

Bridge Modeling Investigation

(Please share one copy with your group and type all answers on that shared file)



You've been hired to design a bridge to replace the current I-5 bridge across the Columbia River and you've decided to go big and recreate this bridge in Zwodzony, Poland. The support structure is the tall parabola. The deck of the bridge is the part that cars drive on and is a shallow parabola.

1. What information do you need to design this bridge for the Columbia River Crossing?
2. Once you obtain this information, use it to model the structural element and deck as two different parabolas. Define your variables.

Support Structural Parabola: $S(x) =$

Deck of Bridge Parabola: $D(x) =$

3. Research local regulations about shipping, aircraft, and bridges. Provide any information regarding the height of ships that can fit under the deck and restrictions for aircraft (the bridge is near PDX) altitudes.

4. Recall that the structural parabola is $S(x)$ and the deck parabola is $D(x)$. Write the equation of each of the following transformations and discuss what effect each transformation would have on the bridge.

a. $-S(x)$

Equation:

Effect:

b. $S(x) + 100$

Equation:

Effect:

c. $D(x - 5)$

Equation:

Effect:

d. $4D(x)$

Equation:

Effect: