

AECOM

Built to deliver a better world

LET'S KEEP IT MOVING

AECOM SPAIN | TRANSPORTATION

Built to deliver a better world

About AECOM

We are a global network of experts working with clients, communities and colleagues to develop and implement innovative solutions to the world's most complex challenges.

From project vision through to completion, we help clients maximise the potential of a development by turning challenges into opportunities. Every day, AECOM helps clients take positive steps to reduce project risks and liabilities.

We are uniquely equipped to design, manage and bring to life infrastructure projects of any type and scale; we have successfully delivered some of the most high-profile, technically advanced projects in Spain and throughout the world. Our combination of local expertise and global experience means we are able to provide the most inspiring, efficient, cost-effective and beautifully designed solutions, meeting our clients' needs.

The foundations of our reputation are built on our ability to deliver innovative projects on time, to cost, and of the highest quality.

**# 1 in Engineering News Record's
"Top 500 Design Firms"**

**# US\$18 billion during the 12 months
ended September 30, 2015**

**# One of Fortune magazine's "2015
World's Most Admired Companies"**

150 countries

100,000 employees

AECOM in Spain

Our nearly 500 employees – including architects, engineers, designers, planners, scientists and management and construction services professionals – have helped shape the world around us, building a strong reputation based on our track-record of providing technical excellence to our clients.

AECOM's Spain's head office in Madrid has been established as an AECOM Global Design Centre, providing multi-disciplinary services from project conception to completion, enabling our public and private sector clients to maintain their competitiveness in global markets. As a design centre, we are uniquely equipped with cutting-edge technology, such as Building Information Modelling (BIM) and RailEST (a new in-house simulation tool for rail lines), allowing us to guarantee the quality of the projects we deliver.

For more information, please contact info.es@aecom.com



Transportation

Our specialist teams throughout Spain provide professional transport services from project conception to completion in the aviation, transit, freight, rail, highways and bridges markets. As technical specialists, we have established an AECOM Transportation Design Centre in Madrid, defining us as company whose reputation is built on our track-record of providing technical excellence to our clients.

Buildings & Places

Our architects and interior design professionals are problem solvers by nature. We have helped shape the world around us, from high-rise buildings that define our city skylines, to educational, cultural, research and transportation facilities which are enabling our way of life and the future. We serve clients by listening to their concerns, understanding their goals and sharing in their visions.

Environment

The combined expertise of our environmental engineers and scientists enables us to provide our clients unparalleled project assessment, design and engineering solutions in all environment markets. We have the ability to manage projects of critical environmental importance not only in Spain but throughout Eastern Europe, the Balkans, Middle East, Africa and Latin America.

International Development

We offer experience in delivering and implementing projects for major international financial institutions and bilateral donors including EuropeAid, SIDA, DFID, SECO and WB. Our team provides services in more than 150 countries, covering economic development, public finance, social development, governance, environment, climate change, water, monitoring and evaluation.

Highways & Roads

As an internationally recognized leader in transportation planning, design, program management, asset support services and construction management, AECOM has built an impressive portfolio of highway and roads projects for all levels of government and private industries.

We also specialize in innovative project delivery methods, public-private partnerships, and alliance contracting for major programs, and have worked in large teams of designers and construction contractors to deliver complex surface transportation projects. As populations grow, so do demands for safe, expedient, cost-effective methods of transportation.

35

YEARS
OF EXPERIENCE

3,500

KM OF HIGHWAY AND
ROAD ENGINEERING

**Moving people
faster, safer
and more sustainably**

North Tarrant Express

United States of America

Ferrovial Agroman is a major Texas investor, based in Madrid, with a bold ambition for Dallas Fort Worth – to build an innovatively managed highway with a guaranteed minimum speed.

The project consists of the implementation of new toll managed lanes and the realignment of the current general purpose lanes for not-tolled traffic in the expressways IH-35W and IH-820.

This also means significant modifications at the current interchange between both infrastructures, in order to include direct connectors for all the movements designed. Besides the interchange, the project will include the upgrade of approximately 2.2 km of the IH-35W Expressway, designing managed lanes, general purpose lanes, frontage roads and connections ramps between them.

The team has delivered a high-quality design to a tight timescale. This involved fast familiarization with local standards and the client's processes, and working closely with colleagues in Texas, overcoming time zone, language and cultural barriers.





A-67 Highway

Spain

A-67 Highway, located on the North of Spain, connects the Cantabrian Atlantic Coast, enhancing accessibility and the economic development of these regions. It follows the route of the N-611.

AECOM was responsible for designing approximately 12 kilometers of highway A-67, including two tunnels and three viaducts. Our scope of work included geotechnical, highway design, structural design at the section Corrales de Buelna-Molledo.

The Pedredo Viaduct has a single 24m wide deck shared by both carriageways. The total length is 930m, divided into 15 spans of 56m each, plus two end spans. The section consists of a continuous prestressed concrete box girder of constant depth, built in stages with self-supporting formwork. The girder is subsequently expanded with lateral ribs of precast concrete to complete the full width of the deck.

The Cieza Viaduct crosses the river with the same name in a 90m canyon, needing two concrete arches with a 130m span to support the 220m long decks of each carriageway.

There are also 2 diamond-type links, one upper crossing and seven lower crossings, some of which include fauna crossings and drainage works.



R-5 Toll Highway

Spain

The R-5 toll highway connects the main cities at Southern Madrid: Leganés, Alcorcon, Mostoles, Fuenlabrada, Arroyomolinos and Navalcarnero. A new 30 kilometres section will reduce traffic congestions at the entrance of the cities in more than 35%.

With a total project investment of 159 million euros, AECOM provided technical assistance for works control and supervision, including geometrical, quantitative and qualitative control, as well as execution control and budget follow-up, environmental surveillance, technical assistance and preparation of works final documentation.

The outstanding 280 metres viaduct over the Arroyomolinos park and the 350 metres viaduct over Guadarrama river, made significant contributions to the project, due to their low environmental impact. The transversal section of the highway is made of 2 carriageways with 2 lanes per way between M-40 and M-45, as well as between M-50 and the end of the alignment, and 3 carriageways per way between M-45 and its link with M-50.



High-Speed Rail

With decades of experience on high-speed rail projects that span countries and continents, we are driving the new wave of safe and efficient high-speed rail, developing rail networks that promote livable communities by reducing highway and aviation congestion, encouraging energy independence and efficiency, and addressing global climate change. We connect communities through our work on emerging regional and express high-speed rail projects.

185

HIGH-SPEED
STRUCTURES DESIGNED

3.8

BN \$ HIGH-SPEED
RAIL PROJECTS

25

YEARS OF EXPERIENCE

Connecting people and places

PIONEERS OF THE PAST INNOVATORS FOR THE FUTURE

Our comprehensive systems expertise includes in-depth knowledge and experience in standards and guidelines, design concepts, assessment, verification and validation. Applying interdisciplinary skills, our talented systems engineering staff has produced in-house applications that allow our engineering teams to work more efficiently.

A wide range of global standards and environmental parameters are supported to ensure that the specific requirements of each client and country can be delivered. No one wants their trains delayed by hot weather or the wrong kind of snow.

RAILEST

The life of a rail electrification system is between 30 and 50 years, which makes future operating requirements difficult to predict. AECOM has developed RailEST, a new in-house software tool that can produce far more accurate designs in less time. This improves tender prices for contractors, generates capital and operational savings for clients and even reduces engineering hours.

Rail clients such as ADIF, always need greater efficiency from their supply chain. More accurate calculation of power consumption, based on real timetables and rolling stock, enables them to negotiate savings with their electricity providers. Now RailEST is going global.

CLARA

Our professionals have recently developed Clara, a tool that designs cantilevers while considering all the mechanical and geometrical variables and restrictions. This enables us to provide our clients with accurate design values on time for onsite installation. Besides, BIM technology and 3D designs can benefit from the results Clara delivers to provide accurate modeling.

High-Speed Rail Urban Integration

Spain

The High Speed Rail Urban Integration Project involves a complex transformation of significant areas surrounding the new high-speed rail connecting Spain and France. Our team in Spain has been appointed to adapt and design the railway's infrastructure to develop a modern, interconnected urban environment.

Several neighbourhoods previously divided by the railway will be integrated including Sagrera, Sant Marti and Sant Andreu, with the aim of fostering social cohesion and bringing economic opportunities to local communities. The scheme involves the development of extensive residential, commercial and leisure spaces, including a 20,000 square metre park connecting around 180,000 people within a ten minute walk.

These vital spaces will be developed strategically around the realigned overground and underground transportation network which include the high-speed railway, metro, intercity railway and bus stops.

The size and technical complexity of the scheme will see the project become one of Spain's urban landmarks as well as reinforce Barcelona's position as a major European railway hub.

The strategic alliance between France and Spain's state-owned railway companies will see the two main continental high-speed networks connected.





Miraflores de la Sierra

Spain

The high-speed rail section between Soto del Real and Miraflores de la Sierra connects the cities of Madrid, Segovia and Valladolid, representing one of the main links between the capital and the North of Spain.

Appointed by the client ADIF, AECOM's experts in Spain provided engineering services of high complexity in delivering a 2.1 km rail section between San Pedro and Guadarrama tunnels. It included a 1.8 km viaduct, considered one of the largest environmentally sustainable viaducts of its kind across Europe.

With a total project investment of EUR 41 million, the scope of work included on site works, design services, geometrical and qualitative controls as well as quality report and road security.

As a result of the work carried out, AECOM's team in Spain was awarded with the prestigious "Acueducto de Segovia" prize.



Torrejón de Velasco - Aranjuez

Spain

Madrid is connected by high-speed train with Valencia, the third Spanish city in terms of importance and population, and the 15th in the European Union, in 95 minutes. Connecting the municipalities of Cuenca, Albacete and Alicante, this line carries nearly two million passengers per year.

AECOM's team in Spain provided engineering services to the client ADIF, within a 24 km line. The state-owned Administrator of Railway Infrastructure company, invested a total amount of EUR 184 million (EUR 110 million on the section Torrejón - Seseña and EUR 74 million on the section Seseña - Aranjuez) for the completion of this project.

Divided into the mentioned subsections, AECOM provided design and technical engineering services, qualitative and quantitative control, work supervision, as well as execution and budget control.





Simandou

Guinea-Conarky

In a remote, southeastern corner of Guinea, the mist-shrouded Simandou mountain range rises above the lush forest. Buried under its green slopes lies some of the planet's finest iron ore, a treasure long coveted by the world's mining giants.

The Simandou project provides access to one of the world's largest untapped (over 2 billion tonnes), high grade iron ore resources in the world. It can sustain a mine life in excess of 40 years and has the potential to make Guinea one of the world's top iron ore exporters.

AECOM Spain was designed to provide detailed design and documentation and construction support services for 650 km of green fields heavy haul rail from the Simandou mine to a new port south of the Guinea capital of Conakry.

The rail project has been divided into nine discrete sections and allocated to AECOM teams across the globe, including Australia, America and Canada. Around 14 offices around the globe were working on the project.



Madrid-Barcelona

Spain

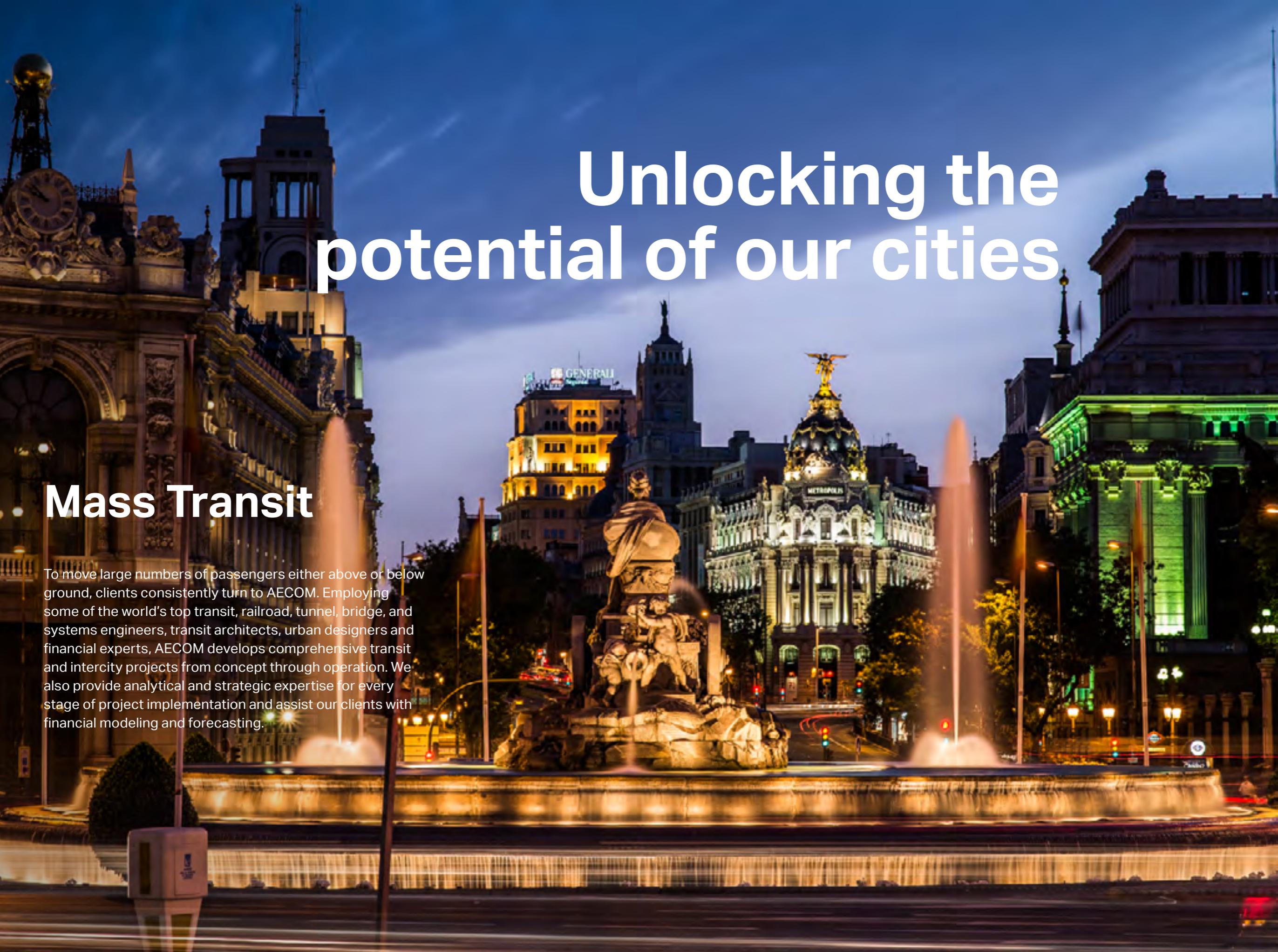
The line Madrid-Zaragoza-Barcelona is currently one of the world's fastest long-distance trains in commercial operation, with non-stop trains covering the 621 km between the two cities in just 2 hours 30 minutes, and those calling at all stations in nearly 3 hours.

A historic milestone for the national rail network was reached when direct high-speed trains between Spain and France were launched for the first time, thus connecting the Spanish high-speed rail system with the rest of Europe.

AECOM's experts in Spain were selected to provide design services on a 7.1 km long section in the municipalities of Ateca, Castejon de las Armas and Terrer.

With a total investment of EUR 64 million, the most significant elements were two tunnels and two viaducts, including the 2,265 m Jalon viaduct, that represented a landmark on high-speed rail transportation network.





Unlocking the potential of our cities

Mass Transit

To move large numbers of passengers either above or below ground, clients consistently turn to AECOM. Employing some of the world's top transit, railroad, tunnel, bridge, and systems engineers, transit architects, urban designers and financial experts, AECOM develops comprehensive transit and intercity projects from concept through operation. We also provide analytical and strategic expertise for every stage of project implementation and assist our clients with financial modeling and forecasting.

Transversal Railway Axis

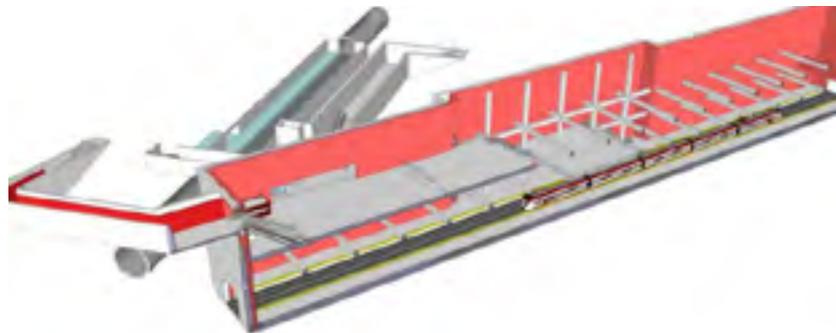
Spain

AECOM faced the challenge of designing a new suburban transversal line that would connect Madrid's main stations while solving the city's East-West connection problems.

We conceptually designed six viaducts, two pergolas, ramps to access the tunnel, stations, pumping pits, emergency exits and the execution of the underground tunnel with 3 different methods: TBM tunnelling machine, the Madrid Traditional Method (MTM) and the German Method (MA).

A double electric line was designed, with an 80-140km/h design speed, with stations in San Fernando de Henares, O'Donnell, Canillejas, Avenida de América, Alonso Martínez and Príncipe Pío. These stations were one of the main challenges of this project, as they are integrated into dense urban environments, making it extremely difficult to include a new station 200 meters long.

The following services were carried out: geotechnical, drainage and environmental studies, easement zone and affected services relocation, etc, always keeping the necessary coordination with the different organizations and entities. We must highlight the importance of the choice of appropriate construction procedures. Considering the work's urban nature, it has been subdivided into four construction lots to enable close control of the works by the package contractors.





Puerta de Atocha

Spain

Atocha is the biggest train station in Madrid, representing the main railway station for commuter trains in the city. It is also the focal point for intercity trains from all over Spain, as well as the country's main station for the high-speed trains.

Madrid's Atocha station is more reminiscent of a modern airport than of the traditional idea of a railway station. The airport analogy carries over with signed references of "Train Departures" and "Boarding Lounges." Currently, around 16 million passengers per year pass through it.

AECOM Spain carried out the extension works' detailed design; alignment study; drainage; structures calculation and design; environmental impact analysis and corrective measures study; utilities relocation study; topography; complementary works and installations; costs; and budget study.

Lines and shoulders of the Puerta de Atocha station were remodelled, as were the superstructure, electric, safety devices and railway switches and crossings.

As an urban rail section, the number of utilities and facilities affected by the works were significant.





MADRID METRO

At AECOM, we understand the importance of safe, efficient and sustainable ways to move people across cities, countries and continents. We build on our extensive knowledge to plan, design and manage transportation systems as well as restore and replace aging infrastructure.

AECOM was selected by the Madrid Transportation Authority to deliver comprehensive services from concept to completion and beyond for the metro network.



Line 4
Detailed design for new depots in Madrid Metro Line 4 and linking tunnel



Line 5
Detailed design of an additional 2.5 km extension from Canillejas station to Alameda de Osuna.



Line 6
Consulting services and technical assistance for inspection and supervision of the construction works for infrastructure in Arganzuela station.



Line 8
Adaptation project of metropolitan lines 8 and 10 unified to increase their capacity



Line 10
Consulting services and assistance for the inspection and supervision of the extension of line 10 to Metrosur



Light Rail
Feasibility study of light rail access to connect Mar de Cristal with Valbebebas Park



With a total investment up to 285 million euros, Plaza de Castilla exchanger is nowadays one of the main public transportation hubs in Madrid. It connects urban and long-distance bus lines, commuter and long-distance trains and metro lines.

Due to its technical complexity, this project challenged AECOM experts to provide the most inspiring, efficient, cost-effective and beautifully designed solutions, meeting our clients' and the city of Madrid's needs.

Lima Metro

Peru

Peru undertakes one of the biggest infrastructure projects ever, aiming to improve the competitiveness of the Lima, the capital city of Peru, and the quality of life of millions of Peruvians.

Lima Metro is a rapid transit metropolitan railway that provides a transport link between different suburbs of the city with a population of over eight million.

Works carried out by AECOM at metro lines 2 and 4 included architectural and geotechnical services of twin-tube running tunnels, elevated and underground stations, rolling stock and systems along two corridors in the Peruvian capital city. Our experts were challenged to avoid any damage to the existing surrounding buildings, considering city of Lima's high seismicity, soil liquefaction, non-cemented gravels under water table.



Bridges & Tunnels

We have worked on projects for all levels of government and private agencies, and our experience spans every type of highway, bridge, tunnel and interchange, including several of the world's largest design-build projects. Our team of underground engineers and supporting specialists are skilled in tunneling through a variety of ground conditions using such methods as immersed tubes, earth pressure balances or new Austrian tunneling.

185

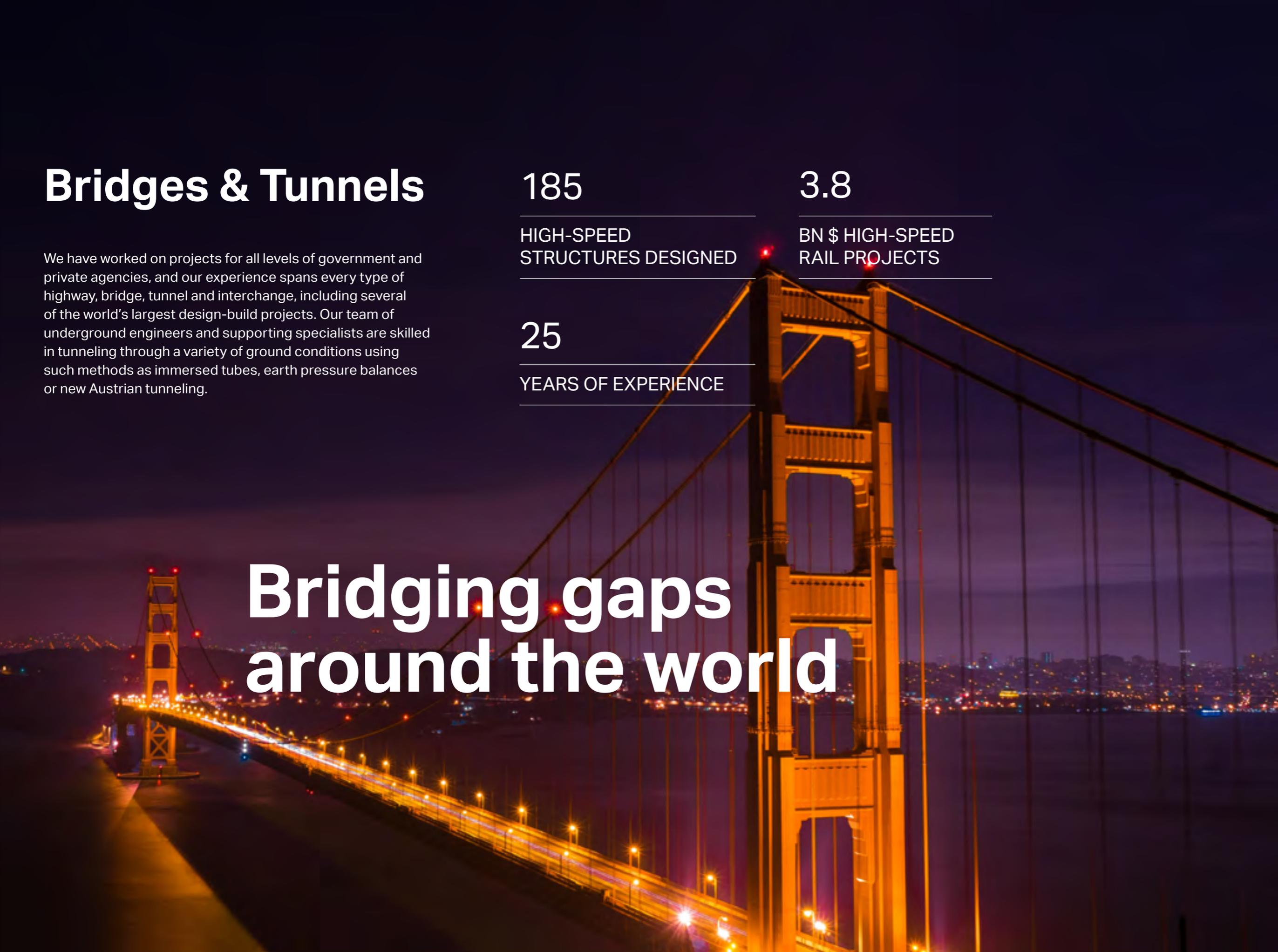
HIGH-SPEED
STRUCTURES DESIGNED

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YEARS OF EXPERIENCE

A night-time photograph of the Golden Gate Bridge, illuminated with warm orange lights. The bridge's towers and suspension cables are prominent against a dark blue sky. In the background, the city lights of San Francisco are visible across the water.

Bridging gaps around the world

Mauricio Baez Bridge

Dominican Republic

The Mauricio Baez Bridge is a cable-stayed bridge near San Pedro de Macoris, located in the east of the Dominican Republic, around 40 km east of the capital city of Santo Domingo. It is one of the most modern bridges in the Dominican Republic and the Caribbean.

AECOM experts in Spain provided both technical and health and safety services like geometrical, qualitative and quantitative control of works, evaluation and liquidation, project and works analysis, as well as in the workplace.





Zenica

Bosnia & Herzegovina

Co-financed by the WB and the Bosnian Government, the 660 kilometres project will connect the cities of Budapest and Ploce. It aims to achieve the conditions to begin construction of the design sections in a manner required by international financial institutions and taking into consideration all the requirements specified in the Environmental Impact Assessment.

Final Design for roadway and structures (tunnels and bridges) comprising activities like stabilization of geodetic base for tunnels, drainage and water protection or construction planning and management.

With a total length of 9km, the section Donja Gracanica – Banzoli, included one tunnel with two tubes, one per each carriageway. The tunnel was projected by the New Austrian Tunnelling Method (N.A.T.M.) in a ground profile dominated by Jurassic Flysch rock mass and fault areas.



Eiroas Tunnel

Spain

The N-120 and N545 corridor link forms part of the strategic Orense bypass, located in the north of Spain. The double tube Eiroás' tunnels are 848m long in the left tunnel and 853m long in the right tube. Also, this is planned considering all regulations on security installations.

Crossing through O'Castro hill just under Eiroas district, the portal zones where excavated between cut-off walls in order to avoid existing building damage.

Our geotechnical experts overcame the main project constraints like the faults with high pore water pressure inflows, to successfully deliver services to the Ministry of Public Works and Transportation.



Aviation

From concept to construction, our expert team of aviation planners and economists, terminal architects, airport engineers, modelers and other specialists take an integrated and comprehensive approach to the planning and design of new airports, as well as improvement projects for existing airports.

AECOM's expertise spans a broad range of facilities, including passenger and cargo terminals; runways, taxiways and aprons; aircraft hangars; infrastructure; and support facilities.

200

AVIATION PROJECTS

60

BUILDING ENGINEERING PROJECTS

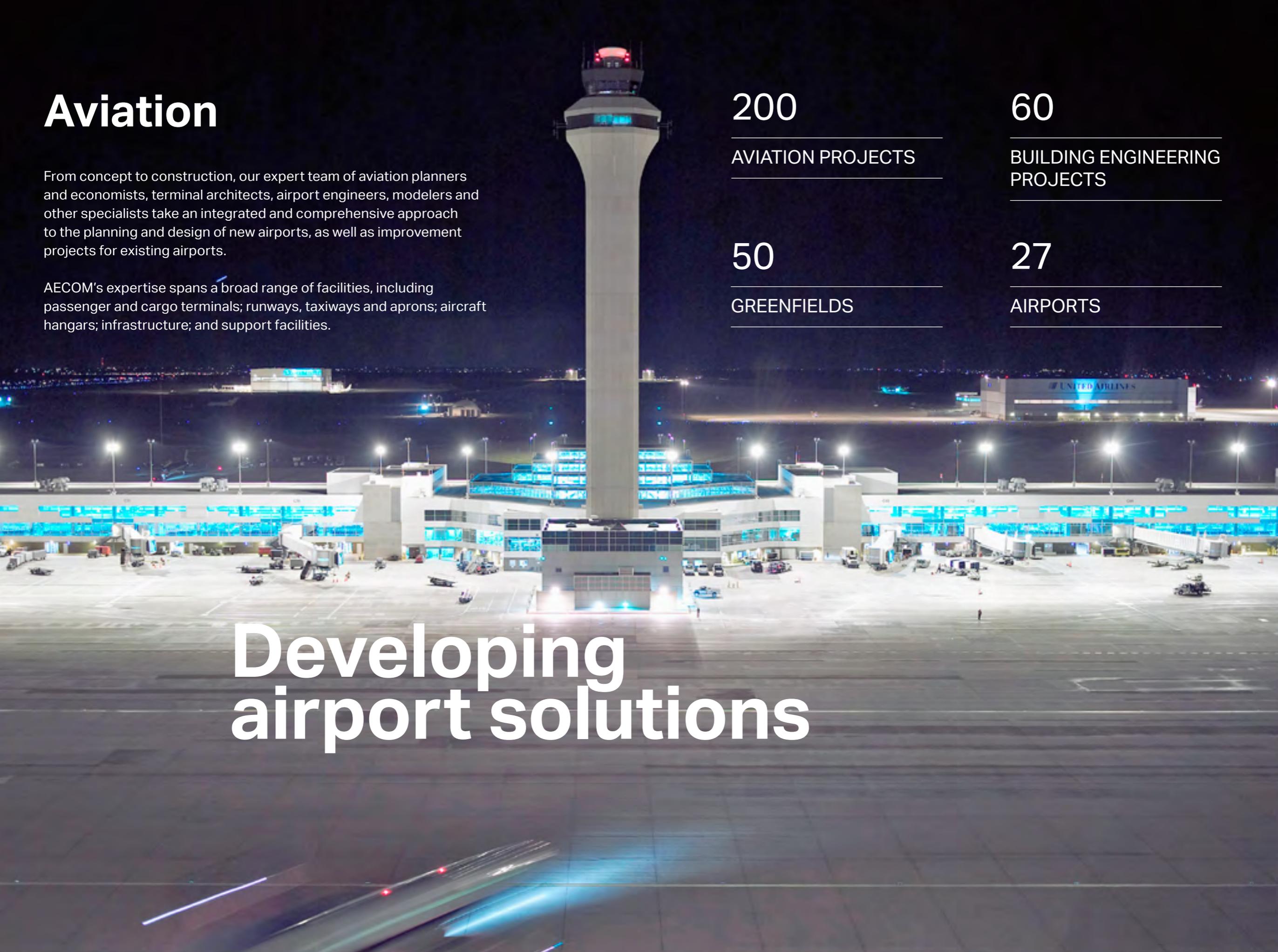
50

GREENFIELDS

27

AIRPORTS

Developing airport solutions



Barcelona Airport

Spain

Barcelona's Airport - El Prat, represents nowadays a worldwide reference and a key asset for the future of the region. Plan Barcelona was a top priority for the regional government, due to the increase in tourism visitors to the city of Barcelona. With a total invested amount of 3,500 million euros, it aimed to expand Barcelona Airport - El Prat, providing infrastructure, technology systems, facilities and services that can meet expected 55 million annual passengers demand safely, fluid and efficiently.

Services carried out by AECOM Spain consisted in the coordination and integration of the various projects that make up the Plan Barcelona, covering the preparation of preliminary studies and planning, project leading and management, project and works supervision, works planning and monitoring, cost and deadlines control, and other technical advisory work.

Some key activities included the adaptation and expansion of a 27,000 sqm terminal area, 4 multifunctional halls, protective, corrective and compensatory environmental measures or actions to improve the internal functionality of the airport.





Murcia Airport

Spain

Region de Murcia International Airport was designed to be a highly functional building while ensuring maximum comfort for passengers, and the shortest possible waiting times.

The construction processes in this project were rationalized, pursuing an optimization of resources dedicated to maintenance so as to consume less energy. The airport, with an over 250 million euros investment, was designed for 5 million passengers traffic per year.

AECOM Spain has participated on Murcia's new international airport from its initial planning phases, including works on the greenfield area, procedures and prior authorizations necessary for the approval of this new private airport by the relevant aviation authorities. Besides, AECOM provided additional services such master plan, territorial impact of the airport, environmental impact study and detailed design of work supervision.

The new airport is expected to start operating in 2015, contributing regional GDP on EUR 1,800 million during its first 10 operating years and generating 4,000 new workplaces.



Tenerife North Airport

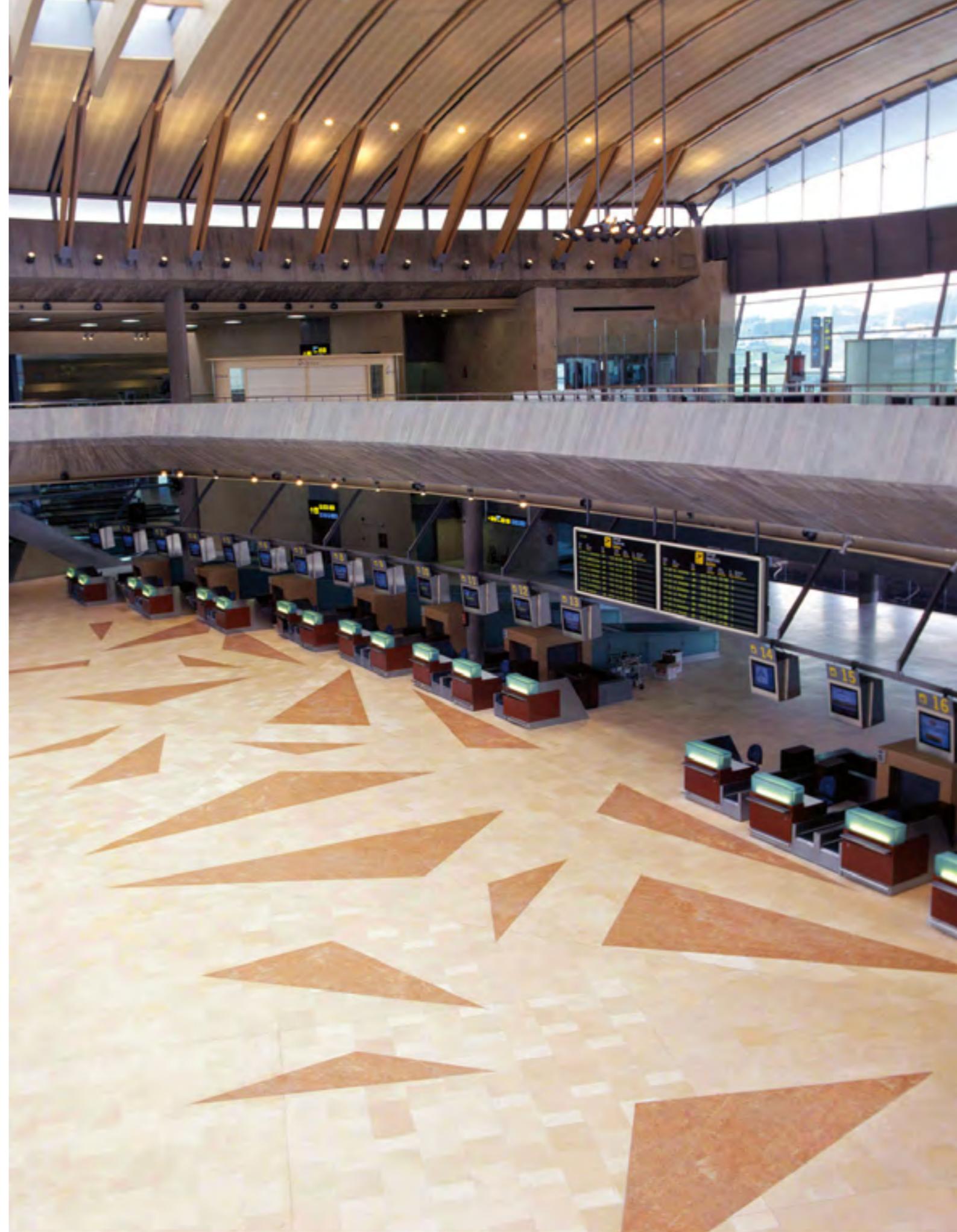
Spain

Prior the expansionary plan, the airport capacity was not able to meet any future increase of passengers traffic demand, while its infrastructure was out of date.

The project foresees the designs for the extension of the terminal building, accesses and parking areas in order to handle the traffic forecast up to 2020.

Within the terminal building extension, the number of check-in desks, security points, boarding gates, passports controls and baggage reclaim devices were enhanced, allowing its growth. Besides, further modifications were applied, significantly improving the functionality of the building and providing a solution fulfilling user needs.

Services offered also dealt with the design of the expansion of the parking areas (up to 45,000 sqm total area), along with the creation of a new 28,000 sqm parking building and adequacy of airport access roads.





Fuerteventura Airport

Spain

In response of the growing air traffic demands - 7.5 million annual passengers-the existing 34,000 sqm terminal area aimed to be expanded to a surface of 85,000 sqm.

AECOM performed works control and supervision services, including the request of necessary permits to local authorities, environmental management of the works or the extension and definition of all the necessary elements for operative working of the terminal building extension and its integration with the existing building. In addition, various roads and accesses were adapted, the baggage hall was transformed into a check-in area, as well as the relocation and extension of the bus parking spaces.

Fuerteventura Airport has paid special attention to caring for the environment. It has restored the areas affected by the works by planting native species, also used as a natural barrier to reduce the noise and visual impact of airport activity.

Nowadays, the upgrade project has already been completed and is fully operational, meeting both island's population and international tourists needs. Thus, the project generated over 3,000 new jobs, while a further 20,000 workplaces are projected to be created indirectly over the long term.



About AECOM

AECOM is built to deliver a better world. We design, build, finance and operate infrastructure assets for governments, businesses and organizations in more than 150 countries. As a fully integrated firm, we connect knowledge and experience across our global network of experts to help clients solve their most complex challenges. From high-performance buildings and infrastructure, to resilient communities and environments, to stable and secure nations, our work is transformative, differentiated and vital. A Fortune 500 firm, AECOM companies have annual revenue of approximately US\$18 billion. See how we deliver what others can only imagine at aecom.com and [@AECOM](https://www.instagram.com/aecom).