Archeological Background Study

Project Name: Shepherd and Durham Drives Reconstruction

Highway: Shepherd Drive and Durham Drive, between IH-10 and I-610

District(s): Houston District

County(s): Harris County

CSJ Number(s): 0912-72-607

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Report Completion Date: September 30, 2020

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Introduction

This project may require compliance both with Section 106 of the National Historic Preservation Act and with the Texas Antiquities Code. The purpose of this document is to identify risks for archeological historic properties within the project's area of potential effects (APE). The document also considers whether any cemeteries may extend into the APE, requiring compliance with the state Health and Safety Code.

The following sections list the results of review of readily-available information for the APE's setting and adjacent areas. The report also evaluates adjacent areas (a buffer zone; see Recommendations Section for definition of the buffer zone). The buffer zone is evaluated in case a subsequent design change expands the APE. This report concludes with separate recommendations regarding project effects and the need for additional work within shallow deposits less than three feet in depth and within Holocene-age deposits of three feet or greater depth, if such deep deposits are present.

This background study is (check one):	☒ the initial study for this project
	☐ a continuation of previous investigations due to design changes or other reasons Identify previous investigation(s): If this box is checked, then answer the questions below only for the area that is affected by the design change.

Area of Potential Effects

The APE is defined to encompass the limits of the existing right of way; proposed, new project right of way; permanent and temporary easements; and any project-specific locations and utility relocations designated by TxDOT. Note: the APE encompasses the entirety of the project area, regardless of the extent of prior archeological investigations, the particular locations subject to proposed field investigations, or the portion of a project added through a design change. If impacts are not known, worst-case impacts are assumed in defining the APE.

See Attachment 1 for a map of the APE, which is based on the project information attached as Attachment 2.

Information Source Checklist

(check each source of information that was consulted by the professional archeologist in preparing this background study—the number and type of sources are at the professional archeologist's discretion)

☒	Labelled USGS 7.5' topographic quadrangle project location map (or equivalent if a 7.5' quadrangle is unavailable) is attached and includes an inset map that depicts the county within Texas where the project occurs.
☒	Predictive Archeological Liability Map (PALM) is attached if available *(consult TxDOT's Environmental Compliance Toolkit).*
☐	Geologic Atlas of Texas map is attached *(PALM may be substituted for the GAT map, if it's available).*
☐	Soils map is attached *(PALM may be substituted for the soils map, if it's available)*.
☒	FEMA flood hazard map is attached.
☒	National Wetlands Inventory map is attached
☒	Texas Archeological Sites Atlas map is attached, depicting any sites within one kilometer of the APE or additional APE.
☒	Historic topographic map is attached.
☐	Historic soils map is attached.
☐	Historic road map is attached.
☒	As-built plans for roadway are attached.
☐	Other map of historic information is attached.
	Specify Map:
☒	Aerial images are attached.
☐	Project area photographs are attached.

Analysis of Project Setting

▪ **Previously-Identified Archeological Sites**	
☒	No archeological sites have been identified within the APE or within 150 feet of the APE
☐	Archeological sites have been identified within the APE or within 150 feet of the APE
	There are no previously identified archeological resources within the APE or within 150 feet of the APE. The closest archeological sites are associated with sandy outcrops adjacent to White Oak Bayou west of the APE (see Figure 4).
▪ **Previously–Identified Cemeteries**	
☒	No known cemetery sites occur within the APE or within 150 feet of the APE.
☐	Cemeteries occur within the APE or within 150 feet of the APE.
	There are no known cemetery sites within the APE or within 150 feet (ft) of the APE. Historical topographic maps were reviewed in addition to information available on the Texas Archeological Sites Atlas (see Figure 4) (THC 2020; U.S. Geological Survey 2020). There are 5 churches within 150 ft of the APE in the 1946 topographic maps, and one additional church located in between shepherd and Durham in the 1955 topographic map which is still present today. None of these data sources suggest that there is an unknown cemetery within or adjacent to the APE.
▪ **Holocene-Age Deposits**	
☒	No Holocene-age deposits occur within or adjacent to the APE.
☐	Holocene-age deposits occur within or adjacent to the APE.
	The entirety of the APE is located in PALM unit 4, in which no survey is recommended (Figure 5). The soils within the APE only include three soil types, Aris-Urban land complex, 0 to 1 percent slopes (As), Urban land complex (URLX), and Clodine Urban Land Complex (Soil Survey Staff 2020). The Urban Land designation signals that these soils have been heavily impacted by development and have been altered in some way. This either means that soil horizons have been removed or fill from elsewhere has been deposited on top. Aris series soils, which make up the majority of the APE (>80%) are derived from loamy fluviomarine sediments associated with the Beaumont Formation and date to the Pleistocene. Clodine series soils are present within a very small portion (<10%) of the APE and are derived from loamy sediments associated with the Lissie Formation, also dating to the Pleistocene (Bureau of Economic Geology 1982; U.S. Department of Agriculture 2020; Wheeler 1976).

▪ **Historically-Reliable Water Sources**	
☐	No historically-reliable water sources occur within 500 feet of the APE.
☒	Historically-reliable water sources occur within 500 feet of the APE, or this question can't be answered confidently.
	Proximity to potable water sources has been demonstrated to be a dominant factor affecting the probability of prehistoric sites. Based on a review of the *Houston Heights* (2995-433) 7.5-minute USGS Quadrangle maps available on *topoView* and aerial imagery, one reliable water sources is within 500 ft of the APE – White Oak Bayou. The southern end of the APE crosses White Oak Bayou (U.S. Geological Survey 2020) (Figures 6 and 7). White Oak Bayou was important to the historic development of the City of Houston as well as prehistoric populations in the region (Aulbach 2012).
▪ **Wetlands and Frequently-Flooded Areas**	
☒	The APE and adjacent areas contain wetlands or frequently-flooded areas.
☐	The APE and adjacent areas do not contain wetlands or frequently-flooded areas, or this question cannot be answered confidently.
	A review of available wetland data and FEMA floodplain data suggests that the APE does contain previously identified wetlands in the vicinity of White Oak Bayou. However, the portion of roadway that crosses White Oak Bayou will be via an existing bridge structure which will remain intact. Additionally, the vicinity of the APE that cross White Oak Bayou is mapped as being within a Regulatory floodway, Special Flood hazard Areas, and Other Areas of Flood Hazards (Zones AE and X) (Figures 6 and 7).
▪ **Preferred Landforms for Occupation**	
☐	The Atlas map or other information shows that the APE does not contain landforms on which human settlement or occupation typically occurred.
☒	The Atlas map or other information shows that the APE does contain landforms on which human settlement or occupation typically occurred, or this issue was not resolved with the available information.
	Available aerial imagery (1944, 1953, 1978, 1989, 1995, 2002-2006, 2008-2020) and historic *Houston Heights* (2995-433) USGS 7.5-minute quadrangle maps (1915, 1922, 1946, 1955, 1967, 1982, 1995, 2010, 2013, 2016, and 2109) were reviewed in order to access the presence of landforms on which human settlement typically occur. With exception to the presence of White Oak Bayou within the APE, which was an important

	waterway to prehistoric peoples in the region, the majority of the project area has been developed extensively in all available historic topographic maps and aerial imagery. A small 0.82 mi. section of the southern extent of modern-day Durham Drive included in the APE was undisturbed in the 1944 aerial. Landforms present before urban disturbance are not visible through the forested vegetation. The entirety of the APE was disturbed by the 1978 aerial. Therefore, natural landforms are not identifiable if they did exist within the project area based on available information. However, soils within the project are typically occur on flat coastal plains (USGS Soil Survey 2020).
▪ **Prior Disturbances**	
Settings that are favorable for human occupation have been subject to the following previous disturbances *(check all that apply).*	
☒	Previous road construction and maintenance.
☒	Installations of utilities.
☒	Modern land use practices like plowing, grade modifications, brush clearing, and tree removal,
☒	Industrial, commercial, urban and/or suburban development
☒	Erosion and scouring by natural causes.
☐	Other (identify)
	A review of *Houston Heights* (2995-433) USGS 7.5-Minute Quadrangle Maps dating to 1915, 1922, 1946, 1955, 1967, 1982, 1995, 2010, 2013, 2016, and 2109, as well as available aerial imagery dating to 1944, 1953, 1978, 1989, 1995, 2002-2006, and 2008-2020 was conducted in order to determine the extent of past activities within the proposed APE (*topoView* 2020 and GoogleEarth Pro 2020). The discussion of Durham and Shephard Drives will start at IH-10 and work northward to I-610 (Figures 2, 3, and 8). *White Oak Bayou to W. 13th Street* This APE is located on the west side of the Houston Heights/Shady Acres, a historic neighborhood representing Houston's development in the late 1800s. The 1915 *Houston Heights* topographic map shows the development of the Houston Heights, showing that the area along White Oak Bayou and the first terraces in the north were undeveloped. The floodplain was largely undeveloped, with the exception of the Missouri Kansas Texas Railroad. The rail is illustrated on quadrangle maps dating as early as 1915 and the railroad tracks are now part of the Heights Hike and Bike Rail system. Shepherd Drive is in its present-day location on both the 1915 *Houston Heights* map and on the 1944 aerial photograph. Durham Drive is shown as a residential road, preciously Nashua Street to the north, that does not extend southward to White Oak Bayou. This undeveloped section of the APE was cleared of

	the remaining native vegetation by 1967, and Durham Drive was extended to reach IH-10. By 1967 Durham Drive occupied its present location. At least one structure was likely demolished to Extend Durham Drive. Additionally, the surrounding area was developed by 1967, mostly by commercial and industrial buildings. Since this point, the roadway configuration remains the same to its current day configuration within the APE. The subsequent topographic maps and aerial imagery show no changes to the APE aside from maintenance to the existing roadway. Lastly, the northeast corner of Durham and West 11th Street, one of the proposed clipped corner locations, is in front of a large parking lot for a shopping center and Tire Shop. The area looks to be very disturbed by previous construction for the shopping center. The area has been disturbed since the 1970s, with the current shopping facilities present by the late 1980s. The southern boundary of the APE also intersects White Oak Bayou. The 1944 aerial further suggests that White Oak Bayou was being channelized, including being straightened and lined with concrete between 1953 and 1978 including the portion that crosses under the APE. This is also evidenced by exposed soil (white) in juxtaposition to the trees and other native vegetation nearby. Interstate 610 bounds the northern boundary of the APE, while Interstate 10 bounds the APE to the south. The interstates first appears in the 1967 topographic map, and are not present in the 1955 topographic map. The final construction of the section of interstate 10 that borders the APE was completed in December of 1968 (Texas Freeways 2020). Aerial imagery show that Shepherd and Durahm Drive were elevated roadways in this area by 1978. While West 11th Street has been present since the earliest aerial imagery, both north and south of the roadway remained undeveloped until sometime between 1953 and 1978 when it was used for industrial buildings and parking lots. In 1944 aerial imagery, the south side of West 12th Street between Durham and Shepard Drive was undeveloped but was cleared of vegetation. The roadway was present in 1944, and commercial buildings were constructed north and south of the roadway between 1953 and 1978. Residential structures were demolished in order to build the commercial structures on the north side of 12th Street. Additionally, when Durham Street was extended from 12th Street to I-610, at least one residential building was removed for the creation of Durham, just to the north of W. 11th Street; and 16th Street. *W. 13th Street to IH-610* West 19th Street, West 18th Street, West 16th Street, West 15th Street, and West 14th Street were all developed by the 1940s with residential structures. Commercial buildings were also developed within the vicinity during the same times period (1953-1978) as streets to the north along the APE. West 20thth Street has been developed since the earliest topographic in 1915. residential housing surrounded the APE along this street and still do in present day. Commercial areas are developed along the north and southeast corners of West 20th Street and North Shepard drive between 1953 and 1978. West 24thth Street has been developed since the earliest aerial photographs in the 1940s. topographic map in 1915. The roadway was bound by residential buildings. Commercial buildings were developed sometime between 1953 and 1978 along the northern boundary of the APE along West 24th Street.

	The majority of the proposed improvements will take place within the existing right-of-way with the exception of 3 minor corner clips, at the southwest corner of Shepherd and West 20th Street, the northeast corner of Durham Drive and West 19th Street, and at the northeast corner of Durham and West 11th Street. The southwest corner of Shepherd and West 20th Street is occupied by a shopping center. The corner has been disturbed by the installation of utilities, sidewalks, waterlines, street signal lights, and sewage lines and currently completely cemented and used as a parking lot. Currently the area is being used to park cars and looks to be graveled over. The entire corridor has been affected by the installation of utilities, the expansion of Durham Drive, and the realignment of the roadway including the removal of structures.
☐	NO PRIOR DISTURBANCES OR UNKNOWN (do not check any foregoing disturbances)
▪ **Previous Archeological Surveys**	
☒	The majority of the settings with high potential for archeological sites within or adjacent to the APE have been previously surveyed.
	A review of the Texas Archeological Sites Atlas (TASA) was conducted using a 1 kilometer (km) review area. The review indicated that there are no previously identified prehistoric or historic archeological sites within the APE. Four prehistoric sites are located within the 1 km review area. At least four surveys have been conducted within the 1 km review area. The project area has not been subject to previous archeological investigations. One City of Houston Historic District and dozens of National Register of Historic Places properties are located within the 1 km review area. All cultural resources within 1 km are shown in Figure 4. Four archeological sites have been previously recorded within 1 km of the APE. All four of the sites were identified along the banks of White Oak Bayou. Two sites, 41HR116 (0.52 km west of APE) and 41HR117 (0.80 km west of APE) were identified in 1956 by Wayne Neyland. Site 41HR139 (0.83 km west of the APE) is a prehistoric small occupation site in sandy soils on an upper bluff along White Oak Bayou Identified by William L. McClure in 1975 of the Houston Archeological Society (HAS). The site contained ceramics and lithics including projectile points. Lastly, 41HR274 (0.68 km west of APE) is a prehistoric site also identified by W.L. McClure with HAS. The site contained lithics and ceramics and was located on a sandy bank of White Oak Bayou (THC 2020). Atkins conducted an aera survey in 1983 directly east of the APE along Shepard Drive between Larkin Street and Cornish Street. This survey did not identify any archeological sites. A linear survey was conducted 0.85 km south- southwest of the APE along Washington Avenue that did not encounter cultural resources. No additional information was available regarding this survey (THC 2020). In 2012, MAC conducted a survey an approximate 10-acre parcel along White Oak Bayou in preparation of multi-use recreational trails proposed by the Houston Parks Board. The survey was located 0.25 km west of the APE and no subsurface archeological materials were identified (Mangum 2012). Lastly, in 1987 a linear survey was conducted along Shepard Drive, approximately 0.59 km north of the APE on the north side of IH-610 for the Federal Highway Administration (FHA). No further information on this survey was available (THC 2020).

	Additionally, over 30 properties listed on the National Register of Historic Places (NRHP) are located within 1 km of the APE. Of these, only one of these is located between Shepard and Durham Drives on the southside of W. 17th Street. (Carden, David A., House, 1900-1924, Bungalow/Craftsman; Ellic Edelson, and Daniel Tucker, 1990, Reference Number:90001048) (THC 2020). The properties listed on the NRHP are residential and commercial structures associated with the development of the Houston Heights staring in 1851. The Heights Boulevard Esplanade National Register District falls in the middle of these historic structures, falling outside of the 1 km buffer. This district follows Heights Boulevard as it extends from White Oak Bayou to 20th Street and reflects the original plan for the neighborhood. It encapsulates the main periods of significance between 1875 and 1899 and 1900 to 1924, when many of the bungalows and Victorians were constructed, however the NRHP district focuses on the long linear park that bisects Heights Boulevard (Reference No. 84001766) (London 1980). Starting in 2015, the residents of the Houston Heights worked with the Office of Historic Preservation at the City of Houston to create city historic districts that reflect the unique architecture of the Heights. This was predicated by a study by the National Park Service in 1983 that designated the Houston Heights as a Multiple Resource Area (MRA), reflecting the numerous eligible and listed historic properties within the same geographic area that are linked by place rather than historic association (Houston Heights Association 1983). The northern portion of the project area, extending between W. 16th Street and IH-610. The NPS recommended that several NRHP districts be created around these resources to reflect the multiple periods of significance of the neighborhood. The City of Houston created three historic districts and design guidelines for each: Houston Heights West, East and South. The planned neighborhood included both residential and commercial areas, however commercial areas of the neighborhood have undergone significant changes and are not included in the Historic Districts (HAHC 2020). The majority of the APE parallels industrial and commercial buildings, which have been constructed over residential structures or represent repurposed residential structures.
☐	The majority of the settings with high potential for archeological sites within or adjacent to the APE have not been previously surveyed.

Conclusions

- **Results of Previous Investigations**

☒	Previous surveys have covered a sufficient proportion of the APE or adjacent areas to conclude that the APE and adjacent areas are unlikely to contain archeological sites or cemeteries.

☐	Previous surveys have not covered a sufficient proportion of the APE or adjacent areas to draw inferences regarding the presence of archeological sites and cemeteries, or previous surveys show that archeological sites and/or cemeteries are present within the APE.
▪ **APE Integrity (Prehistoric Sites)**	
The APE contains no deposits with sufficient integrity that prehistoric archeological sites would have the potential to address important questions. Any such sites would lack integrity of *(check all that apply):*	
☒	Location
☐	Design
☒	Materials
☒	Association
☐	Other (*identify*)
	Four prehistoric archeological sites were identified in a 1 km buffer. White Oak Bayou and its resources were utilized by prehistoric peoples, as evidenced by the numerous sites along the waterway. These sites were buried in sandy soils atop of silty deposits. Due to the APE's previous urban disturbances, and the disturbances from roadway construction and channelization, straightening, and then lining of concrete along White Oak Bayou where it intersects with the APE, it is highly unlikely that prehistoric sites are located within the proposed APE. Additionally, the area of the Shepard and Durham Drives in the portion of the APE that intersects White Oak Bayou crosses the Bayou via an existing bridge structure which will remain intact. There is no likelihood that prehistoric materials would be found within the APE that retain any association with their original contexts or likely remain in their original depositional location.
☐	THE APE HAS THE POTENTIAL TO PRESERVE SITES WITH SUFFICIENT INTEGRITY TO QUALIFY THOSE SITES FOR INCLUSION IN THE NATIONAL REGISTER OF HISTORIC PLACES *(if true, do not check any of the forgoing aspects of integrity)*
▪ **APE Integrity (Historic-Age Sites)**	
The APE contains no deposits with sufficient integrity that historic-age archeological sites would have the potential to address important questions. Any such sites would lack integrity of *(check all that apply)*:	
☒	Location

☐	Design
☐	Materials
☐	Association
☐	Other (*identify*)
	A review of the historical *Houston Heights* (2995-433) USGS 7.5-minute Quadrangle maps, as well as available aerial imagery was conducted in order to determine the probability of encountering historic-age deposits within the APE. In the 1944 imagery, the majority of the APE has been previously disturbed with the entirety of Shepard Drive constructed, and most of Durham Drive with the exception of a small portion between 11th Street and Larkin Street. The review also revealed that that area was cleared of native vegetation prior to the 1967 topographic map and Durham Drive was extended to meet I-610. Roadways and industrial buildings have been constructed east and west of the APE as early as 1915 according to the *Houston Heights* (2995-433) USGS 7.5-minute Quadrangle map. While multiple structures are adjacent to the APE, no structures are illustrated on any of the quadrangle maps within the APE. While this makes it unlikely that historic aged deposits will be encountered, there is the possibility of encountering outlying foundations, cropped cisterns, or privies. The 2019 and 2020 aerial imagery show a parking lots depicted in the three locations previously mentioned where corner clips are proposed within the APE (Figure 3). With these factors in mind, it is highly unlikely that any historic age deposits are located within the APE. If any materials are present within the APE, they are likely not in their original context nor do they have association with its current location and/or function.
☐	THE APE HAS THE POTENTIAL TO PRESERVE SITES WITH SUFFICIENT INTEGRITY TO QUALIFY THOSE SITES FOR INCLUSION IN THE NATIONAL REGISTER OF HISTORIC PLACES *(if true, do not check any of the forgoing aspects of integrity)*
▪ **Results of Historic Map Research (Historic Age Sites)**	
☒	Historic map research shows that historic-era archeological deposits are not likely to occur within or adjacent to the APE
☐	Historic map research shows that historic-era archeological deposits could occur within or adjacent to the APE; this research was inconclusive; or this research was not completed because it was not necessary to reach justifiable conclusions.
▪ **Results of Map Research (Cemeteries)**	
☒	Map research shows that cemeteries are not likely to occur within or adjacent to the APE.
☐	Map research shows that cemeteries could occur within or adjacent to the APE, or this research was inconclusive.

▪ **Results of Landform Study**	
☐	The APE and adjacent areas occur in a setting that was not conducive to human occupation and activity
☒	The APE and adjacent areas occur in a setting that was conducive to human occupation and activity; research on this issue was inconclusive; or this research was not completed because it was not necessary to reach justifiable conclusions.

Recommendations

▪ **Shallow Deposits**

Evaluate the potential for shallow deposits (Holocene-age deposits less than three-feet in depth) within the APE to contain archeological historic properties and cemeteries. Make appropriate recommendations regarding the need for further work, including the need for shovel test pits, auger probes, or other methods for evaluating shallow deposits.

The proposed project involves roadway improvements to Shepard and Durham Drives between IH-10 and I-610, along with improvements to multiple cross streets including West 20th Street, West 19th Street, West 18th Street, West 16th Street, West 15th St, West 14th Street, West, 12th Street, and West 11th Street. The majority of the proposed improvements will take place within the existing right-of-way with the exception of three minor corner clips. The corner clips will take place at the southwest corner of Shepherd Drive and West 20th Street, the northeast corner of Durham Drive and West 19th Street, and at the northeast corner of Durham Drive and West 11th Street. These three locations show previous modern disturbances, lowering the potential for encountering intact historic and prehistoric cultural deposits

As stated previously, the entirety of the APE is located in PALM Unit 4 (Abbott 2001) (Figure 4). Unit 4 is characterized as Pleistocene landforms and do not contain Holocene aged deposits. This map unit suggests that the soils within the APE pre-date human occupation or younger soils are missing either from urban construction. However, two of the four prehistoric sites identified along White Oak Bayou within 1 km of the APE were identified in PALM Unit 4. Three soil types, Aris-Urban land complex, 0 to 1 percent slopes (As), Urban land complex (URLX), and Clodine Urban Land Complex are present within the APE, none of which contain Holocene aged soils (Soil Survey Staff 2020).

Therefore, despite its proximity to numerous prehistoric sites along the White Oak Bayou, Historic Districts, and numerous National Register Historic Properties, the data suggests that there is a negligible potential to encounter intact shallowly buried archeological resources.

In the event that unanticipated archeological deposits are encountered during construction, work should be halted immediately, and the Archeology Division of the THC should be contacted. Given the location of the prehistoric archeological sites along White Oak Bayou and the abundance of the turn of the century residential structures adjacent to the APE, there are

	some specific features one may look for while construction is in progress. If present, historic resources will be shallowly buried and probably capped by concrete. Privies, cisterns, carriage houses, and other structures that fell into disuse and were demolished are likely found behind structures or to the east or west side.

- **Deep Deposits**

Evaluation of deep deposits (Holocene-age deposits of three feet or greater depth) may or may not be necessary, depending on the nature of the sediments within the APE and the depth of proposed impacts. If Holocene-age deposits extend to three feet or more within the APE and would be impacted by the project, make appropriate recommendations regarding the need for further work. If no deep, Holocene-age deposits occur within the APE note that they are absent and indicate that no additional work in needed. If the deep Holocene deposits are present but the project either would not affect them or they have been too extensively disturbed to hold intact archeological deposits, provide an appropriate justification that no additional work is needed.

	The deepest disturbances involved in the proposed construction will be a maximum of 10-15 feet below the surface. As previously stated, all three soil types identified within the APE are of Pleistocene age and are not expected to contain deep prehistoric deposits. Additionally, as indicated by the PALM for the Houston District and the mapped soils within the APE, there is no potential to encounter deeply buried Holocene age deposits within the APE (Figure 5). Historic deposits may be located near the APE, but because the proposed work will remain within the existing Right-of-Way (ROW) of the existing roadways, which have been present since at least the 1920's and have been repaved multiple times, intact cultural resources are not expected to be present. However, if historic-age deposits were encountered, they would likely be shallowly buried as there is no evidence of deep layers of fill being added to the neighborhood. Therefore, with these factors in mind, MAC does not recommend an archeological survey be conducted in the APE.

- **Recommendations Summary (select only one check box)**

☒ No further study needed	☐ Survey of entire APE	☐ Variable, see attached figure

- **Results Valid Within**

The purpose of considering adjacent areas is to define, when possible, a buffer zone around the APE to which findings of no effect and recommendations for no further work can be extended. No additional investigation should be necessary if a subsequent design change expands the APE into the buffer zone. In some cases, however, no buffer zone may be reasonably defined for the project or portions of the project as expansion of the APE may warrant survey. In such cases, check the middle box and indicate that the results are valid within zero feet of the APE.

☐ 50 feet of APE	☒ 00 feet of APE	☐ Variable, see attached figure

- **The Definition and Evaluation of this Horizontal Buffer Zone is Based on One or More of the Following Considerations**

☐	The integrity of the areas within and adjacent to the setting is affected by prior development.
☐	Previous investigations show that archeological materials are unlikely to exist in this area.
☒	Adjacent areas have potential to preserve archeological sites with good integrity.
☐	Other (specify)
	An extended buffer was not assessed because there is little potential to expand into the neighboring properties, and because known Historic properties have been identified within the vicinity of the APE, meaning there is potential for historic resources. Private property along all existing roadways that make up the APE are present and include existing structures, both commercial and residential, many dating from 1900 to the 1920's.

Findings of no effect to archeological historic properties and/or State Antiquities Landmarks and recommendations for no further work apply to all areas within the horizontal buffer zone, as specified in the previous section. Any design change within this study area would not require further action or review beyond those actions recommended in this study. Design changes that either extend beyond the buffer zone or result in potential impacts deeper than the impacts considered in this report would require additional review. Note that no buffer zone may be defined for some projects, based on local conditions.

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Attachments

Attachment 1 – Map showing horizontal extent of APE, including existing ROW and proposed ROW/new easements

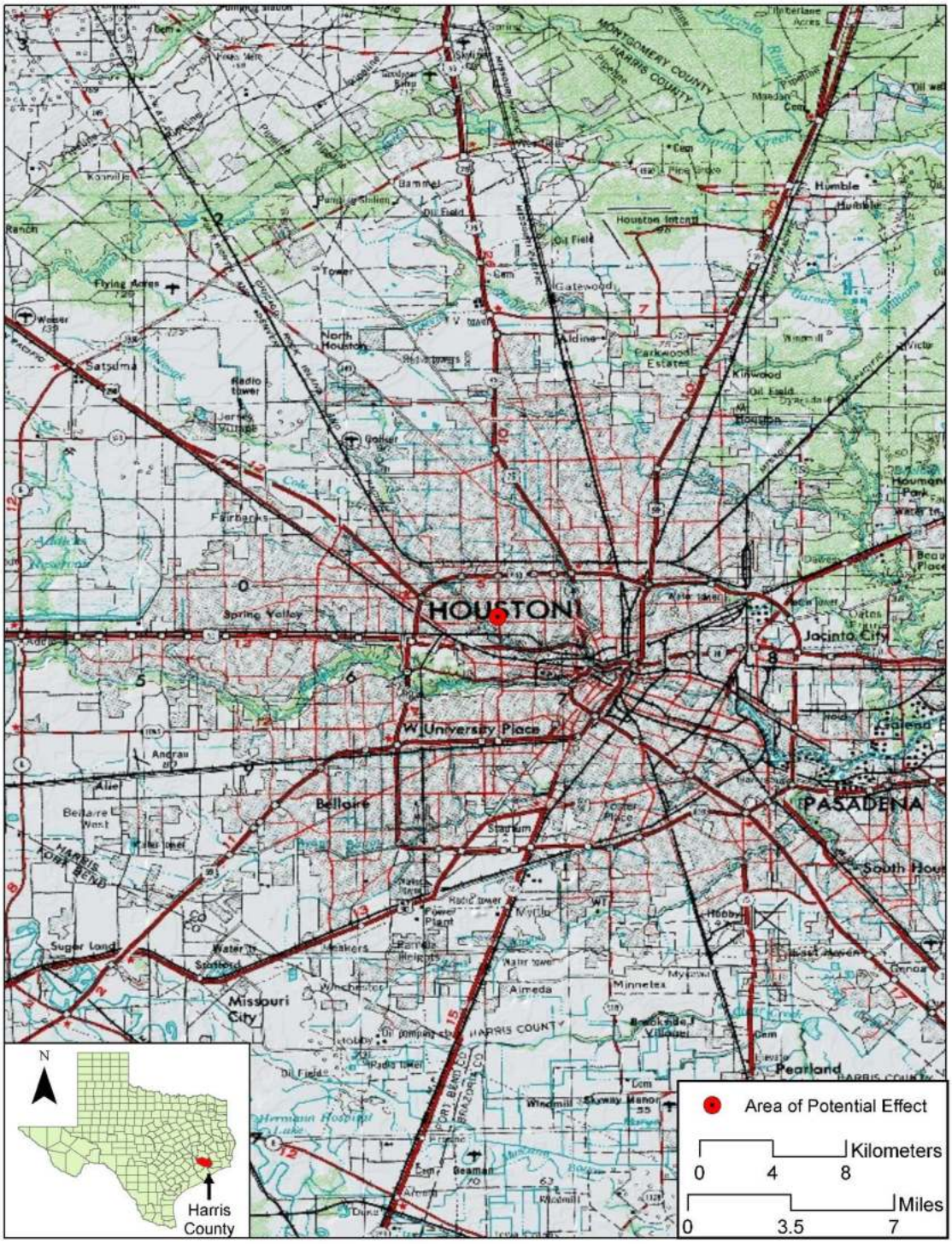


Figure 1. The APE on the 2019 *Houston Heights* (2995-433) USGS 7.5-Minute Quadrangle Map.

Attachment 2– Project information

ECOS Project Definition

1. **Describe the Limits of All Activities**

The project will extend for a total of approximately 2.4 miles along Shepherd Drive and approximately 2.4 miles along Durham Drive, from IH-610 to IH-10.The project will also include work on several cross streets between Durham and Shepherd: West 20th Street from approximately 740 feet west of Durham Drive to Shepherd Drive; West 19th Street from approximately 200 feet west of Durham Drive to Shepherd Drive; West 18th Street from approximately 140 feet west of Durham Drive to Shepherd Drive; West 16th Street from Durham Drive to Shepherd Drive; West 15th Street from approximately 500 feet west of Durham Drive to Dorothy Street approximately 220 feet east of Shepherd Drive; West 14th Street from Durham Drive to Shepherd Drive; West 12th Street from Durham Drive to Shepherd Drive; and West 11th Street from approximately 55 feet west of Durham Drive to Shepherd Drive.
The project will take place within the existing 65 to 80-foot right-of-way on Shepherd and Durham Drives. Improvements will also take place within the connecting cross streets which have rights-of-way which vary from 50 feet to 100 feet. The project may require minor "corner clips" of approximately 810 square feet of right-of-way at the southwest corner of Shepherd at West 20th, 460 square feet at the northeast corner of Durham at West 19th; and 730 square feet at the northeast corner of Durham at West 11th. This is anticipated, in these sections, to increase the existing right-of-way up to approximately 90 feet to accommodate turning movements.

2. **Describe Project Setting**

The project area is generally urban. Major traffic generators within the project area include H-E-B between 23rd and 24th and the large strip mall with Kroger, Big Lots, etc. south of 11th.
The general vegetation composition in the project area consists of typical decorative urban landscaping (grass, smalls trees and shrubs).
Primary land use in the area includes commercial and residential with some industrial.
The project crosses White Oak Bayou via an existing bridge structure which will remain intact.

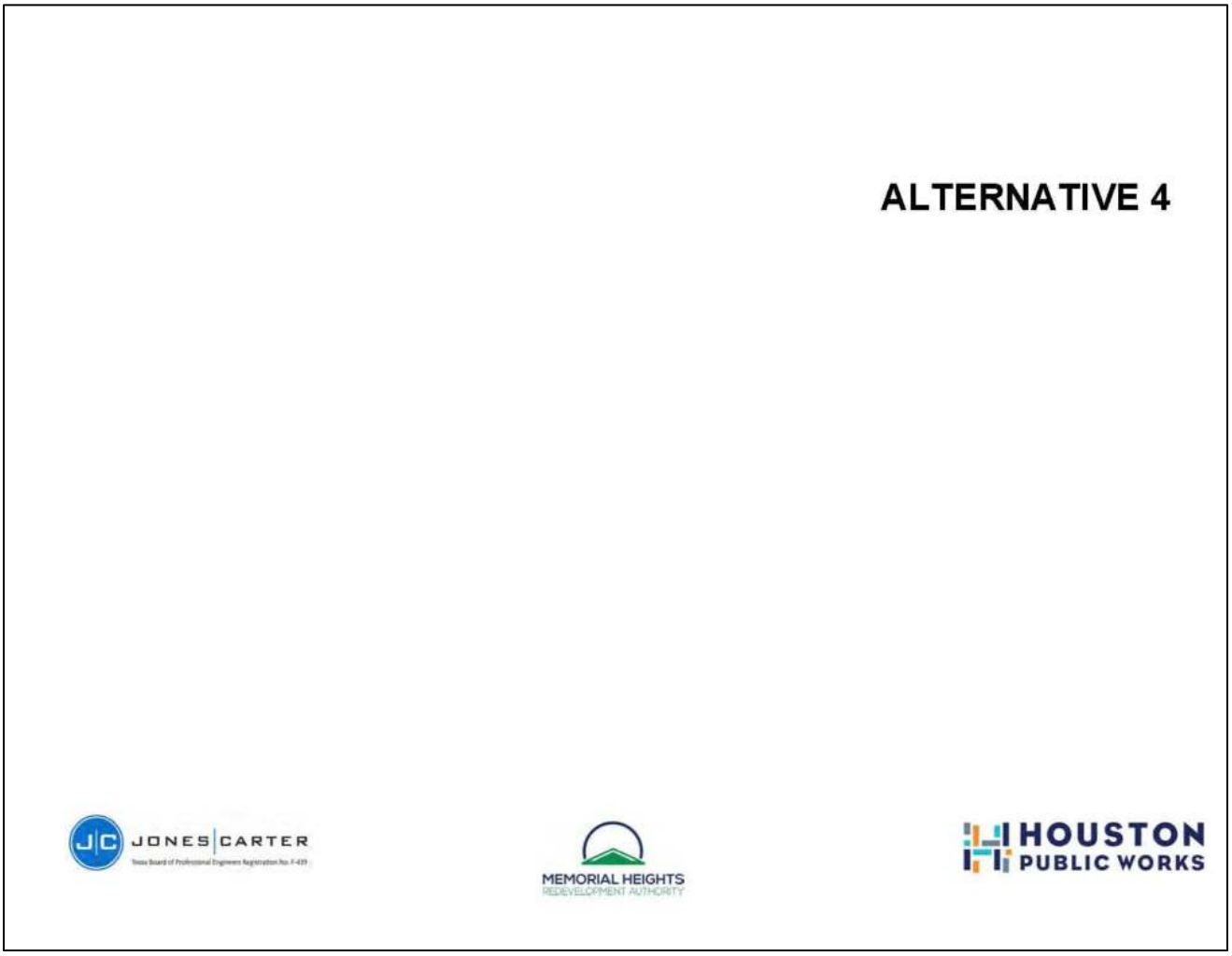
3. **Describe Existing Facility**

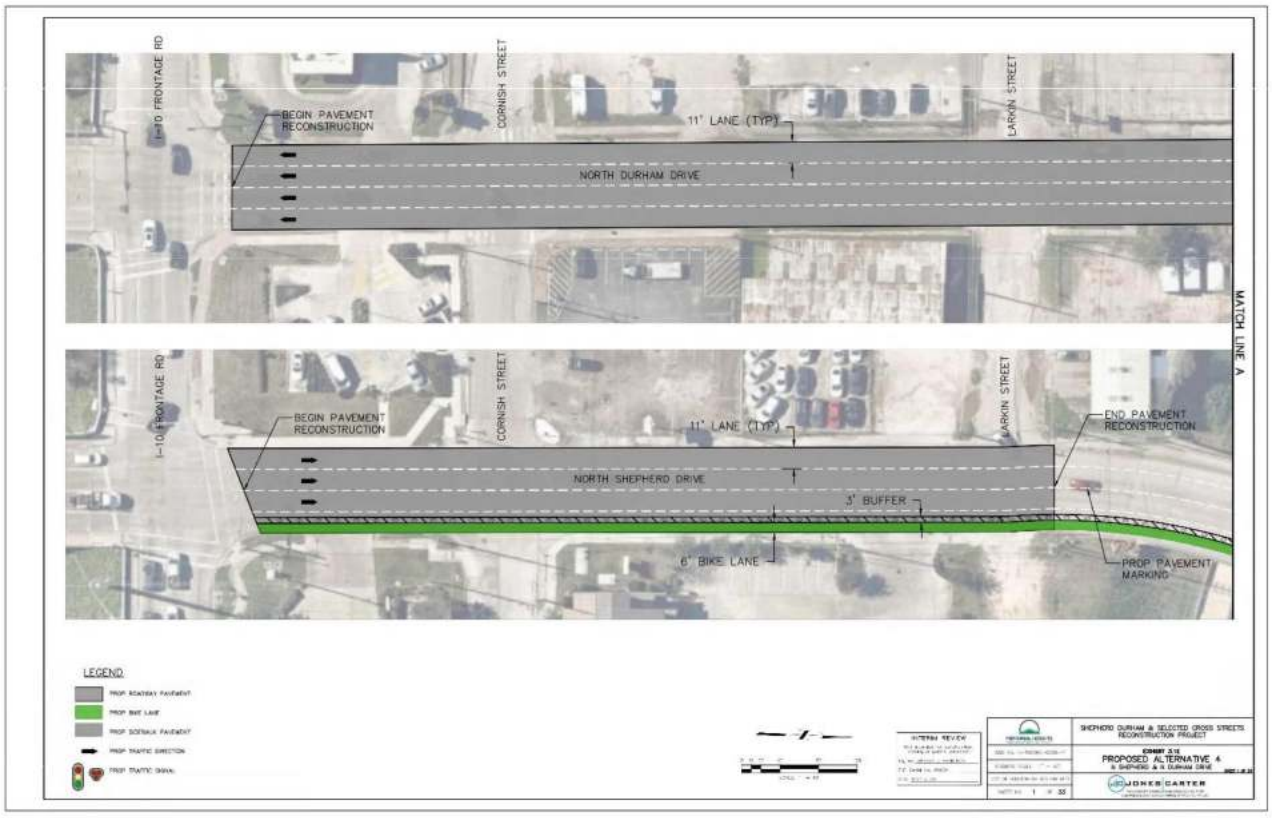
The existing facilities are four lane roadways, which include 11-foot wide main lanes in each direction. The connecting streets are generally two-lane facilities with one 11-foot lane in each direction, with the exception of 11th street which has two main lanes in each direction.
Existing drainage features includes curb-and-gutter.
The existing facility has signals at the following intersections: 24th, 20th, 19th, 18th, 14th, and 11th.
The existing roadway includes bridges on Durham and Shepherd located at White Oak Bayou.
The existing roadway includes 0 to 5-foot-wide sidewalks on both sides of the roadway.

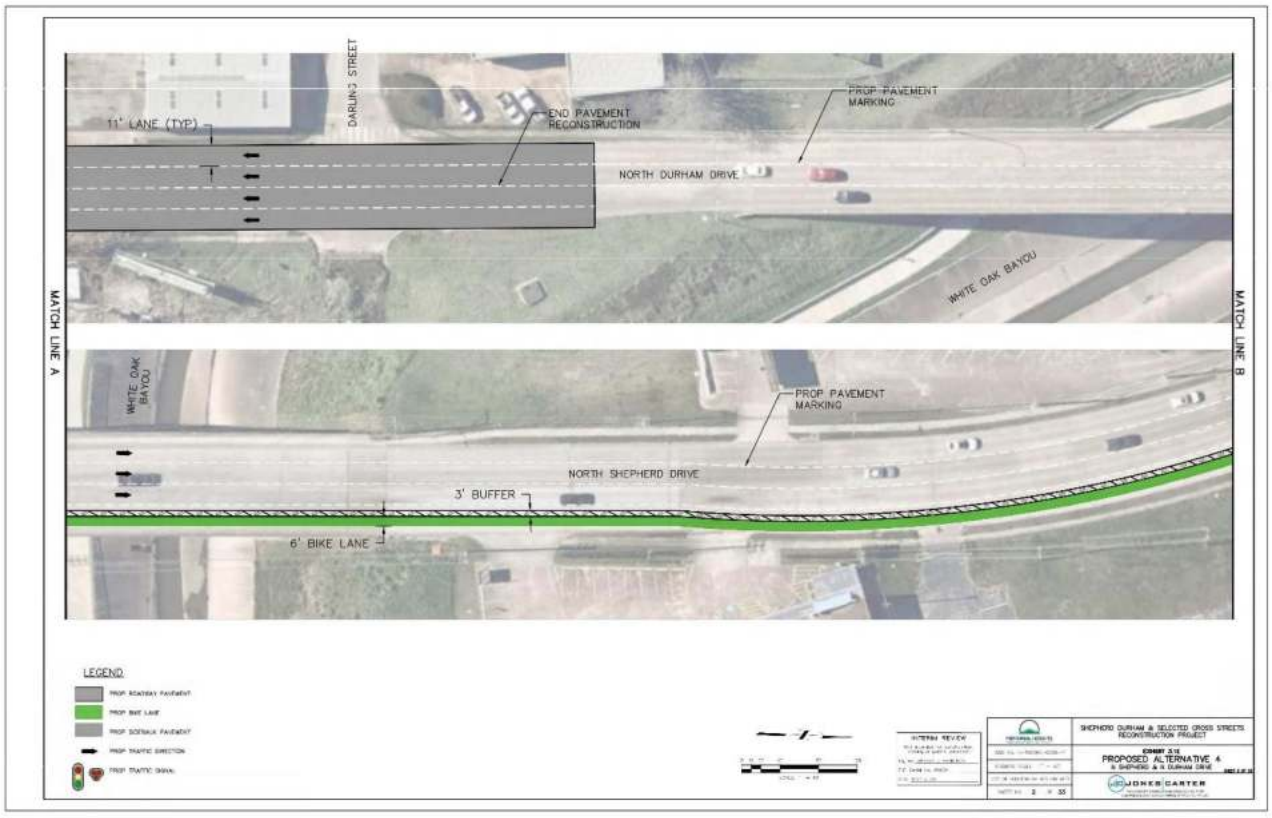
4. **Describe Proposed Facility**

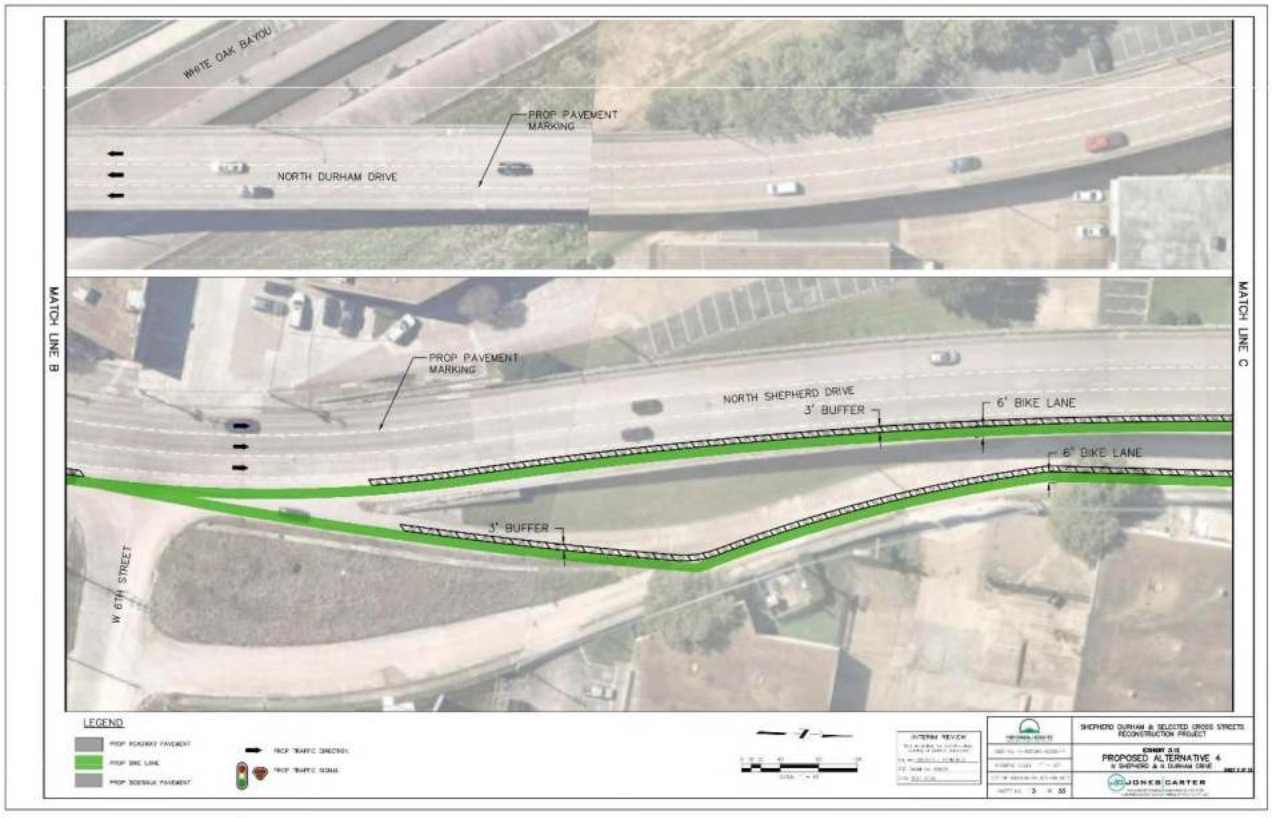
The proposed facility would include three lane roadways on Shepherd and Durham, which includes three 11-foot wide main lanes on both Shepherd and Durham.
Proposed drainage features are curb-and-gutter.
The proposed facility has 14-foot wide raised medians at West 11th Street (Nashua Street to Shepherd Drive).
The proposed roadway includes six to ten-foot-wide sidewalks on both sides of Shepherd and Durham Drives and bike lanes (five feet with three-foot buffers or six feet behind the curb) on the east sides of both Shepherd and Durham Drives.

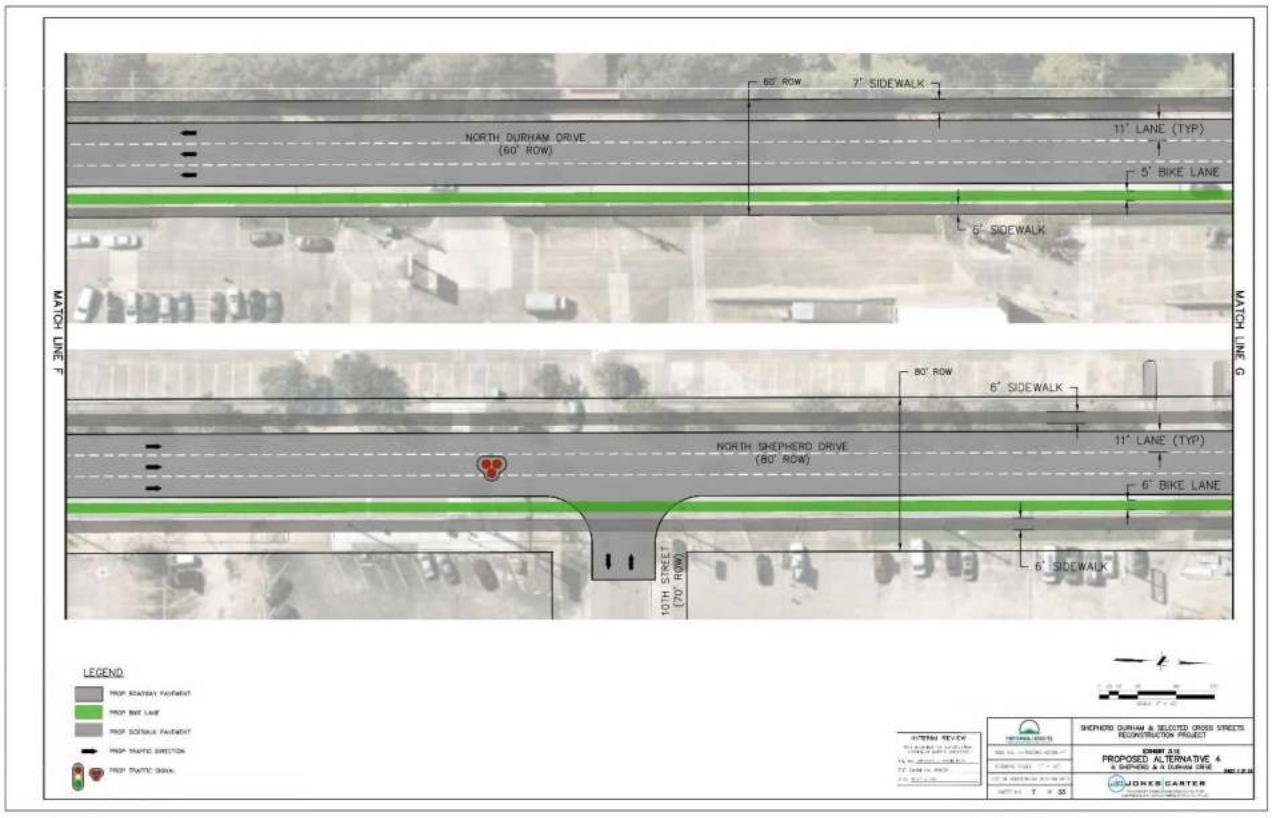
As Built Plans

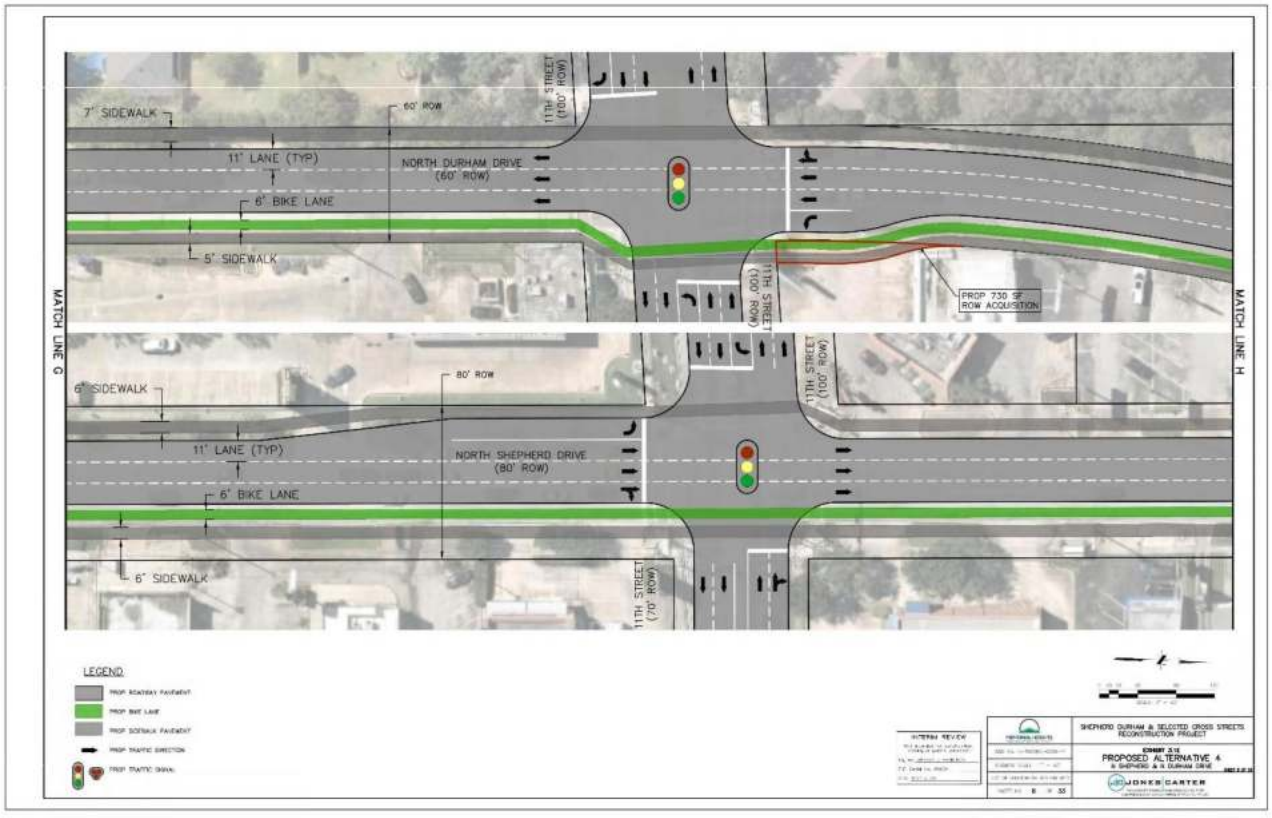


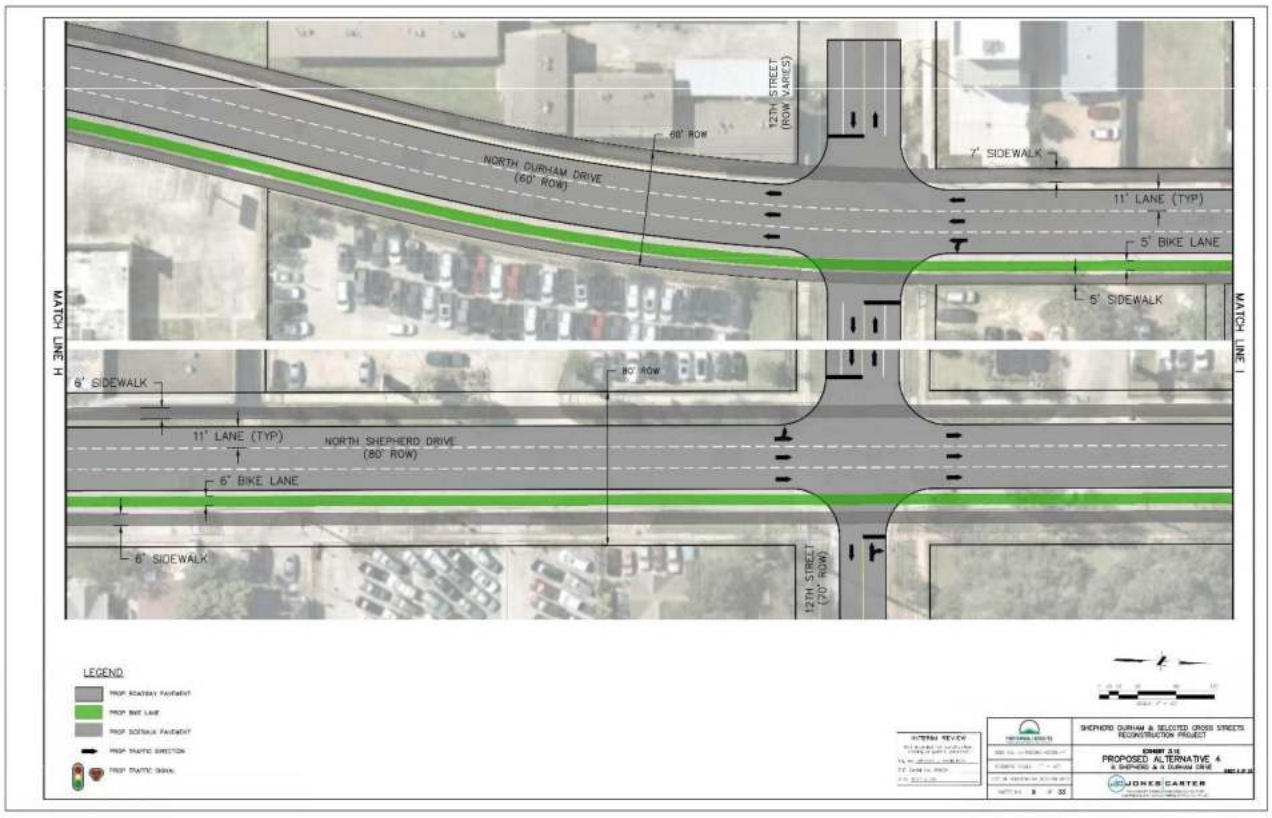

I-10 FRONTAGE RD
CORNISH STREET
LARKIN STREET
BEGIN PAVEMENT RECONSTRUCTION
11' LANE (TYP)
NORTH DURHAM DRIVE
MATCH LINE A
I-10 FRONTAGE RD
CORNISH STREET
LARKIN STREET
BEGIN PAVEMENT RECONSTRUCTION
11' LANE (TYP)
END PAVEMENT RECONSTRUCTION
NORTH SHEPHERD DRIVE
3' BUFFER
6' BIKE LANE
PROP. PAVEMENT MARKING
LEGEND
PROPOSED ALTERNATIVE A
JONES CARTER

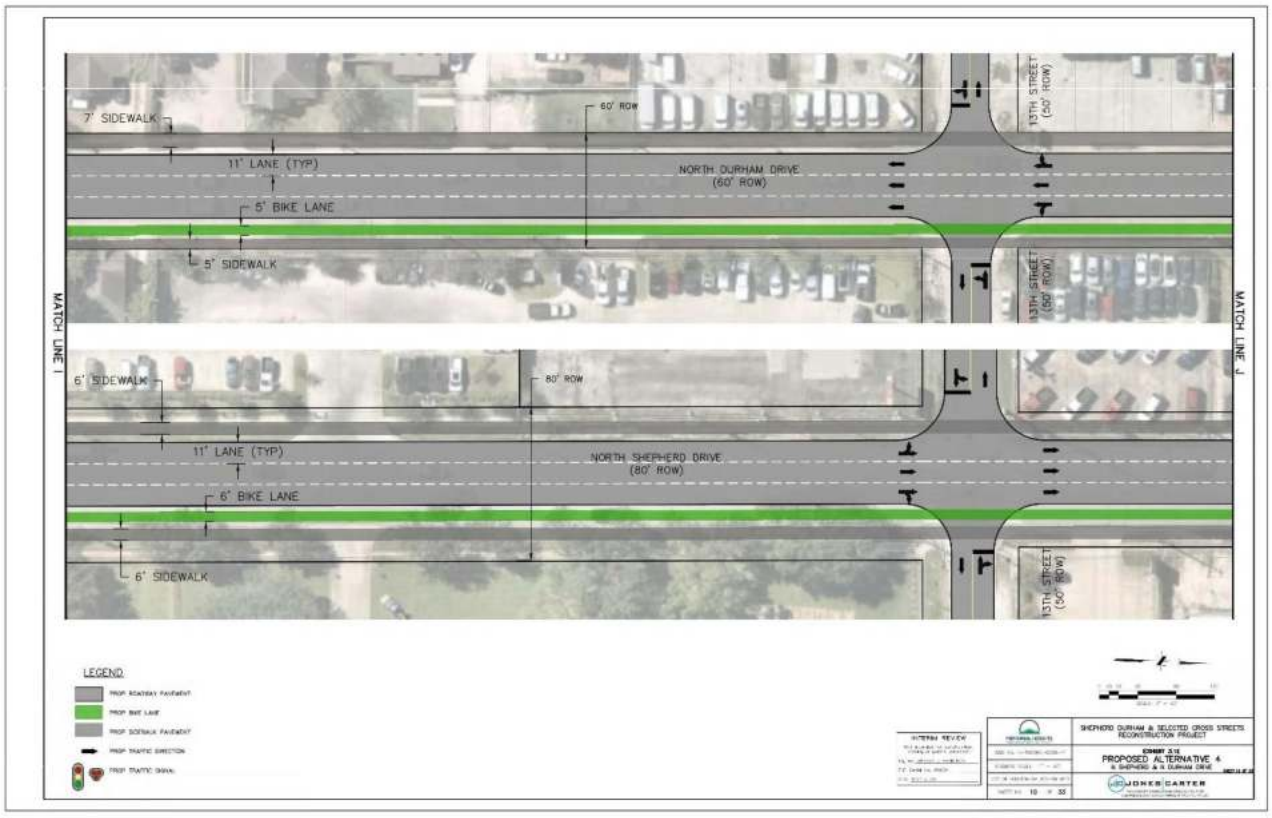

DARLING STREET
11' LANE (TYP)
END PAVEMENT RECONSTRUCTION
PROP PAVEMENT MARKING
NORTH DURHAM DRIVE
WHITE OAK BAYOU
MATCH LINE A
MATCH LINE B
WHITE OAK BAYOU
PROP PAVEMENT MARKING
NORTH SHEPHERD DRIVE
3' BUFFER
6' BIKE LANE
LEGEND
PROP ROADWAY PAVEMENT
PROP BIKE LANE
PROP SIDEWALK PAVEMENT
PROP TRAFFIC DIRECTION
PROP TRAFFIC SIGNAL
INTERIM REVIEW
SHEPHERD DURHAM & SELECTED CROSS STREETS RECONSTRUCTION PROJECT
PROPOSED ALTERNATIVE 4
JONES CARTER

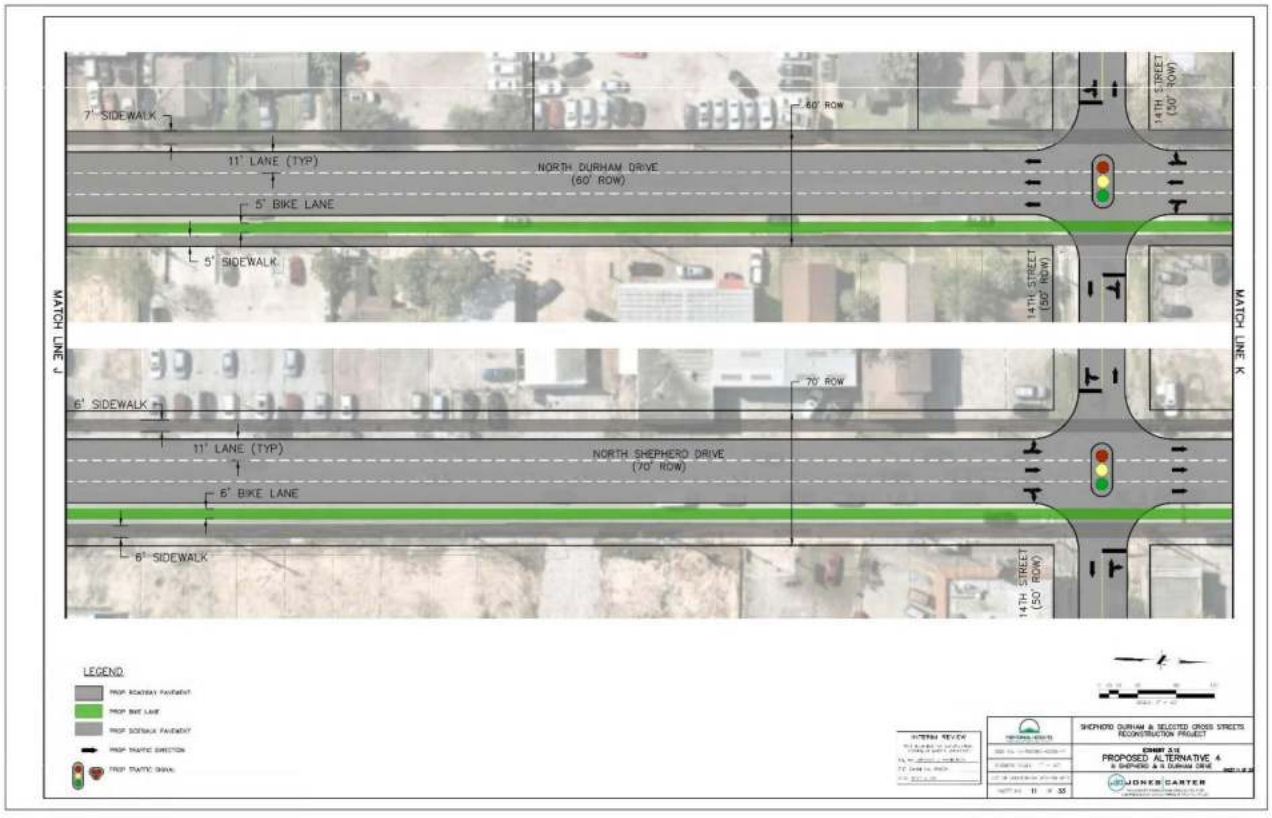

WHITE OAK BAYOU
PROP PAVEMENT MARKING
NORTH DURHAM DRIVE
MATCH LINE B
MATCH LINE C
PROP PAVEMENT MARKING
NORTH SHEPHERD DRIVE
3' BUFFER
6' BIKE LANE
6' BIKE LANE
3' BUFFER
W 6TH STREET
LEGEND
PROP ROADWAY PAVEMENT
PROP BIKE LANE
PROP SIDEWALK PAVEMENT
PROP TRAFFIC DIRECTION
PROP TRAFFIC SIGNAL
INTERIM REVIEW
SHEPHERD DURHAM & SELECTED CROSS STREETS RECONSTRUCTION PROJECT
PROPOSED ALTERNATIVE 4
JONES CARTER

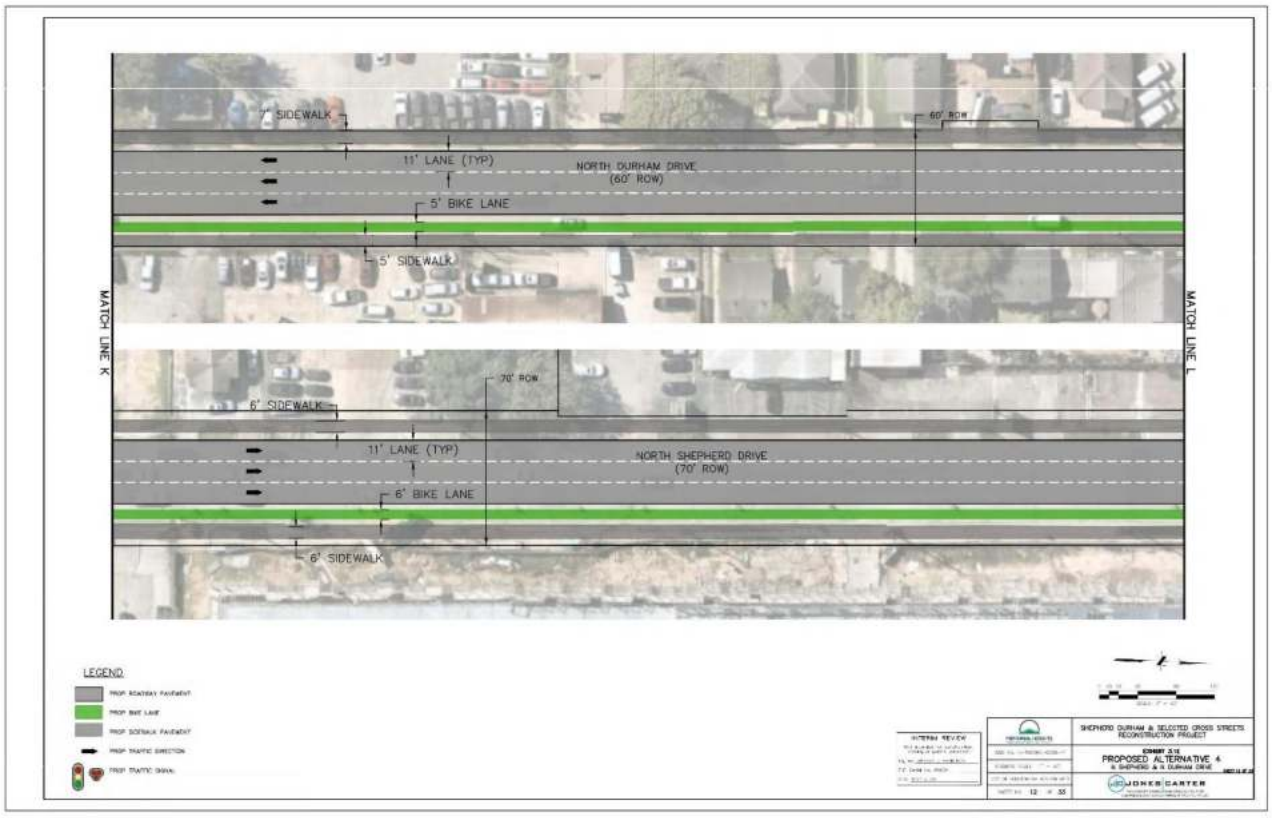

60' ROW
7' SIDEWALK
NORTH DURHAM DRIVE
(60' ROW)
11' LANE (TYP)
5' BIKE LANE
6' SIDEWALK
MATCH LINE F
MATCH LINE G
80' ROW
6' SIDEWALK
NORTH SHEPHERD DRIVE
(80' ROW)
11' LANE (TYP)
6' BIKE LANE
10TH STREET
(70' ROW)
6' SIDEWALK
LEGEND
PROPOSED ALTERNATIVE A
JONES CARTER

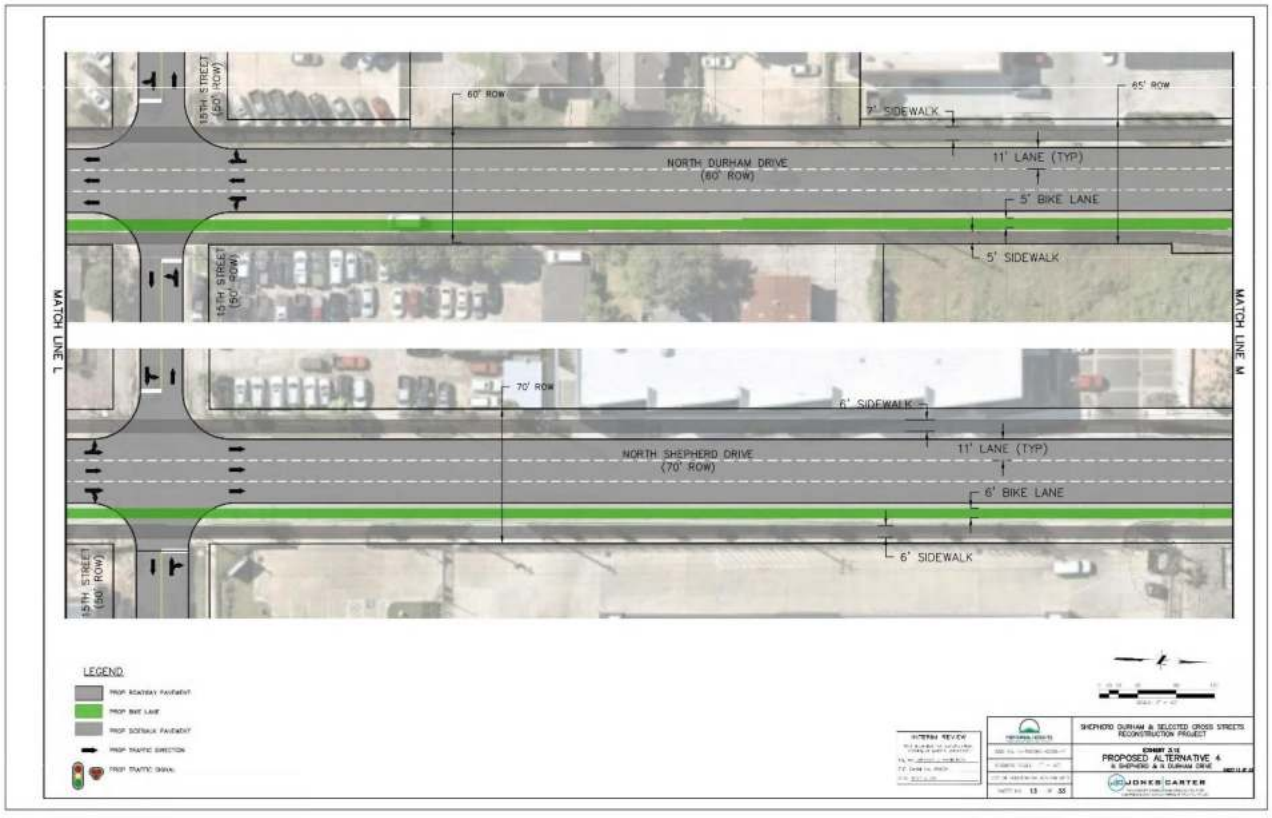

11TH STREET
(100' ROW)
7' SIDEWALK
60' ROW
11' LANE (TYP)
NORTH DURHAM DRIVE
(60' ROW)
6' BIKE LANE
5' SIDEWALK
PROP 730 SF
ROW ACQUISITION
MATCH LINE G
MATCH LINE H
6' SIDEWALK
80' ROW
11' LANE (TYP)
NORTH SHEPHERD DRIVE
(80' ROW)
6' BIKE LANE
6' SIDEWALK
11TH STREET
(70' ROW)
LEGEND
PROPOSED ALTERNATIVE A
JONES CARTER

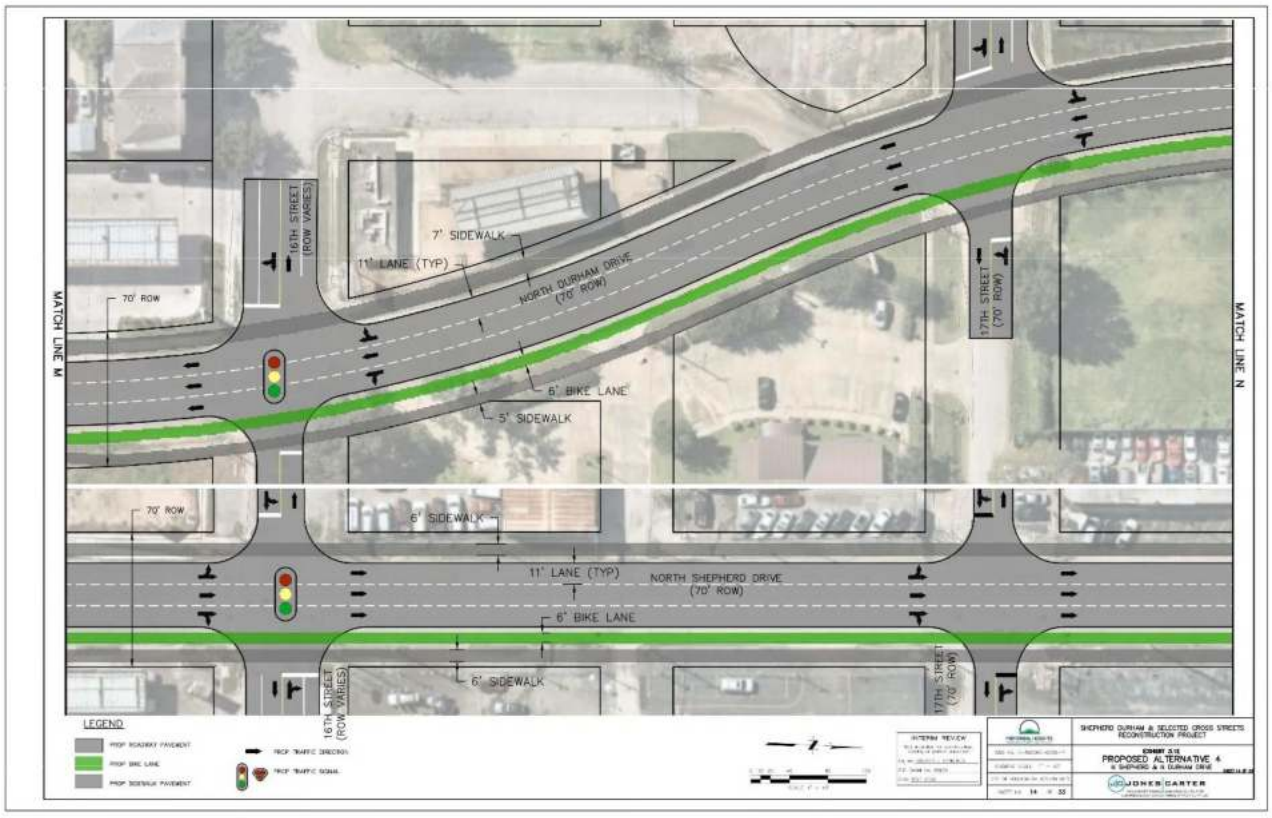

NORTH DURHAM DRIVE
(60' ROW)
60' ROW
12TH STREET
(ROW VARIES)
7' SIDEWALK
11' LANE (TYP)
5' BIKE LANE
5' SIDEWALK
MATCH LINE H
MATCH LINE I
6' SIDEWALK
80' ROW
11' LANE (TYP)
NORTH SHEPHERD DRIVE
(80' ROW)
6' BIKE LANE
6' SIDEWALK
12TH STREET
(70' ROW)
LEGEND
PROPOSED ALTERNATIVE A
JONES CARTER

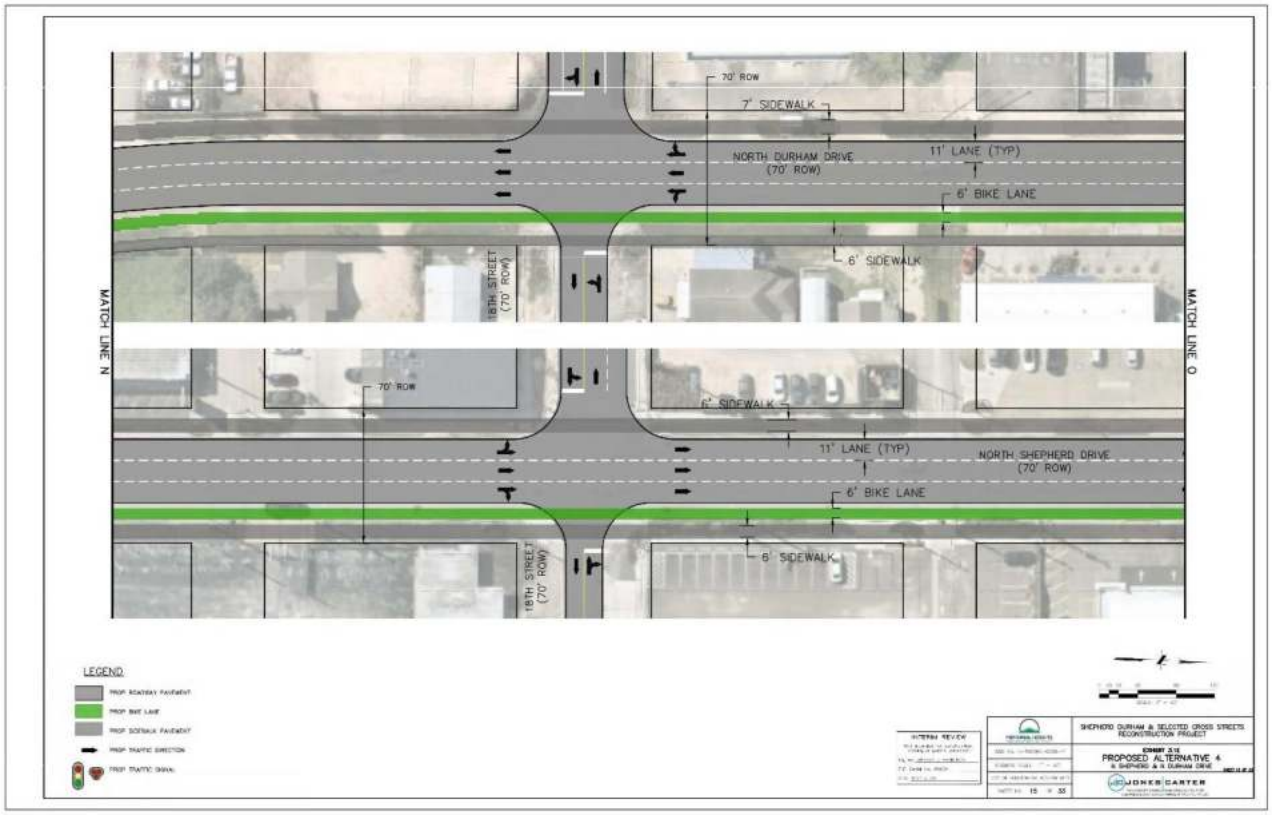

7' SIDEWALK
11' LANE (TYP)
5' BIKE LANE
5' SIDEWALK
60' ROW
NORTH DURHAM DRIVE
(60' ROW)
15TH STREET
(50' ROW)
MATCH LINE I
MATCH LINE J
6' SIDEWALK
11' LANE (TYP)
6' BIKE LANE
6' SIDEWALK
80' ROW
NORTH SHEPHERD DRIVE
(80' ROW)
LEGEND
PROPOSED ALTERNATIVE 4
JONES CARTER

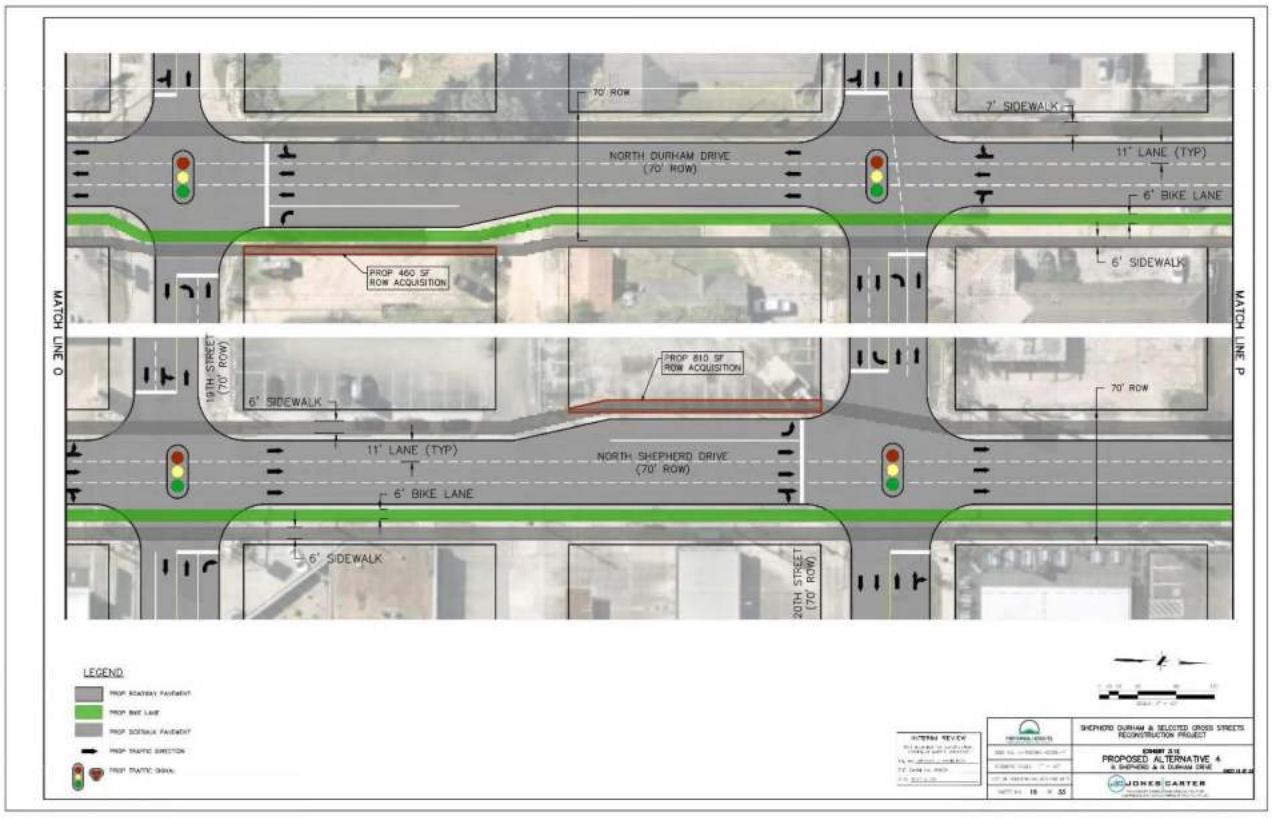

7' SIDEWALK
11' LANE (TYP)
5' BIKE LANE
5' SIDEWALK
60' ROW
NORTH DURHAM DRIVE
(60' ROW)
14TH STREET
(50' ROW)
MATCH LINE J
MATCH LINE K
6' SIDEWALK
11' LANE (TYP)
6' BIKE LANE
6' SIDEWALK
70' ROW
NORTH SHEPHERD DRIVE
(70' ROW)
LEGEND
PROPOSED ALTERNATIVE 4
JONES CARTER

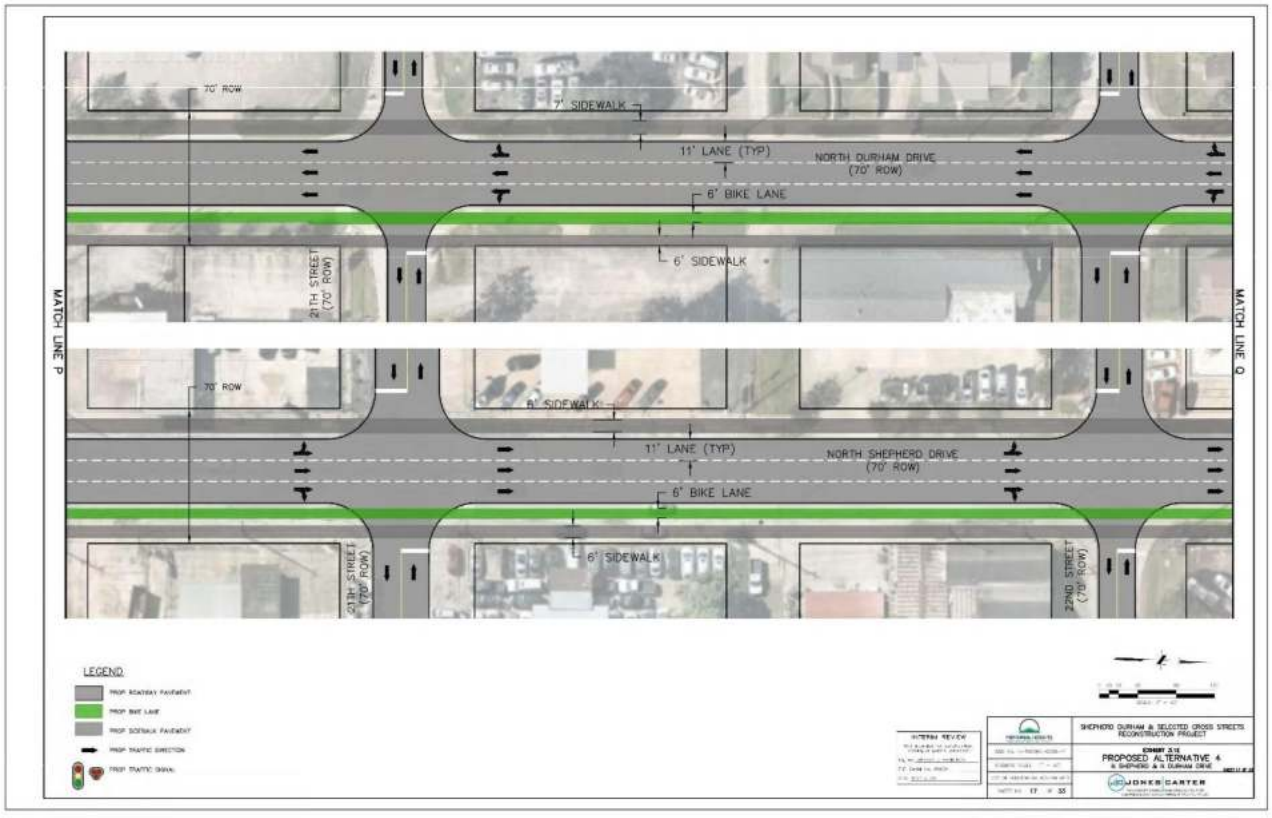

7' SIDEWALK
11' LANE (TYP)
NORTH DURHAM DRIVE
(60' ROW)
5' BIKE LANE
5' SIDEWALK
60' ROW
MATCH LINE K
MATCH LINE L
70' ROW
6' SIDEWALK
11' LANE (TYP)
NORTH SHEPHERD DRIVE
(70' ROW)
6' BIKE LANE
6' SIDEWALK
LEGEND
PROPOSED ALTERNATIVE 4
JONES CARTER

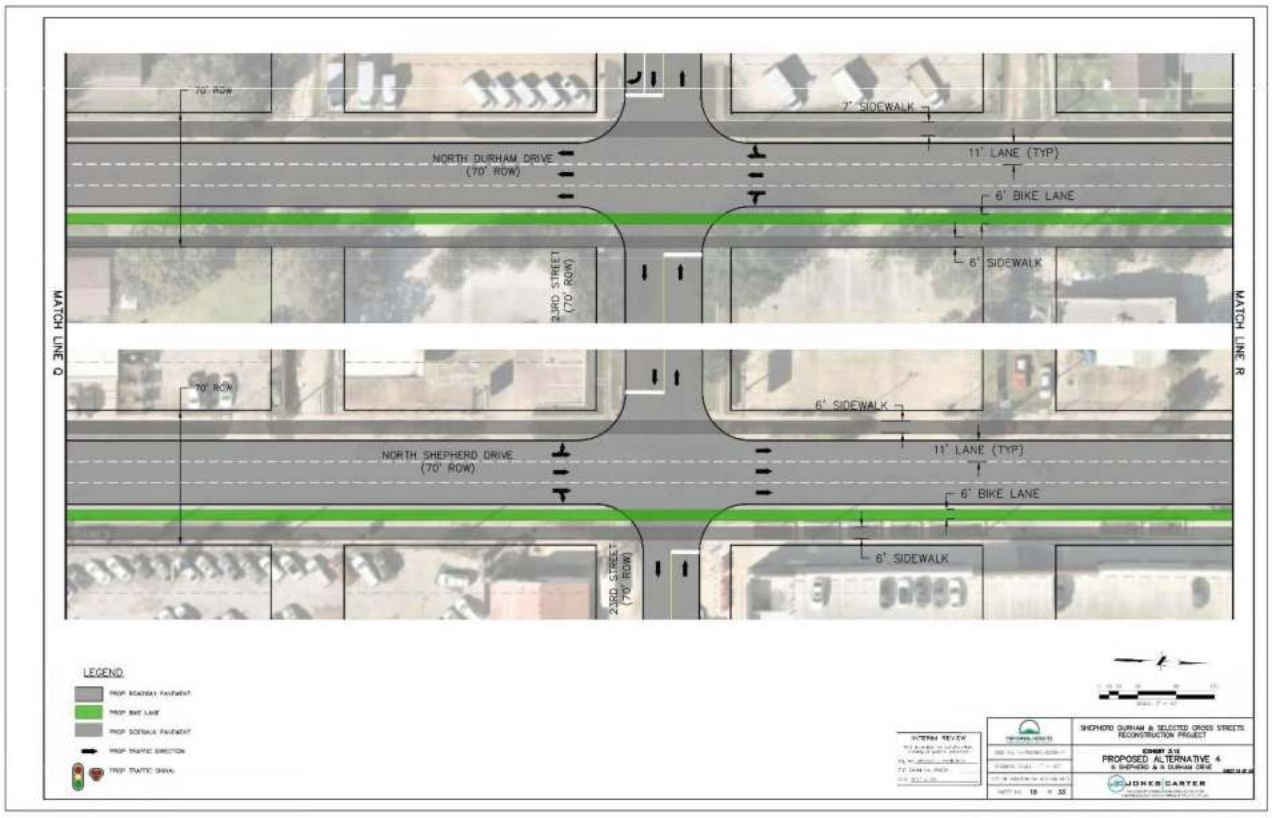

15TH STREET
(60' ROW)
60' ROW
7' SIDEWALK
65' ROW
NORTH DURHAM DRIVE
(60' ROW)
11' LANE (TYP)
5' BIKE LANE
5' SIDEWALK
MATCH LINE L
MATCH LINE M
70' ROW
6' SIDEWALK
NORTH SHEPHERD DRIVE
(70' ROW)
11' LANE (TYP)
6' BIKE LANE
6' SIDEWALK
LEGEND
PROPOSED ALTERNATIVE 4
JONES CARTER

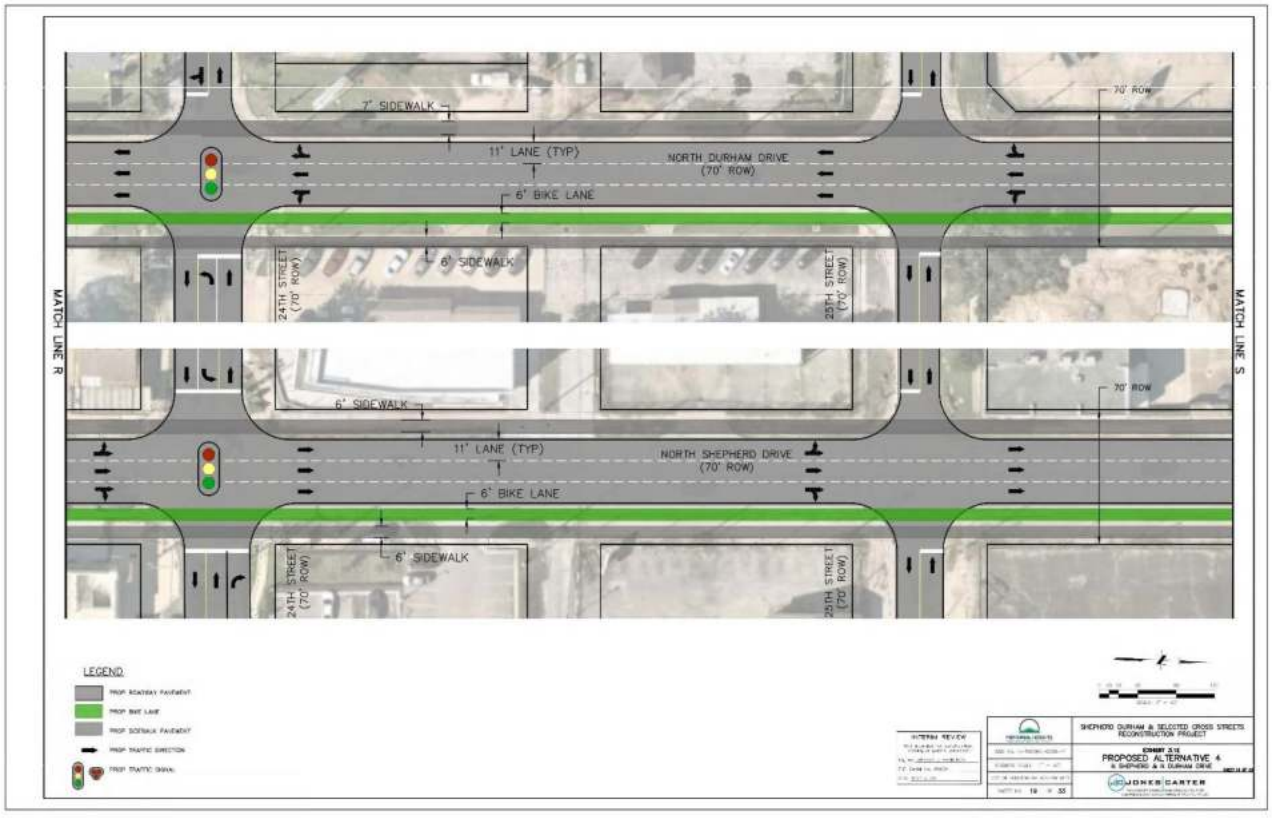

MATCH LINE M
MATCH LINE N
16TH STREET (ROW VARIES)
7' SIDEWALK
11' LANE (TYP)
NORTH DURHAM DRIVE (70' ROW)
70' ROW
6' BIKE LANE
5' SIDEWALK
17TH STREET (70' ROW)
6' SIDEWALK
11' LANE (TYP)
NORTH SHEPHERD DRIVE (70' ROW)
6' BIKE LANE
6' SIDEWALK
LEGEND
PROPOSED ALTERNATIVE 4
JONES CARTER

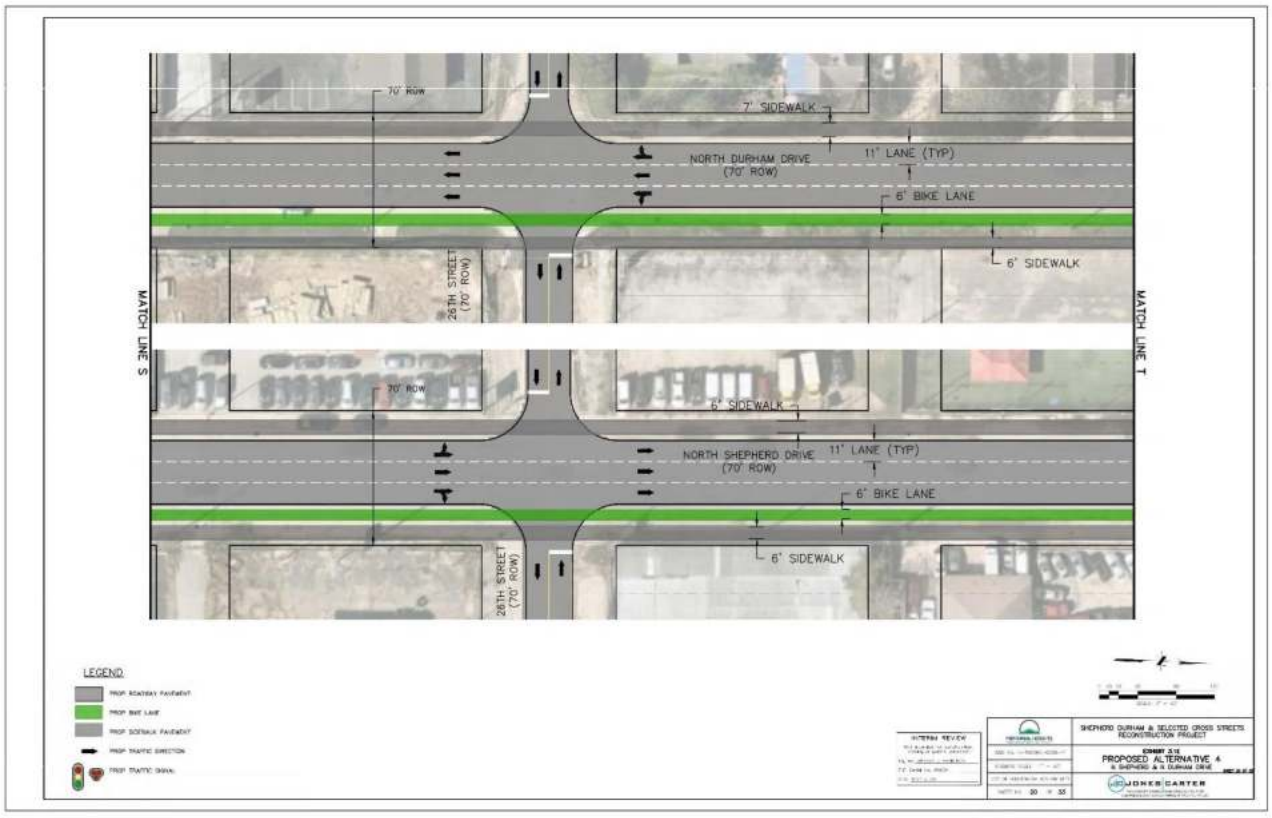

MATCH LINE N
MATCH LINE O
70' ROW
7' SIDEWALK
NORTH DURHAM DRIVE (70' ROW)
11' LANE (TYP)
6' BIKE LANE
6' SIDEWALK
18TH STREET (70' ROW)
6' SIDEWALK
11' LANE (TYP)
NORTH SHEPHERD DRIVE (70' ROW)
6' BIKE LANE
6' SIDEWALK
LEGEND
PROPOSED ALTERNATIVE 4
JONES CARTER

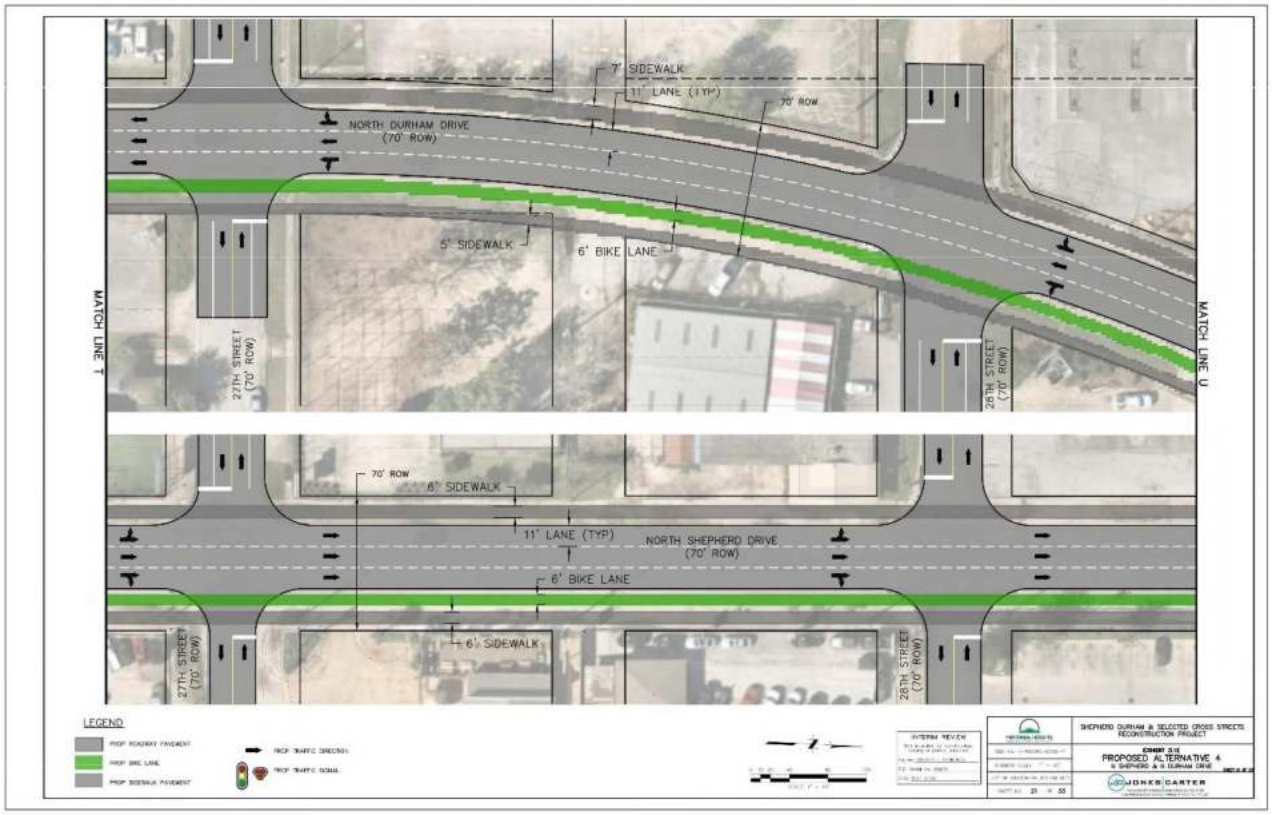

70' ROW
7' SIDEWALK
NORTH DURHAM DRIVE
(70' ROW)
11' LANE (TYP)
6' BIKE LANE
6' SIDEWALK
PROP 460 SF
ROW ACQUISITION
MATCH LINE O
MATCH LINE P
19TH STREET
(70' ROW)
6' SIDEWALK
PROP 810 SF
ROW ACQUISITION
70' ROW
11' LANE (TYP)
NORTH SHEPHERD DRIVE
(70' ROW)
6' BIKE LANE
6' SIDEWALK
20TH STREET
(70' ROW)
LEGEND
PROP ROADWAY PAVEMENT
PROP BIKE LANE
PROP SIDEWALK PAVEMENT
PROP TRAFFIC DIRECTION
PROP TRAFFIC SIGNAL
INTERIM REVIEW
SHEPHERD DURHAM & SELECTED CROSS STREETS
RECONSTRUCTION PROJECT
PROPOSED ALTERNATIVE 4
& SHEPHERD & N. DURHAM DRIVE
JONES CARTER

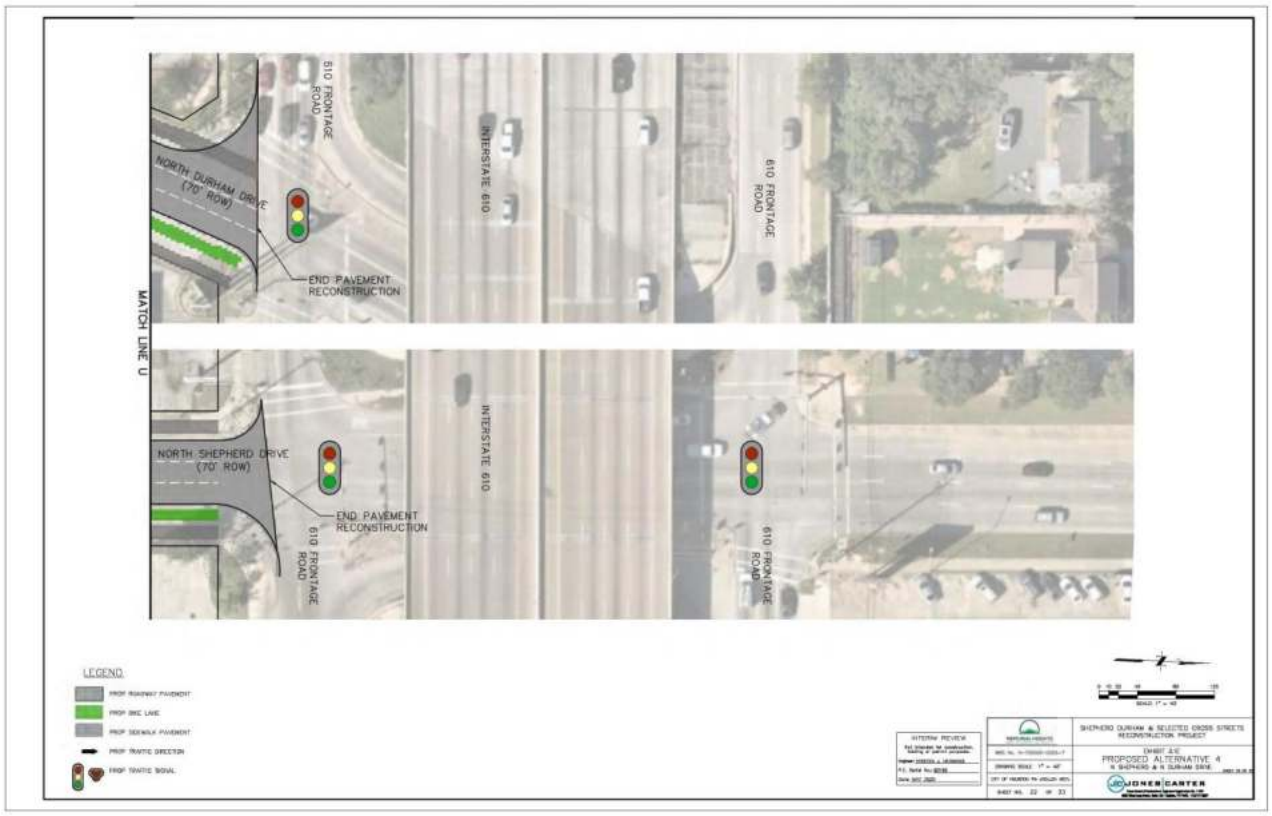

70' ROW
7' SIDEWALK
11' LANE (TYP)
NORTH DURHAM DRIVE
(70' ROW)
6' BIKE LANE
6' SIDEWALK
21ST STREET
(70' ROW)
MATCH LINE P
MATCH LINE Q
70' ROW
6' SIDEWALK
11' LANE (TYP)
NORTH SHEPHERD DRIVE
(70' ROW)
6' BIKE LANE
6' SIDEWALK
21ST STREET
(70' ROW)
22ND STREET
(70' ROW)
LEGEND
PROP ROADWAY PAVEMENT
PROP BIKE LANE
PROP SIDEWALK PAVEMENT
PROP TRAFFIC DIRECTION
PROP TRAFFIC SIGNAL
INTERIM REVIEW
SHEPHERD DURHAM & SELECTED CROSS STREETS
RECONSTRUCTION PROJECT
PROPOSED ALTERNATIVE 4
& SHEPHERD & N. DURHAM DRIVE
JONES CARTER

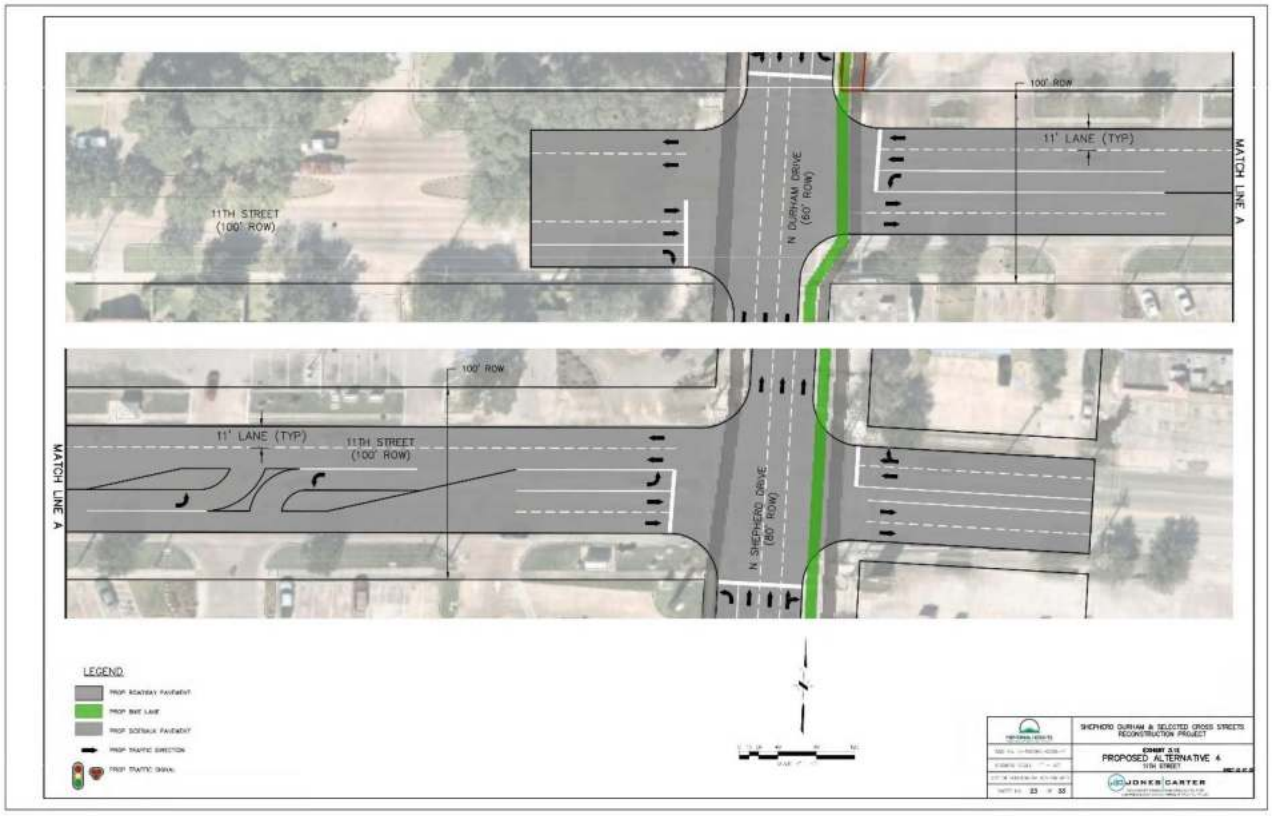

70' ROW
7' SIDEWALK
NORTH DURHAM DRIVE
(70' ROW)
11' LANE (TYP)
6' BIKE LANE
6' SIDEWALK
23RD STREET
(70' ROW)
MATCH LINE Q
MATCH LINE R
70' ROW
6' SIDEWALK
NORTH SHEPHERD DRIVE
(70' ROW)
11' LANE (TYP)
6' BIKE LANE
6' SIDEWALK
23RD STREET
(70' ROW)
LEGEND
PROP ROADWAY PAVEMENT
PROP BIKE LANE
PROP SIDEWALK PAVEMENT
PROP TRAFFIC DIRECTION
PROP TRAFFIC SIGNAL
INTERIM REVIEW
SHEPHERD DURHAM & SELECTED CROSS STREETS RECONSTRUCTION PROJECT
PROPOSED ALTERNATIVE 4
& SHEPHERD & N. DURHAM DRIVE
JONES CARTER

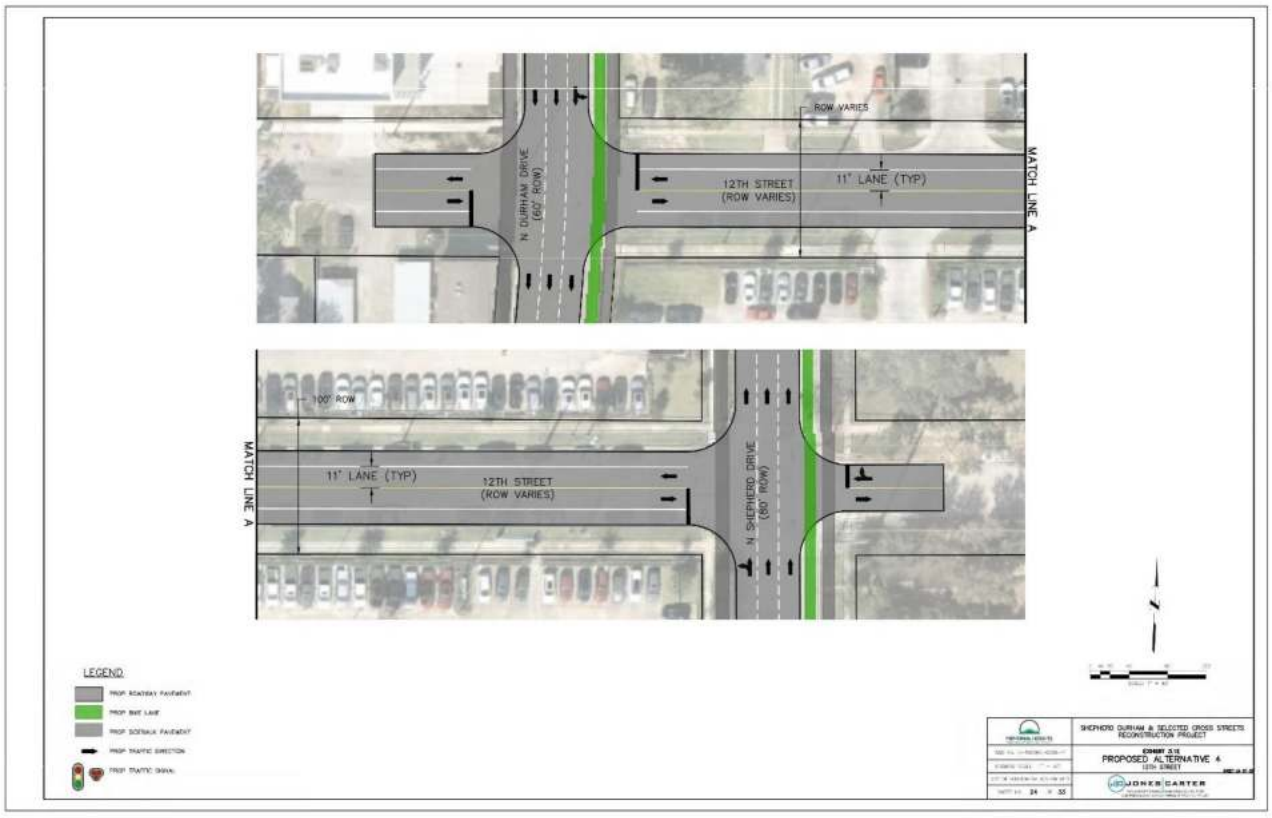

7' SIDEWALK
11' LANE (TYP)
NORTH DURHAM DRIVE
(70' ROW)
70' ROW
6' BIKE LANE
6' SIDEWALK
24TH STREET
(70' ROW)
25TH STREET
(70' ROW)
MATCH LINE R
MATCH LINE S
6' SIDEWALK
11' LANE (TYP)
NORTH SHEPHERD DRIVE
(70' ROW)
70' ROW
6' BIKE LANE
6' SIDEWALK
24TH STREET
(70' ROW)
25TH STREET
(70' ROW)
LEGEND
PROP ROADWAY PAVEMENT
PROP BIKE LANE
PROP SIDEWALK PAVEMENT
PROP TRAFFIC DIRECTION
PROP TRAFFIC SIGNAL
INTERIM REVIEW
SHEPHERD DURHAM & SELECTED CROSS STREETS RECONSTRUCTION PROJECT
PROPOSED ALTERNATIVE 4
& SHEPHERD & N. DURHAM DRIVE
JONES CARTER

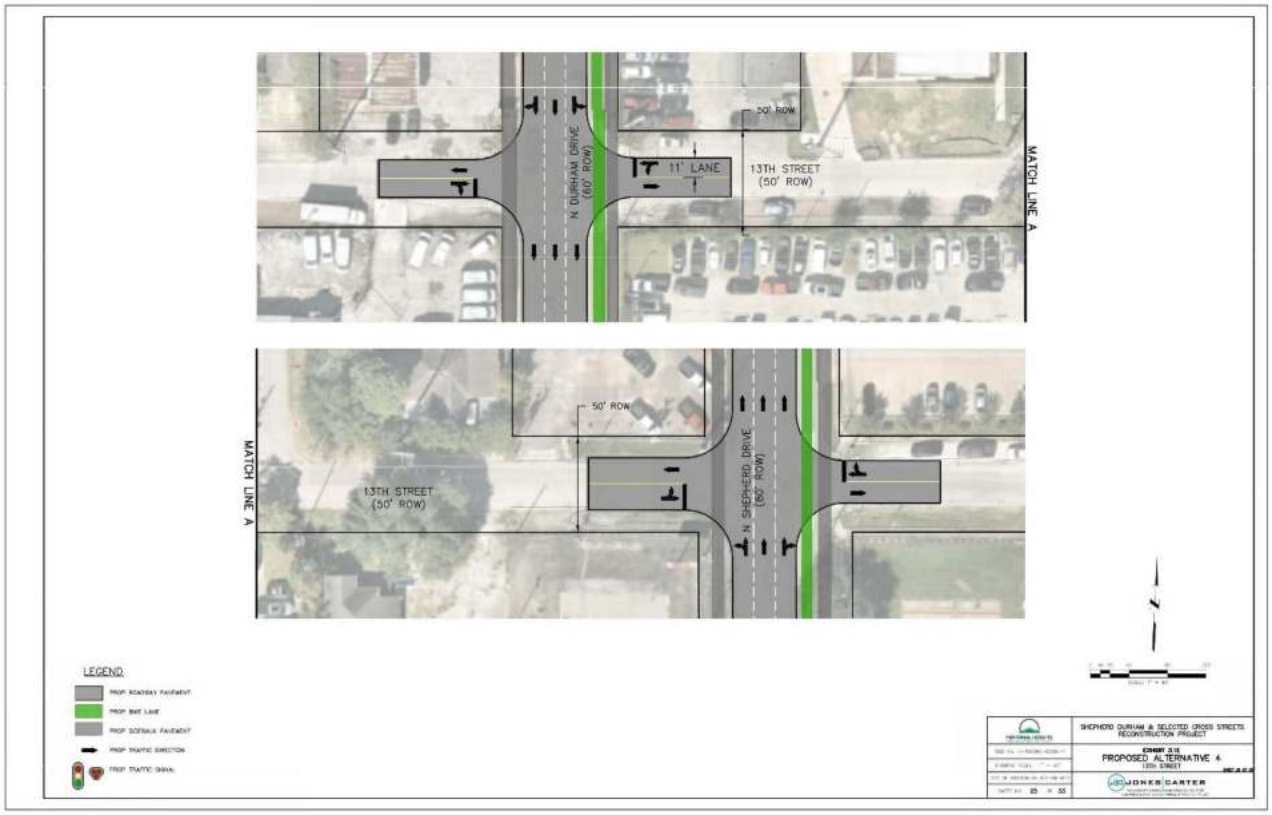

70' ROW
7' SIDEWALK
11' LANE (TYP)
NORTH DURHAM DRIVE
(70' ROW)
6' BIKE LANE
6' SIDEWALK
26TH STREET
(70' ROW)
MATCH LINE S
MATCH LINE T
70' ROW
6' SIDEWALK
11' LANE (TYP)
NORTH SHEPHERD DRIVE
(70' ROW)
6' BIKE LANE
6' SIDEWALK
26TH STREET
(70' ROW)
LEGEND
PROP ROADWAY PAVEMENT
PROP BIKE LANE
PROP SIDEWALK PAVEMENT
PROP TRAFFIC DIRECTION
PROP TRAFFIC SIGNAL
INTERIM REVIEW
SHEPHERD DURHAM & SELECTED CROSS STREETS RECONSTRUCTION PROJECT
PROPOSED ALTERNATIVE 4
& SHEPHERD & N. DURHAM DRIVE
JONES CARTER

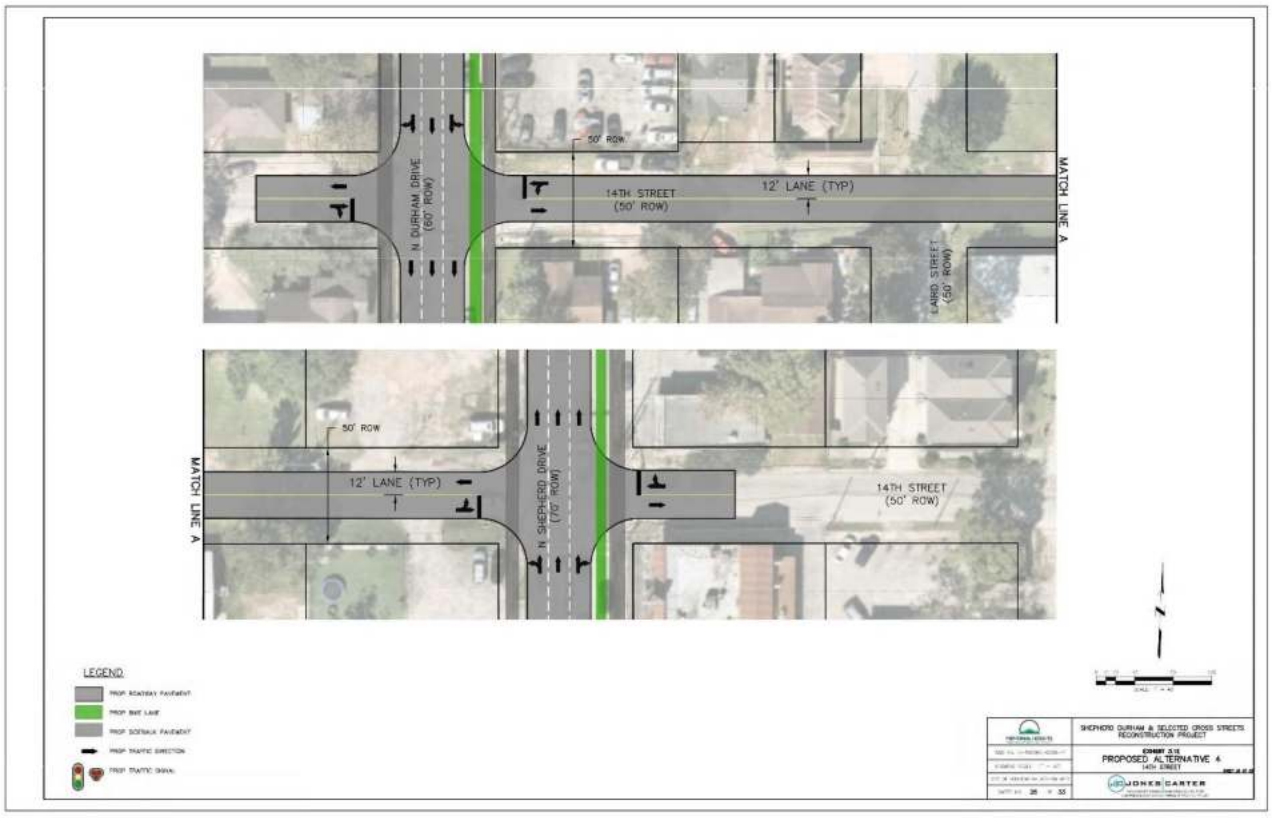

7' SIDEWALK
11' LANE (TYP)
70' ROW
NORTH DURHAM DRIVE
(70' ROW)
5' SIDEWALK
6' BIKE LANE
MATCH LINE T
MATCH LINE U
27TH STREET
(70' ROW)
28TH STREET
(70' ROW)
70' ROW
6' SIDEWALK
11' LANE (TYP)
NORTH SHEPHERD DRIVE
(70' ROW)
6' BIKE LANE
6' SIDEWALK
27TH STREET
(70' ROW)
28TH STREET
(70' ROW)
LEGEND
PROP ROADWAY PAVEMENT
PROP BIKE LANE
PROP SIDEWALK PAVEMENT
PROP TRAFFIC DIRECTION
PROP TRAFFIC SIGNAL
INTERIM REVIEW
SHEPHERD DURHAM & SELECTED CROSS STREETS RECONSTRUCTION PROJECT
PROPOSED ALTERNATIVE 4
& SHEPHERD & N. DURHAM DRIVE
JONES CARTER

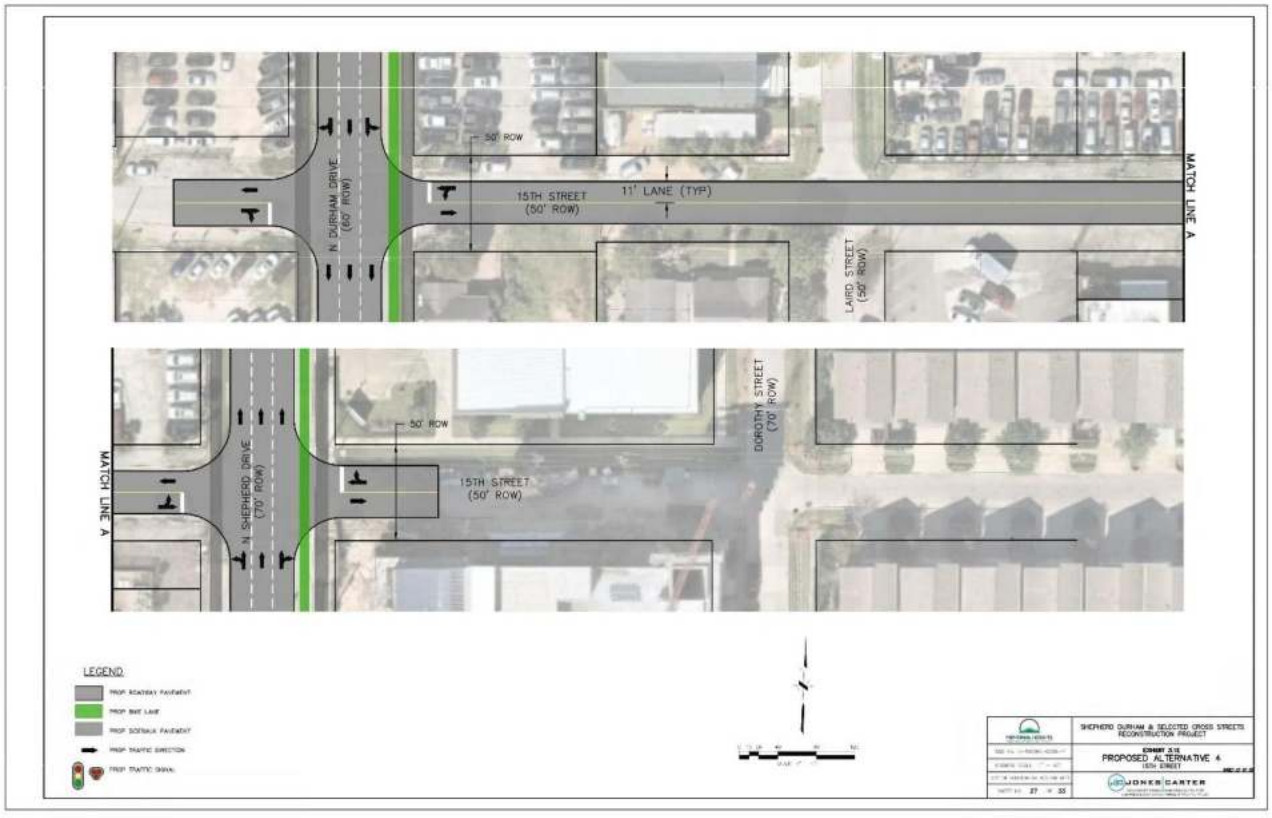

610 FRONTAGE ROAD
NORTH DURHAM DRIVE (70' ROW)
END PAVEMENT RECONSTRUCTION
INTERSTATE 610
610 FRONTAGE ROAD
MATCH LINE U
NORTH SHEPHERD DRIVE (70' ROW)
END PAVEMENT RECONSTRUCTION
INTERSTATE 610
610 FRONTAGE ROAD
610 FRONTAGE ROAD
LEGEND
PROP ROADWAY PAVEMENT
PROP BIKE LANE
PROP SIDEWALK PAVEMENT
PROP TRAFFIC DIRECTION
PROP TRAFFIC SIGNAL
SHEPHERD DURHAM & SELECTED CROSS STREETS RECONSTRUCTION PROJECT
EXHIBIT 3-E
PROPOSED ALTERNATIVE 4
N SHEPHERD & N DURHAM DRIVE
JONES CARTER

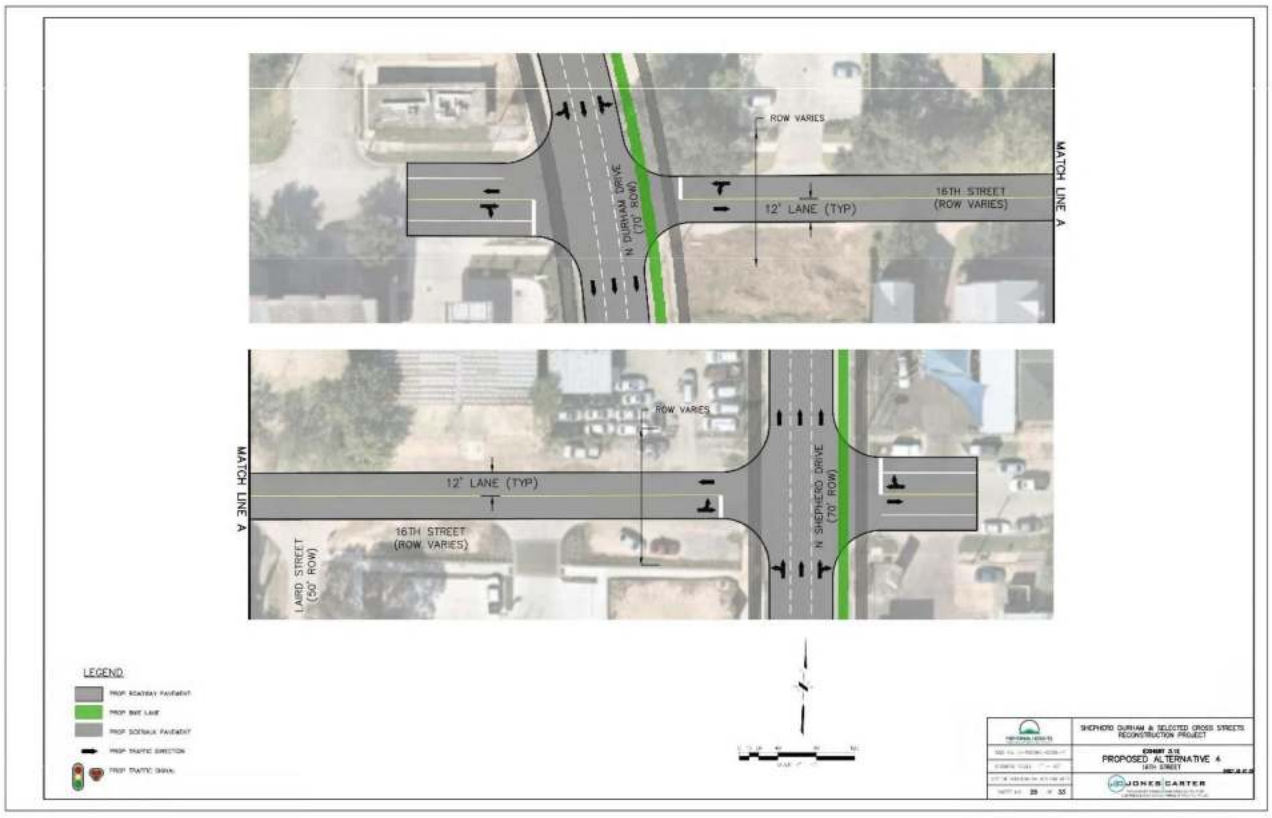

100' ROW
11' LANE (TYP)
11TH STREET (100' ROW)
N. DURHAM DRIVE (60' ROW)
MATCH LINE A
100' ROW
11' LANE (TYP)
11TH STREET (100' ROW)
MATCH LINE A
N. SHEPHERD DRIVE (80' ROW)
LEGEND
PROP ROADWAY PAVEMENT
PROP BIKE LANE
PROP SIDEWALK PAVEMENT
PROP TRAFFIC DIRECTION
PROP TRAFFIC SIGNAL
SHEPHERD DURHAM & SELECTED CROSS STREETS RECONSTRUCTION PROJECT
EXHIBIT 3-E
PROPOSED ALTERNATIVE 4
11th STREET
JONES CARTER

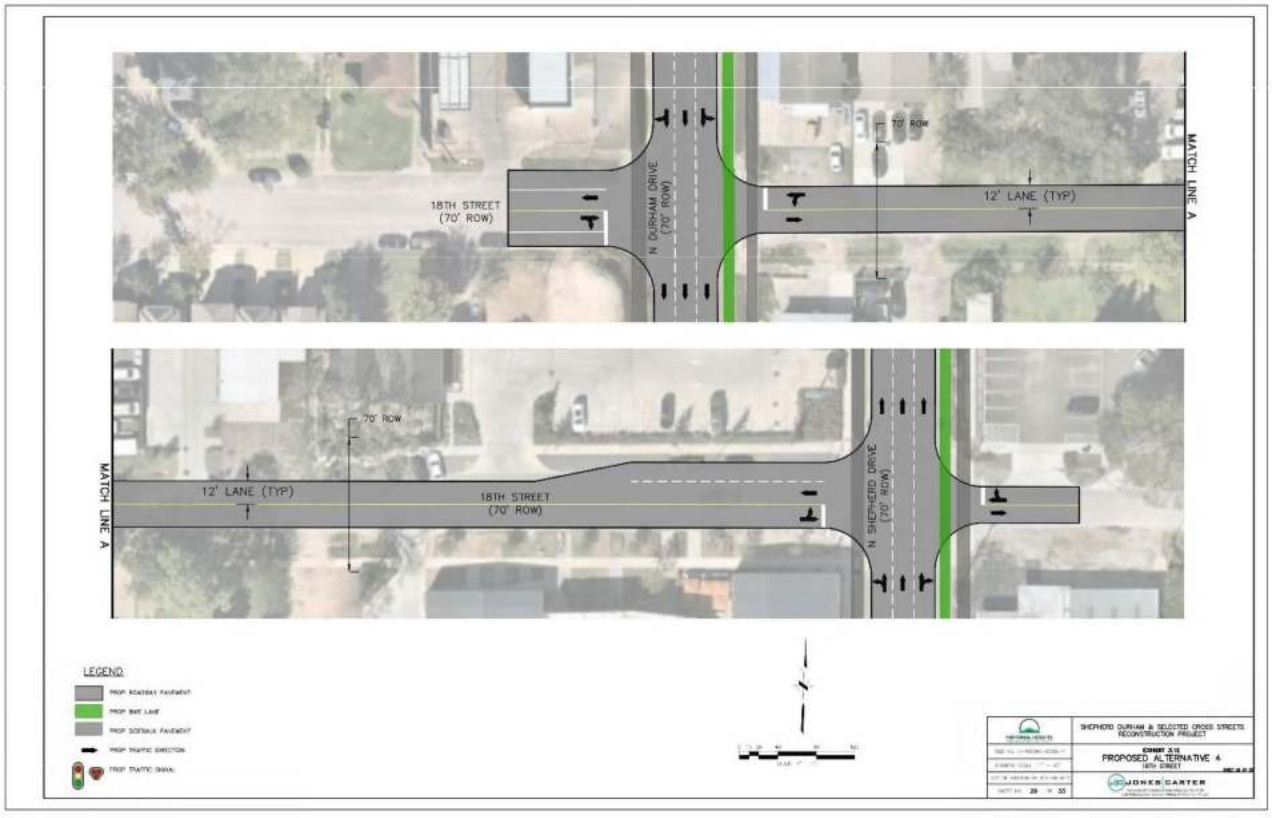

ROW VARIES
N DURHAM DRIVE (60' ROW)
12TH STREET (ROW VARIES)
11' LANE (TYP)
MATCH LINE A
100' ROW
11' LANE (TYP)
12TH STREET (ROW VARIES)
N SHEPHERD DRIVE (60' ROW)
MATCH LINE A
LEGEND
PROPOSED ALTERNATIVE 4
JONES CARTER

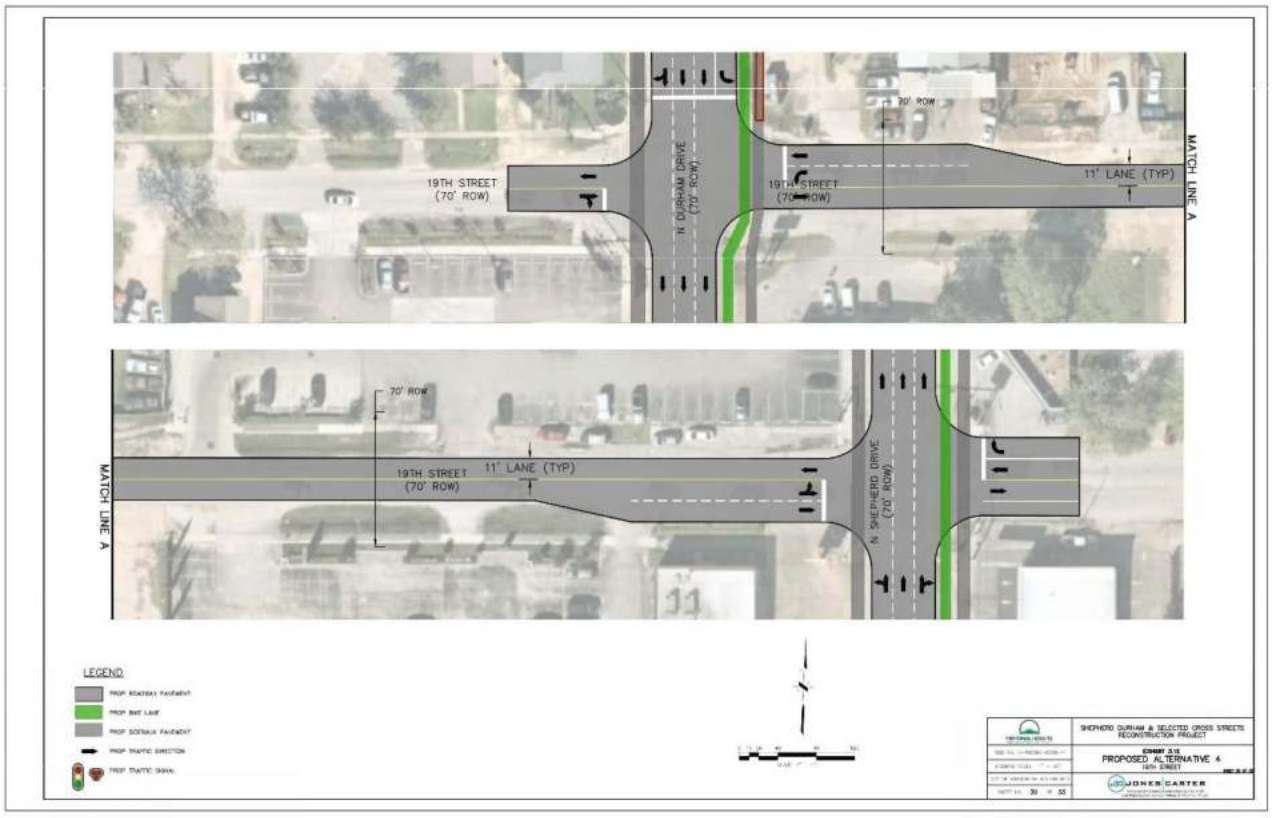

50' ROW
N DURHAM DRIVE (60' ROW)
11' LANE
13TH STREET (50' ROW)
MATCH LINE A
50' ROW
13TH STREET (50' ROW)
N SHEPHERD DRIVE (60' ROW)
MATCH LINE A
LEGEND
PROPOSED ALTERNATIVE 4
JONES CARTER

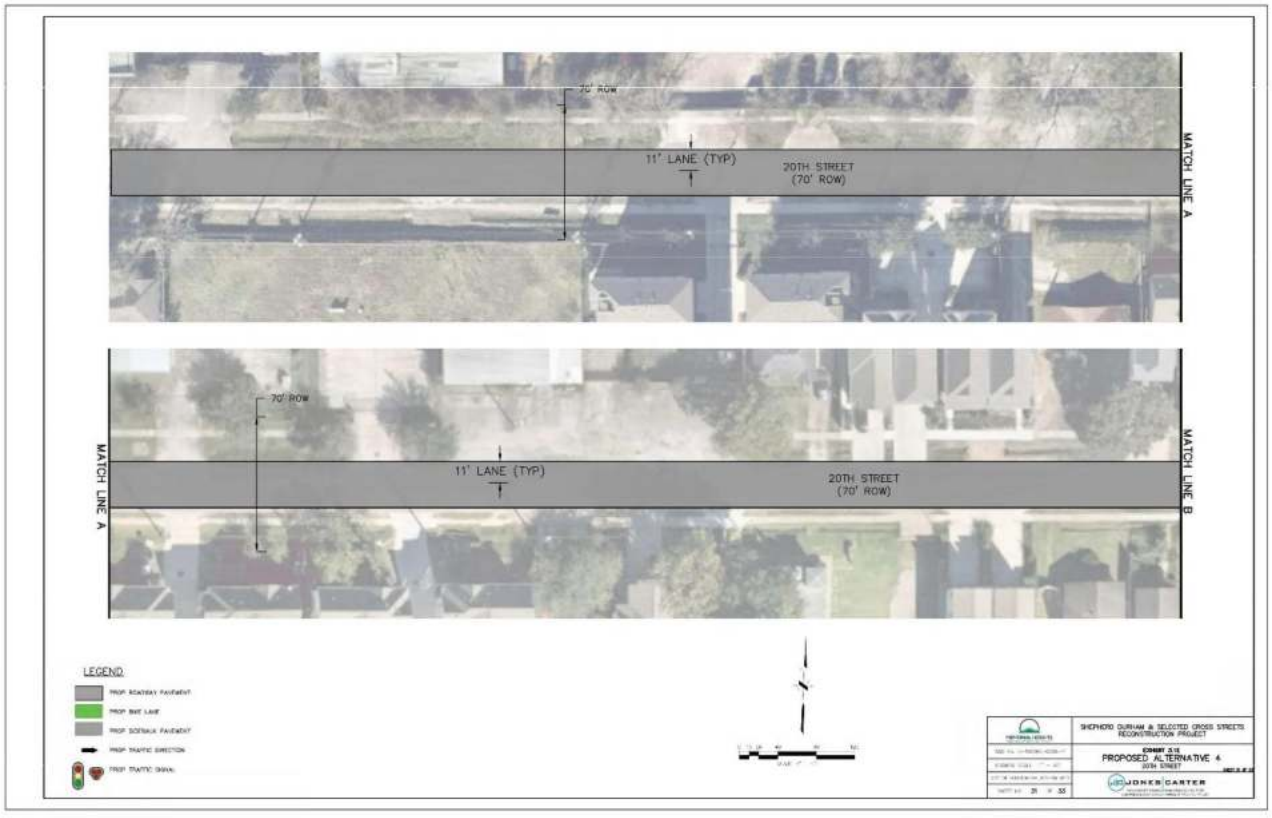

N. DURHAM DRIVE (60' ROW)
50' ROW
14TH STREET (50' ROW)
12' LANE (TYP)
LAIRD STREET (50' ROW)
MATCH LINE A
50' ROW
12' LANE (TYP)
SHEPHERD DRIVE (70' ROW)
14TH STREET (50' ROW)
MATCH LINE A
LEGEND
PROP ROADWAY PAVEMENT
PROP BIKE LANE
PROP SIDEWALK PAVEMENT
PROP TRAFFIC DIRECTION
PROP TRAFFIC SIGNAL
SHEPHERD DURHAM & SELECTED CROSS STREETS RECONSTRUCTION PROJECT
PROPOSED ALTERNATIVE 4
14TH STREET
JONES CARTER

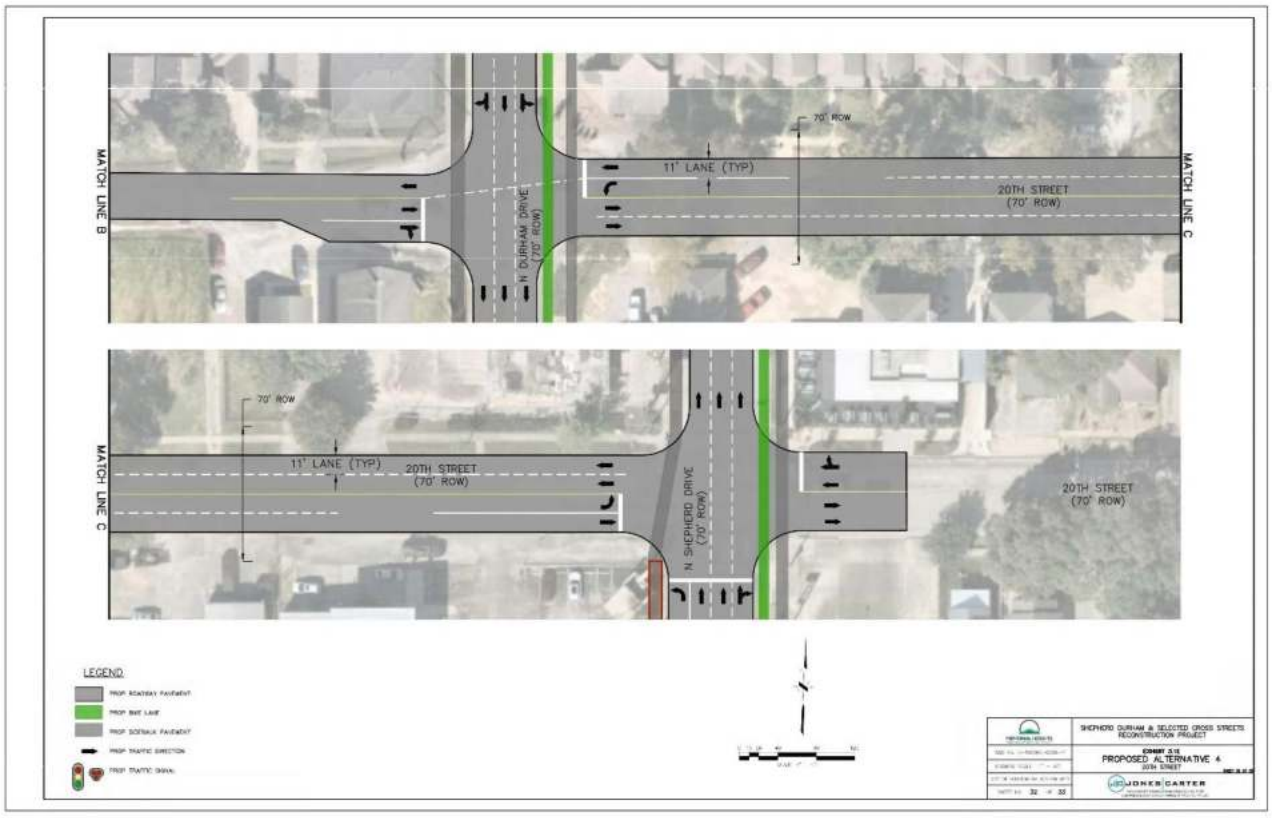

N. DURHAM DRIVE (60' ROW)
50' ROW
15TH STREET (50' ROW)
11' LANE (TYP)
LAIRD STREET (50' ROW)
MATCH LINE A
MATCH LINE A
SHEPHERD DRIVE (70' ROW)
50' ROW
15TH STREET (50' ROW)
DOROTHY STREET (70' ROW)
LEGEND
PROP ROADWAY PAVEMENT
PROP BIKE LANE
PROP SIDEWALK PAVEMENT
PROP TRAFFIC DIRECTION
PROP TRAFFIC SIGNAL
SHEPHERD DURHAM & SELECTED CROSS STREETS RECONSTRUCTION PROJECT
PROPOSED ALTERNATIVE 4
15TH STREET
JONES CARTER

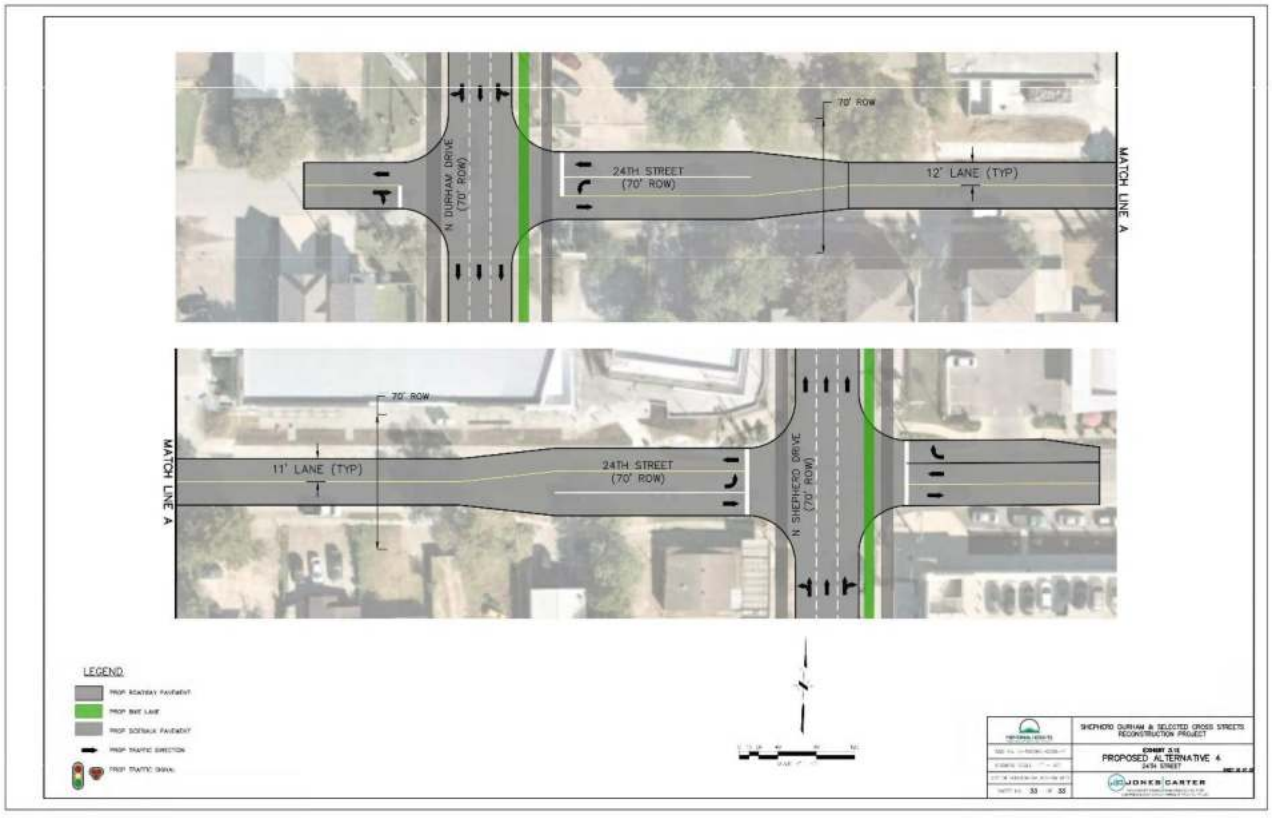

ROW VARIES
N DURHAM DRIVE (70' ROW)
16TH STREET (ROW VARIES)
12' LANE (TYP)
MATCH LINE A
ROW VARIES
12' LANE (TYP)
16TH STREET (ROW VARIES)
LAIRD STREET (50' ROW)
N SHEPHERD DRIVE (70' ROW)
MATCH LINE A
LEGEND
PROPOSED ALTERNATIVE 4
JONES CARTER


18TH STREET (70' ROW)
N DURHAM DRIVE (70' ROW)
70' ROW
12' LANE (TYP)
MATCH LINE A
70' ROW
12' LANE (TYP)
18TH STREET (70' ROW)
N SHEPHERD DRIVE (70' ROW)
MATCH LINE A
LEGEND
PROPOSED ALTERNATIVE 4
JONES CARTER


19TH STREET
(70' ROW)
N DURHAM DRIVE
(70' ROW)
19TH STREET
(70' ROW)
70' ROW
11' LANE (TYP)
MATCH LINE A
70' ROW
19TH STREET
(70' ROW)
11' LANE (TYP)
N SHEPHERD DRIVE
(70' ROW)
MATCH LINE A
LEGEND
SHEPHERD DURHAM & SELECTED CROSS STREETS RECONSTRUCTION PROJECT
PROPOSED ALTERNATIVE 4
19TH STREET
JONES CARTER


70' ROW
11' LANE (TYP)
20TH STREET
(70' ROW)
MATCH LINE A
70' ROW
11' LANE (TYP)
20TH STREET
(70' ROW)
MATCH LINE A
MATCH LINE B
LEGEND
SHEPHERD DURHAM & SELECTED CROSS STREETS RECONSTRUCTION PROJECT
PROPOSED ALTERNATIVE 4
20TH STREET
JONES CARTER


MATCH LINE B
N DURHAM DRIVE (70' ROW)
70' ROW
11' LANE (TYP)
20TH STREET (70' ROW)
MATCH LINE C
MATCH LINE C
70' ROW
11' LANE (TYP)
20TH STREET (70' ROW)
N SHEPHERD DRIVE (70' ROW)
20TH STREET (70' ROW)
LEGEND
PROPOSED ALTERNATIVE 4
20TH STREET
JONES CARTER


N DURHAM DRIVE (70' ROW)
24TH STREET (70' ROW)
70' ROW
12' LANE (TYP)
MATCH LINE A
MATCH LINE A
70' ROW
11' LANE (TYP)
24TH STREET (70' ROW)
N SHEPHERD DRIVE (70' ROW)
LEGEND
PROPOSED ALTERNATIVE 4
24TH STREET
JONES CARTER

Attachment 3 – Overview Map

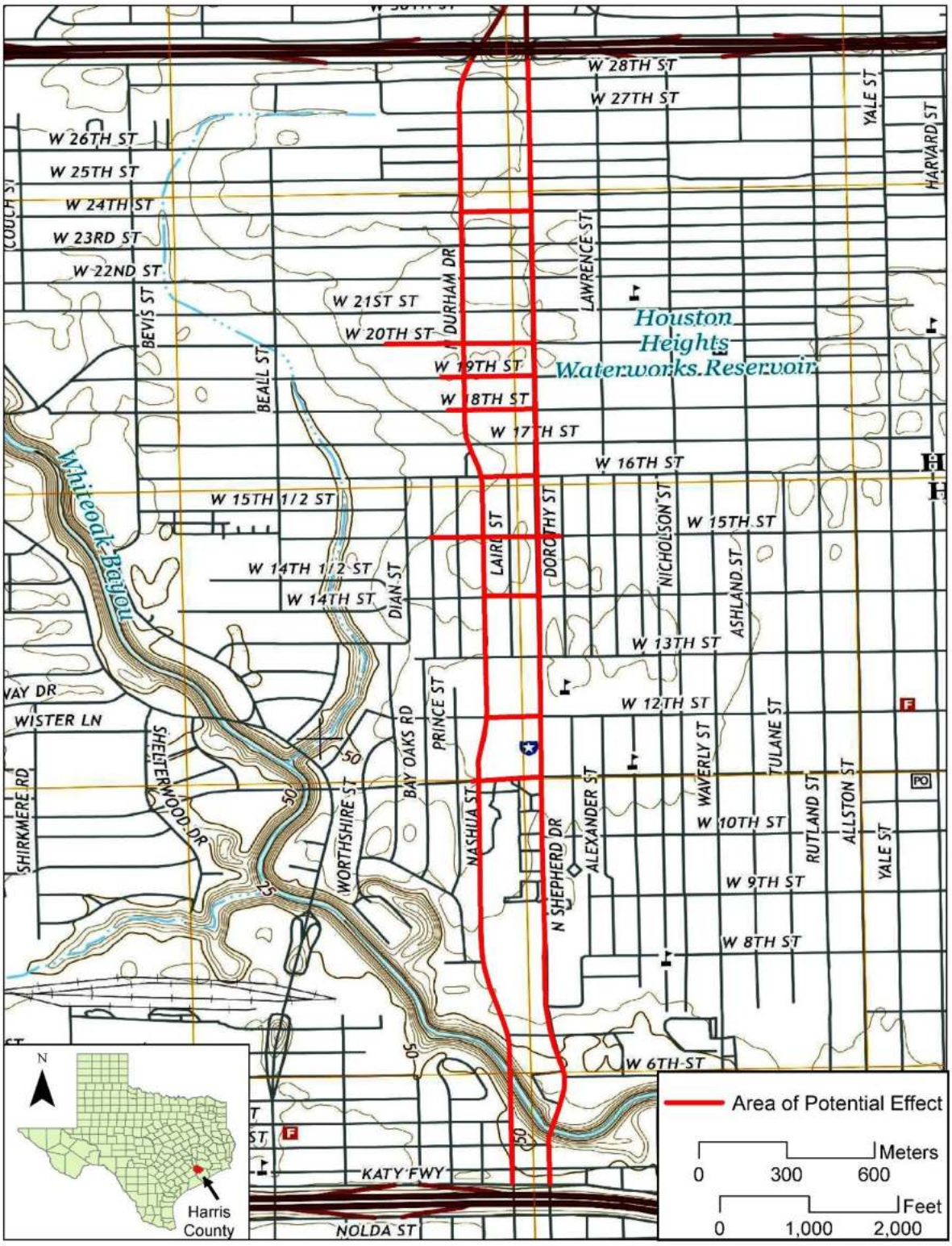


Figure 2. The APE shown in Harris County, Texas on a composite of 2017 USGS 7.5-minute quadrangle maps.

Attachment 4 – Aerial Imagery Map

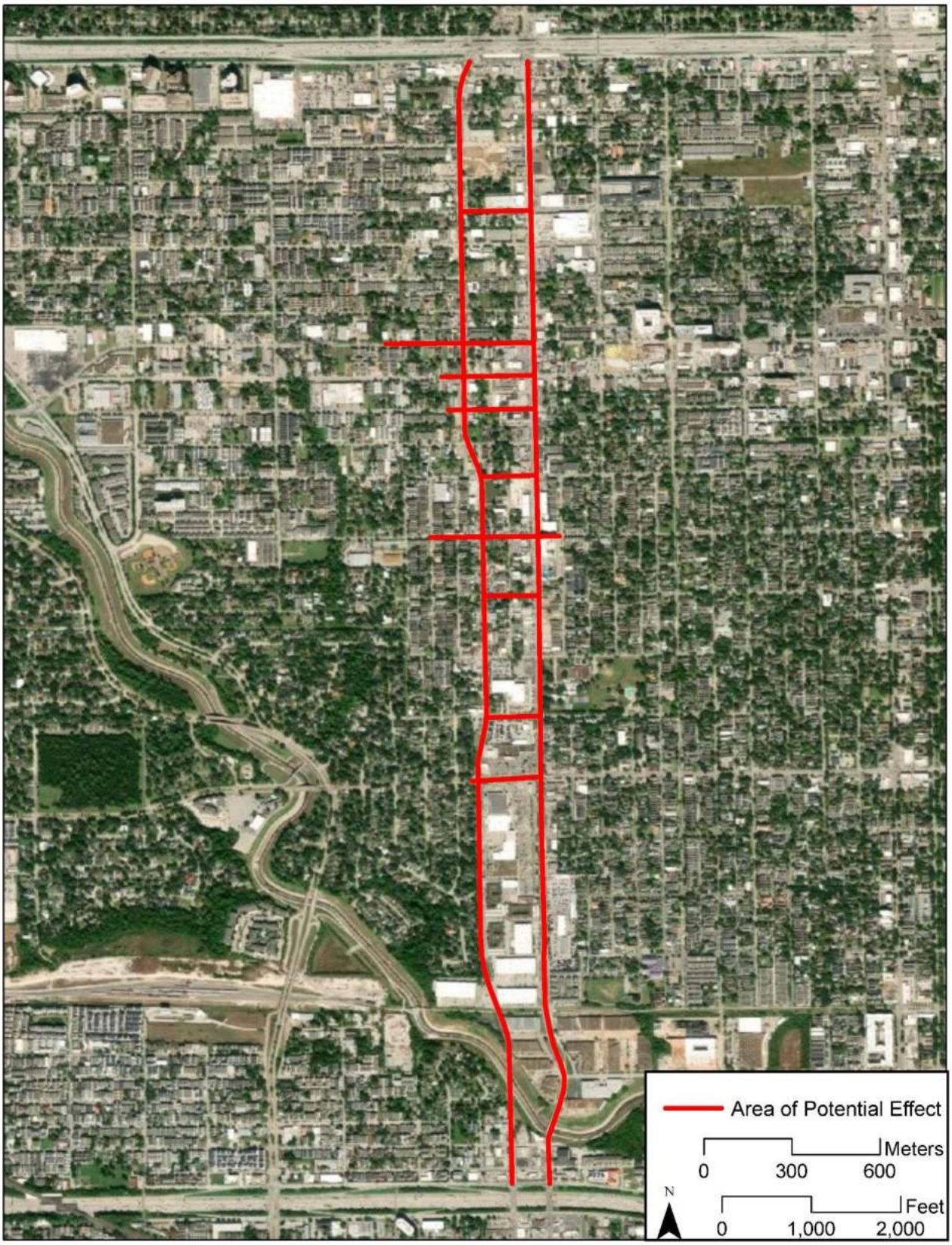


Figure 3. The APE depicted on the 2019 aerial imagery, Houston, Harris County, Texas

Attachment 5 – Texas Archeological Sites Atlas Map

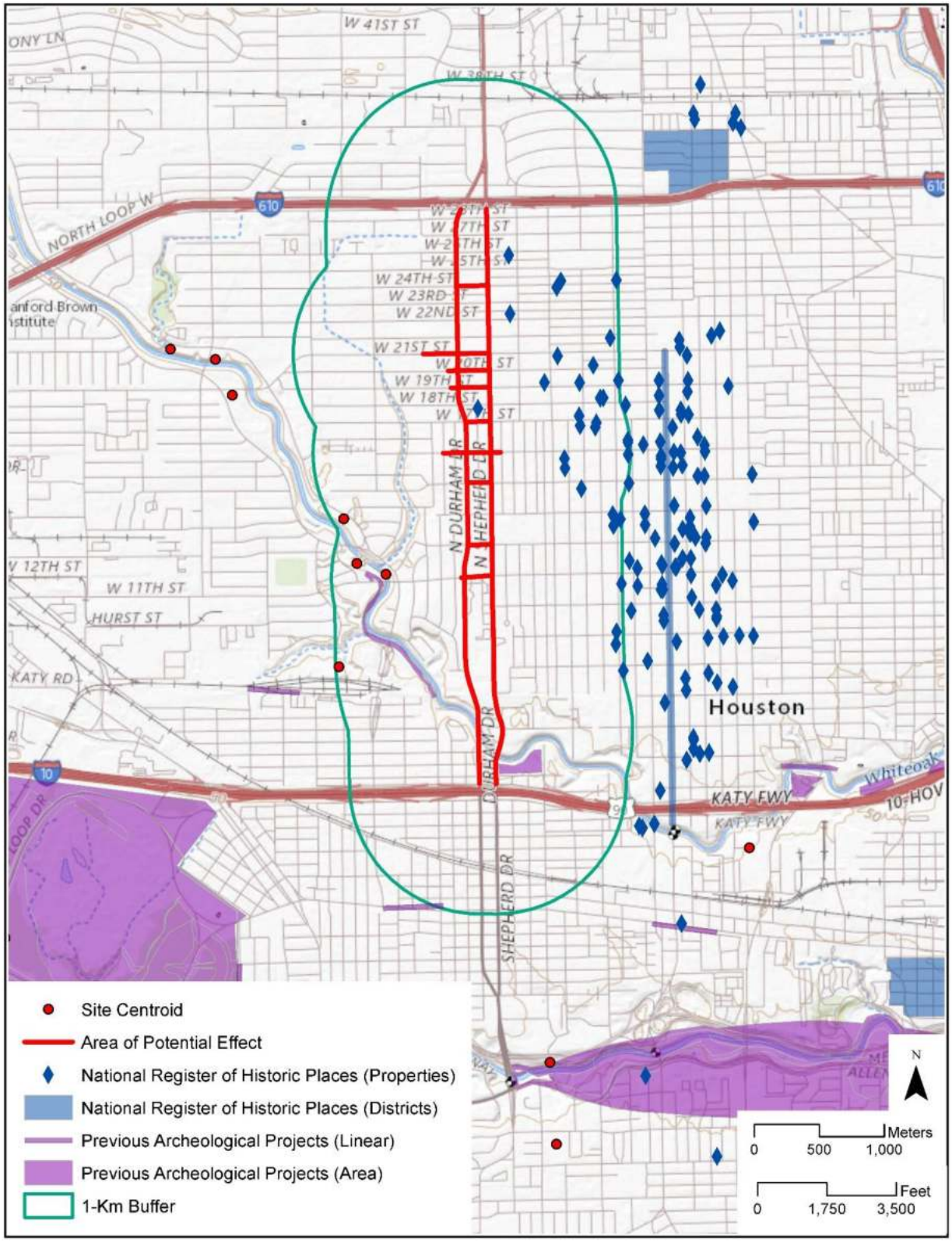


Figure 4. Archeological sites and surveys within 1 km. of the APE.

Attachment 6 – Predictive Archeological Liability Map (PALM)

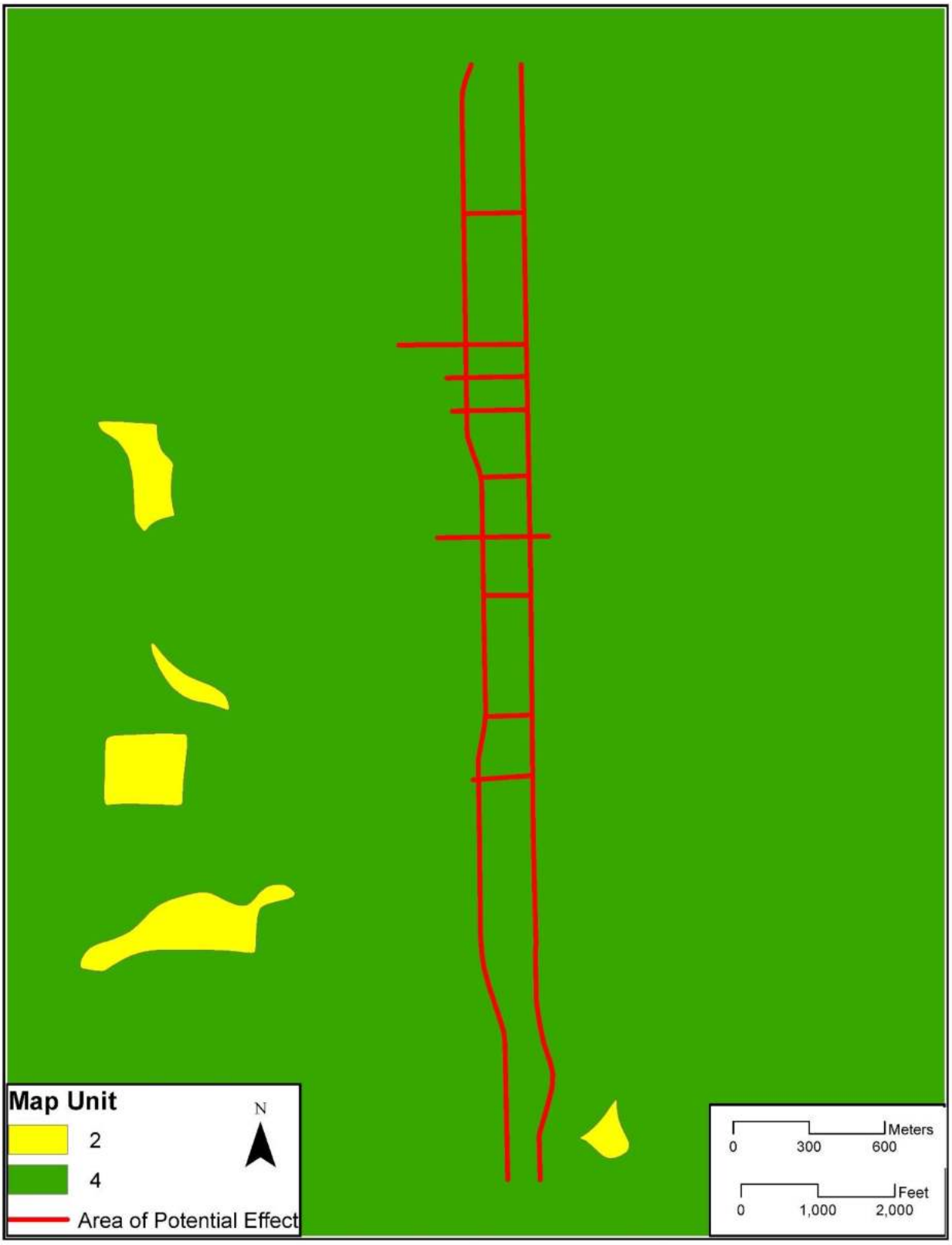


Figure 5. The APE depicted on the PALM in Map Unit 4.

Attachment 7 – FEMA Flood Hazard Map

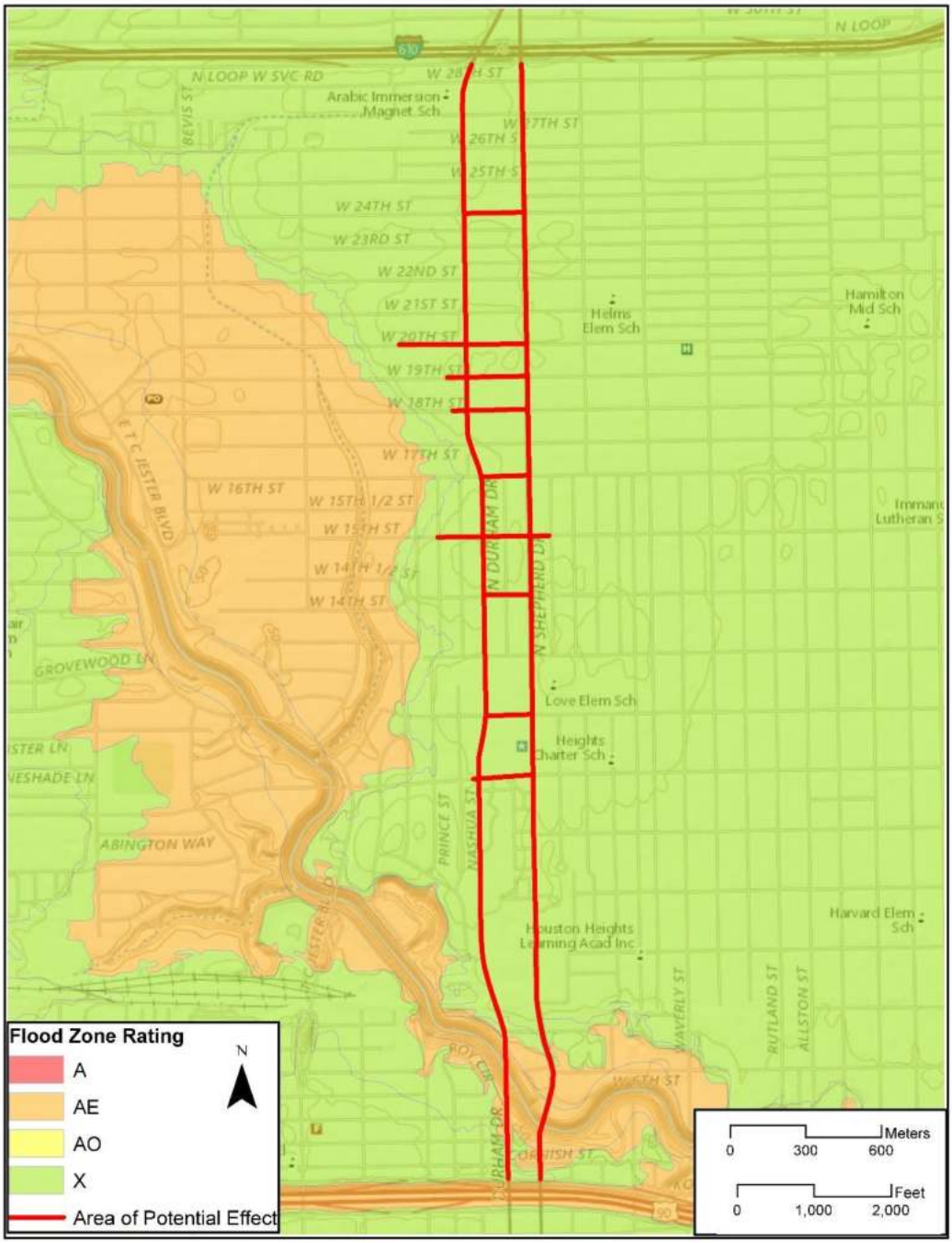


Figure 6. The APE depicted on the FEMA Flood Hazard Map (See below for Zone descriptions).

Zone AE: Areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods. Base Flood Elevations (BFEs) are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply.

Zone X: Moderate flood hazard areas between the limits of the base flood and the 0.2-percent-annual-chance (or 500-year) flood.

Attachment 8 – National Wetlands Inventory Map

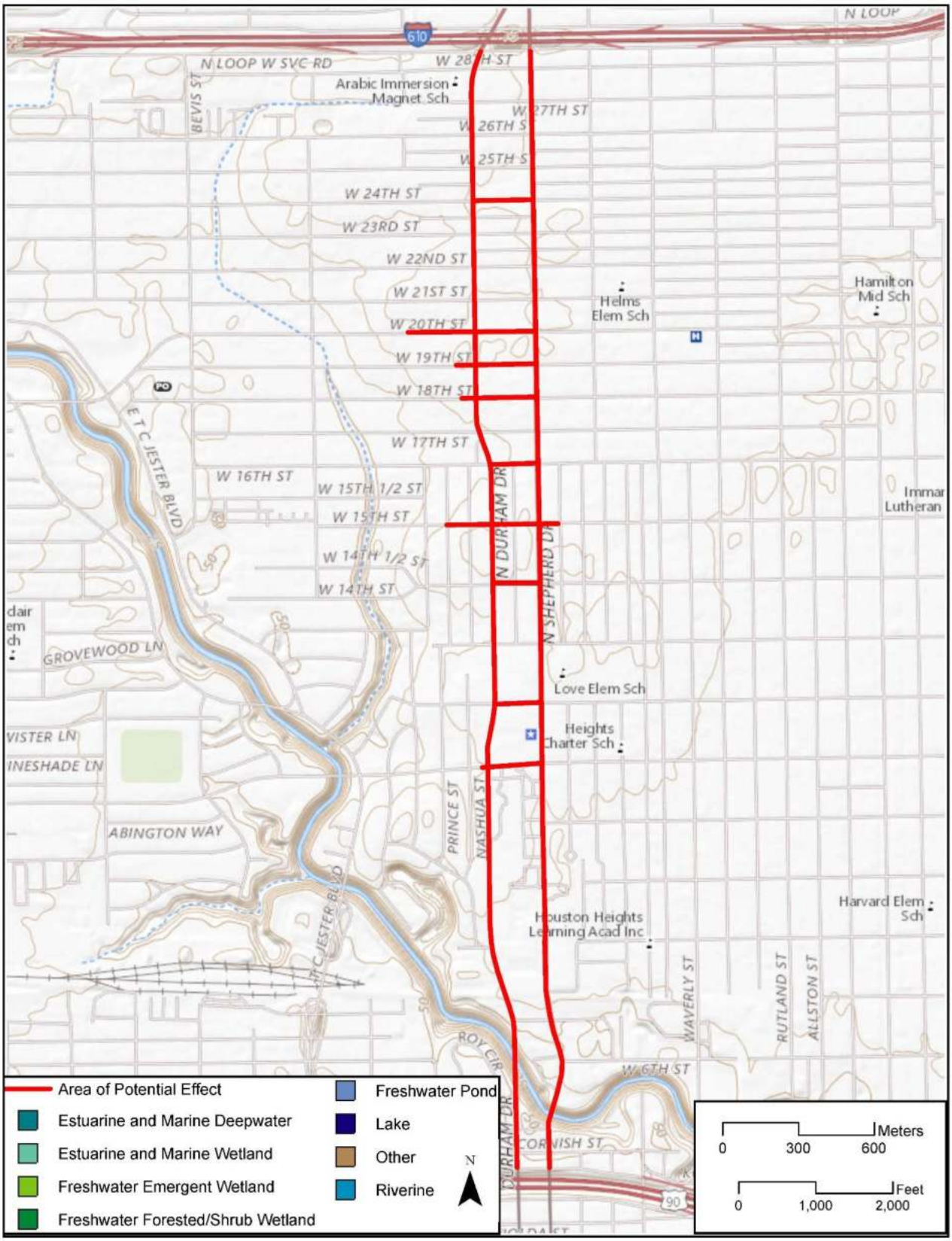


Figure 7. The APE depicted on the National Wetlands Inventory Map.

Attachment 9 – Historic Topographic Map

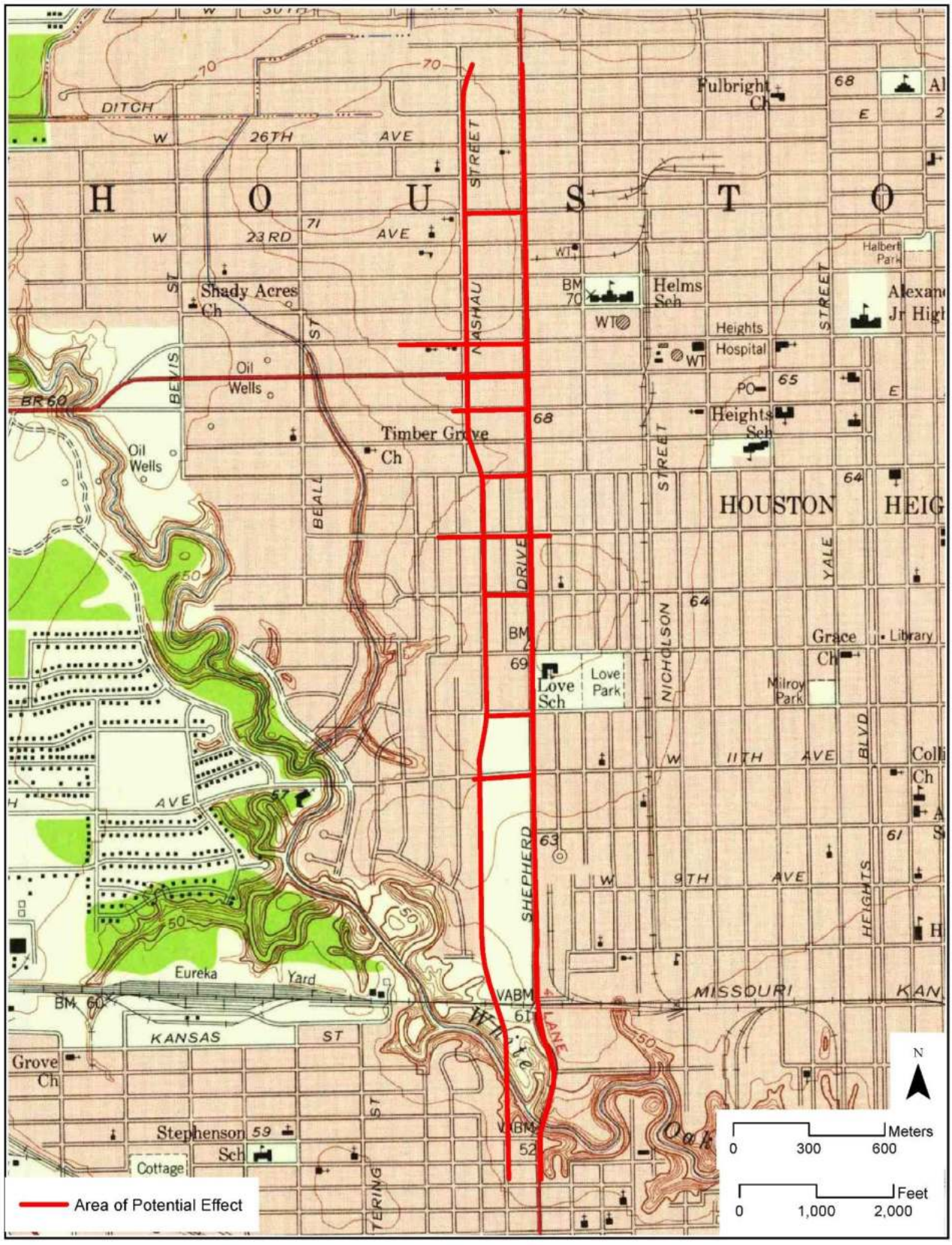


Figure 8. The APE on the 1955 *Houston Heights* (2995-433) USGS 7.5-minute quadrangle map.

This report was written on behalf of the Texas Department of Transportation by:

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