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The Engineering Marvel Beneath Your Car: Cameron on Transportation

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The 47,000 miles of highways that comprise America's interstate highway system are nothing short of an engineering marvel, perhaps surpassed only in mileage and design by what China has built in the last few years.

We take them for granted, but when they were designed almost 60 years ago these superhighways presented both great opportunity and vast challenges. Mind you, the U.S. wasn't the first with superhighways. Those bragging rights go to the Germans, whose Reichsautobahn saw cars zooming along at 100+ mph in the 1930s.

Most credit President Dwight Eisenhower, whose troops rode the Autobahn in World War II, for seeing the

military value of an American equivalent, though engineering such a complex across the U.S. was far more difficult.

Of course by 1940 the US already had the Pennsylvania Turnpike and by 1954 the New York State Thruway, but those private toll roads were just the beginning.

To build a road expected to last, in 1955 the federal government, AAA and automakers first built a \$27 million 7-mile test road near Ottawa, Illinois. Half was concrete, the other half asphalt. The 836 separate sections of highway had various sub-surfaces and 16 bridges. For two years army trucks drove night and day, seeing which road designs would hold up under heavy use.

Weather and traffic dictated different designs: in desert areas the highways need be only a foot thick, while in Maine the tough winter and freeze-thaw cycles required that I-95 would be five feet thick.

Construction of the nation's highways required moving 42 billion cubic feet of soil. To expedite construction of I-40 in California, there was even consideration of a plan to use nuclear bombs to vaporize part of the Bristol Mountain range.

As author Dan McNichol writes in his excellent book, "The Roads that Built America":

"VIP seating was even planned for the event. The (nuclear) bombing was to produce a cloud 12,000 feet high and a radioactive blast 133 times that of Hiroshima." Needless to say, wiser minds prevailed and the mountains were moved using more conventional explosives.

Outside Greenbelt, Maryland, another site tested the design of road signs — white lettering on a black background, white on blue (already adopted by the New York Thruway) or, what proved to be the winning model, white on green.

Just 5,200 of the original 41,000 miles of Interstates were to be built in urban areas, but those few miles accounted for almost half of the \$425 billion total cost. By 1992 the system was deemed "completed." Bragging rights for the longest of the interstates goes to I-90 running 3,020 miles from Boston to Seattle and our own beloved I-95, which runs 1,920 miles from the Canadian border to Miami.

As anyone who drives on I-95 in Connecticut knows, the interstates have far surpassed their expected traffic load and are in need of billions of repairs. Little did we know 60 years ago what our automotive future might bring.

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