TSC Category	Discipline Engineering Specialisation					
TSC	Civil and Structural Engineering Management					
TSC Description	Manage the design, technical specification, selection, modification and troubleshooting of civil structures and systems to provide civil and structural engineering discipline support to construction, maintenance and project teams					
TSC Proficiency Description	**Level 1**	**Level 2**	**Level 3**	**Level 4**	**Level 5**	**Level 6**
				EGS-EPM-4061-1.1	**EGS-EPM-5061-1.1**	**EGS-EPM-6061-1.1**
				Interpret designs, technical specifications, modification designs, constructability methods, and maintenance procedures to provide civil and structural engineering support to construction, maintenance and project teams	Facilitate the development and implementation of designs, technical specifications, modification designs, constructability methods, and maintenance procedures to manage civil and structural engineering support to construction, maintenance and project teams	Evaluate designs, technical specifications, modification designs, constructability methods, and maintenance procedures to drive high standards of civil and structural engineering support to construction, maintenance and project teams
Knowledge				• Local and international legislative requirements and safety standards • Civil and structural engineering drawing standards • Engineering geology and soil mechanics • Concepts of statics and mechanics of materials and their applications • Site surveying and measurement techniques • Concepts of foundation engineering • Concepts of structural analysis, and concrete and steel design • Principles of hydraulics, hydrology and fluid mechanics • Civil and structural engineering technologies • Principles of sustainability in civil engineering	• Local and international legislative requirements and safety standards • Principles of design of civil structures • Concepts of structural stability and dynamics, and finite element analysis • Techniques for analysis of civil engineering experiments • Advanced structural concrete and steel design • Analytical and numerical methods in foundation engineering • Construction equipment and methods • Principles of precast and advanced concrete technologies • Principles of hazard and environmental risk assessment • Principles of construction project management	• Local and international legislative requirements and safety standards • Civil and structural construction and maintenance strategies • Civil and structural design and modification practices • Principles of project quality management • Principles of environmental planning • Concepts of hazard identification and evaluation • Principles of robotics technology and applications • Industry best practices in civil and structural engineering

Abilities				• Select and apply appropriate civil and structural engineering standards and regulations • Interpret scales, projections, sections, isometric views, and engineering drawings for civil structures • Evaluate the adequacy of civil and structural elements under different loads • Apply site surveying and measurement techniques for engineering works control and map interpretation • Provide engineering support for construction of shallow and deep foundations by analysing properties of soils, shear strength, and earth pressure • Validate layout of steel and concrete structures, flexural members, and compression members in line with building code and standards • Recommend application of construction methodologies, machineries, and technologies • Incorporate green practices to ensure sustainability in civil structures for pollution control, energy management, waste management, and noise management	• Validate compliance of civil structures with legislative requirements and safety standards • Review, validate or re-validate design and behaviour of civil structures • Analyse structural stability and dynamics of civil structures • Verify civil engineering models using in-laboratory and field experiments • Ensure optimal function and loading of concrete beams, slabs and columns, and connections of steel structures • Recommend methods and techniques for creation of substructures which include shallow foundation, deep foundation and deep basement, and superstructures • Provide discipline engineering support for selection of suitable construction methods and technology depending on the site condition, time and cost • Validate design and construction of civil structures against environmental risk and hazards • Manage the development and implementation of the organisational safe working procedures • Provide discipline engineering support for	• Set the organisation's compliance and safety standards for civil and structural engineering activities • Review and approve professional design proposals, plans, layout drawings and design criteria for civil structures • Review and endorse civil engineering models and structures • Review and endorse designs and technology selection for civil structures • Strategise planning processes, policies and design methods to minimise environmental issues and problems • Provide engineering support to ensure adherence to safety regulations and mitigation of hazards associated with civil and structural engineering activities • Review and endorse the design and construction of civil structures against environmental risk and hazards • Drive adoption of civil engineering technology and robotics in the organisation based on industry best practices • Review and endorse the organisation's safe working procedures

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					engineering, construction and maintenance of civil structures	