

TRAFFIC SAFETY WORKSHOP SUMMARY REPORT
OLD SIXTH WARD NEIGHBORHOOD
HOUSTON, TEXAS

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TBPE FIRM REG.#F-4302

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Introduction

The Old Sixth Ward/TIRZ engaged Gonzalo Camacho, P.E. to conduct a traffic safety workshop attended by residents and stakeholders of the Old Sixth Ward. The purpose of the workshop consisted of:

- Establish a dialogue with participants.
- Address concerns and priorities related to traffic and pedestrian safety.
- Assist participants in better understanding of traffic calming.
- Provide description of various strategies used to manage traffic.
- Provide alternative strategies for traffic calming and for improving pedestrian access pertinent to the Old Sixth Ward.

The following write-up is for education purposes. It is a summary of topics addressed during the workshop and relevant information to aid in the understanding of public concerns. It includes:

- Brief descriptions of traffic control devices and traffic calming strategies.
- For individual streets, it provides a brief description of challenges as expressed by residents as well as opportunities to improve the OSW making it safer for pedestrians, bicyclists, and automobile drivers.
- Identifies some options that could be considered for addressing concerns of residents and suggested improvements.

The summary is only a guideline for alternatives that maybe considered. It is not an engineering study and/or recommended engineering solutions. Any of the suggested improvements should be individually considered, analyzed, engineered, and approved by public authorities before implementation.

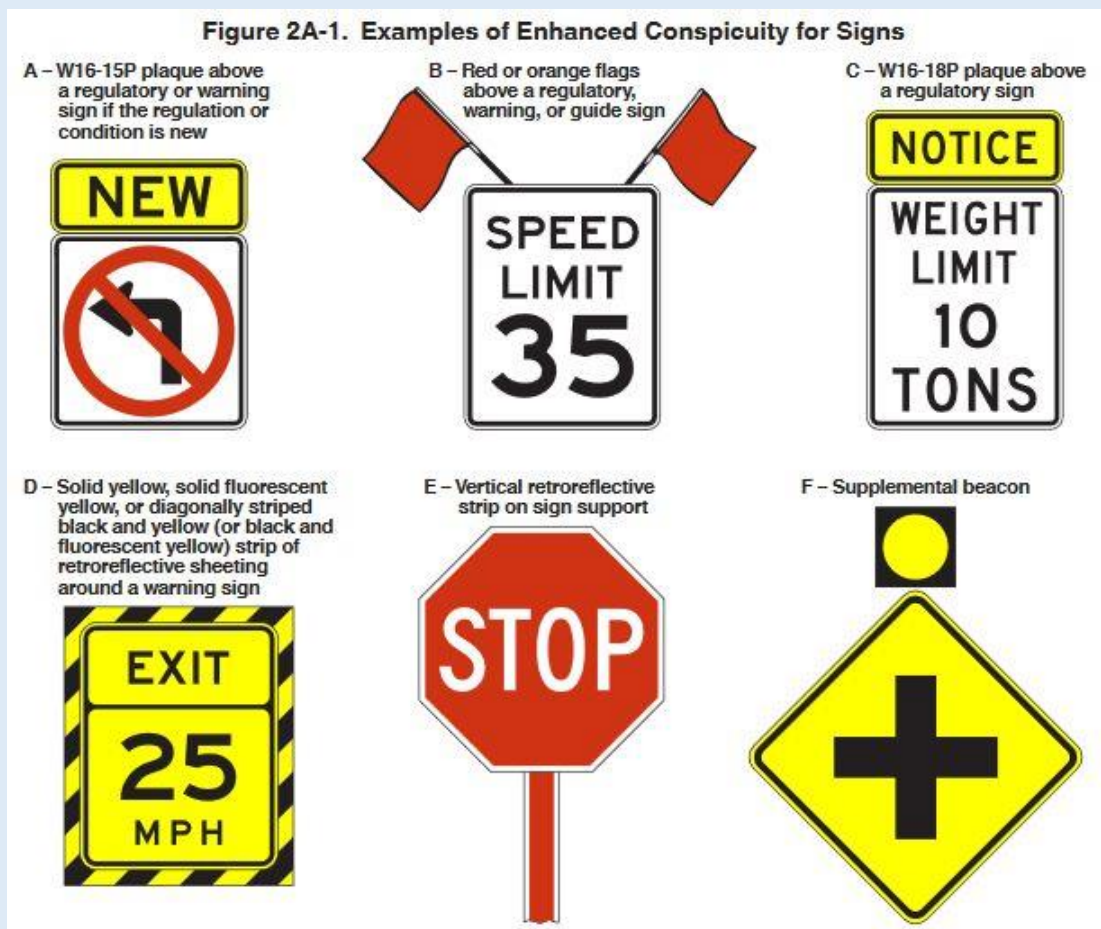
Tools, Traffic Calming Strategies and Descriptions

Following is a brief description of traffic control devices, regulations, and applications along with some strategies used for traffic calming as they apply to the Old Sixth Ward neighborhood.

Texas Manual on Uniform Traffic Control Devices (Texas MUTCD)

The Texas MUTCD provides minimum standards for placement of traffic control devices in public roads. Source: <https://www.txdot.gov/business/resources/signage/tmutcd.html>

Texas MUTCD



As an example of guidance for warranting the installation of a STOP sign consider:

- Through traffic per day exceeds 6,000 vehicles
- Restricted view requires drivers to stop before proceeding to cross a street
- Unsafe conditions as shown by crash records

“Traffic Calming”

Traffic calming brings together engineering design and traffic management strategies for the purpose of safer traffic flow conditions. Traffic calming strategies intend to: improve roadway safety, promote walking and bicycling, and enhance quality of life.

“Share space” design approach of streets for use of many modes of transportation.



Accident-free zone: The German town which scrapped all traffic lights and road signs: “If you find yourself crossing the road in the German town of Bohmte, look both ways – and then perhaps check again. It has scrapped all its traffic lights and road signs in a radical experiment designed to make the streets safer... In the four weeks since the signs were ripped up, there has not been a single accident.” 23 June 2008 www.DailyMail.com

Traffic Signs

Cannot regulate driver behavior. If a sign is not warranted it may not be effective and drivers might ignore the sign.

The function of traffic signs is to inform about regulations, warnings, and guidance to road users. Placement of traffic signs should follow standards and/or traffic engineering guidance.

Regulatory signs provide information about traffic laws or regulations.



"STOP" (R1-1)

Warning signs provide information not apparent to users.



"25 MPH" (W13-1P)

Guide signs provide direction or points of interest.



"Parking" (D4-1)

Vertical vs. Horizontal Traffic Divertors

A method used to reduce traffic speeds are traffic divertors. Traffic divertors can be categorized as vertical or horizontal divertors. Vertical divertors are barriers that vehicles need to go over thus requiring drivers to slow down to avoid the hump or barrier such as: humps, cushions, tables, and raised crosswalks. Unlike vertical divertors, horizontal divertors require that drivers slow down to drive around the horizontal divertors such as: chicanes, traffic circles, roundabouts, and lateral shift.

The implementation of divertors should include some of the following considerations:

- Purpose, what is the objective or purpose for implementing traffic divertors?
- Alternatives, are there other options that can meet the intended objective?
- Selection, which is the better option between vertical and horizontal divertors?

When selecting the type and design of traffic divertors, additional considerations should be given to the following:

- Access for emergency vehicles (ambulance, fire)
- Environmental pollution (acceleration deceleration of vehicles)
- Engineering and costs (drainage, cleaning, construction, maintenance)
- Location, location, location

Vertical Traffic Diversion - Speed Cushions

Similar to speed humps but with wheel cut-outs designed to slow passenger vehicles.

Speed cushions are effective at slowing traffic. May divert traffic to other streets, presents obstruction to most roadway users, motorcycles and bicycles riding between cushions. Determining the location for installation of speed cushions may require public feedback.

- Require engineering
- Constructed at location or prefabricated
- Cost for implementation and maintenance
- Installed ahead of the pedestrian crossing
- Sidewalk railings located to direct pedestrians
- Advanced warning signs



Source: <https://www.rosehillhighways.com/products/speed-cushions/two-piece/>

Horizontal Traffic Diversion - Chicanes

Designed to force drivers reduce speed to drive around them.

Chicanes may consist of curb extensions or traffic islands strategically located to require drivers to slow down in order to drive around them. Chicanes are effective at slowing traffic.

- Require engineering
- Constructed at location or prefabricated
- Cost for implementation and maintenance
- Best two or three chicanes minimum
- Constructed at location
- Cost for implementation and maintenance
- Advanced warning signs



Source http://en.wikipedia.org/wiki/File:One-lane_chicane_1.jpg

Modern Roundabouts

A street crossing that requires traffic to circle in one direction around a center island or curb. A modern roundabout requires traffic entering the roundabout to slow down. Roundabouts reduce the potential for vehicle crashes and crash severity. Roundabouts can vary in design, size, shape, or material.

A mini-roundabout is used at locations with limited space and the dome or roundabout can be designed to be traversed by vehicles such as emergency vehicles.

By www.hsd.ie Durable and long-lasting, made with fully vulcanized reinforced rubber. Consists of 8 ramp-like formed elements. Quick and easy to assemble. Larger vehicles can easily cross. Clearly visible day and night and in bad conditions due to the large reflecting surfaces and additional glass reflectors.



Fayetteville experiments with tactical roundabout downtown. Sustainability Department, Fayetteville, AK. January 27, 2017 www.nwaonline.com

Narrow Travel Lanes and One-Way Street Conversion

Two alternatives for reducing travel speeds and/or reduce cut-through traffic are narrowing travel lanes and turning two-way into one-way streets.

Narrowing travel lanes can be achieved using travel lane delineators or lane lines or by relocating the street curb i.e. curb extensions. Reducing the width of travel lanes tends to slow speeds. It also reduces the distance to cross streets.

Making a two-way street into a one-way is an effective way to reduce vehicular traffic and discourage cut-through traffic, but it could also divert traffic to other streets. There are several options for turning a two-way street into a one-way street including the following:

- Posting of signs like “DO NOT ENTER” (R5-1) and “ONE WAY” arrows (R6-1)
- Pavement markings
- Modifying the width of travel lanes
- Adding parking
- Changing through only lanes to turn lanes
- Striping lanes off
- Adding barriers, temporary wooden barriers or permanent bollards
- Extending curbs to reduce width of travel lane

Whether narrowing travel lanes or converting a street from two-way to one-way, the change requires engineering judgement and coordination with regulatory authorities and stake-holders.

Radar Speed Signs

A radar speed sign can be permanent or portable. It determines the speed of passing vehicles and posts it on a variable message electronic sign. Radar speed signs are effective for educating drivers not familiar with posted speeds, often used for short periods of time, one to two weeks. Long term use reduces their effect on drivers.

Radar speed sign



Speed Aware 9" radar speed sign (white) by treetopproducts.com, listed price \$3,750. Solar power vehicle speed feedback. Recommended to pair with speed limit sign for improve effectiveness.

Lowering Posted Speed Limits

Generally, cities and states have regulations that determine the posted speed limits in residential streets. Varying from the standards may require engineering recommendations.

City of Houston Municipal Code

https://library.municode.com/tx/houston/codes/code_of_ordinances?nodeId=COOR_CH45TR_ARTVSPRE_S45-91MALIGE

Sec. 45-91. - Maximum limits generally.

(a) No person shall drive a vehicle on any street or highway in the city at a speed greater than is reasonable and prudent under the circumstances then existing. Except when a special hazard exists that requires lower speeds for compliance with subsection (d), the following limits shall be lawful, but any speed in excess of such limits shall be prima facie evidence that the speed is not reasonable or prudent and that it is unlawful:

(1) Where no other speed limit has been posted with appropriate signs giving notice thereof, 30 miles per hour on any street or highway other than an alley and 15 miles per hour on an alley within the city limits.

State of Texas Transportation Code

<https://codes.findlaw.com/tx/transportation-code/transp-sect-545-352.html>

(a) A speed in excess of the limits established by Subsection (b) or under another provision of this subchapter is prima facie evidence that the speed is not reasonable and prudent and that the speed is unlawful.

(b) Unless a special hazard exists that requires a slower speed for compliance with [Section 545.351\(b\)](#), the following speeds are lawful:

(1) 30 miles per hour in an urban district on a street other than an alley and 15 miles per hour in an alley;

Disabilities and Street Safety

ADA compliance enhances accessibility for all users making streets safer. While meeting ADA requirements is a first step in making a street compliant, additional considerations should be given to the various types of people with disabilities in communities.

Unlike newer streets that are designed to meet ADA standards, older neighborhood streets were constructed before ADA standards. These streets vary significantly in: geometric design (layout of intersection), edge of road treatment (curb and gutter vs. open ditches), street widths, traffic control at intersections, traffic flow characteristics, and desired routes for pedestrians and bicyclists.

While standard treatment is most desirable, design and construction might require detailed survey and design to address elements such as: ADA access, street surfaces, drainage, location of utilities, destination routes, available right of way, operations/use of street spaces, etc.

Street improvements and modifications should: be uniform, enhance street safety, improve accessibility, and improve quality of life.

Neighborhood Streets

Following is a brief description of streets included in the workshop. It highlights some of their characteristics, challenges, opportunities to improve ADA, street safety, and options/suggestions. The pictorial samples are only for education purposes.

Washington Avenue

Washington Avenue is a major street that serves for areawide and local access. It has high traffic volumes including transit service. Washington Avenue has three distinct characteristics depending on day of the week and hour of the day:

- Weekday traffic
- Evening weekday traffic
- Weekend traffic.

Challenges: Crossing street by pedestrians and bicyclists.

Opportunities: Improve busy crossings of Silver Street and Sawyer Streets for traffic and pedestrians. Discourage traffic crossing Hemphill, Henderson, White and/or Sabine to improve conditions for pedestrians and bicyclists. Work with Houston METRO to improve transit access and crossings.

Options: ADA crossings at Silver and Sawyer. Raised median for bike/ped crossings at Hemphill, Henderson, White, and/or Sabine. Intersecting street crossings may require analysis and engineering design.

Considerations: Proposed strategy to improve safety and traffic operations at the crossings of Sawyer, Silver and Houston streets. Priority would be given to pedestrians and bicyclists at alternative crossings of Taylor, Hemphill, Henderson, White and Sabine streets. Raised medians for pedestrian refuge at two or more of the following crossings: Hemphill, Henderson, White, and Sabine.

Median treatment for pedestrian crossings. Source AARP (Asheville, NC).



Decatur Street & Union Street

Decatur and Union Streets are located parallel and south of Washington Avenue. They serve local businesses and residents with business. The impact of traffic generated by businesses on Washington Avenue spills over to neighborhood streets.

Challenges: Provide access to local venues and residences. The area serves as a buffer between commercial and residential areas. Meet demand for on-street parking.

Opportunities: Partnership with businesses to implement street safety strategies, parking management and access.

Options: Include businesses and patrons in the overall Old Sixth Ward traffic calming program. Develop way-finding program for pedestrian access and parking demand management.

Considerations: Conduct parking survey to better define availability of automobile parking and access. Identify pedestrian routes and meet ADA requirements. Identify preferred bicyclist routes and destinations. Implement a way-finding program.

A way-finding program aids educating patrons of local business in locating parking, routes, and operating speeds, among other type of information.



Source: <https://streetsillustrated.seattle.gov>

Silver Street

Silver Street, located in the center of the Old Sixth Ward neighborhood, extends north-south attracting cut-through traffic to Old Sixth Ward, because of the intersection with Memorial Drive. Silver Street is one of three streets that allow crossing of existing railroad tracks located north of and parallel to Washington Avenue.

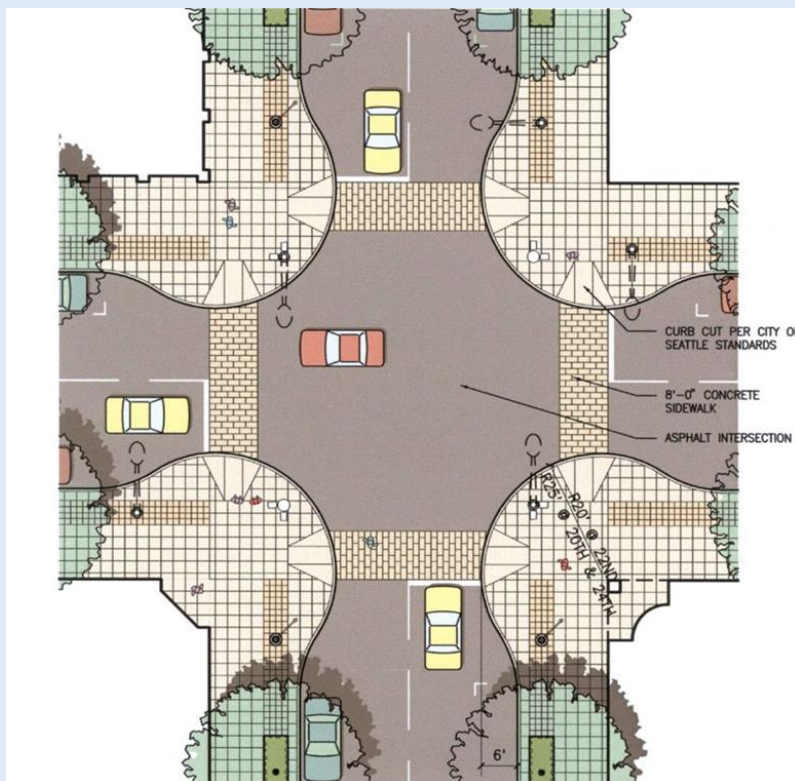
Challenges: Speeding traffic accessing Memorial Drive crossing Washington Avenue.

Opportunities: Work with area neighborhoods, developers and City of Houston to improve street safety and mitigate development impacts.

Options: Improve safety at intersection of Silver Street and Washington Avenue. Implement traffic calming strategies for through traffic on Silver Street. Enhance pedestrian crossings. Consider ADA access, curb extensions, street islands, speed tables, pedestrian night lighting, and modified one-way blocks.

Considerations: Define whether Silver Street is a neighborhood. Develop a uniform system of curb extensions and pedestrian crossings.

Example of curb extensions at intersections such as Silver St. and Lubbock St. at MECA. Similar curb extension could be applied to the four intersections that provide access to MECA.



Source: <https://streetsillustrated.seattle.gov/urban-design/street-concept-plans/>

Lubbock Street & State Street

Lubbock Street provides an alternative to access downtown and local businesses. It is used by cut-through traffic, provides access to parking facilities, and used for street parking for drivers attending municipal court facilities located east of Houston Avenue. State Street runs parallel to Lubbock Street. Both Lubbock and State Streets are similar in their layout. These streets are impacted by speeding and cut-through traffic generated by: area court, police union and police credit union banking facilities, and new apartment complex. At the intersection of Lubbock and Sabine is the beginning of the historic brick Sabine Street that extends three blocks north to Washington Avenue.

Challenges: Streets are used by speeding cut-through traffic and for local access. Lubbock street width varies; at the wider section, traffic speed increases. The street intersections are off-set at the crossing of Lubbock and State Streets with Sabine Street.

Opportunities: Implement traffic calming strategies to improve street safety and quality of life. Partnership with local businesses, police union, credit union, parking lots, City of Houston for Municipal Courts parking.

Options: Incorporate mini roundabouts or traffic diverters at crossings with Sabine Street. Alternative treatment of Lubbock Street where street is wider. Enhance pedestrian environment to and from Houston Avenue. Consider traffic calming on Lubbock Street as it runs parallel with MECA campus.

Considerations: Mini-roundabouts or traffic divertors at the intersection of Lubbock and State Streets at Sabine Street. Work with City for pedestrian crossing on Lubbock Street at Houston Avenue and future improvements.

A full diverter used to limit access to traffic by eliminating through movements.



Source: <https://www.stcharlescitemo.gov/654/Traffic-Calming>

Sabine Street

Sabine Street, from Lubbock Street to Washington Avenue (three blocks) was recently reconstructed to its historic context, paved with bricks and narrow travel lanes. It extends from North Memorial Way to Center Street.

Challenges: Preserve its historic context. Narrow travel lanes. Narrow sidewalks. Cut-through traffic.

Opportunities: Reduce cut-through and speeding traffic. Enhance its historic significance and quality of life.

Options: Enhance pedestrian safety. Consider combination of one-way and two-way blocks. May use bollards to divert traffic and for traffic calming.

Considerations: Convert Sabine Street to one-way with option of chicanes or reverse direction in the middle block (between Decatur Street and Kane Street).

Use of bollards to limit traffic access or select user.



Source: <https://www.cyclesheffield.org.uk>

Sawyer Street

Sawyer Street is a major north-south corridor. It crosses existing railroad tracks at-grade, and provides a direct connector to downtown Houston via a curved bridge over Memorial Drive. Sawyer Street defines, within a block, the western boundary of the Old Sixth Ward neighborhood and creates a barrier for non-motorized vehicles and pedestrians.

Challenges: Pedestrians find it unsafe to cross.

Opportunities: Traffic calming. Encourage through traffic to limit access through neighborhood streets. Improve pedestrian crossings and traffic safety.

Options: Identify and improve safer crossing for pedestrians.

Considerations: Identify pedestrian crossings. Use of raised crossings. Use of curb extensions. Narrow lanes.

North Memorial Way

North Memorial Way runs parallel with and connects via two ramps to Memorial Drive (a major roadway) to/from local streets. Traffic entering the neighborhood from Memorial Drive is characterized as speeding.

Challenges: Cut-through and speeding traffic. Unsafe for pedestrians.

Opportunities: Traffic calming. Improve quality of life. Review parking. Access to area trails and green spaces (Memorial Silver Park).

Options: Traffic divertors. Curb extensions. Improved pedestrian crossing.

Considerations: Identify pedestrian crossings. Use of raised crossings. Use of curb extensions. Narrow lanes.

Enhance pedestrian safety by raising crosswalk and reduce width of traffic lanes.



Source: <https://www.onemotoring.com.sg/>

Bicycle Routes and Access

The Old Sixth Ward might benefit from identifying preferred bicycle routes, busy crossings and destinations within the neighborhood and coordinate them with the City of Houston Bike Plan Network.

The Houston Bike Plan Network Map identifies:

- Potential short-term implementation opportunities - Sawyer, Silver, and Center streets.
- Long-term Houston bikeway vision - Sawyer Street (north of Washington Avenue) and Washington Avenue.

The Houston Bike Plan also identifies the type of bicycle routes as follows:

- Dedicated in street right of way - Washington Avenue, Sawyer Street, and Houston Avenue.
- Shared on-street - Silver Street and Center Street.

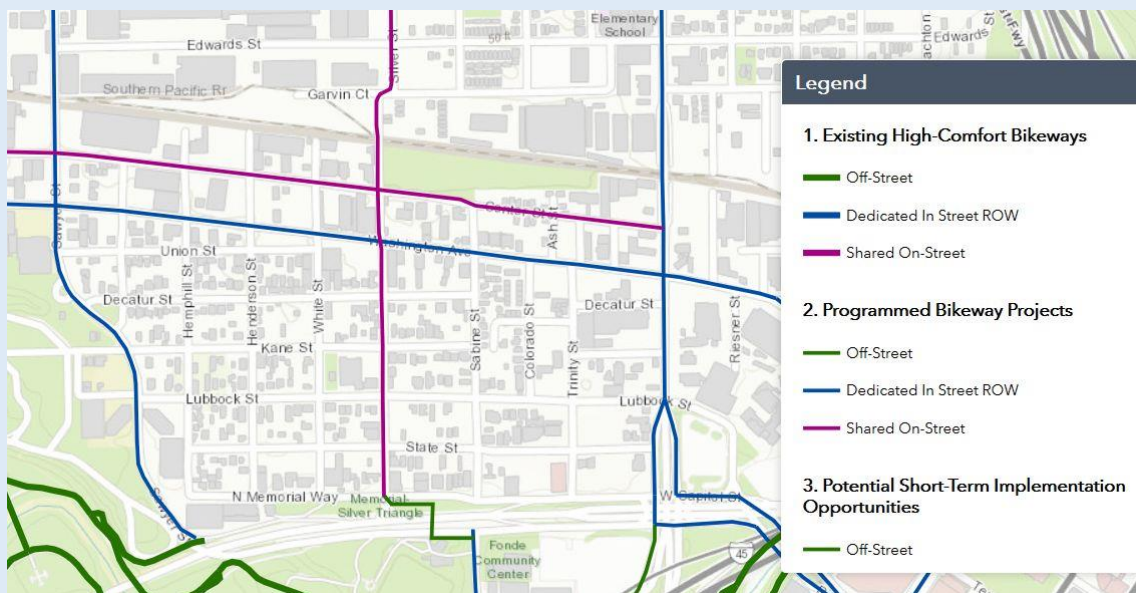
Challenges: Unsafe street routes and crossings. Condition of street surfaces.

Opportunities: Identify neighborhood desired routes, crossings, local destinations, and partners. Improve safety and accessibility.

Options: Develop a neighborhood plan identifying preferred routes and amenities appealing to the needs and demands of bicyclists.

Consideration: Develop a neighborhood bicycle access plan with preferred routes.

City of Houston Bike Map



Partnerships and Unique Opportunities

The process of improving street safety allows for engaging various other partners and stakeholders that offer unique opportunities for improving the neighborhood's quality of life.

Some of these potential partners may include the following:

- **City of Houston:** The City is the regulatory entity that manages, maintains, and approves works in the public right of way. Proposed changes to the roadway network must be coordinated with the City of Houston. Best to identify city staff who is in charge of coordinating the activities related to pedestrian access and traffic safety improvements.
- **Houston METRO:** Houston METRO provides public transit on Washington Avenue (routes 36 and 85), Sawyer Street (route 50), and Houston Avenue (routes 37 and 40). Houston METRO could be a partner at improving access to bus stops.
- **MECA:** A unique neighborhood destination and trip generation. It also includes a neighborhood park.
- **Police Union and Police Credit Union:** Facilities generate traffic that cut-through the neighborhood.
- **Local businesses:** Venue that attract patrons and visitors during peak and off-peak hours.
- **Area developers:** Early dialogue with area developers may reduce long term negative impacts of traffic generated by new development.
- **Apartments:** Apartments are traffic generators and also member of the community.
- **Buffalo Bayou / City parks department:** Mutual interest in making park areas safe and accessible to local residents.
- **Connecting neighborhoods** (Sixth Ward, First Ward): Area neighborhoods may partake in similar interest and consequences related to increase of traffic.

Challenges: Increased traffic generated by new development impacting neighborhood streets. Existing infrastructure does not meet demand.

Opportunities: Coordinate efforts and program improvements for common objectives.

Considerations: Identify key representatives of the various partners early. Communicate expectations and long-term objectives. Identify possible contribution from individual partnerships.

Pedestrian Friendly Neighborhood Designation and Implementation

The pedestrian friendly neighborhood designation by the City of Houston is a concept identified during the workshop that has great merit and potential for developing in conjunction with traffic and pedestrian safety improvements for the Old Sixth Ward neighborhood. The City of Houston has a standing Walkable Places Committee that is in the process of implementing regulations for the creation of Walkable Places. The Walkable Place program might offer opportunities to Washington Avenue and the Old Sixth Ward once it is established. In the meantime, the following are some next-step tasks to advance the development of a pedestrian friendly neighborhood. It should be noted that the general consensus during the workshop was to create a neighborhood that is accessible to all ages and disability. Therefore, the objective is to create a pedestrian friendly neighborhood intends to be accessible to all ages and disabilities.

Where to Start: It is desired to select areas of concern based on the level of effort and cost that may require implementation. For this purpose, concerns identified in the workshop have been grouped into three based on the expected level of effort, cost, and time of implementation. These are listed in Table 1, Implementation Phasing of Pedestrian Friendly Projects.

Table 1. Implementation Phasing of Pedestrian Friendly Projects

Street	Initial	Intermedia	Long Term
Washington Ave.	<ul style="list-style-type: none"> • Pedestrian crossings 	<ul style="list-style-type: none"> • Bicycle routes and crossings 	
Decatur & Union Streets		<ul style="list-style-type: none"> • Bicycle routes 	<ul style="list-style-type: none"> • Parking management • Way-finding program
Silver Street		<ul style="list-style-type: none"> • Traffic calming • Bike route 	
Lubbock Street	<ul style="list-style-type: none"> • Traffic calming at Sabine 	<ul style="list-style-type: none"> • Traffic calming west of Houston Ave. 	<ul style="list-style-type: none"> • Ped crossing at Houston Ave.
State Street		<ul style="list-style-type: none"> • Traffic calming at Sabine 	
Sabine Street	<ul style="list-style-type: none"> • One-way conversion • Pedestrian crossing at Washington Ave. 		
Sawyer Street		<ul style="list-style-type: none"> • Pedestrian crossing 	<ul style="list-style-type: none"> • Traffic calming
North Memorial Way		<ul style="list-style-type: none"> • Pedestrian crossing 	<ul style="list-style-type: none"> • Traffic calming

Develop a Review Committee: Early involvement of key agencies improves the progress and implementation of selected projects. A review committee improves communication and the success of the program. At minimum this review committee should include representatives of OSW/TIRZ13 and City of Houston.

Collect Traffic Data: For projects identified in the Initial phase, it is suggested to do 24-hour traffic counts (on Washington Avenue, Silver Street, Lubbock Street, and Sawyer Street) and turning movement counts during peak hours (at Washington @ Sawyer, Washington @ Silver, Washington @ Sabine, and Sabine @ Lubbock). Each traffic count costs about \$325. Estimated cost from GRAM Traffic Counting is quoted \$2,528 for the listed data collection.

Determination of Traffic Calming Strategy: Based on collected data and dialogue with Review Committee members, determine location of pedestrian crossings on Washington Avenue, type of one-way conversion for Sabine Street, and type of traffic calming for the Sabine Street and Lubbock Street intersection.

Design, Review & Cost Estimate: Identified elements for traffic calming may require engineering design, review and cost estimation. These tasks are required for approval by the City of Houston. In some instances, area survey might be required to locate existing right of way, curbs and drainage.

Construction: Once design is approved, construction should be done by a qualified contractor.