



# ARCHITECTURE

EHLINGER & ASSOCIATES

SECOND QUARTER 2009



Mezquita - Catedral  
Córdoba, Spain  
© 2009 Ladd P. Ehlinger

out in stark and beautiful contrast to the cathedral.

The Great Mosque is primarily the work of Abd ar-Rahman I, who razed the Christian church on the site in about 780 AD, and began the construction. The plan was originally eleven aisles wide, and was widened to nineteen aisles total in later additions done in 848, 961 and 987 AD. The salient feature of this type of architectonic element is that the number of aisles is expandable and not offensive aesthetically when it is expanded. The unity of the overall structure is maintained when added to.

Another feature or device used was the layering of the horseshoe arches into a double arcade to give added height to the ceilings because the re-used classical columns were too short. This an

giving a flickering appearance typical of other Muslim decorative art.

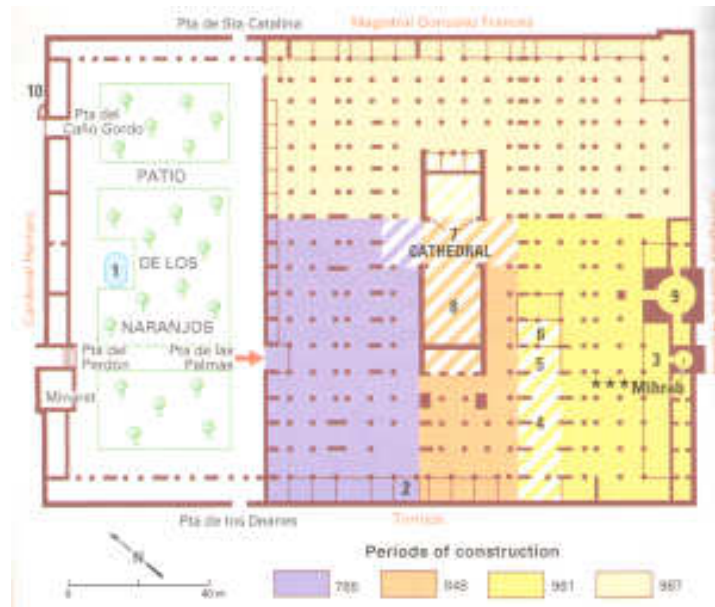
Each of the original eleven aisles were entered into from the walled forecourt known as the “Patio de los Naranjos” or Patio of the Oranges. Dominating the Patio de los Naranjos was a minaret originally built by Abd ar-Rahman III and enveloped by a tower built in the late 16th, early 17th century in the Baroque style. The orange trees in the patio with the several Mudejar fountains and channels of running water are a calming and fragrant accent that preceded the experience of the Mezquita. Before entering, the Muslims would perform their ritual ablutions here.

The main aisle entrance from the Patio de los Naranjos leads to the Mihrab. Wikipedia says the word *mihrab* originally had a non-religious meaning and simply denoted a special room in a house, a throne room in a palace for example. Others considered a *mihrab* to have originally

signified a throne room. The term was subsequently used by the Prophet Muhammed to denote his own private prayer room. The room additionally provided access to the adjacent mosque, and the Prophet would enter the mosque through this room. This original meaning of *mihrab* - i.e. as a special room in the house - continues to be

## MEZQUITA - CATEDRAL

The Great Mosque in Córdoba, Spain is one of the world’s treasures of Islamic architecture. In Spanish, mosque is called “Mezquita”, and this one also has the distinction of having been butchered by the Christian clergy after the re-conquest occurred at the end of the 15th century by inserting in the 16th century a Spanish Gothic style cathedral right in the middle of the Mezquita! The Emperor Carlos V said of the cathedral in great anger to the architects Hernán Ruiz I, Hernán Ruiz II and Juan Ochoa: “You have destroyed something unique to build something commonplace”. Despite opposition from the cathedral chapter, the Bishop Don Alonso Manrique had received authorization to build the cathedral right in the middle of the mezquita. In all fairness, the Cathedral is a handsome Spanish Gothic style building, but it simply does not belong where it is. Fortunately, the mezquita was not totally destroyed, and there is enough of it left that is so strong an architectural statement, that it stands



architectural device borrowed from the Mosque of Damascus. The lower arch thus functioned as a lateral brace for the tops of the columns and the walls above the upper arches. Each arch has voussoirs (the pie slice shaped segments) of red and ivory and the re-used classical and Visigothic columns are grey and pink, all

preserved in some forms of Judaism where *mihrabs* are rooms used for private worship. In the Koran (xix.12), the word *mihrab* refers to a sanctuary/place of worship, and it is in this sense that the term was used to define a special, private prayer room in this mosque.

Ladd P. Ehlinger, AIA

## LEED Rating System

As the “green” movement becomes more and more ubiquitous in our every day lives, so is it in the design and construction industry. Heading the way is the U.S. Green Building Council’s (USGBC) Leadership in Energy and Environment Design (LEED) rating system, which I am currently studying for a certificate in. E&A is a member of USGBC.

LEED is currently advertised as an entirely voluntary program to participate in for an Owner. More and more Federal and State projects are requiring LEED certification for specific projects, however, and it is reasonable to expect that minimal LEED certification may become a requirement for all construction, as many local governments are already adopting standards which mimic LEED’s requirements, as in Boston and Los Angeles. Other areas have already incorporated LEED Neighborhood Development standards into their local Zoning codes.

The concept behind LEEDs is to provide a credit system for design, materials, and methods incorporation into construction which benefit “green” ideals. The more credits the construction is awarded, the greater the building is rated; from a minimal certification, which is the first rating, to Silver, Gold, and then Platinum.

LEED’s has a review process. Every project must be submitted, with evidence for each criteria, for review and compliance with credit requirements, to LEED. This requires not only substantiation from the design perspective, but also follow through during construction that the criteria for credits have been met. It is possible to have a building pre-approved for a great number of credits during the design phase, but then have them denied after construction if changes occurred or if appropriate records during construction were not kept.

To achieve even more credit with the LEED process, points are awarded for hiring an independent Commissioning Authority to review the design and construction process, as well as to monitor the performance of the building systems for a set period of time after occupation.

In fact, a good portion of the LEED process involves monitoring the full performance of the building after completion, and is not limited just to its design and construction.

So, what exactly are these “green” ideals that LEED strives towards? It’s a whole gaggle of issues.

Some are straightforward, and should really be a part of any architect’s design arsenal from the get-go, including optimization of energy performance through passive solar design, use of daylight and views, mold prevention, acoustical comfort, thermal comfort, among other considerations that are foundational, if complicated, design decisions. Yet, they are recognized, which is often not the case for these issues in a design (unless there’s a problem, of course).

Many are issues which are often dismissed from projects for up-front cost considerations, even though the long-term costs are generally beneficial for the owner. For example, installing grey-water plumbing systems, or outdoor cisterns for landscaping watering needs. Other examples include the use of geothermal HVAC systems, or solar water heating. These techniques can often be expensive to implement, but always pay for themselves in the long run.



A good number of the goals are to lessen the impact a building has on its surroundings, both to other people and to society as a whole. For example, credit is awarded for the management of storm water runoff, particularly where it allows re-infiltration back into the ground, including such techniques as the use of pervious concrete pavement and storm-water cisterns which allow for delayed release of excess storm water. Outdoor lights which prevent light pollution (the scattering of light onto other properties or indiscriminately into the sky) are encouraged. Use

of recycled building materials is encouraged, as well as recycling of building material waste.

Minimizing the “heat island” effect is another such societal concern, encouraging light colored paving, and extensive vegetation, even upon the roof or using vegetation as the roof. It is here where such “green” concerns... well, concern me. Minimizing the heat effect of a building and its attendant pavement is a good and practical technique, not just for society as a whole, but also to maximize comfort in the use of the property and minimize energy use in the building by modifying its surroundings. Encouraging and rewarding questionable and unproven building methods, like a vegetative roof, is another. Such roofs, though, are not a requirement for credit in this area, just ... encouraged.

One large concern of many of the LEEDS credits are health and comfort, based on quality and rating of materials and furnishings selected, and air quality. Air quality concerns have been a building code concern ever since “sick building” syndrome, and material quality concerns are now in the public spotlight with such disasters as the Chinese Drywall installed in a great deal of Katrina recovering New Orleans and the Mississippi Gulf Coast. LEEDS takes these concerns to the limit, encouraging Low-Emitting Materials (presuming reduction of outgassing of toxic manufacturing chemicals) for all products of the building, and air quality controls which exceed any current code requirements.

A few of the goals espoused by LEEDS are really nothing more than social engineering. Encouraging development in high density areas, providing access to public transportation, providing area and signage for recycling, building bicycle storage areas and changing rooms for the cyclists, along with allocating parking spaces specifically for fuel efficient vehicles and carpooling vehicles. All innocuous enough, in the context of promoting “green” behavior. Even though these guidelines attempt to deal with the fairly well recognized problems of sprawl, traffic, waste, and economy of scale, I just find myself recalling past social engineering projects attempted through architecture and design, (like Cabrini Green, or even any city’s standard Zoning Requirements), and wondering how well it will ultimately work. Hopefully, much better.

*R. Perrin Ehlinger, AIA*