

Building, Civil Engineering and
Built Environment Training Board



Manpower Update Report

Building, Civil Engineering and Built Environment Industries

2024



ACKNOWLEDGEMENT

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Introduction

Background

The Building, Civil Engineering and Built Environment Training Board (BCETB) of the Vocational Training Council (VTC) is appointed by the Government of the HKSAR. According to its Terms of Reference, the BCETB is responsible for determining the manpower demand of the industries, assessing whether the

manpower supply matches manpower demand, and recommending to the VTC the development of vocational and professional education and training (VPET) facilities to meet the assessed training needs.

A new approach for collecting manpower information is adopted to better reflect

the dynamics of the manpower situation in the various industries. Under the new approach, one full manpower survey is conducted every four years, and this is supplemented by two manpower updates. The BCETB completed its latest manpower survey in 2021. Two manpower updates will be conducted in 2024 and 2025.

The 2024 manpower information update comprises:

- (a) two focus group meetings to get the views of industry experts on the latest developments in the industries, manpower and training needs, recruitment difficulties, and measures to tackle the challenges the industries face; and
- (b) desk research analysing job advertisements including job market trends and skills required in the Building, Civil Engineering and Built Environment (BCE) industries.

Objectives

The objectives of the manpower update are:

- (i) to examine the latest trends and developments in the industries;
- (ii) to explore the job market situation and training needs;
- (iii) to identify the recruitment challenges; and
- (iv) to recommend measures to meet the training needs and to ease the problem of manpower shortage.

Methodology

Overview

This update report aims to provide qualitative descriptions of the recent development of the industries through focus group meetings, supplemented by referring to some quantitative data of recruitment advertisements from desk research.

Focus Group Meeting

The focus group members are representatives from various sectors or professionals of the BCE industries, including 1. Building and Civil Engineering Site, 2. New Building Site Contractor, 3. Electrical and Mechanical Contractor, 4. Decoration, Repair and Maintenance Contractor, 5. Major Estate Developer, 6. Architect, 7. Surveyor, 8. Engineer, 9. BIM Manager, 10. Construction Manager, 11. Tertiary Institution, 12. Vocational and Skills Training Course Provider, and 13. Government Department.

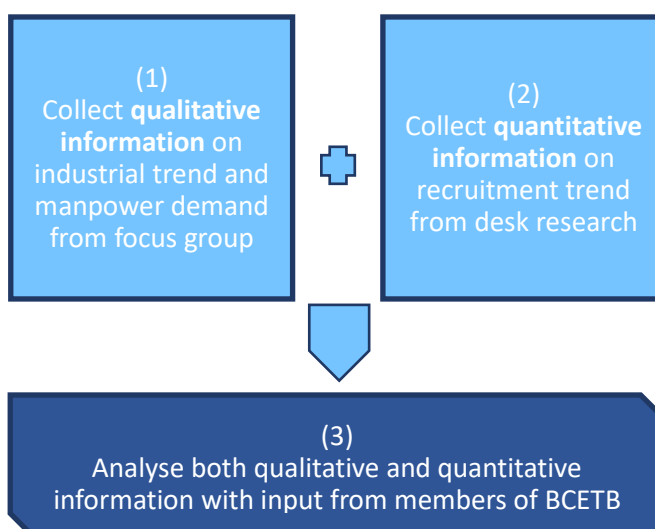
The focus group meetings were conducted on 24 and 25 October 2023 with discussion on topics selected by the Working Party on Manpower Survey of the BCETB. The discussions were recorded and transcribed to facilitate analysis.

Desk Research

Manpower information covering the period between January and December 2023 was collected through desk research. An information system was developed to capture relevant recruitment data from major online recruitment portals. Collected information was mapped against the list of companies related to the BCE industries under the Hong Kong Standard Industrial Classification devised by the Census and Statistics Department. After mapping and removal of duplicated records, a total of around 24,000 recruitment records were collected during the research period and served as indicative information of the job market trend. The principal jobs of the BCE industries are at Appendix I.

Data Analysis

The analysis consists of the following three steps:



Limitations

As this is not a full manpower survey, the findings and recommendations of the focus group meeting are more qualitative and the report focuses mainly on the manpower trends. The information on job advertisements was collected from major recruitment websites and the Labour Department. Other channels, such as headhunting for managerial positions, were not covered. Since the data collected is a snapshot of a particular period without reference to any historical data, this can serve as reference information supplementary to the findings of focus group meetings.

Findings

Factors Affecting the Development of the Industries

Increased Construction Volume

Major Development Projects and Urban Renewal

To address the demand for housing and land supply in Hong Kong, the Government has put a focus on creating developable land ¹ through various initiatives including the development of the Northern Metropolis and the Kau Yi Chau Artificial Islands, as well as enhancing the efficiency of urban renewal including the redevelopment and maintenance of aged buildings.

Hong Kong Major Transport Infrastructure Development Blueprint

Besides, the Government promulgated the “Hong Kong Major Transport Infrastructure Development Blueprint”¹ which formulated the planning framework for Hong Kong’s future transport infrastructure development of railway and major road networks, to meet Hong Kong’s long-term transport and logistics demand.

The focus group expressed that the industries widely welcomed the infrastructure development and major construction projects being launched, and

believed that different sectors of the industries could definitely benefit from the projects.

Manpower Shortage Dilemma

Nevertheless, the industries would face the dilemma of insufficient manpower due to the heavy construction volume in the coming decade. It was anticipated that the manpower shortage would become increasingly acute at all skilled worker, technician and professional levels. Several concerns were highlighted by the focus group including an ageing workforce, reduced fresh graduates or new entrants to join the industries, succession gap due to talent leakage and emigration waves, and the requirement of upskilling staff for new construction technologies adoption.

Safety Concerns

In light of the recent accidents in construction sites where the renewal of registration of contractor was denied, the focus group anticipated that strengthened safety measures and relevant management systems, such as introducing a Smart Site Safety System (SSSS) and smart tools for safety inspections and monitoring, would be

¹ The Chief Executive’s 2023 Policy Address

enforced to enhance the safety performance of the construction industry. The demands for safety officers and frontline supervisory personnel were expected to heighten the implementation of safety management measures.

Extended Adoption of Advanced Construction Technologies

Leveraging innovative construction technologies has been proven to uplift the productivity and efficiency of construction works, improving the effectiveness of work supervision, as well as enhancing site safety performance. The scope of advanced technologies implementation in the industries has been extended in recent years.

Smart Site Safety System (SSSS) and Digital Works Supervision System (DWSS)

With the aid of the rapid development of smart products and solutions involving the Internet of Things (IoT), artificial intelligence (AI) and robotic technology, etc., the SSSS was readily available for enhancing site safety management by monitoring high-risk construction activities continuously. Since early 2023, the adoption of SSSS has been mandated to all public works contracts with an estimated sum exceeding \$30 million. Meanwhile, the implementation of DWSS was also extended to all public works with an estimated sum exceeding \$30 million.

To promote the wide adoption of SSSS, the Government provided subsidies to private worksites for the adoption through the “Construction Innovation and Technology Fund” (CITF).

Building Information Modelling (BIM)

BIM would also move towards its full adoption in the preparation and approval of building plans for private development projects. The demand for relevant professionals and qualified personnel to fulfil the mandatory requirements as required in the BIM team in Capital Works Projects over \$30M, including CIC-Certified BIM Manager (CCBM), CIC-Certified BIM Coordinator (CCBC) and CIC-Certified BIM Coordinator (Associate), would remain high. The focus group highlighted that the practitioners who had knowledge of site operations and construction practices taking up the role of BIM professionals would be advantageous to effective project coordination.

The BIM models should be updated as and when necessary to suit unexpected site condition and design changes during the construction stage. The focus group emphasised that allowing sufficient time for the pre-construction design stage would favour the thorough planning and coordination of construction projects before the commencement of construction processes and reduce variability.

Further promotion on BIM adoption in small and medium enterprises (SMEs)

would be required. The focus group reflected that some SMEs had concerns on the cost of BIM software and hardware during the implementation of BIM. To meet the needs of the industry, the Construction Industry Council (CIC) has allocated resources to enhance BIM adoption and trainings for SMEs. SMEs could apply for CITF on BIM adoption including purchasing BIM software and hardware.

Modular Integrated Construction (MiC) and Multi-trade Integrated Mechanical, Electrical and Plumbing (MiMEP)

MiC and MiMEP have been proactively adopted in public works projects to raise construction productivity in recent years. The focus group opined that difficulties were still encountered in the implementation of MiC / MiMEP approaches in private housing projects due to the uniqueness and variety of building designs. The techniques of the MiC approach should continuously be developed and optimised.

Transition Period for Adaptation

The focus group indicated that the adoption of smart technologies was accelerated while the industries were still in the transition period to gradually adapt and implement such technologies into construction practices. Efforts and time had to be put into equipping industry practitioners from front-line workers to

senior managerial members with relevant skills and knowledge.

High Employee Turnover

The focus group iterated on the severe demand for professionals in the industries. Given the hyper-competitive manpower market, companies responded by increasing the offering salaries to attract and compete with prospective entrants. Consequently, the salary levels of the positions with intensive demand have been driven upward. The focus group observed the high turnover rate of the industries as practitioners left their serving companies to pursue better remuneration.

Enhanced Admission Schemes for Talents and Labour Importation Scheme

To address the manpower demand across roles at different levels, various admission schemes for the construction industry have been enhanced. To attract more talents to come and meet Hong Kong's development needs, the Talent List applicable for various talent admission schemes has expanded its coverage, in which construction professionals, construction managers and BIM managers were included under the "development and construction service" segment. The Labour Importation Scheme for the Construction Sector was launched to allow the importation of

labour to fill the temporary manpower gap in skilled and semi-skilled construction workers as well as technicians and site supervisory personnel. In addition, the Immigration Arrangements for Non-local Graduates (IANG) and the newly introduced Vocational Professionals Admission Scheme (VPAS) aimed to attract university graduates and vocational and technical talents to stay and work in Hong Kong.

The Government joined hands with local construction companies, professional institutions and associations to conduct recruitment activities in Mainland and overseas regions, as well as promote the Hong Kong construction industry and its opportunities to the universities of the regions, aiming to entice talents from Mainland and overseas regions to pursue their careers in Hong Kong. The focus group reflected that more incentives could be given to incoming talents to attract their stay in Hong Kong.

Manpower Demand

Focus Group

Concerning the trends and development of the industries, views of the focus group on the anticipated changes in manpower demand were collected. Job positions especially related to BIM, site supervision and safety are considered to be in high demand.

Relevant job titles highlighted by the focus group are as follows:

Professional / Site Supervisor / Technician

- Architect
- BIM Manager / Coordinator
- Building Services Engineer / Technician
- Civil Engineer
- Clerk of Works
- Construction Manager
- Draughtsman
- Lift Engineer / Technician
- Planning Engineer
- Quantity Surveyor
- Safety Officer
- Site Engineer
- Site Foreman
- Structural Engineer

Skilled and Semi-skilled Worker

- Carpenter
- Cement Sand Mortar Worker
- Joiner
- Plumber
- Signalman
- Tower Crane Operator

In addition, the focus group particularly highlighted the importance of requiring Planning / Programming Engineers for effective project planning, programming, construction method preparation, logistic planning, and coordinating the mobilisation of manpower and materials, to ensure the projects could be conducted according to the schedule.

Desk Research

Out of the relevant recruitment advertisements captured in desk research, the following principal jobs with the highest number of recruitment advertisements were identified:

Professional / Site Supervisor / Technician

- Quantity Surveyor
- Site Foreman
- Safety Officer
- Project Coordinator
- Civil Engineer
- Architectural Technician / Draughtsman
- Assistant Safety Officer / Safety Supervisor
- Clerks of Works
- Structural Engineer
- Building Services Engineer

Skilled and Semi-skilled Worker

- Leveller
- General Welder
- Plumber
- Bricklayer
- Painter & Decorator

Training Needs

Focus Group

The focus group considered the following skills essential for employees in the BCE industries:

BIM Training in Specialised Streams

The focus group encouraged professionals of different fields to take up appropriate training for acquiring BIM skills to enable the incorporation of their professional knowledge and experience into model building, as well as to facilitate the full adoption of BIM in the industries.

Knowledge in Information Technology (IT) and Environmental, Social and Governance (ESG)

In view of the accelerated digitalisation and the growing significance of ESG considerations in the industries, the focus group iterated on the importance of equipping new entrants of relevant engineering and technician posts with knowledge and skills in IT and ESG to foster the growth of the industries and enhance their competitiveness in the job market.

Safety Trainings

The focus group anticipated that more stringent enforcement of safety management systems and relevant new measures in the construction industry would be upheld. Training for Safety Officers and Safety Supervisors, who were

responsible for monitoring the safety performance, should be enhanced. Furthermore, industry practitioners at all levels should receive regular safety training to keep abreast of the latest safety standards, regulations and good practices.

Industry Standards, Practices and Regulations in Hong Kong for Imported Labours / Admitted Talents

Concerns were raised on the potential language barriers and the discrepancy in understanding of technical requirements and regulations. Provision of information on industry standards, practices and regulations in Hong Kong before the commencement of employment of the imported labour and admitted talent would be conducive to their settling in Hong Kong.

Multi-skilled Local Workers for Building Repair and Maintenance

The focus group suggested training a pool of “Handymen”, who were the local workers equipped with multi-skills for taking up some of the jobs in the building repair and maintenance sector, to alleviate the manpower shortage in relevant fields.

Desk Research

In addition, new technologies / emerging skills and related job titles identified from some 24,000 advertisements are summarised in the following table.

New Technologies / Emerging Skills	Related Job Titles
Building Information Modelling (BIM)	<ul style="list-style-type: none"> • BIM Manager / Engineer / Coordinator / Modeller
Common Data Environment (CDE)	<ul style="list-style-type: none"> • BIM Manager / Engineer / Coordinator • Senior Digital Engineer • Engineer – Project Information
Modular Integrated Construction (MiC) Method	<ul style="list-style-type: none"> • Building Services Inspector • MiC Coordinator • Planning Engineer • Resident Structural Engineers
Design for Manufacture and Assembly (DfMA)	<ul style="list-style-type: none"> • Design Engineer • Planning Engineer • Resident Clerk of Works
Multi-trade Integrated Mechanical, Electrical and Plumbing (MiMEP)	<ul style="list-style-type: none"> • Building Services Engineer • Building Services Inspector
Internet of Things (IoT) / Artificial Intelligence (AI)	<ul style="list-style-type: none"> • BIM Manager / Engineer / Coordinator • Project Engineer • Senior Digital Engineer
Automation / Robotics	<ul style="list-style-type: none"> • Engineer – Mechanical • Project Engineer • Senior Engineer (Infrastructure Smart Solutions)
Virtual Reality (VR) / Augmented Reality (AR)	<ul style="list-style-type: none"> • Virtual Design & Construction (VDC) Specialist • Survey Technician, Digital

New Technologies / Emerging Skills	Related Job Titles
Digital Surveying / Digital Twin / Photogrammetry / Unmanned Aerial Vehicle (UAV) / Drone Scanning	<ul style="list-style-type: none"> • BIM Technician / Coordinator (VDC) • BIM Surveyor • Survey Officer / Survey Assistant • Survey Technician, Digital
Geographic Information System (GIS)	<ul style="list-style-type: none"> • GIS / Survey Specialist • GIS Analyst • Project Geologist • Senior Digital Engineer
Environment, Social and Governance (ESG)	<ul style="list-style-type: none"> • Senior Environmental Consultant (ESG) • Environmental Officer • Consultant – Environmental Assessment
Green Building and related certifications	<ul style="list-style-type: none"> • Engineer in Environmental / Sustainability • Environmental Engineer / Consultant • Environmental Consultant (Green Building)

Recruitment Challenges

Due to the keen competition of the market, some employers have experienced difficulties in the recruitment process. The difficulties highlighted by the focus group are summarised and related to some of the following factors:

Emigration

The local manpower market was hit by the emigration wave in recent years. Middle management and professionals with 3 to 10 years of work experience and young professionals aged between 30 and 45 have made up a significant proportion of emigrants. There was a shortage of manpower to fill the vacancies at middle to senior levels resulting in succession gaps of talents in the industries.

Reduced Workforce in Local Manpower Market

Along with the persistently low birth rate and ageing population in recent years, the overall workforce of the local manpower market has experienced a decline, which is compounded by the reduced number of fresh graduates available to fill the vacancies of retiring ageing workers.

High Demand for Professionals

The demand for professionals in specific streams, such as architects, BIM-related talents, construction managers and planning engineers, was overwhelming. Employers have driven up the salary and

reduced the recruitment requirements to compete for talent. The intense competition has resulted in a high turnover rate in the industries.

Demanding Manual Work

The schedule of construction works was usually tight. Construction workers were required to carry out physically demanding outdoor work in 6-day work weeks in the construction site. The focus group highlighted the job satisfaction of workers needs to be paid attention to for yielding better retention results. Despite the provision of attractive salary and remuneration packages, the young generation displayed a greater inclination towards pursuing careers in other sectors with comfortable working environments, such as IT or financial services sectors. Career preferences have resulted in a decrease in the number of new entrants to the industries.

Salary and Remuneration Packages

The young incumbents in particular at technician and junior professional levels showed higher intention to work in Government Departments and developers which offer competitive salaries and remuneration packages. The SMEs and consultancy companies which might not afford the cost encountered challenges in recruitment.

Retention of Non-local Graduates

Non-local graduates could opt to apply to stay and work in Hong Kong through admission schemes like the IANG and VPAS. The focus group reflected that the long-term career development and the living cost in Hong Kong would be the major considerations of non-local graduates, affecting their willingness to remain in the city for work after graduation.

RECOMMENDATIONS

To meet the future development of the industries, it is considered essential for the Government, industries, education institutions and employers to provide support and suitable training opportunities to employees / students in the following areas:

Government

Provide Transition Period for New Technology Implementation

The Government has been proactively promoting the adoption of technologies and innovative construction methods to enhance the productivity of the industries. A sufficient transition period could be provided to facilitate industry practitioners to develop their knowledge of the new technologies, and gradually familiar with the applications.

Allow Certain Flexibility for Work Arrangement of Imported Labours

Under the current labour importation schemes, the imported workers were only allowed to work in designated trade as specified in the employment contract. The focus group opined that allowing the imported labours to work in various sites under the same contractor would provide higher flexibility for work arrangement. Extending the duration of the employment contract of workers imported under such schemes could also be considered.

Provide Support to SMEs for Admitted Talents Recruitment

Besides, the focus group pointed out that some SMEs might not have sufficient resources and effective channels for approaching and recruiting talents for various admission schemes, hence suggesting that the Government could provide assistance in bridging the connections between potential non-local recruits and employers from Hong Kong.

Continue Streamlining Construction Submissions

Given the current talent shortage, the Government could consider further streamlining the submission and approval procedures for carrying out building works to ease the employment pressure of technical staff for the heavy administration workload, especially for SMEs.

Take the Lead in Promoting Good Work Culture and Environment

The Government could consider continuing the initiative to improve the work culture and environment of the industries and create a positive perception of the industries among the young generation, for example, by allowing reasonable contract periods and promoting good practices of work plans and scheduling for government works projects, to continue fostering a better work culture in the BCE industries.

Continue the Promotion of BCE Industries and relevant Vocational and Professional Education and Training (VPET)

To attract more young people to pursue VPET education as a preferred choice, the Government could continue to put effort into the publicity to secondary school students, even at the junior secondary level, and their parents to raise the profile of BCE industries and VPET, as well as promote the professionalism and diverse career opportunities available of the industries.

The Government promulgated the VPAS in the Chief Executive's 2023 Policy Address, allowing non-local students of designated Higher Diploma programmes of VTC, including the BCE-related programmes, to stay in Hong Kong and work in relevant disciplines after graduation. The VTC has stepped up its promotional efforts in publicising the

VPAS and recruiting more non-local students to join the scheme, as well as promoting VPET of Hong Kong across different Mainland cities and overseas regions.

The Government could further support the VTC and the industries in promoting VPAS through its offices in Mainland and overseas regions to entice more non-local vocational and technical talents to pursue their careers in Hong Kong.

Continue the Provision of Funding to Nurture Talents for BCE Industries

The Government continuously fosters industry-institution collaborations and diversified development to promote and enhance VPET. As announced in the 2024-25 Budget, funding has been set aside to support the VTC's initiatives including the extension of the Pilot Incentive Scheme to Employers (PISE) and the Pilot Subsidy Scheme for Students of Professional Part-time Programmes (known as Vplus Subsidy Scheme) for five years, starting from 2024/25 academic year. As at February 2024, around 13 200 eligible students have benefitted from the Vplus Subsidy Scheme since its inception. In recent years, some new programmes were launched in the areas of Building Information Modelling, Modular Integrated Construction, Construction Engineering, and Lift and Escalator Engineering.

The Government could continue to provide funding for training schemes

and subsidies for lifelong learning and career development, such as CITF and the “On-the-Job Training Allowance Pilot Scheme” to support practitioners in pursuing qualifications in relevant fields.

Industries

Promote Continuous Improvement of Work Environment

The work environment of construction sites was identified as one of the considerations that the young generation hesitated to join the BCE industries. The industries should promote industry-wide and continuous improvement of the work environment for the safety, health and well-being of site workers, such as maintaining cleanliness and hygiene of construction sites, and providing adequate resting and showering facilities for workers. The improved work environment would promote a positive perception of the industries.

Encourage Upskilling in BIM

Along with the mandatory BIM adoption in construction projects, employers have driven up the salary to compete for BIM professionals, which attracted a number of young graduates to pursue expertise in BIM. Nonetheless, the number of new entrants to other roles, such as draughtsman, has been thinned out. To effectively address the manpower needs in various roles meanwhile the

adoption of BIM is being pushed, the industries should encourage professionals across the industries to absorb BIM knowledge through upskilling.

Provide Information on Industry Standards, Practices and Regulations in Hong Kong for Imported Labours

Under the importation scheme for the construction industry, imported labours are required to possess relevant work experience before they are allowed to come to Hong Kong to perform the jobs. They are also required to follow all the safety and related requirements under the relevant legislation in Hong Kong, e.g. undertaking green-card training and registering as construction workers in Hong Kong. Information on industry standards, practices and relevant regulations in Hong Kong would further facilitate the familiarisation of imported labours with the industries.

Proactively Engage Prospective Entrants

The Government has been supporting the promotion of the construction industry through various campaigns including “Design for Future Build for Life, Construction Hong Kong”, and outreaches to Mainland and overseas universities. The industries should work in concert with the Government and relevant education institutions,

leveraging the opportunities to gain exposure and promote the industries to prospective entrants.

Promote Diversity, Equity and Inclusion (DEI) Culture in BCE Industries

The industries were encouraged to promote diversity, equity and inclusion culture within the industries, fostering an inclusive and supportive atmosphere which facilitates talent retention, and encourages more female entrants and entrants of different nationalities to join the industries, particularly through the enhanced talent admission and labour importation schemes.

Education Institutions

Closely Collaborate with Industry for Developing In-demand Training Programmes

The Government has been in liaison with the tertiary institutions to support and encourage them to increase relevant training places and enhance the curriculum design of various programmes. The education institutions should strengthen the collaboration with the industries for the timely development of training programmes with emerging knowledge and skills, such as BIM, MiC, smart construction technologies, AI applications, new engineering contract (NEC), IT and ESG, to upskill in-service

practitioners and cater for the manpower demand of the industries. Such knowledge and skills should also be integrated into existing curricula to raise the competitiveness of fresh graduates.

Provide Upskilling Courses on Supervision and Management

To meet the manpower requirement at the supervisory and management levels of the industries, the education institutions could offer upskilling courses on supervisory and management skills in various contexts of BCE industries. The curriculum should be supplemented with a comprehensive knowledge of the industries, including the different roles and the variety of types of work, which would be beneficial for supervisors and management in effective work coordination.

Allocate Study Places for In-demand Degree Programmes

The local universities were suggested to allocate more study places for construction-related degree programmes of high demand, especially in the fields of civil engineering and surveying. The focus group observed that such programmes received overwhelming numbers of applications in recent years.

Enhance Promotion for Non-local Student Recruitment

VPAS and IANG are the admission schemes specialised for retaining non-local graduates for work in Hong Kong. The education institutions should capitalise on the opportunity and work in tandem with the Government and the Industries to strengthen the promotion of GBA and overseas areas for non-local student recruitment, thus attracting them to stay and work in Hong Kong after graduation to supply the local manpower market.

Provide Applied Learning Opportunities

In view of the high demand for new entrants to the industries, the education institutions could provide more Applied Learning opportunities to secondary school students to develop their vocational knowledge and skills and enhance their understanding of BCE industries and workplace requirements at the early stage.

Employers

Introduce Staff Retention Measures

Employers should impose effective staff retention measures to reduce talent loss. A clear career path and promotion ladder should be provided to new entrants for a better understanding of the future opportunities of the industries.

The Government's initiative in introducing a two-year "On-the-job Training Allowance Pilot Scheme" provides subsidised training places to construction practitioners with Higher Diploma qualifications to upskill and advance in their career, to provide articulation path to attract young people to join the construction industry. Employers are encouraged to identify suitable employees to participate in the pilot scheme to enhance their education and career ladders. In addition, employers could consider implementing the "core team" programme, in which the outstanding staff members could be awarded bonuses or extra training opportunities, to boost the motivation of employees.

Internal job transfer could be introduced to allow employees opting for working in a preferred department within the company, or even the overseas branches, to reduce their departure due to change of professions and emigration.

Enhance Safety Awareness and Culture

Fostering safety awareness and culture among employees at all levels should be given high priority. Employers should regularly provide compulsory safety training to keep employees updated on safety practices. Assessment should be associated with evaluating employees' understanding and proficiency in relevant safety measures. To reinforce the importance of safety, employers could consider imposing

penalties for safety misconduct, such as undergoing mandatory supplementary training and suspension from work, to enhance the deterrent effect. Alternatively, introducing incentive schemes for encouraging and rewarding staff or teams with good safety performance could also be considered.

Continuously Adopt the Apprenticeship Model

The long-standing apprenticeship model of the industries should be continuously adopted. The young practitioners could receive practical training, guidance and mentorship directly from experienced masters, and beyond, the masters could serve as role models to instil a strong sense of belonging to the young practitioners in the workplace.

Deploy Advance Technologies to Boost Productivity

Besides the industry-wide adoption of innovative construction techniques to uplift the productivity and safety of construction processes, employers could actively take advantage of advanced technologies to deal with administration processes, such as generating construction submissions using Robotic automation systems and AI regarding previous in-house submissions.

Engage Potential Entrants at the Early Stage

To ease the recruitment challenges, especially for SMEs, employers could engage undergraduates with potential through active participation in job fairs and career talks. To attract talents to join the BCE industries, conditional offers could be issued to undergraduates who were studying in BCE-related fields, with the commitment to providing on-the-job training to enhance the specific skills of their roles.

Encourage Continuous Learning of Employees

Employers should encourage their employees to keep abreast of the latest developments in the industries and to upgrade their professional knowledge and technical skills, taking advantage of the Government training schemes and subsidies for lifelong learning and career development, such as CITF and “On-the-Job Training Allowance Pilot Scheme”. The employers could identify staff members with potential and provide recommendations for their pursuit of further education in particular areas beneficial to their promotion prospects.

Employees

Proactive to Learn

Employees should proactively keep abreast of the latest developments in the industries. They were encouraged to make good use of subsidies provided by different schemes of Government for lifelong learning and career development to upgrade their knowledge and skills.

Principal Jobs
of the Building, Civil Engineering and Built Environment Industries
 建築、土木工程及建設環境業的主要職務

PROFESSIONAL/TECHNOLOGIST 專業人士／技師

(in alphabetical order 按英文字母順序排列)

• Arborist 樹藝師	• Architect 建築師
• Building Information Modelling Manager 建築信息模擬經理	• Building Services Engineer 屋宇設備工程師
• Building/ Maintenance Surveyor 屋宇／保養測量師	• Civil Engineer 土木工程師
• Construction Manager/ Project Manager 營造師／項目經理	• Construction Plant Engineer 建造機械工程師
• Electrical Engineer 電機工程師	• Engineering Geologist 工程地質學家
• Environmental Engineer 環境工程師	• Geotechnical Engineer 土力工程師
• Interior Designer 室內設計師	• Land Surveyor 土地測量師
• Landscape Architect 園景規劃師	• Mechanical Engineer 機械工程師
• Quality Control/ Assurance Engineer 品質工程師	• Quantity Surveyor 工料測量師
• Safety Officer 安全主任	• Structural Engineer 結構工程師
• Town Planner 城市設計師	

TECHNICIAN 技術員

(in alphabetical order按英文字母順序排列)

• Architectural Technician/ Draughtsman 建築技術員／繪圖員	• Assistant Safety Officer/ Safety Supervisor 助理安全主任／安全督導員
• Building Information Modelling Coordinator/ Modeller 建築信息模擬協調員	• Building Services and Engineering Supervisor 屋宇設備技術及工程監督
• Building Services Technician 屋宇設備技術員	• Civil Engineering Technician 土木工程技術員
• Clerk of Works 監工	• Construction Plant Technician 建造機械技術員
• Construction Purchaser/ Storekeeper 建造物料採購員／倉庫管理員	• Electrical Engineering Technician 電機工程技術員
• Environmental Technician 環境技術員	• Estimator 估價員
• Geographic Information System (GIS) Technician 地理信息系統技術員	• Geotechnical Engineering Technician 土力工程技術員
• Inspector of Works 工程檢測員	• Interior Design Technician 室內設計員
• Laboratory Technician (Construction Materials/ Soils) 建築材料試驗員	• Landscape Technician 園景技術員
• Mechanical Engineering Technician 機械工程技術員	• Project Coordinator 項目統籌
• Quality Control/ Assurance Technician 品質控制／保證技術員	• Site Agent 地盤總管
• Site Foreman 地盤管工	• Structural Engineering Technician 結構工程技術員
• Surveying Technician (Building) 屋宇測量員	• Surveying Technician (Land) 土地測量員
• Surveying Technician (Quantity) 工料測量員	• Surveying Technician (Town Planning) 城市設計員
• Technical Officer 技術主任	• Utility Technician 設施技術員
• Works Supervisors 工程督導員	

SKILLED & SEMI-SKILLED WORKER 熟練及半熟練技工

(in alphabetical order按英文字母順序排列)

• Arboricultural Worker 樹藝工人	• Asbestos Abatement Worker 清除石棉工
• Asphalter (Road Construction) 瀝青工（道路建造）	• Asphalter (Water Proofing) 瀝青工（防水）
• Bamboo Scaffolder 竹棚工	• Bar Bender and Fixer 鋼筋屈紮工
• Bricklayer 砌磚工	• Builder's Lift Operator 建築工地升降機操作員
• Carpenter (Fender) 木工（護木）	• Carpenter (Formwork) 木工（模板）
• Concrete Repairer (Spalling Concrete) 混凝土修補工（混凝土剝落）	• Concretor 混凝土工
• Construction Plant Mechanic 建造機械技工	• Curtain Wall Installer 幕牆工
• Demolition Worker (Building) 清拆工（建築物）	• Demolition Worker (Unauthorised Building Work) 清拆工（僭建物）
• Diver 潛水員	• Drainlayer 地渠工
• Electrician (Main Contractor's) 電氣技工（總承建商所僱用）	• Floor Layer 鋪地板工
• Gas Plumber 燃氣喉工	• General Welder 普通焊接工
• Glazier 玻璃工	• Ground Investigation Operator/Driller/Borer 岩土勘探工／鑽井工／鑽孔工
• Grouting Worker 灌漿工	• Hand-dug Caisson Worker 手挖沉箱工
• Joiner 細木工	• Leveller 平水工
• Marble Worker 雲石工	• Marine Construction Plant Operator 海面建造機械操作工
• Mason 砌石工	• Metal Scaffolder 金屬棚架工
• Metal Worker 金屬工	• Modular Integrated Construction (MiC) Unit Driver 組裝合成組件車輛駕駛員

SKILLED & SEMI-SKILLED WORKER (Continued) 熟練及半熟練技工 (續)

<ul style="list-style-type: none"> • Modular Integrated Construction (MiC) Unit Installer 組裝合成組件安裝員 	<ul style="list-style-type: none"> • Painter & Decorator 髹漆及裝飾工
<ul style="list-style-type: none"> • Paving Block Layer 地磚鋪砌工 	<ul style="list-style-type: none"> • Piling Operative 打樁工
<ul style="list-style-type: none"> • Pipelayer 敷喉管工 	<ul style="list-style-type: none"> • Plant and Equipment Operator (Demolition) 機械設備操作工（清拆）
<ul style="list-style-type: none"> • Plant and Equipment Operator (Hoist and Crane) 機械設備操作工（起重機及吊機） 	<ul style="list-style-type: none"> • Plant and Equipment Operator (Load Shifting) 機械設備操作工（負荷物移動機械）
<ul style="list-style-type: none"> • Plant and Equipment Operator (Piling) 機械設備操作工（打樁） 	<ul style="list-style-type: none"> • Plant and Equipment Operator (Suspended Working Platform) 機械設備操作工（吊船）
<ul style="list-style-type: none"> • Plant and Equipment Operator (Tunnelling) 機械設備操作工（隧道） 	<ul style="list-style-type: none"> • Plasterer 批盪工
<ul style="list-style-type: none"> • Plumber 水喉工 	<ul style="list-style-type: none"> • Prestressing Operative 預應力（拉力）工
<ul style="list-style-type: none"> • Repair and Maintenance Workers 維修及保養工 	<ul style="list-style-type: none"> • Rigger/Metal Formwork Erector 索具工（叻㗎）／金屬模板裝嵌工
<ul style="list-style-type: none"> • Rock-Breaking Driller 鑽破工（風炮工） 	<ul style="list-style-type: none"> • Shotcretor 噴射混凝土工
<ul style="list-style-type: none"> • Shotfirer 爆石工 	<ul style="list-style-type: none"> • Slope Maintenance Worker 斜坡修葺工
<ul style="list-style-type: none"> • Structural Steel Erector 結構鋼架工 	<ul style="list-style-type: none"> • Structural Steel Welder 結構鋼材焊接工
<ul style="list-style-type: none"> • Tiler 鋪瓦工 	<ul style="list-style-type: none"> • Trackworker 鋪軌工
<ul style="list-style-type: none"> • Truck Driver 重型車輛駕駛員（泥頭車司機） 	<ul style="list-style-type: none"> • Tunnel Worker 隧道工
<ul style="list-style-type: none"> • Window Frame Installer 窗框工 	

GENERAL WORKER 普通工人

(in alphabetical order按英文字母順序排列)

<ul style="list-style-type: none">• Chainman 測量幫工	<ul style="list-style-type: none">• Concreting Labourer 混凝土幫工
<ul style="list-style-type: none">• Diver's Linesman 潛水員幫工	<ul style="list-style-type: none">• Excavator 挖泥工
<ul style="list-style-type: none">• Heavy Load Labourer 抬重工	<ul style="list-style-type: none">• Labourer 雜工
<ul style="list-style-type: none">• Precast (concrete) Installation Labourer 建築預製件裝嵌工人	<ul style="list-style-type: none">• Sewerman 渠務工