Texas Department of Transportation

35 State Highway

State Highway 35
Major Corridor Feasibility Study
Final Report

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SH 35 MAJOR CORRIDOR FEASIBILITY STUDY FINAL REPORT

Prepared for:

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Figures and Tables

CHAPTER 1: STATE HIGHWAY 35 MAJOR CORRIDOR FEASIBILITY STUDY BACKGROUND

Study Background

The Houston-Galveston Area Council (H-GAC) which acts as the federally designated metropolitan planning organization (MPO) for the region, identified the State Highway 35 corridor as a candidate for significant infrastructure investment. Under the 1991 Federal Intermodal Surface Transportation Efficiency Act (ISTEA), a Major Investment Study (MIS) was mandated before undertaking any urban area transportation improvements having significant capital costs. The 1998 Transportation Equity Act for the 21st Century (TEA-21) and the 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) built upon and replaced the ISTEA legislation. Although the MIS process is no longer mandated, the TxDOT Houston District has chosen to continue the corridor planning process in the form of a Major Corridor Feasibility Study (MCFS).

The SH 35 MCFS is being conducted to define the scope and characteristics of the transportation infrastructure investment to be made in the corridor over the next 20 years. It is a multi-modal study characterized by analysis of new lanes, tolling strategies, transit support, non-motorized transportation, and upgrades to the existing facility. Essential to the success of the study is to accurately portray the transportation needs of the corridor and to develop an investment strategy that most closely addresses these needs. Study goals and objectives will guide the study and target the analysis. Technical Memorandum I, dated March 22, 2004, identifies factors that demonstrate the effectiveness of planned improvements to SH 35.

Study Area Description

The SH 35 corridor study area starts at IH 45 in Houston, and includes both the Spur 5/Mykawa Road and the SH 35/Telephone Road sections. Extending southeast to BW 8 and then westward to SH 288 in its central section, the remainder of the study area is more closely aligned with the SH 35 corridor. From IH 45, it runs southward for approximately 47 miles terminating at the intersection of SH 35 and SH 288 in Angleton.

Bounded by IH 45 in downtown Houston and SH 288 in Angleton, the study area is intersected by two major east/west highways: IH 610 and BW 8. No north/south controlled access roads serve this corridor; however, both Mykawa Road and SH 35/Telephone Road are programmed for widening by TxDOT.

The northern section of the study area encompasses significant employment and activity centers. Major traffic generators include: The University of Houston, located in the southwest quadrant of IH 45 and Spur 5/Mykawa Road, which is currently expanding its campus facilities and student enrollment and Hobby Airport, located at SH 35/Telephone

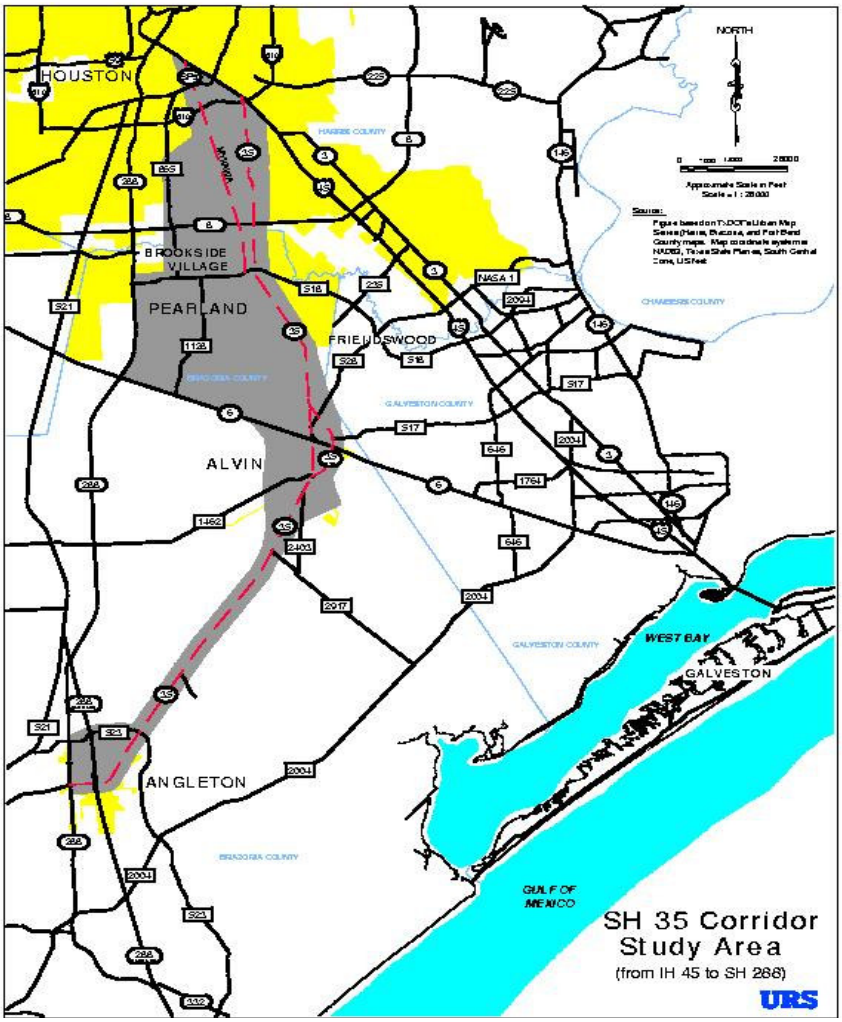
Road and Airport Boulevard, which is planning for the expansion of its terminal facilities and runway capacity.

South of BW 8, Pearland and Alvin are experiencing unprecedented growth in large-scale housing developments. With major employment centers located in Houston, demand for north/south transportation services is increasing significantly. Mykawa Road and SH 35 are currently operating over capacity during the peak travel periods.

While Angleton is projected to grow over the next 25 years, its rate of growth will be slower than both Alvin and Pearland. State Highway 288 serves Angleton as its major north/south controlled access facility with SH 35 experiencing lower travel demand. Between Alvin and Angleton, the area is projected to retain its more rural character, which is consistent with lower travel demand.

Along its route, SH 35 encounters dense urban neighborhoods, large institutions, a major airport, significant industrial areas, downtown areas, housing developments, farmland, rural landscapes, oil and gas fields, and historic and natural resources. The SH 35 MCFS study area is shown in Figure 1.1.

Figure 1.1 – Study Area



Regional Context

Demographic Profile

Demographic growth factors for the SH 35 study area were obtained from H-GAC for 2000 and projections to 2025 and are shown in Table 1.1. These projections are based on the H-GAC Regional Transportation Model Transportation Analysis Zones (TAZ) for the SH 35 study area. Significant demographic growth is anticipated. The Regional Analysis Zones that were included in this analysis are included in Figure 1.2 shown on page 1-4.

Table 1.1 – SH 35 Study Area Demographic Growth Factors

	Actual 2000	Estimated 2025	% Growth
Population	222,899	328,932	48%
Households	75,928	115,529	52%
Employment	75,012	130,400	74%

Source: Houston-Galveston Area Council, November 2003

Traffic Congestion/Travel Patterns

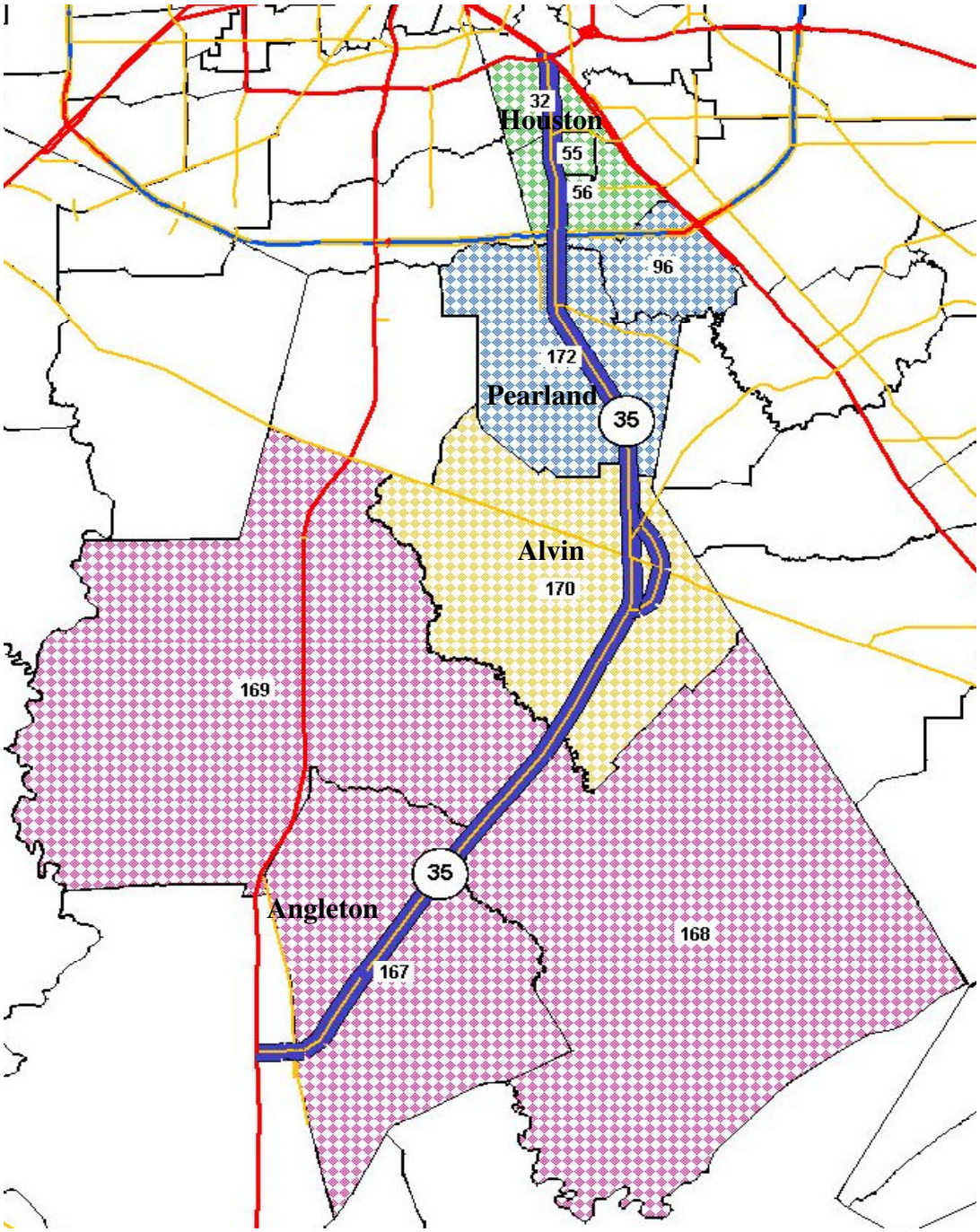
SH 35 corridor traffic and travel patterns were obtained from H-GAC for year 2000 and projections for 2025. An overview of 2000 and 2025 vehicle trips as shown in Table 1.2 demonstrates the growth in the region and in the SH 35 study area. Houston Region Trips are the total vehicle trips made in the eight-county region. Study Area to Region Trips refers to those vehicle trips that originate in the SH 35 study area with destinations outside of the study area. Vehicle trips that originate in the study area and remain in the study area are classified as Internal Study Area Trips and are shown in Figures 1.3 and 1.4 for the years 2000 and 2025 respectively.

Table 1.2 – Houston Region and SH 35 Study Area Total Vehicle Trips

	Actual 2000	Estimated 2025	% Growth
Houston Region Trips	12,488,450	20,488,385	64%
Study Area to Region Trips	847,568	1,330,970	57%
Internal Study Area Trips	234,836	348,658	48%

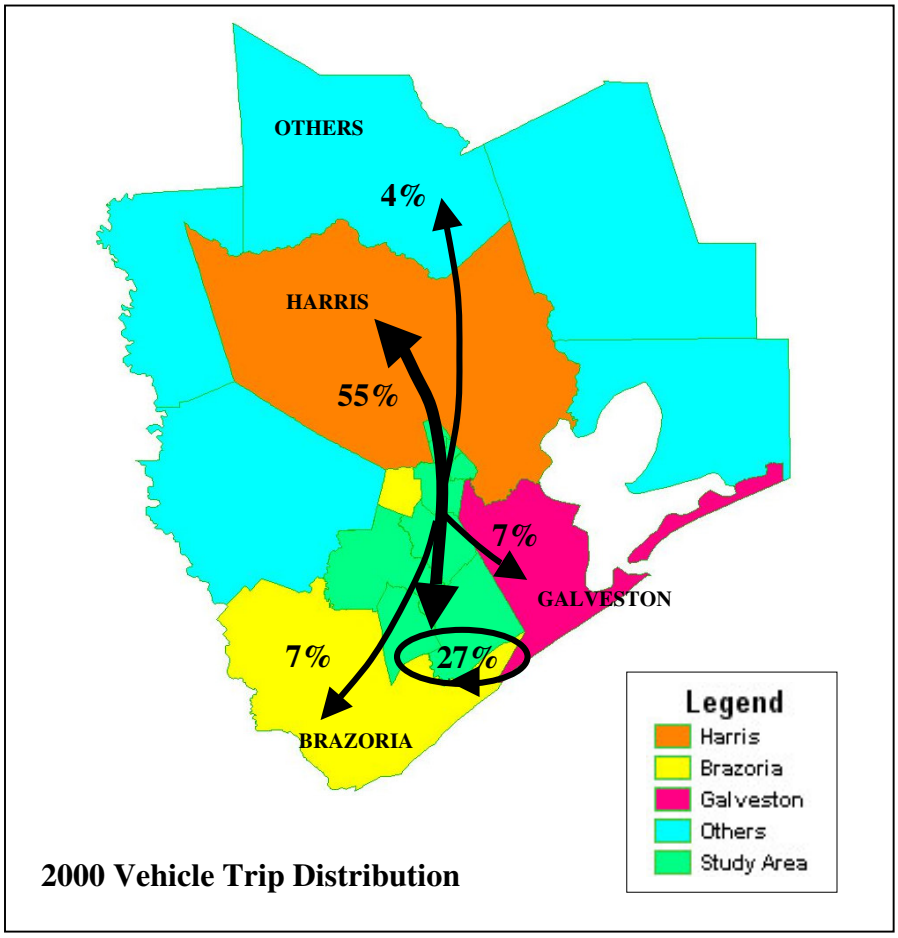
Source: Houston-Galveston Area Council, November 2003

Figure 1.2 – Transportation Analysis Zones in SH 35 Corridor



Internal Study Area Trips and Study Area to Region Trips for 2000 are shown in Figure 1.3. Data are based on total vehicle trips. Of the total trips, 27-percent are Internal Study Area Trips, which means that trips originate and end in the study area.

Figure 1.3 – Year 2000 Vehicle Trip Distribution

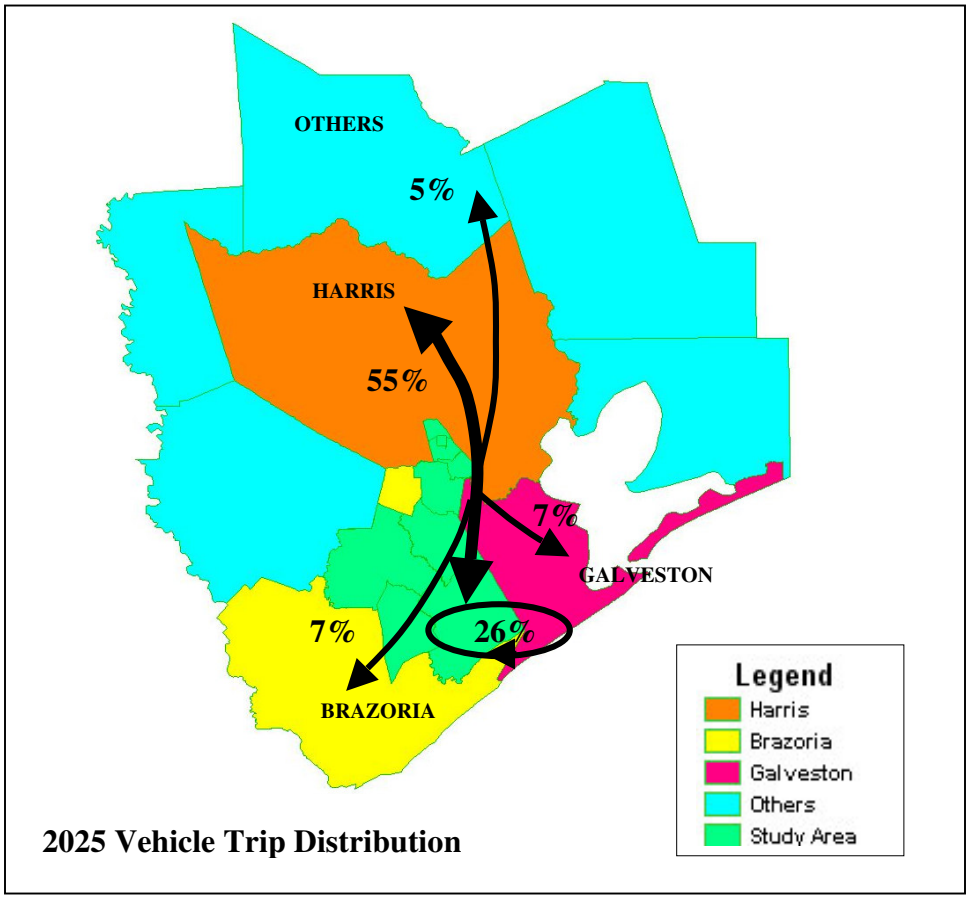


Source: Houston-Galveston Area Council, December 2003

Of the remaining 73-percent, 55-percent of the trips are destined to Harris County and four-percent travel north of Harris County. Seven percent of the trips are to Brazoria County destinations and the remaining seven-percent are to Galveston County.

Year 2025 travel patterns are depicted in Figure 1.4. Travel characteristics remain constant over the 25 years. Trips that begin and end in the study area decrease from 27-percent to 26-percent. While trips traveling north of Harris County, are projected to increase from four-percent to five-percent.

Figure 1.4 – Year 2025 Vehicle Trip Distribution



Source: Houston-Galveston Area Council, December 2003

Study Process

The critical first step of the corridor planning process, determining the Need and Purpose for the project, is essential in establishing a basis for identification of the project goals and objectives. This step requires a rigorous data gathering effort and analytical tasks, followed by a technical discussion of the characteristics, i.e., constraints and opportunities that affect the purpose and need. In turn, the SH 35 MCFS project goals and objectives helped to set the course for selection of the transportation improvements within the corridor. The criteria, which represent the goals and objectives, and the qualitative/quantitative measures upon which each will be measured, were then established. A test was then performed to evaluate each proposed improvement alternative and to compare the effectiveness of each. Input from the SH 35 MCFS Steering and Advisory Committees was solicited in this developmental phase of the project. Public outreach was introduced into the process through a series of public meetings that were concluded in March of 2007.

Corridor capacity, system linkages, transportation demand, roadway deficiencies, modal interrelationships, demographic profiles, and community and environmental factors are fundamental to the SH 35 corridor study effort. Major travel markets and travel patterns emerged from an initial review of the existing and projected travel patterns for a 2025-planning horizon. Identification of community, social, and natural environment elements set the stage for understanding constraints on future transportation improvements. A preliminary review of several modes of transportation was undertaken to identify travel patterns, traffic operations, transit services, motorized and non-motorized transportation, truck freight, and freight rail operations in the SH 35 study area. This data was refined during the study to evaluate congestion, air quality, traffic operations, safety, and environmental issues for the proposed alternatives, including the No-Build alternative.

Public Meeting Held in the City of Alvin

A review of operating characteristics and facility infrastructure combined with study area travel and demographic growth projections for the year 2025 demonstrates the need for improvements to the current transportation system. Input from the SH 35 MCFS Steering and Advisory Committees provided insight into local issues and priorities for transportation system expansion in the SH 35 corridor that were taken into consideration when conducting the final evaluation. Additionally, public input contributed to the identification of the MCFS goals and objectives. Study purpose and need are identified in the next chapter followed by the study goals and objectives that target the scope of the analysis. The set of criteria upon which the effectiveness of each proposed improvement alternative was measured is described in later chapters.

Public Involvement Process

In keeping with the original intent of the MIS process, TxDOT engaged in a rigorous public involvement process throughout the duration of the Major Corridor Feasibility Study process. Upon conducting the latter stages of analysis for each of the corridors, TxDOT presented the most feasible alternative for public review and comment. As indicated in Chapter 8 of this document, the Hybrid Corridor scored the best overall in terms of meeting the study goals and the corresponding objectives.

At the public meetings held in 2005, opposition to the Hybrid Corridor was such that TxDOT heeded the desires of the general public and revisited the alternative alignments to determine which alignment would best coincide with the wants and needs of the public. After an extensive outreach effort, which included discussions with stakeholders throughout the study area, TxDOT presented the Revised Most Feasible Alternative in March of 2007 at a series of public meetings. Chapter 9 of this document describes the Revised Most Feasible Alternative in detail, as well as providing the general consensus of the public comments that were received regarding this alternative.

CHAPTER 2: SH 35 MAJOR CORRIDOR FEASIBILITY STUDY NEED AND PURPOSE

The stated purpose for the SH 35 MCFS, as developed and approved by the TxDOT Houston District is: **"To consider and evaluate all reasonable alternative modes of transportation and all routes along the SH 35 corridor from IH 45 in Houston to SH 288 in Angleton."**

Need for the SH 35 Major Corridor Feasibility Study

As a main north/south route in south central Houston and central Brazoria County, SH 35 serves passenger and commercial vehicles and is a goods movement corridor and emergency vehicle access route. It serves commercial, retail, employment, civic, and institutional activity centers, residential land uses, and is a designated evacuation route.

Population, household, and employment growth projections for 2025, as discussed in Chapter 1, offer the most compelling reason for future transportation improvements in the SH 35 corridor. In addition, roadway geometry, signalization, at-grade rail crossings, safety issues, and the current travel pattern crossing through municipal downtown districts are just some of the elements that prevent SH 35 from serving as an efficient transportation corridor today.

The need for enhanced north/south movement will become more evident as development in Pearland, Alvin, and Angleton increases over the next 25 years. Congestion will build during this time frame, which in turn will increase local and regional air quality problems. East/west connectivity will also be of more concern to residents and travelers seeking viable routes through the study area, for example traveling from SH 288 to IH 45. Recognition that emergency management services (EMS) need to be able to respond quickly to calls also underlies the need for transportation improvements.

As populations increase in the southern sectors of the SH 35 corridor, demand for transit, park and ride lots, and non-motorized transportation will also expand. As congestion increases, resulting in travel delays, motorists will demand that mobility standards be maintained. Accessibility to alternative modes of transportation will emerge as an important component in the overall SH 35 corridor transportation system.

An initial review of travel characteristics, traffic operations, safety, projected demographic growth, and environmental factors led to determining the need for the improvements suggested in Chapter 9 of this report.

Need for the purposes of this study is classified in the following six categories, described in greater detail later in this chapter:

- North/South Mobility
- Multi-Modal Transportation Options
- Facility Infrastructure
- Community/Social Environment and Economic Viability
- Natural Environment
- Safety

Transportation Facilities and Services in the SH 35 Corridor

1. North/South Mobility

Factors affecting north/south mobility on SH 35 result from a multitude of traffic operations and control access issues. Outstanding detriments to mobility are signalization, at-grade railroad crossings, and lack of a controlled access highway system. On many portions of SH 35, both residential and commercial properties are connected directly to the roadway. Additionally, portions of SH 35 travel through municipal downtown areas, reducing mobility. Factors reducing north/south mobility were identified as follows:

- Causes of Reduced Mobility:
- Signalization delays at at-grade railroad crossings
- Lack of controlled access highway system
- Portions of SH 35 traverse downtown areas
- Growth causing increased traffic congestion
- Suggestions to relieve Reduced Mobility:
- Improvements to SH 35 and potential new alignments
- Managed lanes/tolling strategies
- Increased hurricane evacuation capacity

Intersection of Business SH 35 and SH 6 in Alvin

2. Multi-Modal Transportation Systems

Houston METRO currently provides scheduled bus service in the Harris County study area north of Beltway 8. The most heavily used bus routes are 52 Scott, 30 Cullen, 77 MLK Ltd., and 73 Bellfort Crosstown. The Southeast Transit Center is located at the intersection of Scott Crest and Old Spanish Trail (limited parking is available at this facility). Houston METRO "Solutions Plan" has proposed to expand bus service and to construct a light rail line from downtown Houston to the University of Houston and Hobby Airport. Gulf Coast Center Connect Transit provides demand/response transit service only in Brazoria County. Bicycle paths/routes are also sparse throughout the corridor. Tolling and/or managed lane strategies and travel demand management (TDM) strategies would provide alternatives to people commuting alone.

The need for sufficient right-of-way to accommodate future modes of transportation as growth occurs was recognized as an important factor during several of the public meetings. Multi-modal transportation system improvements that would meet the need for expanding transportation alternatives were identified as follows:

- Expanded capacity of multi-modal systems
- Implementation of Houston METRO's "Solutions Plan"
- Gulf Coast Center Connect Transit – demand/response
- Increased non-motorized transportation system options (i.e., bicycles and pedestrians)
- Managed lanes/tolling strategies
- Implementation of Intelligent Transportation System (ITS) elements (e.g., Advanced Traveler Information System [ATIS] and Advanced Traffic Management System [ATMS])
- Additional TDM strategies to reduce commuting

Traffic Along Existing SH 35 at Park Place/Long Drive

3. Facility Infrastructure

Aging roadway pavement and structures were infrastructure items identified as in need of improvement. Implementation of transportation system management (TSM) components in the SH 35 corridor to improve traffic operations and upgrade the existing facility will be an important tool to meeting this need. A shortfall of existing capacity was recognized, leading to the following list of solutions to meet the current infrastructure needs:

- Ensure sufficient right-of-way for future transportation system implementation
- Repair/Replace aging roadway pavement and structures
- Provide capacity sufficient to meet future demand
- Improve existing SH 35 and add new facilities
- Implement TSM elements to improve traffic operations

4. Community/Social Environment and Economic Viability

Quality of life in the SH 35 corridor is linked to a viable transportation system. Major institutions, commercial and civic activity centers, and employment centers need dependable transportation services. There is a concern that expansion of the transportation system could mean displacement of residential and commercial establishments along SH 35. Any transportation improvements will need to balance regional mobility with local needs. Environmental justice principles will be used to consider the needs of identified lower income and minority populations. Archaeological, historical, and cultural resources also need to be protected in transportation expansion plans. Primary community/social environment and economic viability solutions were identified as follows:

- Enhance quality of life through a viable transportation system
- Provide access to major institutions, commercial and civic activity centers, and employment centers
- Support economic growth through additional transportation services
- Minimize the displacement of residential and commercial structures along SH 35
- Balance regional mobility with local needs
- Use environmental justice principles to protect the public as well as archaeological, historical, and cultural resources

5. Natural Environment

Transportation improvements should be developed to avoid and/or minimize environmental impacts. The implementation of solutions presented throughout this study must be sensitive to public parklands, wildlife areas, and plant and animal species. Growing congestion in the corridor can generate poor air quality, which in turn can adversely affect the natural environment. System expansion plans must also consider the potential for intrusive noise pollution. Solutions to meet natural environment needs were identified as follows:

Chocolate Bayou at SH 35

- Ensure a sensitivity to public park lands, wildlife areas, and plant and animal species
- Avoid and/or minimize environmental impacts
- Provide a transportation system that reduces poor air quality
- Minimize the impacts of intrusive noise pollution during system expansion
- Address the floodplain and drainage impacts of system expansion

6. Safety

Vehicular and pedestrian safety is also a concern. Vehicle-to-vehicle conflicts and conflicts with other modes of transportation were stressed throughout the public engagement process. At-risk potential accident locations need to be improved. Poor signalization, lack of left turn lanes, and at-grade railroad crossings generate safety concerns. The existing SH 35 corridor is an uncontrolled access facility, which can create hazardous conditions. Potential safety solutions were identified as follows:

- Improve potential at-risk accident locations
- Decrease the vehicular hazards at at-grade railroad crossings
- Implement signalization improvements and left turn lanes
- Reduce vehicle-to-vehicle conflicts and conflicts with other modes especially pedestrians and bicyclists
- Implement access management to limit the number of traffic hazards
-
-

The need for improved transportation options in the corridor must be linked to identifiable travel markets and derived from an analysis of existing and projected travel patterns. The viability for investment in transportation improvements in the SH 35 corridor is demonstrated in Technical Memorandum No. 4. As justification for future investment in transportation infrastructure, alternatives identified in subsequent chapters will address the manner in which future improvements will be planned, programmed, and ultimately implemented.

Consistency with Local, State, and Federal Planning Processes

Concurrent with the SH 35 MCFS, TxDOT is conducting an DEIS study that is being prepared for the SH 35 from Bellfort Road to FM 1462 pursuant to the National Environmental Policy Act (NEPA). The DEIS scoping and public outreach meetings were held in conjunction with the SH 35 MCFS public meetings. The purpose of the scoping process (23 CFR 771.123 [b]) was to identify:

SH 35 MCFS DEIS Scoping Public Meeting in the City of Alvin

- The range of alternatives and impacts; and
- Significant issues to be addressed in the DEIS

Public input was solicited at these meetings via written comments of concerns, issues, and additional environmental constraints.

CHAPTER 3: GOALS AND OBJECTIVES

The goals and objectives for the SH 35 MCFS were derived from evaluation of the Need and Purpose criteria, presented in Chapter 2, and through input from the Steering and Advisory Committees, organizations, and the general public. These Goals and Objectives define the direction for the study and help target the analysis. Proposed transportation improvement alternatives were narrowed through such analysis and through stakeholder input to achieve the locally preferred alternative. The preferred alternative is presented in Chapter 9 for adoption and future transportation investment.

Input from Steering and Advisory Committees was solicited at a meeting on December 17, 2003. The initial series of public meetings were held on January 13, 2004, at the Nolan Ryan Center, Alvin Community College, in Alvin, and on January 14, 2004, at the Hilton-Hobby Hotel, in Houston. These meetings helped to shape the Goals and Objectives of the MCFS. Public comments received through the duration of the SH 35 MCFS were incorporated into the study phases and are included as an appendix to this document.

Goals adopted for the study and the associated objectives are: improve north/south mobility along the corridor, provide a multi-modal transportation system, improve transportation infrastructure, preserve and enhance social/community and economic viability, protect the natural environment, and improve safety for the traveling public. The objectives for these goals are provided below.

Goal: Improve North/South Mobility Along the Corridor

Improve North/South mobility in the corridor in a cost-effective manner such that existing and future demand for transportation services is met.

Objectives:

- Reduce traffic congestion, travel delays, and conflicts
- Provide for smooth transitions and connectivity
- Pursue an access controlled facility
- Identify needed improvements to the existing facility
- Consider a transportation system that balances regional mobility with local need
- Incorporate ITS elements, e.g., ATIS and ATMS
- Consider tolling strategies/managed lanes

First Presbyterian Church Angleton Historical Marker

Goal: Provide a Multi-Modal Transportation System

Provide a balanced and coordinated transportation system.

Objectives:

- Provide a system offering convenient travel alternatives
- Incorporate opportunities for development of non-highway improvements
- Promote connectivity of all modes
- Incorporate non-motorized transportation systems (e.g., bicycles and pedestrian ways)
- Preserve sufficient right-of-way for future transportation growth
- Incorporate TDM strategies
- Consider separate roadway/rail transit alignments

Goal: Improve Transportation Infrastructure

Improve transportation infrastructure to overcome any deficiencies.

Objectives:

- Identify aging pavement, structures, and geometrics
- Expand infrastructure capacity to accommodate projected growth
- Coordinate physical connectivity of all modes
- Improve at-grade railroad crossings
- Improve segments of the existing facility
- Employ TSM strategies

Goal: Preserve and Enhance Social/Community and Economic Viability

Provide a transportation system that recognizes community and social quality of life, enhances economic viability, and serves local and regional transportation system needs.

Objectives:

- Minimize residential and business impacts
- Provide access to major employment and activity centers
- Provide a system that supports quality of life
- Provide a system that meets all travel needs
- Incorporate environmental justice principles
- Provide a system that influences consistent development
- Avoid and/or minimize impacts to historic/cultural resources

Goal: Protect the Natural Environment

Identify transportation improvements that avoid and/or minimize impacts on the natural environment.

Objectives:

- Minimize and/or avoid negative environmental impacts
- Evaluate air quality and noise impacts
- Identify sensitive plant and animal species
- Evaluate impacts to parks, wildlife, and waterfowl
- Focus on improvements that are beneficial to the environment
- Develop mitigation measures to reduce any impacts

Goal: Improve Safety for the Traveling Public

Improve safety for users of all modes of transportation along the corridor.

Objectives:

- Reduce vehicle-to-vehicle conflicts and conflicts with other modes
- Reduce accident rates along the corridor
- Provide safety for non-motorized transportation users
- Implement ITS strategies
- Provide EMS accessibility
- Optimize the evacuation capacity of the corridor

CHAPTER 4: EXISTING TRANSPORTATION SYSTEM CONDITIONS

SH 35 Study Area Roadway System

SH 35 is the primary north/south access for east/west roadways, notably IH 610, Bellfort Road, BW 8, and Airport Boulevard in Houston. Dixie Farm Road and FM 518 are major intersections in Brookside Village and Pearland. SH 6, FM 1462, FM 517, and FM 2403 intersect SH 35 in the city of Alvin. FM 523 and SH 288 (the terminus of the SH 35 MCFS) are major intersections in Angleton.

Running south from the SH 35/Telephone Road and IH 45/IH 610 interchange (north terminus) to Airport Boulevard, which is adjacent to Hobby Airport, the roadway consists of a six-lane boulevard section with traffic signals, at-grade railroad crossings, and left-turn bays. It is an established commercial strip including the Gulf Gate Mall. From Airport Boulevard south to BW 8, SH 35 is a seven-lane roadway with a two-way continuous left-turn lane (TWCLTL). It is reduced to a five-lane roadway with a TWCLTL from BW 8, through Pearland to Dixie Farm Road, south of FM 518. From Dixie Farm Road, south to the SH 35 Bypass in Alvin, the roadway is a two-lane rural roadway with shoulders.

At the SH 35/Business 35 split in Alvin, SH 35 consists of two multiple lane frontage roads separated by a wide median. This section is planned for conversion to a controlled access highway in the future. Continuing to just north of SH 6 where the frontage roads end, it becomes a controlled access highway at the UPRR underpass. South of the UPRR underpass, SH 35 reverts back to the frontage road configuration to just north of FM 2403. A two-lane rural highway with shoulders from FM 2403 to FM 523 in Angleton, SH 35 is non-access controlled. From FM 523 to SH 288 in Angleton, it is a multi-lane roadway with a TWCLTL.

Intersection SH 35/FM 523

A parallel route to SH 35/Telephone Road in Houston is the Spur 5/Mykawa Road section adjacent to the University of Houston at IH 45 and continuing to FM 518 in Pearland. Spur 5, from IH 45 to Old Spanish Trail, in Houston consists of a two-lane frontage road system aligned on either side of an existing right-of-way planned for a future controlled access highway. Mykawa Road, from IH 610 south to FM 518, is a two-lane roadway. Portions of Mykawa Road from IH 610 to Airport Boulevard are currently undergoing widening reconstruction. This section terminates in Pearland.

Level of Service Analysis

The *Highway Capacity Manual,* Transportation Research Board, 2000, "Level-Of-Service Definitions for Urban Arterials," was used as the standard upon which existing levels of service (LOS) in the SH 35 corridor were analyzed. Service level characteristics range from LOS A (primarily free-flow operations at average travel speeds) to LOS F (flow at extremely slow speeds, characterized by congestion at signalized locations with high delays and extensive queuing). Service levels in the D, E, and F range slow traffic flows, are detrimental to mobility, and increase emissions, which can increase pollution problems.

SH 35/FM 518 Intersection

The SH 35 MCFS LOS analysis included the length of the corridor from IH 45 in the Houston to and including the SH 288 intersection in Angleton. Both the Spur 5/Mykawa Road and SH 35/Telephone Road sections are included in the bi-directional (northbound and southbound) PM peak-period analysis. Existing 2003 traffic data used in this analysis were obtained from the Texas Transportation Institute (TTI) and TxDOT for SH 35, with the exception of the Spur 5/Mykawa, Alvin By-Pass, and FM 523. Traffic data for these areas were collected via field studies performed for the SH 35 MCFS in March and April 2004. PM peak-period LOS is summarized by NB/SB segment in Table 4-2.

Along the SH 35/Telephone Road segment, between IH 45 and including the BW 8 intersection, nine of 30 bi-directional northbound/southbound (NB/SB) segments were operating at arterial LOS D or F during the PM period. On the Spur 5/Mykawa alignment, seven of the NB/SB segments were operating at LOS D or E in the PM period.

Along the NB/SB bi-directional segments studied from south of the BW 8 intersection to and including the SH 288 intersection, 21 were operating at LOS D, E, or F during the PM peak period. Figure 4-1 depicts the entire corridor, while Figures 4-2 through 4-5 depict the SH 35 corridor arterial segment LOS analysis graphically, color-coded by roadway segment. These exhibits are color coded as follows:

- LOS A-B Green
- LOS C Blue
- LOS D Yellow
- LOS E-F Red

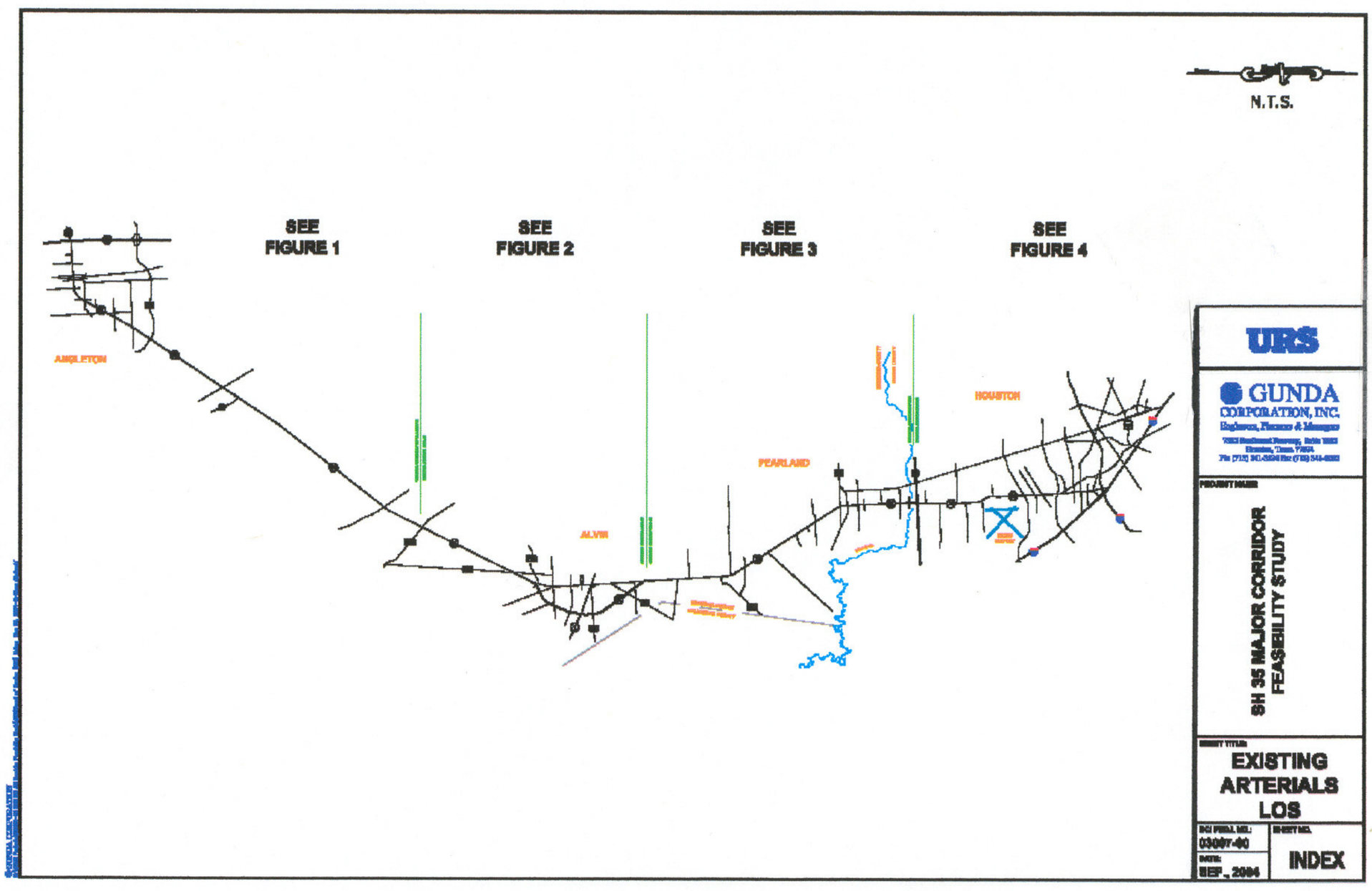


Figure 4.1 – Overall Map of Existing Arterial LOS

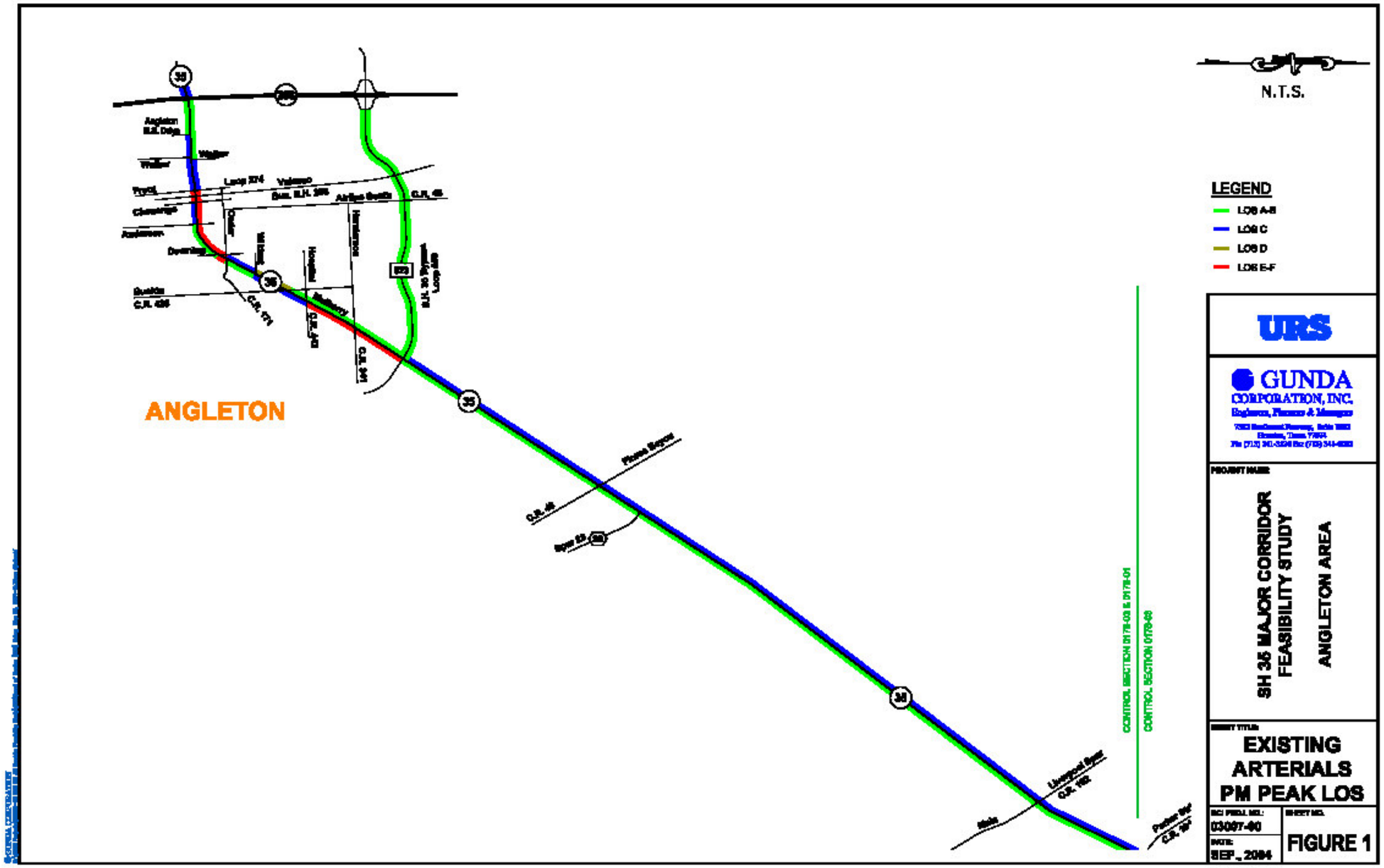


Figure 4.2 – Angleton Area PM Peak LOS (SH 288 north to CR 192)

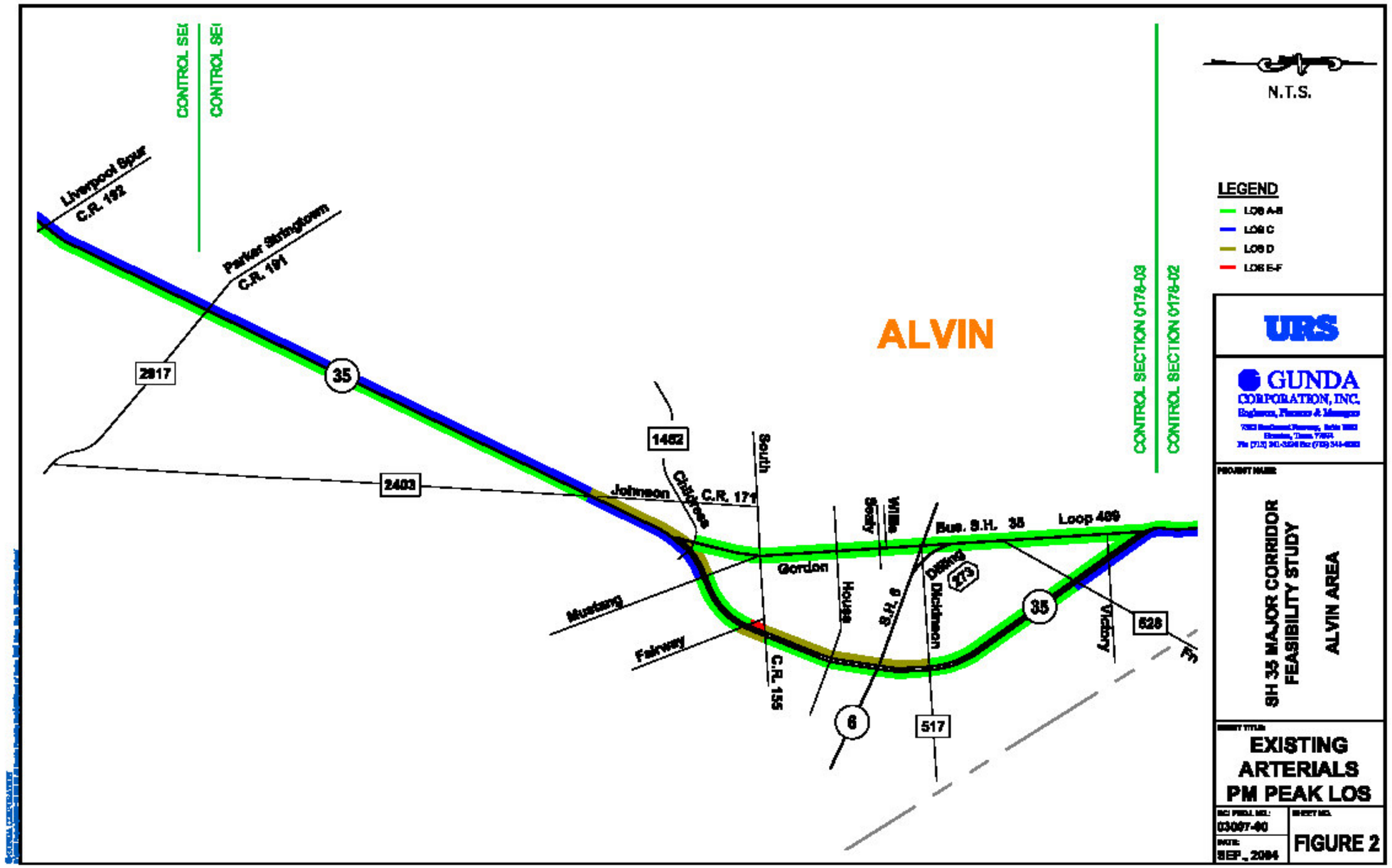


Figure 4.3 – Alvin Area PM Peak LOS (CR 192 north to FM 528)

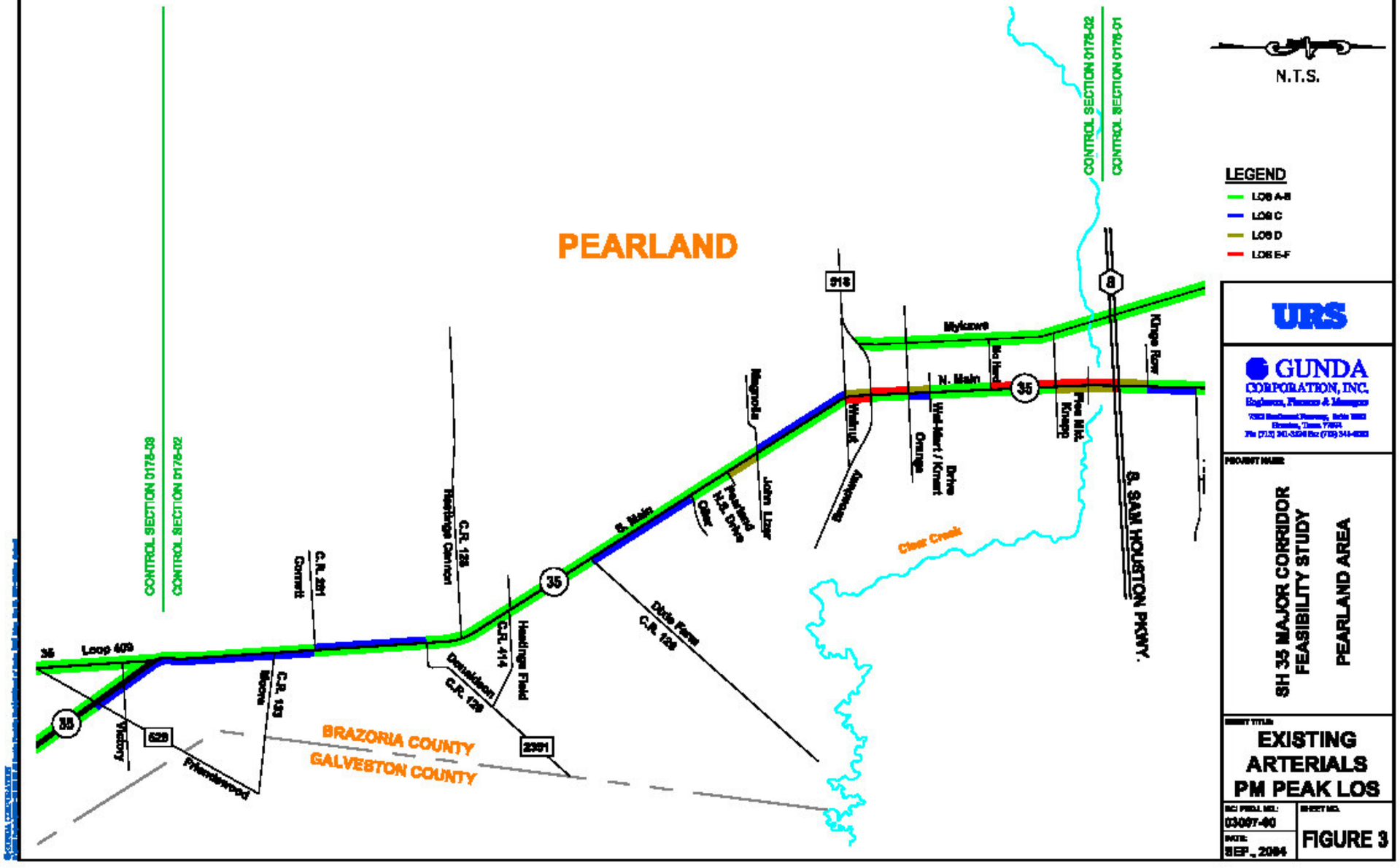


Figure 4.4 – Pearland Area PM Peak LOS (FM 528 north to Kings ROW)

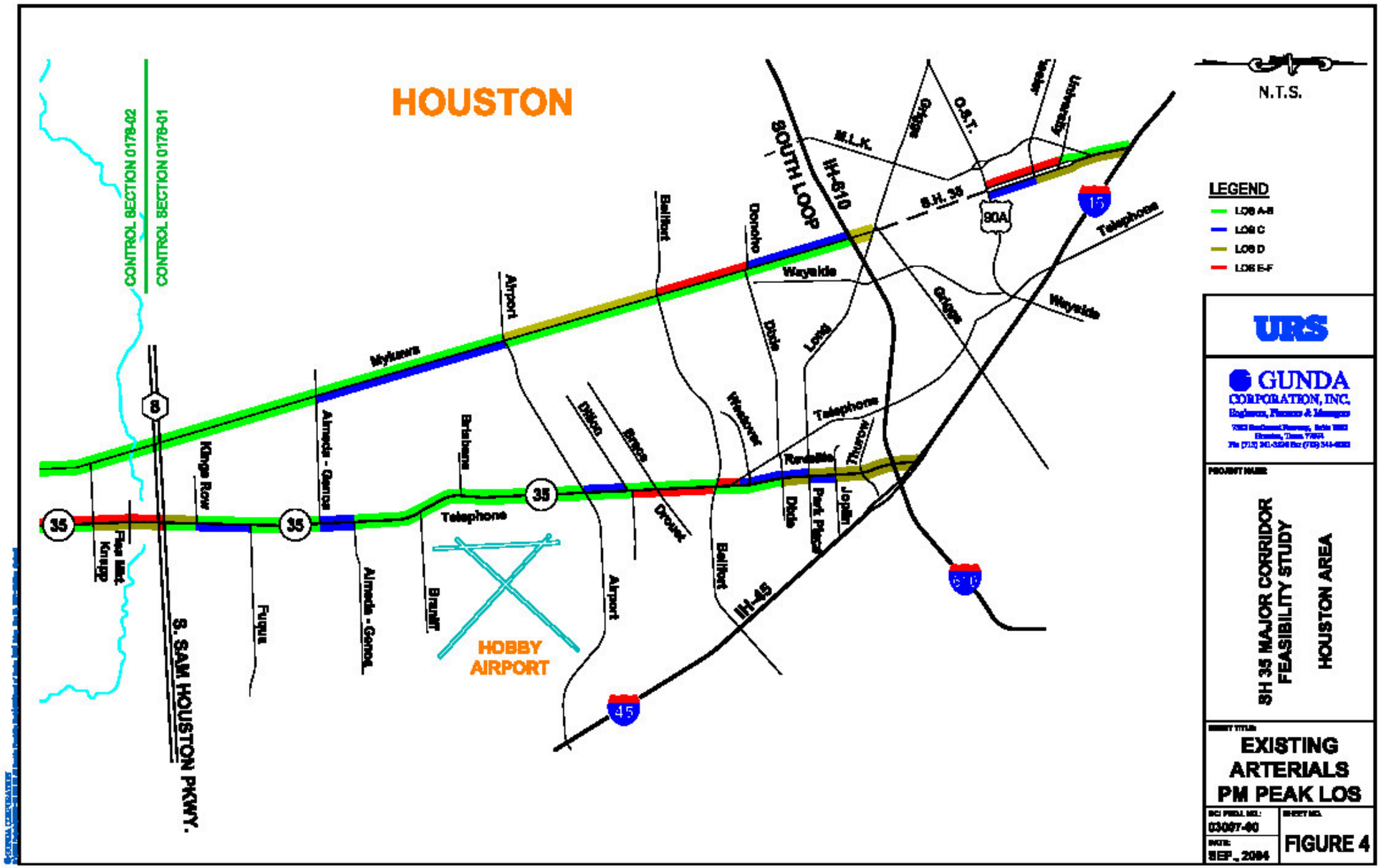


Figure 4.5 – Houston Area (SH 35 and Mykawa Road segments) PM Peak LOS (Kings ROW to IH – 45)

Safety and Accident Data

Accident data, depicted in Table 4-3, for 1998, 1999, and 2000 are segregated into four sections for the SH 35 study: Houston, Pearland, Alvin, and Angleton. The occurrence of accidents in the Houston area has continued to rise over the three-year period from 128 accidents in 1998 to 155 in 2000. Contrary to Houston, accidents have declined in the other three cities. The Pearland section had the highest overall 2000 accidents at 175. At 72 in 2000, the Alvin section recorded the fewest accidents. The Angleton section recorded 84 in the year 2000.

Table 4.3 – SH 35 Accident Data Summary

HOUSTON
(IH 45 to Beltway 8)

Type of Accident	Year		
	1998	1999	2000
Fatal	1	3	2
Injury	95	98	118
Property Damage	32	34	35
Total Accidents	**128**	**135**	**155**

PEARLAND
(**Beltway 8 to Alvin Bypass**)

Type of Accident	Year		
	1998	1999	2000
Fatal	1	0	0
Injury	122	131	119
Property Damage	68	83	56
Total Accidents	**191**	**214**	**175**

ALVIN
(**Alvin Bypass to FM 2917)**

Type of Accident	Year		
	1998	1999	2000
Fatal	0	1	0
Injury	54	53	48
Property Damage	31	25	24
Total Accidents	**85**	**79**	**72**

ANGLETON
(**FM 2917 to Southern Limits)**

Type of Accident	Year		
	1998	1999	2000
Fatal	1	0	3
Injury	48	64	55
Property Damage	21	33	26
Total Accidents	**70**	**97**	**84**

Source: Texas Department of Transportation, 2003

Accident rates in the SH 35 corridor are compared with statewide rates in Table 4-4. It is notable that average rates for all types of accidents in the SH 35 study area exceed the statewide average rates in each of the four geographic sections of the MCFS. The Houston and Pearland sections far exceed the statewide average for all accident types averaged for 1998, 1999, and 2000. While the Alvin and Angleton sections are nearer to the statewide average for the three-year period, they also exceed it.

Table 4.4 – SH 35 Accident Rates – Houston and Statewide Comparison Summary

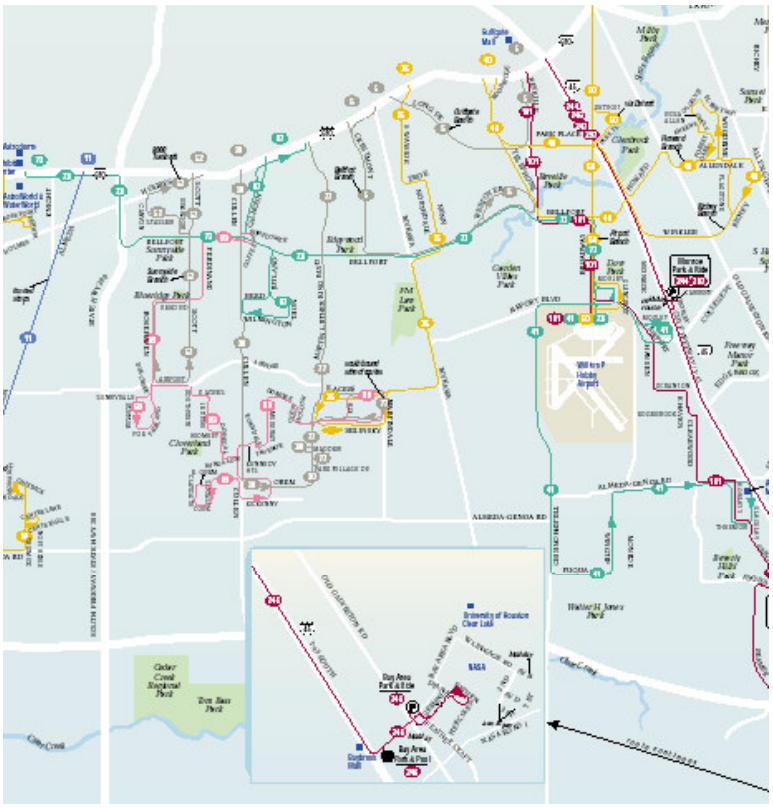
SH 35 Sections	From	To	All Accident Types 1998, 1999, 2000 Average Rate per 100 Million Vehicle Miles Traveled
Houston Section	I-45	Brazoria County Line	188
Pearland Section	Brazoria County Line	Loop 409 (Alvin)	198
Alvin Section	Loop 409 (Alvin)	FM 2917	129
Angleton Section	FM 2917	SH 288	119
Houston District Average			128
Statewide Average			114

Source: Texas Department of Transportation, 2003

Transit Services

The SH 35 study area north of Beltway 8 is in the Houston Metropolitan Transportation Authority of Harris County (METRO) service area. A comprehensive network of local bus routes serves the south central Houston area. The most heavily used bus routes are those on Scott, Cullen, MLK, and Bellfort (52 Scott, Route 30 Cullen, 77 MLK Ltd., and 73 Bellfort Crosstown), according to the *METRO Mobility 2025 Southeast-Universities-Hobby Planning Study, Purpose and Need Report* (July 2002). Using "ride check" data as well as passenger boarding and alighting patterns within the sector, the report noted that there is a concentration of transit passengers around the University of Houston and Texas Southern University area and to and from downtown Houston. There was also evidence of the importance of the Scott Street corridor, as well as Bellfort, MLK, Cullen, Broadway, and Telephone Road. However, the more heavily used portion of the Telephone Road route was north of the SH 35 study area.

IH 45, which intersects SH 35 at the northernmost sector of the MCFS, provides the METRO-assisted high occupancy vehicle (HOV) system depicted in Figure 4-8.



Source: Houston Metro, 2002

Figure 4.8 – Existing METRO Bus Routes – Northernmost Section of the SH 35 Corridor Area

Located just south of Old Spanish Trail is the Southeast Transit Center, which is on Scott Crest one block east of Scott. This center is primarily a bus transfer point with minimal parking.

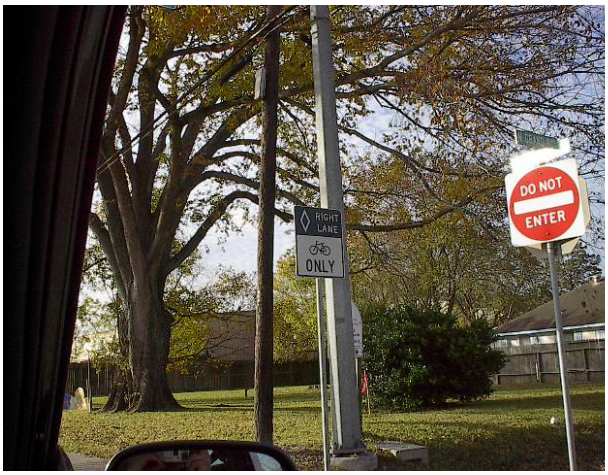
Southeast METRO Transit Center

Fuqua Park and Ride at 11755 Sabo Road (IH 45) at Sagetree, is the park and ride facility in the nearest proximity to the study area. Often full, METRO reports heavy use of this facility.

TxDOT has developed Park and pool lots in Pearland, Alvin, and Angleton. These lots are located in the available right-of-way. Plans are underway to double the capacity of the lot in Pearland at SH 288 and FM 515 (from 28 parking spaces to 56-60 spaces).

Nonmotorized Transportation

The SH 35 corridor lacks an organized bicycle network system. An on-road bicycle lane exists in Pearland on FM 518 east of SH 35. Bicycle data are being collected in conjunction with the TxDOT Bicycle Coordinator as part of the MCFS work effort.



FM 518 Bike Lane

Freight Rail Network

The major railroad corridor paralleling SH 35 on the west between IH 45 in Houston and Angleton consists of the Burlington Northern and Santa Fe Railway (BNSF) and the Union Pacific Railroad (UP). A description of the BNSF and UP rail lines between Houston and Angleton, as well as other intersecting rail lines, is described in this section.

The BNSF Mykawa Spur runs between New South Yard and Alvin. It includes a portion of the BNSF Galveston Spur, the line between Alvin and Algoa. The UP Angleton Spur includes the portion between Algoa and Angleton. Two other rail lines intersect with the BNSF Mykawa Line: the UP East Belt Spur and the UP Glidden Spur. It is noted that a large volume of hazardous materials move over these lines due to the significant presence of the petrochemical industry in the Houston area. Recent figures estimate that 19 percent of the total petrochemical shipments out of the Houston area move by rail. Pipelines, ships, and trucks move the remainder of the shipments. In general, the rail lines in the SH 35 study area are not grade separated. Exceptions include the major freeway and roadway intersections where the crossings are grade separated. The different rail lines are described in more detail below.

Burlington Northern and Santa Fe Mykawa Line

The BNSF Mykawa Line runs between New South Yard and Alvin, a distance of 20.3 miles. It is a single track with passing sidings located at Mykawa (10,320 feet in length), Pearland (5,490 feet in length), and Hastings (13,140 feet in length). Train movements are dispatched from Fort Worth, and movements are controlled utilizing a Centralized Traffic Control (CTC) signaling system. Maximum allowable train speed is 55 mph. The line is owned by BNSF, but UP has trackage rights. Trains can operate over the line under the control of the BNSF dispatcher. On average, 25 to 30 trains operate on this line per day. The number of trains per day varies depending on the day of the week and the time of year.

Train Engines at Mykawa

New South Yard and Old South Yard have a capacity of approximately 1,300 cars. These yards operate at capacity most of the time. It is not uncommon for trains to experience long waits on the Mykawa Line until such time as they can access the yard. A much smaller yard is located at Mykawa. The Mykawa Yard serves local industries and the Mykawa Intermodal Facility. Truck trailers and containers are loaded and unloaded from railcars at this facility.

Railroad right-of-way typically averages 75 to 100 feet in width with the track running in the center. Much of the right-of-way on this line is utilized because the track is elevated on a high fill. Mykawa Road runs along the alignment on the west side of the tracks. Land uses adjacent to the east side of the alignment are predominately industrial buildings and older residential neighborhoods.

Burlington Northern and Santa Fe Galveston Line

A portion of the BNSF Galveston Subdivision runs between Alvin and Algoa, a distance of 4.2 miles. The line consists mostly of double track and CTC signaling. The maximum allowable operating speed is 55 mph. The UP has trackage rights from Algoa to the west beyond Alvin. A small yard is located on the line near Alvin. It is estimated that an average of 25 to 30 trains per day operate over this line.

Union Pacific Railroad Angleton Line

The UP Angleton Subdivision includes the portion between Algoa and Angleton, a distance of 21.4 miles. It consists of a single-track line with three passing sidings located at Browne (10,025 feet in length), Liverpool (7,631 feet in length), and Glenn (8,319 feet in length) with CTC signaling. Train movements are dispatched from Omaha, NE. Maximum operating train speed is 50 mph. BNSF has trackage rights over this line. Yard facilities are located at Chocolate Bayou (located between Algoa and Liverpool) and at Angleton. An average of 20 to 25 trains operating on this line per day.


BNSF RR Bridge Over Clear Creek

Union Pacific Railroad East Belt

The UP East Belt Line connects with the BNSF Mykawa Line between Old South Yard and New South Yard at Double Track Junction. Access for trains heading to and from the railroad yards located northeast of Houston use the East Belt. Maximum operating speed is 20 mph on this double track line. The BNSF has trackage rights over the East Belt. Typically, 15 to 20 trains operate on the line daily. Trains waiting to access or pass through the New South Yard are commonly held along the East Belt. Residents in neighborhoods adjacent to the line have been known to complain about trains blocking the crossings.

Union Pacific Glidden Line

The UP Glidden Line intersects with the BNSF Mykawa Line at T&NO Junction located at the south end of New South Yard. Maximum operating speed is 20 mph on this single track with passing sidings and CTC signaling. BNSF has trackage rights over the Glidden Line. An average of 10 to 15 trains operate over the line each day.

Evacuation Issues

SH 35 serves as an emergency evacuation route for Angleton, Alvin, Pearland, Brookside Village, and southern Houston as well as the surrounding areas. Angleton uses SH 288 in conjunction with SH 35 for emergency evacuations. For Alvin, a combination of SH 6 and SH 35 are the designated emergency evacuation routes. SH 35 is the only emergency evacuation route available to Pearland with IH 45 and SH 288 as approximate alternatives. Areas of southern Houston that are north of BW 8 can use either SH 35 or SH 288 as evacuation routes.

CHAPTER 5: ALTERNATIVES CONSIDERED

Development of the Universe of Alternatives

A primary component of the SH 35 MCFS was to develop the corridor-wide "Universe of Alternatives", herein referred as the Universe. Identification of these conceptual alternatives represented the first step toward developing the preferred transportation alternative for investment within the SH 35 corridor. Guidance from the Steering and Advisory Committees and input from the general public, affected agencies, and communities along the corridor assisted the Study Team in identifying improvements applicable to the study goals.

Initially, the Universe represented a wide-range of conceptual mode/corridor improvements with the potential for meeting the SH 35 MCFS goals and objectives. More than 60 conceptual alternatives were developed representing a multi-modal perspective for numerous potential corridors. A technical evaluations methodology, consistent with the guidelines established for major investment studies, was employed to screen the Universe. Subsequent to this initial evaluation, the study goals and objectives were then used to develop additional screening and evaluation criteria against which to compare the various alternatives.

The Universe was categorized by transportation type: controlled access highway (including tolling strategies), arterial, transit, and Transportation System Management (TSM) improvements. Highway alternatives concentrated on controlled access corridors (with possible tolling strategies), while arterial alternatives focused on expansion of thoroughfares. Transit alternatives encompassed high occupancy vehicle (HOV) facilities, commuter passenger rail service, and connectivity with the METRO Light Rail Transit (LRT) service in Harris County. It also included park and ride/pool facilities and non-motorized transportation systems. Major TSM alternatives focused on improvements to roadway intersections, railroad and water crossings, and traffic operations.

Public Meeting Held in Southeast Houston

The Universe of Alternatives is described in Table 5.1, which is defined by geographic area and categorized by transportation type. It is cross-referenced to demonstrate continuance of an alternative across the study area and/or connectivity of modes.

Table 5.1 – Universe of Alternatives

Northern Geographic Area (From IH 45 to BW 8) **Controlled Access Highway Alternatives (consider toll strategies)**			
N-CA 1	This alternative would complete the controlled access highway in the Spur 5/Mykawa alignment from IH 45 to IH 610, within the existing TxDOT right-of-way. It would connect with IH 45 adjacent to the University of Houston and continue southward to connect with IH 610. The controlled access alignment would be constructed between the northbound and southbound frontage road system to Old Spanish Trail and a new facility would be constructed to IH 610. While TxDOT has acquired enough ROW for this eight-lane facility, additional ROW for frontage roads and interchanges may be required.	N-CA 3	This controlled access highway alternative would follow the same alignment as N-CA 2 from IH 610 to Sims Bayou. South of the bridge at the Bayou it would turn southwest to connect with Martin Luther King (MLK). It would continue southward along the MLK alignment to BW 8. If Alternative N-CA1 were implemented, the MLK alignment would complete a high-speed corridor from IH 45 to BW 8. The MLK/BW 8 interchange would need to be completed. Connected to C-CA 1, at BW 8 it would provide a high-speed route southward, terminating at the Alvin Bypass.
N-CA 2	This controlled access highway alternative would run from IH 610 to BW 8 following the Mykawa Road alignment. Extending the controlled access southward from IH 610, the proposed facility would create a continuous high-speed corridor from IH 45 to BW 8 (refer to N-CA 1). To maximize the use of existing TxDOT ROW, the use of the east side of the existing Mykawa Road and BNSF tracks to the south boundary of Law Park at Sims Bayou is proposed. It would cross to the west side of Sims Bayou and the BNSF tracks with a single elevated structure. South to BW 8, it would be aligned on the west side of Mykawa, with a major interchange at BW 8. The IH 610 interchange would need to be upgraded (N-TSM 5).	N-CA 4	This controlled access highway alternative would run on the west side of Mykawa and the BNSF railroad tracks from IH 610 to BW 8. When combined with Alternative N-CA 1, it would provide a continuous high-speed corridor from IH 45 to BW 8. Right of way acquisition would be required.
Transit Alternatives			
N-T 1	A new passenger commuter rail corridor is proposed from downtown Houston to BW 8 parallel to the existing BNSF alignment. The proposed line would start at Union Station, located at Texas and Crawford Streets adjacent to Minute Maid Park in Downtown Houston, and would follow the BNSF alignment south to BW 8. ROW would need to be acquired. C-T 1 would extend the passenger rail southward to terminate at Alvin Depot.	N-T 7	This alternative proposes a Diamond Lane along existing Monroe Road from IH 45 at the Monroe Park and Ride lot south to BW 8. New right-of-way would be required. This alternative would correspond with the proposal to extend Monroe from Fuqua to BW 8 (refer to N-A 4). The proposed Diamond Lane would connect with Pearland Parkway at BW 8.

N-T 2	A new Light Rail Transit (LRT) corridor is proposed along the BNSF alignment extending from the Griggs/Long intersection southward to a proposed Park and Ride/Pool facility at BW 8 (refer to N-T 8). Proposed to run parallel to the existing east side of the BNSF tracks to Sims Bayou, the LRT would then cross to the west side of the tracks to BW 8. This alternative would connect at the Griggs/Long intersection with the proposed METRO LRT southeast corridor expansion that is planned to terminate at Hobby Airport. ROW would be required. LRT is not proposed south of BW 8.	N-T 8	A Park and Ride/Pool facility and/or inter-modal transfer station is proposed at BW 8 and Mykawa. This alternative could potentially serve carpooling vehicles, bus, and/or rail transit users depending on the preferred corridor alternatives chosen by the SH 35 MCSF. ROW would be required.
N-T 3	This alternative would include a High Occupancy Vehicle (HOV) or Diamond Lane from IH 45 to IH 610 along the Spur 5/Mykawa corridor as described in N-CA 1.	N-T 9	This commuter passenger rail alternative from Downtown Houston to BW 8 is proposed to run along the west side of the BNSF tracks from IH 45 to BW 8. Fatal flaws were identified west of the Spur 5/Mykawa alignment at the University of Houston, MacGregor Park, Law Park, and the neighborhoods/ businesses, which excluded it from further consideration.
N-T 4	This HOV or Diamond Lane alternative would coincide with the proposed Mykawa corridor described in N-CA 2 from IH 610 to BW 8.	N-T 10	This LRT alternative along the Spur 5/Mykawa corridor from the Griggs/Long intersection to BW 8 was proposed to run along the east side of the BNSF tracks and Spur 5/Mykawa. Fatal flaws were recognized at the Super Fund site south of Willardville, and the neighborhoods/businesses. It was excluded from further consideration.
N-T 5	This alternative proposes an HOV or Diamond Lane along the Mykawa and MLK corridor from IH 610 to BW 8 described in N-CA 3.	N-T 11	This Diamond Lane was proposed along SH 35 from IH 45 to BW 8 rather than a new controlled access highway. Fatal flaws for higher-speed lanes were identified in the neighborhoods/businesses adjacent to the roadway and to the Hobby Airport aircraft clearance zone (ACZ) and new Master Plan. It was excluded from further consideration.
N-T 6	Along the existing SH 35/Telephone Road alignment, a Diamond Lane is proposed, extending from IH 45 to BW 8. This high-speed alternative is proposed within the existing SH 35 ROW.	N-T 12	This HOV Lane alternative is proposed from IH 610 to BW 8 on the west side of Mykawa and the BNSF railroad tracks. The alignment is described in the N-CA 4.
Arterial Alternatives			
N-A 1	This alternative proposes a six-lane Mykawa thoroughfare with center turn lane from IH 610 to BW 8	N-A 3	This alternative proposes a new six-lane thoroughfare with center turn lane to run on the west side of Mykawa and the

	that follows the same alignment as N-CA 2. This improvement is proposed rather than the controlled-access highway in N-CA 2. TxDOT owns partial ROW.		BNSF tracks from IH 610 to BW 8. It would be in the same alignment as the N-CA 4. ROW would be required.
N-A 2	This alternative proposes an eight-lane thoroughfare with center turn lane along existing SH 35/Telephone Road from Hobby Airport to BW 8. ROW would need to be acquired.		
Transportation System Management (TSM) Alternatives			
N-TSM 1	This alternative is proposed to improve the SH 35, Telephone Road, Reveille, and Bellfort intersection at Sims Bayou. These improvements would include grade separation and non-motorized transportation ROW.	N-TSM 5	This alternative is proposed to improve the intersection of Mykawa, IH 610 north entry-exit ramps, Griggs, Long, and the railroad crossing. It would include the proposed METRO south line LRT alignment.
N-TSM 2	This alternative proposes an improvement to the interchange at SH 35, Reveille, IH 45, and IH 610. This improvement is currently under planning within another TxDOT project.	N-TSM 6	This alternative recognizes that signal systems throughout the existing SH 35 corridor along SH 35, Mykawa, Telephone Road, and Reveille need to be reviewed for potential upgrades and synchronization. This alternative would facilitate free flow of traffic thereby improving safety and providing congestion relief.
N-TSM 3	Improvements are proposed to the intersection of Spur 5 and Wheeler to be implemented in conjunction with N-CA 1. This alternative would include vehicular and non-motorized transportation access to the east side of Spur 5 from the University of Houston.	N-TSM 7	At-grade railroad crossings within the existing SH 35 corridor need to be reviewed for possible improvement. This alternative would separate the railroad tracks from vehicular and non-motorized transportation.
N-TSM 4	Improvements are proposed to the intersection of SH 35, Telephone Road, and Airport Boulevard. This alternative would potentially include the addition of turn lanes and signal upgrades.	N-TSM 8	This alternative is proposed to upgrade the water crossings in the SH 35 corridor. These upgrades may coincide with roadway improvements and need to include ROW for non-motorized transportation facilities.
Central Geographic Area (From BW 8 to FM 1462 in the City of Alvin) Controlled Access Highway Alternatives (consider toll strategies)			
C-CA 1	This controlled access highway alternative is proposed to connect at the BW 8 and MLK interchange, run southward along Stone Road, along FM 1128, then southeast along CR 98 to the northern end of the Alvin Bypass at SH 35. ROW would be required.	C-CA 3	This controlled access highway alternative would connect to the CR 58 and SH 288 interchange south of BW 8 and run diagonally southeast terminating at the northern end of the Alvin Bypass at SH 35/SH 35 Business. ROW would be required.
C-CA 2	This alternative proposes a controlled access highway along the west side of the BNSF railroad alignment from the BW 8 and Mykawa interchange southeast to the northern terminus of the Alvin Bypass terminating at SH 35/SH 35 Business. ROW would be required.	C-CA 4	This controlled access highway alternative would complete the SH 35 Alvin Bypass. Starting at the northern terminus and ending at the southern terminus of the Alvin Bypass, this alternative would remain within the existing TxDOT right-of-way. It would include a grade separation at the Old Galveston railroad.

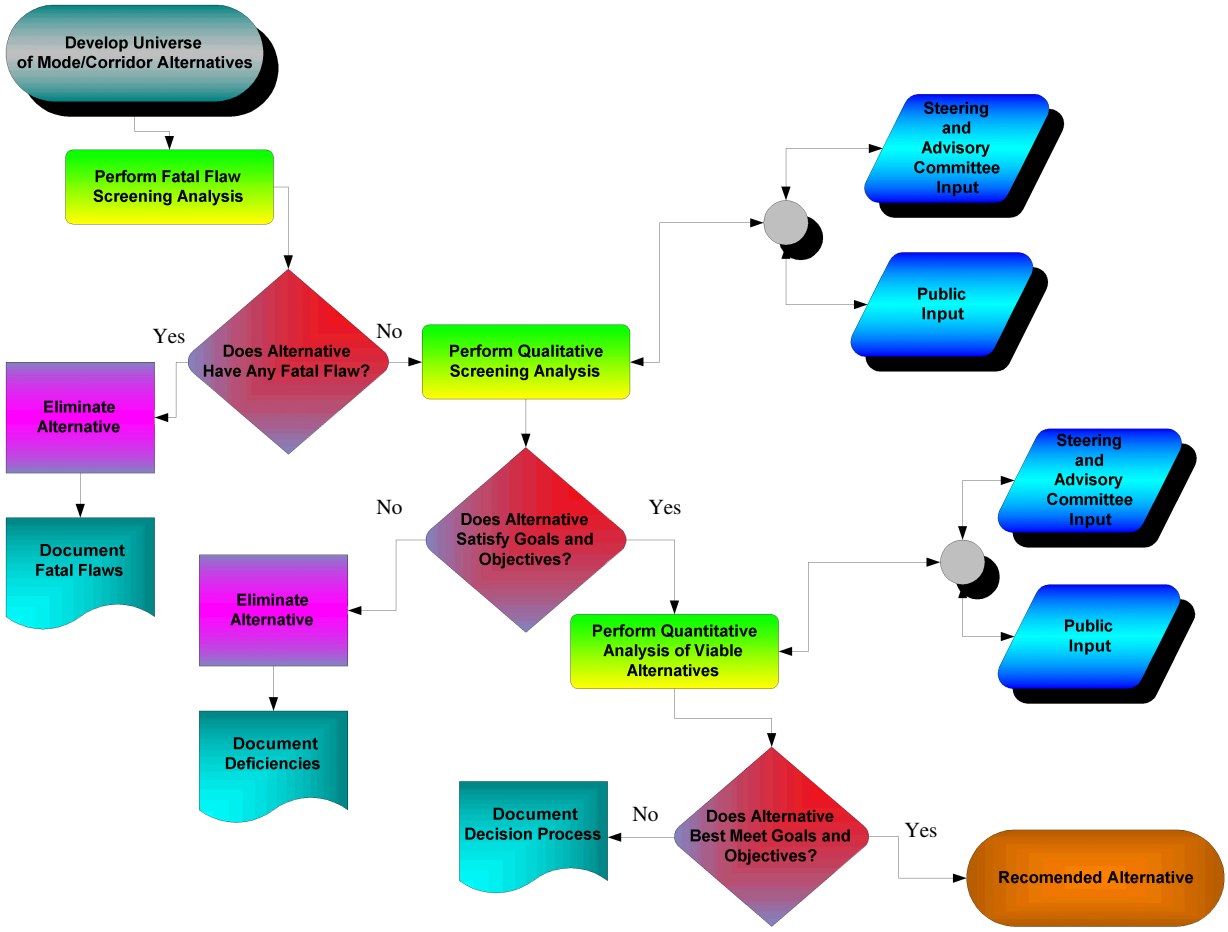
Transit Alternatives			
C-T 1	This alternative proposes a commuter passenger rail line from BW 8 to the Alvin Depot east of SH 35 Business located at Gordon and Willis Streets. It is proposed to run adjacent to the BNSF tracks and connect with N-T 1. ROW would be required.	C-T 4	This HOV or Diamond Lane alternative would run along the controlled access roadway alignment from the SH 288 and CR 58 interchange southeast to the northern terminus of the Alvin Bypass as described in alternative C-CA 3.
C-T 2	This alternative proposes an HOV or Diamond Lane from BW 8 approximately along Stone Road, FM 1128, and CR 98 alignment to the northern end of the Alvin Bypass, as is described in C-CA 1.	C-T 5	A Park and Ride/Pool facility is proposed near the northern terminus of the Alvin Bypass at SH 35/SH 35 Business. Two possible locations were identified: 1) on the west side of SH 35 near the intersection of SH 35 and SH 35 Business, or 2) on the north side of SH 6 near SH 35. ROW would be required.
C-T 3	This HOV or Diamond Lane alternative corresponds with the proposed BNSF railroad alignment described in C-CA 2.		
Arterial Alternatives			
C-A 1	This alternative would improve the existing Dixie Farm Road (CR 126) from SH 35 to FM 518 to a six-lane thoroughfare with center turn lane. Reference C-TSM 3 and C-TSM 4 for proposed intersection improvements.	C-A 3	This alternative coincides with the improvements proposed in C-A 2. A six-lane thoroughfare with center turn lane is proposed to be implemented along existing SH 35 from Dixie Farm Road to the northern end of Alvin Bypass at the SH 35/SH 35 Business intersection.
C-A 2	Improvements to the existing SH 35 facility are being implemented from BW 8 to FM 518. Upgrades include a six-lane thoroughfare with center turn lanes and signal upgrades. This alternative proposes to extend the same facility improvements along existing SH 35 from FM 518 southward to Dixie Farm road.	C-A 4	This alternative proposes a new hike and bike facility along Brookside Road from Mykawa to CR 561 (Stone Road). This facility would address the needs and safety of non-motorized transportation users traversing Brookside Road.
Transportation System Management (TSM) Alternatives			
C-TSM 1	This alternative proposes to realign the section of Hastings Road east of SH 35 to FM 2351 and SH 35.	C-TSM 5	This alternative focuses on the BNSF and SH 35 Alvin Bypass railroad crossing. This improvement would be a grade separation including access for non-motorized transportation (refer to C-CA 4).
C-TSM 2	This alternative would improve the SH 35/SH 35 Business Bypass intersection with FM 528. Intersection improvements would include grade separation, signal additions, and driveway consolidations.	C-TSM 6	This alternative recognizes that signal systems along the existing SH 35 facility throughout the cities of Pearland and Alvin need to be reviewed for potential upgrades and synchronization. This alternative would facilitate free flow of traffic thereby improving safety and providing congestion relief.
C-TSM 3	This alternative would improve the intersection of SH 35 and Dixie Farm Road. Signal upgrades and additional turn lanes are considerations (refer to C-A 1).	C-TSM 7	Railroad crossings within the existing SH 35 corridor need to be reviewed for possible improvement. This alternative focuses on potential grade separation of the tracks and roadway and for non-motorized transportation access.
C-TSM 4	This alternative would improve the intersection of SH 35	C-TSM 8	This alternative is proposed to review the water crossings

	and FM 518. Signal upgrades, additional turn lanes, improved pedestrian crossings, and/or driveway consolidation are options that could help alleviate congestion.		within the existing SH 35 corridor. It focuses on coordinating roadway and water crossing improvements to include non-motorized transportation facilities.
Southern Geographic Area (from FM 1462 in the City of Alvin to SH 288 in the City of Angleton) Controlled Access Highway Alternatives (consider toll strategies)			
S-CA 1	This controlled access highway alternative would run along the existing SH 35 alignment from FM 1462 (southern terminus of the Alvin Bypass) southward to FM 523 in Angleton. ROW would be required.	S-CA 2	This alternative would be a controlled access highway within the existing FM 523 alignment from SH 35 to SH 288. This route could potentially be designated as a truck route with corresponding lanes. Additional ROW may be required.
Transit Alternatives			
	No transit alternatives were identified in the Southern Geographic area.		
Arterial Alternatives			
S-A 1	This alternative would improve the existing SH 35 to a four-lane thoroughfare with center turn lane from FM 1462 (southern interchange of the Alvin Bypass) to FM 523. It could be implemented within the existing ROW.	S-A 2	This improvement would upgrade FM 523, from SH 35 to SH 288, to a four-lane divided thoroughfare with designated left turn lanes. Additional ROW may be required.
Transportation System Management (TSM) Alternatives			
S-TSM 1	This alternative proposes to improve the intersection of FM 523 and SH 288 Business. Improvements could include signal upgrades, grade separations, non-motorized transportation facilities, and additional turn lanes. This alternative would be coordinated with the TxDOT SH 288 Corridor Feasibility Study.	S-TSM 3	This alternative is proposed to upgrade the water crossings within the existing SH 35 corridor when roadway improvements are implemented, including non-motorized transportation facilities.
S-TSM 2	This alternative proposes improving the intersection of CR 48 and FM 523. Upgrades could include, but are not limited to, signal upgrades, non-motorized transportation facilities, and additional turn lanes.		

Summary of the Alternatives Evaluation Methodology

The framework for the SH 35 MCFS decision-making process results in the selection of modal and corridor project alternative(s). It is an incremental step-by-step evaluation that measures the effectiveness of each possible proposed alternative to achieve the study goals and objectives. The Alternatives Evaluation Methodology Flow Chart in Figure 5.1 shows the process. Evaluations were conducted with input from the Steering and Advisory Committees, the public, regional agencies, and affected jurisdictions.

Figure 5.1 – SH 35 MCFS Alternatives Evaluation Flow Chart



The technical evaluation methodology was employed to guide screening of the wide-range of multi-modal, conceptual alternatives – the Universe of Alternatives. Initially the Universe was subjected to a preliminary evaluation, called the fatal flaw screening. This initial screening eliminated those alternatives with identifiable constraints that would cause inordinate environmental impacts were they to be implemented.

Each preliminary alternative was then measured for its effectiveness in achieving the study's mobility goals and environmental criteria. Those concepts deemed less effective to achieve the criteria were rejected from further consideration. This step narrowed the Universe of Alternatives to the "Recommended Preliminary Viable Alternatives." Guidance from the

Steering and Advisory Committees and input from affected agencies and the public confirmed those alternatives to undergo the initial quantitative screening.

This step results in the identification of the most promising modal and corridor alternatives, known as the Viable Alternatives. A more rigorous process, including capacity modeling and benefits analysis, is performed to evaluate the effectiveness of each viable alternative in meeting the study goals and objectives. The results of the analytical analysis provided a basis for the recommendations for transportation improvements in the SH35 corridor.

The SH 35 MCFS objectives are translated into a series of questions, e.g., criteria upon which the effectiveness of a given viable alternative will be measured to achieve a specified goal. The viable build alternatives will be evaluated against the screening criteria that reflect the most critical aspects of each MCFS goal and objective. Screening criteria are intended to differentiate the viable alternatives within the categories based on their likelihood of satisfactorily addressing the transportation needs of the corridor. The screening criteria are based on the goals discussed in Chapter 3. For example, for the first goal of improving north-south mobility within the corridor, the study team asked: Does the alternative reduce traffic congestion, travel delays, and conflicts?

Fatal Flaw Screening

The first evaluative step performed by the Study Team was to screen the Universe of Alternatives for any fatal flaw that would prohibit it from realization. Each concept was reviewed in terms of environmental constraints that were identified in the study's environmental investigation and mapping. For example, a public park, toxic waste site, or major commercial and/or residential development could represent a land use constraint that would preclude realization of a new transportation corridor or expansion of an existing roadway. Numerous conceptual alternatives from the universe were identified as having a fatal flaw of the magnitude to be exempted from further consideration.

Table 5.2 – Fatal Flaw Screening

Northern Geographic Area (From IH 45 to BW 8)
5 fatal flaws were identified including, N-CA 4, N-T 9, N-T 10, N-T 11, and N-T 12.
Central Geographic Area (From BW 8 to FM 1462 in Alvin)
No fatal flaws identified.
Southern Geographic Area (From FM 1462 to SH 288 in Angleton)
No fatal flaws identified.

Qualitative Screening Analysis

The purpose of the qualitative screening was to determine the effectiveness of the remaining conceptual alternatives from the universe to achieve the study's goals and objectives. Utilizing the environmental constraints maps and transportation planning and engineering judgment, the Study Team identified the effects of the development of each alternative that remained following the fatal flaw screening.

A matrix format was employed to measure the effectiveness of each remaining conceptual alternative on a scale of: Positive, Somewhat Positive, Neutral, Somewhat Negative, and Negative. Prime consideration was given to whether an alternative enhanced mobility along the entire length of the corridor, or a major portion of it, rather than in a single geographic section.

Description of Preliminary Viable Alternatives

The build alternatives are described by facility type, e.g., general-purpose lanes, toll lanes, arterials, etc. These facility types were coded into the model network, the model was run, and the traffic volume results and travel patterns were then analyzed for their effectiveness to serve demand in year 2025.

No-Build and ITS/TDM/TSM Alternatives

These alternatives were used as a baseline for comparison during the modeling of the transportation alternatives within the H-GAC Regional Travel Demand Model as described in Chapter 6.

Alternative 1 – Arterial Improvements

This alternative modeled the proposed arterial improvements within the study area for year 2025. A brief description of each improvement follows:

- Six-lane thoroughfare widening with center-turn lane on existing Mykawa Road from IH 610 to BW 8.
- Eight-lane thoroughfare widening with center-turn lane on SH 35 from Airport Boulevard (by Hobby Airport) to BW 8.
- Four-lane thoroughfare widening with center-turn lane on Dixie Farm Road from FM 518 to SH 35.
- Six-lane thoroughfare widening with center-turn lane on SH 35 from FM 518 to Dixie Farm Road.
- Six-lane thoroughfare on SH 35 from Dixie Farm Road to the northern terminus of the Alvin Bypass.
- Four-lane thoroughfare widening with center-turn lane on SH 35 from the southern terminus of the Alvin Bypass to FM 523.
- Four-lane thoroughfare widening with center-turn lane on FM 523 from SH 35 to SH 288

Summary of Alternatives 2A, B and C – Mykawa Corridor

This alternative is proposed as a new controlled access highway to provide a high-speed corridor from IH 45 in Houston to the southern terminus of the Alvin Bypass. An eight-lane controlled access highway with frontage roads was assumed on the Spur 5 section (this improvement is included in the H-GAC Year 2025 No-Build).

The Alvin Bypass was modeled as a four-lane controlled access highway with frontage roads. The following facility types were modeled in this corridor: 1) freeway, 2) toll-way, and 3) High Occupancy Toll (HOT) Lanes. Each facility type was analyzed as a stand-alone improvement to

test its mobility effectiveness and for comparison with other alternatives and with the No-Build Alternative.

Alternative 2A – Mykawa Freeway

In year 2025, Spur 5, between IH 45 and Old Spanish Trail, is assumed operational as an eight-lane controlled access highway. Between Spur 5 and IH 610, the proposed roadway would fall mostly within existing TxDOT right of way (ROW), although some additional ROW may be required in the vicinity of the IH 610 interchange. A bridge, beginning north of Kuhlman Gully, would be needed to carry the highway over the Griggs Road, Long Drive, and IH 610 intersection. This intersection would need to be improved.

South of IH 610, the roadway would run along the east side of the existing Mykawa Road and BNSF tracks. Modeled traffic volumes indicate the eight-lane facility would need to continue to BW 8. South of Law Park the highway is proposed to cross Sims Bayou to the west side of the BNSF tracks with a single elevated structure. From Sims Bayou to BW 8, existing Mykawa Road would remain and be reconfigured as a frontage road system for local access. Elevated direct connectors would need to be constructed at BW 8.

From the BW 8 and Mykawa interchange to the northern terminus of the Alvin Bypass, a four-lane freeway was modeled that was assumed to run along the west side of the BNSF. A frontage road system was assumed from BW 8 south to Brookside Road with no frontage roads south of Brookside to the Bypass.

Alternative 2B – Mykawa Toll-way

This alternative was analyzed as a Toll-way only. It is proposed to follow the same alignment as Alternative 2A including the frontage road system. It assumes all lanes would be tolled between Spur 5 and the southern terminus of the Alvin Bypass.

Alternative 2C – Mykawa HOT Lanes

In the same alignment as Alternatives 2A and 2B, the northern section of the road, between Spur 5 and BW 8 would consist of eight lanes: four freeway general-purpose (GP) lanes and four HOT lanes (two lanes in either direction). South of BW 8, the facility would consist of only four HOT lanes, with no freeway GP lanes. The Alvin Bypass would consist of only four HOT lanes with no GP lanes.

Summary of Alternatives 3A, B and C – MLK Corridor

This alternative is proposed as a new controlled access highway that would provide a high-speed corridor from IH 45 in Houston to the southern terminus of the Alvin Bypass. From IH 45 to south of Sims Bayou, the MLK controlled access highway corridor follows the same alignment as Alternative 2 – the Mykawa Corridor. South of Sims Bayou this alternative is proposed to turn southwest toward a new MLK/BW 8 intersection.

The Year 2025 R-TIP model includes: 1) an eight-lane controlled access highway with frontage roads on the Spur 5 section and 2) Alvin Bypass as a four-lane controlled access highway with frontage roads. The following facility types were modeled in this corridor: 1) freeway, 2) toll-way, and 3) HOT Lanes. Each facility type was analyzed as a stand-alone improvement to test its mobility effectiveness and to compare with other alternatives and the No-Build Alternative.

Alternative 3A – MLK Freeway

From Spur 5 to south of Sims Bayou, Alternative 3A follows the same alignment and has the same facility characteristics as Alternative 2A. South of Law Park the highway would cross Sims Bayou to the west side of the BNSF tracks with a single elevated structure. Between Sims Bayou and Airport Blvd the freeway is proposed to turn southwest to intersect with MLK Blvd. It would follow the MLK alignment southward to BW 8 and include a frontage road system. It is assumed that the BW 8/MLK intersection with elevated direct connectors would be completed.

South of BW 8, the freeway was modeled as four-lanes with frontage roads connecting to the northern terminus of the Alvin Bypass. This corridor assumes maximum use of existing roadway ROW where possible. It is proposed to run along existing Stone Road and then turn eastward between Cliffstone Road and FM 518, intersecting with FM 518 at FM 1128. Continuing southward along the existing FM 1128 alignment to CR 98, it would turn southeast onto the CR 98 alignment. The highway is then proposed to follow CR 98 to Pearland Sites Road where it would follow a southeasterly path to connect with the northern terminus of the Alvin Bypass.

Alternative 3B – MLK Toll-way

Alternative 3B proposes an all Toll-way facility. It would follow the same corridor as Alternative 3A. Between the Spur 5 connection and BW 8, it would be eight lanes. South of BW 8, it was modeled as four lanes in subsequent study efforts.

Alternative 3C – MLK HOT Lanes

This alternative would follow the same corridor as Alternatives 3A and 3B and includes both HOT lanes and GP lanes. This section would consist of four GP lanes and four HOT lanes between Spur 5 and BW 8. Between BW 8 and the northern end of the Alvin Bypass, it would consist of four HOT lanes only. The Alvin Bypass was modeled as a tolled facility with the existing frontage road system.

Summary of Alternatives 4A, B and C – Diagonal Corridor

This alternative is proposed as a new controlled access highway corridor between the northern terminus of the Alvin Bypass and SH 288. The following facility types were modeled in this corridor: 1) freeway, 2) Toll-way, and 3) HOT Lanes. Each facility type was analyzed as a stand-alone improvement to test its mobility effectiveness and to compare with other alternatives and the No-Build Alternative.

Alternative 4A – Diagonal Freeway

This alternative assumes an eight-lane Spur 5/Mykawa alignment from IH 45 to IH 610 is operational in 2025. Beginning at the CR 58 and SH 288 interchange and running diagonally in a southeasterly alignment, it would continue along Del Bello Road, maintaining its southeasterly direction to FM 1128. South of Mustang Bayou and Phillips Drive, the road is proposed to turn in a southeasterly direction to run along existing Belcher Road. South of Dusty Dawn Lane, it would connect with O'Donnell Road (CR 144) near Heights Road North. Proposed to run along CR 144 it would continue eastward along CR 144 until Herring Road, connecting with existing SH 35 between Barrell Road and Moore Road. This four-lane section would terminate at the northern end of the Alvin Bypass at SH 35/SH 35 Business.

Alternative 4B – Diagonal Toll-way

This alternative would follow the same alignment as Alternative 4A. Additionally the connection between State Highway 288 and the northern section of the Alvin Bypass would consist of four tolled lanes with frontage roads. The Alvin Bypass would consist of four tolled lanes and two frontage road lanes on each side of the highway.

Alternative 4C – Diagonal HOT Lanes

This alternative would follow the same alignment as Alternative 4A. The connection between SH 288 and the northern section of the Alvin Bypass would consist of four HOT lanes and no GP lanes. Frontage road service would be the same as described in Alternative 4A. The Alvin Bypass would consist of four HOT lanes and four frontage road lanes on each side of the highway.

Alternative 5 – Commuter Rail

Alternative 5 proposes a new passenger commuter rail corridor from downtown Houston at Union Station, located at Texas and Crawford Streets adjacent to Minute Maid Park, along the BNSF tracks to its southern terminus at the Alvin Depot located at the intersection of Gordon and Willis Streets east of SH 35 Business. For purposes of this analysis a dual track, bi-directional system was assumed with intermediate stations to be located in Pearland, at BW 8, and at IH 610 (interface with the METRO LRT). Park and ride lots were assumed at BW 8 and Alvin.

A feeder bus system was assumed to link with the commuter rail in both Harris and Brazoria Counties. Bus routes in Harris County would connect with the park and ride and intermodal station at BW 8. Additionally, new bus routes would connect FM 518 and FM 628 in Friendswood to the Pearland station. Meanwhile commuters on SH 6 and FM 1764 in Santa Fe and commuters on CR 58/Hillcrest Village and SH 35/SH 288 from Angleton would connect to the Alvin Depot station.

Findings of Preliminary Viable Alternatives Analysis

This evaluation investigated the route of the proposed build alternatives described to determine how well it met each of the stated MCFS goals listed in Chapter 3.

The results of each analysis were ranked as: Positive, Somewhat Positive, Neutral, Negative or Somewhat Negative; and these results were totaled to give each alternative an overall score. The results of this study are summarized in Table 5.3.

No-Build Alternative

The no-build alternative received Somewhat Negative or Negative ratings for all mobility criteria studies; therefore, it was given a Negative rating for mobility within the study corridor. It was given Neutral ratings for impact on the natural environment, social and community impact and funding considerations, since it stayed within existing ROW. Overall, this alternative received a negative rating.

ITS/TDM/TSM Alternative

The ITS/TDM/TSM alternative received somewhat negative or negative ratings for all mobility criteria studies; therefore, it was given a negative rating for mobility within the study corridor. It was given neutral ratings for impact on the natural environment, social and community resources and a somewhat positive score for funding considerations. Overall, this alternative received a negative rating.

Alternative 1 – Arterial Improvements

Alternative 1 received Somewhat Negative or Negative ratings for all mobility criteria studies; therefore, it was given a Negative rating for mobility within the study corridor. The arterial improvements were given a Somewhat Negative rating for social and community resources, as intersection improvements at IH 610/Long/Griggs would require additional ROW and cause business and residential relocations. This alternative was given a Neutral rating for impact on the natural environment and a Somewhat Positive score for funding considerations. Overall, this alternative received a negative rating.

Alternative 2A – Mykawa Freeway

This alternative rated somewhat negative on the floodplain and wetlands evaluation because it crosses several creeks and bayous and would permanently affect wetland areas. The Mykawa Freeway Alternative was conservatively rated as having a Somewhat Negative effect on vegetation and wildlife habitat and an overall Somewhat Negative rating for environmental considerations. It was ranked Negative for business and residential relocations, environmental justice, noise concerns and public input. Overall, the Mykawa Freeway received a Negative rating for social and community resources. Funding considerations for this alternative were also given a Negative rating. This alternative received a Positive score in the mobility analysis and overall this alternative received a Somewhat Negative rating.

Alternative 2B – Mykawa Toll-way

This alternative rated Somewhat Negative on the floodplain and wetlands evaluation because it crosses several creeks and bayous and would permanently affect wetland areas. The Mykawa Toll-way Alternative was conservatively rated as having a Somewhat Negative effect on vegetation and wildlife habitat and received an overall Somewhat Negative rating for environmental considerations. It was rated Negative for business and residential relocations, environmental justice, noise concerns and public input. The Mykawa Toll-way received a Negative rating for social and community resources. Funding considerations and mobility for this alternative were rated as Positive. Overall, this alternative received a Somewhat Positive score.

Alternative 2C – Mykawa HOT Lanes

The Mykawa HOT Lanes Alternative received a Negative rating for Level Of Service (LOS), and therefore a Somewhat Negative overall rating in the mobility analysis. This alternative rated Somewhat Negative on the floodplain and wetlands evaluation because it crosses several creeks and bayous and would permanently affect wetland areas. It was rated Negative for business and residential relocations, environmental justice, noise concerns and public input. The Mykawa HOT lanes received a Negative rating for social and community resources. Funding considerations for this alternative were Somewhat Positive. Overall, this alternative received a Somewhat Negative rating.

Alternative 3A – MLK Freeway

This alternative rated Somewhat Negative on the floodplain evaluation and for the wetlands criterion because it crosses several creeks and bayous and would permanently affect wetland areas. The MLK Freeway Alternative was conservatively rated as having a Somewhat Negative effect on vegetation, wildlife habitat and unique vegetation. The MLK Freeway received a Somewhat Negative rating for impacts on the natural environment. The MLK Freeway received Negative ratings for business/residential relocations, environmental justice, neighborhood integrity, and noise concerns.

The impacts on historic and cultural resources were rated Somewhat Negative for the MLK Freeway Alternative due to the corridor's proximity to two historical sites near the University of Houston. The central segment of the MLK alignment has the greatest potential to affect farmlands. Consequently, this alternative was given a Somewhat Negative rating for impact on prime farmlands. The MLK Freeway was given Neutral public input. All other criteria were given Neutral ratings, and overall, the MLK Freeway was given a Somewhat Negative rating for the social and community resource evaluation. Funding considerations for this alternative were also rated Negative. This alternative received a Positive score in the mobility analysis and overall, this alternative received a Somewhat Negative rating.

Alternative 3B – MLK Toll-way

This alternative rated Somewhat Negative on the floodplain evaluation and for the wetlands criterion because it crosses several creeks and bayous and would permanently affect wetland areas. The MLK corridor received Negative ratings for business/residential relocations, environmental justice, neighborhood integrity, and noise concerns. The impacts on historic and cultural resources were rated Somewhat Negative for the MLK Toll-way due to the corridor's proximity to two historical sites near the University of Houston. The central segment of the MLK Toll-way Alignment has the greatest potential to affect farmlands. The MLK Toll-way also received Negative public input. All other criteria were given Neutral ratings, and overall, the MLK Toll-way was given a Somewhat Negative rating for the social and community resource evaluation. Funding considerations and mobility were considered Positive. Overall, this alternative received a Somewhat Positive rating.

Alternative 3C – MLK HOT Lanes

The MLK HOT Lanes Alternative received a Negative rating for LOS, and therefore a Somewhat Negative overall rating in the mobility analysis. This alternative rated Somewhat Negative on the floodplain evaluation and for the wetlands criterion because it crosses several creeks and bayous and would permanently affect wetland areas. The MLK HOT Lanes received Negative ratings for business/residential relocations, environmental justice, neighborhood integrity, and noise concerns. The impacts on historic and cultural resources were rated Somewhat Negative for the MLK HOT Lanes due to the corridor's proximity to two historical sites near the University of Houston. The central segment of the MLK HOT Lanes alignment has the greatest potential to affect farmlands. The MLK HOT Lanes also received Negative public input. All other criteria were given Neutral ratings, and overall, the MLK HOT Lanes Alternative was given a Somewhat Negative rating for the social and community resource evaluation. Funding considerations were considered Somewhat Positive. Overall, this alternative received a Somewhat Positive rating.

Alternative 4A – Diagonal Freeway

The Diagonal Freeway received a Somewhat Negative score for mobility due to low average daily traffic volumes. This alternative rated Somewhat Negative for the floodplain evaluation because it crosses several creeks and bayous. The Diagonal Freeway Alternative rated Somewhat Negative for the wetlands criterion, as it would permanently affect wetland areas. This alternative was conservatively rated as having a Somewhat Negative effect on vegetation and wildlife habitat and a Somewhat Negative overall impact on the natural environment. This alternative was a given a Somewhat Negative rating for business/residential relocations, as well as impacts on historic and cultural resources and impact on prime farmlands. Noise concerns were considered negative for this alternative. The Diagonal Toll-way (Alternative 4B) and the Diagonal HOT Lanes (4C) received Negative public input, while the Diagonal Freeway was given a Neutral response. All other criteria were given Neutral ratings, and overall, the Diagonal Freeway Alternative was given a Somewhat Negative rating for social and community resource

considerations. Funding considerations for this alternative were also rated Negative. Overall, this alternative received a Somewhat Negative score.

Alternative 4B – Diagonal Toll-way

The Diagonal Toll-way Alternative received a Somewhat Negative score for mobility due to low average daily traffic volumes. This alternative rated Somewhat Negative for the floodplain evaluation, because it crosses several creeks and bayous. The Diagonal Toll-way rated Somewhat Negative for the wetlands criterion, as it would permanently affect wetland areas. This alternative was conservatively rated as having a Somewhat Negative effect on vegetation and wildlife habitat and a Somewhat Negative overall impact on the natural environment. This alternative was a given a Somewhat Negative rating for business/residential relocations, as well as impacts on historic and cultural resources and impact on prime farmlands. Noise concerns were considered Negative for this alignment. All other criteria were given Neutral or Positive ratings, and overall, the Diagonal Toll-way was given a Somewhat Negative rating for social and community resource considerations. Funding considerations for this alternative were Somewhat Positive. Overall, this alternative received a Somewhat Negative score.

Alternative 4C – Diagonal HOT Lanes

The Diagonal HOT Lanes Alternative received a Somewhat Negative score for mobility due to low average daily traffic volumes. This alternative rated Somewhat Negative for the floodplain evaluation because it crosses several creeks and bayous. The Diagonal HOT Lanes Alternative rated Somewhat Negative for the wetlands criterion, as it would permanently affect wetland areas. This alternative was conservatively ranked as having a Somewhat Negative effect on vegetation and wildlife habitat and a Somewhat Negative overall impact on the natural environment. This alternative was given a Somewhat Negative rating for business/residential relocations, as well as impacts on historic and cultural resources and impact on prime farmlands. Noise concerns were considered Negative for this alignment. The Diagonal HOT Lanes received Negative public input. All other criteria were given Neutral ratings, and overall, the Diagonal HOT Lanes Alternative was given a Somewhat Negative rating for social and community considerations. Funding considerations for this alternative were Somewhat Positive. Overall, this alternative received a Somewhat Negative score.

Alternative 5 – Commuter Rail

Alternative 5 was ranked Negative for the social and community evaluation, as it is proposed to run through downtown Pearland. The mobility analysis and natural environmental considerations were considered Neutral and funding considerations were considered somewhat positive. Overall, this alterative received a Neutral rating.

Table 5.3 – Summary of Preliminary Viable Alternatives Analysis

Alternative	Mobility	Natural Environmental	Social & Economic	Funding Considerations	Overall Alternative Ranking
No-Build	- -	⊖	⊖	⊖	- -
TDM/TSM	- -	⊖	⊖	+	- -
ALT-1: Arterial Improvements	- -	⊖	-	+	- -
ALT-2A: Mykawa Freeway	+ +	-	- -	- -	-
ALT-2B: Mykawa Toll-way	+ +	-	- -	+ +	+
ALT-2C: Mykawa HOT	-	-	- -	+	-
ALT-3A: MLK Freeway	+ +	-	-	- -	-
ALT-3B: MLK Toll-way	+ +	-	-	+ +	+
ALT-3C: MLK HOT	-	-	-	+	-
ALT-4A: Diagonal Freeway	-	-	-	- -	-
ALT-4B: Diagonal Toll-way	-	-	-	+	-
ALT-4C: Diagonal HOT	-	-	-	+	-
ALT-5: Commuter Rail	⊖	⊖	-	+	⊖

++ = Positive; + = Somewhat Positive; ⊖ = Neutral; - = Somewhat Negative - - = Negative

Description of Short List of Viable Alternatives

The Short List of Viable Alternatives was derived from the analysis presented in the previous section and through discussions with local stakeholders about the bundling of the Viable Preliminary Alternatives. This section illustrates the options that attracted the highest traffic volumes in year 2025 as modeled using the H-GAC Regional Transportation Network. Different from the viable alternatives that were each modeled separately, the Short List of Viable Alternatives are a "bundle" of improvements combining highways, arterial improvements, and a commuter passenger rail scenario. TxDOT determined that the controlled access highway alternatives would be studied only as toll-ways since the potential for inadequate funding for design and construction of new freeways would not keep pace with increasing traffic volumes in the SH 35 corridor over the next 20 years. Members of the Steering/Advisory Committees reviewed the proposed Short List and confirmed that these alternatives had the most promise to achieve the goals and objectives of the SH 35 MCFS. This review process also involved the removal of the Diagonal Corridor Alternatives and the creation of a "Hybrid" between the Mykawa and MLK Alternatives. This Hybrid Corridor, in conjunction with the Mykawa and MLK Alternatives became the Recommended Viable Alternatives.

While the Preliminary Viable Alternatives were analyzed as stand-alone options, each of the Recommended Viable Alternatives (listed below) is a set of improvements "bundled" together. These alternatives underwent a more detailed traffic and alignment analysis and investigation of social, community, and natural environment affects.

The evaluation methodology to screen the Short List of Viable Alternatives, known as "build" alternatives, is distinguished by a more detailed level of quantitative analysis utilizing an expanded data set. A technical evaluations methodology, consistent with the guidelines established for major investment studies, was employed to screen the Recommended Viable Alternatives. The study goals and objectives were then used to develop an additional screening and evaluation criteria (listed in Technical Memorandum 1), against which to compare the various alternatives. The evaluation criteria are as follows:

- Improve North/South Mobility Along the Corridor
- Provide a Multi-Modal Transportation System
- Improve Transportation Infrastructure
- Preserve and Enhance Social/Community and Economic Viability
- Protect the Natural Environment
- Improve Safety for the Traveling Public

Short List of Viable Alternatives:

- Alternative I – Mykawa Corridor
- Alternative II – MLK Corridor
- Alternative III – Hybrid Corridor

Each alternative recognizes a different controlled access corridor toll-way accompanied by arterial improvements and a commuter passenger rail option common to each alternative.

Arterial (Non-Highway) Improvements Common to All Viable Alternatives

- SH 35 – FM 518 to North Terminus of Alvin Bypass widened to six lanes.
- Alvin Bypass – completed as a four-lane toll-way with frontage road system and grade separations at SH 6 and the Old Galveston railroad.
- SH 35 – Alvin Bypass to FM 523 widened to four lanes.
- FM 523 – SH 35 to SH 288 widened to four lanes.
- Commuter Passenger Rail Corridor – Union Station in downtown Houston to Alvin Depot. Additional train stations would be located at Pearland, BW 8, and IH 610.

Alternative 1 – Mykawa Corridor

Mykawa Toll-way

The Mykawa Toll-way would connect at Spur 5 adjacent to the University of Houston and continue southward as a high-speed corridor, terminating at the Alvin Bypass. It was assumed that the controlled access section of Spur 5 from IH 45 to Old Spanish Trail and the Alvin Bypass would be completed by 2025. Between Spur 5 and IH 610 it would be an eight-lane toll-way mostly within existing TxDOT ROW. It is anticipated that additional ROW would be required to upgrade the IH 610 interchange A bridge, beginning north of Kuhlman Gully, would be needed to carry the toll-way over the Griggs Road, Long Drive, and IH 610 intersections. The IH 610/SH35 intersection would be upgraded to a bi-level interchange that would include ROW for the METRO LRT.

South of IH 610, the roadway would run as an eight-lane toll-way along the east side of the existing Mykawa Road and Burlington Northern and Santa Fe (BNSF) Railroad tracks utilizing existing TxDOT ROW. South of Bellfort Blvd, the toll-way would transition from eight lanes to six lanes. At Sims Bayou (south of Law Park), the highway would cross from the east to the west side of the BNSF tracks with a single elevated structure. From this point south to BW 8, the proposed facility would run along the west side of the existing Mykawa Road to new elevated direct connectors at BW 8.

A four-lane toll-way would then continue south of BW 8, along the west side of the BNSF alignment, to merge with the northern terminus of the Alvin Bypass. It would include grade separations at FM 518, SH 6, and the Old Galveston Rail Road crossings. This alternative assumes the arterial improvements and commuter passenger rail option common to all alternatives.

Table 5.4 summarizes the facility type and lane designations between the Spur 5 connector and SH 288, including the Alvin Bypass and FM 523 in Angleton.

Table 5.4 – Alternative 1 – Mykawa Corridor Facility Type and Lane Designations

Segment	Toll-way Lanes	Frontage Road Lanes
Spur 5 – IH 610	8	4
IH 610 - Bellfort	8	-
Bellfort – Sims Bayou	6	-
Sims Bayou – BW 8	6	2
BW 8 – Brookside Road	4	2
Brookside Road – Cornett Street	4	-
Cornett Street – Alvin Bypass North Terminus	4	2
SH 35 Alvin Bypass	4	4

Alternative 2 – MLK Corridor

From the Spur 5 connector to Sims Bayou, the MLK Toll-way is proposed to follow the same alignment as Alternative I, the Mykawa Corridor. Between Sims Bayou and Airport Blvd., this alternative would turn to the southwest and intersect with the MLK Boulevard alignment. It would continue southward along the existing MLK alignment to BW 8, where the intersection would be improved with elevated direct connectors.

South of BW 8, the MLK Toll-way is proposed to run as a four-lane facility along existing Stone Road and turn east between Cliffstone Road and FM 518, connecting with FM 518 at FM 1128. It would then continue south along the FM 1128 alignment to CR 98 turning southeast along CR 98 to ultimately merge with SH 35 at the northern end of the Alvin Bypass. This alternative assumes the arterial improvements and commuter passenger rail option that is common to all alternatives.

Table 5.4 summarizes the facility type and lane designations between Spur 5 and the southern termination of the Alvin Bypass.

Table 5.4 – Alternative 2 – MLK Corridor Facility Type and Lane Designations

Segment	Toll-way Lanes	Frontage Road Lanes
Spur 5 – IH 610	8	4
IH 610 - Bellfort	8	-
Bellfort – Sims Bayou	6	-
Sims Bayou – BW 8	6	2
BW 8 – Pearland Sites Road	4	2
Pearland Sites Road – O'Donnell Road (CR 144)	4	-
O'Donnell Road (CR 144) – Herring Road	4	2
Herring Road – Alvin Bypass North Terminus	4	-
SH 35 Alvin Bypass	4	4

Alternative 3 – Hybrid Corridor

(Mykawa Toll-way North of BW 8 and MLK Toll-way South of BW 8)

The Hybrid Toll-way is proposed to follow the Mykawa Toll-way Corridor north of BW 8 and the MLK Toll-way Corridor south of BW 8. This configuration assumes that BW 8 would be utilized as the connector segment for vehicles traveling north/south on the Hybrid Toll-way or west to connect with SH 288 or east to connect with SH 35/Telephone Road or to IH 45. This alternative assumes the arterial improvements and commuter passenger rail option common to all alternatives.

Table 5.5 summarizes the facility type and lane designations between Spur 5 and the southern terminus of the Alvin Bypass.

Table 5.5 – Alternative 3 – Hybrid Corridor Facility Type and Lane Designations

Segment	Toll-way Lanes	Frontage Road Lanes
Spur 5 – IH 610	8	4
IH 610 – Bellfort	8	-
Bellfort – Sims Bayou	6	-
Sims Bayou – BW 8	6	2
BW 8 – Pearland Sites Road	4	2
Pearland Sites Road – O'Donnell Road (CR 144)	4	-
O'Donnell Road (CR 144) – Herring Road	4	2
Herring Road – Alvin Bypass North Terminus	4	-
SH 35 Alvin Bypass	4	4

Evaluation of Short List of Viable Alternatives

The next step in the SH 35 MCFS was to once again evaluate each of the Short List of Viable Alternatives. This process was accomplished by subjecting each alternative to a more detailed traffic and alignment analysis and investigation of social, community, and natural environment affects. The evaluation methodology to screen the Short List of Viable Alternatives, known as "build" alternatives, is distinguished by a more detailed level of quantitative analysis utilizing an expanded data set. For planning year 2025, travel characteristics and traffic volumes were modeled and analyzed. For each build scenario facility type identified, preliminary traffic and revenue studies were performed and exploratory hydraulic, natural environment, social, and community data were specified. Arterial upgrades to existing streets were analyzed along with new controlled access highway corridors and a commuter passenger rail option. Alternatives were screened for mobility effectiveness and potential social and environmental impacts and then ranked accordingly. In addition, a financial analysis was conducted to estimate the life cycle cost (including capital and operations and maintenance (O&M) costs) of each alternative. For planning purposes, capital and O&M costs are provided in 2010 dollars, while traffic modeling was conducted assuming a 2025 opening year. This iterative evaluation process narrowed the "Short List of Viable Alternatives" to the "Most Feasible Alternative."

CHAPTER 6: TRANSPORTATION NETWORK FORECASTS

The H-GAC Travel Demand Model

The development and use of regional models capable of simulating existing travel patterns and enabling forecasts of future travel demands based on various land uses and network scenarios is mandated by federal regulations for all metropolitan planning organizations in the nation.

This chapter provides a brief summary of H-GAC's regional travel demand modeling procedures including data input and model output. The Track 0 version, EMME/2 software package of the H-GAC 2025 R-TIP regional travel demand model as shown in Figure 6.1 was used for the SH 35 MCFS. It follows the traditional four-step planning process of trip generation, trip distribution, mode-choice, and trip assignment. As with most transportation models, the primary inputs to the H-GAC model are: supply side—available transportation networks (roadways and transit), and demand side—socioeconomic data such as population, households, employment, income level, etc.

The development of the regional travel demand model in the Houston area is a cooperative effort between three agencies: the Houston-Galveston Area Council (H-GAC), the Texas Department of Transportation (TxDOT), and the Metropolitan Transit Authority (METRO). METRO provides transit network information and TxDOT assists in the preparation of highway supply characteristics. H-GAC develops demographic projections and implements the entire model chain into an integrated system.

The eight-county Houston-Galveston-Brazoria Consolidated Metropolitan Statistical Area (CMSA) represent the geographic area covered by the model. These counties are: Harris, Brazoria, Chambers, Fort Bend, Galveston, Liberty, Montgomery, and Waller. This eight-county area covers more than 7,800 square miles and has been designated as the Transportation Management Area (TMA). All of the freeways, Toll-ways, principal and major arterials, and many collector streets in the eight-county area are represented in the model.

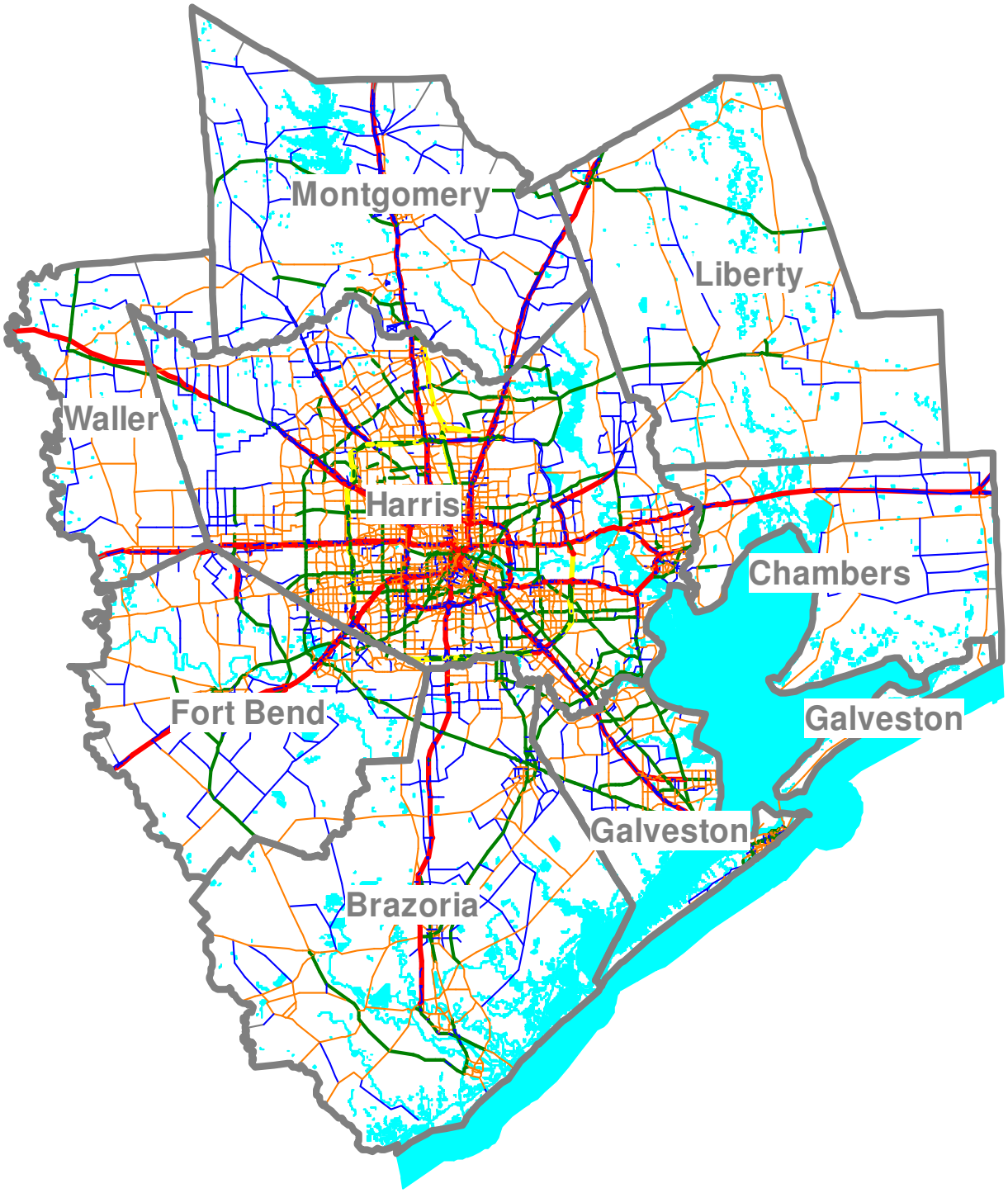
People living and working in the eight-county area and special generators, such as airports, create travel demand. Trips are categorized by home-end (origin) called "productions" and destinations such as employment centers known as "attractions." Employment and school enrollment data make up the trip attraction model. Employment data is classified by retail, office, industrial, and other categories. There are three categories of special generators: airports and ports, beaches, and parks. The result of the trip generation model analysis is an estimation of trip productions and attractions for seven trip purposes.

The trip productions and attractions are linked in the trip distribution model. Simply stated, the model determines the most likely locations for destinations of employed persons.

This module of the modeling process determines the likely travel mode for each person trip in the trip table.

Results from the traffic assignment model and post-assignment analyses of these results are the primary reasons for the development and implementation of the model. An estimate of the future travel demand and traffic congestion is provided on every link in the model. The results are used to compute the vehicle miles traveled (VMT), vehicle hours traveled (VHT), average speed, congestion, and many other performance measures used for comparing the effectiveness of various alternatives.

Figure 6.1 – H-GAC Regional Travel Demand Model



SH 35 Corridor Study Area Model Development

Enhancements were made to H-GAC's original model to improve the accuracy of the travel demand forecasts in the SH 35 corridor. These enhancements included expansion of the network and refinement of the traffic analysis zone (TAZ) system.

For travel modeling purposes, the model area was enlarged to an area surrounding the SH 35 MCFS study area. This area is defined as the Study Modeling Area (SMA) or model enhancement area. The vast majority of traffic impact associated with the various alternative improvements in the corridor is expected to be in this SMA.

The H-GAC regional travel model totaled 2,954 internal zones that primarily follow the census track and block-group boundaries. Since the census boundaries are typically based on population and household size, the zones tend to be in smaller geographic segments in urbanized and developed suburban areas. Conversely, in rural areas that mostly consist of farm and ranch land, such as the SH 35 corridor between the cities of Alvin and Angleton, the TAZ represents a larger geographic area. Travel demand models assign all trips produced from and attracted to a TAZ via a single node called a centroid. Therefore, smaller geographic zones result in more accurate travel forecasts than do larger zones. For the SH 35 MCFS, it was prudent to split the large zones in the more rural and undeveloped segments of the SH 35 corridor into smaller zones to obtain more accurate estimates from the model. URS conducted a thorough examination of the original zone system in the SMA, specifically along the SH 35 corridor, and then split each TAZ into two or more new zones. Existing and future highway networks, railroad tracks, water bodies, and the 2000 census block boundaries were considered during the zone splitting process. For the future year 2025, demographic and employment splits were assumed to be similar to the base year 2002, except for some selected TAZs.

Major roadways are represented in the model highway network. The network is used in determining the shortest path between two points and in calculating a zone-to-zone impedance matrix (e.g., distance, time, toll, etc.) that forms the primary input to the trip distribution, mode-choice, and traffic assignment steps of the model chain.

Large regional transportation models such as the H-GAC model include all freeways, Toll-ways, state highways, other principal arterials, and major collectors. However, the H-GAC model does not include local streets and many collectors. Again, to improve travel-forecasts accuracy, URS added some local and collector roadway sections into the base year and future year highway networks. These roads would also support the additional TAZs in the SH 35 corridor.

For the SH 35 corridor model, URS performed an iterative validation process to achieve a reasonable agreement between the observed conditions and estimated values in the model. This process builds confidence in the model's output and its ability to more

accurately predict future traffic. Model validation for the SH 35 MCFS specifically focused on improving the correlation between the actual traffic counts and model assignments in daily traffic levels.

Based on the results of various validation tests, it was determined that the model could reasonably replicate the existing traffic in the overall model study area. However, the model traffic volumes along the SH 35 corridor, especially around Pearland and Alvin, showed significant deviation from ground counts and needed to be improved. This significant difference on the SH 35 corridor became the focus of the URS model validation effort. All network links in the corridor, including zonal centroid connectors, were carefully examined and several iterations of network changes were performed to improve the model assignment.

The future year 2025 model provided by H-GAC was revised by URS to create a no-build scenario for the SH 35 MCFS.

Travel Model Results

Results of the SH 35 MCFS modeling analysis for the base year 2002 and future year 2025 no-build are summarized in this section.

The number of households in the SH 35 corridor is projected to grow from 275,100 in year 2002 to 431,100 in 2025, a growth of 57 percent or 156,000 households. For the same period the employment in the corridor is projected to grow by 91,400 from 138,000 to 229,400 or 66 percent. Total trip productions grew from 1.3 million to 2.2 million or 72 percent, faster than the growth in demographics and employment. The total trips in the eight-county TMA area are projected to grow from 12.1 million in 2002 to 19.4 million in 2025, a growth factor of 60 percent or an average annual growth rate of 2.1 percent. The most rapid growth in trip making in the SH 35 study area is projected at 80 percent in the Pearland area.

The number of vehicle miles traveled represents a true picture of travel demand on the study area roadway system. The study area VMT is projected to grow at an average annual rate of 2.1 percent from 2002 to 2025. The Pearland area would experience the highest growth rate at 2.7 percent annual growth rate while the Angleton area depicts the slowest growth rate in the corridor at 1.3 percent annually – still a significant growth rate.

Vehicle hours traveled (VHT) in the study area depend on the travel speed, traffic volume, and travel distance. VHT in the SH 35 study area is projected to grow at an average annual rate of 2.1 percent in the period between 2002 and 2025. The Pearland area would again experience the highest growth rate at 2.5 percent annual rate of growth while the Angleton area depicts the slowest growth rate in the corridor at 1.4 percent annually.

The average travel speeds in study area are calculated using the VMT and VHT numbers. A slight reduction in overall travel speed is projected in the study area from 45.09 miles-per-hour in 2002 to 44.19 in 2025. The reduction is small due to many roadway improvement projects included in the 2025 highway network.

The regional model was used to perform a generalized Level of Service (LOS) analysis based on the planning level volume-to-capacity (V/C) ratios. This planning level analysis is not a substitute for the operational analysis being performed by the SH 35 Study Team for peak hours using Highway Capacity Manual procedures and software, such as the Synchro LOS analysis software package. It does, however, provide an initial assessment of future additional improvement needs.

URS compared the daily basis model-estimated traffic volumes for each link in the network with the planning capacities assigned to each roadway link in the model and calculated the V/C ratio for each network link. Results show a deterioration of service in the future. On the SH 35 alignment, traffic volumes between Alvin and Pearland are expected to exceed the available capacity for many roadway segments.

Travel demand in the SH 35 corridor is projected to increase significantly between 2002 and 2025 due to increases in total households and employment. Analysis of many performance measures such as traffic volume, VMT, and VHT indicate the demand will outpace growth in available roadway capacities, which will result in increased traffic congestion and travel delays within the corridor.

CHAPTER 7: ENVIRONMENTAL SCREENING OF ALTERNATIVES

Findings of Natural Environment Evaluation

The natural environment consists of vegetation and wildlife habitats, unique vegetation and habitat features, and state and federally listed rare, threatened, and endangered species. Each of the build alternative corridors was investigated to assess the potential impacts on these natural environment factors. The natural environment criteria are listed below.

- Vegetation and Wildlife Habitat
- Rare Vegetation Communities
- Riparian and Bottomland Hardwood Forests
- Threatened and Endangered Species
- Hazardous Waste Sites
- Flood Plains and Jurisdictional Water Crossings
- Water Resources
- Floodplains
- Surface Waters
- Wetlands
- Hydraulic Evaluation
- Parks and Park Facilities
- Public Input

This evaluation investigated the route of each proposed build alternative to discern the potential level of impact to the natural environment that would result from expansion of the transportation system. Each of the build alternatives would require acquisition of right-of-way to develop the proposed new transportation corridors. Considering the environmental and ecological importance of riparian and bottomland hardwood forests in these areas and based upon the fact that they are considered unusual habitat features under the TxDOT – TPWD MOU, impacts to riparian habitats should be minimized during project planning. To the extent these habitats are affected by transportation system expansion, compensatory mitigation should be considered to restore ecosystem functions that may be impaired or lost during construction. Affects on the natural environment identified in the SH 35 MCFS will undergo an environmental analysis in the subsequent DEIS and EIS studies.

Natural environment impacts were ranked as: positive, somewhat positive, neutral, negative or somewhat negative. A more detailed discussion of the analysis conducted to develop the ratings presented in Table 7.1 is provided in Technical Memorandum No. 3.

Table 7.1 – Summary of Natural Environment Evaluation

Alternative	Surface Waters	100-Year Floodplain	Wetlands	Potential Hazardous Material Sites	Vegetation and Wildlife Habitats	Unique Vegetation	Rare, Threatened, and Endangered Species	Wildlife and Waterfowl Refuges	Overall Ranking
TDM / TSM / ITS	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖
ALT I: Mykawa Corridor	-	-	-	⊖	-	⊖	⊖	⊖	-
ALT II: MLK Corridor	-	-	-	⊖	-	-	⊖	⊖	-
Alt III - Hybrid Corridor	-	-	-	⊖	-	-	⊖	⊖	-
+ + = Positive; + = Somewhat Positive; ⊖ = Neutral; - = Somewhat Negative; - - = Negative									

When compared to the build alternatives that propose expansion of the transportation system in the study area, the TDM/TSM Alternative ranked neutral. This Alternative would make only minor changes to the network and traffic operations.

The Mykawa Corridor was found to have a somewhat negative overall impact on the natural environment. These effects were minimized by the fact that many of the proposed improvements run along existing right-of-way.

The MLK Corridor was found to have some negative impacts on floodplains and vegetation. The proposed MLK Toll-way alignment was slightly more intrusive than that of the Mykawa Corridor, as the segment between Sims Bayou and BW 8 runs partially along undeveloped land. However, most of the other proposed improvements run along existing right-of-way. Overall, the MLK Corridor alternative was found to have a somewhat negative impact on the natural environment.

The Hybrid Corridor was found to have a somewhat negative impact on the natural environment. These effects were minimized by the fact that many of the proposed improvements run along existing right-of-way. The toll-way corridor was found to be less intrusive than the MLK Corridor, as it runs along existing Mykawa Road north of BW 8.

The Commuter Rail Alternative was given a rank of somewhat negative for the floodplain evaluation, because it crosses several creeks and bayous. All other criteria were deemed to be neutral.

Findings of Social and Community Resources Evaluation

Social and community resources pertain to the human and built environments. Land use in the SH 35 study area is diverse and reflects these distinct types: urban industrial, commercial, and residential (Figures 7.1 through 7.3); major activity centers (e.g., University of Houston, Hobby Airport, and Alvin Community College); central business districts in smaller cities; large suburban residential communities supported by major retail centers; rural farmland/ranchland devoted to agricultural production; and vast oil and gas well fields.

The Study Team's initial investigation of potential impacts to the social and community resources within the SH 35 corridor was a qualitative assessment and is presented in Technical Memorandum No. 3. The impacts discussed in Technical Memorandum No. 3 are based on a review of preliminary corridors, not definitive alignments.

In Technical Memorandum No. 4, each proposed corridor was investigated to ascertain the potential for impacts to individual residences or businesses, neighborhoods, cultural and historic sites, and for any environmental justice issues. Data resources reviewed in this analysis included the SH 35 MCFS environmental land use constraints maps, field verifications, and the Year 2000 Census database. Social and community resources were ranked on the following qualitative scale: positive, somewhat positive, neutral, somewhat negative and negative. This preliminary review references Federal, state, and local agencies with regulatory jurisdiction. Table 7.2 summarizes the results of the social and community impacts evaluation for each of the Viable Alternatives addressed in this memorandum.

Table 7.2 – Summary of Social and Community Resource Evaluation

Alternative	Business/ Residential Relocations	Environ-mental Justice	Neighbor-hood Integrity	Historic and Cultural Resources	Noise	Visual and Aesthetics	Prime and Unique Farmlands	Parks and Park Facilities	Public Input	Overall Rating
TDM / TSM / ITS	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖
ALT I: Mykawa Corridor	- -	- -	- -	-	- -	- -	⊖	⊖	+ +	- -
ALT II: MLK Corridor	- -	- -	- -	-	- -	- -	-	⊖	+ +	-
ALT III: Hybrid Corridor	- -	- -	- -	-	- -	- -	-	⊖	N/A	-
+ + = Positive; + = Somewhat Positive; ⊖ = Neutral; - = Somewhat Negative; - - = Negative										

Because the TDM/TSM/ITS alternative made only minor changes to the existing roadways, this alternative was determined to have a neutral impact on all components of the social and community evaluation, and therefore received an overall neutral ranking.

Alternative 1 – Mykawa Corridor

The Mykawa Corridor least achieved the goal of minimizing social and community impacts, as it ran through the center of downtown Pearland. Thus, the Mykawa Corridor received a negative overall ranking.

Alternative 2 – MLK Corridor

The MLK Corridor was found to somewhat achieve the goal of minimizing social and community impacts. It was less divisive to downtown Pearland than the Mykawa alternative, but required acquiring more right-of-way in undeveloped areas north of BW 8 than the Mykawa alignment. The MLK received a somewhat negative overall ranking.

Alternative 3 – Hybrid Corridor

The Hybrid Corridor most achieved the goal of minimizing social and community impacts, as it avoided downtown Pearland and was not as destructive to existing farmland as the MLK Corridor.

FIGURE 7.1 - HOUSTON CONSTRAINT MAP

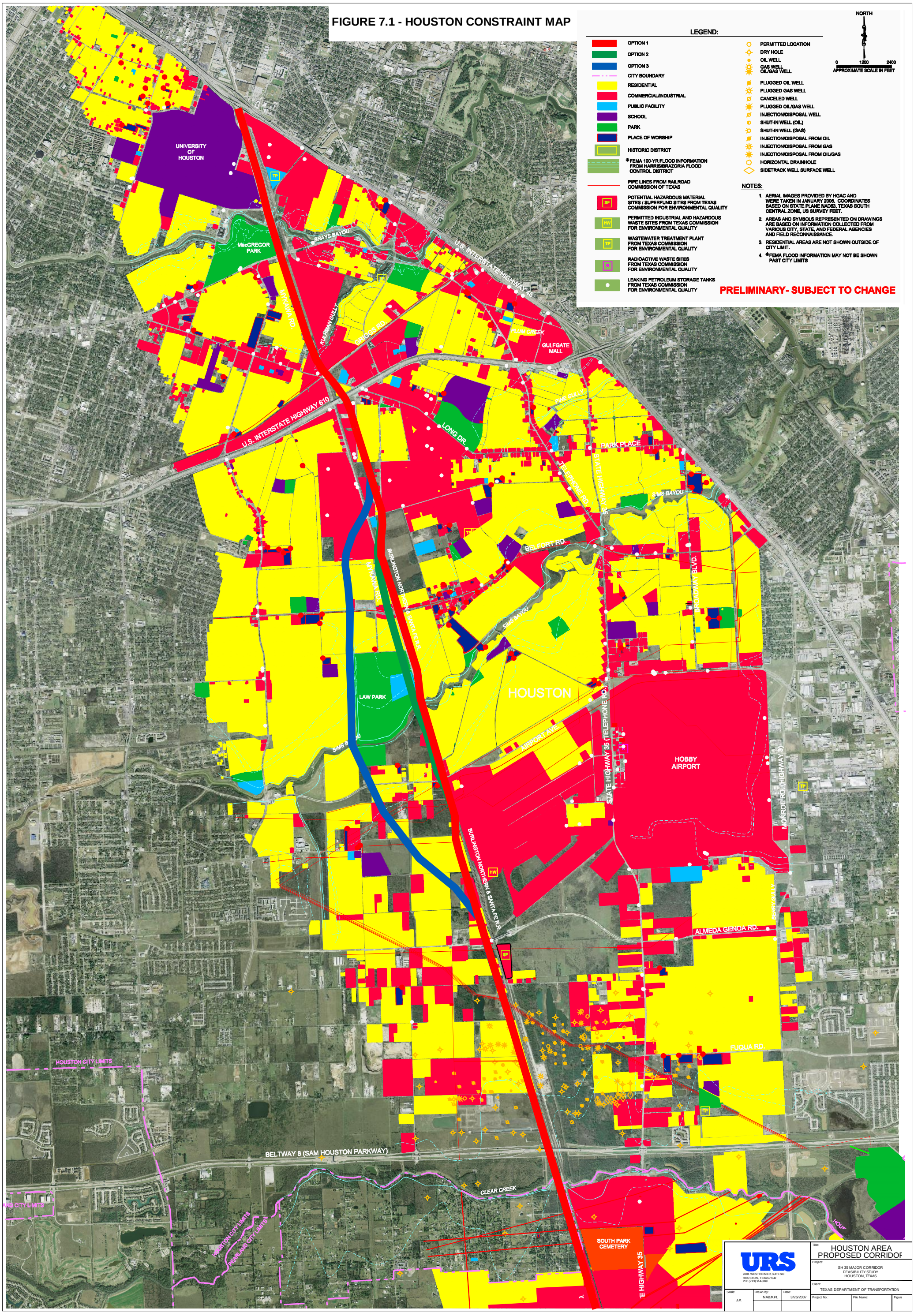
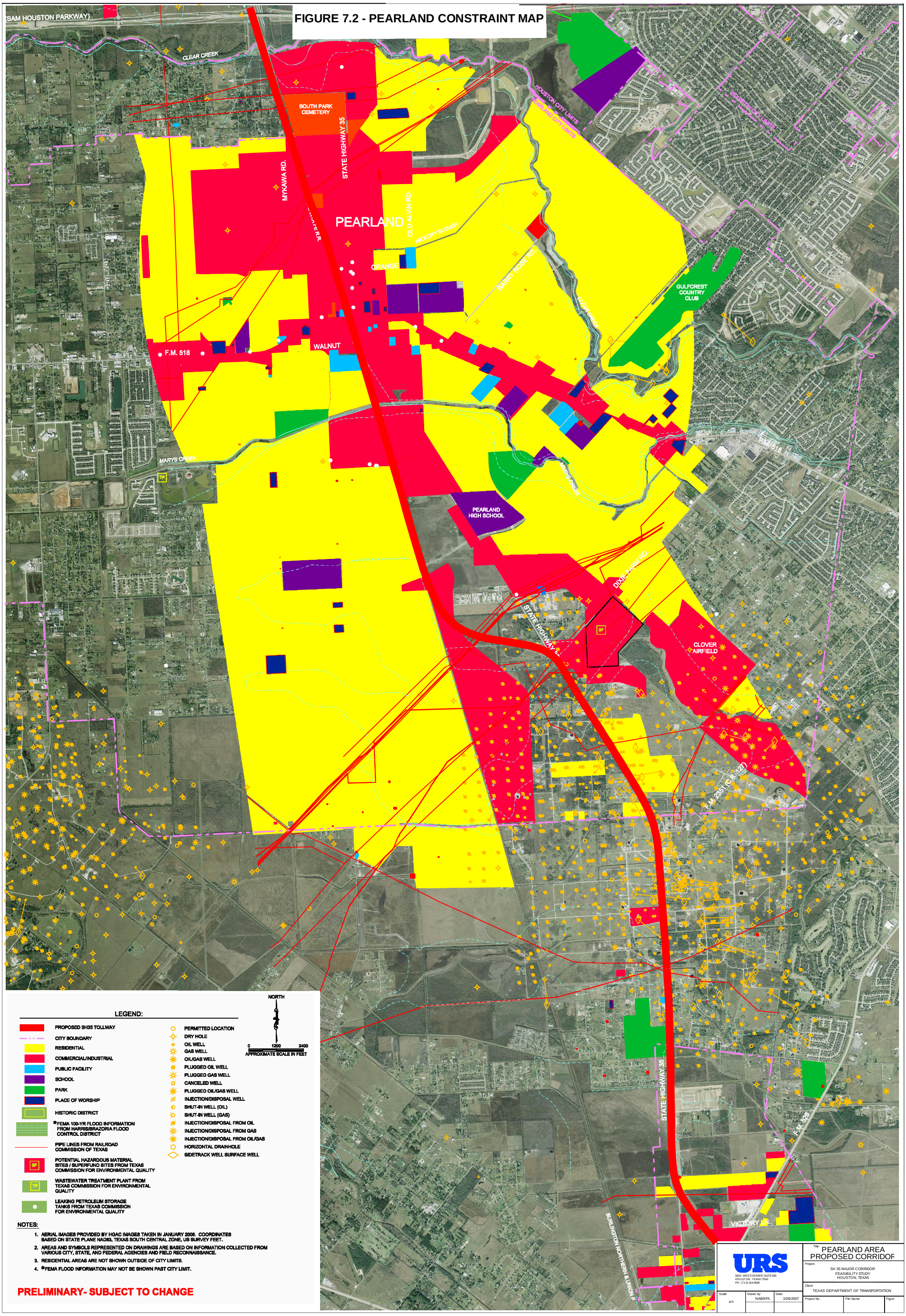


FIGURE 7.2 - PEARLAND CONSTRAINT MAP



LEGEND:

- PROPOSED SH35 TOLLWAY
- CITY BOUNDARY
- RESIDENTIAL
- COMMERCIAL/INDUSTRIAL
- PUBLIC FACILITY
- SCHOOL
- PARK
- PLACE OF WORSHIP
- HISTORIC DISTRICT
- *FEMA 100-YR FLOOD INFORMATION FROM HARRIS/BRAZORIA FLOOD CONTROL DISTRICT
- PIPE LINES FROM RAILROAD COMMISSION OF TEXAS
- POTENTIAL HAZARDOUS MATERIAL SITES / SUPERFUND SITES FROM TEXAS COMMISSION FOR ENVIRONMENTAL QUALITY
- WASTEWATER TREATMENT PLANT FROM TEXAS COMMISSION FOR ENVIRONMENTAL QUALITY
- LEAKING PETROLEUM STORAGE TANKS FROM TEXAS COMMISSION FOR ENVIRONMENTAL QUALITY
- PERMITTED LOCATION
- DRY HOLE
- OIL WELL
- GAS WELL
- OIL/GAS WELL
- PLUGGED OIL WELL
- PLUGGED GAS WELL
- CANCELED WELL
- PLUGGED OIL/GAS WELL
- INJECTION/DISPOSAL WELL
- SHUT-IN WELL (OIL)
- SHUT-IN WELL (GAS)
- INJECTION/DISPOSAL FROM OIL
- INJECTION/DISPOSAL FROM GAS
- INJECTION/DISPOSAL FROM OIL/GAS
- HORIZONTAL DRAINHOLE
- SIDETRACK WELL SURFACE WELL

NORTH

0 1200 2400

APPROXIMATE SCALE IN FEET

NOTES:

1. AERIAL IMAGES PROVIDED BY HGAC IMAGES TAKEN IN JANUARY 2006. COORDINATES BASED ON STATE PLANE NAD83, TEXAS SOUTH CENTRAL ZONE, US SURVEY FEET.
2. AREAS AND SYMBOLS REPRESENTED ON DRAWINGS ARE BASED ON INFORMATION COLLECTED FROM VARIOUS CITY, STATE, AND FEDERAL AGENCIES AND FIELD RECONNAISSANCE.
3. RESIDENTIAL AREAS ARE NOT SHOWN OUTSIDE OF CITY LIMITS.
4. *FEMA FLOOD INFORMATION MAY NOT BE SHOWN PAST CITY LIMIT.

PRELIMINARY- SUBJECT TO CHANGE

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9801 WESTHEIMER, SUITE 500
HOUSTON, TEXAS 77042
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Scale:	Drawn by:	Date:
AS	NAB/KPL	3/26/2007

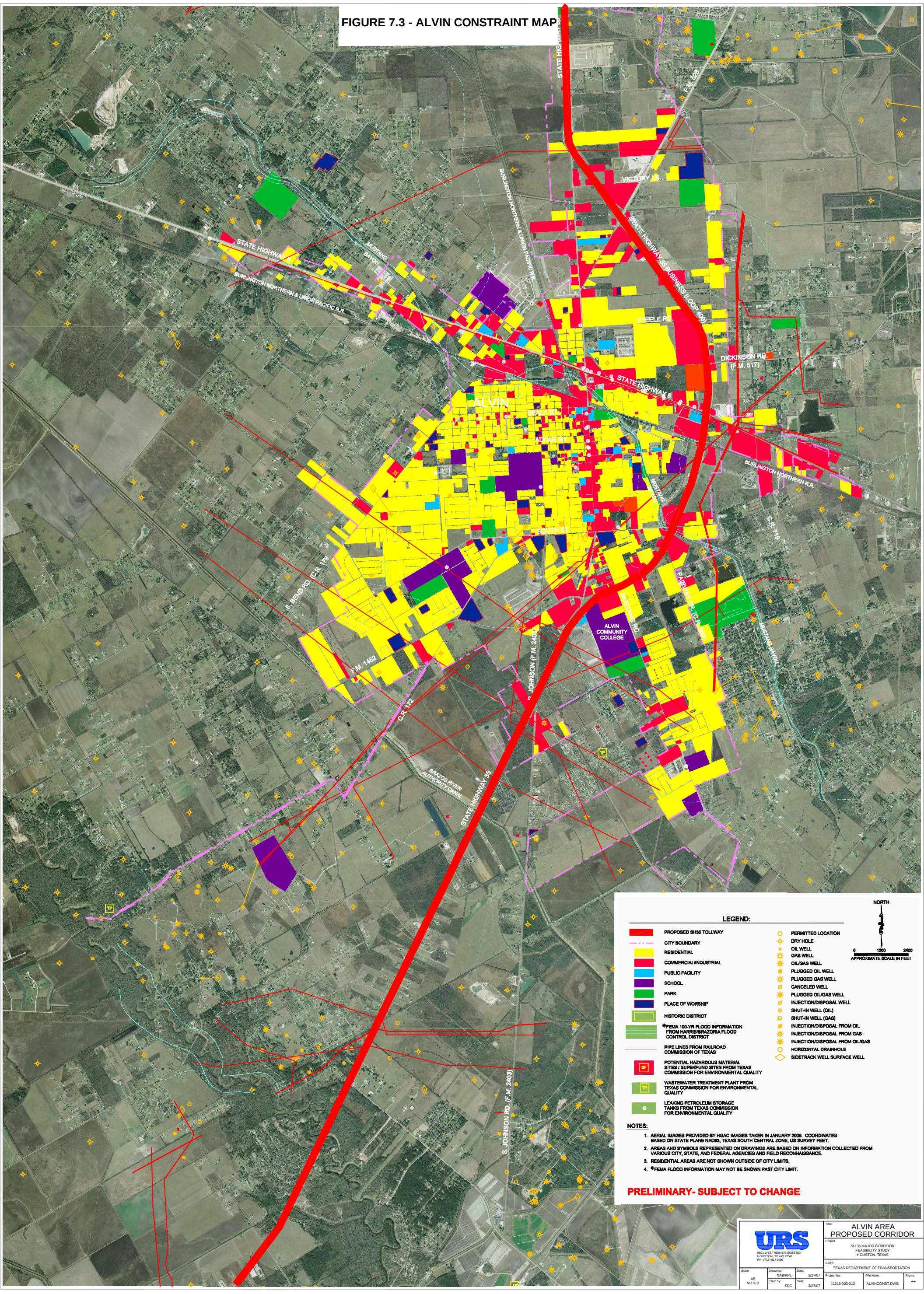
Title: PEARLAND AREA PROPOSED CORRIDOR

Project: SH 35 MAJOR CORRIDOR FEASIBILITY STUDY HOUSTON, TEXAS

Client: TEXAS DEPARTMENT OF TRANSPORTATION

Project No.:	File Name:	Figure

FIGURE 7.3 - ALVIN CONSTRAINT MAP



LEGEND:

- PROPOSED SH35 TOLLWAY
- CITY BOUNDARY
- RESIDENTIAL
- COMMERCIAL/INDUSTRIAL
- PUBLIC FACILITY
- SCHOOL
- PARK
- PLACE OF WORSHIP
- HISTORIC DISTRICT
- *FEMA 100-YR FLOOD INFORMATION FROM HARRIS/BRAZORIA FLOOD CONTROL DISTRICT
- PIPE LINES FROM RAILROAD COMMISSION OF TEXAS
- POTENTIAL HAZARDOUS MATERIAL SITES / SUPERFUND SITES FROM TEXAS COMMISSION FOR ENVIRONMENTAL QUALITY
- WASTEWATER TREATMENT PLANT FROM TEXAS COMMISSION FOR ENVIRONMENTAL QUALITY
- LEAKING PETROLEUM STORAGE TANKS FROM TEXAS COMMISSION FOR ENVIRONMENTAL QUALITY
- PERMITTED LOCATION
- DRY HOLE
- OIL WELL
- GAS WELL
- OIL/GAS WELL
- PLUGGED OIL WELL
- PLUGGED GAS WELL
- CANCELED WELL
- PLUGGED OIL/GAS WELL
- INJECTION/DISPOSAL WELL
- SHUT-IN WELL (OIL)
- SHUT-IN WELL (GAS)
- INJECTION/DISPOSAL FROM OIL
- INJECTION/DISPOSAL FROM GAS
- INJECTION/DISPOSAL FROM OIL/GAS
- HORIZONTAL DRAINHOLE
- SIDETRACK WELL SURFACE WELL

NORTH

0 1200 2400

APPROXIMATE SCALE IN FEET

NOTES:

1. AERIAL IMAGES PROVIDED BY HGAC IMAGES TAKEN IN JANUARY 2006. COORDINATES BASED ON STATE PLANE NAD83, TEXAS SOUTH CENTRAL ZONE, US SURVEY FEET.
2. AREAS AND SYMBOLS REPRESENTED ON DRAWINGS ARE BASED ON INFORMATION COLLECTED FROM VARIOUS CITY, STATE, AND FEDERAL AGENCIES AND FIELD RECONNAISSANCE.
3. RESIDENTIAL AREAS ARE NOT SHOWN OUTSIDE OF CITY LIMITS.
4. *FEMA FLOOD INFORMATION MAY NOT BE SHOWN PAST CITY LIMIT.

PRELIMINARY- SUBJECT TO CHANGE

URS
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Title: ALVIN AREA PROPOSED CORRIDOR			
Project: SH 35 MAJOR CORRIDOR FEASIBILITY STUDY HOUSTON, TEXAS			
Client: TEXAS DEPARTMENT OF TRANSPORTATION			
Scale: AS NOTED	Drawn by: NAB/KPL	Date: 3/27/07	
	Chk'd by: SRC	Date: 3/27/07	
Project No.: 41216-003-012	File Name: ALVINCONST.DWG	Figure: --	

CHAPTER 8: EVALUATION OF VIABLE ALTERNATIVES

Each of the three viable alternatives was compared on how it achieved the study goals outlined in *Technical Memorandum 1*. The adopted goals for the MCFS were to:

- Improve North/South Mobility Along the Corridor
- Provide a Multi-Modal Transportation System
- Improve Transportation Infrastructure
- Preserve and Enhance Social/Community and Economic Viability
- Protect the Natural Environment
- Improve Safety for the Traveling Public

The alternatives were ranked as "Most Achieves Goal," "Moderately Achieves Goal" and "Least Achieves Goal."

Alternative I – Mykawa Corridor

This alternative was found to most achieve the mobility goal. All of the alternatives operated at a high level of service along the tollway lanes, but this alternative was found to have the highest traffic volumes, therefore giving it the highest mobility score of the alternatives. The Mykawa Corridor was found to most achieve the goal of providing a multi-modal transportation system as it proposed a commuter rail, a controlled access facility and improvements to existing arterials. It was also found to most achieve the goal of improving transportation infrastructure as it included new toll facilities as well as improvements to existing ones.

Because the Mykawa Corridor proposes a controlled access tollway though the center of downtown Pearland that would divide the business district and require the acquisition of properties, it was found to least achieve the goal of preserving and enhancing social and community viability. This alternative was given a rating of "moderately achieves goal" for preserving the natural environment, as it mostly follows existing right-of-way and no significant environmental impacts are anticipated, but the fact that any construction is conservatively considered to be negative prevented this alternative from receiving the highest rating. Finally, this alternative, reduces congestion and therefore the risk of accidents as well as improving existing roads, thus it receives the highest rating for the final study goal of improving safety for the traveling public.

Overall, the significant impacts to the community were balanced out by the highest mobility of the three alternatives, giving Alternative I – Mykawa Corridor a final score of "moderately achieves goal" for the study. Table 8.1 summarizes the results for all alternatives.

Alternative II – MLK Corridor

All of the alternatives operated at a high level of service along the tollway lanes, however the MLK traffic volumes were the lowest of the three alternatives, giving it the lowest mobility. The MLK Corridor was also found to most achieve the goal of providing a multi-modal transportation system as it proposed a commuter rail, a controlled access facility and improvements to existing arterials. And it was also found to most achieve the goal of improving transportation infrastructure since it included new toll facilities as well as improvements to existing ones.

Because the MLK Corridor moved away from existing roadways, it created concerns about neighborhood integrity in the section of the corridor between Sims Bayou and BW 8. Unlike the Mykawa alignment, it avoided downtown Pearland and was therefore found to moderately achieve the goal of preserving and enhancing social and community viability. Alternative II – MLK Corridor was given a rating of "moderately achieves goal" for preserving the natural environment, as it mostly follows existing right-of-way and no significant environmental impacts are anticipated, but the fact that any construction is conservatively considered to be negative prevented this alternative from receiving the highest rating. Finally, this alternative reduces congestion and therefore the risk of accidents as well as improving existing roads, thus it receives the highest rating for the final study goal of improving safety for the traveling public.

Overall, because Alternative II received the lowest mobility score and was found to moderately impact the local community, it was given a final score of "least achieves goal" for the study.

Alternative III – Hybrid Corridor

All of the alternatives operated at a high level of service along the tollway lanes, but as expected, this alternative experienced high traffic volumes in the northern section of the corridor while it followed the Mykawa alignment and lower volumes in the south where it followed the MLK Corridor. Overall, traffic volumes fell between the other two alternatives. Therefore, the Hybrid Corridor was found to moderately achieve the goal of improving north-south mobility in the region. The Hybrid Corridor was found to most achieve the goal of providing a multi-modal transportation system as it proposed a commuter rail, a controlled access facility and improvements to existing arterials. It was also found to most achieve the goal of improving transportation infrastructure as it included new toll facilities as well as improvements to existing ones.

Because the Hybrid Corridor follows existing roads north of BW 8, does not affect neighborhood integrity, and avoids downtown Pearland, it was found to most achieve the goal of preserving and enhancing social and community viability. Alternative III was given a rating of "moderately achieves goal" for preserving the natural environment, as it

mostly follows existing right-of-way and no significant environmental impacts are anticipated, but the fact that any construction is conservatively considered to be negative prevented this alternative from receiving the highest rating. Finally, this alternative reduces congestion and therefore the risk of accidents as well as improving existing roads, thus it receives the highest rating for the final study goal of improving safety for the traveling public.

Overall, the fact that Alternative III gave the corridor a high degree of mobility along with the smallest impact on the community combined to give this alternative a final score of "most achieves goal" for the study. Table 8.1 summarizes the results for all alternatives.

Table 8.1 – Summary of Viable Alternatives Analysis

Goal	Alt. 1: Mykawa	Alt. 2: MLK	Alt. 3: Hybrid
Improve North South Mobility	+	-	⊖
Provide a Multi-Modal Transportation System	+	+	+
Improve Transportation Infrastructure	+	+	+
Preserve and Enhance Social / Community and Economic Viability	-	⊖	+
Protect the Natural Environment	⊖	⊖	⊖
Improve Safety for the Traveling Public	+	+	+
Total	⊖	-	+

Key:

+	Most Achieves Goal
⊖	Moderately Achieves Goal
-	Least Achieves Goal

CHAPTER 9: RECOMMENDED ALTERNATIVE

A Summary of Public Outreach Activities

This section describes the public outreach activities that have led to the definition of the Revised Most Feasible Alternative as presented in the latter sections of this chapter.

After receiving public comments on the Most Feasible Alternative during the public meetings held in 2005, TxDOT concluded that further discussions with stakeholders throughout the study area were needed to refine the alignment in order to reach the goals as stated in Chapter 3 while minimizing environmental impacts. Elected officials and neighborhoods were contacted and several smaller stakeholder meetings followed in order to arrive at the best alternative to serve the needs of the residents of the study area.

After revising the "Most Feasible Alternative" based upon the public input received in the process described above, the fourth series of public meetings was held in two different locations along the corridor to provide ample opportunity for interested citizens to attend. The meeting time for each of these locations was 5:30-7:30 p.m. The meetings were held as follow:

Tuesday, March 27, 2007, Holiday Inn Houston - Hobby Airport, 8611 Airport Blvd., **Houston, TX**

Wednesday, March 28, 2007, Pearland High School Cafeteria, 3775 South Main Street, **Pearland, TX**

The purpose of these meetings was to present and discuss the project's "Revised Most Feasible Alternative", a variation upon the original Mykawa Corridor, and to present information and gather input for the Environmental Impact Statement currently under development for the segment of SH 35 from Bellfort Road in Harris County to FM 1462 in Brazoria County. The meetings were conducted in open house format and consisted of exhibits, large-scale maps, and a presentation. The Houston meeting was the first of the two public meetings to be held and approximately 202 citizens, 6 elected officials/representatives, and 2 city/agency representatives attended the meeting. A presentation was given along with a poster board walk-through depicting the various options within Houston, the revised alignment in Pearland, constraint maps, and a conceptual drawing.

The second meeting was held in Pearland and followed the same format with the same presentation and poster boards. One hundred thirty-eight citizens, 12 elected officials/representatives, nine city/agency representatives, and three members of the media attended the Pearland public meeting.

At the meetings, TxDOT staff and consultant team members were available to answer questions and discuss public concerns. Attendees were provided a comment form and encouraged to return the comment form at the meeting or to submit their comments to TxDOT by mail or e-mail. Participants were also asked to comment on which options they most favored and to recommend other transportation improvements in the study area. Comments received on the options and alignments presented are discussed later in this chapter.

Revisions to the Mykawa Alternative

The following section illustrates the changes that were made to the previously proposed Mykawa Corridor based upon public input.

The Revised Mykawa Alternative is proposed to connect at Spur 5 adjacent to the University of Houston and to continue southward as a high-speed corridor terminating at the Alvin Bypass. Between Spur 5 and IH 610, the alignment is mostly within existing TxDOT Right-of-Way (ROW). It is anticipated that additional ROW would be required to upgrade the IH 610 interchange A bridge, beginning north of Kuhlman Gully, would be needed to carry the toll-way over the Griggs Road, Long Drive, and IH 610 intersections.

South of IH 610, the roadway would run along the east side of the existing Mykawa Road and Burlington Northern and Santa Fe (BNSF) Railroad tracks, utilizing existing TxDOT ROW. Existing TxDOT ROW ends directly south of Dixie Dr. The original Mykawa alignment continued on the east side of the BNSF Railroad tracks until Sims Bayou where it crosses back over to the west side of the BNSF tracks. The issue addressed by the public in 2005 centered around the abundance of potentially impacted homes in the Overbrook Subdivision on the east side of the tracks. The proposed Toll-way was approximately 220' in ROW (3 lanes in each direction), which would impact many homes in the area. After the public meetings in 2005, it was clear that the area between Dixie Dr. and Sims Bayou had to be reevaluated. After discussions with city officials, the public, and TxDOT, three options were developed between Dixie Dr. and Airport Dr. (directly south of Sims Bayou). The three options will be described in detail in the section entitled Houston Options.

Mykawa Rd. near the Police Station at Law Park

Continuing south, the revised Mykawa Corridor alignment runs on the west side of the BNSF tracks to the proposed elevated direct connectors at BW 8. The configuration still assumes BW 8 would be utilized as the connector segment for vehicles traveling north/south on the proposed Toll-way or west to connect with SH 288 or east to connect with SH 35/Telephone Road or IH 45. South of BW 8, the revised alignment continues on the west side of the tracks until Rice Dryer Rd. where the corridor alignment crosses back to the east side of the tracks. The proposed Toll-way continues on the east side of the BNSF tracks until reaching Industrial Dr. where it then crosses over to existing SH35 and become a "typical" freeway section with frontage roads. The proposed Toll-way remains on existing SH35 until it merges with Alvin Bypass.

Arterial Improvements

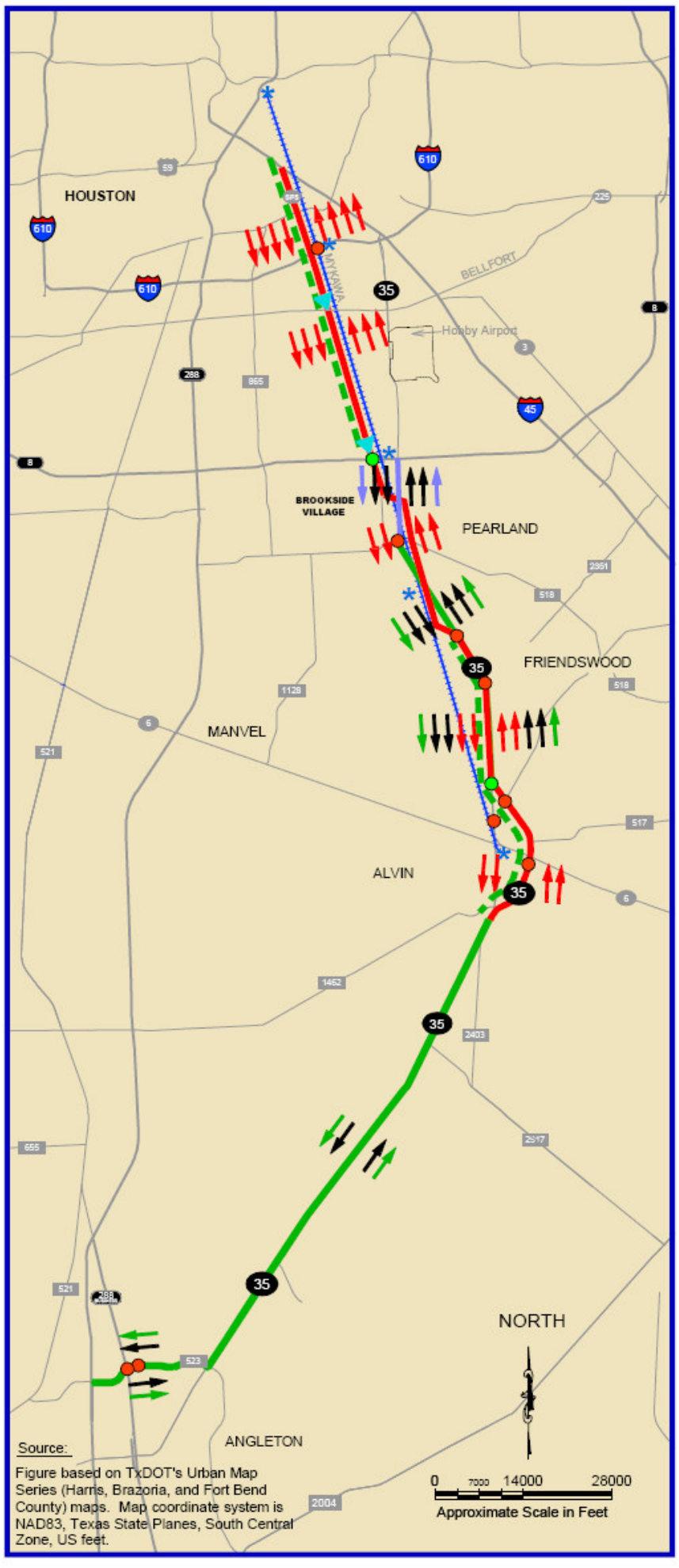
- SH 35 – FM 518 to North Terminus of Alvin Bypass widen to six lanes with center-turn lane.
- Alvin Bypass – complete as a four-lane toll-way with frontage road system and grade separations at SH 6 and the Old Galveston RR.
- SH 35 – Alvin Bypass to FM 523 widen to four lanes with center-turn lane.
- FM 523 – SH 35 to SH 288 widen to four lanes with center-turn lane.

Commuter Rail Corridor

This alternative proposes a commuter passenger rail running between Union Station in downtown Houston and Alvin Depot in Alvin. Additional train stations would be located at Pearland, BW 8, and IH 610 (interface with METRO LRT). The commuter rail will remain on the west side of the BNSF tracks running parallel to the current train operations.

Figure 9.1 – Modified Mykawa Corridor

SH 35 MCFS
Revised Most Feasible Alternative
Modified Mykawa Corridor



SH 35 Major Highway Improvements

- Eight-lane tollway between IH 45 and IH 610 along existing Spur 5 and the west side of the existing railroad tracks
- Eight-lane tollway between IH 610 and Bellfort along the east side of the BNSF tracks
- Six-lane tollway between Bellfort and Sims Bayou along the east side of the BNSF tracks, crossing over to the west side of the BNSF tracks at Sims Bayou
- Six-lane tollway between Sims Bayou and BW 8 along existing Mykawa Road
- Four-lane tollway along existing Mykawa Road and BNSF RR connecting with exisitng SH 35 north of Dixie Farm Road
- Four-lane tollway on Alvin Bypass

Arterial Improvements

- Expand existing SH 35 between FM 518 and the Alvin Bypass
- Expand existing SH 35 between south terminus of the Alvin Bypass and FM 523
- Expand FM 523 between SH 35 and SH 288

Transit Improvements

- **Commuter rail between downtown Houston and Alvin with stations** at downtown Houston, IH 610, BW 8, Pearland, and Alvin
- Expand existing and construct new park and ride lots

Other Improvements

- Implement Transportation System Management and Travel Demand Management (TSM/TDM) and access management measures along SH 35, FM 523 and cross streets ***(intersection improvements, signal synchronization, transit, bikeway and pedestrian improvements)***
- Implement Intelligent Transportation System (ITS) improvements
- Implement regional improvements by H-GAC and other local entities ***(dynamic message signs, closed circuit television cameras, and motorist assistance patrol)***

SH 35 CORRIDOR
(from IH 45 to SH 288)

LEGEND:

- EXISTING LANES
- CURRENTLY PLANNED LANES
- CURRENTLY PLANNED IMPROVEMENTS
- PROPOSED ARTERIAL IMPROVEMENTS
- PROPOSED FRONTAGE ROAD SYSTEM
- PROPOSED ARTERIAL LANES
- PROPOSED TOLLWAY CORRIDOR
- PROPOSED TOLLWAY MAIN LANES
- PROPOSED COMMUTER RAIL CORRIDOR
- PROPOSED COMMUTER RAIL STATION
- NUMBER OF LANES CHANGE AT THIS LOCATION
- PROPOSED TRANSPORTATION SYSTEM MANAGEMENT (INTERSECTION IMPROVEMENTS)
- PROPOSED PARK and RIDE FACILITY

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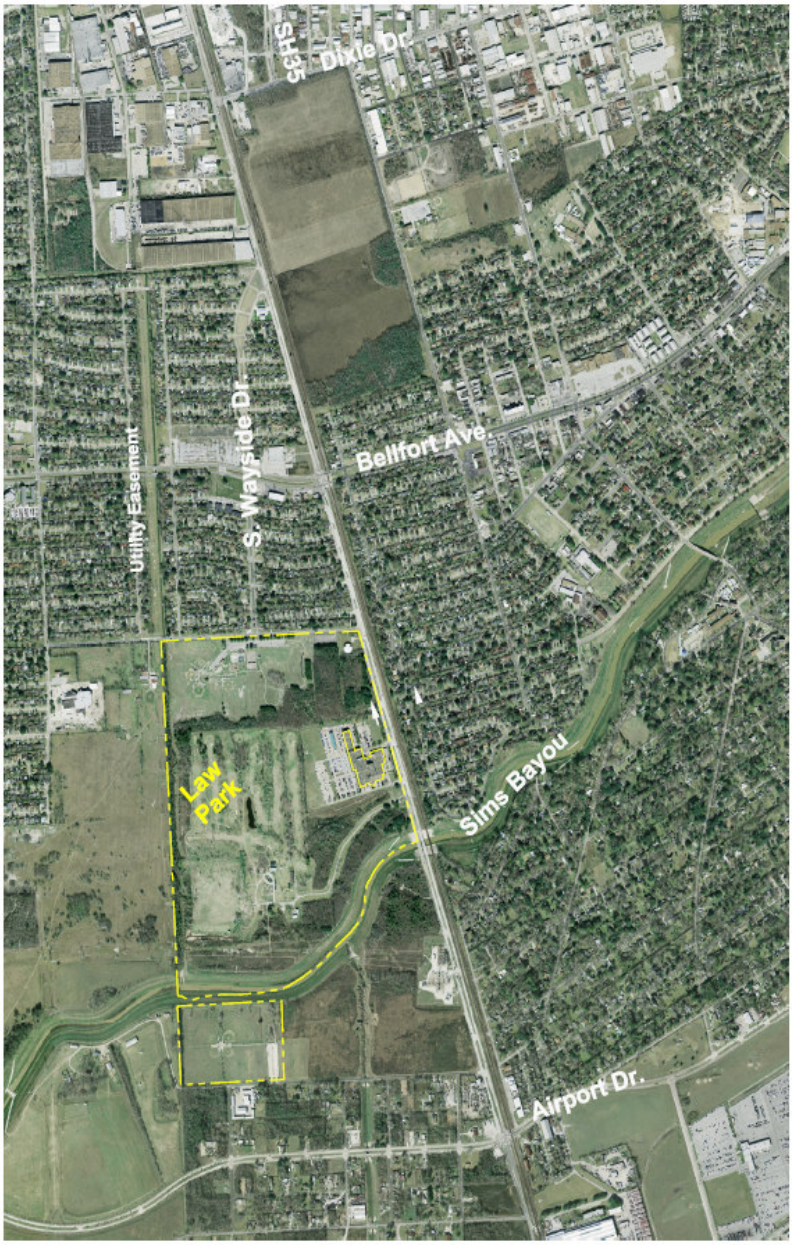
Revised March 2007

Houston Options

The area between Dixie Dr. and Airport Blvd was further studied based on public comments received during the public meetings held in 2005. TxDOT engaged in discussions with local officials and stakeholders, after which, three different options were developed that would allow for fewer impacts. The decision as to which option to pursue will be made during the Preliminary Engineering and Environmental Impact Statement phase of the project development process

Study Area

The Study Area of concern has three major components that were factored in to create the new alignment options: the first of which is the impact to residential homes. The original Mykawa alignment impacted the Overbrook Subdivision, which is nestled between Bellfort Ave. and Sims Bayou. The second major impact is commercial/utility impacts. Many commercial companies reside on the west side of Mykawa Rd directly north of Bellfort Ave. Lastly, the impacts to Law Park, which sits on the west side of Mykawa Rd. between Bellfort and Sims Bayou, were a major impact identified during the fatal flaw screening. A police station also sits inside of Law Park. The map below shows the study area and the potential obstacles:

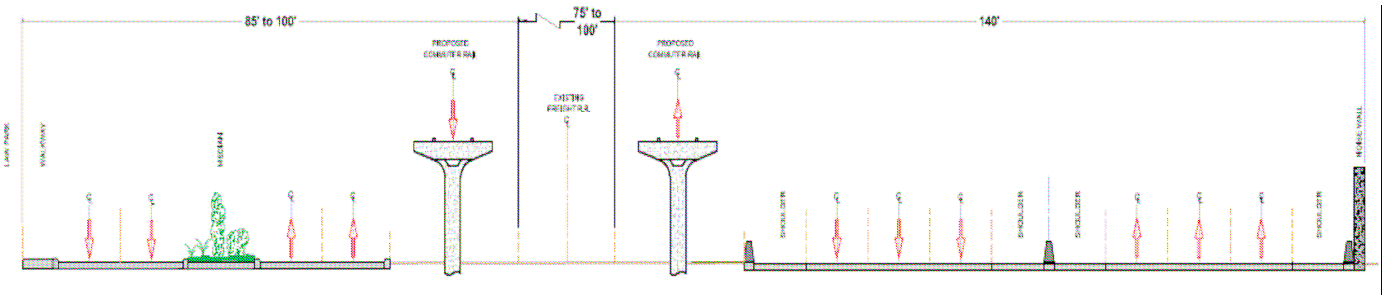


Mykawa Overview in Study Area
2006 Aerial Photo Courtesy of HGAC

Option 1

Option 1 is very similar to the original Mykawa alignment (previously named Alternative 1B). It runs along the east side of the BNSF tracks at-grade until it reaches Sims Bayou where it crosses over to the west side of the tracks. The goal of reexamining Option 1 was to reduce the amount of additional ROW required, thereby reducing the number of homes impacted.

Originally, the alignment was designed to be 220', including commuter rail. After examining the TxDOT roadway design manual, the cross section ROW was reduced to 140' on the east side of the tracks. The commuter rail lines are split. The northbound line would be on the east side of the tracks and the southbound line would be on the west side of the tracks. This revised alignment would greatly reduce the impact to homes in the Overbrook Subdivision. The illustration below depicts the proposed Option 1 Toll-way on the east side of the BNSF tracks along with existing Mykawa Rd. on the west side of the BNSF tracks.

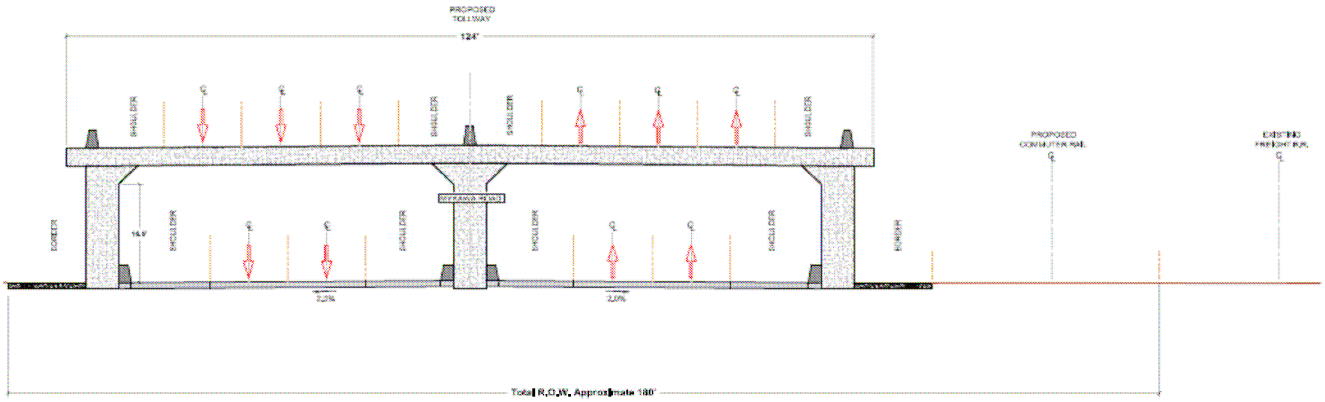


Option 1 Section Cut

Option 2

Option 2 is a double-deck elevated Toll-way that runs on the west side of the tracks. The Toll-way is essentially on top of existing Mykawa Rd. Residential impacts would occur at Edgewood and Bellfort Park Subdivisions, located on the west side of Mykawa Rd. There would also be impacts to Law Park and the Police Station parking area.

Initially, the fatal flaw screening eliminated those concepts that would cause inordinate environmental impacts, such as those to public parks. A second level qualitative screening identified concepts, which would not meet the goals of the study and lacked sufficient merit for further analysis. However, after public comments and a third level of screening, it was determined that the option should be considered. Approximately five acres of parkland are impacted by this Option. The illustration below shows the double-deck option with the proposed Toll-way elevated above existing Mykawa and the Commuter rail running just east of the existing BNSF tracks. Total ROW is approximately 180'.

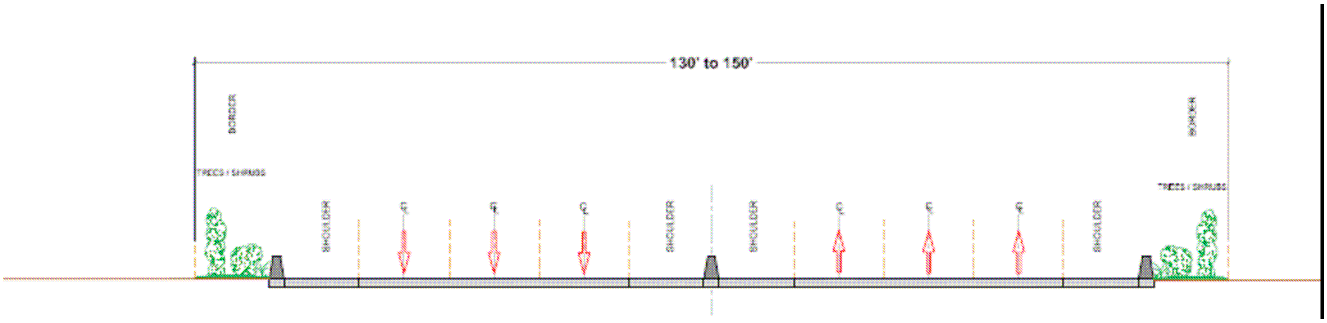


Option 2 Section Cut

Option 3

Option 3 is an at-grade Toll-way that runs along the west side of the Law Park area. After crossing Dixie Dr. the Toll-way makes a sharp curve to the west and runs along the Utility Corridor. From there it crosses Bellfort Ave. alongside Law Park to Airport Drive where it gradually curves back to the east and connects back to Mykawa before reaching Orem Dr. The commuter rail line will stay along the west side of the BNSF tracks.

Impacts to commercial buildings occur just north of Bellfort Ave. Residential impacts occur to Edgewood and Bellfort Park Subdivisions north of Sims Bayou and to Golden Glade Estates Subdivision south of Sims Bayou. The illustration below shows the proposed section cut for Option 3. ROW for Option 3 is approximately 150'.



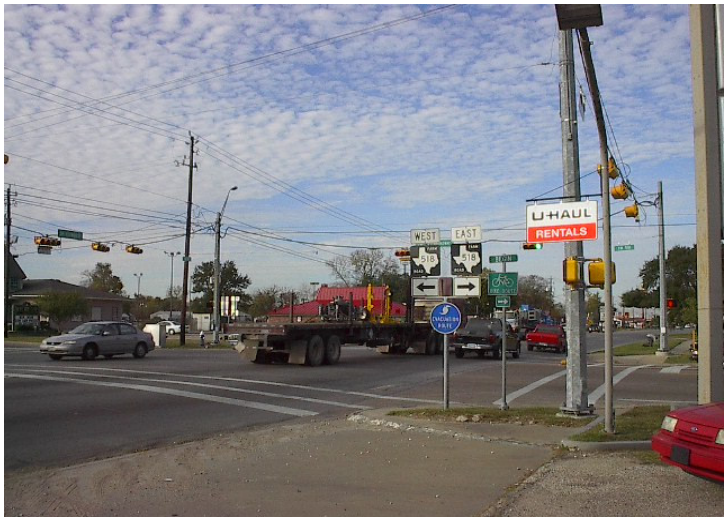
Option 3 Section Cut

Pearland Section

Public comments received from the Pearland Area during the public meetings in 2005 favored revisiting the Mykawa Corridor. A refinement process was then developed with coordination between TxDOT and Pearland local officials to develop the most feasible option.

Study Area

The Pearland study area ranged from BW 8 to Dixie Farm Rd. Residential areas are located in Brookside Village, just south of BW 8 and closer to downtown Pearland. South of Walnut many newer subdivisions are under development. Commercial properties exist heavily throughout the corridor. High traffic volumes occur in this segment of the corridor, which is more akin to the traffic generation north of BW 8 than to the corridor south of FM 518. Pearland is a planned community that is experiencing high growth in new residential communities supported by commercial/retail development. Pearland is growing as a bedroom community, and many of its residents commute to jobs in Harris County. Pearland is also planning an "Old Townsite" plan to revitalize the downtown area. These plans were taken into consideration when planning the alignment options.



Traffic at SH 35 and FM 518 in Downtown Pearland

Revisions to the Original Mykawa Alignment

The revised Mykawa alignment in Pearland considers all planned development in the area, including commercial, residential and public works. The elevated Toll-way begins in the Brookside Village community (not a part of Pearland) where the Toll-way will be a "freeway" section with frontage roads on each side. The Toll-way then separates itself from the frontage road at Knapp Rd and becomes a stand-alone Toll-way facility. As the proposed Toll-way travels on the west side of the BNSF tracks it then crosses to the east side at Rice Dryer Rd and follows that route into Downtown Pearland and into FM 518.

South of FM 518 there would be noticeable impacts to commercial properties. Just south of Walnut Street, the proposed Toll-way goes back to grade to Magnolia Rd. Magnolia Rd is planned to bridge over the BNSF railroad tracks. The column spacing will allow for the proposed Toll-way to pass underneath this overpass. Further south, the Toll-way continues on the east side of the BNSF tracks and crosses underneath the proposed Bailey/Oiler overpass. After crossing Industrial Dr. the Toll-way begins to rise in elevation and curves east to existing SH35 where it then becomes a typical "freeway" section with frontage roads. The proposed Toll-way goes back to grade just south of Dixie Farm Rd. and continues to the Alvin where it will connect with the Alvin Bypass.

Public Comments on Revised Alternative

The fourth and final Public Meetings were held in March of 2007 to present the Revised Mykawa Alternative and solicit the public's comments and concerns. Many poster boards with maps, alignments, and the study process were shown. An impact list for each alignment option within the Houston Section was also presented as shown below.

	Impacts to:		
Alignment	Residential	Commercial	Other
Option 1	69	9	1
Option 2	34	9	2
Option 3	74	15	1

A total of 77 written questionnaires/comments were received – 14 from Houston meeting attendees, 11 from Pearland meeting attendees, 45 mailed to TxDOT and 7 comments by e-mail. The following summarizes the responses for the Houston Options.

Option 1 – 5 total comment cards received

- Most direct, makes most sense
- Offers opportunity for economic and neighborhood revitalization
- If choose Alternative 1, what homes will be taken and when?
- Out of the question
- Impacts many retirees homes
- Option 1 will disrupt a small close-knit and longstanding community

Option 2 – 23 total comment cards received

- Option 2 is my second choice
- Affects the least amount of property
- Looks acceptable
- Less impact to Overbrook Subdivision
- Only 34 homes versus 69
- Some commercial and 5 acres from Park inconsequential compared to 35 homes
- Build overpass over Mykawa to prevent homes from being taken
- Noise impacts will effect my health
- Let the noise stay on the west side of the RR tracks

Option 3 – 21 total comment cards received

- More convenient for everyone
- Best for Overbrook area
- Does not affect my property
- Insanity, ignores existing roadways and attacks the maximum amount of private property
- Option 3 is worst choice
- Destroys too much park land
- If you don't choose Option 3, please build the double-decker roadway to reduce impacts to homes in Overbrook

Unlike Houston, Pearland's alignment was relatively set. Comments received about the Pearland alignment suggested a few changes, alternative roads to widen and more emphasis on commuter rail. The following is a summary of the list of comments on the alternative provided for Pearland.

Pearland Alternative Comments

- Looks good
- Good plan for the area
- Proposed route is the most sensible and direct
- The alternative does not further divide the city because it follows the RR tracks
- Alignment appears to be in the best location for the community
- Option 1 most cost-effective, but impacts homes
- Option 1, stay within Mykawa
- Build the rail before the toll road
- Layouts for the vast ROW are not what we discussed in our meetings
- These ROW can be reduced so you don't wipe out the whole SH 35 business district through Pearland
- Why does it take 10 years to get to construction phase
- Make your road more beautiful
- Expand SH 288 instead

Conclusion

The stated purpose for the SH 35 MCFS, as developed and approved by the TxDOT Houston District is:

"To consider and evaluate all reasonable alternative modes of transportation and all routes along the SH 35 corridor from IH 45 in Houston to SH 288 in Angleton."

Goals adopted for the study and the associated objectives led to a framework for the SH 35 MCFS decision-making process resulting in the selection of modal and corridor project alternative(s). Evaluations were conducted with input from the Steering and Advisory Committees, the public, regional agencies, and affected jurisdictions.

While the Preliminary Viable Alternatives were analyzed as stand-alone options, each of the Short Listed Viable Alternatives was a set of improvements "bundled" together to provide a comprehensive set of transportation improvements for the corridor. These alternatives underwent a more detailed traffic and alignment analysis and investigation of impacts to the social, community, and natural environments.

Each of the three Short Listed Viable Alternatives were evaluated on how it achieved the study goals and the alternatives were ranked as "Most Achieves Goal," "Moderately Achieves Goal" and "Least Achieves Goal." The Hybrid Corridor received the overall highest ranking and becoming the "Recommended Most Feasible Alternative."

After receiving public comments on the previously identified Recommended Most Feasible Alternative, the Hybrid Corridor, during the public meetings held in 2005, TxDOT concluded that further discussions with stakeholders throughout the study area were needed to refine the alignment in order to achieve the project goals while minimizing environmental impacts.

The Revised Most Feasible Alternative, the Modified Mykawa Corridor, is the result of this process and is presented for consideration. These recommendations are for the modes of transportation resources to be developed within the corridor and the general location of these modes. Specific design of the individual elements will be further investigated in the Preliminary Engineering and Environmental Impact Statement phase of the project development process.

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