

PROFESSIONAL LIGHTING DESIGN



Magazine for professional lighting design

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¡Nunca más! - Never again!

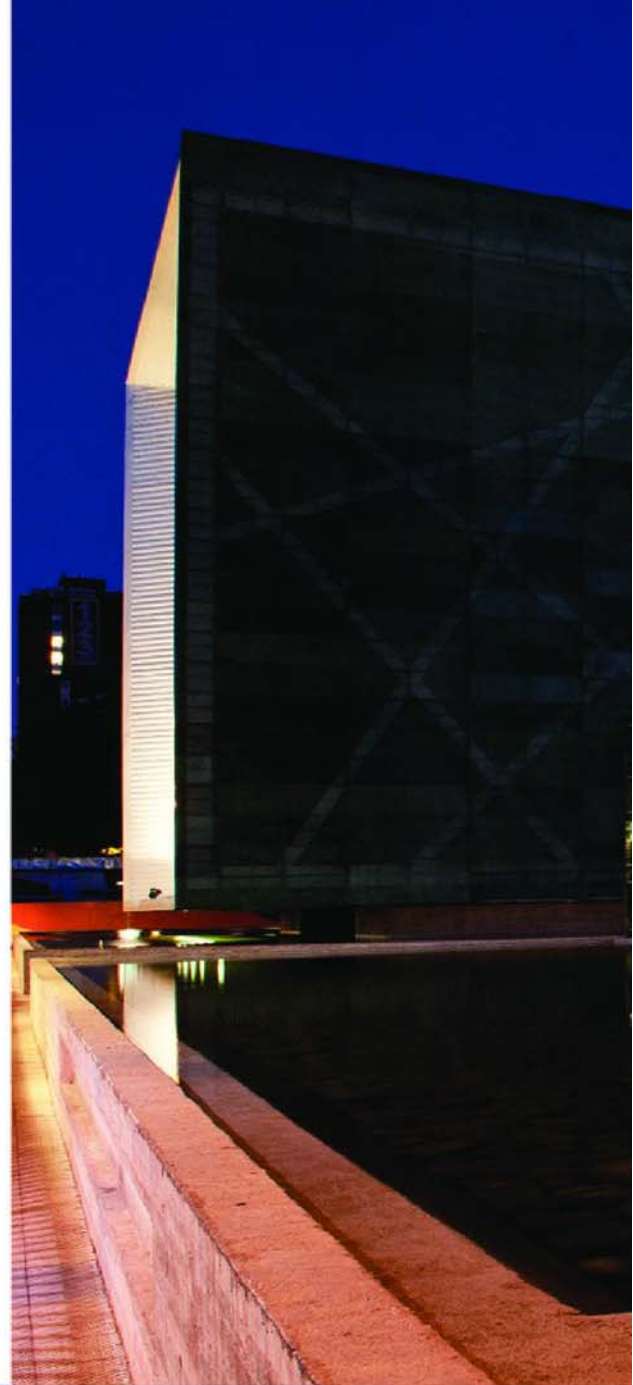
The Museum of Memories and Human Rights in Santiago de Chile/RCH offers Chileans the chance to remember.

Text: Joachim Ritter
Photos: Alfredo Cacciani

The mists of the past are slowly beginning to clear in the Chilean capital. Twenty years have elapsed since the end of the military dictatorship in Chile. During the time under Augusto Pinochet's rule more than 40,000 people were

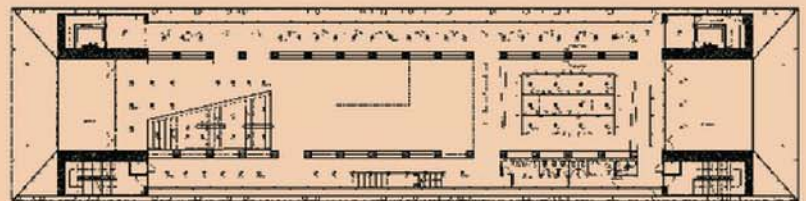
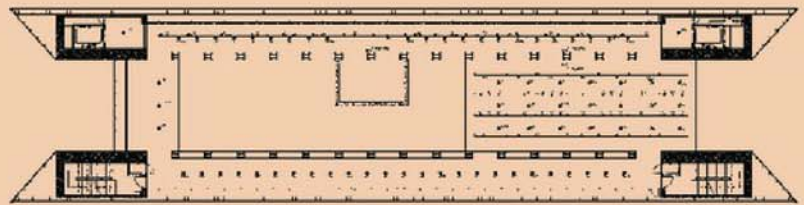
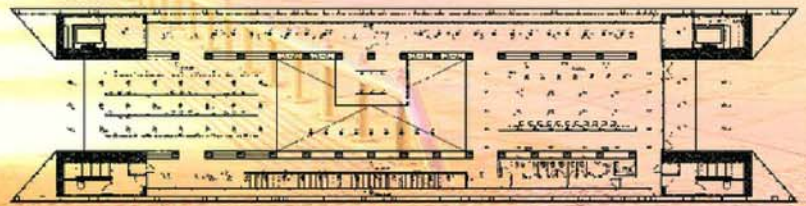


imprisoned, tortured and threatened, and over 4000 people were murdered. The Museo de la Memoria y de los Derechos Humanos is in memory of all the victims of the military regime and at the same time serves to remind the world that such terrible crimes should never be allowed to happen again. ¡Nunca más! The content of the exhibition is both factual and emotional. The team of designers from LLD Limarí Lighting Design contributed in their own way to support the message – using light. But it was not an easy ride.



The exterior view of the Museum of Memories and Human Rights reveals a stunning facade structure. The design incorporates the direct juxtaposition of freedom and imprisonment. The facade is on the one hand transparent and permeable, while the bars across the glazing can clearly be interpreted as prison features.





Ground plans and lighting layouts.



Top: the ramp leading from the Metro station to the entrance. The mural was designed by the Chilean artist Jorge Tacla. The lighting designers were confronted with a situation where recessed downlights had already been installed and were thus only able to add lighting to illuminate the wall adequately. The track-mounted spotlights look a little out of place at first glance. It was critical for the lighting designers to find the right solution: spots with adjustable glare shields for optimum light control and to avoid glare.

Centre and directly above: the large exhibition walls in the entrance area were predominantly lit uniformly and vertically. The overall impression and general view were more important than accentuating individual elements.

You can spend hours walking through the museum, allowing the impressions to gradually sink in – from the military coup in 1973 to the referendum in 1988, which finally managed to guide Chile towards peace and democracy. Step by step the history of the dictatorship is told: in newspaper articles, pictures, children's drawings, interviews with victims, articles of clothing, notes from people's diaries. Hardly a day goes by when members of a victim's family do not turn up at the museum with further memorabilia from those years of terror.

The "Museo de la Memoria y los Derechos Humanos" was opened on 11. January, 2010 by Michelle Bachelet, who was President of Chile at the time and herself a victim of torture during the Pinochet regime. Before the doors opened, however, the project went through a somewhat chaotic "Latin American" phase. To understand what that meant, we need to take a closer look at the history of the overall project.

In June 2007 the Chilean Ministry of Public Works (Ministerio de Obras Públicas) launched an international competition inviting architects to submit designs for the Museum of Memories and Human Rights building, but without specifically designing the exhibition part. The winners were a team of Brazilian architects from "Estudio América" in São Paulo.

Only later, in April 2009, when the construction work was well underway did the client start looking for a design team to develop a concept for the exhibition. The architects' firm *Árbol de Color* was commissioned to do the job, and they in turn took the lighting design practice LLD Limarí Lighting Design on board to undertake an evaluation and analysis of the lighting concept to date. The lighting designers presented the results to a complete, multidisciplinary team comprising the architects, clients (representatives from the Human Rights Commission) and various consultants and officials from the Ministry. The lighting designers demonstrated that the lighting concept currently planned for the building did not relate to the structure as a museum – neither from an architectural point of view nor with respect to the intended contents. On the contrary, there were a number of defects and inconsistencies that required attention. The client expressly wanted to create a suitable place for people to reflect on and come to terms with the events that had occurred during Pinochet's regime of violence and terror, and lighting was to play a significant role in enabling this process.

LLD Limarí Lighting Design was commissioned to design the lighting for the museum at the time when the construction of the basement level was already complete and the central section was being built. The brief was twofold: on the one hand, the building owner wanted the architectural lighting to be adjusted – as far as this was possible and necessary – and on the other hand *Árbol de Color* wanted them to design the lighting for the exhibition spaces. There was little time to propose any significant changes, since this would have meant drastic changes in the electrical installations and the service pipes for water supply, heating and cooling systems, much of which had already been completed.

The lighting designers were obliged to develop the lighting concept in close consultation with the construction company. Decisions were dependent upon the

extent to which changes in the respective construction phase were still possible. Working under these conditions meant immense restrictions when designing the plans.

Exterior lighting

The main idea behind the concept for the exterior lighting was to create the impression that the central part of the building is "floating" above the sunken square. This was achieved by integrating luminaires into the double outer skin of the building to illuminate both the entrance area and the building itself. This also allowed the designers to play with the transparent qualities of the structure: the lighting affords views of the interior and gives backlight to the outer façade and the interplay of the diagonal beams. This design element speaks simultaneously of freedom of expression and imprisonment. The façade thus demonstrates transparency and permeability, although its structural design is reminiscent of the bars of a prison. It is a pity that enjoyment of the view of the building after dark is hindered by two inconveniently positioned pole-mounted luminaires in the centre of the square.

The white opaque façades at either end of the building are gently washed with warm white light. The illumination of the square and access routes to the museum building is kept purposefully discreet to draw more attention to the path along the low wall leading to the entrance steps with its rhythmic pattern of horizontal light scallops generated by wall-recessed spots, thus providing orientation after dark. Again, the electrical outlets were already fixed when the lighting designers entered the scene.

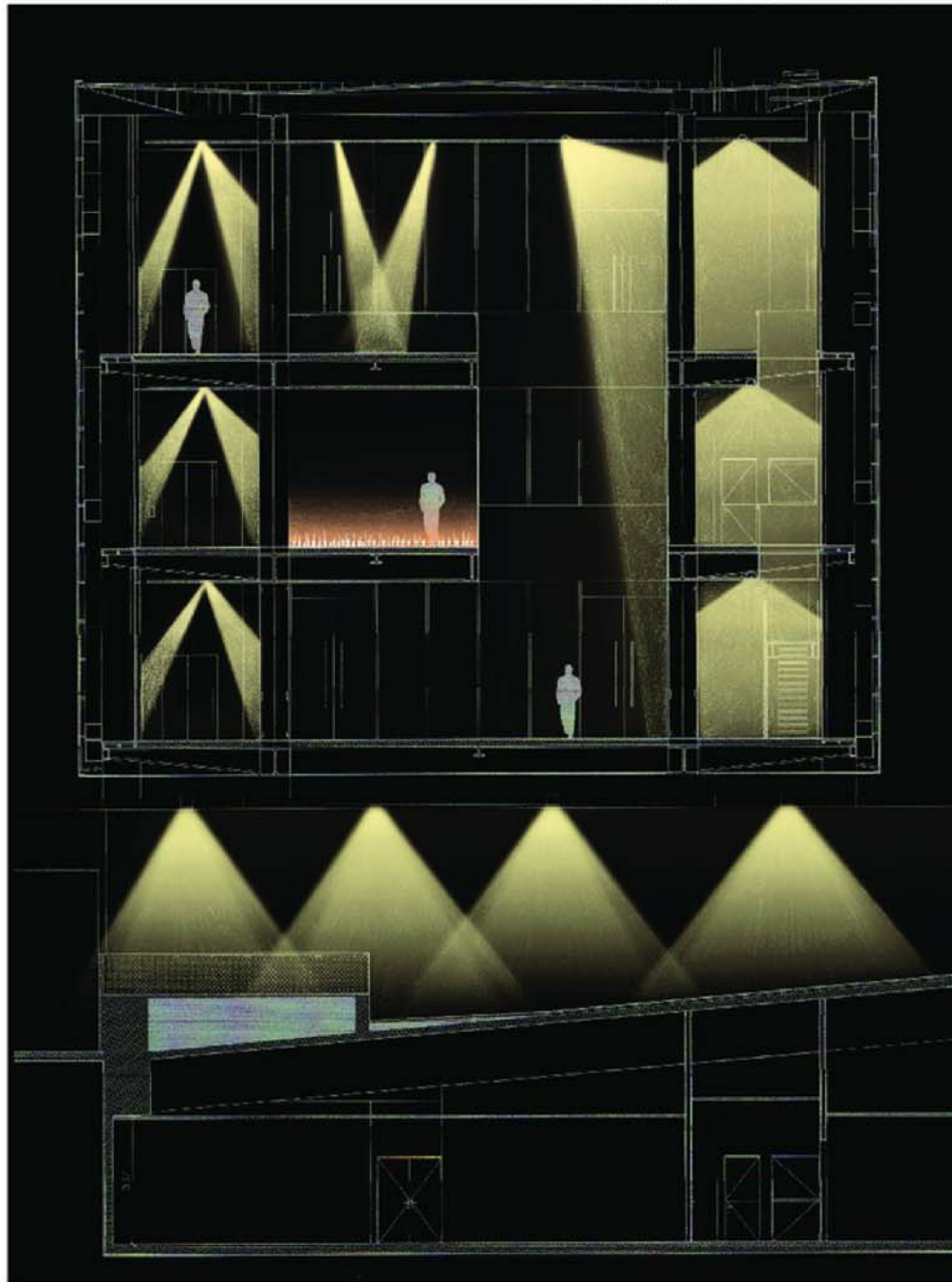
The path leading from the museum exit to the underground station was designed by Chilean artist Jorge Tacla: a mural, designed as a homage to the musician, poet and theatre director Victor Jara, who was murdered when Pinochet was in power. Here, too, the lighting designers from LLD Limarí Lighting Design had to work with a structure that had already been completed. The solution they came up with is a series of track-mounted halogen projectors equipped with adjustable glare shields. It was not possible to replace the recess-mounted downlights in the false ceiling with an acceptable alternative that would have provided adequate lighting for the mural given the distance to the wall.

The lighting concept for the museum lobby comprised illuminating the vertical surfaces, such as the map of the world with the pictures dedicated to the theme of human rights. This is achieved using ceiling-recessed wall washers. Additional dimmable recessed fluorescent downlights illuminate the central cloakroom and ticket office area.

Exhibition lighting

While developing the lighting concept, the lighting designers considered using LEDs. This idea was not pursued for budget reasons, and because at the time colour rendering was still an issue...

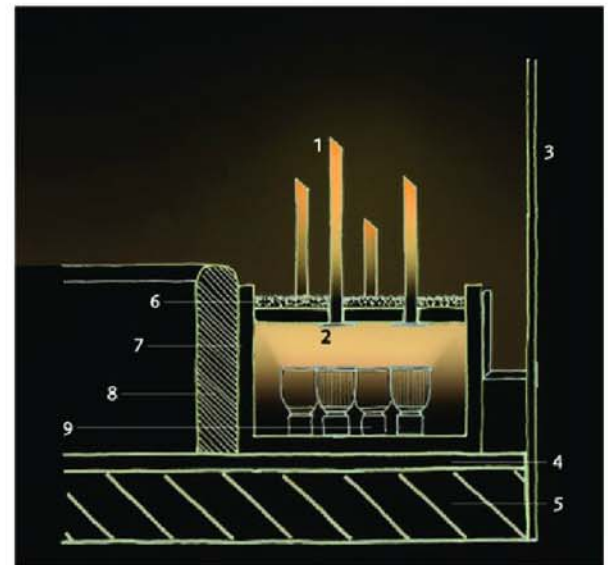
The exhibition spaces are located on the second, third and fourth floors of the central building. During the entire lighting design process the exhibition design was still being developed. The only two exhibition spaces



Overview of the different lighting solutions. Depending on the task, the lighting was designed to be spread uniformly, to accent precisely or to provide general ambient light.



The acrylic rods are a successful rendering of an abstract candle. The ends of the rods are cut at an angle. The cut surface is the brightest part and when the LEDs flicker, the rods look like an array of candles.



- | | |
|--|---|
| 1 15 mm transparent acrylic bar | 6 Stones |
| 2 Transparent acrylic base with 205 filter to attain warm colour temperature | 7 Wooden box |
| 3 Glass | 8 Concrete slab |
| 4 Floor | 9 250 7 Watt lamps (GU10) split into 6 dimming circuits connected to the control system |
| 5 Concrete slab | |



The 15-meter high portrait wall contains innumerable pictures of people who disappeared during Pinochet's régime of terror. The lighting had to be sufficiently bright to allow visitors to view the individual photos from a distance. In principle, the only solution was to light the wall from the ceiling. The pictures are mounted on glass panels in front of the wall. The lighting is focussed to create dark shadows on the wall, which contributes to the sombre atmosphere.

where the design was complete were the huge memorial wall and the room with the symbolic candles. The memorial wall is approximately 15 metres high and extends over all three levels. It contains photos of all those who disappeared or were incarcerated during the military regime. The room with the symbolic candles, which is directly opposite the portrait wall, is designed as a quiet space for people to retreat to, to be (almost) alone with their thoughts. The acrylic rods which are equipped with LEDs and glow like classic white candles, are a reference to the times when people lit candles and put them out on the streets as a homage to friends, relations and other people who had disappeared during the years under the dictator. The random positioning of the candles is reflected in the layout of the symbolic candles.

The alignment of these two exhibition spaces demanded lighting the vertical surfaces to provide optimum viewing conditions for visitors inspecting the memorial wall and to put soft 'candlelight' to the wall in the retreat space. The illumination of the large vertical surface is achieved using a series of wall washers. The room with the symbolic candles receives reflected light from the memorial wall and light from the LED candles only, which makes for a contemplative, even meditative, atmosphere. Each "candle" consists of an acrylic rod sourced with one LED with an orange filter. Rapidly pulsing the on/off current alters the rate of Hz/second and produces a flicker, which is used purposefully in this case to simulate candlelight.

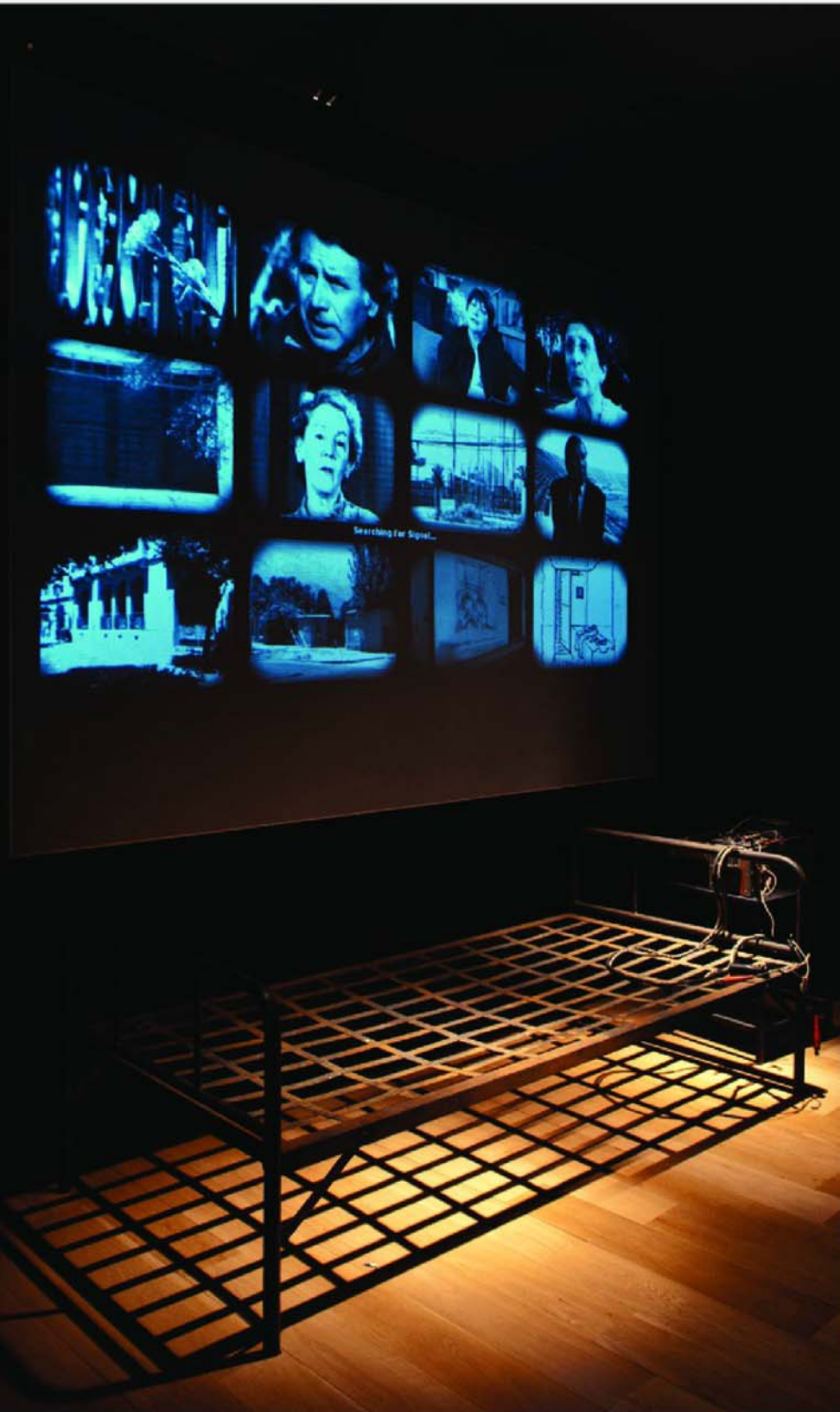
For all other exhibition spaces, which mostly consist of corridors or individual spaces, the designers opted for a flexible lighting system, keeping in mind that the museum was to house temporary exhibitions and that it



would be some time before a permanent exhibition could be organised and staged.

The room heights of the spaces vary from between four to five metres and all of the vertical surfaces bearing exhibits have glass panels in front of them, with a large part of the images, drawings and other exhibits being mounted behind the glass. The majority of exhibits displayed on the walls are two-dimensional (photos, texts, posters, and so on). It was crucial to control the light emitted in the upper sections of these glazed surfaces to avoid disturbing reflections.

General lighting is provided by dimmable ceiling-mounted luminaires, each equipped with two 26 watt fluorescent lamps. These provide the lighting for installation work, for cleaning the toilets, and serve as emergency lighting. They also serve as the background lighting for the exhibition spaces on the lower floors.



The same lighting system was applied for illuminating the circulation areas.

Complementary to this base lighting scheme, a three-circuit track system is used, accommodating two types of luminaire: on the one hand, halogen luminaires with adjustable glare shields that put uniform light over the vertical and horizontal surfaces – these wash the vertical surfaces and prevent disturbing reflections being generated in the upper section of the glass panels; and on the other hand, luminaires designed for accent lighting, which are fitted with symmetrical reflectors, interchangeable lenses and adjustable glare shields for achieving beam angles of ten to 80 degrees and narrow or ellipsoidal light distributions. The track-mounted luminaires all have integral electronic dimmers.

Lighting controls

For this project a lighting control system was developed based on Lutron's "Homework" system, which enables natural light to be used when available, regulating the consumption of electric light according to daylight availability. This inevitably means less energy is consumed for electric lighting. The control system allows static scenes or dynamic sequences to be programmed, depending on what effects are required for the respective exhibitions and how light-sensitive the exhibits are.

The lighting control system can be operated via three Touch Screens, which are located on each floor. There is one further wireless Touch Screen that can be used for programming the lighting for the different exhibition spaces. The same system also programmes the dynamic "candle" sequences.

The Museo de la Memoria y de los Derechos Humanos has proven to be exceptionally popular with around 50,000 visitors in the first six weeks. "This exhibition is designed to show what happened in our country; a lot is still unknown to many people," Director of the Museum Romy Schmidt explains. Over 40,000 exhibits and documents tell the story of Chile in those difficult and tragic years, with more evidence and items turning up every day. In spite of the relatively difficult conditions they were working under, the team of lighting designers from LLD Limarí Lighting Design have contributed towards conveying the meaning of this mass of information on an emotional level through their sensitive lighting concepts, which give people space to ponder and reflect.

Large sections of the exhibition were destroyed during the earthquake in Chile on 27. February, 2011. After immense effort, and with the aid and support of many helpers, the museum re-opened its doors on 14. August, 2011.



Project team:

Client: Human Rights Commission of Chile; Ministry of Public Works, Architectural Division
 Architects: Estudio América – Carlos Dias, Lucas Fehr y Mario Figueroa (Brazil) and Roberto Ibieta (responsible for technical planning and project architect in Chile)
 Lighting design: LLD Limarí Lighting Design – Pascal Chautard, Francisca Nicoletti, Carolina Roese.
 Construction company: Comsa de Chile

Products applied:

Exterior/end facades:
 Willy Meyer+Sohn 8873.061.000 150 Watt HID 3000K
 Exterior/low-level spotlights on the square:
 Ligman Rado Square 40363 18 Watt 3000K
 Exterior/square: Supralight Soft 150 Watt HIT 3000K
 Ramp/spots for the mural:
 Erco Jilly 77.312.000 150 Watt/220V QT-DE
 Lower floor/world map, ticket office:
 Targetti CCT Flash T54012D 2x 26 Watt 3000K
 Targetti CCT Flash 46990 2x26 Watt 3000K
 Spotlights for the portrait wall:
 Erco Lightcast 81.649.000 150 Watt HIT 3000K
 LED candles: Philips 7 Watt Master LEDs E27 3000K, dimmbar
 Base lighting: Targetti CCT Flash T54012D 2x 26 Watt 3000K
 Track-mounted fixtures:
 Erco, Jilly 77.312.000 150 Watt/220V QT-DE;
 Designed Architectural Lighting Baltic 64005 100 Watt/12V HAL

Above: specific exhibition areas were lit realistically. The prison fence is lit using fluorescent fixtures and makes the space feel very oppressive.

Left: textual information and small exhibits are accentuated using spots.