



Introduction

State Highway 288 (SH 288) is critical for everyday travel and emergency evacuation in the southern area of the Houston-Galveston region. Also known as the Nolan Ryan Expressway, SH 288 traverses Harris and Brazoria Counties and serves many communities along its north-south route from Houston to the Gulf Coast City of Freeport. It provides important access to numerous residential subdivisions, businesses, and major employment centers such as Downtown Houston, the Texas Medical Center, and several large industrial and petrochemical facilities.



Mobility in the SH 288 corridor has become increasingly less efficient with the significant population and traffic growth that has occurred over the past decade. With the extensive development and growth that is projected in the area over the next twenty years, traffic conditions will continue to get worse without major transportation improvements. To address the increasing mobility and safety issues, the Texas Department of Transportation (TxDOT) sponsored this SH 288 Corridor Feasibility Study to evaluate potential solutions and develop recommended transportation improvements to accommodate existing and future travel demands along the corridor.

STUDY PURPOSE

The purpose of this Corridor Feasibility Study is to evaluate the impacts and feasibility of all reasonable transportation modes and alternative improvements along the SH 288 corridor from just south of Downtown Houston to the City of Freeport. The primary study objective is to select a Most Feasible Alternative that consists of recommended transportation improvements that will accommodate existing and future mobility and safety needs along the corridor while minimizing environmental and land use impacts.

Chapter 1



This study responds to increasing concern regarding traffic congestion resulting from the rapid growth along and near the SH 288 corridor. From the perspective of mobility and efficient travel, the level-of-service and travel speeds along SH 288 have already reached unacceptable conditions during peak periods, particularly between US 59 and FM 518. Future conditions are projected to become increasingly unacceptable with congestion extending further south to SH 6 and eventually to the Grand Parkway (SH 99), without additional transportation improvements. Safety conditions are also an issue. Specific locations along the SH 288 corridor include a relatively high concentration of accidents in comparison to other major highways in the region. Additionally, the SH 288 corridor is the only north-south freeway and designated evacuation route serving rapidly growing Brazoria County.



STUDY AREA

SH 288 is a major north-south highway located in the southern Houston metropolitan area. As shown in **Figure 1-1**, the study area for this project extends along SH 288 from US 59 just south of Downtown Houston to SH 36 in Freeport. The corridor, located in Harris and Brazoria Counties, is 58 miles in length with a character that ranges from highly urbanized and suburban conditions to rural pastures. A total of 13 communities of various sizes are served by the SH 288 corridor including Houston, Brookside Village, Pearland, Manvel, Iowa Colony, Alvin, Bonney, Angleton, Baileys Prairie, Lake Jackson, Clute, Oyster Creek, and Freeport.

Major north-south highways in the study corridor include SH 288, FM 521 (Almeda Road), Business SH 288 and FM 523. SH 288 also intersects a large number of major regional highways including US 59, IH 610, Sam Houston



**Figure 1-1
Study Area**





Introduction

Tollway (Beltway 8), FM 518, SH 6, the future Grand Parkway (SH 99), SH 35, and SH 36.

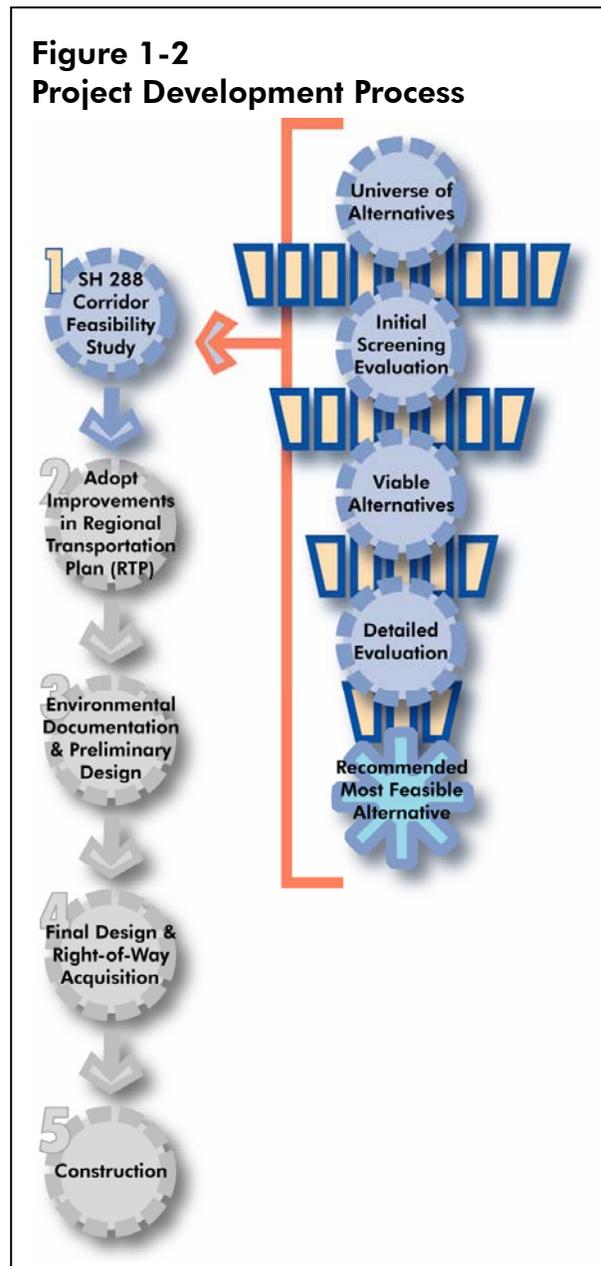
Numerous commercial and residential developments are planned along SH 288, including projects such as Pearland's 1,000-acre Biotechnology Park (The Spectrum at Clear Creek), Shadow Creek Subdivision (more than 10,000 homes and apartments) and major medical facilities. A majority of the ongoing and proposed activity is occurring along the northern section of the study corridor, primarily north of SH 6.

PROJECT DEVELOPMENT PROCESS

As shown in **Figure 1-2**, this Corridor Feasibility Study is the first of several phases that will be required prior to the actual implementation and construction of recommended transportation improvements along the SH 288 corridor. Upon completion of the Corridor Feasibility Study, the Most Feasible Alternative will be adopted in the Houston-Galveston Area Council (H-GAC) Regional Transportation Plan (RTP) to await implementation.

During the interim between placement in the RTP and construction, advanced project development will be ongoing, including preparation of environmental documentation in

Figure 1-2
Project Development Process



Chapter 1



accordance with the National Environmental Policy Act (NEPA) regulations, preliminary and final design, as well as any necessary right-of-way acquisition. Movement of the project through the various development and implementation phases will be dependent upon the availability or needed funding sources.

The Corridor Feasibility Study utilizes a comprehensive screening and evaluation process to examine and evaluate a wide array of potential transportation improvements. The final result is recommendation of the Most Feasible Alternative to relieve congestion and improve traffic mobility and safety throughout the SH 288 corridor.

- ◆ **Universe of Alternatives** - Initial alternatives were developed through the stakeholder process to provide a number of reasonable transportation options for improving traffic and safety conditions along the corridor. These “Universe of Alternatives” included options such as No Build; Transportation System/Travel Demand Management/Intelligent Transportation Systems (TSM/TDM/ITS) improvements; additional general purpose lanes, high occupancy vehicle lanes, managed lanes, express toll lanes, or exclusive truck lanes; and implementation of commuter or light rail.
- ◆ **Initial Screening Evaluation** - Following development of the Universe of Alternatives, each option was compared and evaluated according to relatively broad criteria including the level of public acceptance, ability to improve mobility, potential cost, and potential social or environmental impacts.
- ◆ **Viable Alternatives** - Based upon the results of the initial screening evaluation, combinations of the various alternatives were developed for further study in a detailed evaluation phase. These alternatives selected for further consideration are referred to as “Viable Alternatives”. The selected Viable Alternatives were compared to the No Build alternative and to each other as part of the detailed evaluation phase.
- ◆ **Detailed Evaluation** - Evaluation of the Viable Alternatives was based upon categories similar to those used in the initial screening evaluation but in significantly greater detail. This evaluation phase also included the determination of the economic feasibility or cost effectiveness of each alternative.



Introduction

- ◆ **Recommended Most Feasible Alternative** - The Most Feasible Alternative is derived from the numerous alternatives filtered through the evaluation process. Benefits and impacts of each of the Viable Alternatives are compiled and considered in relationship to the study goals and objectives, as well as comments received during public involvement activities. The Most Feasible Alternative selected for the SH 288 corridor consisted of a combination of the positive components of the Viable Alternatives.

GOALS AND OBJECTIVES

Study goals and objectives were developed for this project through the public involvement process to guide the development and evaluation of alternatives, and ultimate selection of the Most Feasible Alternative. The goals and objectives established for this study are as follows:

Goal 1: Improve and maintain existing and future mobility and access in the study corridor.

- ◆ **Objective 1.1:** Improve traffic management and reduce congestion and travel time within the corridor;
- ◆ **Objective 1.2:** Improve access to Downtown Houston, Texas Medical Center, Port of Freeport, corridor communities and all existing and planned major developments within the study area;
- ◆ **Objective 1.3:** Provide alternative modes of travel along the existing facility, investigate HOV lanes, toll lanes, and light rail or commuter rail feasibility along the corridor;
- ◆ **Objective 1.4:** Recommend interim transportation improvements, provide short term geometric improvements at existing bottle-necks; and,
- ◆ **Objective 1.5:** Improve access and connections within the transportation system (i.e. to Beltway 8 and IH 610).

Goal 2: Improve existing and future safety conditions within study area.

- ◆ **Objective 2.1:** Improve traffic safety by upgrading to applicable design and access control standards;

Chapter 1



- ◆ **Objective 2.2:** Improve transportation operating characteristics;
- ◆ **Objective 2.3:** Improve safety at existing crossovers by constructing grade separations and providing auxiliary lanes;
- ◆ **Objective 2.4:** Improve general alignment of the corridor for safety and mobility;
- ◆ **Objective 2.5:** Provide for efficient emergency evacuation;
- ◆ **Objective 2.6:** Provide alternative routes for hazardous cargo to keep out of developed areas such as Freeport and Lake Jackson; and,
- ◆ **Objective 2.7:** Identify locations with high accident rates and develop alternatives to minimize conflicts.

Goal 3: Minimize impacts on the socioeconomic and environmental conditions of the SH 288 corridor.

- ◆ **Objective 3.1:** Minimize the amount of land required;
- ◆ **Objective 3.2:** Minimize impacts to parklands, schools, churches, cemeteries, and other sensitive sites;
- ◆ **Objective 3.3:** Preserve community cohesion;
- ◆ **Objective 3.4:** Ensure that impacts are not disproportionately applied to poor and minority communities;
- ◆ **Objective 3.5:** Ensure compatibility with regional and local plans and accommodate planned local growth;
- ◆ **Objective 3.6:** Minimize impacts to forests, wetlands, wildlife habitat, aquatic ecosystems, and floodplains;
- ◆ **Objective 3.7:** Minimize impacts to cultural resources;
- ◆ **Objective 3.8:** Minimize adverse impacts to air and water quality;
- ◆ **Objective 3.9:** Recognize need for air quality conformance in the region;
- ◆ **Objective 3.10:** Mitigate noise impacts by designing highway improvements so that, where possible, homes do not experience significantly increased noise levels; and,
- ◆ **Objective 3.11:** Avoid impacts to threatened and endangered species by developing alternatives that do not upset nests, and feeding and movement corridors.



Introduction

Goal 4: Provide for a feasible and cost effective transportation system.

- ◆ **Objective 4.1:** Maximize cost effectiveness;
- ◆ **Objective 4.2:** Coordinate with other planned and or proposed improvements along the corridor;
- ◆ **Objective 4.3:** Provide optimum constructability and life-cycle costs; and,
- ◆ **Objective 4.4:** Provide improvements with capital and operating costs within the financial capacity of the participating agencies.

Goal 5: Allow for efficient transportation system expansion or modification in the future.

- ◆ **Objective 5.1:** Preserve existing facility to meet current and future transportation with greater efficiency.

Goal 6: Consider comments and recommendations received from major stakeholders and public input.

- ◆ **Objective 6.1:** Generate interim/low-cost improvements derived from public input received at the series of public meetings, corridor meetings, and other public involvement venues;
- ◆ **Objective 6.2:** Evaluate alternatives that meet the multimodal components suggested from the public; and,
- ◆ **Objective 6.3:** Evaluate all alternatives and transportation improvement suggestions received from area citizens.

Chapter 1



STUDY DEVELOPMENT AND COORDINATION

This study was a joint undertaking of TxDOT, H-GAC, a Steering Committee consisting of involved agencies and major stakeholders, a Consultant Team, and the public. Professional services for this study were provided by Wilbur Smith Associates in association with HNTB Corporation, Quadrant Consultants, The Lentz Group, and Aerial Data Services.



As part of this study, maximum use was made of available information regarding existing and proposed transportation, roadway, land use, and environmental conditions in the corridor. Additionally, a number of previous and ongoing studies in the area were obtained, reviewed and considered for this project. Some of the major recent or ongoing studies along or near the SH 288 corridor include the Texas Medical Center Master Plan, SH 35 Corridor Feasibility Study, Brazoria County SH 288/SH 35 Toll Feasibility Studies, and Grand Parkway (Segments B and C) Environmental Impact Studies (EIS).

STUDY TECHNICAL MEMORANDA

This Final Report for the SH 288 Corridor Feasibility Study summarizes the detailed information documented in the interim technical memoranda that were prepared following the completion of major project milestones and work tasks.

- ◆ **Technical Memorandum No. 1:** *“Evaluation of Existing Corridor Conditions”* – presents existing transportation, engineering, land use, socioeconomic, and environmental conditions along the SH 288 corridor.
- ◆ **Technical Memorandum No. 2:** *“Technical Methodology Plan”* – presents the study goals and objectives as well as the measures of effectiveness and



Introduction

criteria that were used to evaluate alternative transportation improvements within the study corridor.

- ◆ **Technical Memorandum No. 3: “Traffic Modeling Methodology”** – presents refinements made to the Houston-Galveston Area Council (H-GAC) regional travel demand model and projected travel demands and conditions along the SH 288 corridor through Year 2025.
- ◆ **Technical Memorandum No. 4: “Initial Screening of Alternatives”** – presents the initial or Universe of Alternatives, overall evaluation process and screening results, and the Viable Alternatives selected for consideration in the detailed evaluation phase.
- ◆ **Technical Memorandum No. 5: “Recommended Most Feasible Alternative”** – discusses the Viable Alternatives that resulted from the initial screening process, the detailed evaluation of the Viable Alternatives, and selection of the recommended Most Feasible Alternative.

Although not originally part of this project, another Technical Memorandum entitled: *“Recommended Short-Term Improvements”*, was prepared following the evaluation of existing transportation conditions and interim needs and comments received during initial stakeholder and public meetings. This technical memorandum identifies potential short-term improvements that could be considered to provide interim relief and improve safety until the recommended Most Feasible Alternative can be implemented. Many of the recommended short-term improvements are planned for implementation or have already been constructed, such as the provision of auxiliary lanes along SH 288 between Beltway 8 and FM 518, and the additional northbound travel lane through the IH 610 interchange.