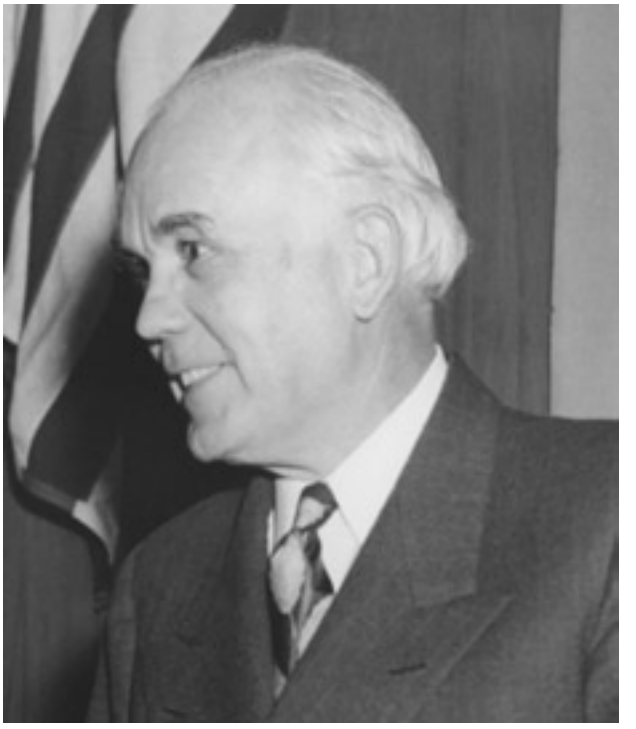
Gulf Freeway, Interstate 45 South

The Gulf Freeway launched Houston into the freeway era on September 30, 1948. As the history of the Gulf Freeway unfolded, it became a classic story of the rise of the American urban freeway and the myriad of issues that would accompany it. Intertwined in the story of the Gulf Freeway is the demise of the urban electric railway, the unprecedented demand for new freeways in the postwar era, huge suburban development, malls, traffic jams, the development of better freeways, urban protest, and the never-ending battle to catch up to demand. The newly dedicated Gulf Freeway was ahead of its time, yet it couldn't keep up with the times. It would be brought into the modern era, not just once, but twice.

While the Gulf Freeway was at the forefront of many national freeway issues, it also became the prototypical Houston freeway. From the very beginning it was a freeway with continuous frontage roads, spawning the development and commercial clutter that would become characteristic of Houston's freeways. The ongoing—some would say never-ending—improvement of the freeway would become a way of life for Houston's freeway system. Perhaps as a fitting reward for its first 50 years of struggle, in 1997 it received the most impressive instance of Houston's newest freeway trademark: the five-level stack interchange. The Gulf Freeway story, while presently in a quiet mode, is certainly not over. A wave of expansion will push southward from Beltway 8 in the future, giving the freeway its widest and most modern sections yet.

Gulf Freeway	
Previous designation	US 75
Designated as freeway	1943
First freeway section open	September 30, 1948
Freeway complete	1970 (to NASA 1) 1976 (to Galveston)
Reconstruction	1959–1997
Max traffic volume, 2001	266,000 vehicles per day
Future construction	Expand freeway from Beltway 8 to Galveston

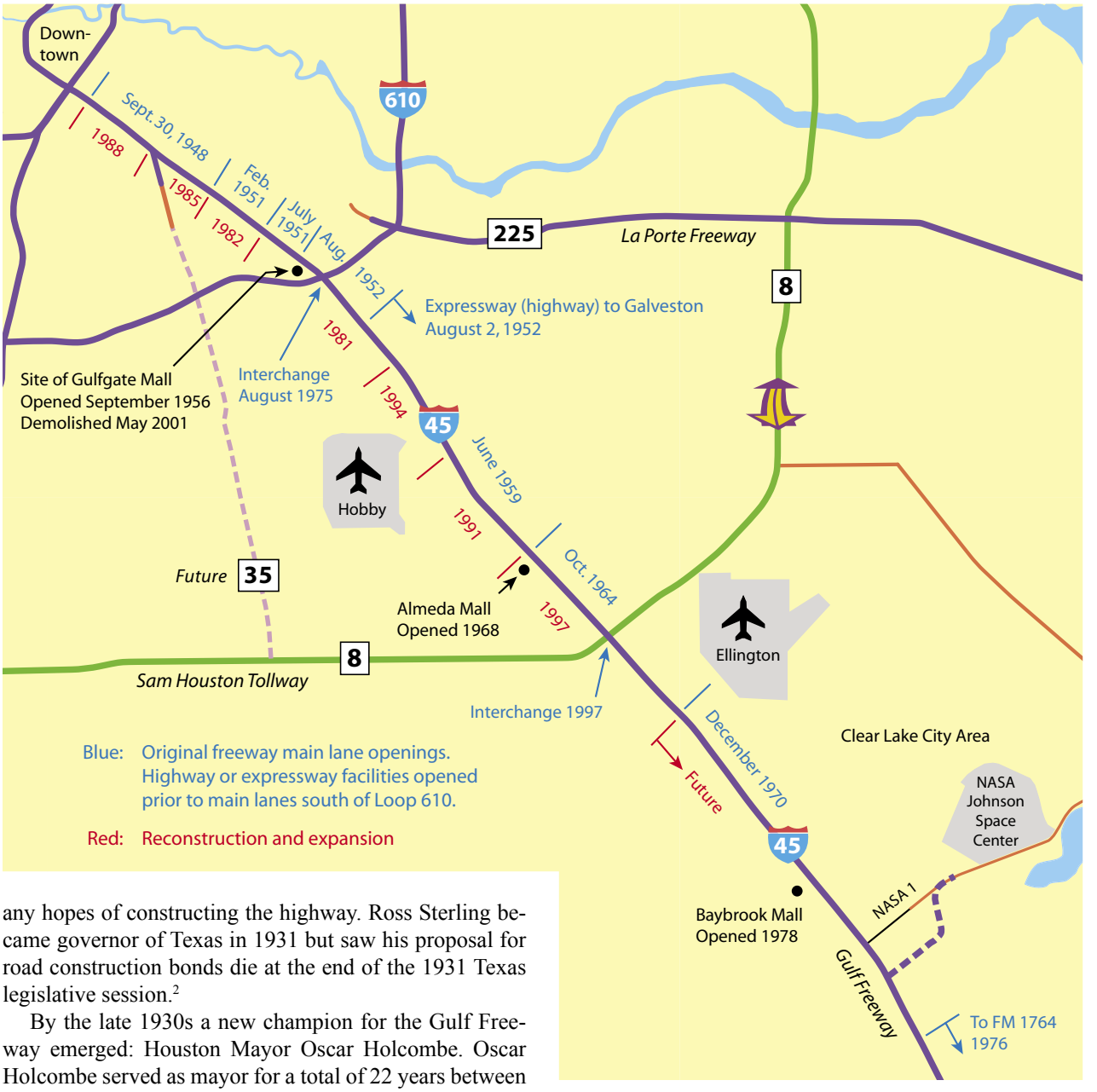


Freeway champion: Houston Mayor Oscar Holcombe was the strongest promoter of the Gulf Freeway in the late 1930s and early 1940s. In 1940, he negotiated the city of Houston's acquisition of the right-of-way of the electric railway operating on the corridor. (Photo: HMRC RGD5-7481)

Origins

The beginnings of the Gulf Freeway corridor can be traced to the formation of the Galveston-Houston Electric Railway (GHE) in 1905. Stone and Webster, which at that time actively purchased and consolidated electric railroads and power utilities, took control of GHE in 1906 and immediately changed the originally proposed route of the railway. Instead of following the shore of Galveston Bay, the GHE would have a direct route between Houston and Galveston. The route selected in 1906 was 50.5 miles (81 km) long and featured a 34-mile (54 km) perfectly straight section. In 1908 GHE entered into agreements to participate in the new concrete Galveston causeway. Passenger service on the GHE began December 5, 1911. The GHE distinguished itself as one of the fastest interurban railways in the nation, earning the title of "Fastest Interurban in the United States" in 1925 and 1926 in a nationwide speed contest conducted by *Electric Traction* magazine. The last day of service on the GHE was October 31, 1936. The track inside the Houston city limits from downtown to Park Place was taken over by Houston's transit operator, the Houston Electric Company, and continued to be used for streetcar service. The Gulf Freeway would ultimately follow the alignment of the GHE from downtown Houston to near the present-day Bellfort intersection, just south of Loop 610. Between Bellfort and Galveston, the Gulf Freeway closely parallels the GHE alignment.[1]

Even before the demise of the Galveston-Houston Electric Railway there was talk of a "super-highway" between Houston and Galveston. Ross Sterling, Houstonian and chairman of the Texas Transportation Commission, proposed the highway in 1930. The alignment contemplated at the time would have begun near the present-day Houston Hobby Airport and generally followed the Gulf Freeway corridor to the intersection of SH 6 and SH 146—the Texas City Y. However, the Depression dashed

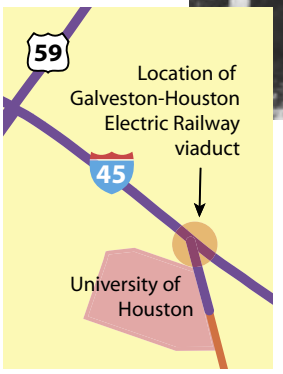


any hopes of constructing the highway. Ross Sterling became governor of Texas in 1931 but saw his proposal for road construction bonds die at the end of the 1931 Texas legislative session.[2]

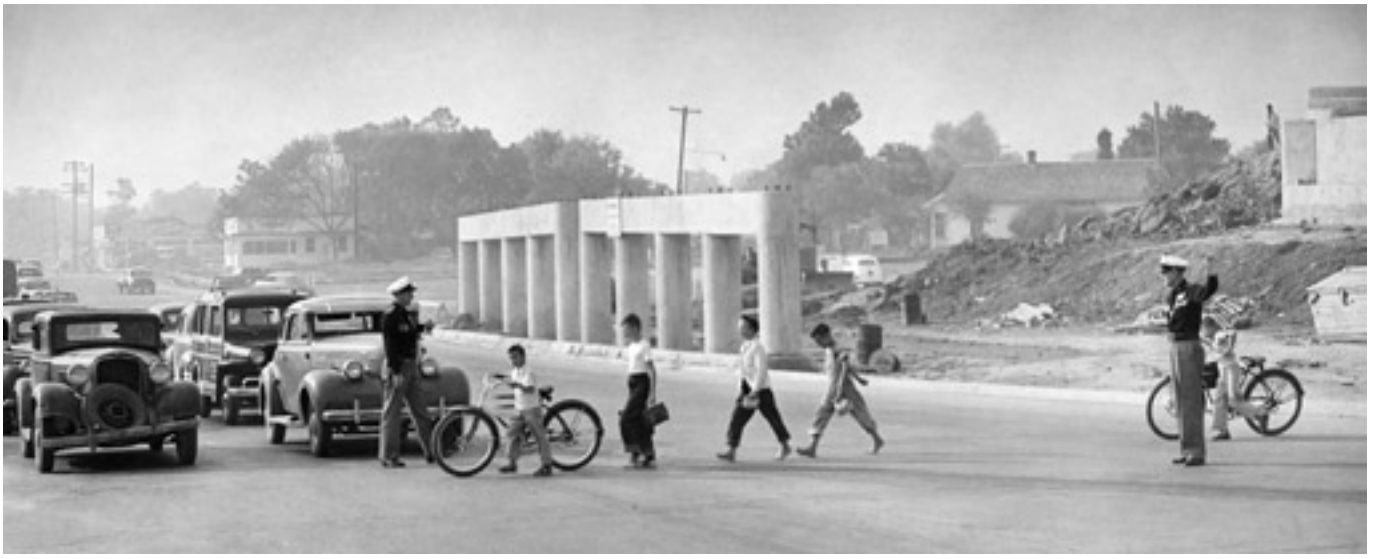
By the late 1930s a new champion for the Gulf Freeway emerged: Houston Mayor Oscar Holcombe. Oscar Holcombe served as mayor for a total of 22 years between 1921 and 1958. During his terms from 1939 to 1944, he set the wheels in motion for construction of the Gulf Freeway. On April 12, 1940, Holcombe announced that the city of Houston had reached an agreement with the Houston Electric Company for the termination of electric streetcar service in Houston. Houston Electric would be allowed to abandon its four remaining streetcar routes, including the Park Place line on the former GHE right-of-way, and the city of Houston would be responsible for the rail removal. In return, the city would receive a $50,000 payment from Houston Electric and ownership of the former GHE right-of-way. The GHE railway right-of-way varied in width from 60 to 100 feet (18 to 30 m), and a 230-foot-wide (70 m) corridor would be needed for the six-lane freeway with frontage roads. Because of the increased tax burden due to World War II, it would not be possible to immediately raise the funds needed to purchase the additional right-of-way along the corridor.

But planning for the freeway continued, and in October 1943 the Texas Transportation Commission entered into an agreement with the city of Houston and Harris County to develop the facility, referring to it as the relocation of US 75. The Federal-Aid Highway Act of 1944 revived the project by providing funding for new highway construction. Funds were released in October 1945 after the conclusion of World War II.[3]

By early 1946 plans had been formulated for the freeway, and on January 31 TxDOT released drawings of the planned design. The next day the *Houston Post* featured a large report on the project to build the "highway of the future," showing artists' depictions of the freeway, its overpasses, and the frontage roads. The inclusion of continuous frontage roads as a matter of design policy was a characteristic that would set the Gulf Freeway apart from most emerging freeways in the nation and would also set



Before the freeway: These photos show the Galveston-Houston Electric Railway, which occupied the Gulf Freeway corridor in Houston prior to the construction of the freeway. The interurban service operated from December 5, 1911, to October 31, 1936. The tracks in Houston continued to be used by Houston Electric, Houston's streetcar operator, until the shutdown of streetcar operations on June 9, 1940. In the upper photo, passengers board the Galveston Flyer in downtown Houston circa 1929. The lower photo shows the electric railway viaduct at the railroad crossing near the present-day University of Houston. The viaduct was demolished after abandonment of the railway, and construction of the freeway began in 1946. (Photos: upper, HMRC MSS 200-375; lower, HMRC MSS 145-4)



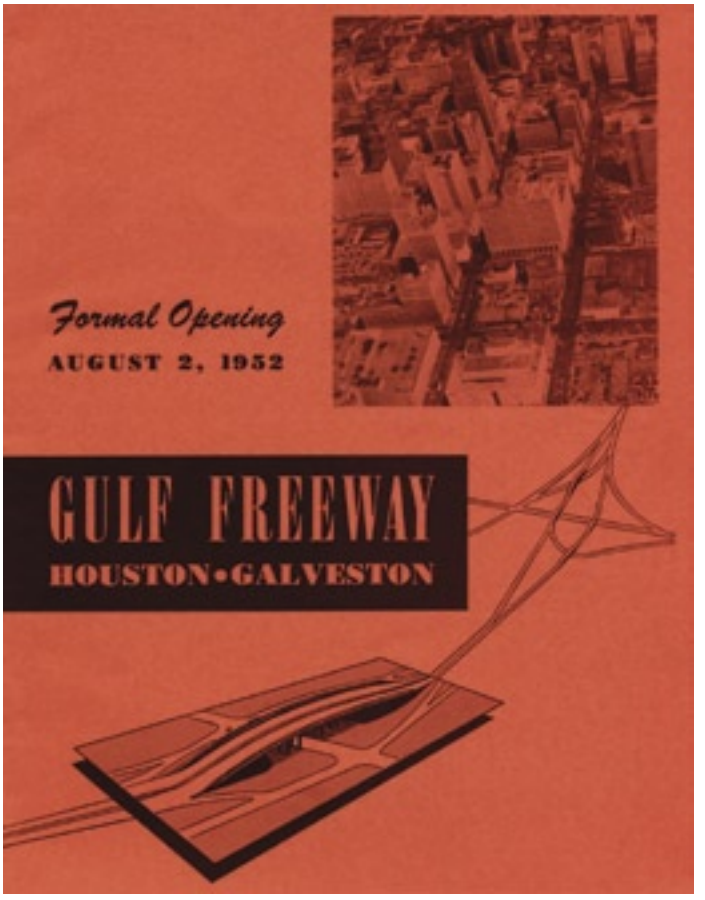
The first freeway generation sees the future take shape: Schoolchildren cross the Gulf Freeway construction zone at Telephone Road in October 1948. At the time of this photo, the first section of the freeway north of Telephone Road had just opened. (Photo: *Houston Chronicle*)

the standard for future Houston freeways. Although previous freeways outside of Houston had been constructed with frontage road or "quasi" frontage road sections, particularly in New York City and Detroit, those frontage road sections were more on a case-by-case basis and were not part of a policy for comprehensive use of frontage roads. The terminus of the freeway at downtown Houston would distribute the traffic among four city streets in an arrangement that the project engineer called the loading and unloading platforms.[4]

The first construction contracts were awarded in September 1946. On September 30, 1948, the first section of the Gulf Freeway from downtown to Telephone Road was ready for service. This was not only the first freeway in Houston, but also the first in Texas. A crowd of about 500 gathered on the Calhoun Road overpass for a 7:00 P.M. ceremony that the state of Texas had never seen before: a new freeway dedication. In the spirit of the occasion, speakers at the ceremony praised the freeway as the "best that money can buy." The president of the Chamber of Commerce stated, "There is nothing finer in the construction line in the United States than this highway." After speakers made their statements, Mayor Holcombe threw a circuit breaker to turn on the freeway lights. "The expressway will be in use from now on," he said as a phonograph played "Happy Days are Here Again," his political theme song. In a few moments, the trailer on which the speaker's stand was located was removed. Automobiles which had backed up for about one-half mile in each direction were now free to drive on the city's first freeway.[5]

With the freeway now in service, it quickly became apparent that something was missing: the freeway had no name. Press reports called it the Interurban Expressway, referring to the Galveston-Houston interurban railway that previously occupied the corridor. Mayor Holcombe

A Houston rarity: This view looks north at the Broadway intersection in early 1952. The intersection design included a traffic circle, and the same basic design remains in service in 2003. It is the only remaining traffic circle on Houston's freeway system. (Photo: Greater Houston Partnership)



Official dedication: The official opening of the Gulf Freeway between Houston and Galveston took place on August 2, 1952. Motorcades from both Houston and Galveston met at the approximate midpoint near Dickinson for the ceremony, which was held on the FM 517 overpass. A full-sized 12-page brochure with an orange cover (shown at left) was distributed. The designation as a freeway was somewhat of a misnomer, however. Only an 8.5-mile (14 km) section in Houston was actually a freeway, and there were 32 at-grade crossings between Houston and Galveston. But it just wouldn't have sounded right to call it the Gulf Highway. (Source, photo and brochure: *Galveston Daily News)*

Not really a freeway: This view, near the present-day El Dorado Boulevard, shows a typical section of the Gulf Freeway in July 1956. After its official dedication, most of the Gulf Freeway was in fact a highway without access control. TxDOT did not purchase access rights along the highway, so frontage roads would need to be added for the entire length to Galveston to make the Gulf Freeway a true freeway. (Photo: TxDOT)

quickly took action to solve the problem and launched a contest to name the freeway. There was no shortage of suggestions. The six judges sifted through 86 pages with the 13,000 entries, and on December 17, 1948, the winner was announced. The freeway would be named the Gulf Freeway. The exact name "Gulf Freeway" was suggested by only one entry, that of Miss Sara Yancy of the Heights. She received a $100 prize and, perhaps more importantly, placed her mark on Houston's freeway system. Only one other Houston freeway, the Eastex Freeway, would be named by a contest.[6]

Completing the Highway to Galveston

After the opening, work progressed quickly on the rest of the corridor to Galveston, which was a new 300-foot-wide (90 m) alignment bypassing the cities between Houston and Galveston. The new highway took on a mild dog-leg form on its route, in contrast to the existing highway which was almost perfectly straight. At the time, highway experts believed that arrow-straight highways over a long stretch created driver monotony and laxness, and gentle curves in the highway alignment were desirable. In some cases, a dog-leg was needed to steer the roadway to easily-acquired right-of-way or provide a better alignment for a stream crossing.[7]

A large dedication ceremony was held on August 2, 1952, for the completion of the highway between Houston and Galveston. Convoys departed from both Houston and Galveston, meeting at the approximate midpoint at FM 517 near Dickinson where the official dedication was held. Even though the facility was widely called the Gulf Freeway, most of the facility was not a freeway but a four-lane divided highway. The Gulf Freeway was a true limited-access facility for only 8.5 miles (14 km) from downtown Houston to the Houston city limits near the present-day Airport Boulevard. Although there were no traffic signals between Houston and Galveston, there were 32 at-grade crossings, a fact emphasized by officials who worried that motorists might not exercise appropriate caution at the intersections along the route. Those fears were realized when 15 fatalities occurred in the first six months after the official opening. In 1959, TxDOT officials launched a program to eliminate the 30 at-grade crossings that still existed along the route. Complicating the upgrade program was the fact that TxDOT had not purchased access rights along the Gulf Freeway. In order to provide landowners with the right of access and make the freeway limited-access, the Gulf Freeway would need frontage roads for its entire length to Galveston. The final at-grade crossing between Houston and Galveston would not be eliminated until 1976. But in 1952, no one was complaining about the at-grade crossings. The "dream highway" was enough to make everyone happy.[8]

The prototypical Houston freeway: This 1950s aerial view looking toward downtown illustrates one of the key features that would define urban freeways in Texas, and especially in Houston: the frontage road. Although freeways with frontage roads had previously been built in other cities, those instances were typically special cases, often the result of previously existing roads. On the Gulf Freeway, frontage roads were part of a policy and design philosophy that frontage roads should be built whenever possible. This view shows that the original frontage roads did not extend over the railroad tracks, consistent with the policy of serving local traffic, not through traffic, with frontage roads. *(*Photo: TxDOT)

The loading and unloading platform: This view shows the terminus of the Gulf Freeway just southeast of downtown Houston on August 3, 1954. The chief engineer for the Gulf Freeway called the connection into downtown the loading and unloading platforms, since four city streets were integrated into the freeway.[9] (Photo: Squire Haskins Photography, Dallas)

Increasing Traffic Load

The Gulf Freeway corridor served southeast Houston, the city's most active region in the 1940s and 1950s. The corridor included the Houston International Airport (now Hobby Airport), Ellington Field, and the burgeoning petrochemical complexes along the Houston Ship Channel. Later, in the early 1960s, NASA's Manned Spacecraft Center (now the Johnson Space Center) would be constructed in the Gulf Freeway corridor.

It didn't take long for Houston motorists to develop a love for their new freeway. On October 2, 1948, the second day of operation, 28,800 vehicles used the Gulf Freeway at its busiest point. A traffic count meter resembling a big thermometer was erected alongside the freeway to keep motorists up-to-date on the increasing traffic volume. Traffic increased rapidly, and by September 1950 the traffic meter had reached 66,300 vehicles per day. Local officials celebrated the 100 millionth vehicle-mile of travel in September 1950 with a ceremony next to the freeway and a chart that showed the growth in cumulative traffic volume.

Officials had not yet realized that rapidly increasing

The who's who of Houston celebrate freeway traffic: In August 1950, 21 months after the freeway opening, local officials celebrated the 100 millionth vehicle-mile of travel on the Gulf Freeway. Unexpectedly heavy demand for the freeway was cited as evidence of the need for more new freeways. Officials would soon realize, however, that rapidly increasing traffic volumes were not necessarily something to celebrate. By 1954 the freeway was operating at full capacity during rush hour, and the era of the Houston freeway traffic jam had begun. The following are included in the photo: William P. Hobby, former Texas governor and owner of the *Houston Post* (second from left in the white suit); W. J. Van London, head of the Houston TxDOT office and chief designer of the freeway (immediately to the left of the sign); Houston Mayor Oscar Holcombe, one of the freeway's strongest backers (immediately to the right of the sign); and Jesse Jones (second to the right of the sign). Jones was often called "Mr. Houston" in recognition of his contribution to the development of Houston in the first half of the 20th century. He was instrumental in the construction of the Houston Ship Channel, a leading real estate developer in the downtown area, and owner of the *Houston Chronicle*. His political connections brought the 1928 Democratic National Convention to Houston, and he served in powerful, high-level federal positions under President Franklin Roosevelt. In 1999 the *Houston Chronicle* named Jesse Jones the Houstonian of the Century.[10] (Photo: Center for American History, University of Texas at Austin, CN 11063)

traffic volume was not necessarily something to celebrate. Six years after the opening, in November 1954, 90,000 vehicles per day were using the freeway at its busiest point. A report issued by W. J. Van London, head of the TxDOT Houston Urban Project Office, stated that the "freeway is carrying about full capacity for 30 minutes between 7:00 and 7:30 in the morning on the inbound lanes and for about 20 minutes on the outbound lanes in the evening from about 5:00 to 5:20." The era of the freeway traffic jam was about to arrive. And so began the never-ending battle against freeway congestion in Houston.[11]

By the early 1960s, the Gulf Freeway became heavily congested and officials were recommending the construction of parallel relief freeways. The proposed extension of the La Porte Freeway (SH 225) into downtown had its origins in a 1961 traffic study. In 1965 the Alvin Freeway (SH 35) was recommended. Neither freeway would be constructed in that period, and the La Porte Freeway extension would ultimately be cancelled.[12]

By the mid-1960s, average rush-hour speeds on the Gulf Freeway would drop to about 22 miles per hour (35 km/h). In spite of traffic management efforts by TxDOT, traversing the five-mile (8 km) section of freeway from just south of Loop 610 to downtown could take 30 to 60 minutes in 1969. The freeway recorded 150,000 vehicles per day just south of downtown in 1969, far busier than Houston's second busiest freeway, the West Loop, which had a volume of 113,000 vehicles per day just south of the Katy Freeway. After 1969, a shift in Houston's freeway travel patterns occurred. Without a precipitating event, Gulf Freeway traffic volume just south of downtown dropped to 142,000 vehicles per day in 1971. In the same period from 1969 to 1971, traffic on the West Loop increased to 146,000 vehicles per day. Something larger was happening in Houston. The center of Houston's population growth and development had shifted away from southeast Houston and became focused on the west and southwest sides of the city, with huge commercial real estate developments underway at Greenway Plaza on the Southwest Freeway and in the Galleria area on the West Loop. Traffic

Keeping count: A traffic count indicator was placed alongside the freeway to keep motorists up-to-date on freeway usage. At the time of this photo, circa 1951, traffic volume had reached 75,000 vehicles per day. Unfortunately for motorists, the traffic count would go off the scale by 1954 and then continue to increase, soon causing traffic congestion. (Photo: TxDOT)

Houston's first congested freeway: By the early 1960s rush-hour traffic jams were part of everyday life on the Gulf Freeway. This 1965 photo shows the evening rush-hour backup at the beginning of the freeway in downtown. Researchers at the Texas Transportation Institute used the Gulf Freeway to investigate experimental traffic management techniques between 1963 and 1969. (Photo: HMRC MSS 157-622)

Crossing over to safety: The most serious design flaw of the original Gulf Freeway was the lack of a center guardrail. The upper left photo shows a typical section of the original freeway with its curbed median. Prior to the installation of the barrier, there were 60 crossover accidents, resulting in 9 fatalities and 70 injuries. The upper right photo shows the installation of the median guardrail in 1956. The lower photo shows the freeway in the late 1950s. In the three years after the guardrail installation, there were no crossover accidents. (Photos: TxDOT)

Ramping up to danger: This 1963 photo illustrates design and safety hazards in the original Gulf Freeway. The freeway on-ramp has practically no merging space and was the most accident-prone spot in Houston in 1963. Also shown is a row of light fixtures positioned within about 12 feet (3.7 m) of the main traffic lanes. Breakaway fixtures had not yet been developed in 1963, and these obstructions were a serious hazard to motorists.[13] (Photo: *Houston Chronicle*)

demand on the Gulf Freeway would resume its upward trend in 1972, but the Gulf Freeway would never again be Houston's traffic volume leader. From the traffic congestion perspective, this was good news. However, major relief from traffic congestion would not take place until the freeway expansion was completed in the 1980s.[14]

First Generation Freeway Design

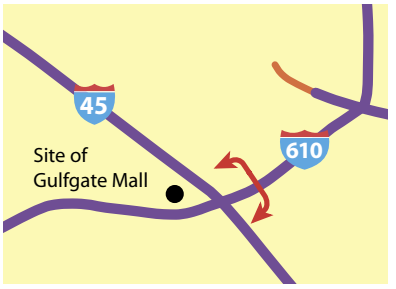
Even though the Gulf Freeway was touted as the "best that money can buy" in 1948, its shortcomings quickly became apparent. First and foremost was the absence of a median barrier. In the 1940s and early 1950s, it was common to construct freeways with only a raised median with curbs, not only in Texas but also in other states, including California. By 1956, there had been 60 accidents caused by vehicles crossing the median into oncoming traffic, resulting in nine fatalities and more than 70 injuries. A 1954 report from the Houston office of TxDOT reported that six of the seven median crossings in 1953 occurred on overpasses, and it was believed that drivers were using the elevated position to observe the cityscape rather than pay attention to the road. In 1956, a two-foot-high (61 cm) metal barrier rail was installed in the median. Three years later there were no reports of vehicles jumping over or running through the barrier.[15]

There were numerous other design deficiencies. The merging distances at the freeway on-ramps were too short. The freeway, which had been called a roller-coaster, had poor sight lines, especially at overpasses. Bridges, and in many cases ground-level lanes, lacked shoulders. The Gulf Freeway would later be designated as a "first generation freeway" by TxDOT.* The lessons learned on the Gulf Freeway would be applied to the next generation of freeways in Houston, which would start to take shape in the late 1950s. However, many of the first-generation sections of the Gulf Freeway would remain in service until the mid-1980s.

A Match Made in Heaven

As the widespread ownership of private automobiles and development of freeways began to gain momentum across the United States after World War II, new concepts

* For a complete history of the first generation freeway and subsequent generations of freeways, see "Building Better Freeways," starting on page 71.



The mall arrives in Houston: Houston's first shopping mall, Gulfgate Shopping City, opened on September 20, 1956. A huge crowd estimated at 150,000 to 200,000 visited the mall on opening day. This photo shows the original, open-air mall in the late 1950s. The Gulf Freeway crosses from left to right in the lower half of the photo, and the South Loop would later be built in the corridor just to the left of the mall. Gulfgate Mall was highly successful, but went into decline starting around 1982. In May 2001 the mall was demolished and redeveloped with retail stores in a strip-center configuration. (Photo: TxDOT)

in suburban land development began to appear. Levittown, New York, launched in 1947, typified the trend toward low-density, mass-produced, single-family housing. Another new product of the era was the auto-oriented shopping center. Crenshaw Center in Los Angeles, also opened in 1947, was one of the first auto-oriented shopping centers of the new automobile suburbia. Northgate on Interstate 5 in Seattle, Washington, which opened on April 21, 1950, was the next step in the evolution of the regional shopping center with its arrangement of stores along a central mall. The first regional shopping mall is generally recognized to be Northland Center, opened in 1954 in Southfield Township, Michigan, near Detroit. The open-air mall was designed by architect Victor Gruen. The first fully enclosed, climate-controlled regional shopping mall is generally recognized to be Southdale Center in Edina, Minnesota, just southwest of Minneapolis. Southdale, also designed by Gruen, opened in 1956.

Freeways and shopping malls were a match made in heaven, so it was only a matter of time before the Gulf Freeway would get its first mall. In March 1954 ground was broken for Gulfgate Shopping City, an open-air mall located at the intersection of the Gulf Freeway and the planned South Loop. The grand opening of Gulfgate Shopping City and its 62 stores took place on September 20, 1956. A huge crowd converged on the shopping center opening day. The parking lot was filled to capacity for the 10 A.M. opening, and by 11 A.M. automobiles were spilling over onto nearby streets and fields. An estimated 50,000 people attended the dedication, and an estimated 150,000 to 200,000 people visited the mall on opening day. Houstonians quickly adopted the shopping mall lifestyle, and Gulfgate Shopping City was highly successful. Houstonians would get their first fully enclosed air-conditioned mall, Sharpstown Mall on the Southwest Freeway, on September 14, 1961.[16]

The Gulf Freeway as a Guinea Pig

One morning in May 1956, motorists on the Gulf Freeway were greeted by something very strange. A 50-foot (15 m) tower had been erected immediately adjacent to a freeway overpass, and on top of the tower were a large clock and two movie cameras. What was this all about? It was just one of the many studies and experiments conducted on the Gulf Freeway over the years, distinguishing the Gulf Freeway as the guinea pig of Houston's freeways. The 1956 study filmed vehicle movement to help researchers get a better understanding of vehicle behavior at freeway entrance and exit ramps. In addition,

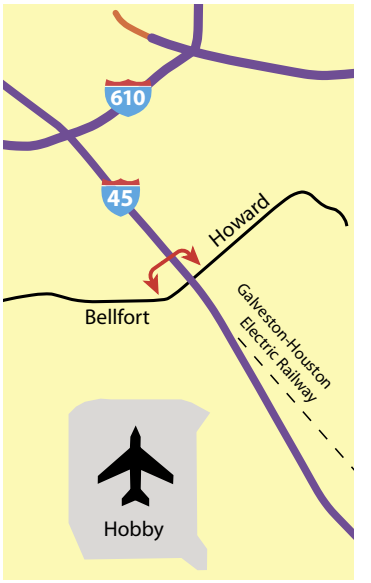
Freeway laboratory: Since the Gulf Freeway was the first freeway in Texas and the first to experience many freeway-related problems, it became a laboratory for experimentation and research. In 1956, researchers erected this 50-foot-tall (15 m) tower at the Cullen overpass to film traffic movements before and after the installation of a center guardrail. Extending from the tower platform is a clock, which was included in the camera view. Plans for the tower were publicized in advance to minimize the disruption caused by curious motorists. (Photo: TxDOT)

the study examined the effects of the addition of a central median barrier which would soon be installed. The clock was mounted so that it was visible in all camera views of the traffic flow, and white lines painted on the roadway allowed researchers to estimate vehicle speed.[17]

Intensive study of the Gulf Freeway actually began soon after its completion. In July 1949 the city of Houston released a report titled *Economic Evaluation of the Gulf Freeway*, documenting the time savings provided to motorists. The first study to determine the effect of the freeway on property values took place in 1950. The study found that freeway property values in the "zone of influence" increased by 103% between 1945 and 1950, while land values outside the freeway zone of influence increased by only 50%. Accident rates were also carefully studied, and the freeway sections of the Gulf Freeway were found to have substantially fewer fatal accidents than the national average. The benefits found by these studies were used to justify the cost of the freeway and to help secure funding for future freeways.[18]

The traffic congestion that developed on the Gulf Freeway by the early 1960s made it an ideal laboratory for studying new traffic management techniques. The period from 1963 to 1969 was the most active for freeway research. The first ramp control experiments were conducted in August 1964. Selected ramps were closed during peak hours and police officers regulated the flow of vehicles entering the freeway at ramps which remained open. Results indicated that ramp control was effective in improving freeway operation. In September 1965, ramp metering signals began operation at freeway on-ramps, with the timing of the signals still controlled manually by operators with remote control radio. After full implementation, researchers reported a 30% increase in average speed and a 12% increase in roadway capacity. In March 1966, automatic ramp metering was tested by using computer-controlled signal actuation, metering vehicles into the freeway based on available capacity and gaps in the traffic. The 1960s-era computer occupied two six-foot-tall (1.83 m) racks. Ultimately, fully automatic operation of

Freeway and train tracks part ways: This aerial view from the mid-1950s looks south at the Bellfort crossing. Just south of Bellfort, the Gulf Freeway veers away from the right-of-way of the Galveston-Houston Electric Railway. At the top center of the photo, evidence of the railway right-of-way can still be seen. (Photo: TxDOT)



the ramp meters was achieved using fixed timing.

In conjunction with the ramp metering project, a closed-circuit television system with 14 cameras was put into operation in December 1966, providing a continuous video view of a 6.5-mile (10 km) stretch of freeway. Near the end of the study in November 1968, researchers reported that the new traffic management techniques had increased the average speed during the morning rush hour from 22 to 34 miles per hour (35 to 54 km/h).[19]

Space Freeway

On May 25, 1961, President John F. Kennedy summoned both houses of Congress for a Special Message on Urgent National Needs. His speech focused on the Cold War, the threat it imposed, and steps that were needed to ensure national security. But near the end he delivered a statement that would distinguish this speech as perhaps one of the most significant in the nation's history: "I believe that this nation should commit itself to achieving the goal, before this decade is out, of landing a man on the moon and returning him safely to the earth. No single space project in this period will be more impressive to mankind, or more important for the long-range exploration of space; and none will be so difficult or expensive to accomplish." With that statement, President Kennedy upped the stakes in the space race between the United States and the Soviet Union—a contest in which the Soviet Union had established its lead with the October 4, 1957, launch of Sputnik, the world's first orbiting spacecraft.

Though few would know it at the time, Houston would soon become a key player in the nation's space effort. Influential Texans in Washington, D.C., including Vice President Lyndon Johnson and Houston Representative Albert Thomas, worked to designate Houston as the location for the new Manned Spacecraft Center that would lead the nation's effort to reach the moon. On September 19, 1961, the announcement was made in Washington, D.C. that a site southeast of Houston, just off the Gulf Freeway, would house the new complex. Throughout the 1950s, the Houston Chamber of Commerce had promoted Houston as "America's Industrial Frontier," printing the statement on its publications. In an instant, Houston became Space City, USA.

The original seven Mercury Program astronauts, who

The original seven: America's first seven astronauts were introduced to the public in Washington, D.C. on April 9, 1959. In 1961, Houston was designated as the location of the Manned Spacecraft Center (now the Johnson Space Center), and on July 4, 1962, the astronauts were welcomed to Houston with a parade. Five of the astronauts were auto enthusiasts, and two in particular, Gordon Cooper and Gus Grissom, were racing fanatics and were known to race frequently on the roads around the space center, including the Gulf Freeway. Front row, left to right: Walter Shirra, Deke Slayton, John Glenn, and Scott Carpenter. Back row, left to right: Alan Shepherd, Gus Grissom, Gordon Cooper. (Photo: NASA)

had been selected in 1959, were introduced to Houston on July 4, 1962, with a large downtown parade and a barbecue at the Sam Houston Coliseum.* While the space program was pushing science and technology to new levels, five of the astronauts had a more down-to-earth interest: fast cars. Gordon Cooper, Gus Grissom, Walter Shirra, Alan Shepherd, and Scott Carpenter were all automobile enthusiasts. Two in particular, Cooper and Grissom, were especially fanatical about auto racing and were partners in an Indy car racing team that participated in major racing events. The racing enthusiasts didn't limit their speed contests to the race track. The roads around NASA, especially the Gulf Freeway and State Highway 3, were the scene of frequent high-speed races between the astronauts.[20]

The Manned Spacecraft Center, which was renamed the Johnson Space Center in 1973, also served as the launch pad for Houston's first large-scale, master-planned real estate development. In late 1962, Del E. Web Corporation and Friendswood Development announced the 15,000-acre Clear Lake City community, dwarfing the 6,500-acre Sharpstown development which had begun along the Southwest Freeway in 1955.[21]

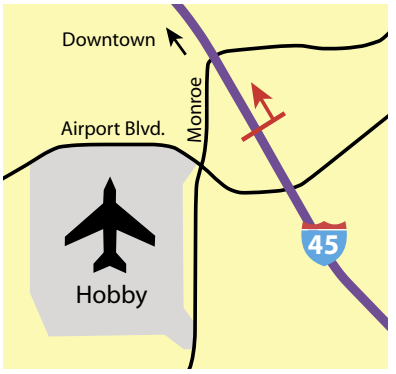
Entering the Anti-Freeway Era

Among its many firsts, the Gulf Freeway was also Houston's first freeway to generate a substantial amount of community opposition over expansion plans. The year was 1972, and TxDOT was formulating plans to expand the antiquated section of freeway just south of downtown, which had opened in 1948, and run the northern terminus of the planned Alvin Freeway on the same right-of-way as the Gulf Freeway. Approximately 100 feet of right-of-way would be taken on the south side of the Gulf Freeway, displacing about 170 homes with 500 to 800 residents and 22 businesses. The residents to be displaced were almost entirely black and low-income, and many were elderly.

Leading the black community's efforts against the project was the director of the Martin Luther King Community Center, Madgelean Bush, a feisty woman who fought for improvement of the black inner city and told people she had a degree in "ghettology." After the first public hearing

Eight days in a space capsule? No problem. The Gulf Freeway? Too dangerous! This cartoon appeared in the *Houston Chronicle* on August 10, 1969, just after Apollo 11's moon landing with its crew of Neil Armstrong, Edwin "Buzz" Aldrin, and Mike Collins.

* The Sam Houston Coliseum was located downtown at the present-day location of the Hobby Center for the Performing Arts, 800 Bagby. It was constructed in 1937 and demolished in 1998.



The Gulf Freeway transitway: In the late 1960s planners at TxDOT were already envisioning a comprehensive busway system for the Gulf Freeway, fully integrated with park-and-ride lots and connecting ramps along its length. Twenty years later in May 1988, the original concept of the fully integrated bus lane was realized with the opening of the transitway from downtown to Loop 610. The transitway was extended southward to south of Beltway 8 during the 1990s. This morning rush-hour view looks north along the freeway at the connection ramp to the Monroe Transit Center, which is approximately halfway between Loop 610 and Beltway 8. This view shows the mix of buses and high-occupancy automobiles that use the transitway. (Photo: Metropolitan Transit Authority)

in February 1973, two organizations were formed to oppose the freeway: the Anti-Freeway Coalition and the Third Ward Preservation Association. A third group known as the Urban Bunch, consisting primarily of architects, also opposed the freeway expansion. The opposition groups enlisted the help of recently elected minority representatives Barbara Jordan of the United States House and State Representative Mickey Leland. Additional public hearings were held, often with heated dialog and racial overtones. Fueling the opposition was a belief that freeways benefited affluent white suburban communities and contractors, while disrupting low-income inner-city neighborhoods. At one meeting an irate black woman exclaimed: "This will be the last time a white man's bulldozer moves through the black man's bedroom!" [22]

The opposition was not able to stop the Gulf Freeway expansion, however. The 1973 environmental impact statement for the project stated, "An analysis … would indicate that there is no widespread opposition to the project. It is also concluded that those opposing the project have received little or no widespread support even though some of those opposing the project have received wide publicity through the news media." The expansion project to build a dual freeway with the Gulf Freeway at ground level and the lanes for the future Alvin Freeway on elevated structures would proceed, although construction would not begin until the early 1980s.

"The Gulf Freeway, billed as the Highway of the Future at its inception in 1945, is still the highway of the future, for it has never been completed."

Houston Chronicle, August 10, 1969

50 Years of Construction

When the Gulf Freeway was officially dedicated on August 2, 1952, construction on the Gulf Freeway was far from complete. In fact, work had really just begun. The first dedication ceremony in 1948 marked the beginning of 50 years during which there was almost always some construction in progress. Finally, in 1997, ongoing construction came to a temporary halt with the completion of the magnificent stack interchange at Beltway 8. But in those 50 years, the Gulf Freeway became known as the freeway that was never finished, prompting one of Houston's longest-running one-liners: "I just hope to live long enough to see the Gulf Freeway finished." [23]

As sections of the Gulf Freeway were opened starting in 1948, many were obsolete as soon as they opened or shortly thereafter. First generation freeway design standards and rapidly increasing traffic volume rendered the freeway inadequate. The Gulf Freeway "was the first freeway in the state, and we didn't have freeway experi-

The Gulf Freeway wishbone: This transitway access structure was completed in 1997 just south of Beltway 8. (Photo: James Lyle, TTI, June 2001)

ence," explained A. C. Kyser, manager of TxDOT's Houston Urban Project Office, in 1969. A few years later in 1973, another engineer observed, "Very little was known about freeways when we started. And who knew about the Space Center location or the rate of growth Houston would have?" In 1976 a construction worker on a project joked, "I think we'll get through with this in about the next 20 years." His joking prediction turned out to be surprisingly accurate.[24]

Soon after the 1952 dedication, work began to provide grade separations at many of the intersections on the highway. Starting in the late 1950s, TxDOT began to reconstruct the freeway one small section at a time to bring it up to standards and convert it from a highway to a true freeway. In 1960 the first widening was completed when a short section of freeway was widened to six lanes from the present-day Loop 610 southward to Sims Bayou. From the late 1960s to the late 1970s, traffic was shifted to the frontage roads as long sections of main lanes were reconstructed all the way to Galveston. The process began all over again in the early 1980s, with work beginning downtown and proceeding southwards to rebuild and expand the freeway to eight main lanes with a central, barrier-separated transitway lane. The slow progression finally reached Beltway 8 in the mid-1990s with the completion of the huge stack interchange in 1997. Finally, the Gulf Freeway was construction-free. But it was not finished. In fact, the Gulf Freeway may never be truly "finished."

Future Plans

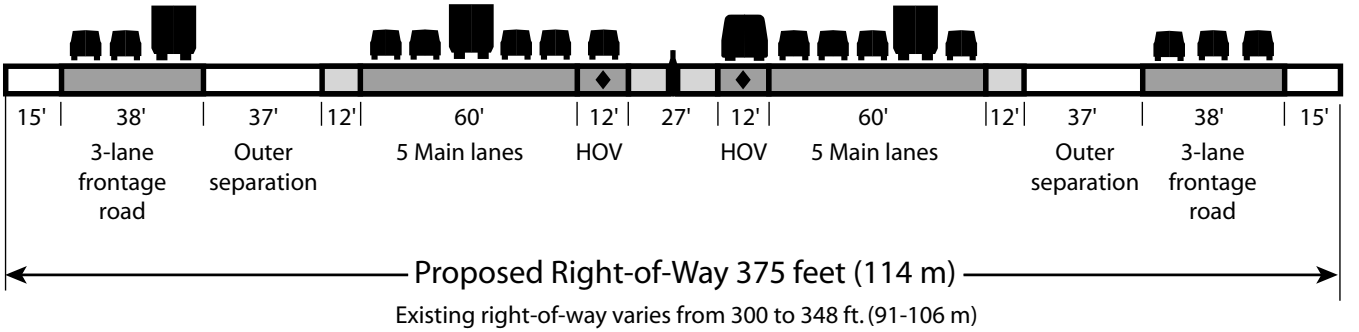
A comprehensive study completed in 1999 set the wheels in motion for the next round of major reconstruction. From Beltway 8 to Galveston, the freeway will be modernized and widened. The section from Beltway 8 to

"Like the pyramids of Egypt, the freeway has consumed much of the working careers of many of the workers involved in its construction."

Houston Post, March 25, 1976

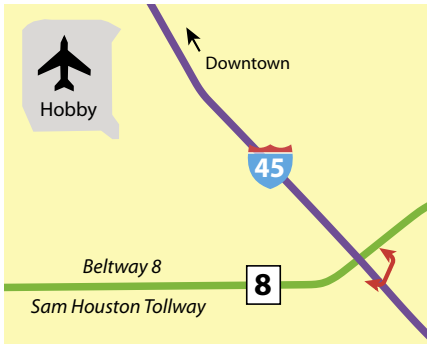
Key dates in the history of the Gulf Freeway	
1930	The Houston-Galveston super highway receives its first serious consideration.
1940	The city of Houston purchases the right-of-way of the former Galveston-Houston Electric Railway.
1943	TxDOT officially designates the route as a freeway.
1948	The first freeway section opens on September 30.
1952	The highway to Galveston is dedicated.
1959	The first major reconstruction and expansion begins.
1961	NASA announces the Manned Spacecraft Center near the Gulf Freeway.
1976	The entire distance to Galveston meets freeway standards.
1988	Transitway operation begins.
1997	Major freeway construction temporarily ends with the completion of the interchange at Beltway 8.
Future	Expansion between Beltway 8 and Galveston.

FM 518 in League City, currently a 6-lane freeway with 2-lane frontage roads in each direction, will have 10 general purpose main lanes, 2 diamond lanes for high occupancy vehicles, and 3 frontage road lanes in each direction. From FM 518 in League City to Galveston, the freeway will be expanded from its present 6 main lanes to 8 main lanes, and the Galveston Causeway will be reconstructed to an 8-lane facility. Work on the $136 million causeway reconstruction project began in the summer of 2003, and work on the new NASA 1 bypass freeway, which will involve reconstruction of the Gulf Freeway main lanes, could begin in 2004. Those projects will kick off another 20 years of work on the freeway.[25]



Future construction: In 2003 the Gulf Freeway is free of major construction, but plans are being developed for the next wave of construction which will expand the freeway from Beltway 8 to Galveston. The 9-mile (14 km) section immediately south of Beltway 8 will be expanded to the configuration shown above, with 10 general purpose main lanes, 2 non-barrier-separated HOV lanes, and 3-lane frontage roads in each direction. Construction will likely take place between 2010 and 2015. (Source: adapted from *I-45 South Corridor Major Investment Study Executive Summary*)

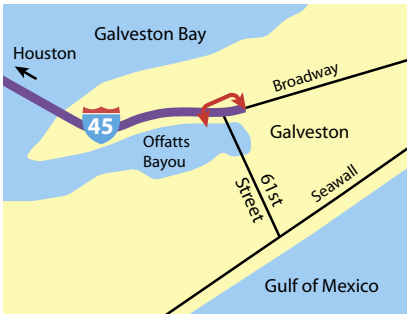
The downtown approach: The downtown approach of the Gulf Freeway is actually a multiplex with the planned Alvin Freeway. The elevated structures between the Gulf Freeway main lanes and the frontage roads serve as the terminus of the Alvin Freeway and the downtown exit for both the Gulf and Alvin Freeways. The early 1980s image at right shows this section of freeway before reconstruction began. The freeway was still generally in its original 1948 configuration. The main lanes were expanded and the elevated structures were added. This project generated the first major community opposition over a planned freeway expansion in Houston when public hearings were held in 1973. (Photos: above, May 2002; right, Chuck Fuhs)



The ultimate stack interchange? The impressive interchange at the Gulf Freeway and Beltway 8 features high-flying ramps, symmetric design, and a sprawling right-of-way. This view looks northwest along the freeway. The completion of the interchange in 1997 capped 50 years of nearly nonstop construction on the Gulf Freeway. (Photo: May 2002)

Overall view: This wide-angle view shows the overall configuration of the interchange. (Photo: May 2002)

Ground view: This view looks west along the Beltway 8 main lanes, with the frontage road at ground level at left. (Photo: November 2002)



Gulf Freeway namesake: This view of the Gulf Freeway in Galveston shows the freeway's namesake, the Gulf of Mexico. The body of water in the center of the photo is Offatts Bayou, which is really more of an inlet from Galveston Bay than a bayou. The water in the upper part of the photo is the Gulf of Mexico. The road running vertically is 61st Street. The Gulf Freeway ends just to the left of this photo and does not actually reach the Gulf of Mexico. (Photo: James Lyle, TTI, June 2001)