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civil + structural ENGINEER

CELEBRATING THE DESIGNERS OF THE WORLD AROUND US

PARSONS: SMART ABOUT INFRASTRUCTURE

Meeting emerging needs and priorities in a world of decreasing resources and increasing innovation.

Positive outlooks for AEC markets

Partnership prepares students for land development and design

NYC's second tallest office tower breaks ground

Challenging design of a runway safety area





WHY PROTECT HERITAGE STRUCTURES?

At their greatest, architecture and engineering offer a meaningful representation of place, history, people, and culture.

WHEN I FIRST SAW collapsed temples and piles of debris where there once stood ancient sacred monuments in Durbar Square, Kathmandu, in the spring of 2015, my heart sank. Not only had more than 200 people just lost their lives in this square, a part of human history also had been completely eliminated. In Nepal's 2015 earthquake, it is estimated that a third of Kathmandu's heritage structures were lost in those 90 seconds of violent shaking.

As an engineer who works around the world in countries far older than ours, I've experienced the important relationship people have with iconic, historic buildings.

In the summer of 2016, a 20-second earthquake destroyed the picturesque 16th-century, hilltop town of Amatrice in Central Italy, taking 300 lives. I met a firefighter team that had been there since two hours after the deadly earthquake. On the first day, their mission was to rescue lives, but the next eight weeks they spent recovering bodies. I saw a tear in a tough firefighter's eyes.

Heritage buildings can be structurally dangerous, but they are a part of human history. These buildings often are key to a place's cultural identity. Washington, D.C. would not be the same without the Washington Monument. Rome would be severely diminished without the Coliseum. We need to strengthen and save these buildings. This will save lives and human history.

This type of engineering requires a different approach and skills than those used for new construction. With heritage structures, we must analyze and engineer for strength and durability of existing materials. We need to use pure physics. Codes are often ill-equipped to understand the nuances of these buildings, since codes are a generalized form and each heritage building is unique. Often, the most fragile features of the structure are its most notable characteristics, too. That's why performance-based engineering is a key to minimize the impact to a building's historic features.

The Griffith Observatory in Los Angeles is a 1930s icon that was expanded and modernized by adding a basement. At one point when the shoring was in, it floated in the air, held only by what looked like a bunch of bamboo sticks (the shoring). I was glad there was no major earthquake while they were doing it. Today, locals and tourists enjoy its enhanced and preserved former glory.

Same with the Gaddi Baithak, a former Rana palace and key presence on Kathmandu's UNESCO World Heritage site. Without even trying, it's a centerpiece of history. Half destroyed by the 2015 earthquake, the U.S. Ambassador's Fund for Cultural Preservation is funding its repair, strengthening, and reconstruction, done by our nonprofit, Miyamoto Relief. It was abandoned and sustained water damage since the earthquake but, with Nepal experts and international capacity, it will be back to where it was in 1908.

At their greatest, architecture and engineering offer a meaningful representation of place, history, people, and culture. By preserving and strengthening these touchstones, we are conserving the cultural identity of place — and people.

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