

# FE ANALYSIS OF THE SUPPORT ASSEMBLY OF THE PORT BAY BRIDGE

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## Abstract

*Port bay bridge (PBB) presents unique challenges in design and construction compared to the conventional bridge. This research aims to present a 3D finite element analysis of the PBB supports. At all points of supporting parts (wheels, plate, and pin) where one tunnel is in a contact with another tunnel, the same supporting elements are used, and what differs at these points are loads that have to be carried. Since it is expected that pins will be the load-carrying elements with the highest stress, the safety factors will be evaluated according to the stress calculated on pins. Reactions forces will be applied on both wheels equally; that is, any reaction force must be divided by two first (since there is pair of supports at all points), and then obtained value must be divided again by two (since there are two wheels on each support). The moment on the pin equals zero when  $F_1$  and  $F_2$  are equal (this is an ideal case); otherwise, the twisting moment (torque) occurs. Possible values of twisting moments are also analyzed and presented later in this paper.*

## Keywords

Port bay bridge, design, forces, FE analysis, safety factors

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