

# STATICS

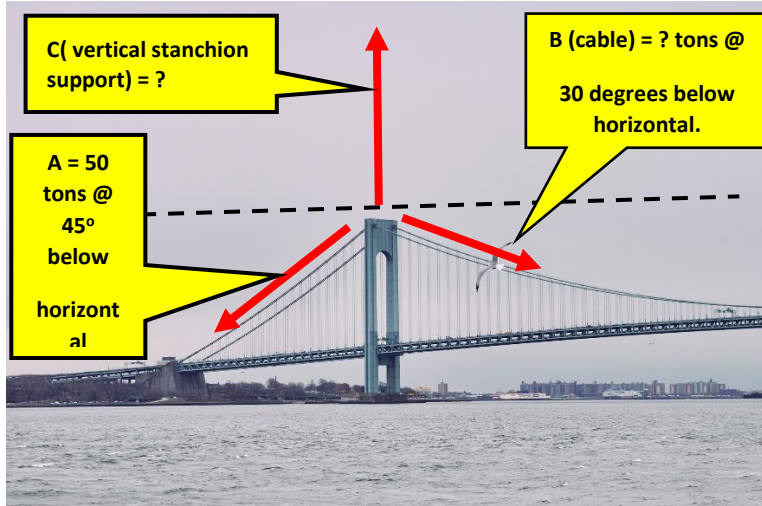
Unit 3 Dr. John P. Cise, Professor of Physics, Austin Com. College, Austin Texas, USA & New York

Times, April 19, 2018 by Winnie Hu , Dedicated to my Wife (Gert) who did NYC five burrow Bike ride over this Bridge twice.

## 'Outrageous' \$17 Toll to Cross the Verrazano Vexes Drivers

By WINNIE HU

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The \$17 toll to drive one way across the Verrazano-Narrows Bridge may make it the most expensive crossing in the United States, though many drivers take advantage of an E-ZPass discount and the price is even lower for Staten Island residents.

**INTRODUCTION:** Huge cables A & B are held Up by vertical stanchion C. See graphic at left. The purpose of this application is to find forces B & C using concepts for static equilibrium : If a = 0 is X direction then  $\Sigma F_x = 0$  And if a = 0 in Y direction then  $\Sigma F_y = 0$ . With these two concepts for static equilibrium one could solve for two unknowns by setting up two equations.

**QUESTION:** (a) Find forces B & C ? Solve for solutions in units of tons (2000 lb. = 1 ton). (b) Show your initial two equations which allowed you to solve for B & C?

**ANSWERS:** (a) B = ~ 40.82 tons , C = ~ 55.91 tons

(c) \_\_\_\_\_

It just may be the most expensive bridge in the country. The \$17 toll to drive across the Verrazano-Narrows Bridge is more than twice the \$7.75 toll to take the far more glamorous Golden Gate Bridge to San Francisco. It makes the \$15 toll on the Chesapeake Bay Bridge-Tunnel in Virginia — a 20-mile expanse of two bridges, two tunnels, and 12 miles of trestles — look like a bargain. "It's completely outrageous," said Nicole Malliotakis, an Assembly Republican whose district encompasses both ends of the bridge in Staten Island and in Brooklyn. "When I tell colleagues from other states, they are just shocked that we have a bridge that is so expensive. They ask, 'What's on Staten Island? Are they giving away gold on the streets? Or is it some kind of utopia?'" The debate over congestion pricing is largely over, but it has focused attention on yet another fraught issue for drivers in and around New York City: pricey bridge tolls. Though most Verrazano travelers pay a discounted E-ZPass rate of \$11.52, not the full \$17 toll, the bridge has nevertheless emerged as a symbol of the glaring inequities of a transportation system that many see as primarily benefiting Manhattan, while penalizing residents of the other boroughs and the suburbs who drive because they do not have easy access to buses or subways. Now, a 10-member task force to be appointed by state and city political leaders and transportation officials will examine the tolls on bridges as part of a broader study of transportation issues and make recommendations by the end of the year. Four other bridges have one-way \$15 cash tolls, though E-ZPass discounts lower them to \$12.50 at peak hours, and \$10.50 during off-peak hours. Three of these bridges — the Bayonne, the Goethals and the Outerbridge Crossing — collect the tolls on traffic heading to Staten Island from New Jersey, and the George Washington Bridge gathers its fee on traffic to Manhattan from New Jersey. (The toll on the Verrazano is charged to cross from Brooklyn to Staten Island, whose residents pay about half the discounted E-ZPass rate.) Someone should do the research regarding when the bridge was built and what was said, regarding tolls, to whom. Then hold those who lied... Staten Island always gets the short end of the stick from City Hall. The bridges off the island are all expensive, with the Verrazano being... Meanwhile, it costs nothing to take the Brooklyn, Manhattan and Williamsburg bridges either way across the East River.