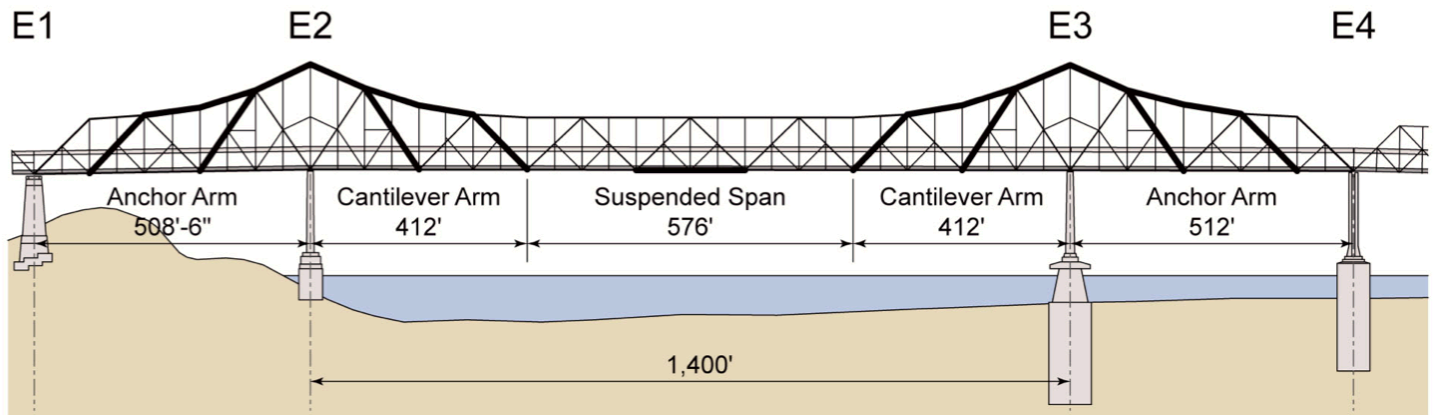




# SEPARATING THE CANTILEVER TRUSS

Demolition of the 77-year-old original East Span of the San Francisco-Oakland Bay Bridge is underway. Contractors have begun to dismantle the 1936 East Span piece-by-piece, working in the reverse order from which it was built. The first phase of the process is to cut the suspended span of the cantilever truss at its center in order to begin removing it. When the entire demolition project is complete, over 58,000 tons of steel and 245,000 tons of concrete will have been removed.

## The Cantilever Truss



*Bold lines represent steel members that are always in tension (being pulled apart).*

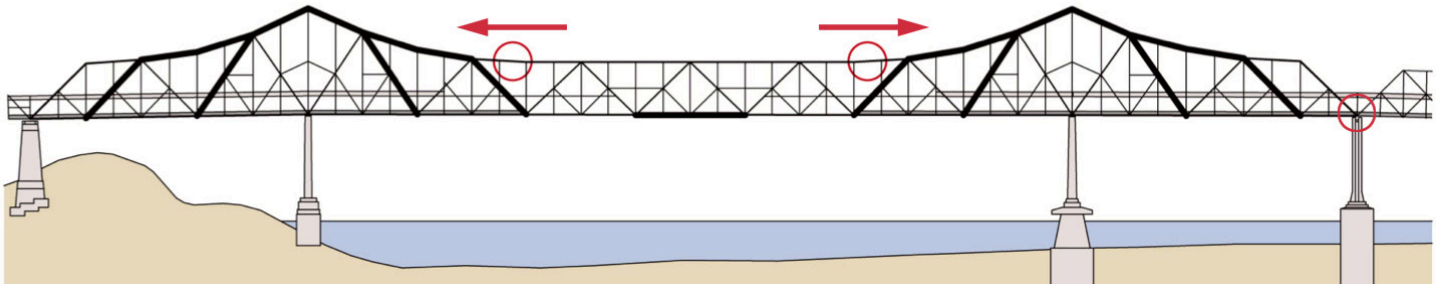
The original East Span cantilever truss is a 1,400-foot span made up of steel frames called trusses. This truss section is composed of three main parts: the anchor span, the cantilever span, and the suspended span. The anchor spans are the outside halves of the cantilever, and the inside halves are called the cantilever spans. They keep each other in balance and are balanced on their own.

Between the two sides of the cantilever is an independent bridge called the suspended span. The weight of the suspended span causes the two sides of the cantilever to want to tip toward the center and each other. In order to keep this from happening, the outside arms must be held, or anchored, down by the anchor spans. On the west end, the concrete anchorage on Yerba Buena Island holds the bridge down; the east end is anchored by the rest of the bridge that extends towards Oakland.

The suspended span's top layer, called the upper chord, is in compression, which means its steel members are being pushed together. The lower chords of the span are in tension, meaning that they are being pulled apart.

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### Step One: Jacking locations of top chords

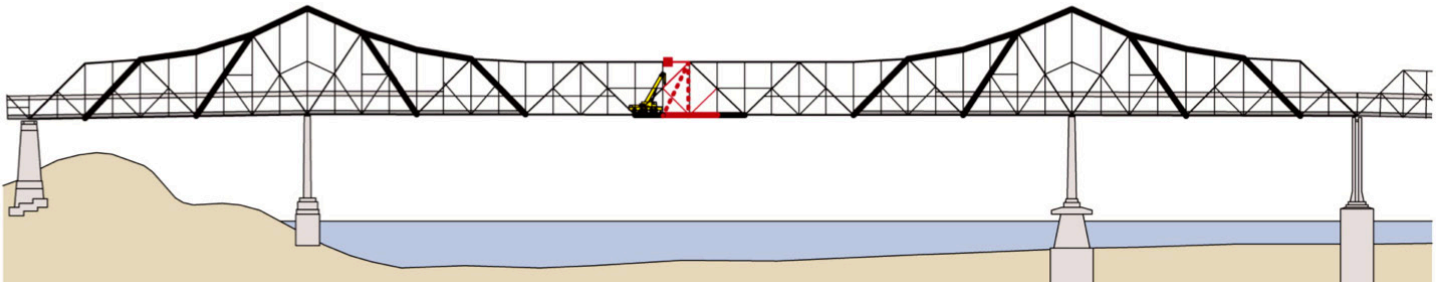


Red circles indicate hydraulic jack installation locations.

In order to cut the center of the suspended span, preparations must be made first. Workers have to neutralize the stresses and pull the suspended span on each end toward the rest of the bridge. Otherwise, the two halves of the suspended span would collapse and fall into the water when it is cut.

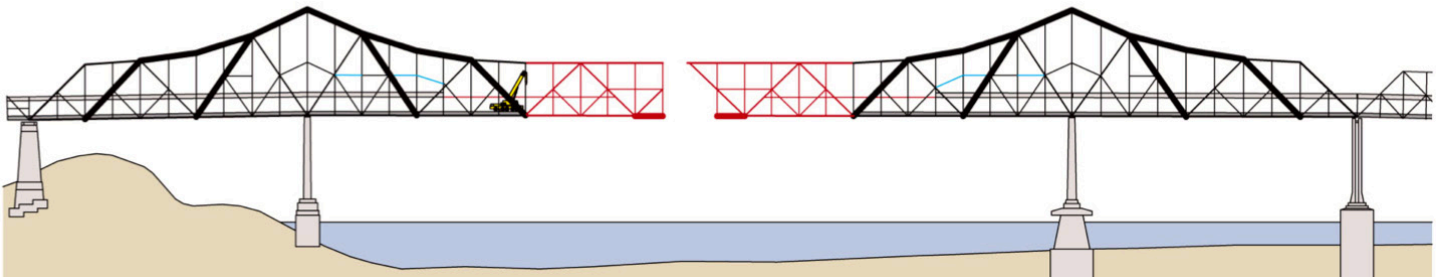
To prevent this from happening, the upper chords of the suspended span are tied back to the cantilever spans. Jacking frames, pins, and hydraulic jacks are installed. Once the fixtures and equipment are in place, tension is applied in a controlled manner to reduce the compression forces at work at the middle of the suspended span.

### Step Two: Disconnecting the bridge at mid-span



With the mid-point forces controlled and the outer edges of the suspended span restrained at both the top and the bottom, the contractor then can separate the middle of the bridge and start removing steel members. This dismantling will progress from the middle outward.

### Step Three: Removing suspended span, element by element



Once the suspended span is gone, the next phase of demolition — removing the two halves of the cantilever — begins.