

DEMOLITION

Dykon Explosive Demolition & D.H. Griffin of Texas Team on Corpus Christi Bridge



Dykon Explosive Demolition had the privilege of working with the elite team of D.H. Griffin of Texas and subcontractor Testa Corp of Boston, MA on a one of a kind project in Corpus Christi, TX. The project consisted of removal of a lift bridge, approach spans, towers and counterweights spanning the Port of Corpus Christi Tule Lake ship channel.

The major challenge of project execution was the timetable dictated by the Port of Corpus Christi Authority for the bridge and tower removal. If the closure of the ship channel exceeded the dictated time frame there were heavy monetary penalties that would be imposed.

The Tule Lake Lift Bridge was 510 feet long from abutment to abutment and spanned the Port of Corpus Christi ship channel. The lift span portion of the bridge was 350 feet long and 46 feet wide. The bridge accommodated two lanes of highway traffic and a single track railroad. The total weight of the lift span was 1905 Tons. The two towers were approximately 175 feet tall and accommodated concrete counterweights that weighed approximately 900 tons each.

The project required the execution of two tasks that were somewhat unique: Removal of the Lift Span and Removal of the towers and counterweights. The Lift Span removal was accomplished by disconnecting the span from the towers and lowering the span on to a barge and floating the structure intact. This method required that the counterweights be supported in place in the "up position". During the lift span removal operation the ship channel was closed for a limited period.

Two barges were used—an anchor barge spudded in place and a bridge barge held in place by the anchor barge and tug boats. The barges were located using laser lines to ensure proper location. Timber blocking platforms were preinstalled on the bridge barge at predetermined locations to support the Lift Span on the bridge barge. Cranes were located at each bridge approach structure to provide access and perform support work as required.

The lift span was lowered utilizing its own power down to the bridge barge and seated on the timber blocking platforms. The

counterweights were locked in place using structural beams and timber blocking. The Lift Span was raised to a height to provide sufficient slack in the counter weight ropes by debalancing the bridge barge. All power to the Lift Span was then cut and tagged out at the switch box. The 72 counterweight wire ropes at each tower were cut free from the structures. After the counterweight ropes were removed the 16 Lift Span operation wire ropes were removed. The last operation to be performed was the removal of the upper and lower span guides at each tower which allowed the float out of the Lift Span.

D. H. Griffin of Texas and Testa floated the lift span out prior to the arrival of Dykon Explosive Demolition. D.H. Griffin prepared the towers and counterweights for explosives demolition and Dykon arrived on site to place the charges and set up the detonation system to explosively remove the counterweights and towers.

It was Dykon Explosive Demolition's opinion that the counterweights and towers could be rotated to fall away from the ship channel. If the counterweights and towers happened to fall in the direction of the ship channel the channel would have been blocked for an extended period. To successfully do this Dykon Explosive Demolition used properly sized and proper placement of Linear Shape Charges to remove selected structural members in a predetermined, timed sequence to achieve the desired results. There were several structural members that were required to remain intact during the tower rotation so Dykon Explosive Demolition had to be very precise in the execution of the planned and controlled felling of the Towers.

The button was pushed and the South Tower rotated about the pinned connections on the rear main columns. Explosives caused failure of certain structural members and the South Tower rotated and fell in a southerly direction. In a similar manner the North Tower was rotated about the pinned connections on the rear main columns. Explosives caused the failure to certain structural members and the North Tower fell to the north. Both counterweights and towers fell exactly as Dykon Explosive Demolition had planned and the project went off without a hitch!