

Alameda Estuary (Posey) Tube (1924-28)¹

In 1924 Alameda County appointed a Board of Consulting Engineers to review their plans for a vehicular tube to be constructed beneath the San Antonio Estuary between Oakland and Alameda near Webster Street, to replace the old swing draw-span Webster Street Bridge (which was wrecked by the collision of the steamer Lancaster on January 7, 1926, while the tube was under construction).

The work on the Alameda Estuary Tube was supervised by Alameda County Surveyor **George A. Posey**, who served as the project's chief engineer, after voters approved a \$5 million bond issue in early 1925. **Ned D. Baker** was design engineer, supervising all office design work, **Merton C. Collins** (BSCE 1912 Berkeley) was the project's structural and ventilation engineer, and **Lochiel M. King** was construction engineer in charge of field work. Professor **Bruce Jameyson** (BSCE 1917 Berkeley) of Cal Berkeley's civil engineering department served as Alameda County's consulting structural engineer, an association which continued on more than 100 other County projects over the succeeding 30 years, mostly with respect to bridges.

The contract for construction was awarded to the California Bridge & Tunnel Co. on April 28, 1925, calling for completion in 900 days. The subway was 4,437 ft long. One of the project's most novel aspects was its use of precast concrete tubes, which were sunk in place to form the middle 2,437 ft of the subway, beneath the estuary. These segments were 37 ft in diameter (32 ft inside) and 203 ft long, placed on crushed rock and tremied concrete pads and backfilled with a sand cushion. The project was completed on October 27, 1928 and christened the "**George A. Posey Tube.**" A second parallel tube was constructed by the State of California in 1960-62, using 12 precast concrete tube segments. These served as the models for the steel BART Transbay Tube constructed in 1966-69.

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Historic Posey Tube and Renovation Plan

The Oakland Portal's elaborate Beaux Arts façade conceals eight massive fans that draw in fresh air and expel foul air to prevent carbon monoxide buildup in the George A. Posey Tube, an underwater automobile tunnel that runs under Harrison Street between the cities of Oakland and Alameda. One block west sits the Webster Tube Portal, a 1963 structure that serves the same function as the more decorative Oakland Portal. At the time of its construction, the Posey Tube was the largest underground tunnel in the world. George Lucas filmed a scene in the tunnel for THX 1138, Lucas's first feature film.

Designer: Henry H. Meyers

Construction Date: 1925-28

Architectural Style: Beaux Arts derivative/Art Deco

The tube replaced the Webster Street Bridge to Alameda, allowed industrial development of Oakland's Inner Harbor, and appeased restless divers tired of waiting for water

traffic. The Portals (its twin is on the Alameda side) house ventilation equipment, eight huge fans, to exchange stale air for fresh in the tube. One visitor remembers leather belts operating machinery for the fans that looked like industrial strength hair dryers. It was the first underwater tunnel in the world constructed entirely of reinforced concrete. Forms were towed by tugs from Hunters Point in San Francisco. Art Deco in style, each portal has a three-story central section flanked by two hip roof towers, connected with a huge arched industrial sash window (now painted over). Two side piers, with vertical arched openings and decorative grillwork, create a stepped effect.



January 2016 - Posey Tube Renovation Project Begins

Caltrans will perform a historical renovation of the Posey Tube portal buildings and replace the pedestrian handrail inside of the tube. The work will include sandblasting and repainting the

buildings, historical renovation of the sidewalks leading up to the portal, and retrofitting the inside of the building. Other work includes installing CCTVs, organizing signs and replacing cobra head lighting with the original historic lighting at the entrances of the Posey and Webster tubes.

- Work will take place at the two portal buildings, in Alameda and in the Jack London district of Oakland.
- In Oakland, scaffolding around the Posey Tube portal building will block parking adjacent to the building along Harrison Street and both sides of 4th. Also, the sidewalk behind the building will be blocked. A Pedestrian Detour will be provided.
- Pedestrian and bicycle access through the Posey tube will be blocked from February to May. A shuttle will be provided and signage indicating how to contact the shuttle will be posted at both entrances to the Posey Tube pedestrian walkways.

Schedule and Updates

The project is scheduled to start construction in **January 2016** and to be completed in **July 2016**.

- Stationary mounted signs and changeable message signs (CMS) will be strategically placed to provide information regarding the project's closures and detours.



POSEY AND WEBSTER STREET TUBES

Route 260

SEISMIC RETROFIT

Fact Sheet

[June 8, 2001, News Release on Posey Tube Closure on June 15-16](#)

The Project and its Benefits

On April 24, 2000, the California Department of Transportation (Caltrans) began construction on the Seismic Retrofit of the Posey and Webster Tubes, the main roadway connection between downtown Oakland and northern Alameda. The project is necessary to strengthen the tubes for a major earthquake. Construction on this project is expected to begin in April 2000 and will continue for three to four years.

The Posey and Webster Street Tubes Construction Project is divided into two major stages:

Stage I - Work Inside the Tubes

These modifications will make the tubes safer and more flexible:

- Install expansion joints between tube segments.
- Modify the connections from portal buildings to tubes.
- Remove the ceiling tiles.
- Install a warning system for use during an earthquake.

Major Issue - Tube Closures:

- Nightly closure of both tubes from Sunday through Thursday between 9:00 PM and 6:00 AM. Travelers may use the Park Street Bridge during these closures. The contractor will be assessed damages for opening the lanes late.
- Occasional partial tube closures (one lane) on weekends to allow concrete curing.
- Complete closure of one tube on four separate weekends (48 hours per closure) to allow concrete to cure at portal joints.
- Detour routes will be clearly marked during tube closures.

Stage II - Work Outside the Tubes

These modifications will prevent the tubes from becoming buoyant:

- Densify and strengthen the foundation around the tubes so they can withstand an earthquake. This will prevent the soil from becoming liquid during a seismic event.

Work Inside the Tubes

Work Outside the Tubes

Advertise Contract	July 1999	July 2001
Begin Construction	April 2000	September 2001
Complete Construction	July 2002	August 2003 – 04

Updated 6/12/01

Posey Tube and Webster St Tube - Alameda, CA

by Gary Lenhart

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From before **1871**, when the [Webster Street drawbridge](#) from Alameda to Oakland across San Antonio creek was completed, until 1928 when the Posey tube opened, the crossing from Alameda to Oakland at Webster Street was made by a bridge.

- **In 1908 United States Senator Frick** toured the East Bay with **M. Kelley** -- a member of the Alameda County board of supervisors. On his visit Senator Frick **suggested to Kelley the idea of developing the estuary. Almost immediately Kelley introduced a resolution** to the board of Supervisors to appropriate money for an estuary tube and removal of the estuary bridges.¹
- On August 31, **1908** the Alameda County Board of Supervisors passed a resolution asking the county surveyor to submit a cost estimate. The board finds out that the state has no provision for such an expense, and the issue of the tube is shelved, although it continues to get brought up intermittently.
- In **1919**, Mr. Lochiel M. King, President of City Planning Commission, agitates the matter of building a tube and the project is brought to the attention of the Board of Supervisors again.
- **1921**, Carl E. Storm, president of the Alameda Chamber of Commerce, calls a community meeting of the chamber of commerce to boost the tube project. Speakers include "Drydock" Smith, eminent engineer. Smith declares that "building the tube using concrete sections is readily feasible." Other speakers include M.L. King and Supervisor Hamilton.²
- April 5, **1922**, The Board of Supervisors of Alameda County call for a bond election for the construction of a vehicular tube.



- August 21, **1922**, The Board of Supervisors of Alameda County pass a resolution directing the County Surveyor, **George A Posey**, to prepare a preliminary cost and construction report.



- March 23, **1923** the War Department issues a permit to the Board of Supervisors of Alameda County to construct a tunnel under the Alameda-Oakland estuary. **The Harrison St Bridge and Webster St Bridge are ordered to be removed.**

- April 5, **1923** George Posey submits a **preliminary tube report** to the Board of Supervisors.

- The day before the bond election on **May 7, 1923** the "Tube-the-Estuary" committee gets a front page story in the Oakland Tribune. The story is called "Last Appeal For Tube". The advantages of a tube they point to include the opinion that, "The best bridge will become obsolete in 20 years, while a tube lasts indefinitely." **George Posey offers his opinion that the tube, "would prove an aid, rather than an injury, to property values."**



- That same day, on **May 7, 1923** The Alaska Packers' Association announces plans for a \$2 million plant to be built in Alameda -- but only if the tube bond issue is passed. (Oakland Tribune, 5/07/1923)



Posey Tube Portal in Alameda mailed 1948



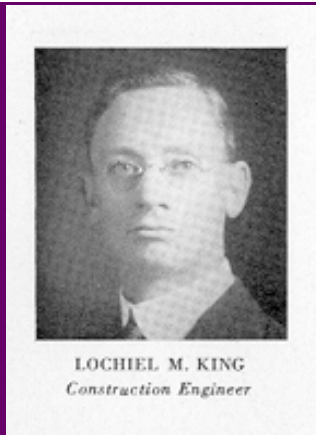
Posey Tube Alameda Portal note train tracks on right



Posey Tube Oakland Side



George A. Posey
Chief Engineer, and County
Surveyor



Lochiel M. King
Construction Engineer



Engineering Personnel
Posey Tube

The Boosters of the Project Included:³

- **Lochiel M. King, President of City Planning Commission of Alameda.**
- **William J. Hamilton, Supervisor**
- **A.K. Tichenor, Vice-president of Alaska Packers' Corporation**
- **Wm. J. Locke, City Attorney**
- **Edw. S. Babue, President, Alameda Chamber of Commerce**
- **Al Latham, City Councilman**
- **Walter G. Tibbets**
- **"Drydock" Smith**



Lochial became a field engineer building of the tube and Smith became engineer of construction for the California Bridge & Tunnel Co.⁴

Some of the Doubters' Concerns Included:⁵



Formation of the inner harbor floor.



The marshy ground to be crossed at the Alameda entrance. ([maps](#))



Pre-casting great sections of concrete and towing them in place and



sinking them.



Fear of monoxide gas.



Problem of adequate ventilation.



The proper sealing together of the tube sections with great concrete collars.

- **May 8, 1923 bonds** in the amount of **\$4,4960,000** are **approved** for the tube by an **"overwhelming majority."** (from tube dedication pamphlet dated 1928)
- The day following the election, on **May 9, 1923** The **Alaska Packers' Association** announces that construction of the \$2,000,000 rail and ship terminal in Alameda, estuary, which was **contingent on the tube bond being approved**, will **begin within two weeks**. Plans provide for **seven great piers and wharves**, and **nine one-story warehouses**. "Facilities will be provided for canning, packing and storing of all kinds of Pacific coast and Hawaiian food products, including fruit, vegetables, sauces and catsups, and the annual salmon pack of the Alaska association." (Oakland Tribune 5/09/1923)



September 1923 to January 1925 - planning phase of project.

Construction: Pre-cast segments (reinforced concrete) were made at **Hunters Point dry dock in San Francisco**. These were floated (tugged) across the bay to the tube site, sank into a trench, sealed together, and then covered with fill that was dredged from the bay.⁽⁹⁾

The California Bridge and Tunnel Company were the general contractors major portion of the work.

• Alameda County Board of Supervisors decide to name the tube
The George A Posey Tube.

- **October 27, 1928**, The George A. Posey Tube **is dedicated and opens to traffic**...not in 1927, as this "Historic Bridge" sign posted at the entrance of the tube today so prominently displays. Was it the fact that the the tube opened on **Oct 27th** that caused the confusion between 1927 and 1928? The plaque behind the sign, (click picture at the right to make it bigger) which can now barely be noticed driving into the tube, gives the correct date -- 1928.



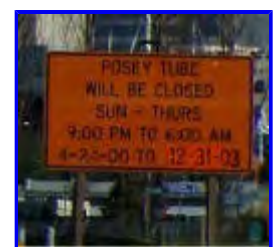
- **November 30, 1928** Alameda County auctions the [Webster Street Bridge](#) -- 980 feet long, steel, swing-span rim-bearing type, cantilever construction to Sacramento County for just \$3,100. The bridge had been erected just 2 years earlier at a cost of \$134,000.⁶ While the tube was being built a ship rammed into the Webster Street bridge and caused it severe damage, making it unusable. With no crossing at Webster Street, the merchants along Webster Street suffered an immense loss in business -- and so the Webster Street Bridge was rebuilt -- even as the tube was being constructed.

- Sadly, on **August 3, 1932** (during the depression) **George Posey committed suicide by inhaling carbon monoxide from car fumes in his garage** at his home in Oakland. An Alameda County Superior Court Jury had just recommended an investigation into his office (he was the Alameda County Surveyor) the day before he took his life. The investigation was due to work Posey had done for some real estate men who were convicted of running a "free lot" real estate racket.



- **In 1963 The Webster Street Tube was completed** using the **same design technique** as the Posey Tube.⁸ It was a Ben C. Gerwick, Inc. construction joint venture.⁷

- **April 24, 2000**, the California Department of Transportation (Caltrans) begins the Seismic Retrofit construction Posey and Webster Tubes, in order to strengthen them for a "major earthquake". During the construction, which lasted for over three years, both tubes were (usually) closed from Sunday through Thursday between 9:00 PM and 6:00 AM, forcing people to use alternate routes to and from Alameda (such as the Park Street Bridge). Getting home before 9:00 PM became an issue for some people living West side of Alameda, to avoid the much longer route home.



SEISMIC RETROFIT Fact Sheet: <http://www.dot.ca.gov/dist4/poseywebster.htm>



- **October 31, 2003, the tubes are reopened to traffic 24 hours a day, 7 days a week -- with only occasional closures for additional work.**



notes:

- (1) Alameda Times-Star. *Tube Beginning Told by Kelley*, Oct 28, 1928
- (2) Alameda Times-Star. *Estuary Tunnel Masterpiece of Man's Ingenuity*, Oct. 28, 1928
- (3) Alameda Co CA Board of Supervisors. *Formal Opening and Dedication of George A. Posey Tube*, Oct 27, 1928
- (4) Alameda Times-Star. *Estuary Tunnel Masterpiece of Man's Ingenuity*, Oct. 28, 1928
- (5) Alameda Times-Star. *Estuary Tunnel Masterpiece of Man's Ingenuity*, Oct. 28, 1928
- (6) SF Examiner. 12/1/1928
- (7) Ben C Gerwick Inc. *Seismic Retrofit at Posey Tube and Webster St Tube*, May, 1997
<http://www.gerwick.com/project-detail.asp?ProjectID=296>
- (8) CalTrans website, no longer available
- (9) CalTrans website, no longer available

