

## TITLE 4. PROFESSIONS AND OCCUPATIONS

## CHAPTER 30. BOARD OF TECHNICAL REGISTRATION

**R4-30-221. Engineering Branches Recognized**

A. The Board shall recognize the branches of engineering described below for review of experience, selection of examination, definition of examination areas, and definition of demonstrated proficiency areas to be inscribed on the registrant's seal. The branches do not limit the areas of a registrant's practice of engineering. (See R4-30-301(18))

1. Agriculture: Consultation, investigation, evaluation, planning, design, location, development, and review of construction for projects concerning agricultural machinery, drainage, irrigation, terracing, farm electricity or water pumps and wells for the maintenance of adequate potable water supplies for crops, people, animals, or industry.
2. Architectural: Consultation, investigation, evaluation, planning, design, location, development, and review of construction for projects concerning building mechanical, acoustical, electrical, lighting, or structural systems.
3. Chemical: Consultation, investigation, evaluation, planning, design, location, development, and review of construction for projects concerning chemical enterprises, chemical and biological processes, plant layout, production of pilot plants, water, wastewater and pollution control plants, piping and distribution systems, heat exchanges, energy production management and distribution systems, process instrumentation and control systems, biomedical equipment, mining and minerals beneficiation, corrosion retardation, heat, mass and momentum transfer systems, reaction kinetics, thermodynamics, quality assurance controls, or systems for heat transmission.
4. Civil: Consultation, investigation, evaluation, planning, design, location, development, and review of construction for projects concerning highways, streets, transportation systems, drainage and flood control structures, surface and subsurface hydrologics, sewers, tunnels, railroads, geotechnical analysis, waterfronts, water and wastewater systems, water power and supply apparatus, wells, pumps, bridges, dams, irrigation structures, water purification apparatus, incinerators, or site fire protection systems.
5. Control Systems: Consultation, investigation, evaluation, planning, design, location, development, and review of construction for projects concerning control systems and their constituent devices including, but not limited to, dynamic stability and the application of instrumentation and feedback control principles to regulate and operate chemical plants, petroleum refineries, food processing plants, water and waste treatment plants, power plants, pollution abatement systems, transportation systems, or other dynamic processes and systems.
6. Electrical: Consultation, investigation, evaluation, planning, design, location, development, and review of construction for projects concerning power systems, electronic and transmission equipment, electric service and supply systems, lighting systems, communication service and supply systems, fire alarm and detection systems, control systems, or electrical installations.
7. Environmental: Consultation, investigation, evaluation, planning, design, location, development, and review of construction for projects concerning water and wastewater systems, domestic and process (industrial/commercial) solid waste and hazardous materials systems, air quality systems, or health, safety, and environmental protection including, but not limited to systems relating to emergency response, risk analysis, radiation protection, noise toxicology, or industrial hygiene.
8. Fire Protection: Consultation, investigation, evaluation, planning, design, location, development, and review of construction for projects concerning building exiting and life safety systems, fire suppression systems and devices, fire detection and alarm systems and devices, smoke exhaust and smoke management systems, fire resistance for building components and assemblies, water supplies and pumping systems for fire protection, including the hydraulic analysis of such systems, and the reduction and control of fire hazards due to processes subject to fire or explosion.
9. Geological: Consultation, investigation, evaluation, planning, design, location, development, and review of construction for projects concerning geological studies related to surface and subsurface excavations and foundations, stability of slopes, groundwater locations, geological material age and strength determinations near surface or deep subsurface geological structures or geophysical mapping of geological formations and groundwater locations.
10. Industrial: Consultation, investigation, evaluation, planning, design, location, development, and review of construction for projects concerning factory layouts, tools and fixtures, factory planning, time and motion study systems, rate plans, production plans, quality control systems and analysis, work simplification systems, methods studies and cost, production control, organizational, operational and labor needs, or safety analysis.
11. Mechanical: Consultation, investigation, evaluation, planning, design, location, development, and review of construction for projects concerning air conditioning, refrigeration, ventilation, combustion, heat transfer, energy, power, fuels, propulsion, machinery, tools, manufacturing, fluids, plumbing, fire suppression systems and devices, water supplies and pumping systems for fire protection, including the hydraulic analysis of such systems.
12. Metallurgical: Consultation, investigation, evaluation, planning, design, location, development, and review of construction for projects concerning the production of metals or metal objects, testing procedures, metal processing, failure analysis procedures, mining and mineral beneficiation, or the development of metal alloys.
13. Mining: Consultation, investigation, evaluation, planning, design, location, development, and review of construction for projects concerning the construction of plants, shaft and bottom layouts, ventilation and hoisting systems, head frames, washery or concentration mills, mining methods and testing procedures, or metallurgical works and production procedures.

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14. Nuclear: Consultation, investigation, evaluation, planning, design, location, development, and review of construction for projects concerning nuclear waste management, alternative waste management systems, disposal criteria and risk evaluation, transportation, packaging, decontamination, handling, welding evaluation, site stabilization, recovery techniques, water and air quality control systems, waste volume management, evaporation systems, reactor safety methods, health safety systems, cycle analysis, or nuclear fuels.
  15. Petroleum: Consultation, investigation, evaluation, planning, design, location, development, and review of construction for projects concerning drilling equipment, pipelines, refinery plants, gathering systems, handling and storage systems, exploitation and selection methods, gas measurement and core analysis, phase behavior studies, reserve calculations, or the development of petroleum products.
  16. Sanitary: Consultation, investigation, evaluation, planning, design, location, development, and review of construction for projects concerning water treatment and sewage disposal plants, water systems, sewers, incinerators, distribution systems, sewage and industrial waste treatment plants, pollution reduction systems, sanitary facilities, or public health systems.
  17. Structural: Consultation, investigation, evaluation, planning, design, location, development, and review of construction for projects concerning force-resisting and load-bearing members and their connections for structures such as foundations, bridges, walls, columns, slabs, beams, trusses, or similar members used singly or as part of a larger structure.
- B.** An applicant shall submit to the Board a separate application and application fee for each branch for which application is made. An applicant who wishes to change the branch of application after notification by the Board that the application has been evaluated by the Board shall submit the request in writing and pay an additional application fee.

**Historical Note**

Adopted effective August 3, 1983 (Supp. 83-4).  
Amended effective December 18, 1991 (Supp. 91-4).  
Amended effective July 6, 1993 (Supp. 93-3). Amended effective May 1, 1995 (Supp. 95-2). Amended effective December 18, 1997 (Supp. 97-4). Amended by final rulemaking at 6 A.A.R. 1018, effective February 25, 2000 (Supp. 00-1). Amended by final rulemaking at 10 A.A.R. 2798, effective August 7, 2004 (Supp. 04-2). Amended by final rulemaking at 12 A.A.R. 1606, effective July 1, 2006 (Supp. 06-2).