

Prepared for:
Houston-Galveston Area Council
Texas Department of Transportation
City of Stafford

Prepared by:
Traffic Engineers, Inc.

In partnership with:
Asakura Robinson
Marsh Darcy Partners
Progressive Consulting Engineers
TranSystems



FM 1092

ACCESS MANAGEMENT STUDY

December 2013

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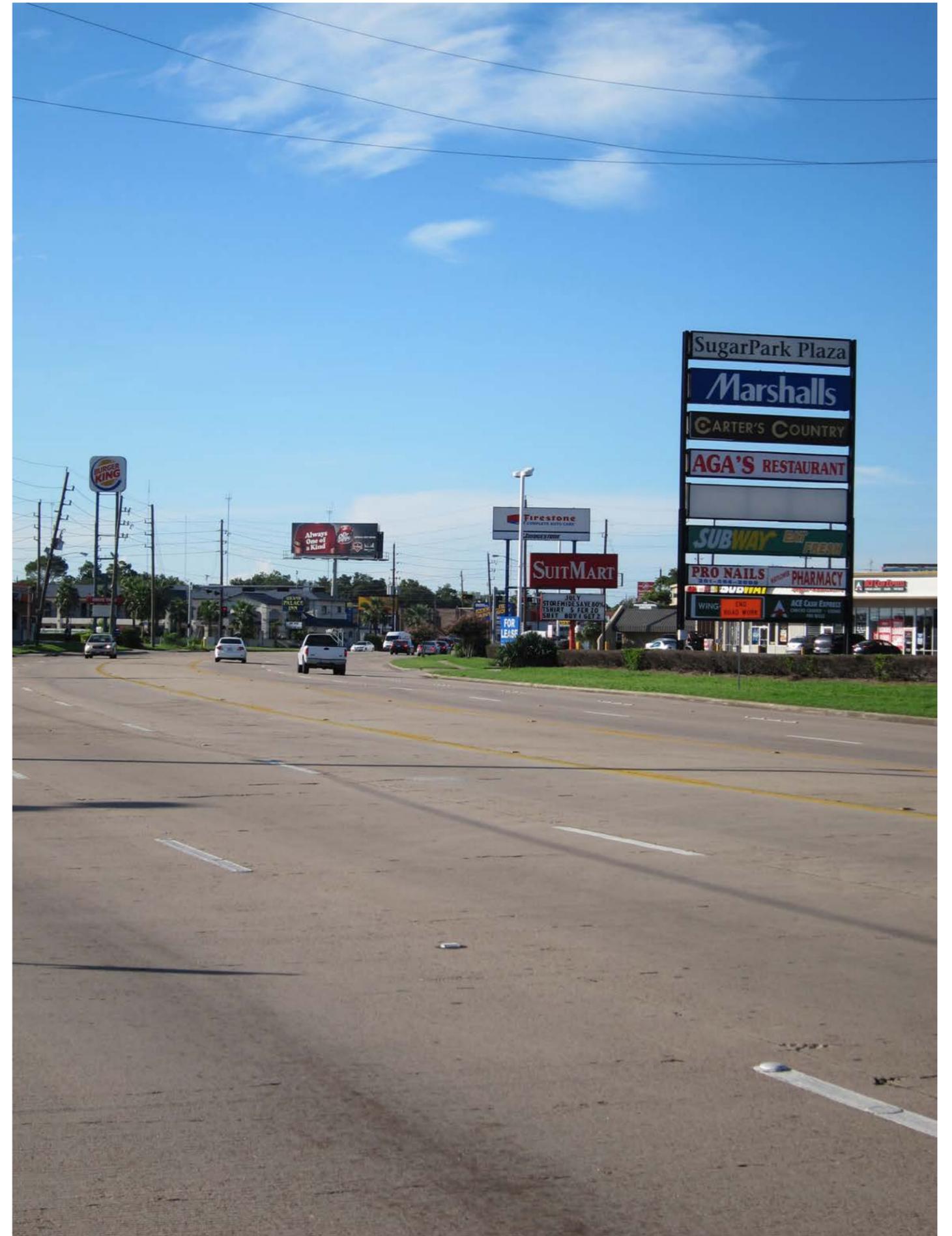




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FM 1092 ACCESS MANAGEMENT STUDY STAKEHOLDERS AND STUDY GOALS

FM 1092 is the main north-south corridor through the City of Stafford connecting US 59 (recently designated I-69) and the City of Houston on the north to the City of Missouri City to the south. The study area corridor, also known to many people in the region as Murphy Road, can be seen in Figure ES.1. The study area includes the right-of-way for FM 1092, major intersections, and also considers access to major facilities and destinations along the corridor.

The FM 1092 corridor plays two primary roles in the City of Stafford and the region. First, it is the primary connection for many north-south trips through Stafford connecting SH 6 and Missouri City on the south with major regional roadways such as US 90A and US 59. Its role is particularly important as there are limited alternative north-south corridors in eastern Fort Bend County. Safety along the corridor is a concern as, currently, the corridor experiences a high rate of crashes versus similar corridors across the State of Texas. To the north of the corridor is the West Bellfort Park & Ride which provides strong commuter and local bus connections as well as access to the HOV/HOT lane system on US 59.

Secondly, the FM 1092 corridor also represents the economic core of the City of Stafford. Travelling the full length of the city, the corridor is home to many businesses and potential development sites and a significant share of the city's tax base. Key destinations along the corridor include the Stafford Centre, the nearby Houston Community College campus, the Island District along US 90A, and the Texas Instruments campus site.

The FM 1092 Access Management Study has been developed to help define a vision for the corridor to support and balance these two objectives as traffic volumes grow and the corridor continues to redevelop.

The FM 1092 Access Management Study was sponsored by the City of Stafford and the Houston-Galveston Area Council (H-GAC). The study team developed the recommendations outlined in the study through extensive input from the public and business owners along the corridor. Input was gathered through a series of outreach events and public meetings (Chapter 2 of this report). A steering committee guided the study development and was made up of constituents who have an interest in the long term success of the corridor. The steering committee included representatives from:

- Houston - Galveston Area Council
- City of Stafford Public Works
- City of Stafford Fire Department
- City of Stafford Police Department
- Stafford Municipal School District
- Stafford Economic Development Council
- Texas Department of Transportation
- City of Houston
- City of Missouri City
- METRO
- Fort Bend Chamber of Commerce
- Houston Community College System

The Steering Committee developed three major goals for the study as a framework for the recommendations for the corridor.

- Improve FM 1092 Corridor Mobility
- Address Safety Issues
- Enhance Economic Development Opportunities

These goals were developed to balance the objectives for the corridor to move people traveling in all modes efficiently and safely while enhancing FM 1092 as the economic "Main Street" for the City of Stafford.

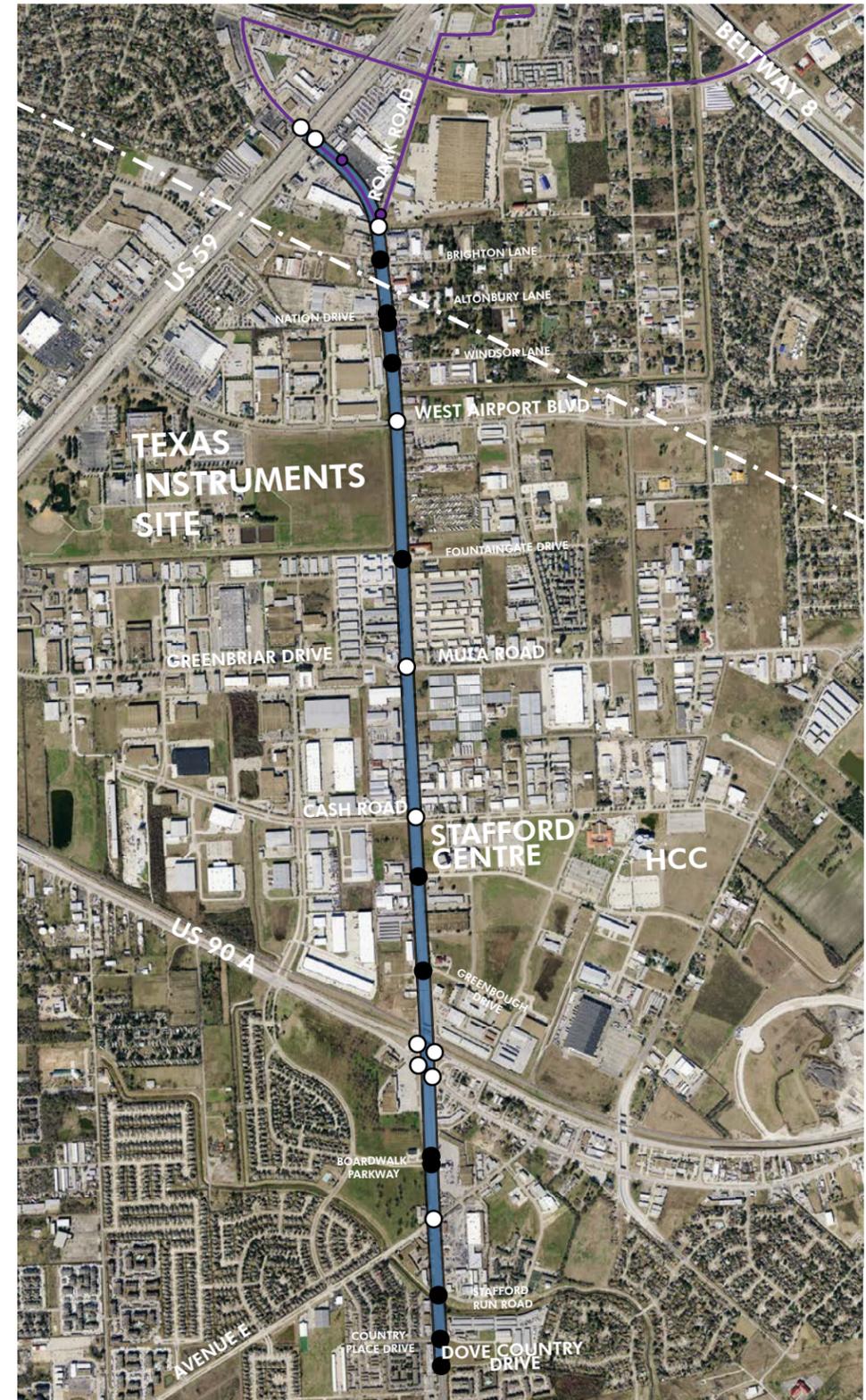


Figure ES.1 - FM 1092 Study Corridor

STUDY RECOMMENDATIONS

Based on an analysis of existing conditions along the corridor and comparing with the goals established by the Steering Committee, a set of recommendations were developed. The existing conditions assessment looked at critical issues including traffic operations and delay, pedestrian and cyclist mobility, safety metrics including crash rates and causes, and overall economic performance data such as land values and sales tax rates.

Based on this detailed assessment, which is detailed in Chapter 3 of this report, recommendations were developed that address the overall corridor, key intersections, streetscape elements and economic development opportunities focused around key opportunity nodes.

The current cross-section for most of the FM 1092 corridor is shown in Figure ES.2. The roadway is seven lanes with three travel lanes in each direction and a center turn lane. No sidewalks exist along the majority of the corridor. The proposed cross-section for the corridor, shown in Figure ES.3, was developed to utilize the existing right-of-way and pavement section as efficiently possible to achieve the desired benefits and minimize implementation costs. The proposed cross-section maintains three travel lanes in each direction but also provides a center median with turn lanes at major roadways and driveways to provide access to adjacent developments. 11' travel lanes allow the inclusion of a bike lane in each direction of travel. Sidewalks were proposed for the length of the project, a top concern of area residents.

A more detailed set of recommendations with associated planning level cost estimates are shown in Table ES.1 on the following page. Each of these recommendations is detailed in Chapter 5 of this report.

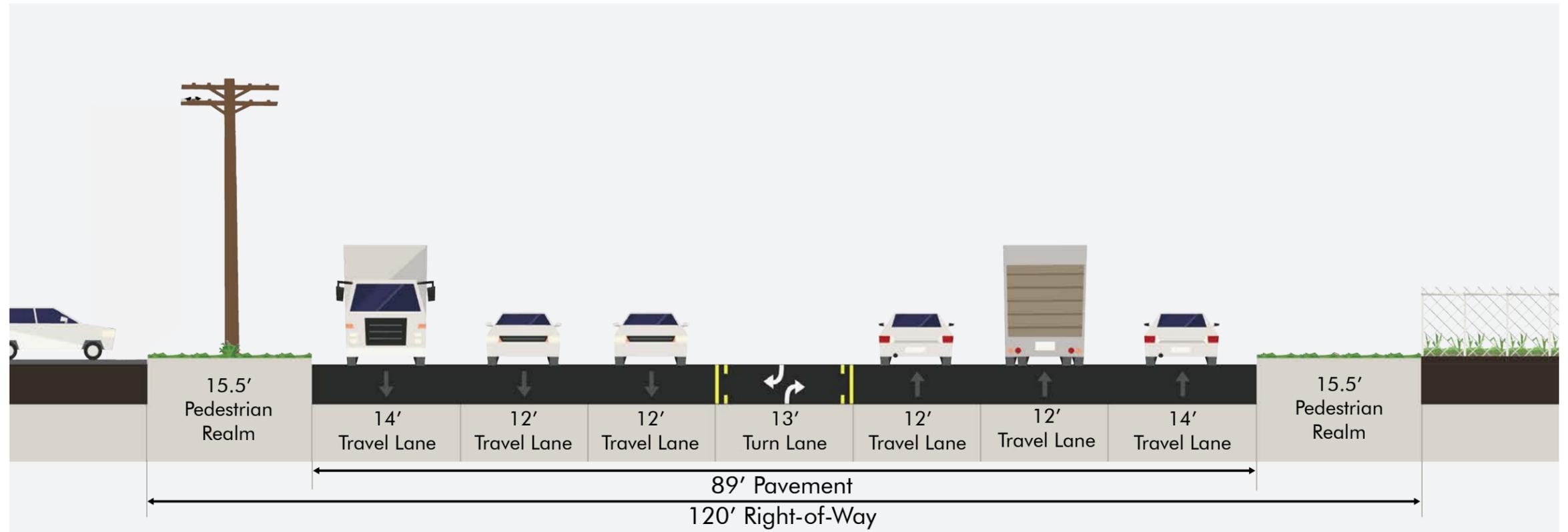


Figure ES.2 FM 1092 Study Corridor Typical Cross Section

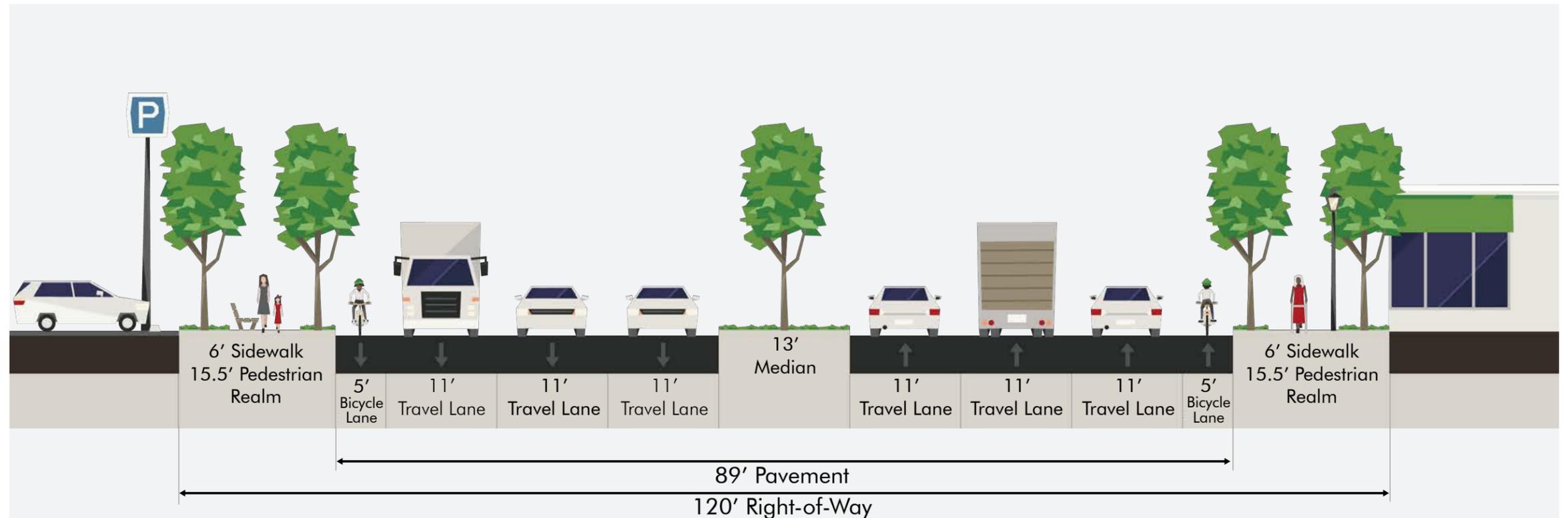


Figure ES.3 Proposed Typical Cross-section - Roark Road to Dove Country Drive

Table ES.1 Summary of Roadway Corridor, Intersection and Streetscape Recommendations

PROJECT NUMBER	PROJECT TITLE	TYPE	TxDOT COST	CITY OF STAFFORD COST ¹	OTHER ENTITIES ²	COST
SHORT						
1	Install Signal Interconnect	Corridor	\$ 510,400	\$0	\$0	\$ 510,400
2A	FM 1092 at US 59 West Frontage Rd - Short	Intersection	\$ 46,200	\$0	\$0	\$ 46,200
5A	FM 1092 at West Airport Blvd - Short	Intersection	\$ 33,400	\$0	\$0	\$ 33,400
7	FM 1092 at Greenbriar Dr/Mula Rd	Intersection	\$ 22,920	\$ 34,380	\$0	\$ 57,300
8	FM 1092 at Cash Rd	Intersection	\$ 48,800	\$ 12,200	\$0	\$ 61,000
9	FM 1092 at US 90A Underpass	Intersection	\$ 30,500	\$0	\$0	\$ 30,500
11A	FM 1092 at Dove Country Dr - Short	Intersection	\$ 28,800	\$0	\$0	\$ 28,800
12	US 90A at Promenade Blvd	Intersection	\$ 33,800	\$0	\$0	\$ 33,800
13	Restripe Corridor	Corridor	\$ 471,100	\$0	\$0	\$ 471,100
14	Construct 13' Median	Corridor	\$ 485,400	\$0	\$0	\$ 485,400
MEDIUM						
4	Mid-block Crossing	Intersection	\$ 147,500	\$0	\$0	\$ 147,500
11B	FM 1092 at Dove Country Dr - Medium	Intersection	\$ 186,000	\$0	\$0	\$ 186,000
16	Landscape Medians	Landscape	\$0	\$ 425,000 - \$ 595,000 ³	\$ 75,000 - \$ 105,000 ³	\$ 500,000 - \$ 700,000 ³
17	Driveway Consolidation	Corridor	\$ 120,800	\$0	\$0	\$ 120,800
18A	Construct Sidewalks	Corridor	\$ 1,444,700	\$0	\$0	\$ 1,444,700
18B	Construct Side Paths	Corridor	\$ 321,900	\$0	\$0	\$ 321,900
19	Plants Street Trees	Landscape	\$0	\$127,500 - \$ 255,000 ⁴	\$ 22,500 - \$ 45,000 ⁴	\$ 150,000 - \$ 300,000 ⁴
20	Pedestrian Lighting	Streetscape	\$0	\$ 850,000 - \$ 2,550,000 ⁵	\$ 150,000 - \$ 450,000 ⁵	\$ 1,000,000 - \$ 3,000,000 ⁵
21	Roadway Lighting	Corridor	\$ 400,000 - \$ 500,000 ⁴	\$0	\$0	\$ 400,000 - \$ 500,000 ⁶
22	City of Stafford Monuments	Streetscape	\$0	Cost similar to existing monuments	\$0	Cost similar to existing monuments
LONG						
2B	FM 1092 at US 59 West Frontage Rd - Long	Intersection	\$ 297,600	\$0	\$0	\$ 297,600
3	FM 1092 at Roark Rd	Intersection			Future Cost ⁷	
5B	FM 1092 at West Airport Blvd - Long	Intersection	\$ 1,225,500	\$0	\$0	\$ 1,225,500
6	FM 1092 at Fountaingate Dr	Intersection	\$1,006,160	\$ 251,540	\$0	\$ 1,257,700
10	FM 1092 at Avenue E	Intersection	\$ 1,774,000	\$0	\$0	\$ 1,774,000
15	RTP Project 13641	Corridor		City of Missouri City listed as lead agency in the 2035 RTP Update		\$ 10,100,000
23	Stafford Centre Park	Streetscape	\$0	\$ 145,000 ⁸	\$0	\$ 145,000 ⁸
24	Pedestrian and Bicycle Trail	Streetscape	\$0	\$ 135,000 ⁹	\$0	\$ 135,000 ⁹
TOTAL COST						
		LOW	\$ 8,635,480	\$ 1,980,620	\$ 357,500	\$ 10,863,600 ¹⁰
		HIGH	\$ 8,735,480	\$ 3,978,120	\$ 600,000	\$ 13,313,600 ¹⁰

¹ Includes other entities within the City of Stafford not yet determined, e.g.: improvement districts, local businesses, other management entities

² Other entities outside the City of Stafford, e.g.: Brays Oaks Management District, International Management District

³ For trees, depending on size, at a 25 to 100 foot spacing. Special pavers are an alternative to vegetation landscaping that can reduce maintenance costs.

⁴ For trees, depending on size, at a spacing of 25 to 100 feet

⁵ Dependent on phasing of implementation prioritized by activity centers and fixture type and spacing

⁶ Dependent on fixture type and a spacing of 120 to 150 feet

⁷ Cost to be based on final design of future long term project

⁸ Cost is estimated based on a 9,000 square foot plaza on the southeast corner of FM 1092 at Cash Rd

⁶ Cost estimate considers the addition of a trail, irrigation and street trees along the drainage corridor at the Texas Instruments Site

¹⁰ Does not include Project 15 - 2035 RTP Updated Project 13641

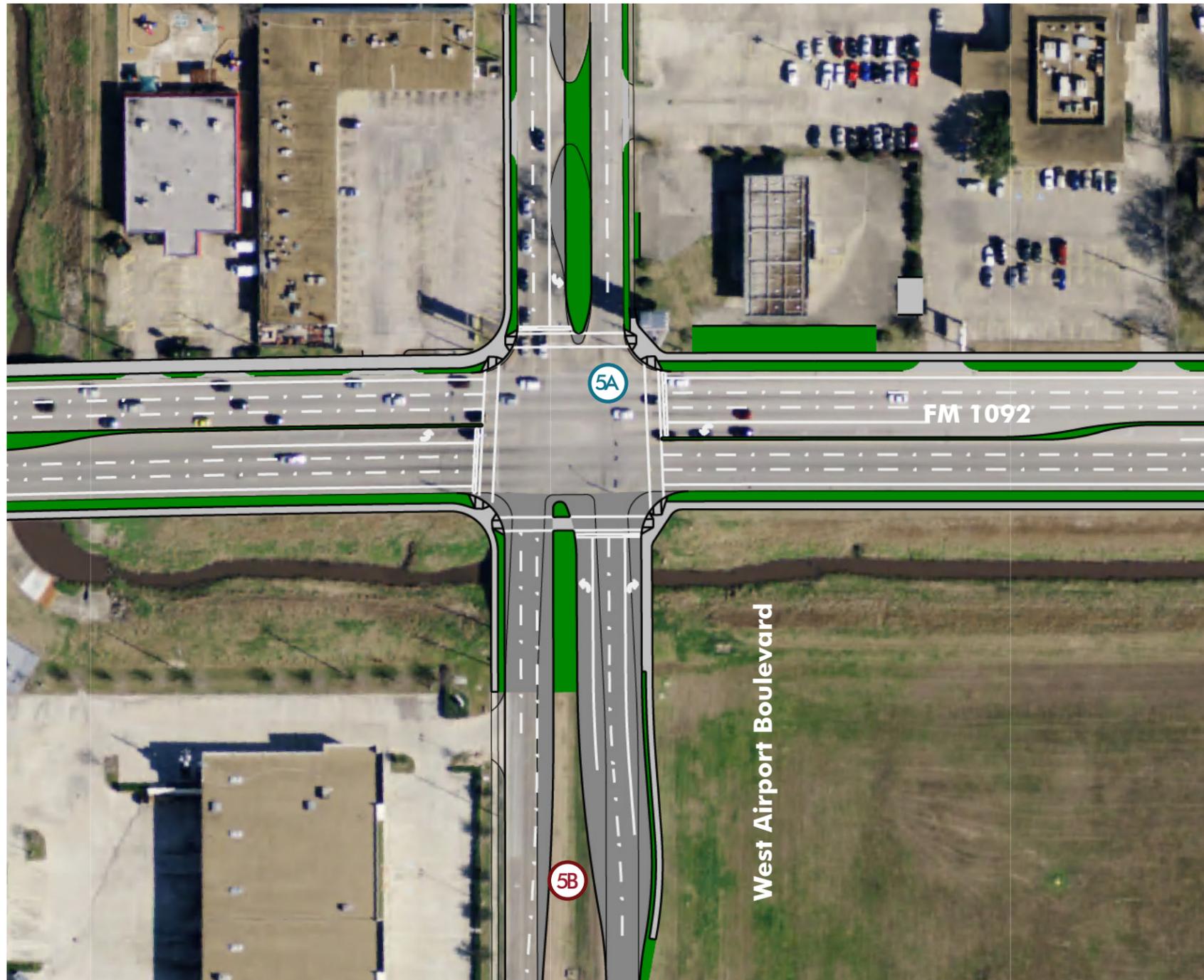


Figure ES.4: Recommendations for FM 1092 at West Airport Boulevard

Recommendations were developed to a schematic design level, to assess the feasibility and identify any potential challenges or opportunities that would arise from the proposed recommendations. An example of this is shown in Figure ES.4 which shows the proposed conditions for the intersection of FM 1092 at West Airport Boulevard. The addition of left turns at the intersection were recommended to improve the signal operations and improve the overall level of service for vehicles. Improved pedestrian and bicycle facilities are also recommended.

The recommendations outlined in Table ES.1 summarize an implementation approach that defines a clear path forward in terms of project phasing based on a prioritized timeline. The timeline was established based on 1) project cost, 2) likely ease of implementation and 3) ability to satisfy project goals. The timeline is an estimate and individual projects may be accelerated by increased focus and availability of funding.

In addition to the recommendations outlined for the corridor, the report also identifies regional improvements, such as improvements in regional roadway connectivity, potential bicycle opportunities, and stronger transit connections that round out the toolbox of transportation choices to improve mobility for travellers along the corridor and in the study area.

The implementation of the recommendations outlined in this report will require strong partnership among the various stakeholders, both public and private, with interests along the corridor. While the infrastructure improvements outlined here may be accomplished through partnerships of public agencies such as the City of Stafford, the City of Houston, TxDOT and H-GAC, to fully achieve the vision for the corridor outlined by the goals set forth by the project steering committee, a more holistic approach will be required. The redevelopment adjacent to the corridor should be coordinated with the investments in infrastructure that these recommendations outline to maximize the potential benefits to the community and the region.

Chapter 6 of this report outlines implementation strategies including economic development tools, potential partnerships, and approaches to redefine key development nodes along the corridor. By coordinating the recommendation with planning efforts such as the development of an updated Comprehensive Plan for the City of Stafford, supporting a regulatory environment aligned with the communities goals, and working with property owners and developers along the corridor, FM 1092 can continue to be the true “Main Street” for the City of Stafford while providing safer, more efficient connectivity and mobility for the region.

Introduction

FM 1092 is the main north-south corridor through the City of Stafford connecting US 59 (recently designated I-69) and the City of Houston on the north to the City of Missouri City to the south (Figure 1.1). The corridor is known to many people in the region as Murphy Road though for consistency will be referred to as FM 1092 in this report.

The FM 1092 corridor plays two primary roles in the City of Stafford and the region. First, it is the primary connection for many trips through the City to regional destinations, including a large percentage of commute trips. As Fort Bend County has experienced significant development and population growth for the past several decades, traffic volumes have increased along segments of the corridor. FM 1092 serves as a key connection for regional trips with direct access to two of the major east-west freeways in Fort Bend County, US 59 and US 90A. Mobility on the corridor was improved when the roadway was grade separated from the Union Pacific railroad tracks just north of US 90A. The corridor also provides connections to major east-west arterials such as West Airport Boulevard, and West Bellfort Avenue. As the existing roadway network provides limited alternative routes, FM 1092 will continue to play a key role in mobility for the City of Stafford and the region for the foreseeable future.

The FM 1092 corridor also represents the economic core of the City of Stafford. Travelling the full length of the city, the corridor is home to many businesses and potential development sites and a significant share of the city's tax base. Key destination in the city along the corridor include the Stafford Centre, the nearby Houston Community College campus, the Island District along US 90A, and the Texas Instruments campus site. There are many local jobs along the corridor, with concentrations of light industrial and distribution sites. There is also local retail, neighborhood services, and entertainment

options, primarily restaurants. Stakeholders have identified a desire for more neighborhood services to serve the local community. Figure 1.2 shows the typical cross-section of FM 1092 through the study area.

ACCESS MANAGEMENT

Given the critical nature the corridor plays in the mobility and economic future of the City of Stafford and the region, the Houston-Galveston Area Council (H-GAC), the Metropolitan Planning Organization (MPO) for the Houston-Galveston 8-County region, has collaborated with the City of Stafford and the Texas Department of Transportation (TxDOT) to develop the FM 1092 Access Management Study. H-GAC has previously developed an access management study for the segment of FM 1092 in Missouri City, south of the City of Stafford, and this plan has been developed to coordinate with the vision developed in that study.

By definition, access management is a strategy to reduce and consolidate access points along a corridor to reduce the number of conflict points between drivers, pedestrians, and bicyclists. Improving the visibility and operations of driveways as well as creating clear channels for turning movements and cross movements along a corridor, will not only improve safety along a

LEGEND

- Bus Stop
- Unsignalized Intersection
- TxDOT Operated Signalized Intersection
- City of Houston Operated Signalized Intersection
- FM 1092 - 7 Lane Typical Section
- FM 1092 - 5 Lane Typical Section
- - - Fort Bend / Harris County Line
- Stafford City Limit
- Meadows Place City Limit
- Missouri City City Limit
- Houston City Limit
- Sugar Land City Limit

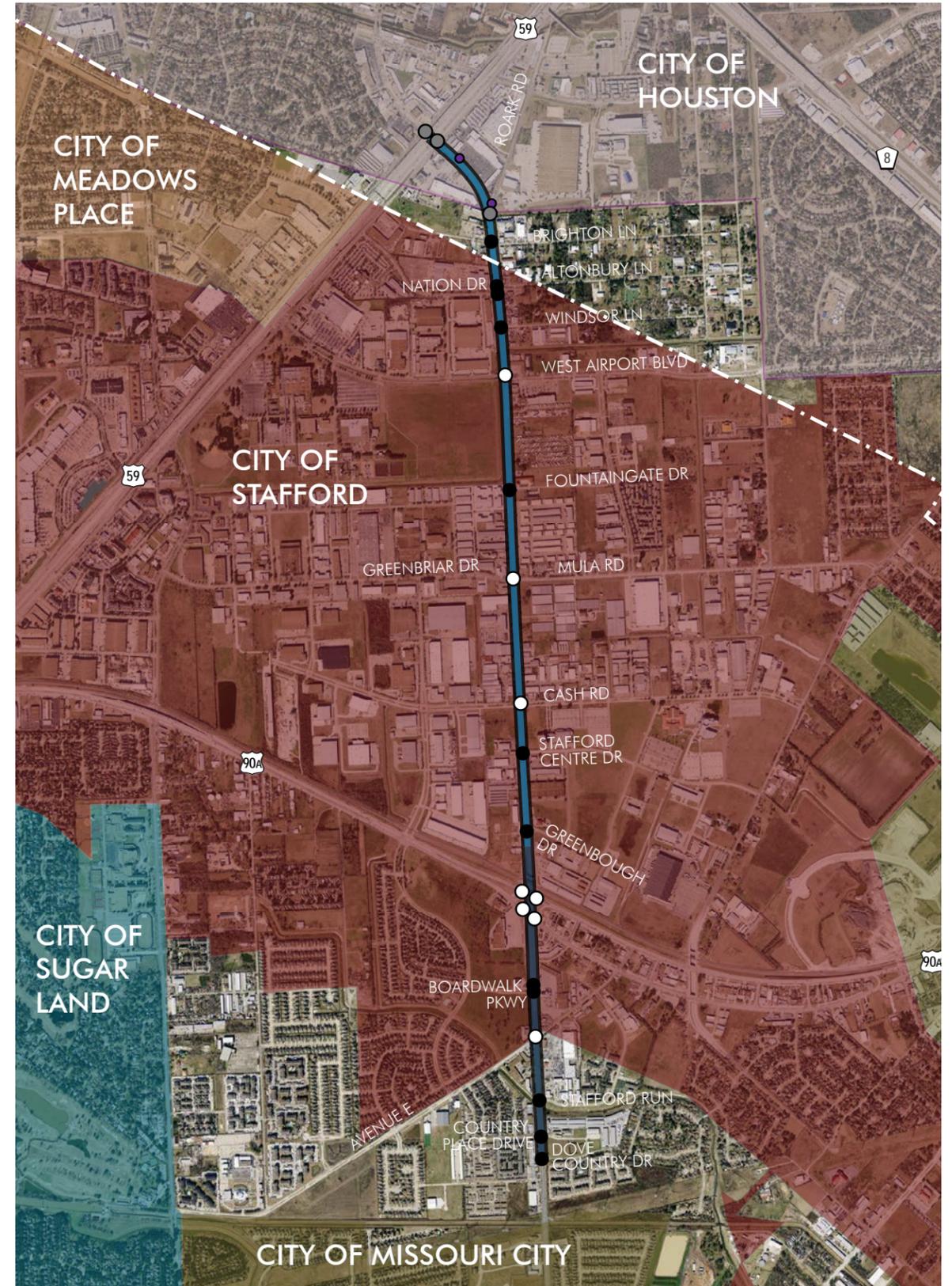


Figure 1.1 Surrounding Jurisdictions

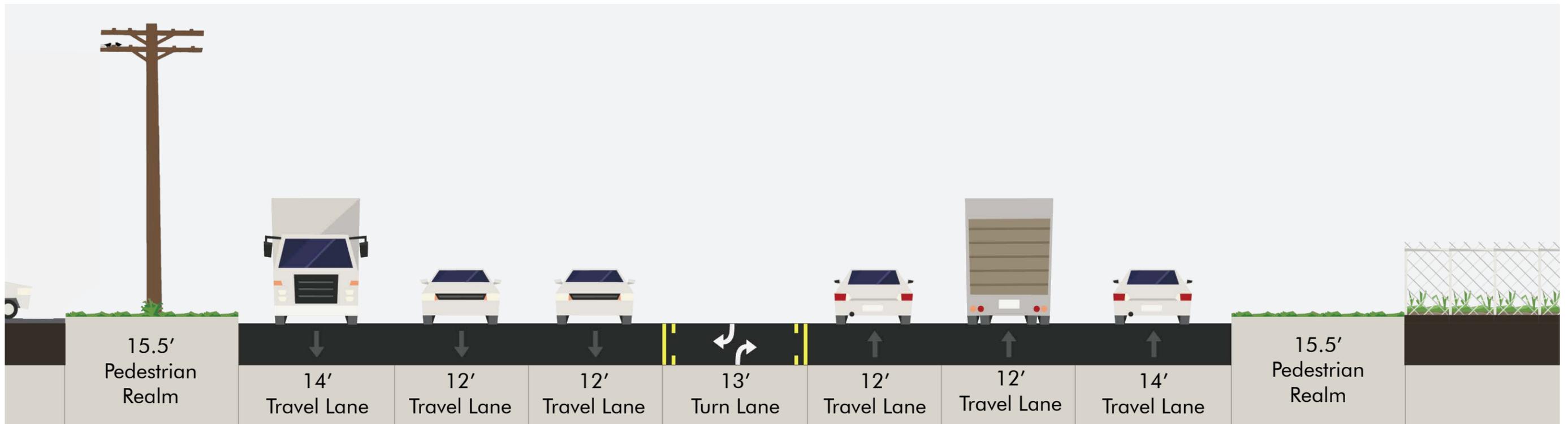


Figure 1.2 FM 1092 Study Corridor Typical Cross Section

corridor, due to reduced conflict points, it will also increase mobility and traffic flow. This will improve traffic delays, lowering emissions and improving air quality along the corridor. Access management also focuses on improving the overall attractiveness of the corridor by creating a sense of place which benefits both users and business owners alike.

An access management study encompasses a large toolbox of strategies that can be implemented to improve the mobility, safety, and attractiveness of a corridor. This toolbox includes:

- Raised medians
- Dedicated left- and right-turn lanes
- Driveway improvements and consolidation
- Joint and cross access between adjacent properties
- Improvements to the pedestrian realm, including sidewalks and pedestrian amenities
- Bicycle facilities and amenities
- Traffic signal operation improvements
- Intelligent Transportation Systems
- Thoroughfare planning to improve surrounding roadway network
- Landscaping
- Branding and Wayfinding
- Policy Improvements

This study will address the current operations of FM 1092 and determine ways to improve mobility of the corridor and present a future plan for the study area that will improve safety, plan for projected growth in the region, and

define a path to meet the goals of the project stakeholder to transform the corridor into a multi-modal, economically vibrant, activity center for the City of Stafford.

STUDY AREA

The 3.1 mile FM 1092 study corridor is a TxDOT roadway that travels through four jurisdictions. The 0.31 mile section between US 59 and Roark Road is within the City of Houston. The 0.15 mile section between Roark Road and the county line (approximately half way between Brighton Lane and Altonbury Lane) is within Stafford ETJ and Harris County. The 2.25 mile section between the county line and Avenue E is within the City of Stafford. The southernmost 0.35 miles between Avenue E and Dove Country Drive is within Stafford ETJ and Fort Bend County. Members of each jurisdiction were part of the project Steering Committee to define goals for the corridor.

The majority of the corridor travels through the City of Stafford, a city which does not levy non-school property taxes and is known for a strong commercial sales tax base. The City of Stafford became the home to a large Texas Instruments (TI) manufacturing site in the 1960s and since then, the city has been a hub of high tech and specialized manufacturing. Due to the large commercial and retail base within the City of Stafford the city sales tax revenue was \$767 per capita in 2010, a much higher value than surrounding communities and the city of Houston. One

Buffer	Land Area	Population	Population Density	Employment	Employment Density
0.25 Mile	1.6 sq. miles	3,254	2,007	4,761	2,936
0.5 Mile	3.5 sq. miles	7,277	2,076	10,974	3,131
1.0 Mile	8.2 sq. miles	22,691	2,760	27,289	3,318
1.5 Mile	14.2 sq. miles	50,033	3,528	38,443	2,711

Table 1.1 2010 Employment and Population within the Study Area
Source: US Census 2010, Longitudinal Employer - Household Dynamics, 2010

Statistics	Study Area	Stafford	Houston	Fort Bend County	Harris County	Texas
Total Population: Total	50,033	17,693	2,099,451	585,375	4,092,459	25,145,561
Households: Total	17,415	6,750	782,643	187,384	1,435,155	8,922,933
Households: Average household size	2.86	2.62	2.64	3.09	2.82	2.75
Median Household income	\$59,549	\$61,084	\$42,962	\$79,845	\$51,444	\$49,646
Unemployed	15.90%	3.70%	8.00%	5.10%	7.30%	7.00%
Below Poverty Level	16%	9%	21.00%	8.00%	16.80%	16.80%
% Own	44%	44%	45%	80%	54%	64%
% Rent	56%	56%	55%	20%	43%	36%
Vacancy	8%	5%	12%	5%	10%	11%
Single Family Detached	51%	50%	46%	84%	57%	66%
Single Family Attached	3%	2%	5%	2%	4%	3%
Apt 2-9	7%	8%	13%	3%	10%	10%
Apt 10-49	31%	29%	24%	5%	18%	10%
Apt 50+	6%	8%	11%	2%	7%	4%
Other	1%	3%	1%	4%	3%	8%
% Hispanic	35.8%	25.9%	43.8%	23.7%	40.8%	37.6%
% White (non Hispanic)	17.9%	22.4%	25.6%	36.2%	33.0%	45.3%
% Black (non Hispanic)	24.7%	26.8%	23.1%	21.1%	18.4%	11.5%
% Asian (non Hispanic)	19.4%	22.6%	5.9%	16.9%	6.1%	3.8%
% Other (non Hispanic)	2.2%	2.3%	1.6%	2.3%	1.7%	1.8%
% 17 or Under	28%	25%	26%	30%	28%	27%
% 18-34	28%	30%	29%	20%	26%	24%
% 35-64	37%	38%	36%	43%	38%	38%
% 65+	7%	7%	9%	7%	8%	10%
% No High School	10%	6%	14%	6%	12%	10%
% Some High School	8%	6%	12%	6%	10%	10%
% High School Graduate	22%	20%	23%	20%	24%	26%
% Some College	22%	24%	18%	21%	20%	22%
% Assoc. Degree	5%	8%	4%	7%	6%	6%
% College Degree	22%	22%	18%	27%	18%	17%
% Grad School	11%	13%	11%	14%	10%	9%
% Drive Alone	77%	83%	74.2%	82%	77%	79%
% Carpool	17%	11%	13.5%	11%	13%	12%
% Transit	2%	2%	4.8%	2%	3%	2%
% Bike	0%	0%	0.4%	0%	0%	0%
% Walk	1%	1%	2.2%	1%	2%	2%
% Other	4%	3%	4.9%	5%	5%	5%
% No Vehicle Available	6%	3%	5%	1%	7%	6%
% 1 Vehicle Available	37%	36%	32%	14%	37%	35%
% 2 Vehicles Available	42%	43%	41%	50%	39%	41%
% 3 or more Vehicles Available	15%	17%	21%	35%	16%	19%

Source: US Census, 2010 Source: American Community Survey 5 year Estimates, 2011

Table 1.2 Study Area Demographics

third of the cities sales tax revenue is collected within 0.5 miles of the study corridor, showing the economic importance of FM 1092 to the City of Stafford.

Table 1.1 summarizes the population as well as the jobs within the study area emphasizing that the corridor is a major employment destination with higher numbers of jobs than local population. Demographics were collected and summarized in Table 1.2, which includes all persons who reside within 1.5 miles of the study corridor. Over 50,000 people live within 1.5 miles of the corridor. The study area population is young and racially diverse. The median income for the study area is similar to the City of Stafford and higher than both Houston and Harris County but less than Fort Bend County, which is one of the highest incomes counties in the state. The majority of residents commute by car, either by driving alone or carpooling. The majority of the single family residential homes are near the edges of study area, with the exception of two residential developments along the south segment of the corridor, the Promenade at Stafford Run and Dove Country.

GOAL DEVELOPMENT

The following summarized the goals developed for the FM 1092 corridor. Working with the project steering committee, which is detailed in Chapter 2, three overarching goals - Safety, Mobility, and Economic Development - were developed for FM 1092.

Safety

The first goal for the study is to improve the safety along the corridor. The overall crash rate for FM 1092 is double the statewide average calculated by TxDOT for peer roadways. The crash rate is 426 crashes per 100 million vehicle miles travelled (VMT); approximately 150 crashes occur along the corridor each year. A high number of crashes are concentrated at key intersection along the corridor. These locations are:

- Greenbough Drive and the US 90A underpass
- West Airport Boulevard
- Greenbriar Drive/Mula Road
- Avenue E
- US 59 Frontage Roads
- Cash Road

Crash data were analyzed to better understand the contributing factors and dynamics of crashes at these hotspots and to develop recommendations to address major safety issues along the corridor.

Research has also shown the number of access points along a corridor is strongly correlated to crash rates. The current driveway density along FM 1092 exceeds typical standards, with some segments of the corridor having driveway densities over 70 driveways per mile. Introducing standards to decrease driveway density through driveway spacing minimums and encouraging joint-access will allow for improvement of safety along the corridor as redevelopment occurs and standards are enforced.

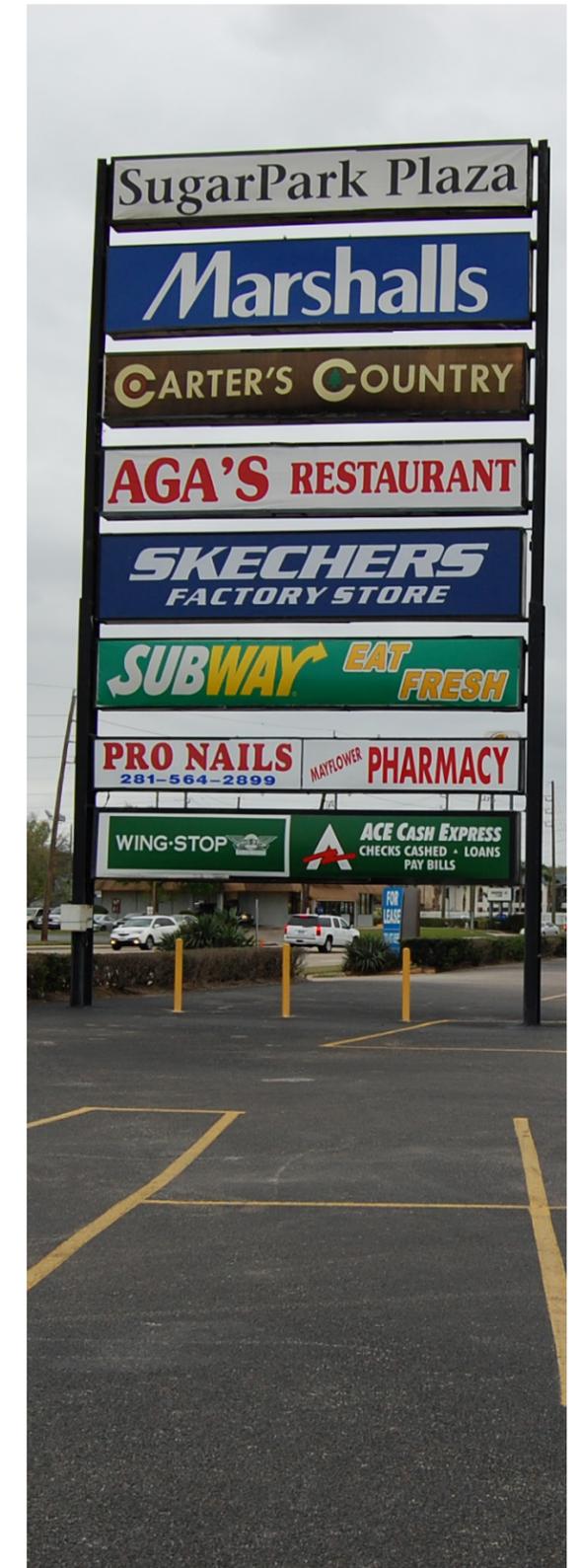


Figure 1.3 Traffic and Signage along FM 1092