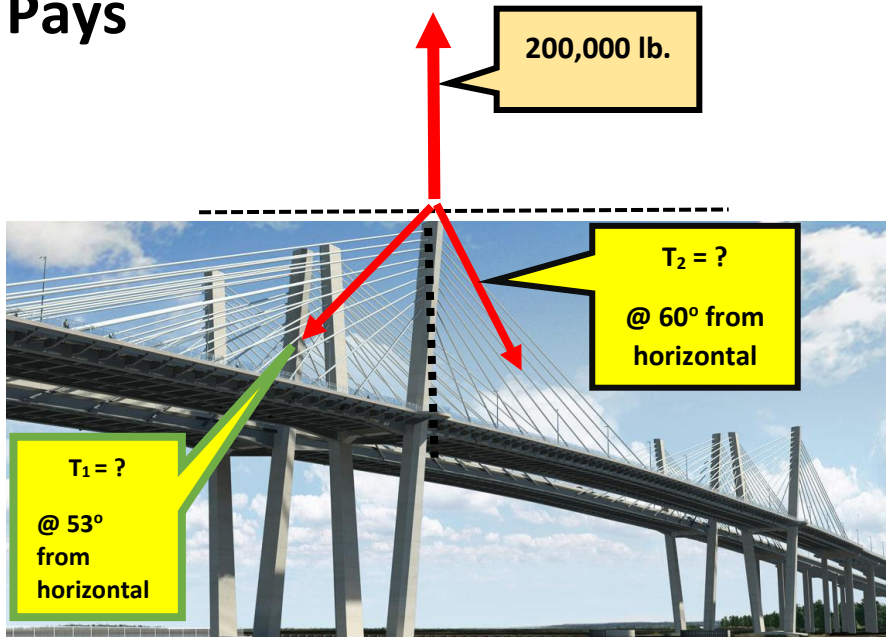


STATICS

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Public-Private Projects Where the Public Pays and Pays



The diagram shows a section of a cable-stayed bridge. A red arrow points upwards from the top of a central pylon, labeled "200,000 lb.". Two red arrows point downwards from the top of the pylon, labeled "T₂ = ? @ 60° from horizontal". A green arrow points upwards from the bridge deck, labeled "T₁ = ? @ 53° from horizontal".

INTRODUCTION: To have no acceleration in X or Y direction:
 $\Sigma F_x = 0, \Sigma F_y = 0$

QUESTIONS: (a) Write the equation for the force components in X direction equal to zero?, (b) Same as (a) except components in the Y direction = 0?, (c) Find T₁ & T₂?

ANSWERS: (a) $-T_1(\cos. 53^\circ) + T_2(\cos. 60^\circ) = 0$, (b) $-T_1(\sin. 53^\circ) - T_2(\sin. 60^\circ) + 200,000 = 0$, (c) T₁ = 108,718 lb., T₂ = 130,514 lb.

A section of the Goethals Bridge, which connects Elizabeth, N.J., with Staten Island, is being worked on by Macquarie, an Australian investment bank. Faster, better, cheaper.

As President Trump prepares to deliver a speech on Wednesday about infrastructure, his administration is promoting the benefits of having local governments work with private corporations to build, repair and manage the nation's ailing roads, bridges and airports. New York, the Australian investment bank Macquarie — one of the biggest global funders of infrastructure projects — is working to build and maintain a new Goethals Bridge to replace the span that connects Elizabeth, N.J., and Staten Island. One phase of the bridge could open in the coming weeks, according to a spokesman. As part of the arrangement, the Port Authority of New York and Jersey has agreed to pay the Macquarie consortium about \$56.5 million a year for about 40 years once the bridge opens, regardless of how much traffic it handles. Macquarie is working on other projects around the country. In 2014, Kentucky tapped the company to oversee the installation and maintenance of 3,400 miles of high-speed fiber optic cable throughout the state. Private money is beginning to line up to take advantage of new deals now that Mr. Trump appears to throwing his backing behind such arrangements. Blackstone Group, the giant private equity firm, announced last month the establishment of a \$40 billion fund to invest mainly in infrastructure projects, with Saudi Arabia's main sovereign wealth fund kicking in \$20 billion. Stephen A. Schwarzman, Blackstone's chairman and chief executive, is leading a White House business advisory group, which lists infrastructure work as one of its topics for discussion.