PRE – DESIGN STUDY REPORT

PREPARED FOR:

HARRIS COUNTY ENGINEERING DEPARTMENT
PRECINCT 2
HARRIS COUNTY, TEXAS

Quitman Street On-Street Bike Lanes and Sidewalks From Houston Avenue to East of Elysian Street

PRECINCT 2, HARRIS COUNTY, TEXAS
UPIN: 21102MF1XE01

June 2021
Revised August 2021
Revised October 2021

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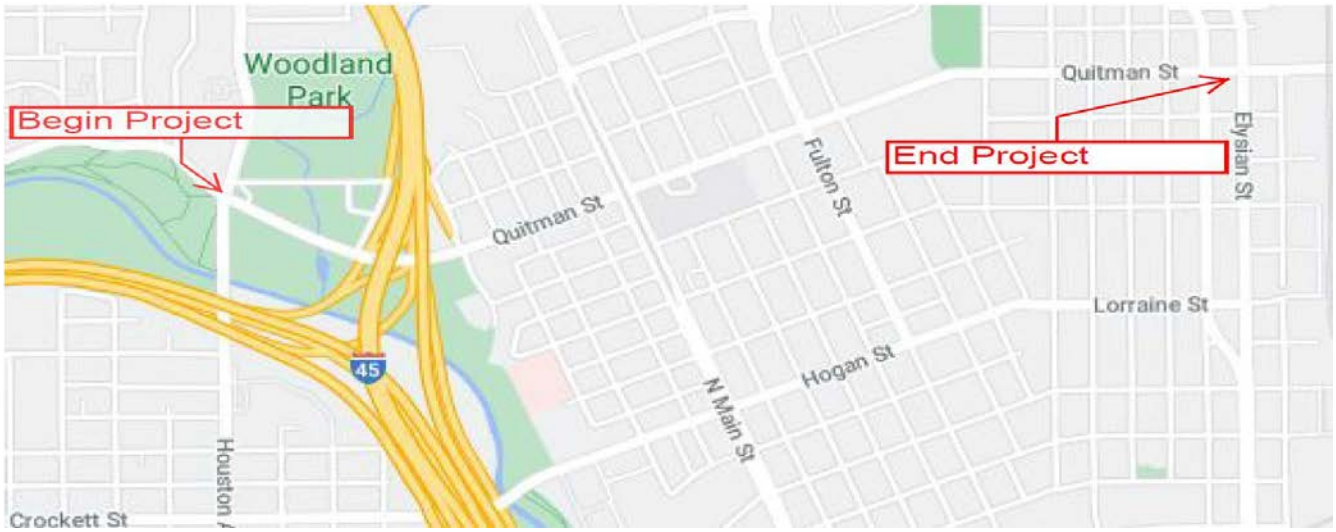
10-26-2021
Firm No: 4014

Study Phase (Pre-Design)

Project Title: Quitman Street On-Street Bike Lane and Sidewalks- Houston Avenue to west of Elysian Street
Precinct 2, P.O. # HCNTY-0000023022
HCED Project#: UPIN: 21102MF1XE01
Key Map Block#: 493C, 493D and 493G
Date Submitted: **June 18, 2021**
Revised August 19, 2021

INTRODUCTION:

Scientech Engineers, Inc. in association with TBG Partners (landscape and hardscape), HVJ Associates (geotechnical), Windrose (survey), Berg Oliver Associates (environmental) and Infratech (traffic) was authorized by Harris County Commissioner's Court and Engineering Department to develop a Study Phase Report for this project which is located north of downtown Houston and IH10, inside 610 Loop of Harris County. This project will start at west of Houston Avenue and ends west of Elysian street as shown below, about 1.38 miles.



This scope includes restriping existing pavement to provide for bi-directional protected bike lanes at south side of street, construct new sidewalks up to 6 foot wide and as feasible by available ROW, rework cross walks and ramps as necessary, provide for planned METRO floating bus stops, mill and overlay the existing asphalt road from Fulton to west of Elysian Street. Landscape and hardscape including additional lighting will be provided based on a previous study performed by TBG Partners for Greater North Side Management District (GNMD) and modified as needed. The improvements should provide and encourage for better pedestrian flow by installing

functional landscaping, hardscape, and pedestrian lighting. This corridor is classified as Major Collector with multi-modal classification of Urban Street.

This project is a joint funding project with City of Houston, METRO, GNMD and Harris County as major stakeholders. City of Houston Design standards shall be used. Additionally, this project will tie into an on-going design project by HCTRA at west side of Elysian street. HISD has three (3) facilities within the project limits, Ketelsen Elementary, Northside High School, and Marshal Middle School. METRO light rail intersection at Main Street falls into this project as well as their bus route along Quitman. Extensive coordination meetings were done with all these major stake holders to resolve the issues and get their input.

EXISTING CONDITIONS:

Please refer to Appendix A - Site Photos. The existing roadway of Quitman is a curb and gutter asphalt two lane road with varying ROW from 50 ft. to 100 ft. The adjacent land uses along this corridor vary from residential to commercial, school and park. There were six (6) signalized intersections along limits of the project but later City replaced three (3) of them with 4-way stop signs namely at South, Fulton and Cochran streets leaving signals at Houston, Main, and Hardy crossing streets.

METRO bus line 66 runs along this corridor with 17 bus stops at north and south sides of the street and get connected to light rail at Main, line 79 at Fulton, lines 51 and 52 at Hardy.

City of Houston is planning on dedicated bike lanes (on street ROW) at Fulton. There are existing dedicated on-street bike lanes on Houston, Hardy and Elysian streets. Keene and Cochran streets are used as shared on-street bike lanes. At west end of the project, there is off-street bike lane along White Oak Bayou.

Existing sidewalks are present along the corridor, but are in poor conditions with narrow widths. A portion of the project lies within TxDOT IH 45 ROW with an overpass which has old sidewalk to remain as is. There are currently no sidewalks from feeder road of IH45 to Houston Avenue at north side of White Oak street.

Numerous public and private utilities are present along this corridor as documented on UCT list. Most obvious ones are overhead power poles that are present on both side of the street, in tight spots next to existing sidewalks. Streets lights are mounted on power poles.

PROPOSED ROADWAY IMPROVEMENTS:

Roadway improvements mainly consists of restriping the existing roadway to allow for bi-directional protected bike lane with a buffer zone, at south side of the corridor by reducing the existing lane widths to 11 ft. Please refer to Proposed Typical Section details.

Pavement Widening:

Only a very narrow widening of 2ft to 7 ft is proposed on north side of the road, east of Houston Avenue from station 7+18 to station 11+58 for about 450 feet to have minimum pavement width of 34 ft to provide recommended bike lane configuration. See proposed typical section details.

Mill & Overlay:

As per scope of work and Geotech recommendation it is proposed to mill 4 inch of existing asphalt and overlay with 4 inch (2-2" lifts) Hot mix asphalt from east of Tackaberry Street to west of Elysian street. It is also recommended to remove and reconstruct existing concrete curb and gutter at both sides of the street due to its poor conditions. See proposed typical section and Geotechnical report in the Appendix.

Pavement Reconstruction:

It is recommended to complete pavement reconstruction from East of Fulton St to East of Tackaberry street from station 48+73 to station 54+00 for about 530 ft as no existing base/concrete pavement was found in boring P6. See typical section and Geotech report in appendix.

Sidewalks:

Proposed sidewalks will replace existing ones and the widths will be improved to maximum based on available ROW. Maximum 6 ft of sidewalk recommended from Houston Avenue to west Cochran Street. Maximum of 5 ft sidewalk is recommended from West of Cochran street to west of Elysian due limited 50 ft existing ROW. Minimum of 4ft sidewalk width proposed to be available at locations with constraints like power poles to avoid relocation of power poles.

Right of way Encroachments:

Currently there are some private fence encroachments into the public ROW. They are identified on drawings and owners need to be contacted for relocation of them. County decided to be sensitive to the property owners by allowing existing fence encroachments to remain provided that they do not impede in sidewalks of at least 4 feet in width.

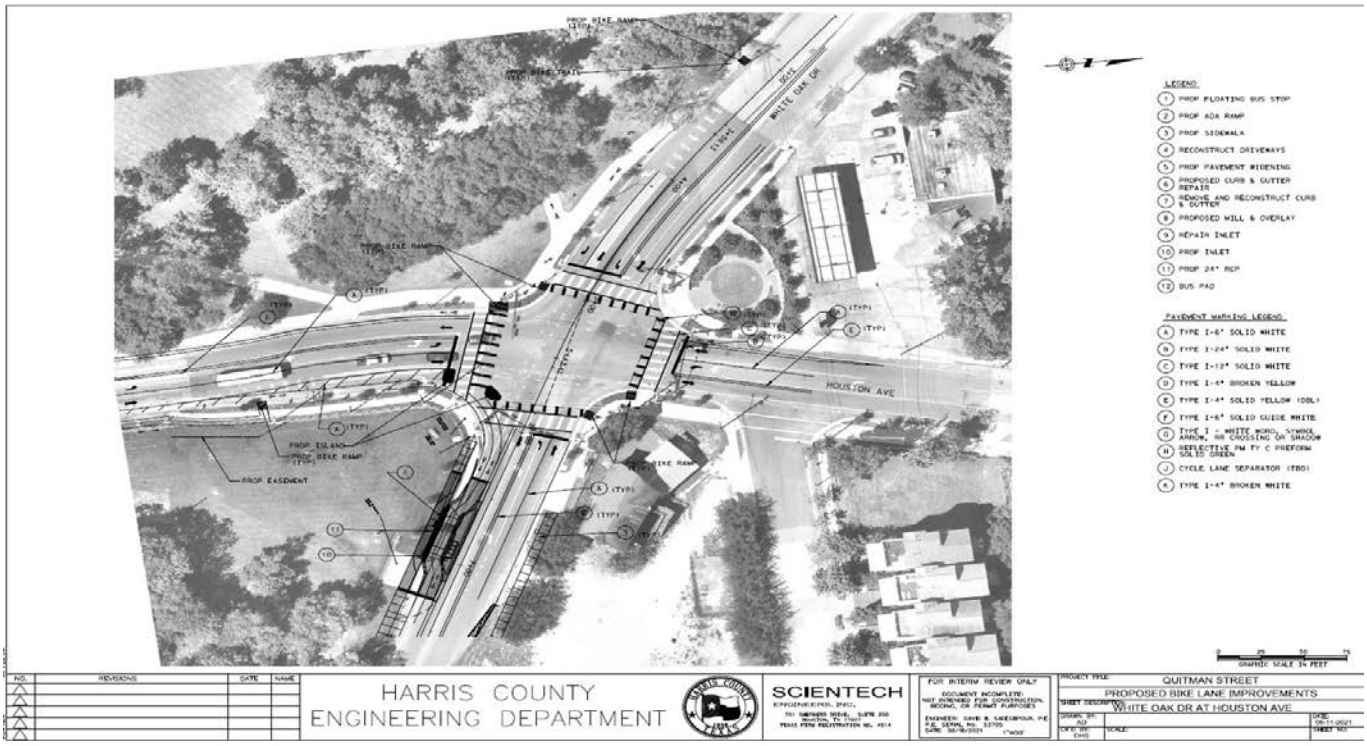
Pedestrian curb ramps:

All ramps at intersections are reconfigured and will be reconstructed to meet current ADA requirements as well as upgrades to provide with a pleasing architectural enhancement. Cross walks will be restriped to align with new ramps and street reconfiguration. Following are minimum intersection effective radii per City of Houston IDM criteria:

Local street = 20 ft

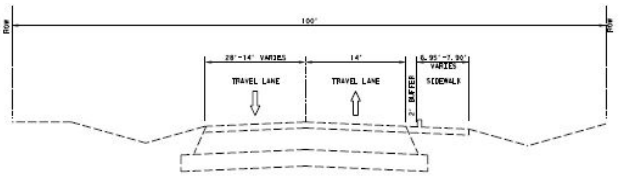
Major Collector/Thoroughfare = 25 ft.

Several meetings were held with City of Houston on White Oak and Houston Ave. intersection, which is newly reconstructed. City did a traffic study and confirmed that the existing dedicated right turn on Houston Avenue heading east on White Oak could be eliminated, allowing bike lane on Houston Avenue to be placed close to curb at south leg of this intersection. They also recommended increasing the left turn lane storage in this leg to avoid congestion in through and right turn lanes. This will require relocating the existing bike lanes at southeast side of intersection to the park land at southeast corner. Also, recommendations were made to divert the existing stripped bike lane at west leg on intersection at south side to the trail at southwest corner of intersection and provide a new on-street bike lane connection at northwest corner of this intersection. All bike lanes at four corners need to also be connected to each other. Existing aerials and proposed layout are shown below:

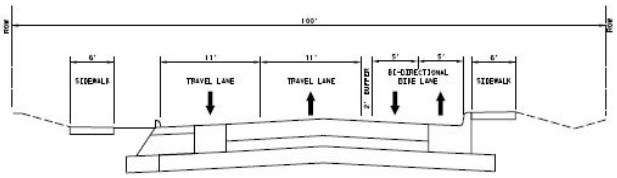


Typical roadway plans and cross sections for rest of corridor with different existing ROW is as illustrated below:

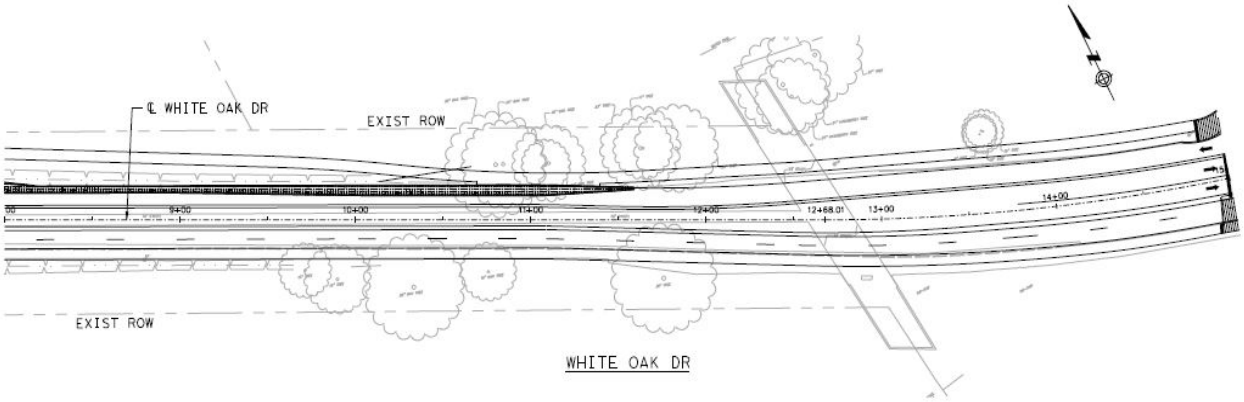
100 ft. ROW



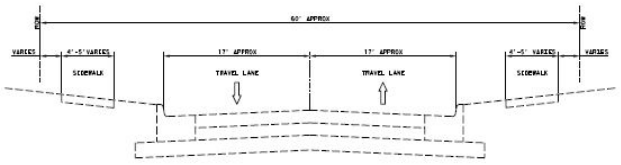
EXISTING TYPICAL SECTION



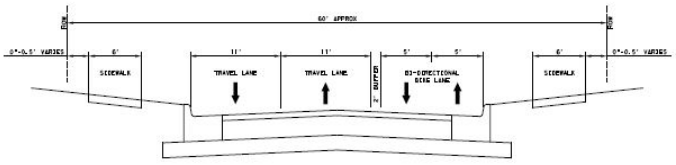
PROPOSED TYPICAL SECTION



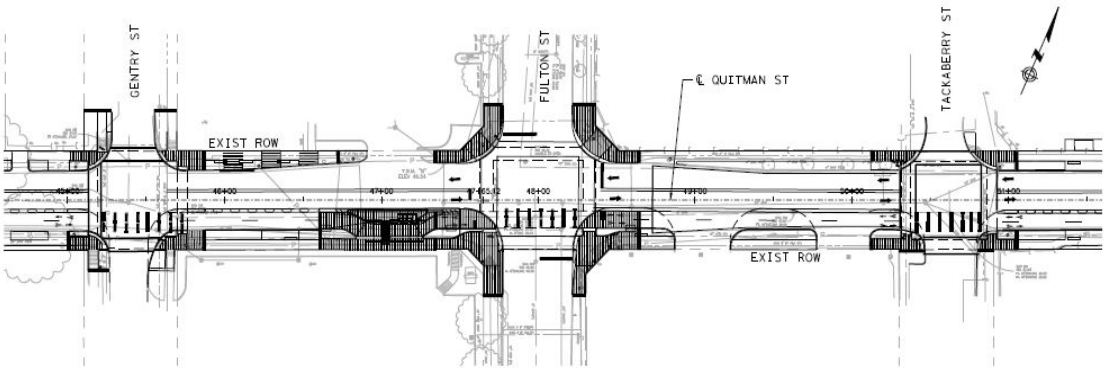
60 ft. ROW (majority of corridor):



EXISTING TYPICAL SECTION

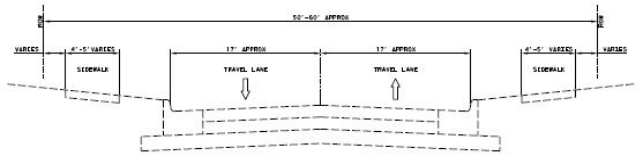


PROPOSED TYPICAL SECTION

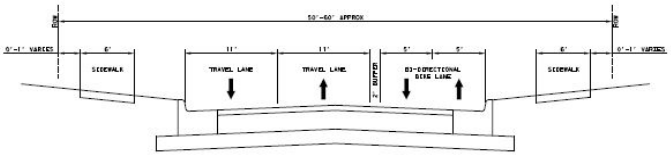


QUITMAN ST

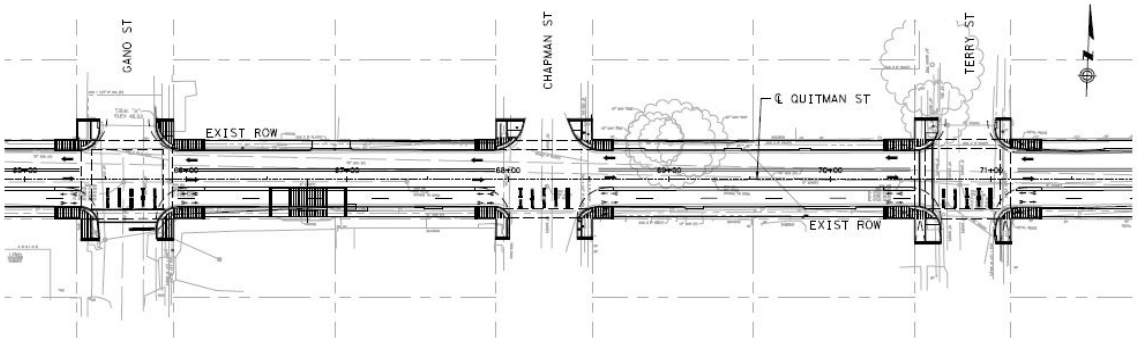
50 ft. ROW (small section of corridor):



EXISTING TYPICAL SECTION

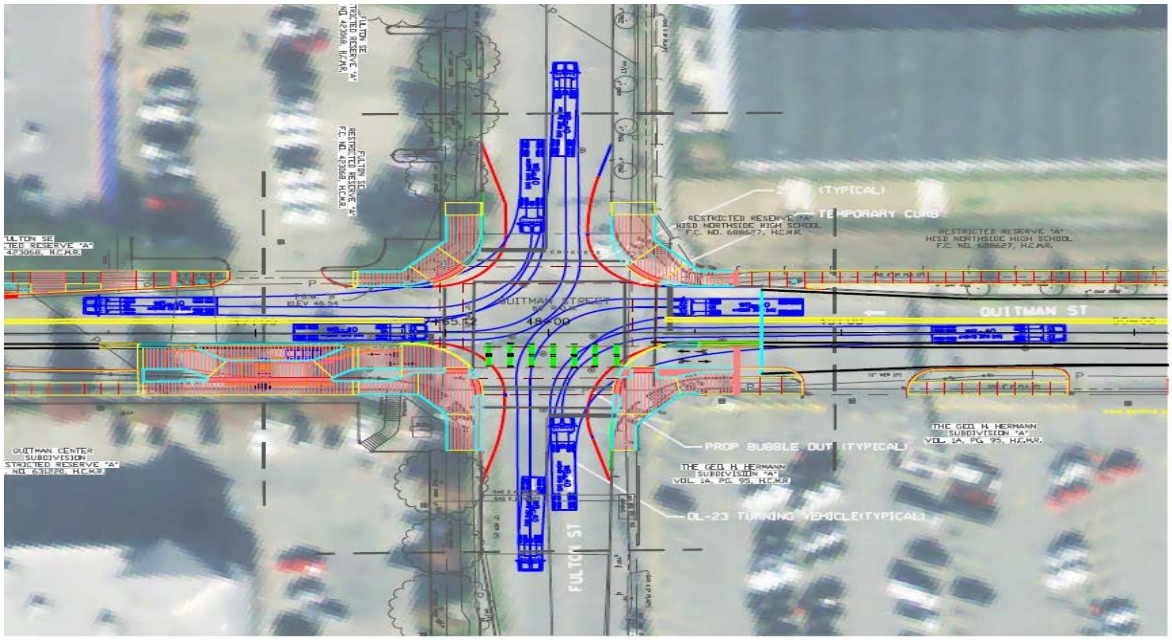


PROPOSED TYPICAL SECTION

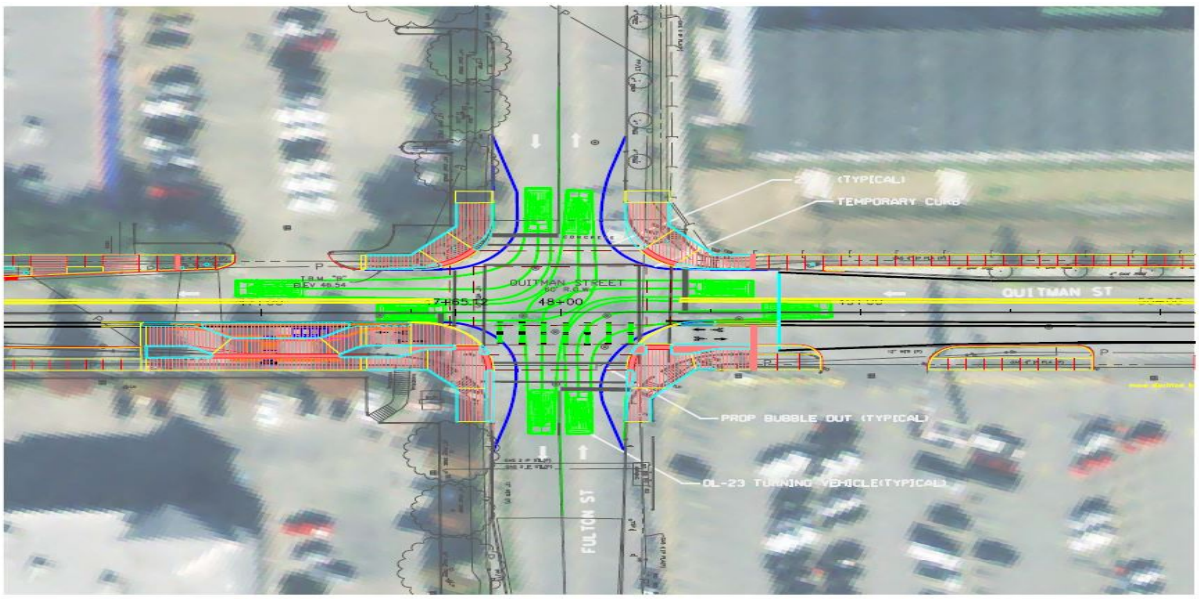


QUITMAN ST

City of Houston has a CIP project for Fulton Street reconstruction which is in initial stages of design. It will incorporate bike lanes on north-south direction which will connect to proposed ones on this project. As part of their project, Quitman-Fulton intersection will be totally reconstructed at a later date. Our team has coordinated with them and they requested turning radius studies for both DL23 and Bus WB-40. We performed those and submitted to the City. They are requesting that we provide bulb-outs on Fulton to restrict traffic turning to proposed bike lanes on Quitman. It was decided to use low mountable concrete curbs (4 inch high) with drainage openings in them. Ramps, sidewalks and cross walks will not be constructed in Fulton ROW as part of our project. The proposed bulb-outs are as below:



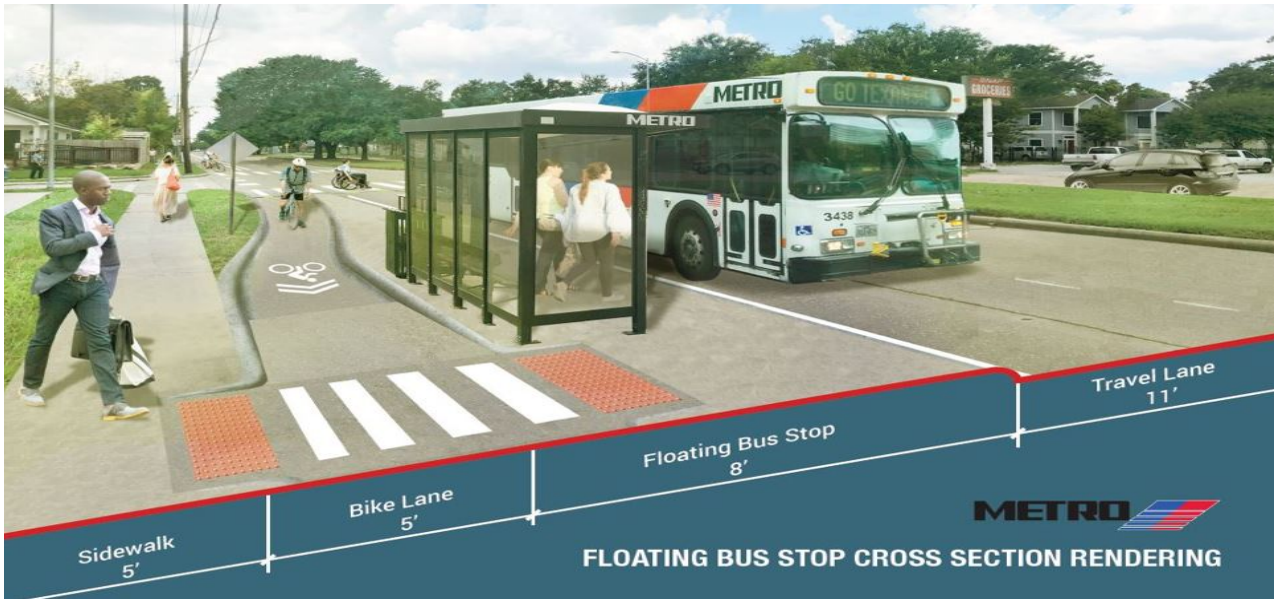
WB-40 turning radius



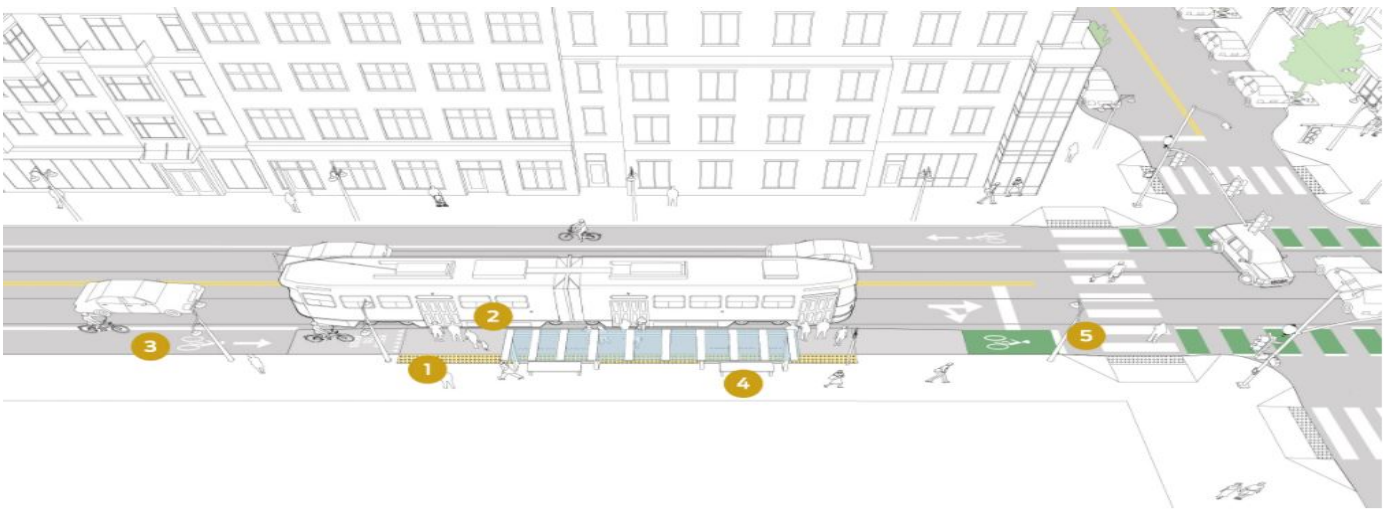
DL23 turning radius

METRO Floating Bus Stops

METRO has requested construction of Floating Bus Stops at three (3) locations, namely east side of White Oak, east side of North Main and west side of Fulton to enhance the ridership and allow for ease of integration of bike lanes and their major stops along this corridor as illustrated below:



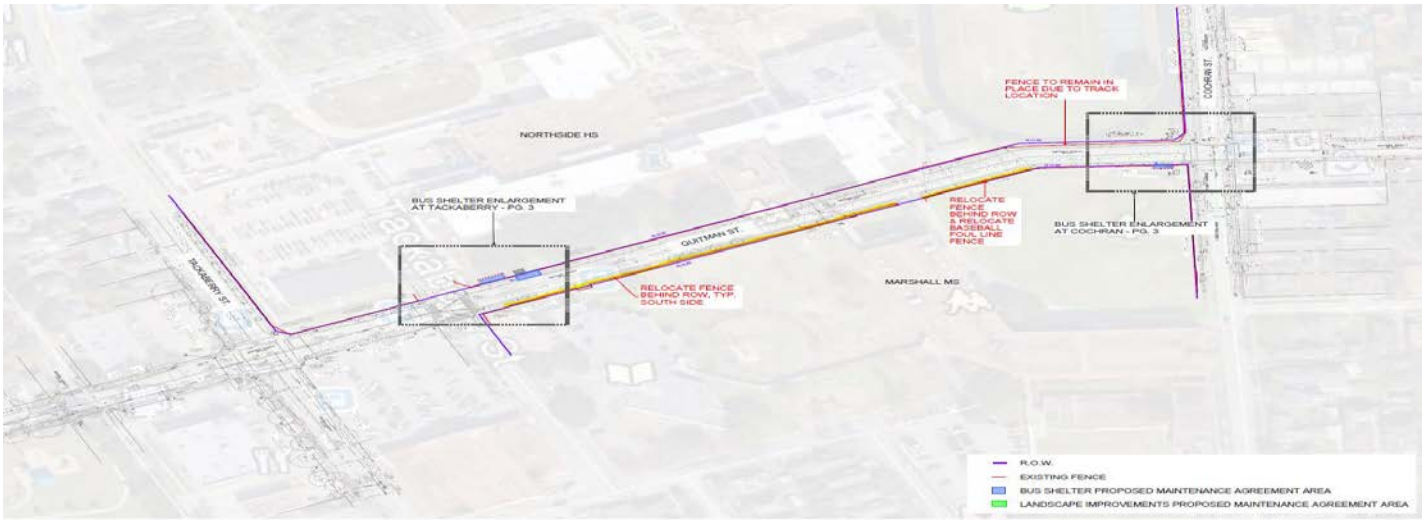
Concept of Raised Cycle Track, as discussed and approved by METRO, will be used at south side of street at four (4) other bus stops locations, namely at east of Tackaberry, west of Chochran, east of Gano and east of Mc Kee streets . This concept will allow for bus stop operation without busses encroaching into the bike lane for loading and unloading as illustrated below:



It is proposed to move back the existing bus shelter at north side of street in front of North Side High School and to the east side of Tackaberry (as shown below), inside HISD property to allow for better sidewalk pedestrian flow. An easement will be required from HISD to accomplish this, similar to the existing bus stop on the other side of street which has been pushed back already. HISD was contacted and their survey obtained to place it in a suitable location to avoid HISD access to their utilities at this location. METRO will obtain these easements/agreements.

A similar other situation exists at south side of street and west side of Cochran street for bus shelter as shown below:

HISD also has some fence encroachments in front of Marshal Middle School that needs to be relocated, according to our recent survey as shown below:



Driveways:

All driveways to be reconstructed with the reconstruction of sidewalk. It is recommended that following driveways to be closed due to proximity of the intersection and to construct ADA compliance sidewalk. Coordination will be needed with property owners, Harris County and City of Houston.

1) Northwest corner of Quitman and Gano Street. Station 65+00. The second driveway is available on side street.
2) Southwest corner of Quitman and Gano Street. Station 65+00, Long driveway/parking. The second driveway is available on side street.
3) Northeast corner of Quitman and Everett Street, station 40+70, there are other one driveway on Quitman and one on side street will stay open.

Civil roadway drawings are included in Appendix B

TRAFFIC SIGNAL MODIFICATION:

There were six (6) signalized intersections along limits of the project but later City replaced three (3) of them with 4-way stop signs namely at South, Fulton and Cochran streets. The other traffic signals at Houston Avenue, Main Street and Hardy Street need to be modified for change in lane configuration and addition of bi-directional bike lanes.

CONSTRUCTION TRAFFIC CONTROL PLAN

The proposed improvements will be constructed in accordance with latest Texas Manual on Uniform Traffic Control Devices and City of Houston standards. The following sequence is being proposed for the proposed improvements:

Phase I

Step 1: Shift two lane traffic to North and construct improvement on south side including, curb & gutter, sidewalk, floating bus station, pedestrian curb ramps, repair inlets etc.

Step 2: Shift two lane traffic to south and construct improvement on north side including, curb & gutter, sidewalk, pedestrian curb ramps, repair inlets etc.

Phase II

Step 1 Shift two lane traffic and construct mill & overlay in three sub steps.

Step 2 Construct traffic signals and signing and striping by traffic shift and temporary lane closure.

LANSDSCAPE AND HARDSACPE

TBG partners, who had previously performed a study for a portion of this corridor for GNMD, was added to our team to continue working on urban architectural enhancements and features along project limits. Their work in included in Appendixes B and C

ENVIORONMENTAL

A review of previously conducted Categorical Exclusion, conducted by Metro and submitted to FTA, for GNHDD (Greater North Houston Development District) receiving federal grant, was performed by Berg Oliver Associates. Their scope included determination that this report also meets the City of Houston Chapter 11 design manual requirements since the project is within City ROW as well as compliance with Texas Historical Commission (THC) requirements. Their recommendation is listed below.

- Must coordinate with THC Division of Architecture regarding the rehabilitation of any existing curb-mounted blue tile street signs.
- Utilize the Sidewalk Protection notes provided by the THC for the work in front of sources, specifically the Bible Days Revival Church and other resources near 2223 North Main.
- Conduct a Phase I ESA per Chapter 11.25 of the City of Houston design manual if excavations of 5 feet or more are needed in Final Design.

The team will coordinate with THC as to how preserve blue tiles in the design phase.

SURVEY

A topo survey was conducted by Windrose and included in Appendix D

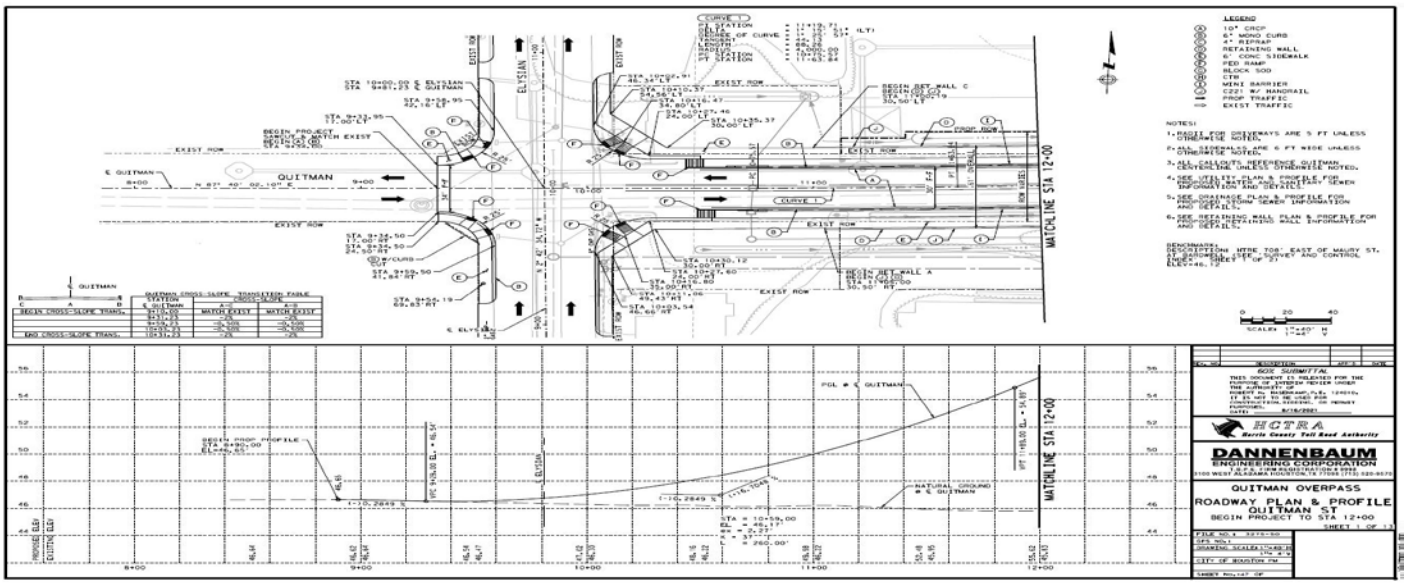
RIGHT-OF-WAY ACQUISITION

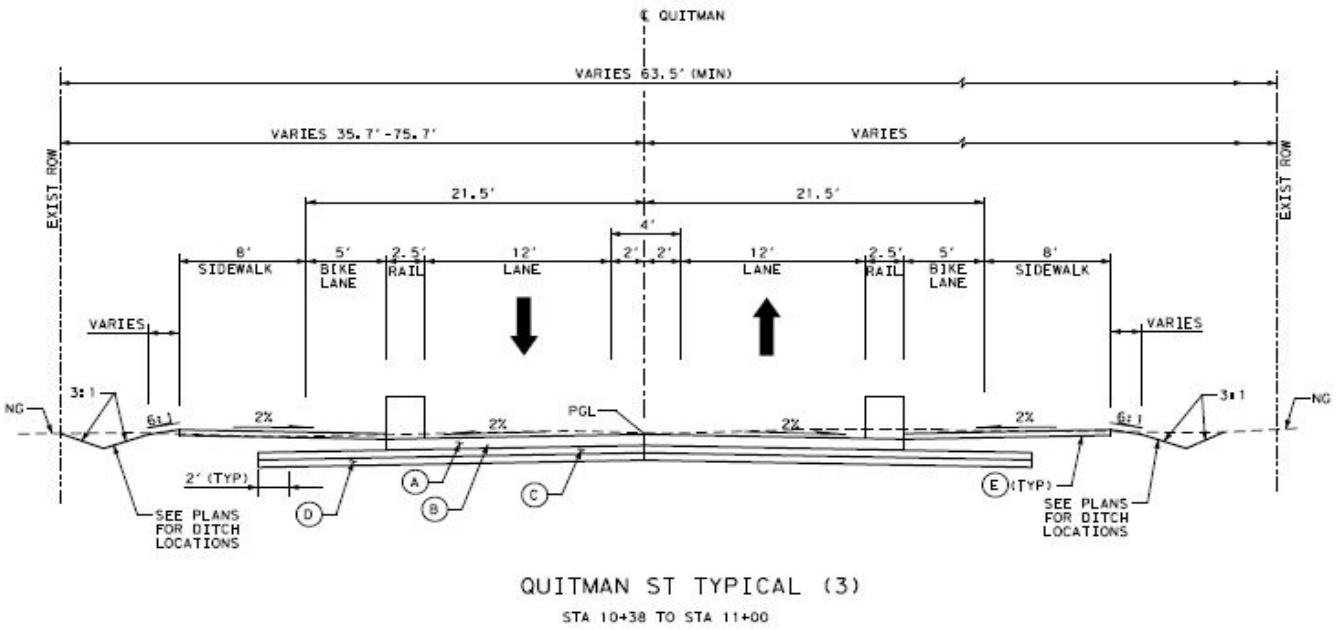
An effort was made to avoid ROW takings as much as possible in design. The corner radius and curb ramps were designed to fit in the existing ROW using effective radiuses. The current design depicts the need for two 15'x15' corner clip taking at north corners of Fletcher Street, one corner clip at northeast corner of Cochran Street and two corner clips at north corners of Hardy to design corner radius as per City IDM and to place curb ramps connected to sidewalks.

Discussions were held with City of Houston as to either request a variance from City or treat this project as a restriping one (not a total reconstruction) with existing radiuses at these locations to remain the same, thereby avoiding Corner Clips. City (Mr. Ian Hlavacek, PE) instructed us that these IDM radiuses need not be applied to this project thereby there won't be any need for corner clips and existing radiuses can be kept to avoid corner clips takings. In addition, acquiring Corner Clips may trigger already approved CE revisions and impact the available funding. Also, 270 sf easement from City of Houston Park is needed to diverted bike lane at Houston Ave at southeast side, by constructing paving for a combined sidewalks and bike lanes behind the curb.

HCTRA PROJECT

Harris County Toll Road Authority has a project involving an overpass over rail road on east of Elysian street ending at west of Elysian-Quitman intersection where our project ends. Their plans (currently at 60%) call out for single protected bike lanes on each side of Quitman with intersection reconstruction at Elysian-Quitman.





QUITMAN ST TYPICAL (3)

STA 10+38 TO STA 11+00

It appears at present that their project will be constructed after ours. Coordination was performed with them as to transfer and connectivity of bike lanes from our segment to theirs at this intersection. It was decided that our team will make connections to existing bike lanes at this intersection and modify the signal on Quitman so the facilities can be useable till HCTRA projects of reconstructing the entire intersection starts. Their plans and sections are as shown below:

JOSUE FLORES MEMORIAL

Precinct 2 initially expressed a desire to provide a memorial to the slain Josue Flores who attended Marshal Middle School and was murdered on his way home from school in this area in May 2016. However, it was decided (on Design Phase Kick-Off meeting) to not do this memorial as part of this project and County will try to do it on another CIP project.

GEOTECHNICAL

Geotechnical investigation was performed for overlay section between Fulton and Elysian by drilling six (6) borings to a depth of 4 feet within this limit. Coordination meeting was done with City of Houston geotechnical engineer, engineering and maintenance section of Public Works and was decided to mill 4 inch of existing asphalt and replace it with new at 2 inch lifts. The existing pavement generally compromises of 4 to 6.75 inch of asphalt on top of concrete and stabilized base. However, concrete sub-base was not observed in boring number 6. It was further suggested by us to do additional corings along the length of the overlay to be able to identify and quantify the areas without concrete sub-base but County decided not to perform this task. The recommendation summary is as listed below:

Table 6-3 – Overlay of Existing Pavement considering 1% Trucks

Location	Borings	Required Structural Number – 12 year Design Life Period	Effective Existing Structural Number	Milling (inches)	Hot Mix Asphaltic Concrete Overlay Thickness-inches	New Structural Number
Quitman Street	P-1	4.17	3.1	4.0	4.0	4.4
Quitman Street	P-2	4.17	3.4	4.0	4.0	4.8
Quitman Street	P-3	4.17	3.7	4.0	4.0	5.0
Quitman Street	P-4	4.17	3.7	4.0	4.0	5.1
Quitman Street	P-5	4.17	3.7	4.0	4.0	5.1

Table 6-4– New Pavement at Boring Location P-6

Materials	New Pavement	
	Structural Numbers	Thickness (inches)
Hot Mix Asphalt Concrete Surface	0.44	4.0
Asphaltic Base	0.34	5.0
Lime Stabilized Subgrade	0.11	8.0

Complete geotechnical report is included in Appendix E

PRIVATE AND PUBLIC UTILITIES

Numerous private and public utilities are present in project limits with power poles being a major contributing factor in design. Some powers poles, fire hydrants, water meters and water valves need to be relocated/adjusted due to proposed reconstruction of sidewalks and pedestrian curb ramps. Utility lists and conflicts are included in Appendix F

COST ESTIMATE AND FUNDING

A preliminary cost estimate is developed in conjunction with input from TBG Partners for landscape/hardscape elements and included in Appendix G. Total Construction cost is estimated at $5,494,754.00 at present.

Stakeholder's shares, including soft costs of Design and Construction are as follows:

City of Houston (14%):

$644,000.00 (Mill and overlay from Fulton to Elysian) plus $300,000.00 Bikeways= $ 944,000.00

METRO (7%):

Floating Bus stops, Raised Cycle tracks----------= $ 430,000.00

Greater Northside Management District, GNMD, Federal Grant from H-GAC and local (28%):

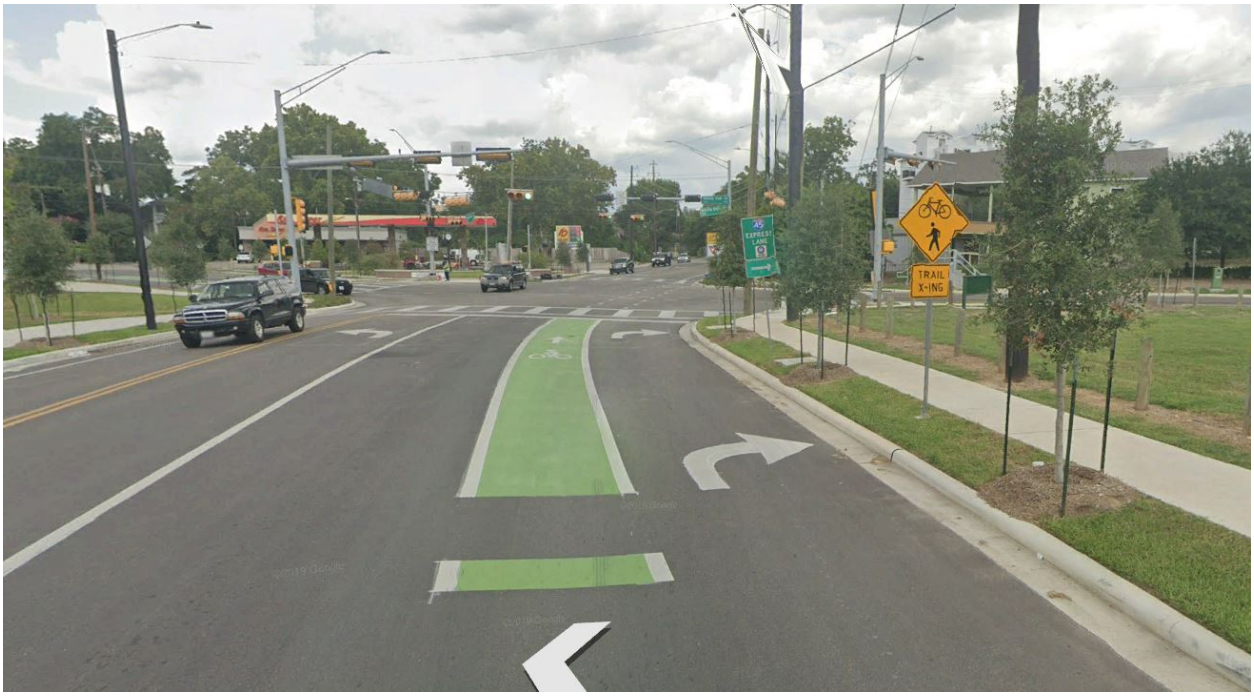
ADA ramps, pedestrian lighting, streetscape/landscape from South St. To Gano St.$1,864,000.00

Harris County Precinct 2 (51%)

Sidewalks, additional pedestrian lighting, ADA ramps from Houston Ave to South St. and Gano St. to Elysian St., additional hardscape/landscape, misc. utility reconstruction, driveways, etc. ----------= $3,351,782.00

APPENDIX A – Site Photos

White Oak and Houston Avenue looking east



Houston Avenue and White Oak looking north

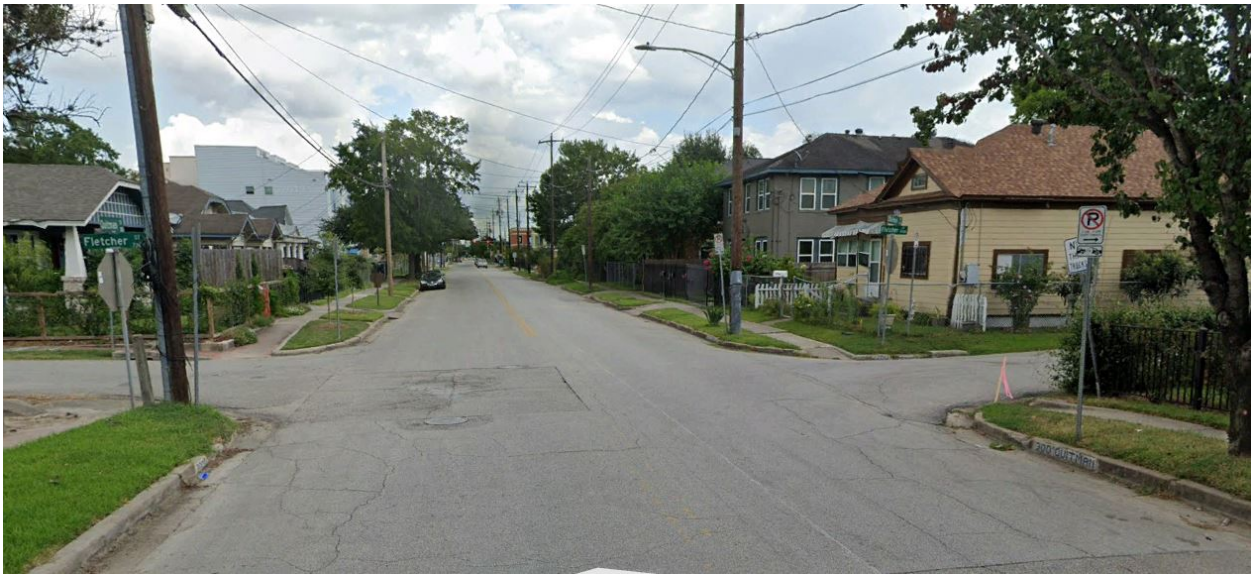
White Oak Avenue east of Houston Avenue looking east

White Oak at I45 feeder road

Quitman bridge over I45 looking east

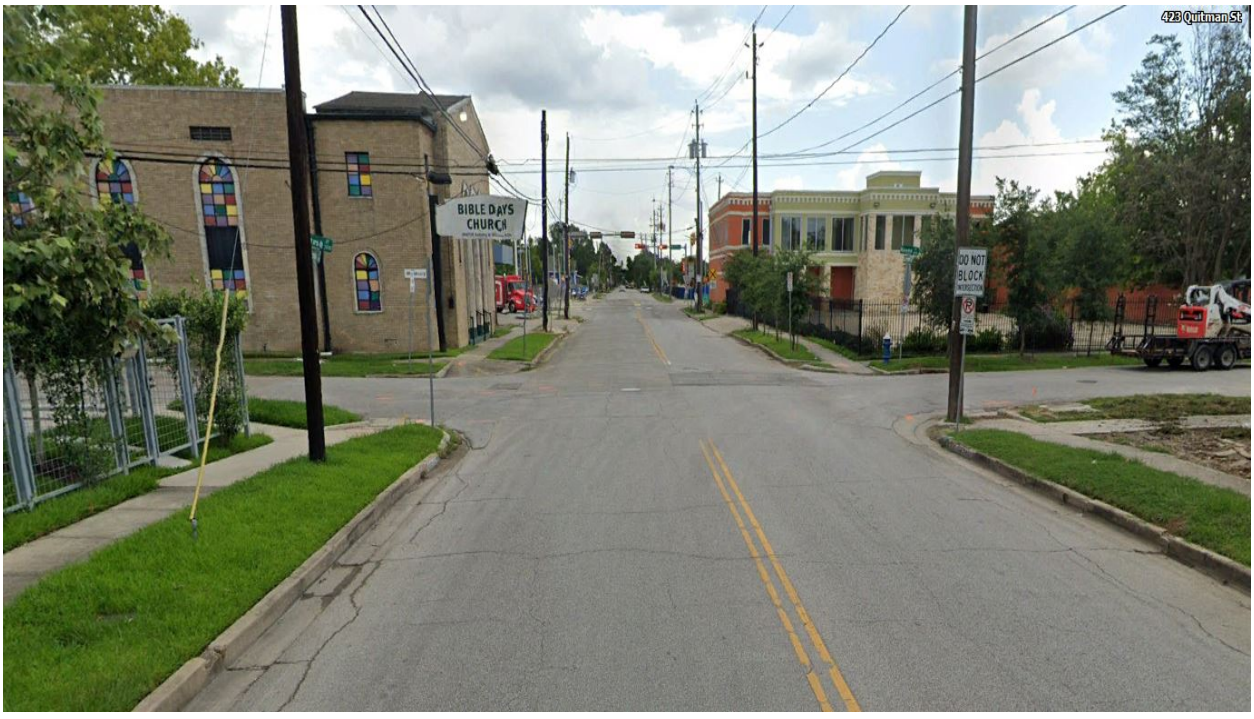
Quitman at South St. looking east

Feeder road at South St. and Quitman looking south

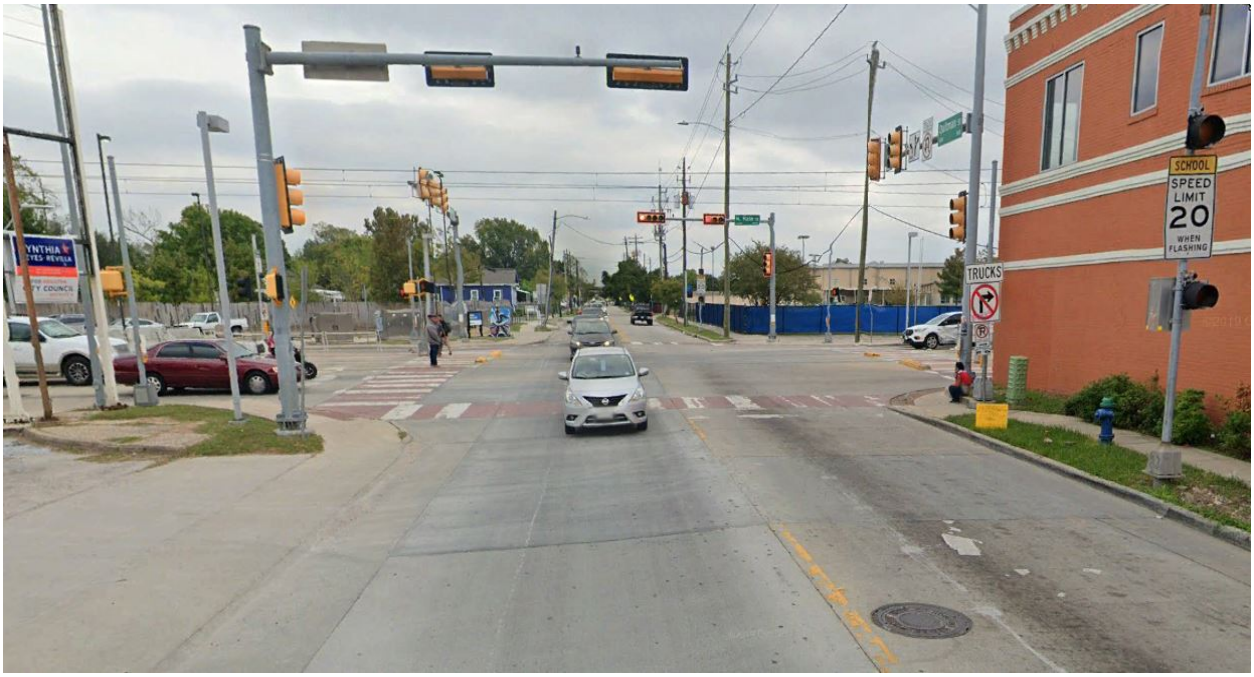


Quitman at Fletcher St. looking east

Quitman at Churchill looking north



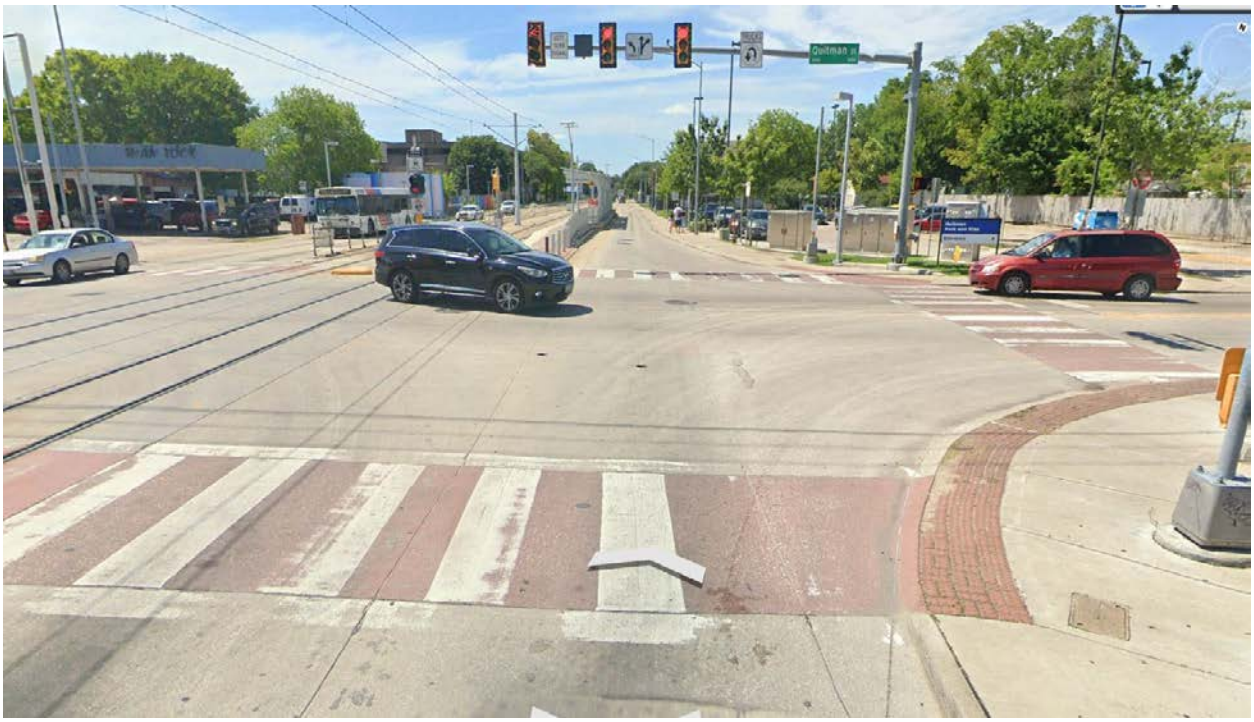
Quitman at Keene looking east



Quitman at Main looking east

Main St at Quitman looking north

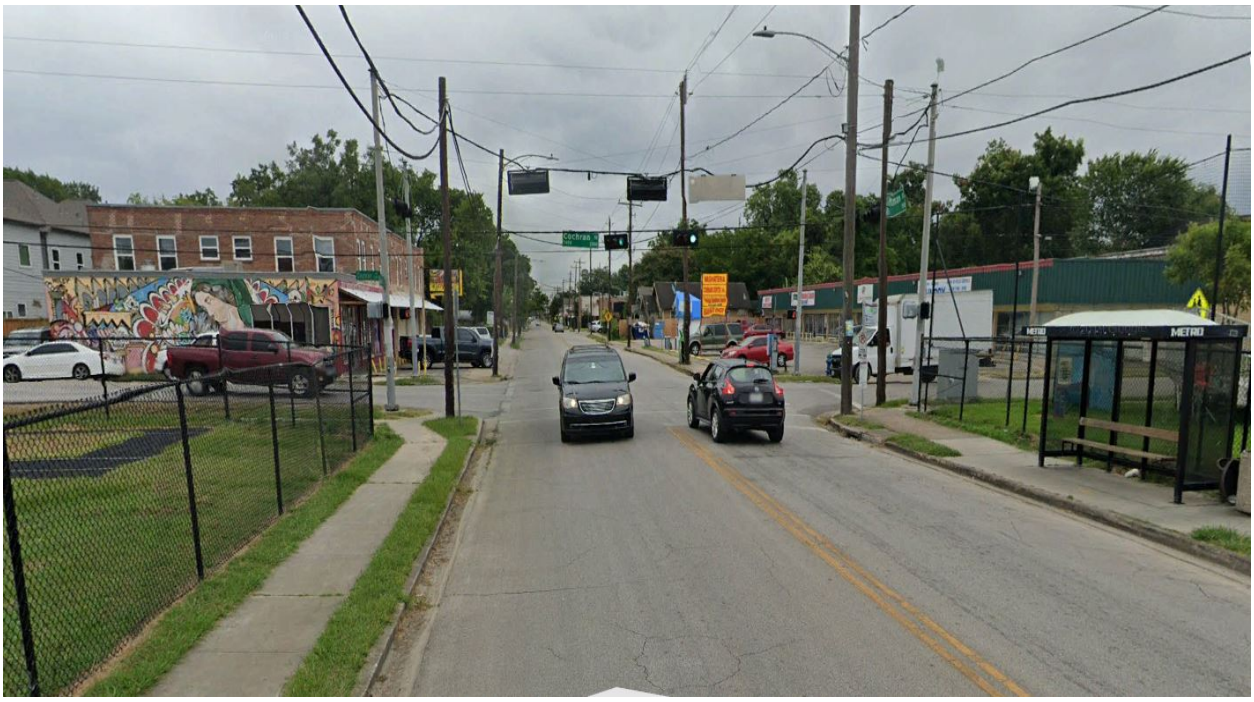
Main St at Quitman looking north



Main and Quitman looking north

Quitman at Fulton looking east

Quitman at Tackaberry looking east

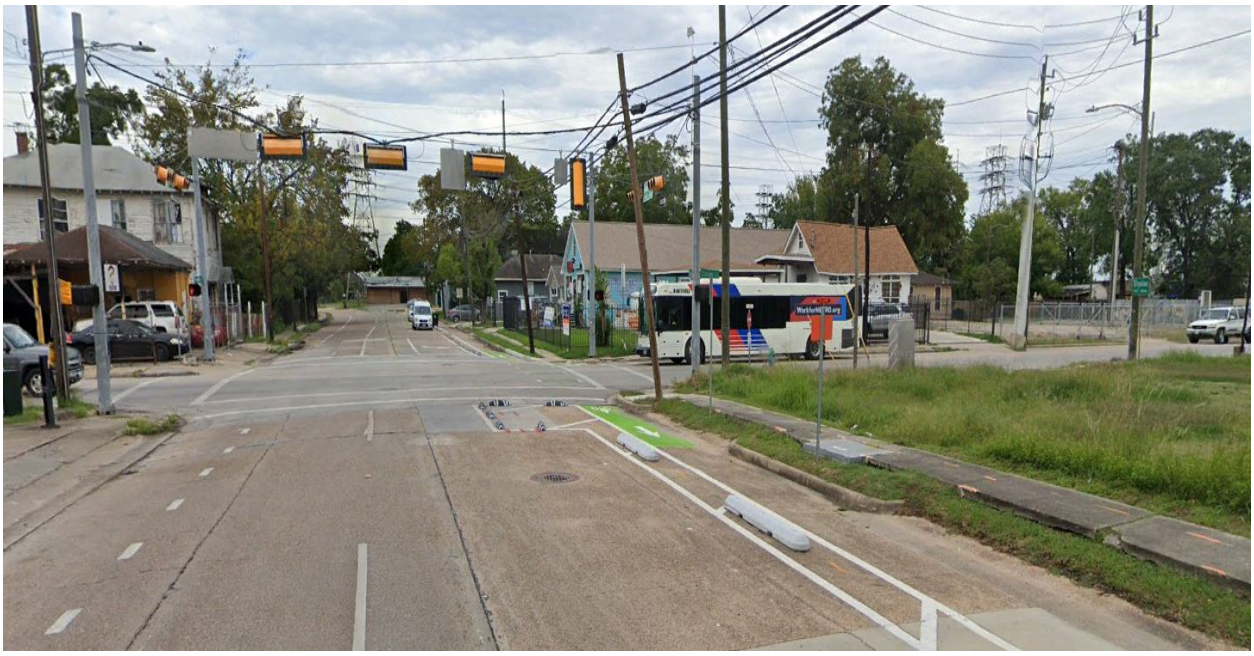


Quitman at Cochran looking east

Cochran at Quitman looking north

Quitman at McKee looking east

Quitman at Hardy looking east



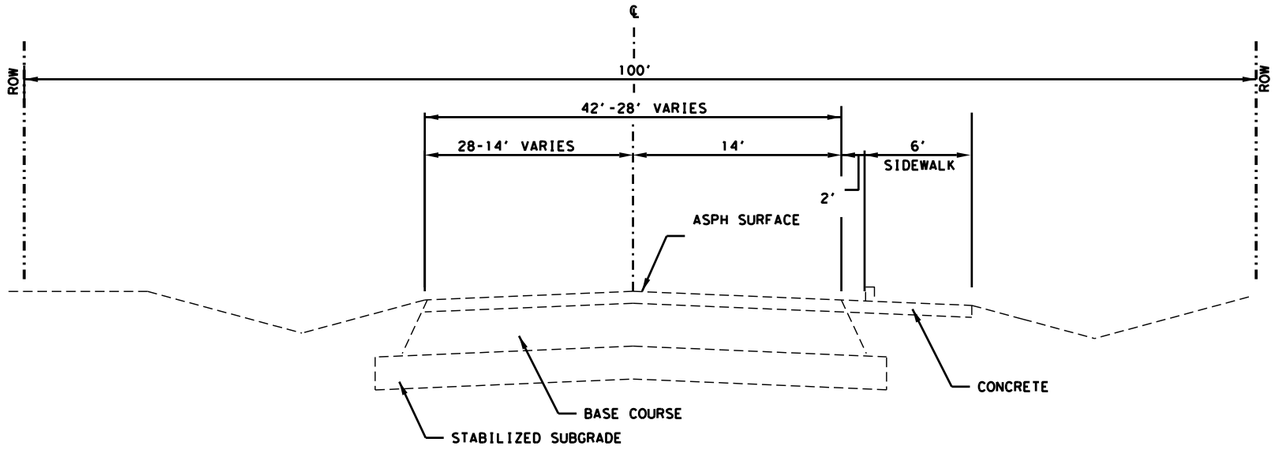
Hardy at Quitman looking north

Quitman at Elysian looking east

Elysian at Quitman looking north

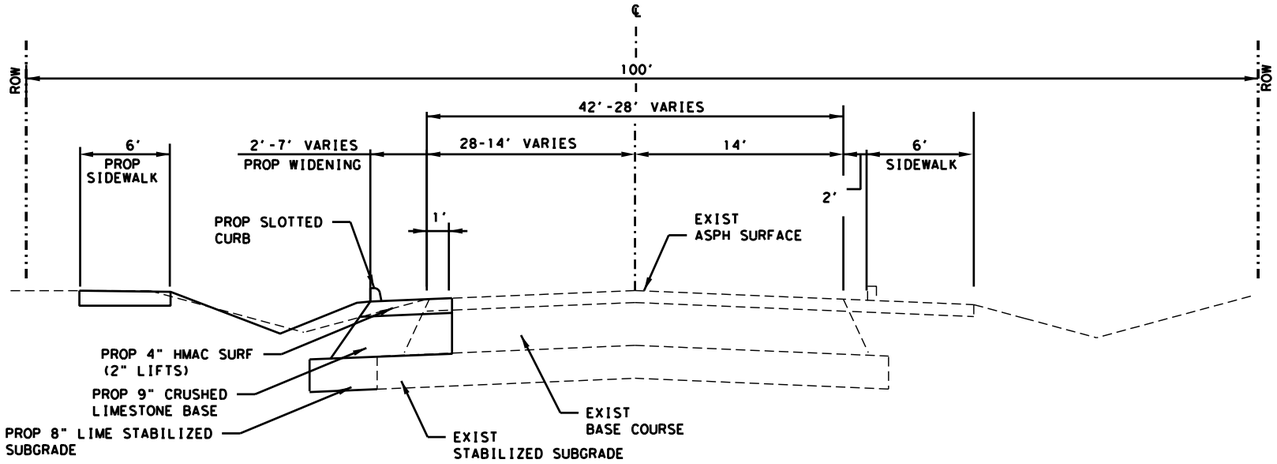
Quitman at Elysian looking west

APPENDIX B – Roadway, Bike Lane and Sidewalk Drawings



EXISTING TYPICAL SECTION

WHITE OAK DRIVE/QUITMAN STREET
FROM 200 FT EAST OF HOUSTON AVE TO 600 FT EAST OF HOUSTON AVE



EXISTING TYPICAL SECTION

WHITE OAK DRIVE/QUITMAN STREET
FROM 200 FT EAST OF HOUSTON AVE TO 600 FT EAST OF HOUSTON AVE

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$DATES$

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ENGINEERING DEPARTMENT

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ENGINEERS, INC.
701 SHEPHERD DRIVE, SUITE 200
HOUSTON, TX 77007
TEXAS FIRM REGISTRATION NO. 4014

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DOCUMENT INCOMPLETE:
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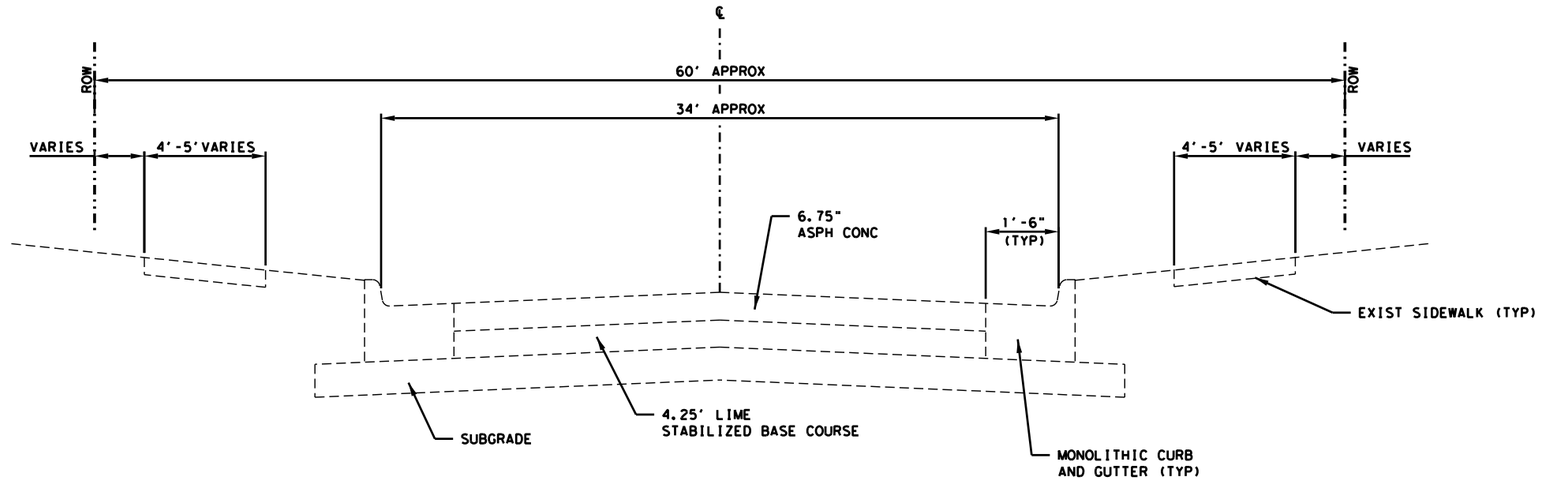
BIDDING, OR PERMIT PURPOSES

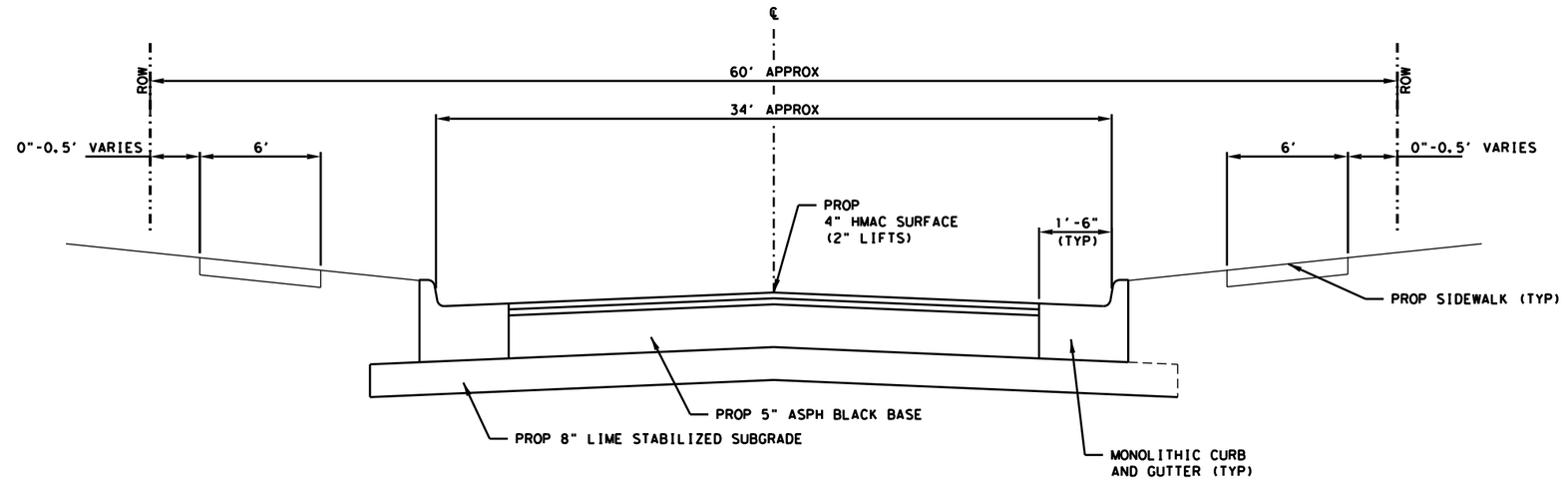
ENGINEER: DAVID H. SADEGHPOUR, P.E.
P.E. SERIAL No. 53705
DATE: 06/18/2021

PROJECT TITLE:	QUITMAN STREET
	PROPOSED BIKE LANE IMPROVEMENTS
SHEET DESCRIPTION:	TYPICAL SECTIONS
DRAWN BY: AD	DATE: 06-11-2021
CK'D BY: DHS	SCALE: NTS — SHEET NO: 1



EXISTING TYPICAL SECTION

QUITMAN STREET
FROM EAST OF FULTON STREET TO EAST OF TACKABERRY STREET



PROPOSED TYPICAL SECTION

QUITMAN STREET
FROM EAST FULTON STREET TO EAST OF TACKABERRY STREET

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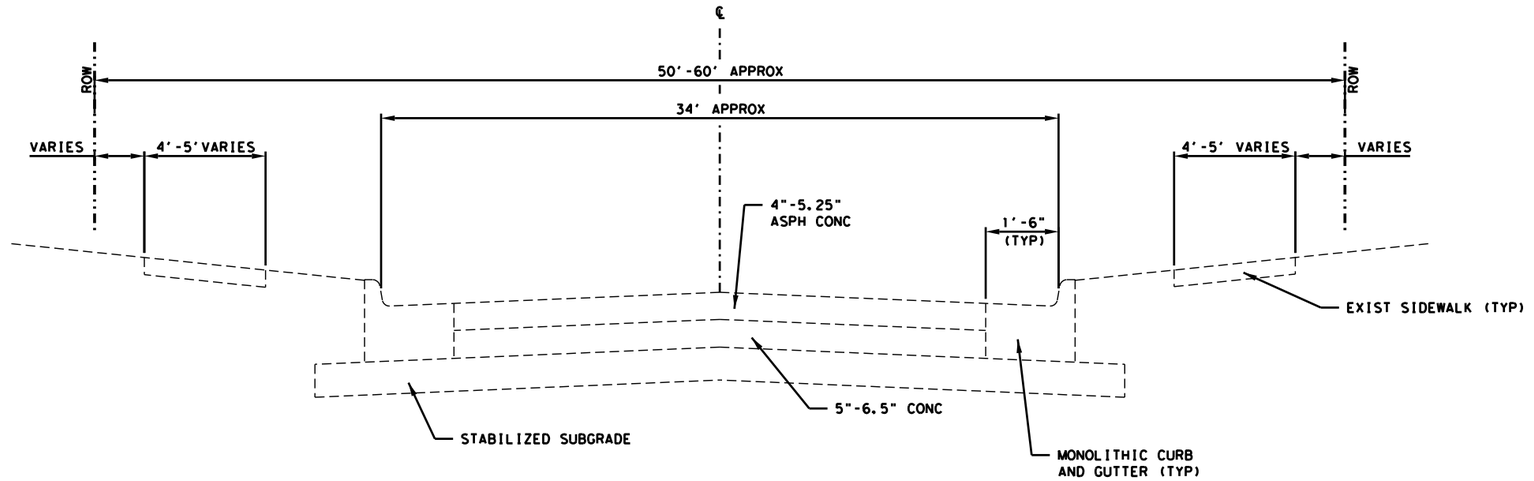
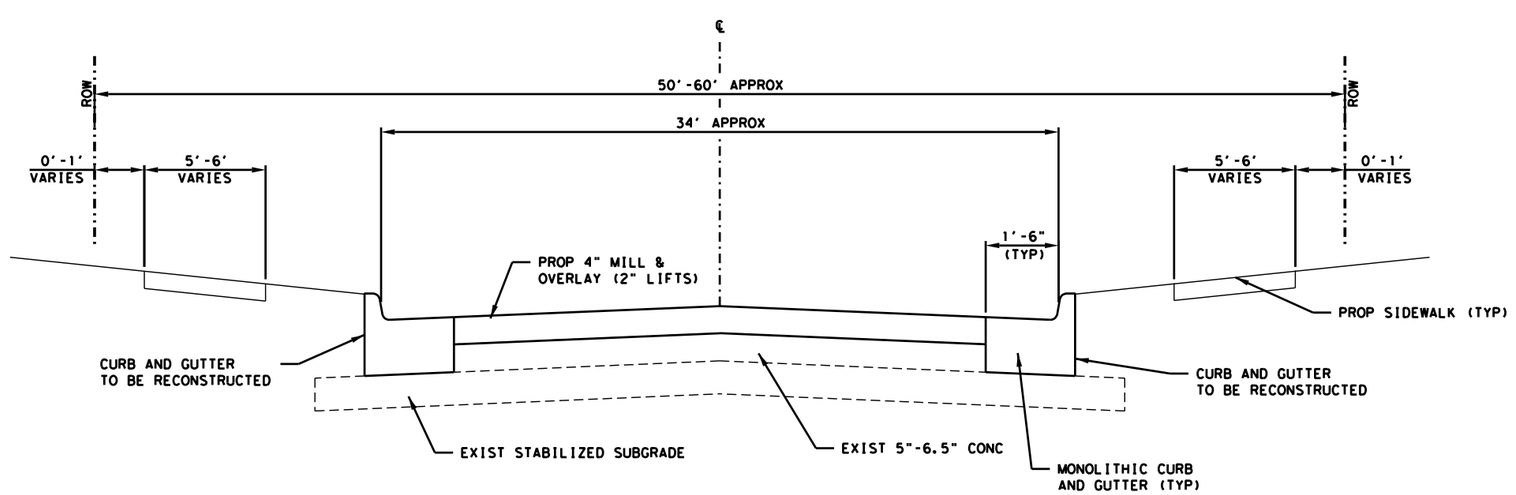
P.E. SERIAL No. 53705
DATE: 06/18/2021

PROJECT TITLE:	QUITMAN STREET
	PROPOSED BIKE LANE IMPROVEMENTS
SHEET DESCRIPTION:	TYPICAL SECTIONS
DRAWN BY: AD	DATE: 06-11-2021
CK'D BY: DHS	SCALE:
	SHEET NO: 2



EXISTING TYPICAL SECTION

QUITMAN STREET
FROM EAST OF TACKABERRY STREET TO WEST OF ELYSIAN STREET



PROPOSED TYPICAL SECTION

QUITMAN STREET
FROM EAST OF TACKABERRY STREET TO WEST OF ELYSIAN STREET

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HARRIS COUNTY
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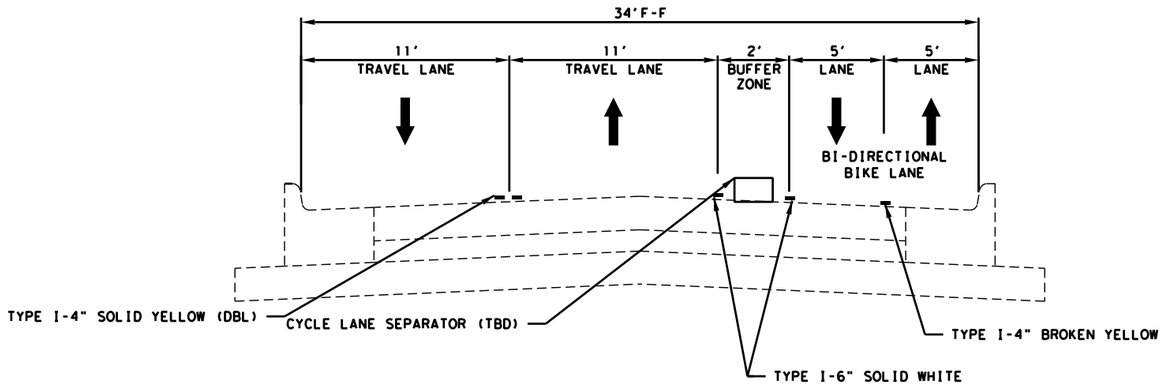
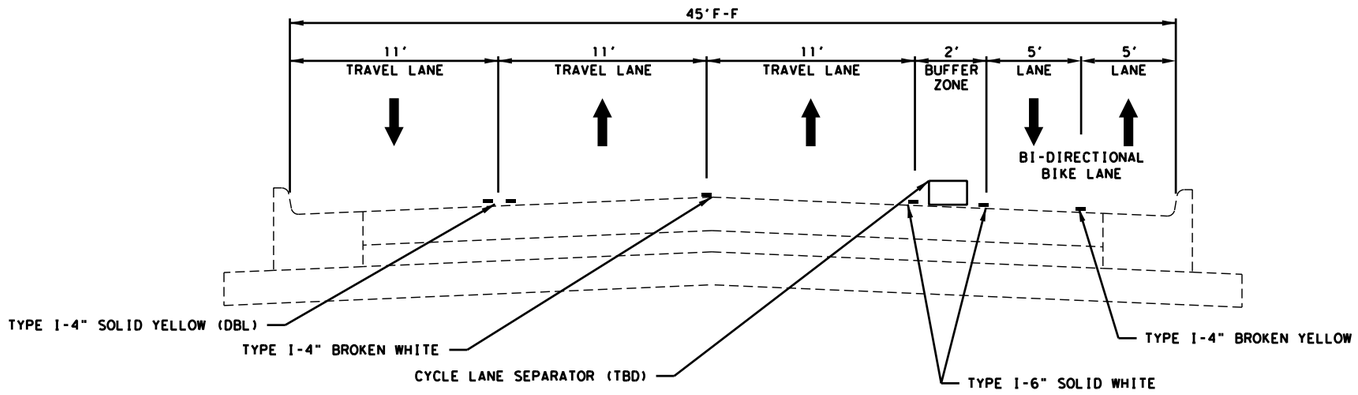
ENGINEER: DAVID H. SADEGHPOUR, P.E.
P.E. SERIAL No. 53705
DATE: 06/18/2021

PROJECT TITLE:	QUITMAN STREET
	PROPOSED BIKE LANE IMPROVEMENTS
SHEET DESCRIPTION:	TYPICAL SECTIONS
DRAWN BY: AD	DATE: 06-11-2021
CK'D BY: DHS	SCALE:
	SHEET NO: 3



PAVMENT MARKING TYPICAL SECTION

STA 8+00 TO STA 15+00
STA 22+00 TO STA 78+20



PAVMENT MARKING TYPICAL SECTION

STA 15+00 TO STA 22+00

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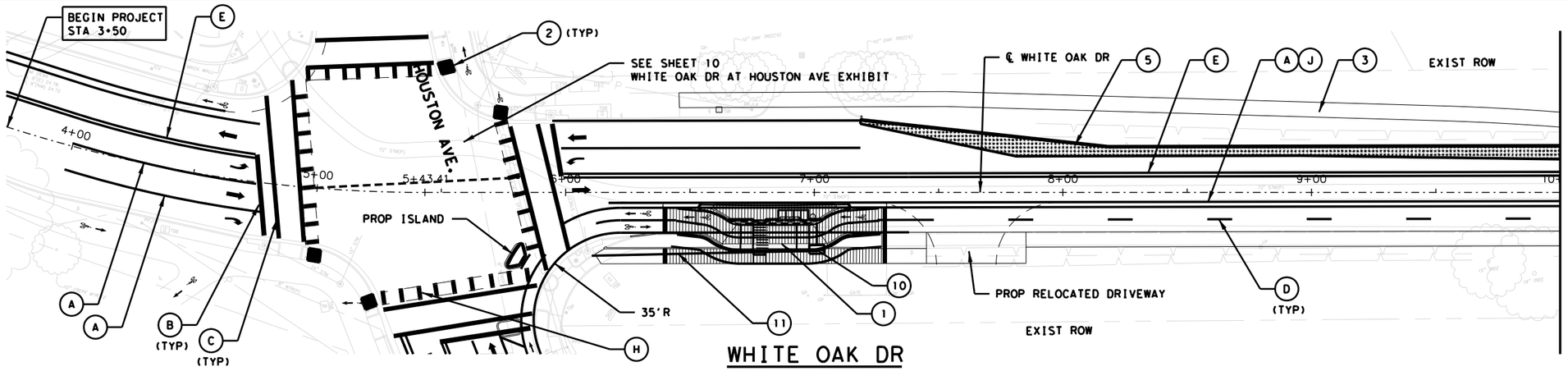
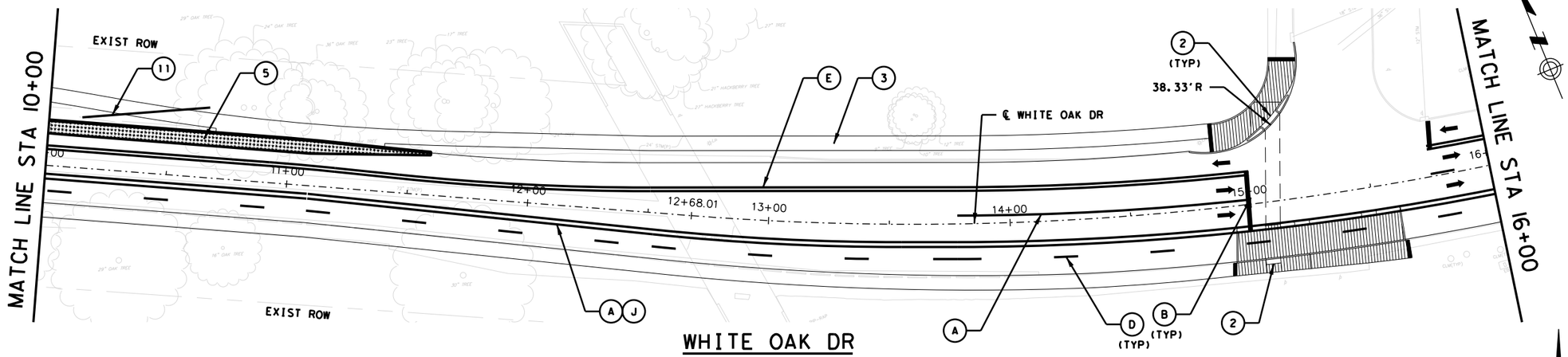
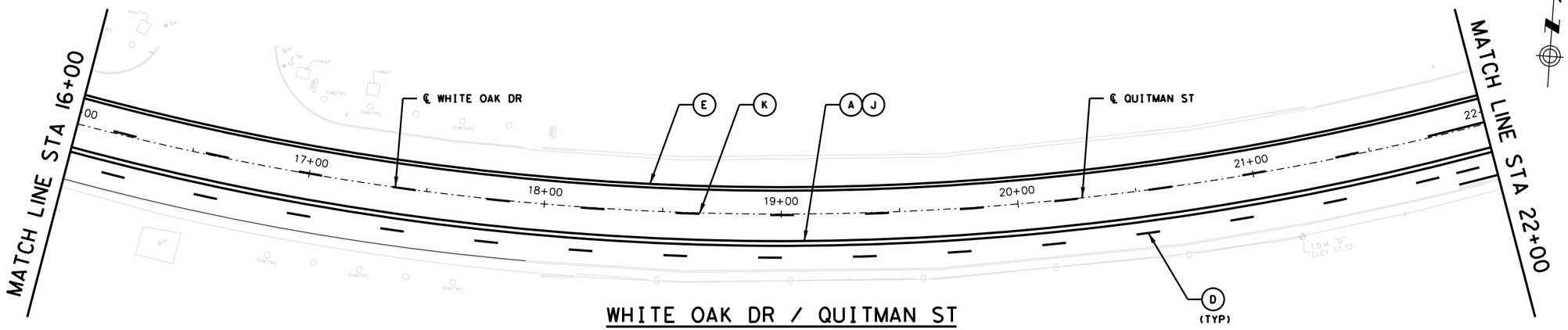
ENGINEER: DAVID H. SADEGHPOUR, P.E.
P.E. SERIAL No. 53705
DATE: 06/18/2021

PROJECT TITLE: QUITMAN STREET
PROPOSED BIKE LANE IMPROVEMENTS
SHEET DESCRIPTION: PAVEMENT MARKING TYPICAL SECTIONS

DRAWN BY:		DATE:
AD		06-11-2021
CK'D BY:	SCALE:	SHEET NO:
DHS		4







LEGEND

1. PROP FLOATING BUS STOP
2. PROP ADA RAMP
3. PROP SIDEWALK
4. RECONSTRUCT DRIVEWAYS
5. PROP PAVEMENT WIDENING
6. PROPOSED CURB & GUTTER REPAIR
7. REMOVE AND RECONSTRUCT CURB & GUTTER
8. PROPOSED MILL & OVERLAY
9. REPAIR INLET
10. PROP INLET
11. PROP 24" RCP
12. BUS PAD

PAVEMENT MARKING LEGEND

- A. TYPE I-6" SOLID WHITE
- B. TYPE I-24" SOLID WHITE
- C. TYPE I-12" SOLID WHITE
- D. TYPE I-4" BROKEN YELLOW
- E. TYPE I-4" SOLID YELLOW (DBL)
- F. TYPE I-6" SOLID GUIDE WHITE
- G. TYPE I - WHITE WORD, SYMBOL ARROW, RR CROSSING OR SHADOW
- H. REFLECTIVE PM TY C PREFORM SOLID GREEN
- J. CYCLE LANE SEPARATOR (TBD)
- K. TYPE I-4" BROKEN WHITE

0 12.5 25 50
SCALE: 1"=50'

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NO.	REVISIONS	DATE	NAME
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HARRIS COUNTY
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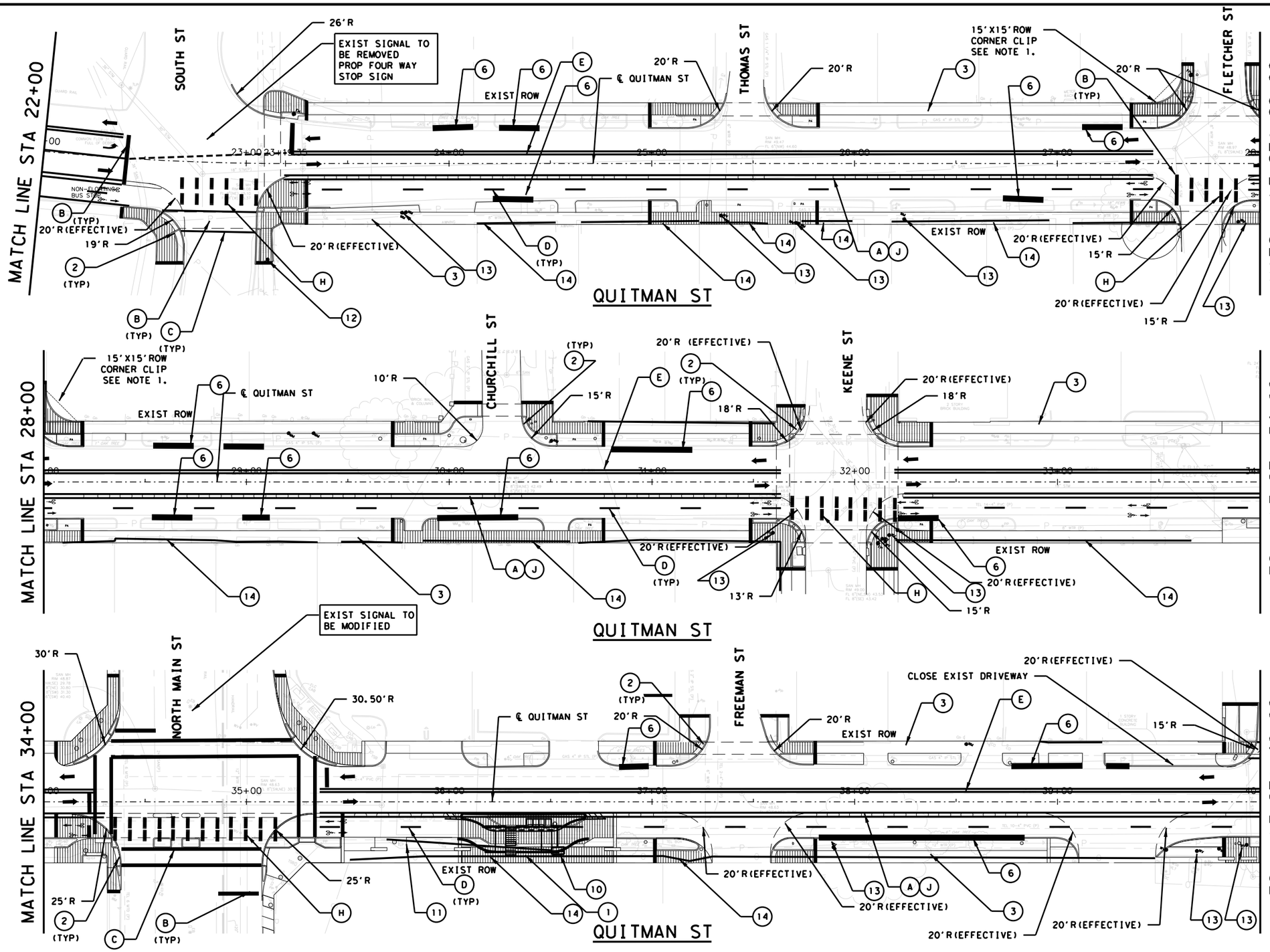
P.E. SERIAL No. 53705
DATE: 06/18/2021

PROJECT TITLE: QUITMAN STREET
PROPOSED BIKE LANE IMPROVEMENTS
SHEET DESCRIPTION:

DRAWN BY:		DATE:
AD		06-11-2021
CK'D BY:	SCALE:	SHEET NO:
DHS		5



LEGEND

1. PROP FLOATING BUS STOP
2. PROP ADA RAMP
3. PROP SIDEWALK
4. RECONSTRUCT DRIVEWAYS
5. PROP PAVEMENT WIDENING
6. PROPOSED CURB & GUTTER REPAIR
7. REMOVE AND RECONSTRUCT CURB & GUTTER
8. PROPOSED MILL & OVERLAY
9. REPAIR INLET
10. PROP INLET
11. PROP 24" RCP
12. BUS PAD
13. RELOCATE/ADJUST FH/WV/WM
14. FENCE ENCHROACHMENT (TO BE RELOCATED BY OTHERS)

PAVEMENT MARKING LEGEND

- A TYPE I-6" SOLID WHITE
- B TYPE I-24" SOLID WHITE
- C TYPE I-12" SOLID WHITE
- D TYPE I-4" BROKEN YELLOW
- E TYPE I-4" SOLID YELLOW (DBL)
- F TYPE I-6" SOLID GUIDE WHITE
- G TYPE I - WHITE WORD, SYMBOL ARROW, RR CROSSING OR SHADOW
- H REFLECTIVE PM TY C PREFORM SOLID GREEN
- J CYCLE LANE SEPARATOR (TBD)
- K TYPE I-4" BROKEN WHITE

NOTE:
1. ALTERNATE PEDESTRIAN RAMP DESIGN WITHOUT ROW CORNER CLIP IS SHOWN ON SITEWORK AND PLANTING PLAN SHEET LS3.02
2. ALL DRIVEWAYS TO BE RECONSTRUCTED.

0 12.5 25 50
SCALE: 1"=50'

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NO.	REVISIONS	DATE	NAME

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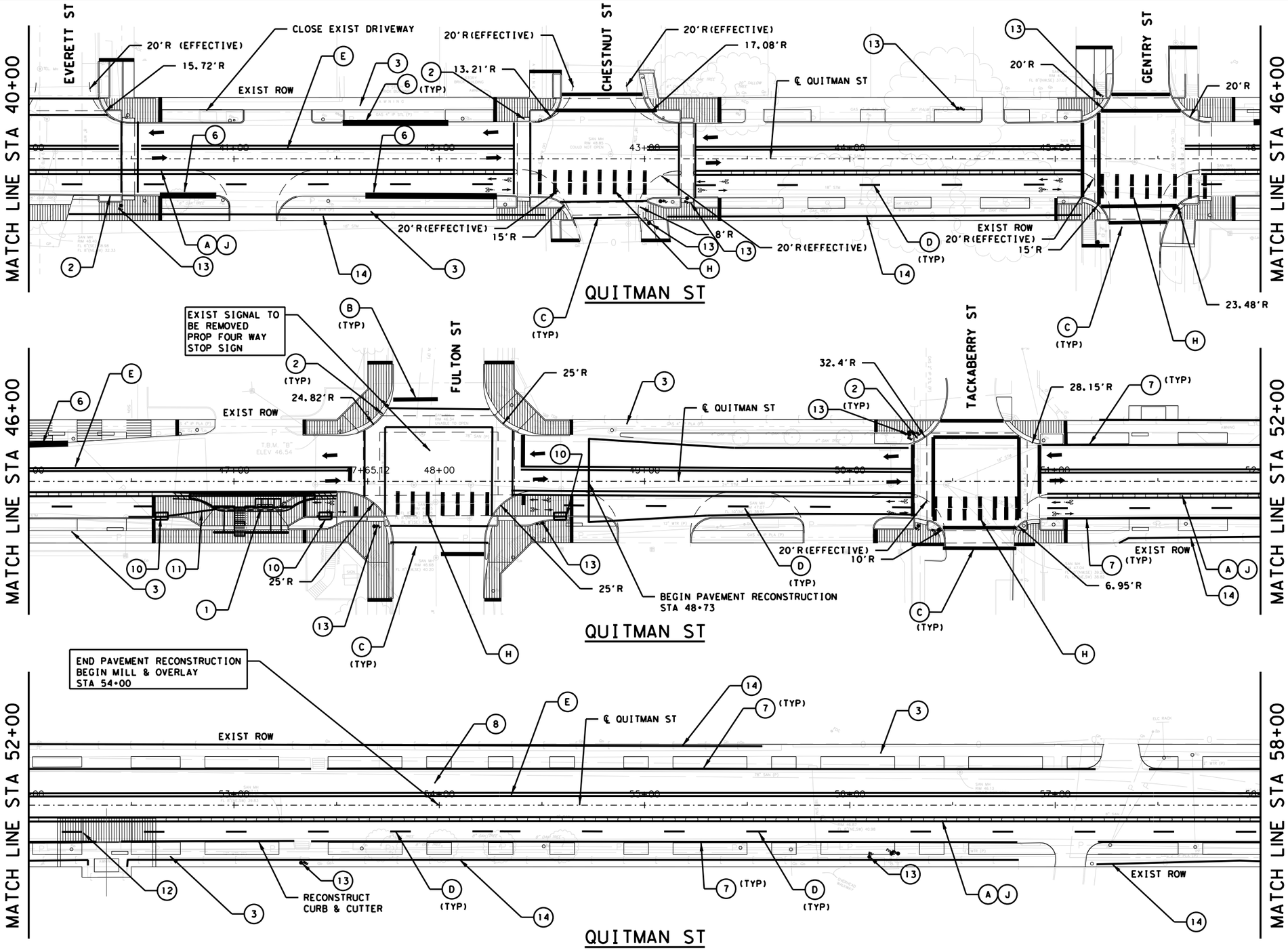
P.E. SERIAL No. 53705
DATE: 06/18/2021

PROJECT TITLE: QUITMAN STREET
PROPOSED BIKE LANE IMPROVEMENTS
SHEET DESCRIPTION:

DRAWN BY: AD		DATE: 06-11-2021
CK'D BY: DHS	SCALE:	SHEET NO: 6



LEGEND

1. PROP FLOATING BUS STOP
2. PROP ADA RAMP
3. PROP SIDEWALK
4. RECONSTRUCT DRIVEWAYS
5. PROP PAVEMENT WIDENING
6. PROPOSED CURB & GUTTER REPAIR
7. REMOVE AND RECONSTRUCT CURB & GUTTER
8. PROPOSED MILL & OVERLAY
9. REPAIR INLET
10. PROP INLET
11. PROP 24" RCP
12. BUS PAD
13. RELOCATE/ADJUST FH/WV/WM
14. FENCE ENCHROACHMENT (TO BE RELOCATED BY OTHERS)

PAVEMENT MARKING LEGEND

- A TYPE I-6" SOLID WHITE
- B TYPE I-24" SOLID WHITE
- C TYPE I-12" SOLID WHITE
- D TYPE I-4" BROKEN YELLOW
- E TYPE I-4" SOLID YELLOW (DBL)
- F TYPE I-6" SOLID GUIDE WHITE
- G TYPE I - WHITE WORD, SYMBOL ARROW, RR CROSSING OR SHADOW
- H REFLECTIVE PM TY C PREFORM SOLID GREEN
- J CYCLE LANE SEPARATOR (TBD)
- K TYPE I-4" BROKEN WHITE

0 12.5 25 50
SCALE: 1"=50'

$FILES$
$DATE$

NO.	REVISIONS	DATE	NAME
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HARRIS COUNTY ENGINEERING DEPARTMENT

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P.E. SERIAL No. 53705
DATE: 06/18/2021

PROJECT TITLE: QUITMAN STREET
PROPOSED BIKE LANE IMPROVEMENTS
SHEET DESCRIPTION:

DRAWN BY:		DATE:
AD		06-11-2021
CK'D BY:	SCALE:	SHEET NO:
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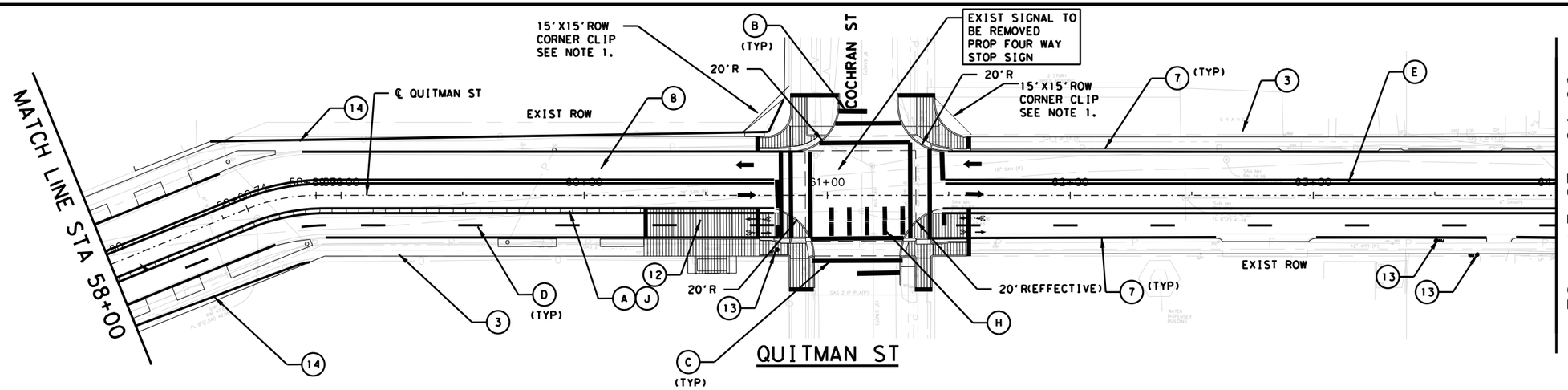

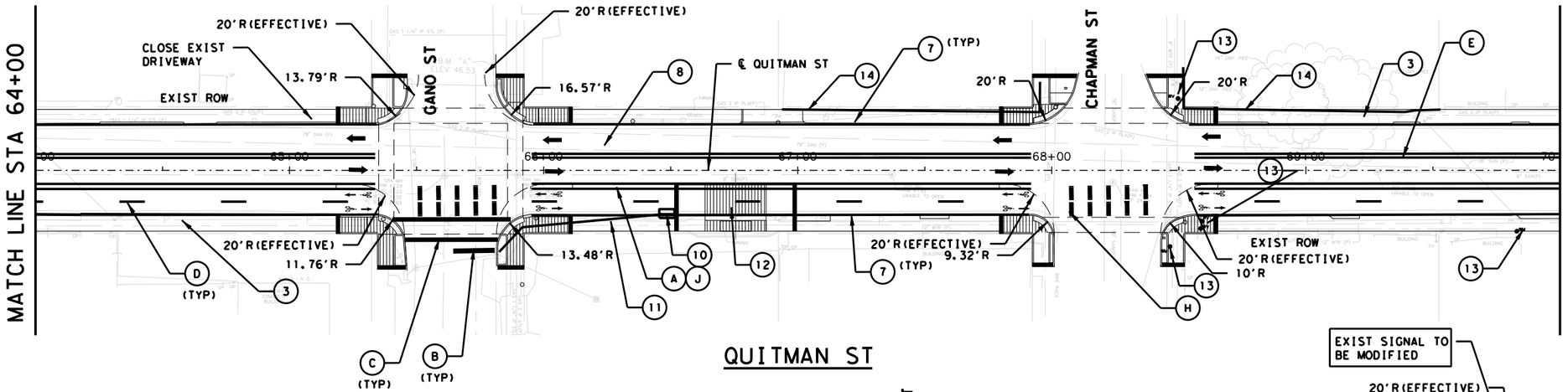

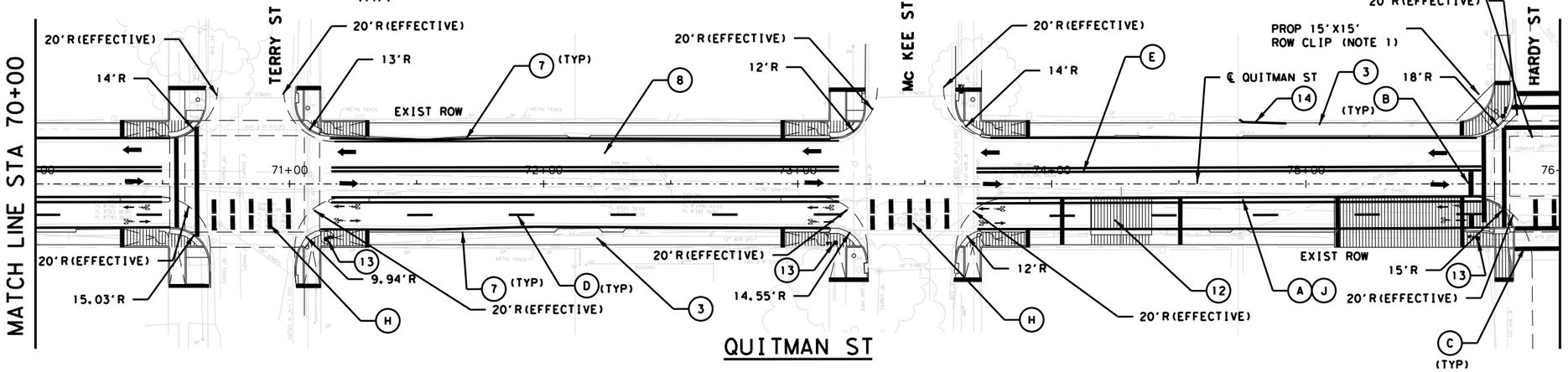

LEGEND

1. PROP FLOATING BUS STOP
2. PROP ADA RAMP
3. PROP SIDEWALK
4. RECONSTRUCT DRIVEWAYS
5. PROP PAVEMENT WIDENING
6. PROPOSED CURB & GUTTER REPAIR
7. REMOVE AND RECONSTRUCT CURB & GUTTER
8. PROPOSED MILL & OVERLAY
9. REPAIR INLET
10. PROP INLET
11. PROP 24" RCP
12. BUS PAD
13. RELOCATE/ADJUST FH/WV/WM
14. FENCE ENCHROACHMENT (TO BE RELOCATED BY OTHERS)

PAVEMENT MARKING LEGEND

- A. TYPE I-6" SOLID WHITE
- B. TYPE I-24" SOLID WHITE
- C. TYPE I-12" SOLID WHITE
- D. TYPE I-4" BROKEN YELLOW
- E. TYPE I-4" SOLID YELLOW (DBL)
- F. TYPE I-6" SOLID GUIDE WHITE
- G. TYPE I - WHITE WORD, SYMBOL ARROW, RR CROSSING OR SHADOW
- H. REFLECTIVE PM TY C PREFORM SOLID GREEN
- J. CYCLE LANE SEPARATOR (TBD)
- K. TYPE I-4" BROKEN WHITE

NOTE:
1. ALTERNATE PEDESTRIAN RAMP DESIGN WITHOUT ROW CORNER CLIP IS SHOWN ON SITEWORK AND PLANTING PLAN SHEET LS3.03 AND LS3.05.

0 12.5 25 50
SCALE: 1"=50'

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NO.	REVISIONS	DATE	NAME
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HARRIS COUNTY ENGINEERING DEPARTMENT

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P.E. SERIAL No. 53705
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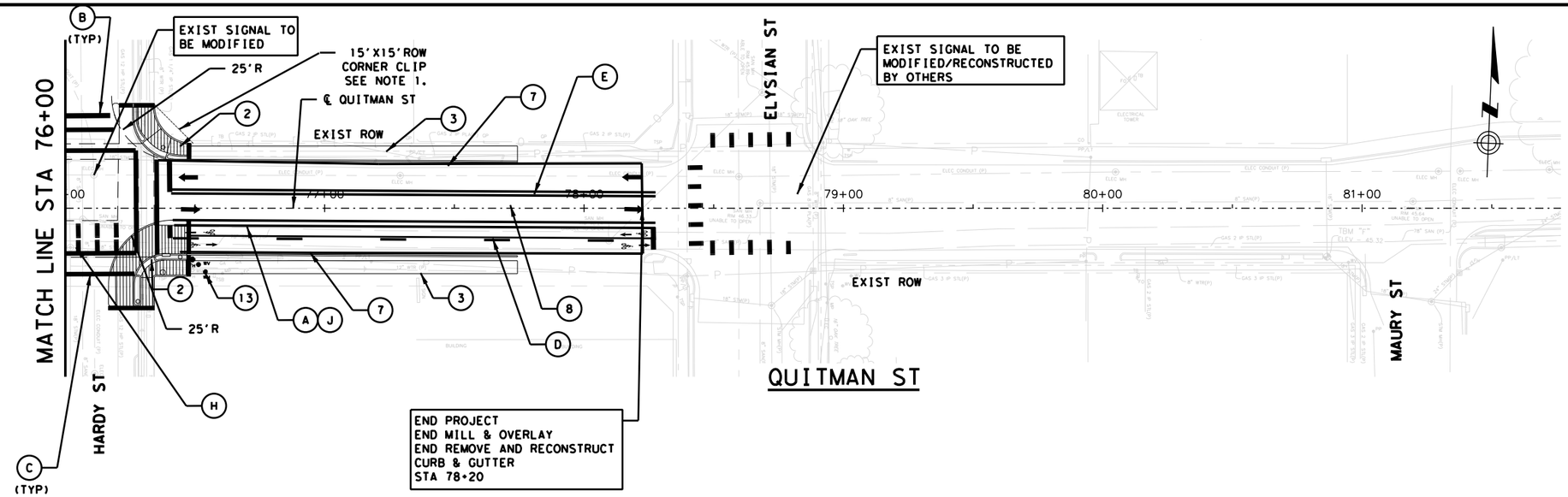
PROPOSED BIKE LANE IMPROVEMENTS
SHEET DESCRIPTION:

DRAWN BY:		DATE:
AD		06-11-2021
CK'D BY:	SCALE:	SHEET NO:
DHS		8



LEGEND

1. PROP FLOATING BUS STOP
2. PROP ADA RAMP
3. PROP SIDEWALK
4. RECONSTRUCT DRIVEWAYS
5. PROP PAVEMENT WIDENING
6. PROPOSED CURB & GUTTER REPAIR
7. REMOVE AND RECONSTRUCT CURB & GUTTER
8. PROPOSED MILL & OVERLAY
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10. PROP INLET
11. PROP 24" RCP
12. BUS PAD

PAVEMENT MARKING LEGEND

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- B TYPE I-24" SOLID WHITE
- C TYPE I-12" SOLID WHITE
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- E TYPE I-4" SOLID YELLOW (DBL)
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- G TYPE I - WHITE WORD, SYMBOL ARROW, RR CROSSING OR SHADOW
- H REFLECTIVE PM TY C PREFORM SOLID GREEN
- J CYCLE LANE SEPARATOR (TBD)
- K TYPE I-4" BROKEN WHITE

NOTE:
1. ALTERNATE PEDESTRIAN RAMP DESIGN WITHOUT ROW CORNER CLIP IS SHOWN ON SITEWORK AND PLANTING PLAN SHEET LS3.05
2. ALL DRIVEWAYS TO BE RECONSTRUCTED.

0 12.5 25 50
SCALE: 1"=50'

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P.E. SERIAL No. 53705
DATE: 06/18/2021

PROJECT TITLE: QUITMAN STREET
PROPOSED BIKE LANE IMPROVEMENTS
SHEET DESCRIPTION:

DRAWN BY: AD		DATE: 06-11-2021
CK'D BY: DHS	SCALE:	SHEET NO: 9

LEGEND

1. PROP FLOATING BUS STOP
2. PROP ADA RAMP
3. PROP SIDEWALK
4. RECONSTRUCT DRIVEWAYS
5. PROP PAVEMENT WIDENING
6. PROPOSED CURB & GUTTER REPAIR
7. REMOVE AND RECONSTRUCT CURB & GUTTER
8. PROPOSED MILL & OVERLAY
9. REPAIR INLET
10. PROP INLET
11. PROP 24" RCP
12. BUS PAD

PAVEMENT MARKING LEGEND

- A TYPE I-6" SOLID WHITE
- B TYPE I-24" SOLID WHITE
- C TYPE I-12" SOLID WHITE
- D TYPE I-4" BROKEN YELLOW
- E TYPE I-4" SOLID YELLOW (DBL)
- F TYPE I-6" SOLID GUIDE WHITE
- G TYPE I - WHITE WORD, SYMBOL ARROW, RR CROSSING OR SHADOW
- H REFLECTIVE PM TY C PREFORM SOLID GREEN
- J CYCLE LANE SEPARATOR (TBD)
- K TYPE I-4" BROKEN WHITE

0 25 50 75
GRAPHIC SCALE IN FEET

$FILES$

NO.	REVISIONS	DATE	NAME
1			
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3			
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$DATE$

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P.E. SERIAL No. 53705
DATE: 06/18/2021

PROJECT TITLE:	QUITMAN STREET
	PROPOSED BIKE LANE IMPROVEMENTS
SHEET DESCRIPTION:	WHITE OAK DR AT HOUSTON AVE
DRAWN BY: AD	DATE: 06-11-2021
CK'D BY: DHS	SCALE: 1"=50'
	SHEET NO:

MATERIALS SCHEDULE

PAVING / CONCRETE

KEY	DESCRIPTION /MODEL NUMBER	COLOR	FINISH	CONTACT	REMARKS
P.1	CONCRETE	GRAY	MEDIUM BROOM FINISH- PERPENDICULAR TO DIRECTION OF WALK	LOCAL SOURCE	• CONTRACTOR SHALL SUBMIT 5'x5' MOCK UP FOR L.A. APPROVAL PRIOR TO INSTALLATION.
P.2	ENHANCED CONCRETE -REFUGE PLAZA	INTEGRAL COLOR CONCRETE COLOR TBD	SANDBLAST	COMPANY: L.M. SCOFIELD PHONE: 800-800-9900	• CONTRACTOR SHALL SUBMIT 5'x5' MOCK UP OF EACH NOTED COLOR FOR L.A. REVIEW & APPROVAL PRIOR TO INSTALLATION. • CAULKED JOINTS SHALL MATCH SELECTED COLOR. PROVIDE SAMPLES OF FULL RANGE OF COLORS FOR L.A. SELECTION.
P.3	ACCENT BAND -ACCENT BANDS ON QUITMAN STREET TO HAVE SANDBLASTED/PAINTED STREET NAME, TYP. -ACCENT BANDS ON SIDE STREETS TO HAVE SOLID SANDBLAST	INTEGRAL COLOR CONCRETE COLOR TBD STREET NAME: COLOR TBD	SANDBLAST	COMPANY: L.M. SCOFIELD PHONE: 800-800-9900	• REF. PLAN FOR STREET NAME BAND LOCATIONS. • CONTRACTOR SHALL SUBMIT 5'x5' MOCK UP OF EACH NOTED COLOR FOR L.A. REVIEW & APPROVAL PRIOR TO INSTALLATION. • CAULKED JOINTS SHALL MATCH SELECTED COLOR. PROVIDE SAMPLES OF FULL RANGE OF COLORS FOR L.A. SELECTION.
P.4	TRUNCATED DOME TILE, WET SET -RADIUS & STRAIGHT TILE	COLOR TBD	NATURAL	COMPANY: TEKWAY BY STRONGGO INDUSTRIES PHONE: 866-439-3216	• INSTALL PER MANF. SPECIFICATIONS USING WET SET METHOD IN FRESH CONCRETE. • CONTRACTOR SHALL SUBMIT PRODUCT DATA & SAMPLES FOR L.A. APPROVAL PRIOR TO ORDERING. • CONTRACTOR SHALL SUBMIT SHOP DRAWINGS W/FIELD VERIFIED RADIUS FOR L.A. APPROVAL PRIOR TO INSTALLATION. • CONTRACTOR SHALL SUBMIT MOCK UP FOR L.A. APPROVAL PRIOR TO INSTALLATION.
P.5	CONCRETE SEATWALL	GRAY	SMOOTH RUBBED	LOCAL SOURCE	• REF. DETAILS FOR ADDITIONAL INFO. • CONTRACTOR SHALL SUBMIT 4' LENGTH MOCK UP FOR L.A. APPROVAL PRIOR TO INSTALLATION.
P.6	MORTARED AGGREGATE -2-3" DIA. WET SET IN THE FOLLOWING MIX: -TEC FLOOR MUD -TEC LATEX ADDITIVE ACRYLBOND AMA	COLOR TBD, TUMBLED 1x	N/A	CONTACT: BRYAN MOORE COMPANY: ALAMO STONE PHONE: 281-240-4600 COMPANY: TEC ADHESIVE PHONE: 800-552-6225	• MIX FLOOR MUD & ADDITIVE AND INSTALL ON TOP OF CONC. SUBBASE. WET SET ROCK WITHIN MIX, REF. DETAILS. • KNOCK DOWN OR TURN DOWN SHARP EDGES INTO FLOOR MUD. NO SHARP EDGES ON SURFACE WILL BE ACCEPTED. • CONTRACTOR SHALL SUBMIT PRODUCT DATA & SAMPLES FOR L.A. APPROVAL PRIOR TO ORDERING. • CONTRACTOR SHALL SUBMIT MOCK UP WITHIN CURB FOR L.A. APPROVAL PRIOR TO INSTALLATION. • REF. SPECIFICATIONS FOR ADDITIONAL INFORMATION.
P.7	CONCRETE CURB BIKE LANE DELINEATOR	GRAY	N/A	LOCAL SOURCE	• REF. DETAILS FOR ADDITIONAL INFO. • CONTRACTOR SHALL SUBMIT 4' LENGTH MOCK UP FOR L.A. APPROVAL PRIOR TO INSTALLATION.

MISCELLANEOUS

Z.1	BUS SHELTER, REF. PLAN FOR TYPE: -PROPOSED BUS SHELTER AT 'FLOATING' BUS STOPS -RELOCATED BUS SHELTER AT EXISTING BUS STOPS	N/A	N/A	COORDINATE W/METRO FOR RELOCATION	• PLACEMENT TO BE FIELD LOCATED AND APPROVED BY L.A. & METRO PRIOR TO INSTALLATION. • INSTALL PER METRO SPECIFICATIONS.
Z.2	PEDESTRIAN LIGHTING MODEL TBD	COLOR TBD	POWDERCOAT	CONTACT: CAREY DAVIS COMPANY: FORMS+SURFACES PHONE: 800-451-0410	• REF. PLAN FOR LOCATION. • CONTRACTOR SHALL SUBMIT CUTSHEET W/ALL SELECTED PRODUCT DATA & COLOR SAMPLES FOR L.A. APPROVAL PRIOR TO ORDERING. • PLACEMENT TO BE FIELD LOCATED AND APPROVED BY L.A. PRIOR TO INSTALLATION. • INSTALL PER MANF. SPECIFICATIONS.
Z.3	TRASH BIN MODEL TBD 45 GAL., SINGLE STREAM	COLOR TBD	POWDERCOAT	CONTACT: CAREY DAVIS COMPANY: FORMS+SURFACES PHONE: 800-451-0410	• TRASH BIN TO BE LOCATED AT EACH BUS STOP. • SURFACE MOUNT TO CONCRETE WALK. • CONTRACTOR SHALL SUBMIT CUTSHEET W/ALL SELECTED PRODUCT DATA & COLOR SAMPLES FOR L.A. APPROVAL PRIOR TO ORDERING. • PLACEMENT TO BE FIELD LOCATED AND APPROVED BY L.A. PRIOR TO INSTALLATION. • INSTALL PER MANF. SPECIFICATIONS.
Z.4	FLEXIBLE BIKE LANE DELINEATOR	REF. CIVIL	REF. CIVIL	REF. CIVIL	• REF. CIVIL FOR LOCATION & QTY.

GENERAL LEGEND

ABBREVIATIONS

SYMBOL	EXPLANATION
B.O.C.	BACK OF CURB
B.P	BOTTOM OF PIPE
B.S.	BOTTOM OF STAIRS
B.W.	BOTTOM OF WALL = F.G.
C.J.	CONTROL JOINT
C.L.	CENTERLINE
CMU	CONCRETE MASONRY UNIT
CONC.	CONCRETE
DWG.	DRAWING
E.J.	EXPANSION JOINT
ESMT.	EASEMENT
F.G.	FINISH GRADE
H.P.	HIGH POINT
I.E.	INVERT ELEVATION
N.I.C.	NOT IN CONTRACT
O.C	ON CENTER
O.C.E.W.	ON CENTER EACH WAY
O.D	OUTSIDE DIAMETER
P.A.	PLANTING AREA
P.O.B.	POINT OF BEGINNING
P.O.T.	POINT OF TANGENCY
PVC R.	POLYVINYL CHLORIDE RADIUS
REF.	REFERENCE
R.O.W.	RIGHT OF WAY
SAN S.	SANITARY SEWER
SBK.	SETBACK
S.S.	STAINLESS STEEL
STRM. S.	STORM SEWER
T.O.D.	TOP OF AREA DRAIN
T.O.S.	TOP OF STEEL
T.B.	TOP OF BEAM
T.C.	TOP OF CURB
TCL	TOP OF COLUMN
T.F.	TOP OF FOUNDATION
T.S.	TOP OF STAIRS
T.W.	TOP OF WALL
TYP.	TYPICAL
U.N.O.	UNLESS NOTED OTHERWISE
VAR.	VARIES
W/	WITH

SYMBOLS AND LINETYPES

SYMBOL	EXPLANATION
XXX / XXX	DETAIL REFERENCE
X	MATERIALS & FINISHES SYMBOLS
X / X.X	SECTION SYMBOL
15 / XX / X	DETAIL ELEVATION
XX.XX + / XX.XX +	PROPOSED SPOT GRADE / EXISTING SPOT GRADE
SWALE	SWALE LINETYPE
REF:	ENLARGEMENT AREA WITH REFERENCE

SITEWORK LEGEND

LINETYPES	KEY	DESCRIPTION / MODEL NUMBER
	P.1	TYP. CONCRETE WALK
	P.2	UPGRADED ACCENT BAND / REFUGE PLAZA
	P.3	ACCENT BAND W/STREET NAME
	P.4	TRUNCATED DOME TILE, WET SET -RADIUS TILE, REF. DETAILS
	P.5	CONCRETE SEATWALL
	P.6	MORTARED AGGREGATE CURB
	Z.2	PEDESTRIAN LIGHT
		4' TREE PROTECTION POLY FENCE
		TRUNK PROTECTION

PLANT LIST

SHADE TREES

GRAPHIC	KEY	COMMON NAME	SCIENTIFIC NAME	SIZE	REMARKS
	ORN	PROPOSED ORNAMENTAL TREE	----	65 GAL.; 10' HT.; 8' SPR.	
	SH	PROPOSED SHADE TREE	----	100 GAL; 4" CAL.; 12-14' HT.; 8' SPR.	
	EX	EXISTING TREE			
	DM	EXISTING TREE TO BE DEMOLISHED			

PERENNIALS, GROUNDCOVERS, AND ANNUALS

GRAPHIC	KEY	COMMON NAME	SCIENTIFIC NAME	SIZE	REMARKS
	SHRB	SHRUBS & GROUNDCOVER	----	----	----

TURF GRASS AND SEED MIXES

GRAPHIC	KEY	COMMON NAME	SCIENTIFIC NAME	SIZE	REMARKS
	CDS	COMMON BERMUDA SOD	*CYNODON DACTYLON*	SOD	PROVIDE CONTINUOUS 2' WIDE SOLID SOD STRIP AT BACK OF CURB AND EDGE OF SIDEWALK. CONTRACTOR TO FIELD VERIFY QUANTITY OF SOD REQUIRED.

NO.	REVISIONS	DATE	NAME
1			
2			
3			
4			
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HARRIS COUNTY ENGINEERING DEPARTMENT

SCIENTECH ENGINEERS, INC.
701 SHEPHERD DRIVE, SUITE 200
HOUSTON, TX 77007
TEXAS FIRM REGISTRATION NO. 4014

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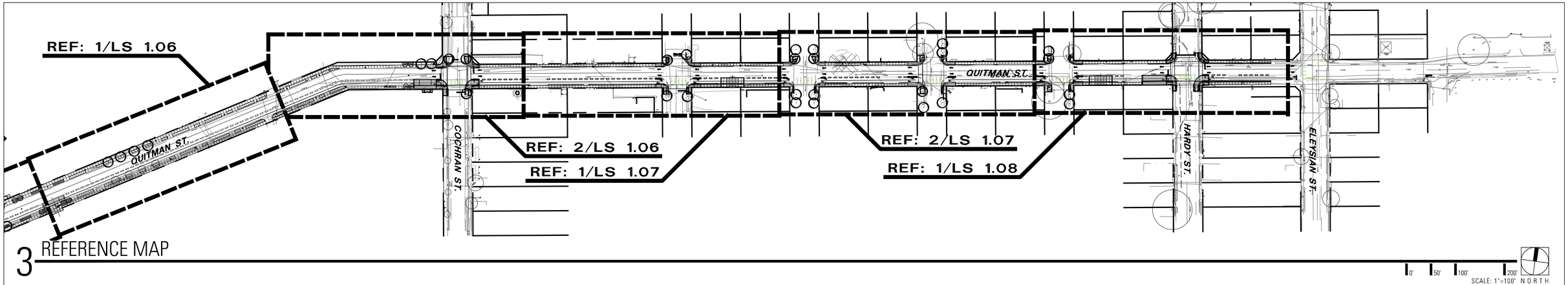
DOCUMENT INCOMPLETE: NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES

ENGINEER: XXXX
P.E. SERIAL No. XXXXX
DATE: XX/XX/2021

PROJECT TITLE: QUITMAN

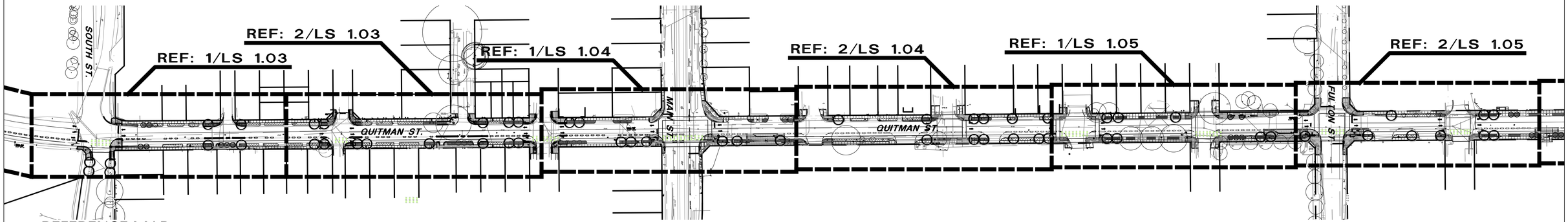
SHEET DESCRIPTION: MATERIALS SCHEDULE, NOTES & LEGENDS

DRAWN BY: HJ, JR
DATE: 05-06-2021
CK'D BY: LP, BC, JL
SCALE:
SHEET NO: MODEL



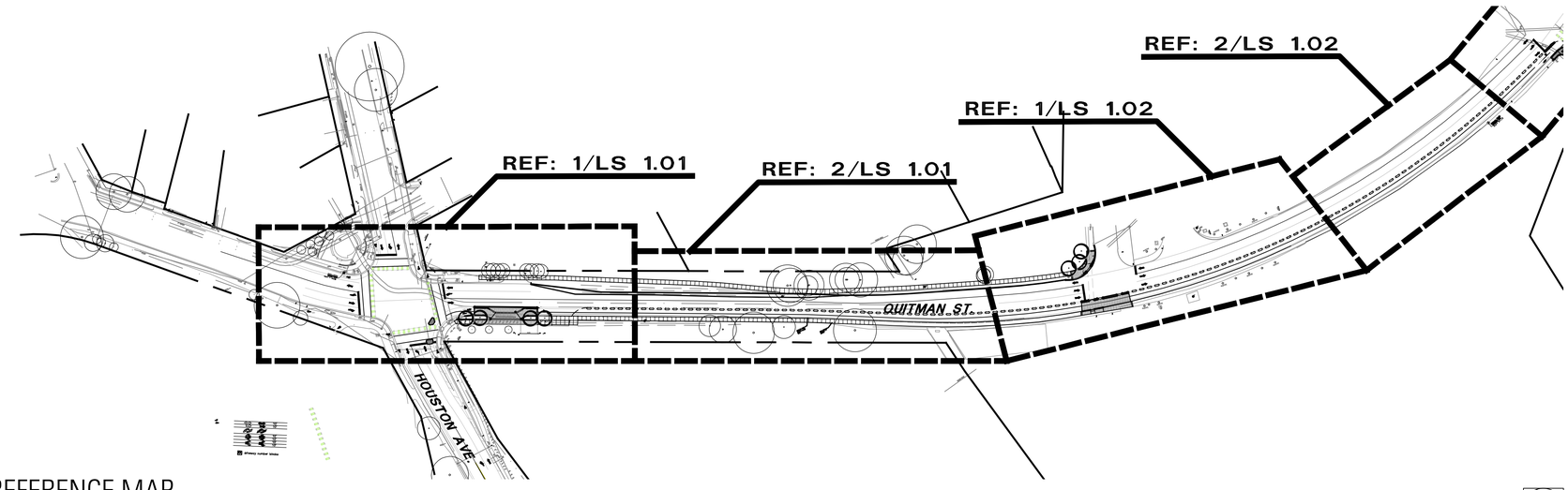
3 REFERENCE MAP

0' 50' 100' 200'
SCALE: 1"=100' NORTH



2 REFERENCE MAP

0' 50' 100' 200'
SCALE: 1"=100' NORTH



1 REFERENCE MAP

0' 50' 100' 200'
SCALE: 1"=100' NORTH

NO.	REVISIONS	DATE	NAME

HARRIS COUNTY
ENGINEERING DEPARTMENT

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701 SHEPHERD DRIVE, SUITE 200
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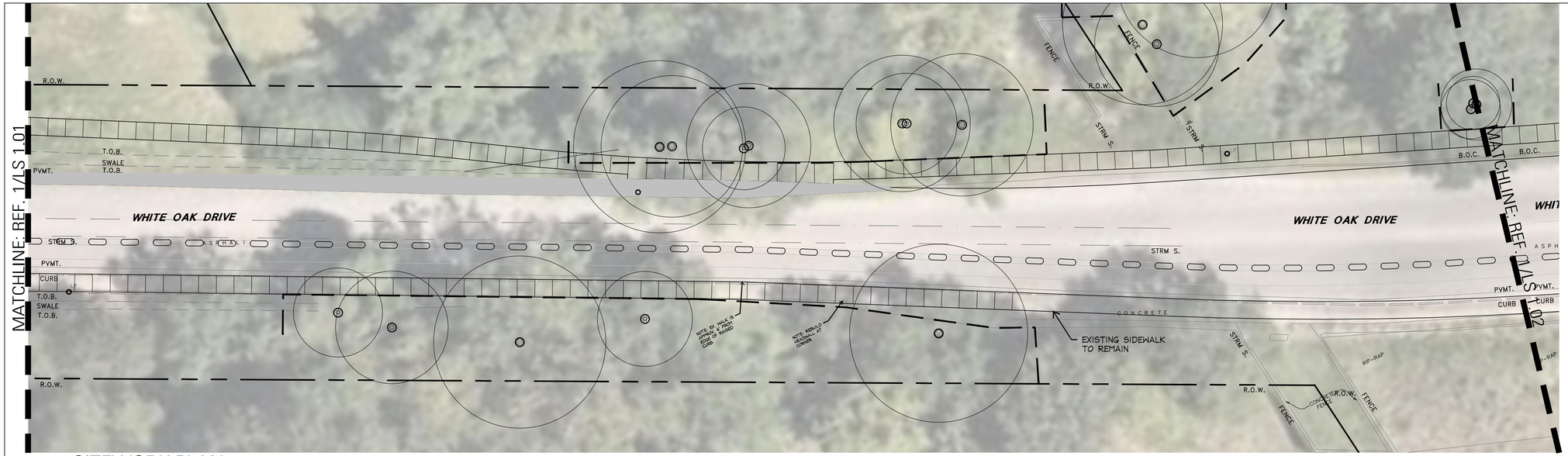
ENGINEER: XXXX
P.E. SERIAL No. XXXXX
DATE: XX/XX/2021

PROJECT TITLE: QUITMAN

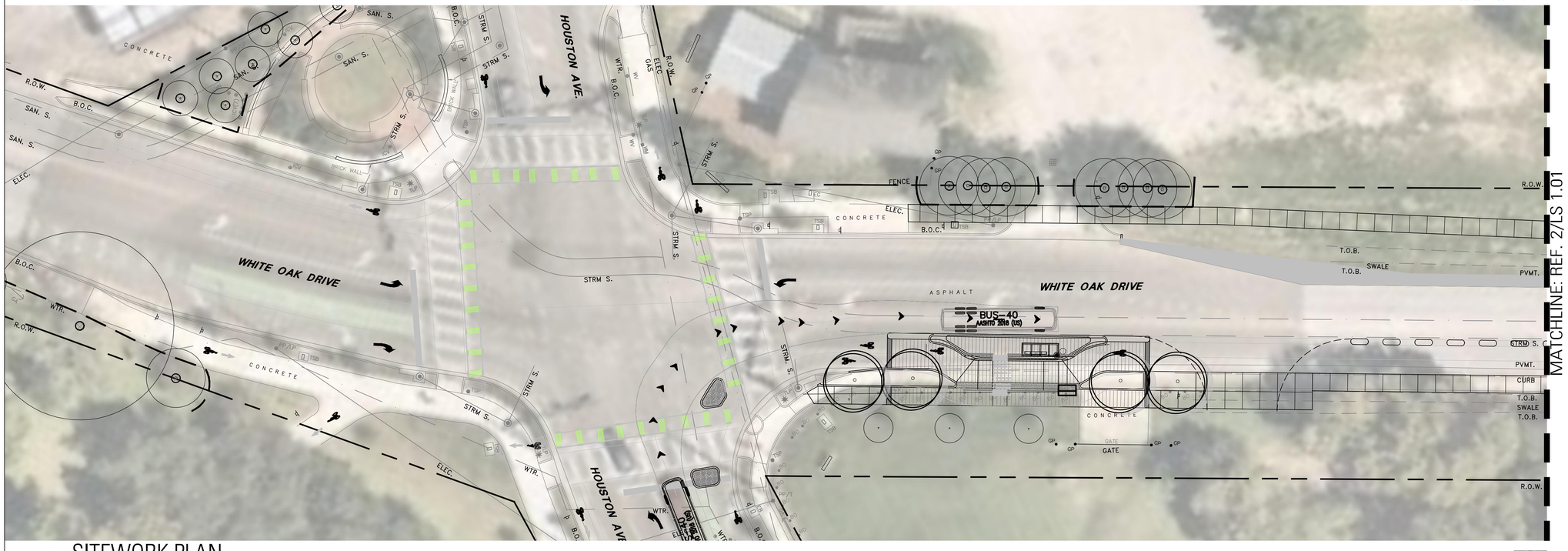
SHEET DESCRIPTION: OVERALL REFERENCE MAP

DRAWN BY:		DATE:
HJ, JR		05-06-2021
CK'D BY:	SCALE:	SHEET NO:
LP, BC, JL		MODEL



2 SITEWORK PLAN

SCALE: 1"=20' NORTH



1 SITEWORK PLAN

SCALE: 1"=20' NORTH

SITEWORK LEGEND

LINETYPES	KEY	DESCRIPTION / MODEL NUMBER
	P.1	TYP. CONCRETE WALK
	P.2	UPGRADED ACCENT BAND / REFUGE PLAZA
	P.3	ACCENT BAND W/STREET NAME
	P.4	TRUNCATED DOME TILE, WET SET -RADIUS TILE, REF. DETAILS
	P.5	CONCRETE SEATWALL
	P.6	MORTARED AGGREGATE CURB
	Z.2	PEDESTRIAN LIGHT
		4' TREE PROTECTION POLY FENCE
		TRUNK PROTECTION

SHADE TREES

GRAPHIC	KEY	COMMON NAME
	ORN	PROPOSED ORNAMENTAL TREE
	SH	PROPOSED SHADE TREE
	EX	EXISTING TREE
	DM	EXISTING TREE TO BE DEMOLISHED

PERENNIALS, GROUNDCOVERS, AND ANN

GRAPHIC	KEY	COMMON NAME
	SHRB	SHRUBS & GROUNDCOVER

TURF GRASS AND SEED MIXES

GRAPHIC	KEY	COMMON NAME
	CDS	COMMON BERMUDA SOD

NO.	REVISIONS	DATE	NAME

HARRIS COUNTY ENGINEERING DEPARTMENT

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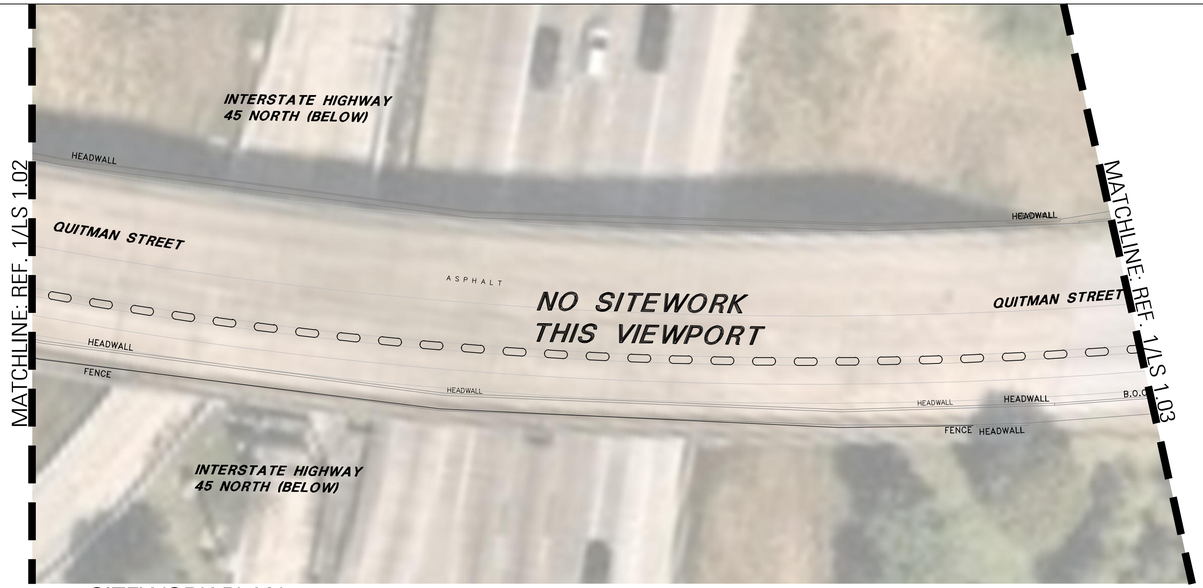
ENGINEER: XXXX
P.E. SERIAL No. XXXXX
DATE: XX/XX/2021

PROJECT TITLE: QUITMAN

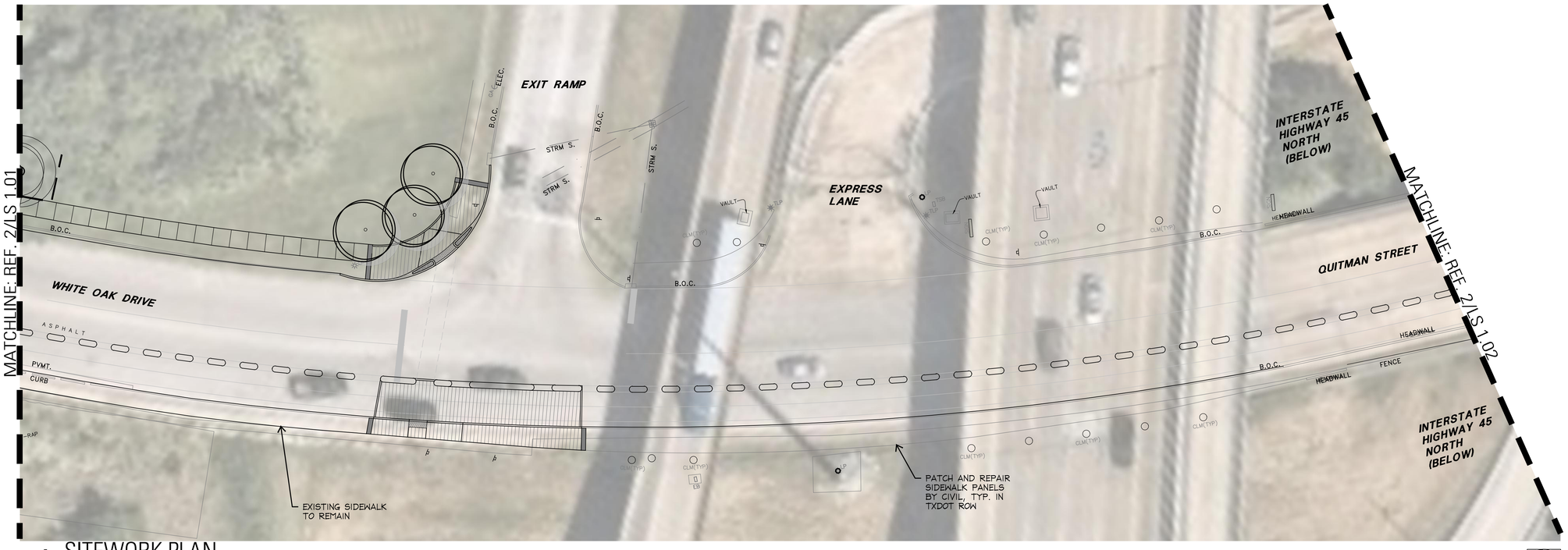
SHEET DESCRIPTION: SITEWORK & PLANTING PLAN

DRAWN BY: HJ, JR		DATE: 05-06-2021
CK'D BY: LP, BC, JL	SCALE:	SHEET NO: LS1.01



2 SITEWORK PLAN

0' 10' 20' 40'
SCALE: 1"=20' NORTH



1 SITEWORK PLAN

0' 10' 20' 40'
SCALE: 1"=20' NORTH

SITEWORK LEGEND

LINETYPES	KEY	DESCRIPTION / MODEL NUMBER
	P.1	TYP. CONCRETE WALK
	P.2	UPGRADED ACCENT BAND / REFUGE PLAZA
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	P.6	MORTARED AGGREGATE CURB
	Z.2	PEDESTRIAN LIGHT
		4' TREE PROTECTION POLY FENCE
		TRUNK PROTECTION

SHADE TREES

GRAPHIC	KEY	COMMON NAME
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	SH	PROPOSED SHADE TREE
	EX	EXISTING TREE
	DM	EXISTING TREE TO BE DEMOLISHED

PERENNIALS, GROUNDCOVERS, AND ANN

GRAPHIC	KEY	COMMON NAME
	SHRB	SHRUBS & GROUNDCOVER

TURF GRASS AND SEED MIXES

GRAPHIC	KEY	COMMON NAME
	CDS	COMMON BERMUDA SOD

NO.	REVISIONS	DATE	NAME
1			
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HARRIS COUNTY
ENGINEERING DEPARTMENT

HARRIS COUNTY 1836 TEXAS

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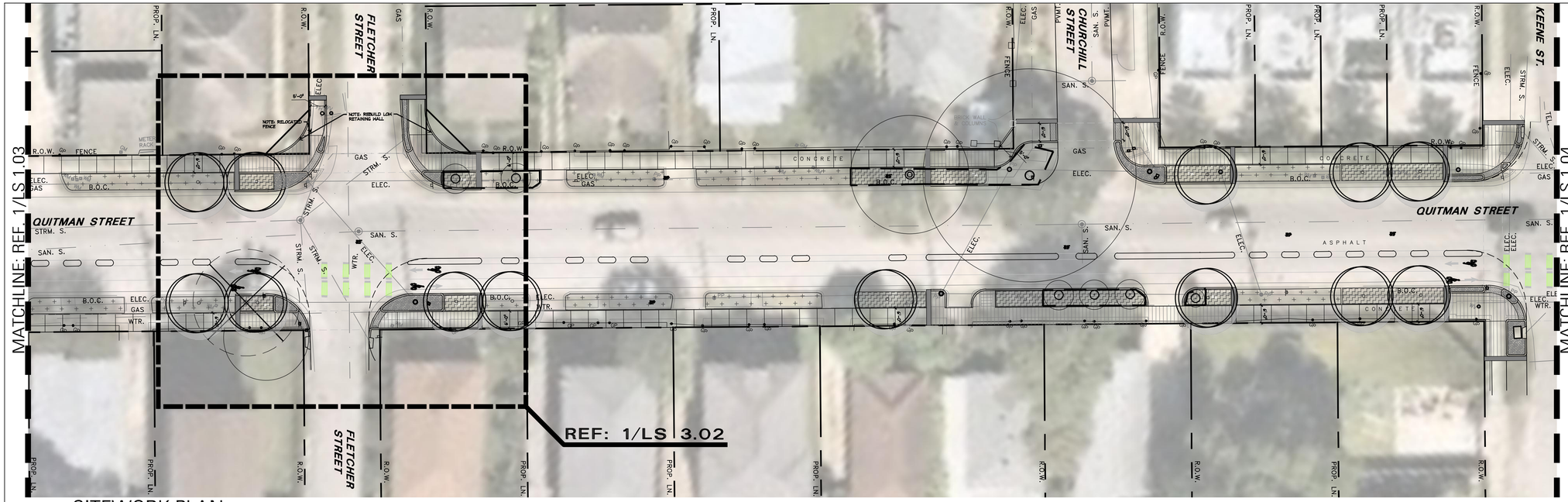
ENGINEER: XXXX
P.E. SERIAL No. XXXXX
DATE: XX/XX/2021

PROJECT TITLE: QUITMAN

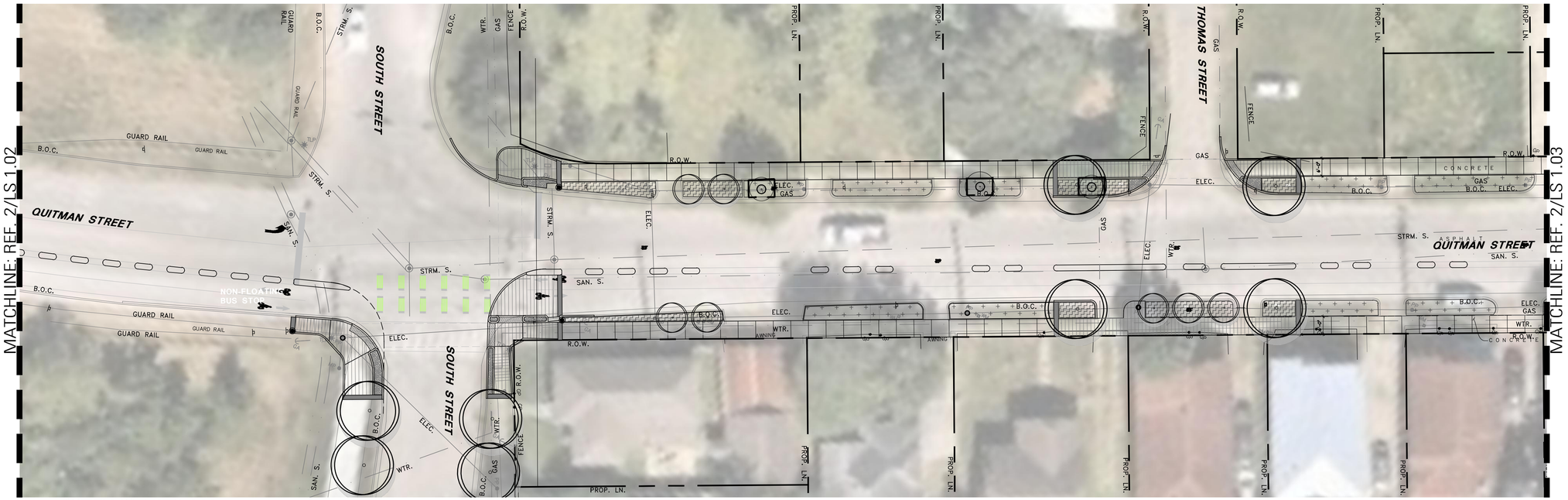
SHEET DESCRIPTION: SITEWORK & PLANTING PLAN

DRAWN BY:		DATE:
HJ, JR		05-06-2021
CK'D BY:	SCALE:	SHEET NO:
LP, BC, JL		LS1.02



2 SITEWORK PLAN

0' 10' 20' 40' SCALE: 1"=20' NORTH



1 SITEWORK PLAN

0' 10' 20' 40' SCALE: 1"=20' NORTH

SITEWORK LEGEND

LINETYPES	KEY	DESCRIPTION / MODEL NUMBER
	P.1	TYP. CONCRETE WALK
	P.2	UPGRADED ACCENT BAND / REFUGE PLAZA
	P.3	ACCENT BAND W/STREET NAME
	P.4	TRUNCATED DOME TILE, WET SET -RADIUS TILE, REF. DETAILS
	P.5	CONCRETE SEATWALL
	P.6	MORTARED AGGREGATE CURB
	Z.2	PEDESTRIAN LIGHT
		4' TREE PROTECTION POLY FENCE
		TRUNK PROTECTION

SHADE TREES

GRAPHIC	KEY	COMMON NAME
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	SH	PROPOSED SHADE TREE
	EX	EXISTING TREE
	DM	EXISTING TREE TO BE DEMOLISHED

PERENNIALS, GROUNDCOVERS, AND ANN

GRAPHIC	KEY	COMMON NAME
	SHRB	SHRUBS & GROUNDCOVER

TURF GRASS AND SEED MIXES

GRAPHIC	KEY	COMMON NAME
	CDS	COMMON BERMUDA SOD

NO.	REVISIONS	DATE	NAME
1			
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HARRIS COUNTY ENGINEERING DEPARTMENT

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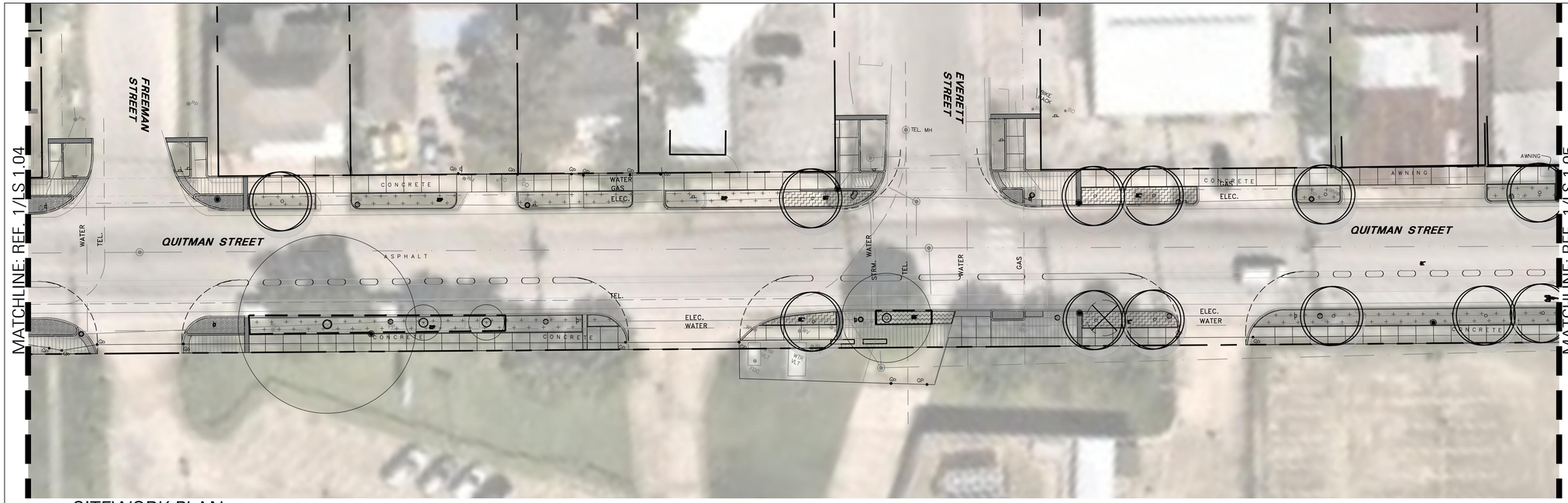
ENGINEER: XXXX
P.E. SERIAL No. XXXXX
DATE: XX/XX/2021

PROJECT TITLE: QUITMAN

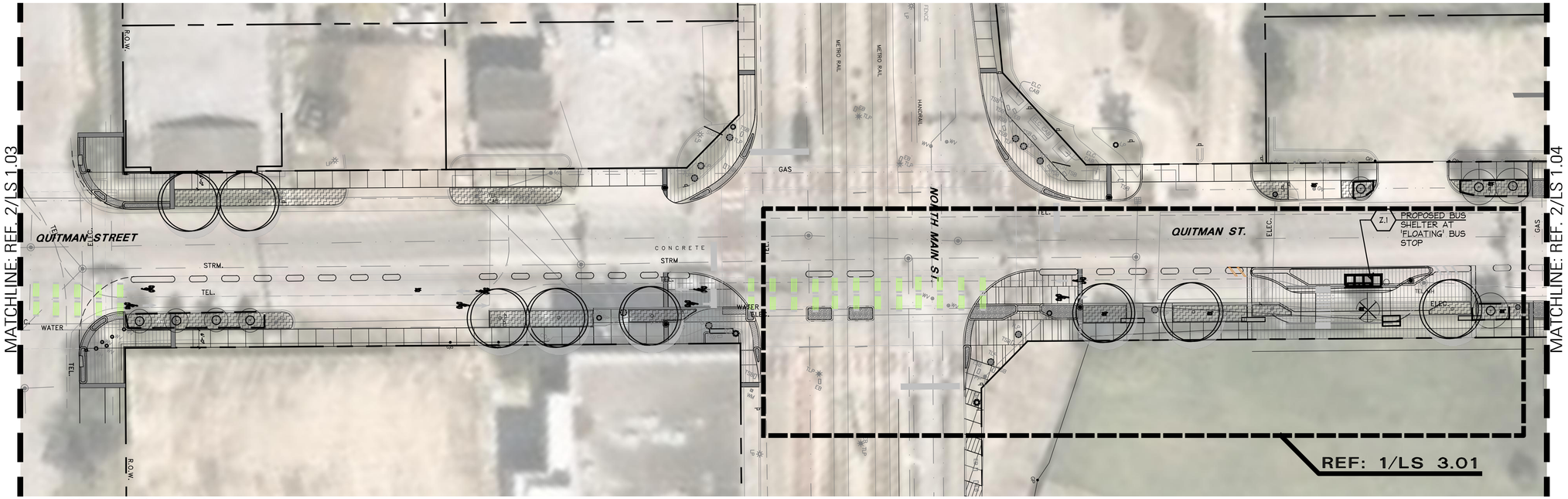
SHEET DESCRIPTION: SITEWORK & PLANTING PLAN

DRAWN BY: HJ, JR
CK'D BY: LP, BC, JL
SCALE:
DATE: 05-06-2021
SHEET NO: LS1.03



2 SITEWORK PLAN

SCALE: 1"=20' NORTH



1 SITEWORK PLAN

SCALE: 1"=20' NORTH

SITEWORK LEGEND

LINETYPES	KEY	DESCRIPTION / MODEL NUMBER
	P.1	TYP. CONCRETE WALK
	P.2	UPGRADED ACCENT BAND / REFUGE PLAZA
	P.3	ACCENT BAND W/STREET NAME
	P.4	TRUNCATED DOME TILE, WET SET -RADIUS TILE, REF. DETAILS
	P.5	CONCRETE SEATWALL
	P.6	MORTARED AGGREGATE CURB
	Z.2	PEDESTRIAN LIGHT
		4' TREE PROTECTION POLY FENCE
		TRUNK PROTECTION

SHADE TREES

GRAPHIC	KEY	COMMON NAME
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PERENNIALS, GROUNDCOVERS, AND ANN

GRAPHIC	KEY	COMMON NAME
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TURF GRASS AND SEED MIXES

GRAPHIC	KEY	COMMON NAME
	CDS	COMMON BERMUDA SOD

NO.	REVISIONS	DATE	NAME
1			
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HARRIS COUNTY
ENGINEERING DEPARTMENT

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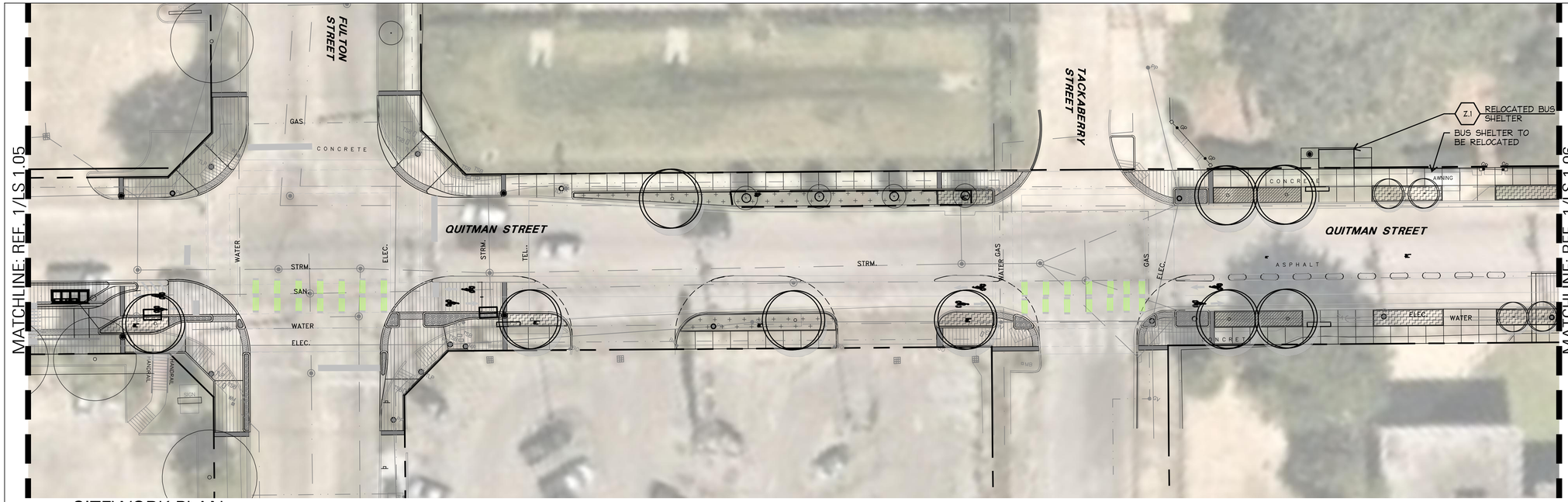
ENGINEER: XXXX
P.E. SERIAL No. XXXXX
DATE: XX/XX/2021

PROJECT TITLE: QUITMAN

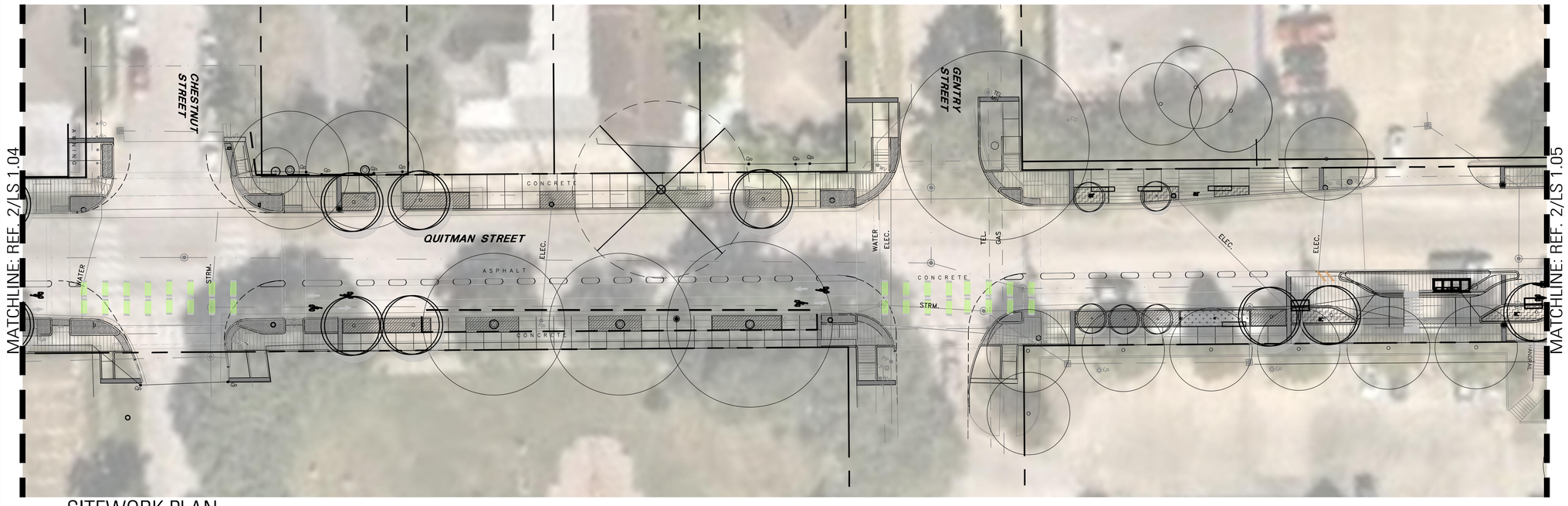
SHEET DESCRIPTION: SITEWORK & PLANTING PLAN

DRAWN BY: HJ, JR
CK'D BY: LP, BC, JL
SCALE:
DATE: 05-06-2021
SHEET NO: LS1.04



2 SITEWORK PLAN

0' 10' 20' 40'
SCALE: 1"=20' NORTH



1 SITEWORK PLAN

0' 10' 20' 40'
SCALE: 1"=20' NORTH

SITEWORK LEGEND

LINETYPES	KEY	DESCRIPTION / MODEL NUMBER
	P.1	TYP. CONCRETE WALK
	P.2	UPGRADED ACCENT BAND / REFUGE PLAZA
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		TRUNK PROTECTION

SHADE TREES

GRAPHIC	KEY	COMMON NAME
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PERENNIALS, GROUNDCOVERS, AND ANN

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TURF GRASS AND SEED MIXES

GRAPHIC	KEY	COMMON NAME
	CDS	COMMON BERMUDA SOD

NO.	REVISIONS	DATE	NAME
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HARRIS COUNTY ENGINEERING DEPARTMENT

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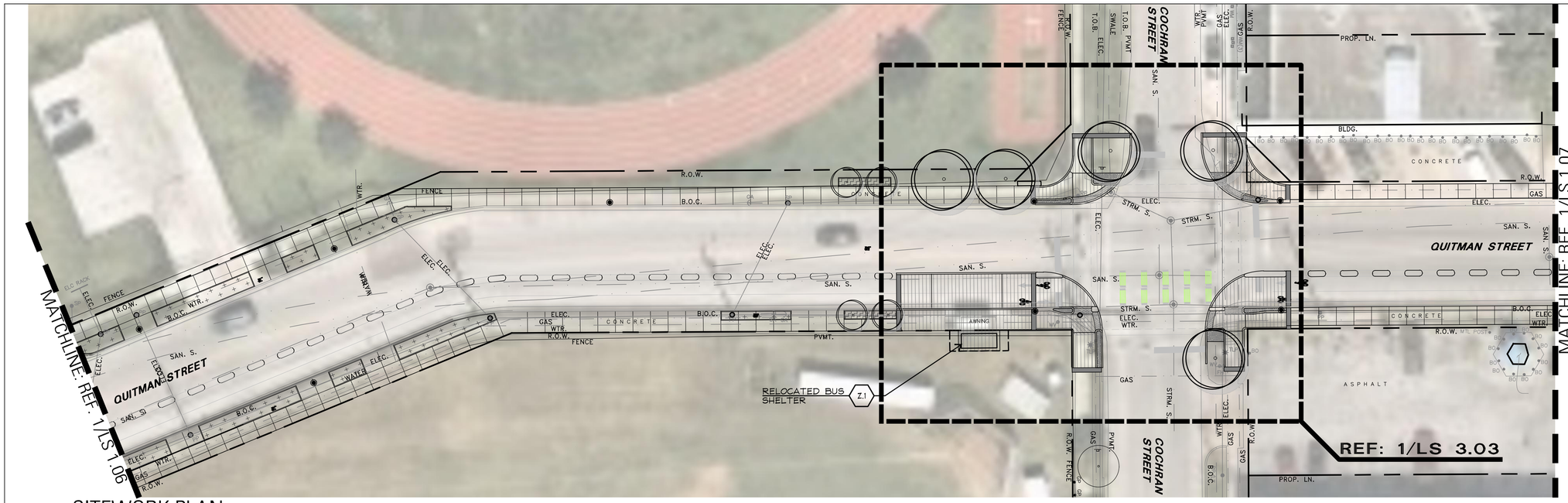
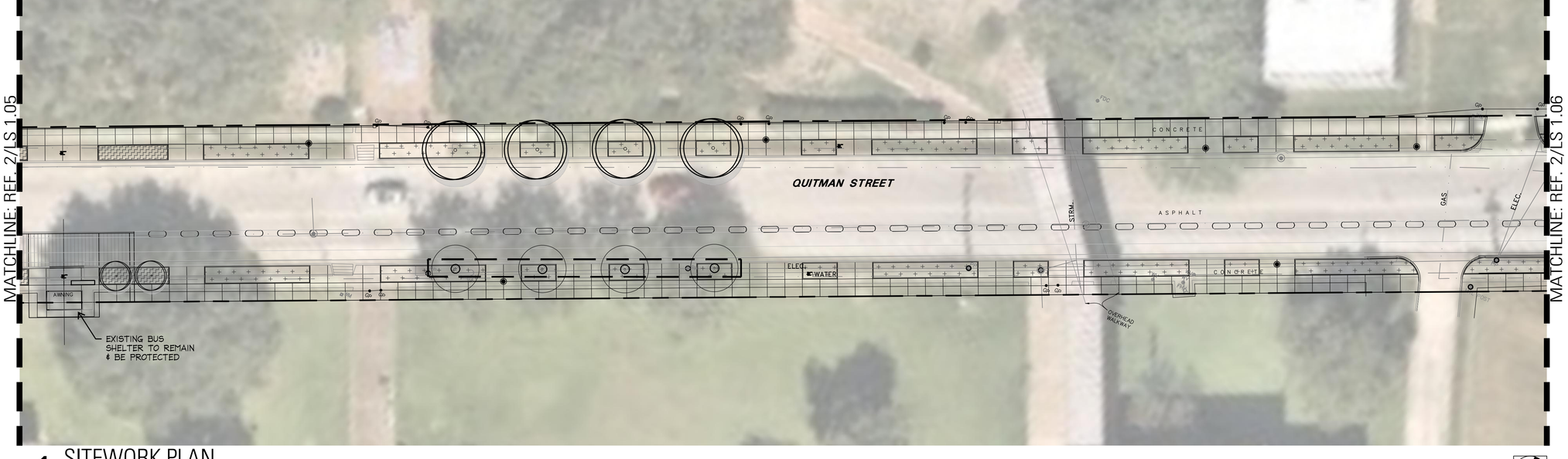
ENGINEER: XXXX
P.E. SERIAL No. XXXXX
DATE: XX/XX/2021

PROJECT TITLE: QUITMAN
SHEET DESCRIPTION: SITEWORK & PLANTING PLAN
DRAWN BY: HJ, JR
CK'D BY: LP, BC, JL
SCALE:
DATE: 05-06-2021
SHEET NO: LS1.05



2 SITEWORK PLAN

SCALE: 1"=20' NORTH



1 SITEWORK PLAN

SCALE: 1"=20' NORTH

SITEWORK LEGEND

LINETYPES	KEY	DESCRIPTION / MODEL NUMBER
	P.1	TYP. CONCRETE WALK
	P.2	UPGRADED ACCENT BAND / REFUGE PLAZA
	P.3	ACCENT BAND W/STREET NAME
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	P.6	MORTARED AGGREGATE CURB
	Z.2	PEDESTRIAN LIGHT
		4' TREE PROTECTION POLY FENCE
		TRUNK PROTECTION

SHADE TREES

GRAPHIC	KEY	COMMON NAME
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PERENNIALS, GROUNDCOVERS, AND ANN

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TURF GRASS AND SEED MIXES

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NO.	REVISIONS	DATE	NAME

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HOUSTON, TX 77007
TEXAS FIRM REGISTRATION NO. 4014

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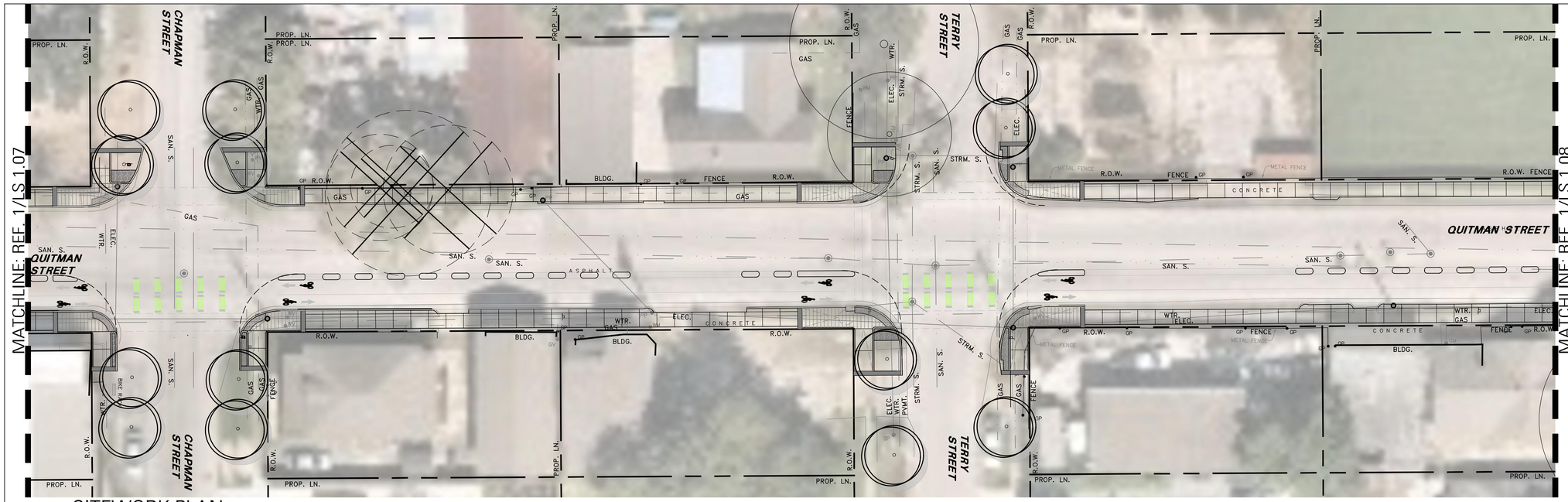
DOCUMENT INCOMPLETE: NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES

ENGINEER: XXXX
P.E. SERIAL No. XXXXX
DATE: XX/XX/2021

PROJECT TITLE: QUITMAN

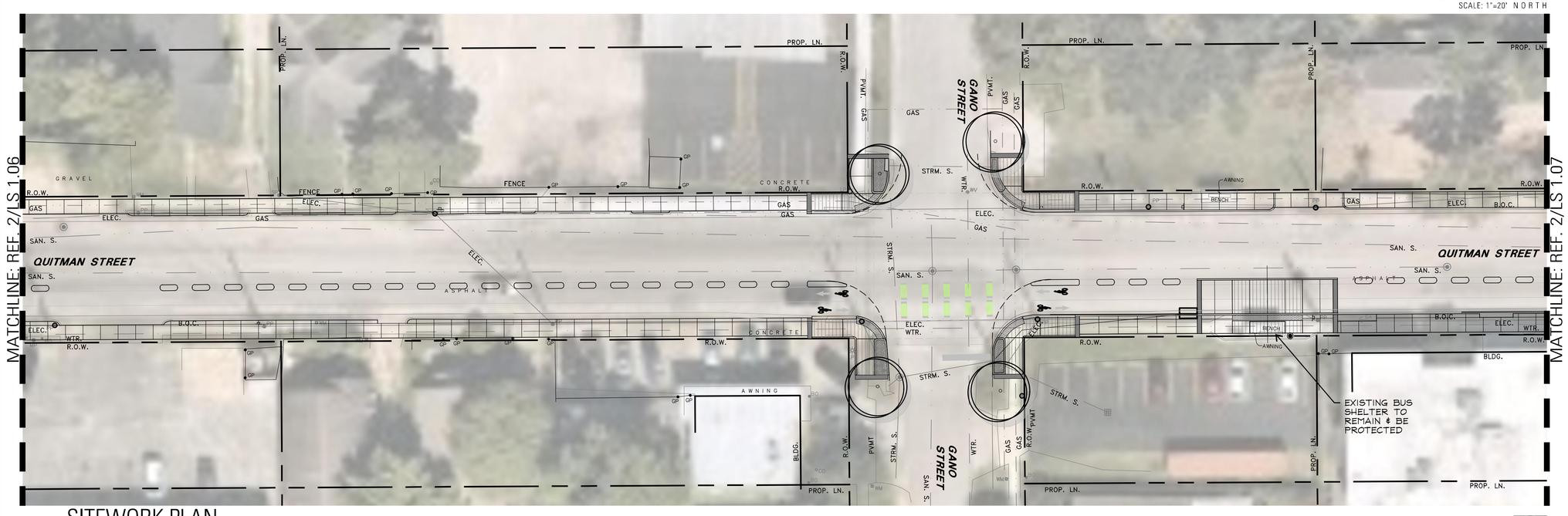
SHEET DESCRIPTION: SITEWORK & PLANTING PLAN

DRAWN BY:		DATE:
HJ, JR		05-06-2021
CK'D BY:	SCALE:	SHEET NO:
LP, BC, JL		LS1.06



2 SITEWORK PLAN

SCALE: 1"=20' NORTH



1 SITEWORK PLAN

SCALE: 1"=20' NORTH

SITEWORK LEGEND

LINETYPES	KEY	DESCRIPTION / MODEL NUMBER
	P.1	TYP. CONCRETE WALK
	P.2	UPGRADED ACCENT BAND / REFUGE PLAZA
	P.3	ACCENT BAND W/STREET NAME
	P.4	TRUNCATED DOME TILE, WET SET -RADIUS TILE, REF. DETAILS
	P.5	CONCRETE SEATWALL
	P.6	MORTARED AGGREGATE CURB
	Z.2	PEDESTRIAN LIGHT
		4' TREE PROTECTION POLY FENCE
		TRUNK PROTECTION

SHADE TREES

GRAPHIC	KEY	COMMON NAME
	ORN	PROPOSED ORNAMENTAL TREE
	SH	PROPOSED SHADE TREE
	EX	EXISTING TREE
	DM	EXISTING TREE TO BE DEMOLISHED

PERENNIALS, GROUNDCOVERS, AND ANN

GRAPHIC	KEY	COMMON NAME
	SHRB	SHRUBS & GROUNDCOVER

TURF GRASS AND SEED MIXES

GRAPHIC	KEY	COMMON NAME
	CDS	COMMON BERMUDA SOD

NO.	REVISIONS	DATE	NAME

HARRIS COUNTY ENGINEERING DEPARTMENT

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P.E. SERIAL No. XXXXX
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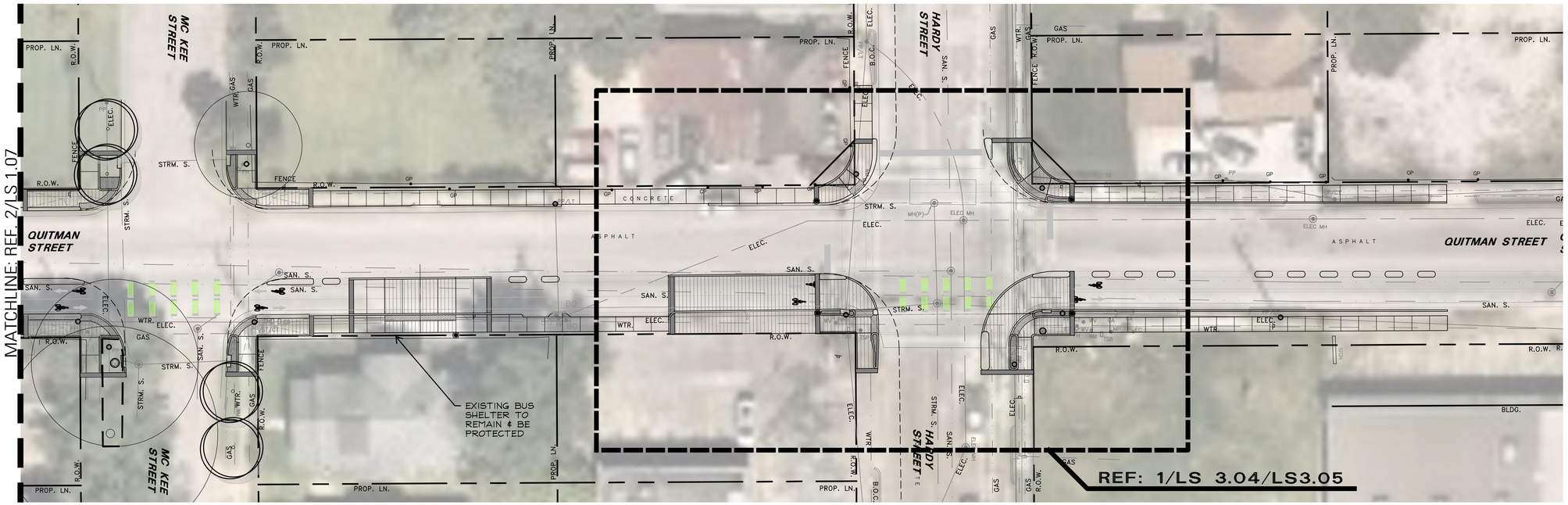
DRAWN BY:		DATE:
HJ, JR		05-06-2021
CK'D BY:	SCALE:	SHEET NO:
LP, BC, JL		LS1.07



1 SITEWORK PLAN

0' 10' 20' 40' SCALE: 1"=20' NORTH

SITEWORK LEGEND

LINETYPES	KEY	DESCRIPTION / MODEL NUMBER
	P.1	TYP. CONCRETE WALK
	P.2	UPGRADED ACCENT BAND / REFUGE PLAZA
	P.3	ACCENT BAND W/STREET NAME
	P.4	TRUNCATED DOME TILE, WET SET -RADIUS TILE, REF. DETAILS
	P.5	CONCRETE SEATWALL
	P.6	MORTARED AGGREGATE CURB
	Z.2	PEDESTRIAN LIGHT
		4' TREE PROTECTION POLY FENCE
		TRUNK PROTECTION

SHADE TREES

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GRAPHIC	KEY	COMMON NAME
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TURF GRASS AND SEED MIXES

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NO.	REVISIONS	DATE	NAME
1			
2			
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SHEET DESCRIPTION: SITEWORK & PLANTING PLAN

DRAWN BY: HJ, JR
CK'D BY: LP, BC, JL
SCALE:
DATE: 05-06-2021
SHEET NO: LS1.08

P.2 - UPGRADED CONCRETE PAVING - VARYING BAND COLORS & WIDTHS (12" - 4'-0" WIDE BANDS)

P.2 - UPGRADED CONCRETE PAVING - VARYING TEXTURES (SANDBLASTED & BROOM FINISHED SURFACES)

P.6 - DARK MARRON/GRAY COBBLE CURB INFILL AT CORNER CURBS

P.3 - INTEGRAL COLOR CONCRETE BAND W/STAMP - STREET NAMES

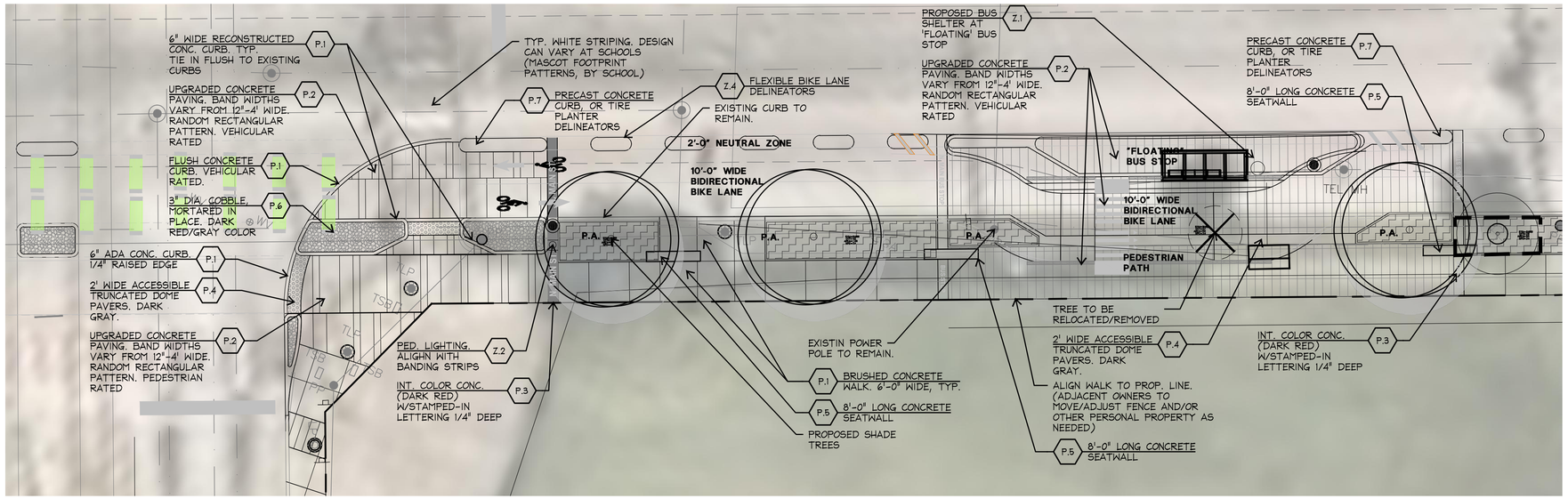
MATERIAL REFERENCE IMAGES

REGULAR CONCRETE | SANDBLASTED CONCRETE | UPGRADED CONC. COLOR #1 | UPGRADED CONC. COLOR #2 | TRUNCATED DOME PAVERS | COBBLE INFILL | INTEGRAL COLOR CONC. BAND W/TEXT

PRELIMINARY MATERIAL COLOR PALETTE

SITEWORK LEGEND

LINETYPES	KEY	DESCRIPTION / MODEL NUMBER
	P.1	TYP. CONCRETE WALK
	P.2	UPGRADED ACCENT BAND / REFUGE PLAZA
	P.3	ACCENT BAND W/STREET NAME
	P.4	TRUNCATED DOME TILE, WET SET -RADIUS TILE, REF. DETAILS
	P.5	CONCRETE SEATWALL
	P.6	MORTARED AGGREGATE CURB
	Z.2	PEDESTRIAN LIGHT
		4' TREE PROTECTION POLY FENCE
		TRUNK PROTECTION



SHADE TREES

GRAPHIC	KEY	COMMON NAME
	ORN	PROPOSED ORNAMENTAL TREE
	SH	PROPOSED SHADE TREE
	EX	EXISTING TREE
	DM	EXISTING TREE TO BE DEMOLISHED

PERENNIALS, GROUNDCOVERS, AND ANN

GRAPHIC	KEY	COMMON NAME
	SHRB	SHRUBS & GROUNDCOVER

TURF GRASS AND SEED MIXES

GRAPHIC	KEY	COMMON NAME
	CDS	COMMON BERMUDA SOD

1 SITEWORK MATERIAL PLAN: NORTH MAIN ST

ENLARGEMENT

SCALE: 1"=10' NORTH

NO.	REVISIONS	DATE	NAME
1			
2			
3			
4			
5			

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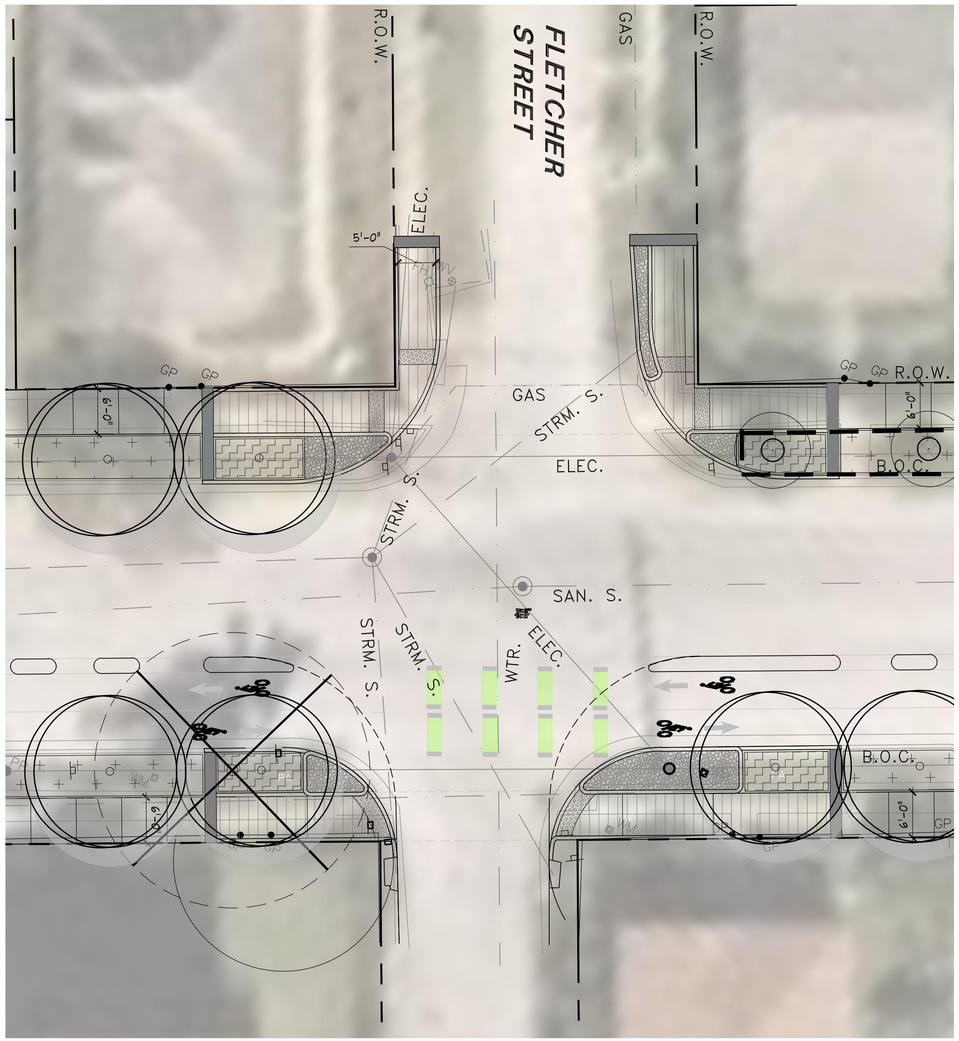
DATE: XX/XX/2021

PROJECT TITLE: QUITMAN

SHEET DESCRIPTION: SITEWORK & PLANTING PLAN

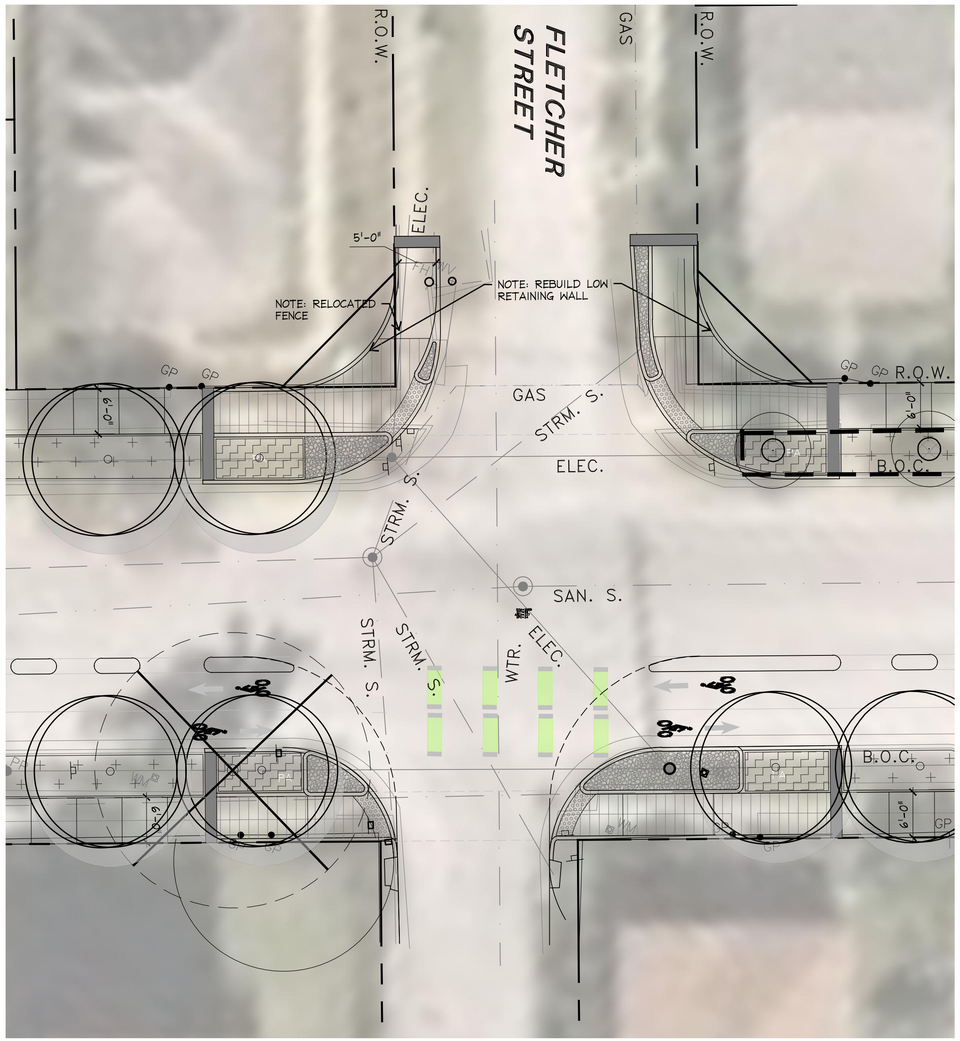
DRAWN BY: HJ, JR		DATE: 05-06-2021
CK'D BY: LP, BC, JL	SCALE:	SHEET NO: LS3.01



2 SITEWORK PLAN: FLETCHER ST - OPTION 2:SAME ROW

ENLARGEMENT

SCALE: 1"=10' NORTH



1 SITEWORK PLAN: FLETCHER ST - OPTION 1:ROW CLIP

ENLARGEMENT

SCALE: 1"=10' NORTH

SITEWORK LEGEND

LINETYPES	KEY	DESCRIPTION / MODEL NUMBER
	P.1	TYP. CONCRETE WALK
	P.2	UPGRADED ACCENT BAND / REFUGE PLAZA
	P.3	ACCENT BAND W/STREET NAME
	P.4	TRUNCATED DOME TILE, WET SET -RADIUS TILE, REF. DETAILS
	P.5	CONCRETE SEATWALL
	P.6	MORTARED AGGREGATE CURB
	Z.2	PEDESTRIAN LIGHT
		4' TREE PROTECTION POLY FENCE
		TRUNK PROTECTION

SHADE TREES

GRAPHIC	KEY	COMMON NAME
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PERENNIALS, GROUNDCOVERS, AND ANN

GRAPHIC	KEY	COMMON NAME
	SHRB	SHRUBS & GROUNDCOVER

TURF GRASS AND SEED MIXES

GRAPHIC	KEY	COMMON NAME
	CDS	COMMON BERMUDA SOD

NO.	REVISIONS	DATE	NAME
1			
2			
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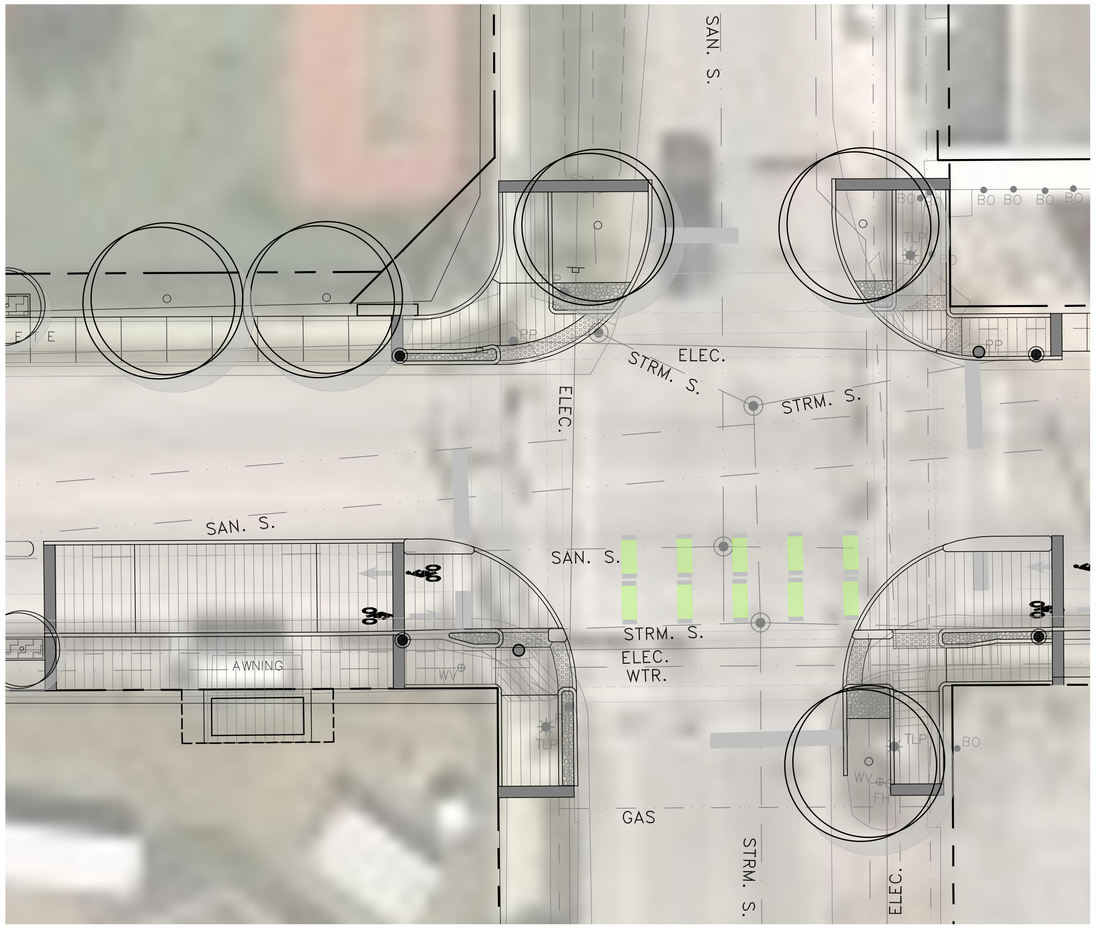
DATE: XX/XX/2021

PROJECT TITLE: QUITMAN

SHEET DESCRIPTION: SITEWORK & PLANTING PLAN

DRAWN BY: HJ, JR		DATE: 05-06-2021
CK'D BY: LP, BC, JL	SCALE:	SHEET NO: LS3.02



2 SITEWORK PLAN: COCHRAN ST - OPTION 2:SAME ROW
ENLARGEMENT

SCALE: 1"=10' 0' 5' 10' 20' NORTH

1 SITEWORK PLAN: COCHRAN ST - OPTION 1:ROW CLIP
ENLARGEMENT

SCALE: 1"=10' 0' 5' 10' 20' NORTH

SITEWORK LEGEND

LINETYPES	KEY	DESCRIPTION / MODEL NUMBER
	P.1	TYP. CONCRETE WALK
	P.2	UPGRADED ACCENT BAND / REFUGE PLAZA
	P.3	ACCENT BAND W/STREET NAME
	P.4	TRUNCATED DOME TILE, WET SET -RADIUS TILE, REF. DETAILS
	P.5	CONCRETE SEATWALL
	P.6	MORTARED AGGREGATE CURB
	Z.2	PEDESTRIAN LIGHT
		4' TREE PROTECTION POLY FENCE
		TRUNK PROTECTION

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GRAPHIC	KEY	COMMON NAME
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	SH	PROPOSED SHADE TREE
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PERENNIALS, GROUNDCOVERS, AND ANN

GRAPHIC	KEY	COMMON NAME
	SHRB	SHRUBS & GROUNDCOVER

TURF GRASS AND SEED MIXES

GRAPHIC	KEY	COMMON NAME
	CDS	COMMON BERMUDA SOD

NO.	REVISIONS	DATE	NAME
1			
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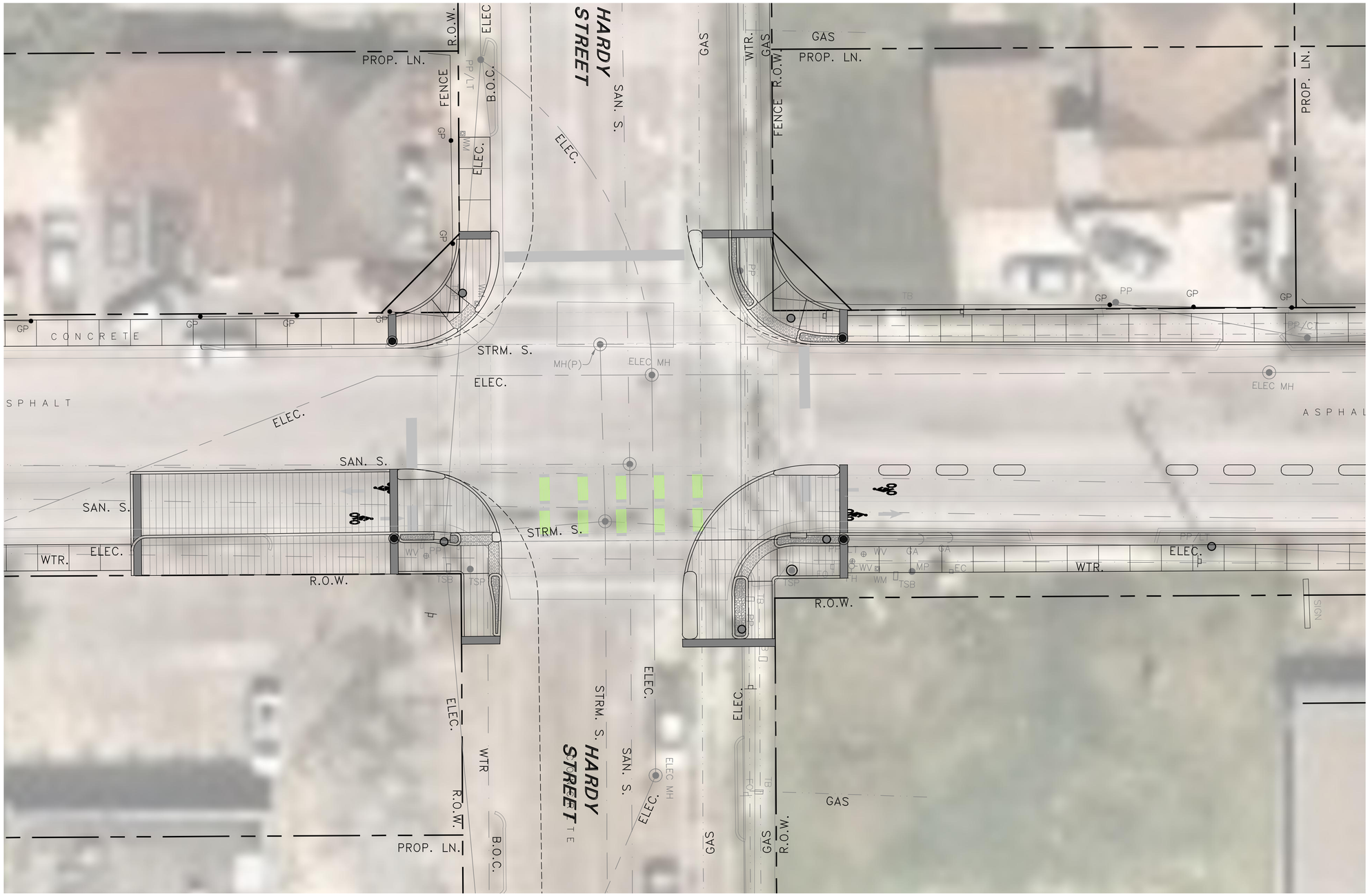
PROJECT TITLE: QUITMAN

SHEET DESCRIPTION: SITEWORK & PLANTING PLAN

DRAWN BY: HJ, JR		DATE: 05-06-2021
CK'D BY: LP, BC, JL	SCALE:	SHEET NO: LS3.03



1 SITEWORK PLAN: HARDY ST - OPTION 1:ROW CLIP

ENLARGEMENT

SCALE: 1"=10' NORTH

SITEWORK LEGEND

LINETYPES	KEY	DESCRIPTION / MODEL NUMBER
	P.1	TYP. CONCRETE WALK
	P.2	UPGRADED ACCENT BAND / REFUGE PLAZA
	P.3	ACCENT BAND W/STREET NAME
	P.4	TRUNCATED DOME TILE, WET SET -RADIUS TILE, REF. DETAILS
	P.5	CONCRETE SEATWALL
	P.6	MORTARED AGGREGATE CURB
	Z.2	PEDESTRIAN LIGHT
		4' TREE PROTECTION POLY FENCE
		TRUNK PROTECTION

SHADE TREES

GRAPHIC	KEY	COMMON NAME
	ORN	PROPOSED ORNAMENTAL TREE
	SH	PROPOSED SHADE TREE
	EX	EXISTING TREE
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PERENNIALS, GROUNDCOVERS, AND ANN

GRAPHIC	KEY	COMMON NAME
	SHRB	SHRUBS & GROUNDCOVER

TURF GRASS AND SEED MIXES

GRAPHIC	KEY	COMMON NAME
	CDS	COMMON BERMUDA SOD

NO.	REVISIONS	DATE	NAME
1			
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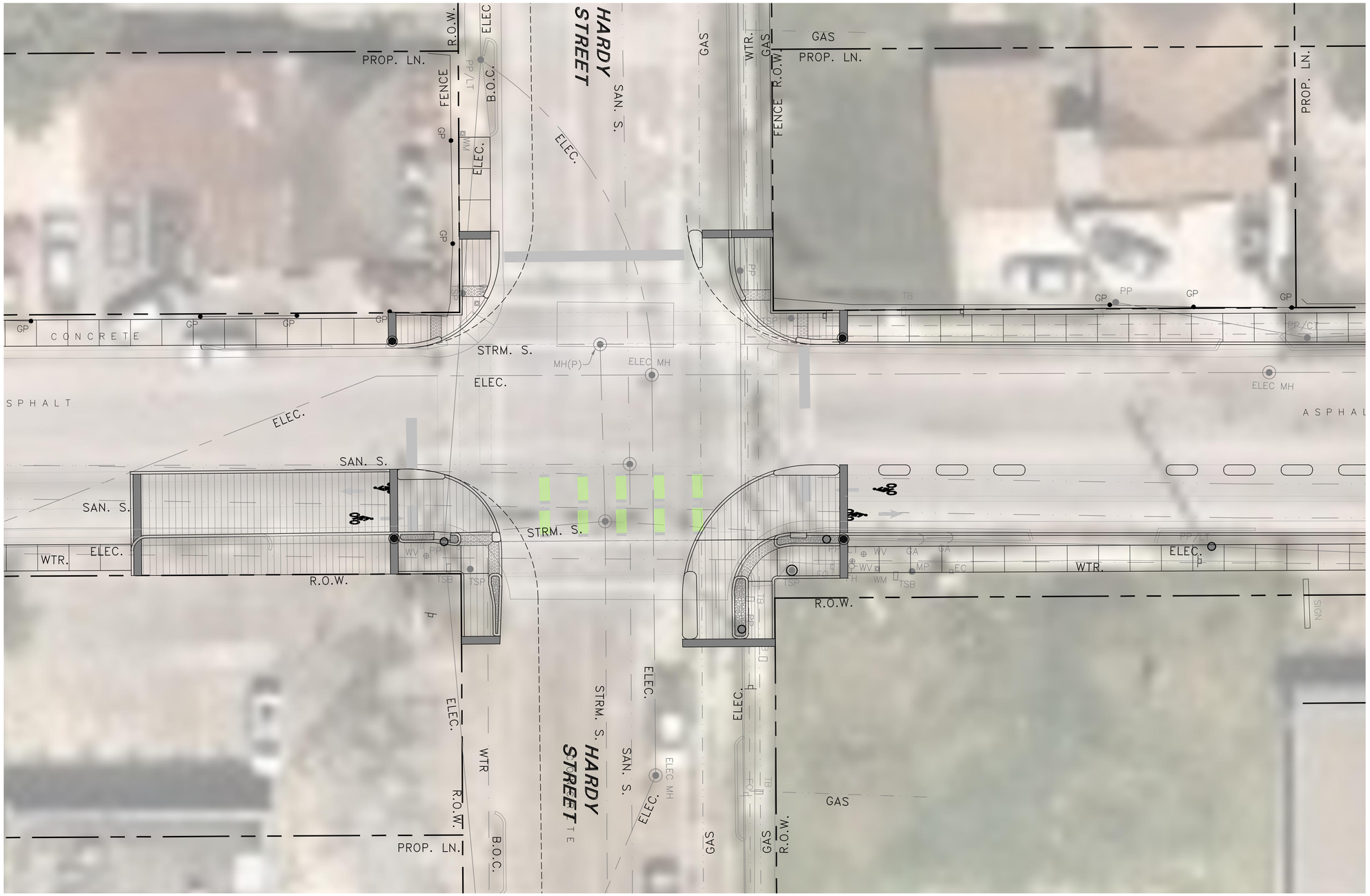
SHEET DESCRIPTION: SITEWORK & PLANTING PLAN

DRAWN BY: HJ, JR
CK'D BY: LP, BC, JL
SCALE:
DATE: 05-06-2021
SHEET NO: LS3.04



1 SITEWORK PLAN: HARDY ST - OPTION 2:SAME ROW

ENLARGEMENT

SCALE: 1"=10' NORTH

SITEWORK LEGEND

LINETYPES	KEY	DESCRIPTION / MODEL NUMBER
	P.1	TYP. CONCRETE WALK
	P.2	UPGRADED ACCENT BAND / REFUGE PLAZA
	P.3	ACCENT BAND W/STREET NAME
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	P.6	MORTARED AGGREGATE CURB
	Z.2	PEDESTRIAN LIGHT
		4' TREE PROTECTION POLY FENCE
		TRUNK PROTECTION

SHADE TREES		
GRAPHIC	KEY	COMMON NAME
	ORN	PROPOSED ORNAMENTAL TREE
	SH	PROPOSED SHADE TREE
	EX	EXISTING TREE
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PERENNIALS, GROUNDCOVERS, AND ANN		
GRAPHIC	KEY	COMMON NAME
	SHRB	SHRUBS & GROUNDCOVER

TURF GRASS AND SEED MIXES		
GRAPHIC	KEY	COMMON NAME
	CDS	COMMON BERMUDA SOD

NO.	REVISIONS	DATE	NAME

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SHEET DESCRIPTION: SITEWORK & PLANTING PLAN

DRAWN BY: HJ, JR
CK'D BY: LP, BC, JL
SCALE:
DATE: 05-06-2021
SHEET NO: LS3.05

APPENDIX C – Landscape/Hardscape Exhibits

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QUITMAN CORRIDOR

ANALYSIS & 100% SCHEMATIC DESIGN

Houston, TX Harris County Precinct 2 03/31/2021

PROJECT VISION - “To create a Premier Corridor”

GOALS OF THE PROJECT

- Enhance the Image of the Corridor
- Improve Pedestrian and Vehicular Safety
- Enhance Mobility for Pedestrians, Bicyclists, and Vehicles

TBG
1333 w. loop south
suite 1450
houston, texas 77027

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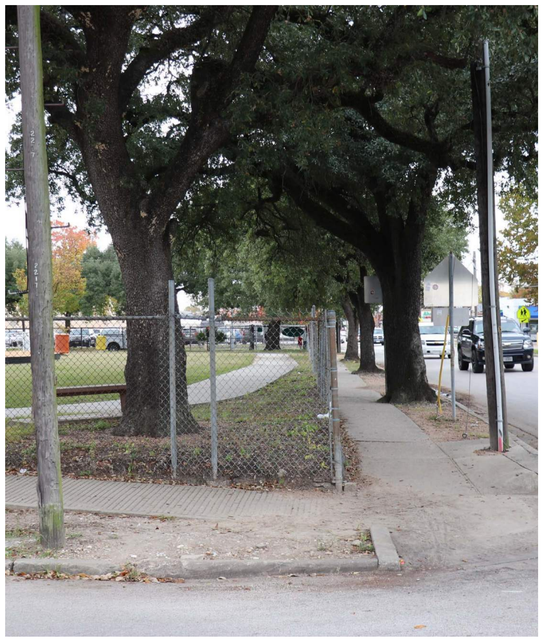
NEIGHBORHOOD CHARACTER

EXISTING MATURE TREE CANOPY - PRESERVE WHERE POSSIBLE

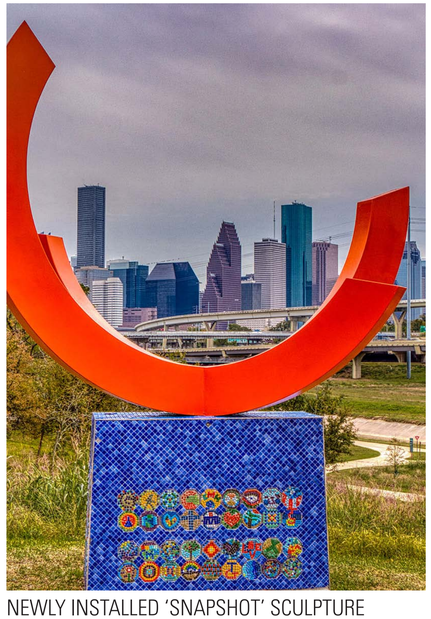


MINI MURAL - SOUTH AT QUITMAN

EXISTING ART AND MURALS ADD ENERGY TO STREETSCAPE

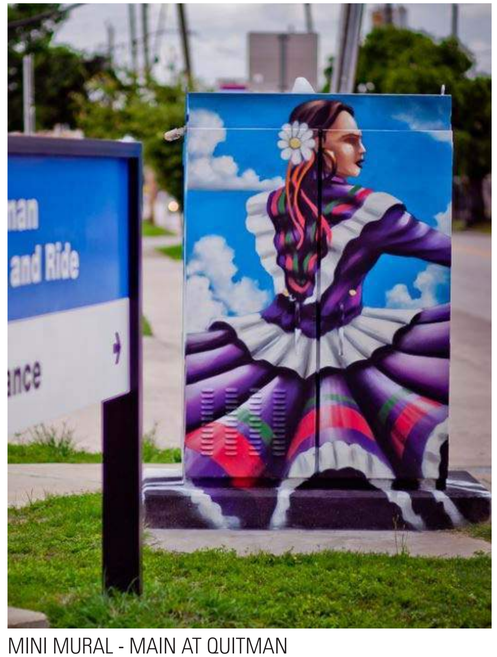
COMMUNITY IS INVOLVED IN HELPS SHAPE THE CHARACTER OF THE STREET

CHARACTER OF SCHOOLS GIVES HISTORCAL SIGNIFICANCE TO NEIGHBORHOOD



NEWLY INSTALLED ‘SNAPSHOT’ SCULPTURE

CIVIC PLACES - STRENGTHEN PEDESTRIAN CONNECTIONS



MINI MURAL - MAIN AT QUITMAN

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quitman
corridor
improvements

neighborhood
character & history

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03/31/2021
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/ Precinct 2

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houston, texas 77027

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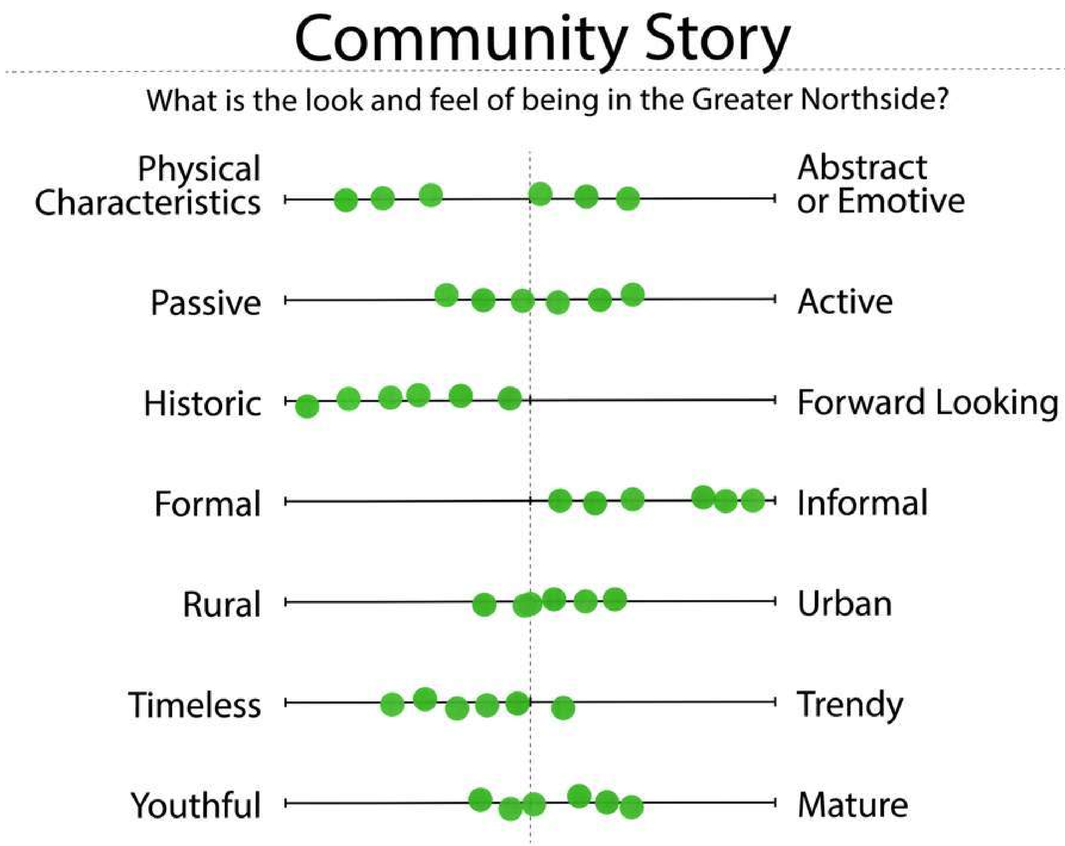
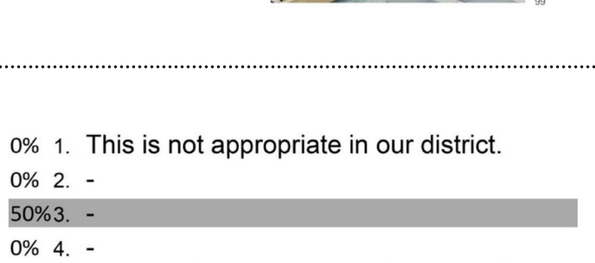
Although some “Community Story” topics were readily agreed upon, others fell in the center indicating that there may not be a strong inclination toward either side currently in the community. The Design Workshop team suggested that the GNMD Board continue to consider both how the District is viewed currently and how the District could be viewed in the future. Determining the community story strengthens the focus and will allow the District to better differentiate itself, through physical design, from other districts in Houston. The results of the exercise are included below.



“Community Story” Exercise Results



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quitman corridor improvements

results of GNMD branding workshop

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03/31/2021
Scientech Engineers, Inc.
/ Precinct 2

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suite 1450
houston, texas 77027

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CORRIDOR INVENTORY & ANALYSIS

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quitman corridor improvements

parallel project partnerships

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03/31/2021
Scientech Engineers, Inc.
/ Precinct 2

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houston, texas 77027

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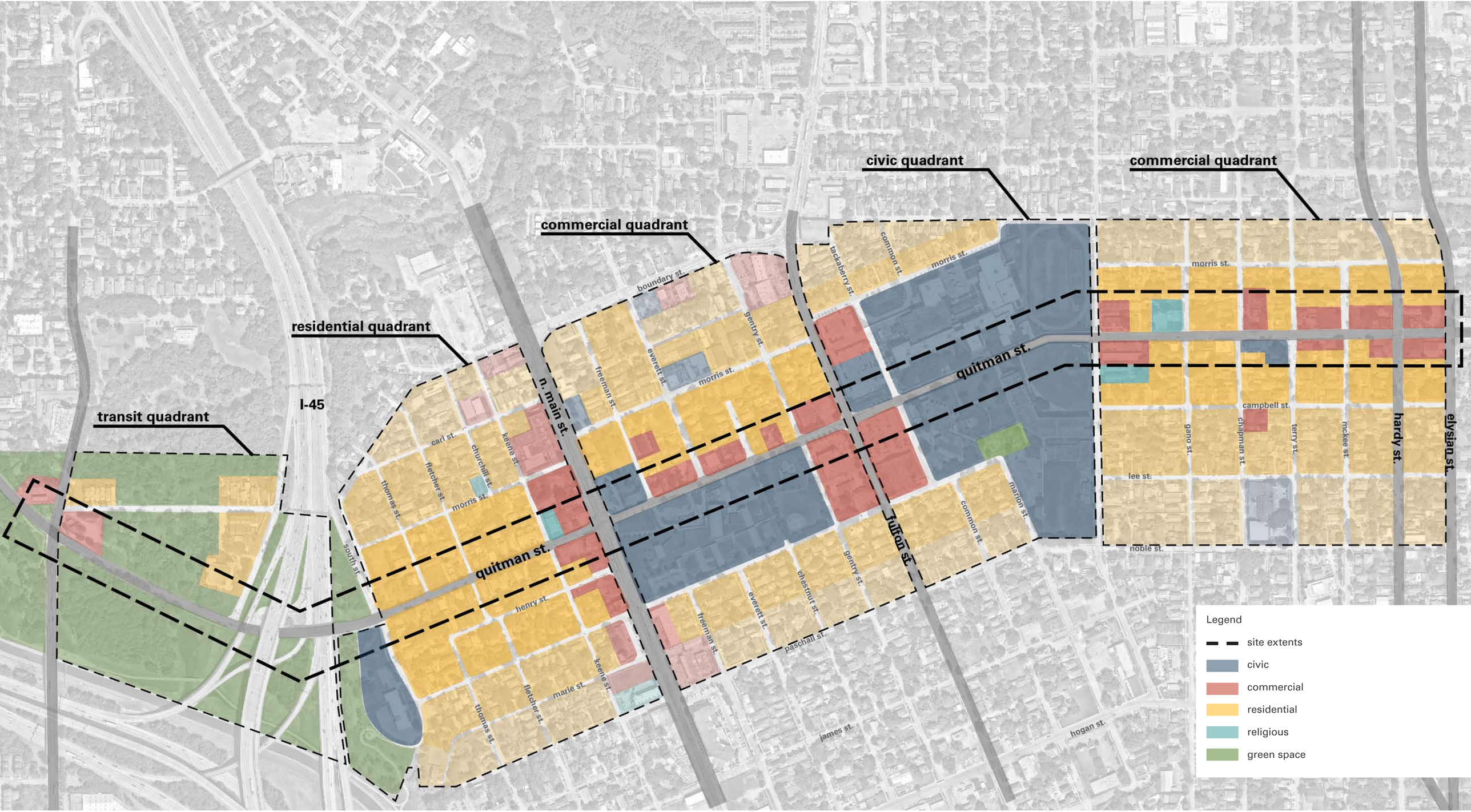
0 100' 200' 400'



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quitman corridor improvements

existing land use

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03/31/2021
Scientech Engineers, Inc.
/ Precinct 2

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houston, texas 77027

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0 100' 200' 400'

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quitman corridor improvements

existing vehicular network

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03/31/2021
Scientech Engineers, Inc.
/ Precinct 2

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tbgpartners.com

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0 100′ 200′ 400′

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quitman corridor improvements

existing public transit network

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03/31/2021
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/ Precinct 2

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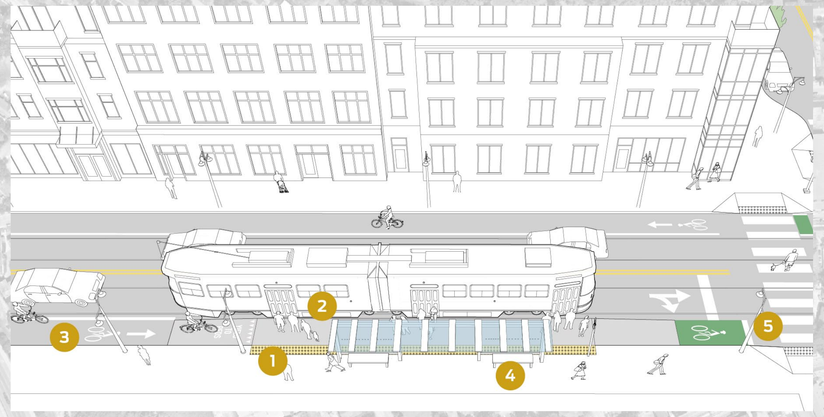
0 100' 200' 400'

EXAMPLE DIAGRAM OF "FLOATING" BUS STOP W/ SHELTER



EXAMPLE DIAGRAM OF BUS STOP W/SHELTER AND RAISED CYCLE TRACK FOR ADA ACCESS

OBTAIN ACCESS ESMT FOR SHELTER

RAISED CYCLE TRACK IN FRONT OF SHELTER FOR ADA ACCESS; NEED TO OBTAIN ACCESS ESMT FOR SHELTER

RAISED CYCLE TRACK IN FRONT OF SHELTER FOR ADA ACCESS

RAISED CYCLE TRACK IN FRONT OF SHELTER FOR ADA ACCESS

Legend

- proposed "floating" bus stop w/shelter
- bus stop w/shelter and raised cycle track for ada access
- bus stop w/shelter
- proposed bus stop w/shelter to be moved w/esmt agreement
- bus stop without shelter; needs raised cycle track for ada access
- bus stop without shelter

TBG

quitman corridor improvements

proposed bus stop types on quitman

Houston, Texas
06/18/2021
Scientech Engineers, Inc.
/ Precinct 2

TBG
1333 w. loop south
suite 1450
houston, texas 77027

[713] 439 0027
tbgpartners.com

The information shown is based on the best information available and is subject to change without notice.

0 100' 200' 400'

TBG

quitman corridor improvements

existing & proposed bicycle lane network & civic places

Houston, Texas
03/31/2021
Scientech Engineers, Inc.
/ Precinct 2

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1333 w. loop south
suite 1450
houston, texas 77027

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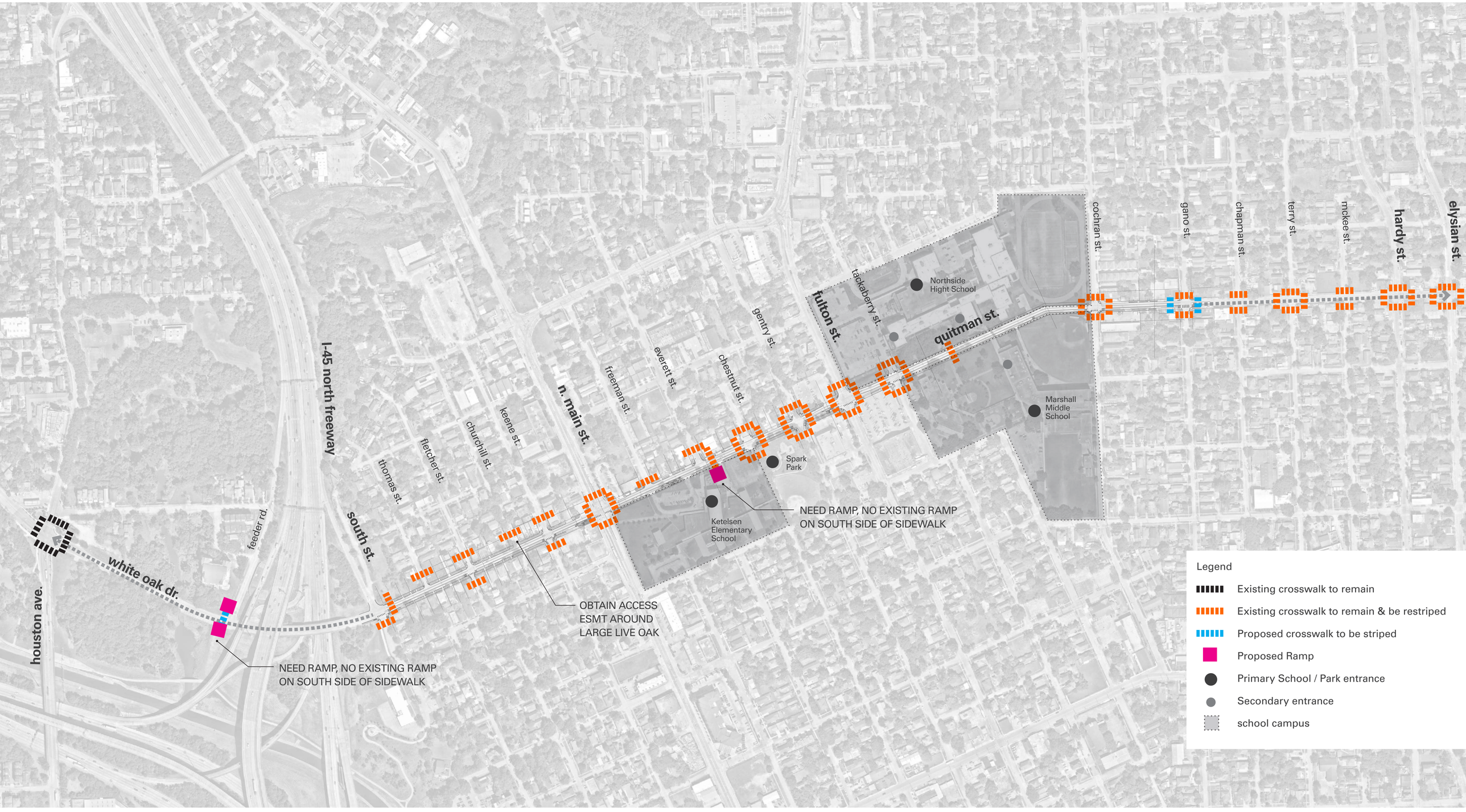
0 100' 200' 400'



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quitman corridor improvements

existing & proposed pedestrian crosswalk locations

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/ Precinct 2

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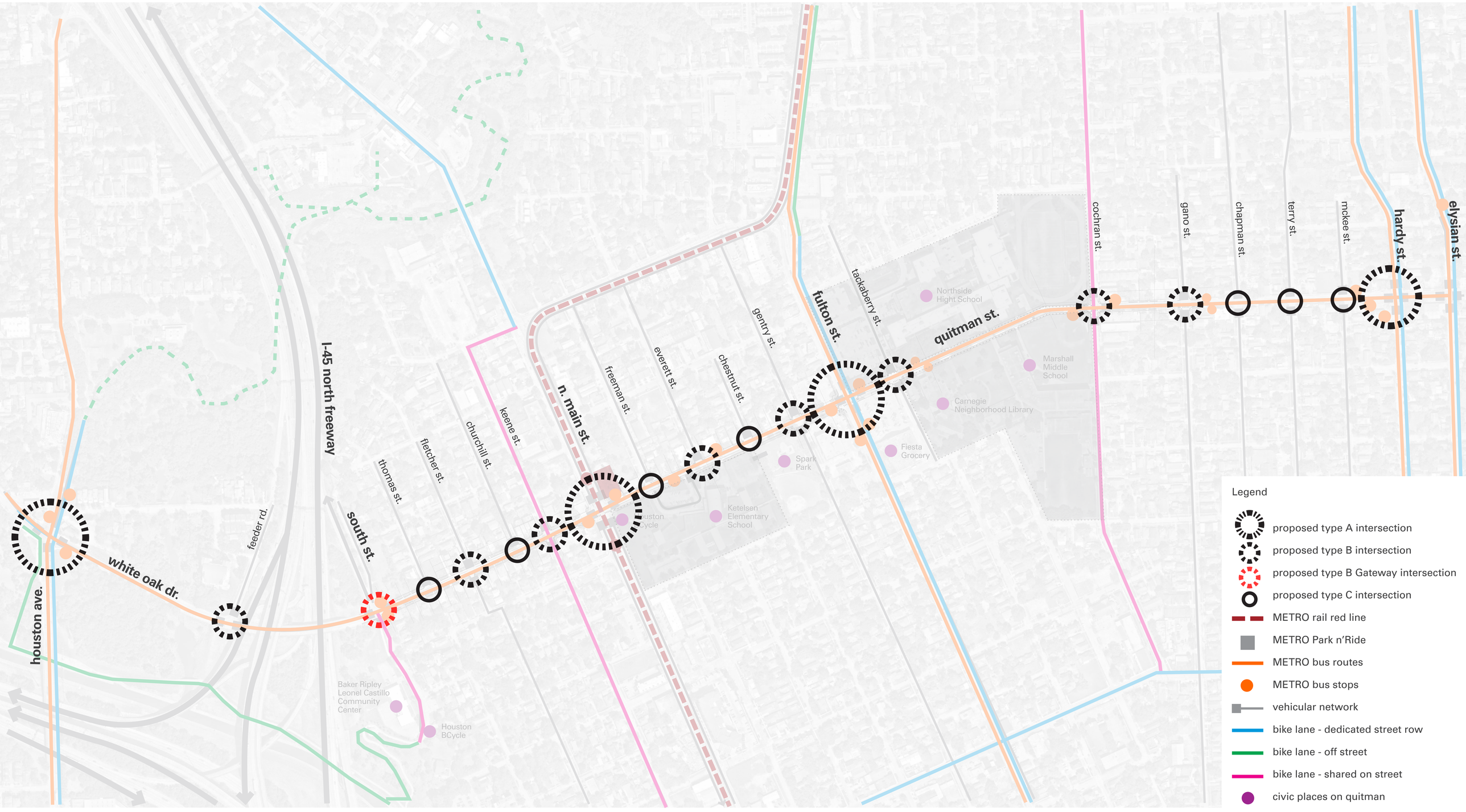
0 100' 200' 400'



Legend

- proposed type A intersection
- proposed type B intersection
- proposed type B Gateway intersection
- proposed type C intersection
- METRO rail red line
- METRO Park n'Ride
- METRO bus routes
- METRO bus stops
- vehicular network
- bike lane - dedicated street row
- bike lane - off street
- bike lane - shared on street
- civic places on quitman

TBG

quitman corridor improvements

proposed intersection hierarchy typologies

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03/31/2021
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0 100' 200' 400'

INTERSECTION TYPOLOGIES

TBG

quitman corridor improvements

intersection reference map

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houston, texas 77027

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0 100' 200' 400'

Legend

01 'floating' bus shelter with at-grade crossing
02 bike lane ramp
03 truncated dome ada pavers
04 sloped walk
05 mortared aggregate curb
06 enhanced concrete refuge and pavement
07 street name band
08 broom finish concrete
09 proposed bike lane
10 concrete bike lane delineators at intersection
11 flexible bike lane delineators
12 upgraded crosswalk striping
13 seatwall

main st
main st
METRO RAIL
METRO RAIL
HANDRAIL
metro park'n ride
quitman st
quitman st
ketelsen elementary campus
GAS 4" IP PLA (P)
GAS 4" IP STL (P)
TEL 6 MTD (P)
12" MTR (P)
TEL 2-4" PVC (P)
8" SAN
24" STM
CONCRETE
ELC CAB
SIGN LP
EB TLP
WV
TLP

pedestrian improvements in this area require proposed maintenance agreement with HISD

01 raised cycle track at floating bus stop

06 pedestrian refuge

06 sandblasted integral color concrete, or sim.

TBG

quitman corridor improvements

intersection plan - type A

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03/31/2021
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/ Precinct 2

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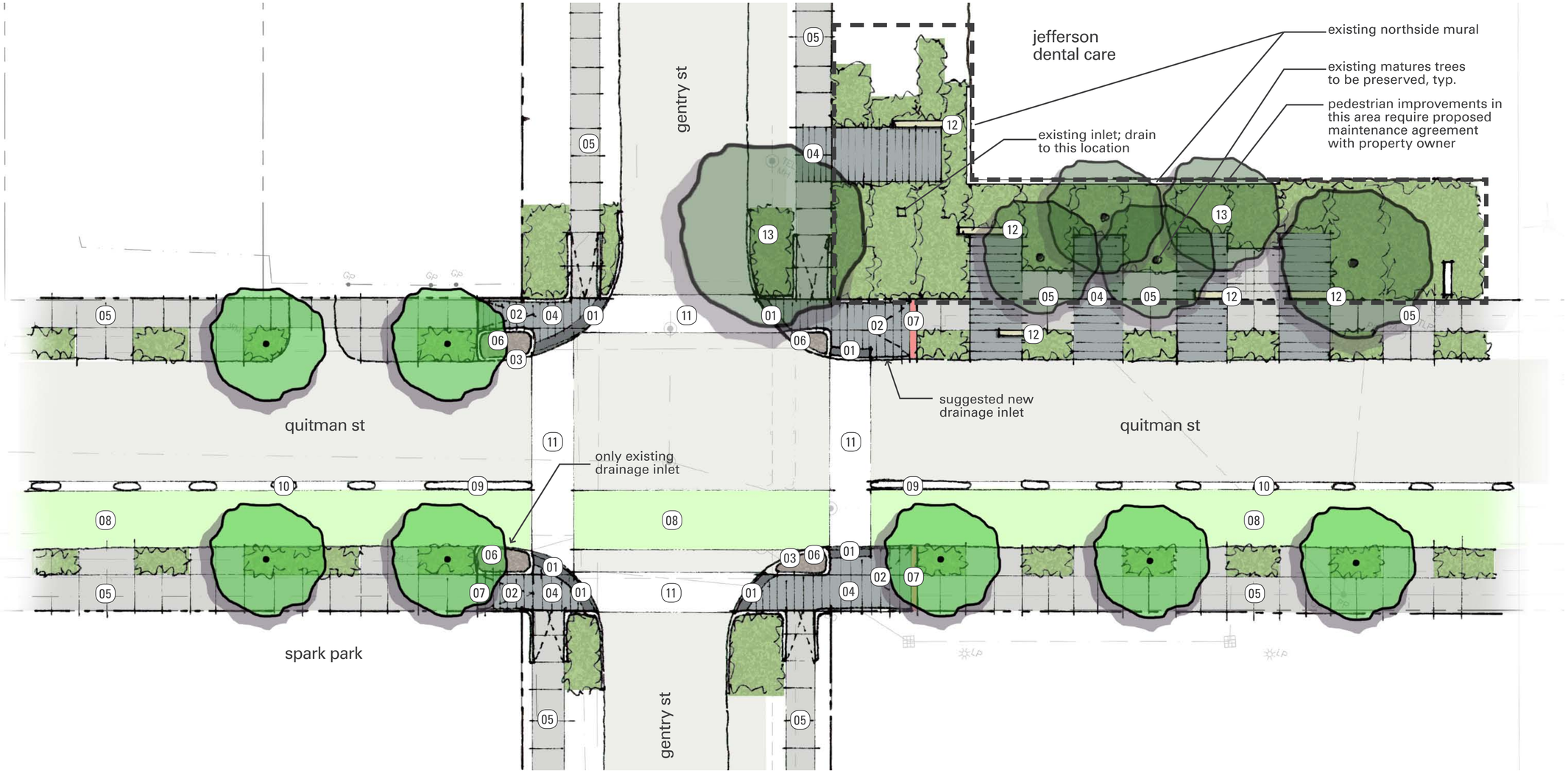
0 5' 10' 20'

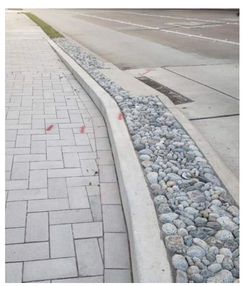
Legend

01 truncated dome ada pavers
02 ramp
03 widened curb
04 enhanced concrete pavement
05 broom finish concrete
06 mortared aggregate curb
07 street name band
08 proposed bike lane
09 concrete bike lane delineators at intersection
10 flexible bike lane delineators
11 crosswalk striping
12 seatwall
13 existing trees, typ.



07 street name band

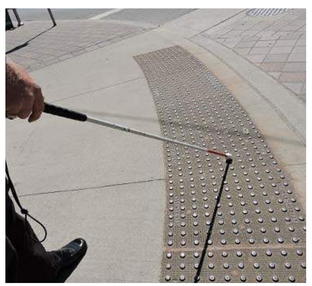

04 sandblasted integral color concrete, sim.


06 mortared aggregate curb


06 mortared aggregate curb


09 concrete bike lane delineators at intersection


10 flexible bike lane delineators


01 truncated dome ada pavers


07 street name band

TBG

quitman corridor improvements

intersection plan - type B

Houston, Texas
03/31/2021
Scientech Engineers, Inc.
/ Precinct 2

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suite 1450
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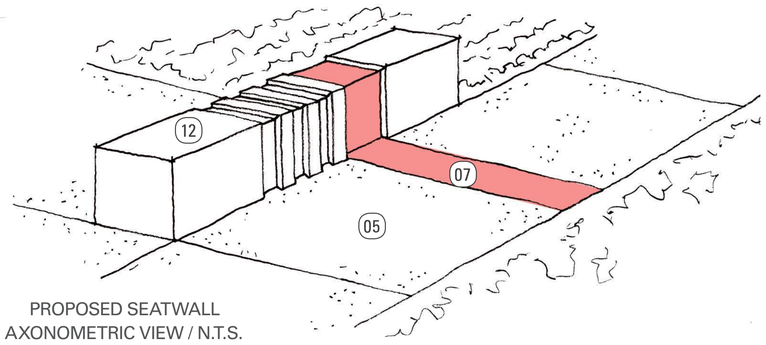
tbgpartners.com

The information shown is based on the best information available and is subject to change without notice.

0 5' 10' 20'

Legend

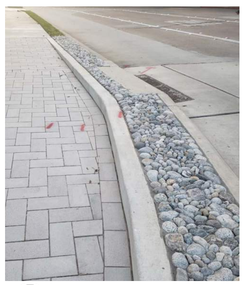
01 truncated dome ada pavers
02 ramp
03 widened curb
04 enhanced concrete pavement
05 broom finish concrete
06 mortared aggregate curb
07 street name band
08 proposed bike lane
09 concrete bike lane delineators at intersection
10 flexible bike lane delineators
11 crosswalk striping
12 seatwall



PROPOSED SEATWALL
AXONOMETRIC VIEW / N.T.S.

07 street name band

04 sandblasted integral color concrete, sim.

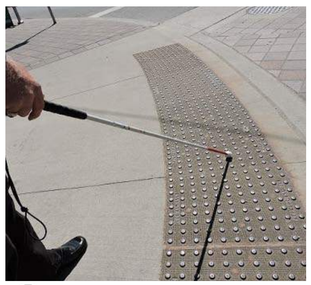


06 mortared aggregate curb

06 mortared aggregate curb

09 concrete bike lane delineators at intersection

10 flexible bike lane delineators



01 truncated dome ada pavers

07 street name band

TBG

quitman corridor improvements

intersection plan - type C

Houston, Texas
03/31/2021
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0 5' 10' 20'

GREEN PAINTED BICYCLE LANES - TYP.

FLEIXBLE PLASTIC VERTICAL DELINEATOR

RASIED ARMADILLO DELINEATOR

BOLTED PRECAST CONCRETE BARRIER

ARMADILLOS

HEAVY-DUTY FLEXIBLE PLASTIC DELINEATOR

CONCRETE DELINEATOR AT INTERSECTIONS

BOLTED STEEL PANEL DELINEATOR

'WAVE' FLEXIBLE PLASTIC DELINEATOR

TBG

quitman corridor improvements

bike lane delineator options

Houston, Texas
03/31/2021
Scientech Engineers, Inc.
/ Precinct 2

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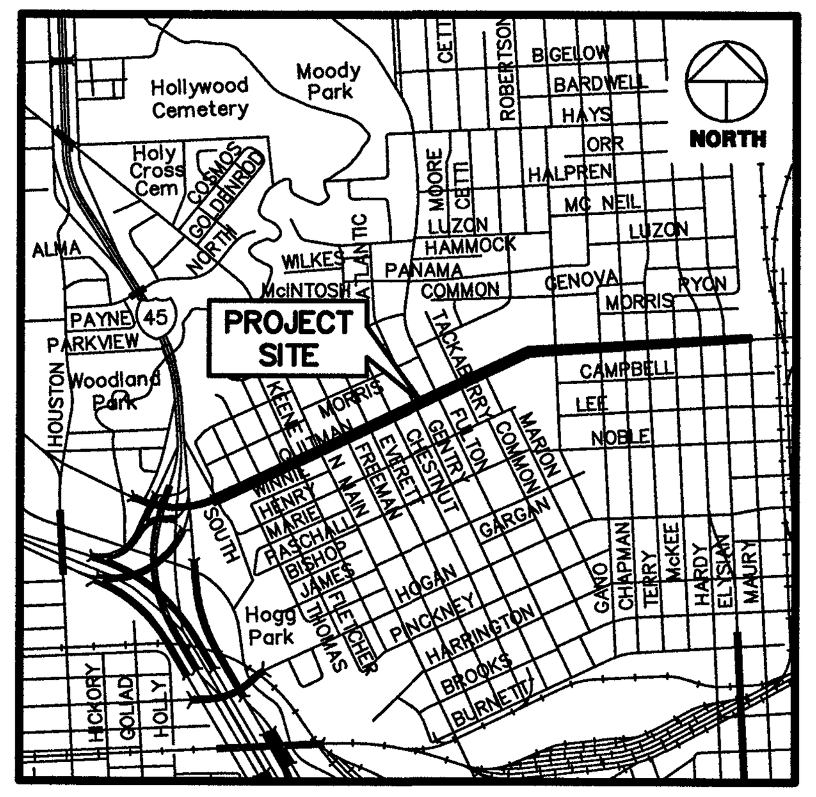
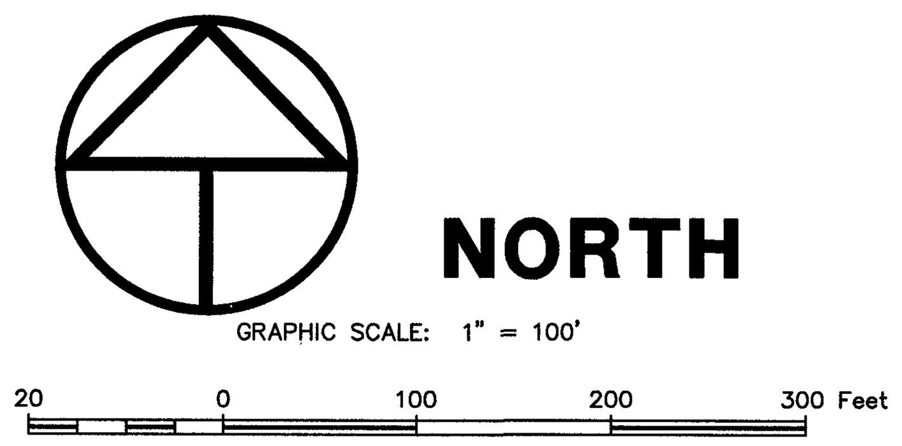
APPENDIX D - Survey



CITY OF HOUSTON, HARRIS COUNTY, TEXAS

VICINITY MAP

SCALE: 1" = 2,000'



LEGEND

* SOME OF THESE ELEMENTS MAY NOT BE USED ON THIS SURVEY

BO	– BOLLARD	PP	– POWER POLE	UCS	– UNDERGROUND CABLE SIGN	FND	– FOUND
	– HANDICAP	PP/T	– POWER POLE W/TRANSFORMER	CTL	– CATHODIC TEST LEAD	H.C.C.F.	– HARRIS COUNTY CLERK FILE
GM	– GAS METER	PP/LT	– POWER POLE W/LIGHT	MW	– MONITORING WELL	H.C.D.R.	– HARRIS COUNTY DEED RECORDS
GV	– GAS VALVE	PP/CT	– POWER POLE W/CONDUIT		– PIN FLAG/PAINT MARK	H.C.M.R.	– HARRIS COUNTY MAP RECORDS
FH	– FIRE HYDRANT	MP	– METER POLE	TC	– TOP OF CURB	IP	– IRON PIPE
WM	– WATER METER	SP	– SERVICE POLE	G	– GUTTER	IR	– IRON ROD
WV	– WATER VALVE	GA	– GUY ANCHOR	TG	– TOP OF GRATE	NO.	– NUMBER
ICV	– IRRIGATION CONTROL VALVE	P	– OVERHEAD POWER LINE	FL	– FLOW LINE	PG.	– PAGE
	– GRATE INLET		– BARBED WIRE FENCE	HB	– HIGHBANK	R.O.W.	– RIGHT-OF-WAY
	– GRATE INLET		– WROUGHT IRON FENCE	SAN	– SANITARY SEWER	SQ. FT.	– SQUARE FEET
	– MANHOLE		– WOOD FENCE	STM	– STORM SEWER	VOL.	– VOLUME
CO	– CLEANOUT		– CHAINLINK FENCE	CMP	– CORRUGATED METAL PIPE	F.C.	– FILM CODE
TP	– TELEPHONE PEDESTAL	GP	– GATE POST	CPP	– CORRUGATED PLASTIC PIPE	B.L.	– BUILDING LINE
EB	– ELECTRIC BOX	(P)	– PER PLANS	RCP	– REINFORCED CONCRETE PIPE	U.E.	– UTILITY EASEMENT
TSB	– TRAFFIC SIGNAL BOX	APPROX.	– APPROXIMATE	TEL	– TELEPHONE		– TREE/SHRUB
LP	– LIGHT POLE		– HIGHBANK	SWBT	– SOUTHWESTERN BELL TELEPHONE CO.		
TLP	– TRAFFIC LIGHT POLE		– SIGN	WTR	– WATER		
GL	– GROUND/SPOT LIGHT	PLM	– PIPELINE MARKER	UG	– UNDERGROUND		
MB	– MAIL BOX	TSP	– TRAFFIC SIGNAL POLE	ER	– ELECTRIC RACK		
WR	– WATER RISER		– GUARD RAIL				
FDC	– FIRE DEPARTMENT CONNECTION						
TB	– TELEPHONE BOX						

GENERAL NOTES

1. BEARINGS WERE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE (NAD 83).
2. ALL COORDINATES SHOWN HEREON ARE GRID COORDINATES AND MAY BE BROUGHT TO SURFACE BY APPLYING THE FOLLOWING SCALE FACTOR: 0.999895535.

BENCHMARK PUBLISHED ELEVATION – 43.26'

HARRIS COUNTY FLOODPLAIN REFERENCE MARKS NO. 050010 BEING A BRASS DISC STAMPED "BM12 WEISSER" SET ON THE EAST R.O.W. LINE OF HOUSTON APPROXIMATELY 0.15 MILE SOUTH FROM ITS INTERSECTION OF WHITE OAK BAYOU DRIVE. (NAVD88, 2001 ADJUSTMENT)

TEMPORARY BENCHMARK "A" ELEVATION – 46.53

BEING A CUT BOX SET ON CONCRETE INLET LOCATED ON THE EAST SIDE OF GANO STREET APPROXIMATELY 35 FEET NORTH FROM THE CENTER LINE OF QUITMAN STREET. (SHOWN HEREON)

TEMPORARY BENCHMARK "B" ELEVATION – 46.54

BEING A CUT BOX SET ON CONCRETE INLET LOCATED ON THE NORTH SIDE OF QUITMAN STREET APPROXIMATELY 60 FEET WEST FROM THE CENTER LINE OF FULTON STREET. (SHOWN HEREON)

TEMPORARY BENCHMARK "C" ELEVATION – 48.22

BEING A CUT BOX SET ON CONCRETE INLET LOCATED ON THE NORTH SIDE OF QUITMAN STREET APPROXIMATELY 110 FEET WEST FROM THE CENTER LINE OF NORTH MAIN STREET. (SHOWN HEREON)

TEMPORARY BENCHMARK "D" ELEVATION – 57.73

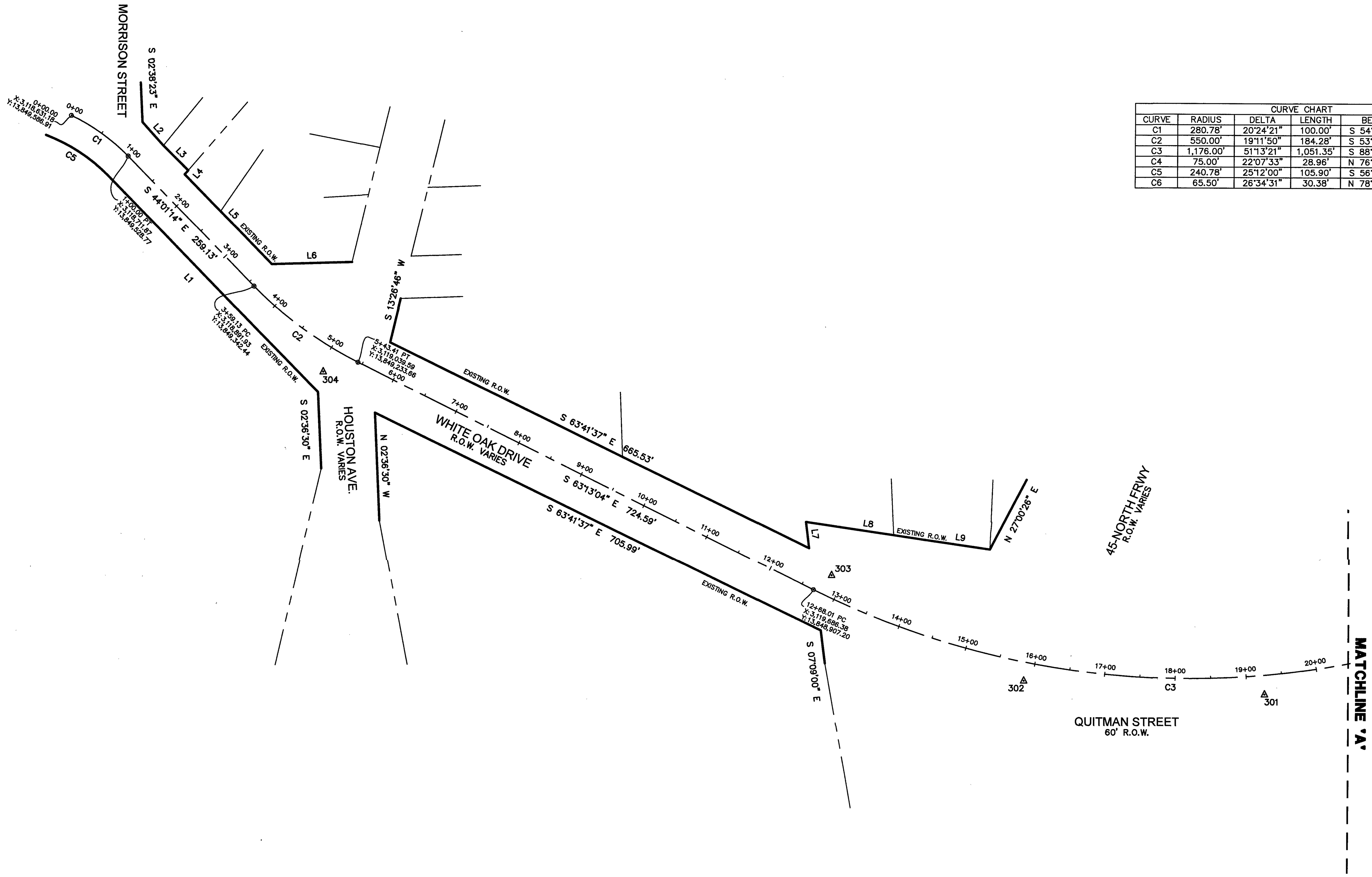
BEING A CUT BOX SET ON CONCRETE INLET LOCATED ON THE SOUTH SIDE OF QUITMAN STREET APPROXIMATELY 175 FEET WEST FROM THE CENTER LINE OF SOUTH STREET.

TEMPORARY BENCHMARK "E" ELEVATION – 27.16

BEING A BOX CUT ON STORM INLET LOCATED ON THE NORTHEAST SIDE OF WHITE OAK DRIVE, +/– 66 FEET NORTHWEST FROM THE INTERSECTION OF WHITE OAK DRIVE AND HOUSTON AVENUE.

TEMPORARY BENCHMARK "F" ELEVATION – 57.73

BEING A BOX CUT ON STORM INLET LOCATED ON THE SOUTH SIDE OF QUITMAN STREET, +/– 40 FEET WEST FROM THE INTERSECTION OF MAURY STREET AND QUITMAN STREET.



CURVE CHART					
CURVE	RADIUS	DELTA	LENGTH	BEARING	CHORD
C1	280.78'	20°24'21"	100.00'	S 54°13'25" E	99.47'
C2	550.00'	19°11'50"	184.28'	S 53°37'09" E	183.42'
C3	1,176.00'	51°13'21"	1,051.35'	S 88°49'45" E	1,016.68'
C4	75.00'	22°07'33"	28.96'	N 76°37'00" E	28.78'
C5	240.78'	25°12'00"	105.90'	S 56°37'14" E	105.05'
C6	65.50'	26°34'31"	30.38'	N 78°59'55" E	30.11'

LINE TABLE		
LINE	BEARING	DISTANCE
L1	S 44°01'14" E	431.18'
L2	S 41°52'50" E	45.01'
L3	S 44°56'11" E	50.28'
L4	S 40°25'46" W	7.70'
L5	S 44°01'14" E	178.90'
L6	N 88°19'46" E	113.85'
L7	N 07°09'00" W	38.21'
L8	N 81°29'27" W	175.27'
L9	S 81°41'49" E	87.48'
L10	N 65°33'57" E	185.46'
L11	N 65°33'57" E	200.00'
L12	N 65°33'57" E	200.00'
L13	N 65°33'57" E	110.00'
L14	N 65°33'57" E	210.00'
L15	N 65°33'57" E	192.17'
L16	N 20°33'10" E	25.22'
L17	N 20°32'13" E	22.51'
L18	S 66°12'53" E	42.44'
L19	N 65°33'14" E	161.56'
L20	N 65°33'14" E	210.00'
L21	N 65°33'14" E	198.77'
L22	N 65°33'14" E	200.00'
L23	N 65°33'14" E	180.00'
L24	N 20°33'14" E	21.21'
L25	N 65°33'14" E	180.00'
L26	S 69°26'46" E	21.21'
L27	N 20°33'14" E	21.21'
L28	N 65°33'14" E	185.00'
L29	S 69°26'50" E	21.30'
L30	N 87°40'47" E	200.16'
L31	N 42°40'47" E	21.21'
L32	N 87°40'47" E	191.13'
L33	N 87°40'47" E	200.00'
L34	N 87°40'47" E	200.00'
L35	N 87°40'47" E	200.00'
L36	N 87°40'47" E	200.00'
L37	N 87°40'47" E	200.00'
L38	N 87°40'47" E	200.00'
L39	N 87°40'47" E	202.00'
L40	N 87°40'47" E	202.00'
L41	N 87°40'47" E	185.00'
L42	N 87°40'47" E	190.00'
L43	N 87°40'47" E	200.00'
L44	N 87°40'47" E	200.00'

SURVEYOR'S CERTIFICATION

I DO HEREBY CERTIFY TO THE ABOVE LISTED THAT THIS SURVEY WAS THIS DAY MADE ON THE GROUND AND WAS PERFORMED UNDER MY SUPERVISION. THAT THIS PLAT CORRECTLY REPRESENTS THE PROPERTY LEGALLY DESCRIBED HEREON, THAT THE FACTS FOUND AT THE TIME OF THIS SURVEY SHOW THE IMPROVEMENTS AND THAT THERE ARE NO VISIBLE ENCROACHMENTS APPARENT ON THE GROUND, EXCEPT AS SHOWN. THIS SURVEY SUBSTANTIALLY CONFORMS TO THE CURRENT TEXAS SOCIETY OF PROFESSIONAL SURVEYORS STANDARDS AND SPECIFICATIONS FOR A CATEGORY 6, CONDITION II SURVEY, TO THE BEST OF MY KNOWLEDGE.

STATE OF TEXAS REGISTERED ROBERT KNESS 6486 PROFESSIONAL LAND SURVEYOR

ROBERT KNESS
Registered Professional Land Surveyor
Texas Registration No. 6486

03-11-2021
DATE

NO.	REVISIONS	DATE	NAME
1			
2			
3			
4			
5			

HARRIS COUNTY
ENGINEERING DEPARTMENT

HARRIS COUNTY 1836 TEXAS

WINDROSE
LAND SURVEYING I PLATTING
11111 RICHMOND AVE, STE 150 I HOUSTON, TX 77082 I 713.458.2281
FIRM REGISTRATION NO. 10108800 I WINDROSESERVICES.COM

QUITMAN STREET IMPROVEMENTS

SHEET DESCRIPTION: CONTROL SHEET

DRAWN BY: AT		DATE: 03-11-2021
CK'D BY: TW	SCALE: 1"=100'	SHEET NO: 1 / 21

NORTH

GRAPHIC SCALE: 1" = 100'

20 0 100 200 300 Feet

LEGEND

* SOME OF THESE ELEMENTS MAY NOT BE USED ON THIS SURVEY

- BO – BOLLARD
- HC – HANDICAP
- GM – GAS METER
- GV – GAS VALVE
- FH – FIRE HYDRANT
- WM – WATER METER
- WV – WATER VALVE
- ICV – IRRIGATION CONTROL VALVE
- GRATE INLET
- GRATE INLET
- MANHOLE
- CO – CLEANOUT
- TP – TELEPHONE PEDESTAL
- EB – ELECTRIC BOX
- TSB – TRAFFIC SIGNAL BOX
- LP – LIGHT POLE
- TLP – TRAFFIC LIGHT POLE
- GL – GROUND/SPOT LIGHT
- MB – MAIL BOX
- WR – WATER RISER
- FDC – FIRE DEPARTMENT CONNECTION
- TB – TELEPHONE BOX
- PP – POWER POLE
- PP/T – POWER POLE W/TRANSFORMER
- PP/LT – POWER POLE W/LIGHT
- PP/CT – POWER POLE W/CONDUIT
- MP – METER POLE
- SP – SERVICE POLE
- GA – GUY ANCHOR
- OHP – OVERHEAD POWER LINE
- BWF – BARBED WIRE FENCE
- WIF – WROUGHT IRON FENCE
- WF – WOOD FENCE
- CLF – CHAINLINK FENCE
- GP – GATE POST
- (P) – PER PLANS
- APPROX. – APPROXIMATE
- HB – HIGHBANK
- SIGN
- PLM – PIPELINE MARKER
- TSP – TRAFFIC SIGNAL POLE
- GR – GUARD RAIL
- UCS – UNDERGROUND CABLE SIGN
- CTL – CATHODIC TEST LEAD
- MW – MONITORING WELL
- PIN FLAG/PAINT MARK
- TC – TOP OF CURB
- G – GUTTER
- TG – TOP OF GRATE
- FL – FLOW LINE
- HB – HIGHBANK
- SAN – SANITARY SEWER
- STM – STORM SEWER
- CMP – CORRUGATED METAL PIPE
- CPP – CORRUGATED PLASTIC PIPE
- RCP – REINFORCED CONCRETE PIPE
- TEL – TELEPHONE
- SWBT – SOUTHWESTERN BELL TELEPHONE CO.
- WTR – WATER
- UG – UNDERGROUND
- ER – ELECTRIC RACK

FND – FOUND
H.C.C.F. – HARRIS COUNTY CLERK FILE
H.C.D.R. – HARRIS COUNTY DEED RECORDS
H.C.M.R. – HARRIS COUNTY MAP RECORDS
IP – IRON PIPE
IR – IRON ROD
NO. – NUMBER
PG. – PAGE
R.O.W. – RIGHT-OF-WAY
SQ. FT. – SQUARE FEET
VOL. – VOLUME
F.C. – FILM CODE
B.L. – BUILDING LINE
U.E. – UTILITY EASEMENT
– TREE/SHRUB

LINE TABLE		
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L9	S 81°41'49" E	87.48'
L10	N 65°33'57" E	185.46'
L11	N 65°33'57" E	200.00'
L12	N 65°33'57" E	200.00'
L13	N 65°33'57" E	110.00'
L14	N 65°33'57" E	210.00'
L15	N 65°33'57" E	192.17'
L16	N 20°33'10" E	25.22'
L17	N 20°32'13" E	22.51'
L18	S 66°12'53" E	42.44'
L19	N 65°33'14" E	161.56'
L20	N 65°33'14" E	210.00'
L21	N 65°33'14" E	198.77'
L22	N 65°33'14" E	200.00'
L23	N 65°33'14" E	180.00'
L24	N 20°33'14" E	21.21'
L25	N 65°33'14" E	180.00'
L26	S 69°26'46" E	21.21'
L27	N 20°33'14" E	21.21'
L28	N 65°33'14" E	185.00'
L29	S 69°26'50" E	21.30'
L30	N 87°40'47" E	200.16'
L31	N 42°40'47" E	21.21'
L32	N 87°40'47" E	191.13'
L33	N 87°40'47" E	200.00'
L34	N 87°40'47" E	200.00'
L35	N 87°40'47" E	200.00'
L36	N 87°40'47" E	200.00'
L37	N 87°40'47" E	200.00'
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L39	N 87°40'47" E	202.00'
L40	N 87°40'47" E	202.00'
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L42	N 87°40'47" E	190.00'
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L44	N 87°40'47" E	200.00'

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CURVE	RADIUS	DELTA	LENGTH	BEARING	CHORD
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C3	1,176.00'	51°13'21"	1,051.35'	S 88°49'45" E	1,016.68'
C4	75.00'	22°07'33"	28.96'	N 76°37'00" E	28.78'
C5	240.78'	25°12'00"	105.90'	S 56°37'14" E	105.05'
C6	65.50'	26°34'31"	30.38'	N 78°59'55" E	30.11'

NO.	REVISIONS	DATE	NAME
1			
2			
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HARRIS COUNTY
ENGINEERING DEPARTMENT

HARRIS COUNTY TEXAS 1836

WINDROSE
LAND SURVEYING | PLATTING
11111 RICHMOND AVE. STE 150 | HOUSTON, TX 77082 | 713.458.2281
FIRM REGISTRATION NO. 10108800 | WINDROSESERVICES.COM

QUITMAN STREET IMPROVEMENTS

SHEET DESCRIPTION: CONTROL SHEET

DRAWN BY: AT
DATE: 03-11-2021
CK'D BY: TW
SCALE: 1"=100'
SHEET NO: 2 / 21

NORTH

GRAPHIC SCALE: 1" = 100'

20 0 100 200 300 Feet

LEGEND

* SOME OF THESE ELEMENTS MAY NOT BE USED ON THIS SURVEY

- BO – BOLLARD
- HC – HANDICAP
- GM – GAS METER
- GV – GAS VALVE
- FH – FIRE HYDRANT
- WM – WATER METER
- WV – WATER VALVE
- ICV – IRRIGATION CONTROL VALVE
- GRATE INLET
- GRATE INLET
- MANHOLE
- CO – CLEANOUT
- TP – TELEPHONE PEDESTAL
- EB – ELECTRIC BOX
- TSB – TRAFFIC SIGNAL BOX
- LP – LIGHT POLE
- TLP – TRAFFIC LIGHT POLE
- GL – GROUND/SPOT LIGHT
- MB – MAIL BOX
- WR – WATER RISER
- FDC – FIRE DEPARTMENT CONNECTION
- TB – TELEPHONE BOX
- PP – POWER POLE
- PP/T – POWER POLE W/TRANSFORMER
- PP/LT – POWER POLE W/LIGHT
- PP/CT – POWER POLE W/CONDUIT
- MP – METER POLE
- SP – SERVICE POLE
- GA – GUY ANCHOR
- OVERHEAD POWER LINE
- BARBED WIRE FENCE
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- WOOD FENCE
- CHAINLINK FENCE
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- (P) – PER PLANS
- APPROX. – APPROXIMATE
- HIGHBANK
- SIGN
- PLM – PIPELINE MARKER
- TSP – TRAFFIC SIGNAL POLE
- GUARD RAIL
- UCS – UNDERGROUND CABLE SIGN
- CTL – CATHODIC TEST LEAD
- MW – MONITORING WELL
- PIN FLAG/PAINT MARK
- TC – TOP OF CURB
- G – GUTTER
- TG – TOP OF GRATE
- FL – FLOW LINE
- HB – HIGHBANK
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- STM – STORM SEWER
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- CPP – CORRUGATED PLASTIC PIPE
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- TEL – TELEPHONE
- SWBT – SOUTHWESTERN BELL TELEPHONE CO.
- WTR – WATER
- UG – UNDERGROUND
- ER – ELECTRIC RACK

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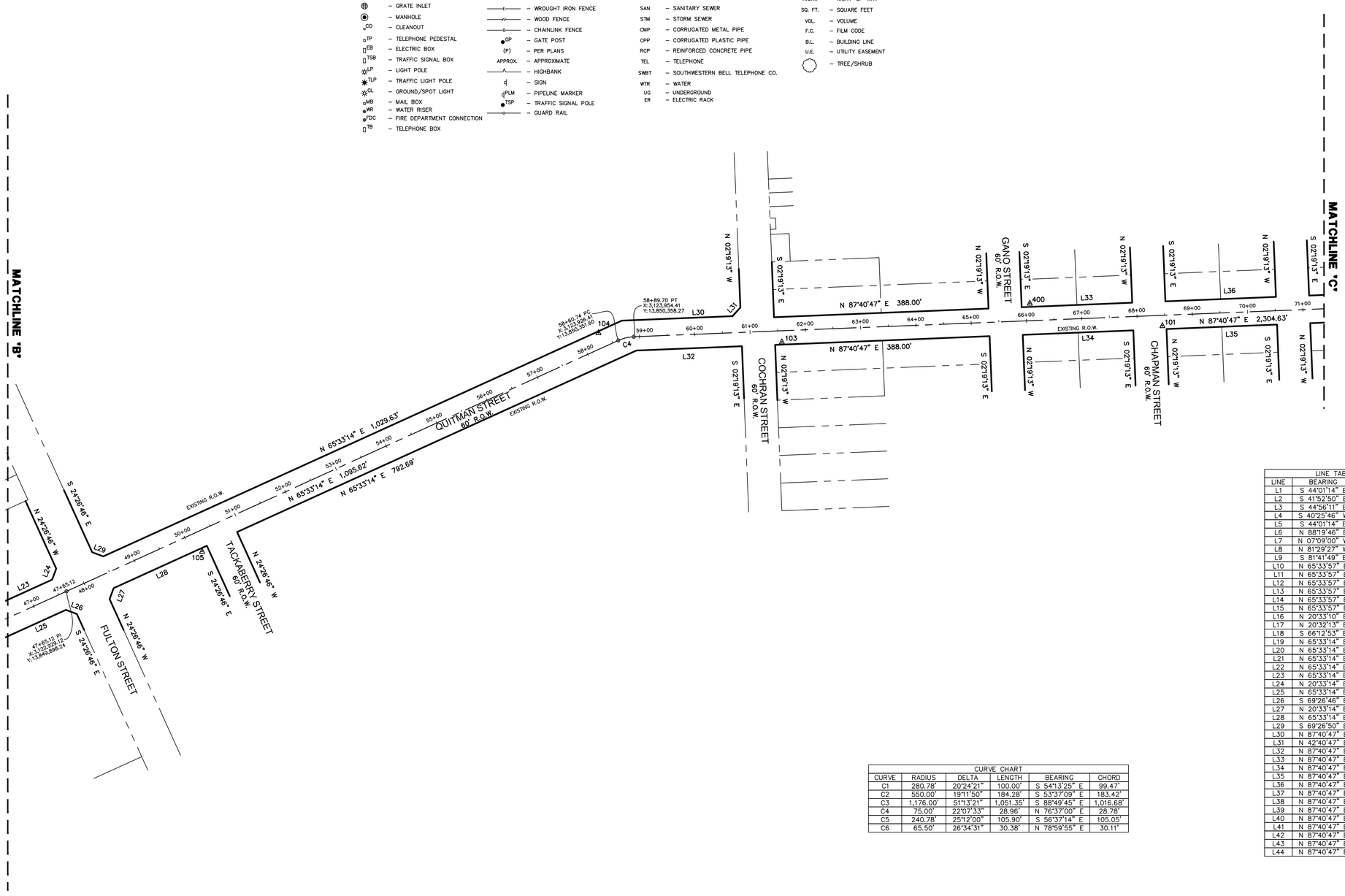

LINE TABLE		
LINE	BEARING	DISTANCE
L1	S 44°01'14" E	431.18'
L2	S 41°52'50" E	45.01'
L3	S 44°56'11" E	50.28'
L4	S 40°25'46" W	7.70'
L5	S 44°01'14" E	178.90'
L6	N 88°19'46" E	113.85'
L7	N 07°09'00" W	38.21'
L8	N 81°29'27" W	175.27'
L9	S 81°41'49" E	87.48'
L10	N 65°33'57" E	185.46'
L11	N 65°33'57" E	200.00'
L12	N 65°33'57" E	200.00'
L13	N 65°33'57" E	110.00'
L14	N 65°33'57" E	210.00'
L15	N 65°33'57" E	192.17'
L16	N 20°33'10" E	25.22'
L17	N 20°32'13" E	22.51'
L18	S 66°12'53" E	42.44'
L19	N 65°33'14" E	161.56'
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L27	N 20°33'14" E	21.21'
L28	N 65°33'14" E	185.00'
L29	S 69°26'50" E	21.30'
L30	N 87°40'47" E	200.16'
L31	N 42°40'47" E	21.21'
L32	N 87°40'47" E	191.13'
L33	N 87°40'47" E	200.00'
L34	N 87°40'47" E	200.00'
L35	N 87°40'47" E	200.00'
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L42	N 87°40'47" E	190.00'
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L44	N 87°40'47" E	200.00'

CURVE CHART					
CURVE	RADIUS	DELTA	LENGTH	BEARING	CHORD
C1	280.78'	20°24'21"	100.00'	S 54°13'25" E	99.47'
C2	550.00'	19°11'50"	184.28'	S 53°37'09" E	183.42'
C3	1,176.00'	51°13'21"	1,051.35'	S 88°49'45" E	1,016.68'
C4	75.00'	22°07'33"	28.96'	N 76°37'00" E	28.78'
C5	240.78'	25°12'00"	105.90'	S 56°37'14" E	105.05'
C6	65.50'	26°34'31"	30.38'	N 78°59'55" E	30.11'

NO.	REVISIONS	DATE	NAME
1			
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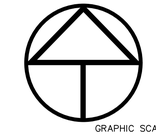
SCALE: 1"=100'
SHEET NO: 3 / 21



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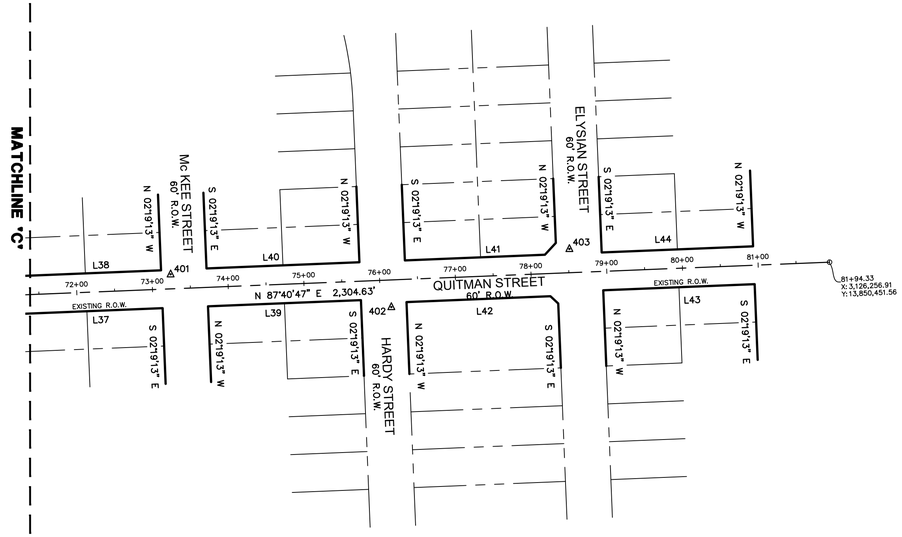

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SCALE: 1"=100'

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GRAPHIC SCALE: 1" = 20'

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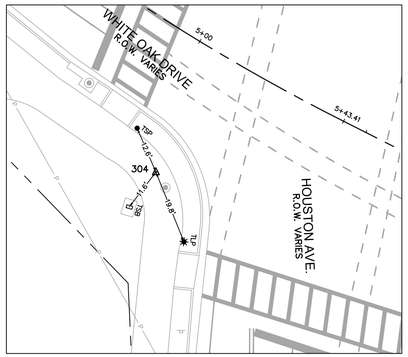
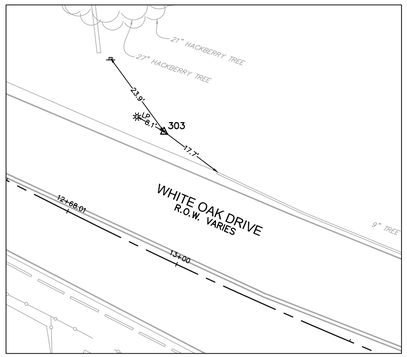
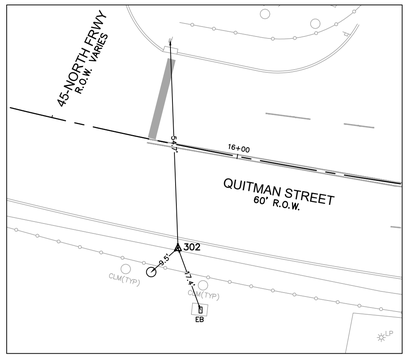


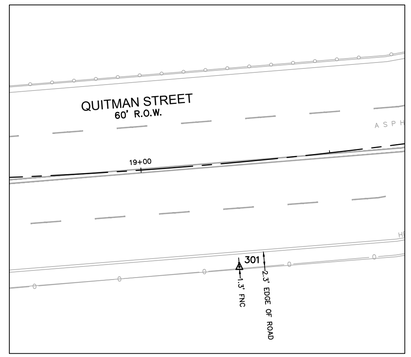
SET CUT "X"
CONTROL POINT #304
5+07.53 R35.56
X: 3,118,990.05
Y: 13,849,220.23
ELEV. 25.68



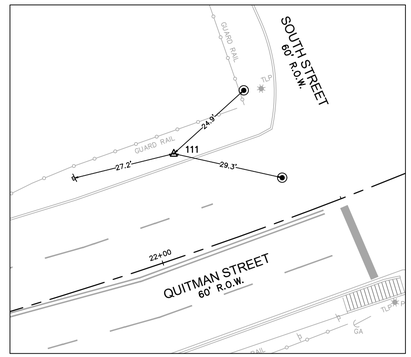
SET 5/8" IRC
"WINDROSE"
CONTROL POINT #303
12+81.62 L30.16
X: 3,119,711.85
Y: 13,848,928.21
ELEV. 25.30



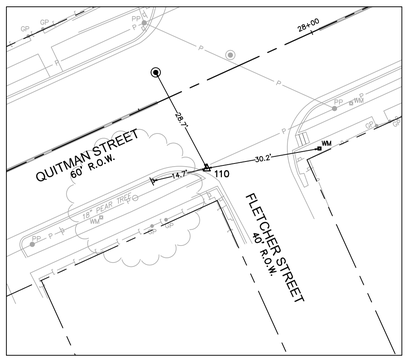
SET CUT "X"
CONTROL POINT #302
15+89.30 R26.68
X: 3,119,984.13
Y: 13,848,776.99
ELEV. 32.98



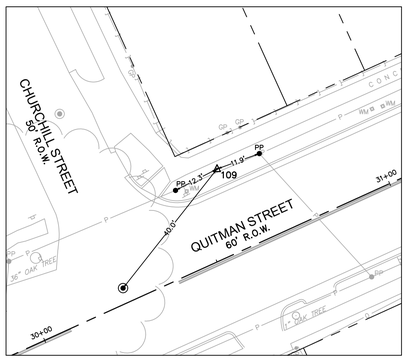
SET CUT "X"
CONTROL POINT #301
19+23.57 R27.53
X: 3,120,324.41
Y: 13,848,758.40
ELEV. 51.60



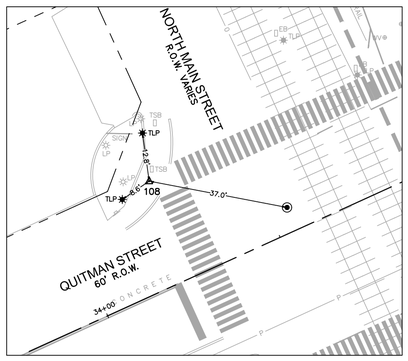
SET 5/8" IRC
"WINDROSE"
CONTROL POINT #111
22+12.22 L26.37
X: 3,120,594.66
Y: 13,848,871.50
ELEV. 51.66



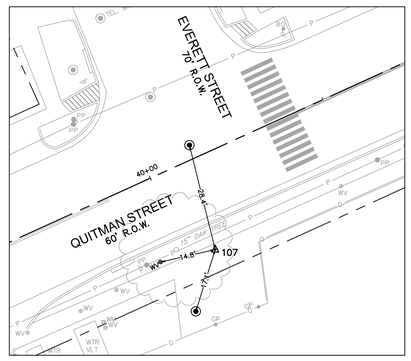
SET MAG NAIL
CONTROL POINT #110
27+59.98 R21.19
X: 3,121,112.61
Y: 13,849,049.42
ELEV. 48.36



SET 5/8" IRC
"WINDROSE"
CONTROL POINT #109
30+60.11 L22.35
X: 3,121,367.81
Y: 13,849,213.23
ELEV. 49.25



SET CUT "X"
CONTROL POINT #108
34+24.67 L27.82
X: 3,121,697.40
Y: 13,849,369.02
ELEV. 48.30



SET CUT "X"
CONTROL POINT #107
40+07.80 R24.23
X: 3,122,249.76
Y: 13,849,562.88
ELEV. 48.38

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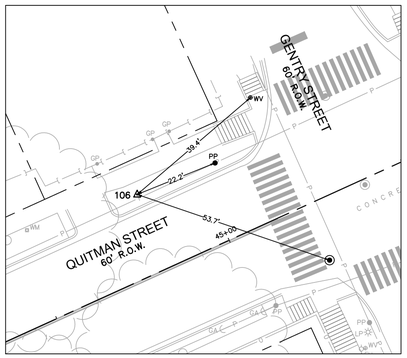
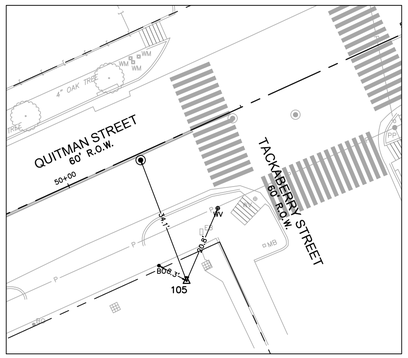
- CMP – CORRUGATED METAL PIPE
- CPP – CORRUGATED PLASTIC PIPE
- RCP – REINFORCED CONCRETE PIPE
- TEL – TELEPHONE
- SWBT – SOUTHWESTERN BELL TELEPHONE CO.
- WTR – WATER
- UG – UNDERGROUND
- ER – ELECTRIC RACK

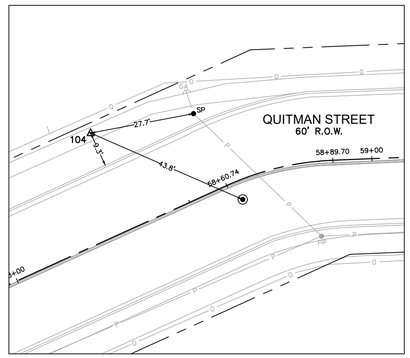
- FND – FOUND
- H.C.C.F. – HARRIS COUNTY CLERK FILE
- H.C.D.R. – HARRIS COUNTY DEED RECORDS
- H.C.M.R. – HARRIS COUNTY MAP RECORDS
- IP – IRON PIPE
- IR – IRON ROD
- NO. – NUMBER
- PG. – PAGE
- R.O.W. – RIGHT-OF-WAY
- SQ. FT. – SQUARE FEET
- VOL. – VOLUME
- F.C. – FILM CODE
- B.L. – BUILDING LINE
- U.E. – UTILITY EASEMENT
- TREE/SHRUB



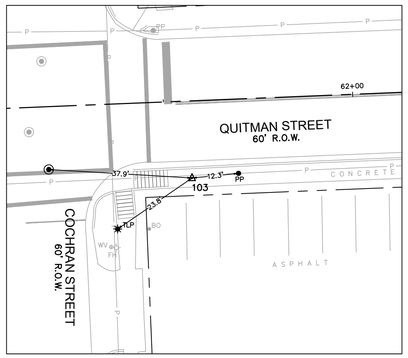
SET 5/8" IRC
"WINDROSE"
CONTROL POINT #106
44+82.89 L21.05
X: 3,122,663.50
Y: 13,849,800.64
ELEV. 48.39



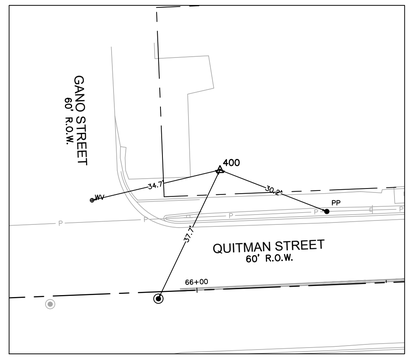
SET MAG NAIL
CONTROL POINT #105
50+17.95 R35.75
X: 3,123,174.06
Y: 13,849,970.33
ELEV. 47.39



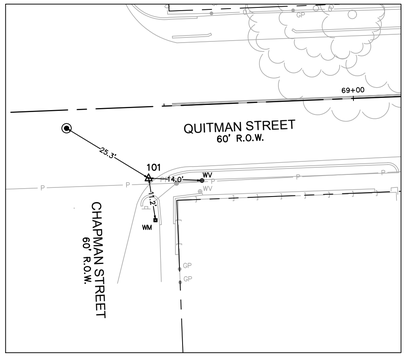
SET CUT "X"
CONTROL POINT #104
58+33.72 L27.47
X: 3,123,890.46
Y: 13,850,365.43
ELEV. 47.64



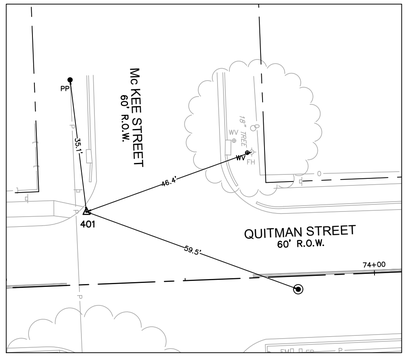
SET CUT "X"
CONTROL POINT #103
61+56.76 R20.35
X: 3,124,222.05
Y: 13,850,348.75
ELEV. 47.63



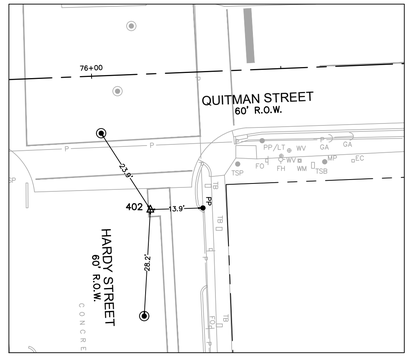
SET 5/8" IRC
"WINDROSE"
CONTROL POINT #400
66+07.36 L31.47
X: 3,124,670.13
Y: 13,850,418.76
ELEV. 47.74



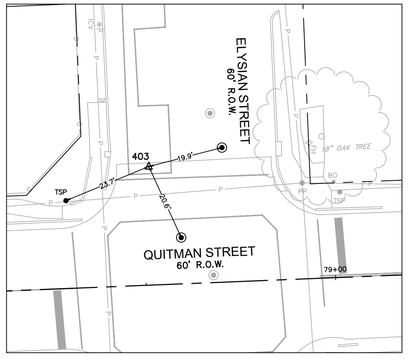
SET MAG NAIL
CONTROL POINT #101
68+45.14 R18.85
X: 3,124,909.73
Y: 13,850,378.11
ELEV. 47.01



SET MAG NAIL
CONTROL POINT #401
73+24.70 L19.21
X: 3,125,387.31
Y: 13,850,435.54
ELEV. 46.12



SET CUT "X"
CONTROL POINT #402
76+24.09 R35.77
X: 3,125,678.66
Y: 13,850,392.33
ELEV. 46.12



SET MAG NAIL
CONTROL POINT #403
78+51.94 L31.30
X: 3,125,913.57
Y: 13,850,468.97
ELEV. 45.78

NO.	REVISIONS	DATE	NAME
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HARRIS COUNTY
ENGINEERING DEPARTMENT

HARRIS COUNTY TEXAS 1836

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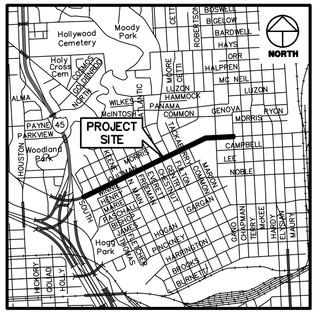
FIRM REGISTRATION NO. 10108800 | WINDROSESERVICES.COM

QUITMAN STREET IMPROVEMENTS

SHEET DESCRIPTION: CONTROL SHEET

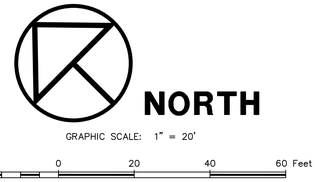
DRAWN BY: AT
CK'D BY: TW
SCALE: 1"=20'
DATE: 03-11-2021
SHEET NO: 6 / 21



CITY OF HOUSTON, HARRIS COUNTY, TEXAS

VICINITY MAP

SCALE: 1" = 2,000'



LEGEND

* SOME OF THESE ELEMENTS MAY NOT BE USED ON THIS SURVEY

- BO – BOLLARD
- HC – HANDICAP
- GM – GAS METER
- GV – GAS VALVE
- FH – FIRE HYDRANT
- WM – WATER METER
- WV – WATER VALVE
- ICV – IRRIGATION CONTROL VALVE
- GRATE INLET
- GRATE INLET
- MH – MANHOLE
- CO – CLEANOUT
- TP – TELEPHONE PEDESTAL
- EB – ELECTRIC BOX
- TSB – TRAFFIC SIGNAL BOX
- LP – LIGHT POLE
- TLP – TRAFFIC LIGHT POLE
- GL – GROUND/SPOT LIGHT
- MB – MAIL BOX
- WR – WATER RISER
- FDC – FIRE DEPARTMENT CONNECTION
- TB – TELEPHONE BOX
- PP – POWER POLE
- PP/T – POWER POLE W/TRANSFORMER
- PP/LT – POWER POLE W/LIGHT
- PP/CT – POWER POLE W/CONDUIT
- MP – METER POLE
- SP – SERVICE POLE
- GA – GUY ANCHOR
- OHP – OVERHEAD POWER LINE
- BWF – BARBED WIRE FENCE
- WIF – WROUGHT IRON FENCE
- WF – WOOD FENCE
- CLF – CHAINLINK FENCE
- GP – GATE POST
- (P) – PER PLANS
- APPROX. – APPROXIMATE
- HB – HIGHBANK
- SIGN
- PLM – PIPELINE MARKER
- TSP – TRAFFIC SIGNAL POLE
- GR – GUARD RAIL
- UCS – UNDERGROUND CABLE SIGN
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- F.C. – FILM CODE
- B.L. – BUILDING LINE
- U.E. – UTILITY EASEMENT
- TREE/SHRUB

GENERAL NOTES

1. SURVEYOR DID NOT ABSTRACT SUBJECT PROPERTY. THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A CURRENT TITLE REPORT OR ABSTRACTORS CERTIFICATE AND WOULD BE SUBJECT TO ANY AND ALL CONDITIONS OR RESTRICTIONS THAT A CURRENT TITLE REPORT OR ABSTRACTORS CERTIFICATE MAY DISCLOSE.
2. BEARINGS WERE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE (NAD 83). ALL DISTANCES SHOWN HEREON ARE SURFACE DISTANCES AND MAY BE BROUGHT TO GRID BY APPLYING THE FOLLOWING SCALE FACTOR: 0.999895535.
3. ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), FLOOD INSURANCE RATE MAP (FIRM) FOR HARRIS COUNTY, TEXAS, MAP NO. 48201C0690N REVISED/DATED JANUARY 6, 2017, THE SUBJECT TRACT APPEARS TO LIE WITHIN UNSHADED ZONE "X". THIS DETERMINATION WAS DONE BY GRAPHIC PLOTTING AND IS APPROXIMATE ONLY, AND HAS NOT BEEN FIELD VERIFIED. THIS FLOOD STATEMENT DOES NOT IMPLY THAT THE PROPERTY OR STRUCTURES THEREON WILL BE FREE FROM FLOODING OR FLOOD DAMAGE. ON RARE OCCASIONS FLOODS CAN AND WILL OCCUR AND FLOOD HEIGHTS MAY BE INCREASED BY MAN-MADE OR NATURAL CAUSES. THIS FLOOD STATEMENT SHALL NOT CREATE LIABILITY ON THE PART OF WINDROSE LAND SERVICES.
4. DEVELOPMENT OF THIS TRACT IS SUBJECT TO REQUIREMENTS PER CITY OF HOUSTON ORDINANCE NO. 2013-343 WHICH STIPULATES PLATTING AND SETBACK CONSTRAINTS. PROPOSED USAGE OF THIS TRACT WILL DETERMINE ACTUAL BUILDING SETBACK LINE(S) ALONG ANY ADJOINING STREETS. REFER TO CITY OF HOUSTON BUILDING CODES TO ESTABLISH MINIMUM PUBLISHED SETBACK REQUIREMENTS. ULTIMATELY THE CITY OF HOUSTON PLANNING COMMISSION WILL DETERMINE REQUIRED SETBACKS UPON REVIEW OF PLANS OR PLATS SUBMITTED TO SAID COMMISSION. THIS TRACT MAY REQUIRE PLATTING AS A CONDITION FOR RECEIVING BUILDING PERMITS.
5. READILY VISIBLE IMPROVEMENTS AND UTILITIES WERE LOCATED WITH THIS SURVEY, NO SUBSURFACE PROBING, EXCAVATION OR EXPLORATION WAS PERFORMED BY WINDROSE LAND SERVICES.
6. ENVIRONMENTAL AND DRAINAGE ISSUES ARE BEYOND THE SCOPE OF THIS SURVEY.
7. THE SQUARE FOOTAGE TOTALS SHOWN HEREON ARE BASED ON THE MATHEMATICAL CLOSURE OF THE COURSES AND DISTANCES REFLECTED ON THE SURVEY. IT DOES NOT INCLUDE THE TOLERANCES THAT MAY BE PRESENT DUE TO THE POSITIONAL ACCURACY OF THE BOUNDARY MONUMENTATION.
8. THE WORD "CERTIFY" OR "CERTIFICATE" AS SHOWN AND USED HEREON MEANS AN EXPRESSION OF PROFESSIONAL OPINION REGARDING THE FACTS OF THE SURVEY AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE EXPRESSED OR IMPLIED.
9. ELEVATIONS SHOWN TO THE NEAREST TENTH ARE NATURAL GROUND SURFACE ELEVATIONS AND ELEVATIONS SHOWN TO THE NEAREST HUNDREDTH ARE SOLID SURFACE ELEVATIONS.
10. GAS, SANITARY, STORM, TELEPHONE AND WATER LINES SHOWN HEREON ARE BASED ON UTILITY PLANS ACQUIRED FROM CITY OF HOUSTON AND WERE FIELD VERIFIED WHERE POSSIBLE. OTHER UTILITY PLANS OR INFORMATION MAY EXIST NOT KNOWN TO THIS COMPANY.
11. SURVEYOR DID NOT PHYSICALLY ENTER MANHOLES. UNDERGROUND PIPE SIZES WERE DETERMINED BY A "MEASURE DOWN" METHOD FROM TOP OF MANHOLE RIM OR TOP OF GRATE OR TOP OF CURB AND WERE COMPARED WITH UTILITY PLANS WHERE POSSIBLE.
12. SURVEYOR HAS CONTACTED DIGTESS FOR LOCATION OF BURIED UTILITY AND FIBER OPTIC LINES PRIOR TO THIS SURVEY. SURVEYOR CANNOT CERTIFY OR GUARANTY THE ACCURACY OR COMPLETENESS OF THIS REQUEST. OTHER UNDERGROUND UTILITY LINES MAY EXIST NOT KNOWN TO THIS COMPANY. IT IS THE CONTRACTORS RESPONSIBILITY TO CONTACT DIGTESS OR OTHER UTILITY NOTIFICATION SERVICES FOR LOCATION OF UNDERGROUND UTILITIES, PRIOR TO CONSTRUCTION.

BENCHMARK — PUBLISHED ELEVATION – 43.26'

HARRIS COUNTY FLOODPLAIN REFERENCE MARKS NO. 050010 BEING A BRASS DISC STAMPED "BM12 WEISSER" SET ON THE EAST R.O.W. LINE OF HOUSTON APPROXIMATELY 0.15 MILE SOUTH FROM ITS INTERSECTION OF WHITE OAK BAYOU DRIVE. (NAVD88, 2001 ADJUSTMENT)

TEMPORARY BENCHMARK "A" — ELEVATION – 46.53

BEING A CUT BOX SET ON CONCRETE INLET LOCATED ON THE EAST SIDE OF GANO STREET APPROXIMATELY 35 FEET NORTH FROM THE CENTER LINE OF QUITMAN STREET.

TEMPORARY BENCHMARK "B" — ELEVATION – 46.54

BEING A CUT BOX SET ON CONCRETE INLET LOCATED ON THE NORTH SIDE OF QUITMAN STREET APPROXIMATELY 60 FEET WEST FROM THE CENTER LINE OF FULTON STREET.

TEMPORARY BENCHMARK "C" — ELEVATION – 48.22

BEING A CUT BOX SET ON CONCRETE INLET LOCATED ON THE NORTH SIDE OF QUITMAN STREET APPROXIMATELY 110 FEET WEST FROM THE CENTER LINE OF NORTH MAIN STREET.

TEMPORARY BENCHMARK "D" — ELEVATION – 57.73

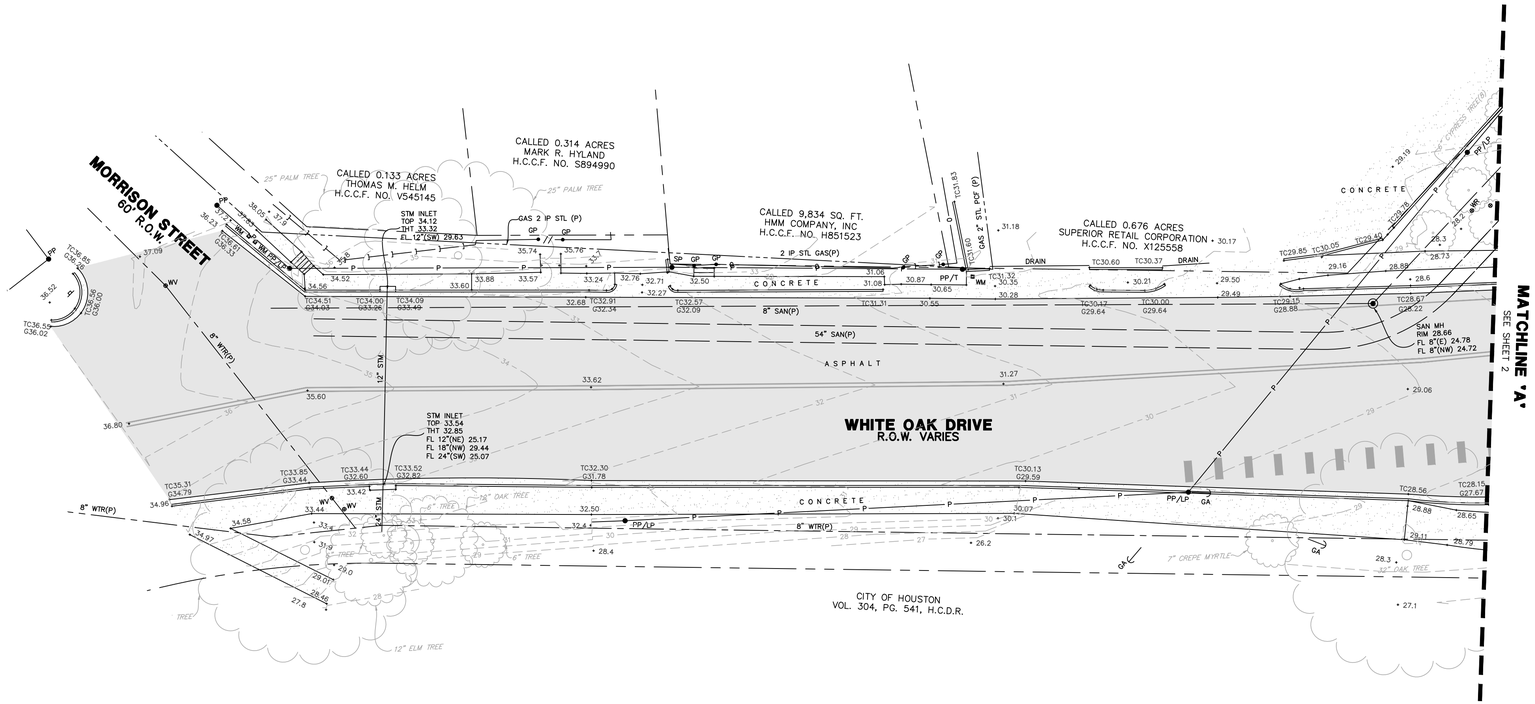
BEING A CUT BOX SET ON CONCRETE INLET LOCATED ON THE SOUTH SIDE OF QUITMAN STREET APPROXIMATELY 175 FEET WEST FROM THE CENTER LINE OF SOUTH STREET.

TEMPORARY BENCHMARK "E" — ELEVATION – 27.16

BEING A BOX CUT ON STORM INLET LOCATED ON THE NORTHEAST SIDE OF WHITE OAK DRIVE, +/– 66 FEET NORTHWEST FROM THE INTERSECTION OF WHITE OAK DRIVE AND HOUSTON AVENUE.

TEMPORARY BENCHMARK "F" — ELEVATION – 57.73

BEING A BOX CUT ON STORM INLET LOCATED ON THE SOUTH SIDE OF QUITMAN STREET, +/– 40 FEET WEST FROM THE INTERSECTION OF MAURY STREET AND QUITMAN STREET.



NO.	REVISIONS	DATE	NAME
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HARRIS COUNTY
ENGINEERING DEPARTMENT

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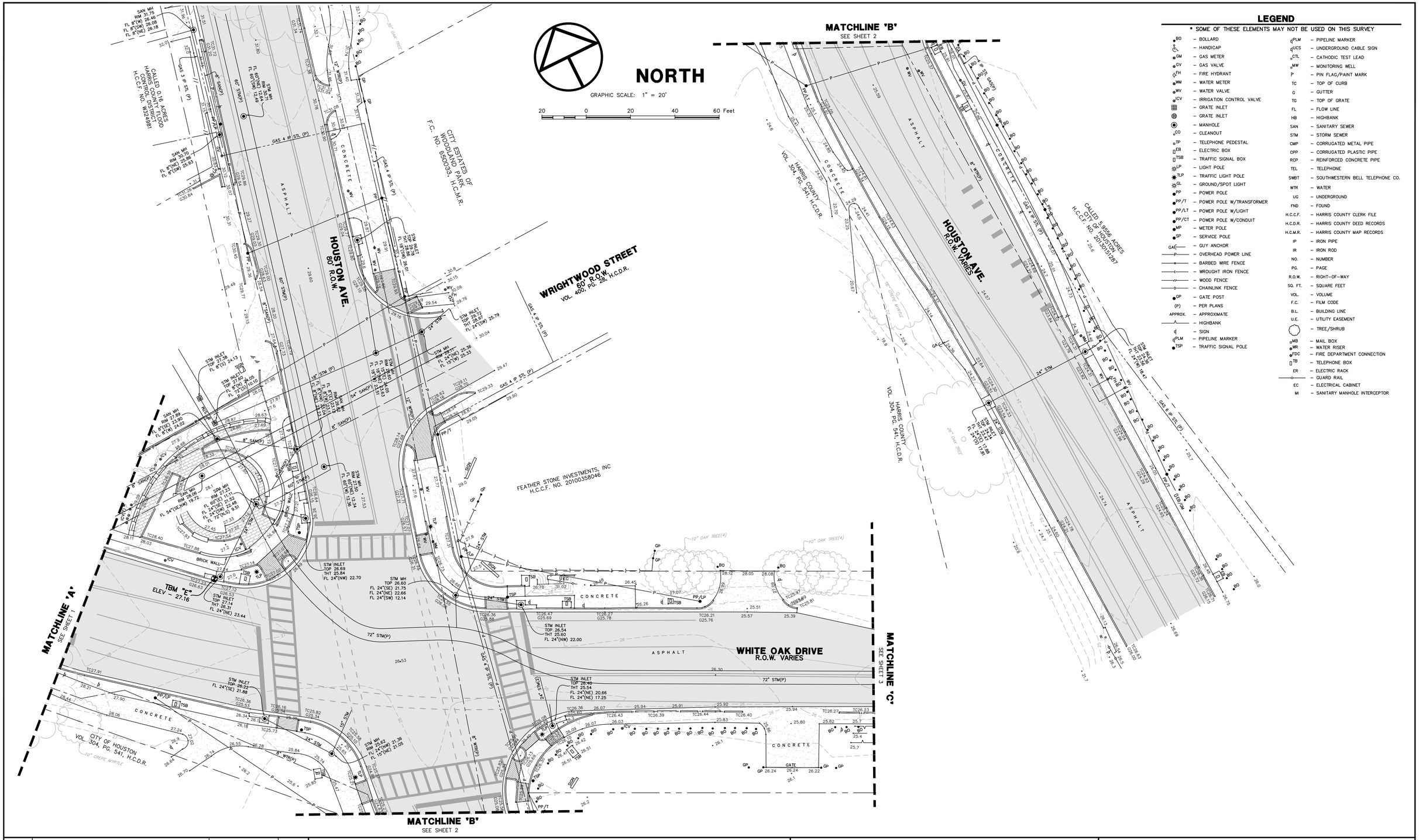
FIRM REGISTRATION NO. 10108800 | WINDROSESERVICES.COM

QUITMAN STREET IMPROVEMENTS

SHEET DESCRIPTION: R.O.W. TOPO OF QUITMAN STREET/WHITE OAK DRIVE BETWEEN MORRISON STREET AND MAURY STREET

DRAWN BY:		DATE:
AT		03-11-2021
CK'D BY:	SCALE:	SHEET NO:
TW	1"=20'	7 / 21



LEGEND

* SOME OF THESE ELEMENTS MAY NOT BE USED ON THIS SURVEY

- BO – BOLLARD
- – HANDICAP
- GM – GAS METER
- GV – GAS VALVE
- FH – FIRE HYDRANT
- WM – WATER METER
- WV – WATER VALVE
- ICV – IRRIGATION CONTROL VALVE
- – GRATE INLET
- – GRATE INLET
- – MANHOLE
- CO – CLEANOUT
- TP – TELEPHONE PEDESTAL
- EB – ELECTRIC BOX
- TSB – TRAFFIC SIGNAL BOX
- LP – LIGHT POLE
- TLP – TRAFFIC LIGHT POLE
- GL – GROUND/SPOT LIGHT
- PP – POWER POLE
- PP/T – POWER POLE W/TRANSFORMER
- PP/LT – POWER POLE W/LIGHT
- PP/CT – POWER POLE W/CONDUIT
- MP – METER POLE
- SP – SERVICE POLE
- GA – GUY ANCHOR
- —P— – OVERHEAD POWER LINE
- —x— – BARBED WIRE FENCE
- —i— – WROUGHT IRON FENCE
- —/— – WOOD FENCE
- —o— – CHAINLINK FENCE
- GP – GATE POST
- (P) – PER PLANS
- APPROX. – APPROXIMATE
- – HIGHBANK
- – SIGN
- PLM – PIPELINE MARKER
- TSP – TRAFFIC SIGNAL POLE
- PLM – PIPELINE MARKER
- UCS – UNDERGROUND CABLE SIGN
- CTL – CATHODIC TEST LEAD
- MW – MONITORING WELL
- PK – MAG FLAG/PAINT MARK
- TC – TOP OF CURB
- G – GUTTER
- TG – TOP OF GRATE
- FL – FLOW LINE
- HB – HIGHBANK
- SAN – SANITARY SEWER
- STM – STORM SEWER
- CMP – CORRUGATED METAL PIPE
- CPP – CORRUGATED PLASTIC PIPE
- RCP – REINFORCED CONCRETE PIPE
- TEL – TELEPHONE
- SWBT – SOUTHWESTERN BELL TELEPHONE CO.
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- FND – FOUND
- H.C.C.F. – HARRIS COUNTY CLERK FILE
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- SQ. FT. – SQUARE FEET
- VOL. – VOLUME
- F.C. – FILM CODE
- B.L. – BUILDING LINE
- U.E. – UTILITY EASEMENT
- – TREE/SHRUB
- MB – MAIL BOX
- WR – WATER RISER
- FDC – FIRE DEPARTMENT CONNECTION
- TB – TELEPHONE BOX
- ER – ELECTRIC RACK
- – GUARD RAIL
- EC – ELECTRICAL CABINET
- MI – SANITARY MANHOLE INTERCEPTOR

NO.	REVISIONS	DATE	NAME
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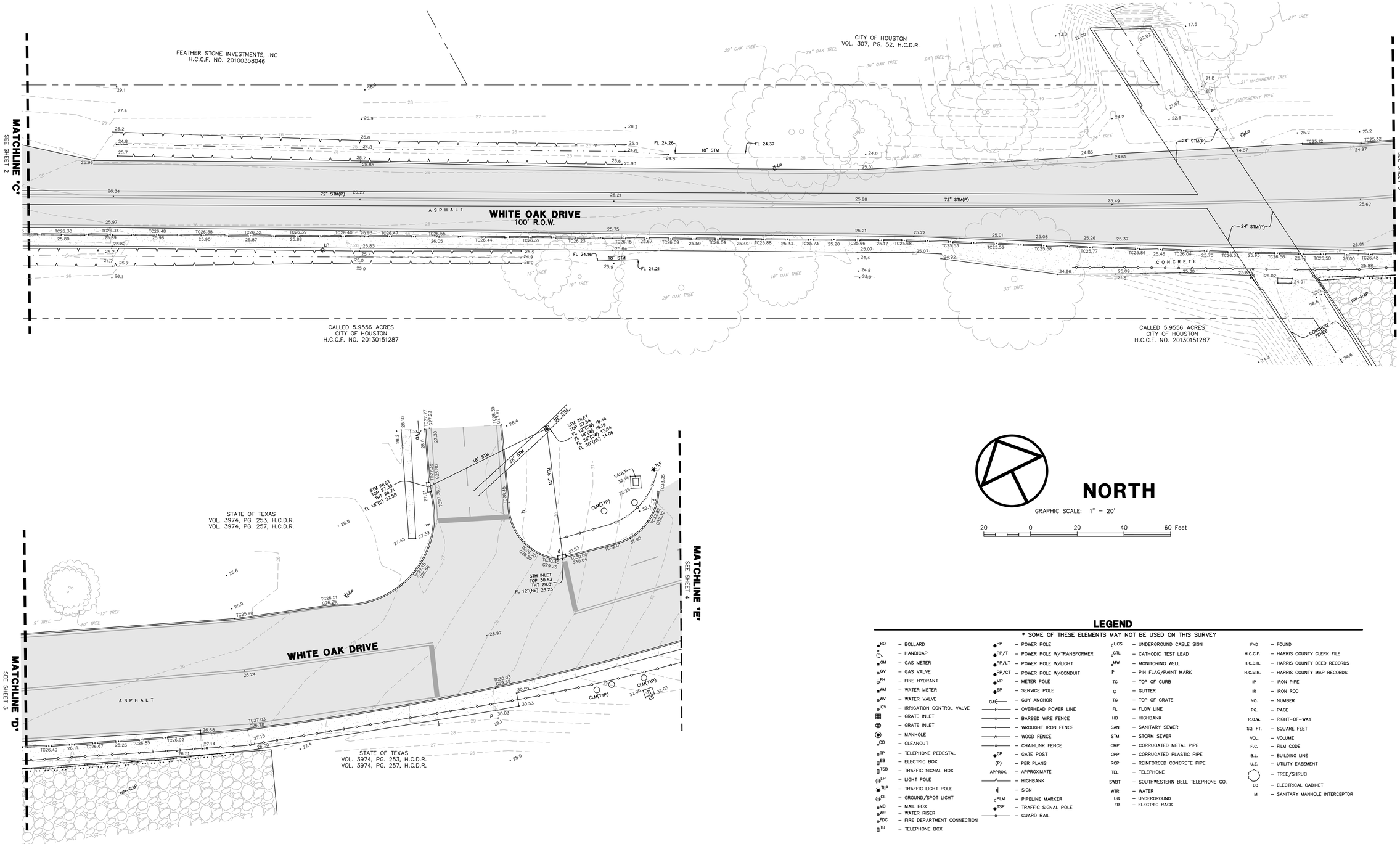
QUITMAN STREET IMPROVEMENTS

SHEET DESCRIPTION: R.O.W. TOPO OF QUITMAN STREET/WHITE OAK DRIVE BETWEEN MORRISON STREET AND MAURY STREET

DRAWN BY:		DATE:
AT		03-11-2021
CK'D BY:	SCALE:	SHEET NO:
TW	1"=20'	8 / 21



NORTH

GRAPHIC SCALE: 1" = 20'

20 0 20 40 60 Feet

LEGEND

* SOME OF THESE ELEMENTS MAY NOT BE USED ON THIS SURVEY

BO	– BOLLARD	PP	– POWER POLE	UCS	– UNDERGROUND CABLE SIGN	FND	– FOUND
	– HANDICAP	PP/T	– POWER POLE W/TRANSFORMER	CTL	– CATHODIC TEST LEAD	H.C.C.F.	– HARRIS COUNTY CLERK FILE
GM	– GAS METER	PP/LT	– POWER POLE W/LIGHT	MW	– MONITORING WELL	H.C.D.R.	– HARRIS COUNTY DEED RECORDS
GV	– GAS VALVE	PP/CT	– POWER POLE W/CONDUIT		– PIN FLAG/PAINT MARK	H.C.M.R.	– HARRIS COUNTY MAP RECORDS
FH	– FIRE HYDRANT	MP	– METER POLE	TC	– TOP OF CURB	IP	– IRON PIPE
WM	– WATER METER	SP	– SERVICE POLE	G	– GUTTER	IR	– IRON ROD
WV	– WATER VALVE	GAC	– GUY ANCHOR	TG	– TOP OF GRATE	NO.	– NUMBER
ICV	– IRRIGATION CONTROL VALVE		– OVERHEAD POWER LINE	FL	– FLOW LINE	PG.	– PAGE
	– GRATE INLET		– BARBED WIRE FENCE	HB	– HIGHBANK	R.O.W.	– RIGHT-OF-WAY
	– GRATE INLET		– WROUGHT IRON FENCE	SAN	– SANITARY SEWER	SQ. FT.	– SQUARE FEET
	– MANHOLE		– WOOD FENCE	STM	– STORM SEWER	VOL.	– VOLUME
CO	– CLEANOUT		– CHAINLINK FENCE	CMP	– CORRUGATED METAL PIPE	F.C.	– FILM CODE
TP	– TELEPHONE PEDESTAL	GP	– GATE POST	CPP	– CORRUGATED PLASTIC PIPE	B.L.	– BUILDING LINE
EB	– ELECTRIC BOX	(P)	– PER PLANS	RCP	– REINFORCED CONCRETE PIPE	U.E.	– UTILITY EASEMENT
TSB	– TRAFFIC SIGNAL BOX	APPROX.	– APPROXIMATE	TEL	– TELEPHONE		– TREE/SHRUB
LP	– LIGHT POLE		– HIGHBANK	SWBT	– SOUTHWESTERN BELL TELEPHONE CO.	EC	– ELECTRICAL CABINET
TLP	– TRAFFIC LIGHT POLE		– SIGN	WTR	– WATER	MI	– SANITARY MANHOLE INTERCEPTOR
GL	– GROUND/SPOT LIGHT	PLM	– PIPELINE MARKER	UG	– UNDERGROUND		
MB	– MAIL BOX	TSP	– TRAFFIC SIGNAL POLE	ER	– ELECTRIC RACK		
WR	– WATER RISER		– GUARD RAIL				
FDC	– FIRE DEPARTMENT CONNECTION						
TB	– TELEPHONE BOX						

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QUITMAN STREET IMPROVEMENTS

SHEET DESCRIPTION: R.O.W. TOPO OF QUITMAN STREET/WHITE OAK DRIVE BETWEEN MORRISON STREET AND MAURY STREET

DRAWN BY:		DATE:
AT		03-11-2021
CK'D BY:	SCALE:	SHEET NO:
TW	1"=20'	9 / 21

NORTH

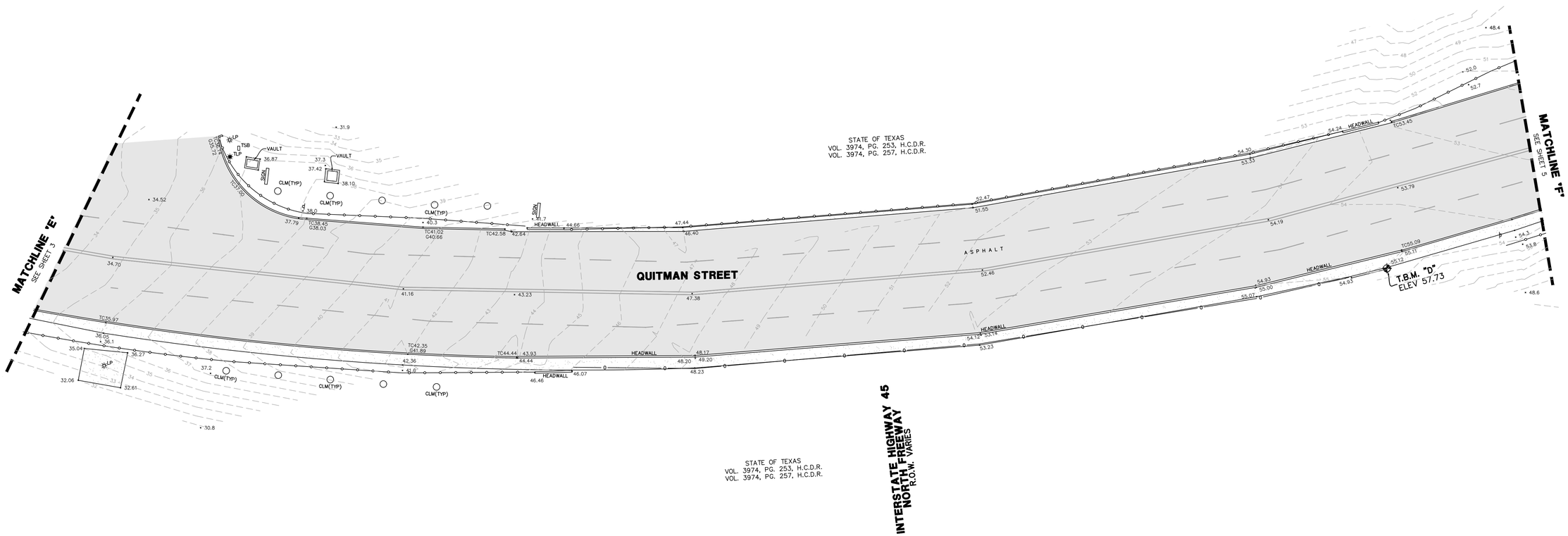
GRAPHIC SCALE: 1" = 20'

20 0 20 40 60 Feet

LEGEND

* SOME OF THESE ELEMENTS MAY NOT BE USED ON THIS SURVEY

BO – BOLLARD	PP – POWER POLE	UCS – UNDERGROUND CABLE SIGN	FND – FOUND		
HC – HANDICAP	PP/T – POWER POLE W/TRANSFORMER	CTL – CATHODIC TEST LEAD	H.C.C.F. – HARRIS COUNTY CLERK FILE		
GM – GAS METER	PP/LT – POWER POLE W/LIGHT	MW – MONITORING WELL	H.C.D.R. – HARRIS COUNTY DEED RECORDS		
GV – GAS VALVE	PP/CT – POWER POLE W/CONDUIT	PK – PIN FLAG/PAINT MARK	H.C.M.R. – HARRIS COUNTY MAP RECORDS		
FH – FIRE HYDRANT	MP – METER POLE	TC – TOP OF CURB	IP – IRON PIPE		
WM – WATER METER	SP – SERVICE POLE	G – GUTTER	IR – IRON ROD		
WV – WATER VALVE	GA – GUY ANCHOR	TG – TOP OF GRATE	NO. – NUMBER		
ICV – IRRIGATION CONTROL VALVE	—P— OVERHEAD POWER LINE	FL – FLOW LINE	PG. – PAGE		
– GRATE INLET	—x— BARBED WIRE FENCE	HB – HIGHBANK	R.O.W. – RIGHT-OF-WAY		
– GRATE INLET	—i— WROUGHT IRON FENCE	SAN – SANITARY SEWER	SQ. FT. – SQUARE FEET		
– MANHOLE	—/— WOOD FENCE	STM – STORM SEWER	VOL. – VOLUME		
CO – CLEANOUT	—o— CHAINLINK FENCE	CMP – CORRUGATED METAL PIPE	F.C. – FILM CODE		
TP – TELEPHONE PEDESTAL	GP – GATE POST	CPP – CORRUGATED PLASTIC PIPE	B.L. – BUILDING LINE		
EB – ELECTRIC BOX	(P) – PER PLANS	RCP – REINFORCED CONCRETE PIPE	U.E. – UTILITY EASEMENT		
TSB – TRAFFIC SIGNAL BOX	APPROX. – APPROXIMATE	TEL – TELEPHONE	– TREE/SHRUB		
LP – LIGHT POLE	– HIGHBANK	SWBT – SOUTHWESTERN BELL TELEPHONE CO.	MI – SANITARY MANHOLE INTERCEPTOR		
TLP – TRAFFIC LIGHT POLE	– SIGN	WTR – WATER			
GL – GROUND/SPOT LIGHT	PLM – PIPELINE MARKER	UG – UNDERGROUND			
MB – MAIL BOX	TSP – TRAFFIC SIGNAL POLE	ER – ELECTRIC RACK			
WR – WATER RISER	– GUARD RAIL	EC – ELECTRICAL CABINET			
FDC – FIRE DEPARTMENT CONNECTION					
TB – TELEPHONE BOX					



NO.	REVISIONS	DATE	NAME
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HARRIS COUNTY
ENGINEERING DEPARTMENT

HARRIS COUNTY TEXAS 1836

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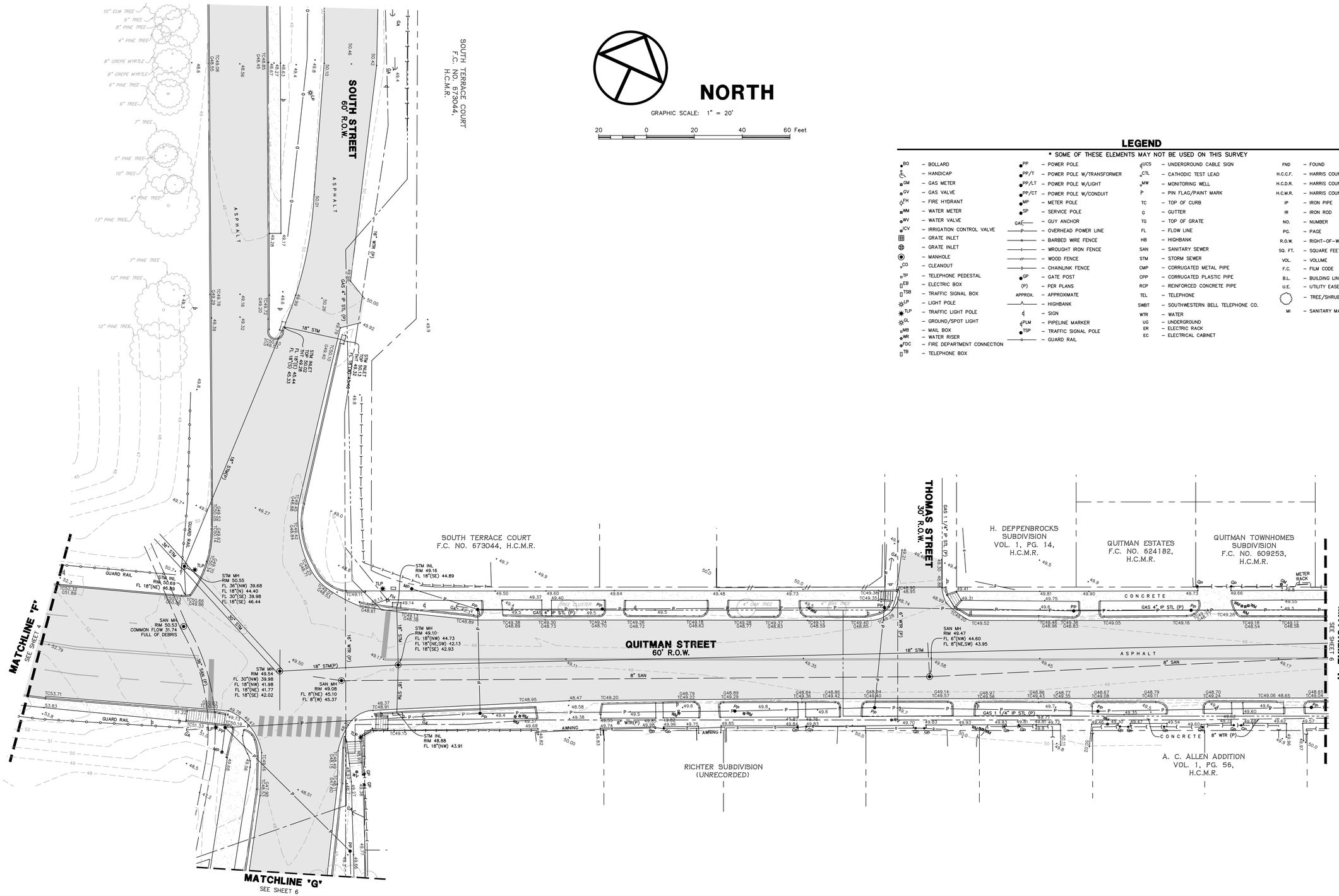
QUITMAN STREET IMPROVEMENTS

SHEET DESCRIPTION: R.O.W. TOPO OF QUITMAN STREET/WHITE OAK DRIVE BETWEEN MORRISON STREET AND MAURY STREET

DRAWN BY: AT		DATE: 03-11-2021
CK'D BY: TW	SCALE: 1"=20'	SHEET NO: 10 / 21



NORTH

GRAPHIC SCALE: 1" = 20'

20 0 20 40 60 Feet

LEGEND

* SOME OF THESE ELEMENTS MAY NOT BE USED ON THIS SURVEY

BO	– BOLLARD	PP	– POWER POLE	UCS	– UNDERGROUND CABLE SIGN	FND	– FOUND
	– HANDICAP	PP/T	– POWER POLE W/TRANSFORMER	CTL	– CATHODIC TEST LEAD	H.C.C.F.	– HARRIS COUNTY CLERK FILE
GM	– GAS METER	PP/LT	– POWER POLE W/LIGHT	MW	– MONITORING WELL	H.C.D.R.	– HARRIS COUNTY DEED RECORDS
GV	– GAS VALVE	PP/CT	– POWER POLE W/CONDUIT	P	– PIN FLAG/PAINT MARK	H.C.M.R.	– HARRIS COUNTY MAP RECORDS
FH	– FIRE HYDRANT	MP	– METER POLE	TC	– TOP OF CURB	IP	– IRON PIPE
WM	– WATER METER	SP	– SERVICE POLE	G	– GUTTER	IR	– IRON ROD
WV	– WATER VALVE	GAC	– GUY ANCHOR	TG	– TOP OF GRATE	NO.	– NUMBER
ICV	– IRRIGATION CONTROL VALVE	OHP	– OVERHEAD POWER LINE	FL	– FLOW LINE	PG.	– PAGE
	– GRATE INLET	BWF	– BARBED WIRE FENCE	HB	– HIGHBANK	R.O.W.	– RIGHT–OF–WAY
	– GRATE INLET	WIF	– WROUGHT IRON FENCE	SAN	– SANITARY SEWER	SQ. FT.	– SQUARE FEET
	– MANHOLE	WF	– WOOD FENCE	STM	– STORM SEWER	VOL.	– VOLUME
CO	– CLEANOUT	CLF	– CHAINLINK FENCE	CMP	– CORRUGATED METAL PIPE	F.C.	– FILM CODE
TP	– TELEPHONE PEDESTAL	GP	– GATE POST	CPP	– CORRUGATED PLASTIC PIPE	B.L.	– BUILDING LINE
EB	– ELECTRIC BOX	(P)	– PER PLANS	RCP	– REINFORCED CONCRETE PIPE	U.E.	– UTILITY EASEMENT
TSB	– TRAFFIC SIGNAL BOX	APPROX.	– APPROXIMATE	TEL	– TELEPHONE		– TREE/SHRUB
LP	– LIGHT POLE		– HIGHBANK	SWBT	– SOUTHWESTERN BELL TELEPHONE CO.	MI	– SANITARY MANHOLE INTERCEPTOR
TLP	– TRAFFIC LIGHT POLE		– SIGN	WTR	– WATER		
GL	– GROUND/SPOT LIGHT	PLM	– PIPELINE MARKER	UG	– UNDERGROUND		
MB	– MAIL BOX	TSP	– TRAFFIC SIGNAL POLE	ER	– ELECTRIC RACK		
WR	– WATER RISER		– GUARD RAIL	EC	– ELECTRICAL CABINET		
FDC	– FIRE DEPARTMENT CONNECTION						
TB	– TELEPHONE BOX						

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CK'D BY: TW	SCALE: 1"=20'	SHEET NO: 11 / 21

NORTH

GRAPHIC SCALE: 1" = 20'

20 0 20 40 60 Feet

LEGEND

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BO	– BOLLARD	PP	– POWER POLE	UCS	– UNDERGROUND CABLE SIGN	FND	– FOUND
	– HANDICAP	PP/T	– POWER POLE W/TRANSFORMER	CTL	– CATHODIC TEST LEAD	H.C.C.F.	– HARRIS COUNTY CLERK FILE
GM	– GAS METER	PP/LT	– POWER POLE W/LIGHT	MW	– MONITORING WELL	H.C.D.R.	– HARRIS COUNTY DEED RECORDS
GV	– GAS VALVE	PP/CT	– POWER POLE W/CONDUIT	P	– PIN FLAG/PAINT MARK	H.C.M.R.	– HARRIS COUNTY MAP RECORDS
FH	– FIRE HYDRANT	MP	– METER POLE	TC	– TOP OF CURB	IP	– IRON PIPE
WM	– WATER METER	SP	– SERVICE POLE	G	– GUTTER	IR	– IRON ROD
WV	– WATER VALVE	GA	– GUY ANCHOR	TG	– TOP OF GRATE	NO.	– NUMBER
ICV	– IRRIGATION CONTROL VALVE		– OVERHEAD POWER LINE	FL	– FLOW LINE	PG.	– PAGE
	– GRATE INLET		– BARBED WIRE FENCE	HB	– HIGHBANK	R.O.W.	– RIGHT-OF-WAY
	– GRATE INLET		– WROUGHT IRON FENCE	SAN	– SANITARY SEWER	SQ. FT.	– SQUARE FEET
	– MANHOLE		– WOOD FENCE	STM	– STORM SEWER	VOL.	– VOLUME
CO	– CLEANOUT		– CHAINLINK FENCE	CMP	– CORRUGATED METAL PIPE	F.C.	– FILM CODE
TP	– TELEPHONE PEDESTAL	GP	– GATE POST	CPP	– CORRUGATED PLASTIC PIPE	B.L.	– BUILDING LINE
EB	– ELECTRIC BOX	(P)	– PER PLANS	RCP	– REINFORCED CONCRETE PIPE	U.E.	– UTILITY EASEMENT
TSB	– TRAFFIC SIGNAL BOX	APPROX.	– APPROXIMATE	TEL	– TELEPHONE		– TREE/SHRUB
LP	– LIGHT POLE		– HIGHBANK	SWBT	– SOUTHWESTERN BELL TELEPHONE CO.	MI	– SANITARY MANHOLE INTERCEPTOR
TLP	– TRAFFIC LIGHT POLE		– SIGN	WTR	– WATER		
GL	– GROUND/SPOT LIGHT	PLM	– PIPELINE MARKER	UG	– UNDERGROUND		
MB	– MAIL BOX	TSP	– TRAFFIC SIGNAL POLE	ER	– ELECTRIC RACK		
WR	– WATER RISER		– GUARD RAIL	EC	– ELECTRICAL CABINET		
FDC	– FIRE DEPARTMENT CONNECTION						
TB	– TELEPHONE BOX						

MATCHLINE 'G'
SEE SHEET 5

CALLED 3.212 ACRES
HARRIS COUNTY
H.C.C.F. NO. Z107718

SOUTH STREET
R.O.W. VARIES

ASPHALT

CONCRETE

RICHTER SUBDIVISION
(UNRECORDED)

27" OAK TREE
30" MAGNOLIA
18" OAK TREE
42" OAK TREE
7" OAK TREE
12" OAK TREE
13" OAK TREE
28" OAK TREE
30" OAK TREE
13" PALM TREE

FLETCHER STREET
40' R.O.W.

H. DEPPENBROCKS
SUBDIVISION
VOL. 1, PG. 14,
H.C.M.R.

MATCHLINE 'H'
SEE SHEET 5

QUITMAN STREET
60' R.O.W.

A. C. ALLEN ADDITION
VOL. 1, PG. 56, H.C.M.R.

CHURCHILL STREET
50' R.O.W.

QUITMAN TERRACE
F.C. NO. 591247,
H.C.M.R.

MATCHLINE 'I'
SEE SHEET 7

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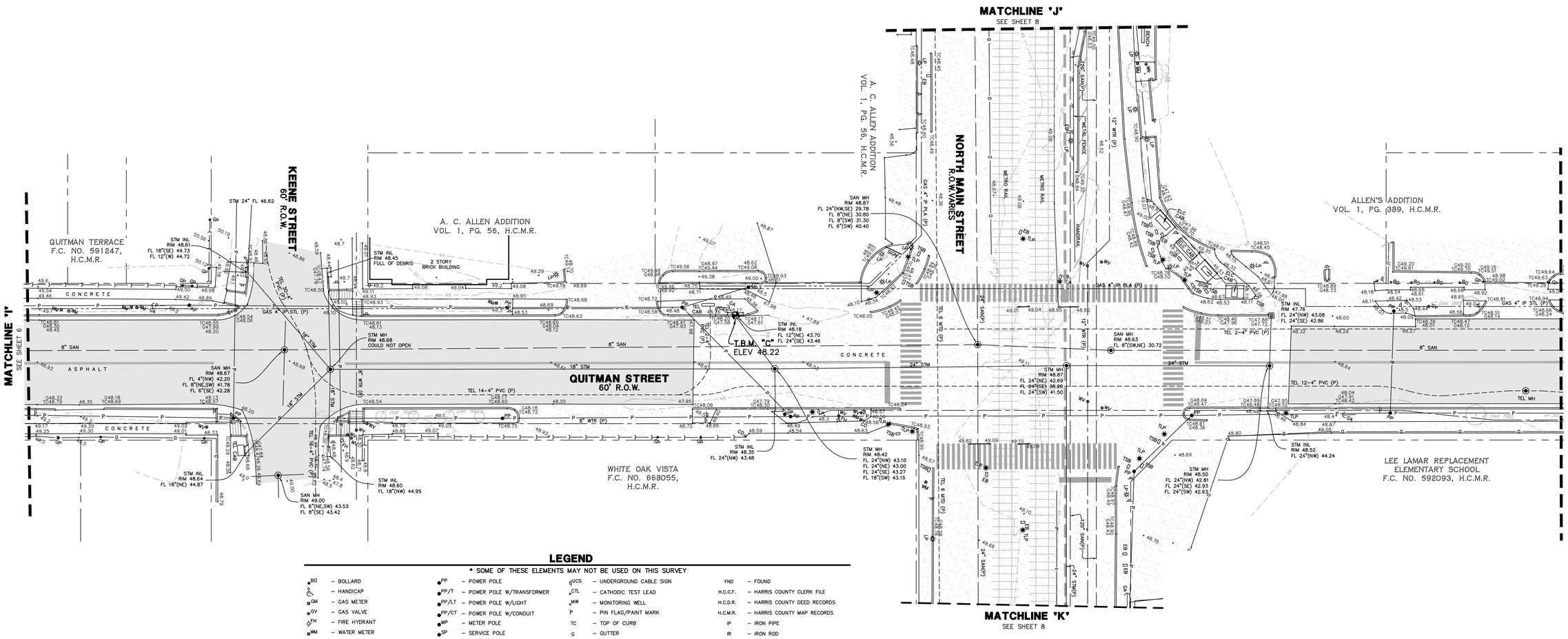
AT		03-11-2021
CK'D BY:	SCALE:	SHEET NO:
TW	1"=20'	12 / 21

NORTH

GRAPHIC SCALE: 1" = 20'

20 0 20 40 60 Feet



LEGEND

* SOME OF THESE ELEMENTS MAY NOT BE USED ON THIS SURVEY

- BO – BOLLARD
- HC – HANDICAP
- GM – GAS METER
- GV – GAS VALVE
- FH – FIRE HYDRANT
- WM – WATER METER
- WV – WATER VALVE
- ICV – IRRIGATION CONTROL VALVE
- GRATE INLET
- GRATE INLET
- MANHOLE
- CO – CLEANOUT
- TP – TELEPHONE PEDESTAL
- EB – ELECTRIC BOX
- TSB – TRAFFIC SIGNAL BOX
- LP – LIGHT POLE
- TLP – TRAFFIC LIGHT POLE
- GL – GROUND/SPOT LIGHT
- MB – MAIL BOX
- WR – WATER RISER
- FDC – FIRE DEPARTMENT CONNECTION
- TB – TELEPHONE BOX
- PP – POWER POLE
- PP/T – POWER POLE W/TRANSFORMER
- PP/LT – POWER POLE W/LIGHT
- PP/CT – POWER POLE W/CONDUIT
- MP – METER POLE
- SP – SERVICE POLE
- GAC – GUY ANCHOR
- OVERHEAD POWER LINE
- BARBED WIRE FENCE
- WROUGHT IRON FENCE
- WOOD FENCE
- CHAINLINK FENCE
- GP – GATE POST
- (P) – PER PLANS
- APPROX. – APPROXIMATE
- HIGHBANK
- SIGN
- PLM – PIPELINE MARKER
- TSP – TRAFFIC SIGNAL POLE
- GUARD RAIL
- UCS – UNDERGROUND CABLE SIGN
- CTL – CATHODIC TEST LEAD
- MW – MONITORING WELL
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- HB – HIGHBANK
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- H.C.M.R. – HARRIS COUNTY MAP RECORDS
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- VOL. – VOLUME
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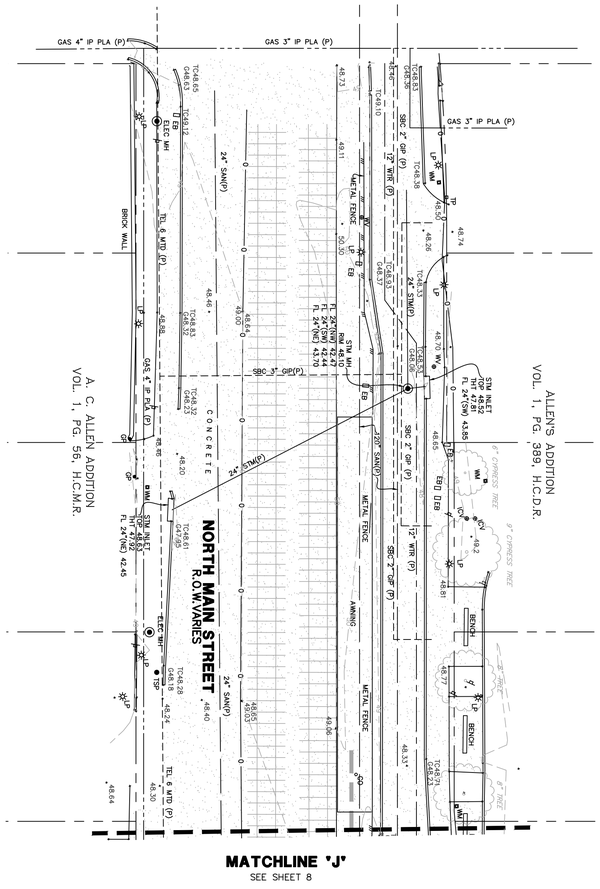
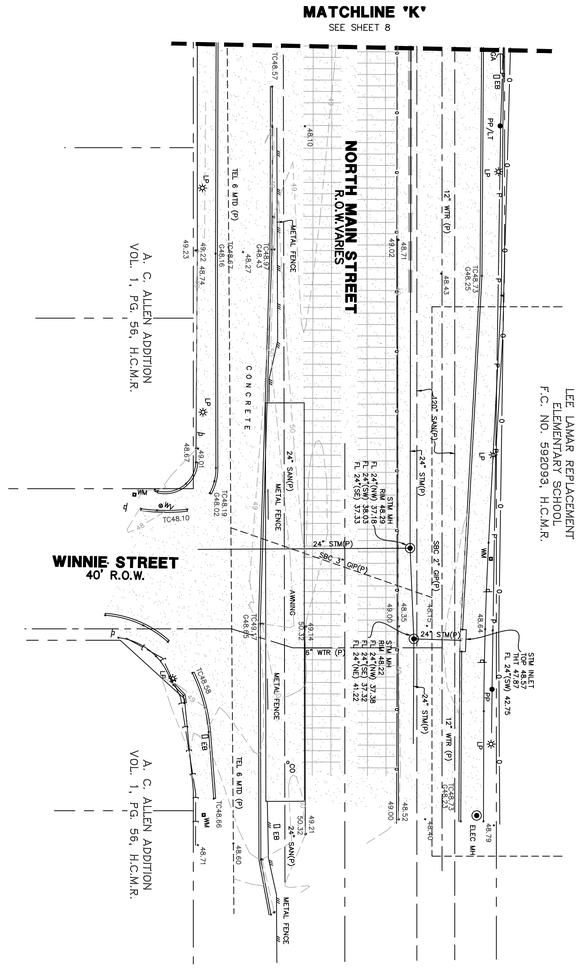
GRAPHIC SCALE: 1" = 20'

20 0 20 40 60 Feet





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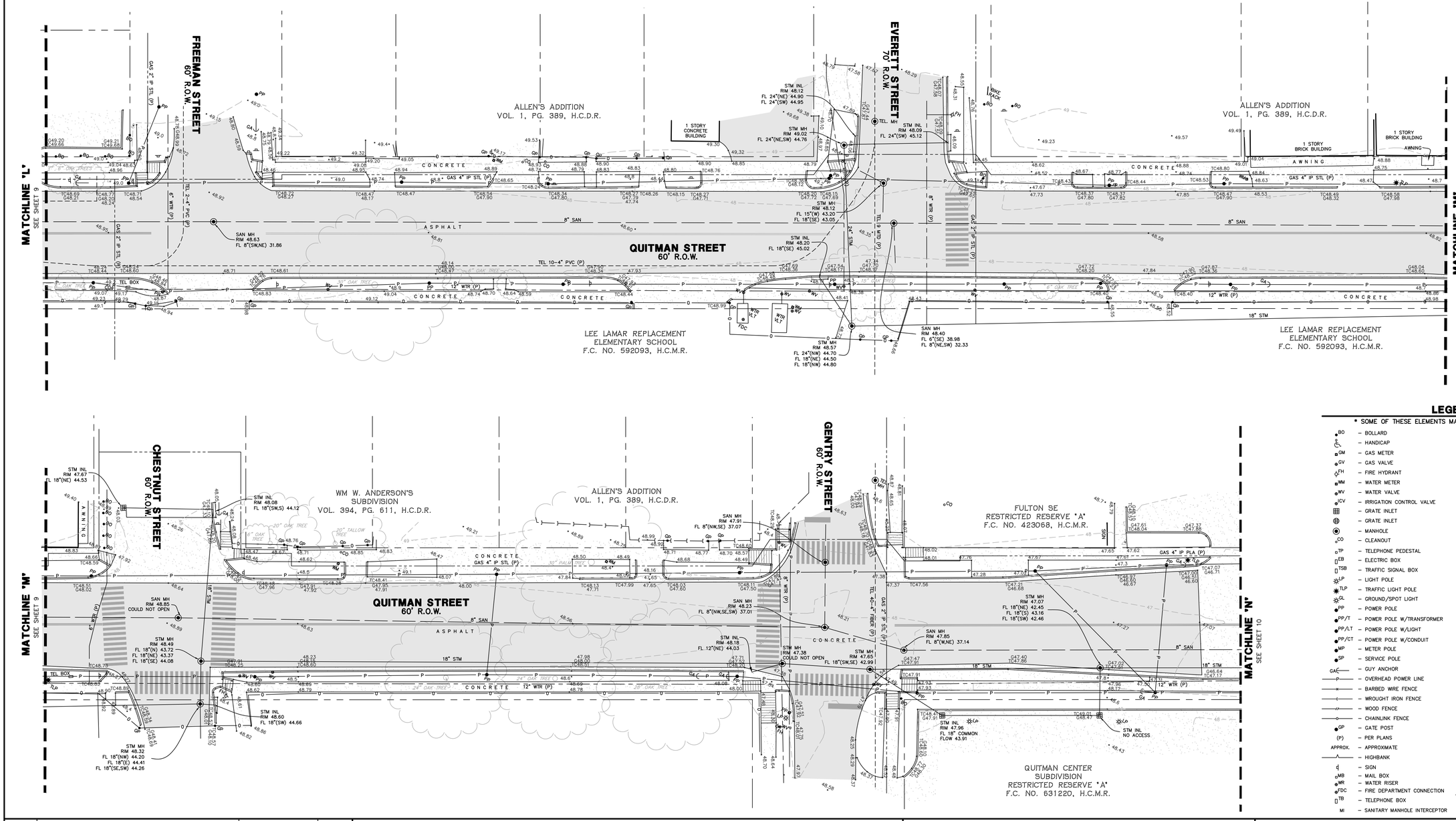

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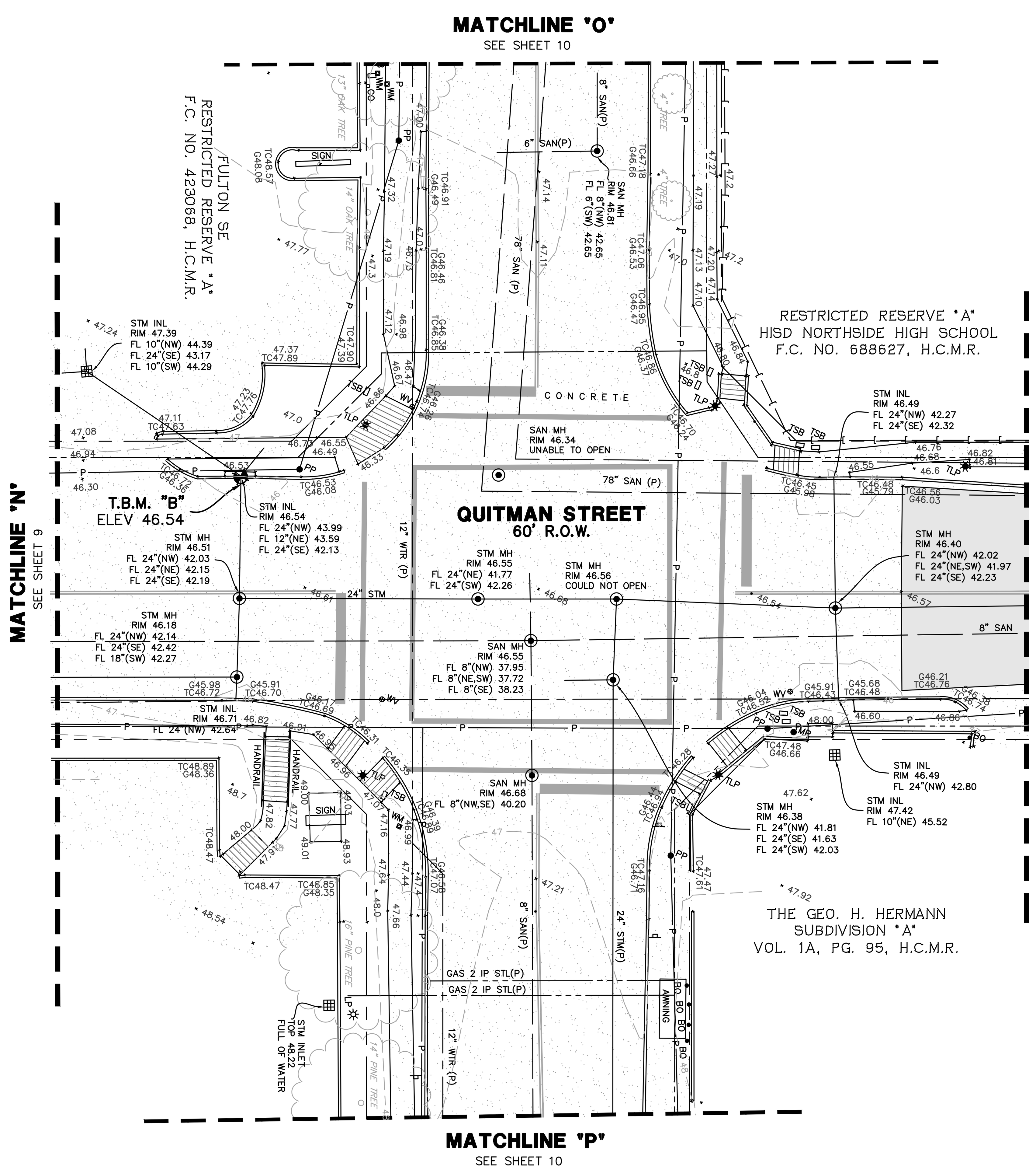

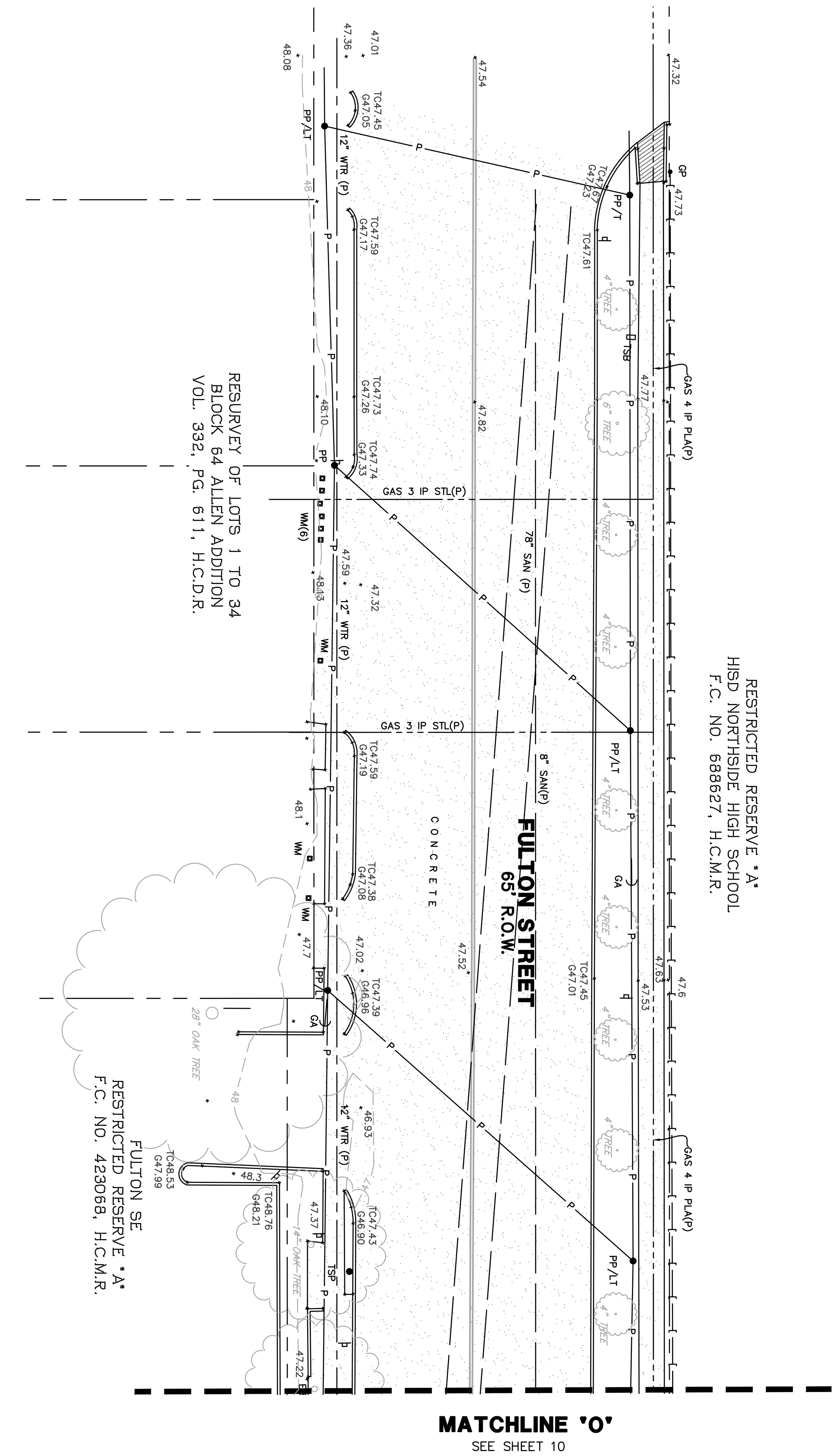

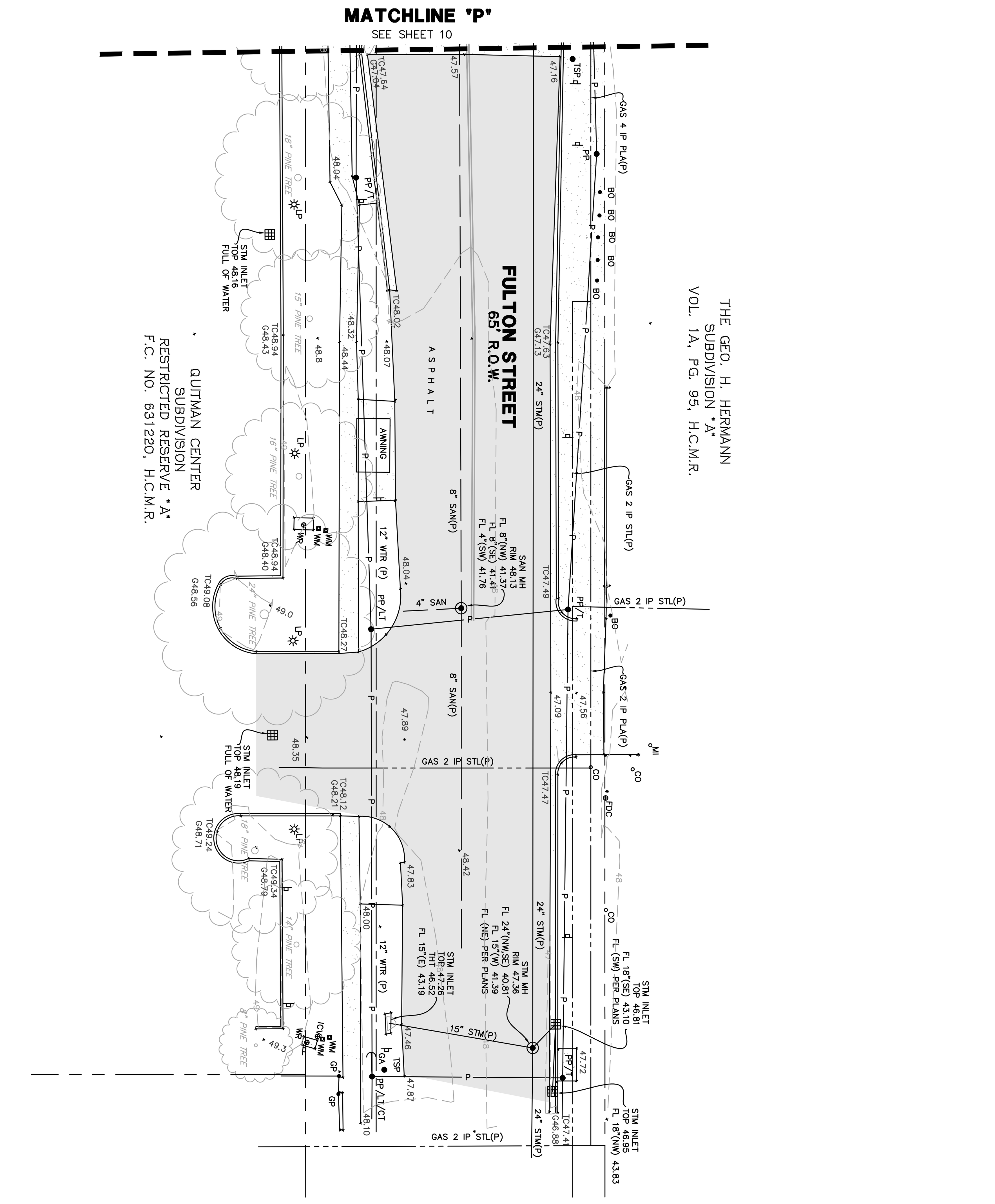

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	– GRATE INLET	—x—	– BARBED WIRE FENCE	HB	– HIGHBANK	R.O.W.	– RIGHT-OF-WAY
	– GRATE INLET		– WROUGHT IRON FENCE	SAN	– SANITARY SEWER	SQ. FT.	– SQUARE FEET
	– MANHOLE	—//—	– WOOD FENCE	STM	– STORM SEWER	VOL.	– VOLUME
CO	– CLEANOUT	—o—	– CHAINLINK FENCE	CMP	– CORRUGATED METAL PIPE	F.C.	– FILM CODE
TP	– TELEPHONE PEDESTAL	GP	– GATE POST	CPP	– CORRUGATED PLASTIC PIPE	B.L.	– BUILDING LINE
EB	– ELECTRIC BOX	(P)	– PER PLANS	RCP	– REINFORCED CONCRETE PIPE	U.E.	– UTILITY EASEMENT
TSB	– TRAFFIC SIGNAL BOX	APPROX.	– APPROXIMATE	TEL	– TELEPHONE		– TREE/SHRUB
LP	– LIGHT POLE		– HIGHBANK	SWBT	– SOUTHWESTERN BELL TELEPHONE CO.	MI	– SANITARY MANHOLE INTERCEPTOR
TLP	– TRAFFIC LIGHT POLE		– SIGN	WTR	– WATER		
GL	– GROUND/SPOT LIGHT	PLM	– PIPELINE MARKER	UG	– UNDERGROUND		
MB	– MAIL BOX	TSP	– TRAFFIC SIGNAL POLE	ER	– ELECTRIC RACK		
WR	– WATER RISER		– GUARD RAIL	EC	– ELECTRICAL CABINET		
FDC	– FIRE DEPARTMENT CONNECTION						
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AT		03-11-2021
CK'D BY: TW	SCALE: 1"=20'	SHEET NO: 16 / 21

NORTH

GRAPHIC SCALE: 1" = 20'

20 0 20 40 60 Feet

LEGEND

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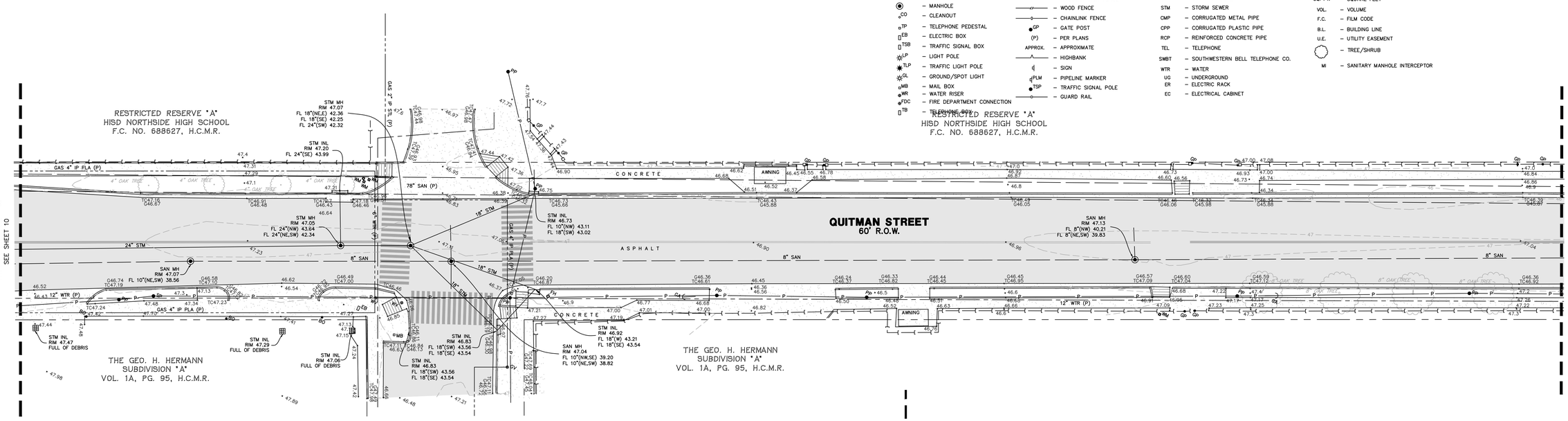

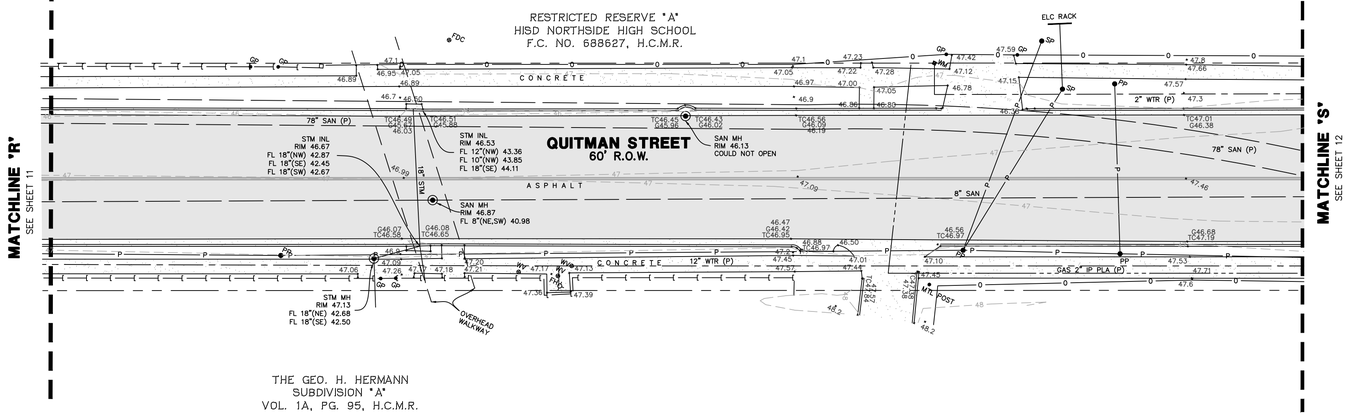

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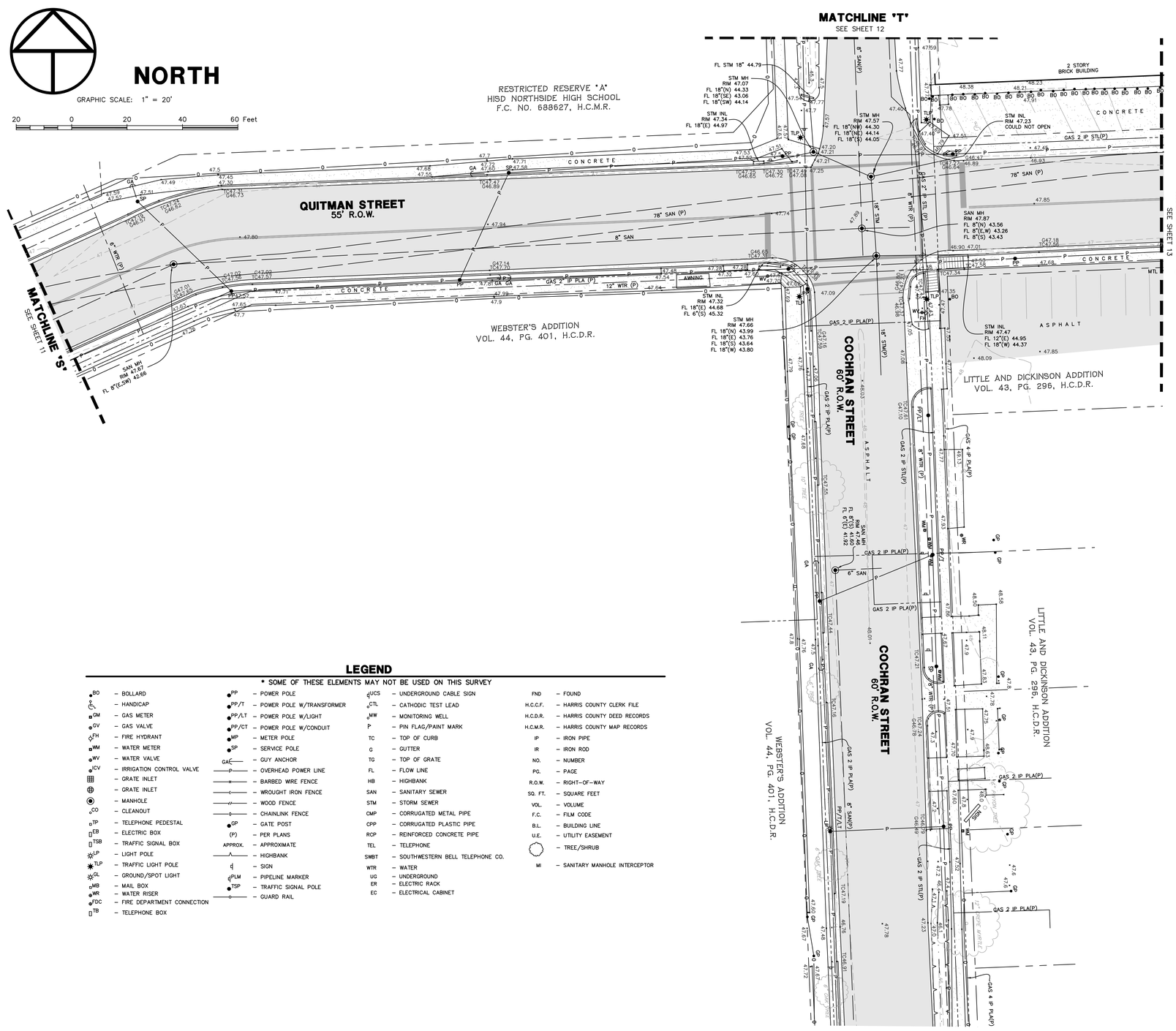

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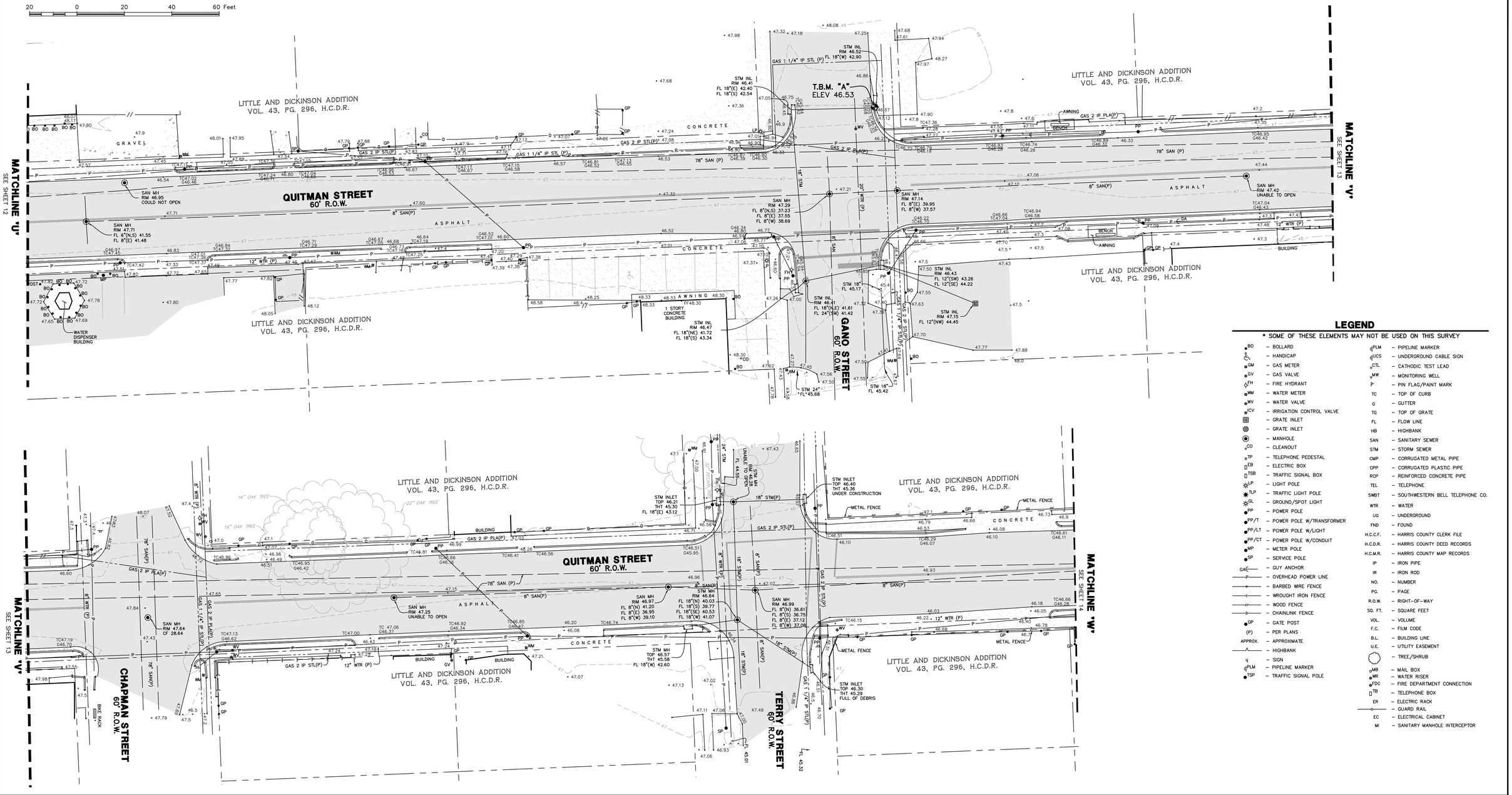

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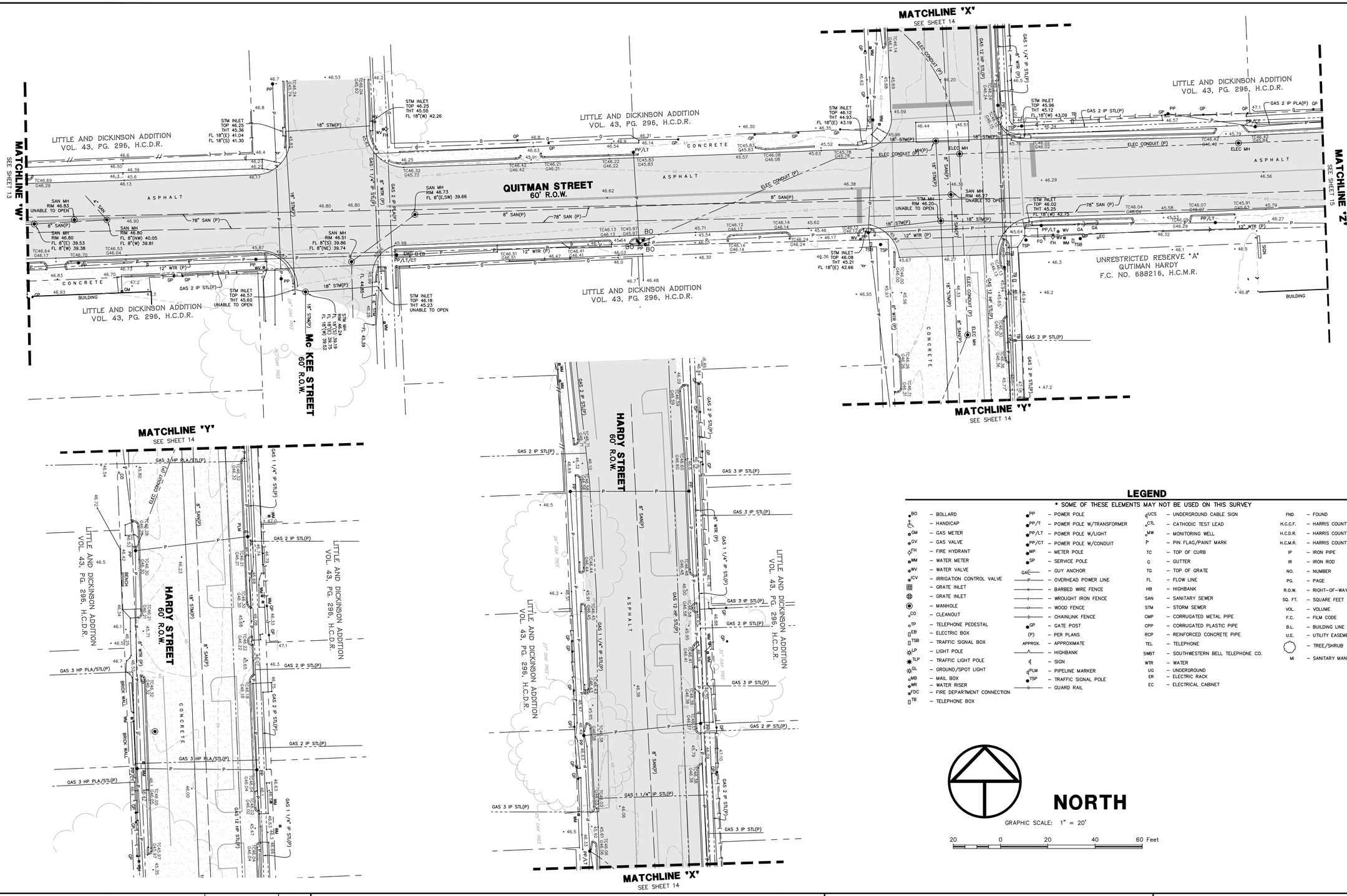

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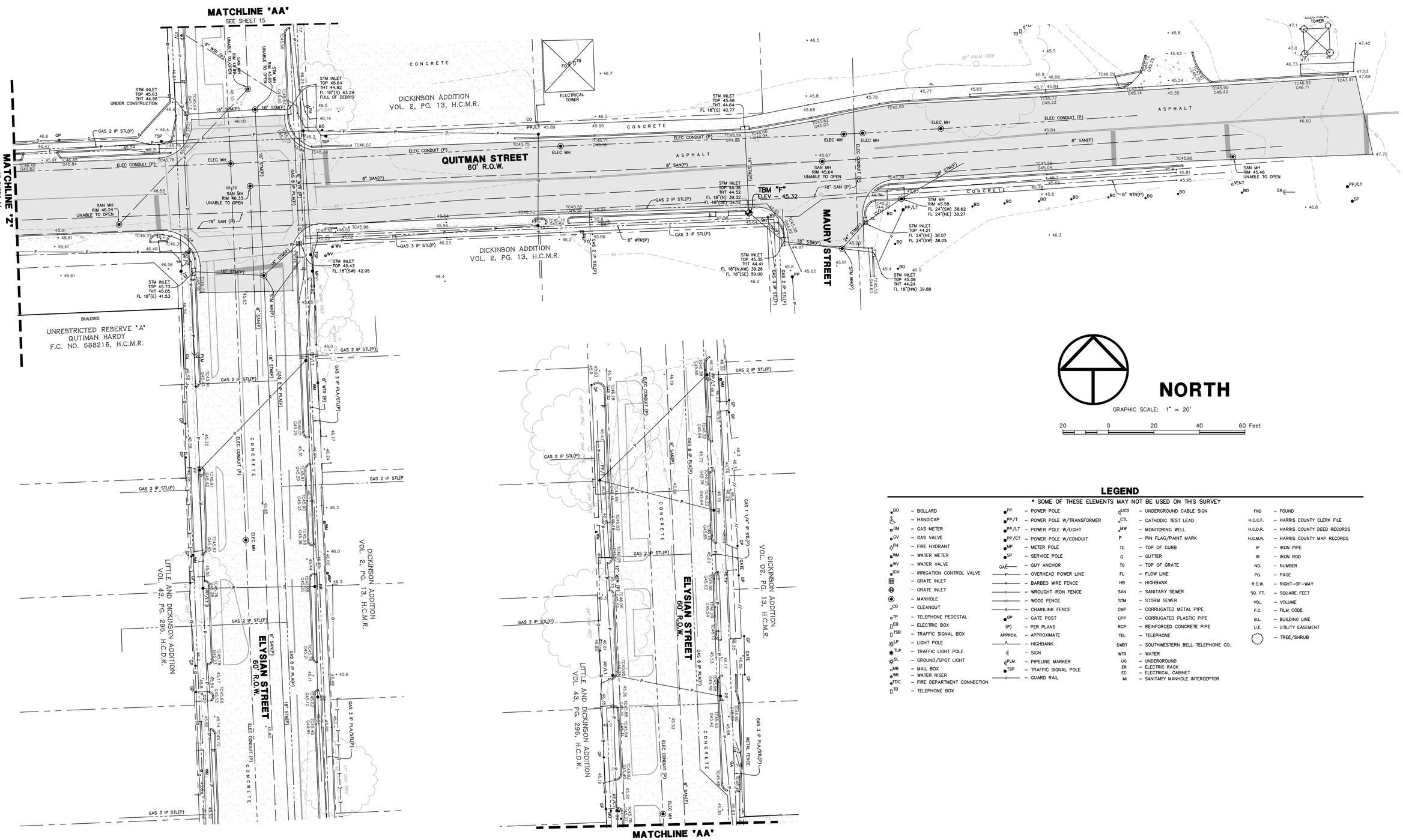

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APPENDIX E - Geotechnical Report for Overlay

GEOTECHNICAL INVESTIGATION
QUITMAN STREET INTERGOVERNMENTAL PARTNERSHIP ON STREET BIKE LANE
HARRIS COUNTY, TEXAS

SUBMITTED TO

SCIENTECH ENGINEERS, INC.

701 SHEPHERD DRIVE, SUITE 200

HOUSTON, TEXAS 77007

BY

HVJ ASSOCIATES, INC.

Houston, Texas

June 11, 2021

REPORT NO. HG2010444

HVJ ASSOCIATES

HVJ ASSOCIATES

Houston
Austin
Dallas
San Antonio

6120 S. Dairy Ashford Rd.
Houston, TX 77072-1010
281.933.7388 Ph
281.933.7293 Fax
www.hvj.com

June 11, 2021

Mr. David Sadeghpour, PE
Scientech Engineers, Inc.
701 Shepherd Drive, Suite 200
Houston, TX 77007

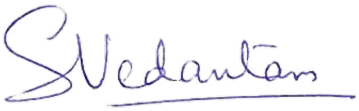
Re: Geotechnical Study
Quitman Street Intergovernmental Partnership On Street Bike Lane
UPIN 21102MF1XE01
Harris County, Texas
Owner: Harris County, Precinct 2
HVJ Proposal No. HG2010444

Dear Mr. Sadeghpour:

Submitted herein is the final report of our geotechnical investigation for the above referenced project. The study was conducted in general accordance with our proposal number HG2010444 dated October 14, 2020 (Revised October 25, 2020), and is subject to the limitations presented in this report. We appreciate the opportunity of working with you on this project. Please read the entire report and notify us if there are questions concerning this report or if we may be of further assistance.

Sincerely,

HVJ ASSOCIATES, INC.
Texas Firm Registration No. F-000646



6/11/2021

Sharmi P. Vedantam, PE
Houston Branch Manager

Vijay Kakara, EIT
Staff Engineer

This document was released under the authority of Sharmi Vedantam, PE 100218 on June 11, 2021. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act.

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STANDARD PROCTOR AND CBR TEST RESULTS C

DARWIN STRUCTURAL NUMBER OUTPUT ..... D

1 EXECUTIVE SUMMARY

HVJ Associates, Inc. (HVJ) was retained by Scientech Engineers, Inc. to provide geotechnical recommendations for milling and overlay of existing asphalt pavement from Fulton Street to Elysian Street along Quitman Street in Houston, Texas. The project involves restriping existing pavement to include a bi-directional protected bike lane including safety dividers and floating bus stops, widen or construct 6-foot sidewalks, install or repair curbs and wheelchair ramps at intersections and driveways as needed, mill and overlay from Fulton Street to Elysian Street along Quitman Street.

The purpose of this study is to provide design and construction recommendations for the proposed pavement. We cored the existing pavement and drilled six soil borings to a depth of 4 feet below the existing grade to determine the existing pavement thickness and obtain subsurface soil information. Based on the subsurface conditions obtained by the soil borings, the findings and recommendations of this report are summarized below:

1. The existing pavement generally comprises of 4 to 6.75 inches of asphaltic concrete followed by concrete and stabilized base.

2. Firm to stiff cohesive soils (CH and CL) were generally encountered in the borings below the pavement to their termination depth.

3. Groundwater was not encountered during drilling operations. It should be noted that water levels determined during drilling may not accurately reflect the true groundwater conditions, and therefore should only be considered as approximate. The readings will fluctuate seasonally and in response to rainfall.

4. A literature review of surface faults near the project area was conducted based on the Scientific Investigations Map 2874, Principal Faults in the Houston, Texas metropolitan area by Shah, S.D., and Lanning-Rush, J, 2005. The primary objective of this review was to evaluate available information from published and open file reports. Faulting is not anticipated to impact the project site; however, unmapped faults may exist near the site. A detailed fault study is not within the scope of this study. A fault map is presented on Plate 4 of this report.

5. We have performed the pavement design for milling and overlaying of existing pavement along Quitman Street. We recommend milling of 4 inches of asphaltic pavement and replacing it with new asphaltic concrete at 2 inch lifts. At locations where concrete is not encountered below asphalt and at locations where the existing pavement is in a very poor condition, we recommend removing the entire asphalt layer and replacing it with new asphalt pavement. Pavement design recommendations for new and overlay sections are provided in Section 6 of the report.

Please note that this executive summary does not fully relate our findings and opinions. Those findings and opinions are only presented through our full report.

2 INTRODUCTION

2.1 Project Description

HVJ Associates, Inc. (HVJ) was retained by Scientech Engineers, Inc. to provide geotechnical recommendations for milling and overlay of existing asphalt pavement from Fulton Street to Elysian Street along Quitman Street in Houston, Texas. The project involves restriping existing pavement to include a bi-directional protected bike lane including safety dividers and floating bus stops, widen or construct 6-foot sidewalks, install or repair curbs and wheelchair ramps at intersections and driveways as needed, mill and overlay from Fulton Street to Elysian Street along Quitman Street.

The purpose of this study is to provide design and construction recommendations for the proposed pavement overlay design recommendations. The study was performed in accordance with the Harris County Engineering Department (HCED) Guidelines for Consultants performing Geotechnical investigations dated January 01, 2011 and HCED Regulations for the Approval and Acceptance of Infrastructure dated January 1, 2019. Geotechnical Investigation Program. The major objectives of this study were to gather information on existing pavement and subsurface soil conditions at the site and to provide pavement overlay recommendations. The objectives were accomplished by:

- Coring the existing pavement at six (6) locations and drilling soil borings to a depth of about 4 feet below the existing grade to determine soil stratigraphy and to obtain samples for laboratory testing.

- Performing laboratory tests to determine physical and engineering characteristics of the soils.

- Performing engineering analyses to develop pavement and subgrade recommendations for the proposed pavement improvements.

Subsequent sections of this report contain descriptions of the field exploration, laboratory testing program, general subsurface conditions, pavement and subgrade recommendations.

3 FIELD INVESTIGATION

3.1 Geotechnical Borings

The field exploration program undertaken at the project site was performed on January 27th, 2021. The existing pavement within the project area was cored prior to drilling at the boring locations. Subsurface conditions were investigated by drilling 6 soil borings to a depth of 4 feet below the existing grade. All boreholes were backfilled with non-shrink grout by tremie method and the pavement was patched with asphalt. The approximate boring locations are presented on Plate 2.

3.2 Sampling Methods

All the borings were sampled continuously to a depth of 4 feet. Cohesive soil samples were obtained with a three-inch thin-walled (Shelby) tube sampler in general accordance with ASTM D1587 standard. Each sample was removed from the sampler in the field, carefully examined, and then classified. The shear strength of the cohesive soils was estimated by a hand penetrometer in the field. Detailed descriptions of the soils encountered in the borings are given on the boring logs presented in Appendix A. A key to the soils classification and symbols used on the boring logs is also presented in Appendix A.

3.3 Water Level Measurements

Groundwater measurements were made during and after drilling. Groundwater was not encountered during the drilling operations.

4 LABORATORY TESTING

Selected soil samples were tested in the laboratory to determine applicable physical and engineering properties. All tests were performed according to the relevant ASTM Standards. These tests consisted of moisture content measurement, percent passing No. 200 sieve, Atterberg limits, unconfined compression, dry unit weights, standard Proctor and California Bearing ratio (CBR) tests.

The Atterberg Limits and percent passing number 200 sieve tests were utilized to verify field classification by the ASTM D2487, the unconfined compression tests were performed to obtain the undrained shear strength of the soil, the standard Proctor and CBR tests were performed to estimate the subgrade strength for pavement. The type and number of tests performed for this investigation are summarized below:

Table 4-1 – Laboratory Test Summary

Type of Test	Number of Tests
Moisture Content (ASTM D2216)	12
Atterberg Limits (ASTM D4318)	6
Percent Passing No. 200 Sieve (ASTM D1140)	8
Unconfined Compression (ASTM D2166)	1
Standard Proctor (ASTM D698)	1
Laboratory CBR (ASTM D1883)	1

The laboratory test results are presented on the boring logs in Appendix A. The conversion between pocket penetrometer readings obtained in the field to the shear strength parameters presented in the borings logs were obtained using a conversion factor of 1/3. A summary of laboratory test results is provided in Appendix B.

4.1 Standard Proctor & California Bearing Ratio (CBR) Tests

One standard Proctor and California Bearing Ratio (CBR) test was performed on the composite sample, obtained from Borings P-1 through P-6 along the alignment. Based on the results of the standard Proctor test, the maximum dry density of the composite sample was determined to be 106.2 pcf at an optimum moisture content of 15.5. A design CBR of 1.55 was estimated at 95% of the maximum dry density. The results of the Standard Proctor and CBR tests are presented in Appendix C.

5 SITE CHARACTERIZATION

5.1 General Geology

There are two major surface geological formations that exist in the Houston area: the Beaumont formation and the Lissie formation. The Beaumont formation is a relatively younger formation generally found to the southeast of the Lissie formation. The Beaumont formation dips southeastward and extends beneath beach sand and waters of the Gulf of Mexico as far as the continental shelf. The project site is located in the Beaumont formation. A geologic map is presented on Plate 3.

The Beaumont formation was deposited on land near sea level in flat river deltas and in inter-delta regions. Soil deposition occurred in fresh water streams and in flood plains (as backwater marsh and natural levees). The courses of major streams and deltaic tributaries changed frequently during the period of deposition, generating within the Beaumont clay a complex stratification of sand, silt and clay deposits. Frequently, stream courses were diverted significant distances from a given point in a backwater marsh, and the water overlying the soil would evaporate since it was cut off from a drainage path. Such water, which would be highly alkaline, would precipitate large nodules of calcium carbonate (calcareous nodules) throughout the surface of evaporation. With the coming of the Second Wisconsin Ice Age, the nearby sea withdrew, leaving the formation several hundred feet above sea level and permitting the soil to desiccate. The process of desiccation compressed the clays in the formation such that they became significantly over-consolidated to a large depth. In addition to pre-consolidating the soil, the process of desiccation, together with the later rewetting, produced a network of fissures and slickensides that are now closed but which represent potential planes of weakness in the soil.

5.2 Geologic Faulting

The tectonic history of the Texas Gulf Coast includes a relatively stable depositional cycle since the Cretaceous Period (about 65 million years). During this period the area was subjected to deposition of clays, silts, and sands resulting in over 30 thousand feet of sedimentary rocks. Underlying this clastic sequence are salt formations, which have migrated upwards to produce the typical salt dome features associated with the Texas Gulf Coast. In conjunction with salt movement, dewatering and compaction of some of the deeper sediments in the basin have resulted in the development of growth faults.

A literature review of surface faults near the project area was conducted. Based on the review, the project site is situated about 0.5 miles south of existing fault line. Faulting is not anticipated to impact the project site; however, unmapped faults may exist near the site. A detailed fault study is not within the scope of this study. A fault map is presented on Plate 4.

5.3 Soil Stratigraphy

HVJ's interpretation of soil and groundwater conditions at the project site is based on information obtained at the boring location only. This information has been used as the basis for our conclusions and recommendations. Significant variations at areas not explored by the project boring may require re-evaluation of our findings and conclusions.

Firm to stiff cohesive soils (CH and CL) were generally encountered in the borings below the pavement to their termination depth.

5.4 Groundwater Conditions

Groundwater was not encountered during drilling operations. It should be noted that water levels determined during drilling may not accurately reflect the true groundwater conditions, and therefore should only be considered as approximate. The readings will fluctuate seasonally and in response to rainfall.

6 PAVEMENT RECOMMENDATIONS

We understand that the project includes overlay of existing pavement along Quitman Street from Fulton to Elysian in Harris County, Texas. Quitman Street can be classified as "Collector" based on the criteria listed in Section 12 of the HCED Design Manual, September 29, 2020. Pavement overlay design was completed using DARWin software based on the Section 7 of the HCED Design Manual and AASHTO 1993 Pavement Design Procedure (AASHTO).

6.1 Existing Pavement Thickness

The existing pavement within the project area was cored prior to drilling at all the boring locations, and the thicknesses are presented in the table below.

Table 6-1 – Existing Pavement Information

Street Name	Boring No.	Pavement		Base
		Asphaltic Concrete	Concrete	
Quitman St.	P-1	5"	5"	Not Identified
Quitman St.	P-2	4"	6"	Not Identified
Quitman St.	P-3	5.25"	6.25"	Not Identified
Quitman St.	P-4	4.5"	6.5"	Not Identified
Quitman St.	P-5	4.5"	6.5"	Not Identified
Quitman St.	P-6	6.75"	--	4.25" Lime Stabilized Base

6.2 Traffic Data

The traffic parameters required for design include initial average daily traffic (ADT), growth rate, truck factor, and percent trucks in ADT. A traffic survey was not performed for this investigation. We have utilized the traffic data from *ttihouston.tamu.edu* website to obtain the ADT for Quitman Street for our design. The ADT used in our design is 8,930.

The truck factor and percent trucks in ADT values were assumed based on available references and our discussion with City of Houston. A truck factor of 2.36 and 1 percent of annual truck growth rate was assumed. Based on the above assumptions, we have calculated a 12-year design 18-kip Equivalent Single Axle Load (ESAL) for Quitman Street as 256,329.

The subgrade soil beneath the pavement at the location of borings generally consist of medium to high plasticity cohesive soil (Lean Clays and Fat Clays). The CBR obtained from lab test is 1.55 and the correlated subgrade resilient modulus obtained from CBR is 2,325 psi.

6.3 Design Criteria and Performance Constraints

The design and performance constraints include reliability level, overall standard deviation, initial serviceability index and terminal serviceability index.

Reliability Level and Overall Standard Deviation. A Reliability (R) of 90% was selected based on AASHTO. A mean value of the overall standard deviation (S_o) of 0.45 was used for the flexible pavement design.

Serviceability. The serviceability of a pavement is defined as its ability to serve the type of traffic that uses the facility. The condition of the pavement after the performance period is characterized by a Terminal Serviceability Index (P_t), which is a function of the pavement structure. A Terminal Serviceability Index of 2.25 and an initial serviceability of 4.2 are used in accordance with HCED design manual and AASHTO Guide for Design of Pavement Structures, 1993.

The estimated and/or assumed values for the design parameters are summarized in the following table. The Structural Coefficients are from HCED design manual and AASHTO Guide for Design of Pavement Structures, 1993.

Table 6-2 – Pavement Design Inputs for Overlay Pavement Design

Parameter	Quitman Street
Performance Period	12 years
Design Traffic 20- year ESALs	256,329
Subgrade Resilient Modulus, M_R	2,325 psi
Design Serviceability Loss	1.95
Overall Standard Deviation, S_o	0.45
Reliability, R	90%
Assumed Milling Thickness before Overlay	4 inches
Structural Coefficients for Existing Pavement	
Hot Mix Asphalt Concrete Surface	0.11
Concrete	0.50
Lime Stabilized Subgrade	0.11
Structural Coefficients for Overlay Pavement	
Hot Mix Asphalt Concrete Surface	0.44
Structural Coefficients for New Pavement	
Hot Mix Asphalt Concrete Surface (Surface Course)	0.44
Black Base (Base Course)	0.34
Lime Stabilized Subgrade	0.11

6.4 Resulting Pavement Designs

The calculated structural number required for flexible pavement design is calculated in DARWIN computer program, and the DARWin output data is presented in Appendix D. For the overlay design of the existing pavement, we recommend milling 4 inches of asphaltic pavement and replacing it with new asphaltic concrete at 2 inch lifts. At the location of Boring P-6 where concrete is not encountered below asphalt and at locations where the existing pavement is in a very poor condition, we recommend removing the entire asphalt layer and replacing it with new asphalt pavement. It may be required to over excavate a few inches to match the existing pavement elevation at the new pavement reconstruction locations. The overlay and new pavement recommendations are provided in Table 6-3 and Table 6-4 below.

Table 6-3 – Overlay of Existing Pavement considering 1% Trucks

Location	Borings	Required Structural Number – 12 year Design Life Period	Effective Existing Structural Number	Milling (inches)	Hot Mix Asphaltic Concrete Overlay Thickness-inches	New Structural Number
Quitman Street	P-1	4.17	3.1	4.0	4.0	4.4
Quitman Street	P-2	4.17	3.4	4.0	4.0	4.8
Quitman Street	P-3	4.17	3.7	4.0	4.0	5.0
Quitman Street	P-4	4.17	3.7	4.0	4.0	5.1
Quitman Street	P-5	4.17	3.7	4.0	4.0	5.1

Table 6-4– New Pavement at Boring Location P-6

Materials	New Pavement	
	Structural Numbers	Thickness (inches)
Hot Mix Asphalt Concrete Surface	0.44	4.0
Asphaltic Base	0.34	5.0
Lime Stabilized Subgrade	0.11	8.0

7 DESIGN REVIEW

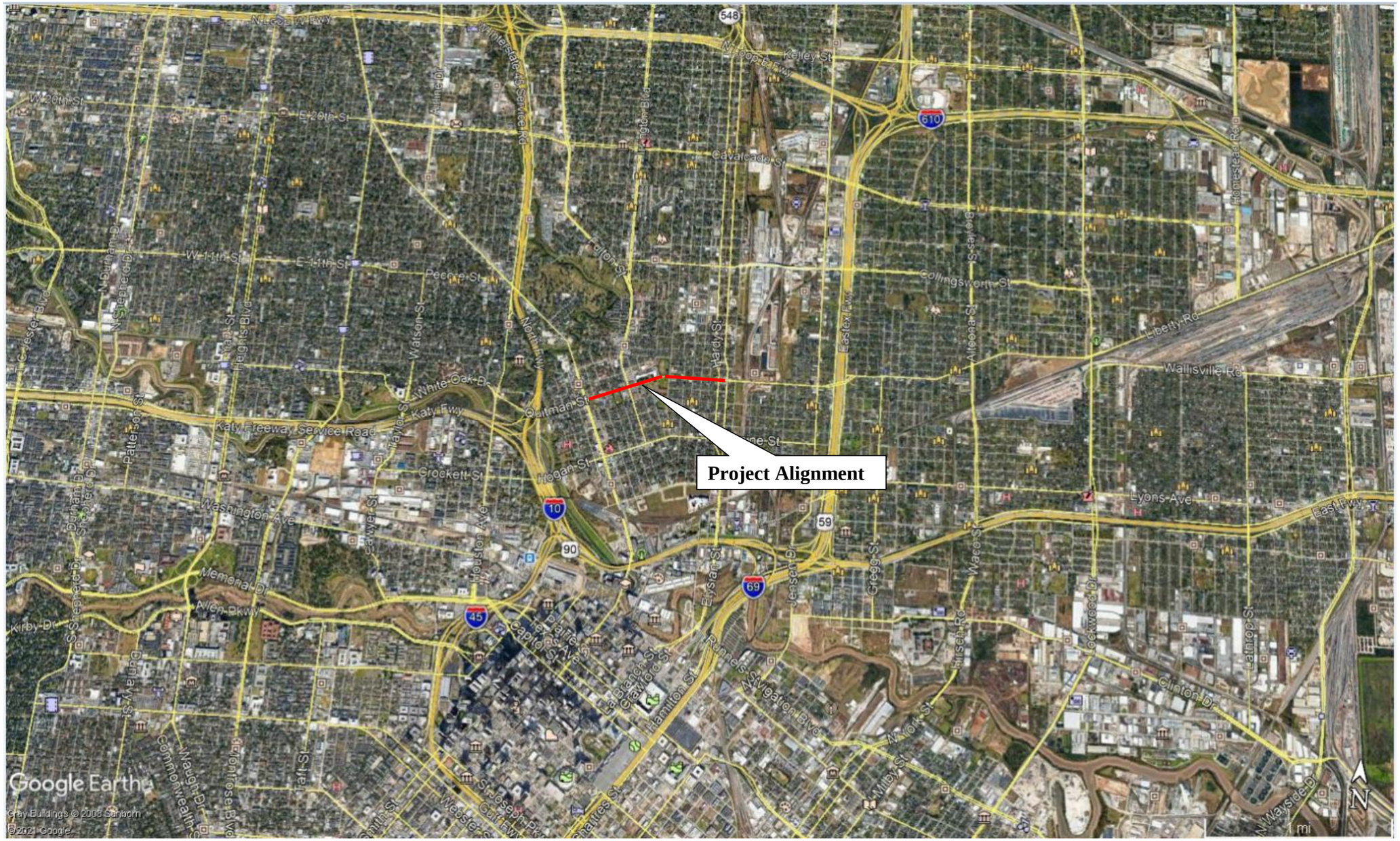
HVJ should review the design and construction plans and specifications prior to release to make certain that the geotechnical recommendations and design criteria presented herein have been properly interpreted.

8 LIMITATIONS

This investigation was performed for the exclusive use of Harris County and Scientech Engineers, Inc. to provide recommendations for milling and overlay of existing asphalt pavement from Fulton Street to Elysian Street along Quitman Street in Houston, Texas. HVJ has endeavored to comply with generally accepted geotechnical engineering practice common in the local area. HVJ makes no warranty, express or implied. The analyses and recommendations contained in this report are based on data obtained from subsurface exploration, laboratory testing, the project information provided

to us and our experience with similar soils and area conditions. The methods used indicate subsurface conditions only at the specific locations where samples were obtained, only at the time they were obtained, and only to the depths penetrated. Samples cannot be relied on to accurately reflect the strata variations that usually exist between sampling locations. Should any subsurface conditions other than those described in our boring logs be encountered, HVJ should be immediately notified so that further investigation and supplemental recommendations can be provided.

PLATES



Source: Google Earth

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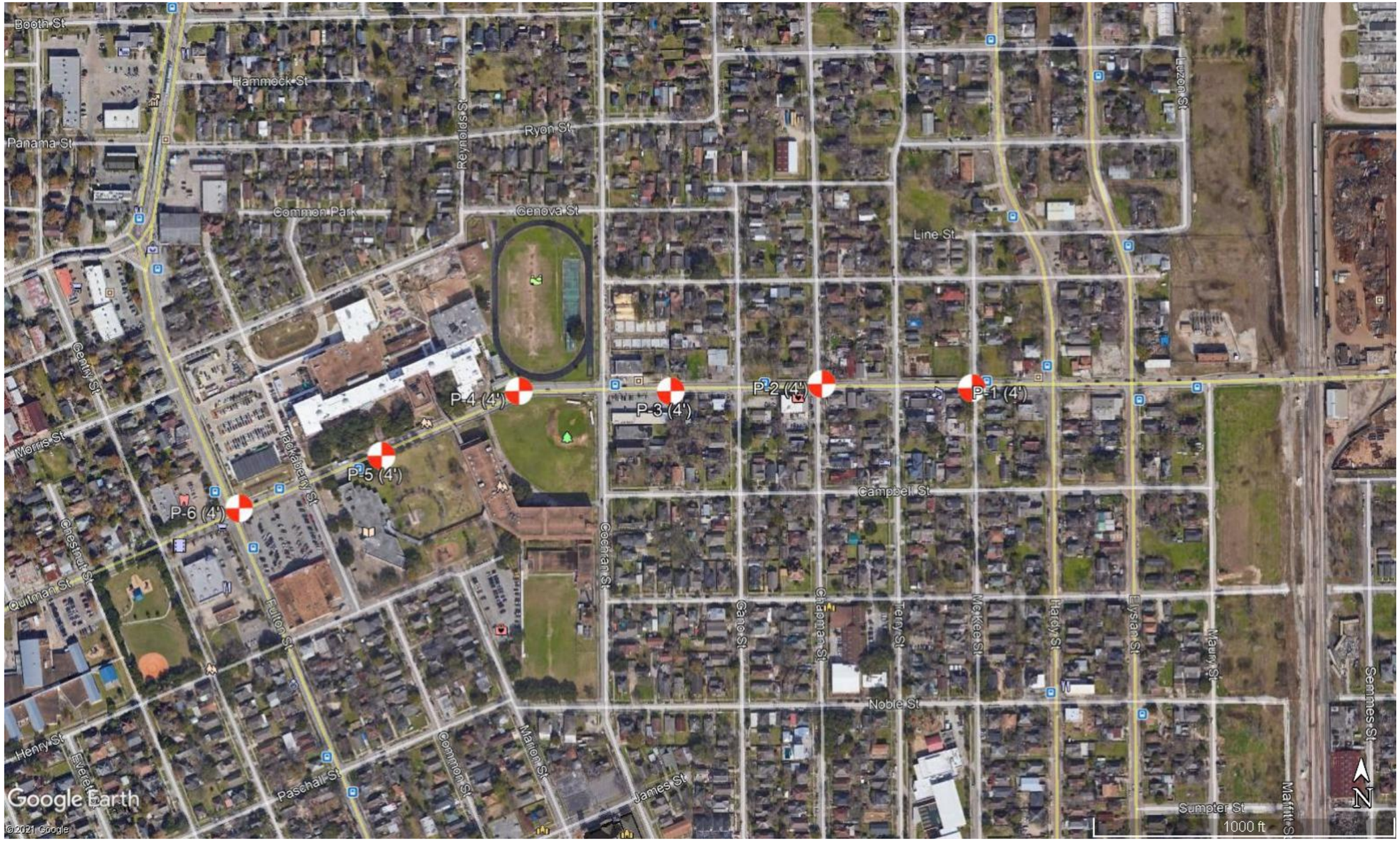
281.933.7293 Fax

DATE: 03/31/2021	APPROVED BY: SV	PREPARED BY: VK

SITE VICINITY MAP
Quitman Street Intergovernmental
Partnership On Street Bike Lane UPIN 102MF1XE01

PROJECT NO.:	DRAWING NO.:
HG2010444	PLATE 1



LEGEND:

APPROXIMATE BORING LOCATIONS

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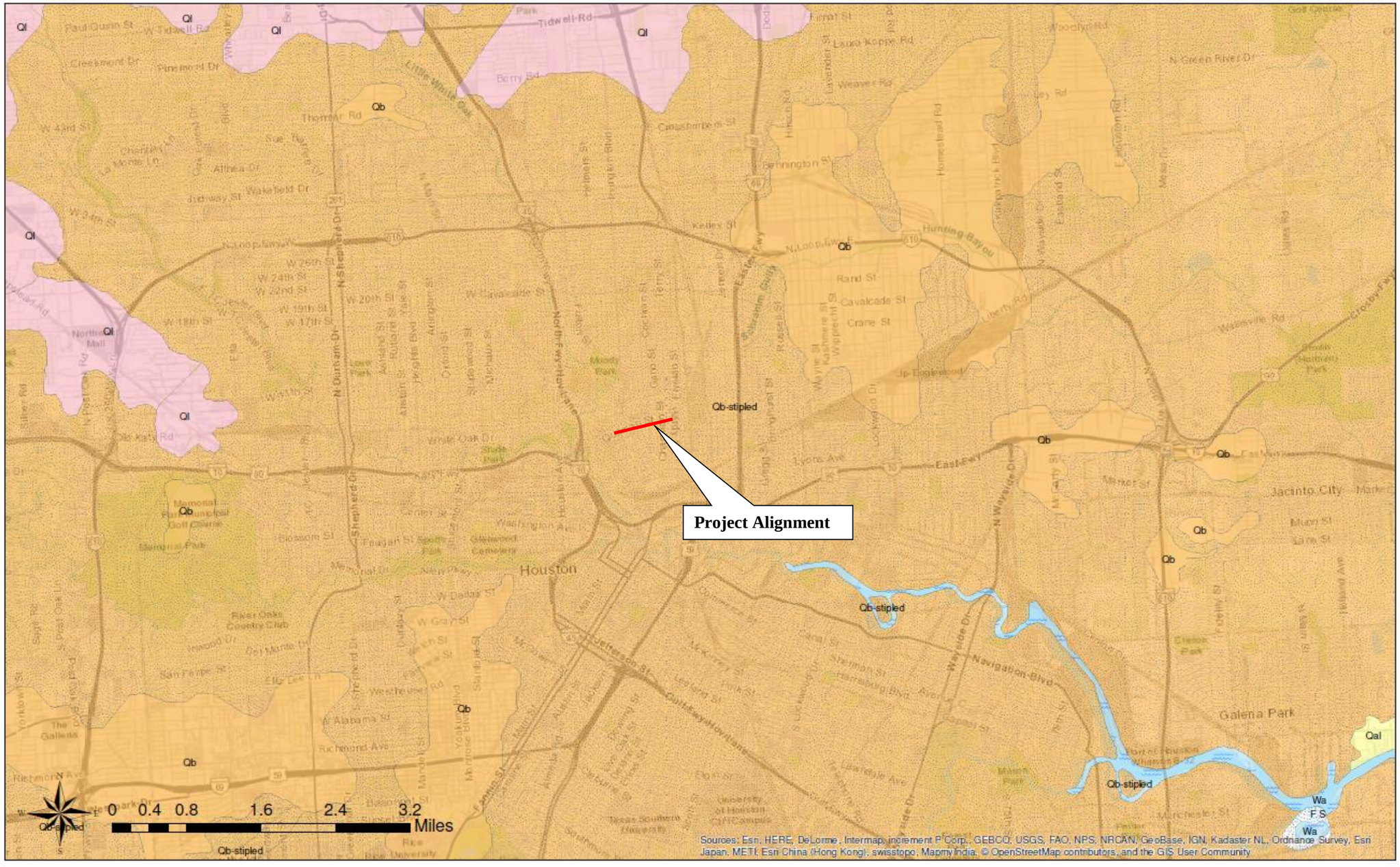
PLAN OF BORINGS
Quitman Street Intergovernmental
Partnership On Street Bike Lane UPIN 102MF1XE01

PROJECT NO.:	DRAWING NO.:
HG2010444	PLATE 2



Qb-stipled

Beaumont Formation – Mostly clay, silt, and sand; includes mainly stream channel, point-bar, natural levee, backswamp, and to a lesser extent coastal marsh and mud flat deposits; concretions of calcium carbonate, iron oxide, and iro`n-manganese oxides in zone of weathering; surface almost featureless, characterized by relict river channels shown by meander patterns and pimple mounds on meanderbelt ridges, separated by areas of flow, relatively smooth, featureless backswamp deposits without pimple mounds; thickness ± 100 ft.

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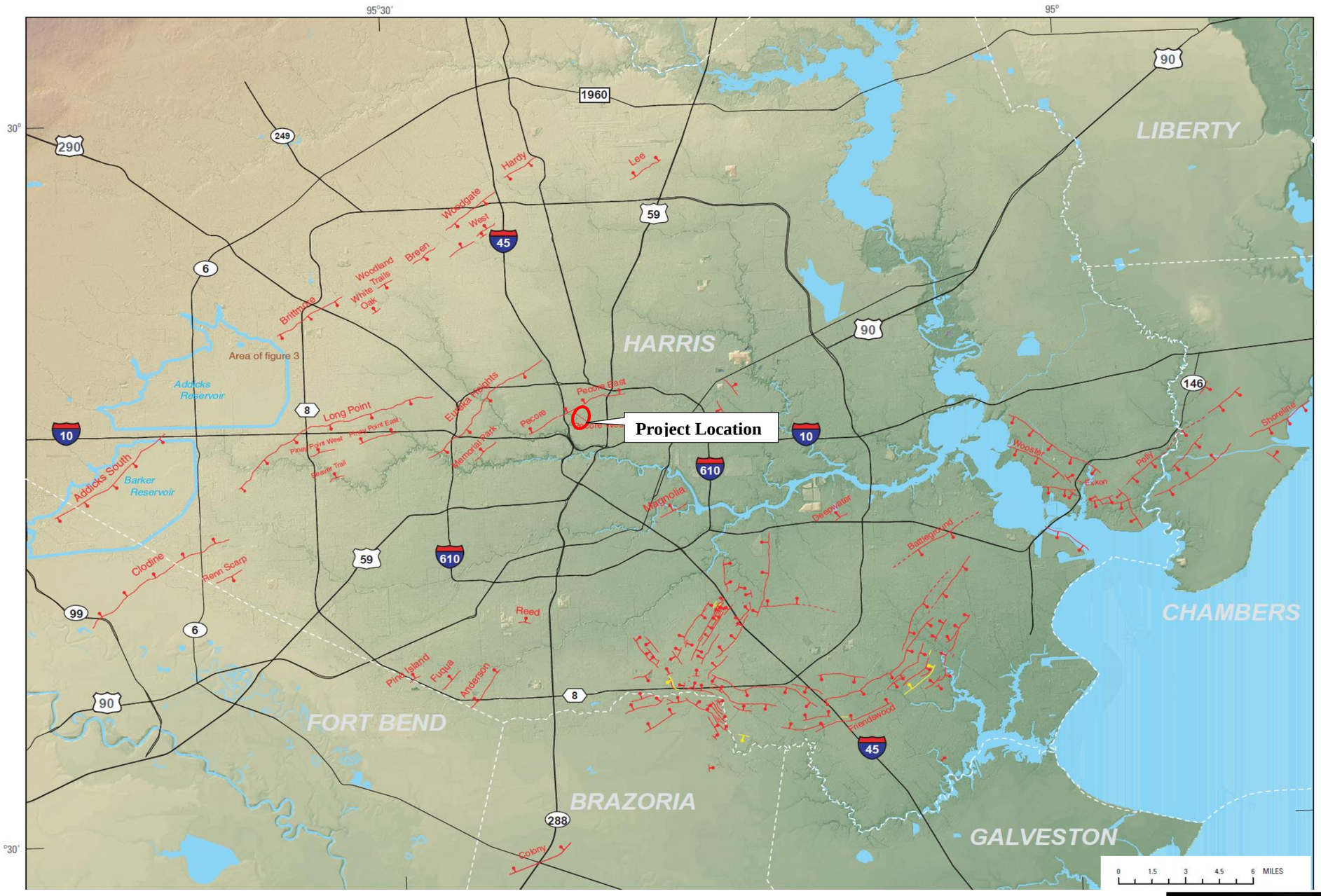
GEOLOGIC MAP
Quitman Street Intergovernmental
Partnership On Street Bike Lane UPIN 102MF1XE01

PROJECT NO.: HG2010444	DRAWING NO.: PLATE 3



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DATE: 04/5/2021	APPROVED BY: SV	PREPARED BY: YA

FAULT MAP

Quitman Street Intergovernmental Partnership on Street Bike Lane UPIN 21102MF1XE01

PROJECT NO.: HG2010444	DRAWING NO.: PLATE 4

APPENDIX A

BORING LOGS AND KEY TO TERMS & SYMBOLS

LOG OF BORING P-1

PROJECT: Quitman Street Bike Trail
LOCATION: Houston

PROJECT NO.: HG2010444

COMPLETION DEPTH: 4 FT

GPS Coordinates: 29°47'0.17" N 95°21'8.90" W
SURFACE ELEVATION: 47.0 FT

DATE: 1/27/2021

SAMPLER: Shelby Tube/Split Spoon
DRY AUGER: 0 TO 4 FT
WET ROTARY: NA TO NA FT

UNDRAINED SHEAR STRENGTH, TSF
○ HAND PENETROMETER
● UNCONFINED COMPRESSION
■ UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION
△ TORVANE
0.5 1.0 1.5 2.0 2.5

ELEVATION, FT	DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	STANDARD PENETRATION TEST, BLOWS PER FOOT	PERCENT PASSING NO. 200 SIEVE	DRY UNIT WEIGHT, PCF	MOISTURE CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %
	0			Pavement: 5'' Asphaltic Concrete, 5" Concrete							
45				Stiff, dark gray, gray and light gray, LEAN CLAY (CL) -w/ ferrous stains at 0'-2' -w/ calcareous nodules at 0'-4'		91.5		14			
						85.5		21	49	20	29

DEPTH TO WATER IN BORING:
▽ FREE WATER DURING DRILLING: ---
▼ WATER DEPTH 24 HOURS AFTER DRILLING: ---

Drilled By: Soltek Logged By: Frank

HVJ Associates, Inc.

PLATE A-1

COH_GPS HG2010444.GPJ 4/5/21

LOG OF BORING P-2

PROJECT: Quitman Street Bike Trail
LOCATION: Houston

PROJECT NO.: HG2010444

COMPLETION DEPTH: 4 FT

GPS Coordinates: 29°47'0.10" N 95°21'13.29" W
SURFACE ELEVATION: 48.0 FT

DATE: 1/27/2021

SAMPLER: Shelby Tube/Split Spoon
DRY AUGER: 0 TO 4 FT
WET ROTARY: NA TO NA FT

ELEVATION, FT	DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	STANDARD PENETRATION TEST, BLOWS PER FOOT	PERCENT PASSING NO. 200 SIEVE	DRY UNIT WEIGHT, PCF	MOISTURE CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %
	0			Pavement: 4" Asphaltic Concrete, 6" Concrete							
				Firm to stiff, gray and light gray, LEAN CLAY (CL)		90.8		20	47	18	29
45							115	21			

UNDRAINED SHEAR STRENGTH, TSF
○ HAND PENETROMETER
● UNCONFINED COMPRESSION
■ UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION
△ TORVANE
0.5 1.0 1.5 2.0 2.5

DEPTH TO WATER IN BORING:
▽ FREE WATER DURING DRILLING: ---
▼ WATER DEPTH 24 HOURS AFTER DRILLING: ---

Drilled By: Soltek Logged By: Frank

HVJ Associates, Inc.

PLATE A-2

COH_GPS HG2010444.GPJ 4/5/21

LOG OF BORING P-3

PROJECT: Quitman Street Bike Trail
LOCATION: Houston

PROJECT NO.: HG2010444

COMPLETION DEPTH: 4 FT

GPS Coordinates: 29°46'59.98" N 95°21'19.41" W
SURFACE ELEVATION: 48.0 FT

DATE: 1/27/2021

SAMPLER: Shelby Tube/Split Spoon
DRY AUGER: 0 TO 4 FT
WET ROTARY: NA TO NA FT

ELEVATION, FT	DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	STANDARD PENETRATION TEST, BLOWS PER FOOT	PERCENT PASSING NO. 200 SIEVE	DRY UNIT WEIGHT, PCF	MOISTURE CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %
	0			Pavement: 5.25" Asphaltic Concrete, 6.25" Concrete							
				Stiff, gray, light gray and brown, FAT CLAY (CH) -w/ ferrous stains at 0'-4' -w/ calcareous nodules at 0'-2'		88.6		25	62	23	39
45								19			

UNDRAINED SHEAR STRENGTH, TSF
○ HAND PENETROMETER
● UNCONFINED COMPRESSION
■ UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION
△ TORVANE
0.5 1.0 1.5 2.0 2.5

DEPTH TO WATER IN BORING:
▽ FREE WATER DURING DRILLING: ---
▼ WATER DEPTH 24 HOURS AFTER DRILLING: ---

Drilled By: Soltek Logged By: Frank

HVJ Associates, Inc.

PLATE A-3

COH_GPS HG2010444.GPJ 4/5/21

LOG OF BORING P-4

PROJECT: Quitman Street Bike Trail
LOCATION: Houston

PROJECT NO.: HG2010444

COMPLETION DEPTH: 4 FT

GPS Coordinates: 29°47'0.03" N 95°21'25.06" W
SURFACE ELEVATION: 49.0 FT

DATE: 1/27/2021

SAMPLER: Shelby Tube/Split Spoon
DRY AUGER: 0 TO 4 FT
WET ROTARY: NA TO NA FT

ELEVATION, FT	DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	STANDARD PENETRATION TEST, BLOWS PER FOOT	PERCENT PASSING NO. 200 SIEVE	DRY UNIT WEIGHT, PCF	MOISTURE CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %
	0			Pavement: 4.5" Asphaltic Concrete, 6.5" Concrete							
				Stiff, dark brown, gray and light gray, LEAN CLAY (CL)		86.2		21	44	15	29
				-w/ ferrous stains at 2'-4							
						89.1		22			
45											

UNDRAINED SHEAR STRENGTH, TSF
○ HAND PENETROMETER
● UNCONFINED COMPRESSION
■ UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION
△ TORVANE
0.5 1.0 1.5 2.0 2.5

DEPTH TO WATER IN BORING:
▽ FREE WATER DURING DRILLING: ---
▼ WATER DEPTH 24 HOURS AFTER DRILLING: ---

Drilled By: Soltek Logged By: Frank

HVJ Associates, Inc.

PLATE A-4

COH_GPS HG2010444.GPJ 4/5/21

LOG OF BORING P-5

PROJECT: Quitman Street Bike Trail
LOCATION: Houston

PROJECT NO.: HG2010444

COMPLETION DEPTH: 4 FT

GPS Coordinates: 29°46'57.90" N 95°21'30.24" W
SURFACE ELEVATION: 48.0 FT

DATE: 1/27/2021

SAMPLER: Shelby Tube/Split Spoon
DRY AUGER: 0 TO 4 FT
WET ROTARY: NA TO NA FT

ELEVATION, FT	DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	STANDARD PENETRATION TEST, BLOWS PER FOOT	PERCENT PASSING NO. 200 SIEVE	DRY UNIT WEIGHT, PCF	MOISTURE CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %
	0			Pavement: 4.5" Asphaltic Concrete, 6.5" Concrete							
				Firm, gray light gray and light reddish brown, FAT CLAY (CH) -w/ calcareous nodules at 0'-4'		85.1		26	50	17	33
45								23			

UNDRAINED SHEAR STRENGTH, TSF
○ HAND PENETROMETER
● UNCONFINED COMPRESSION
■ UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION
△ TORVANE
0.5 1.0 1.5 2.0 2.5

DEPTH TO WATER IN BORING:
▽ FREE WATER DURING DRILLING: ---
▼ WATER DEPTH 24 HOURS AFTER DRILLING: ---

Drilled By: Soltek Logged By: Frank

HVJ Associates, Inc.

PLATE A-5

COH_GPS HG2010444.GPJ 4/5/21

LOG OF BORING P-6

PROJECT: Quitman Street Bike Trail
LOCATION: Houston

PROJECT NO.: HG2010444

COMPLETION DEPTH: 4 FT

GPS Coordinates: 29°46'56.27" N 95°21'35.33" W
SURFACE ELEVATION: 48.0 FT

DATE: 1/27/2021

SAMPLER: Shelby Tube/Split Spoon
DRY AUGER: 0 TO 4 FT
WET ROTARY: NA TO NA FT

ELEVATION, FT	DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	STANDARD PENETRATION TEST, BLOWS PER FOOT	PERCENT PASSING NO. 200 SIEVE	DRY UNIT WEIGHT, PCF	MOISTURE CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %
	0			Pavement: 6.75" Asphaltic Concrete, 4.25" Lime stabilized							
				Stiff, gray, brown and light gray, LEAN CLAY (CL)		89.0		21	49	15	34
				-w/ ferrous stains at 2'-4							
45								21			

UNDRAINED SHEAR STRENGTH, TSF
○ HAND PENETROMETER
● UNCONFINED COMPRESSION
■ UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION
△ TORVANE
0.5 1.0 1.5 2.0 2.5

DEPTH TO WATER IN BORING:
▽ FREE WATER DURING DRILLING: ---
▼ WATER DEPTH 24 HOURS AFTER DRILLING: ---

Drilled By: Soltek Logged By: Frank

HVJ Associates, Inc.

PLATE A-6

COH_GPS HG2010444.GPJ 4/5/21

SOIL SYMBOLS

Soil Types


Clay


Silt


Sand


Gravel

Modifiers


Clayey


Silty


Sandy


Cemented

Construction Materials


Asphaltic Concrete


Stabilized Base


Fill or Debris


Portland Cement Concrete

SAMPLER TYPES

Thin Walled Shelby Tube


No Recovery


Auger


Split Barrel


Core


Liner Tube


Jar Sample

WATER LEVEL SYMBOLS

Groundwater level after drilling in open borehole or piezometer


Groundwater level determined during drilling operations

SOIL GRAIN SIZE

Classification	Particle Size	Particle Size or Sieve No. (U.S. Standard)
Clay	< 0.002 mm	< 0.002 mm
Silt	0.002 - 0.075 mm	0.002 mm - #200 sieve
Sand	0.075 - 4.75 mm	#200 sieve - #4 sieve
Gravel	4.75 - 75 mm	#4 sieve - 3 in.
Cobble	75 - 200 mm	3 in. - 8 in.
Boulder	> 200 mm	> 8 in.

DENSITY OF COHESIONLESS SOILS

Descriptive Term	Penetration Resistance "N" * Blows/Foot
Very Loose	0 - 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	> 50

CONSISTENCY OF COHESIVE SOILS

Consistency	Undrained Shear Strength (tsf)	Penetration Resistance "N" * Blows/Foot
Very Soft	0 - 0.125	0 - 2
Soft	0.125 - 0.25	2 - 4
Firm	0.25 - 0.5	4 - 8
Stiff	0.5 - 1.0	8 - 16
Very Stiff	1.0 - 2.0	16 - 32
Hard	> 2.0	> 32

PENETRATION RESISTANCE

3/6	Blows required to penetrate each of three consecutive 6-inch increments per ASTM D-1586 *
50/4"	If more than 50 blows are required, driving is discontinued and penetration at 50 blows is noted
0/18"	Sampler penetrated full depth under weight of drill rods and hammer

* The N value is taken as the blows required to penetrate the final 12 inches

TERMS DESCRIBING SOIL STRUCTURE

Slickensided	Fracture planes appear polished or glossy, sometimes striated
Fissured	Breaks along definite planes of fracture with little resistance to fracturing
Inclusion	Small pockets of different soils, such as small lenses of sand scattered through a mass of clay
Parting	Inclusion less than 1/4 inch thick extending through the sample
Seam	Inclusion 1/4 inch to 3 inches thick extending through the sample
Layer	Inclusion greater than 3 inches thick extending through the sample
Laminated	Soil sample composed of alternating partings of different soil type
Stratified	Soil sample composed of alternating seams or layers of different soil type
Intermixed	Soil sample composed of pockets of different soil type and laminated or stratified structure is not evident
Calcareous	Having appreciable quantities of calcium carbonate
Ferrous	Having appreciable quantities of iron
Nodule	A small mass of irregular shape

HVJ ASSOCIATES
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Houston, Texas 77072-1010
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281.933.7293 Fax

KEY TO TERMS AND SYMBOLS USED ON BORING LOGS

PROJECT NO.: HG2010444

DRAWING NO.: PLATE A-07

APPENDIX B

SUMMARY OF LABORATORY TEST RESULTS

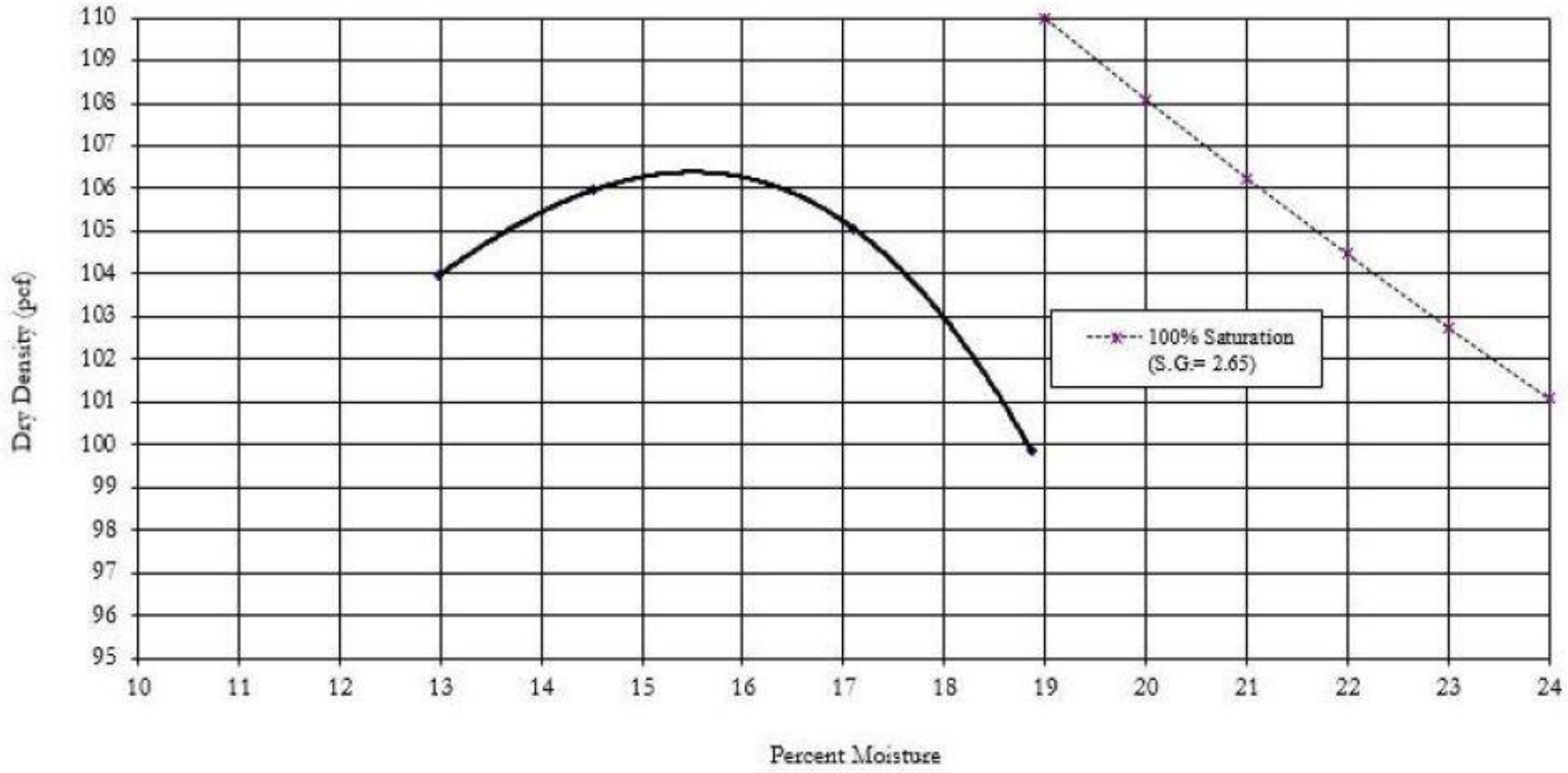
Project Name: Quitman Street Intergovernmental Partnership On Street Bike Lane
Project Location: Houston, Texas
Project Number: HG2010444

Borehole	Depth	Liquid Limit	Plastic Limit	Plasticity Index	% Passing #200 Sieve	Moisture Content (%)	Total Unit Weight (pcf)	Shear Strength (UC) (tsf)	Shear Strength (Pocket Pen) (tsf)
P-1	1				91.5	14			0.67
P-1	3	49	20	29	85.5	21			0.67
P-2	1	47	18	29	90.8	20			1
P-2	3					21	115	1.05	0.33
P-3	1	62	23	39	88.6	25			1
P-3	3					19			0.67
P-4	1	44	15	29	86.2	21			0.5
P-4	3				89.1	22			1
P-5	1	50	17	33	85.1	26			0.5
P-5	3					23			0.5
P-6	1	49	15	34	89	21			0.67
P-6	3					21			0.67
Total		**6**	**6**	**6**	**8**	**12**	**1**	**1**	**12**

APPENDIX C

STANDARD PROCTOR AND CBR TEST RESULTS

METHOD OF TEST ☑ STANDARD ASTM D-698 ☐ MODIFIED ASTM D-1557



DATE TESTED:	2/18/21	
TYPE OF MATERIAL :	Gray Lean Clay	
MAXIMUM DRY DENSITY :	106.2	pcf
OPT. MOISTURE CONTENT :	15.5	%

LIQUID LIMI 38
PLASTICITY INDEX : 15
-200 SEIVE % : 92.9

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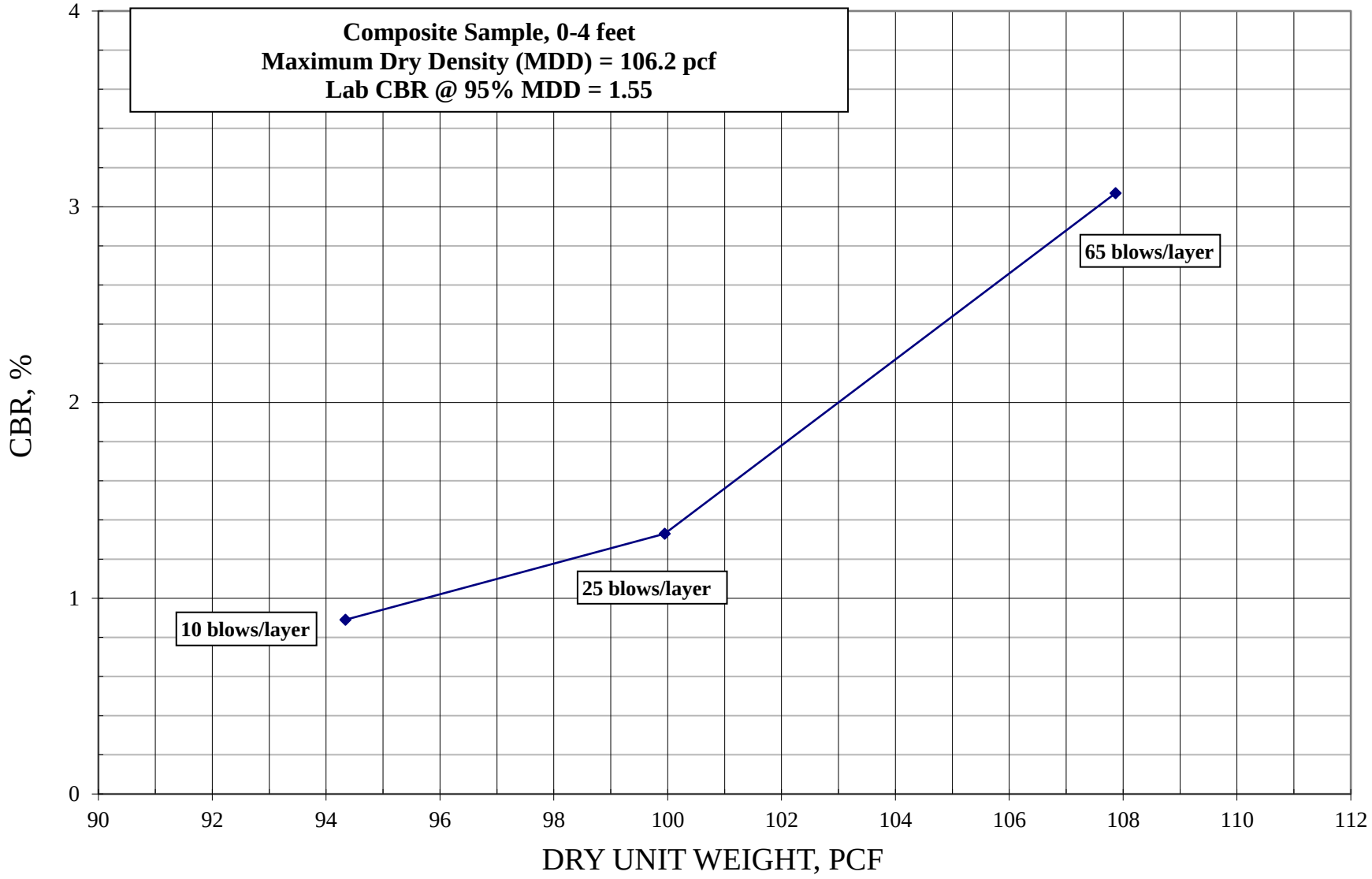
DATE: 3/8/2021	APPROVED BY: SV	PREPARED BY: YA

Quitman Street Intergovernmental Partnership on Street Bike Lane UPIN 21102MF1XE01

PROJECT NO.: HG2010444	DRAWING NO.: PLATE C-1

CALIFORNIA BEARING RATIO TEST RESULT



CBR (CALIFORNIA BEARING RATIO) OF LABORATORY COMPACTED SOILS ASTM D-1883

Project: Quitman Street On Street Bike Lane

Sample: Composite, 0-4 feet

Liquid Limit: 38 **Plastic Limit:**23 **Plasticity Index:** 15

Method of Compaction: ☒ ASTM D698 ☐ ASTM D1557

Sample Condition:	☒ soaked	☐ unsoaked	
No. of Blows:	**10**	**25**	**65**
Dry Density Before Soaking (pcf):	94.3	99.9	107.9
Dry Density After Soaking (pcf):	91.0	95.3	102.6
Moisture Content:			
Before Compaction (%):	15.9	16.5	16.7
Top 1-inch Layer After Soaking (%):	32.0	30.7	25.2
Swell (%):	5.39	5.59	2.39
Bearing Ratio (%): (☒ Soaked ☐ unsoaked)	0.89	1.33	3.07

Surcharge: 10 lbs.

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DATE: 3/8/2021	APPROVED BY: SV	PREPARED BY: YA

Quitman Street Intergovernmental Partnership on Street Bike Lane UPIN 21102MF1XE01

PROJECT NO.: HG2010444	DRAWING NO.: PLATE C-3

APPENDIX D

DARWIN STRUCTURAL NUMBER OUTPUT

1993 AASHTO Pavement Design

DARWin Pavement Design and Analysis System

A Proprietary AASHTOWare
Computer Software Product

Flexible Structural Design Module

Flexible Pavement Design - 12- years Design
Quitman Street - From Fulton to Elysian Street

Flexible Structural Design

18-kip ESALs Over Initial Performance Period	256,329
Initial Serviceability	4.2
Terminal Serviceability	2.25
Reliability Level	90 %
Overall Standard Deviation	0.45
Roadbed Soil Resilient Modulus	2,325 psi
Stage Construction	1
Calculated Design Structural Number	4.17 in

Simple ESAL Calculation

Performance Period (years)	12
Two-Way Traffic (ADT)	8,930
Number of Lanes in Design Direction	1
Percent of All Trucks in Design Lane	50 %
Percent Trucks in Design Direction	50 %
Percent Heavy Trucks (of ADT) FHWA Class 5 or Greater	1 %
Average Initial Truck Factor (ESALs/truck)	2.36
Annual Truck Factor Growth Rate	0 %
Annual Truck Volume Growth Rate	2 %
Growth	Simple
Total Calculated Cumulative ESALs	256,329

Specified Layer Design

Layer	Material Description	Struct Coef. (Ai)	Drain Coef. (Mi)	Thickness (Di)(in)	Width (ft)	Calculated SN (in)
1	Asphaltic Concrete	0.44	1	4	12	1.76
2	Black Base	0.34	1	5	12	1.70
3	Lime Stabilized Subgrade	0.11	1	8	12	0.88
Total	-	-	-	17.00	-	4.34

APPENDIX F – Utility Tables

Beginning Station		Ending Station		Utility Type	Utility Owner	Does Utility Co. Have an Easement?	Conflict?	Probed	SUE	Owner Rep Name	Owner Rep Address	Owner Rep Phone	Owner Rep Email	Describe Conflict (if applicable	Reloc. Start Date	Reloc. Com. Date
06+00.27	48.28 RT	06+00.27	48.28 RT	TRAFFIC PEDESTRIAN SIGNAL POLE	CITY OF HOUSTON		No				611 walker St, Houston, Texas	832.395.2500	publicworks@houstontx.gov			
06+04.21	27.36 RT	06+04.21	27.36 RT	TRAFFIC SIGNAL POLE/LIGHT POLE	CITY OF HOUSTON		No									
06+08.84	23.39 RT	06+08.84	23.39 RT	STORM MANHOLE	CITY OF HOUSTON		No									
06+09.86	21.11 RT	06+09.86	21.11 RT	STORM C INLET	CITY OF HOUSTON		No									
06+17.77	34.91 RT	06+17.77	34.91 RT	TRAFFIC SIGNAL BOX	CITY OF HOUSTON		No									
06+61.66	33.45 LT	06+61.66	33.45 LT	TRAFFIC SIGNAL BOX	CITY OF HOUSTON		No									
06+74.89	33.30 LT	06+74.89	33.30 LT	POWER POLE/LIGHT POLE W/ TRANSFORMER (3)	CENTERPOINT ENERGY		No			Lori Simmons/Mike Brower	1111 Louisiana, Suite 225IC Houston, Tx 77002	14044541 01 or 713-207-4622	713-207-4624 michael.brower@centerpointenergy.com			
08+79.60	21.91 RT	08+79.60	21.91 RT	LIGHT POLE	CENTERPOINT ENERGY		No									
10+72.80	14.66 LT	10+72.80	14.66 LT	LIGHT POLE	CENTERPOINT ENERGY		No									
14+81.44	27.61 LT	14+81.44	27.61 LT	LIGHT POLE	CENTERPOINT ENERGY		No									
15+26.81	66.42 LT	15+26.81	66.42 LT	STORM B INLET	CITY OF HOUSTON		No									
22+41.44	32.40 RT	22+41.44	32.40 RT	GUY WIRE	CENTERPOINT ENERGY		No									
22+53.34	30.61 RT	22+53.34	30.61 RT	TRAFFIC SIGNAL POLE	CITY OF HOUSTON		No									
22+56.34	40.77 RT	22+56.34	40.77 RT	ELECTRIC METER POLE	CENTERPOINT ENERGY		No									
22+57.11	30.45 RT	22+57.11	30.45 RT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY		No									
23+08.51	80.50 RT	23+08.51	80.50 RT	POWER POLE	CENTERPOINT ENERGY		No									
23+09.42	64.16 RT	23+09.42	64.16 RT	GUY WIRE	CENTERPOINT ENERGY		No									
23+10.90	47.35 RT	23+10.90	47.35 RT	WATER VALVE	CITY OF HOUSTON		Yes									
23+12.43	32.99 RT	23+12.43	32.99 RT	TRAFFIC SIGNAL POLE	CITY OF HOUSTON		No				Houston Transtar	6922 Katy Road, Houston, TX 77024	713-837-0311			
23+21.43	29.30 LT	23+21.43	29.30 LT	TRAFFIC SIGNAL POLE	CITY OF HOUSTON		No									
23+23.45	24.48 LT	23+23.45	24.48 LT	FIRE HYDRANT	CITY OF HOUSTON		Yes									
23+25.84	29.47 LT	23+25.84	29.47 LT	ELECTRIC CABINET	CENTERPOINT ENERGY		No									
23+27.30	21.64 LT	23+27.30	21.64 LT	STORM B INLET	CITY OF HOUSTON		No									
23+27.33	22.53 RT	23+27.33	22.53 RT	STORM B INLET	CITY OF HOUSTON		No									
23+33.55	29.29 LT	23+33.55	29.29 LT	ELECTRIC METER POLE	CENTERPOINT ENERGY		No									
23+37.97	24.03 RT	23+37.97	24.03 RT	GUY WIRE	CENTERPOINT ENERGY		No									
23+52.22	22.02 LT	23+52.22	22.02 LT	GUY WIRE	CENTERPOINT ENERGY		No									
23+61.11	20.65 LT	23+61.11	20.65 LT	POWER POLE	CENTERPOINT ENERGY		No									
23+62.13	22.82 RT	23+62.13	22.82 RT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY		No									
23+76.83	24.21 RT	23+76.83	24.21 RT	WATER METER	CITY OF HOUSTON		Yes									
23+78.74	23.99 RT	23+78.74	23.99 RT	WATER METER	CITY OF HOUSTON		Yes									
24+13.24	20.81 LT	24+13.24	20.81 LT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY		No									
24+45.29	22.83 RT	24+45.29	22.83 RT	WATER METER	CITY OF HOUSTON		Yes									
24+68.65	21.89 RT	24+68.65	21.89 RT	POWER POLE	CENTERPOINT ENERGY		No									
24+72.51	22.92 RT	24+72.51	22.92 RT	WATER METER	CITY OF HOUSTON		No									
24+99.78	21.13 LT	24+99.78	21.13 LT	WATER METER	CITY OF HOUSTON		No									
25+27.09	20.45 RT	25+27.09	20.45 RT	POWER POLE	CENTERPOINT ENERGY		No									
25+31.19	21.41 LT	25+31.19	21.41 LT	POWER POLE	CENTERPOINT ENERGY		Yes									
25+34.18	25.63 RT	25+34.18	25.63 RT	WATER VALVE	CITY OF HOUSTON		Yes									
25+71.10	29.21 RT	25+71.10	29.21 RT	WATER METER	CITY OF HOUSTON		Yes									
25+72.32	29.59 RT	25+72.32	29.59 RT	WATER METER	CITY OF HOUSTON		Yes									
26+10.34	20.01 LT	26+10.34	20.01 LT	POWER POLE	CENTERPOINT ENERGY		No									
26+20.45	21.95 RT	26+20.45	21.95 RT	POWER POLE	CENTERPOINT ENERGY		No									
26+24.48	27.36 RT	26+24.48	27.36 RT	WATER METER	CITY OF HOUSTON		Yes									
26+59.44	20.28 LT	26+59.44	20.28 LT	POWER POLE	CENTERPOINT ENERGY		No									
26+80.66	22.03 LT	26+80.66	22.03 LT	WATER METER	CITY OF HOUSTON		No									
26+82.08	21.79 LT	26+82.08	21.79 LT	WATER METER	CITY OF HOUSTON		No									
26+83.37	22.18 LT	26+83.37	22.18 LT	WATER METER	CITY OF HOUSTON		No									
27+09.71	20.39 RT	27+09.71	20.39 RT	POWER POLE W/ TRANSFORMER	CENTERPOINT ENERGY		No									
27+11.50	20.37 RT	27+11.50	20.37 RT	ELECTRIC CONDUIT	CENTERPOINT ENERGY		No									
27+29.22	21.43 RT	27+29.22	21.43 RT	WATER METER	CITY OF HOUSTON		No									
27+60.80	20.62 LT	27+60.80	20.62 LT	POWER POLE	CENTERPOINT ENERGY		No									
27+60.98	34.29 RT	27+60.98	34.29 RT	STORM B INLET	CITY OF HOUSTON		No									
27+65.93	43.72 LT	27+65.93	43.72 LT	FIRE HYDRANT	CITY OF HOUSTON		Yes									
27+68.02	34.16 LT	27+68.02	34.16 LT	STORM B INLET	CITY OF HOUSTON		No									
27+68.97	43.78 LT	27+68.97	43.78 LT	WATER VALVE	CITY OF HOUSTON		Yes									
27+81.73	34.60 RT	27+81.73	34.60 RT	STORM B INLET	CITY OF HOUSTON		No									
27+89.19	28.73 RT	27+89.19	28.73 RT	WATER METER	CITY OF HOUSTON		Yes									
27+93.70	34.60 LT	27+93.70	34.60 LT	STORM B INLET	CITY OF HOUSTON		No									
27+97.17	20.76 RT	27+97.17	20.76 RT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY		No									
28+01.72	21.34 RT	28+01.72	21.34 RT	WATER METER	CITY OF HOUSTON		No									
28+58.33	22.08 LT	28+58.33	22.08 LT	WATER METER	CITY OF HOUSTON		No									
28+78.85	20.52 LT	28+78.85	20.52 LT	POWER POLE	CENTERPOINT ENERGY		No									
28+99.01	20.18 RT	28+99.01	20.18 RT	POWER POLE	CENTERPOINT ENERGY		No									
29+20.80	24.05 LT	29+20.80	24.05 LT	WATER METER	CITY OF HOUSTON		No									
29+27.53	31.64 LT	29+27.53	31.64 LT	GAS METER	CENTERPOINT ENERGY		No									
29+33.09	24.05 LT	29+33.09	24.05 LT	WATER METER	CITY OF HOUSTON		No									
29+64.57	22.60 RT	29+64.57	22.60 RT	WATER METER	CITY OF HOUSTON		No									
29+76.42	19.28 RT	29+76.42	19.28 RT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY		No									
30+00.01	22.89 LT	30+00.01	22.89 LT	POWER POLE	CENTERPOINT ENERGY		No									
30+05.05	21.46 RT	30+05.05	21.46 RT	WATER METER	CITY OF HOUSTON		No									
30+07.03	19.88 RT	30+07.03	19.88 RT	WATER METER	CITY OF HOUSTON		No									
30+47.81	21.74 LT	30+47.81	21.74 LT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY		No									
30+50.41	20.34 LT	30+50.41	20.34 LT	WATER METER	CITY OF HOUSTON		No									
30+71.96	21.43 LT	30+71.96	21.43 LT	POWER POLE	CENTERPOINT ENERGY		No									
30+85.49	20.45 RT	30+85.49	20.45 RT	POWER POLE W/ TRANSFORMER	CENTERPOINT ENERGY		No									
31+03.92	19.84 LT	31+03.92	19.84 LT	WATER METER	CITY OF HOUSTON		No									
31+06.80	19.34 LT	31+06.80	19.34 LT	WATER METER	CITY OF HOUSTON		No									
31+30.81	20.98 LT	31+30.81	20.98 LT	WATER METER	CITY OF HOUSTON		No									
31+32.91	20.73 LT	31+32.91	20.73 LT	WATER METER	CITY OF HOUSTON		No									
31+38.59	21.37 LT	31+38.59	21.37 LT	GUY WIRE	CENTERPOINT ENERGY		No									
31+52.98	21.55 LT	31+52.98	21.55 LT	POWER POLE	CENTERPOINT ENERGY		No									
31+59.59	25.10 RT	31+59.59	25.10 RT	WATER VALVE	CITY OF HOUSTON		Yes									
31+69.88	21.68 RT	31+69.88	21.68 RT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY		No									
31+72.70	33.93 RT	31+72.70	33.93 RT	TELECOMMUNICATION BOX	UNKNOWN		No									
31+75.36	34.06 LT	31+75.36	34.06 LT	STORM B INLET	CITY OF HOUSTON		No									
31+75.38	34.33 RT	31+75.38	34.33 RT	STORM B INLET	CITY OF HOUSTON		No									
32+06.19	34.70 RT	32+06.19	34.70 RT	STORM B INLET	CITY OF HOUSTON		No									
32+11.46	30.21 RT	32+11.46	30.21 RT	FIRE HYDRANT	CITY OF HOUSTON		Yes									
32+13.58	28.05 RT	32+13.58	28.05 RT	WATER VALVE	CITY OF HOUSTON		Yes									
32+15.07	29.31 RT	32+15.07	29.31 RT	WATER VALVE	CITY OF HOUSTON		Yes									
32+16.98	26.25 RT	32+16.98	26.25 RT	WATER VALVE	CITY OF HOUSTON		Yes									
32+21.03	23.80 RT	32+21.03	23.80 RT	WATER VALVE	CITY OF HOUSTON		Yes									
32+70.57	22.37 LT	32+70.57	22.37 LT	WATER METER	CITY OF HOUSTON		No									
32+72.94	21.75 RT	32+72.94	21.75 RT	POWER POLE	CENTERPOINT ENERGY		No									
32+74.71	20.64 LT	32+74.71	20.64 LT	POWER POLE	CENTERPOINT ENERGY		No									
33+41.75	20.74 LT	33+41.75	20.74 LT	POWER POLE W/ TRANSFORMER	CENTERPOINT ENERGY		No									
33+42.00	22.76 LT	33+42.00	22.76 LT	ELECTRIC CONDUIT	CENTERPOINT ENERGY		No									
33+51.69	21.69 LT	33+51.69	21.69 LT	ELECTRIC CABINET	CENTERPOINT ENERGY		No									
33+54.89	20.23 LT	33+54.89	20.23 LT	GAS MARKER	CENTERPOINT ENERGY		No									
33+59.92	20.64 LT	33+59.92	20.64 LT	GUY WIRE	CENTERPOINT ENERGY		No									
33+62.10	17.52 LT	33+62.10	17.52 LT	STORM BB INLET	CITY OF HOUSTON		No									
33+65.80	28.40 RT	33+65.80	28.40 RT	CLEANOUT	UNKNOWN		No									
33+67.12	28.48 LT	33+67.12	28.48 LT	ELECTRIC METER POLE	CENTERPOINT ENERGY		No									
33+77.42	17.92 RT	33+77.42	17.92 RT	STORM BB INLET	CITY OF HOUSTON		No									
33+81.02	20.20 RT	33+81.02	20.20 RT	SERVICE POLE	CENTERPOINT ENERGY		No									
33+83.26	21.09 RT	33+83.26	21.09 RT	POWER POLE/LIGHT POLE W/ TRANSFORMER (3)	CENTERPOINT ENERGY		No									
33+91.61	19.34 RT	33+91.61	19.34 RT	TRAFFIC SIGNAL POLE	CITY OF HOUSTON		No									
34+01.49	22.42 RT	34+01.49	22.42 RT	FIRE HYDRANT	CITY OF HOUSTON		No									
34+01.75	20.81 RT	34+01.75	20.81 RT	WATER VALVE	CITY OF HOUSTON		No									
34+10.17	22.25 RT	34+10.17	22.25 RT	WATER METER	CITY OF HOUSTON		No									
34+10.36	19.66 RT	34+10.36	19.66 RT	WATER VALVE	CITY OF HOUSTON		No									
34+11.28	22.62 RT	34+11.28	22.62 RT	CLEANOUT	UNKNOWN		No									
34+16.20	26.35 LT	34+16.20	26.35 LT	TRAFFIC SIGNAL POLE	CITY OF HOUSTON		No									
34+18.18	41.17 LT	34+18.18	41.17 LT	LIGHT POLE	CENTERPOINT ENERGY		No									
34+18.35	30.49 LT	34+18.35	30.49 LT	LIGHT POLE	CENTERPOINT ENERGY		No									
34+20.68	24.05 RT	34+20.68	24.05 RT	TRAFFIC PEDESTRIAN SIGNAL POLE	CITY OF HOUSTON		No									
34+24.38	27.71 RT	34+24.38	27.71 RT	TRAFFIC SIGNAL BOX	CITY OF HOUSTON		Yes									
34+26.62	30.43 LT	34+26.62	30.43 LT	TRAFFIC SIGNAL BOX	CITY OF HOUSTON		Yes									

34+28.31	40.11 LT	34+28.31	40.11 LT	TRAFFIC PEDESTRIAN SIGNAL POLE	CITY OF HOUSTON	No
34+29.46	43.72 LT	34+29.46	43.72 LT	LIGHT POLE	CENTERPOINT ENERGY	No
34+29.89	26.80 RT	34+29.89	26.80 RT	TRAFFIC SIGNAL POLE	CITY OF HOUSTON	No
34+32.40	41.20 LT	34+32.40	41.20 LT	TRAFFIC SIGNAL BOX	CITY OF HOUSTON	Yes
34+35.07	46.22 RT	34+35.07	46.22 RT	WATER METER	CITY OF HOUSTON	No
34+36.27	41.42 RT	34+36.27	41.42 RT	TRAFFIC SIGNAL BOX	CITY OF HOUSTON	Yes
35+11.24	73.72 RT	35+11.24	73.72 RT	ELECTRIC BOX	CENTERPOINT ENERGY	Yes
35+11.38	78.05 RT	35+11.38	78.05 RT	ELECTRIC BOX	CENTERPOINT ENERGY	Yes
35+11.94	50.96 RT	35+11.94	50.96 RT	LIGHT POLE	CENTERPOINT ENERGY	No
35+12.15	88.72 RT	35+12.15	88.72 RT	GUY WIRE	CENTERPOINT ENERGY	No
35+12.39	95.34 RT	35+12.39	95.34 RT	GUY WIRE	CENTERPOINT ENERGY	No
35+12.65	40.28 RT	35+12.65	40.28 RT	TRAFFIC SIGNAL BOX	CITY OF HOUSTON	Yes
35+14.80	42.11 RT	35+14.80	42.11 RT	POWER POLE	CENTERPOINT ENERGY	No
35+16.88	37.18 RT	35+16.88	37.18 RT	TRAFFIC PEDESTRIAN SIGNAL POLE	CITY OF HOUSTON	No
35+17.79	39.93 RT	35+17.79	39.93 RT	TRAFFIC SIGNAL BOX	CITY OF HOUSTON	Yes
35+19.75	85.00 LT	35+19.75	85.00 LT	LIGHT POLE	CENTERPOINT ENERGY	No
35+21.24	52.33 LT	35+21.24	52.33 LT	TRAFFIC SIGNAL BOX	CITY OF HOUSTON	No
35+21.99	42.57 LT	35+21.99	42.57 LT	TRAFFIC SIGNAL BOX	CITY OF HOUSTON	Yes
35+23.44	49.57 LT	35+23.44	49.57 LT	TRAFFIC SIGNAL BOX	CITY OF HOUSTON	No
35+24.02	45.53 LT	35+24.02	45.53 LT	TRAFFIC SIGNAL BOX	CITY OF HOUSTON	Yes
35+24.28	30.72 RT	35+24.28	30.72 RT	TRAFFIC SIGNAL BOX	CITY OF HOUSTON	Yes
35+25.65	48.35 LT	35+25.65	48.35 LT	ELECTRIC BOX	CENTERPOINT ENERGY	No
35+25.87	38.96 LT	35+25.87	38.96 LT	TRAFFIC PEDESTRIAN SIGNAL POLE	CITY OF HOUSTON	No
35+26.40	27.83 RT	35+26.40	27.83 RT	TRAFFIC SIGNAL POLE	CITY OF HOUSTON	No
35+28.58	36.33 LT	35+28.58	36.33 LT	LIGHT POLE	CENTERPOINT ENERGY	No
35+32.27	39.30 LT	35+32.27	39.30 LT	TRAFFIC SIGNAL BOX	CITY OF HOUSTON	Yes
35+34.21	31.27 LT	35+34.21	31.27 LT	TRAFFIC SIGNAL POLE	CITY OF HOUSTON	Yes
35+37.32	29.14 LT	35+37.32	29.14 LT	TRAFFIC SIGNAL BOX	CITY OF HOUSTON	Yes
35+42.54	26.85 LT	35+42.54	26.85 LT	TRAFFIC SIGNAL BOX	CITY OF HOUSTON	Yes
35+53.28	26.56 LT	35+53.28	26.56 LT	ELECTRIC CABINET	CENTERPOINT ENERGY	No
35+61.65	24.40 LT	35+61.65	24.40 LT	TRAFFIC SIGNAL BOX	CITY OF HOUSTON	Yes
35+66.08	18.03 RT	35+66.08	18.03 RT	STORM BB INLET	CITY OF HOUSTON	No
35+67.36	17.52 LT	35+67.36	17.52 LT	STORM A INLET	CITY OF HOUSTON	No
35+72.99	19.79 RT	35+72.99	19.79 RT	TRAFFIC SIGNAL POLE	CITY OF HOUSTON	No
35+94.65	20.53 RT	35+94.65	20.53 RT	GUY WIRE	CENTERPOINT ENERGY	No
36+12.71	19.16 LT	36+12.71	19.16 LT	ELECTRIC CONDUIT	CENTERPOINT ENERGY	No
36+12.93	19.74 RT	36+12.93	19.74 RT	POWER POLE W/ TRANSFORMER (3)	CENTERPOINT ENERGY	Yes
36+14.31	19.28 LT	36+14.31	19.28 LT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY	No
36+15.37	19.78 LT	36+15.37	19.78 LT	ELECTRIC CONDUIT	CENTERPOINT ENERGY	No
36+27.65	21.04 LT	36+27.65	21.04 LT	GAS VALVE	CENTERPOINT ENERGY	No
36+64.83	11.26 RT	36+64.83	11.26 RT	TELECOMMUNICATION MH	AT&T	Yes
					CENTERPOINT ENERGY	No
36+90.01	19.61 LT	36+90.01	19.61 LT	GUY WIRE		
36+96.88	19.82 RT	36+96.88	19.82 RT	POWER POLE	CENTERPOINT ENERGY	No
37+04.37	21.89 RT	37+04.37	21.89 RT	CLEANOUT	UNKNOWN	No
37+10.55	21.60 RT	37+10.55	21.60 RT	TELECOMMUNICATION BOX	UNKNOWN	No
37+24.29	23.40 RT	37+24.29	23.40 RT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY	No
37+61.13	39.93 LT	37+61.13	39.93 LT	GUY WIRE	CENTERPOINT ENERGY	No
37+89.57	22.44 RT	37+89.57	22.44 RT	WATER VALVE	CITY OF HOUSTON	No
38+18.62	19.89 LT	38+18.62	19.89 LT	POWER POLE	CENTERPOINT ENERGY	No
38+29.54	20.00 RT	38+29.54	20.00 RT	POWER POLE	CENTERPOINT ENERGY	No
38+55.02	28.48 LT	38+55.02	28.48 LT	WATER METER	CITY OF HOUSTON	Yes
38+66.42	27.78 LT	38+66.42	27.78 LT	CLEANOUT	UNKNOWN	Yes
38+75.35	27.98 LT	38+75.35	27.98 LT	CLEANOUT	UNKNOWN	Yes
38+76.48	19.23 LT	38+76.48	19.23 LT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY	No
38+82.39	20.42 RT	38+82.39	20.42 RT	POWER POLE	CENTERPOINT ENERGY	No
39+53.27	31.82 RT	39+53.27	31.82 RT	WATER METER VAULT	CITY OF HOUSTON	No
39+53.51	34.34 RT	39+53.51	34.34 RT	WATER FIRE DEPARTMENT CONNECTOR	CITY OF HOUSTON	No
39+53.65	23.71 RT	39+53.65	23.71 RT	WATER VALVE	CITY OF HOUSTON	Yes
39+67.87	33.90 RT	39+67.87	33.90 RT	WATER METER VAULT	CITY OF HOUSTON	Yes
39+68.76	24.29 RT	39+68.76	24.29 RT	WATER VALVE	CITY OF HOUSTON	Yes
39+72.87	31.03 RT	39+72.87	31.03 RT	WATER VALVE	CITY OF HOUSTON	Yes
39+73.02	29.48 RT	39+73.02	29.48 RT	WATER METER	CITY OF HOUSTON	Yes
39+79.67	23.15 RT	39+79.67	23.15 RT	WATER VALVE	CITY OF HOUSTON	Yes
39+83.66	17.72 RT	39+83.66	17.72 RT	STORM BB INLET	CITY OF HOUSTON	No
39+87.42	21.36 LT	39+87.42	21.36 LT	POWER POLE	CENTERPOINT ENERGY	No
39+88.01	22.46 LT	39+88.01	22.46 LT	POWER POLE	CENTERPOINT ENERGY	No
39+89.62	20.46 RT	39+89.62	20.46 RT	POWER POLE	CENTERPOINT ENERGY	No
39+93.28	21.27 RT	39+93.28	21.27 RT	WATER VALVE	CITY OF HOUSTON	Yes
39+93.29	34.44 LT	39+93.29	34.44 LT	STORM MANHOLE	CITY OF HOUSTON	No
39+97.98	34.79 LT	39+97.98	34.79 LT	STORM BB INLET	CITY OF HOUSTON	No
40+34.37	35.42 LT	40+34.37	35.42 LT	STORM BB INLET	CITY OF HOUSTON	No
40+36.09	46.46 LT	40+36.09	46.46 LT	FIRE HYDRANT	CITY OF HOUSTON	No
40+45.00	22.74 RT	40+45.00	22.74 RT	WATER VALVE	CITY OF HOUSTON	Yes
40+56.56	20.39 RT	40+56.56	20.39 RT	POWER POLE	CENTERPOINT ENERGY	No
40+94.64	20.10 RT	40+94.64	20.10 RT	POWER POLE	CENTERPOINT ENERGY	No
41+43.36	19.24 LT	41+43.36	19.24 LT	POWER POLE/LIGHT POLE W/ TRANSFORMER (2)	CENTERPOINT ENERGY	No
41+45.91	20.52 RT	41+45.91	20.52 RT	POWER POLE	CENTERPOINT ENERGY	No
41+52.34	21.04 LT	41+52.34	21.04 LT	WATER METER	CITY OF HOUSTON	No
41+61.53	20.54 RT	41+61.53	20.54 RT	GUY WIRE	CENTERPOINT ENERGY	No
42+11.37	19.59 LT	42+11.37	19.59 LT	TRAFFIC SIGNAL POLE	CITY OF HOUSTON	No
42+32.11	22.25 RT	42+32.11	22.25 RT	TRAFFIC SIGNAL POLE	CITY OF HOUSTON	No
42+41.03	20.90 RT	42+41.03	20.90 RT	TELECOMMUNICATION BOX	UNKNOWN	Yes
42+49.11	18.84 LT	42+49.11	18.84 LT	POWER POLE	CENTERPOINT ENERGY	No
42+97.22	45.06 LT	42+97.22	45.06 LT	STORM BB INLET	CITY OF HOUSTON	No
42+97.51	32.08 RT	42+97.51	32.08 RT	STORM BB INLET	CITY OF HOUSTON	No
42+99.50	42.85 LT	42+99.50	42.85 LT	GUY WIRE	CENTERPOINT ENERGY	No
43+02.23	28.51 RT	43+02.23	28.51 RT	FIRE HYDRANT	CITY OF HOUSTON	Yes
43+07.73	20.63 RT	43+07.73	20.63 RT	WATER VALVE	CITY OF HOUSTON	Yes
43+13.66	20.95 RT	43+13.66	20.95 RT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY	No
43+20.71	19.16 RT	43+20.71	19.16 RT	WATER VALVE	CITY OF HOUSTON	Yes
43+46.59	23.72 LT	43+46.59	23.72 LT	WATER METER	CITY OF HOUSTON	Yes
43+47.69	28.20 LT	43+47.69	28.20 LT	CLEANOUT	UNKNOWN	Yes
44+05.25	20.16 RT	44+05.25	20.16 RT	POWER POLE W/ TRANSFORMER (3)	CENTERPOINT ENERGY	No
44+52.51	24.49 LT	44+52.51	24.49 LT	WATER METER	CITY OF HOUSTON	Yes
44+88.01	20.72 RT	44+88.01	20.72 RT	GUY WIRE	CENTERPOINT ENERGY	No
44+99.80	20.92 RT	44+99.80	20.92 RT	GUY WIRE	CENTERPOINT ENERGY	No
45+04.10	20.82 RT	45+04.10	20.82 RT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY	No
45+05.05	20.11 LT	45+05.05	20.11 LT	POWER POLE	CENTERPOINT ENERGY	No
45+09.93	19.15 RT	45+09.93	19.15 RT	STORM B INLET	CITY OF HOUSTON	No
45+19.87	40.58 RT	45+19.87	40.58 RT	FIRE HYDRANT	CITY OF HOUSTON	Yes
45+20.69	31.97 LT	45+20.69	31.97 LT	WATER VALVE	CITY OF HOUSTON	Yes
45+20.98	40.80 RT	45+20.98	40.80 RT	WATER VALVE	CITY OF HOUSTON	Yes
45+23.34	37.24 RT	45+23.34	37.24 RT	LIGHT POLE	CENTERPOINT ENERGY	No
45+24.73	35.13 RT	45+24.73	35.13 RT	POWER POLE	CENTERPOINT ENERGY	No
45+57.98	24.03 RT	45+57.98	24.03 RT	WATER VALVE	CITY OF HOUSTON	Yes
45+58.66	56.59 LT	45+58.66	56.59 LT	TELECOMMUNICATION MH	AT&T	No
45+75.01	28.97 RT	45+75.01	28.97 RT	ELECTRIC CONDUIT	CENTERPOINT ENERGY	No
45+75.23	27.44 RT	45+75.23	27.44 RT	POWER POLE W/ TRANSFORMER (3)	CENTERPOINT ENERGY	No
46+21.79	20.78 LT	46+21.79	20.78 LT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY	No
46+21.88	21.94 LT	46+21.88	21.94 LT	ELECTRIC CONDUIT	CENTERPOINT ENERGY	No
46+47.45	17.48 RT	46+47.45	17.48 RT	STORM MANHOLE	CITY OF HOUSTON	No
46+63.36	26.70 RT	46+63.36	26.70 RT	GUY WIRE	CENTERPOINT ENERGY	Yes
46+69.18	27.21 RT	46+69.18	27.21 RT	POWER POLE W/ TRANSFORMER (3)	CENTERPOINT ENERGY	Yes
46+73.66	23.16 LT	46+73.66	23.16 LT	POWER POLE/LIGHT POLE W/ TRANSFORMER	CENTERPOINT ENERGY	No
46+81.29	23.19 LT	46+81.29	23.19 LT	GUY WIRE	CENTERPOINT ENERGY	No
46+82.05	25.03 LT	46+82.05	25.03 LT	TRAFFIC SIGNAL POLE	CITY OF HOUSTON	No
47+38.86	22.10 RT	47+38.86	22.10 RT	STORM BB INLET	CITY OF HOUSTON	No
47+39.09	17.41 RT	47+39.09	17.41 RT	STORM MANHOLE	CITY OF HOUSTON	No
47+39.90	22.99 LT	47+39.90	22.99 LT	STORM BB INLET	CITY OF HOUSTON	No
47+51.69	24.35 LT	47+51.69	24.35 LT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY	No

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47+64.40	37.15 RT	47+64.40	37.15 RT	TRAFFIC SIGNAL POLE	CITY OF HOUSTON	No
47+64.96	33.27 LT	47+64.96	33.27 LT	TRAFFIC SIGNAL POLE	CITY OF HOUSTON	No
47+65.20	40.01 LT	47+65.20	40.01 LT	TRAFFIC SIGNAL BOX	CITY OF HOUSTON	Yes
47+68.27	21.89 RT	47+68.27	21.89 RT	WATER VALVE	CITY OF HOUSTON	Yes
47+68.69	41.21 RT	47+68.69	41.21 RT	TRAFFIC SIGNAL BOX	CITY OF HOUSTON	Yes
47+71.72	47.43 RT	47+71.72	47.43 RT	WATER METER	CITY OF HOUSTON	Yes
47+74.37	36.88 LT	47+74.37	36.88 LT	WATER VALVE	CITY OF HOUSTON	Yes
48+26.32	53.30 RT	48+26.32	53.30 RT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY	No
48+30.11	43.55 RT	48+30.11	43.55 RT	TRAFFIC SIGNAL BOX	CITY OF HOUSTON	Yes
48+31.80	41.24 LT	48+31.80	41.24 LT	TRAFFIC SIGNAL BOX	CITY OF HOUSTON	Yes
48+34.24	43.90 LT	48+34.24	43.90 LT	TRAFFIC SIGNAL BOX	CITY OF HOUSTON	Yes
48+35.27	37.11 LT	48+35.27	37.11 LT	TRAFFIC SIGNAL POLE	CITY OF HOUSTON	No
48+35.84	37.04 RT	48+35.84	37.04 RT	TRAFFIC SIGNAL POLE	CITY OF HOUSTON	No
48+45.79	27.80 RT	48+45.79	27.80 RT	POWER POLE	CENTERPOINT ENERGY	Yes
48+48.99	24.68 RT	48+48.99	24.68 RT	TRAFFIC SIGNAL BOX	CITY OF HOUSTON	Yes
48+49.46	26.33 RT	48+49.46	26.33 RT	TRAFFIC SIGNAL BOX	CITY OF HOUSTON	Yes
48+50.38	20.35 RT	48+50.38	20.35 RT	WATER VALVE	CITY OF HOUSTON	Yes
48+51.03	28.48 RT	48+51.03	28.48 RT	ELECTRIC METER POLE	CENTERPOINT ENERGY	No
48+52.35	29.18 LT	48+52.35	29.18 LT	TRAFFIC SIGNAL BOX	CITY OF HOUSTON	Yes
48+55.47	28.75 LT	48+55.47	28.75 LT	TRAFFIC SIGNAL BOX	CITY OF HOUSTON	Yes
48+55.80	28.74 RT	48+55.80	28.74 RT	ELECTRIC CABINET	CENTERPOINT ENERGY	No
48+59.14	22.81 LT	48+59.14	22.81 LT	STORM BB INLET	CITY OF HOUSTON	No
48+59.44	3.56 RT	48+59.44	3.56 RT	STORM MANHOLE	CITY OF HOUSTON	No
48+60.10	22.11 RT	48+60.10	22.11 RT	STORM BB INLET	CITY OF HOUSTON	No
48+85.59	24.93 LT	48+85.59	24.93 LT	TRAFFIC PEDESTRIAN SIGNAL POLE	CITY OF HOUSTON	No
49+35.47	22.32 RT	49+35.47	22.32 RT	POWER POLE/LIGHT POLE W/ TRANSFORMER (2)	CENTERPOINT ENERGY	No
49+48.64	20.95 RT	49+48.64	20.95 RT	SERVICE POLE	CENTERPOINT ENERGY	No
49+62.80	7.68 RT	49+62.80	7.68 RT	SANITARY MANHOLE	CITY OF HOUSTON	No
50+19.83	18.27 LT	50+19.83	18.27 LT	STORM BB INLET	CITY OF HOUSTON	No
50+26.87	25.62 RT	50+26.87	25.62 RT	ELECTRIC BOX	CENTERPOINT ENERGY	Yes
50+28.80	23.87 LT	50+28.80	23.87 LT	WATER METER	CITY OF HOUSTON	Yes
50+28.99	22.62 LT	50+28.99	22.62 LT	WATER METER	CITY OF HOUSTON	Yes
50+30.95	23.38 LT	50+30.95	23.38 LT	WATER METER	CITY OF HOUSTON	Yes
50+33.39	21.71 RT	50+33.39	21.71 RT	WATER VALVE	CITY OF HOUSTON	Yes
50+43.39	23.54 RT	50+43.39	23.54 RT	WATER VALVE	CITY OF HOUSTON	Yes
50+46.14	34.61 RT	50+46.14	34.61 RT	STORM B INLET	CITY OF HOUSTON	No
50+84.71	21.64 RT	50+84.71	21.64 RT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY	No
50+94.10	17.96 LT	50+94.10	17.96 LT	STORM B INLET	CITY OF HOUSTON	No
50+94.32	18.38 RT	50+94.32	18.38 RT	STORM B INLET	CITY OF HOUSTON	No
50+94.34	19.93 LT	50+94.34	19.93 LT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY	No
51+50.50	21.39 RT	51+50.50	21.39 RT	GUY WIRE	CENTERPOINT ENERGY	No
51+63.64	20.76 RT	51+63.64	20.76 RT	POWER POLE W/ TRANSFORMER (3)	CENTERPOINT ENERGY	No
51+64.71	22.28 RT	51+64.71	22.28 RT	ELECTRIC CONDUIT	CENTERPOINT ENERGY	No
52+20.85	21.48 RT	52+20.85	21.48 RT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY	No
53+32.64	28.00 RT	53+32.64	28.00 RT	WATER METER	CITY OF HOUSTON	Yes
53+62.26	21.05 RT	53+62.26	21.05 RT	POWER POLE W/ TRANSFORMER	CENTERPOINT ENERGY	No
53+77.84	20.89 RT	53+77.84	20.89 RT	GUY WIRE	CENTERPOINT ENERGY	No
54+50.86	20.02 RT	54+50.86	20.02 RT	POWER POLE	CENTERPOINT ENERGY	No
55+46.70	20.74 RT	55+46.70	20.74 RT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY	No
55+48.26	21.40 RT	55+48.26	21.40 RT	ELECTRIC CONDUIT	CENTERPOINT ENERGY	No
55+71.29	21.55 RT	55+71.29	21.55 RT	STORM MANHOLE	CITY OF HOUSTON	No
55+81.67	17.91 LT	55+81.67	17.91 LT	STORM B INLET	CITY OF HOUSTON	No
55+83.43	18.30 RT	55+83.43	18.30 RT	STORM BB INLET	CITY OF HOUSTON	No
55+91.14	36.11 LT	55+91.14	36.11 LT	WATER FIRE DEPARTMENT CONNECTOR	CITY OF HOUSTON	No
56+09.48	25.10 RT	56+09.48	25.10 RT	WATER VALVE	CITY OF HOUSTON	Yes
56+19.85	26.15 RT	56+19.85	26.15 RT	WATER VALVE	CITY OF HOUSTON	Yes
56+20.34	28.80 RT	56+20.34	28.80 RT	FIRE HYDRANT	CITY OF HOUSTON	Yes
56+23.49	23.52 RT	56+23.49	23.52 RT	WATER VALVE	CITY OF HOUSTON	Yes
57+19.25	29.99 LT	57+19.25	29.99 LT	WATER METER	CITY OF HOUSTON	Yes
57+26.81	19.40 RT	57+26.81	19.40 RT	POWER POLE/LIGHT POLE W/ TRANSFORMER (3)	CENTERPOINT ENERGY	No
57+53.04	23.12 LT	57+53.04	23.12 LT	SERVICE POLE	CENTERPOINT ENERGY	No
57+65.27	23.64 LT	57+65.27	23.64 LT	ELECTRIC CONDUIT	CENTERPOINT ENERGY	No
57+66.83	24.51 LT	57+66.83	24.51 LT	POWER POLE W/ TRANSFORMER (3)	CENTERPOINT ENERGY	No
57+68.24	20.34 RT	57+68.24	20.34 RT	POWER POLE	CENTERPOINT ENERGY	No
58+60.60	20.90 LT	58+60.60	20.90 LT	SERVICE POLE	CENTERPOINT ENERGY	No
58+61.14	27.41 LT	58+61.14	27.41 LT	GUY WIRE	CENTERPOINT ENERGY	No
59+68.47	19.24 RT	59+68.47	19.24 RT	POWER POLE/LIGHT POLE W/ TRANSFORMER	CENTERPOINT ENERGY	No
59+73.91	18.83 LT	59+73.91	18.83 LT	GUY WIRE	CENTERPOINT ENERGY	No
59+83.33	18.83 RT	59+83.33	18.83 RT	GUY WIRE	CENTERPOINT ENERGY	No
59+86.97	19.15 RT	59+86.97	19.15 RT	GUY WIRE	CENTERPOINT ENERGY	No
59+87.72	18.72 LT	59+87.72	18.72 LT	SERVICE POLE	CENTERPOINT ENERGY	No
60+78.05	18.12 LT	60+78.05	18.12 LT	STORM B INLET	CITY OF HOUSTON	No
60+78.29	17.63 RT	60+78.29	17.63 RT	STORM B INLET	CITY OF HOUSTON	No
60+79.57	22.34 RT	60+79.57	22.34 RT	WATER VALVE	CITY OF HOUSTON	Yes
60+86.69	20.71 LT	60+86.69	20.71 LT	POWER POLE	CENTERPOINT ENERGY	No
60+87.15	20.07 RT	60+87.15	20.07 RT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY	No
60+90.70	30.18 RT	60+90.70	30.18 RT	TRAFFIC SIGNAL POLE	CITY OF HOUSTON	No
60+92.62	35.55 RT	60+92.62	35.55 RT	ELECTRIC CABINET	CENTERPOINT ENERGY	No
60+93.42	27.17 LT	60+93.42	27.17 LT	TRAFFIC SIGNAL POLE	CITY OF HOUSTON	No
60+93.73	27.54 RT	60+93.73	27.54 RT	POWER POLE	CENTERPOINT ENERGY	No
60+97.91	21.80 LT	60+97.91	21.80 LT	STORM MANHOLE	CITY OF HOUSTON	No
61+34.71	37.70 RT	61+34.71	37.70 RT	WATER VALVE	CITY OF HOUSTON	No
61+36.03	37.95 RT	61+36.03	37.95 RT	FIRE HYDRANT	CITY OF HOUSTON	No
61+36.61	33.01 RT	61+36.61	33.01 RT	TRAFFIC SIGNAL POLE	CITY OF HOUSTON	No
61+39.12	31.78 LT	61+39.12	31.78 LT	TRAFFIC SIGNAL POLE	CITY OF HOUSTON	No
61+48.12	18.97 LT	61+48.12	18.97 LT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY	No
61+51.97	18.14 LT	61+51.97	18.14 LT	STORM B INLET	CITY OF HOUSTON	No
61+52.10	17.45 RT	61+52.10	17.45 RT	STORM B INLET	CITY OF HOUSTON	No
61+69.06	19.63 RT	61+69.06	19.63 RT	POWER POLE	CENTERPOINT ENERGY	No
62+53.71	23.99 RT	62+53.71	23.99 RT	ELECTRIC METER POLE	CENTERPOINT ENERGY	No
62+61.00	19.05 RT	62+61.00	19.05 RT	POWER POLE/LIGHT POLE W/ TRANSFORMER	CENTERPOINT ENERGY	No
62+88.26	24.82 LT	62+88.26	24.82 LT	WATER METER	CITY OF HOUSTON	Yes
62+89.76	19.31 LT	62+89.76	19.31 LT	POWER POLE	CENTERPOINT ENERGY	No
63+32.57	19.73 RT	63+32.57	19.73 RT	POWER POLE	CENTERPOINT ENERGY	No
63+37.91	25.05 LT	63+37.91	25.05 LT	SERVICE POLE	CENTERPOINT ENERGY	No
63+50.46	18.61 RT	63+50.46	18.61 RT	WATER METER	CITY OF HOUSTON	Yes
63+67.45	24.34 RT	63+67.45	24.34 RT	WATER METER	CITY OF HOUSTON	Yes
63+91.22	18.46 LT	63+91.22	18.46 LT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY	No
64+31.21	19.50 RT	64+31.21	19.50 RT	POWER POLE	CENTERPOINT ENERGY	No
65+33.09	25.31 LT	65+33.09	25.31 LT	LIGHT POLE	CENTERPOINT ENERGY	No
65+33.56	29.11 RT	65+33.56	29.11 RT	LIGHT POLE	CENTERPOINT ENERGY	No
65+36.90	19.22 RT	65+36.90	19.22 RT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY	No
65+43.85	33.37 RT	65+43.85	33.37 RT	FIRE HYDRANT	CITY OF HOUSTON	No
65+44.36	36.02 RT	65+44.36	36.02 RT	POWER POLE	CENTERPOINT ENERGY	No
65+45.94	41.35 RT	65+45.94	41.35 RT	STORM B INLET	CITY OF HOUSTON	No
65+46.43	34.01 LT	65+46.43	34.01 LT	STORM B INLET	CITY OF HOUSTON	No
65+81.58	33.34 LT	65+81.58	33.34 LT	STORM B INLET	CITY OF HOUSTON	No
65+81.72	32.98 RT	65+81.72	32.98 RT	STORM B INLET	CITY OF HOUSTON	No
65+84.64	36.54 RT	65+84.64	36.54 RT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY	No
65+96.99	18.87 RT	65+96.99	18.87 RT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY	No
66+92.27	18.83 LT	66+92.27	18.83 LT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY	No
66+92.73	19.66 RT	66+92.73	19.66 RT	POWER POLE W/ TRANSFORMER (2)	CENTERPOINT ENERGY	No
67+06.99	19.55 RT	67+06.99	19.55 RT	GUY WIRE	CENTERPOINT ENERGY	No
68+01.50	24.91 LT	68+01.50	24.91 LT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY	No
68+46.50	30.00 RT	68+46.50	30.00 RT	WATER METER	CITY OF HOUSTON	Yes
68+47.63	36.21 LT	68+47.63	36.21 LT	FIRE HYDRANT	CITY OF HOUSTON	Yes
68+47.63	33.79 LT	68+47.63	33.79 LT	WATER VALVE	CITY OF HOUSTON	Yes
68+49.68	28.29 LT	68+49.68	28.29 LT	WATER VALVE	CITY OF HOUSTON	Yes
68+52.44	20.45 RT	68+52.44	20.45 RT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY	Yes
68+58.59	22.90 RT	68+58.59	22.90 RT	WATER VALVE	CITY OF HOUSTON	Yes

68+59.21	20.05 RT	68+59.21	20.05 RT	WATER VALVE	CITY OF HOUSTON	Yes
69+46.65	19.42 LT	69+46.65	19.42 LT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY	No
69+83.02	23.97 RT	69+83.02	23.97 RT	WATER METER	CITY OF HOUSTON	Yes
69+83.63	19.07 RT	69+83.63	19.07 RT	POWER POLE W/ TRANSFORMER (3)	CENTERPOINT ENERGY	No
70+51.85	17.73 RT	70+51.85	17.73 RT	STORM B INLET	CITY OF HOUSTON	No
70+63.91	33.15 LT	70+63.91	33.15 LT	POWER POLE	CENTERPOINT ENERGY	No
70+65.87	61.27 RT	70+65.87	61.27 RT	SERVICE POLE	CENTERPOINT ENERGY	No
70+66.17	39.27 LT	70+66.17	39.27 LT	FIRE HYDRANT	CITY OF HOUSTON	No
70+66.76	34.30 LT	70+66.76	34.30 LT	STORM B INLET	CITY OF HOUSTON	No
70+67.35	39.22 LT	70+67.35	39.22 LT	WATER VALVE	CITY OF HOUSTON	No
70+72.82	33.94 LT	70+72.82	33.94 LT	STORM MANHOLE	CITY OF HOUSTON	No
71+02.65	33.80 LT	71+02.65	33.80 LT	STORM B INLET	CITY OF HOUSTON	No
71+02.83	37.39 RT	71+02.83	37.39 RT	STORM B INLET	CITY OF HOUSTON	No
71+06.87	24.95 RT	71+06.87	24.95 RT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY	No
71+07.11	29.85 LT	71+07.11	29.85 LT	POWER POLE	CENTERPOINT ENERGY	No
71+14.35	21.79 RT	71+14.35	21.79 RT	WATER VALVE	CITY OF HOUSTON	Yes
72+36.65	18.13 RT	72+36.65	18.13 RT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY	No
73+11.72	19.68 RT	73+11.72	19.68 RT	POWER POLE	CENTERPOINT ENERGY	No
73+14.94	23.21 RT	73+14.94	23.21 RT	WATER VALVE	CITY OF HOUSTON	Yes
73+21.78	54.18 LT	73+21.78	54.18 LT	POWER POLE	CENTERPOINT ENERGY	No
73+22.10	28.33 RT	73+22.10	28.33 RT	POWER POLE	CENTERPOINT ENERGY	No
73+26.35	33.91 LT	73+26.35	33.91 LT	STORM B INLET	CITY OF HOUSTON	No
73+27.82	33.12 RT	73+27.82	33.12 RT	STORM B INLET	CITY OF HOUSTON	No
73+62.29	34.77 LT	73+62.29	34.77 LT	STORM B INLET	CITY OF HOUSTON	No
73+62.59	33.19 RT	73+62.59	33.19 RT	STORM B INLET	CITY OF HOUSTON	No
73+64.38	36.38 LT	73+64.38	36.38 LT	WATER VALVE	CITY OF HOUSTON	Yes
73+64.90	48.64 RT	73+64.90	48.64 RT	WATER METER	CITY OF HOUSTON	No
73+67.75	33.07 LT	73+67.75	33.07 LT	WATER VALVE	CITY OF HOUSTON	Yes
73+68.92	33.19 LT	73+68.92	33.19 LT	FIRE HYDRANT	CITY OF HOUSTON	Yes
73+71.28	20.23 RT	73+71.28	20.23 RT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY	No
73+72.76	20.32 RT	73+72.76	20.32 RT	ELECTRIC CONDUIT	CENTERPOINT ENERGY	Yes
73+77.42	19.90 RT	73+77.42	19.90 RT	ELECTRIC METER	CENTERPOINT ENERGY	Yes
73+79.71	20.02 RT	73+79.71	20.02 RT	ELECTRIC BOX	CENTERPOINT ENERGY	Yes
74+73.13	19.14 LT	74+73.13	19.14 LT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY	No
74+74.05	19.48 RT	74+74.05	19.48 RT	POWER POLE	CENTERPOINT ENERGY	No
75+67.68	21.56 RT	75+67.68	21.56 RT	WATER VALVE	CITY OF HOUSTON	Yes
75+70.17	18.87 LT	75+70.17	18.87 LT	STORM B INLET	CITY OF HOUSTON	No
75+70.39	17.53 RT	75+70.39	17.53 RT	STORM B INLET	CITY OF HOUSTON	No
75+71.11	18.88 RT	75+71.11	18.88 RT	POWER POLE	CENTERPOINT ENERGY	No
75+71.93	23.91 RT	75+71.93	23.91 RT	TRAFFIC SIGNAL BOX	CITY OF HOUSTON	Yes
75+74.90	28.66 LT	75+74.90	28.66 LT	TRAFFIC SIGNAL POLE	CITY OF HOUSTON	Yes
75+75.09	59.22 LT	75+75.09	59.22 LT	WATER METER	CITY OF HOUSTON	No
75+76.07	24.13 RT	75+76.07	24.13 RT	TRAFFIC SIGNAL POLE	CITY OF HOUSTON	Yes
75+77.66	26.70 LT	75+77.66	26.70 LT	WATER VALVE	CITY OF HOUSTON	Yes
76+27.97	35.92 RT	76+27.97	35.92 RT	POWER POLE	CENTERPOINT ENERGY	No
76+28.02	32.68 LT	76+28.02	32.68 LT	POWER POLE	CENTERPOINT ENERGY	No
76+29.57	30.15 RT	76+29.57	30.15 RT	TELECOMMUNICATION BOX	UNKNOWN	
76+37.60	24.71 RT	76+37.60	24.71 RT	TRAFFIC SIGNAL POLE	CITY OF HOUSTON	No
76+37.72	23.53 LT	76+37.72	23.53 LT	TRAFFIC SIGNAL POLE	CITY OF HOUSTON	Yes
76+38.64	18.57 LT	76+38.64	18.57 LT	STORM B INLET	CITY OF HOUSTON	No
76+39.24	17.64 RT	76+39.24	17.64 RT	STORM B INLET	CITY OF HOUSTON	No
76+44.31	18.82 RT	76+44.31	18.82 RT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY	No
76+45.33	24.08 RT	76+45.33	24.08 RT	TELECOMMUNICATION MARKER	CENTERPOINT ENERGY	Yes
76+49.03	23.94 RT	76+49.03	23.94 RT	FIRE HYDRANT	CITY OF HOUSTON	Yes
76+49.19	23.04 RT	76+49.19	23.04 RT	WATER VALVE	CITY OF HOUSTON	Yes
76+51.35	21.70 RT	76+51.35	21.70 RT	WATER VALVE	CITY OF HOUSTON	Yes
76+53.97	24.50 RT	76+53.97	24.50 RT	WATER METER	CITY OF HOUSTON	Yes
76+57.46	25.87 RT	76+57.46	25.87 RT	TRAFFIC SIGNAL BOX	CITY OF HOUSTON	Yes
76+59.27	24.66 LT	76+59.27	24.66 LT	TELECOMMUNICATION BOX	UNKNOWN	Yes
76+60.58	25.05 RT	76+60.58	25.05 RT	ELECTRIC METER POLE	CENTERPOINT ENERGY	Yes
76+62.89	18.90 RT	76+62.89	18.90 RT	GUY WIRE	CENTERPOINT ENERGY	No
76+68.07	25.13 RT	76+68.07	25.13 RT	ELECTRIC CABINET	CENTERPOINT ENERGY	No
76+68.43	18.62 RT	76+68.43	18.62 RT	GUY WIRE	CENTERPOINT ENERGY	No
76+99.83	26.23 LT	76+99.83	26.23 LT	POWER POLE	CENTERPOINT ENERGY	No
77+17.96	20.59 RT	77+17.96	20.59 RT	POWER POLE/LIGHT POLE	CENTERPOINT ENERGY	No
77+34.54	19.54 LT	77+34.54	19.54 LT	ELECTRIC CONDUIT	CENTERPOINT ENERGY	No
77+36.45	19.24 LT	77+36.45	19.24 LT	POWER POLE	CENTERPOINT ENERGY	No

APPENDIX G – Cost Estimate

SCIENTECH

Quitman Street from Houston Ave to Elysian St
Preliminary cost estimate

Item No.	Description	Spec. No.	Unit of Measure	Estimated Quantity		Unit Price		Total Price
A	**Site Preparation**							
1	Project Sign	100	EA	2	x	1,200.00	=	$2,400.00
2	Clearing and Grubbing	102	LS	1	x	200,000.00	=	$200,000.00
3	Removing Old Concrete (Curb Ramps)(Removal and Disposal)	104	EA	84	x	500.00	=	$42,000.00
4	Removing Old Concrete, Reinforced Concrete Curb & Gutter(Removal and	104	LF	7540	x	8.00	=	$60,320.00
5	Remove Old Concrete Pavement Driveway, w/sawcut (Removal and	104	SY	1733	x	20.00	=	$34,666.67
6	Remove Old Concrete sidewalk (Removal and Disposal)	104	SY	6578	x	6.00	=	$39,466.67
7	Remove and dispose of existing asphalt surface and base material	540	SY	1815	x	12.00	=	$21,782.67
8	Mill 4" thick existing Asphalt surface	309	SY	8336	x	8.00	=	$66,684.44
9	Tree Protection Fencing		LF	2600	x	15.00	=	$39,000.00
10	Trunk Protection		EA	83	x	500.00	=	$41,500.00
11	Removal of all Striping and Pavement markings	674	LS	1	x	15,000.00	=	$15,000.00
				Subtotal of A				**$562,820.44**
B	**Drainage [STORM SEWER SYSTEM]**							
12	Reinforced Concrete Pipe, C76, Class III, Rubber Gasket (24")	460	LF	428	x	72.00	=	$30,816.00
13	Standard Type "B-B" Inlet	472	EA	5	x	3,500.00	=	$17,500.00
14	Manhole/stub in	471	EA	5	x	5,200.00	=	$26,000.00
15	Repair Inlets	472	EA	10		1,500.00	=	$15,000.00
16	Adjusting/relocation FH/WV/WM		EA	56	x	1,000.00	=	$56,000.00
				Subtotal of B				**$145,316.00**
C	**Subgrade & Paving**							
17	Lime Stabilized Subgrade 8"	221	SY	2167	x	4.00	=	$8,666.22
18	Hot Mix Asphalt Concrete Base	251	TON	499	x	90.00	=	$44,926.75
19	8" Thick Reinforced Concrete Driveway (High Early Strength) (Min. Bid	530	SY	2167	x	60.00	=	$130,000.00
20	6" Concrete Curb & Gutter/6" Curb	530	LF	7540	x	20.00	=	$150,800.00
21	Concrete Sidewalks/hardscape with arhitectural enhancements	530	SY	6531	x	65.00	=	$424,515.00
22	Concrete hardscape at intersection ped refuge	530	SF	29764	x	18.00	=	$535,752.00
23	Concrete accent band	530	SF	2104	x	30.00	=	$63,120.00
24	Truncated Dome Paver Tile	530	SF	1844	x	40.00	=	$73,760.00
25	Mortared Aggregate curb	530	SF	2894	x	20.00	=	$57,880.00
26	HMAC surface 4" Thick (2" lifts)	340	TON	399	x	90.00	=	$35,941.40
27	HMAC Overlay 4" Thick (2" lifts)	340	TON	1834	x	90.00	=	$165,044.00
				Subtotal of C				**$1,690,405.37**
D	**Miscellaneous**							
28	Floating Bus Station	xx	EA	3	x	15,000.00	=	$45,000.00
29	Bus Pad	xx	EA	4	x	6,000.00	=	$24,000.00
30	Shade Trees	xx	EA	93	x	1,200.00	=	$111,600.00
31	Ornamental Trees	xx	EA	25	x	800.00	=	$20,000.00
32	Funcational Landscape Planting - Shrubs and Groundcover	xx	LS	7400	x	8.00	=	$59,200.00
33	Funcational Landscape Planting - Sod	xx	LS	10200	x	1.00	=	$10,200.00
34	Irrigation	xx	LS	17600	x	2.00	=	$35,200.00
35	Lighting - Electrical, Wiring, and Controls	xx	LS	1	x	30,000.00	=	$30,000.00
36	Lighting - Fixtures	xx	LS	44	x	6,000.00	=	$264,000.00
37	Lighting - GFCIs	xx	LS	10	x	600.00	=	$6,000.00
38	Site Fix Furnishings	xx	LF	80	x	1,000.00		$80,000.00
39	Hardscape	xx	LS	1	x	50,000.00		$50,000.00
				Subtotal of D				**$735,200.00**
E	**Traffic Control**							
40	Traffic Control - Furnish-Install & Remove	671	MO	12	x	20,000.00	=	$240,000.00
				Subtotal of E				**$240,000.00**
F	**Signing & Striping**							
41	Aluminum Signs (Ground Mounted)- Furnish & Install	624	EA	100	x	1,000.00	=	$100,000.00
42	Pavement Marking	660	LS	1	x	218,592.00	=	$218,592.00
				Subtotal of F				**$318,592.00**
G	**Traffic Signal**							
43	Traffic Signal System Modification	1000	LS	3	x	125,000.00	=	$375,000.00
				Subtotal of G				**$375,000.00**
H	**Storm Water Pollution Prevention Plan**							
44	16" Sodding Strip (Along Curbs)	162	LF	8600	x	4.00	=	$34,400.00
45	Hydromulch Seeding	165	AC	2.00	x	1,500.00	=	$3,000.00
46	Storm Water Pollution Prevention Plan	700	LS	1	x	50,000.00	=	$50,000.00
47	SWPPP Inspection and Maintenance (Min. Bid of $6000.0/MO.)	751	MO	12	x	6,000.00	=	$72,000.00
				Subtotal of H				**$159,400.00**
			Contigency	**30%**				$1,268,020.15
			***** Grand Total (Items A-H)**					**$5,494,754**