



The Association of Professional
Engineers and Geoscientists of Alberta

Samples of Defined Scopes of Practice for the P.L. (Eng.) Designation

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CHEMICAL ENGINEERING

Within the **discipline** of Chemical Engineering; **in the field of** oil and gas operations:

- **Advising on, evaluating:** fire and gas detection systems for oil and gas facilities,
- **Reporting on, advising on, evaluating and designing:** building egress fire and safety equipment layouts used in oil and gas facilities.

Within the **discipline** of Chemical Engineering; **in the field of** oil and gas operations:

- **Evaluating** sulphur recovery and tail gas treating units within the oil and gas industry.

Within the **discipline** of Chemical Engineering; **in the field of** heavy oil operations:

- **Designing and preparing plans and specifications** for: pump and piping systems, and for atmospheric storage tanks
- **Evaluating and designing:** process flow diagrams, piping and instrumentation diagrams and related heat and mass balances
- **Preparing plans and specifications** for vapour/liquid separation vessels

Within the **discipline** of Chemical Engineering; **in the field of** oil and gas operations:

- **Directing** the operation of oil & gas processing facilities and equipment to optimize, operate efficiently and within safe limits
- **Designing** piping systems, separation equipment, and relief systems in oil and gas production facilities and wellsites
- **Preparing plans and specifications** for piping systems, separation equipment, and relief systems in oil and gas production facilities and wellsites

– Within the **discipline** of Chemical Engineering; **in the field of** oil and gas exploration and production:

- **Evaluating, reporting on and advising on;** the feasibility and performance in the production, development and maintenance of oil and gas wells
- **Designing** type curve models, well workover programs, Enhanced Oil Recovery (EOR) Systems, pumping and compression systems used in the production, development and maintenance of oil and gas wells
- **Preparing plans and specifications** for long and short-term planning for fracture communication and mitigation systems used in the production, development and maintenance of oil and gas wells.

Within the **discipline** of Chemical Engineering; **in the field of** conventional oil and natural gas processing:

- **Designing** and **preparing plans and specifications** for: piping systems
- **Designing** plot plans, process flow diagrams, piping and instrumentation diagrams
- **Directing** the construction of piping and processing facilities.

The scope **excludes**: Fired equipment, compressors, process automation and control systems.

CIVIL ENGINEERING

Within the **discipline** of Civil Engineering; **in the field of** oil and gas operations and power plant facilities:

- **Designing and preparing plans and specifications for:** structural steel supports and concrete pads/foundations to support mechanical equipment/pipes and electrical equipment/cable trays/conduits.

The scope **excludes:** design for dynamic loading

Within the **discipline** of Civil Engineering; **in the field of** municipal infrastructure:

- **Designing, preparing plans and specifications for, evaluating, and directing the technical inspection of:** water distribution systems, storm and sanitary sewer collection systems, and roadways.

Within the **discipline** of Civil Engineering; **in the field of** roadway design & transportation:

- **Designing, preparing plans and specifications for:** urban and rural roadways, overland drainage and earthworks.

Within the **discipline** of Civil Engineering; **in the field of** fire protection:

- **Evaluating** the design of fire water distribution systems, fire risk, public fire protection systems and emergency response management systems for municipalities
- **Designing** public fire protection systems for municipalities

Within the **discipline** of Civil Engineering; **in the field of** municipal infrastructure:

- **Advising on, designing, evaluating, preparing plans and specifications for, directing the operation of, directing the construction of, directing the technical inspection of:** water distribution systems, wastewater collection systems, storm water management systems, roadway systems, site grading and drainage.
- **Reporting on** water distribution systems, wastewater collection systems, storm water management systems.

Within the **discipline** of Civil Engineering; **in the field of** roadway design for watercourse crossings:

- **Evaluating, designing, preparing plans and specifications for, directing the construction of, directing the maintenance of:** standard bridges, culverts, open channels and the associated roadways

The scope excludes major bridge structures

Within the **discipline** of Civil Engineering; **in the field of** municipal infrastructure:

- **Designing and preparing plans and specifications for** sanitary and stormwater collection systems, water distribution systems, local to major roadways, grading and earthworks.

Within the **discipline** of Civil Engineering; **in the field of** materials testing and inspection:

- **Advising on, reporting on, directing the technical inspection of:** construction materials (earthworks, aggregates, Portland cement concrete and asphalt cement pavements).

Within the **discipline** of Civil Engineering; **in the field of** electrical transmission systems:

- **Preparing plans and specifications for:** the layout, placement of structures, and cable tension for electrical transmission systems from 69 kV to 500 kV.

Within the **discipline** of Civil Engineering; **in the field of** municipal infrastructure:

- **Designing, preparing plans and specifications for, directing the technical inspection of:** roadways, sanitary systems, storm water systems, water distribution systems, drainage channels and parking lots.

Within the discipline of Civil Engineering; in the field of roadway design and transportation:

- **Evaluating, advising on, designing, reporting on, preparing plans and specifications for, directing the construction of, directing the technical inspection of:** earthworks, granular base course and asphalt concrete pavement, geometric alignment, traffic analysis and drainage.

Within the **discipline** of Civil Engineering; **in the field of** oil and gas operations:

- **Designing and preparing plans and specifications for:** low or high temperature structural components for oil/water separation systems and oil field waste management systems
- **Designing** building foundations and steel and wood frame building/offices for industrial use

Within the **discipline** of Civil Engineering; **in the field of** industrial oil and gas plant facilities:

- **Designing** steel and concrete piling, and concrete foundations
- **Designing** steel structures and modules for the support of pipelines, cable trays and transport of equipment

Within the **discipline** of Civil Engineering; **in the field of** roadway design and transportation:

- **Advising on, reporting on, preparing plans and specifications for, evaluating, directing the technical inspection of:** roadway and rail grading construction
- **Advising on, reporting on, preparing plans and specifications for, evaluating:** utility relocation
- **Designing** local roadways

Within the discipline of Civil Engineering; in the field of municipal infrastructure:

- **Evaluating, preparing plans and specifications for:** water distribution piping systems, sanitary sewer piping systems, stormwater management systems, site grading and roadway geometrics
- **Directing** the technical inspection of water distribution piping systems, sanitary sewer piping systems, stormwater management systems, site grading and roadworks geometrics.

Within the **discipline** of Civil Engineering; **in the field of** municipal infrastructure:

- **Directing the construction of, directing the technical inspection of and evaluating:** earthworks, water/sewer mains, lot services, storm water management facilities, urban roads and streets infrastructure
- **Designing and preparing plans and specifications for:** earthworks, water/sewer mains, lot services, urban roads and streets infrastructure.

The scope **excludes:** Street lighting design.

Within the **discipline** of Civil Engineering; **in the field of** roadway design and transportation:

- **Directing the construction of** arterial and collector roadway rehabilitations.

Within the **discipline** of Civil Engineering; **in the field of** roadway design & transportation:

- **Designing, preparing plans and specifications for:** rural highways, local roadways, drainage channels, intersections, and parking areas.

Within the **discipline** of Civil Engineering; **in the field of** building systems:

- **Designing** floor and roof systems for high density housing and light commercial building using engineered lumber products
- **Designing** floor and roof systems for single family dwellings using engineered lumber products.

Within the **discipline** of Civil Engineering; **in the field of** transportation and utilities:

- **Designing and preparing plans and specifications for:** earthworks, roads and pads for power lines and substations.

Within the **discipline** of Civil Engineering; **in the field of** roadway design and transportation:

- **Evaluating, designing, preparing plans and specifications for:** highways, local roadways, intersections and overland drainage systems

Within the **discipline** of Civil Engineering; **in the field of** municipal infrastructure:

- **Designing** roadways, ditches, culverts, intersections and approaches.

Within the **discipline** of Civil Engineering; **in the field of** transportation:

- **Designing and preparing plans and specifications for:** the horizontal and vertical alignment for arterial streets.

Within the **discipline** of Civil Engineering; **in the field of** municipal infrastructure:

- **Evaluating and directing the technical inspection of:** roadways, site grading, water and irrigation distribution systems, wastewater and stormwater collection systems.

Within the **discipline** of Civil Engineering; **in the field of** roadway design and transportation:

- **Designing** geometric, cross section, signage, pavement markings, surface drainage of highways and rural/urban roadways, water and storm systems
- **Preparing plans and specifications for** highways, arterial, collector and local roads
- **Reporting on** road construction, embankment and surface works, site grading

Within the **discipline** of Civil Engineering; **in the field of** materials testing and inspection
– geotechnical:

- **Evaluating and reporting on:** soils for use in building dykes, dams and roads in mining industries.

Within the **discipline** of Civil Engineering; **in the field of** materials testing and inspection:

- **Reporting on and directing the technical inspection of:** deep cast-in-place pile foundations, continuous flight auger foundations, steel driven pile foundations and construction materials (aggregate, Portland cement concrete and asphalt cement pavement).

Within the **discipline** of Civil Engineering; **in the field of** roadway design and transportation:

- **Evaluating** existing urban and rural roadway conditions
- **Advising on** urban and rural roadway improvements
- **Designing** local to major urban and rural roadways
- **Reporting on** existing roadway conditions, capacity analysis and proposed improvements
- **Preparing plans and specifications for** roadway designs.

The scope **excludes:** Design of sanitary sewers, water mains, storm mains, street lighting, pavement structures, landscaping and irrigation.

Within the **discipline** of Civil Engineering; **in the field of** airport land development:

- **Designing, preparing plans and specifications for and directing the technical inspection of:** runways, aprons, taxiways, airport roadways, storm and sanitary drainage systems and airport land parcel developments

Within the **discipline** of Civil Engineering; **in the field of** municipal infrastructure:

- **Designing** water distribution systems, sanitary/storm collection systems, local/collector roadways, site grading and irrigation systems for urban infrastructure
- **Preparing plans and specifications for** water distribution systems, sanitary/storm collection systems, local/collector roadways, site grading and irrigation systems for urban infrastructure
- **Directing the construction of** water distribution systems, sanitary/storm collection systems, local/collector roadways, site grading and irrigation systems for urban infrastructure
- **Directing the technical inspection of** water distribution systems, sanitary/storm collection systems, local/collector roadways, site grading and irrigation systems for urban infrastructure.

Within the **discipline** of Civil Engineering; **in the field of** municipal infrastructure:

- **Designing, preparing plans and specifications for, directing the construction of:** local, collector and arterial roadways, gravity sanitary sewers, storm water collection and water distribution systems.

Within the **discipline** of Civil Engineering; **in the field of** municipal infrastructure:

- **Directing** the maintenance of road bridges.

Within the **discipline** of Civil Engineering; **in the field of** municipal infrastructure:

- **Designing, preparing plans and specifications for, evaluating, directing the technical inspection of, reporting on, and advising on:** sanitary and stormwater collection systems, water distribution systems, local to major urban and rural roadways, grading and earthworks.

Within the **discipline** of Civil Engineering; **in the field of** municipal infrastructure:

- **Designing, evaluating, directing the technical inspection of, preparing plans and specifications for:** sanitary sewer collection, water distribution, storm water collection and drainage systems, water treatment, roadways and earthworks for commercial and residential site balancing and grading.

Within the **discipline** of Civil Engineering; **in the field of** roadway design and transportation:

- **Designing, preparing plans and specifications for, evaluating, advising on, directing the construction of:** municipal roads, parking lots, multi-use trails, sports fields and associated minor storm infrastructure.

COMPUTER ENGINEERING

Within the **discipline** of Computer Engineering; **in the field of** process automation and control systems infrastructure:

- **Designing, preparing plans and specifications for, advising on, directing the construction and maintenance of:** networks and computer systems for distributed control systems, process control networks, supervisory control and data acquisition systems, programmable logic controls in petrochemicals and utilities industries.

The scope **excludes:** Host control software for: distributed control systems, process control networks, supervisory control and data acquisition systems, programmable logic controls.

ELECTRICAL ENGINEERING

Within the **discipline** of Electrical Engineering; **in the field of** building systems:

- **Designing, preparing plans and specifications for, and evaluating:** electrical systems up to 25kV for residential, commercial, institutional, and industrial buildings.

Within the **discipline** of Electrical Engineering; **in the field of** instrumentation and shutdown systems:

- **Advising on, designing, evaluating, preparing plans and specifications for:** field instrumentation and Safety Instrumented Systems (SIS) for petrochemical industries.

Within the **discipline** of Electrical Engineering; **in the field of** power distribution and lighting:

- **Designing** underground power distribution systems for residential and commercial developments (up to and including 25 kV)
- **Designing** lighting for municipal roadways, pedestrian walkways, parking lots, decorative feature lighting, and sports field lighting.

Within the **discipline** of Electrical Engineering; **in the field of** power distribution:

- **Designing, preparing plans and specifications for, evaluating, reporting on, advising on and directing the construction of:** electrical power and control systems up to and including 25kV.

The scope **excludes:** SCADA systems.

Within the **discipline** of Electrical Engineering; **in the field of** instrumentation and controls:

- **Designing, advising on, and evaluating:** distributed control systems (DCS), safety instrumented systems (SIS) and supervisory control and data acquisition (SCADA) systems for oil and gas industries.

Within the **discipline** of Electrical Engineering; **in the field of** electronics and communications:

- **Designing, advising on, evaluating, preparing plans and specifications for:** electronic measuring equipment for operations in oil and gas exploration.

Within the **discipline** of Electrical Engineering; **in the field of** instrumentation and controls:

- **Designing, evaluating, preparing plans and specifications for, directing the maintenance of, directing the operation of:** industrial data communications, supervisory control and data acquisition (SCADA) and Programmable Logic Controller (PLC) systems; for the oil and gas and utility industries.

The scope excludes: power distribution equipment, including power supply to motor control equipment.

Within the **discipline** of Electrical Engineering; **in the field of** oil and gas operations:

- **Designing, evaluating and preparing plans and specifications for:** electrical power distribution systems up to 480 V.

The scope **excludes:** Protection, control and Supervisory Control and Data Acquisition (SCADA) systems.

Within the **discipline** of Electrical Engineering; **in the field of** control systems:

- **Advising on, designing, evaluating, preparing plans and specifications for, directing the technical inspection and construction of:** human machine interfaces (HMI), safety instrumented systems (SIS), distributed control systems (DCS), fire gas and smoke protection systems (FGS) and programmable logic controller (PLC) systems up to 120VAC, for petroleum, chemical and oil and gas facilities.

Within the **discipline** of Electrical Engineering; **in the field of** instrumentation:

- **Designing and advising on:** Programmable Logic Controllers (PLC), Distributed Control System (DCS) for the oil and gas industry.

Within the **discipline** of Electrical Engineering, **in the field of** electrical systems for oil and gas facilities:

- **Designing, evaluating, directing the construction of, advising on and preparing plans and specifications for:** electrical power and control systems up to 5 kv
- **Designing and preparing plans and specifications for:** industrial lighting systems
- **Designing and preparing plans and specifications for:** electrical heat tracing systems.
The scope excludes: power system and arc flash studies.

Within the **discipline** of Electrical Engineering, **in the field of** oil and gas operations:

- **Designing, evaluating, preparing plans and specifications for:** electrical power distribution up to 1 kv
- **Designing** industrial lighting systems

The scope **excludes:** front end design of electrical systems and design of protection and control systems.

Within the **discipline** of Electrical Engineering; **in the field of** instrumentation:

- **Advising on, evaluating, designing, preparing plans and specifications for, directing the construction of, directing the technical inspection of:** field instrumentation for oil and gas facilities.

Within the **discipline** of Electrical Engineering; **in the field of** instrumentation:

- **Designing, preparing plans and specifications for, advising on, evaluating and directing the technical inspection of:** instrumentation and shutdown systems (programmable logic controller) for the oil and gas industry.

Within the **discipline** of Electrical Engineering; **in the field of** mining facilities:

- **Designing and preparing plans and specifications for:** electrical power systems for industrial plants (up to and including 34.5 kV).

Within the **discipline** of Electrical Engineering; **in the field of** instrumentation:

- **Designing, evaluating, directing the construction of and advising on:** PLC systems and field instrumentation for oil and gas pipeline facilities.

Within the **discipline** of Electrical Engineering; **in the field of** instrumentation and controls:

- **Designing, evaluating, and preparing plans and specifications for:** field instruments for oil and gas industries.

Within the **discipline** of Electrical Engineering; **in the field of** oil and gas operations: -

Designing control systems for pressure and level control

- **Directing the operation of** process monitoring instrumentation.

Within the **discipline** of Electrical Engineering, **in the field of** oil and gas operations:

- **Designing, preparing plans and specifications for** and evaluating: electrical power systems up to and including 4160 V.
The scope **excludes**:
- **Design, installation and commissioning of** SCADA systems
- **Design, installation and commissioning of** fire protection and suppression systems

Within the **discipline** of Electrical Engineering; **in the field of** building systems:

- **Evaluating, designing, preparing plans and specifications for** and **directing the technical inspection of**: electrical power, communication and control systems up to and including 5 kV for institutional, commercial and light Industrial buildings.

Within the **discipline** of Electrical Engineering; **in the field of** instrumentation:

- **Advising on, designing**, and evaluating: instrumentation systems for process measurement and control of bitumen upgrading facilities in the oil and gas industry.

Within the **discipline** of Electrical Engineering; **in the field of** industrial operating plant facilities:

- **Designing** and **preparing plans and specifications for**: electrical power, lighting and heat tracing systems up to 600VAC and 50VDC.

Within the **discipline** of Electrical Engineering; **in the field of** instrumentation:

- **Designing**, evaluating, **directing the construction of** and **preparing plans and specifications for**: DCS and PLC systems and field instrumentation for oil and gas and power facilities.

Within the **discipline** of Electrical Engineering; **in the field of** power distribution:

- **Designing, preparing plans and specifications for**: overhead and underground electrical utility distribution systems up to and including 25 kV.

Within the **discipline** of Electrical Engineering; **in the field of** oil and gas operations:

- **Directing the construction of, designing**, and **directing the technical inspection of**: electrical power and control systems up to and including 5 kV.

Within the **discipline** of Electrical Engineering, **in the field of** instrumentation:

- **Designing, evaluating and directing the construction of:** field instruments and control systems for oil and gas operations.

Within the **discipline** of Electrical Engineering, **in the field of** instrumentation:

- **Evaluating, preparing plans and specifications for:** field instruments in oil and gas facilities.

Within the **discipline** of Electrical Engineering; **in the field of** power distribution systems 25 kV and below:

- **Designing, preparing plans and specifications for:** overhead and underground electrical utility distribution systems.

Within the **discipline** of Electrical Engineering; **in the field of** oil and gas operations:

- **Advising on, designing, preparing plans and specifications for, and directing the construction of:** low and medium voltage power, distribution, control and communication systems.
The scope **excludes** systems over 15kV.

Within the **discipline** of Electrical Engineering; **in the field of** instrumentation:

- **Designing, preparing plans and specifications for, advising on, evaluating and directing the technical inspection of:** field instrumentation and programmable logic controller/ communication control panels in oil and gas pipelines and refineries.

Within the **discipline** of Electrical Engineering; **in the field of** instrumentation:

- **Designing** instrument systems, control systems, Safety Instrumented Systems (SIS) and Fire and Gas Systems (FGS) for the oil and gas industry.
- **Evaluating** reliability of Safety Instrumented Systems (SIS) and Fire and Gas Systems (FGS) in the oil and gas industry.

Within the **discipline** of Electrical Engineering; **in the field of** low rise commercial, institutional and municipal building systems:

- **Designing** power distribution systems up to 600V, telephone and data communication systems, fire alarm systems, lighting and lighting control systems. The scope **excludes:** on-site power generation systems

Within the **discipline** of Electrical Engineering; **in the field of** automation and control systems:

- **Advising on, designing, preparing plans and specifications for:** control systems (DCS, PLC, SIS, and motor control), instrumentation, automation control panels/junction boxes and electrical systems (up to 750V).

Within the **discipline** of Electrical Engineering; **in the field of** building systems and municipal infrastructure:

- **Designing, evaluating, preparing plans and specifications for:** electrical distribution systems, instrumentation systems, programmable logic controllers and traffic signalling (up to 750V)
- **Designing, evaluating and reporting on:** roadway lighting.

Within the **discipline** of Electrical Engineering; **in the field of** instrumentation:

- **Designing, preparing plans and specifications for, directing the maintenance of:** instrumentation systems for the oil and gas and pulp and paper industries.

Within the **discipline** of Electrical Engineering; **in the field of** building systems:

- **Designing and preparing plans and specifications for:** electrical systems in residential, commercial, light industrial and institutional buildings up to 1KV.

Within the **discipline** of Electrical Engineering; **in the field of** telecommunications:

- **Designing, preparing plans and specifications for and evaluating:** public address and general alarm (PAGA), security access control systems, close circuit television, structured cabling systems, voice over internet protocol telephone systems and enterprise local area network (LAN).

Within the **discipline** of Electrical Engineering; **in the field of** instrumentation:

- **Designing** field instrumentation
- **Designing** control and shutdown systems networks for oil and gas industries.

Within the **discipline** of Electrical Engineering; **in the field of** instrumentation:

- **Preparing plans and specifications for and designing:** PLC control panels for oil and gas processing plants
- **Designing** supervisory control systems (SCADA) for oil and gas processing plants

Within the **discipline** of Electrical Engineering; **in the field of** oil and gas operations:

- **Designing** electrical power and control systems up to and including 750VAC.

Within the **discipline** of Electrical Engineering; **in the field of** power generation and distribution:

- **Designing and preparing plans and specifications for:** electrical power distribution underground and aerial lines (up to 25kv).

Within the **discipline** of Electrical Engineering; **in the field of** overhead transmission and distribution power lines:

- **Designing, preparing plans and specifications for:** overhead power lines operating up to 500 kV AC and 320 kV DC.

Within the **discipline** of Electrical Engineering; **in the field of** power generation and distribution:

- **Designing** power and control systems for electrical utilities within medium voltage range of 4kV-25kV.

Within the **discipline** of Electrical Engineering; **in the field of** electric utility transmission and distribution:

- **Designing and preparing plans and specifications for:** electric utility transmission and distribution systems from 4.16 kV to 500 kV.

Within the **discipline** of Electrical Engineering; **in the field of** instrumentation:

- **Preparing plans and specifications for, designing and evaluating:** field instrumentation for oil and gas facilities.

Within the **discipline** of Electrical Engineering; **in the field of** instrumentation:

- **Designing** instrument maintenance and reliability programs
- **Evaluating, advising on, preparing plans and specifications for and directing the technical inspection of:** flow measurement of natural gas in heavy oil thermal SAGD facilities

Within the **discipline** of Electrical Engineering; **in the field of** instrumentation:

- **Preparing plans and specifications for** software configuration of industrial control and safety systems for oil and gas production, transportation, and processing facilities and pipelines.
- **Designing** industrial control system panels, control system networks, and 24VDC and 120VAC control circuitry.
- **Evaluating** instrumentation and control systems for application in oil & gas facilities. The scope **excludes** design of large scale distributed control systems (DCS) and SCADA systems.

Within the **discipline** of Electrical Engineering; **in the field of** oil and gas pipeline/pump station/terminal facilities:

- **Designing, preparing plans and specifications for, directing the technical inspection and construction of:** low to medium voltage (up to 8kV) electrical power, control and protection systems including back-up diesel generators.

Within the **discipline** of Electrical Engineering; **in the field of** building systems:

- **Designing, preparing plans and specifications for, reporting on, directing the technical inspection of, evaluating and advising on:** lighting, communication, life safety and power systems up to 25 kV.

Within the **discipline** of Electrical Engineering; **in the field of** electric power distribution:

- **Advising on, evaluating and designing:** electric power distribution systems operating up to 25 kV.

Within the **discipline** of Electrical Engineering, **in the field of** instrumentation:

- **Advising on, evaluating, designing and directing the maintenance of:** measurement transmitters, control valves and isolation valves in petrochemical facilities.

Within the **discipline** of Electrical Engineering; **in the field of** construction planning:

- **Preparing plans and specifications for, evaluating, and reporting on:** construction and maintenance of transmissions lines and substation components which cover electrical voltages up to 500kV.

Within the **discipline** of Electrical Engineering, **in the field of** instrumentation:

- **Designing** instrument systems, control systems for the oil and gas, petrochemical, and pipeline industries.

Within the **discipline** of Electrical Engineering; **in the field of** oil and gas operations:

- **Designing, preparing plans and specifications for** and **advising on:** electrical power distribution systems up to 25 kV, including electrical heat tracing systems and industrial lighting systems.

The scope **excludes:** Front end design of systems, high voltage protection systems and SCADA systems.

ENVIRONMENTAL ENGINEERING

Within the **discipline** of Environmental Engineering; **in the field of** environmental site assessment:

- **Preparing plans and specifications for** and **directing the construction of:** phase II environment site assessments
- **Reporting on** phase II environmental site assessment and remediation activities

Within the **discipline** of Environmental Engineering; **in the field of** water resources:

- **Evaluating, reporting on** and **advising on:** programs for the exploration, development and management of water resources and for the installation, performance and reclamation of water wells.

MATERIALS ENGINEERING

Within the **discipline** of Materials Engineering; in the **discipline** of materials testing and inspection:

- **Directing the technical inspection of** new and in-service pressure piping, pressure pipelines and pressure equipment utilized in oil and gas and petrochemical industries.

MECHANICAL ENGINEERING

Within the **discipline** of Mechanical Engineering; **in the field of** transport and lifting equipment:

- **Designing and directing the construction of:** industrial transport and lifting equipment up to 200T capacities.

Within the **discipline** of Mechanical Engineering; **in the field of** oil and gas operations:

- **Designing and preparing plans and specifications for:** tailings pipelines (slurry, non-segregated tailings, naptha recovery unit, and water) from -45 °C to 98 °C for oil and gas operations
- **Designing** process piping, temperatures from -45 °C to 450 °C and pressures to 4000 kPa(g) for oil and gas operations
- **Designing** and preparing plans and specifications for: hot water piping up to 22000 kPa(g) pressure

The scope excludes underground pipelines.

Within the **discipline** of Mechanical Engineering; **in the field of** aerospace:

- **Designing, evaluating, reporting on, preparing plans and specifications for, advising on:** the repair and modification of aircraft and aeronautical products.

Within the **discipline** of Mechanical Engineering; **in the field of** aerospace:

- **Designing, preparing plans and specifications for; Evaluating and reporting on:** the installation of antennas and avionic components on transport aircrafts.

Within the **discipline** of Mechanical Engineering; **in the field of** equipment manufacturing:

- **Evaluating, designing and directing the construction of:** HVAC equipment from 5,000 to 100,000 CFM, operating under internal static pressure of 1.5” to 6” in water.
- **Designing and directing the construction of:** modular data center equipment from 500 kW to 3 MW.

The scope excludes Evaluating, designing and directing the construction of hydronic heating.

Within the **discipline** of Mechanical Engineering, **in the field of** building systems:

- **Designing, preparing plans and specifications for:** HVAC (heating, ventilation, and air conditioning) and plumbing systems for commercial, institutional, industrial and residential buildings.

Within the **discipline** of Mechanical Engineering; **in the field of** oil and gas operations:

- **Directing the construction of** pressure piping and equipment in petrochemical facilities
- **Directing the technical inspection of** pressure piping and equipment in petrochemical facilities.

Within the **discipline** of Mechanical Engineering, **in the field of** power generation and distribution:

- **Designing, preparing plans and specifications for:** HVAC systems for industrial buildings
- **Designing, preparing plans and specifications for:** propane, natural gas and diesel fuel systems for gensets and heaters
- **Preparing plans and specifications for** prime, continuous and standby rated generating plants
- **Directing the maintenance of and directing the technical inspection of:** glycol cooling and HVAC Systems for power generating plants, synchronous condensers, 500 kV HVDC stations, and static VAR compensators.

Within the **discipline** of Mechanical Engineering; **in the field of** building systems:

- **Designing, preparing plans and specifications for:** heating, ventilation, air conditioning, plumbing, and fire protection systems for low to medium rise commercial and residential buildings.

Within the **discipline** of Mechanical Engineering; **in the field of** packaged fire water pump and air compressor systems:

- **Designing** pump and compressor systems
- **Directing the technical inspection of** pump and compressor systems
- **Evaluating** pump and compressor systems.

Within the **discipline** of Mechanical Engineering; **in the field of** building systems:

- **Designing, preparing plans and specifications for, reporting on, evaluating:** of heating, ventilation, air conditioning, plumbing, and fire protection systems for residential, commercial, institutional and industrial facilities.

Within the **discipline** of Mechanical Engineering; **in the field of** oil and gas operations:

- **Preparing plans and specifications for, designing, evaluating, reporting on, advising on, and directing the construction of:** oil and gas processing systems and piping systems up to 6167 psig

Within the **discipline** of Mechanical Engineering; **in the field of** oil and gas operations:

- **Designing** upstream oil and gas flow lines and well sites.

Within the **discipline** of Mechanical Engineering; **in the field of** building design:

- **Evaluating, designing and preparing plans and specifications for:** HVAC, hot water boiler systems, plumbing systems for residential, commercial, and institutional buildings

The scope excludes: chiller, direct digital control, sprinkler and steam systems.

Within the **discipline** of Mechanical Engineering; **in the field of** building systems:

- **Designing, preparing plans and specifications for:** HVAC, plumbing and fire protection systems for residential, commercial and industrial facilities
- **Reporting on** building HVAC, plumbing and fire protection systems for residential, commercial and industrial facilities.

Within the **discipline** of Mechanical Engineering; **in the field of** oil and gas operations:

- **Preparing plans and specifications for** new coiled tubing tools and new multi-stage hydraulic fracturing completions systems
- **Directing the operation of** coiled tubing tools and multi-stage hydraulic fracturing completions
- **Evaluating** coiled tubing tools and multi-stage hydraulic fracturing completions tools performance
- **Directing the operation of** flow loop testing apparatus

Within the **discipline** of Mechanical Engineering; **in the field of** building systems:

- **Designing** and preparing plans and specifications for: HVAC systems for industrial buildings.

Within the **discipline** of Mechanical Engineering; **in the field of** building systems:

- **Designing, preparing plans and specifications for, reporting on, evaluating, advising on:** HVAC, plumbing, fire protection and medical gas systems for health care, laboratory, institutional, residential, commercial, and recreational facilities.

Within the **discipline** of Mechanical Engineering; **in the field of** oil & gas operations:

- **Evaluating and directing the technical inspection of:** pressure equipment management systems in petroleum processing facilities and pipeline systems relating to fitness for service evaluations, corrosion mitigation, materials specifications and maintenance programs.

Within the **discipline** of Mechanical Engineering; **in the field of** mobile heavy equipment:

- **Designing and preparing plans and specifications for:** unmanned surface and aerial vehicle systems

The scope **excludes** designing of hull surface and air frame and telemetry and control systems.

Within the **discipline** of Mechanical Engineering; **in the field of** fire protection:

- **Designing, preparing plans and specifications for, reporting on, advising on,** evaluating: fire protection system for residential, commercial, institutional and industrial buildings.

The scope **excludes:** Halon 1301 fire extinguishing systems, carbon dioxide extinguishing systems, clean agent fire extinguishing systems.

Within the **discipline** of Mechanical Engineering; **in the field of** oil and gas operations:

- **Designing, preparing plans and specifications for:** oil batteries (3000Bbl/d), compressor stations (4500 BHP), water injection (2000 Bbl/D), wellsite piping and equipment (to 10,000 psi API, ASME class 2500)
- **Directing the technical inspection of** fire damage to oil batteries, compressor stations, water injection facilities, wellsite piping and equipment compressor vibration.

The scope **excludes:** Cryogenic piping, steam systems and hot oil systems.

Within the **discipline** of Mechanical Engineering, **in the field of** building design:

- **Reporting on, advising on, evaluating, designing, preparing plans and specifications for, and directing the construction and technical inspection of:** HVAC (Heating Ventilation and Air Conditioning) & plumbing systems for commercial, industrial, institutional and residential buildings.

The scope excludes tall buildings HVAC and plumbing systems design.

Within the **discipline** of Mechanical Engineering, **in the field of** building systems:

- **Designing, preparing plans and specifications for:** heating, ventilation, air conditioning, plumbing, and fire protection systems for commercial, institutional, industrial and residential buildings.

Within the discipline of Mechanical Engineering, **in the field of** oil and gas operations:

- **Preparing plans and specifications for** process piping systems.

Within the **discipline** of Mechanical Engineering; **in the field of** oil and gas pipeline systems:

- **Reporting on, advising on,** and evaluating the conversion of existing gas pipelines to liquid pipelines.

PETROLEUM ENGINEERING

Within the **discipline** of Petroleum Engineering; **in the field of** oil and gas operations:

- **Evaluating** reserves using decline analysis and volumetric methods
- **Evaluating** waterflood performance.

Within the **discipline** of Petroleum Engineering; **in the field of** oil and gas operations:

- **Preparing plans and specifications for** and **directing the operation of**: oil and gas well drilling, completions and work over
- **Directing the technical inspection of materials and equipment used for** oil and gas well drilling, completion, repairs, maintenance and abandonment

Within the **discipline** of Petroleum Engineering; **in the field of** oil and gas operations:

- **Designing** artificial lift systems for oil and gas wells
- **Evaluating** oil and gas fields for production and cost optimization.

Within the **discipline** of Petroleum Engineering, **in the field of** oil and gas operations:

- **Evaluating, designing** and **preparing plans and specifications for**: downhole instrumentation and well optimization systems for enhanced oil recovery.

Within the **discipline** of Petroleum Engineering; **in the field of** oil and gas operations:

- **Designing** and **directing the construction of**: drilling rig lease sites
- **Designing** drilling programs

Within the **discipline** of Petroleum Engineering; **in the field of** operations of coal bed methane wells:

- **Directing the operation of**: well interventions, artificial lift and well stimulation
- **Designing**: artificial lift systems
- **Evaluating**: well production profiles, facility and gathering system efficiency and optimization.

Within the **discipline** of Petroleum Engineering; **in the field of** oil and gas operations:

- **Designing** well completions systems
- **Evaluating** the optimization of oil, gas and injection wells.

Within the **discipline** of Petroleum Engineering; **in the field of** oil & gas operations:

- **Evaluating** oil and gas properties and hydrocarbon reserves for development, acquisitions and divestitures.

Within the **discipline** of Petroleum Engineering; **in the field of** oil and gas operations:

- **Designing and preparing plans and specifications for:** natural gas distribution systems of low pressure that is less than 700 kPa.

Within the **discipline** of Petroleum Engineering; **in the field of** oil and gas operations:

- **Evaluating** oil and gas properties and capital projects to determine their economic viability
- **Designing** artificial lift systems
- **Reporting on** production volumes
- **Advising on** well operations, downhole well design and service rig operations

Within the **discipline** of Petroleum Engineering; **in the field of** oil and gas operations:

- **Evaluating** tubing performance, Inflow performance and production decline for natural gas and oil wells in primary and secondary recovery schemes
- **Designing** beam pump systems, progressive cavity pumping systems and plunger lift systems
- **Preparing plans and specifications for** installation and modification of oil and gas wellhead and flow system piping
- **Designing** well work-over programs to repair artificial lift equipment and restore production in oil and gas wells