Highway Engineering Training Course

Professional Development Training Course Outline

Category	Construction Institute	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Highway Engineering Training Course is designed to develop advanced expertise in modern road infrastructure development, smart transportation systems, sustainable highway design, and intelligent mobility solutions. With the rapid growth of urbanization, logistics networks, and digital transportation technologies, highway professionals must understand innovative pavement engineering, traffic management systems, geotechnical solutions, AI-enabled infrastructure monitoring, and climate-resilient road construction practices. This training equips engineers, planners, consultants, and project professionals with the latest tools, standards, and methodologies required for designing and managing high-performance highway networks.

The course integrates theoretical concepts, practical engineering applications, global best practices, and real-world case studies from major highway projects. Participants will gain expertise in highway planning, geometric design, pavement technology, construction quality control, road safety engineering, GIS applications, smart highways, and sustainable transportation infrastructure. Through interactive sessions, technical workshops, and project-based learning, this program prepares professionals to deliver efficient, safe, and future-ready highway projects.

Programme Curriculum

Highway Engineering Training Course

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Course Duration

5 days

Course Objectives

1. Develop advanced knowledge of highway engineering principles, standards, and emerging infrastructure technologies.
2. Understand modern highway planning, feasibility studies, and transportation network optimization.
3. Master geometric road design principles using digital engineering approaches.
4. Learn innovative pavement design, rehabilitation techniques, and lifecycle management strategies.
5. Apply sustainable highway engineering concepts and green infrastructure practices.
6. Gain expertise in traffic engineering, intelligent transportation systems (ITS), and smart mobility solutions.
7. Understand road safety engineering, accident analysis, and Vision Zero strategies.
8. Develop skills in construction project management, quality assurance, and cost optimization.
9. Learn advanced applications of GIS, BIM, remote sensing, and digital twins in highway projects.
10. Understand climate-resilient infrastructure design and disaster-resistant highway systems.
11. Explore AI, automation, and data analytics applications in transportation engineering.
12. Improve knowledge of highway asset management and predictive maintenance technologies.
13. Build professional capability for managing large-scale transportation infrastructure projects.

Target Audience

1. Highway design engineers and transportation engineers
2. Civil engineers involved in road infrastructure projects
3. Construction managers and project engineers
4. Government highway authorities and infrastructure planners
5. Consultants and engineering design professionals
6. Contractors and quality control specialists
7. Urban planners and smart city professionals
8. Researchers, academics, and transportation technology specialists

Course Modules

Module 1: Fundamentals of Highway Engineering and Transportation Planning

- Highway classification, transportation systems, and infrastructure development trends
- Highway planning methodologies and traffic demand forecasting
- Route selection, feasibility studies, and corridor development strategies
- Transportation network optimization and mobility planning

- **Case Study:** National highway corridor planning and expansion projects

Module 2: Highway Geometric Design and Digital Engineering

- Horizontal and vertical alignment design principles
- Road cross-section elements and design standards
- Sight distance, curves, gradients, and intersection design
- Application of CAD, BIM, and digital design platforms
- **Case Study:** BIM-based design implementation for major expressway projects

Module 3: Pavement Engineering and Advanced Materials

- Flexible, rigid, and composite pavement design concepts
- Asphalt technology, concrete pavement innovations, and recycled materials
- Pavement failure analysis and rehabilitation techniques
- Lifecycle pavement management strategies
- **Case Study:** Sustainable pavement solutions for high-volume highways

Module 4: Traffic Engineering and Intelligent Transportation Systems (ITS)

- Traffic flow theory and capacity analysis
- Intelligent Transportation Systems architecture
- Smart traffic monitoring and automated control systems
- Connected vehicles and future mobility technologies
- **Case Study:** ITS deployment on smart highway networks

Module 5: Highway Construction Management and Quality Control

- Highway construction processes and execution planning
- Construction equipment selection and productivity improvement
- Quality assurance, material testing, and compliance monitoring
- Cost control, scheduling, and project risk management
- **Case Study:** Quality management practices in large highway construction projects

Module 6: Road Safety Engineering and Sustainable Highways

- Road accident analysis and safety improvement strategies
- Road safety audits and risk assessment techniques
- Sustainable highway design and environmental management
- Climate-resilient roads and green infrastructure solutions
- **Case Study:** Road safety improvement programs reducing accident risks

Module 7: GIS, Remote Sensing, BIM, and Smart Highway Technologies

- GIS applications in highway planning and asset management
- Remote sensing for terrain and environmental analysis
- Digital twins for infrastructure monitoring
- AI-based highway inspection and predictive analytics
- **Case Study:** Digital transformation of highway asset management systems

Module 8: Highway Maintenance, Rehabilitation, and Future Trends

- Highway maintenance strategies and performance evaluation

- Pavement condition assessment technologies
- Predictive maintenance using data analytics
- Future highways: autonomous mobility and smart infrastructure
- **Case Study:** AI-driven predictive maintenance for highway networks

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

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

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

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
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

Ready to enroll or request a customized program? Book online or contact us:

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