

State
Highway **146**

***State Highway 146 Corridor
Major Investment Study***

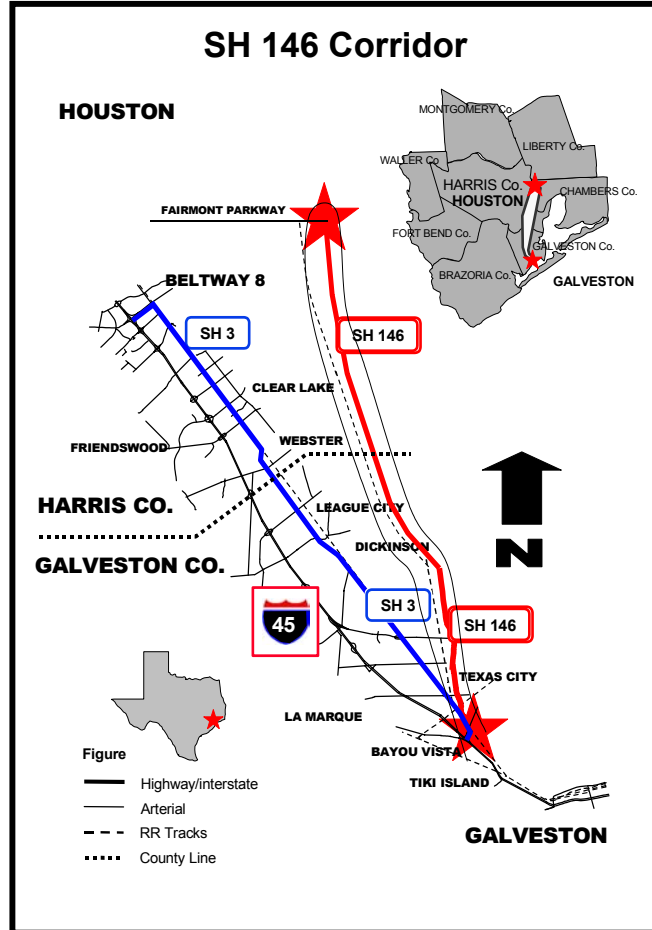


Executive Summary

Overview

The SH 146 Corridor Major Investment Study (MIS) was initiated in December 1999 to evaluate the transportation needs of the SH 146 Corridor. The purpose of the study was to define the scope and characteristics of the transportation investment to be made in the SH 146 Corridor over the next 20-year period. The overall goal of the study was to identify the transportation needs of the corridor and to determine the improvements which best address those identified needs.

The study corridor consisting of portions of both Harris and Galveston Counties, extends along SH 146 and serves the communities of Houston, Bayou Vista, Clear Lake Shores, El Lago, Hitchcock, Kemah, Galveston, La Porte, La Marque League City, Pasadena, Seabrook, Shoreacres, Taylor Lake Village, Texas City, Baytown, and Dear Park. The study corridor is approximately 24 miles long and extends from one-half mile east of SH 146 to one-half mile west of SH 146.



The underlying characteristics of the SH 146 Corridor vary throughout the project limits in terms of observed traffic conditions, development patterns, mobility needs and environmental concerns. For this reason, the corridor was divided into four segments for development and evaluation of conceptual alternatives. The segments are defined as Segment 1 (IH 45 to FM 517), Segment 2 (FM 517 to FM 518), Segment 3 (FM 518 to Red Bluff road), and Segment 4 (Red Bluff road to Fairmont Parkway). These segments define areas with similar land uses, demographics, traffic characteristics, and public concerns.

Problems and Needs

A set of problems and needs within the SH 146 corridor was identified early in the MIS study process. These identified issues were based on an analysis of the existing traffic conditions, forecasts of future travel demand 20 years hence, projected population and employment growth trends, extensive dialogue with concerned citizens and stakeholders within the corridor, and public input and discussions with federal, state, and local agencies. The identified problems and needs helped refine the scope of the MIS and highlighted those issues to be addressed. Identified problems and needs included:

Traffic Congestion

- ❖ On the north end and mid section of the corridor, demand exceeds capacity during both a.m. and p.m. daily commute periods. In addition, during seasonal recreational and special events, demand exceeds capacity on a regular basis in the mid section of the corridor

SH 146 Facility Improvement Needs

- ❖ Many sections of SH 146 need major pavement maintenance or overlay reconstruction.
- ❖ Operational and safety improvements are needed at various locations throughout the SH 146 corridor due to accident rates and non-standard design configurations.

Parallel Route and Evacuation Needs

- ❖ Provide for additional modes of transportation such as bicycle and pedestrian facilities.
- ❖ The lack of hurricane and other evacuation options along the SH 146 corridor is a safety concern that needs to be addressed.
- ❖ Roadway flooding along SH 146 and at the Texas City Wye contributes to reduced highway capacity and increased level of congestion.
- ❖ When incidents obstruct many sections of the corridor, there are very limited alternative routes and this results in a breakdown of the SH 146 highway.

Community/ Environmental Concerns

- ❖ There is a need to improve access to the recreational and scenic resources within the SH 146 corridor.
- ❖ When considering alternative solutions, address the status of the Houston and Galveston as ozone “non-attainment” areas.
- ❖ Some intersections along SH 146 and various port access roads do not meet the requirements for truck turning movements.

- ❖ A substantial number of trains traveling into and out of ports of Texas City and Houston utilize rail lines having numerous at-grade crossings. These crossings not only require slower train speeds, but also cause bottlenecks and congestion on the crossing roadways.
- ❖ Growth in port activities will contribute to the need to improve freight movement to and from ports of Houston, Texas City, Galveston, and within freight corridors in the SH 146 study area.
- ❖ A number of attractions, businesses, and events are important to the economy of the corridor and the improvement alternatives must provide adequate accessibility.
- ❖ Improvements are needed to provide better access to the major employment generators such as Kemah/Seabrook entertainment center, NASA corridor communities and ports.
- ❖ Traffic, population and employment trends reveal the existence of variety of travel needs throughout the corridor.

Study Goals

In evaluation of the Problems and Needs, comprehensive goals were developed to provide guidance for the development and evaluation of the transportation alternatives to be considered. These goals were adopted by the Steering Committee and served as the guiding principals for the MIS:

Goal 1: Reduce Traffic Congestion

Goal 2: Improve Hurricane Evacuation

Goal 3: Improve Safety

Goal 4: Provide Travel Options

Goal 5: Protect Natural and Social Environment.

Roadway Alternatives Considered

Based on the adopted study goals and objectives, a range of conceptual alternatives was developed to meet the needs of the corridor. These conceptual alternatives ranged in scope and focus from a No-Build Alternative to various build alternatives that represented various levels of investment.

Utilizing a “mix-n-match” process, combination of planning concepts were defined, resulting in twelve conceptual alternatives. These were then screened using a “fatal flaw” type analysis to arrive at six alternatives that were considered to be viable for the various corridor segments. The twelve conceptual alternatives include:

1. No-Build Alternative

The No-Build Alternative assumes the current roadway configuration plus enhancements of regional significance that are already under construction or that are planned and have committed funding sources. The enhancements included in the no-build alternative are expected to be in place by the year 2022 and they represent the future base system against which all other alternatives are compared.

2. Transportation System Management (TSM) Alternative

This alternative included the existing and committed improvements in the no-build alternative plus traffic operational improvements and travel demand programs designed to relieve congestion. The elements of the TSM alternative would also be included in all build alternatives. The following are the TSM elements:

- ❖ Improved traffic signal systems
- ❖ Operational and circulation improvements
- ❖ Increased bus transit services
- ❖ Bicycle/Pedestrian facilities
- ❖ Expansion of park-and-ride/park-and-pool facilities
- ❖ Motorist information systems
- ❖ Intersection improvements
- ❖ Rideshare support programs

3. Arterial Alternative

Arterial roadway consists of expansion of roadway depending upon design year 2022 traffic projections.

4. Arterial with grade separation at major intersections Alternative

This alternative is similar to arterial alternative, except grade separation would be provided at major connecting roadways.

5. Arterial with access road Alternative

This alternative is similar to arterial alternative but also includes an adjacent road, which would provide access to local businesses in between connecting roadways.

6. Arterial with Express Lanes grade separated at major intersections Alternative

Arterial with express lanes consists of express lanes immediately adjacent to the existing arterial or expanded arterial with grade separations at connecting roadways.

7. Freeway with Frontage Roads and potential future HOV lanes Alternative

This alternative would provide a facility with one-way frontage roads on both side of the freeway and potential future HOV lanes. This alternative includes the standard TxDOT freeway design elements.

8. Alignment option Alternative

This alternative would consist of moving the existing SH 146 alignment either to the east or to the west or in combination.

9. Truck Lanes Alternative

Exclusive truck lanes could be provided in the median of the freeway, included in the express lanes, or be on an elevated structure in the median or on either side of the arterial roadway. Exclusive truck lanes is an alternative in selected segments of SH 146 to provide better mobility for non-truck traveling motorists.

10. Transit Alternative

The potential for this alternative (high performance bus or rail) is related to the nature of travel demand in the corridor. This includes the purpose of the trip, the time of the day, and the trip's origin and destination. For the purpose of this particular MIS, highway and transit demand forecasting were done separately, with H-GAC playing the lead role.

11. HOV Lanes Alternative

HOV lanes would likely be constructed within the median of a freeway section, to compliment Park and Ride facilities. Like the transit alternative, demand is largely dependent upon potential users having similar origin and destinations.

12. Non-Motorized Modes Alternative (Alternate Modes)

This alternative would provide improvements to both bicycle accommodations and pedestrian access.

Emergency Evacuation

The No-Build, TSM, and Non-Motorized Modes Alternatives could not provide a 100 percent evacuation of the affected areas of Harris and Galveston Counties within the acceptable 48-hour time period. However, all of the other build Alternatives are able to accommodate the evacuation more efficiently with a 100 percent evacuation of the affected areas within the 48-hours. Therefore, it can be concluded that any of the build alternatives can easily meet the evacuation needs.

Corridor safety Concerns

Safety of the future transportation system within the SH 146 was a major concern of the citizens who participated in the public meetings. In response to these concerns, safety concepts related to the design of facilities in the corridor were incorporated in all the build alternatives. Major elements of these concepts included:

- ❖ Re-Design of major intersections to meet current TxDOT design standards.
- ❖ Increased motorist assistance patrols in the corridor.
- ❖ Provide relief of the congested areas in the corridor.
- ❖ Ability to reverse one lane of traffic between the Texas City Wye and Fairmont Parkway.

The implementation of these elements will improve the safety within the corridor and respond to the concerns that have been raised.

Environmental Analysis

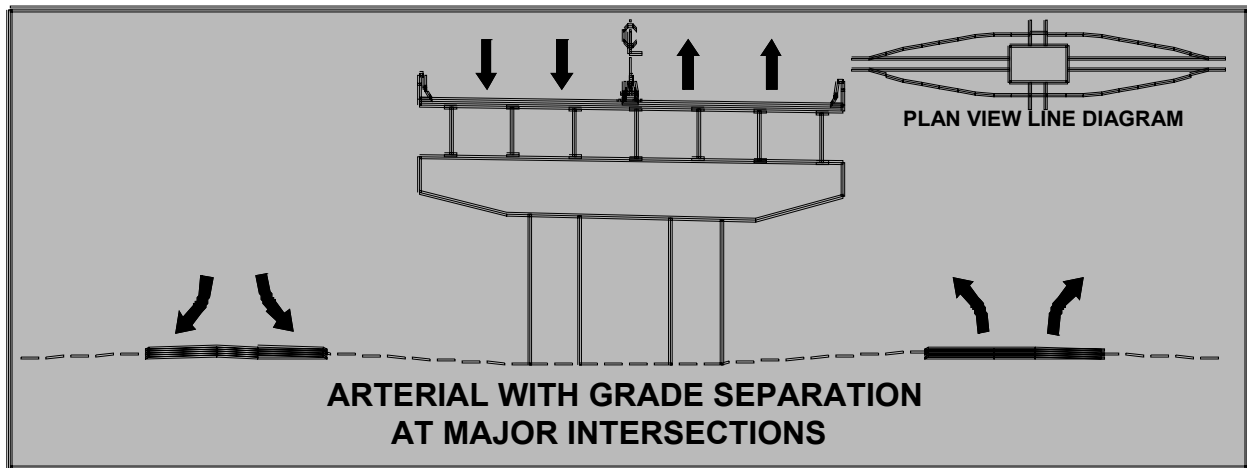
As part of the MIS evaluation, a full range of environmental impact concerns was discussed for their potential affect on the viable alternatives. These concerns include Noise, Air Quality, Water Quality, Wetlands, Floodplains, Wildlife Habitat, Endangered Species, and Hazardous Materials. The evaluation indicated that there are relatively few environmental or community constraints within the corridor that would be adversely affected with the implementation of one of the viable build alternatives. Therefore, if the No-Build and TSM Alternatives are determined to be inadequate to meet the goals of the SH 146 corridor MIS, the resulting environmental impacts from selecting a build alternative will be similar, regardless of which build alternative is selected.

Recommended Preferred Alternative

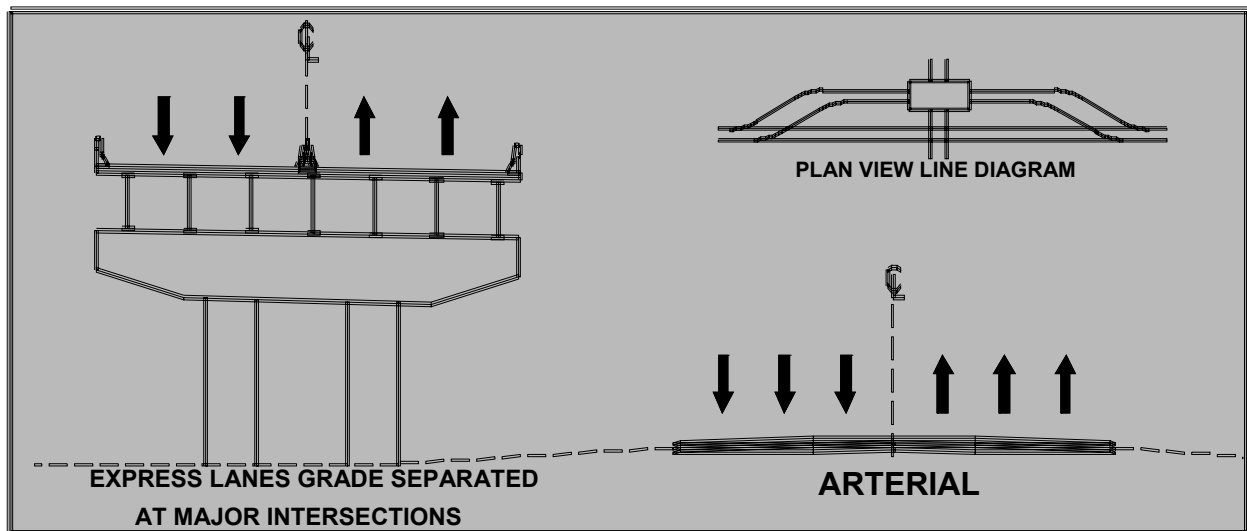
Based on findings of the technical evaluation of the alternatives, a recommendation for locally preferred alternative was developed. This recommendation was based on the five goals established early in the study.

Based on these five key findings, TxDOT and the Steering Committee recommended that following Alternatives be selected as the Locally Preferred Alternatives for the four segments of the corridor.

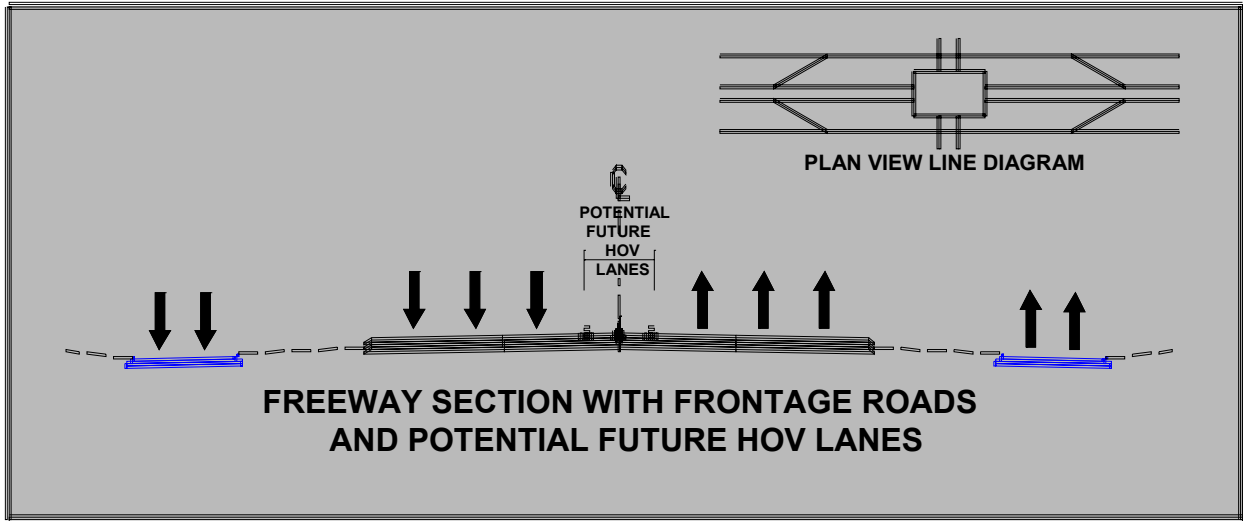
- 1) Alternative #4 for Segments #1 and 2.

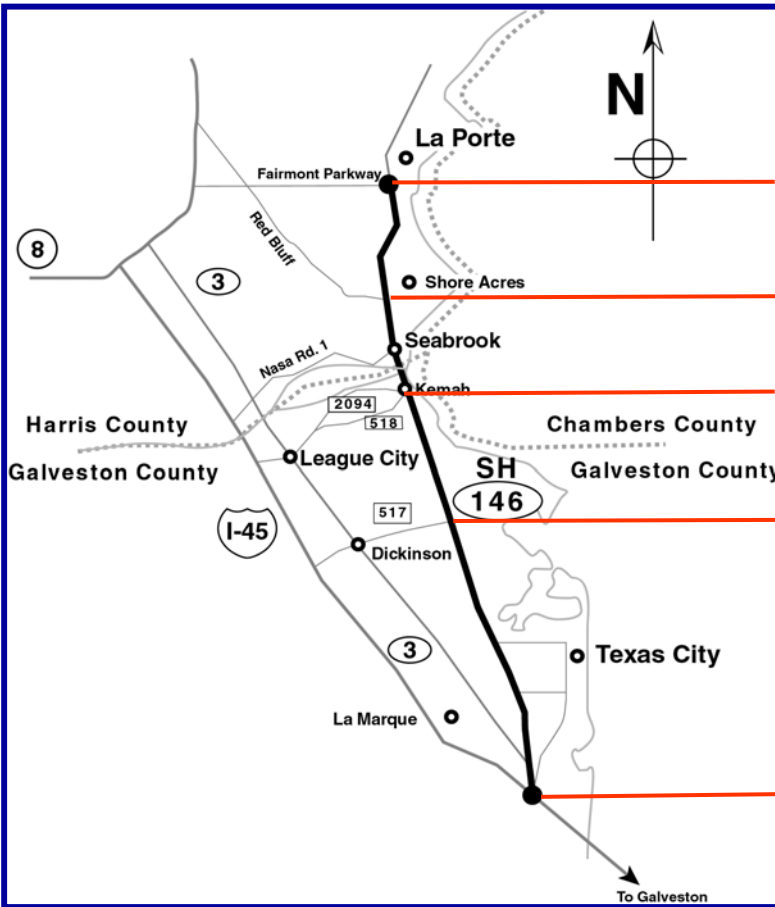


- 2) Alternative #6 for Segment #3.



3) Alternative #7 for Segment #4.





Fairmont Pkwy

Segment 4 - Provide 6 Freeway Lanes with Frontage Roads and potential future HOV lanes.

Red Bluff

Segment 3 - Provide 6 Arterial Lanes with Express lanes grade separated at major intersections.

FM 518

Segment 2 - Provide 6 Arterial lanes with grade separation at major intersections.

FM 517

Segment 1 - Provide 4 Arterial lanes with grade separation at major intersections.

I45

Next Step

The recommended locally preferred alternative would be considered in July 2002 by the Metropolitan Planning organization (MPO) for adoption into the Regional Transportation Plan (VISION 2022). Following its adoption into the regional plan, the amended VISION 2022 will be evaluated for conformity with regional air quality requirements. Preliminary design, environmental documentation and final design will then follow.