Studio DE MIRANDA Associati is a Consulting Engineering Company specialising in the design of Bridges and Structures.

Founded in 1968 by Professor Fabrizio de Miranda, the firm operates in Milano and Rio de Janeiro in the field of structural design, under the management of the senior partners Mario de Miranda and Elena Gneccchi Ruscone.

The continuity of the design experience, developed through fifty years of studies and designs, often characterized by innovative ideas, represents the strong philosophy of the Company.

Studio DE MIRANDA Associati has built a wide design know-how in many areas of bridge and structural engineering over the years, and is highly specialised in design and construction of Suspension and Cable Stayed bridges.

The Company designed and has been involved in the construction of more than 20 Cable Stayed Bridges, many of which are long span, all over the world.

Bridge Design, from Concept to Construction
- Cable-Stayed
- Suspension
- Girder
- Arches
- Road bridges
- Railway bridges
- Footbridges
- Pipeline bridges

Design of special structures
- Towers and stayed masts
- Special buildings structures
- Hangars
- Helidecks

Construction Engineering
- Conception and study of Construction Methods
- Analysis of staged construction of bridges built by span by span methods, or:
- Precast full span box girders
- Longitudinal launching
- Progressive cantilever construction
- Construction by rotation
- Construction design and analysis of cable stayed and suspension bridges
- Aerodynamic stability analysis
- Design of special equipment for the construction of bridge decks:
- Self launching trusses and self launching formworks
- Any type of special structure and method for allowing and easing the construction of bridges
- Supervision and control of bridge construction

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Studio de Miranda
1968 //
50 years
2018
Bridge Design
**Storstrom Bridge // Denmark**  Road and high speed railway Viaducts and Cable Stayed Bridge with total length of 3832 m. Design and Construction International Tender awarded in 2018, end of construction expected in 2022.

**Stadano Suspension Bridge // Italy**  Road suspension bridge with steel-sting-tie deck and three concrete towers; the two main cables converge in one mast, and all the deck hangers are inclined. Constructed in 2017.

**Basra Cable Stayed Bridge and Viaducts // Iraq**  Steel structure with horizontal constant blend; constructed by 'double longitudinal launching. Opened to traffic in 2017, total length of 1188 m.

**Ponte del Mare // Pescara // Italy**  Pedestrian cable stayed bridge with inclined mast, double curved deck, steel structure. 2009

**Curitiba Cable Stayed Viaduct // Brasil**  Steel-concrete composite structure, central plane of stays built in 2014 with longitudinal launching of the deck and vertical rotation of the mast.

**Watermark image: Hand drawn cross section of Rande Cable Stayed Bridge, 1977**
Innovation is

Forefront Structural Systems

- First use of High Performance Steel in bridge construction in Italy occurred in 1970, for the construction of the one kilometre long, Entella Bridge, where high-strength steel, 690 MPa class, T.L. type, was adopted in highly stressed sections, realizing a forerunner Hybrid Girders Bridge.

- Steel-concrete composite structures is today a well-consolidated technique, but in the 60s the standard was of steel or concrete. The introduction of this system in Italy, for road and railway bridge, was carried out by F. de Miranda; first composite bridge was the Chiese Bridge in 1956, and many others followed up.

- The Indiana Bridge, in Florence, first steel cable stayed bridge in Italy, also has two other interesting primacies: it was the first earth-anchored and the first twin-deck cable stayed bridge in the world.

- In Europe the first steel bridges seismically isolated by elastic restraints were the Stazzo and Vallone viaducts, designed in 1984. And the first public building seismically base isolated was the Civic Centre of Monte d’Ago near Airolo.

- The main concepts of modern long span cable stayed bridge, were introduced in 1969 by Fabrizio de Miranda in the Messina Bridge Design for the International Competition: closely spaced and fan-shaped stay cables, stiffening transverse cables, slender and streamlined box girder, A-shaped pylons. The same concepts were adopted by the same author in the design of the Zarate–Brazo Larga Bridges in 1970, in Argentina, first long span railway cable stayed bridge, and in the Rande Bridge in Spain in 1973, the longest cable stayed bridge at the moment of its construction.

- The elevated Helidock in Turin, over the Lingotto building was an innovative large-senior structure, placed over the rooftop test track of the ancient FIAT car factory and received the ECCS award in 1997.

- The first and largest cable stayed bridge in the Caribbean, in a strongly seismic area, prone to frequent hurricanes was the Higuaín Bridge, Dominican Republic, designed by Mario de Miranda with tuned differentiated materials: reinforced concrete heavy side spans, and aerodynamic steel-concrete main span. Concrete legs and steel head were designed for the pylon.

- First long span self-launching trusses, and self-launching formworks were designed in 1965 by Fabrizio and Marco de Miranda; by means of these special forerunner equipment, the construction of many segmental span by span concrete long viaducts, was made easy and quick.

- The first large cable stayed bridge in Brazil, over the river Guama in Amazon rainforest, opened the way for a series of modern Brazilian steel cable bridges: over the São Pedro river in Aracaju; in Natal on the mouth of Potengi river into the Atlantic Ocean; and crossing the Xingu river, so joining Brazil with French Guyana, ideally linking South America and Europe.

The company has been involved in the innovation of many different aspects of bridge design over the years...

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Our Tradition

Construction Methods

- Autogeneous vertical rotation, without the aid of cranes, was conceived by Studio di Miranda Associates for the assembly of the pylons of the cable-stayed viaduct of Curitiba (Brazil) in 2013 and for the two pylons of Israa bridge (Iraq) in 2016.

- First large longitudinal launching of long span girders in Italy were accomplished for the Vallone and Stazzo bridges, with 80 m long spans, cured in situ.

- Posttensioning of steel structures by using internal disconnections was, and still is an innovative construction system. It allows turning and optimizing the girder bending moments without jacking, but simply by releasing some jacks. The Mallers Bridge, as well as many motorway overpasses were designed by Fabrizio de Miranda by using his patented method.

- Innovative and differentiated systems were conceived for the erection of many large bridges:
  - horizontal quadrotation of two half-decks on a motorway
  - a Levite bridge
  - the erection by running on the deck, rotating, shifting and lowering, of extra-large segments, in Higauin Bridge, Dominican Republic.
  - the automated replacement of old railway track girders with new ones on the Mercato Main railway, in Alba Adriatica (Italy).
  - macro active-structures and macro segments installation devices for the erection of Delhi Signature Bridge
  - the quick erection of the 200 m deck of a Suspension Bridge in 20 days, in the Sambodhri Bridge
  - the designed erection of macro pre-stressing concrete girders without mega-crane, in the Storeiholm Bridge.

- Original and innovative methods were used for the construction of the Storeiholm Suspension Bridge in Denmark: progressive posttensioning of steel viaducts, special lowering frames, special temporary joints between segments, vibration control systems. All these methods were specifically designed and successfully used within the Construction Engineering task.

... and in the conception of other systems making smart and simple many complex projects.

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