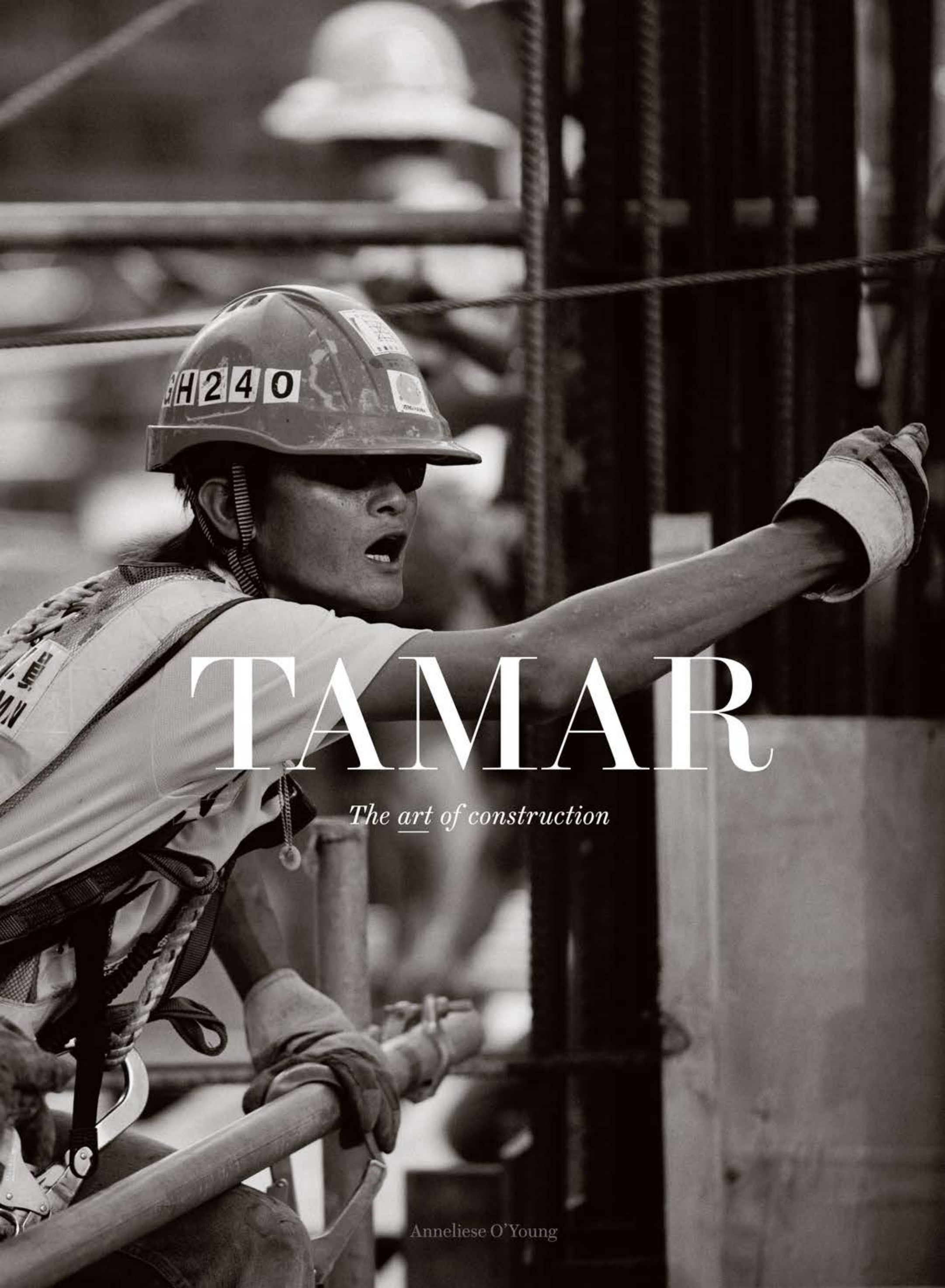

TAMAR

The art of construction

Anneliese O'Young

TAMAR

The art of construction

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Published by Kevin Sinclair & Associates
www.ksa-asia.com
First Published 2013

ISBN 978-962-85130-5-5

Foreword

It is an exciting moment to witness the launch of this book, which tells the story of the building of the Hong Kong Special Administrative Region's Government Headquarters at Tamar – a project that has, we hope you will agree, delivered a unique place for Hong Kong's people to visit and enjoy, and for those who represent us, the legislators, elegant buildings in which to work comfortably and efficiently. We trust a balance has been achieved that gives us all great pride in our city, and a seat of government that compliments and enhances our magnificent harbourfront. We have placed much emphasis on connectivity. We have tried in our design to reinforce this overall concept by creating more green areas throughout the site, and returning Tamar to the public and the visitors to our city. We are proud that the project is being described as a milestone and a model of sustainability for Hong Kong's construction industry.

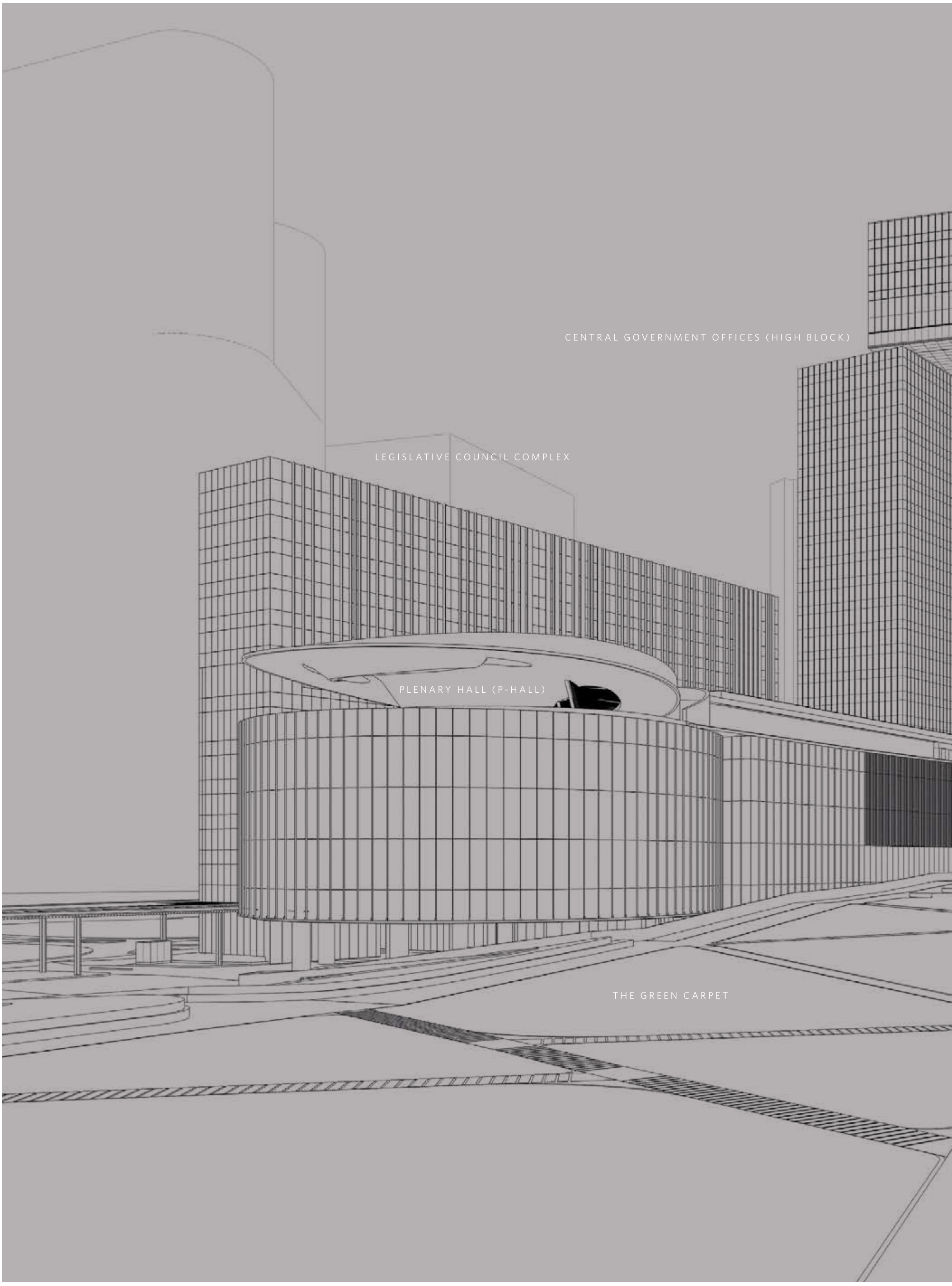
Our sense of achievement must be shared with so many business partners and stakeholders. Project colleagues in the government, who have worked with us enthusiastically and with great encouragement. Teams of highly professional advisers and consultants, experts in their field, who have contributed with unfailing attention to detail. Suppliers and subcontractors who have worked diligently, sharing ideas and innovations, often within demanding timescales.

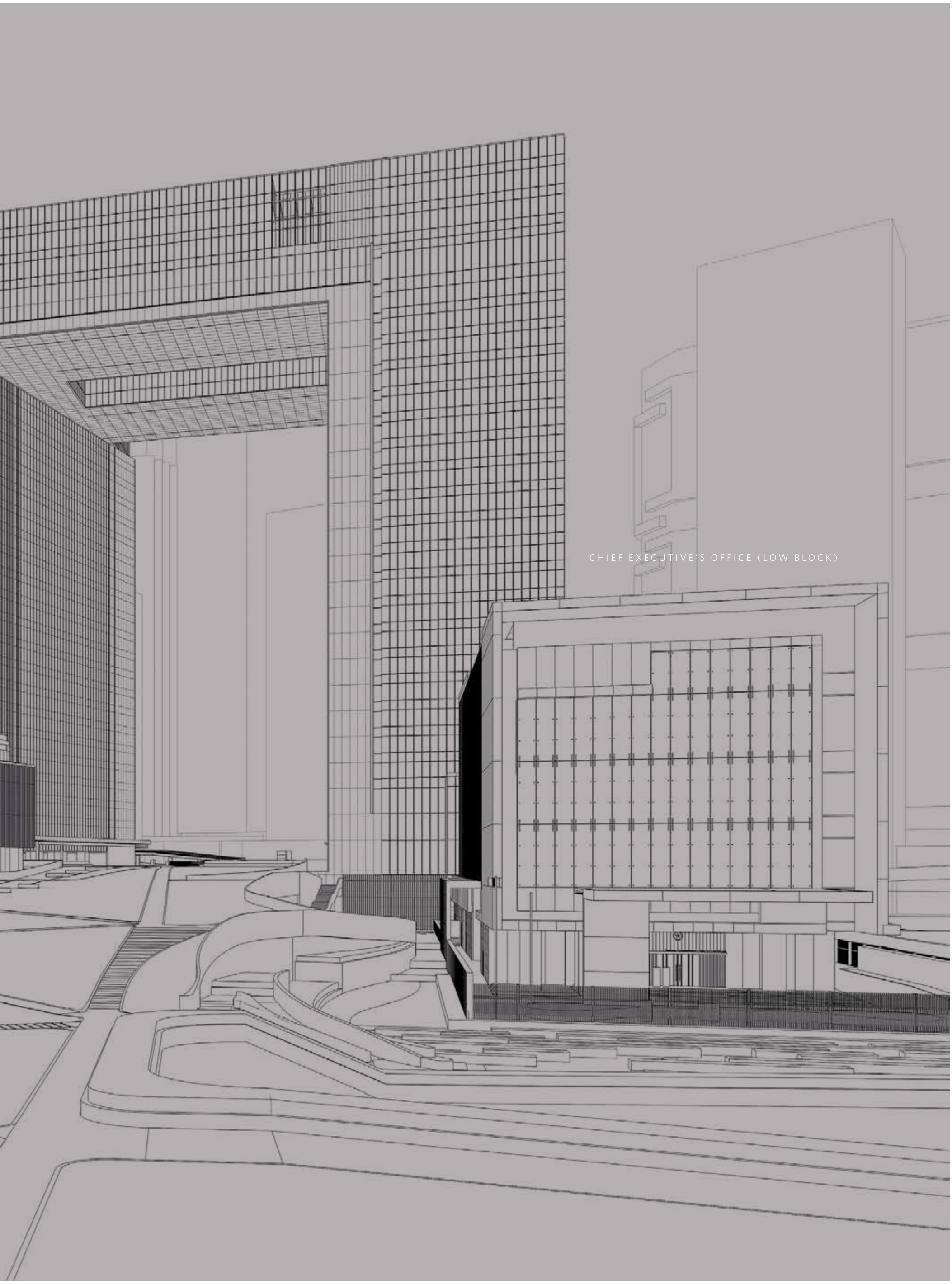
All those involved enabled the Gammon-Hip Hing Joint Venture to bring the task to fruition. We would like to express our appreciation for the support and patience from all members of the community during the construction. In this book, you will read many personal stories from the project management team and the 3,000-strong workforce "that made it all happen". This is by intent, for our greatest thanks and admiration goes to the men and women on-site who worked so tirelessly, so conscientiously and with such good heart to bring all the elements of the project together. Their pride is our pride and we thank them all for their individual contributions in making a little of Hong Kong's history.

This project has enabled us to demonstrate our engineering capabilities. We believe the Government Headquarters encapsulates all that is good about Hong Kong's vitality, and the pursuit of excellence of its people. We wish those who work there every good fortune and wisdom to guide our city. We encourage all of you to visit the project and take in the beauty of this remarkable city of ours from the new seat of Hong Kong's government.

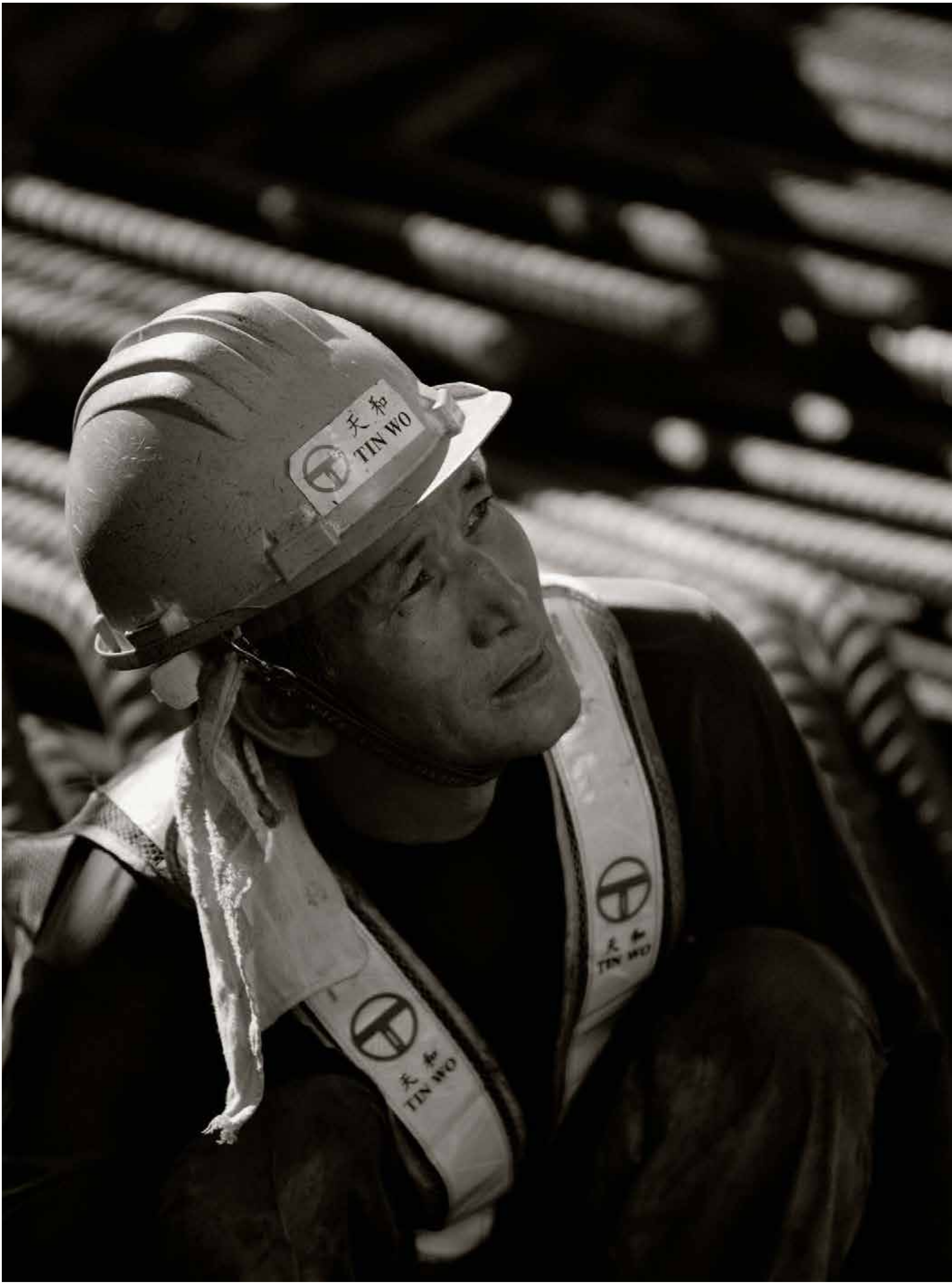
Thomas Ho
Chief Executive
Gammon Construction Limited

Chu Tat Chi
Managing Director
Hip Hing Construction Co., Ltd


CENTRAL GOVERNMENT OFFICES (HIGH BLOCK)
LEGISLATIVE COUNCIL COMPLEX
PLENARY HALL (P-HALL)
THE GREEN CARPET



CHIEF EXECUTIVE'S OFFICE (LOW BLOCK)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Contents

Docked along the west wall of the British Royal Navy dockyard basin, the HMS Tamar was the 3,650 tonne receiving ship which housed newly recruited sailors from 1897 to 1941. The HMS Tamar had 47 Royal Marines serving under the command of Lieutenant Colonel Robert Giles RM in 1941. On December 8, the Japanese Occupation began and the vessel was taken out to sea. Four days later, the HMS Tamar was scuttled by the Royal Artillery.

Evolution

第一章

添馬艦原為駐港英國海軍基地，取名自英國運兵船「添馬艦」。今天添馬艦的發展已揭開了新的一頁，在總面積4.2公頃的標誌地段上，興建了行政長官辦公室、政府總部及立法會綜合大樓，還有經特別景觀設計的休憩用地－「綠地毯」，通過兩條行人天橋，與金鐘區腹地連接起來，令添馬艦的崇高地位得以傳承下去。

2008年1月28日，前建築署署長余熾鏗代表特區政府，與金門建築總裁何安誠及協興建築有限公司董事總經理朱達慈代表的聯營公司簽訂合約，落實添馬艦發展工程。

添馬艦發展項目由2008年2月起動工，建築高峰期間，受聘施工的人員超過三千人，務求於2011年完成是項先進的工程項目。前政務司司長唐英年說過，添馬艦是香港市民可以分享的共同資產。他於簽署合約時說：「這幅寶貴的土地，一半面積會成為供市民享用的休憩用地。我們期待與金門－協興聯營公司緊密合作，為香港矗立一個新地標，供市民大眾、立法會及特區政府共同使用，並且引以為傲。」

自香港成為前英國殖民地以來，這幅土地一直是香港的心臟地帶。是項工程合約的簽訂，成為添馬艦發展的重要轉捩點，代表著這個核心區的未來轉變。

自上世紀九十年代初，政府已有初步的意念，計劃在面臨維多利亞港的地段興建政府總部。經過一番討論和研究，於2003年確認添馬艦成為可供發展的地點，其後更發表了首份招標簡介，可是金融危機及嚴重威脅公眾健康的沙士疫症相繼發生，令香港的經濟活動停滯不前，有關計劃亦只好擱置下來。第二次招標簡介於2005年舉行，入標競投的金門－協興聯營公司成立了一個十五人的團隊，負責管理十九名顧問人員，提交符合聯營公司董事會嚴格要求的設計方案。

2006年9月29日，特區政府向四家入圍的投標商發出邀請，於翌年2月限期前提交工程合約計劃書。2007年3月，政務司司長辦公室於金鐘道政府合署及九龍公園向市民展出四家投標商的設計方案，展期為兩個月。

2007年7月，特區政府向金門－協興聯營公司發出一份不具約束力的意向書，表示該聯營公司提交的方案如獲得城市規劃委員會通過，其標書便可獲得接納，並可落實執行。聯營公司的設計並沒有完全遵照城市規劃委員會通過的法定分區計劃大綱圖，添馬艦的方形地段最初一分為二，北面臨海的一半預留作休憩用地，而南面的一半則用作發展。金門－協興聯營公司將整個設計向右旋轉九十度，讓部分發展項目可佔用北面的地段，另將同等面積撥作休憩用地，並改變了地皮的形狀。

金門－協興聯營公司的方案得到特區政府的垂青，並於「公眾展示」期間獲得市民的支持，最終在2007年10月獲得通過。政府遂向聯營公司發出具法律約束力的中標通知書，批准添馬艦發展工程動工。

2008年1月28日，建築署、金門及協興各方代表出席簽署儀式，合約內容包括設計及建造政府總部、立法會綜合大樓、休憩用地、兩條行人天橋及其他輔助設施。

From Ship to Shore

For more than a century, the HMS (His Majesty's Ship) Tamar naval site at present day Admiralty has witnessed Hong Kong's historic rise and fall as merchant powerhouse, through plague, celebration, devastating war, famine, immigration explosions, refugees landing, economic surges and construction booms – all the while keeping its illustrious position at the harbourfront of Asia's world city. HMS Tamar, a former British naval base which adopted its name from a receiving ship, continues to hold its exalted position as it starts its next chapter as the integrated 4.2 hectare iconic site to house the Hong Kong Chief Executive's Office, the Central Government Offices and the Legislative Council Complex.

On the famous waterfront of Victoria Harbour, also known as the "Fragrant Harbour", the initial concept to construct the government headquarters has been on the administration's agenda since the early 1990s. Tamar was identified as a potential site in 2003. On January 28, 2008, the construction of an integrated government headquarters at Tamar became a reality as the then Director of Architectural Services Department, Yue Chi-hang, signed the contract on behalf of the government, while the Chief Executive of Gammon Construction Limited, Thomas Ho, and the Managing Director of Hip Hing Construction Co. Ltd., Chu Tat Chi, represented the joint venture in signing the contract. The contract covers the design and construction of the Chief Executive's Office, Central Government Offices, the Legislative Council Complex, an open space, two covered pedestrian footbridges and other ancillary facilities. Starting in January 2008, a workforce of more than 3,000 at the peak of the construction period was employed to complete the state-of-the-art project by 2011.

According to the former Chief Secretary for Administration, Henry Tang Ying-yen, Tamar will be an asset shared by all Hongkongers. "Half of this precious land will be allocated as public open space," said Mr Tang at the signing of the contract. "We look forward to working closely with the Gammon-Hip Hing Joint Venture to bring to the community a new landmark that the public, the Legislative Council

The British Navy first built a makeshift dockyard in 1878 (top). A stone constructed dockyard was inaugurated in 1902 by Mrs Powell, the wife of the then Commodore Superintendent. When the Tamar dockyard was reopened after the war, 9,000 workers passed their gates each morning to start work.

From Statue Square, (right) the Cenotaph was originally built in 1924 to commemorate World War I veterans, and the Tamar dockyard can be seen in the distance.

In October 1944, Kowloon (left) took yet another hit during one of the numerous Allied air raids when Hong Kong was under the Japanese Occupation (1941-1945).

During the four years of occupation, the population of Hong Kong dropped from 1.6 million to a scarce 600,000. On August 15, 1945, the Japanese surrendered while the first Union Jack was raised on the peak on August 18. The trams started running on August 20 followed by the ferries. Hong Kong was off and running.

and the Government will jointly use and be proud of." The signing of the contract was a significant turning point for the Tamar site, representing its next transformation. The plot of land has been at the centre of Hong Kong history since the founding of the former British colony.

In 1841, when the British Royal Navy first hoisted the Union Jack flag at Possession Point, the population of the "barren rock" was estimated to be a mere 7,540 – mostly Tanka fishermen and Hakka farmers. As a British port in the South China Sea, Hong Kong soon attracted entrepreneurial merchants who were fuelled by Britain's lust for commerce with China. By 1891, the population had ballooned to 221,441. At the turn of the 20th century, the praya of the harbour was a ménage of merchant ships from around the world – with most carrying valuable goods and people in search of their fortunes in the South China Sea. While the name HMS Tamar is linked in Hong Kong history with the naval base on the habourfront of Admiralty, the name originated from a 3,650 tonne receiving ship which housed newly recruited sailors from 1897 to 1941. The ship, the HMS Tamar, was built in Millwall and first visited Hong Kong in 1878. She arrived in 1897 to relieve HMS Victor Emmanuel as the city's receiving ship. Initially, the HMS Tamar was moored in the harbour, but soon found its way along the west wall of the dockyard basin. As the years passed, the ship's name soon became synonymous with the naval base that adopted its name.

In 1904, the first reclamation of Hong Kong Island was completed after 14 years of construction. The expansion into the harbour was aimed at relieving traffic along the former seafront, Des Voeux Road. It was estimated to cost $3 million and included roads such as Connaught Road Central, and the prestigious addresses of famous buildings such as Jardine House and Exchange Square. Unknown to most Hongkongers, HMS Tamar was scuttled on December 12, 1941; four days after the Japanese invaded Hong Kong. The vessel, which was an iconic landmark, refused to sink due to the administrative superstructure built over the decks. The Royal Artillery was called in to finish the job and they blasted the ship with dynamite. The sky was alight with flames. Nearly four years later, Rear Admiral Cecil Harcourt led the naval liberation of roughly 600,000 Hongkongers from Japanese occupation on August 30, 1945.

As the colony returned to the rigours of post-war life, a new influx of immigrants arrived on the shores of British Hong Kong. Simultaneously, the Chinese Communist Party, led by Chairman Mao Zedong, gathered strength leading up to the establishment of the People's Republic of China on October 1, 1949. As the bamboo curtain fluttered down, border control, including marine and naval policing under the British government became a primary concern. By 1950, the population of Hong Kong had soared to 2.2 million. In 1959, the British War Department agreed to give back the naval and army land between Murray Road and the police headquarters on Arsenal Road. On October 8, 1959, the *South China Morning Post* reported that the government agreed to pay $112 million for the Royal Naval Dockyard and the Kowloon Yard – which included the site of the HMS Tamar naval base for the price of $24 million. The Royal Navy took up their presence on the naval base in present day Admiralty and named it HMS Tamar. This is where the Royal Navy barracks, offices, and recreation facilities were found. The waterfront base moored various vessels and patrol crafts, which worked together with the Hong Kong Marine Police to secure the waterways around the city and spot smugglers and illegal immigrants. Many facilities at Tamar were made available to the public including the gymnasium and swimming pools, while tours of the patrol crafts were held every Saturday and Sunday. The HMS Tamar also recruited and trained Chinese cooks and stewards who served on larger ships.

As the population expanded to 3.7 million by 1967, the city reclaimed 76,890 square metres of land at the waterfront of Wan Chai and Causeway Bay for the waterfront road and the Cross-Harbour Tunnel. In 1978, the government started construction of the new headquarters for the British forces at HMS Tamar, the Prince of Wales Building. It would act as the offices and also home to the officers and ranks of all the services - including the Royal Navy, Royal Marines and the British Army - as well as catering and recreational requirements such as the Holy Trinity Church. In 1993, the headquarters of HMS Tamar was moved to Stonecutters Island and decommissioned in April 1997 when the People's Liberation Army acquired much of the former British Armed Forces' acreage across the territory. The historical handover was the end of an era – and the beginning of Hong Kong's bright new future.

Revisiting the past

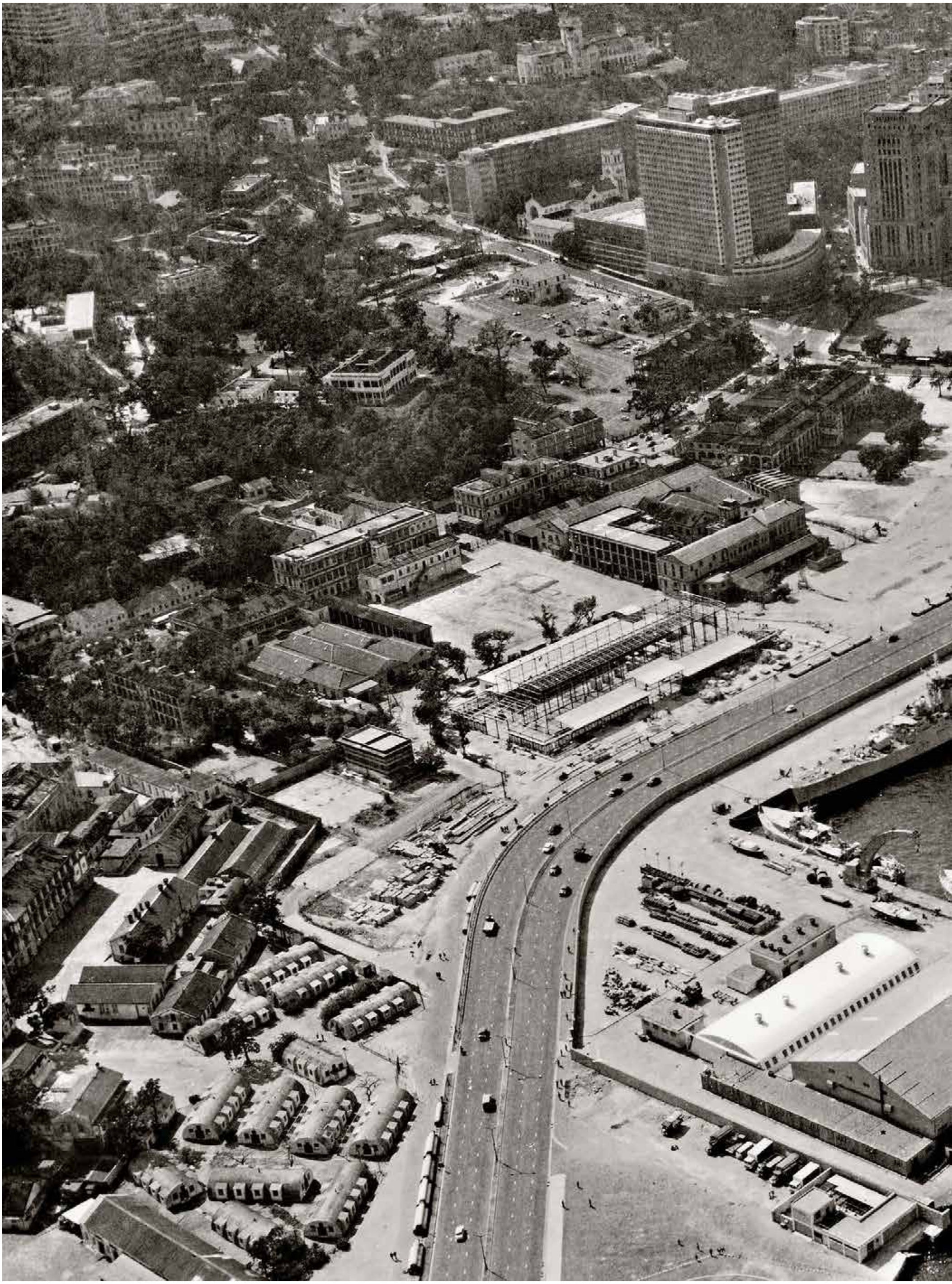
In 1974, British colonial rule of the 1,046 square kilometre "Fragrant Harbour" was omnipresent. The Governor, Sir Murray MacLehose led the 112,818-strong civil service, which translated to a staggering one in every 40 people of Hong Kong's estimated 4.3 million population, being employed by the government. In February that year, a tall, lanky 17-year-old named Johnny Yeung strolled on to the British naval base of HMS Tamar in search of a career in the armed services. This was also the year when the Hong Kong dollar was floated, the Bee Gees visited the city, the medical comprehensive fee was $2 at local hospitals and total trade topped out at $64.2 million. The purpose of the British Armed Forces was to assist the government in maintaining security and stability with the Commander British Forces in Hong Kong – Lieutenant-General Sir Edwin Brammal acting as military adviser to Governor MacLehose.

"When I first started, I was nearly 18 years old, looking for a good paying job," recalled 55-year-old Johnny Yeung, who today is the Construction Safety Officer for the Gammon-Hip Hing Joint Venture, monitoring safety protocols on the Tamar site. "The monthly pay was $1,000 as a junior marine engineering mechanic – a good wage at the time. I took to it like a duck to water!" HMS Tamar employed about 560 Hong Kong Chinese naval ratings – including technicians and seamen to serve worldwide operational ships in the fleet. "Training was crucial and I spent lots of time on the boat, patrolling, chasing, training and learning search and rescue. Through the years I would go on rotation, 18 months on a ship, then back to shore for three years. I ended up staying right until the end in 1997, a memorable day for every Hongkonger."

For 23 years, the young Johnny transformed from a boy into a man rising to the position as Chief Petty Officer, mechanical, at the Tamar Basin. There were more than 1,000 navy personnel working on the site at the height of the naval presence in Hong Kong and Johnny recalled the commodore step, which was practised where the two banyan trees still stand today. As a safety officer on the Tamar site, Johnny joined the construction safety field in 2001 and enjoys being back on the site navigating this time with a focus on safety practices for the more than 3,000 construction workers. "Becoming a safety officer was a very natural transition for me. As an ex-navy man, I implemented and followed in-house rules. When I was in the navy, there was discipline and many safety procedures we had to follow. For instance, if we were welding, special protective suits, goggles and gloves were deemed mandatory. These were the rules and they often made good sense."

Johnny is not the only safety officer to have formerly worked for the British Armed Forces. Assistant Safety Officer, David Ng's involvement with Tamar goes back more than 10 years. As a British Army solider he piloted ships and practised parade marches at the HMS Tamar naval base, which was named after the initial vessel that served as a receiving ship in Hong Kong in 1897. "It's pretty special to work at Tamar to build the government headquarters," said David, who was a Chief Petty Officer and left the army in 1994. "The ocean and land have changed so quickly since I was a young man. Many milestone moments have happened to me on this very soil. I remember running here, training here, docking here. I grew into a man at this base and now I feel privileged to work here again to build a piece of Hong Kong." The feeling is mutual with Johnny.

HMS Tamar Royal Navy base in the 1963. In the distance, the Star Ferry sets off from Central to Tsim Sha Tsui, navigating its way through the Royal Navy ships moored in the Fragrant Harbour.



overhead view

Competition

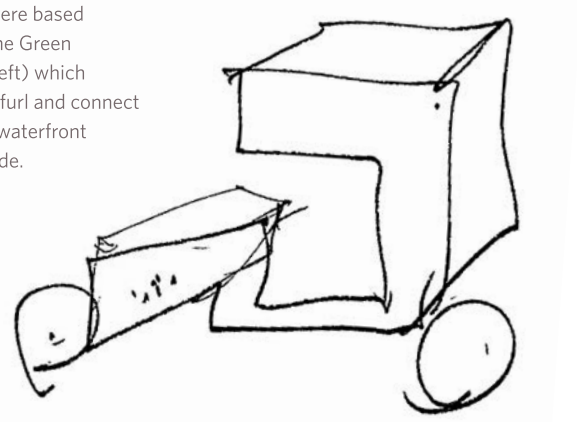
Rocco Yim drew a simple sketch in 2002 – from that day on, the joint venture concept never really changed. The Tamar Development Project comprises the Chief Executive's Office, Central Government Offices and the Legislative Council Complex – together with a landscaped central civic Green Carpet and two connecting bridges into the Admiralty hinterland. "The size of the project is the biggest challenge," explained Taylor Yip, Gammon-Hip Hing Joint Venture (G-HHJV) architectural design co-ordinator. "Tamar is like four normal sized projects – so there are more people and materials, which affects the overall site's progress. This building is also iconic and will set the bar as being a sophisticated and advanced development representing Hong Kong. This gives us an important feeling which can be expressed to friends and family who are proud of you."

The 26-storey Central Government Offices, comprising two towers, will house the Office of the Chief Secretary for Administration, the Office of the Financial Secretary, and the offices of all the Principal Officials who headed the various government bureaus: Food and Health; Transport and Housing; Commerce and Economic Development; Financial Services and the Treasury; Development; Security; Civil Service; Constitutional and Mainland Affairs; Home Affairs; Labour and Welfare; Environment; and Education. The Chief Executive's Office will be home to the Office of the Chief Executive. It is also where the Executive Council meets. The Legislative Council Complex will contain a Chamber and a number of meeting facilities as well as a 11-storey office tower.

The then Architectural Services Department (ArchSD) Project Director, Peter Yuen, started working on the Tamar development scheme in 2001, but he retired in 2009 as the steel structure of the main building was being constructed. "A big part of me wishes I could see the job to completion because I started with this project in 2001 when we started looking for an appropriate site," explained Yuen, who was at the heart of other iconic projects such as Chek Lap Kok airport. "We assessed feasibility in other areas before finally choosing Tamar nearly three years on. It was the ideal site for the project." For more than five years after the handover in 1997, the Tamar site was vacant except when carnivals, corporate events and concerts were held. The prime space, however, was destined for something grand. Yet the search for an ideal site for the project began before 2001. Since the early 1990s, the government had been looking into options to cope with the growing demand for office space in the Central Government Offices, the Murray Building and other departments and bureaus.

Both the Government Secretariat and the Legislative Council (LegCo) faced an acute office space shortage. More than just the cramped quarters, the technological advances of modern-day offices with computers, open-plan flexible layouts and meeting spaces were in discord with the antiquated designs of the buildings being used. Compared with Hong Kong's vast A-grade commercial office buildings, the Hong Kong government buildings were old and tired. Many had been in operation for decades, which made it difficult for major alteration or refurbishment. Though not all bureaus or departments were set to move, the administration decided there was a pressing need to create a reasonable work environment to meet the modern-day needs. In August 2002, prequalification documents were requested by the government. The Gammon-Hip Hing team created a concept design together with Rocco Yim of Rocco Design Architects Limited, the Architect, Leo Daly, the Interior Designer and Meinhardt, the structural engineers during a development design workshop. At the time, the requirement under the design brief was to have at least three buildings. Yim drew a simple sketch, which cemented the design concept from day one.

In preparation, the Gammon-Hip Hing Joint Venture brought in a Project Director to develop the design and "steal a lead". But Hong Kong took an unexpected turn in early 2003 when the financial crisis and public health threat of severe acute respiratory syndrome (SARS) brought the



Initial drawings of the winning bid for the Tamar Development Project were based around the Green Carpet (left) which would unfurl and connect with the waterfront promenade.

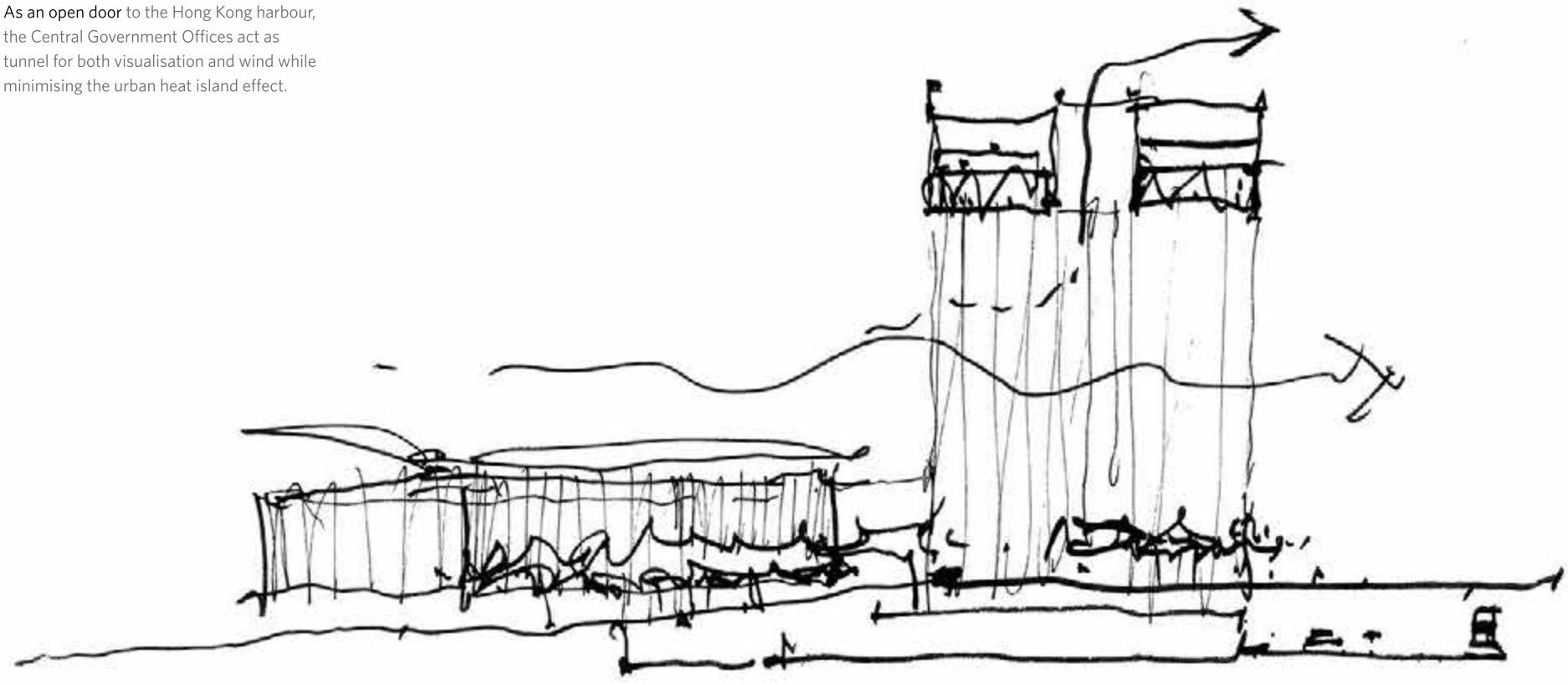
city to a standstill. The project halted. It was deemed to be a critical period for the community, and not the right time for the government to be setting aside money for the project. When the economy picked up, the project was resuscitated at the end of 2005 in the Chief Executive's policy address. Prequalification applications were again invited for Tamar in December. Compared with the first tender in 2003, the brief for the second tender in 2005 had dramatic changes. The gross floor area (GFA) was less in the second brief, with more of an emphasis on the building's relationship to the urban landscape around it. The height restriction was also tightened to ensure that there was at least a 20 per cent building-free zone below the ridgeline. Also, the proposed exhibition hall was scrapped, reducing the development density.

But before the bid team for the joint venture pushed forward, the government had to seek funding from the Legislative Council. "March 2006 was an anxious time for all of us, but the government was united at the time in seeking funding from the Legislative Council for the project," recalled then Director of Administration Elizabeth Tse. "We had a team with colleagues from the ArchSD, Planning Department, Transport Department, Environmental Protection Department and Information Services Department determined to address all concerns – technical or otherwise, flagged up by anti-Tamar lobbyists. The PR team under the Director of Information Services Edward Yau gave me excellent 24-hour support and led me to the right people to speak to, which radio programmes to attend and such. In June, funding for the project was approved.

"There were many concerns and we focused on engaging outside groups, district councils and LegCo members. It was important to get the right impression out to the public. Also, whatever the government promised, we had to deliver. We were committed to clarification of negative reports. The policy was, reply within the same day. For example, there were reports claiming that the unit cost for the Tamar Development Project was higher than Two IFC. These were unfounded claims, which we had to address immediately. At that time, people were often not focused on attention to the details – instead they were attentive to the impressions. It was our job to manage the expectations." On September 29, 2006, the government invited four pre-qualified tenderers to submit their plans for the contract for the project that was set to close in February the following year.

"When the government tendered the second prequalification in 2006, we only had four months to work on it," recalled Bid Manager, Peter Moore with the G-HHJV. "Thankfully, we did not have to take our design much further. HOK (International Asia-Pacific) took on urban planning, landscape and some interiors. For the mechanical and electrical requirements, a joint venture between Balfour Beatty, Shinryo Corp and Young's Engineering was formed. We held a strategy workshop on October 16 and spoke frankly about the risks with the constraints. This was the most challenging tender I had ever done in my career. As a design and build project, it was not just technically and financially challenging, but design wise, we had to find economic viability and consider the budget. All this within a four-month tender period."

As an open door to the Hong Kong harbour, the Central Government Offices act as tunnel for both visualisation and wind while minimising the urban heat island effect.



"As a bid manager with 15 staff, we had the responsibility for managing 19 consultants and delivering a design and tender offer to meet the high expectations of the joint venture's directors. The team engaged with the consultants in developing the tender's design, running regular design workshops. Hip Hing supporting Gammon's efforts with both design and pricing advice throughout the tender period. We had an excellent internal team of managers, with Ken Cox an ex-Gammon staff member brought back to Hong Kong to drive the design submission. Belinda Ho of MUSA Limited managed and co-ordinated the architectural elements of the design, while developing the strategy for the design and technical submission documentation. With Gammon's Angela Cogman 'burning the midnight oil' during the latter stages of the tender period bringing together the overall submission and being responsible to ensure that the tender offer conformed to the Employer's Requirements."

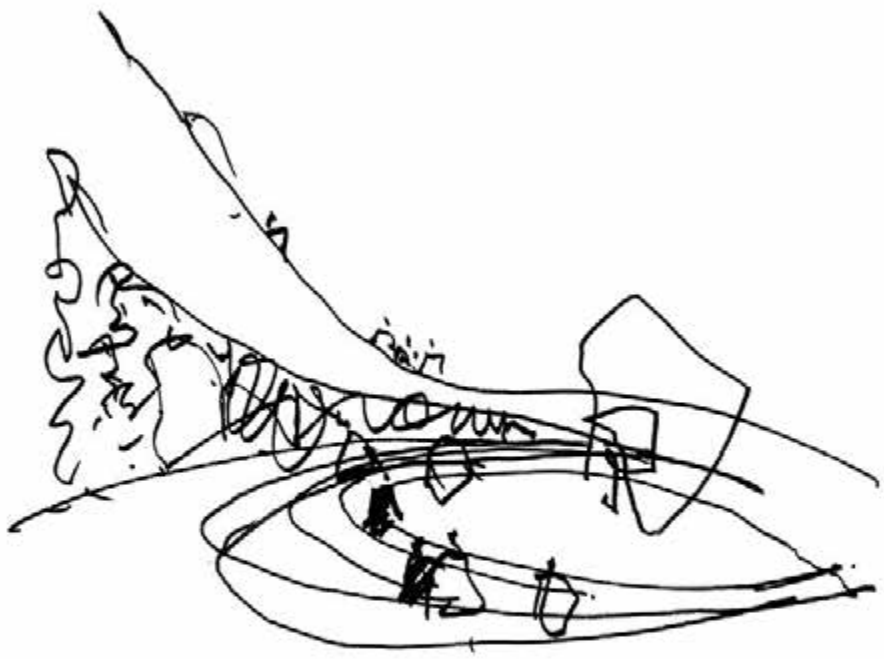
In March, after the closing of the tender, the Chief Secretary for Administration's Office arranged an unprecedented public viewing exercise – displaying the four tender designs at Queensway Government Offices and Kowloon Park spanning two months. "It was risky to host a public viewing exercise during the tender process, but we bent over backwards to reassure the public that we wanted to take their views into account," said Elizabeth Tse, former Director of Administration. "We did not want a white elephant and engagement with the public was of utmost importance. At the public viewing exercise there were rules: thou shall not lobby, thou shall not send spies there to lobby, thou shall not speak to the media. There were safeguards from public manipulation and an in-depth report analysing views gathered from questionnaires, exit polls and telephone polls were presented to the Special Selection Board for their consideration when they assessed the four tender submissions."

"People are naturally very interested in this project," explained Yuen, the former ArchSD Project Director. "It's a prominent site and we were looking for a fine balance – something that looked great from the harbour but not ostentatious. We did not want people saying, 'the government is building itself a palace'. Instead, we wanted to connect the urban area with a green building that is responsive to the harbour." The strength of the Gammon-Hip Hing Joint Venture project was that the design not only responded to the brief, but went above and beyond it. "We zeroed in on the idea of architecture working with public space," said Architect, Rocco Yim. "Then came the realisation of something I've always dreamed of: a green belt connecting all the open spaces from Victoria Park to the Hong Kong Zoological and Botanical Gardens. Tamar, with its iconic Green Carpet, will become the critical link to Hong Kong's 'green belt'."

A team of 20 Rocco Design Architects Limited (RDL) architects were assigned to the project and created a four-pronged approach to the building site: openness, enjoyment, sustainability and togetherness. The development concept was based around the central theme of the Green Carpet as public space. It seemed to be a winning combination. The former Chief Secretary of Hong Kong, Sir David Akers-Jones, participated in the public vote on the new Tamar development project and recalls the impressive rendering of the model. "At the time, the development was a statement of the Hong Kong SAR government," said Akers-Jones. "I was a great supporter for LegCo moving. There had to be a bigger building and the former Supreme Court building was not large enough for such things as members, offices, chambers and meeting rooms. In the end, the big statement was to be: connecting the people from the open space at the waterfront to the new Central Government Offices. I remember going down to the Central Government Offices to vote with the public. I was asked to mark the tenders in the order of preference and I voted for the Gammon-Hip Hing tender. The building has turned out bigger than I initially thought it was."

Having worked with the ArchSD for years, the then Project Director Peter Yuen and his team were meticulous and matter of fact with the process of tendering large projects. Numbers were tallied up and technical considerations made up 60 per cent of the tender. These included design and aesthetic aspects; planning, sustainability and environmental aspects; and functional and technical aspects. Price considerations made up the remaining 40 per cent of the tally. "When choosing the tender, every little bit adds up and this includes the costs as well," Yuen said. "The G-HHJV met the requirements and looked good. We liked the idea of the wind blowing through the building, the number of trees and also the very attractive Green Carpet."

While the concept of the central Green Carpet was embraced by the team and the government panel, there was a small wrinkle in the ambitious plan. The design did not exactly follow the outline zoning plan, a statutory plan approved by the Town Planning Board. Initially, the square plot of land at Tamar was cut in half, the northern end adjacent to the harbour – reserved for open space, the southern end – for development. The G-HHJV design turned the plan 90 degrees to the right, opening up the northern half to partial development, but allotted the same amount of land to the public, albeit in a different shape. "This freed us from an otherwise unadventurous solution of stacking the buildings in a more restrictive plot," explained Rocco Yim. "It was a calculated gamble, based on the spirit of the open space, but not by the rules." As a result, the government awarded G-HHJV a non-binding letter of intent in July 2007, which stipulated that the tender would get the green light only if the joint venture garnered planning approval from the Town Planning Board.



Sculptural Garden

The G-HHJV tender Design Manager Ken Cox recalled the complexity of the tender, which led to the planning approval from the board. “The specific design challenges of the Tamar tender were related to a very constricted site and physically fitting the various buildings within this while maintaining the open space requirements defined by the planning requirements,” said Cox. “The prominence of the site required sensitive design considerations, since as a world-class city with the harbour skyline as Hong Kong’s iconic symbol, the development had many demands to fulfil in the final design solution.”

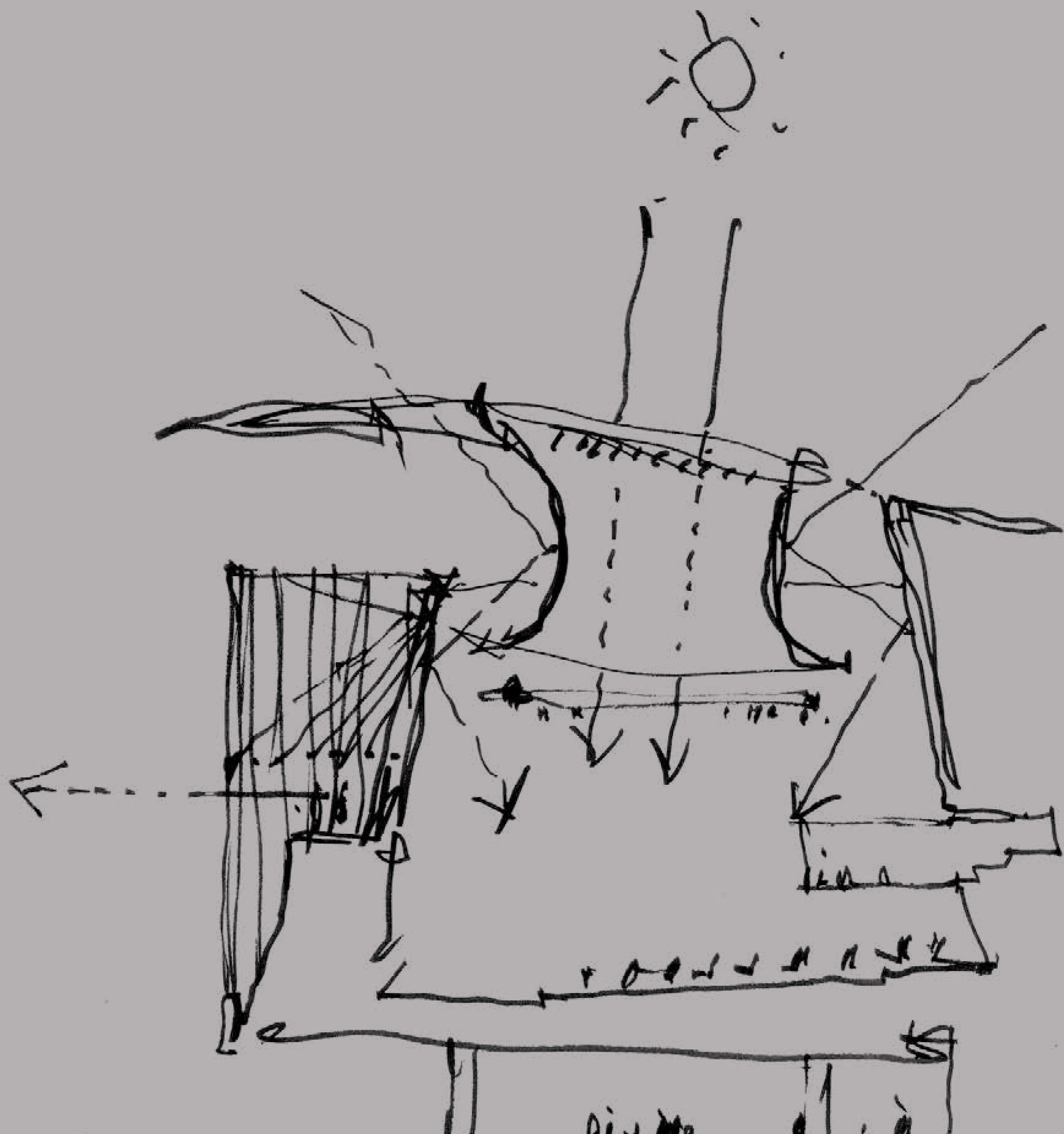
EDAW City Planning under the helm of Director Derek Sun was commissioned as the town planning consultant to liaise with the Planning Department and co-ordinate required documentation for submission of the planning application to the Town Planning Board. The types of questions being raised by concerned government departments on the planning application were related to the open space calculation, clear headroom over drainage reserve, air ventilation calculations, ingress/egress, all of these were answered by the various consultants and formal replies co-ordinated and issued through EDAW to the Planning Department.”

It is important to note that the comments were consolidated in a Town Planning Board (TPB) paper prepared and presented by the Planning Department to the Town Planning Board. The consultants were not present at the TPB meeting. “The G-HHJV was in a cautious mindset before the Town Planning Board meeting, but was optimistic since the consultant team had addressed all the issues in the planning application process in a positive and professional manner. In the usual Hong Kong way, the will to get the job done will always prevail.” It was a tense few months, but in October 2007, the Gammon-Hip Hing Joint Venture gained approval and subsequently, the letter of acceptance, a legally binding document that allowed work to begin at Tamar, was issued. According to Cox, the G-HHJV was favoured by the government for the design solution, which was endorsed by the public during the public viewing exercise and finally ratified by the ArchSD, once the very detailed review of the pricing document and contractor’s proposals had been fully examined, and queries raised and answered.

In January 28, 2008, ArchSD, Gammon and Hip Hing were present to sign the contract. It included construction which covered the design and construction of the Chief Executive’s Office, the Central Government Offices, the Legislative Council Complex, an open space, two covered pedestrian footbridges and other ancillary facilities. Watching from a distance is the former Project Director Peter Yuen, now retired, but eager to see the fruit of his years of labour for the Hong Kong people. “Hong Kong has changed for the better over the years that I worked for the government,” Yuen said. “People are more vocal now. I also think people will be impressed with the openness of the building including the door, the sculptures and the cafe. As with most projects, the biggest challenge is to meet all the requirements while looking good. It’s the job of the ArchSD to manage the contract to keep things in budget and on time. We are the glue in any big project and it’s our pride to help build Hong Kong.”

Connecting thousands of people to the Chief Executive’s Office, Central Government Offices and Legislative Council Complex, the Green Carpet’s extensive podium provides a multitude of green entrances to various buildings.

The iconic oblong Plenary Hall (right) features a light funnel which comprises 34 steel frames and 200 glass reinforced gypsum cladding panels onto the roof.



OPENNESS

The Door is always Open

"When I first heard about Tamar as the potential site for the government headquarters and legislature, I thought it was appropriate as long as the government achieved the objective that it energised the waterfront, provided appropriate public space and did not disturb the airflow or light," said the Architect Rocco Yim. "The site is a cosy urban space, a meaningful open space for interaction. People have a purpose when they go there and things are happening." An iconic element of the design was the "Open Door", the mega truss that spanned over the East and West towers of the Central Government Offices, which represented Hong Kong's commitment to openness and transparency in governance. "It has been a miracle that many of the ideas formulated in the initial design process in 2003 and then 2005 were able to retain their identity and objective of the project," said Yim. "This is with much thanks to G-HHJV respecting the designer's opinion on urban design."

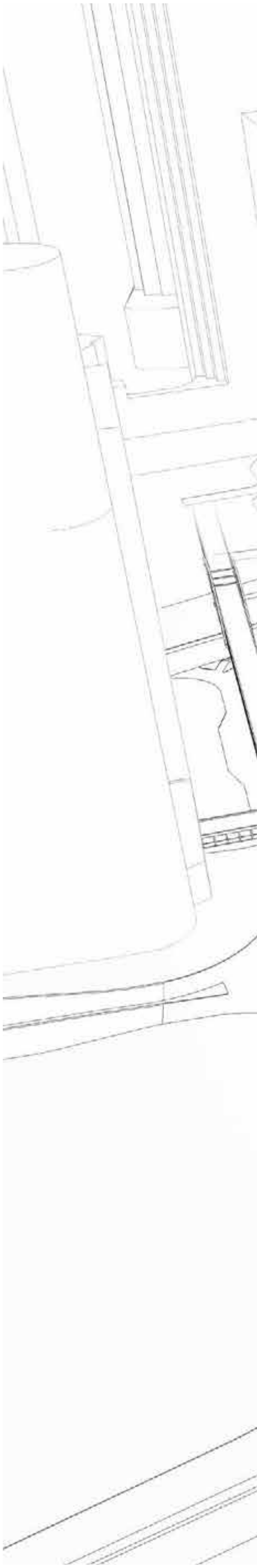
The mega truss was manufactured and built at Pristine, Gammon's steel prefab factory in Dongguan and assembled painstakingly across the length of the yard. Rigorously tested and assembled, the truss was subsequently sliced into sections, which were prepared for transport via truck and barge down to the harbourfront site to be reassembled at podium level. Heavy lifting was chosen as the simplest method to raise the two-part truss. "On the day of the first lift, there were lots of people standing around watching and I was the leader of a team of 120 people," Project Manager (Engineering), Michael Leung said. "I admit, I was very nervous that day. I was not concerned about the onlookers but was focused on the activity itself." The two lifts, which happened within days of each other, were a success and the iconic "Open Door" became the focal point of the complex. "Arches in other cities like Paris, Osaka and Beijing are often urban gestures," said Yim. "At Tamar, the 'Open Door' is central to the openness of the site and the only way we can establish urban flow for commuters. With the buildings forming a 'U-shape', we are embracing the public."

ENJOYMENT

The Land is always Green

Crossing over the footbridge from the Admiralty hinterland, visitors to the Tamar development complex are greeted by two symbolic banyan trees, which represent spiritual calm, knowledge and wisdom. With the architectural design of the buildings "embracing" the open Green Carpet, visitors are encouraged to take in the space overlooking the Fragrant Harbour. "Our initial idea of the 'embracing arms' came from the shape of the three buildings opening out onto the harbour," RDL Director William Tam said. "We wanted the towers sweeping up to the sky in a stately manner with the Green Carpet below." Yim and his team designed the lobby of the complex to be on the first and second floors, instead of the typical ground floor welcome. The reason being that the platform kept everything elevated in parallel with the Green Carpet, which would gradually slope down to the waterfront.

In the words of former Planning Department Assistant Director of Planning (Special Duties), Phyllis Li, "Planning is an evolving process. We do not plan projects in isolation. For the new Central harbourfront, Tamar is the first project to be completed, so it is to be expected that other development projects along the waterfront will follow. We view the Green Carpet as the focus of this prime civic core. By 2012, the promenade and the Green Carpet will be seamlessly integrated which is very important. I am very pleased with Tamar in the context of its surrounding developments." Other civil servants echo their enjoyment of the open area, unique to Tamar. "I am excited to see the Green Carpet," said then Director of Administration Elizabeth Tse. "In my opinion, it made the project." More than just the Green Carpet, the working environment which took into account such features as open space, air ventilation, and natural light foster a level of enjoyment for both public servants and visitors. "The Tamar development gives colleagues a better working environment which is not just an office building," said Jennifer Mak, former Director of Administration. "On the site, we are trying new things with natural light and enhancing the green energy to soften the environment. There is a greening effect as well as a more community feel through facilities like showers and a canteen for staff."



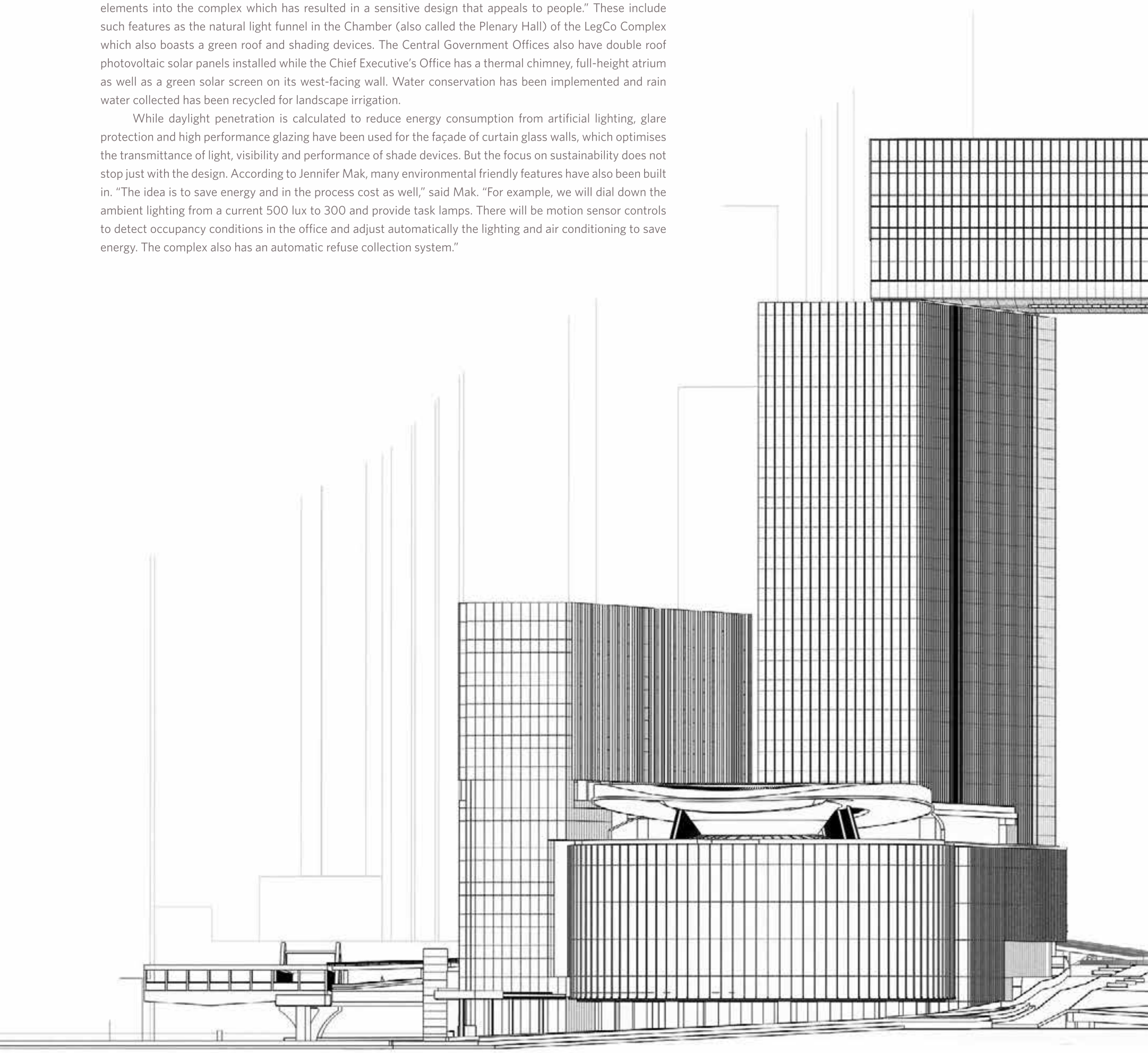
The Sky will be Blue

According to wind expert, Rowan Williams Davies and Irwin Inc (RWDI) Vice-President, Dr Anton Davies, "Hong Kong is unique. The city has dense buildings which are very high. As well, there are the mountains. For this project we had to put in more effort, and it was a pleasure to work together with Hong Kong's vibrant born-and-raised professionals." The challenge was to balance the wind, visual aspects, testing mechanisms and personal feelings of the Hong Kong people. Armed with four wind tunnels from around the world and some of the top international technical professionals, RWDI embarked on a sustainable design, which would address the effects of the wind, stagnant air pockets as well as minimising the urban heat island effect.

"The restraint was we could not adversely affect the surrounding area and pedestrians," said Davies. "As well, there were to be no stagnant areas. Thankfully, the complex was a great design and surprisingly not super tall. The open area would have to have a straight open tunnel for both wind and visualisation as well; the canopy would keep flow elevated and not affect pedestrians. The joint venture has also designed a lot of sustainable elements into the complex which has resulted in a sensitive design that appeals to people." These include such features as the natural light funnel in the Chamber (also called the Plenary Hall) of the LegCo Complex which also boasts a green roof and shading devices. The Central Government Offices also have double roof photovoltaic solar panels installed while the Chief Executive's Office has a thermal chimney, full-height atrium as well as a green solar screen on its west-facing wall. Water conservation has been implemented and rain water collected has been recycled for landscape irrigation.

While daylight penetration is calculated to reduce energy consumption from artificial lighting, glare protection and high performance glazing have been used for the façade of curtain glass walls, which optimises the transmittance of light, visibility and performance of shade devices. But the focus on sustainability does not stop just with the design. According to Jennifer Mak, many environmental friendly features have also been built in. "The idea is to save energy and in the process cost as well," said Mak. "For example, we will dial down the ambient lighting from a current 500 lux to 300 and provide task lamps. There will be motion sensor controls to detect occupancy conditions in the office and adjust automatically the lighting and air conditioning to save energy. The complex also has an automatic refuse collection system."

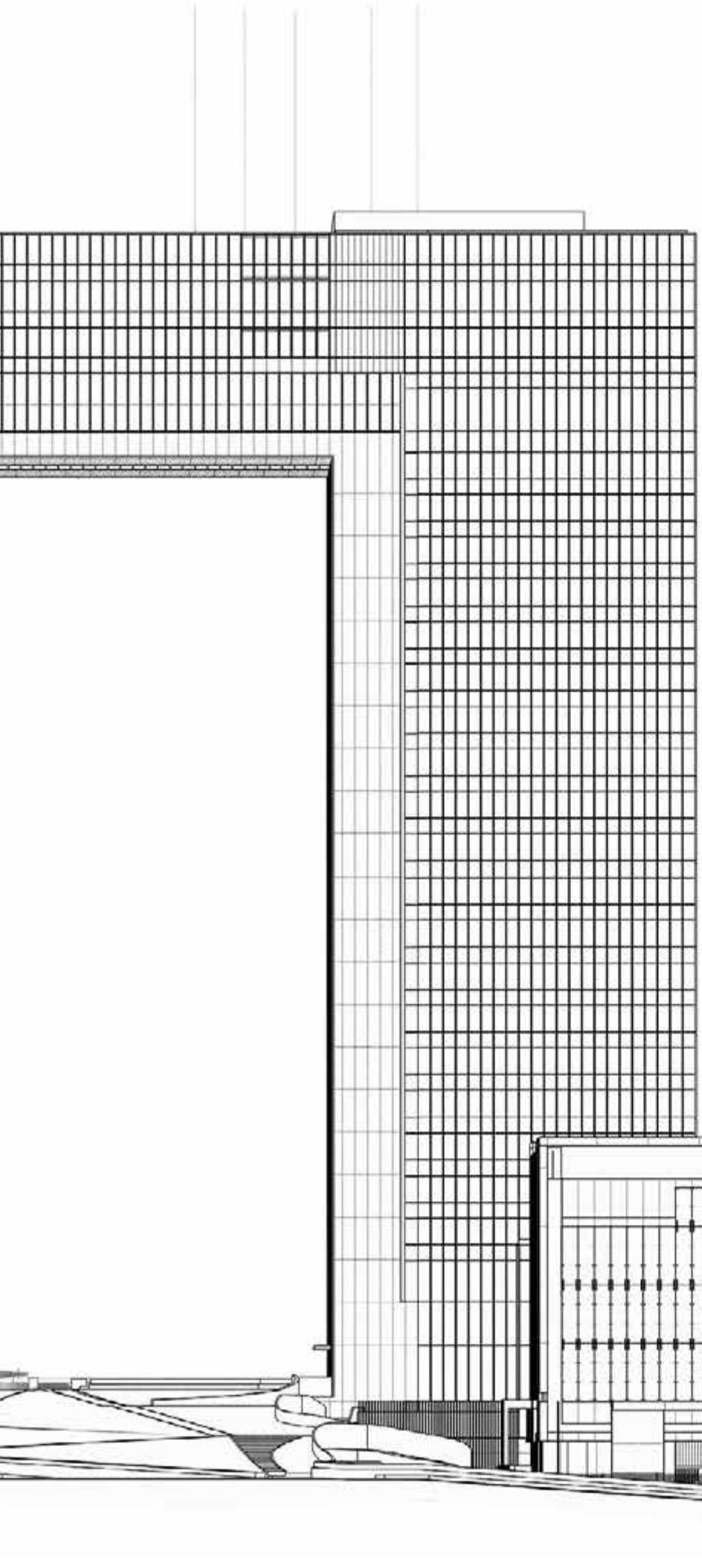
At Tamar, the Open Door is central to the openness of the site and provides an iconic focal point, similar to other famous arches around the world. At the crest of the arch, the double roof features photovoltaic solar panels, while the Chief Executive's Office has a thermal chimney, full-heightatrium and a green solar screen on its west-facing wall.



Connecting the People

Tamar's emphasis on connectivity represents the transparency, open dialogue and community ambience of the development. No urban building is an island unto itself and Tamar is the first development to be completed within a single master plan, which will also cover more than 10 hectares of the city's famous waterfront scheduled for completion in stages. On a pedestrian level, the Tamar development and its Green Carpet connects a "green belt" of the advanced promenade, finished in 2012 with Admiralty Garden, Harcourt Garden and Hong Kong Park. The idea is to provide the public with a comfortable flow and ease of accessibility to the Tamar development, connecting the harbourfront with the rest of the city.

"The Green Carpet is the Tamar development's prime civic space which connects to and is integrated with the promenade," said the then Planning Department Assistant Director of Planning (Special Duties), Phyllis Li, who has since elevated to the position of Deputy Director of Planning/Territorial. "For this waterfront development, each component, the CE's office, CGO and LegCo Complex has its own identity and dignity. Tamar is the first project to be completed within the new Central harbourfront. One has to remember that planning is an evolving process and proposals need to be implemented in a progressive manner. Tamar is not just for people working there, but for the general public to interact and enjoy. It is easily accessible and unique in its ability to integrate the complex so close to the waterfront. We don't plan projects in isolation and we are very pleased with Tamar in its surrounding context." The Tamar development has managed to not only re-establish the visual and physical connectivity between the waterfront and the Admiralty hinterlands – but as well, invite people to experience the openness, enjoyment, sustainability and togetherness on the civic site.



Construct

第二章

添馬艦發展工程包括三幢建築物、休憩用地及兩條行人天橋，成為香港獨特的新地標。2008年至2011年間，金門－協興聯營公司與特區政府攜手合作，設計及建造符合可持續發展概念的樓群。這發展項目融合多項先進技術，如綠化屋頂、海水冷卻製冷系統、太陽能電池板、雙層通風隔熱外牆及電腦控制照明系統，實現了深具創意的新穎建築。

2008年1月，金門－協興聯營公司派遣地基工程團隊進駐工地，高技術工程人員及巨型機械正式開展工作，將二百九十八條高性能樁柱打進地底，為添馬艦政府總部奠下穩固的基石。整個項目以「門常開」為設計主題，其間的「綠地毯」成為核心特色，懷抱著高二十七層的政府總部及巨型桁架、高五層的行政長官辦公室連屋頂及靠西面外牆的花園，以及立法會綜合大樓。

聯營公司派遣項目總監楊家賢，出任駐工地最高負責人，領導由三千多名工人組成的團隊，並擔當與政府協調有關工程項目的聯絡人。楊家賢說：「團隊的組織是一項至關重要的因素。這項工程涉及三十五個顧問項目，是目前與建築署合作最大的設計及建造工程計劃。我們鼓勵大家謹守『同一添馬，同一願景』的格言。」

他說：「要永遠維持最高效率殊不容易，我們必須好好管理期望，有系統地處理各項事務。但我認為，團隊能發揮追求卓越的驅動力，是值得我們在這項工程中引以為傲的。這個深具紀念價值的巨型建築群，將會聞名於世，成為我們世代相傳的傳奇。我深感榮幸能成為這個項目的承建商，與各夥伴同心協力，完成壯舉。」

添馬艦的建築群不但莊嚴兼具象徵意義，佈局更符合實用原則，所有設施均有利立法會及政府部門為市民提供服務，發揮工作效率。

行政長官辦公室是香港特區行政長官及行政會議之所。這幢設計莊嚴的建築物呈長立方形，內設先進的辦公室及會議室，俯瞰壯麗的維多利亞港。

政府總部形狀酷似一扇門的形狀，這是政務司司長辦公室、財政司司長辦公室及全部十二個政策局主要官員辦公室的所在地。政府總部分為三個部分：東翼、西翼及「門常開」巨型桁架，又稱為懸掛於二十四樓連接兩座大樓的橋樑。

立法會綜合大樓由兩座整合式建築物組成，總面積達三萬一千四百平方米。建築物處於四周綠化景致的懷抱中，最顯著的特點是會議廳及其俯瞰海港的採光藻井。與這個地標式會議廳相連的是樓高十一層的辦公室樓，由2012年10月起，成為新一屆立法會七十位議員的辦公室所在地，亦為議員僱用的員工、立法會秘書處六百多名職員及多達八十位全職記者提供辦公室設施。

副項目總監吳萬里說：「參與如添馬艦的聯營項目，必須遵行共同協議，時刻保持溝通和接觸，始能提升工作效率。設計及建造的批核程序未必是一朝一夕的事，但我們對此已司空見慣，具備充足的處理經驗。我們的焦點應集中在安全、規劃及質素方面，主動推行安全作業。我們不但要專注眼前的工作，更要顧全大局，為香港人營造兼具標誌性及實用性的建築。」

添馬艦發展工程的設計及建造，均採納具創意、積極及先進的綠色意念，配合綠色生命周期管理。金門－協興聯營公司環境主任謝志軒說：「我們必須保持開明的態度，接受回收及綠色生命周期管理的概念。最令我感到驕傲的，就是添馬艦發展工程獲頒香港環保卓越計劃建築界金獎，證明我們推動綠色創意的自發性和集體努力獲得認許。」

2011年1月25日，添馬艦發展項目舉行平頂儀式，標誌著上蓋建築工程已竣工，並隨即開展裝修工作。在典禮上，聯營公司雙方均表示為工程人員努力的成果深感驕傲。

令人振奮的巨型桁架安裝工程於2010年秋天展開，起重工序分兩次完成，共有二十多個接口需要完成接合，間隙容差為五十毫米。兩次起重工序相隔兩星期，以便進行所需的後勤工作。

機電工程方面，由 Balfour Beatty、新菱和景福合組的聯營公司派出一百五十多名工程師，為政府總部管理測試、調試、質控及安全等工作。這項史無前例的工程難免會遇到不少需要加工或修改的情況，全賴眾多技術高超的專業人員，任何難題都得以迎刃而解。

優雅的立法會綜合大樓就是一個例子。這座高大橢圓的建築物呈橢圓形狀，位於其中的立法會綜合大樓會議廳，象徵議論的中心所在，而它的獨特形狀被視為最能符合其實際功能，有效安排各立法會議員的座席。

立法會綜合大樓室內設計顧問兼 Guida Moseley Brown Architects 建築師事務所合夥人 Hal Guida 說：「回顧當初，會議廳的橢圓形狀源自我們早年與建築師嚴迅奇的多番評審，要點在於如何為大樓的室內與室外設計建立關係。這個錐形不斷向上收窄，直達屋頂，為圍繞的空間提供庇護作用，而採光藻井亦有足夠的寬度，讓人有良好的空間感，符合其既定的功能。」

Teamwork

FOR ALL OF HONG KONG

The Central Government Offices at Tamar is an iconic and distinctive landmark, which features three buildings, public open space, and two covered pedestrian footbridges. Between 2008 and 2011 the Gammon-Hip Hing Joint Venture worked together with the Government to design and build the Hong Kong government's sustainable complex. The dynamic project boasts an innovative and creative structure, featuring green roofs, sea-water chiller plants, solar energy panels, double-layered ventilation facades and computerised lighting controls.

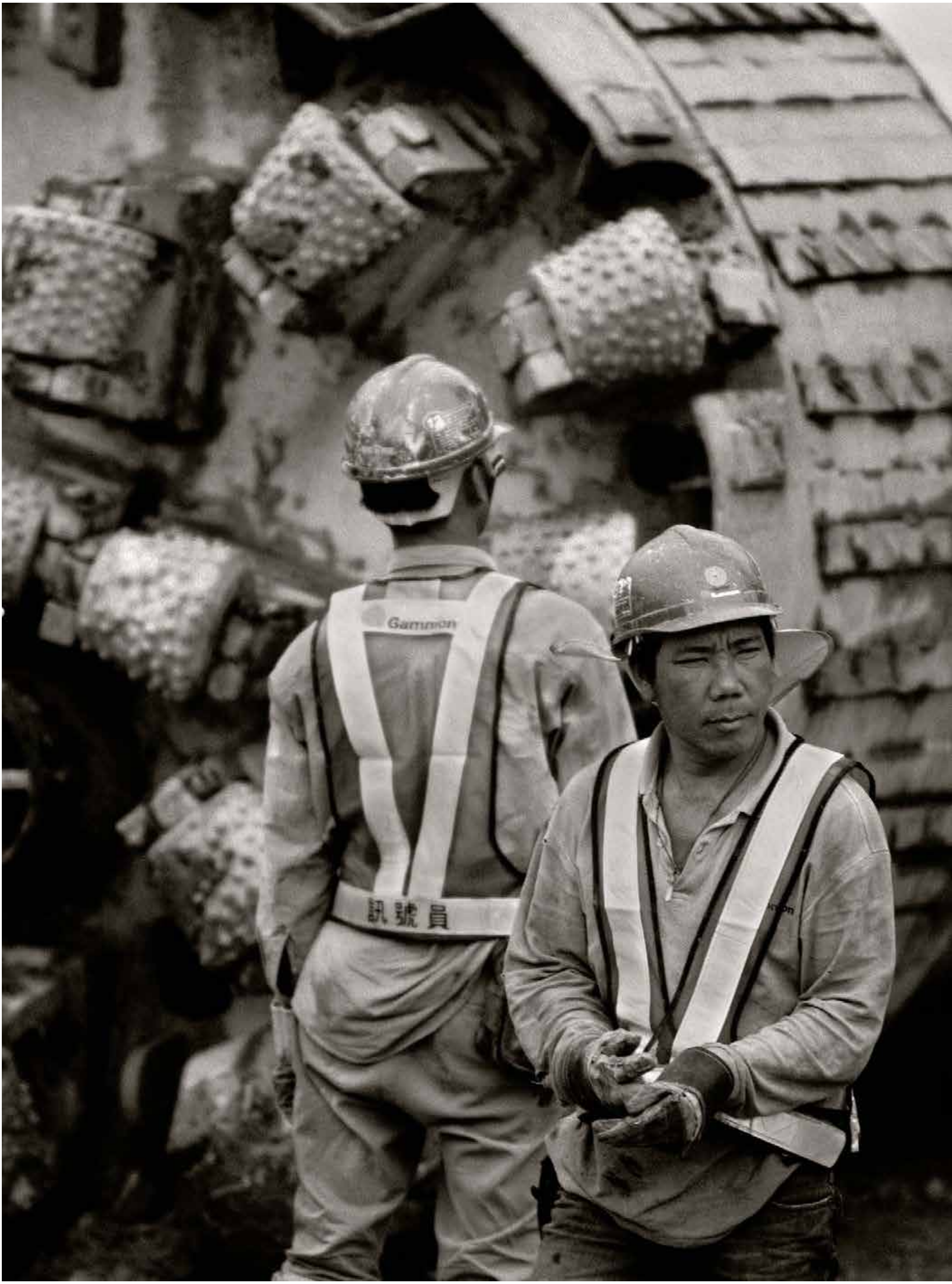
The G-HHJV foundations team descended on the site in January 2008 with their procession of highly-skilled staff and mega machines. The 298 high-performance piles they laid became the rock solid foundation for the Central Government Offices. With the "door always open" theme, a Green Carpet is a central feature, which is embraced by the arms of the 26-storey Central Government Offices and its Mega Truss, the five-storey Chief Executive's Office with its rooftop and west-wall garden and the Legislative Council Complex with its Chamber, five-storey Low Block and 11-storey High Block. On site the joint venture's top man, the Project Director, Edward Yeung, interfaced with the government and co-ordinated the programme and led a team of more than 3,000 workers.

"The organisation of a team was the most important factor," said Yeung. "We had 35 consultant packages within the programme, currently the largest design and build project with the Architectural Services Department and we encouraged everyone to embrace our motto: 'One Tamar, One Vision'.

"Having continuous high levels of efficiency had been difficult and we had to manage expectations and approach things systematically. But I would say that the driving force for performance had been pride in the job. This is a monumental building which is going to be famous, something you can see and tell your grandchildren about. I am proud to be a building contractor, joining hands with our partners."

The buildings in the complex are stately and symbolic yet have a practical layout and contain features that enable the various parties to work as efficiently as possible to serve the public. The Gammon-Hip Hing Joint Venture has been integral in identifying and employing innovative, creative solutions to the daily problems during construction. The design and construction of what many hope will become a landmark building in Hong Kong is an example of the best modern office complex suitable for the seat of government. As with most projects, the Tamar Complex underwent constant changes and it was up to the G-HHJV to implement and juggle resources, and re-plan overlaps. For example, the updating of the barrier free access code in 2008 affected much of the accessibility design, which was approved years before. Initiated by LegCo, the government was keen to implement the upgraded code in the project. At the same time, the LegCo Complex High Block engaged supplementary official agreement to add an extra floor to its High Block, while the double-high ceiling in the library was transformed into a single floor with the second floor being "extended" for office space.

"Working on a joint venture like Tamar, mutual agreement and consistent interfacing made things more efficient," the Deputy Project Director, Kevin Ng, said. "With design and build, approval may not have been as quick, but we have had experience with this. What we had to focus on was safety, the programme and quality, to be proactive and bring about safe practice. It was important not only to focus on the task at hand, but also to see the big picture – that we were constructing an iconic and practical building for the people of Hong Kong." The result is an iconic realisation of "Openness, Enjoyment, Sustainability and Togetherness" in a singular complex – built for all Hongkongers.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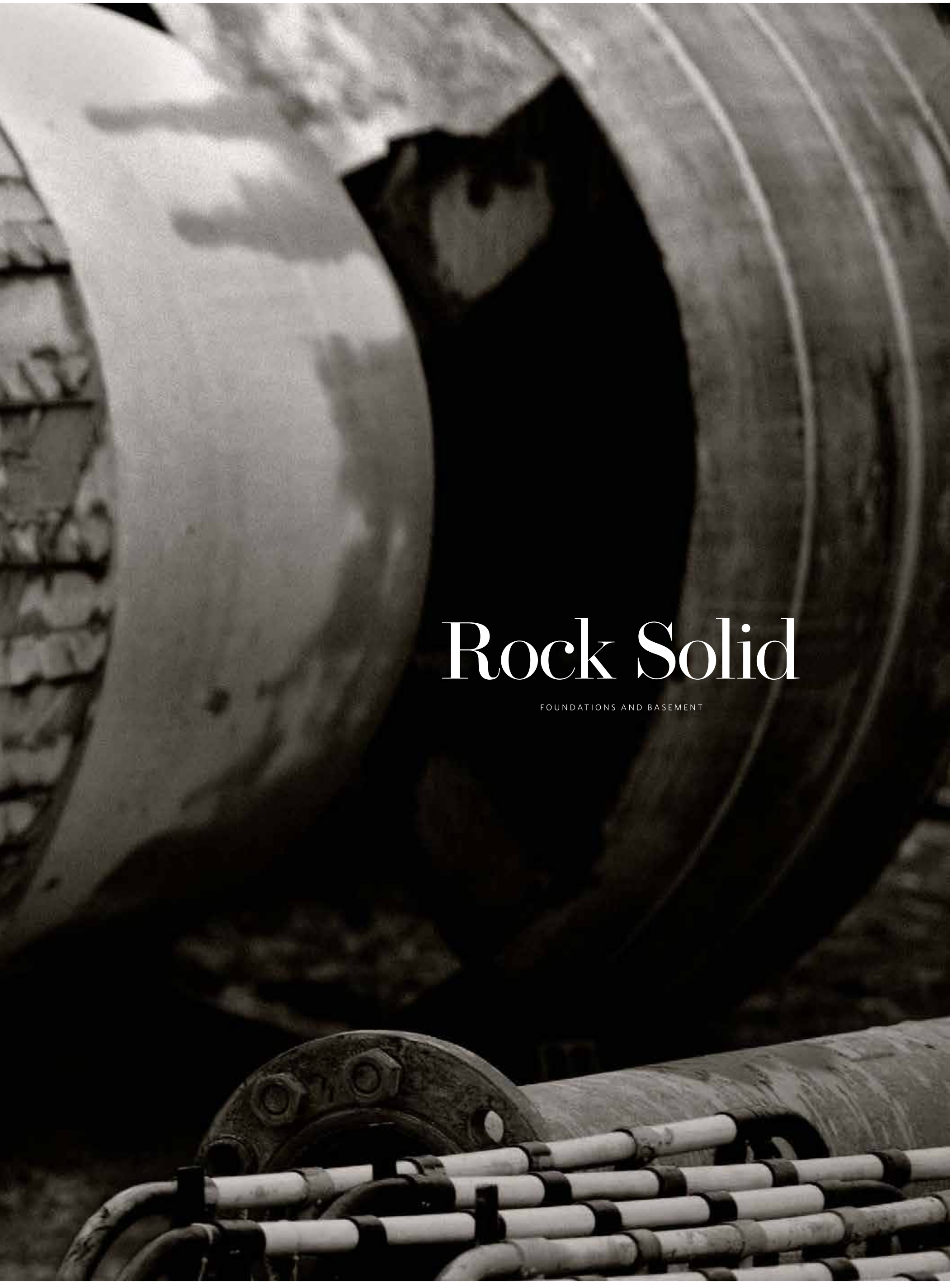

Rock Solid

FOUNDATIONS AND BASEMENT

On June 21, 2008, a crawler crane, the first mega foundation machine from the Tseung Kwan O workshop of Gammon arrived at Tamar for its 10-month sojourn. Crawler cranes, excavators, reverse circulation drills, rotators, rock drills, oscillators and vibratory hammers descended onto the site in a matter of weeks with the intention of drilling 298 piles into the site. Working on up to 30 drill sites a day, with the depth of piles ranging from 20 to 40 metres below sea level, the challenge was to get the right tool to do the right job. Stability and safety was of paramount importance. Some 10 large-casing rotators, renowned for being able to drill through almost any type of ground in any condition, were used to achieve quality results. The experienced Tamar foundations team found the piling construction was on the critical path to achieving the project programme deadline, with all activities to be done in extremely tight site constraints. At one time, the 4.2 hectare site had 40 mega machines, weighing up to 90 tonnes each, weaving their way in and out of each section of the grid similar to an organised dance. Construction of the basement for the Central Government Offices, Chief Executive's Office and the Legislative Council Complex occurred simultaneously. "The biggest challenges were the space constraints, and liaising with the swarm of workers and machinery, which resulted in us separating the site into north and south phases," the Senior Project Manager for Foundations, Alan Wan, said. "As we set pile caps on the foundations of the south phase, the building team would move in as we worked on the north phase."

Collaborating with Wan and his team had been Project Manager, Percy Chan, the man at the Tamar project considered to have held the most technically and logistically complex position. "While the site is 42,000 square metres, about 60 to 70 per cent of that had been the basement, which was under my care," said Chan who was also in charge of the ground floor. "The challenge was maintaining site access on the project and also management of the space around the ground floor. All materials for the mechanical and electrical sectors had to go through the two-level basement." Forklifts buzzed around at a modest speed of 10km/h as bobcats loaded up materials such as concrete mix, pipes and flooring from future car park bays. Materials from shores as far as Sweden, the United States and Israel were found there. The zoning of each area had been clearly marked, so workers knew where to go.

On the ground floor, Chan and his team of five had massive areas for bar bending, including the site for the public amphitheatre. Its construction had been delayed until the bar benders completed their task. "We also must not forget that we had to liaise with the Civil Engineering and Development Department on construction issues related to the Central reclamation phase three site, next to the Tamar development. There was a time when someone inadvertently removed a manhole, which was part of our system but this was quickly resolved through a brief discussion with the department," said Chan. Together with frontline workers, the Gammon-Hip Hing Joint Venture had been elevating the standard of care and concern for the workforce, whilst at the same time delivering excellence in the nature of construction. The innovative processes proved well worth the effort for both employers and employees. There were an abundant number of covered rest areas, showers, toilets and cool water stations for the benefit of workers. These initiatives ensured that the workplace was a safe environment and that the welfare of employees was paramount.

"I feel happiness when I think about Tamar," said Senior Project Engineer for Foundations, Kevin Kam. "All eyes were on us, and safety and quality was of great importance. We changed the preconceived ideas of a construction site; it is cleaner, better and safer. The rest areas and water stations created a better working environment for our workers. This was a personal touch on the site and it came from the heart." Working together with Lambeth Associates Limited, Gammon's in-house design engineers, the G-HHJV found fewer foundation piles were required when compared with the conventional number usually used – this was all thanks to the "bell-shaped" bit in the rotators. This bulb-like shape created at the base of the pile shaft gave the pile 20 to 30 per cent more strength when bearing loads.

Gavin Toh, Senior Engineering Manager, Lambeth was proud to be part of the project. "Lambeth played a key role on constructability, safety and sustainability for the development of the Central Government Development," said Toh who remarked on the tight programme. "With close integration and synergy with the client, Lambeth's design of the basement and foundation systems were critical to the Development. A unique aspect was the location on a historic naval dockyard. There were extreme and complex ground conditions including the presence of old seawalls. The designs further made provisions of the future underground railway station at the north-end of the Development." From 7.30am to 7pm, six days a week, in almost all-weather conditions, 150 specialist workers toiled to lay the foundations that protect the structural integrity of the Tamar Complex's buildings. "With the number of people involved, we still provided quality work at a good speed," said Wan. "We specialise in going the extra step – bringing focus and quality to the forefront. This is a once-in-a-lifetime achievement."

Laying rebar from the ground up, workers pump cement into the three-storey deep excavation area.


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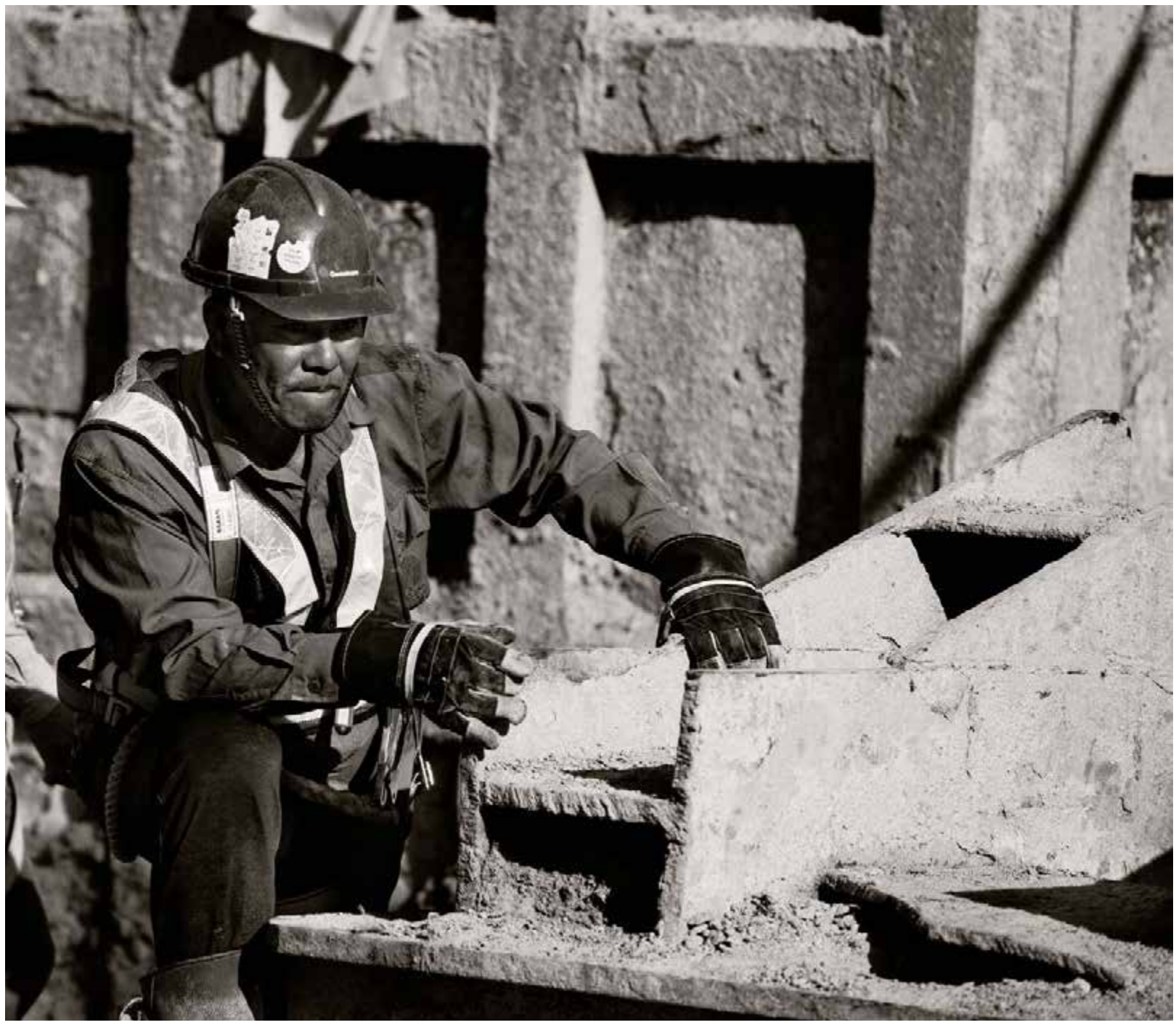


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Bombs Away

On November 17, 2008, the foundation team was on site with nearly 100 machines digging, drilling, rotating and driving. As piles were being set into the ground to build a solid foundation, workers swarmed the Tamar ground – working in tandem with the giant machines pounding into the earth. Soil from the Central reclamation completed nearly 100 years ago was being scooped up and dumped into waiting trucks. Heading off the site in a flurry of motion, a dump truck rolled up to the scale and an alarm sounded. The flashing lights indicated the truck was over the allotted weight permitted onto public roads. Directed to a waiting area nearby, a crane soon arrived to unload the extra soil from the truck. Grabbing and hoisting, the crane not only unloaded dirt, but an unexploded ordnance was hoisted into the sky. Excitement rippled through the site, and the word "bomb" was whispered from worker to worker. A 150cm diameter Japanese World War II shell had been found, which was about the size of a suckling pig, and the police were quickly called.

Workers, following the safety procedures as set out in the guidelines, first informed the foreman, then the site agent and the safety officer. The southeast corner of the site surrounding the bomb was cordoned off, and then cleared of workers. "It is not unexpected seeing that the site is on a former naval facility," said Senior Project Manager for Foundations, Alan Wan. "By chance we found it. It was hidden in a truck which was filled with dirt. When crossing the scale, the truck was overweight and when the crane unloaded some dirt, it also unloaded the undetonated bomb." About 20 to 30 per cent of the bombs during those days failed to explode. It was unstable so a linear-shaped cutting charge, which is a type of explosive that looks like a ribbon, was used to cut open the casing of the bomb. Then, using a small amount of explosive – the team then detonated the fuse and burned the explosive on site around the corner at the then empty site of Central reclamation phase three. The bomb disposal experts theorised that the bomb was fired from the battery artillery on the Kowloon peninsula during WWII.

Several months later, when a second explosive was found on the morning of March 29, 2010, in the same southeast corner of the site where the first one was found, workers swiftly acted. From the view of the "Gate Lady" Sister Ho, the commotion was just another day on the job. "I received a call from the boss, Mr Yeung, with the instructions, 'close the gate', so I immediately went into action," recalls Yuen Ngan-ho who was in charge of the main pedestrian gate for all on-site workers. "At the time, I had no idea that a bomb had been found on site. I just followed protocol and shut the gates. People could leave, but I did not let anyone in. Soon, rumours began but when people asked, there was nothing to say! 'The gates are shut, they will open when I get the call' was all I said. The closure wasn't that long – about half an hour, and afterwards, everything was back on track."

It was a quick discovery the second time around when a worker stumbled on the unstable bomb. The safety team descended on the site, but the front-line workers had already cleared the area, fencing off the bomb from onlookers. Police officers and the bomb disposal unit were on the site within minutes. They observed a high concentration of construction equipment in the area and determined that there was no suitable location to safely detonate the fuse and subsequently disable the bomb. Instead, the bomb was safe enough for transport, but only to be loaded into their four-wheel drive vehicle, and rushed back to headquarters at Jardine's Lookout, where the fuse was safely detonated. The novelty of the second small bomb soon wore off as work resumed – but there was no doubt about what topic dominated the conversation over their lunch boxes that afternoon.

Dominic Brittain (right), the then Senior Bomb Disposal Officer and his team arrived on site to destroy an unexploded WWII bomb unearthed by a Tamar front-line worker.

Seat of Power

CHIEF EXECUTIVE'S OFFICE

The administrative centre for Hong Kong's Chief Executive and his executive staff occupy the Central Government Complex Low Block at Tamar. The elongated cube-shaped building features state-of-the-art offices and meeting rooms. The stately design overlooks the spectacular Victoria Harbour. "There is a pressing need for the government bureaus to join together with LegCo and the CE's office," said Managing Director, Chu Tat Chi from Hip Hing. "Not only does it foster better communication but it also provides modern day offices to Hong Kong civil servants to serve the public."

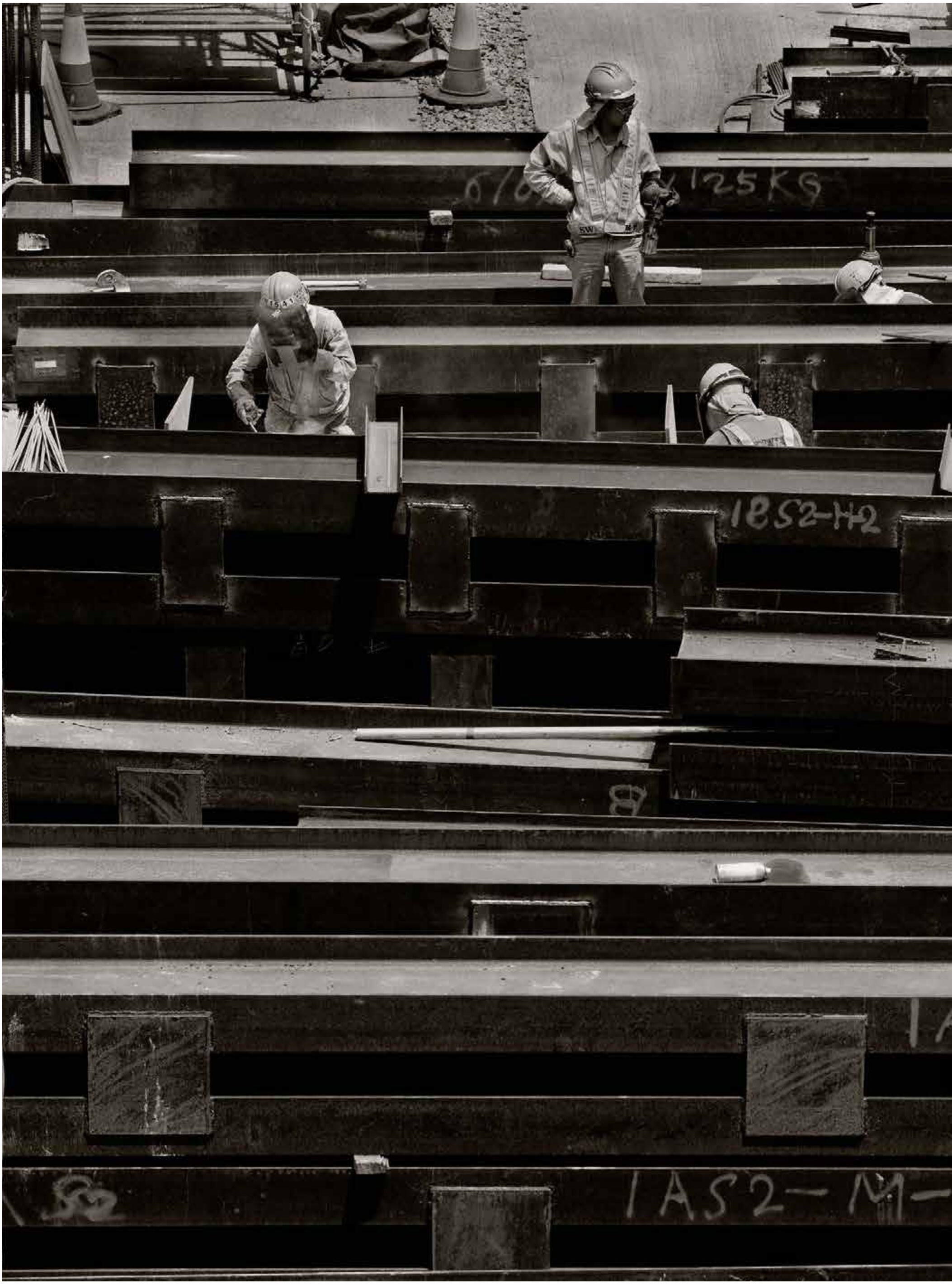
Technically, the building is not very complex. "The building is not very large or tall," said joint venture Project Manager, Tony Chan. "Through the process, there was not too much feedback or changes and the approval process had been relatively simple when compared with other areas on the site." As an understated figure, the building features a 1,100 square metre green wall and roof of trellised vines. Planter boxes in combination with mesh wiring will aid trellises to traverse the wall and climb up to the roof. The concept behind this visual cornucopia of lush vegetation is that the plants will help reduce the building's heat retention during the smouldering summer – thereby reducing the need for air conditioners to cool the building. We were told that the Chief Executive did not want expensive designs, but rather warm and traditional. With the one layer of approval, things moved smoothly with the help of the Architectural Services Department and Chief Secretary's Office."

According to Meinhardt Technical Director, Steve Wong, design and construction of the Chief Executive's Office involved calculations regarding structural design as well as the implementation of the updated barrier-free access in 2008, which changed the design accordingly. RDL Director, William Tam, recalled the improvements implemented. "We contracted the bid in 2007 and this, of course, had the barrier-free access designed into the building, but halfway through the project, we had to implement the 2008 updated design code," said Tam. "This was not easy as it required additional work and materials at a late stage. It was not just wheelchair access and automatically opening doors but such things as bigger signage, disabled toilets, wider rails for normal toilets, breastfeeding rooms and nappy changing rooms to name a few. We worked closely with the Chief Secretary's Office and with the commitment of the government and the Legislative Council Secretariat who took the lead to facilitate with the concern groups for the disabled, we managed to implement the new code."

For the offices for the Chief Executive, the Executive Council and their administration, security was of utmost importance. Under the direction of the Security Bureau and the Hong Kong Police Force, confidential protocol was followed to ensure the safety of the city's leaders, visiting dignitaries and staff. "Aesthetically and functionally, this building will be hosting important diplomatic functions," recalled joint venture Design Manager, Simon Lee, "We needed to distinguish it from other buildings by making something stately, elegant and dignified. You can see this through the design of the meeting rooms where our CE will meet government officials from around the world. The success of the stately design is in the details. Teamwork was really what made the project move forward. While the joint venture pushed on, our team worked closely with the ArchSD and the Security Bureau to not only garner approval but also closely follow protocol for safety on site." With assistance from the ArchSD and solid advice from the Chief Secretary for Administration's Office, the G-HHJV Low Block team surmounted the hurdles to craft a building that represents Hong Kong's safe, elegant and modern spirit.

Workers erect a crane in the Legislative Council Complex, with the Low Block in the background. On site, there were four cranes in operation. At the height of the programme, every couple of weeks, the cranes would "jump" as height was added on by specialised workers then inspected by the government.


Bank of America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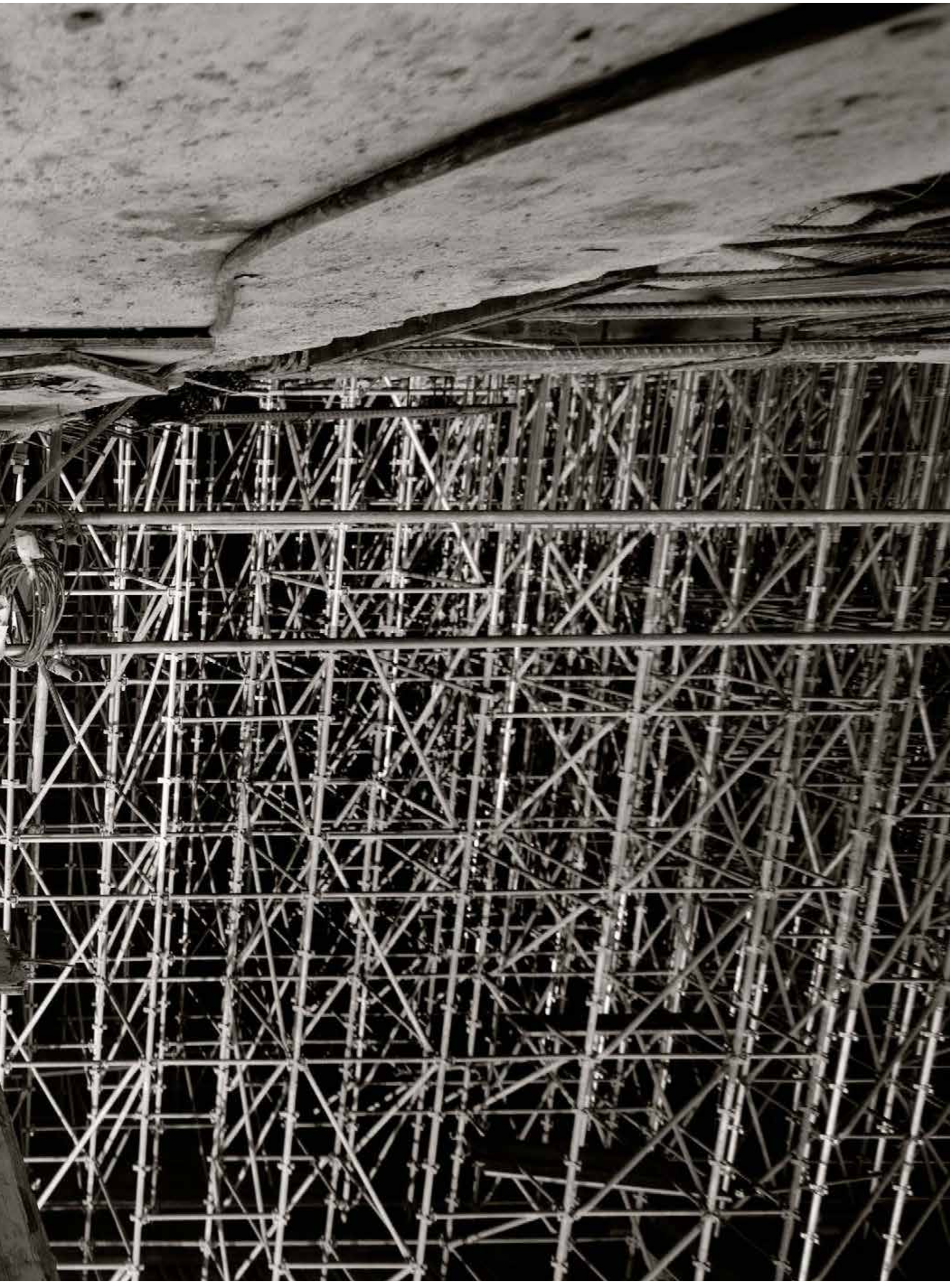
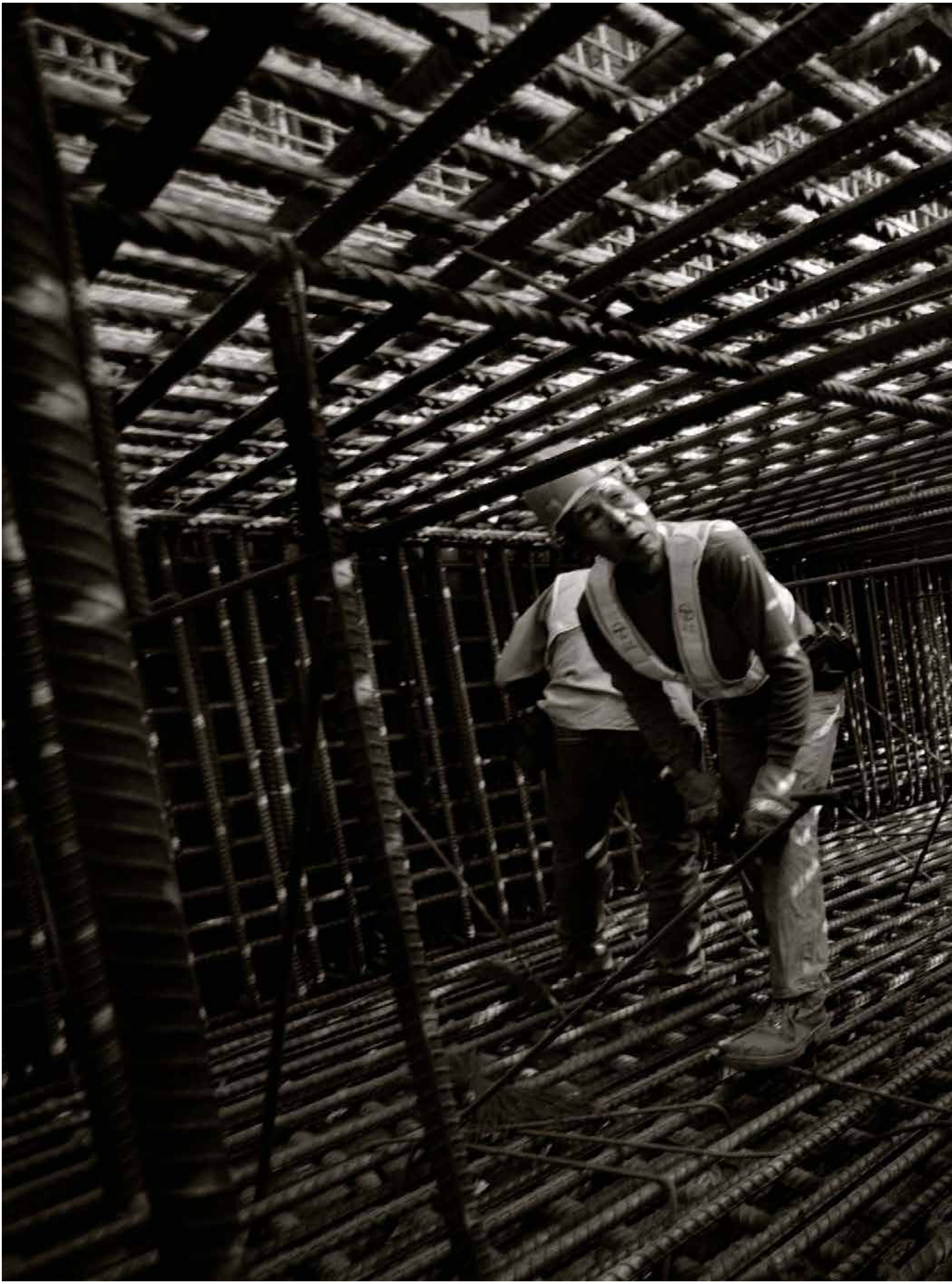
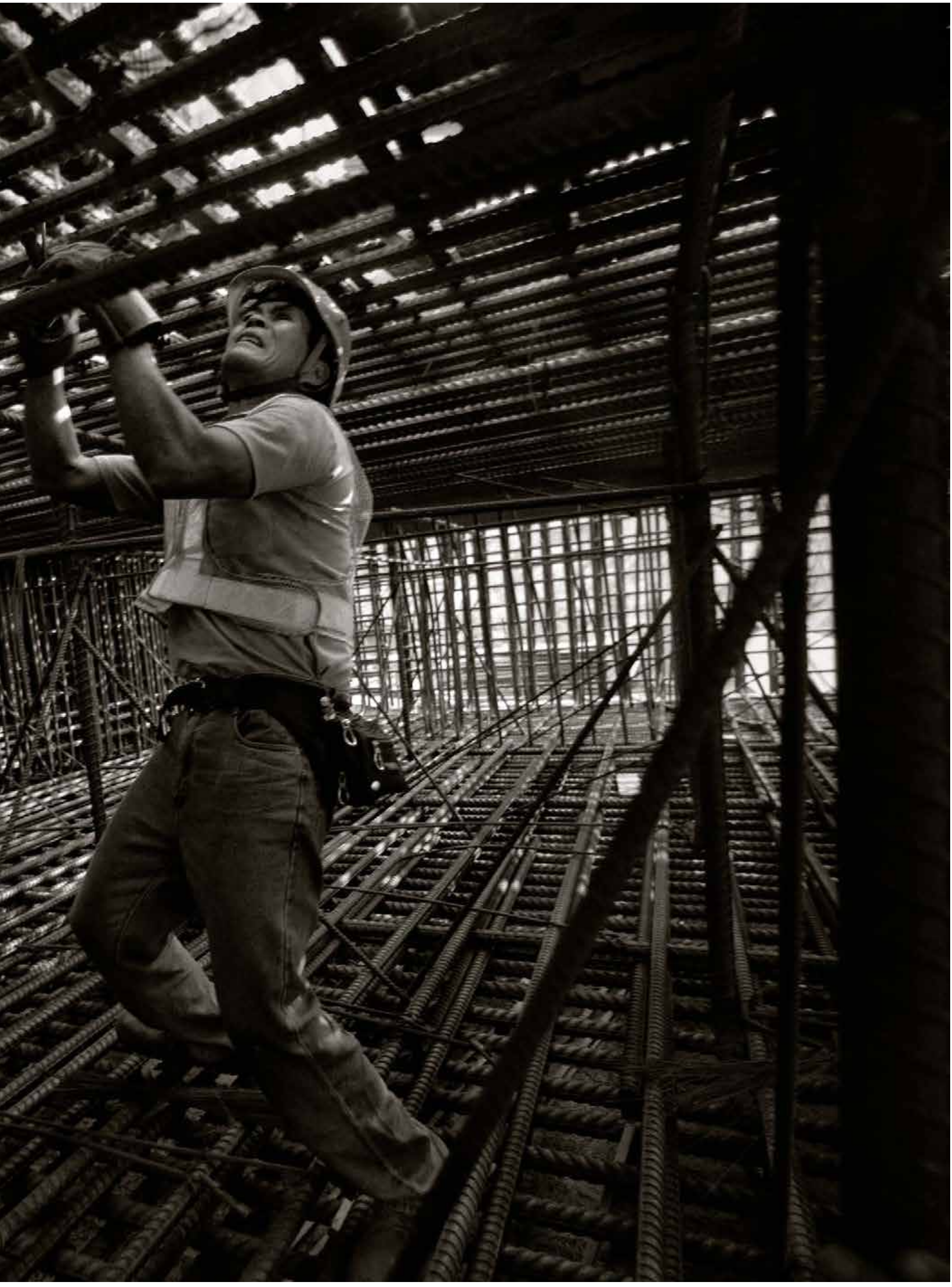


“There is a pressing need for the government bureaus to join together with LegCo and the CE’s office,” said Managing Director, Chu Tat Chi from Hip Hing. “Not only does it foster better communication but it also provides modern day offices to Hong Kong civil servants to serve the public.”

A sea of steel scaffolding (previous) greeted Design Manager Simon Lee every day as he navigated the site. It was remarkable, he recalled.

Pumping cement is never an easy task as workers prepare the vast network of pipes in preparation of another pour.





High Block

RISING TO THE OCCASION

Said to resemble the Chinese character "seven", the Central Government Offices will be home to the Chief Secretary for Administration's Office, the Financial Secretary's Office and offices of all the Principal Officials of bureaus. With the largest area and highest number of staff to accommodate, the CGO is divided into three sections: the East Wing, the West Wing and the Open Door – also known as the 24-storey-tall bridge connecting the two buildings. "What many people do not realise is that the former Central Government Offices in Central was a cramped, inefficient and technologically difficult working environment," said RDL Director William Tam who managed the use and design while liaising with the client. "What RDL did was to create an efficient workplace. It is not grand, but it is an efficent work environment, which is essential in this day and age."

The sequence of work for the CGO followed seven critical paths including the foundation and basement, concrete structure, mega truss design, installation and assembly, mechanical and engineering works, co-ordinating the curtain wall detail and interior finishes. "The challenge of the construction of the CGO was that each floor was not uniform," said joint venture Project Manager for the Central Government Offices, T.Y. Chung who headed the team. "The uses and loads of each floor are different as the uses and needs for each bureau are different. So the system has mechanisms to alter and accommodate the structural elements." Compared with the multitude of high-rises dotting the Hong Kong landscape, the various government departments have diverse needs and the structure of the building accommodates the requirements of all employees.

"With the design and build phase of most projects, the design usually determined when construction of the building would commence. The overlap in time between these two phases was very close and intense for the Tamar Development Project, and sometimes when we were ready to construct, the finalised design was not ready. This was because there needed to be a clear vision of how the variation of the structure would change the programme and costs," Chung said. Working together with Meinhardt engineers and RDL, the Gammon-Hip Hing Joint Venture created a system that was modified with mechanisms to accommodate the structural diversity of each floor. Throughout the site, the G-HHJV used a sustainable method of system formwork. For example, steel moulds replaced the traditional labour-intensive and environmentally unattractive timber formwork. This reduced the amount of wastage on site – while ensuring quality workmanship. This method of system formwork was also safer for the 3,000-plus workers at the CGO as the welding, building and quality control of the formwork had been done off-site.

Table forms, external large wall formwork, column moulds, internal aluminium handsets are just a few examples of the systems that were employed to promote quality, safety and sustainability on site. "In the early days, we were spending much of our time with Meinhardt and the joint venture Design Manager, Simon Lee, to create variables and agree to the design," said Chung. An architect by profession, Lee and his design team worked to supervise the design.

"This project was about the joint venture taking a lead and working together to supervise the design," said Lee. "We had to manage the expectations of over 20 international and local design consultants, our own contractors, subcontractors and, of course, the Architectural Services Department's architectural advisers and the Chief Secretary's Office as they were our ultimate client. Every day, we were meeting to garner approval, work through the variables and, in the end, construct an iconic building. The magnitude of this project is immense and the length of review can last up to six months with the layers of approval needed. The whole time, we are consciously careful about taxpayers' money when it reflects the operational requirements. With the entire process, there is a sense of give and take."

The Mega Truss, which was re-assembled on the podium and hydraulically raised into position in two separate lifts in the spring of 2011.

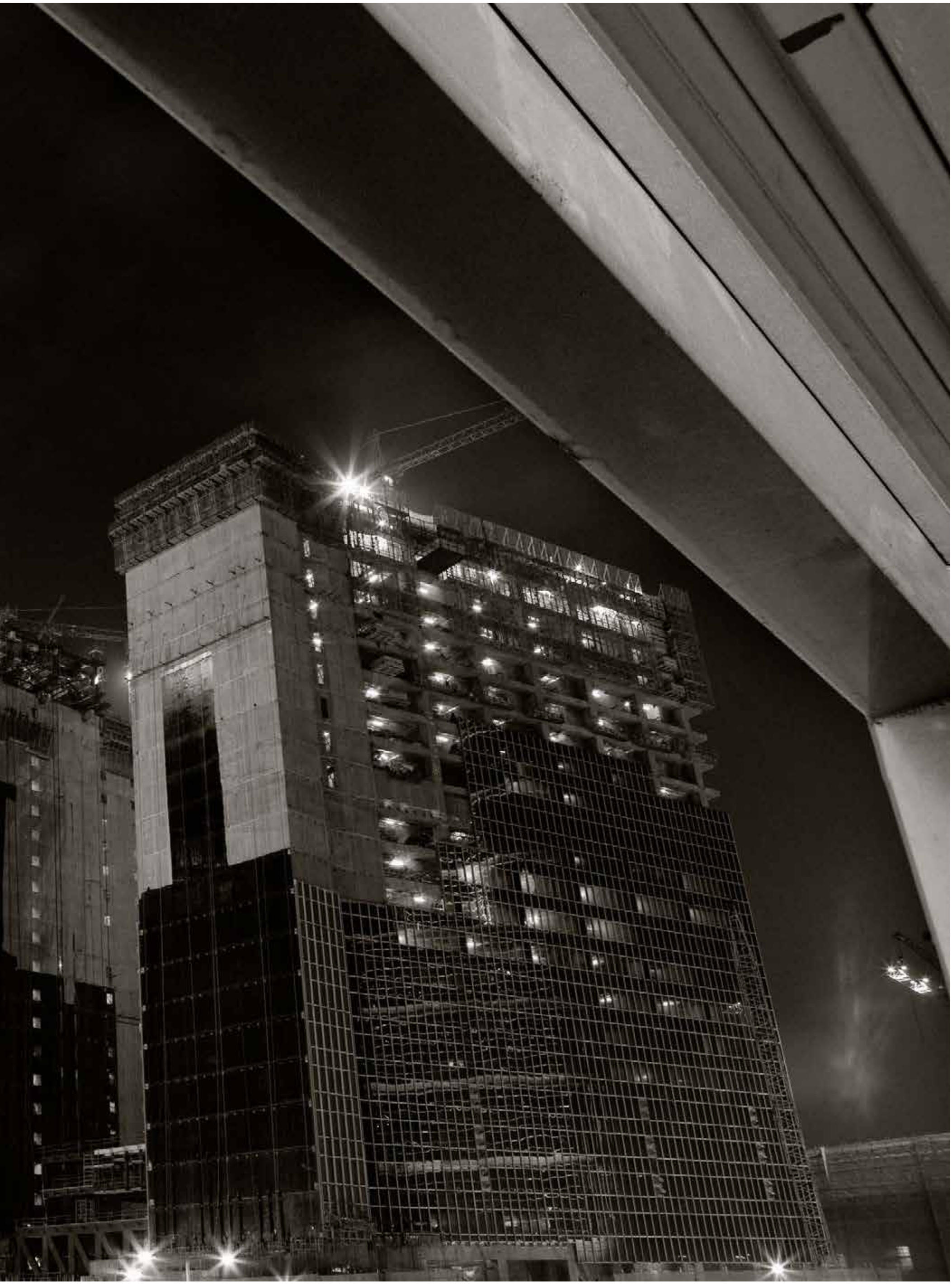
For the front-line workers, the biggest challenge was the non-systematic construction of the Central Government Offices, said Meinhardt Director-Structural, Adam Choy. "Each and every step was unique and discussed in minute detail," said Choy. "We had to calculate that the loading would be different for each floor. This didn't give us too much trouble because we used pre-stressed concrete and reinforced concrete with a precamber technique. As well, the West Wing has a bit of a 'twist'. This meant we could not transfer the loading of the Mega Truss solely onto it. So we used a portal-frame concept to transfer the force to be shared between the two buildings. Because the alignment of the buildings were not parallel, the torque was much more challenging on the East Wing. In the end, we had done something quite amazing."

The urban air ventilation challenge was solved through the design of the Open Door. Working with the Rowan Williams Davies and Irwin wind consultants from Canada, who had a topographical model of Hong Kong Island in the office, the joint venture tested the best scheme according to the air ventilation assessment. More than just keeping the programme on target, the CGO team also had to navigate through the compact 4.2 hectare site. Often the geographical overlap between the different buildings and construction areas was congested: materials moved on and off the site at record speed, bar bending had been methodical and efficient, basement works encroached onto the partition separating the lower floors and the CGO and half a dozen cranes whirled around in semi-circles constructing the various buildings. The approval process and variations to the pattern of the work programme, including costs, were under daily, weekly and monthly evaluations. While the structure of the building was crucial, the work did not stop there. The all-important mechanical and engineering component was essential, as was the work on the wiring, the partitions, the curtain wall, the interiors – even the furniture was a component in the design and build contract.

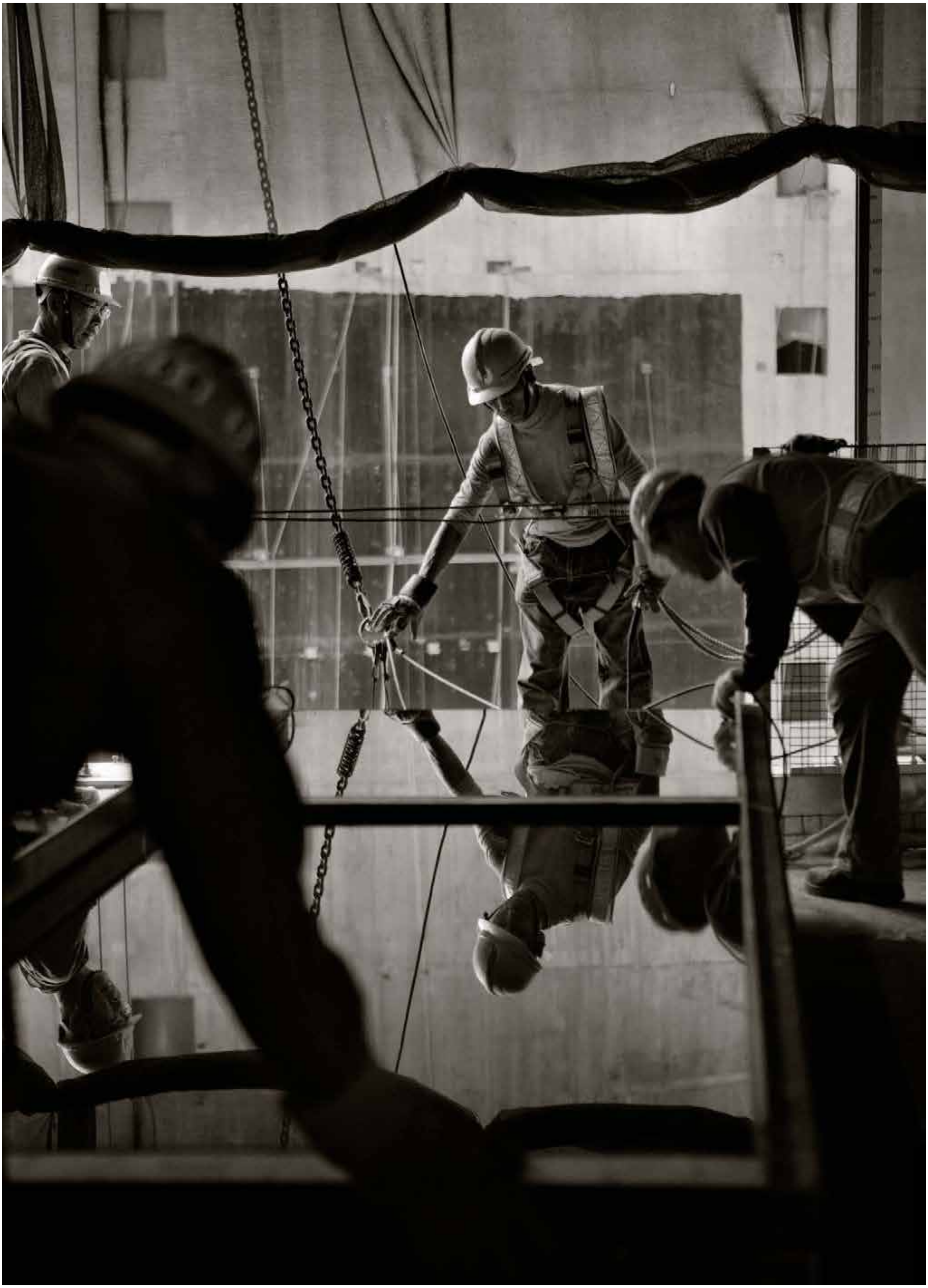
During construction projects, the client usually has contact with dozens of consultants who manage the main contractor. The calibre, size and complexity of the design and build for the Tamar Development Project was a change in the mindset. In this case the hierarchy was reversed, with the main contractor in charge and the employer of the consultants, which took people some time to become accustomed to. On-site, workers from front-line carpenters to foremen found the switch difficult. "It was not easy going from working decades under one methodology to suddenly switching to another," said joint venture Foreman Brother Hung who looked after a team of 200. "I have to be honest. I was only a small potato, and an old one at that! Change was inevitable and it seems that design and build is here to stay."

William Tam, of RDL, agreed with the change. "This had not been an ordinary design and build as there was the fact that the government was interested in pursuing this particular design," said Tam. "We are very proud to be part of this building. Seldom in Hong Kong do civic buildings interact with end users. At the end of the day, the roles were changing. I had a part to play with the architects and the contractors. This gave us a different feeling and projects a positive image for Hong Kong." The outcome of all the hard work is a state-of-the-art well-designed building with modern fittings and furnishings that is appropriate for the staff of any international government, especially for Asia's world city.

Meandering 24-storeys
above the podium, a frontline worker prepares the joint for the impending Mega Truss lift.



The installation of the CGO curtain wall is a precise and measured process.




Gammon
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Steel in Motion

Veteran frontline consultant, Lie Hua-ming, calmly strolls along the rooftop of the Mega Truss, 26 floors above the Tamar site quietly supervising the specialist workmen, speaking into the garbled walkie-talkie and doling out advice to senior site agents. Word about the site: there isn't much that 72-year-old Brother Ming hasn't seen. As the mentor to Project Manager Percy Chan and rising star, Michael Leung, Project Manager (Engineering) – Ming forged relationships with the workers and helped organise the sequencing of construction.

"I've been with Gammon since 1975 and I guess I have the experience in the field which is of vital importance," said Ming who navigates his way across the newly raised Mega Truss with the ease of an acrobat. "With Tamar, there are design-issue challenges. The design and build formula has been tougher than anticipated. On the other hand, we have a very qualified team to handle such things. Michael is a very smart man and this Mega Truss is a tribute to him and the team who has worked hard. Look at the view. It is stunning isn't it?"

Leung and his team of experts are no strangers to designing, constructing and lifting heavy objects. After their successful engineering marvel of a steel truss outrigger at One Island East – the same team moved on to the Tamar Development Project to plan and implement the iconic Mega Truss. "When we were bidding, we chose 'heavy lifting' as the construction method of the bridge or Mega Truss between the two buildings," explained Leung, referring to the two towers comprising the Central Government Offices. "This was considered to be a quick and simple way, meaning it was an all-in-one method, with the drawback being that it would need a detailed logistics and design method." By 2009, there were detailed considerations for the Mega Truss, for this was the first time the team had co-ordinated two separate lifts of this size. Lambeth, Gammon's in-house design engineers, provided technical advice and consultancy for the design and selection of equipment use for the two heavy lifts. "Design wise, Lambeth received numerous proposals for the lift, which required 500 tonnes of temporary steel work per lift," Ted Lawton, Engineering Development Manager, Lambeth. "By redesigning the method and design of the lift, we ended up making both lifts safer as well as eliminated the need to use 1,000 tonnes of temporary steel works. This saved the joint venture both money and time."

The design and specifications of the mega truss had to be presented in detail at every stage of the construction to their partners, the Architectural Services Department, before drawings could be sent to the fabrication plant, Pristine, in Dongguan. In fabrication and erection, C.F. Chan, Gammon's Senior Project Manager and his team of six worked together to modify design-and-shop drawings into detailed fabrication drawings. With the approval of the ArchSD, the two-part Mega Truss began taking shape in the workshop and soon outgrew the shed and expanded into the yard. There, the trusses were assembled, welded together, blast cleaned and then painted. Quality testing of the structure commenced with a visual inspection, magnetic particle inspection and ultrasonic test monitoring. "The biggest challenge was measuring the tolerance of the length during different stages," said Chan. "It measures 78 metres long and 8.4 metres wide – there was plenty of work we needed to put in to keep the truss straight and steady in the fabrication yard, on the Tamar podium and then up in the sky."

For the heavy lifting, prefabrication of the two-part 1,400 and 1,700 tonne trusses took place at Pristine and on the podium of the Central Government Offices, where it was safe and easy to work. While prefabrication commenced on the podium level, this also gave the joint venture time to simultaniously build the towers. "Overall, we shorted the construction programme, reducing the amount and noise and inconvenience to the public," said Lawton. "This high profile project was specialised and unique as the lifts were quite big. The standards were high and safety was something we had to pay special attention to. We are proud to say that the lifts went according to plan."

Inside one of the numerous sheds at Pristine, Dongguan (China) where the prefabricated Mega Truss was detail designed, fabricated, assembled, checked and then disassembled for transport.

It is estimated that it took nearly three months to complete one truss with workers putting in two shifts of 17-hour days, seven days a week. "What we did here was take the initial design from the joint venture and then provide shop drawings or detailed designs for our workers," said Project Engineer, Wang Guo Don. "This is something we excel at and it was a privilege to be part of this huge project." From there, the massive truss was chopped into pieces to be loaded onto a truck and transported down to the Gammon Technology Park in Tseung Kwan O. From that site, the pieces of Mega Truss were moved onto a barge and floated through Hong Kong harbour. The foreman of a five-man team from Luen Tong Logistics, Lo Tak-ming, was on-site to assess each piece of the Mega Truss piled up neatly on the docks of Gammon Technology Park.

"This was not a typical job because the cargo was not of a typical size," said Lo. "There was no need to stack as the pieces of the truss will rest on the floor, but safety was paramount!" The transfer from the dock to the barge was a slow and meticulous exchange where rubber and wooden slats were used to protect the precious cargo. With attention to detail and a systematic approach, Lo gestured hand signals to Captain Yeung who fired up the loud crane machine. "I've been piloting barges for more than 10 years and we are experienced in moving difficult objects," said Yeung. "Brother Ming and I have worked together for many years. We slowly loaded the cargo on, slotting in everything as per the instructions – like Lego pieces!" The barge made its way across Hong Kong harbour and past the Tamar site to stop in Kennedy Town early one evening, with the cargo, ready to load onto a truck for its night-time delivery to the site. This process was repeated on a set schedule until all pieces were safely delivered to the Tamar site.

At the site, the pieces of the truss were unloaded onto the podium where welders caste them together to create two floors and a roof. "When the Mega Truss finally arrived on-site, the fabrication of the truss blocked a large area on an already cramped site," said Michael Leung, Project Manager (Engineering). "This created pressure on us to find logistical solutions to facilitate construction. By June 2010, there was a need to complete as much as possible because our milestone date had already passed. There were many pressures with the two-storey structure and to save time, we were contemplating combining together cladding works, which would be good for the programme. It's also a safer method of construction, as the cladding would be done on the ground instead of the 'air' so the idea was taken on board." But Leung and his team could not entertain all ideas and instead relied on the number-crunching programme to provide targets for safe loading capacity.

"There was a constraint with design as we did not want to overdesign. We had to consider the loading capacity and take in the permanent structure which was not variable. Deflection was also considered at every stage. If there is too much deflection, it will add stress to the structure. With cladding, we needed to consider deflection again. It is a soft material and if there was too much deflection, the cladding would collapse and fall onto the podium. We fabricated a second floor of the Mega Truss to connect onto the existing structure and also commenced with detailed checking of the podium. It was important to consistently survey and calculate the Mega Truss on the podium before the lift. With Mega Truss heavy lifting, the two lifts at Tamar were not the heaviest but deemed complicated because we had lots of joints to connect. This amounted to more than 20 joints within tolerance to meet in the air – with a gap of 50mm. The idea is the estimations in our design are so accurate that when lifted, the truss will connect in the air."

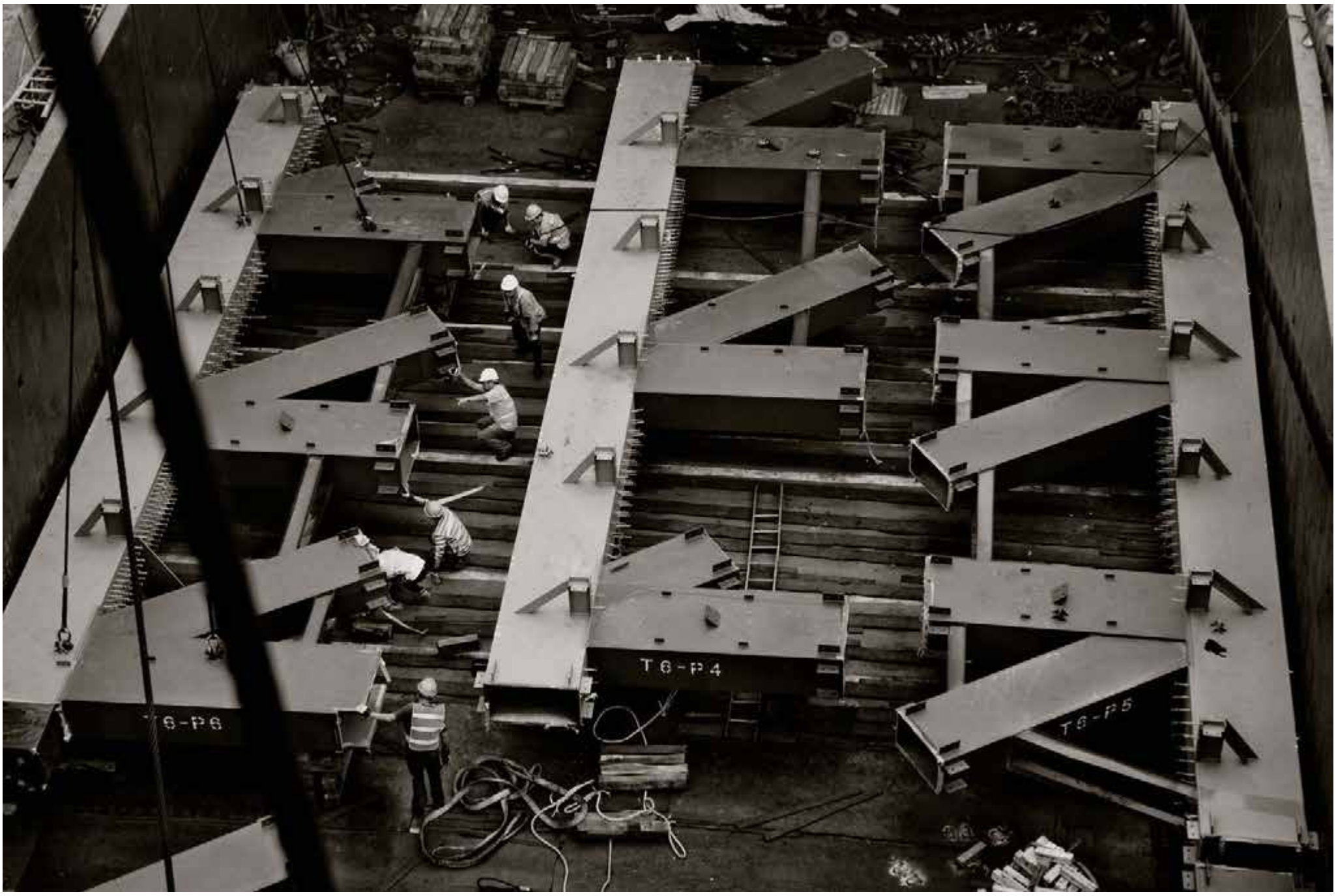
To analyse the load, structure and deflection, the joint venture worked together with structural consultant Meinhardt on the design of the mega truss. Meinhardt Resident Engineer, Philip Shek, saw the lift as a rare and exciting feat of engineering. "Hydraulic lifting is not typically used in Hong Kong and considering what a large piece it was, we wouldn't see this type of work often," said Shek. "The joint venture and their consultants are leaders in their field, the best in their trade."

Some assembly required.
Onsite workers weld together each Mega Truss in the Pristine yard, while engineers inspect the quality of the material and workmanship.


Gammon 金门建筑结构

"Brother Ming and I have worked together for many years. We slowly loaded the cargo on, slotting in everything as per the instructions – like Lego pieces!" said Captain Yeung.

Lying low. Pieces of the Mega Truss make their way across the Fragrant Harbour on Captain Yeung's barge.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Two Lifts - Two Days

The two lifts were completed on separate days, weeks apart, to allow for logistics to be re-set for the second time around. Together with Michael Leung, consultant VSL Special Project Senior Engineer, Y.W. Yung was the man in charge of the 25-strong heavy lifting team. "Each and every lift is unique," said Yung, who outlined that the first lift garnered 16 strands in each jack, while the second had 20. "With different loads on each point, it is important to adjust speed for every jack. It takes high concentration to focus on different points of tolerance, pressure and height – which all need to be adjusted. While the system for the two lifts is more or less the same – we take our time because safety is the number one priority."

The first lift took time. With the programme planned down to the minute, the lift of the first Mega Truss was halted only metres from the podium. Firstly, a pump malfunctioned and needed to be switched out and replaced. The second delay was more time consuming and rare. The team encountered a flower. "A flower is when a strand inside the jack unravels," said Yung. "It is a rare thing, but we faced it and relied on experience to make the right decision to resolve it." The flowered strand was buried on the outside of the bundle of strands inside one of the jacks. There was a discussion about the most effective and safest way to proceed. The decision: to open the body, snip out the damaged strand and pull out the cable both from the top and the bottom. This took time.

Michael Leung, the point man on-site, felt extreme pressure on the day. "I remember there were lots of people standing around observing us," said Leung. "I was very nervous that day. Onlookers were not part of my focus. Instead, I kept count to determine if the crew was on schedule and also anticipated any unforeseen activities. We faced a rare challenge, which was checked very quickly and solved. While unexpected, we had designed buffers into the programme to face the unexpected. In the end, the delay was comparable to our expectations and VSL quickly fixed it. Luckily, our design estimation was accurate. The truss ended up within our expectations." After the lift reached its maximum height, a surveyor from a distance used a digital theodolite and automatic level to judge each point regarding height. This information was sent to the control room where a formula was created to calibrate all 16 to 20 strands to find an agreeable solution.

After the truss was lifted 24 storeys into the air, the joints were carefully welded together. This took about three weeks. Later, the stress of the cable tendons was released. "From an engineering point of view – the critical point was when the load was transferred from the cable onto the building," said Meinhardt Resident Engineer, Philip Shek. "If it did not work, thousands of tonnage of steel would have crashed onto the second floor podium – but of course, we did the calculations and safety had been the number one goal!" According to experts, this was a relatively simple process of cutting 192 cables from the southern mega truss which was done within one working day. With the detailed construction plan, the second mega truss lift went without a hitch as the calibration came up close, within a few millimetres.

"The second time was such a good lift, so good in fact that I felt sick!" said Leung, as the team members congratulated each other. "Teamwork is very important – it is the core of a good project. Clearly, we communicated with our people: VSL, Meinhardt engineering consultant, URS/Scott Wilson, an independent engineering checker, and riggers and workers. In total, we had to liaise with 120 people, so we needed to plan carefully and communicate with workers at every step of the construction. With Tamar, I felt that the co-ordination and co-operation was excellent. It was a big challenge because of design issues. We suffered lots of delays and pressure. But we were focused on the fact that we needed to complete the job on time, so we couldn't say no. Our drive and momentum kept up. With problems or difficulty, most people would give up. But we never gave up! Walking around the site after completion, I felt part of the larger Tamar team and proud because part of the Central Government Offices was designed by me. This was a very strong and moving feeling. The pride and teamwork motivates my construction career, giving me momentum to complete iconic projects."

On February 11, 2010, the first Mega Truss successfully inched its way up 24 storeys after circumventing both a pump malfunction and an unravelled strand.


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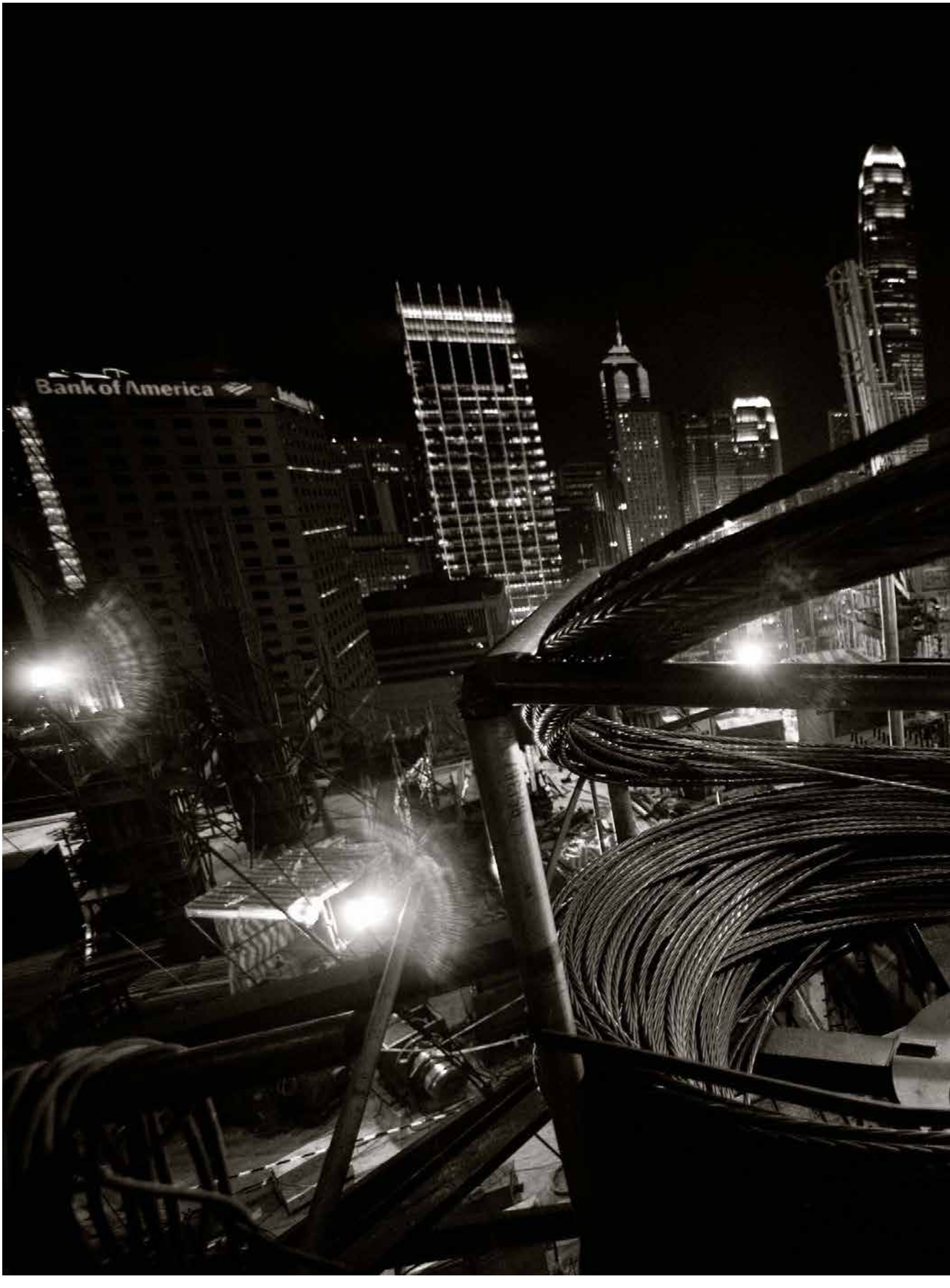
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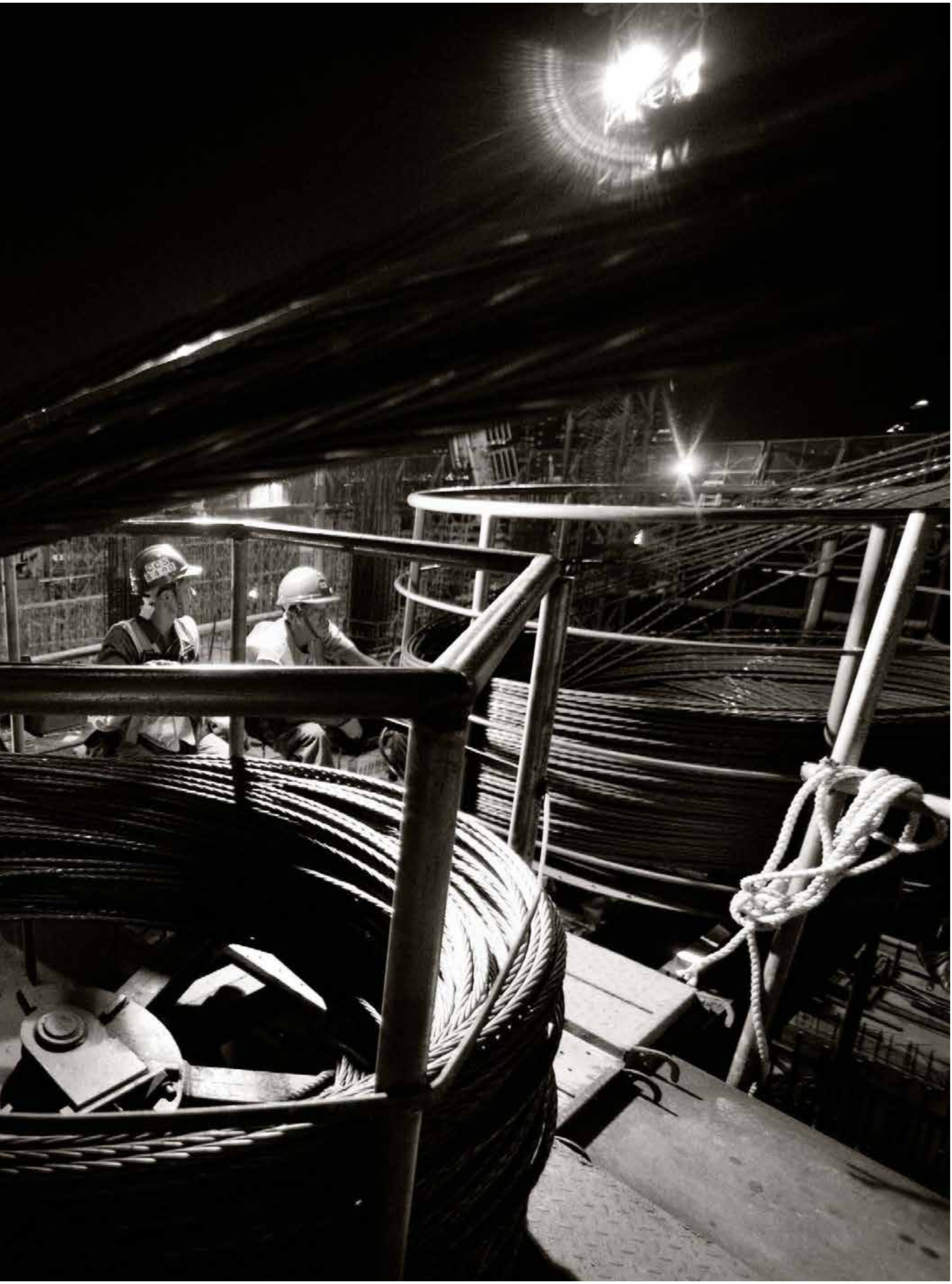

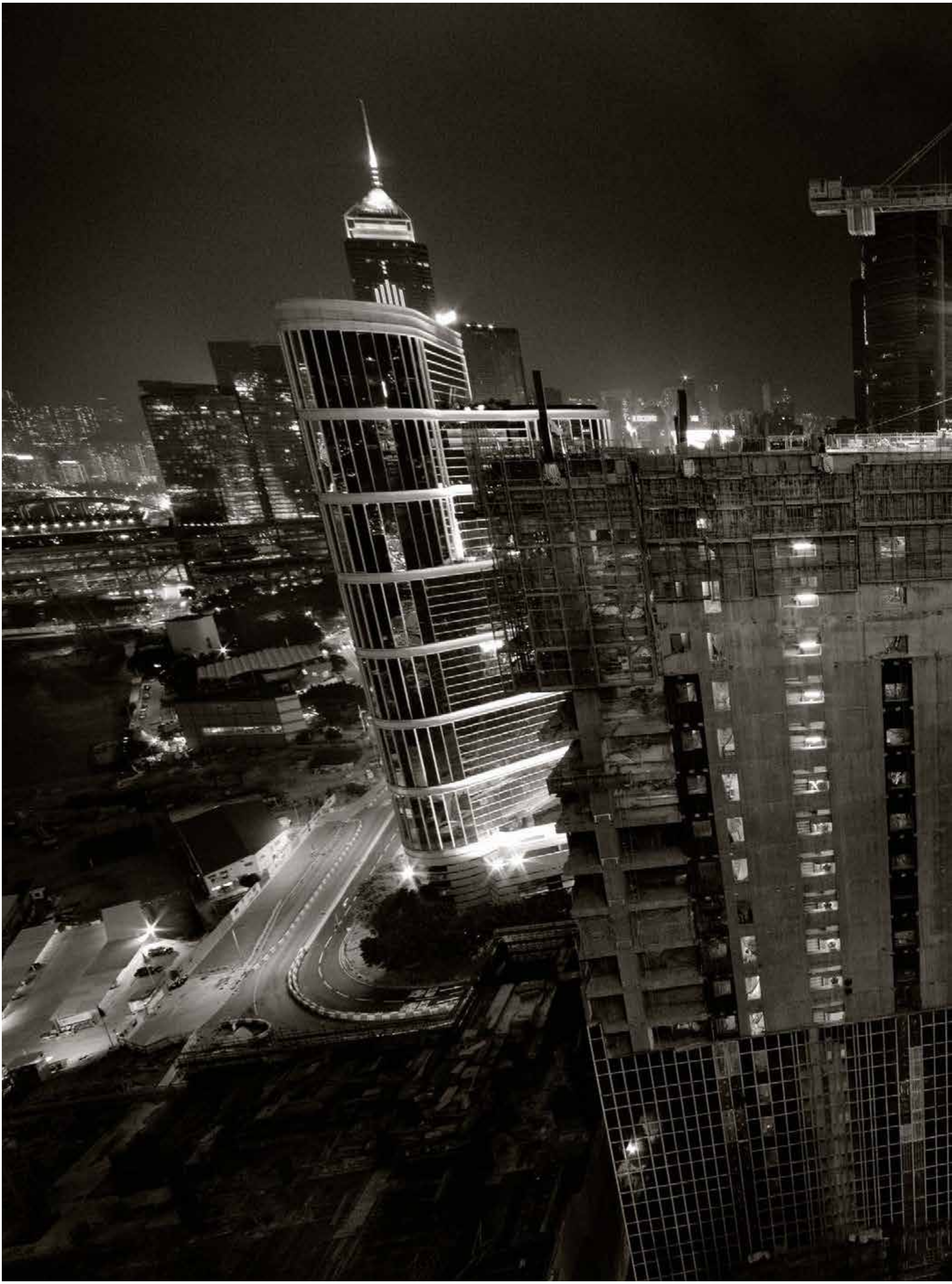


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Circle of Dialogue

LEGISLATIVE COUNCIL COMPLEX

The 31,400 square metre Legislative Council Complex consists of two integrated buildings which brings the public closer to the legislature through expression of views at meetings and interface with its members at the various facilities for the public. The most prominent feature of the complex is the Chamber, which is also refered to as the Plenary Hall (P-Hall), with its glass "light funnel" at the lofty position overlooking the harbour surrounded by greenery. Connected to this iconic Chamber is the 11-storey High Block which provides offices for 60 lawmakers (with the capacity to house 70 by October 2012), 400 of their staff members, some 500 secretariat staff and up to 80 full-time reporters. Together, the complex is home to a circle of dialogue, a place where highly co-ordinated work between legislators, the government and the public takes place. The functional design did not happen overnight – it involved careful planning and in-depth research undertaken by LegCo and its Secretariat working together with RDL. Heading up the project team panel was the then Secretary General, Pauline Ng who recalled a journey through Europe's parliamentary halls, which taught members the challenges of functionality verses aesthetics.

"We conducted duty visits to five countries with famous parliamentary buildings with LegCo's then President, Rita Fan," said Ng. "There, we started to understand the design difficulties facing other buildings. For example, in the EU Parliament building, they needed to resolve the distance between the plenary hall and members' offices by turning the staff offices next to the plenary hall into members' offices. This was important in the case of parliamentary buildings as members needed to get back to the Plenary Hall to cast their votes within a specified time. In other places, space, signage and use had caused tremendous pressure on members and staff. I remember a lobby elevator hallway, which was so wide that everyone had to dash across the expanse in order to catch an elevator arriving. As well, once you stepped out of the elevator, the circular design of the corridor made it so difficult for everyone to move in the right direction. These seem to be simple things, but in a legislature, every minute counts. The implications could be potentially very serious."

After the visits, communication was at the forefront of their minds as the project team soon learnt to be specific about "wishes" and created four working groups to facilitate the flow of information. "I headed up the project team where members, members' offices, the secretariat, and press were involved right from the start. For each division, there was a working group which became the lynch pin for the project team. The goal was for the architects to understand what we wanted, which would make things easier. If they understood our needs and the relative relationships between the various facilities, then the details would be designed in. We were specific and detailed to the point that we specified the numbers and locations of electrical sockets and IT nodes for each room. We also specified the distance, by way of minutes of walking at normal pace, between rooms, lobby halls and dining rooms. Because we were so specific, things were very smooth."

The Light Funnel was suspended four storeys from the ground while 34 steel frames were clad in timber to bring natural light into the Plenary Hall.


CHIM KEE

“I am no hero,” said Crane Operator, Lam Kwun-wah. “We are used to hard work and it’s our pride to build Hong Kong. Often, when others are having lunch, crane operators are working through – our lunch box attached to a line to be lifted up to us! The most important thing is that we are responsible and take care of our teammates.”

The LegCo Complex comprises two buildings: one a reinforced concrete structure for the office building and the second a steel elliptical structure for the Chamber, also called the Plenary Hall (P-Hall). In comparison to the 11-storey LegCo High Block, a different type of construction method was used on the iconic Chamber: steel work which can be found dotting the skyline of Hong Kong. Also known as the "Bird Cage", it is built on a first floor transfer plate structure and the shape of the hall is unique: elliptical. Vertical and horizontal tolerance was vital with survey teams working overtime. With on-site welding, the "inverted" funnel – the centrepiece of the structure - used six layers of ring beams to strengthen and connect the 16 steel columns. Attaching the steel P-Hall to the reinforced concrete structure offsets the load. While the c-truss light funnel skylight – which is above the inverted funnel - weighs more than 20 tonnes, G-HHJV had to use more than 1,300 tonnes of steel for the hall alone.

"The Legislative Council Complex is a major element of the project highly visible by the public," said RDL Director William Tam. "This architectural statement, which is environmentally efficient, brings a distinct and psychological identity to the site. The circle formation is a most suitable expression for the legislature, the government and the public to work together side by side." Regarding the changes, an additional floor to the LegCo High Block and the additional floor in the library was part and parcel of the construction process. "When the brief for the design and build tender commenced, each department detailed their staff numbers and roles, and was allowed a certain area. But this was done nearly eight years ago and staff numbers had increased since then. This was natural. Currently, there are 60 members, but we have designed 'extensions' into the hall and LegCo High Block to accommodate up to 120 members and their staff. Clearly, the additional floor is an extension earlier than anticipated, but with this addition there is less waste generated and less cost because the project will absorb some of the cost."

The design of the LegCo Complex facade is dignified and stately. The facade expresses the identity of the different components of the building creating character and a stately presence. The LegCo Low Block consists of the "Bird Cage" Chamber which is fitted out in aluminium panels and enclosed with a glass wall and a laminated glass skylight. In the foyer area, a glass façade system is paired together with an inner glass wall which forms the enclosure. The elegant LegCo High Block has a north-south orientation, and high-performance tinted insulated glass and shaded fins work to reflect the solar heat generated from the orientation. The façade and the Legislative Council Complex work together to compliment the East Wing of the Central Government Offices and contribute to the character of the project as a whole. The attachment of the Low Block, which houses the Chamber and other conference facilities, to the High Block, which houses the offices, has provided an opportunity for the provision of a roof garden on top of the Low Block with access from the multi-purpose function rooms in the High Block. Overlooking the garden view with the Open Door on one side and the magnificent harbourview on the other, the roof garden provides a most relaxing sitting-out area for members and staff as well as their guests.

To simplify the steel structure, the project team separated the light funnel into six layers: the top of the funnel, light rings, cladding, glass, timber and wall panels.

Cooling & Electrifying

MECHANICAL AND ENGINEERING

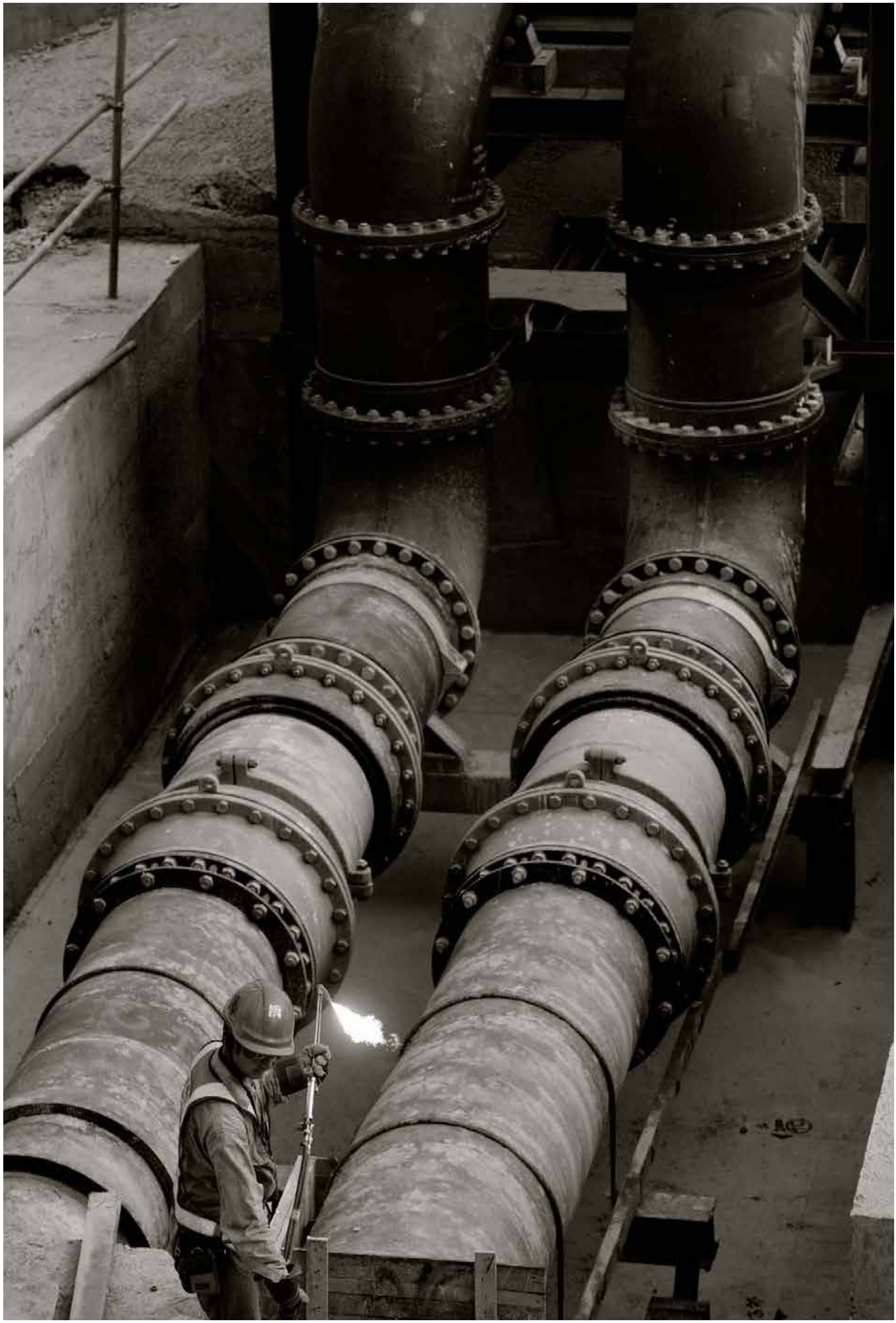
The Balfour Beatty Shinryo and Young's joint venture (BSYJV) boasts a team of more than 150 engineers who managed the testing, commissioning, and quality control and safety for the Central Government Offices. Walking through the depths of the site, Tamar Chief Safety Manager Paul Fu was often found chatting with front-line workers who numbered over 3,000 people during the peak months. The objective: operation-driven safety. "My area comprised the basement, including the chiller plant room, air conditioning, fire services and plant rooms," said Fu in his trademark "red" safety hard hat. "It is not an easy job but something that is important in this trade. What we do is communicate, facilitate and at times, engage in conversations with workers. Construction work in the past was tough, dirty and dangerous – but today, the industry has changed for the better in many ways such as providing workers' rest areas, safer methods of construction and, of course, training."

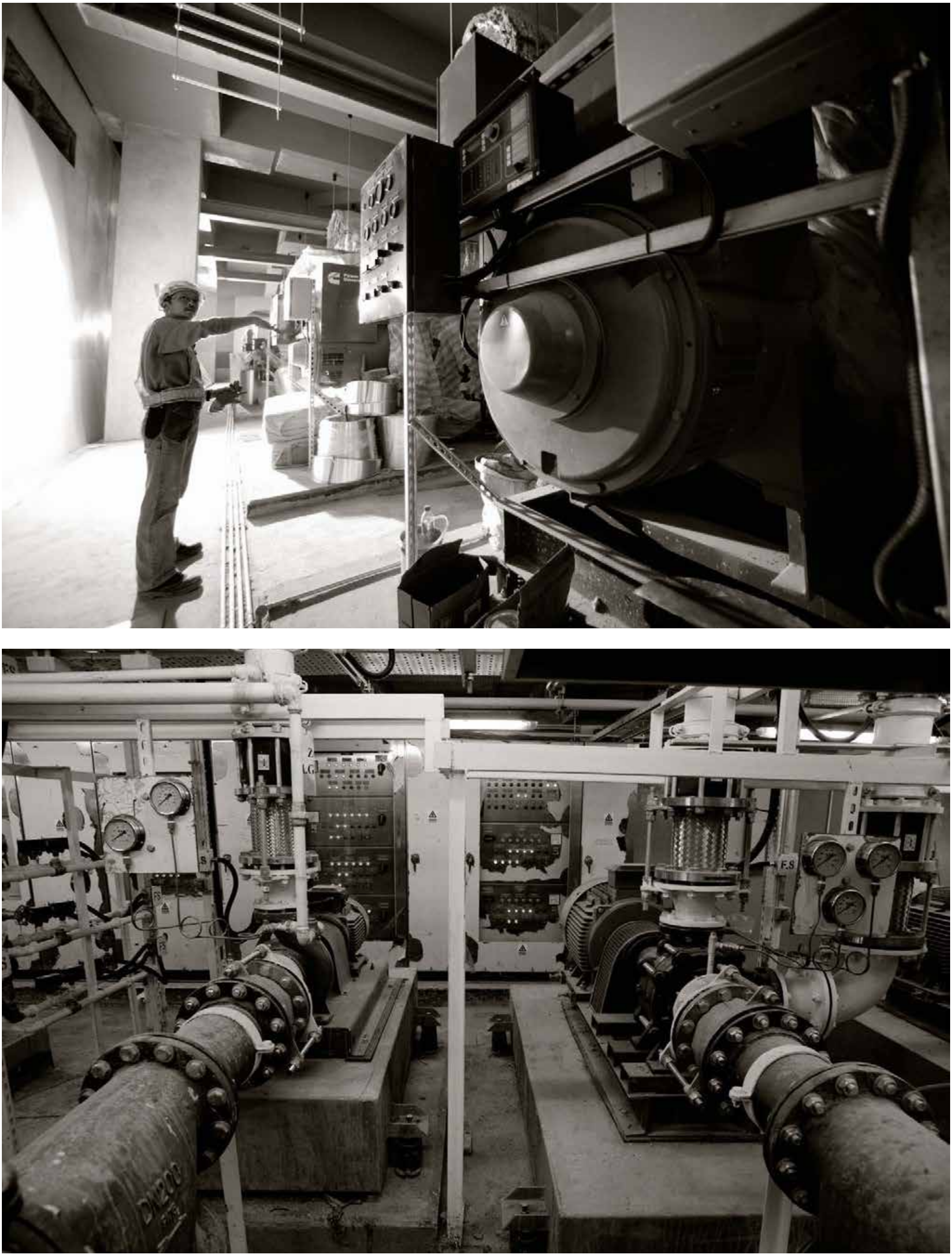
As part of the Gammon-Hip Hing Joint Venture, the highest possible safety standard was adopted, which as noted earlier became the Tamar standard – "One team, one vision". "There were more than 50,000 steps in the M&E process," said BSYJV Project Director Andrew Yim who had his team visualise all the components to make the drawings work out in real life. BSYJV's mechanical and electrical (M&E) role was to plan the build-ability, sequence of work and logistics. "Our scope of work also included air conditioning, electrical, fire services, security and testing and commissioning. Spatial co-ordination was primary as we used the design drawings to create individual services drawings. From there, we would combine builder work drawings and combined concealed conduit drawings. You can imagine the amount of work involved. For the air conditioning alone, we facilitated installation of the seawater plant, central chiller plant, computer room air conditioner for the data centre through to duct work, branch duct, air grills, silencers, chilled water pipes, vibration spring and temperature sensors."

The innovative seawater cooling system was one of the many green features of the Tamar design, which snakes through Central Reclamation Phase III and out into the harbour for both seawater intake and discharge. In the depths of the buildings, the basement chiller plant room is home to elephantine machines, six large variable speed chillers and three smaller constant speed chillers. The seawater cooling system has six pipes, three intake pipes which connect the pump house to the basement chiller plant room and a further three discharge pipes which run from the chiller plant room out into the harbour outfall area. "Many buildings in Hong Kong have a plant in the basement with the cooling towers on the roof. At Tamar, because we are using seawater, everything is in the basement," said Project Manager Percy Chan who emphasised that 100 per cent of the cooling energy for the site would come from the plant.

"When designing the seawater plant and central chiller plant, it is important to take into consideration the site-wide 'load profile' and not overbuild the plant," said M&E design consultant, JRP Director, Joseph Leung. "The seawater cooling plant is very energy-efficient as a heat rejection media and also has built in thermal recovery. As there are a diverse set of users who have different usage patterns and operating hours, we can find the most economical profile to bring down both running and life cycle costs. For maintenance, as everything is in one room, this streamlines everything." Together with the plant room, the basement is home to the telecommunication rooms, rail water recycling tank room, electrical rooms, fire services tanks and the elevator pit with buffer. To make the workplace safer, the joint venture employed a "simplified system" of work including prefabrication and modularization of many M&E components.

Two of the six seawater intake and discharge pipes for the efficient seawater cooling system connect to the basement chiller plant room which provides air conditioning for the Tamar complex.





"Typically, duct work which is built on-site takes up lots of space and time, while the quality is not consistent," said Andrew Yim, Project Director with BSYJV. "What we did was provide and supply duct work, which was crafted in a factory. Other pre-assembled parts included the vitauic joint (a specialised joint coupling system), electrical panels, air handling units and ductile pipes. The modularisation of the vertical riser takes it a step further because we prefabricated the four 400mm to 450mm pipes to be assembled off-site with floor covers. Then the whole piece, which measures about six metres in length, was delivered and installed by crane on site every time the Central Government Offices would jump three floors. These innovations are about working together to develop new techniques, which result in quality and great construction design methodology."

Overseeing the project from inception to completion, Gammon Executive Director Gilbert Tsang was in complete agreement. "We have to manage client expectations, first with aligning our own culture as the joint venture," said Tsang who could be found on site directing staff and mitigating challenges. "It is important for us to organise our behaviour, provide a clear objective and initiative so that we can technically fix things. Communication and strong leadership ensure that things will happen."

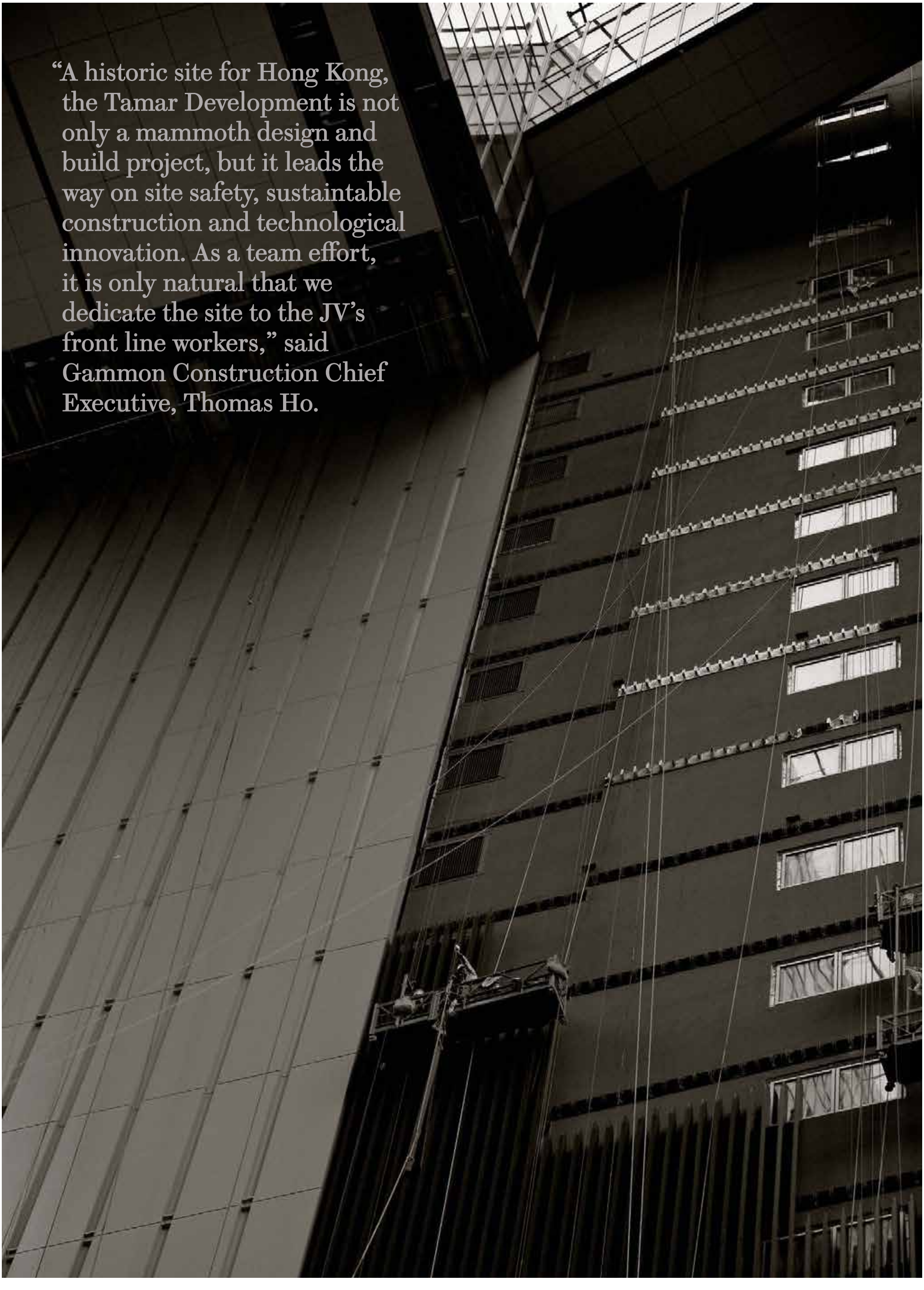
Working together with the joint venture, E&M design consultant, JRP Director, Joseph Leung recalls that the complexity of the project was the biggest challenge. "We are talking about numerous user groups who drive everything," said Leung. "The fire services inspections of the complex site in one go was one technical feat." This was when three separate buildings on the site were swept through in one single rolling fire services inspection. The co-ordination required was high as the site was estimated to be roughly five times the size of typical commercial Hong Kong developments. "The power energisation of the site with 30 power transformers in the last year was another technical feat. But it all feels good to see designs becoming a reality. With design and build, we need to co-ordinate very well with BSYJV. I would say we worked together with the joint venture like brothers and had a compatible culture," added Leung.

"For the Central Government Offices, we followed a client brief, which encompassed generic designs. In the end, we were able to accommodate the full user requirements of all 12 government bureaus after working and reworking the floor stacking and also planning ahead for flexible M&E infrastructure to cater for the eventuality of expansion. For the Chief Executive's Office, the approval process was quite smooth. As it is a relatively smaller building in the complex, there was a clear and concise brief and user requirements to guide execution of M&E design. For the LegCo Complex, there was seamless integration with Guida Moseley Brown Architects, the interior consultants for the Plenary Hall. Challenges included wiring up IT, telecoms and audio visual infrastructure of the chamber and also anticipating the future three expansions within the next 20 to 30 years. We had to make sure that the infrastructure including lifts, chilled water and transformer rooms would be pre-planned and ready.

"On the Green Carpet, we worked with ArchSD and the Leisure and Cultural Services Department, which were tasked with managing the carpet in terms of maintenance, water irrigation, lighting and energy requirements." The green features in the complex are innovative and include seawater cooling plant, chiller condenser heat recovery, condensate water recycling, free-cooling economy system, full motion-sensor controls, a computerised lighting control system, building management systems, task lighting, daylight sensor controls, occupancy sensor control lighting and space temperature control, regenerative power from lifts, service on demand escalators, infra-red sensor-controlled water taps, automatic refuse collecting systems, photovoltaic solar panels, PV lighting, light pipe, LED lights and solar hot-water system. "We are proud of these achievements," said Leung. "As one of the three named prime consultants on the Tamar Project, this project solidified the joint venture's commitment to the environment and, where possible, will reduce the carbon footprint of Tamar."

Inside Out

FITTING OUT



"A historic site for Hong Kong, the Tamar Development is not only a mammoth design and build project, but it leads the way on site safety, sustaintable construction and technological innovation. As a team effort, it is only natural that we dedicate the site to the JV's front line workers," said Gammon Construction Chief Executive, Thomas Ho.

On August 7, 2011, the mercury hit 35 degrees Celsius, which was the hottest day of the hottest month on record for Hong Kong since Observatory scientists began compiling data in 1884. It was during those sweltering weeks that work on the Tamar development project was ramping up to a series of impending handover dates. Starting in late June, and for weeks on end, Gammon Construction Ltd. Chief Executive, Thomas Ho and Hip Hing Construction Co. Ltd. Managing Director Chu Tat Chi could be found trooping up dusty stairwells, winding through dark basement corridors and crossing the tops of windy precipices of the Mega Truss together with Edward Yeung and Kevin Ng; 6pm every weeknight, 4pm on Saturdays. "I really admire people like Edward and Kevin," said joint venture design team member, Fanny Kwong. "Every day they worked a full day from 7am until 6pm. Then they would meet up with the big bosses and walk the site from 6pm to 9pm for daily inspections. It was very inspiring and they led by example, and showed us that we needed to endure, not fall back but continue on."

Today, touring through the three completed buildings, the contemporary and geometric design of each distinct Rocco Design Architects Limited (RDL) structure encompasses a common language of design, tied together by a sea of jade green grass. Inside, workers and visitors alike flow through the hallways in a Zen, a by-product of the soft materials chosen; they were practical but a far cry from the memories of structured and rigid commercial institutions. Inside the 4.2 hectare site which encompasses the CGO's interior offices for 12 bureaus, the Chief Executive's Office and the Legislative Council Complex – their combined gross floor area is equivalent to sizeable commercial properties; the design of which was managed by the joint venture design team led by Simon Lee. Based in the site office for nearly three years, Lee and his team of men and women behind the scenes kept the programme on track, managing users and facilitating design enhancements. "In this type of project, demand for collaboration and co-operation is very high. The public were watching our progress closely and we were ready for that. Especially when we needed to persevere and get things done," said Lee.

"Everything was 'wow' when we first started," said Architect Janice Goh, second in command of the design team. "The scale of the project and the size of the teams were phenomenal." It is inevitable on such a ground-breaking project that there are many additions, changes and modifications as work proceeded due to the breadth and complexity of the design and approval process. "Volume-wise, there was a lot of work to do," said Goh. "Challenges included design improvements and enhancements which, for us, were done on paper. But for site agents, they would be physically tearing into the structure of the buildings to weld things and patch things together."

As the JV man working together with the government, Lee, was up to the task of weaving his way through the design and approval process. "I am a strong believer in the design and build system and we - meaning the JV, our consultants, the government, and the end users - were all working together to build for our future," said Lee who has been on the project since day one. The project required considerable interaction between the end users, who advised on the practicalities needed to create a functioning office environment and an experienced team of specialists with a wide range of design-and-build disciplines. Reading the poster-sized plans did indeed require a specialised "degree", but thinking out of the box, the JV devised a plan which would suit the needs of all parties involved.

From on high, workers install facades to the building. The complex features 10 facade systems to create a variety of depths, shapes and textures.

Through meetings and problem-solving sessions, sketching sessions were the most effective way to communicate with designers, end users, contractors and workers. These sessions conveyed to professionals, supervisors and workers the intent and way forward for the various construction and office layout elements. "We held workshops for shop drawings between us, RDL, the subcontractors, HOK, GMB and BSYJV. While this was labour-intensive, it was done to help all, understand the complex drawings." Even more challenging was the interpretation of a stack of 15 binders, one-metre tall outlining the employer's requirements, which set out and explained the different requirements of each bureau regarding space allocations, and the type of furniture and floor area each person was entitled to according to their rank.

"The point in time when the employer's requirements were written into the proposal was before 2006," explained Goh. "During the design stage, the JV submitted a large open plan. By the time we started construction, plans and needs had evolved and it was obvious that not only had headcount changed, but that the JV had the task to balance a good design with the modified allocation of space. This was something our subcontracting team and design consultants had to accommodate. For example, they had to comply with the fire services and Buildings Department regulations as well as the employer's requirements." During the early days, there was a fire engineering study of a typical floor in the CGO West Wing. Drawings had up to 50 protected corridors. Imagine an employee going from their desk to a bathroom only to open dozens of doors along the way. If this went through, the impact to end users would have been immense. To find solutions, the joint venture had to be professional and practical at the same time.

Solutions were there to be had, but not without the help of many skilled professionals in the JV and also across the table with the government and end users. "I really have to thank our partners, such as the LegCo Complex Architect Adviser Yip Ching-wan who spoke the same technical 'language', facilitated with different stakeholders and resolved many problems," said, Fanny Kwong, JV design team member for the LegCo Complex. "Our many meetings were formal and noted because the organisation and systems are of vital importance when it comes to design approval." In a high-pressure situation when changes are being made by different groups almost at the speed of light, designers needed to keep a clear mind and prioritise. The goal was to send one e-mail to co-ordinate the team, prioritise the list and communicate the methodology. "I think projects like these really highlight the heroes – such as Project Co-ordinator, Vin Wong," said Goh. "He would keep all the documents, drawings and details. It was amazing how one person, in a high pressure environment can become the centre point for everything including operations, Buildings Services, ArchSD, design, HOK and us."

Within the design and build process, the detailed contribution of the end users was something new for the experienced HOK team of 18 designers. Like most of the other workers on the job, the speed, breadth and complexity of the project was a challenge. "In the Central Government Offices, the characteristics of the design theme were openness and ease of approach, which reflected the transparency of governance," said HOK Director Gary Lai, who was in charge of the overall theme. With the Chief Executive's Office, there was a sense of authority and character, which was found in the scale of the building and the functionality of the various style elements. Regarding the Legislative Council Complex High Block and Low Block, there was a sense of solemnness with the muted colour theme of grey, purple, green and dark wood.

"In the Chief Executive's Office, the design language of the interior was consistent in materials and approach to the exterior." Fitting out commenced in late summer of 2010 and there was much to do before the fast approaching handover in July 2011. "We wanted a dignified image, which would distinguish it from any other building," said Simon Lee, who made sure every single design was signed-off on. "The main entrance was sophisticated with copper panels and warm timber, which echo the contemporary design of the exterior. Every step of the way, RDL worked together with us to achieve a sense of functional and contemporary design." Starting in 2009, Chung Tat-yeung, Project Manager for the joint venture has been the man of the hour with his team of 38 engineers and foremen, raising the symbolic Open Door of the CGO.

"I am most proud of the fact that we completed a non-typical project, starting from nothing all the way to fitting out to the level that the client could move in and plug in their computer," said Chung who celebrated the birth of his second son, Chung Wai-lok, during the tough months in May 2011. "While the CGO is a typical concept, the layouts of the two wings are not typical. The employer's requirements posed serious interrelated relationship needs. The physical expectations of the designer and the end user were different. Most of the differences had been minor and were quickly resolved. A typical day started at 7.15am and work continued until 8pm. Chung recalls the difficult summer when he worked a solid 14-hour day for two months straight. "This was the time when I was in charge of

fitting out the communal areas, including eight meeting rooms, a multipurpose hall, staff entrance, the lobby on both the East and West wings as well as the Tamar Cafe. The time allotted to this was very short. The biggest challenge was the high head room of the communal areas, which made it difficult for the workers to get up there to do their work. We didn't want to use scaffolding because it was not very flexible. Instead, we had an astounding 30-plus scissor platforms zooming around. The material logistics were remarkable as we had to use many different types of stone, metal and wood. Design and build is not something the team and I were used to, but we persevered and provided simple, available solutions, which also looked good in the end. Every building is different, but with the Tamar project, we are part of a greater whole," Chung Tat-yeung said.

As one's eyes roll down the Green Carpet towards the Chief Executive's Office, few would appreciate the challenge facing the team as the empty space indicated on the drawings was in reality gardens and open space, which were under construction. As a result, many material bays were only temporary storage space and a daily ballet of finely-tuned movement of materials was performed. "When you look at a project like this, the scale is much larger than typical ArchSD projects and more important, it is all about the end user," said Ian Ku, Assistant Project Manager for the Chief Executive's Office. "While we have had experience with employer's requirements and a good relationship with the ArchSD, sometimes what we drew up did not match what the end user expected. We continuously

needed the help of the end users to meet the expectations of the interior design plans. If there were changes, they needed to know. As the building was not typical, communication about spacing had to be important." Ku recalled the logistical nightmare of bringing in the 4.5-metre tall and three-metre wide antique timber feature, which was separated into pieces, and hand carried through the construction site and then up into the Low Block.

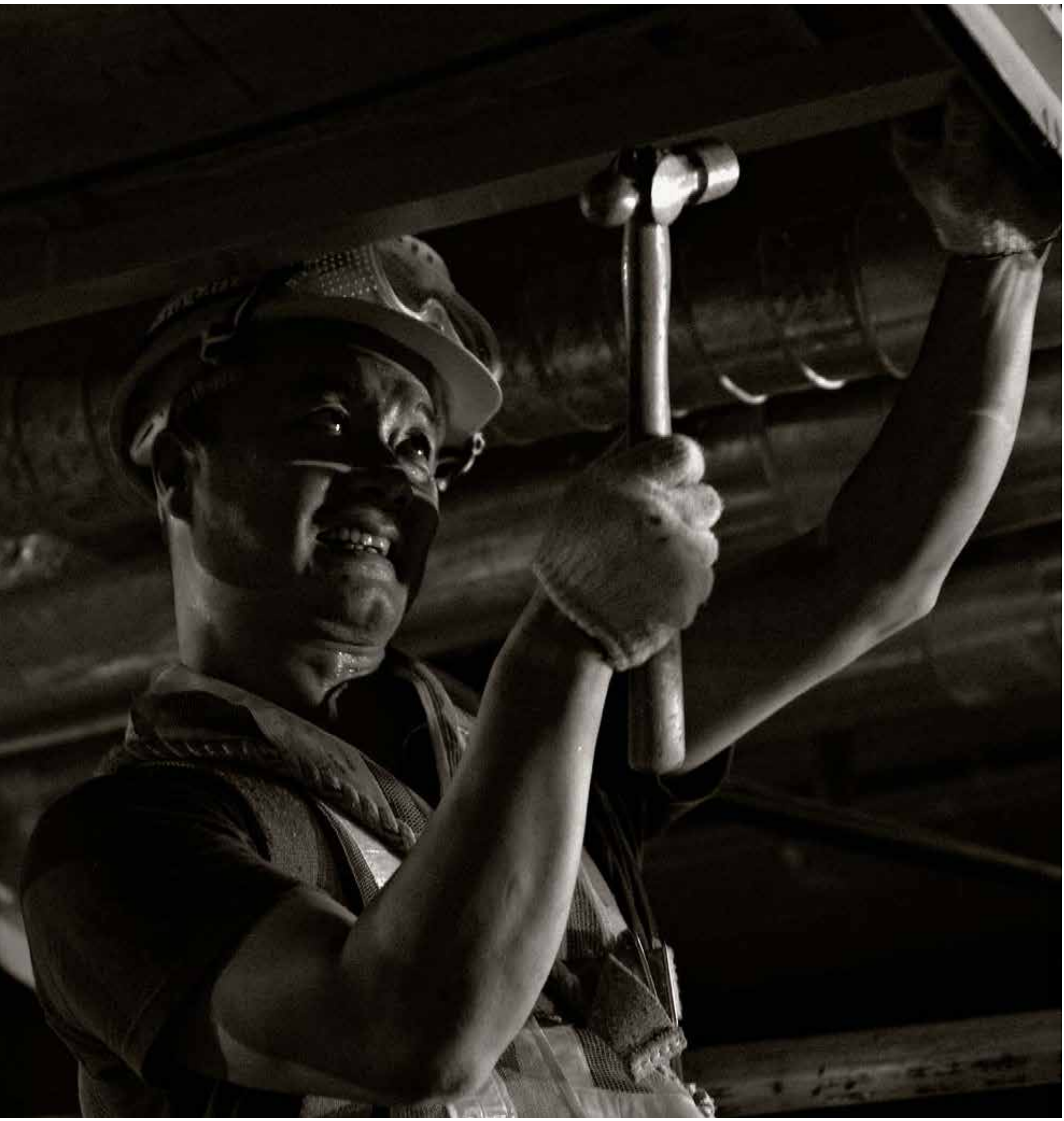
Reflecting on the project, Ku sees blood and toil in the big picture but achievement in learning a multitude of new skill sets. Ku considers the drawing room as the most comfortable and beautiful area in the building. Designed as an area where officials would meet, it is minimal and reflects the simplicity of the project. "The motif brought about a sense of intimacy and we had details like the carpet borders which brought together the colour palate throughout the building," said HOK designer, Gary Lai. "As well, we had Chinese elements in some rooms such as the Executive Council antechamber, which touched upon our historical past, but has a contemporary feel." The metaphorical distance of a table between a designer and the end user was initially vast. The responsibility of each designer was to close the gap and meet the needs of end users by working together. During the early days, one of the more contentious points of the Legislative Council Complex interior design boiled down to the actual look.

"In the early days, there were hiccups in agreeing on the interior design because the design of different rooms were contracted to different companies," said Pauline Ng, the then Secretary General of the LegCo Secretariat and head of the project team panel. "The result was that the rooms looked more like furniture shops because they lacked a common theme. So the project team had to manage this challenge. Some members in the LegCo Commission even suggested to us: 'Can we stay in the old building? The new one is ugly.' So we approached the problem by asking ourselves: What are the things that members like the most about the old LegCo Building? What are the things we can introduce in the new complex but could not be done in the old one? After the review, we found that members love the dignified look of the old building, which is projected by the dark wooden door frames and window frames and high ceiling. In the new complex, we have high ceiling, so we must come up with a consistent colour scheme and use dark wood as a medium to link up the design of the various parts of the complex."

The result was impressive. The LegCo Commission agreed to use three colours as the theme: green for democracy; grey for open-mindedness and purple for importance. Green carpet was then used for the Plenary Hall; grey was used for the carpets and flooring in conference rooms and open space; and purple was used for the walls in public galleries and for the ante-chamber. Sapele, a reminiscent of mahogany, was chosen as the dark wood to be used throughout the building to exemplify the solemn and dignified nature of the work done at LegCo, with a secondary colour of wood, cherry, to project livelihood in deliberations within LegCo. A champion of consistency in design language, insiders were impressed with Ng's grasp of the difficulty of the design process and her ability to manage the expectations of hundreds of stakeholders.

"Pauline was always clear on her position," said Lai. "As a team player, she was respectful of our advice and took it to heart. As well, she assembled a good team of all the stakeholders involved during the sketch sessions. They provided suggestions to us and their voices were heard. As well, then Chief Secretary Henry Tang was a supporter. When there was a proposal for wall to wall carpeting for the Chief Secretary's Office, we told him that it would be a maintenance nightmare as the mechanical and electrical and IT mechanisms were under the floor. He leaned over and said, 'Really? Tell me about that.' He was very receptive and immediately took our advice." In the end, the JV was there to communicate the design and explained how to deliver it. There needed to be a chemistry and as individuals, the team had proven that they were open, professional and ready to give their professional opinion. "There were vested interests and concerns from many different parties," said Lai. "The project was a learning process. There are milestones in this once-in-a-lifetime experience. The Central Government Offices and LegCo Complex at Tamar will be here for a second or even third generation."

Fitting out and handing over was a rolling process, with each seminal moment rolling into the next with often not enough time to celebrate the small moments of grandeur. For Ian Ku, his nocturnal handover would forever be seared into his mind. "I was in Conference Room A at the Chief Executive's Office and it was 3am, verging on the time of completion," recalled Ku. "The date was fixed as the next morning they were going to hold a meeting. Government workers were waiting to prepare the room for the next day's meeting. As all the last-minute details were being dealt with, the subcontractor wanted to go home, so he taught me how to install the key lock in the door. There I was, an hour later, installing the lock into the door; something I had never done before. You can only imagine how nervous I was. When I turned the key signalling that I had installed it correctly, a wave of relief washed through me, as if I was a lottery winner! It was amazing what we all had to do as a team to get to completion." There were winners all around, as the aim of the joint venture was to design and build to a high standard, while also being mindful of the costs. This was achieved.



Connecting to the core

Gearing up, studiously taking notes and listening intently, Information Technology System Managers were found at the end of 2010 taking their safety training examination, same as every man and woman before working on the Tamar site. "The programme was tight and we didn't have the luxury to wait to see if all was going to be satisfactory when complete, so the team all took the safety course provided by the joint venture," recalled Stanley Chan, former Senior Systems Manager for the Office of the Government Chief Information Officer. "We bought new safety shoes and safety gear and wow, was it a tough job going through the site. We were on the site regularly and just walking around was exhausting. Even in the winter, we were sweating as we climbed the stairs and weaved our way through the different floors. We have to give thanks to the JV taking the time to take us around because even until completion, we still would get lost in the massive complex."

Chan recalled in 2002 his involvement with the first tender, when he held a position as a Director of Administration in IT. While the project was halted in 2003, it was restarted in 2005 as a design and build project with provisions for IT to be included as an integrated component. "The first challenge was the physical construction process," said Chan. "Most of these requirements were already put into the tender such as the placement of computer equipment, floor height, optical fibre cable signals (how they are laid down), how much electricity, the level of non-interrupted signal and power supply, emergency generators, the air conditioning – ability to keep cooling our hardware – and the security requirements." During the tender process, it was up to the government to define specific technological requirements, facilitate them and set them out in the tender. Once the Gammon-Hip Hing Joint Venture was awarded the contract, the government had to help assess if the selection of provisional sum items such as data, traffic, signal movement and performance software would conform to their requirements.

From this stage, the government had to provide provisional sum items; the detailed specifications for network control and management facility. "The challenge was: if we wrote in the details too soon, we could potentially miss out an opportunity to use newer and more advanced technology. We also had to make room for capacity and future expansion – or future-proof the area." As one hurdle was cleared, the IT team soon realised that it had to be nimble and flexible to learn a new interface language. "During the design and build process, it was a whole new language that we needed to learn," said Chan with a smile. "Very quickly, we needed to learn how to interpret the maps and shop drawings. The design was always being modified and changed, and often we had to go over and over again the same areas.

"The biggest hurdle was to work with multiple parties including the Architectural Services Department, the joint venture and the sub-contractors. The language was different. We had to learn on the job about the system. How could we mitigate problems along the way? At different levels, we had to locate which party was in charge of what. With so many people moving about in a maze, I mean the actual building, this was difficult." But the systems management team rose to the occasion as they trekked their way through the building each day, closely monitoring the progress in the critical months. "As IT people, we were very green when first going onto the site," said Chan with a grin. "I recall once, that we saw a worker installing a plug into the wrong area in the wall. We consulted our drawings and attempted to call him over to explain. He ignored us and we were perplexed." What they had to learn was the system within construction.

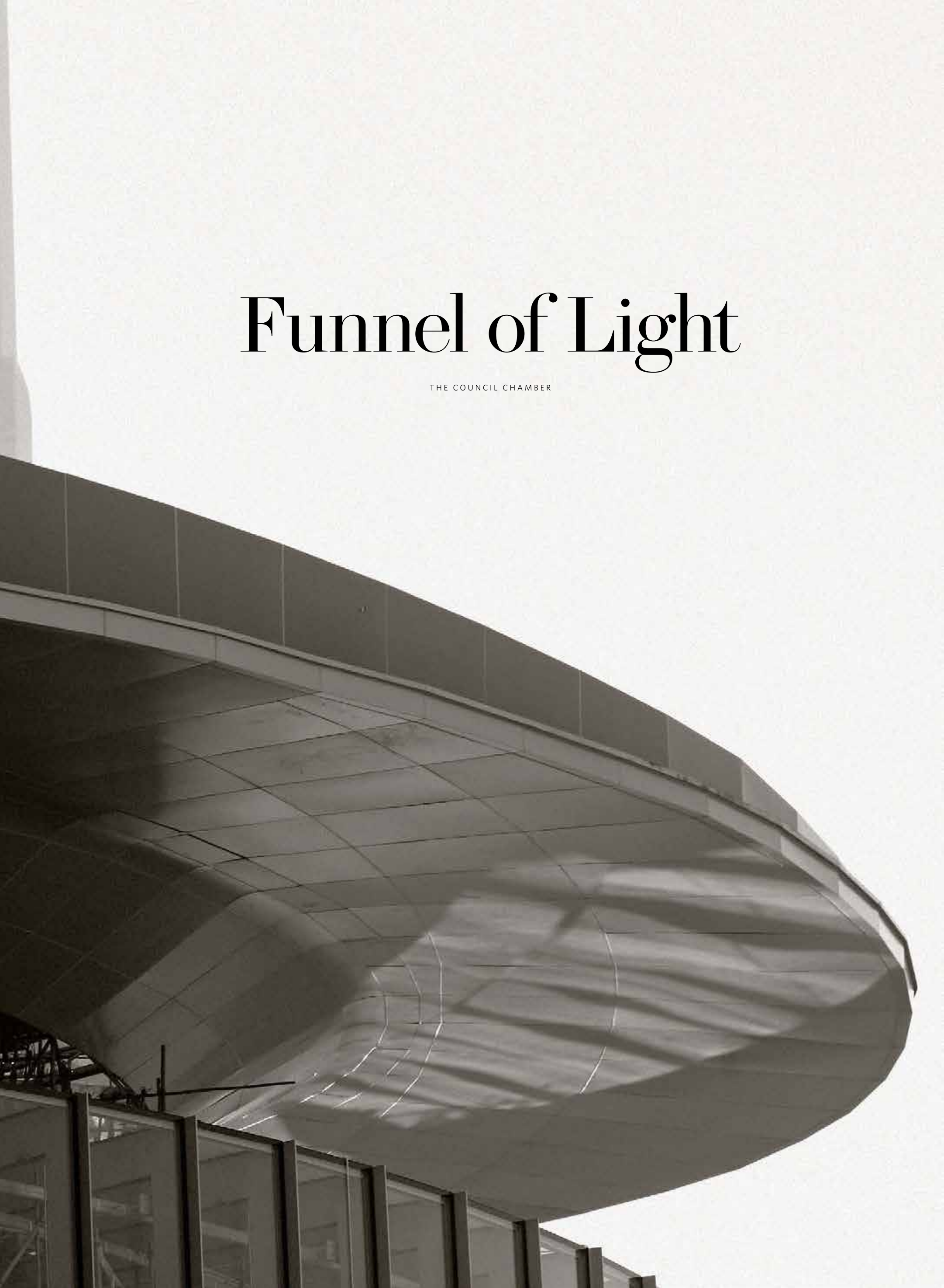
"We needed to speak to the JV and in turn, the joint venture representative would consult the relevant parties and if approved, the amendment would be administered through the foreman. This was their clear line of communication." A construction environment is not the ideal place for specialised workers to be installing IT equipment as there is dust and dirt in abundance. Under the advice of Chan and his team concerning cleanliness and security, the bureaus were pleased that the Office of the Government Chief Information Officer was involved early as it was present to communicate clearly what was expected for the handover day. "Even though we didn't lay down the wires ourselves, we would check and make sure the number of wires, from start to finish were specifically labelled to end back at the correct network distribution room and consolidated service centre.

"I am very proud of the team," said Chan who recalled that there was a time when the team was on the site every day. "They have done so well by committing themselves to following up and maintaining a high level of quality. With design and build, we were not too familiar and while it was good, we had to be quick on our feet to keep up with the many activities happening at the same time." The team went as far as to use their own skills to create an efficient IT database, which would produce such things as a summary and easy to-do list for executives to understand. Even more importantly, the database would use different hardware and software to organise information such as how the bureaus would split resources, queries, what is being followed, and who is in charge of what. "As well, we have to really thank the Chief Secretary's Office who were big partners in co-ordination. They often made the big decisions while letting us know what order we had to do things in. This was a big help."


DANGER
ATTENTION!

Funnel of Light

THE COUNCIL CHAMBER



“While it is very important that the Legislative Council be comfortable on-site, there is a feeling of openness and togetherness as the public is nestled in the middle. The light funnel is symbolic, like a cloud floating over LegCo. You can observe the time of the day, the seasons of the year as light is difused and reflected into the chamber itself.” said Architect Rocco Yim.

Hong Kong’s elegant “bird cage”, the Plenary Hall (P-Hall), also refered to as the Chamber was designed as a lofty elliptical building, the centre of dialogue. During the processing of various studies on planned form, it was decided this unique shape of the building was the most satisfactory for the seating of the Legislative Council’s lawmakers. The design detail in the building continuously returns to the source: the function and workflow in this space. “Retrospectively – the ellipse form of the hall came from assessments we did in the early days with Architect Rocco Yim,” said Hal Guida, an interior design consultant for the LegCo P-Hall interior and a partner of Guida Moseley Brown Architects (GMB). “We developed the general idea of how you work within the ellipse – the sight lines, public views, a sense of unified space and a gathering form. It was important that we discussed how to relate the interior to the exterior of the building. With the conical form tapering towards the roof, the enclosure brings shelter and is generous enough in its dimensions that you don’t feel this is a common type of space. This is appropriate to the space’s defined function.”

The inverted funnel boasted more than 1,300 tonnes of steel and consisted of six layers of steel ring beams wrapped around 16 steel columns which were welded together on-site. In the early days of the construction period, the attention to the detailed design of the Chamber spanned months because much of the technicalities called for strict control of tolerance. “Originally, there were plans for the Plenary Hall walls to be steel-framed,” said Guida. “During the construction process – it was determined that it would be more workable to make it concrete. That changed the structure and added time to the work.” The shape was complex and the 1.55-metre columns were built onto the transfer plate, a reinforced concrete structure, to offset the load onto the first floor. Interfacing with steel frames, a concrete cone with various openings was constructed within the column structure.

Once the skeleton of the Plenary Hall was up, workers moved inside. The elliptical form resulted in many uniquely shaped elements. With no consistent or repetitive plan or shape - the design was all in the details. On-site, B.S.C. Interior Contract and Engineering Co. Ltd, Assistant Project Manager, Eagle Ng led the charge in the building of the unique hall to set the programme, create sample submissions, organise sequencing, commence site inspections and monitor workmanship. “When we began the physical work in December 2010, the main challenge was to co-ordinate with material


Tool
Box


MIDSQUARE

suppliers and fabricators," said Ng. "The detailed design had a very tight timeline. Even before, there was time pressure in providing the specifications to the factory to manufacture the specialised pieces." The scaffolding, which reached the ceiling, took up more than half of the space inside the voluminous P-Hall. Workers climbed up and down, welding, installing and fitting together the giant steel framework. After the completion of the skeleton, the P-Hall was crowned with the funnel skylight. This took three months to complete. The light funnel crown with its iconic glass and steel skylight was constructed in prefabricated pieces weighing almost 20 tonnes each, where workers installed 200 glass reinforced gypsum (GRG) cladding onto the roof.

"We separated the Light Funnel into six layers of shop drawings: the top of the funnel, light rings, cladding, glass, timber and wall panel," said K.C. Li, Project Manager, LegCo. "With the steel frame prefabricated in Hong Kong, we set out the Light Funnel into 34 vertical and eight horizontal GRG sections. This was difficult because we did not have much tolerance, about two to three millimetres. The design of the P-Hall was detailed and great which lead to excellent co-ordination. Metal scaffolding was used and we had a large platform set up to install the large funnel. From there, we had to modify the scaffolding for the cladding."

While safe and sturdy, the metal scaffolding is unforgiving when it comes to exact measurements and also is heavy. In a tight space such as the Plenary Hall, the JV employed a 10-man team to continuously dismantle and reassemble scaffolding according to the needs of the installation. "Boy, was that hard work!" said Ng. "There was a limitation of space on the actual roof – we had to really liaise at a very micro level with the fabricators and detail the plans for the works on a daily basis." To create the natural light funnel suspended four storeys from the ground, 34 steel frames were erected vertically in a circular pattern and clad with timber frames. Inside the funnel was a smorgasbord of electrical and mechanical equipment to help ventilate and light the vast space – as well as a small maintenance platform.

According to Lighting Design Partnership (LDP) Director, Dhruvajyoti Ghose, the visual experience of the P-Hall is cost effective yet absolutely state-of-the-art. "This project was unique from every standpoint," said Ghose. "It is a landmark on the harbourfront, a centrepoint hub within the city and possesses historical and future significance. This was set to be a showpiece of what the joint venture could achieve in a quality design paradigm with a new level of sophistication." On the exterior of the building, the lighting is sombre and retains its dignity. While Hong Kong hosts a light show every night on the harbour, the designers do not feel it is right for the Plenary Hall to be involved. Instead, the exterior lighting on the façade is etched white for simplicity and elegance.

Inside the Light Funnel, LDP incorporated modulated and controlled natural light in the design. The challenge was softening the direct sunlight using louvres, diffusers and clear-vision glass. Other technological aspects of the hall were driven by the requirement to be able to provide live television and radio broadcasts from the building. With the bare essential equipment, the Chamber design had been completed at a minimal technical cost. Natural light would shine into the funnel and defuse downwards. The light ring was also designed to draw light downwards into the area. Acoustics was another factor that was of paramount importance, and this responsibility was in the safe hands of consultant Barry Murray of Wilkinson Murray. "People don't think about acoustics as vital, but ineffectual design can result in people not being able to hear what others are saying," said Murray. "The idea of acoustics design is to control the noise and quality of sound. We used different material for various venues to control vibration and either absorb or reflect sound wherever appropriate."

To make matters more acoustically complex, the P-Hall was designed in an elliptical and fan shape. Without the design parameters of an acoustics consultant, every sound from the edge could potentially be bounced back to the centre of the room. The challenge was to disperse the soundwaves so people would be able to hear from any seat in the chamber. This was solved by using panelled walls, which both absorb and deflect sound. Another issue was the height of the space. Soundwaves naturally travel upwards and deflect back down, but this occurs under natural circumstances, and in the P-Hall this would take a long time as the roof was glass, curved and had louvres, which would defuse the sound in all directions. "To combat that, the room needed to absorb sound in certain places so we used special materials like timber finishes – timber panels with insulation behind them, perforated material with plywood tops, perforated fabric and treatment on the walls to control vibration to make the sound clear," said Murray.

On-site, these were details designed and installed by the JV team of workers. Measurement of the 500 acoustic panels, which were shaped differently, was paramount. There was a high degree of quality control, as each panel at the bottom was wider than at the top. "It was important for us to co-ordinate with the factory, not only on fabrication – but also on the delivery schedule, which dovetailed with the installation of each segment," said Eagle Ng. As each element was manufactured, the challenge of having a smooth flow, finding an area to store the material and the actual vertical transportation method was all solved by the JV team. "We were very lucky as this year, there was not much rain!" recalled K.C. Li. "As a large, tall and impressive building, it is always a challenge to keep the safety standard up, as well as managing delivery sequencing."

The sequencing of work within the Plenary Hall was compressed as logically, the scaffolding was 'blocking' access to the floor where all the electrical and mechanical services were set to be installed into the raised floor system. "The scaffolding started coming down in mid-July and we were, by then, working 24/7," said Li. "It was the most challenging time as we had over 100 people inside the small space installing all the E&M features. The BSYJV had a tough job as they were working on a deadline which was already set." While impressive in scale, the Chamber posed unique electrical and mechanical challenges – namely installing the correct air conditioning to cater for the hot and humid months.

According to JRP Director Joseph Leung, electrical and mechanical consultant for the joint venture, technology was the answer. "We suggested the use of the 'displacement air-conditioning approach' for the entire P-Hall in light of the very high interval space together with locally 'tasked' air conditioning, which was integrated into the furniture," said Leung. "Each member would be able to control the flow rate of cold air to their needs and achieve overall energy saving." Using a computational fluid dynamics study, JRP generated the flow rates of "each" air grill within the P-Hall and designated all return air paths which produced images similar to ultrasound, which would identify "hot spots" by colour. By adjusting the rate and volume of air coming from the desks, the computer calculated the temperature profile and its stratification across the entire space height of the P-Hall – scientifically proving that the design would work. In the end, this method saves energy as the building keeps a comfort cooled zone about two metres from the ground. "Even if the air in the centre-high void of the P-Hall is 43 degrees Celsius, it doesn't matter. Who would be the spider man enjoying such air in the middle of the chamber void?" asked Leung.

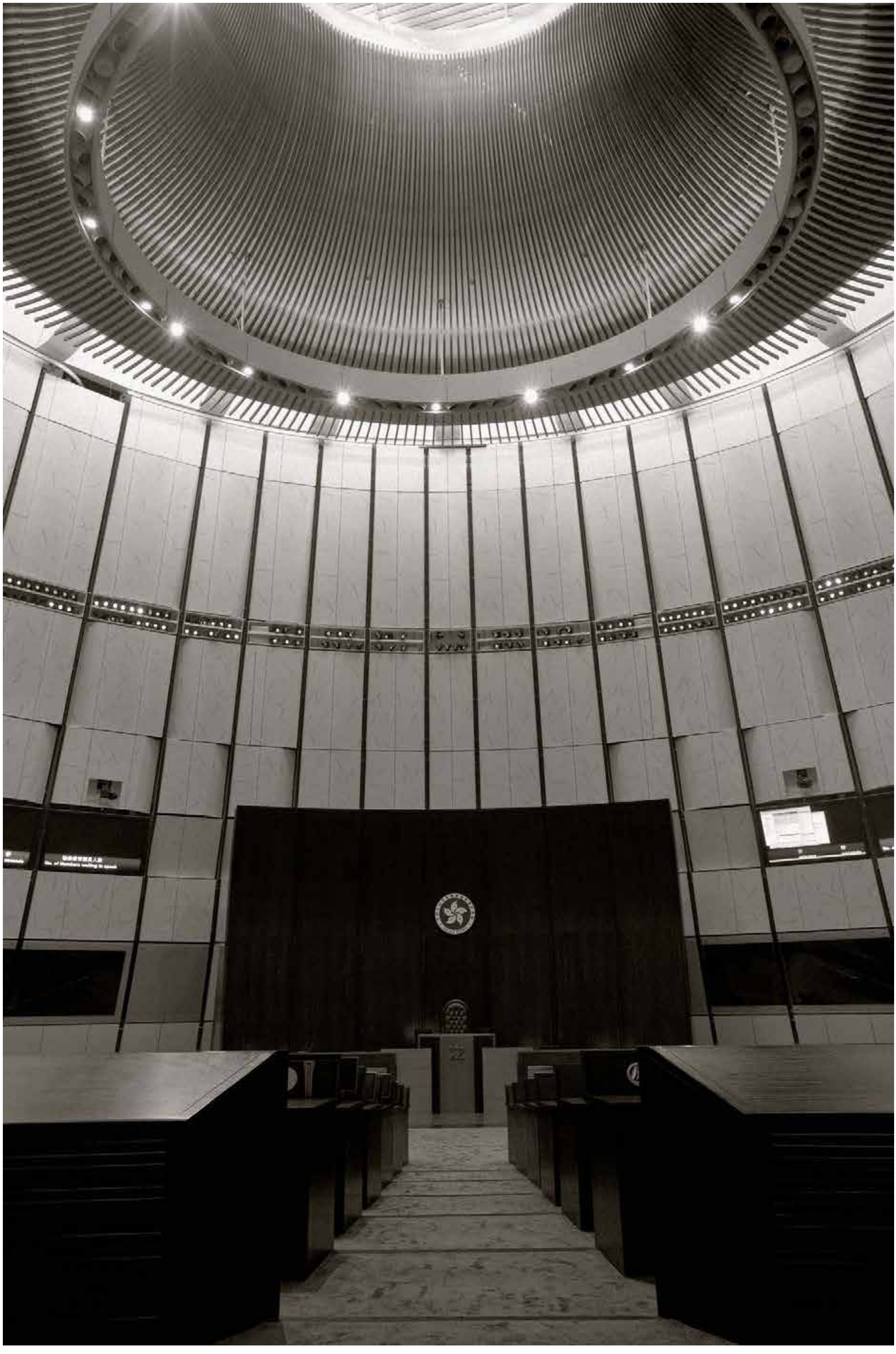
With the Government's green policy solidifying Hong Kong's commitment to the environment, the seamless integration of the displacement air conditioning was brought on board. The P-Hall has a highly functional design and GMB noted that the biggest challenge came through the subtleties of the building management within the chamber. "While we have designed parliament buildings including Australia's Parliament House, we had to be familiar with Hong Kong," said Hal Guida. "Through much back and forth, we began to understand how work was integrated with the variety of management tools including books, cameras, screens, hard copies of paper, and even the printers. We had never encountered this type of work environment and the subtleties were paramount to creating the right design." Both the individual member and clerk's desks were incredibly fitted out with electronics including lighting, voting devices, air conditioning, screens, drawers and places for storage.

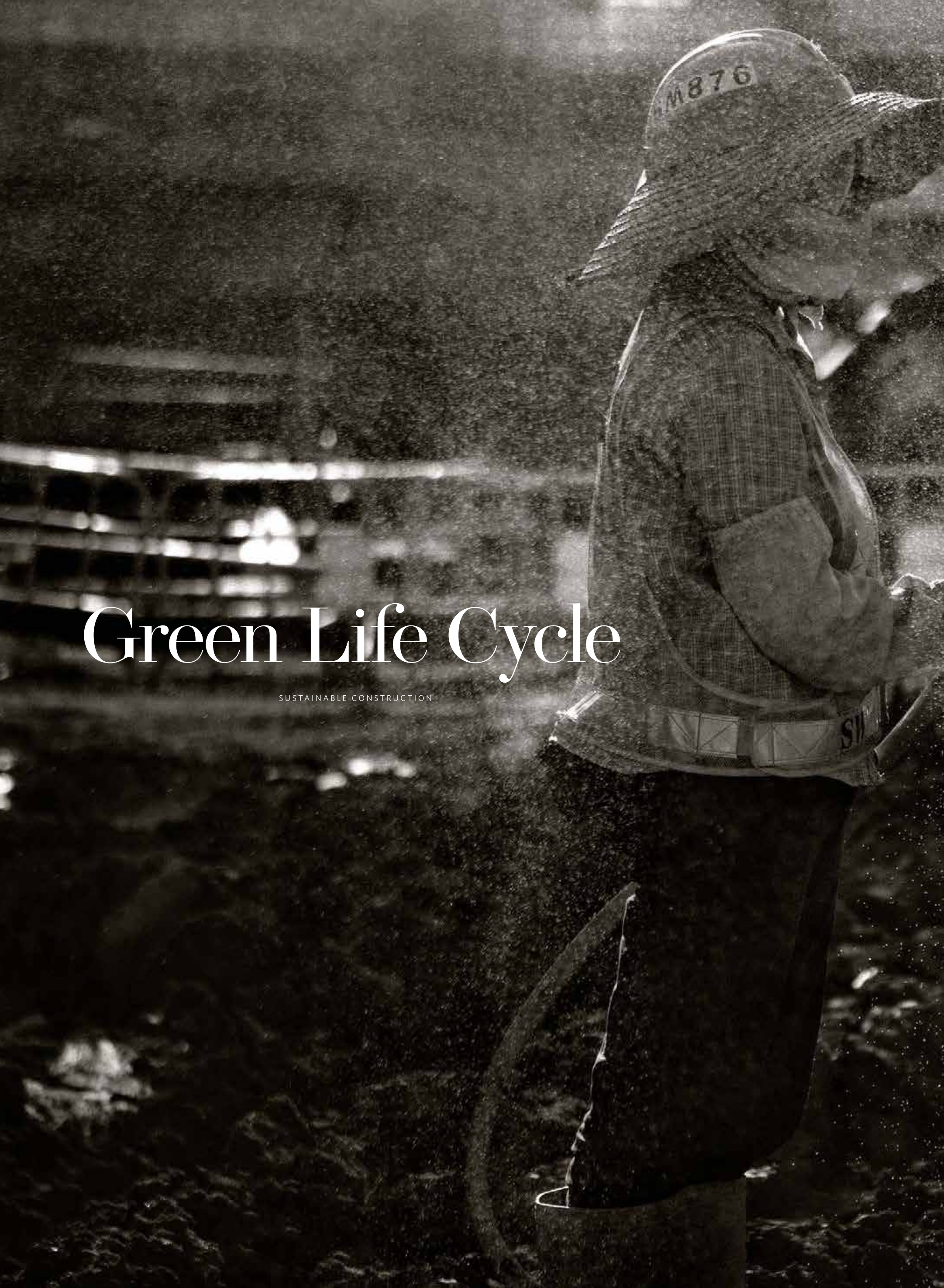
"To get this many electronics installed into a piece of furniture was a struggle," said Guida. "Every piece needed its own route, mounting bracket, and access point for maintenance, and a desk is only logically so big. Integration of these electronics into a piece of fine furniture – the continuous process of integrating, solving and confirming was a challenge. What we have done is to design the space to be an effective workplace which helps lawmakers do their job. We would like to think and hope that the natural light and graciousness of the space has some positive atmosphere for the LegCo deliberations. We also hope Hong Kong will appreciate the carefully integrated complex with its focus and differences. It works as a unified space, which the public will have access to."

While the heart of the building is the Plenary Hall, there are also 13 television and video rooms, eight simultaneous interpretation rooms, two tech rooms, a public observation area, a library, five conference rooms, dining hall and foyer supporting the iconic room.

"I think what I have really enjoyed is learning, thinking and catering for different needs," said Li. "Being part of the new Legislative Council Plenary Hall is a once-in-a-lifetime experience and I have learnt new technical skills. I have enjoyed experiencing how people work and how our detail design on small details help the workflow. I am proud to be part of Tamar, building for the future."

On October 12, 2011, Donald Tsang made the first policy address in the new Legislative Council Plenary Hall.





Green Life Cycle

SUSTAINABLE CONSTRUCTION

From design to construction methodology, the Tamar complex implemented creative, proactive and innovative green initiatives in line with green life cycle management (GLCM). Stressing engagement of stakeholders, GLCM takes leading green initiatives from inception at the concept and planning stage, through to design, redevelopment and construction and eventually in the operation and maintenance of them. Looking back on the three-year project, the Gammon-Hip Hing Joint Venture Environmental Officer, Eddie Tse, said the success of green initiatives in the project was a team effort between front-line workers, contractors, designers, project managers, the government and its partners. "It's important to have an open mind and accept the recycling and GLCM concept," said Tse. "We are glad to have consensus with our clientele like the Architectural Services Department (ArchSD) and the Environmental Protection Department (EPD). My proudest moment was when the Tamar development project was honoured with the Gold Award (Construction Industry) by the Hong Kong Awards for Environmental Excellence. This recognised the self-motivation in establishing green initiatives and our collective effort."

During construction, the focus was on creating a more sustainable workplace, such as having a green site office with a prominent grass rooftop. As well, a micro-wind-turbine-powered signboard, solar heated water system for bathing facilities and wastewater recycling for the washing of construction truck wheels were employed. Trials were conducted to test the methodology of saving energy that had been established in the study assessments completed on lighting. Other tests included vertical greening, which refers to the growing of plants along walls, low waste construction practices by employing reusable and durable formworks, which minimised the use of timber. Another green practice was the reuse and recycling of more than 77,300 cubic metres of excavated material. This is equivalent to 30 standard-sized swimming pools of construction rubbish, which was reused and recycled thanks to the collaborative efforts of contractors, resident site supervision staff and government departments. About 30,000 cubic metres of construction and demolition materials were not trucked to landfills, but instead shifted to other areas on the project site for recycling. The G-HHJV also started pioneering the CO2 (Carbon Dioxide) Emission Study at the site to assess the carbon footprint by measuring emissions from different types of formwork. When comparing the average emission of 121kg of CO2 for each cubic metre of concrete formed from conventional methods, the current formwork at the Tamar Complex only had emissions of 85kg of CO2 for each cubic metre of concrete. While the new formwork plan raised the bar for the construction industry, the concept used to calculate the amount of CO2 emissions during the construction stage is taking sustainability and green initiatives to the next level.

While it took extra time to implement, G-HHJV remained wholly committed to using green construction methods. Towards the completion stage, the environmental team assisted with noise mitigating factors that enabled the joint venture to extend the project's working hours on features such as the lifting of the walkway over Harcourt Road. As well, the team helped prepare and achieve the green design guidelines and standards for the HKBEAM (Hong Kong Building Environmental Assessment Method) platinum rating and HKSAR Indoor Air Quality Certificate Scheme "Excellent" class that the clients required the joint venture to adhere to. The rationale behind the state-of-the-art design at the Tamar Complex had been to use fewer resources, while also focusing on generating less construction waste – all in the hope of bringing about sustainable construction for the betterment of Hong Kong.

In 2009, the JV won the Sectoral Award (Gold) at the Hong Kong Awards for Environmental Excellence. In 2012, the Tamar Development was awarded the highest honour of Platinum status with HK-BEAM.

The sun sets on the site as schools of dump trucks ferry in and out 77,300 cubic metres of excavated material. About 30,000 cubic metres of the material was reused in other areas on the project site as part of recycling.


Bank of America


KANSON
KANSON
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CRANE SERVICE

Final Link

"As the Chairman of the harbourfront subcommittee at LegCo, I was part of the process of stopping earlier reclamation, as there wasn't good access. Today, what we have developed is connectivity and accessibility for the public between Admiralty and Central. Direct and easy paths to the harbour will encourage people to enjoy the waterfront. With the green carpet, Tamar has become a prime location which encourages people to be integrated," said Patrick Lau, the lawmaker representing the Architectural, Surveying and Planning functional constituency.

Connection was of vital importance on site. The Gloucester Road bridge connecting Admiralty to the Hong Kong Chief Execuive's Office, Central Government Offices, the Legislative Council Complex and the waterfront was an engineering feat. At a brisk pace through the winding corridors and out into the open air, Johnny Yeung, the joint venture Safety Officer, was on his daily mission: a two-hour safety walk around the site. On this summer day in 2010, he was monitoring the external operations, namely the piling for the massive sky bridge connecting the Admiralty hinterland to Tamar and the harbourfront. "There is a lot happening outside that people don't realise is part of the site itself," said Yeung. "Take for example, simple things like water and electricity. The pavement needs to be dug up at critical times for the right people to gain access." There was also the need for the project team to be in contact with the neighbouring site, Central Reclamation Phase III, to liaise on issues regarding pipelines and interfacing.

On the southern side of Gloucester Road, Sun Fai Foreman, Wong Chun-pong was found under a striped awning, the area around him, a singular lane of traffic blocked off for this foundation machine. He and his team of workers were laying down the foundation for the major access point to Tamar, the sleek two-pronged bridge connecting Admiralty and the MTR station to Tamar and subsequently the waterfront. "It seems the foundation machine had reached a block of cement or steel," said Wong in the summer of 2010. The bridge was set to have 10 and seven piles respectively on each side. "You have to remember that though we have 'hit' something, the area and the parameters are different in and off the site. We don't have the authority to touch many things. We have to be careful and divert different elements. It is very complex and considering the time limitations, your respective area has to be more responsive to the surroundings." As the critical paths were navigated, the foundation was laid, inspections completed and the day of the two separate lifts in April 2011 was upon the extensive lifting team. "There was a lot of work involved to cumulate to this moment," said Project Manager,

Brother Hung on top of the world. Foreman and Tanka fisherman, the vetran front-line worker first saw the Tamar Basin from the bow of his family junk. "As a layman, I like how it's not too glassy or too artistic. It's a high-quality building, something that will set a new industry standard and deliver a good quality structure."

Percy Chan, the man in charge. "We are prepared for all contingencies as it is important to be mindful of the safety of our workers – as well as keeping to the schedule – meaning the maintenance of open access for the public." On the first night, the tension in the air was palpable, as a dozen police officers on motorbikes zoomed by to aid in the road closure before the lift could start. A major artery in the city, Gloucester Road is a six-lane highway cutting through the heart of Hong Kong Island. More than 60 operational employees were on hand – not including the multitudes of consultants, bystanders and members of the public looking on from a distant bridge.

"The first critical path is the curve in the road. The bridge was trucked in weeks ago and stored at Tin Mei Avenue. You can see that the curve is very tight," Chan said. The second challenge is the 500-tonne crane, which needs to be set up correctly. Third is the lift itself. Is the bridge balanced? This decision is relatively quick in the world where the movement of lifting is slow, smooth and precise." As Chan speaks in more detail about the process, the co-ordinated ballet of movement begins as the Hong Kong Police Force start their preparations to close the road, one lane at a time. The total amount of time that elapsed for the team of 60 to complete their lift is less than four hours. A small group crosses over to the western side of the site to set their eyes on the 500-tonne lifting crane, which is similar in size to a large fuel tanker, only rectangular.

"From midnight to 12.30am, we need to work with a partially closed road. After 12.30am, it will be safer as we won't need to work with open traffic as the police will close the road." Familiar faces stroll around the site, top hand-picked experts to play their part. Radio noise is everywhere as the time approaches. Brother Hung is on the megaphone together with Michael Leung, Project Manager (Engineering), the man of the night together with his team members, who are no novices with managing the logistics of large lifts. Off to the eastern side of the site, parallel to Tin Mei Avenue sits the 150-tonne bridge, which had been prepped the week before. Edward Yeung, Tamar's project Director and the top man on the site, observes from a distance, exuding calm with the knowledge that his team has everything in hand.

On midnight, the partial road closure spurs people into action. Under the control of sub-contractors, Kanson, the bridge starts to move from its stationary position in slow motion and minutes tick by. The corner turning onto Gloucester Road is navigated via a two-piece trolley, the second of half of which pivots the 150-tonne bridge to turn sharp corners. Successfully turning the corner, the clock has already ticked over 12.30am and the full closure of the road prompts dozens of workers onto the road in preparation for lifting the bridge. As dozens of men and women bustle about their own tasks, a lone man, measuring the road makes markings with spray paint – delineating exactly where the crane will be placed. Soon, everyone switches on their headlamps as the street lights along the road, one by one, are being temporarily dismantled to make way for the bridge which slowly pulls up to its allotted position. Sitting quietly on the side, watching with interest, is a group of banksmen patiently waiting for their turn. "What we are doing is positioning the bridge before the lift," explained Fung Chi-kwong, a Rigger Foreman of his team of 12. "Positioning of the bridge is most important. Is it balanced? Are we lifting in exactly the right position? I am not too concerned as our team is experienced in this sort of thing. We are just waiting for our moment to work on the bridge." As the movable crane positions itself, the crowds are pushed back as the beast of a machine unfolds its impressive breadth with a powerful grunt. From a distance, one can see the riggers crawling in and out of the four posts of the steel box consisting of six H-bars – taking their time with the bridge as it dangles a few inches from the road.

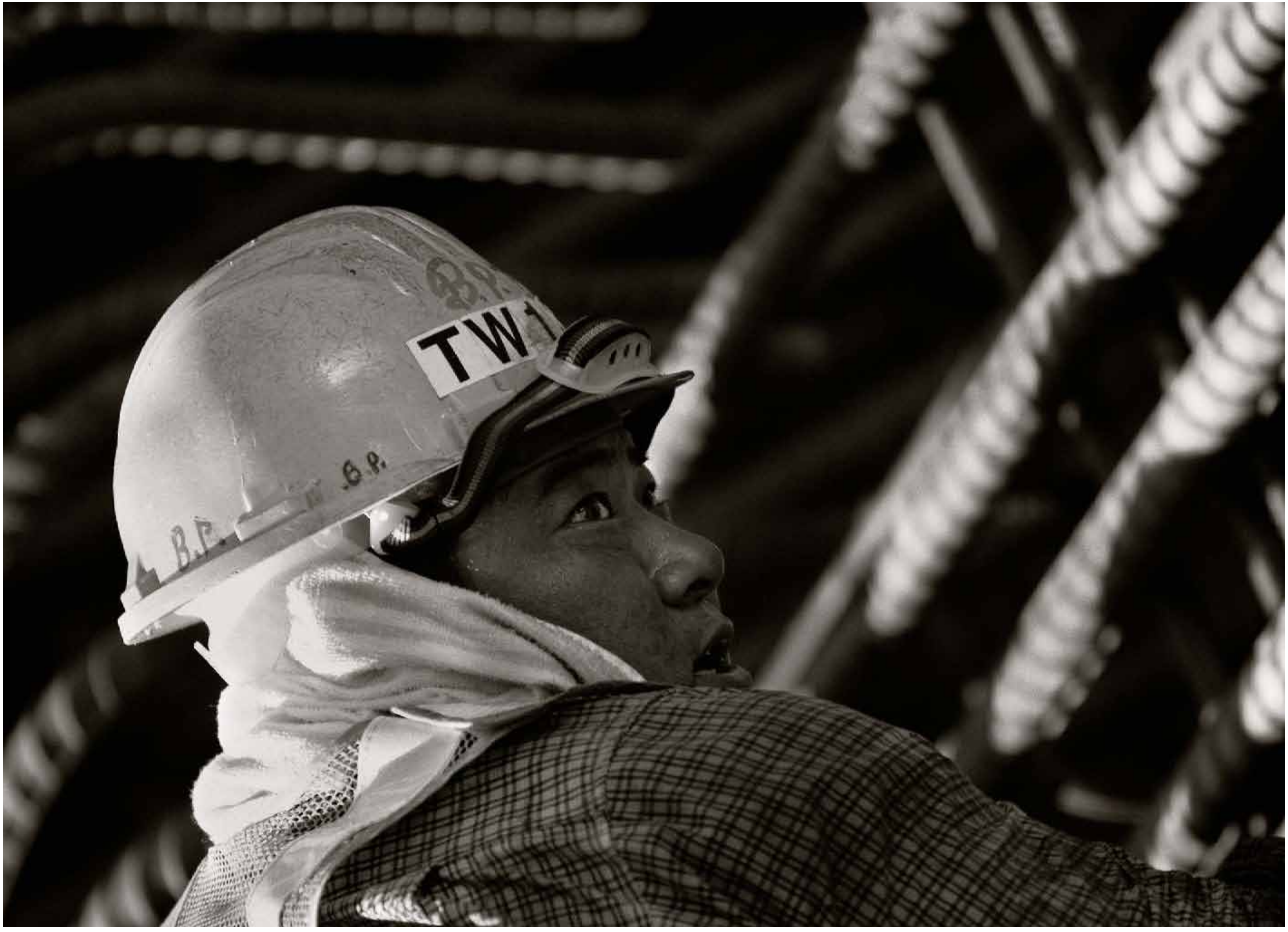
The thumbs up were given and the lift commences. The 500-tonne crane deadlifts more than 150 tonnes of steel without breaking a sweat and slowly swivels the bridge into position without a hitch – this takes precious minutes as everyone holds their collective breaths. Riggers position the steel bridge and the connection is made as welders go straight to work securing the great expanse. The bridge construction continues and the fitting out would only be deemed safe for the public to walk on in a matter of weeks.

The second lift, a few weeks later, was a great success. The pressure was high, but confidence and preparation ran the gambit – much to the relief of the hundreds of men and women on the site. "What we do may seem stressful at times, but the sense of achievement working together with a great team is what keeps us moving forward," said Michael Leung. Today, the connectivity of the Central Government Offices at Tamar is accessible via the waterfront, the Citic Tower and of course, the Gloucester Road bridge, which links the development to the Admiralty hinterland. "When compared to the older site on Ice House Street, the Central Government Offices at Tamar is more convenient than the old offices," said Chief Secretary for Administration's Office Administration Wing , Deputy Director of Administration, Winnie Wong. "I don't think it's far away and often I walk to my office from my home. Overall, access here is easier." "Connectivity was an initial concern of the LegCo members," said Pauline Ng, the then Secretary General of the LegCo Secretariat and head of the project team panel. "There were concerns that transport was not convenient for most Hong Kong people. So we worked with the Transport Department to improve connectivity through increasing the bus routes as well as speeding up roadworks outside the development, which was completed in October 2011. The walkway from Wan Chai was connected, and when the promenade opened in spring 2012, people had the option to walk to Central and take the Star Ferry. A new footbridge is being planned to connect the LegCo Complex to Citic Tower so that pedestrians do not need to compete with the heavy traffic when crossing Tin Mei Avenue. This footbridge will connect LegCo Complex to the pedestrian walkway to Pacific Place Three in two to three years."

On the Front Line

THE TAMAR FAMILY


警示 Safety Alert
施工
065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"Toil, says the proverb, is the sire of fame", according to ancient Greek playwright Euripides. It's no wonder then that the legions of front-line workers who build Hong Kong are the exalted heroes of the Tamar Development Project. More than 3,000 workers toiled through windswept winter mornings and scorching summer afternoons to complete an iconic building within the short project programme. Spread across the 4.2 hectare site, crane operators, riggers, architects, traffic controllers, engineers, drivers, carpenters, scaffolders and welders worked together. All had the same goal – to complete their task as timely, safely and efficiently as possible. On January 25, 2011, the site hosted the topping-out ceremony to mark the completion of the superstructure works and the start of associated fitting out works. As representatives from the Gammon-Hip Hing Joint Venture, Deputy Managing Director, Jardine Matheson, Adam Keswick, and Executive Director of NWS Holdings Limited, Patrick Lam, were present to greet then Chief Executive Donald Tsang who said the project had reached a new milestone.

"The project has adopted the 'door always open' concept in its design," said Tsang. "This open door is now standing behind me. It is not only a distinctive building design, but also a reminder for us to be always open-minded, proactive and receptive to public opinions. The close proximity of the executive and legislative authorities reflects the close working relationship between the government and the Legislative Council (LegCo). With the relocation of government headquarters and the LegCo building to Tamar, I look forward to further co-operation between the two in promoting the development and advancement of our community." During the topping out ceremony, both sides of the joint venture were proud of the achievements of the men and women on site.

"It is an honour to be part of this seminal project," said Keswick at the ceremony. "This building will be for the future generation of Hong Kong leaders – managing from strength to strength. The project has been fascinating, with a tight timeline. The team effort together with the support of the Hong Kong government has created a Hong Kong landmark." NWS Holdings Limited, Patrick Lam echoed the sentiments. "From the onset, Hip Hing has always wanted an innovative and novel design of the new government headquarters," said Lam. "As a result, the joint venture came up with an arc design symbolising openness and transparency. It has been a very enriching and rewarding experience for us to see Tamar to fruition. We are proud to be associated with this landmark project." While there was celebration all around – the heroes of the site continued to be the front-line workers, including Rigger Foreman, Leung Siu-hung, or Brother Hung as he was called on site, who led a team of 130 workers with his drive for excellence and emphasis on safety.

"Building the Hong Kong government headquarters is a bit like watching your own child grow," said Brother Hung, with his trademark smile and no-nonsense tone. "This site is a great project to work on from scratch, but this is not the first time I've worked at Tamar. After 1997, I helped build a model for an environmentally friendly house on this very site. In essence, I'm returning to the same site and feel a sense of belonging." At a typical morning safety drill at 8am sharp, Brother Hung could be found warming up his body with well-timed stretches. He took a turn on the podium to praise fellow workers and also cautioned them on daily safety tips. A Tanka fisherman, he grew up on boats in the harbour, which has given him a unique perspective on building in Hong Kong.

"I personally think the new government headquarters is great because the design allows for more space, which results in a less-congested look," said the father of two, who watched the historic site change through the years from the vantage point of his family boat. "It's environmentally friendly and will allow air to flow into the city. Also, as a layman, I like how it's not all glassy or too artistic. It's a high-quality building, something that will set a new industry standard and deliver a good quality structure. Construction had also been difficult and I had been pushed onto different parts of the site to manage the labour shortage and the delays. While everyone understood each other, we needed to push forward. This was something typical for big projects, but we all had the same focus – to finish on time in a quick and safe manner." Quality and safety was the mantra that all workers on-site adhered to. The discipline of the trade through the change of mindset of each worker had elevated their industry. Today, construction sites are more clean, efficient and safe.

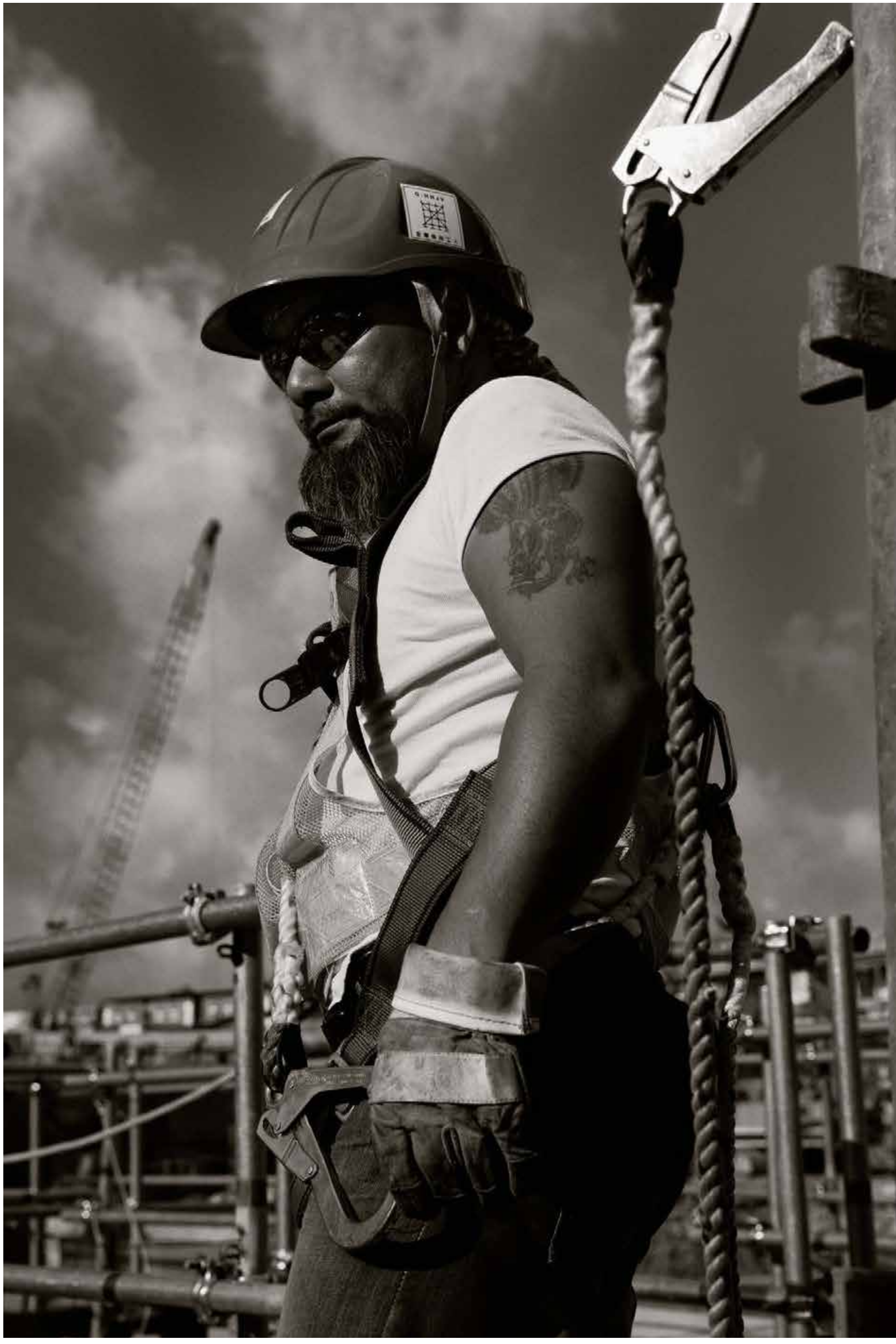
Hong Kong born and raised, carpenter Kwok Ping-kei has been working for nearly 50 years in this tough industry. "The most impressive part of the project was safety management," said Kwok, who started on-site at 6.30am every morning. "Without a doubt, this has been the safest site I have worked on and we kept it that way. The rest areas were comfortable and the contractor even provided herbal tea and water. I had never heard of this before on other construction sites. It was a really nice touch! It is amazing to think that this former British Naval base is going to be the site for the government headquarters. Look how Hong Kong has progressed! I've got two kids who I brought to see the site on the footbridge nearby. I explained to them the history of the site but also showed them the future of Hong Kong, which we are all part of."

Intense labour may be their lot in life, but most of the workers saw it as an opportunity to toil hard, take care of their families and build the world city we see today. Choi Lai-ming was part of the team which cleaned the site, but around Tamar, the workers affectionately referred to her as the "Herbal Tea Lady". Every day at 7am, she would make Crysthanamum and Jinseng tea for the workers – a first on any work site. The Tamar Development Project is one of the best she has come across. "I felt everyone took care to do everything professionally," said Choi. "There was a sense of consideration and my task to make tea for the workers was one of the many examples of this. Gammon-Hip Hing also provided free water to the workers. Nearly unheard of on any other site! I am glad to be one of the few Hongkongers to watch the building rise from the ground up. I have two sons and they kept asking me about the site. They insisted that I make a marking on-site, so that when they come after it is completed, they can tell which part was done by their mother."

Roger Chan, foreman of a six-man team within the LegCo Complex agrees. "Though this job has been one of the more difficult projects, there is a sense of achievement," said Chan. "There is a precision when it comes to our work with the wall claddings in LegCo. With a shortage of time, details are still important and we strived to keep up!" While each worker tried hard to achieve quality and perfection in their vocation, the pressure was high and delays were taken in stride. But one woman was their on-site "mother", the lady who provided the metaphorical glue and guidance to any project family, and measured success not only by the final product, but by the process of learning. Shirley Ip, Secretary to Deputy Project Director, Kevin Ng, has been working on projects for more than 23 years.

"I am a project person and Tamar has been a source of pride, like a small baby who we have been taking care of," said Ip. "Work is often similar on each project site, but the people and the challenges are different. For me, working is not only about your boss, but about learning, understanding and working together with different styles of people. While Tamar has been difficult at times, we are so proud to be part of the process." After each job completion in her 23-year career, Ip takes a stroll through the project, a mental hello and goodbye to the last two years of working from a portable office on-site. It seems this walk was bittersweet, a gentle farewell to a project high on challenges and a welcoming hello to the state-of-the-art buildings. "Though I didn't build it with my own hands, I feel proud that I was part of this. We all have left our blood and sweat, a small part of ourselves at Tamar."

Every worker felt pride in being part of a landmark achievement, but the man with the amiable smile and steely focus was none other than G-HHJV Deputy Project Director, Kevin Ng. "The job is all about how we worked together: 'One Tamar, One Vision' is why the project was such a success," said Ng. "All our objectives tied together to interface, standardise and create consistent solutions. Every person on-site was accountable for performance, but also focused on the safety cycle and practices. The excitement I felt every day has been part of the job."




FIRST AID
GARTNER

Securing the site

Gammon Construction Chief Executive Thomas Ho himself asked for Yuen Ngan-ho to guard his precious site. "The bosses really appreciate me," said Sister Ho who is renowned for her remarkable ability to put a name to a face after a single meeting. "If you are good at what you are doing, it's simple. One also has to have the attitude that if you do a little bit more, it's not a really big deal. People hire you to do a job and it is up to me to do it well." Sister Ho waves to the men and women entering and exiting the site, most know her by name, as they press their palms onto the biometric readers. Her memory is famous and commands respect from the thousands of men and women entering the site. Once seeing a person, she is apt to recongnise their face, name and often ID card number. From front-line worker to high ranking government officer, courtesy is in the forefront of her mind.

"I have been a security guard for nine years – three years with Gammon sites. I was in the Nam Wan site, the Link 200 JV in Jordan, Wah Lan Road and now here at the government headquarters site. It's a job and yes, I am famous for my memory, but I am just like this naturally. What we do is very serious. We have to watch what's going on, write down names, match the names. It's more than just people. We match the piece of machinery as well. We have numerous cameras on site and everyone has to use the official entrances." She mans the main entrance which at Tamar's height admitted more than 3,000 workers a day onto the 4.2 hectare site. "Safety is number one. Hats, vests, shoes are not just important but mandatory. Often people don't use common sense. People need to understand and respect the rules of safety. My job is not only to secure persons in and out but to welcome them with a smile. One has to have manners; even when faced with trouble."

Site security is of great importance and often, workers in the past have helped themselves to valuable goods and material. "Of course, we cannot open people's bags but on other sites, I have caught many people red-handed before!" She pulls out her blue book with commendations from the Hong Kong Police Force of over a dozen incidents in the past. It seems she has the knack for sniffing out the perpetrators. "This line of job can sometimes be tough if people are rude to you. But this doesn't mean you have to be rude back. You can report them. I am known around the site as the lady with the great memory, but one who is also polite!"

Being a gatekeeper is more than just watching workers. Securing the site involves controlling the influx of people in and out. As the cheerful sentry at the gates of the Tamar Project, Sister Ho is on speed dial for many of the contract project workers navigating the enormous site. "I think I can say everyone on the site knows me and I guess I am a go-to person for many of the project people. I am very proud to be working on the government headquarters site – but I haven't thought too far ahead about meeting famous Hongkongers. I just focus on doing my job day to day. I am proud to say I won the monthly safety worker award. Who knew a woman like me could do such a great job?"


EX

Complete

第三章

在香港這個人煙稠密的彈丸之地，如今開闢了一片青翠的綠州，這片令人心曠神怡的草地，乃添馬艦發展工程的一大特色。空曠的「綠地毯」敞開雙手，迎候市民踏足其間，從斜坡平台上舒享美景，並為千萬遊人帶來無窮的想像。高聳的山巒屹立於添馬艦的背景，「綠地毯」則連繫金鐘區腹地與維多利亞港，象徵顧問團隊與政府合作無間，和諧協調，交織成香港人所珍視的奇妙天然景觀。

雅博奧頓國際設計有限公司(ADI)的團隊主管符傑濤說：「漫步在『綠地毯』之上，緩緩邁向迷人的海濱，海港、綠樹和灌木盡入眼簾，予人一種愉悅的感受。我們種植了超過四百株最高達九米的樹，規模可算龐大，工作殊不簡單。」

享受不單是在「綠地毯」上漫步，立足橢圓會議廳旁的觀景廊上，更可一覽廣闊的維港景致，沉醉於海天一色之中。

立法會綜合大樓提供二千三百平方米的公共空間，包括附設一條歷史長廊的教育廊、專題展覽區、播放五分鐘影片簡介立法程序的自學角、兒童活動區、小型咖啡室及圖書館。

至於最受歡迎的日常活動，要算是費用全免的六十分鐘教育導賞團，以及專為學生而設的一小時半模擬立法會會議。前立法會秘書長吳文華說：「讓大眾親睹我們的工作，有助加強立法會與公眾的溝通。立法會必須開放透明，但要保持尊嚴。」

添馬艦並非孤立的一片土地，若宏觀港島筲箕灣至堅尼地城及九龍鯉魚門至青衣全長七十三公里的海岸線，添馬艦就像砌圖遊戲不可或缺的一小塊。

至於中環至灣仔的總體規劃，政府必須面對諮詢公眾的挑戰，並將市民的意見轉化為詳盡的設計大綱，規劃署務求在各方面保持靈活的態度。

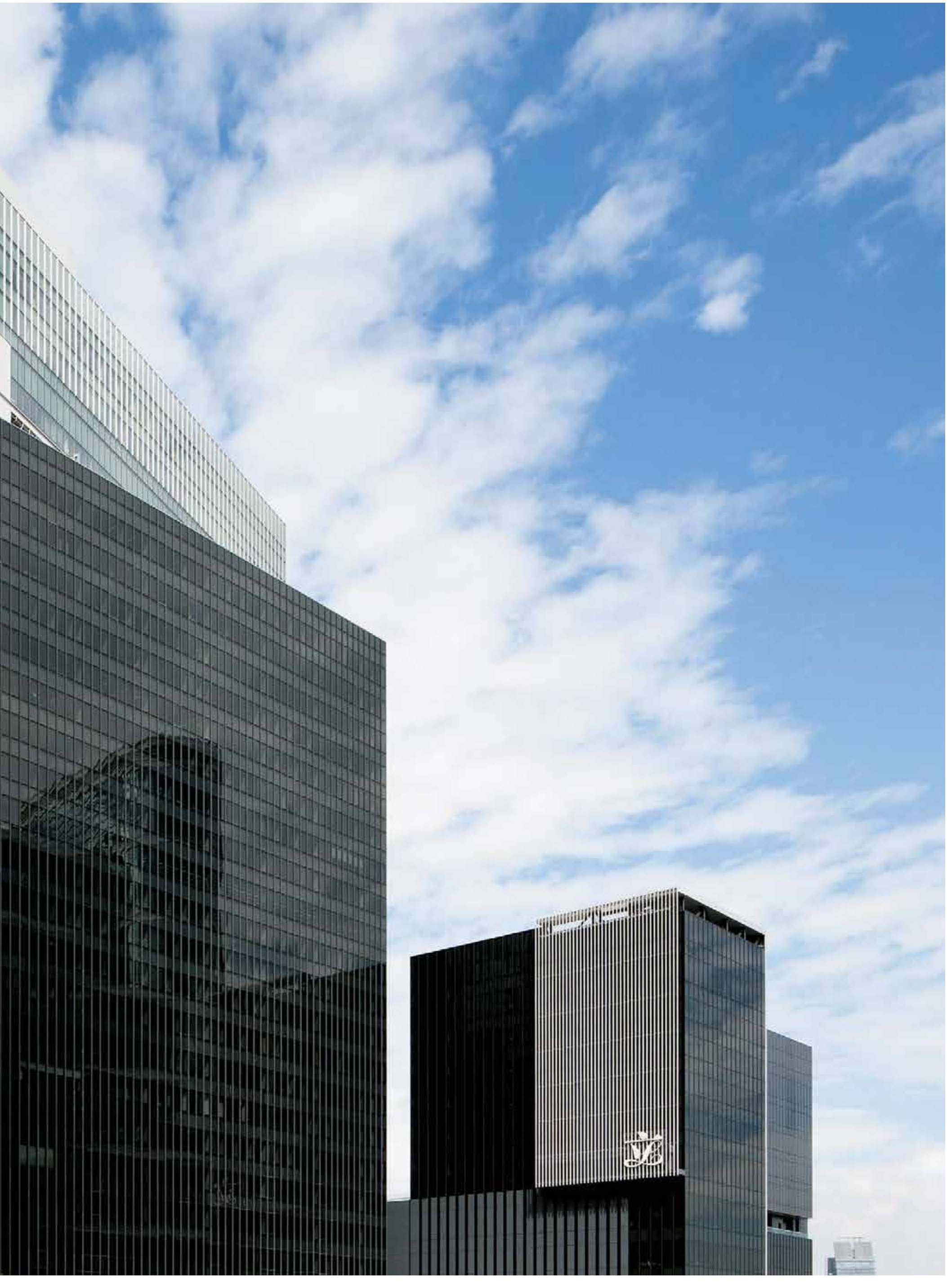
前規劃署助理署長／特別職務李志苗說：「添馬艦發展工程與海濱走廊融為一體至關重要。規劃是一個不斷演變的過程，而添馬艦乃率先完成的一部分。我們預計所有工程將於2017年竣工，目前尚有超過十公頃的土地相繼動工，我們必須審慎進行。我們要循序漸進地推動整個發展項目，把市民吸引到海濱來，並有足夠時間順應一切的轉變。規劃署不會以狹窄的視野規劃個別的項目，我對添馬艦及其周遭的佈局深感滿意。」

正當添馬艦的建設工程於2011年夏季繼續按總體規劃進行，數以千計公務員密切期待經歷職業生涯中最大規模的搬遷行動之際，每天早上的新聞報道，總會提及工程可能有延誤、各項複雜問題及面對不同的需求。大家不禁問道，它究竟會否如期完成呢？然而，金門建築總裁何安誠和協興建築董事總經理朱達慈每天與項目經理巡視工地，總會聽到令人安心的一句：沒問題，不會有延誤！

對立法會來說，時間是最關鍵的因素，議會程序絕對不容延誤。優先處理的立法會搬遷能否實行基於三項條件：議會設施是否完備，辦公室是否預備就緒，以及教育設施是否安裝妥當。

吳文華說：「在計劃確實的搬遷日期時，我們全面考慮了各方事宜，認為綜合大樓如能早日落成啟用，便可讓我們就整個系統每一環節作實際測試，並在過程中不斷調校優化。我們亦欣然樂見綜合大樓的各項教育設施，與會議設施在2011年同步啟用，讓眾多的市民不分老幼均可享用 。」

在物流部署方面，政務司司長辦公室負責組織及安排最終大搬遷，讓來自不同地點的十二個政策局順利遷入新址。商務及經濟發展局百多名員工率先於2011年8月1日遷入添馬艦政府總部新址，而運輸及房屋局於2011年底遷入新址後，整個大搬遷計劃終告順利完成。




ZURICH
LIPPO
POAD

Greenscaping

Hong Kong, with its urban density and unique topography, now has an emerald sea of grass, which is the defining gesture of the Tamar Complex. The Green Carpet has captured the imagination of thousands with the sheer scope and open access that the sloping platform provides. With the mountains cresting behind Tamar and the Green Carpet linking the Admiralty hinterland to the sea, the co-ordination between the consultants and the government has resulted in a subtle natural landscape for Hong Kong to treasure. "I think when people walk along the Green Carpet, there is a sense of enjoyment as one gradually strolls down towards the magnificent harbour, the trees and shrubs are framing your view," said landscape Consultant, Christopher Foot, Director with ADI, the landscape consultant. "I look back on the project with fond memories; it was one of the most challenging projects I've worked on."

Working together with HOK which created the conceptual design with RDL, the detail of the landscaping was taken on by ADI, which wanted to keep the landscape as organic and as subtle as possible. The environment is open, with trees and shrubbery lining up along the periphery, a common landscaping tactic handled in famous parks such as Central Park in New York. The canopy of trees, with lush lawn afoot, is abutted by shrubs providing ground cover. In the landscaping world, they follow the creed of "barrier-free access". Like many modern buildings, the interfacing with the various teams from the Chief Executive's Office was very intense as the western wall of the building had environmental features. Taylor Yip, the Co-ordinator from the Chief Executive's Office design team in charge of the exterior facade explained in more detail. "The design of the buildings is deceptively simple, but in reality we have 10 facade systems including curtain walls, louvres, aluminium cladding, stone cladding and glass wall systems just to name a few," said Yip. "The western face together with the roof has plant features: three rows of planters and wooden trellises. This softens the façade and contributes to the overall green feeling of the complex."

Barry Day, a senior associate with HOK, recalled the milestone of when the government approved the master plan. "This was when government agencies and consultants came to an agreement on many of the detailed aspects of the landscape," said Day. "This included things such as how much space was being used, the types and number of trees to be planted, soil depths for all vegetation and seeds to be scattered. Typically, this step would be simple, but the prominence of this project is of great importance. Everything is scrutinised and reviewed to see if it is in compliance. The selection of trees were changed up to five times as the groups worked together with a proposed list of candidates. Workshops would be held with the Leisure and Cultural Services Department (LCSD), which would then comment on what trees would work and what wouldn't work. This was based on their years of experience in tending much of Hong Kong's public areas." But even more important was the earliest query: how does the public use space? "It was a long process to figure out what goes where," said Day. "First, this starts with the grand gesture. Then the government has requirements. They need to have civic landscape but at the same time, there was a need to minimise the spending. We wanted to consciously include as many public amenities as possible to provide the public with different experiences. "Not much changed from the initial concept except that the layout and flow was modified to bring in access from different variables: the street, buildings and the front area," said Day. "We had to work with the alignment of different levels and pathways, adjusting where the amenity would sit and if it was public or private. We then went about creating an amphitheatre on Harcourt Road, a LegCo Garden Piazza and green space in front of the CGO."

Towering over the entranceway, off the sky bridge over Gloucester Road are the two arching banyan trees in the doorway of the CGO building. "As the years pass, those banyan trees will become a focal point along the Green Carpet," said Foot. "All together, we brought in over 400 trees up to nine metres in height. The sheer scale of the exercise was quite remarkable as these trees, with the intention to grow to a grand scale, each needed up to 2.5 metres of soil. Working with the LCSD was great. For example with the turf, we used four species combined together. With the LCSD stating their preferences based on their past experiences in public spaces, what we chose was more like a shrub. In the winter, we plan to use ryegrass, to overseed and get a second flush of green."

In front of the Chief Executive's Office, the strips of hard pavement are broken up by a relaxing contemplative garden. "It's a hierarchy of special experience," said Foot. "You move from a very open space, into a more intimate, dipped hedgerow, which is architectural." At the LegCo Complex, the gardens are movable planters with bamboo arching from between the planters. As well, the historical seawall line from the original Tamar naval base is also commemorated. "There is a sense of continuity between the different areas," said Day. "All the pathways rise and fall with the landscape. There is no sudden change in the gradient, or steep stairs. The Green Carpet blends and swoops down. The amphitheatre unwinds naturally. The sculpture garden is an experience, which ties everything together. "It was pretty amazing to work on this project, achieving a point of connection to the waterfront and providing an open space for the Hong Kong people. The G-HHJV, through Project Manager Percy Chan and Design Manager Simon Lee were very supportive in setting up meetings to resolve issues. They have done an amazing job."

Creativity

"Why is art important?" asked Leisure and Cultural Services Chief Curator (Special Projects), Tang Hoi-chiu, an iconic ambassador in the art scene and member of the Tamar art committee. "It is there to touch and inspire people! Creativity is the most vital element of any international city. A piece of art should change the environment surrounding it. The government has changed from a business-focused government into a government which is keen to promote art on its iconic new building site." K.L. Ng, LegCo Curator and member of the Tamar Art Committee who worked with the Legislative Council team in organising direct purchases, commissions and open calls for more than 10 pieces of artwork to be placed throughout the buildings and the site. "Judging art can be difficult because of different preferences. This is why we have a panel which involved art experts, members, university professors, art specialists, media representatives and staff representatives.

"It is important to integrate the art into the fabric of the architecture as well as bring in new media to challenge people's thoughts on art with traditional paintings as well as non-traditional pieces. As well, we wanted to support the art scene in Hong Kong." Spending taxpayers' money on art was not something taken lightly. There was much discussion about the evolving importance of Hong Kong as an international city and the role art would play. "In the last few years, you can see how the thought process has evolved as more people are appreciating Hong Kong art," said Ng. "The mindset has changed and there is great community support. As the commercial value of art is evolving, there are people who do understand that there are careers in art out there."

In the early days, the Chief Secretary's Office and LegCo were keen on implementing separate competitions. The LegCo would launch one for its grounds and buildings, while the CSO would manage the Green Carpet as well as the two subsequent buildings, the Central Government Offices and the Chief Executive's Office. "Tamar's Green Carpet is a place of leisure and enjoyment," said renowned artist and architect, Raymond Fung who also acted as a Consultant to the CSO. "Hongkongers can often be sceptical about art and its role in the workplace. We are here to give our perspective and, together with Rocco Yim, we came up with this idea to bring art into the grounds and buildings. This may be a pilot project, but it is a good start as to how to build art into architecture."

In April 2010, the government ran an open call for artwork proposals for the prime civic core at Tamar. The "Public Art Project – Tamar" attracted 326 proposals and an exhibition held in November 2010 featured 30 shortlisted proposals which were given a subsidy of $10,000 to develop their detailed proposal. The commissioning fee for each final chosen artwork was set at $1 million. More than just commissioning art, the Tamar project also featured an art element in its conference rooms, public areas and offices. Working together with institutions, such as the Hong Kong Museum of Art and the Hong Kong Heritage Museum, the process sorted through the present collection and found suitable works to display at the headquarters. "Getting people to say yes and creating momentum is important. Hong Kong is progressing towards a creative society. The up-to-date work from Hong Kong artists will refresh the building," said Fung. There is a sense of trust between the Chief Secretary's Office, the Leisure Cultural and Services Department, RDL, HOK design firm, the artists and sculptors."

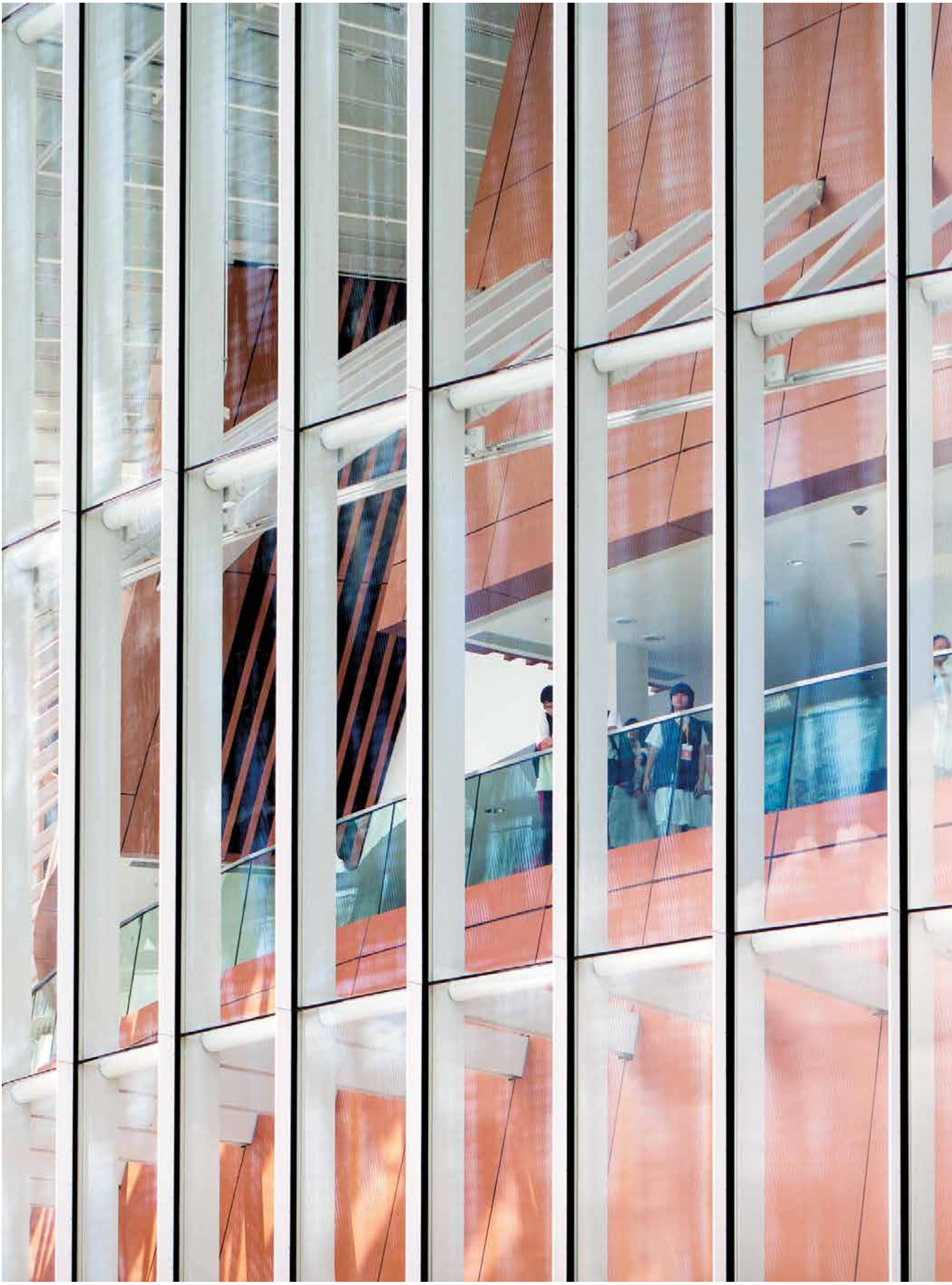
Initially, LegCo proposed four sites and the CSO proposed eight sites for commissioned artworks. "Originally we had proposed numerous sites, but not all would be pursued," said Tang. "The proposal created more than a year earlier was based on drawings and renderings. We have conducted on-site tours and realised that some locations were not ideal." The question: is it possible? Commissioned works are undergoing an approval process as some of the sites were too small, too tight or too large. While judging panels have chosen the sites, the government is in discussions with artists. Models have been sent to the judging panel and the process is ongoing. While civil servants moved into their offices, the art project remains a work in progress. For the Central Government Offices, the Chief Executive's Office and the LegCo Complex, offices, and meeting and VIP rooms as well as the Chamber will be decorated with more than 20 pieces from the government archive.

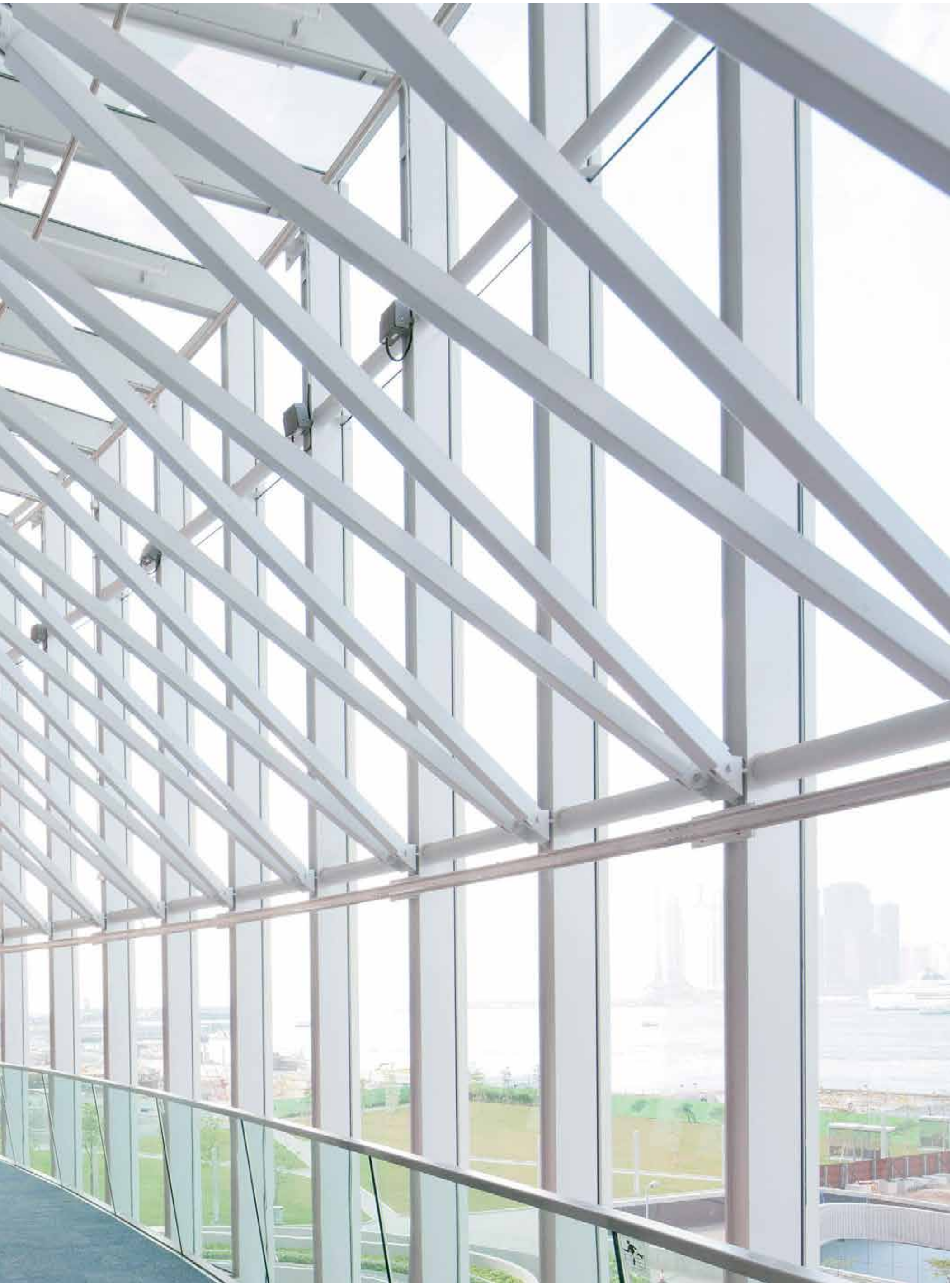
"These pieces, mostly paintings, are quality reproductions which will be mounted," said Tang. "We will be using reproductions because of the fluctuating temperatures inside the building and exposure to the elements. Preservation of art is important. As well, the banquet hall will feature a marble sculpture, rectangular in shape like a bridge. It is an abstract piece which will bring life into the space. It is an ongoing process. We are looking into other areas to decide which specific piece of art would enhance each space."

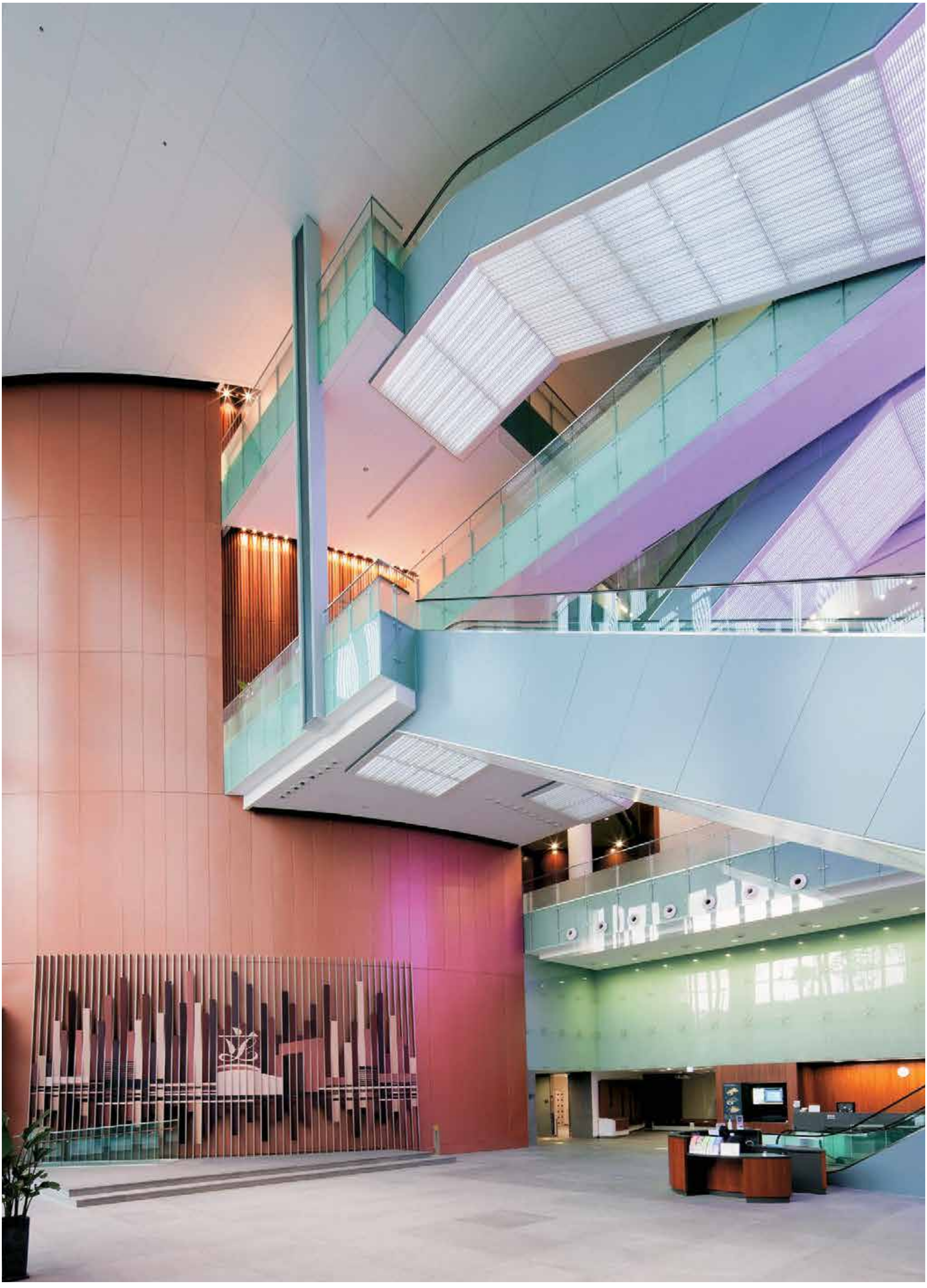
Across the Green Carpet, the LegCo and K.L. Ng geared up for their own open call in April 2010 for a special piece within the grand lobby of the LegCo Complex. "While there were four potential areas for commissioned art, we chose one to be the main focal point for the foyer," said Ng who managed 18 pieces by the end of 2011, all within the complex.

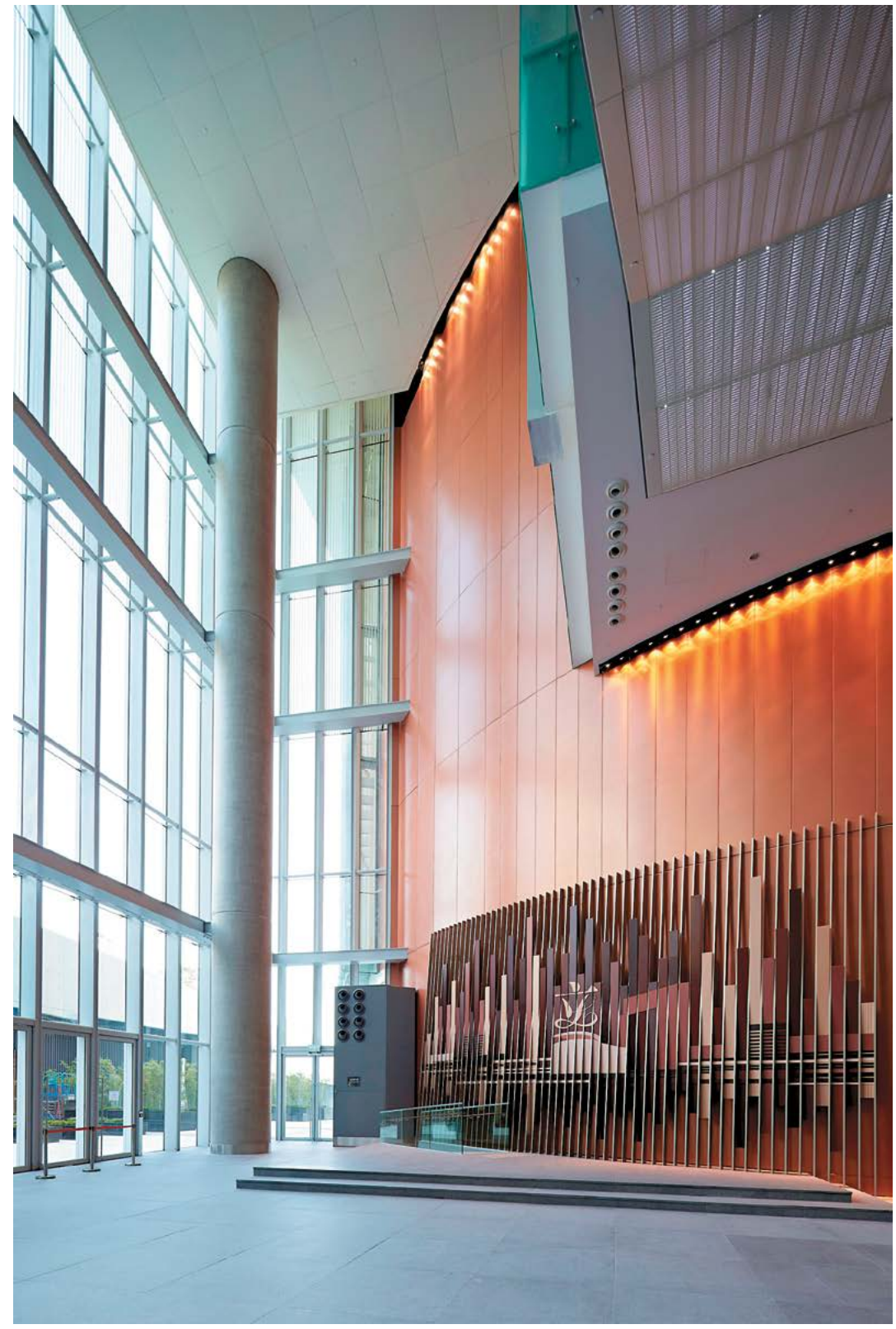
The piece, entitled *The People*, was selected and commissioned in April 2010, which features 87 silhouetted figures installed into the white plaster wall representing the daily life of Hong Kong people of all ages and backgrounds. Created by German-born, Hong Kong resident, Cornelia Erdmann, it is the shift and change of the overhead lights which create different moods.

"This is one of my favourite installations," said Ng who estimated that the cost of the piece was under $1 million. "The shadow, shape, light and colours are always changing. There are dozens of LED lights installed above as part of the installation. Over 80 people were involved in installing and then painting the finish for the project. The position is prominent, the viewpoint and feeling is different from each point – which makes it perfect for the area that encapsulates it." Raymond Fung, the notable artist and architect, was enthusiastic about the prospects of the project as a whole. "Tamar is a breakthrough," said Fung. "In this continuous and rolling process, we are keen to place art where the general public can experience it."









The interactive lobby of the Legislative Council Complex features a visitors' corner, with a five-minute video on how laws are made, a children's corner, a small cafe, a library and archives.

Moving in

Moving is an exciting and thrilling experience and in the summer of 2011, thousands of civil servants were on the edge of their seats in anticipation of one of the largest logistical moves in their careers. Every morning, the media would cover the delays, complications and demands on both sides regarding the sizeable site – the Central Government Offices. Would it be completed on time? The omnipresent voices of both Thomas Ho, Chief Executive of Gammon Construction Ltd., and Chu Tat Chi, Managing Director of Hip Hing Construction Co. Ltd., could be heard as they walked the site daily with the project managers: Yes. There shall be no delays. For LegCo, the timing was crucial as the council proceedings took precedence. The decision to move was based on three criteria: conference facilities, office readiness and educational facilities. "The crucial factor was the conference facilities," said Pauline Ng, the then Secretary General of the LegCo Secretariat. "We went on the path that our staff could move in phases and the priority was not to affect council proceedings. Therefore, we decided that if the staff offices were ready, the secretariat would move starting in June 2011.

"My administration employees were keen to move in earlier as it meant more time to prepare. The IT and building management came in late July, early August. The small office (functional) relocated in late August and September. Finally, LegCo members moved in in late September. This was decided in mid-August subject to testing. When I say testing, I am speaking about things such as the operation of the voting system, which took time and many scenarios to test its functions because it's a new system. Everyday, I monitored test results and the move date was adjusted accordingly. We considered many elements when planning the actual move date and felt it was worthwhile to move in earlier so council members had meetings in the rooms, using every facet of the whole system through any hiccups before considering whether it was okay to move in or not. It was very exciting to see our plans become reality, especially the numerous educational facilities, which came on line in 2012."

On the logistical side, the Chief Secretary of the Administration's Office (CSO) was in charge of organising and juggling the ultimate move of the 12 bureaus from multiple locations. Since February 2010, representatives of all the bureaus were called to interdepartmental meetings with the CSO under the direction of Chief Secretary for Administration's Office Administration Wing, the then Deputy Director of Administration, Winnie Wong who was responsible for the co-ordination of the mammoth relocation exercises. "The Central Government Offices operates and serves the public, so we needed to maintain their services," said Wong, emphasising that each move would not affect the day-to-day operations at the Tamar site. "At these meetings, we covered basic topics like security and guidelines. This included advice from the Government Records Office on disposal of files. Representatives of the Security Bureau also briefed the meeting on relocation of classified documents. But more than that, we had to ask bureaus to send in their requests for moving dates, how many days they would need to move out and move in." Giving each of the bureaus the freedom to schedule in their own dates helped move the process along. As well, bureaus were advised to locate their own contractors as only they knew the specialised needs for moving whether it be the size, and the number of locations or materials needed to be transported. The result of the first round was expected as most bureaus wanted to move during the weekend, but this was limited to two days. Compromises had to be made. "It was a challenging process as numerous updates or modifications were made. It was like putting the pieces of a puzzle together. The request times for nearly all of the 12 bureaus were almost the same, during the summer holiday. The first tier of the moving schedule was challenging, as we had to make sure that all the supporting facilities such as IT and telecommunication facilities, on top of the physical works for the offices, were fully ready for the scheduled relocation."

The first to make the CGO at Tamar their new home was the Commerce and Economic Development Bureau (CEDB), and their 100-plus workers. The precise timing was not flexible as the CEDB's lease at Pacific Place was set to expire soon, and the need to relocate was imminent, despite the delays. "Works were still going on around the office areas, but the joint venture made a good segregation between the construction site and the office to ensure safety," said Winnie Wong. "We had to organise a briefing through a site inspection for staff members to tell them how to walk on the site. Time was needed to brief the department, as it had regular guests visiting." To take an already high-pressure relocation to the next level, Hong Kong experienced a typhoon two days previous to the move.

Permanent Secretary for Commerce and Economic Development Andrew Wong Ho-yuen told the press that the amenities were all working properly. "My colleagues are happy to be the first to move into the new complex with its modern facilities. I believe they will enjoy working here," he said. It was a smooth move. The ultimate goal was to finish the move to the CGO by the end of 2011. While the Chief Executive's Office moved in early August, the CSO had a limited amount of time to move in more than 3,000 workers.

On September 29, the Civil Service Bureau's (CSB) move date coincided with a Typhoon Signal 8. "Everyone was nervous, and we called the CSB to ask them about their move," said Winnie Wong. "We were monitoring the weather updates to ensure when to resume the operations as the moving company had already arrived and were standing by. It was important to check that the physical locations were not affected by flooding. We waited. In the end, the CSB didn't want to stop and works commenced at 6pm that night." In all, there were 15 office locations outside Tamar that moved successfully into the complex. The largest and longest move was for the Development Bureau. The last department to move in was the Transport and Housing Bureau at the end of 2011.

Touring LegCo

"By letting people see what we do, it will improve the communication between the public and the legislature," said Pauline Ng, the then Secretary General of the LegCo Secretariat. "We have to be transparent, but still maintain dignity. The education of youth is a goal of the new LegCo Complex. We want to provide young primary and secondary students the opportunity to understand how the legislature works. We have built certain aspects into the planning parameters – in essence, building for the future." The LegCo Complex boasts 2,300 square metres of public area, which includes an education gallery with a memory lane, exhibition area with thematic displays, a visitors' corner with a five-minute video on how law is made, a children's corner, a small cafe, a library and archives.

"What the JV did was a once in a lifetime experience for contractors like us," said joint venture Project Manager, LegCo, K.C. Li. "It is not only about the requirements, but the technical aspects and the end users. How does the design help LegCo, staff and visitors function on a daily basis. For example, the public gallery has excellent design. Everyone was really thinking about the use of the space in detail. The result is quite remarkable." The pièce de résistance is the free 60-minute educational tours for general visitors as well as the 1½-hour tour-cum-mock council meeting for students. "You have to remember that in the old building, we had very limited space," said Emily Pang, Chief Council Secretary responsible for public (education), who explains that tours started in 1996. "With the limited space, we mainly focused on tours for schools and non-profit groups – about two per month to start with, which grew to 14 tours of 50 people a week."

At the new complex, this number jumped to six to eight tours per day, and seven days a week. They welcome students and also charitable groups, who make prior bookings, and have also set up a booking system for online booking by general tourists and leisure visitors. "The joint venture together with the LegCo Secretariat and Architectural Representative Yip Ching-mun had a very high level of co-operation," said LegCo design team member Fanny Kwong. "We really appreciated their help and management of the end users. Together, the result is something to facilitate visitors, ideas and the public. We want everyone to enjoy the building and be involved in the legislative process."

"Most people are very excited when they are overlooking the Chamber from the public galleries," said Brenda Yeung, former Senior Public Information Officer. "The facilities enable us to plan and organise various types of role-play which are very effective in enhancing students' interest in the law-making process." Questions that students often ask include: Why does the Chamber look so small on television? What is members' remuneration? Where do members sit? The tour, which underwent a soft opening in December 2011, is in a 60-minute format – but visitors are free to remain in the public area of the lobby for another hour to look at the thematic displays, to visit the library or to have a cup of tea in the cafe.

"There is growing public interest among students and teachers, with more requests for learning and teaching opportunities," said Yeung. "With the change of the secondary school syllabus, which focuses on contemporary issues in the new core subject called Liberal Studies, schools are bringing more students into the LegCo Complex to learn. Luckily, with the additional space, we can provide more facilities." The memory lane exhibition is quite remarkable as, with the help of Historian Dr Patrick Hase, the team delved into the British National Archives to find constitutional documents regarding Hong Kong, with its first ordinance in 1844, which abolished slavery. "It is important that we have the heart to get people involved, who will then have an incentive to register themselves as voters," added Yeung. "We know that if they cherish the experience, they will take something with them when they leave. We want our visitors to understand the work of a LegCo member as well as understand what it means to be a good citizen – arousing a sense of political awareness and to appreciate the importance of public engagement in the legislative arena."

Walking around, it is obvious that much time and attention to detail was placed into every educational aspect of the new LegCo Complex. "In the summer of 2011, when I saw that the educational facilities were one by one coming into place, I looked forward very much to the official opening of the Complex," said Pauline Ng. "The readiness of my own office was insignificant as it was the whole range of facilities for the public that had brought us so much excitement. These were our driving forces. I am so happy to say that we are now able to provide every student visit with a mini mock council debate after the tour. I have a passion for education. The first time I noticed such an activity for young people was when I was on attachment to the Australian Parliament where I saw young children from five to 12 years old participating in mock council debates in two dedicated training rooms under the guidance of educators."

"I enquired about this and found out that in Australia, there is a policy for all children under 11 to have the opportunity to visit the Parliament Building in Canberra. This was amazing, a good investment. I came back inspired and we later earmarked a certain part of our meeting facilities for an education centre and started writing books, invented games and educated children on a citizen's rights. After all this hard work, look at what we have now. The idea is for all Hongkongers to pay more attention to society and political affairs, to know that they have a part in the legislative process, and in return, we also raise the image of the LegCo."

Enter the dragon, the entrance to the Chief Executive's Office, the Executive Council Chamber and Ante-Chamber, and its secretariat.


SWIRE
POAD


LIPPO
ZURICH
LIPPO
Bank of America
Bank of America
HSBC

Harbour is our Heritage

"The harbourfront is such an essential part of Hong Kong and we have to address, understand and accept that this is the jewel in the crown," said Nicholas Brooke, Chairman of the Harbourfront Comission which was established in June 2010 to advise the government on harbourfront planning, design and management. "While we have a world-class harbour, we also need a world-class harbourfront, which does it justice. There is a need for a wholistic plan. Integrate what happens on land with the water. A range of experiences, both passive and active, and solutions."

Not an island unto itself, the 4.2 hectare Tamar Development Project is a small piece of the puzzle when looking at the bigger picture of 73 kilometres of harbourfront from Shau Kei Wan to Kennedy Town on Hong Kong Island and Lei Yue Mun to Tsing Yi on Kowloon side; 70 per cent of that is owned by the government.

"The vision and development of a strategic plan need to have both a road map as well as deliverables," said Brooke. "There is a need to engage, and engage early to develop options and alternatives for the development plan as a mix of flying high and flying low. Flying high is the big picture: strategic planning, ongoing, high priority. We are talking about master plans, context [district, priorities, the land and water interface] on individual plans. In the past, applications were looked at in isolation. Flying low is focusing on specific applications." Back in 2008, the Planning Department created a land-use framework, then an urban design study for the new central harbourfront. This then gave way to create a master plan for the Central to Wan Chai reclamation project. With the harbour, the Planning Department had to study the statutory outline zoning plan to create a more refined urban planning framework. The purpose was to create a brief for future planning needs.

"Time is of the essence and the harbour is in a unique situation as we have a protection of the harbour ordinance," said Phyllis Li, former Assistant Director of Planning (Special Duties), Planning Department. "The legal proceedings which took the form of a judicial review launched by the Society for Protection of the Harbour was unique to Hong Kong. Since the ruling, it has taken us a few years to comply with the court judgment." Li has been witness to a change in perspective from the public. "The change can be seen and we are responding. For example, there is a need for iconic civic notes instead of commercial interests and hotels. As well, people favour green areas with attraction notes at specific areas. There is also a push for smaller buildings. The challenge has been to implement public input within the planning, which has translated into more detailed design briefs. This is a good thing. We aim for flexibility in architecture, meeting the market as well as stipulating design parameters, including public open space, transportation facilities, a high concept to the waterfront. This gives certainty to developers.

"The integration with the promenade was very important. Planning is an evolving process and while the Tamar development is the first to be completed, we anticipate that all works will be completed in 2017. We have over 10-hectares to work with so we have to work very carefully. We will implement the project in a progressive manner, so that people will be attracted to the waterfront and also have time to get used to the changes. We don't plan projects in isolation and I am very pleased at Tamar within its surrounding context." Out of the 10-hectare site, sites one and two have the Central ferry piers four to six designed into the harbourfront master plan. As well, the Planning Department will have a planning and infrastructure gallery, which is currently at City Hall. For site three, there will be a retail and office building as well as landscaping. Site four consists of a waterfront promenade, commercial and leisure uses. Site five is an office and hotel complex. Site six also comprises commercial and leisure uses.

"The harbourfront gives structure to the waterfront. With the development of the master plan, it will bring access for the public east and west via the promenade, as well as north and south, via four corridors," Li said. The challenge is that the harbourfront site will be a construction zone for more than five years, so how do you keep the faith of the people? "We need to think about ways of creating experiences," said Brooke. "This can be done through restaurants, bars, places or elements to ensure solutions to specific situations. We are putting business principles into the harbour. We need a strategic master plan and context. Is this is the optimum place, the optimum design? We need to be sensible in our aspirations."