

Lighting Design + Application
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Passamonte Lighting Design, Inc. was one member of the design team charged with revitalizing the Museum of the Cherokee Indian.

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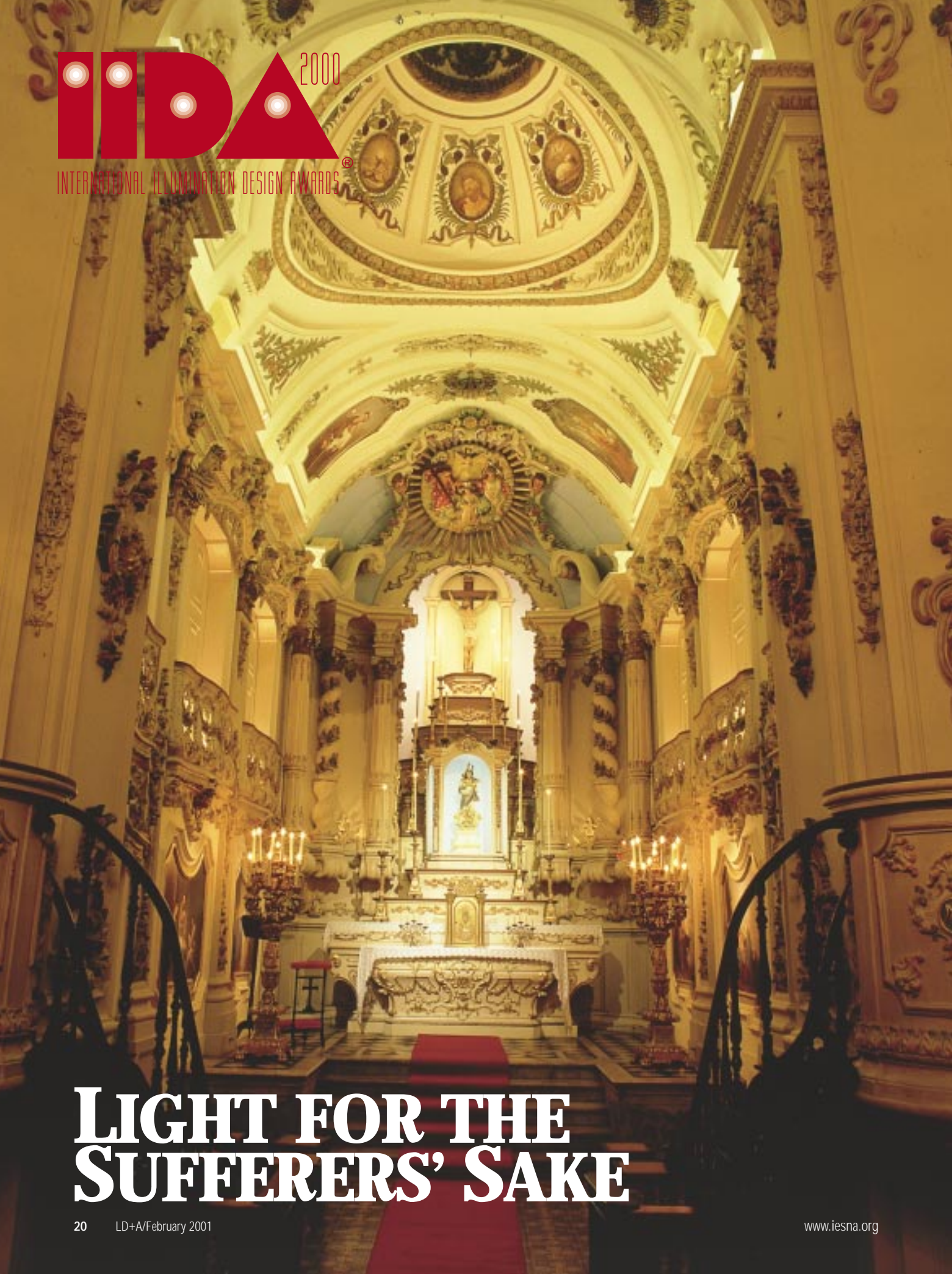


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ON THE COVER: The Tara Okamoto Museum of Art pushed the limit on innovative gallery lighting design. This sculpture is illuminated with multiple colors during a 30-40 minute session of scene variations; something previously considered taboo for museum lighting. Additionally, slide visuals on the wall are displayed for 8-10 minutes during the presentation. Photo: Shinji Miyamoto/Nasca & Partners, Inc.



LIGHT FOR THE SUFFERERS' SAKE

Like many metropolitan cities with complex geography, Rio de Janeiro features strong, ever-changing architecture. In spite of that, it remains one of the richest urban landscapes on earth — a city whose most remarkable characteristic may be its ability to arouse wonder and surprise.

Perhaps that can be traced to where the city originated. Downtown Rio is, in many ways, unplanned disorder. Rich in monumental and non-monumental Beaux-Arts architecture, the buildings house a mix of uses within solid skyscrapers. Past and present do not come together in a gentle partnership of a harmonious city, but rather, collide in the showy eclecticism of a city desperate to make itself new at the expense of the old.

Fortunately, the works of both federal and local landmark preservation commissions initiated in the 1930s have made some downtown areas a crucial part of the city's visual identity.

Located at No. 35 Rua do Ouvidor, on the corner of the Travessa do Comercio, the Church of Nossa Senhora da Lapa dos Mercadores is a true temple in its scale and hints at both simplicity and grandeur. However, it's the interior that is the jewel. Its appearance is of a chapel of eccentric plan and immense visual power. Built in honor of the Madonna of Merchants in the 18th century, the church sits in the heart of downtown Rio de Janeiro and takes part in the city's Corredor Cultural, a group of landmarks significant enough to be worth consideration as architectural space, not as mere anachronisms.

Legend and Belief

It is told that more than a thousand years ago, a mute young lady got her voice back as she came across the hidden image of Our Lady in a grotto existing in the region of Quintela, in Portugal. The chapel built in that place started the worship of the saint who would protect all those who suffer. In 18th Century Rio de Janeiro, small traders used to adore the Madonna of the Grotto at a small oratory on the Rua dos Mercadores, a downtown street whose name was — and still is — a tribute to merchants. In 1747, that group of devotees founded a Roman Catholic order and built the church. Ever since the church's consecration in 1750, Christian religious services have been held.

The church was remodeled in 1870 following the project by the architect Antonio de Padua e Castro. A new facade in Neo-Classical style (containing a triangular pediment, a bell tower, a tondo in marble and a group of images, including Saint Andrew, Saint Bernard, Saint John and Saint Felix) and the interior's Baroque ornamentation turned the former building into a subtle mix of opposing styles, interpreting human consciousness, nature and faith. Nevertheless, one of the church's highlights was preserved: the ellipse-shaped plan. A spatial articulation of extraordinary delicacy and gradual power is created by both the nave and the high altar being formed by a system of oval domes and semicircular arches.

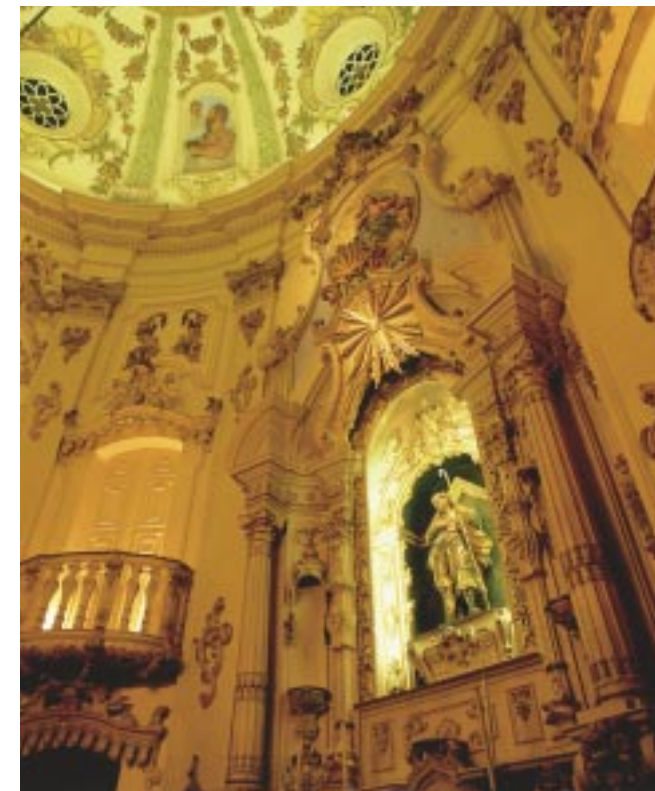
However, the present facade's unadorned geometrical purity and the relative immensity of the vista do not even approach the church's most outstanding feature: its interior. Here, one gets a "light" brief of the over-elaboration of architectural language and ornaments in the Brazilian Baroque naves and altars. Yet, the small space is immensely dignified by paintings, carvings, reliefs and frescos. In spite of a multi-colored paint job on the ceiling, which gives it a touch of a worldly small palace, the interior is graciously welcoming.

(opposite) The niche with Christ's image was illuminated with PAR 38s; floods on the back wall and a spot on the image. The focal point, the main altar, was lighted with two cross-focused PAR 30 metal halide spot luminaires mounted in the small cove dividing the nave from the altar.

To balance brightness at the main altar, large side doors on the second level are lighted from below by MR16s with diffusion filters.

(above) The secondary altars in the nave feature a combination of soft light from the T8 fluorescents (3000K) and accent lighting from two MR16 flood lamps with diffusion filters.

Monica Luz Lobo outlines the challenge of lighting this recently restored Brazilian church, with roots dating back more than 250 years. The impressive lighting design garnered the design team an Edwin F. Guth Award of Excellence for Interior Lighting Design.



PHOTOS: MARIO GRISOLLI



Restoring a Patrimony

The recent restoration began in 1996 and was carried out in two steps. The first, between 1996 and 1997, was the result of a partnership with the American Express Foundation. The first phase allowed for an investigation of the architectonic conditions, a diagnosis of the church's conservation state, a partial repair of both the covering and the roof and the start of the restoration of artistic elements (the high relief of Saint Luke; the images of the four Evangelists in the nave; the high altar's vault ornamentation, among others).

In partnership with Brazil's Bank for Economical and Social Development (BNDES), the second phase of the program (from 1997 until 1999), completed not only the restoration of the facades, but also the installation of new infrastructure systems. At the same time, the necessary facilities of the church — such as the secretary's office, toilets, pantry and a room for parishioners to light candles — were moved away from the church's body. Coverings and rooms had their restoration finished. Architectural elements (the high altar and the dome's lantern; the side altars of Saint Anne and Saint Joachim; the choir; the transept; tribunes and pulpits; stained glass windows) and pieces (the central luster; the choir's

wooden baluster; golden and polychromatic carvings; oils and murals) were all repaired in accordance with the adopted method: To treat ornaments the least and to keep ordinary damage caused by exposure, since these elements have witnessed the passage of time without threatening the building preservation.

It was a shock when the design team first entered the church; everything had almost been destroyed by water infiltration. The skylights were covered with long thin flat pieces of wood. The space was unrecognizable. One could see it was very small yet heavily ornamented.

Concentrating efforts on the use of technology towards the improvement of the church's beauty and use, the challenge was to unobtrusively integrate modern lighting within the architectural structure, provide focus to the altar and add dimension to the ceiling frescoes.

Last but not least, the team wanted to sculpt the ornate detail of the Baroque architecture with light; and visually guide the parishioners around the images bordering the sanctuary. The concern was to illuminate the space in a way that would cause people to become aware of it and notice its details afterwards.

Layers of lighting were to be created with the intended purpose of revealing the architectural vigor, rather than highlighting decoration in particular. The use of dimmers for controlling brightness was fundamental to preventing excessive glare or limiting the use to mere scenic effects. Both direct and indirect lighting sources were chosen and detailed, and put in a position behind the "cymas," or coves, where they could not be seen.

Churches are clever to incorporate these coves, since lighting equipment should not detract from the existing architecture. All luminaire devices and their locations were positioned to subtly clarify architectural elements and art pieces, and balance their relative importance to the building's express sense of space.

The lighting levels were organized from the lowest to the

highest in importance. First, enough light in the nave was required for people to read. Second, general lighting levels were determined in the high altar. As the central focus, the image of Christ demanded a more scenographic treatment. Third, the altar rail provided both very intense and directed light, since it is where the priest stays during service. Finally, domes and vaults were provided with indirect lighting to allow the visitors to notice their curvatures and the ornaments that fill the ceilings.

To achieve the appropriate level of task lighting in the nave without cutting holes in the ceiling, the vault and dome were uplighted. This indirect lighting in the existing cove uses 32 W T8 fluorescents, 3000K with electronic dimming ballasts.

The niche with Christ's image was illuminated with PAR 38s — floods on the back wall and a spot on the image. Initially, the thought was to create variations of the color blue in order to reveal the illusion of the firmament on the wall that can be seen behind the image. However, the Federal Institute for the Preservation of the Artistic and Historical Patrimony (IPHAN) restricted that idea, since the careful research done on the issue proved the original blue to be flat.

As the focal point, the altar rail was lighted with two cross-focused PAR 30 metal halide spot luminaires mounted in the small cove that divides the nave from the altar. To balance brightnesses at the high altar, large side doors on the second level were illuminated from below by MR 16s with diffusion filters. They accentuated the balconies' length and, by contrast, made their balustrades more prominent.

In the same cove, luminaires for MR 16 (spot) and AR 111 eight degree lamps with UV filters were intergrated to accentuate the oil paintings and altar walls.

The oil paintings on the side walls and frescoes on the ceiling, as well as the most representative escutcheons and carvings, received special treatment. To avoid reflective glare, light was directed to the other side in angles less than 90 degrees. For instance, a luminaire intended to illuminate a piece on the wall to the left is installed on the cyma to the right. The beams of light arriving at the surface of the paintings form no right angle because the luminaire was focused obliquely.

The secondary altars in the nave have a combination of soft light from the 32 W T8 fluorescents (3000K) and accent lighting from two MR 16 flood lamps with diffusion filters for the distinction of the images.

Flame-shaped lamps were used to enhance the torcheres and candelabras. These lamps were used to replicate what was once a candle. They do not produce light or glare. Because 220 V lamps were specified instead of 127 V, which is the local voltage, just the brightness of the filament can be seen, warming the fine colors of the church's interior.

Since management had established the height of cymas and coves as the limit for installations, luminaires were positioned to provide relatively easy access. Thus, mechanical ladders would not be necessary to perform maintenance work. Instead of taking advantage of the dome's own cove, that limitation led the team to light the high altar's dome with MR 16 spot luminaires with diffusion filters from the cymas below.

In a church, the main goal of the lighting design should be to provide some benefit for the religious service. The design

should not only preserve both the refinement and grace of the building's interior at night but also during the day. Such a light suspends the world outside.

A Team Work

The church restoration program succeeded because the institutions, experts, sponsors and professionals involved were willing to work together and respect each other's criteria and methodologies. There was a deep commitment to the quality of results. The management firm was determined to get rid of any interference in the communication between the participants.

The restoration program of the Church of Nossa Senhora da Lapa dos Mercadores was made possible by the partnership between BNDES (Brazil's Bank for Economical and Social Development), the American Express Foundation, IPHAN (The Federal Institute for the Preservation of the Artistic and Historical Patrimony) and the Roberto Marinho Foundation. It also had the support of Brazil's Ministry of Culture.

The designers: Monica Luz Lobo graduated from Universidade Santa Úrsula (Rio de Janeiro), receiving a bachelor degree in Architecture and Urban Planning (1987). She began employment as a junior designer at Esther Stiller & Gilberto Franco Consultores de Luminotécnica Ltda in 1988, participating on several architectural lighting projects, and became senior designer in 1990. She founded LD Studio, Projetos de Iluminação S/C Ltda. in 1996. She has been an IESNA member since 1996.

Ines Benevolo graduated from Universidade Federal do Rio de Janeiro, receiving a bachelors degree in Architecture and Urban Planning in 1991. She is a founder of LD Studio, Projetos de Iluminação S/C Ltda. with Monica Luz Lobo.



(above) To achieve the appropriate level of task lighting in the nave without cutting holes in the ceiling, the vault and dome are uplighted. This indirect lighting in an existing cove uses 32 W T8 fluorescents, 3000K with electronic dimming ballasts.

(right) In the same cove, the design team integrated luminaires for MR 16 (spot) and AR 111 eight degree lamps, which accent the oil paintings and altar walls.