

# STATICS

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

[jpcise@austincc.edu](mailto:jpcise@austincc.edu) & New York Times , Dec. 12, 2017

## St. Louis Reconnects With the Gateway Arch and Its Pioneer Spirit

By KEITH SCHNEIDER, DEC. 12, 2017



**INTRODUCTION:** The three ton keystone at the top of arch is caused to be in static equilibrium by  $T_1$  and  $T_2$  pushing on keystone at  $15^\circ$  above the horizontal .

**QUESTIONS:** (a) Convert 3 tons to pounds?, (b) Solve for  $T_1$  and  $T_2$  by using conditions for static equilibrium.

**HINTS:**  $\Sigma F_x = 0$  ,  $\Sigma F_y = 0$      2000 lb. = 1 ton

**ANSWERS:**  $T_1 = T_2 = 11,591$  lb. or 5.8 tons

Construction on a new entrance to the visitor center at the Gateway Arch in St. Louis, part of a \$380 million project to improve the 91-acre Jefferson National Expansion Memorial. Credit Whitney Curtis for The New York Times

ST. LOUIS — In a year that placed monuments at the center of civic strife, a \$380 million project to expand the grounds and visitor center at the Gateway Arch, the tallest man-made monument in the Western Hemisphere, is bringing people together in this Mississippi River city. The project to beautify the arch grounds, redesign entrances and enlarge the underground visitor center drew such robust public support here that voters approved a 2013 local ballot proposition to finance the restoration with \$85 million in sales tax revenue. An additional \$250 million was raised in under 36 months from private donations. The balance of the budget was raised from federal and state grants. "It's a measure of how this city feels about its global icon," said Eric Moraczewski, executive director of the Gateway Arch Park Foundation, which led the capital campaign, producing the largest amount in private gifts for a National Park Service unit in history. "The arch brought us together." St. Louis has been struggling with racial tension that threatened to divide its residents after [violence broke out in 2014](#) after the fatal shooting of a young black man, Michael Brown, by a white police officer in Ferguson, a northern suburb. [Protests occurred](#) again in September after a white former St. Louis police officer [was acquitted](#) in the shooting death of another black man in 2011. City planners hope the arch, a symbol of the country's pioneer spirit, will help reunite its residents. **The 630-foot-high arch, designed in 1947 by Eero Saarinen and completed in 1965,** is clad in stainless steel and stands at the center of the 91-acre Jefferson National Expansion Memorial. After more than two decades of discussion, planning and design, the restoration is intended to significantly improve access to this city's reviving downtown, and reverse 12 years of steadily diminishing attendance. A little more than 1.2 people million visited the arch last year, the lowest number since it opened in 1967, according to National Park Service figures. Before the turn of the century, the arch drew as many as four million visitors annually, making it one of the most popular National Park Service attractions. "



A park is being built over Interstate 44 to provide pedestrian access to the arch from downtown.