FCC CONSTRUCCIÓN

BULLETIN

MARCH 2011



Cover picture

Zaragoza Tram

Leading News



CONTRACT AWARDS

Work on Line1 of the Panama subway

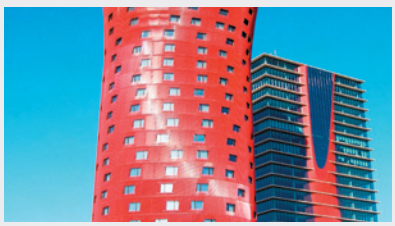
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Work starts on Line 1 of the Panama subway

It will be 14 kilometres long and have 11 stations



Computer-generated image of the Panama subway

The contract for Line 1 of the Panama subway was awarded in late October to FCC in a consortium with the Brazilian building firm Norberto Odebrecht and the French company Alstom, as nominated subcontractor, for 1,000 million euro (1,452 million dollars). Work under that contract began on 15 February.

The Panamanian subway will be 14 kilometres long and have 11 stations, some at ground level. The route will run from north to south and will link the centre of Panama's capital with the suburban neighbourhoods of the east, which are currently swamped with transport difficulties. The subway will connect the National Bus Terminal Station in Albrook with the Los Andes shopping centre in the northern metropolitan area of Panama City.

The construction of the new mass-transit system, the first of its type in Central America, aims to modernise the public transport system of Panama's capital and will largely replace the buses that have been travelling the city's streets for more than four decades.

Line 1 of the system will have the capacity to carry more than 15,000 people per hour per direction at first and will grow to 40,000 people per hour per direction by 2035.

At present the company has contracts worth more than 1,400 million euro of business in Panama.

More Info

304-million-euro contract won to extend the Toronto subway system



Computer-generated image of Highway 407 Station

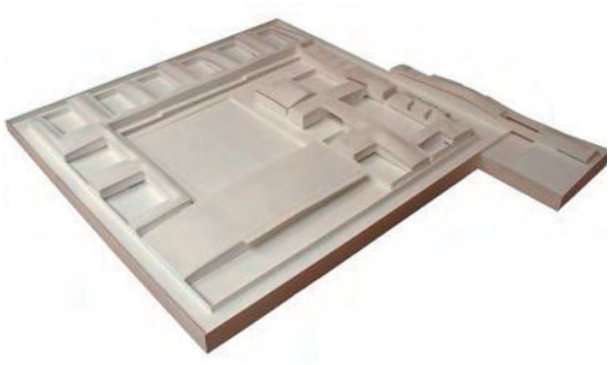
The Toronto Transit Commission has awarded a joint venture featuring FCC the contract for the Toronto-York Spadina Subway Extension (TYSSE) in Canada, which includes the construction of the North Tunnels and Highway 407 Station, for a total of 304 million euro.

The project consists in the construction of a 4,500-metre-long underground section of subway with three stations along the route: York University Station, Steeles West Station (not included in this contract) and Highway 407 Station, in addition to a shed area.

Highway 407 Station will be a new underground station. It will be 165 metres long, 22 metres wide and 23 metres deep, with a central platform and three levels (two underground and one at ground level). The ground-level portion will be housed in a Y-shaped building with a bus terminal and an outdoor car park for 600 vehicles.

More Info

FCC gets the contract for Els Plans Penitentiary in Lérida, for 186 million euro



Computer-generated image

The Catalan Justice Department, acting through the public company Gestión de Infraestructuras (GISA), has awarded a joint venture featuring FCC the 186.2-million-euro contract for the construction of the Els Plans Penitentiary in Tárrega, Lérida, followed by a 32-year management period.

The project, designed by the Massip-Bosch Arquitectos and Luis-Xavier Comerón Grupera studios, will have an area of 64,044.2 square metres and will occupy 29,612 square metres of the lot on which the penitentiary will be built.

Most of the penitentiary buildings will be three storeys high.

Contract worth 39.5 million euro won for the Ciudad de la Energía's museum in Ponferrada

CIUDEN is to begin building the museum at Compostilla I in the next few weeks



Computer-generated image

The Ciudad de la Energía Foundation has awarded a joint venture featuring FCC the 39.5-million-euro contract for the work at the National Energy Museum headquarters in Ponferrada, León.

On 24 January, Ponferrada Gestión Urbanística (Pongesur) and the Ciudad de la Energía Foundation signed a lease providing CIUDEN with the land necessary to begin building at the old Compostilla I power plant, future headquarters of the National Energy Museum.

15 months of work

During construction, which will last 15 months, up to 200 jobs will be created directly.

The project includes the following work:

1. Refurbishment of the Compostilla I power plant, where the museum's permanent exhibits will be located.
2. Construction of a new one-storey building to house the service area. The services located there will include a digital theatre, an auditorium seating 500 people and housing for groups of students and researchers.

Other Contract Awards

- ADIF has chosen a joint venture featuring FCC to do the supplementary indoor work involved in the North Lot of the Pajares Tunnels project, on the high-speed railway line from Madrid to Asturias, La Robla to Pola de Lena (provinces of León and Asturias). The contract is worth 148.8 million euro, and the completion period is 12 months long.
- The Ministry of the Natural, Rural and Marine Environment has awarded the contract to enlarge the eastern river basin wastewater treatment plant, worth a total of 36.1 million euro, to a joint venture in which FCC Construcción and AQUALIA hold interests.
- The Portuguese Ministry of Education has awarded the contract to modernize and build two primary schools, in Abrantes and Río Maior, to a joint venture featuring FCC Construcción, for 25 million euro.

New bridge over the Ebro River delta



Ebro Bridge

The new bridge over the Ebro River joins the towns of Sant Jaume d'Enveja and Deltebre, forming part of the Ebro delta districts' ring road system.

It is a suspension bridge hung by four parabolic cables anchored right to the deck. It crosses the river in three spans (two side spans and a longer central span).

The deck has a compound cross-section made up of a metal box girder at the bottom, with a web in the centre to which the cables are attached, and a reinforced slab on top. The central web is placed so as to divide the bridge into two halves; the upstream half is for vehicular traffic, and the downstream half is for pedestrians and cyclists.

Generally speaking, the project calls for two-lane roads running in both directions and traffic circles at the approaches, with a total roadway width of 10 metres.

The abutments are set far back on each riverbank, parallel to the river, to respect the riverside footpaths.

+ Team

Department head: Carlos Loscertales Fayrén, Miguel Galvarriato Serra
Construction manager: Pau Calvó Carrió
Production chief: Daniel Roig Roca
Security and quality chief: Fernando García Pasamón
Head surveyor: David Gallego Barrero
Administration chief: Juanjo Panisello Vidal
General foreman: Jordi Fornós Mateu

Gijón harbour expansion, built by FCC, now open



Aerial view, El Musel Harbour, Gijón

The project, built by FCC in a joint venture with other firms, consisted basically in the construction of a new seawall off Cape Torres. The seawall is a total of 3,834 metres long, enabling the creation of an additional 145 hectares of land and 140 hectares of sheltered water. This expansion doubles the size of the harbour facilities.

A bulk-solid unloading terminal has been designed for the new area. It will have 1,250 metres of berthing lines available for depths of up to 27 metres, so it will be able to accommodate three bulk carriers at the same time, each carrying 230,000 DWT and having a draft of 20 metres.

The new terminal will be 400 metres wide and will have an unloading and storage capacity of 25 million tons for iron ore and 2 million tons for coal.

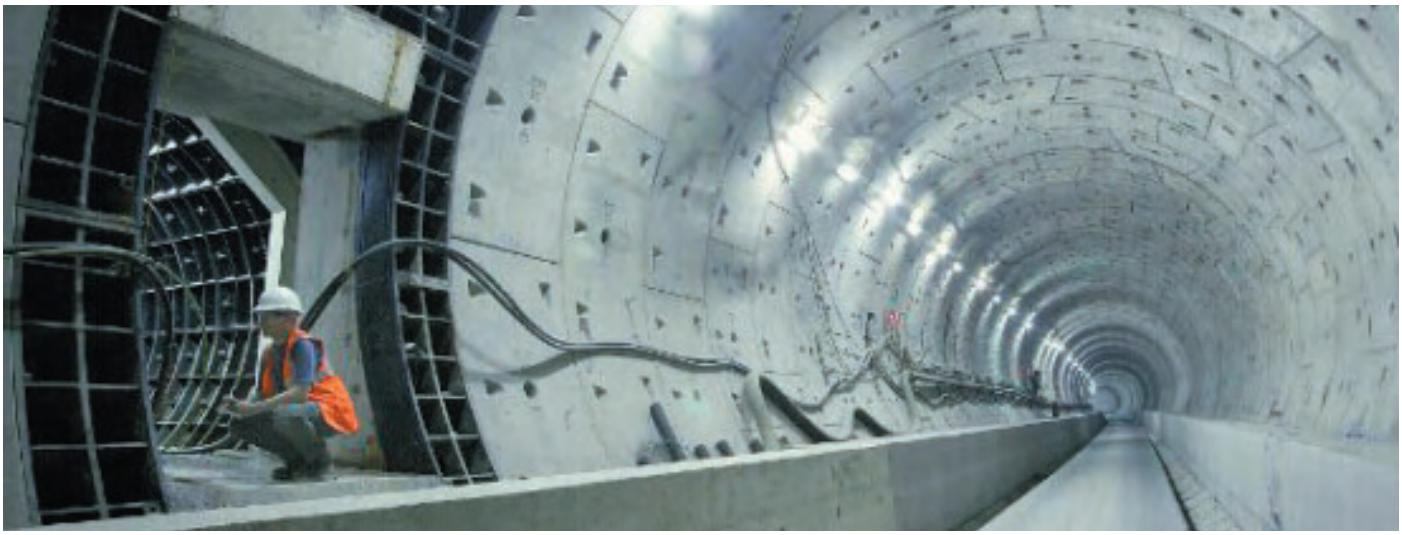
In addition to the construction of the new seawall, the project included the construction of seawalls around the perimeter of the newly reclaimed area, the filling of the space between the protective structures and the demolition of the crest of Prince of Asturias Jetty to create a connection between the pre-project harbour area and the newly expanded area.

+ Team

Construction manager: Guillermo Castanedo Elizalde and Manuel Simancas Ibero
Technical office chief: Manuel Simancas Ibero
Quality chief: Óscar Pérez Hernández and Cristina Ferrero Cantón
Block production chief: Óscar Fernández González and Jorge Aranda Martínez
Administration chief: José Clemente Fernández González
Systems chief: Manuel Montes Cuello and Miguel Ángel Valero
Foremen: Luis Sánchez Rodriguez, Celestino Gutiérrez Álvarez, Manuel Méndez Herres, Rufino Fernández Madroñal, Miguel Ángel Rico Blanco and Jorge Fernández Gutiérrez
Surveyor: Miguel Coya Sánchez, Iván Prieto Serrano and José Manuel Martínez Campos

ALPINE is awarded a section of London's Crossrail

The contract is worth 300 million euro



The high-speed tunnel during its construction (courtesy of LCR)

The consortium partnering Alpine BeMo Tunnelling GMBH (FCC's Austrian subsidiary), Balfour Beatty Civil Engineering Ltd, Morgan Sindall (Infrastructure) and VINCI Construction won the contract for a section of Crossrail, the new system of underground railway connections being built in London.

The contract, which includes the construction of the accesses and caverns of the Whitechapel and Liverpool Street Stations, is worth 250 million pounds (300 million euro).

Crossrail will run for 118 kilometres from Maidenhead and Heathrow in the west to Shenfield and Abbey Wood in the east, through 21 kilometres of new twin tunnels beneath the centre of London.

When it goes into service, it will enable a extra 1.5 million people to reach the busiest business areas in 45 minutes and will increase the London railway system's transport capacity by 10%.

More Info

ALPINE contract in Abu Dhabi worth 81.7 million euro

ALPINE to enlarge Borouge's plant in Ruwais

Borouge, a leading company in high-quality synthetic products, has awarded to FCC, through its Austrian subsidiary ALPINE, the 81.7-million-euro contract to enlarge Borouge's plant in Ruwais, Abu Dhabi.

The project consists in the construction of 26 facilities, including office buildings, production plants and warehouses. Work will begin soon and is anticipated to be completed in 2013.

The Borouge 3 project will boost the petrochemical plant's production capacity by 2.5 million tons a year, to 4.5 million tons of polyethylene per year by the 2014 horizon.

More Info

Drilling concluded on the high-speed Atocha-Chamartín Tunnel

The job is worth 206 million euro



The minister of Development standing next to the mayor of Madrid, the president of the Community of Madrid, the chairman of Adif and the national government's deputy in Madrid.

On Friday, 11 February 2011, Development Minister José Blanco, together with President Esperanza Aguirre of the Community of Madrid and Mayor Alberto Ruiz Gallardón of Madrid, accompanied by FCC Chairman Baldomero Falcones, FCC Construcción Chairman José Mayor and Avelino Acero, managing director of the construction firm, attended the conclusion of the work to dig the AVE (Spanish high-speed rail) tunnel between Atocha and Chamartín stations. The tunnel is being built by a joint venture featuring FCC, for 206 million euro.

The dignitaries visited the area in front of the historic Puerta de Atocha canopy where the extraction shaft has been sunk for removing the tunnel-boring machine used in this project.

This tunnel is the link allowing passengers to make connections between trips starting or ending in the southern and eastern half of Spain and the lines in the northern half of the country. The section has been built with international-gauge double tracks, and it is 7.3 kilometres long. A 6.9-kilometre portion of the line runs underground for easier integration into the city's structure, because it crosses some heavily developed areas. The track weaves above Line 9 of the Madrid Metro system, below another eight Metro lines, and beneath the Iberian-gauge Atocha-Recoletos-Chamartín and Atocha-Sol-Chamartín tunnels, which accommodate the trains belonging to the local and long-distance systems, at an average depth of 45 metres.

This railway connection between Atocha and Chamartín stations, whose construction has created more than 5,000 jobs, will be an essential part of the infrastructure for the development of a good international-gauge network in Spain.

More Info

Joseph Puxeu visits the Flix Reservoir decontamination site



Flix Reservoir

On 10 February the secretary of state for the Rural Environment and Water, Joseph Puxeu, and the head of the regional Department of Land and Sustainability, Lluís Recoder, visited the site in Tarragona where FCC is engaged in decontaminating Flix Reservoir.

Work to decontaminate Flix Reservoir on the Ebro River is proceeding apace. Seven hundred thousand tons of contaminated sludge must be extracted from the reservoir. The sludge is the result of a history of waste dumping by the industrial concerns that have lined the river's right bank since the early days of the last century, compounded by changes in the river's running due to the construction of Mequinenza Dam, Ribarroja Dam and Flix Dam itself.

So far the sheetpile enclosure confining the toxic sludge has been finished on the reservoir side, and activity to close the land side has begun.

More Info

FCC Construcción give the 2010 Fomento Quality and Innovation Awards to its teams

These awards are given each year to the finest projects and the best R&D work

The FCC Construcción Sustainability Committee has decided to grant the 2010 Fomento Awards to the following jobs:

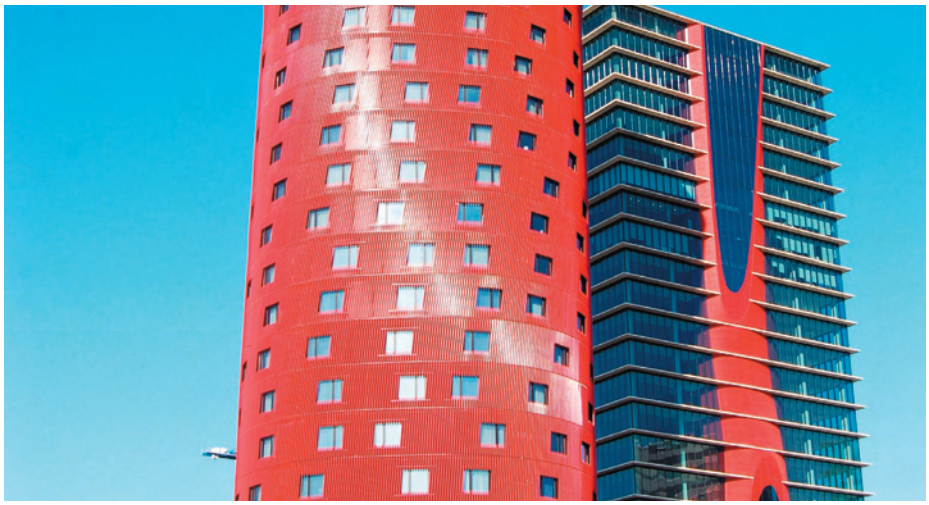
• The Fomento Quality Award for project excellence in 2010 in Building goes to the Hotel Porta Fira, a project belonging to the Cataluña Building II office, Zone III.

• The Fomento Quality Award for project excellence in 2010 in Civil Engineering Work goes to the Madrid Railway Network's New Puerta del Sol-Gran Vía local train station, built by the Zone IX Transport office.

• The 2010 Fomento Innovation Award goes to the new tubular façades on the Hotel Porta Fira, belonging to the Cataluña Building II office, Zone III.



Sol Station cavern, Madrid



Hotel Porta Fira, Barcelona

Prizes for the Civil Engineering School's top three students

The FCC CONSTRUCCIÓN prizes in acknowledgement of the top three students of the Polytechnic University of Madrid School of Civil Engineering's Class of 2010 were handed out by José Mayor Oreja, chairman of the company, to Abraham Laguna Cubero, first in his class, León Morera González, second, and Borja Regúlez Pérez, third.

These prizes, established in 1993, accord to each winning student a sum of economic aid to help the student in his or her academic career.

The prize-giving ceremony was held on 15 February last at the school auditorium. The ceremony was attended by the chancellor of the Polytechnic University, Javier Uceda Antolín, and the director of the School of Civil Engineering, Juan A. Santamera.

The first phase of work on the Zaragoza Tram is finished

Empty-train test runs begin



Control centre of Zaragoza Tram

On 18 February testing got under way on Line 1 of the new Zaragoza tram system, after the conclusion of the work involved in the first phase. These simulations, known as "empty-train test runs", will continue until 19 April, the date when commercial operation is scheduled to begin.

During the test run period, which began on 18 February last, trams will be run up and down the entire line, from Valdespartera to Gran Vía, and will be halted at all stops for the required 20 seconds' time before resuming motion. This will simulate the actions the tram will have to copy in future, including running in reverse, in case that is ever necessary, and manoeuvres in response to specific situations that will occur during operation. All testing is managed from the Central Control Station located at the Valdespartera tram house, where the signals to all the line's rolling stock and infrastructure are controlled.

Line 1 is divided into two phases of approximately the same length. The second phase of the tram project will begin in June 2011.

The new Zaragoza tram is managed as a public service by a partially publicly owned company, 20% of whose shares are held by the Zaragoza City Council, while 80% are in the hands of a private shareholder named TRAZA, made up of several companies, one of whom is FCC (holding 16.6%).

The partially publicly owned company engaged the FCC-ACCIONA joint venture to design the project and build it, including railway systems, for a total budget of 204,740,000 euro.

The public service management contract was awarded in July 2009, and construction began one month later, on 18 August, after the design had been submitted to and approved by the Zaragoza City Council.

The first phase has been completed within the 18 months stipulated in the contract. It has been only 19 months from the awarding of the public service management contract and organization of the partially publicly owned company to the completion of work and commencement of empty-train test runs. That is a real record.

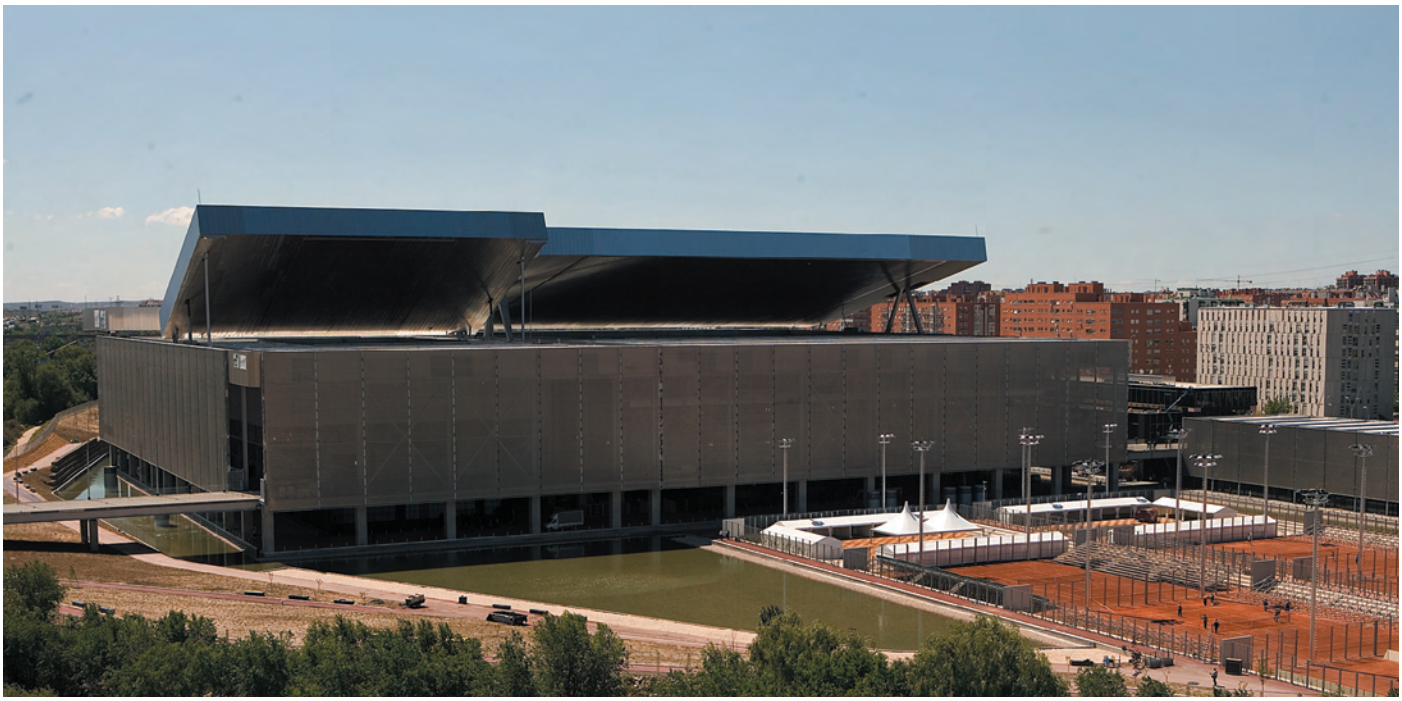
FCC's tram experience

FCC has a great deal of experience in tram infrastructure. At present it is involved in the construction of Line 1 of the Murcia tram system under a 40-year concession awarded by the city council.

It also built phase one of the Alicante tram system; the tram work in Parla, Madrid; the Trambaix (a tram line between Diagonal and Sant Feliu de Llobregat) and the Trambesòs (in the Eixemple and San Martí, San Adrià districts of El Besòs and Badalona, Barcelona); the infrastructure for the Trinitat-Can Cuias light rail in Barcelona; and the Tenerife light rail system.

Moving structures at FCC Construcción

By Luis Viñuela, Manager of Special Systems (Technical Services)



Caja Mágica, Madrid

There is a huge field of development today in moving structures, because moving structures make it possible to increase the amount of function that can be got out of civil engineering works and buildings.

In Spain, moving structures first began to be built as the roofs on bullfighting rings, to enable the same locations to be used for other kinds of shows as well. Probably the first roof of this type was built in 1989 to cover the Zaragoza Bullfighting Ring. That structure, however, is not rigid; it is a folding fabric roof that can be gathered up in the centre of the ring.

FCC has done a number of retractable roofs, such as the roof on the Leganés Bullfighting Ring in 1997, one of the first roofs of this type; the temporary roofs used during the refurbishment of the Prado Museum in Madrid; and recently the retractable roofs on Madrid's Caja Mágica, the world's foremost example of this kind of project.

When plotting and later building projects of this sort, it is necessary to tie together the structural concept and the design of the moving system. Whether systems are driven hydraulically or electromechanically, the problems that have to be foreseen in their structural design (the big difference between moving structures and fixed structures) are very similar and are in fact shared by buildings and civil engineering works alike. In our experience, the most important problems to solve in terms of design are these:

- The mechanism components must be prevented from locking up, which could hamper the structure's movement. Thus, freedom of dilation must be allowed, and the mechanisms' error tolerance and the structure's construction tolerances must be factored in.

- It must be tolerant to its different failure modes over its entire useful lifetime, so as to avoid potential personal and structural damage, which would stop the structure from moving.

- Control and maintenance problems must be anticipated.

FCC Construcción's Special Works Service defines and develops both aspects at once: It designs projects and provides on-site organizations with support for project construction.

Some of the projects that have built from designs drawn up by other engineers or architects and some of the projects whose structure and mechanism design and construction have been done directly by FCC include: the bascule bridge in Barcelona Harbour, the bascule bridge at Tarragona Harbour, the retractable gates and bridges at the new lock at the port of Seville and the roofs of the three tennis courts at the Caja Mágica in Madrid.