

ROAD CONSTRUCTION WORKS

UNIT CODE: CON/CU/CET/CR/04/6/A

Relationship to Occupational Standards

This unit addresses the Unit of Competency: Perform Road Construction Works

Duration of Unit: 150 Hours

Unit Description

This unit specifies the competencies required to perform road construction works. It involves carrying out earthwork activities, constructing road/pavement structure layers and constructing parking, walk ways and cyclist lanes, foot bridges and bus bays. It also includes installing road furniture, construction of erosion prevention structures, constructing highway drainage and hydraulic structures and undertaking highway maintenance.

Summary of Learning Outcomes

- 1 Carry out earthwork activities
- 2 Construct road/pavement structure layers
- 3 Construct parking walk ways and cyclist lanes, foot bridges, bus bays
- 4 Install road furniture
- 5 Construct erosion prevention structures
- 6 Construct highway drainage and hydraulic structures
- 7 Undertake highway maintenance

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Carry out earthwork activities	<ul style="list-style-type: none">• Introduction to earthwork activities• Acquisition of relevant legal documents• Interpretation of drawings• Identification and mobilization of Earthwork resources• Setting out for earthworks• Site clearance and demolition activities	<ul style="list-style-type: none">• Observation• Case studies• Oral• Third party report

	<ul style="list-style-type: none"> • Statutory requirements for road construction • Establishment of road formation • Taking and documentation of ground levels • Determination of cut and fill materials volumes 	
2. Construct road/pavement structure layers	<ul style="list-style-type: none"> • Acquisition and mobilization of the required road construction resources • Interpretation of drawings • Standard construction manuals • Carrying out levelling activities • Types of road pavements • Rigid • Flexible • Construction of sub-grade pavement layer • Construction of sub-base pavement layer • Construction of base layer • Documentation of ground levels • Construction of road surface layer • Quality control operations 	<ul style="list-style-type: none"> • Written tests • Observation • Oral questioning • Third party report
3. Construct parking walk ways and cyclist lanes, foot bridges, bus bays	<ul style="list-style-type: none"> • Contract documents • Acquisition and mobilization of required resources • Interpretation of drawings • Construction manuals • Construction of parking • Construction of walk ways, cyclist lanes and bus bays • Construction of foot bridges 	<ul style="list-style-type: none"> • Written tests • Observation • Oral questions • Third party report

	<ul style="list-style-type: none"> • Levelling activities • Documentation of ground levels • Quality control operations 	
4. Install road furniture	<ul style="list-style-type: none"> • Acquisition and mobilization of road furniture resources • Interpretation of drawings • Standard installation manuals • Determination of location of road furniture • Identification of various types of road furniture • Installation of road furniture • Quality control procedures • Maintenance activities on road furniture • Legal and statutory requirements 	<ul style="list-style-type: none"> • Written tests • Observation • Oral questions • Third party report
5. Construct erosion prevention structures	<ul style="list-style-type: none"> • Mobilization of construction resources • Types of soil erosion • Determination of erosion control structures • Location of erosion prevention structures • Interpretation of drawings • Standard construction manuals • Construction of erosion prevention structures • Quality control procedures • Maintenance of erosion prevention structures • Legal and statutory requirements 	<ul style="list-style-type: none"> • Written tests • Observation • Oral questions • Third party report
6. Construct highway drainage and	<ul style="list-style-type: none"> • Mobilization of drainage construction resources 	<ul style="list-style-type: none"> • Written tests • Observation • Oral questions

<p>hydraulic structures</p>	<ul style="list-style-type: none"> • Determination of drainage positions • Legal documents for drainage structures construction • Definition of roles and responsibilities • Cost estimation and tendering for construction works • Interpretation of survey data • Interpretation of drawings • Setting out construction works • Construction of culvert • Quality control operations • Legal requirements • Contract documents • Licenses • Mobilization of construction resources • Location for construction • Interpretation of drawings • Setting out of construction works • Construction procedures for drains • Quality control operations • Legal and statutory requirements • Mobilization of construction resources • Identification of construction site location • Interpretation of survey data • Interpretation of drawings • Setting out operations • Construction of drains and gullies • Quality control operations 	<ul style="list-style-type: none"> • Third party report
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	<ul style="list-style-type: none"> • Legal requirements • Contract • Licenses • Mobilization of construction materials and resources • Location of bridge construction site sections • Interpretation of survey data • Interpretation of drawings • Setting out activities • Bridge construction • Quality control operation • Legal and statutory requirements • Mobilization of construction resources • Locate sections for construction site • Interpretation of drawings • Setting out activities • Construction of drifts and causeways • Quality control operations • Legal and statutory requirements • Mobilization of construction resources • Interpretation of drawings • Setting out activities • Retaining wall construction operations • Backfilling procedures • Quality control operations • Legal and statutory requirements 	
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<p>7. Undertake highway maintenance</p>	<ul style="list-style-type: none"> • Relevant road maintenance information • Road construction legal documents • Identification of road assessment tools and equipment • Definition of duties and roles • Road inspection • Data collection on the status of the road for maintenance • Data is analysis of road sections for maintenance • Identification of road sections for maintenance • Preparation and presentation of assessment report and material specifications • Cost estimation and tendering for maintenance works • Legal and statutory requirements for road maintenance • Identification of highway maintenance needs • Categorization of maintenance needs • Identification of sources of road maintenance construction materials • Development of road maintenance schedules • Determination of road maintenance resources • Identification of emergency site location 	<ul style="list-style-type: none"> • Written tests • Observation • Oral questions • Third party report
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	<ul style="list-style-type: none"> • Identification of the nature and magnitude of road emergency • Mobilization of emergency response resources • Allocation of duties and roles • Allocation of maintenance construction resources • Emergency maintenance procedures • Monitoring and quality operations • Legal documentation of emergency response maintenance • Mobilization of required resources • Interpretation of road designs • Categorization of routine maintenance activities • Carrying out routine maintenance activities • Maintenance of OSH requirements • Quality control activities • Legal documentation of routine maintenance activities • Identification and mobilization of resources • Interpretation of road designs • Categorization of periodic maintenance activities • Carrying out periodic maintenance activities • Maintenance of OSH requirements • Quality control activities 	
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	<ul style="list-style-type: none">• Legal documentation of routine maintenance activities	
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Suggested Methods of Instruction:

- Direct instruction
- Project
- Case studies
- Field trips/site visits
- Group discussions
- Demonstration by trainer
- Computer Aided Learning (CAL)
- Practice by the trainee
- Relevant video shows

Recommended Resources

- Computer
- Internet
- Workshop
- Construction materials
- Construction tools and equipment
- Construction designs and drawings
- Sample contract documents
- Computer software e.g. AutoCAD, ArchiCAD, Civil3D
- Stationery
- Road construction site
- Material testing laboratory
 - Moulds
 - Tamping rods
 - CBR Machines
 - Crushing machines
- Schedule of work
- Standard manuals
- Road under construction
- Contract documents