FM 1764 Access Management Study
Executive Summary

Project Title: FM 1764 Access Management Study
Client: Houston-Galveston Area Council
Beneficiary: City of Texas City
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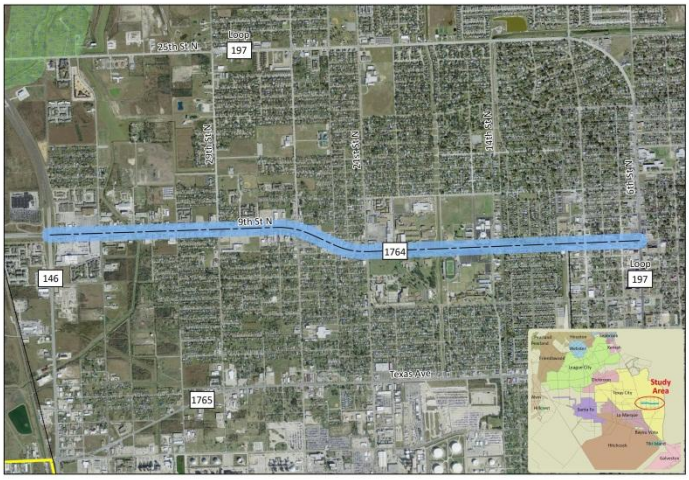


Project Description:
The purpose of this study of access management needs and opportunities on FM 1764, from SH 146 to 14th Street in Texas City, is to identify and evaluate a range of viable short, medium, and long-term improvement concepts that will improve safety and mobility, reduce crash rates, and reduce traffic delays. These initiatives should in turn result in enhanced land use and preservation of property values along the corridor. The strategies also focused on facilitating transit operations, providing opportunities for pedestrian connectivity, and to the extent possible facilitate aesthetic and landscaping treatments; all of which will help stimulate economic vitality of the community.

Recommendation: Single Point Urban Interchange (SPUI)
Description: A SPUI is divided highway intersection in which the opposing left turn lanes are bent inward toward each other so that they can both move on the same signal phase, as in a typical intersection. Compared to the Diamond Interchange, the SPUI Interchange eliminates much of the lost time of clearing out the middle of the intersection where opposing left turns would crossover each other's path. TxDOT is relatively new to the concept of the SPUI. (One of the first on a TxDOT facility has recently been installed at Parker Road and US 75 in Plano.) This would be the first SPUI in the Houston District, and District staff were very interested in the SPUI performance. TxDOT requested copies of the TransModeler simulation that were prepared for analysis and animation for the public meetings.

Need Filled: Texas City is host to several large oil refineries and receives a heavy influx and exodus of workers each day. The diamond interchange of FM 1764 at the grade separation of SH 164 experiences extensive queue lengths and travel time delay each day. During the PM peak hour, the queue along the SH 164 NB service road backs up to the exit ramp from SH 164 and extends approximately 1/4 mile to 1/2 mile in each direction along FM 1764, amassing well over 200 vehicle-hours of delay each day.

SPUI Operational Measures

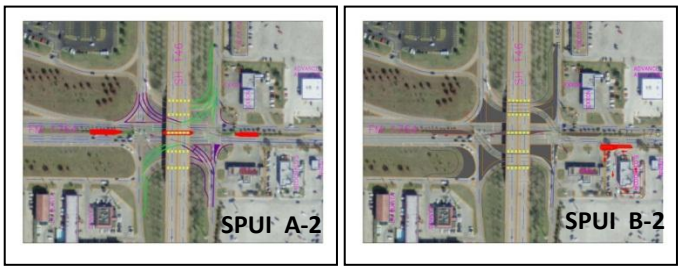
Values for one PM peak hour	Existing Conditions	SPUI A-2 Treatment	SPUI B-2 Treatment	Expected Net Improvement
Total Delay, veh-hrs	232	39	38	193
Avg. Delay, sec/veh	157	33	31	124
Stopped Time, veh-hrs	196	29	27	167
Avg. Stopped Time, sec/veh	133	25	22	108
Wasted Fuel at Idling, gallons	60	9	8	51

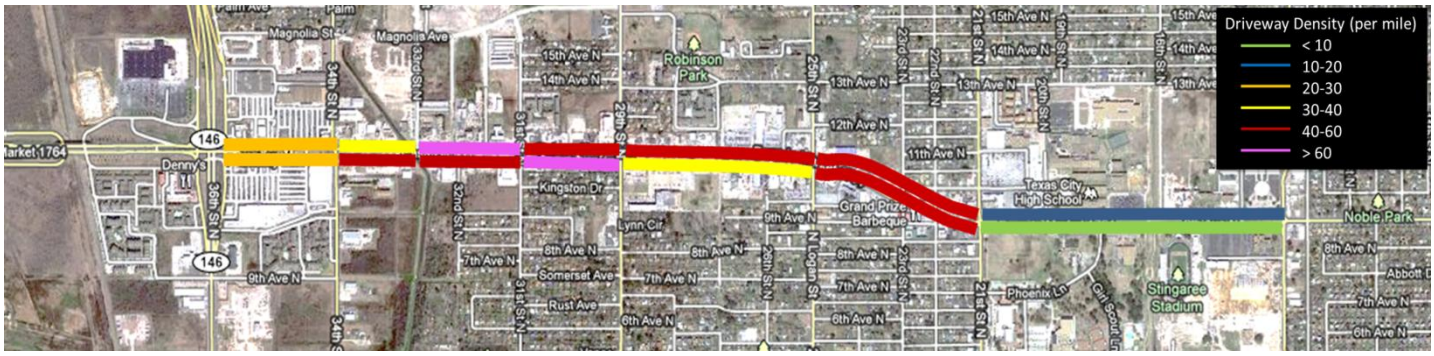
SPUI saves over 50,000 vehicle hours of delay & 12,525 gallons of fuel per year
Savings of over $800,000 personal travel time cost per year
Savings of over $44,000 in fuel per year
Plus Air Quality benefits

Based on 250 work week days per year, only one peak hour per day, using $16.00/hour value of time, 0.3 gallons of fuel/hour of idling, $3.50 per gallon of fuel.

Benefits: Several variations on the SPUI were developed to assess the potential benefits and impacts of the SPUI concept.

Two variations were show to particularly beneficial, both reducing delay at the interchange by over 80%, and creating an acceptable level of service in terms of average delay per vehicle.

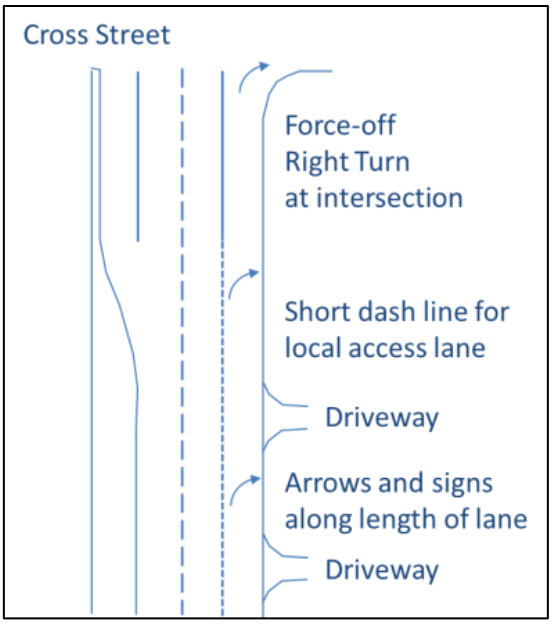




Recommendation: Continuous Right Turn Lanes (CRTL)

Description: The FM 1764 corridor had been developed, lot by lot, over many years resulting in some sections with a density of well over 40 driveways per mile on each side of the street. The turning and crossing activity of vehicles in and out of the driveways was causing a relatively high rate of crashes compared to other urban arterials. The rightmost lane moves much slower than the other two lanes in each direction. Citizens complained that they did not feel safe traveling along FM 1764 and avoided going to the businesses along that corridor. The recommended treatment allocates the rightmost lane as a continuous right turn lane (CRTL), designated by dotted white lane striping and signage. The CRTL ends in a right turn only lane at strategic intersections to keep through traffic from using the lane. The CRTL is more appropriate than a full road diet loss of the right lane at this time due to the existing numerous small size and discontinuous nature of adjoining property developments.

Need Filled: While traffic calming is not typically employed along arterial roadways, a sense of order was needed along the roadway to separate the faster moving traffic from the slower entering and existing traffic. We performed an operational analysis using Synchro traffic Simulation software and determined that the forcing off of the CTRL at strategic intersections did not reduce level of serviced below LOS C.



Benefits: The CTRL is expected to calm the traffic along the roadway by separating the various speeds of traffic, resulting in a reduction of traffic crashes and increased driver confidence and in turn increased local patronage of businesses along the corridor. The treatment of forcing off the CTRL at strategic intersections allowed for the provision of a bulb-out extension of the sidewalk zone at these intersections downstream of the force-off, which provides for a shorter crossing distance for pedestrians and a bus stop refuge for the local transit service.