

## SHORT Takes

### ASCE HONORS MACHU PICCHU AND TIPON AT PERUVIAN EMBASSY CEREMONY

For more than 40 years ASCE has recognized historically significant achievements that embody the pioneering spirit and ingenuity of civil engineers. Through its Historic Civil Engineering Landmark Program, the Society has designated more than 200 projects, structures, and sites around the world as civil engineering landmarks.

In September ASCE conferred landmark status on two Incan sites in Peru—Machu Picchu and Tipon. Perched on a ridge in southern Peru more than 1,500 ft (457 m) above a bend in the Urubamba River, Machu Picchu is believed to have been built in the 15th century at the height of the Incan empire. Often referred to as the Lost City of the Incas, the site comprises buildings, parks, terraces, and fountains that are interconnected by numerous channels and form part of a complex water drainage system. Tipon, also in southern Peru, is located approximately 14.3 mi (23 km) southeast of Cusco and is known for its fine terraces and elaborate canals and aqueducts. In addition to the Incan ceremonial buildings and living quarters, the site features underground channels and aboveground irrigation systems that once supplied the surrounding area with water.

On March 8 representatives from ASCE and the National Museum of the American Indian, which is part of the Smithsonian Institution, gathered in Washington, D.C., at the Peruvian embassy to celebrate these landmark designations. "ASCE is extremely pleased to welcome these two marvels as historic landmarks from the Central and South American regions," said ASCE's president, W.F. Marcuson III, Ph.D., P.E., Hon.M.ASCE, shortly before he presented Peru's ambassador to the United States, Felipe Ortiz de Zevallos, with a bronze plaque commemorating the designation. "Machu Picchu is a masterpiece of site selection, city planning, and design," he went on to say. "Its infrastructure illustrates the advanced civil, hydraulic, and geotechnical engineering capabilities of the Inca people. The steep agricultural terraces, fine masonry walls, surface and subsurface drainage, and the spring headworks are all excellent examples of Inca civil engineering."

Marcuson also called attention to the civil engineering achievements on exhibit at Tipon. "Tipon is a complex also attesting to the advanced hydraulic and geotechnical engineering of the Inca and their predecessors," he said. "Tipon is an engineering masterpiece of planning and construction. The complex irrigation system of canals, aqueducts, fountains, buried conduits,



Kenneth R. Wright, P.E., L.S., Hon.M.ASCE, center, and his wife, Ruth, have done much to explore and publicize the civil engineering prowess manifested in the Inca ruins of Machu Picchu and Tipon. Felipe Ortiz de Zevallos, Peru's ambassador to the United States, expressed his gratitude for their work at a ceremony held in Washington, D.C., at the Peruvian embassy on March 8.

and a tunnel, some of which remain in use, provided conjunctive use of surface and spring water to these terraces constructed of massive, zoned earthworks and fine stone masonry walls."

Kenneth R. Wright, P.E., L.S., Hon.M.ASCE—the author of *Machu Picchu: A Civil Engineering Marvel* and *Tipon: Water Engineering Masterpiece of the Inca Empire* (both published by ASCE Press)—also spoke at the event. The work done by Wright, who is the president of Wright Water Engineers, Inc., and by his wife, Ruth, who contributed significantly to the development of these publications, loomed large in ASCE's decision to confer landmark status on these sites.

"The Inca people of five hundred years ago were good civil engineers and they were very good hydrologists," Wright observed. "They knew how to handle and distribute water very well. Their foundations and buildings withstood the ravages of time, and their uncanny ability to support thatched roofs that were three feet thick is still a marvel to modern architects and structural engineers. We can learn from their ability to protect steep slopes from erosion. We can learn from their water-handling and urban drainage capabilities and their ability to build for the ages. And perhaps, most of all, we can learn from their sensitive environmental design, which is certainly an example for all modern engineers."

For more information about ASCE's Historic Civil Engineering Landmark Program, visit [www.asce.org/history/ce\\_landmarks.cfm](http://www.asce.org/history/ce_landmarks.cfm).