SPEED STUDY REPORT ALONG

EAST BLVD FROM
SPENCER HWY TO EAST THIRTEENTH STREET

FOR CITY OF DEER PARK, TEXAS

JUNE 2021

PREPARED BY

Midtown Engineers, LLC

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(713)-862-8848 WWW.MIDTOWNENGINEERS.COM
TBPE NO. F-8934

STATE OF TEXAS
TERRY L. MCDANIEL
53252
LICENSED
PROFESSIONAL ENGINEER

6/23/2021

I. SCOPE

Deer Park contracted with Midtown Engineers, LLC, to conduct a speed study on East Boulevard between Spencer Highway and E Thirteenth Street.

The scope of this study included a field investigation, the collection of speed samples using a radar gun for two hours or 125 vehicles (whichever condition is fulfilled first) at two locations along the study roadway, and the calculation of the 85th percentile speed. The project limits are illustrated in *Figure 1: Site Location Map*, provided in *Appendix A*.

II. KEY FINDINGS

A. Existing Condition

East Boulevard, within the project limits, is a 2.5-mile long, four-lane, concrete boulevard with raised medians and median openings. East Boulevard is classified as a Minor Arterial by the Texas Department of Transportation (TxDOT) Statewide Planning Map. The posted speed limit along East Boulevard ranges between 40 MPH and 50 MPH with a 30 MPH for the school zone. The side street posted speed limits vary between 25, 30, 40 and 45 MPH. The existing speed limits are illustrated in *Figure 2: East Blvd Existing Speed Limit Layout* provided in *Appendix A*. Sidewalks are also present along East Blvd on both the east and west side for parts of the study limits.

According to the Houston-Galveston Area Council (H-GAC), the land use along East Boulevard is primarily residential. There are some commercial developments on the north and south end of the study limit with residential development backing up to East Blvd in between. There are no residential driveways. In addition, Heritage Elementary School and Deer Park Fire Station #3 are located along East Boulevard within the study limit.

B. Analysis

The spot speed study performed at East Blvd south of X St found an 85th percentile speed of 44 and 45 MPH northbound, southbound, respectively. The spot speed study performed at East Blvd between Aaron St and Pasadena Blvd found an 85th percentile speed of 42 and 43 MPH northbound, southbound, respectively. See *Appendix B* for both speed study sheets. According to the *MUTCD* the posted speed limit should be within 5 MPH of the 85th percentile speed.

By reducing the speed limit to 45 MPH, the existing "Reduce Speed Limit Ahead" signs can be eliminated. According to the *MUTCD* a "Reduce Speed Limit Ahead" sign is only needed when a speed limit is being reduced by more than 10 MPH.

It should also be noted that, south of Spencer Hwy the speed limit along Canada St reduces to 35 MPH. North of E Thirteenth Blvd the speed limit is 40 MPH.

Utilizing *FHWA USLIMITS2* a web-based tool designed to help with determining speed limits for certain sections of the roadway using criteria's such as; 85th percentile, annual average daily traffic (AADT), roadway characteristics and geometry, crash data as well as several other criteria's. A speed limit of 45 MPH was recommended. See *Appendix C* for *FHWA USLIMITS2* and *Appendix D* for crash data. The proposed speed limits are illustrated in *Appendix A, Figure 3: East Blvd Proposed Speed Limit Layout*.

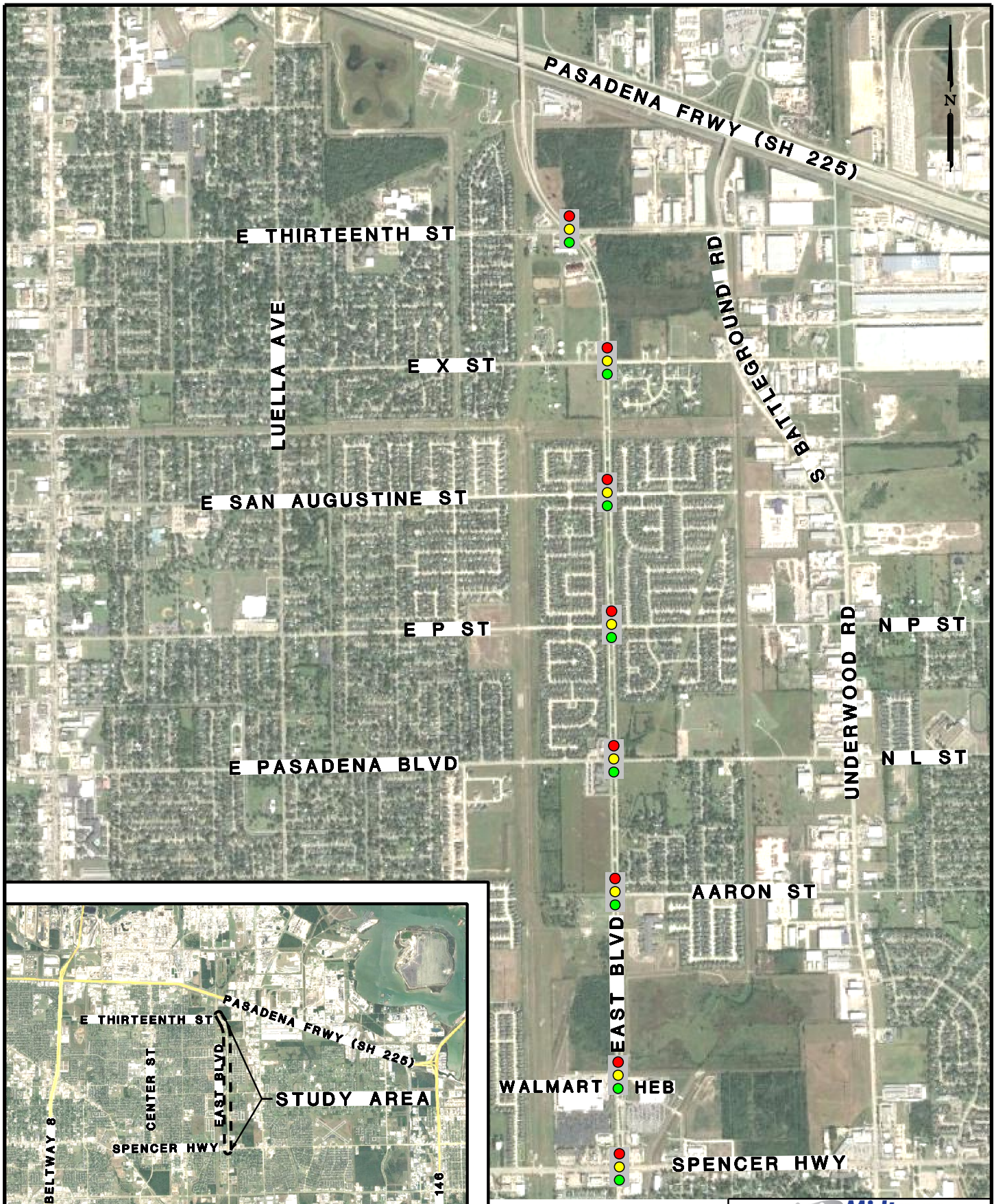
According to the *World Source Institutes-"The Need for (Safe) Speed: 4 Surprising Ways Slower Driving Creates Better Cities"* - "Driving at lower speeds also enables drivers to stop within a shorter distance. The stopping distance of a vehicle is a combination of the distance travelled during the driver's reaction time and the distance it takes for the car to stop after the brakes are applied. At higher speeds, a car travels further during this reaction time and the stopping distance is greater. This affects the rate of momentum at the point of a crash, and therefore the possibility of survival."

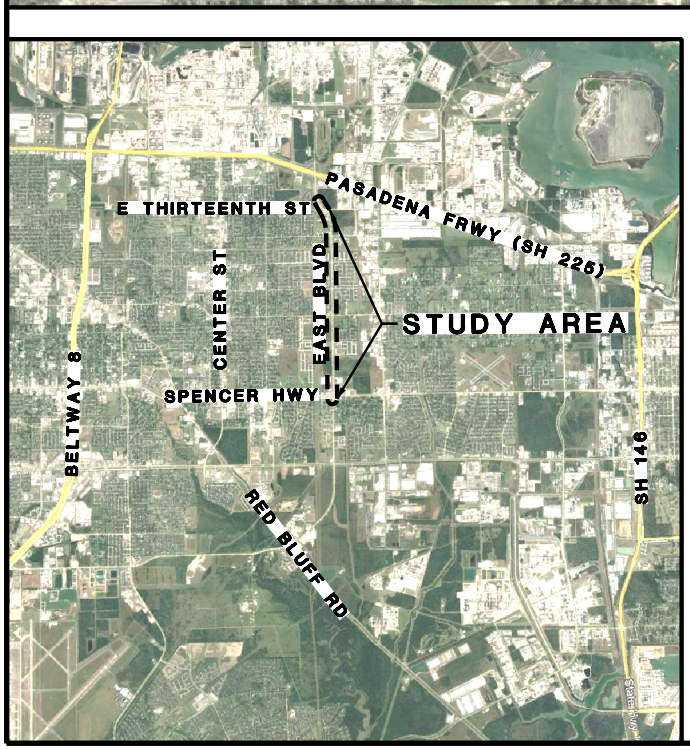
III. RECOMMENDATIONS

A higher speed limit creates "tunnel vision", by reducing the speed limit, the field of vision is widened hence allowing for the driver to notice more. A lower speed limit also reduces traffic fatalities, the chances of survival in a crash at a higher speed vs a lower speed are inversely proportional. Higher the speed limit, the lower chances of survival are.

Based on this analysis and engineering judgment, Midtown Engineers recommends that the existing 50 MPH posted speed limit along East Blvd be reduced to 45 MPH. It is also recommended to keep the existing posted 40 MPH speed limit on both end of East Blvd as is.

Appendix A:
Exhibit 1 through Exhibit 3





LEGEND

SIGNALIZED INTERSECTION

Midtown Engineers, LLC
5225 Katy Freeway, Suite 400 Houston, Texas 77007
(713) 862-8848 TBPE No. F-8934

EAST BOULEVARD TRAFFIC SIGNAL IMPROVEMENTS

EXHIBIT 1:
SITE LOCATION MAP

DATE:	SCALE:
6/14/2021	N.T.S.

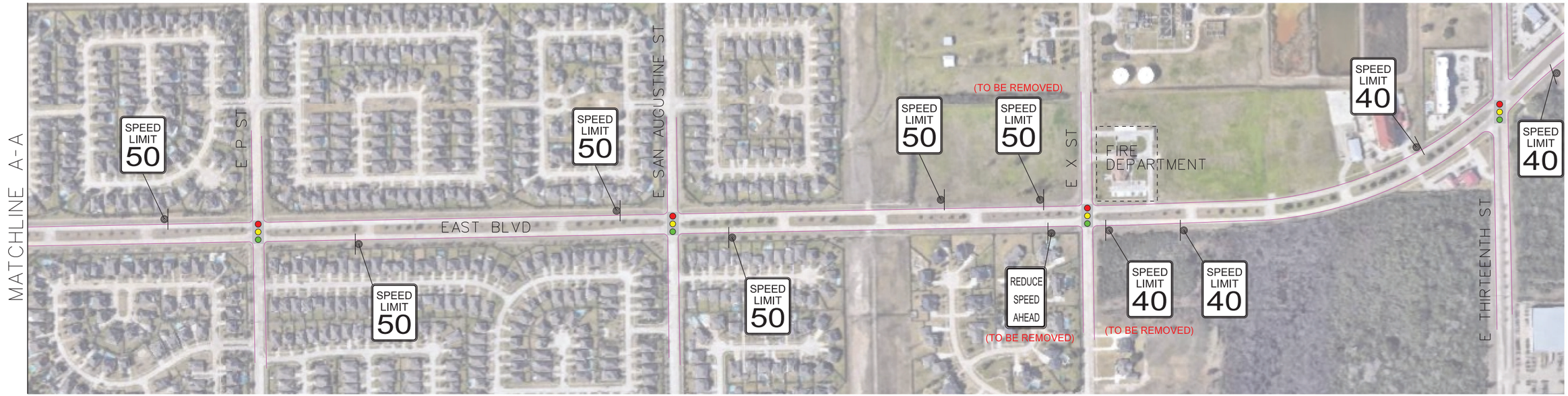


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EXHIBIT 2
EAST BLVD
EXISTING SPEED LIMIT LAYOUT

DATE:	JOB NO.:	SHEET NO.:
6/18/2021	DEER - 4532	

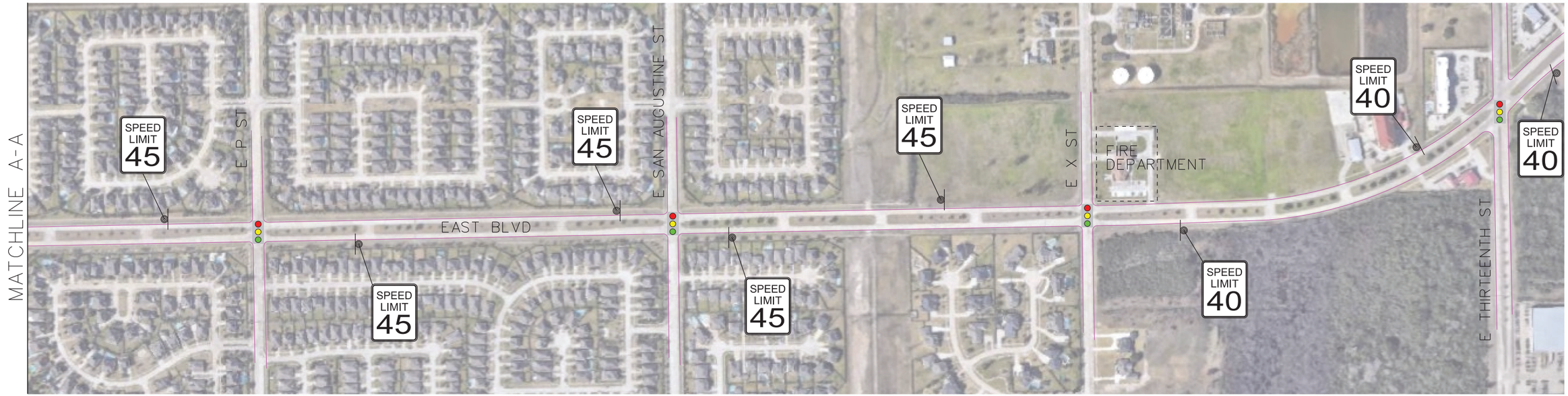

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EXHIBIT 3
EAST BLVD
PROPOSED SPEED LIMIT LAYOUT

DATE:	JOB NO.:	SHEET NO.:
6/18/2021	DEER - 4532	

Appendix B:
Spot Speed Study

Spot Speed Study

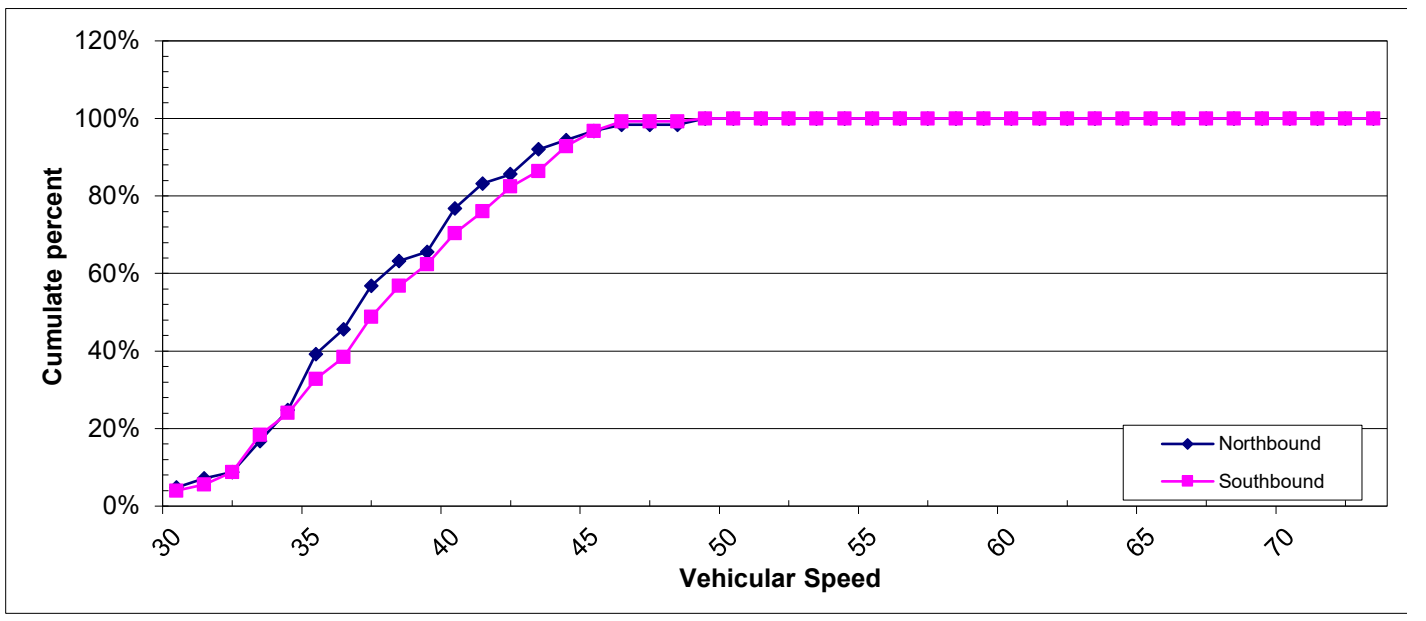
East Rd between Aaron St and Pasadena Blvd

Date: 5/26/2021
Posted Speed: 50 MPH

Begin Time: 9:30 AM
End Time: 11:30 AM

Northbound 85% speed is: **42 MPH**
Southbound 85% speed is: **43 MPH**

Speed	Northbound	Southbound
30	6	5
31	3	2
32	2	4
33	10	12
34	10	7
35	18	11
36	8	7
37	14	13
38	8	10
39	3	7
40	14	10
41	8	7
42	3	8
43	8	5
44	3	8
45	3	5
46	2	3
47	0	0
48	0	0
49	2	1
50	0	0
51	0	0
52	0	0
53	0	0
54	0	0
55	0	0
56	0	0
57	0	0
58	0	0
59	0	0
60	0	0
61	0	0
62	0	0
63	0	0
64	0	0
65	0	0
66	0	0
67	0	0
68	0	0
69	0	0
70	0	0
71	0	0
72	0	0
73	0	0
74	0	0
75	0	0
Total:	125	125



	Northbound					Southbound				
	Cumulative			Cumulative			Cumulative			Cumulative	
	Total of Vehicles Surveyed	Percent of Vehicles Surveyed		Total of Vehicles Surveyed	Percent of Vehicles Surveyed		Total of Vehicles Surveyed	Percent of Vehicles Surveyed		Total of Vehicles Surveyed	Percent of Vehicles Surveyed
30	6	5%	53	125	100%	30	5	4%	53	125	100.00%
31	9	7%	54	125	100%	31	7	6%	54	125	100.00%
32	11	9%	55	125	100%	32	11	9%	55	125	100.00%
33	21	17%	56	125	100%	33	23	18%	56	125	100.00%
34	31	25%	57	125	100%	34	30	24%	57	125	100.00%
35	49	39%	58	125	100%	35	41	33%	58	125	100.00%
36	57	46%	59	125	100%	36	48	38%	59	125	100.00%
37	71	57%	60	125	100%	37	61	49%	60	125	100.00%
38	79	63%	61	125	100%	38	71	57%	61	125	100.00%
39	82	66%	62	125	100%	39	78	62%	62	125	100.00%
40	96	77%	63	125	100%	40	88	70%	63	125	100.00%
41	104	83%	64	125	100%	41	95	76%	64	125	100.00%
42	107	86%	65	125	100%	42	103	82%	65	125	100.00%
43	115	92%	66	125	100%	43	108	86%	66	125	100.00%
44	118	94%	67	125	100%	44	116	93%	67	125	100.00%
45	121	97%	68	125	100%	45	121	97%	68	125	100.00%
46	123	98%	69	125	100%	46	124	99%	69	125	100.00%
47	123	98%	70	125	100%	47	124	99%	70	125	100.00%
48	123	98%	71	125	100%	48	124	99%	71	125	100.00%
49	125	100%	72	125	100%	49	125	100%	72	125	100.00%
50	125	100%	73	125	100%	50	125	100%	73	125	100.00%
51	125	100%	74	125	100%	51	125	100%	74	125	100.00%
52	125	100%	75	125	100%	52	125	100%	75	125	100.00%

Spot Speed Study

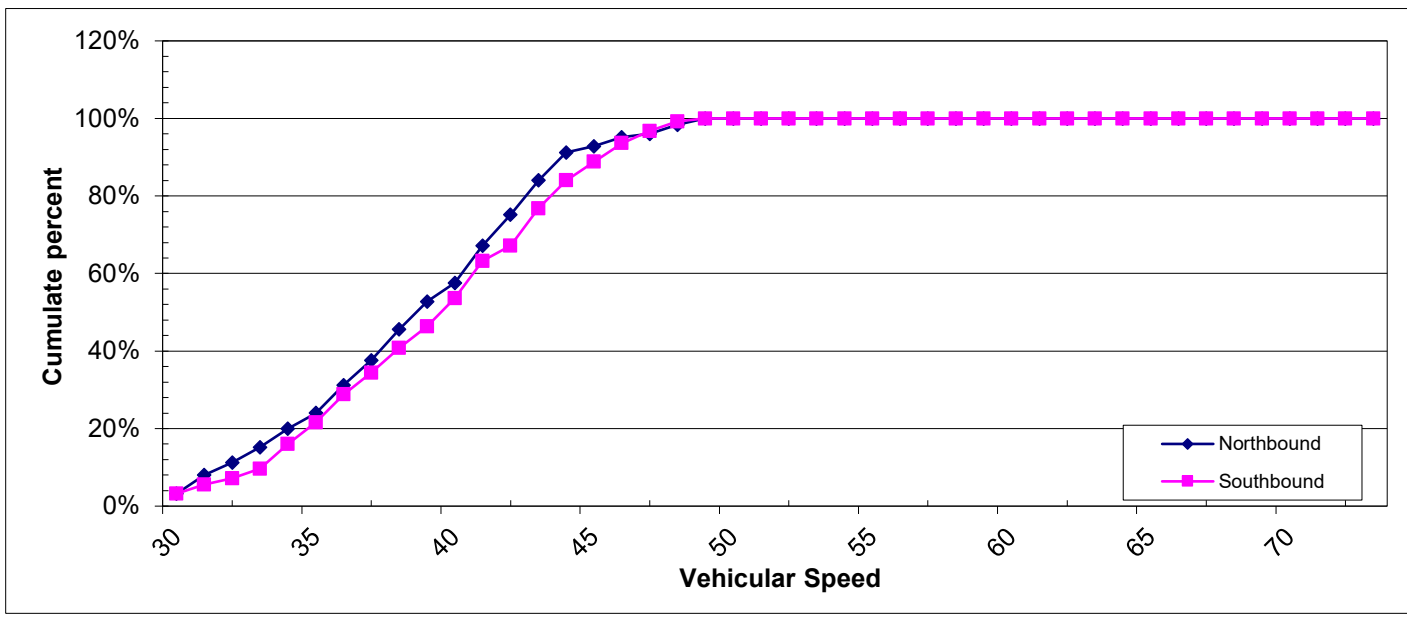
East Rd south of X St

Date: 5/26/2021
Posted Speed: 50 MPH

Begin Time: 9:30 AM
End Time: 11:30 AM

Northbound 85% speed is: **44 MPH**
Southbound 85% speed is: **45 MPH**

Speed	Northbound	Southbound
30	4	4
31	6	3
32	4	2
33	5	3
34	6	8
35	5	7
36	9	9
37	8	7
38	10	8
39	9	7
40	6	9
41	12	12
42	10	5
43	11	12
44	9	9
45	2	6
46	3	6
47	1	4
48	3	3
49	2	1
50	0	0
51	0	0
52	0	0
53	0	0
54	0	0
55	0	0
56	0	0
57	0	0
58	0	0
59	0	0
60	0	0
61	0	0
62	0	0
63	0	0
64	0	0
65	0	0
66	0	0
67	0	0
68	0	0
69	0	0
70	0	0
71	0	0
72	0	0
73	0	0
74	0	0
75	0	0
Total:	125	125



	Northbound					Southbound				
	Cumulative			Cumulative			Cumulative			Cumulative	
	Total of Vehicles Surveyed	Percent of Vehicles Surveyed		Total of Vehicles Surveyed	Percent of Vehicles Surveyed		Total of Vehicles Surveyed	Percent of Vehicles Surveyed		Total of Vehicles Surveyed	Percent of Vehicles Surveyed
30	4	3%	53	125	100%	30	4	3%	53	125	100.00%
31	10	8%	54	125	100%	31	7	6%	54	125	100.00%
32	14	11%	55	125	100%	32	9	7%	55	125	100.00%
33	19	15%	56	125	100%	33	12	10%	56	125	100.00%
34	25	20%	57	125	100%	34	20	16%	57	125	100.00%
35	30	24%	58	125	100%	35	27	22%	58	125	100.00%
36	39	31%	59	125	100%	36	36	29%	59	125	100.00%
37	47	38%	60	125	100%	37	43	34%	60	125	100.00%
38	57	46%	61	125	100%	38	51	41%	61	125	100.00%
39	66	53%	62	125	100%	39	58	46%	62	125	100.00%
40	72	58%	63	125	100%	40	67	54%	63	125	100.00%
41	84	67%	64	125	100%	41	79	63%	64	125	100.00%
42	94	75%	65	125	100%	42	84	67%	65	125	100.00%
43	105	84%	66	125	100%	43	96	77%	66	125	100.00%
44	114	91%	67	125	100%	44	105	84%	67	125	100.00%
45	116	93%	68	125	100%	45	111	89%	68	125	100.00%
46	119	95%	69	125	100%	46	117	94%	69	125	100.00%
47	120	96%	70	125	100%	47	121	97%	70	125	100.00%
48	123	98%	71	125	100%	48	124	99%	71	125	100.00%
49	125	100%	72	125	100%	49	125	100%	72	125	100.00%
50	125	100%	73	125	100%	50	125	100%	73	125	100.00%
51	125	100%	74	125	100%	51	125	100%	74	125	100.00%
52	125	100%	75	125	100%	52	125	100%	75	125	100.00%

Appendix C:
FHWA USLIMITS

USLIMITS2 Speed Zoning Report

Project Overview

Project Name: East Blvd Speed Study

Analyst: Ksenia Kozakis

Date: 2021-06-15

Basic Project Information
Route Name: East Blvd
From: E Thirteenth ST
To: Spencer Hwy
State: Texas
County: Harris County
City: Deer Park city
Route Type: Road Section in Developed Area
Route Status: Existing

Crash Data Information
Crash Data Years: 1.00
Crash AADT: 18000 veh/day
Total Number of Crashes: 42
Total Number of Injury Crashes: 0
Section Crash Rate: 256 per 100 MVM
Section Injury Crash Rate: 0 per 100 MVM
Crash Rate Average for Similar Roads: 200
Injury Rate Average for Similar Roads: 63

Roadway Information
Section Length: 2.5 mile(s)
Statutory Speed Limit: 50 mph
Existing Speed Limit: 50 mph
Adverse Alignment: No
One-Way Street: No
Divided/Undivided: Divided
Number of Through Lanes: 4
Area Type: Residential-Collector/Arterial
Number of Driveways: 10
Number of Signals: 7

Traffic Information
85th Percentile Speed: 45 mph
50th Percentile Speed: 37 mph
AADT: 18000 veh/day
On Street Parking and Usage: Not High
Pedestrian / Bicyclist Activity: Not High

Recommended Speed Limit:

Disclaimer: The U.S. Government assumes no liability for the use of the information contained in this report. This report does not constitute a standard, specification, or regulation.

Appendix D:
Crash Data

C.R.I.S. QUERY
Crash Records Information System

All crash data available using this tool represents reportable data collected from Texas Peace Officer's Crash Reports (CR-3) received and processed by the Texas Department of Transportation (Department) as of 06/18/2021. The Department makes no warranty, representation or guaranty as to the content, accuracy, timeliness or completeness of any of the information provided as a result of your query. Any opinions and conclusions resulting from analysis performed on the crash data must be represented as your own and not those of the State of Texas or the Department.

Query Results List View

Crash ID	Crash Date	Crash Severity	Intersecting Street Name	Manner of Collision	Speed Limit	Street Name
16854615	2019-01-14	N - NOT INJURED	E X ST	ANGLE - BOTH GOING STRAIGHT	50	EAST BLVD
16868884	2019-01-26	N - NOT INJURED	UNKNOWN	SAME DIRECTION - BOTH GOING STRAIGHT-REAR END	40	EAST BLVD
16886715	2019-02-05	N - NOT INJURED	N/A	SAME DIRECTION - ONE STRAIGHT-ONE STOPPED	50	EAST BLVD
16897689	2019-02-11	B - SUSPECTED MINOR INJURY	N/A	SAME DIRECTION - BOTH GOING STRAIGHT-SIDESWIPE	45	E PASADENA BLVD
16929887	2019-03-01	N - NOT INJURED	N/A	SAME DIRECTION - BOTH GOING STRAIGHT-REAR END	40	EAST BLVD
16942159	2019-03-09	N - NOT INJURED	E P ST	OPPOSITE DIRECTION - ONE STRAIGHT-ONE LEFT TURN	50	EAST BLVD
16954269	2019-03-12	C - POSSIBLE INJURY	N/A	ONE MOTOR VEHICLE - GOING STRAIGHT	50	EAST BLVD
16968997	2019-03-25	C - POSSIBLE INJURY	N/A	SAME DIRECTION - BOTH GOING STRAIGHT-REAR END	50	EAST BLVD
17003159	2019-04-02	N - NOT INJURED	EAST BLVD	ONE MOTOR VEHICLE - TURNING RIGHT	40	E P ST
16999132	2019-04-05	N - NOT INJURED	N/A	ANGLE - BOTH GOING STRAIGHT	40	EAST BLVD
17018463	2019-04-10	C - POSSIBLE INJURY	N/A	ANGLE - ONE STRAIGHT-ONE LEFT TURN	40	EAST BLVD
17042966	2019-04-30	C - POSSIBLE INJURY	E SAN AUGUSTINE ST	SAME DIRECTION - ONE STRAIGHT-ONE STOPPED	50	EAST BLVD
17052059	2019-05-03	N - NOT INJURED	N/A	SAME DIRECTION - BOTH GOING STRAIGHT-REAR END	40	E SAN AUGUSTINE ST
17085618	2019-05-11	N - NOT INJURED	EAST BLVD	SAME DIRECTION - ONE STRAIGHT-ONE STOPPED	40	E PASADENA BLVD
17085620	2019-05-19	C - POSSIBLE INJURY	N/A	ANGLE - ONE STRAIGHT-ONE LEFT TURN	40	EAST BLVD
17132165	2019-06-13	N - NOT INJURED	N/A	SAME DIRECTION - BOTH GOING STRAIGHT-SIDESWIPE	40	E PASADENA BLVD
17158250	2019-06-27	N - NOT INJURED	N/A	ONE MOTOR VEHICLE - GOING STRAIGHT	50	EAST BLVD
17158811	2019-06-27	C - POSSIBLE INJURY	N/A	SAME DIRECTION - ONE STRAIGHT-ONE STOPPED	50	EAST BLVD
17170329	2019-07-01	N - NOT INJURED	E PASADENA BLVD	SAME DIRECTION - ONE STRAIGHT-ONE STOPPED	40	EAST BLVD
17167964	2019-07-03	N - NOT INJURED	AARON ST	OPPOSITE DIRECTION - ONE STRAIGHT-ONE LEFT TURN	40	EAST BLVD
17167965	2019-07-03	N - NOT INJURED	EAST BLVD	SAME DIRECTION - ONE STRAIGHT-ONE RIGHT TURN	40	E SAN AUGUSTINE ST
17175850	2019-07-08	N - NOT INJURED	E SAN AUGUSTINE ST	OPPOSITE DIRECTION - ONE STRAIGHT-ONE LEFT TURN	40	EAST BLVD

Crash ID	Crash Date	Crash Severity	Intersecting Street Name	Manner of Collision	Speed Limit	Street Name
17209253	2019-07-30	C - POSSIBLE INJURY	AARON ST	SAME DIRECTION - ONE STRAIGHT-ONE STOPPED	50	EAST BLVD
17231060	2019-08-07	N - NOT INJURED	N/A	OPPOSITE DIRECTION - ONE STRAIGHT-ONE LEFT TURN	40	EAST BLVD
17239606	2019-08-16	C - POSSIBLE INJURY	N/A	ANGLE - ONE STRAIGHT-ONE LEFT TURN	40	EAST BLVD
17241706	2019-08-17	N - NOT INJURED	N/A	SAME DIRECTION - BOTH GOING STRAIGHT-REAR END	50	EAST BLVD
17265891	2019-08-27	N - NOT INJURED	N/A	SAME DIRECTION - ONE STRAIGHT-ONE RIGHT TURN	20	EAST BLVD
17272073	2019-09-03	N - NOT INJURED	EAST BLVD	ANGLE - BOTH GOING STRAIGHT	40	E P ST
17289552	2019-09-07	N - NOT INJURED	E PASADENA BLVD	SAME DIRECTION - BOTH GOING STRAIGHT-REAR END	50	EAST BLVD
17287082	2019-09-10	N - NOT INJURED	EAST BLVD	ANGLE - BOTH GOING STRAIGHT	45	E PASADENA BLVD
17296320	2019-09-16	N - NOT INJURED	E P ST	SAME DIRECTION - ONE STRAIGHT-ONE STOPPED	50	EAST BLVD
17296319	2019-09-18	N - NOT INJURED	E SAN AUGUSTINE ST	ANGLE - ONE STRAIGHT-ONE RIGHT TURN	50	EAST BLVD
17302193	2019-09-21	C - POSSIBLE INJURY	E SAN AUGUSTINE ST	OPPOSITE DIRECTION - ONE STRAIGHT-ONE LEFT TURN	50	EAST BLVD
17346702	2019-10-14	C - POSSIBLE INJURY	N/A	OPPOSITE DIRECTION - ONE STRAIGHT-ONE LEFT TURN	40	EAST BLVD
17354480	2019-10-17	N - NOT INJURED	UNKNOWN	ANGLE - BOTH GOING STRAIGHT	40	EAST BLVD
17358976	2019-10-21	N - NOT INJURED	E SAN AUGUSTINE ST	ANGLE - ONE STRAIGHT-ONE RIGHT TURN	50	EAST BLVD
17395352	2019-11-10	C - POSSIBLE INJURY	AARON ST	SAME DIRECTION - ONE STRAIGHT-ONE STOPPED	50	EAST BLVD
17404658	2019-11-11	C - POSSIBLE INJURY	SPENCER HWY	SAME DIRECTION - ONE STRAIGHT-ONE STOPPED	40	EAST BLVD
17411309	2019-11-18	C - POSSIBLE INJURY	E P ST	ANGLE - BOTH GOING STRAIGHT	50	EAST BLVD
17460635	2019-12-11	N - NOT INJURED	E PASADENA BLVD	ONE MOTOR VEHICLE - TURNING LEFT	45	EAST BLVD
17460640	2019-12-12	C - POSSIBLE INJURY	N/A	ANGLE - BOTH GOING STRAIGHT	40	EAST BLVD
17474726	2019-12-21	N - NOT INJURED	N/A	SAME DIRECTION - BOTH GOING STRAIGHT-REAR END	50	EAST BLVD

Query Result Counts

Your query returned a total of 42 Crashes containing 88 Units and 122 Persons.

Filters Applied to Query

Crash Year Is Equal To 2019