



Iceacsa
GRUPO
A member of Antea Group



anteagroup

EXPERIENCE IN
LAND TRANSPORT INFRASTRUCTURES



EXPERIENCE IN LAND TRANSPORT INFRASTRUCTURES

Developing regions for people



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_02

CORPORATE INFORMATION

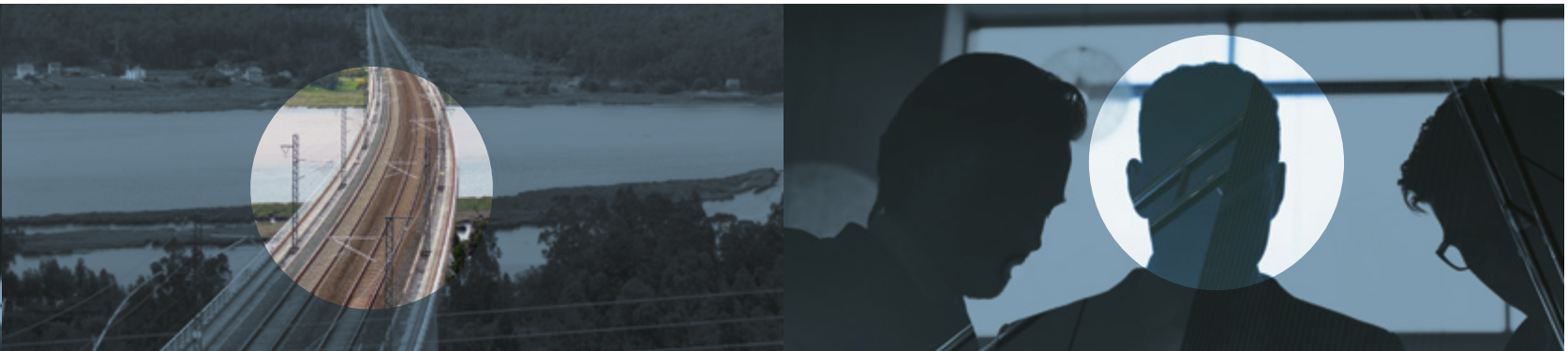
4

INTRODUCTION
ICEACSA GRUPO WORLDWIDE
ACTIVITY AND SERVICE AREAS

EXPERIENCE IN HIGHWAY INFRASTRUCTURES

10

HIGHWAY PLANNING AND FEASIBILITY
HIGHWAY DESIGN
CONSTRUCTION PHASE SERVICES
CONSERVATION AND MAINTENANCE PHASE SERVICES
TRANSPORT INFRASTRUCTURE MANAGEMENT



_03

_04

EXPERIENCE IN RAILWAY INFRASTRUCTURES

22

RAILWAY PLANNING AND FEASIBILITY
RAILWAY DESIGN

CLIENTS

28

INSTITUTIONAL AND PUBLIC
ADMINISTRATION CLIENTS
CONSTRUCTION COMPANIES
CONCESSIONAIRES
INDUSTRIAL AND SERVICE COMPANIES
PRIVATE INVESTORS
PUBLIC AND PRIVATE BANKING
INSTITUTIONS, AND INVESTMENT FUNDS

01 • CORPORATE INFORMATION



INTRODUCTION

MAIN STRATEGIES



Since it was founded in 1985, **ICEACSA** has achieved an outstanding market position as a pioneering leader in turnkey projects in the **engineering, construction, regional and urban development and environmental, industrial and energy generation fields**. **ICEACSA Grupo** has become an international engineering group by continuous development of its experience and know-how and by carefully planned international expansion.

Experience, quality and a result-oriented approach provide our clients with the peace of mind that comes from knowing that they are dealing with a fully accredited and highly solvent company. The results are guaranteed by the talent of a large, multidisciplinary team.

Our track record is backed by a portfolio of more than 2,500 projects. Comprehensive regional planning in the highway, port, water engineering, regional and urban planning and project development fields for more than € 40,000 million (45,000 million USD) firmly endorses our governance. Studies, designs, structuring, project management and works supervision for more than € 10,000 million (11,000 million USD) certify this.

Welcome to ICEACSA Grupo.
A member of the ANTEA Group



COUNTRIES WITH ICEACSA GRUPO OFFICES



OTHER COUNTRIES WITH RECENT INTERNATIONAL PROJECTS BY ICEACSA GRUPO COMPANIES



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ICEACSA GRUPO WORLDWIDE

In an increasingly globalized environment, **ICEACSA Grupo** is committed to boosting its international presence while maintaining the same principles of sustainability, value creation, competitiveness, experience and instant response that have made it what it is today.

ICEACSA Grupo operates internationally to provide cross-border services in the areas in which it operates from its permanent offices in **Spain, Colombia, Mexico, Panama, Peru** and **Uruguay**. Thus the teams based in these places also work in neighboring countries to provide solutions that exactly meet the client's needs and ensure transfer of know-how to the client with the frank, open and at the same time comprehensive approach that characterizes the group as a whole.

In 2017 all the **ICEACSA Grupo** companies joined the **ANTEA Group** further reinforcing their international positioning and complementarity in these-

vices we provide. As a result, we are endowed with full capacity to tackle any kind of project our clients may require in the **engineering, construction, regional and urban development, environmental, industrial and energy generation fields**. A team of more than 3,100 qualified experts around the world distributed among the more than 80 offices in Europe, America and Asia, enables us to provide our clients with comprehensive services that contribute real added value. Our mission is to assist our clients to meet all the requirements encountered in the development of their business projects until execution and commissioning of the works and start-up of the commercial activity.

In addition, **ICEACSA Grupo** has set up **stable strategic alliances** with important local partners in the countries where we operate. These connections ensure comprehensive knowledge of the various markets and a high response capacity to any project the client may propose.

ACTIVITY AREAS AND SERVICES

ICEACSA Grupo provides services in the following areas:



**TRANSPORT
INFRASTRUCTURES**



**INFRASTRUCTURE
MANAGEMENT**



WATER AND THE ENVIRONMENT



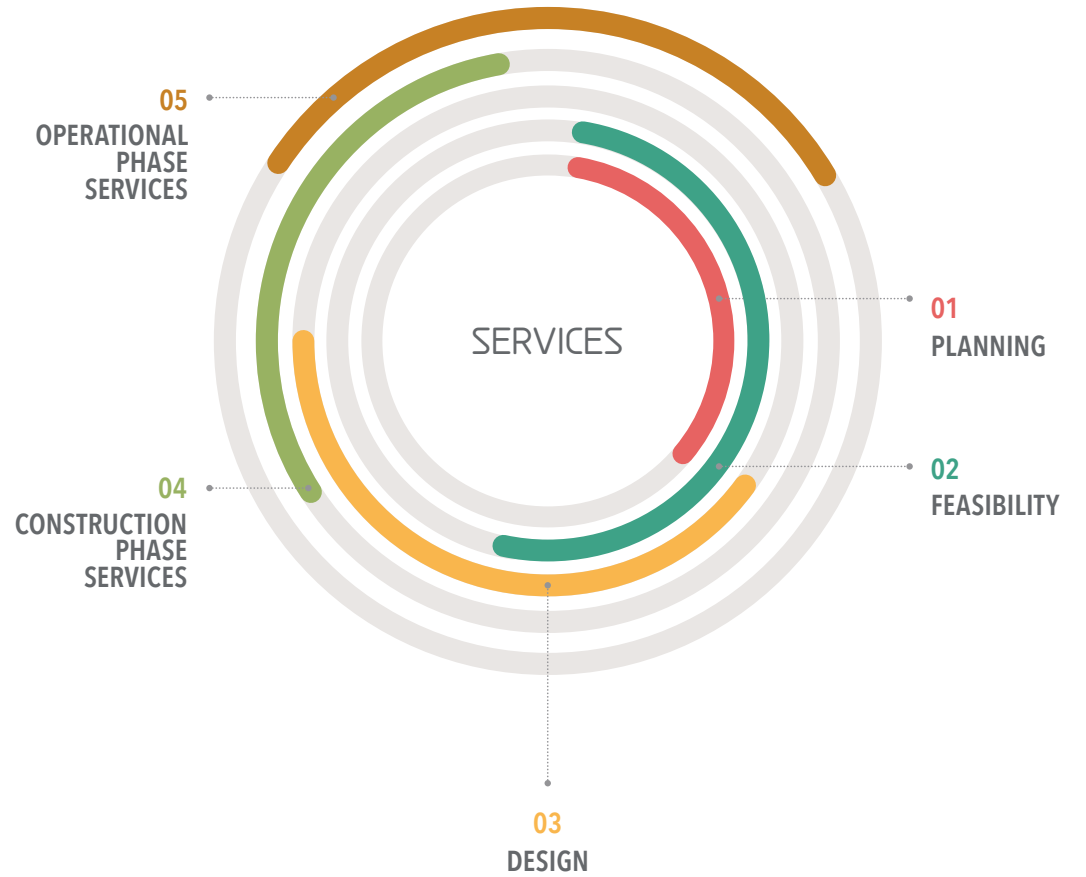
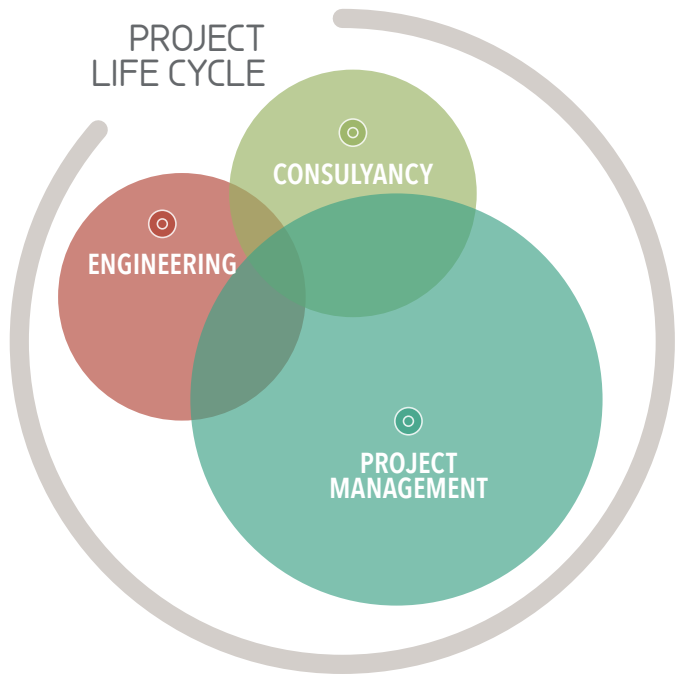
**COASTAL, MARINE, AND FLUVIAL
INFRASTRUCTURES**



**REGIONAL/URBAN DEVELOP-
MENT AND ARCHITECTURE**



INDUSTRY AND ENERGY



02

• EXPERIENCE IN
ROAD TRANSPORT
INFRASTRUCTURES



+9,000 KM
HIGHWAYS DESIGNED INVOLVING
INVESTMENT OF MORE THAN
9,000 M € (10,500 M USD)

+40,000 KM
VARIOUS HIGHWAYS PLANNED INVOLVING
INVESTMENT OF MORE THAN
30,000 M € (35,000 M USD)

+3,300 KM
HIGHWAYS
STRUCTURED

+300 KM
BRIDGES
DESIGNED

+100 KM
TUNNELS
DESIGNED

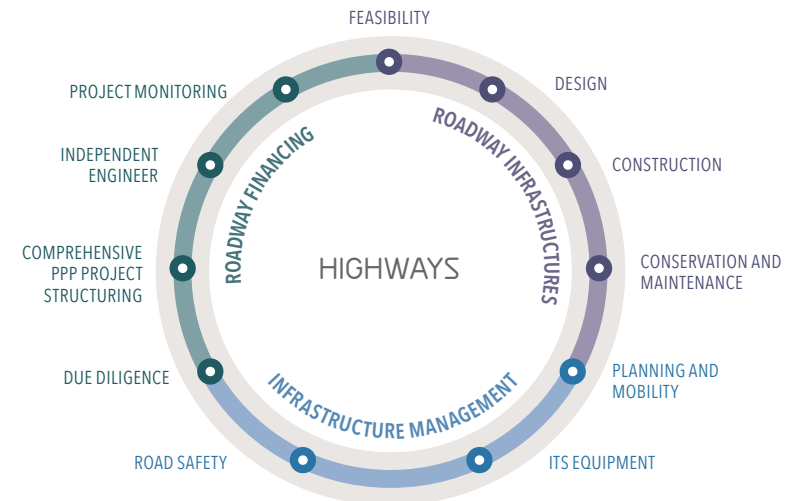
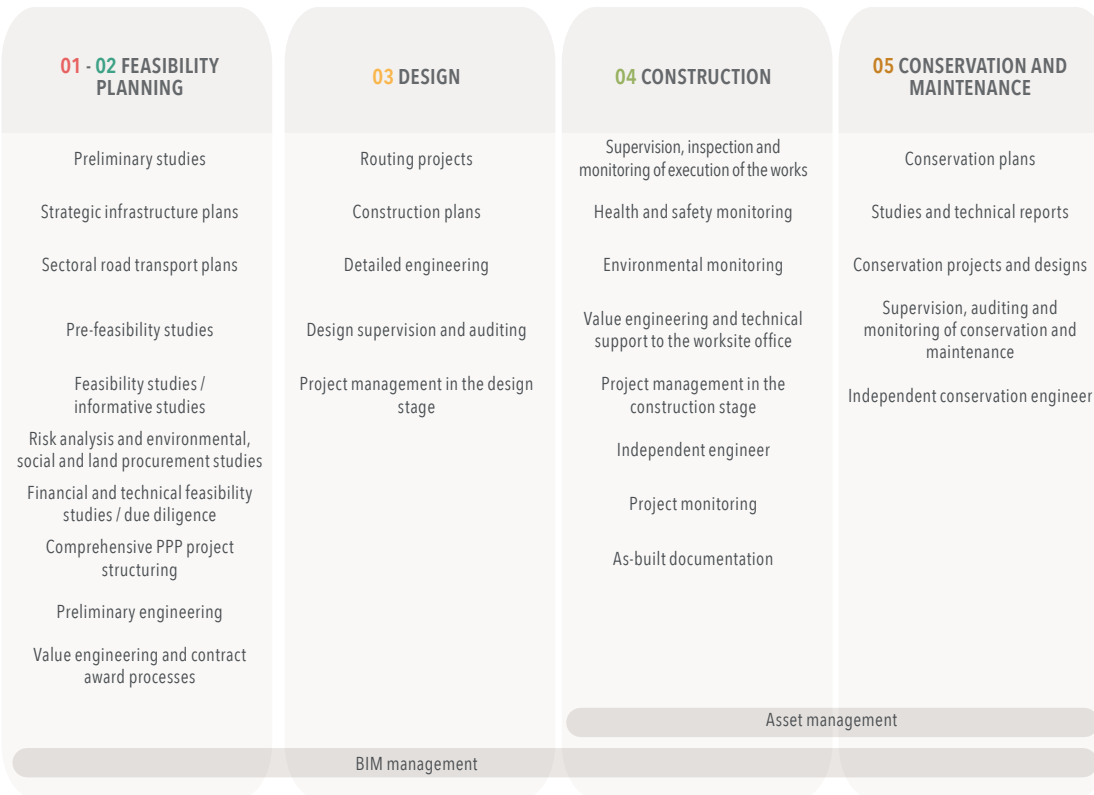
+50,000 KM
HIGHWAYS, MOTORWAYS
AND FREEWAYS MANAGED

+50 MM DATA
OF TRAFFIC MANAGED PER DAY

Highway infrastructures are key aspects of the macroeconomic development of a country. They make a decisive contribution to regional structuring and social cohesion.

Public bodies and developers need specialized support to optimize their resources, and this entails intervening in all phases of the project life cycle.

ICEACSA Grupo has extensive experience providing engineering, consultancy and project management services for highway infrastructures from the earliest **planning** phases and planning stages to the **operational** stage. We also provide services in **private-public partnership** projects, **road safety-related** work and **innovation** projects.













HIGHWAY PLANNING AND FEASIBILITY

- 01 STRATEGIC INFRASTRUCTURE PLANS
- 02 SECTORAL ROAD TRANSPORT PLANS
- 03 PRE-FEASIBILITY STUDIES
- 04 FEASIBILITY STUDIES / INFORMATIVE STUDIES
- 05 RISK ANALYSIS AND ENVIRONMENTAL, SOCIAL AND LAND-PROCUREMENT STUDIES
- 06 TECHNICAL-FINANCIAL FEASIBILITY STUDY / DUE DILIGENCE
- 07 COMPREHENSIVE STRUCTURING OF PPP PROJECTS
- 08 PRELIMINARY ENGINEERING
- 09 VALUE ENGINEERING AND CONTRACT AWARD PROCESSES

12

Planning is choosing the future. The rational use of public resources requires a prior reflection that leads to definition of both the interventions to be carried out and the origin of the required resources. **ICEACSA Grupo** has been successfully providing studies for public works and comprehensive structuring of PPP projects for more than 35 years.

Private initiatives and financiers also require exhaustive analyses that assess the risk level of their investment by taking the entire range of factors and stakeholders that will influence the project throughout its life cycle into account.

01.  2006-2018 Road Transport Master Plan of Galicia (Spain). 27,303 km / investment € 16 million - 14 million USD - 2001.
02.  Informative study of the link highway with the A8 between San Cibrao and Barreiros (Spain). 33.5 km / 5 junctions / 3 km of viaduct / investment: € 258 million - 379 million USD - 2007.
03.  Informative study of the Santiago - Lugo Highway AG-54, Arzúa - Palas de Rei section (Spain). 28 km / 4 junctions / 8 viaducts of 3.1 km / 23 crossings at different levels / investment: € 223 million - 314 million USD - 2008
04.  Informative and environmental impact study of the A-59 highway, A Ramallosa-A Estrada section (Spain). 11.44 km / 3 junctions / 5 viaducts / investment: € 79 million - 113 million USD - 2009.
05.  Preliminary draft of the Carballo-Finisterre high-capacity highway (Spain). 57.56 km / 12 viaducts / 20 junctions / investment: € 110 million - 120 million USD - 2005.
06.  Informative studies of the Aguilar de Campoo bypass (CL-626), Cevico Navero bypass (CL-619) and Baltanás bypass (CL-619) in Castilla y León (Spain). 26 km / 10 junctions / 2 viaducts / investment: € 39 million - 54 million USD - 2013.
07.  Feasibility study for construction of the Chetumal-Costa Maya short road in the city of Chetumal, State of Quintana Roo (Mexico). 55.7 km / 21 km on structure over the sea.
08.  Structuring studies for implementation of the PPP project for the refurbishment and conservation of a toll-free highway network in Tejuipilco, Ixtapan and Toluca (Mexico). 1,637 km / 82 carriageways / investment: 13,629 million MXN - 722 million USD - 2019.
09.  Study of alternatives and operational and road safety improvement project for the Cuernavaca - Acapulco highway, km 95+000 to km 110+000 section (Mexico). 15 km / investment: 52.4 MM MXN - 2.6 MM USD - 2018.





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10.  Technical, economic and financial feasibility study of the transport and logistics infrastructure for road access to the port area of Montevideo (Uruguay). 37 km urban roads / 5.8 km viaducts / 1.6 km tunnels / investment: 634 MM USD - 2015.
11.  Comprehensive technical, legal and financial structuring of the project known as Grupo 2 Centro Occidente, 4G road corridors: Ibagué-La Paila dual carriageway and Buga-Buenaventura and Santander de Quilichao-Chachagüi-Pastor-Rumichaca dual carriageway (Colombia). 791 km / investment: COP 15,800,000 million - 5,214 million USD - 2016.
12.  Comprehensive technical, administrative, social, land procurement, environmental, financial, accounting and legal structuring for the public initiative PPP project for the new road network in Valle del Cauca (Colombia). 760 km / investment: 3,200,000 million COP - 960 million USD - 2020.
13.  Pre-feasibility studies for connection of the east-west system under the Olaya Herrera airport in the Medellín municipal district (Colombia). 3 km / 2 km tunnel / investment: 759,061 million COP - 253 million USD - 2017.
14.  Contract award process for the study, design, construction and maintenance of works for refurbishment of the Transistmica highway, Plaza Ágora section - San Isidro Station (Panama). 8 km of urban road / 3 pedestrian overpasses / investment: 88 million USD - 2017.
15.  International contract award process for the Auto-Estradas do Centro concession (Portugal). 378 km / investment: € 1,000 million - 1,400 million USD - 2008.



ROADWAY DESIGN

- 01 CONSTRUCTION DESIGN
- 02 DETAILED ENGINEERING
- 03 DESIGN OPTIMIZATION
- 04 DESIGN SUPERVISION AND INSPECTION
- 05 PROJECT MANAGEMENT IN THE DESIGN STAGE

14

Drawing up detailed design or construction plans requires the precise calculation and design of all components that comprise the physical infrastructure: dirt roads, paving, hydraulic systems and drainage, structures, viaducts, tunnels, safety elements, signaling and markings, etc. **ICEACSA Grupo's** work teams have accumulated a large number of international references in this field. The multi-disciplinary nature of its qualified experts enables the Group to provide the client with a comprehensive end product that includes the design of components that could be considered unique such as ITS equipment, toll plazas, or tunnel facilities.

The designs we create take the entire life cycle of the infrastructure into account, not only the construction phase but also the operating and maintenance strategies. The BIM methodology is a tool that enables asset management from the design stage, through updating during construction to asset management throughout its entire useful life.

01.  Construction engineering of the Vilamar-Barreiros section of the A-8 Cantabrian motorway from San Sebastián to Santiago de Compostela (Spain). 4.46 km / 1 junction / 3 viaducts totaling 1.55 km / investment: € 50 million - 59 million USD - 2005.
02.  Construction engineering for access road to the outer port of Punta Langosteira in A Coruña (Spain). 5 km / 1 junction / 2 viaducts / investment: € 66 million - 87.4 million USD - 2010.
03.  Construction engineering for the A-8 Cantabrian motorway / N-634 highway, San Sebastián to Santiago de Compostela, section: Reinante-Ribadeo (Spain). 10 km / 3 junctions / 3 viaducts / 10 overpasses / investment: € 42 million - 53 million USD - 2003.
04.  Routing and construction plans for extension of the Pasaje Bridge (AC-12 road, PK 4.2 - 4.4), A Coruña (Spain). 0.6 km / investment: € 24 million - 27 million USD - 2020.
05.  Construction engineering plans to increase the capacity of the AP-9 highway, kp 55 junction with southern branch in A Coruña (Spain). 2.8 km / investment € 7.3 million - 9.6 million USD - 2010.
06.  Construction engineering for Route 21, Nueva Palmira to Mercedes section and Route 24: Route 7 to Route 3 section, (Uruguay). 179 km / investment: 70 million USD - 2016.
07.  Execution plans of the works to fine-tune the road infrastructure of Central-West Route 14, Sarandi del Yí bypass and R14 to R3 link road. Circuit 3. (Uruguay). 291 km / 10 new bridges totaling 1.75 km / 10 bridges totaling 1.3 km to be refurbished / 9 junctions / investment: 171 million USD - 2020.
08.  Execution plans for fine-tuning works on the Route 14 infrastructure, Sarandi del Yí - Lascano - Velázquez section. Circuit 5 (Uruguay). 182 km (112 km of new route - 70 km of upgrading) / 6 junctions / investment: 110 million USD - 2020.
09.  Feasibility study and design for upgrading the Cerro Verde - San José de Bocay junction, Nuevo León La Providencia, Granada - Malacatoya and Jicaro - Murra junction sections (Nicaragua). 113 km / investment: 77 million USD - 2013.





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16

10.  Design, construction and maintenance plans for extension to six (6) lanes of the Las Playas corridor on the Pan-American Highway, section 1: La Chorrera - Santa Cruz (Panama). 32.75 km / 3 new bridges and 9 extensions / 12 junctions / investment: 543 million USD - 2020.
11.  Study, design, construction and commissioning of the toll plaza, adaptation of carriageways and upgrade of public spaces in the San Isidro area, Omar Torrijos district, San Miguelito, Panama City (Panama). 100,000 beneficiaries / investment: 29 million USD - 2018.
12.  Construction plans for functional units 1, 2 and 3 within the upgrading scope of the Puerta de Hierro - Palmar de Varela concession (Colombia). 170 km / 2 x 4-lane toll plazas / investment: COP 1,746 million - 520,000 USD -2020.
13.  Detailed studies and designs of the Pacifico 1 link highway (Colombia). 50 km / 52 viaducts totaling 6 km / 2 dual tunnels totaling 5.5 km / investment: 1,779,775 million COP - 552 million USD - 2015.
14.  Review, adjustment and complements of the studies and construction plans for the Estación Don - Navjoa (km 68+900 to 154+000) and Ciudad Obregón - Guaymas (km 0+000 to 10+000 and km 26+100 to 107+000) highway in the State of Sonora (Mexico). 176 km / 1 junction / investment: 2,324 million MXN - 112 million USD - 2016.
15.  Construction plans for the high-specification Cardel - Poza Rica highway, section I: Laguna Verde - Nautla, State of Veracruz (Mexico). 74 km / investment: 3,470 million MXN - 168 million USD - 2016.
16.  Execution plans for the Siglo XXI highway concession, Jantetelco - Xicatlatcotla and Jantetelco - El Higuero section, State of Morelos (Mexico). 62 km / investment: 2,677 million MXN - 136 million USD - 2017.








CONSTRUCTION PHASE SERVICES

- 01 SUPERVISION, INSPECTION AND MONITORING OF WORKS
- 02 HEALTH AND SAFETY
- 03 ENVIRONMENTAL MONITORING
- 04 VALUE ENGINEERING AND TECHNICAL SUPPORT FOR THE WORKSITE OFFICE
- 05 PROJECT MANAGEMENT IN WORK STAGE
- 06 INDEPENDENT ENGINEER
- 07 PROJECT MONITORING
- 08 AS-BUILT DOCUMENTATION

16

The support of an engineering firm is also a key factor during execution of the works, both to conduct supervision, to check compliance with the specifications set in the design phase and to perform office work and provide technical support to the construction companies.

The accumulated experience of **ICEACSA Grupo's** teams of qualified experts in planning infrastructures and design know-how at the detailed engineering level provide them with an overall vision that they place at the disposal of the clients in the search for technical solutions and organizational methods to maximize the creation of added value. And, in the case of the provision of services to concession holders or financial investors, to ensure an excellent return on investment by retaining the services of an independent engineer, technical reviewer or project monitoring specialist.

01.  Monitoring, surveillance and coordination of occupational health and safety in the construction works of the AP-53 Santiago de Compostela - Ourense Highway, section: Alto de Santo Domingo - A-52, subsection: Cea Junction - A-52 (Spain). 18 km / 2 viaducts totaling 1.3 km / investment: € 140 million - 157 million USD - 2009.
02.  Monitoring and surveillance of road access works to the Outer Port of Punta Langosteira in A Coruña (Spain). 4 km / 2 viaducts totaling 650 m / 1 x 433-meter dual-tube tunnel / investment: € 62 million - 82 million USD - 2012.
03.  Monitoring, surveillance and coordination occupational safety and health of the works for the pedestrian and cycling route on the PO-340, - A Ramallosa section Gondomar (Spain). 4 km / investment: € 1.7 million - 2 million USD - 2018.
04.  Monitoring and supervision of works on the A-57 highway, Vilaboa - A Ermida section. (Spain). 7.7 km / 2 junctions/ 4 viaducts / investment: € 104 million - 119 million USD - 2018.
05.  Monitoring of the execution of the works for construction of an underground roadway in the Marina dock in A Coruña (Spain). 526 m / investment: € 14 million - 15 million USD - 2015.





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06.  Monitoring and surveillance of works: A-8, Cantabria highway: Mondoñedo-Lorenzana section (Spain). 3.5 km / 2 viaducts totaling 534 m / 5 overpasses / investment: € 29 million - 37 million USD - 2011.
07.  Project monitoring of the construction works of 424 km of Federal Network motorways and roads in Mexico (Mexico). 424 km / investment: 12,442 million MXN - 719 million USD - 2015.
08.  Supervision for continuation of the construction, upgrading, refurbishment, maintenance and social, land procurement and environmental management of the Ocaña - Aguaclara - Gamarra transversal highway, Aguaclara - Ocaña section in the Departments of Norte de Santander and Cesar (Colombia). 4 vehicle bridges / 1 toll plaza / investment: 31,943 million COP - 9.5 million USD - 2019.
09.  Inspection for upgrading the Palermo - Salamina highway, Palermo sector - Sitionuevo - Remolino - Guamaro in the Department of Magdalena (Colombia). 56km / investment: 432,000 million COP - 129 million USD - 2019.
10.  Technical and administrative supervision of construction of the southern junctions of the new Mexico City airport (Mexico). 3 connections at different level / investment: 518 million MXN - 27 million USD - 2020.
11.  Comprehensive auditing of the works contract for extension of the NQS trunk road of the integrated mass transportation system of Bogotá, municipality of Soacha Phases II and III, lot 1 from Calle 24 to Calle 15 South (Colombia). 2.6 km / investment: 235,500 million COP - 70 million USD - 2020.
12.  Technical assistance for fine tuning of roadway infrastructure works on Route 14 Centre - West, Sarandi del Yi bypass and R14 - R3 link road. Circuit 3 (Uruguay). 291 km / 10 new bridges totaling 1.75 km / 10 bridges totaling 1.3 km to be refurbished / 9 junctions / investment: 171 million USD - 2019.
13.  Amended construction plans for the Atlantic Highway. Section: Fene-Ferrol, A Coruña (Spain). 9.4 km / 1km of tunnel / 2,6 km of viaducts / investment: € 69 MM - 75 MM USD - 2002.








CONSERVATION AND MAINTENANCE PHASE SERVICES

- 01 CONSERVATION PLANS
- 02 ROAD ASSET MANAGEMENT SYSTEMS
- 03 TECHNICAL STUDIES AND REPORTS
- 04 CONSERVATION PROJECTS AND DESIGNS
- 05 SUPERVISION, AUDITING AND MONITORING OF CONSERVATION AND MAINTENANCE
- 06 INDEPENDENT CONSERVATION ENGINEER

18

Parameters related to the status of all components and factors that constitute the infrastructure must be controlled and monitored during the operational phase to check that the expected conditions are fulfilled during commissioning, and also to enable proper decision-making by both the infrastructure's owners or those responsible for its operation and maintenance and by users when travelling on the highways.

ICEACSA Grupo's experience in drawing up road infrastructure maintenance and operational plans is manifested in the trust that its Clients repeatedly place in the Company.

01.  Technical audits and supervision of the operation and maintenance of the Durango-Mazatlán highway during the 2014-2016 period (Mexico). 120 km / 61 tunnels.
02.  Administrative Supervising Agent (ASA) for comprehensive consulting, management, monitoring, supervision and administration of operations, maintenance and refurbishment of the Villahermosa bypass, State of Tabasco (Mexico). 24 km / investment: 845 million MXN - 44 million USD - 2020.
03.  Review of the contract and monitoring of the construction and maintenance of the PPP project for conservation of the Pirámides - Tulancingo - Pachuca highway section (Mexico). 91.5 km / 90 overpasses / investment: 3,930 million MXN - 209 million USD - 2020.
04.  Financial-technical feasibility study and independent engineer to monitor the 10-year multi-year contract for the purpose of providing services for conservation of the Pirámides - Tulancingo - Pachuca highway section pursuant to the Public Private Partnership Act (Mexico). 91.5 km / 90 bridges / 19,734 AADT vehicles / investment: 3,930 million MXN - 209 million USD - 2020.
05.  Extraordinary refurbishment project of the surface course of the AG-56 Santiago - Brión freeway (Spain). 15.9 kms / 23,700 vehicles/day / investment: € 3.5 million - 3.9 million USD - 2019.





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- 06.  Consultancy and technical assistance on road safety in the operational phase for the tunnels on the state road network in Galicia (Spain). 44 tunnels with a total length of 19 km.
- 07.  Monitoring and surveillance of reinforcement of the surface course of the provincial boundary - AP-9 section of the N-525, (Spain). 26.5 km / investment: € 4.8 million - 7 million USD - 2007.
- 08.  Support for the civil works management of reinforcement of the surface course to improve the intersection on the AC-552. kp 37+300 to 50+000 in Coristanco (Spain). 12.7 km / investment: € 3 million - 3.8 million USD - 2011.
- 09.  Supervision of management, operation and comprehensive maintenance of the Santuario - Route 45 intersection, Hoyo Rico - Tarazá - Cauca and La Pintada - Medellín highways (Colombia). 362 km / investment: 28,851 million COP - 8.6 million USD - 2020.
- 10.  Technical, economic, financial, legal, administrative, operational, environmental, social and land procurement-related inspection of the public-private partnership scheme concession contract derived from the VJ-VE-LP-005-2012 contract-award process for the "Loboguerrero Buga" Corridor (Colombia). 55 kms / investment: 60,000 million COP - 20 million USD - 2017.
- 11.  Highway management of the national highways of which the Antioquia Regional Directorate is in charge. Module 1 (Colombia). 230 km
- 12.  Highway management of the national highways of which the Cesar Regional Directorate is in charge. Module 1 (Colombia). 193.58 km



TRANSPORT INFRASTRUCTURE MANAGEMENT









- 01 DATA COLLECTION
- 02 SMART TRANSPORT SYSTEMS
- 03 OPERATION SYSTEMS
- 04 TECHNOLOGICAL SOLUTIONS
- 05 TRAFFIC, TRANSPORT, AND MOBILITY STUDIES
- 06 TRANSPORT PLANNING
- 07 ROAD SAFETY
- 08 INNOVATION

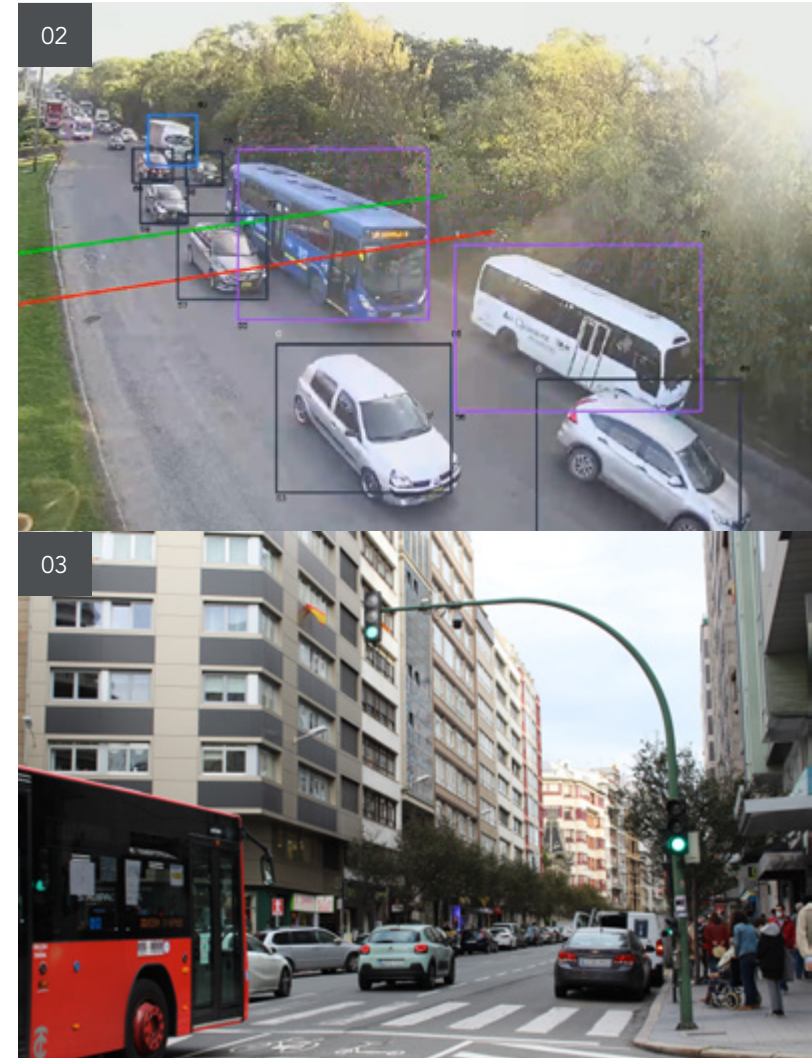
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Growing mobility needs are driving the demand for more specialized traffic management methods.

Urban and interurban transport must be rationalized by developing innovative systems aimed at improving mobility in a smarter manner in order to control and monitor this growth sustainably.

To meet this need, **ICEACSA Grupo** provides highly specialized consulting services to guide our clients in the roadway infrastructure and operational management areas.

01.  Installation, maintenance and operation of the traffic gauging stations in the regional network of Galicia (Spain). 5,546 km monitored / 238 fixed gauging stations / 146 pneumatic gauging stations / 31 million data logged.
02.  Collection and analysis of traffic information on the national road network with verifiable technology (Colombia). 10,044 km of carriageway / 26 departments / 478 gauging stations / 18,000 hours of smart video processing.
03.  Technical assistance, auditing, supervision and control of traffic light maintenance and ITS systems in the city of A Coruña (Spain). 246,146 inhabitants / 153 traffic light crossings / 47 TV cameras / 28 panels / 3 license plate reading points / 17 video reporting points for priority road subject to surveillance / 26 access control video reporting points.
04.  Reception services, technological empowerment and operating model for the centralized traffic-light system of Panama City (Panama). 1 control center / 75 cameras / 35 panels / 1,000 loops / 210 traffic intersections / investment: 1.4 million USD - 2018.
05.  Technical audit and supervision of operation and maintenance of the ITS and safety equipment of the tunnels and control centers of the Durango-Mazatlán highway during the 2014-2016 period (Mexico). 120 km / 61 tunnels.
06.  Technical consultancy for coordination of reports and studies on mobility, technology and vehicles for the General Directorate of Traffic in Madrid (Spain). 6,000 km of carriageway/ 13,000 ITS units / 41 million data managed per day.
07.  Technical assistance for coordination of the Galician public transport plan - Transport-on-demand Plan and resulting operational projects (Spain).
08.  Study of the accident rate in the Regional Network of Galicia (RAEGA), Spain.





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09.  Macro-simulation model using TransCAD to adjust the origin-destination matrices and calibration of the assignment model and micro-simulation of 14 singular points (intersections) with TransModeler within the framework of the transport and logistics infrastructure development plan for access to the port area of Montevideo (Uruguay).
10.  Design and execution plans for installation of detector beacons to enhance road safety in adverse weather conditions (dense fog) in the Alto de O Fiuoco, A-8 Highway in freeway in Lugo (Spain).
11.  Inter-urban transport accessibility plans in the urban center of the cities of A Coruña, Ourense, Pontevedra and Vigo within the framework of the metropolitan transport plan of Galicia (Spain).
12.  Study for the definition of stopping zones for carriers on the roadway network of the devolved Region of Galicia (Spain).
13.  Road safety inspection of the school zone on Route 8 kp 13+200 in Uruguay (Uruguay).
14.  Road Safety Audits and serious accident investigation tasks within the framework of the Supervisory Administration Agent (SAA) services to provide comprehensive consultancy, management, monitoring, supervision and administration of operation, maintenance and refurbishment of the Atacomulco – Maravatio highway, States of México and Michoacán. 64 km / 8 dual-carriageway bridges / 22 overpasses and 31 underpasses / 2 toll plazas.
15.  Supervision of collection (tolls) by means of key performance indicators (KPI) of the activities associated with the highway concession contract for the Loboguerrero – Buga corridor (Colombia). 55 km / investment: 60,000 million COP - 20 million USD - 2017.

03



EXPERIENCE IN RAILWAY INFRASTRUCTURES



+1,000 KM
RAILWAY INFRASTRUCTURES
PLANNED

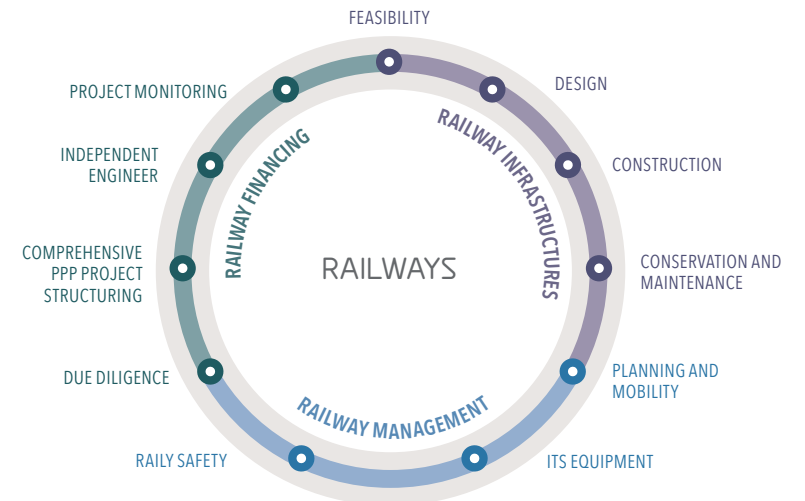
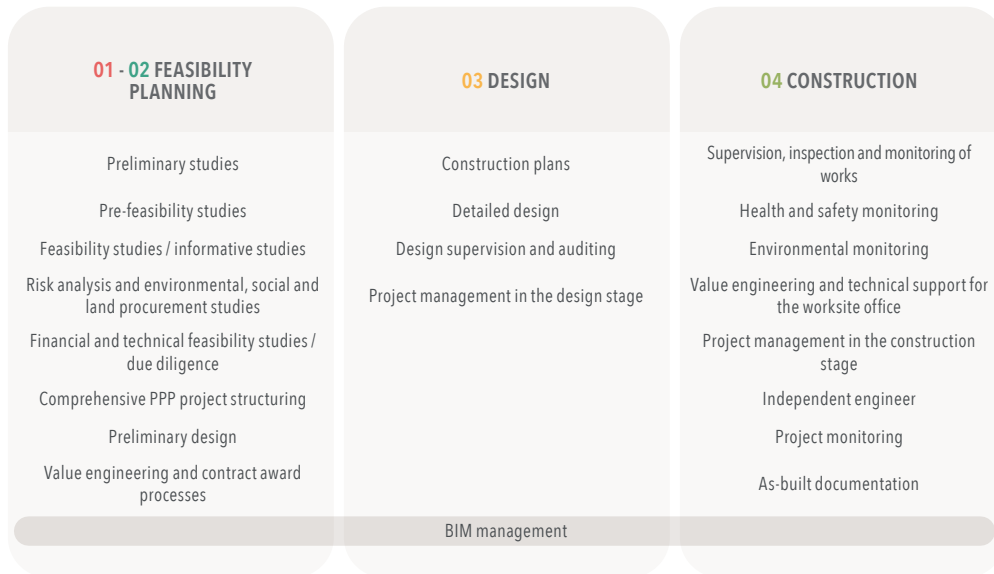
+€4,000 MILLION
(4,700 MILLION USD)
OF INVESTMENT

+300 KM
RAILWAY TRACK
DESIGNED

+20 KM
TUNNELS

The rail network is an essential mode of transport for development of both short- and medium-haul passenger traffic and as a key factor in the freight transport logistics system.

ICEACSA Grupo has extensive experience providing engineering, consulting and project management services for railway infrastructures from the preliminary planning to the operational phase and also takes part in private-public partnerships.





RAILWAY PLANNING AND FEASIBILITY

- 01 PRE-FEASIBILITY STUDIES
- 02 FEASIBILITY STUDIES / INFORMATIVE STUDIES
- 03 RISK ANALYSIS AND ENVIRONMENTAL, SOCIAL AND LAND-PROCUREMENT STUDIES
- 04 TECHNICAL FINANCIAL FEASIBILITY STUDY DUE DILIGENCE
- 05 COMPREHENSIVE STRUCTURING OF PPP PROJECTS
- 06 PRELIMINARY DESIGN
- 07 VALUE ENGINEERING AND CONTRACT AWARD PROCESSES

24

The rail system is a key factor in the current global logistics network and is closely related to the port system. These infrastructures require a prior planning process in anticipation of demand. The right decisions must be made in the planning stage since these investments are extremely rigid once committed. Mass passenger transport in urban and interurban environments is also a key factor in the sustainable development of these areas.

ICEACSA Grupo has wide experience in railway planning and the capacity to develop solutions for both passenger and freight transport. Several of the studies of connectivity by railway carried out and involving logistics facilities such as ports and other intermodal transport hubs are especially noteworthy.

01.  Informative study for the Villagarcía-Padrón section of the Atlantic high-speed corridor in Pontevedra and A Coruña (Spain). 26 km / 3.98 km tunnel / 3.63 km viaducts / maximum speed 250 km/h / investment: € 238 million - 250 million USD - 2002.
02.  Informative study of railway accesses for the port of Ferrol extension works (Spain). 6.7 km / 1 5.5 km tunnel / 1 340-m viaduct / investment: € 107 million - 145 million USD - 2004.
03.  Technical, economic, and financial feasibility study of the transport and logistics infrastructure for rail access to the Montevideo port area (Uruguay). Plans drawn up for 52 km of railway track / investment: 306 million USD - 2015.
04.  Technical support in the international public contract award process for drafting of the execution plans, supply of materials and construction of the platform and track of the Tren Maya 1, 2 and 3 sections (Mexico). 614 km / maximum speed 160 km/h / 33 viaducts / 146 vehicle crossings.
05.  Preliminary study to upgrade railway capacity on the Leixões line and in the new intermodal terminal in Grande Porto (Portugal). 17.76 km / investment: € 23 million - 26 million USD - 2020.





03



05



04



06

- 06. Informative study of the rail access to the outer port of A Coruña in Punta Langosteira (Spain). 9 km / 3 tunnels totaling 2.3 km / investment: € 113 million - 150 million USD - 2012.
- 07. Study of urban integration of the railway in the city of Ferrol (Spain).
- 08. Technical-financial feasibility study of rectification of 56 km of curves and slope, refurbishment of 146.3 km of railway line and connection to the port of Salina Cruz line Z, Meias Agua - Ubero section (Mexico). 41.6 km / investment: 786 million MXN - 42 million USD - 2020.
- 09. Study of accesses to Galicia by a new high-performance railway line (Spain). 312 km / 66 km of tunnels / 33 km of viaducts / investment: € 4,103 million - 3,700 million USD - 2000.
- 10. Financing study for a metro line in the city of Vigo (Spain). 8.7 km / investment: € 355 million - 420 million USD - 2005.
- 11. Study of action options related to public passenger transport interchanges in the main Galician cities (Spain).










RAILWAY DESIGN

- 01 CONSTRUCTION DESIGN AND DESIGNS
- 02 DETAILED DESIGN
- 03 DESIGN OPTIMIZATION
- 04 DESIGN SUPERVISION AND INSPECTION
- 05 PROJECT MANAGEMENT IN THE DESIGN STAGE

26

Drawing up detailed construction plans requires the precise calculation and design of all components to be executed including those that can be considered unique such as railway superstructures, viaducts, safety facilities and communications. The quality of the projects managed by **ICEACSA Grupo** ensures its clients the peace of mind of knowing that they are dealing with a fully accredited and highly solvent company.

The designs we create take the entire life cycle of the infrastructure into account, not only the construction phase but also the operating and maintenance strategies. The BIM methodology is a tool that enables asset management from the design stage, through updating during construction to asset management throughout its entire useful life.

01.  Execution plans and environmental impact assessment study for upgrade of the railway capacity on the Leixões line and in the new intermodal terminal in Grande Porto (Portugal). 17.76 km / investment: € 23.75 million - 26 million USD - 2020.
02.  Betanzos-Ferrol railway line construction plans and upgrade measures (Spain). 42.43 km / 4 tunnels totaling 1.3 km / 1 810-m bridge / investment: € 941 million - 833 million USD - 2000.
03.  Construction plans for the high-speed Atlantic corridor, Ponte das Cabras – Ferrol section (Spain). 1.86 km / 2 overpasses / 1 pedestrian walkway / reform of track hubs / investment: € 10.6 million - 14 million USD - 2009.
04.  High speed Atlantic corridor construction plans, Ordes - Queixas section (Spain). 4 km / 2 tunnels totaling 1.25 km / investment: € 38 million - 52 million USD - 2004.
05.  Studies and engineering to enhance safety and phase out level crossings in the devolved region of Castilla y León (Spain). 3 underpasses / 4 overpasses / investment: € 7.2 million - 10 million USD - 2007.
06.  Construction plans to phase out 10 level crossings on the Venta de Baños - Santander line and 2 level crossings on the Villabona-San Juan de Nieva line (Spain). 2 underpasses / 4 overpasses.
07.  Construction plans for the internal railway network and modal exchange facilities in the outer port of Ferrol (Spain). 3 km / investment: € 4 million - 5.5 million USD - 2004.
08.  Engineering to phase out level crossings in the railway network of Galicia (Spain). 14 level crossings / 3 overpasses / 5 underpasses / investment: € 5.4 million - 5.6 million USD - 2002.
09.  Study, design, construction and commissioning of the toll plaza, adaptation of carriageways and upgrade of public spaces in the San Isidro area, Omar Torrijos district, San Miguelito, Panama City (Panama). 100,000 beneficiaries / investment: 29 million USD - 2015.





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07



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09



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10.  Amended construction plans for the high-speed Atlantic corridor works, Uxes – Pocomaco section (Spain). 4.3 km / 2 tunnels totaling 2.3 km / investment: € 76.5 MM - 109 million USD - 2009.
11.  Construction plans for the road-rail freight intermodal exchange hub in Las Gándaras, O Porriño municipal district, Pontevedra (Spain).
12.  Supervision of construction of footings, piles, columns and caps and earthworks required to complete sections 1 and 9 of the elevated viaduct, section III Observatorio, Santa Fe - Tunnel, of the Mexico - Toluca Interurban Train. 60 km / investment: 420 million MXN - 21 million USD - 2017.

04 • CLIENTS



ACCIONA | ADMINISTRACIONES FERROVIARIAS (ADIF) | AERONÁUTICA CIVIL COLOMBIA | AGENCIA NACIONAL DE INFRAESTRUCTURA (ANI) | ALEÁTICA | AUTOESTRADAS DE GALICIA | AUTOPISTA CENTRAL GALLEGA, C.E.S.A. (ACEGA) | AUTOPISTAS DEL ATLÁNTICO, S.A. (AUDASA) | AXENCIA GALEGA DE INFRESTRUTURAS - XUNTA DE GALICIA | AYUNTAMIENTO DE A CORUÑA | BANCO NACIONAL DE OBRAS Y SERVICIOS PÚBLICOS (BANOBRAS) | BANCO SANTANDER | BANORTE | CINTRA | COINTER CONCESIONES MÉXICO | CONCESIONARIA SANTIAGO-BRION, S.A. | CONSTRUCTORA AUTOPISTAS DE MICHOACÁN | CONSTRUCTORA SAN JOSÉ | COPASA | CORPORACIÓN AUTÓNOMA REGIONAL DE CUNDINAMARCA | DIPUTACION PROVINCIAL DE A CORUÑA | DIPUTACION PROVINCIAL DE PONTEVEDRA | DRAGADOS | ENTERRITORIO | FCC CONSTRUCCIÓN, S.A. | FERROVIAL | FONDO CAPITAL INFRAESTRUCTURAS | GOBERNACIÓN DE BOYACÁ | GOBIERNO DEL ESTADO DE MÉXICO | GRUPO AEROPORTUARIO DE LA CIUDAD DE MÉXICO | GRUPO ALDESA | INFRAESTRUTURAS DE PORTUGAL, S.A. | INSTITUTO NACIONAL DE TÉCNICA AEROSPA-CIAL (INTA) | INSTITUTO NACIONAL DE VIAS (INVIAS) | IRIDIUM CONSTRUCCIONES DE INFRAESTRUCTURAS, S.A. | ITÍNERE INFRAESTRUCTURAS, S.A. | JUNTA DE CASTILLA Y LEON | MINISTERIO DE HACIENDA Y CRÉDITO PÚBLICO DE NICARAGUA | MINISTERIO DE TRANSPORTE Y OBRAS PÚBLICAS DE URUGAUAY | MINISTERIO DE TRANSPORTES DE COLOMBIA | MINISTERIO DE TRANSPORTES, MOVILIDAD Y AGENDA URBANA DE ESPAÑA | MOTA-ENGIL | OHL | S.U. AUTOESTRADA ALTO DE SANTO DOMINGO-OU-RENSE (ACEOUSA) | SACYR | SECRETARIA DE COMUNICACIONES Y TRANSPORTES (SCT) | SOCIEDAD ESTATAL DE INFRAESTRUCTURAS DEL TRANSPORTE (SEITT) | SOCIEDADE PÚBLICA DE IN-VESTIMIENTOS DE GALICIA, S.A. (S.P.I.) | ACCIONA | ADMIN-STRADOR DE INFRAESTRUCTURAS FERROVIARIAS (ADIF) | AERONÁUTICA CIVIL COLOMBIA | AGENCIA NACIONAL DE INFRAESTRUCTURA (ANI) | ALEÁTICA | AUTOESTRADAS DE GALICIA | AUTOPISTA CENTRAL GALLEGA, C.E.S.A. (ACEGA) | AUTOPISTAS DEL ATLÁNTICO, S.A. (AUDASA) | AXENCIA GALEGA DE INFRESTRUTURAS - XUNTA DE GALICIA | AYUNTAMIENTO DE A CORUÑA | BANCO NACIONAL DE OBRAS Y SERVICIOS PÚBLICOS (BANOBRAS) | BANCO SANTANDER | BANORTE | CINTRA | COINTER CONCESIONES MÉXICO | CONCESIONARIA SANTIAGO-BRION, S.A. | CONSTRUCTORA AUTOPISTAS DE MICHOACÁN | CONSTRUCTORA SAN JOSÉ | COPASA | CORPORACIÓN AUTÓNOMA REGIONAL DE CUNDINAMARCA | DIPUTACION PROVINCIAL DE A CORUÑA | DIPUTACION PROVINCIAL DE PONTEVEDRA | DRAGADOS | ENTERRITORIO | FCC CONSTRUCCIÓN, S.A. | FERROVIAL | FONDO CAPITAL INFRAESTRUC-TURAS | GOBERNACIÓN DE BOYACÁ | GOBIERNO DEL ESTADO DE MÉXICO | GRUPO AEROPORTUARIO DE LA CIUDAD DE MÉXICO | GRUPO ALDESA | IN-STITUTO NACIONAL DE TÉCNICA AEROSPA-INSTI-TUTO NACIONAL DE VIAS (INVIAS) | IRIDIUM CONSTRUCCIONES DE INFRAESTRUCTURAS, S.A. | ITÍNERE INFRAESTRUCTURAS, S.A. | JUNTA DE CASTILLA Y LEON | MINISTERIO DE HACIENDA Y CRÉDITO PÚBLICO DE NICARAGUA | MINIS-TRANSPORTE Y OBRAS PÚBLICAS DE URUGAUAY | MINISTERIO DE TRANSPORTES, MOVILIDAD Y AGENDA URBANA DE ESPAÑA | MOTA-ENGIL | OHL | S.U. AUTOESTRADA ALTO DE SANTO DOMINGO-OU-SACYR | SECRETARIA DE COMU-PORTES (SCT) | SOCIEDAD ESTATAL DEL TRANSPORTE (SEITT) | SOCIEDADE DE GALICIA, S.A. (S.P.I.) | ACCIONA | ADMIN-STRADOR DE INFRAESTRUCTURAS FERROVIARIAS (ADIF) | AERONÁUTICA CIVIL COLOMBIA | AGENCIA NACIONAL DE INFRAESTRUCTURA (ANI) | ALEÁTICA | AUTOESTRADAS DE GALICIA | AUTOPISTA CENTRAL GALLEGA, C.E.S.A. (ACEGA) | AUTOPISTAS DEL ATLÁNTICO, S.A. (AUDASA) | AXENCIA GALEGA DE INFRESTRUTURAS - XUNTA DE GALICIA | AYUNTA-MIENTO DE A CORUÑA | BANCO NACIONAL DE OBRAS Y SERVICIOS PÚBLICOS (BANOBRAS) | BANCO SANTANDER | BANORTE | CINTRA | COINTER CONCESIONES MÉXICO | CONCESIONARIA SANTIAGO-BRION, S.A. | CONSTRUCTORA AUTOPISTAS DE MICHOACÁN | CONSTRUC-TORA SAN JOSÉ | COPASA | CORPORACIÓN AUTÓNOMA REGIONAL DE CUNDINAMARCA | DIPUTACION PROVINCIAL DE A CORUÑA | DIPUTACION PROVINCIAL DE PONTEVEDRA | DRAGADOS | ENTERRITORIO | FCC CONSTRUCCIÓN, S.A. | FERROVIAL | FONDO CAPITAL INFRAESTRUCTURAS | GOBERNACIÓN DE BOYACÁ | GOBIERNO DEL ESTADO DE MÉXICO | GRUPO AEROPORTUARIO DE LA CIUDAD DE



The quality of the projects carried out by ICEACSA Grupo is reflected in the prestige of the public and private organizations in our client portfolio:

- INSTITUTIONAL CLIENTS AND GOVERNMENT AGENCIES
- CONSTRUCTION COMPANIES
- CONCESSIONAIRES
- INDUSTRIAL AND SERVICE COMPANIES
- PRIVATE INVESTORS
- PUBLIC AND PRIVATE BANKING ENTITIES, INVESTMENT FUNDS







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