

HIGHWAY SURVEY

UNIT CODE: CON/CU/CET/CR/02/6/A

Relationship to Occupational Standards

This unit addresses the Unit of Competency: Perform Highway Engineering Survey

Duration of Unit: 190 Hours

Unit Description

This unit specifies the competencies required to Perform Highway Survey. It involves undertaking preliminary site survey, performing levelling activities, conducting tacheometry works and drafting road cross-sections. It also includes carrying out setting out activities, performing traversing works and performing traffic engineering survey.

Summary of Learning Outcomes

1. Undertake preliminary site survey
2. Carry out setting out activities
3. Conduct tacheometry works
4. Perform levelling activities
5. Draft road cross-sections
6. Perform traversing works
7. Perform traffic engineering survey

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1 Undertake preliminary site survey	<ul style="list-style-type: none">• Preliminary site survey plan• Mobilization of survey resources• Interpretation of survey drawings• Assessment of site survey conditions• Levelling activities	<ul style="list-style-type: none">• Written tests• Observation• Case study• Oral questions• Third party report

	<ul style="list-style-type: none"> • Establishment of Original ground level (OGL) • Establishment of reference points • Preparation of preliminary survey report 	
2 Perform levelling activities	<ul style="list-style-type: none"> • Description of levelling tools and equipment • Calibration of levelling tools and equipment • Setting out levelling machines and equipment. • Reading and booking surveying levels • Monitoring and control of road levels • Carrying out arithmetic checks 	<ul style="list-style-type: none"> • Written tests • Observation • Oral questions • Third party report •
3 Conduct tacheometry works	<ul style="list-style-type: none"> • Tacheometry tools and equipment • Calibration of tools and equipment • Determination of horizontal distances • Determination of vertical distances • Collection of tacheometry data • Documentation of tacheometry data Collected • Carry out arithmetic checks 	<ul style="list-style-type: none"> • Written tests • Observation • Oral questioning • Third party report •

<p>4 Draft road cross-sections</p>	<ul style="list-style-type: none"> • Recording and computing road levels. • Producing reduced levels • Road cross-sections • Drafting tools and equipment • Drafting road cross-sections • Interpretation of road cross-sections • Establishing road designs profiles 	<ul style="list-style-type: none"> • Written tests • Observation • Oral questions • Third party report •
<p>5 Carry out setting out activities</p>	<ul style="list-style-type: none"> • Identification of Setting out tools and equipment • Calibrations of equipment • Determination of alignments • Setting out of alignments • Horizontal alignment • Vertical alignment • Computation of alignment data 	<ul style="list-style-type: none"> • Written tests • Observation • Oral questioning • Third party report •
<p>6 Perform traversing works</p>	<ul style="list-style-type: none"> • Theodolite traversing • Compass traversing • Calibration of tools • Determination of horizontal and vertical angles • Calculation of coordinates • Data collection and analysis • Documentation of data 	<ul style="list-style-type: none"> • Written tests • Observation • Oral questions • Third party report •

<p>7 Perform traffic engineering survey</p>	<ul style="list-style-type: none"> • Contract documents • Geographical information sources • Interpretation of geographical data • Location of traffic survey site • Topographical maps • Traffic survey • Identification of human resources • Traffic engineering survey tools, equipment and materials • Definition of duties and responsibilities • Methods of data collection and analysis • Establishment of data collection and monitoring methods • Legal and statutory requirements. • Allocation of resources • Allocation of duties and responsibilities • Provision for road safety requirements • Conducting traffic counts • Establishment of traffic volumes and axle loadings • Data analysis 	<ul style="list-style-type: none"> • Written tests • Observation • Oral questions • Third party report
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	<ul style="list-style-type: none"> • Preparation of traffic count report • Traffic data analysis • Categorization of traffic composition • Determination and estimation of traffic characteristics • Determination of road characteristics • Documentation of road and traffic characteristics • Preparation of road traffic survey reports 	
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Suggested Methods of Instruction

- Direct instruction
- Project
- Case studies
- Group discussions
- Field trips /site visits
- Demonstration by trainer
- Practice by the trainees
- Industrial attachment
- Viewing of related videos

Recommended Resources:

- Surveying tools and equipment
- Computers
- CAD & GIS Software
- Construction manuals and guidelines
- Projectors
- Flip charts
- Calculators
- Stationery

- Charts with presentations of data
- Drawing sheets
- Internet
- Relevant videos
- Printers
- Workstation
- Standard of specifications

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