URBAN PASSENGER RAIL

HIGH AND HIGHER SPEED RAIL

wsp



WE ARE WSP

WSP is one of the world's leading engineering professional services consulting firms, bringing together talented people from around the globe. We are technical experts who design and provide strategic advice on sustainable solutions, engineering projects that will help societies grow for lifetimes to come.



DESIGNING WORLD-CLASS HIGH AND HIGHER SPEED RAIL

High-Speed Rail (HSR) provides a means to help local communities and regions address significant challenges. HSR transport networks alleviate congested roads. As population growth around the world continues to put pressure on road transport systems, HSR trains, which generally travel at least 200 km (124 miles) per hour, offer a mobility option for longer trips with less time needed for travel. The high energy efficiency of these trains supports reduction in greenhouse gas emissions, which means reduced environmental pollution and decreasing climate-change impact.

HSR plays an integral role as transport stakeholders seek to achieve transportation systems that integrate multiple modes, strengthen connections and coordinate transport services to provide choices for users.

WSP is pleased to present this collection of our advisory and design work to advance high-speed rail for communities and regions around the world.



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AUSTRALIA'S NATIONAL HSR

Newcastle to Sydney



Location
AUSTRALIA

Client
HIGH-SPEED RAIL AUTHORITY (HSRA)

Status
ONGOING

SPEED
Up to 320 km/h

TRIP FROM NEWCASTLE TO SYDNEY
1 hour

TRIP FROM THE CENTRAL COAST TO NEWCASTLE OR TO SYDNEY
30 minutes

The Australian Government is planning a high speed rail network to connect communities across the east coast of Australia. The Newcastle to Sydney corridor forms Stage 1 of the proposed National High Speed Rail network. WSP was appointed to deliver two key advisory packages to support the development of the Strategic Business Case submitted to the Australian Government in late 2024.

Package 1: Technical Advisory, Environment & Sustainability, and Community & Stakeholder Engagement Services (TAESCS)

WSP and partners led a multidisciplinary team to assess technical feasibility, environmental impacts, and stakeholder considerations for the proposed high-speed rail alignment, informing the Detailed Business Case. Services included:

- Technical advisory: Defined indicative arrangements for high-level costing, including corridor alignment, tunnel/bridge typologies, station configurations, and maintenance facilities.
- Environmental & sustainability: Identified key constraints, conducted risk assessments, and advised on strategies aligned with net-zero objectives.
- Resilience & modularisation: Provided input on infrastructure resilience, operability, construction staging, and advanced manufacturing integration.
- Community engagement: Supported engagement strategy, contributed to 40+ community events, and incorporated feedback into planning.
- HSR Product Definition Report: Developed strategic alignments and optioneering between Melbourne and Brisbane via Sydney–Newcastle Corridor, considering engineering constraints and operations.

Package 2: Transport Integration, Land Use & Property Advisory

WSP delivered integrated land use, transport planning, and property advisory services to assess broader impacts and enablers of high-speed rail. This included:

- Transport integration: Access strategies for active, public, and private transport, interchange concepts, and station connectivity.
- Land use & precinct analysis: Corridor visioning and forecasts to support housing, jobs, and place-based outcomes.
- Socio-economic assessment: Identified access improvements to employment, education, and services, with demographic analysis.
- Property advisory: Acquisition strategy, cost estimate support, and value capture opportunities.
- HSR Product Definition Report: Provided transport and land use inputs for station locations and alignments; prepared a Corridor Preservation Strategy.

WSP's work informed the strategic case for the first phase of the National High-Speed Rail network and contributed to planning for future stages to Canberra, Melbourne, and Brisbane.



Image courtesy of Sam McWilliams

PLANNING & ADVISORY

VIA TORONTO-OTTAWA -MONTREAL



Location
ONTARIO AND QUEBEC, CANADA

Client
CANADA DEVELOPMENT INVESTMENT CORPORATION (CDEV)

Status
COMPLETED IN 2017

WSP was engaged by the Canada Development Investment Corporation (CDEV) to carry out a financial and technical peer review and due diligence of VIA Rail's proposed High-Frequency Rail (HFR) service between Toronto-Ottawa-Montreal. This included a review of passenger travel demand forecasting, capital and operating costing, financial modelling and alternative financing and procurement (AFP) options. The goal of this assignment was to provide CDEV, the federal Ministry of Finance and Ministry of Transport with guidance on the work completed to date by VIA in the development of their HFR business case and requests for funding.

The passenger rail due diligence included a review of travel demand forecasting, capital and operating costing, financial modelling and alternative financing and procurement (AFP) options.

WSP carried out a full value-for-money analysis and P3 feasibility, including consideration of alternative financing and delivery structures. This project occurred over a six-month timeframe and involved engagement of multiple project stakeholders, including: Transport Canada, Finance Canada, and various potential industry participants. The work included a due diligence review of previously prepared ridership, assessment of the environmental risks of the proposed alignment, capital and operating cost estimates, development of a sophisticated financial model to assess project performance, market sounding, case studies, and guidance on project structure and governance models.

CHINA
HIGH-SPEED RAIL



Location
MAINLAND CHINA

Client
CHINA MINISTRY OF RAILWAY

Status
COMPLETED IN 2016

HIGH-SPEED RAILWAY NETWORK IN THE WORLD

Longest

TOTAL LENGTH

>40,000 km

LINKING PROVINCIAL-LEVEL ADMINISTRATIVE DIVISIONS

33

WSP has contributed to the construction of the world's largest high-speed rail system in China. Currently with a total length of over 40,000 km, the system connects all 34 provincial-level administrative divisions except Macau.

WSP was mandated to provide professional services on four sections of the China High-Speed Rail (HSR) program with a combined line length of over 800 km, 100 tunnels totalling 260 km, and 280 bridges. Our services on four sections of the China HSR program cover project management, systems assurance, systems integration, safety and risk management and construction supervision. This project's main challenge was that it extended over vast remote areas including uninhabited regions in the mountains.

Our involvement began in 2005, on the 476 km high-speed passenger dedicated line, linking Zhengzhou and Xi'an, two ancient capitals of China located in Henan and Shaanxi provinces. As part of a consortium, we provided project management advice, systems assurance advice and construction supervision services for this new line, which included 38 tunnels totalling 75 km and 140 bridges totalling 225 km. The project was undertaken on a highly accelerated schedule and opened in 2010. It now saves users up to six hours in travel time between these major cities.

From 2005 to 2009, we worked on the 161km-long Shijiazhuang-Taiyuan Line, where we provided construction supervision services for 32 tunnels totalling 74 km, and 82 bridges with a total length of 33 km. These services included building the 27.8km-long Taihangshan tunnel and the 11.5km-long Nanliang tunnel, two of the longest on the Chinese HSR system.

We also worked on:

- Changsha to Kunming, Guizhou Section, Construction Supervision Package 5 & 6: As part of a joint venture with the Beijing Tieyan Construction Supervision Co., Ltd, WSP was commissioned to provide international expertise, which includes chief supervising engineers, construction supervision team leaders and resident engineers to support the local teams.
- Hefei to Fuzhou Package 1: WSP, in a joint venture with the construction supervision division of China Railway Fourth Design Institute, provided construction supervision services for this 56km-long section.



DSB
FREMTIDENS TOG



Location
COPENHAGEN, DENMARK

Client
DSB

Status
ONGOING

Denmark is investing to upgrade its railway network, electrifying most of the routes and implementing the European standard signalling and safety system, ERTMS.

Fremtidens Tog (Future Trains) is the program set up by the Danish state railway, DSB, for the procurement of the new rolling stock, the largest rolling stock program in Danish history. This includes electric multiple units (EMUs) for intercity and regional service, coaches and locomotives, enabling DSB to replace the old rolling stock as well as meet the expected passenger growth.

WSP was taken onboard as a partner to deliver multidisciplinary technical and business advisory services. These services are provided for the new high-speed EMUs during several program phases to specify, procure and bring into operation the new trains, plus a 30-year maintenance contract for these trains.

During the second program phase, WSP implemented its demand-driven design philosophy through undertaking workshops to capture needs of various stakeholders within DSB and developing the technical specification and other tender documents from these captured needs, including market intelligence and benchmarks.The third phase included evaluation of submitted bids and recommendations for tender selection. It was a negotiated procedure in three steps after the pre-qualification where input from the competing tenderers was considered in updates of the tender documents.

The fourth phase (ongoing 2021-2025) includes technical and commercial expert advice during the design, production and approval of the first five trainsets.

WSP's involvement has included but is not limited to the following:

- Technical, commercial and project management, WSP is currently supporting the DSB technical leads in managing the project activities and planning as well as coordinating with third parties, such as solicitors and Banedanmark, the entity responsible for the maintenance and traffic control on the state-owned Danish railway network.

WSP has used its experience to develop the technical specification for both trains and corresponding maintenance strategy, ensuring not only that there are products on the market that fit the specification but that the rolling stock will meet the future needs. This includes RAM and LLC strategy and analysis to form key performance measure to allow DSB to meet the passenger demands.



Image courtesy of DSB

PARIS-STRASBOURG HIGH-SPEED LINE



Location
FRANCE - VOSGES DU NORD

Client
RFF (RÉSEAU FERRÉ DE FRANCE) / SNCF RÉSEAU

Status
COMPLETED IN 2015
COMMERCIAL OPENING IN JULY 2016

RAIL TUNNEL LENGTH
4 km

MAX SPEED IN TUNNEL
352 km/h

RAILWAY PLATFORM
3.5 km

The seventh railway corridor of the European Union (referred to as "Main Line") links Paris to Bratislava. The French portion of the corridor links Paris to Strasbourg and has been divided into two phases.

The first phase reduced the Paris-Strasbourg trip time from four hours to two hours and twenty minutes and was opened to traffic on June 10, 2007. It consisted of 300 km of high-speed railway line from Paris to Baudrecourt. This line set the world speed record for a commercial train on steel wheels in 2007 at 574.8 km/h.

The second phase, 106 km long from Baudrecourt to Strasbourg, reduced the Paris-Strasbourg journey time to one hour and fifty minutes. It was opened to traffic on July 3, 2016.

The emblematic work of the second phase is the Saverne Tunnel, one 4 km twin tube tunnel, linking the two French regions of Alsace and Lorraine, designed for a maximum speed of 352 km/h. The main characteristics of the new line are the commercial speed of 320 km/h, and the absence of merchandise traffic. This is the first tunnel in France to be designed and constructed since the new European Safety Regulation CE 2008/163 has been issued.

RFF / SNCF Réseau launched a design and build tender for the tunnel and its surroundings. The designer-builder (BG Consulting Engineers, now WSP) chose to create a two-pipe tunnel.

The second phase included the construction of the tunnel, a 270 m-long viaduct, three bridges and underpasses, a 3.5 km railway platform surrounding the tunnel, and all the tunnel security equipment.

The contract was awarded to a JV lead by Dodin Campenon Bernard, a VINCI group contractor, which includes companies coming from VINCI and Spie Batignolles TPCI. The French company CEGELEC was in charge of the equipment. The engineering was led by BG Consulting Engineers, now WSP.



PARIS-NORMANDIE HIGH-SPEED LINE



Location
FRANCE

Client
SNCF RÉSEAU - MISSION LNPN

Status
COMPLETED IN 2018

The new Paris-Normandie line (LNPN) operation is an effort to meet the growing demand for alternative transportation (non-car), bearing in mind that, in addition to passenger rail transportation, the development of the Paris-Normandie axis also appears to be strategic from an economic and territorial point of view. The construction of new infrastructure should also make it possible to promote the development of rail transportation, for the purpose of creating the "Seine Gateway" (transportation corridor in the Seine Valley).

The LNPN project foresees the completion of nearly 250 km of new lines, combined with the construction of 5 new stations and improvements to the existing network.

We carried out the infrastructure assessments as part of stage 1 of the studies and prior to the public inquiry, with the following main objectives:

- to enable the State to validate a functional and performance-based program based on infrastructure hypotheses that best fit the environmental context and meet service objectives;
- to identify preferential travel areas that correspond with potential infrastructure and that are 1 to 3 km wide (or less depending on the context);
- to ensure the feasibility of infrastructure at the "preliminary study" level;
- to assess the costs of this infrastructure at the "preliminary study" level and to ensure that these costs are controlled, understand the associated risks;
- to seek the acceptance of the territory stakeholders.



3D modelling of one of the options

THE FOLLO LINE



Location
OSLO, NORWAY

Client
BANE NOR

Status
COMPLETED IN 2022

NEW TRACK LENGTH
64 km

RAILWAY TUNNEL
20 km

SPEED
200 km/h

The Follo Line has been built to meet the increased demand for rail capacity south of the Norwegian capitol of Oslo.

In 2016, the Follo Line project was the largest infrastructure project in the country. It includes the longest railway tunnel (20 km) in any of the Nordic countries (Norway, Sweden, Denmark, Finland and Iceland). In addition, it is Norway's first long twin-tube rail tunnel and one of the first tunnels to be constructed in the country using tunnel boring machines.

The main construction work began in 2015, and the project was completed in December 2022.

The Follo Line project is comprised of four tracks that run from Ski Station to Oslo Central Station, Norway's largest hub for public transport. Constructing new rail tracks in such a densely trafficked metropolitan area was a major logistics challenge. One of the goals of the project was to cause the least amount of disruption possible, and to that end much of the work was carried out without interfering with the daily flow of traffic to and from this busy station.

Trains on the new Follo Line run directly between Oslo and the public transport hub at Ski. The Follo Line runs alongside the Østfold Line, which currently provides service between Oslo and Ski. The Follo Line brings improved service to passengers, as the Østfold line has reached its capacity limit.

Between Oslo Central Station and the tunnel, the Follo Line must accommodate other rail traffic in and out of Oslo Central Station. The line has been constructed so that the tracks will connect with several existing platforms.

In addition, we have worked rigorously to preserve the physical integrity of Oslo's Medieval Park to respect the archaeological and historical significance of the area.

WSP's primary services:

- Construction management;
- Technical management;
- Quality manager;
- Environment, Health and Safety Management and Compliance (EHS advisory and supervisor);
- Strategic planning;
- Processing and follow-up of public/ governmental plans;
- Delivery of project specialists to the client.



Credit: Bane NOR

FJERNTOG
N10



Location
OSLO, NORWAY

Client
NORSKE TOG

Status
ONGOING

Norske Tog's project Fjerntog has the objective to procure new long-distance trains to replace the current trains when reaching their technical life expectancy. The trains will serve both electrified and non-electrified lines on the following four routes:

- Sørlandsbanen
- Dovrebanen
- Bergenbanen
- Nordlandsbanen

The new trains, with a top speed of 200km/h, need to meet many needs, including day and night function, multiple passenger needs, varying infrastructure, and harsh weather conditions. This includes reclining seats, sleeping compartments, bistro, family areas and flexible luggage handling. WSP is supporting Norske Tog with multidisciplinary technical and business advisory services in several phases of the project. From developing initial overall goals in the pre-study, to planning and developing tender documents and evaluating tenders in the procurement phase. WSP also supported by preparing the contract and the organization for the next phase. The project is currently in the delivery phase where WSP is supporting with technical and commercial expert advice. The first train will be in traffic by 2026.

WSP's involvement includes but is not limited to the following:

- Providing technical, commercial and project management.
- Providing support with market intelligence.
- Providing technical expertise for all aspects of rolling stock, including maintenance.
- Providing technical expertise for the development of an IT Concept.
- Providing reliability, availability and maintenance (RAM) and life cycle cost (LCC) technical expertise.



Norske Tog

HARAMAIN HIGH-SPEED RAILWAY



Location
SAUDI ARABIA

Client
SAUDI ARABIA RAILWAYS

Status
COMPLETED IN 2025

LENGTH
444 km

FUTURE RIDERSHIP
60 million

SPEED
300 km/h

Making it the first high-speed railway in Saudi Arabia, the Haramain High-Speed Railway is approximately 444 km in length, consisting of 5 stations linking the two cities Makkah and Madinah. The railway will transport more than 11 million passengers, whereas future annual demand is expected to reach as much as 60 million passengers.

WSP was commissioned by Saudi Rail Organisation (SRO) to undertake independent verification and assurance of the employer's requirements. WSP acted as the Design Verification Engineer (DVE) on this high profile, complex multi-disciplinary project including rail systems infrastructure. The DVE role is an essential step in the design process and is intended to ensure that the product as designed is the same as the product delivered. We made certain the rail system dependencies were duly considered and with any risks identified and suitably mitigated.

We demonstrated that the employer's high-level criteria were achieved and delivered to program throughout the Concept, Preliminary and Detailed Design of all the Rail Systems, as well as the Definition Design and Detailed Design for the new rolling stock.

Our approach for successful delivery was based around our collaborative approach and the utilization of several experts in their discipline field, who were responsible for organizing appropriately competent and qualified staff to carry out detailed evidence-based readiness assessments on design submissions such that they are personally assured and informed to sign the design verification certificates.



GREAT TRAIN EXPRESS A (GTX-A) LINE



Location
SEOUL, KOREA

Client
SG RAIL

Status
ONGOING

TRACK LENGTH
83 km

FULL JOURNEY TIME
47 minutes

SPEED
200 km/h

GTX-A Line is one of three lines planned as Seoul's next generation city-wide rapid urban commuter rail network in Seoul Capital Region, connecting Ilsan area in northwest Gyeonggi province with Dongtan in southeast of the province, passing through major interchanges aside from Seoul Station.

The line will be constructed about 50m underground with 200 km/h high-speed train and have ten stops on its 83 km-long route. It will take around 47 minutes for a one-way trip, which is more than three times faster than the existing metro journey time. This line will cut the average commuting time in Seoul metropolitan region from the current 50-plus minutes to less than 30 minutes, greatly enhancing the traffic congestion of the region.

Since 2020, WSP has been carrying out project management consultancy covering the construction progress, cost, contract, risk and system performance management, as well as O&M preparedness. The GTX-A Line is set to enter service in 2024, and our involvement is expected to be completed by 2025.



DESIGN



Location
SPAIN

Client
ADMINISTRADOR DE INFRAESTRUCTURAS FERROVIARIAS (ADIF)

Status
ONGOING

AUDITED TRACK LENGTH
1,200 km

TUNNEL LENGTH
125 km

VIADUCTS
67

MULTIPLE HIGH-SPEED LINES

Since 2010, WSP has been carrying out the quality control, quality management and monitoring of a significant portion of the high-speed railway network in Spain, supporting ADIF to ensure all new high-speed stretches are being built under the strictest quality national and international standards.

Within the contract, the Olmedo–Zamora–Lubián–Ourense high-speed line is included, where more than 320 km of high-speed platform, over 125 km of tunnels, and 67 viaducts totalling more than 19 km have been audited, designed for a speed of 350 km/h, and divided in 15 stretches, with an estimated total construction cost of 2.2 billion euros (CAD 3.2 billion).

Quality audits of the high-speed railway network in southern Spain (Seville–Córdoba, Jaén, Almería, and the transversal axes of Seville–Cádiz) are also being conducted, as well as those in the northern region of Spain (the León–Zamora high-speed line, high-speed sections in Zamora and Asturias, as well as the Atlantic High-Speed Corridor).

In total, more than 1,200 km of high-speed rail in the Spanish railway network have been audited, which provides us with a unique knowledge of the requirements, needs, strategy and main stakeholders.

Our scope of works includes the revision and monitoring of quality plans, conducting technical audits of suppliers, providers, laboratories, concrete and prefabricated plants, technical audits of works, geometric control in all platform works, management of disconformities between the property and the contractor, and reporting all deviations to minimize errors, omissions and ensure works are developed in accordance with the project, rules and regulations.

The typology of projects includes track assembly works, track renewal and/or duplication, station remodelling, overhead contact lines and their associated electrical systems, level crossing elimination, and auxiliary railway facilities (security facilities in tunnels, logistic platforms, electrical substations, CCTV, etc.).



Location
SPAIN

Client
ADMINISTRADOR DE INFRAESTRUCTURAS FERROVIARIAS (ADIF)

Status
COMPLETED IN 2010

ANALYZED VIADUCTS

100

DIVERSE TYPOLOGIES

From mixed concrete-steel to innovative designs

SPEED

200 km/h

SPANISH HIGH-SPEED LINE BRIDGE BEHAVIOR

Our project was a two-fold endeavor. The first phase involved a meticulous examination of 100 viaducts belonging to operational high-speed rail lines. This entailed a rigorous inspection of their structural health and the precise measurement of horizontal movements, expansion joint adjustments, displacement in sliding bearing systems, longitudinal and transverse settlements at abutment heads, concrete section cracking at the abutment base, and the performance of various track expansion devices.

The second phase was dedicated to the monitoring and interpretation of data collected from four recently constructed viaducts of distinct engineering marvels: The Las Piedras Creek Viaduct, Valle Creek Viaduct, Sanboi Mixed Viaduct in Llobregat, and Sanboi Concrete Viaduct in Llobregat. These state-of-the-art structures presented unique challenges. Our mission was to observe and correlate foundation and pier crown movements with thermal influences and wind effects while delving into the dynamic behavior of the viaducts.

The Las Piedras Creek Viaduct, a continuous structure spanning 20 segments with a total length of 1208.90 metres, boasts a unique mixed concrete-steel structure. On the other hand, the Valle Creek Viaduct is a key component of the New Railway Access to the North and Northwest of Spain, stretching over 1750 metres and characterized by a hollow-box-type girder design. Meanwhile, the Sanboi Mixed Viaduct, spanning 340 metres, features an innovative structure with suspended concrete slabs between longitudinal girders.

In essence, our project combined a meticulous inspection of operational viaducts with the cutting-edge monitoring of newly constructed viaducts.

We addressed crucial aspects such as structural movements, thermal behavior, and dynamic response. Each viaduct, from the mixed marvel of Las Piedras to the Valle Creek girder bridge and the innovative Sanboi Mixed Viaduct, was treated as a unique engineering masterpiece. Our ultimate goal was to ensure the safety and stability of these vital components in the high-speed rail network.





Location
SPAIN

Client
ADMINISTRADOR DE INFRAESTRUCTURAS FERROVIARIAS (ADIF)

Status
ONGOING

RAILWAY PROJECTS
>120

CONSTRUCTION COST
>3B €

SPEED
200 km/h

HIGH-SPEED RAILWAY PROJECTS DYNAMIC SUPERVISION

Since 2019, WSP has taken on a significant role in the management and supervision of a wide spectrum of railway projects across the Spanish network. These encompass a diverse range of elements such as track alignment design, electrification, overhead line design, station development, structural enhancements, and tunnel projects throughout the country's railway network. Acting as project supervisor, WSP reviews all documentation produced by third-party consultants to guarantee strict alignment with ADIF's stringent requirements and regulatory standards.

WSP acts as project supervisor, reviewing all the documents developed by third-party consultants, to ensure its alignment with ADIF requirements, rules and regulations, providing technical support and advice to the client prior to the approval of the railway projects in each of its phases (preliminary documents, preliminary design and detailed design) as well as the BIM deliverables, BIM execution plan and the rest of BIM documents that might include the project before construction.

The scope of WSP's supervision responsibilities encompasses more than 120 railway projects, each with its unique challenges and complexities. Some noteworthy projects that stand out include the ventures undertaken in the R2 underground rail network in Barcelona, valuing 520 million euros (CAD 750 million) in construction costs, and the railway access project to the port of Castellón, involving nearly 100 million euros (CAD 144 million) of construction investments. Additionally, several other critical infrastructure initiatives are poised to fortify and expand Spain's railway network. As total, the construction cost of all the projects supervised, amount over 3 billion euros (CAD 4.4B).

As part of our Future Ready® approach, we have developed a tool that facilitates automation; improves efficiency in the communication between stakeholders; and makes it easy to customize reports, include alerts, filters and get real-time statistics, among other features. It also helps keep track of the high number of documents that are being developed within the contract, to ensure the latest versions are being used, minimizing errors and mistakes.



Location
SPAIN

Client
ADMINISTRADOR DE INFRAESTRUCTURAS FERROVIARIAS (ADIF)

Status
ONGOING

TRACK LENGTH
45 km

DOUBLE STANDARD-GAUGE TUNNEL
2.2 km

STATIONS
2

MURCIA–CARTAGENA HIGH-SPEED RAIL PROJECT

El Reguerón to Cartagena Section

The Region of Murcia is poised for a transformative shift in its railway transportation network with the execution of a comprehensive project that will revolutionize connectivity and the efficiency of rail service in the area. This ambitious project aims to enhance both passenger and freight transportation and is anticipated to be a key catalyst for economic and tourism development in the region.

WSP developed the detailed design of the project that spans a length of 45.7 kms, stretching from El Reguerón to Cartagena, traversing the municipalities of Murcia, Torre–Pacheco, and Cartagena. This high-speed railway corridor runs in parallel with the existing conventional line (Chinchilla–Cartagena, with Iberian gauge) and is designed to harmoniously coexist with the existing rail service, maintaining cross-transverse permeability of the dense network of roads and highways.

Key Features of the Project:

- **Expansion of High-Speed Platform:** The essence of this project lies in the expansion of the high-speed railway platform, which is developed through a double standard-gauge track. This will enable greater capacity and efficiency in rail transportation between Murcia and Cartagena.
- **Sustainable Drainage Solutions:** The project design pays special attention to water management and drainage of the proposed platform. Coordination with the Segura Hydrographic Confederation is underway to define new bridges and drainage works over dry riverbeds without compromising the existing railway.
- **Modernization of Stations:** Existing stations, such as Balsicas–Mar Menor and Torre–Pacheco, will undergo significant expansion and remodelling, enhancing the passenger experience and ensuring a high-quality infrastructure.
- **Altaona Tunnel:** The most prominent infrastructure of the project is the Altaona tunnel, with a length of 2.2 km, crossing the Altaona mountain range. This tunnel is essential to overcome the mountainous terrain and protect the natural environment.
- **Environmental and Cultural Impact:** The project is committed to mitigating impacts on irrigation systems, environmentally and culturally sensitive areas, and habitats of community interest. Noise, vibration studies, and archaeological surveys will be conducted to ensure compliance with environmental and cultural standards.





Location
SPAIN

Client
ADMINISTRADOR DE INFRAESTRUCTURAS FERROVIARIAS (ADIF)

Status
COMPLETED IN 2010

LONGEST VIADUCT LENGTH
2.5 km

TRACK LENGTH
8.45 km

SPEED
200 km/h

HSR BOBADILLA–GRANADA ANTEQUERA

Peña de Los Enamorados Section

WSP has carried out the preliminary and detailed design, as well as the supervision and structural adaptation of this major high-speed section from Antequera and Peña de los Enamorados, an 8.45 km stretch that crosses the municipal districts of Antequera and Archidona within the province of Malaga (Andalusia).

The beginning of the section is located about 3 km northeast of Antequera, passing its plains during the first 2 km and crossing the A-45 highway. Its course then veers left toward the Guadalhorce River and the A-92 highway, crossing them by means of a single structure, and then continuing north of them until reaching the Málaga–Granada railway line, in the vicinity of which the end of the section is located. The layout is based on the design proposed for the previous feasibility study, for a maximum speed of 200 km/h and for passenger traffic.

Several structures in this section are noteworthy: the 130-metre-long viaduct over the A-45, the 2525-metre-long viaduct over the Guadalhorce River and the A-92, the 800-metre-long tunnel, and the 123-metre-long viaduct over the Malaga-Granada railroad.

This viaduct over the Guadalhorce River and the A-92, 2.5 km long, is in the Antequera–Peña de los Enamorados section, in the municipality of Antequera (Málaga). Its design and construction process allowed minimizing the impact on the Singular Agricultural Landscape of the Vega de Antequera.

The structure has 49 spans. The deck, 14 metres wide, accommodates the platform of the high-speed double track. The most emblematic element of this viaduct is the metal arch that allows it to cross the A-92, with a span of 90 metres between supports, with a deflection of 17 metres.

The piers have a variable height to adapt to the profile of the route, reaching a maximum height of 27 metres in the area closest to the crossing over the A-92.





Location
SPAIN

Client
ADMINISTRADOR DE INFRAESTRUCTURAS FERROVIARIAS (ADIF)

Status
COMPLETED IN 2005

SPEED
350 km/h

TUNNELS
7

MAJOR VIADUCTS
2

HSR ORENSE–SANTIAGO

Lalín–Lalín and Lalín–Silleda Section

WSP carried out the preliminary and detailed design services of the 14.4 km high-speed railway line from Lalín and Silleda in Pontevedra, as part of the Ourense–Santiago high-speed line.

This section includes the design of 7 viaducts at Rego da Cabritas, Rego da Laxe, Rego das Lamas, Rego da Faquinitas, Anzo 1, Anzo 2, and Deza River as well as 7 tunnels at A Pena, Castro (cut & cover), Bendoiro (cut & cover), Vilar do Xestal, Anzo, Vila de Cruces, and Carboeiro.

The Río Deza (1,175 m long) and Anzo 2 (732.40 m long) viaducts consist of a box girder (4.50 m high) of prestressed concrete. The typical span, for both viaducts, is 70 m long, although the longest span of the Río Deza Viaduct is 75 m long. They were built by the incremental launching method, with a 43.50-m long nose. The deck was divided in segments of 35 m of maximum length (among the longest segments made in Spain up to date). The cross section of the piers is octagonal and has a linear variation of its transverse and longitudinal dimensions in those piers taller than 50 m. The tallest pier in Anzo 2 is 70 m high, whereas the tallest one in Río Deza is 96.50 m high.

The Río Deza Viaduct crosses it at a height of more than 100 m by means of a 131.50 m span pointed arch. The erection procedure used in the construction of the arch was the vertical rotation method. For this purpose, the two half leaves of the arch were built in vertical position and then moved to position and met at the closure. It is the third longest arch built in the world by this method.





Location
SPAIN

Client
ADMINISTRADOR DE INFRAESTRUCTURAS FERROVIARIAS (ADIF)

Status
ONGOING

SPEED
250 km/h

TRACK LENGTH
180.5 km

VIADUCT LENGTH
3.2 km

VITORIA–BILBAO–SAN SEBASTIÁN HIGH-SPEED LINE

The new High-Speed Line Vitoria–Bilbao–San Sebastián–French border is part of the Atlantic branch of the European Union's Priority Project No. 3, providing continuity in Spanish territory of the Madrid–Valladolid¬–Vitoria–French border line.

This line will connect the three capitals of the Basque Country through high-speed rail, bringing it closer to the rest of Spain and France. In addition to linking the three Basque capitals, the new railway infrastructure will have a connection to Pamplona through the Navarrese Corridor.

The new line will have a total approximate length of 180.5 km (excluding access to the capitals). It consists of two separate branches: Vitoria–Bilbao, measuring 90.8 km, and Bergara–San Sebastián–French border, spanning 89.7 km.

WSP has participated in the preliminary and detailed design as well as construction management of several stretches from the Vitoria–Bilbao–San Sebastián high-speed line. The layout is mainly constrained by the complex topography of the territory. This leads to the need to construct several tunnels and viaducts along the stretches.

In total, WSP has participated in over 4.9 km of tunnel, constructed using both conventional blasting and mechanical methods, as well as sections of artificial tunnel, and over 3.2 km of viaduct—with the Kortazar viaduct in the Mondragón–Elorrio–Bergara section standing out as a unique structure spanning more than 570 metres with double track.

All the sections in which WSP has been involved add up to a total of more than 290 million euros (CAD 419 million).

One of ADIF's priorities is environmental protection. That's why 6.7 percent of the high-speed rail construction budget is allocated to ensure environmental integration, making improvements to the surroundings, guaranteeing compliance with the Environmental Impact Statement regarding the project for the New Railway Network in the Basque Country.

PLANNING & ADVISORY

FEASIBILITY STUDY
JÖNKÖPING-MALMÖ



Location
SWEDEN

Client
TRAFIKVERKET (SWEDISH TRANSPORT ADMINISTRATION)

Status
COMPLETED IN 2018

Capacity on the Swedish railway network is limited, and capacity utilization on the Southern and the Western Main Lines is high today. The high-capacity utilization means that the traffic becomes sensitive to disturbances and cannot be developed in line with increased demand. As a possible solution due to the shortcomings and needs that exist, an expansion of high-speed rail has been proposed.

In 2015, WSP was commissioned to carry out a feasibility study for high-speed lines between Jönköping and Malmö (a distance of 250 km). This section is part of the planned high-speed train network between Stockholm and Malmö.

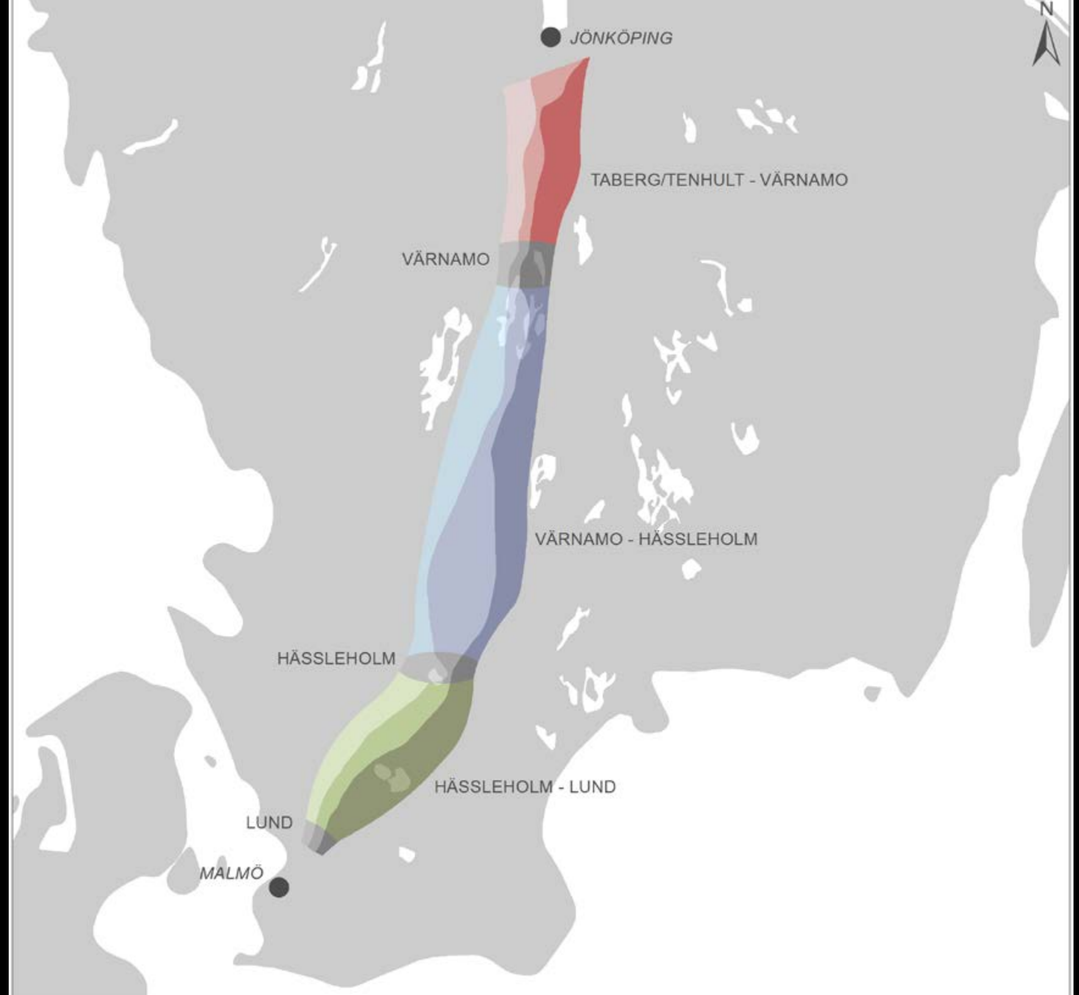
WSP analyzed both possible alignments and possible location of new stations in Lund, Hässleholm and Värnamo. Alternatives with track and station at ground level, on a bridge and in a tunnel were studied.

The work included:

- Landscape Character Assessment
- Environmental Impact Assessment
- Overall System Design
- Conceptual Design, alinement studies
- Station location
- Cost and socioeconomic estimates

The work was carried out with the landscape character assessment as the starting point. This meant that WSP worked in an integrated way with different aspects of the project; all disciplines worked together to identify possibilities and to develop solutions. This also included close dialogue with the Swedish Transport Administration's organization. The project was coordinated with several other projects within the Swedish Transport Administration.

In both the landscape character assessment and the environmental assessment, social aspects in relation to the new infrastructure and planned future construction and development of the city were studied. Analysis of social sustainability was an aspect assessed in the environmental assessment.



PLANNING & ADVISORY



Location
SWEDEN

Client
TRAFIKVERKET
(SWEDISH TRANSPORT ADMINISTRATION)

Status
COMPLETED IN 2021

RAILWAY PLAN
EAST LINK- BÄCKEBOL-TALLBODA

The East Link will be a new, approximately 150 km long, double-track railway between Järna outside Södertälje and Linköping. WSP has been commissioned to draw up a railway plan, system documents and an environmental impact assessment for the section Bäckebol-Tallboda, east of Linköping, a distance of 16.5 km.

The mandate included, inter alia, the following:

1. Railway plan
2. System document
3. Road plans included in railway plans
4. EIA
5. Design program
6. Prepare documentation for the application of environmental permits, notifications and exemptions, etc.
7. Mass management plan

The assignment included, among other things, about 17 km of double-track railway and several grade-separated crossings, including a bridge at Tallboda over the old E4. A new site between Bäckeby and Tallboda. The assignment also included in-depth investigation and planning of the connection of the East Link to the Southern Main Line at Tallboda, with a new operating site in Tallboda, as well as the investigation into the relocation of the existing Southern Main Line to avoid major encroachments on existing buildings.

Among the technical areas covered by the assignment were track, land, telecommunications, signalling, road engineering/design, civil engineering, geotechnics, field geotechnics, risk management, land/water and sewerage/wiring, rock, noise, structural sound and vibrations, landscape architecture, architecture, surveying, hydrogeologist, environmental impact assessment , railway plan, land negotiation, natural and cultural environment study.

The WSP's role started in 2016 and ended in 2021.



Courtesy of SJ AB



Location
STOCKHOLM, SWEDEN

Client
SJ AB

Status
ONGOING

X2 UPGRADE

The X2 vehicles were the first high-speed trains operating in Sweden when these were taken into operation in the beginning of the 1990s. Thanks to the train-tilting function and the top speed of 200km/h, the vehicles could operate at higher speeds on the existing rail network. In 2013, SJ AB decided to refurbish and modernize the vehicles to increase the lifetime expectancy by 20-25 years.

The following system and components were replaced within the scope of the project:

- High voltage components
- Main transformers
- Propulsion converters
- Brake computer
- Auxiliary power converters
- Cooling tower
- Battery charger
- Air condition (HVAC)
- Train control (TCMS)
- Doors

The upgraded electrical systems of the new X2 vehicles will ensure more reliable power supply while reducing energy consumption in a significant way. Punctuality, reliability and higher comfort are key factors to further improve customer satisfaction.

The train will be equipped with the latest version of TCMS (Train Control and Management System). This means that the train will constantly be connected to a remote analysis and diagnostics system. It will be possible for fault diagnosis when the train is in traffic and when the train arrives for maintenance; everything is already prepared for the train to get back to traffic as soon as possible. The new X2 vehicles have extensive computer systems and continuously produces data about train conditions and performance.

WSP is supporting SJ AB in advising and reviewing in several technical areas. Especially within TCMS, Vehicle Functionality, Propulsion and HV system. Further, WSP is working with requirement analysis, validation and testing.



Courtesy of SJ AB

SJ DELTA



Location
SWEDEN

Client
SJ AB

Status
ONGOING

To meet the increasing public demand for climate-friendly and comfortable train journeys, SJ AB has decided to invest CAD 910 million in procuring 25 new high-speed trains, with a procurement option of an additional 15 trains. The new vehicles will be the fastest trains in operation in Sweden, with a top speed of 250 km/h. The routes of operation are mainly between major cities in Sweden, but the trains will be adapted to be able to cross the borders into Denmark and Norway.

A high emphasis has been placed on providing comfort for passengers, along with the ease and ability to work while onboard the vehicles. Additionally, the vehicles will have a first-class section, bicycle storage and flexible luggage handling, as well as a bistro car that can serve hot food in a dedicated seated serving area.

WSP has been involved from the initial tendering phase to providing technical expertise and advisory services. The tendering phase was executed according to a demand-driven design philosophy in the creation of the tender documentation, requirement specifications, and evaluation model. Close attention was paid to the involvement of the end-user-related SJ personnel, such as drivers and onboard personnel, as well as maintenance and cleaning staff.

Furthermore, WSP was tasked with providing the digital evaluation tool used for the bid evaluation during the tendering phase. This included tool development, testing, implementation, and technical support. During the bid evaluation, WSP was involved in the evaluation of the technical quality of the submitted bids. This included rounds of negotiations with the tenderers, in order to better understand the vehicle concepts offered by the tenderers.

During the vehicle realization phase, WSP has been involved in supporting SJ AB in the review of the technical solutions proposed by the awarded tenderer.



SJ AB

NEW RAIL LINK THROUGH THE ALPS GOTTHARD BASE TUNNEL



Location
GÖSCHENEN – AIROLO, SWITZERLAND

Client
ALPTRANSIT GOTTHARD AG (ATG)

Status
COMPLETED IN 2016

TRACK LENGTH
57 km

ESTIMATED RIDERSHIP
15,000

SPEED
250 km/h

The Gotthard Base Tunnel, also called the "Project of the Century," was inaugurated on June 1, 2016. It is the world's longest (57 kilometres) and deepest (2.3 kilometres) railway tunnel and the first flat, low-level route through the Alps. To meet the rigorous requirements and challenging conditions, WSP's rail experts were chosen by the construction consortium to lead the approval procedure for the special catenary system as well as to carry out the design.

The Gotthard Base Tunnel represents the centrepiece of the New Rail Link through the Alps (NRLA). It embodies Swiss values such as innovation, precision and reliability. It provides a quicker, more reliable link between north and south for both people and goods. The national railway company of Switzerland, SBB, is proud to be operating the longest railway tunnel in the world.

Faster, more frequent and more convenient services as well as new and modernized rolling stock have considerably increased the transport quality on the north-south axis. Customers also benefit from more seats. The improvements took effect gradually from the end of 2016 and provided their full benefit from the end of 2020. At the same time, SBB actively marketed the Gotthard region and the mountain route. In total, SBB expects demand for passenger services to almost double by 2025, with passenger numbers increasing from 9,000 people to approximately 15,000 people per day. More new trains are provided in order to meet this increase in passenger demand.

When it comes to freight traffic, the new Gotthard tunnel brings increased capacity, faster services and greater reliability. SBB Cargo customers receive efficient, congestion-free and environmentally friendly solutions for their logistics requirements.

For international transit traffic, the new Gotthard Base Tunnel marks the first major step toward a flat-rail route through the Alps. With the Ceneri Base Tunnel and the 4-metre corridor, rail has become significantly more competitive on the north-south axis.

Following an intensive test and approval period, the tunnel constructor AlpTransit Gotthard AG handed over the completed tunnel to the federal government, or more precisely SBB, on 31 May 2016, signalling the completion of the construction project.



© AlpTransit Gotthard AG

TAIWAN
HIGH-SPEED RAIL



Location
TAIWAN

Client
TAIWAN GOVERNMENT & TAIWAN HIGH SPEED RAIL CORPORATION

Status
COMPLETED IN 2016

SPEED
300 km/h

TRACK LENGTH
345 km

TRIP FROM TAIPEI TO KAOHSIUNG
90 minutes

Over a period of 16 years, WSP performed a variety of roles in advancing what was at the time the world's largest build-operate-transfer (BOT) project.

We worked on behalf of the Taiwanese government, the BOT concessionaire, design-build contractors, and other consultants. In January 2007, the 345km-long high-speed line opened—on time and underbudget—whisking passengers from Taipei, the capital city in the north, to the southern port city of Kaohsiung, in just 90 minutes, at speeds up to 300 km/h. The line serves cities along Taiwan's western corridor, home to more than 90 percent of Taiwan's population. Residents of the center of the island are now within an easy 45-minute commute to employment centers in Taipei and Kaohsiung.

WSP's many contributions to the CAD 21 billion undertaking began in 1990 with a preliminary alignment and feasibility study on behalf of the Taiwanese government. WSP was then selected by the Taiwan High Speed Rail Corporation (THSRC), a consortium of five companies, to assist in the preparation of its successful bid for the BOT concession awarded in 1999. Subsequently, THSRC appointed WSP to provide project management and a variety of related services to the consortium. We designed the project's tunnel environmental system and contributed mechanical and electrical design services for stations, depots and the main workshop. The establishment of seismic design criteria by a team of WSP experts from California is an example of the international expertise we brought to the project. At the project's peak, more than 250 employees from Taiwan, the United States, Australia, Singapore, Hong Kong and Thailand worked on various aspects of the high-speed rail line.



DESIGN



Location
THAILAND

Client
THE STATE RAILWAY OF THAILAND (SRT)

Status
ONGOING

TRACK LENGTH (PHASE 1)
253 km

TRACKS
2

SPEED
250 km/h

BANGKOK - NONG KHAI HIGH-SPEED RAIL (PHASE 1: BANGKOK-NAKHON RATCHASIMA)

The Thai and Chinese governments have signed a Memorandum of Understanding on Railway Infrastructure Development Cooperation under the 2015-2022 Thailand Transportation Infrastructure Development Strategic Framework to develop and build the standard-gauge (1.435 mm) HSR from Bangkok to Map Ta Phut Sea Port for a total distance of 867 km in length.

The agreement includes the design and construction of the project in two phases—Phase 1 from Bangkok to Nakhon Ratchasima, and its extension Phase 2 from Nakorn Ratchasima to Nong Kai. Phase 1, starting from Bangkok's Krung Thep Aphiwat Central Terminal, covers a distance of 253 km and comprises six stations plus centralized traffic control (CTC) building and depot.

WSP, as one of the members of the consortium that has undertaken system safety certification roles for the project, is taking the leading role in the checking and validating tasks for system certification. This involves the preparation of the processes and methodologies to be adopted in the management of works and deliverables, including key documents of the project, to check and supervise the proceeding for accuracy and safety of railway works. We are planning the sequence of activities together with duties and responsibilities of each party, including the design consultant, design checker and construction supervision consultant for the civil works, contractors as well as the operation and maintenance services provider, to ensure that the entire HSR system is complete, safe, reliable, efficient, durable and ready to serve the public.

DESIGN



Location
LONDON, BIRMINGHAM, CREWE

Client
HS2 LTD

Status
ONGOING

TRACK LENGTH
555 km

HIGH-SPEED TRAINS PER HOUR
18

PASSENGERS PER DAY
300,000

HS2

HS2 promises to set a new standard for rail travel in the UK. Frequent, high-capacity trains will improve connectivity between key cities, providing much-needed additional capacity for the railway network and putting Britain on track to a net zero carbon future.

Once completed, it will represent a step-change in terms of customer experience, with passengers benefitting from advanced train control systems, ticketless travel and real-time journey information.

Since 2012, WSP has supported HS2 Ltd. through the development of railway systems, operations, maintenance, construction planning and land referencing services for Phases 1 and 2. We have applied our station design expertise to the development of three of the four Phase 1 stations, London Euston, Old Oak Common and Birmingham Curzon Street.

We have played a key role in developing the hybrid Bills for all three phases to date: Phase 1 (London to West Midlands), which was the largest single piece of legislation ever laid before Parliament; Phase 2a (West Midlands to Crewe); and Phase 2b (Crewe to Manchester), the hybrid Bill for this leg having been successfully submitted to Parliament in February 2022.

The new high-speed railway will feature 400m trains operating at speeds of up to 360kph—among the fastest in Europe. Using a series of models, we demonstrated that the high capacity and speeds can be achieved without compromising on safety, sustainability or passenger comfort.

HS2 is focussed on building a cleaner, greener future. As such, our design looks to find innovative ways to reduce carbon emissions, for example by enabling a significant proportion of train braking energy to be regenerated. We are currently investigating the potential for a heat recovery concept for HS2. If demonstrated to be viable, this innovation could provide energy to local districts from heat generated by high-speed trains as they move through tunnels.



HS2 media centre

CALIFORNIA HIGH-SPEED RAIL



Location
CALIFORNIA, UNITED STATES

Client
CALIFORNIA HIGH-SPEED RAIL AUTHORITY

Status
ONGOING

TRACK LENGTH
804 km

SPEED
350 km/h

FULL-TIME WSP EMPLOYEES
275

WSP's international high-speed rail experience - along with its background with successful delivery of passenger rail mega projects in the United States (US) - has played a crucial role with the design, development and construction of one of the largest, most ambitious public transportation programs in US history. The 804 km California High-Speed Rail Project will connect San Francisco and the Los Angeles Basin with net zero emissions trains in under three hours - cutting travel times in half.

In 2015, WSP was awarded the Rail Delivery Partner (RDP) contract, as the prime consultant, through June 2022. Key elements of the RDP contract have been extended through December 2023. WSP brought its deep program and project management, technical and strategic expertise and leadership from a range of international projects - in the United Kingdom, Italy, Qatar and Taiwan and others. Staffing reached a peak of 275 full-time employees, with surges of part-time employees rising to more than 400.

In July 2023, 679 km were environmentally cleared and 309 km were under construction.

The WSP team has played a critical role in helping streamline environmental reviews and managing construction of 192 km of high-speed rail guideway and structures, the Authority's highest priority over the last decade. Our team has played a key role in coordinating among all project delivery functions - such as infrastructure delivery, engineering, rail operations, third- party agreements - to identify, address and resolve a range of technical, schedule, legal and other issues and challenges.

Serving as a strategic advisor and securing billions in federal funds, WSP brought to the program significant experience and expertise on the challenges associated with delivering mega projects in a dynamic political and funding environment.

We provide strategic advice and leadership on a range of issues and challenges, including policy, funding, project development and implementation strategies, and strategic communications.

WSP, leading the RDP Team, has been instrumental in developing the performance requirements and design criteria - as well as theprocurement strategies - that inform the contract packages for the track, systems, trainsets, and facilities procurements. Recognizing the importance of delivering a safe, fully integrated high-speed rail system, WSP has been leveraging holistic, systems-based international high-speed rail standards, specifications, and lessons learned while providing the technical "bridge" to demonstrate compliance with the federal regulations.



Courtesy of the California High-Speed Rail Authority

ILLINOIS HIGH-SPEED RAIL

Chicago to St. Louis Line



Location
CHICAGO, IL TO ST. LOUIS, MO, USA

Client
ILLINOIS DEPARTMENT OF TRANSPORTATION (IDOT)

Status
ONGOING

SPEED
180 km/h

LENGTH
460 km

NB OF AT-GRADE CROSSINGS CLOSED
36

For over a decade, WSP has served an integral role in the IDOT high-speed rail program. The WSP team started by developing the successful applications for approximately US$1.6B in Federal grants and then partnered with IDOT as program manager to develop and deliver passenger rail infrastructure and operations at speeds of up to 180km/h.

Travelers throughout the corridor will see significant travel time reductions; experience state-of-the-art, environmentally friendly and American-made passenger cars and locomotives; and arrive and depart from new or significantly upgraded stations that have been designed and implemented in partnership with the local municipalities to serve as gateways to the communities which they serve. Throughout the corridor, spanning the length of Illinois, where tracks intersect with roadways and pedestrian ways, state-of-the-art grade crossing technology has been deployed so that these intersections meet and exceed the highest possible safety standards.

The State of Illinois has aggressively supported the operation and improvement of rail service and physical aspects of the Chicago to St. Louis intercity rail corridor for more than 40 years. The improvements included in the program, largely complete, were made over a distance of 245 corridor miles from Joliet, Illinois to East St. Louis, Illinois on the Union Pacific's Joliet and Springfield Subdivisions. The initial portion of work began in September 2010, with upgrades to all main tracks.

WSP coordinated matters including technical design, NEPA, project controls, and construction management, administrative oversight, overall quality assurance; and enforcement of cost, change and schedule. WSP continues to provide IDOT with a dedicated, professional and loyal program management team—consistently accepting responsibility for any and all aspects of the required activities and carrying them out in a proactive manner under IDOT direction.

The program was one of the first major construction projects of the Federal Railroad Administration's High-Speed and Intercity Passenger Rail program. Highlights of the program include the provision of full quad gates at all public grade crossings, testing of crossing treatments using a new cab signal installation to support demonstration 110 mph service in 2012, safety improvements at almost all grade crossings, closure of 36 at-grade crossings, extensive pedestrian fencing, and development of a wide range of policies and procedures that meet or exceed FRA, UP, and IDOT requirements.



INTERNATIONAL AGILITY

73,000
EMPLOYEES

12.2B
2024 NET REVENUES* (CAD)
*Non-IFRS measure

ENR
Engineering News-Record

TOP INTERNATIONAL DESIGN FIRM

#1
TRANSPORTATION

#1
MASS TRANSIT AND RAIL

Source: ENR Global Sourcebook 2024



OUR GUIDING PRINCIPLES

We value our people and our reputation.

We are locally dedicated with international scale.

We are future-focused and challenge the status quo.

We foster collaboration in everything we do.

We have an empowering culture and hold ourselves accountable.



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