

CONDUCT ENGINEERING SURVEY

UNIT CODE: ENG/OS/QS/CR/01/6/A

UNIT DESCRIPTION

This unit describes the competence in conducting engineering survey. It involves conducting levelling, setting out construction works, performing earthworks and carrying out road surveys.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA <i>(Bold and italicized terms are elaborated in the Range)</i>
1 Conduct levelling	1.1 Reconnaissance is carried out as per SOPs 1.2 Site clearance is carried out based on the <i>conditions of the site</i> 1.3 Reduced levels are determined based on the <i>nature of the ground</i> 1.4 Contours are plotted as per SOPs 1.5 Longitudinal profiles are produced based on the reduced levels 1.6 Mass haul diagram is produced based on the contours plotted 1.7 Formation level is achieved based on the mass haul diagram
2 Set out constructions works.	2.1 <i>Nature of the construction</i> is determined based on the working drawings 2.2 Site layout plan is obtained and interpreted as per SOPs 2.3 Construction plan is obtained and interpreted as per SOPs 2.4 Construction line is established according to the local authority 2.5 Construction base line is established based on the site plan 2.6 First corner/centre of the building is located based on the site plan 2.7 Construction works is set out based on the <i>setting out methods</i> 2.8 Profile boards are erected as per SOPs 2.9 Construction dimensions are transferred to the ground as per SOPs
3 Carry out road survey	3.1 Tacheometry survey is carried out as per SOPs 3.2 Survey maps and photographs are scaled as per SOPs 3.3 Circular curves are set out as per SOPs 3.4 Traverse details are plotted as per SOPs
4 Perform earthworks	4. 1Working drawings are interpreted as per SOPs 4. 2Site clearance works are carried out based on site conditions and project scope 4. 3Cross sections are set out based on the working drawings 4. 4Top soil is removed as per SOPs 4. 5Excavation to formation level/reduced level is carried out based on the working drawings 4. 6Embankments are formed as per working drawings 4. 7Formation level is compacted as per SOPs 4. 8Excess earthworks materials are disposed as per SOPs

RANGE

Variable	Range <i>May include but is not limited to:</i>
1. Conditions of the site	1.1 Bushy 1.2 Plain 1.3 Forest 1.4 Shrubs 1.5 Structures 1.6 Marshy
2. Nature of the ground	2.1 Slope 2.2 Flat 2.3 Rock
3. Nature of the construction	3.1 Single storey 3.2 Multi storey 3.3 Basement 3.4 Irregular shaped 3.5 Regular shaped 3.6 Circular 3.7 Road works 3.8 Tunnels 3.9 Bridges 3.10 Sewers 3.11 Railway lines
4. Setting out methods	4.1 3-4-5 method/Pythagoras theorem 4.2 Builder's square method 4.3 Site square method

REQUIRED KNOWLEDGE

- Mathematics
- Measurements
- Surveying instruments
- Surveying methods
- Tabulation of data
- Site clearance methods
- Use of surveying instruments
- Plan interpretation
- Technical drawing
- Use of setting out equipment
- Construction
- Setting out methods
- Local authority by-laws

- Surveying
- Soil mechanics
- Waste disposal
- Land use
- Mapping
- Photogrammetry
- Data interpretation
- Civil engineering construction
- Building construction

SKILLS

- Surveying
- Masonry
- Technical drawing
- Analytical

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: <ul style="list-style-type: none"> 1.1 Determined reduced levels 1.2 Plotted contour maps 1.3 Produced mass haul diagram 1.4 Determined setting out method 1.5 Set out a building 1.6 Interpreted working drawings 1.7 Set out cross sections 1.8 Carried out road survey
2. Resource Implications	The following resources should be provided: <ul style="list-style-type: none"> 2.1 Survey instruments 2.2 Storage facilities 2.3 Surveying technician 2.4 Appropriate plant and equipment 2.5 Plant operator
3. Methods of Assessment	Competency may be assessed through: <ul style="list-style-type: none"> 3.1 Written text 3.2 Interview 3.3 Observation

4. Context of Assessment	Competency may be assessed on the job, off the job or a combination of these. Off the job assessment must be undertaken in a closely simulated workplace environment.
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

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