ROADS

SYSTRA

ABOUT SYSTRA

SYSTRA is a global leader in engineering and consultancy, specializing in mobility solutions. With 65 years of experience, we manage and deliver highway and road projects for governments and private industries worldwide.

Our mission is to partner with clients to create safe, sustainable, and efficient road services that support multimodal travel while minimizing environmental impacts.

We understand the financial constraints faced by our clients and excel in project delivery methods that manage costs and ensure timely, efficient completion.

2024 ENR RANKINGS

Top 6
in Transport

Top 2
Mass Transit & Rail

Top 22
in International Design firms

1.2 billion €
turnover*

80%
of turnover abroad

11,000
staff

*Based on 2024 turnover

GLOBAL ROAD AND HIGHWAYS ENGINEERING CENTRES

SYSTRA workforce

Main roads and highways engineering centres

250
road specialists

300
traffic modelling / consultancy roads specialists

Over
1,000
specialists covering associated disciplines (bridges, tunnels, geotech…).

Teaming up with you to deliver your project

With over 1,500 highly skilled experts in 30 countries, SYSTRA offers comprehensive services to help governments and private industries meet the technical, financial, and contextual challenges of delivering roads and highways. Our projects address the economic, social, and environmental needs of the communities they serve.

We cover all technical disciplines in road and highway design and engineering, leveraging our global workforce to assemble the best teams for your projects. Our multi-site production capacity ensures operational excellence and deep local knowledge.

We are committed to contributing to a climate-neutral society. Our solutions focus on low carbon footprints in design, construction, and operation. We use tools to calculate the carbon footprint of materials, constructions, and entire projects, and prepare life cycle analyses for comprehensive carbon footprint assessments.

OUR SERVICES

We provide specialised value engineering services to optimize performance and value from existing to new assets.

Our expertise in construction management, transport planning, design program management, and asset support services helps clients develop, expand, reconstruct, and rehabilitate highways and roads globally. Our team includes world-renowned experts in tunneling, bridges, transport planning, and traffic management systems.

FEASIBILITY STUDIES & TRANSPORT PLANNING

- Transport planning
- Traffic engineering
- Economic evaluation
- Social impact evaluation
- Feasibility design & reports
- Site Survey

DESIGN

- Highways & Roads design integrating climate resilience
- Pavement design
- Alignment & geometric design
- Junction design
- Street lighting design
- Road signage
- Road signalling design
- Road Safety audit & accessibility studies
- Car Parks, bus lay-by, service area
- + Geotechnics studies, earthwork
- + Water engineering, drainage design
- + Bridges & tunnels
- + Environmental services
- + Landscaping, Noise barriers
- + Utility relocation studies

CONSTRUCTION SUPPORT & HAND OVER

- Supervision - Project management consultancy
- Contract Management
- As-Built BIM models
- O&M manuals
- Site support
- Asset management

ADVISORY SERVICES

- Strategy, Traffic & revenue studies for PPP projects
- Investment strategies
- Tariff policies
- Safety studies
- Expert Witness

OUR MARKETS

FOCUS
What we bring to contractors

We have the skills and imagination required to develop the original and creative solutions that contractors expect. Our teams provide a Unique Added Value at every step of a D&B project life cycle, at qualification stage, tender stage or project execution stage, to help you differentiate from your competitors and deliver successful projects to the final client.

	WE BRING	YOUR BENEFITS
PREQUAL	» Complementary Skills » Additional references » Brand & Reputation	» Secure the pass versus Fail process » Stronger contractual position
TENDER	» Technical solutions benchmark » Customer Design optimization / Value engineering » Risk appraisal » Civil/System integrated approach » Enhancement of tender quality from your customer's perspective	» **Competitive Advantage for a winning bid**
EXECUTION	» Support to overall Project Management » Cutting edge expertise combined with large workforce capacity » Secure key milestones	» High quality & Mass production design capacity

HOW WE CAN HELP THROUGHOUT THE LIFE CYCLE

We offer in-depth expertise throughout the asset lifecycle, from pre-feasibility and risk engineering to post-maintenance and asset management.
Our comprehensive understanding of project stakes ensures that we deliver maximum value at every stage.

Leveraging data and digital technology

Our solutions are reliable thanks to technology-driven design and data-driven asset management.

Road infrastructure requires powerful and centralised data management during design and construction. One of the most important results of such management is enhancing communication between the different parties working on the project. The visual models, that can be built through our BIM approach, provide actual proof that constructability is assured.

Automatic access to project data, analyses execution and result representation allow a quick execution of an extremely large number of simulations which would be highly uneconomical with conventional design approaches.

Our innovative in-House digital solutions offer a set of high-quality, cost efficient tools to create, manage and use data throughout the lifecycle.

TRANSPORT PLANNING

Quetzal

_Modelling transport demand

Cyclops

_Optimises cycling networks

Paramics MICROSIMULATION

_Designs and evaluates the road transport networks

ENGINEERING & CONSTRUCTION

eLODy

_Analyses, checks, and secures the data of your BIM models

OPERATIONS & MAINTENANCE

Fablo

_Builds the BIM data of your future digital twin from early phase

A STEP FORWARD IN SUSTAINABLE DESIGN

Dedicated digital solutions to compare, measure and value the environmental gains and the carbon reduction by taking into account the performance of the infrastructure as well as the return on investments.

CARBONTRACKER

An application dedicated to sustainable design and carbon footprint monitoring using BIM technology

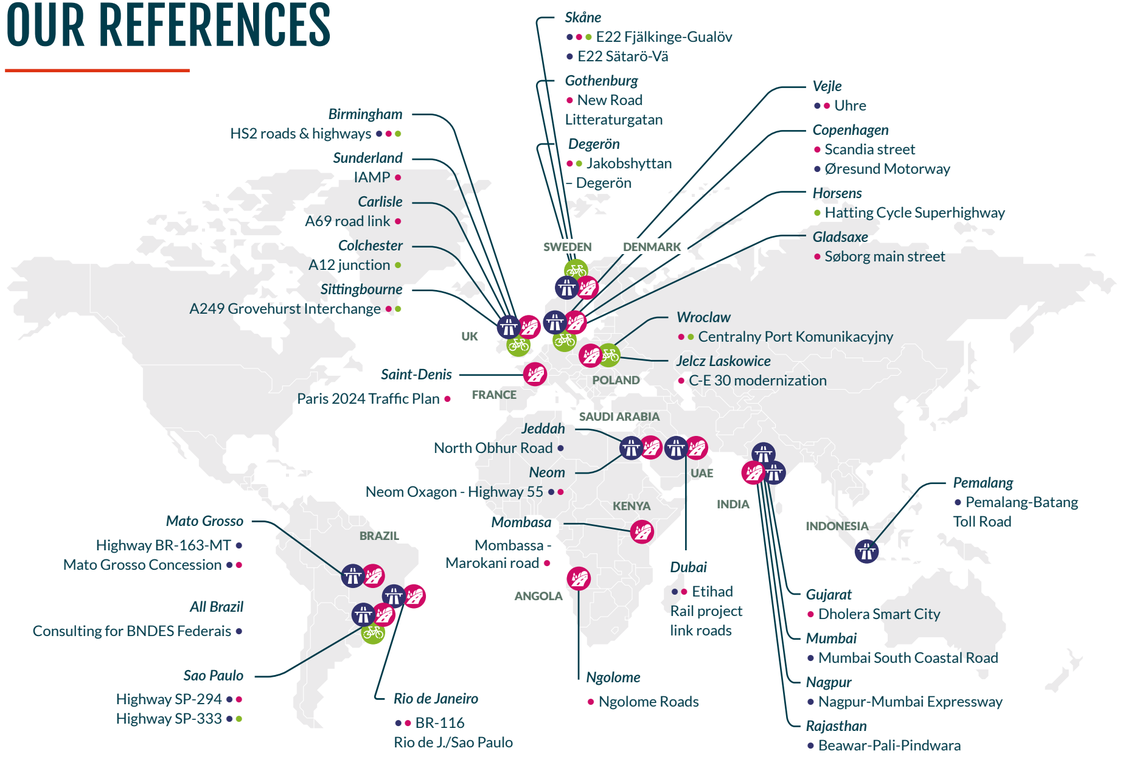
Climateplus

Anticipate climate change trends faced by your infrastructure

Ecotheque

A digital library of sustainable design solutions

OUR REFERENCES



MOTORWAYS ROADS ACTIVE MOBILITY

MOTORWAYS INDIA – NAGPUR/MUMBAI

Nagpur–Mumbai Super Communication Expressway Project – Maharashtra

CLIENT : AFCONS Infrastructure Limited

ROLE/PHASE : Detailed Design

Nagpur–Mumbai Super Communication Expressway is a 6-lane wide (with capacity for 2 additional lanes), 701 km long access-controlled expressway. SYSTRA is undertaking the detailed design work for Package 2, which consists of nearly 60 km of expressway with 150 kph design speed.

The route includes 153 major and minor structures, featuring significant constructions such as:

- Bow String Steel Girder Viaduct with an 80m span over existing state highway and the Bor River
- Major bridge of 315 m total length with 3 & 4 span deck continuity for 31.50 m span lengths and average 30m height of piers, spanning the Wardha River
- India's 1st wildlife overpasses with span arrangement of 2×20.60 m + 2×31.05 m, overall width 45 m and average 30 m height of portal-type pier
- Elevated roundabout to facilitate crossing of a railway line.

The expressway crosses a major ecological zone in which the Wildlife Institute of India has designated as a Wildlife Focus Area (WFA). Nationally, this project has been recognised as a model for wildlife protection and conservation. As a part of this initiative, wildlife overpasses and underpasses are proposed, allowing safe passage for animals to protect wildlife and improve highway safety. The project also includes an extensive tree planting programme along its length.

MOTORWAYS (including pedestrian underpass) INDIA – MUMBAI

Mumbai Coastal Road Project

CLIENT : CJV. Hindustan Construction Company (HCC) and Hyundai Development Corporation (HDC) joint venture

ROLE/PHASE : Detailed Design

This coastal road aims to enhance connectivity and reduce traffic congestion along Mumbai's western coastline primarily between South Mumbai and the western parts of Mumbai. The proposed highway, spanning 2.71 km, features 6-8 lanes, providing seamless connectivity to various routes.

This multi-disciplinary project encompasses the design of a complex interchange, featuring:

- 1 Major Bridge (696 m)
- 4 Interchange Arms (2229 m in total)
- 1 Minor Bridge (150 m)
- Pedestrian bridge (150 m)
- Reclaimed Promenade

It is the first road project in India using monopile technology, reducing project's footprint on the seabed, and its impact on the marine ecosystem during construction.

The project also includes detailed design of various pedestrian underpasses, vehicle underpasses, two underground car parks, street lighting, viaduct drainage, culverts, peripheral drains and other road furniture.

CJV appointed SYSTRA as the detailed design consultant (DDC) for the scheme.

MOTORWAYS, ROADS & ACTIVE MOBILITY (in link with High Speed Railway project) UNITED KINGDOM – WEST MIDLANDS/ BIRMINGHAM

High Speed 2 – associated road works

CLIENT : Balfour Beatty Vinci Construction Joint Venture and HS2 Ltd

ROLE/PHASE : Detailed Engineering

HS2 is the second proposed high speed railway to be constructed within the United Kingdom. It connects London and Birmingham.

SYSTRA, as part of the Mott MacDonald SYSTRA DJV, is the highway designer for the Area North section, which includes 92 public roads of all types (single carriageway roads in a rural setting, dual carriageways, motorways, etc..).

Over 50 km of roads are required to be realigned as part of these works. All elements of the highways design are produced in a Level 2 BIM model using the OpenRoads software.

Scheme highlights include the first concrete structure push across a UK motorway, a 1.6 km dual carriageway realignment with an open watercourse in the centre of a roundabout, and the realignment of the UK's first SMART Motorway.

ROADS & ACTIVE MOBILITY

UNITED KINGDOM – WEST MIDLANDS

A249 Grovehurst Interchange

CLIENT : National Highways, Kent County Council

ROLE/PHASE : Feasibility to detailed engineering & construction support

This project is the major upgrade of existing junction to full gyratory grade separated junction, near Sittingbourne, Kent. The project aims to address anticipated capacity issues, enhance safety, and introduce improved walking and cycling routes. A key challenge is ensuring that live traffic can continue to utilise this junction during construction.

SYSTRA is appointed to lead the design and provide construction support for the project, leveraging its expertise in engineering, environmental, and transport planning. The chosen design includes a gyratory flyover, with a new bridge, new slip roads, pedestrian and cycle facilities, and advanced drainage systems.
The project will deliver a modernised junction that supports economic growth by reducing congestion and improving accessibility. It also achieves a 40% Biodiversity Net Gain.

ROADS & ACTIVE MOBILITY

POLAND – WARSAW

The Centralny Port Komunikacyjny

CLIENT : Centralny Port Komunikacyjny sp. z o.o.

ROLE/PHASE : Feasibility to detailed design

Communication Hub (CPK) is a strategic investment that aims at creating a modern national transport system that efficiently integrates air, rail, and road transport, southwest of Warsaw.

SYSTRA's scope covers 140 km of Roads including, private roads, service roads, public roads, pedestrian routes and bicycle paths. SYSTRA took this design from feasibility to final design delivery.

MOTORWAYS, ROADS & ACTIVE MOBILITY

SWEDEN – SKÅNE

E22 FJÄLKINGE–GUALÖV

CLIENT : SVEVIA AB

ROLE/PHASE : Detail design

To improve traffic safety and accessibility along the 9-kilometer stretch of E22 between Fjälkinge and Gualöv in Sweden's Skane County, the Swedish Transport Administration (STA) initiated a project to transform the county road into a motorway. The project required widening the existing centrally separated two-plus-one, three-lane roadway into a 21.5-meter-wide, four-lane highway.
To create well-functioning conditions for local and public transport, the conversion also involves the expansion of 10 kilometers of local roads, pedestrian, and cycle paths, as well as the addition of bus stops and a new interchange to connect traffic from the local road network. SYSTRA was contracted by the construction company SVEVIA to design the main highway stretch, considering the entire landscape of the project, and working together with both SVEVIA and the STA."

MOTORWAYS

DENMARK – AMAGER MOTORWAY TO THE ØRESUND BRIDGE

Expansion of the Øresund Motorway

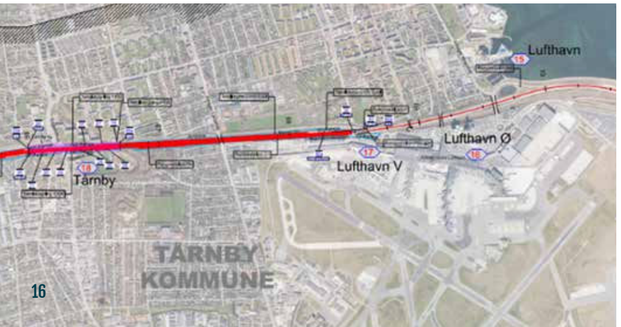
CLIENT : A/S Øresund

ROLE/PHASE : Traffic modelling, preliminary design, advisory

In connection with the widening of the Øresund Motorway, SYSTRA is the main consultant to A/S Øresund. SYSTRA is responsible for investigating the possible solutions for an accessibility project that focuses on reducing congestion and increasing safety on the Øresund Motorway. Both now and in the future.

The widening of the Øresund Motorway is intended to alleviate capacity problems on the almost 10 km long section, from the Amager Motorway to the Øresund Bridge leading to Sweden, while focusing on accessibility and traffic safety at the five major junctions.

SYSTRA is the main consultant for the design of the widening of the Øresund Motorway from 3 to 4 lanes. SYSTRA provides the following services: project management, traffic analyses, pre-construction studies, preliminary design, environmental impact assessment and detailed design in later phases.



ROADS

FRANCE – PARIS AREA

Paris 2024 Olympic Games Traffic & Restriction Plan Study

CLIENT : Departmental Council (CD93)

ROLE/PHASE : Advisory & traffic modelling

During the Paris 2024 Olympic Games, the Seine-Saint-Denis department is at the heart of the organization, as it hosts several key facilities, and several traffic measures are envisaged.

The RD986 route is one of the main connecting roads between several Olympic facilities. For this key road, SYSTRA assesses the cumulative impact of traffic restrictions during the Olympics, based on a macroscopic model.

SYSTRA's mission includes simulation of two traffic restriction scenarios, comparative analysis of static traffic simulation results and recommendations.

MOTORWAYS (including pedestrian underpass , cycling path)

SAUDI ARABIA – JEDDAH

Northern Obhur Road

CLIENT : Jeddah Development Authority

ROLE/PHASE : Feasibility and Concept Design

SYSTRA Arabia is designing the 'Northern Obhur Road' project in Jeddah.

SYSTRA is the lead consultant for feasibility studies and preliminary design for this new road in the north of Jeddah.

SYSTRA'S scope of services comprises the feasibility and concept design of approximately 59 km of highway, from the south of Obhur to Dahban with connectivity to the Qiddiya project. SYSTRA'S services include the following studies:

- Land Acquisition Study
- Geotechnical and Topographical Surveys
- Scheme Options and Economic Evaluation
- Highway Design
- Hydrology
- Bridges including Iconic Bridge over Obhur
- Dry and Wet Utilities
- Traffic Modelling

MOTORWAYS, ROADS & ACTIVE MOBILITY

DUBAI – ETIHAD

Etihad Rail: Dubai Expo and MBZ Station Link Roads

CLIENT : Etihad Rail

ROLE/PHASE : Traffic engineering, feasibility to detailed Design, advisory

As part of the UAE's visionary initiative, to create a state-of-the-art passenger rail service linking Abu Dhabi, Dubai, Sharjah, and Fujairah, this project includes significant development of critical road infrastructure.

It comprises two main road packages : one in the rural areas of Dubai and the other in the MBZ area of Abu Dhabi for Etihad Passenger Rail Connectivity.

SYSTRA's scope includes the development of the Overall Station Context Plan and the Traffic Impact Study.

SYSTRA is entrusted as the Detailed Design Consultant for approximately 9 km of roads, navigating complex challenges such as land boundaries, urban infrastructure, utilities relocation, existing traffic as well as obtaining approvals from various stakeholders.

The project includes the design of a major road that connects several major and minor streets, incorporating five major junctions, numerous smaller intersections, and two access ramps.

It also includes 4.0 km of supporting infrastructure, drainage systems, pedestrian pathways, road markings, and signage.

MOTORWAYS & ROADS

BRAZIL – RIO DE JANEIRO TO SÃO PAULO

Expansions and Improvements of BR-116/Rio de Janeiro – São Paulo

CLIENT : Companhia de Concessões Rodoviárias

ROLE/PHASE : Functional project consolidation, preliminary design & detailed design

The project involves consolidating the concept design, developing the preliminary design, and the detailed design for the planned works on BR-116/RJ-SP and BR-101/RJ-SP, between Rio de Janeiro and Sao Paulo. This includes conducting field studies and preparing designs for geometric layouts, earthworks, drainage systems, pavement structures, and landscaping. Additionally, it addresses structural engineering, geotechnical solutions, interferences, land purchase plans, and traffic diversions. The project covers 60.5 km of additional lanes, 26.2 km of marginal roads and includes 14 bridges, 13 road safety devices, 2 wildlife crossings, 66 bus stops, 13 pedestrian bridges, 5 retaining walls and 468 m of noise barriers.

MOTORWAYS

BRAZIL – MATO GROSSO

Supervision Services to Expand the Capacity of Highway BR-163-MT

CLIENT : Rota do Oeste concessionaire

ROLE/PHASE : Construction support / supervision

SYSTRA is contracted by Rota do Oeste Concessionaire to supervise the duplication and capacity expansion of BR-163/MT over 336.20 km, between the cities of Cuiabá and Sinop. SYSTRA oversees the construction of 15 viaducts and 2 bridges, ensuring quality control, in accordance to environmental and engineering standards.

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