



CONSTRUCTION
INDUSTRY COUNCIL
建造業議會

Manpower Forecast for Hong Kong Construction Industry

- Appendix

February 2023





List of Trades for Worker

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Asbestos Abatement Worker	False Ceiling Installer	Piling Operative
Asphalter (Road Construction)	Fire Service Mechanic	Plant and Equipment Mechanic (Construction Work)
Bar Bender and Fixer	Floor Layer	Plant and Equipment Operator
Blasting worker	Gas Installer	Prestressing Operative
Cement Sand Mortar Worker	Hand-dug Caisson Worker	Refrigeration/ Air- conditioning/ Ventilation Mechanic
Concrete and Grouting Worker	Leveller	Rigger/Metal Formwork Erector
Construction Goods Vehicle Driver	Lift and Escalator Mechanic	Scaffolder
Curtain Wall and Glass Panes Installer	Marble Worker	Trackworker
Demolition Worker	Marine Construction Plant Operator (Lifting)	Tunnel Worker
Diver (Construction Work)	Metal-steel Worker	Waterproofing Worker
Drain and Pipe Layer	Painter and Decorator	Welder
Electrician	Partition (Metal Frame) Installer	Window Frame Installer
Electronic Equipment Mechanic (Construction Work)	Paving Block Layer	Woodworker

Note: The trades follow the definition under Cap. 583 Construction Workers Registration Ordinance



Definition of Disciplines

Definition of Professional

Architect

Plans, designs and supervises the erection of all types of building in compliance with building ordinance, regulations and requirements of public utilities. He is responsible for all stages and facets of a building project including advice on the brief, feasibility and sketch-planning, estimates, specifications, contract drawing and documents, tender action, contract supervision, and financial control. He also co-ordinates the work of allied disciplines engaged in building projects.

Building Information Modelling (BIM) Manager

Manages BIM technology implementation and assures the quality deliverables on construction projects and is responsible for BIM facilitation, coordinating data-exchange activities, fulfilling pre-defined design specifications and delivery specifications, and overall model quality control.

Civil Engineer

Plans, designs, constructs and supervises the construction of all civil engineering works required for the health, welfare, safety, employment and pleasure of mankind, and for development of natural resources and environmental control. Usually specialises in one or more of the following: (1) structural engineering (2) geotechnical engineering (3) hydraulic engineering (4) highway engineering (5) material engineering (6) traffic and transportation engineering (7) railway engineering (8) maritime engineering (9) airport engineering (10) other civil engineering fields

Construction Manager / Site Engineer

Directs and assumes responsibilities for all aspects of construction projects in accordance with the agreed method, procedure, budget and specifications; co-ordinates work of main contractor, sub-contractors, specialist contractors and suppliers; liaises with architects, engineers, surveyors, specialist consultants, contractors and government departments; reviews, inspects, evaluates and reports on the quality, progress and cost of works and adjusts schedule as necessary

Definition of Professional

Geotechnical Engineer

Plans, designs and supervises the construction and maintenance of geotechnical aspects of earth works and foundation works, and the development of natural resources for the construction industry. *(Remarks: Engineering Geologist is included in this category)*

Electrical / Mechanical Engineer *

Researches into electrical and mechanical engineering problems; designs and advises on electrical systems, mechanical plant and equipment; and plans and supervises their development, construction, manufacture, installation, operation, maintenance and repair; designs and advises on building services facilities in buildings. Plans, supervises and coordinates their installation, testing, maintenance and repair. *(Remarks: Building Services Engineer is included in this category)*

Environmental Engineer

Conceives, designs, appraises, directs, manages and supervises the construction of engineering works for the protection and promotion of public health and for the improvement of man's environments; investigates, improves and rectifies engineering works and other projects that are capable of injuring public health by being faulty in conception, design, direction or management.

Structural Engineer

Engages in one or more of the following activities (This job title does not refer to a civil engineer engaged in structural engineering work): (1) investigates structural engineering problems, (2) designs and advises on structures of industrial, commercial, public and residential buildings, (3) plans and supervises their erection, maintenance and repair.

*Taken comments from practitioners in the construction industry, it is difficult to have a clear cut on the duties of Building Services, Electrical and Mechanical Engineers in actual work situation. The 3 types of Professionals are grouped into 1 category for calculation in the Model.

Definition of Professional

Building Surveyor

Deals with the planning, administration and co-ordination of all types of works (including maintenance) to buildings and land with particular cognizance of requirements, by relevant public health, planning and building regulations.

Land Surveyor

Undertakes the physical measurement of land and collates data for the preparation of plans and maps including cadastral surveying for land registration, topographical surveying, geodetic surveying and hydrographic surveying.

Quantity Surveyor

Deals with the following aspects of building and civil engineering design and construction administration: (1) design cost and cost planning, (2) pre-contract documentation including bills of quantities and/or contract specifications, (3) tendering procedures, contractual agreements and advice on selection of tenders, (4) post-contract services including measurement of work, preparation of interim and final payment certificates and settlement of other contractual claims.

Town Planner

Prepares and implements town plans at various levels, in the form of maps and planning reports; and undertakes planning studies, for the provision of a satisfactory physical environment in the urban and rural areas with a view to promoting the health, safety, convenience and general welfare of the community.

Landscape Architect

Identifies and advises on construction projects requiring landscaping and other major landscaping projects; designs landscaping; organises and supervises landscaping work; and liaises with relevant authorities and other professionals.

Definition of Technician

BIM Coordinator/Modeller

Uses Building Information Modelling (BIM) to perform drawing work, monitor modelling and update drawing, and is responsible for model management, project information management and process management activities. Model management activities are technical in nature and focus on the generation and delivery of one or more model uses. Project information management activities focus on the inclusion / accuracy / detail of information as to meet contractual requirements. Process management activities focus on facilitating the relationship between project participants by assisting them to select collaboration workflows, delivery standards and communication protocols as best suited for each particular project.

Civil/Structural/Geotechnical Engineering Technician

Carries out civil/structural/geotechnical engineering work under the supervision of a civil/structural/geotechnical engineer.

Draftsman

Interprets the Architect's initial design concepts and sketches into a practical building solution, and translates this information into submission/contract drawings, taking due account of the constraints imposed by economic, environmental, technological and legislative requirements; involves in Building Information Modeling (BIM) works, coordinates information and works of other disciplines involved including statutory bodies; assists in the checking of shop drawings and prepares site sketches for projects at the construction stage; from sketch designs prepares general and detailed drawing under the supervision of architects, engineers, surveyors or contractors.

Environmental Technician

Monitor the environment and investigate sources of pollution by performing laboratory and field tests to solve complex environmental problems that affect public health.

Landscape Technician

Performs studies, grows, tends and transplants flowers/shrubbery/ trees/other plants; prepares landscape drawings.

Definition of Technician

E&M Engineering Technician

Performs technical tasks, either independently or under the direction of a qualified engineer, contributory to design, installation, operation, maintenance and repair of electrical engineering, mechanical engineering or building services systems and equipment. Assists to plan, coordinate and supervise their projects.

Fire Services Technician

Performs technical tasks, either independently or under the direction of a qualified engineer, contributory to design, development, manufacture, installation, operation, maintenance and repair of fire services systems, equipment and fire extinguishers.

Lift/Escalator Technician

Performs technical tasks, either independently or under the direction of qualified engineer, contributory to design, development, manufacture, installation, operation, maintenance and repair of both mechanical and electrical equipment for various types of lifts and escalators.

Refrigeration/Air-conditioning/Ventilation Technician

Performs technical tasks, either independently or under the direction of a qualified engineer, contributory to design, development, manufacture, construction, installation, efficient operation, maintenance and repair of air-conditioning plant and equipment.

Definition of Technician

Surveying Technician (Building)

Assists the building surveyor in the planning, administration and co-ordination of works to buildings and land.

Surveying Technician (Land)

Assists the land surveyor in carrying out surveys and setting-out work, and supervises chainmen and survey labourers.

Surveying Technician (Town Planning)

Assists the town planner in the preparation and implementation of town plans at various levels and in the undertaking of planning studies.

Surveying Technician (Quantity)

Assists the quantity surveyor in preparing bills of quantities by performing taking-off, working-up and abstracting, and measuring and valuating completed works or variations.

Definition of Site Supervisory Personnel

Clerk of work / Inspector

Acts as the representative of the owner, inspects building and civil engineering construction works (including all maintenance works) to ensure conformity with contracts, drawings, specifications, workmanship standards and relevant legislation.

Project Coordinator

Plans, organises, directs and co-ordinates all activities and resources for construction projects in accordance with the agreed method, procedure, budget and specifications.

Safety Officer

Assists the employer of a workplace or a construction site in promoting the safety and health of persons employed therein, including the inspection of workplace, plants, equipment or works processes to identify any risks and to advise on preventive measures; investigates accidents and dangerous occurrences and makes recommendations to prevent similar accidents.

Site Agent

Plans, organises, directs and co-ordinates all activities and resources on the construction site through sub-agents and general foremen in accordance with the agreed method, procedure, budget and specifications.

Site Foreman

Supervises, directs and co-ordinates normally under the general control of the site agent, the activities of workers engaged in construction works and requisitions, receives and inspects materials and supplies.

Definition of Site Supervisory Personnel

Supervisor

Plans, manages, instructs and directs staff and construction workers to carry out building and civil engineering construction works (including all maintenance works) to ensure conformity with contracts, drawings, specifications, workmanship standards and relevant legislation.

Technical Officer

Provides technical support for engineers to complete construction works in compliance with contracts, drawings, specifications, workmanship standards and relevant legislation.



Major Assumptions

Major Assumptions

- Workforce analytics telephone survey findings are applied to capture the registered workers that are engaged in construction sites with DAR recorded and those work outside construction sites without DAR (e.g. RMAA and E&M)
- The upper quartile of the public works expenditure and lower quartile of the private works expenditure forecast are adopted
- Maximum age of retirement is assumed as 70