

GEOSPATIAL ENGINEERING COMPETENCIES - - Buried Services Surveyor Competencies

Buried Services Surveying

The measurement, definition and portrayal, either digitally or graphically in the form of maps, plans or reports, of the characteristics of buried services. The ability to interpret, collate and manage data generated from the propagation of electromagnetic radiation and from visual inspection, and from this provide comprehensivel and reliable information to end users.

Range Indicators

Competency will be demonstrated in the application of relevant knowledge, understanding and skills set out in the Buried Services Surveying Competency Requirements. Such knowledge and skills will normally be obtained through a form of structured training and work experience.

This area of specialism includes the following core skills:

- Comprehensive experience of all commonly used classes of instruments/tools which are used to detect buried services
- Comprehensive experience of carrying out buried services surveys at various scales
- Understanding of 2 and 3 dimensional co-ordinate geometry
- Understanding of the basic principles of geodesy and the problems or representing curved surfaces with planar coordinates
- Comprehensive experience of the use of ICT for processing/manipulating geospatial information
- Experience of other aspects of measurement.

Communication, basic computing and Health and Safety skills apply to all specialisms and are elsewhere.

Evidence Guide

Evidence of successful achievement of this competency would be effective and efficient management of the Buried Services Surveying process with the application of appropriate systems for monitoring and reporting of data, at the minimum levels as stated in the competency details and range of elements

GEBS01 Competency		Competency	The ability to carry out underground services surveys					
				Date	of as	sessn	nent	
	Optimum S	standard	Activity Details					
ITEM	TECHNICAL MEMBER	MEMBER		А	K	Е	В	
Α	A	В	Site reconnaissance					
В	К	В	Use of appropriate survey control stations and measurements					
С	E	В	Obtain, interpret and understand limitations of STATS records, service records and other available data					
D	E	В	 Visual methods of locating/mapping services/local knowledge surface indications; lifting services covers, overhead services, possible pitfalls, manholes, services pits, conduits, services ducts, trench scars, services risers 					

GEBS01 continued Competency		Competency	The ability to carry out underground services surveys					
				Date	of as	sessn	nent	
	Optimum S	tandard	Activity Details					
ITEM	TECHNICAL MEMBER	MEMBER		Α	K	Е	В	
E	E	В	Assessment of local knowledge – existing formal and other informal sources of information					
F	E	В	Effective use of electromagnetic methods of locating services Signal generator/receiver					
G	E	В	Acoustic methods					
Н	Е	В	Effective use of ground probing radar (GPR)					
I	A	К	Geophysical methods Electromagnetic, seismic, radar,resistivity, how these can be used to further knowledge of buried services/voids/structures; when should these additional services be suggested to a client?					

GEBS01 continued Competency		The ability to carry out underground services surveys					
				Date	of as	sessn	nent
	Optimum S	tandard	Activity Details				
ITEM	TECHNICAL MEMBER	MEMBER		А	K	Е	В
J	E	В	Site mark-out techniques				
K	Е	В	Drainage surveys				
L	A	К	Drainage CCTV surveys				
М	К	E	Producing reduced level information				
N	Е	В	Permanent recording of services locations				
0	E	В	Production of record cards 1. Photos 2. Sketches 3. Georeferences				
Р	A	К	Geotechnical investigations				

GEBS01 continued Competency		Competency	The ability to carry out underground services surveys					
		1		Date	of as	sessm	ent	
	Optimum Standard		Activity Details					
ITEM	TECHNICAL MEMBER	MEMBER		Α	K	Е	В	
Q	E	В	Understand applicable legislation and how it applies including CDM considerations; HSG47, NRSWA, Traffic Management Act and any other					

GEBS01: The ability to carry out underground services surveys

Name of Supervisor	Name of Applicant
Supervisor's signature	Date

GEBS02 Competency		Competency	The ability to use and understanding of surveying instruments					
				Date	of as	sessn	nent	
	Optimum S	tandard	Activity Details					
ITEM	TECHNICAL MEMBER	MEMBER		Α	K	E	В	
A	E	В	A variety of methods of buried services surveying					
В	E	В	Use of appropriate equipment					
С	E	В	Levels					
D	К	В	Levels – digital					
E	E	E	Instrument checking					
F	E	E	Instrument calibration					
G	E	E	Instrument adjustment					
н	E	E	Accessories checking and adjustment					

ICES Geospatial	Buried Services	Competencies	- Final
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GEBS02: The ability to use and understanding of surveying instruments

Name of Supervisor	Name of Applicant
Supervisor's signature	Date

GEBS03 Competency		Competency	Application of geometric principles					
		l		Date	of as	sessm	ent	
	Optimum St	andard	Activity Details					
ITEM	TECHNICAL MEMBER	MEMBER		А	K	E	В	
A	E	В	3 dimensional coordinate geometry. All calculations, manual and using computers					
В	E	В	Geometric calculations					
С	E	В	2D and 3D Survey control – intersection, resection, free station, traverse, network					
D	Е	В	Adjustment of survey measurements. Redundant observations. Principles of Least squares, residuals, standard errors, error ellipses					
Е	E	В	Quality of geometric configurations					
F	Е	В	Measurement of heights; use of height datums; datum transformations					
G	E	В	Self-checking survey measurements					

GEBS03: Application of geometric principles

Name of Supervisor	Name of Applicant
Supervisor's signature	Date

GEBS04 Competency		Competency	The ability to use ICT in surveying						
		I		Date of assessment					
	Optimum St	andard	Activity Details						
ITEM	TECHNICAL MEMBER	MEMBER		Α	K	E	В		
A	E	В	Transfer of survey data between instrument and computer						
В	E	В	Electronic processing of co-ordinate geometry data including geometric networks						
С	E	В	Use and manipulation of digital ground models						
D	E	В	CAD - general principles, structure, layering						
E	E	В	CAD – various formats – Autocad, MOSS, Microstation and others						
F	E	В	Digital data transfer – dxf, Genio etc						

GEBS04: The ability to use ICT in surveying

Name of Supervisor	Name of Applicant
Supervisor's signature	Date