

Editor's Note

Mission 26—the final journey of the retired space shuttle *Endeavour*—entailed a 12 mi journey through the streets of Los Angeles and Inglewood, California, that challenged a cadre of civil engineers.



IT'S PROBABLY safe to say that when you were in engineering school it never crossed your mind that transporting a space shuttle through the streets of Los Angeles and Inglewood, California, would qualify as civil engineering. And yet a cadre of civil engineers recently undertook just that—a feat that not only added new luster to the term “engineering challenge” but also ensured the continued appreciation of the retired space shuttle *Endeavour*, a beloved icon of the American space program. *Endeavour* was one of five space shuttles in the National Aeronautics and Space Administration (NASA) fleet—the only winged manned spacecraft to achieve orbit and to land.

Christened Mission 26 (*Endeavour* flew 25 times), the 12 mi land-based journey from a hangar at Los Angeles International Airport (LAX) to the new home created for *Endeavour* at the California Science Center, in Los Angeles, presented a series of challenges few of the engineers who orchestrated that journey are likely to encounter again. As Robert L. Reid, the magazine's senior editor, explains in his article “A Stellar Move,” not only was the planned path lined with such obstacles as utility poles, buildings, median strips, curbs, and trees, but the sheer weight of the shuttle (roughly 400,000 lb with the support and transport systems) threatened underground utilities, and the wheel arrangement of the transporter system carrying the shuttle was not allowed passage over the Manchester Boulevard bridge, near LAX. The shuttle, of course, could not be self-propelled along the route, so a series of computer-controlled modular transporters, which are ve-

hicles designed to transport such massive objects, were employed, along with the Overland Transporter, a frame developed by NASA to help transport the shuttles over roads.

What this undertaking involved was both gargantuan and arduous in terms of the engineering. For example, the logistics had to be addressed—specifically, determining the best route for safely transporting the 122 ft long shuttle, which has a wingspan of 78 ft. Then there were the thousands of obstacles to consider, which included nearly 2,000 trees that had to be trimmed or removed and, if removed, quickly replaced. The trip also required a structural analysis of the Manchester Boulevard bridge and determination of the precise locations of pipes and other underground infrastructure. And, of course, there were such unanticipated predicaments as what to do about a gate in a fence surrounding LAX that appeared impassable.

Each of these challenges—and the numerous others involved in this effort—required thoughtful engineering solutions. These solutions called upon the ingenuity, creativity, knowledge, and expertise of civil engineers who didn't flinch at the enormity and complexity of Mission 26 and who developed a program for that mission that did the profession proud.

A handwritten signature in black ink that reads "Anne Elizabeth Powell".

ANNE ELIZABETH POWELL
Editor in Chief