

# International Ideas Competition

Concurso internacional de ideas

## 110th Anniversary of Félix Candela (2010–2020)

The Structural Art of Thin Concrete Shells / El Arte de las Estructuras Laminares /

**7.500€ AWARDS**  
Sponsor SIKA, SAU





# International Ideas Competition

Eduardo Torroja Foundation with the collaboration of CSCAE/ Higher Council of Collegues of Architects of Spain, the General Directorate of Architecture, Housing and Land of the Ministry of Development, and Madrid Polytecnic University through Superior Technical School of Architecture and Superior Technical School of Engineering, launches the “International Ideas Competition” for students in order to commemorate the **110th Aniversary** of the birth of the famous Spanish architect **FÉLIX CANDELA (1910–1997)**

The sponsoring of this competition is carried out by the company SIKA, SAU, Spain.

## Diffusion of Competition Announcement

The rules of this competition will be published through the web pages of the organizations that announce and promote it, as well as all those, Spanish or foreigner, that want to participate and provide support.



Fundación Eduardo Torroja  
[www.fundacioneduardotorroja.org](http://www.fundacioneduardotorroja.org)



Consejo Superior de Colegios de Arquitectos de España/ CSCAE  
[www.cscae.com](http://www.cscae.com)



Ministerio de Fomento, Dirección General de Arquitectura  
[www.fomento.gob.es](http://www.fomento.gob.es)



Universidad Politécnica de Madrid  
[www.upm.es](http://www.upm.es)



Escuela Técnica Superior de Arquitectura  
[www.aq.upm.es](http://www.aq.upm.es)



Escuela Técnica Superior de Ingenieros de Caminos, Canales y Puertos  
[www.caminos.upm.es](http://www.caminos.upm.es)



Sika, SAU, España  
[www.sika.es](http://www.sika.es)

## Directors of the Organization

Pepa Cassinello, Director of Eduardo Torroja Foundation

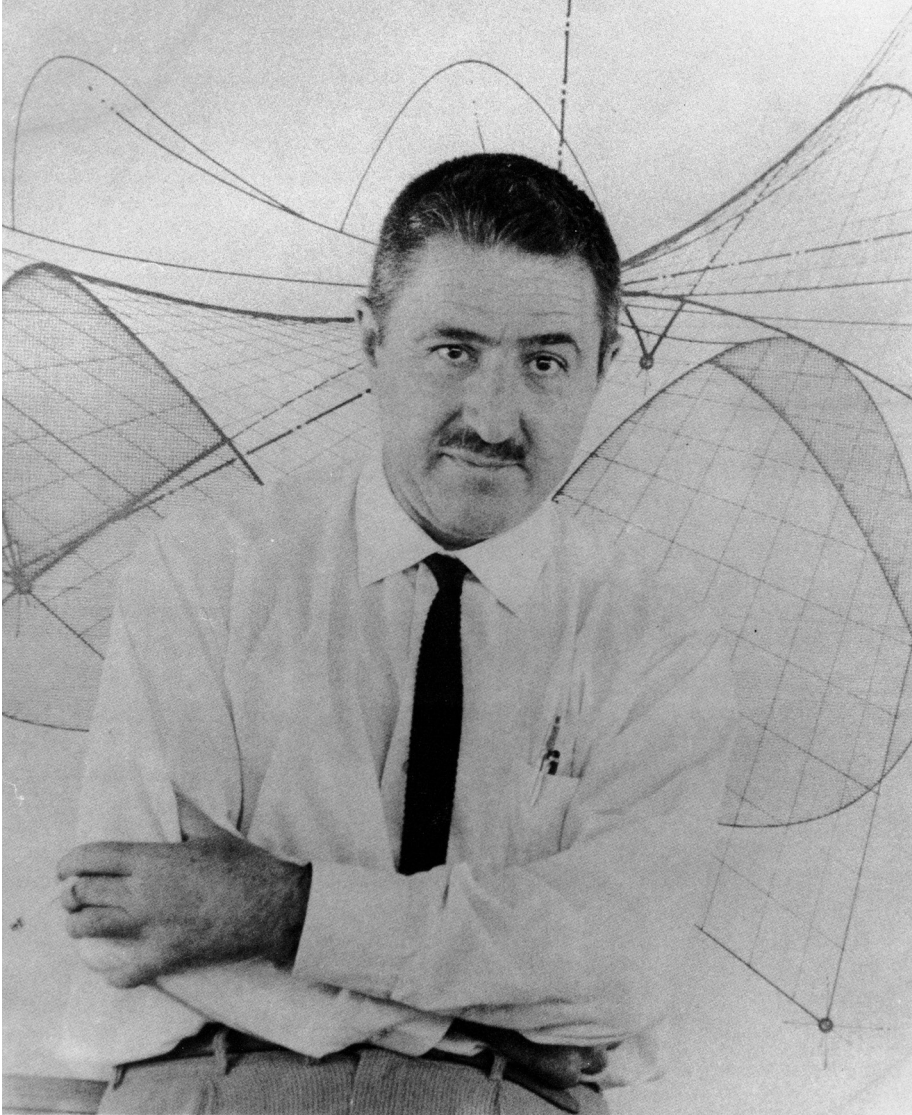
Fernando Vela Cossío, Deputy Director of Academic Planing and Relations with Latin America. ETSAM–UPM

## Secretaría–Contacto del Concurso

[contacto@fundacioneduardotorroja.org](mailto:contacto@fundacioneduardotorroja.org)

Enrique Ramírez, Collaborator of Eduardo Torroja Foundation

# Félix Candela 1910 –1997



Felix Candela Outeriño has been one of the architects, of Spanish origin, who has achieved greater international fame. His contribution to Modern Architecture represents the most extensive legacy of thin concrete shell structures ever built.

He was born in Madrid on January 27, 1910, and his life was linked to the historical surroundings of the city. His parents had a shoe store –Calzados Candela– on the “Calle Mayor”. He graduated as an architect in 1935, at the “Escuela Técnica Superior de Arquitectura de Madrid”.

His interest in the concrete shell structures, which Eduardo Torroja was building in those years (Hipódromo de la Zarzuela, Frontón Recoletos and Mercado de Algeciras) increased his enthusiasm for participating in the “**Shell Adventure of Modern Architecture**”, which were revolutionizing the world of Architecture and Engineering at international level. Build concrete shell structures was his dream.

Felix Candela went into exile to México after the Spanish Civil War. There he began the construction of concrete shell structures in 1949, where he founded his construction company “Cubiertas Ala” in 1950. In the international context of the 50–60s, Félix Candela acquired his fame with the construction of more than 800 –Thin Concrete Shells–, which he endowed, not only with a rational and optimal resistant form, but also of a modern sculptural beauty. Not surprisingly, Ove Arup, Frei Otto and David P. Billington, defined his work as **Structural Art**.

He conquered the slenderness of the structural form, at a time when reinforced concrete was still being developed, when designing and building new structural forms, with this material, it was really “an adventure”.

He built different laminar structural forms but fundamentally he used the hyperbolic paraboloid, since it is a ruled surface of double curvature – resistant by form– and of simple construction on a wood formwork of boards that follow the straight generatrices of its surface.

In 1953 he began his teaching activity. He was professor of architecture at the “**Universidad Nacional Autónoma de México**”, subsequently, in 1971 he was appointed professor at the **University of Illinois**, Chicago, where he moved to live, obtaining American nationality in 1978.

Since 1955 Felix Candela collaborated with the **Instituto Técnico de la Construcción y del Cemento**, as well as with the IASS “**Internacional Association for Shell Structures**” (1959), both institutions founded by Eduardo Torroja in Madrid. Among the many distinctions and awards he received are: 1961 Gold Medal of the Institution of Structural Engineers in London, 1961 August Perret Award of the International Union of Architects, 1963 was named honorary member of the IASS with Pier Luigi Nervi, 1991 Gold Medal of Architecture of the Spanish CSCAE, in Madrid, in 1992 he presided the International Academy of Architecture, in 1994, the university where he studied, “Universidad Politécnica de Madrid” appointed him doctor honoris causa.

In addition to his innovative shell structures, his legacy contains several publications that will undoubtedly be of fundamental use to students. Although we are many architects and engineers who have written about his work worldwide, and these publications will be also useful for students, nothing better than learning to know his thoughts and works through his own words.

His life was between Spain, Mexico and the United States. He had all three nationalities. Félix Candela died on December 7, 1997 in Durham, North Carolina.

On the occasion of the Centenary of his birth in Madrid, in 2010 the “Universidad Politécnica de Madrid” paid homage to him with several activities, including a monographic exhibition, and catalogue book, under the title “Felix Candela / Centenario–*Centenary*: La Conquista de la Esbeltez / *The Achievement of Slenderness*” of which I had the honor of being its curator. It was inaugurated in the vault room of the “Palacio Conde Duque” of the Madrid City Council and later it was exhibited at the Technische Universität in Berlin with the collaboration of Mike Schlaich and Annette Bogle, and at the Munich Deutsche Museum with Dirk Bühler. Currently virtual exhibition of CEDEX, Spanish Ministry of Development ([www.museovirtual.cedex.es](http://www.museovirtual.cedex.es))

This year 2020, when 110 years after his birth, Madrid, his hometown, returns to pay tribute through the convening of this International Ideas Competition for Architecture and Engineering students and of the Exhibition “**110th Anniversary of Felix Candela: The Structural Art of Thin Concrete Shells**”, in which all the works submitted to the international idea’s competition will be collected, as well as the names of all the collaborating professors and universities.

On this occasion we intend to join our call effort with all national and international universities that want to participate by encouraging their students to collaborate in this tribute.

For this reason, we have stated that, after the jury’s decision, in the month of May of this year 2020, on the **same day**, all participating universities disseminate digitally on their websites, and physically, by printing on paper –if it is possible–, this **Exhibition that we will have made among all**; students, professors and representatives of all the institutions, companies and universities involved.

The network provides us with a powerful and effective means of communication to make visible this deserved tribute to Felix Candela on its 110th anniversary. A way to keep his legacy alive, making it known to the new generations of students who are studying today in our universities.

# International Ideas Competition

## 1. Objective and destination of the ideas competition

The fundamental objective that the students of the Polytechnic Universities, at international level, are directly involved in this tribute to the architect Félix Candela and know, not only his work but also that invisible part of his legacy that has made him an international reference of the new generations of architects and engineers – his model of thought and action –, in which it is clear that the “magic” of success is nothing more than the illusion and effort to innovate.

In order to continue spreading the work of this distinguished architect of Spanish origin, an Exhibition is planned under the title “**110th Anniversary of Felix Candela: The Structural Art of Thin Concrete Shells**”. In this way, the effort made by all the participants (students, collaborating professors, organizations and organizing and collaborating universities) will contribute to continue disseminating their legacy among the new generations.

## 2. Who Can Be Presented to the Competition

**2.1** Any student enrolled in official university studies in architecture or engineering in any country in the world may submit to the competition.

**2.2** Each work submitted to the contest may be carried out by a single student or by a group of several students without limitation of number.

## 3. Pre-Registration

In order to compete, it is **necessary and essential** to proceed first to make the **free pre-registration**, by sending an e-mail to the address: [contacto@fundacioneduardotorroja.org](mailto:contacto@fundacioneduardotorroja.org)

In this email, the following information should be sent in a **pdf**:

- Name and surname of the contestants
- ID or passport number (foreigners)
- Emails of the contestants
- Name of the Technical School or University in which each contestant is enrolled

**The name of the pdf file must be:** Pre-Registration followed by the first name of each of the students in the group, or in the case of being a single contestant, both last names and first name.

Examples:

- Pre-registration of a group of three contestants: Pre-registration Álvarez, Rodríguez, Palomar.
- Pre-registration of a single contestant: Pre-registration Gómez Plaza Enrique

**Important:** The prescription does not require you to submit any work, however, to be able to submit to the contest you **must be previously registered**.

**Pre-Registration period: January 27 to April 2, 2020**

**Nota:** Students will receive a confirmation email and pre-registration number

## 4. Theme: Advertising Poster and Drawings (Structural Geometric Shape)

4.1 The Ideas Competition has two different sections::

- A) Poster announcing the anniversary of the 110th anniversary of the birth of Felix Candela
- B) Drawing on one of Félix Candela's works, as a result of the geometric analysis of its resistant form and / or its specific structural behavior

4.2 Each of the sections listed in the previous point are independent of each other, being able to present the same students to one of them or to both.

## 5. Section A: Advertising Poster

5.1 The objective of this section is the design of an original Poster announcing the anniversary of the 110th anniversary of the birth of Félix Candela (1910–2020).

5.2 The Poster will be made to be exposed in an upright position and its measurements will be 50 centimeters wide by 70 centimeters high. (50 x 70)

5.3 The reason represented in the poster is the free choice of the contestants, as well as the representation technique, the style and the material with which it is made.

5.4 Only the following text should appear on the poster: **Félix Candela 1910–2020**  
The type, size, and color of said text is freely chosen by the author or authors of the poster.

5.5 In the event that the poster is made with manual pictorial techniques (colored pencils, oil, acrylic paint ..) it must be scanned at good resolution to be sent in pdf to the contest.

## 6. Section B: Drawings (Structural Geometric Shape)

6.1 The objective of this section is to make an original drawing of one of Félix Candela's works.

6.2 You can freely select the work object of the drawing, as well as the type of technique (pictorial or digital) and the use or not of color.

6.3 The participating student must sharpen their ingenuity and imagination when deciding the drawing they want to develop, as well as "what aspect" of Félix Candela's work they want to highlight; geometric, constructive and / or structural

Given the geometric and structural richness of Candela's works, drawings consisting of spatial visions of pure geometry, drawings can be made as a continuous sequence in which the generation of the final form is reproduced, formwork drawings, or schematics structural operation.

Also included in this section are the drawings obtained as a result of structural analyzes performed with different methods, such as the application of the Finite Element Method (MEF).

6.4 The Drawing, like the Poster, will be made to be exposed in a **vertical position** and its measurements will be 50 centimeters wide and 70 centimeters high. (50 x 70)

6.5 In the event that the poster is made with manual pictorial techniques (colored pencils, oil, acrylic paint ..) it must be scanned at good resolution to be sent in pdf to the contest.



## 7. Delivery of work to the contest

### 7.1 Format and Sending by Email

All the works carried out for the Contest, whether Poster or Drawing, must be sent by email in a **pdf (maximum 20 MB)** under a **LEMA** in order to maintain the anonymity of the authors.

They must be sent to the “FUNDACIÓN EDUARDO TORROJA” email: [contacto@fundacioneduardotorroja.org](mailto:contacto@fundacioneduardotorroja.org)

The **name of the pdf file** sent to that email must be called the same as the **LEMA** chosen by the authors or author of the work. The names of the authors cannot be put or the delivery of the work will be invalidated.

The **LEMA** must be different from the name of Felix Candela or one of his works so that there are no coincidences and confusion when awarding the prizes.

The **LEMA** must consist of one or two words whose meaning is understood only by the authors. Example pdf name (LEMA): DAWN

**Note:** Only the originals of the 6 works that were winners should be printed and sent by post to the Eduardo Torroja Foundation, in the event that their realization has been manual and not digital.

### 7.2 Collaborating Teachers

In order to maintain the **anonymity** of the authors of the work, each student or group of students who submit papers to the Contest must contact a **Professor from their University** and deliver by email the LEMA of their work and data of all students participating in the performance of said work that will have been included in the Pre-registration (see section 2).

There may be several **Collaborating Teachers** in the same University and / or Technical School. Their names will appear in this document of the call.

Each collaborating Professor will be the one who sends to the email of the “FUNDACIÓN EDUARDO TORROJA” a pdf with the list of LEMAS and data of their authors: [contacto@fundacioneduardotorroja.org](mailto:contacto@fundacioneduardotorroja.org)

## 8. Collaborating Universities and Teachers

The success of the announcement of this Contest Tribute to Felix Candela on its 110th Anniversary depends to a large extent on the work of the Collaborating Teachers from different universities.

The role of these teachers has three different aspects:

- a) **MOTIVATE** their students to present themselves for the Contest, for which they must first know the work of Félix Candela.
- b) **SEND** the data of the student authors of the different works submitted by them under a LEMA.
- c) **EXHIBIT** digitally through a link from the website of your University or Technical School to the website of the EDUARDO TORROJA FOUNDATION the exhibition “110th Anniversary of Félix Candela Thin Concrete Shells” that will be done collecting all the works submitted to the contest International, as well as the names of all the collaborating professors and their universities, who will be attached to this tribute through this exhibition. And if possible, collaborate with your university to physically EXHIBIT this exhibition, printing its content. For this, the EDUARDO TORROJA FOUNDATION will send each collaborating professor a pdf with the exhibition.

In recognition of their important work, all the **collaborating professors will be curators** of this exhibition in their respective universities and in the group of all those that are exhibited internationally.

## 9. Delivery time (posters and drawings)

**Last day of delivery of the work by email: 15 April 2020**  
[contacto@fundacioneduardotorroja.org](mailto:contacto@fundacioneduardotorroja.org)

## 10. Awards and distinctions

### 10.1 Monetary awards

The monetary prizes will be financed by SIKA Spain, to whom all the organizing and collaborating entities thank for their support in the tribute and dissemination of the distinguished work of the Spanish-born architect Félix Candela. A timeless reference of Architecture and Engineering at international level.

A total of **7.500 euros** will be awarded distributed in 6 Awards  
2 prizes of 2000 euros + 2 prizes of 1000 euros + 2 prizes of 750 euros

#### Section A) ADVERTISING POSTER

**1st Prize 2,000 euros + 2nd Prize 1000 euros + 3rd Prize 750 euros**

#### Section B) DRAWING

**1st Prize 2,000 euros + 2nd Prize 1000 euros + 3rd Prize 750 euros**

All winning students will also receive a copy of the Eduardo Torroja Museum catalog book in the language they request: German, French, English, Italian, Japanese, Portuguese, or Russian (this last edition pending in 2020)

### 10.2 Contestants / Certificates

All the contestants, for the fact of having presented a work, which will be exhibited in the International Commemorative Exhibition "**110th Anniversary. Felix Candela: The Structural Art of Thin Concrete**", will receive a certificate that will recognize their participation in the Contest, as well as in the Exhibition.

### 10.3 Collaborating Teachers / Certificates and Catalog Book

All Collaborating Teachers will be curators of the exhibition "110 Aniversario. Felix Candela: The Structural Art of Thin Concrete Shells in their respective universities.

They will receive from the "FUNDACIÓN EDUARDO TORROJA" a copy of the **Eduardo Torroja Museum catalog book** in the language they request: German, French, English, Italian, Japanese, Portuguese, or Russian (this last edition pending in 2020), as well as a certificate that it will recognize his participation in this international tribute to Felix Candela.



## 11. Assignment of Copyright

Participation in this contest implies the free transfer of the rights of Image by the authors to the Eduardo Torroja Foundation for an indefinite period of time, being able to transfer them to third parties, as well as disseminate and reproduce them not only in the planned exhibition, but also in as many publications as they deem appropriate, whether digital or physical (exhibitions, brochures, magazines, books, etc.), using all the technical means and supports known at present, particularly written, audiovisual and electronic media, including internet, and those that could Develop in the future. This transfer of image rights has no geographical limitation of any kind.

## 12. Jury

The jury will be formed by representatives of the different organizing institutions, as well as by a renowned pictorial artist.

We look forward to the participation of the following members:

President:

José Antonio Torroja, Presidente de la Fundación Eduardo Torroja

Vowels:

– Dirección General de Arquitectura, Vivienda y Suelo del Ministerio de Fomento de España

Javier Martín Ramiro, Director General

– Consejo Superior de Colegios de Arquitectos de España

Laureano Matas Trenas, Secretario General

– Universidad Politécnica de Madrid

Fco. Javier Jiménez Leube, Vicerrector de Comunicación Institucional y Promoción Exterior

– Escuela Técnica Superior de Arquitectura UPM

Manuel Blanco, Director

– Escuela Técnica Superior de Ingenieros de Caminos, Canales y Puertos UPM

Francisco Javier Martín Carrasco, Director

– Fundación Eduardo Torroja

Pepa Cassinello, Directora

– Artista pictórica

Carmen Pinart

– SIKA SAU, España

Gonzalo Causin Sánchez, Director General

Once formed the jury will be disseminated its final composition, for the knowledge of the contestants. The dissemination will be done through the web pages of the convening organizations.

## 13. Dissemination of Results

The results of the contest will be disseminated through the web pages of the organizations that are the authors of the call, as well as the press and technical journals.

Regardless of this dissemination, the authors of the winning works will be communicated directly.

## 14. Delivery of Prizes

The awards ceremony will be held at a public event in Madrid, whose place, date and time will be previously announced.

**Note: The organization will not be responsible for the travel and accommodation expenses of the winning contestants..**