Engineering the Future
Arcadis is the leading global Design & Consultancy for natural and built assets. Applying our deep market sector insights and collective design, consultancy, engineering, project and programme management services, we work in partnership with our clients to deliver exceptional and sustainable outcomes throughout the lifecycle of their natural and built assets.

We offer the full range of design and engineering consultancy services across the following sectors:

- TUNNELS
- BRIDGES & HIGHWAYS
- RAIL
- BUILDINGS
68% of the world’s population is expected to live in cities by 2050. As the population grows, liveability becomes increasingly important for cities as they tackle the effects of climate change, rising sea levels, mobility challenges, and need for better infrastructure. Engineering the future of cities will require governments and industry experts to collaborate, innovate, and embrace digital in design and engineering.

Arcadis has over 140 years of experience working with architects, construction companies, and city leaders to plan, design, and build some of the world’s most complex infrastructure projects.

Bringing together technical excellence, a deep understanding of community needs, and a genuine passion for improving quality of life, our experts are helping to build more efficient rail transportation systems and road networks, improve waste and water infrastructure, and offer innovative solutions to protect cities for the impact of urbanization.

Join us as we engineer the future.
WHAT WE DO

Our design and engineering consultancy services are characterized by our sense of responsibility and acute focus on quality. From concept design and pre-feasibility development, through to detailed design and construction support, we strive to use our understanding and expertise to achieve optimum social and economic outcomes that are in line with our clients’ and stakeholders’ biggest priorities.

We have experience in delivering a diverse range of projects using a variety of delivery models, including alliance, public-private partnerships, design and construct, early contractor involvement model, design only, professional project management, design verification and maintenance contracts.

Our capabilities are spread across a range of areas including:

- Infrastructure – rail and railway systems, airports, ports and maritime assets
- Bridges and civil structures
- Caverns and tunnels
- Geotechnics
- Waste and environmental management
- Water management, treatment and conveyance
- Sustainability design
140+ YEARS ON MAJOR INFRASTRUCTURE PROJECTS ACROSS ASIA

- MTR Express Rail Link Contract 825 Mai Po to Ngau Tam Mei Tunnels, Hong Kong
- West Kowloon Cultural District, Park Development, Hong Kong
- MTR Whampoa Station, Hong Kong
- DTSS Phase 1 Paya Lebar Tunnel, Singapore
- Chi Feng Bridge Tianjin, China
- Route 8, Lai Chi Kok Viaduct, Hong Kong
Arcadis combines strategic advice with multi-disciplinary technical knowledge to design and build tunnels that are safe, functional and sustainable. We have been at the forefront of this expertise for more than 60 years, ensuring reliable and efficient tunnel systems worldwide.

Arcadis’ comprehensive tunnelling experience encompasses the planning, design and construction of underground railways, highways and sewerage tunnels as well as utility infrastructure. We provide a full range of coordinated design services and solutions to suit client needs and expectations - this includes the use of a variety of tunnelling techniques and the application of best practice procurement methods.

Specialist input is provided at all stages of the project life cycle - feasibility, planning and concept development, detailed design, construction, operational management and maintenance. All disciplines are integrated to create innovative, practical and cost-effective approaches for all tunnel project phases.

- Geotechnical Assessment
- Tunnel and Shaft Construction Method
- Tunnel Alignment & Geometry and Shaft Location
- Tunnel Lining
- Groundwater Inflow & Drawdown
- Ground Movement and Building Impact Assessment
- Value Engineering
- Contract Documentation and Tender Evaluation
- Construction Support, Supervision and Verification
- Risk Management
- Tunnel System
MTR EXPRESS RAIL LINK CONTRACT 825 MAI PO TO NGAU TAM MEI TUNNELS, HKSAR
Engineering services for connecting the Guangzhou-Shenzhen-Hong Kong

We are the Contractor’s Designer for Express Rail Link (XRL) Contract 825, which forms part of the Hong Kong section of Guangzhou-Shenzhen-Hong Kong cross boundary Express Rail Link project. The contract comprises construction of a section of 2.35km twin bore single track TBM tunnels with 8.15m internal diameter running between Mai Po and Ngau Tam Mei, cross passages at 250m spacing along the tunnel alignment and a 110m long x 36m wide x 35m deep launching shaft at Mai Po area.

CHALLENGE
Design and approval of the tunnels and launching shaft were required to be completed within a very tight time frame to meet the contract programme. The tunnels are exposed to a full range of ground conditions from fill and alluvium sand to completely decomposed Granite/Tuff and eventually encountering full face of rock at retrieval shaft. The tunnel alignment ran underneath some sensitive structures, including a footbridge across Castle Peak Road, where ground treatment for underpinning the footbridge foundations was anticipated.

INNOVATION/BEST PRACTICE
We contributed to the success of the tender by adopting limit state design approach to CIRIA C580 to optimize the depth of diaphragm wall panels and value-engineering the segmental lining thickness from that of the reference design in tender stage. The lining thickness was further reduced in detailed design stage to achieve significant cost saving. We used 3D numerical modelling to evaluate the face pressure required when the TBM passed under the footbridge at Castle Peak Road, thus eliminating the originally perceived grouting works for underpinning the footbridge.

KEY OUTCOMES
- The 26km High Speed Rail (Hong Kong Section) runs from West Kowloon, connecting Hong Kong with the Mainland’s national high-speed rail network.
- High Speed Rail is running at 200km/h in the Hong Kong Section and this is the fastest cross-boundary land transport in Hong Kong.
RAIL
CONNECTING COMMUNITIES

Operators need access to reliable rail engineering and consulting expertise that guarantees sustainable programs where health, safety, security and, above all, stewardship are critical success factors.

With extensive global experience in the design, construction and asset management of railroads across; Asia, Australia, Europe, the Middle East and the Americas, Arcadis has the proven ability to deliver successful strategies for a range of rail and Total Mobility programs.

Arcadis technical capabilities in rail engineering and experience spans across:

- Cut & cover, immersed tube, and bored tunnels utilizing New Austrian Tunnelling Method (NATM)
- Electrical & mechanical installations, service buildings, illumination and ventilation systems
- Experience in negating a wide variety of physical constraints (railway lines and stations, motorways and other surface roads, as well as waterways)
- Rail Track and Switches
- Signaling
- Power Systems
- Stations and buildings
- Environmental
- Safety
MTR WHAMPOA STATION AND OVERRUN TUNNEL, HONG KONG
Connecting commuters in densely developed urban area

Arcadis was responsible for the detailed design of a new MTR underground station and over-run tunnel to be constructed as part of the Kwun Tong Line Extension. It was built 25 metres beneath the busy streets of Hong Kong’s second largest private housing estate. The station design has a single platform, two concourse areas and a 100m long connecting platform tunnel.

CHALLENGE
The challenge was to minimise street-level construction impact as the station is located within rock and mixed ground conditions located close to residential tower blocks and major utilities. Arcadis’ work also included reconfiguration of an existing footbridge across Hung Hom Road and the design of major utility and traffic diversions.

SOLUTION
Our partnering approach enabled rapid design decisions during the extremely tight design program and public consultations and workshops helped garner community support during the design process. The traffic deck system kept everything running smoothly throughout the construction works. The original scheme was streamlined minimizing construction waste, construction work on site and reducing the overall footprint of the station.

KEY OUTCOMES
- The HKIE Structural Division Structural Excellence Award 2018 – Project Award - Commendation Merit Award
- Improving mobility for 50,000 Whampoa residents from 10,000 households
Arcadis has the proven ability to deliver successful strategies for a range of road infrastructure development programs ensuring lasting value to their owners and operators. Arcadis has handled a wide range of roadwork projects for HKSAR and Private Sectors including widening and improvement works to existing local roads and expressways.

The range of services provided by Arcadis includes project management, concept development, detailed design, value engineering, public consultation from Investigation Stage to Construction Stage.

We combine strategic road advice with multi-disciplinary technical knowledge to help clients and partners plan, build and optimize sustainable road networks, connecting neighborhoods, cities and regions safely and efficiently.

- Mass Transit System Planning & Design
- Highways Design
- Structural Design
- Civil Engineering and Construction Supervision
- Drainage Impact Assessment (DIA)/ Sewage Impact Assessment (SIA)/ Waterworks Impact Assessment (WIA)
- Utilities Design and Diversion
- Road Improvement Works
LAI CHI KOK VIADUCT, HONG KONG
A strategic flyover to reduce congestion

Tsing Sha Highway being part of Route 8, a section between Cheung Sha Wan and Sha Tin provides the fourth road link between Sha Tin and Kowloon, serving the increasing traffic demand between Northeast New Territories and West Kowloon. Arcadis was responsible for the design, contract management and site supervision of the “Lai Chi Kok Viaduct” section forming part of Tsing Sha Highway.

CHALLENGE
The Lai Chi Kok Viaduct is a 1.4-kilometre dual three lane viaduct designed to minimize the new highway’s impact on the existing residents below, and either side of the viaduct. Being constructed in a very congested urban area, it posed severe constraints from underground services, buildings, flyovers, roads and future developments.

SOLUTION
To minimize conflict, the mainline was designed as a high-level viaduct with long spans, and transverse portal frames were also used at several locations. The balanced cantilever method reduced the occupation of ground space, and was used for erecting and assembling the bridge deck segments to minimise disturbance to grade traffic. Structural forms of the bridge deck and piers were also designed with landscaping to provide an aesthetically pleasing appearance.

KEY OUTCOMES
- 1.4 kilometre dual three lane viaduct
- 10th Tien-Yow Jeme Award 2011 for the Tsing Sha Highway project China Civil Engineering Society
- This award is the highest category for civil engineering projects in China
Arcadis possesses a combination of local and international experience and knowledge in building design in structure and facade engineering, including high rise offices, railway stations, commercial and residential developments, long-span commercial, industrial complexes and specialist buildings and structures such as retail malls, auditoria, stadia and large-space long-span roof structures, and many others.

Our experienced team of engineers work collaboratively with clients, project managers, architects and builders to generate design solutions that are innovative, yet practical and cost-effective. Arcadis is in the strong position of being able to provide respected local and international-based expertise across a wide range of structural disciplines to ensure effective project delivery.

We provide services for the whole of the project life cycle from feasibility studies, preliminary planning through detailed design, construction phase services and asset management, to maintenance and decommissioning.

Most importantly, Arcadis can effectively integrate these disciplines to create innovative, practical and cost-effective approaches for all phases of building projects including:

- Preliminary, concept detailed, and tender designs
- Independent verification
- Building services systems
- Risk and reliability analysis
- Due diligence
- BEAM Plus, LEED and WELL Certification
- Project inspection/site surveillance and commissioning support
- Construction supervision
- Sustainable solutions
CITY UNIVERSITY OF HONG KONG LAU MING WAI ACADEMIC BUILDING, HKSAR

The Academic and Administration Building (now called Lau Ming Wai Academic Building) is designed to meet the needs of the four-year undergraduate curriculum through provision of facilities for additional senior year places as well as space for the existing shortfall in City University of Hong Kong. The completion of the building gives a facelift to the nearby area and become a district landmark, highlighting the position of City University and Hong Kong as an education and research hub.

The building was required to respond to a multiplicity of varying uses throughout the building height, resulting in different grids throughout the building. The High Block and the Low Block are connected at 4 levels to provide direct access between these two blocks. The design of site formation, foundations and shoring works had to consider the utility constraints of the box culvert as well as an existing elevated road under the footprint of the building.

Arcadis was responsible for the geotechnical, civil, structural, building services, traffic, acoustic engineering, environmental and sustainable design services.

KEY OUTCOMES

- Green Building Award, merit award in the New Building-Hong Kong (Building Under Construction) category 2012
- Certificate of Excellence (Best Institutional / Public Space) under the Perspective Award 2013
- Good Class (Whole Building) award of the Indoor Air Quality Certificate 2014
- FuturArc Green Leadership Award 2015
Within Arcadis, Building Information Modelling (BIM) is one of our global key strategic drivers which we adopt in our Design and Engineering capability. BIM leads to better performance by increasing efficiency, providing better quality, reducing production time and lowering costs, bringing full lifecycle benefits.

We have global agreements with the required software providers and experienced BIM Managers across our key locations. In Manila, we have 1,500 staff in our Global Excellence Centres who collaborate closely with local teams virtually and are focused on producing drawings directly from the full BIM model.

Our BIM Execution Plan includes:
- Purpose, Scope, Goals, Objectives
- Client Requirements
- Common Data Environment
- Information Delivery Plans
- BIM Roles and Responsibilities
- Responsibility Assignment (RASCI matrix)
- Collaboration and Communication
- Clash Detection Workflow
- BIM Meeting Schedules
- Model Setup
- Quality Control

Some prominent projects that have benefitted from using BIM are the West Kowloon Cultural Development, the Integrated Waste Management Facility, the IT Building in Sha Tin and the Kwun Tong Town Centre Underground Utilities advanced Works.
WEST KOWLOON CULTURAL DEVELOPMENT, HKSAR

The West Kowloon Cultural District project is one of the largest developments in Hong Kong. The site covers an area greater than 40 hectares and includes 17 arts and cultural venues including theatres, an art park, retail, dining and hospitality developments, and a 17,000 square meters museum.

Arcadis provided concept, schematic, detail designs, tender documentation and construction supervision for all Structural, Civil, Geotechnical, Building Services, Structural Surveying, Façade, Environmental, Sustainable Design, Green Building, BEAM+, Traffic and Marine solutions.

CHALLENGE
The depth of rocks in the area is deep, and cost-effective foundation solutions were required. Advantage was taken of the relatively stiff nature of the ageing reclamation. Stringent plate load tests were carried out to validate the bearing capacity enabling use of shallow foundations in lieu of lengthy pre-bored H-piles, thereby saving millions of dollars. The structural design of the theatre had to accommodate very strict acoustic requirements dictating special double wall construction and box in box techniques.

SOLUTION
Using Revit & Civil3D software, separate models for structure, building services and utilities/civil works were completed. The structural and architectural models were first aligned with each other and then all the engineering models were combined to analyse and remove clashes between them. 2D drawings were obtained through the various discipline aligned BIM models.

KEY OUTCOMES

- Our engineers completed separate virtual models for structure, building services and civil works which were coordinated with the architectural model
- Delivering the government’s wider vision to promote the arts
Arcadis is a leader in built and natural asset design management. From major road and rail infrastructure to innovative waster, water, residential, retail and heritage projects, we strive to create smart, sustainable solutions for our valued clients.

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