Brussels ringroad, Brussels, Belgium
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DELIVERING TOTAL MOBILITY

Fraser Davidson
Transportation
Roads and Highways
Arcadis is the leading global natural and built asset design and consultancy firm, covering the whole asset lifecycle. For over a hundred years we have been working in partnership with clients around the world to deliver exceptional and sustainable outcomes.

Our reputation is built on a deep understanding of client needs, combined with our strategic vision, knowledge and experience worldwide. With circa 28,000 people and €3 billion in revenues, we have built a global network, operating with both local focus and multi-national reach.

The megatrends of the 21st century place increasing demands on clients worldwide. Rapidly increasing urbanization and associated congestion, shrinking budgets, and environmental sensitivity require innovative approaches to deliver sustainable and advanced infrastructure for the Megacentury. With our expertise in road networks and our transformational thinking, our clients rely on us to connect communities across the globe.

We look forward to working with you.
Arcadis provides consultancy, design, engineering and management services in infrastructure, water, environment and buildings. Established in the Netherlands in 1888, Arcadis now operates with circa 28,000 staff in 42 countries worldwide.

We provide services throughout the entire spectrum – from master-planning, strategic advice, design and implementation, through to maintenance and total lifecycle operation. We offer our clients solutions that are whole-life focussed, viewed within the context of their business needs.

Challenges faced by our clients are rarely met through simply providing traditional professional services. We deliver real results through innovative application of services that are new to the industry, combined with traditional skills and an understanding of specific client needs in their local and wider context.

Arcadis has a substantial footprint worldwide. Our global network enables us to bring our knowledge and experience of projects worldwide and apply that expertise to specific local situations and needs.

Our mission is to improve the quality of life worldwide by creating assets of distinction and sustainable solutions that enhance the built environment. Sustainability is central to everything we do: in our work with clients, in the way our company is organized and in our approach to social responsibility. Arcadis supports UN-HABITAT with knowledge and expertise to improve the quality of life in rapidly growing cities around the world.

**FACTS**

Gross revenue by activity:
- Infrastructure: 24%
- Water: 15%
- Environment: 33%
- Buildings: 28%

Gross revenue: €3 billion.
The mega trends of the 21st century will bring rapidly increasing levels of urbanization as the global population is set to reach nearly 10 billion by 2050. This demands visionary solutions across the Infrastructure spectrum, including roads, railways, ports and waterways, airports, energy resources and communication networks. There is increasing urgency for sustainable solutions to resolve the issues of climate change, fragile environments and the scarcity of natural resources within the wider social, economic and environmental agenda.

**FACTS**

More than two billion light duty vehicles (not counting two and three-wheelers) are expected to be on the roads in 2050, an increase from the approximately 900 million today.

*Source:* International Energy Agency
INFRASTRUCTURE FOR THE MEGACENTURY

THE TOTAL MOBILITY CHALLENGES
In mature markets, variable government ability to commit to new infrastructure along with challenging budgets, mean that more innovative ways to manage assets are required. This can be achieved through reviewing operational expenditure to refurbish and optimize existing assets. Emerging markets must also rise to the challenge by building new infrastructure in order to compete. Both require transformational thinking on mobility, connectivity, safety, durability, aesthetics and sustainable solutions. This is infrastructure beyond the technical: this is Total Mobility.

FULFILLING THE POTENTIAL, MEETING THE DEMAND
Road networks are essential elements in the evolution of 21st century infrastructure, enabling multi-modal connectivity. That is why most countries place them at the center of their integrated transportation strategies. With our global presence, Arcadis has the expertise and experience to plan, design, build, operate and decommission the most demanding of road infrastructure. We have developed a deep understanding of regional, macro and micro-economic drivers that enables us to bring fresh perspectives, innovative thinking and solutions to complex problems. In doing so, we deliver Total Mobility to billions of people worldwide.

CONNECTING COMMUNITIES NOW AND INTO THE FUTURE
Arcadis responds to these challenges by working in partnership with the public and private sectors to deliver the intelligent road systems that will connect communities now and for future generations. All our activities embody the highest levels of safety, quality and effectiveness. Our engineering and design solutions meet the world’s most rigorous safety standards, whilst always considering the natural environment. With demand for road mobility increasing, clients from a number of sectors look to us to help them deliver new road infrastructure and improve the efficiency of their existing networks.
Arcadis combines 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 worldwide.

Lochkov tunnels, the Czech Republic
FACTS

World’s longest highways:
1. The Pan American Highway, covering the entire US interstate highway system, approximately 48,000km.
2. Highway 1 in Australia, the longest national highway, 14,500km long, carrying more than a million people a day.
3. The Trans-Siberian Highway, 11,000km long, from St. Petersburg to Vladivostok in Russia.
4. The Trans-Canada Highway, approximately 7,821km, running east-west from Victoria in British Columbia to St. John’s City in Newfoundland and Labrador. It passes through all 10 Canadian provinces.
5. India’s Golden Quadrilateral, 5,846km, connecting Delhi, Mumbai, Chennai and Kolkata.
CONNECTING CITIES, REDUCING CONGESTION

Communities everywhere rely on roads, from running their daily lives to growing a national economy. Roads are the most flexible way of connecting people and business, whether as road users, or interconnecting with all aspects of multi-modal transport systems such as rail, metro systems or waterways.

In emerging economies the priority is on developing new road network systems, arterial roads, connector distribution routes and network optimization to connect and develop whole areas of a country. Our clients in these regions need support in planning and delivery of distribution networks that will be environmentally sustainable, understanding how they will operate, the likely traffic volumes and how to get best value from investing in those new networks.

In regions with mature road infrastructure the challenge is to optimize capacity on major roads, keeping highway traffic running smoothly and maintaining roads cost-effectively. In the cities, there is pressure to reduce urban congestion and create better environments for local communities – not just for the immediate future but for the long term – with budgets that are increasingly constrained. Our urban clients are demanding transformational change in their cities.

Our attention to both the desired end results and the detail means that right from the start of the planning phase we identify, mitigate and even avoid issues that could affect the smooth running of road networks. With innovative thinking and excellence integrated into every phase of the project from planning to maintenance, clients trust our multi-disciplinary experts to deliver mobility, connectivity, safety and sustainability across every project.

LOCAL, GLOBAL AND INDEPENDENT

Our local presence helps us to maintain lasting relationships with our clients and to build in-depth understanding of local market conditions in the roads sector. Our global network enables us to use our vast expertise to provide the best value added services and technologies to multinational, regional and local clients.

By combining global expertise with local presence, the projects we deliver incorporate the highest levels of strategic consulting with the full range of technical services and solutions, from detailed master-planning for urban infrastructure to delivering highway networks that connect cities across a whole country.

And, as an independent company with no links to government, suppliers or network owners, Arcadis is best placed to advise clients objectively on the most appropriate solutions and suppliers.

FACTS

Road reconstruction costs are expected to continue to rise as the world’s roadway infrastructure continues to grow and age. The world will spend as much on fixing and rebuilding existing infrastructure as it does building new roadway.

Source: International Energy Agency
Clients need reliable planning, design, construction and operational expertise that guarantees road infrastructure of lasting value to their owners and operators. With experience in the design, construction and optimization of road networks across Asia, Europe, the Middle East, Australia and the Americas, Arcadis has the proven ability to deliver successful strategies for a range of road programs.

**EXPANDING TRANSPORTATION CAPACITY**

Regional and local motorways in many countries are struggling to cope with traffic demand. Road congestion is becoming a serious threat to economic development and budgets for enhancements are shrinking. Working collaboratively with the public and private sector, Arcadis delivers optimized solutions for today’s problems and the future.

**LINKING MAJOR INDUSTRIAL AND URBAN REGIONS**

Modern highways can help to transform regional economies, with high speed routes providing safe and sustainable connectivity between cities and even countries. Crucially, Arcadis can draw on national and regional expertise to ensure that cross-border concerns are addressed through the most efficient and technologically appropriate solutions when enhancing existing road networks.
OUR CLIENT’S CHALLENGE

The Civil Engineering and Development Department (CEDD) of the Hong Kong SAR Government wants a new trunk road connection to improve the transport infrastructure across the Kowloon Peninsula. Part of this trunk road requires the provision of a trunk road passing through the new prestigious Kai Tak Development and under Hong Kong’s Victoria Harbour and on to the new urban developments within Tseung Kwan O area of Hong Kong.

The site selected for development is technically very complex: the former Kai Tak airport is famous worldwide for its challenging geophysical conditions. There are also legal and environmental requirements to minimise impact on and avoid disturbing marine life within the Victoria Harbour, which is regarded as a Hong Kong natural asset.

OUR APPROACH

In July 2009, a joint venture led by Arcadis won the investigation, design and construction supervision assignment of the Trunk Road T2. With the associated infrastructure works at the South Apron of the former Kai Tak airport, to connect with the Cha Kwo Ling and Tseung Kwan O-Lam Tin Tunnels at Lam Tin Interchange. T2 is a dual 2-lane highway of about 3.0km, with about 2km of the route carried in a tunnel under the seabed. Key features of our approach are:

- Use of TBM tunneling technology to ensure minimum impact on the community and on marine fauna and flora
- Maximum re-use of excavated materials on site
- Low profile ventilation buildings, with maximum practicable roof and vertical greening, to minimize visual impact.

OUTCOMES FOR THE CLIENT

- The project approach is environmentally sustainable, minimizing impact to people and the environment.
- When completed, the new infrastructure will contribute substantially to improve traffic flow across the densely populated Kowloon Peninsula.
MERGING URBAN TRANSPORT STREAMS SAFELY

As we settle in to the second decade of the 21st century, we expect road networks in major metropolitan areas to integrate with multi-modal transport designed for growing populations in rapidly urbanizing centers of increasing density. Arcadis advises on safe and efficient merging of transport streams in and around some of the world’s busiest transport hubs that have the added complexity of bridges, tunnels and heritage sites to accommodate.

ENSURING EFFICIENT OPERATION OF COMMERCIAL DISTRIBUTION HUBS

Asset owners expect to run multi-modal transport hubs and systems for distribution that increase in value while generating income. We are leaders in the specialized, integrated and innovative disciplines that guarantee these outcomes. With proven experience of phasing – managing and completing complex reconstruction works while transport systems remain in operation – Arcadis is able to offer all-round support in the planning, development and optimization of commercial distribution hubs.

ADDING VALUE WITH ASSET MANAGEMENT

Our unique combination of civil engineering and road network systems expertise means we can provide the most efficient integrated solutions for urban, suburban and rural areas. We offer added value for asset renewal programs for functional upgrading. We are also able to provide program, project and cost management for capital expenditure projects. In more mature markets, our Built Asset Solutions ensure that clients are equipped with the most important elements for operational success.

PUBLIC PRIVATE PARTNERSHIPS

Limited public funding means that public road owners and operators around the world are looking towards private sector funding to meet their investment goals. At the same time, investors are increasingly interested in assets that deliver a long-term guaranteed return. Arcadis can identify and scope the possibilities for Public Private Partnerships (PPP), assess the value of assets and structure the outsourcing of operations to private parties. We can also play a role in the formation of PPP and BOT (Build Operate Transfer) projects, bringing our engineering expertise into consortia.

PLACEMAKING FOR LOCAL COMMUNITIES, KEEPING TRAFFIC MOVING UNDERGROUND

Local authorities are frequently faced with conflicting demands for improving the quality of life for their communities – creating safe and pleasant green spaces – while providing optimum traffic flow throughout the city. Arcadis provides an optimal social, economic and environmental network resolution, including network redistribution and reallocation, redefinition of existing assets, and optimization of traffic flow. Focusing on elevated, at grade and sub-level engineering solutions, Arcadis advises on all aspects of these projects from tunnel and road design, to zoning plans and wider environmental assessments.

FACTS

Global road traffic activity is expected to more than double to nearly 43 trillion annual vehicle kilometres by 2050. To accommodate this growth, global road infrastructure is expected to increase by roughly 60% above 2010 levels by 2050. (Source: International Energy Agency)
OUR CLIENT’S CHALLENGE

The Mário Covas Beltway is a 177km ring road around the city of São Paulo that connects ten major highways leading into the Metropolitan Region of São Paulo. The ring road will be important in supporting economic growth in the Greater São Paulo area, eliminating heavy traffic loads and connecting all roads to Santos port.

As this is a very large infrastructure project, the client divided the project into four sections – west, south, east and north.

OUR APPROACH

Arcadis Logos was awarded Lots for parts of the East and South sections.

- For the East section our contract focused on development of the detail design for 43.6km of ring road, which included administration and control of toll booths. We provided a full range of services, including geometry, sewage, earthwork, geology, geo-technics, foundations, signalization, landscaping, architecture, structure, electrical and illumination systems.

- For the South section we were responsible for technical, management, supervision and inspection of Lot 3 of the project, planning and financial control of the venture, including two bridges and 22 civil projects of overhead passages and underpasses.

OUTCOMES FOR THE CLIENT

Projects on this large scale require the effective participation of multiple teams. For this venture, Arcadis Logos contributed to the development of projects of different lots, attending to all the contract clauses, being able to deliver the product at the deadline stipulated and with the required quality. This was very important for our client, not delaying the continuity of the project for other companies and teams involved in the venture.

CASE STUDY
RING ROAD INTERCONNECTING SÃO PAULO’S MAJOR HIGHWAYS

Project: Mario Covas Beltway, São Paulo, Brazil
Date won/completed: 2006 / 2010
Client: SPMAR Concessionaire S.A.

The eastbound I-20 interchange on the eastern side of the city was a particular trouble spot because of conflicting traffic movements. Drivers were weaving as they tried to merge or exit, causing long queues and high numbers of accidents.

Georgia Department of Transportation (GDOT) needed a short-term operational improvement project to address the growing problem – a project that could be quickly implemented with minimal environmental impacts, to avoid delaying environmental and federal approval.

OUR APPROACH

Our solution was a collector-distributor (C-D) lane concept developed by Arcadis for implementation by GDOT on a fast-track schedule leading to a design-build contract.

- The main features are the addition of C-D lanes, modification of general-purpose lanes, and ramp improvements to separate conflicting traffic and eliminate the problematic weaving behavior in the eastbound direction of I-20.

- Our roadway engineers designed the entire C-D lane concept to be constructed inside existing right-of-way (ROW) using advanced retaining wall technology to reduce environmental noise impacts. No existing commercial or residential properties were displaced.

- Arcadis’ ecology department streamlined the Nationwide Permit application process.

OUTCOME FOR THE CLIENT

Arcadis helped GDOT capitalize on an early implementation phase to solve an immediate problem while keeping an eye on the future – long-term solutions as planned in ARC’s Regional Transportation Plan.

The need for weaving will be essentially halved, leading to more efficient traveling conditions, higher speeds, fewer accidents, and less delay. For commuters and freight traffic who travel this corridor daily, that equates to safer conditions, less time spent in stop-and-go traffic, more consistent commute times, and an overall higher quality of life.

CASE STUDY
FAST-TRACK PROJECT TO IMPROVE EFFICIENCY AND SAFETY ON URBAN INTERCHANGE

Project: I-20 East Collector Distributor Lane concept, Atlanta, Georgia, US
Date won/completed: 2009 / ongoing
Client: Georgia Department of Transportation

OUR CLIENT’S CHALLENGE

Atlanta’s urban region is the fastest growing metropolitan area in the US, which places a heavier burden on an already challenged urban transportation system.

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OUR CLIENT’S CHALLENGE
Tolo Highway and Fanling Highway form a strategic road link serving both the Northeast New Territories and cross-boundary traffic from Hong Kong to mainland China. The road has already exceeded its capacity. Future development in the northern territory and growth in cross-boundary traffic mean that improvements are now essential. The client wants to upgrade the existing road to current design standards and to widen it from the existing dual three-lane carriageway to a dual four-lane carriage with full-width hard shoulders. Traffic control and surveillance systems are also required along the expressway, to facilitate efficient management and speedy response to incidents.

OUR APPROACH
In March 2001, a joint venture led by ARCADIS won a design and construction supervision consultancy to widen a 8.7km section of Tolo Highway between Island House Interchange and Tai Hang (Stage 1) and from Tai Hang to Wo Hop Shek Interchange (Stage 2).

• This comprises extensive modification of five interchanges, bridge widening/re-provision works and noise barrier erection along the road.

• The work is severely constrained by the layout of the existing interchanges, the natural topography, heavy live traffic, stringent requirements for working next to the expressway and the presence of existing trunk utilities, East Rail and nearby residential areas.

OUTCOMES FOR THE CLIENT
• The first stage of the road widening construction works has been awarded to two contractors, starting in 2009 summer and 2010 spring, respectively, and has progressed with final completion anticipated by 2016.

• The second stage of the road widening construction works commenced in 2013 and has progressed with final completion anticipated by 2020.
OUR CLIENT’S CHALLENGE
The Department for Transport (DfT) is introducing significant improvements across key parts of the road network in England. ‘Hard Shoulder Running’ (HSR) on the M60 and M62 motorways around Manchester were two priority schemes in 2010. At the same time Highways England (formerly the Highways Agency) was planning a third scheme, improved capacity on the M60. Arcadis and CH2M, as a joint venture (HHJV), were appointed as scheme designer; then responsible for preliminary design and detailed design; and subsequently responsible for design assurance and site assurance during the construction phase, which started in 2014. This paper only covers the design aspects.

OUR APPROACH
We developed a preliminary design to provide an integrated motorway corridor, approximately 27km long, bringing together the three schemes with the addition of a controlled motorway section. The overall scheme is known as Manchester Smart Motorways.

CASE STUDY
‘SMART MOTORWAYS’ TO IMPROVE ENGLAND’S ROAD NETWORK
Project: Manchester Smart Motorways (Development Phase)
Client: Highways England

• The design brief for Stage 5 (Construction Preparation) was to upgrade the motorway sections using a combination of Smart Motorway All Lanes Running (upgrading the hard shoulders to full running lanes to increase capacity) and Controlled Motorway (technology enhancements to regulate traffic).
• We worked closely with the delivery partner from the beginning of Stage 5: a joint venture of five major contractors.
• At key stages in the program we held collaborative workshops with key stakeholders and the wider integrated project team. Having so many controls in place ensured good performance throughout the Development Phase.

OUTCOMES FOR THE CLIENT
• Our collaborative approach enabled us to mitigate air quality issues and manage the impact of the Nationally Significant Infrastructure Projects (NSIP) approvals process.
• We identified that the scheme could be delivered as two separate projects, which has enabled us to deliver on program using the integrated team approach.
OUR CLIENT’S CHALLENGE
WestConnex is a 33 kilometre motorway that will be built in three stages to link Sydney’s West with its international gateways and key places of business. The client, WestConnex Delivery Authority (WDA), required capacity improvements on existing roads and substantial new sections of motorway.

The team was appointed by the contractor Leighton-Samsung-John Holland Joint Venture (LSJH) to provide civil design services in a joint venture with AECOM for WestConnex – M4 East initially for Tender Design and subsequently for Detailed Design. This included road and drainage design, traffic engineering services, utilities coordination, structural design for bridges and cut, cover and dive structures for the twin tunnels.

OUR APPROACH
• The Arcadis design team worked as an integrated design and construction team, using our skill and know-how from previous projects such as Sydney’s InnerWest Busway. Support from our team to the contractor (LSJH) was recognised as a key factor in generating confidence in the design.
• Our ability to source a team at short notice to complete a major tender redesign, working closely with the contractor and focusing on what mattered meant the team could complete the redesign in a very short timeframe.

OUTCOMES FOR THE CLIENT
• Working collaboratively, our team enabled LSJH to run the design in parallel with the Environmental and Planning Approval process; this produces a significant reduction in the project program and ensures the design meets community expectations.
• The M4 East section will help remove traffic, including heavy vehicles, and ease congestion for local road users.

CASE STUDY
WESTCONNEX M4 EAST TENDER AND DETAILED DESIGN

Project:
WestConnex M4 East Tender and Detailed Design, Sydney, Australia

Date won/completed:
2015 / Construction expected to be completed by 2019

Client:
WestConnex Delivery Authority (WDA)
sustainable plan for the city and the A2 motorway. The plan focuses on the point where currently the A2 National Highway divides the city in two, with the aims of improving traffic flow on the A2 and access to Maastricht – as well as promoting quality of life and road safety for local people, resolving bottlenecks, limiting air and noise pollution, and creating opportunities for urban development to revitalize the A2 corridor.

OUR APPROACH
Arcadis, as partner and Lead Designer for Avenue2 Joint Venture (consisting of Ballast-Nedam and Strukton, with other partners) was awarded the project in 2009. Our innovative plan includes:

- A 2300m double-layer tunnel, one tunnel above the other, separating local traffic from through traffic, improving the traffic flow in Maastricht and on the A2 highway
- The “Green Carpet”, a recreational strip of 2000 trees, winding through the city from north to south
- The Parklaan, a tree-lined avenue above the dual-layered tunnel – the connecting element between the adjacent city-districts on the location that was once the A2 Highway
- A cycle bridge with a specially designed S-shaped overpass, connecting the ‘country zone’ with a cycle route
- Real estate development in Europaplein and Geusselt after 2016.

Arcadis was able to provide support on all aspects involved in the project including local know-how. This included landscaping, infrastructure design, MEP, Tunnel safety, EIS and geo-technical and geo-hydrological expertise. This combined expertise enabled Avenue2 JV to develop and propose the unique concept of the plan.

OUTCOMES FOR THE CLIENT
As evaluated by the Client during the tender, the plan offers the highest added value for the fixed amount of budget available. The developed plan will improve the traffic flow in Maastricht considerably, the air and noise conditions will meet European legislation and the urban development in the A2 corridor will enhance living conditions for future generations to come.

CASE STUDY

INNOVATIVE PLAN TO CONNECT THE CITY AND MOTORWAY SEAMLESSLY

Project:
A2 Motorway, Maastricht Corridor Plan
Date won/completed:
2009 / 2016

Client:
Directorate-General for Public Works and Water Management, the Provincial Government of Limburg, and the municipal councils of Maastricht and Meerssen

OUR CLIENT’S CHALLENGE
The client, A2 Maastricht (representing the Directorate-General for Public Works and Water Management, the Provincial Government of Limburg, and the municipal councils of Maastricht and Meerssen), wanted a single seamlessly integrated and
OUR CLIENT’S CHALLENGE
The Florida Department of Transportation (FDOT), District 2 needed a master plan for managed lanes on an important section of I-10. The I-10 corridor is unique in that land use on the western end is rural, but the eastern terminus is highly constrained and urban. This segment of I-10 also includes four system-to-system interchanges and 11 service interchanges. A critical point in the study is the managed lanes connection at the interchange of I-295 and I-10, a major route for commuters from the west to and from downtown Jacksonville.

OUR APPROACH
The Arcadis team was selected to evaluate the feasibility and operation of managed lanes on I-10 from CR 125 to I-95. The goal of this project is to develop a master plan for managed lanes and identify entry and exit points between the general purpose and managed lanes.

- Our approach, which includes traffic modeling and roadway concepts, divides the corridor into smaller segments for the subsequent PD&E and design phases. It also includes extensive modeling to evaluate alternatives and alignments.
- The first component of the project is to develop interchange improvement concepts for I-10 at SR 121.
- The second major component is the Feasibility Study and Master Plan for addition of managed lanes to the I-10 corridor through Baker, Nassau, and Duval Counties.
- A critical location is the I-10 at I-295 interchange where the I-10 traffic essentially doubles with the commuters into downtown Jacksonville.

OUTCOME FOR THE CLIENT
Arcadis developed cost effective and constructability concepts for managed lanes on I-10 that can be easily transitioned to the PD&E phase.
Ashghal has awarded Arcadis two contracts for this program: Group 5 and subsequently Group 2 North. In addition Arcadis are employed as Contractor’s Designer on Project 23 (Contract 2) a 40km design and build section of the New Orbital Highway and Truck Route.

OUR APPROACH
For the Group 5 contract Arcadis is responsible for the design and supervision of:

- Two new sections of highway in north-east Qatar: Al Khor Bypass (35km), and Al Khor Expressway and Al Khor to Umm Birkah Road (26km)
- Upgrading of two stretches of existing dual carriageway: Lusail Development External Road
- Eight major grade separate junctions.

Additional service requirements across all four projects include the provision of collector, feeder, service and access roads, footways and cycleways. The design will interface with the metro red line, which will be in the central median along the Al Khor Expressway.

For the Group 2 North contract:
- The scope encompasses all services from concept design review to construction supervision for major roads north-west of Al Dafna
- The key challenges of this inner-city project covering approximately 19km of main roads include dealing with utility congestion and complex geometry within narrow urban corridors
- Six major separate junctions
- 5km of 6m diameter bored +IV cable tunnels.

OUTCOMES FOR THE CLIENT
Once completed, the Expressway program will improve traffic flow, increase safety, reduce congestion and shorten travel times, as well as providing improved environmental outcomes; benefits that will support the State of Qatar as it continues its rapid growth.

All projects are also being delivered to level 2 BIM with full asset data embedded in design models ready to feed into Doha’s Smart City Enterprise Asset Management System (EAMS).
We have people and offices around the world. Our global network enables us to bring our knowledge and experience of projects worldwide and apply that expertise to specific local needs and situations. We are based in:

Australia  Bahrain  Belgium  Brazil  Brunei  Canada  Chile  China  Czech Republic  France  Germany  Hong Kong  India  Indonesia  Italy  Jordan  Kazakhstan  Korea  Macau  Malaysia  Mexico  Mozambique  Netherlands  Oman  Peru  Philippines  Poland  Qatar  Romania  Russia  Saudi Arabia  Serbia  Singapore  Slovakia  Spain  Switzerland  Taiwan  Thailand  Turkey  United Arab Emirates  United Kingdom  United States  Vietnam