(Oct. 1990)
United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
REGISTRATION FORM

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NAT. REGISTER OF HISTORIC PLACES
NATIONAL PARK SERVICE

316

1. NAME OF PROPERTY

HISTORIC NAME: Washburn Tunnel
OTHER NAME/SITE NUMBER: NA

2. LOCATION

STREET & NUMBER: 3100 Federal Road
CITY OR TOWN: Houston and Pasadena **VICINITY:** N/A **NOT FOR PUBLICATION:** N/A
STATE: Texas **CODE:** TX **COUNTY:** Harris **CODE:** 201 **ZIP CODE:** 77015

3. STATE/FEDERAL AGENCY CERTIFICATION

As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this (X nomination) (__ request for determination of eligibility) meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property (_ meets) (_ does not meet) the National Register criteria. I recommend that this property be considered significant (_ nationally) (X statewide) (_ locally). (__ See continuation sheet for additional comments.)

_____ 3.6.2008
Signature of certifying official Date

State Historic Preservation Officer, Texas Historical Commission
State or Federal agency and bureau

In my opinion, the property ___meets ___does not meet the National Register criteria. (__ See continuation sheet for additional comments.)

_____ _____
Signature of commenting or other official Date

_____
State or Federal agency and bureau

4. NATIONAL PARK SERVICE CERTIFICATION

I hereby certify that this property is: Signature of the Keeper Date of Action

✓ entered in the National Register — love Edson H. Beall — 4.16.08
___ See continuation sheet.
____ determined eligible for the National Register
_____
___ See continuation sheet
____ determined not eligible for the National Register
____ removed from the National Register
____ other (explain): _____

5. CLASSIFICATION

OWNERSHIP OF PROPERTY: Public-Local

CATEGORY OF PROPERTY: structure

NUMBER OF RESOURCES WITHIN PROPERTY:	CONTRIBUTING	NONCONTRIBUTING
	0	0 BUILDINGS
	0	0 SITES
	1	0 STRUCTURES
	0	0 OBJECTS
	1	0 TOTAL

NUMBER OF CONTRIBUTING RESOURCES PREVIOUSLY LISTED IN THE NATIONAL REGISTER: 0

NAME OF RELATED MULTIPLE PROPERTY LISTING: N/A

6. FUNCTION OR USE

HISTORIC FUNCTIONS: Transportation: road-related (vehicular tunnel)

CURRENT FUNCTIONS: Transportation: road-related (vehicular tunnel)

7. DESCRIPTION

ARCHITECTURAL CLASSIFICATION: Other: Subaqueous tunnel

MATERIALS:

FOUNDATION	steel, concrete
WALLS	interior: ceramic tile
	exterior: metal, stone
ROOF	concrete
OTHER	roadway: concrete

NARRATIVE DESCRIPTION (see continuation sheets 7-5 through 7-8).

Description

The Washburn Tunnel, spanning the Houston Ship Channel of Buffalo Bayou, is a subaqueous trench-type tunnel structure connecting the Houston suburbs of Galena Park and Pasadena in Harris County, Texas. The two-lane motor vehicle tunnel is constructed of two steel tubes, with one fitted inside the other. Concrete fills the 18-inch void between the tubes, and a layer of concrete, two feet thick, covers the outer shell. The brick roadway is now paved, and the tunnel interior is covered in its original white ceramic tiles. A 3-story control building of steel frame construction straddles the tunnel's north entrance and is clad with granite and cast stone panels as well as vertical siding of zinc. A traffic roundabout and a traffic circle leading to the tunnel roadways from the north and south, respectively, are also included in this nomination. While some changes have been made to the tunnel and control building structure since its construction, it retains a great degree of integrity.

Connecting two suburbs of Houston, Texas—Galena Park and Pasadena—the Washburn Tunnel crosses north-to-south underneath the Houston Ship Channel of Buffalo Bayou. On the northern, Galena Park side, the connection is made by means of a traffic roundabout on Federal Road; Clinton Drive intersects the roundabout from the west. The southern side, at Pasadena, is connected to the tunnel by a traffic circle at Shaver Street, with two streets intersecting at the circle: West Richey Street from the southwest and East Red Bluff Road from the east.[1] Both the roundabout and the traffic circle areas are planted with grass, oleanders, and small caliber trees.

A tank farm may be observed to the west as drivers approach the tunnel from the north via Federal Road, while the catalytic crackers of a petroleum refinery loom in the distant background beyond the tunnel entrance. Approximately 200 feet beyond the roundabout, on the right side of the road, are buildings which serve as the offices of Harris County Precinct 2 and the tunnel's administrative headquarters as well as other additional maintenance structures. These non-contributing buildings, structures, and staging areas are on the west side and adjacent to the roadway and tunnel entrance. The tunnel entrance is 500 feet to the south of the roundabout in Galena Park. Heading south after passing through the tunnel, the Crown Petroleum Road intersects the route from the east at about 750 feet, and the traffic circle is approximately 1,000 feet from the tunnel exit. To the right of the traffic circle is a narrow service road parallel to the tunnel road. Following this road, to the right is a large coal handling, staging area, and storage facility.

The 3,791-foot total length of the Washburn Tunnel, designed in 1947 by the engineering firm of Palmer & Baker and built by Merritt-Chapman & Scott, is comprised of three sections—a concrete roadway and ramp to the north; the steel-and-concrete tunnel measuring 2,936 feet, portal-to-portal, of which 1,500 feet are submerged below the Houston Ship Channel; and a concrete roadway and ramp to the south.[2] Sitting atop the

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[1] *Houston Harris County Atlas*, "Key Map," 40th Edition, 496 Y and 536 C. While a roundabout and a traffic circle are both circular in shape, a roundabout has stop signs through its course.

[2] Ben Kaplan, "Spanning the Waters in 90 Seconds. Washburn Tunnel Gets Test Tomorrow to Hail Dawn of New Era," *Houston Press*, 16 February 1950. Kaplan states that the 3,791-foot length includes the approaches.

northern tunnel opening, on the Galena Park side, is a 3-story control building with a basement. This structure houses the controls for the tunnel's security and ventilation systems. To the east of the south portal, adjacent to the entrance, is a 2-story pump room with a basement.

The steel tubes of the Washburn Tunnel are built in four 375-foot sections of welded construction, each having a diameter of 35 feet, with the inner, circular steel tube enclosed in an octagonal outer shell of steel. The void between the two tubes is 18 inches wide and is filled with steel-reinforced concrete. An additional layer of concrete, 2 feet thick, encases the outer steel shell. The two concrete-encapsulated steel tubes rest on the bottom of the Houston Ship Channel in a ditch measuring 40 feet in width.

The tunnel's reinforced concrete roadway is 22 feet wide and more than 15 inches thick, considered at the time of its construction to be "the thickest paving base in Texas."[3] The roadway was originally paved with brick, but in 1987 it was replaced with concrete.[4] The concrete roadway slopes down at a 6 per cent grade to mid-channel, where the road levels at the tunnel bottom for a length of approximately 400 feet, before starting its incline to the tunnel exit on the opposite side of the Houston Ship Channel.[5] To the east side of the roadway inside the tunnel, and rising 2 ½ feet above it, is a narrow sidewalk approximately 1 ½ feet wide, its edge originally defined by an aluminum railing standing 3 feet and 10 inches tall, since removed. The sidewalk is accessed by 5 concrete stairs at each tunnel entrance and is open only to maintenance crews, not to general pedestrian traffic. The walls of the tunnel are finished with 1,061,000 glazed ceramic subway tiles, the majority of which are white, except for a double-course of green tiles running along the edge of the sidewalk.[6] A single line of fluorescent light bulbs is affixed to the tunnel ceiling in its central section, while at the two entrance ramps, the ceiling is lined with three rows of lights to better acclimate drivers arriving from or approaching into bright sunlight. The center headroom inside the tunnel is 18 feet.

Running along each side of the roadway is an air flue connecting to the air duct that spans the length of the tunnel. This air duct is 18 ½ feet in width and 7 feet in height, except at its point of entry, where the space is 10 feet in height.[7] The air duct is accessible from the control building's basement, where one may descend a steel ladder affixed to the wall and drop straight down. The walls of the air duct are unadorned reinforced concrete.

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[3] Harris County Office of Human Resources & Risk Management, n.d.; also "Spanning the Waters in 90 Seconds; Washburn Tunnel Gets Test Tomorrow to Hail Dawn of New Era," *Houston Press*, 16 February 1950.

[4] The tunnel was closed for repairs between April and November 1987, the longest period of closure in its history to that date. See articles in the *Houston Chronicle* 12 February 1987; 11 April 1987; 29 September 1987; and 21 November 1987.

[5] *The Washburn Tunnel*, Harris County Precinct 2, n.d.

[6] The tile count appears in a document titled "The Washburn Tunnel," provided by Harris County Precinct 2, n.d. However, *Houston Press* reporter Ben Kaplan wrote in 1950 that the ceramic tiles cost $1,060,000, but gave no count of the tiles used. See Ben Kaplan, "Spanning the Waters in 90 Seconds. Washburn Tunnel Gets Test Tomorrow to Hail Dawn of New Era," *Houston Press*, 16 February 1950.

[7] Dimensions are taken from the Palmer & Baker construction drawings, revised 11 July 1947. Collection of Harris County Precinct 2.

While the two-lane roadway inside the tunnel is divided by a painted yellow double-line, the ramped roadways outside the tunnel are divided by a low concrete curb approximately 2 feet wide; a similar concrete curb flanks each lane, affording a safe distance from the retaining walls as the roadway gradually narrows along the descent. The retaining walls at each tunnel entrance, lining the approach ramps, are made of thick reinforced concrete and faced with a smooth-faced brick of a mottled, dark reddish-brown color. Each entrance portal façade reads as a large square, with an arched opening almost 14 feet high and just more than 27 feet wide. The arched opening is defined at its edge with a single course of brick The square gateway façades are each 36 feet tall and faced with the same brick as the retaining walls.

Forty feet wide and 3 stories tall, the control building rises above the north entrance to the tunnel, on the Galena Park Side. The building houses traffic monitors, transformers, generators, fans, filters, and a host of electronic systems, in addition to having a basement from which both the roadway and the air duct beneath the roadway can be accessed. Its major façade, on the north, is segmented into 3 masses: a nearly-square block of stone balanced between two narrower volumes of stone and steel. The central section reads as a solid volume and is faced with light-colored cast stone panels laid in a grid 7-by-7. The top and side edges of this central mass are edged with a dark-colored cast stone. Flanking either side of this central mass are two volumes of steel louvers, each articulated with a row of light cast stone panels at its top and bottom; these louvered sections appear to wrap around the building, continuing on to the east and west elevations. The louvers allow for airflow in the mechanical spaces housing the tunnel's massive exhaust systems. These two side masses seem to float above their recessed first-floor entrances, supported at each corner by engaged columns faced with granite. Between the columns and the stone wall of the central mass, the walls of the first story are covered with light-colored cast stone panels on a base course of granite, which wraps around the entire building. On this major façade are two single doors of steel, their upper halves glazed, positioned adjacent to the central volume, one on each side. At each entrance door, a 4-foot-tall rectangular planter projects out from the base course and is faced with matching granite panels. Six concrete steps lead up to each door and are adjacent to the planters; each concrete step is longer than the one above it, making the stairs appear as if they are flowing down the front of the planters. A spare, yet elegant, aluminum railing is affixed to the retaining wall on the tunnel-side of each entrance stair. Each railing is comprised of three thin, flat balusters that taper as they rise to connect with the top handrail, which is round in section. Between each baluster are ten thin wires, stretched horizontally.

The opposite façade of the control building, facing Pasadena to the south, is asymmetrical. The top two floors here appear as one stone volume that overhangs the first, supported by four engaged columns of granite. Between these engaged columns, the slightly-recessed first floor is covered with light cast stone panels and a base course of granite panels. Steel awning windows, divided into 3 lights each, punctuate this south façade. On the west side of the façade, a single awning window appears at the second and third floors, while a band of four awning windows appears to be centered in the façade at each floor. On the first floor, another single awning window appears several feet to the east of the band of four windows. At the second and third floors a large, continuous section of steel louvers punctuates the eastern third of this façade and wraps around to the east elevation, just as the two louvered sections do on the main façade of the control building.

The east elevation is symmetrical, but is more obviously read as divided into thirds. Centered in the façade at the first floor level is a pair of steel doors with their upper halves glazed. Four engaged columns of granite appear as if evenly spaced, with one at each corner and one on either side of the doors. The enormous panels of louvers on the second and third floors of the north and south elevations wrap around to this east façade, each enveloping one-third of the mass and leaving the center third of this composition as an unadorned grid of light cast stone panels. The west elevation is asymmetrical. The two-story louvered section on the left is a continuation of the louvers from the north façade. A narrow strip of light cast stone panels abuts the louvered section on its right and is followed by a band of four 3-light awning windows at both the second and third floors. To the right of these window groupings and extending to the elevation's right edge is an uninterrupted expanse of light cast stone. The recessed first floor features a steel entrance door on the right side, reached as on the north elevation by six concrete steps with an aluminum handrail. Between the granite columns are two open bays for maintenance equipment and vehicles.

Renovations to the Washburn Tunnel made between 1987 and 1991 include a new roadbed; updated electrical, lighting, monitoring, and mechanical systems; and new air intake louvers. The ceramic tiles on the ceiling and walls of the tunnel interior were re-grouted and cleaned, but not replaced. Perhaps making the greatest visual impact of all of the renovations, the control building was covered with a vertical siding of charcoal gray-colored zinc, its channels suggesting a vertical ship-lap. The large expanses of louvers and the awning windows remain in place, puncturing through the mass of zinc. This slipcover was selected as a low-maintenance solution to a potentially hazardous problem: loose chunks of cast stone could fall onto motorists approaching the tunnel on the ramp below, or on pedestrians entering the control building from its parking lot. The original façades, as constructed in 1949, remain under this removable zinc cover.

8. STATEMENT OF SIGNIFICANCE

APPLICABLE NATIONAL REGISTER CRITERIA

- **A** PROPERTY IS ASSOCIATED WITH EVENTS THAT HAVE MADE A SIGNIFICANT CONTRIBUTION TO THE BROAD PATTERNS OF OUR HISTORY.
- **B** PROPERTY IS ASSOCIATED WITH THE LIVES OF PERSONS SIGNIFICANT IN OUR PAST.
- X **C** PROPERTY EMBODIES THE DISTINCTIVE CHARACTERISTICS OF A TYPE, PERIOD, OR METHOD OF CONSTRUCTION OR REPRESENTS THE WORK OF A MASTER, OR POSSESSES HIGH ARTISTIC VALUES, OR REPRESENTS A SIGNIFICANT AND DISTINGUISHABLE ENTITY WHOSE COMPONENTS LACK INDIVIDUAL DISTINCTION.
- **D** PROPERTY HAS YIELDED, OR IS LIKELY TO YIELD INFORMATION IMPORTANT IN PREHISTORY OR HISTORY.

CRITERIA CONSIDERATIONS: N/A

AREAS OF SIGNIFICANCE: Engineering, Transportation

PERIOD OF SIGNIFICANCE: 1947-1958

SIGNIFICANT DATES: 1947-1958

SIGNIFICANT PERSON: N/A

CULTURAL AFFILIATION: N/A

ARCHITECT/BUILDER: Designers: Palmer and Baker, Consulting Engineers, Mobile, Alabama

Engineers and Contractors: Merritt-Chapman and Scott Corporation of New York

NARRATIVE STATEMENT OF SIGNIFICANCE (see continuation sheets 8-9 through 8-17).

9. MAJOR BIBLIOGRAPHIC REFERENCES

BIBLIOGRAPHY (see continuation sheets 9-18 through 9-25).

PREVIOUS DOCUMENTATION ON FILE (NPS): N/A

_ preliminary determination of individual listing (36 CFR 67) has been requested.
_ previously listed in the National Register
_ previously determined eligible by the National Register
_ designated a National Historic Landmark
_ recorded by Historic American Buildings Survey #
_ recorded by Historic American Engineering Record #

PRIMARY LOCATION OF ADDITIONAL DATA:

_ State historic preservation office *(Texas Historical Commission)*
_ Other state agency
_ Federal agency
X Local government
_ University
_ Other -- Specify Repository:

STATEMENT OF SIGNIFICANCE

The first underwater traffic artery in the state of Texas and the second toll-free tunnel in the United States, the Washburn Tunnel replaced the Pasadena Ferry, which had been crossing the Houston Ship Channel since 1916. The tunnel signifies the rapid industrialization of the channel and served to encourage growth in the suburban communities of Pasadena and Galena Park. Serving an estimated 10,000 automobiles and trucks each day after its opening in 1950, today the Washburn Tunnel safely carries more than 30,000 vehicles daily on its route under the waters of the Buffalo Bayou.

The Washburn Tunnel, as conceived by the Harris County Commissioners Court in 1940, was proposed to allow elimination of an inadequate 1916 ferry crossing over the Houston Ship Channel on Buffalo Bayou that linked the growing cities of Pasadena and Galena Park, Texas. More than 6,000 deep sea-going vessels and 10,000 barges moved daily on the Houston Ship Channel during the 1940s, in direct conflict with the Pasadena-Galena Park Free Ferry. The Harris County-Houston Ship Channel Navigation District first commissioned a study to determine the number of vehicles that would use the tunnel. It was estimated that over 10,000 vehicles would use the tunnel each day, when completed; on its first day of operation, an estimated 55,000 automobiles passed through the tunnel's portals.[8] Near the end of the 20th century, traffic through the tunnel reached over 30,000 vehicles per day. Between 1940 and 1947, Harris County planned the tunnel in collaboration with the engineering firm of Palmer & Baker, Inc., of Mobile, Alabama. A shortage of manpower and materials created by World War II delayed the tunnel's construction during these years, but it opened to great fanfare in May 1950 and has been in operation continuously since then.

Industrial Development of the Houston Ship Channel[9]

The Houston Ship Channel, one of the busiest waterways in the United States, achieved its earliest significance as a link between interior Texas and the sea. It traces its origin to early trade on Buffalo Bayou, which heads on the prairie thirty miles west of Houston in the extreme northeastern corner of Fort Bend County and runs southeast for fifty miles to the San Jacinto River and then into Galveston Bay. Recognizing the potential of the stream, the brothers John Kirby and Augustus Chapman Allen laid out the town of Houston at the head of navigation on Buffalo Bayou in 1836. As the waterway proved to be the only one in Texas that was dependably navigable, planters over a large area brought their cotton to Houston to be shipped by barge or riverboat to Galveston, the best natural port in Texas, where the cargoes were transferred to seagoing vessels and then to market. In 1869 a group of Houston merchants organized the Buffalo Bayou Ship Channel Company to improve the channel, and in 1870 they persuaded Congress to make Houston a port of delivery. The United States Army

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[8] John Gurwell, "55,000 Cars Use Tunnel First Day. Just One Mishap—Auto Stalls Half-Way," *Houston Press*, 26 May 1950.
[9] This section on the Houston Ship Channel was adapted from Marilyn M. Sibley, "Houston Ship Channel," *Handbook of Texas Online* at http://www.tsha.utexas.edu/handbook/online/articles/HH/rhh11.html, accessed on 24 October 2007. See also Marilyn M. Sibley, *The Port of Houston* (Austin: University of Texas Press, 1968).

Corps of Engineers surveyed the channel and recommended a width of 100 feet and a depth of 6 feet. Still, because of inadequate appropriations, this effort brought few improvements. It was not until 1876 that the Bayou Ship Channel Company dredged a channel from Galveston Bay to the site of Clinton—now called Galena Park—near Houston. By 1909, however, the channel had been dredged to 18½ feet.

Impatient at the slow progress, Mayor Horace Baldwin Rice led a delegation to Washington to present the "Houston Plan," which offered to pay one-half of the cost of dredging the channel to twenty-five feet. After receiving assurances that the facilities would be publicly owned, Congress accepted the offer. Prior to Houston's offer, no substantial contributions had ever been made by local interests, but since then no project has been adopted by the national government without local contributions. The Texas legislature passed a bill enabling Harris County to establish a navigation district, and the citizens then approved a bond issue of $1,250,000. Dredging was completed on 7 September 1914 and celebrated with great fanfare in the city. Because of shipping conditions during World War I, however, the channel's deep water development was delayed until after the war. In 1919 an ocean-going vessel took the first shipment of cotton directly from Houston to a foreign market, thus inaugurating a trade that made Houston the leading cotton port in the United States within a decade. Oil, which had been discovered in Texas early in the twentieth century, increasingly rivaled cotton as the most important cargo on the channel. Petroleum also led to the industrialization of the waterfront, for the long, protected channel with its nearby crude oil supplies proved an attractive location for oil refineries. By 1930 nine oil refineries operated along the channel. Although the Great Depression briefly interrupted the progress, the Port of Houston ranked third in the nation in the amount of tonnage carried on the eve of World War II.

The war suspended normal shipping activities, but gave further impetus to the industrialization of the waterway. In addition to increasing the demand for customary petroleum products, the war inspired the development of synthetic rubber based on a byproduct of petroleum. Two synthetic rubber plants were located near the channel while the war was in progress, and after the war the channel became a center of the petrochemical industry. In the postwar years the port also became a major shipping point for midwestern grain. Growing foreign trade and new industry boosted the port to second in tonnage in the nation in 1948, and from then until 1964 it customarily ranked second or third. The combination of industry and transportation facilities, including a network of railroads, trucklines, and interstate highways, influenced the National Aeronautics and Space Administration to select a site convenient to the channel as headquarters for the nation's space program in 1961.

Congress approved a project to widen the channel to 300 feet from Fidelity Island to the turning basin in 1945, and in 1957 army engineers recommended that the entire channel be deepened to 40 feet. By 1964, the 50th anniversary of the deepwater channel, the federal government had expended $64 million for channel improvement and maintenance, and the local government had invested $28 million in port facilities. In return, economic activities related to the channel yielded $148 million annually in taxes. The channel-side industrial complex, valued at $3 billion, and shipping activities gave employment to 55,000 persons who received $314 million in wages annually. The Port of Houston was the first in the nation to introduce container shipping. By the 1970s 4,500 ships flying the flags of sixty-one nations passed through the channel annually.

The Growth of Galena Park and Pasadena, Texas[10]

Galena Park is a portion of an 1824 land grant from the Mexican government to an individual settler, Ezekiel Thomas. When Thomas died in 1835, his family sold the land to Isaac Batterson, who built a small settlement on Buffalo Bayou and named it Clinton. During its early years Clinton was a farming and ranching community, but the development of the port of Houston after 1876 changed the character of the settlement. Clinton resident Charles Morgan, owner of the Morgan Steam Ship Company, dredged Buffalo Bayou and excavated a canal opposite Morgan's Point to open a channel for the port. He also built a cotton compress and constructed a railroad from the main line in Houston to a location opposite Buffalo and Sims bayous. Clinton continued to be the terminus for much of the bayou shipping until a turning basin was constructed in later years. By the early 1880s cotton warehouses and compresses were located along the bayou and railroad, and Clinton prospered in its new role as a railroad and shipping center.

In the early 1900s the petroleum industry began to take advantage of Clinton's prime location. The first refinery there was built by the Galena Signal Oil Company of Texas, which was later bought out by Texaco. Another refinery, established by C. D. Keen and W. C. Woolf of Shreveport, Louisiana, was eventually acquired by Gulf Oil Corporation. Other important early industries in Clinton included the United States Steel Company, which constructed an office and warehouse adjacent to the Southern Pacific terminal facilities in 1927. In 1935 Clinton changed its name to Galena Park, in honor of the oil company, after an initial request for a post office was denied because another Clinton, Texas, already had the name. In 1936 the town had 300 residents and twelve businesses. However, beginning in the late 1930s, with the development of Houston as a major port, Galena Park grew rapidly. In 1952 the population was 7,162. Growth continued until the mid-1970s, when the town reported a peak population of 12,645. Afterward, however, residents declined to 9,957 in 1988, when the town had 101 businesses. In 1990 the population was 10,033, and in 2000 it was 10,592. Since the 1940s the town has been considered a part of greater Houston. The original name survives in the town's main street, Clinton Drive.

John H. Burnett of Galveston founded the town of Pasadena in 1893 and named it for Pasadena, California, because of the site's lush vegetation. The La Porte, Houston and Northern Railroad was built through the townsite in 1894 and opened the area for development as a farming community. Retired Kansas banker Charles R. Munger and land promoter Cora Bacon Foster were instrumental in organizing the early community. After the Galveston hurricane of 1900 Clara Barton, of the American Red Cross, purchased 1½ million strawberry plants for Gulf Coast farmers, and Pasadena quickly established itself as the strawberry capital of the region. By the 1920s all of southeast Harris County was known as "Pasadena Acres."

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[10] This section on the Houston suburbs of Galena Park and Pasadena was adapted from Mary Ramirez, "Galena Park," *Handbook of Texas Online* at http://www.tsha.utexas.edu/handbook/online/articles/GG/hfg1.html, accessed on 24 October 2007; and C. David Pomeroy, Jr., "Pasadena, Texas," handbook of Texas Online at http://www.tsha.utexas.edu/handbook/online/articles/PP/hdp2.html, accessed on 24 October 2007. Also see C. David Pomeroy, Jr., *Pasadena: The Early Years* (Pasadena, Texas: Pomerosa Press, 1994).

The citizens of Pasadena voted to incorporate on 22 December 1923, then elected to disincorporate on 29 November 1924, and voted finally to incorporate in 1928. The city held about half the land Burnett had originally platted for his town. At the time of incorporation water, electricity, and gas utilities had only recently been brought to the community. Burnett had laid his town out on the southern bank of Buffalo Bayou, which became the Houston Ship Channel. When Joseph Stephen Cullinan, founder of Texaco, moved his company to Houston in 1906, he purchased 200 acres in nearby Pasadena. There he operated an experimental farm for twenty years, while he promoted this site and other lands along the ship channel. The Sinclair (now ARCO), Texaco, and Crown oil companies all built refineries in the area by 1920.

Transition from a farming economy to an industrial one did not occur until the late 1930s, when the war in Europe spurred a major increase in the ship-channel industries. Pasadena had a population of 3,436 in 1940 and 22,483 in 1950, as the postwar boom continued. It annexed the communities of Deepwater, Middle Bayou, and Red Bluff. From 1.7 square miles in 1893 the community site grew to 58.6 square miles in 1980, when the city had a population of 112,560 people. In 1993 Pasadena had a population of 122,805 and 2,147 businesses. By 2000 the population was 141,674 with 3,709 businesses. Employment in Pasadena today is closely linked to the ship-channel industries, the Bayport Industrial District, and the Lyndon B. Johnson Space Center in adjacent Clear Lake.

Construction of the Washburn Tunnel

The Harris County Commissioners established the Pasadena Free Ferry in 1916 to provide safe, reliable passage across the Houston Ship Channel for the large number of Pasadena residents who had found employment at the newly constructed Sinclair Refinery near Galena Park. Before that time, Pasadena residents typically would walk or ride bicycles from their homes to the end of Shaver Street at Buffalo Bayou, and from there they would row across the channel in private boats. Other alternative crossings included a more distant ferry or one of several bridges built across Buffalo Bayou in the city of Houston during the late 19th and early 20th centuries.

By the end of World War II, more than 100 industrial plants had located along the ship channel.[11] As increased industrialization created more employment opportunities and more commuters, the ferry could not meet rising demand. Depending upon conditions and the route selected, it could take commuters as little as fifteen minutes or as much as two hours to cross the channel; the closest automobile route—the 69th Street bridge—required a round-trip of 14 miles.[12] Harris County realized that a better transportation was needed if the area was to continue to grow.

The Harris County Commissioners Court first considered the construction of a tunnel beneath the Houston Ship Channel in 1940, and it passed the first bond issue for the construction of a tunnel in 1944. The court then

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[11] "Channel Is Lined with Industries," *Houston Post*, 27 May 1950.
[12] Ben Kaplan, "Spanning the Waters in 90 Seconds, Washburn Tunnel Gets Test Tomorrow to Hail Dawn of New Era," *Houston Press*, 16 February 1950; also "County Commissioners Say: Tunnel Will Boom County Growth," *Pasadena Citizen*, 25 May 1950.

invited the Mobile, Alabama, engineering firm of Palmer & Baker to conduct a six-month transportation study, which was completed in April 1945. The firm had designed the subaqueous trench-type Bankhead Tunnel (1941) through the Mobile River, and this served as a model for the firm's design of the Pasadena Tunnel.

Automobile tunnels like the Bankhead were safe, economical, and the simplest to construct during this era. Other subaqueous trench-type tunnels in the United States at that time included the Posey Tube (1928) connecting Oakland and Alameda, California, beneath the Oakland-Alameda Estuary; and the Detroit-Windsor Tunnel (1930), under the Detroit River between Detroit, Michigan, and Windsor, Ontario, Canada. These tunnels each accommodated two lanes of vehicular traffic. The Hudson River Vehicular Tunnel in New York City (1927), now called the Holland Tunnel, is comprised of two two-lane tunnels, making four traffic lanes; the Lincoln Tunnel (1934-45), also spanning the Hudson River in New York City, was similarly designed as a pair of two-lane tunnels, although only one tunnel operated between 1937 and 1945, and a third tunnel was added to the system in 1957.

Palmer & Baker completed the final plans for the Pasadena Tunnel in July 1947. Ground breaking for the tunnel took place on 3 March 1948, and the general contractor, the New York-based marine and salvage firm of Merritt-Chapman & Scott, commenced construction shortly thereafter. The Ingalls Shipbuilding Company of Pascagoula, Mississippi, built the steel tubes for the tunnel in four 375-foot sections, each having a diameter of 35 feet. The tubes were then shipped by barge through the Intercoastal Canal to Galveston, Texas, up the Galveston Bay to the Houston Ship Channel, and then on to the old ferry site near Pasadena.

A local newspaper reported that the steel tunnel components "were fitted with watertight bulkheads at either end, launched one by one like any deep sea vessel and then—looking like some prehistoric sea monster—were towed by tug through the Gulf and Inland Waterway." Upon their arrival at the Clinton Docks at Galena Park, two miles from the tunnel site and 400 miles from their origin, the four steel sections—each nothing more than a circular steel tube enclosed in an octagonal outer shell—were prepared for "shape-up" work, as reported:

> Still afloat, but settling deeper as work progressed, they were fitted with a two-foot thick inner ring of concrete, steel-reinforced roadway, walkway, ventilator ducts and conduits. All concrete had to be poured through temporary openings in the top of the tube section, later sealed by welded plates. And every pour had to be delicately timed and balanced to guard against bending the steel framework in any way. In the last pour at the Clinton Docks, concrete was sent into the open space between the inner tube and outer shell until each section rode as low in the water as it could without sinking. Then, one by one, they were taken on their last two-mile ride to the tunnel site, where other crews had dredged the channel-bottom trench and had started construction of the approach sections. Nudging the unwieldy 375-foot sections into precise position above the trench called for perfect co-ordination [sic] ashore and afloat.[13]

[13] "Laying Casings for Tube Was Precision Job," newspaper unknown, 26 May 1950. Collection of Harris County Precinct 2.

In order to send the buoyant tube to the channel bottom, more concrete was gradually poured between the outer and inner shells. Buoyancy of the channel's water varied as the salt content changed with the tides, and allowances had to be made accordingly. Although measured in tons, the concrete pour demanded great accuracy in order to maintain control over every inch of the tube's descent into the trench forty feet below the channel. The final, carefully-timed pour "gently eased the tube sections atop steel pile bents driven into the trench bottom to act as a temporary support until a bed of firmly packed sand could be placed beneath the tunnel. Huge fittings locked each tube section to the next and, on either end of the span, to the 'transition' sections joining them to the land approaches. Later these fittings were welded from inside the tunnel, turning the interlocked sections into a single shore-to-shore tube."[14]

Because concrete poured under water must be sent down in one continuous flow, the tremie method of concrete casting was used to build the final outer casing for the submerged structure, chuting concrete down a 12-inch pipe toward the bottom of the Houston Ship Channel. The pipe's end was constantly kept just beneath the surface of the concrete already poured, and approximately 11,750 cubic yards of tremie concrete were required to fully encase the tunnel.[15] Once the concrete casing was completed, the tunnel was covered with backfill. Then the temporary watertight bulkheads at either end of each section were taken down, and the finish work on the tunnel interior began.

Celebrating the Grand Opening of the Washburn Tunnel

On Friday, 17 February 1950, "amid a shower of flying sparks," County Judge Glenn A. Perry, wearing a welder's hat and goggles, cut through the last steel bulkhead in the tunnel, and after the heavy steel plate was removed, the judge became the first person to step from the Pasadena side to the Galena Park side of the Houston Ship Channel.[16] Onlookers included representatives from the firms of Palmer & Baker and Merritt-Chapman & Scott, as well as several county commissioners, the port director, members of the Houston Chamber of Commerce, and other former county officials who had taken part in the early stages of the project's planning. However, "one unscheduled event took place Friday [which] took tunnel officials so completely by surprise that for a brief interlude it upset the festivities completely."[17] While the politicos were milling about the refreshment table informally set up on the Pasadena side, an adventurous 19-year-old truck driver, Ray C. Armer, "chugged through the tunnel on his motorcycle, driving right through the crowd of brass on hand for the occasion," and earned the title of the first person to drive a motor vehicle of any kind through the new tunnel.[18]

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[14] Ibid.
[15] "Washburn Tunnel Data," mimeographed sheet. Collection of Harris County, Precinct Two.
[16] Dick Tate, "Judge 'Holes Through' to Open Washburn Tunnel," *Houston Chronicle*, 18 February 1950. Also see John W. Yeats, "Perry Cuts Through Final Tube Bulkhead," *Houston Post*, 17 February 1950.
[17] Tate, "Judge 'Holes Through.'"
[18] Ibid. The article gave Armer's local address as 1118 East Twenty-fourth Street, as if people would be interested in finding him for retribution or congratulation.

The young motorcyclist robbed Harris County auditor Harry L. Washburn—the county official for whom the new tunnel would be named—of an important honor being reserved for him: that of driving the first vehicle through the tunnel at its official opening celebration in May 1950. Washburn was absent from this unofficial tunnel joining or "opening" event that February, however, as he was at his mother's bedside; gravely ill, she died the following day.

Born in Columbus, Texas, Harry L. Washburn (1882-1954) studied civil engineering at the University of Texas before moving to Mexico in 1902, where he worked as an auditor for the International Mexican Railroad. In 1904 he applied for the position of Harris County auditor but was denied the post because of his lack of professional training. Undeterred, Washburn spent the next eight years studying law and accounting, and he became the auditor of Harris County in 1913, remaining in that position for 41 years. Upon Washburn's appointment Harris County was deeply in debt, but by 1915 he had established a more efficient accounting system and transferred the county's finances to a cash basis. Years later he managed to do the same for the suffering State Highway Department, yet he refused to accept the state's $25,000 fee for this work, taking only a certificate of appreciation.[19]

In 1949 a relatively new county commissioner, E. A. "Squatty" Lyons, put forth the measure to name the tunnel for Washburn, who had saved taxpayers millions of dollars during his tenure as auditor. Many residents and politicians in the county objected to Lyons's nomination, however, suggesting instead that the tunnel should be named the Pasadena Tunnel, the Galena Park Tunnel, or the Pasadena-Galena Park Tunnel, and some disgruntled individuals threatened lawsuits and made attempts to vote the commissioners out of their offices. Despite these difficulties, on 4 April 1949 the Harris County Commissioners Court voted to name the Pasadena Tunnel for Harry L. Washburn in appreciation for his many years of devoted service to the county and the state of Texas.[20]

Demonstrating the friendly, but competitive, spirit of the two communities, elaborate ceremonies were planned at both ends of the tunnel to officially mark its opening. The north end of the structure, where the control building hovered over the tunnel entrance, would be the location for the county's official dedication program. Brass bands, politicians, and community leaders would gather with onlookers at the Galena Park side for a series of public addresses. A plaque was to be unveiled, and County Judge Perry would snip the ribbon before a car carrying an official party would drive through the tunnel to Pasadena. As the automobile made its way across the Ship Channel, people would be allowed to walk through the tunnel from Galena Park to Pasadena—the only time in its history that the tunnel has opened to pedestrian traffic.

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[19] "Tunnel Is Tribute to Washburn," *Pasadena Citizen*, 25 May 1950.

[20] Ibid.; Meldrum S. Young, "Washburn Tunnel Foes Pledge Hot Campaign, Four East Harris C. of C's Say They'll Change Commissioners If Name Isn't," *Houston Chronicle*, 27 April 1949; "Pasadena Citizens to Protest Naming Tunnel for Washburn," *Houston Chronicle*, 16 April 1949; and *Houston Chronicle*, 26 July 1955; also Minutes of the Harris County Commissioners Court, 4 April 1949.

Not to be outdone by the official pomp and circumstance on the Galena Park side, the Pasadena Chamber of Commerce planned ceremonies that would "be a treat for those who walk through the tunnel," according to Pasadena Mayor Sam Hoover.[21] Pasadena chamber officials claimed that they were not consulted on plans for opening the tunnel and "decided to 'work up a little program of our own'" in an attempt to "out-do" the ceremonies on the north side.[22] "Radio stars of homespun humor" Lum and Abner, then appearing at the nearby Shamrock Hotel, were scheduled to "crack a few jokes" before Mayor Hoover addressed the curious throngs. The *Pasadena Citizen* also reported: "The Pasadena High School band will whoop it up with popular and patriotic music, soft drinks will be distributed free by the Pasadena Chamber of Commerce, and a 1950 [Ford] model automobile will be given away."[23] Advertisements in the newspaper reveal how local vendors sought to drum up business in celebration of "Tunnel Day," citing "plenty entertainment" and offering sale prices on everything from wristwatches to men's slacks to permanent waves and other beauty-shop treatments.[24] Texas Quarries, Inc., of Austin, suppliers of Cordova Cream, Cordova Shell, and "Randomstone" limestone products, bought a large advertisement space in the *Citizen* that deemed the Washburn Tunnel to be "Another Symbol of a Free, Progressive Texas."[25]

At ten o'clock in the morning of Saturday, 27 May 1950, the official dedication ceremonies began at the Galena Park entrance. A band played while the Port Commission's fire boat conducted a demonstration with a naval vessel, and the 63rd Fighter Wing of the Air National Guard followed with a display of zooming planes. Two M-4 tanks fired 76-mm guns in a twenty-one-gun salute, perhaps the day's loudest event. P. P. Butler, president of the Houston Chamber of Commerce, gave the opening address at 10:45, and then eight hundred members of school bands from Baytown, La Porte, Crosby, Channelview, Klein, Galena Park, Woodland Acres, and the University of Houston simultaneously played the national anthem. The pastor of the Grace Methodist Church in Baytown, the Reverend Milton Jordan, made the invocation, after which the bands performed "Eyes of Texas." Next Roy Hofheinz, who served as county judge when the first plans for the tunnel were made, gave the principal address to the gathered crowd of over 10,000 citizens. "Bubbling with enthusiasm, Hofheinz predicted that industries would replace the open spaces and groves in the vicinity of the north end of the tunnel almost overnight...[and] he predicted a boom in residential growth of the same area immediately. He also forecast a population of 1,200,000 for Houston in 1960."[26]

Mr. Butler, too, spoke of the significance of the Washburn Tunnel to the greater Houston area. "This is the first underwater tunnel in Texas and the second toll-free tunnel in the United States. It is perhaps the greatest single

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[21] "Festivities Set Saturday for Tunnel Opening," *Pasadena Citizen*, 21 May 1950.
[22] Ibid.
[23] Ibid.
[24] See the newspaper collections of the Harris County Commissioner, Precinct 2, now in THC files.
[25] *Pasadena Citizen*, 25 May 1950.
[26] John Moore and Leon Hale, "County Opens Tunnel," *Houston Post*, 28 May 1950, p.1. Also see "Washburn Tunnel Opens Saturday with Big Display," *Pasadena Citizen*, 26 May 1950; "Tunnel to Open," *Houston Chronicle*, 27 May 1950; and "County Commissioners Say: Tunnel Will Boom County Growth," *Pasadena Citizen*, 25 May 1950. The actual population of Houston in 1960 would be 938,219.

accomplishment to have been engineered since we dredged this Ship Channel and brought the waters of the Seven Seas inland almost to Main Street."[27] Others spoke of the tunnel's ability to unite the growing Harris County, separated as two peninsulas. "We are joined, we are united, and we can now go forward together," said Hofheinz, who went on to suggest the establishment of a unified, county-city government.[28]

But it was eighth-grade student Janice Cowart who addressed the real significance of the tunnel to the people attending the gala event that day. Reading from her poem, "Farewell, Old Ferry," the young Miss Cowart reminded the gathered crowds that it was the need for speed in a rapidly industrializing landscape which necessitated this subaqueous solution:

> The Pasadena ferry on old Buffalo
> Shall surrender her place to a tunnel below
> For man must travel, and travel fast.
> Farewell old ferry! Farewell at last![29]

Serving an estimated 10,000 automobiles and trucks each day after its opening in 1950, today the Washburn Tunnel safely carries more than 30,000 vehicles daily on its route under the waters of the Buffalo Bayou. The structure encouraged the growth of the suburban communities of Pasadena and Galena Park and signifies the rapid industrialization of the Houston Ship Channel. The tunnel was the first underwater traffic artery constructed in the state of Texas and the second toll-free tunnel in the United States, and today it remains as the state's only subaqueous tunnel. The Washburn Tunnel is therefore nominated to the National Register under Criterion C in the areas of Transportation and Engineering, both at the state level of significance.

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[27] Moore and Hale, "County Opens Tunnel."
[28] Ibid.
[29] Janice Cowart, "Farewell, Old Ferry," *Pasadena Citizen*, 25 May 1950. Cowart composed the poem while in the sixth grade at Kruse Elementary School in 1948, when the tunnel concept was first presented publicly. This is the first of the poem's eight stanzas.

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10. GEOGRAPHICAL DATA

ACREAGE OF PROPERTY: Approximately 6.7 acres, including traffic circle and roundabout areas

UTM REFERENCES	Zone	Easting	Northing
1.	15	286060 E	3291328 N
2.	15	286058 E	3289507 N

VERBAL BOUNDARY DESCRIPTION:
This nomination encompasses the structure, Washburn Tunnel, from the northern edge of the Houston Ship Channel to the far southern edge of the Houston Ship Channel, and the roadways leading to the tunnel entrances, including the traffic roundabout on Federal Road to the north and the traffic circle to the south, which is met by West Richey Road to the southwest and East Red Bluff Road to the east.

BOUNDARY JUSTIFICATION: Nomination includes all property historically associated with the structure. Does not include outbuildings, offices adjacent to the structure.

11. FORM PREPARED BY

NAME/TITLE: Rachel Leibowitz, historian, Texas Historical Commission; and Janet K. Wagner, consultant

ORGANIZATION: Texas Historical Commission **DATE:** 2 November 2007

STREET & NUMBER: P.O. Box 12276 **TELEPHONE:** (512) 463-6100

CITY OR TOWN: Austin **STATE:** Texas **ZIP CODE:** 78711-2276

ADDITIONAL DOCUMENTATION

CONTINUATION SHEETS

MAPS (see continuation sheet Map-26)

PHOTOGRAPHS (see continuation sheet Photo-27 through Photo-39)

ADDITIONAL ITEMS (see continuation sheets Figure-40 through Figure-43)

PROPERTY OWNER

NAME: Harris County (Precinct 2, Commissioner Sylvia Garcia; Assistant Deputy Commissioner Gail Miller)

STREET & NUMBER: 3100 Federal Road **TELEPHONE:** (713) 455-0062

CITY OR TOWN: Houston **STATE:** Texas **ZIP CODE:** 77015

Map 1. Washburn Tunnel on Buffalo Bayou, Houston Ship Channel, connecting Galena Park and Pasadena, Harris County, Texas. U.S. Geological Survey topographical map.

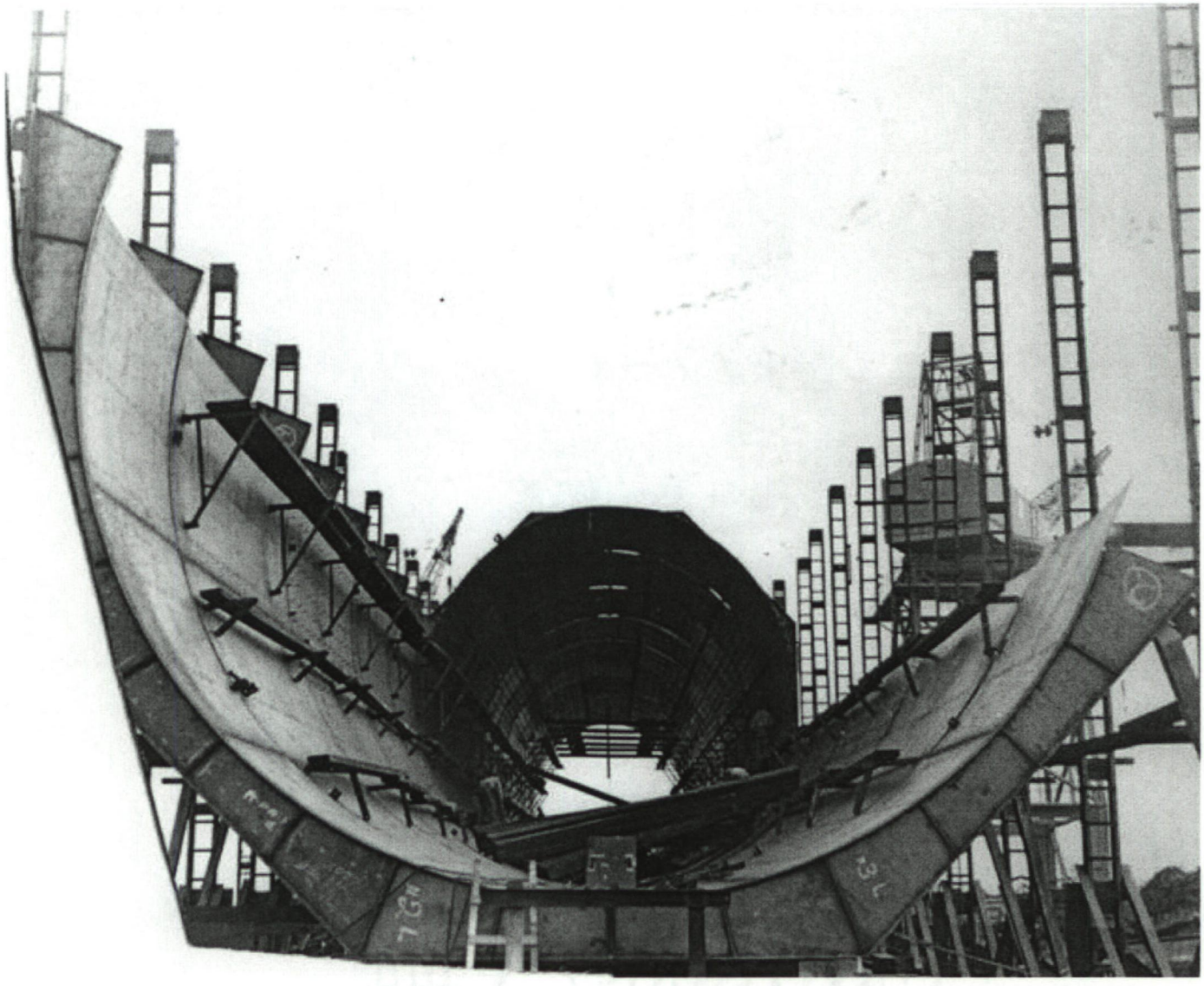
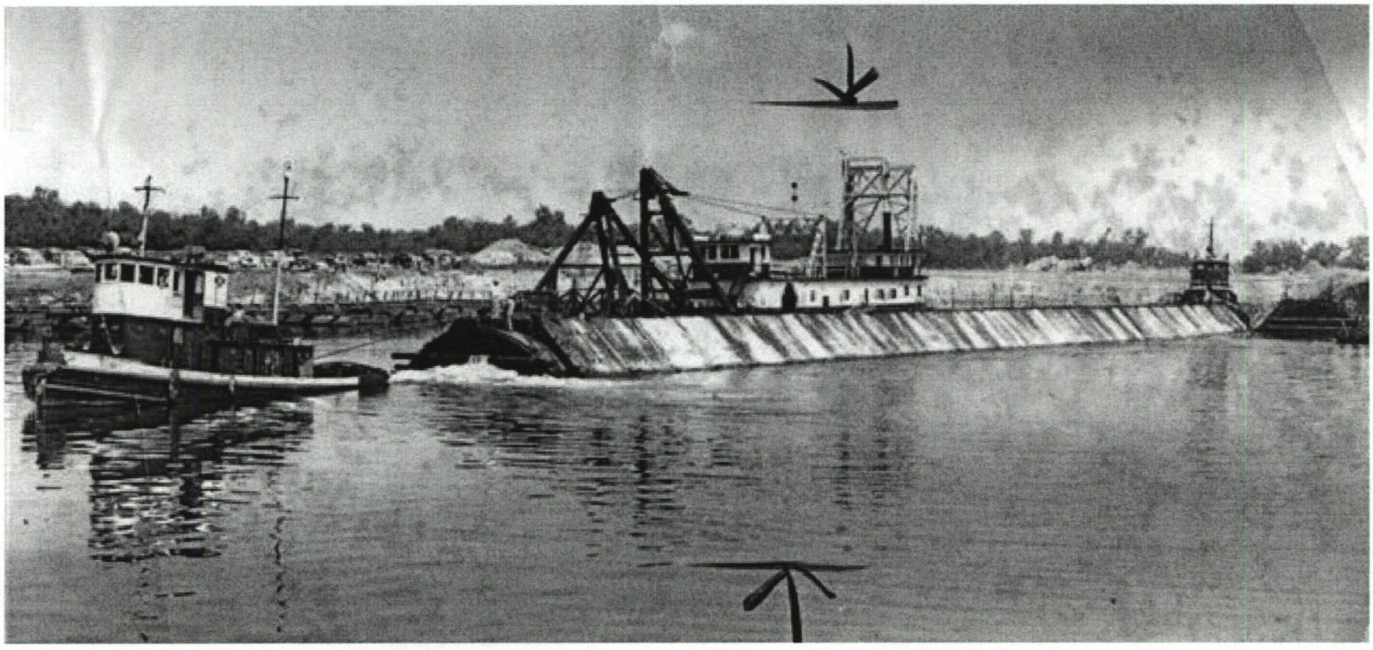
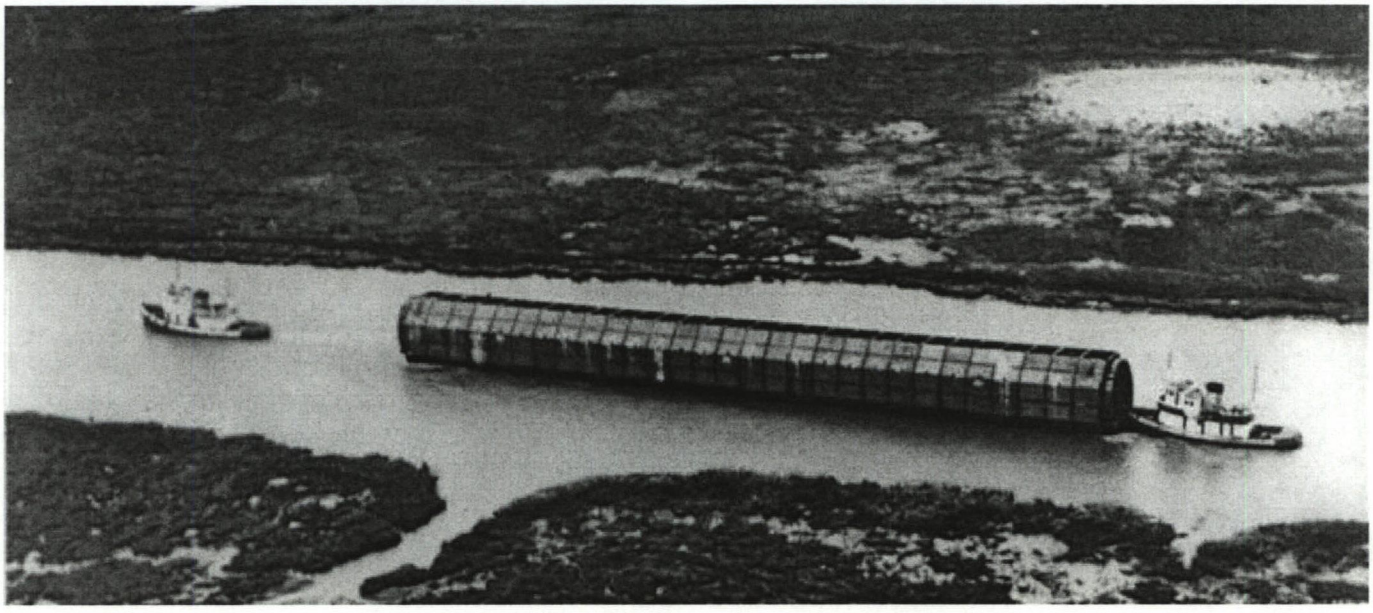


Photo 1. Washburn Tunnel under construction at the Ingalls Shipbuilding Company yards, Pascagoula, Mississippi, ca. 1948. Photograph from the *Houston Post* archives, courtesy of Harris County.





Photos 2 and 3. Steel tubes for the tunnel—in four 375-foot sections, each having a diameter of 35 feet—were shipped by barge from Mississippi through the Intercoastal Canal to Galveston, Texas, up the Galveston Bay to the Houston Ship Channel, and then on to the old ferry site near Pasadena. Photographs from the archives of the *Houston Post*, courtesy of Harris County.

Photo 4. Washburn Tunnel under construction in the dredged ship channel. Photograph from the archives of the *Houston Post*, courtesy of Harris County.

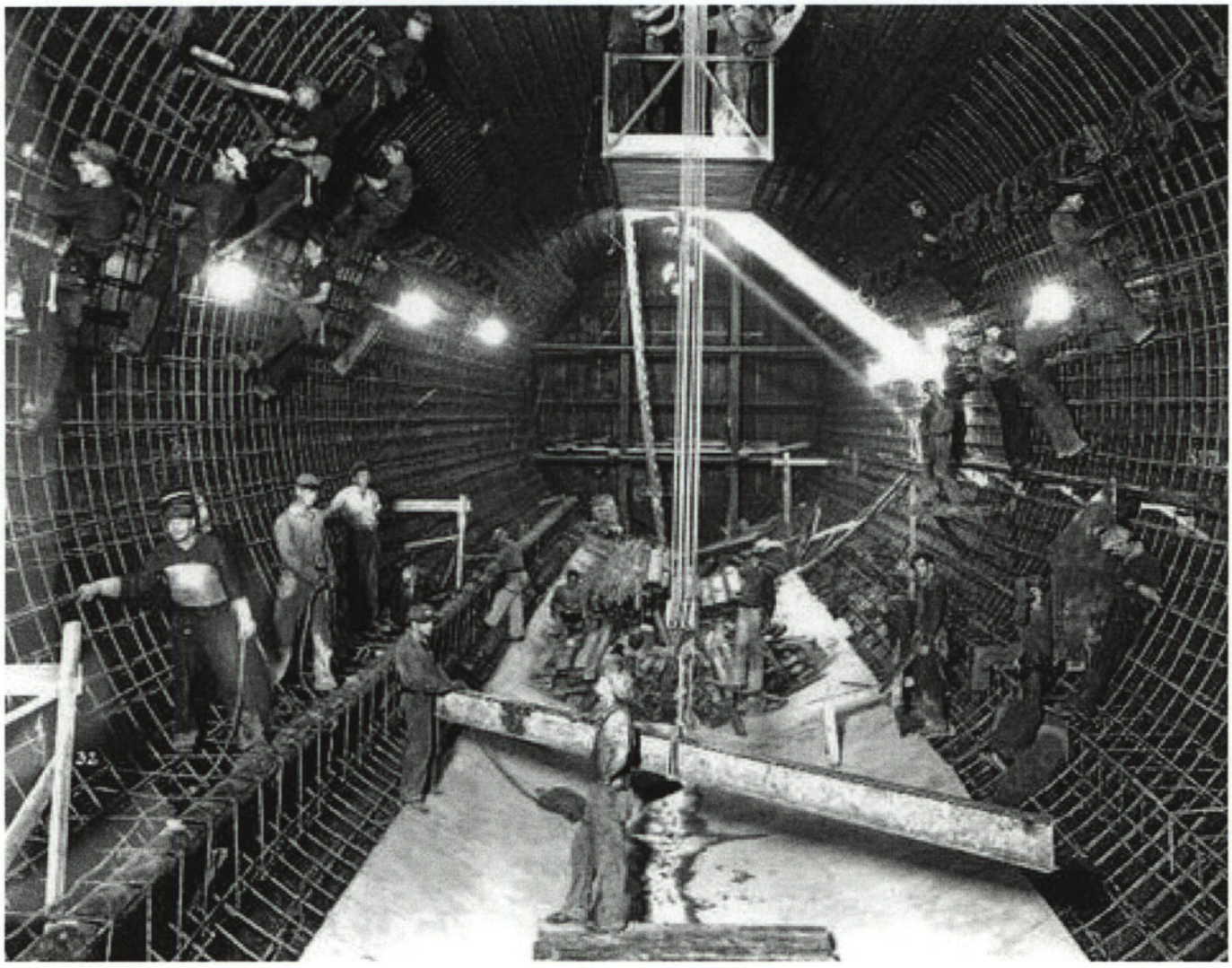


Photo 5. Washburn Tunnel under construction, 1949. Photograph from the archives of the *Houston Post*, courtesy of Harris County.

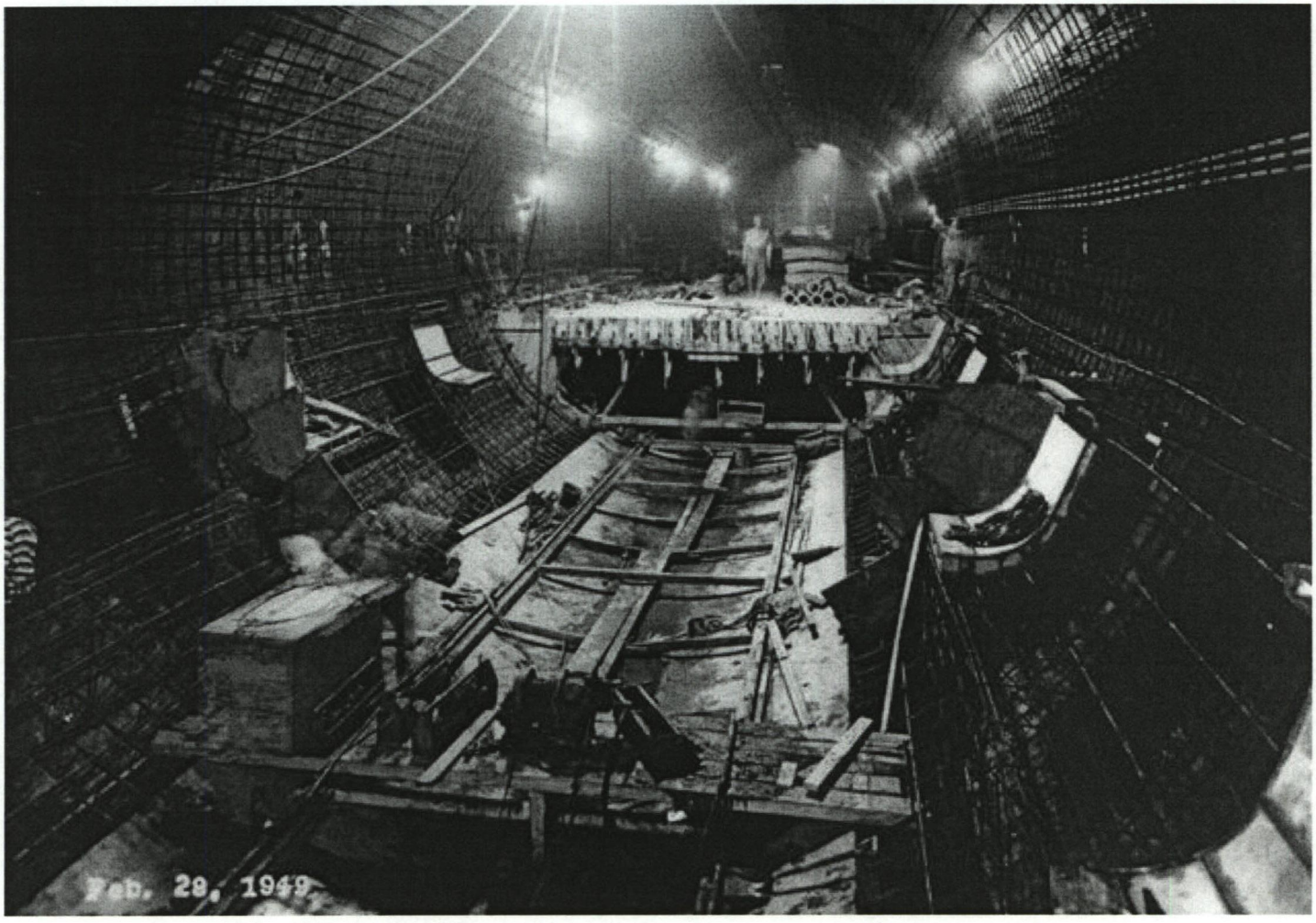


Photo 6. Washburn Tunnel under construction, 1949. Photograph from the archives of the *Houston Post*, courtesy of Harris County.

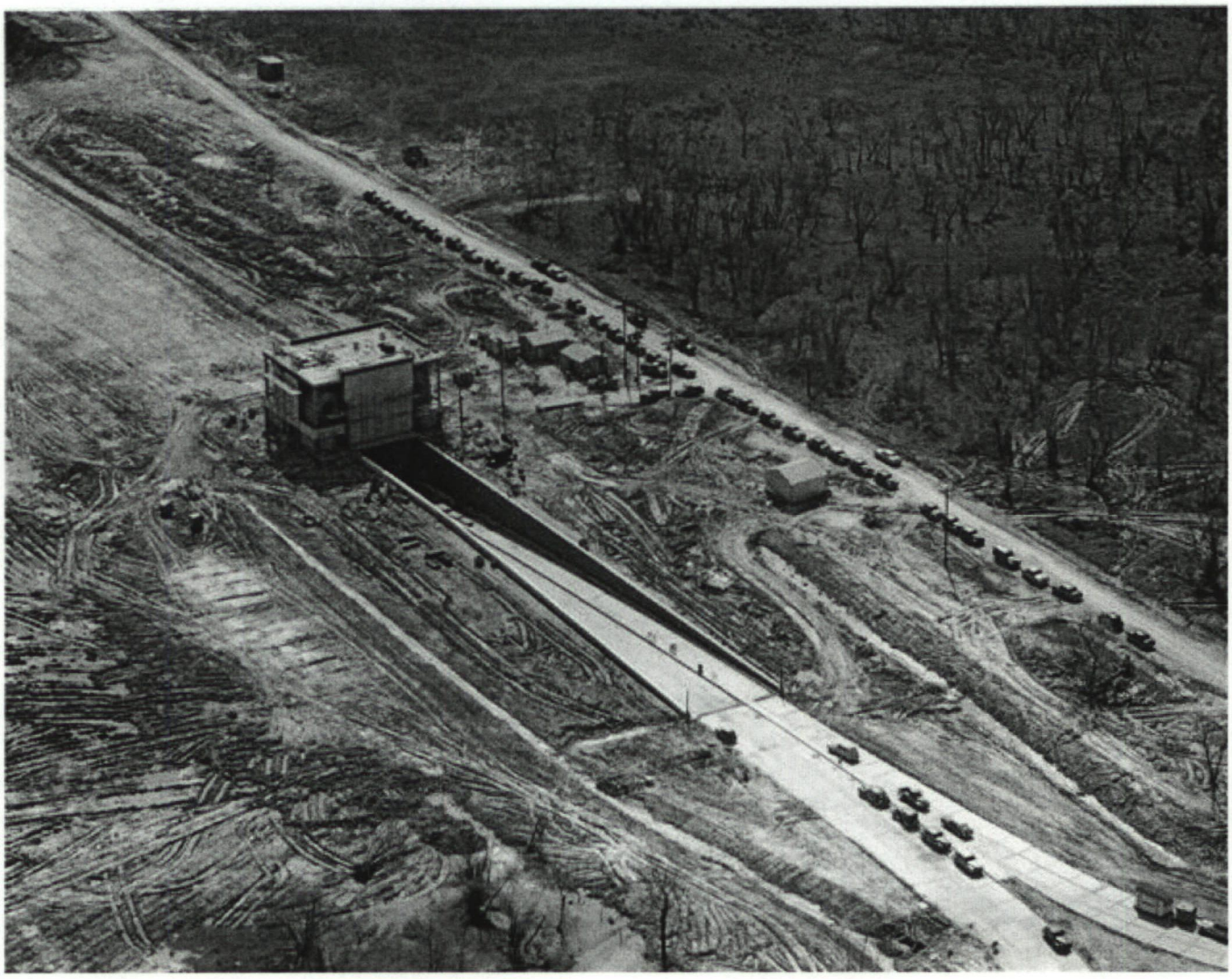


Photo 7. Washburn Tunnel control building and roadways nearing completion, ca. 1950. Photograph from the archives of the *Houston Post*, courtesy of Harris County.

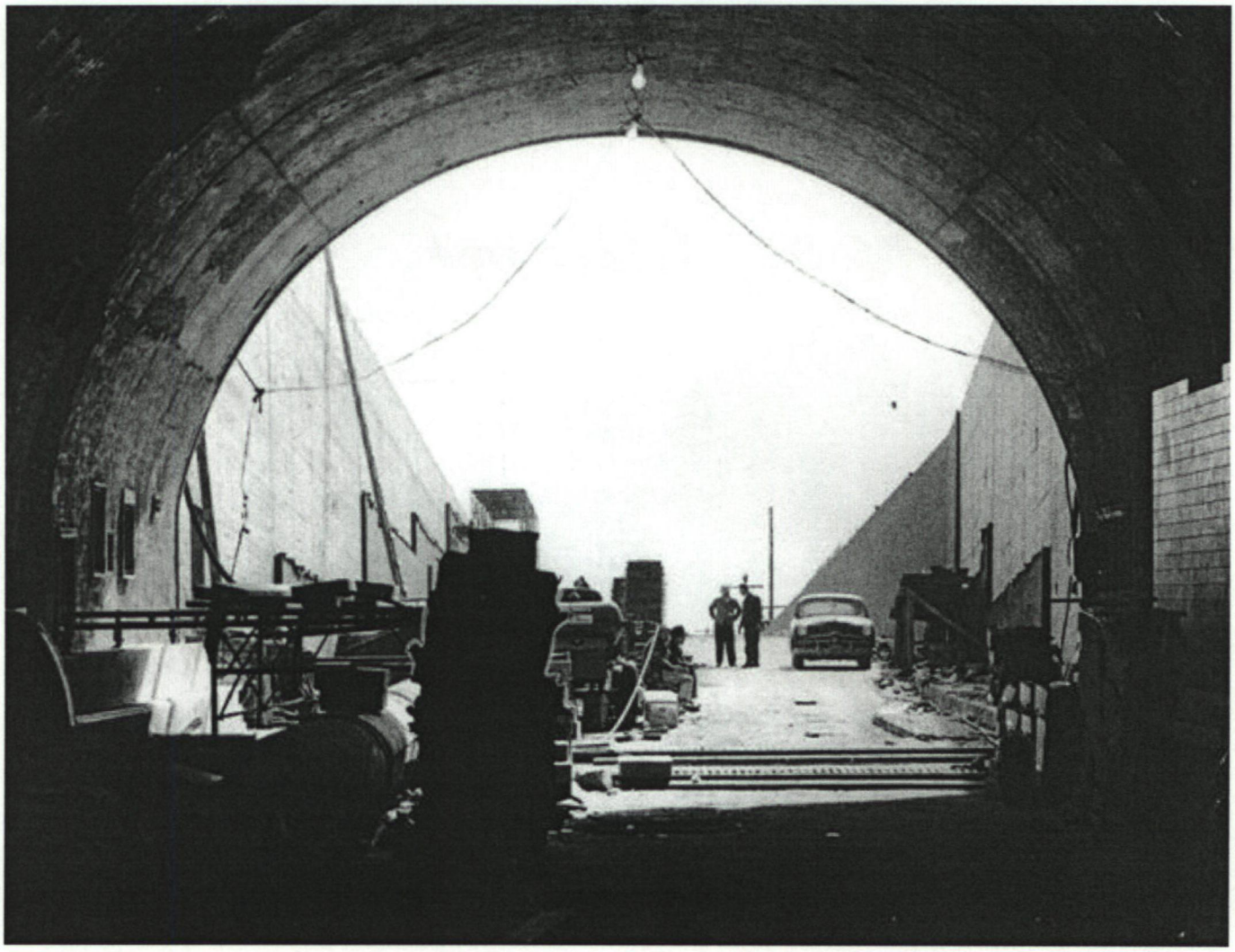


Photo 8. Washburn Tunnel and entrance roadways under construction, ca. 1949. The tunnel interior is not yet completely tiled. Photograph from the archives of the *Houston Post*, courtesy of Harris County.

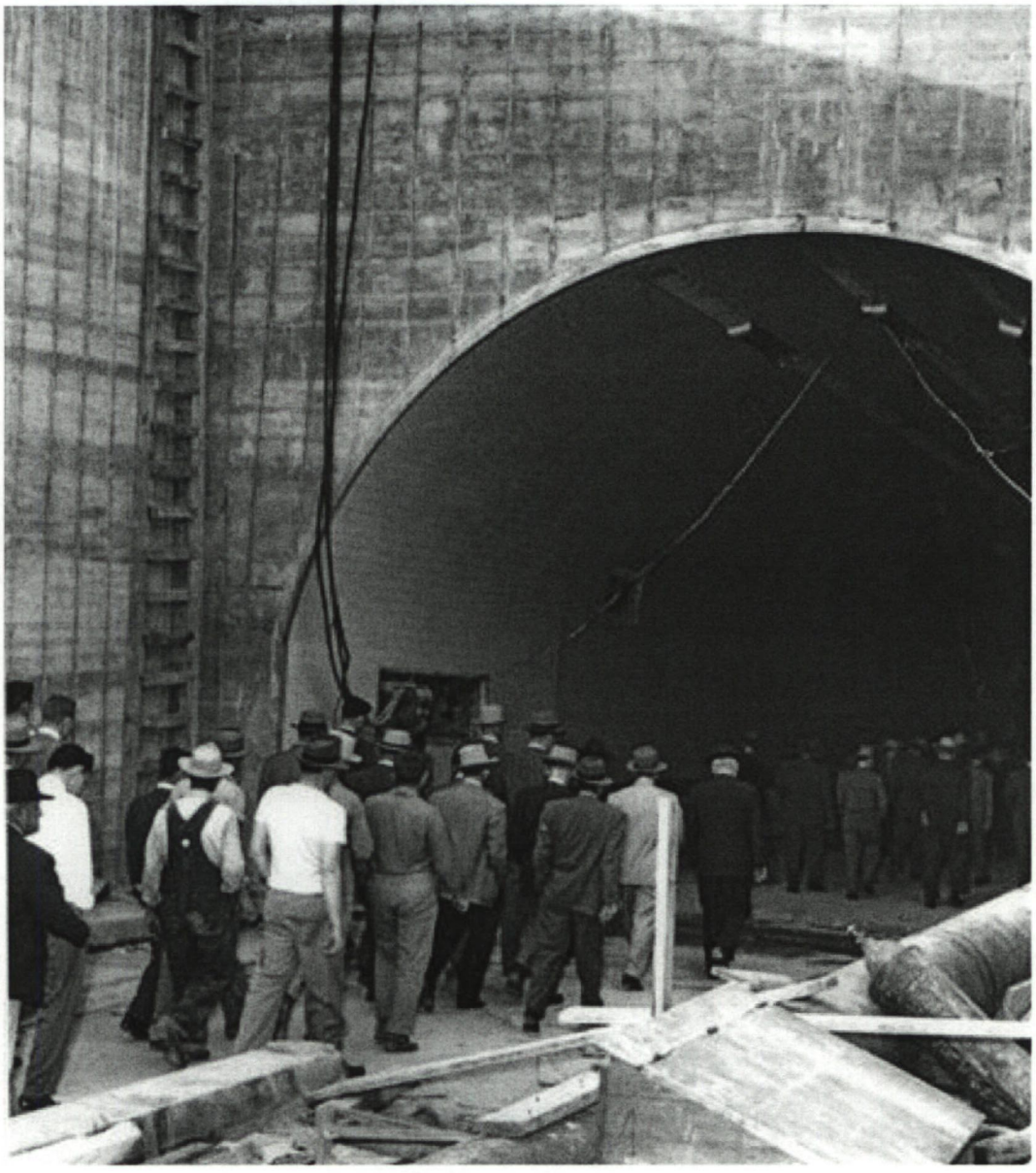


Photo 9. City and county officials visit the Washburn Tunnel nearing completion, 1950. Photograph from the archives of the *Houston Post*, courtesy of Harris County.

Photo 10. Ray C. Armer and his motorcycle, the first vehicle to drive through the Washburn Tunnel, 17 February 1950. Photograph courtesy of Harris County.

Photo 11. Crowds walk through the Washburn Tunnel, the only time the tunnel has opened to foot traffic, 27 May 1950. Photograph courtesy of Harris County.

Photo 12. Washburn Tunnel, ventilation control building, 1991. These original cast stone panels remain in place under a removable slipcover of zinc currently covering all four façades. Photograph courtesy of Harris County.

Photo 13. Washburn Tunnel, north façade, 2007. Photograph courtesy of Harris County.

Photo 14. Washburn Tunnel, ventilation control building, detail of stair and railing, north façade. Photograph by Rachel Leibowitz, Texas Historical Commission.

PHOTOGRAPH CONTINUATION SHEET

Washburn Tunnel
Harris County, Houston TX
Photographed by Curtis Stanley
November 2007
Negatives on file with Precinct 2, Harris County, Houston, TX

Photo 1 of 12
Traffic roundabout on Federal Road
Camera facing north

Photo 2 of 12
Traffic roundabout on Federal Road
Camera facing northwest

Photo 3 of 12
Traffic roundabout on Federal Road
Camera facing northwest

Photo 4 of 12
Washburn Tunnel Control Building, west façade
Camera facing east

Photo 5 of 12
Washburn Tunnel Control Building, south façade
Camera facing north

Photo 6 of 12
Washburn Tunnel Control Building, east façade
Camera facing west

Photo 7 of 12
Entrance portal and Washburn Tunnel Control Building, north façade
Camera facing south

Photo 8 of 12
Washburn Tunnel interior
Camera facing south

Photo 9 of 12
Washburn Tunnel interior
Camera facing south

Photo 10 of 12
Washburn Tunnel interior
Camera facing north

Photo 11 of 12
Washburn Tunnel interior
Camera facing north

Photo 12 of 12
Washburn Tunnel entrance portal, south façade
Camera facing north

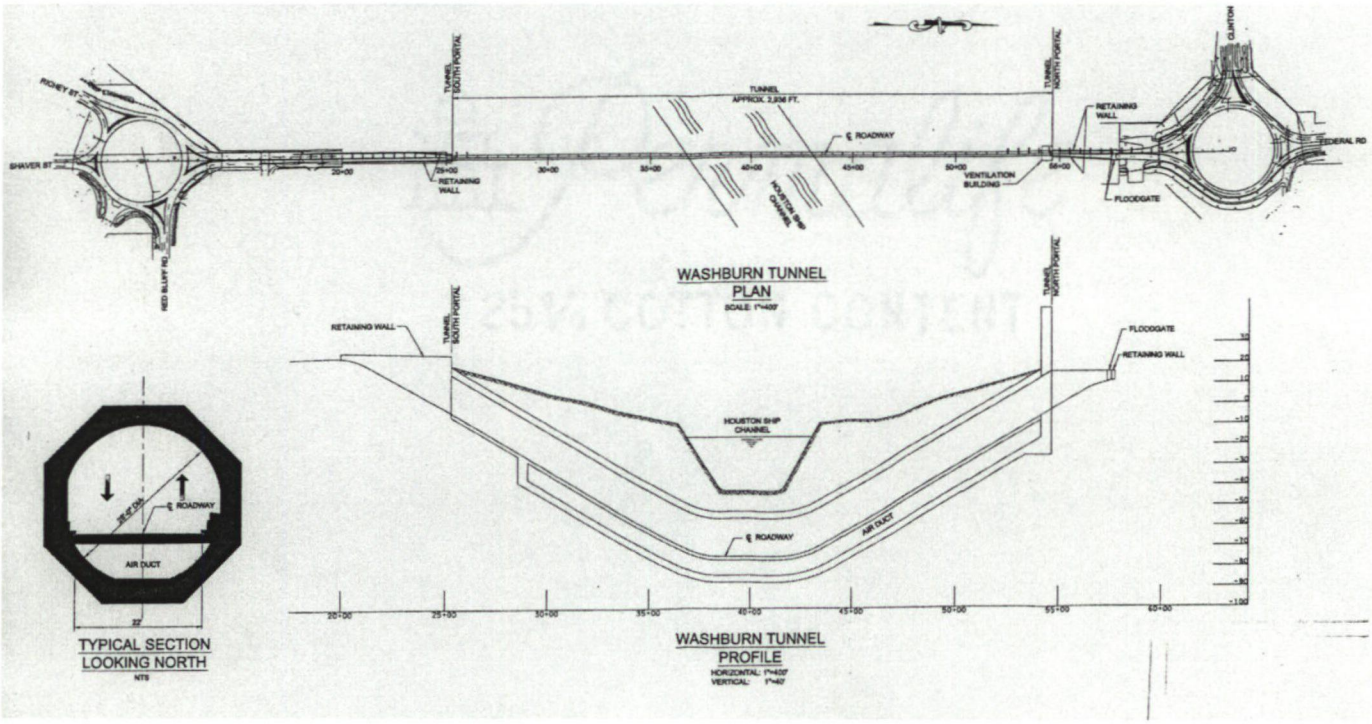


Figure 1. Washburn Tunnel, plan and section drawings, including approach roadways, the traffic circle, and the roundabout.

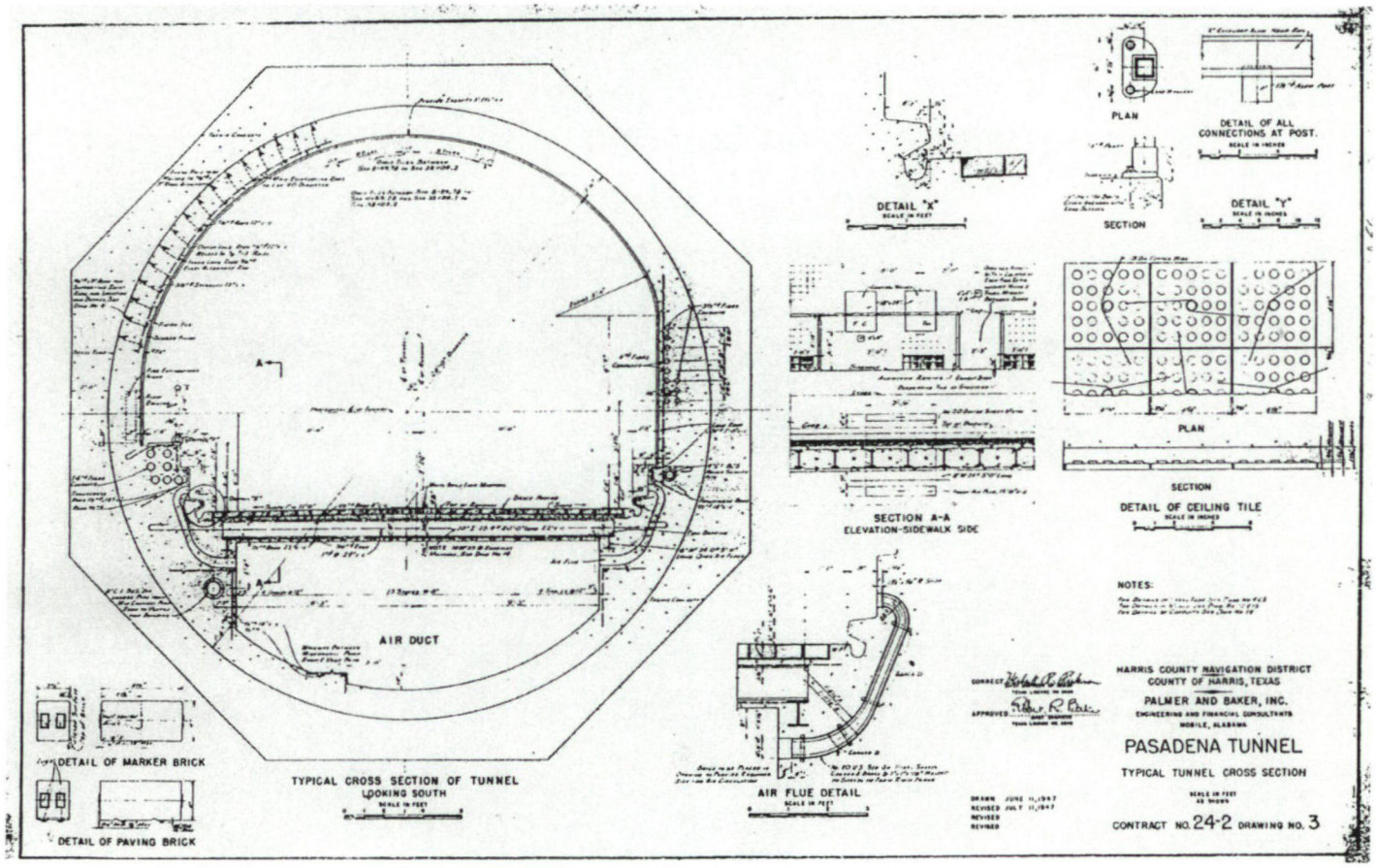


Figure 2. Washburn Tunnel, typical section. From Palmer and Baker, Inc., revised construction set, July 1947.

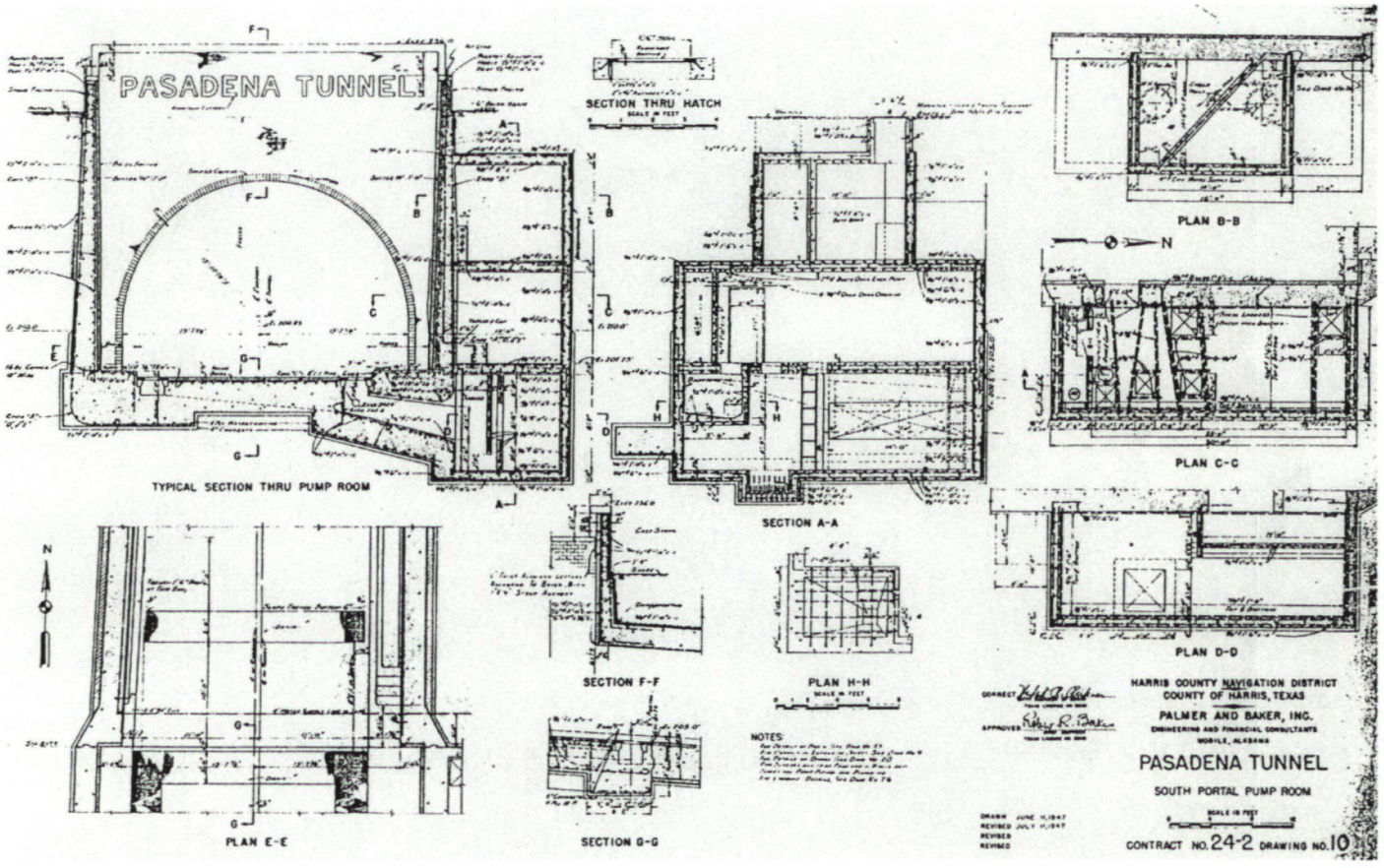


Figure 3. Washburn Tunnel, typical section through pump room. From Palmer and Baker, Inc., revised construction set, July 1947.

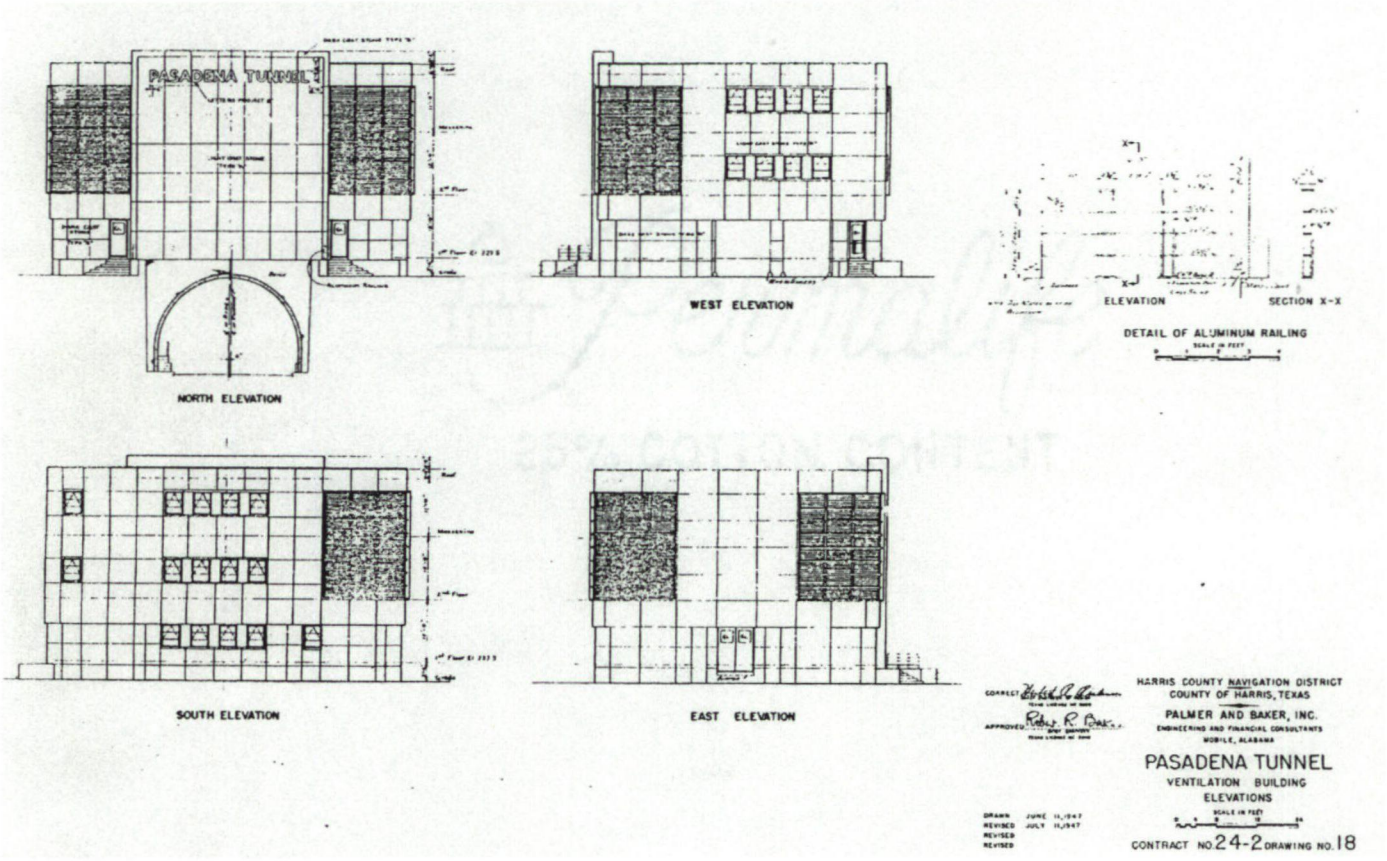


Figure 4. Washburn Tunnel, elevations. From Palmer and Baker, Inc., revised construction set, July 1947.

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES
EVALUATION/RETURN SHEET

REQUESTED ACTION: NOMINATION

PROPERTY NAME: Washburn Tunnel

MULTIPLE NAME:

STATE & COUNTY: TEXAS, Harris

DATE RECEIVED: 3/05/08 DATE OF PENDING LIST: 3/24/08
DATE OF 16TH DAY: 4/08/08 DATE OF 45TH DAY: 4/18/08
DATE OF WEEKLY LIST:

REFERENCE NUMBER: 08000316

REASONS FOR REVIEW:

APPEAL:	N	DATA PROBLEM:	N	LANDSCAPE:	N	LESS THAN 50 YEARS:	N
OTHER:	N	PDIL:	N	PERIOD:	N	PROGRAM UNAPPROVED:	N
REQUEST:	N	SAMPLE:	N	SLR DRAFT:	N	NATIONAL:	N

COMMENT WAIVER: N

√ ACCEPT ___RETURN ___REJECT 4-16-08 DATE

ABSTRACT/SUMMARY COMMENTS:

Entered in
The National Register
of
Historic Places

RECOM./CRITERIA_____

REVIEWER_____ DISCIPLINE_____

TELEPHONE_____ DATE_____

DOCUMENTATION see attached comments Y/N see attached SLR Y/N

If a nomination is returned to the nominating authority, the nomination is no longer under consideration by the NPS.

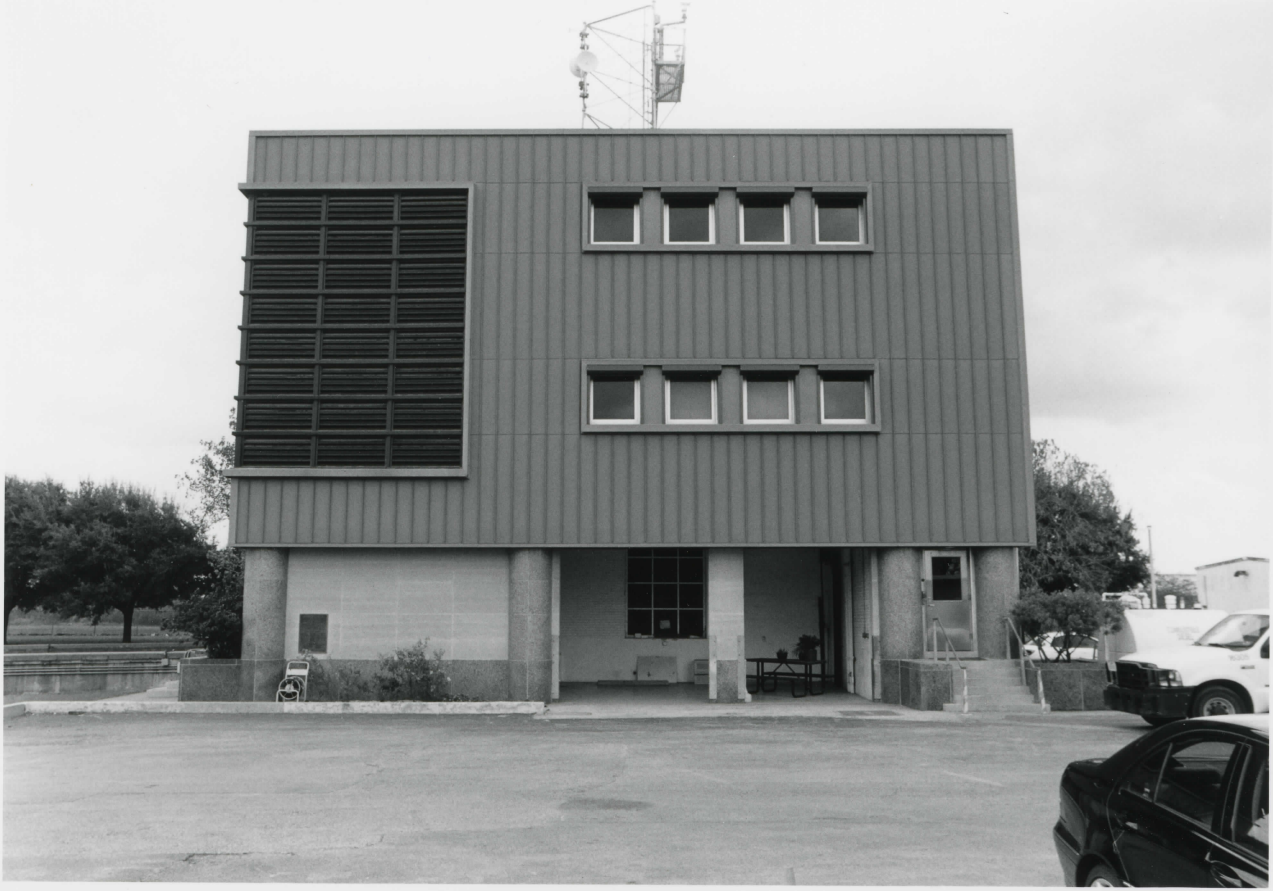
WASHBURN TUNNEL
PASADENA AND HOUSTON, HARRIS COUNTY, TX
PHOTO 1 OF 12


STOP

WASHBURN TUNNEL
PASADENA AND HOUSTON, HARRIS COUNTY, TX
PHOTO 2 OF 12


STOP
STOP

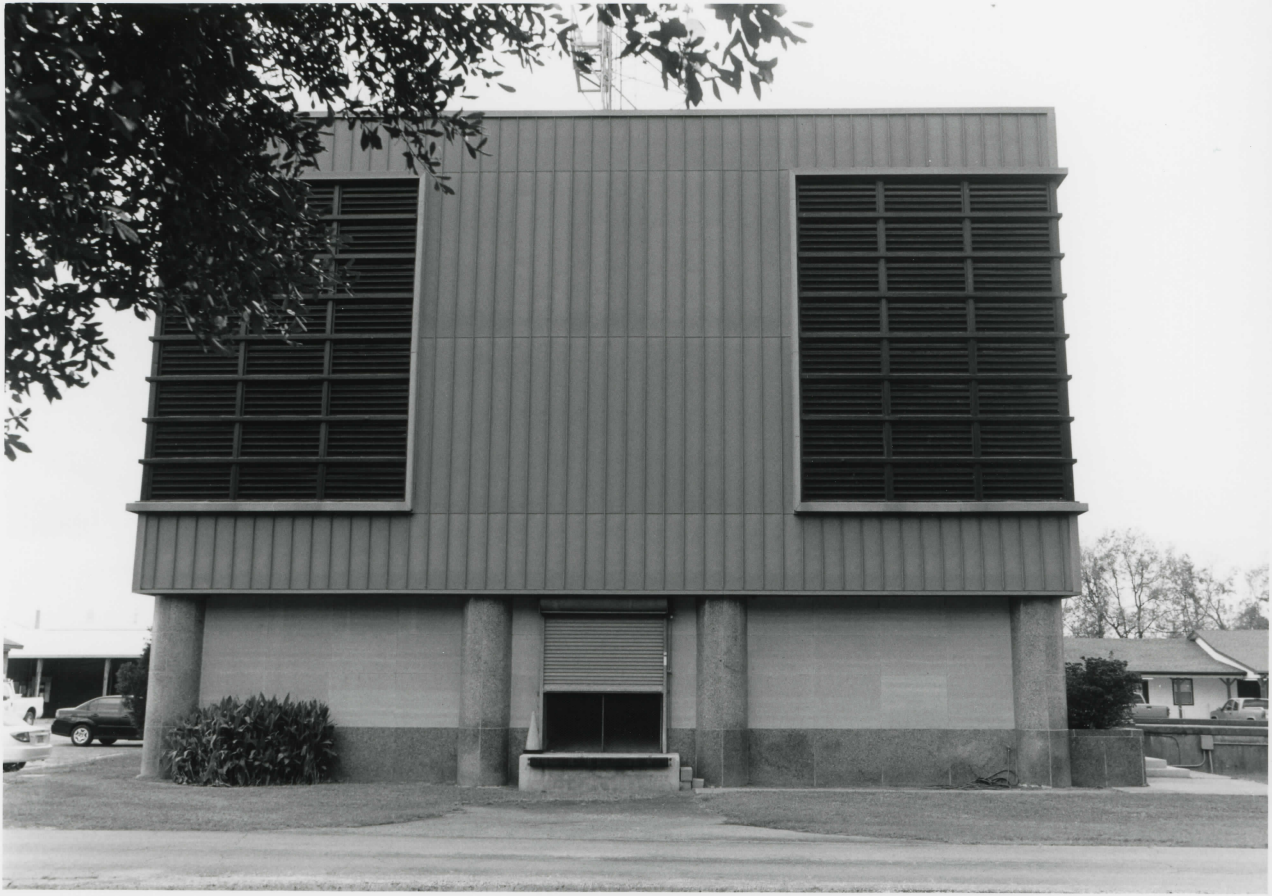
WASHBURN TUNNEL
PASADENA AND HOUSTON, HARRIS COUNTY, TX
PHOTO 3 OF 12



WASHBURN TUNNEL
PASADENA AND HOUSTON, HARRIS COUNTY, TX
PHOTO 4 OF 12

WASHBURN TUNNEL
PASADENA AND HOUSTON, HARRIS COUNTY, TX

PHOTO 5 OF 12

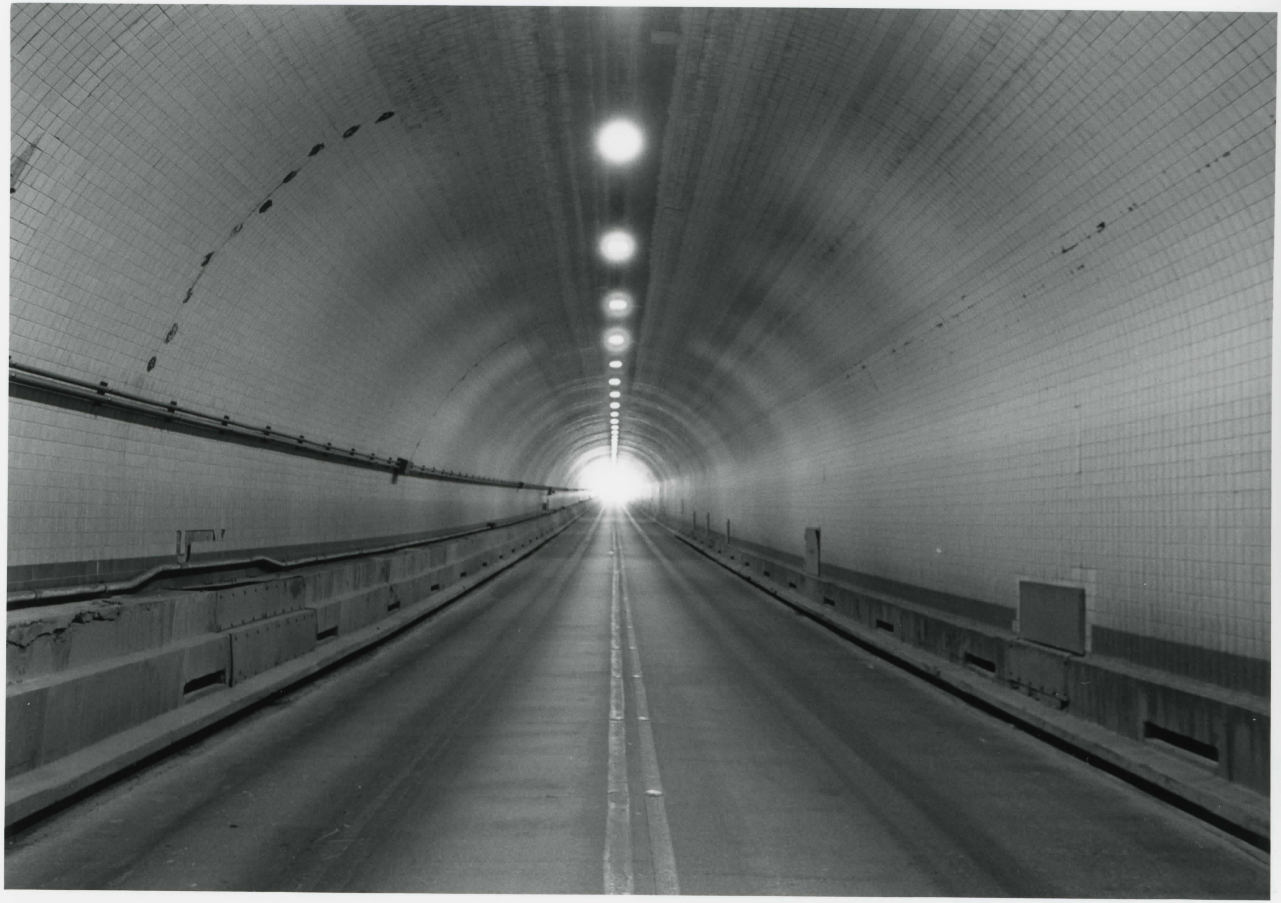


WASHBURN TUNNEL
PASADENA AND HOUSTON, HARRIS COUNTY, TX
PHOTO 6 OF 12

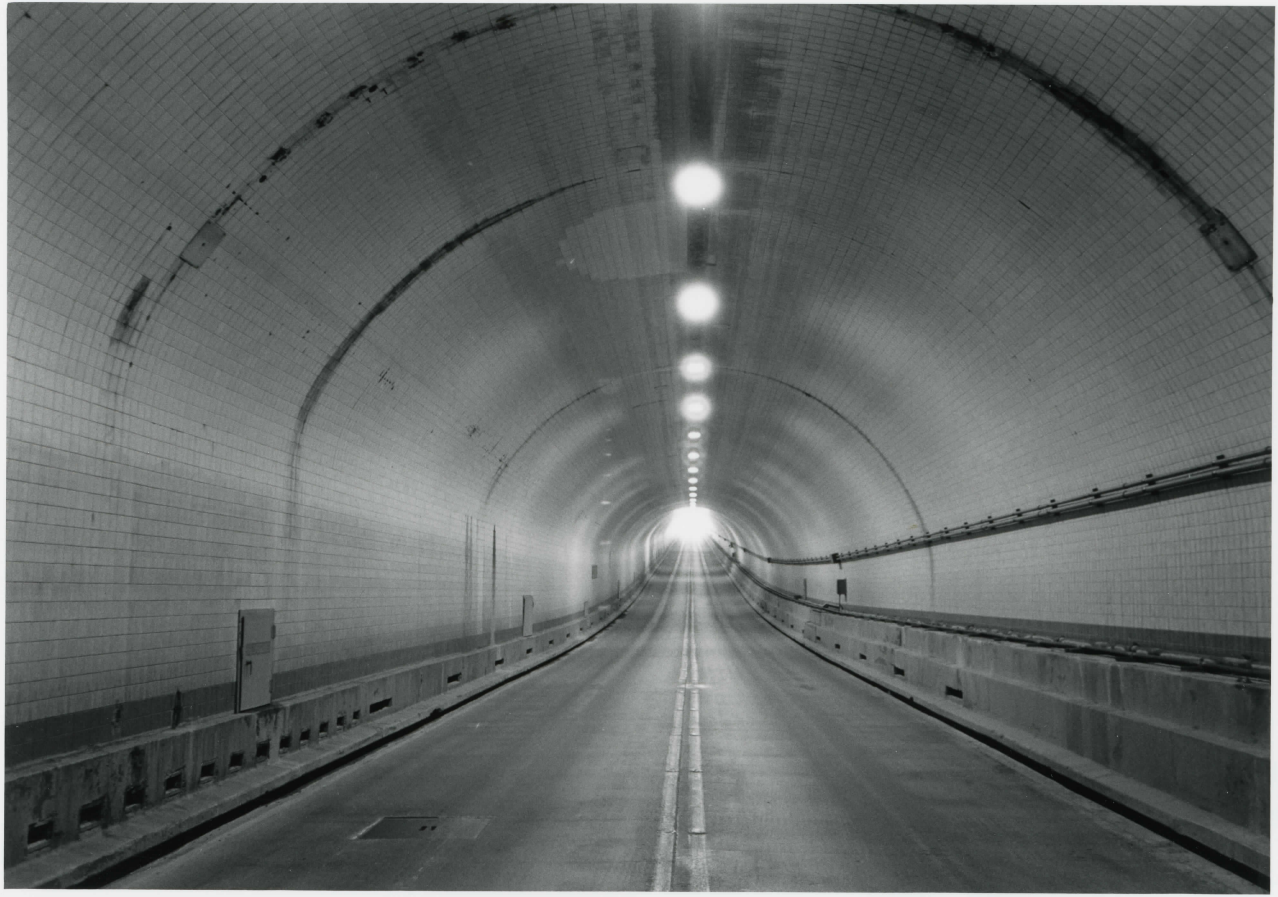

WASHBURN TUNNEL

WASHBURN TUNNEL
PASADENA AND HOUSTON, HARRIS COUNTY, TX
PHOTO 7 OF 12

WASHBURN TUNNEL
PASADENA AND HOUSTON, HARRIS COUNTY, TX
PHOTO 8 OF 12



WASHBURN TUNNEL
PASADENA AND HOUSTON, HARRIS COUNTY, TX
PHOTO 9 OF 12



WASHBURN TUNNEL
PASADENA AND HOUSTON, HARRIS COUNTY, TX
PHOTO 10 OF 12

WASHBURN TUNNEL
PASADENA AND HOUSTON, HARRIS COUNTY, TX
PHOTO 11 OF 12


WASHBURN TUNNEL

WASHBURN TUNNEL
PASADENA AND HOUSTON, HARRIS COUNTY, TX
PHOTO 12 OF 12

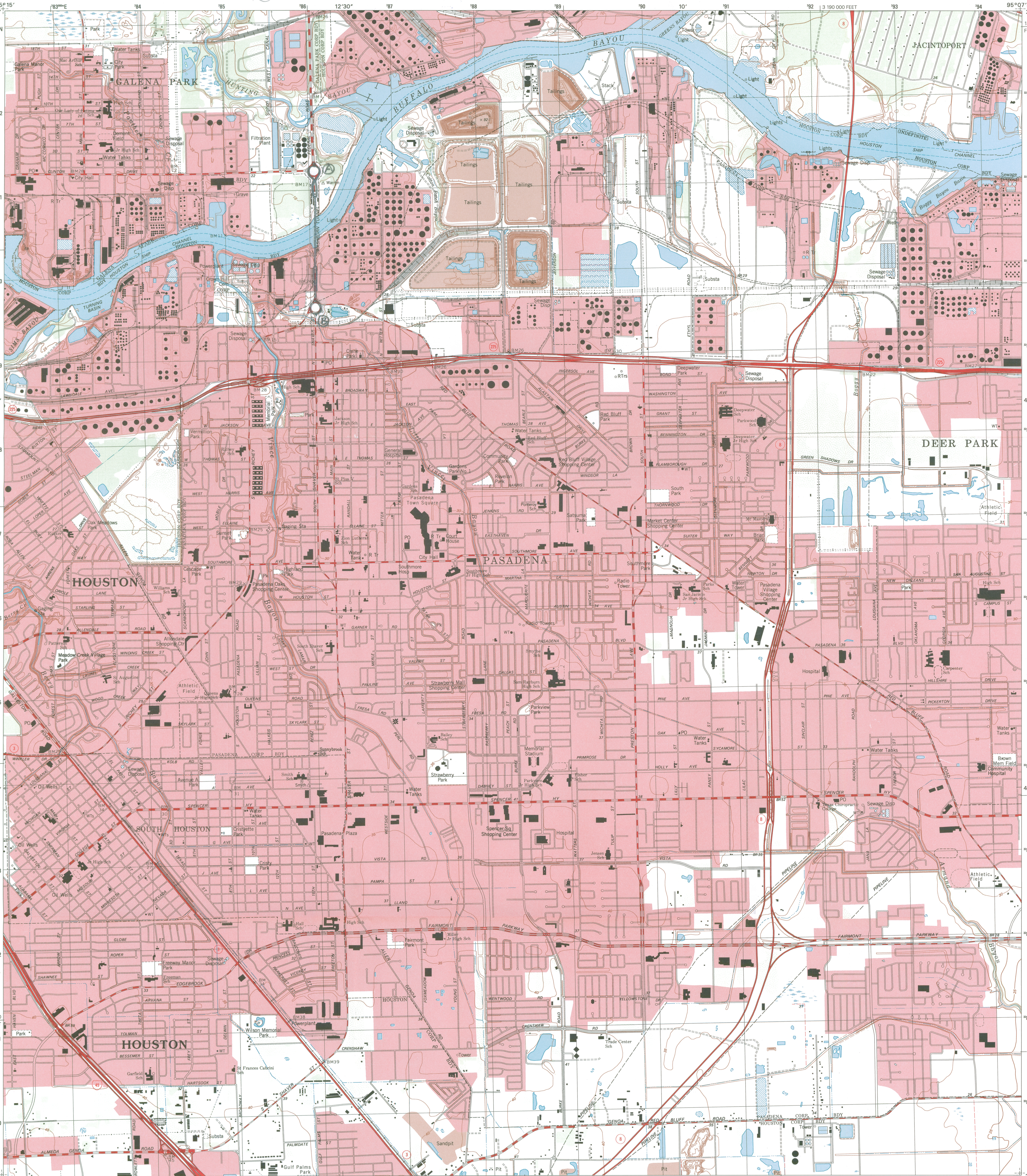
WASHBURN TUNNEL
HOUSTON AND PASADENA, HARRIS COUNTY, TEXAS

USGS science for a changing world

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

Ⓐ UTM 15 286060 E 3291328 N
Ⓑ UTM 15 286058 E 3289507 N

PASADENA QUADRANGLE
TEXAS-HARRIS CO.
7.5-MINUTE SERIES (TOPOGRAPHIC)



Produced by the United States Geological Survey
Topography compiled 1976. Planimetry derived from imagery taken 1995. Survey control current as of 1976
North American Datum of 1983 (NAD 83). Projection and 1000-meter grid: Universal Transverse Mercator, zone 15
10 000-foot ticks: Texas Coordinate System of 1983 (south central zone)
North American Datum of 1927 (NAD 27) is shown by dashed corner ticks. The values of the shift between NAD 83 and NAD 27 for 7.5-minute intersections are obtainable from National Geodetic Survey NADCON software
This quadrangle covers a subsidence area
Selected hydrographic data compiled from NOS/NOAA Chart 11329 (1980). This information not intended for navigational purposes
Water stages in this area vary with meteorological conditions
Approximate limits of occasional inundation shown by dashed blue lines where mean high water is undetermined for lack of visual evidence
Dotted blue lines indicate the approximate limits of low water
Landmark buildings verified 1976

1°04′ 19 MILS
4½° 80 MILS

UTM GRID AND 1999 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

20% TOTAL RECOVERED FIBER

SCALE 1:24 000

CONTOUR INTERVAL 5 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
TO CONVERT FROM FEET TO METERS, MULTIPLY BY 0.3048
SOUNDINGS IN FEET-GULF COAST LOW WATER DATUM
THE MEAN RANGE OF TIDE IS NEGLIGIBLE

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U.S. GEOLOGICAL SURVEY, P.O. BOX 25286, DENVER, COLORADO 80225
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

TEXAS
QUADRANGLE LOCATION
2995-413

1 Settegast
2 Jacinto City
3 Highlands
4 Park Place
5 La Porte
6 Pearland
7 Friendswood
8 League City

ADJOINING 7.5′ QUADRANGLE NAMES

INTERIOR - GEOLOGICAL SURVEY, RESTON, VIRGINIA - 2000

ROAD CLASSIFICATION
Primary highway hard surface ....
Light-duty road, hard or improved surface ......
Secondary highway hard surface ....
Unimproved road ......
Interstate Route
U.S. Route
State Route

PASADENA, TX
1995
NIMA 6943 II NW-SERIES V882

ISBN 0-607-89294-3

TEXAS HISTORICAL COMMISSION

Rick Perry • *Governor*
John L. Nau, III • *Chairman*
F. Lawerence Oaks • *Executive Director*

The State Agency for Historic Preservation

TO: Linda McClelland
National Register of Historic Places

FROM: Rachel Leibowitz, Historian
Texas Historical Commission

RE: Washburn Tunnel, Houston and Pasadena, Harris County, Texas

DATE: February 28, 2008

- The following materials are submitted regarding Washburn Tunnel, Houston and Pasadena, Harris County, Texas:

X	National Register of Historic Places form
	__ Resubmitted nomination
	Multiple Property nomination form
X	Photographs
X	USGS map
	Correspondence
	Other: CD with digital photograph files

COMMENTS: Enclosed in the revised nomination, addressing all concerns in your evaluation/return sheet.

___ SHPO requests substantive review

___ The enclosed owner objections (do__) (do not__) constitute a majority of property owners

Other: