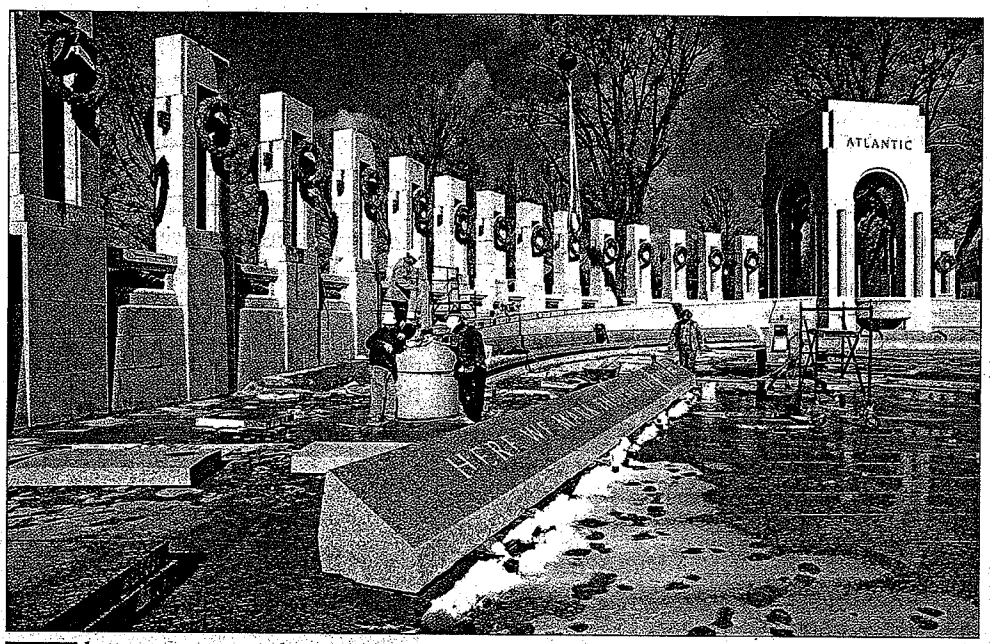
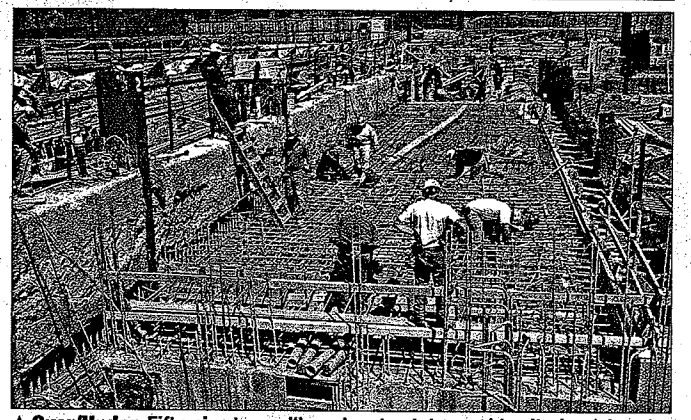
MEMORIALS

WW II Tribute Nearly Ready A Decade After Conception





▲ **Over/Under.** Fifty-six stone pillars denote states and territories (above). Washington, D.C.'s high water table complicated foundation work (below).

PHOTO TOP COURTESY OF L.P. REBEL; BOTTOM COURTESY OF RICHARD LATOFF

The controversial World War II Memorial will be dedicated May 29 in Washington, D.C., more than 10 years after plans were first announced and longer than it took Allied Forces to defeat Germany, Italy and Japan.

Building the $110-million memorial on the National Mall between the Lincoln Memorial and the Washington Monument is like "working in a fishbowl," says Lawrence P. Rebel, senior project manager for construction quality manager Gilbane Building Co., Laurel, Md.

Fifty-six stone pillars standing 17 ft above grade, representing the states and territories, rim the perimeter of the 7.5-acre memorial site. The ring is broken at the northern and southern ends by two memorial arches, representing the Atlantic and Pacific theaters. The original concept by Rhode Island architect Friedrich St. Florian was tweaked several times before final approval by the federal Commission of Fine Arts and the National Capital Planning Commission. Site opponents' suits delayed construction further (ENR 10/2/00 p. 9).

Poor soil conditions marked the site. "There was no competent soil until bedrock," about 30 to 45 ft below existing grade, says Rebel. Siting the foundation 600 ft from the Tidal Basin, itself fed by the Potomac River a quarter-mile away, posed another challenge. To reduce inflow from a high water table, contractors ringed the 4,000-ft perimeter with a 2-ft-thick slurry wall that varies in depth between 30 and 45 ft.

The project "is one huge foundation," says Ken Terry, project manager for Tompkins/Grunley-Walsh joint venture, the Washington, D.C.-based general contractor. Rebel describes the foundation as a 1-ft-thick concrete structural slab placed on the slurry wall and 600 H steel piles. Crews took six months to place 11,000 cu yd of structural concrete. Inside each stone pillar is a 1-⅛-in.-dia stainless steel rod. Rods are imbedded in the slurry wall and extend upward to just below the top of its pillar where it is tourqued and grouted into place. Rods were fabricated in sections and delivered in 5-ft lengths. The stone and rods were erected concurrently, says Rebel.

Terry notes the site has "a fairly big footprint" that pile-drivers had to navigate. To ease that task, workers installed a 2-ft-thick, large-aggregate overlay within the perimeter to kept pile-drivers and excavators from getting stuck in the mud, says Terry.

Designers modeled a complex four-fountain system with three-dimensional CAD to fit utility piping into subterranean vaults and stainless steel tunnels built some 40 ft below grade. Delivering 100,000 cu ft of granite from five fabricators to a tight urban space also required coordination.

Despite the controversy, tickets for the public dedication are sold out. A scheduled informal opening in mid-April will give the public its first peek. ■

By Sherie Winston