



GEOSPATIAL ENGINEERING COMPETENCIES

Engineering Surveying

The measurement, definition and portrayal, either digitally or graphically in the form of maps or plans, of the physical features of, and the structures on the Earth's surface. The ability to understand engineering design information and from this, provide dimensional control for all stages of construction work.

GEES01		Competency	To be able to undertake engineering surveying / setting out and provide reports to clients and third parties				
			Date of assessment				
	Optimum Standard		Activity Details	A	K	E	B
ITEM	TECHNICAL MEMBER	MEMBER					
A	E	B	Site Reconnaissance				
B	E	B	Understanding requirements, accuracies				
C	E	B	Retrieving existing survey information and linking to design drawings				
D	E	B	Establishing and surveying appropriate control stations to appropriate accuracy				
E	E	B	Use of appropriate equipment e.g., Total Station, GPS, Tape, reflectorless EDM				
F	E	B	Data capture, survey records				
G	E	B	Methods of marking dimensional information on site				

GEES01 continued		Competency	To be able to undertake engineering surveying / setting out and provide reports to clients and third parties				
			Date of assessment				
	Optimum Standard		Activity Details	A	K	E	B
ITEM	TECHNICAL MEMBER	MEMBER					
H	E	B	Communication of dimensional information to others. Verbal, graphical, written presentation of information				
I	E	B	Maintenance and verification of dimensional control				

GEES01: To be able to undertake engineering surveying / setting out and provide reports to clients and third parties

Name of Supervisor	Name of Applicant
Supervisor's signature	Date

GEES02		Competency	The ability to use and understanding of surveying instruments				
			Date of assessment				
		Optimum Standard	Activity Details	A	K	E	B
ITEM	TECHNICAL MEMBER	MEMBER					
A	E	B	Total Stations – conventional				
B	E	B	Total Stations – reflectorless				
C	E	B	Other methods of measuring distance				
D	E	B	GPS – Static - RTK				
E	A	A	Theodolites				
F	A	B	Levels				
G	K	E	Levels – precise				
H	E	B	Levels – digital				

GEES02 continued		Competency	The ability to use and understanding of surveying instruments				
			Date of assessment				
Optimum Standard			Activity Details	A	K	E	B
ITEM	TECHNICAL MEMBER	MEMBER					
I	E	B	Construction laser devices				
J	A	A	Laser scanners				
K	E	E	Electronic tapes / handheld measuring devices				
L	E	B	Instrument checking				
M	E	B	Instrument calibration				
N	E	B	Instrument adjustment				
O	E	B	Accessories checking and adjustment				

GEES02: The ability to use and understanding of surveying instruments

Name of Supervisor	Name of Applicant
Supervisor's signature	Date

GEES03		Competency	Application of geometric principles				
			Date of assessment				
	Optimum Standard		Activity Details	A	K	E	B
ITEM	TECHNICAL MEMBER	MEMBER					
A	E	B	3 dimensional co-ordinate geometry. All calculations, manual and using computers				
B	E	B	Geometric calculations				
C	E	B	2D and 3D Survey control – intersection, resection, free station, traverse, network				
D	E	B	Adjustment of survey measurements. Redundant observations. Principles of least squares, residuals, standard errors, error ellipses				
E	E	B	Quality of geometric configurations				
F	E	B	Measurement of heights; use of height datums; datum transformations				
G	E	B	Self-checking survey measurements				

GEES03: Application of geometric principles

Name of Supervisor	Name of Applicant
Supervisor's signature	Date

GEES04		Competency	The ability to use ICT in surveying				
			Date of assessment				
	Optimum Standard		Activity Details	A	K	E	B
ITEM	TECHNICAL MEMBER	MEMBER					
A	E	B	Transfer of survey data between instrument and computer				
B	E	B	Electronic processing of co-ordinate geometry data including geometric networks				
C	E	B	Use and manipulation of digital ground models				
D	E	B	CAD - general principles, structure, layering				
E	E	B	CAD – various formats – Autocad, MOSS, Microstation and others				
F	E	B	Digital data transfer – dxf, Genio etc				

GEES04: The ability to use ICT in surveying

Name of Supervisor	Name of Applicant
Supervisor's signature	Date