CITY OF HOUSTON

HOUSTON PUBLIC WORKS

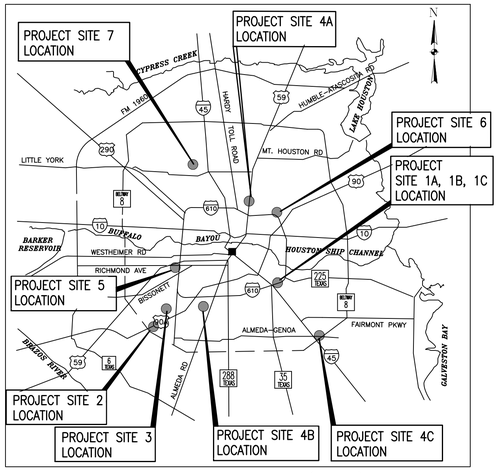
CAPITAL PROJECTS

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3

NOTIFY CITY OF HOUSTON
48 HOURS BEFORE START
OF CONSTRUCTION

WBS NO. S-000701-0041-3

60% SUBMITTAL



LOCATION MAP (NTS)

COUNCIL DISTRICTS: B, C, E, H, I, J & K

KEYMAP(S)

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MAYOR
JOHN WHITMIRE

CONTROLLER
CHRIS HOLLINS

DISTRICT COUNCIL MEMBERS

AMY PECK, DISTRICT A
TARSHA JACKSON, DISTRICT B
ABBIE KAMIN, DISTRICT C
CAROLYN EVANS–SHABAZZ, DISTRICT D
FRED FLICKINGER, DISTRICT E
TIFFANY D. THOMAS, DISTRICT F
MARY NAN HUFFMAN, DISTRICT G
MARIO CASTILLO, DISTRICT H
JOAQUIN MARTINEZ, DISTRICT I
EDWARD POLLARD, DISTRICT J
MARTHA CASTEX–TATUM, DISTRICT K

COUNCIL MEMBERS AT–LARGE

JULIAN RAMIREZ, POSITION 1
WILLIE DAVIS, POSITION 2
TWILA CARTER, POSITION 3
LETITIA PLUMMER, POSITION 4
SALLIE ALCORN, POSITION 5

SURVEYED BY:

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Engineer: CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 02/23/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F–2614

PARKS–FORESTRY DEPT.

METRO

HOUSTON WATER

TRANSPORTATION & DRAINAGE OPERATIONS

CAPITAL PROJECTS

SURVEY

CITY ENGINEER DATE

DIRECTOR OF HOUSTON PUBLIC WORKS DATE

FOR CITY OF HOUSTON USE ONLY

SHEET NO 01 OF 244

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NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713–223–4567

PRIVATE UTILITY LINES SHOWN

Date:
CENTERPOINT ENERGY/ELECTRIC FACILITIES
ELECTRICAL FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION).

Date:
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Date:
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LAN

EFF DATE: XXXX–XX–20XX

DWG NO: XXXXX–XX

LOCKWOOD, ANDREWS
& NEWNAM, INC.
3700 W SAM HOUSTON PKWY S,
SUITE 400
HOUSTON, TX 77042

PH: 713–266–6900
TEXAS REGISTERED ENGINEERING
FIRM F–2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

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Engineer: CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F–2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

INDEX SHEET

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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ABBREVIATIONS:

&	AND
@	AT
AB	ALL BELL
AC	ACRE / ASBESTOS CEMENT
AI/VR	AIR INLET / VACUUM RELIEF
APPROX	APPROXIMATELY
ASPH	ASPHALT
AVE	AVENUE
℄	BASELINE
B/B	BACK TO BACK
BC	BACK OF CURB
BFV	BUTTERFLY VALVE
BL	BUILDING LINE
BLDG	BUILDING
BLVD	BOULEVARD
℄	CENTER LINE
C/C	CENTER TO CENTER
CGMP	CORRUGATED GALVANIZED METAL PIPE
CMP	CORRUGATED METAL PIPE
CIP	CAST IRON PIPE
CLR	CLEARANCE
CO	CLEAN OUT
COH	CITY OF HOUSTON
CONC	CONCRETE
CONSTR	CONSTRUCTION
CP	CATHODIC PROTECTION
CPEE	CENTERPOINT ENERGY ELECTRIC
CPEG	CENTERPOINT ENERGY GAS
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DR	DRIVE
DWG	DRAWING
DWY	DRIVEWAY
E	EAST
EL	ELEVATION
EP	EDGE OF PAVEMENT
E/R	END OF RADIUS
ESMT	EASEMENT
EXST	EXISTING
FC	FACE OF CURB
F/F	FACE TO FACE
FH	FIRE HYDRANT
℄	FLOW LINE
FM	FORCE MAIN
FT	FEET
GPS	GLOBAL POSITIONING SYSTEM
GV	GATE VALVE
GV&B	GATE VALVE AND BOX
HCFCD	HARRIS COUNTY FLOOD CONTROL DISTRICT
HDPE	HIGH-DENSITY POLYETHYLENE
HGL	HYDRAULIC GRADE LINE
HP	HIGH PRESSURE
INV EL	INVERT ELEVATION
IP	INTERMEDIATE PRESSURE
IR	IRON ROD

ABBREVIATIONS:

J-BOX	JUNCTION BOX
JT	JOINT
JUNCT	JUNCTION
LF	LINEAR FEET
LN	LANE
LPT	LOW POINT
LT	LEFT
LS	LIFT STATION
MAX	MAXIMUM
METRO	METROPOLITAN TRANSIT AUTHORITY
MH	MANHOLE
MIN	MINIMUM
MON	MONUMENT
N	NORTH
NA	NOT APPLICABLE
NAVD	NORTH AMERICAN VERTICAL DATUM
NG	NATURAL GROUND
NO	NUMBER
NTS	NOT TO SCALE
OCC	ZERO CURB CUT
OS	OFFSET
OH	OVERHEAD
PC	POINT OF CURVE
PCC	POINT OF COMPOUND CURVATURE
PCCP	PRESTRESSED CONCRETE CYLINDER PIPE
PERM	PERMANENT
PGL	PROFILE GRADE LINE
PI	POINT OF INTERSECTION
PL	PROPERTY LINE
PNT	POINT
PPCA	POTENTIALLY PETROLEUM CONTAMINATED AREA
PRC	POINT OF REVERSE
PROP	PROPOSED
PSI	POUND PER SQUARE INCH
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE PIPE / POINT OF VERTICAL CURVATURE
PVMT	PAVEMENT
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY

ABBREVIATIONS:

Ⓡ	RECORD DRAWING
R	RADIUS
RCB	REINFORCED CONCRETE BOX
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
REINF	REINFORCED
REM	REMOVABLE
RJ	RESTRAINED JOINT
ROW	RIGHT OF WAY
RR	RAILROAD
RRPM	REFLECTIVE REMOVABLE PAVEMENT MARKERS
RT	RIGHT
S	SOUTH
SAN	SANITARY
SCHED	SCHEDULE
SF	SQUARE FEET
SHT	SHEET
SSE	SANITARY SEWER EASEMENT
ST	STREET
STA	STATION
STD	STANDARD
STL	STEEL
STM	STORM
SWBT	SOUTHWESTERN BELL TELEPHONE
SWR	SEWER
SY	SQUARE YARD
TAN	TANGENT
TBM	TEMPORARY BENCHMARK
TEMP	TEMPORARY
TOB	TOP OF BANK
TOC	TOP OF CURB
TOP	TOP OF PAVEMENT
TOS	TOP OF STACK
TS&V	TAPPING SLEEVE AND VALVE
TXDOT	TEXAS DEPARTMENT OF TRANSPORTATION
TYP	TYPICAL
UE	UTILITY EASEMENT
UGND	UNDERGROUND
VC	VERTICAL CURVE
VPI	VERTICAL POINT OF INTERSECTION
W	WEST
W/	WITH
WL	WATER LINE
WLE	WATER LINE EASEMENT
WM	WATER METER
WP	WOOD POLE
WSEL	WATER SURFACE ELEVATION
WV	WATER VALVE
WWTP	WASTE WATER TREATMENT PLANT

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS
& NEWNAM, INC.
3700 W SAM HOUSTON PKWY S,
SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING
FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes.this document is released for the purpose of interim review under the authority of:
Engineer:CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON

HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3

60% SUBMITTAL

ABBREVIATIONS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
NONE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 3 OF 244	

PEN TABLE: LAN-COH-CIVIL.ctb

USERNAME: Fleming, David

PLOTED: 4/7/2025 7:33 PM

FILE PATH: P:\121\12-1001-000\V4-0-Production-Working\V4-1-BIM-CAD\Civil\Sheets\COH-STANDARD SYMBOLS.dwg

EXISTING PLAN VIEW

- WATER METER
- WATER VALVE (GATE)
- WATER VALVE (BUTTERFLY)
- FIRE HYDRANT/FLUSHING VALVE
- TAPPING SLEEVE & VALVE
- REDUCER
- ROUND CONNECTION
- SANITARY SEWER CLEANOUT & MANHOLE
- STORM SEWER MANHOLE
- STORM SEWER INLETS
- CULVERT PIPE AND HEADWALL
- TOP OF CURB ELEVATION
- GUTTER ELEVATION
- TOP OF PAVEMENT ELEVATION
- CONTOUR LINE
- ROW LINE
- PROPERTY LINE
- LOT LINES
- EASEMENT LINE
- CENTER LINE OF ROW
- TRANSIT LINE
- EDGE OF DITCHES
- CENTER LINE OF DITCHES
- EDGE OF DITCHES
- FENCE LINE, WOOD
- FENCE LINE, CHAIN LINK
- FENCE LINE, BARBED WIRE
- FENCE LINE, HOG WIRE
- EDGE OF CONCRETE
- CURB LINE
- CONCRETE WALK
- EDGE OF ASPHALT
- EDGE OF SHELL OR GRAVEL
- DIMENSION LINE
- AERIAL POWER LINE
- UNDERGROUND POWER LINE
- GAS LINE
- UNKNOWN UNDERGROUND LINE
- OIL PIPELINE
- UNDERGROUND TELECOMM LINE W/VAULT
- AERIAL TELECOMM LINE
- RAILROAD LINE
- WATER LINE
- SANITARY SEWER LINE
- STORM SEWER LINE
- SANITARY SEWER FORCE MAIN
- RECLAIMED WATER LINE
- NON–POTABLE WATER LINE
- GAS METER
- GAS VALVE
- PROPANE LINE
- STEAM LINE
- MISC UNDERGROUND PIPELINE LABLE

PROPOSED PLAN VIEW

- WATER METER
- WATER VALVE (GATE)
- WATER VALVE (BUTTERFLY)
- FIRE HYDRANT/FLUSHING VALVE
- TAPPING SLEEVE & VALVE
- REDUCER
- ROUND CONNECTION
- SANITARY SEWER CLEANOUT & MANHOLE
- STORM SEWER MANHOLE
- STORM SEWER INLETS
- CULVERT PIPE AND HEADWALL
- TOP OF CURB ELEVATION
- GUTTER ELEVATION
- TOP OF PAVEMENT ELEVATION
- CONTOUR LINE
- ROW LINE
- PROPERTY LINE
- LOT LINES
- EASEMENT LINE
- CENTER LINE OF ROW
- TRANSIT LINE
- EDGE OF DITCHES
- CENTER LINE OF DITCHES
- EDGE OF DITCHES
- FENCE LINE, WOOD
- FENCE LINE, CHAIN LINK
- FENCE LINE, BARBED WIRE
- FENCE LINE, HOG WIRE
- EDGE OF CONCRETE
- CURB LINE
- CONCRETE WALK
- EDGE OF ASPHALT
- EDGE OF SHELL OR GRAVEL
- DIMENSION LINE
- AERIAL POWER LINE
- UNDERGROUND POWER LINE
- GAS LINE
- UNKNOWN UNDERGROUND LINE
- OIL PIPELINE
- UNDERGROUND TELCOMM LINE W/ VAULT
- AERIAL TELECOMM LINE
- RAILROAD LINE
- WATER LINE
- SANITARY SEWER LINE
- STORM SEWER LINE
- SANITARY SEWER FORCE MAIN
- RECLAIMED WATER LINE
- NON–POTABLE WATER LINE
- GAS METER
- GAS VALVE
- PROPANE LINE
- STEAM LINE
- MISC UNDERGROUND PIPELINE LABLE
- MATCH LINE

EXISTING PLAN VIEW

- PAVING HEADER
- BUILDING, RESIDENTIAL
- BUILDING, COMMERCIAL
- TREE
- HEDGE
- IRON PIPE OR IRON ROD MONUMENT
- POINT OF INTERSECTION (PI)
- POINT OF CURVE (PC)
- POINT OF TANGENCY (PT)
- POWER POLE
- POWER POLE W/DOWN GUY

EXISTING PROFILE VIEW

- NORTH OR EAST PROPERTY LINE
- SOUTH OR WEST PROPERTY LINE
- NORTH OR EAST CURB
- SOUTH OR WEST CURB
- NORTH OR EAST DITCH
- SOUTH OR WEST DITCH
- NORTH OR EAST NATURAL GROUND
- SOUTH OR WEST NATURAL GROUND
- NORTH OR EAST CULVERT
- SOUTH OR WEST CULVERT
- CENTERLINE OF ROW
- CENTERPOINT ENERGY CONDUIT
- GAS LINE
- WESTERN UNION
- AT&T CONDUIT
- WATER LINE
- SANITARY SEWER LINE
- STORM SEWER LINE
- SANITARY SEWER FORCE MAIN
- RECLAIMED WATER LINE
- NON–POTABLE WATER LINE
- CENTERPOINT ENERGY MANHOLE
- AT&T MANHOLE
- WATER LINE MANHOLE
- SANITARY SEWER MANHOLE & CLEANOUT
- STORM SEWER MANHOLE
- STORM SEWER INLET

PROPOSED PLAN VIEW

- PAVING HEADER
- BUILDING, RESIDENTIAL
- BUILDING, COMMERCIAL
- TREE
- HEDGE
- IRON PIPE OR IRON ROD MONUMENT
- POINT OF INTERSECTION (PI)
- POINT OF CURVE (PC)
- POINT OF TANGENCY (PT)
- POWER POLE
- POWER POLE W/DOWN GUY

PROPOSED PROFILE VIEW

- NORTH OR EAST PROPERTY LINE
- SOUTH OR WEST PROPERTY LINE
- NORTH OR EAST CURB
- SOUTH OR WEST CURB
- NORTH OR EAST DITCH
- SOUTH OR WEST DITCH
- NORTH OR EAST NATURAL GROUND
- SOUTH OR WEST NATURAL GROUND
- NORTH OR EAST CULVERT
- SOUTH OR WEST CULVERT
- CENTERLINE OF ROW
- CENTERPOINT ENERGY CONDUIT
- GAS LINE
- WESTERN UNION
- AT&T CONDUIT
- WATER LINE
- SANITARY SEWER LINE
- STORM SEWER LINE
- SANITARY SEWER FORCE MAIN
- RECLAIMED WATER LINE
- NON–POTABLE WATER LINE
- CENTERPOINT ENERGY MANHOLE
- AT&T MANHOLE
- WATER LINE MANHOLE
- SANITARY SEWER MANHOLE & CLEANOUT
- STORM SEWER MANHOLE
- STORM SEWER INLET

MISC STANDARD ELEMENTS

- COH NORTH ARROW
- COH BAR SCALE (0' 10' 20' 40'; SCALE: 1"=20')
- REVISION CLOUDE/DELTA
- DETAIL/SECTION TITLE (1 VIEW TITLE; SCALE: 1:1)
- SECTION CALLOUT (1 / XX)
- DETAIL CALLOUT (1 / XX)

EFF DATE: XXXX–XX–20XX

DWG NO: XXXXX–XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713–266–6900
TEXAS REGISTERED ENGINEERING FIRM F–2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

INTERIM REVIEW ONLY
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Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F–2614

CITY OF HOUSTON

HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

60% SUBMITTAL

STANDARD SYMBOLS

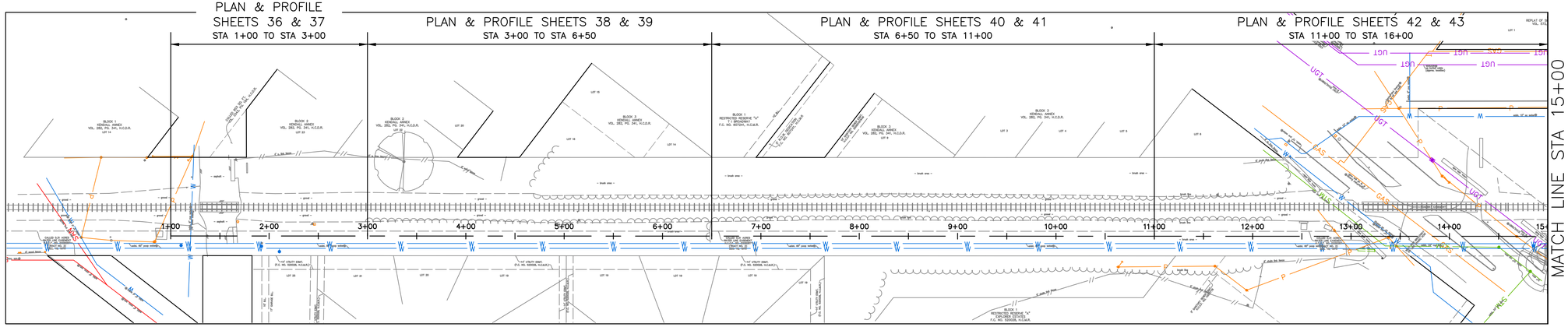
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 4 OF 244	

PEN TABLE: LAN–COH–CIVIL.ctb

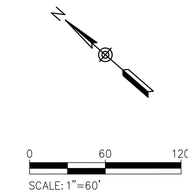
USERNAME: Fleming, David

PLOTED: 4/3/2025 7:33 PM

FILE PATH: P:\132\132–1000–000\4–D–Production–Working\4–1–BIM–CAD\Cad\Sheets\COH–STANDARD SYMBOLS.dwg



SITE 1A
SITE PLAN
GALVESTON RD



NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567

PRIVATE UTILITY LINES SHOWN

Date:
CENTERPOINT ENERGY/ELECTRIC FACILITIES
ELECTRICAL FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION).

Date:
CENTERPOINT ENERGY/GAS FACILITIES
(GAS SERVICE LINES ARE NOT SHOWN). THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION.

Date:
AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

LAN

EFF DATE: XXXX-XX-20XX
DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

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Engineer: CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
SITE 1A – GALVESTON RD
SHEET LAYOUT & BORING PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 60'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 5 OF 244	

PEN TABLE: LAN-COH-CIVIL.ctb
USERNAME: Fleming, David
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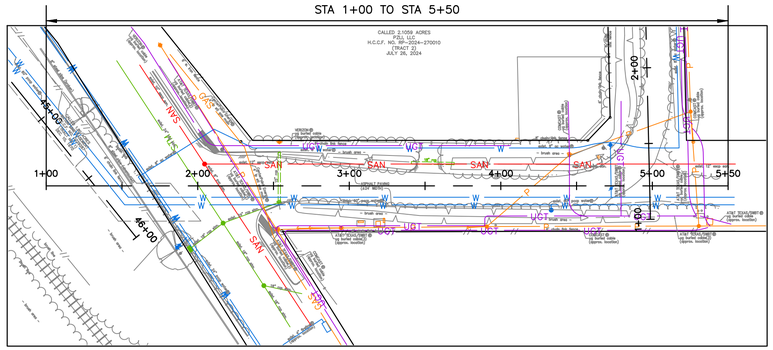
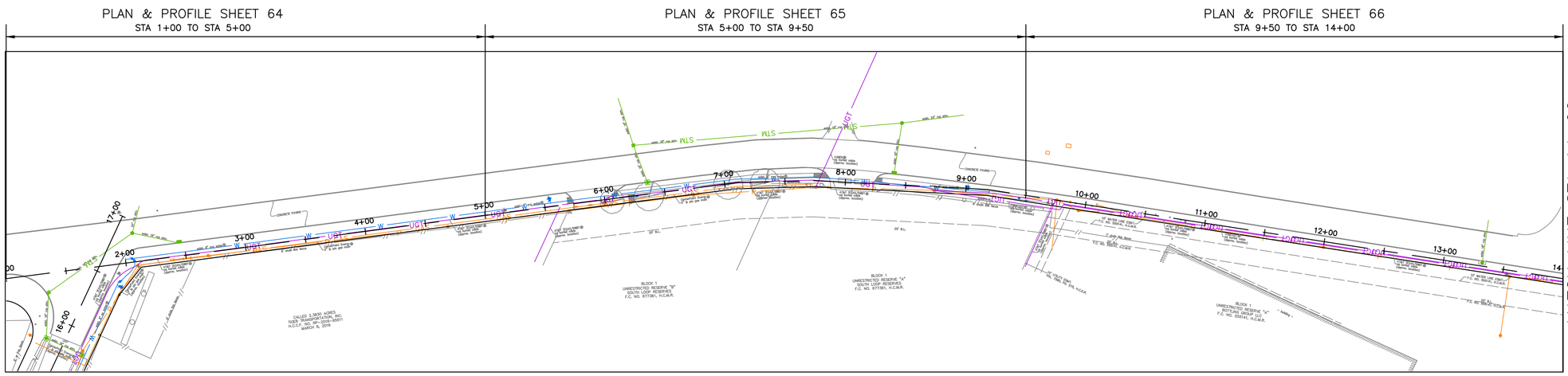
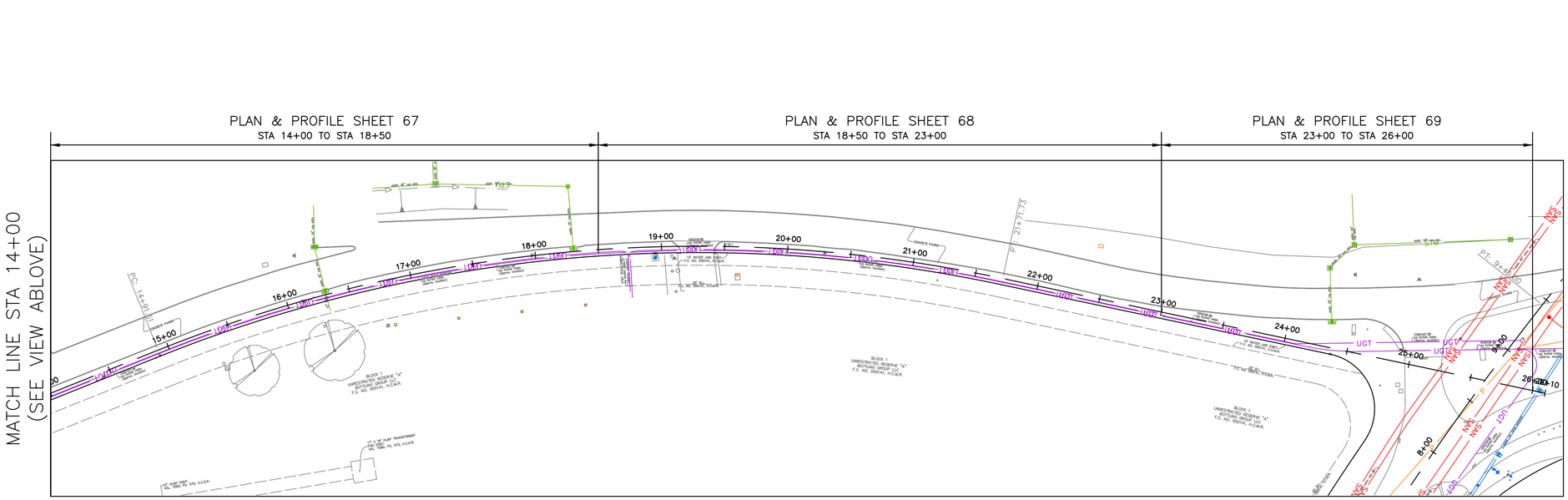
PLAN & PROFILE SHEETS 58 & 59
STA 1+00 TO STA 5+50


1+00
2+00
3+00
4+00
5+00
5+50
2+00
3+00
45+00
46+00
CALLED 2.1059 ACRES
PZU, LLC
H.C.C.F. NO. RP-2024-270010
(TRACT 2)
JULY 26, 2024
SAN
SAN
SAN
SAN
UGT
UGT
UGT
UGT
W
W
W





SITE 1A
SITE PLAN
IH 610 FEEDER RD

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567

PRIVATE UTILITY LINES SHOWN

Date:
CENTERPOINT ENERGY/ELECTRIC FACILITIES
ELECTRICAL FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION).

Date:
CENTERPOINT ENERGY/GAS FACILITIES
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Date:
AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

LAN

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS
& NEWNAM, INC.
3700 W SAM HOUSTON PKWY S,
SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING
FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

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Engineer:CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL

SITE 1A – IH 610 FEEDER RD SHEET LAYOUT & BORING PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 50'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 7 OF 244	

PEN TABLE: LAN-COH-CIVIL.ctb
USERNAME: Fleming, David
PLOTED: 4/3/2025 7:34 PM
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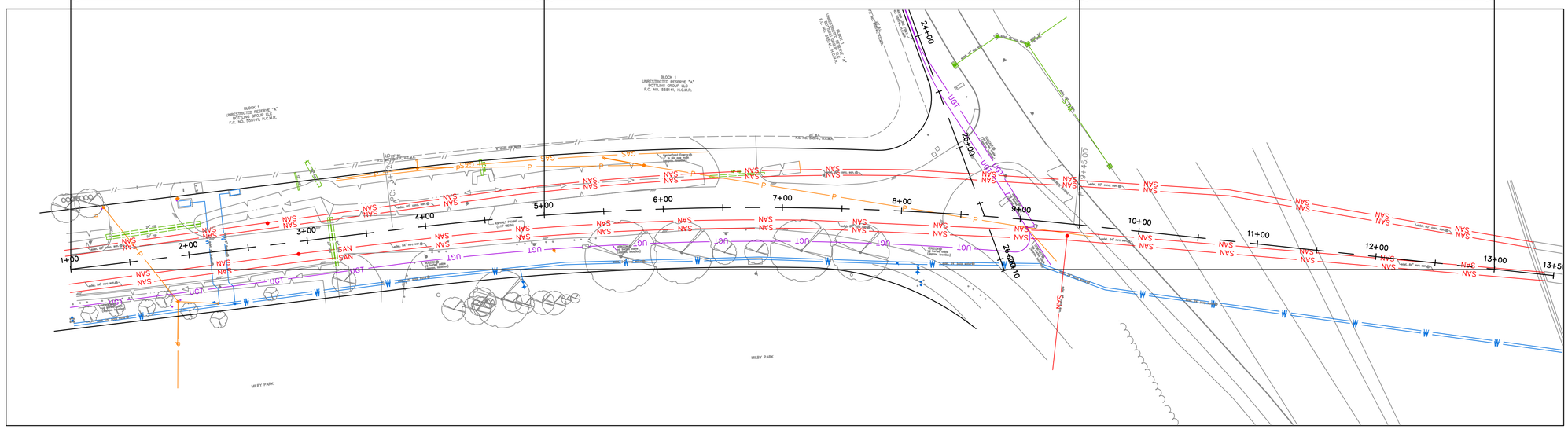
PLAN & PROFILE SHEETS 70 & 71
STA 1+00 TO STA 5+00

PLAN & PROFILE SHEETS 72 & 73
STA 5+00 TO STA 9+50

PLAN & PROFILE SHEETS 74 & 75
STA 9+50 TO STA 13+00



SITE 1A
SITE PLAN
CENTRAL ST

N

0 50 100
SCALE: 1"=50'

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567

PRIVATE UTILITY LINES SHOWN

Date:
CENTERPOINT ENERGY/ELECTRIC FACILITIES
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Date:
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Date:
AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

LAN

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS
& NEWNAM, INC.
3700 W SAM HOUSTON PKWY S,
SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING
FIRM F-2614

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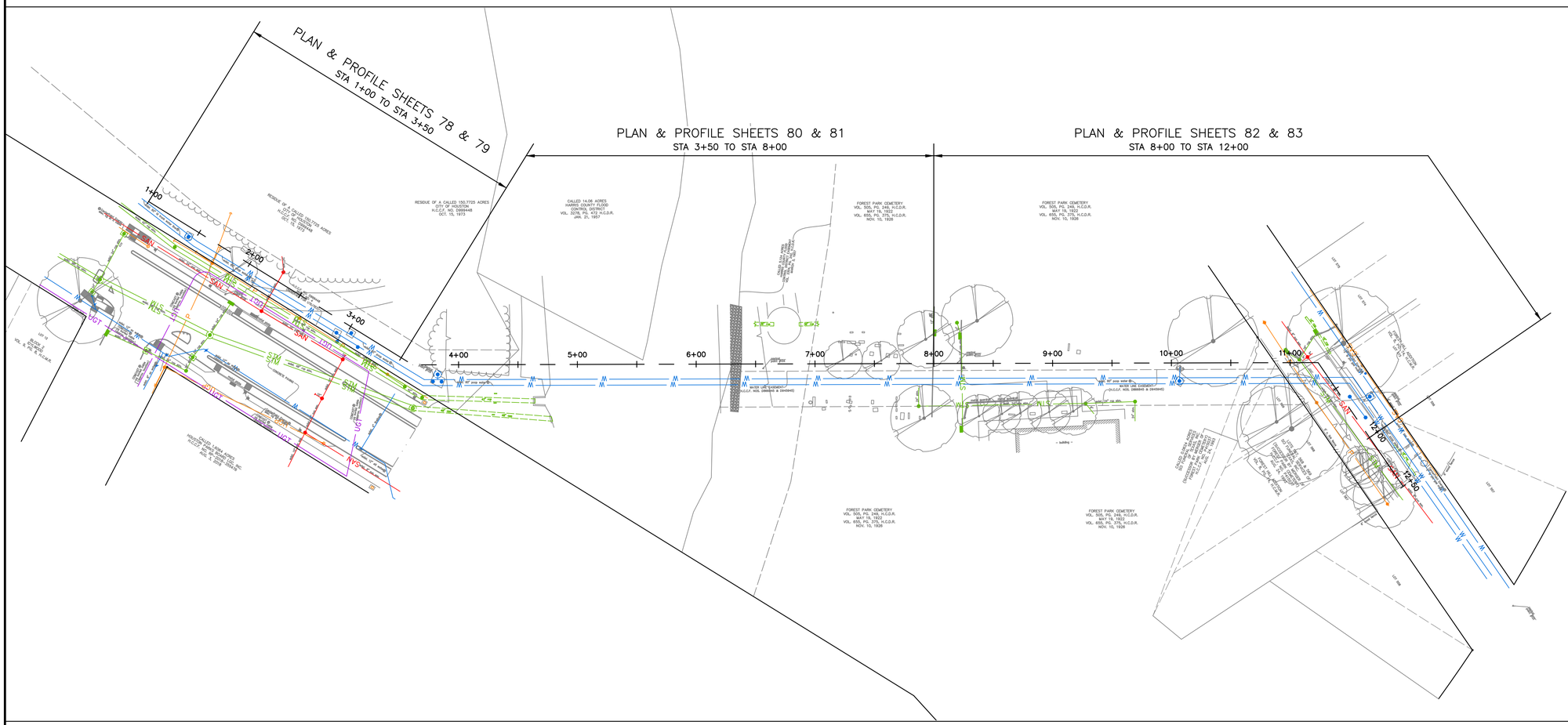
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

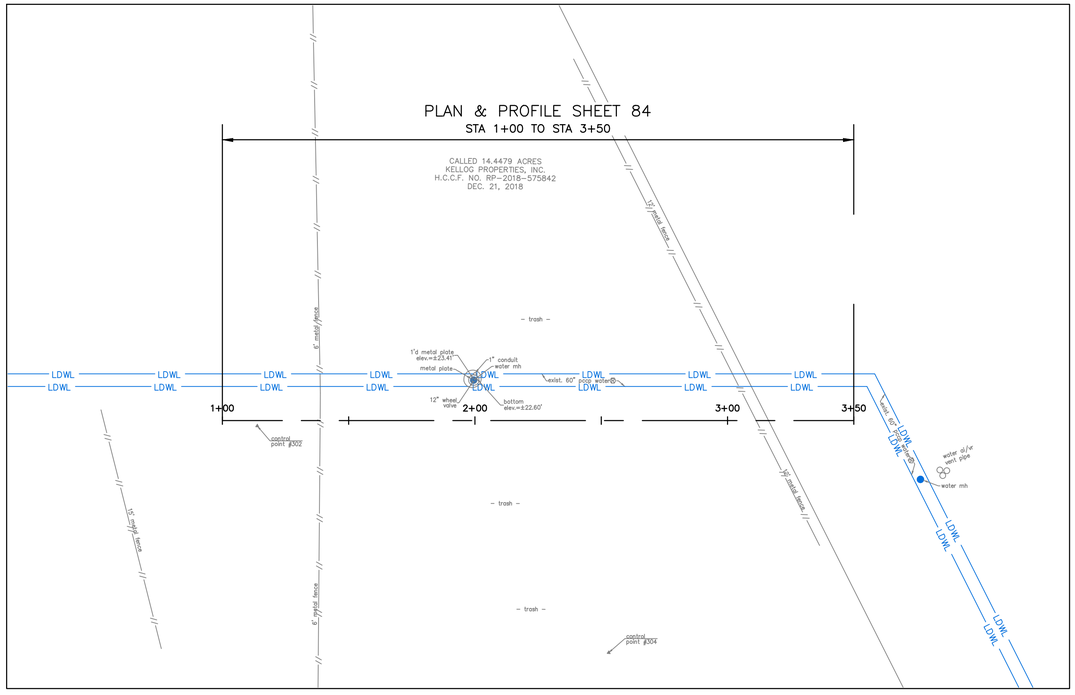
CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL
IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL
SITE 1A – CENTRAL ST
SHEET LAYOUT &
BORING PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 50'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 8 OF 244	

PEN TABLE: LAN-COH-CIVIL.ctb
USERNAME: Fleming, David
PLOTED: 4/3/2025 7:34 PM
FILE PATH: P:\132\132-1001-000\4-D-Production-Working\4-I-BIM-CAD\CAD\Sheets\SITE 1A CENTRAL ST SHEET LAYOUT & BORING PLAN.dwg


PLAN & PROFILE SHEETS 78 & 79
STA 1+00 TO STA 3+50
PLAN & PROFILE SHEETS 80 & 81
STA 3+50 TO STA 8+00
PLAN & PROFILE SHEETS 82 & 83
STA 8+00 TO STA 12+00
1+00
2+00
3+00
4+00
5+00
6+00
7+00
8+00
9+00
10+00
11+00
12+00
12+50
RESIDUE OF A CALLED 150.7725 ACRES
CITY OF HOUSTON
H.C.C.F. NO. 59994148
OCT. 15, 1973
CALLED 14.06 ACRES
HARRIS COUNTY FLOOD
CONTROL DISTRICT
VOL. 3276, PG. 473 H.C.D.R.
JAN. 21, 1957
FOREST PARK CEMETERY
VOL. 505, PG. 249, H.C.D.R.
MAY 19, 1922
VOL. 650, PG. 375, H.C.D.R.
NOV. 10, 1926
CALLED 1.0000 ACRES
HOUSTON LIGHTING & POWER CO.
H.C.C.F. NO. 20070010
JAN. 3, 2007



SITE 1C
SITE PLAN
KELLOGG ST

N

0 30 60

SCALE: 1"=30'

NO.	DATE	REVISION	APP.

NOTICE:

AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567

PRIVATE UTILITY LINES SHOWN

Date:

CENTERPOINT ENERGY/ELECTRIC FACILITIES

ELECTRICAL FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION).

Date:

CENTERPOINT ENERGY/GAS FACILITIES

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Date:

AT&T TEXAS/SBC UTILITY LINES SHOWN

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LAN

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS
& NEWNAM, INC.
3700 W SAM HOUSTON PKWY S,
SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING
FIRM F-2614

SURVEYED BY:
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FB NO. 000000

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Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON

HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3

60% SUBMITTAL

SITE 1C
SHEET LAYOUT & BORING PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 30'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 10 OF 244	

PEN TABLE: LAN-COH-CIVIL.ctb

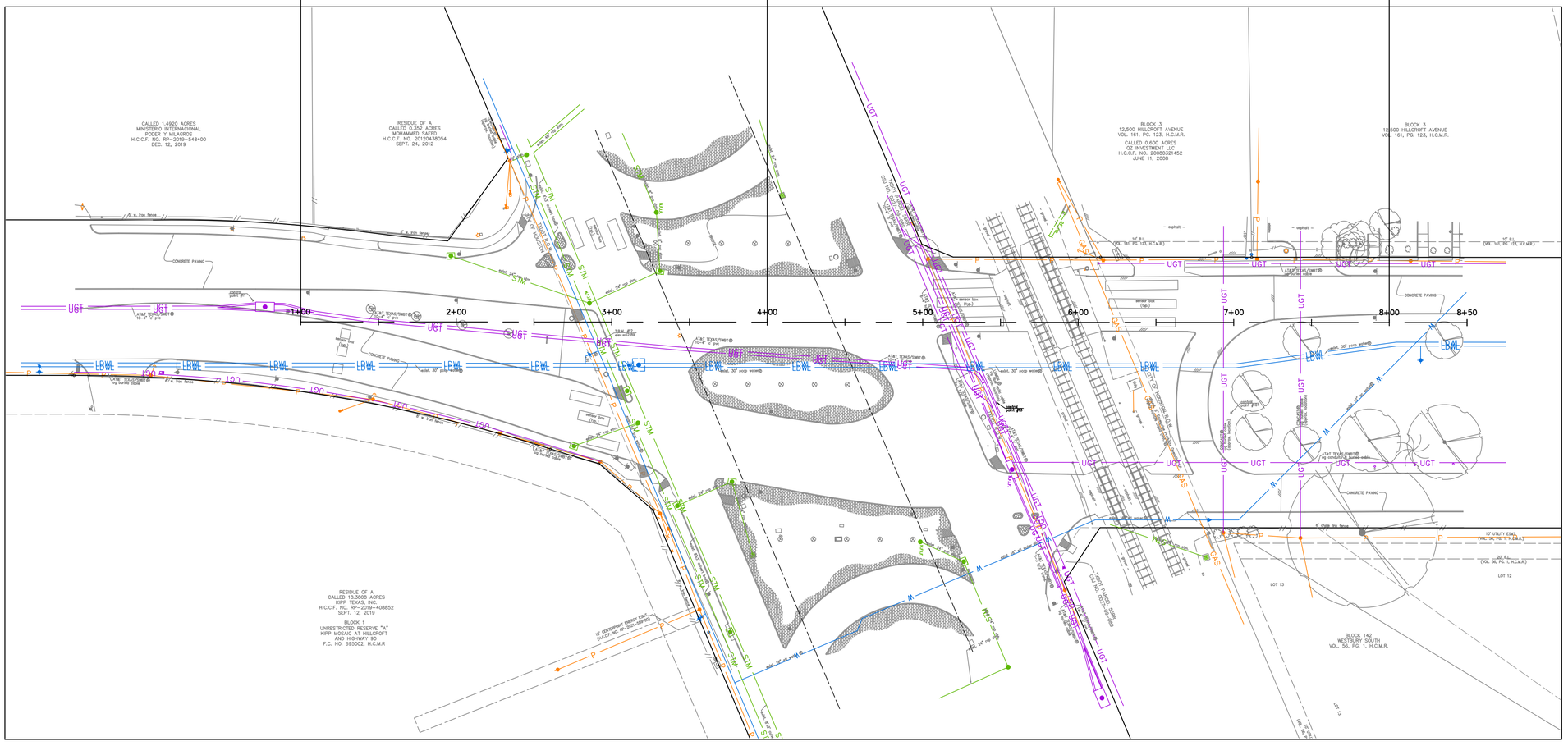
USERNAME: Fleming, David

PLOTTED: 4/3/2025 7:34 PM

FILE PATH: P:\132\126-1001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Sheets\SITE 1C SHEET LAYOUT & BORING PLAN.dwg

PLAN & PROFILE SHEETS 89 & 90
STA 1+00 TO STA 4+00

PLAN & PROFILE SHEETS 91 & 92
STA 4+00 TO STA 8+00



SITE 2
SITE PLAN
HILLCROFT AVE

0 40 80
SCALE: 1"=40'

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567

PRIVATE UTILITY LINES SHOWN

Date:
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APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS
& NEWNAM, INC.
3700 W SAM HOUSTON PKWY S,
SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING
FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of review under the authority of:
Engineer: CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL
SITE 2
SHEET LAYOUT &
BORING PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 40'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 11 OF 244	

PEN TABLE: LAN-COH-CIVIL.ctb
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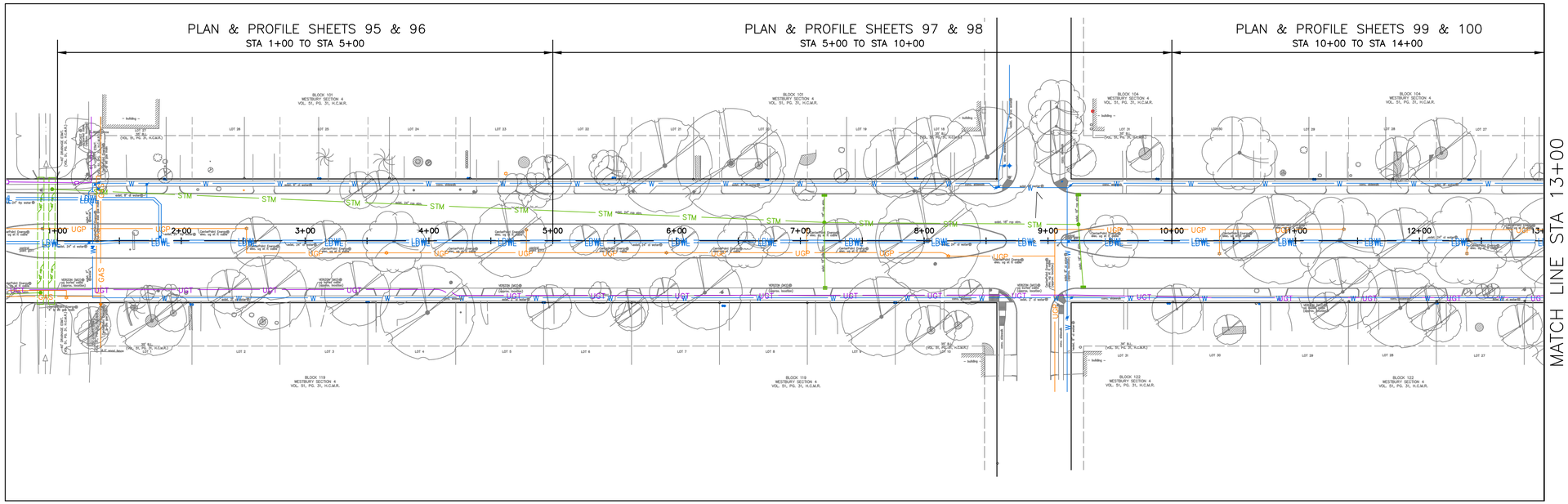

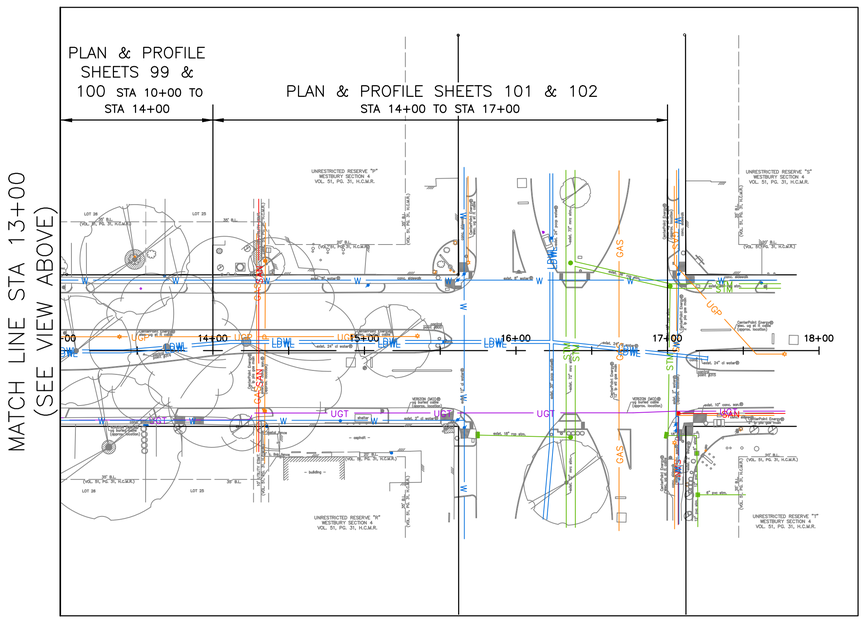

SITE 3
SITE PLAN
W AIRPORT BLVD

N

0 50 100
SCALE: 1" = 50'

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567

PRIVATE UTILITY LINES SHOWN

Date:
CENTERPOINT ENERGY/ELECTRIC FACILITIES
ELECTRICAL FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION).

Date:
CENTERPOINT ENERGY/GAS FACILITIES
(GAS SERVICE LINES ARE NOT SHOWN). THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION.

Date:
AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

LAN

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS
& NEWNAM, INC.
3700 W SAM HOUSTON PKWY S,
SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING
FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
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Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL
SITE 3
SHEET LAYOUT &
BORING PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 50'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 12 OF 244	

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SCALE: 1"=50'

PLAN & PROFILE SHEETS 116 & 117

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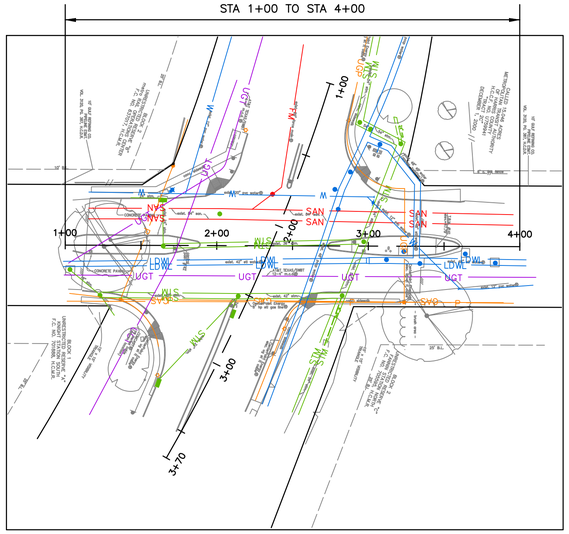
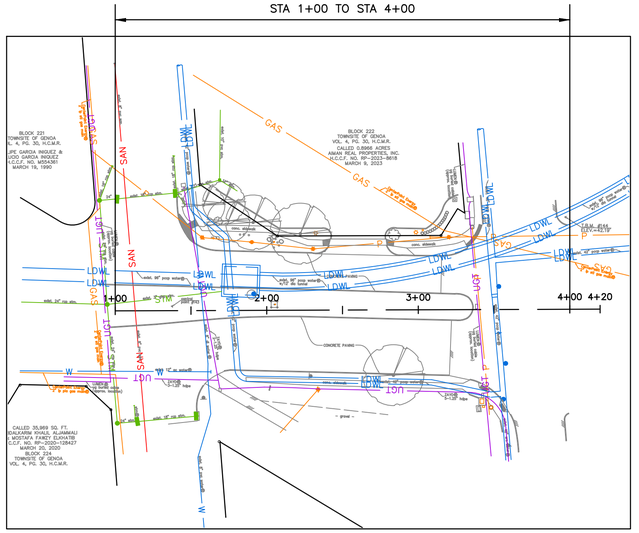


SITE 4B
SITE PLAN
KNIGHT RD

PLAN & PROFILE SHEETS 120 & 121

STA 1+00 TO STA 4+00



SITE 4C
SITE PLAN
FUQUA ST

NO.	DATE	REVISION	APP.

NOTICE:

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PRIVATE UTILITY LINES SHOWN

Date:

CENTERPOINT ENERGY/ELECTRIC FACILITIES

ELECTRICAL FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION).

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Date:

AT&T TEXAS/SBC UTILITY LINES SHOWN

APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS
& NEWNAM, INC.
3700 W SAM HOUSTON PKWY S,
SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING
FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
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Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON

HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3

60% SUBMITTAL

SITE 4 B & C
SHEET LAYOUT &
BORING PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 50'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 13 OF 244	

PEN TABLE: LAN-COH-CIVIL.ctb

USERNAME: Fleming, David

PLOTED: 4/3/2025 7:35 PM

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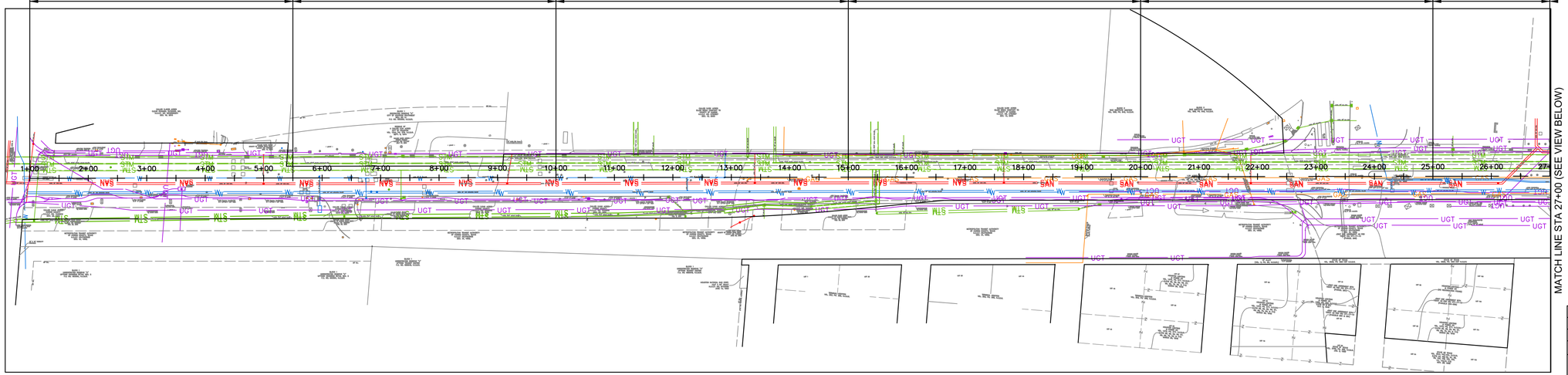

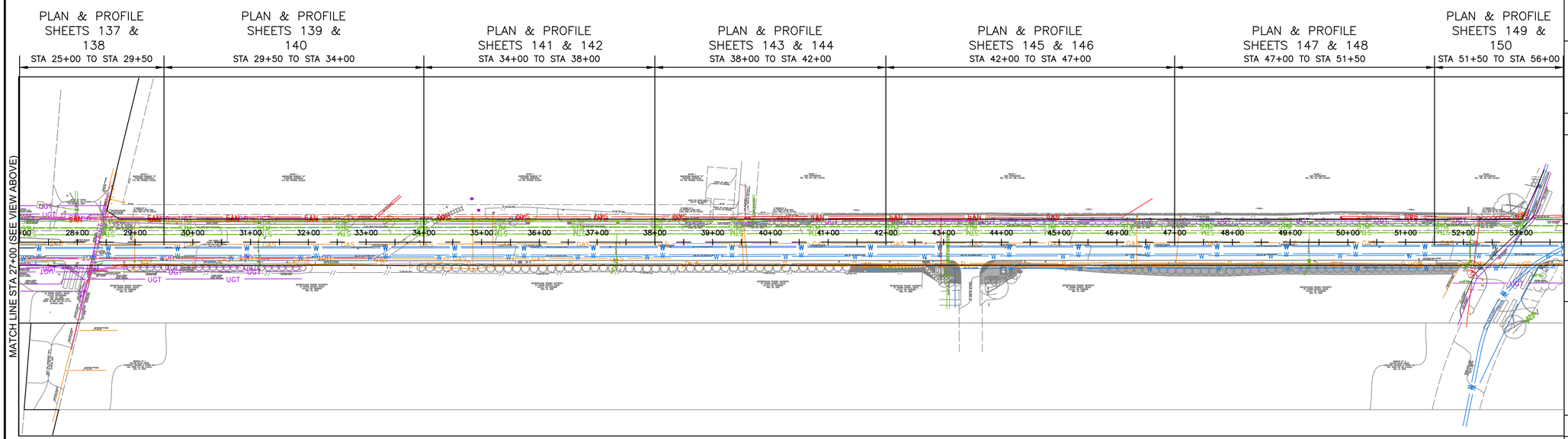

SITE 5
SITE PLAN
WESTPARK DR

N

0 100 200
SCALE: 1"=100'

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567

PRIVATE UTILITY LINES SHOWN

Date:
CENTERPOINT ENERGY/ELECTRIC FACILITIES
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AT&T TEXAS/SBC UTILITY LINES SHOWN
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LAN

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS
& NEWNAM, INC.
3700 W SAM HOUSTON PKWY S,
SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING
FIRM F-2614

SURVEYED BY:
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Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL
SITE 5
SHEET LAYOUT &
BORING PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 100'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 14 OF 244	

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PLAN & PROFILE
SHEETS ### &
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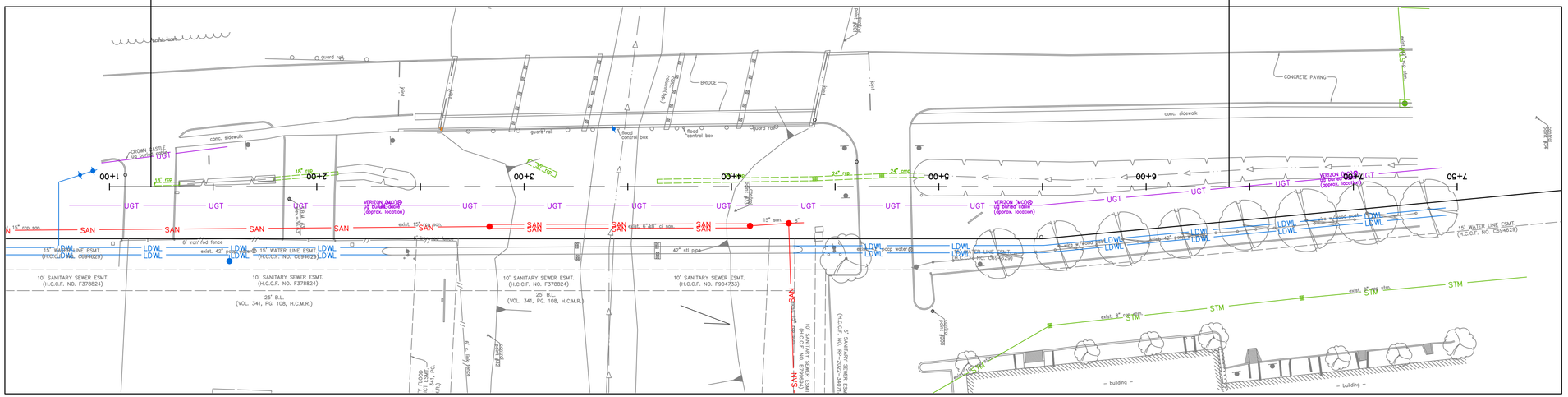
STA 1+20 TO STA 6+40



SITE 6
SITE PLAN
42-INCH CROSSING

N

0 30 60
SCALE: 1"=30'

NO.	DATE	REVISION	APP.

NOTICE:
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PRIVATE UTILITY LINES SHOWN

Date:
CENTERPOINT ENERGY/ELECTRIC FACILITIES
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DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS
& NEWNAM, INC.
3700 W SAM HOUSTON PKWY S,
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HOUSTON, TX 77042

PH: 713-266-6900
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL
SITE 6
SHEET LAYOUT &
BORING PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 30'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 15 OF 244	

PEN TABLE: LAN-COH-CIVIL.ctb
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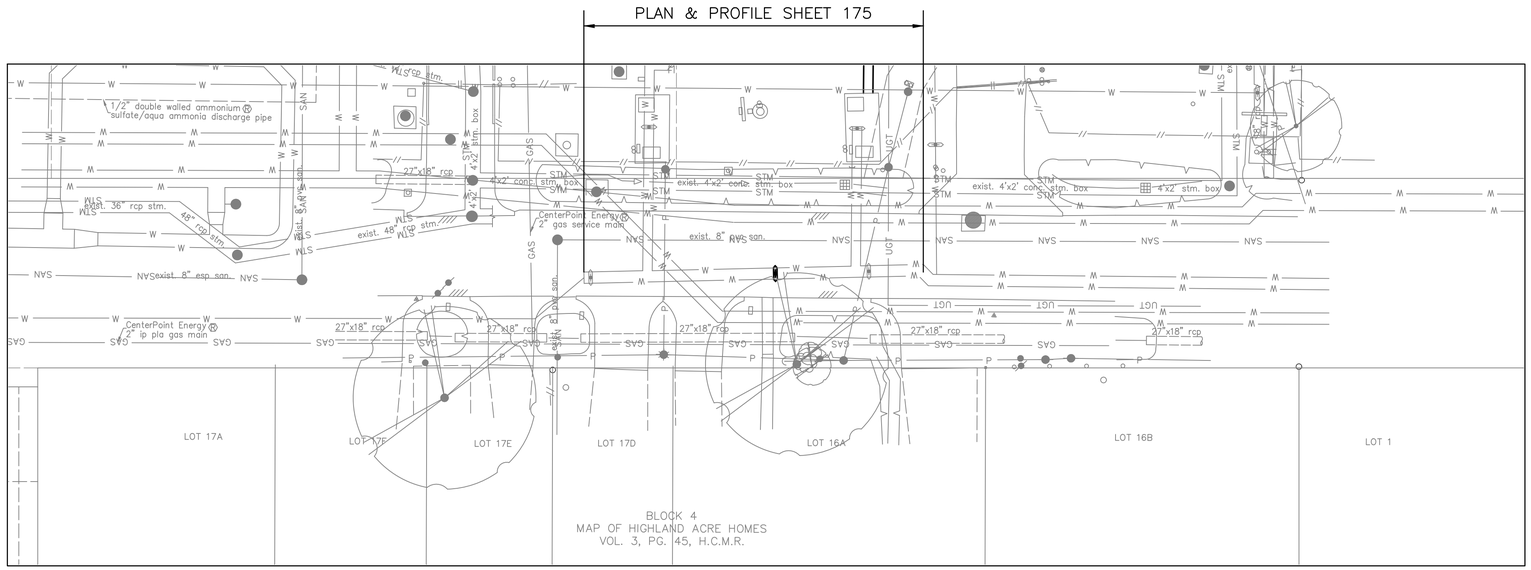

SITE 7
SITE PLAN
DOLLY WRIGHT ST

N

0 20 40
SCALE: 1"=20'

NO.	DATE	REVISION	APP.

NOTICE:
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DWG NO: XXXXX-XX

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3700 W SAM HOUSTON PKWY S,
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HOUSTON, TX 77042

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FIRM F-2614

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Date: 04/03/2025
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Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL

SITE 7
SHEET LAYOUT & BORING PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 20'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 16 OF 244	

PEN TABLE: LAN-COH-CIVIL.ctb
USERNAME: Fleming, David
PLOTED: 4/3/2025 7:35 PM
FILE PATH: P:\122\132-1000-000\V-1-0-Production-Working\V-1-BIM-CAD\Civil\Sheets\SITE 7 SHEET LAYOUT & BORING PLAN.dwg

PRIVATE UTILITY NOTES:

AT&T TEXAS/ SWBT FACILITIES:

1. THE LOCATIONS OF AT&T TEXAS/SWBT FACILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND UTILITIES.

2. THE CONTRACTOR SHALL CALL 1-800-344-8377 (TEXAS 811) A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE UNDERGROUND LINES FIELD LOCATED.

3. WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF AT&T TEXAS/SWBT FACILITIES, ALL EXCAVATIONS MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES. WHEN BORING, THE CONTRACTOR SHALL EXPOSE THE AT&T TEXAS/SWBT FACILITIES.

4. WHEN AT&T TEXAS/SWBT FACILITIES ARE EXPOSED, THE CONTRACTOR WILL PROVIDE SUPPORT TO PREVENT DAMAGE TO THE CONDUIT DUCTS OR CABLES. WHEN EXCAVATING NEAR TELEPHONE POLES THE CONTRACTOR SHALL BRACE THE POLE FOR SUPPORT.

5. THE PRESENCE OR ABSENCE OF AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES OR BURIED CABLE FACILITIES SHOWN ON THESE PLANS DOES NOT MEAN THAT THERE ARE NO DIRECT BURIED CABLES OR OTHER CABLES IN CONDUIT IN THE AREA.

6. PLEASE CONTACT THE AT&T TEXAS DAMAGE PREVENTION MANAGER ROOSEVELT LEE JR. AT (713) 567-4552 OR EMAIL HIM AT RL7259@ATT.COM, IF THERE ARE QUESTIONS ABOUT BORING OR EXCAVATING NEAR OUR AT&T TEXAS/SWBT FACILITIES.

CENTERPOINT ENERGY NOTES:

CAUTION: UNDERGROUND GAS FACILITIES

1. THE CONTRACTOR SHALL CONTACT THE UTILITY COORDINATING COMMITTEE AT 1-800-545-6005 OR 811 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE MAIN AND SERVICE LINES FIELD LOCATED.
   - -WHEN CENTERPOINT ENERGY PIPE LINE MARKINGS ARE NOT VISIBLE, CALL 713-945-8036 OR 713-945-8037 (7:00 AM TO 4:30 PM) FOR STATUS OF LINE LOCATION REQUEST BEFORE EXCAVATION BEGINS.
   - -WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF CENTERPOINT ENERGY FACILITIES, ALL EXCAVATION MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES.
   - -WHEN CENTERPOINT ENERGY FACILITIES ARE EXPOSED, SUFFICIENT SUPPORT MUST BE PROVIDED TO THE FACILITIES TO PREVENT EXCESSIVE STRESS ON THE PIPING.
   - -FOR EMERGENCIES REGARDING GAS LINES CALL 713-659-3552 OR 713-207-4200

2. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND FACILITIES.

WARNING: OVERHEAD ELECTRICAL LINES:

1. OVERHEAD LINES MAY EXIST ON THE PROPERTY. THE LOCATION OF OVERHEAD LINES HAS NOT BEEN SHOWN ON THESE DRAWINGS AS THE LINES ARE CLEARLY VISIBLE, BUT YOU SHOULD LOCATE THEM PRIOR TO BEGINNING ANY CONSTRUCTION. TEXAS LAW, SECTION 752, HEALTH & SAFETY CODE FORBIDS ACTIVITIES THAT OCCUR IN CLOSE PROXIMITY TO HIGH VOLTAGE LINES, SPECIFICALLY:
   - -ANY ACTIVITY WHERE PERSONS OR THINGS MAY COME WITHIN SIX (6) FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES; AND
   - -OPERATING A CRANE, DERRICK, POWER SHOVEL, DRILLING RIG, PILE DRIVER, HOISTING EQUIPMENT, OR SIMILAR APPARATUS WITHIN 10 FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES.

2. PARTIES RESPONSIBLE FOR THE WORK, INCLUDING CONTRACTORS, ARE LEGALLY RESPONSIBLE FOR THE SAFETY OF CONSTRUCTION WORKERS UNDER THIS LAW. THIS LAW CARRIES BOTH CRIMINAL AND CIVIL LIABILITY. TO ARRANGE FOR LINES TO BE TURNED OFF OR REMOVED CALL CENTERPOINT ENERGY AT 713-207-2222.

ACTIVITIES ON/OR ACROSS CENTERPOINT ENERGY FEE OR EASEMENT PROPERTY

1. NO APPROVAL TO USE, CROSS, OR OCCUPY NO CENTERPOINT FEE OR EASEMENT PROPERTY IS GIVEN. IF YOU NEED TO USE CENTERPOINT PROPERTY, PLEASE CONTACT OUR SURVEYING AND RIGHT OF WAY DIVISION AT (713) 207-6348 OR (713) 207-5769

DETAILS

CITY OF HOUSTON STANDARD DETAILS FOR WASTEWATER COLLECTION SYSTEMS,WATERLINES, STORM DRAINAGE, AND STREET PAVING ARE INCORPORATED IN PLANS BY REFERENCE AS IF COPIED VERBATIM
STANDARD DETAILS ARE AVAILABLE FOR DOWNLOAD AT THE FOLLOWING WEB ADDRESS:

http://houstonpermittingcenter.org/office-city-engineer/design-and-construction-standards

DETAILS INCLUDED IN PLAN SET SUPERSEDE RELATED COH STANDARD DETAILS.

GENERAL CONSTRUCTION NOTES

1. CONSTRUCT WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING IN ACCORDANCE WITH THE LATEST EDITION OF THE PUBLICATIONS STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, AND STREET PAVING AND STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, AND STREET PAVING PUBLISHED BY HOUSTON PUBLIC WORKS.

2. UTILITIES PRESENTED ON THESE DRAWINGS ARE SHOWN BASED ON THE BEST AVAILABLE FORMATION.CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS IN THE FIELD PRIOR TO COMMENCING CONSTRUCTION.
   CONTRACTOR SHALL NOTIFY TEXAS ONE CALL AT 713-223-4567/811 OR 800-344-8377 AND LONE STAR NOTIFICATION CENTER AT 800-669-8344 AT LEAST 48 HOURS BEFORE PROCEEDING WITH ANY EXCAVATION. UTILITIES MARKED WITHIN THE PUBLIC RIGHT OF WAY OR IN EASEMENTS SHALL COMPLY WITH TAC TITLE 16, PART 1. CHAPTER 18, RULE 18.6 AND THE AMERICAN PUBLIC WORKS ADMINISTRATION (APWA) UNIFORM COLOR CODE.

3. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGES TO EXISTING WATER, WASTEWATER, STORM WATER LINES AND TRAFFIC CONTROL DEVICES. DAMAGES SHALL BE REPAIRED IN ACCORDANCE WITH HOUSTON PUBLIC WORKS, STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, AND STREET PAVING AND STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, AND STREET PAVING, REFERENCED ABOVE, AT NO ADDITIONAL COST.

4. ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION AND ANY DRAINAGE DITCH OR STRUCTURE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO EXISTING CONDITIONS OR BETTER.

5. CONTRACTOR SHALL COMPLY WITH WITH LATEST EDITION OF OSHA REGULATIONS AND THE STATE OF TEXAS LAW CONCERNING EXCAVATION.

6. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO PROTECT ROOT SYSTEMS OF SHRUBS, PLANTS AND TREES ALONG THE AREA OF EXCAVATION.

7. CONTRACTOR SHALL MAINTAIN A SET OF REDLINE DRAWINGS RECORDING AS-BUILT CONDITIONS DURING CONSTRUCTION. THESE REDLINE MARKED UP DRAWINGS WILL BE SUBMITTED TO THE DESIGN CONSULTANT WHO WILL MAKE THE CHANGES ON THE ORIGINAL TRACINGS, LABELING EACH SHEET IN THE SET AS "RECORD DRAWINGS", AND RETURNING IT TO THE CITY ENGINEER.

8. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING, RESTORING, REPLACING, ALL SIGNAL INFRASTRUCTURE AND EXISTING DETECTION SYSTEMS AT SIGNALIZED INTERSECTIONS CURRENTLY IN PLACE FOR ALL APPROACHES IF DAMAGED DURING CONSTRUCTION. THE CONTRACTOR SHALL ALSO MAINTAIN EXISTING COMMUNICATION. THE CONTRACTOR SHALL ALSO MAINTAIN PEDESTRIAN ACCESSIBILITY TO PUSH BUTTONS AND PROPER SIGNAL ALIGNMENT TROUGH OUT TCP STAGES, OTHERWISE BAG PEDESTRIAN SIGNAL HEADS AND INSTALL CROSSWALK CLOSED SIGNS TIMING MODIFICATIONS AT LEAST 72 HOURS PRIOR TO IMPLEMENTING THE TCP STAGES. THIS NOTE APPLIES TO ALL CONSTRUCTION PHASES AND STAGES. IN NORMAL OPERATION OF TRAFFIC SIGNAL AT ANY INTERSECTION IS AFFECTED BY LANE CLOSURE OR TRAFFIC DIVERSION AS A RESULT OF THE PROPOSED IMPROVEMENTS. THEREFOR SHALL SUBMIT TRAFFIC CONTROL PLANS THAT INCLUDES TEMPORARY TRAFFIC SIGNALS TO ACCOMMODATE THE NEW TRAFFIC OPERATION AT THE INTERSECTION.

STANDARD NOTES FOR CONSTRUCTION DRAWINGS (HCFCD):

1. OBTAIN AND COMPLY WITH ALL APPLICABLE CITY, COUNTY, STATE, AND FEDERAL PERMITS AND APPROVALS, WITH ASSISTANCE FROM ENGINEER, IF NECESSARY. OBTAIN PERMIT (CERTIFICATION) FROM HARRIS COUNTY ENGINEER TO ENTER HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY.

2. NOTIFY THE HARRIS COUNTY FLOOD CONTROL DISTRICT'S PROPERTY MANAGEMENT DEPARTMENT IN WRITING AT LEAST 48 HOURS PRIOR TO CONSTRUCTION. SUBMIT THE HCFCD 48 HOUR PRE-CONSTRUCTION NOTIFICATION FORM, A COPY OF THE APPROVED CONSTRUCTION DRAWINGS, AND A COPY OF THE CORPS OF ENGINEERS INDIVIDUAL SECTION 404 PERMIT, IF APPLICABLE, TO HCFCD, 9900 NORTHWEST FREEWAY, HOUSTON, TEXAS 77092, ATTN: PROPERTY MANAGEMENT DEPT. BY HAND DELIVERY, OR FAX TO 713-684-4129 (FAX NUMBER).

3. ENGINEER SHALL SUBMIT CERTIFICATION LETTER AND RECORD DRAWINGS TO THE HARRIS COUNTY FLOOD CONTROL DISTRICT'S PROPERTY MANAGEMENT DEPARTMENT REQUESTING INSPECTION OF ITEMS CONSTRUCTED IN HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY. PRIOR TO REQUESTING INSPECTION, THE DRAINAGE RIGHT-OF-WAY AND/OR EASEMENTS SHALL BE STAKED AND FLAGGED.

4. PROTECT, MAINTAIN, AND RESTORE EXISTING BACKSLOPE DRAINAGE SYSTEMS.

5. BACKSLOPE SWALE AND INTERCEPTOR STRUCTURE ELEVATIONS AND LOCATIONS SHOWN ON PLANS ARE APPROXIMATE. FINAL ELEVATIONS AND LOCATIONS SHALL BE FIELD VERIFIED BY THE ENGINEER PRIOR TO INSTALLATION.

6. ESTABLISH TURF GRASS ON ALL DISTURBED AREAS WITHIN THE CHANNEL OR DETENTION RIGHT-OF-WAY, EXCEPT THE CHANNEL BOTTOM AND WHERE STRUCTURAL EROSION MEASURES ARE USED. MINIMUM ACCEPTANCE CRITERIA ARE 75% COVERAGE OF LIVE BERMUDA GRASS AND NO EROSION OR RILLS DEEPER THAN 4".

7. BACKFILL IN ACCORDANCE WITH THE HARRIS COUNTY FLOOD CONTROL DISTRICT STANDARD SPECIFICATION, SECTION 02315 - EXCAVATING AND BACKFILLING, OR EQUIVALENT.

8. EXCAVATE CHANNEL FLOWLINE TO DESIGN ELEVATION AS SHOWN ON PLANS AND DOWNSTREAM, AS NECESSARY, TO ENSURE NO WATER REMAINS IN THE FACILITY (STORM SEWER, LATERAL CHANNEL, OR DRY BOTTOM DETENTION BASIN) DURING NORMAL WATER SURFACE CONDITIONS IN THE CHANNEL, SO THE FACILITY WILL FUNCTION AS INTENDED. FOR WET BOTTOM DETENTION BASINS, ENSURE NO WATER IS ABOVE THE DESIGN LEVEL IN THE WET BOTTOM DURING NORMAL WATER SURFACE CONDITIONS IN THE CHANNEL.

9. MAINTAIN FLOW IN CHANNEL DURING CONSTRUCTION AND RESTORE CHANNEL TO ORIGINAL CONDITION.

10. REMOVE ALL EXCAVATED MATERIAL FROM THE HARRIS COUNTY FLOOD CONTROL DISTRICT OR DRAINAGE RIGHT-OF-WAY. NO FILL IS TO BE PLACED WITHIN A DESIGNATED FLOOD PLAIN AREA WITHOUT FIRST OBTAINING A FILL PERMIT FROM THE APPROPRIATE JURISDICTIONAL AUTHORITY.

CITY OF HOUSTON GENERAL NOTES

1. LARGE DIAMETER WATER LINES SHALL BE STEEL PIPE AS INDICATED ON DRAWINGS.

2. CONSTRUCT WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING IN ACCORDANCE WITH THE LATEST EDITION OF THE PUBLICATIONS STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING, AND STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING PUBLISHED BY HOUSTON PUBLIC WORKS.

3. THE GEOTECHNICAL INVESTIGATION FOR THIS PROJECT WAS CONDUCTED IN ACCORDANCE WITH CHAPTER 11 OF THE LATEST EDITION OF THE PUBLICATION INFRASTRUCTURE DESIGN MANUAL, PUBLISHED BY HOUSTON PUBLIC WORKS. SOIL REPORT WAS PREPARED BY HVJ ASSOCIATES REPORT NO. HG1510260.7, DATED JUNE 2, 2022.

4. UTILITIES PRESENTED ON THESE DRAWINGS ARE SHOWN BASED ON THE BEST AVAILABLE INFORMATION. CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS IN THE FIELD PRIOR TO COMMENCING CONSTRUCTION. CONTRACTOR SHALL NOTIFY TEXAS ONE CALL AT 713.223.4567/811 OR 800.344.8377 AND LONE STAR NOTIFICATION CENTER AT 800.669.8344 AT LEAST 48 HOURS BEFORE PROCEEDING ANY EXCAVATION. UTILITIES MARKED WITHIN THE PUBLIC RIGHT OF WAY OR EASEMENTS SHALL COMPLY WITH TAC TITLE 16, PART 1, CHAPTER 18, RULE 18.6 AND THE AMERICAN PUBLIC WORKS ADMINISTRATION (APWA) UNIFORM COLOR CODE.

5. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGES TO EXISTING WATER, WASTEWATER, STORM WATERE LINES AND TRAFFIC CONTROL DEVICES. DAMAGES SHALL BE REPAIRED IN ACCORDANCE WITH THER HOUSTON PUBLIC WORKS, STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING, AND STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING REFERENCED ABOVE, AT NO ADDITIONAL COST.

6. CONTRACTOR SHALL NOTIFY THE OFFICE OF THE CITY ENGINEER, HOUSTON PUBLIC WORKS AT 832.394.9098 OF VIA FAX AT 832.395.4424 FOR INSPECTION AT LEAST 48 HOURS PRIOR TO COMMENCING CONSTRUCTION.

7. ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION AND ANY DRAINAGE DITCH OR STRUCTURE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO EXISTING CONDITIONS OR BETTER.

8. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO PROTECT ROOT SYSTEMS OF SHRUBS, PLANTS AND TREES ALONG THE AREA OF EXCAVATION.

9. CONTRACTOR SHALL COMPLY WITH WITH LATEST EDITION OF OSHA REGULATIONS AND THE STATE OF TEXAS LAWS CONCERNING EXCAVATION.

10. CONTRACTOR SHALL MAINTAIN A SET OF REDLINE DRAWINGS AND RECORD AS-BUILT CONDITIONS DURING CONSTRUCTION. THESE REDLINE MARKED UP DRAWINGS WILL BE SUBMITTED TO THE DESIGN CONSULTANT WHO WILL MAKE THE CHANGES ON THE ORIGINAL TRACINGS, LABEL EACH SHEET IN THE SET AS "RECORD DRAWINGS", AND RETURN IT TO THE OFFICE OF THE CITY ENGINEER.

HARRIS COUNTY CONSTRUCTION NOTES

1. WATER LINES, WASTEWATER COLLECTION SYSTEMS, AND STORM DRAINAGE SYSTEMS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE CITY OF HOUSTON'S DEPARTMENT OF PUBLIC WORKS AND ENGINEERING "DESIGN MANUAL, STANDARD CONSTRUCTION SPECIFICATIONS, AND DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING".
2. ALL STORM SEWERS WILL BE REINFORCED CONCRETE (C76 CLASS III) AND BE INSTALLED, BEDDED AND BACKFILLED IN ACCORDANCE WITH THE CITY OF HOUSTON'S DRAWINGS 02317-02, 02317-03, 02317-05, 02317-06 AND 02317-07 AS APPLICABLE
3. ALL STORM SEWERS CONSTRUCTED IN SIDE LOT EASEMENTS SHALL BE R.C.P., MINIMUM TWENTY (20) FEET WIDE EASEMENTS SHALL BE PROVIDED.
4. AN ALTERNATIVE TO CEMENT STABILIZED SAND MAY BE USED AS BACKFILL FOR PIPES FIFTY-FOUR (54) INCH AND LARGER, FROM 1-FOOT ABOVE THE TOP OF THE PIPE TO THE BOTTOM OF THE SUBGRADE. CONTRACTOR MAY BACKFILL WITH SUITABLE MATERIAL, PROVIDED THE BACKFILL MATERIAL IS PLACED IN EIGHT (8) INCH LIFTS AND MECHANICALLY COMPACTED TO NINETY-FIVE (95)% STANDARD PROCTOR DENSITY. TESTS SHALL BE TAKEN AT HUNDRED (100) FOOT INTERVALS ON EACH LIFT. BEDDING AND BACKFILL TO ONE (1) FOOT ABOVE THE TOP OF THE PIPE SHALL BE CEMENT-STABILIZED SAND.
5. ALL PROPOSE PIPE STUB-OUTS FROM MANHOLES OR INLETS ARE TO BE PLUGGED WITH EIGHT (8) INCH BRICK WALLS UNLESS OTHERWISE NOTED.
6. THE CONTRACTOR(S) SHALL NOTIFY HARRIS COUNTY ENGINEERING DEPARTMENT-PERMIT OFFICE TWENTY-FOUR (24) HOURS IN ADVANCE OF COMMENCING UTILITY AND/OR PAVING CONSTRUCTION AT (713)274-3823 AND WITHIN NOTIFICATION FORTY-EIGHT (48) HOURS IN ADVANCE OF COMMENCING CONSTRUCTION AT 10555 NORTHWEST FREEWAY, SUITE 144, HOUSTON, TX 77092.
7. PAVING SHALL BE IN ACCORDANCE WITH THE "REGULATIONS OF HARRIS COUNTY, TEXAS FOR THE APPROVAL AND ACCEPTANCE OF INFRASTRUCTURE" AND/OR AMENDMENTS OF THE SAME.
8. GUIDELINES SET FORTH IN THE LATEST EDITION OF THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES TMUCD WITH REVISIONS" SHALL BE OBSERVED.
9. OWNER OR OWNER'S AGENT TO OBTAIN ALL PERMITS REQUIRED BY THE "REGULATIONS OF HARRIS COUNTY, TEXAS FOR FLOODPLAIN MANAGEMENT" PRIOR TO STARTING CONSTRUCTION.
10. OWNER OR OWNER'S AGENT TO OBTAIN ALL NOTIFICATIONS REQUIRED BY HARRIS COUNTY, TEXAS PRIOR TO STARTING CONSTRUCTION OF UTILITIES AND/OR CULVERTS WITHIN HARRIS COUNTY AND HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY.

EXISTING UTILITY NOTE:

EXISTING UNDERGROUND UTILITY INFORMATION (TYPE, SIZE & OWNERSHIP) ARE SHOWN APPROXIMATELY BASED ON THE AVAILABLE RECORD DRAWINGS AND FIELD VERIFICATION (WHERE FEASIBLE) WITHOUT PROBING AND EXCAVATION. NO WARRANTY IS MADE AS TO THE ACCURACY OR COMPLETENESS OF UTILITY LOCATION SHOWN ON THE DRAWING. CAUTION SHOULD BE EXERCISED WHEN EXCAVATING OR BORE AND JACKING IN THE VICINITY OF UNDERGROUND UTILITIES. OWNERS OF THE UTILITIES SHOULD BE NOTIFIED PRIOR TO SUCH ACTIVITIES. CALL UTILITY COORDINATING COMMITTEE AT 713-223-4567, AT LEAST 48 HOURS PRIOR TO EXCAVATING IN THE STREET RIGHT-OF-WAY.

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567

PRIVATE UTILITY LINES SHOWN

Date:
CENTERPOINT ENERGY/ELECTRIC FACILITIES
ELECTRICAL FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION).

Date:
CENTERPOINT ENERGY/GAS FACILITIES
(GAS SERVICE LINES ARE NOT SHOWN). THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION.

Date:
AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

LAN

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

INTERIM REVIEW ONLY
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Engineer:CHRISTINE H. KIRBY, PE
Registration Number:94776
Date:04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL

GENERAL NOTES

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
NONE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 17 OF 244	

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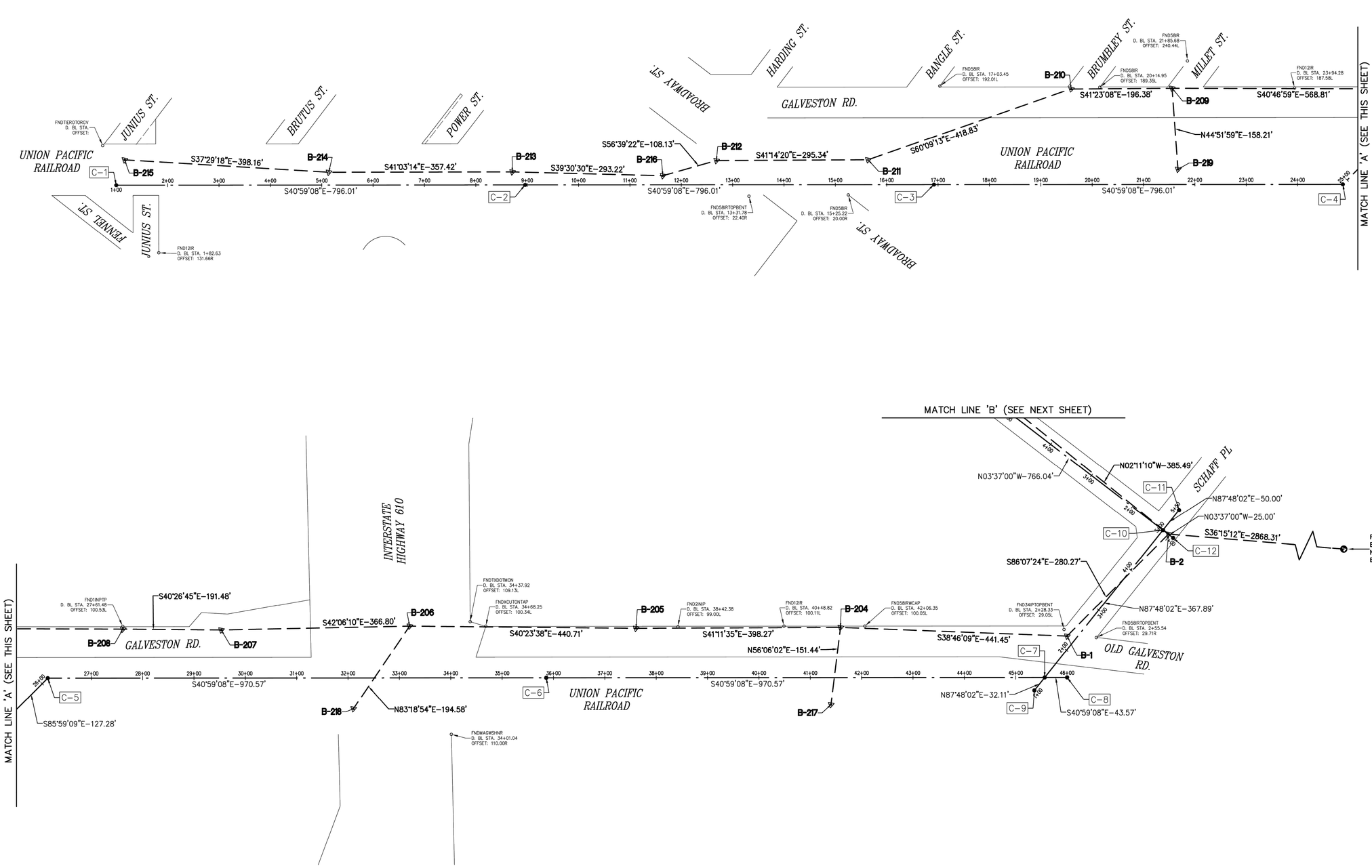

100 0 50 100

SCALE: 1" = 100'

NO.	DATE	REVISION	APP.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 030190 IS AN HCFCD BRASS DISC STAMPED C103 PCM1 LOCATED ON EAST SIDEWALK ON GALVESTON ROAD APPROXIMATELY 0.1 MILE NORTHWEST FROM THE INTERSECTION OF PARK PLACE BLVD IN KEYMAP 535L IN THE SIMS BAYOU WATERSHED

ELEV. 23.22 FEET NAVD 1988 2001 ADJUSTMENT

NOTE:

ALL BEARINGS AND DISTANCES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. ALL DISTANCES ARE IN SURFACE.

THE COORDINATES SHOWN HEREON ARE TEXAS SOUTH CENTRAL ZONE NO. 4204 STATE PLANE GRID COORDINATES (NAD83) AND MAY BE BROUGHT TO SURFACE BY DIVIDING BY THE COMBINED SCALE FACTOR 0.999870017.

LEGEND:

B-X	SURVEY CONTROL POINT NUMBER
C-X	DESIGN BASELINE POINT NUMBER
◬	SURVEY CONTROL POINT
•	DESIGN BASELINE POINT
Ⓐ	FLOODPLAIN REFERENCE MARK
D. BL:	DESIGN BASELINE
S. BL:	SURVEY BASELINE

LAN Planning Engineering Program Management

KUO & ASSOCIATES
ENGINEERING & SURVEYING
10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713-975-8769
TX FIRM NO.: F-4578

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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KUTUBUL A. M. MAINUDDIN, R.P.L.S.
TEXAS REG. NO.: 6404

ON 03/11/2025 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3

SITE 1A
JUNIUS STREET TO STATE HIGHWAY 225

SURVEY CONTROL MAP
(SHEET 1 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 100'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 18 OF 244	

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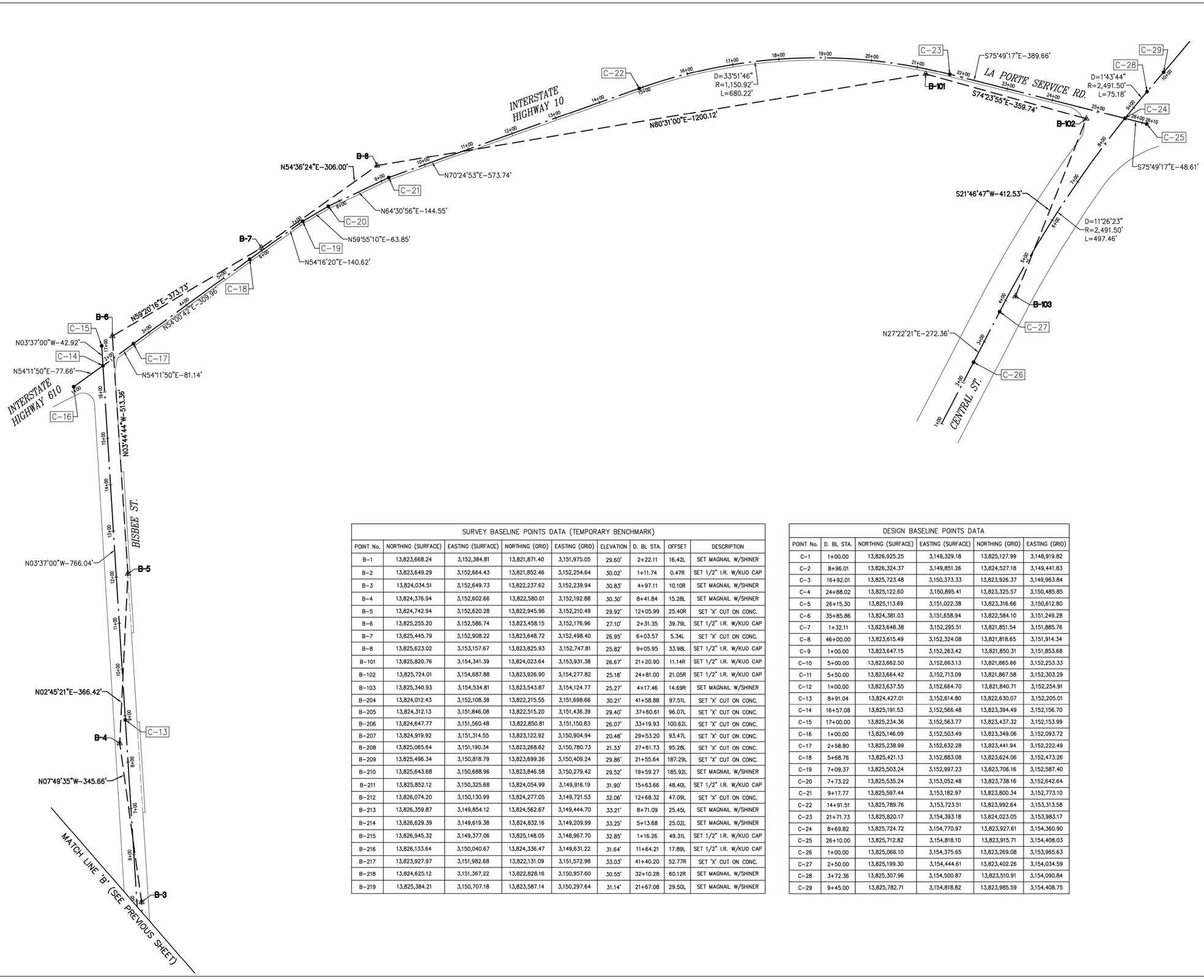

100 0 50 100

SCALE: 1" = 100'

NO.	DATE	REVISION	APP.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 030190 IS AN HCFCD BRASS DISC STAMPED C103 PCM1 LOCATED ON EAST SIDEWALK ON GALVESTON ROAD APPROXIMATELY 0.1 MILE NORTHWEST FROM THE INTERSECTION OF PARK PLACE BLVD IN KEYMAP 535L IN THE SIMS BAYOU WATERSHED

ELEV. 23.22 FEET NAVD 1988 2001 ADJUSTMENT

NOTE:

ALL BEARINGS AND DISTANCES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. ALL DISTANCES ARE IN SURFACE.

THE COORDINATES SHOWN HEREON ARE TEXAS SOUTH CENTRAL ZONE NO. 4204 STATE PLANE GRID COORDINATES (NAD83) AND MAY BE BROUGHT TO SURFACE BY DIVIDING BY THE COMBINED SCALE FACTOR 0.999870017.

LEGEND:

- B-X SURVEY CONTROL POINT NUMBER
- C-X DESIGN BASELINE POINT NUMBER
- SURVEY CONTROL POINT
- DESIGN BASELINE POINT
- FLOODPLAIN REFERENCE MARK
- D. BL: DESIGN BASELINE
- S. BL: SURVEY BASELINE

SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)

POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-1	13,823,668.24	3,152,384.81	13,821,871.40	3,151,975.05	29.60'	2+22.11	16.42L	SET MAGNAIL W/SHINER
B-2	13,823,649.29	3,152,664.43	13,821,852.46	3,152,254.64	30.02'	1+11.74	0.47R	SET 1/2" I.R. W/KUO CAP
B-3	13,824,034.51	3,152,649.73	13,822,237.62	3,152,239.94	30.83'	4+97.11	10.10R	SET MAGNAIL W/SHINER
B-4	13,824,376.94	3,152,602.66	13,822,580.01	3,152,192.88	30.30'	8+41.84	15.28L	SET MAGNAIL W/SHINER
B-5	13,824,742.94	3,152,620.28	13,822,945.96	3,152,210.49	29.92'	12+05.99	25.40R	SET 'X' CUT ON CONC.
B-6	13,825,255.20	3,152,586.74	13,823,458.15	3,152,176.96	27.10'	2+31.35	39.79L	SET 1/2" I.R. W/KUO CAP
B-7	13,825,445.79	3,152,908.22	13,823,648.72	3,152,498.40	26.95'	6+03.57	5.34L	SET 'X' CUT ON CONC.
B-8	13,825,623.02	3,153,157.67	13,823,825.93	3,152,747.81	25.82'	9+05.95	33.98L	SET 1/2" I.R. W/KUO CAP
B-101	13,825,820.76	3,154,341.39	13,824,023.64	3,153,931.38	26.67'	21+20.90	11.14R	SET 1/2" I.R. W/KUO CAP
B-102	13,825,724.01	3,154,687.88	13,823,926.90	3,154,277.82	25.18'	24+81.00	21.05R	SET 1/2" I.R. W/KUO CAP
B-103	13,825,340.93	3,154,534.81	13,823,543.87	3,154,124.77	25.27'	4+17.46	14.69R	SET MAGNAIL W/SHINER
B-204	13,824,012.43	3,152,108.38	13,822,215.55	3,151,698.66	30.21'	41+58.88	97.51L	SET 'X' CUT ON CONC.
B-205	13,824,312.13	3,151,846.08	13,822,515.20	3,151,436.39	29.40'	37+60.61	96.07L	SET 'X' CUT ON CONC.
B-206	13,824,647.77	3,151,560.48	13,822,850.81	3,151,150.83	26.07'	33+19.93	100.62L	SET 'X' CUT ON CONC.
B-207	13,824,919.92	3,151,314.55	13,823,122.92	3,150,904.94	20.48'	29+53.20	93.47L	SET 'X' CUT ON CONC.
B-208	13,825,065.64	3,151,190.34	13,823,268.62	3,150,780.73	21.33'	27+61.73	95.28L	SET 'X' CUT ON CONC.
B-209	13,825,496.34	3,150,818.79	13,823,699.26	3,150,409.24	29.86'	21+55.64	187.29L	SET 'X' CUT ON CONC.
B-210	13,825,643.68	3,150,688.96	13,823,846.58	3,150,279.42	29.52'	19+59.27	185.92L	SET MAGNAIL W/SHINER
B-211	13,825,852.12	3,150,325.68	13,824,054.99	3,149,916.19	31.90'	15+63.66	48.40L	SET 1/2" I.R. W/KUO CAP
B-212	13,826,074.20	3,150,130.99	13,824,277.05	3,149,721.53	32.06'	12+68.32	47.09L	SET 'X' CUT ON CONC.
B-213	13,826,359.87	3,149,854.12	13,824,562.67	3,149,444.70	33.21'	8+71.09	25.45L	SET MAGNAIL W/SHINER
B-214	13,826,629.39	3,149,619.38	13,824,832.16	3,149,209.99	33.25'	5+13.68	25.02L	SET MAGNAIL W/SHINER
B-215	13,826,945.32	3,149,377.06	13,825,148.05	3,148,967.70	32.85'	1+16.26	49.31L	SET 1/2" I.R. W/KUO CAP
B-216	13,826,133.64	3,150,040.67	13,824,336.47	3,149,631.22	31.64'	11+64.21	17.89L	SET 1/2" I.R. W/KUO CAP
B-217	13,823,927.97	3,151,982.68	13,822,131.09	3,151,572.98	33.03'	41+40.20	52.77R	SET 'X' CUT ON CONC.
B-218	13,824,625.12	3,151,367.22	13,822,828.16	3,150,957.60	30.55'	32+10.28	60.12R	SET MAGNAIL W/SHINER
B-219	13,825,384.21	3,150,707.18	13,823,587.14	3,150,297.64	31.14'	21+67.08	29.50L	SET MAGNAIL W/SHINER

DESIGN BASELINE POINTS DATA

POINT No.	D. BL STA.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)
C-1	1+00.00	13,826,925.25	3,149,329.18	13,825,127.99	3,148,919.82
C-2	8+96.01	13,826,324.37	3,149,851.26	13,824,527.18	3,149,441.83
C-3	16+92.01	13,825,723.48	3,150,373.33	13,823,926.37	3,149,963.84
C-4	24+88.02	13,825,122.60	3,150,895.41	13,823,325.57	3,150,485.85
C-5	26+15.30	13,825,113.69	3,151,022.38	13,823,316.66	3,150,612.80
C-6	35+85.86	13,824,381.03	3,151,658.94	13,822,584.10	3,151,249.28
C-7	1+32.11	13,823,648.38	3,152,295.51	13,821,851.54	3,151,885.76
C-8	46+00.00	13,823,615.49	3,152,324.08	13,821,818.65	3,151,914.34
C-9	1+00.00	13,823,647.15	3,152,263.42	13,821,850.31	3,151,853.68
C-10	5+00.00	13,823,662.50	3,152,663.13	13,821,865.66	3,152,253.33
C-11	5+50.00	13,823,664.42	3,152,713.09	13,821,867.58	3,152,303.29
C-12	1+00.00	13,823,637.55	3,152,664.70	13,821,840.71	3,152,254.91
C-13	8+91.04	13,824,427.01	3,152,614.80	13,822,630.07	3,152,205.01
C-14	16+57.08	13,825,191.53	3,152,566.48	13,823,394.49	3,152,156.70
C-15	17+00.00	13,825,234.36	3,152,563.77	13,823,437.32	3,152,153.99
C-16	1+00.00	13,825,146.09	3,152,503.49	13,823,349.06	3,152,093.72
C-17	2+58.80	13,825,238.99	3,152,632.28	13,823,441.94	3,152,222.49
C-18	5+68.76	13,825,421.13	3,152,883.08	13,823,624.06	3,152,473.26
C-19	7+09.37	13,825,503.24	3,152,997.23	13,823,706.16	3,152,587.40
C-20	7+73.22	13,825,535.24	3,153,052.48	13,823,738.16	3,152,642.64
C-21	9+17.77	13,825,597.44	3,153,182.97	13,823,800.34	3,152,773.10
C-22	14+91.51	13,825,789.76	3,153,723.51	13,823,992.64	3,153,313.58
C-23	21+71.73	13,825,820.17	3,154,393.18	13,824,023.05	3,153,983.17
C-24	8+69.82	13,825,724.72	3,154,770.97	13,823,927.61	3,154,360.90
C-25	26+10.00	13,825,712.82	3,154,818.10	13,823,915.71	3,154,408.03
C-26	1+00.00	13,825,066.10	3,154,375.65	13,823,269.08	3,153,965.63
C-27	2+50.00	13,825,199.30	3,154,444.61	13,823,402.26	3,154,034.59
C-28	3+72.36	13,825,307.96	3,154,500.87	13,823,510.91	3,154,090.84
C-29	9+45.00	13,825,782.71	3,154,818.82	13,823,985.59	3,154,408.75

LAN Planning Engineering Program Management

KUO & ASSOCIATES ENGINEERING & SURVEYING

10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713-975-8769
TX FIRM NO.: F-4578

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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KUTUBUL A. M. MAINUDDIN, R.P.L.S.
TEXAS REG. NO.: 6404
ON 03/11/2025 IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES

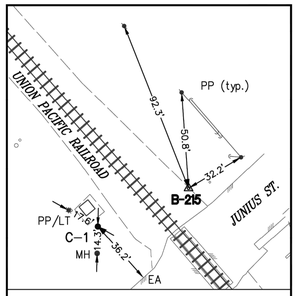
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3

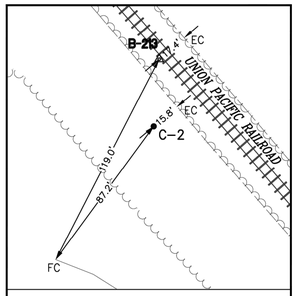
SITE 1A
JUNIUS STREET TO STATE HIGHWAY 225
SURVEY CONTROL MAP
(SHEET 2 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 100'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 19 OF 244	

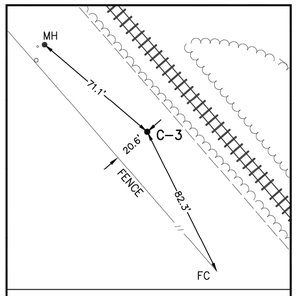
S:\Proj-2023\23077 (LAN-LDWL-Pkg 3)\Dwgs\SCM\Site 1A-Junius to SH 225\SCM-Site 1A-Junius to SH 225.dwg plotted on Mar 11, 2025 - 7:42pm



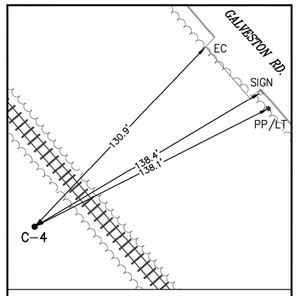
C–1 & T.B.M. B–215



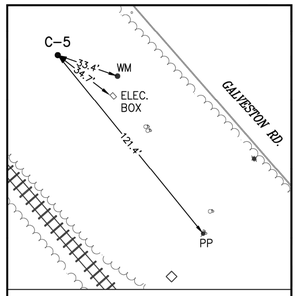
C–2 & T.B.M. B–213



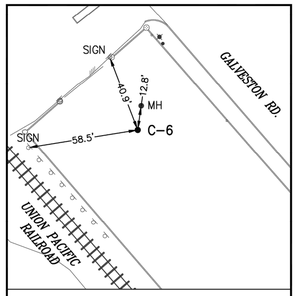
C–3



C–4



C–5



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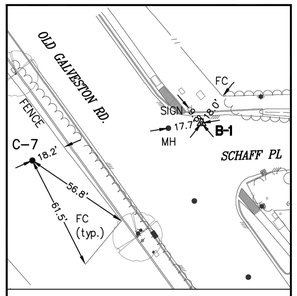
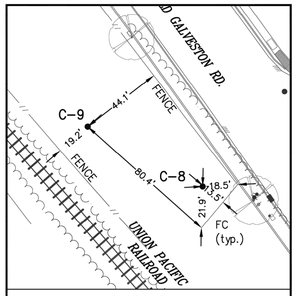
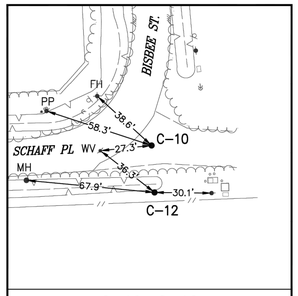


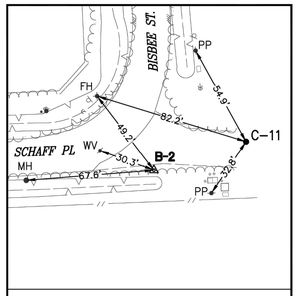
C–7 & T.B.M. B–1



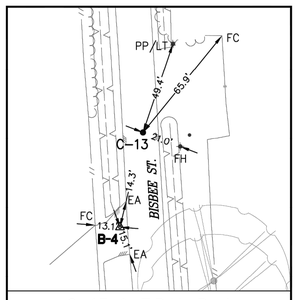
C–8, C–9



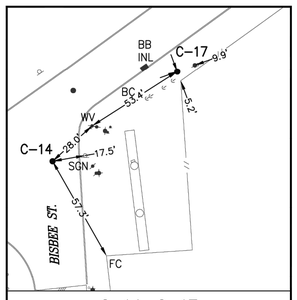
C–10, C–12



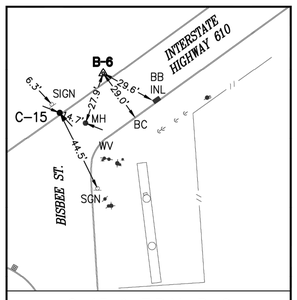
C–11 & T.B.M. B–2



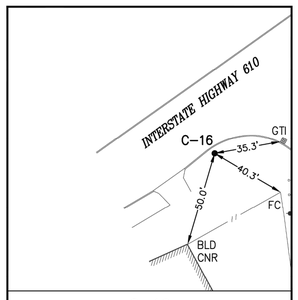
C–13 & T.B.M. B–4



C–14, C–17



C–15 & T.B.M. B–6



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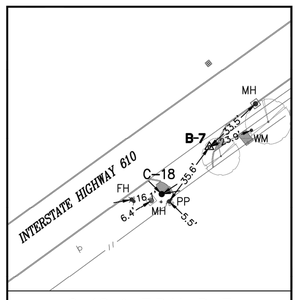
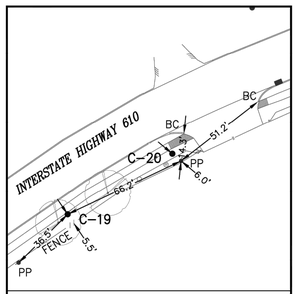
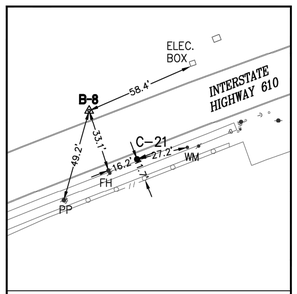


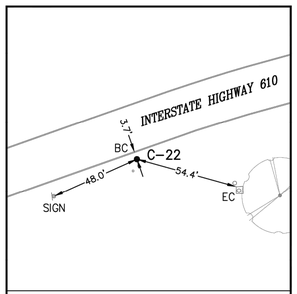
C–18 & T.B.M. B–7



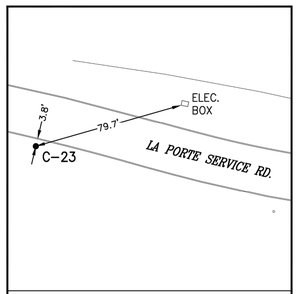
C–19, C–20



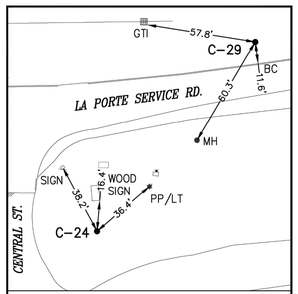
C–21 & T.B.M. B–8



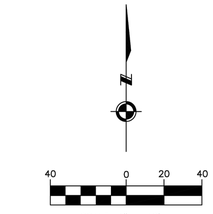
C–22



C–23



C–24, C–29



NO.	DATE	REVISION	APP.

EXIST. TOPOGRAPHIC LEGEND

- ASPHALT SYMBOL
- B OR BB INLET
- BUSH
- C INLET
- CLEANOUT
- brick column
- DOWN GUY
- E INLET
- ELEC MANHOLE
- FIRE HYDRANT
- GAS METER
- GAS VALVE
- GATE
- GRATE INLET
- GRATE INLET
- MAIL BOX
- STORM MANHOLE
- SANITARY MANHOLE
- PLANTER
- POWER POLE
- POWER POLE W/LT.
- SIGN
- SIGNAL POLE
- SPRINKLER VALVE
- SPRINKLER HEAD
- STREET LIGHT/FLOOD LIGHT
- STREET LIGHT/PARKING LIGHT
- TREE
- TREE STUMP
- TREE–CREPE MYRTLE
- TREE–PINE
- WATER METER
- WATER VALVE
- IRRIGATION CONTROL VALVE

ABBREVIATIONS

FH – FIRE HYDRANT
FC – FENCE CORNER
LT – LIGHT POLE
MB – MAIL BOX
MH – MANHOLE
PP – POWER POLE
PP/LT – POWER POLE W/LIGHT
WM – WATER METER

Planning
Engineering
Program Management

KUO & ASSOCIATES
10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713–975–8769
TX FIRM NO.: F–4578

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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TEXAS REG. NO.: 6404
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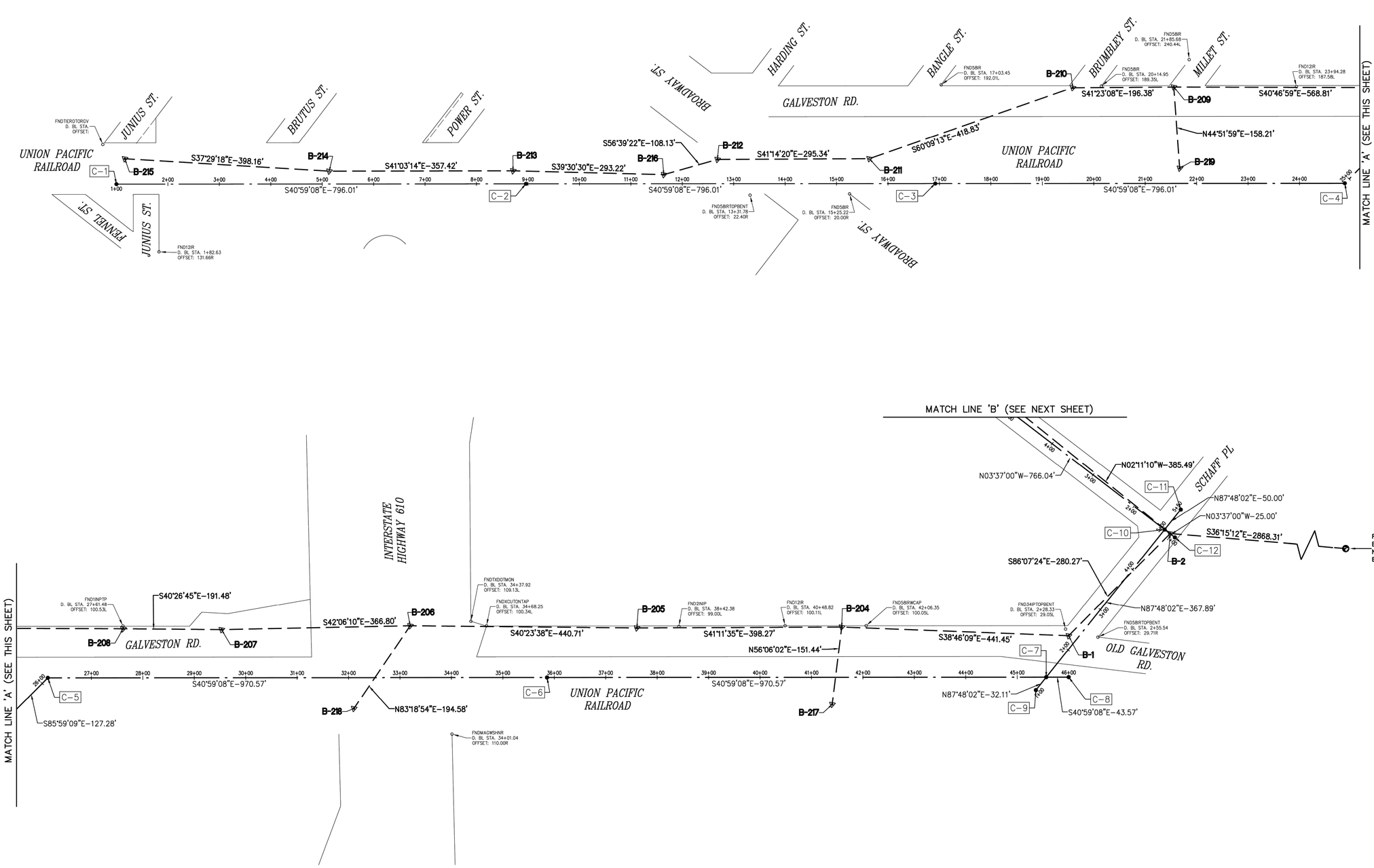
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

SITE 1A
JUNIUS STREET TO STATE HIGHWAY 225
SURVEY CONTROL MAP
(SHEET 3 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
1" = 40'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. **20** OF **244**	

S:\Proj–2023\23077 (LAN–LDWL–Pkg 3)\Dwgs\SCM\Site 1A–Junius to SH 225\Swinglea–Site 1A–Junius to SH 225.dwg plotted on Mar 11, 2025 – 7:43pm



100 0 50 100

SCALE: 1" = 100'

NO.	DATE	REVISION	APP.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 030190 IS AN HCFCD BRASS DISC STAMPED C103 PCM1 LOCATED ON EAST SIDEWALK ON GALVESTON ROAD APPROXIMATELY 0.1 MILE NORTHWEST FROM THE INTERSECTION OF PARK PLACE BLVD IN KEYMAP 535L IN THE SIMS BAYOU WATERSHED

ELEV. 23.22 FEET NAVD 1988 2001 ADJUSTMENT

NOTE:

ALL BEARINGS AND DISTANCES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. ALL DISTANCES ARE IN SURFACE.

THE COORDINATES SHOWN HEREON ARE TEXAS SOUTH CENTRAL ZONE NO. 4204 STATE PLANE GRID COORDINATES (NAD83) AND MAY BE BROUGHT TO SURFACE BY DIVIDING BY THE COMBINED SCALE FACTOR 0.999870017.

LEGEND:

B-X	SURVEY CONTROL POINT NUMBER
C-X	DESIGN BASELINE POINT NUMBER
◬	SURVEY CONTROL POINT
•	DESIGN BASELINE POINT
◬	FLOODPLAIN REFERENCE MARK
D. BL:	DESIGN BASELINE ——·——
S. BL:	SURVEY BASELINE — — —

LAN Planning Engineering Program Management

KUO & ASSOCIATES
ENGINEERING & SURVEYING
10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713-975-8769
TX FIRM NO.: F-4578

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

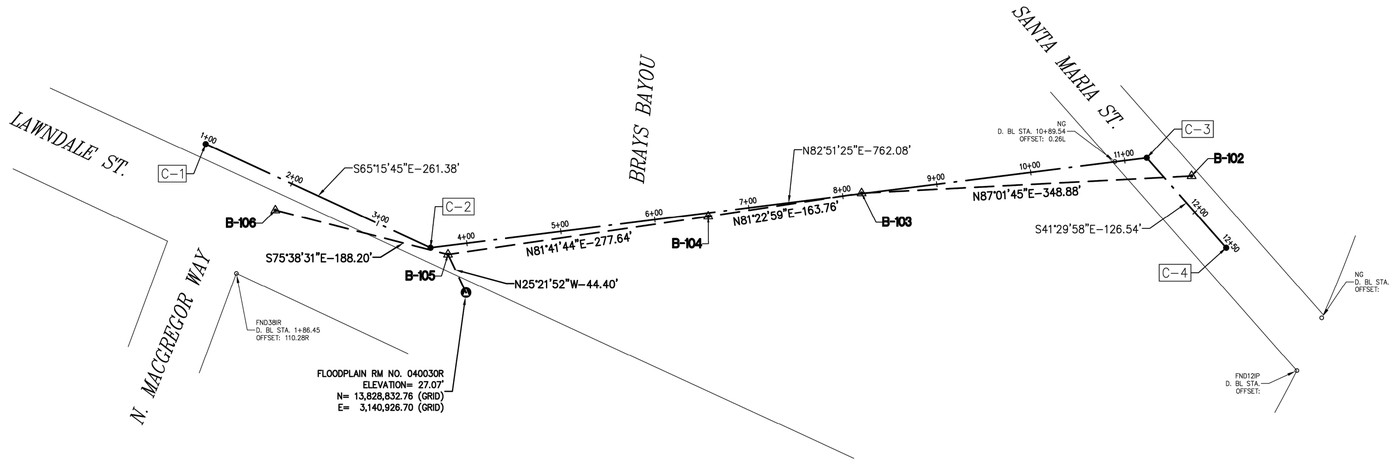
MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3

SITE 1A
JUNIUS STREET TO STATE HIGHWAY 225

SURVEY CONTROL MAP
(SHEET 1 OF 4)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 100'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 21 OF 244	

S:\Proj-2023\23077 (LAN-LDWL-Pkg 3)\Dwgs\SCM\Site 1A-Junius to SH 225\SCM-Site 1A-Junius to SH 225.dwg plotted on Mar 11, 2025 - 7:41pm



SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)

POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-102	13,830,753.34	3,142,101.04	13,828,955.58	3,141,692.63	24.21'	11+69.16	22.75L	SET 'X' CUT ON CONC.
B-103	13,830,735.26	3,141,752.64	13,828,937.50	3,141,344.26	13.95'	8+20.08	0.50L	SET 'X' CUT ON CONC.
B-104	13,830,710.73	3,141,590.73	13,828,912.97	3,141,182.38	12.23'	6+56.38	3.72R	SET 1/2" I.R. W/CAP
B-105	13,830,670.62	3,141,316.00	13,828,872.87	3,140,907.68	21.65'	3+78.79	9.34R	SET 'X' CUT ON CONC.
B-106	13,830,717.29	3,141,133.68	13,828,919.54	3,140,725.39	23.85'	1+95.98	32.64R	SET 'X' CUT ON CONC.

DESIGN BASELINE POINTS DATA

POINT No.	D. BL STA.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)
C-1	1+00.00	13,830,787.11	3,141,060.16	13,828,989.34	3,140,651.88
C-2	3+61.38	13,830,677.73	3,141,297.56	13,828,879.98	3,140,889.24
C-3	11+23.46	13,830,772.49	3,142,053.72	13,828,974.73	3,141,645.31
C-4	12+50.00	13,830,677.72	3,142,137.57	13,828,879.97	3,141,729.15

EXIST. TOPOGRAPHIC LEGEND

- ASPHALT SYMBOL
- B OR BB INLET
- BUSH
- C INLET
- CLEANOUT
- brick column
- DOWN GUY
- E INLET
- ELEC MANHOLE
- FIRE HYDRANT
- GAS METER
- GAS VALVE
- GATE
- GRATE INLET
- GRATE INLET
- MAIL BOX
- STORM MANHOLE
- SANITARY MANHOLE
- PLANTER
- POWER POLE
- POWER POLE W/LT.
- SIGN
- SIGNAL POLE
- SPRINKLER VALVE
- SPRINKLER HEAD
- STREET LIGHT/FLOOD LIGHT
- STREET LIGHT/PARKING LIGHT
- TREE
- TREE STUMP
- TREE-CREPE MYRTLE
- TREE-PINE
- WATER METER
- WATER VALVE
- IRRIGATION CONTROL VALVE

ABBREVIATIONS

FH – FIRE HYDRANT
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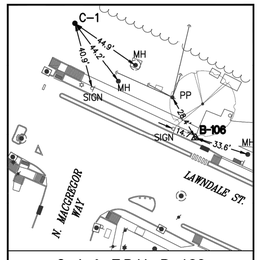
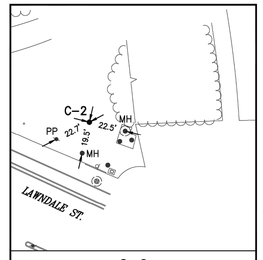
PP/LIGHT – POWER POLE W/LIGHT
WM – WATER METER



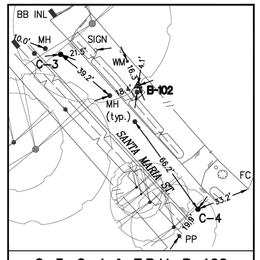
C-1 & T.B.M. B-106

N.T.S.



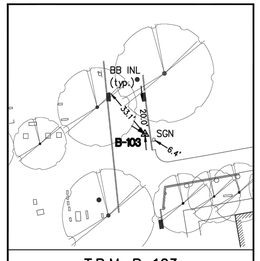
C-2

N.T.S.



C-3, C-4 & T.B.M. B-102

N.T.S.



T.B.M. B-103

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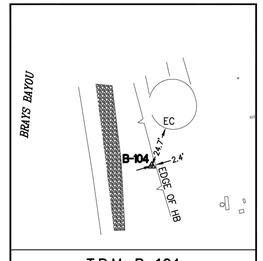
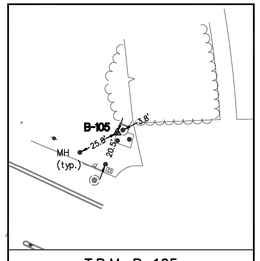


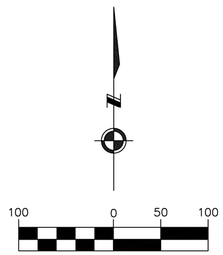
T.B.M. B-104

N.T.S.



T.B.M. B-105

N.T.S.



SCALE: 1" = 100'

NO.	DATE	REVISION	APP.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 040030R IS AN HCFCD ALUMINIUM DISC STAMPED 040030R LOCATED ON NORTH SIDEWALK ON THE BRIDGE ON LAWNDALE ST APPROXIMATELY 0.4 MILE EAST FROM THE INTERSECTION OF S WAYSIDE DR IN KEYMAP 534D IN THE BRAYS BAYOU WATERSHED

ELEV. 27.07 FEET NAVD 1988 2001 ADJUSTMENT

NOTE:

ALL BEARINGS AND DISTANCES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. ALL DISTANCES ARE IN SURFACE.

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LEGEND:

- **B-X** SURVEY CONTROL POINT NUMBER
- C–X DESIGN BASELINE POINT NUMBER
- SURVEY CONTROL POINT
- DESIGN BASELINE POINT
- FLOODPLAIN REFERENCE MARK
- D. BL: DESIGN BASELINE
- S. BL: SURVEY BASELINE

LAN Planning Engineering Program Management

KUO & ASSOCIATES
PROFESSIONAL ENGINEERS
10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713-975-8769
TX FIRM NO.: F-4578

SURVEYED BY:
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FB NO. 000000

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

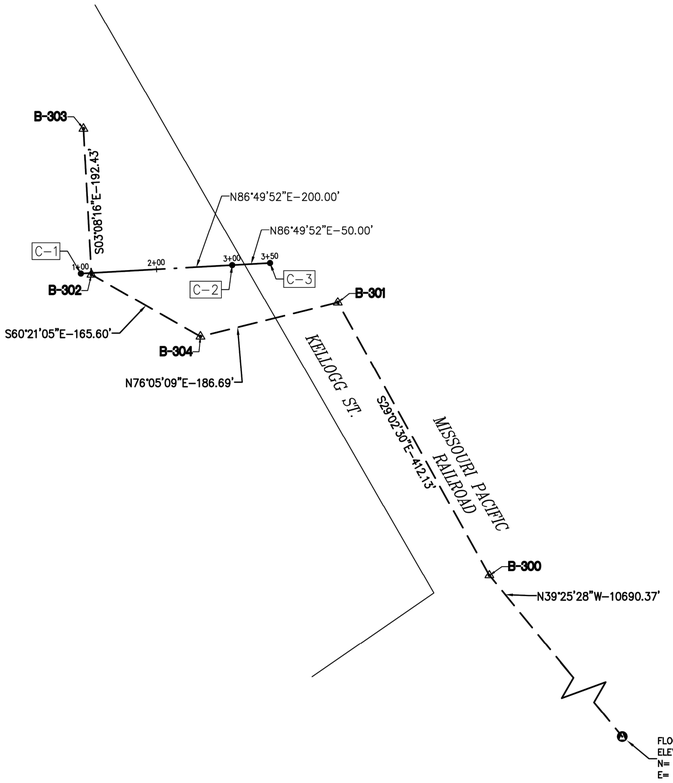
MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

SITE 1B
LAWNDALE STREET

SURVEY CONTROL MAP

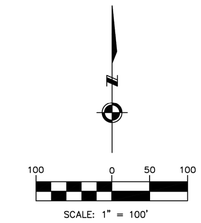
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 100'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. **22** OF **244**	

S:\Proj-2023\23077 (LAN-LDWL-Pkg 3)\Dwgs\SCM\Site 1B-Lawndale St\SCM-Site 1B-Lawndale St.dwg plotted on Mar 11, 2025 - 8:01pm



SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-300	13,829,594.16	3,147,571.59	13,827,796.55	3,147,162.46	32.92'	–	–	SET RR SPIKE
B-301	13,829,954.48	3,147,371.52	13,828,156.82	3,146,962.41	32.06'	–	–	SET RR SPIKE
B-302	13,829,991.50	3,147,046.39	13,828,193.84	3,146,637.33	29.07'	1+13.80	2.13R	SET BOLT
B-303	13,830,183.64	3,147,035.86	13,828,385.96	3,146,626.79	28.88'	1+13.90	190.30L	SET BOLT
B-304	13,829,909.59	3,147,190.30	13,828,111.93	3,146,781.22	30.84'	2+52.96	91.88R	SET 'X' CUT

DESIGN BASELINE POINTS DATA					
POINT No.	D. BL STA.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)
C-1	1+00.00	13,829,992.87	3,147,032.50	13,828,195.21	3,146,623.44
C-2	3+00.00	13,830,003.93	3,147,232.19	13,828,206.26	3,146,823.10
C-3	3+50.00	13,830,006.69	3,147,282.11	13,828,209.02	3,146,873.02



NO.	DATE	REVISION	APP.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 030190 IS AN HCFCD BRASS DISC STAMPED C103 PCM1 LOCATED ON EAST SIDEWALK ON GALVESTON ROAD APPROXIMATELY 0.1 MILE NORTHWEST FROM THE INTERSECTION OF PARK PLACE BLVD IN KEYMAP 535L IN THE SIMS BAYOU WATERSHED

ELEV. 23.22 FEET NAVD 1988 2001 ADJUSTMENT

NOTE:

ALL BEARINGS AND DISTANCES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. ALL DISTANCES ARE IN SURFACE.

THE COORDINATES SHOWN HEREON ARE TEXAS SOUTH CENTRAL ZONE NO. 4204 STATE PLANE GRID COORDINATES (NAD83) AND MAY BE BROUGHT TO SURFACE BY DIVIDING BY THE COMBINED SCALE FACTOR 0.999870017.

LEGEND:

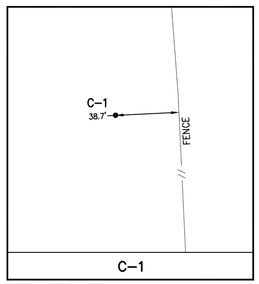
- **B-X** SURVEY CONTROL POINT NUMBER
- C-X DESIGN BASELINE POINT NUMBER
- SURVEY CONTROL POINT
- DESIGN BASELINE POINT
- FLOODPLAIN REFERENCE MARK
- D. BL: DESIGN BASELINE
- S. BL: SURVEY BASELINE

EXIST. TOPOGRAPHIC LEGEND

- ASPHALT SYMBOL
- B OR BB INLET
- BUSH
- C INLET
- CLEANOUT
- brick column
- DOWN GUY
- E INLET
- ELEC MANHOLE
- FIRE HYDRANT
- GAS METER
- GAS VALVE
- GATE
- GRATE INLET
- GRATE INLET
- MAIL BOX
- STORM MANHOLE
- SANITARY MANHOLE
- PLANTER
- POWER POLE
- POWER POLE W/LT.
- SIGN
- SIGNAL POLE
- SPRINKER VALVE
- SPRINKLER HEAD
- STREET LIGHT/FLOOD LIGHT
- STREET LIGHT/PARKING LIGHT
- TREE
- TREE STUMP
- TREE-CREPE MYRTLE
- TREE-PINE
- WATER METER
- WATER VALVE
- IRRIGATION CONTROL VALVE

ABBREVIATIONS

FH – FIRE HYDRANT
FC – FENCE CORNER
LT – LIGHT POLE
MB – MAIL BOX
MH – MANHOLE
PP – POWER POLE
PP/LIGHT – POWER POLE W/LIGHT
WM – WATER METER



C-1

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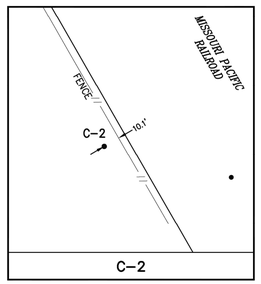

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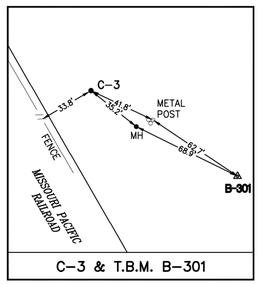

C-3 & T.B.M. B-301

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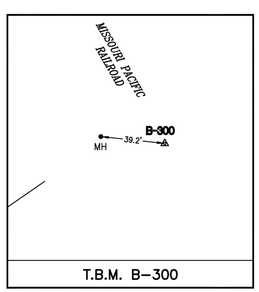

T.B.M. B-300

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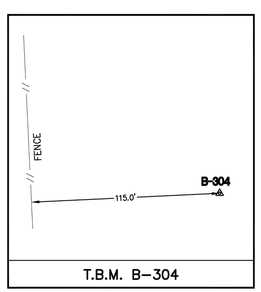

T.B.M. B-304

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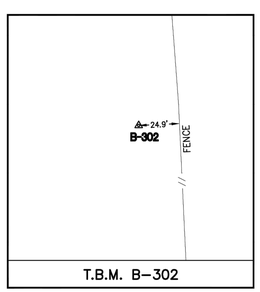

T.B.M. B-302

N.T.S.

LAN Planning Engineering Program Management

KUO & ASSOCIATES
ENGINEERING & SURVEYING
10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713-975-8769
TX FIRM NO.: F-4578

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

SITE 1C
KELLOGG STREET

SURVEY CONTROL MAP

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 100'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 23 OF 244	

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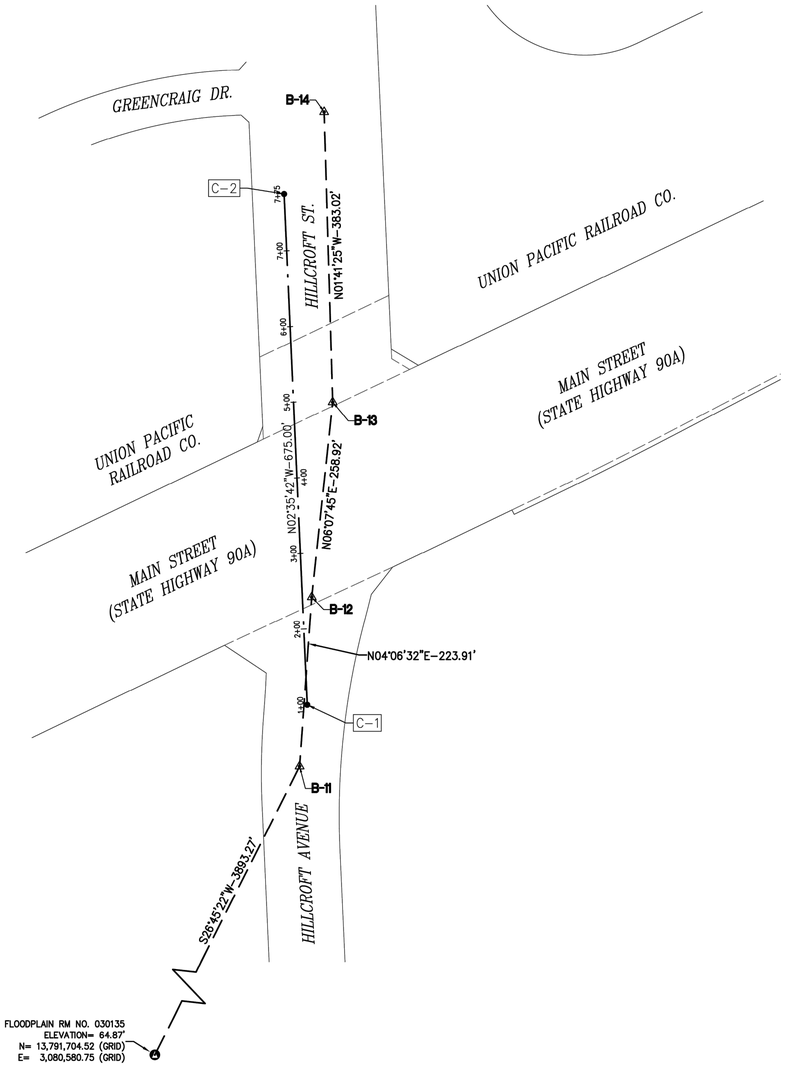
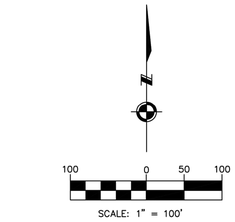


SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-11	13,796,973.86	3,082,733.95	13,795,180.49	3,082,333.25	61.67'	–	–	SET 1/2 I.R. W/CAP
B-12	13,797,197.20	3,082,750.00	13,795,403.79	3,082,349.29	62.88'	2+41.76	12.37R	FND 'X' CUT ON CONC.
B-13	13,797,454.63	3,082,777.64	13,795,661.20	3,082,376.93	67.15'	4+97.67	51.64R	SET 1/2 I.R. W/CAP
B-14	13,797,837.49	3,082,766.35	13,796,044.00	3,082,365.64	62.45'	–	–	SET 1/2 I.R. W/CAP

DESIGN BASELINE POINTS DATA					
POINT No.	D. BL STA.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)
C-1	1+00.00	13,797,055.03	3,082,744.06	13,795,261.64	3,082,343.36
C-2	7+75.00	13,797,729.33	3,082,713.50	13,795,935.86	3,082,312.80



NO.	DATE	REVISION	APP.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 030135 IS AN HCFCD BRASS DISC STAMPED C100 BM18 LOCATED ON EAST SIDEWALK ON CARLSBAD STREET BRIDGE APPROXIMATELY 250 FEET SOUTH FROM THE INTERSECTION OF W OREM DRIVE IN KEYMAP 570M IN THE SIMS BAYOU WATERSHED

ELEV. 64.87 FEET NAVD 1988 2001 ADJUSTMENT

NOTE:

ALL BEARINGS AND DISTANCES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. ALL DISTANCES ARE IN SURFACE.

THE COORDINATES SHOWN HEREON ARE TEXAS SOUTH CENTRAL ZONE NO. 4204 STATE PLANE GRID COORDINATES (NAD83) AND MAY BE BROUGHT TO SURFACE BY DIVIDING BY THE COMBINED SCALE FACTOR 0.99987017.

LEGEND:

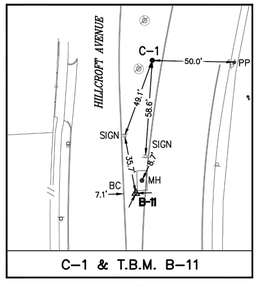
- **B-X** SURVEY CONTROL POINT NUMBER
- C-X DESIGN BASELINE POINT NUMBER
- SURVEY CONTROL POINT
- DESIGN BASELINE POINT
- FLOODPLAIN REFERENCE MARK
- D. BL: DESIGN BASELINE
- S. BL: SURVEY BASELINE

EXIST. TOPOGRAPHIC LEGEND

- ASPHALT SYMBOL
- B OR BB INLET
- BUSH
- C INLET
- CLEANOUT
- brick column
- DOWN GUY
- E INLET
- ELEC MANHOLE
- FIRE HYDRANT
- GAS METER
- GAS VALVE
- GATE
- GRATE INLET
- GRATE INLET
- MAIL BOX
- STORM MANHOLE
- SANITARY MANHOLE
- PLANTER
- POWER POLE
- POWER POLE W/LT.
- SIGN
- SIGNAL POLE
- SPRINKER VALVE
- SPRINKLER HEAD
- STREET LIGHT/FLOOD LIGHT
- STREET LIGHT/PARKING LIGHT
- TREE
- TREE STUMP
- TREE-CREPE MYRTLE
- TREE-PINE
- WATER METER
- WATER VALVE
- IRRIGATION CONTROL VALVE

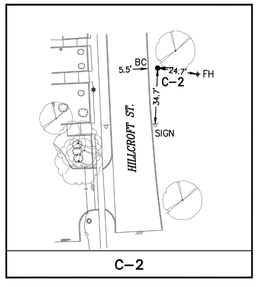
ABBREVIATIONS

FH – FIRE HYDRANT
FC – FENCE CORNER
LT – LIGHT POLE
MB – MAIL BOX
MH – MANHOLE
PP – POWER POLE
PP/LIGHT – POWER POLE W/LIGHT
TRLT – TRAFFIC LIGHT
WM – WATER METER



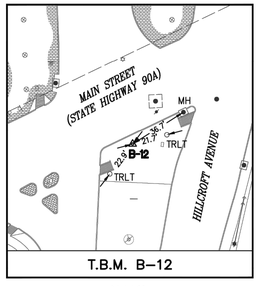
C-1 & T.B.M. B-11

N.T.S.



C-2

N.T.S.



T.B.M. B-12

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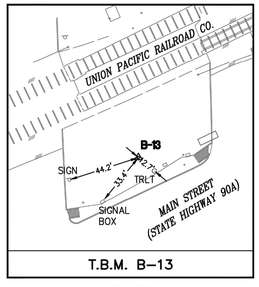

T.B.M. B-13

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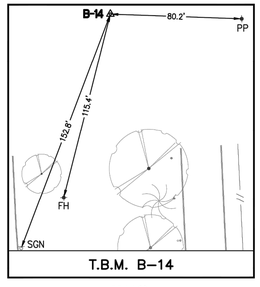

T.B.M. B-14

N.T.S.

Planning
Engineering
Program Management

KUO & ASSOCIATES
ENGINEERING & SURVEYING
10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713-975-8769
TX FIRM NO.: F-4578

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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TEXAS REG. NO.: 6404

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

SITE 2
HILLCROFT STREET

SURVEY CONTROL MAP

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 100'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. **24** OF **244**	

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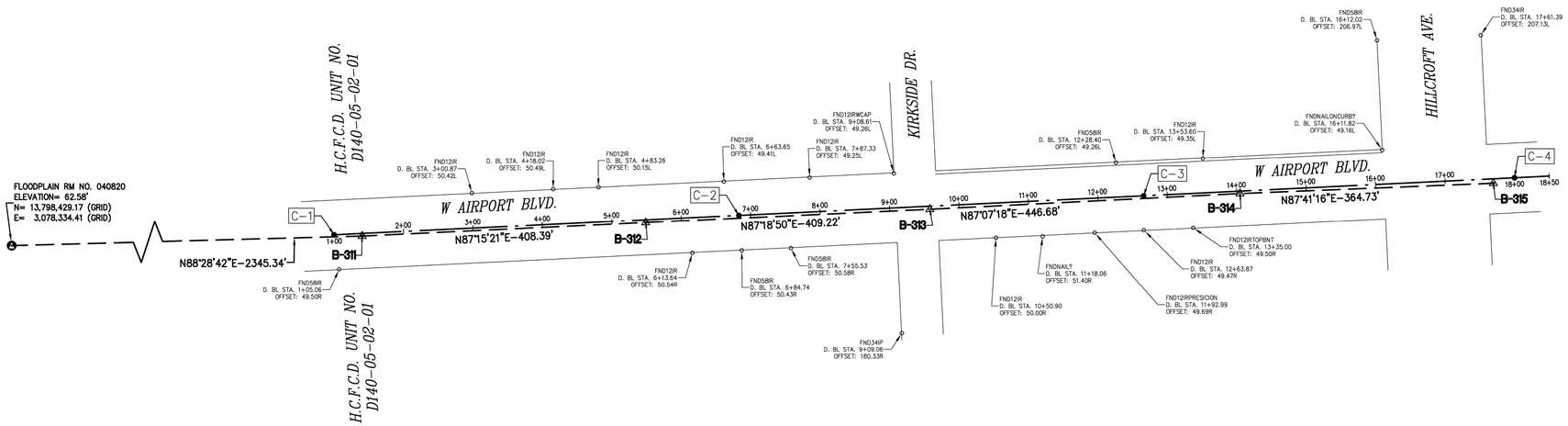
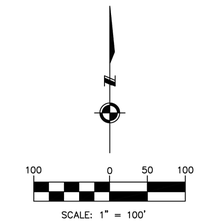


SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)							
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-311	13,800,285.24	3,081,079.11	13,798,491.44	3,080,678.62	61.25'	1+40.26	3.75R	SET 1/2" I.R. W/CAP
B-312	13,800,304.80	3,081,487.03	13,798,510.99	3,081,086.49	60.08'	5+48.65	3.88R	SET 1/2" I.R. W/CAP
B-313	13,800,323.98	3,081,895.81	13,798,530.17	3,081,495.21	59.19'	9+57.87	4.41R	SET 'X' CUT ON CONC.
B-314	13,800,346.41	3,082,341.92	13,798,552.60	3,081,941.27	60.58'	14+04.55	3.50R	SET 1/2" I.R. W/CAP
B-315	13,800,361.12	3,082,706.35	13,798,567.31	3,082,305.65	60.13'	17+69.27	6.37R	SET 'X' CUT ON CONC.

DESIGN BASELINE POINTS DATA					
POINT No.	D. BL STA.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)
C-1	1+00.00	13,800,287.05	3,081,038.72	13,798,493.25	3,080,638.23
C-2	6+83.00	13,800,315.14	3,081,621.04	13,798,521.34	3,081,220.48
C-3	12+66.00	13,800,343.23	3,082,203.36	13,798,549.42	3,081,802.73
C-4	18+00.00	13,800,368.96	3,082,736.74	13,798,575.15	3,082,336.04



BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 040820 IS AN HCFCD BRASS DISC STAMPED D140 BM05 LOCATED ON NORTH SIDEWALK ON W AIRPORT BLVD (WESTBOUND) APPROXIMATELY 0.2 MILE EAST FROM THE INTERSECTION OF FONDREN RD IN KEYMAP 570H IN THE BRAYS BAYOU WATERSHED

ELEV. 62.58 FEET NAVD 1988 2001 ADJUSTMENT

NOTE:

ALL BEARINGS AND DISTANCES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. ALL DISTANCES ARE IN SURFACE.

THE COORDINATES SHOWN HEREON ARE TEXAS SOUTH CENTRAL ZONE NO. 4204 STATE PLANE GRID COORDINATES (NAD83) AND MAY BE BROUGHT TO SURFACE BY DIVIDING BY THE COMBINED SCALE FACTOR 0.999870017.

LEGEND:

- **B-X** SURVEY CONTROL POINT NUMBER
- C-X DESIGN BASELINE POINT NUMBER
- SURVEY CONTROL POINT
- DESIGN BASELINE POINT
- FLOODPLAIN REFERENCE MARK
- D. BL: DESIGN BASELINE
- S. BL: SURVEY BASELINE

NO.	DATE	REVISION	APP.

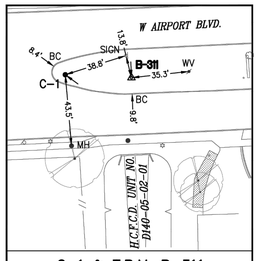


EXIST. TOPOGRAPHIC LEGEND

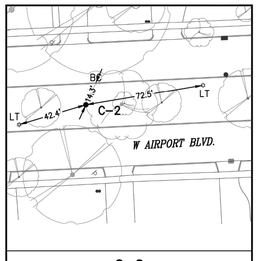
- ASPHALT SYMBOL
- B OR BB INLET
- BUSH
- C INLET
- CLEANOUT
- brick column
- DOWN GUY
- E INLET
- ELEC MANHOLE
- FIRE HYDRANT
- GAS METER
- GAS VALVE
- GATE
- GRATE INLET
- GRATE INLET
- MAIL BOX
- STORM MANHOLE
- SANITARY MANHOLE
- PLANTER
- POWER POLE
- POWER POLE W/LT.
- SIGN
- SIGNAL POLE
- SPRINKLER VALVE
- SPRINKLER HEAD
- STREET LIGHT/FLOOD LIGHT
- STREET LIGHT/PARKING LIGHT
- TREE
- TREE STUMP
- TREE-CREPE MYRTLE
- TREE-PINE
- WATER METER
- WATER VALVE
- IRRIGATION CONTROL VALVE

ABBREVIATIONS

FH – FIRE HYDRANT
FC – FENCE CORNER
LT – LIGHT POLE
MB – MAIL BOX
MH – MANHOLE
PP – POWER POLE
PP/LIGHT – POWER POLE W/LIGHT
WM – WATER METER



C-1 & T.B.M. B-311



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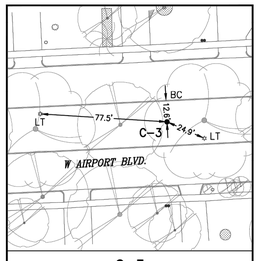
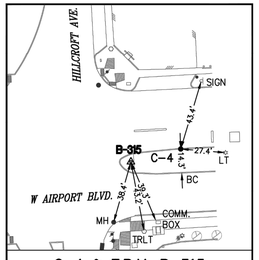
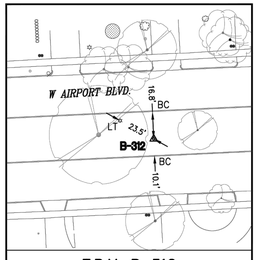


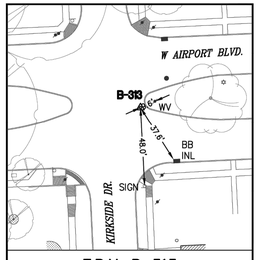
C-3



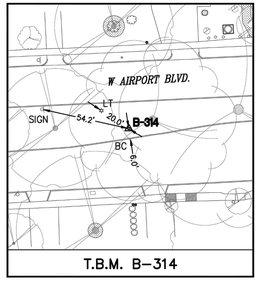
C-4 & T.B.M. B-315



T.B.M. B-312



T.B.M. B-313



T.B.M. B-314

Planning
Engineering
Program Management

KUO & ASSOCIATES
ENGINEERING & SURVEYING

10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713-975-8769
TX FIRM NO.: F-4578

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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TEXAS REG. NO.: 6404
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

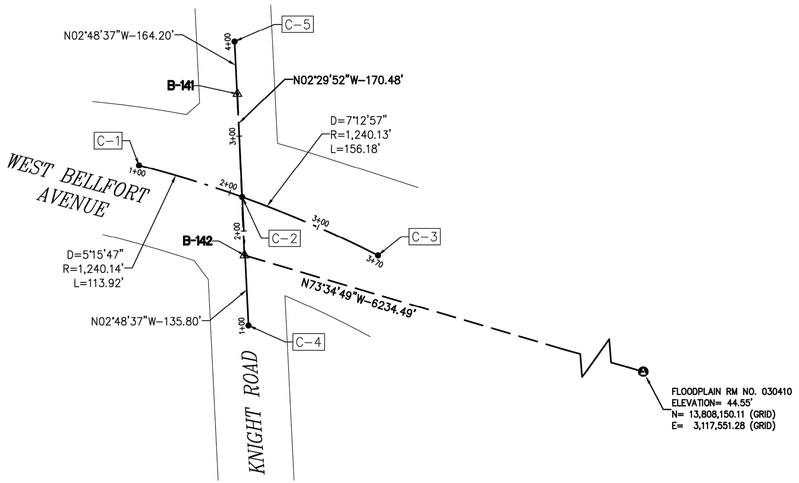
MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

SITE 3
WEST AIRPORT BOULEVARD

SURVEY CONTROL MAP

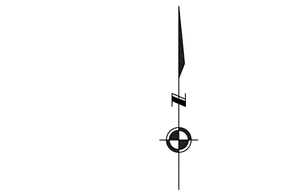
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 100'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 25 OF 244	

S:\Proj-2023\23077 (LAN-LDWL-Pkg 3)\Dwgs\SCM\Site 3-W Airport\SCM-Site 3 W Airport.dwg plotted on Mar 11, 2025 - 7:31pm



SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-141	13,811,877.79	3,111,968.90	13,810,082.48	3,111,564.40	47.79'	3+44.73	0.28R	SET 'X' CUT ON CONC.
B-142	13,811,707.47	3,111,976.33	13,809,912.18	3,111,571.83	46.92'	1+74.25	0.65L	SET 'X' CUT ON CONC.

DESIGN BASELINE POINTS DATA					
POINT No.	D. BL STA.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)
C-1	1+00.00	13,811,802.31	3,111,865.08	13,810,007.01	3,111,460.59
C-2	2+13.92	13,811,768.97	3,111,973.97	13,809,973.68	3,111,569.46
C-3	3+70.10	13,811,707.33	3,112,117.36	13,809,912.04	3,111,712.83
C-4	1+00.00	13,811,633.34	3,111,980.62	13,809,838.06	3,111,576.12
C-5	4+00.00	13,811,932.98	3,111,965.91	13,810,137.66	3,111,561.41



SCALE: 1" = 80'

NO.	DATE	REVISION	APP.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 030410 IS AN HCFCD BRASS DISC STAMPED 030410 LOCATED ON SOUTH HEADWALL OF THE CULVERT ON BELLFORT BLVD APPROXIMATELY 275 FT EAST FROM THE INTERSECTION OF HIGHWAY 288 IN KEYMAP 533X IN THE SIMS BAYOU WATERSHED

ELEV. 44.55 FEET NAVD 1988 2001 ADJUSTMENT

NOTE:

ALL BEARINGS AND DISTANCES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. ALL DISTANCES ARE IN SURFACE.

THE COORDINATES SHOWN HEREON ARE TEXAS SOUTH CENTRAL ZONE NO. 4204 STATE PLANE GRID COORDINATES (NAD83) AND MAY BE BROUGHT TO SURFACE BY DIVIDING BY THE COMBINED SCALE FACTOR 0.999870017.

LEGEND:

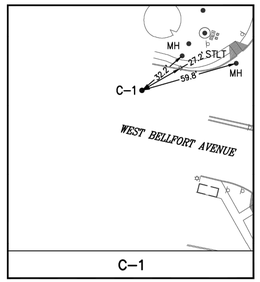
- **B-X** SURVEY CONTROL POINT NUMBER
- C-X DESIGN BASELINE POINT NUMBER
- SURVEY CONTROL POINT
- DESIGN BASELINE POINT
- (A) FLOODPLAIN REFERENCE MARK
- D. BL: DESIGN BASELINE
- S. BL: SURVEY BASELINE

EXIST. TOPOGRAPHIC LEGEND

- ASPHALT SYMBOL
- B OR BB INLET
- BUSH
- C INLET
- CLEANOUT
- brick column
- DOWN GUY
- E INLET
- ELEC MANHOLE
- FIRE HYDRANT
- GAS METER
- GAS VALVE
- GATE
- GRATE INLET
- GRATE INLET
- MAIL BOX
- STORM MANHOLE
- SANITARY MANHOLE
- PLANTER
- POWER POLE
- POWER POLE W/LT.
- SIGN
- SIGNAL POLE
- SPRINKER VALVE
- SPRINKLER HEAD
- STREET LIGHT/FLOOD LIGHT
- STREET LIGHT/PARKING LIGHT
- TREE
- TREE STUMP
- TREE-CREPE MYRTLE
- TREE-PINE
- WATER METER
- WATER VALVE
- IRRIGATION CONTROL VALVE

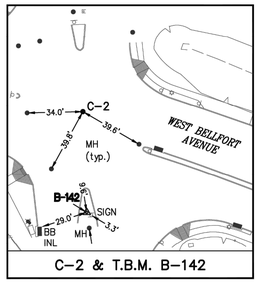
ABBREVIATIONS

FH – FIRE HYDRANT
FC – FENCE CORNER
LT – LIGHT POLE
MB – MAIL BOX
MH – MANHOLE
PP – POWER POLE
PP/LIGHT – POWER POLE W/LIGHT
WM – WATER METER



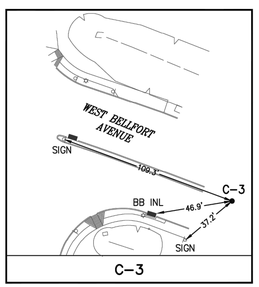
C-1

N.T.S.



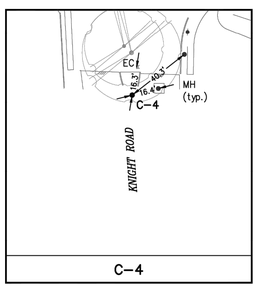
C-2 & T.B.M. B-142

N.T.S.



C-3

N.T.S.



C-4

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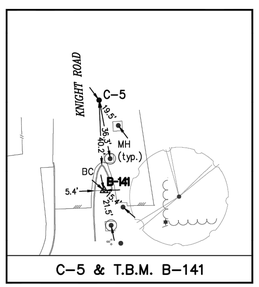

C-5 & T.B.M. B-141

N.T.S.

Planning
Engineering
Program Management

KUO & ASSOCIATES
ENGINEERING & SURVEYING
10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713-975-8769
TX FIRM NO.: F-4578

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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TEXAS REG. NO.: 6404

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CITY OF HOUSTON

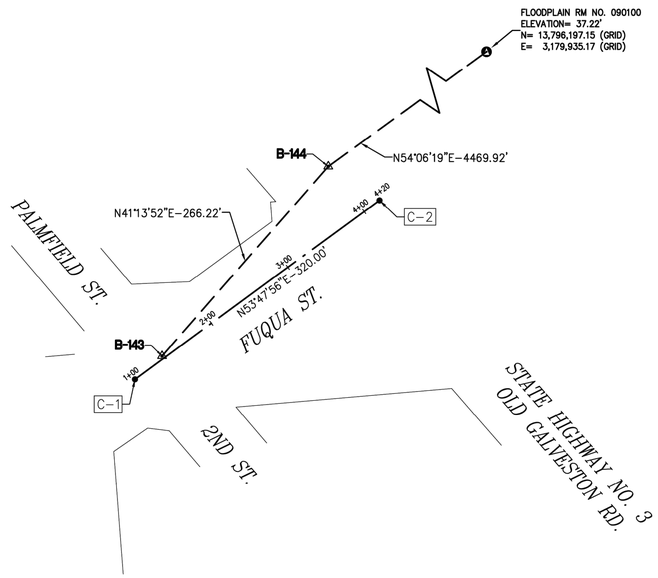
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

SITE 4B
KNIGHT ROAD & WEST BELLFORT AVENUE
SURVEY CONTROL MAP

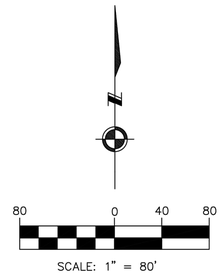
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 80'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. **26** OF **244**	

S:\Proj-2023\23077 (LAN-LDWL-Pkg 3)\Dwgs\SCM\Site 4B- Knight & Bellfort\SCM-Site 4B-Knight & Bellfort.dwg plotted on Mar 11, 2025 – 8:41pm



SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-143	13,795,169.74	3,176,552.03	13,793,376.60	3,176,139.13	39.97'	1+37.62	2.88L	SET 1/2 I.R. W/CAP
B-144	13,795,369.95	3,176,727.49	13,793,576.79	3,176,314.57	42.19'	3+97.46	60.81L	SET 'X' CUT ON CONC.

DESIGN BASELINE POINTS DATA					
POINT No.	D. BL STA.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)
C-1	1+00.00	13,795,145.19	3,176,523.38	13,793,352.06	3,176,110.48
C-2	4+20.00	13,795,334.19	3,176,781.60	13,793,541.03	3,176,368.67



SCALE: 1" = 80'

NO.	DATE	REVISION	APP.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 090100 IS AN HCFCD BRASS DISC STAMPED 090100 LOCATED ON NORTH HEADWALL OF THE CULVERT ON GENOA BLUFF ROAD APPROXIMATELY 0.8 MILE NORTHEAST FROM THE INTERSECTION OF HIGHWAY 3 IN KEYMAP 577N IN THE VINCE BAYOU WATERSHED

ELEV. 37.22 FEET NAVD 1988 2001 ADJUSTMENT

NOTE:

ALL BEARINGS AND DISTANCES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. ALL DISTANCES ARE IN SURFACE.

THE COORDINATES SHOWN HEREON ARE TEXAS SOUTH CENTRAL ZONE NO. 4204 STATE PLANE GRID COORDINATES (NAD83) AND MAY BE BROUGHT TO SURFACE BY DIVIDING BY THE COMBINED SCALE FACTOR 0.999870017.

LEGEND:

B-X	SURVEY CONTROL POINT NUMBER
C-X	DESIGN BASELINE POINT NUMBER
◬	SURVEY CONTROL POINT
●	DESIGN BASELINE POINT
Ⓐ	FLOODPLAIN REFERENCE MARK
D. BL:	DESIGN BASELINE ——·——
S. BL:	SURVEY BASELINE — — —

EXIST. TOPOGRAPHIC LEGEND

- ASPHALT SYMBOL
- B OR BB INLET
- BUSH
- C INLET
- CLEANOUT
- brick column
- DOWN GUY
- E INLET
- ELEC MANHOLE
- FIRE HYDRANT
- GAS METER
- GAS VALVE
- GATE
- GRATE INLET
- GRATE INLET
- MAIL BOX
- STORM MANHOLE
- SANITARY MANHOLE
- PLANTER
- POWER POLE
- POWER POLE W/LT.
- SIGN
- SIGNAL POLE
- SPRINKLER VALVE
- SPRINKLER HEAD
- STREET LIGHT/FLOOD LIGHT
- STREET LIGHT/PARKING LIGHT
- TREE
- TREE STUMP
- TREE-CREPE MYRTLE
- TREE-PINE
- WATER METER
- WATER VALVE
- IRRIGATION CONTROL VALVE

ABBREVIATIONS

FH – FIRE HYDRANT
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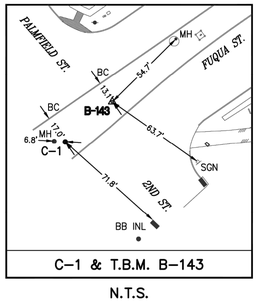
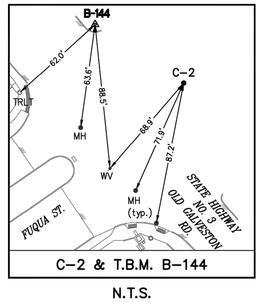
MB – MAIL BOX
MH – MANHOLE
PP – POWER POLE
PP/LIGHT – POWER POLE W/LIGHT
TRLT – TRAFFIC LIGHT
WM – WATER METER



C-1 & T.B.M. B-143

N.T.S.



C-2 & T.B.M. B-144

N.T.S.

Planning
Engineering
Program Management

KUO & ASSOCIATES
ENGINEERING & SURVEYING
10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713-975-8769
TX FIRM NO.: F-4578

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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TEXAS REG. NO.: 6404
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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

SITE 4C
HIGHWAY 3 & FUQUA ST.

SURVEY CONTROL MAP

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 80'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. **27** OF **244**	

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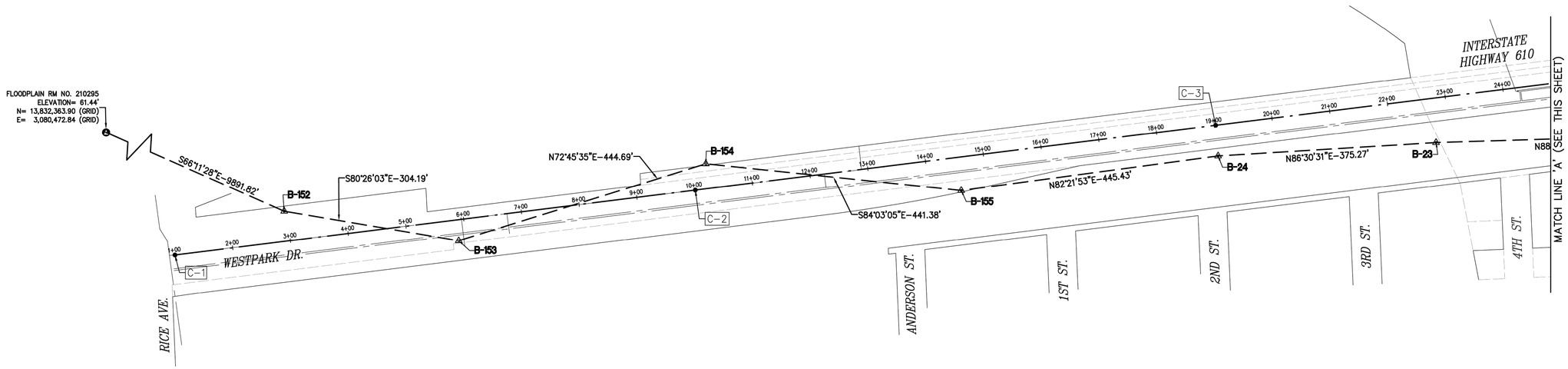

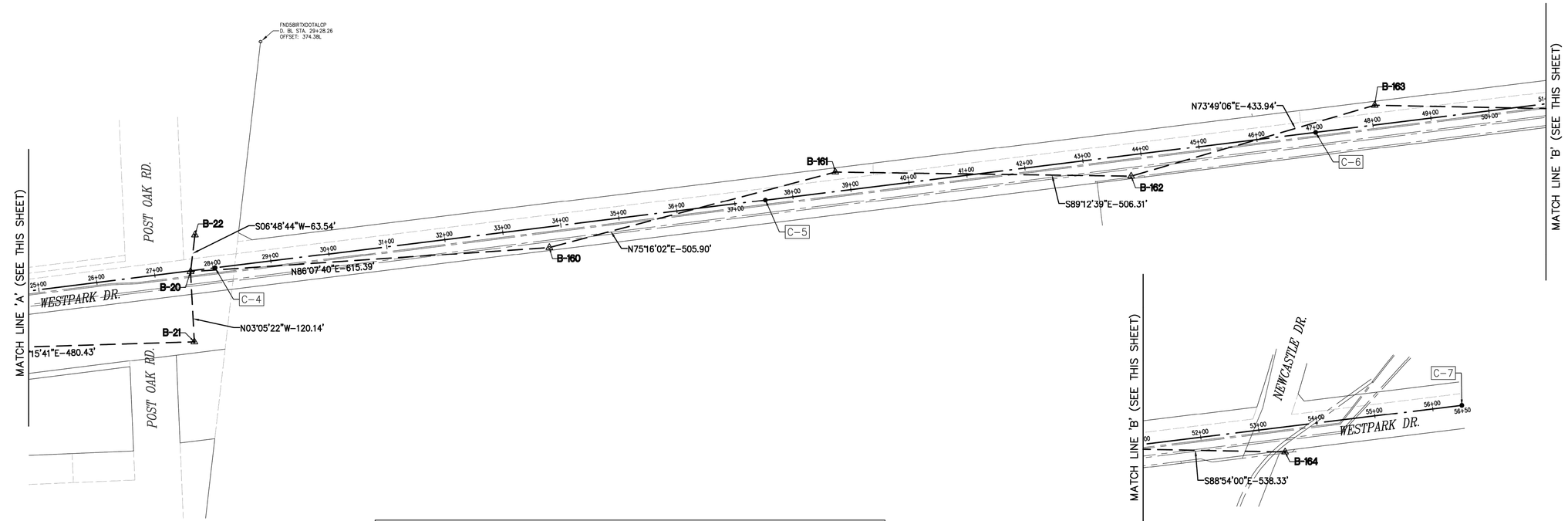

SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-20	13,830,421.00	3,092,376.77	13,828,623.28	3,091,974.81	58.10'	27+61.41	1.40R	FND 'X' CUT ON CONC.
B-21	13,830,301.04	3,092,383.24	13,828,503.33	3,091,981.28	58.12'	27+53.02	121.25R	SET 1/2" I.R. W/CAP
B-22	13,830,484.09	3,092,384.30	13,828,686.37	3,091,982.35	56.67'	27+76.67	60.28L	SET 1/2" I.R. W/CAP
B-23	13,830,286.46	3,091,903.04	13,828,488.76	3,091,501.14	57.84'	22+74.69	76.43R	SET 1/2" I.R. W/CAP
B-24	13,830,263.61	3,091,528.46	13,828,465.91	3,091,126.61	56.14'	19+00.16	52.86R	SET 1/2" I.R. W/CAP
B-152	13,830,168.92	3,089,923.30	13,828,371.23	3,089,521.66	57.66'	2+95.59	51.35L	SET 'X' CUT ON CONC.
B-153	13,830,118.37	3,090,223.26	13,828,320.69	3,089,821.58	58.05'	5+87.01	35.85R	SET 'X' CUT ON CONC.
B-154	13,830,250.17	3,090,647.97	13,828,452.47	3,090,246.24	58.06'	10+24.75	42.51L	SET 'X' CUT ON CONC.
B-155	13,830,204.42	3,091,086.98	13,828,406.73	3,090,685.19	57.27'	14+54.75	57.09R	SET 1/2" I.R. W/CAP
B-160	13,830,462.56	3,092,990.75	13,828,664.83	3,092,588.71	59.32'	33+75.87	35.13R	SET 1/2" I.R. W/CAP
B-161	13,830,591.21	3,093,480.01	13,828,793.47	3,093,077.91	57.40'	38+77.18	32.87L	SET 'X' CUT ON CONC.
B-162	13,830,584.24	3,093,986.27	13,828,786.50	3,093,584.11	57.33'	43+78.81	35.82R	SET 'X' CUT ON CONC.
B-163	13,830,705.17	3,094,403.02	13,828,907.41	3,094,000.80	57.24'	48+07.19	33.36L	SET 'X' CUT ON CONC.
B-164	13,830,694.83	3,094,941.25	13,828,897.08	3,094,538.96	57.47'	53+40.14	42.57R	SET 'X' CUT ON CONC.

DESIGN BASELINE POINTS DATA					
POINT No.	D. BL STA.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)
C-1	1+00.00	13,830,093.82	3,089,735.55	13,828,296.14	3,089,333.93
C-2	10+01.29	13,830,205.09	3,090,629.94	13,828,407.40	3,090,228.21
C-3	19+02.58	13,830,316.36	3,091,524.33	13,828,518.65	3,091,122.49
C-4	28+03.87	13,830,427.63	3,092,418.73	13,828,629.91	3,092,016.77
C-5	37+52.58	13,830,543.39	3,093,360.35	13,828,745.65	3,092,958.27
C-6	47+01.29	13,830,659.14	3,094,301.97	13,828,861.39	3,093,899.77
C-7	56+50.00	13,830,774.89	3,095,243.60	13,828,977.13	3,094,841.27

APP.	DATE	NO.	REVISION

100 0 50 100
SCALE: 1" = 100'

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 210295 IS AN HCFCD BRASS DISC STAMPED 210295 LOCATED ON CONCRETE STEP AT BAYOU AT SOUTH OF WESTHEIMER ROAD APPROXIMATELY 350 FEET EAST FROM THE INTERSECTION OF WINROCK BLVD IN KEYMAP 491S IN THE BUFFALO BAYOU WATERSHED

ELEV. 61.44 FEET NAVD 1988 2001 ADJUSTMENT

NOTE:

ALL BEARINGS AND DISTANCES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. ALL DISTANCES ARE IN SURFACE.

THE COORDINATES SHOWN HEREON ARE TEXAS SOUTH CENTRAL ZONE NO. 4204 STATE PLANE GRID COORDINATES (NAD83) AND MAY BE BROUGHT TO SURFACE BY DIVIDING BY THE COMBINED SCALE FACTOR 0.999870017.

LEGEND:

B-X	SURVEY CONTROL POINT NUMBER
C-X	DESIGN BASELINE POINT NUMBER
◬	SURVEY CONTROL POINT
•	DESIGN BASELINE POINT
Ⓐ	FLOODPLAIN REFERENCE MARK
D. BL:	DESIGN BASELINE
S. BL:	SURVEY BASELINE

LAN Planning Engineering Program Management

KUO & ASSOCIATES ENGINEERING & SURVEYING
10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713-975-8769
TX FIRM NO.: F-4578

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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TEXAS REG. NO.: 6404

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

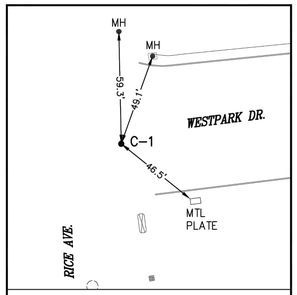
MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

SITE 5
WESTPARK DRIVE

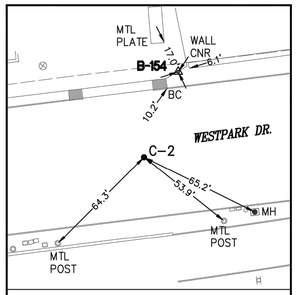
SURVEY CONTROL MAP
(SHEET 1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 100'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. **28** OF **244**	

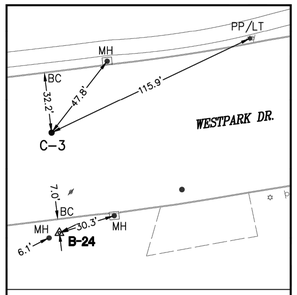
S:\Proj-2023\23077 (LAN-LDWL-Pkg 3)\Dwgs\SCM\Site 5-Westpark\SCM-Site 5-Westpark.dwg plotted on Mar 11, 2025 - 7:51pm



C-1



C-2 & T.B.M. B-154



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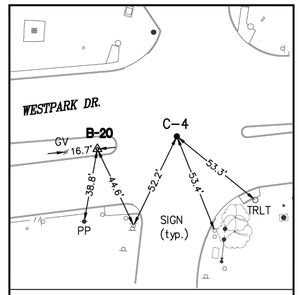

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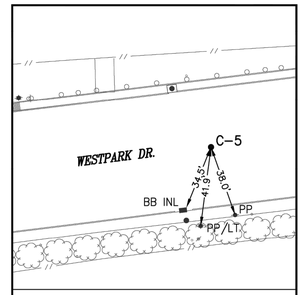
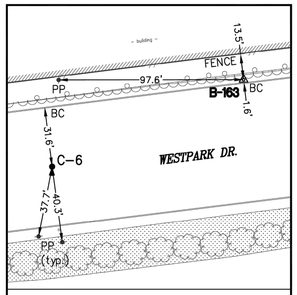
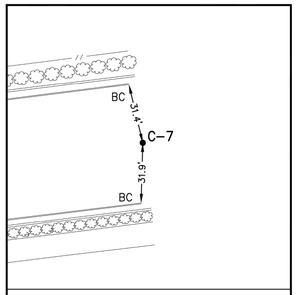


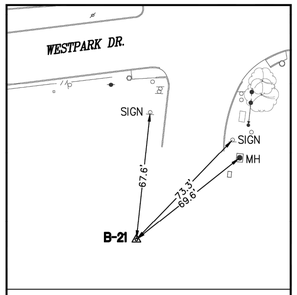
C-5



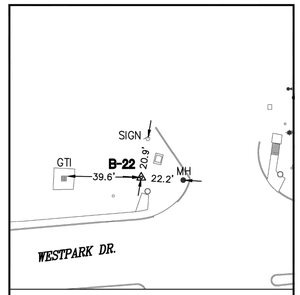
C-6 & T.B.M. B-163



C-7



T.B.M. B-21



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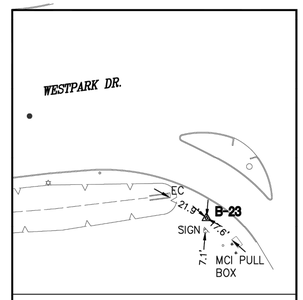
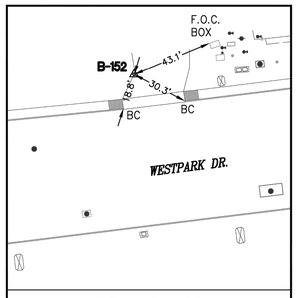
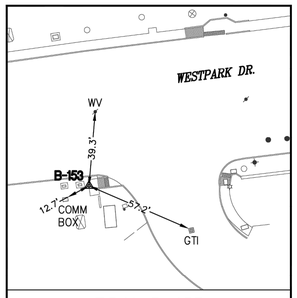


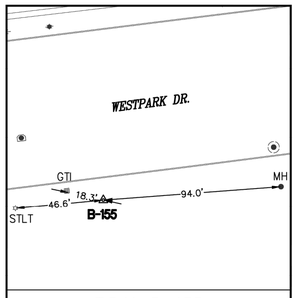
T.B.M. B-23



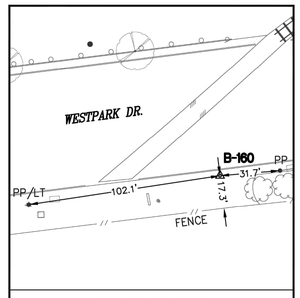
T.B.M. B-152



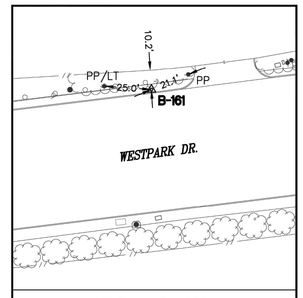
T.B.M. B-153



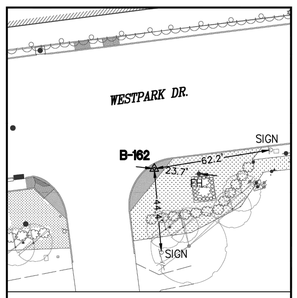
T.B.M. B-155



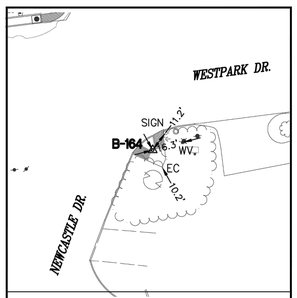
T.B.M. B-160



T.B.M. B-161



T.B.M. B-162



T.B.M. B-164



40 0 20 40

SCALE: 1" = 40'

NO.	DATE	REVISION	APP.

EXIST. TOPOGRAPHIC LEGEND

- ASPHALT SYMBOL
- B OR BB INLET
- BUSH
- C INLET
- CLEANOUT
- brick column
- DOWN GUY
- E INLET
- ELEC MANHOLE
- FIRE HYDRANT
- GAS METER
- GAS VALVE
- GATE
- GRATE INLET
- GRATE INLET
- MAIL BOX
- STORM MANHOLE
- SANITARY MANHOLE
- PLANTER
- POWER POLE
- POWER POLE W/LT.
- SIGN
- SIGNAL POLE
- SPRINKER VALVE
- SPRINKLER HEAD
- STREET LIGHT/FLOOD LIGHT
- STREET LIGHT/PARKING LIGHT
- TREE
- TREE STUMP
- TREE-CREPE MYRTLE
- TREE-PINE
- WATER METER
- WATER VALVE
- IRRIGATION CONTROL VALVE

ABBREVIATIONS

FH – FIRE HYDRANT
FC – FENCE CORNER
FOC – FIBER OPTIC CABLE
LT – LIGHT POLE
MB – MAIL BOX
MH – MANHOLE
PP – POWER POLE
PP/LIGHT – POWER POLE W/LIGHT
TRLT – TRAFFIC LIGHT
WM – WATER METER

Planning Engineering Program Management

KUO & ASSOCIATES
10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713-975-8769
TX FIRM NO.: F-4578

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

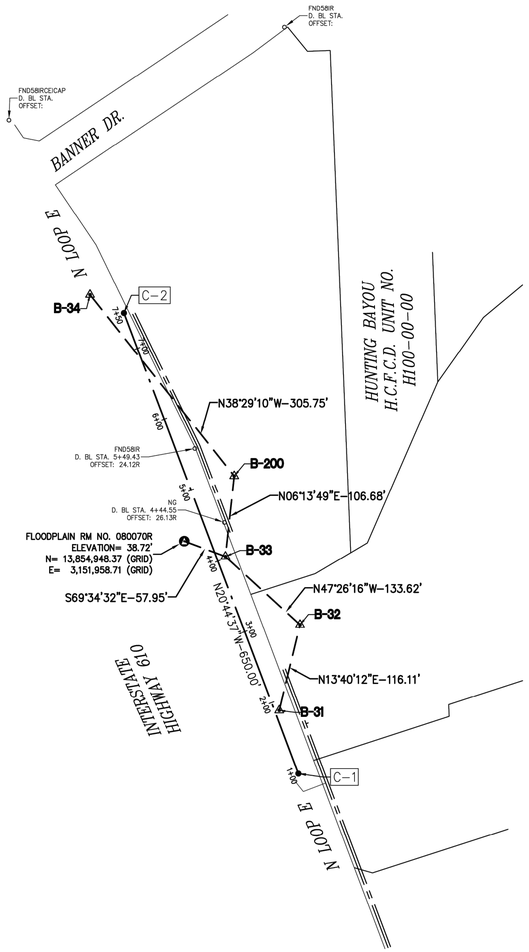
MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

SITE 5
WESTPARK DRIVE

SURVEY CONTROL MAP
(SHEET 2 OF 2)

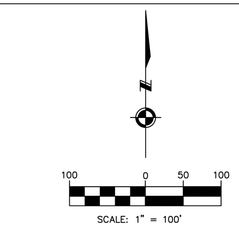
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 40'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. **29** OF **244**	

S:\Proj-2023\23077 (LAN-LDWL-Pkg 3)\Dega\SCM\Site 5-Westpark\Swingles - Site 5-Westpark.dwg plotted on Mar 11, 2025 - 7:53pm



SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)								
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	D. BL STA.	OFFSET	DESCRIPTION
B-31	13,856,526.08	3,152,493.75	13,854,724.97	3,152,083.98	36.63'	1+86.85	5.83R	SET 'X' CUT ON CONC.
B-32	13,856,638.90	3,152,521.19	13,854,837.78	3,152,111.42	35.28'	2+82.64	71.46R	SET 1/2" I.R. W/CAP
B-33	13,856,729.28	3,152,422.78	13,854,928.14	3,152,013.01	34.42'	4+02.02	11.43R	SET 1/2" I.R. W/CAP
B-34	13,857,074.66	3,152,244.08	13,855,273.48	3,151,834.34	34.51'	–	–	SET 1/2" I.R. W/CAP
B-200	13,856,835.33	3,152,434.35	13,855,034.18	3,152,024.59	36.46'	4+97.10	59.82R	SET 'X' CUT ON CONC.

DESIGN BASELINE POINTS DATA					
POINT No.	D. BL STA.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)
C-1	1+00.00	13,856,442.79	3,152,519.06	13,854,641.69	3,152,109.28
C-2	7+50.00	13,857,050.66	3,152,288.84	13,855,249.47	3,151,879.09



NO.	DATE	REVISION	APP.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 080070R IS AN HARRIS COUNTY ALUMINUM DISC STAMPED 080070R LOCATED AT THE NORTHEAST CORNER OF LOOP 610 NORTHBOUND FEEDER ROAD APPROXIMATELY 620 FEET NORTH FROM THE INTERSECTION OF WALLISVILLE RD IN KEYMAP 455Y IN THE HUNTING BAYOU WATERSHED

ELEV. 38.72 FEET NAVD 1988 2001 ADJUSTMENT

NOTE:

ALL BEARINGS AND DISTANCES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. ALL DISTANCES ARE IN SURFACE.

THE COORDINATES SHOWN HEREON ARE TEXAS SOUTH CENTRAL ZONE NO. 4204 STATE PLANE GRID COORDINATES (NAD83) AND MAY BE BROUGHT TO SURFACE BY DIVDING BY THE COMBINED SCALE FACTOR 0.999870017.

LEGEND:

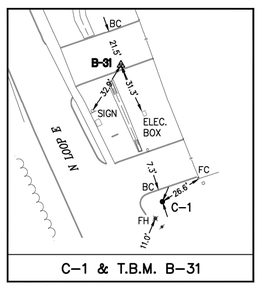
- **B-X** SURVEY CONTROL POINT NUMBER
- C-X DESIGN BASELINE POINT NUMBER
- SURVEY CONTROL POINT
- DESIGN BASELINE POINT
- FLOODPLAIN REFERENCE MARK
- D. BL: DESIGN BASELINE
- S. BL: SURVEY BASELINE

EXIST. TOPOGRAPHIC LEGEND

- ASPHALT SYMBOL
- B OR BB INLET
- BUSH
- C INLET
- CLEANOUT
- brick column
- DOWN GUY
- E INLET
- ELEC MANHOLE
- FIRE HYDRANT
- GAS METER
- GAS VALVE
- GATE
- GRATE INLET
- GRATE INLET
- MAIL BOX
- STORM MANHOLE
- SANITARY MANHOLE
- PLANTER
- POWER POLE
- POWER POLE W/LT.
- SIGN
- SIGNAL POLE
- SPRINKER VALVE
- SPRINKLER HEAD
- STREET LIGHT/FLOOD LIGHT
- STREET LIGHT/PARKING LIGHT
- TREE
- TREE STUMP
- TREE-CREPE MYRTLE
- TREE-PINE
- WATER METER
- WATER VALVE
- IRRIGATION CONTROL VALVE

ABBREVIATIONS

FH – FIRE HYDRANT
FC – FENCE CORNER
LT – LIGHT POLE
MB – MAIL BOX
MH – MANHOLE
PP – POWER POLE
PP/LIGHT – POWER POLE W/LIGHT
WM – WATER METER



C-1 & T.B.M. B-31

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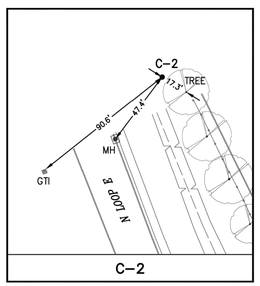
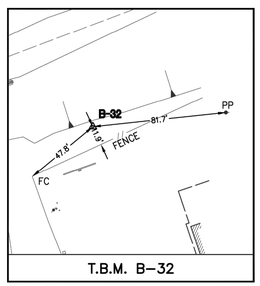


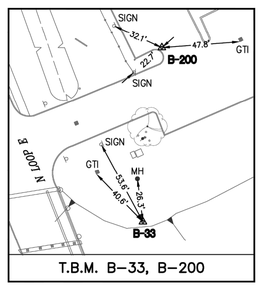
C-2

N.T.S.



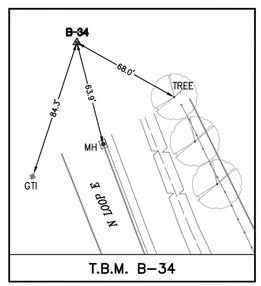
T.B.M. B-32

N.T.S.



T.B.M. B-33, B-200

N.T.S.



T.B.M. B-34

N.T.S.

Planning
Engineering
Program Management

KUO & ASSOCIATES
ENGINEERING + SURVEYING
10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713-975-8769
TX FIRM NO.: F-4578

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

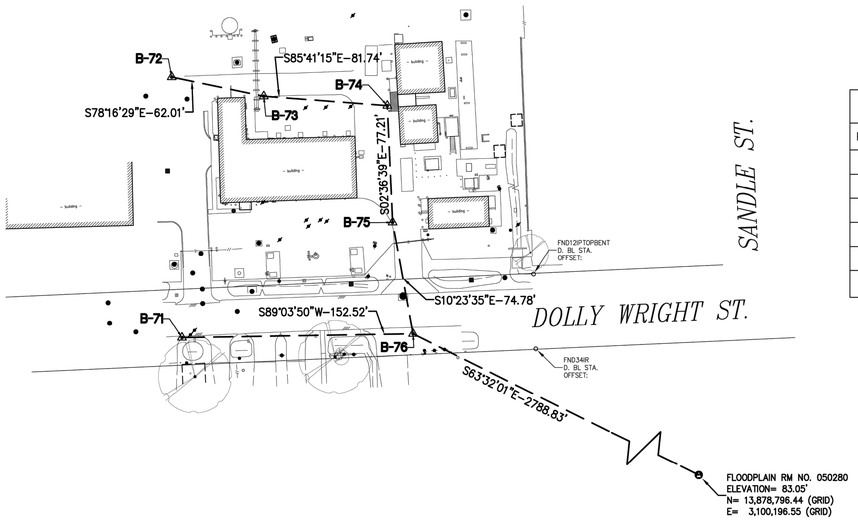
MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

SITE 6
INTERSTATE HIGHWAY 610 NORTH LOOP

SURVEY CONTROL MAP

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 100'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 30 OF 244	

S:\Proj-2023\23077 (LAN-LDWL-Pkg 3)\Dwgs\SCM\Site 6-IH 610 N Loop\SCM-Site 6-IH 610 N Loop.dwg plotted on Mar 11, 2025 - 7:58pm



SURVEY BASELINE POINTS DATA (TEMPORARY BENCHMARK)						
POINT No.	NORTHING (SURFACE)	EASTING (SURFACE)	NORTHING (GRID)	EASTING (GRID)	ELEVATION	DESCRIPTION
B-71	13,881,841.09	3,097,950.52	13,880,036.69	3,097,547.84	84.58'	SET 'X' CUT ON CONC.
B-72	13,882,013.02	3,097,943.79	13,880,208.60	3,097,541.11	84.69'	SET 'X' CUT ON CONC.
B-73	13,882,000.42	3,098,004.51	13,880,196.00	3,097,601.82	85.21'	SET 'X' CUT ON CONC.
B-74	13,881,994.27	3,098,086.02	13,880,189.85	3,097,683.32	85.07'	SET 'X' CUT ON CONC.
B-75	13,881,917.14	3,098,089.53	13,880,112.73	3,097,686.83	84.66'	SET 'X' CUT ON CONC.
B-76	13,881,843.58	3,098,103.02	13,880,039.18	3,097,700.32	84.27'	SET 1/2 I.R. W/CAP

0 25 50

SCALE: 1" = 50'

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 050280 IS AN HCFCD BRASS DISC STAMPED 050280 LOCATED ON TOP OF BB-INLET AT SOUTH SIDE OF W LITTLE YORK RD APPROXIMATELY 110 FEET EAST FROM THE INTERSECTION OF WHEATLEY ST IN KEYMAP 412X IN THE WHITE OAK BAYOU WATERSHED

ELEV. 83.05 FEET NAVD 1988 2001 ADJUSTMENT

NOTE:

ALL BEARINGS AND DISTANCES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. ALL DISTANCES ARE IN SURFACE.

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LEGEND:

- **B-X** SURVEY CONTROL POINT NUMBER
- C-X DESIGN BASELINE POINT NUMBER
- SURVEY CONTROL POINT
- DESIGN BASELINE POINT
- FLOODPLAIN REFERENCE MARK
- S. BL: SURVEY BASELINE

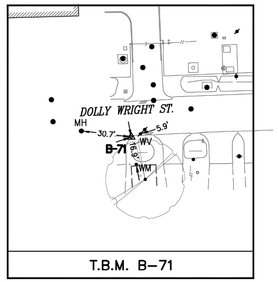
NO.	DATE	REVISION	APP.

EXIST. TOPOGRAPHIC LEGEND

- ASPHALT SYMBOL
- B OR BB INLET
- BUSH
- C INLET
- CLEANOUT
- brick column
- DOWN GUY
- E INLET
- ELEC MANHOLE
- FIRE HYDRANT
- GAS METER
- GAS VALVE
- GATE
- GRATE INLET
- GRATE INLET
- MAIL BOX
- STORM MANHOLE
- SANITARY MANHOLE
- PLANTER
- POWER POLE
- POWER POLE W/LT.
- SIGN
- SIGNAL POLE
- SPRINKLER VALVE
- SPRINKLER HEAD
- STREET LIGHT/FLOOD LIGHT
- STREET LIGHT/PARKING LIGHT
- TREE
- TREE STUMP
- TREE-CREPE MYRTLE
- TREE-PINE
- WATER METER
- WATER VALVE
- IRRIGATION CONTROL VALVE

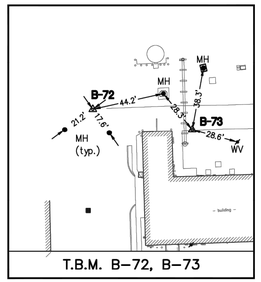
ABBREVIATIONS

FH – FIRE HYDRANT
FC – FENCE CORNER
LT – LIGHT POLE
MB – MAIL BOX
MH – MANHOLE
PP – POWER POLE
PP/LIGHT – POWER POLE W/LIGHT
WM – WATER METER



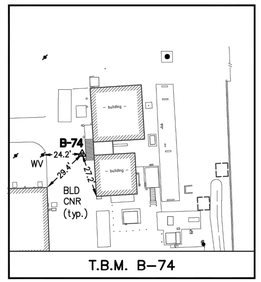
T.B.M. B-71

N.T.S.



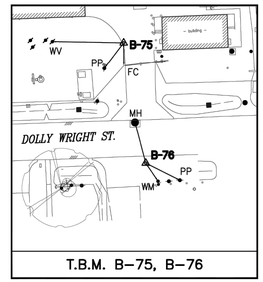
T.B.M. B-72, B-73

N.T.S.



T.B.M. B-74

N.T.S.



T.B.M. B-75, B-76

N.T.S.

LAN Planning Engineering Program Management

KUO & ASSOCIATES
ENGINEERING & SURVEYING

10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713-975-8769
TX FIRM NO.: F-4578

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

SITE 7
ACRES HOMES PLANT

SURVEY CONTROL MAP

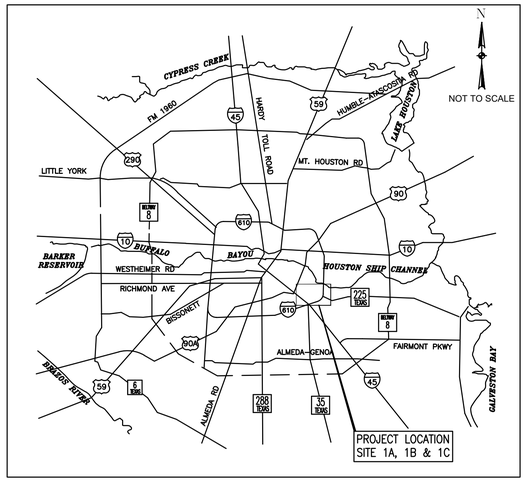
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 50'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 31 OF 244	

S:\Proj-2023\23077 (LAN-LDWL-Pkg 3)\Dwgs\SCM\Site 7-Acres Homes Plant\SCM-Site 7-Acres Homes Plant.dwg plotted on Mar 11, 2025 - 8:34pm

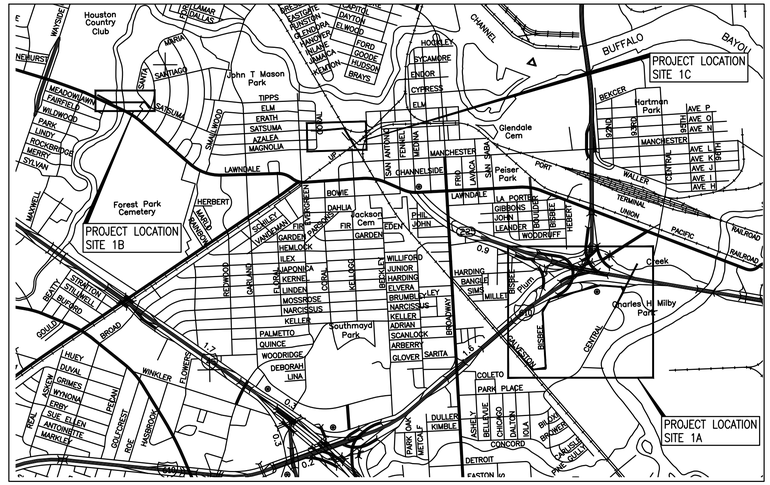
SITE 1A
NORTH 60
CONDITION ASSESSMENT
FROM JUNIUS ST. TO BISBEE ST.
ALONG GALVESTON RD. AND SCHAFF PL.
8-INCH REPLACEMENT
ALONG SCHAFF PL, BISBEE ST.,
610 FEEEDER & CENTRAL ST. &
24-INCH RELINING ALONG CENTRAL ST.
ACROSS PLUM CREEK

SITE 1B
NORTH 60
REPAIRS ACROSS BRAYS BAYOU
ALONG LAWNDALE ST.

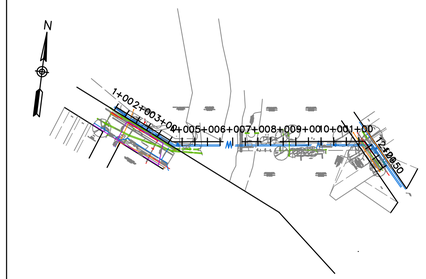
SITE 1C
NORTH 60
MANHOLE REPAIRS
ALONG KELLOGG ST.



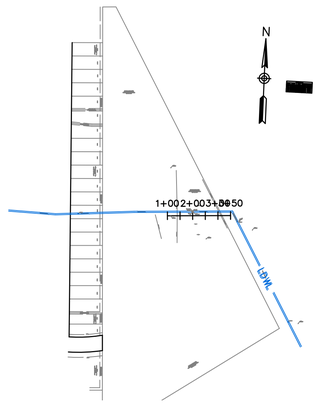
LOCATION MAP



VICINITY MAP 1A, 1B & 1C



SITE 1B
SITE PLAN



SITE 1C
SITE PLAN


N
PT: 9+45.00
PT: 21+71.73
PC: 14+91.51
PC: 3+72.36
1+002+003+004+005+006+007+008+009+010+011+012+013+014+015+016+017+018+019+020+021+022+023+024+025+026+027+028+029+030+031+032+033+034+035+036+037+038+039+040+041+042+043+044+045+046+047+048+049+050+051+052+053+054+055+056+057+058+059+060+061+062+063+064+065+066+067+068+069+070+071+072+073+074+075+076+077+078+079+080+081+082+083+084+085+086+087+088+089+090+091+092+093+094+095+096+097+098+099+100+101+102+103+104+105+106+107+108+109+110+111+112+113+114+115+116+117+118+119+120+121+122+123+124+125+126+127+128+129+130+131+132+133+134+135+136+137+138+139+140+141+142+143+144+145+146+147+148+149+150+151+152+153+154+155+156+157+158+159+160+161+162+163+164+165+166+167+168+169+170+171+172+173+174+175+176+177+178+179+180+181+182+183+184+185+186+187+188+189+190+191+192+193+194+195+196+197+198+199+200+201+202+203+204+205+206+207+208+209+210+211+212+213+214+215+216+217+218+219+220+221+222+223+224+225+226+227+228+229+230+231+232+233+234+235+236+237+238+239+240+241+242+243+244+245+246+247+248+249+250+251+252+253+254+255+256+257+258+259+260+261+262+263+264+265+266+267+268+269+270+271+272+273+274+275+276+277+278+279+280+281+282+283+284+285+286+287+288+289+290+291+292+293+294+295+296+297+298+299+300+301+302+303+304+305+306+307+308+309+310+311+312+313+314+315+316+317+318+319+320+321+322+323+324+325+326+327+328+329+330+331+332+333+334+335+336+337+338+339+340+341+342+343+344+345+346+347+348+349+350+351+352+353+354+355+356+357+358+359+360+361+362+363+364+365+366+367+368+369+370+371+372+373+374+375+376+377+378+379+380+381+382+383+384+385+386+387+388+389+390+391+392+393+394+395+396+397+398+399+400+401+402+403+404+405+406+407+408+409+410+411+412+413+414+415+416+417+418+419+420+421+422+423+424+425+426+427+428+429+430+431+432+433+434+435+436+437+438+439+440+441+442+443+444+445+446+447+448+449+450+451+452+453+454+455+456+457+458+459+460+461+462+463+464+465+466+467+468+469+470+471+472+473+474+475+476+477+478+479+480+481+482+483+484+485+486+487+488+489+490+491+492+493+494+495+496+497+498+499+500+501+502+503+504+505+506+507+508+509+510+511+512+513+514+515+516+517+518+519+520+521+522+523+524+525+526+527+528+529+530+531+532+533+534+535+536+537+538+539+540+541+542+543+544+545+546+547+548+549+550+551+552+553+554+555+556+557+558+559+560+561+562+563+564+565+566+567+568+569+570+571+572+573+574+575+576+577+578+579+580+581+582+583+584+585+586+587+588+589+590+591+592+593+594+595+596+597+598+599+600+601+602+603+604+605+606+607+608+609+610+611+612+613+614+615+616+617+618+619+620+621+622+623+624+625+626+627+628+629+630+631+632+633+634+635+636+637+638+639+640+641+642+643+644+645+646+647+648+649+650+651+652+653+654+655+656+657+658+659+660+661+662+663+664+665+666+667+668+669+670+671+672+673+674+675+676+677+678+679+680+681+682+683+684+685+686+687+688+689+690+691+692+693+694+695+696+697+698+699+700+701+702+703+704+705+706+707+708+709+710+711+712+713+714+715+716+717+718+719+720+721+722+723+724+725+726+727+728+729+730+731+732+733+734+735+736+737+738+739+740+741+742+743+744+745+746+747+748+749+750+751+752+753+754+755+756+757+758+759+760+761+762+763+764+765+766+767+768+769+770+771+772+773+774+775+776+777+778+779+780+781+782+783+784+785+786+787+788+789+790+791+792+793+794+795+796+797+798+799+800+801+802+803+804+805+806+807+808+809+810+811+812+813+814+815+816+817+818+819+820+821+822+823+824+825+826+827+828+829+830+831+832+833+834+835+836+837+838+839+840+841+842+843+844+845+846+847+848+849+850+851+852+853+854+855+856+857+858+859+860+861+862+863+864+865+866+867+868+869+870+871+872+873+874+875+876+877+878+879+880+881+882+883+884+885+886+887+888+889+890+891+892+893+894+895+896+897+898+899+900+901+902+903+904+905+906+907+908+909+910+911+912+913+914+915+916+917+918+919+920+921+922+923+924+925+926+927+928+929+930+931+932+933+934+935+936+937+938+939+940+941+942+943+944+945+946+947+948+949+950+951+952+953+954+955+956+957+958+959+960+961+962+963+964+965+966+967+968+969+970+971+972+973+974+975+976+977+978+979+980+981+982+983+984+985+986+987+988+989+990+991+992+993+994+995+996+997+998+999+1000+1001+1002+1003+1004+1005+1006+1007+1008+1009+1010+1011+1012+1013+1014+1015+1016+1017+1018+1019+1020+1021+1022+1023+1024+1025+1026+1027+1028+1029+1030+1031+1032+1033+1034+1035+1036+1037+1038+1039+1040+1041+1042+1043+1044+1045+1046+1047+1048+1049+1050+1051+1052+1053+1054+1055+1056+1057+1058+1059+1060+1061+1062+1063+1064+1065+1066+1067+1068+1069+1070+1071+1072+1073+1074+1075+1076+1077+1078+1079+1080+1081+1082+1083+1084+1085+1086+1087+1088+1089+1090+1091+1092+1093+1094+1095+1096+1097+1098+1099+1100+1101+1102+1103+1104+1105+1106+1107+1108+1109+1110+1111+1112+1113+1114+1115+1116+1117+1118+1119+1120+1121+1122+1123+1124+1125+1126+1127+1128+1129+1130+1131+1132+1133+1134+1135+1136+1137+1138+1139+1140+1141+1142+1143+1144+1145+1146+1147+1148+1149+1150+1151+1152+1153+1154+1155+1156+1157+1158+1159+1160+1161+1162+1163+1164+1165+1166+1167+1168+1169+1170+1171+1172+1173+1174+1175+1176+1177+1178+1179+1180+1181+1182+1183+1184+1185+1186+1187+1188+1189+1190+1191+1192+1193+1194+1195+1196+1197+1198+1199+1200+1201+1202+1203+1204+1205+1206+1207+1208+1209+1210+1211+1212+1213+1214+1215+1216+1217+1218+1219+1220+1221+1222+1223+1224+1225+1226+1227+1228+1229+1230+1231+1232+1233+1234+1235+1236+1237+1238+1239+1240+1241+1242+1243+1244+1245+1246+1247+1248+1249+1250+1251+1252+1253+1254+1255+1256+1257+1258+1259+1260+1261+1262+1263+1264+1265+1266+1267+1268+1269+1270+1271+1272+1273+1274+1275+1276+1277+1278+1279+1280+1281+1282+1283+1284+1285+1286+1287+1288+1289+1290+1291+1292+1293+1294+1295+1296+1297+1298+1299+1300+1301+1302+1303+1304+1305+1306+1307+1308+1309+1310+1311+1312+1313+1314+1315+1316+1317+1318+1319+1320+1321+1322+1323+1324+1325+1326+1327+1328+1329+1330+1331+1332+1333+1334+1335+1336+1337+1338+1339+1340+1341+1342+1343+1344+1345+1346+1347+1348+1349+1350+1351+1352+1353+1354+1355+1356+1357+1358+1359+1360+1361+1362+1363+1364+1365+1366+1367+1368+1369+1370+1371+1372+1373+1374+1375+1376+1377+1378+1379+1380+1381+1382+1383+1384+1385+1386+1387+1388+1389+1390+1391+1392+1393+1394+1395+1396+1397+1398+1399+1400+1401+1402+1403+1404+1405+1406+1407+1408+1409+1410+1411+1412+1413+1414+1415+1416+1417+1418+1419+1420+1421+1422+1423+1424+1425+1426+1427+1428+1429+1430+1431+1432+1433+1434+1435+1436+1437+1438+1439+1440+1441+1442+1443+1444+1445+1446+1447+1448+1449+1450+1451+1452+1453+1454+1455+1456+1457+1458+1459+1460+1461+1462+1463+1464+1465+1466+1467+1468+1469+1470+1471+1472+1473+1474+1475+1476+1477+1478+1479+1480+1481+1482+1483+1484+1485+1486+1487+1488+1489+1490+1491+1492+1493+1494+1495+1496+1497+1498+1499+1500+1501+1502+1503+1504+1505+1506+1507+1508+1509+1510+1511+1512+1513+1514+1515+1516+1517+1518+1519+1520+1521+1522+1523+1524+1525+1526+1527+1528+1529+1530+1531+1532+1533+1534+1535+1536+1537+1538+1539+1540+1541+1542+1543+1544+1545+1546+1547+1548+1549+1550+1551+1552+1553+1554+1555+1556+1557+1558+1559+1560+1561+1562+1563+1564+1565+1566+1567+1568+1569+1570+1571+1572+1573+1574+1575+1576+1577+1578+1579+1580+1581+1582+1583+1584+1585+1586+1587+1588+1589+1590+1591+1592+1593+1594+1595+1596+1597+1598+1599+1600+1601+1602+1603+1604+1605+1606+1607+1608+1609+1610+1611+1612+1613+1614+1615+1616+1617+1618+1619+1620+1621+1622+1623+1624+1625+1626+1627+1628+1629+1630+1631+1632+1633+1634+1635+1636+1637+1638+1639+1640+1641+1642+1643+1644+1645+1646+1647+1648+1649+1650+1651+1652+1653+1654+1655+1656+1657+1658+1659+1660+1661+1662+1663+1664+1665+1666+1667+1668+1669+1670+1671+1672+1673+1674+1675+1676+1677+1678+1679+1680+1681+1682+1683+1684+1685+1686+1687+1688+1689+1690+1691+1692+1693+1694+1695+1696+1697+1698+1699+1700+1701+1702+1703+1704+1705+1706+1707+1708+1709+1710+1711+1712+1713+1714+1715+1716+1717+1718+1719+1720+1721+1722+1723+1724+1725+1726+1727+1728+1729+1730+1731+1732+1733+1734+1735+1736+1737+1738+1739+1740+1741+1742+1743+1744+1745+1746+1747+1748+1749+1750+1751+1752+1753+1754+1755+1756+1757+1758+1759+1760+1761+1762+1763+1764+1765+1766+1767+1768+1769+1770+1771+1772+1773+1774+1775+1776+1777+1778+1779+1780+1781+1782+1783+1784+1785+1786+1787+1788+1789+1790+1791+1792+1793+1794+1795+1796+1797+1798+1799+1800+1801+1802+1803+1804+1805+1806+1807+1808+1809+1810+1811+1812+1813+1814+1815+1816+1817+1818+1819+1820+1821+1822+1823+1824+1825+1826+1827+1828+1829+1830+1831+1832+1833+1834+1835+1836+1837+1838+1839+1840+1841+1842+1843+1844+1845+1846+1847+1848+1849+1850+1851+1852+1853+1854+1855+1856+1857+1858+1859+1860+1861+1862+1863+1864+1865+1866+1867+1868+1869+1870+1871+1872+1873+1874+1875+1876+1877+1878+1879+1880+1881+1882+1883+1884+1885+1886+1887+1888+1889+1890+1891+1892+1893+1894+1895+1896+1897+1898+1899+1900+1901+1902+1903+1904+1905+1906+1907+1908+1909+1910+1911+1912+1913+1914+1915+1916+1917+1918+1919+1920+1921+1922+1923+1924+1925+1926+1927+1928+1929+1930+1931+1932+1933+1934+1935+1936+1937+1938+1939+1940+1941+1942+1943+1944+1945+1946+1947+1948+1949+1950+1951+1952+1953+1954+1955+1956+1957+1958+1959+1960+1961+1962+1963+1964+1965+1966+1967+1968+1969+1970+1971+1972+1973+1974+1975+1976+1977+1978+1979+1980+1981+1982+1983+1984+1985+1986+1987+1988+1989+1990+1991+1992+1993+1994+1995+1996+1997+1998+1999+2000+2001+2002+2003+2004+2005+2006+2007+2008+2009+2010+2011+2012+2013+2014+2015+2016+2017+2018+2019+2020+2021+2022+2023+2024+2025+2026+2027+2028+2029+2030+2031+2032+2033+2034+2035+2036+2037+2038+2039+2040+2041+2042+2043+2044+2045+2046+2047+2048+2049+2050+2051+2052+2053+2054+2055+2056+2057+2058+2059+2060+2061+2062+2063+2064+2065+2066+2067+2068+2069+2070+2071+2072+2073+2074+2075+2076+2077+2078+2079+2080+2081+2082+2083+2084+2085+2086+2087+2088+2089+2090+2091+2092+2093+2094+2095+2096+2097+2098+2099+2100+2101+2102+2103+2104+2105+2106+2107+2108+2109+2110+2111+2112+2113+2114+2115+2116+2117+2118+2119+2120+2121+2122+2123+2124+2125+2126+2127+2128+2129+2130+2131+2132+2133+2134+2135+2136+2137+2138+2139+2140+2141+2142+2143+2144+2145+2146+2147+2148+2149+2150+2151+2152+2153+2154+2155+2156+2157+2158+2159+2160+2161+2162+2163+2164+2165+2166+2167+2168+2169+2170+2171+2172+2173+2174+2175+2176+2177+2178+2179+2180+2181+2182+2183+2184+2185+2186+2187+2188+2189+2190+2191+2192+2193+2194+2195+2196+2197+2198+2199+2200+2201+2202+2203+2204+2205+2206+2207+2208+2209+2210+2211+2212+2213+2214+2215+2216+2217+2218+2219+2220+2221+2222+2223+2224+2225+2226+2227+2228+2229+2230+2231+2232+2233+2234+2235+2236+2237+2238+2239+2240+2241+2242+2243+2244+2245+2246+2247+2248+2249+2250+2251+2252+2253+2254+2255+2256+2257+2258+2259+2260+2261+2262+2263+2264+2265+2266+2267+2268+2269+2270+2271+2272+2273+2274+2275+2276+2277+2278+2279+2280+2281+2282+2283+2284+2285+2286+2287+2288+2289+2290+2291+2292+2293+2294+2295+2296+2297+2298+2299+2300+2301+2302+2303+2304+2305+2306+2307+2308+2309+2310+2311+2312+2313+2314+2315+2316+2317+2318+2319+2320+2321+2322+2323+2324+2325+2326+2327+2328+2329+2330+2331+2332+2333+2334+2335+2336+2337+2338+2339+2340+2341+2342+2343+2344+2345+2346+2347+2348+2349+2350+2351+2352+2353+2354+2355+2356+2357+2358+2359+2360+2361+2362+2363+2364+2365+2366+2367+2368+2369+2370+2371+2372+2373+2374+2375+2376+2377+2378+2379+2380+2381+2382+2383+2384+2385+2386+2387+2388+2389+2390+2391+2392+2393+2394+2395+2396+2397+2398+2399+2400+2401+2402+2403+2404+2405+2406+2407+2408+2409+2410+2411+2412+2413+2414+2415+2416+2417+2418+2419+2420+2421+2422+2423+2424+2425+2426+2427+2428+2429+2430+2431+2432+2433+2434+2435+2436+2437+2438+2439+2440+2441+2442+2443+2444+2445+2446+2447+2448+2449+2450+2451+2452+2453+2454+2455+2456+2457+2458+2459+2460+2461+2462+2463+2464+2465+2466+2467+2468+2469+2470+2471+2472+2473+2474+2475+2476+2477+2478+2479+2480+2481+2482+2483+2484+2485+2486+2487+2488+2489+2490+2491+2492+2493+2494+2495+2496+2497+2498+2499+2500+2501+2502+2503+2504+2505+2506+2507+2508+2509+2510+2511+2512+2513+2514+2515+2516+2517+2518+2519+2520+2521+2522+2523+2524+2525+2526+2527+2528+2529+2530+2531+2532+2533+2534+2535+2536+2537+2538+2539+2540+2541+2542+2543+2544+2545+2546+2547+2548+2549+2550+2551+2552+2553+2554+2555+2556+2557+2558+2559+2560+2561+2562+2563+2564+2565+2566+2567+2568+2569+2570+2571+2572+2573+2574+2575+2576+2577+2578+2579+2580+2581+2582+2583+2584+2585+2586+2587+2588+2589+2590+2591+2592+2593+2594+2595+2596+2597+2598+2599+2600+2601+2602+2603+2604+2605+2606+2607+2608+2609+2610+2611+2612+2613+2614+2615+2616+2617+2618+2619+2620+2621+2622+2623+2624+2625+2626+2627+2628+2629+2630+2631+2632+2633+2634+2635+2636+2637+2638+2639+2640+2641+2642+2643+2644+2645+2646+2647+2648+2649+2650+2651+2652+2653+2654+2655+2656+2657+2658+2659+2660+2661+2662+2663+2664+2665+2666+2667+2668+2669+2670+2671+2672+2673+2674+2675+2676+2677+2678+2679+2680+2681+2682+2683+2684+2685+2686+2687+2688+2689+2690+2691+2692+2693+2694+2695+2696+2697+2698+2699+2700+2701+2702+2703+2704+2705+2706+2707+2708+2709+2710+2711+2712+2713+2714+2715+2716+2717+2718+2719+2720+2721+2722+2723+2724+2725+2726+2727+2728+2729+2730+2731+2732+2733+2734+2735+2736+2737+2738+2739+2740+2741+2742+2743+2744+2745+2746+2747+2748+2749+2750+2751+2752+2753+2754+2755+2756+2757+2758+2759+2760+2761+2762+2763+2764+2765+2766+2767+2768+2769+2770+2771+2772+2773+2774+2775+2776+2777+2778+2779+2780+2781+2782+2783+2784+2785+2786+2787+2788+2789+2790+2791+2792+2793+2794+2795+2796+2797+2798+2799+2800+2801+2802+2803+2804+2805+2806+2807+2808+2809+2810+2811+2812+2813+2814+2815+2816+2817+2818+2819+2820+2821+2822+2823+2824+2825+2826+2827+2828+2829+2830+2831+2832+2833+2834+2835+2836+2837+2838+2839+2840+2841+2842+2843+2844+2845+2846+2847+2848+2849+2850+2851+2852+2853+2854+2855+2856+2857+2858+2859+2860+2861+2862+2863+2864+2865+2866+2867+2868+2869+2870+2871+2872+2873+2874+2875+2876+2877+2878+2879+2880+2881+2882+2883+2884+2885+2886+2887+2888+2889+2890+2891+2892+2893+2894+2895+2896+2897+2898+2899+2900+2901+2902+2903+2904+2905+2906+2907+2908+2909+2910+2911+2912+2913+2914+2915+2916+2917+2918+2919+2920+2921+2922+2923+2924+2925+2926+2927+2928+2929+2930+2931+2932+2933+2934+2935+2936+2937+2938+2939+2940+2941+2942+2943+2944+2945+2946+2947+2948+2949+2950+2951+2952+2953+2954+2955+2956+2957+2958+2959+2960+2961+2962+2963+2964+2965+2966+2967+2968+2969+2970+2971+2972+2973+2974+2975+2976+2977+2978+2979+2980+2981+2982+2983+2984+2985+2986+2987+2988+2989+2990+2991+2992+2993+2994+2995+2996+2997+2998+2999+3000+3001+3002+3003+3004+3005+3006+3007+3008+3009+3010+3011+3012+3013+3014+3015+3016+3017+3018+3019+3020+3021+3022+3023+3024+3025+3026+3027+3028+3029+3030+3031+3032+3033+3034+3035+3036+3037+3038+3039+3040+3041+3042+3043+3044+3045+3046+3047+3048+3049+3050+3051+3052+3053+3054+3055+3056+3057+3058+3059+3060+3061+3062+3063+3064+3065+3066+3067+3068+3069+3070+3071+3072+3073+3074+3075+3076+3077+3078+3079+3080+3081+3082+3083+3084+3085+3086+3087+3088+3089+3090+3091+3092+3093+3094+3095+3096+3097+3098+3099+3100+3101+3102+3103+3104+3105+3106+3107+3108+3109+3110+3111+3112+3113+3114+3115+3116+3117+3118+3119+3120+3121+3122+3123+3124+3125+3126+3127+3128+3129+3130+3131+3132+3133+3134+3135+3136+3137+3138+3139+3140+3141+3142+3143+3144+3145+3146+3147+3148+3149+3150+3151+3152+3153+3154+3155+3156+3157+3158+3159+3160+3161+3162+3163+3164+3165+3166+3167+3168+3169+3170+3171+3172+3173+3174+3175+3176+3177+3178+3179+3180+3181+3182+3183+3184+3185+3186+3187+3188+3189+3190+3191+3192+3193+3194+3195+3196+3197+3198+3199+3200+3201+3202+3203+3204+3205+3206+3207+3208+3209+3210+3211+3212+3213+3214+3215+3216+3217+3218+3219+3220+3221+3222+3223+3224+3225+3226+3227+3228+3229+3230+3231+3232+3233+3234+3235+3236+3237+3238+3239+3240+3241+3242+3243+3244+3245+3246+3247+3248+3249+3250+3251+3252+3253+3254+3255+3256+3257+3258+3259+3260+3261+3262+3263+3264+3265+3266+3267+3268+3269+3270+3271+3272+3273+3274+3275+3276+3277+3278+3279+3280+3281+3282+3283+3284+3285+3286+3287+3288+3289+3290+3291+3292+3293+3294+3295+3296+3297+3298+3299+3300+3301+3302+3303+3304+3305+3306+3307+3308+3309+3310+3311+3312+3313+3314+3315+3316+3317+3318+3319+3320+3321+3322+3323+3324+3325+3326+3327+3328+3329+3330+3331+3332+3333+3334+3335+3336+3337+3338+3339+3340+3341+3342+3343+3344+3345+3346+3347+3348+3349+3350+3351+3352+3353+3354+3355+3356+3357+3358+3359+3360+3361+3362+3363+3364+3365+3366+3367+3368+3369+3370+3371+3372+3373+3374+3375+3376+3377+3378+3379+3380+3381+3382+3383+3384+3385+3386+3387+3388+3389+3390+3391+3392+3393+3394+3395+3396+3397+3398+3399+3400+3401+3402+3403+3404+3405+3406+3407+3408+3409+3410+3411+3412+3413+3414+3415+3416+3417+3418+3419+3420+3421+3422+3423+3424+3425+3426+3427+3428+3429+3430+3431+3432+3433+3434+3435+3436+3437+3438+3439+3440+3441+3442+3443+3444+3445+3446+3447+3448+3449+3450+3451+3452+3453+3454+3455+3456+3457+3458+3459+3460+3461+3462+3463+3464+3465+3466+3467+3468+3469+3470+3471+3472+3473+3474+3475+3476+3477+3478+3479+3480+3481+3482+3483+3484+3485+3486+3487+3488+3489+3490+3491+3492+3493+3494+3495+3496+3497+3498+3499+3500+3501+3502+3503+3504+3505+3506+3507+3508+3509+3510+3511+3512+3513+3514+3515+3516+3517+3518+3519+3520+3521+3522+3523+3524+3525+3526+3527+3528+3529+3530+3531+3532+3533+3534+3535+3536+3537+3538+3539+3540+3541+3542+3543+3544+3545+3546+3547+3548+3549+3550+3551+3552+3553+3554+3555+3556+3557+3558+3559+3560+3561+3562+3563+3564+3565+3566+3567+3568+3569+3570+3571+3572+3573+3574+3575+3576+3577+3578+3579+3580+3581+3582+3583+3584+3585+3586+3587+3588+3589+3590+3591+3592+3593+3594+3595+3596+3597+3598+3599+3600+3601+3602+3603+3604+3605+3606+3607+3608+3609+3610+3611+3612+3613+3614+3615+3616+3617+3618+3619+3620+3621+3622+3623+3624+3625+3626+3627+3628+3629+3630+3631+3632+3633+3634+3635+3636+3637+3638+3639+3640+3641+3642+3643+3644+3645+3646+3647+3648+3649+3650+3651+3652+3653+3654+3655+3656+3657+3658+3659+3660+3661+3662+3663+3664+3665+3666+3667+3668+3669+3670+3671+3672+3673+3674+3675+3676+3677+3678+3679+3680+3681+3682+3683+3684+3685+3686+3687+3688+3689+3690+3691+3692+3693+3694+3695+3696+3697+3698+3699+3700+3701+3702+3703+3704+3705+3706+3707+3708+3709+3710+3711+3712+3713+3714+3715+3716+3717+3718+3719+3720+3721+3722+3723+3724+3725+3726+3727+3728+3729+3730+3731+3732+3733+3734+3735+3736+3737+3738+3739+3740+3741+3742+3743+3744+3745+3746+3747+3748+3749+3750+3751+3752+3753+3754+3755+3756+3757+3758+3759+3760+3761+3762+3763+3764+3765+3766+3767+3768+3769+3770+3771+3772+3773+3774+3775+3776+3777+3778+3779+3780+3781+3782+3783+3784+3785+3786+3787+3788+3789+3790+3791+3792+3793+3794+3795+3796+3797+3798+3799+3800+3801+3802+3803+3804+3805+3806+3807+3808+3809+3810+3811+3812+3813+3814+3815+3816+3817+3818+3819+3820+3821+3822+3823+3824+3825+3826+3827+3828+3829+3830+3831+3832+3833+3834+3835+3836+3837+3838+3839+3840+3841+3842+3843+3844+3845+3846+3847+3848+3849+3850+3851+3852+3853+3854+3855+3856+3857+3858+3859+3860+3861+3862+3863+3864+3865+3866+3867+3868+3869+3870+3871+3872+3873+3874+3875+3876+3877+3878+3879+3880+3881+3882+3883+3884+3885+3886+3887+3888+3889+3890+3891+3892+3893+3894+3895+3896+3897+3898+3899+3900+3901+3902+3903+3904+3905+3906+3907+3908+3909+3910+3911+3912+3913+3914+3915+3916+3917+3918+3919+3920+3921+3922+3923+3924+3925+3926+3927+3928+3929+3930+3931+3932+3933+3934+3935+3936+3937+3938+3939+3940+3941+3942+3943+3944+3945+3946+3947+3948+3949+3950+3951+3952+3953+3954+3955+3956+3957+3958+3959+3960+3961+3962+3963+3964+3965+3966+3967+3968+3969+3970+3971+3972+3973+3974+3975+3976+3977+3978+3979+3980+3981+3982+3983+3984+3985+3986+3987+3988+3989+3990+3991+3992+3993+3994+3995+3996+3997+3998+3999+4000+4001+4002+4003+4004+4005+4006+4007+4008+4009+4010+4011+4012+4013+4014+4015+4016+4017+4018+4019+4020+4021+4022+4023+4024+4025+4026+4027+4028+4029+4030+4031+4032+4033+4034+4035+4036+4037+4038+4039+4040+4041+4042+4043+4044+4045+4046+4047+4048+4049+4050+4051+4052+4053+4054+4055+4056+4057+4058+4059+4060+4061+4062+4063+4064+4065+4066+4067+4068+4069+4070+4071+4072+4073+4074+4075+4076+4077+4078+4079+4080+4081+4082+4083+4084+4085+4086+4087+4088+4089+4090+4091+4092+4093+4094+4095+4096+4097+4098+4099+4100+4101+4102+4103+4104+4105+4106+4107+4108+4109+4110+4111+4112+4113+4114+4115+4116+4117+4118+4119+4120+4121+4122+4123+4124+4125+4126+4127+4128+4129+4130+4131+4132+4133+4134+4135+4136+4137+4138+4139+4140+4141+4142+4143+4144+4145+4146+4147+4148+4149+4150+4151+4152+4153+4154+4155+4156+4157+4158+4159+4160+4161+4162+4163+4164+4165+4166+4167+4168+4169+4170+4171+4172+4173+4174+4175+4176+4177+4178+4179+4180+4181+4182+4183+4184+4185+4186+4187+4188+4189+4190+4191+4192+4193+4194+4195+4196+4197+4198+4199+4200+4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EXHIBIT 1 – SHUTDOWN MAP

MISCELLANEOUS LDWL IMPROVEMENTS PACKAGE 3
(SITE 1: CONDITION ASSESSMENT & REHABILITATION OF 24–INCH ALONG CENTRAL)

LEGEND

- 24–INCH MAIN LINE VALVE
- WATER LINE BUTTERFLY VALVE
- WATER LINE GATE VALVE
- 24–INCH WATER LINE
- EXISTING WATER LINE

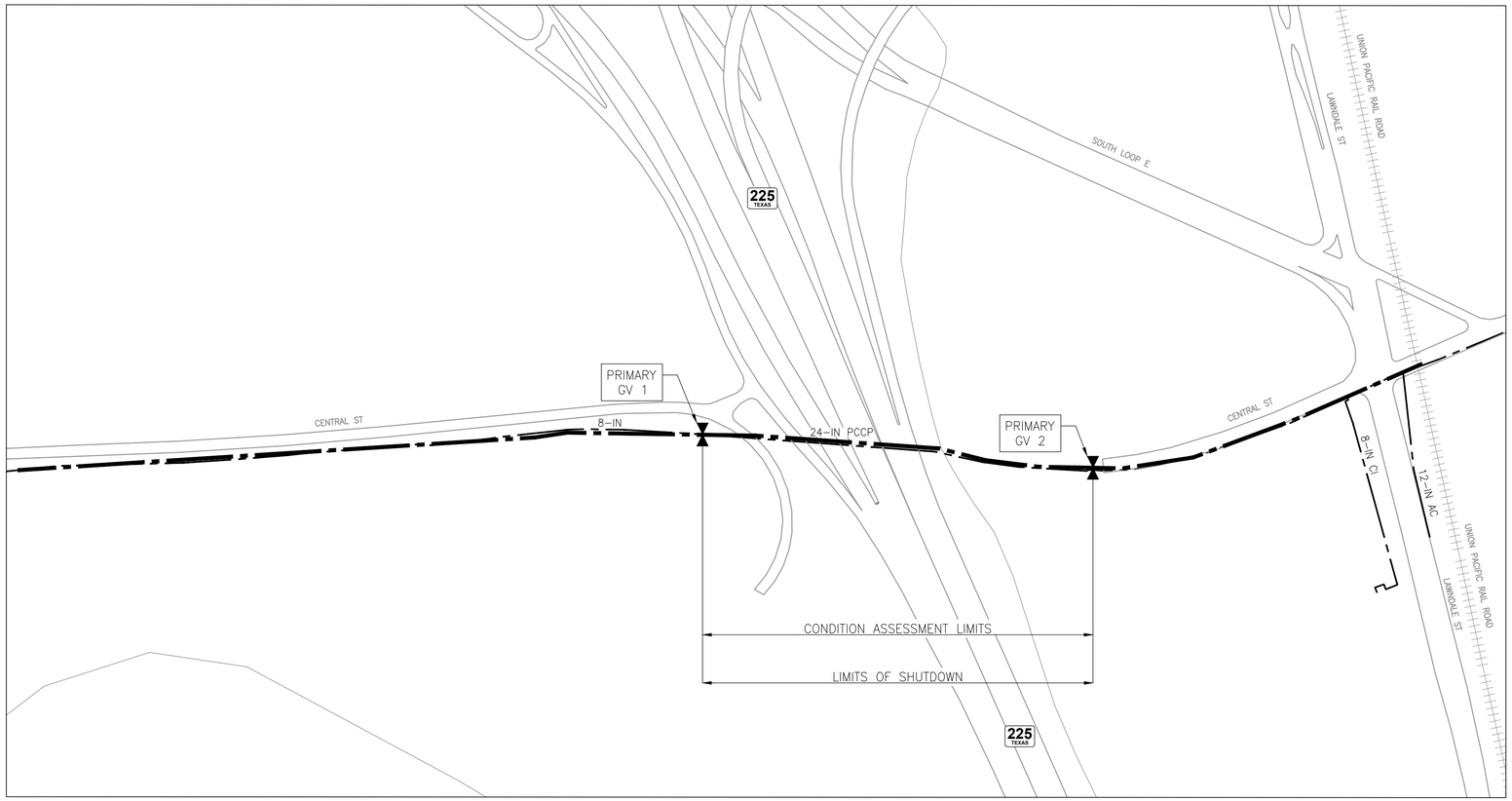
0 200 400

SCALE: 1"=200'

SHUTDOWN DURATION: APPROX. 1 – 2 MONTHS
(MAY 2026–AUG 2026)
*CONDITION ASSESSMENT AND REHABILITATION PRIOR TO N60 CONDITION ASSESSMENT ALONG GALVESTON FROM JUNIUS STREET TO SCHAFF STREET

NOTE:

1. ISOLATION VALVE TO BE CLOSED BY HOUSTON PUBLIC WORKS – UTILITY MAINTENANCE ONLY. COORDINATE WITH PROJECT MANAGER FOR DWO CONTACT INFORMATION BEFORE BEGINNING WORK.



VALVE	POSITION	TYPE
GV 1	CLOSE	24–INCH GATE VALVE
GV 2	CLOSE	24–INCH GATE VALVE

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713–223–4567

PRIVATE UTILITY LINES SHOWN

Date:

CENTERPOINT ENERGY/ELECTRIC FACILITIES
ELECTRICAL FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION).

Date:

CENTERPOINT ENERGY/GAS FACILITIES
(GAS SERVICE LINES ARE NOT SHOWN). THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION.

Date:

AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

LAN

EFF DATE: XXXX–XX–20XX

DWG NO: XXXXX–XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713–266–6900
TEXAS REGISTERED ENGINEERING FIRM F–2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

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Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F–2614

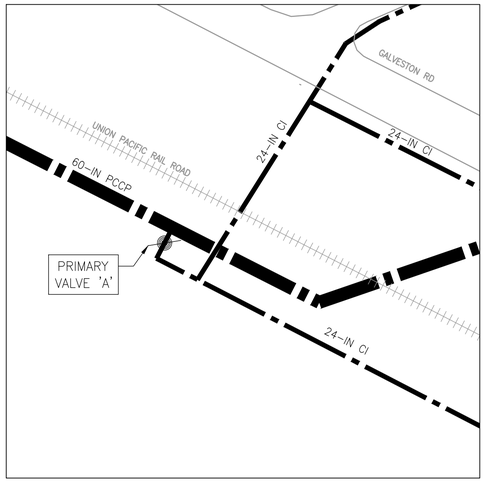
CITY OF HOUSTON

HOUSTON PUBLIC WORKS STANDARD

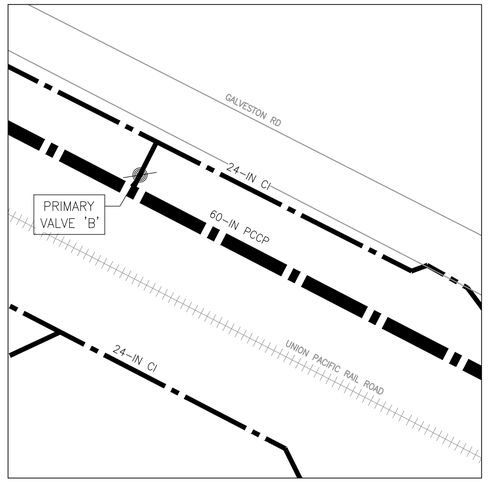
MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
SITE 1 – PHASE 2
SHUTDOWN MAP EXHIBIT
(SHEET 1 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
1" = 200'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 33 OF 244	

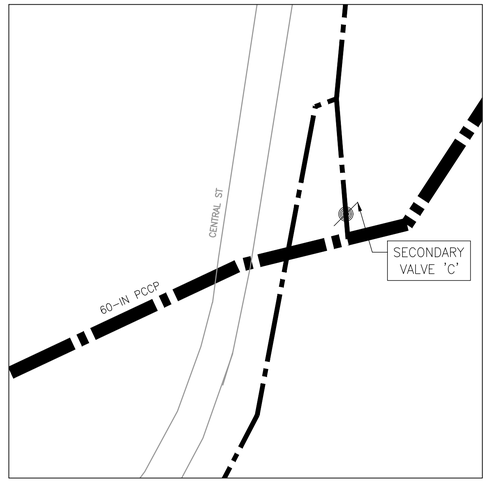
PEN TABLE: LAN–COH–CIVIL.ctb
USERNAME: Fleming, David
PLOTED: 4/3/2025 7:40 PM
FILE PATH: P:\132\132–1001–0001\4–D–Production–Working\1–1–BIM–CAD\Civil\Exhibits\WORKING\SITE 1 SHUTDOWN MAP EXHIBIT 2025–02–05.dwg



INSET 'A'
SCALE: 1"=60'



INSET 'B'
SCALE: 1"=60'



INSET 'C'
SCALE: 1"=60'

EXHIBIT 1 – SHUTDOWN MAP

MISCELLANEOUS LDWL IMPROVEMENTS PACKAGE 3
(SITE 1: CONDITION ASSESSMENT & REHABILITATION OF N60)

LEGEND

- 30-INCH MAIN LINE VALVE
- WATER LINE BUTTERFLY VALVE
- WATER LINE GATE VALVE
- 60-INCH WATER LINE
- EXISTING WATER LINE

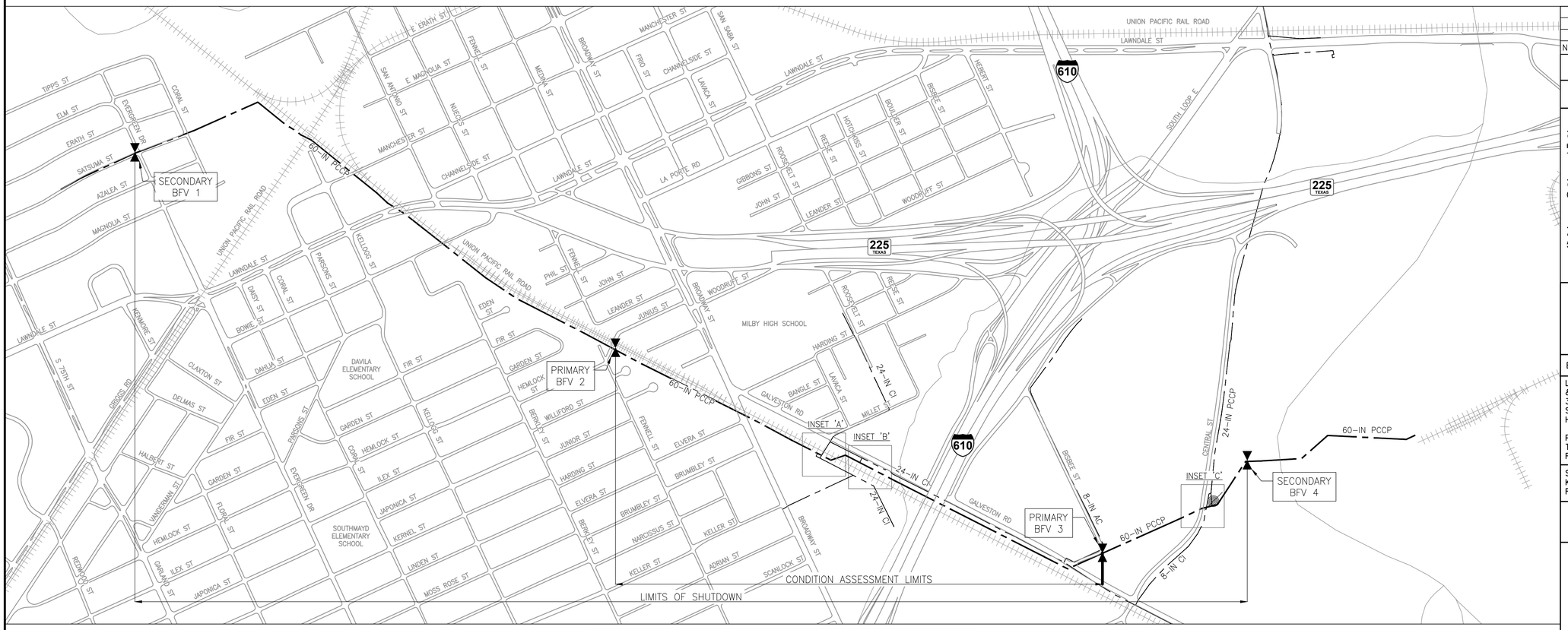
N

0 500 1000
SCALE: 1"=500'

SHUTDOWN DURATION: APPROX. 4 – 5 MONTHS
(JULY 2026–NOV 2026)
*TO BE COMPLETED AFTER 24-INCH CONDITION ASSESSMENT ALONG CENTRAL ST

NOTES:

1. ISOLATION VALVE TO BE CLOSED BY HOUSTON PUBLIC WORKS – UTILITY MAINTENANCE ONLY. COORDINATE WITH PROJECT MANAGER FOR DWO CONTACT INFORMATION BEFORE BEGINNING WORK.



VALVE	POSITION	TYPE
BFV 1	CLOSE	60-INCH BUTTERFLY VALVE
BFV 2	CLOSE	60-INCH BUTTERFLY VALVE
BFV 3	CLOSE	60-INCH BUTTERFLY VALVE
BFV 4	CLOSE	60-INCH BUTTERFLY VALVE
VALVE 'A'	CLOSE	24-INCH GATE VALVE
VALVE 'B'	CLOSE	24-INCH GATE VALVE
VALVE 'C'	CLOSE	24-INCH BUTTERFLY VALVE

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567

PRIVATE UTILITY LINES SHOWN

Date:
CENTERPOINT ENERGY/ELECTRIC FACILITIES
ELECTRICAL FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION).

Date:
CENTERPOINT ENERGY/GAS FACILITIES
(GAS SERVICE LINES ARE NOT SHOWN). THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION.

Date:
AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

LAN

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS
& NEWNAM, INC.
3700 W SAM HOUSTON PKWY S,
SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING
FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of interim review under the authority of:
Engineer:CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON

HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL
IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
SITE 1 – PHASE 2
SHUTDOWN MAP EXHIBIT
(SHEET 2 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 500'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 34 OF 244	

PEN TABLE: LAN-COH-CIVIL.ctb
USERNAME: Fleming, David
PLOTED: 4/3/2025 7:50 PM
FILE PATH: P:\132\132-1001-000\4-b-Production-Working\4-1-BIM-CAD\Civil\Exhibits\WORKING\SITE 1 SHUTDOWN MAP EXHIBIT 2025-02-05.dwg

EXHIBIT 1 – SHUTDOWN MAP

MISCELLANEOUS LDWL
IMPROVEMENTS PACKAGE 3

LEGEND

- MANHOLE
- WATER LINE BUTTERFLY VALVE
- WIRE BREAK LOCATION
- NORTH 60–INCH WATER LINE
- EXISTING WATER LINE

N

0 200 400

SCALE: 1"=200'

SHUTDOWN DURATION: APPROX. 3 – 4 MONTHS
(MAY 2026–AUG 2027)
*TO BE COMPLETED AFTER 24–INCH CONDITION ASSESSMENT ALONG CENTRAL ST

NOTES:

1. ISOLATION VALVE TO BE CLOSED BY HOUSTON PUBLIC WORKS – UTILITY MAINTENANCE ONLY. COORDINATE WITH PROJECT MANAGER FOR DWO CONTACT INFORMATION BEFORE BEGINNING WORK.



NO.	DATE	REVISION	APP.

NOTICE:
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PRIVATE UTILITY LINES SHOWN

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Date:
CENTERPOINT ENERGY/GAS FACILITIES
(GAS SERVICE LINES ARE NOT SHOWN). THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION.

Date:
AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

LAN

EFF DATE: XXXX–XX–20XX

DWG NO: XXXXX–XX

LOCKWOOD, ANDREWS
& NEWNAM, INC.
3700 W SAM HOUSTON PKWY S,
SUITE 400
HOUSTON, TX 77042

PH: 713–266–6900
TEXAS REGISTERED ENGINEERING
FIRM F–2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of interim review under the authority of Engineer CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F–2614

CITY OF HOUSTON

HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

60% SUBMITTAL

SITE 1 – PHASE 2
VALVE SHUTDOWN MAP EXHIBIT
(SHEET 3 OF 3)

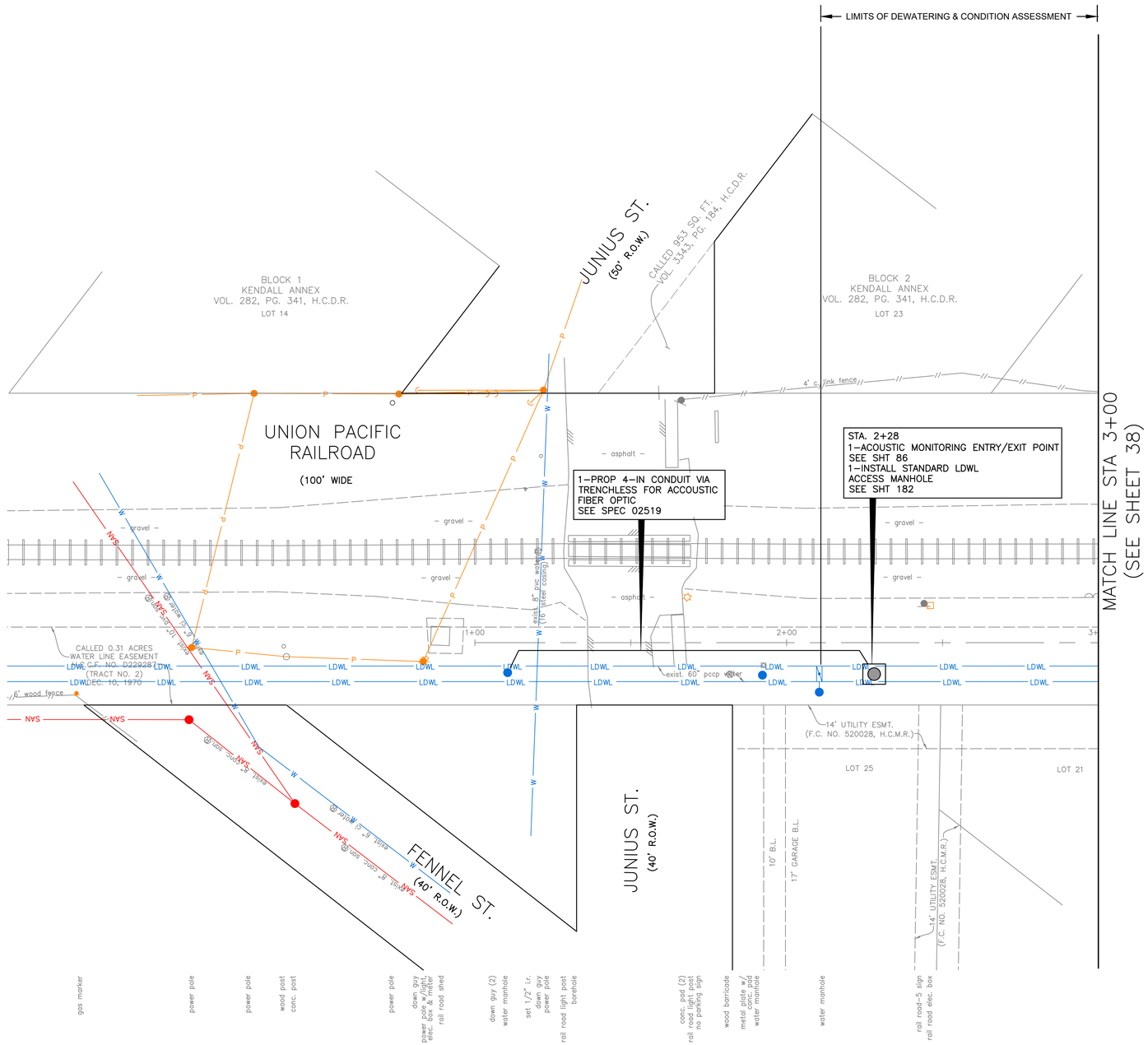
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
1" = 200'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 35 OF 244	

PEN TABLE: LAN–COH–CIVIL.ctb

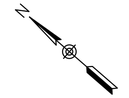
USERNAME: Fleming, David

PLOTED: 4/3/2025 7:52 PM

FILE PATH: P:\132\132–1001–000\4–D–Production–Working\4–1–BW–CAD\Civil\Exhibits\WORKING\SITE 1 SHUTDOWN MAP EXHIBIT 2025–02–05.dwg



(SEE SHEET 37 FOR PROFILE)



NO.	DATE	REVISION	APP.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 030190 IS AN HCFCD BRASS DISC STAMPED C103 PCM1 LOCATED ON EAST SIDEWALK ON GALVESTON ROAD APPROXIMATELY 0.1 MILE NORTHWEST FROM THE INTERSECTION OF PARK PLACE BLVD IN KEYMAP 535L IN THE SIMS BAYOU WATERSHED

ELEV. 23.22 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:

T.B.M.: B-215
SET 1/2" I.R. W/KUO CAP
ELEV.=32.853
D. STA. 1+16.26 OFFSET: 49.31L

NOTES:

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.

Signature valid for six months.

Date

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities – not to be used for conflict verification)

Signature valid for six months.

Date

Approved for AT&T underground conduit facilities only.
Signature valid for one year.

LOCKWOOD, ANDREWS
& NEWNAM, INC.
3700 W SAM HOUSTON PKWY S
SUITE 400
HOUSTON, TX 77042

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of interim review under the authority of:
Engineer:CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 02/23/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

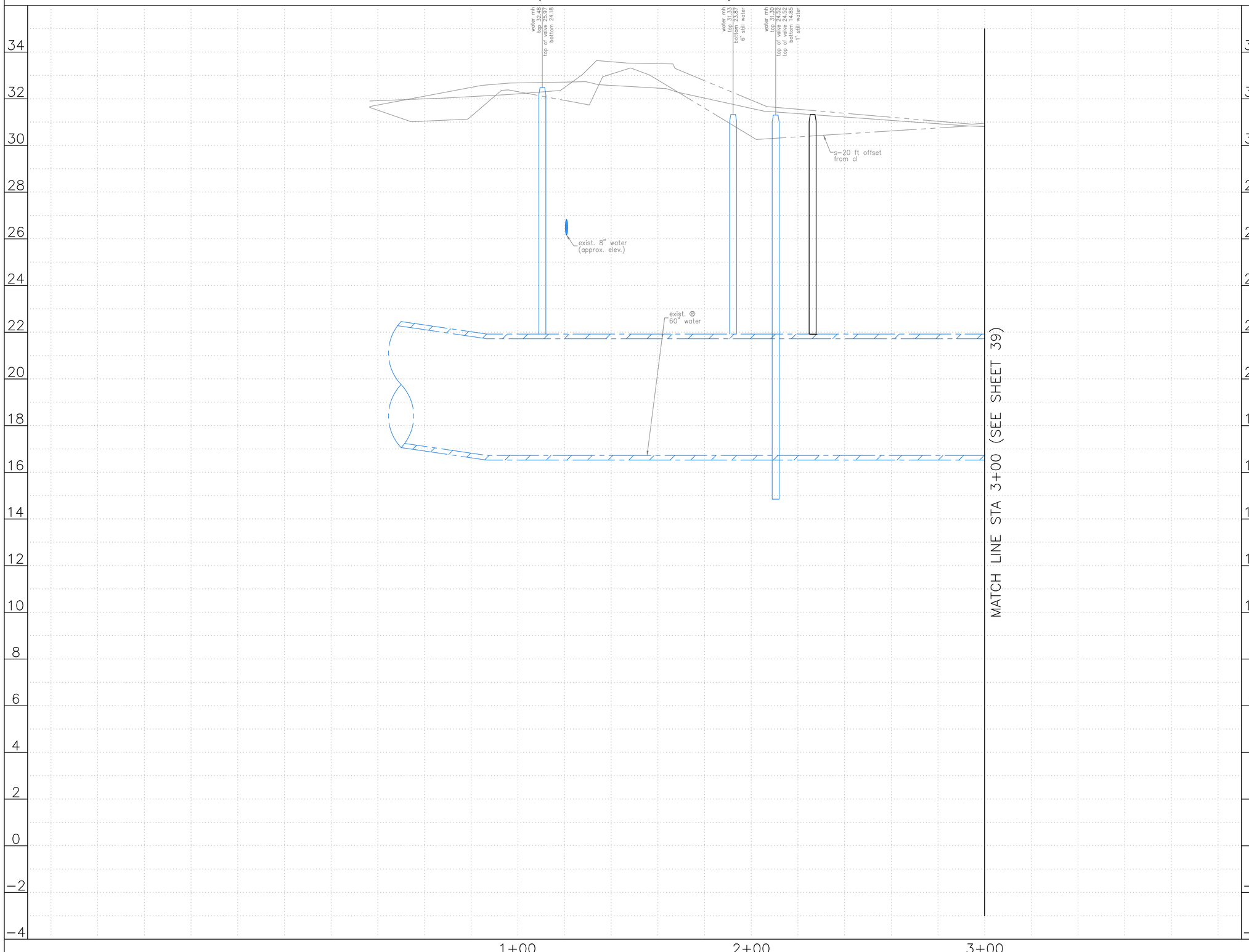
MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 1A – GALVESTON RD PLAN
BEGIN TO STA 3+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 36 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - Galveston Rd.dwg plotted on Apr 03, 2025 - 7:53pm

(SEE SHEET 36 FOR PLAN)



0' 20' 40'
HORIZ:1"=20'
VERT:1"=2'

NO.	DATE	REVISION	APP.

NOTES:

NOTICE:
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Date

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Signature valid for one year.

LAN

LOCKWOOD, ANDREWS
& NEWNAM, INC.
3700 W SAM HOUSTON PKWY S
SUITE 400
HOUSTON, TX 77042

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

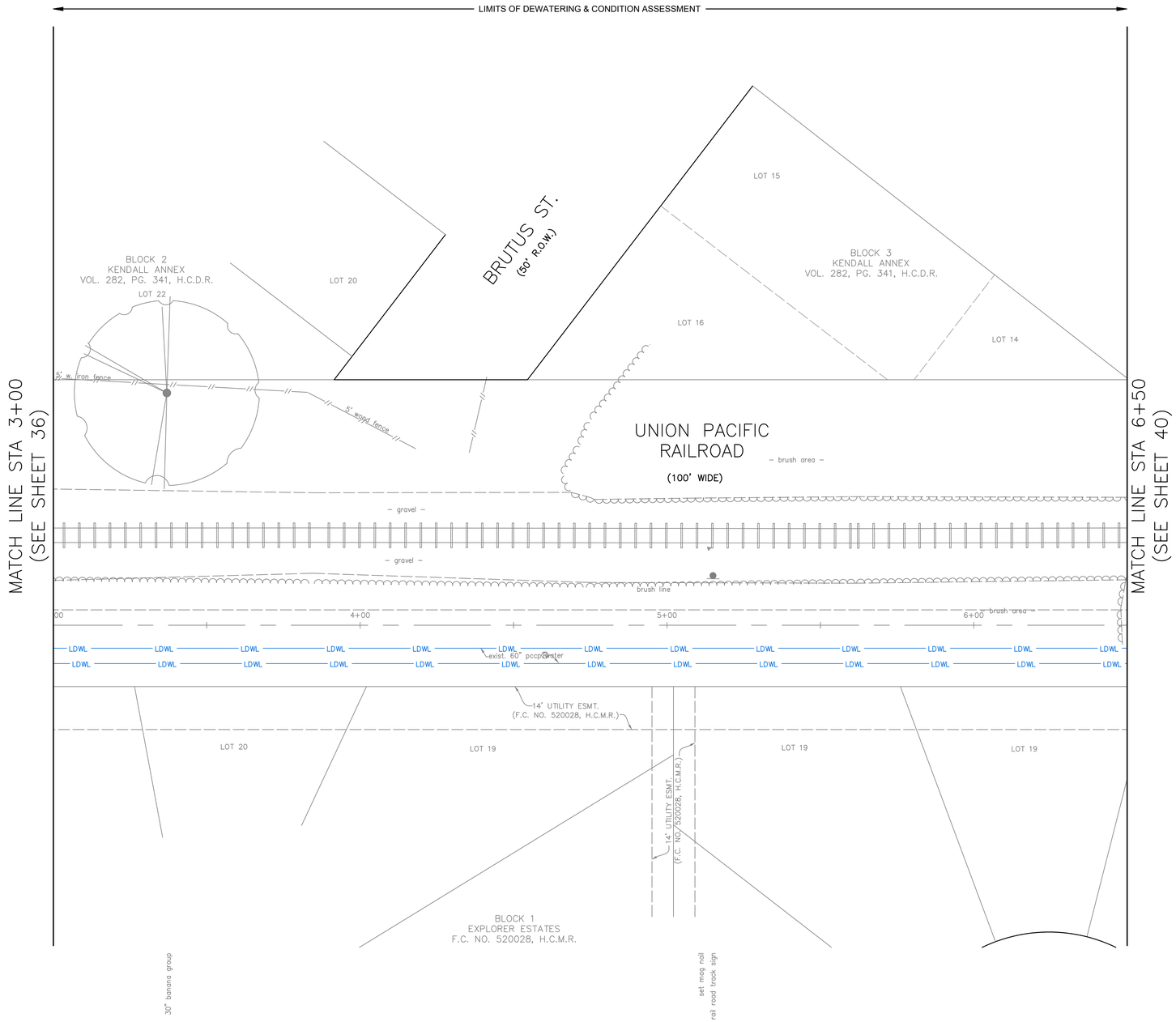
INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of interim review under the authority of:
Engineer:CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 02/23/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL
IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
SITE 1A – GALVESTON RD
PROFILE
BEGIN TO STA 3+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' V: 1" = 2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 37 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - Galveston Rd.dwg plotted on Apr 03, 2025 - 7:53pm



(SEE SHEET 39 FOR PROFILE)

N

0' 20' 40'

HORIZ:1"=20'
VERT:N/A

NO.	DATE	REVISION	APP.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 030190 IS AN HCFCD BRASS DISC STAMPED C103 PCM1 LOCATED ON EAST SIDEWALK ON GALVESTON ROAD APPROXIMATELY 0.1 MILE NORTHWEST FROM THE INTERSECTION OF PARK PLACE BLVD IN KEYMAP 535L IN THE SIMS BAYOU WATERSHED

ELEV. 23.22 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:

T.B.M.: B–214
SET MAGNAIL W/SHINER
ELEV.=33.249
D. STA. 5+13.68 OFFSET: 25.02L

NOTES:

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.

Signature valid for six months.

Date

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities – not to be used for conflict verification)

Signature valid for six months.

Date

Approved for AT&T underground conduit facilities only.
Signature valid for one year.

LAN

LOCKWOOD, ANDREWS
& NEWNAM, INC.
3700 W SAM HOUSTON PKWY S
SUITE 400
HOUSTON, TX 77042

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of interim review under the authority of:
Engineer:CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 02/23/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F–2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

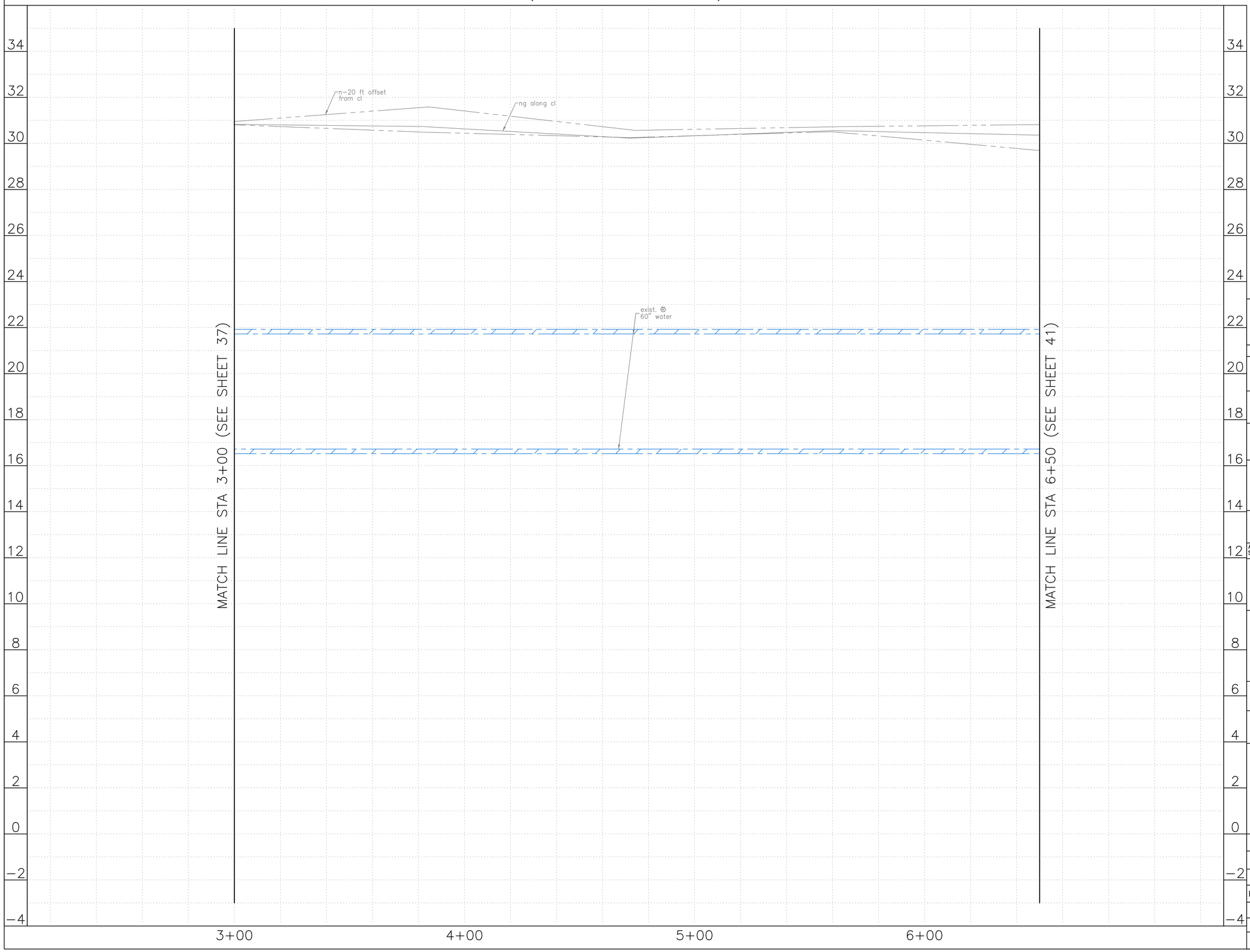
MISCELLANEOUS LDWL
IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 1A – GALVESTON RD
PLAN
STA 3+00 TO STA 6+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1" = 20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 38 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - Galveston Rd.dwg plotted on Apr 03, 2025 - 7:53pm

(SEE SHEET 38 FOR PLAN)



HORIZ:1"=20'
VERT:1"=2'

NO.	DATE	REVISION	APP.

NOTES:

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

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Date

Approved for AT&T underground conduit facilities only.
Signature valid for one year.

LOCKWOOD, ANDREWS
& NEWNAM, INC.
3700 W SAM HOUSTON PKWY S
SUITE 400
HOUSTON, TX 77042

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

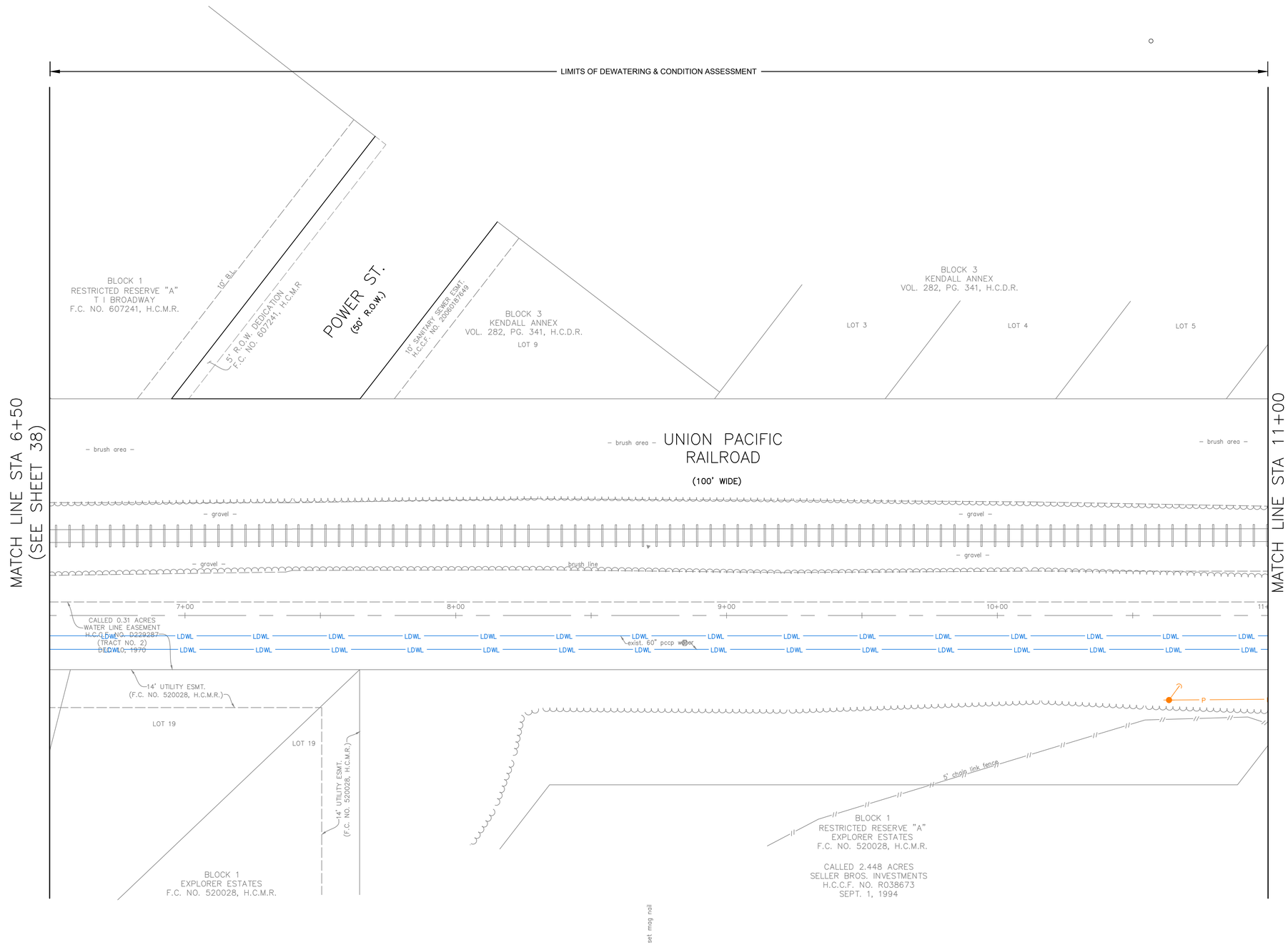
INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of interim review under the authority of:
Engineer:CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 02/23/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

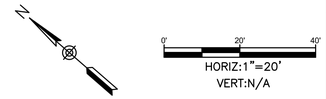
MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
SITE 1A – GALVESTON RD
PROFILE
STA 3+00 TO STA 6+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' V: 1" = 2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 39 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - Galveston Rd.dwg plotted on Apr 03, 2025 - 7:54pm



(SEE SHEET 41 FOR PROFILE)



NO.	DATE	REVISION	APP.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 030190 IS AN HCFCD BRASS DISC STAMPED C103 PCM1 LOCATED ON EAST SIDEWALK ON GALVESTON ROAD APPROXIMATELY 0.1 MILE NORTHWEST FROM THE INTERSECTION OF PARK PLACE BLVD IN KEYMAP 535L IN THE SIMS BAYOU WATERSHED

ELEV. 23.22 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:

T.B.M.: B–213
SET MAGNAIL W/SHINER
ELEV.=33.210
D. STA. 8+71.09 OFFSET: 25.45L

NOTES:

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.

Signature valid for six months.

Date

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities – not to be used for conflict verification)

Signature valid for six months.

Date

Approved for AT&T underground conduit facilities only.
Signature valid for one year.

LOCKWOOD, ANDREWS
& NEWNAM, INC.
3700 W SAM HOUSTON PKWY S
SUITE 400
HOUSTON, TX 77042

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of bidders under the authority of:
Engineer:CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 02/23/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F–2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

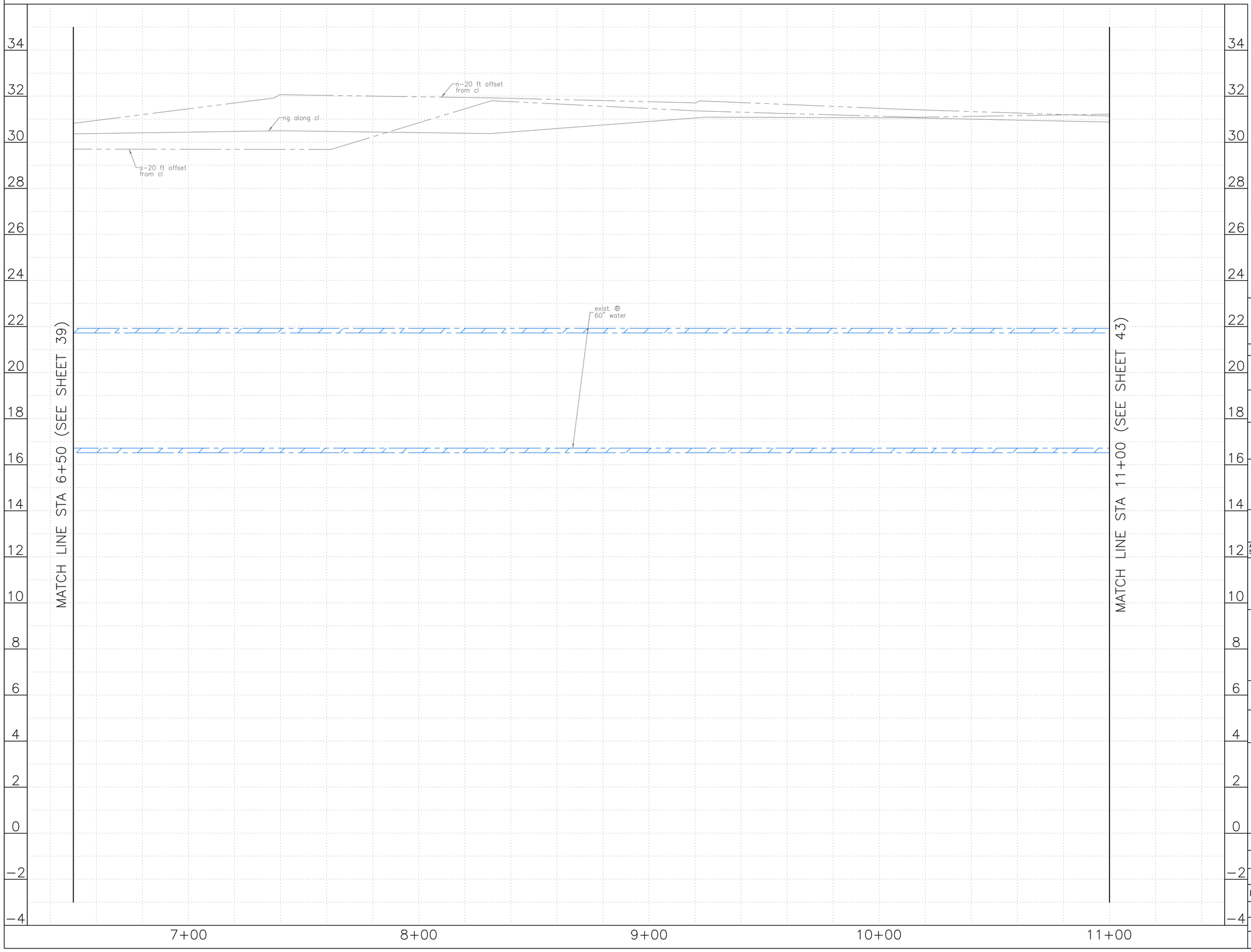
MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 1A – GALVESTON RD PLAN
STA 6+50 TO STA 11+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1" = 20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 40 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - Galveston Rd.dwg plotted on Apr 03, 2025 - 7:54pm

(SEE SHEET 40 FOR PLAN)



0' 20' 40'
HORIZ:1"=20'
VERT:1"=2'

NO.	DATE	REVISION	APP.

NOTES:

NOTICE:
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LAN

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S
SUITE 400
HOUSTON, TX 77042

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

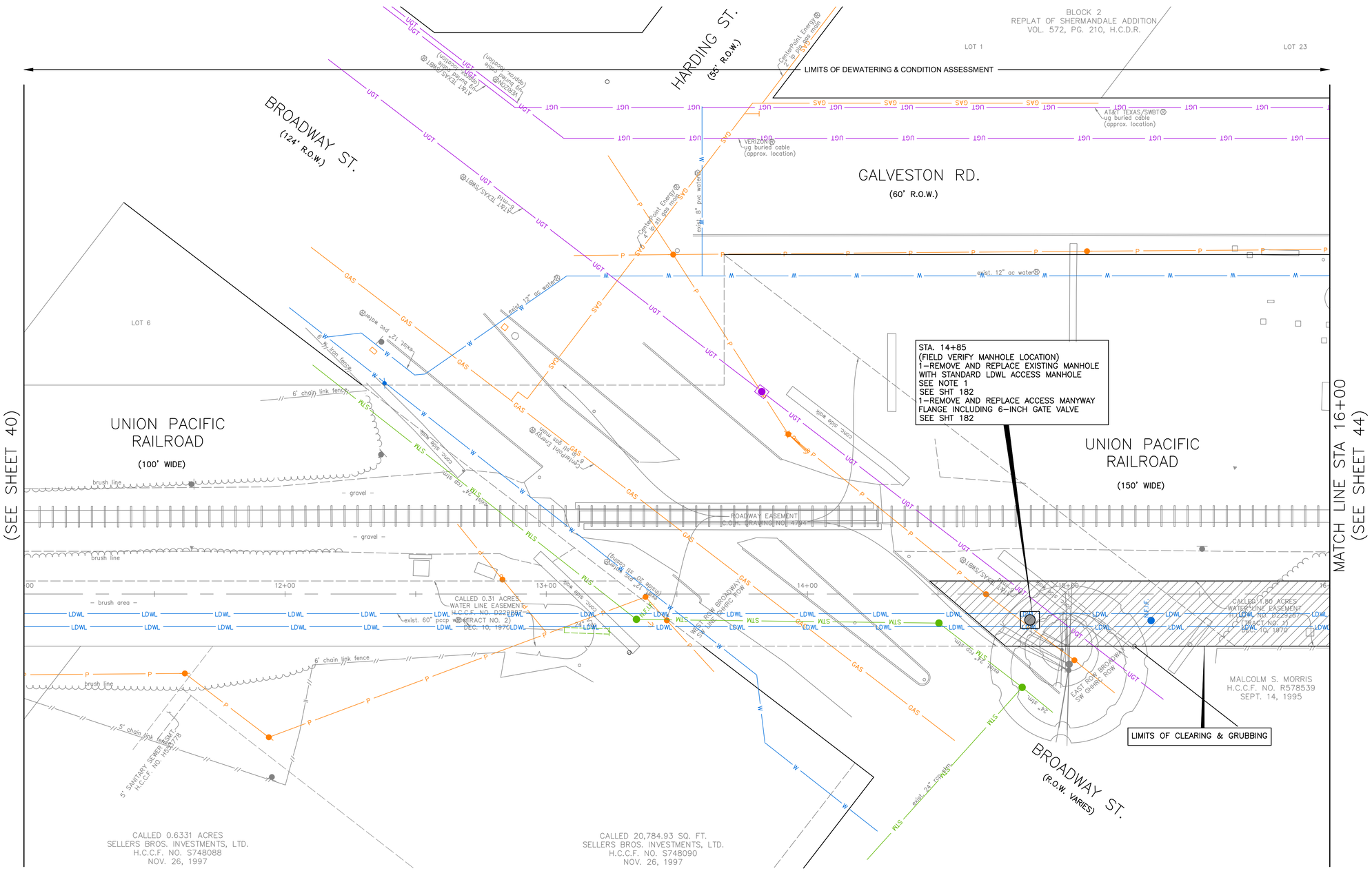
INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of interim review under the authority of:
Engineer:CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 02/23/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F–2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL
IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
SITE 1A – GALVESTON RD
PROFILE
STA 6+50 TO STA 11+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1" = 20' V: 1" = 2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 41 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheet-Site 1A - Galveston Rd.dwg plotted on Apr 03, 2025 - 7:54pm



HORIZ:1"=20'
VERT:N/A

NO.	DATE	REVISION	APP.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 030190 IS AN HCFCD BRASS DISC STAMPED C103 PGM1 LOCATED ON EAST SIDEWALK ON GALVESTON ROAD APPROXIMATELY 0.1 MILE NORTHWEST FROM THE INTERSECTION OF PARK PLACE BLVD IN KEYMAP 535L IN THE SIMS BAYOU WATERSHED

ELEV. 23.22 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:

T.B.M.: B-212
SET 'X' CUT ON CONC.
ELEV.=32.064
D. STA. 12+68.32 OFFSET: 47.09L

NOTES:

1. FOR EXISTING ACCESS MANHOLES OR AIR RELEASE VALVES, REFER TO DETAILS ON SHEET 56, "EXISTING CONDITIONS" FOR DIMENSIONS OF EXISTING ACCESS MANWAYS. REMOVE EXISTING 20-INCH BLIND FLANGE AND INSTALL 20-INCH FLANGED RISER PIPE TO PROVIDE MINIMUM 24-INCH ABOVE TOP OF WATER LINE (BUT NOT LESS THAN 8-INCHES ABOVE BASE OF MANHOLE) AS INDICATED IN DETAIL INSTALL 20-INCH BLIND FLANGE WITH HOLE FOR 6-INCH PIPE.

NOTICE:

FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

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Date

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& NEWNAM, INC.
3700 W SAM HOUSTON PKWY S
SUITE 400
HOUSTON, TX 77042

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes. This document is released for the purpose of interim review under the authority of:
Engineer: CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 02/23/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

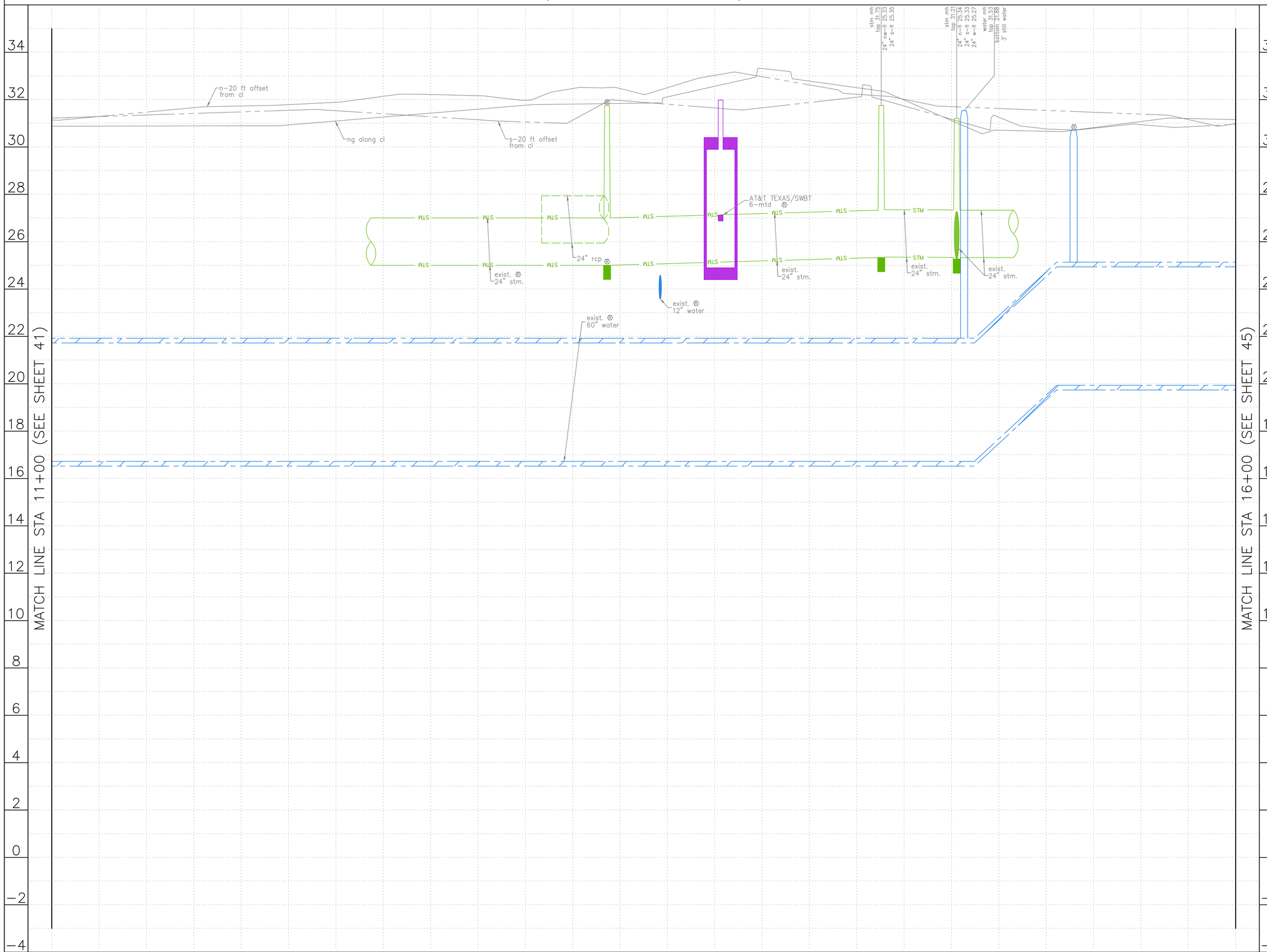
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL
IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL
SITE 1A - GALVESTON RD
PLAN
STA 11+00 TO STA 16+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 42 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - Galveston Rd.dwg plotted on Apr 03, 2025 - 7:55pm

(SEE SHEET 42 FOR PLAN)



0' 20' 40'
HORIZ:1"=20'
VERT:1"=2'

NO.	DATE	REVISION	APP.

NOTES:

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.

Signature valid for six months.

Date

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities – not to be used for conflict verification)

Signature valid for six months.

Date

Approved for AT&T underground conduit facilities only.
Signature valid for one year.

LAN

LOCKWOOD, ANDREWS
& NEWNAM, INC.
3700 W SAM HOUSTON PKWY S
SUITE 400
HOUSTON, TX 77042

SURVEYED BY:
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INTERIM REVIEW ONLY
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Date: 02/23/2025
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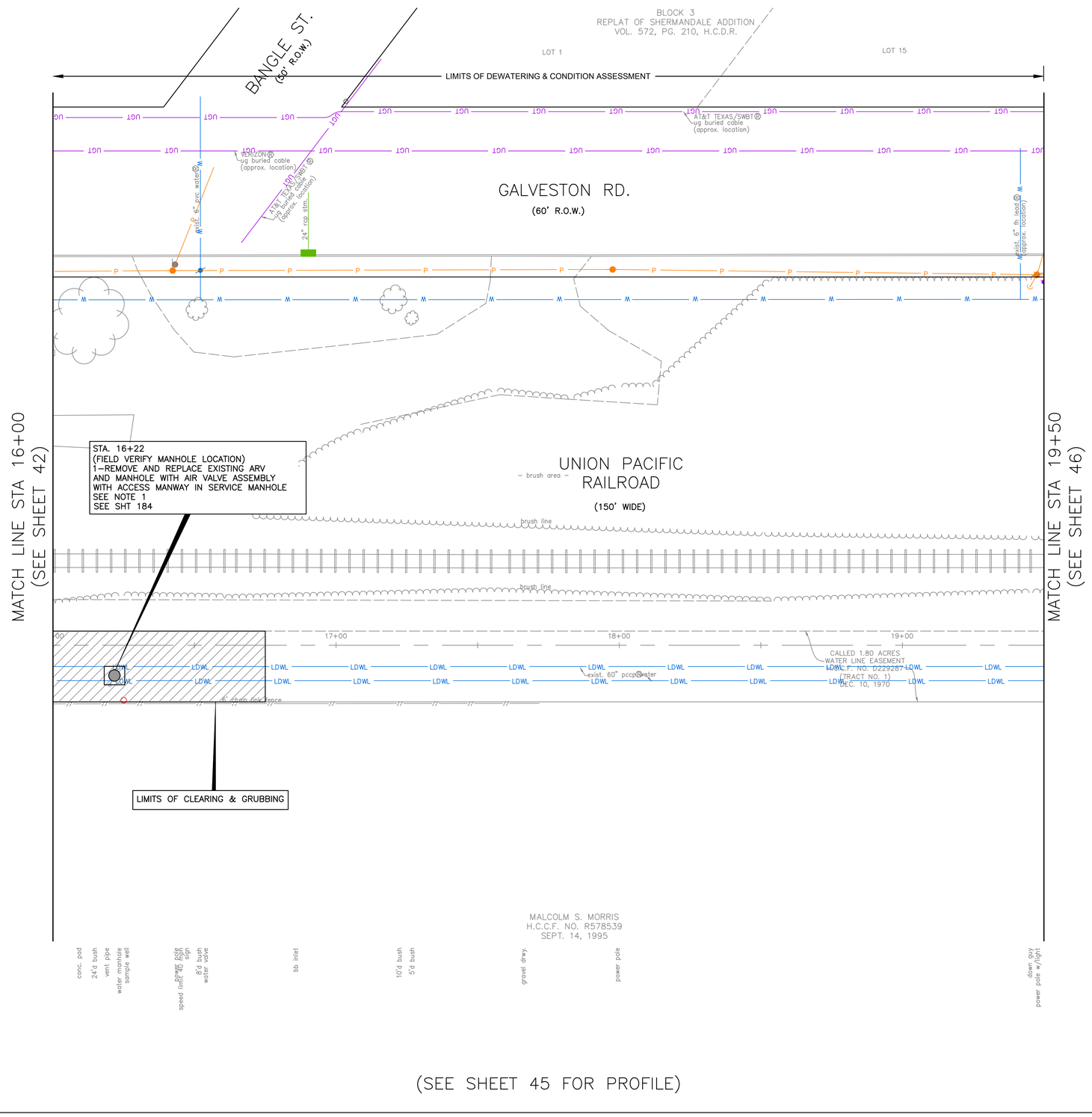
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
SITE 1A – GALVESTON RD
PROFILE
STA 11+00 TO STA 16+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S−000701−0041−3	
DRAWING SCALE	
H: 1" = 20' V: 1" = 2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 43 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - Galveston Rd.dwg plotted on Apr 03, 2025 - 7:55pm



(SEE SHEET 45 FOR PROFILE)

N

0' 20' 40'
HORIZ:1"=20'
VERT:N/A

NO.	DATE	REVISION	APP.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 030190 IS AN HCFCD BRASS DISC STAMPED C103 PGM1 LOCATED ON EAST SIDEWALK ON GALVESTON ROAD APPROXIMATELY 0.1 MILE NORTHWEST FROM THE INTERSECTION OF PARK PLACE BLVD IN KEYMAP 535L IN THE SIMS BAYOU WATERSHED

ELEV. 23.22 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:

T.B.M.: B-211
SET 1/2" I.R. W/KUO CAP
ELEV.=31.904
D. STA. 15+63.66 OFFSET: 48.40L

NOTES:

1. FOR EXISTING ACCESS MANHOLES OR AIR RELEASE VALVES, REFER TO DETAILS ON SHEET 56. "EXISTING CONDITIONS" FOR DIMENSIONS OF EXISTING ACCESS MANWAYS. REMOVE EXISTING 20-INCH BLIND FLANGE AND INSTALL 20-INCH FLANGED RISER PIPE TO PROVIDE MINIMUM 24-INCH ABOVE TOP OF WATER LINE (BUT NOT LESS THAN 8-INCHES ABOVE BASE OF MANHOLE) AS INDICATED IN DETAIL INSTALL 20-INCH BLIND FLANGE WITH HOLE FOR 6-INCH PIPE.

NOTICE:

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Date

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Date

Approved for AT&T underground conduit facilities only.
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LAN

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& NEWNAM, INC.
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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

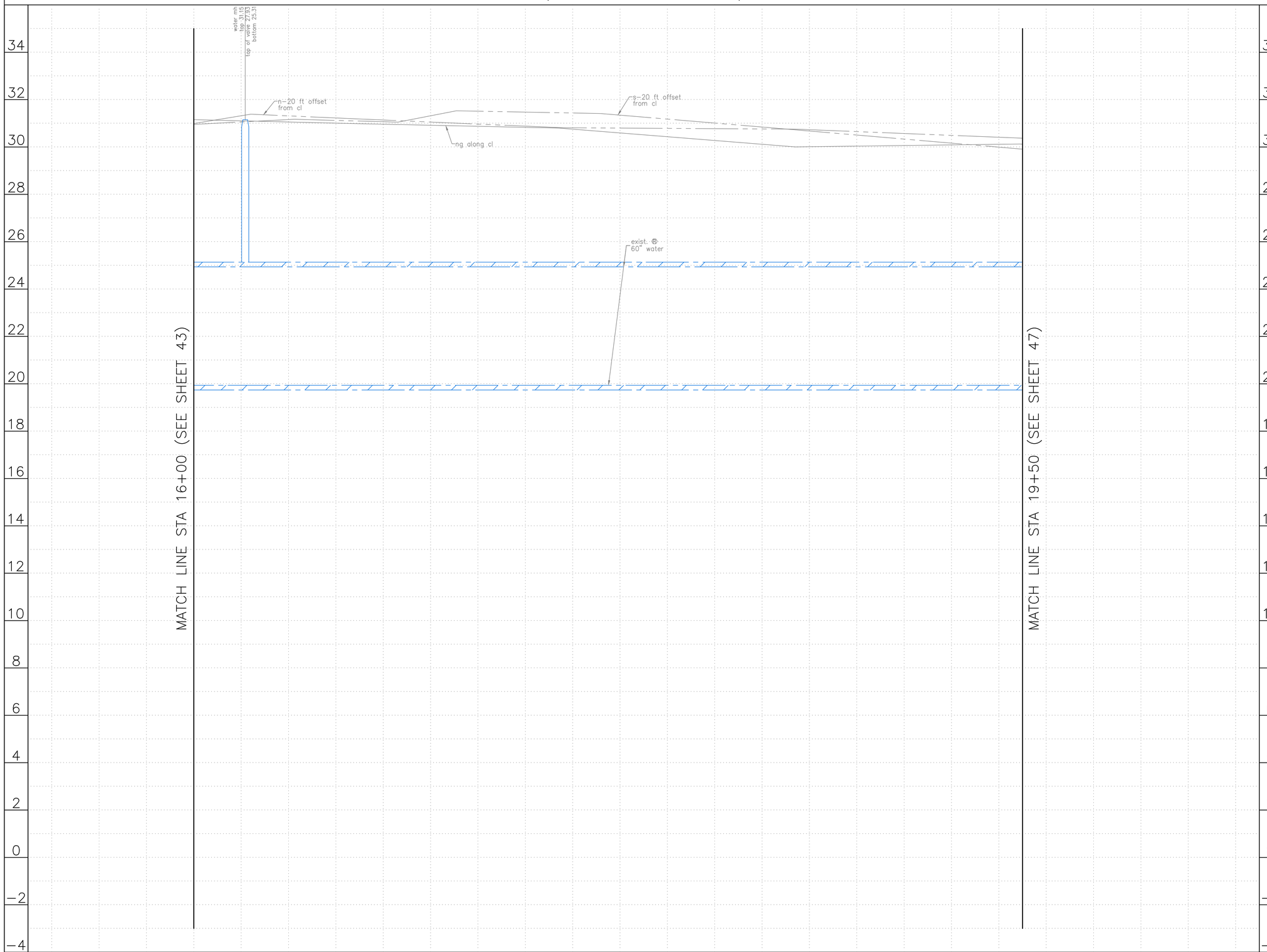
MISCELLANEOUS LDWL
IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL

SITE 1A - GALVESTON RD
PLAN
STA 16+00 TO STA 19+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 44 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - Galveston Rd.dwg plotted on Apr 03, 2025 - 7:55pm

(SEE SHEET 44 FOR PLAN)



HORIZ:1"=20'
VERT:1"=2'

NO.	DATE	REVISION	APP.

NOTES:

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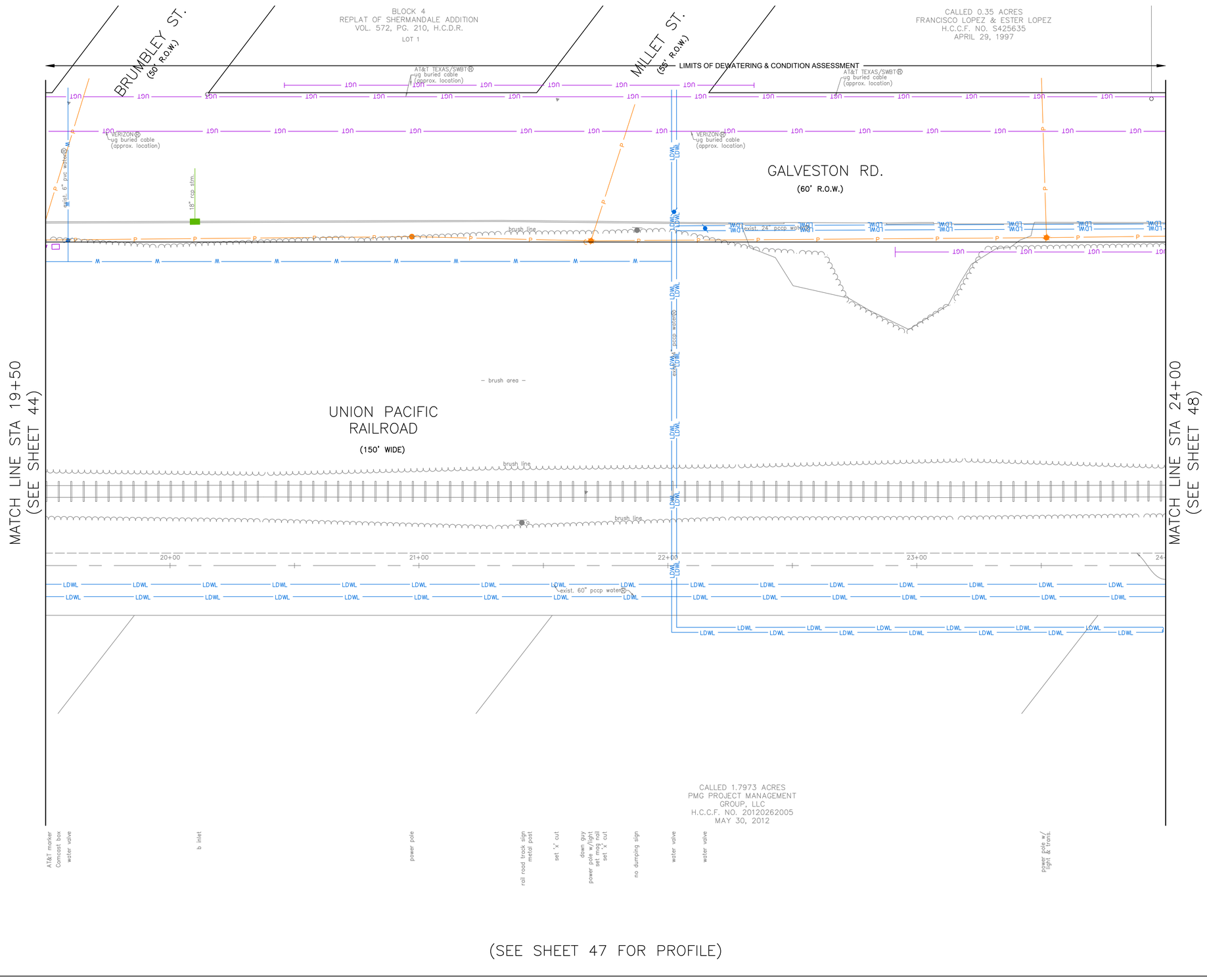
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL
IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 1A – GALVESTON RD
PROFILE
STA 16+00 TO STA 19+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1" = 20' V: 1" = 2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 45 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - Galveston Rd.dwg plotted on Apr 03, 2025 – 7:56pm



N

0' 20' 40'

HORIZ:1"=20'
VERT:N/A

NO.	DATE	REVISION	APP.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 030190 IS AN HCFCD BRASS DISC STAMPED C103 PCM1 LOCATED ON EAST SIDEWALK ON GALVESTON ROAD APPROXIMATELY 0.1 MILE NORTHWEST FROM THE INTERSECTION OF PARK PLACE BLVD IN KEYMAP 535L IN THE SIMS BAYOU WATERSHED

ELEV. 23.22 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:

T.B.M.: B-219
SET MAGNAIL W/SHINER
ELEV.=31.143
D. STA. 21+67.08 OFFSET: 29.50L

NOTES:

NOTICE:

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VERIFICATION OF PRIVATE UTILITY LINES

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Date

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Signature valid for one year.

LAN

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SUITE 400
HOUSTON, TX 77042

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SURVEYED BY:
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FB NO. 000000

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

60% SUBMITTAL

SITE 1A – GALVESTON RD PLAN

STA 19+50 TO STA 24+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 46 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - Galveston Rd.dwg plotted on Apr 03, 2025 - 7:56pm

(SEE SHEET 46 FOR PLAN)

MATCH LINE STA 19+50 (SEE SHEET 45)

MATCH LINE STA 24+00 (SEE SHEET 49)

n-20 ft offset from cl

ng along cl

s-20 ft offset from cl

exist. Ø 24" water

exist. Ø 60" water

34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0 −2 −4

20+00 21+00 22+00 23+00 24+00

0' 20' 40'

HORIZ:1"=20'
VERT:1"=2'

NO.	DATE	REVISION	APP.

NOTES:

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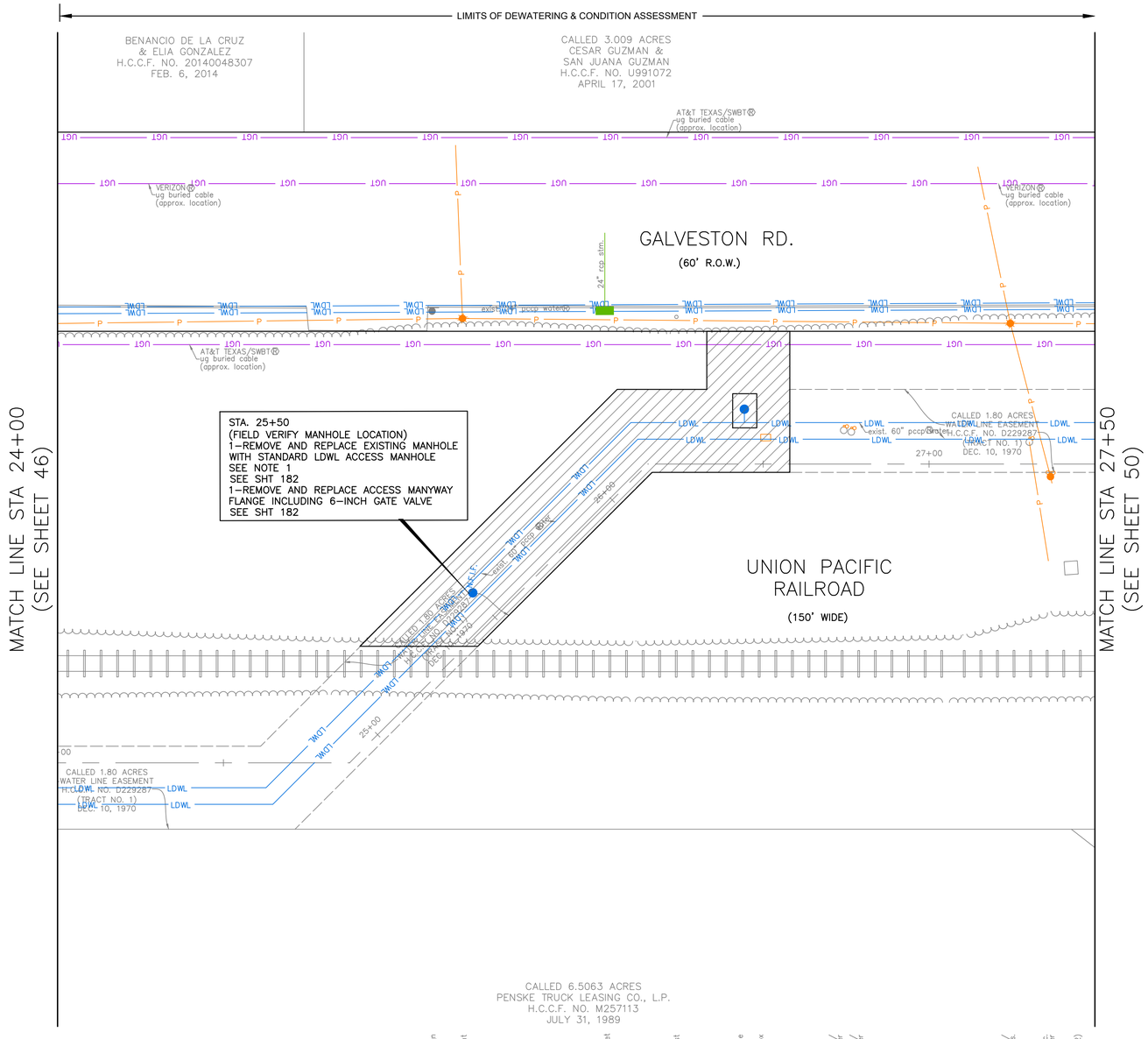
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
SITE 1A – GALVESTON RD
PLAN
STA 19+50 TO STA 24+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' V: 1" = 2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 47 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - Galveston Rd.dwg plotted on Apr 03, 2025 - 7:56pm



0' 20' 40'

HORIZ:1"=20'
VERT:N/A

NO.	DATE	REVISION	APP.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 030190 IS AN HCFCD BRASS DISC STAMPED C103 PCM1 LOCATED ON EAST SIDEWALK ON GALVESTON ROAD APPROXIMATELY 0.1 MILE NORTHWEST FROM THE INTERSECTION OF PARK PLACE BLVD IN KEYMAP 535L IN THE SIMS BAYOU WATERSHED

ELEV. 23.22 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:

T.B.M.: B-208
SET 'X' CUT ON CONC.
ELEV.=21.329
D. STA. 27+61.73 OFFSET: 95.28L

NOTES:

1. FOR EXISTING ACCESS MANHOLES OR AIR RELEASE VALVES, REFER TO DETAILS ON SHEET 56, "EXISTING CONDITIONS" FOR DIMENSIONS OF EXISTING ACCESS MANWAYS. REMOVE EXISTING 20-INCH BLIND FLANGE AND INSTALL 20-INCH FLANGED RISER PIPE TO PROVIDE MINIMUM 24-INCH ABOVE TOP OF WATER LINE (BUT NOT LESS THAN 8-INCHES ABOVE BASE OF MANHOLE) AS INDICATED IN DETAIL INSTALL 20-INCH BLIND FLANGE WITH HOLE FOR 6-INCH PIPE.

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LOCKWOOD, ANDREWS
& NEWNAM, INC.
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HOUSTON, TX 77042

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FB NO. 000000

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

60% SUBMITTAL

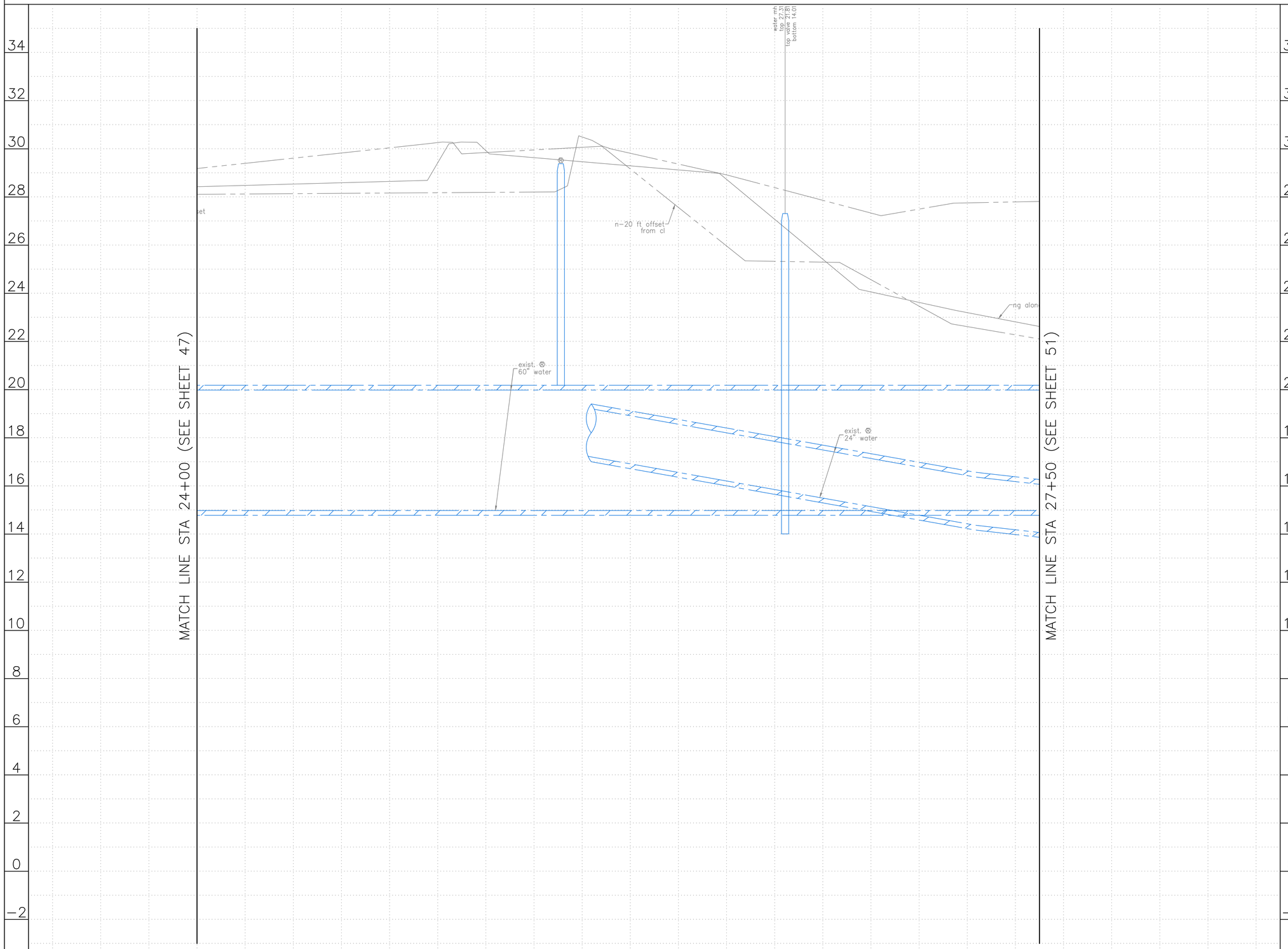
SITE 1A – GALVESTON RD PLAN

STA 24+00 TO STA 27+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 48 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\VKIO\P&P Sheets\P&P Sheet-Site 1A - Galveston Rd.dwg plotted on Apr 03, 2025 - 7:56pm

(SEE SHEET 48 FOR PLAN)



0' 20' 40'
HORIZ:1"=20'
VERT:1"=2'

NO.	DATE	REVISION	APP.

NOTES:

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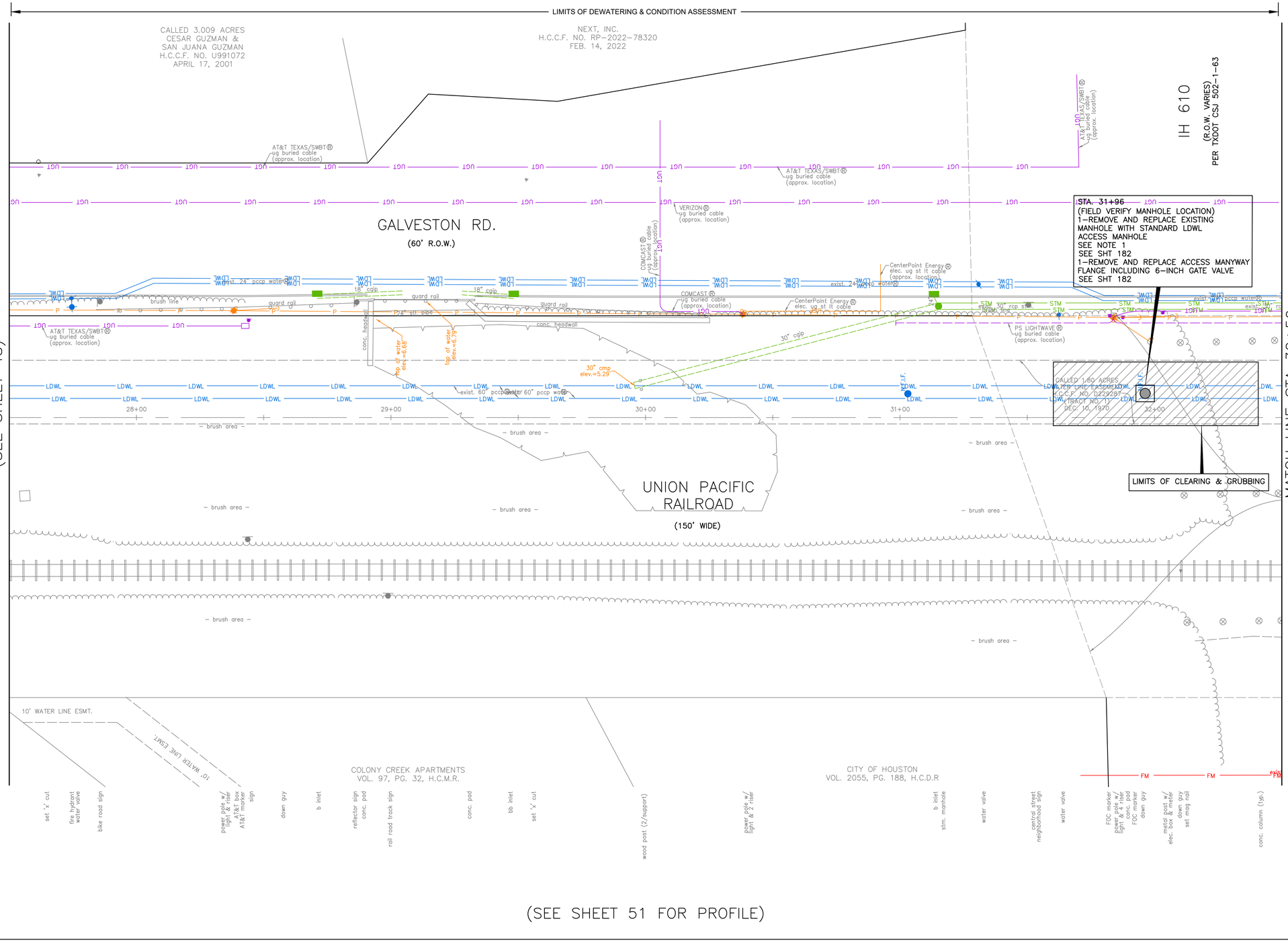
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL
IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 1A – GALVESTON RD
PROFILE
STA 24+00 TO STA 27+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' V: 1" = 2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 49 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - Galveston Rd.dwg plotted on Apr 03, 2025 - 7:57pm



(SEE SHEET 51 FOR PROFILE)

0' 20' 40'
HORIZ:1"=20'
VERT:N/A

NO.	DATE	REVISION	APP.

BENCHMARK:

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ELEV. 23.22 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:

T.B.M.: B-207
SET 'X' CUT ON CONC.
ELEV.=20.483
D. STA. 29+53.20 OFFSET: 93.47L

NOTES:
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LOCKWOOD, ANDREWS & NEWNAM, INC.
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Date: 02/23/2025
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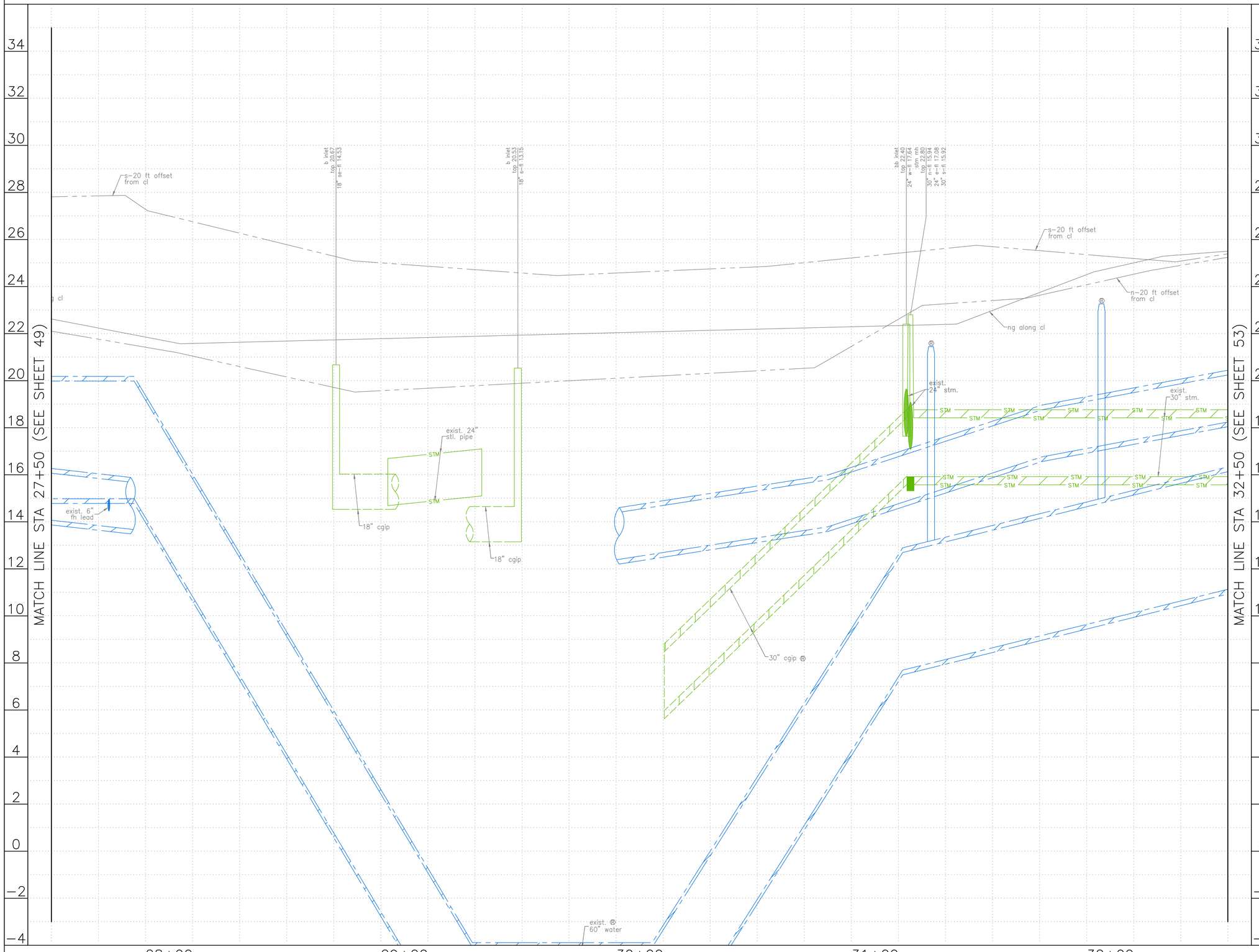
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL
SITE 1A - GALVESTON RD
PLAN
STA 27+50 TO STA 32+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 50 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheet-Site 1A - Galveston Rd.dwg plotted on Apr 03, 2025 - 7:57pm

(SEE SHEET 50 FOR PLAN)



0' 20' 40'
HORIZ:1"=20'
VERT:1"=2'

NO.	DATE	REVISION	APP.

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INTERIM REVIEW ONLY
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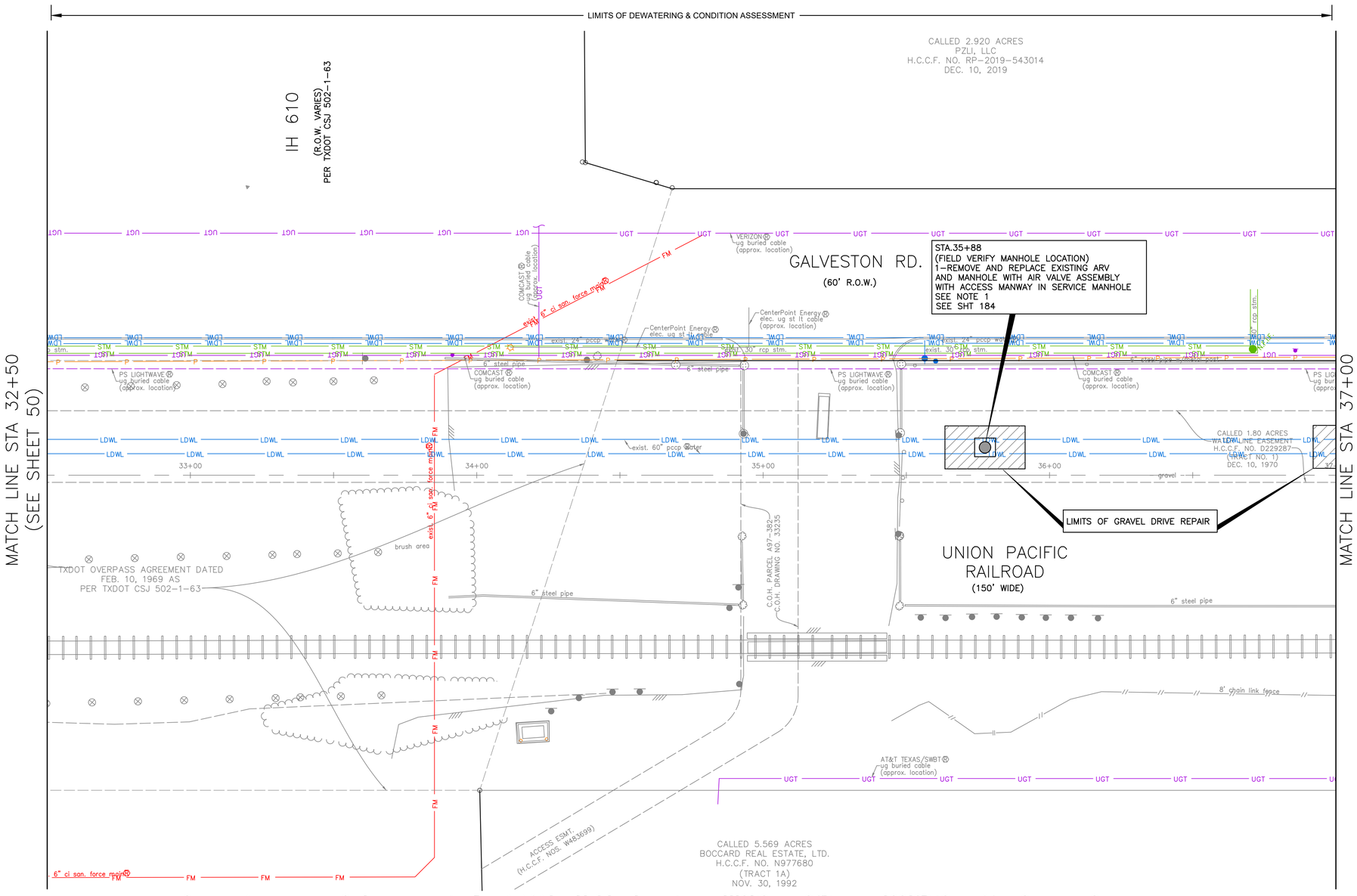
Engineer:CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 02/23/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
SITE 1A – GALVESTON RD
PROFILE
STA 27+50 TO STA 32+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' V: 1" = 2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 51 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - Galveston Rd.dwg plotted on Apr 03, 2025 - 7:57pm



(SEE SHEET 53 FOR PROFILE)

HORIZ:1"=20'
VERT:N/A

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 030190 IS AN HCFCD BRASS DISC STAMPED C103 PCM1 LOCATED ON EAST SIDEWALK ON GALVESTON ROAD APPROXIMATELY 0.1 MILE NORTHWEST FROM THE INTERSECTION OF PARK PLACE BLVD IN KEYMAP 535L IN THE SIMS BAYOU WATERSHED

ELEV. 23.22 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:

T.B.M.: B-206
SET 'X' CUT ON CONC.
ELEV.=26.072
D. STA. 33+19.93 OFFSET: 100.62L

NOTES:

1. FOR EXISTING ACCESS MANHOLES OR AIR RELEASE VALVES, REFER TO DETAILS ON SHEET 56, "EXISTING CONDITIONS" FOR DIMENSIONS OF EXISTING ACCESS MANWAYS. REMOVE EXISTING 20-INCH BLIND FLANGE AND INSTALL 20-INCH FLANGED RISER PIPE TO PROVIDE MINIMUM 24-INCH ABOVE TOP OF WATER LINE (BUT NOT LESS THAN 8-INCHES ABOVE BASE OF MANHOLE) AS INDICATED IN DETAIL INSTALL 20-INCH BLIND FLANGE WITH HOLE FOR 6-INCH PIPE.

NO.	DATE	REVISION	APP.

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.

Signature valid for six months.

Date

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities – not to be used for conflict verification)

Signature valid for six months.

Date

Approved for AT&T underground conduit facilities only.
Signature valid for one year.

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S
SUITE 400
HOUSTON, TX 77042

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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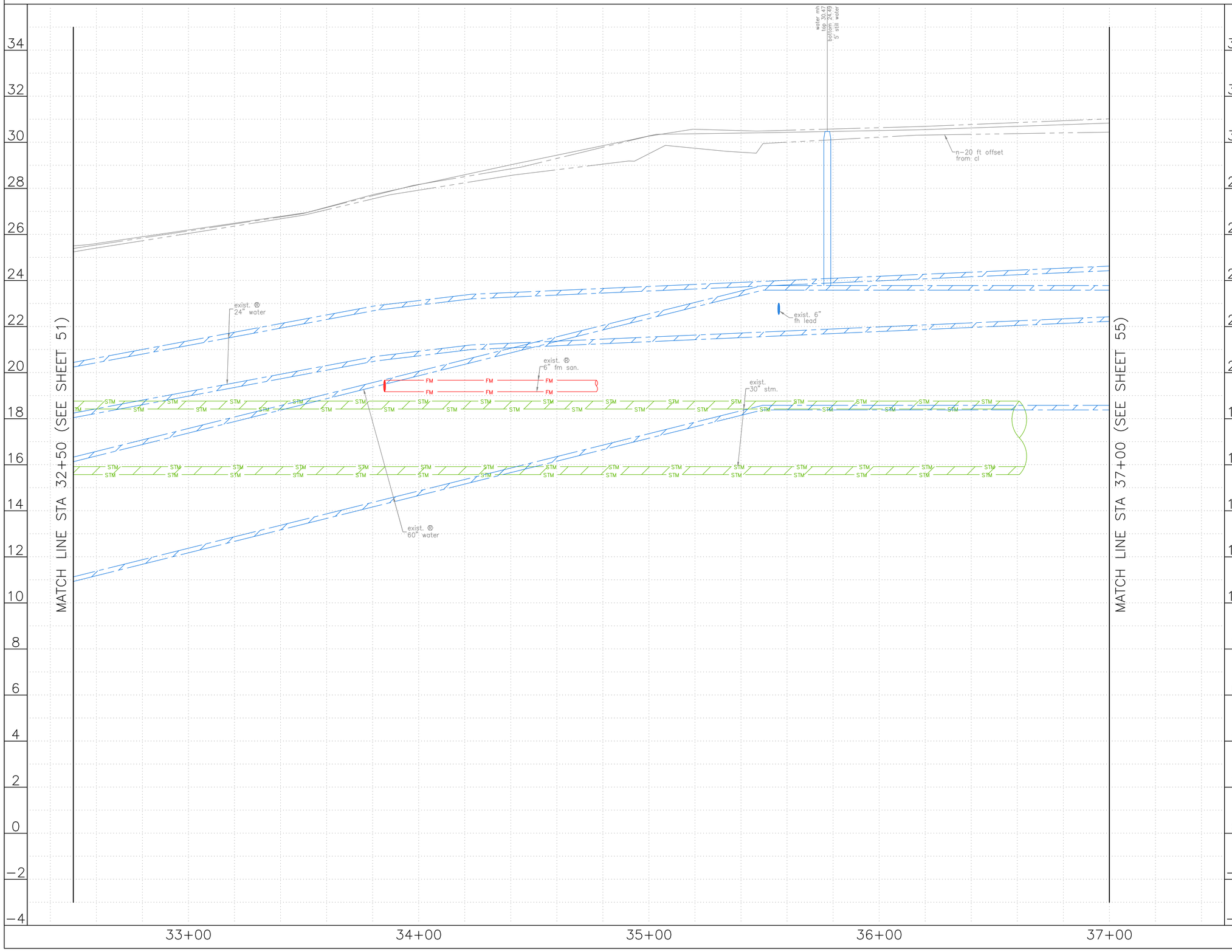
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL
SITE 1A - GALVESTON RD
PLAN
STA 32+50 TO STA 37+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 52 OF 244	

P:\132\132-10001-000\4-D-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - Galveston Rd.dwg plotted on Apr 03, 2025 - 7:57pm

(SEE SHEET 52 FOR PLAN)



0' 20' 40'
HORIZ:1"=20'
VERT:1"=2'

NO.	DATE	REVISION	APP.

NOTES:

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Signature valid for one year.

LAN

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& NEWNAM, INC.
3700 W SAM HOUSTON PKWY S
SUITE 400
HOUSTON, TX 77042

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Texas Registered Engineering Firm F-2614

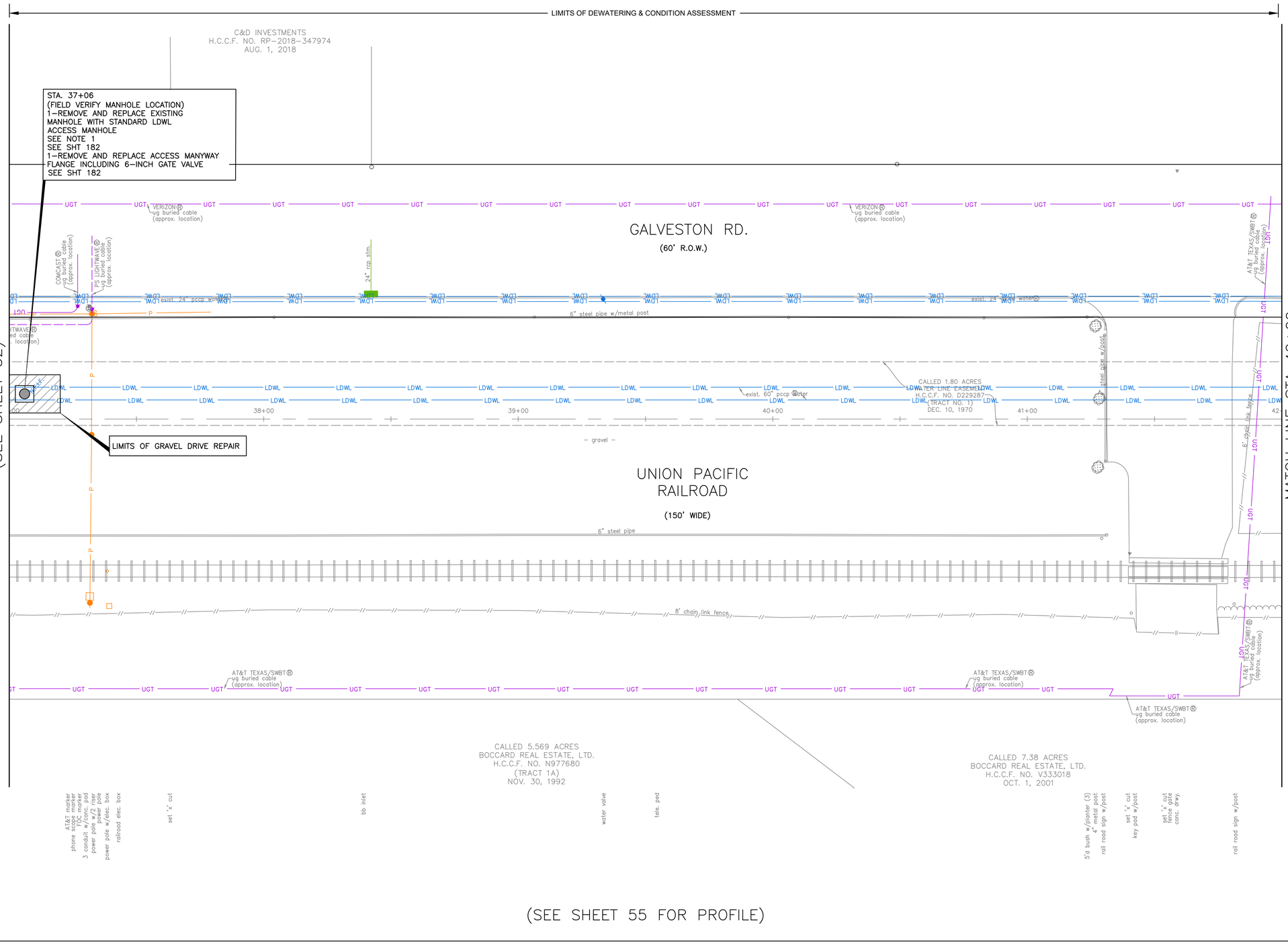
SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL
IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
SITE 1A – GALVESTON RD
PROFILE
STA 32+50 TO STA 37+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' V: 1" = 2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 53 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - Galveston Rd.dwg plotted on Apr 03, 2025 - 7:58pm



HORIZ:1"=20'
VERT:N/A

NO.	DATE	REVISION	APP.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 030190 IS AN HCFCD BRASS DISC STAMPED C103 PCM1 LOCATED ON EAST SIDEWALK ON GALVESTON ROAD APPROXIMATELY 0.1 MILE NORTHWEST FROM THE INTERSECTION OF PARK PLACE BLVD IN KEYMAP 535L IN THE SIMS BAYOU WATERSHED

ELEV. 23.22 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:

T.B.M.: B-204
SET 'X' CUT ON CONC.
ELEV.=30.211
D. STA. 41+58.88 OFFSET: 97.51L

NOTES:

1. FOR EXISTING ACCESS MANHOLES OR AIR RELEASE VALVES, REFER TO DETAILS ON SHEET 56, "EXISTING CONDITIONS" FOR DIMENSIONS OF EXISTING ACCESS MANWAYS. REMOVE EXISTING 20-INCH BLIND FLANGE AND INSTALL 20-INCH FLANGED RISER PIPE TO PROVIDE MINIMUM 24-INCH ABOVE TOP OF WATER LINE (BUT NOT LESS THAN 8-INCHES ABOVE BASE OF MANHOLE) AS INDICATED IN DETAIL INSTALL 20-INCH BLIND FLANGE WITH HOLE FOR 6-INCH PIPE.

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Date

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Signature valid for one year.

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S
SUITE 400
HOUSTON, TX 77042

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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Date: 02/23/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

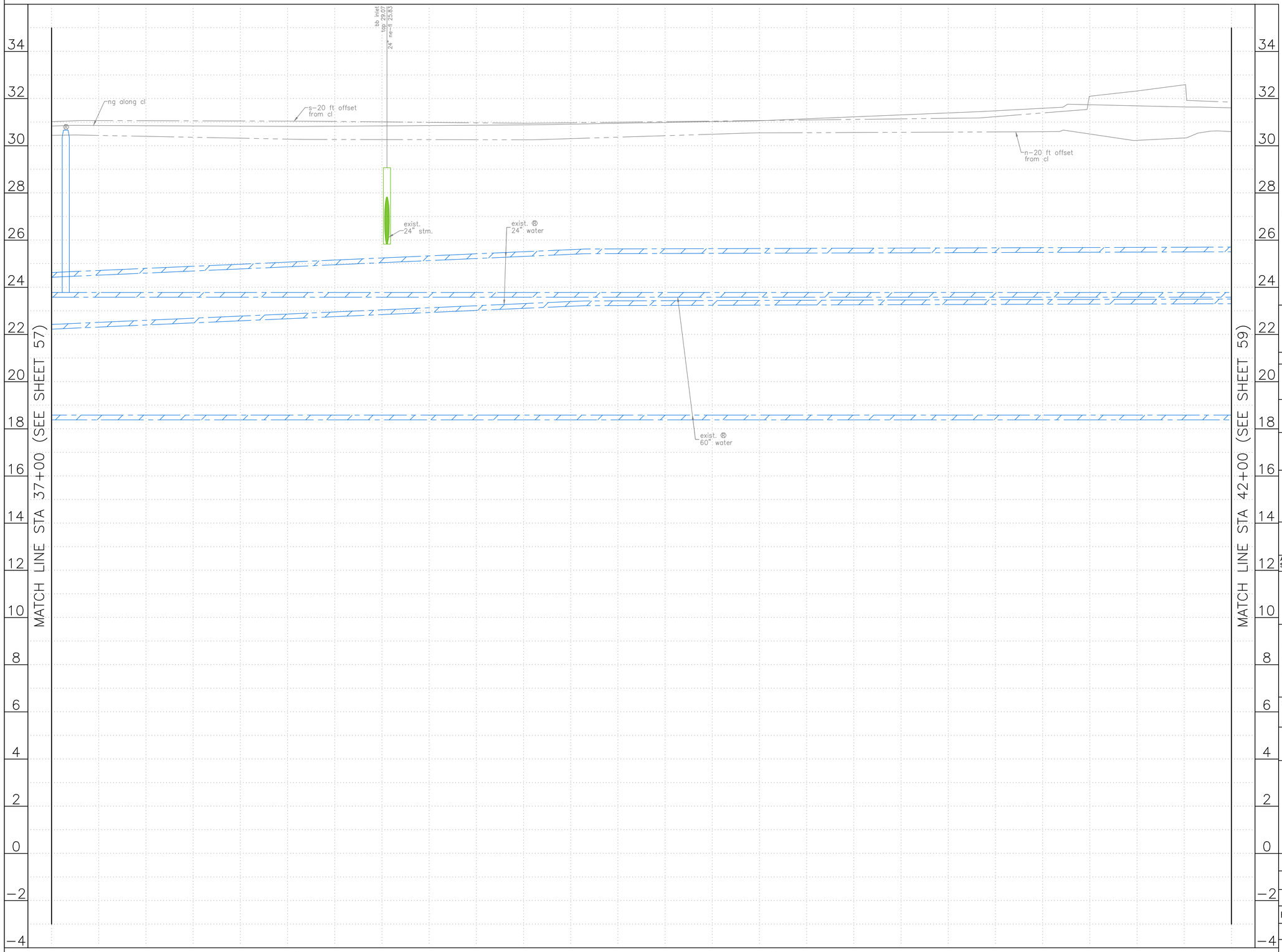
MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL

SITE 1A - GALVESTON RD
PLAN
STA 37+00 TO STA 42+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 54 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - Galveston Rd.dwg plotted on Apr 03, 2025 - 7:58pm

(SEE SHEET 54 FOR PLAN)



0' 20' 40'
HORIZ:1"=20'
VERT:1"=2'

NO.	DATE	REVISION	APP.

NOTES:

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Date

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Signature valid for one year.

LOCKWOOD, ANDREWS
& NEWNAM, INC.
3700 W SAM HOUSTON PKWY S
SUITE 400
HOUSTON, TX 77042

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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Date: 02/23/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

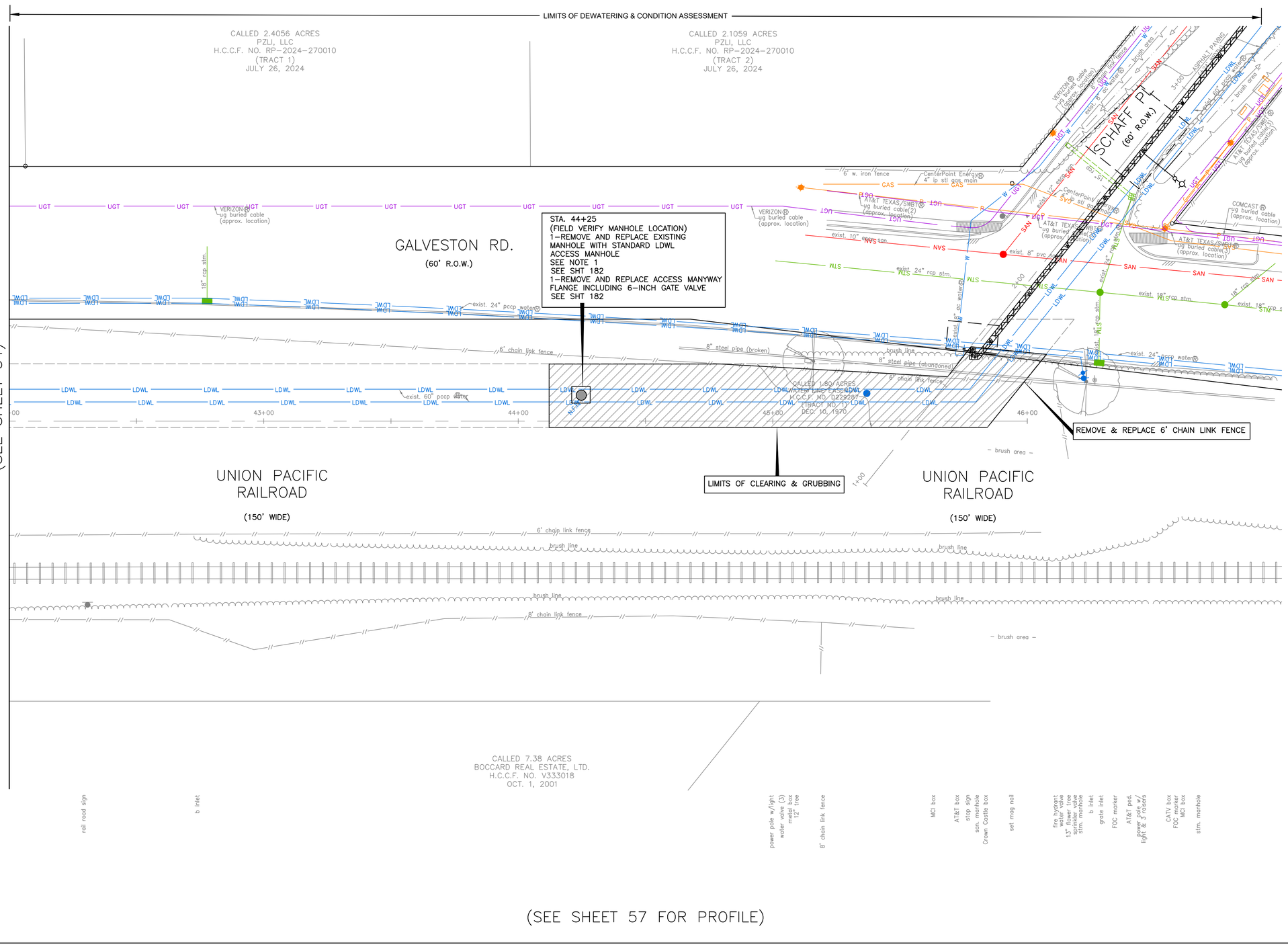
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL
IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 1A – GALVESTON RD
PROFILE
STA 37+00 TO STA 42+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' V: 1" = 2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 55 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - Galveston Rd.dwg plotted on Apr 03, 2025 - 7:58pm



(SEE SHEET 57 FOR PROFILE)

HORIZ:1"=20'
VERT:N/A

NO.	DATE	REVISION	APP.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 030190 IS AN HCFCD BRASS DISC STAMPED C103 PGM1 LOCATED ON EAST SIDEWALK ON GALVESTON ROAD APPROXIMATELY 0.1 MILE NORTHWEST FROM THE INTERSECTION OF PARK PLACE BLVD IN KEYMAP 535L IN THE SIMS BAYOU WATERSHED

ELEV. 23.22 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:

T.B.M.: B-1
SET MAGNAIL W/SHINER
ELEV.=29.598
D. STA. 2+22.11 OFFSET: 16.42L

NOTES:
1. FOR EXISTING ACCESS MANHOLES OR AIR RELEASE VALVES, REFER TO DETAILS ON SHEET 56, "EXISTING CONDITIONS" FOR DIMENSIONS OF EXISTING ACCESS MANWAYS. REMOVE EXISTING 20-INCH BLIND FLANGE AND INSTALL 20-INCH FLANGED RISER PIPE TO PROVIDE MINIMUM 24-INCH ABOVE TOP OF WATER LINE (BUT NOT LESS THAN 8-INCHES ABOVE BASE OF MANHOLE) AS INDICATED IN DETAIL INSTALL 20-INCH BLIND FLANGE WITH HOLE FOR 6-INCH PIPE.

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VERIFICATION OF PRIVATE UTILITY LINES

Date

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Date

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Signature valid for six months.

Date

Approved for AT&T underground conduit facilities only.
Signature valid for one year.

LAN

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S
SUITE 400
HOUSTON, TX 77042

INTERIM REVIEW ONLY
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Registration Number: 94776
Date: 02/23/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL

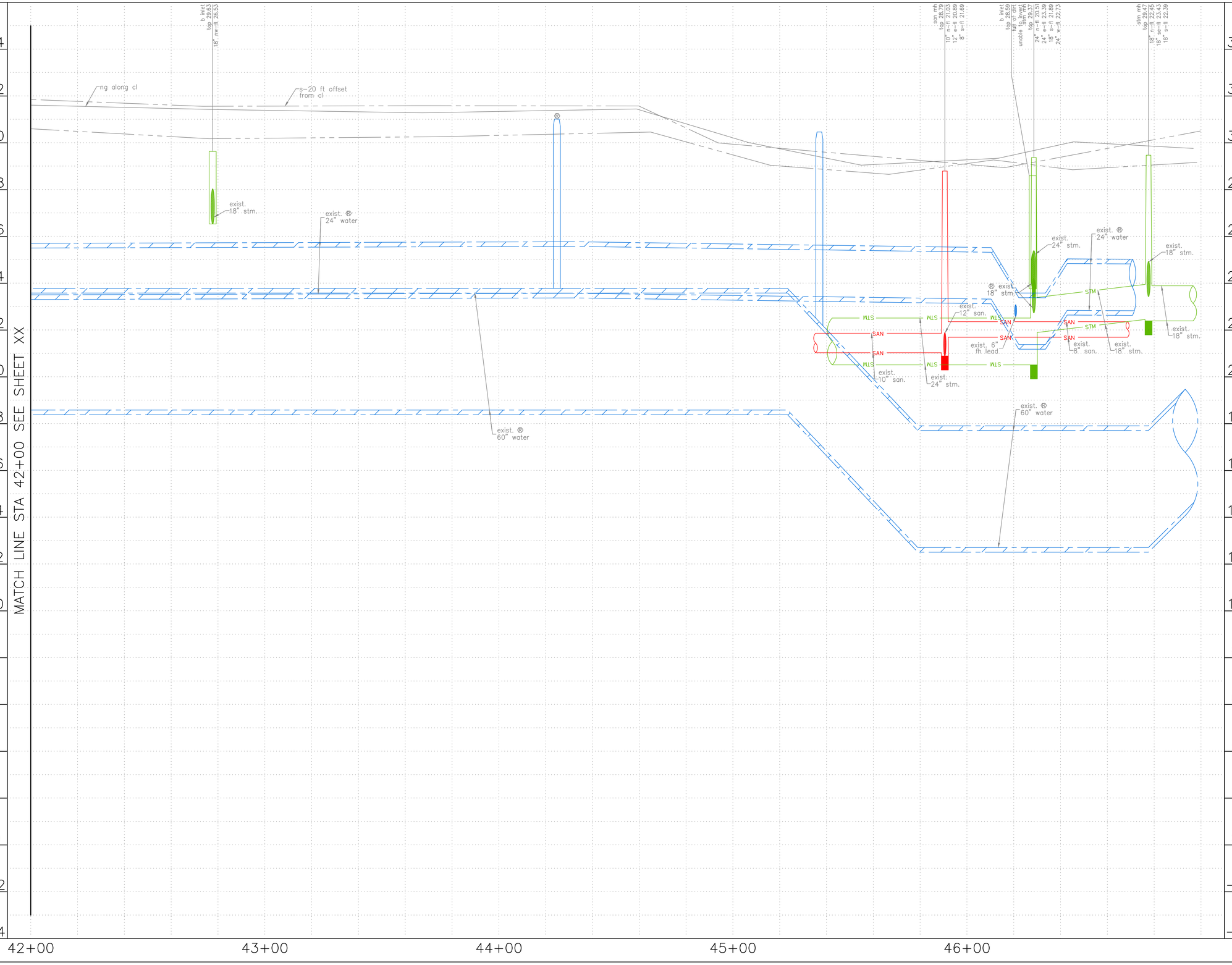
SITE 1A - GALVESTON RD
PLAN
STA 42+00 TO END

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 56 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheet-Site 1A - Galveston Rd.dwg plotted on Apr 03, 2025 - 7:59pm

SEE SHEET XX FOR PLAN

MATCH LINE STA 42+00 SEE SHEET XX



42+00 43+00 44+00 45+00 46+00

0' 20' 40'
HORIZ:1"=20'
VERT:1"=2'

NO.	DATE	REVISION	APP.

NOTES:

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LOCKWOOD, ANDREWS
& NEWNAM, INC.
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SUITE 400
HOUSTON, TX 77042

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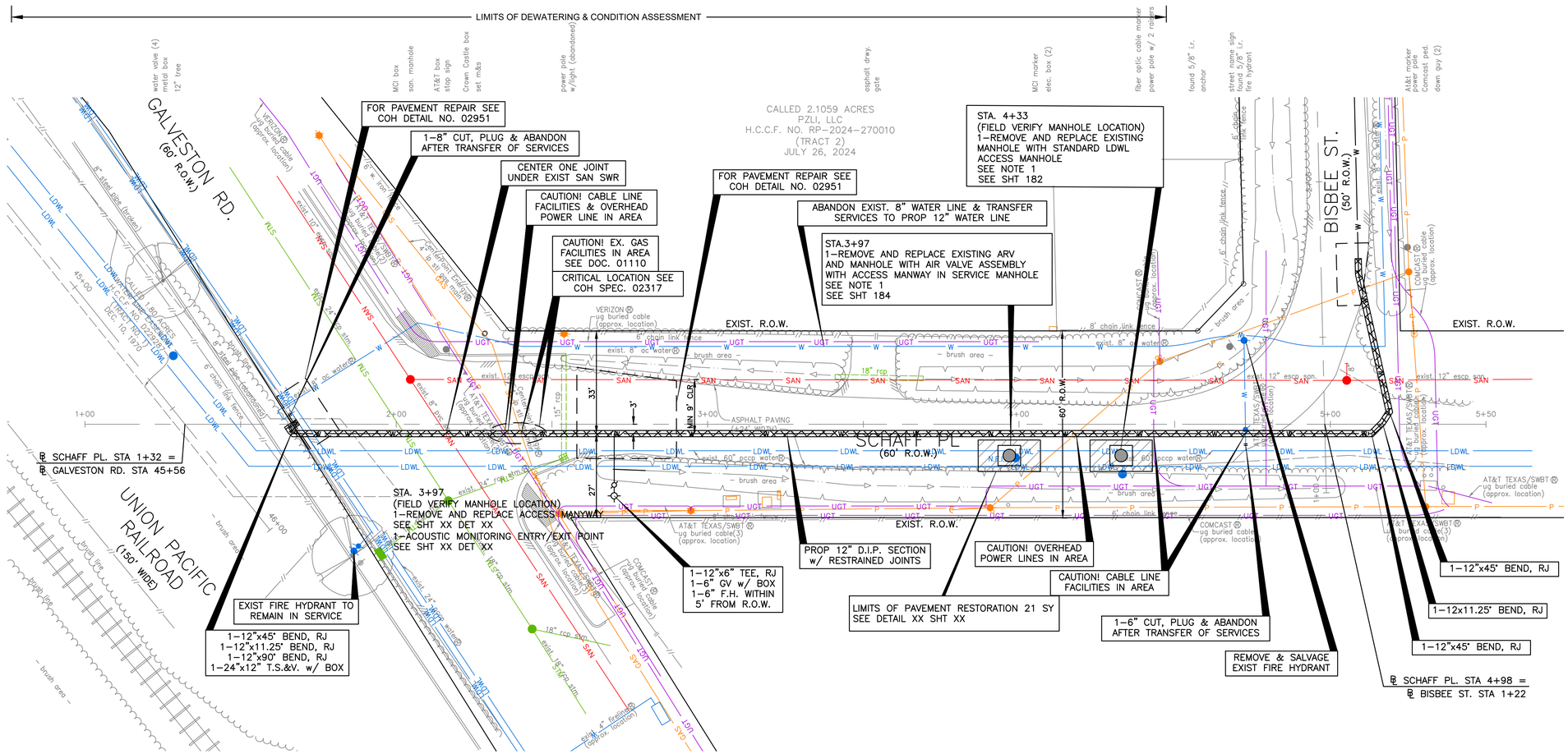
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
SITE 1A – GALVESTON RD
PROFILE
STA 42+00 TO END

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' V: 1" = 2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 57 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - Galveston Rd.dwg plotted on Apr 03, 2025 - 7:59pm



N

0' 20' 40'
HORIZ:1"=20'
VERT:N/A

NO.	DATE	REVISION	APP.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 030190 IS AN HCFCD BRASS DISC STAMPED C103 PCM1 LOCATED ON EAST SIDEWALK ON GALVESTON ROAD APPROXIMATELY 0.1 MILE NORTHWEST FROM THE INTERSECTION OF PARK PLACE BLVD IN KEYMAP 535L IN THE SIMS BAYOU WATERSHED

ELEV. 23.22 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:

T.B.M.: B-2
SET 1/2" I.R. W/KUO CAP
ELEV.=30.017
D. STA. 1+11.74 OFFSET: 0.47R

NOTES:
1. FOR EXISTING ACCESS MANHOLES OR AIR RELEASE VALVES, REFER TO DETAILS ON SHEET 56. "EXISTING CONDITIONS" FOR DIMENSIONS OF EXISTING ACCESS MANWAYS. REMOVE EXISTING 20-INCH BLIND FLANGE AND INSTALL 20-INCH FLANGED RISER PIPE TO PROVIDE MINIMUM 24-INCH ABOVE TOP OF WATER LINE (BUT NOT LESS THAN 8-INCHES ABOVE BASE OF MANHOLE) AS INDICATED IN DETAIL INSTALL 20-INCH BLIND FLANGE WITH HOLE FOR 6-INCH PIPE.

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LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S
SUITE 400
HOUSTON, TX 77042

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Registration Number: 94776
Date: 02/23/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm T-2614

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

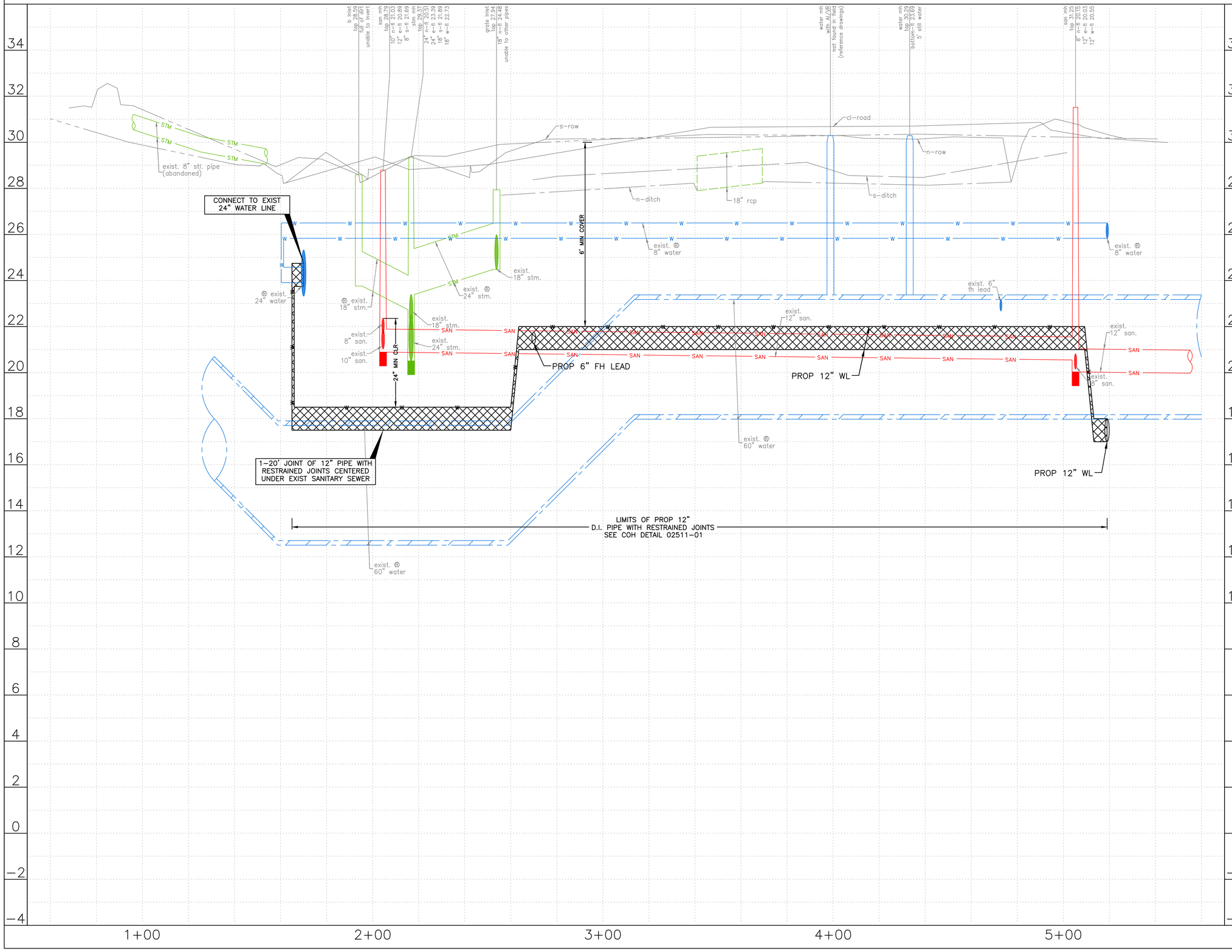
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL
SITE 1A – SCHAFF PL
PLAN
BEGIN TO END

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 58 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - Schaff Pl.dwg plotted on Apr 03, 2025 - 7:59pm

(SEE SHEET 58 FOR PLAN)



0' 20' 40'
HORIZ:1"=20'
VERT:1"=2'

NO.	DATE	REVISION	APP.

NOTES:

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& NEWNAM, INC.
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SUITE 400
HOUSTON, TX 77042

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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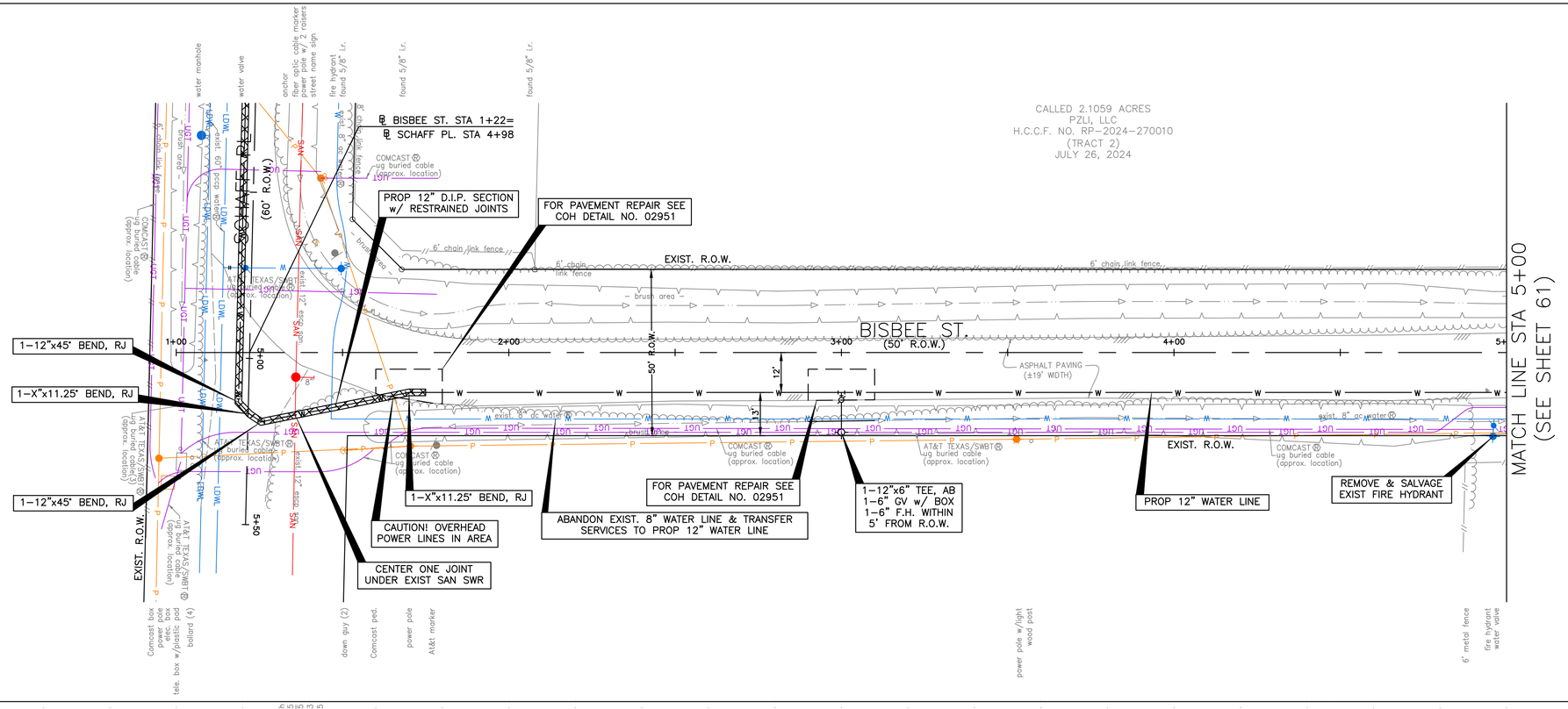
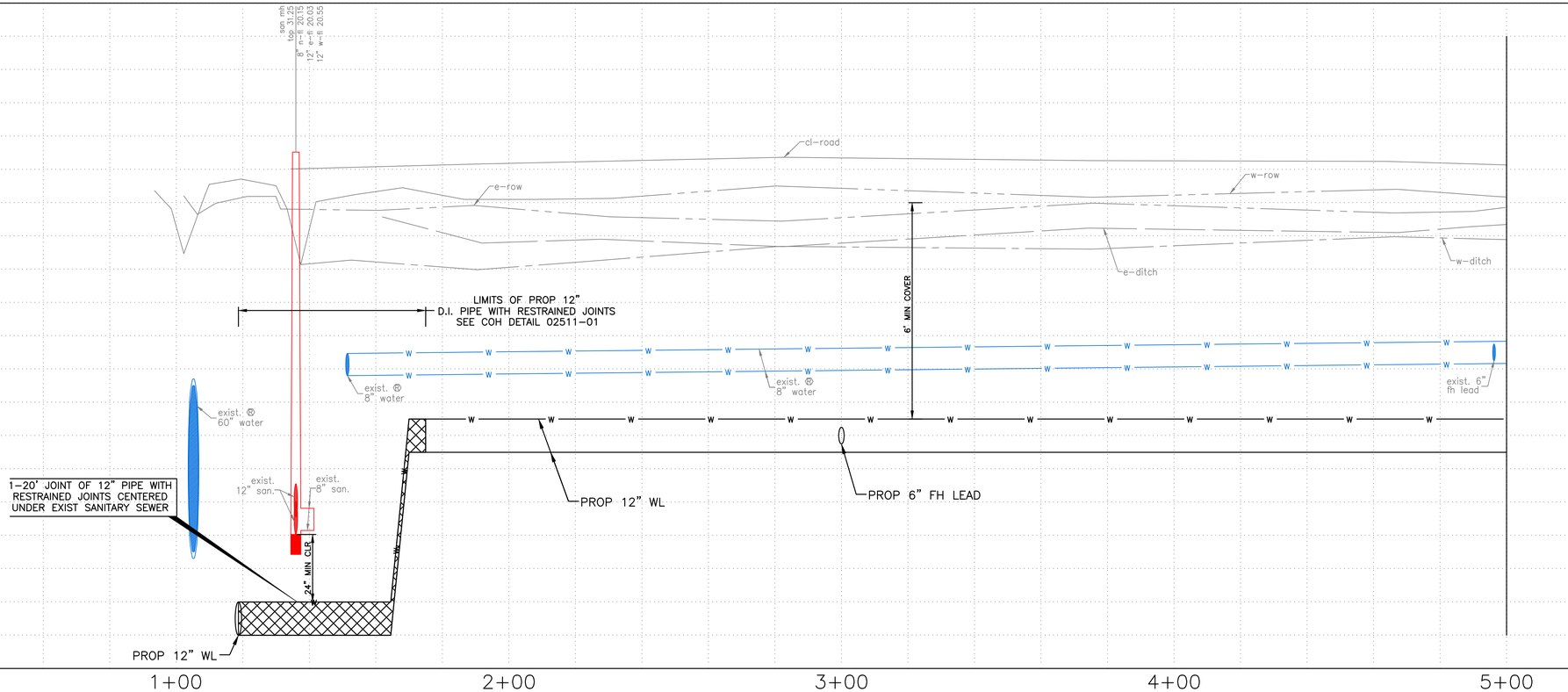
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL
IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL
SITE 1A - SCHAFF PL
PROFILE
BEGIN TO END

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' V: 1" = 2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 59 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - Schaff PL.dwg plotted on Apr 03, 2025 - 8:00pm





HORIZ:1"=20'
VERT: 1"=2'

NO.	DATE	REVISION	APP.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 030190 IS AN HCFCD BRASS DISC STAMPED C103 PCM1 LOCATED ON EAST SIDEWALK ON GALVESTON ROAD APPROXIMATELY 0.1 MILE NORTHWEST FROM THE INTERSECTION OF PARK PLACE BLVD IN KEYMAP 535L IN THE SIMS BAYOU WATERSHED

ELEV. 23.22 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:

T.B.M.: B-2
SET 1/2" I.R. W/KUO CAP
ELEV.=30.017
D. STA. 1+11.74 OFFSET: 0.47R

NOTES:

NOTICE:

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VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.

Signature valid for six months.

Date

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities – not to be used for conflict verification)

Signature valid for six months.

Date

Approved for AT&T underground conduit facilities only.
Signature valid for one year.

KUO & ASSOCIATES
ENGINEERING + SURVEYING
10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713-975-8769
TX FIRM NO.: F-4578

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF

SUDHEER GOUD SANGAM, P.E.
TEXAS REG. NO.: 111684

ON 01/15/2025
IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES.

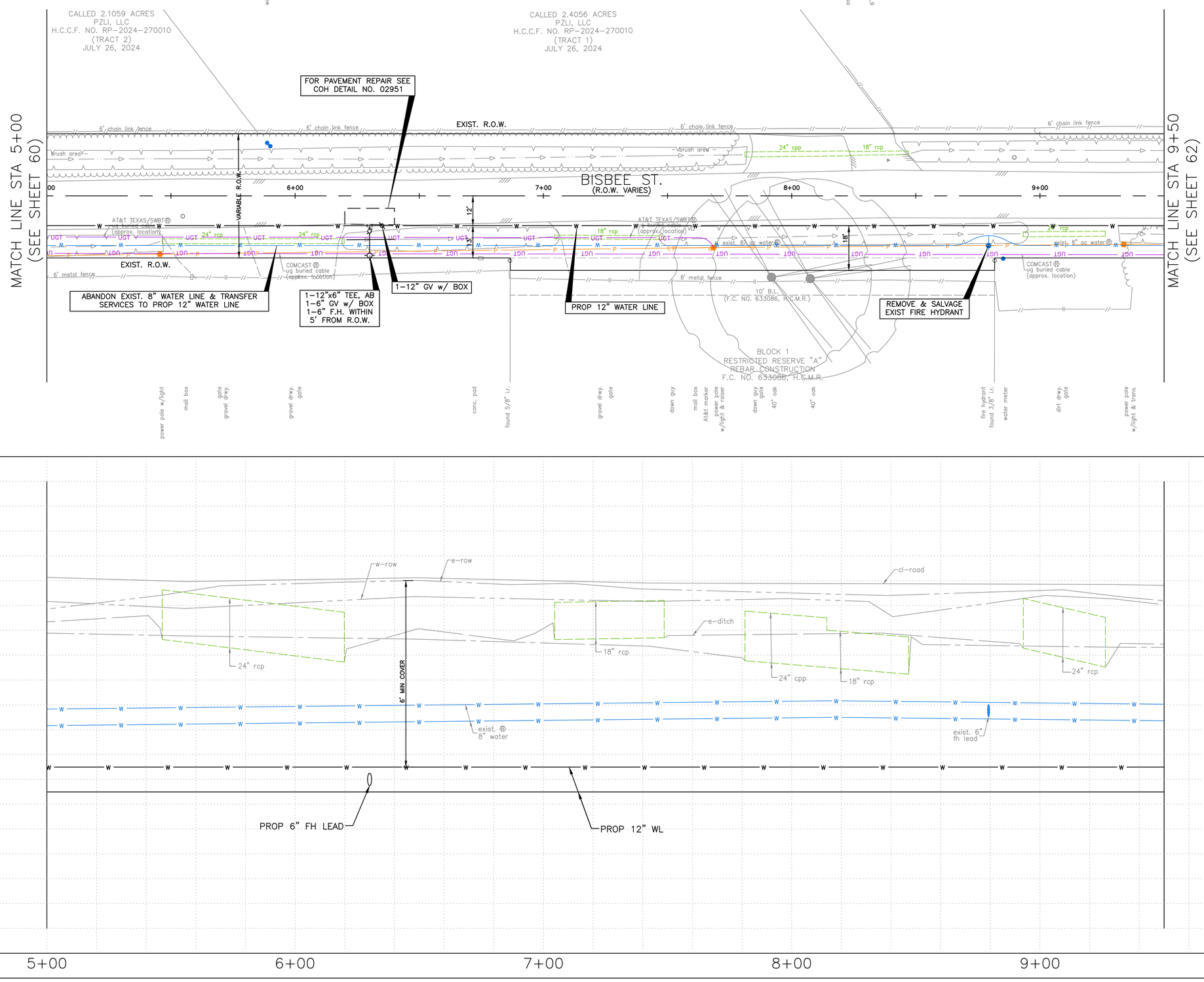
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL

SITE 1A – BISBEE ST
PLAN & PROFILE
BEGIN TO STA 5+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' W: 1" = 2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 60 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - Bisbee St.dwg plotted on Apr 03, 2025 - 8:00pm



HORIZ:1"=20'
VERT: 1"=2'

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ELEV. 23.22 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:

T.B.M.: B-4
SET MAGNAIL W/SHINER
ELEV.=30.303
D. STA. 8+41.84 OFFSET: 15.28L

NOTES:

NO.	DATE	REVISION	APP.

NOTICE:
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HOUSTON, TX 77042
713-975-8769
TX FIRM NO.: F-4578

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL

SITE 1A – BISBEE ST
PLAN & PROFILE
STA 5+00 TO 9+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' W: 1" = 2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 61 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - Bisbee St.dwg plotted on Apr 03, 2025 - 8:01pm

MATCH LINE STA 9+50
(SEE SHEET 61)

MATCH LINE STA 14+00
(SEE SHEET 63)

FOR PAVEMENT REPAIR SEE COH DETAIL NO. 02951

CAUTION! OVERHEAD POWER LINES IN AREA

EXIST. R.O.W.

VARIABLE R.O.W.

ASPHALT PAVING (±19' WIDTH)

ABANDON EXIST. 8" WATER LINE & TRANSFER SERVICES TO PROP 12" WATER LINE

1–12"x6" TEE, AB
1–6" GV w/ BOX
1–6" F.H. WITHIN
5' FROM R.O.W.

CAUTION! CABLE LINE FACILITIES IN AREA

PROP 12" WATER LINE

REMOVE & SALVAGE EXIST FIRE HYDRANT

BLOCK 1
UNRESTRICTED RESERVE "A"
TEXAS CABLE PARTNERS, L.P. BISBEE
F.C. NO. 492022, H.C.M.R.

10' B.L.
(F.C. NO. 492022, H.C.M.R.)

20' INGRESS & EGRESS
(H.C.C.F. NOS. H471451 & K793598)

10' UTILITY ESTATE
H.C.C.F. NO. K793598

FOR PAVEMENT REPAIR SEE COH DETAIL NO. 02951

1–12"x6" TEE, AB
1–6" GV w/ BOX
1–6" F.H. WITHIN
5' FROM R.O.W.

PROP 6" FH LEAD

PROP 12" WL

PROP 6" FH LEAD

6' MIN COVER

10+00 11+00 12+00 13+00 14+00

HORIZ:1"=20'
VERT: 1"=2'

NO.	DATE	REVISION	APP.

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ELEV. 23.22 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:

T.B.M.: B–5
SET 'X' CUT ON CONC.
ELEV.=29.922
D. STA. 12+05.99 OFFSET: 25.40R

NOTES:

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HOUSTON, TX 77042
713–975–8769
TX FIRM NO.: F–4578

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FB NO. 000000

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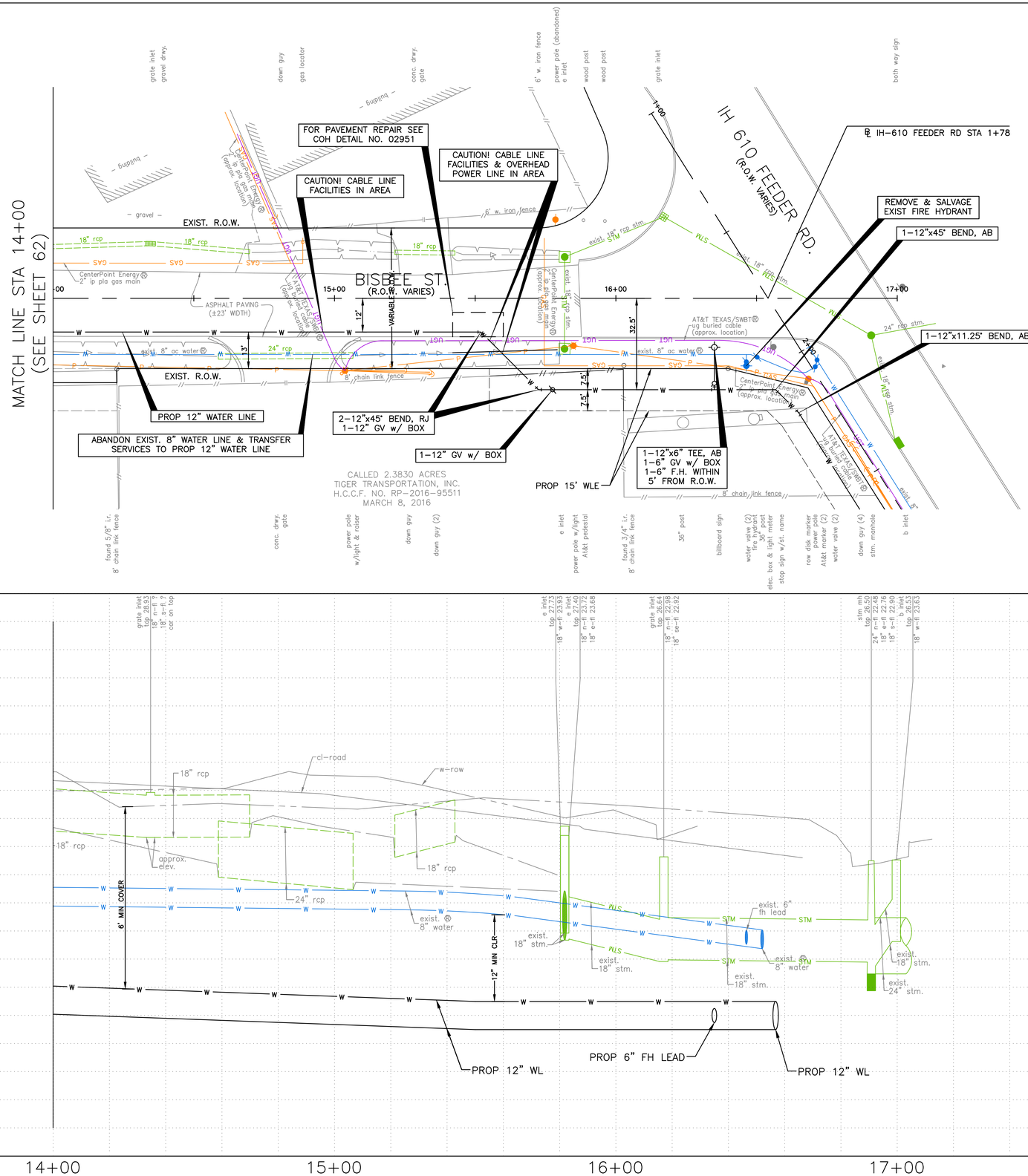
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

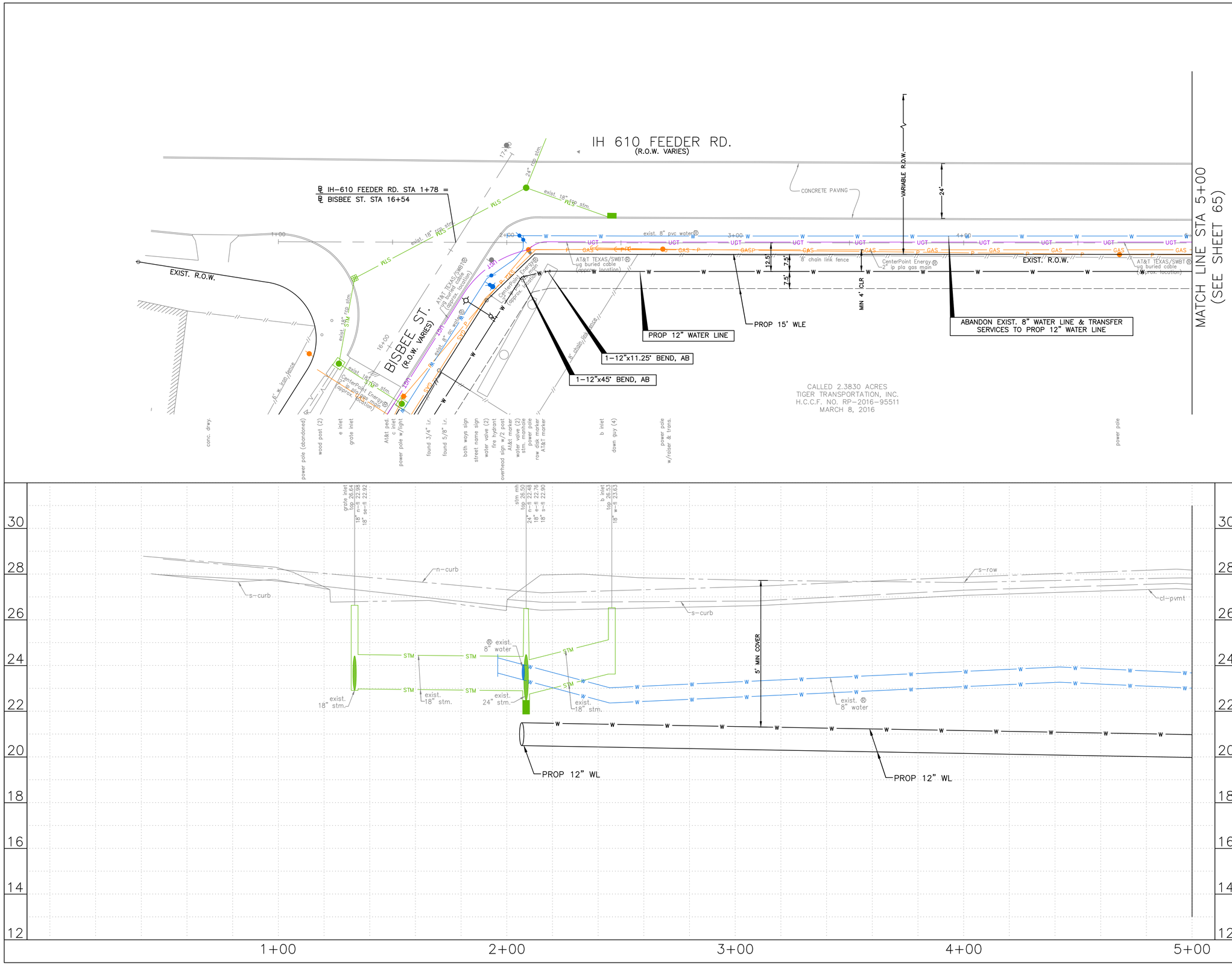
MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 1A – BISBEE ST
PLAN & PROFILE
STA 9+50 TO 14+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1" = 20' W: 1" = 2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 62 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - Bisbee St.dwg plotted on Apr 03, 2025 - 8:01pm


MATCH LINE STA 14+00
(SEE SHEET 62)
EXIST. R.O.W.
BISBEE ST.
(R.O.W. VARIES)
ASPHALT PAVING
(±23' WIDTH)
EXIST. R.O.W.
IH 610 FEEDER RD.
(R.O.W. VARIES)
℄ IH-610 FEEDER RD STA 1+78
FOR PAVEMENT REPAIR SEE
COH DETAIL NO. 02951
CAUTION! CABLE LINE
FACILITIES IN AREA
CAUTION! CABLE LINE
FACILITIES & OVERHEAD
POWER LINE IN AREA
REMOVE & SALVAGE
EXIST FIRE HYDRANT
1-12"x45° BEND, AB
1-12"x11.25° BEND, AB
PROP 12" WATER LINE
ABANDON EXIST. 8" WATER LINE & TRANSFER
SERVICES TO PROP 12" WATER LINE
2-12"x45° BEND, RJ
1-12" GV w/ BOX
1-12" GV w/ BOX
1-12"x6" TEE, AB
1-6" GV w/ BOX
1-6" F.H. WITHIN
5' FROM R.O.W.
PROP 15" WLE
CALLED 2.3830 ACRES
TIGER TRANSPORTATION, INC.
H.C.C.F. NO. RP-2016-95511
MARCH 8, 2016
CenterPoint Energy
-2" lp pla gas main
(approx. location)
AT&T TEXAS/SWBT
-ug buried cable
(approx. location)
exist. 8" ac water
6' chain link fence
6' w. iron fence
exist. 18" rcp stm.
exist. 15" rcp stm.
24" rcp stm.
exist. 6" WLS
exist. 6" W
exist. 6" S
exist. 6" P
exist. 6" G
exist. 6" T
exist. 6" E
exist. 6" TV
exist. 6" SVO
exist. 6" STM



HORIZ:1"=20'
VERT: 1"=2'

BENCHMARK:

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ELEV. 23.22 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:

T.B.M.: B-6
SET 1/2" I.R. W/KUO CAP
ELEV.=27.095
D. STA. 2+31.35 OFFSET: 39.79L

NOTES:

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Date

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LAN

KUO & ASSOCIATES
ENGINEERING + SURVEYING
10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713-975-8769
TX FIRM NO.: F-4578

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

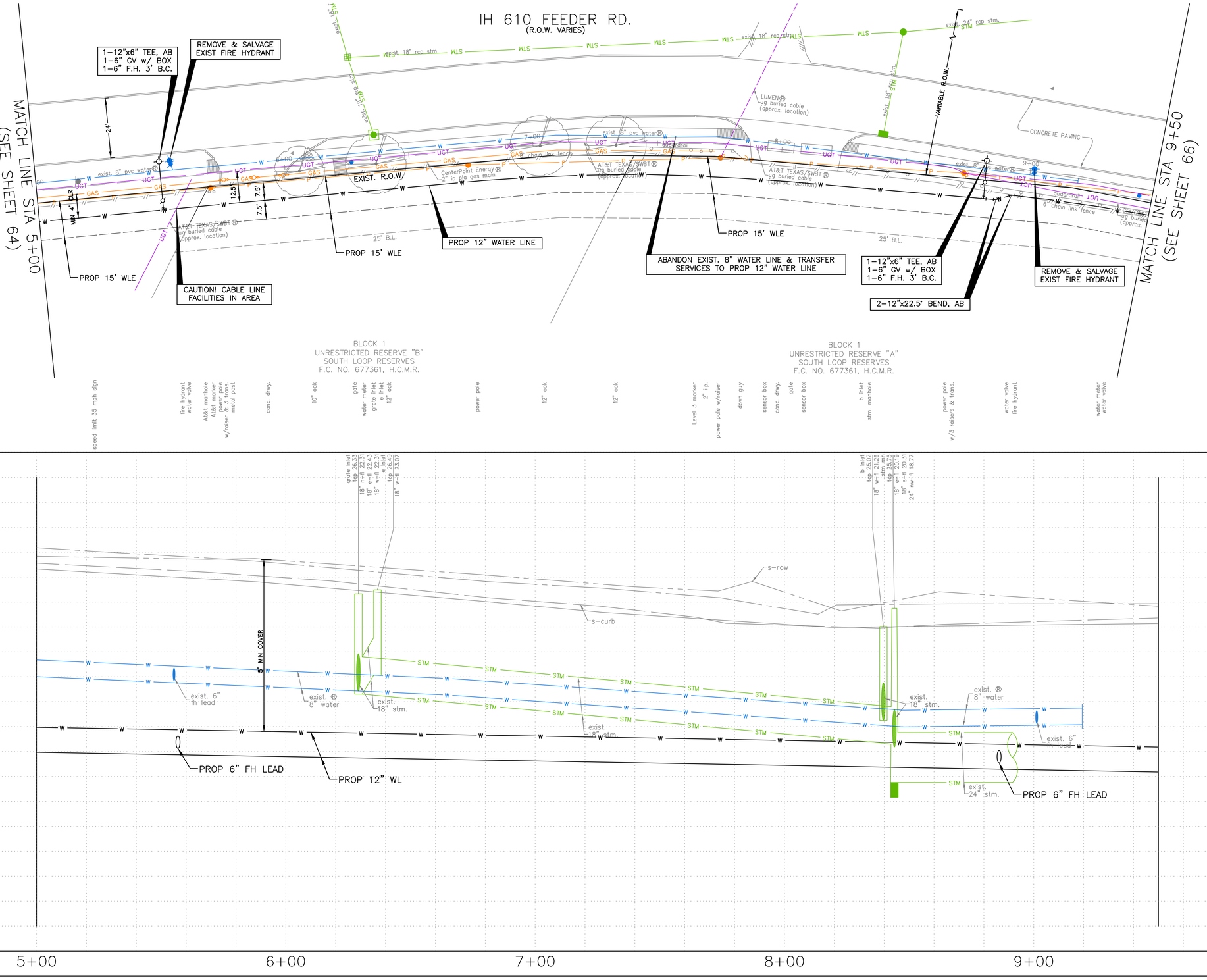
MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 1A – IH-610 FEEDER
PLAN & PROFILE
BEGIN TO STA 05+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' W: 1" = 2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 64 OF 244	

NO.	DATE	REVISION	APP.

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - IH-610 Feeder Rd.dwg plotted on Apr 03, 2025 - 8:02pm



HORIZ:1"=20'
VERT: 1"=2'

NO.	DATE	REVISION	APP.

BENCHMARK:

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ELEV. 23.22 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:

T.B.M.: B-7
SET 'X' CUT ON CONC.
ELEV.=26.952
D. STA. 6+03.57 OFFSET: 5.34L

NOTES:

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10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713-975-8769
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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

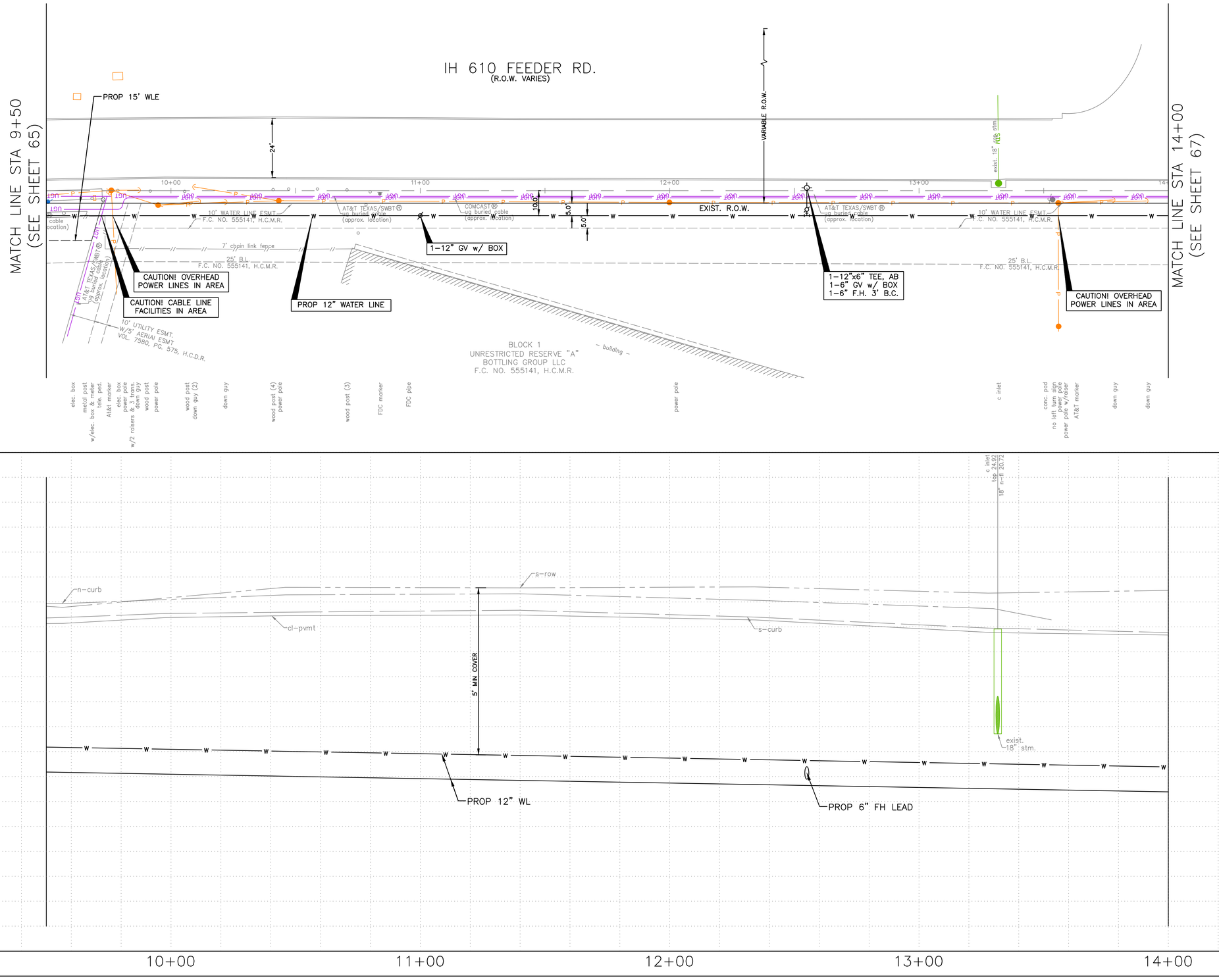
MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3

60% SUBMITTAL

SITE 1A – IH-610 FEEDER PLAN & PROFILE STA 5+00 TO 9+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1"= 20' W: 1"= 2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 65 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - IH-610 Feeder Rd.dwg plotted on Apr 03, 2025 - 8:02pm



HORIZ:1"=20'
VERT: 1"=2'

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ELEV. 23.22 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:

T.B.M.: B-8
SET 1/2" I.R. W/KUO CAP
ELEV.=25.820
D. STA. 9+05.95 OFFSET: 33.98L

NOTES:

NO.	DATE	REVISION	APP.

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL

SITE 1A - IH-610 FEEDER
PLAN & PROFILE
STA 9+50 TO 14+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1"=20' W: 1"=2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 66 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - IH-610 Feeder Rd.dwg plotted on Apr 03, 2025 - 8:03pm



N

0' 20' 40'

HORIZ:1"=20'
VERT: 1"=2'

NO.	DATE	REVISION	APP.

BENCHMARK:

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ELEV. 23.22 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:

T.B.M.: B-101
SET 1/2" I.R. W/KUO CAP
ELEV.=26.668
D. STA. 21+20.90 OFFSET: 11.14R

NOTES:

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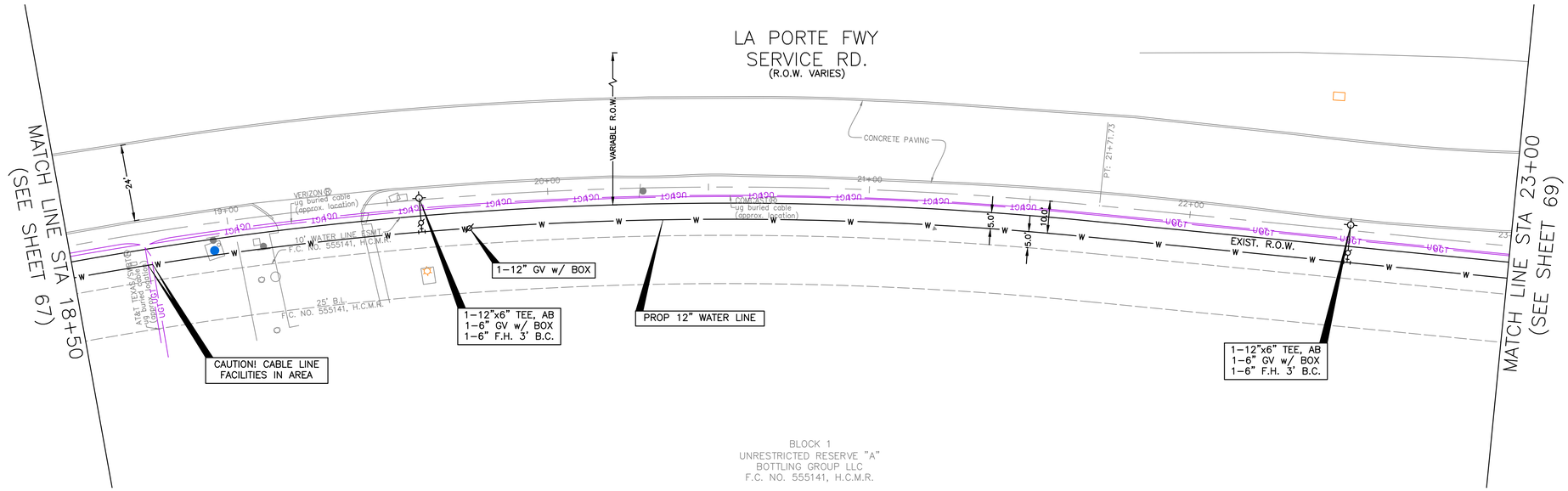
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

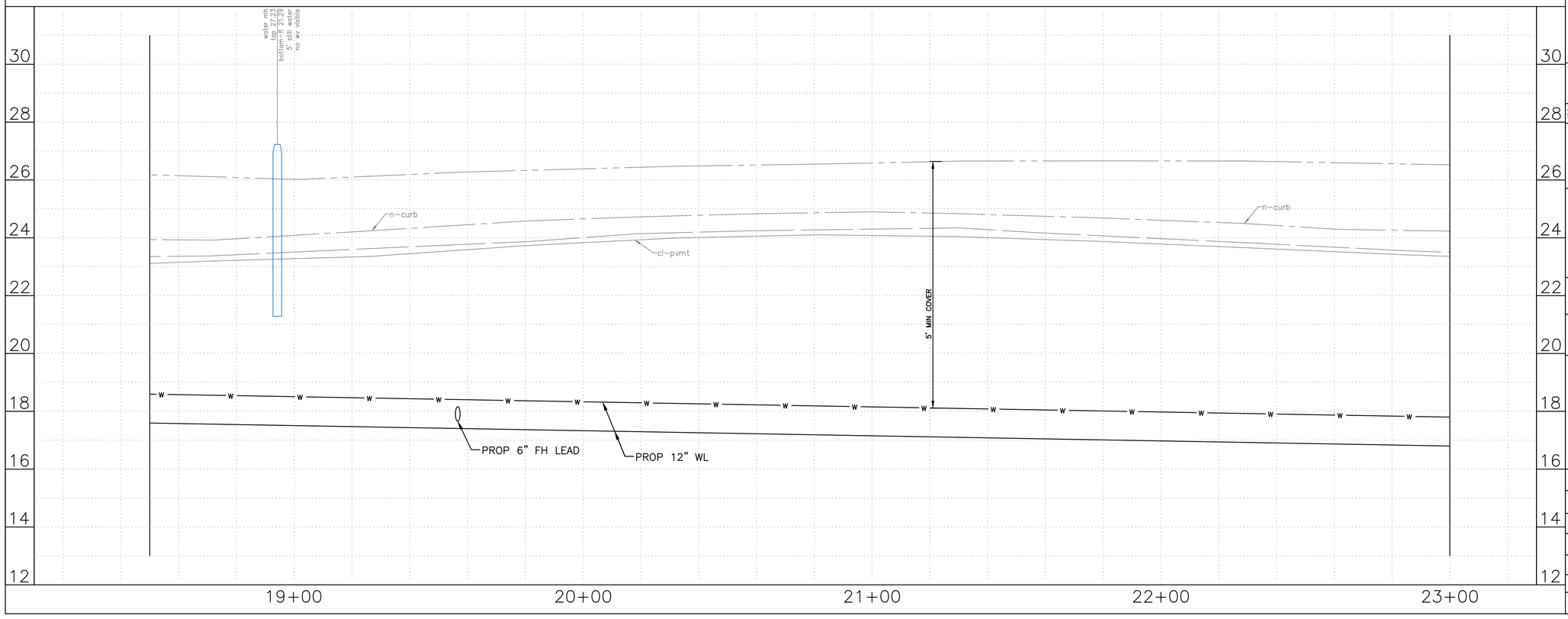
MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL

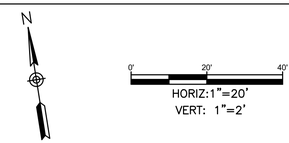
SITE 1A - IH-610 FEEDER PLAN & PROFILE
STA 14+00 TO 18+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 67 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - IH-610 Feeder Rd.dwg plotted on Apr 03, 2025 - 8:03pm







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ELEV. 23.22 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:

T.B.M.: B-101
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ELEV.=26.668
D. STA. 21+20.90 OFFSET: 11.14R

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KUO & ASSOCIATES
ENGINEERING + SURVEYING
10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713-975-8769
TX FIRM NO.: F-4578

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF

SUDHEER GOUD SANGAM, P.E.
TEXAS REG. NO.: 111684

ON 01/15/2025
IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES.

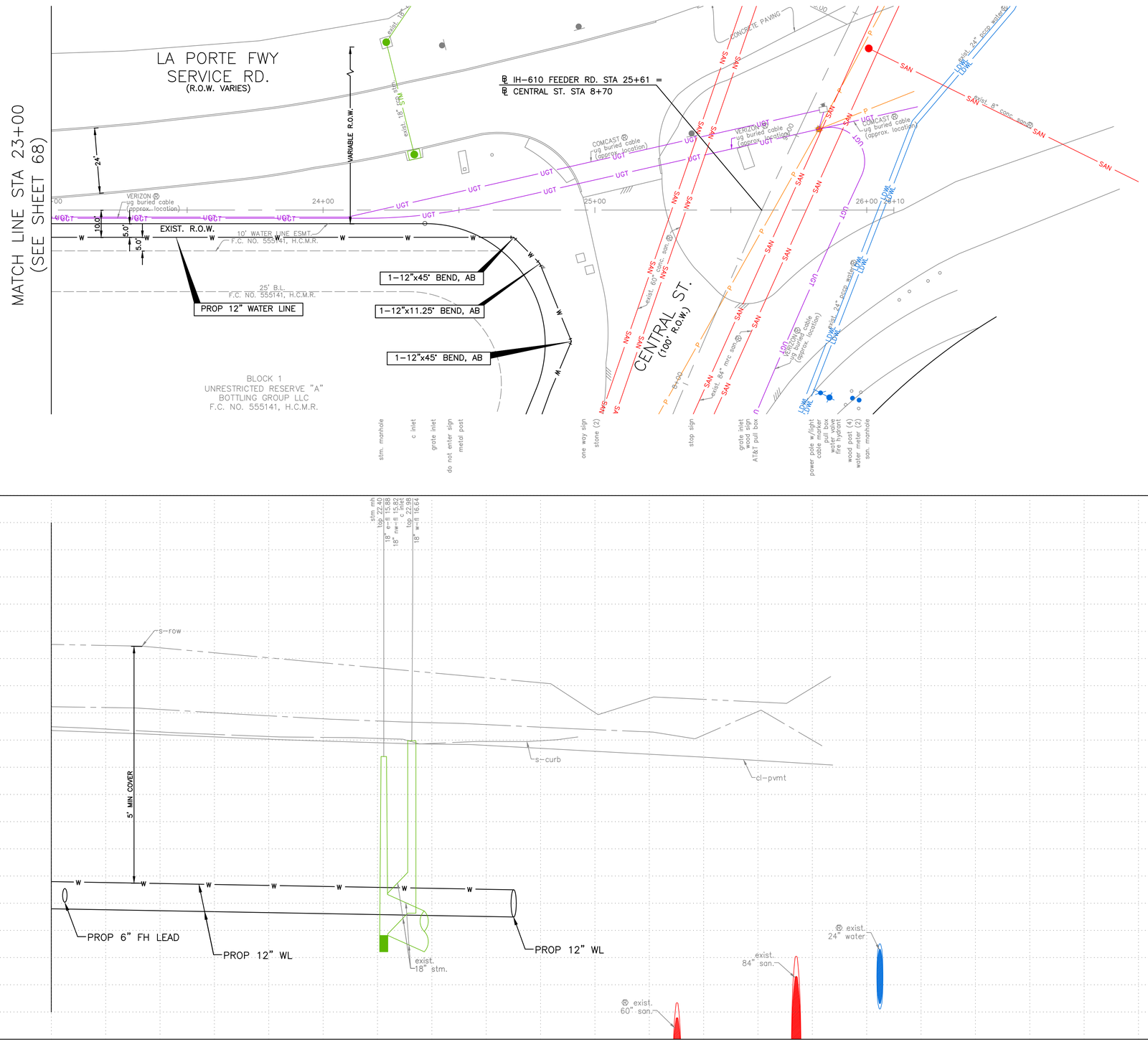
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL

SITE 1A - IH-610 FEEDER
PLAN & PROFILE
STA 18+50 TO 23+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' W: 1" = 2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 68 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - IH-610 Feeder Rd.dwg plotted on Apr 03, 2025 - 8:04pm



N

0' 20' 40'

HORIZ:1"=20'
VERT: 1"=2'

NO.	DATE	REVISION	APP.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 030190 IS AN HCFCD BRASS DISC STAMPED C103 PCM1 LOCATED ON EAST SIDEWALK ON GALVESTON ROAD APPROXIMATELY 0.1 MILE NORTHWEST FROM THE INTERSECTION OF PARK PLACE BLVD IN KEYMAP 535L IN THE SIMS BAYOU WATERSHED

ELEV. 23.22 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:

T.B.M.: B-102
SET 1/2" I.R. W/KUO CAP
ELEV.=25.175
D. STA. 24+81.00 OFFSET: 21.05R

NOTES:

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.

Signature valid for six months.

Date

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities – not to be used for conflict verification)

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Date

Approved for AT&T underground conduit facilities only.
Signature valid for one year.

LAN

KUO & ASSOCIATES
ENGINEERING + SURVEYING
10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713-975-8769
TX FIRM NO.: F-4578

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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SUDHEER GOUD SANGAM, P.E.
TEXAS REG. NO.: 111684

ON 01/15/2025
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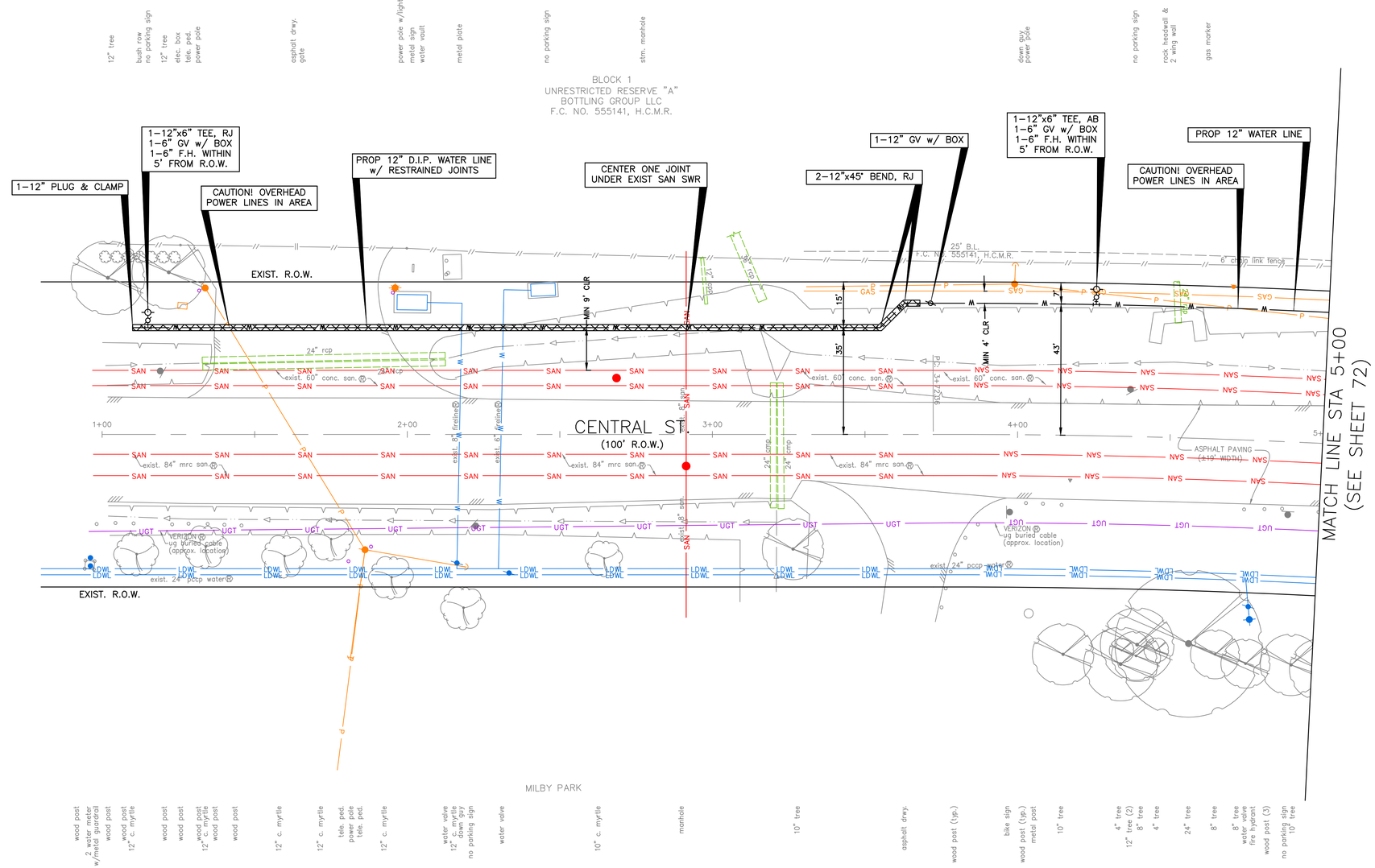
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL

SITE 1A - IH-610 FEEDER PLAN & PROFILE STA 23+00 TO END

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1"=20' W: 1"=2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 69 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - IH-610 Feeder Rd.dwg plotted on Apr 03, 2025 - 8:04pm



(SEE SHEET 71 FOR PROFILE)

HORIZ:1"=20'
VERT:N/A

NO.	DATE	REVISION	APP.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 030190 IS AN HCFCD BRASS DISC STAMPED C103 PCM1 LOCATED ON EAST SIDEWALK ON GALVESTON ROAD APPROXIMATELY 0.1 MILE NORTHWEST FROM THE INTERSECTION OF PARK PLACE BLVD IN KEYMAP 535L IN THE SIMS BAYOU WATERSHED

ELEV. 23.22 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:

T.B.M.: B–103
SET MAGNAIL W/SHINER
ELEV.=25.270
D. STA. 4+17.46 OFFSET: 14.69R

NOTES:

NOTICE:
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VERIFICATION OF PRIVATE UTILITY LINES

Date

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Signature valid for six months.

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Date

Approved for AT&T underground conduit facilities only.
Signature valid for one year.

KUO & ASSOCIATES
ENGINEERING + SURVEYING
10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713–975–8769
TX FIRM NO.: F–4578

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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TEXAS REG. NO.: 111684

ON 02/25/2025
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

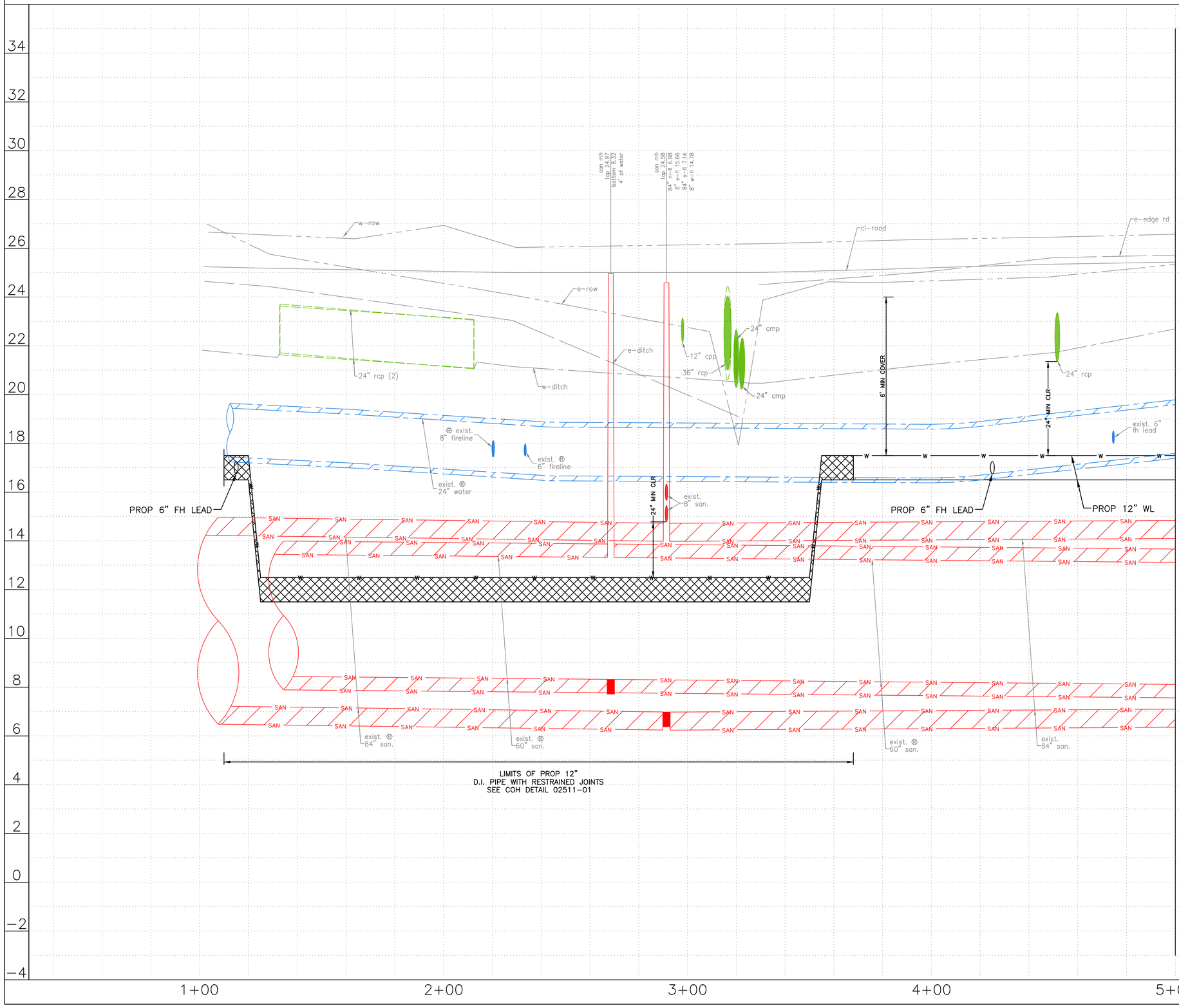
MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 1A – CENTRAL ST
PLAN
BEGIN TO STA 5+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1" = 20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 70 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - Central St.dwg plotted on Apr 03, 2025 - 8:04pm

(SEE SHEET 70 FOR PLAN)



0' 20' 40'
HORIZ:1"=20'
VERT:1"=2'

NO.	DATE	REVISION	APP.

NOTES:

NOTICE:
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HOUSTON, TX 77042
713-975-8769
TX FIRM NO.: F-4578

SURVEYED BY:
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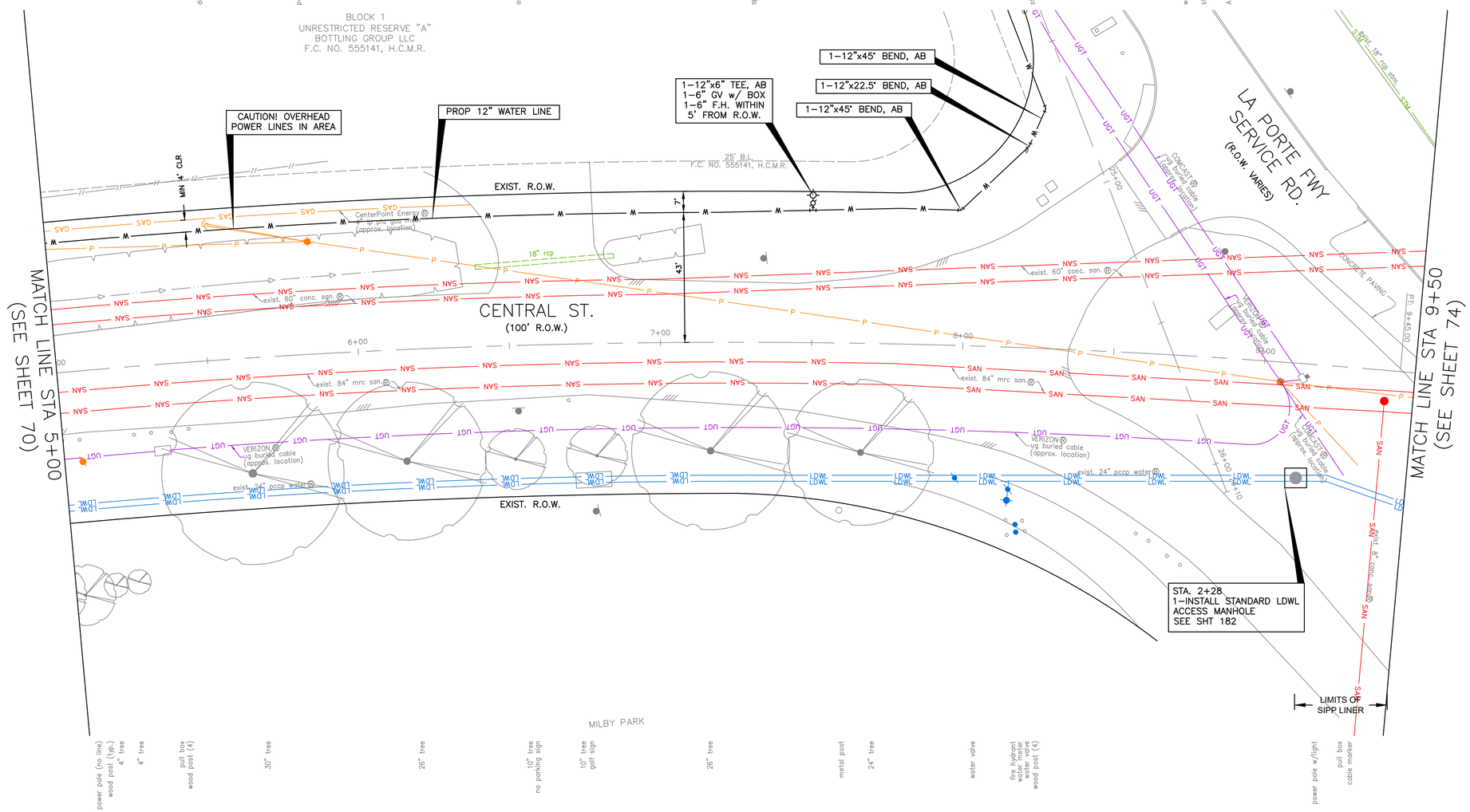
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 1A – CENTRAL ST
PROFILE
BEGIN TO STA 5+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1"=20' V: 1"=2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 71 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - Central St.dwg plotted on Apr 03, 2025 - 8:05pm



(SEE SHEET 73 FOR PROFILE)

0' 20' 40'
HORIZ:1"=20'
VERT:N/A

NO.	DATE	REVISION	APP.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 030190 IS AN HCFCD BRASS DISC STAMPED C103 PCM1 LOCATED ON EAST SIDEWALK ON GALVESTON ROAD APPROXIMATELY 0.1 MILE NORTHWEST FROM THE INTERSECTION OF PARK PLACE BLVD IN KEYMAP 535L IN THE SIMS BAYOU WATERSHED

ELEV. 23.22 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:

T.B.M.: B-102
SET 1/2" I.R. W/KUO CAP
ELEV.=25.175
D. STA. 24+81.00 OFFSET: 21.05R

NOTES:

NOTICE:
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VERIFICATION OF PRIVATE UTILITY LINES

Date

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Signature valid for six months.

Date

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Date

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Signature valid for one year.

LAN

KUO & ASSOCIATES
ENGINEERING + SURVEYING
10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713-975-8769
TX FIRM NO.: F-4578

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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TEXAS REG. NO.: 111684

ON 02/25/2025
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

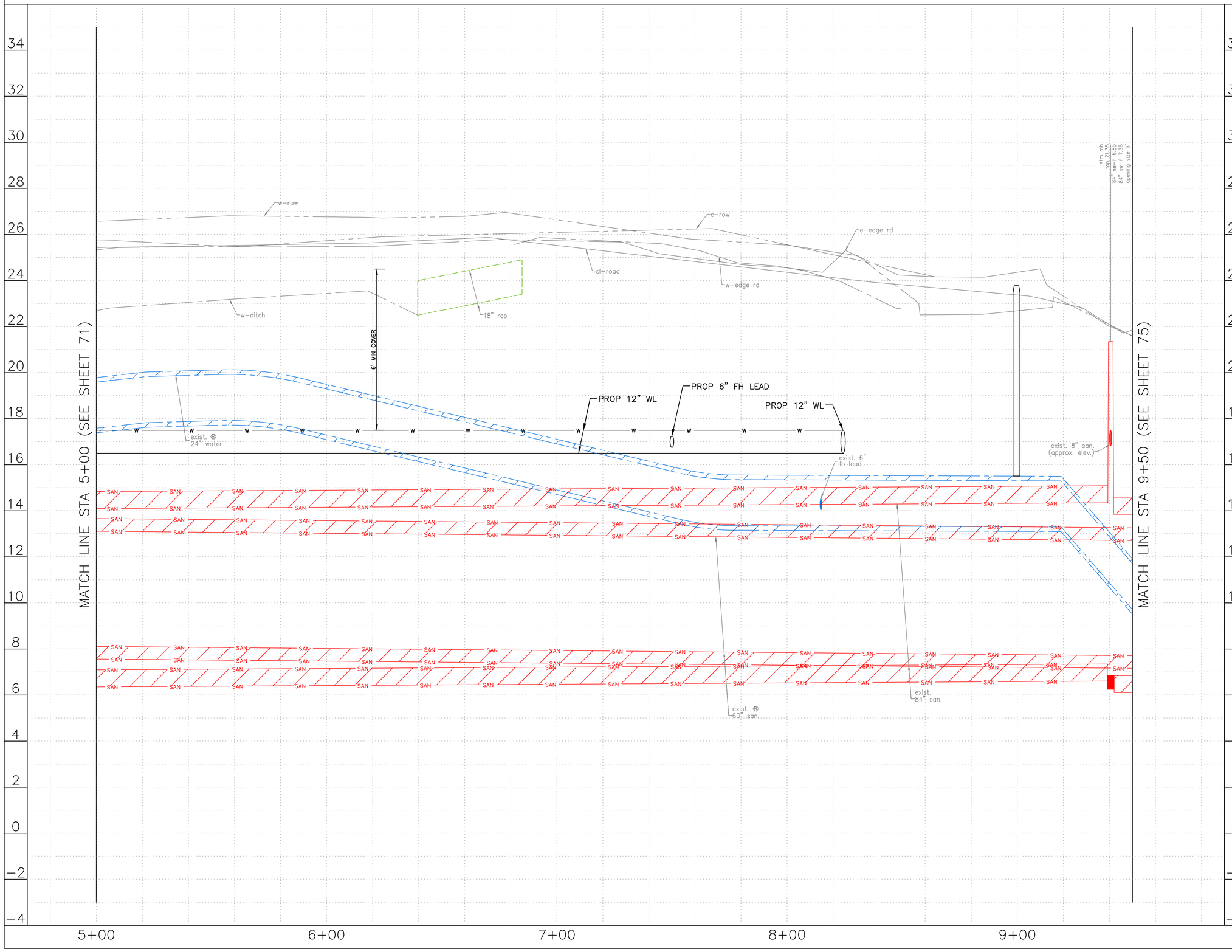
MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL

SITE 1A - CENTRAL ST
PLAN
STA 5+00 TO STA 9+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 72 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - Central St.dwg plotted on Apr 03, 2025 - 8:05pm

(SEE SHEET 72 FOR PLAN)



0' 20' 40'
HORIZ:1"=20'
VERT:1"=2'

NO.	DATE	REVISION	APP.

NOTES:

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LAN

KUO & ASSOCIATES
ENGINEERING + SURVEYING
10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713-975-8769
TX FIRM NO.: F-4578

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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TEXAS REG. NO.: 111684

ON 01/15/2025
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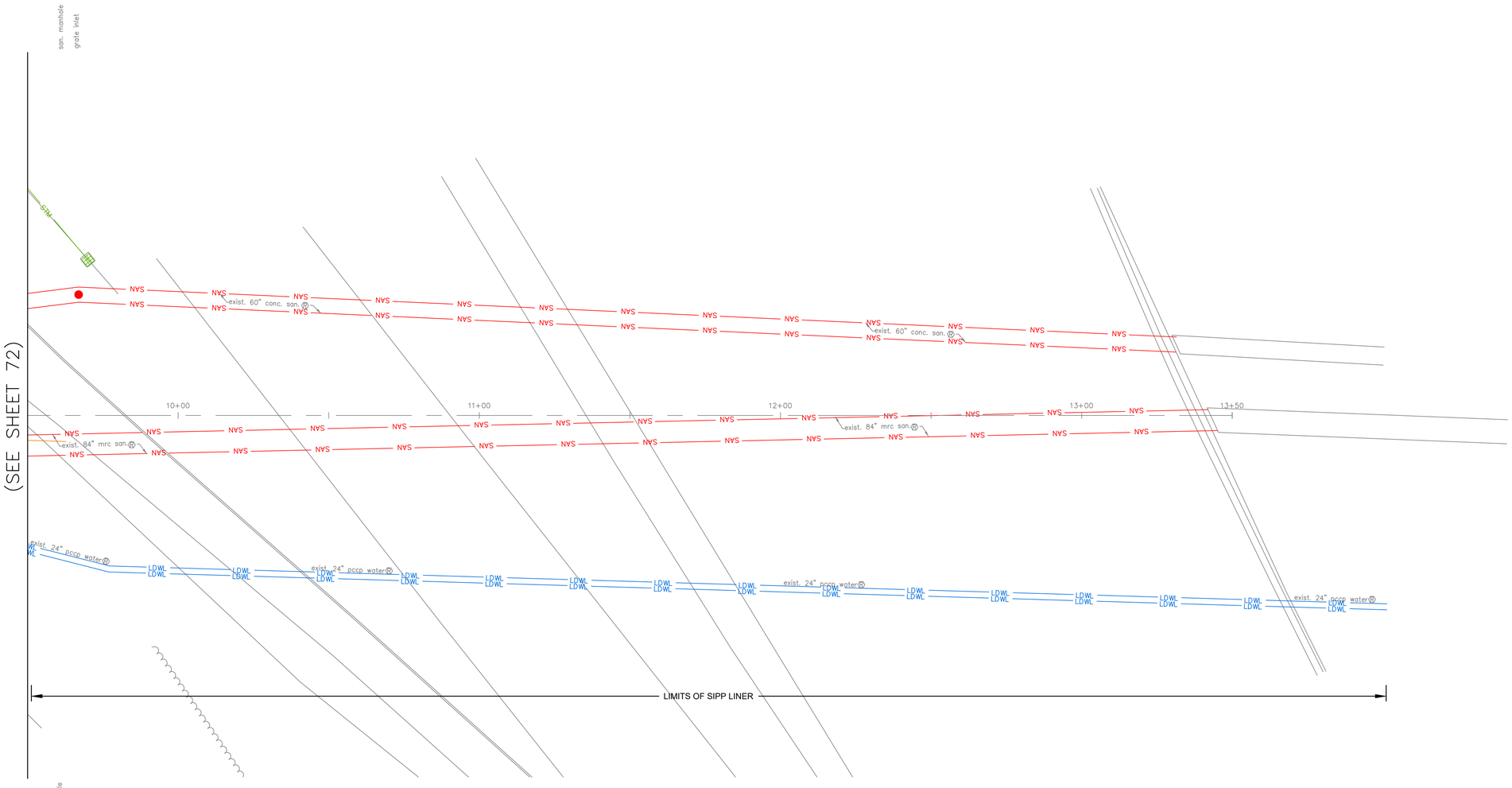
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 1A – CENTRAL ST
PROFILE
STA 5+00 TO STA 9+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' W: 1" = 2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 73 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - Central St.dwg plotted on Apr 03, 2025 - 8:05pm



(SEE SHEET 75 FOR PROFILE)

HORIZ:1"=20'
VERT:N/A

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 030190 IS AN HCFCD BRASS DISC STAMPED C103 PCM1 LOCATED ON EAST SIDEWALK ON GALVESTON ROAD APPROXIMATELY 0.1 MILE NORTHWEST FROM THE INTERSECTION OF PARK PLACE BLVD IN KEYMAP 535L IN THE SIMS BAYOU WATERSHED

ELEV. 23.22 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:

T.B.M.: B-102
SET 1/2" I.R. W/KUO CAP
ELEV.=25.175
D. STA. 24+81.00 OFFSET: 21.05R

NOTES:

NO.	DATE	REVISION	APP.

NOTICE:
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VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.

Signature valid for six months.

Date

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Date

Approved for AT&T underground conduit facilities only.
Signature valid for one year.

LOCKWOOD, ANDREWS
& NEWNAM, INC.
3700 W SAM HOUSTON PKWY S
SUITE 400
HOUSTON, TX 77042

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of interim review under the authority of:
Engineer:CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 02/23/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

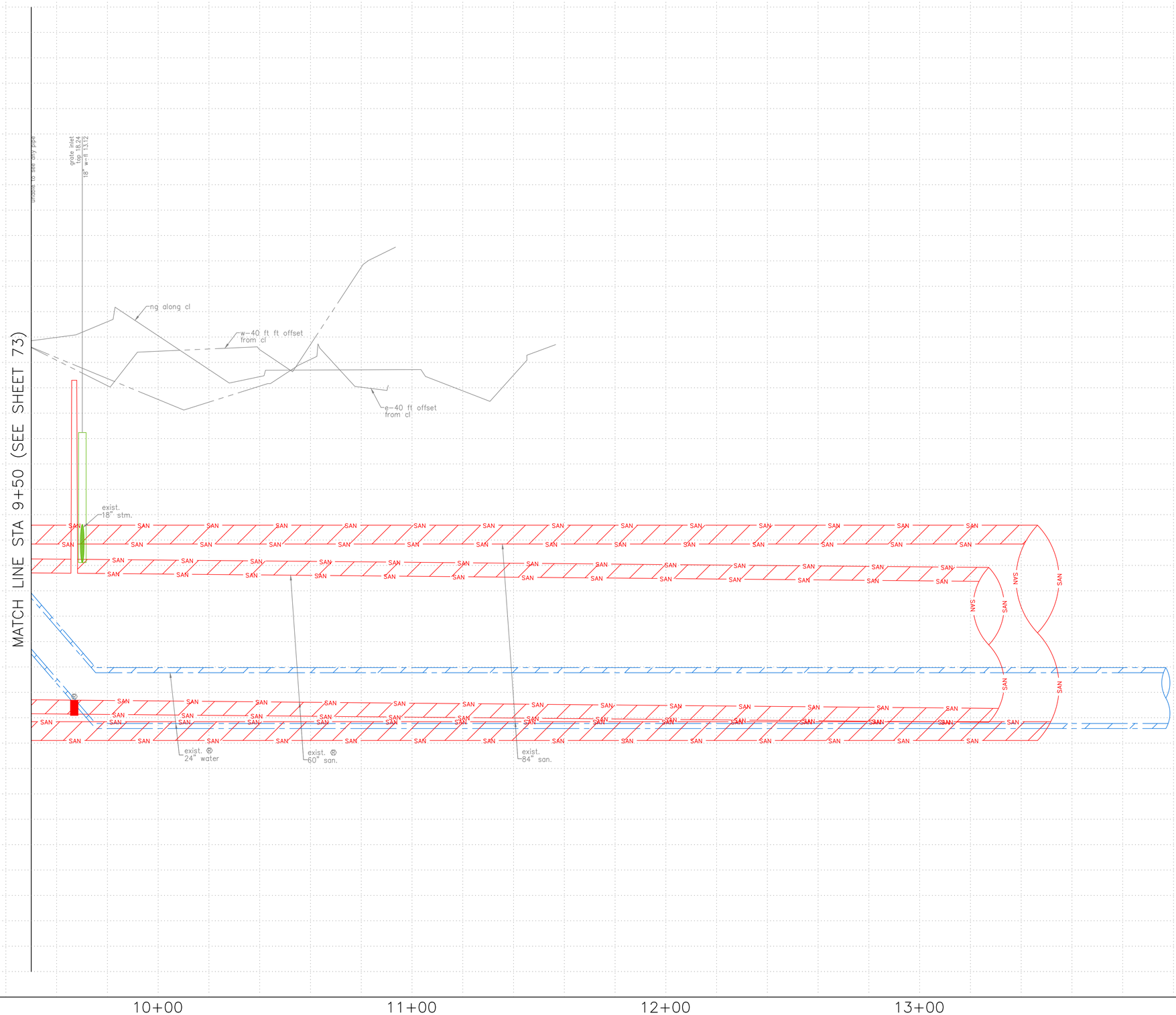
MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 1A – CENTRAL ST
PLAN
STA 9+50 TO END

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 74 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - Central St.dwg plotted on Apr 03, 2025 - 8:05pm

(SEE SHEET 74 FOR PLAN)



0' 20' 40'
HORIZ:1"=20'
VERT:1"=2'

NO.	DATE	REVISION	APP.

NOTES:

NOTICE:
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Date

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Signature valid for one year.

LAN

LOCKWOOD, ANDREWS
& NEWNAM, INC.
3700 W SAM HOUSTON PKWY S
SUITE 400
HOUSTON, TX 77042

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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Engineer:CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 02/23/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

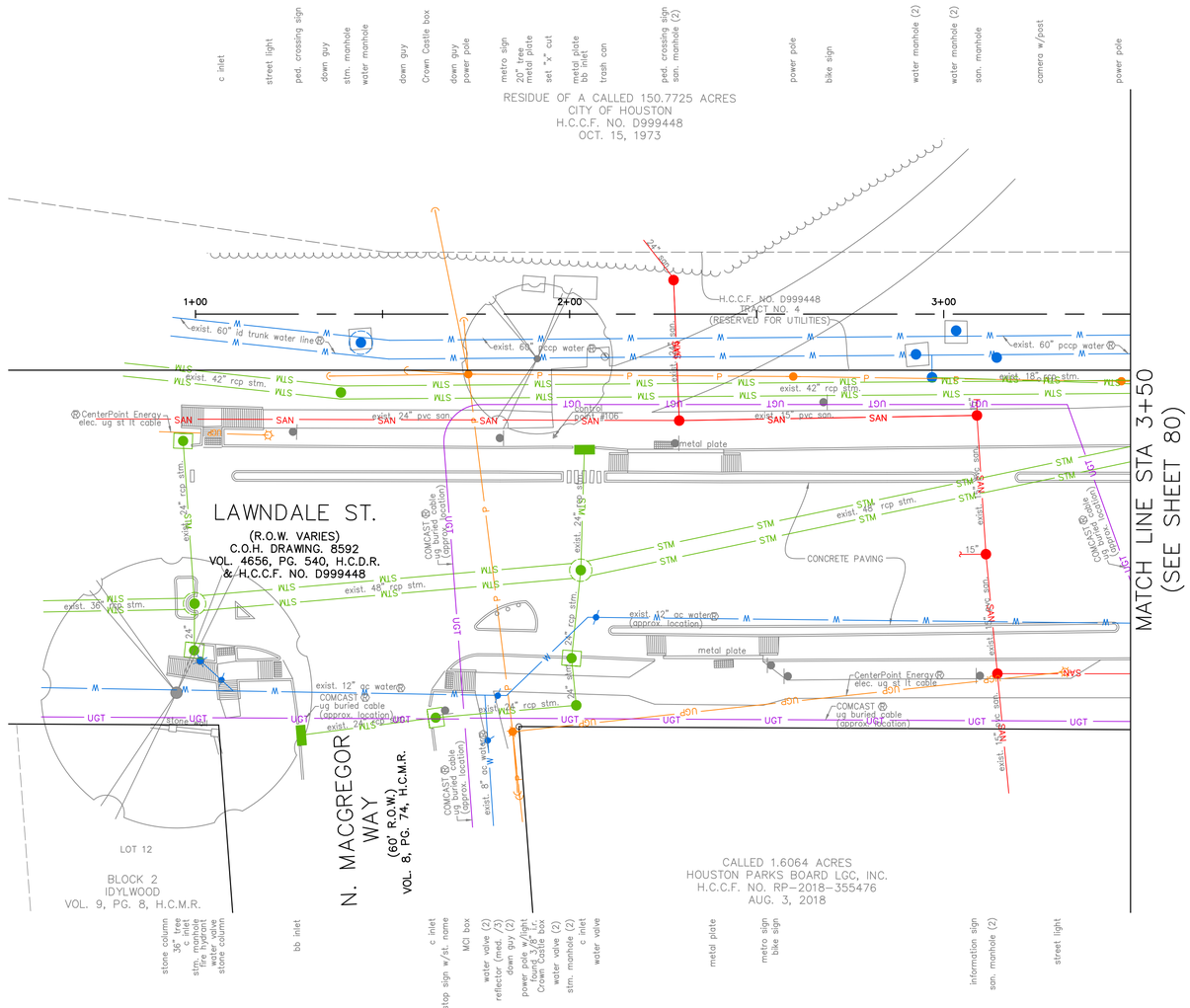
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL
IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 1A – CENTRAL ST
PROFILE
STA 9+50 TO END

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' W: 11" = 2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 75 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1A - Central St.dwg plotted on Apr 03, 2025 - 8:06pm



(SEE SHEET 79 FOR PROFILE)

HORIZ:1"=20'
VERT:N/A

BENCHMARK:
FLOODPLAIN REFERENCE MARK NUMBER 040030R IS AN HCFCD ALUMINIUM DISC STAMPED 040030R LOCATED ON NORTH SIDEWALK ON THE BRIDGE ON LAWNDALE ST APPROXIMATELY 0.4 MILE EAST FROM THE INTERSECTION OF S WAYSIDE DR IN KEYMAP 534D IN THE BRAYS BAYOU WATERSHED

ELEV. 27.07 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:
T.B.M.: B-106
SET 'X' CUT ON CONC.
ELEV.=23.849
D. STA. 1+95.98 OFFSET: 32.64R

NOTES:

NO.	DATE	REVISION	APP.

NOTICE:
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VERIFICATION OF PRIVATE UTILITY LINES

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LAN

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY
HOUSTON, TX 77042

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Engineer: CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 02/23/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

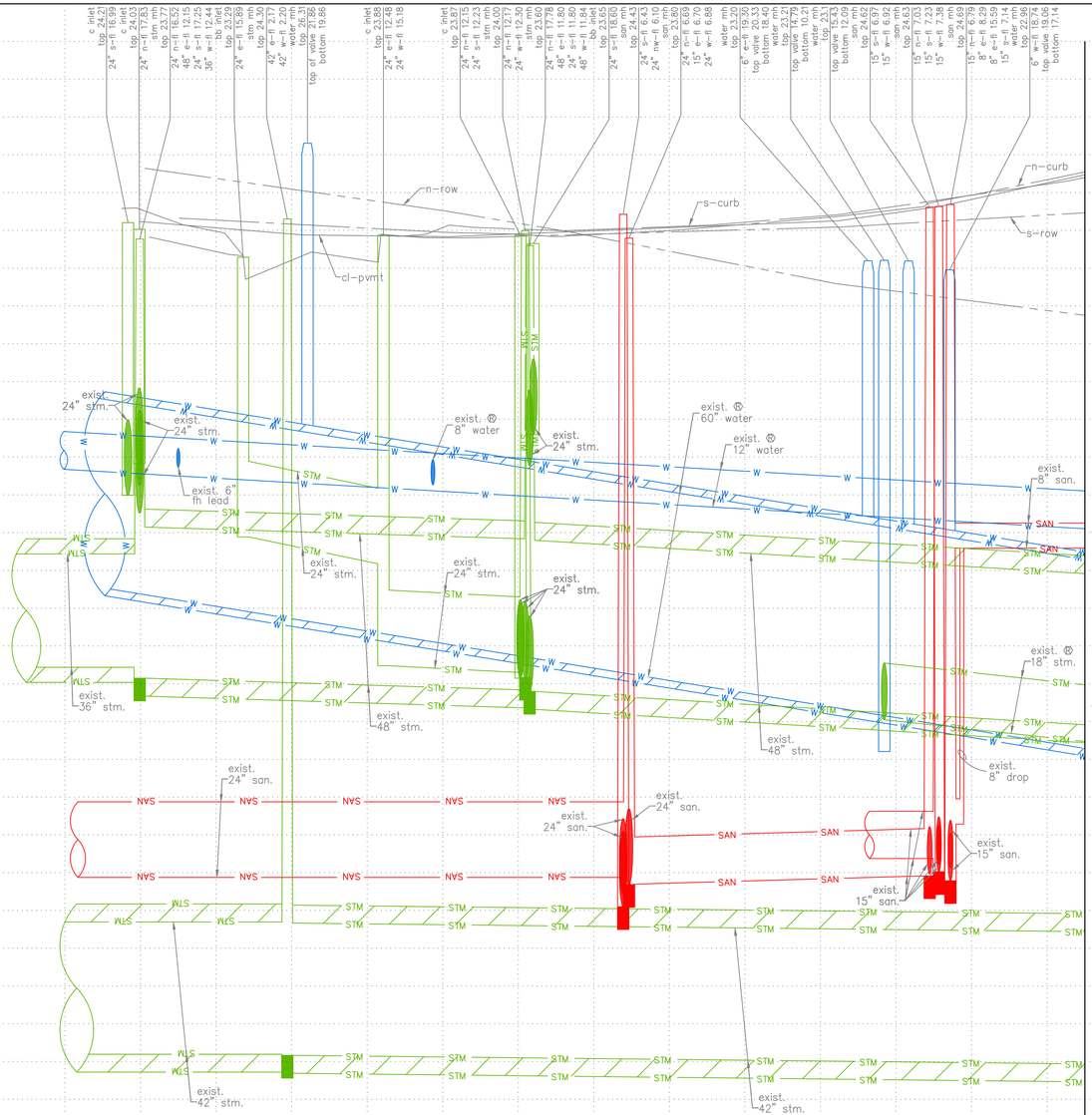
MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 1B – LAWNDALE ST
PLAN
BEGIN TO STA 3+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' V: 1" = 2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 78 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1B - Lawndale St.dwg plotted on Apr 03, 2025 - 8:06pm

(SEE SHEET 78 FOR PLAN)



1+00 2+00 3+00

0' 20' 40'
HORIZ:1"=20'
VERT:1"=2'

NO.	DATE	REVISION	APP.

NOTES:

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& NEWNAM, INC.
3700 W SAM HOUSTON PKWY
HOUSTON, TX 77042

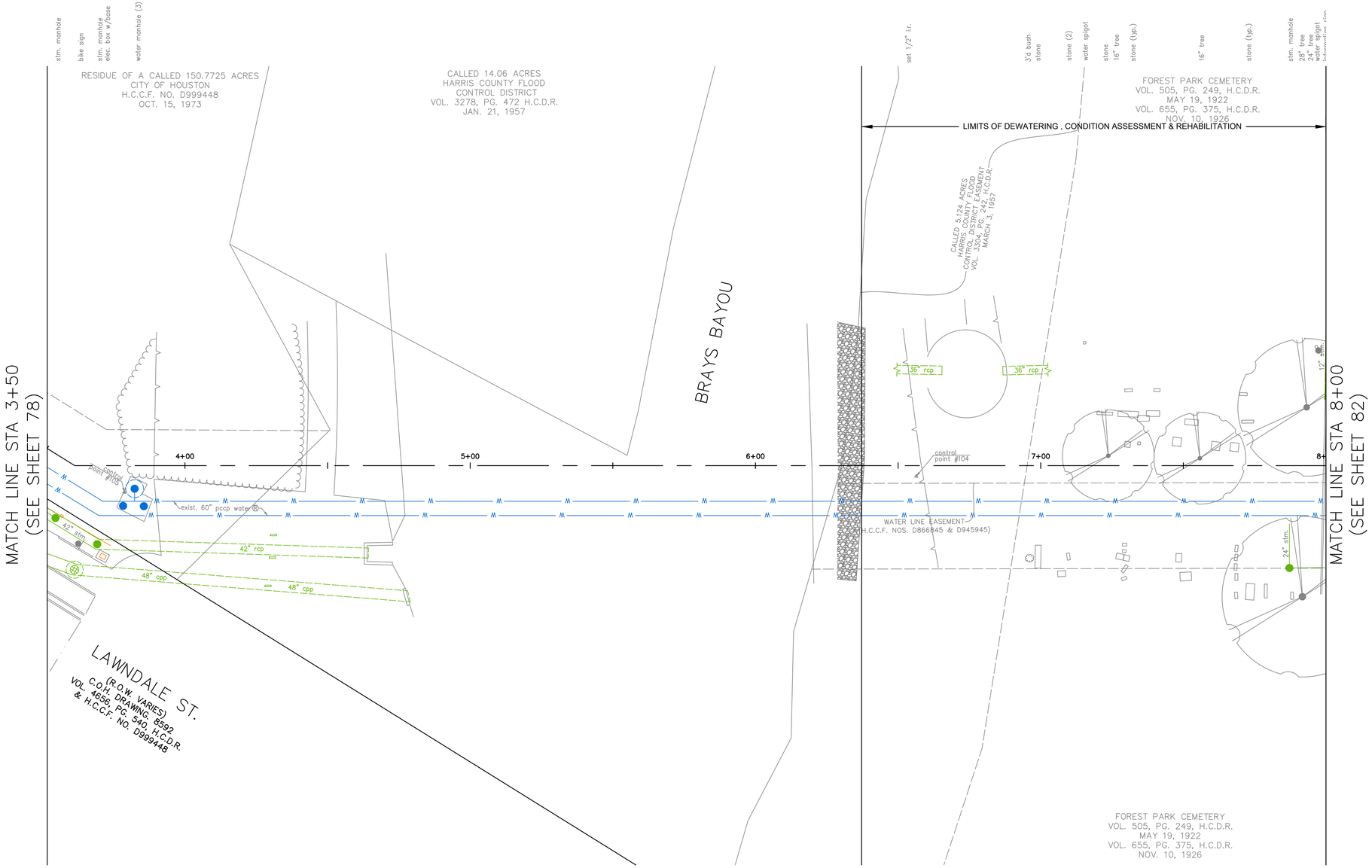
SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
SITE 1B – LAWNDALE ST
PROFILE
BEGIN TO STA 3+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1" = 20' V: 1" = 2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 79 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1B - Lawndale St.dwg plotted on Apr 03, 2025 - 8:06pm



(SEE SHEET 81 FOR PROFILE)



0' 20' 40'

HORIZ:1"=20'
VERT:N/A

NO.	DATE	REVISION	APP.

BENCHMARK:
FLOODPLAIN REFERENCE MARK NUMBER 040030R IS AN HCFCD ALUMINIUM DISC STAMPED 040030R LOCATED ON NORTH SIDEWALK ON THE BRIDGE ON LAWNDALE ST APPROXIMATELY 0.4 MILE EAST FROM THE INTERSECTION OF S WAYSIDE DR IN KEYMAP 534D IN THE BRAYS BAYOU WATERSHED

ELEV. 27.07 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:
T.B.M.: B-105
SET 'X' CUT ON CONC.
ELEV.=21.654
D. STA. 3+78.79 OFFSET: 9.34R

NOTES:
1. CONTRACTOR TO PREPARE WATER LINE FOR DEWATERING, CONDITION ASSESSMENT, & REHABILITATION UP TO THE VERTICAL BEND UNDER BRAY'S BAOU.

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.

Signature valid for six months.

Date

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities – not to be used for conflict verification)

Signature valid for six months.

Date

Approved for AT&T underground conduit facilities only.
Signature valid for one year.

LOCKWOOD, ANDREWS
& NEWNAM, INC.
3700 W SAM HOUSTON PKWY
HOUSTON, TX 77042

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of review under the authority of:
Engineer:CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 02/23/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

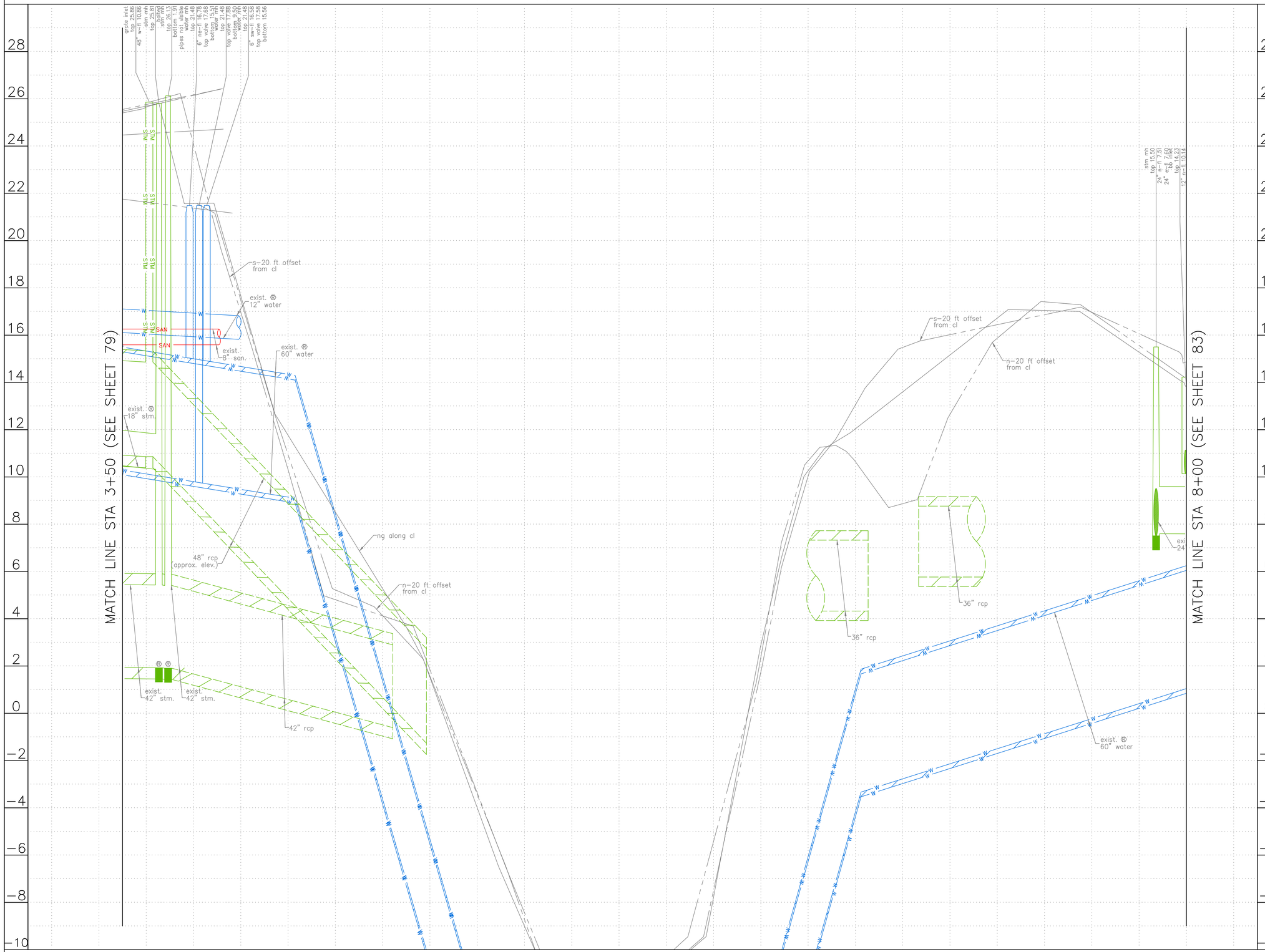
MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 1B – LAWNDALE ST
PLAN
STA 3+50 TO 8+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 80 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1B - Lawndale St.dwg plotted on Apr 03, 2025 - 8:06pm

(SEE SHEET 80 FOR PLAN)



0' 20' 40'

HORIZ:1"=20'
VERT:1"=2'

NO.	DATE	REVISION	APP.

NOTES:

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

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Date

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Signature valid for six months.

Date

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Signature valid for six months.

Date

Approved for AT&T underground conduit facilities only.
Signature valid for one year.

LAN

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY
HOUSTON, TX 77042

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

CITY OF HOUSTON

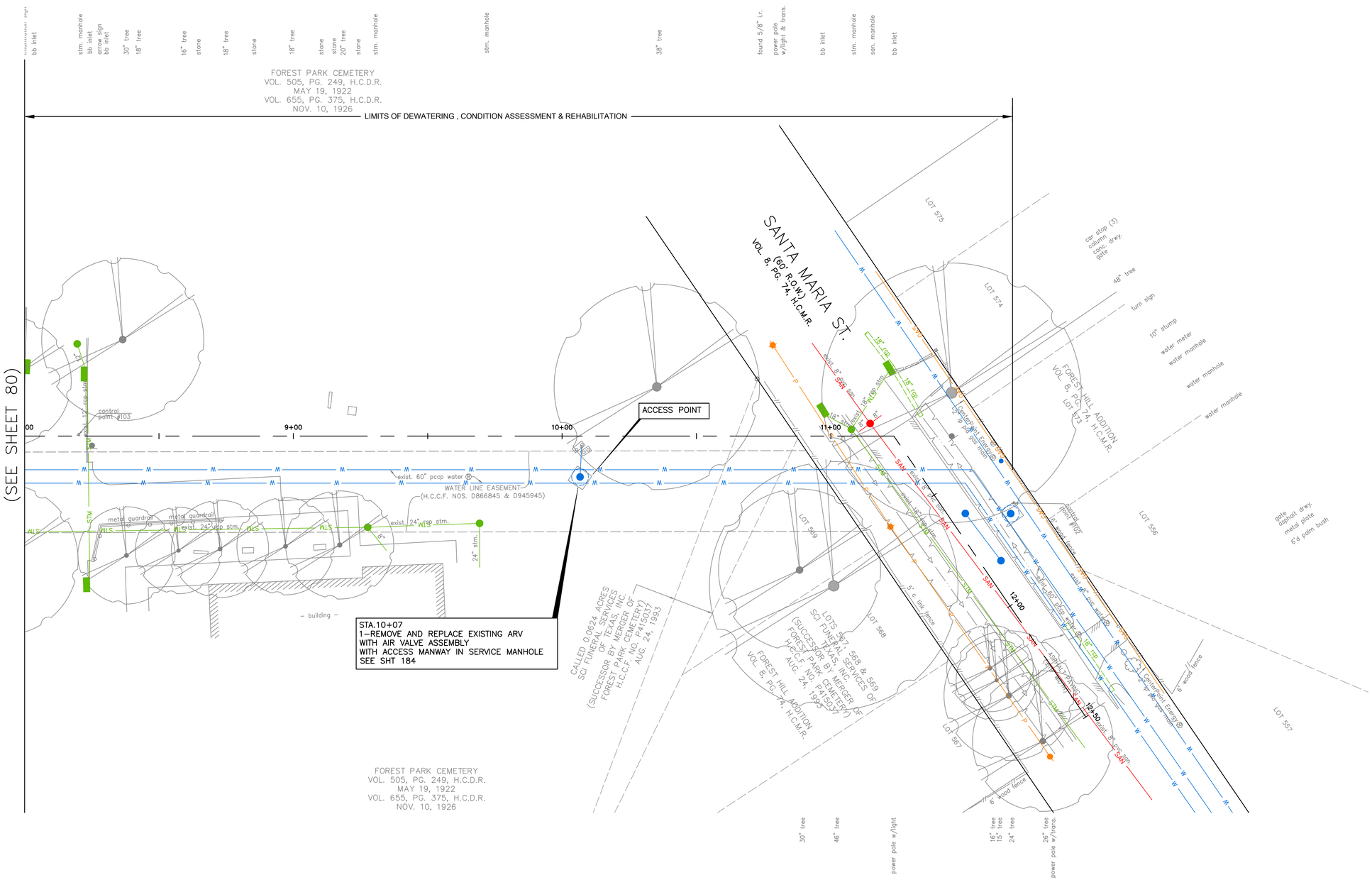
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 1B – LAWNDALE ST
PROFILE
STA 3+50 TO 8+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1" = 20' V: 1" = 2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 81 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1B - Lawndale St.dwg plotted on Apr 03, 2025 - 8:06pm





0' 20' 40'

HORIZ:1"=20'
VERT:N/A

NO.	DATE	REVISION	APP.

BENCHMARK:
FLOODPLAIN REFERENCE MARK NUMBER 040030R IS AN HCFCD ALUMINIUM DISC STAMPED 040030R LOCATED ON NORTH SIDEWALK ON THE BRIDGE ON LAWNDALE ST APPROXIMATELY 0.4 MILE EAST FROM THE INTERSECTION OF S WAYSIDE DR IN KEYMAP 534D IN THE BRAYS BAYOU WATERSHED

ELEV. 27.07 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:
T.B.M.: B-102
SET 'X' CUT ON CONC.
ELEV.=24.210
D. STA. 11+69.16 OFFSET: 22.75L

NOTES:

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.

Signature valid for six months.

Date

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities – not to be used for conflict verification)

Signature valid for six months.

Date

Approved for AT&T underground conduit facilities only.
Signature valid for one year.

LAN

LOCKWOOD, ANDREWS
& NEWNAM, INC.
3700 W SAM HOUSTON PKWY
HOUSTON, TX 77042

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes. This document is released for the purpose of interim review under the authority of Engineer: CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 02/23/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

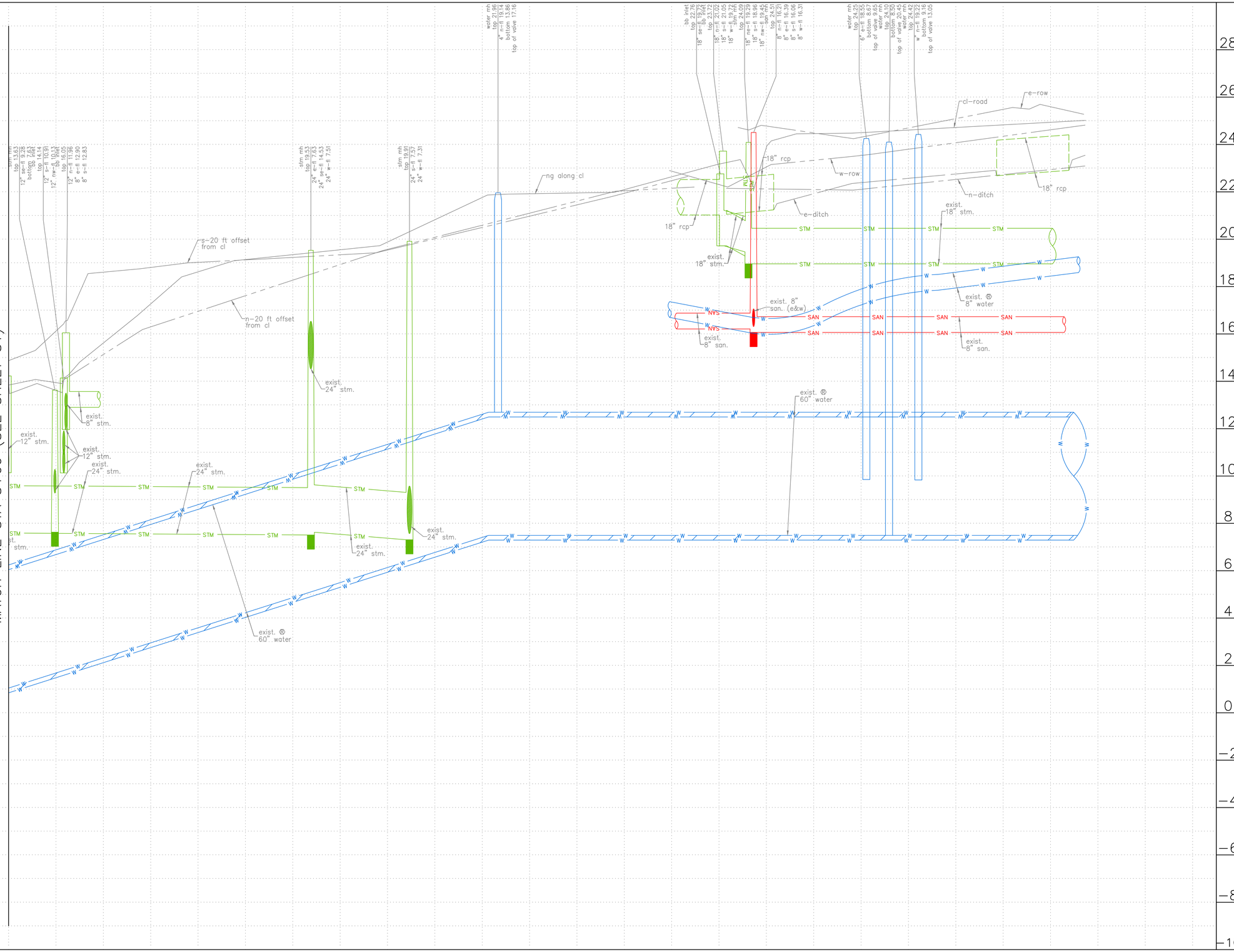
SITE 1B – LAWNDALE ST
PLAN
STA 8+00 TO END

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 82 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1B - Lawndale St.dwg plotted on Apr 03, 2025 - 8:06pm

(SEE SHEET 82 FOR PLAN)

MATCH LINE STA 8+00 (SEE SHEET 81)



NO.	DATE	REVISION	APP.

NOTES:

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES

Date

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Signature valid for six months.

Date

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Signature valid for six months.

Date

Approved for AT&T underground conduit facilities only.
Signature valid for one year.

LAN

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY
HOUSTON, TX 77042

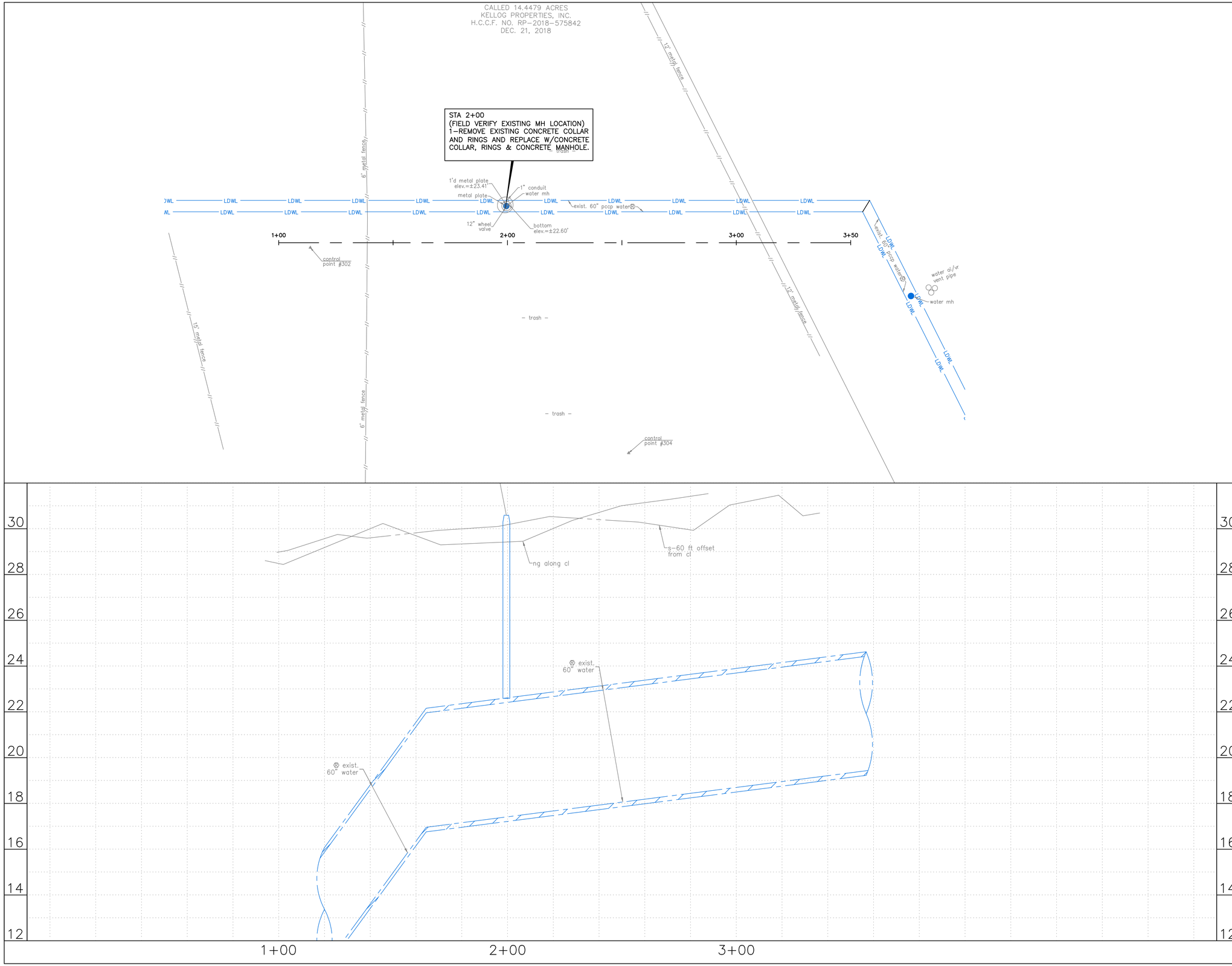
SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
SITE 1B – LAWNDALE ST
PROFILE
STA 8+00 TO END

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1" = 20' V: 1" = 2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 83 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1B - Lawndale St.dwg plotted on Apr 03, 2025 - 8:06pm



N

0' 20' 40'
HORIZ:1"=20'
VERT: 1"=2'

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 030190 IS AN HCFCD BRASS DISC STAMPED C103 PCM1 LOCATED ON EAST SIDEWALK ON GALVESTON ROAD APPROXIMATELY 0.1 MILE NORTHWEST FROM THE INTERSECTION OF PARK PLACE BLVD IN KEYMAP 535L IN THE SIMS BAYOU WATERSHED

ELEV. 23.22 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:

T.B.M.: B-302
SET BOLT
ELEV.=29.072
D. STA. 1+13.80 OFFSET: 2.13R

NOTES:

NO.	DATE	REVISION	APP.

NOTICE:

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Date

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Date

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Signature valid for one year.

LAN

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY
HOUSTON, TX 77042

INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes. This document is released for the purpose of interim review under the authority of:
Engineer: CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 02/23/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

CITY OF HOUSTON

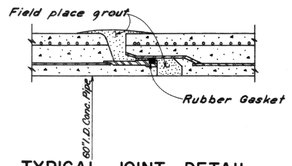
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 1C – KELLOGG ST
PLAN & PROFILE
BEGIN TO END

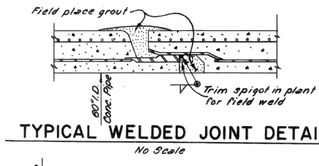
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' V: 1" = 2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 84 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 1C - Kellogg St.dwg plotted on Apr 03, 2025 - 8:06pm



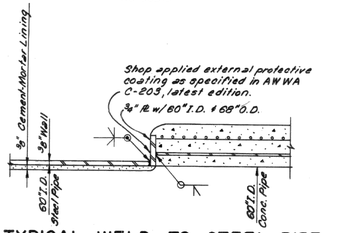
TYPICAL JOINT DETAIL

No Scale



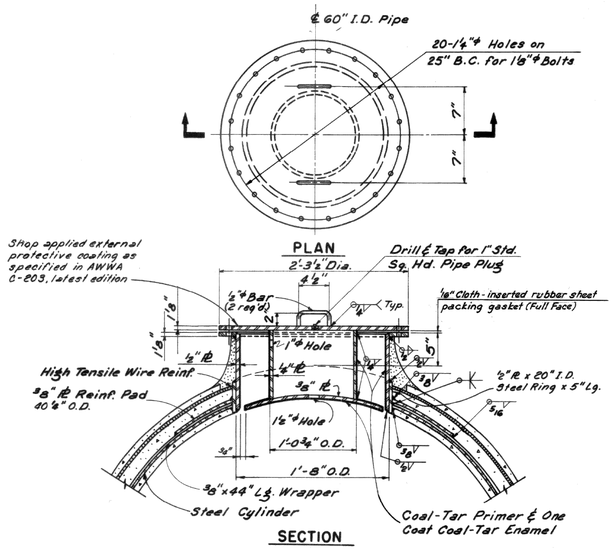
TYPICAL WELDED JOINT DETAIL

No Scale

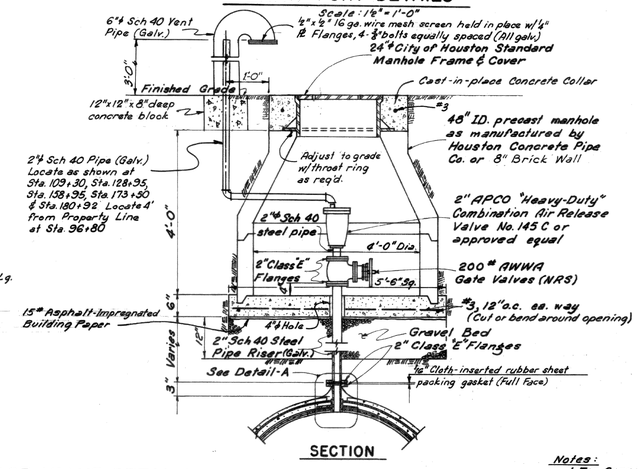


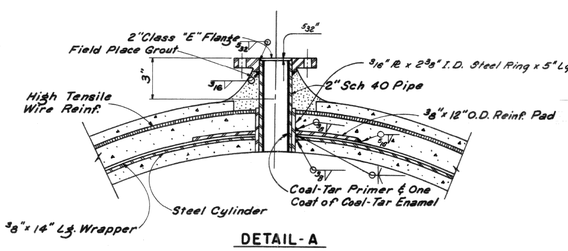
TYPICAL WELD TO STEEL PIPE

No Scale



ENTRY PORT DETAILS

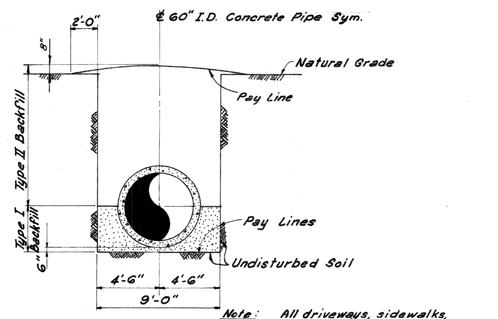




DETAIL-A

AIR RELEASE VALVE DETAILS

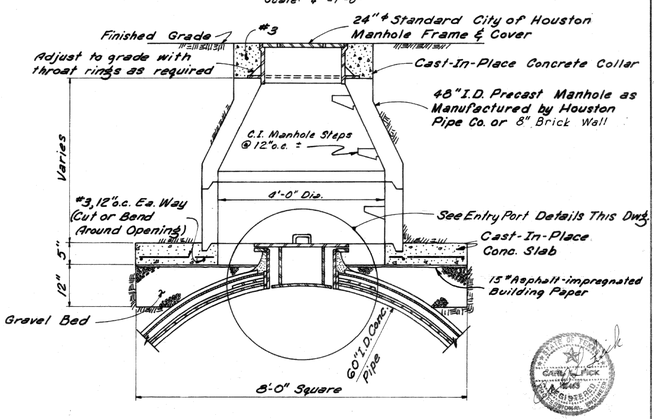
Scale: ¾" = 1'-0"



Note: All driveways, sidewalks, ditches and landscaped areas to be restored to a condition equal to or better than the existing condition prior to construction. For street surfacing details, see Dwg. 611-1.

TRENCH EXCAVATION & BACKFILL DETAIL

Scale: 4" = 1'-0"



MANHOLE

Scale: ¾" = 1'-0"

Notes:
1. For General Notes on concrete see Dwg. 611-2.
2. All valve flanges shall be furnished with a ⅛" Cloth-inserted rubber sheet packing gasket (Full Face), Unless otherwise noted.

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567.

PRIVATE UTILITY LINES SHOWN

Date:
CENTERPOINT ENERGY/ELECTRIC FACILITIES
ELECTRICAL FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION).

Date:
CENTERPOINT ENERGY/GAS FACILITIES
(GAS SERVICE LINES ARE NOT SHOWN). THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION.

Date:
AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

LAN

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of interim review under the authority of: Engineer CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

RECEIVED
APPROVED
APPROVED

BROWN & ROOT INC.
ENGINEERS & CONSULTANTS
HOUSTON, TEXAS

APPROVED:
DATE:

60" DIAMETER TRUNK LINE

GALVESTON ROAD TO EVERGREEN DRIVE

CONCRETE PIPELINE DETAILS SHEET I
ALT. II

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS

APPROVALS

STORM SEWERS | SANITARY SEWERS
PAVING DEPT. | WATER DEPT.
BRIDGE ENGINEER | HIGHWAYS & TRANSPORTATION
SURVEYOR
DIRECTOR OF PUBLIC WORKS | DIRECTOR OF PUBLIC WORKS

SUBMITTED:
SCALE: AS SHOWN
DATE: 2-10-69
SURV. BY:
F. B. NO.

DESIGNED BY: POPE
DRAWN BY: LAMINACK
SHEET NO. 1 OF 3 SHEETS
DWG. NO. 611-1

WD4406-2

13

35

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

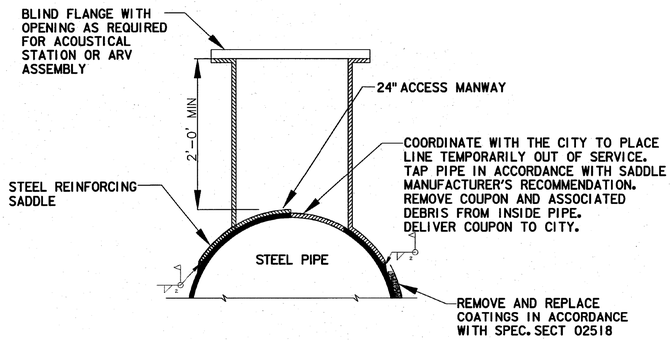
MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 1A
EXISTING CONDITIONS

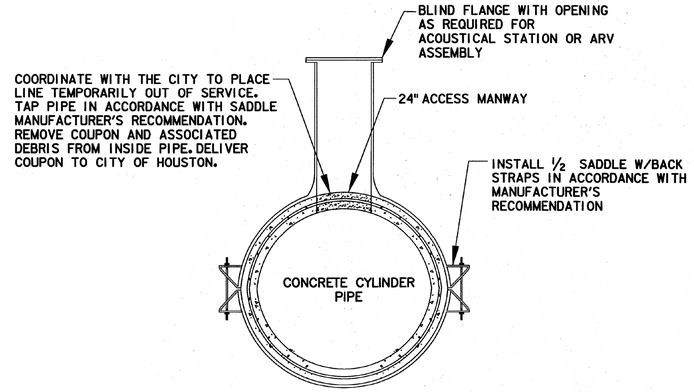
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
NONE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 85 OF 244	

PEN TABLE: LAN-COH-CIVIL.ctb
USERNAME: Fleming, David
PLOTED: 4/3/2025 8:06 PM
FILE PATH: P:\137\125-10001-000\4-Production-Working\4-1-BIM-CAD\Civil\Sheets\Standard Sheets\Details Sheets From Markups\EXISTING CONDITIONS.dwg

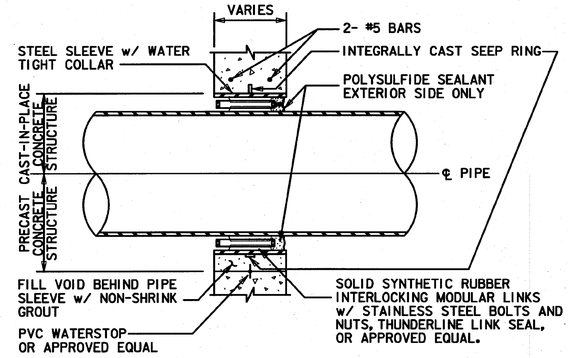
7-67



1 ACCESS MANWAY ON STEEL PIPE

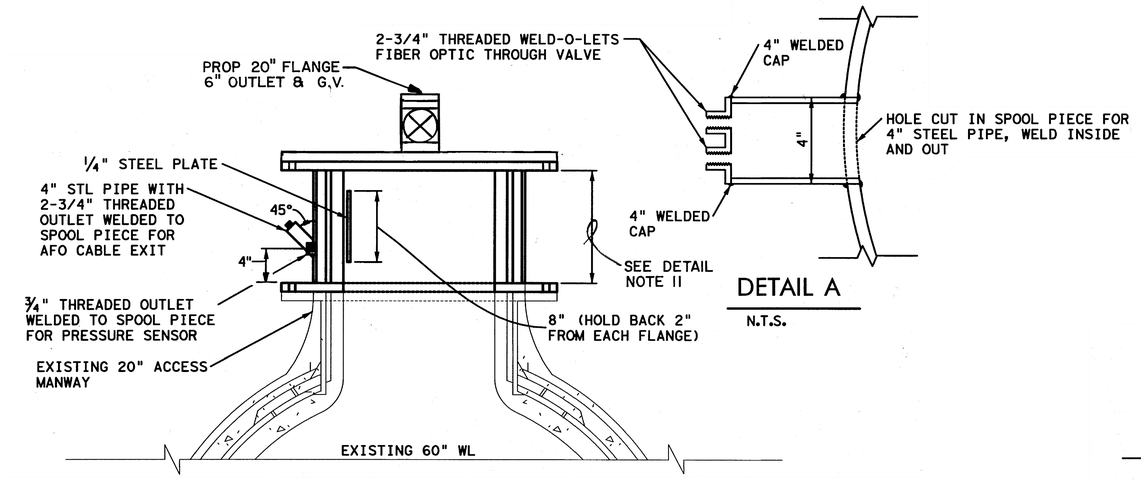


2 ACCESS MANWAY ON CONCRETE PIPE



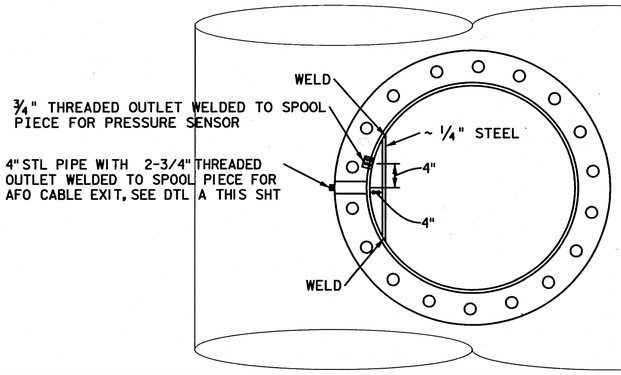
3 TYPICAL WALL PENETRATION DETAIL

NOTE:
1. CONTRACTOR TO FIELD VERIFY CONDITION PRIOR TO INSTALLATION OF AND CONNECTION TO EXISTING ACCOUSTIC FIBER OPTIC CABLE SYSTEM.



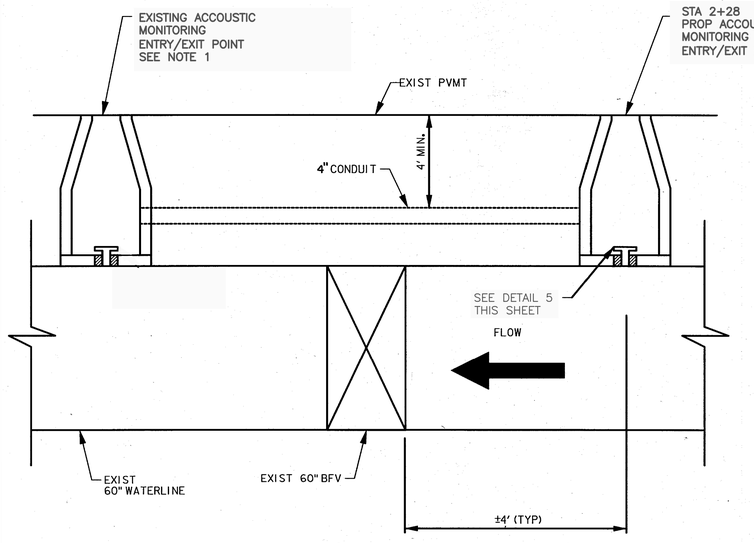
DETAIL A
N.T.S.

4 ACCOUSTIC MONITORING ENTRY/EXIT POINT



NOTES:

1. PROVIDE STEEL SPOOL PIECE AND FLANGES AND COAT STEEL SURFACES INSIDE AND OUT WITH EPOXY IN ACCORDANCE WITH SPECIFICATION SECTION 02518
2. PRESSURE SENSOR OUTLET NOT REQUIRED AT MANHOLE P3.



5 2+28 ACCOUSTIC MONITORING ENTRY/EXIT POINT

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567

PRIVATE UTILITY LINES SHOWN

Date:
CENTERPOINT ENERGY/ELECTRIC FACILITIES
ELECTRICAL FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION).

Date:
CENTERPOINT ENERGY/GAS FACILITIES
(GAS SERVICE LINES ARE NOT SHOWN). THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION.

Date:
AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

LAN

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

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Engineer CHRISTINE H. KIRBY, PE
Registration Number 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
SITE 1
SITE SPECIFIC DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
NONE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 86 OF 244	

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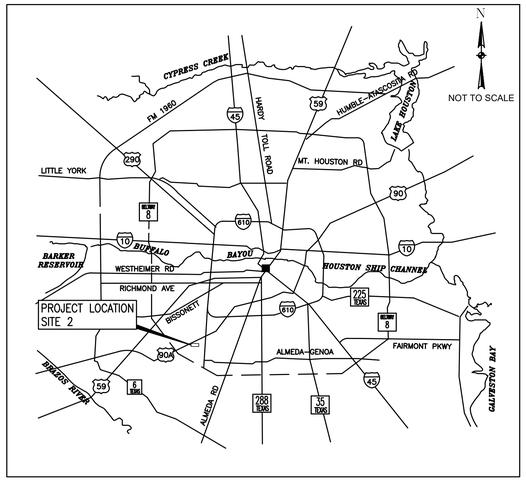
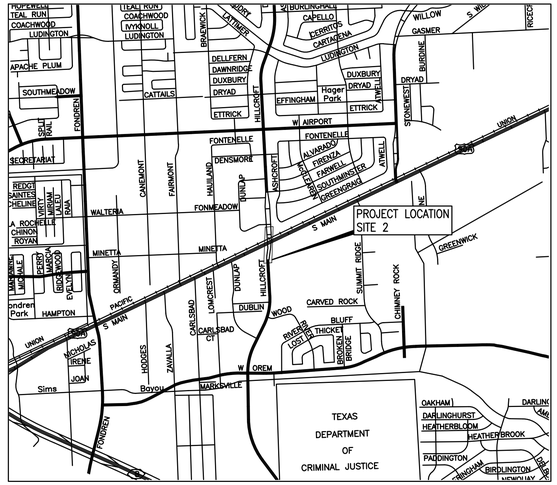
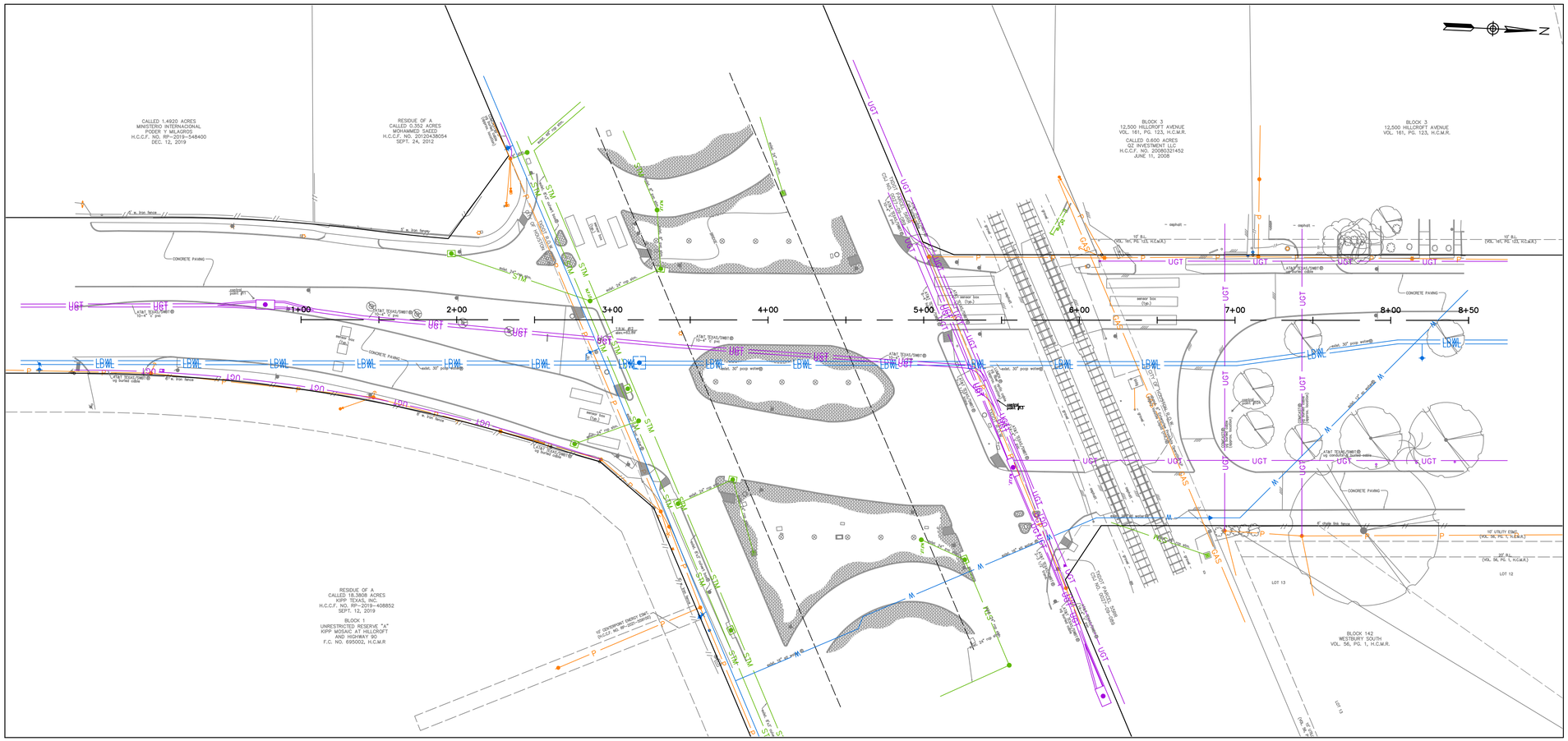
SITE 2
30-INCH COLLECTION LINE ALONG HILLCROFT AVE



LOCATION MAP



VICINITY MAP



SITE 2
SITE PLAN

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567

PRIVATE UTILITY LINES SHOWN

Date:

CENTERPOINT ENERGY/ELECTRIC FACILITIES
ELECTRICAL FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION).

Date:

CENTERPOINT ENERGY/GAS FACILITIES
(GAS SERVICE LINES ARE NOT SHOWN). THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION.

Date:

AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

LAN

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes.this document is released for the purpose of interim review under the authority of:
Engineer: CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL

SITE 2
VICINITY MAP

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 40'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 87 OF 244	

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PLOTED: 4/3/2025 8:07 PM
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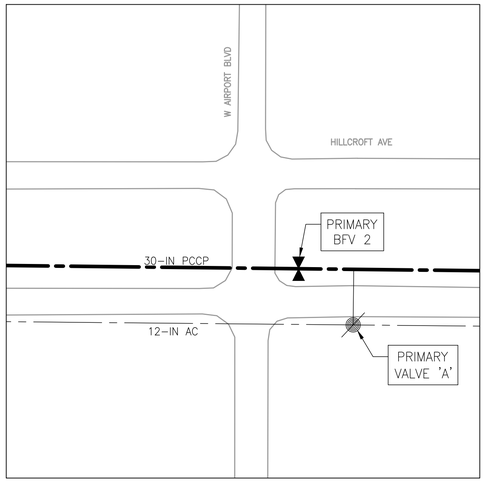
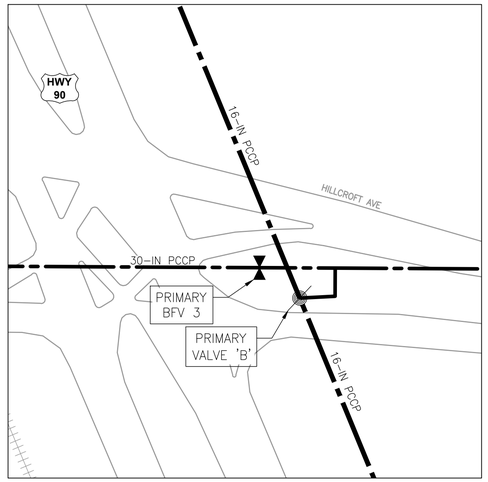
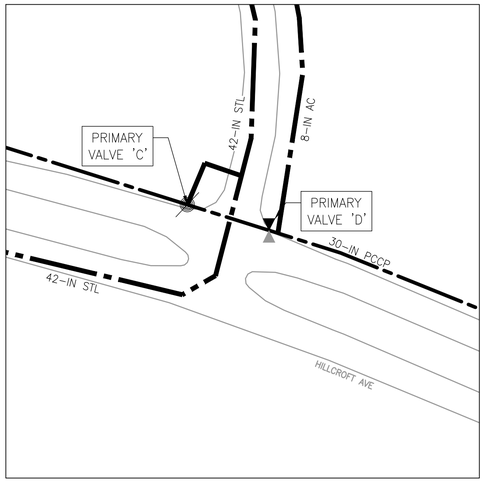


INSET 'A'
SCALE: 1"=60'



INSET 'B'
SCALE: 1"=60'



INSET 'C'
SCALE: 1"=60'

EXHIBIT 1 – SHUTDOWN MAP

MISCELLANEOUS LDWL IMPROVEMENTS PACKAGE 3
(SITE 2: CONDITION ASSESSMENT & REHABILITATION OF MAIN AND HILLCROFT)

LEGEND

- 30-INCH MAIN LINE VALVE
- WATER LINE BUTTERFLY VALVE
- WATER LINE GATE VALVE
- 30-INCH & 24-INCH WATER LINES
- EXISTING WATER LINE

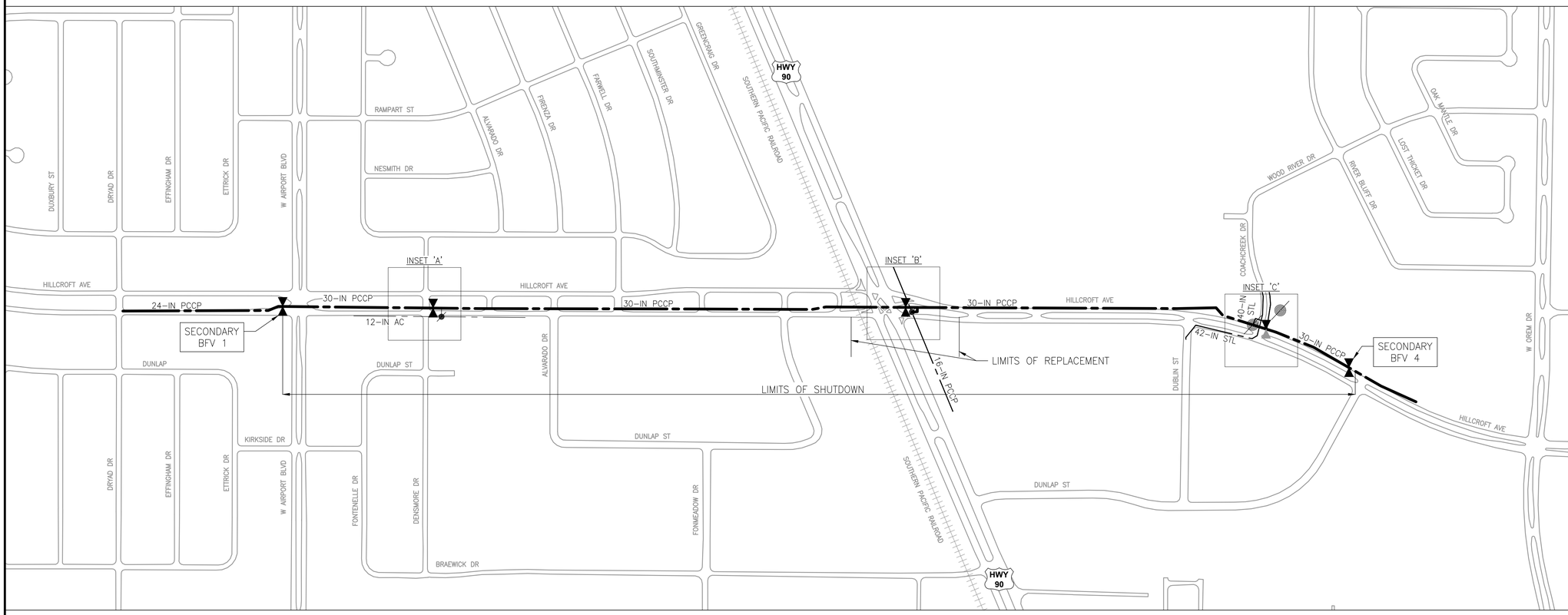
N

0 300 600
SCALE: 1"=300'

SHUTDOWN DURATION: 1 – 2 MONTHS
(MAY 2027–JULY 2027)

NOTES:

1. ISOLATION VALVE TO BE CLOSED BY HOUSTON PUBLIC WORKS – UTILITY MAINTENANCE ONLY. COORDINATE WITH PROJECT MANAGER FOR DWO CONTACT INFORMATION BEFORE BEGINNING WORK.



VALVE	POSITION	TYPE
BFV 1	CLOSE	24–INCH BUTTERFLY VALVE
BFV 2	CLOSE	24–INCH BUTTERFLY VALVE
BFV 3	OPEN	30–INCH BUTTERFLY VALVE
BFV 4	CLOSE	30–INCH BUTTERFLY VALVE
VALVE 'A'	CLOSE	12–INCH GATE VALVE
VALVE 'B'	CLOSE	16–INCH GATE VALVE
VALVE 'C'	CLOSE	12–INCH GATE VALVE
VALVE 'D'	CLOSE	8–INCH BUTTERFLY VALVE

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713–223–4567

PRIVATE UTILITY LINES SHOWN

Date:
CENTERPOINT ENERGY/ELECTRIC FACILITIES
ELECTRICAL FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION).

Date:
CENTERPOINT ENERGY/GAS FACILITIES
(GAS SERVICE LINES ARE NOT SHOWN). THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION.

Date:
AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

LAN

EFF DATE: XXXX–XX–20XX

DWG NO: XXXXX–XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713–266–6900
TEXAS REGISTERED ENGINEERING FIRM F–2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes.this document is released for the purpose of interim review under the authority of:
Engineer: CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F–2614

CITY OF HOUSTON

HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 2
SHUTDOWN MAP

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
1" = 300'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 88 OF 244	

FILE PATH: P:\132\132-1001-001\4-0-Production-Working\4-1-BIM-CAD\Civil\Exhibits\WORKING\OVERALL VALVE MAP EXHIBIT CO BY 2025-02-04.dwg
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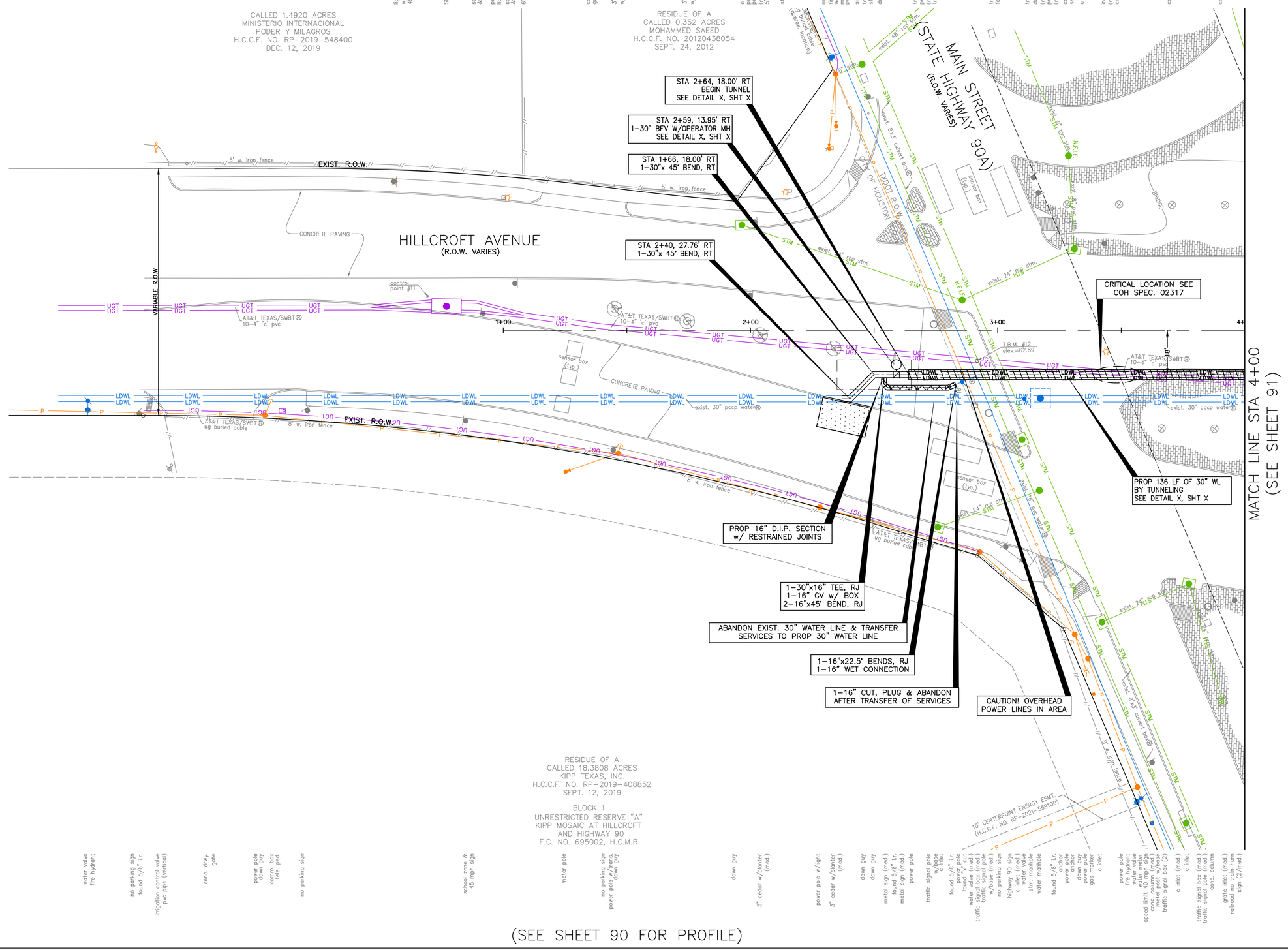
USERNAME: Fleming, David
PEN TABLE: LAN-COH-CIVIL.ctb



HORIZ:1"=20'
VERT:N/A

NO.	DATE	REVISION	APP.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 030135 IS AN HCFCD BRASS DISC STAMPED C100 BM18 LOCATED ON EAST SIDEWALK ON CARLSBAD STREET BRIDGE APPROXIMATELY 250 FEET SOUTH FROM THE INTERSECTION OF W OREM DRIVE IN KEYMAP 570M IN THE SIMS BAYOU WATERSHED

ELEV. 64.87 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:

T.B.M.: B-12
FND 'X' CUT ON CONC.
ELEV.=62.885
D. STA. 2+41.76 OFFSET: 12.37R

NOTES:

NOTICE:

FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.

Signature valid for six months.

Date

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities – not to be used for conflict verification)

Signature valid for six months.

Date

Approved for AT&T underground conduit facilities only.
Signature valid for one year.

KUO & ASSOCIATES
ENGINEERING + SURVEYING
10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713-975-8769
TX FIRM NO.: F-4578

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF

SUDHEER GOUD SANGAM, P.E.
TEXAS REG. NO.: 111684

ON 02/25/2025
IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES.

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

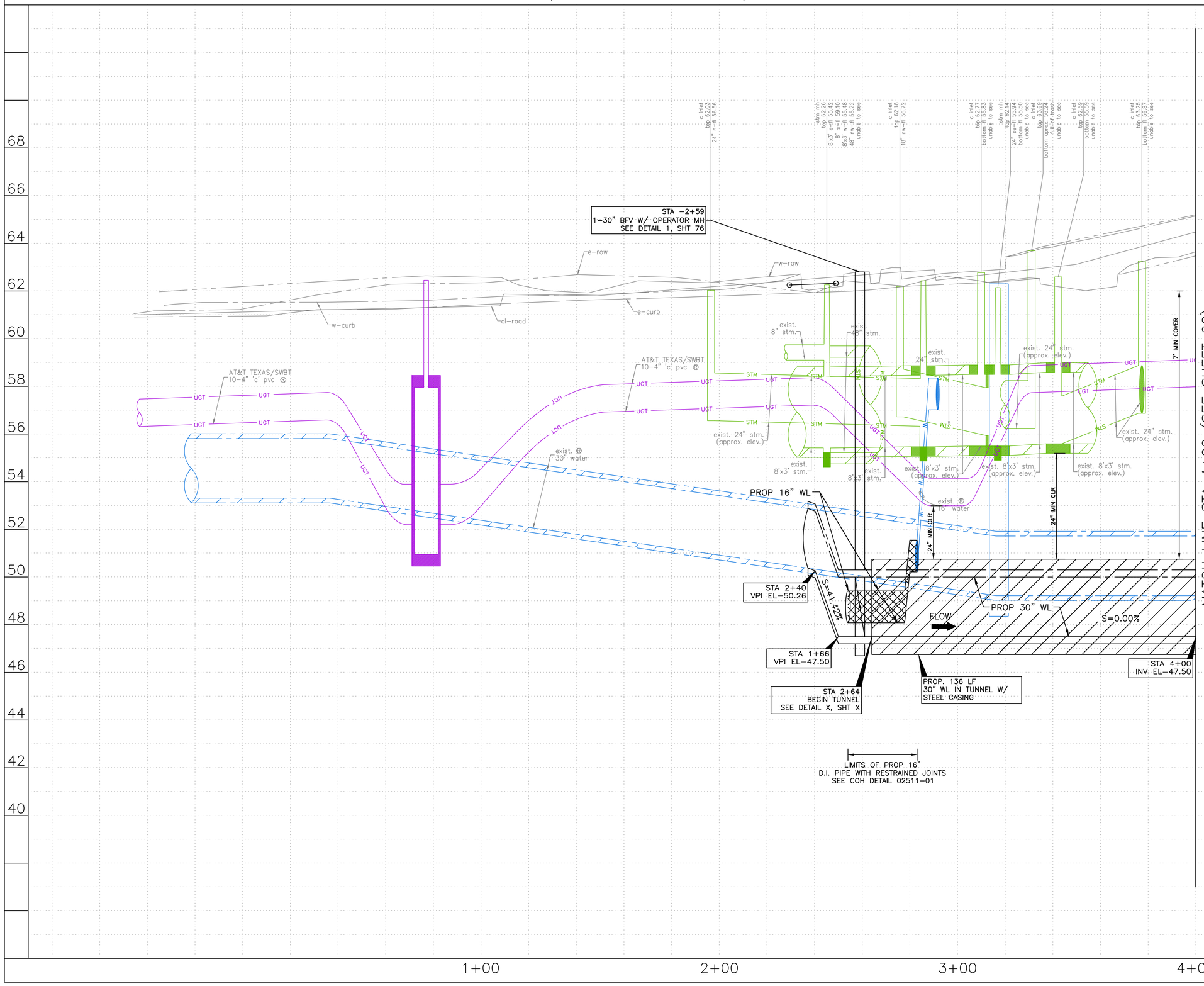
MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL

SITE 2 - MAIN & HILCROFT PLAN BEGIN TO STA 4+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1"=20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 89 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 2 - Main & Hillcroft.dwg plotted on Apr 03, 2025 - 8:17pm

(SEE SHEET 89 FOR PLAN)



0' 20' 40'
HORIZ:1"=20'
VERT:1"=2'

NO.	DATE	REVISION	APP.

NOTES:

NOTICE:
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Date

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Signature valid for one year.

LAN

KUO & ASSOCIATES
ENGINEERING + SURVEYING
10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713-975-8769
TX FIRM NO.: F-4578

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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SUDHEER GOUD SANGAM, P.E.
TEXAS REG. NO.: 111684
ON 01/15/2025
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 2 – MAIN & HILCROFT PROFILE
BEGIN TO STA 4+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1"=20' W: 1"=2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 90 OF 244	

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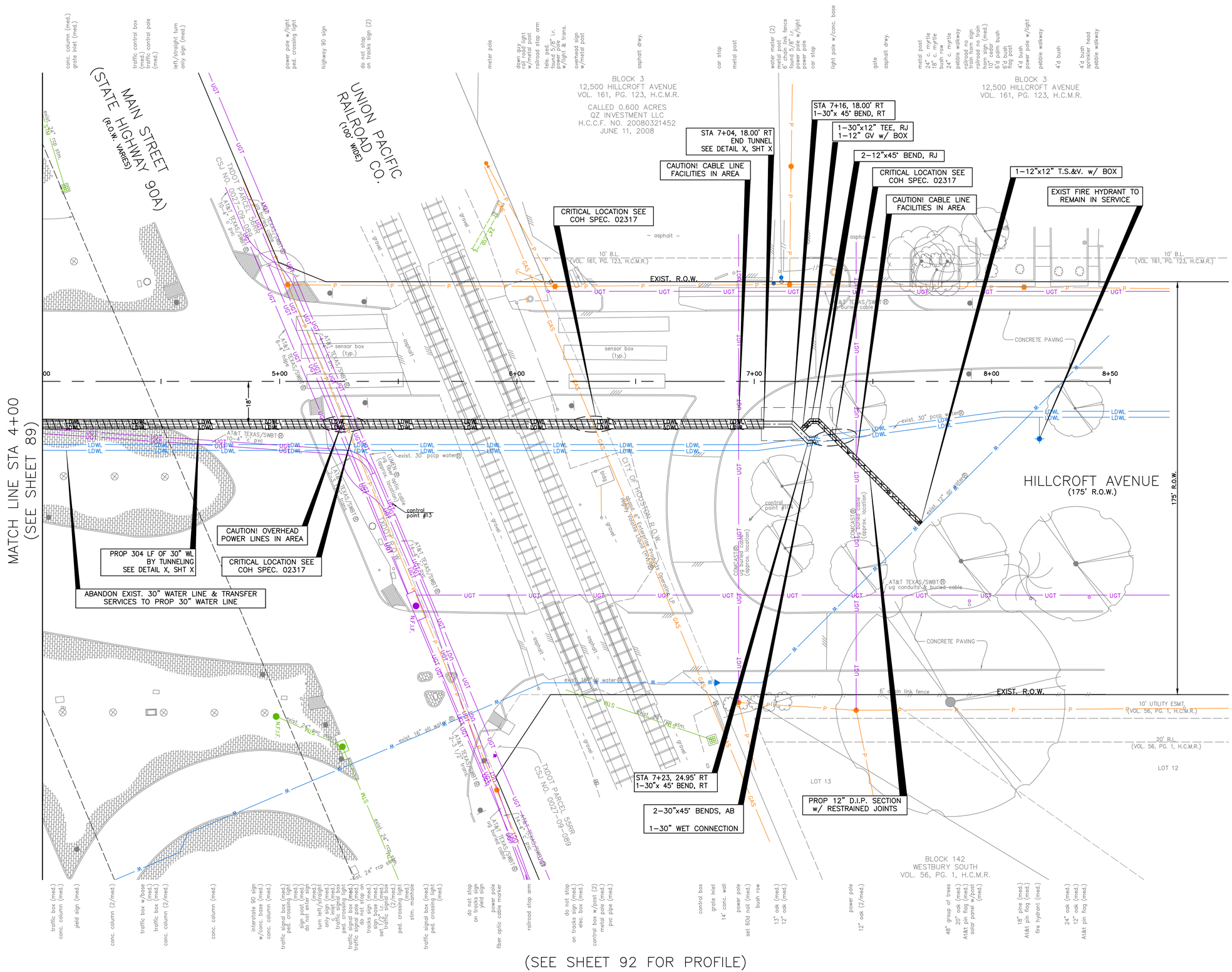

HORIZ:1"=20'
VERT:N/A

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 030135 IS AN HCFCD BRASS DISC STAMPED C100 BM18 LOCATED ON EAST SIDEWALK ON CARLSBAD STREET BRIDGE APPROXIMATELY 250 FEET SOUTH FROM THE INTERSECTION OF W OREM DRIVE IN KEYMAP 570M IN THE SIMS BAYOU WATERSHED

ELEV. 64.87 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:

T.B.M.: B-13
SET 1/2 I.R. W/CAP
ELEV.=67.150
D. STA. 4+97.67 OFFSET: 51.64R

NOTES:

NO.	DATE	REVISION	APP.

NOTICE:

FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.

Signature valid for six months.

Date

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities – not to be used for conflict verification)

Signature valid for six months.

Date

Approved for AT&T underground conduit facilities only.
Signature valid for one year.

LAN

KUO & ASSOCIATES
ENGINEERING + SURVEYING
10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713-975-8769
TX FIRM NO.: F-4578

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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SUDHEER GOUD SANGAM, P.E.
TEXAS REG. NO.: 111684

ON 02/25/2025
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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

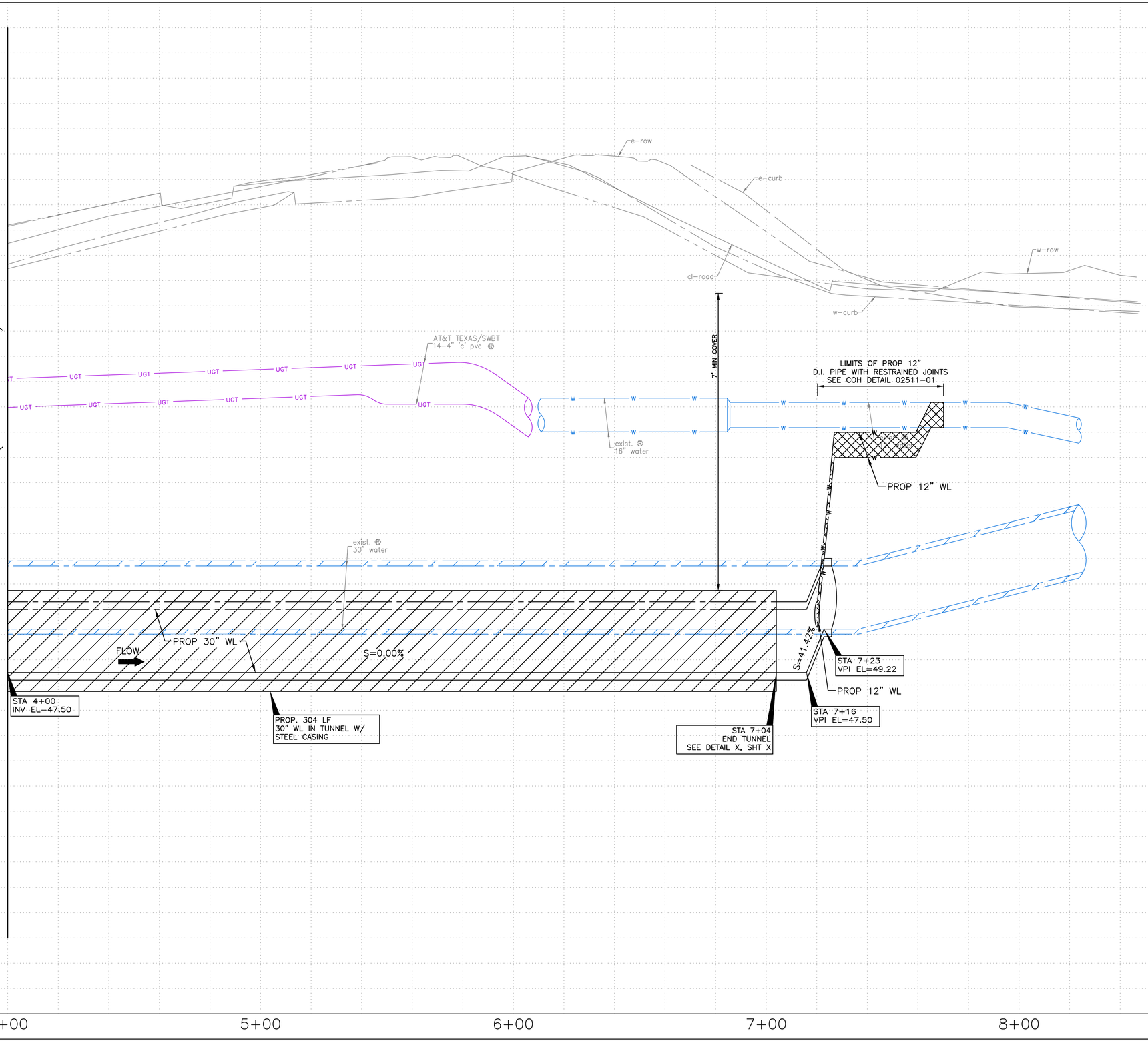
MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 2 – MAIN & HILCROFT PLAN
STA 4+00 TO END

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1"=20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 91 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 2 - Main & Hillcroft.dwg plotted on Apr 03, 2025 - 8:17pm

(SEE SHEET 91 FOR PLAN)



NO.	DATE	REVISION	APP.

0' 20' 40'
HORIZ:1"=20'
VERT:1"=2'

NOTES:

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Date

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LAN

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10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
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TX FIRM NO.: F-4578

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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TEXAS REG. NO.: 111684

ON 01/15/2025
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 2 – MAIN & HILCROFT
PROFILE
STA 4+00 TO END

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1"= ~~1"=20'~~ 20' W: 11"=2= 2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 92 OF 244	

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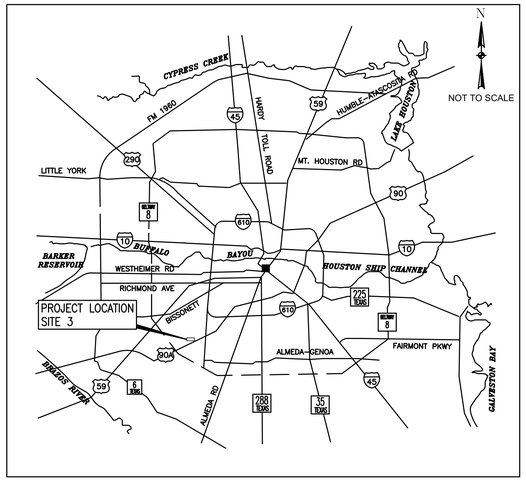
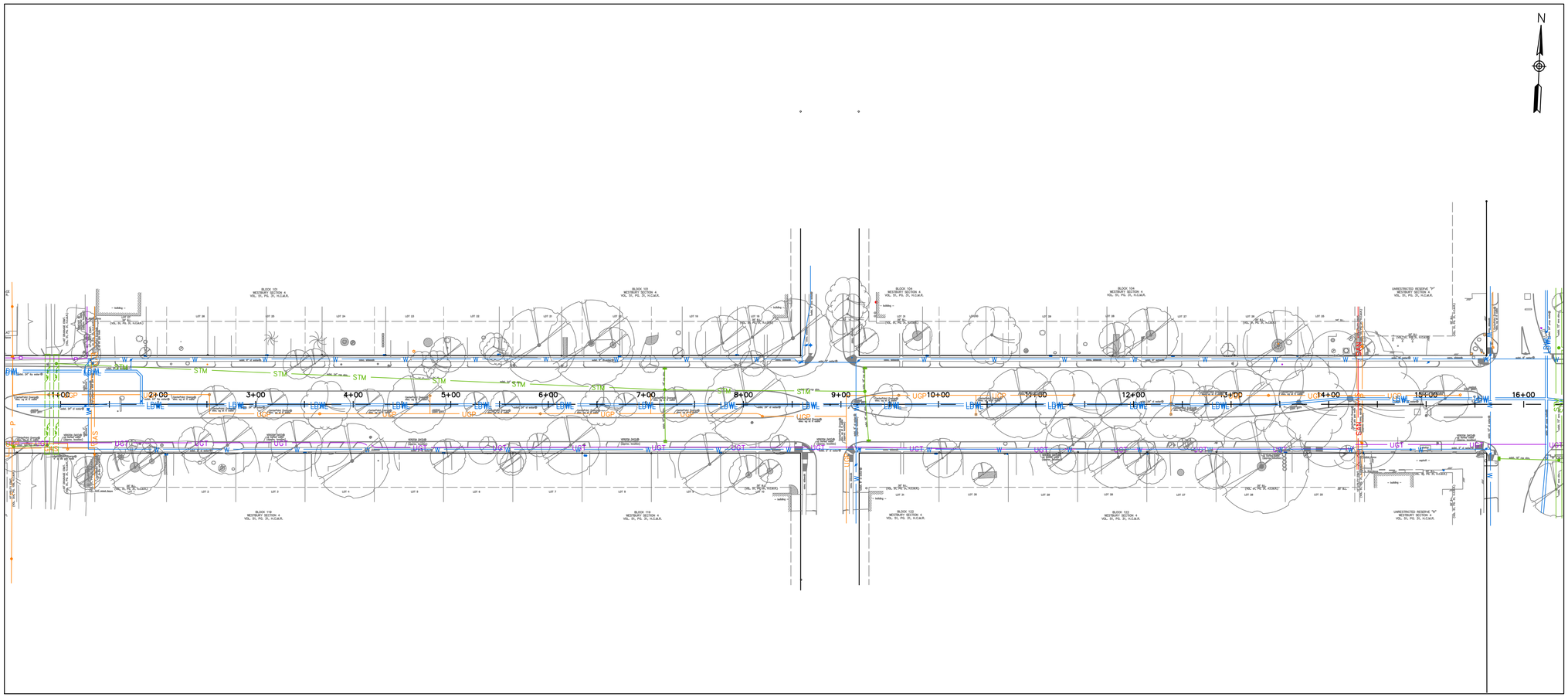
SITE 3
24-INCH COLLECTION LINE
ALONG W AIRPORT BLVD



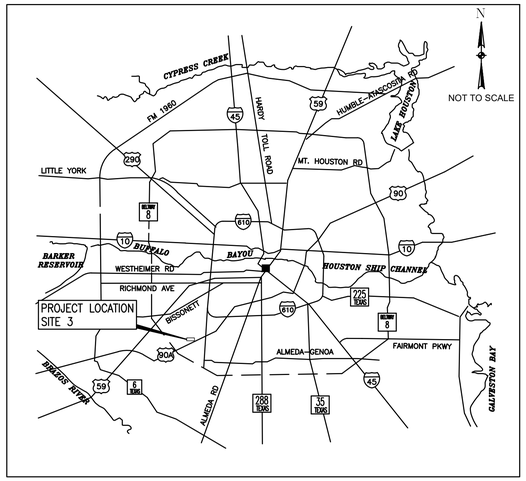
LOCATION MAP



VICINITY MAP



SITE 3
24-INCH COLLECTION LINE
ALONG W AIRPORT BLVD

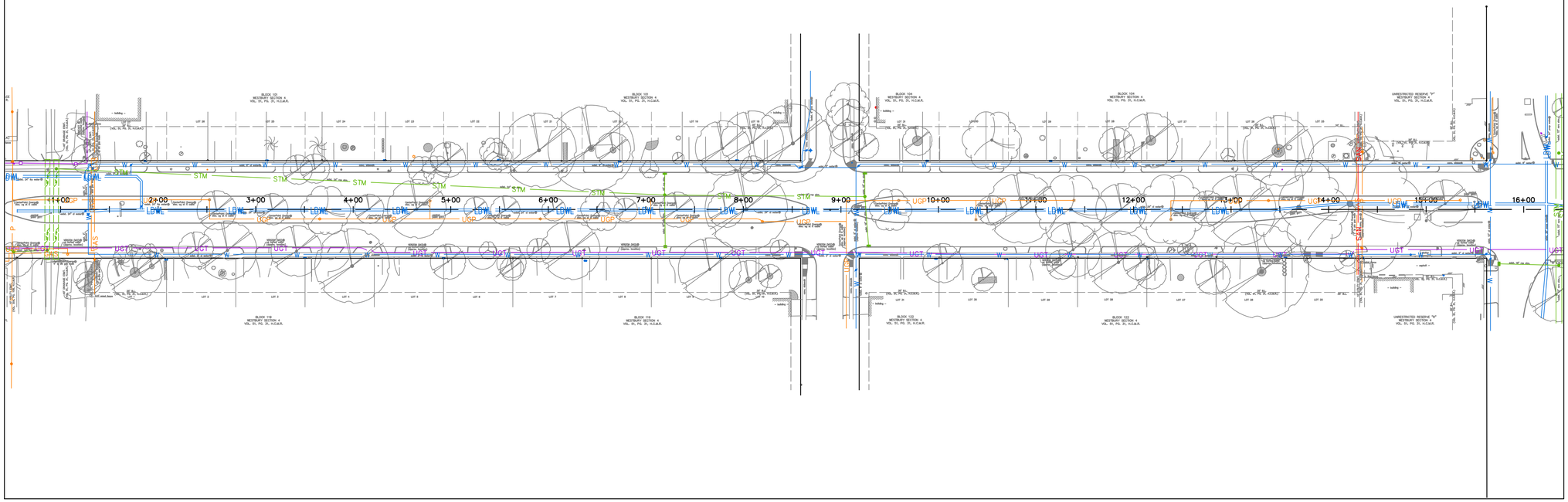


LOCATION MAP



VICINITY MAP

PLACEHOLDER FOR SHUTDOWN MAP
FROM KUO



SITE 3
SITE PLAN

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567

PRIVATE UTILITY LINES SHOWN

Date:

CENTERPOINT ENERGY/ELECTRIC FACILITIES
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Date:

CENTERPOINT ENERGY/GAS FACILITIES
(GAS SERVICE LINES ARE NOT SHOWN). THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION.

Date:

AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

INTERIM REVIEW ONLY
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Engineer:CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 04/03/2025

Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 3
SHUTDOWN MAP

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
Value	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 94 OF 244	

PEN TABLE: LAN-COH-CIVIL.ctb
USERNAME: Fleming, David
PLOTED: 4/3/2025 8:18 PM
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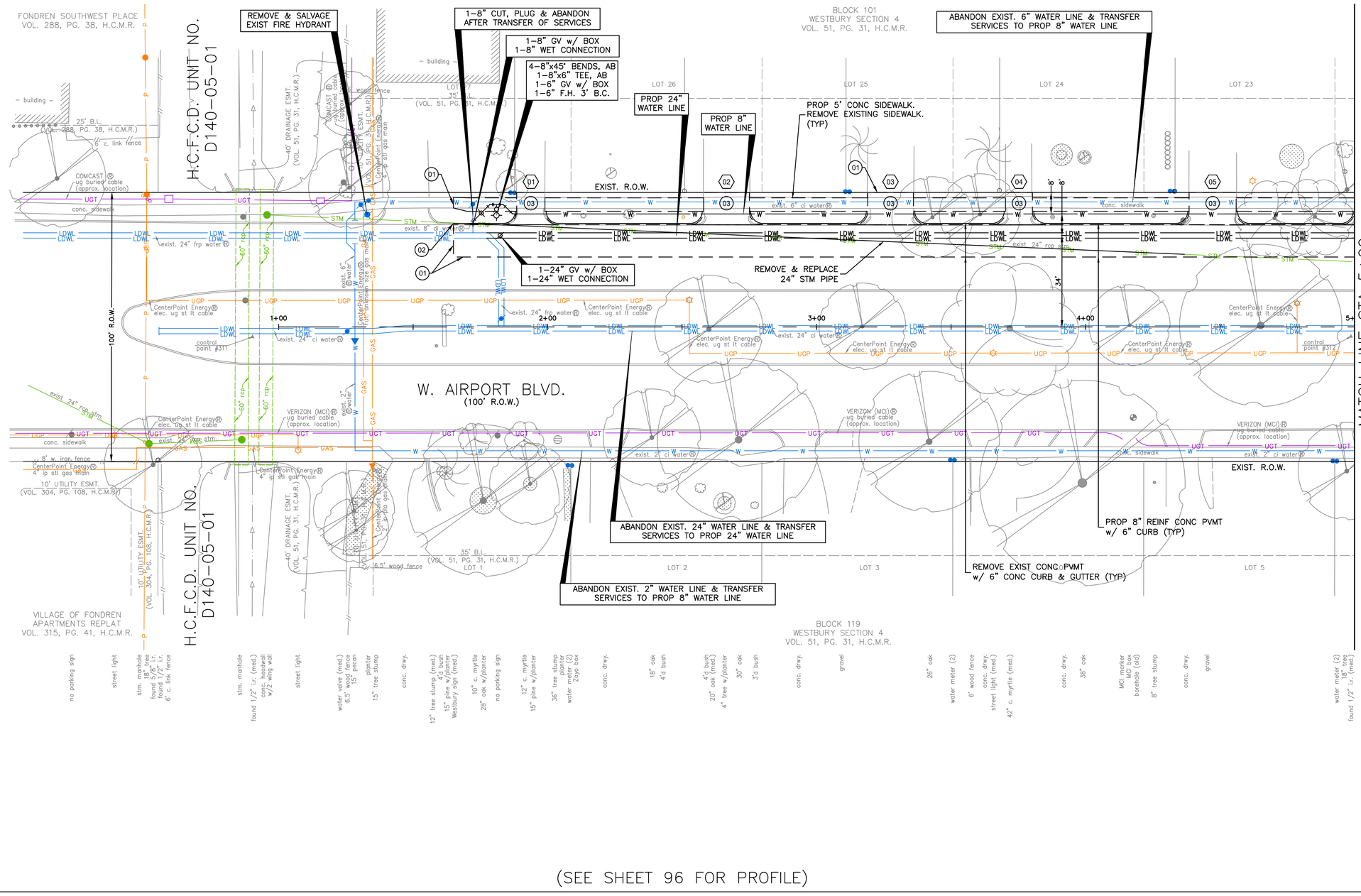

N

0' 20' 40'

HORIZ:1"=20'
VERT:N/A

NO.	DATE	REVISION	APP.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 040820 IS AN HCFCD BRASS DISC STAMPED D140 BM05 LOCATED ON NORTH SIDEWALK ON W AIRPORT BLVD (WESTBOUND) APPROXIMATELY 0.2 MILE EAST FROM THE INTERSECTION OF FONDREN RD IN KEYMAP 570H IN THE BRAYS BAYOU WATERSHED

ELEV. 62.58 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:

T.B.M.: B-311
SET 1/2" I.R. W/CAP
ELEV.=61.248
D. STA. 1+40.26 OFFSET: 3.75R

(XX) PROPOSED CONSTRUCTION NOTES

(XX) PROPOSED DRIVEWAY IDENTIFICATION AND DETAILS

HIGH EARLY STRENGTH CONCRETE PAVEMENT AREA

NOTICE:

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VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.

Signature valid for six months.

Date

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities – not to be used for conflict verification)

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Date

Approved for AT&T underground conduit facilities only.
Signature valid for one year.

KUO & ASSOCIATES
ENGINEERING • SURVEYING
10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713-975-8769
TX FIRM NO.: F-4578

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF

SUDHEER GOUD SANGAM, P.E.
TEXAS REG. NO.: 111684

ON 02/25/2025
IT IS NOT TO BE USED FOR PERMIT, BIDDING OR CONSTRUCTION PURPOSES.

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

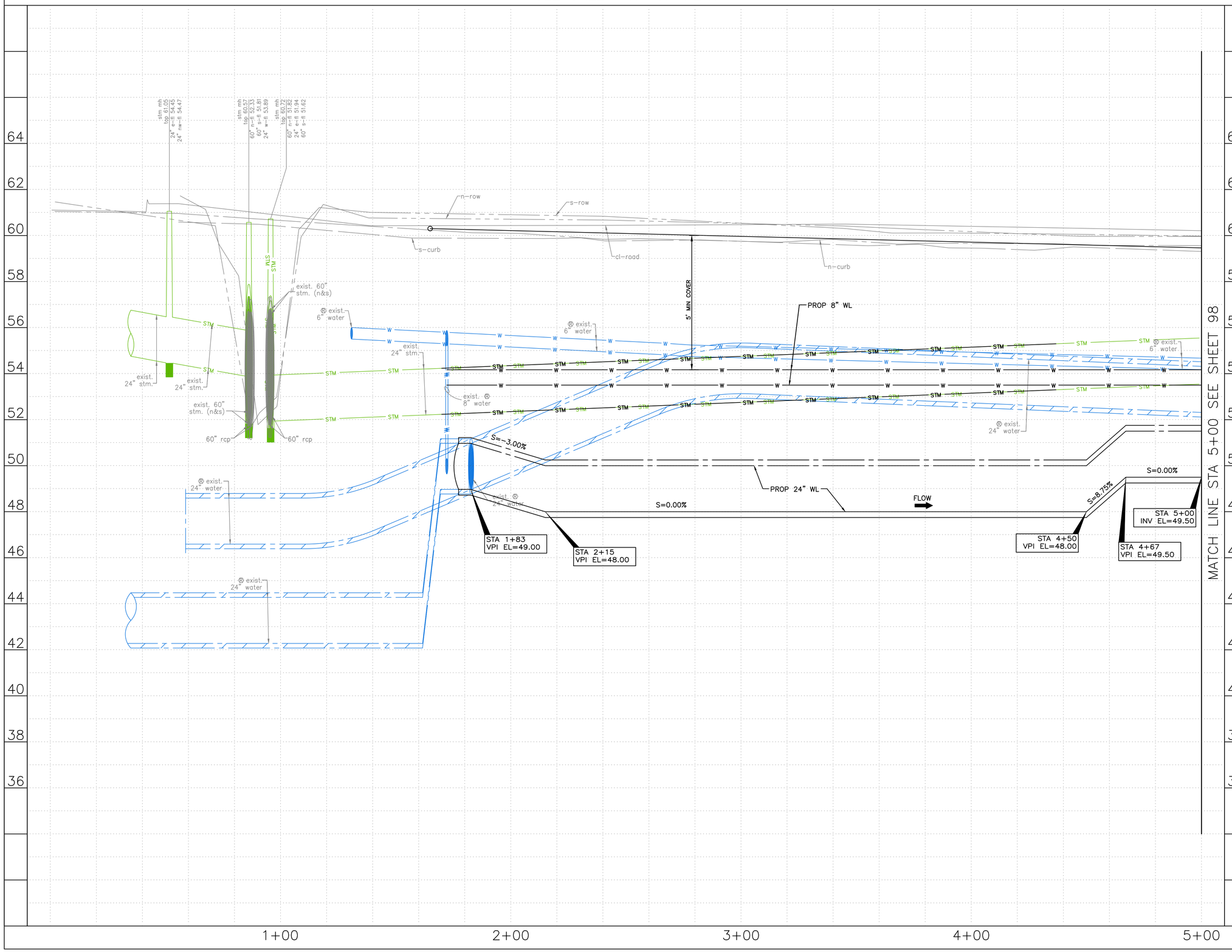
MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 3 – W AIRPORT BLVD PLAN BEGIN TO STA 5+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 95 OF 244	

P:\132\132-10001-000\4-C-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 3 - W Airport Blvd.dwg plotted on Apr 03, 2025 - 8:18pm

SEE SHEET XX FOR PLAN



0' 20' 40'
HORIZ:1"=20'
VERT:1"=2'

NO.	DATE	REVISION	APP.

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 3 – W AIRPORT BLVD PROFILE
BEGIN TO STA 05+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1"=20' W: 1"=2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 96 OF 244	

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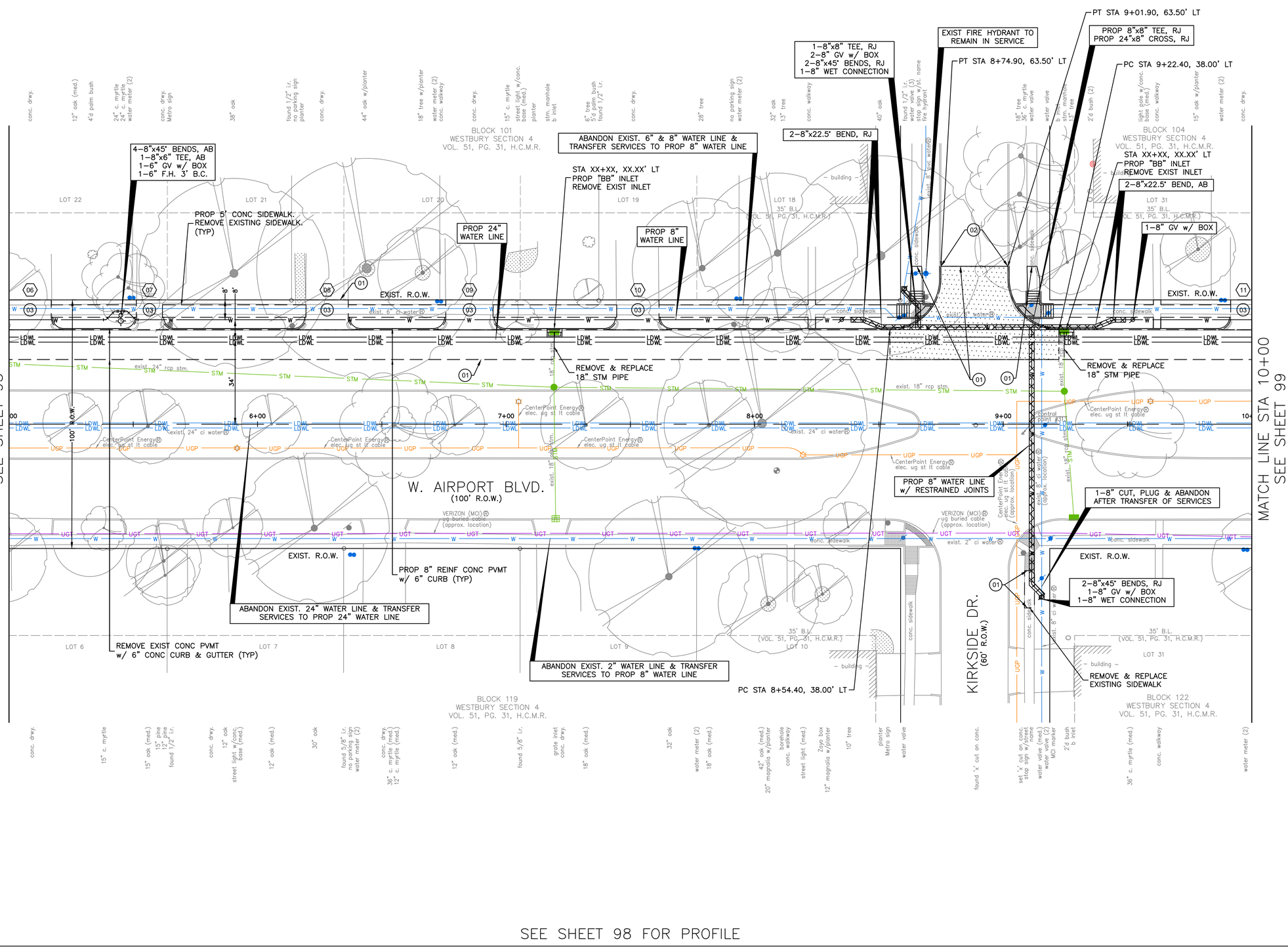

N

0' 20' 40'

HORIZ:1"=20'
VERT:N/A

NO.	DATE	REVISION	APP.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 040820 IS AN HCFCD BRASS DISC STAMPED D140 BM05 LOCATED ON NORTH SIDEWALK ON W AIRPORT BLVD (WESTBOUND) APPROXIMATELY 0.2 MILE EAST FROM THE INTERSECTION OF FONDREN RD IN KEYMAP 570H IN THE BRAYS BAYOU WATERSHED

ELEV. 62.58 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:

T.B.M.: B–313
SET 'X' CUT ON CONC.
ELEV.=59.194
D. STA. 9+57.87 OFFSET: 4.41R

(XX) PROPOSED CONSTRUCTION NOTES

XX PROPOSED DRIVEWAY IDENTIFICATION AND DETAILS

HIGH EARLY STRENGTH CONCRETE PAVEMENT AREA

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KUO & ASSOCIATES
ENGINEERING & SURVEYING
10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713–975–8769
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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

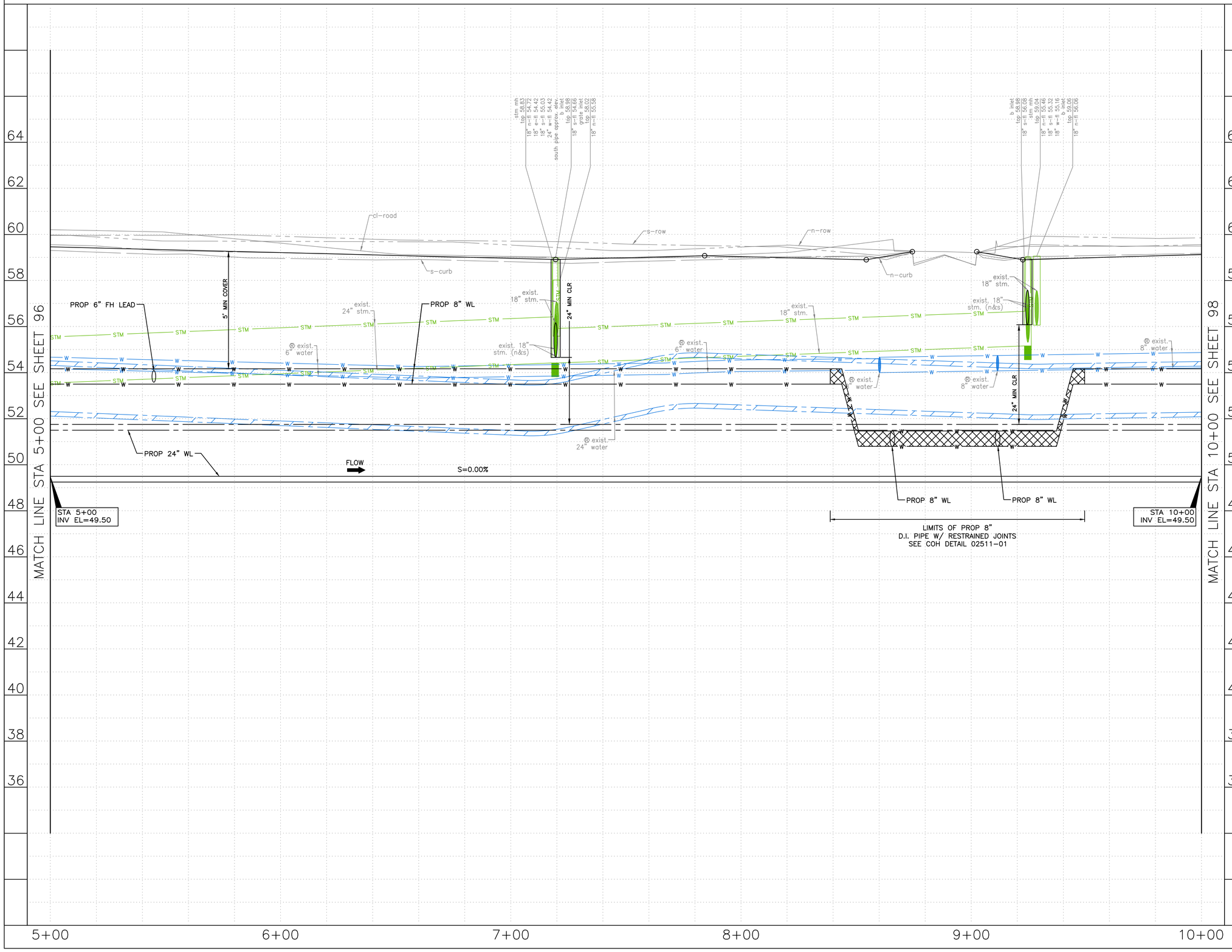
MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 3 – W AIRPORT BLVD PLAN STA 05+00 TO 10+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1" = 20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 97 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 3 – W Airport Blvd.dwg plotted on Apr 03, 2025 – 8:18pm

SEE SHEET XX FOR PLAN



HORIZ:1"=20'
VERT:1"=2'

NO.	DATE	REVISION	APP.

NOTES:

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INFRASTRUCTURE CONSULTING
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713-975-8769
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL
IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 3 – W AIRPORT BLVD
PROFILE
STA 05+00 TO 10+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' W: 1" = 2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 98 OF 244	

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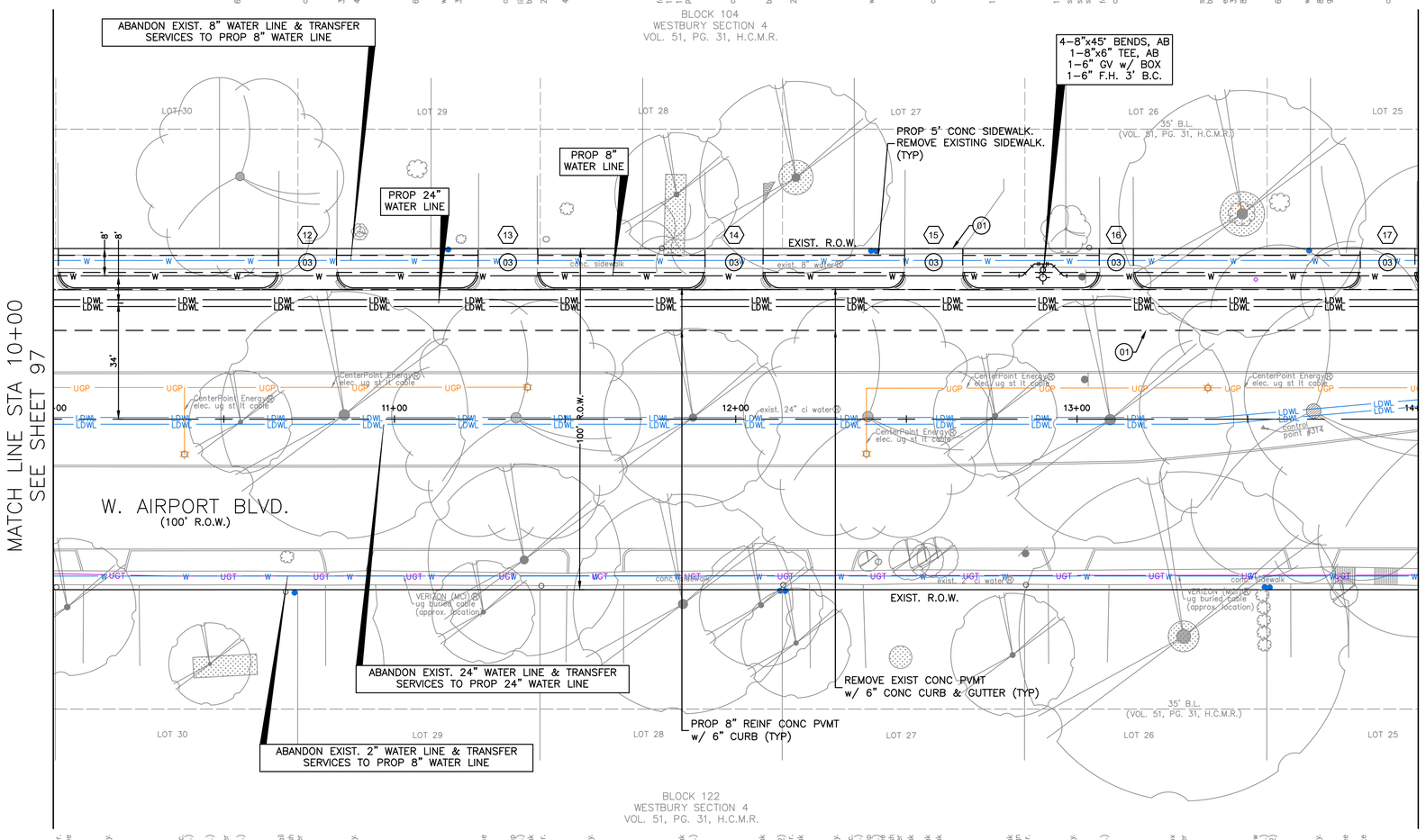

N

HORIZ:1"=20'
VERT:N/A

NO.	DATE	REVISION	APP.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 040820 IS AN HCFCD BRASS DISC STAMPED D140 BM05 LOCATED ON NORTH SIDEWALK ON W AIRPORT BLVD (WESTBOUND) APPROXIMATELY 0.2 MILE EAST FROM THE INTERSECTION OF FONDREN RD IN KEYMAP 570H IN THE BRAYS BAYOU WATERSHED

ELEV. 62.58 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:

T.B.M.: B-314
SET 1/2" I.R. W/CAP
ELEV.=60.580
D. STA. 14+04.55 OFFSET: 3.50R

(XX) PROPOSED CONSTRUCTION NOTES

(XX) PROPOSED DRIVEWAY IDENTIFICATION AND DETAILS

HIGH EARLY STRENGTH CONCRETE PAVEMENT AREA

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VERIFICATION OF PRIVATE UTILITY LINES

Date

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KUO & ASSOCIATES
ENGINEERING + SURVEYING
10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713-975-8769
TX FIRM NO.: F-4578

SURVEYED BY:
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ON 02/25/2025
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

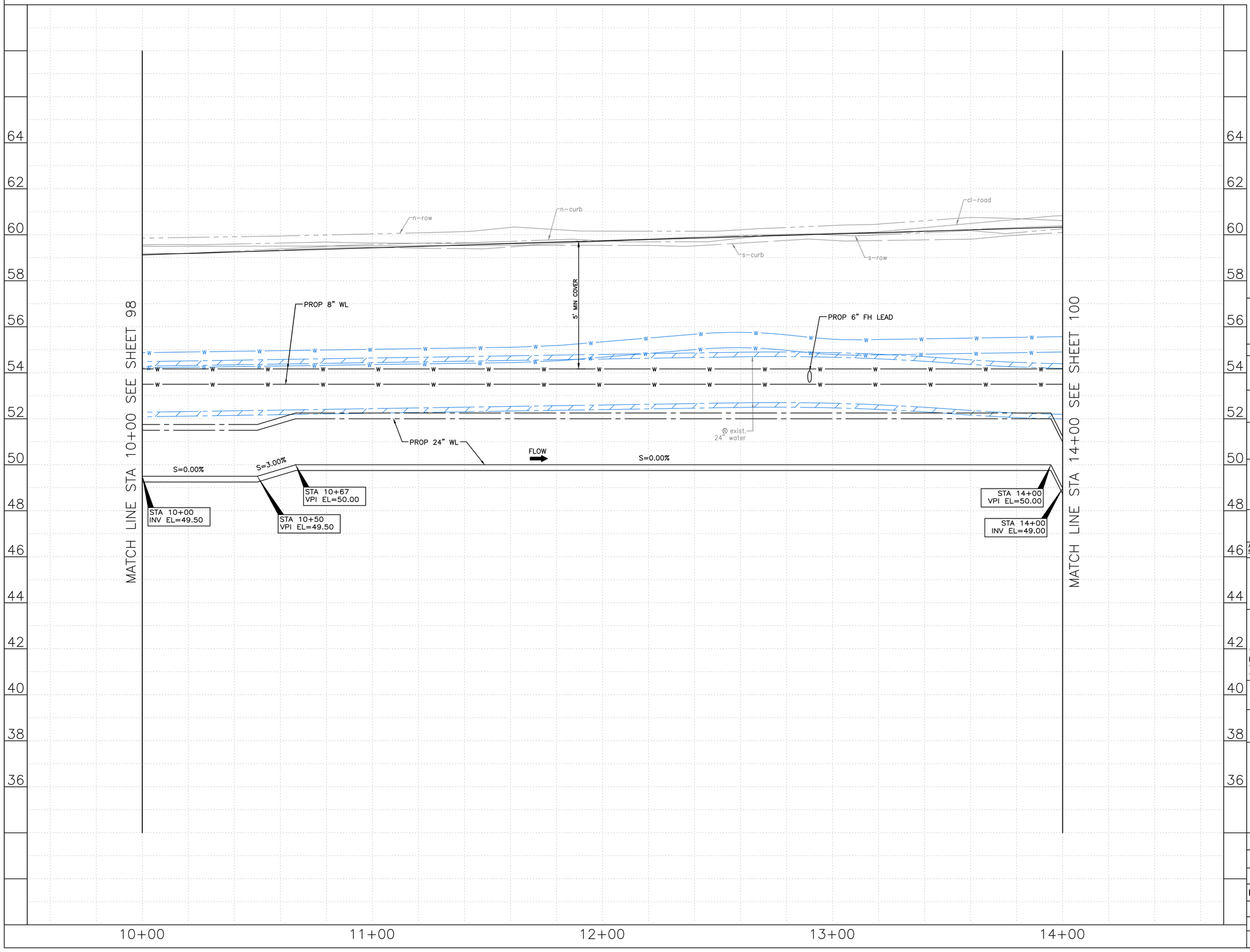
MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL

SITE 3 – W AIRPORT BLVD PLAN STA 10+00 TO 14+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1"=20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 99 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 3 - W Airport Blvd.dwg plotted on Apr 03, 2025 - 8:18pm

SEE SHEET XX FOR PLAN



0' 20' 40'
HORIZ:1"=20'
VERT:1"=2'

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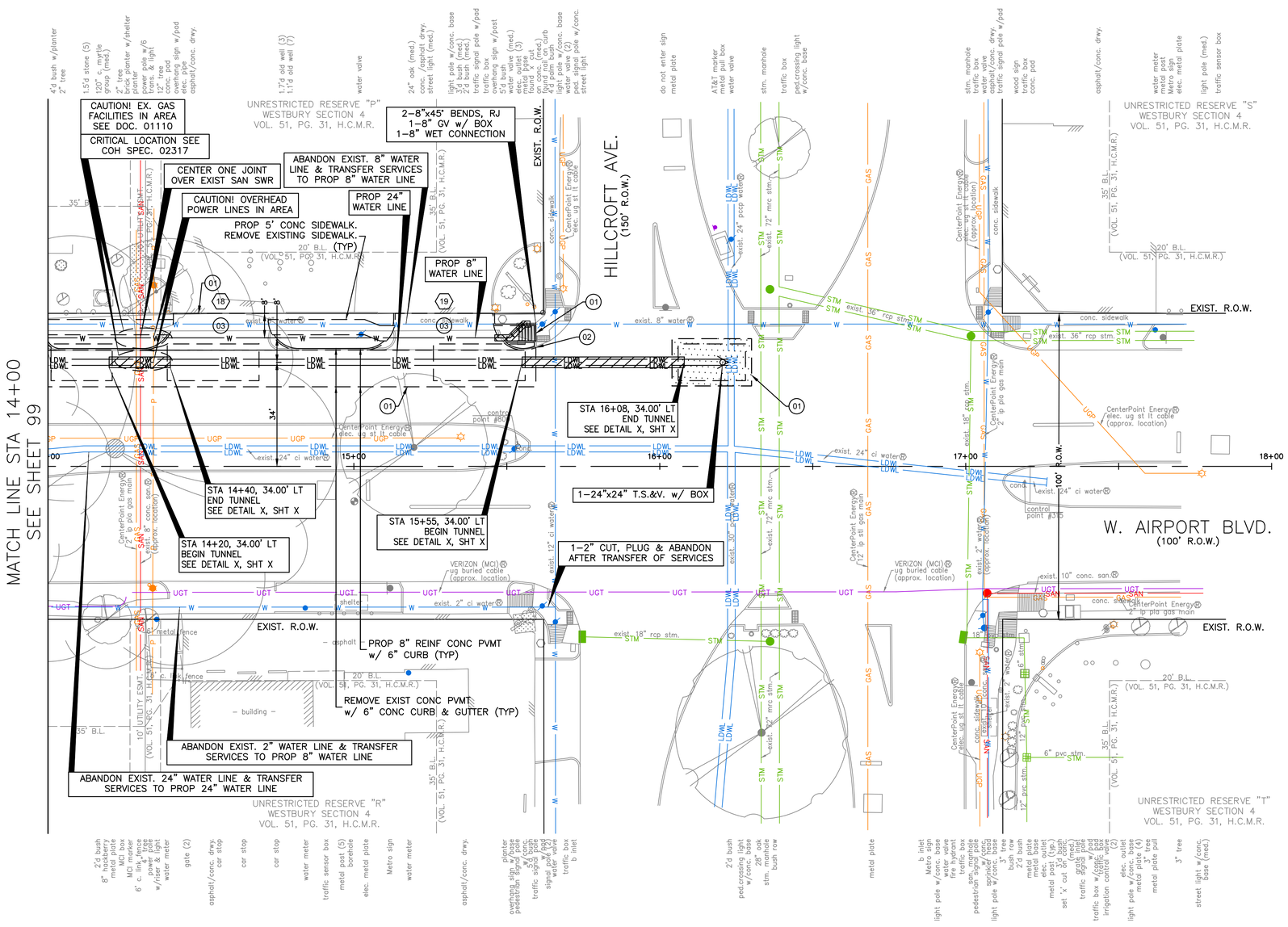
MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 3 – W AIRPORT BLVD
PROFILE
STA 10+00 TO 14+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 200' W: 1" = 2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 100 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 3 - W Airport Blvd.dwg plotted on Apr 03, 2025 - 8:18pm



SEE SHEET 102 FOR PROFILE

N

0' 20' 40'
HORIZ:1"=20'
VERT:N/A

NO.	DATE	REVISION	APP.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 040820 IS AN HCFCD BRASS DISC STAMPED D140 BM05 LOCATED ON NORTH SIDEWALK ON W AIRPORT BLVD (WESTBOUND) APPROXIMATELY 0.2 MILE EAST FROM THE INTERSECTION OF FONDREN RD IN KEYMAP 570H IN THE BRAYS BAYOU WATERSHED

ELEV. 62.58 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:

T.B.M.: B-315
SET 'X' CUT ON CONC.
ELEV.=60.134
D. STA. 17+69.27 OFFSET: 6.37R

(XX) PROPOSED CONSTRUCTION NOTES

(XX) PROPOSED DRIVEWAY IDENTIFICATION AND DETAILS

HIGH EARLY STRENGTH CONCRETE PAVEMENT AREA

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

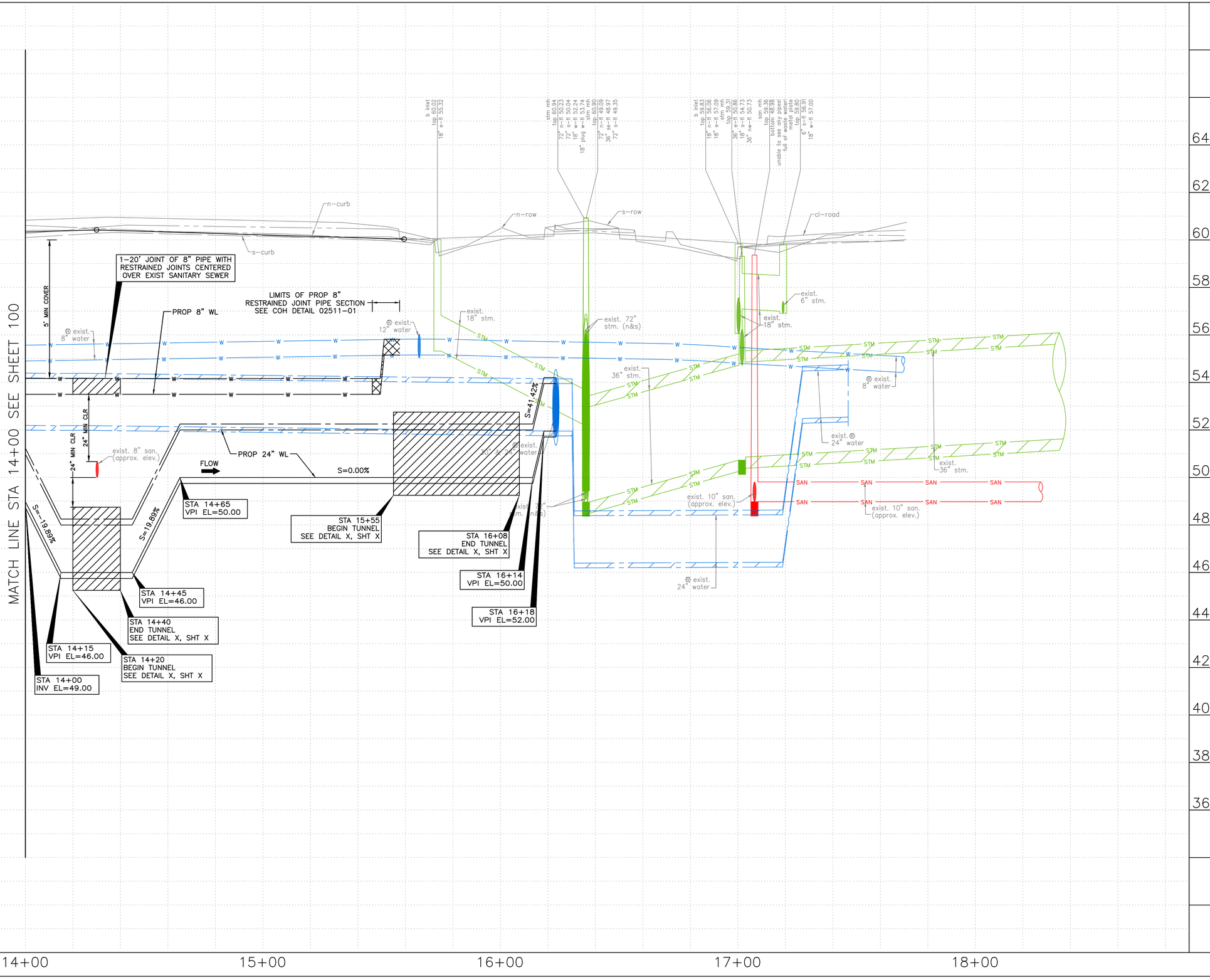
MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 3 – W AIRPORT BLVD PLAN
STA 14+00 TO END

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1"=20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 101 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 3 - W Airport Blvd.dwg plotted on Apr 03, 2025 - 8:18pm

SEE SHEET XX FOR PLAN



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HORIZ:1"=20'
VERT:1"=2'

NO.	DATE	REVISION	APP.

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HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL

SITE 3 – W AIRPORT BLVD PROFILE STA 14+00 TO END

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S-000701-0041-3	
DRAWING SCALE	
H: 1"= 20' V: 1"= 2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
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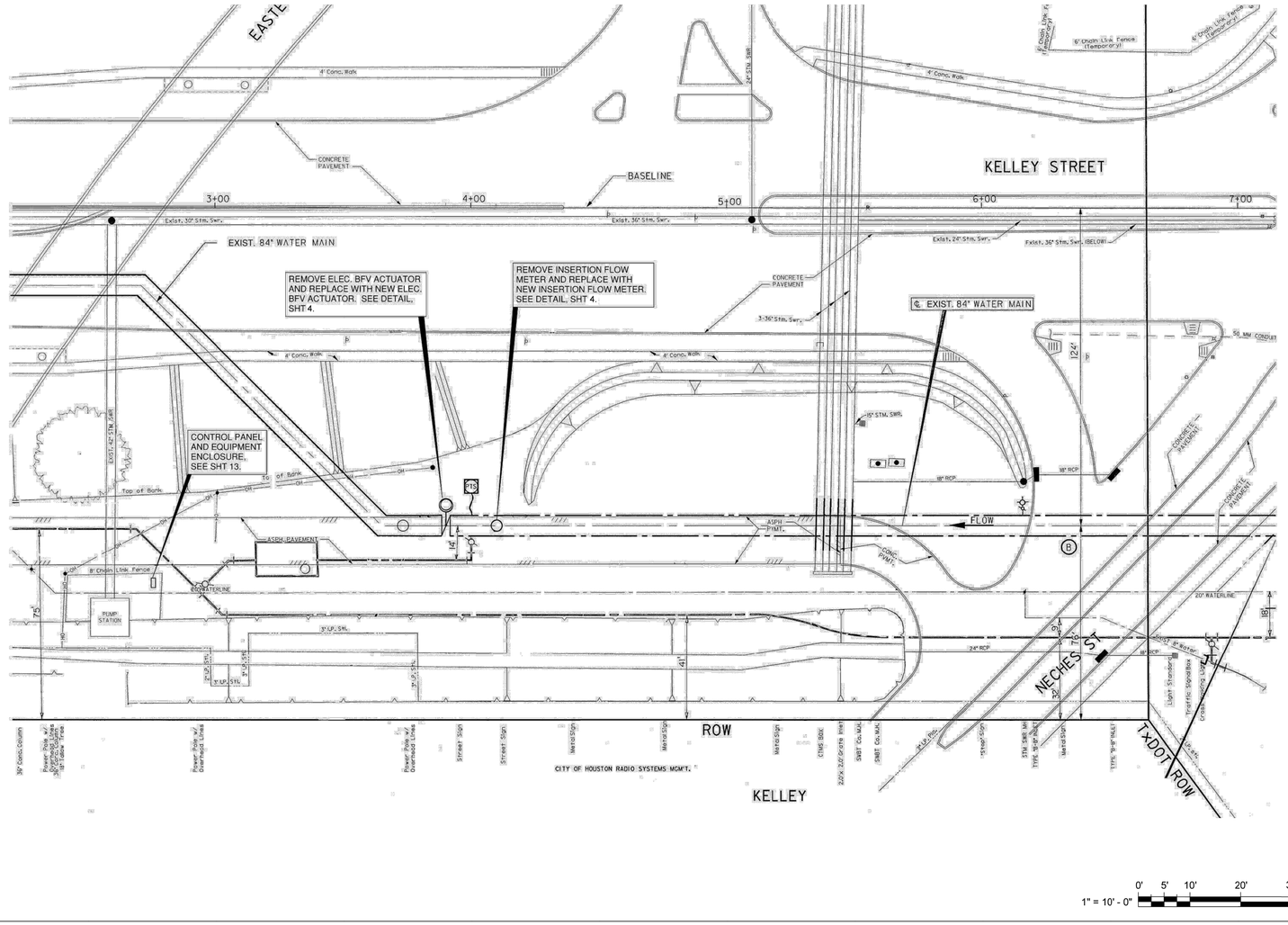

NOTES

1. TOPOGRAPHIC INFORMATION AND WATERLINE ALIGNMENT REFLECT INFORMATION FROM RECORD DRAWINGS DATED MARCH 7, 2003. LOCATIONS OF FACILITIES AND STRUCTURES AND SPECIFIC DIMENSIONS SHOWN ON THE DRAWINGS SHALL BE CONFIRMED IN THE FIELD BY THE CONTRACTOR.
2. REMOVE AND REPLACE INSERTION FLOW METER, CABLE, REDUCER, COMPRESSOR FITTING, STEEL CASING. REPLACE WITH NEW INSERTION FLOW METER WITH CASING, FITTINGS CABLE CONNECTION AS REQUIRED. INSTALL NEWFLOW METER IN ACCORDANCE WITH MANFACTURERS RECOMMENDATIONS.
3. REMOVE EXIST. ELECTRIC ACTUATORS AND CONDUCTORS (WIRING) AS INDICATED ON THE DRAWINGS. REPLACE ELECTRIC ACTUATORS WITH NEW ACTUATORS WITH MINIMUM TORQUE OF 150 FOOT-POUNDS INSTALL NEW ACTUATORS IN ACCORDANCE WITH MANFACTURERS RECOMMENDATIONS.
4. ELECTRIC ACTUATORS SHALL INCLUDE ALARM RELAY MODULE (AR), ANALOG POSITION TRANSMITTER (APT), AND 2-SPEED TIMER FOR INCREASED VALVE STROKE TIME. CONFIGURED FOR 3-WIRE "INCHING" CONTROL USING EXTERNAL 110 VOLT-AC SUPPLY AND PUSH-TO-RUN SIGNALS, WITH EMERGENCY SHUTDOWN (ESD) ENABLED.

NO.	DATE	REVISION	APP.

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Date

Aurora Technical Services, LLC
engineering • construction management
2121 Sage Road, Suite 150
Houston, TX 77056
Tel: (281) 453-7000
www.auroratechservices.com

SURVEYED BY:
FB NO. 000000

INTERIM REVIEW ONLY
Document incomplete, not intended for regulatory approval, permit, or construction.
WILLIAM M. WILSHIRE III
Signature
94193
07/07/21
Date
Aurora Technical Services, LLC
Texas Registered Engineering Firm F-2059

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LARGE DIAMETER WATERLINE TECHNICAL SERVICES - PACKAGE 1
WORK ORDER G - CONTROLS FOR 84-INCH VALVES
AT US 59 CROSSING

CIVIL SITE PLAN - WEST SIDE

C-1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000020-0071-3	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
VENUS PRICE, P.E.	
SHEET NO. 2 OF 13	

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567

PRIVATE UTILITY LINES SHOWN

Date:

CENTERPOINT ENERGY/ELECTRIC FACILITIES
ELECTRICAL FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION).

Date:

CENTERPOINT ENERGY/GAS FACILITIES
(GAS SERVICE LINES ARE NOT SHOWN). THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION.

Date:

AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

LAN

EFF DATE: XXXX-XX-20XX	DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of interim review under the authority of:
Engineer:CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL
SITE 4A
CIVIL SITE PLAN
WEST

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 103 OF 244	

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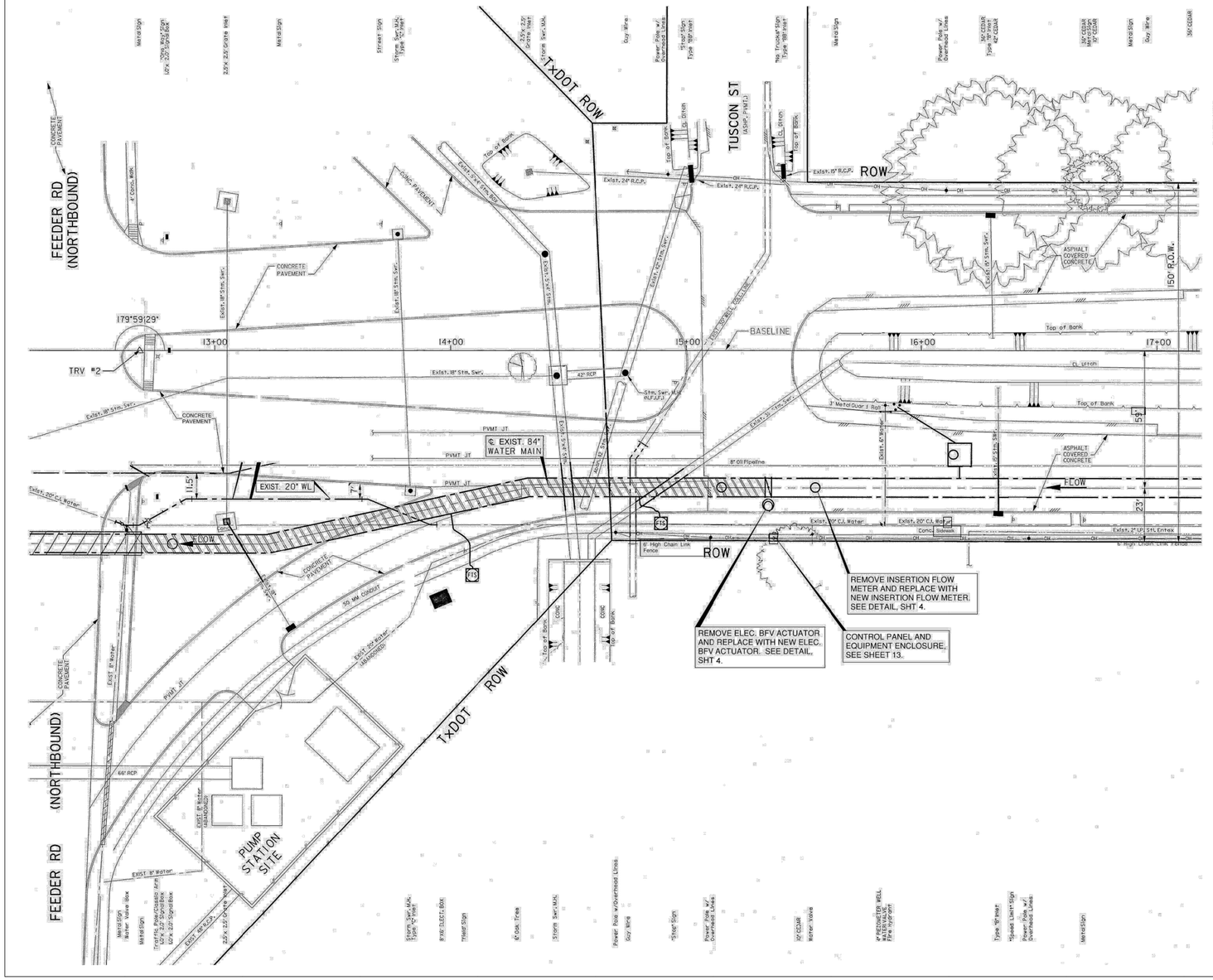

NOTES

1. TOPOGRAPHIC INFORMATION AND WATERLINE ALIGNMENT REFLECT INFORMATION FROM RECORD DRAWINGS DATED MARCH 7, 2003. LOCATIONS OF FACILITIES AND STRUCTURES AND SPECIFIC DIMENSIONS SHOWN ON THE DRAWINGS SHALL BE CONFIRMED IN THE FIELD BY THE CONTRACTOR.
2. REMOVE AND REPLACE INSERTION FLOW METER, CABLE, REDUCER, COMPRESSOR FITTING, STEEL CASING. REPLACE WITH NEW INSERTION FLOW METER WITH CASING, FITTINGS CABLE CONNECTION AS REQUIRED. INSTALL NEWFLOW METER IN ACCORDANCE WITH MANFACTURERS RECOMMENDATIONS.
3. REMOVE EXIST. ELECTRIC ACTUATORS AND CONDUCTORS (WIRING) AS INDICATED ON THE DRAWINGS. REPLACE ELECTRIC ACTUATORS WITH NEW ACTUATORS WITH MINIMUM TORQUE OF 150 FOOT-POUNDS INSTALL NEW ACTUATORS IN ACCORDANCE WITH MANFACTURERS RECOMMENDATIONS.
4. ELECTRIC ACTUATORS SHALL INCLUDE ALARM RELAY MODULE (AR), ANALOG POSITION TRANSMITTER (APT), AND 2-SPEED TIMER FOR INCREASED VALVE STROKE TIME. CONFIGURED FOR 3-WIRE "INCHING" CONTROL USING EXTERNAL 110 VOLT-AC SUPPLY AND PUSH-TO-RUN SIGNALS, WITH EMERGENCY SHUTDOWN (ESD) ENABLED.

NO.	DATE	REVISION	APP.

1" = 10' - 0" (0' 5' 10' 20' 30')

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.

Signature valid for six months.

Date

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities – not to be used for conflict verification)

Signature valid for six months.

Date

Approved for AT&T underground conduit facilities only. Signature valid for one year.

Aurora Technical Services, LLC
engineering • construction management
2121 Sage Road, Suite 150
Houston, TX 77056
Tel: (281) 453-7000
www.auroratechservices.com

INTERIM REVIEW ONLY
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WILLIAM M. WILSHIRE III
94193
07/07/21
Date
Aurora Technical Services, LLC
Texas Registered Engineering Firm F-2059

SURVEYED BY:
FB NO. 000000

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LARGE DIAMETER WATERLINE TECHNICAL SERVICES - PACKAGE 1
WORK ORDER G - CONTROLS FOR 84-INCH VALVES AT US 59 CROSSING

CIVIL SITE PLAN - EAST SIDE

C-2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000020-0071-3	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
VENUS PRICE, P.E.	
SHEET NO. 3 OF 13	

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567.

PRIVATE UTILITY LINES SHOWN

Date:

CENTERPOINT ENERGY/ELECTRIC FACILITIES
ELECTRICAL FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION).

Date:

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(GAS SERVICE LINES ARE NOT SHOWN). THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION.

Date:

AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

LAN

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

INTERIM REVIEW ONLY
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Engineer:CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
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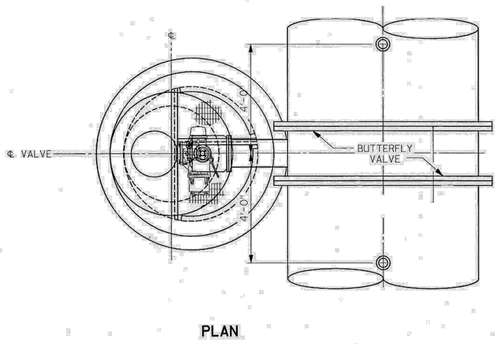
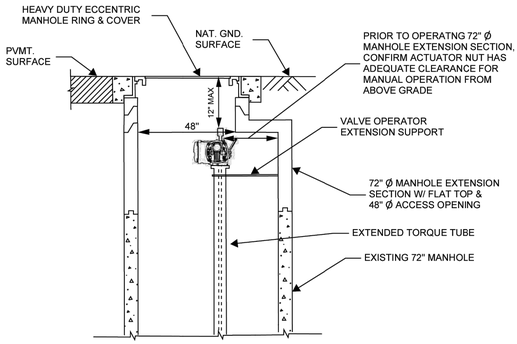
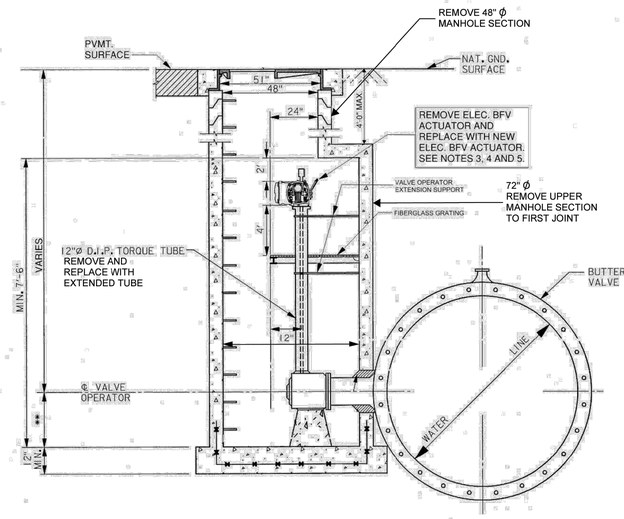


PLAN

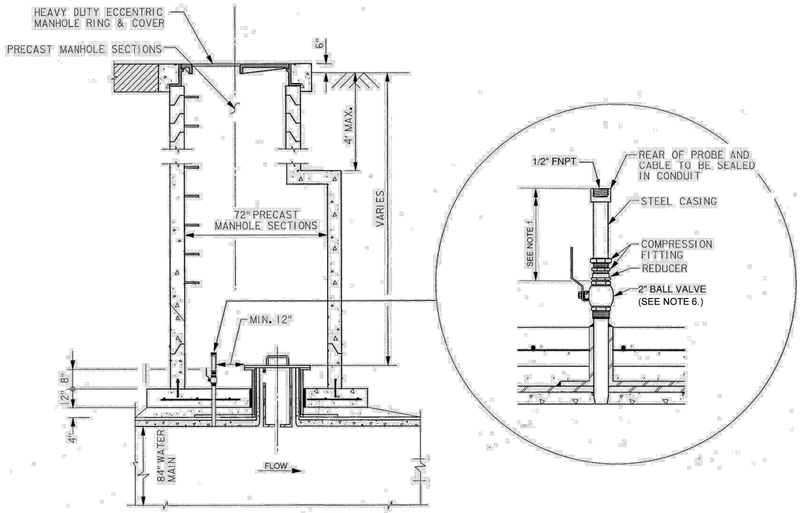


EXTENDED 72" Ø OPERATOR MANHOLE



ELEVATION

OPERATOR MANHOLE DETAILS FOR BUTTERFLY VALVES WITH ELECTRIC ACTUATORS



SERVICE MANHOLE FOR ACCESS MANWAY AND INSERTION FLOWMETER

NOTES

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4. REMOVE TORQUE TUBE AND VALVE OPERATOR EXTENSION AS NECESSARY TO INSTALL NEW ACTUATOR.
5. ELECTRIC ACTUATORS SHALL INCLUDE ALARM RELAY MODULE (AR), ANALOG POSITION TRANSMITTER (APT), AND 2-SPEED TIMER FOR INCREASED VALVE STROKE TIME. CONFIGURED FOR 3-WIRE "INCHING" CONTROL USING EXTERNAL 110 VOLT-AC SUPPLY AND PUSH-TO-RUN SIGNALS, WITH EMERGENCY SHUTDOWN (ESD) ENABLED.
6. VERIFY BALL VALVE SIZE IN THE FIELD, PRIOR TO ORDERING NEW INSERTION FLOWMETER. IF EXISTING BALL VALVE SIZE IS 3-INCH, USE THREADED REDUCING BUSHING TO REDUCE VALVE CONNECTION TO 2-INCH FOR INSTALLATION OF NEW INSERTION FLOWMETER.
7. NEW INSERTION FLOWMETER:
   PROVIDE NEW 84-INCH ELECTROMAGNETIC INSERTION FLOWMETER WITH SUFFICIENT LENGTH OF CABLE TO EXTEND FROM FLOWMETER TO CONVERTER BOX TO BE INSTALLED INSIDE NEW ELECTRICAL/CONTROL EQUIPMENT ENCLOSURE. PROVIDE McCROMETER FPI MODEL 394.

   CONTACT Ann Lippert, HB SYSTEMS, INC.
   email: ann@hbsystemsinc.com
   Telephone - Mobile: 972-977-8763
8. NEW ELECTRIC BFV ACTUATOR:
   PROVIDE NEW ELECTRIC ACTUATORS FOR EXISTING 84-INCH BUTTERFLY VALVES. PROVIDE LIMITORQUE MX-85-77 ELECTRIC ACTUATOR WITH 2-INCH OPERATING NUT; OR PROVIDE EMERSON EIM MODEL 3LSM-3 ELECTRIC ACTUATOR WITH 2-INCH OPERATING NUT.

   CONTACT Jimmy Scruggs, The Scruggs Company, 8530 Hansen Rd., Houston, TX 77075;
   Email: jscruggs@scruggsco.com;
   Telephone - Office: 713-649-2776 x 6
   Telephone - Direct: 832-319-6822

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WILLIAM M. WILSHIRE III
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Date
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LARGE DIAMETER WATERLINE TECHNICAL SERVICES - PACKAGE 1
WORK ORDER G - CONTROLS FOR 84-INCH VALVES AT US 59 CROSSING

DETAILS
C-3

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Registration Number: 94776
Date: 04/03/2025
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Texas Registered Engineering Firm F-2614

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SITE 4A
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ONE LINE AND CONTROL DIAGRAM SYMBOLS

- WIRING BETWEEN REMOTE DEVICES (CONTROL DIAGRAMS) TRIP/CONTROL SIGNAL (ONE LINE DIAGRAMS)
- 3P. A — MOLDED CASE CIRCUIT BREAKER WITH THERMAL AND MAGNETIC TRIP ELEMENTS IT=INSTANTANEOUS TRIP NA=NON-AUTOMATIC MCP=MOTOR CIRCUIT PROTECTOR
- [K] — KEY INTERLOCK; TO ALLOW ONLY ONE DISCONNECT AT A TIME POSITIONED TO "ON"
- 3P. A [S] — CIRCUIT BREAKER WITH SHUNT TRIP RELAY
- DISCONNECT SWITCH - SIZE AND QUANTITY OF POLES AS NOTED
- FUSE - QUANTITY AND RATING AS NOTED
- SURGE ARRESTER, METAL-OXIDE VARISTOR, QUANTITY AND RATING AS NOTED
- [GFR] — GROUND FAULT RELAY
- (20) — MOTOR, THREE-PHASE, HORSEPOWER AS NOTED
- MOTOR STARTER - NEMA SIZE AS INDICATED
- THERMAL OVERLOAD RELAY; "SS" INDICATES SOLID STATE UNIT

- TRANSFORMER - DESCRIPTION AND RATING AS NOTED
  TRANSFORMER CONNECTION:
  - Δ DELTA
  - ∠ OPEN DELTA
  - WYE
  - GROUNDED WYE
- 3 /5 — CURRENT TRANSFORMER-QUANTITY AND RATIO AS INDICATED
- VOLTAGE TRANSFORMER (VT) - QUANTITY AND RATIO AS NOTED
- PUSHBUTTON, N.C. MOMENTARY CONTACT, SPRING RETURN
- PUSHBUTTON, N.O. MOMENTARY CONTACT, SPRING RETURN
- SWITCH, 2 POSITION
- OFF / HAND / AUTO — HAND-OFF-AUTO SELECTOR SWITCH, 3-POSITION

- (M) — RELAY/CONTACTOR OPERATING COIL
- NORMALLY OPEN (N.O.) CONTACT
- NORMALLY CLOSED (N.C.) CONTACT
- (TDI) — RELAY; "TD" INDICATES TIMING RELAY
- TDI / TC — NORMALLY OPEN CONTACT TIME DELAY (WHERE INDICATED): TC = TIME DELAY ON CLOSURE, TIME DELAY AS INDICATED; TO = TIME DELAY ON OPENING, TIME DELAY AS INDICATED
  0.5 SEC (0-20 SEC) (X-Y) = ADJUSTABLE TIME BAND/RANGE, WHERE SHOWN
- NORMALLY CLOSED TORQUE SWITCH
- LIMIT SWITCH, CLOSED
- LIMIT SWITCH, OPEN

- N.C. PRESSURE SWITCH OPENS ON DECREASING PRESSURE
- N.C. LIQUID LEVEL SWITCH OPENS ON FALLING LEVEL
- N.O. LIQUID LEVEL SWITCH CLOSES ON RISING LEVEL
- N.C. FLOW SWITCH OPENS ON DECREASE IN FLOW
- (R) — L.E.D. PILOT LIGHTS: G=GREEN, R=RED, A=AMBER
- CONNECTION POINT
- GROUND CONNECTION
- KEYED NOTE
- (602) — FEEDER DESIGNATION - REFER TO PLAN DRAWINGS FOR LOCATION
- CAPACITOR, SIZE AND RATING AS INDICATED; 480V, 3Ø U.ON.
- BATTERY; 24VDC NICd UON.

PLAN SYMBOLS

- (602) — FEEDER DESIGNATION - REFER TO ONE LINE DIAGRAM FOR CONDUIT/CONDUCTOR SIZE
- (2) — KEYED NOTE
- CONDUIT TURNED UP
- CONDUIT TURNED DOWN
- CAPPED CONDUIT
- [S] — CONDUIT SEAL
- SERVICE WEATHERHEAD
- FUSIBLE DISCONNECT SWITCH, 60A, 3P. UON; FUSE SIZE AS INDICATED
- [C] — MOTOR CONTACTOR, WEATHERPROOF; RATING AS NOTED
- (J) — JUNCTION BOX; PROVIDE 316 S.S. FOR EXTERIOR LOCATIONS
- S — SINGLE POLE SWITCH, WEATHERPROOF, 20A, 250V UON.

- POLE AND SITE LUMINAIRE
- UNDERGROUND DUCT BANK, CONDUIT, OR CONDUCTOR
- CIRCUIT EXPOSED
- — G — GROUNDING CONDUCTOR, SIZE AS NOTED
- NEW
- LA-1,3,5 — HOMERUN TO PANELBOARD-SUBSCRIPT DENOTES POINT OF ORIGINATION AND CIRCUIT NUMBERS
- ¾" X 10' GROUND ROD
- WP / GFI — NEMA 5-20R RECEPTACLE "GFI" INDICATES GROUND FAULT CIRCUIT INTERRUPTER "WP" INDICATES WEATHERPROOF
- SINGLE RECEPTACLE; 30A, 250V; 2P-3W-G; LOCKING, NEMA L6-20R, UON.

INSTRUMENTATION SYMBOLS

- (XX / XXX) — FIELD INSTRUMENT
- (XX / XXX) — LOCAL CONTROL PANEL
- (XX / XXX) — LOCAL CONTROL PANEL, BEHIND FRONT PANEL
- [XX / XXX] — PLC CONTROL SYSTEM
- INTERLOCK

LAH	LEVEL ALARM HIGH
LAL	LEVEL ALARM LOW
LALL	LEVEL ALARM LOW LOW
LCV	LEVEL CONTROL VALVE
LC	LEVEL CONTROLLER
LSH	LEVEL SWITCH HIGH
LSL	LEVEL SWITCH LOW
LSLH	COMBINATION LEVEL SWITCH
LSLL	LEVEL SWITCH LOW LOW
LT	LEVEL TRANSMITTER
LI	LEVEL INDICATOR
PI	PRESSURE INDICATOR
PT	PRESSURE TRANSMITTER
PAL	LOW PRESSURE ALARM
PALL	LOW LOW PRESSURE ALARM
PSH	PRESSURE SWITCH HIGH
PSLH	COMBINATION PRESSURE SWITCH
PSHH	PRESSURE SWITCH HIGH HIGH
PSLL	PRESSURE SWITCH LOW LOW

FI	FLOW INDICATOR
FT	FLOW TRANSMITTER
FS	FLOW SWITCH
FAHH	FLOW ALARM HIGH HIGH
FAL	FLOW ALARM LOW
FAH	FLOW ALARM HIGH
FSH	FLOW SWITCH HIGH
FSL	FLOW SWITCH LOW
FSLL	FLOW SWITCH LOW LOW
FC	FLOW CONTROLLER
IC	MOTOR CONTROLLER
IS	CURRENT SWITCH
YS	STATUS SWITCH
YA	STATUS ALARM
HS	HAND SWITCH

ABBREVIATIONS

@	AT
A,AMP	AMPERE
AC	ALTERNATING CURRENT
AF	AMPERE FUSE
AFF	ABOVE FINISHED FLOOR
AIC	AMP INTERRUPTING CAPACITY
AL	ALUMINUM
AS	AMPERE SWITCH
ATS	AUTOMATIC TRANSFER SWITCH
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE
BFI	BLOWN FUSE INDICATOR
BLDG	BUILDING
C	CONDUIT
CAT	CATALOG/CATEGORY
CB	CIRCUIT BREAKER
CCU	CENTRAL CONTROL UNIT
CJ.	CAST IRON
CKT	CIRCUIT
CL, ℄	CENTERLINE, CURRENT LIMITING (W/ FUSE)
COH	CITY OF HOUSTON
COORD	COORDINATE
CPT	CONTROL POWER TRANSFORMER
CT	CURRENT TRANSFORMER
CTRL	CONTROL(LER)
CU	COPPER
Δ	DELTA
DET	DETAIL
DIA	DIAMETER
DIV	DIVISION
DPDT	DOUBLE POLE, DOUBLE THROW
DPST	DOUBLE POLE, SINGLE THROW
DWG	DRAWING
EA	EACH
E.G.	EQUIPMENT GROUND(ING)
ELEC	ELECTRICAL)
EMT	ELECTRICAL METALLIC CONDUIT
EST	ELEVATED STORAGE TANK
ETM	ELAPSED TIME METER
EWH	ELECTRIC WATER HEATER
EXG	EXISTING
FBO	FURNISHED BY OWNER
FC	FOOT-CANDLE, FOOT-CANDLES
FIC	FURNISH AND INSTALL COMPLETE
FLA	FULL LOAD AMPERES
F.O.	FIBER OPTIC
FP	FREEZE PROTECTION
FURN	FURNISH
FUT	FUTURE
FVNR	FULL VOLTAGE, NON-REVERSING
FVR	FULL VOLTAGE, REVERSING
GA	GAGE,GAUGE
GALV	GALVANIZED
GND	GROUND(ED)
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
G.P.	GENERAL PURPOSE
GPM	GALLONS PER MINUTE
GWST	GROUND WATER STORAGE TANK
HL&P	HOUSTON LIGHTING & POWER (UTILITY)
H-O-A	HAND-OFF-AUTO (SWITCH)
HP	HORSEPOWER
HPCO	HIGH PRESSURE CUT-OUT
HPS	HIGH PRESSURE SODIUM
HTR	HEATER
HVAC	HEATING, VENTILATING, & AIR CONDITIONING
IAW	IN ACCORDANCE WITH
ICW	IN CONJUNCTION WITH
I.D.	INSIDE DIAMETER
I.G.	ISOLATED GROUND(ING)
I/O	INPUT/OUTPUT
K	KILO
KA	KILO AMPERES
KAIC	KILO AMPERES INTERRUPTING CAPACITY
KCMIL	THOUSAND CIRCULAR MILS
KV	KILOVOLT
KVA	KILOVOLT-AMPERES
KVAR	KILOVOLT-AMPERES REACTIVE
KW	KILOWATTS
LCTN	LOCATION
LED	LIGHT EMITTING DIODE
LPS	LOW PRESSURE SODIUM
LRC	LOCKED ROTOR CURRENT/AMPERES
LTG	LIGHTING
MA	MILLI AMP (0.001 A)
MANUF	MANUFACTURER, MANUFACTURER'S
MAX	MAXIMUM
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCCB	MOLDED CASE CIRCUIT BREAKER
MCP	MOTOR CIRCUIT PROTECTOR
MH	MANHOLE, METAL-HALIDE
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MOV	METAL OXIDE VARISTOR
MRVS	MAGNETIC REDUCED VOLTAGE MOTOR STARTER
MTS	MANUAL TRANSFER SWITCH
MVA	MEGA VOLT-AMPERES
MVAR	MEGAVAR
MW	MEGAWATT
N.C.	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE (NFPA 70)
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NIC	NOT IN CONTRACT
NICd	NICKEL-CADMIUM
N.O.	NORMALLY OPEN
NO.	NUMBER
NTE	NOT TO EXCEED
NTS	NOT TO SCALE
OAS	OR APPROVED SUBSTITUTION
OC	ON CENTER
OD	OUTSIDE DIAMETER
O.H.	OVERHEAD
OL	OVERLOAD
P.	POLE
PB	PULLBOX
PF	POWER FACTOR
PFCC	POWER FACTOR CORRECTION CAPACITOR
PH., Ø	PHASE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PR.	PAIR
PROP	PROPOSED
PROV	PROVIDE
PT	POTENTIAL TRANSFORMER
RCPT	RECEPTACLE
RE	REFER TO, REFERENCE
REQ	REQUIRE, REQUIRED
RGS	RIGID GALVANIZED STEEL
RMS	ROOT-MEAN-SQUARE
RTD	RESISTANCE TEMPERATURE DETECTOR
RTU	REMOTE TERMINAL UNIT
RVS	REDUCED VOLTAGE MOTOR STARTER
RVS/M	RVS-MAGNETIC
RVS/SS	RVS-SOLID STATE
SCADA	SUPERVISORY CONTROL AND DATA ACQUISITION
SCH	SCHEDULE(D)
SE	SERVICE ENTRANCE
SH	SHEET
SHD	SHIELDED
SIM	SIMILAR
SP	SPARE
SPDT	SINGLE POLE, DOUBLE THROW
SPST	SINGLE POLE, SINGLE THROW
S.S.	STAINLESS STEEL
SSCCR	SYMMETRICAL SHORT CIRCUIT CURRENT RATING
SSOL	SOLID STATE OVERLOAD
SSRVS	SOLID STATE REDUCED VOLTAGE MOTOR STARTER
STD	STANDARD
STP	SHIELDED TWISTED PAIR
STRUC	STRUCTURAL
SW/	SWITCH
SWBD	SWITCHBOARD
SWBT	SOUTHWESTERN BELL TELEPHONE
SWGR	SWITCHGEAR
SWTP	SURFACE WATER TRANSMISSION PROGRAM
SYM	SYMMETRICAL
TELCO	TELEPHONE COMPANY
TELCOM	TELECOMMUNICATIONS
TOL	THERMAL OVERLOAD (RELAY)
TSP	TWISTED SHIELDED PAIR
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSER
TYP	TYPICAL
UG	UNDERGROUND
UL	UNDERWRITERS LABORATORY
UON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTIBLE POWER SUPPLY
U.S.E.	UNDERGROUND SERVICE ENTRANCE
UTIL	UTILITY
UTP	UNSHIELDED TWISTED PAIR
V	VOLTS
VA	VOLT-AMPERE
VAC	AC VOLTS
VAR	VOLT-AMPERE REACTIVE
VDC	DC VOLTS
VFD	VARIABLE FREQUENCY DRIVE
W.	WIRE
W/	WITH
WP	WEATHERPROOF
WRT	WITH RESPECT TO
XFMR	TRANSFORMER
XMTR	TRANSMITTER
Y	WYE
Z	IMPEDANCE

CP&Y, INC.
5120 REGAL ROW
DALLAS, TX 75235 | 214.638.0500
TBPE FIRM NO. F-1741

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.

Signature valid for six months.

Date

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities – not to be used for conflict verification)

Signature valid for six months.

Date

Approved for AT&T underground conduit facilities only. Signature valid for one year.

Aurora Technical Services, LLC
regularly - invested engineers
2121 Sage Road, Suite 150
Houston, TX 77056
Tel: (281) 453-7000
www.auroratechservices.com

SURVEYED BY:
FB NO. 000000

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LIANG LI
96785
07/07/21
CP&Y Inc.
Texas Registered Engineering Firm F-1741

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LARGE DIAMETER WATERLINE TECHNICAL SERVICES - PACKAGE 1
WORK ORDER G - CONTROLS FOR 84-INCH VALVES AT US 59 CROSSING

ELECTRICAL LEGEND
E-1

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000020-0071-3	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
VENUS PRICE, P.E.	
SHEET NO. 5 OF 13	

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567

PRIVATE UTILITY LINES SHOWN

Date:
CENTERPOINT ENERGY/ELECTRIC FACILITIES
ELECTRICAL FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION).

Date:
CENTERPOINT ENERGY/GAS FACILITIES
(GAS SERVICE LINES ARE NOT SHOWN). THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION.

Date:
AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

LAN

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

INTERIM REVIEW ONLY
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Engineer: CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 4A
ELECTRICAL LEGEND

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 106 OF 244	

PEN TABLE: LAN-COH-CIVIL.ctb
USERNAME: Flemig, David
PLOTTED: 4/3/2025 6:18 PM
FILE PATH: P:\132\132-1000-000\V-D-Production-Working\V-I-BIM-CAD\Civil\Sheets\SITE 4A.dwg

GENERAL NOTES

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SCOPE OF WORK

1. REPLACE ALL POWER, CONTROL AND FIBER OPTIC CABLES. COORDINATE WITH CITY FOR CABLE SPECIFICATION.
2. POWER UTILITY FEEDER TO POWER METER SHALL STAY.
3. REPLACE PLC 1 AND 2 PANEL. COORDINATE WITH CITY FOR PLC PANEL ENCLOURE, WIRES, TERMINAL BLOCKS, AND OTHER HARDWARE REQUIREMENTS. PROVIDE PANEL SUBMITTAL AND AS-BUILT DRAWING. PANEL SHALL BE UL LISTED.
4. REPLACE ALL FIELD INSTRUMENTS.
5. CONFIGURE NEW PLC TO COMMUNICATE TO SCADA VIA RADIO AND TELEPHONE LINE COMMUNICATION.
6. PROGRAMMING OF NEW PLCs AND CONTROL FUNCTIONS SHALL BE BY THE CITY.

KEYED NOTES ⬡

1. VALVE ACTUATOR MOTOR, SEE SHEETS 2, 3 AND 8.
2. REMOVE AND REPLACE FLOW AND PRESSURE TRANSMITTERS. LOCATE NEW TRANSMITTERS INSIDE ACCESS MANWAY MANHOLE AT HIGHEST ELEVATION POSSIBLE TO PERMIT MONITORING WITHOUT CONFINED SPACE ENTRY INTO MANHOLE. REMOVE AND REPLACE INSTRUMENT TUBING AND PROVIDE FREEZE PROTECTION FOR EXPOSED TUBING; PROVIDE PHYSICAL DAMAGE PROTECTION FOR EXPOSED TUBING USING CONDUIT. INSTRUMENT TUBING SHALL BE INSTALLED UNDERGROUND IN CONDUIT UP TO THE LIMITS OF CONCRETE PAD FOUNDATION FOR EQUIPMENT ENCLOSURE. DO NOT EXPOSE INSTRUMENT TUBING BEYOND LIMITS OF CONCRETE PAD FOUNDATION FOR EQUIPMENT ENCLOSURE.
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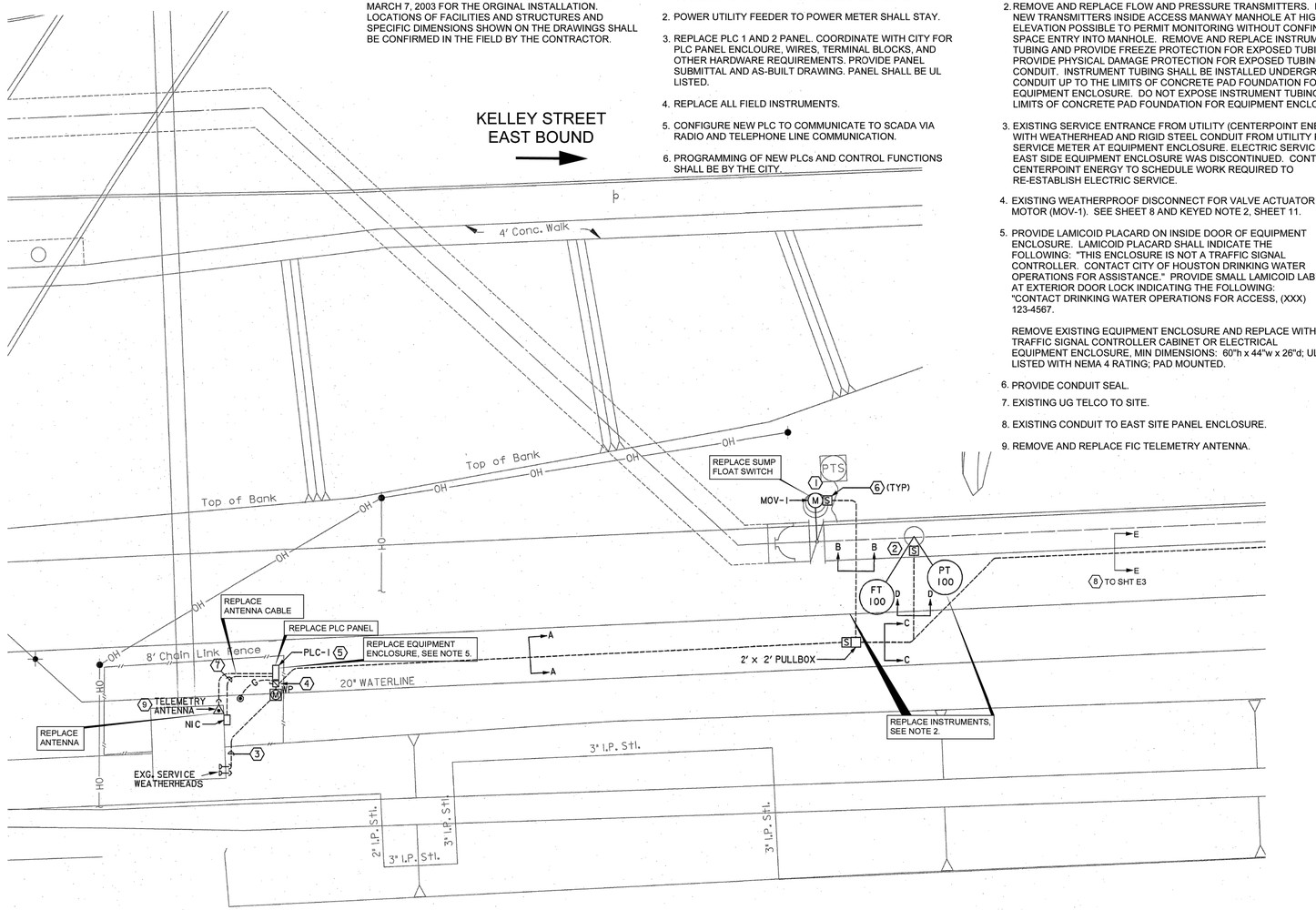
4. EXISTING WEATHERPROOF DISCONNECT FOR VALVE ACTUATOR MOTOR (MOV-1). SEE SHEET 8 AND KEYED NOTE 2, SHEET 11.
5. PROVIDE LAMICOID PLACARD ON INSIDE DOOR OF EQUIPMENT ENCLOSURE. LAMICOID PLACARD SHALL INDICATE THE FOLLOWING: "THIS ENCLOSURE IS NOT A TRAFFIC SIGNAL CONTROLLER. CONTACT CITY OF HOUSTON DRINKING WATER OPERATIONS FOR ASSISTANCE." PROVIDE SMALL LAMICOID LABEL AT EXTERIOR DOOR LOCK INDICATING THE FOLLOWING: "CONTACT DRINKING WATER OPERATIONS FOR ACCESS, (XXX) 123-4567.

   REMOVE EXISTING EQUIPMENT ENCLOSURE AND REPLACE WITH TRAFFIC SIGNAL CONTROLLER CABINET OR ELECTRICAL EQUIPMENT ENCLOSURE, MIN DIMENSIONS: 60"h x 44"w x 26"d; UL LISTED WITH NEMA 4 RATING; PAD MOUNTED.
6. PROVIDE CONDUIT SEAL.
7. EXISTING UG TELCO TO SITE.
8. EXISTING CONDUIT TO EAST SITE PANEL ENCLOSURE.
9. REMOVE AND REPLACE FIC TELEMETRY ANTENNA.



NO.	DATE	REVISION	APP.

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LARGE DIAMETER WATERLINE TECHNICAL SERVICES - PACKAGE 1
WORK ORDER G - CONTROLS FOR 84-INCH VALVES AT US 59 CROSSING

ELECTRICAL SITE PLAN - WEST SIDE

E-2

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000020-0071-3	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
VENUS PRICE, P.E.	
SHEET NO. 6 OF 13	

CP&Y, INC.
1820 REGAL ROW
DALLAS, TX 75235 | 214.638.0500
TBPE FIRM NO. F-1741

NO.	DATE	REVISION	APP.

NOTICE:
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PRIVATE UTILITY LINES SHOWN

Date:

CENTERPOINT ENERGY/ELECTRIC FACILITIES
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Date:

AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

LAN

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

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Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL
SITE 4A
ELECTRICAL SITE PLAN
WEST

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 107 OF 244	

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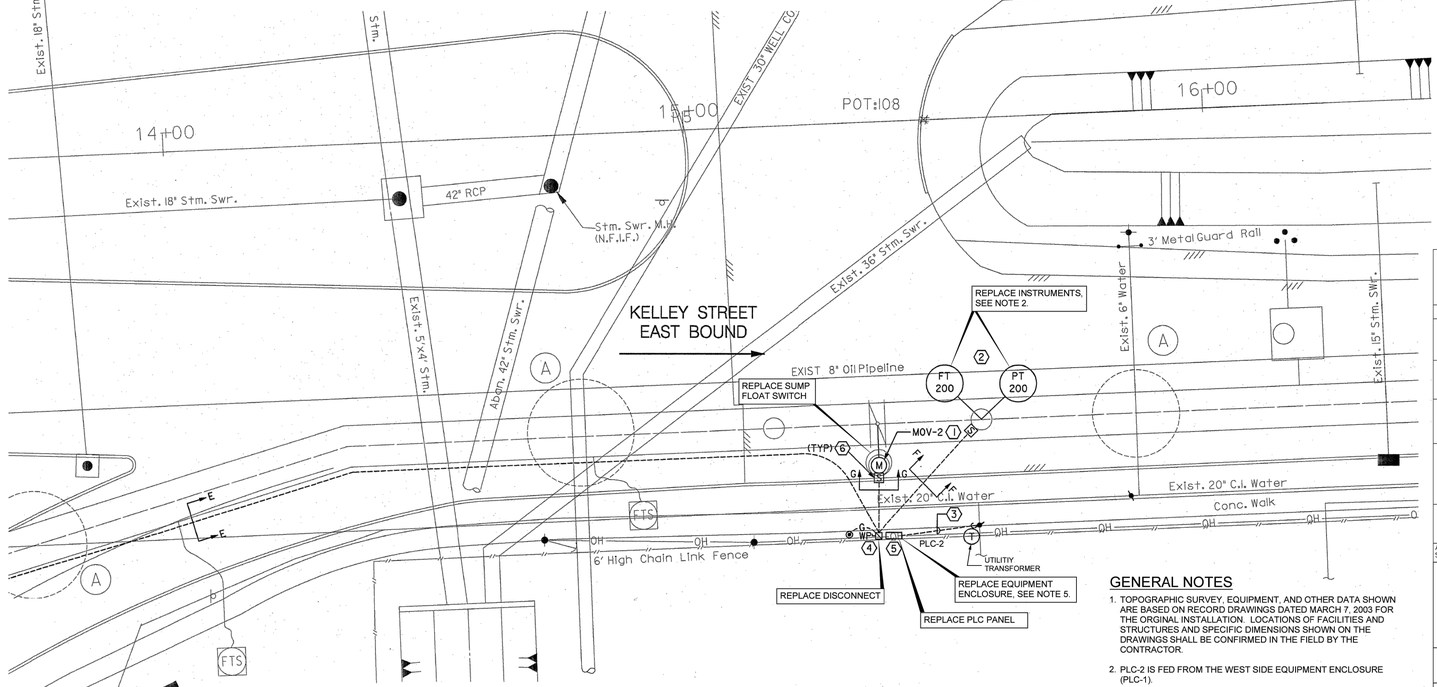

KEYED NOTES

1. VALVE ACTUATOR MOTOR (MOV-2), SEE SHEETS 2, 3 AND 8.
2. REMOVE AND REPLACE FLOW AND PRESSURE TRANSMITTERS. LOCATE NEW TRANSMITTERS INSIDE ACCESS MANWAY MANHOLE AT HIGHEST ELEVATION POSSIBLE TO PERMIT MONITORING WITHOUT CONFINED SPACE ENTRY INTO MANHOLE. REMOVE AND REPLACE INSTRUMENT TUBING AND PROVIDE FREEZE PROTECTION FOR EXPOSED TUBING; PROVIDE PHYSICAL DAMAGE PROTECTION FOR EXPOSED TUBING USING CONDUIT. INSTRUMENT TUBING SHALL BE INSTALLED UNDERGROUND IN CONDUIT UP TO THE LIMITS OF CONCRETE PAD FOUNDATION FOR EQUIPMENT ENCLOSURE. DO NOT EXPOSE INSTRUMENT TUBING BEYOND LIMITS OF CONCRETE PAD FOUNDATION FOR EQUIPMENT ENCLOSURE.
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6. PROVIDE CONDUIT SEAL.

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2. PLC-2 IS FED FROM THE WEST SIDE EQUIPMENT ENCLOSURE (PLC-1).

SCOPE OF WORK

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0 5′ 10′ 20′ 30′
1"=10'-0"

NO.	DATE	REVISION	APP.

CP&Y, INC.
1920 REGAL ROW
DALLAS, TX 75235 | 214.638.0500
TBPE FIRM NO. F-1741

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VERIFICATION OF PRIVATE UTILITY LINES

Date

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Date

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2121 Sage Road, Suite 150
Houston, TX 77056
Tel: (281) 453-7000
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INTERIM REVIEW ONLY
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LIANG LI
Engineer
96785
Registration Number
07/07/21
Date
CP&Y Inc.
Texas Registered Engineering Firm F-1741

SURVEYED BY:
FB NO. 000000

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LARGE DIAMETER WATERLINE TECHNICAL SERVICES - PACKAGE 1
WORK ORDER G - CONTROLS FOR 84-INCH VALVES AT US 59 CROSSING

ELECTRICAL SITE PLAN - EAST SIDE

E-3

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000020-0071-3	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
VENUS PRICE, P.E.	
SHEET NO. 7 OF 13	

NO.	DATE	REVISION	APP.

NOTICE:
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PRIVATE UTILITY LINES SHOWN

Date:

CENTERPOINT ENERGY/ELECTRIC FACILITIES
ELECTRICAL FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION).

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Date:

AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

LAN

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

INTERIM REVIEW ONLY
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Engineer: CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

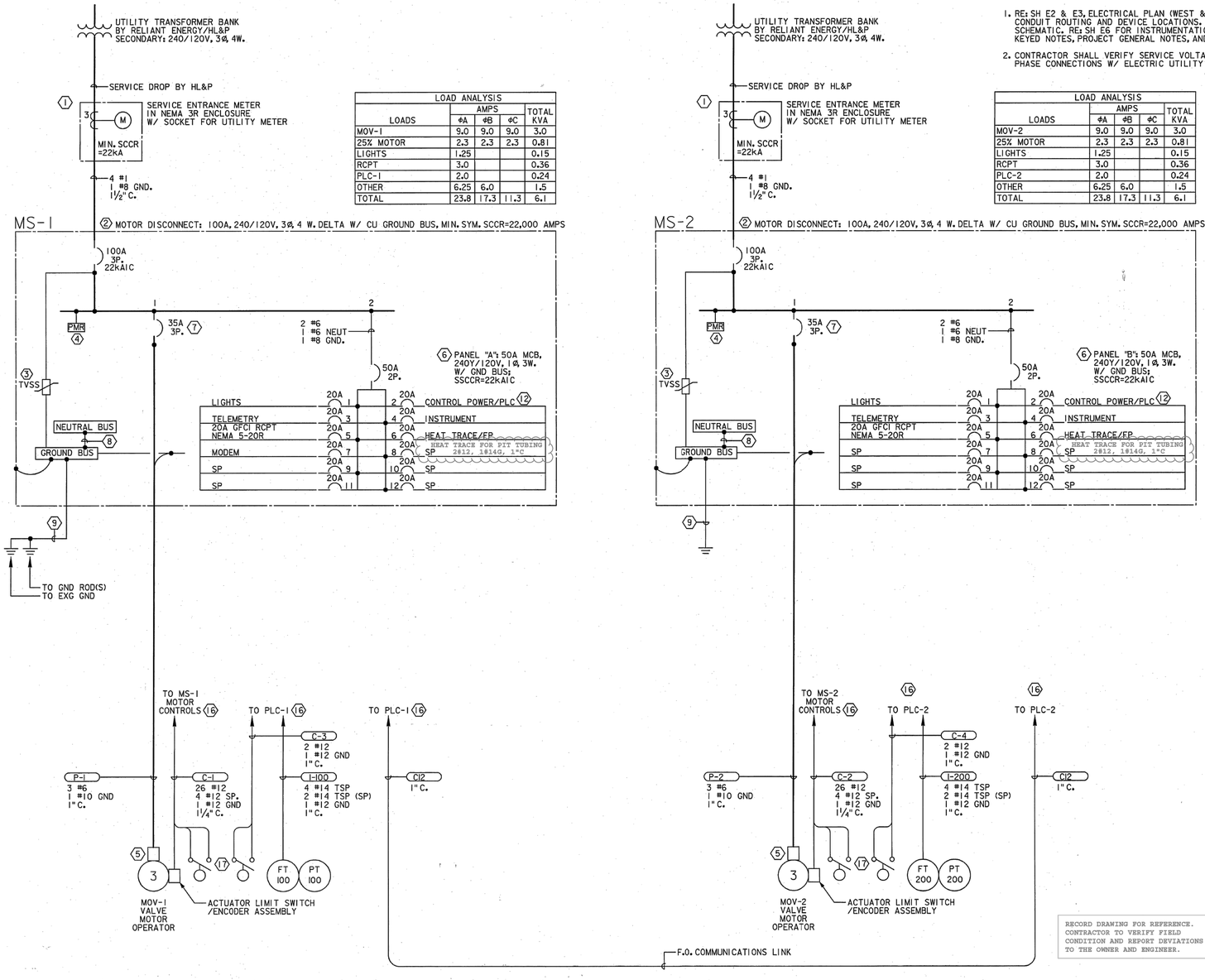
MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL
SITE 4A
ELECTRICAL SITE PLAN
EAST

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 108 OF 244	

PEN TABLE: LAN-COH-CIVIL.ctb
USERNAME: Fleming, David
PLOTED: 4/3/2025 8:18 PM
FILE PATH: P:\121\12-1000-000\4-3-Production-Working\4-1-BIM-CAD\Civil\Sheets\SITE 4A.dwg

GENERAL NOTES:

1. REF SH E2 & E3, ELECTRICAL PLAN (WEST & EAST, RESPECTIVE), FOR CONDUIT ROUTING AND DEVICE LOCATIONS. REF SH E5 FOR CONTROL SCHEMATIC. REF SH E6 FOR INSTRUMENTATION DIAGRAM. REF SH E7 FOR KEYED NOTES, PROJECT GENERAL NOTES, AND SEQUENCE OF OPERATION.
2. CONTRACTOR SHALL VERIFY SERVICE VOLTAGE AND TRANSFORMER AND PHASE CONNECTIONS W/ ELECTRIC UTILITY (RELIANT ENERGY/HL&P)



LOAD ANALYSIS				
LOADS	AMPS ΦA	ΦB	ΦC	TOTAL KVA
MOV-1	9.0	9.0	9.0	3.0
25% MOTOR	2.3	2.3	2.3	0.81
LIGHTS	1.25			0.15
RCPT	3.0			0.36
PLC-1	2.0			0.24
OTHER	6.25	6.0		1.5
TOTAL	23.8	17.3	11.3	6.1

LOAD ANALYSIS				
LOADS	AMPS ΦA	ΦB	ΦC	TOTAL KVA
MOV-2	9.0	9.0	9.0	3.0
25% MOTOR	2.3	2.3	2.3	0.81
LIGHTS	1.25			0.15
RCPT	3.0			0.36
PLC-2	2.0			0.24
OTHER	6.25	6.0		1.5
TOTAL	23.8	17.3	11.3	6.1

RECORD DRAWING FOR REFERENCE. CONTRACTOR TO VERIFY FIELD CONDITION AND REPORT DEVIATIONS TO THE OWNER AND ENGINEER.

NO.	DATE	REVISION	APP.

CP&Y, INC.
1999 BRYAN, #2900
DALLAS, TX 75201 | 214.638.0500
TBPE FIRM NO: F-3741

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LARGE DIAMETER WATERLINE TECHNICAL SERVICES - PACKAGE 1
WORK ORDER G - CONTROLS FOR 84-INCH VALVES AT US 59 CROSSING

ONE LINE DIAGRAM
E-4

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000020-0071-3	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
VENUS PRICE, P.E.	
SHEET NO. 8 OF 13	

NO.	DATE	REVISION	APP.

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LAN

EFF DATE: XXXX-XX-20XX	DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
SITE 4A
ONE LINE DIAGRAM

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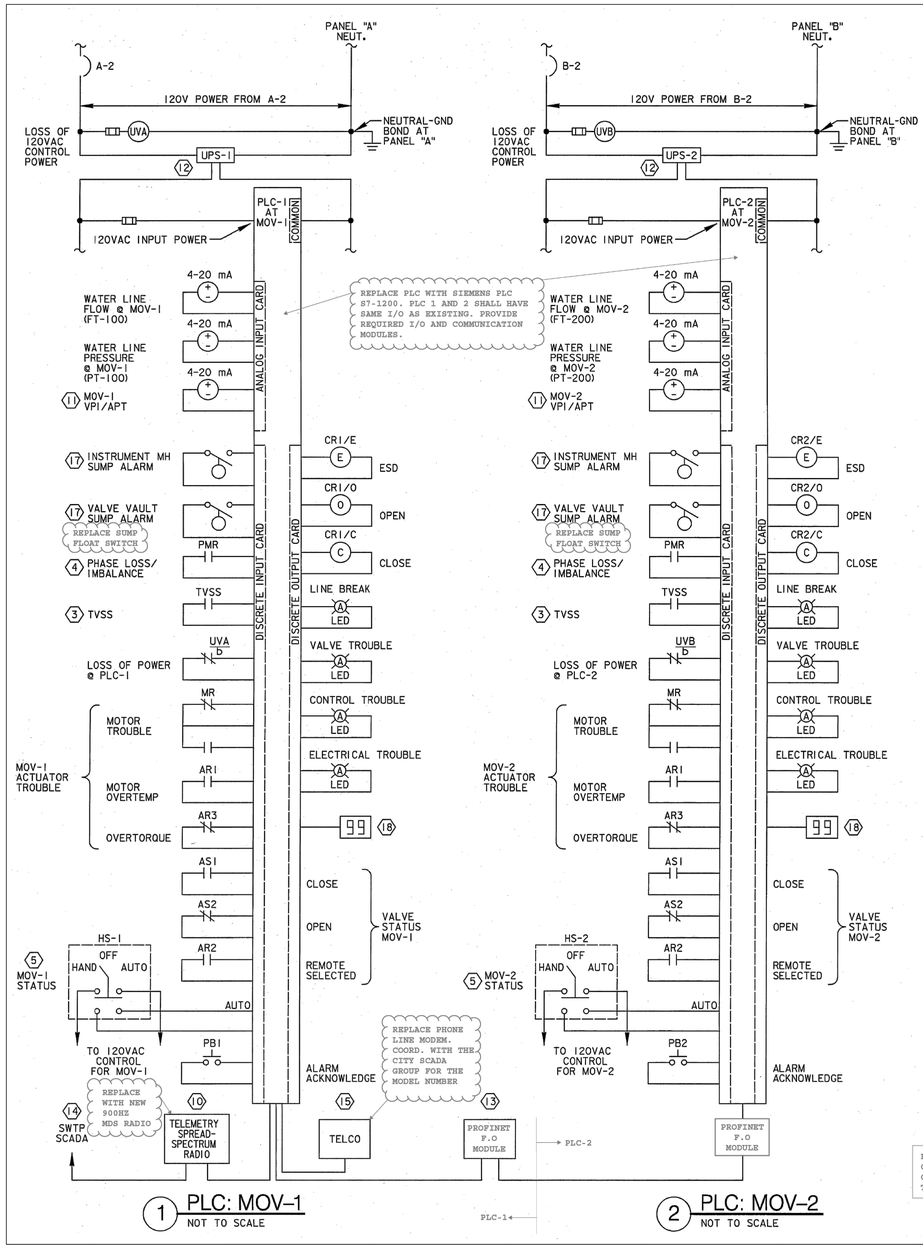

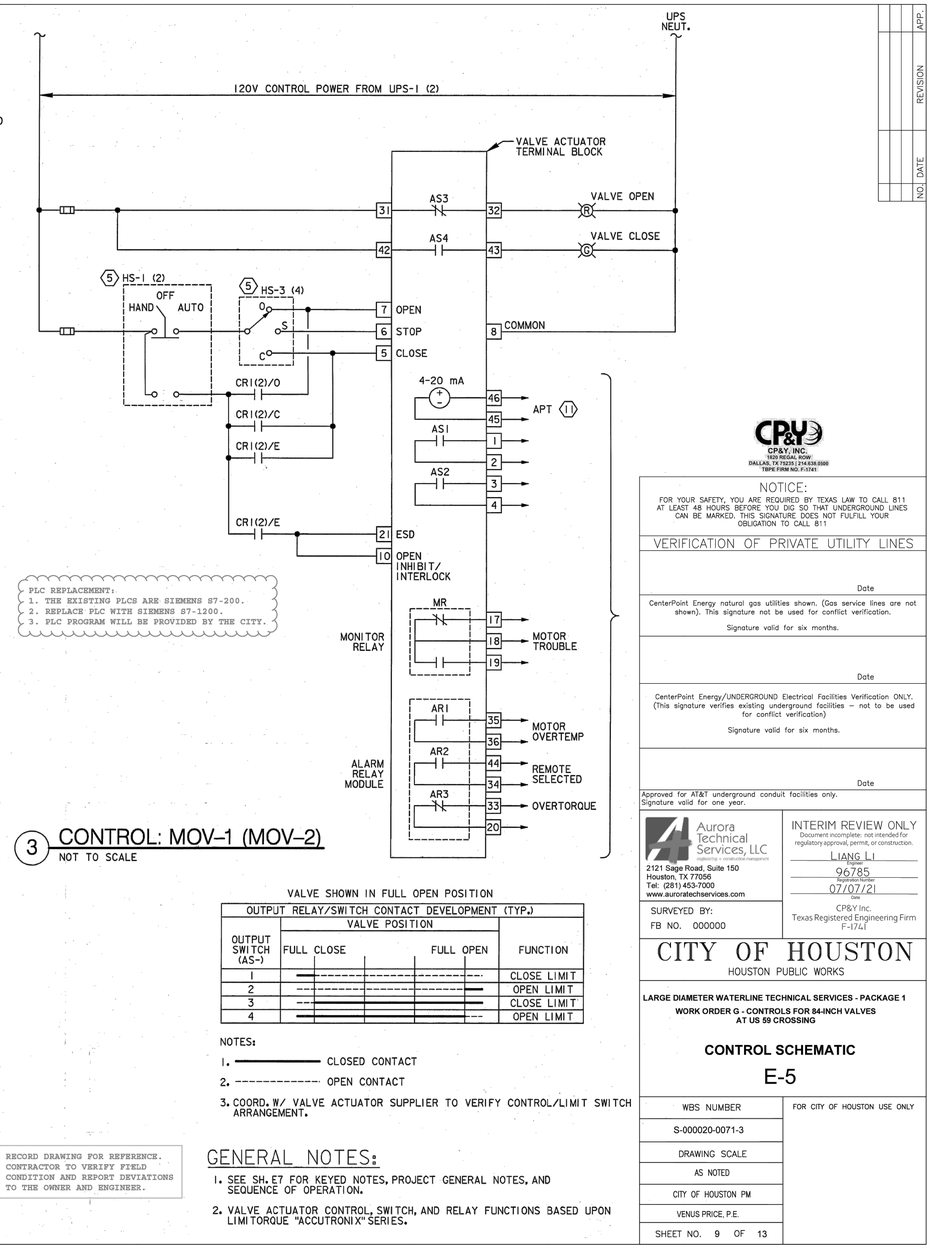

VALVE SHOWN IN FULL OPEN POSITION

OUTPUT RELAY/SWITCH CONTACT DEVELOPMENT (TYP.)			
OUTPUT SWITCH (AS-)	VALVE POSITION FULL CLOSE	VALVE POSITION FULL OPEN	FUNCTION
1	———	----------	CLOSE LIMIT
2	----------	———	OPEN LIMIT
3	———	———	CLOSE LIMIT
4	----------	----------	OPEN LIMIT

NOTES:

1. ——— CLOSED CONTACT
2. ---------- OPEN CONTACT
3. COORD. W/ VALVE ACTUATOR SUPPLIER TO VERIFY CONTROL/LIMIT SWITCH ARRANGEMENT.

RECORD DRAWING FOR REFERENCE. CONTRACTOR TO VERIFY FIELD CONDITION AND REPORT DEVIATIONS TO THE OWNER AND ENGINEER.

GENERAL NOTES:

1. SEE SH. E7 FOR KEYED NOTES, PROJECT GENERAL NOTES, AND SEQUENCE OF OPERATION.
2. VALVE ACTUATOR CONTROL, SWITCH, AND RELAY FUNCTIONS BASED UPON LIMITORQUE "ACCUTRONIX" SERIES.

NO.	DATE	REVISION	APP.

CP&Y, INC.
1920 REGAL ROW
DALLAS, TX 75235 | 214.638.0500
TBPE FIRM NO. F-17141

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VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.

Signature valid for six months.

Date

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities – not to be used for conflict verification)

Signature valid for six months.

Date

Approved for AT&T underground conduit facilities only. Signature valid for one year.

Aurora Technical Services, LLC
engineering • construction management
2121 Sage Road, Suite 150
Houston, TX 77056
Tel: (281) 453-7000
www.auroratechservices.com

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96785
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CP&Y Inc.
Texas Registered Engineering Firm F-17141

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LARGE DIAMETER WATERLINE TECHNICAL SERVICES - PACKAGE 1
WORK ORDER G - CONTROLS FOR 84-INCH VALVES AT US 59 CROSSING

CONTROL SCHEMATIC

E-5

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000020-0071-3	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
VENUS PRICE, P.E.	
SHEET NO. 9 OF 13	

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NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567

PRIVATE UTILITY LINES SHOWN

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Date:

AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

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EFF DATE: XXXX-XX-20XX	DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
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Engineer: CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 4A
CONTROL SCHEMATIC

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 110 OF 244	

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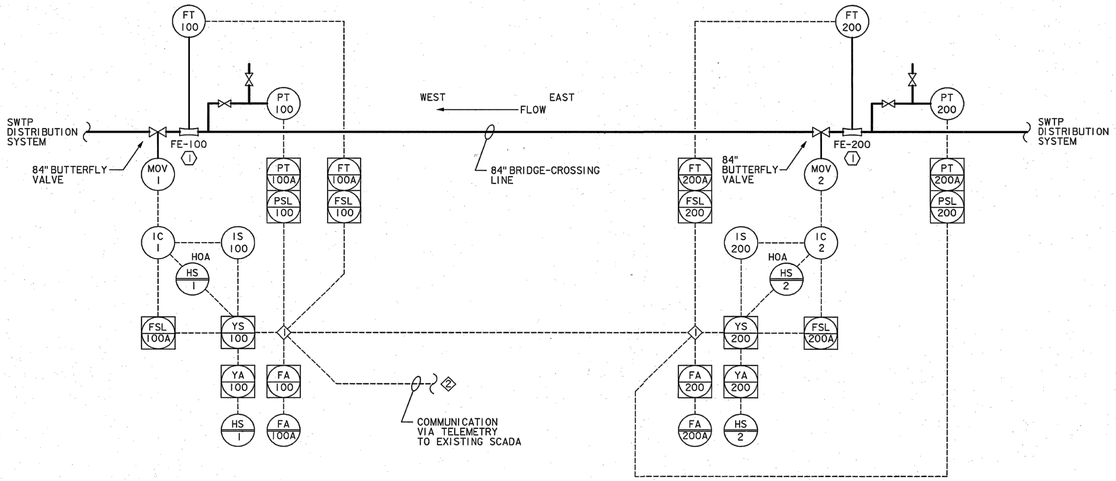

INTERLOCK NOTES: ◇

1. INTERLOCK VALVE CONTROLLERS TO SHUT BOTH VALVES UPON DETECTION OF WATER LINE BREAK. RE SEQUENCE OF OPERATION, SH E7.
2. PROVIDE COMMUNICATIONS TO SWTP SCADA SYSTEM VIA NORTH-EAST WATER PLANT SCADA SYSTEM. RE SEQUENCE OF OPERATION, SH E7.

KEYED NOTES: ⬡

1. INSERTION-TYPE ELECTROMAGNETIC FLOW METER. RE SH E2 & E3 OF 8 FOR LCTN.

INSTRUMENTATION SYMBOLS

XX / XXX	FIELD INSTRUMENT
XX / XXX	LOCAL CONTROL PANEL
XX / XXX	LOCAL CONTROL PANEL, BEHIND FRONT PANEL
XX / XXX	PLC CONTROL SYSTEM
◇	INTERLOCK

LAH	LEVEL ALARM HIGH
LAL	LEVEL ALARM LOW
LALL	LEVEL ALARM LOW LOW
LCV	LEVEL CONTROL VALVE
LC	LEVEL CONTROLLER
LSH	LEVEL SWITCH HIGH
LSL	LEVEL SWITCH LOW
LSLH	COMBINATION LEVEL SWITCH
LSLL	LEVEL SWITCH LOW LOW
LT	LEVEL TRANSMITTER
LI	LEVEL INDICATOR
PI	PRESSURE INDICATOR
PT	PRESSURE TRANSMITTER
PAL	LOW PRESSURE ALARM
PALL	LOW LOW PRESSURE ALARM
PSH	PRESSURE SWITCH HIGH
PSLH	COMBINATION PRESSURE SWITCH
PSHH	PRESSURE SWITCH HIGH HIGH
PSLL	PRESSURE SWITCH LOW LOW
FI	FLOW INDICATOR
FT	FLOW TRANSMITTER
FS	FLOW SWITCH
FAHH	FLOW ALARM HIGH HIGH
FAL	FLOW ALARM LOW
FAH	FLOW ALARM HIGH
FSH	FLOW SWITCH HIGH
FSL	FLOW SWITCH LOW
FSLL	FLOW SWITCH LOW LOW
FC	FLOW CONTROLLER
IC	MOTOR CONTROLLER
IS	CURRENT SWITCH
YS	STATUS SWITCH
YA	STATUS ALARM
HS	HAND SWITCH
WAH	VIBRATION ALARM HIGH
WSH	VIBRATION SWITCH HIGH
WT	VIBRATION TRANSMITTER
HP	HIGH PRESSURE
LP	LOW PRESSURE

RECORD DRAWING FOR REFERENCE. CONTRACTOR TO VERIFY FIELD CONDITION AND REPORT DEVIATIONS TO THE OWNER AND ENGINEER.

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1320 REGAL ROW
DALLAS, TX 75247 | 214.638.0500
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Engineer
96785
Registration Number
07/07/21
Date
CP&Y Inc.
Texas Registered Engineering Firm F-1741

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LARGE DIAMETER WATERLINE TECHNICAL SERVICES - PACKAGE 1
WORK ORDER G - CONTROLS FOR 84-INCH VALVES AT US 59 CROSSING

INSTRUMENTATION DIAGRAM

E-6

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000020-0071-3	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
VENUS PRICE, P.E.	
SHEET NO. 10 OF 13	

NO.	DATE	REVISION	APP.

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PRIVATE UTILITY LINES SHOWN

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EFF DATE: XXXX-XX-20XX

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LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
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Engineer: CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL

SITE 4A
INSTRUMENTATION DIAGRAM

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DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 111 OF 244	

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GENERAL NOTES:

1. THE CONTRACTOR SHALL FIELD VERIFY EXISTING SITE CONDITIONS.
2. ALL CONDUCTORSSHALLBE COPPER, 600V, TYPE"THHN" INSULATION UON.
3. REFER TO ELECRICAL ONE-LINE DIAGRAM FOR CONDUIT, WIRE, AND DEVICE SIZE FOR MAJOR EQUIPMENT.
4. REFER TO SH E2 AND E3, ELECTRICAL SITE PLAN (WEST AND EAST AIDES, RESPECTIVELY, OF THE 84" AERIAL CROSSING), FOR CONDUIT ROUTING AND DEVICE LOCATIONS. REFER TO SH E4 FOR ONE-LINE DIAGRAM. REFER TO SH E5 FOR CONTROL SCHEMATIC . REFER TO SH E6 FOR INSTRUMENTATION DIAGRAM.
5. CONNECT ALL EXPOSED, NON-CURRENTCARRYINGMETAL PARTS AND EQUIPMENT TO GROUNDING SYSTEM.
6. ANY FIRE-RATED BARRIER PENETRATIONS SHALL BECAREFULLY RESTORED TO APPROPRIATE FIRE RATING USING UL-APPROVED SEALANT. SHOP DRAWINGS FOR SEALANT SYSTEM SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO INSTALLATION/RESTORATION.
7. ELECTRICAL EQUIPMENT INSTALLATIONS AT EACH VALVE MANHOLE, INCLUDING CONTROL AND INSTRUMENTATION, SHALL BE RATED FOR CONTINUOUS SUBMERGENCE IN WATER. PROVIDE NEMA 6R ENCLOSURES, LIQUID TIGHT CONDUIT, SEALS, FASTENERS, FITTINGS, DEVICES, APPURTENANCES AND ACCESSOTIES REQUIRED FOR CONTINUOUS SUBMERGENCE.

KEYED NOTES: ⬡

1. SERVICE ENTRANCE METER. PROVIDE NEMA 3R ENCLOSURE W/ METER SOCKET AND CURRENT TRANSFORMERS (CT) FOR 100A, 240/120V, 3ϕ, 4 WIRE SERVICE. COORDINATE W/ HL&P TO VERIFY METER SOCKET REQUIREMENTS.
2. PROVIDE TYPE 316 STAINLESS STEEL NEMA 3R ENCLOSURE W/ MAIN SERVICE DISCONNECT, COPPER NEUTRAL LUGS AND COPPER GND BUS, SUITABLE FOR USE AS SERVICE ENTRANCE EQUIPMENT. RATING: 100A, 240/120V, 3ϕ, 4W., W/ 22,000A SYMMETRICAL SHORT CIRCUIT CURRENT WITHSTAND. INCLUDE ALL COMPONENTS REQUIRED FOR A COMPLETE AND FUNCTIONING SYSTEM.
3. TRANSIENT VOLTAGE SURGE SUPPRESSER (TVSS) W/ FORM "C" DRY CONTACTS IN NEMA 3R ENCLOSURE. PROVIDE ELECTRICAL TRANSIENT SUPPRESSION FILTER SYSTEM W/ INDIVIDUALLY FUSED MOV'S CONNECTED THROUGH INTEGRATED SUPPRESSION BUS. CONNECT TO SERVICE ENTRANCE MAIN LUGS. MINIMIZE CONDUCTOR LENGTH. WIRE SIZE PER MANUFACTURER. MAKE ALL BENDS W/ 12" OR LARGER RADIUS. CONNECT TO GND BUS. SIZE GND CONDUCTOR PER MANUFACTURER RECOMMENDATION. CURRENT TECHNOLOGY CAT. NO. TGGO-120/240-3GHD-L. VERIFY TVSS RATINGS W/ ELECTRICAL SERVICE CONFIGURATION (WYE OR DELTA).
4. PHASE MONITOR RELAY (PMR). CONNECT TO CONTROL CIRCUIT. RE: SH E5. SET PMR TO OPERATE IN THE MANUAL RESET MODE. OPERATOR MUST MANUALLY RESET PMR TO ENABLE VALVE OPERATION. PMR SHALL BE ABLE TO OPERATE IN AUTO-RESET MODE. DIVERSIFIED ELECTRONICS #SLD-230-ASA.
5. VALVE ACTUATOR MOTOR REVERSING CONTACTOR FURNISHED W/ ACTUATOR. PROVIDE "HAND-OFF-AUTO"(HOA) MOTOR CONTROL CIRCUIT @ PLC W/ DOOR-MOUNTED, NEMA 4X 3-POSITION, DUAL-DECK, MAINTAINED-CONTACT HOA SWITCH, 3-POSITION, MAINTAINED-CONTACT, OPEN-STOP-CLOSE (OSC) SELECTOR SWITCH, AND LONG-LIFE LIGHT-EMITTING-DIODE (LED) INDICATING/PILOT LIGHTS. CONNECT TO PLC AND MOTOR CONTROL CIRCUIT. RE: CONTROL SCHEMATIC, SH. E5. SQUARE-D TYPE "SK" OAS.
6. INDUSTRIAL LOAD CENTER W/ 100% RATED COPPER NEUTRAL, AND COPPER GND BUS, RATINGS AS INDICATED. MOUNT IN MOTOR CONTROLLER ENCLOSURE.
7. PROVIDE THERMAL-MAGNETIC CIRCUIT BREAKER FOR MOTOR BRANCH CIRCUIT. BREAKER SHALL BE CAPABLE OF BEING LOCKED IN THE "OFF"OR OPEN POSITION. COORDINATE W/ MOTOR AND VALVE ACTUATOR MANUFACTURER FOR PROPER SELECTION OF MOTOR OL AND SHORT CIRCUIT OVERCURRENT PROTECTION SETTINGS. VERIFY PROPER COORDINATION OF FUSE, OL, AND CIRCUIT BREAKER TRIP CHARACTERISTICS FOR MAIN AND BRANCH OVERLOAD, SHORT CIRCUIT, AND GROUND FAULT OVERCURRENT PROTECTION.
8. BOND NEUTRAL BUS TO GND BUS AT MAIN DISCONNECT. USE #1/0 GREEN INSULATED CU CONDUCTOR.
9. GROUNDING ELECTRODE CONDUCTOR. USE BARE, STRANDED CU CONDUCTOR, SIZE IAW NEC 250-66, UON.
10. COORDINATE W/ PLC, TELEMETRY, AND ANTENNA SUPPLIER TO VERIFY SURGE SUPPRESSION AT ANTENNA LEAD INPUT TO PLC ENCLOSURE. PROVIDE APPROPRIATE SURGE SUPPRESSER, AS REQUIRED.
11. VALVE POSITION INDICATOR/ANALOG POSITION TRANSMITTER. PROVIDE 4-20 mA OR DISCRETE DIGITAL ENCODER W/ ENCODER INPUT MODULE TO INDICATE POSITION OF BUTTERFLY ISOLATION VALVE. COORD W/ VALVE ACTUATOR AND PLC SUPPLIERS.
12. PROVIDE UPS AT PLC RATED FOR PLC LOADS, INCLUDING FIELD I/O AND VALVE ACTUATOR CONTROL. INPUT: 120VAC, 1ϕ; OUTPUT: 120VAC, 1ϕ; MINIMUM BATTERY BACKUP 8 HOURS.
13. PROVIDE FIBER OPTIC LINK BETWEEN PLC-1 AND PLC-2.
14. PROVIDE COMMUNICATIONS BETWEEN PLC-1 AND SWTP SCADA SYSTEM VIA SPREAD-SPECTRUM RADIO TELEMETRY SYSTEM. COORD W/ COH SCADA DEPT TO ESTABLISH TELEMETRY COMMUNICATIONS LINK W/ COH SWTP SCADA SYSTEM.
15. PROVIDE MODEM FOR PLC BACK-UP COMMUNICATIONS VIA TELCO LAND LINE. COORD W/ TELCO (SWBT) TO CONFIRM SERVICE TO SITE IS ACTIVE. NOTIFY CITY'S PROJECT MANAGER IF TELCO SERVICE IS INACTIVE, AND CITY WILL REQUEST TELCO SERVICE ACTIVATION.
16. REFER TO CONTROL SCHEMATIC, SH E5. COORD W/ VALVE ACTUATOR SUPPLIER; VERIFY WIRING QUANTITY AND TYPE AND METHOD OF CONNECTION.
17. MH/VAULT SUMP PROBE. CONNECT TO PLC AND RELAY SUMP ALARM TO OWNER'S (SWTP) CENTRAL SCADA STATION.
18. TWO DIGIT, SEVEN SEGMENT LCD DIGITAL DISPLAY: VALVE POSITION, 0-99% (CLOSE-OPEN), "OP" = FULL OPEN (100%). PANEL MOUNT, NEMA 4X ENCAPSULATED ENCLOSURE. EAGLE SIGNAL, OAS.

SEQUENCE OF OPERATION

1. THE WATER LINE VALVE CONTROL SYSTEM SHALL MONITOR DISCRETE (DIGITAL) AND ANALOG (4-20mA) INPUTS AND PROVIDE DISCRETE (DIGITAL) AND ANALOG (4-20 mA) OUTPUTS AS INDICATED. PROVIDE INSTRUMENTATION, PROGRAMMABLE LOGIC CONTROLLERS (PLCs) AND ALL OTHER DEVICES REQUIRED TO PERFORM FUNCTIONS AS DESCRIBED ON THE DRAWINGS AND IN THE FOLLOWING "SEQUENCE OF OPERATION" WHICH IS BASED ON INFORMATION FROM THE RECORD DRAWNGS DATED MARCH 7, 2003 FOR INSTALLATION OF THE ORIGINAL EQUIPMENT.
2. THE CITY WILL BE RESPONSIBLE FOR PROGRAMMING PLCs AND CORRESPONDING EQUIPMENT, INCLUDING PROGRAMMING REQUIREMENTS NOTED IN THE "SEQUENCE OF OPERATION".
3. CONTRACTOR AND CITY PERSONNEL SHALL COORDINATE AND WORK TOGETHER FOR TESTING CONTROL EQUIPMENT AND INITIAL START-UP.
4. PLC-1 AT THE WEST VALVE LOCATION SHALL BE DESIGNATED AS THE MASTER VALVE CONTROL STATION. THE MASTER STATION SHALL COMMUNICATE VIA SPREAD-SPECTRUM RADIO TELEMETRY SYSTEM WITH THE CITY'S EXG SCADA SYSTEM.
5. PLC-2 AT THE EAST VALVE LOCATION SHALL COMMUNICATE WITH PLC-1 VIA FIBER-OPTIC LINE IN UNDERGROUND DUCTBANK AND CONDUIT ROUTED ALONG SIDE THE WATER-LINE.
6. BACKUP COMMUNICATIONS BETWEEN THE MASTER VALVE CONTROL STATION (PLC-1) AND THE CITY'S SWTP SCADA SYSTEM SHALL BE BY DEDICATED TELEPHONE LAND-LINE.
7. THE VALVE ACTUATOR AND CONTROL CIRCUIT SHALL BE CONFIGURED FOR 3-WIRE "INCHING" CONTROL, I.E., VALVE RUN COMMANDS (OPEN/CLOSE) SHALL BE APPLIED CONTINUOUSLY FOR VALVE TO RUN. THE VALVE ACTUAEDIR SHALL BE FURNISHED WITH A 2-SPEED TIMER MODULE TO LIMIT SPEED OF VALVE TRAVEL TO MINIMIZE WATER LINE HAMMER. VALVE ACTUATOR SHALL PROVIDE ADJUSTABLE, PULSED SEQUENCE OF RUN AND STOP COMMANDS TO PRODUCE REDUCED SPEED OF VALVE TRAVEL BY INTERMITTENT VALVE OPERATION. DUTY CYCLE SHALL BE USER-ADJUSTABLE.
8. PLC SHALL CONTROL VALVE OPERATION WHEN IN "AUTO". THE CONTROL SYSTEM SHALL ALLOW THE OPERATOR TO POSITION THE VALVE TO A USER-SELECTABLE INTERMEDIATE ("GO-TO") VALVE POSITION. THE INTERMEDIATE VALVE POSITION SHALL BE SET BY VARIABLE IN THE PLC PROGRAM. COORD W/ VALVE AND ACTJATOR SUPPLIER FOR INTERMEDIATE VALVE POSITIONING. THE "GO TO" POSITION IN THE PLC PROGRAM SHALL NOT BE GREATER THAN THE VALVE ACTUATOR TRAVEL-STOP/LIMIT SET AT THE VALVE.
9. THE CONTROL SYSTEM SHALL MONITOR FOR A BREAK IN THE WATER LINE BETWEEN THE EAST AND WEST ISOLATION VALVES. THE CONTROL SYSTEM SHALL SHUT BOTH EAST AND WEST VALVES UPON DETECTION OF A BREAK IN THE WATER LINE.
10. THE PRIMARY METHOD OF DETECTING A WATER LINE BREAK SHALL BE A DIVERGENCE BETWEEN THE FLOW SIGNALS AT PLC-1 AND PLC-2. FLOW DIVERGENCE SHALL BE CALCULATED AS A MISMATCH IN FLOW SIGNALS EXCEEDING THE COMBINED TOLERANCES OF THE FLOW SENSORS, PLUS AN ADDITIONAL, USER-ADJUSTABLE MARGIN SPECIFIED AND SELECTED BY THE OWNER. THE MARGIN SHALL ALLOW AN ADJUSTMENT FOR TOLERANCES AND SENSOR ERRORS TO AVOID FALSE ALARMS AND NUISANCE ACTUATIONS.
11. FLOW TRANSMITTERS SHALL BE CALIBRATED FOR BI-DIRECTIONAL FLOW. DETECTION OF FLOW IN OPPOSITE DIRECTIONS SHALL INDICATE FLOW DIVERGENCE.
12. THE CONTROL SYSTEM SHALL BE PROGRAMMED TO RESPOND TO FLOW TRANSMITTER SIGNAL OUT-OF-RANGE HIGH AS A HIGH FLOW SIGNAL. HIGH FLOW AT THE EAST VALVE STATION (PLC-2) AND NO OR LOW FLOW AT THE WEST VALVE STATION (PLC-1) SHALL INDICATE A WATER LINE BREAK.
13. THE BACKUP METHOD OF DETECTING A WATER LINE BREAK SHALL BE THE PRESSURE SENSORS AT EAST AND WEST VALVE LOCATIONS. THE CONTROL SYSTEM SHALL MONITOR LINE PRESSURE FOR A SIGNIFICANT PRESSURE DROP COINCIDING WITH NORMAL INITIAL WATER FLOW.
14. UPON DETECTION OF A WATER LINE BREAK BY PRIMARY (FLOW DIVERGENCE) SENSING METHOD, THE CONTROL SYSTEM SHALL INITIATE AN EMERGENCY SHUTDOWN (ESD) COMMAND SIGNAL TO CLOSE THE VALVE AT FULL VALVE SPEED IN ORDER TO ISOLATE THE WATER LINE. THE ESD SIGNAL SHALL OVERRIDE THE 2-SPEED TIMER MODULE. VALVE TRAVEL SHALL BE CONTINUOUS; VALVE SHUTTING SPEED SHALL NOT BE LIMITED.
15. DETECTION OF A WATER LINE BREAK BY ONLY BACKUP (PRESSURE) SENSING SHALL INITIATE VALVE CLOSURE WITH VALVE SPEED LIMITED TO THE USER-SELECTED VALUE OF TRAVEL SPEED BY THE 2-SPEED TIMER MODULE.
16. UPON LOSS OF COMMUNICATIONS BETWEEN PLC-1 AND PLC-2, THE CONTROL SYSTEM AT EACH VALVE LOCATION SHALL MONITOR WATER LINE PRESSURE AND FLOW FOR DETECTION OF A LINE BREAK. HIGH FLOW AT THE EAST VALVE STATION (PLC-2) SHALL INDICATE A LINE BREAK. REVERSE FLOW AT THE WEST VALVE STATION (PLC-1) SHALL INDICATE A LINE BREAK.
17. THE CONTROL SYSTEM SHALL RECEIVE VALVE ORDERS FROM THE OWNER'S (SWTP) SCADA SYSTEM. THE CONTROL SYSTEM SHALL PERMIT REMOTE CONTROL OF VALVE POSITION FROM THE CITY'S SWTP SCADA SYSTEM DURING NORMAL CONDITIONS. THE CONTROL SYSTEM SHALL INHIBIT REMOTE CONTROL OF VALVE POSITION UPON DETECTION OF A LINE-BREAK.
18. THE CONTROL SYSTEM SHALL LOCKOUT AND INHIBIT VALVE OPENING AFTER VALVES CLOSE IN RESPONSE TO LINE BREAK.
19. THE CONTROL SYSTEM SHALL INHIBIT VALVE OPERATION IN THE EVENT OF A PHASE MONITOR RELAY (PMR) TRIP, AND SHALL INHIBIT VALVE OPENING LESS THAN 300 SECONDS (5 MINUTES) AFTER CLOSING THE VALVE. COORDINATE WITH VALVE AND ACTUATOR SUPPLIER TO VERIFY DUTY CYCLES AND WAIT PERIODS.
20. THE CONTROL SYSTEM SHALL GENERATE A VALVE TROUBLE ALARM UPON ANY OF THE FOLLOWING CONDITIONS:

    VALVE OPERATION (OPEN OR CLOSE) ORDERED, VALVE IN AUTO, AND MOTOR NOT RUNNING
    VALVE STOP REQUIRED, VALVE IN AUTO, AND MOTOR RUNNING
    MOTOR OVERTEMP (ARI)
    OVERTORQUE (AR3)
    MOTOR TROUBLE/MONITOR RELAY (MR)

SEQUENCE OF OPERATION (CONTINUED)

21. THE CONTROL SYSTEM SHALL GENERATE A CONTROL TROUBLE ALARM UPON ANY OF THE FOLLOWING CONDITIONS:
    > ANY TRANSMITTER OUT OF RANGE OR SIGNAL LOST
    > LOSS OF COMMUNICATIONS BETWEEN PLC-1 AND PLC-2
    > PLC FAILURE
    > VALVE NOT IN "REMOTE" OR CONTROL NOT IN "AUTO"
22. THE CONTROL SYSTEM SHALL GENERATE AN ELECTRICAL TROUBLE ALARM UPON ANY OF THE FOLLOWING CONDITIONS:
    > PHASE MONITOR RELAY (PMR)
    > LOSS OF 120 VAC CONTROL POWER
    > TRANSIENT VOLTAGE SURGE SUPPRESSER (TVSS) TROUBLE
23. THE CONTROL SYSTEM SHALL GENERATE A MASTER ALARM UPON ANY OF THE FOLLOWING CONDITIONS:
    > WATER LINEBREAK
    > VALVE TROUBLE ALARM
    > CONTROL TROUBLE ALARM
    > ELECTRICAL TROUBLE ALARM
24. THE CONTROL SYSTEM SHALL PROVIDE A USER-SELECTABLE ALARM MODE. THE ALARM MODE SHALL PERMIT AUTOMATIC RESET OF ALARMS OR MANUAL ALARM RESET.
25. DEPESSING THE MASTER ALARM ACKNOWLEDGE/SILENCE PUSH BUTTON SHALL SILENCE THE AUDIBLE ALARM AND ACKNOWLEDGE THE MASTER ALARM TO THE CONTROL SYSTEM. ALARM ACKNOWLEDGEMENT SHALL REMOVE THE LOCKOUT AND RE-ENABLE THE VALVE OPERATION FOLLOWING DETECTION OF A LINE BREAK. INDICATOR LIGHTS SHALL REMAIN LIT WHILE THE ALARM CONDITION PERSISTS.
26. THE CONTROL SYSTEM SHALL RELAY (COMMUNICATE) THE FOLLOWING INDICATIONS AND ALARMS TO THE CITY'S SCADA SYSTEM:
    > WATER LINE BREAK
    > VALVE TROUBLE
    > CONTROL TROUBLE
    > ELECTRICAL TROUBLE

    > WATER LINE FLOW - EAST (FT200)
    > WATER LINE FLOW - WEST (FT100)
    > PERCENT FLOW DIVERGENCE ((FT100 - FT200)/AVERAGE FLOW]
    > MARGIN (PERCENT) TO PRIMARY LINE BREAK SETPOINT
    > MARGIN (PERCENT OF FULL FLOW) TO FLOW TURNDOWN
    > WATER LINE PRESSURE - WEST (PT-100)
    > WATER LINE PRESSURE - EAST (PT-200)
    > PERCENT PRESSURE DIVERGENCE
    > MARGIN (PERCENT) TO BACKUP LINE-BREAK SETPOINT (PRESSURE)

    > VALVE POSITION (OPEN/SHUT/INTERMEDIATE)
    > ORDERED VALVE POSITION
    > ACTUAL VALVE POSITION
    > SUMP ALARM
27. THE CITY'S SWTP SCADA SYSTEM CENTRAL CONTROL STATION SHALL TREND THE FLOW AND PRESSURE CHARACTERISTICS OF THE WATER LINE. THE CONTROL SYSTEM SHALL MONITOR FOR FLOW AND PRESSURE TRENDS THAT DO NOT SATISFY THE LINE BREAK CRITERIA, BUT EXCEED THE NORMAL (TWO STANDARD DEVIATIONS) OF THE TRENDED OPERATING CHARACTERISTICS. THE CONTROL SYSTEM SHALL REPORT TRENDS OUT-OF-NORMAL TO THE CITY'S SWTP SCADA SYSTEM. TRENDED VALUES SHALL ALLOW THE CITY TO DIAGNOSE SMALL LEAKS, FOULED SENSORS, SENSOR DRIFT, AND OTHER NON-CATASTROPHIC SYSTEM FAULTS.

INFORMATION PRESENTED ON THIS SHEET IS BASED ON THE RECORD DRAWINGS DATED MARCH 7, 2003 FOR THE ORIGINAL INSTALLATION.

NO.	DATE	REVISION	APP.

CP&Y, INC.
1920 McGAL ROW
DALLAS, TX 75235 | 214.638.0500
TBPE/FIRM NO. F-1741

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES

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Signature valid for six months.

Date

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Date

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Aurora Technical Services, LLC
Civil Construction management
2121 Sage Road, Suite 150
Houston, TX 77056
Tel: (281) 453-7000
www.auroratechservices.com

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LIANG LI
Engineer
96785
Registration Number
07/07/21
Date
CP&Y Inc.
Texas Registered Engineering Firm F-1741

SURVEYED BY:
FB NO. 000000

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LARGE DIAMETER WATERLINE TECHNICAL SERVICES - PACKAGE 1
WORK ORDER G - CONTROLS FOR 84-INCH VALVES AT US 59 CROSSING

GENERAL NOTES, KEYED NOTES AND SEQUENCE OF OPERATION
E-7

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000020-0071-3	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
VENUS PRICE, P.E.	
SHEET NO. 11 OF 13	

NO.	DATE	REVISION	APP.

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PRIVATE UTILITY LINES SHOWN

Date:
CENTERPOINT ENERGY/ELECTRIC FACILITIES
ELECTRICAL FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION).

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(GAS SERVICE LINES ARE NOT SHOWN). THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION.

Date:
AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

LAN

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes. This document is released for the purpose of interim review under the authority of Engineer CHRISTINE H. KIRBY, PE
Registration Number 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
SITE 4A
GENERAL NOTES, KEYED NOTES AND SEQUENCE

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 112 OF 244	

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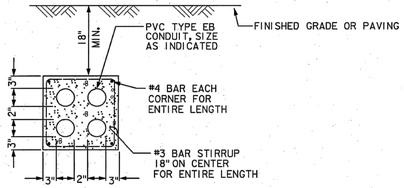
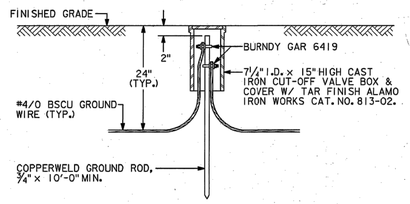


NOTE:
1. PROVIDE ADDITIONAL #4 BAR AT EVERY 12 INCHES HORIZONTALLY AND VERTICALLY.

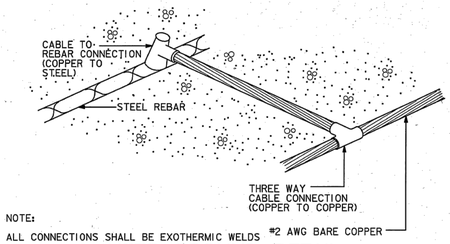
TYPICAL FOR ALL DUCTBANK

NOT TO SCALE



(2) TYPICAL GROUND ROD WELL

NOT TO SCALE

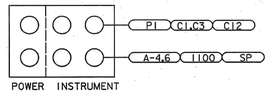


NOTE:
ALL CONNECTIONS SHALL BE EXOTHERMIC WELDS #2 AWG BARE COPPER

(3) UFER GROUND DETAIL

NOT TO SCALE

SECTION "AA"



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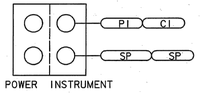
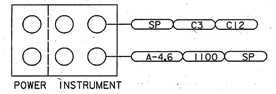


SECTION "CC"



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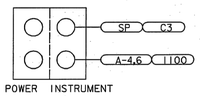

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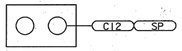

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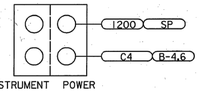

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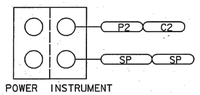
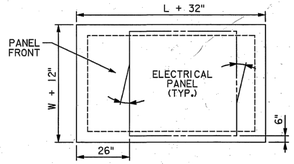
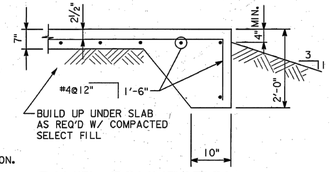


(1) ELECTRICAL DUCTBANK SECTIONS

NOT TO SCALE

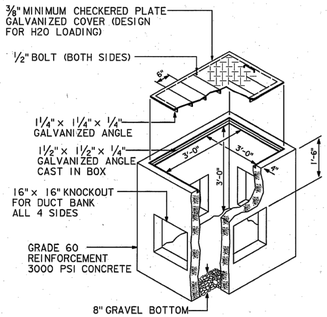


NOTES:
1. SEE ELECTRICAL PLAN FOR PANEL LOCATIONS, COORDINATE PENETRATIONS WITH CIVIL/ STRUCTURAL CONTRACTOR.
2. PROVIDE A MINIMUM OF 3 FOOT OF SELECT FILL BELOW THE SLAB, EXCAVATE EXISTING MATERIAL AS REQUIRED.
3. PROVIDE 6" THICK HOUSEKEEPING PAD ABOVE/ATOP FOUNDATION. HOUSEKEEPING PAD DIMENSIONS SHALL MATCH PANEL DIMENSIONS, UON.



(4) PANEL FOUNDATION

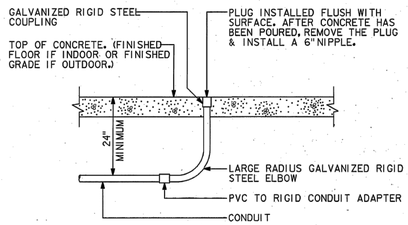
NOT TO SCALE



NOTE: 1. PULLBOX SIMILAR TO STRONGWELL "QUAZITE" SERIES.
2. BOND COVERPLATE TO DUCTBANK GROUND IN ACCORDANCE WITH NEC 370-28(c) AND NEC 250-42.
3. PROVIDE CABLE SUPPORT IN PULLBOX. CABLE AND WIRE ROUTING AND SEPARATION SHALL COMPLY WITH NEC 370-28(a).

(5) PRECAST PULLBOX DETAIL

NOT TO SCALE



(6) TYPICAL CONDUIT STUB-UP DETAIL

NOT TO SCALE

RECORD DRAWING FOR REFERENCE. CONTRACTOR TO VERIFY FIELD CONDITION AND REPORT DEVIATIONS TO THE OWNER AND ENGINEER.

NO.	DATE	REVISION	APP.

CP&Y, INC.
1920 REGAL ROW
DALLAS, TX 75235 | 214.536.6500
TBPE FIRM NO. F-1741

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www.auroratechservices.com

SURVEYED BY:
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LIANG LI
Engineer
96785
Registration Number
07/07/21
Date
CP&Y Inc.
Texas Registered Engineering Firm F-1741

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LARGE DIAMETER WATERLINE TECHNICAL SERVICES - PACKAGE 1
WORK ORDER G - CONTROLS FOR 84-INCH VALVES AT US 59 CROSSING

ELECTRICAL DETAILS

E-8

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000020-0071-3	
DRAWING SCALE	
AS NOTED	
CITY OF HOUSTON PM	
VENUS PRICE, P.E.	
SHEET NO. 12 OF 13	

NO.	DATE	REVISION	APP.

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APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

LAN

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

INTERIM REVIEW ONLY
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Engineer CHRISTINE H. KIRBY, PE
Registration Number 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 4A
ELECTRICAL DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 113 OF 244	

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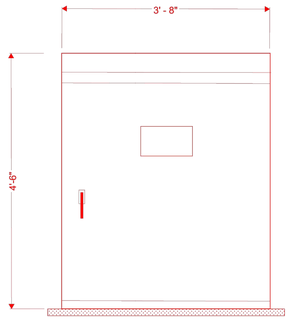
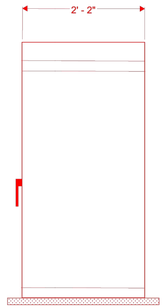






WEST SIDE
(PLC-1)



WEST SIDE
(PLC-1)



EAST SIDE
(PLC-2)



EAST SIDE
(PLC-2)

EXIST. ELECTRICAL/CONTROL EQUIPMENT ENCLOSURE

REPLACE WITH SAME MODEL PRESSURE TRANSMITTER AND BALL VALVE.

REPLACE WITH PROFINET MODULE.

REPLACE WITH SIEMENS S7-1200 PLC. PROVIDE REQUIRED IO AND COMM MODULES.

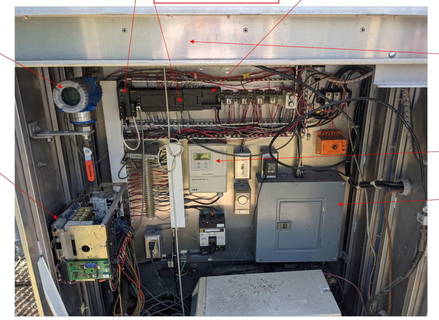
TELEPHONE MODEM. PROVIDE NEW MODEL

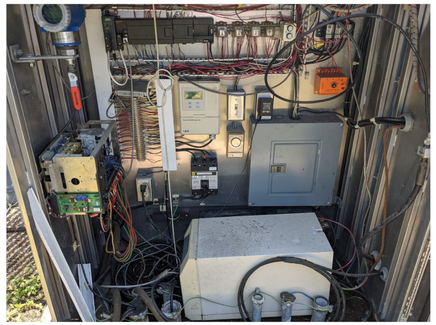
REPLACE WITH NEW MDS 900HZ RADIO. PROVIDE SURGE PROTECTOR.

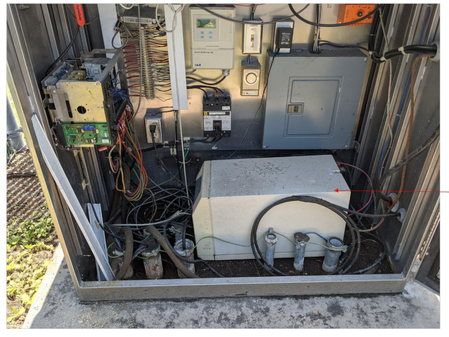
REPLACE WITH NEW VALVE CONTROLLER

REPLACE WITH FLOW CONTROLLER

REPLACE WITH NEW PANELBOARD







PROVIDE NEW SAME SIZE UPS AND INSTALL INSIDE NEW PLC PANEL.

TYPICAL EQUIPMENT LAYOUT

KEYED NOTES:

1. PROVIDE HEAT TRACE FOR PRESSURE TRANSMITTER TUBING.
2. REPLACE WITH NEW RELAY CONTROL CIRCUITS.
3. COORDINATE WITH POWER UTILITY FOR POWER SERVICE DISCONNECT/RECONNECT FOR PANEL REPLACEMENT. REINSTALL POWER METER.

NO.	DATE	REVISION	APP.

CP&Y, INC.
1201 REGAL ROW
DALLAS, TX 75235 | 214.638.0500
TBPE FIRM NO. F-1741

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Engineer
96785
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07/07/21
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LARGE DIAMETER WATERLINE TECHNICAL SERVICES - PACKAGE 1
WORK ORDER G - CONTROLS FOR 84-INCH VALVES AT US 59 CROSSING

EXIST. ELECTRICAL/CONTROL EQUIPMENT REMOVAL
E-9

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AS NOTED	
CITY OF HOUSTON PM	
VENUS PRICE, P.E.	
SHEET NO. 13 OF 13	

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EFF DATE: XXXX-XX-20XX

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LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

INTERIM REVIEW ONLY
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Engineer: CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL
SITE 4A
EXIST. ELECTRICAL/CONTROL EQUIPMENT REMOVAL

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SHEET NO. 114 OF 244	

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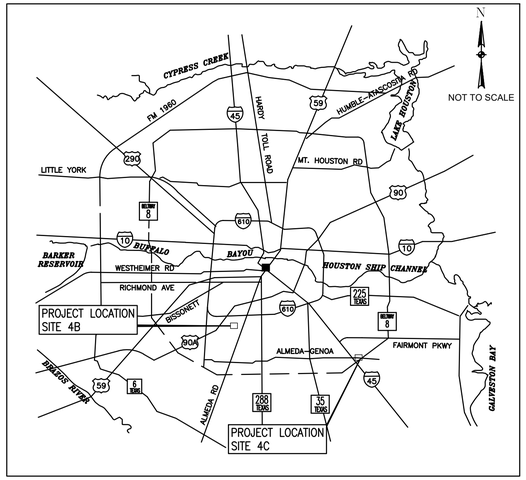
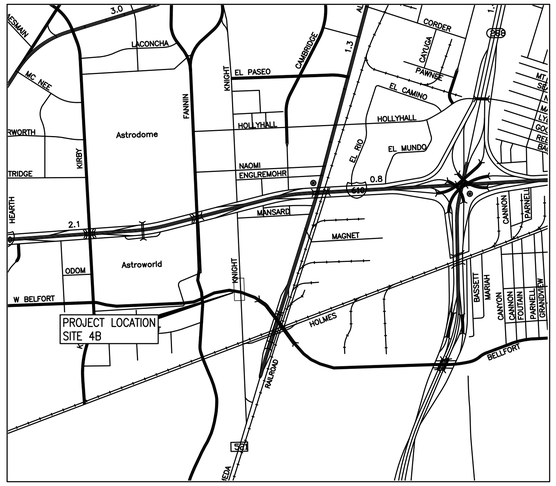


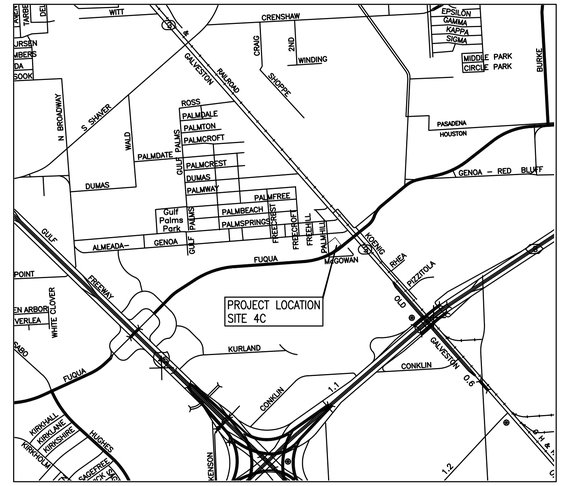
LOCATION MAP

SITE 4B
MOTOR OPERATED VALVE AND FLOWMETER
ALONG W. BELLFORT & KNIGHT

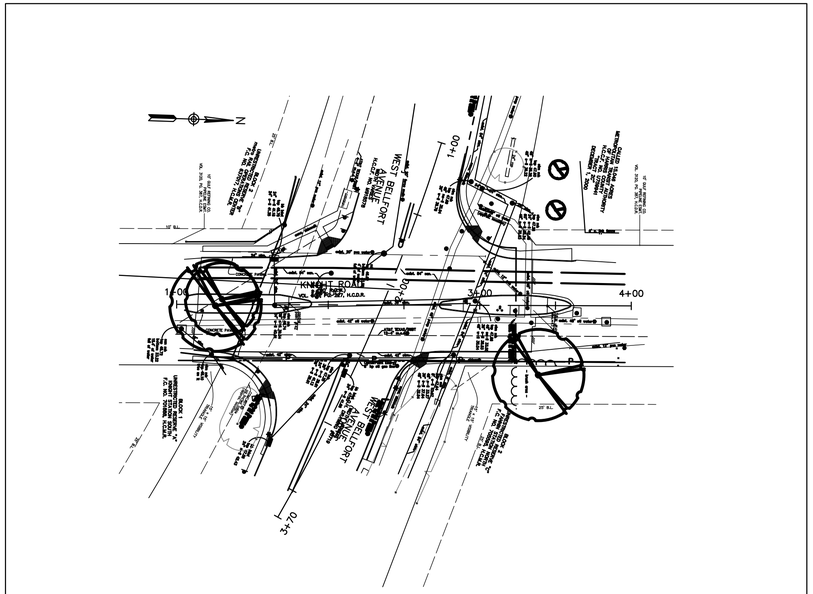
SITE 4C
MOTOR OPERATED VALVES AND PRESSURE METERS
ALONG FUQUA & GALVESTON RD



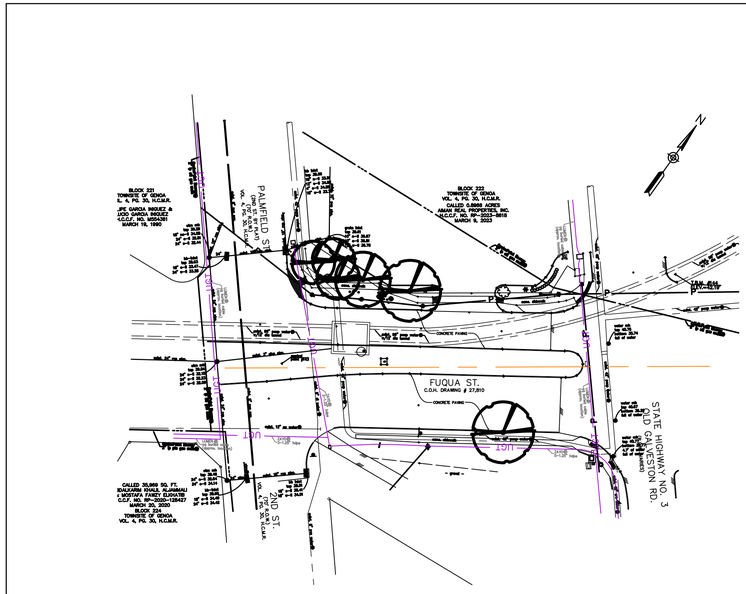
VICINITY MAP 4B



VICINITY MAP 4C



SITE 4B
SITE PLAN
KNIGHT RD



SITE 4C
SITE PLAN
FUQUA ST

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567

PRIVATE UTILITY LINES SHOWN

Date:

CENTERPOINT ENERGY/ELECTRIC FACILITIES
ELECTRICAL FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION).

Date:

CENTERPOINT ENERGY/GAS FACILITIES
(GAS SERVICE LINES ARE NOT SHOWN). THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION.

Date:

AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

LAN

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of interim review under the authority of:
Engineer: CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 4 B & C
VICINITY MAP

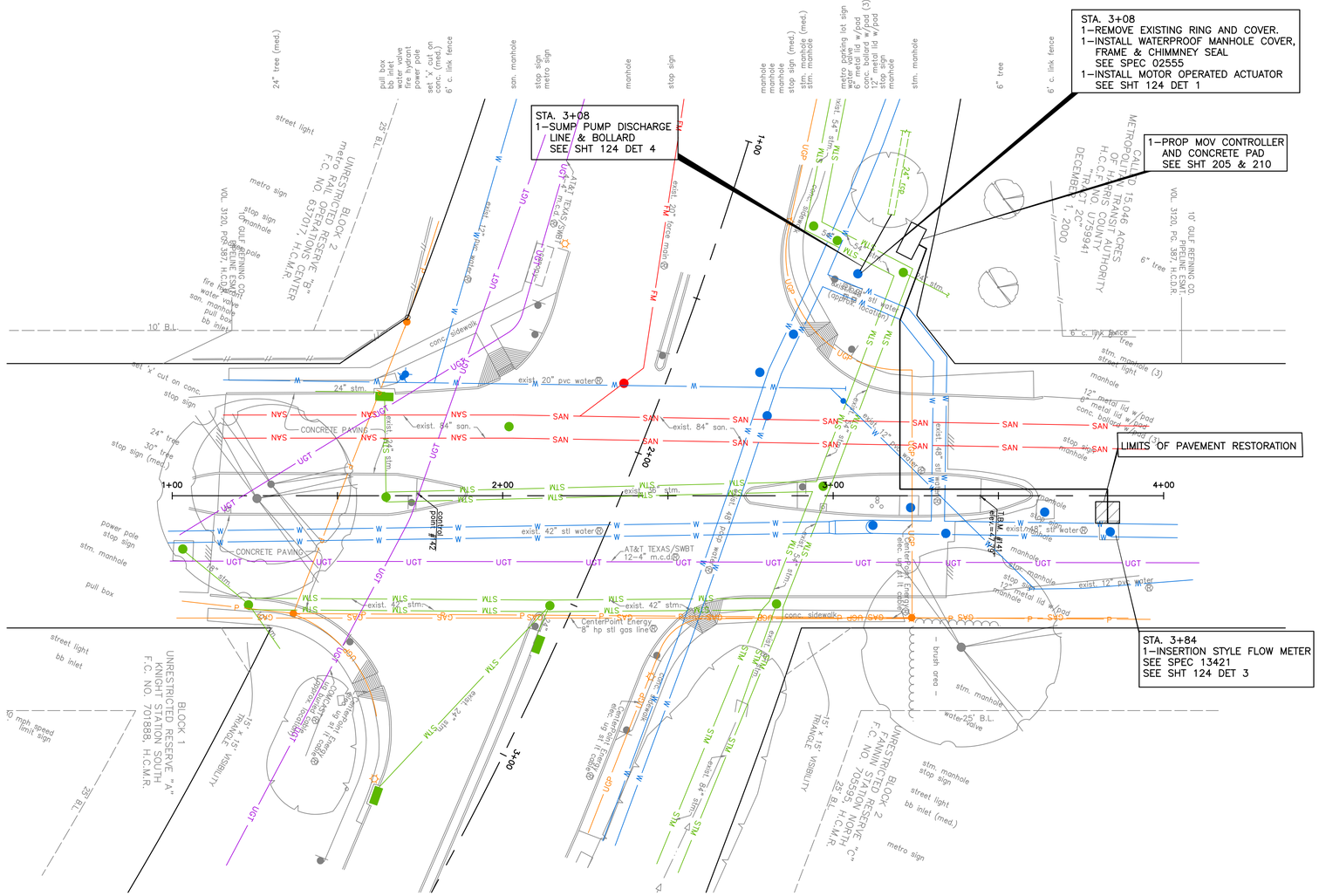
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1"=50'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 115 OF 244	

PEN TABLE: LAN-COH-CIVIL.ctb

USERNAME: Fleming, David

PLOTED: 4/3/2025 8:19 PM

FILE PATH: P:\123\132-1000\132-1000\4-0-Production-Working\4-1-BIM-CAD\Cad\Sheets\SITE 4 VICINITY MAP.dwg



FLOODPLAIN REFERENCE MARK NUMBER 030410 IS AN HCFCD BRASS DISC STAMPED 030410 LOCATED ON SOUTH HEADWALL OF THE CULVERT ON BELLFORT BLVD APPROXIMATELY 275 FT EAST FROM THE INTERSECTION OF HIGHWAY 288 IN KEYMAP 533X IN THE SIMS BAYOU WATERSHED

ELEV. 44.55 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.: B–141
SET 'X' CUT ON CONC.
ELEV.=47.787
D. STA. 3+44.73 OFFSET: 0.28R

NO.	DATE	REVISION	APP.

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.

Signature valid for six months.

Date

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities – not to be used for conflict verification)

Signature valid for six months.

Date

Approved for AT&T underground conduit facilities only.
Signature valid for one year.

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713–266–6900

TEXAS REGISTERED ENGINEERING FIRM F–2614

INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of interim review under the authority of Engineer CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 12/09/2024
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F–2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

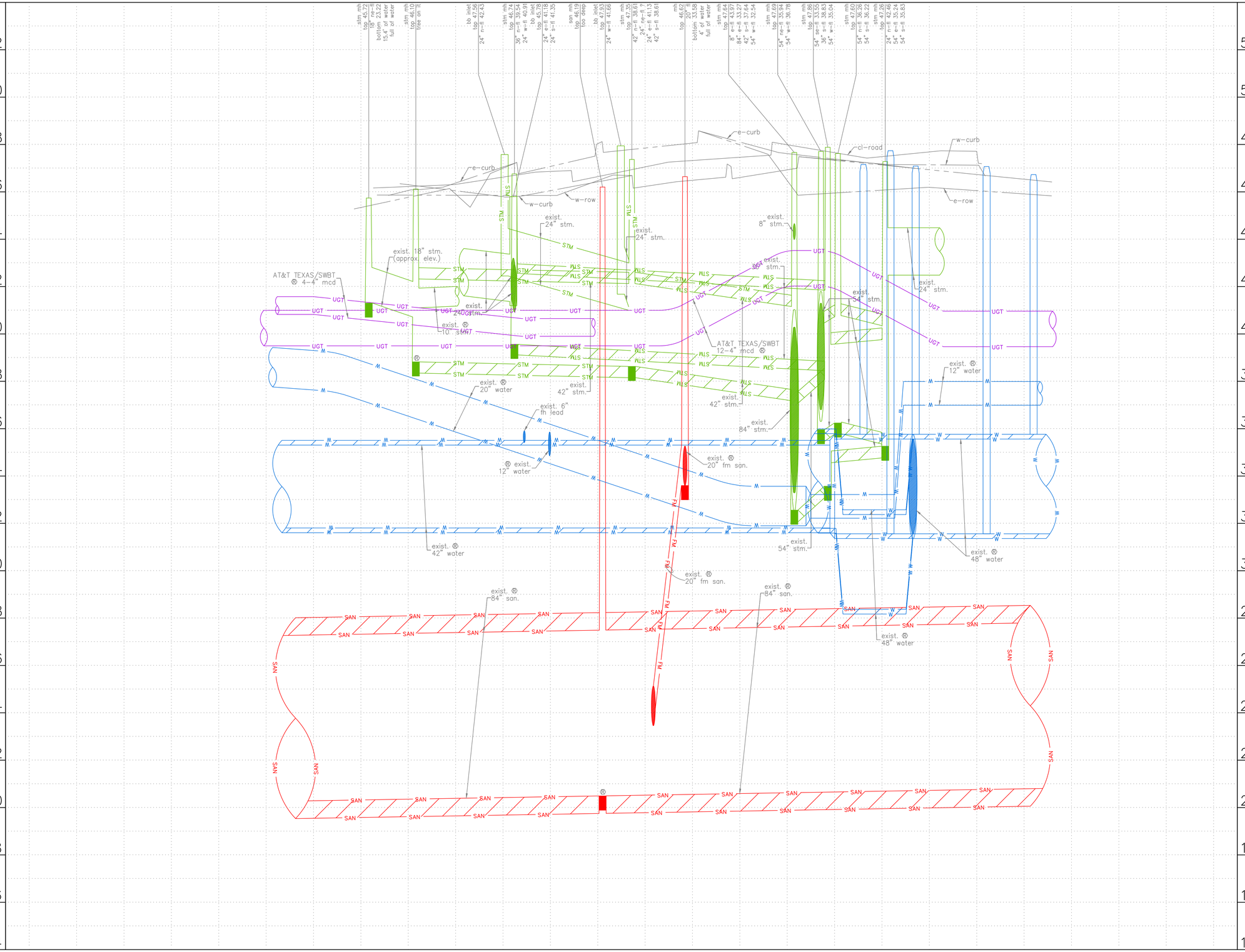
MISCELLANEOUS LDWL IMPROVEMENTS

SITE 4B – KNIGHT ST
PLAN
BEGIN TO END

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1" = 20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 116 OF XX	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\P&P Sheet-Site 4B - Knight St Pl.dwg plotted on Apr 03, 2025 - 8:24pm

SEE SHEET 116 FOR PLAN



0' 20' 40'
HORIZ:1"=20'
VERT:1"=2'

NO.	DATE	REVISION	APP.

NOTES:

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Signature valid for one year.

LAN

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S
SUITE 400
HOUSTON, TX 77042

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Not to be used for construction, bidding, permit or regulatory approval purposes.this document is released for the purpose of interim review under the authority of:
Engineer: CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 02/23/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F–2614

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

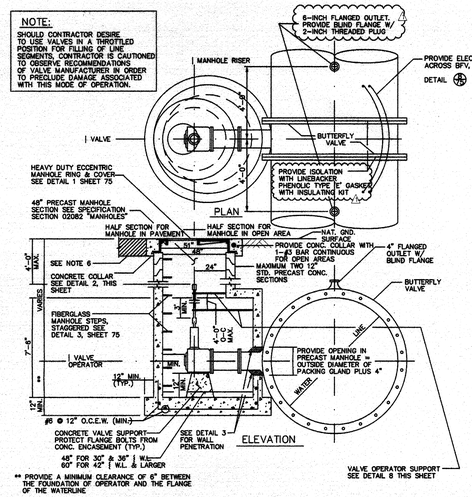
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

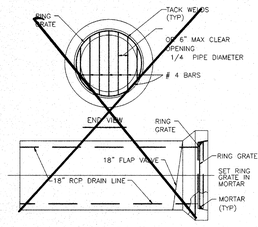
SITE 4B – KNIGHT ST
PROFILE
BEGIN TO END

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1" = 20' W: 1" = 2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 117 OF 244	

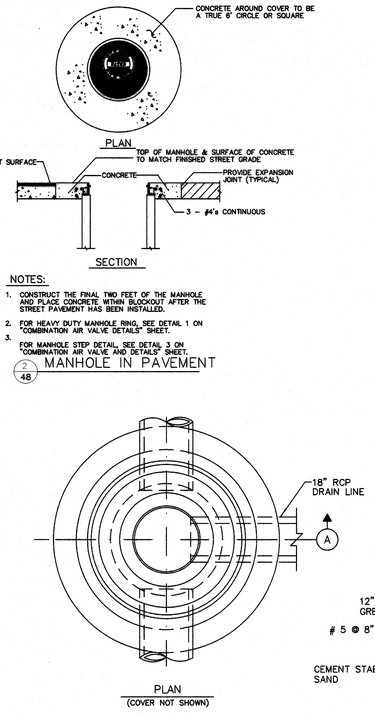
P:\132\132–10001–000\4–0–Production–Working\4–1–BIM–CAD\Civil\Reference\P&P Sheet–Site 4B – Knight St PL.dwg plotted on Apr 03, 2025 – 8:24pm



1 / 48 OPERATOR MANHOLE DETAILS FOR MAINLINE VALVES
(FOR WATER LINES 30-INCHES AND LARGER IN DIAMETER)

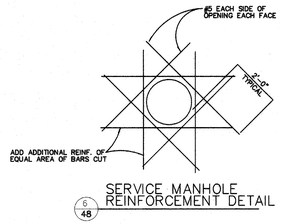


3 / 48 DRAIN LINE CONNECTION
FOR DITCH OUTFALL



NOTES:
1. CONSTRUCT THE FINAL TWO FEET OF THE MANHOLE AND PLACE CONCRETE WITHIN BLOCKOUT AFTER THE STREET PAVEMENT HAS BEEN INSTALLED.
2. FOR HEAVY DUTY MANHOLE RING, SEE DETAIL 1 ON "COMBINATION AIR VALVE DETAILS" SHEET.
3. FOR MANHOLE STEP DETAIL SEE DETAIL 3 ON "COMBINATION AIR VALVE AND DETAILS" SHEET.

2 / 48 MANHOLE IN PAVEMENT



6 / 48 SERVICE MANHOLE REINFORCEMENT DETAIL

NOTES:
1. PROVIDE RAMNEK OR APPROVED EQUAL BETWEEN PRECAST SEGMENTS OF THE MANHOLE.
2. ALL JOINTS SHALL BE BONDED, SEE THE CATHODIC PROTECTION DETAILS.
3. FIELD COAT ALL FLANGE BOLTS, FLANGE COUPLING, FLANGE COUPLING ADAPTER AND THRUST TIE ASSEMBLIES AFTER ASSEMBLY TO 35 MDFT W/ 2 COATS OF COAL TAR EPOXY.
4. PLACE MANHOLE ON NEW COMPACTED (95% S.P.D.) BOTTOM IN ACCORDANCE WITH SPECIFICATION 02316.
5. 2" OPERATING NUT ON LARGE DIAMETER BUTTERFLY VALVES SHALL TURN CLOCKWISE TO OPEN VALVE.
6. FOR PAVEMENT REPAIR, SEE SHEET "EXCAVATION, BEDDING, BACKFILL AND PAVEMENT REPAIR DETAILS".
7. FOR MANHOLES DEEPER THAN 20 FEET, PROVIDE SAFETY CLIMBING RAIL (SAF-T-CLIMB OR EQUAL)

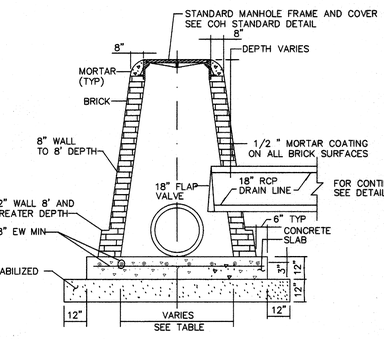
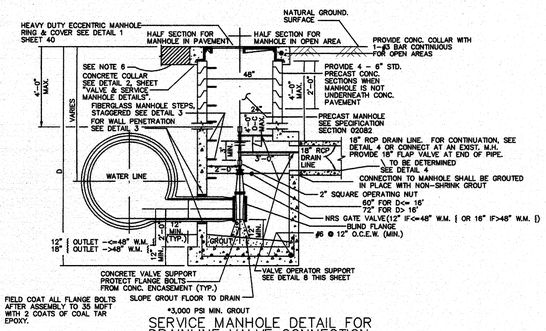


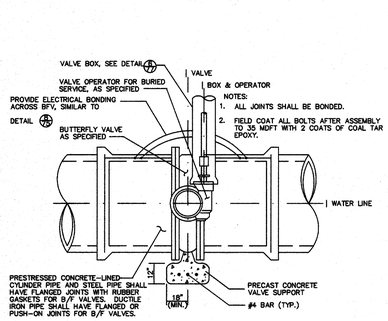
TABLE
SEWER SIZE VS MANHOLE SIZE

SEWER SIZE	MANHOLE BASE DIAMETER
42"	5'-0"
36"	4'-6"
30" AND LESS	4'-0"

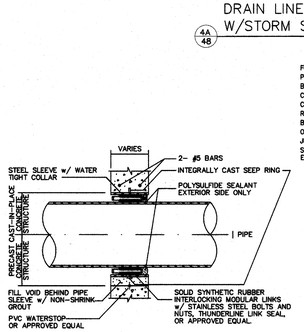
4A / 48 DRAIN LINE CONNECTION
W/STORM SEWER MANHOLE TYPE "C"



5 / 48 SERVICE MANHOLE DETAIL FOR DRAINLINE VALVE CONNECTION

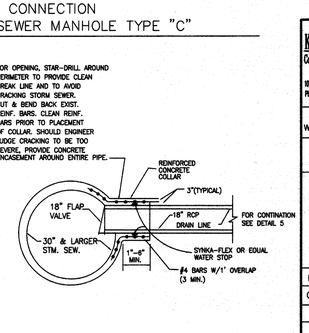


7 / 48 ISOLATION VALVE ASSEMBLY
(FOR WATER LINES SMALLER THAN 30-INCHES IN DIAMETER)



3 / 48 TYPICAL WALL PENETRATION DETAIL

FOR OPENING, STAR-DRILL AROUND PERIMETER TO PROVIDE CLEAN BREAK LINE AND TO AVOID CRACKING STORM SEWER. CUT & BEND BACK DIST. REINF. BARS. CLEAN REINF. BARS PRIOR TO PLACEMENT OF COLLAR. SHOULD ENGINEER JUDGE CRACKING TO BE TOO SEVERE, PROVIDE CONCRETE ENCASEMENT AROUND ENTIRE PIPE.



5A / 48 DRAIN LINE CONNECTION
(FOR STORM SEWERS 30-INCHES AND LARGER IN DIA.)

RECORD DRAWINGS DO NOT MODIFY

LOCKWOOD, ANDREWS & NEWNAM, INC.

SWTP
SURFACE WATER TRANSMISSION PROGRAM

Kuo & Associates, Inc.
Consulting Engineers, Surveyors
10700 Richmond Ave., Suite 113, Houston, Texas 77042
Ph: 713-975-0700 Fax: 713-975-0703

SURVEYED BY:
Western Group Consultants

STATE OF TEXAS
SHAREEN CHOWDHURY
83891
LICENSED PROFESSIONAL ENGINEER
10/17/06

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

CONTRACT 13C
PROPOSED 48" WATER LINE ALONG CAMBRIDGE, HOLLYHALL & KNIGHT ST. FROM OLD SPANISH TRAIL (OST) TO WEST BELLFORT
VALVE AND SERVICE MANHOLE DETAILS

FILE NO. WA 10800-01	
G.F.S. NO. S-0900-92-3	
DRAWING SCALE	
N.T.S.	
CITY OF HOUSTON PM	
BRIAN LONG, P.E.	
SHEET NO. 48 OF 96	

PUBLIC WORKS AND ENGINEERING
ACCEPTED AND FILED
41524
CITY OF HOUSTON, TEXAS

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567

PRIVATE UTILITY LINES SHOWN

Date:
CENTERPOINT ENERGY/ELECTRIC FACILITIES
ELECTRICAL FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION).

Date:
CENTERPOINT ENERGY/GAS FACILITIES
(GAS SERVICE LINES ARE NOT SHOWN). THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION.

Date:
AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

LAN

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

INTERIM REVIEW ONLY
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Registration Number 94776
Date 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 4B
EXISTING CONDITIONS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
AS SHOWN	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 118 OF 244	

FILE PATH: P:\121\13-1000-0001-4-0-Production-Working\4-1-BIM-CAD\04\Sheets\Standard Sheets\Details Sheets From Markups\SITE 4 DETAILS FROM MARKUPS\EXISTING CONDITIONS-DT 4/3/2025 8:24 PM
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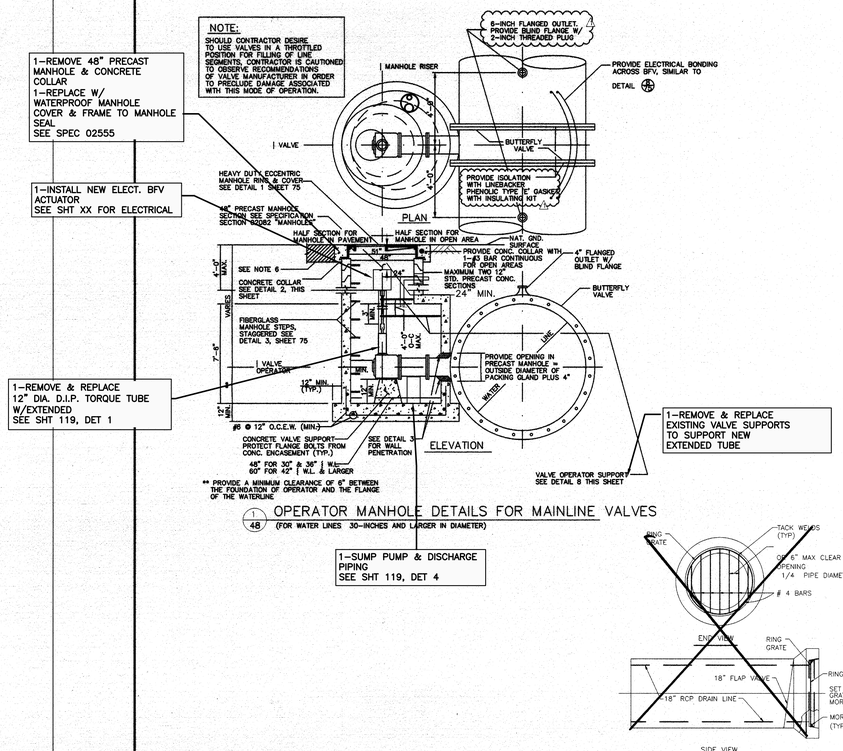
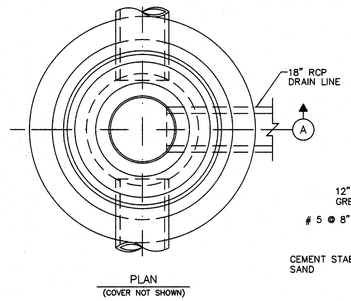
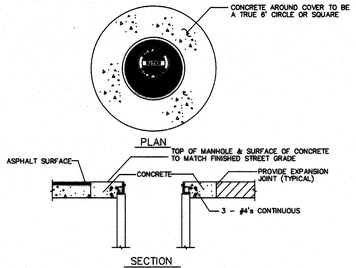


1 48 OPERATOR MANHOLE DETAILS FOR MAINLINE VALVES
(FOR WATER LINES 30-INCHES AND LARGER IN DIAMETER)

3 48 DRAIN LINE CONNECTION
FOR DITCH OUTFALL





NOTES:
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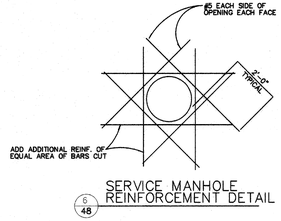
2. FOR HEAVY DUTY MANHOLE RING, SEE DETAIL 1 ON "COMBINATION AIR VALVE DETAILS" SHEET.
3. FOR MANHOLE STEP DETAIL SEE DETAIL 3 ON "COMBINATION AIR VALVE and DETAILS" SHEET.

2 48 MANHOLE IN PAVEMENT



6 48 SERVICE MANHOLE REINFORCEMENT DETAIL

NOTES:
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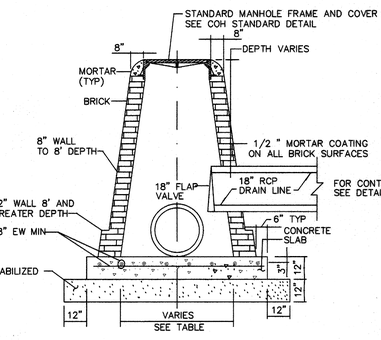
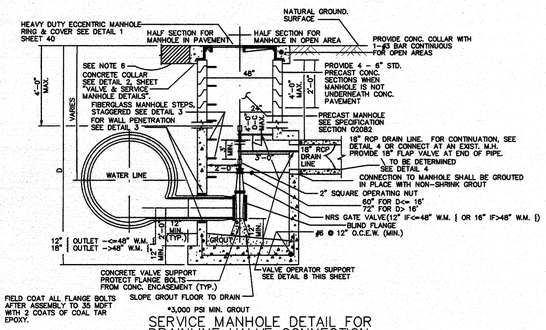


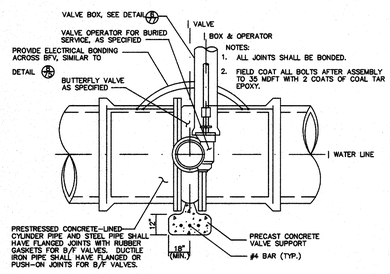
TABLE
SEWER SIZE VS MANHOLE SIZE

SEWER SIZE	MANHOLE BASE DIAMETER
42"	5'-0"
36"	4'-6"
30" AND LESS	4'-0"

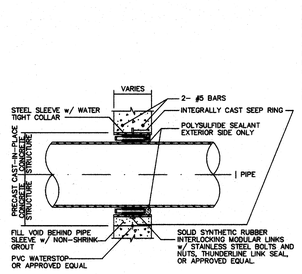
4A 48 DRAIN LINE CONNECTION
W/STORM SEWER MANHOLE TYPE "C"



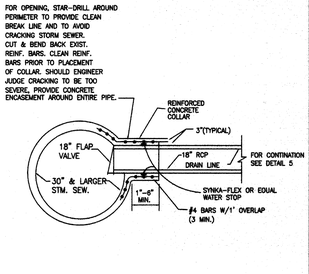
5 48 SERVICE MANHOLE DETAIL FOR DRAINLINE VALVE CONNECTION



7 48 ISOLATION VALVE ASSEMBLY
(FOR WATER LINES SMALLER THAN 30-INCHES IN DIAMETER)



3 48 TYPICAL WALL PENETRATION DETAIL



5A 48 DRAIN LINE CONNECTION
(FOR STORM SEWERS 30-INCHES AND LARGER IN DIA.)

RECORD DRAWINGS DO NOT MODIFY

LOCKWOOD, ANDREWS & NEWNAM, INC.

SWTP
SURFACE WATER TRANSMISSION PROGRAM

Kuo & Associates, Inc.
Consulting Engineers, Surveyors
6500 Richmond Ave., Suite 113, Houston, Texas 77082
Ph: 713-975-0700 Fax: 713-975-0800

SURVEYED BY:
Western Group Consultants

STATE OF TEXAS
SHAREEN CHOWDHURY
83891
LICENSED PROFESSIONAL ENGINEER
12/19/06

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
CONTRACT 13C
PROPOSED 48" WATER LINE ALONG CAMBRIDGE, HOLLYHALL & KNIGHT ST. FROM OLD SPANISH TRAIL (OST) TO WEST BELLFORT
VALVE AND SERVICE MANHOLE DETAILS

FILE NO. WA 10800-01	
G.F.S. NO. S-0900-92-3	
DRAWING SCALE	
N.T.S.	
CITY OF HOUSTON PM	
BRIAN LONG, P.E.	
SHEET NO. 48 OF 96	

PUBLIC WORKS AND ENGINEERING
ACCEPTED AND FILED
41524
CITY OF HOUSTON, TEXAS

NOTES:
DETAILS REFLECT INFORMATION FROM RECORD DRAWINGS DATED FEBRUARY 19, 2006. LOCATIONS OF FACILITIES, STRUCTURES, AND SPECIFIC DIMENSIONS SHALL BE CONFIRMED IN THE FIELD BY THE CONTRACTOR.

REMOVE TORQUE TUBE AND VALVE OPERATOR EXTENSION AS NECESSARY TO INSTALL NEW ACTUATOR.

NEW ACTUATOR TO HAVE TORQUE RATING OF XXX FOOT-POUNDS. INSTALL ACCORDING TO MANUFACTURERS RECOMMENDATION.

NEW ELECTRIC BFV ACTUATOR
PROVIDE NEW ELECTRICAL ACTUATOR FOR EXISTING 48-IN BFV. PROVIDE LI

NO.	DATE	REVISION	APP.

NOTICE:
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(GAS SERVICE LINES ARE NOT SHOWN). THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION.

Date:
AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

LAN

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042
PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of interim review under the authority of Engineer CHRISTINE H. KIRBY, PE
Registration Number 94776
Date 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL

SITE 4B MODIFICATIONS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
AS SHOWN	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 119 OF 244	

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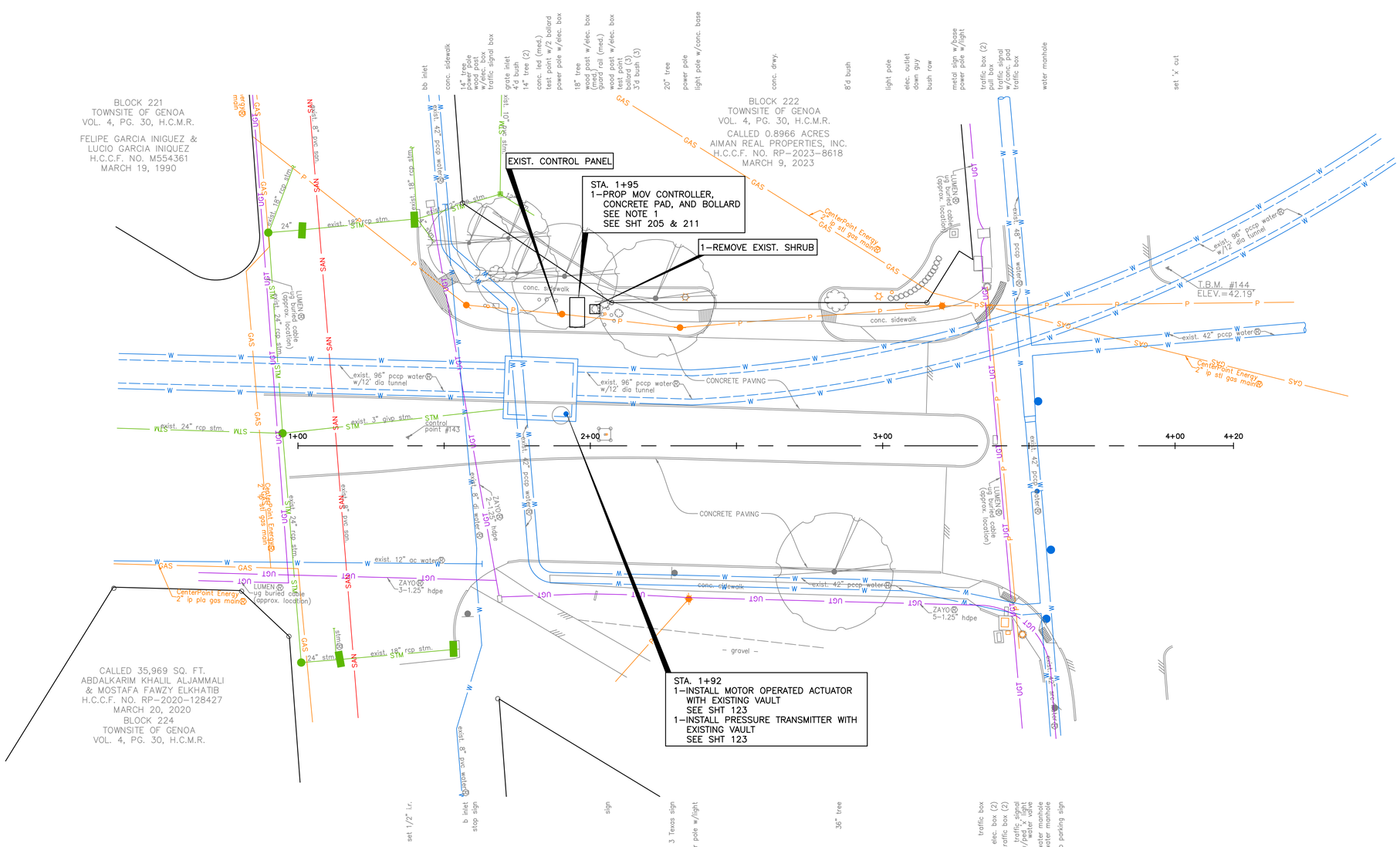
By: Kelly, Zach (ZKelly) Dgn: (ZKelly) K:\3-Production Working\4-1-BIM-CAD\04\Sheets\Standard Sheets\Details Sheets from Markups\SITE 4 DETAILS FROM MARKUPS\SITE 4B MODIFICATIONS.dgn



SEE SHEET 121 FOR PROFILE

0' 20' 40'

HORIZ:1"=20'
VERT:N/A

NO.	DATE	REVISION	APP.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 090100 IS AN HCFCD BRASS DISC STAMPED 090100 LOCATED ON NORTH HEADWALL OF THE CULVERT ON GENOA BLUFF ROAD APPROXIMATELY 0.8 MILE NORTHEAST FROM THE INTERSECTION OF HIGHWAY 3 IN KEYMAP 577N IN THE VINCE BAYOU WATERSHED

ELEV. 37.22 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M.:

T.B.M.: B-143
SET 1/2 I.R. W/CAP
ELEV.=39.967
D. STA. 1+37.62 OFFSET: 2.88L

NOTES:

NOTICE:

FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.

Signature valid for six months.

Date

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities – not to be used for conflict verification)

Signature valid for six months.

Date

Approved for AT&T underground conduit facilities only.
Signature valid for one year.

LAN

LOCKWOOD, ANDREWS
& NEWNAM, INC.
3700 W SAM HOUSTON PKWY
HOUSTON, TX 77042

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of interim review under the authority of:
Engineer:CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 02/23/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

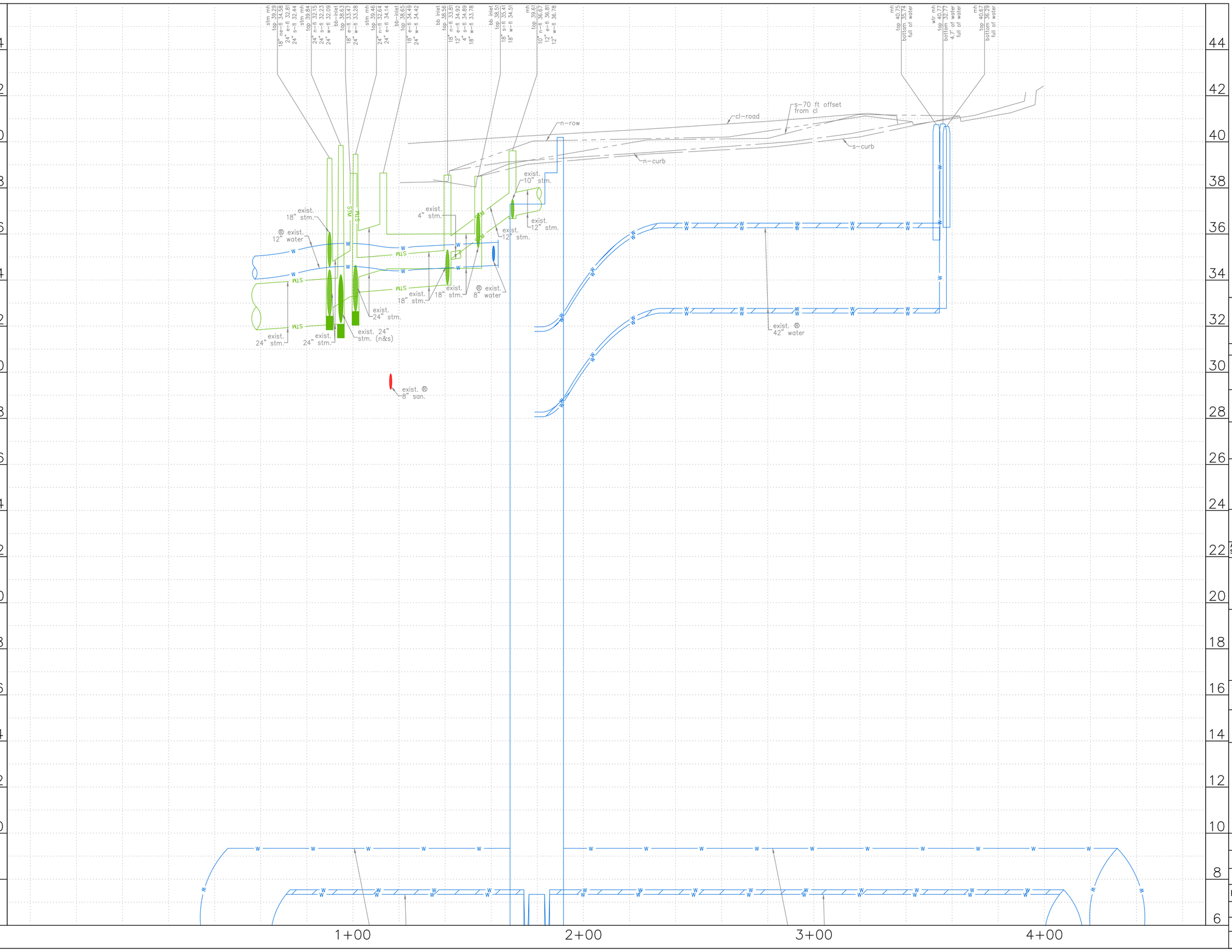
MISCELLANEOUS LDWL
IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL

SITE 4C – FUQUA ST
PLAN
SITBEGIN TO END

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 120 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\P&P Sheet-Site 4C - Fuqua St Pl.dwg plotted on Apr 03, 2025 - 8:24pm

SEE SHEET 120 FOR PLAN



HORIZ:1"=20'
VERT:1"=2'

NO.	DATE	REVISION	APP.

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Signature valid for one year.

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S
SUITE 400
HOUSTON, TX 77042

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Registration Number: 94776
Date: 02/23/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

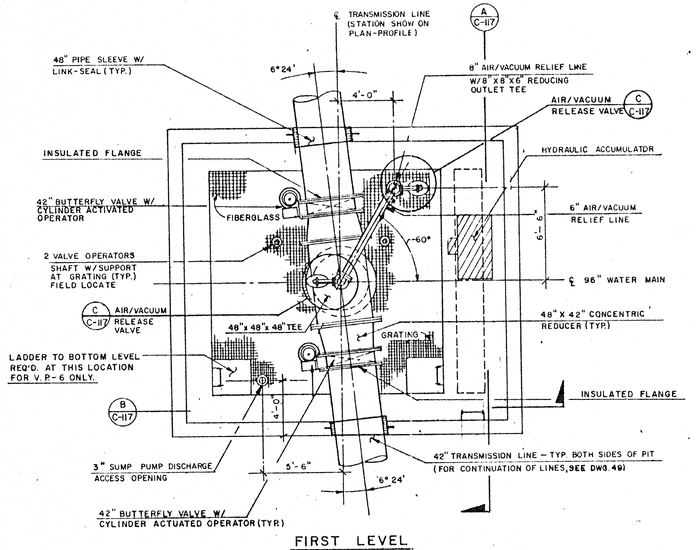
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

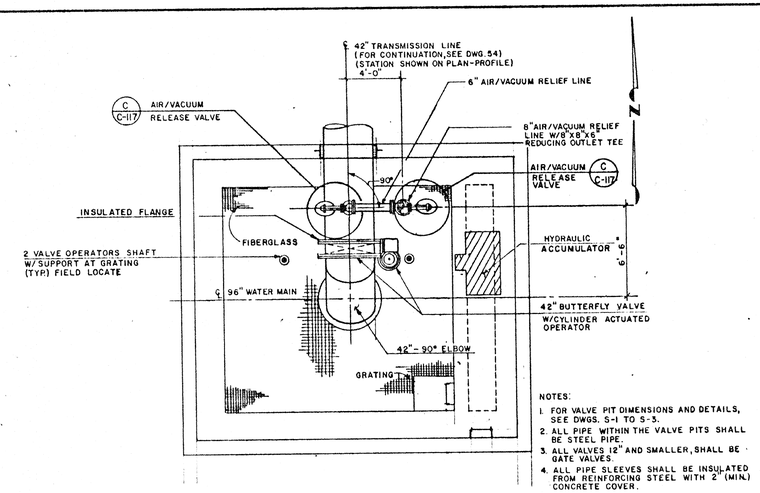
SITE 4C – FUQUA ST
PROFILE
BEGIN TO END

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1"=20' W: 1"=2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 121 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\P&P Sheet-Site 4C - Fuqua St Pl.dwg plotted on Apr 03, 2025 - 8:24pm



FIRST LEVEL



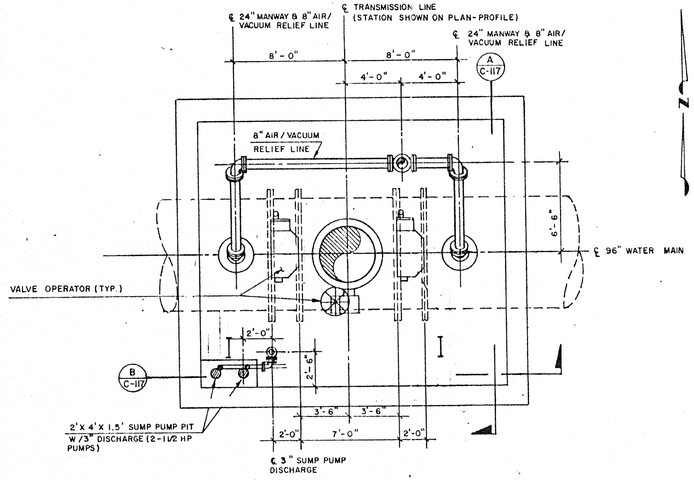
NOTES:

1. FOR VALVE PIT DIMENSIONS AND DETAILS, SEE DWGS. S-1 TO S-5.
2. ALL PIPE WITHIN THE VALVE PITS SHALL BE STEEL PIPE.
3. ALL VALVES 12" AND SMALLER, SHALL BE GATE VALVES.
4. ALL PIPE SLEEVES SHALL BE INSULATED FROM REINFORCING STEEL WITH 2" (MIN.) CONCRETE COVER.

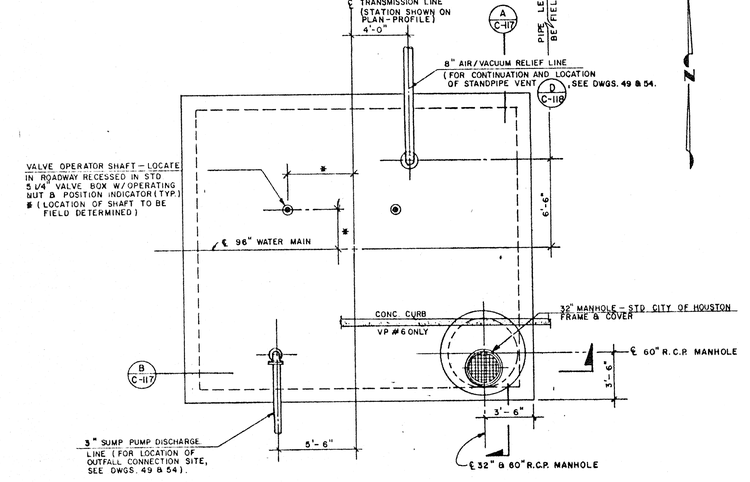
FIRST LEVEL

(V.P-7 TRANSMISSION PIPING ONLY)

NOTE. PIPING NOT SHOWN SAME AS V.P.-6.



BOTTOM LEVEL



TOP LEVEL

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567.

PRIVATE UTILITY LINES SHOWN

Date:
CENTERPOINT ENERGY/ELECTRIC FACILITIES
ELECTRICAL FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION).

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AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

NO.	DATE	REVISION	CK'D. APP.

PROJECT NO. 0491-032
DRAWN BY: H.P.
CHECKED BY: H.M.G.
APPROVED BY: J.M.S.

STATE OF TEXAS – HARRY M. GRESHAM – 96331 – REGISTERED PROFESSIONAL ENGINEER – 5/12/25

BOVAY ENGINEERS, INC. HOUSTON BATON ROUGE AUSTIN ALBUQUERQUE

SOUTHEAST WATER DISTRIBUTION IMPROVEMENTS PROPOSED 96" WATER TRANSMISSION MAIN
CONTRACT NO.1

VALVE PIT PIPING DETAILS
PLANS BY LEVEL
(VALVE PITS - 6 & 7)

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS

APPROVED: 4/3/25 – WATER DESIGN
APPROVED: 4/3/25 – PLANNING DEPT.
APPROVED: 4/3/25 – WASTEWATER – CONSERVATION
APPROVED: 4/3/25 – SANITARY SEWER
APPROVED: 4/3/25 – SHOP SUB – SEWER DIV.
APPROVED: 4/3/25 – OTHER DEPT'S.
APPROVED: 4/3/25 – TRAFFIC & TRANSPORTATION DIV.
APPROVED: 4/3/25 – ASST. DIRECTOR OF PUBLIC WORKS

SUBMITTED: SCALE: 1/4"=1'-0"
DATE:
SURV. BY:
F.B. NO.:
DESIGNED BY:
DRAWN BY:
SHEET NO. 56 OF 71 SHEETS
DWG. NO.

C-116

WD 7839

EFF DATE: XXXX-XX-20XX
DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042
PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

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Registration Number 94776
Date 04/03/2025
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

CITY OF HOUSTON

HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

60% SUBMITTAL

SITE 4C
EXISTING CONDITIONS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
AS SHOWN	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 122 OF 244	

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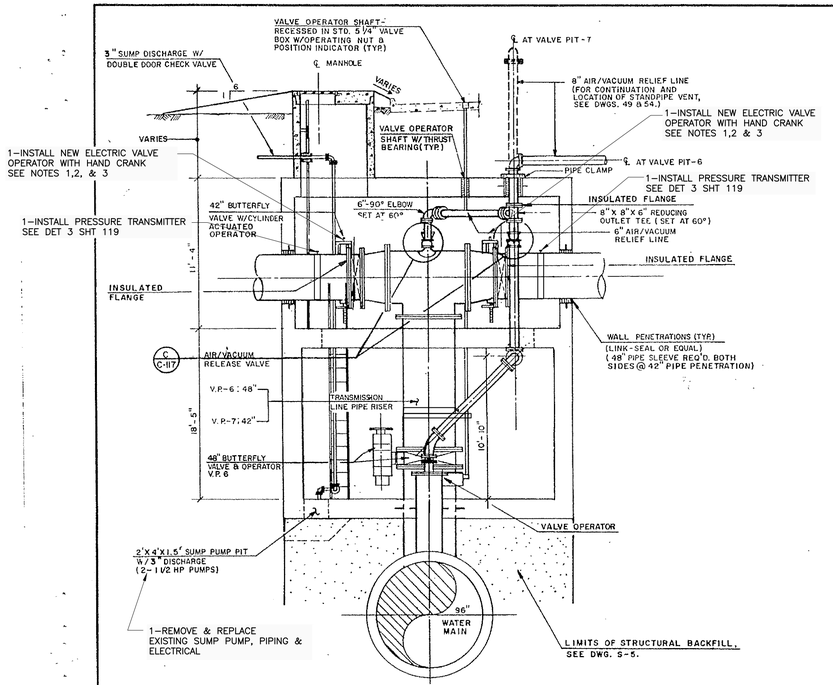
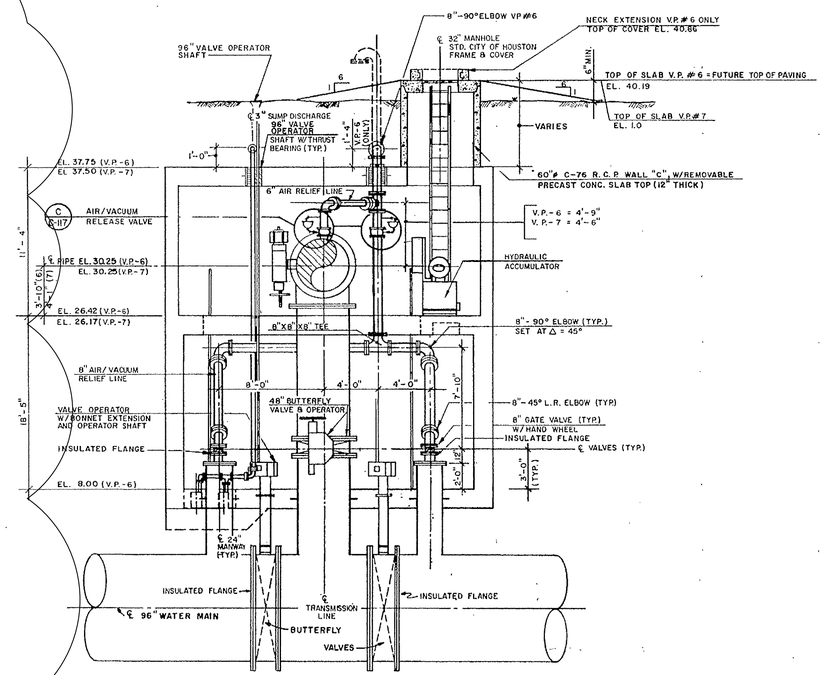
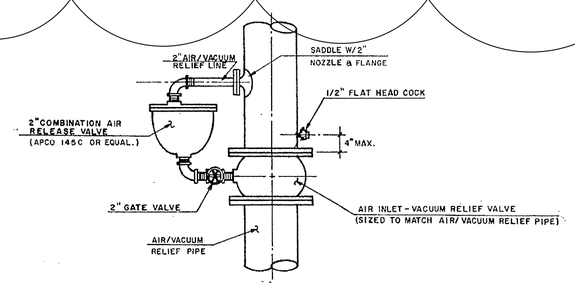


A C-117 SECTION



B C-117 SECTION
N.T.S.

NOTE:
FOR REVISIONS TO V.P.7 SEE DWG. C-117A



C C-117 AIR / VACUUM RELEASE VALVE DETAIL
SCALE: 1" = 1'-0"

NOTES
1. FOR VALVE PIT DIMENSIONS AND DETAILS, SEE DWGS. S-1 TO S-3.
2. ALL PIPE WITHIN VALVE PITS SHALL BE STEEL PIPE.
3. ALL VALVES 12" AND SMALLER SHALL BE GATE VALVES.
4. ALL PIPE SLEEVES SHALL BE INSULATED FROM REINFORCING STEEL WITH 2"(MIN.) CONCRETE COVER.

NO.	DATE	REVISION	CK'D. APP.
1	3/89	ISSUED TO REFLECT CHANGES IN V.P. 7	

PROJECT NO. 0491-032
DRAWN BY: H.P./N.L.N.
CHECKED BY: H.M.G.
APPROVED BY: J.M.S./G.R.M.

BOVAY ENGINEERS, INC. HOUSTON BATON ROUGE AUSTIN ALBUQUERQUE

SOUTHEAST WATER DISTRIBUTION IMPROVEMENTS
PROPOSED 96" WATER TRANSMISSION MAIN
CONTRACT NO. [illegible]

VALVE PIT PIPING DETAILS
SECTIONS
(VALVE PIT 6)

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS

SUBMITTED
DATE _____ MANAGER, ENGINEERING

APPROVED
WATER _____ UTILITY OPERATIONS DIVISION
STREET & BRIDGE _____ STORM SEWER
TRAFFIC & TRANSP. DEPT. _____ CONSTRUCTION ENG.
DEPUTY DIRECTOR _____ DIRECTOR

DRAWN _____ CHECKED _____ SURVEY _____
SCALES HORZ. _____ FIELD BOOK NO. _____
VERT. _____ BOX _____
REVISED AS BUILT _____ DATE _____
PROJ. NO. _____ SHEET NO. _____ OF _____ SHEETS
FILE NO. _____ DRAWING NO. _____

C-117

WD 7839

NOTES:
1. DETAILS REFLECT INFORMATION FROM RECORD DRAWINGS DATED FEBRUARY 19, 2006. LOCATIONS OF FACILITIES, STRUCTURES, AND SPECIFIC DIMENSIONS SHALL BE CONFIRMED IN THE FIELD BY THE CONTRACTOR.
2. REMOVE TORQUE TUBE AND VALVE OPERATOR EXTENSION AS NECESSARY TO INSTALL NEW ACTUATOR.
3. NEW ELECTRIC BFV ACTUATOR
PROVIDE NEW ELECTRICAL ACTUATOR FOR EXISTING 42-IN BFV.

NO.	DATE	REVISION	APP.

NOTICE:
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PRIVATE UTILITY LINES SHOWN

Date:
CENTERPOINT ENERGY/ELECTRIC FACILITIES
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LAN

EFF DATE: XXXX-XX-20XX
DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042
PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

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Engineer CHRISTINE H. KIRBY, PE
Registration Number 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL

SITE 4C MODIFICATIONS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
AS SHOWN	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 123 OF 244	

FILE PATH: P:\132\132-1000-000\4-0-Production-Working\4-1-BIM-CAD\Civil Sheets\Standard Sheets\Details Sheets from Markups\SITE 4 DETAILS FROM MARKUPS\SITE 4C MODIFICATIONS.dwg PLOTTED: 4/3/2025 @ 2:25 PM
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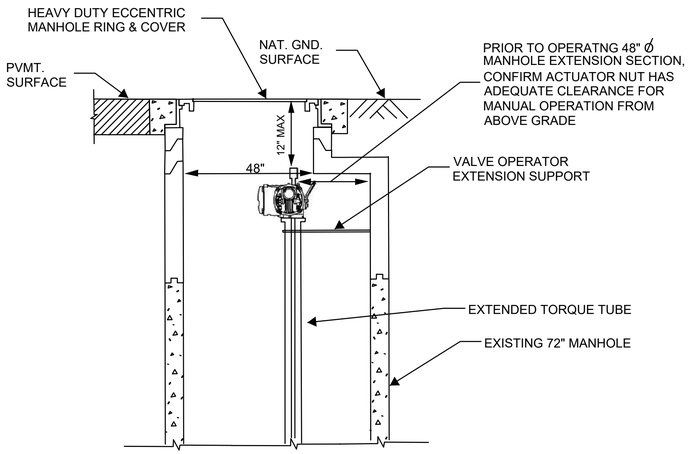
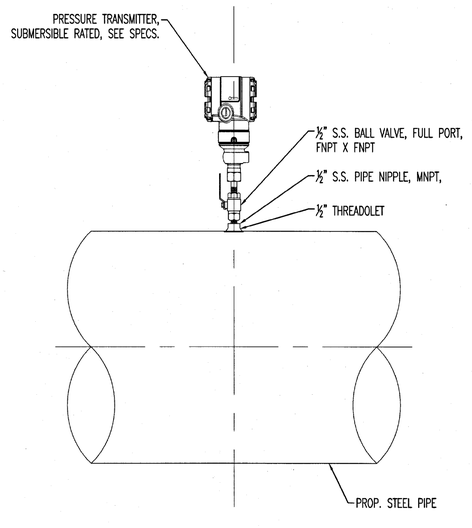
USERNAME: Fleming, David



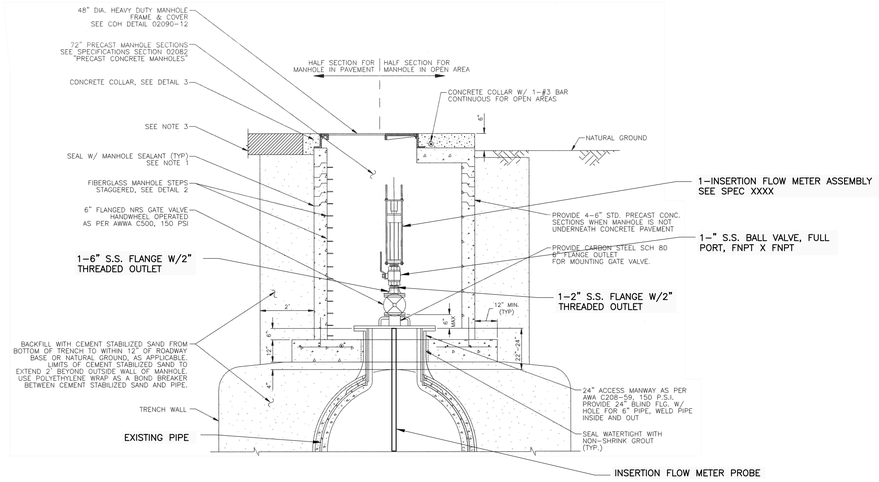
1 EXTENDED 48" Ø OPERATOR MANHOLE

PRESSURE INSTRUMENTATION NOTES:

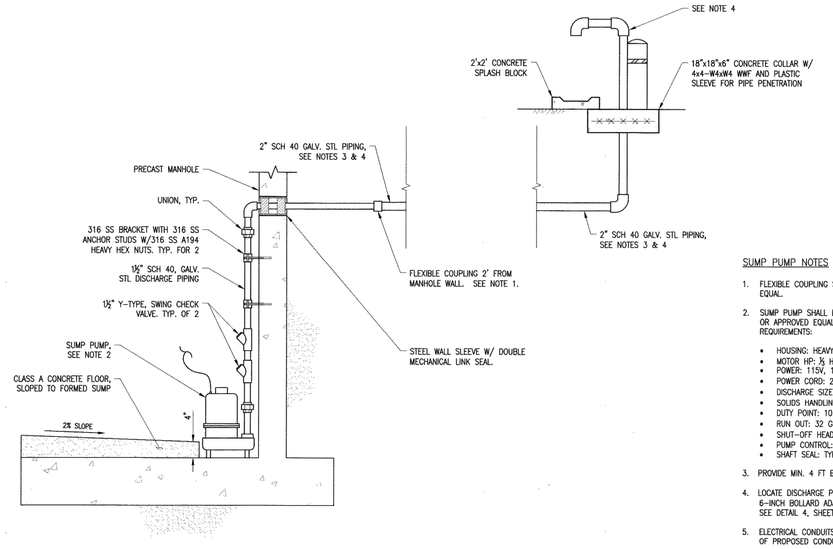
1. FITTINGS SHALL BE 150 PSI 316 STAINLESS STEEL THREADED FITTINGS MEETING ANSI 16.3 AND ANSI 16.5 CLASS 150 LB, AND ASTM A351 CF8M AISI316.
2. BALL VALVES SHALL BE TWO-PIECE, FULL PORT BALL VALVES WITH FEMALE NPT CONNECTIONS RATED FOR 1000 PSI CWP COLD NON-SHOCK AND VACUUM SERVICE TO 29 INCHES Hg. BALL, RETAINER, GLAND, STEM, LEVER NUT, LEVER (W/VINYL GRIP), AND BODY SHALL BE STAINLESS STEEL. STEM PACKING, STEM BEARING, SEAT AND BODY SEAL SHALL BE PTFE. BALL VALVES SHALL BE 76F-100-A SERIES AS MANUFACTURED BY APPOLO VALVES, OR APPROVED EQAL.
3. USE NECESSARY BUSHINGS, FITTINGS, ETC. FOR TRANSMITTER CONNECTION.



2 PRESSURE TRANSMITTER DETAIL



3 ACCESS MANWAY IN ACCESS MANHOLE



SUMP PUMP NOTES

1. FLEXIBLE COUPLING SHALL BE ROMAC STYLE 501, 511, OR APPROVED EQUAL.
2. SUMP PUMP SHALL BE MODEL SSM33J AS MANUFACTURED BY F.E. MYERS, OR APPROVED EQUAL. SUMP PUMP SHALL MEET THE FOLLOWING REQUIREMENTS:
   - HOUSING: HEAVY CAST IRON
   - MOTOR HP: ½ HP, 9A
   - POWER: 115V, 1Ø, 60HZ
   - POWER CORD: 20', ¹⁰/₃₂ SJTW, SJTW-A
   - DISCHARGE SIZE: 1½" NPT
   - SOLIDS HANDLING ½"ø
   - DUTY POINT: 10 GPM @ 20' TDH
   - RUN OUT: 32 GPM @ 5' TDH
   - SHUT-OFF HEAD: 23'
   - PUMP CONTROL: AUTOMATIC TETHERED FLOAT SWITCH
   - SHAFT SEAL: TYPE IIA, CARBON & CERAMIC
3. PROVIDE MIN. 4 FT BURY DEPTH FOR DISCHARGE PIPING.
4. LOCATE DISCHARGE PIPING AT EXISTING ROADSIDE DITCH. PROVIDE ONE (1) 6-INCH BOLLARD ADJACENT TO ABOVE GROUND PIPING. SEE DETAIL 4, SHEET 268 FOR BOLLARD DETAILS.
5. ELECTRICAL CONDUITS NOT SHOWN. SEE SHEETS 219 & 221 FOR LOCATION OF PROPOSED CONDUITS AND DETAILS.

4 SUMP PUMP DETAIL

NO.	DATE	REVISION	APP.

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PRIVATE UTILITY LINES SHOWN

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EFF DATE: XXXX-XX-20XX

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3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

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Engineer CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

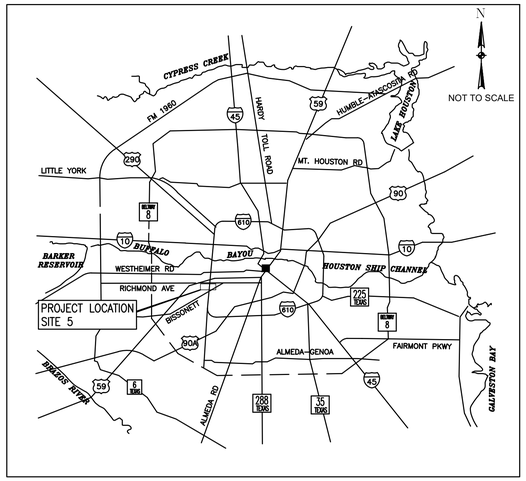
CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL
SITE 4
SITE SPECIFIC DETAILS

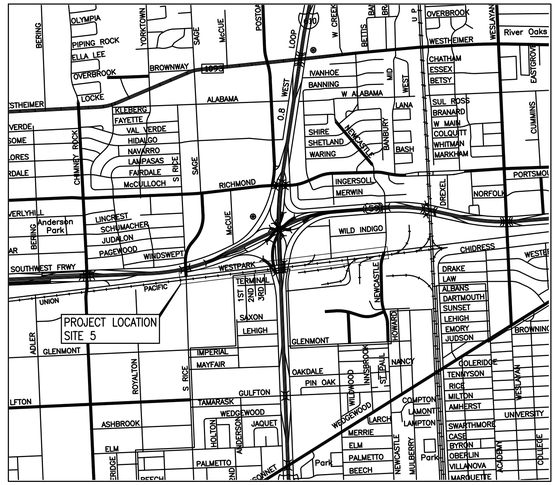
WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
AS SHOWN	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 124 OF 244	

PEN TABLE: LAN-COH-CIVIL.ctb
USERNAME: Fleming, David
FILE PATH: P:\133\132-1001-000\V-D-Production-Working\4-1-BIM-CAD\CAD\Sheets\Standard Sheets\Details Sheets From Markups\SITE 4 DETAILS FROM MARKUPS\SITE 4-SITE SPECIFIC.dwg PLOTTED: 4/3/2025 8:25 PM

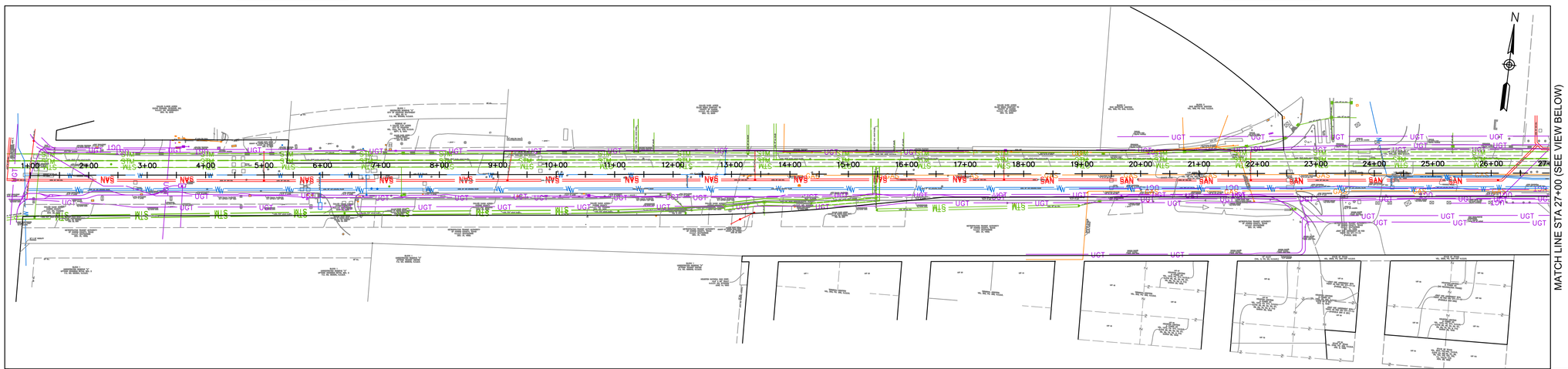
SITE 5
36-INCH WELL COLLECTION LINE ALONG WESTPARK



LOCATION MAP



VICINITY MAP



SITE 5
SITE PLAN

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567

PRIVATE UTILITY LINES SHOWN

Date:

CENTERPOINT ENERGY/ELECTRIC FACILITIES
ELECTRICAL FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION).

Date:

CENTERPOINT ENERGY/GAS FACILITIES
(GAS SERVICE LINES ARE NOT SHOWN). THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION.

Date:

AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

LAN

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes.this document is released for the purpose of interim review under the authority of:
Engineer: CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL

SITE 5
VICINITY MAP

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 100'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 125 OF 244	

PEN TABLE: LAN-COH-CIVIL.ctb
USERNAME: Fleming, David
PLOTED: 4/3/2025 8:25 PM
FILE PATH: P:\132\132-1001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Sheets\SITE 5 VICINITY MAP.dwg

SHUTDOWN MAP

MISCELLANEOUS LDWL IMPROVEMENTS PACKAGE 3
(SITE 5. WELL COLLECTION LINE ALONG WESTPARK DR)

LEGEND

- 36-INCH MAIN LINE VALVE
- WATER LINE BUTTERFLY VALVE
- 36-INCH WATER LINE
- EXISTING WATER LINE
- LIMITS OF DEWATERING

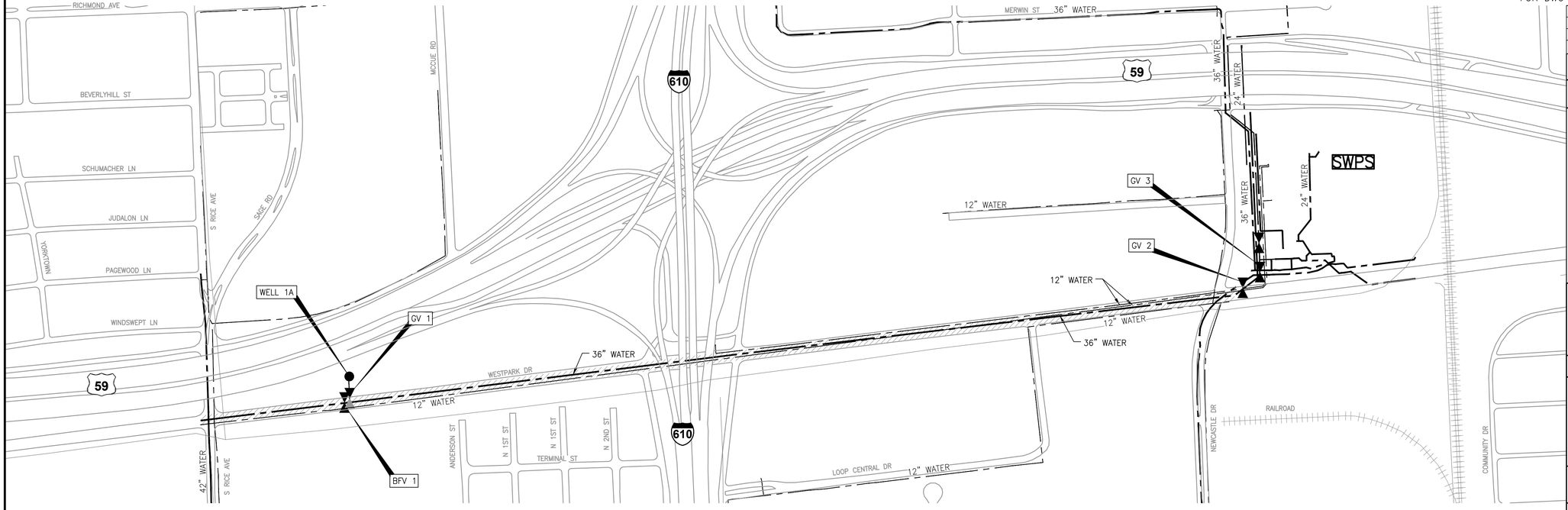
N

0 300 600
SCALE: 1"=300'

SHUTDOWN DURATION: APPROX. 2 – 3 MONTHS
(DEC 2027 – MARCH 2028)

NOTE:

1. ISOLATION VALVE TO BE CLOSED BY HOUSTON PUBLIC WORKS – UTILITY MAINTENANCE ONLY. COORDINATE WITH PROJECT MANAGER FOR DWO CONTACT INFORMATION BEFORE BEGINNING WORK.



VALVE	POSITION	TYPE
BFV 1	CLOSE	36-INCH BUTTERFLY VALVE
GV 1	CLOSE	16-INCH GATE VALVE
GV 2	CLOSE	36-INCH GATE VALVE
GV 3	CLOSE	36-INCH GATE VALVE

NO.	DATE	REVISION	APP.

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Date:
AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

LAN

EFF DATE: XXXX-XX-20XX
DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S,
SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
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CITY OF HOUSTON

HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
SITE 5
SHUTDOWN MAP
Value

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 300'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 126 OF 244	

PEN TABLE: LAN-COH-CIVIL.ctb
USERNAME: Fleming, David
PLOTED: 4/3/2025 8:28 PM
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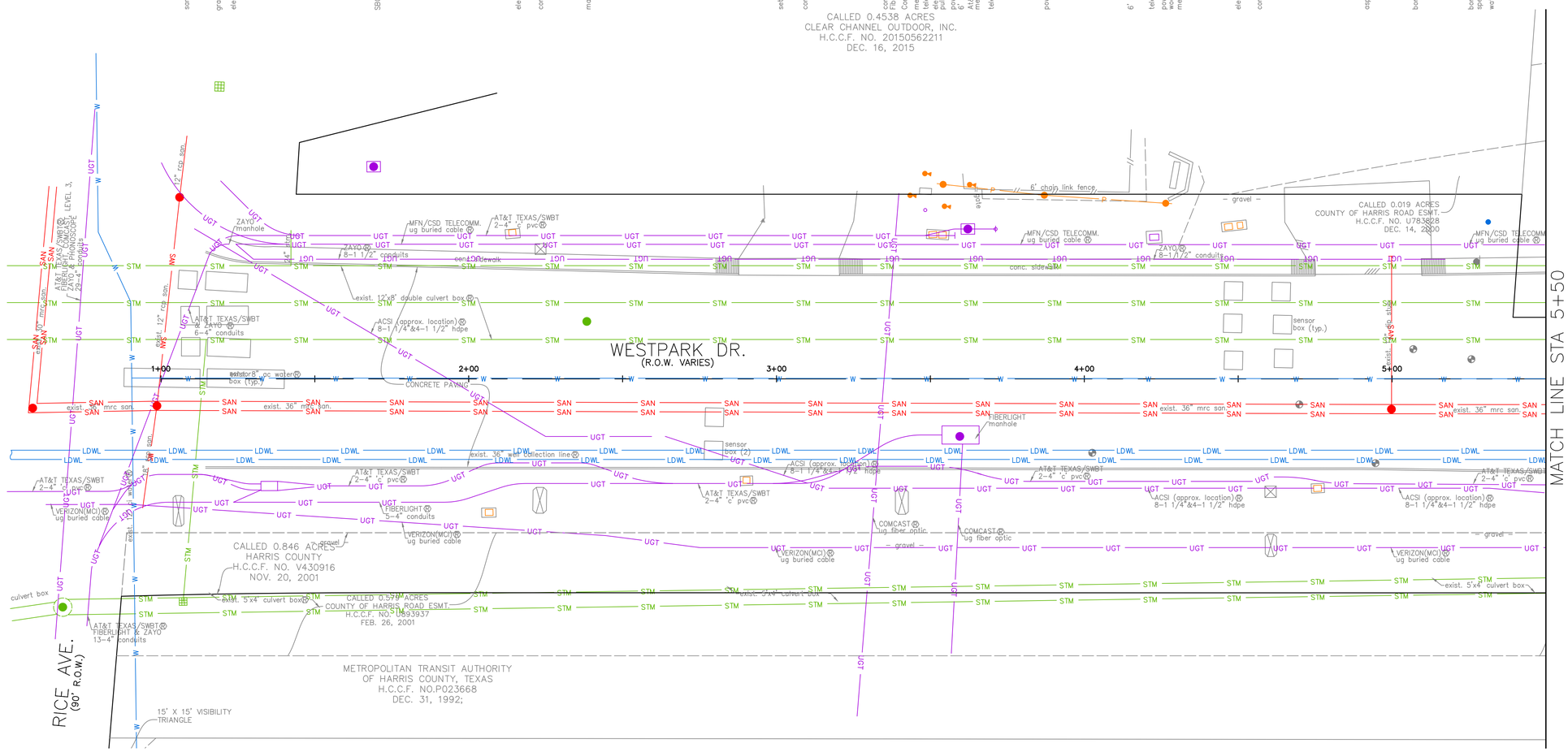

(SEE SHEET 128 FOR PROFILE)

N

0' 20' 40'

HORIZ:1"=20'
VERT:N/A

NO.	DATE	REVISION	APP.

BENCHMARK:
FLOODPLAIN REFERENCE MARK NUMBER 210295 IS AN HCFCD BRASS DISC STAMPED 210295 LOCATED ON CONCRETE STEP AT BAYOU AT SOUTH OF WESTHEIMER ROAD APPROXIMATELY 350 FEET EAST FROM THE INTERSECTION OF WINROCK BLVD IN KEYMAP 491S IN THE BUFFALO BAYOU WATERSHED

ELEV. 61.44 FEET NAVD 1988 2001 ADJUSTMENT
T.B.M.: B–152
FIND 'X' CUT ON CONC.
ELEV.=57.662
D. STA. 2+95.59 OFFSET: 51.35L

NOTES:

1. CONTRACTOR TO FIELD LOCATE EXISTING 36" WELL COLLECTION LINE PRIOR TO EXCAVATION FOR PROPOSED MANHOLE.
2. EXISTING LAYOUT IS BASED ON BEST INFORMATION AVAILABLE. CONTRACTOR TO VERIFY PIPE MATERIAL AND FIELD MEASURE ALL DIMENSIONS PRIOR TO ORDERING MATERIAL.
3. PAVEMENT REPLACEMENT SECTION SHALL BE:
   12" REINFORCED CONCRETE
   6" SAND BASE
4. SEE SHEETS 195-196 FOR PAVEMENT REPLACEMENT DETAILS

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.

Signature valid for six months.

Date

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities – not to be used for conflict verification)

Signature valid for six months.

Date

Approved for AT&T underground conduit facilities only.
Signature valid for one year.

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S
SUITE 400
HOUSTON, TX 77042

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F–2614

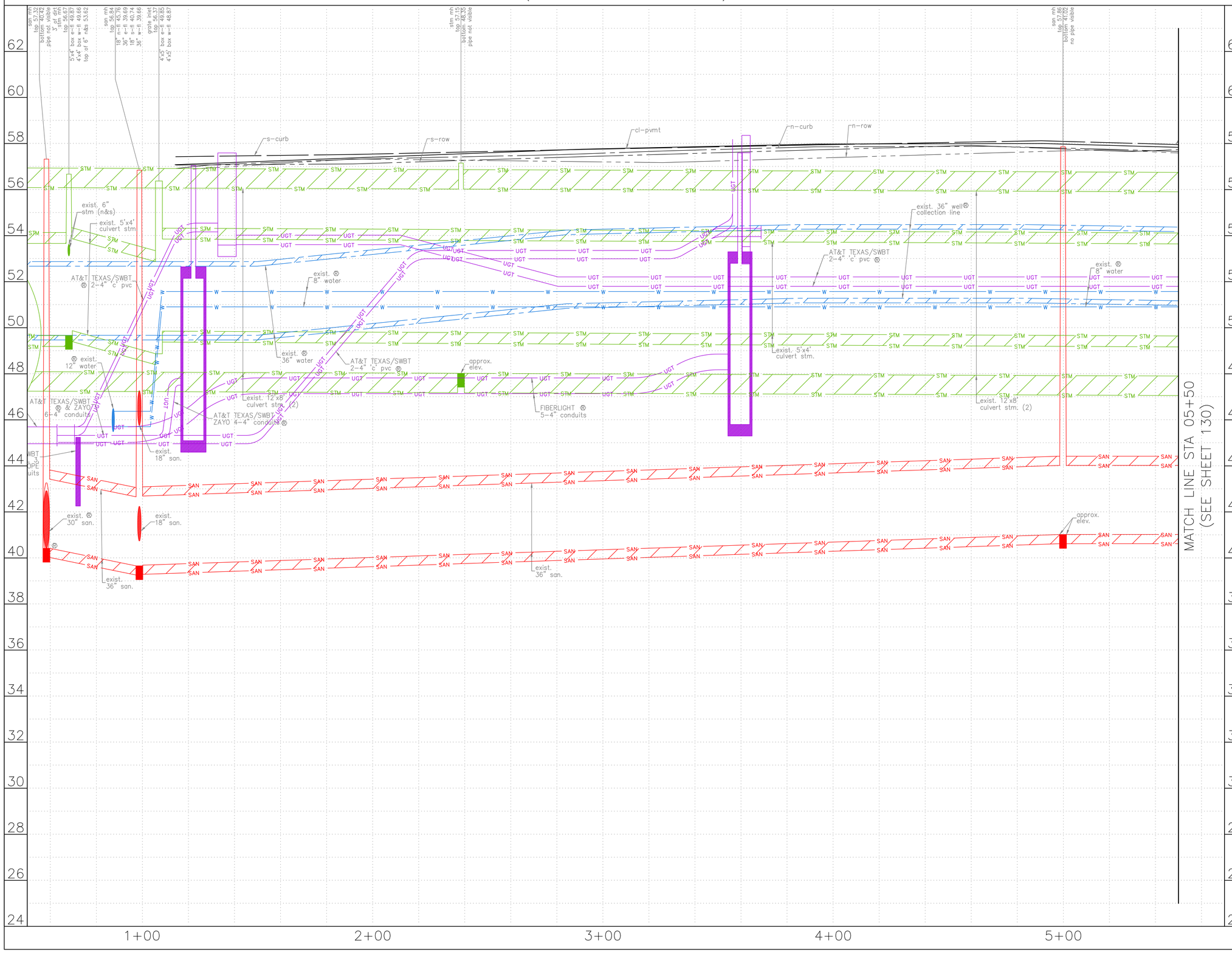
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
SITE 5 – WESTPARK DR
PLAN
BEGIN TO STA 5+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1" = 20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 127 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 5 – Westpark Dr.dwg plotted on Apr 03, 2025 – 8:28pm

(SEE SHEET 127 FOR PLAN)



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HORIZ:1"=20'
VERT:1"=2'

NO.	DATE	REVISION	APP.

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL
IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
SITE 5 – WESTPARK DR
PROFILE
BEGIN TO STA 5+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' V: 1" = 2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 128OF 244	

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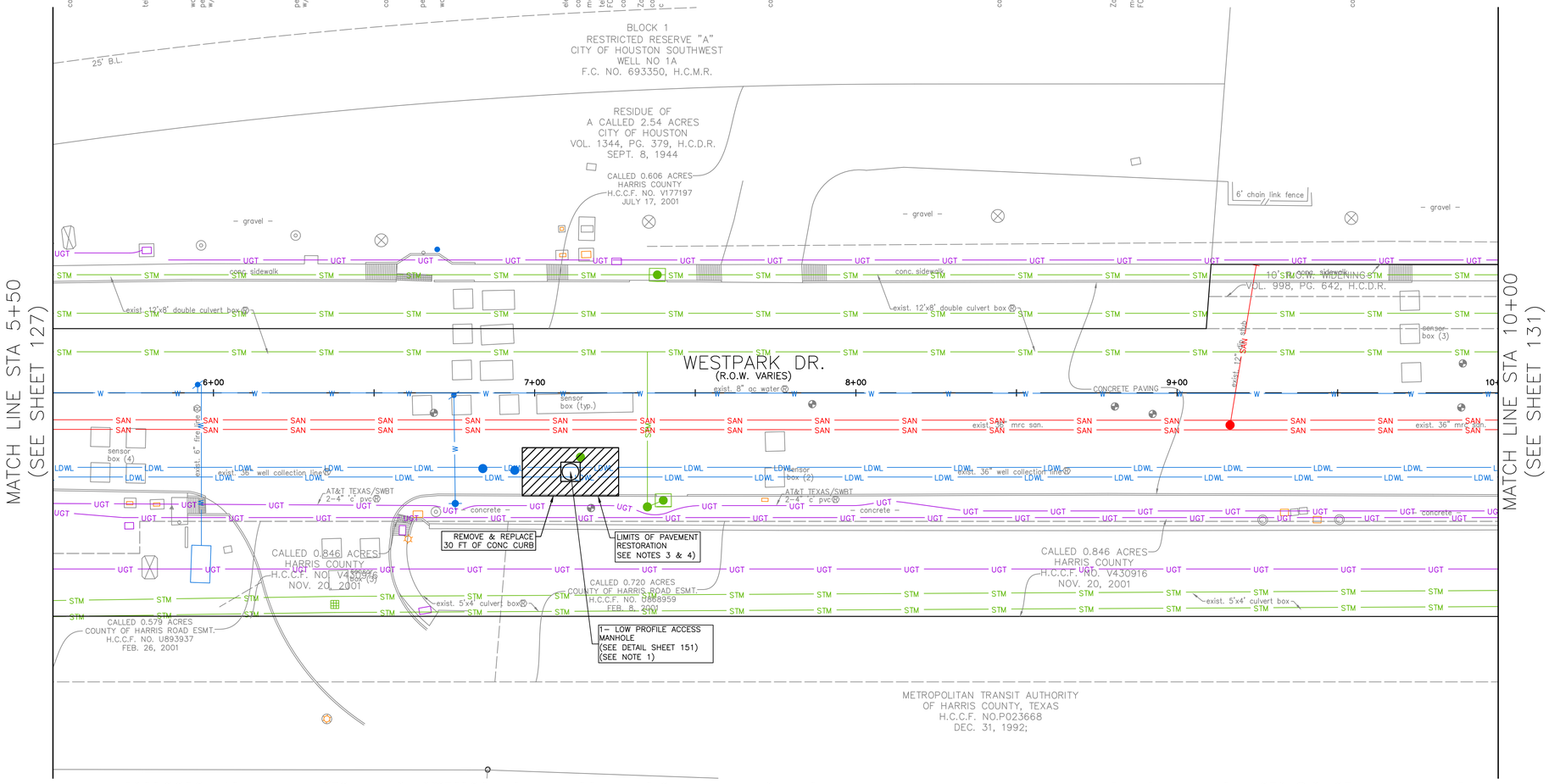

(SEE SHEET 130 FOR PROFILE)

N

0' 20' 40'

HORIZ:1"=20'
VERT:N/A

NO.	DATE	REVISION	APP.

BENCHMARK:
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ELEV. 61.44 FEET NAVD 1988 2001 ADJUSTMENT
T.B.M.: B-153
FIND 'X' CUT ON CONC.
ELEV.=58.053
D. STA. 5+87.01 OFFSET: 35.85R

NOTES:
1. CONTRACTOR TO FIELD LOCATE EXISTING 36" WELL COLLECTION LINE PRIOR TO EXCAVATION FOR PROPOSED MANHOLE.
2. EXISTING LAYOUT IS BASED ON BEST INFORMATION AVAILABLE. CONTRACTOR TO VERIFY PIPE MATERIAL AND FIELD MEASURE ALL DIMENSIONS PRIOR TO ORDERING MATERIAL.
3. PAVEMENT REPLACEMENT SECTION SHALL BE:
   12" REINFORCED CONCRETE
   6" SAND BASE
4. SEE SHEETS 195-196 FOR PAVEMENT REPLACEMENT DETAILS

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VERIFICATION OF PRIVATE UTILITY LINES

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Signature valid for six months.

Date

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Signature valid for six months.

Date

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Signature valid for one year.

LOCKWOOD, ANDREWS
& NEWNAM, INC.
3700 W SAM HOUSTON PKWY S
SUITE 400
HOUSTON, TX 77042

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Registration Number: 94776
Date: 02/23/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

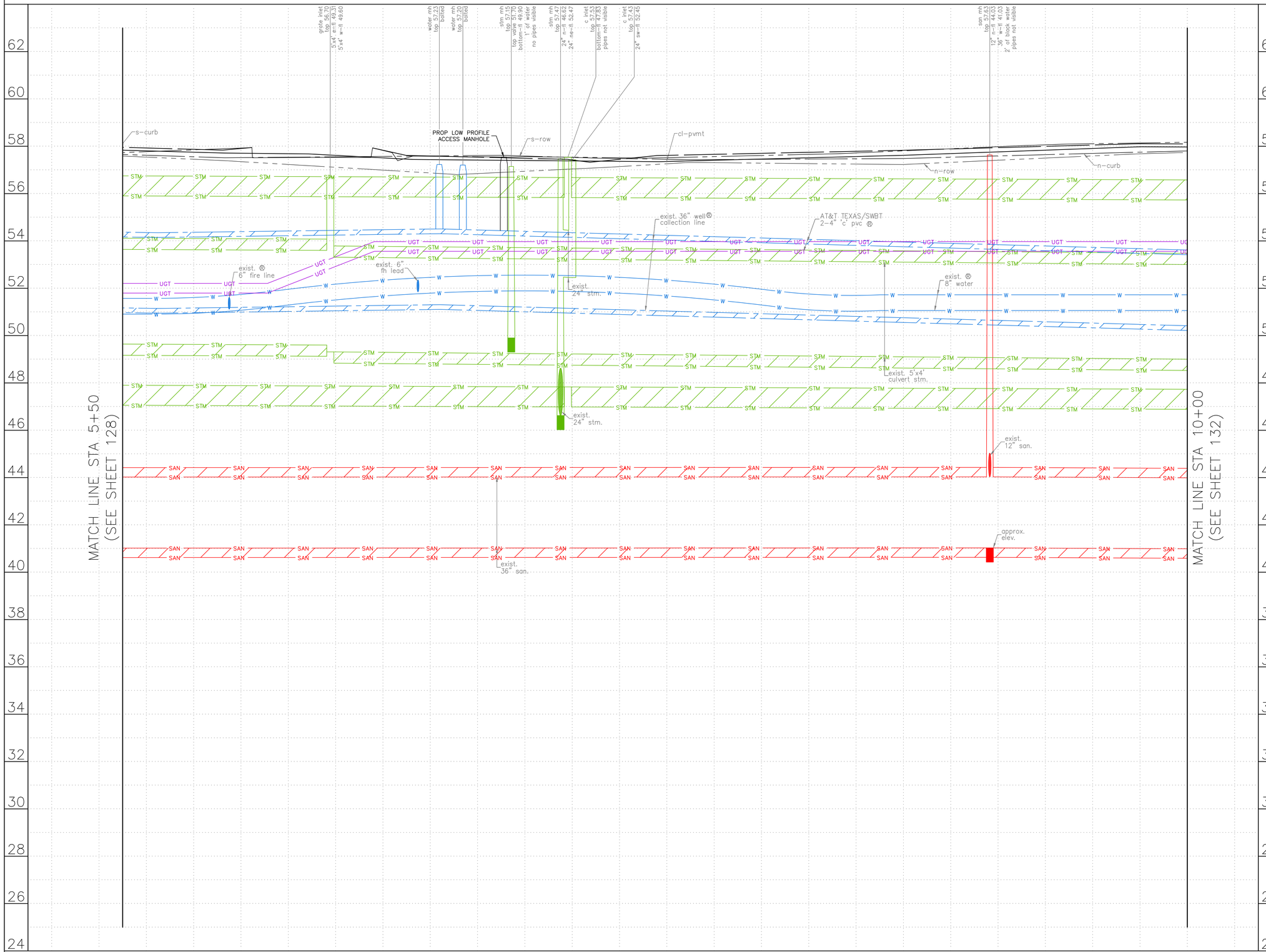
MISCELLANEOUS LDWL
IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 5 – WESTPARK DR
PLAN
STA 5+50 TO STA 10+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 129 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 5 - Westpark Dr.dwg plotted on Apr 03, 2025 - 8:28pm

(SEE SHEET 129 FOR PLAN)



0' 20' 40'
HORIZ:1"=20'
VERT:1"=2'

NO.	DATE	REVISION	APP.

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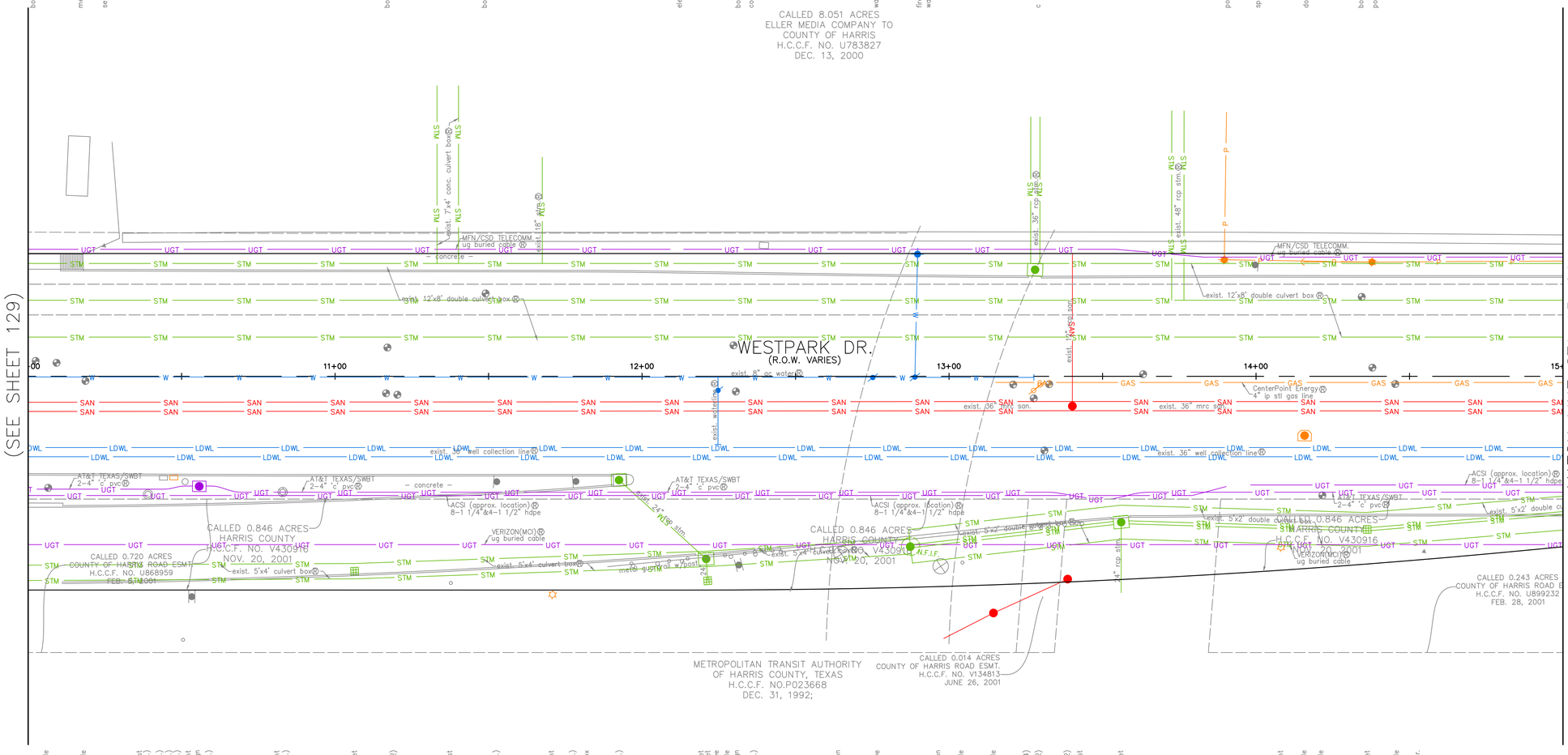

(SEE SHEET 132 FOR PROFILE)

N

0' 20' 40'
HORIZ:1"=20'
VERT:N/A

NO.	DATE	REVISION	APP.

BENCHMARK:
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ELEV. 61.44 FEET NAVD 1988 2001 ADJUSTMENT
T.B.M.: B-154 T.B.M.: B-155
FIND 'X' CUT ON CONC. SET 1/2" I.R. W/CAP
ELEV.=58.058 ELEV.=57.274
D. STA. 10+24.75 OFFSET: 42.31L 14+54.75 OFFSET: 57.09R

NOTES:
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL
IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
SITE 5 – WESTPARK DR
PLAN
STA 10+00 TO STA 15+00

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DRAWING SCALE	
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CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 131 OF 244	

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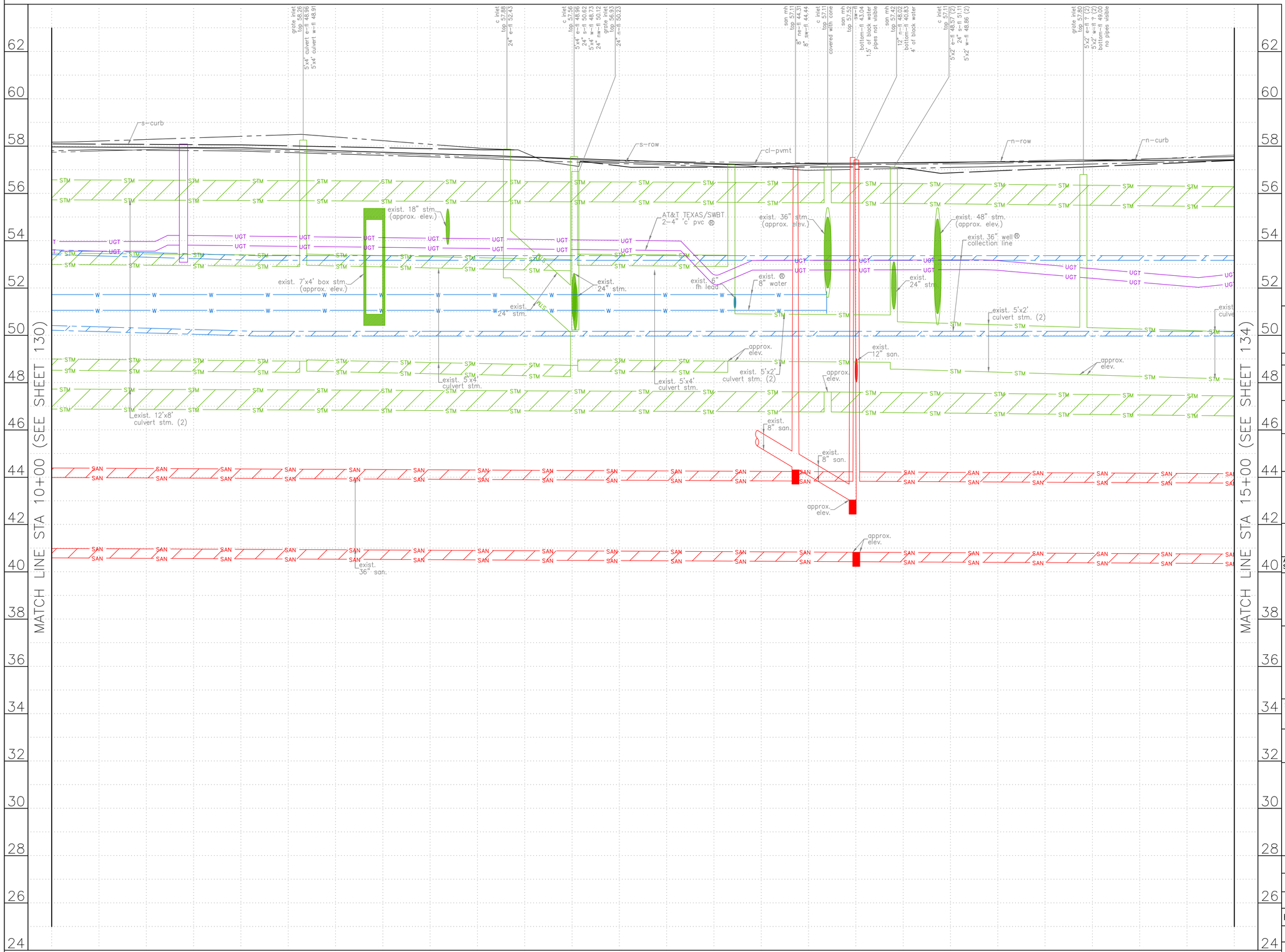
(SEE SHEET 131 FOR PLAN)



HORIZ:1"=20'
VERT:1"=2'

NO.	DATE	REVISION	APP.

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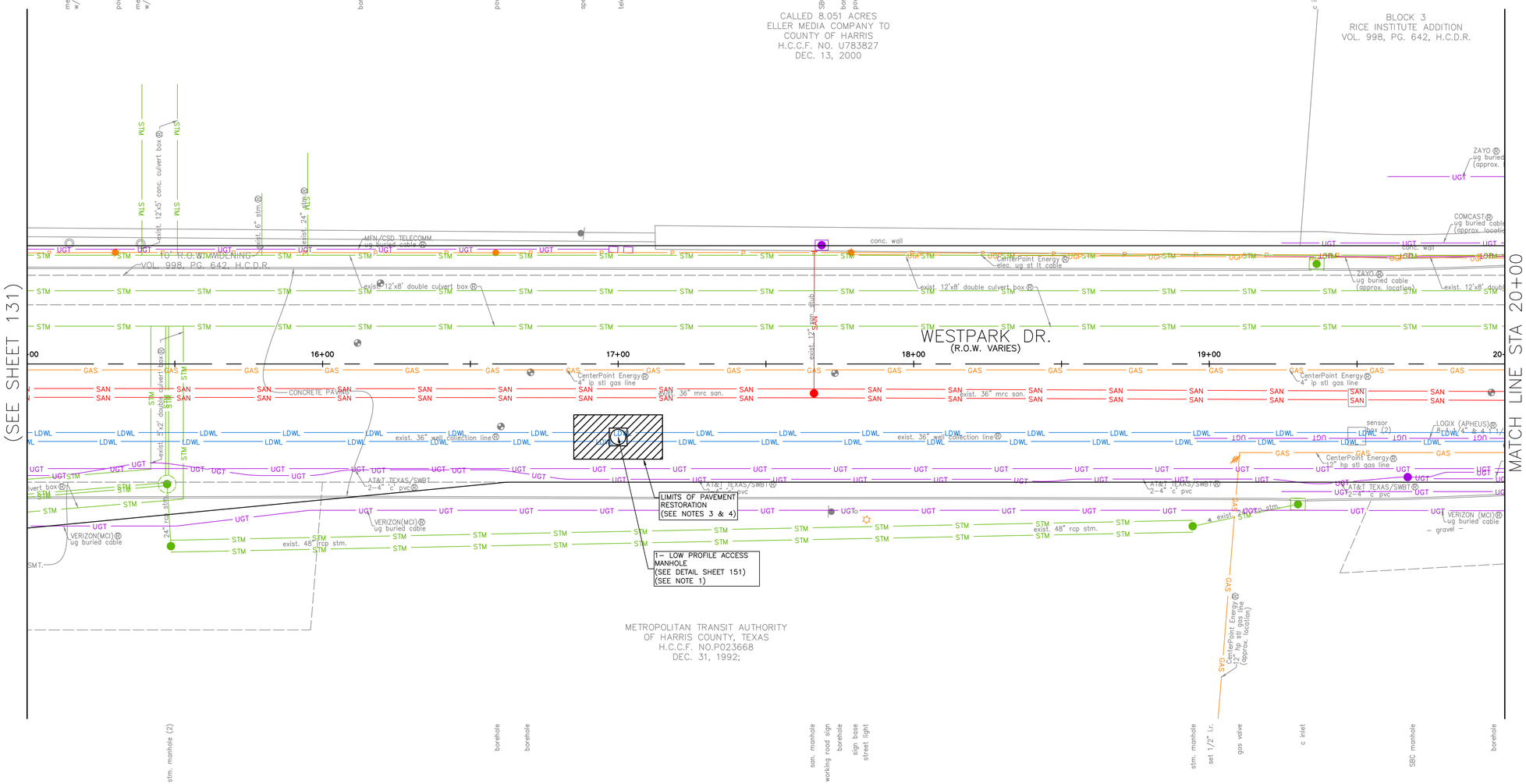
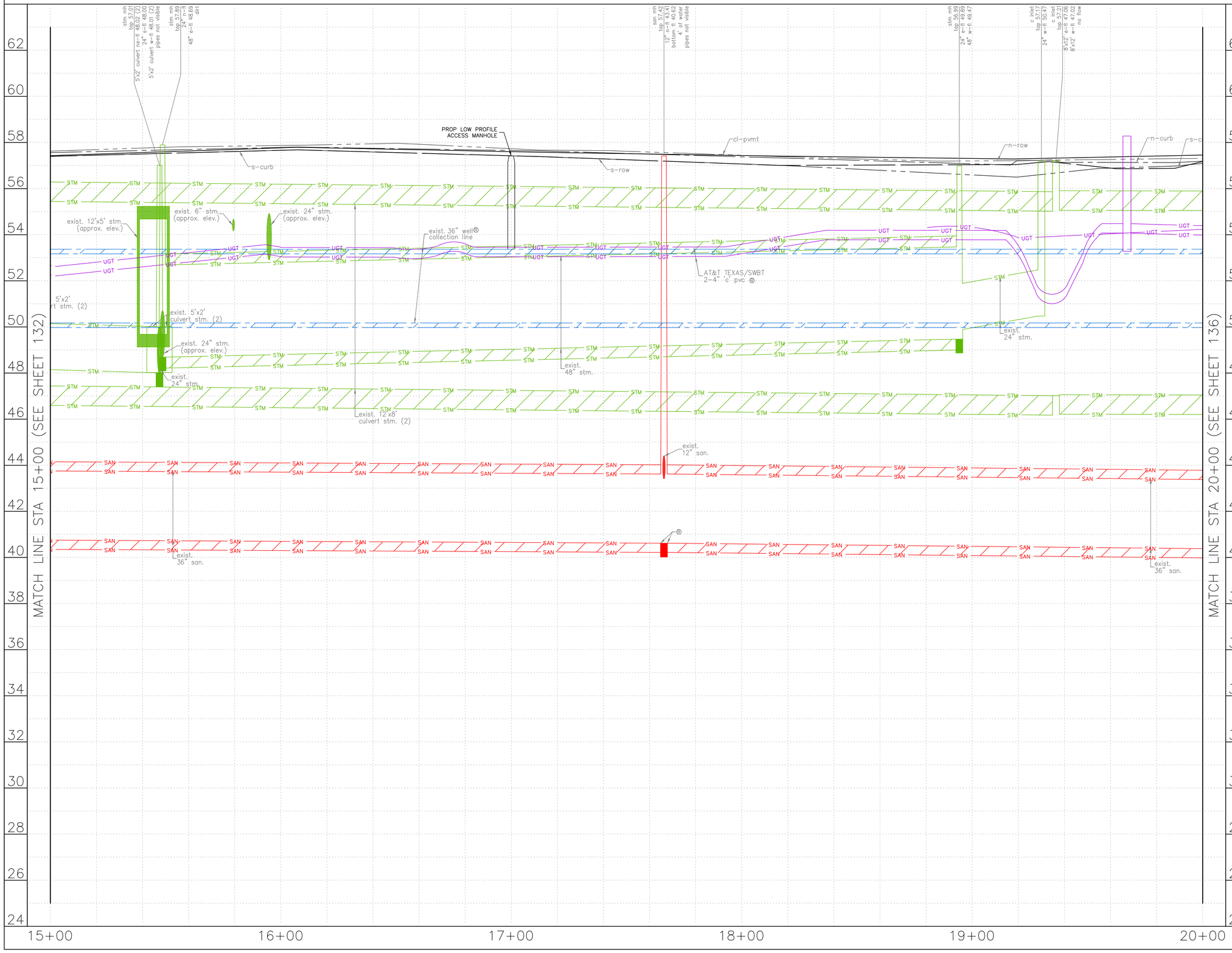

MATCH LINE STA 15+00
(SEE SHEET 131)
MATCH LINE STA 20+00
(SEE SHEET 135)
CALLED 8.051 ACRES
ELLER MEDIA COMPANY TO
COUNTY OF HARRIS
H.C.C.F. NO. U783827
DEC. 13, 2000
BLOCK 3
RICE INSTITUTE ADDITION
VOL. 998, PG. 642, H.C.D.R.
TO R.O.W. WIDENING
VOL. 998, PG. 642, H.C.D.R.
WESTPARK DR.
(R.O.W. VARIES)
15+00
16+00
17+00
18+00
19+00
20+00
CONCRETE PAVING
exist. 36" mrc san.
exist. 36" wet collection line
exist. 48" rcp stm.
exist. 12'x8' double culvert box
exist. 12'x5' double culvert box
exist. 12" SAN stub
LIMITS OF PAVEMENT RESTORATION (SEE NOTES 3 & 4)
1- LOW PROFILE ACCESS MANHOLE (SEE DETAIL SHEET 151) (SEE NOTE 1)
METROPOLITAN TRANSIT AUTHORITY
OF HARRIS COUNTY, TEXAS
H.C.C.F. NO.P023668
DEC. 31, 1992;
conc. wall
conc. curb
gravel
MFN/CSD TELECOMM. ug buried cable
CenterPoint Energy elec. ug st lt cable
CenterPoint Energy 4" ip stl gas line
CenterPoint Energy 12" hp stl gas line
CenterPoint Energy 4" hp stl gas line
AT&T TEXAS/SWBT 2-4" 'c' pvc
VERIZON(MCI) ug buried cable
ZAYO ug buried cable (approx. location)
COMCAST ug buried cable (approx. location)
LOGIX (APHEUS) 8 & 4 & 4 & 4

(SEE SHEET 133 FOR PLAN)



0' 20' 40'
HORIZ:1"=20'
VERT:1"=2'

NO.	DATE	REVISION	APP.

NOTES:

NOTICE:
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VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.

Signature valid for six months.

Date

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Signature valid for six months.

Date

Approved for AT&T underground conduit facilities only.
Signature valid for one year.

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S
SUITE 400
HOUSTON, TX 77042

INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of interim review under the authority of:
Engineer:CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 02/23/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

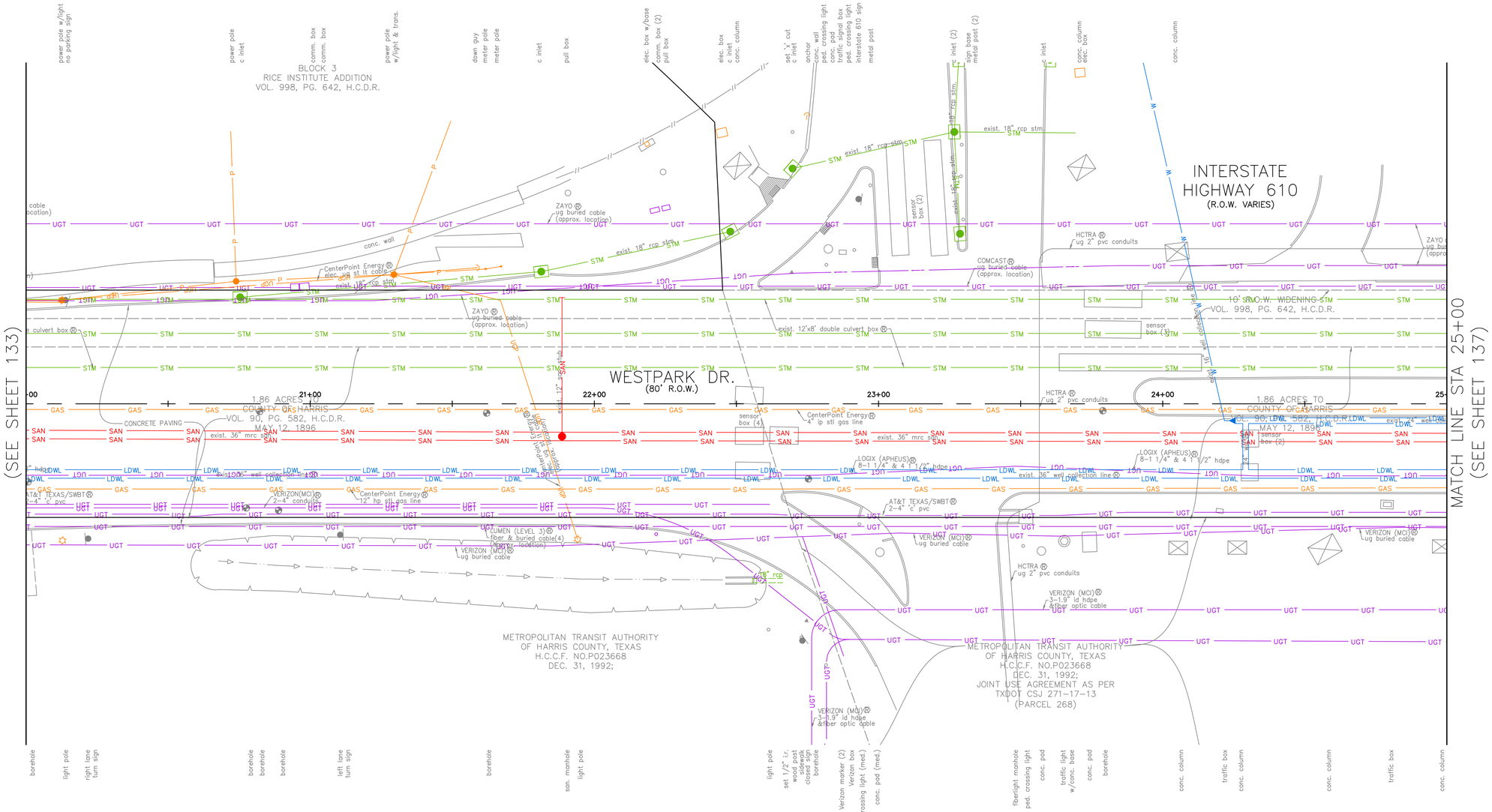
SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
SITE 5 – WESTPARK DR
PROFILE
STA 15+00 TO STA 20+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 134 OF	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 5 - Westpark Dr.dwg plotted on Apr 03, 2025 - 8:29pm



(SEE SHEET 136 FOR PROFILE)

N

0' 20' 40'

HORIZ:1"=20'
VERT:N/A

NO.	DATE	REVISION	APP.

BENCHMARK:
FLOODPLAIN REFERENCE MARK NUMBER 210295 IS AN HCFCD BRASS DISC STAMPED 210295 LOCATED ON CONCRETE STEP AT BAYOU AT SOUTH OF WESTHEIMER ROAD APPROXIMATELY 350 FEET EAST FROM THE INTERSECTION OF WINROCK BLVD IN KEYMAP 491S IN THE BUFFALO BAYOU WATERSHED

ELEV. 61.44 FEET NAVD 1988 2001 ADJUSTMENT
T.B.M.: B-23
SET 1/2" I.R. W/CAP
ELEV.=57.844
D. STA. 22+74.69 OFFSET: 76.43R

NOTES:

1. CONTRACTOR TO FIELD LOCATE EXISTING 36" WELL COLLECTION LINE PRIOR TO EXCAVATION FOR PROPOSED MANHOLE.
2. EXISTING LAYOUT IS BASED ON BEST INFORMATION AVAILABLE. CONTRACTOR TO VERIFY PIPE MATERIAL AND FIELD MEASURE ALL DIMENSIONS PRIOR TO ORDERING MATERIAL.
3. PAVEMENT REPLACEMENT SECTION SHALL BE:
   12" REINFORCED CONCRETE
   6" SAND BASE
4. SEE SHEETS 195-196 FOR PAVEMENT REPLACEMENT DETAILS

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

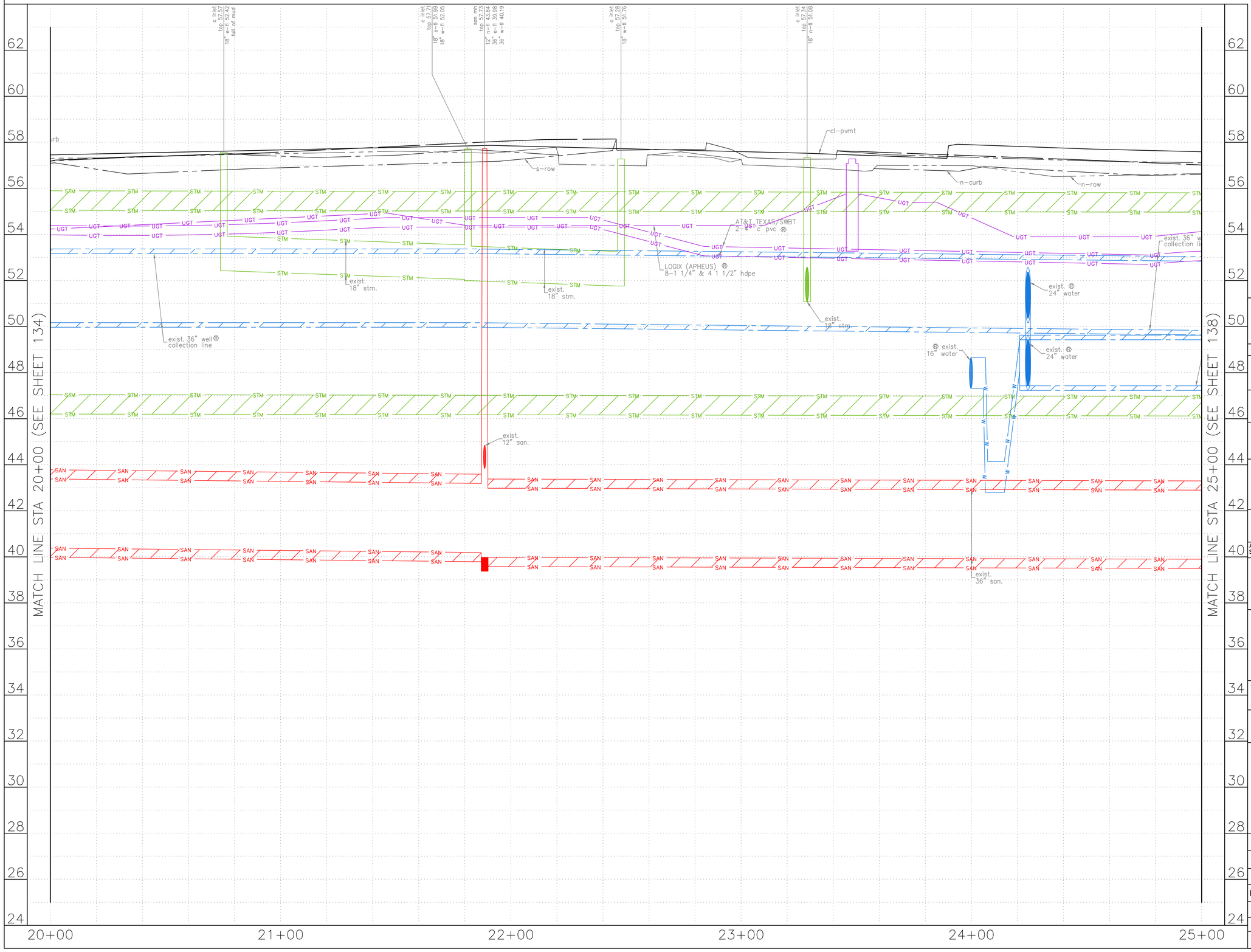
MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 5 – WESTPARK DR
PLAN
STA 20+00 TO STA 25+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 135 OF 244	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 5 - Westpark Dr.dwg plotted on Apr 03, 2025 - 8:29pm

(SEE SHEET 135 FOR PLAN)



0' 20' 40'
HORIZ:1"=20'
VERT:1"=2'

NO.	DATE	REVISION	APP.

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MISCELLANEOUS LDWL
IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
SITE 5 – WESTPARK DR
PROFILE
STA 20+00 TO STA 25+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1" = 20' V: 1" = 2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 136OF 244	

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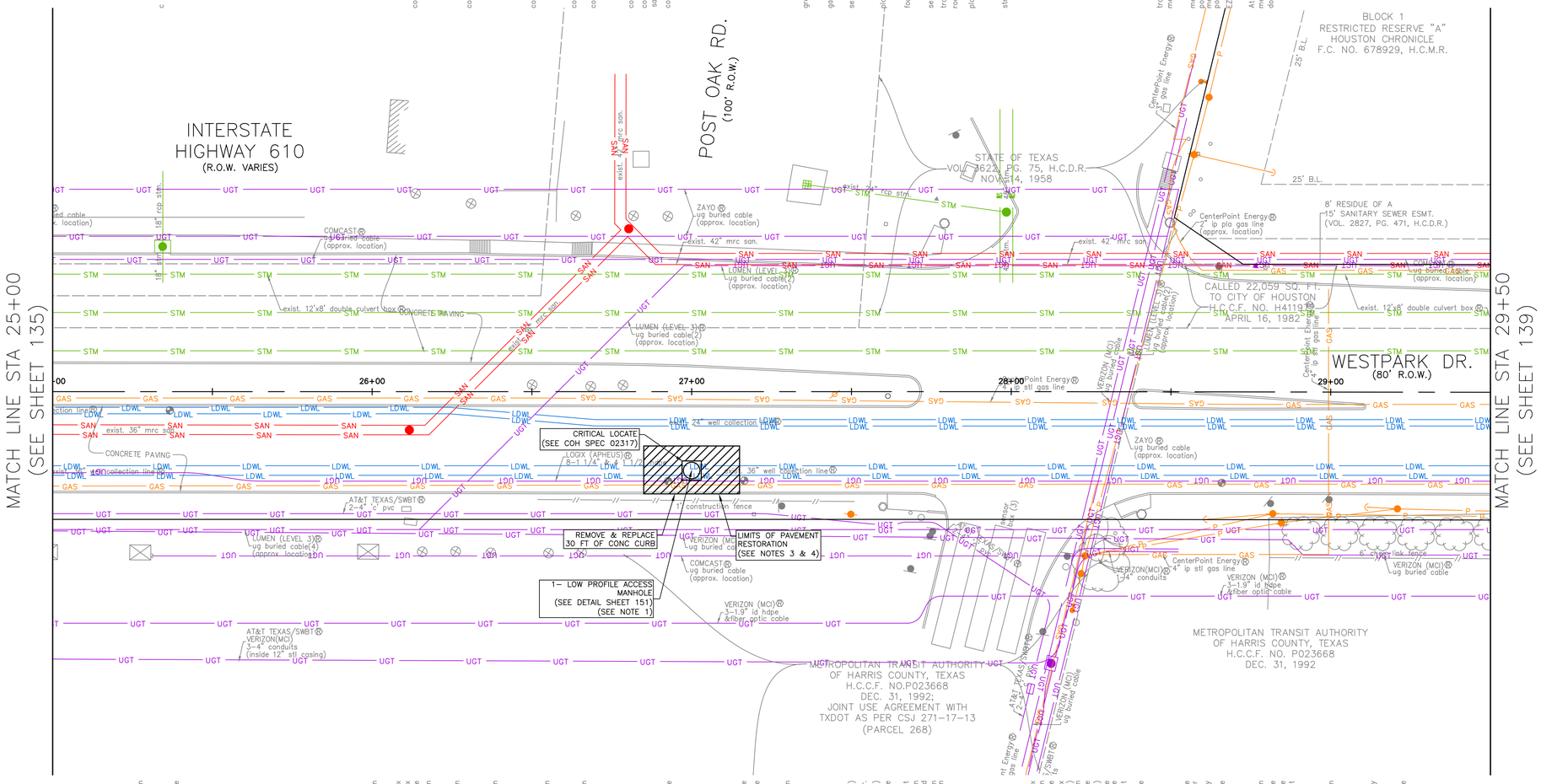
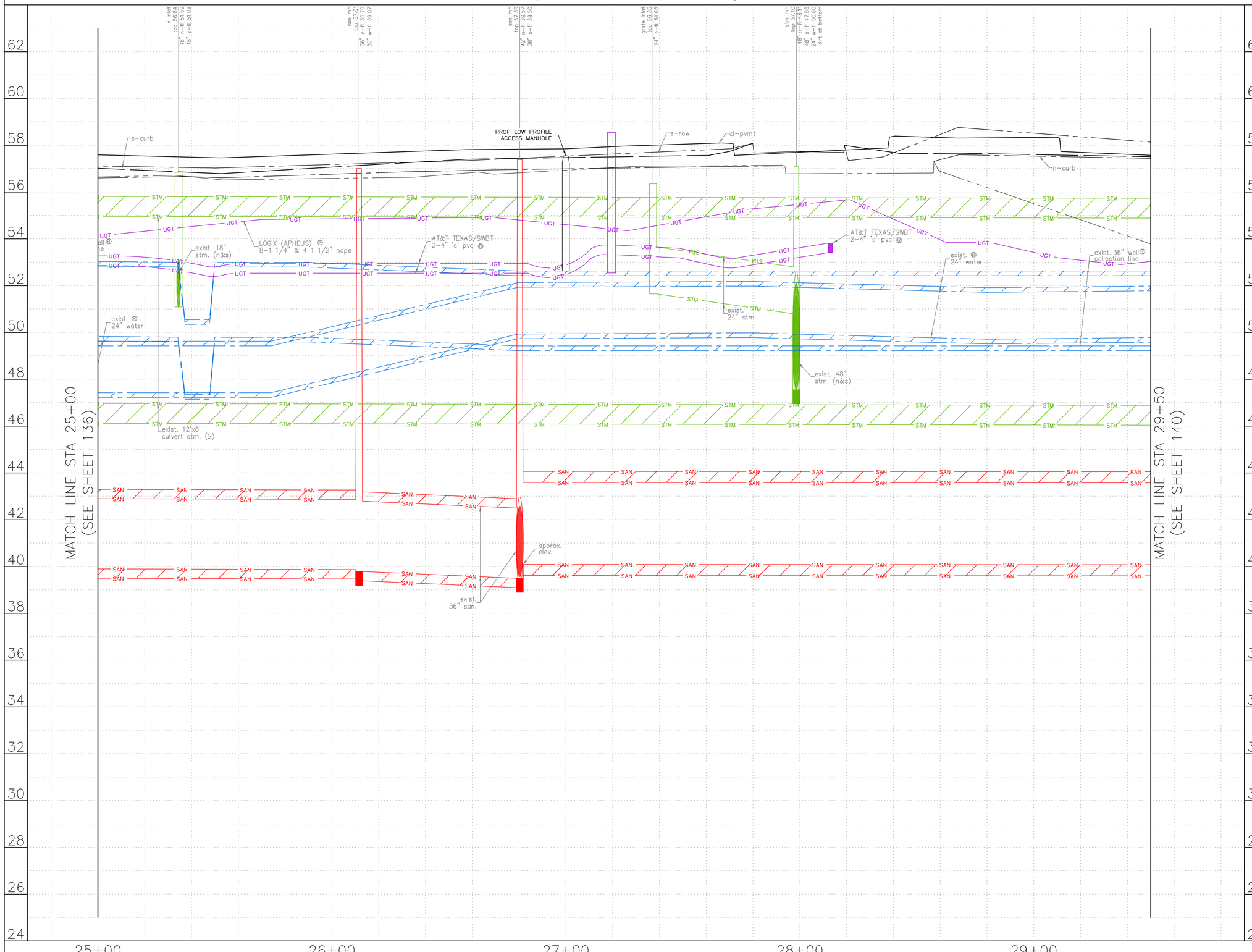

INTERSTATE HIGHWAY 610
(R.O.W. VARIES)
POST OAK RD.
(100' R.O.W.)
WESTPARK DR.
(80' R.O.W.)
MATCH LINE STA 25+00
(SEE SHEET 135)
MATCH LINE STA 29+50
(SEE SHEET 139)
STATE OF TEXAS
VOL. 3622, PG. 75, H.C.D.R.
NOV. 14, 1958
BLOCK 1
RESTRICTED RESERVE "A"
HOUSTON CHRONICLE
F.C. NO. 678929, H.C.M.R.
CALLED 22,059 SQ. FT.
TO CITY OF HOUSTON
H.C.C.F. NO. H411911
APRIL 16, 1982
METROPOLITAN TRANSIT AUTHORITY
OF HARRIS COUNTY, TEXAS
H.C.C.F. NO.P023668
DEC. 31, 1992;
JOINT USE AGREEMENT WITH
TXDOT AS PER CSJ 271-17-13
(PARCEL 268)
METROPOLITAN TRANSIT AUTHORITY
OF HARRIS COUNTY, TEXAS
H.C.C.F. NO. P023668
DEC. 31, 1992
CRITICAL LOCATE
(SEE COH SPEC 02317)
REMOVE & REPLACE
30 FT OF CONC CURB
LIMITS OF PAVEMENT
RESTORATION
(SEE NOTES 3 & 4)
1- LOW PROFILE ACCESS
MANHOLE
(SEE DETAIL SHEET 151)
(SEE NOTE 1)
CONCRETE PAVING
exist. 12'x8' double culvert box
exist. 36" mrc san.
exist. 42" mrc san.
exist. 24" rcp stm.
exist. 18" rcp stm.
exist. 15" san
exist. 10" san
exist. 8" san
exist. 6" san
exist. 4" san
exist. 12" san
exist. 8" stm
exist. 10" stm
exist. 15" stm
exist. 18" stm
exist. 24" stm
exist. 30" stm
exist. 36" stm
exist. 42" stm
exist. 48" stm
exist. 54" stm
exist. 60" stm
exist. 66" stm
exist. 72" stm
exist. 84" stm
exist. 96" stm
exist. 108" stm
exist. 120" stm
exist. 132" stm
exist. 144" stm
exist. 156" stm
exist. 168" stm
exist. 180" stm
exist. 192" stm
exist. 204" stm
exist. 216" stm
exist.

(SEE SHEET 137 FOR PLAN)



0' 20' 40'
HORIZ:1"=20'
VERT:1"=2'

NO.	DATE	REVISION	APP.

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VERIFICATION OF PRIVATE UTILITY LINES

Date

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Signature valid for six months.

Date

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Date

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Signature valid for one year.

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S
SUITE 400
HOUSTON, TX 77042

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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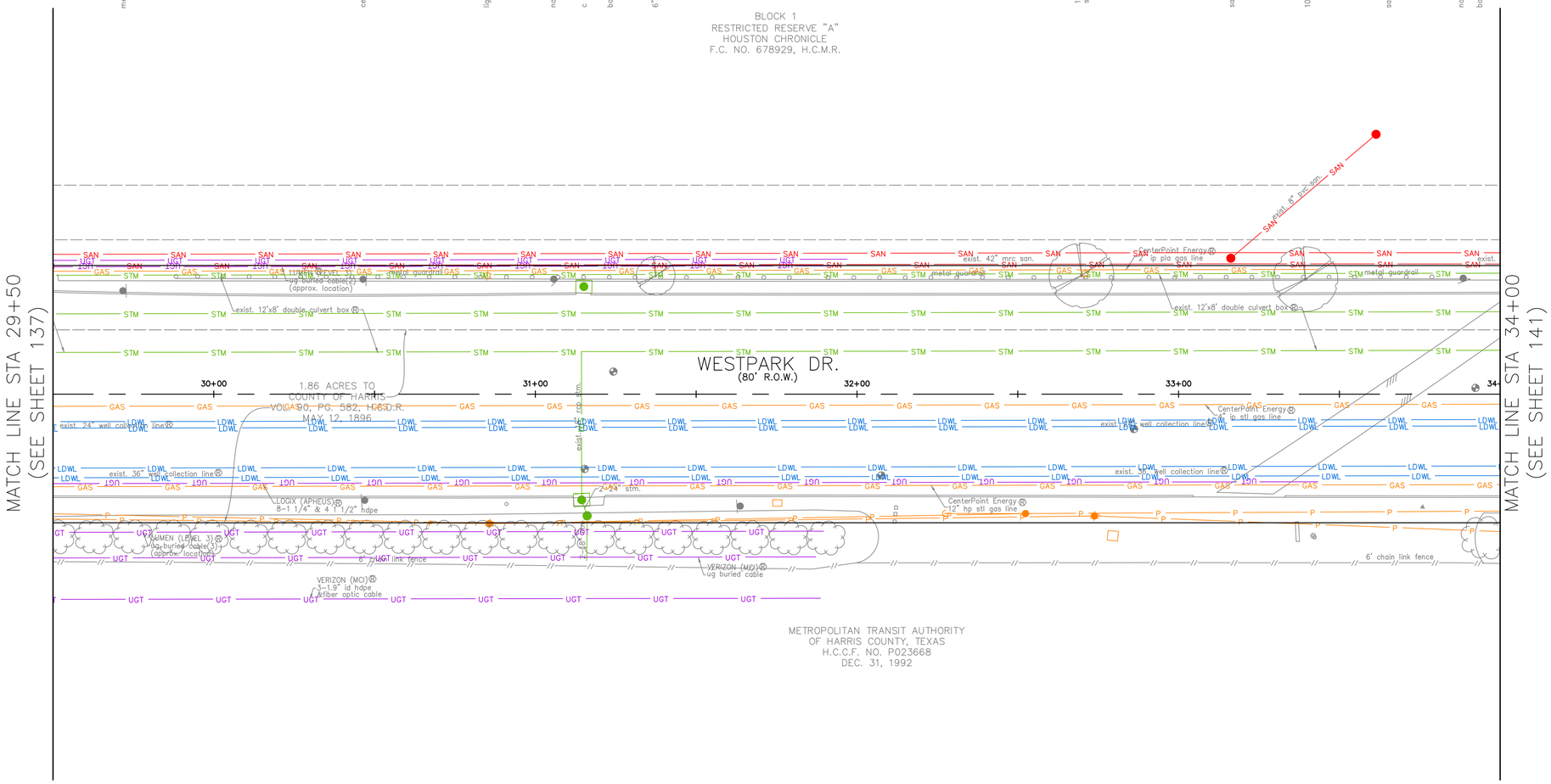
Registration Number: 94776
Date: 02/23/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
SITE 5 – WESTPARK DR
PROFILE
STA 25+00 TO STA 29+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 138 OF	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 5 - Westpark Dr.dwg plotted on Apr 03, 2025 - 8:29pm



(SEE SHEET 140 FOR PROFILE)

N

0' 20' 40'

HORIZ:1"=20'
VERT:N/A

NO.	DATE	REVISION	APP.

BENCHMARK:
FLOODPLAIN REFERENCE MARK NUMBER 210295 IS AN HCFCD BRASS DISC STAMPED 210295 LOCATED ON CONCRETE STEP AT BAYOU AT SOUTH OF WESTHEIMER ROAD APPROXIMATELY 350 FEET EAST FROM THE INTERSECTION OF WINROCK BLVD IN KEYMAP 491S IN THE BUFFALO BAYOU WATERSHED

ELEV. 61.44 FEET NAVD 1988 2001 ADJUSTMENT
T.B.M.: B-160
SET 1/2" I.R. W/CAP
ELEV.=59.318
D. STA. 33+75.87 OFFSET: 35.13R

NOTES:

1. CONTRACTOR TO FIELD LOCATE EXISTING 36" WELL COLLECTION LINE PRIOR TO EXCAVATION FOR PROPOSED MANHOLE.
2. EXISTING LAYOUT IS BASED ON BEST INFORMATION AVAILABLE. CONTRACTOR TO VERIFY PIPE MATERIAL AND FIELD MEASURE ALL DIMENSIONS PRIOR TO ORDERING MATERIAL.
3. PAVEMENT REPLACEMENT SECTION SHALL BE:
   12" REINFORCED CONCRETE
   6" SAND BASE
4. SEE SHEETS 195-196 FOR PAVEMENT REPLACEMENT DETAILS

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HOUSTON, TX 77042

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Engineer CHRISTINE H. KIRBY, PE
Registration Number 94776
Date 02/23/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

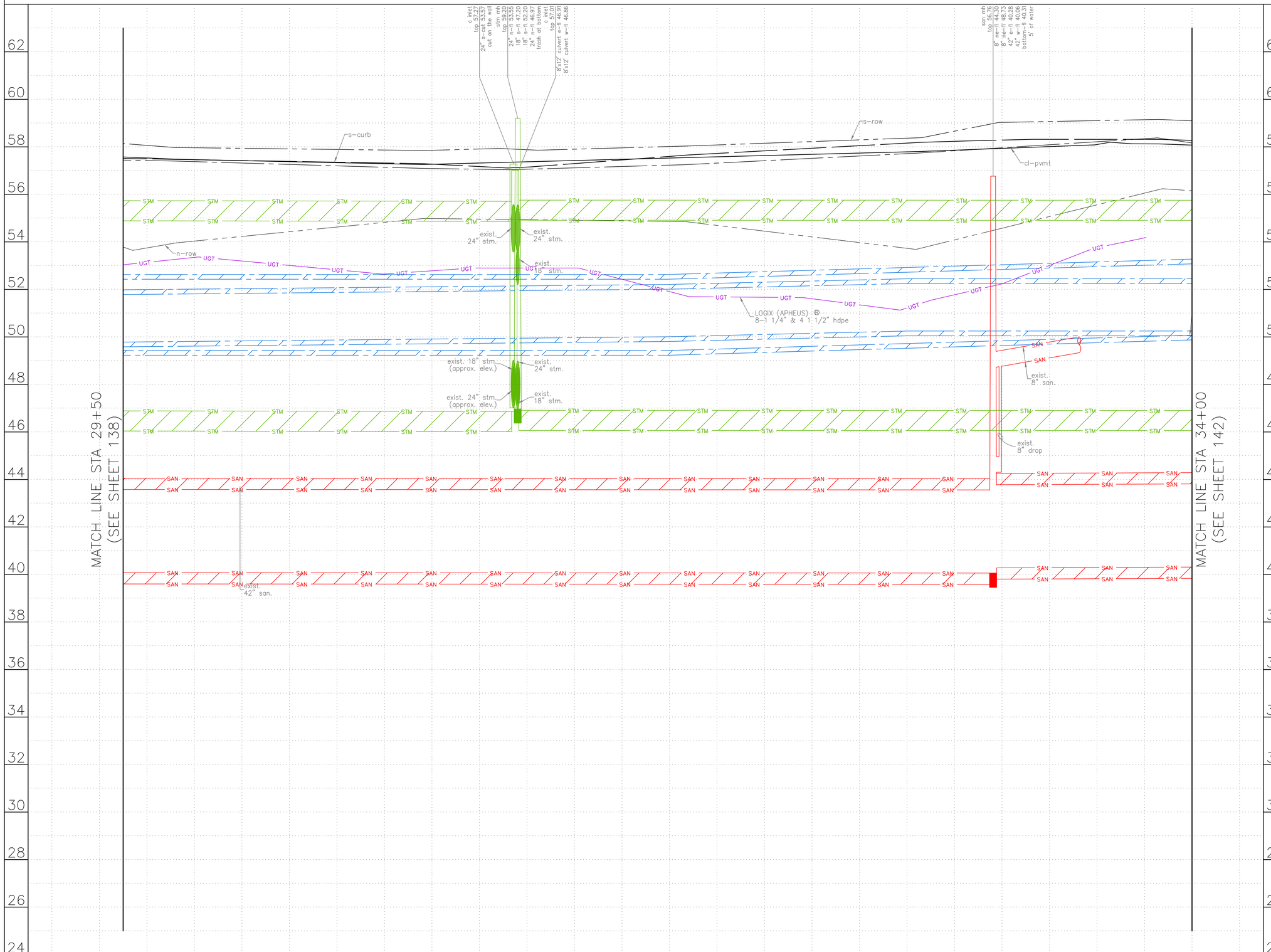
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
SITE 5 – WESTPARK DR PLAN
STA 29+50 TO STA 34+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 139 OF	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 5 – Westpark Dr.dwg plotted on Apr 03, 2025 – 8:29pm

(SEE SHEET 139 FOR PLAN)



0' 20' 40'
HORIZ:1"=20'
VERT:1"=2'

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HOUSTON PUBLIC WORKS

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SITE 5 – WESTPARK DR
PROFILE
STA 29+50 TO STA 34+00

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DRAWING SCALE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. **140** OF	

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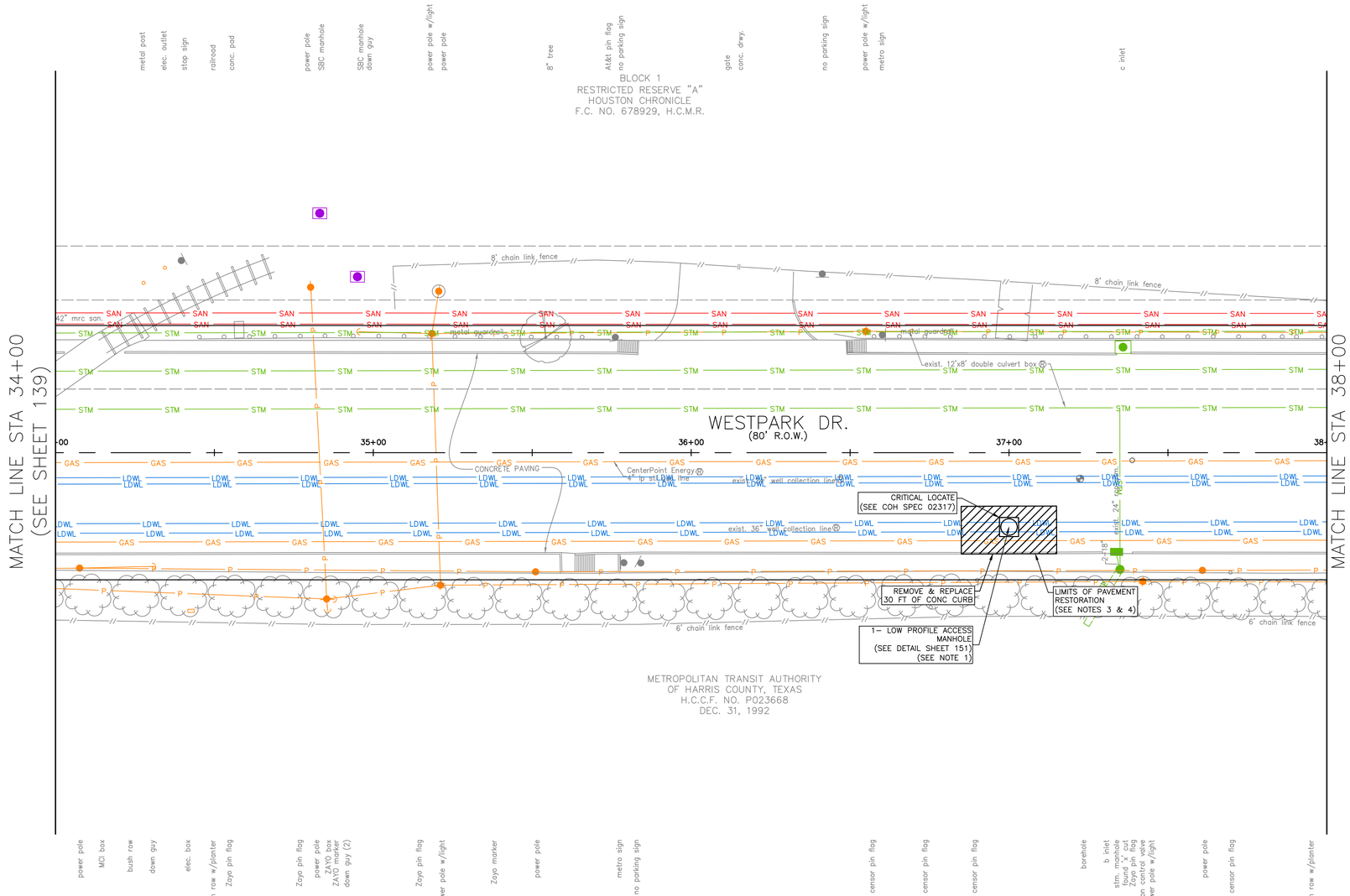

(SEE SHEET 142 FOR PROFILE)

N

0' 20' 40'
HORIZ:1"=20'
VERT:N/A

NO.	DATE	REVISION	APP.

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL
IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
SITE 5 – WESTPARK DR
PLAN
STA 34+00 TO STA 38+00

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S-000701-0041-3	
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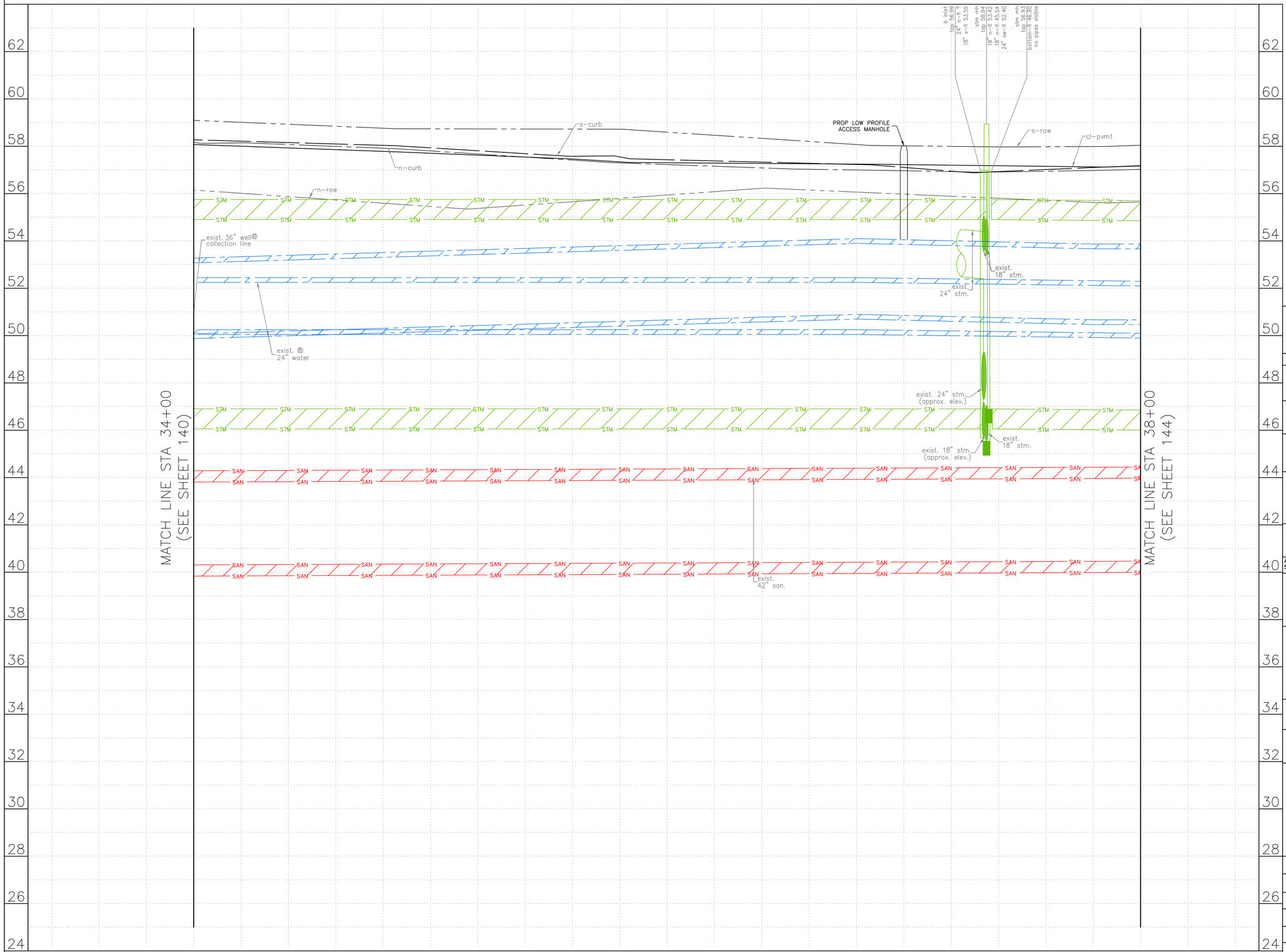
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 141 OF	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 5 - Westpark Dr.dwg plotted on Apr 03, 2025 - 8:30pm

(SEE SHEET 141 FOR PLAN)



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VERT:1"=2'

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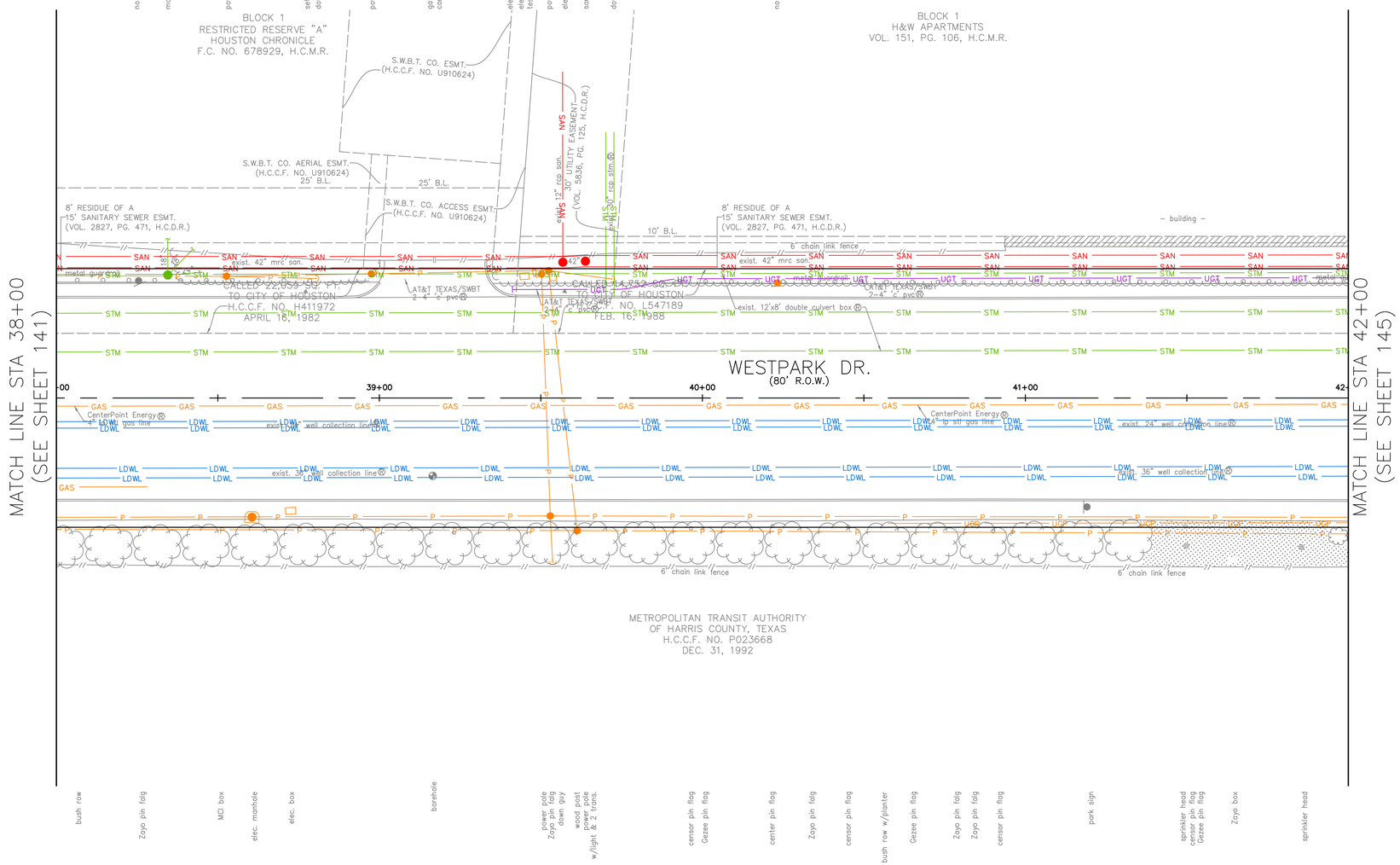
DRAWING SCALE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. **142** OF	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 5 - Westport Dr.dwg plotted on Apr 03, 2025 - 8:30pm



(SEE SHEET 144 FOR PROFILE)

N

0' 20' 40'
HORIZ:1"=20'
VERT:N/A

NO.	DATE	REVISION	APP.

BENCHMARK:
FLOODPLAIN REFERENCE MARK NUMBER 210295 IS AN HCFCD BRASS DISC STAMPED 210295 LOCATED ON CONCRETE STEP AT BAYOU AT SOUTH OF WESTHEIMER ROAD APPROXIMATELY 350 FEET EAST FROM THE INTERSECTION OF WINROCK BLVD IN KEYMAP 491S IN THE BUFFALO BAYOU WATERSHED

ELEV. 61.44 FEET NAVD 1988 2001 ADJUSTMENT
T.B.M.: B-161
SET 'X' CUT ON CONC.
ELEV.=57.399
D. STA. 38+77.18 OFFSET: 32.87L

NOTES:
1. CONTRACTOR TO FIELD LOCATE EXISTING 36" WELL COLLECTION LINE PRIOR TO EXCAVATION FOR PROPOSED MANHOLE.
2. EXISTING LAYOUT IS BASED ON BEST INFORMATION AVAILABLE. CONTRACTOR TO VERIFY PIPE MATERIAL AND FIELD MEASURE ALL DIMENSIONS PRIOR TO ORDERING MATERIAL.
3. PAVEMENT REPLACEMENT SECTION SHALL BE:
   12" REINFORCED CONCRETE
   6" SAND BASE
4. SEE SHEETS 195-196 FOR PAVEMENT REPLACEMENT DETAILS

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.

Signature valid for six months.

Date

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities – not to be used for conflict verification)

Signature valid for six months.

Date

Approved for AT&T underground conduit facilities only.
Signature valid for one year.

LOCKWOOD, ANDREWS
& NEWNAM, INC.
3700 W SAM HOUSTON PKWY S
SUITE 400
HOUSTON, TX 77042

INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of interim review under the authority of:
Engineer CHRISTINE H. KIRBY, PE
Registration Number 94776
Date: 02/23/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL
IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
SITE 5 – WESTPARK DR
PLAN
STA 38+00 TO STA 42+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 143 OF	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 5 – Westpark Dr.dwg plotted on Apr 03, 2025 – 8:30pm

(SEE SHEET 143 FOR PLAN)

stm. mh
top- 56.36
18" n-in 50.68
18" n-out 50.66
24" e-in 50.06

san. mh
top- 56.27
12" n-in 43.77
bottom-in 40.53
4" of black water

san. mh
top- 56.12
bottom-in 40.74
4" of black water
pipes not visible

s-curb

n-curb

n-row

exist. 36" well ®
collection line

exist. 18"
stm. (n&ne)

exist. ®
24" water

UGT

AT&T TEXAS/SWBT
2-4" "c" pvc ®

exist.
24" stm.

exist.
12" san.

exist. 12'x8'
culvert stm. (2)

exist.
42" san.

exist.
42" san.

MATCH LINE STA 38+00
(SEE SHEET 142)

MATCH LINE STA 42+00
(SEE SHEET 146)

62 60 58 56 54 52 50 48 46 44 42 40 38 36 34 32 30 28 26 24

38+00 39+00 40+00 41+00 42+00

0' 20' 40'
HORIZ:1"=20'
VERT:1"=2'

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HOUSTON, TX 77042

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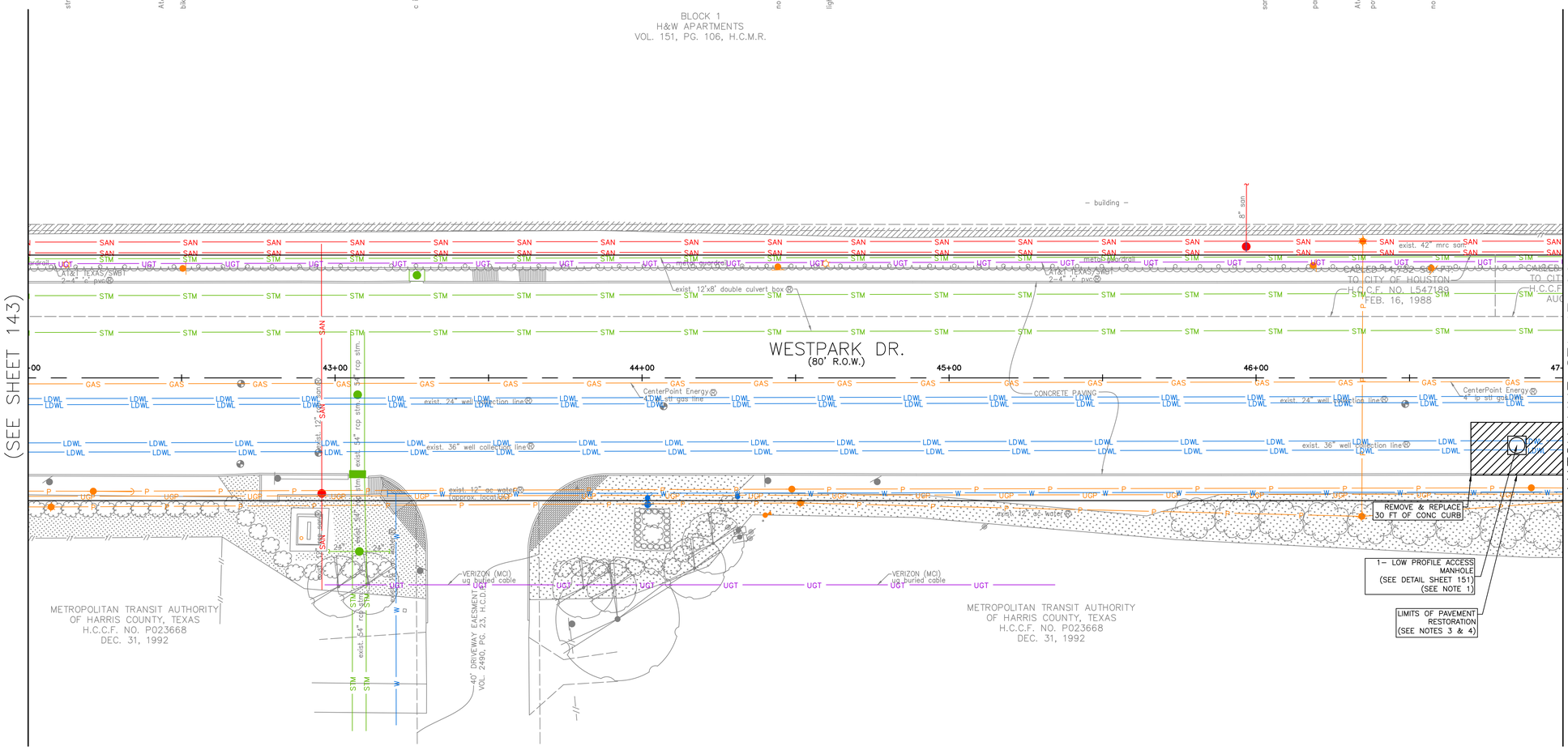
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL
IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
SITE 5 – WESTPARK DR
PROFILE
STA 38+00 TO STA 42+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. **144** OF	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheet-Site 5 - Westpark Dr.dwg plotted on Apr 03, 2025 - 8:30pm



(SEE SHEET 146 FOR PROFILE)

N

0' 20' 40'
HORIZ:1"=20'
VERT:N/A

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ELEV. 61.44 FEET NAVD 1988 2001 ADJUSTMENT
T.B.M.: B–162
SET 'X' CUT ON CONC.
ELEV.=57.334
D. STA. 43+78.81 OFFSET: 35.82R

NOTES:
1. CONTRACTOR TO FIELD LOCATE EXISTING 36" WELL COLLECTION LINE PRIOR TO EXCAVATION FOR PROPOSED MANHOLE.
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Signature valid for one year.

LAN

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& NEWNAM, INC.
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SUITE 400
HOUSTON, TX 77042

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL
IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
SITE 5 – WESTPARK DR
PLAN
STA 42+00 TO STA 47+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 145 OF	

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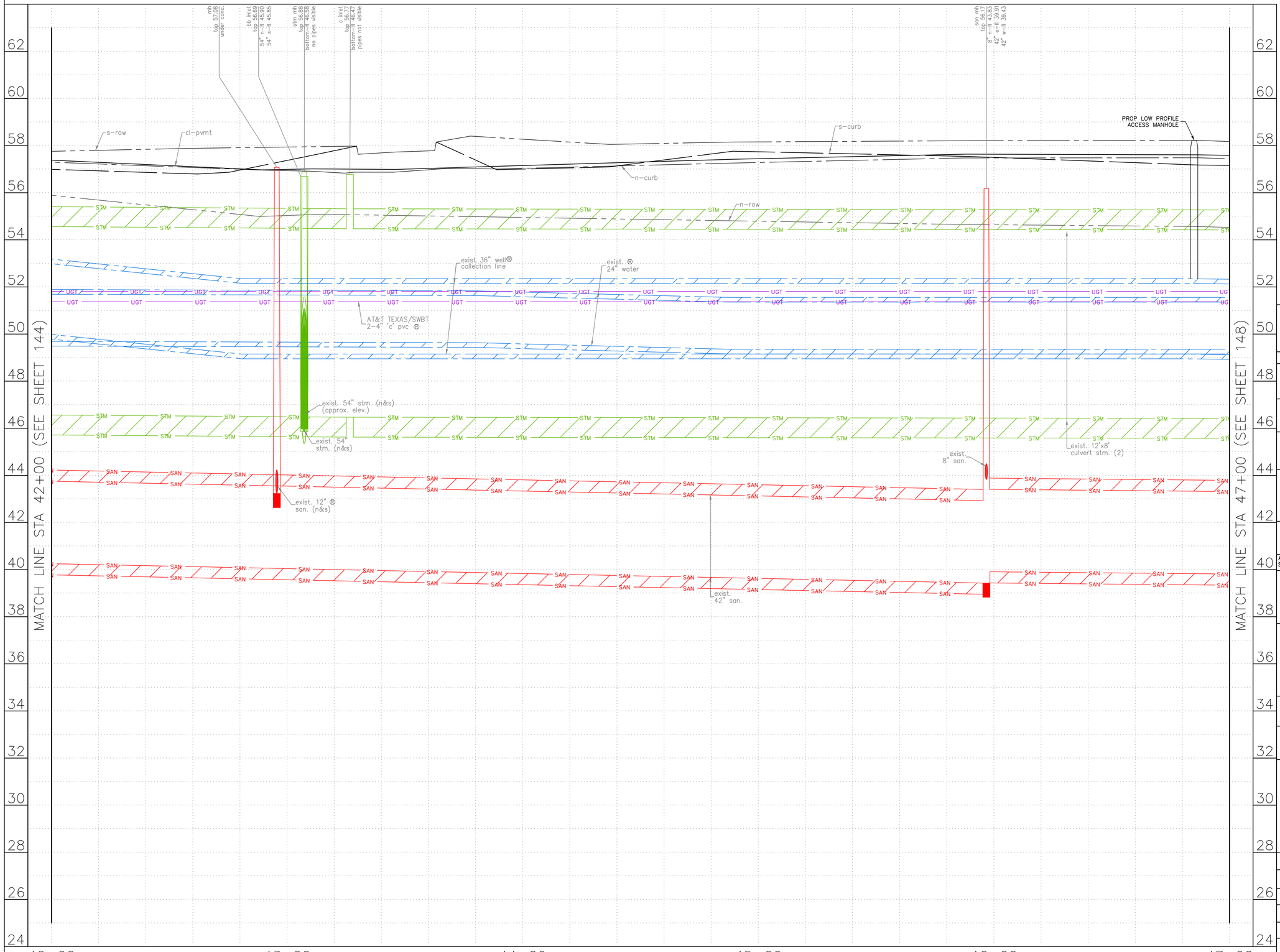
(SEE SHEET 145 FOR PLAN)



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HORIZ:1"=20'
VERT:1"=2'

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL
IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 5 – WESTPARK DR
PROFILE
STA 42+00 TO STA 47+00

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 146 OF	

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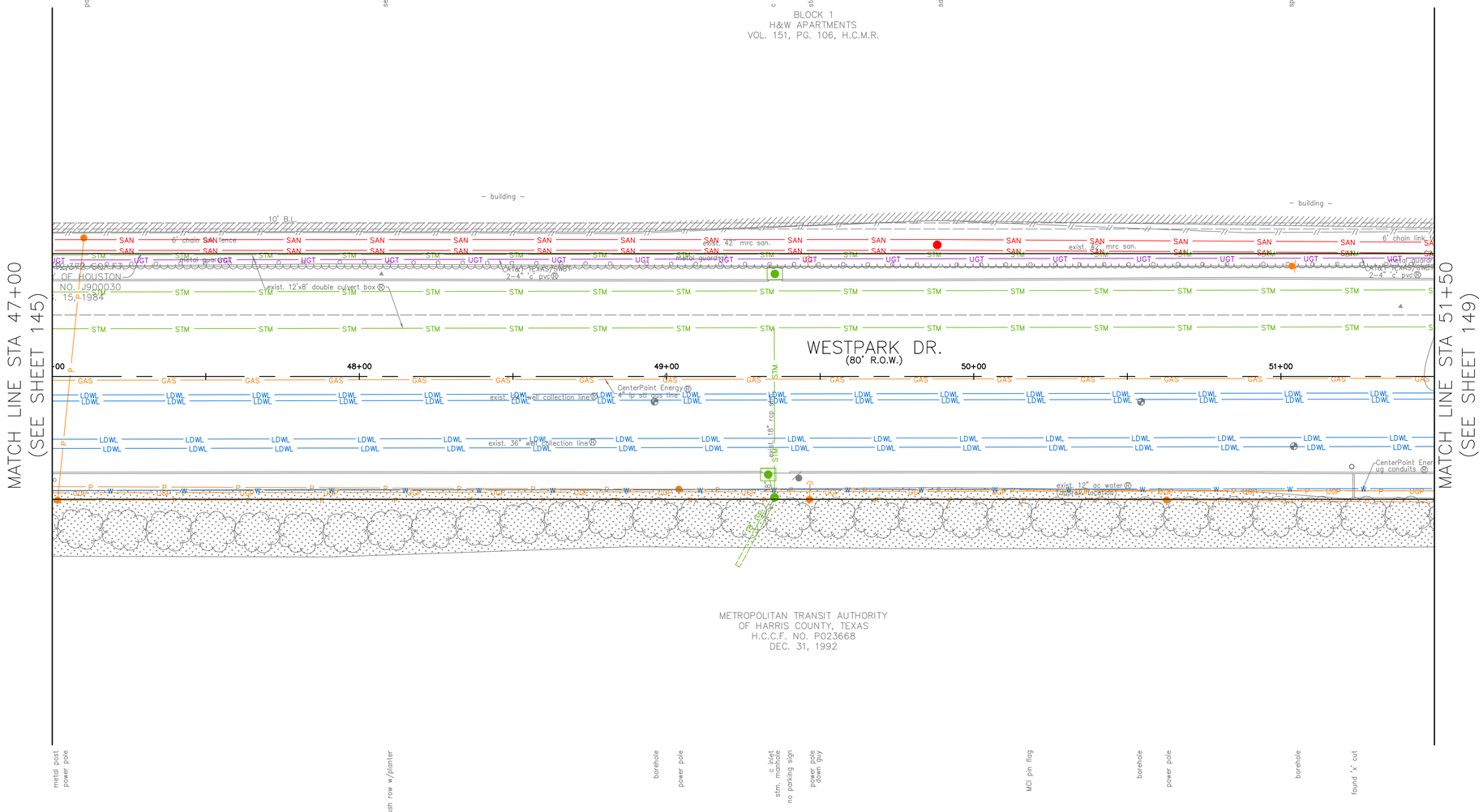

(SEE SHEET 148 FOR PROFILE)

N

0' 20' 40'

HORIZ:1"=20'
VERT:N/A

NO.	DATE	REVISION	APP.

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ELEV. 61.44 FEET NAVD 1988 2001 ADJUSTMENT
T.B.M.: B-163
SET 'X' CUT ON CONC.
ELEV.=57.235
D. STA. 48+07.19 OFFSET: 33.36L

NOTES:

1. CONTRACTOR TO FIELD LOCATE EXISTING 36" WELL COLLECTION LINE PRIOR TO EXCAVATION FOR PROPOSED MANHOLE.
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FB NO. 000000

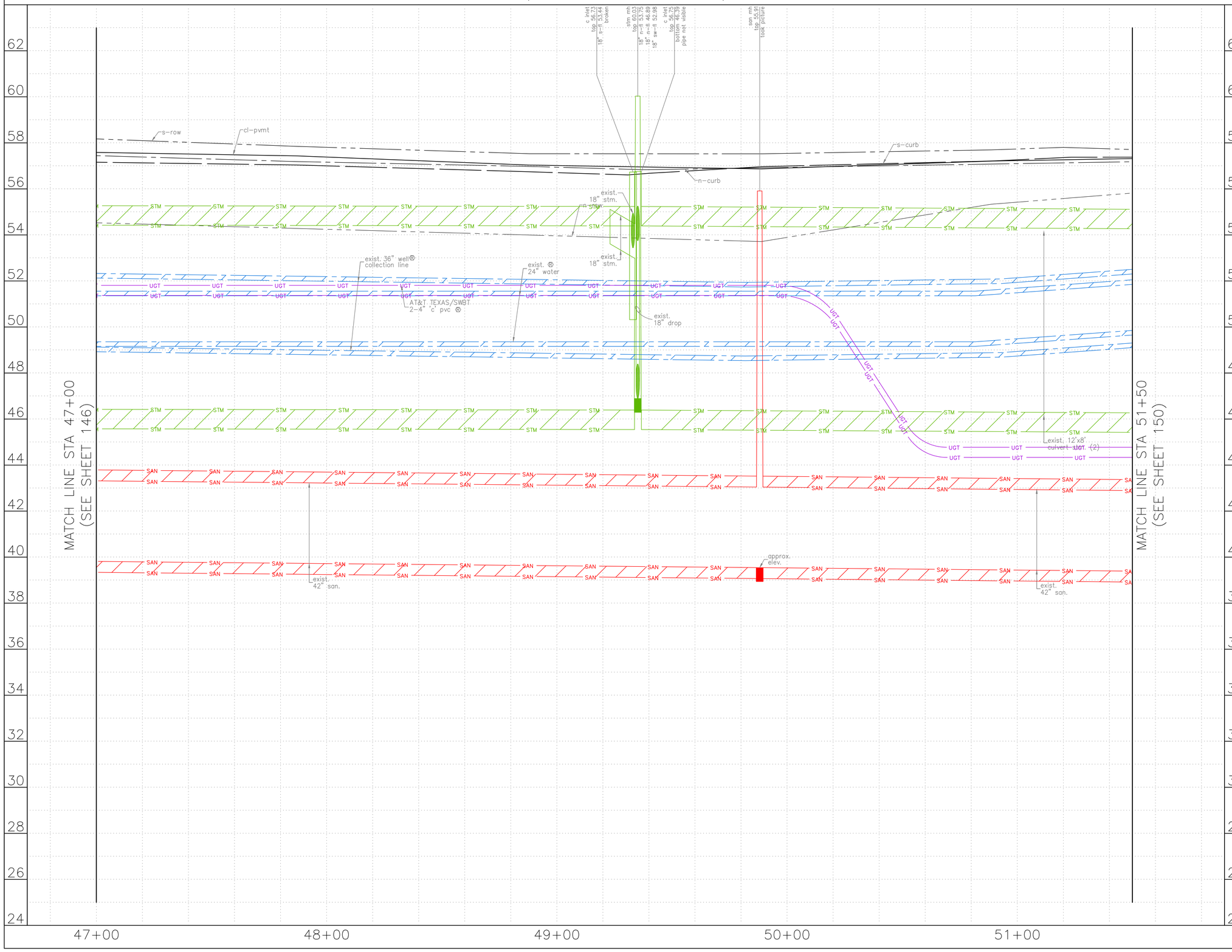
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL
IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
SITE 5 – WESTPARK DR
PLAN
STA 47+00 TO STA 15+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 147 OF	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 5 – Westpark Dr.dwg plotted on Apr 03, 2025 – 8:30pm

(SEE SHEET 147 FOR PLAN)



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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL
IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 5 – WESTPARK DR
PROFILE
STA 47+00 TO STA 51+50

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 148 OF	

P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Reference\KUO\P&P Sheets\P&P Sheet-Site 5 - Westpark Dr.dwg plotted on Apr 03, 2025 - 8:30pm

MATCH LINE STA 51+50
(SEE SHEET 147)

BLOCK 1
H&W APARTMENTS
VOL. 151, PG. 106, H.C.M.R.

8' RESIDUE OF A
15' SANITARY SEWER ESMT.
(VOL. 2827, PG. 471, H.D.D.R.)

CALLED 0.2356 ACRES
PUBLIC ROADWAY ESMT.
H.C.C.F. NO. J900030
AUG. 15, 1984

CALLED 0.235 ACRES
TEXAS PROPERTY
HOLDINGS, LLC
H.C.C.F. NO.
20140042287
FEB. 3, 2014

CALLED 16.273 ACRES
CITY OF HOUSTON
VOL. 1374, PG. 731, H.C.D.R.

NEWCASTLE DR.
(60' R.O.W.)

WESTPARK DR.
(80' R.O.W.)

R.O.W. DEDICATION
H.C.C.F. NOS. H599797 & 20140580

CALLED 0.2356 ACRES
PUBLIC ROADWAY ESMT.
H.C.C.F. NO. J61709
MAY 14, 1981

METROPOLITAN TRANSIT AUTHORITY
OF HARRIS COUNTY, TEXAS
H.C.C.F. NO. P023668
DEC. 31, 1992

52+00 53+00 54+00 55+00 56+00

REMOVE & REPLACE
30 FT OF CONC CURB

LIMITS OF PAVEMENT
RESTORATION
(SEE NOTES 3 & 4)

1- LOW PROFILE ACCESS
MANHOLE
(SEE DETAIL SHEET 151)
(SEE NOTE 1)

(SEE SHEET 150 FOR PROFILE)

N

0' 20' 40'
HORIZ:1"=20'
VERT:N/A

NO.	DATE	REVISION	APP.

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T.B.M.: B-164
SET 'X' CUT ON CONC.
ELEV.=57.469
D. STA. 53+40.14 OFFSET: 42.57R

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL
IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
SITE 5 – WESTPARK DR
PLAN
STA 51+50 TO END

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
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CITY OF HOUSTON PM	
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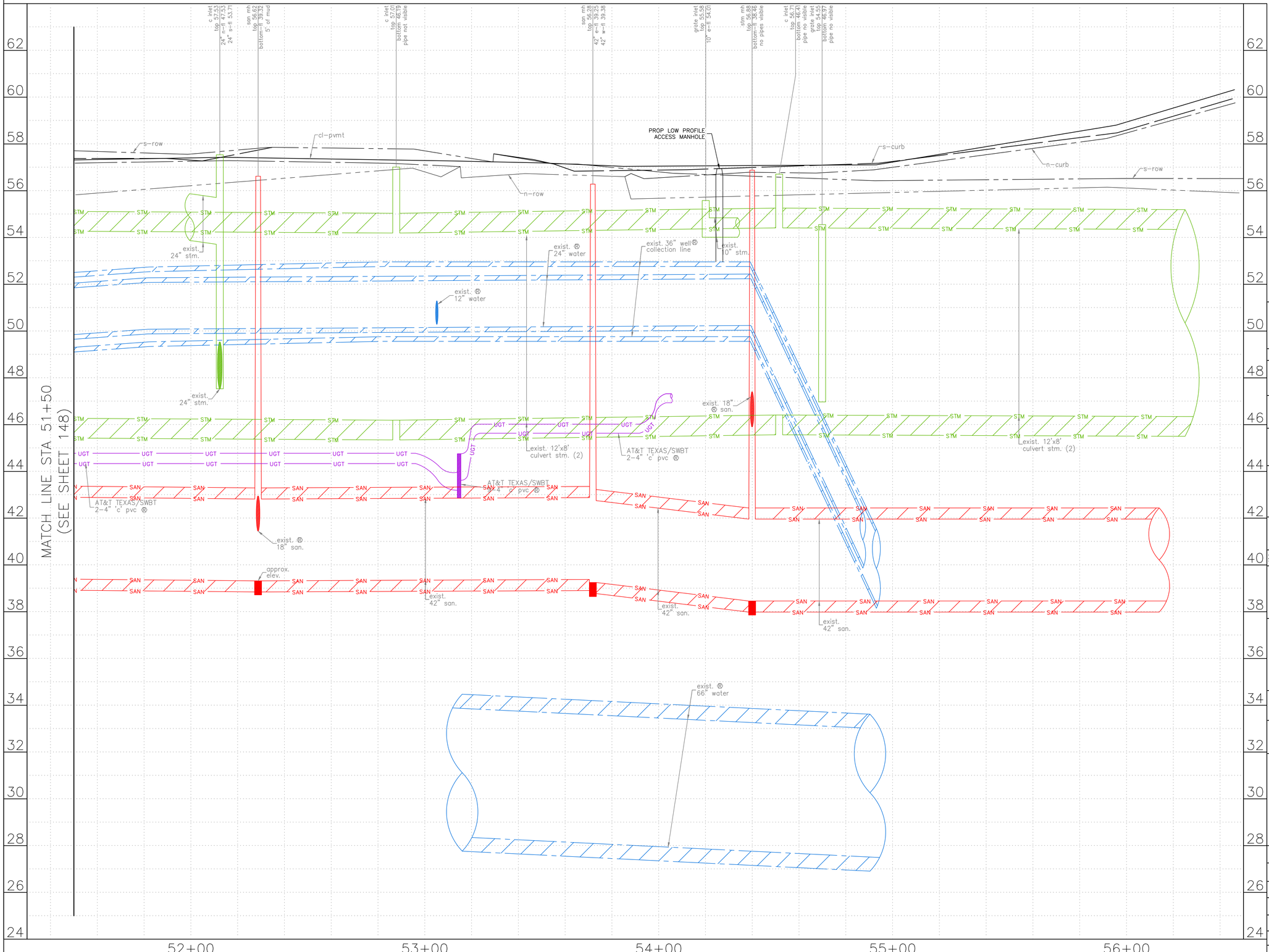
(SEE SHEET 149 FOR PLAN)



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HOUSTON PUBLIC WORKS

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PROFILE
STA 51+50 TO END

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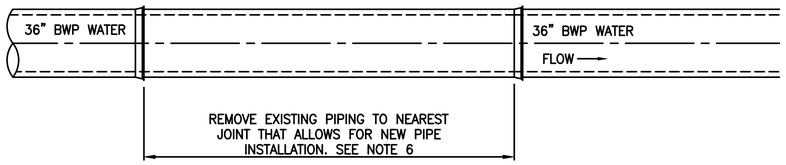
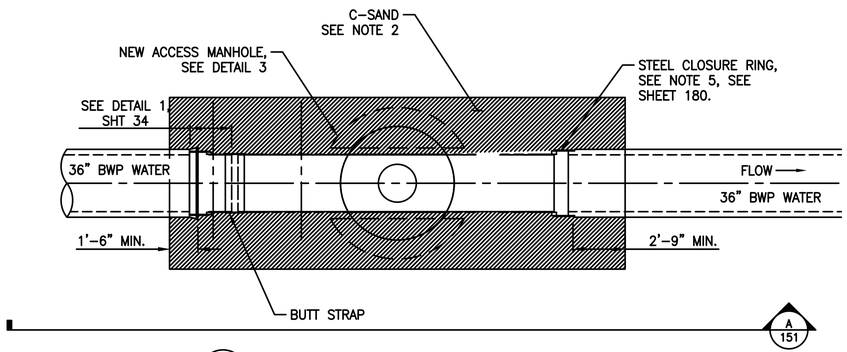
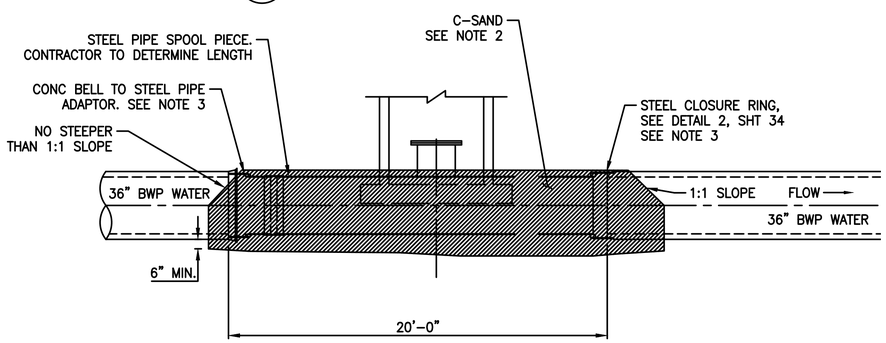


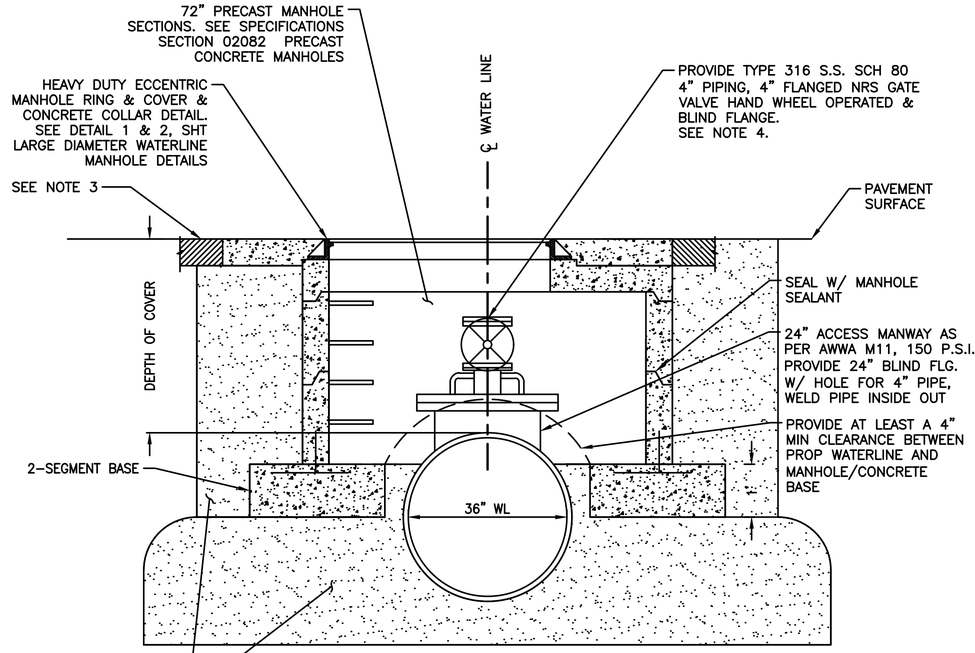
1 EXISTING PIPING PLAN
1/4"=1'-0"



2 PROPOSED PIPING LAYOUT
1/4"=1'-0"



A SECTION
1/4"=1'-0"



3 LOW PROFILE ACCESS MANHOLE
NO SCALE

NOTES:

1. EXISTING LAYOUT IS BASED ON BEST INFORMATION AVAILABLE. CONTRACTOR TO VERIFY PIPE MATERIAL AND FIELD MEASURE ALL DIMENSIONS PRIOR TO ORDERING MATERIAL.
2. PIPE AND/OR COUPLING SHALL BE WRAPPED IN POLYETHYLENE SHEET FOR BOND BREAKER PRIOR TO PLACEMENT OF FILL.
3. FOR PAVEMENT REPAIR, SEE SHEETS 195 & 196.
4. CONTRACTOR TO INSTALL 36" BFV VERTICALLY.
5. WHERE REQUIRED ON DRAWINGS, PROVIDE BOLTED COUPLING WITH AWWA M11 HARNESS INSTEAD OF WELDED BUTT-STRAP.
6. BASED ON ASSUMPTION THAT EXISTING 36" WATER MAIN IS BAR WRAP CONCRETE PIPE. REVISIONS NEEDED IF PIPE IS FOUND TO BE STEEL.

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567

PRIVATE UTILITY LINES SHOWN

Date:
CENTERPOINT ENERGY/ELECTRIC FACILITIES
ELECTRICAL FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION).

Date:
CENTERPOINT ENERGY/GAS FACILITIES
(GAS SERVICE LINES ARE NOT SHOWN). THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION.

Date:
AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

LAN

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes. This document is released for the purpose of bidding under the authority of:
Engineer: CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL

SITE 5
MANHOLE INSTALLATION DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
AS SHOWN	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 151 OF 244	

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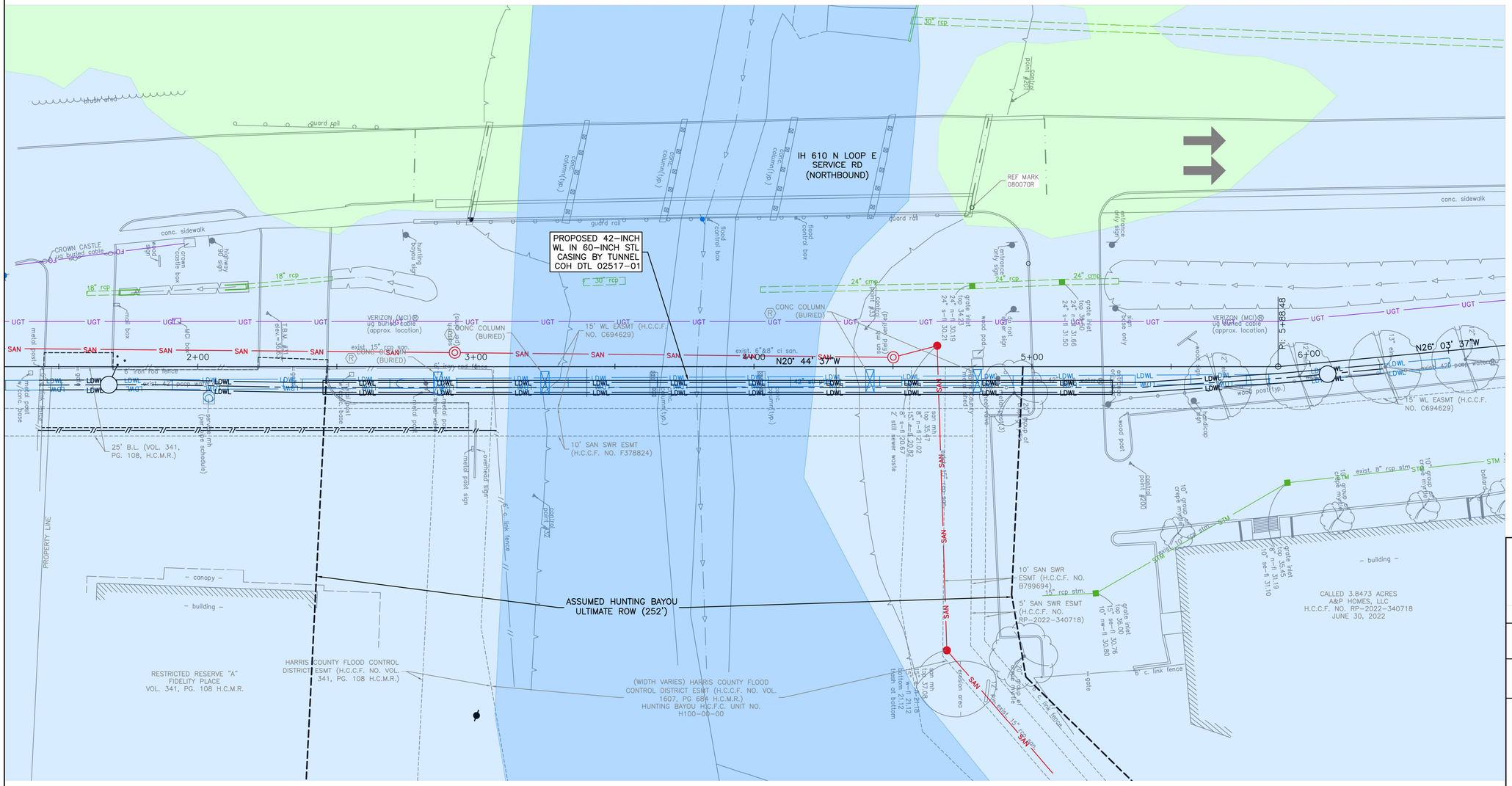
FILE PATH: C:\Users\srika\OneDrive - InduSri Consulting, LLC\5Projects\202210_LAN_COH-LDWL Rehab\Production\DRAWINGS\42-inch Crossing Floodplain Matigation.dwg

LEGEND:

- 500-YEAR FLOOD PLAIN ANNUAL CHANCE FLOOD APPROX ELEV. 38.4
- 100-YEAR FLOOD PLAIN (1% ANNUAL CHANCE FLOOD EVENT).
- FLOODWAY

NOTES:

1. BASE FLOOD ELEVATION OF 37 AND 100-YR FLOOD PLAIN DETERMINED FROM FEMA FLOOD INSURANCE RATE 48201C0695M.
2. PER SECTION 01576-WASTE MATERIAL DISPOSAL, NO FILL IS TO BE PLACED WITHIN THE FLOOD PLAIN. CONTACT CITY OF HOUSTON FLOOD PLAIN MANAGEMENT OFFICE 48 HOURS PRIOR TO ANY WORK WITHIN THE FLOOD PLAIN.
3. BACKFILL OPERATIONS TO MATCH EXISTING GROUND ELEVATIONS.
4. EXCESS SOIL TO BE HAULED OFF OF PROJECT SITE.



CROSS SECTION START STA	CROSS SECTION END STA	CUT (CU. YD.)	FILL (CU. YD.)
2+46	4+97	0	0
		TOTAL NET CUT (CU. YD.)	0
		TOTAL NET FILL (CU. YD.)	0

NOTES:
1. MINIMUM TRENCH WIDTH PER DETAIL 1 OR 2, SHEET 10.

NO.	DATE	REVISION	APP.

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

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 080070R IS AN HARRIS COUNTY ALUMINUM DISC STAMPED 080070R LOCATED AT THE NORTHEAST CORNER OF LOOP 610 NORTHBOUND FEEDER ROAD APPROXIMATELY 620 FEET NORTH FROM THE INTERSECTION OF WALLISVILLE RD IN KEYMAP 455Y IN THE HUNTING BAYOU WATERSHED

ELEV. 38.72 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M. #31:

SET "X" CUT ON CONCRETE DRIVEWAY AT EAST SIDE OF N LOOP E FRWY. FRONTAGE RD. APPROX. 350' NORTH FROM WALLISVILLE RD. INTERSECTION.
STA 2+25.11, 19.17'LT. ELEV. = 36.63 FT.

InduSri Consulting
8815 WEST ROAD, SUITE 302
HOUSTON, TEXAS 77064
832-865-4462
TBPE FIRM NO. F-21781

SURVEYED BY: KUO & ASSOCIATES
FB NO.

FOR INTERIM REVIEW ONLY

ENGINEER: SRIKANTH PUNUKULA
P.E. LICENSE No. 88614
DATE: 3/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISC. LDWL IMPROVEMENTS PKG NO. 3
SITE 6 - 42-INCH AERIAL CROSSING

FLOODPLAIN MITIGATION PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1"=20'	
CITY OF HOUSTON PM	

SHEET NO. 123 OF 247	

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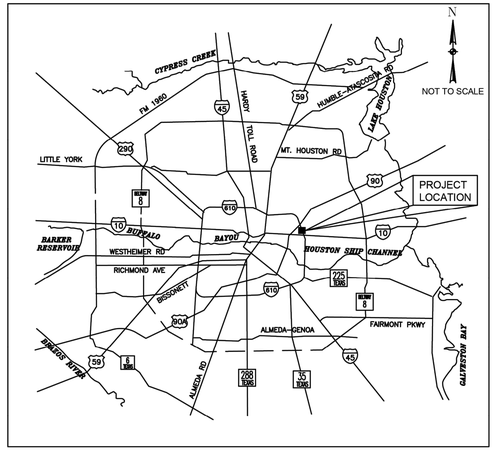
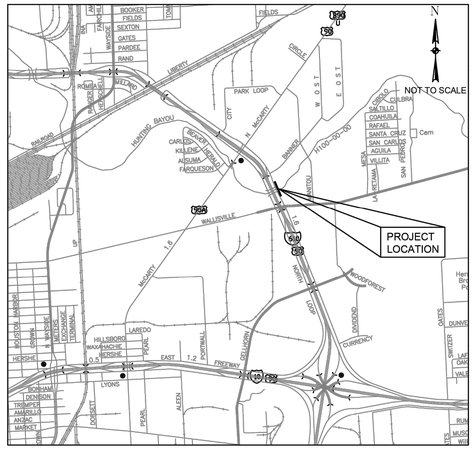
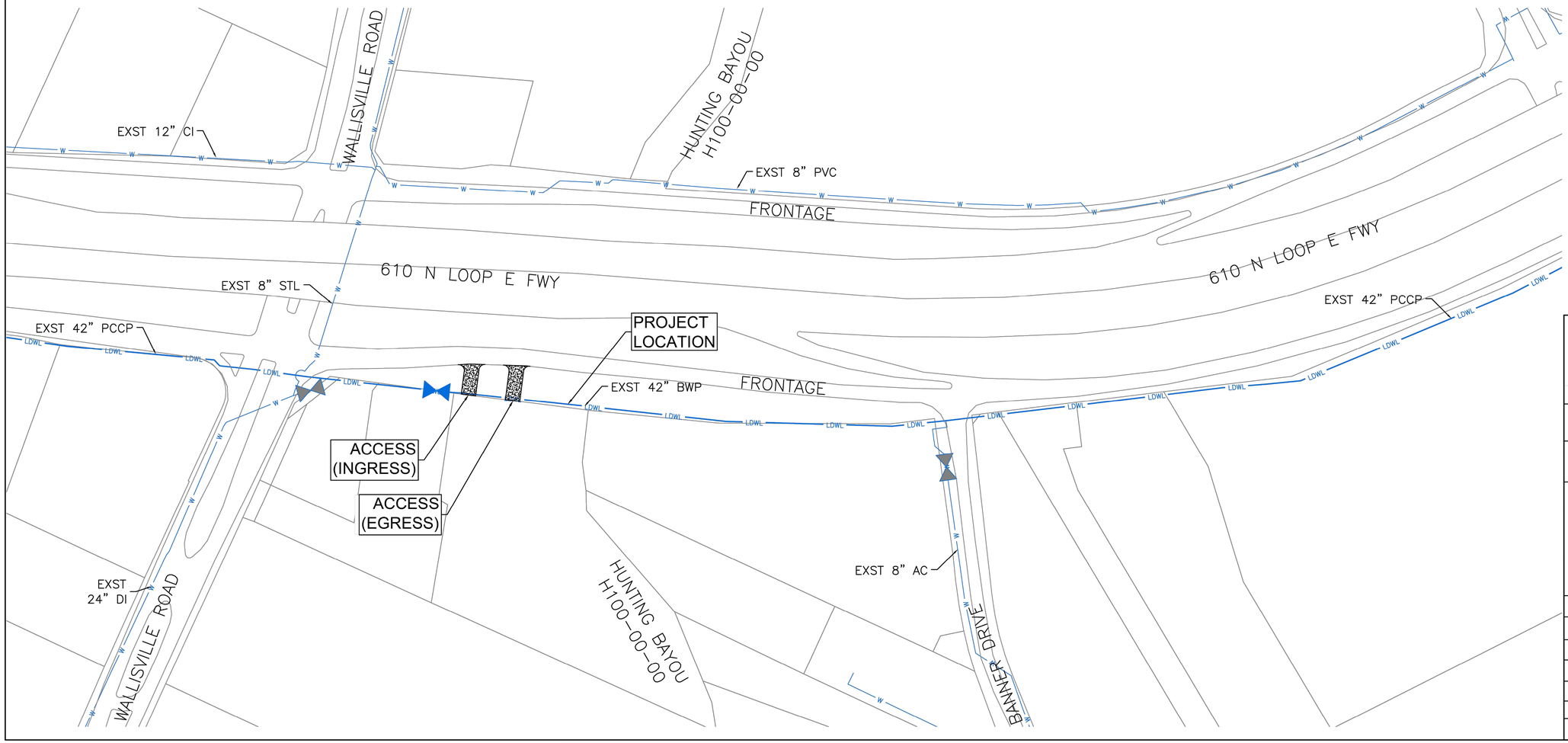


LOCATION MAP



VICINITY MAP

SITE 6- REPLACEMENT OF THE 42-INCH AERIAL CROSSING OF HUNTING BAYOU



N

0' 100' 200' 400'

SCALE: 1"=200'

LEGEND:

- LARGE DIAMETER VALVE
- SMALL DIAMETER VALVE
- LDWL — LARGE DIAMETER WATERLINE
- W — SMALL DIAMETER WATERLINE

NO.	DATE	REVISION	APP.

InduSri Consulting
8815 WEST ROAD, SUITE 302
HOUSTON, TEXAS 77064
832-865-4462
TBPE FIRM NO: F-21781

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ENGINEER: SRIKANTH PUNUKULA
P.E. LICENSE No. 88614
DATE: 3/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISC. LDWL IMPROVEMENTS PKG NO. 3
SITE 6 – 42-INCH AERIAL CROSSING

OVERALL LAYOUT

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1"=100'	
CITY OF HOUSTON PM	

SHEET NO. 164 OF 244	

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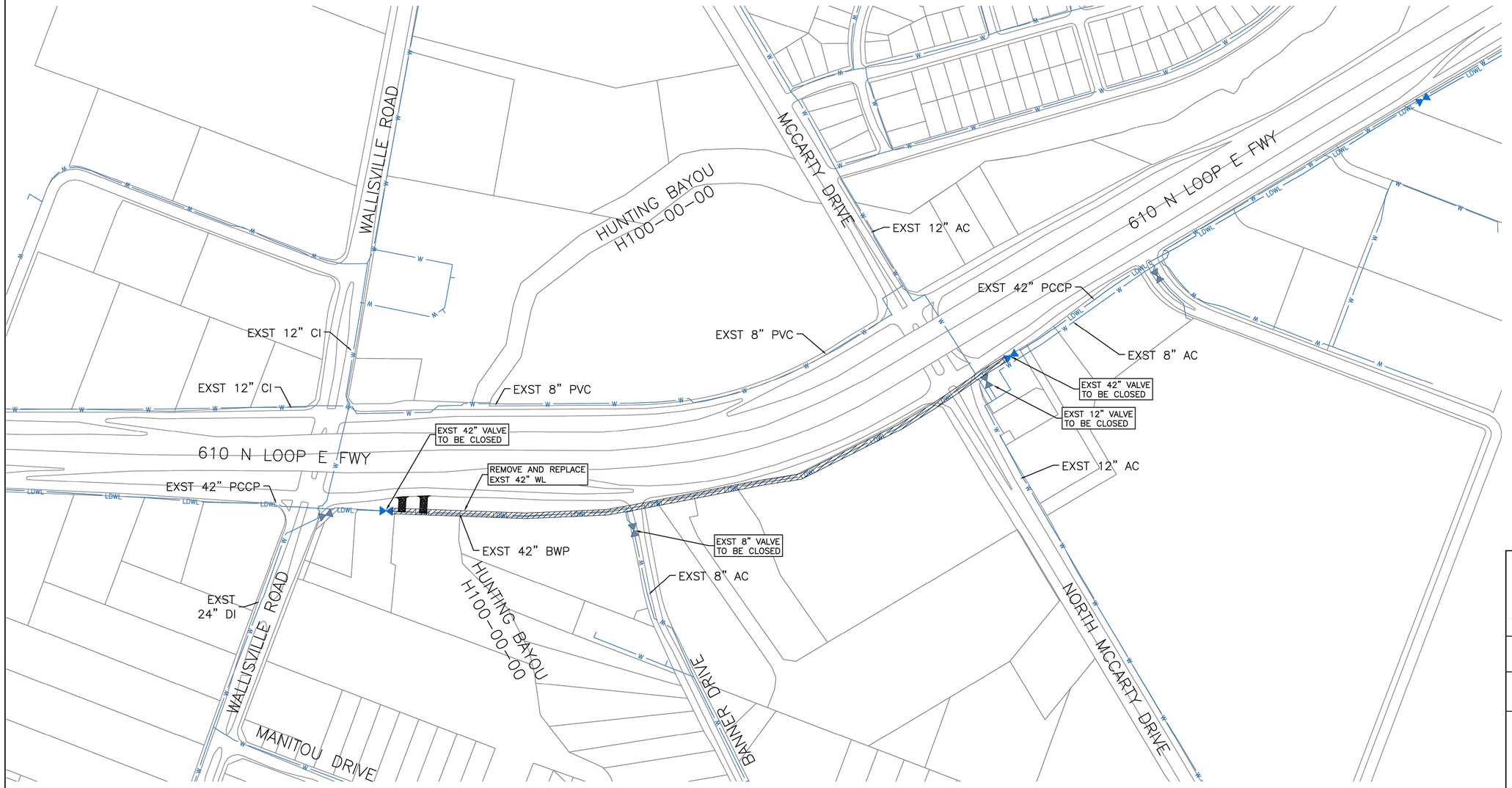
NO.	DATE	REVISION	APP.

N

0' 100' 200' 400'

SCALE: 1"=200'



LEGEND:

- LARGE DIAMETER VALVE
- SMALL DIAMETER VALVE
- LDWL — LARGE DIAMETER WATERLINE
- W — SMALL DIAMETER WATERLINE
- LIMITS OF DEWATERING

NOTES:

1. ISOLATION VALVE TO BE CLOSED BY HOUSTON PUBLIC WORKS – UTILITY MAINTENANCE ONLY. COORDINATE WITH PROJECT MANAGER FOR DWO CONTACT INFORMATION BEFORE BEGINNING WORK.

InduSri Consulting
8815 WEST ROAD, SUITE 302
HOUSTON, TEXAS 77064
832-865-4462
TBPE FIRM NO: F-21781

FOR INTERIM REVIEW ONLY

SURVEYED BY: KUO & ASSOCIATES
FB NO.

ENGINEER: SRIKANTH PUNUKULA
P.E. LICENSE No. 88614
DATE: 3/24/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

MISC. LDWL IMPROVEMENTS PKG NO. 3
SITE 6 – 42-INCH AERIAL CROSSING

VALVE ISOLATION LAYOUT

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1"=200'	
CITY OF HOUSTON PM	

SHEET NO. 105 OF 247	

PLOT STYLE: Coh_ctb_230809.ctb
PLOTTED: 3/24/2025 11:16 AM

FILE PATH: C:\Users\srika\OneDrive - InduSri Consulting, LLC\5Projects\20221O_LAN_COH-LDWL Rehab\Production\DRAWINGS\42-inch Crossing Demo.dwg

*CONSTRUCTION IN HARRIS COUNTY FLOOD CONTROL DISCTRICT RIGHT-OF-WAY REQUIRES:

SITE PLANS MUST BE APPROVED PRIOR TO OBTAINING THE REQUIRED HCFCD RIGHT-OF-WAY NOTIFICATION. BE ADVISED THAT THE HCFCD RIGHT-OF-WAY NOTIFICATION IS SEPARATE FROM THE SITE DEVELOPMENT PERMIT PACKAGE

1.) HCFCD RIGHT-OF-WAY NOTIFICATION (PERMIT)
2.) HCFCD 48-HR PRE-CONSTRUCTION NOTICE

BOTH ARE REQUIRED PRIOR TO ENTERING OR WORKING WITHIN HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY. THE HCFCD RIGHT-OF-WAY NOTIFICATION AND 48-HOUR NOTICE MUST BE PROVIDED TO HCFCD AT doid@hcfcd.org.
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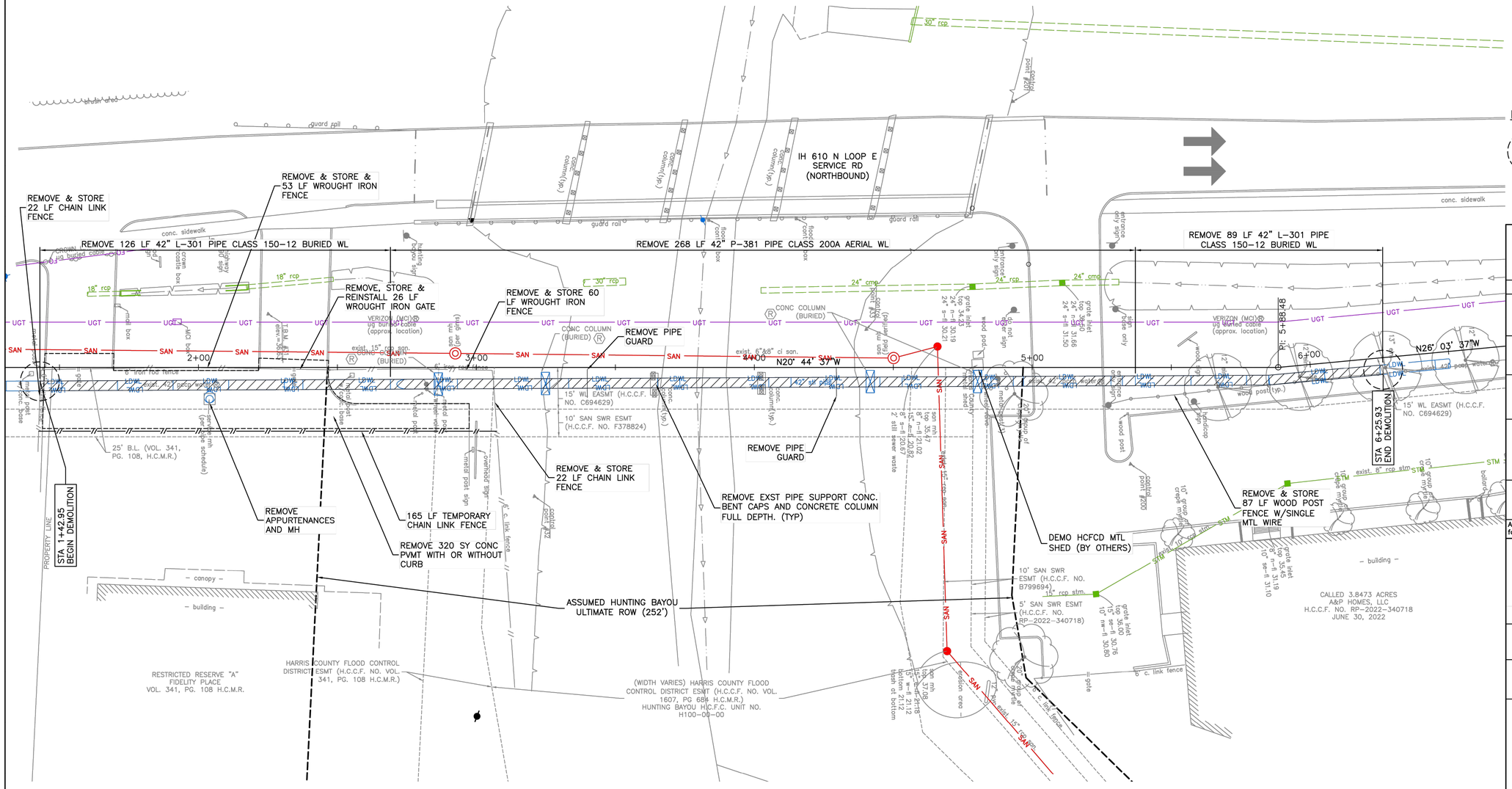
FAILURE TO PROVIDE BOTH ITEMS COULD RESULT IN PROJECT DELAYS.

NO.	DATE	REVISION	APP.

N

0' 10' 20' 40'

SCALE: 1"=20'



LEGEND:

CRITICAL LOCATE, SEE SPEC SECTION 02317. LOCATE AND REMOVE EXISTING PIPE TO NEAREST JOINT AFTER STA 1+43 AND BEFORE STA 6+31.

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.

Signature valid for six months.

Date

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities – not to be used for conflict verification)

Signature valid for six months.

Date

Approved for AT&T Texas/SWBT underground conduit facilities only. Signature valid for one year.

InduSri Consulting
8815 WEST ROAD, SUITE 302
HOUSTON, TEXAS 77064
832-865-4462
TBPE FIRM NO. F-21781

FOR INTERIM REVIEW ONLY

SURVEYED BY: KUO & ASSOCIATES
FB NO.

ENGINEER: SRIKANTH PUNUKULA
P.E. LICENSE No. 88614
DATE: 3/24/2025

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

MISC. LDWL IMPROVEMENTS PKG NO. 3
SITE 6 – 42-INCH AERIAL CROSSING

DEMOLITION LAYOUT

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1"=20'	
CITY OF HOUSTON PM	

SHEET NO. 156 OF 247	

PLOT STYLE: Coh_ctb_230809.ctb
PLOTTED: 3/24/2025 11:16 AM

FILE PATH: C:\Users\srika\OneDrive - InduSri Consulting, LLC\5Projects\202210_LAN_COH-LDWL Rehab\Production\DRAWINGS\42-inch Crossing PP.dwg

*CONSTRUCTION IN HARRIS COUNTY FLOOD CONTROL DISCTRICT RIGHT-OF-WAY REQUIRES:

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1.) HCFCD RIGHT-OF-WAY NOTIFICATION (PERMIT)
2.) HCFCD 48-HR PRE-CONSTRUCTION NOTICE

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TO APPLY FOR THE HCFCD RIGHT-OF-WAY NOTIFICATION PLEASE GO TO http://apps.harriscountytx.gov/EPermits AND APPLY FOR THE HCFCD ROW UNDER ROW NOTIFICATION.
FAILURE TO PROVIDE BOTH ITEMS COULD RESULT IN PROJECT DELAYS.

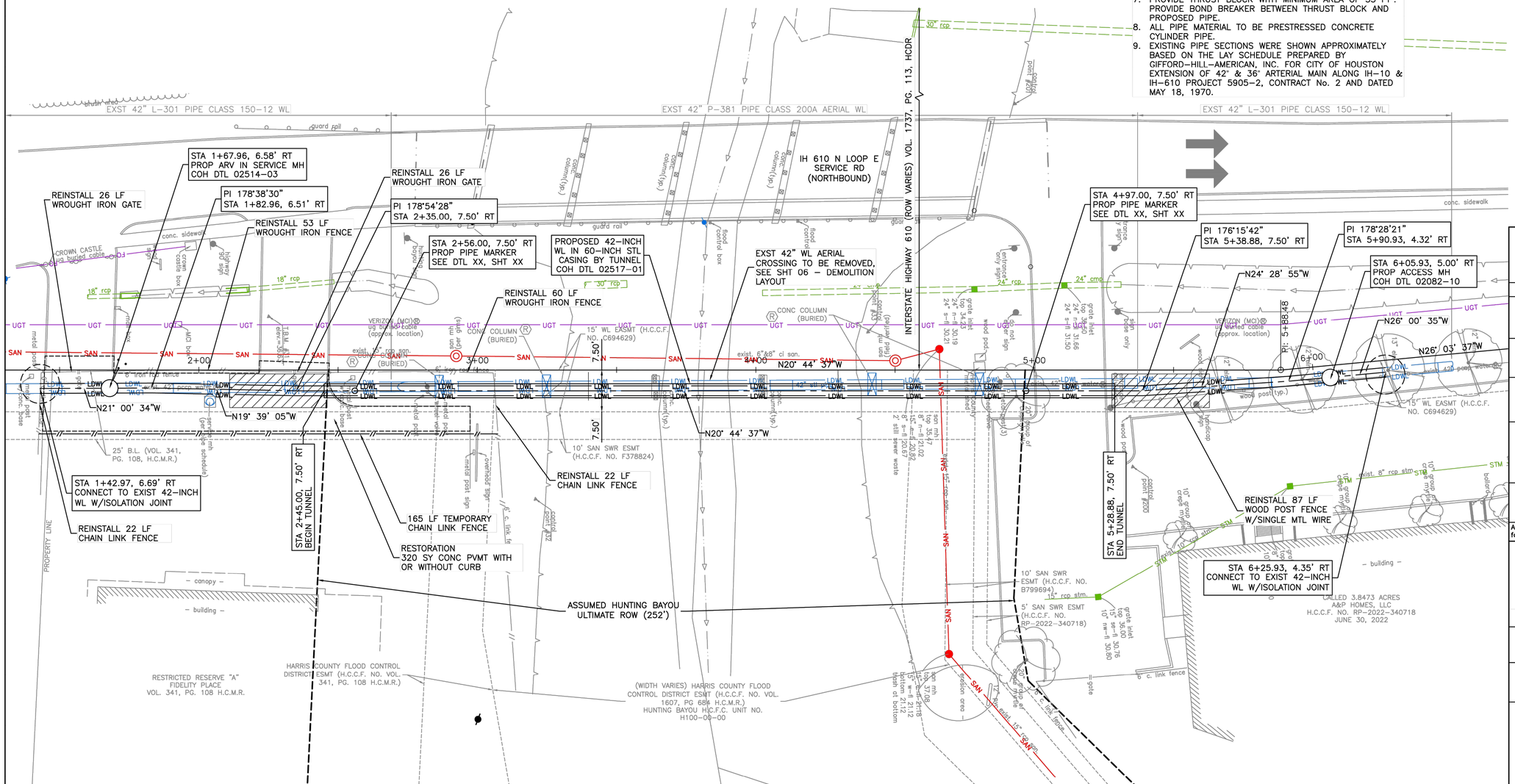
LEGEND:

CRITICAL LOCATE, SEE SPEC SECTION 02317. LOCATE AND REMOVE EXISTING PIPE TO NEAREST JOINT AFTER STA 1+43 AND BEFORE STA 6+31

MINIMUM 35'x12' CONSTRUCTION SHAFT

NOTES:

1. FIELD VERIFY PIPE MATERIAL LOCATION AND ELEVATION OF EXISTING 42-INCH WATER LINE AND MAKE NECESSARY ADJUSTMENT TO THE LINE AND GRADE FOR PROPOSED TIE-IN.
2. PROVIDE TEMPORARY DISHED HEAD PLUG FOR CHLORINATION (EXTEND CHLORINATION TO THE LIMITS OF DEWATERING, SEE SHT 05) & HYDROSTATIC TESTING OF PROPOSED 42-INCH BEFORE CONNECTING TO EXISTING 42-INCH WATER LINE.
3. REMOVE ENTIRE LIMITS OF EXISTING 42-INCH WATER LINE BETWEEN CONNECTIONS PRIOR TO TUNNEL EXCAVATION WORK.
4. PROPOSED STORM WATER POLLUTION PREVENTION PLAN, SEE SHEET ##-##.
5. PROPOSED TREE PROTECTION PLAN, SEE SHEET ##-##.
6. ANY DISTURBED AREA WILL BE RESTORED BACK TO EXISTING CONDITION AND WILL MAINTAIN EXISTING DRAINAGE PATTERN.
7. PROVIDE THRUST BLOCK WITH MINIMUM AREA OF 33 FT^2. PROVIDE BOND BREAKER BETWEEN THRUST BLOCK AND PROPOSED PIPE.
8. ALL PIPE MATERIAL TO BE PRESTRESSED CONCRETE CYLINDER PIPE.
9. EXISTING PIPE SECTIONS WERE SHOWN APPROXIMATELY BASED ON THE LAY SCHEDULE PREPARED BY GIFFORD-HILL-AMERICAN, INC. FOR CITY OF HOUSTON EXTENSION OF 42" & 36" ARTERIAL MAIN ALONG IH-10 & IH-610 PROJECT 5905-2, CONTRACT No. 2 AND DATED MAY 18, 1970.



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

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 080070R IS AN HARRIS COUNTY ALUMINUM DISC STAMPED 080070R LOCATED AT THE NORTHEAST CORNER OF LOOP 610 NORTHBOUND FEEDER ROAD APPROXIMATELY 620 FEET NORTH FROM THE INTERSECTION OF WALLISVILLE RD IN KEYMAP 455Y IN THE HUNTING BAYOU WATERSHED

ELEV. 38.72 FEET NAVD 1988 2001 ADJUSTMENT

T.B.M. #31:

SET "X" CUT ON CONCRETE DRIVEWAY AT EAST SIDE OF N LOOP E FRWY. FRONTAGE RD. APPROX. 350' NORTH FROM WALLISVILLE RD. INTERSECTION.
STA 2+25.11, 19.17'LT. ELEV. = 36.63 FT.

NO.	DATE	REVISION	APP.

NOTICE:
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VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.

Signature valid for six months.

Date

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Date

Approved for AT&T Texas/SWBT underground conduit facilities only. Signature valid for one year.

InduSri Consulting
8815 WEST ROAD, SUITE 302
HOUSTON, TEXAS 77064
832-885-4462
TBPE FIRM NO. F-21781

FOR INTERIM REVIEW ONLY

ENGINEER: SRIKANTH PUNUKULA
P.E. LICENSE No. 88614
DATE: 3/24/2025

SURVEYED BY: KUO & ASSOCIATES
FB NO.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISC. LDWL IMPROVEMENTS PKG NO. 3
SITE 6 - 42-INCH AERIAL CROSSING

PLAN
STA 1+20 TO STA 6+40

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1"=20'	
CITY OF HOUSTON PM	

SHEET NO. 167 OF 247	

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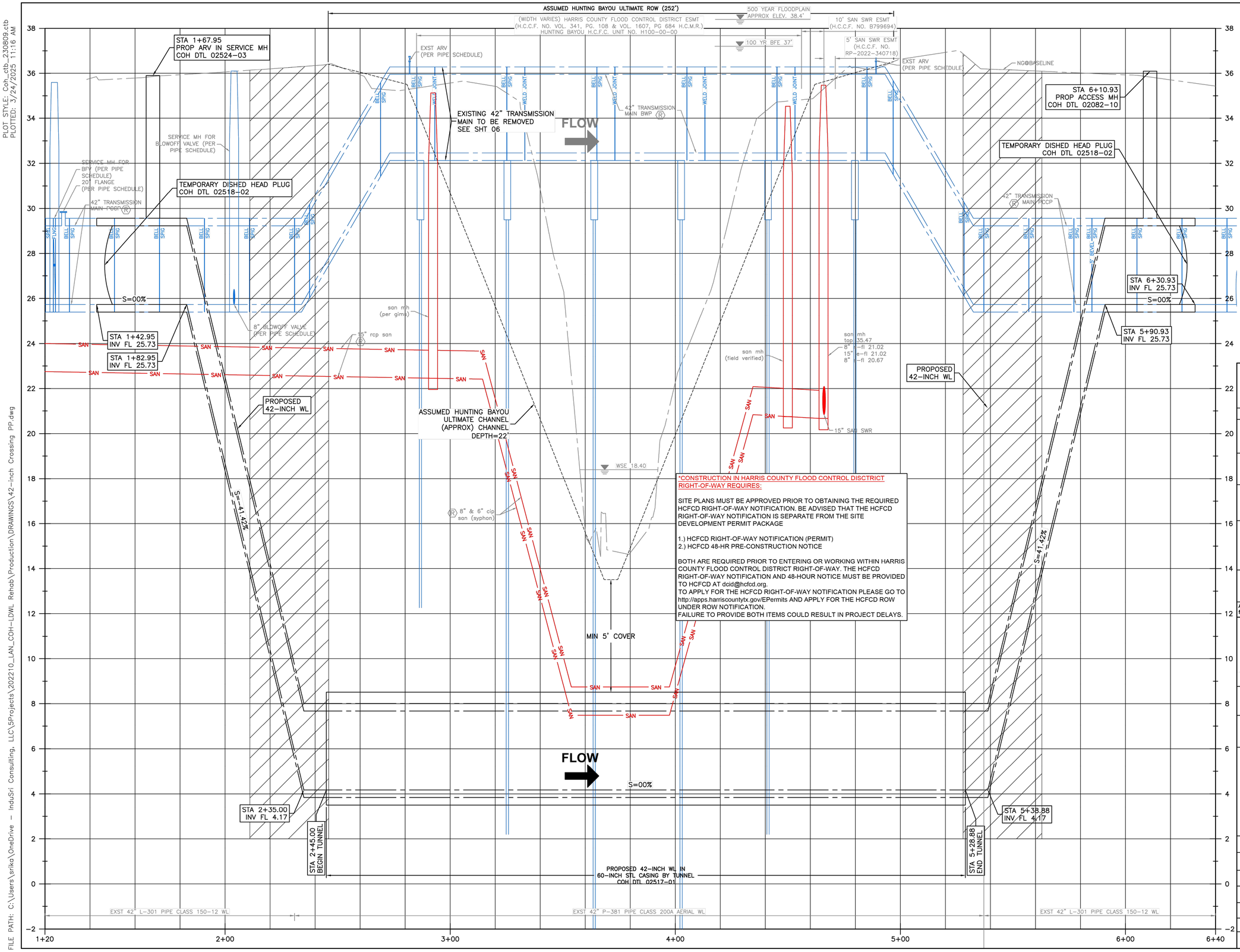
PLOTTED: 3/24/2025 11:16 AM



0' 10' 20' 40'

SCALE: 1"=20'

NO.	DATE	REVISION	APP.

NOTES:

1. FIELD VERIFY PIPE MATERIAL LOCATION AND ELEVATION OF EXISTING 42-INCH WATER LINE AND MAKE NECESSARY ADJUSTMENT TO THE LINE AND GRADE FOR PROPOSED TIE-IN.
2. ALL PIPE MATERIAL TO BE PRESTRESSED CONCRETE CYLINDER PIPE.
3. EXISTING PIPE SECTIONS WERE SHOWN APPROXIMATELY BASED ON THE LAY SCHEDULE PREPARED BY GIFFORD-HILL-AMERICAN, INC. FOR CITY OF HOUSTON EXTENSION OF 42" & 36" ARTERIAL MAIN ALONG IH-10 & IH-610 PROJECT 5905-2, CONTRACT No. 2 AND DATED MAY 18, 1970.

LEGEND:

MINIMUM 35'x12' CONSTRUCTION SHAFT

*CONSTRUCTION IN HARRIS COUNTY FLOOD CONTROL DISCTRICT RIGHT-OF-WAY REQUIRES:

SITE PLANS MUST BE APPROVED PRIOR TO OBTAINING THE REQUIRED HCFCD RIGHT-OF-WAY NOTIFICATION. BE ADVISED THAT THE HCFCD RIGHT-OF-WAY NOTIFICATION IS SEPARATE FROM THE SITE DEVELOPMENT PERMIT PACKAGE

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SURVEYED BY: KUO & ASSOCIATES
FB NO.

ENGINEER: SRIKANTH PUNUKULA
P.E. LICENSE No. 88614
DATE: 3/24/2025

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISC. LDWL IMPROVEMENTS PKG NO. 3
SITE 6 – 42-INCH AERIAL CROSSING

PROFILE
STA 1+20 TO STA 6+40

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H 1"=20', V 1"=2'	
CITY OF HOUSTON PM	

SHEET NO. 108 OF 244	

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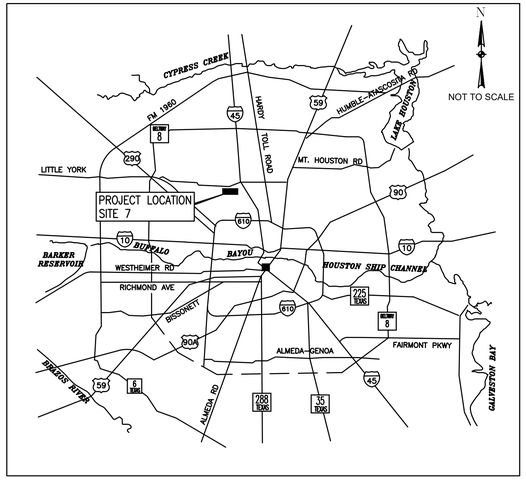
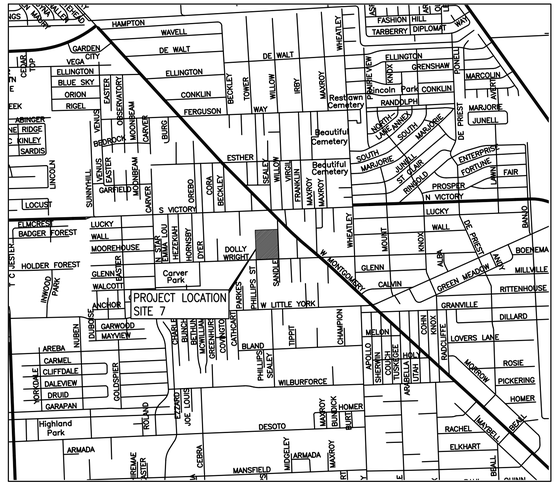
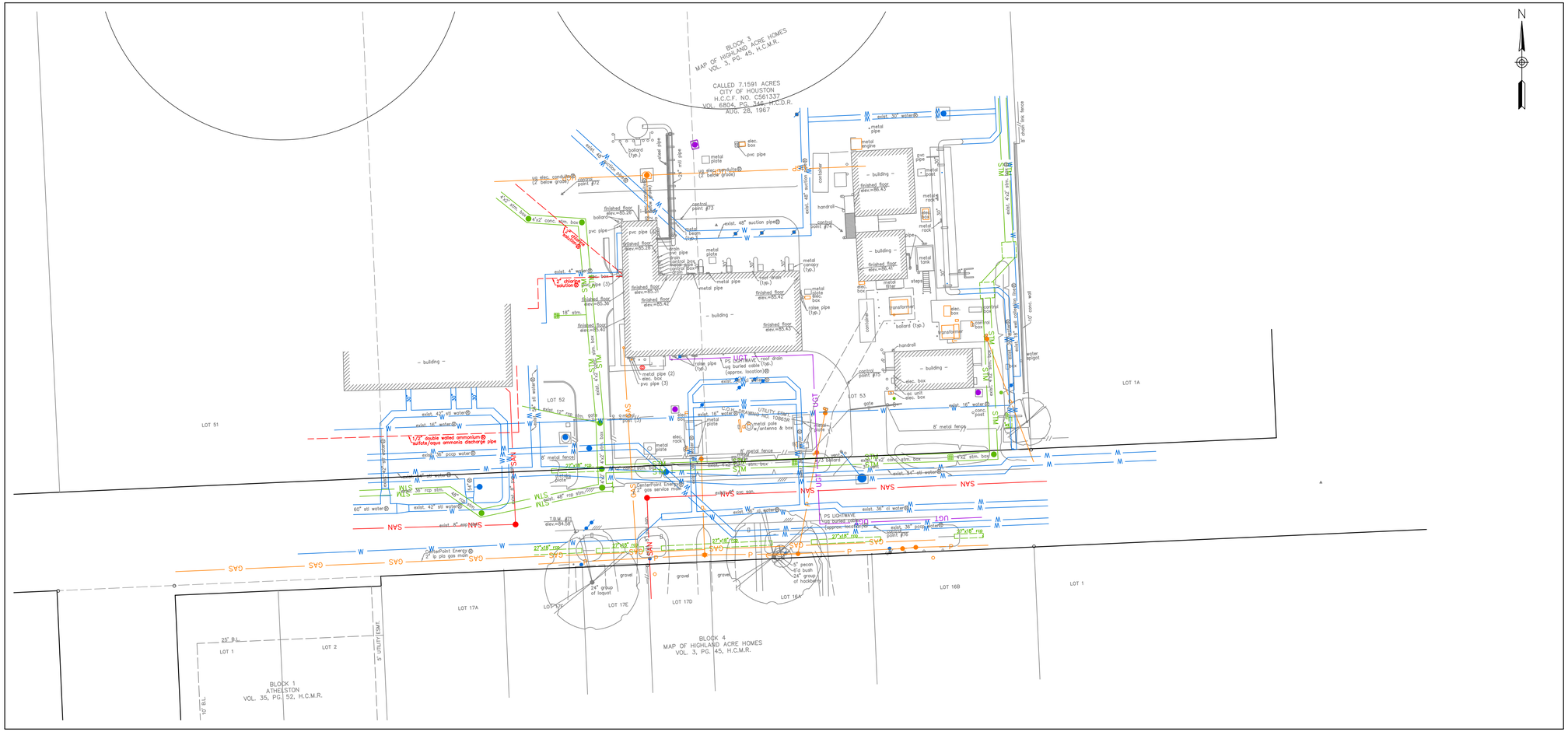
SITE 7
ACRES HOMES PUMP STATION
PROJECT LOCATION



LOCATION MAP



VICINITY MAP



SITE 7
SITE PLAN

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567

PRIVATE UTILITY LINES SHOWN

Date:

CENTERPOINT ENERGY/ELECTRIC FACILITIES
ELECTRICAL FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION).

Date:

CENTERPOINT ENERGY/GAS FACILITIES
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Date:

AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

LAN

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

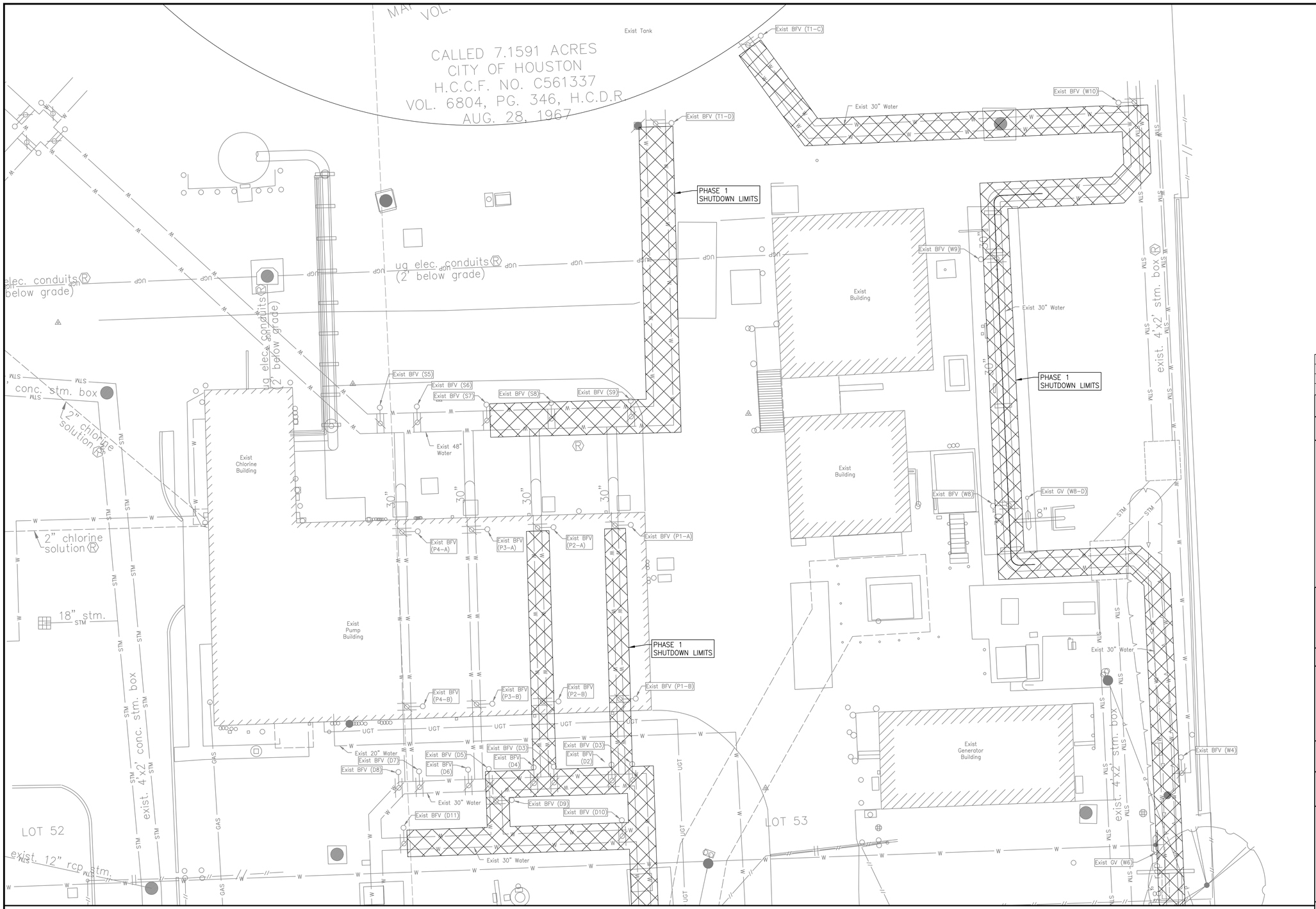
INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of review under the authority of:
Engineer:CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL
SITE 7
ACRES HOME PUMP STATION
VICINITY MAP

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 30'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 158 OF 244	

PEN TABLE: LAN-COH-CIVIL.ctb
USERNAME: Fleming, David
PLOTTED: 4/3/2025 8:37 PM
FILE PATH: P:\132\132-10001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Sheets\SITE 7 VICINITY MAP.dwg



N

0 10 20

SCALE: 1"=10'

LEGEND

- PHASE 1 SHUTDOWN LIMITS
- EXIST SLEEVE VALVE
- EXIST GATE VALVE (VERTICAL)
- EXIST GATE VALVE (HORIZONTAL)
- EXIST BUTTERFLY VALVE

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567

PRIVATE UTILITY LINES SHOWN

Date:

CENTERPOINT ENERGY/ELECTRIC FACILITIES
ELECTRICAL FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION).

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Date:

AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS
& NEWNAM, INC.
3700 W SAM HOUSTON PKWY S,
SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING
FIRM F-2614

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Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON

HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3

60% SUBMITTAL

SITE 7
PHASE 1 SHUTDOWN
(SHEET 1 OF 2)

WBS NUMBER
S-000701-0041-3
DRAWING SCALE
1" = 10'
CITY OF HOUSTON PM
ANH H. BOYD, P.E.
SHEET NO. 159 OF 244

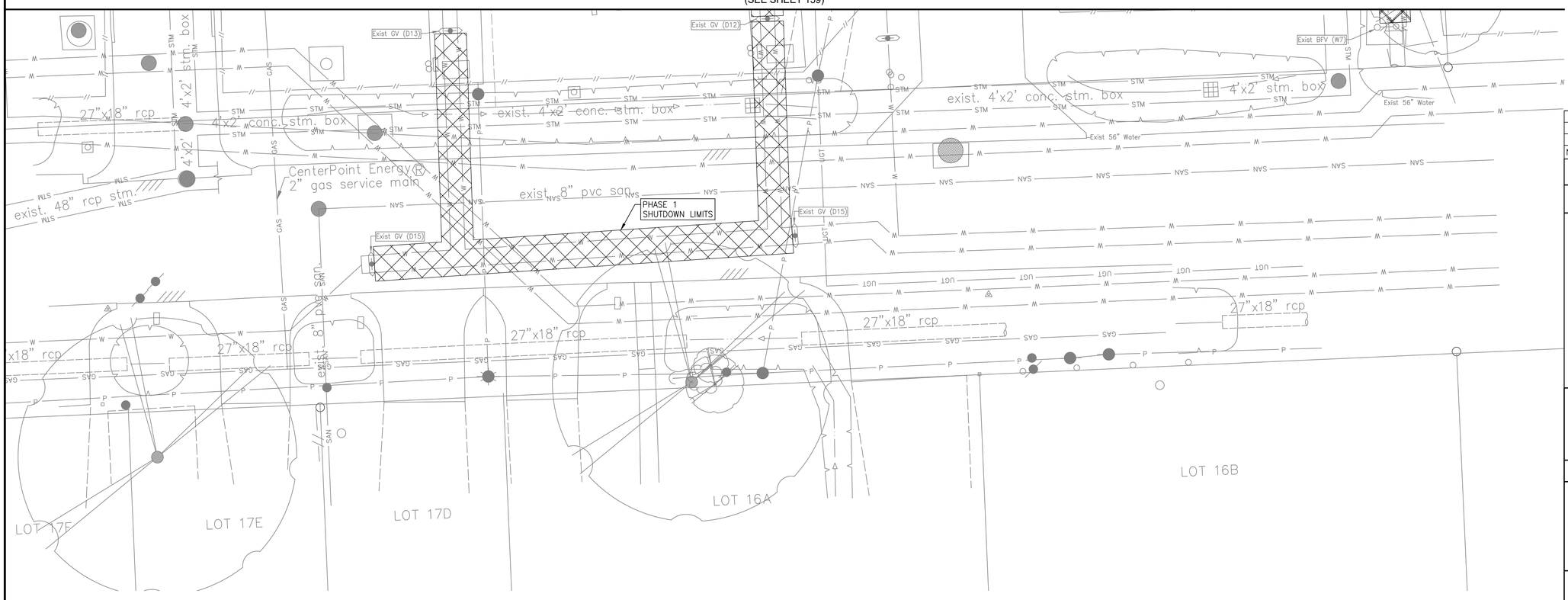
FOR CITY OF HOUSTON USE ONLY

PEN TABLE: LAN-COH-CIVIL.ctb

USERNAME: Fleming, David

PLOTED: 4/3/2025 8:37 PM

FILE PATH: P:\132\12-1001-000\4-0-Production-Working\4-1-BIM-CAD\Civil\Sheets\SITE 7 PHASE 1 SHUTDOWN MAP.dwg



N

0 10 20

SCALE: 1"=10'

LEGEND

- PHASE 1 SHUTDOWN LIMITS
- EXIST SLEEVE VALVE
- EXIST GATE VALVE (VERTICAL)
- EXIST GATE VALVE (HORIZONTAL)
- EXIST BUTTERFLY VALVE

NO.	DATE	REVISION	APP.

NOTICE:
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PRIVATE UTILITY LINES SHOWN

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EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS
& NEWNAM, INC.
3700 W SAM HOUSTON PKWY S,
SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING
FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
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Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON

HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL
IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL
SITE 7
PHASE 1 SHUTDOWN
(SHEET 2 OF 2)

WBS NUMBER
S-000701-0041-3
DRAWING SCALE
1" = 10'
CITY OF HOUSTON PM
ANH H. BOYD, P.E.
SHEET NO. 160 OF 244

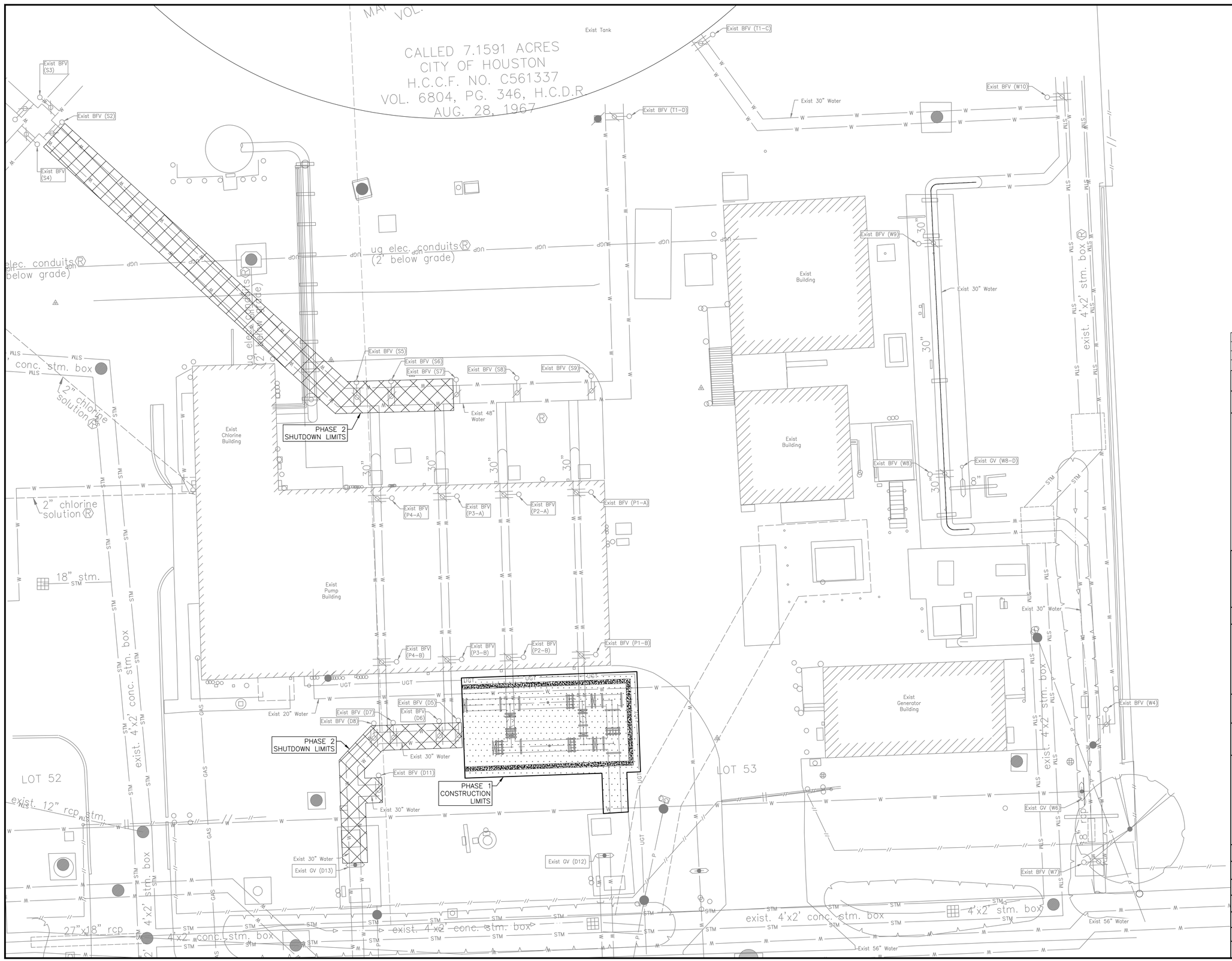
FOR CITY OF HOUSTON USE ONLY

PEN TABLE: LAN-COH-CIVIL.ctb

USERNAME: Fleming, David

PLOTED: 4/3/2025 8:37 PM

FILE PATH: P:\132\132-1001-000\4-D-Production-Working\4-1-BIM-CAD\Civil\Sheets\SITE 7 PHASE 1 SHUTDOWN MAP.dwg



N

0 10 20

SCALE: 1"=10'

LEGEND

- PHASE 1 CONSTRUCTION LIMITS
- PHASE 2 SHUTDOWN LIMITS
- EXIST SLEEVE VALVE
- EXIST GATE VALVE (VERTICAL)
- EXIST GATE VALVE (HORIZONTAL)
- EXIST BUTTERFLY VALVE

NO.	DATE	REVISION	APP.

NOTICE:
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PRIVATE UTILITY LINES SHOWN

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EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS
& NEWNAM, INC.
3700 W SAM HOUSTON PKWY S,
SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING
FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

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Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON

HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3

60% SUBMITTAL

SITE 7
PHASE 2 SHUTDOWN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 10'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 161 OF 244	

PEN TABLE: LAN-COH-CIVIL.ctb

USERNAME: Fleming, David

PLOTTED: 4/3/2025 8:37 PM

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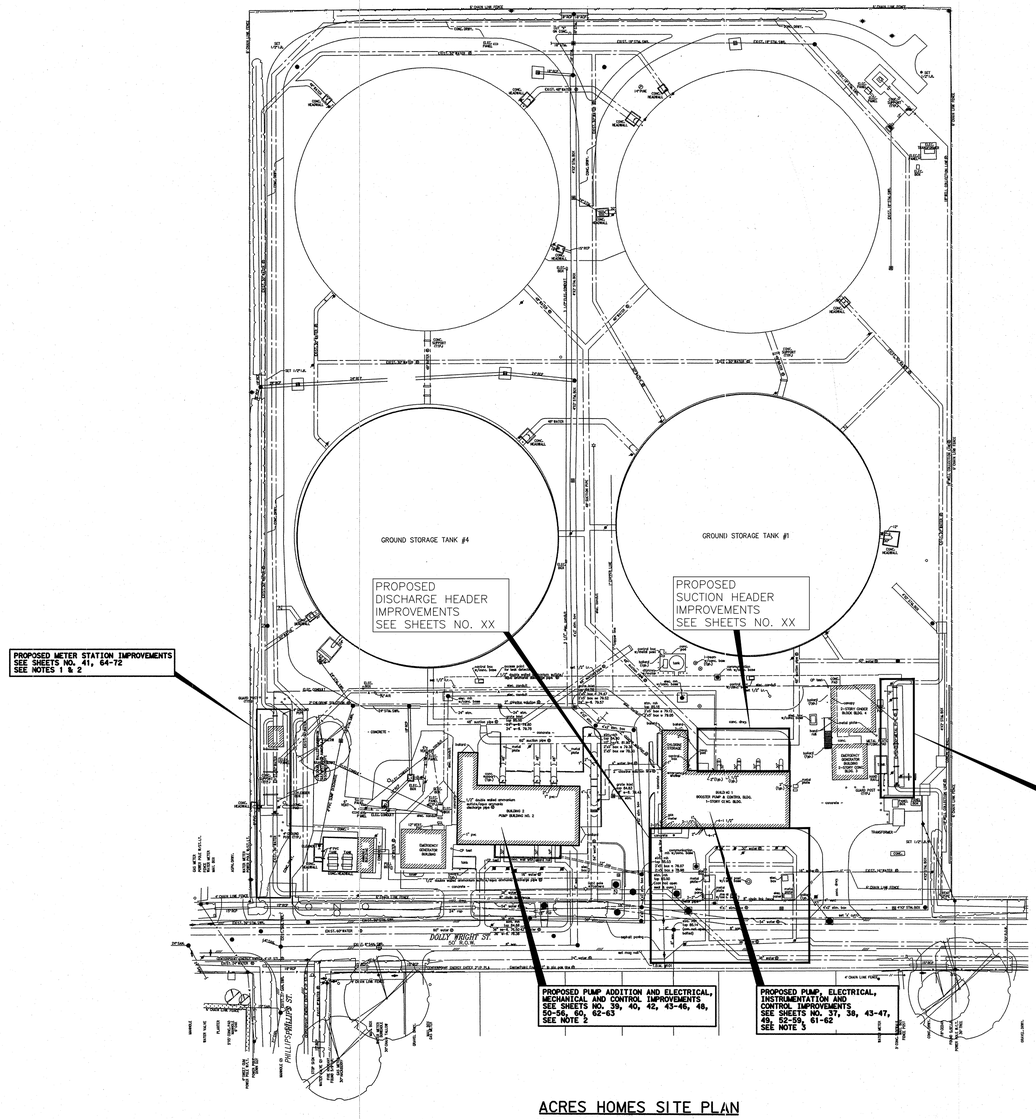

ACRES HOMES SITE PLAN

0 40 80
(IN FEET)
1 inch = 40 ft.

NO.	DATE	REVISIONS	APP.

NOTES

1. PROPOSED METER STATION IMPROVEMENTS CONSIST OF REMOVING AND REPLACING EXISTING METERING STATION PIPING, FITTINGS, VALVES, CHEMICAL FEED CONNECTIONS, INSTRUMENTATION AND CONTROL CONNECTIONS AND ELECTRICAL CONNECTIONS, NEW PIPING, FITTINGS, VALVES CHEMICAL FEED CONNECTIONS, INSTRUMENTATION AND CONTROL CONNECTIONS AND ELECTRICAL CONNECTIONS TO BE INSTALLED IN ACCORDANCE WITH LOCATIONS AND DETAILS SHOWN ON THE REFERENCED DRAWING SHEETS AND APPLICABLE TECHNICAL SPECIFICATIONS.
2. THE PROPOSED IMPROVEMENTS LOCATED INSIDE EXISTING BUILDING NO. 2 INCLUDE INSTALLING A NEW BOOSTER PUMP, REMOVING EXISTING ELECTRICAL SWITCHGEAR AND VARIABLE FREQUENCY DRIVE UNIT, INSTALLING NEW ELECTRICAL SWITCHGEAR AND REDUCED VOLTAGE / SOFT STARTERS INSTALLING MISC. MECHANICAL IMPROVEMENTS AND INSTALLING NEW INSTRUMENTATION AND CONTROL EQUIPMENT. NEW EQUIPMENT TO BE INSTALLED IN ACCORDANCE WITH LOCATIONS AND DETAILS SHOWN ON THE REFERENCE DRAWING SHEETS AND APPLICABLE TECHNICAL SPECIFICATIONS.
3. THE PROPOSED IMPROVEMENTS LOCATED INSIDE EXISTING BUILDING NO. 1 INCLUDE REMOVING EXISTING BOOSTER PUMPS, INSTALLING NEW BOOSTER PUMPS, REMOVING VARIABLE FREQUENCY DRIVE UNITS, INSTALLING NEW REDUCED VOLTAGE / SOFT STARTERS AND INSTALLING NEW INSTRUMENTATION AND CONTROL EQUIPMENT. NEW EQUIPMENT TO BE INSTALLED IN ACCORDANCE WITH LOCATIONS AND DETAILS SHOWN ON THE REFERENCED DRAWING SHEETS AND APPLICABLE TECHNICAL SPECIFICATIONS.
4. PRE-CONSTRUCTION IMPERVIOUS COVER AT METER STATION = 201 SY
   POST-CONSTRUCTION IMPERVIOUS COVER AT METER STATION = 201 SY

NOV 18 2015
PW-014905

RECORD DRAWINGS
DO NOT MODIFY
LOCKWOOD, ANDREWS & NEWNAM, INC.

LAN
Lockwood, Andrews & Newnam, Inc.
A LEO A DALY COMPANY
2925 Briarpark Drive Houston, TX 77042

SURVEYED BY:
KUO & ASSOCIATES
FB No.

STATE OF TEXTAS
WILLIAM M. WILSHIRE III
94193
PROFESSIONAL ENGINEER
11/4/15
Lockwood, Andrews & Newnam, Inc.
Firm No. 2614

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

GROUNDWATER TREATMENT PLANTS IMPROVEMENTS
ACRES HOMES
OVERALL SITE LAYOUT
PROPOSED IMPROVEMENTS
AH-C-1A

WBS NO. S-001000-0031-4	
DRAWING SCALE	
SCALE: 1"=40'	
CITY OF HOUSTON PM	
RAJINDER SINGH, P.E.	
SHEET NO. 36A OF 92	

ACCEPTED AND FILED
48523
HARRIS COUNTY, TEXAS

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567

PRIVATE UTILITY LINES SHOWN

Date:
CENTERPOINT ENERGY/ELECTRIC FACILITIES
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LAN

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

INTERIM REVIEW ONLY
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Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL

SITE 7
OVERALL SITE LAYOUT

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
NONE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 162 OF 244	

L:\L12\-1020-0011\4-0-Production\04-01-Drawings\Civil\Acres Homes Pump Station\000-ACRES HOME site plan-01.dgn 9/6/2011 8:45:03 AM Marc Isondon

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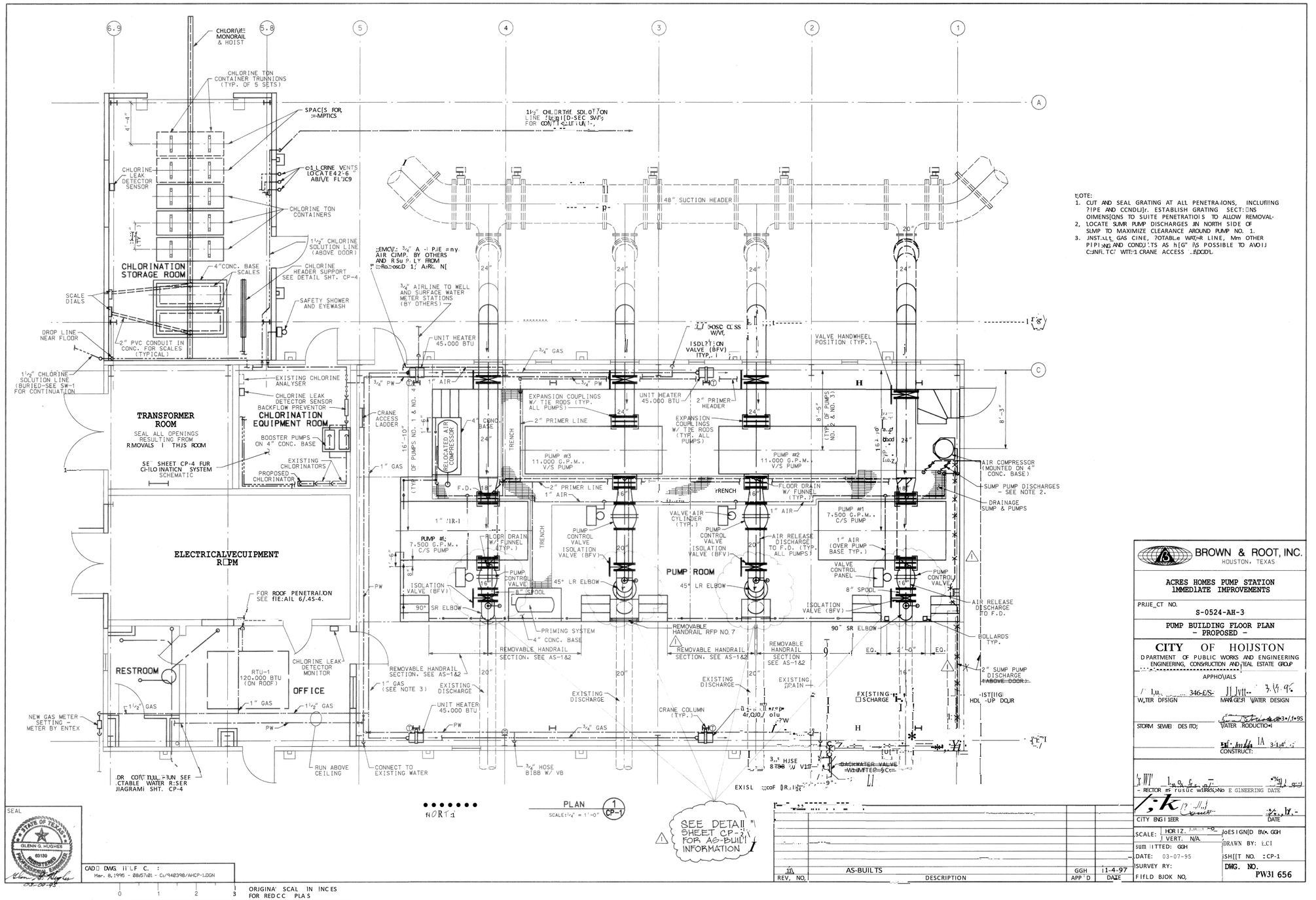

PLAN
SCALE: 1/4" = 1'-0"
1 / CP-1

SEAL
STATE OF TEXAS
GLENN G. HUGHES
68139
REGISTERED
PROFESSIONAL ENGINEER
03-07-95

CADD DWG. FILE:
Mar. 8, 1996 - 08:57:01 - D:/940398/AHCP-1.DGN

0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

NO.	DATE	REVISION	APP.

NOTICE:
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Date:
AT&T TEXAS/SBC UTILITY LINES SHOWN
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LAN

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

INTERIM REVIEW ONLY
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Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 7
PUMP BUILDING FLOOR PLAN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 10'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 163 OF 244	

BROWN & ROOT, INC.
HOUSTON, TEXAS

ACRES HOMES PUMP STATION IMMEDIATE IMPROVEMENTS

PROJECT NO.
S-0524-AH-3

PUMP BUILDING FLOOR PLAN
– PROPOSED –

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP

APPROVALS

WATER DESIGN — 346-E/S- — MANAGER WATER DESIGN

STORM SEWER DESIGN — WATER PRODUCTION

CONSTRUCT:

DIRECTOR PUBLIC WORKS & ENGINEERING — DATE

CITY ENGINEER — DATE

SCALE: HORIZ. 1"=10'
VERT. N/A.
SUBMITTED: GGH
DATE: 03-07-95
SURVEY BY:
FIELD BOOK NO.

DESIGNED BY: GGH
DRAWN BY: LCI
SHEET NO. CP-1
DWG. NO. PW31 656

REV. NO.	DESCRIPTION	APP'D	DATE
1	AS-BUILTS	GGH	11-4-97

FILE PATH: P:\132\132-1000-000\4-0-Production-Working\4-1-BIM-CAD\CAD\Sheets\SITE 7 PUMP BUILDING FLOOR PLAN.dwg
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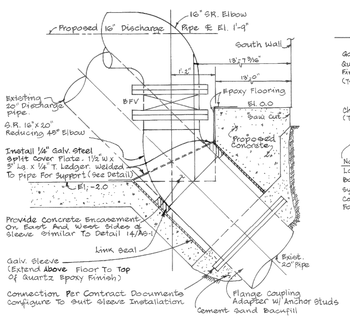
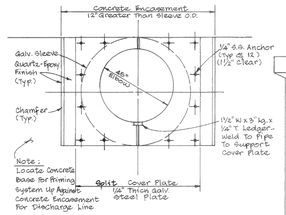
USERNAME: Fleming, David
PEN TABLE: LAN-COH-CIVIL.ctb



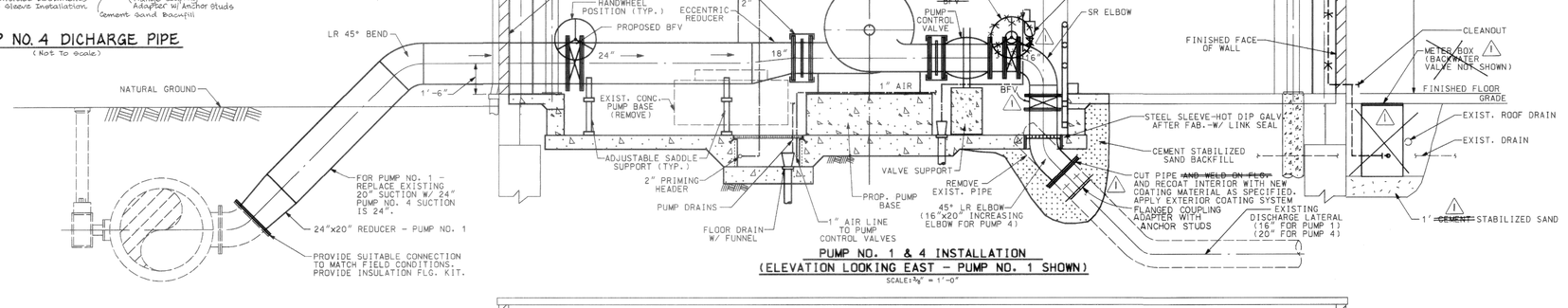
PUMP NO. 4 DICHARGE PIPE

(Not To Scale)



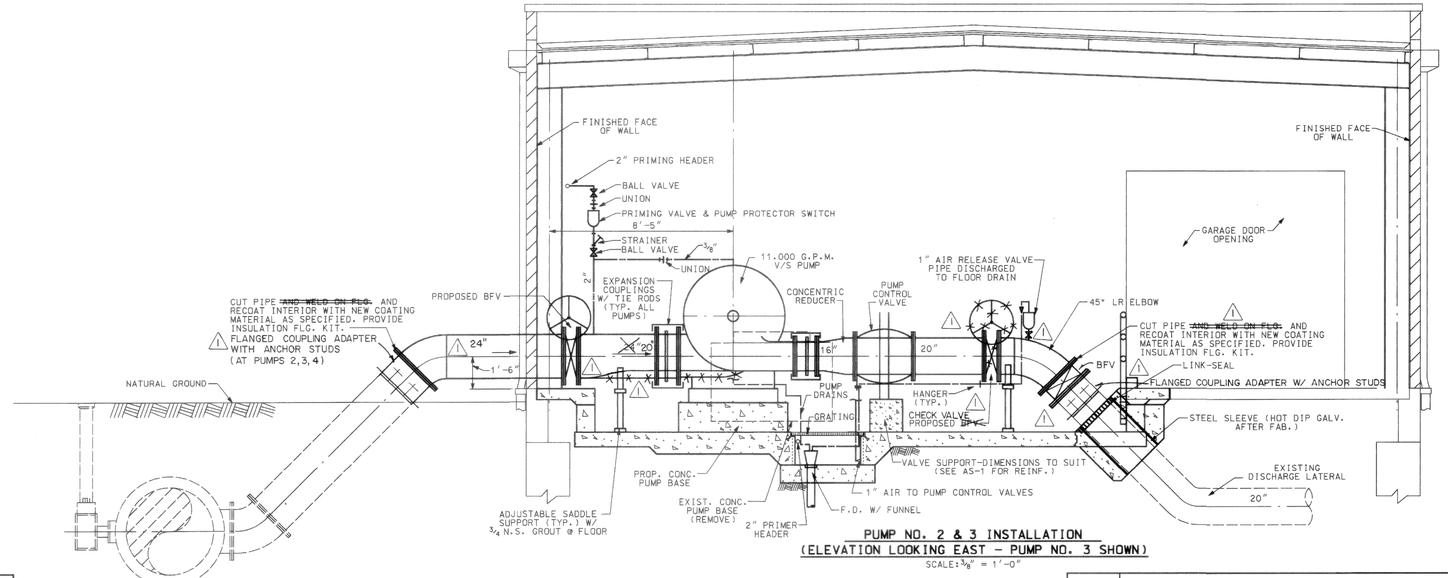
COVER PLATE DETAIL PLAN VIEW

(Scale: ⅜" = 1'-0")



PUMP NO. 1 & 4 INSTALLATION
(ELEVATION LOOKING EAST - PUMP NO. 1 SHOWN)

SCALE: ⅜" = 1'-0"



PUMP NO. 2 & 3 INSTALLATION
(ELEVATION LOOKING EAST - PUMP NO. 3 SHOWN)

SCALE: ⅜" = 1'-0"

SEAL

STATE OF TEXAS — GLENN G. HUGHES — 69180 — REGISTERED — PROFESSIONAL ENGINEER

CADD DWG. FILE NO. :
Mar. 8, 1995 - 08:57:44 - C:/940398/AHCP-2.DGN

0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

REV. NO.	DESCRIPTION	APP'D	DATE
1	AS-BUILTS	GGH	11-4-97

NO.	DATE	REVISION	APP.

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PRIVATE UTILITY LINES SHOWN

Date:

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BROWN & ROOT, INC.
HOUSTON, TEXAS

ACRES HOMES PUMP STATION
IMMEDIATE IMPROVEMENTS

PROJECT NO.
S-0524-AH-3

CIVIL PROCESS
PUMP INSTALLATION DETAILS

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP

APPROVALS

W.S. Harris 3-16-95 — WATER DESIGN
D. Wood 3-17-95 — MANAGER, WATER DESIGN
STORM SEWER DESIGN
Glen Stubbs 3-17-95 — WATER PRODUCTION
A.J. Hallaway 3/17/95 — CONSTRUCTION
3-21-95 — DIRECTOR OF PUBLIC WORKS AND ENGINEERING DATE
3/20/95 — CITY ENGINEER DATE

SCALE: HORIZ. AS SHOWN; VERT. N/A
SUBMITTED: GGH
DATE: 03-07-95
SURVEY BY:
FIELD BOOK NO.
DESIGNED BY: GGH
DRAWN BY: LCI
SHEET NO. : CP-2
DWG. NO. PW31656

LAN

EFF DATE: XXXX-XX-20XX
DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of interim review under the authority of: Engineer CHRISTINE H. KIRBY, PE
Registration Number 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL

SITE 7
PUMP BUILDING ELEVATIONS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
NONE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 164 OF 244	

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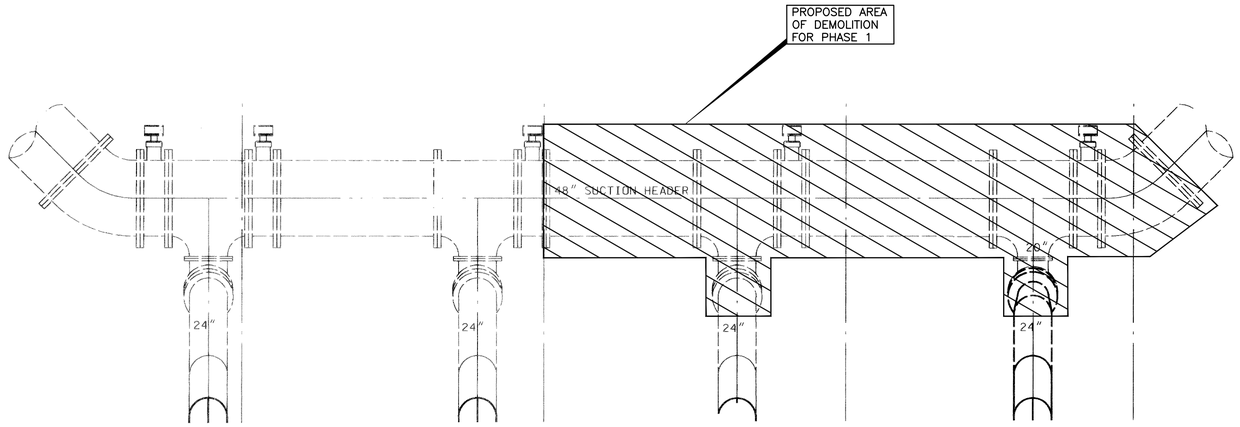
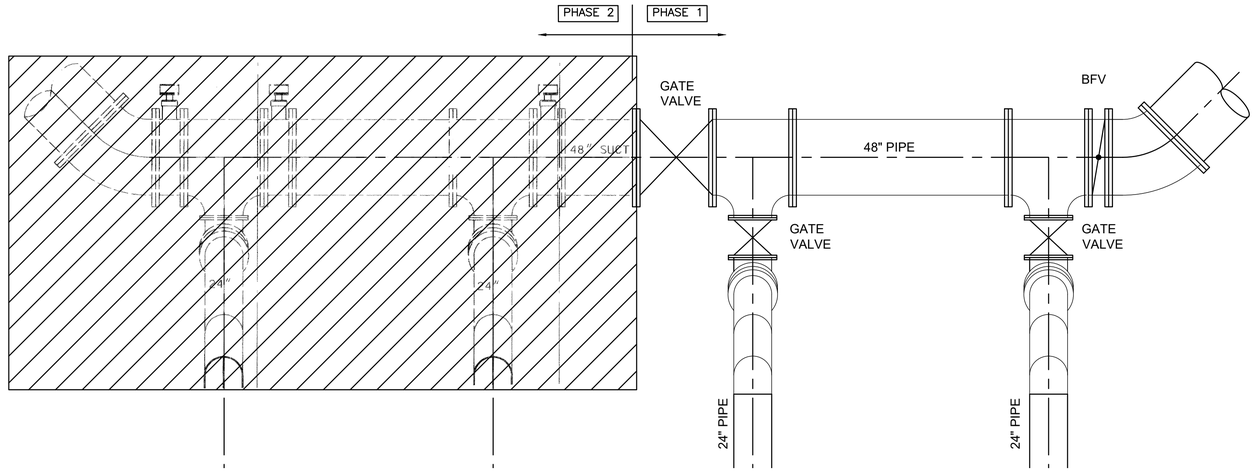


SUCTION HEADER PIPING - PHASE 1 DEMOLITION PLAN

(AERIAL VIEW)

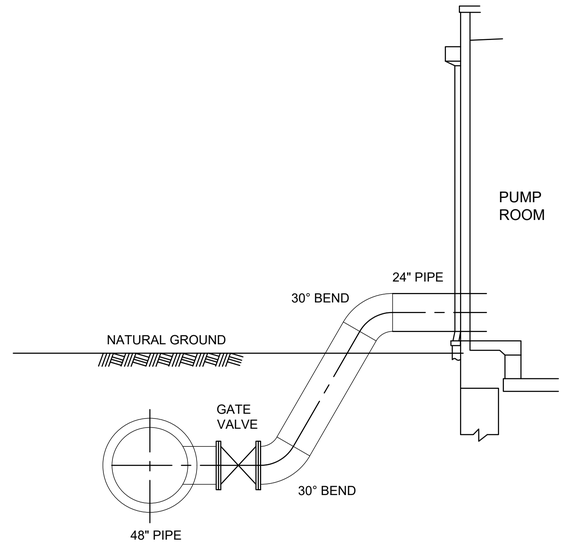
SCALE: 1"=4'



SUCTION HEADER PIPING - PHASE 1 CONSTRUCTION PLAN

(AERIAL VIEW)

SCALE: 1"=4'



ELEVATION

(LOOKING EAST-NORTH SIDE PUMP BLDG.)

SCALE: 1"=4'



NO.	DATE	REVISION	APP.

NOTICE:

AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567

PRIVATE UTILITY LINES SHOWN

Date:

CENTERPOINT ENERGY/ELECTRIC FACILITIES

ELECTRICAL FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION).

Date:

CENTERPOINT ENERGY/GAS FACILITIES

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Date:

AT&T TEXAS/SBC UTILITY LINES SHOWN

APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

LAN

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

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SUITE 400
HOUSTON, TX 77042

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FIRM F-2614

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3

60% SUBMITTAL

SITE 7 – PUMP BUILDING 1 PHASE 1 SUCTION HEADERS PLAN & SECTION

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 4'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 165 OF 244	

PEN TABLE: LAN-COH-CIVIL.ctb

USERNAME: Fleming, David

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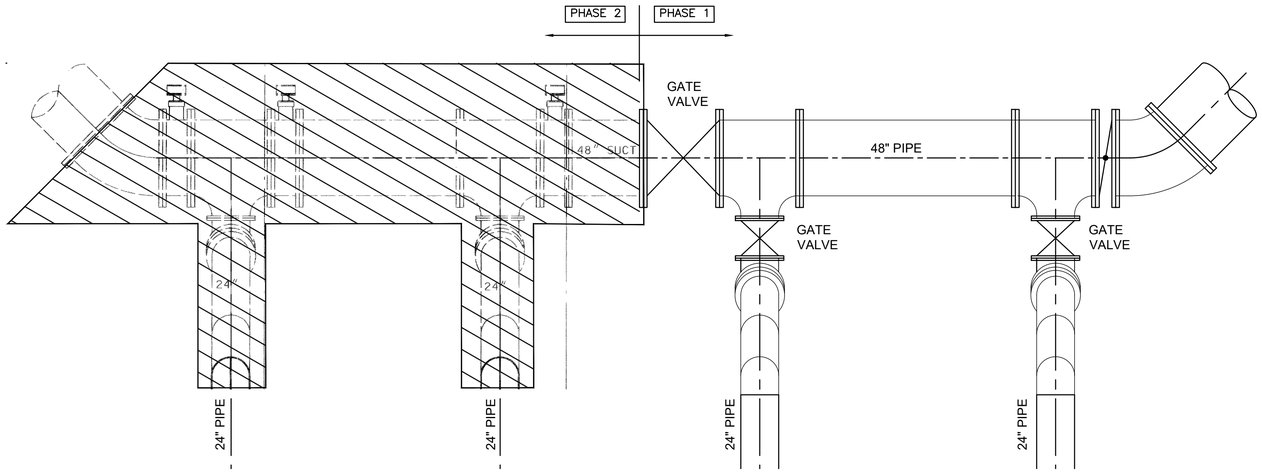
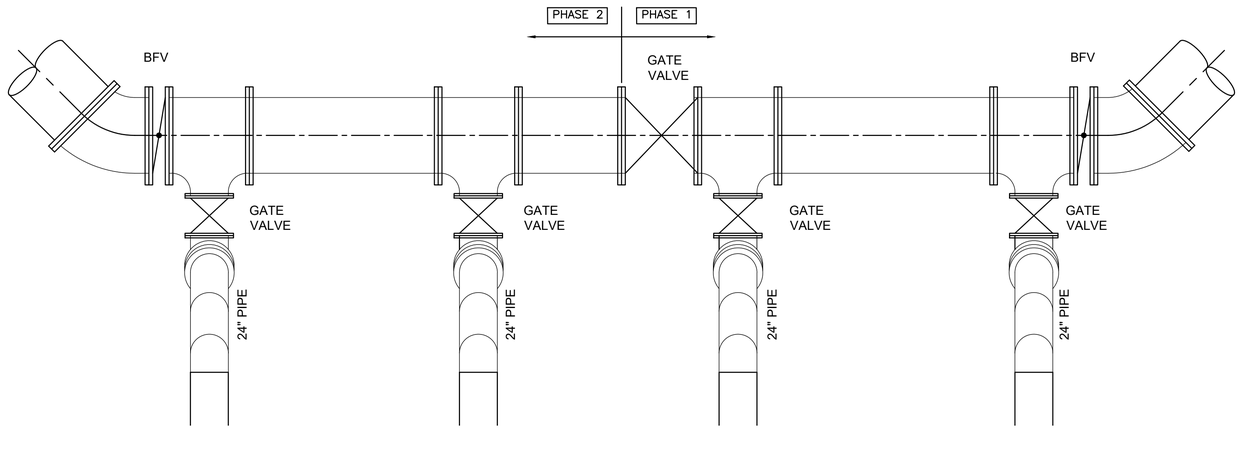


SUCTION HEADER PIPING - PHASE 2 CONSTRUCTION PLAN

(AERIAL VIEW)

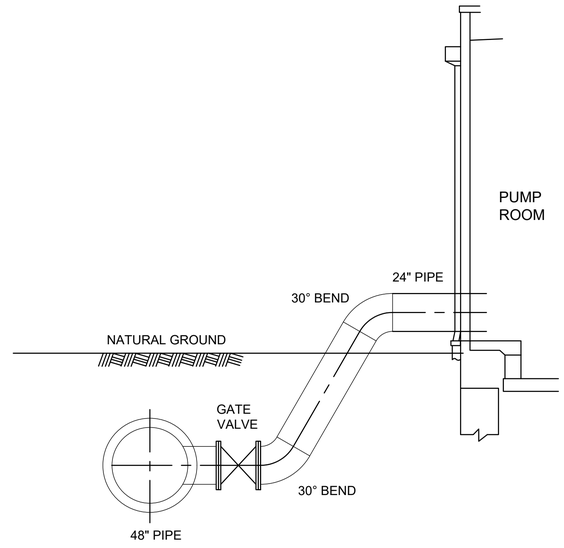
SCALE: 1"=4'



SUCTION HEADER PIPING - PHASE 2 CONSTRUCTION PLAN

(AERIAL VIEW)

SCALE: 1"=4'



ELEVATION

(LOOKING EAST-NORTH SIDE PUMP BLDG.)

SCALE: 1"=4'

NO.	DATE	REVISION	APP.

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PRIVATE UTILITY LINES SHOWN

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EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS
& NEWNAM, INC.
3700 W SAM HOUSTON PKWY S,
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HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING
FIRM F-2614

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Texas Registered Engineering Firm F-2614

CITY OF HOUSTON

HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3

60% SUBMITTAL

SITE 7 - PUMP BUILDING PHASE 2 SUCTION HEADERS PLAN & SECTION

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 4'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 166 OF 244	

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USERNAME: Fleming, David

PLOTED: 4/4/2025 9:51 AM

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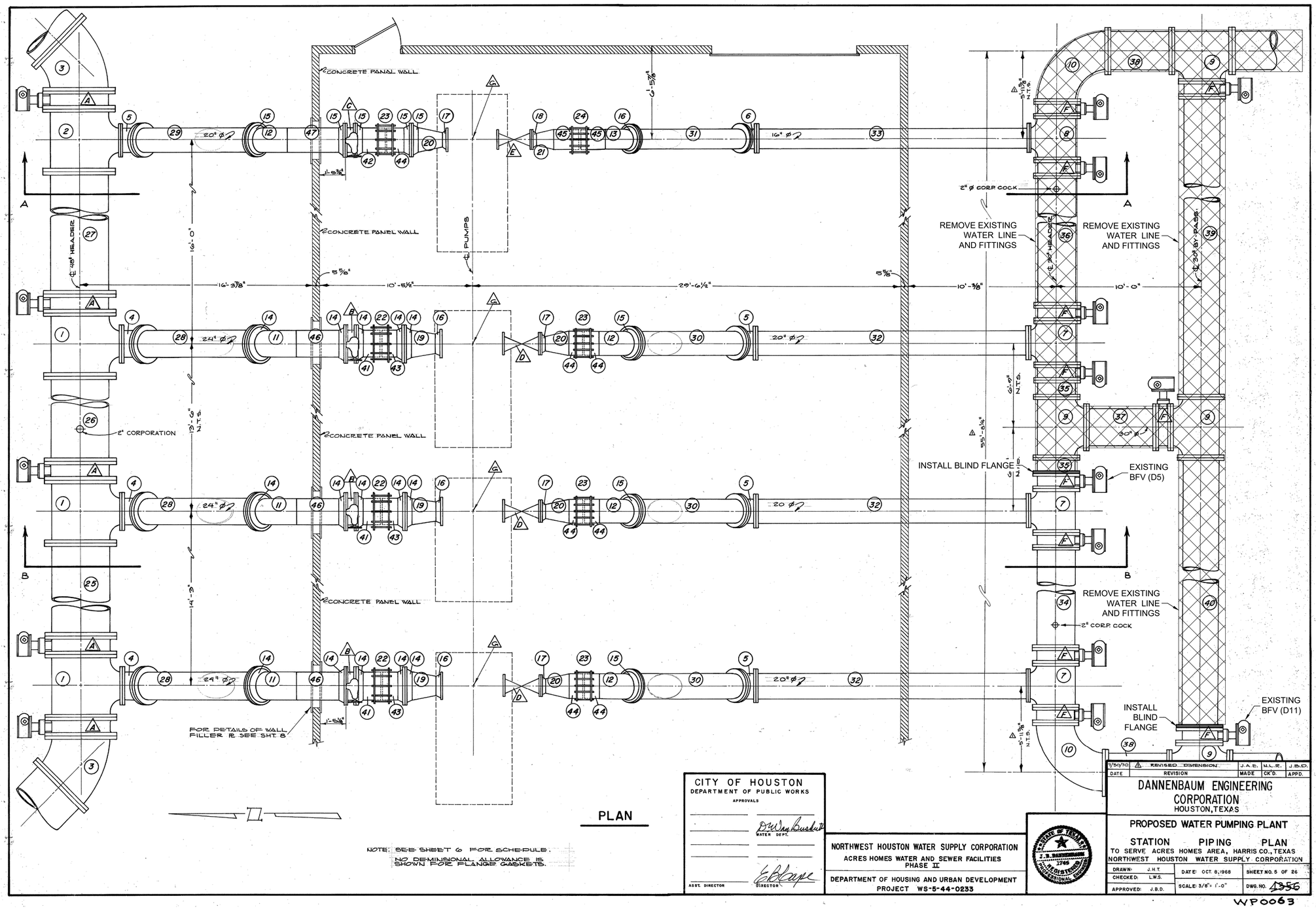

PLAN

NOTE: SEE SHEET 6 FOR SCHEDULE.
NO DEMINSIONAL ALLOWANCE IS SHOWN FOR FLANGE GASKETS.

LEGEND

PHASE 1 DEMOLITION LIMITS

BLIND FLANGE

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567

PRIVATE UTILITY LINES SHOWN

Date:
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LAN

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S,
SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
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Registration Number: 94776
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Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 7
PHASE 1 DEMOLITION

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
NONE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 167 OF 244	

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS
APPROVALS

D. Wayne Bushett
WATER DEPT.

ASST. DIRECTOR

E. B. Cape
DIRECTOR

NORTHWEST HOUSTON WATER SUPPLY CORPORATION
ACRES HOMES WATER AND SEWER FACILITIES
PHASE II

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
PROJECT WS-5-44-0233

STATE OF TEXAS
J. B. DANNENBAUM
1746
REGISTERED PROFESSIONAL ENGINEER

DATE	REVISION	MADE	CK'D.	APPD.
7/30/70	△1 REVISED DIMENSION	J.A.E.	N.L.R.	J.B.D.

DANNENBAUM ENGINEERING CORPORATION
HOUSTON, TEXAS

PROPOSED WATER PUMPING PLANT
STATION PIPING PLAN
TO SERVE ACRES HOMES AREA, HARRIS CO., TEXAS
NORTHWEST HOUSTON WATER SUPPLY CORPORATION

DRAWN: J.H.T.	DATE: OCT. 8, 1968	SHEET NO. 5 OF 26	
CHECKED: L.W.S.	SCALE: 3/8" = 1'-0"	DWG. NO. 1356	
APPROVED: J.B.D.			

WP0063

PEN TABLE: LAN-COH-CIVIL.ctb
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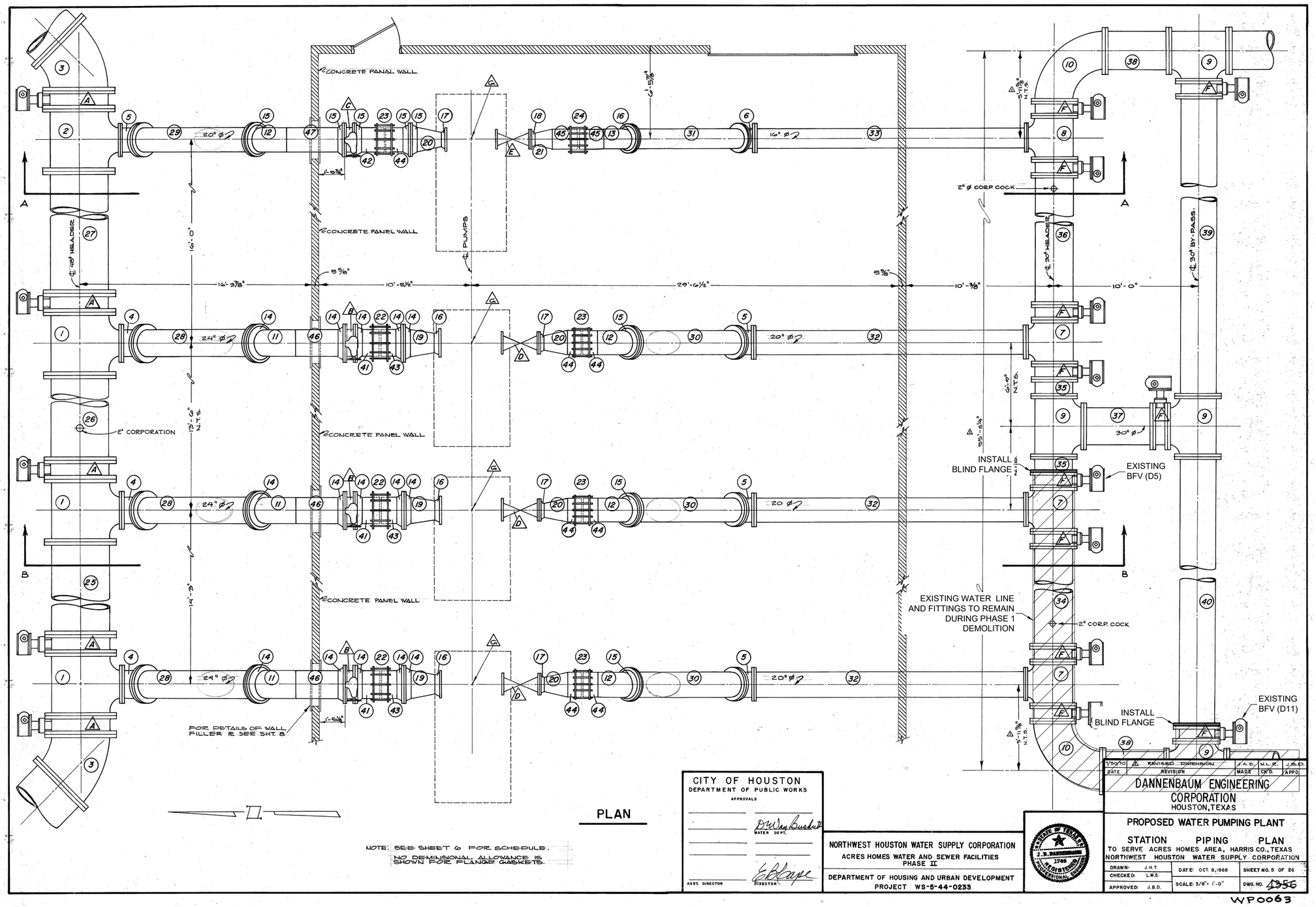

PLAN

NOTE: SEE SHEET 6 FOR SCHEDULE.
NO DEMINISIONAL ALLOWANCE IS SHOWN FOR FLANGE GASKETS.

LEGEND

PHASE 1 WATER LINE AND FITTINGS TO REMAIN DURING DEMOLITION

BLIND FLANGE

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567

PRIVATE UTILITY LINES SHOWN

Date:
CENTERPOINT ENERGY/ELECTRIC FACILITIES
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Date:
AT&T TEXAS/SBC UTILITY LINES SHOWN
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LAN

EFF DATE: XXXX-XX-20XX | DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S,
SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

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Engineer: CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

SITE 7
EXISTING WATER TO REMAIN

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
NONE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 168 OF 244	

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS
APPROVALS
WATER DEPT.
ASST. DIRECTOR
DIRECTOR

NORTHWEST HOUSTON WATER SUPPLY CORPORATION
ACRES HOMES WATER AND SEWER FACILITIES
PHASE II
DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
PROJECT WS-5-44-0233

STATE OF TEXAS
J. B. DANNENBAUM
1745
REGISTERED PROFESSIONAL ENGINEER

DATE	REVISION	MADE	CK'D.	APP'D
7/30/70	REVISED DIMENSION	J.A.E.	N.L.R.	J.B.D.

DANNENBAUM ENGINEERING CORPORATION
HOUSTON, TEXAS

PROPOSED WATER PUMPING PLANT
STATION PIPING PLAN
TO SERVE ACRES HOMES AREA, HARRIS CO., TEXAS
NORTHWEST HOUSTON WATER SUPPLY CORPORATION

DRAWN: J.H.T.	DATE: OCT. 8, 1968	SHEET NO. 5 OF 26	
CHECKED: L.W.S.	SCALE: 3/8" = 1'-0"	DWG. NO. 1356	
APPROVED: J.B.D.			

WP0063

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USERNAME: Fleming, David
PLOTED: 4/3/2025 8:38 PM
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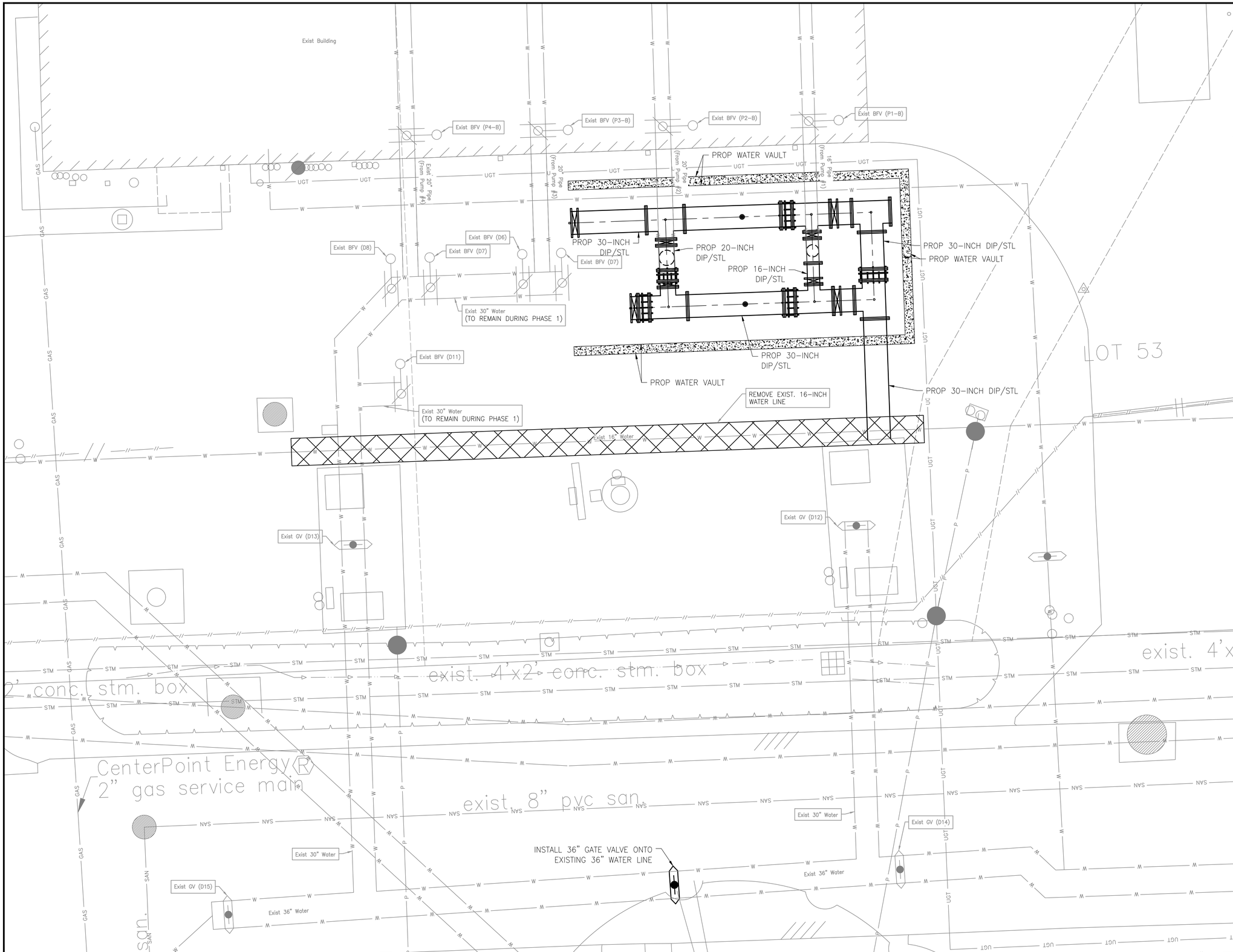

N

0 5 10

SCALE: 1"=5'

LEGEND

- PHASE 1 PROP WATER VAULT
- EXIST SLEEVE VALVE
- EXIST GATE VALVE (VERTICAL)
- EXIST GATE VALVE (HORIZONTAL)
- EXIST BUTTERFLY VALVE
- PROP TEE
- PROP BFV
- PROP DISMANTLING JOINT
- PROP AIR RELEASE VALVE
- PROP GATE VALVE

NO.	DATE	REVISION	APP.

NOTICE:
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PRIVATE UTILITY LINES SHOWN

Date:
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EFF DATE: XXXX-XX-20XX

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LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

60% SUBMITTAL

SITE 7 PHASE 1 CONSTRUCTION

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 5'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 169 OF 244	

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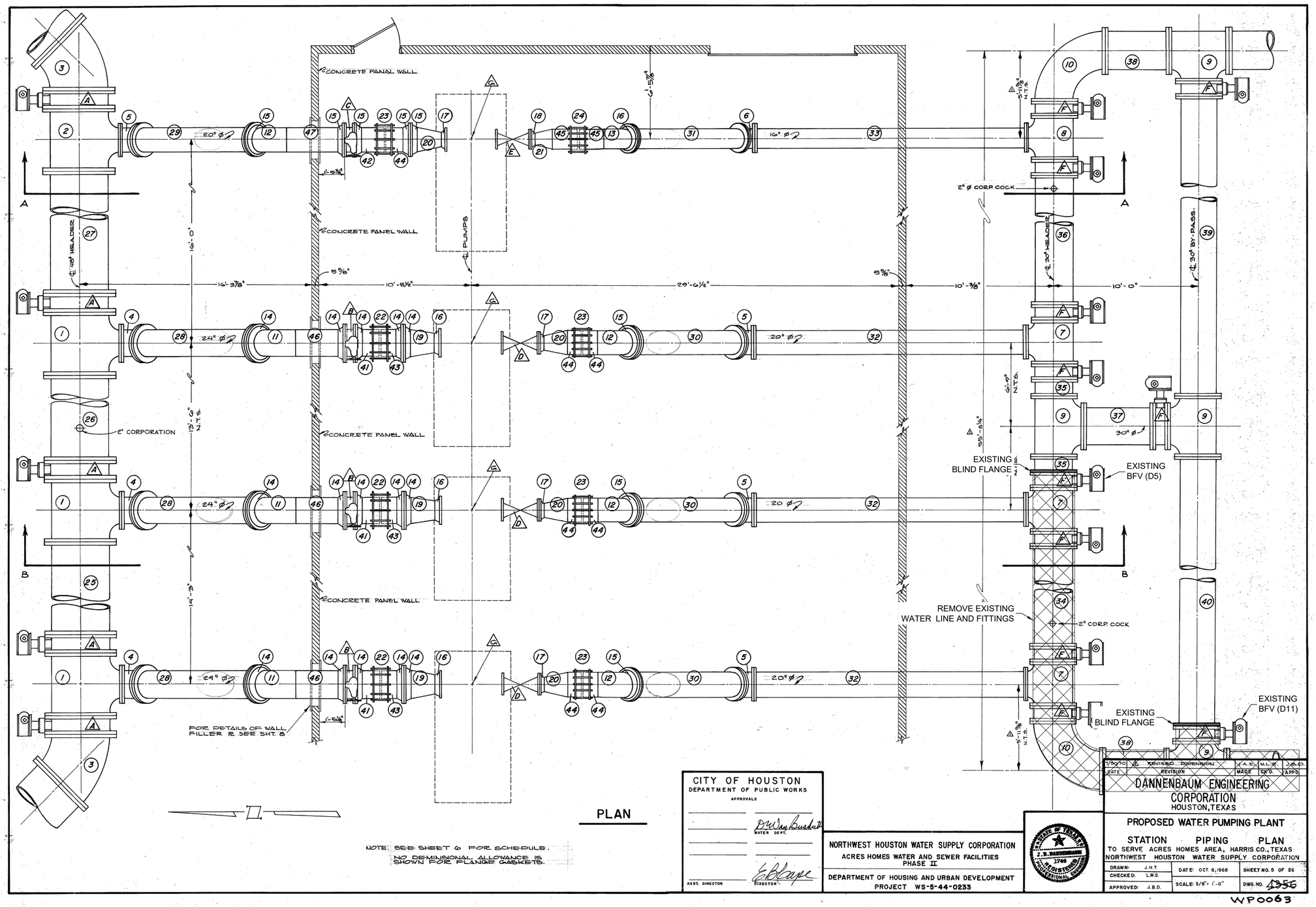

PLAN

NOTE: SEE SHEET 6 FOR SCHEDULE.
NO DEMINISIONAL ALLOWANCE IS SHOWN FOR FLANGE GASKETS.

LEGEND

PHASE 2 DEMOLITION LIMITS

BLIND FLANGE

NO.	DATE	REVISION	APP.

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SITE 7
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WATER DEPT.
ASST. DIRECTOR
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NORTHWEST HOUSTON WATER SUPPLY CORPORATION
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PHASE II
DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
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DATE	REVISION	MADE	CK'D.	APP'D.
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DANNENBAUM ENGINEERING CORPORATION
HOUSTON, TEXAS

PROPOSED WATER PUMPING PLANT
STATION PIPING PLAN
TO SERVE ACRES HOMES AREA, HARRIS CO., TEXAS
NORTHWEST HOUSTON WATER SUPPLY CORPORATION

DRAWN: J.H.T.	DATE: OCT. 8, 1968	SHEET NO. 5 OF 26	
CHECKED: L.W.S.	SCALE: 3/8" = 1'-0"	DWG. NO. 1356	
APPROVED: J.B.D.			

WP0063

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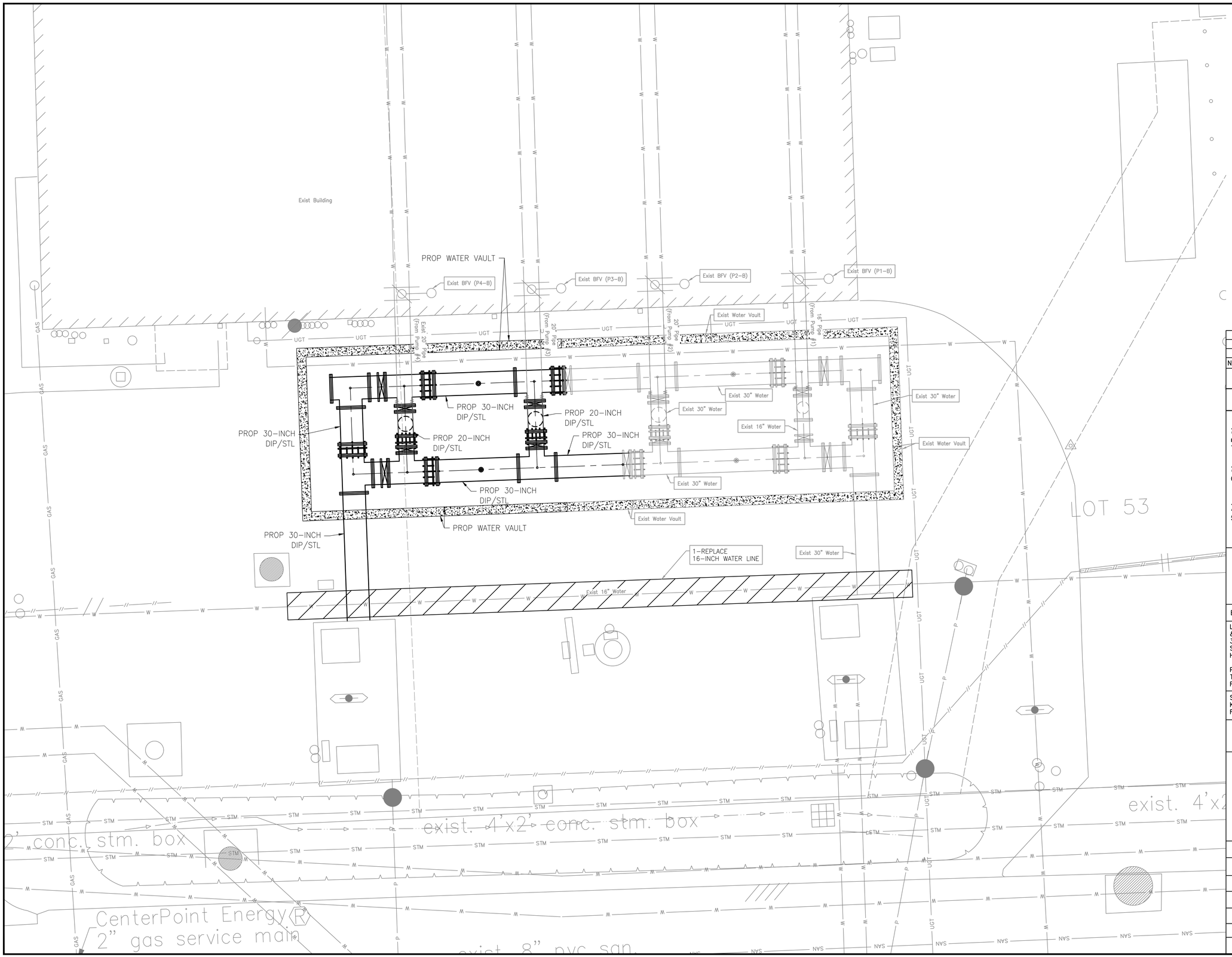

N

0 5 10

SCALE: 1"=5'

LEGEND

- PHASE 1 PROP WATER VAULT
- EXIST SLEEVE VALVE
- EXIST GATE VALVE (VERTICAL)
- EXIST GATE VALVE (HORIZONTAL)
- EXIST BUTTERFLY VALVE
- PROP TEE
- PROP BFV
- PROP DISMANTLING JOINT
- PROP AIR RELEASE VALVE

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567.

PRIVATE UTILITY LINES SHOWN

Date:

CENTERPOINT ENERGY/ELECTRIC FACILITIES
ELECTRICAL FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION).

Date:

CENTERPOINT ENERGY/GAS FACILITIES
(GAS SERVICE LINES ARE NOT SHOWN). THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION.

Date:

AT&T TEXAS/SBC UTILITY LINES SHOWN
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LAN

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

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Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

CITY OF HOUSTON

HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3

60% SUBMITTAL

SITE 7
PHASE 2 CONSTRUCTION

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 5'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 171 OF 244	

PEN TABLE: LAN-COH-CIVIL.ctb
USERNAME: Fleming, David
PLOTED: 4/3/2025 8:39 PM
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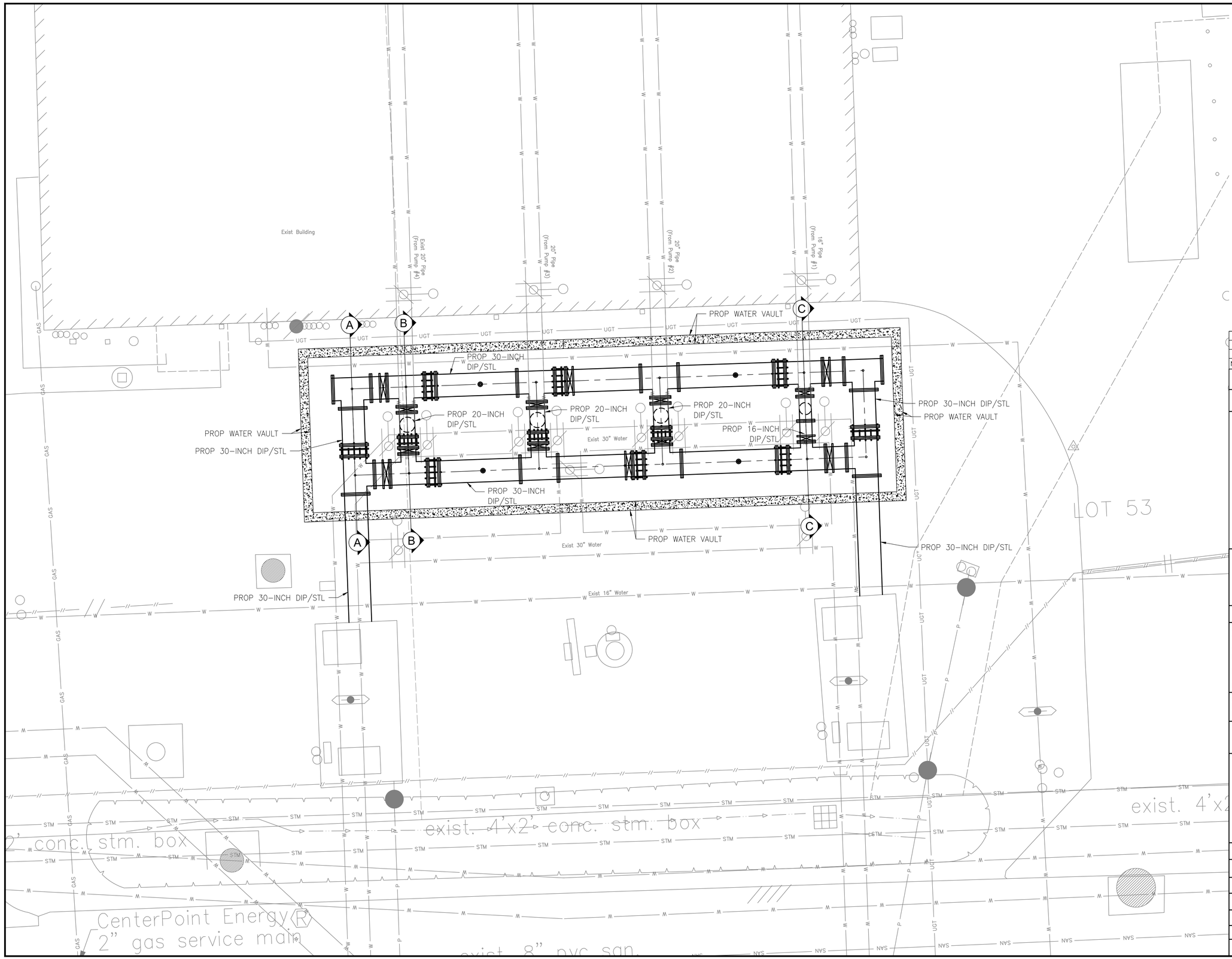

N

0 5 10

SCALE: 1"=5'

LEGEND

- PHASE 1 PROP WATER VAULT
- EXIST SLEEVE VALVE
- EXIST GATE VALVE (VERTICAL)
- EXIST GATE VALVE (HORIZONTAL)
- EXIST BUTTERFLY VALVE
- PROP TEE
- PROP BFV
- PROP DISMANTLING JOINT
- PROP AIR RELEASE VALVE

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567.

PRIVATE UTILITY LINES SHOWN

Date:

CENTERPOINT ENERGY/ELECTRIC FACILITIES
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DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3

60% SUBMITTAL

SITE 7
PROP WATER LINE VAULT
(SHEET 1 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 5'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 172 OF 244	

PEN TABLE: LAN-COH-CIVIL.ctb

USERNAME: Fleming, David

PLOTED: 4/3/2025 8:39 PM

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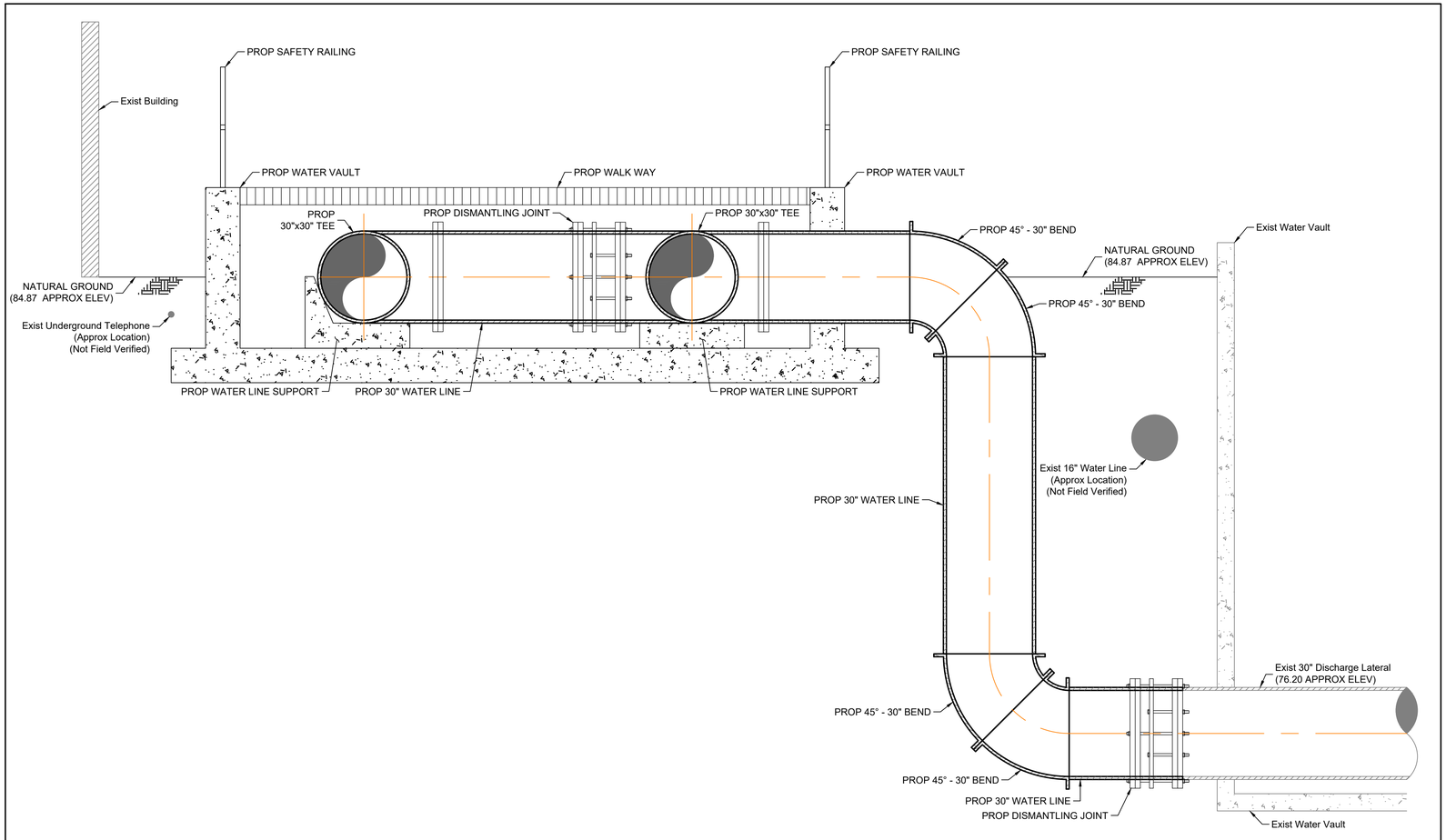

CROSS SECTION 'A-A'
SCALE: 1" = 2'

NO.	DATE	REVISION	APP.

NOTICE:
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PRIVATE UTILITY LINES SHOWN

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DWG NO: XXXXX-XX

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Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL
SITE 7
CROSS SECTIONS
(SHEET 2 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
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1" = 2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 173 OF 244	

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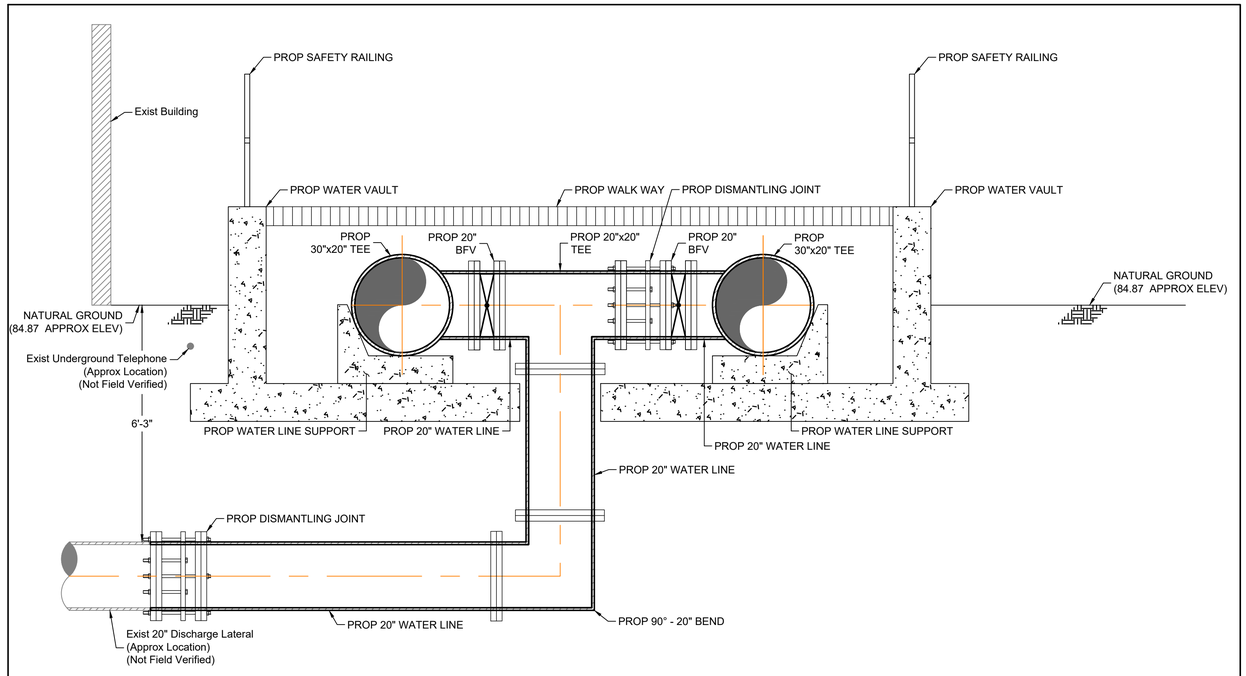
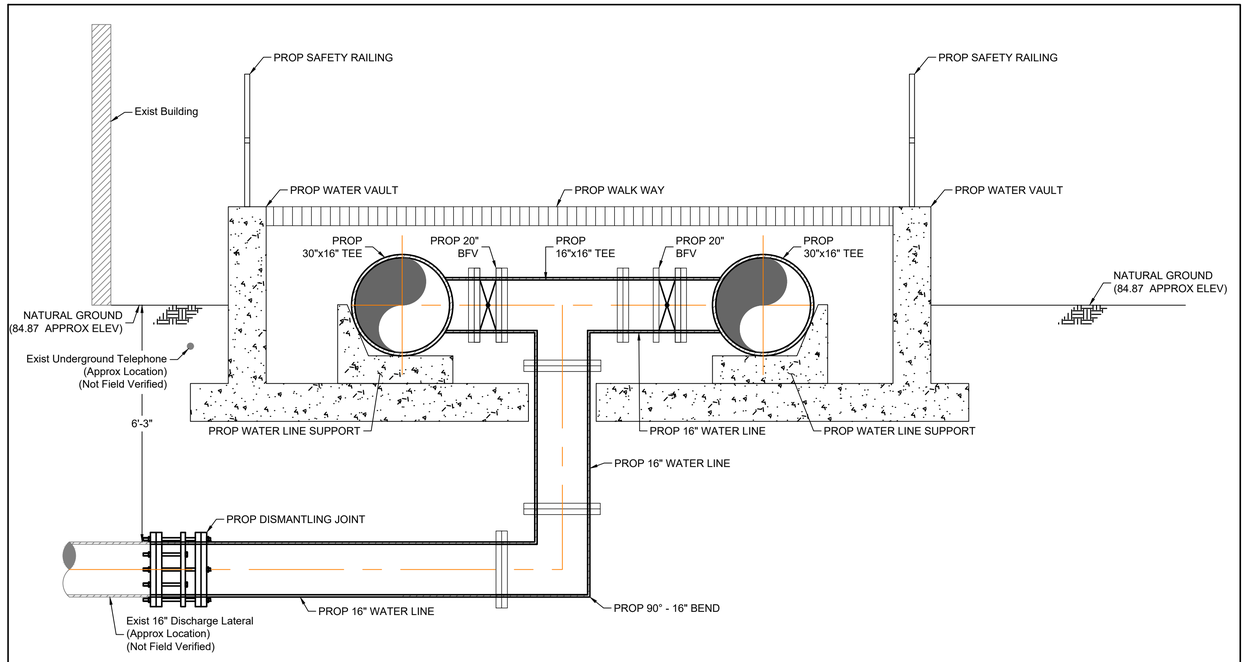


CROSS SECTION 'B-B'
SCALE: 1" = 2'



CROSS SECTION 'C-C'
SCALE: 1" = 2'

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567

PRIVATE UTILITY LINES SHOWN

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EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

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Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL
SITE 7
CROSS SECTIONS
(SHEET 3 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 2'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 174 OF 244	

PEN TABLE: LAN-COH-CIVIL.ctb
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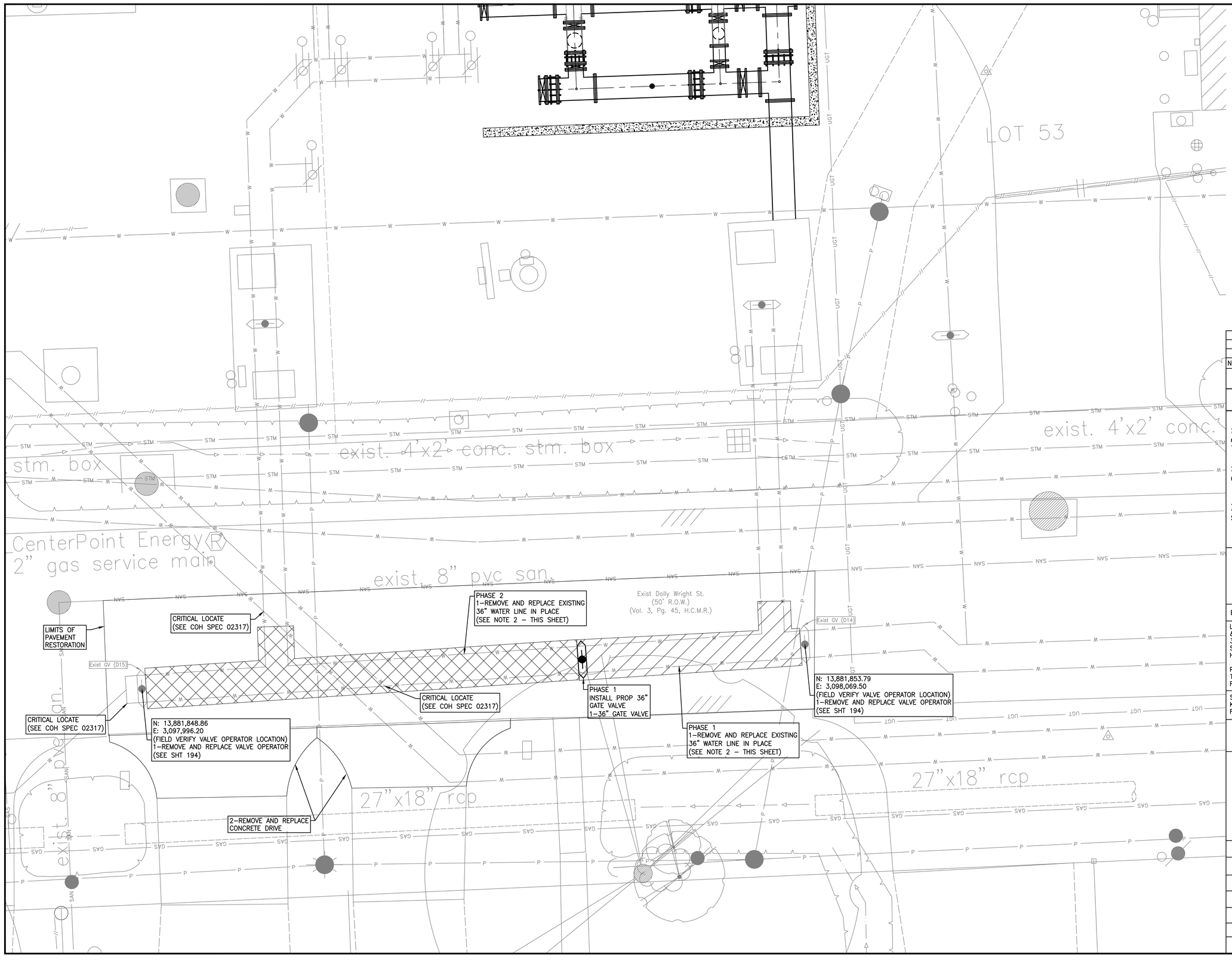

N

0 5 10

SCALE: 1"=5'

LEGEND

- EXIST SLEEVE VALVE
- EXIST GATE VALVE (VERTICAL)
- EXIST GATE VALVE (HORIZONTAL)
- EXIST BUTTERFLY VALVE
- PHASE 1 LIMITS OF CONSTRUCTION
- PHASE 2 LIMITS OF CONSTRUCTION
- PROP PHASE 1 GATE VALVE (VERTICAL)

NOTES:

1. CONTRACTOR TO HAND EXCAVATE BELOW EXISTING PIPE.
2. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS PRIOR TO START OF WORK.

NO.	DATE	REVISION	APP.

NOTICE:
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PRIVATE UTILITY LINES SHOWN

Date:
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LAN

EFF DATE: XXXX-XX-20XX | DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

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Registration Number: 94776
Date: 04/03/2025
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Texas Registered Engineering Firm F-2614

CITY OF HOUSTON

HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL

SITE 7
DOLLY WRIGHT WATER LINE

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 5'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 175 OF 244	

PEN TABLE: LAN-COH-CIVIL.ctb
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PLOTED: 4/4/2025 9:27 AM
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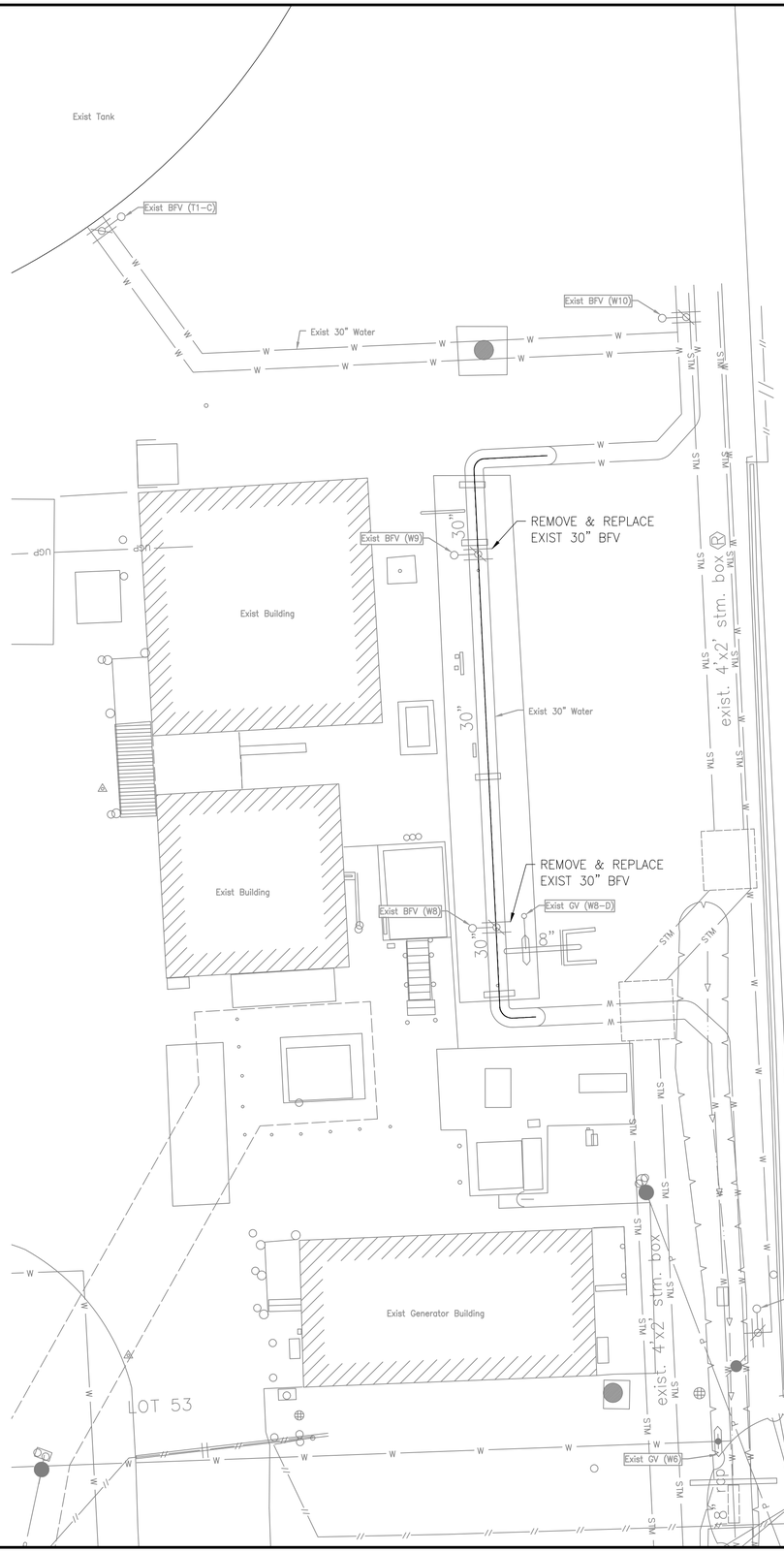

N

0 10 20

SCALE: 1"=10'

LEGEND

- EXIST SLEEVE VALVE
- EXIST GATE VALVE (VERTICAL)
- EXIST GATE VALVE (HORIZONTAL)
- EXIST BUTTERFLY VALVE

NO.	DATE	REVISION	APP.

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LOCKWOOD, ANDREWS
& NEWNAM, INC.
3700 W SAM HOUSTON PKWY S,
SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING
FIRM F-2614

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3

60% SUBMITTAL

SITE 7 METER STATION

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
1" = 10'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 176 OF 244	

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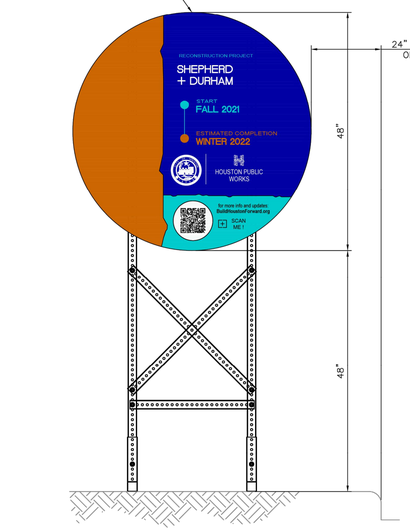
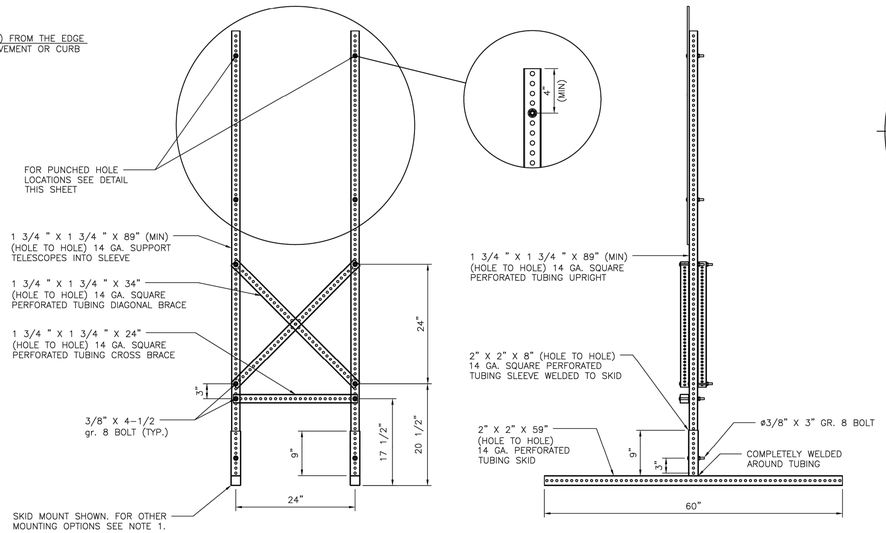
DISCLAIMER:
THE USE OF THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THIS STANDARD DO NOT PURPORT TO ADDRESS ALL OF THE SAFETY CONCERNS ASSOCIATED WITH THEIR USE. THE ENGINEER OF RECORD (EOR) IS TO REVIEW THESE DESIGN REQUIREMENTS AND BY AUTHORIZING THEIR USE, ACCEPTS RESPONSIBILITY FOR THEIR APPLICABILITY, ADEQUACY AND SAFETY. NO WARRANTY OF ANY KIND IS MADE BY THE CITY OF HOUSTON FOR ANY PURPOSES WHATSOEVER. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.



FRONT VIEW

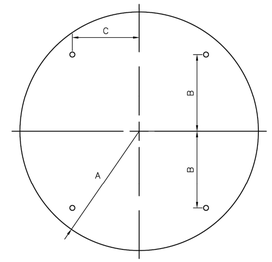
PROJECT SIGN – 48"



FRONT VIEW

SIDE VIEW

SKID MOUNTED SUPPORTS FOR 48" PROJECT SIGN



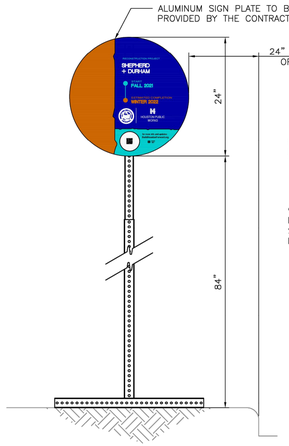
CIRCLE

A	B	C	T
24"	15"	12"	0.080"

48" SIGN PLATE HOLE DETAIL

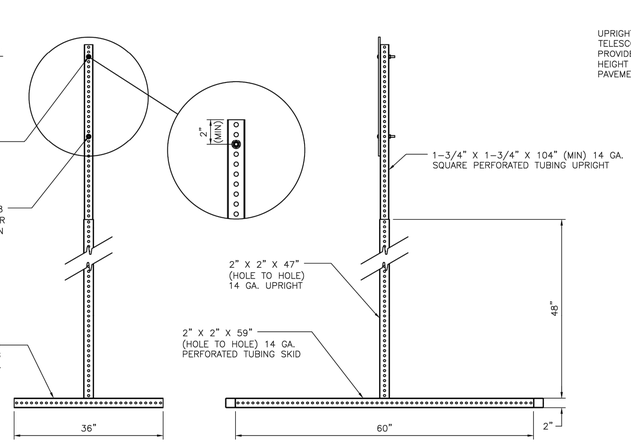
NOTES:

1. ALLOWABLE POST INSTALLATION METHODS ARE: CONCRETE FOOTING, SURFACE MOUNTING, SKID MOUNTING AND PILE DRIVEN POSTS.
2. FOR POST INSTALLATION WITH CONCRETE FOOTING, REFER TO DETAIL 01554–01.
3. FOR SURFACE MOUNTED POST INSTALLATION, REFER TO DETAIL 01554–02.
4. FOR SKID MOUNTING REQUIREMENTS REFER TO SPECIFICATION 01582.
5. PILE DRIVEN POSTS MUST BE DRIVEN TO A MINIMUM DEPTH OF 4–FEET INTO EXISTING GROUND.
6. LAYOUT, TEXT SIZE, AND OVERALL DESIGN OF THE SIGN WILL BE THE RESPONSIBILITY OF THE BUILD HOUSTON COORDINATOR.
7. ALL SIGN POSTS, SIGN TUBING, AND SIGN FASTENERS SHALL BE GALVANIZED STEEL PER SPECIFICATION 01582.



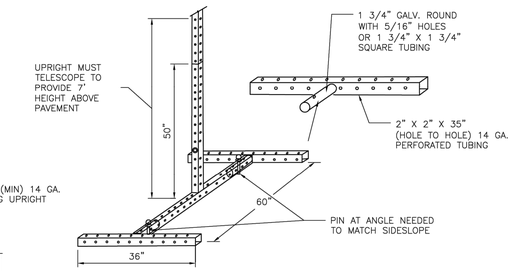
FRONT VIEW

PROJECT SIGN – 24"

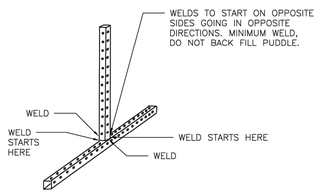


FRONT VIEW

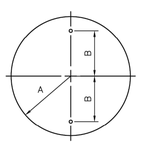
SIDE VIEW



ISO VIEW



ISO VIEW



A	B	C
12"	8"	0.080"

24" SIGN PLATE HOLE DETAIL

SKID MOUNTED SUPPORTS FOR 24" PROJECT SIGN

APPROVED BY:	APPROVED BY:
DocuSigned by: Suhail Kanwar 3E318B0C84191A7B...	DocuSigned by: Carol Haddock A4CFA1597280483...
CITY ENGINEER	DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: NOV–27–2023	DWG NO: 01582–01

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

CONSTRUCTION SIGN BUILD HOUSTON FORWARD

	FOR CITY OF HOUSTON USE ONLY
DRAWING SCALE	
NOT TO SCALE	

NO.	DATE	REVISION	APP.

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PRIVATE UTILITY LINES SHOWN

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LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713–266–6900
TEXAS REGISTERED ENGINEERING FIRM F–2614

SURVEYED BY:
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Date 04/03/2025
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F–2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

CONSTRUCTION SIGN BUILD HOUSTON FORWARD

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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NOT TO SCALE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 177 OF 244	

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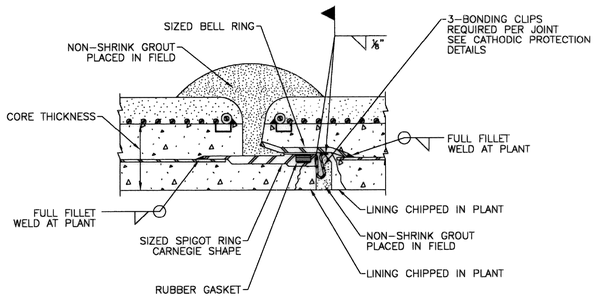
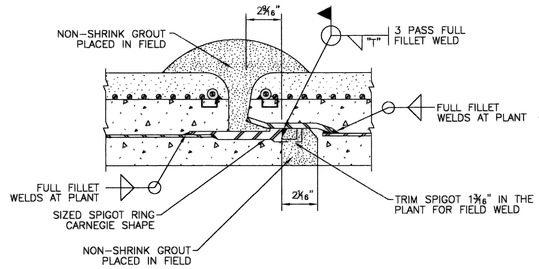


1 JOINT – EMBEDDED CYLINDER PIPE

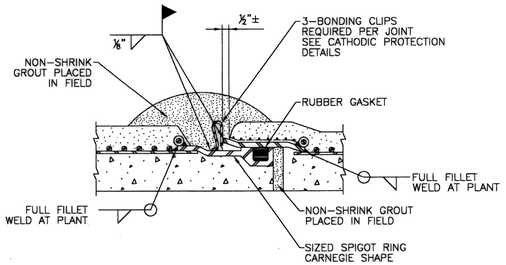


2 WELDED JOINT WITH TRIMMED SPIGOT – EMBEDDED CYLINDER PIPE

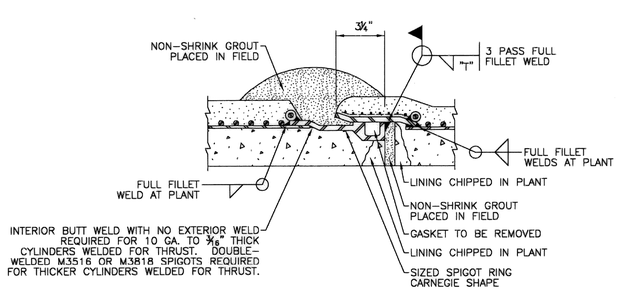
FIELD PROCEDURE: WITH THE JOINT ENGAGED THE INSIDE WELD WILL BE MADE BY ACCESS THROUGH THE PIPE. THE JOINT GROUT SHALL THEN BE PLACED AS SHOWN.

NOTES:

1. T = STEEL CYLINDER THICKNESS AND SIZE OF FILLET ATTACHMENT WELD.
2. FLEXIBLE MASTIC SEALER SHALL BE APPLIED TO THE EXTERIOR OF THE JOINT PRIOR TO JOINT ENGAGEMENT WHEN PIPE IS INSTALLED IN A TUNNEL OR ENCASEMENT PIPE.



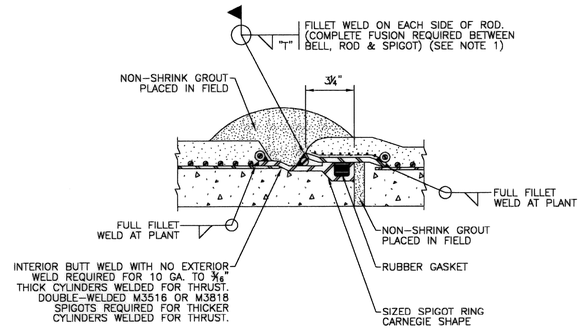
3 JOINT – LINED CYLINDER PIPE



4 WELDED JOINT – LINED CYLINDER PIPE

(INTERIOR WELD FOR WATERLINES 36–INCHES DIAMETER AND LARGER)

FIELD PROCEDURE: WITH THE JOINT ENGAGED THE INSIDE WELD WILL BE MADE BY ACCESS THROUGH THE PIPE. THE JOINT GROUT SHALL THEN BE PLACED AS SHOWN.



5 WELDED JOINT – LINED CYLINDER PIPE

(EXTERIOR WELD FOR WATER LINES LESS THAN 36–INCHES IN DIAMETER)

FIELD PROCEDURE: PLACE STEEL ROD SNUGLY INTO THE RECESS BETWEEN THE BELL AND SPIGOT. THE WELD MUST BE CONTINUOUS.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STANDARD LDWL PRESTRESSED CONCRETE CYLINDER PIPE DETAILS

(NOT TO SCALE)

APPROVED BY:	APPROVED BY:
ACTING CITY ENGINEER	DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: MAR-20-2018	DWG NO: 02507-01

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713–223–4567.

PRIVATE UTILITY LINES SHOWN

Date:
CENTERPOINT ENERGY/ELECTRIC FACILITIES
ELECTRICAL FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION).

Date:
CENTERPOINT ENERGY/GAS FACILITIES
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Date:
AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

LAN

EFF DATE: XXXX–XX–20XX

DWG NO: XXXXX–XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713–266–6900
TEXAS REGISTERED ENGINEERING FIRM F–2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

INTERIM REVIEW ONLY
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Registration Number 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F–2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

STANDARD LDWL PRESTRESSED CONCRETE CYLINDER PIPE DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
AS SHOWN	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 178 OF 244	

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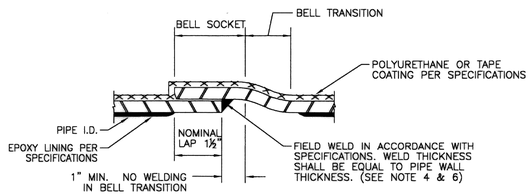
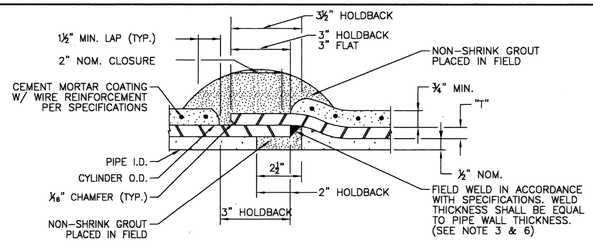
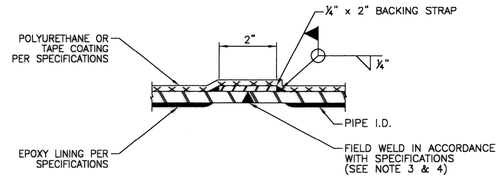


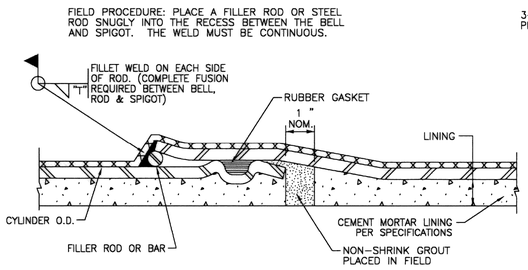
1 LAP–WELD FIELD JOINT – STEEL PIPE JOINT
FLEXIBLE COATING AND LINING



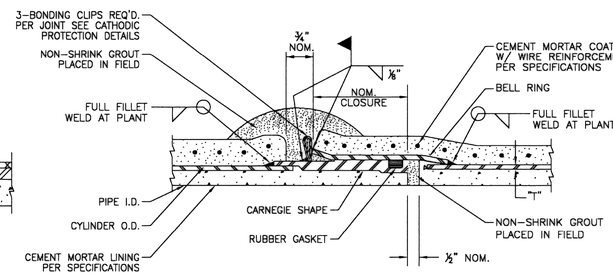
2 LAP–WELD FIELD JOINT – STEEL PIPE JOINT
CEMENT MORTAR LINED & CEMENT MORTAR COATED



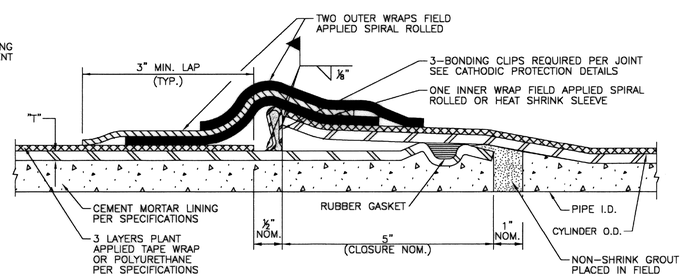
3 BUTT WELD FIELD JOINT – STEEL PIPE JOINT
FLEXIBLE COATING AND LINING



4 FIELD WELDED O–RING – STEEL PIPE JOINT
FLEXIBLE COATING AND CEMENT MORTOR LINING
(FOR ADJUSTMENTS ONLY AS APPROVED BY ENGINEER AND PIPE MANUFACTURER.)



5 CARNEGIE JOINT – STEEL PIPE JOINT
CEMENT MORTAR LINED & CEMENT MORTAR COATED



6 O–RING – STEEL PIPE JOINT
CEMENT MORTAR LINED & FLEXIBLE COATING

NOTES:

1. T = STEEL CYLINDER THICKNESS AND SIZE OF FILLET ATTACHMENT WELD.
2. ALL REFERENCES TO PIPE DIAMETER FOR THIS PROJECT SHALL SIGNIFY SIZE MEASURED TO INSIDE DIAMETER OF THE LINED PIPE.
3. DETAILS 1 AND 3 SHOW EPOXY LINING. CEMENT MORTAR LINING TO BE SIMILAR TO DETAILS ON THIS SHEET SHOWING CEMENT MORTAR LINED PIPE, AS APPROVED BY PROGRAM MANAGER.
4. SEE SPECIFICATIONS FOR REPAIR OF EPOXY LINING.
5. WHEN CEMENT MORTAR COATING IS USED FOR STEEL PIPE, FLEXIBLE MASTIC SEALER SHALL BE APPLIED TO THE EXTERIOR OF THE JOINT PRIOR TO JOINT ENGAGEMENT WHEN PIPE IS INSTALLED IN A TUNNEL OR ENCASEMENT PIPE.
6. OUTSIDE WELD MAY BE SUBSTITUTED FOR INSIDE WELD. INTERIOR WELDING IS NOT RECOMMENDED FOR 30" DIAMETER PIPE AND SMALLER.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STANDARD LDWL
STEEL PIPE DETAILS
(SHEET 1 OF 2)

(NOT TO SCALE)

APPROVED BY: ACTING CITY ENGINEER	APPROVED BY: DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: MAR-20-2018	DWG NO: 02518-01

NO.	DATE	REVISION	APP.

NOTICE:
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PRIVATE UTILITY LINES SHOWN

Date:
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AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

LAN

EFF DATE: XXXX–XX–20XX

DWG NO: XXXXX–XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713–266–6900
TEXAS REGISTERED ENGINEERING FIRM F–2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

INTERIM REVIEW ONLY
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Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F–2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
STANDARD LDWL
STEEL PIPE DETAILS
(SHEET 1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
AS SHOWN	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 179 OF 244	

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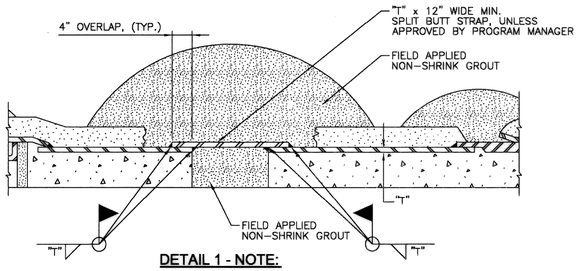
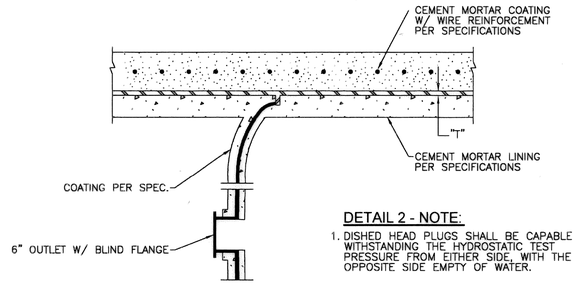


DETAIL 1 - NOTE:

1. WELD SIZE SHALL MATCH THICKNESS OF BUTT STRAP AND CARRIER PIPE, AS RECOMMENDED BY THE PIPE MANUFACTURER.
2. INTERNAL WELD NOT RECOMMENDED FOR 30" DIAMETER PIPE AND SMALLER.
3. NO ANGULAR DEFLECTION ALLOWED.

1 CLOSURE PIECE

FOR STEEL PIPE WITH CEMENT MORTAR LINED AND CEMENT MORTAR COATED (SIMILAR FOR FLEXIBLE COATING AND LINING)

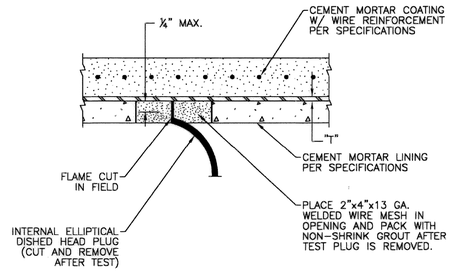


DETAIL 2 - NOTE:

1. DISHED HEAD PLUGS SHALL BE CAPABLE OF WITHSTANDING THE HYDROSTATIC TEST PRESSURE FROM EITHER SIDE, WITH THE OPPOSITE SIDE EMPTY OF WATER.

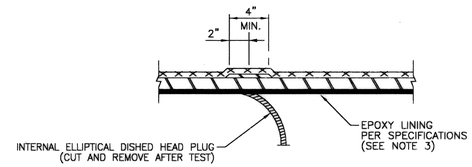
2 INTERNAL ELLIPTICAL DISHED HEAD PLUG

CEMENT MORTAR LINING AND CEMENT MORTAR COATED STEEL PIPE SPECIAL



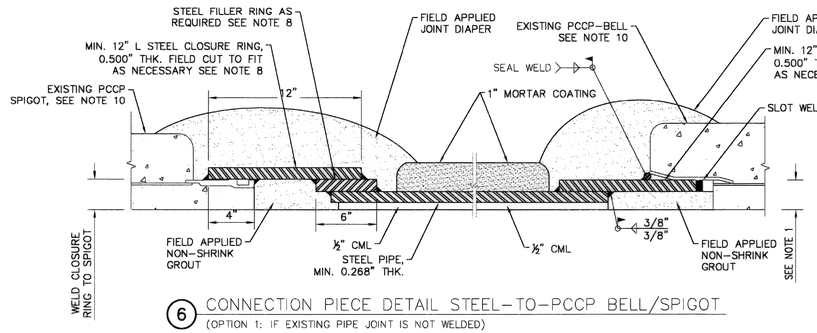
3 INTERNAL ELLIPTICAL DISHED HEAD PLUG REMOVAL

CEMENT MORTAR LINING AND CEMENT MORTAR COATED STEEL PIPE SPECIAL



4 INTERNAL ELLIPTICAL DISHED HEAD PLUG REMOVAL

FOR STEEL PIPE WITH FLEXIBLE COATING AND LINING

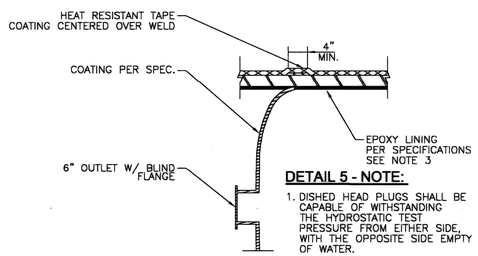


6 CONNECTION PIECE DETAIL STEEL-TO-PCCP BELL/SPIGOT

(OPTION 1: IF EXISTING PIPE JOINT IS NOT WELDED)

NOTES:

1. T = STEEL CYLINDER THICKNESS AND SIZE OF FILLET ATTACHMENT WELD.
2. ALL REFERENCES TO PIPE DIAMETER FOR THIS PROJECT SHALL SIGNIFY SIZE MEASURED TO INSIDE DIAMETER OF THE LINED PIPE.
3. DETAILS 4 AND 5 SHOW EPOXY LINING. CEMENT MORTAR LINING TO BE SIMILAR TO DETAILS ON THIS SHEET SHOWING CEMENT MORTAR LINED PIPE, AS APPROVED BY PROGRAM MANAGER.
4. SEE SPECIFICATIONS FOR REPAIR OF EPOXY LINING.
5. WHEN CEMENT MORTAR COATING IS USED FOR STEEL PIPE, FLEXIBLE MASTIC SEALER SHALL BE APPLIED TO THE EXTERIOR OF THE JOINT PRIOR TO JOINT ENGAGEMENT WHEN PIPE IS INSTALLED IN A TUNNEL OR ENCASEMENT PIPE.
6. OUTSIDE WELD MAY BE SUBSTITUTED FOR INSIDE WELD. INTERIOR WELDING IS NOT RECOMMENDED FOR 30" DIAMETER PIPE AND SMALLER.
7. FIELD VERIFY INSIDE DIAMETER OF JOINT RING.
8. RING THICKNESS TO BE DETERMINED BASED ON FIELD VERIFIED JOINT DIMENSIONS.
9. COATINGS ON PROPOSED PIPE TO BE SIMILAR TO EXISTING PIPE.
10. PROTECT EXISTING PIPE SECTIONS TO REMAIN IN PLACE. NOTIFY ENGINEER IF ANY SUSPECTED DAMAGE OCCURS.

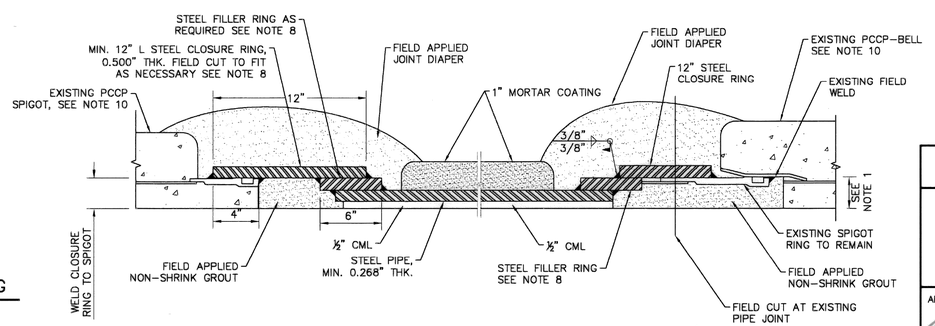


DETAIL 5 - NOTE:

1. DISHED HEAD PLUGS SHALL BE CAPABLE OF WITHSTANDING THE HYDROSTATIC TEST PRESSURE FROM EITHER SIDE, WITH THE OPPOSITE SIDE EMPTY OF WATER.

5 INTERNAL ELLIPTICAL DISHED HEAD PLUG

FOR STEEL PIPE WITH FLEXIBLE COATING AND LINING



7 CONNECTION PIECE DETAIL STEEL-TO-PCCP BELL/SPIGOT

(OPTION 2: IF EXISTING PIPE JOINT IS WELDED)

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STANDARD LDWL
STEEL PIPE DETAILS
(SHEET 2 OF 2)

(NOT TO SCALE)

APPROVED BY:	APPROVED BY:
ACTING CITY ENGINEER	DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: MAR-20-2018	DWG NO: 02518-02

NO.	DATE	REVISION	APP.

NOTICE:
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EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

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Engineer: CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL
STANDARD LDWL
STEEL PIPE DETAILS
(SHEET 2 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 180 OF 244	

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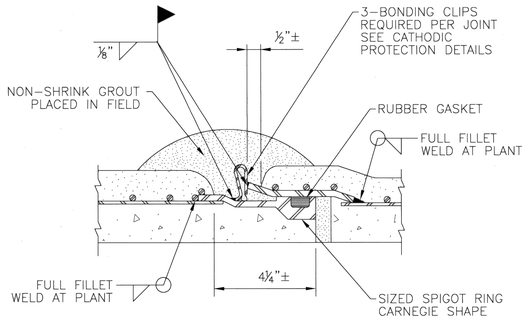
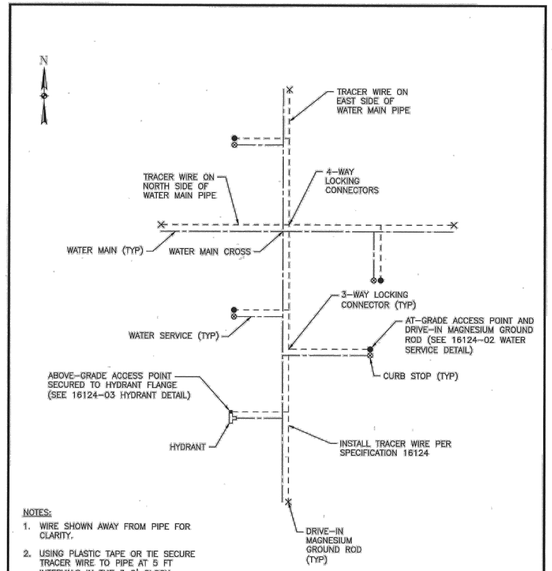


1 JOINT – BAR WRAPPED CYLINDER PIPE

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STANDARD LDWL
BAR WRAPPED CYLINDER PIPE JOINT DETAIL
(NOT TO SCALE)

APPROVED BY: ACTING CITY ENGINEER	APPROVED BY: DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: MAR-20-2018	DWG NO. 02613-01



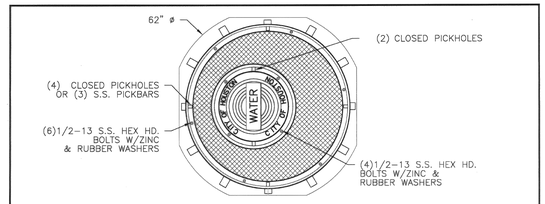
NOTES:
1. WIRE SHOWN AWAY FROM PIPE FOR CLARITY.
2. USING PLASTIC TAPE OR TIE SECURE TRACER WIRE TO PIPE AT 5 FT INTERVALS IN THE 3 O' CLOCK POSITION.

SAMPLE PLAN (WATER)
NOT TO SCALE

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COMPLETE UTILITY LOCATING SYSTEM SAMPLE PLAN (WATER)
(NOT TO SCALE)

APPROVED BY: Sarah Kanwar CITY ENGINEER	APPROVED BY: DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: JUL-01-2021	DWG NO: 16124-01

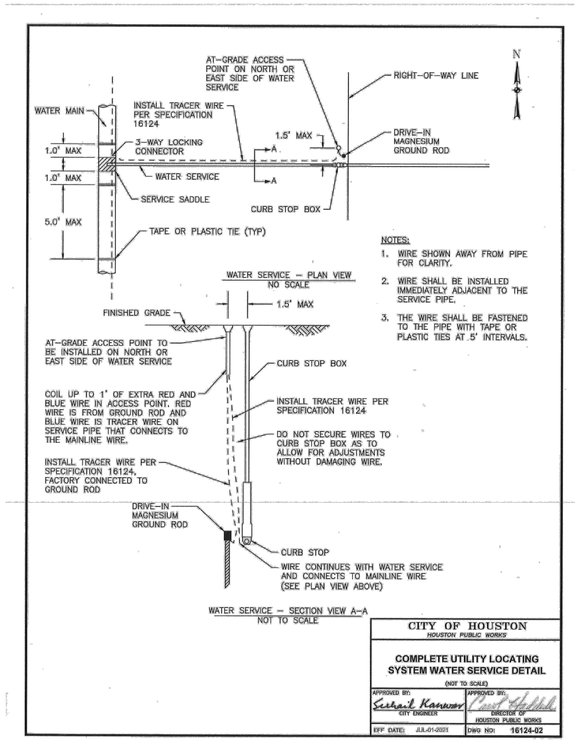


NOTES:
1. MATERIAL – GRAY IRON ASTM A48 CL35B / DUCTILE IRON ASTM A536 70–50–05
2. CASTING TO MEET M306 PROOF LOAD SPECIFICATION
3. EJIW MODEL V–7048–2 OR APPROVED EQUAL.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STANDARD LDWL
48" DIA HEAVY DUTY MANHOLE FRAME AND COVER DETAIL
(NOT TO SCALE)

APPROVED BY: ACTING CITY ENGINEER	APPROVED BY: DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: MAR-20-2018	DWG NO. 02090-12

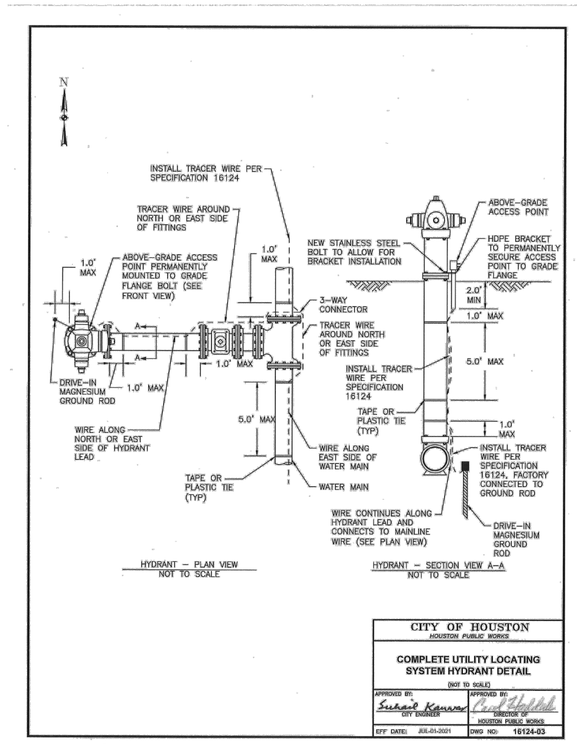


NOTES:
1. WIRE SHOWN AWAY FROM PIPE FOR CLARITY.
2. WIRE SHALL BE INSTALLED IMMEDIATELY ADJACENT TO THE SERVICE PIPE.
3. THE WIRE SHALL BE FASTENED TO THE PIPE WITH TAPE OR PLASTIC TIES AT 5' INTERVALS.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COMPLETE UTILITY LOCATING SYSTEM WATER SERVICE DETAIL
(NOT TO SCALE)

APPROVED BY: Sarah Kanwar CITY ENGINEER	APPROVED BY: DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: JUL-01-2021	DWG NO: 16124-02



CITY OF HOUSTON
HOUSTON PUBLIC WORKS

COMPLETE UTILITY LOCATING SYSTEM HYDRANT DETAIL
(NOT TO SCALE)

APPROVED BY: Sarah Kanwar CITY ENGINEER	APPROVED BY: DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: JUL-01-2021	DWG NO: 16124-03

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713–223–4567

PRIVATE UTILITY LINES SHOWN

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LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713–266–6900
TEXAS REGISTERED ENGINEERING FIRM F–2614

SURVEYED BY:
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Engineer CHRISTINE H. KIRBY, PE
Registration Number 94776
Date 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F–2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

STANDARD LDWL DETAILS

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S–000701–0041–3	
DRAWING SCALE	
AS SHOWN	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 181 OF 244	

PEN TABLE: LAN–COH–CIVIL.ctb
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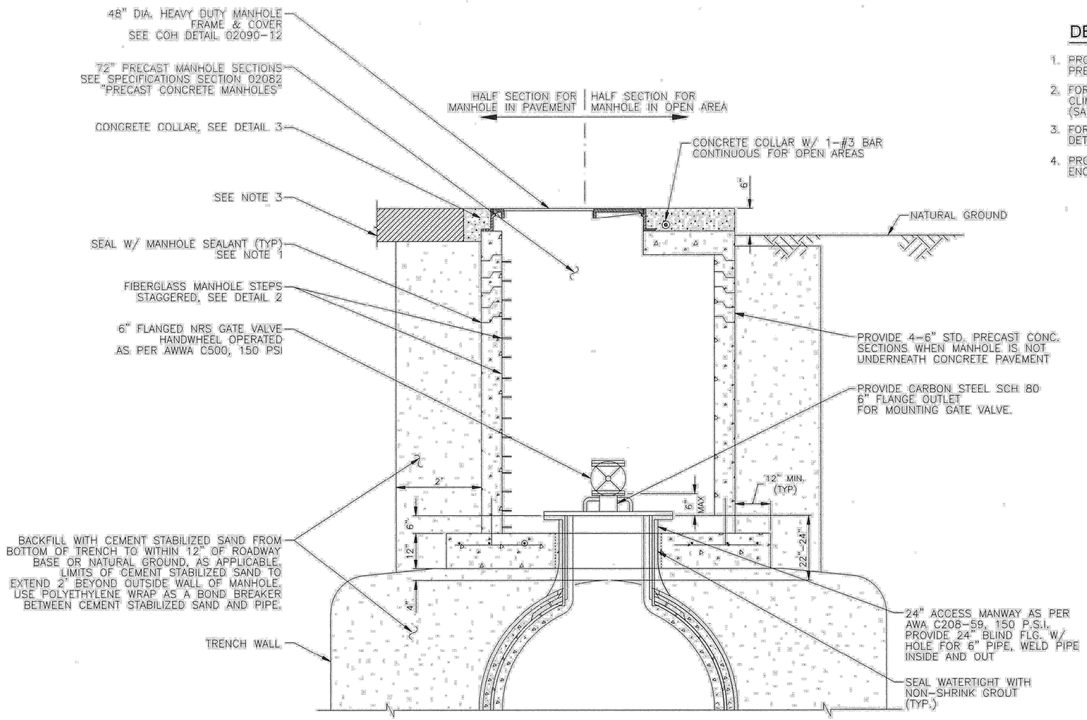
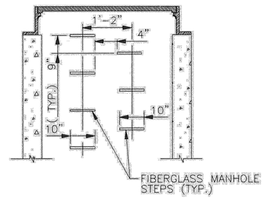


1 ACCESS MANWAY IN ACCESS MANHOLE
(FOR WATER LINES 36-INCH TO 96-INCH DIAMETER)

DETAIL 1 - NOTES:

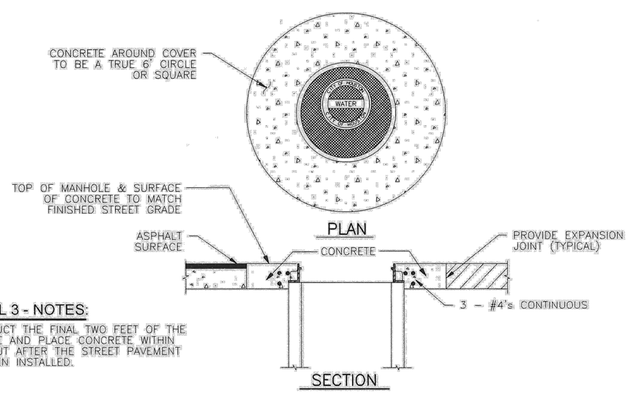
1. PROVIDE RAM-NEK OR APPROVED EQUAL BETWEEN PRECAST SEGMENTS OF THE MANHOLE.
2. FOR MANHOLES DEEPER THAN 20 FEET, SAFETY CLIMBING RAIL MUST BE PROVIDED (SAF-T-CLIMB OR APPROVED EQUAL).
3. FOR PAVEMENT REPAIR, SEE COH STANDARD DETAILS 02902-01 & 02902-02.
4. PROVIDE AN APPROVED PETROLATUM BASED TAPE ENCAPSULATING ALL BOLTS IN ACCESS MANHOLE.



DETAIL 2 - NOTES:

1. PROVIDE MODEL PS1-PF STEPS AS MANUFACTURED BY M.A. INDUSTRIES INC. OR APPROVED EQUAL.
2. BOTTOM MANHOLE STEP SHALL BE NO HIGHER THAN 12" ABOVE MANHOLE INVERT.

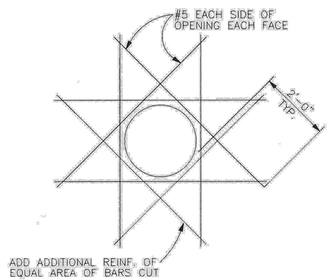
2 MANHOLE STEP DETAIL



DETAIL 3 - NOTES:

1. CONSTRUCT THE FINAL TWO FEET OF THE MANHOLE AND PLACE CONCRETE WITHIN BLOCKOUT AFTER THE STREET PAVEMENT HAS BEEN INSTALLED.

3 MANHOLE CONCRETE COLLAR DETAIL



4 SERVICE MANHOLE REINFORCEMENT DETAIL

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STANDARD LDWL ACCESS MANHOLE DETAILS

(NOT TO SCALE)

APPROVED BY:	APPROVED BY:
Suhail Kanwar, CITY ENGINEER	Carol Haddock, DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: JULY - 01 - 2021	DWG NO: 02082-10

NO.	DATE	REVISION	APP.

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EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

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Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL

STANDARD LDWL
ACCESS MH DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
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NOT TO SCALE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 182 OF 244	

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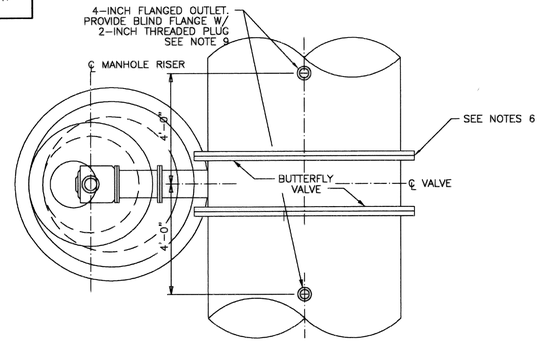
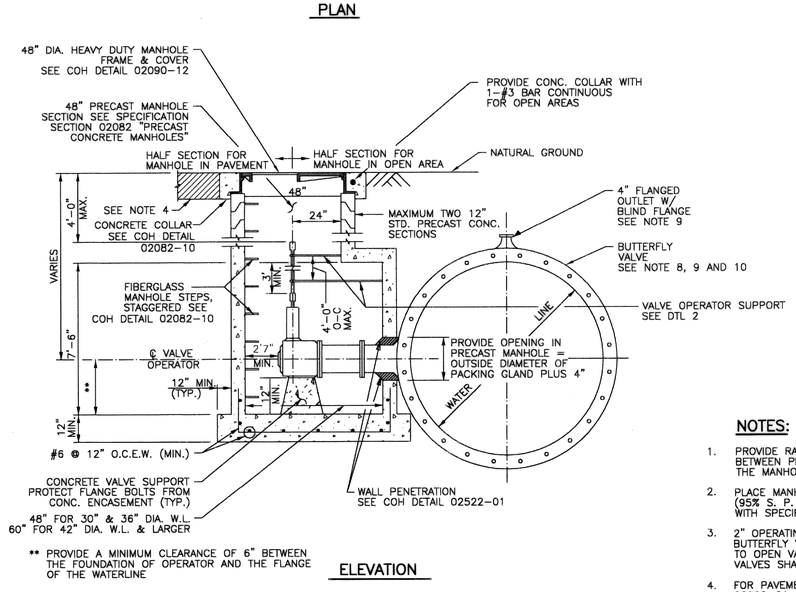
USERNAME: Fleming, David
PEN TABLE: LAN-COH-CIVIL.ctb

NOTE:

SHOULD CONTRACTOR DESIRE TO USE VALVES IN A THROTTLED POSITION FOR FILLING OF LINE SEGMENTS, CONTRACTOR IS CAUTIONED TO OBSERVE RECOMMENDATIONS OF VALVE MANUFACTURER IN ORDER TO PRECLUDE DAMAGE ASSOCIATED WITH THIS MODE OF OPERATION.



PLAN

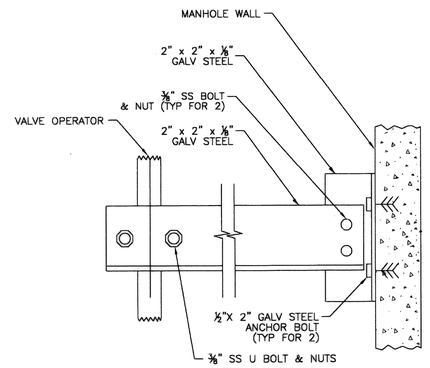


** PROVIDE A MINIMUM CLEARANCE OF 6" BETWEEN THE FOUNDATION OF OPERATOR AND THE FLANGE OF THE WATERLINE

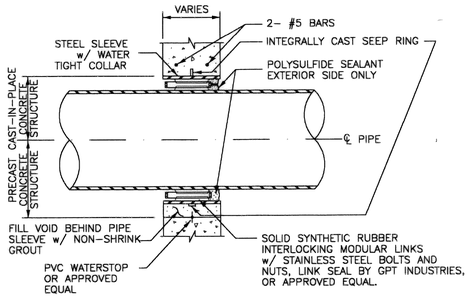
ELEVATION

1 BUTTERFLY VALVE AND OPERATOR MANHOLE DETAIL

(FOR WATER LINES 30–INCHES TO 96–INCH IN DIAMETER)



2 VALVE OPERATOR SUPPORT



3 TYPICAL WALL PENETRATION DETAIL

NOTES:

1. PROVIDE RAMNEK OR APPROVED EQUAL BETWEEN PRECAST SEGMENTS OF THE MANHOLE.
2. PLACE MANHOLE ON NEW COMPACTED (95% S. P. D.) BOTTOM IN ACCORDANCE WITH SPECIFICATION 02316.
3. 2" OPERATING NUT ON LARGE DIAMETER BUTTERFLY VALVES SHALL TURN CLOCKWISE TO OPEN VALVE. ABOVE–GROUND AND PLANT VALVES SHALL OPEN COUNTERCLOCKWISE.
4. FOR PAVEMENT REPAIR, SEE COH DETAILS 02902–01 & 02902–02.
5. FOR MANHOLES DEEPER THAN 20 FEET, PROVIDE SAFETY CLIMBING RAIL (SAF–T–CLIMB OR EQUAL)
6. FOR JOINT BONDING DETAILS AT BUTTERFLY VALVES SEE COH DETAIL 15640–02.
7. ADJUST MANHOLE AND MANHOLE OPENING TO ALIGN WITH VALVE OPERATOR NUT FOR EASE OF OPERATION
8. FOR VALVES GREATER THAN OR EQUAL TO 24–INCH DIAMETER, BACKFILL USING CONTROLLED LOW STRENGTH MATERIAL (CLSM, 100 P.S.I. MIN.) EXTENDING FROM THE VALVE CENTERLINE TO 7–FEET UPSTREAM AND DOWNSTREAM OF THE VALVE CENTERLINE FROM THE BOTTOM OF THE TRENCH TO 12–INCH MIN. ABOVE THE TOP OF PIPE. PROVIDE BUOYANCY CONTROL.
9. ADJUST FLANGED OUTLET LOCATION TO 9–FEET FROM VALVE CENTER LINE FOR VALVES GREATER THAN OR EQUAL TO 54–INCH DIAMETER.
10. USE ENCAPSULATED BOLTS AND POLYETHYLENE WRAP AS A BOND BREAKER BETWEEN PIPE, VALVE AND CLSM. ENSURE CLSM IS PROPERLY FILLED IN PIPE HAUNCHES. FOUR CLSM IN LIFTS.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STANDARD LDWL
BUTTERFLY VALVE AND
OPERATOR MANHOLE DETAILS

(NOT TO SCALE)

APPROVED BY:	APPROVED BY:
ACTING CITY ENGINEER	DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: MAR-20-2018	DWG NO: 02522-01

NO.	DATE	REVISION	APP.

NOTICE:
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DWG NO: XXXXX–XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713–266–6900
TEXAS REGISTERED ENGINEERING FIRM F–2614

SURVEYED BY:
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Registration Number 94776
Date 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F–2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
STANDARD LDWL
BUTTERFLY VALVE AND
OPERATOR MANHOLE DETAILS

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SHEET NO. 183 OF 244	

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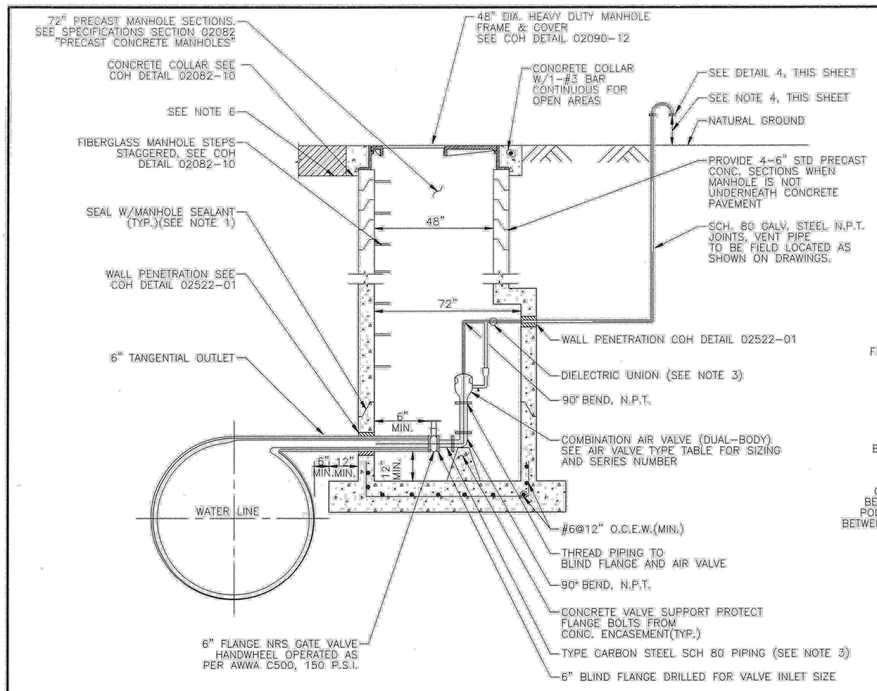
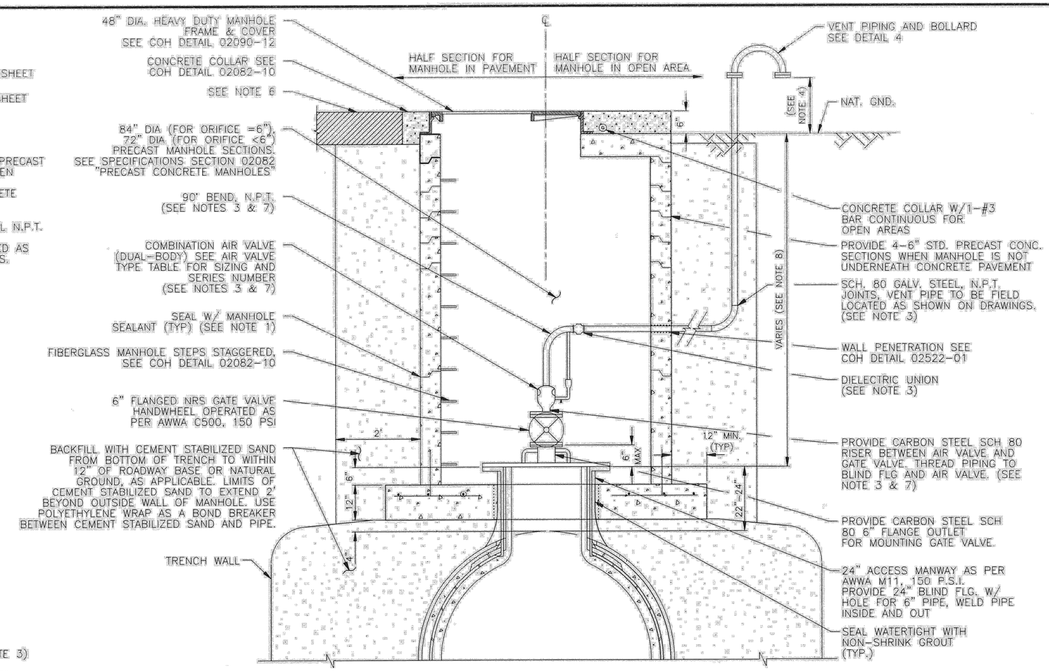


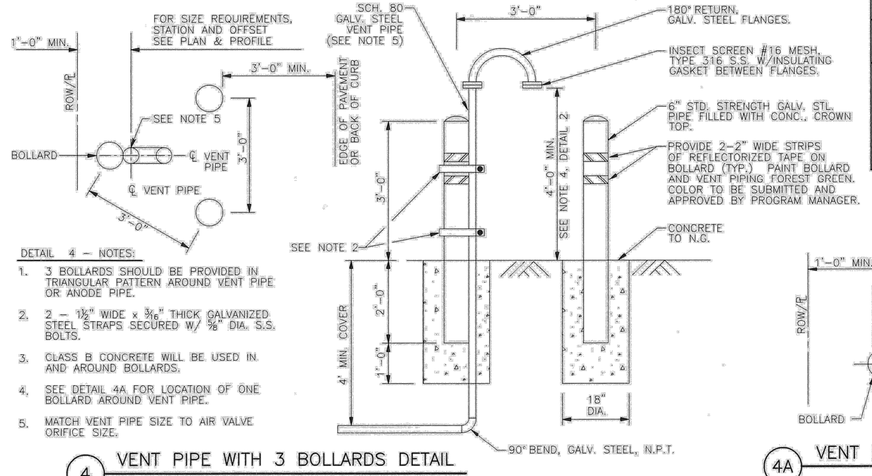
1 LOW PROFILE AIR VALVE ASSEMBLY

(FOR WATER LINES 36-INCH TO 96-INCH DIAMETER, ONLY IF SPECIFIED IN PLAN AND PROFILE SHEETS)



2 AIR VALVE ASSEMBLY WITH ACCESS MANWAY IN SERVICE MANHOLE

(FOR WATER LINES 36-INCH TO 96-INCH DIAMETER)



4 VENT PIPE WITH 3 BOLLARDS DETAIL

DETAIL 4 - NOTES:

1. 3 BOLLARDS SHOULD BE PROVIDED IN TRIANGULAR PATTERN AROUND VENT PIPE OR ANODE PIPE.
2. 2 - 1½" WIDE x 3/16" THICK GALVANIZED STEEL STRAPS SECURED W/ ⅝" DIA. S.S. BOLTS.
3. CLASS B CONCRETE WILL BE USED IN AND AROUND BOLLARDS.
4. SEE DETAIL 4A FOR LOCATION OF ONE BOLLARD AROUND VENT PIPE.
5. MATCH VENT PIPE SIZE TO AIR VALVE ORIFICE SIZE.

WATER MAIN DIAMETER	MANUFACTURER (1)	VACUUM (AI/VR) SERIES	VACUUM (AI/VR) ORIFICE SIZE	AIR RELEASE SERIES	AIR RELEASE INLET SIZE (NPT)	AIR RELEASE ORIFICE SIZE (2)
>=36" <=96"	APCO	1500C		200A	1"	
	CLAVAL	38VB		34AR-C	1"	
	PRATT	WAVVB		WAR 02	1"	

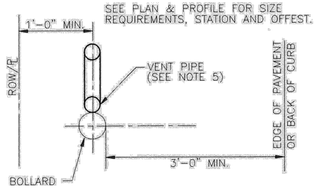
3 AIR VALVE & TYPE TABLE

(FOR WATER LINES 36" TO 96" DIAMETER)

DETAILS 3 - NOTES:

(1) OR APPROVED EQUAL.

(2) MINIMUM ORIFICE SIZE REQUIRED. TO BE UPDATED FOR EACH PROJECT BASED ON TRANSIENT ANALYSIS.



4A VENT PIPE WITH 1 BOLLARD DETAIL

DETAILS 1 & 2 - NOTES:

1. PROVIDE RAM-NEK OR APPROVED EQUAL BETWEEN PRECAST SEGMENTS OF THE MANHOLE.
2. FOR MANHOLES DEEPER THAN 20 FEET, SAFETY CLIMBING RAIL MUST BE PROVIDED (SAF-T-CLIMB OR APPROVED EQUAL). SEE COH DETAIL 02082-11.
3. PIPING AND APPURTENANCES OF THE SAME DIAMETER AND CONSTRUCTED OF THE SAME MATERIAL AND CLASS.
4. VERIFY THAT LOCATION OF VENT PIPE SCREEN IS 1 FOOT ABOVE 100-YEAR FLOOD PLAIN ELEVATION OR 4 FEET ABOVE NATURAL GROUND WHICHEVER IS HIGHER.
5. REFER TO PLAN AND PROFILE SHEETS FOR LOCATIONS OF AIR VALVES.
6. FOR PAVEMENT REPAIR, SEE COH DETAILS 02902-01 & 02902-02.
7. PROVIDE AN APPROVED PETROLATUM BASED TAPE ENCAPSULATING ALL BOLTS IN ACCESS MANHOLE.
8. USE "LOW PROFILE AIR VALVE ASSEMBLY DETAIL" ONLY IF SPECIFIED IN PLAN AND PROFILE SHEETS.
9. NATIONAL PIPE THREAD IS ABBREVIATED AS N.P.T. ON THIS DRAWING

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LDWL
AIR VALVE ASSEMBLY IN SERVICE MANHOLE DETAIL
(NOT TO SCALE)

APPROVED BY:	APPROVED BY:
Suhail Kanwar, CITY ENGINEER	Carol Haddock, DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: JUL-01-2021	DWG NO: 02524-03

NO.	DATE	REVISION	APP.

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3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
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Registration Number 94776
Date 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
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AIR VALVE ASSEMBLY IN SERVICE MANHOLE DETAIL

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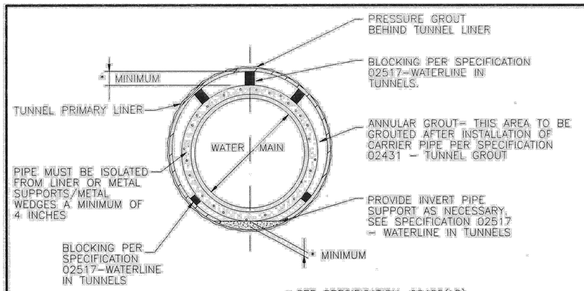
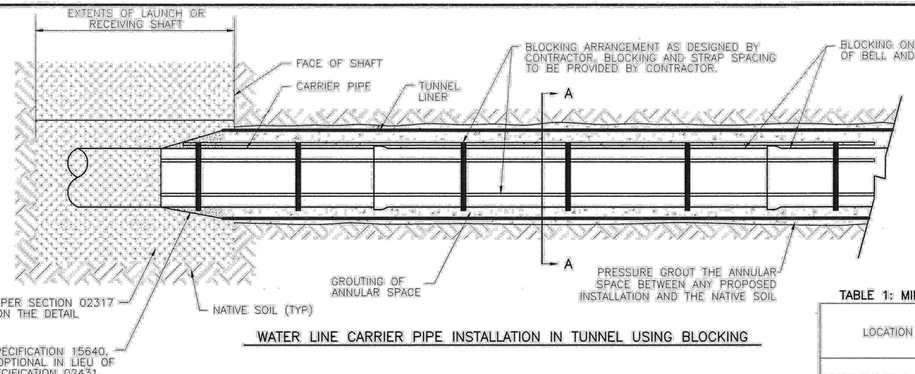


SECTION A–A

1 WATER LINE CARRIER PIPE INSTALLATION IN TUNNEL USING BLOCKING



WATER LINE CARRIER PIPE INSTALLATION IN TUNNEL USING BLOCKING

GENERAL NOTES:

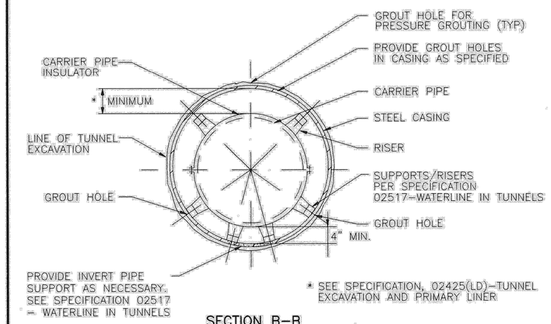
1. DETAIL IS FOR PRESTRESSED CONCRETE CYLINDER PIPE (BAR WRAPPED STEEL CYLINDER PIPE, STEEL PIPE AND D.I.P. ALTERNATE SIMILAR).
2. MINIMUM CLEARANCES SHOWN ON THE PLAN & PROFILE DRAWINGS ARE TO THE O.D. OF TUNNEL LINER. ADJUST PROFILE AS REQUIRED TO MAINTAIN CLEARANCES IDENTIFIED. NO SEPARATE PAY.
3. DIAMETERS INDICATED ON PLANS ARE NOMINAL DIAMETERS.

TABLE 1: MINIMUM TUNNEL LINER / CASING SIZES AND THICKNESS

LOCATION	WATER MAIN DIA.	PIPE MATERIAL	NOMINAL DIA[3](.IN)(CASING O.D.)/ WALL THICKNESS (IN.)		
			2–FLANGE[2] LINER PLATE	4–FLANGE LINER PLATE	STEEL CASING

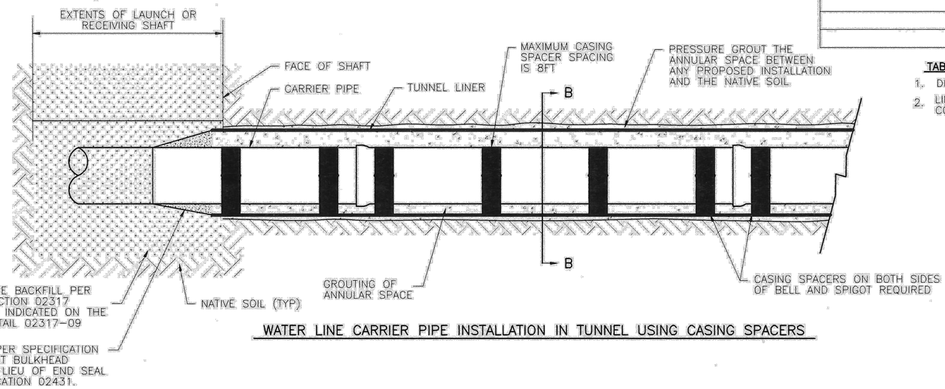
TABLE 1 – NOTES:

1. DIAMETER OF LINER PLATE IS AT NEUTRAL AXIS.
2. LINER PLATE IS TWO FLANGE AND NOMINALLY 2–INCH CORRUGATION BY 6–INCH PROFILE.

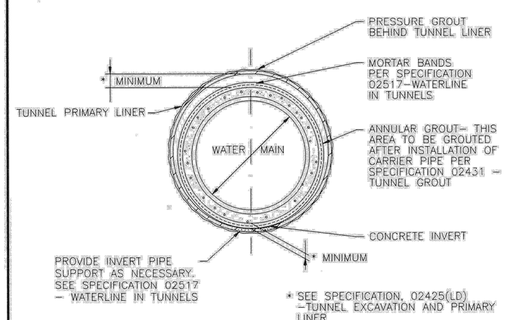


SECTION B–B

2 WATER LINE CARRIER PIPE INSTALLATION IN TUNNEL USING CASING SPACERS

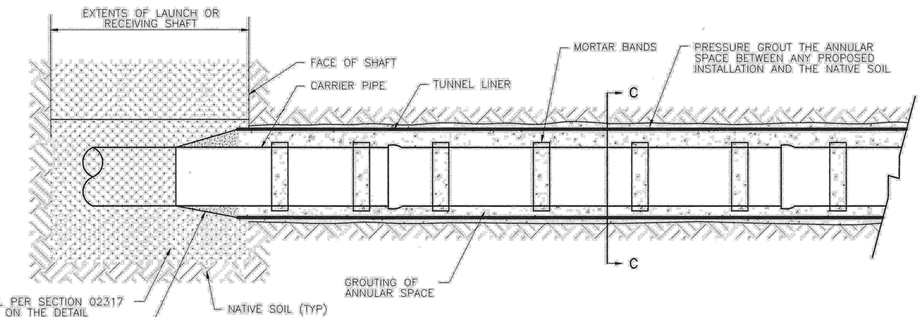


WATER LINE CARRIER PIPE INSTALLATION IN TUNNEL USING CASING SPACERS



SECTION C–C

3 WATER LINE CARRIER PIPE INSTALLATION IN TUNNEL USING MORTAR BANDS



WATER LINE CARRIER PIPE INSTALLATION IN TUNNEL USING MORTAR BANDS

(ONLY APPLICABLE FOR MORTAR COATED CARRIER PIPES)

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LDWL
TUNNEL AND CASING DETAILS FOR WATER LINES 24-INCH AND LARGER

(NOT TO SCALE)

APPROVED BY:	APPROVED BY:
Suresh Kanwar, CITY ENGINEER	Carol Haddock, DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: JUL - 01 - 2021	DWG NO: 02517-01

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713–223–4567.

PRIVATE UTILITY LINES SHOWN

Date:

CENTERPOINT ENERGY/ELECTRIC FACILITIES
ELECTRICAL FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION).

Date:

CENTERPOINT ENERGY/GAS FACILITIES
(GAS SERVICE LINES ARE NOT SHOWN). THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION.

Date:

AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

EFF DATE: XXXX–XX–20XX

DWG NO: XXXXX–XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713–266–6900
TEXAS REGISTERED ENGINEERING FIRM F–2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

INTERIM REVIEW ONLY
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Registration Number 94776
Date 04/03/2025
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F–2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
LDWL
TUNNEL & CASING DETIALS FOR WATER LINES 24–INCH AND LARGER

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 185 OF 244	

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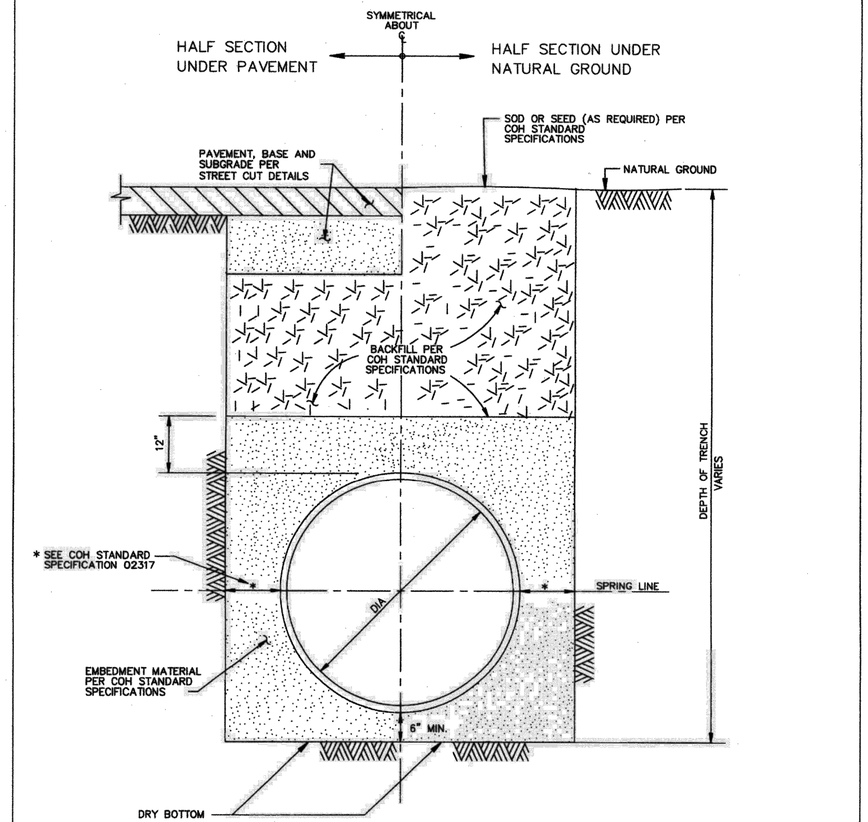

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

WATER DISTRIBUTION MAIN
BEDDING AND BACKFILL FOR
OPEN CUT TRENCHES
(NOT TO SCALE)

APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JUL-01-2010	DWG NO: 02317-04

COH

NO.	DATE	REVISION	APP.

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PRIVATE UTILITY LINES SHOWN

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FIRM F-2614

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Engineer: CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL
STANDARD LDWL EXCAVATION & BACKFILL DETAIL

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 186 OF 244	

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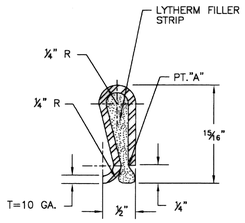
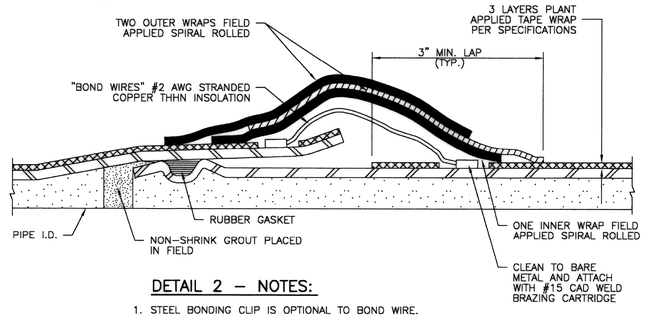


DETAIL 1 – NOTES:

1. STEEL BONDING CLIP:
   MATERIAL SPECIFICATION --- ASTM A366 (COMMERCIAL QUALITY)
   CUT LENGTH ---------- 2⅛" ± 1/16"
   WIDTH---------- 1¼" ± 1/16"
2. LYTHERM FILLER STRIP TO BE 1" x 1½" WIDE TO OVERLAP SIDES OF CLIP.
3. CRIMP JUMPER OVER FILLER AT "A" TO COMPRESS FILLER CLOSE AT PT. "A" AS MUCH AS POSSIBLE WITHOUT CUTTING FILLER PAD.
4. THREE BONDING CLIPS ARE REQUIRED PER GASKETED JOINT (TYPICAL).
5. BONDING NOT REQUIRED FOR WELDED JOINTS.

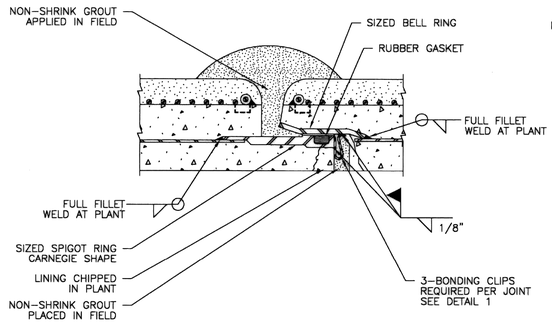
1 STEEL BONDING CLIP DETAIL

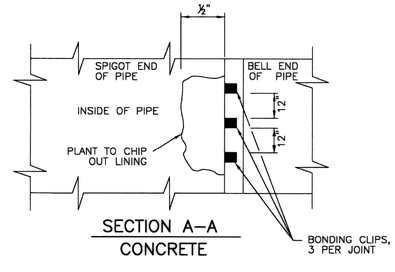


DETAIL 2 – NOTES:

1. STEEL BONDING CLIP IS OPTIONAL TO BOND WIRE.
2. A MINIMUM OF TWO BOND WIRES OR THREE BONDING CLIPS ARE REQUIRED FOR RUBBER GASKETED STEEL PIPE. CLIPS ARE TO BE PROVIDED IN ACCORDANCE WITH DETAILS.
3. BONDING NOT REQUIRED FOR WELDED JOINTS.

2 BONDED JOINT – EMBEDDED CYLINDER PIPE

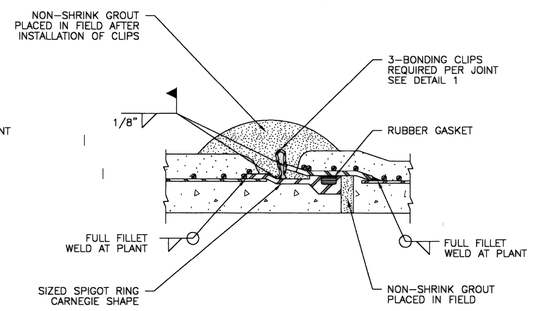




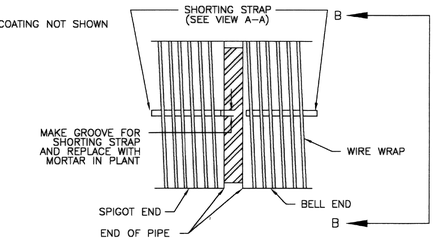
SECTION A–A
CONCRETE

3 BONDED JOINT – BAR WRAPPED CYLINDER PIPE

(SIMILAR FOR LINED CYLINDER PIPE)



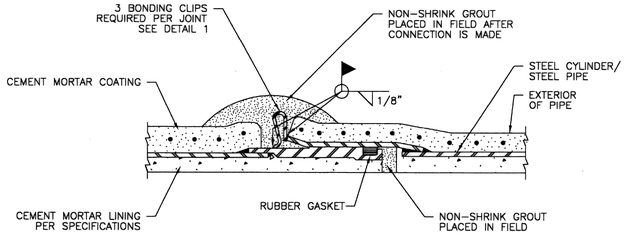
NOTE: COATING NOT SHOWN



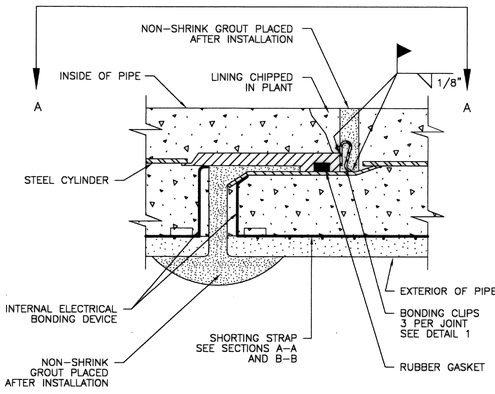
SECTION A–A
REINFORCEMENT

4 O-RING STEEL PIPE JOINT DETAIL

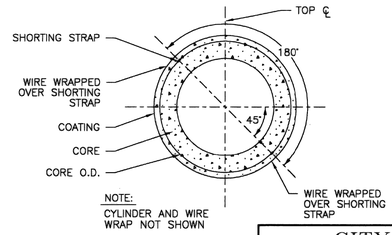
(CEMENT MORTAR LINED & TAPE WRAPPED SHOWN. FLEXIBLE LINING SIMILAR)



5 BONDED JOINT – MORTAR COATED STEEL PIPE



6 ELECTRICAL CONTINUITY BONDING OF EMBEDDED CYLINDER PIPE



NOTE:
CYLINDER AND WIRE WRAP NOT SHOWN

SECTION B–B

DETAIL 6 – NOTES:

PLACE BONDING CLIPS IN INTERIOR JOINT RECESS AS SHOWN. WELD CLIPS TO BELL AND SPIGOT USING ⅜" FILLET WELD. REMOVE SLAG FROM WELD AND FILL RECESS WITH CEMENT MORTAR, COVERING ALL EXPOSED STEEL.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STANDARD LDWL
CATHODIC PROTECTION
DETAILS FOR JOINT BONDING
(SHEET 1 OF 2)

(NOT TO SCALE)

APPROVED BY:	APPROVED BY:
ACTING CITY ENGINEER	DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: MAR-20-2018	DWG NO: 15640-01

NO.	DATE	REVISION	APP.

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PRIVATE UTILITY LINES SHOWN

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LAN

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

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Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
50% SUBMITTAL
STANDARD LDWL
CATHODIC PROTECTION
DETAILS FOR JOINT BONDING
(SHEET 1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
AS SHOWN	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 187 OF 244	

PEN TABLE: LAN-COH-CIVIL.ctb
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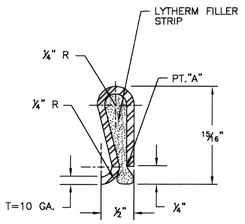

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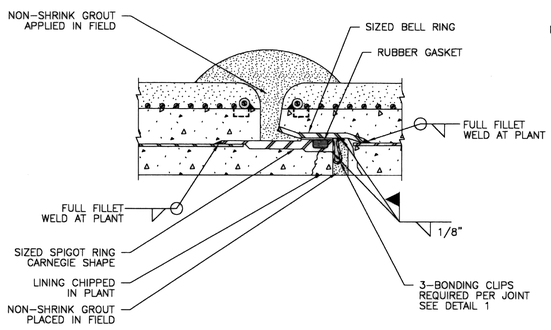
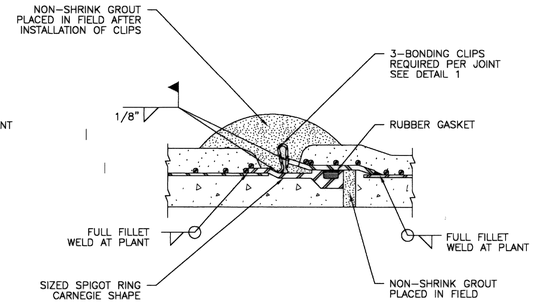
1 STEEL BONDING CLIP DETAIL

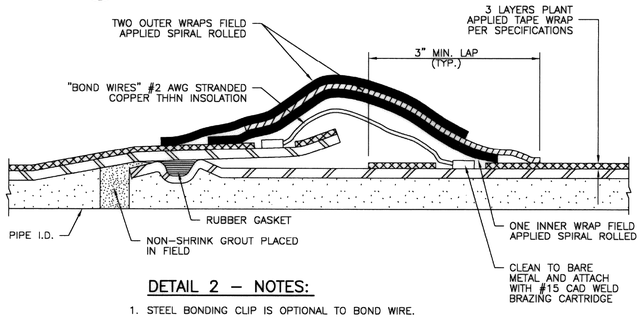


2 BONDED JOINT – EMBEDDED CYLINDER PIPE



3 BONDED JOINT – BAR WRAPPED CYLINDER PIPE

(SIMILAR FOR LINED CYLINDER PIPE)



DETAIL 2 – NOTES:

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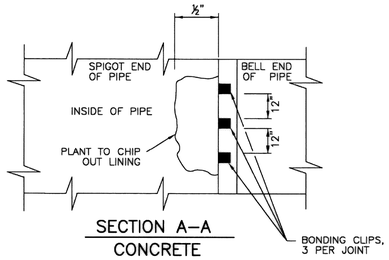
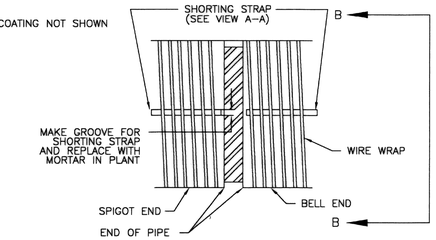


SECTION A–A
CONCRETE

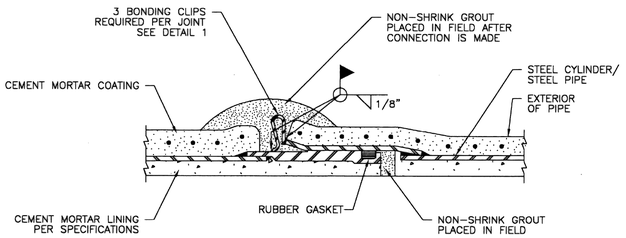
NOTE: COATING NOT SHOWN



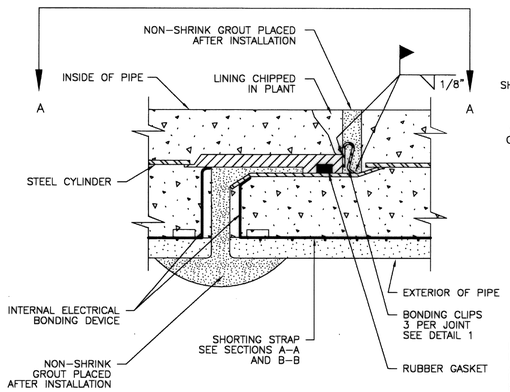
SECTION A–A
REINFORCEMENT

4 O–RING STEEL PIPE JOINT DETAIL

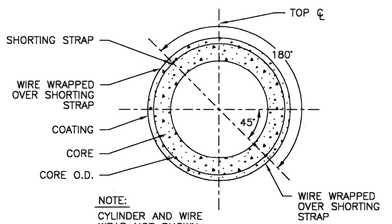
(CEMENT MORTAR LINED & TAPE WRAPPED SHOWN. FLEXIBLE LINING SIMILAR)



5 BONDED JOINT – MORTAR COATED STEEL PIPE



6 ELECTRICAL CONTINUITY BONDING OF EMBEDDED CYLINDER PIPE



NOTE:
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SECTION B–B

DETAIL 6 – NOTES:

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STANDARD LDWL
CATHODIC PROTECTION
DETAILS FOR JOINT BONDING
(SHEET 1 OF 2)

(NOT TO SCALE)

APPROVED BY:	APPROVED BY:
ACTING CITY ENGINEER	DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: MAR-20-2018	DWG NO: 15640-01

NO.	DATE	REVISION	APP.

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LAN

EFF DATE: XXXX-XX-20XX

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LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
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Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
STANDARD LDWL
CATHODIC PROTECTION
DETAILS FOR JOINT BONDING
(SHEET 2 OF 2)

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DRAWING SCALE	
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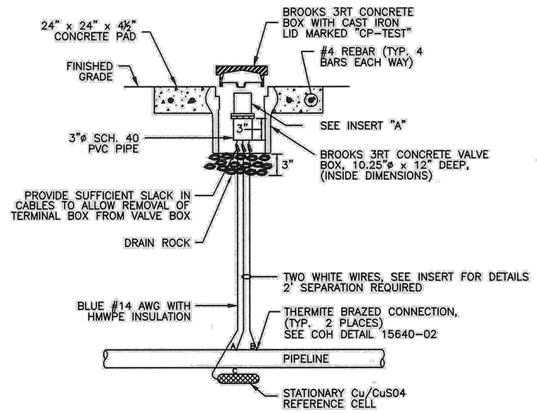
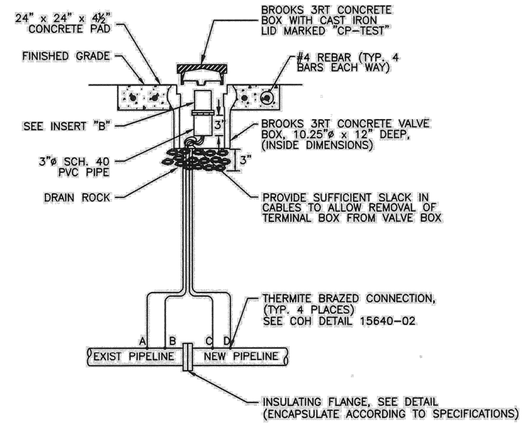


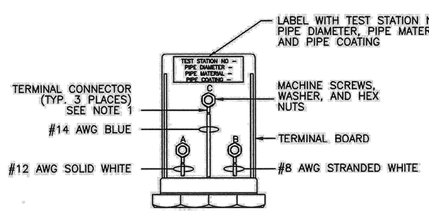
1 FLUSH MOUNTED POTENTIAL TEST STATION

WIRE CODING:
* WIRES A & B ARE WHITE, WIRE C IS BLUE
* WIRE A IS #12 AWG TW SOLID SINGLE CONDUCTOR WIRE
* WIRE B IS #8 AWG TW STRANDED SINGLE CONDUCTOR
* WIRES C IS #14 AWG WITH HMWPE INSULATION



2 FLUSH MOUNTED FLANGE ISOLATION TEST STATION

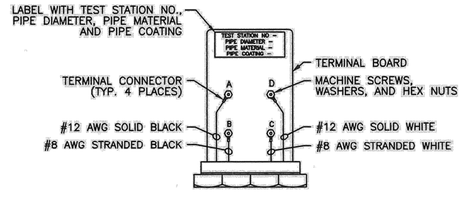
WIRE CODING:
* WIRES A & B ARE BLACK, WIRES C & D ARE WHITE
* WIRES A & D ARE #12 AWG TW SOLID SINGLE CONDUCTOR WIRE
* WIRES B & C ARE #8 AWG TW STRANDED SINGLE CONDUCTOR
* BLACK WIRES ATTACHED TO UNPROTECTED OR EXISTING PIPE
* WHITE WIRES ATTACHED TO PROTECTED OR NEW PIPE



INSERT A – NOTES:

1. TERMINAL CONNECTORS SHALL BE RING TONGUE, BRAZED, COPPER, NON-INSULATED WITH " ¼" STUD SIZE

INSERT "A"



INSERT B – NOTES:

1. TERMINAL CONNECTORS SHALL BE RING TONGUE, BRAZED, COPPER, NON-INSULATED WITH " ¼" STUD SIZE

INSERT "B"

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STANDARD LDWL
CATHODIC PROTECTION
DETAILS FOR TEST STATIONS
(SHEET 1 OF 3)
(NOT TO SCALE)

APPROVED BY:	APPROVED BY:
CITY ENGINEER	DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: JUL-01-2021	DWG NO: 15641-01

NO.	DATE	REVISION	APP.

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Date:
CENTERPOINT ENERGY/ELECTRIC FACILITIES
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EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

INTERIM REVIEW ONLY
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Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
~~STANDARD LDWL~~
CATHODIC PROTECTION
DETAILS FOR TEST STATIONS
(SHEET 1 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 189 OF 244	

20% SUBMITTAL

PEN TABLE: LAN-COH-CIVIL.ctb
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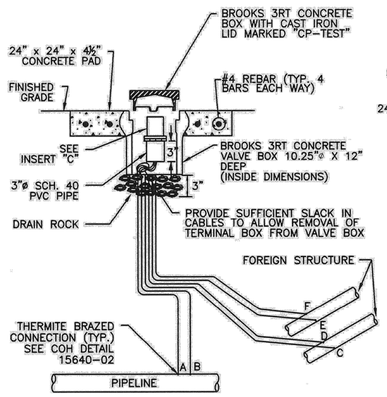
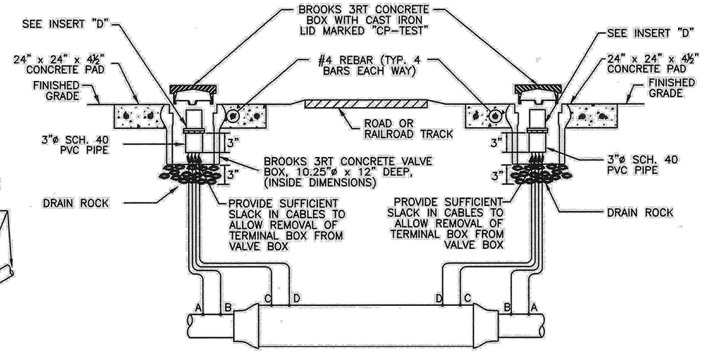


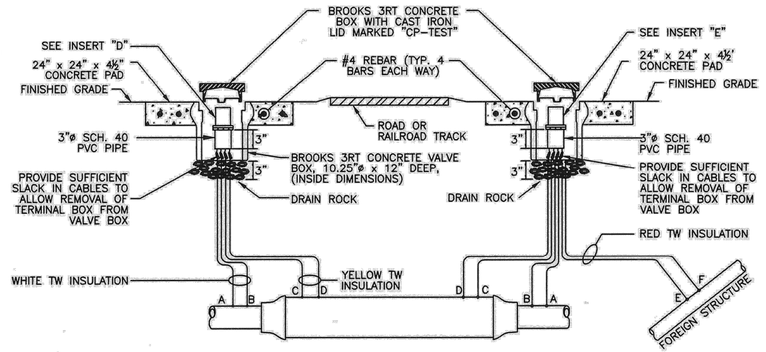
DETAIL 3 – NOTES:

1. TEST STATION SHALL BE MOUNTED DIRECTLY ABOVE THE NEW WATER LINE.
2. FOR MORE THAN TWO (2) FOREIGN LINES, INSTALL A COTTBOX TYPE TEST STATION. (UP TO 20 TERMINALS)



DETAIL 4 – NOTES:

1. FOR PARALLEL CASED CROSSINGS, INSTALL A COTTBOX TYPE TEST STATION. (UP TO 20 TERMINALS)

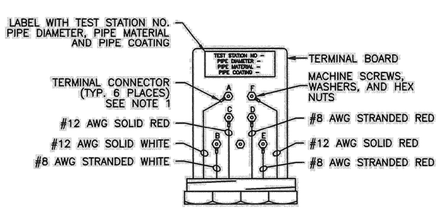


DETAIL 5 – NOTES:

1. TEST STATION SHALL BE MOUNTED DIRECTLY ABOVE THE NEW WATER LINE.
2. FOR MORE THAN ONE (1) FOREIGN LINE, INSTALL A COTTBOX TYPE TEST STATION. (UP TO 20 TERMINALS)

3 FLUSH MOUNTED FOREIGN LINE TEST STATION

WIRING CODE:
* WIRES A & B ARE WHITE
* WIRES C, D, E & F ARE RED
* WIRES A, C, F ARE #12 AWG TW SOLID COPPER WIRE
* WIRES B, D, E ARE #8 AWG TW STRANDED COPPER WIRE
* RED WIRES ATTACHED TO FOREIGN OWNED PIPE
* WHITE WIRES ATTACHED TO NEW PIPE



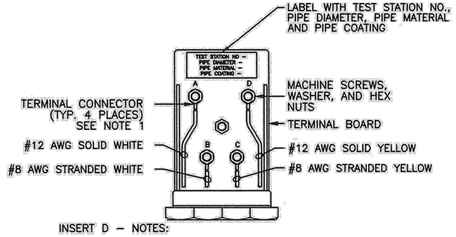
INSERT C – NOTES:

1. TERMINAL CONNECTORS SHALL BE RING TONGUE, BRAZED, COPPER, NON-INSULATED WITH ¼" STUD SIZE.

INSERT "C"

4 FLUSH MOUNTED CASED CROSSING TEST STATION

WIRE CODING:
* WIRES A & B ARE WHITE, WIRES C & D ARE YELLOW
* WIRES A & D ARE #12 AWG TW SOLID SINGLE CONDUCTOR WIRE
* WIRES B & C ARE #8 AWG TW STRANDED SINGLE CONDUCTOR
* YELLOW WIRES ATTACHED TO CASING
* WHITE WIRES ATTACHED TO PROTECTED OR NEW PIPE



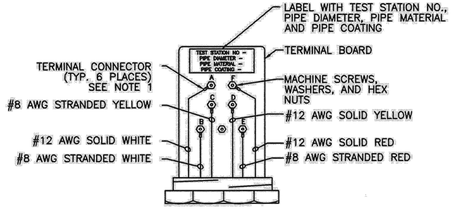
INSERT D – NOTES:

1. TERMINAL CONNECTORS SHALL BE RING TONGUE, BRAZED, COPPER, NON-INSULATED WITH ¼" STUD SIZE.

INSERT "D"

5 FLUSH MOUNTED CASED CROSSING AND FOREIGN LINE TEST STATION

WIRE CODING:
* WIRES A & B ARE WHITE, WIRES C & D ARE YELLOW
* WIRES E & F ARE RED
* WIRES A, D & F ARE #12 AWG TW SOLID SINGLE CONDUCTOR WIRE
* WIRES B, C & E ARE #8 AWG TW STRANDED SINGLE CONDUCTOR
* WHITE WIRES ATTACHED TO PROTECTED OR NEW PIPE
* YELLOW WIRES ATTACHED TO CASING
* RED WIRES ATTACHED TO FOREIGN OWNED PIPE



INSERT E – NOTES:

1. TERMINAL CONNECTORS SHALL BE RING TONGUE, BRAZED, COPPER, NON-INSULATED WITH ¼" STUD SIZE.

INSERT "E"

CITY OF HOUSTON
HOUSTON PUBLIC WORKS
STANDARD LDWL
CATHODIC PROTECTION
DETAILS FOR TEST STATIONS
(SHEET 2 OF 3)
(NOT TO SCALE)

APPROVED BY:	APPROVED BY:
CITY ENGINEER	DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: JUL-01-2021	DWG NO: 15641-02

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567.

PRIVATE UTILITY LINES SHOWN

Date:
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Date:
AT&T TEXAS/SBC UTILITY LINES SHOWN
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EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
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Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
90% SUBMITTAL
STANDARD LDWL
CATHODIC PROTECTION
DETAILS FOR TEST STATIONS
(SHEET 2 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 190 OF 244	

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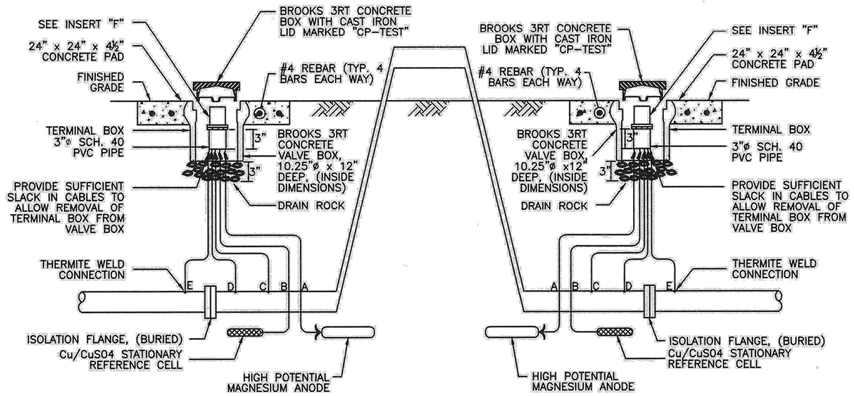
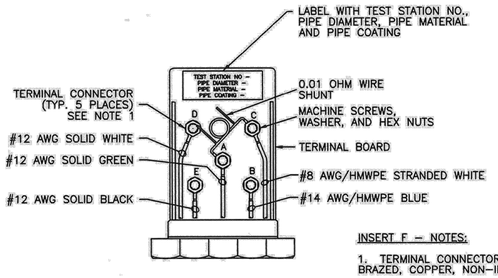


6 ABOVE GROUND CROSSING FLUSH MOUNTED FLANGE ISOLATION AND ANODE INSTALLATION TEST STATION

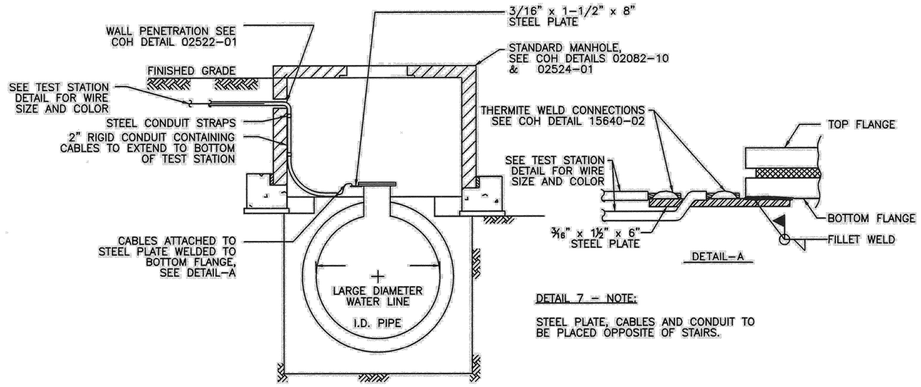
WIRE CODING:
* WIRES C & D ARE WHITE, WIRE E IS BLACK
* WIRES D & E ARE #12 AWG TW SOLID SINGLE CONDUCTOR WIRE
* WIRE C IS #8 AWG/HMWPE STRANDED SINGLE CONDUCTOR WIRE
* WIRE A IS GREEN #12 AWG ANODE LEAD WIRE TO 48 LB. MAGNESIUM
* WIRE B IS BLUE #14 AWG/HMWPE LEAD WIRE TO REFERENCE CELL



INSERT "F"

INSERT F – NOTES:

1. TERMINAL CONNECTORS SHALL BE RING TONGUE, BRAZED, COPPER, NON-INSULATED WITH ." ¼" STUD SIZE



DETAIL 7 – NOTE:

STEEL PLATE, CABLES AND CONDUIT TO BE PLACED OPPOSITE OF STAIRS.

7 TEST STATION INSTALLATION IN MANHOLE

CITY OF HOUSTON
HOUSTON PUBLIC WORKS
STANDARD LDWL
CATHODIC PROTECTION
DETAILS FOR TEST STATIONS
(SHEET 3 OF 3)
(NOT TO SCALE)

APPROVED BY:	APPROVED BY:
Suhail Kanwar, CITY ENGINEER	DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: JUL-01-2021	DWG NO: 15641-03

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567.

PRIVATE UTILITY LINES SHOWN

Date:
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EFF DATE: XXXX-XX-20XX

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3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042
PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
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Registration Number 94776
Date 04/03/2025
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
90% SUBMITTAL
STANDARD LDWL
CATHODIC PROTECTION
DETAILS FOR TEST STATIONS
(SHEET 3 OF 3)

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ANH H. BOYD, P.E.	
SHEET NO. 191 OF 244	

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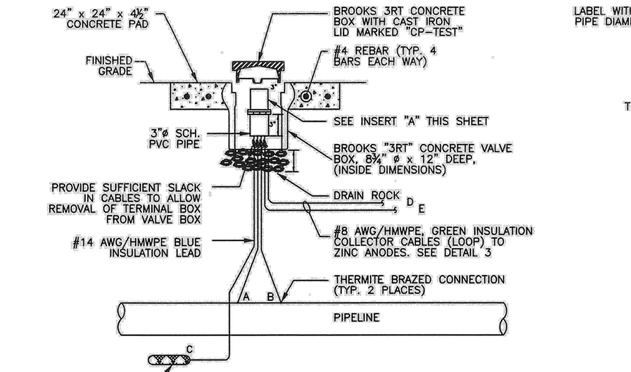
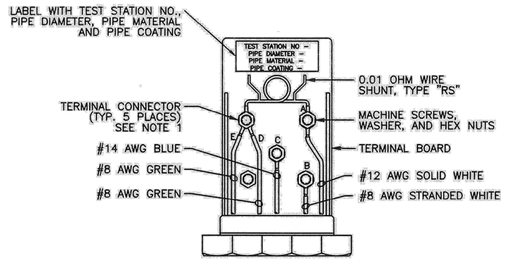


1 FLUSH MOUNTED ANODE TEST STATION

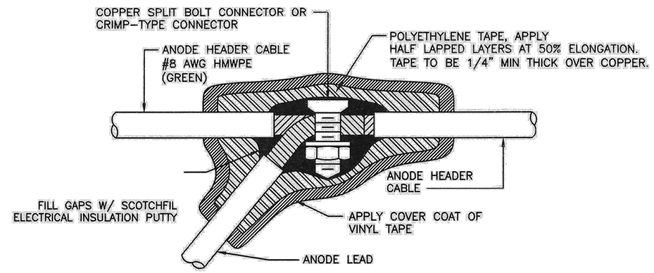
WIRE CODING:
* WIRES A & B ARE WHITE
* WIRE A IS #12 AWG TW SOLID SINGLE CONDUCTOR WIRE
* WIRE B IS #8 AWG TW STRANDED SINGLE CONDUCTOR WIRE
* WIRE C IS BLUE #14 AWG/HMWPE LEAD WIRE TO REFERENCE ELECTRODE
* WIRES D & E ARE GREEN #8 AWG ANODE LEAD WIRE TO ANODE GROUND BED



INSERT A – NOTES:

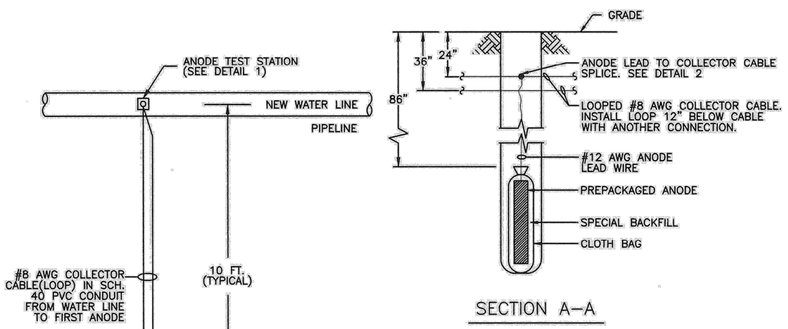
1. TERMINAL CONNECTORS SHALL BE RING TONGUE, BRAZED, COPPER, NON-INSULATED WITH ¼" STUD SIZE

INSERT "A"

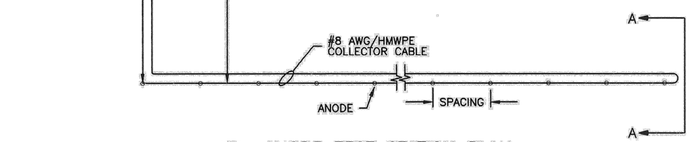


DETAIL 2 – NOTES:
1. MAKE SPLICE WATERPROOF
   A. SMOOTH ALL IRREGULAR SURFACES WITH ELECTRICAL INSULATION PUTTY.
   B. APPLY 2 LAYERS OF HALF LAPPED RUBBER SPLICING TAPE.
   C. APPLY 2 LAYERS OF HALF LAPPED VINYL ELECTRICAL TAPE.
2. NUMBER OF WIRES MAY VARY PER SPLICE

2 SPLICE DETAIL

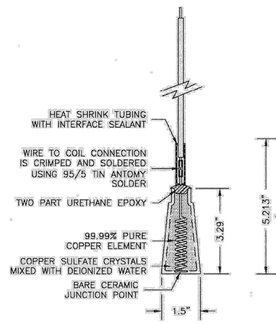


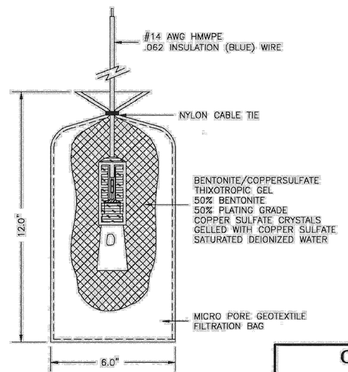
SECTION A–A



3 ANODE TEST STATION PLAN

ANODE SIZE AND SPACING REQUIREMENT PER DESIGN DRAWINGS





4 Cu/CuSO4 PERMACELL PLUS STATIONARY REFERENCE CELL

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STANDARD LDWL CATHODIC PROTECTION DETAILS FOR TEST STATIONS & ANODES

(NOT TO SCALE)

APPROVED BY:	APPROVED BY:
CITY ENGINEER	DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: JUL - 01 - 2021	DWG NO: 16640-01

NO.	DATE	REVISION	APP.

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EFF DATE: XXXX-XX-20XX

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LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

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Registration Number 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

CP DETAILS FOR TEST STATIONS & ANODES

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 192 OF 244	

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WILL BE PROVIDED IN 90% SUBMITTAL

NO.	DATE	REVISION	APP.

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& NEWNAM, INC.
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SUITE 400
HOUSTON, TX 77042

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FIRM F-2614

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Registration Number: 94776
Date: 04/03/2025
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Texas Registered Engineering Firm F-2614

CITY OF HOUSTON

HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3

60% SUBMITTAL

NON-STANDARD LDWL CATHODIC PROTECTION SCHEDULE

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
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CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
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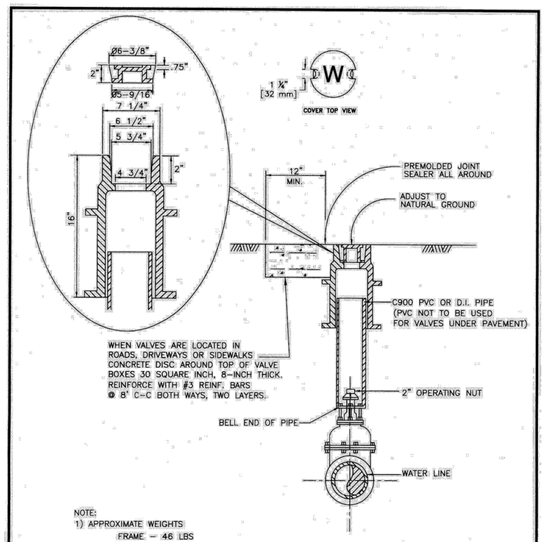
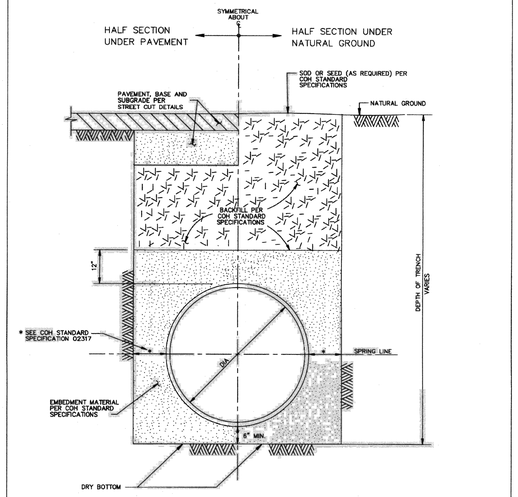
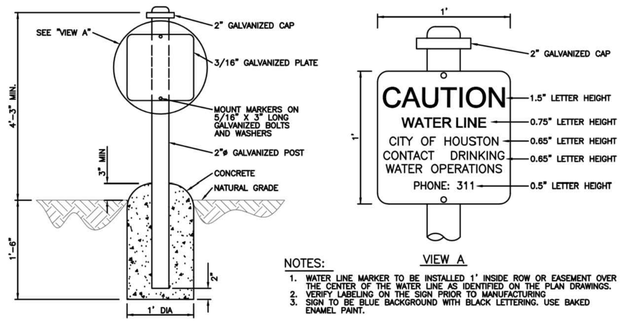


NOTE:
1) APPROXIMATE WEIGHTS:
FRAME – 46 LBS
COVER – 10 LBS
2) MATERIAL – GRAY IRON ASTM A48 CL35B

CITY OF HOUSTON	
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING	
VALVE BOX DETAIL	
(NOT TO SCALE)	
APPROVED: CITY ENGINEER	APPROVED: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF. DATE: JULY 01, 2010	DWG. NO: 02065-03



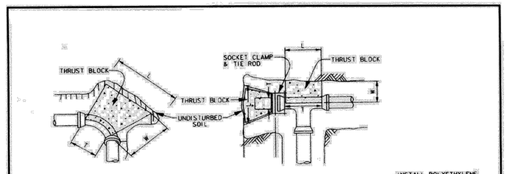
CITY OF HOUSTON	
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING	
WATER DISTRIBUTION MAIN BEDDING AND BACKFILL FOR OPEN CUT TRENCHES	
(NOT TO SCALE)	
APPROVED: CITY ENGINEER	APPROVED: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JUL-01-2010	DWG NO: 02317-04



VIEW A

NOTES:
1. WATER LINE MARKER TO BE INSTALLED 1' INSIDE ROW OR EASEMENT OVER THE CENTER OF THE WATER LINE AS IDENTIFIED ON THE PLAN DRAWINGS.
2. VERIFY LABELING ON THE SIGN PRIOR TO MANUFACTURING
3. SIGN TO BE BLUE BACKGROUND WITH BLACK LETTERING. USE BAKED ENAMEL PAINT.

1 WATER LINE MARKER INSTALLATION
NOT TO SCALE



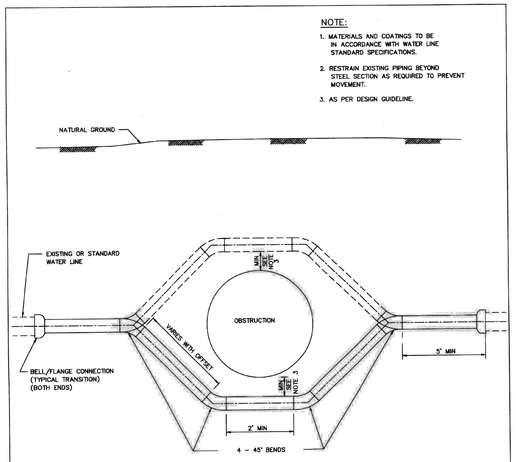
MINIMUM BLOCKING DIMENSION IN INCHES:											
PIPE SIZE	90° BEND			45° BEND			TEE/PLUG				
	W	H	L	T	W	H	L	T	W	H	L	T
4"	6	12	14	10	6	8	11	8	6	10	12	12
6"	8	14	26	12	8	14	14	12	8	14	19	19
8"	10	16	40	16	10	18	20	16	10	18	26	26
10"	12	24	42	18	12	22	25	18	12	24	30	30
12"	14	36	40	30	14	26	30	22	14	26	40	40

CORRECTION FACTORS:		
SOIL TYPE	SOIL BEARING STRENGTH S_b(lb/ft²)	MULTIPLY "L" AND "H" BY
SOFT CLAY	1000	1.73
SILT	1500	1.41
SANDY SILT	3000	1.00
SAND	4000	0.87
SANDY CLAY	6000	0.71
HARD CLAY	9000	0.58

NOTES:
1. DEPTH "H" MAY BE GREATER THAN SPECIFIED TO ALLOW WORKING SPACE.
2. BLOCKING MUST BE PLACED AGAINST UNDISTURBED EARTH. WHERE THIS IS NOT POSSIBLE, THE FILL BETWEEN THE BEARING SURFACE AND UNDISTURBED SOIL MUST BE COMPACTED TO AT LEAST 90% STANDARD PROCTOR DENSITY.
3. PROVIDE CONCRETE IN ACCORDANCE WITH STANDARD SPECIFICATION SECTION 03315 – CONCRETE FOR UTILITY CONSTRUCTION.
4. BLOCKING DIMENSIONS SHOWN ARE BASED ON 3000 PSI SOIL BEARING STRENGTH AND 125 PSI INTERNAL WATER PRESSURE. FOR OTHER SOIL CONDITIONS, MULTIPLY DIMENSIONS "L" AND "H" BY THE APPROPRIATE CORRECTION FACTOR.

CITY OF HOUSTON	
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING	
THRUST BLOCK DETAIL FOR WATER LINES (4-INCH TO 12 INCH)	
(NOT TO SCALE)	
APPROVED: CITY ENGINEER	APPROVED: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF. DATE: JULY-01-2010	DWG NO: 02511-02

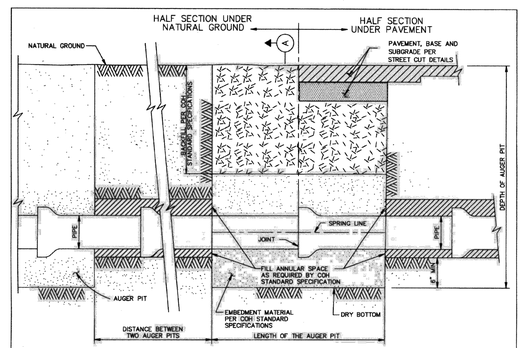
NOTE:
1. MATERIALS AND COATINGS TO BE IN ACCORDANCE WITH WATER LINE STANDARD SPECIFICATIONS.
2. RESTRAIN EXISTING PIPING BEYOND STEEL SECTION AS REQUIRED TO PREVENT MOVEMENT.
3. AS PER DESIGN GUIDELINE.

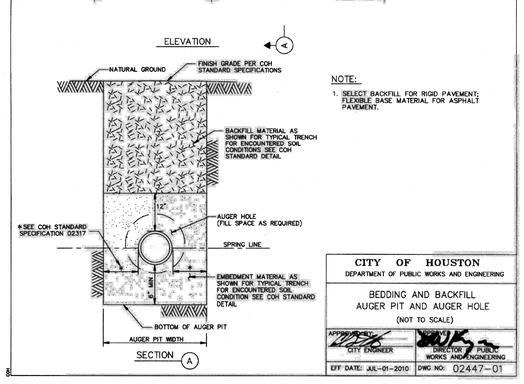


PIPE OFFSET ALTERNATES

1. DUCTILE IRON PIPE PRESSURE 250 PSI WITH APPROVED RESTRAINED JOINTS.
2. PVC PIPE WITH INTEGRAL RESTRAINED JOINT SYSTEM, OR DUCTILE – IRON RESTRINED JOINT FITTINGS, EPOXY LINED AND COATED. USE 250 PSI AWWA C900 DR 14 FOR PVC RESTRAINED JOINTS.
3. PVC NOT ALLOWED FOR GREATER THAN 20 FT OF COVER OR FOR DIAMETER LARGER THAN 20 IN.
4. USE ONLY DUCTILE IRON AND PVC PRODUCTS LISTED ON OCE DIVISION APPROVED PRODUCTS LIST AND IN ACCORDANCE WITH CITY STANDARD SPECIFICATIONS.

CITY OF HOUSTON	
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING	
TYPICAL STEEL PIPE OFFSET SECTION FOR WATER LINES	
(NOT TO SCALE)	
APPROVED: CITY ENGINEER	APPROVED: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JULY-01-2010	DWG NO: 02511-01





NOTE:
1. SELECT BACKFILL FOR RIGID PAVEMENT; FLEXIBLE BASE MATERIAL FOR ASPHALT PAVEMENT.

CITY OF HOUSTON	
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING	
BEDDING AND BACKFILL AUGER PIT AND AUGER HOLE	
(NOT TO SCALE)	
APPROVED: CITY ENGINEER	APPROVED: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JUL-01-2010	DWG NO: 02447-01

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567.

PRIVATE UTILITY LINES SHOWN

Date:
CENTERPOINT ENERGY/ELECTRIC FACILITIES
ELECTRICAL FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION).

Date:
CENTERPOINT ENERGY/GAS FACILITIES
(GAS SERVICE LINES ARE NOT SHOWN). THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION.

Date:
AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

LAN

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes.this document is released for the purpose of interim review under the authority of Engineer CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
SMALL DIAMETER
WATER LINE
DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 194 OF 244	

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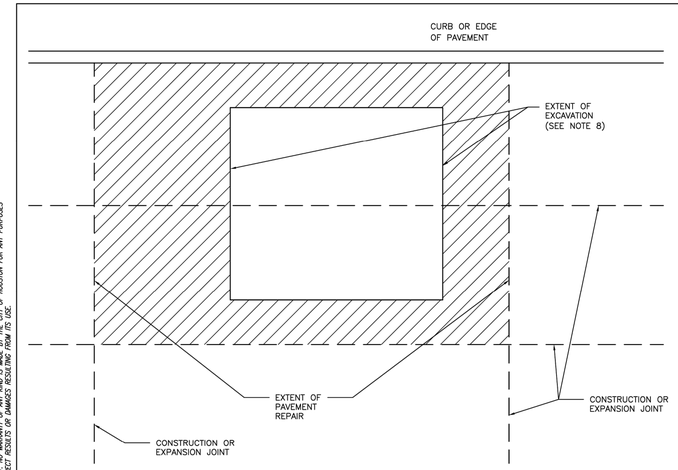

NOTES:

1. EXTENT OF PAVEMENT REPAIR SHALL BE PERPENDICULAR AND PARALLEL TO TRAVEL WAY.
2. REPLACE ENTIRE PANEL WIDTH AND LENGTH TO NEAREST CONSTRUCTION OR EXPANSION JOINT BEYOND EDGE OF EXCAVATION.
3. SAW CUT AND EXPOSE 15" OF REINFORCING STEEL WITHIN EXISTING PAVEMENT. PROVIDE HORIZONTAL DOWELS (PER SPECIFICATION SECTION 02951–PAVEMENT REPAIR AND RESTORATION) IF EXISTING REINFORCING IS BROKEN OFF.
4. REPLACE CURB WHEN ADJACENT LANE IS REPLACED.
5. MAINTAIN EXPANSION JOINTS AT EXISTING LOCATIONS UNLESS OTHERWISE DIRECTED BY CITY ENGINEER.
6. SPECIALTY PAVEMENTS (IE: BRICK PAVERS) TO BE REPLACED WITH MATCHING PAVEMENT IN ALL CASES.
7. REPLACE PAVEMENT MARKINGS IN ACCORDANCE WITH CITY OF HOUSTON STANDARD SPECIFICATIONS 02764–RAISED PAVEMENT MARKERS AND 02767–THERMOPLASTIC PAVEMENT MARKINGS.
8. EXTENT OF EXCAVATION INCLUDES 18" OVERCUT AS SHOWN ON STANDARD DETAIL 02951–04 PAVEMENT REPAIR DETAIL FOR STREET CUTS (FLEX–BASE PAVEMENT & CONCRETE PAVEMENT).

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

STREET CUT FOR CONCRETE PAVEMENT REPLACEMENT/RESTORATION AGE OF PAVEMENT ≤ 5YRS
(SCALE: NOT TO SCALE)

APPROVED BY:

DocuSigned by: Suhail Kanwar — CITY ENGINEER
DocuSigned by: Carl Haddock — DIRECTOR OF HPW
DocuSigned by: HANG NGUYEN — CITY TRAFFIC ENGINEER

EFF DATE: NOV–27–2023 | DWG NO: 02951–01

DISCLAIMER:
THE USE OF THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THIS STANDARD DO NOT PURPORT TO ADDRESS ALL OF THE SAFETY CONCERNS ASSOCIATED WITH THEIR USE. THE ENGINEER OF RECORD (EOR) IS TO REVIEW THESE DESIGN REQUIREMENTS AND BY AUTHORIZING THEIR USE, ACCEPTS RESPONSIBILITY FOR THEIR APPLICABILITY, ADEQUACY AND SAFETY. NO WARRANTY OF ANY KIND IS MADE BY THE CITY OF HOUSTON FOR ANY PURPOSES WHATSOEVER. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

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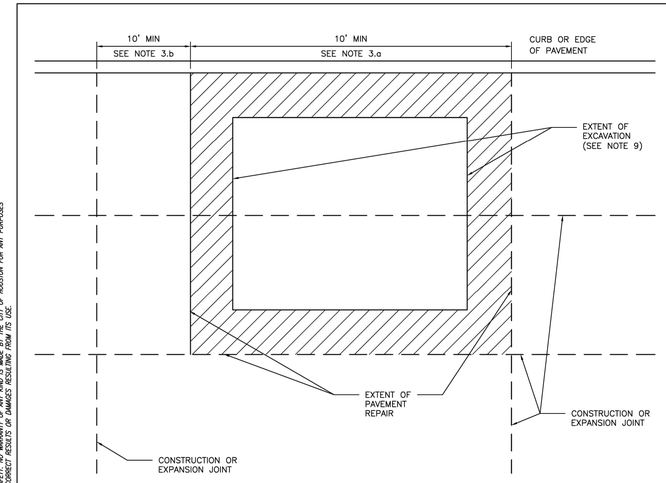

NOTES:

1. EXTENT OF PAVEMENT REPAIR SHALL BE PERPENDICULAR AND PARALLEL TO TRAVEL WAY.
2. WIDTH:
   REPLACE PANEL WIDTH TO NEAREST CONSTRUCTION OR EXPANSION JOINT BEYOND EDGE OF EXCAVATION.
3. LENGTH:
   a. MINIMUM LENGTH OF PAVEMENT REPAIR ALONG TRAVEL WAY IS 10' FROM THE NEAREST JOINT.
   b. IF EXTENT OF PAVEMENT REPAIR IS LESS THAN 10' FROM EXISTING CONSTRUCTION OR EXPANSION JOINT, EXTEND PAVEMENT REPAIR TO EXISTING JOINT.
4. SAW CUT AND EXPOSE 15" OF REINFORCING STEEL AROUND EDGE OF PANEL REPLACEMENT. PROVIDE HORIZONTAL DOWELS (PER SPECIFICATION SECTION 02951–PAVEMENT REPAIR AND RESTORATION) IF REINFORCING IS BROKEN OFF OR DOES NOT EXIST.
5. REPLACE CURB WHEN ADJACENT LANE IS REPLACED.
6. MAINTAIN EXPANSION JOINTS AT EXISTING LOCATIONS UNLESS OTHERWISE DIRECTED BY CITY ENGINEER.
7. SPECIALTY PAVEMENTS (IE: BRICK PAVERS) TO BE REPLACED WITH MATCHING PAVEMENT IN ALL CASES.
8. REPLACE PAVEMENT MARKINGS IN ACCORDANCE WITH CITY OF HOUSTON STANDARD SPECIFICATIONS 02764–RAISED PAVEMENT MARKERS AND 02767–THERMOPLASTIC PAVEMENT MARKINGS.
9. EXTENT OF EXCAVATION INCLUDES 18" OVERCUT AS SHOWN ON STANDARD DETAIL 02951–04 PAVEMENT REPAIR DETAIL FOR STREET CUTS (FLEX–BASE PAVEMENT & CONCRETE PAVEMENT).

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

STREET CUT FOR CONCRETE PAVEMENT REPLACEMENT/RESTORATION AGE OF PAVEMENT > 5YRS
(SCALE: NOT TO SCALE)

APPROVED BY:

DocuSigned by: Suhail Kanwar — CITY ENGINEER
DocuSigned by: Carl Haddock — DIRECTOR OF HPW
DocuSigned by: HANG NGUYEN — CITY TRAFFIC ENGINEER

EFF DATE: NOV–27–2023 | DWG NO: 02951–02

DISCLAIMER:
THE USE OF THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THIS STANDARD DO NOT PURPORT TO ADDRESS ALL OF THE SAFETY CONCERNS ASSOCIATED WITH THEIR USE. THE ENGINEER OF RECORD (EOR) IS TO REVIEW THESE DESIGN REQUIREMENTS AND BY AUTHORIZING THEIR USE, ACCEPTS RESPONSIBILITY FOR THEIR APPLICABILITY, ADEQUACY AND SAFETY. NO WARRANTY OF ANY KIND IS MADE BY THE CITY OF HOUSTON FOR ANY PURPOSES WHATSOEVER. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

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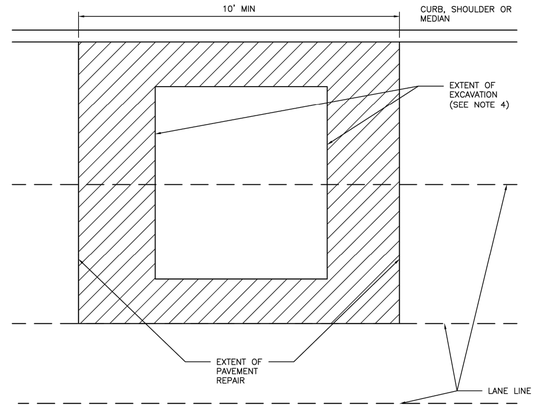

NOTES:

1. EXTENT OF PAVEMENT REPAIR SHALL BE PERPENDICULAR AND PARALLEL TO TRAVEL WAY.
2. FLEXIBLE BASE: REPLACE BASE TO SAME THICKNESS PLUS TWO INCHES (2") FOR EXTENT OF EXCAVATION. USE APPROVED BASE MATERIAL TYPE.*
3. SURFACE COURSE:
   3.1. WIDTH:
   SURFACE MILL AND OVERLAY FULL WIDTH OF LANE(S) TO NEAREST LANE DIVIDER BEYOND EDGE OF EXCAVATION.
   3.2. LENGTH:
   MINIMUM LENGTH OF SURFACE MILL ALONG TRAVEL WAY IS 10'.
   3.3. REPLACE PAVEMENT MARKINGS IN ACCORDANCE WITH CITY OF HOUSTON STANDARD SPECIFICATIONS 02764–RAISED PAVEMENT MARKERS AND 02767–THERMOPLASTIC PAVEMENT MARKINGS.
4. EXTENT OF EXCAVATION INCLUDES 18" OVER CUT AS SHOWN ON STANDARD DETAIL 02951–04 PAVEMENT REPAIR DETAIL FOR STREET CUTS (FLEX–BASE PAVEMENT AND CONCRETE PAVEMENT).
5. ADDITIONAL REQUIREMENTS FOR ASPHALT OVERLAY ON CONCRETE PAVEMENT:
   5.1. REPLACE CONCRETE FOR EXTENT OF EXCAVATION. REPLACE TO SAME THICKNESS PLUS TWO INCHES (2").
   5.2. WIDTH:
   5.2.1. IF EXCAVATION EXTENDS MORE THAN HALF OF A LANE, REPLACE ENTIRE LANE OF CONCRETE. OTHERWISE USE STANDARD DETAIL 02951–04 THROUGH 05.
   5.3. SAW CUT AND EXPOSE 15" OF REINFORCING STEEL AROUND EDGE OF CONCRETE REPLACEMENT. IF NO REINFORCING STEEL EXISTS, USE HORIZONTAL DOWELS PER CITY OF HOUSTON STANDARD SPECIFICATION SECTION 02951–PAVEMENT REPAIR AND RESTORATION.
   5.4. REPLACE CURB WHEN ADJACENT LANE IS REPLACED.
   5.5. MAINTAIN CONCRETE EXPANSION JOINTS AT EXISTING LOCATIONS UNLESS OTHERWISE APPROVED BY CITY ENGINEER.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

STREET CUT FOR ASPHALT PAVEMENT REPLACEMENT/RESTORATION FOR PAVEMENT OF ALL AGES
(SCALE: NOT TO SCALE)

APPROVED BY:

DocuSigned by: Suhail Kanwar — CITY ENGINEER
DocuSigned by: Carl Haddock — DIRECTOR OF HPW
DocuSigned by: HANG NGUYEN — CITY TRAFFIC ENGINEER

EFF DATE: NOV–27–2023 | DWG NO: 02951–03

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LAN

EFF DATE: XXXX–XX–20XX | DWG NO: XXXXX–XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713–266–6900
TEXAS REGISTERED ENGINEERING FIRM F–2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

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Engineer: CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F–2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
COH
PAVEMENT DETAILS
(SHEET 1 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
NONE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 195 OF 244	

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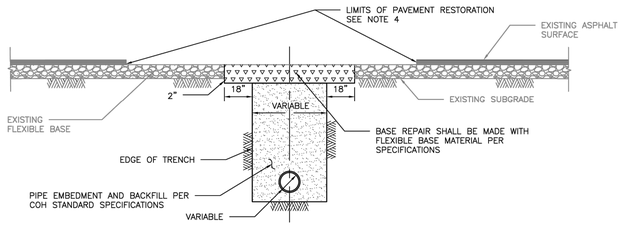
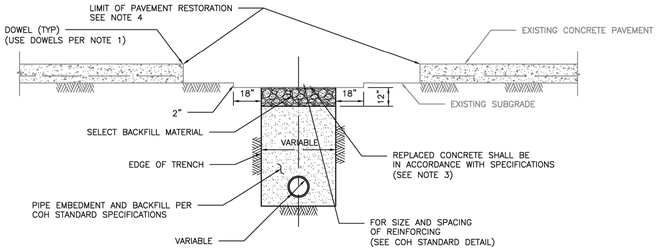


ELEVATION A
REPAIR OF FLEXIBLE BASE PAVEMENT



ELEVATION B
REPAIR OF REINFORCED CONCRETE PAVEMENT

NOTES:

1. EXPOSE 15" OF REINFORCING STEEL AT PROPOSED SAWED JOINT. IF NO REINFORCING STEEL EXISTS, USE HORIZONTAL DOWELS. HORIZONTAL DOWELS SHALL BE #6 BAR, 24" LONG, 24" C-C, DRILLED AND EMBEDDED 8" INTO THE CENTER OF THE EXISTING SLAB. WITH "PO ROC" OR EQUAL.
2. IF REINFORCED CONCRETE IS OVERLAYED WITH ASPHALT, REPLACE WITH 2" MIN HMAC SURFACING.
3. REFER TO STANDARD DETAIL 02751-01 FOR REINFORCING STEEL REQUIREMENTS.
4. REFER TO STANDARD DETAIL 02951-01 THROUGH 03 FOR PAVEMENT RESTORATION LIMITS.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD
PAVEMENT REPAIR DETAIL FOR STREET CUTS
(FLEX-BASE PAVEMENT & CONCRETE PAVEMENT)
(SCALE: NOT TO SCALE)
APPROVED BY:
DocuSigned by: Sukul Kanwar — CITY ENGINEER
DocuSigned by: Carl Haddock — DIRECTOR OF HPW
DocuSigned by: HANG NGUYEN — CITY TRAFFIC ENGINEER
EFF DATE: NOV-27-2023 — DWG NO: 02951-04

DISCLAIMER:
THE USE OF THIS STANDARD IS GOVERNED BY THE TEXAS ENGINEERING PRACTICE ACT. THE DESIGN REQUIREMENTS ON THIS STANDARD DO NOT PURPORT TO ADDRESS ALL OF THE SAFETY CONCERNS ASSOCIATED WITH THEIR USE. THE ENGINEER OF RECORD (EOR) IS TO REVIEW BASE DESIGN REQUIREMENTS AND BY APPROPRIATE THEIR USE, ACCEPTS RESPONSIBILITY FOR THEIR APPLICABILITY, ADEQUACY AND SAFETY. NO WARRANTY OF ANY KIND IS MADE BY THE CITY OF HOUSTON FOR ANY PURPOSES WHATSOEVER. THE CITY OF HOUSTON ASSUMES NO RESPONSIBILITY FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

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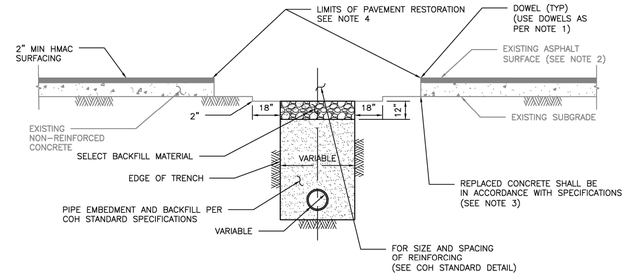
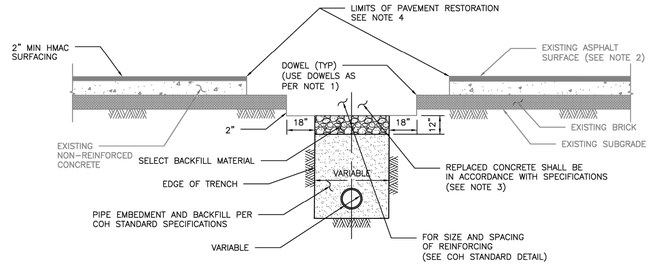


ELEVATION C
REPAIR OF NON-REINFORCED CONCRETE PAVEMENT



ELEVATION D
REPAIR OF NON-REINFORCED CONCRETE PAVEMENT WITH BRICK

NOTES:

1. EXPOSE 15" OF REINFORCING STEEL AT PROPOSED SAWED JOINT. IF NO REINFORCING STEEL EXISTS, USE HORIZONTAL DOWELS. HORIZONTAL DOWELS SHALL BE #6 BAR, 24" LONG, 24" C-C, DRILLED AND EMBEDDED 8" INTO THE CENTER OF THE EXISTING SLAB. WITH "PO ROC" OR EQUAL.
2. IF REINFORCED CONCRETE IS OVERLAYED REPLACE WITH SAME THICKNESS OF HMAC SURFACING.
3. REFER TO STANDARD DETAIL 02751-01 FOR REINFORCING STEEL REQUIREMENT
4. REFER TO STANDARD DETAILS 02951-01 THROUGH 03 FOR PAVEMENT RESTORATION LIMITS.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD
PAVEMENT REPAIR DETAIL FOR STREET CUTS
(NON-REINFORCED CONCRETE & BRICK PAVEMENT)
(SCALE: NOT TO SCALE)
APPROVED BY:
DocuSigned by: Sukul Kanwar — CITY ENGINEER
DocuSigned by: Carl Haddock — DIRECTOR OF HPW
DocuSigned by: HANG NGUYEN — CITY TRAFFIC ENGINEER
EFF DATE: NOV-27-2023 — DWG NO: 02951-05

DISCLAIMER:
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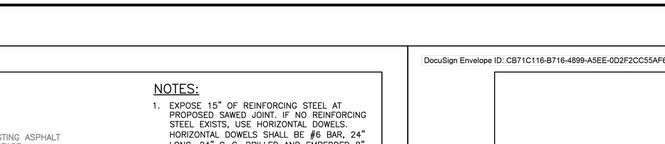
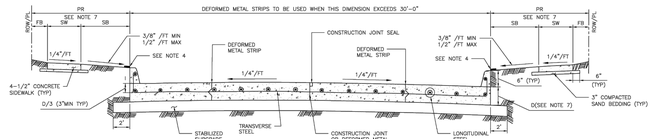


TYPICAL DOUBLE ROADWAY SECTION FOR CONCRETE PAVEMENT WITH CURBS



TYPICAL SINGLE ROADWAY SECTION FOR CONCRETE PAVEMENT WITH CURBS

NOTES:

1. THE MAXIMUM WIDTH BETWEEN LONGITUDINAL JOINTS SHALL NOT EXCEED 15'-0".
2. ALL EARTHEN AREAS ARE TO BE HYDROMULCHED UNLESS SHOWN OTHERWISE ON DRAWINGS.
3. CONTRACTOR MAY SAW CUT IN LIEU OF DEFORMED METAL STRIP.
4. USE STRIP OF SOD GRASS TO PREVENT EROSION UNTIL STAND OF GRASS IS ESTABLISHED.
5. AN EQUAL OR LARGER AREA OF WELDED REINFORCEMENT (MM CONFORMING TO ASTM A497, MAY BE SUBSTITUTED FOR REBARS LISTED IN TABLE 1.
6. IF AVAILABLE ROW IS NOT SUFFICIENT TO ACCOMMODATE SIDEWALK WIDTH (SW) ACCORDING TO DM REQUIREMENTS, ENGINEER SHALL OBTAIN A VARIANCE FROM THE CITY ENGINEER.
7. REFER TO CONTRACT DRAWINGS FOR PAVEMENT WIDTH (PW) AND PAVEMENT THICKNESS (D), MEDIAN (M), PEDESTRIAN REALM (PR), SIDEWALK (SW), FRONTAGE BUFFER (FB), AND SAFETY BUFFER (SB) WIDTHS.

TABLE 1

REINFORCING STEEL BAR SIZES AND SPACINGS FOR VARIOUS PAVEMENT THICKNESSES (D) WITH: MAXIMUM TRANSVERSE CONTROL JOINT SPACING = 20'-0"
MAXIMUM EXPANSION JOINT SPACING = 80'-0"
fc' = 4,000 PSI/28 DAYS AND FY = 60,000 PSI

PAVEMENT THICKNESS 'D' (IN)	PAVEMENT WIDTH 'PW' (FT)	LONGITUDINAL STEEL									TRAVERSE STEEL		
		#4 BARS			#5 BARS			#6 BARS			#4 BARS	#5 BARS	#6 BARS
		NUMBER OF BARS	SPACING (IN)	END BAR SPACING (IN)	NUMBER OF BARS	SPACING (IN)	END BAR SPACING (IN)	NUMBER OF BARS	SPACING (IN)	END BAR SPACING (IN)	SPACING (IN)	SPACING (IN)	SPACING (IN)
6	28	17	20.50	4.00	–	–	–	–	–	–	36	–	–
7	25	17	18.25	4.00	–	–	–	–	–	–	36	–	–
7	35	24	18.00	3.00	–	–	–	–	–	–	36	–	–
7	36	25	17.75	3.00	–	–	–	–	–	–	36	–	–
7	37	25	18.25	3.00	–	–	–	–	–	–	36	–	–
7	41	28	18.00	3.00	–	–	–	–	–	–	36	–	–
7	45	31	17.75	3.75	–	–	–	–	–	–	36	–	–
8	25	20	15.50	2.75	13	24.50	3.0	–	–	–	36	36	–
8	34	27	15.50	2.50	17	25.00	4.0	–	–	–	36	36	–
8	35	27	16.00	2.00	18	24.25	4.0	–	–	–	36	36	–
8	36	28	15.75	3.25	18	25.00	3.0	–	–	–	30	36	–
8	44	24	15.75	4.00	22	24.75	4.0	–	–	–	30	36	–
8	45	35	15.75	2.25	23	24.25	3.0	–	–	–	30	36	–
9	25	22	14.00	3.00	14	22.50	4.0	–	–	–	36	36	–
9	34	31	13.50	2.00	19	22.25	3.5	–	–	–	30	36	–
9	35	31	13.75	3.75	20	21.75	3.5	–	–	–	30	36	–
9	36	32	13.75	3.00	21	21.25	3.5	–	–	–	30	36	–
9	44	39	13.75	2.75	25	21.75	3.0	–	–	–	24	36	–
9	45	39	14.00	4.00	26	21.25	4.5	–	–	–	24	36	–
10	25	24	12.75	3.50	17	18.25	4.0	–	–	–	36	36	36
10	34	33	12.50	4.00	21	20.00	4.0	–	–	–	30	36	36
10	35	34	12.50	3.75	23	18.75	4.0	–	–	–	30	36	36
10	36	35	12.50	3.50	24	18.50	3.0	–	–	–	30	36	36
10	44	44	12.00	4.00	29	18.50	4.5	–	–	–	24	36	36
10	45	44	12.50	3.00	29	19.00	3.0	–	–	–	24	36	36
11	25	27	11.25	3.00	17	18.25	4.0	12	26.75	3	36	36	36
11	34	36	11.50	2.75	24	17.50	2.5	17	25.00	4	24	36	36
11	35	37	11.50	3.00	24	18.00	3.0	17	25.75	4	24	36	36
11	36	40	11.00	2.00	25	17.75	3.0	17	26.50	4	24	36	36
11	44	48	11.125	2.50	30	18.00	3.0	21	26.00	4	24	36	36
11	45	49	11.125	3.00	31	17.75	4.0	22	25.50	3	24	36	36
12	25	–	–	–	19	16.25	4.0	13	24.50	3	36	36	36
12	34	–	–	–	26	16.00	4.0	18	23.50	4	24	36	36
12	35	–	–	–	26	16.50	4.0	19	23.00	3	24	36	36
12	36	–	–	–	27	16.25	4.5	20	22.25	4.5	24	36	36
12	44	–	–	–	33	16.25	4.0	24	22.50	5	24	30	36
12	45	–	–	–	35	15.75	3.0	25	22.25	3	24	30	36

MINIMUM LAP LENGTH (L):
A. # 4 BARS ; L = 22 INCHES
B. # 5 BARS ; L = 27 INCHES
C. # 6 BARS ; L = 32 INCHES

APPROVED BY:	APPROVED BY:
DocuSigned by: Sukul Kanwar — CITY ENGINEER	DocuSigned by: HANG NGUYEN — CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carl Haddock — DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV-27-2023	DWG NO: 02751-01

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD
CONCRETE PAVEMENT DETAILS
FOR CITY OF HOUSTON USE ONLY
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EFF DATE: XXXX-XX-20XX	DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

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Engineer: CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL
COH
PAVEMENT DETAILS
(SHEET 2 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
NONE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 196 OF 244	

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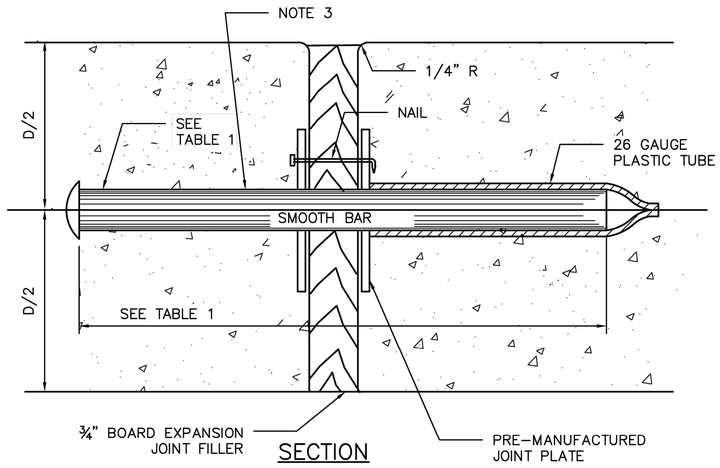
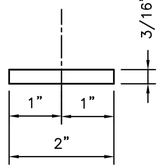


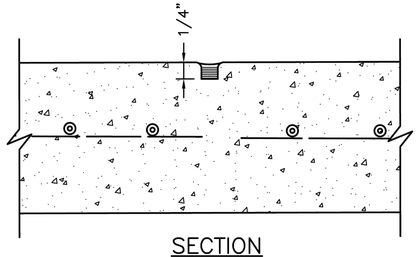
SECTION

DOWEL TYPE EXPANSION JOINT



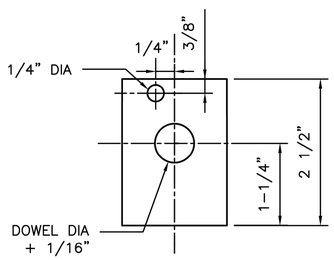
PLAN VIEW

JOINT PLATE



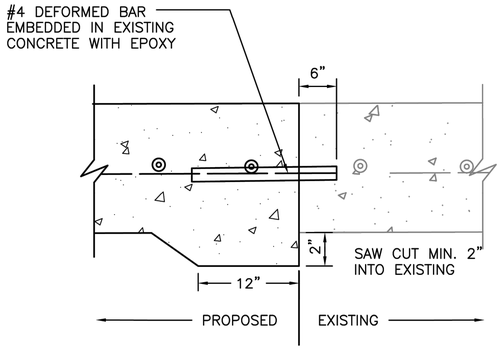
SECTION

CONTROL JOINT



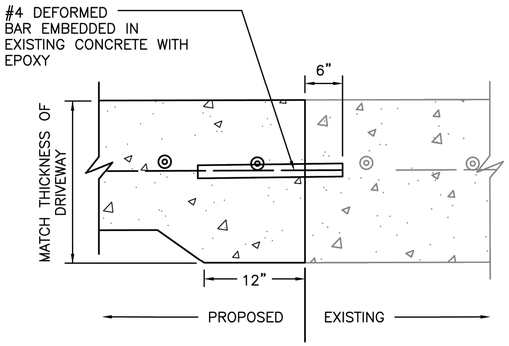
ELEVATION VIEW

JOINT PLATE



SECTION

SIDEWALK TO EXISTING SIDEWALK



SECTION

SIDEWALK TO EXISTING DRIVEWAY

TABLE 1

PAVEMENT THICKNESS (IN)	DOWEL SIZES AND SPACINGS		
	DIAMETER (IN)	LENGTH (IN)	SPACING (IN)
4 1/2	1/2	18	12
5	1/2	18	12
6	3/4	18	12
7	1	18	12

NOTES:

1. STEEL TO MEET ASTM STANDARD SPECIFICATIONS FOR CONCRETE REINFORCING BARS.
2. EXPANSION JOINT TO BE PLACED AT THE END OF EACH CURB RADIUS AND SPACED AT A MAXIMUM DISTANCE OF 3 FEET MAXIMUM SPACING FOR CONTROL JOINTS SHALL BE 5 FEET.
3. CENTER DOWEL HORIZONTALLY ON JOINT.
4. CENTER DOWEL VERTICALLY IN CONCRETE AS NEEDED TO MAINTAIN A 2 INCH MINIMUM COVER.

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NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567.

PRIVATE UTILITY LINES SHOWN

Date:
CENTERPOINT ENERGY/ELECTRIC FACILITIES
ELECTRICAL FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION).

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LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042
PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

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Engineer:CHRISTINE H. KIRBY, PE
Registration Number:94776
Date:04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

SIDEWALK EXPANSION AND CONSTRUCTION JOINT DETAILS

(SCALE: NOT TO SCALE)

APPROVED BY:

DocuSigned by: Suhail Kanwar 0EF8B0C641F5478...
CITY ENGINEER

DocuSigned by: KHANG NGUYEN 95A29EFDA75B4CD...
CITY TRAFFIC ENGINEER

DocuSigned by: Carol Haddock A93C410B72B3453...
DIRECTOR OF HPW

EFF DATE: NOV-27-2023 | DWG NO: 02752-02

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL

COH
SIDEWALK DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
AS SHOWN	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 197 OF 244	

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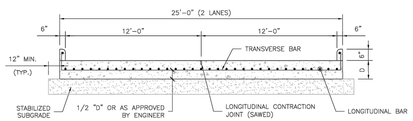
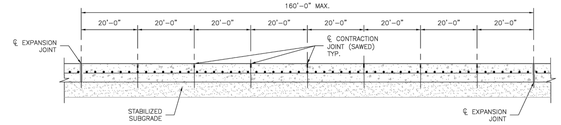


SPACING OF LONGITUDINAL JOINT (2 LANES) (NEW CONSTRUCTION)

HORIZONTAL SCALE: 1" = 3'-0"
VERTICAL SCALE: 1" = 1'-6"



SPACING OF TRANSVERSE EXPANSION AND CONTRACTION JOINTS

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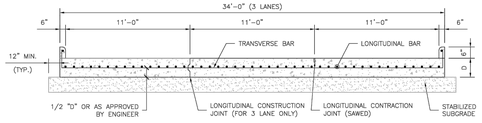
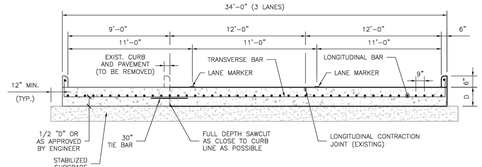
VERTICAL SCALE: 1" = 1'-6"



SPACING OF LONGITUDINAL JOINTS (3 LANES) (NEW CONSTRUCTION)

HORIZONTAL SCALE: 1" = 3'-0"
VERTICAL SCALE: 1" = 1'-6"

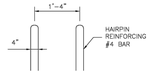


SPACING OF LONGITUDINAL JOINTS (WIDENING)

HORIZONTAL SCALE: 1" = 3'-0"
VERTICAL SCALE: 1" = 1'-6"

SUBGRADE AND PAVEMENT NOTES:

1. TYPICAL STABILIZED SUBGRADE THICKNESS IS 8 INCHES.
2. TYPICAL PAVEMENT THICKNESS (D) IS 10 INCHES.
3. TYPICAL REINFORCING STEEL BAR SIZE AND SPACING ARE:
   a. LONGITUDINAL: #5 BARS @ 9 INCH SPACING
   b. TRANSVERSE: #5 BARS @ 36 INCH SPACING
4. REINFORCEMENT SHALL NOT BE PLACED WITHIN 3 INCHES FROM THE EDGE OF PAVEMENT.
5. FOR HEAVY INDUSTRIAL TRAFFIC, PAVEMENT THICKNESS (D) AND REINFORCING STEEL BAR SIZE AND SPACING WILL BE AS PER GEOTECHNICAL RECOMMENDATION.
6. ALL REINFORCING STEEL BARS SHALL BE GRADE 60 STEEL UNLESS OTHERWISE SPECIFIED.



ALTERNATE VERTICAL REINFORCEMENT

SCALE: 1" = 1'-0"

TYPICAL CONCRETE CURB REINFORCING DETAILS

SCALE: 1" = 1'-0"

GENERAL NOTES:

1. FOR FURTHER INFORMATION REGARDING THE PLACEMENT OF CONCRETE AND STEEL REINFORCEMENT, REFER TO THE GOVERNING SPECIFICATION ITEM 360 "CONCRETE PAVEMENT."
2. CONCRETE SHALL BE CLASS P, 4,000 PSI @ 28 DAYS IN ACCORDANCE WITH SPECIFICATION ITEM 421 "HYDRAULIC CEMENT CONCRETE."
3. THE CHAIRS USED TO SUPPORT THE BAR MATS SHALL BE OF SUFFICIENT STRUCTURAL QUALITY AND NUMBER TO HOLD THE MAT WITHIN THE PLACEMENT HEIGHT, AND SHALL BE OF A TYPE APPROVED BY THE ENGINEER. SPACING OF BAR SUPPORT CHAIRS SHALL BE 3'-0" MAXIMUM.
4. SAWED CONTRACTION JOINTS SHALL BE USED FOR LONGITUDINAL JOINTS WHEREVER MORE THAN ONE LANE WIDTH IS PLACED IN A SINGLE POUR. KEYED CONSTRUCTION JOINTS SHALL BE USED AT ALL OTHER JOINTS.
5. ALL SAW CUTTING SHOWN ON THIS DETAIL SHALL BE INCIDENTAL TO SPECIFICATION ITEM 360 "CONCRETE PAVEMENT."
6. D = THICKNESS OF CONCRETE PAVEMENT.
   - FOR DEVELOPMENT PROJECTS SEE "REGULATIONS OF HARRIS COUNTY, TEXAS FOR THE APPROVAL AND ACCEPTANCE OF INFRASTRUCTURE."
   - FOR PUBLIC PROJECTS SEE HCED 1988 DESIGN GUIDELINES.
7. JOINT SEALANT SHALL CONFORM TO THE REQUIREMENTS OF SPECIFICATION ITEM 360 "CONCRETE PAVEMENT."

NO.	REVISIONS	DATE	NAME
1			
2			
3			
4			
5			

HARRIS COUNTY ENGINEERING DEPARTMENT

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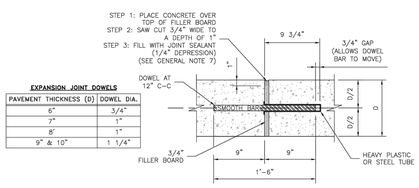
ENGINEER: NAME
P.E. SERIAL No. NUMBER
DATE: / /

PROJECT TITLE:
SHEET DESCRIPTION: CONCRETE PAVEMENT DETAILS
DRAWN BY: JDZ
CK'D BY: PDG
SCALE: AS NOTED
CIVIL STANDARD: CP-13
DATE: 10/10/23
SHEET NO.: 197



EXPANSION JOINT DOWELS

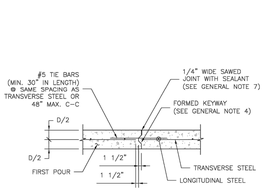
PAVEMENT THICKNESS (D)	DOWEL DIA.
6"	3/4"
7"	1"
8"	1"
9" & 10"	1 1/4"

DOWEL TYPE EXPANSION JOINT

SCALE: 1" = 3"

NOTES FOR DOWEL EXPANSION JOINT:

1. EXPANSION JOINT SHALL BE PLACED AT THE END OF EACH CURB RADIUS AND SPACED AT A MAXIMUM DISTANCE OF 360 FEET.
2. CENTER DOWEL HORIZONTALLY ON JOINT.
3. EXPANSION JOINT BARS SHALL BE HELD PARALLEL TO THE FINISHED CONCRETE SURFACE.

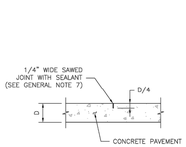


LONGITUDINAL CONSTRUCTION JOINT

SCALE: 1" = 1'-6"

NOTES FOR CONSTRUCTION JOINT:

1. SAWED JOINTS SHALL BE CLEANED IN ACCORDANCE WITH SPECIFICATION ITEM 438 "JOINT SEALANTS."
2. JOINT SEALANT SHALL FILL THE JOINT FROM BOTTOM TO 1/4" BELOW CONCRETE PAVEMENT SURFACE.

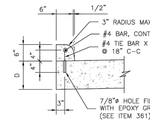


CONTRACTION JOINT (SAWED)

SCALE: 1" = 1'-6"

NOTES FOR CONTRACTION JOINT:

1. 20'-0" MAXIMUM SPACING BETWEEN TRANSVERSE CONTRACTION JOINTS.
2. SAWED JOINTS SHALL BE CLEANED IN ACCORDANCE WITH SPECIFICATION ITEM 438 "JOINT SEALANTS."
3. JOINT SEALANT SHALL FILL THE JOINT FROM BOTTOM TO 1/4" BELOW CONCRETE PAVEMENT SURFACE.

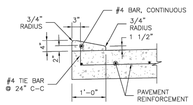


DRILLED-IN CONCRETE CURB FOR CONCRETE PAVEMENT

SCALE: 1" = 1'-0"

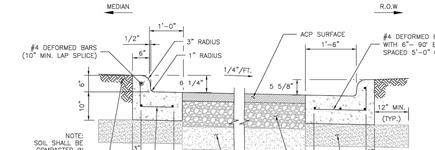
NOTES FOR CURB:

1. AT EACH PAVEMENT CONTRACTION JOINT, PROVIDE A 1/4" THICK PRE-MOLDED EXPANSION JOINT AT THE FULL WIDTH AND HEIGHT OF THE CURB.
2. FOR EACH PAVEMENT EXPANSION JOINT, THE PRE-MOLDED EXPANSION JOINT FILLER MATERIAL SHALL BE THE FULL WIDTH AND HEIGHT OF THE CURB.



4" X 12" CURB

SCALE: 1" = 1'-0"



6" COMBINED CURB AND GUTTER

SCALE: 1" = 1'-0"

NO.	REVISIONS	DATE	NAME
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HARRIS COUNTY ENGINEERING DEPARTMENT

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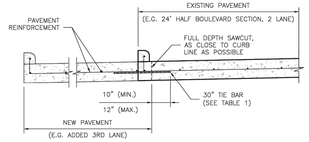
DOCUMENT INCOMPLETE; NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES
ENGINEER: NAME
P.E. SERIAL No. NUMBER
DATE: / /

PROJECT TITLE:
SHEET DESCRIPTION: CONCRETE PAVEMENT DETAILS
DRAWN BY: JDZ
CK'D BY: PDG
SCALE: AS NOTED
CIVIL STANDARD: CP-13
DATE: 10/10/23
SHEET NO.: 196

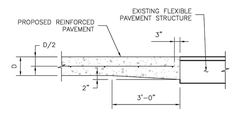


TYPICAL CONCRETE ROADWAY WIDENING DETAIL

SCALE: 1" = 1'-0"

TABLE 1
(CONSTRUCTION JOINT TIE BARS)

TIE BAR SIZE	PAVEMENT DEPTH
#5 BAR	7" AND LESS
#6 BAR	GREATER THAN 7"
TIE BAR SHALL BE DRILLED INTO EXISTING PAVEMENT (MIN. 10", MAX. 12") AND EPOXIED. (SEE ITEM 361)	

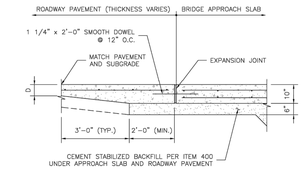


TYPICAL PAVING HEADER

SCALE: 1" = 1'-0"

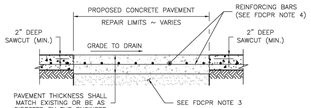
NOTES FOR PAVING HEADER:

1. ADDITIONAL CONCRETE FOR PAVING HEADER SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAVING BID ITEMS.
2. DISTURBED MATERIAL IN THE FLEXIBLE PAVEMENT WILL BE BACKFILLED WITH ASPHALT CONCRETE PAVEMENT (ACP). THE ACP WILL BE CONSIDERED INCIDENTAL TO VARIOUS PAVING BID ITEMS.



TYPICAL SECTION PAVING TIE-IN TO BRIDGE APPROACH SLAB

SCALE: 1" = 1'-0"

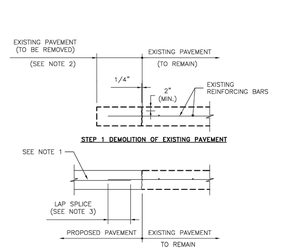


FULL DEPTH CONCRETE PAVEMENT REPAIR

HORIZONTAL SCALE: 1" = 3'-0"
VERTICAL SCALE: 1" = 1'-6"

FULL DEPTH CONCRETE PAVEMENT REPAIR (FDCPR) NOTES:

1. SAWCUT LIMITS SHALL BE AS DIRECTED BY ENGINEER.
2. EXISTING CONCRETE VERTICAL FACES SHALL BE CLEANED OF ALL DELETERIOUS LOOSE MATERIAL PRIOR TO CONCRETE PLACEMENT.
3. FOR REPAIR/REPLACE AREAS, A 6 INCH DEPTH BASE SHALL BE REMOVED AND REPLACED WITH CEMENT STABILIZED BEDDING AND BACKFILL PER ITEM 400.
4. REINFORCEMENT FOR PAVEMENT 7" THICK AND LESS SHALL BE NO. 4 BARS AT 18" SPACING IN EACH DIRECTION. REINFORCEMENT FOR PAVEMENT GREATER THAN 7" THICK SHALL BE NO. 5 BARS AT 18" IN EACH DIRECTION.
5. ALTERNATIVELY, THE CONTRACTOR MAY CHOOSE TO USE FULL DEPTH SAWCUT WITH DRILLED IN TIE BARS (AS SHOWN ON THE "TYPICAL CONCRETE ROADWAY WIDENING DETAIL" DRAWING). IF THE CONTRACTOR SO CHOOSES, THE SAWCUTTING AND TIE BARS WILL BE AT HIS OWN EXPENSE (THESE ITEMS WILL ONLY BE PAID FOR IF HARRIS COUNTY REQUIRES THE FULL DEPTH SAWCUT AND TIE BARS).



CONCRETE TO CONCRETE STANDARD PAVEMENT TIE-IN

SCALE: 1" = 1'-0"

NOTES FOR STANDARD PAVEMENT TIE-IN:

1. REINFORCING CENTERED IN PROPOSED PAVEMENT, 3" CLEAR AT EDGES.
2. SAWCUT 2" DEEP MINIMUM AND REMOVE 2'-0" EXISTING PAVEMENT OR PAVEMENT WITH CURB. EXPOSE AND CLEAN EXISTING REINFORCING.
3. 24 BAR DIAMETER LAP SPLICE OR WELD, IF DIRECTED.
4. IF NO EXPOSED REINFORCING STEEL EXISTS, HORIZONTAL TIE BARS SHALL BE GRADE 60, 30" LONG DRILLED AND EMBEDDED 15" INTO THE CENTER OF THE EXISTING CONCRETE SLAB WITH EPOXY OR APPROVED EQUAL. SIZE OF TIE BARS SHALL CONFORM TO TO TABLE 1. TIE BARS SHALL BE PLACED 24" CENTER TO CENTER.
5. ALTERNATIVELY, THE CONTRACTOR MAY CHOOSE TO USE FULL DEPTH SAWCUT WITH DRILLED IN TIE BARS (AS SHOWN IN THE "TYPICAL CONCRETE ROADWAY WIDENING DETAIL" ON THIS SHEET. IF THE CONTRACTOR SO CHOOSES, THE SAWCUTTING AND BARS WILL BE AT HIS OWN EXPENSE (THESE ITEMS WILL ONLY BE PAID FOR IF HARRIS COUNTY REQUIRES THE FULL DEPTH SAWCUT AND TIE BARS).

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LAN

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

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Engineer: CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON

HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3

60% SUBMITTAL

HARRIS COUNTYCONCRETE PAVEMENT DETAILS PRECINCT 1 & 3

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
AS SHOWN	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 198 OF 244	

J:\Engineering Specs\HC Standard Civil Drawings - Master File\2023 Standard Civil Drawings\2-Pavement & Driveway\CP-13_23.10.10.dwg

PEN TABLE: LAN-COH-CIVIL.ctb

USERNAME: Fleming, David

PLOTTED: 4/3/2025 8:41 PM

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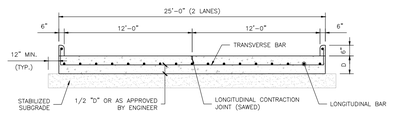
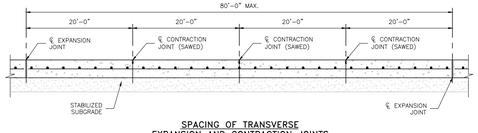
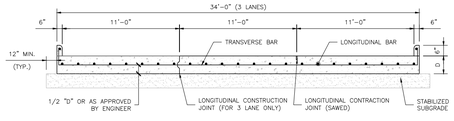


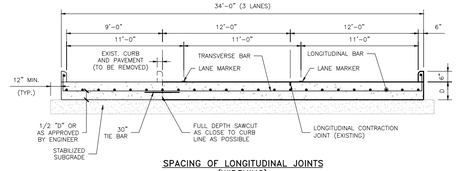
SPACING OF LONGITUDINAL JOINT (2 LANES)
(NEW CONSTRUCTION)
HORIZONTAL SCALE: 1" = 3'-0"
VERTICAL SCALE: 1" = 1'-6"



SPACING OF TRANSVERSE
EXPANSION AND CONTRACTION JOINTS
HORIZONTAL SCALE: 1" = 8'-0"
VERTICAL SCALE: 1" = 1'-6"



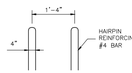
SPACING OF LONGITUDINAL JOINTS (3 LANES)
(NEW CONSTRUCTION)
HORIZONTAL SCALE: 1" = 3'-0"
VERTICAL SCALE: 1" = 1'-6"



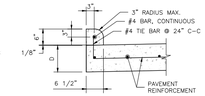
SPACING OF LONGITUDINAL JOINTS
(WIDENING)
HORIZONTAL SCALE: 1" = 3'-0"
VERTICAL SCALE: 1" = 1'-6"

SUBGRADE AND PAVEMENT NOTES:

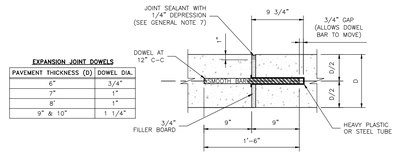
1. TYPICAL STABILIZED SUBGRADE THICKNESS IS 8 INCHES.
2. TYPICAL PAVEMENT THICKNESS (D) IS 10 INCHES.
3. TYPICAL REINFORCING STEEL BAR SIZE AND SPACING ARE:
   a. LONGITUDINAL: #5 BARS @ 18 INCH SPACING
   b. TRANSVERSE: #5 BARS @ 36 INCH SPACING
4. REINFORCEMENT SHALL NOT BE PLACED WITHIN 3 INCHES FROM THE EDGE OF PAVEMENT.
5. FOR HEAVY INDUSTRIAL TRAFFIC, PAVEMENT THICKNESS (D) AND REINFORCING STEEL BAR SIZE AND SPACING WILL BE AS PER GEOTECHNICAL RECOMMENDATION.
6. ALL REINFORCING STEEL BARS SHALL BE GRADE 60 STEEL UNLESS OTHERWISE SPECIFIED.



ALTERNATE VERTICAL
REINFORCEMENT
SCALE: 1" = 1'-0"



TYPICAL CONCRETE CURB
REINFORCING DETAILS
SCALE: 1" = 1'-0"



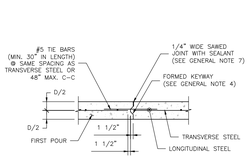
EXPANSION JOINT DOWELS

PAVEMENT THICKNESS (D)	DOWEL DIA.
6"	3/4"
7"	1"
8"	1"
9" & 10"	1 1/4"

DOWEL TYPE EXPANSION JOINT
SCALE: 1" = 3"

NOTES FOR DOWEL EXPANSION JOINT:

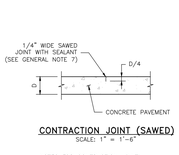
1. EXPANSION JOINT SHALL BE PLACED AT THE END OF EACH CURB RADIUS AND SPACED AT A MAXIMUM DISTANCE OF 80 FEET.
2. CENTER DOWEL HORIZONTALLY ON JOINT.
3. EXPANSION JOINT BARS SHALL BE HELD PARALLEL TO THE FINISHED CONCRETE SURFACE.



LONGITUDINAL CONSTRUCTION JOINT
SCALE: 1" = 1'-6"

NOTES FOR CONSTRUCTION JOINT:

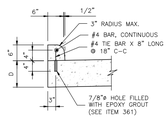
1. SAWED JOINTS SHALL BE CLEANED IN ACCORDANCE WITH SPECIFICATION ITEM 438 "JOINT SEALANTS."
2. JOINT SEALANT SHALL FILL THE JOINT FROM BOTTOM TO 1/4" BELOW CONCRETE PAVEMENT SURFACE.



CONTRACTION JOINT (SAWED)
SCALE: 1" = 1'-6"

NOTES FOR CONTRACTION JOINT:

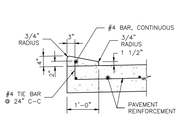
1. 20'-0" MAXIMUM SPACING BETWEEN TRANSVERSE CONTRACTION JOINTS.
2. SAWED JOINTS SHALL BE CLEANED IN ACCORDANCE WITH SPECIFICATION ITEM 438 "JOINT SEALANTS."
3. JOINT SEALANT SHALL FILL THE JOINT FROM BOTTOM TO 1/4" BELOW CONCRETE PAVEMENT SURFACE.



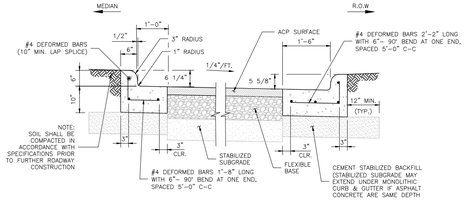
DRILLED-IN CONCRETE CURB
FOR CONCRETE PAVEMENT
SCALE: 1" = 1'-0"

NOTES FOR CURB:

1. AT EACH PAVEMENT CONTRACTION JOINT, PROVIDE A 1/4" THICK PRE-MOLDED EXPANSION JOINT AT THE FULL WIDTH AND HEIGHT OF THE CURB.
2. FOR EACH PAVEMENT EXPANSION JOINT, THE PRE-MOLDED EXPANSION JOINT FILLER MATERIAL SHALL BE THE FULL WIDTH AND HEIGHT OF THE CURB.



4" X 12" CURB
SCALE: 1" = 1'-0"



6" COMBINED CURB AND GUTTER
SCALE: 1" = 1'-0"

GENERAL NOTES:

1. FOR FURTHER INFORMATION REGARDING THE PLACEMENT OF CONCRETE AND STEEL REINFORCEMENT, REFER TO THE GOVERNING SPECIFICATION ITEM 360 "CONCRETE PAVEMENT."
2. CONCRETE SHALL BE CLASS P, 4,000 PSI @ 28 DAYS IN ACCORDANCE WITH SPECIFICATION ITEM 421 "HYDRAULIC CEMENT CONCRETE."
3. THE CHAIRS USED TO SUPPORT THE BAR MATS SHALL BE OF SUFFICIENT STRUCTURAL QUALITY AND NUMBER TO HOLD THE MAT WITHIN THE PLACEMENT HEIGHT, AND SHALL BE OF A TYPE APPROVED BY THE ENGINEER. SPACING OF BAR SUPPORT CHAIRS SHALL BE 3'-0" MAXIMUM.
4. SAWED CONTRACTION JOINTS SHALL BE USED FOR LONGITUDINAL JOINTS WHEREVER MORE THAN ONE LANE WIDTH IS PLACED IN A SINGLE POUR. KEYED CONSTRUCTION JOINTS SHALL BE USED AT ALL OTHER JOINTS.
5. ALL SAW CUTTING SHOWN ON THIS DETAIL SHALL BE INCIDENTAL TO SPECIFICATION ITEM 360 "CONCRETE PAVEMENT."
6. D = THICKNESS OF CONCRETE PAVEMENT.
   - FOR DEVELOPMENT PROJECTS SEE "REGULATIONS OF HARRIS COUNTY, TEXAS FOR THE APPROVAL AND ACCEPTANCE OF INFRASTRUCTURE."
   - FOR PUBLIC PROJECTS SEE HCED 1988 DESIGN GUIDELINES.
7. JOINT SEALANT SHALL CONFORM TO THE REQUIREMENTS OF SPECIFICATION ITEM 360 "CONCRETE PAVEMENT."

NO.	REVISIONS	DATE	NAME
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HARRIS COUNTY
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DRAWN BY: JDZ
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CIVIL STANDARD: CP-24
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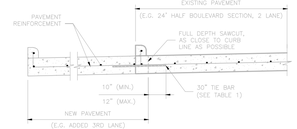
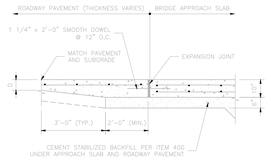


TYPICAL CONCRETE ROADWAY
WIDENING DETAIL
SCALE: 1" = 1'-0"

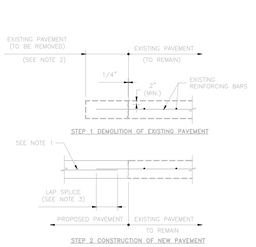
TABLE 1
(CONSTRUCTION JOINT TIE BARS)

TIE BAR SIZE	PAVEMENT DEPTH
#5 BAR	7" AND LESS
#6 BAR	GREATER THAN 7"

TIE BAR SHALL BE DRILLED INTO EXISTING PAVEMENT (MIN. 10", MAX. 12") AND EPOXIED. (SEE ITEM 361)



TYPICAL SECTION
PAVING TIE-IN TO BRIDGE APPROACH SLAB
SCALE: 1" = 1'-6"



CONCRETE TO CONCRETE
STANDARD PAVEMENT TIE-IN
SCALE: 1" = 1'-6"

NOTES FOR STANDARD PAVEMENT TIE-IN:

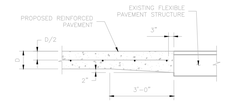
1. REINFORCING CENTERED IN PROPOSED PAVEMENT, 3" CLEAR AT EDGES.
2. SAWCUT 2" DEEP MINIMUM AND REMOVE 2'-0" EXISTING PAVEMENT OR PAVEMENT WITH CURB. EXPOSE AND CLEAN EXISTING REINFORCING.
3. 24 BAR DIAMETER LAP SPLICE OR WELD, IF DIRECTED.
4. IF NO EXPOSED REINFORCING STEEL EXISTS, HORIZONTAL TIE BARS SHALL BE GRADE 60, 20" LONG DRILLED AND EMBEDDED 10" INTO THE CENTER OF THE EXISTING CONCRETE SLAB WITH EPOXY OR APPROVED EQUAL. SIZE OF TIE BARS SHALL CONFORM TO TABLE 1. TIE BARS SHALL BE PLACED 24" CENTER TO CENTER.
5. ALTERNATIVELY, THE CONTRACTOR MAY CHOOSE TO USE FULL DEPTH SAWCUT WITH DRILLED IN TIE BARS (AS SHOWN IN THE "TYPICAL CONCRETE ROADWAY WIDENING DETAIL" ON THIS SHEET). IF THE CONTRACTOR DO CHOOSES, THE SAWCUTTING AND TIE BARS WILL BE AT HIS OWN EXPENSE (THESE ITEMS WILL ONLY BE PAID FOR IF HARRIS COUNTY REQUIRES THE FULL DEPTH SAWCUT AND TIE BARS).



FULL DEPTH CONCRETE PAVEMENT REPAIR
HORIZONTAL SCALE: 1" = 3'-0"
VERTICAL SCALE: 1" = 1'-6"

FULL DEPTH CONCRETE PAVEMENT REPAIR (FDCPR) NOTES:

1. SAWCUT LIMITS SHALL BE AS DIRECTED BY ENGINEER.
2. EXISTING CONCRETE VERTICAL FACES SHALL BE CLEANED OF ALL DELETERIOUS LOOSE MATERIAL PRIOR TO CONCRETE PLACEMENT.
3. FOR REPAIR/REPLACE AREAS, A 6 INCH DEPTH BASE SHALL BE REMOVED AND REPLACED WITH CEMENT STABILIZED BEDDING AND BACKFILL PER ITEM 400.
4. REINFORCEMENT FOR PAVEMENT 7" THICK AND LESS SHALL BE NO. 4 BARS AT 18" SPACING IN EACH DIRECTION. REINFORCEMENT FOR PAVEMENT GREATER THAN 7" THICK SHALL BE NO. 5 BARS AT 18" IN EACH DIRECTION.
5. ALTERNATIVELY, THE CONTRACTOR MAY CHOOSE TO USE FULL DEPTH SAWCUT WITH DRILLED IN TIE BARS (AS SHOWN ON THE "TYPICAL CONCRETE ROADWAY WIDENING DETAIL" DRAWING). IF THE CONTRACTOR DO CHOOSES, THE SAWCUTTING AND TIE BARS WILL BE AT HIS OWN EXPENSE (THESE ITEMS WILL ONLY BE PAID FOR IF HARRIS COUNTY REQUIRES THE FULL DEPTH SAWCUT AND TIE BARS).



TYPICAL PAVING HEADER
SCALE: 1" = 1'-6"

NOTES FOR PAVING HEADER:

1. ADDITIONAL CONCRETE FOR PAVING HEADER SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAVING BID ITEMS.
2. DISTURBED MATERIAL IN THE FLEXIBLE PAVEMENT WILL BE BACKFILLED WITH ASPHALT CONCRETE PAVEMENT (ACP). THE ACP WILL BE CONSIDERED INCIDENTAL TO VARIOUS PAVING BID ITEMS.

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LOCKWOOD, ANDREWS
& NEWNAM, INC.
3700 W SAM HOUSTON PKWY S,
SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING
FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
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Engineer: CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON

HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3

60% SUBMITTAL

HARRIS COUNTY

CONCRETE PAVEMENT DETAILS

PRECINCT 2 & 4

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 199 OF 244	

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STRUCTURAL ABBREVIATIONS

ABOVE FINISH FLOOR	–	A.F.F.
ADDITIONAL	–	ADDN'L.
ADJACENT	–	ADJ.
AGGREGATE	–	AGGR.
ALTERNATE	–	ALT.
ANCHOR BOLT	–	A.B.
AND	–	&
ANGLE	–	L
APPROVED	–	APPD.
APPROXIMATE	–	APPROX.
ARCHITECT	–	ARCH.
ARCHITECTURAL	–	ARCH'L
AT	–	@
AIR CONDITIONER	–	A/C
AIR HANDLING UNIT	–	AHU
BACK TO BACK	–	BTB
BEAM	–	BM.
BEARING	–	BRG.
BELOW FINISH FLOOR	–	B.F.F.
BETWEEN	–	BTWN.
BEVEL (ED)	–	BEV ('D)
BOTTOM	–	BOT.
BRACKET	–	BRKT.
CANTILEVER	–	CANT.
CAST–IN–PLACE	–	C.I.P.
CENTER LINE	–	CL
CENTER OF GRAVITY	–	C.G.
CENTER TO CENTER	–	C. TO C.
CLEAR OR CLEARANCE	–	CLR.
COLUMN	–	COL.
COMPRESSION	–	C OR COMP.
CONCRETE	–	CONC.
CONCRETE MASONRY UNIT	–	CMU
CONNECTION (S)	–	CONNX(S)
CONTINUOUS	–	CONT.
CONTROL JOINT	–	CONTR. JT. OR C.T.J
CONSTRUCTION	–	CONST.
CONSTRUCTION JOINT	–	CONST. JT. OR C.J.
DEAD LOAD	–	D.L.
DIAGONAL	–	DIAG.
DIAMETER	–	DIA. OR ø
DIMENSION(S)	–	DIM(S).
DOUBLE TEE	–	D.T.
DRAWING(S)	–	DWG(S).
DOWEL(S)	–	DWL(S).
EACH	–	EA.
EACH FACE	–	E.F.
EACH WAY	–	E.W.
ELEVATION	–	ELEV.
ENGINEER	–	ENGR.
ENTRANCE	–	ENT.
EQUAL	–	EQ.
EQUIPMENT	–	EQUIP.
EXPANSION	–	EXP.
EXPANSION JOINT	–	E.J.
EXISTING	–	EXIST.
FACE TO FACE	–	F.T.F.
FABRICATOR	–	FABR.
FAR SIDE	–	F.S.
FINISH (ED)	–	FIN.
FINISHED FLOOR	–	FIN. FL.
FOUNDATION	–	FDN.
FOOTING	–	FTG.
GAGE OR GAUGE	–	GA.
GALVANIZED	–	GALV.
GENERAL	–	GEN.
GOVERNMENT	–	GOVT.
HIGH STRENGTH	–	H.S.
HORIZONTAL	–	HORIZ.
INFORMATION	–	INFO.
INSIDE DIAMETER	–	I.D.
INSIDE FACE	–	I.F.
INTERMEDIATE	–	INTERM.
JOINT	–	JT.
JOIST(S)	–	JST(S)
KIPS (1000 LBS)	–	K.
KIP PER LINEAR FOOT	–	K.L.F.
KIP PER SQUARE FOOT	–	K.S.F.
LIGHTWEIGHT CONCRETE	–	LWT. CONC.
LIVE LOAD	–	L.L.
LONGITUDINAL	–	LONG.
LONG LEG HORIZONTAL	–	LLH
LONG LEG VERTICAL	–	LLV
MANUFACTURE(R)	–	MFR.
MATERIAL	–	MAT'L.
MAXIMUM	–	MAX.
MECHANICAL	–	MECH.
MEZZANINE	–	MEZZ.
MIDDLE	–	MID.
MINIMUM	–	MIN.
MISCELLANEOUS	–	MISC.
MOMENT	–	M
MOMENT CONNECTION(S)	–	MC
NEAR FACE	–	N.F.
NEAR SIDE		N.S.
NOMINAL	–	NOM.
NOT TO SCALE	–	N.T.S.
NUMBER	–	NO. OR #
ON CENTER	–	O.C.
OPENING(S)	–	OPNG(S).
OPPOSITE	–	OPP.
OUTSIDE DIAMETER	–	O.D.
PLATE	–	PL
POUNDS PER SQUARE FOOT	–	P.S.F.
POUNDS PER SQUARE INCH	–	P.S.I.
PROJECTION	–	PROJ.
RADIUS	–	R
REINFORCE (ING)(MENT)	–	REINF.
REMAINDER	–	REM.
REQUIRE	–	REQ.
REQUIRED	–	REQ'D.
SECTION	–	SECT.
SHEAR	–	V
SIMILAR	–	SIM.
SPACE	–	SPA
SPECIFICATION(S)	–	SPEC(S).
SPECIFIED	–	SPEC'D
SQUARE FOOT (FEET)	–	S.F.
STAINLESS STEEL	–	S.S
STANDARD	–	STD.
STEEL	–	STL.
STIFFENER	–	STIFF.
STIRRUPS	–	STIR.
STRUCTURE	–	STRUCT.
STRUCTURAL	–	STRUCT'L.
SYMMETRICAL	–	SYM.
SUBCONTRACTOR	–	SUBCONTR.
TEMPERATURE	–	TEMP.
TENSION	–	T
THICK	–	THK.
TOP AND BOTTOM	–	T & B
TOP OF BEAM	–	T.O.B.M.
TOP OF FOOTING	–	T.O.F.
TOP OF PIER	–	T.O.P.
TOP OF STEEL	–	T.O.S.
TOP OF CONCRETE	–	T.O.C.
TYPICAL	–	TYP.
UNLESS NOTED OTHERWISE	–	U.N.O.
VERTICAL	–	VERT.
WATERPROOFING	–	WPFG.
WIND LOAD	–	W.L.
WITH	–	W/
WORK POINT	–	W.P.

GENERAL REQUIREMENTS AND DESIGN CRITERIA

1. THESE STRUCTURAL GENERAL NOTES APPLY TO ALL WORK. REFER TO THE SPECIFICATIONS FOR ADDITIONAL INFORMATION NOT FULLY ADDRESSED IN THESE NOTES.
2. TYPICALLY, THE LATEST EDITION OF CONSTRUCTION STANDARDS SHALL BE UTILIZED, AS APPROVED BY THE AUTHORITY HAVING JURISDICTION. BUILDING CODE AND SELECT REFERENCED STANDARDS:

   A. INTERNATIONAL BUILDING CODE (IBC), 2021 EDITION, INTERNATIONAL CODE COUNCIL
   B. ASCE 7–16, STANDARD, MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES
   C. ACI 318–19, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE AND COMMENTARY
   D. AISC MANUAL OF STEEL CONSTRUCTION, 15TH EDITION
   E. AISC 303–16, CODE OF STANDARD PRACTICE FOR STRUCTURAL STEEL BUILDING AND BRIDGES
   F. AISC 360–16, SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS
   G. ANSI/AWS D1.1, STRUCTURAL WELDING CODE – STEEL

3. THE PROVISIONS OF THE REFERENCED BUILDING CODE AND ALL REFERENCED STANDARDS THEREIN SHALL APPLY TO THIS PROJECT. WHERE THERE IS A CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL BE APPLICABLE. GENERAL REQUIREMENTS NOT SHOWN IN THE DETAILS ARE NOT CONSIDERED CONFLICTS AND ARE STILL REQUIRED, AS APPLICABLE.
4. WHERE A DETAIL, TYPICAL DETAIL, SECTION, TYPICAL SECTION OR NOTE IS SHOWN FOR ONE CONDITION, IT SHALL APPLY FOR ALL LIKE OR SIMILAR CONDITIONS UNLESS OTHERWISE NOTED. IF THERE ARE QUESTIONS REGARDING THE APPLICABILITY OF A DETAIL, TYPICAL DETAIL, SECTION, TYPICAL SECTION, CONTACT THE ENGINEER IN WRITING REQUESTING A CLARIFICATION. THE CONTRACTOR SHALL NOT BE RELIEVED OF THE RESPONSIBILITY OF SUPPLYING AND INSTALLING REQUIRED ITEMS OR PERFORMING OTHER REQUIRED WORK DUE TO ANY MISINTERPRETATION OF THE PROJECT DRAWINGS.
5. DESIGN LOADS

   A. LIVE LOADS

      1) PLATFORMS AND WALKWAYS 100 PSF
      2) ROOF LIVE 20 PSF (NOT REDUCIBLE)

   B. WIND (PER ASCE 7–16, WIND LOADS ARE ULTIMATE; SERVICE LOADS MAY BE DETERMINED BY DIVIDING THE LOADS IDENTIFIED ON THE COMPONENTS AND CLADDING DIAGRAMS BY 1.67):

      1) BASIC WIND SPEED, V = 143 MPH (3–SECOND GUST)
      2) EXPOSURE CATEGORY: C
      3) OCCUPANCY CATEGORY: III

   C. SEISMIC:

      1) RISK CATEGORY III
      2) SEISMIC IMPORTANCE FACTOR, Ie: 1.25
      3) MAPPED SPECTRAL ACCELERATION (SHORT PERIOD), Ss: 0.069g
      4) MAPPED SPECTRAL ACCELERATION (1–SECOND PERIOD), S1: 0.040g
      5) SITE SOIL CLASS: D
      6) SITE COEFFICIENT: Fa: 1.6
      7) SITE COEFFICIENT: Fv: 2.4
      8) MAXIMUM CONSIDERED EARTHQUAKE SPECTRAL RESPONSE ACCELERATION (SHORT PERIOD), Sms: 0.111g
      9) MAXIMUM CONSIDERED EARTHQUAKE SPECTRAL RESPONSE ACCELERATION (1–SECOND PERIOD), Sm1: 0.097g
      10) DESIGN SPECTRAL RESPONSE ACCELERATION (SHORT PERIOD), Sds: 0.074g
      11) DESIGN SPECTRAL RESPONSE ACCELERATION (1–SECOND PERIOD), Sd1: 0.065g
      12) SEISMIC DESIGN CATEGORY: A

6. CONTRACTOR RESPONSIBILITIES

   A. THE STRUCTURAL DRAWINGS DEPICT THE STRUCTURE IN ITS FINAL CONSTRUCTED CONFIGURATION. NEITHER CONSTRUCTION MEANS AND METHODS NOR CONSTRUCTION SAFETY ARE PART OF THE STRUCTURAL ENGINEER'S EXPERTISE OR SCOPE OF WORK. THE GENERAL CONTRACTOR AND HIS SUBCONTRACTORS ARE FULLY RESPONSIBLE FOR THE MEANS AND METHODS USED TO CONSTRUCT THE STRUCTURE AND FOR FULL COMPLIANCE WITH ALL JOB SAFETY RELATED REGULATIONS AND CONDITIONS AT THE SITE. LIMITED SITE VISITS IF ANY BY THE STRUCTURAL ENGINEER ARE SOLELY TO OBSERVE COMPLETED PARTS OF THE STRUCTURE. THE STRUCTURAL ENGINEER IS NEITHER QUALIFIED TO OBSERVE NOR COMMENT ON CONSTRUCTION MEANS AND METHODS AND JOB SITE SAFETY.
   B. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS BEFORE STARTING WORK OR FABRICATING OR INSTALLING ANY REINFORCING STEEL, STRUCTURAL STEEL, OR MASONRY. THE ENGINEER SHALL BE IMMEDIATELY NOTIFIED OF ANY DISCREPANCIES FOUND.
   C. THE CONTRACTOR SHALL DISSEMINATE ALL CONSTRUCTION DOCUMENTS AND ADDENDA TO ALL SUBCONTRACTORS AND MATERIAL SUPPLIERS PRIOR TO THE SUBMITTAL OF SHOP DRAWINGS, FABRICATION OF REINFORCING STEEL OR PRECAST CONCRETE COMPONENTS, AND CONSTRUCTION.
   D. THE CONTRACTOR SHALL COMPARE THE CIVIL, STRUCTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS AND REPORT ANY DISCREPANCY TO THE ENGINEER PRIOR TO FABRICATION AND INSTALLATION OF ANY STRUCTURAL MEMBERS.
   E. NO CORE DRILLING SHALL BE ALLOWED WITHOUT APPROVAL BY THE ENGINEER. BEFORE CORE DRILLING ANY HOLES, LOCATE THE REINFORCING STEEL IN EXISTING CONCRETE USING AN R–METER OR OTHER NON–DESTRUCTIVE METHODS. AN EXAMPLE OF SUCH A DEVICE IS HILTI'S PS 300 FERROSCAN SYSTEM.
   F. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ADEQUATE SHORING AND BRACING OF THE STRUCTURE FOR ALL LOADS THAT MAY BE IMPOSED DURING CONSTRUCTION. THE DESIGN AND PROVISION FOR ALL TEMPORARY SUPPORTS SUCH AS GUYS, BRACES, SUPPORTS AND ANCHORS FOR SAFETY LINES, CRIBBING OR OTHER TEMPORARY ELEMENTS REQUIRED FOR THE EXECUTION OF THE CONTRACT ARE NOT INCLUDED IN THE DRAWINGS AND SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. TEMPORARY SUPPORTS SHALL NOT RESULT IN OVERSTRESS OR DAMAGE TO THE ELEMENTS TO BE BRACED NOR ANY ELEMENTS USED AS BRACE SUPPORTS.
   G. WHEN CUTTING A NEW OPENING IN EXISTING CONCRETE, THE CONTRACTOR SHALL NOT OVER CUT AT CORNERS. CORE–DRILL, CHIP AND GRIND AS REQUIRED AT CORNERS. A LAYOUT OF ALL PROPOSED OPENINGS SHALL BE REVIEWED BY THE STRUCTURAL ENGINEER PRIOR TO SAWCUTTING OR CORING.
   H. THE CONTRACTOR SHALL ENSURE NO STRUCTURAL MEMBERS OR ELEMENTS ARE DAMAGED OR ALTERED BY OTHER TRADES. ANY SUCH DAMAGE THAT DOES OCCUR SHALL BE BROUGHT TO THE ATTENTION OF THE STRUCTURAL ENGINEER AND SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
   I. THE USE OR REPRODUCTIONS OF THESE CONTRACT DRAWINGS BY ANY CONTRACTOR, SUBCONTRACTOR, ERECTOR, FABRICATOR, OR MATERIAL SUPPLIER IN LIEU OF PREPARATION OF SHOP DRAWINGS SIGNIFIES HIS ACCEPTANCE OF ALL INFORMATION SHOWN HEREON AS CORRECT, AND OBLIGATES HIMSELF TO ANY JOB EXPENSE, REAL OR IMPLIED, ARISING DUE TO ANY ERRORS THAT MAY OCCUR HEREON.
   J. WORK AREAS SHALL BE KEPT, AT ALL TIMES, FREE OF DEBRIS AND NON–HAZARDOUS MATERIAL TO THE SATISFACTION OF THE OWNER. ALL EXISTING PIPING AND CONDUITS SHALL HAVE TEMPORARY PROTECTION DURING CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE STORAGE OF MATERIALS, PARKING OF VEHICLES, AND RESTRICTIONS OF WORK WITH THE OWNER. AFTER PROJECT COMPLETION, THE SITE SHALL BE CLEANED UP TO ITS CONDITION PRIOR TO THE START OF THE PROJECT TO THE SATISFACTION OF THE OWNER.
   K. THE CONTRACTOR SHALL DISPOSE OF ALL MATERIALS REMOVED WHICH ARE NOT TO BE REINSTALLED OR SALVAGED ON THE PROJECT. DISPOSAL OF MATERIALS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
   L. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES IN THE AREA OF CONSTRUCTION THAT MIGHT BE AFFECTED BY OR OTHERWISE INTERFERE WITH INSTALLATION OF NEW WORK. THIS INCLUDES THOSE THAT MIGHT BE DAMAGED BY NEW FOUNDATIONS OR OTHER WORK, AND THOSE WHOSE PRESENCE MIGHT LEAD TO DAMAGE TO THE NEW WORK (SUCH AS DIFFERENTIAL SETTLEMENT, ETC.).

7. PRINCIPAL OPENINGS ARE SHOWN ON THESE DRAWINGS. THE CONTRACTOR SHALL EXAMINE THE PROCESS, ARCHITECTURAL, ELECTRICAL, AND MECHANICAL DRAWINGS FOR REQUIRED OPENINGS TO BE PROVIDED, WHETHER SHOWN ON THESE DRAWINGS OR NOT. VERIFY SIZE AND LOCATION OF ALL OPENINGS WITH EQUIPMENT MANUFACTURERS.
8. SEE CIVIL AND ELECTRICAL DRAWINGS FOR FLOOR ELEVATIONS, SLOPES, LOCATION OF DEPRESSED FLOOR AREAS, FLOOR FINISHES, WALKS, CURBS, TOPPING SLABS, ETC. ALL SLAB RECESSES SHALL BE PROVIDED BY THE CONTRACTOR WHETHER SHOWN ON THESE DRAWINGS OR NOT.
9. STRUCTURAL MEMBERS HAVE BEEN SPACED TO ACCOMMODATE THE EQUIPMENT SPECIFIED. ANY REQUIRED CHANGES TO THE STRUCTURAL DRAWINGS DUE TO THE ACCEPTANCE OF ALTERNATES AND/OR SUBSTITUTIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. CALCULATIONS SHALL ACCOMPANY REVISED DRAWINGS PREPARED AND SUBMITTED BY THE CONTRACTOR AND THEY SHALL BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF TEXAS.
10. THE STRUCTURAL DRAWINGS ARE NOT TO BE SCALED FOR DETERMINATION OF QUANTITIES, LENGTHS, OR FIT OF MATERIALS.

STRUCTURAL EXCAVATION, BACKFILL AND COMPACTION NOTES

1. REFER TO GEOTECHNICAL REPORT XXX DATED XXX PREPARED BY XXX (NAME) AND XXX (ADDRESS). THE REPORT IS INCLUDED IN THE CONTRACT DOCUMENTS.
2. BEFORE THE START OF EARTHWORK OPERATIONS, ADEQUATELY PROTECT EXISTING STRUCTURES, UTILITIES, AND OTHER PERMANENT OBJECTS FROM DAMAGE. THE CONTRACTOR IS RESPONSIBLE FOR THE REPAIR OR REPLACEMENT OF ALL DAMAGED ELEMENTS, AT NO ADDITIONAL COST TO THE OWNER.
3. EXCAVATION WORK SHALL BE NEAT AND FREE OF DEBRIS AND LOOSE MATERIAL. REFER TO THE SPECIFICATIONS FOR PROTECTION OF EXCAVATIONS.
4. EXCAVATIONS SHALL NOT BE MADE DURING INCLEMENT WEATHER. WATER ACCUMULATION IN EXCAVATIONS EXCEEDING 1 INCH SHALL BE PUMPED OUT BEFORE THE CONCRETE IS PLACED.
5. ALL EXCAVATIONS AND BACKFILL OPERATIONS SHALL BE IN ACCORDANCE WITH THE LATEST OSHA EXCAVATION SAFETY STANDARDS.
6. A 2–INCH SAND LAYER MAY BE PLACED UNDER ALL SLABS ON GRADE FOR LEVELING PURPOSES.

FOUNDATION NOTES

1. PRIOR TO PLACEMENT OF ANY FILL SOILS, THE EXPOSED SUBGRADE SHOULD BE EVALUATED BY PROOFROLLING. REFER TO SPECIFICATIONS AND GEOTECHNICAL RECOMMENDATIONS OBTAINED PER NOTE 1 ABOVE.
2. BACKFILLING OF WALLS SHALL BE PLACED SUCH THAT SYMMETRICAL LOADING SHALL BE MAINTAINED ON BOTH SIDES. WHERE DESIGN CONDITIONS REQUIRE BACKFILLING EACH SIDE TO UNEQUAL HEIGHTS, THEN WALLS SHALL BE FIRMLY SHORED IN POSITION, AND SHORING SHALL REMAIN UNTIL FLOORS OR OTHER PERMANENT BRACING ELEMENTS ARE PLACED AND PROPERLY SET TO PROVIDE FULL SUPPORT.
3. PROVIDE POSITIVE DRAINAGE AWAY FROM THE BUILDING AREAS DURING CONSTRUCTION AND AFTER PROJECT COMPLETION.
4. DO NOT ALLOW STORED EXCAVATION MATERIAL TO DISRUPT PROPER DRAINAGE OF AREA.
5. MAINTAIN STABILITY OF EXCAVATIONS UNTIL PROPERLY BACKFILLED. KEEP EXCAVATIONS FREE OF ANY LOOSE MATERIAL. DEWATER EXCAVATIONS AND REMOVE ANY WET MATERIAL PRIOR TO THE PLACING OF CONCRETE.
6. HEAVY EQUIPMENT FOR SPREADING AND COMPACTING BACKFILL SHALL NOT BE OPERATED CLOSER TO WALL, GRADE BEAM, ETC., THAN A DISTANCE EQUAL TO THE HEIGHT OF BACKFILL ABOVE TOP OF WALL FOOTING AND BOTTOM OF GRADE BEAM, ETC. THE AREA REMAINING SHALL BE COMPACTED BY HAND TAMPERS.
7. FOUNDATIONS HAVE BEEN DESIGNED FOR THE FOLLOWING ALLOWABLE BEARING PRESSURES:
   SHALLOW/STRIP FOOTINGS: XXXX PSF DEAD PLUS SUSTAINED LIVE LOAD
   AND XXXX PSF TOTAL LOADS
8. SOIL BELOW FOUNDATIONS SHALL BE PREPARED AND COMPACTED PER GEOCHNICAL REPORT.
9. BOTTOM OF FOOTING ELEVATIONS GIVEN ARE FOR PURPOSES OF CONTRACT AND SHALL BE ADJUSTED AT THE TIME OF EXCAVATION TO MEET SOIL CONDITIONS IF SO REQUIRED.

CAST–IN–PLACE CONCRETE NOTES

1. CONCRETE CONSTRUCTION SHALL BE IN ACCORDANCE WITH ACI 318: "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE."
2. DETAILING, FABRICATION AND ERECTION OF REINFORCING BARS SHALL COMPLY WITH ACI 315R "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES."
3. NORMAL WEIGHT CONCRETE SHALL NOT WEIGHT MORE THAN 150 PCF.
4. ALL CAST–IN–PLACE STRUCTURAL CONCRETE SHALL BE NORMAL WEIGHT CLASS A CONCRETE AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 POUNDS PER SQUARE INCH AT 28 DAYS UNLESS NOTED OTHERWISE.
5. REINFORCING STEEL SHALL BE NEW DEFORMED BILLET STEEL, CONFORMING TO ASTM A 615 WITH SUPPLEMENTARY REQUIREMENTS S1, GRADE 60. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185, GRADE 60 AND SHALL BE SUPPLIED IN FLAT SHEETS ONLY.
6. PROVIDE LAP SPLICES IN CONFORMANCE WITH TABLE 7 ON SHEET 73, UNLESS OTHERWISE INDICATED. FOLLOW RESTRICTIONS ON LOCATIONS OF SPLICES AS INDICATED IN THE DETAILS, NOTES, OR SPECIFICATIONS. STAGGER ALL LAP SPLICES IN ADJACENT BARS 3'–6" MINIMUM.
7. PROVIDE TWO NO. 4 x 4'–0" BARS AT ALL RE–ENTRANT CORNERS, PLACED ON THE DIAGONAL @ 3"O.C., WITH 1 INCH CLEARANCE FROM CORNER AND TOP OF SLAB.
8. PROVIDE PLASTIC CHAIRS AND SPACERS AT 5'–0" O.C. MAX. FOR ALL SLABS AND BEAMS ABOVE GRADE.
9. TERMINATE DISCONTINUOUS BEAM REINFORCEMENT WITH STANDARD 90 DEGREE HOOKS U.N.O.
10. UNLESS NOTED OTHERWISE, ALL 90, 135 AND 180 DEGREE HOOKS SHOWN ON THE DRAWINGS SHALL BE STANDARD ACI HOOKS.
11. FIELD CUTTING OF REINFORCING BARS SHALL BE BY SHEARING OR SAWING. FIELD CUTTING BY CUTTING TORCH IS NOT ALLOWED.
12. PROVIDE NO. 4 HORIZONTAL AT 12 INCHES O.C. MAXIMUM IN EACH FACE OF BEAMS EXCEEDING 21 INCHES IN DEPTH U.N.O.
13. MINIMUM REINFORCING STEEL COVERAGE SHALL BE AS FOLLOWS, U.N.O.:

SLABS ABOVE GRADE	1"
BEAMS/COLUMNS ABOVE GRADE	1 1/2"
CONCRETE CAST PERMANENTLY AGAINST EARTH	3"
CONCRETE EXPOSED TO EARTH AND WEATHER BUT NOT CAST AGAINST EARTH	2"
ALL LIQUID CONTAINING CONCRETE	2"

14. EPOXY COAT ENDS OF ANY REBAR LEFT EXPOSED IN THE COMPLETE STRUCTURE.
15. WHERE REINFORCING STEEL IN TENSION IS REQUIRED TO BE MECHANICALLY SPLICED, MECHANICAL SPLICES SHALL BE DESIGNED FOR 125% OF THE SPECIFIED YIELD STRENGTH OF THE LARGER BAR BEING SPLICED.
16. CONSTRUCTION JOINTS SHALL BE LOCATED AS SHOWN ON THE DRAWINGS. ADDITIONAL CONSTRUCTION JOINTS SHALL BE LOCATED AS SPECIFIED IN SECTION 03150 OF THE CONTRACT DOCUMENTS. THE LOCATION OF CONSTRUCTION JOINTS SHALL BE APPROVED BY THE STRUCTURAL ENGINEER. CONSTRUCTION JOINTS SHALL BE MADE IN THE CENTER OF SPANS WITH VERTICAL BULKHEADS U.N.O. THERE SHALL BE NO HORIZONTAL CONSTRUCTION JOINTS IN CONCRETE POURS U.N.O.
17. REFER TO CIVIL, ELECTRICAL, AND VENDOR'S DRAWINGS FOR SLEEVES, EMBEDDED ITEMS, ACCESSORIES, ETC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING AND PLACING ALL SUCH ITEMS.
18. DO NOT PLACE PIPES OR SLEEVES THROUGH FOOTINGS UNLESS SPECIFICALLY NOTED ON STRUCTURAL DRAWINGS.
19. UNLESS SHOWN ON THE STRUCTURAL DRAWINGS, OPENINGS IN SLABS OR WALLS LARGER THAN 12"x12" SHALL NOT BE CONSTRUCTED. PIPES, DUCTS, AND SLEEVES SHALL NOT EXCEED 1/3 OF SLAB OR WALL THICKNESS UNLESS SPECIFICALLY NOTED ON THE STRUCTURAL DRAWINGS. APPROVALS MUST BE OBTAINED FROM THE STRUCTURAL ENGINEER PRIOR TO FABRICATION OF STEEL AND PLACEMENT OF CONCRETE.
20. PROVIDE A 3/4–INCH CHAMFER AT ALL EXPOSED EDGES OF CONCRETE UNLESS DETAILED OTHERWISE.

STRUCTURAL STEEL FRAMING

1. STRUCTURAL STEEL DETAILING, FABRICATION, AND ERECTION SHALL BE IN ACCORDANCE WITH THE FOURTEENTH EDITION OF THE "MANUAL OF STEEL CONSTRUCTION" (LRFD PROVISIONS) OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION AND SHALL CONFORM TO THE LATEST OSHA REQUIREMENTS.
2. SUBMIT SHOP DRAWINGS FOR FABRICATION AND ERECTION OF ALL STEEL MEMBERS. SHOP DRAWINGS SHALL GIVE COMPLETE WELDING INFORMATION, BOTH SHOP AND FIELD, USING AWS SYMBOLS.
3. MATERIAL REQUIREMENTS, U.N.O.:

   A. ALL STRUCTURAL STEEL W SHAPES SHALL BE ASTM A992, GRADE 50.
   B. ALL RECTANGULAR OR SQUARE HOLLOW STRUCTURAL STEEL SECTIONS SHALL BE ASTM A500, GRADE B AND MINIMUM YIELD STRENGTH OF 58,000 PSI.
   C. STRUCTURAL STEEL FOR CHANNELS, ANGLES BARS AND PLATES MAY CONFORM TO ASTM A36 IN LIEU OF ASTM A992, GRADE 50.
   D. STRUCTURAL STEEL TUBING SHALL CONFORM TO ASTM A500, GRADE B WITH A MINIMUM YIELD STRENGTH OF 58,000 PSI.
   E. ALL OTHER STRUCTURAL STEEL SHALL CONFORM TO ASTM A992.
   F. GROUT BELOW BASE PLATES SHALL BE NON–SHRINK, HIGH–STRENGTH, NON–METALLIC GROUT, WITH A MINIMUM (28) DAY COMPRESSIVE STRENGTH OF 6,000 PSI.
   G. UNLESS OTHERWISE RECOMMENDED BY AWS. WELDING ELECTRODES SHALL CONFORM TO AWS A5.1 OR A5.5 E–70XX (LOW–HYDROGEN FOR SMAW WELDING). ALL WELDING PROCEDURES SHALL BE LOW–HYDROGEN PROCESSES. ELECTRODES SHALL BE STORED AFTER OPENING TO MAINTAIN HYDROGEN CONTENTS.

NO.	DATE	REVISION	APP.

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713–266–6900
TEXAS REGISTERED ENGINEERING FIRM F–2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

EFF DATE:

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Registration Number: 111686
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F–2614

CITY OF HOUSTON

HOUSTON PUBLIC WORKS STANDARD

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STRUCTURAL STEEL FRAMING (CONT.)

4. DETAILING, FABRICATION, AND ERECTION OF STRUCTURAL STEEL SHALL COMPLY WITH AISC "SPECIFICATION FOR DETAILING, FABRICATION, AND ERECTION OF STRUCTURAL STEEL", AISC "CODE OF STANDARD PRACTICE", AND ALL UPDATING PUBLICATIONS.
5. STRUCTURAL STEEL HAS BEEN DESIGNED IN ACCORDANCE WITH AISC "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS," 2016. LOAD AND RESISTANCE FACTOR DESIGN.
6. GENERAL CONTRACTOR SHALL REMOVE EARTH OR DEBRIS FROM TOP OF FOUNDATION AS REQUIRED TO INSTALL COLUMNS.
7. PRE-GROUTING OF BASE PLATES IS PROHIBITED.
8. COLUMNS SHALL BE FINISHED TO PROVIDE FULL BEARING CONTACT WITH BASE PLATE (AND CAP PLATE IF REQUIRED BY LOAD TRANSFER). BASE PLATES AND CAP PLATES SHALL BE FINISHED IN ACCORDANCE WITH SECTION M2.8 OF THE AISC SPECIFICATION.
9. ALL ANCHOR RODS SHALL BE ASTM F593, TYPE 316 UNLESS NOTED OTHERWISE. ANCHOR BOLTS SHALL BE SET USING RIGID TEMPLATES.
10. UNLESS SHOWN OTHERWISE ON THE DRAWINGS, CONNECTIONS SHALL BE SHOP WELDED AND FIELD BOLTED USING 3/4-INCH DIAMETER HIGH-STRENGTH ASTM F593, TYPE 316 BOLTS (BEARING TYPE CONNECTION).
11. ALL MISCELLANEOUS WELDS SHALL BE 3/16" MINIMUM SIZE FILLET WELD ALL AROUND. INCREASE WELD SIZE TO MEET AISC REQUIREMENTS. WELDING OF CONTINUOUS MEMBERS SHALL BE A MINIMUM OF 2 INCHES OF 3/16-INCH FILLET WELD AT 12 INCHES O.C., STAGGERED EACH SIDE, UNLESS NOTED OTHERWISE. COLUMN BASE PLATES, COLUMN CAP PLATES AND STIFFENER PLATES SHALL BE WELDED ALL AROUND.
12. QUALIFY WELDING PROCESSES AND WELDING OPERATORS IN ACCORDANCE WITH AWS STANDARD QUALIFICATION PROCEDURE. OPERATORS SHALL CARRY PROOF OF QUALIFICATIONS ON THEIR PERSONS.
13. WELDED CONNECTIONS SHALL CONFORM TO AWS D1.1. TESTING AGENCY SHALL INSPECT ALL COMPLETE PENETRATION WELDS AND ALL BUTT WELDS MADE BY FABRICATOR. PERFORM ULTRASONIC OR RADIOGRAPHIC INSPECTIONS OF ALL FULL PENETRATION WELDS MADE IN THE FIELD. IF THE FABRICATOR USES THE FULL VALUE FOR FILLET WELDS, AS SPECIFIED IN THE REFERENCES, INSPECT 15% OF THESE WELDS. VISUALLY INSPECT ALL (100%) FIELD WELDS.
14. ALL RE-ENTRANT CORNERS OF BEAM COPES AND PLATE CUTS MUST BE SHAPED NOTCH-FREE PER AWS D1.1 TO A RADIUS OF APPROXIMATELY 1/2 INCH MINIMUM.
15. SPLICING OF STRUCTURAL STEEL MEMBERS IS PROHIBITED WITHOUT THE APPROVAL OF THE STRUCTURAL ENGINEER. ANY MEMBER HAVING A SPLICE NOT SPECIFICALLY APPROVED BY THE ENGINEER ON THE SHOP DRAWINGS WILL BE REJECTED.
16. SINGLE SHEAR PLATES SHALL BE 3/8" MINIMUM.
17. STRUCTURAL STEEL SHALL BE PUNCHED FOR WOOD BLOCKING AND NAILERS IN ACCORDANCE WITH THE ARCHITECTURAL DETAILS.
18. BURNING OF HOLES IN STRUCTURAL STEEL IS PROHIBITED. ANY MEMBER WITH BURNED HOLES SHALL BE REJECTED.
19. ALL STRUCTURAL SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A 123, "SPECIFICATION FOR ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS." STEEL SHALL BE PRE-CLEANED UTILIZING A CAUSTIC BATH, ACID PICKLE, AND FLUX. ZINC COATING FOR THREADED PRODUCTS SHALL CONFORM TO ASTM A153, CLASS C. AREAS TO BE FIELD-WELDED SHALL BE MASKED IN ORDER TO ACCOMMODATE WELDING OPERATIONS.
20. FIELD REPAIR OF GALVANIZING SHALL BE DONE WITH "ZRC COLD GALVANIZING COMPOUND," MANUFACTURED BY ZRC WORLDWIDE, MARSHFIELD, MASSACHUSETTS, OR APPROVED EQUAL.
21. PROVIDE DIELECTRIC ISOLATION KITS AT ALL CONNECTIONS BETWEEN DISSIMILAR METALS.

MISCELLANEOUS PRODUCT NOTES

1. ALL GUARDRAIL SHALL BE GALVANIZED STEEL. REFERENCE SPECIFICATION SECTION 05 52 13 FOR GUARDRAIL REQUIREMENTS.
2. ALL GRATING SHALL BE GALVANIZED STEEL REFERENCE SPECIFICATION SECTION 05 53 13 FOR GRATING REQUIREMENTS. SEE PLAN FOR ORIENTATION.
3. REFERENCE SPECIFICATION DIVISION 05 FOR ADDITIONAL MISCELLANEOUS METALS REQUIREMENTS.

NO.	DATE	REVISION	APP.

LAN

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LOCKWOOD, ANDREWS
& NEWNAM, INC.
3700 W SAM HOUSTON PKWY S,
SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING
FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
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Engineer:JENNIFER N. SAVAGE, PE
Registration Number: 111686
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON

HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3

60% SUBMITTAL
STRUCTURAL
GENERAL NOTES
(SHEET 2 OF 2)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
NONE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 201 OF 244	

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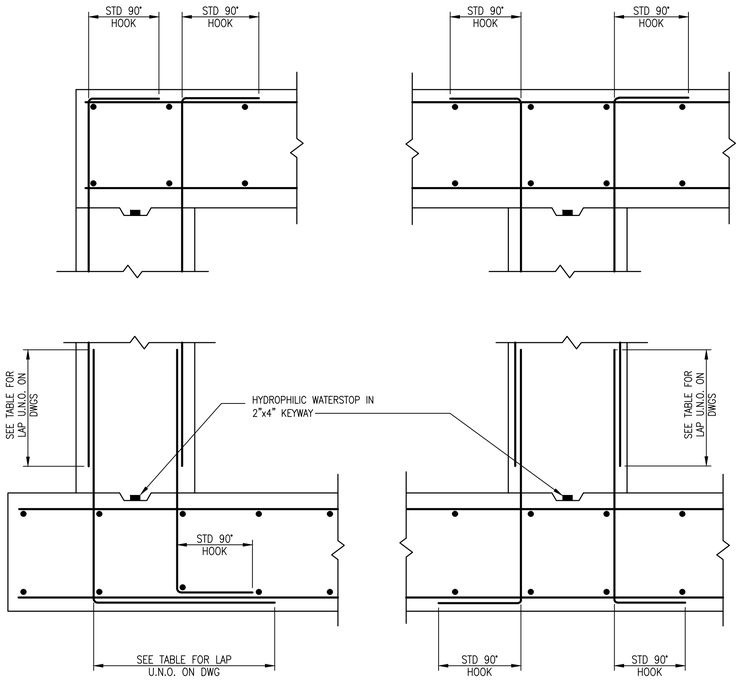
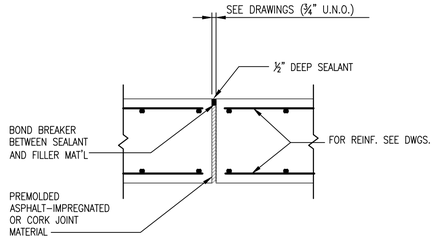


NOTE:
REINFORCING SHALL BE CONTINUOUS THROUGH JOINT. WATERSTOP REQUIRED ONLY IF JOINT IS BELOW MAX. WATER SURFACE OR BELOW FINISHED GRADE.

1 CONSTRUCTION JOINTS AT WALLS
SCALE: N.T.S.



2 ISOLATION OR EXPANSION JOINT WITHOUT DOWELS
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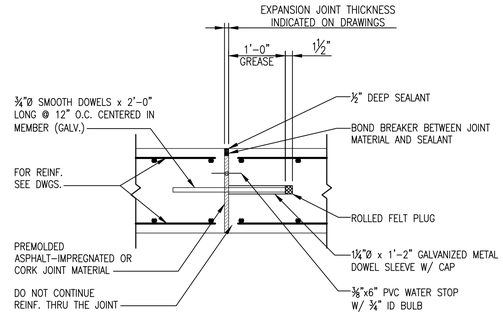
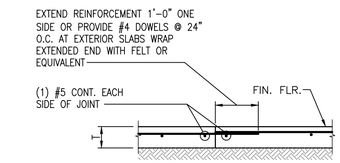
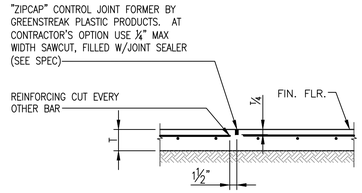


3 DOWELED EXPANSION JOINT
SCALE: N.T.S.



4 TYPICAL CONSTRUCTION JOINT SLAB ON GRADE
SCALE: N.T.S.



5 TYPICAL CONTROL JOINT SLAB ON GRADE
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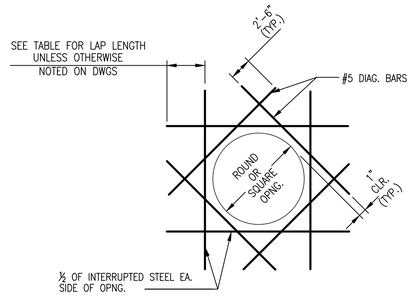

6 REINFORCING AT OPENINGS 8" OR LARGER
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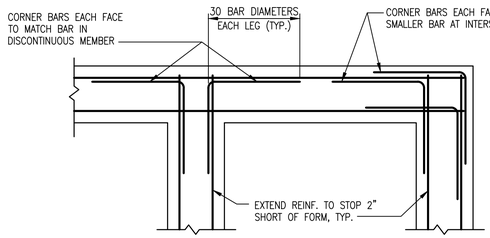
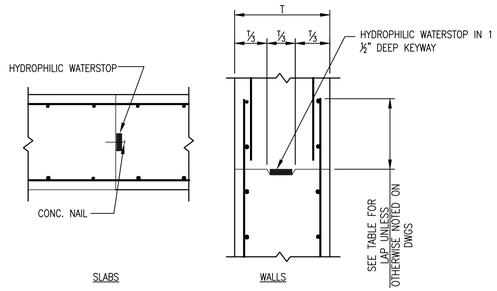


NOTES:
1. PROVIDE CORNER BARS TO MATCH SIZE AND LOCATION OF ALL HORIZONTAL GRADE BEAM AND WALL BARS EXCEPT HOOKED TOP & BOTTOM BARS.
2. CORNER BARS ARE NOT REQUIRED AT HOOKED ENDS. TURN HOOKS SIDEWAYS.

7 CORNER BAR DETAIL
SCALE: N.T.S.

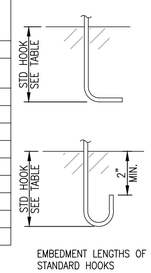


8 CONSTRUCTION JOINTS AT SLABS AND WALLS
SCALE: N.T.S.

REINFORCING LAP SPLICE & EMBEDMENT SCHEDULE

BAR SIZE	MIN LAP LENGTH (IN)		MIN EMBEDMENT LENGTH (IN)		
	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	STD HOOK
3	24	18	18	14	7
4	32	24	25	19	9
5	40	31	31	24	12
6	48	37	37	28	14
7	70	54	54	42	17
8	80	62	62	47	19
9	90	70	70	54	21
10	102	78	78	60	24
11	113	87	87	67	27

1. LAP SPLICES AND EMBEDMENT LENGTHS NOT SHOWN ON THE DRAWINGS SHALL CONFORM TO THE TABLE ABOVE.
2. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12 INCHES DEPTH OF CONCRETE CAST BELOW THE REINFORCING BAR.
3. TABLE LENGTHS BASED ON F'c=4000 PSI AND GRADE 60 REINF.



EMBEDMENT LENGTHS OF STANDARD HOOKS

9 REINFORCING SCHEDULE
SCALE: N.T.S.

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LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
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Registration Number: 111686
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL
STRUCTURAL
TYPICAL DETAILS
(SHEET 1 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
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DRAWING SCALE	
NONE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 202 OF 244	

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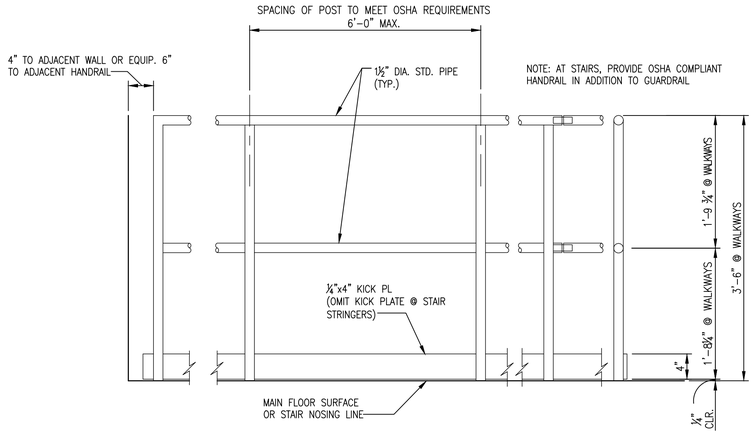
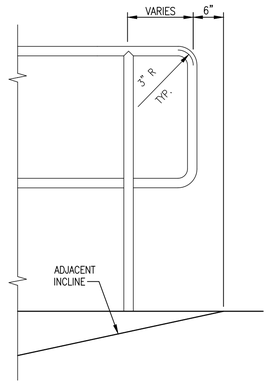


1 GUARDRAIL ELEVATION & SECTION
SCALE: N.T.S.



2 TERMINAL LOOP
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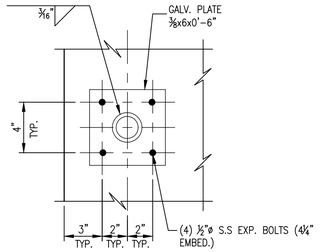
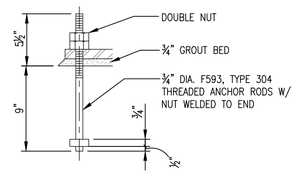


3 TOP MOUNTED RAILING POST
SCALE: N.T.S.



4 ANCHOR BOLT DETAIL
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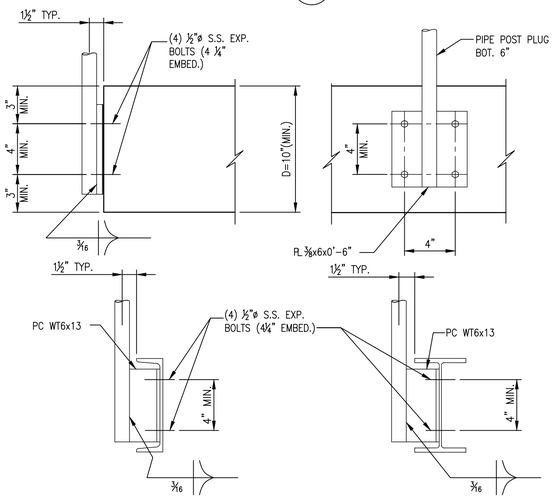

5 SIDE MOUNTED RAILING POST
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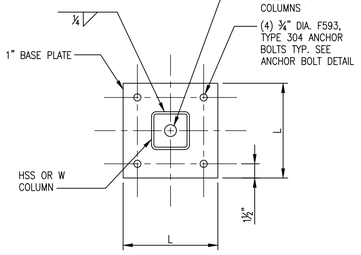


COLUMN SIZE	L (INCHES)
HSS4x4	10
W6	12
W8	14

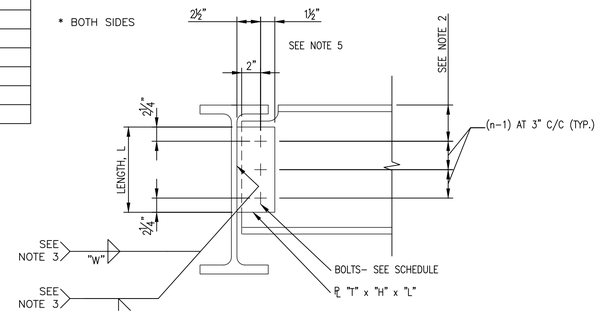
6 BASE PLATE DETAIL
SCALE: N.T.S.

SHEAR TAB CONNECTION SCHEDULE

BEAM SIZE	PLATE THICK "T"	PLATE LENGTH "H"	PLATE THICK "L"	NUMBER OF BOLTS "n"	BOLT SIZE AND TYPE
C8, C9	5/16"	4"	6"	2	3/4"ø F593-N
W6, MC6	5/16"	7"	3"	2	3/4"ø F593-N
W8, W10	5/16"	4"	6"	2	3/4"ø F593-N
W12, W14, C12	5/16"	4"	9"	3	3/4"ø F593-N
W16, W18	5/16"	4"	12"	4	3/4"ø F593-N
W21	5/16"	4"	15"	5	3/4"ø F593-N

NOTES:
1. DETAIL APPLIES TO ALL SIMPLY SUPPORTED BEAMS UNLESS SPECIFIC DETAILS FOR AN ALTERNATE CONNECTION ARE PROVIDED
2. "x" + 1½" OR 3" MIN. – "x" = DISTANCE FROM OUTER FACE OF FLANGE TO WEB TOE OF FILLET OF ROLLED SHAPE OR EQUIVALENT DISTANCE ON WELDED SECTION, IN.
3. WELD SIZE AND TYPE VARIES WITH ANGLE OF FRAMING – SEE SCHEDULE
4. SCHEDULES ARE BASED ON ASD DESIGN METHODS.
5. AT W6 CONNECTIONS, 3" SPACING BETWEEN BOLTS, CTR. TO CTR.

WELD SCHEDULE	
ANGLE OF FRAMING "Z"	WELD SIZE "W"
	BEAM SIZE W 8 TO W 27
90° TO 60°	* 1/4" FILLET
59.9° TO 30°	FULL PEN
LESS THAN 30°	



7 STEEL SHEAR TAB CONNECTION DETAIL AND SCEDULE
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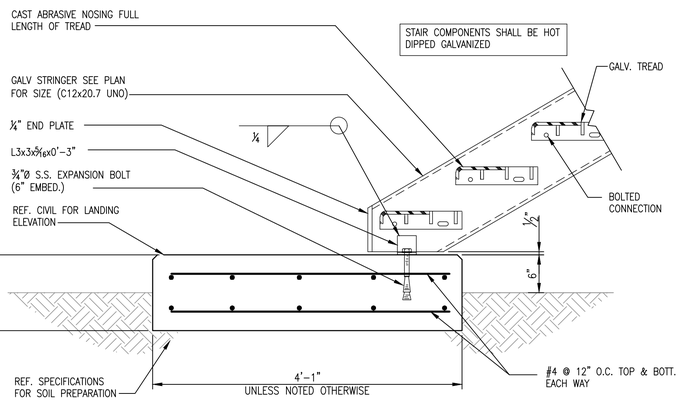
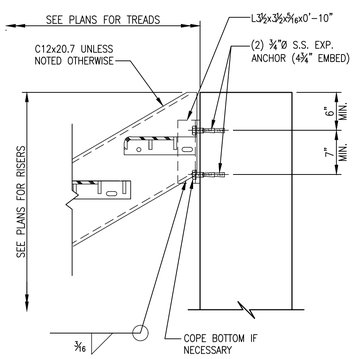


SECTION AT BOTTOM



SECTION AT TOP

8 STAIR CONNECTION DETAILS
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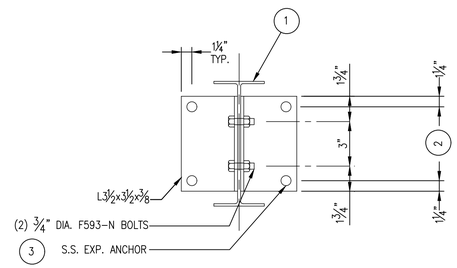

WIDE FLANGE

MEMBER SIZE (1)	DIM (2)	EXP. ANCHOR SIZE (3)	MIN EMBED
W12	4"	(4) ½" DIA.	6"

9 ANCHOR DETAIL - STEEL MEMBER TO CONCRETE
SCALE: N.T.S.

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Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
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CITY OF HOUSTON
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MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL
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TYPICAL DETAILS
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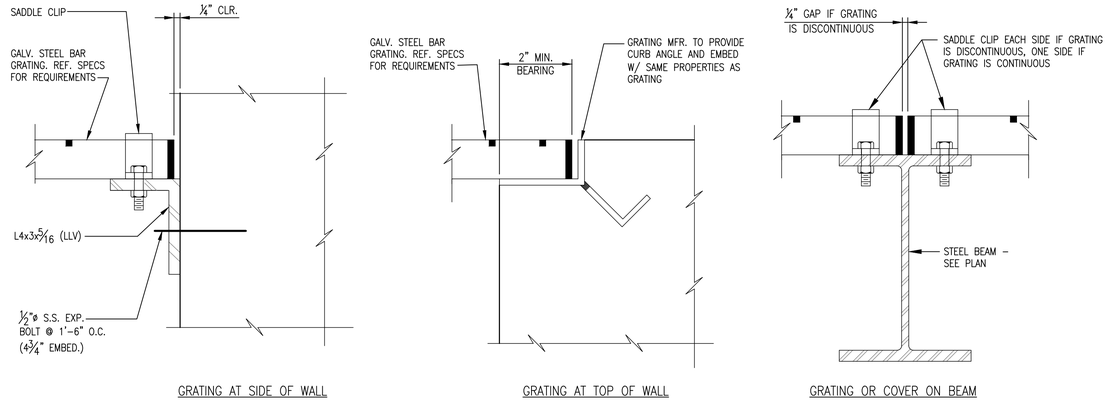

1 BAR GRATING
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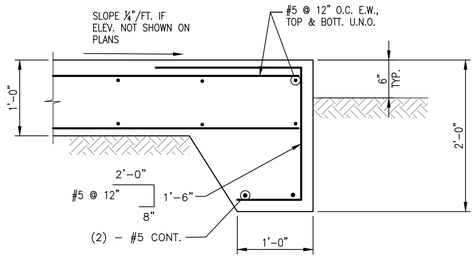

2 TYPICAL EXTERIOR PAD
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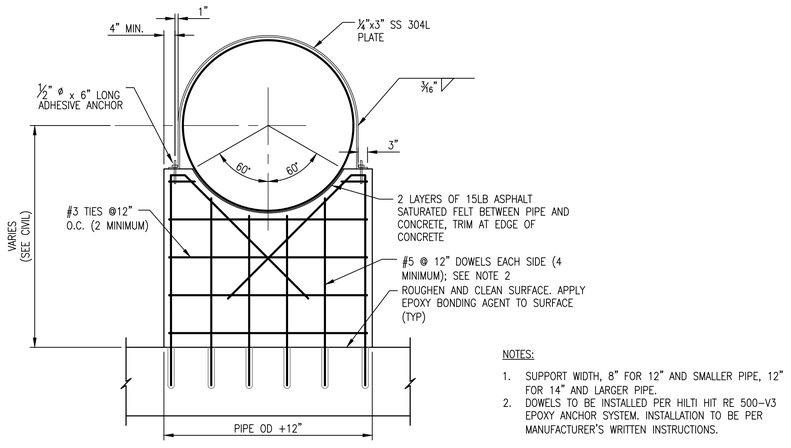

NOTES:

1. SUPPORT WIDTH, 8" FOR 12" AND SMALLER PIPE, 12" FOR 14" AND LARGER PIPE.
2. DOWELS TO BE INSTALLED PER HILTI HIT RE 500-V3 EPOXY ANCHOR SYSTEM. INSTALLATION TO BE PER MANUFACTURER'S WRITTEN INSTRUCTIONS.

3 CONCRETE SADDLE SUPPORT
SCALE: N.T.S.

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CITY OF HOUSTON
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MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
60% SUBMITTAL

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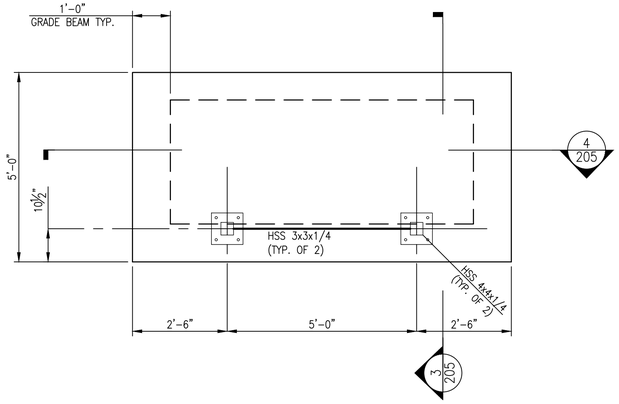
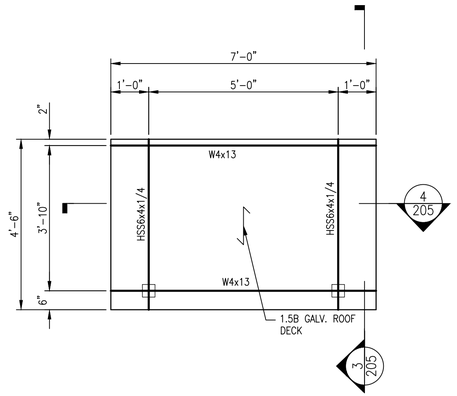
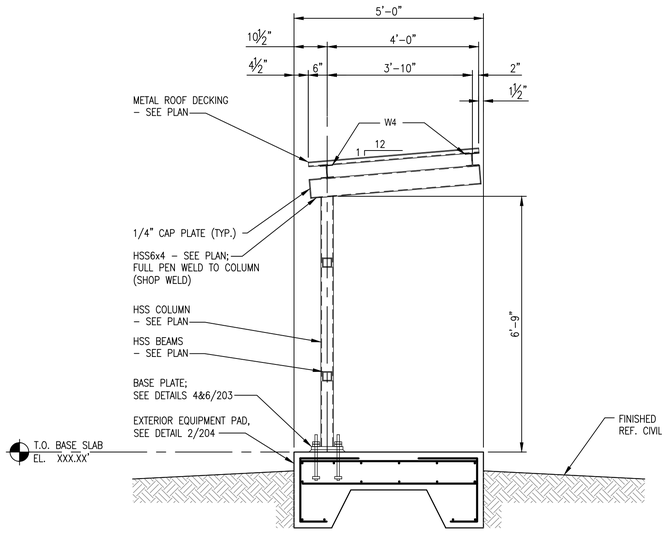


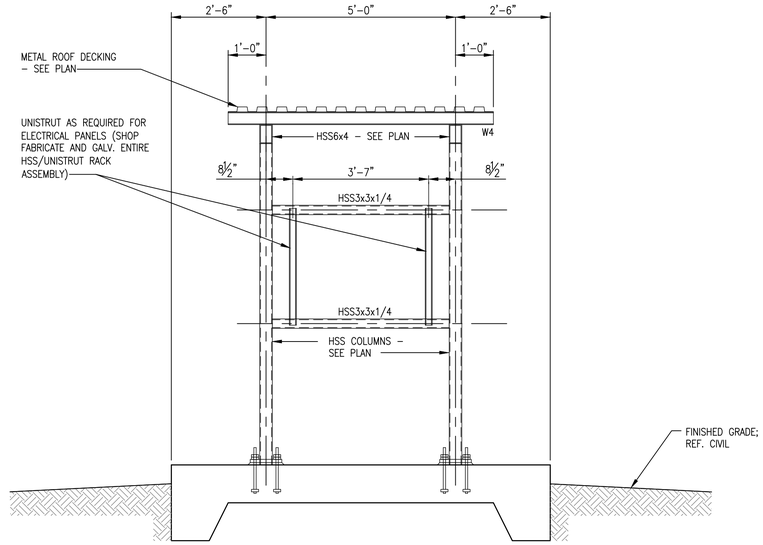
1 TOP SLAB PLAN
SCALE: 1/2" = 1'-0"



2 CANOPY ROOF PLAN
SCALE: 1/2" = 1'-0"



3 SECTION
SCALE: 1/2" = 1'-0"



4 SECTION
SCALE: 1/2" = 1'-0"

NO.	DATE	REVISION	APP.

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EFF DATE:

DWG NO:

LOCKWOOD, ANDREWS
& NEWNAM, INC.
3700 W SAM HOUSTON PKWY S,
SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING
FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

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Registration Number: 111686
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON

HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

60% SUBMITTAL

SITE 4 ELECTRICAL RACK AND CANOPY PLANS, SECTIONS & DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
NONE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. **205** OF **244**	

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USERNAME: Fleming, David

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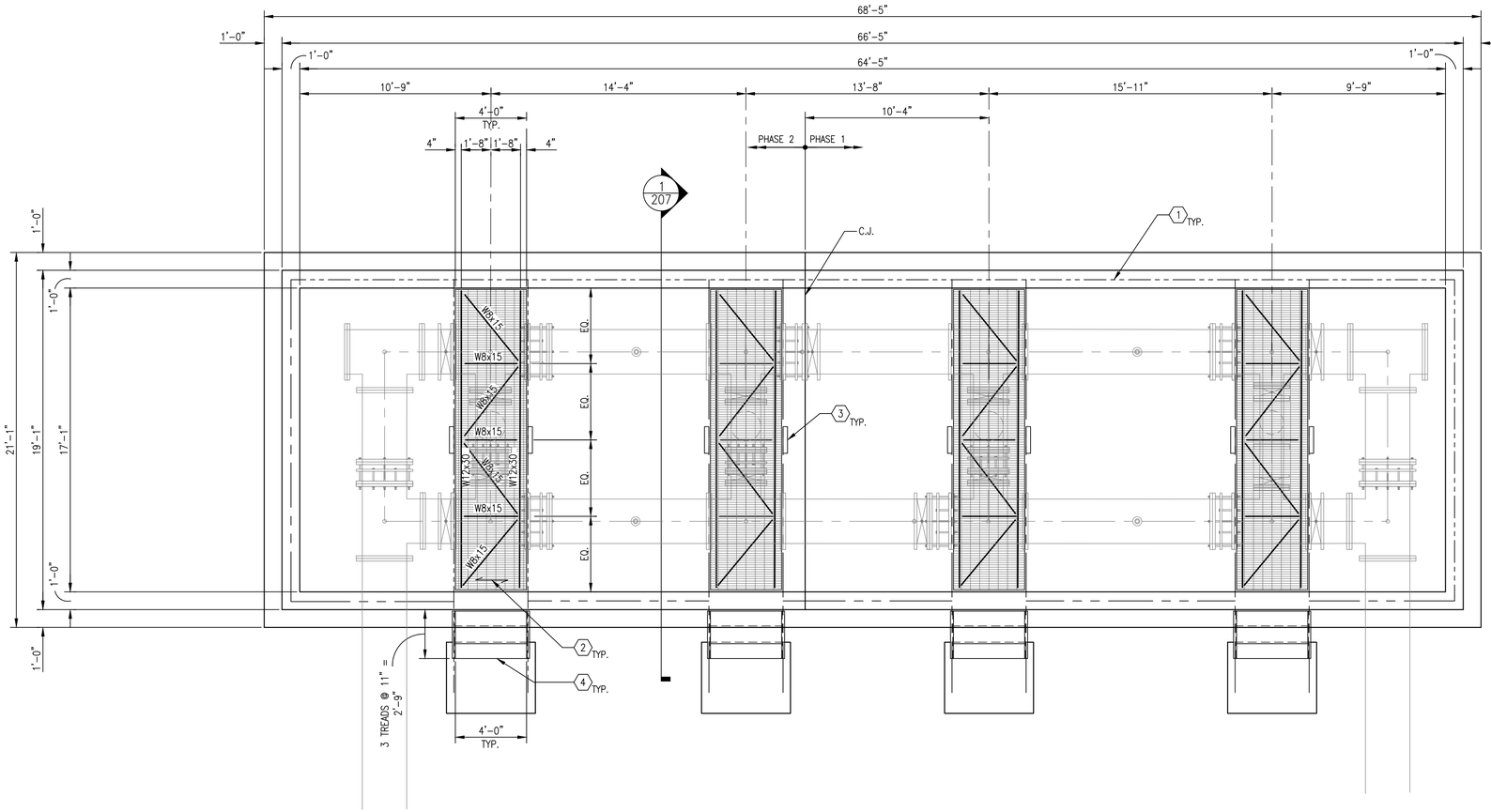

1 PLAN

SCALE: 1/4"=1'-0"

0 4' 8'

SCALE: 1/4"=1'-0"

N

PLAN NOTES

1. FOR GENERAL NOTES, REFERENCE SHEET 200 AND 201.
2. FOR STANDARD DETAILS, REFERENCE SHEETS 202 THRU 204.
3. REFER TO THE CIVIL, PROCESS, MECHANICAL, ELECTRICAL, PLUMBING, AND ARCHITECTURAL DRAWINGS FOR ADDITIONAL OR SUPPLEMENTARY INFORMATION NOT SHOWN OR ADDRESSED HEREIN AND FOR SIZE AND LOCATION OF ANY SLEEVES, BLOCKOUTS, EMBEDDED ITEMS, ETC. NOT DETAILED OR INDICATED ON THE STRUCTURAL DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE LOCATIONS AND DETAILS FOR THESE ITEMS PRIOR TO FABRICATION AND CONSTRUCTION OF THE STRUCTURE.
4. PROVIDE ADDITIONAL REINFORCING AT OPENINGS PER CONCRETE GENERAL NOTES AND DETAIL 6/202.
5. * DENOTES DIMENSION TO BE DETERMINED BY EQUIPMENT MANUFACTURER AND COORDINATED BY CONTRACTOR.
6. ** DENOTES DIMENSION TO BE VERIFIED AND COORDINATED BY CONTRACTOR.
7. ⟷ DENOTES MAIN BEARING BAR SPAN DIRECTION.
8. SECTIONS OR DETAILS DESIGNATED AS "TYPICAL SECTION" OR "TYPICAL DETAIL" APPLY GENERALLY TO THE DRAWINGS IN ALL AREAS WHERE CONDITIONS ARE SIMILAR TO THOSE DESCRIBED IN THE SECTIONS AND DETAILS.

KEYED NOTES (X)

1. ALUMINUM GUARDRAIL SEE SHEET 203.
2. ALUMINUM GRATING, SEE PLAN AND SHEET 204.
3. ALUMINUM LADDER SEE SPECS.
4. STAIR, SEE DETAIL 8/207.

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CITY OF HOUSTON

HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3

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SITE 7

PROP WATER LINE VAULT

STRUCTURAL PLAN

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DRAWING SCALE	
NONE	
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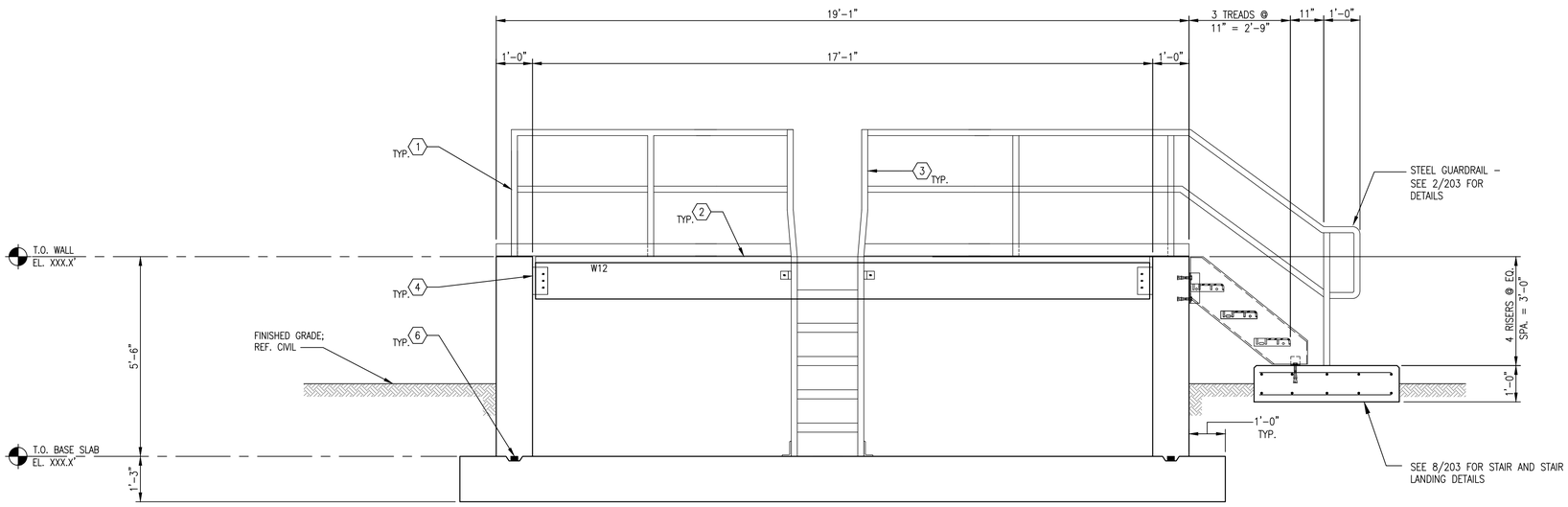

1 SECTION
SCALE: 1/2"=1'-0"

KEYED NOTES (X)

1. ALUMINUM GUARDRAIL SEE SHEET 203.
2. ALUMINUM GRATING, SEE PLAN AND SHEET 204.
3. ALUMINUM LADDER SEE SPECS.
4. STAIR, SEE DETAIL 8/203.
5. TYP. BEAM TO CONC. CONNECTION, SEE DETAIL 9/203.
6. HYDROPHILIC WATERSTOP IN KEYWAY, SEE DETAIL 8/202.

NO.	DATE	REVISION	APP.

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EFF DATE:

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3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL

SITE 7 PROP WATER LINE
VAULT SECTIONS AND DETAILS
SHEET 1 OF 2

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NONE	
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SHEET NO. **207** OF **244**	

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ABBREVIATIONS

A	AMPERE, AMBER.
AC	ALTERNATING CURRENT
AF	AMPERE FRAME
AFD	ADJUSTABLE FREQUENCY DRIVE.
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHJ	AUTHORITY HAVING JURISDICTION.
AIC	AMPERE INTERRUPTING CAPACITY.
AIL	AMBER INDICATING LIGHT
AL	ALUMINUM
AM	AMMETER
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE
BKR	BREAKER
BIL	BASIC IMPULSE ISOLATION LEVEL
BLDG	BUILDING
BFV	BUTTERFLY VALVE
C	CONDUIT, CONTACTOR
CC	CLOSE CIRCUIT/COIL
CAT	CATALOG, CATEGORY.
CAP	CAPACITOR
CB	CIRCUIT BREAKER
CFE	CITY FURNISHED EQUIPMENT
CKT	CIRCUIT
COMM	COMMUNICATION
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
CR	CONTROL RELAY
CT	CURRENT TRANSFORMER
CU	COPPER
CS	CONTROL SWITCH
DC	DIRECT CURRENT
DCS	DISTRIBUTED CONTROL SYSTEM
DIA	DIAMETER
DIST	DISTRIBUTION
DIV	DIVISION
DP	DISTRIBUTION PANEL
DPS	DIFFERENTIAL PRESSURE SWITCH
DTL	DETAIL
E	EMPTY
EA	EACH
ELEC	ELECTRIC
ELEV	ELEVATION
EMER	EMERGENCY
EMH	ELECTRIC MANHOLE
EMT	ELECTRIC METALLIC TUBING CONDUIT
EQPT	EQUIPMENT
ESP	EMERGENCY STOP PUSH BUTTON
ETM	ELAPSED TIME METER
EXIST	EXISTING
FU	FUSE
FDR	FEEDER
FIT	FLOW INDICATING TRANSMITTER
FLA	FULL LOAD AMPS
FO	FIBER OPTIC
FT	FEET
FVNR	FULL VOLTAGE NON-REVERSING
FVR	FULL VOLTAGE REVERSING
G	GREEN, GROUND
GAP	GENERATOR ANNUNCIATOR PANEL
GALV	GALVANIZED
GFCI	GROUND FAULT CIRCUIT INTERRUPTER 5MA
GFI	GROUND FAULT INTERRUPTER-EQUIPMENT-30MA
GFR	GROUND FAULT RELAY
GIL	GREEN INDICATING LIGHT
GND	GROUND
HH	HANDHOLE
HMI	HUMAN MACHINE INTERFACE
HOA	HAND-OFF-AUTO
HP	HORSE POWER
HPS	HIGH PRESSURE SODIUM
HSP	HIGH SPEED PUMP
HS	2-POSITION SELECTOR SWITCH
IS	INCOMPLETE SEQUENCE RELAY
JB	JUNCTION BOX
KAIC	KILO AMPERES INTERRUPTING CAPACITY
KCMIL	THOUSAND CIRCULAR MILS
KV	KILOVOLT
KVA	KILOVOLT-AMPERE
KW	KILOWATTS
KWH	KILOWATT HOURS
LCP	LOCAL CONTROL PANEL
LED	LIGHT EMITTING DIODE
LIT	LEVEL INDICATING TRANSMITTER
LOR	LOCAL OFF REMOTE
LTS	LIGHTS
LWCO	LOW WATER CUT OFF
M	MAIN CONTACTOR AUX. CONTACT
MA	MILLIAMP
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MDP	MAIN DISTRIBUTION PANEL
MH	MANHOLE
MIN	MINIMUM, MINUTES
MLO	MAIN LUGS ONLY
MOV	MOTOR OPERATED VALVE
MV	MEDIUM VOLTAGE
MVAR	MEGAVAR
N	NEUTRAL
NC	NORMALLY CLOSED
NF	NON-FUSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NPW	NON POTABLE WATER
NTS	NOT TO SCALE
OAS	OR APPROVED SUBSTITUTION
OC	ON CENTER, OPEN CIRCUIT/COIL
OH	OVERHEAD
OL	OVERLOAD RELAY
P	PRIMARY
PB	PULL BOX, PUSH BUTTON SWITCH
PBC	PULL BOX CONTROL
PE	PHOTOELECTRIC
PFCC	POWER FACTOR CORRECTION CAPACITOR
PFR	PHASE FAIL RELAY
PH	PHASE
PIT	PRESSURE INDICATING TRANSMITTER
PLC	PROGRAMMABLE LOGIC CONTROLLER
PS	PUMP STATION, PRESSURE SWITCH
PNL	PANEL
PR	PAIR
PT	POTENTIAL TRANSFORMER
PTT	PUSH TO TEST
PVC	POLYVINYL CHLORIDE CONDUIT
QTY	QUANTITY
R	RED
RA	RIGID ALUMINUM
RAS	RETURN ACTIVATED SLUDGE
RCPT	RECEPTACLE
RES	RESISTOR
REQD	REQUIRED
RIL	RED INDICATING LIGHT
RIO	REMOTE I/O
RGS	RIGID GALVANIZED STEEL CONDUIT
RTD	RESISTANCE TEMPERATURE DEVICE
RTU	REMOTE TERMINAL UNIT
RX	PUMP SHUTDOWN AUXILIARY RELAY
S	SECONDARY
SCADA	SUPERVISORY CONTROL AND DATA ACQUISITION
SA	SURGE ARRESTOR
SEC	SECONDS
SH	SPACE HEATER
SCCR	SHORT CIRCUIT CURRENT RATING
SCTB	SHORTING CIRCUIT TRANSFORMER BLOCK
SPD	SURGE PROTECTION DEVICE
SS	STAINLESS STEEL, SELECTOR SWITCH.
S/S	START/STOP
SSOL	SOLID STATE OVERLOAD RELAY
SSRV	SOLID STATE REDUCED VOLTAGE STARTER
SUPV	SUPERVISORY
SV	SOLENOID VALVE
SW	SWITCH
SWGR	SWITCHGEAR
SWBD	SWITCHBOARD
T	TRANSFORMER
TC	TRIP CIRCUIT
TDR	TIME DELAY RELAY
TDDO	TIME DELAY AFTER DROP OUT
TDPU	TIME DELAY AFTER PICK UP
TIT	TEMPERATURE INDICATING TRANSMITTER
TM	TIMING METER
TO	TIMED OPENING
TP	TWISTED PAIR
TS	TEMPERATURE SWITCH, TEST SWITCH
TSC	TORQUE SWITCH CLOSE
TSO	TORQUE SWITCH OPEN
TSP	TWISTED SHIELDED PAIR
TSS	TWISTED SHIELDED TRIAD
TYP	TYPICAL
UG	UNDERGROUND
UH	UNIT HEATER
UON	UNLESS OTHERWISE NOTED
UV	ULTRAVIOLET
V	VOLTS
VA	VOLT-AMPERES
VAC	AC VOLTS
VAR	VOLT-AMPERES REACTIVE
VCP	VENDOR CONTROL PANEL (NOT PROVIDED BY INTEGRATOR)
VDC	DC VOLTS
VFD	VARIABLE FREQUENCY DRIVE
VLS	VALVE LIMIT SWITCH
VLSX	VALVE LIMIT SWITCH AUXILIARY RELAY
W/	WITH
WAS	WASTE ACTIVATED SLUDGE
WP	WEATHER PROOF WHILE IN USE

GENERAL NOTES

1. ELECTRICAL SYSTEMS, DISTRIBUTION EQUIPMENT, AND RACEWAYS AS SHOWN ARE DIAGRAMMATIC IN NATURE. COORDINATE WITH OTHER TRADES AND MOV EQUIPMENT. PROVIDE ALL REQUIRED ELECTRICAL SYSTEMS FOR A COMPLETE AND FUNCTIONING SYSTEM.
2. PROVIDE ACCURATE PANELBOARD DIRECTORIES FOR ALL PANELS, INDICATE NEW CIRCUITS AS WELL AS SPARE CIRCUITS AND BREAKER SPACES. TURN 'OFF' ALL SPARE BREAKERS.
3. ELECTRICAL EQUIPMENT SHALL BE UL LISTED
4. NO PIPING, DUCTS, OR EQUIPMENT FOREIGN TO ELECTRICAL EQUIPMENT SHALL BE PERMITTED TO BE LOCATED WITHIN THE DEDICATED SPACE ABOVE THE ELECTRICAL EQUIPMENT.
5. PROVIDE AND MAINTAIN REQUIRED WORK SPACE, ADEQUATE ILLUMINATION, ACCESS TO WORK SPACE AND HEAD ROOM ABOUT ELECTRICAL EQUIPMENT.
6. ELECTRICAL DISTRIBUTION EQUIPMENT AND OVERCURRENT PROTECTION SYSTEM SHALL BE A FULLY RATED SYSTEM FOR SHORT CIRCUIT PROTECTION.
7. ALL EQUIPMENT FASTENED IN PLACE OR CONNECTED BY PERMANENT WIRING METHOD SHALL BE GROUNDED. SEE CONDUIT SCHEDULE AND ONE-LINE DIAGRAM SHEETS FOR REQUIRED SIZES OF EQUIPMENT GROUNDING CONDUCTORS.
8. PROPOSED EQUIPMENT SHOWN IN BOLD LINE WORK. EQUIPMENT PROVIDED BY OTHER DISCIPLINES SHOWN IN HALF TONE LINE WORK.
9. THIS SET OF ELECTRICAL DRAWINGS IS ACCOMPANIED BY A WRITTEN SET OF SPECIFICATIONS WITH WHICH THE CONTRACTOR MUST COMPLY.
10. PROVIDE ARC FLASH LABELS AND ADJUST BREAKER SETTINGS FOR THE PROPOSED EQUIPMENT AS SPECIFIED IN SECTION 260573.19.
11. INSTALL ELECTRIC SERVICE EQUIPMENT AND RACEWAY PER CENTERPOINT ENERGY STANDARDS.

COMMUNICATION PLAN SYMBOLS

- WALL MOUNTED TELEPHONE OUTLET
- FLOOR MOUNTED TELEPHONE OUTLET.
- WALL MOUNTED DATA OUTLET
- FLOOR MOUNTED DATA OUTLET.
- WALL MOUNTED TELEPHONE/DATA OUTLET
- FLOOR MOUNTED TELEPHONE/DATA OUTLET

FIRE ALARM PLAN SYMBOLS

- F — MANUAL PULL STATION
- F — SMOKE DETECTOR
- FACP — CONTROL PANEL
- F — FIRE ALARM HORN/STROBE
- H — FIXED HEAT DETECTOR WITH RATE OF RISE SUITABLE IN HIGH HUMIDITY AREAS

POWER AND LIGHTING PLAN SYMBOLS

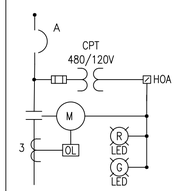
- 2X4 LED RECESSED FIXTURE. LETTER DENOTES FIXTURE TYPE.
- 2X4 LED EMERGENCY RECESSED FIXTURE. LETTER DENOTES FIXTURE TYPE.
- 1X4 LED WET LOCATION FIXTURE, LETTER DENOTES FIXTURE TYPE (1x8 SIMILAR).
- 1X4 LED EMERGENCY WET LOCATION FIXTURE, LETTER DENOTES FIXTURE TYPE (1x8 SIMILAR).
- POLE MOUNTED LED FIXTURE.
- A — WALL-PACK FIXTURE
- STANCHION MOUNTED FIXTURE
- DUPLEX RECEPTACLE 20A-125V: 2P-3W-G: NEMA 5-20R
- WP — DUPLEX RECEPTACLE AS DESCRIBED ABOVE WITH WEATHERPROOF COVER
- GFCI — DUPLEX RECEPTACLE AS DESCRIBED ABOVE WITH GROUND FAULT CIRCUIT INTERRUPTER.
- GFCI WP — DUPLEX RECEPTACLE AS DESCRIBED ABOVE WITH GROUND FAULT CIRCUIT INTERRUPTER AND WEATHERPROOF COVER.
- DENOTES DOUBLE DUPLEX QUAD TYPE RECEPTACLE.
- SPECIAL RECEPTACLE NEMA TYPE AS NOTED.
- $ — 20A, 120V SINGLE POLE WALL SWITCH. WP INDICATES WEATHERPROOF.
- $3 — 20A, 120V THREE WAY WALL SWITCH. WP INDICATES WEATHERPROOF.
- $M — MANUAL MOTOR STARTER W/THERMAL ELEMENT.
- BRANCH CIRCUIT PANELBOARD - SURFACE MOUNTED.
- NON-FUSIBLE DISCONNECT SWITCH-30A FRAME UON, WP INDICATES WEATHERPROOF TYPE.
- FUSIBLE DISCONNECT SWITCH-FUSE SIZE AS INDICATED, WP INDICATES WEATHERPROOF TYPE.
- SECURITY CAMERA.
- CR — CARD READER.
- DC — DOOR CONTACT.
- J — JUNCTION BOX
- 24" x 24" COPPER CLAD GROUND PLATE.
- GROUND TEST WELL
- PE — PHOTOELECTRIC SWITCH
- PB — HANDHOLE
- BRANCH CIRCUIT OR FEEDER EXPOSED OR CONCEALED IN EITHER CEILING OR WALL.
- BRANCH CIRCUIT OR FEEDER IN FLOOR SLAB OR UNDERGROUND
- A-1,3,5 — HOMERUN TO PANELBOARD-SUBSCRIPT DENOTES POINT OR PANELBOARD OF ORIGINATION AND CIRCUIT NUMBERS.
- OH — OVERHEAD POWER DISTRIBUTION BY ELECTRIC UTILITY CO.
- UT — UNDERGROUND TELEPHONE DISTRIBUTION. CONDUIT BY CONTRACTOR CABLE BY TELEPHONE UTILITY CO.
- BARE STRANDED TINNED-COPPER WIRE, #4/0 UON
- INSTRUMENTATION SYMBOL.
- ASDF — CONDUIT/CONDUCTOR LABEL. REFER TO CONDUIT SCHEDULES ON E0604.
- EMERGENCY STOP PUSH BUTTON
- CONDUIT UP
- CONDUIT DOWN

REFLECTED CEILING PLAN SYMBOLS

- WALL MOUNTED EXIT UNIT, LETTER DENOTES TYPE.
- OC — CEILING MOUNTED OCCUPANCY SENSOR.
- OC HB — CEILING MOUNTED HIGH BAY OCCUPANCY SENSOR.
- OC — CEILING MOUNTED DAY LIGHT DIMMING SENSOR.

ONE-LINE DIAGRAM SYMBOLS

- POT HEAD
- UTILITY CONNECTION
- BREAKER
- DRAW OUT TYPE
- FUSE
- FUSED SWITCH
- NON-FUSED SWITCH
- M — METER
- M — MOTOR
- M — DC MOTOR
- G — GENERATOR
- PANEL 'X' — PANEL
- TRANSFORMER T-03, 5kVA, 480-120/208V, Z=0.8%
- DELTA
- GROUNDED Y
- CONDUIT SEAL
- GROUND
- GROUND/RESISTOR
- LIGHTNING ARRESTOR
- AS — AMMETER SWITCH
- VS — VOLTMETER SWITCH
- X — METER INDICATING
- X — METER RECORDING
- K — KEY INTERLOCK
- XXXX — METER
- ETM — ELAPSED TIME METER
- 3 /5 — CURRENT TRANSFORMER - QUANTITY AND RATIO AS INDICATED
- RVSS OL — SOLID STATE SOFT STARTER WITH INTEGRATED OVERLOAD AND INTEGRAL BYPASS CONTACTOR
- CP — VENDOR FURNISHED CONTROL PANEL
- COMBINATION MOTOR STARTER-SIZE AS INDICATED; OR NORMALLY OPEN (N.O.) CONTACTOR
- MOTOR SPACE HEATER
- TS — MOTOR TEMPERATURE SWITCH
- RTD — MOTOR REMOTE TEMPERATURE DEVICE
- VS — VIBRATION SWITCH
- PM — PUMP MONITOR



COMBINATION MOTOR STARTER WITH CIRCUIT BREAKER (CB) AND SOLID STATE OVERLOAD RELAY, NEMA SIZE AND RATINGS AS INDICATED. PROVIDE CONTROL SWITCH AS INDICATED WITH CONTROL POWER TRANSFORMER (CPT), AND LIGHT-EMITTING DIODE (LED) PILOT/ INDICATING LIGHTS.

THIS IS A STANDARD SHEET LEGEND. NOT ALL SYMBOLS ARE USED ON THIS PROJECT.

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567.

PRIVATE UTILITY LINES SHOWN

Date:

CENTERPOINT ENERGY/ELECTRIC FACILITIES
ELECTRICAL FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES - NOT TO BE USED FOR CONFLICT VERIFICATION).

Date:

CENTERPOINT ENERGY/GAS FACILITIES
(GAS SERVICE LINES ARE NOT SHOWN). THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION.

Date:

AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

LAN

EFF DATE: XXXX-XX-20XX

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3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

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Registration Number: 104970
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

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HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3

60% SUBMITTAL

ELECTRICAL LEGENDS AND ABBREVIATIONS

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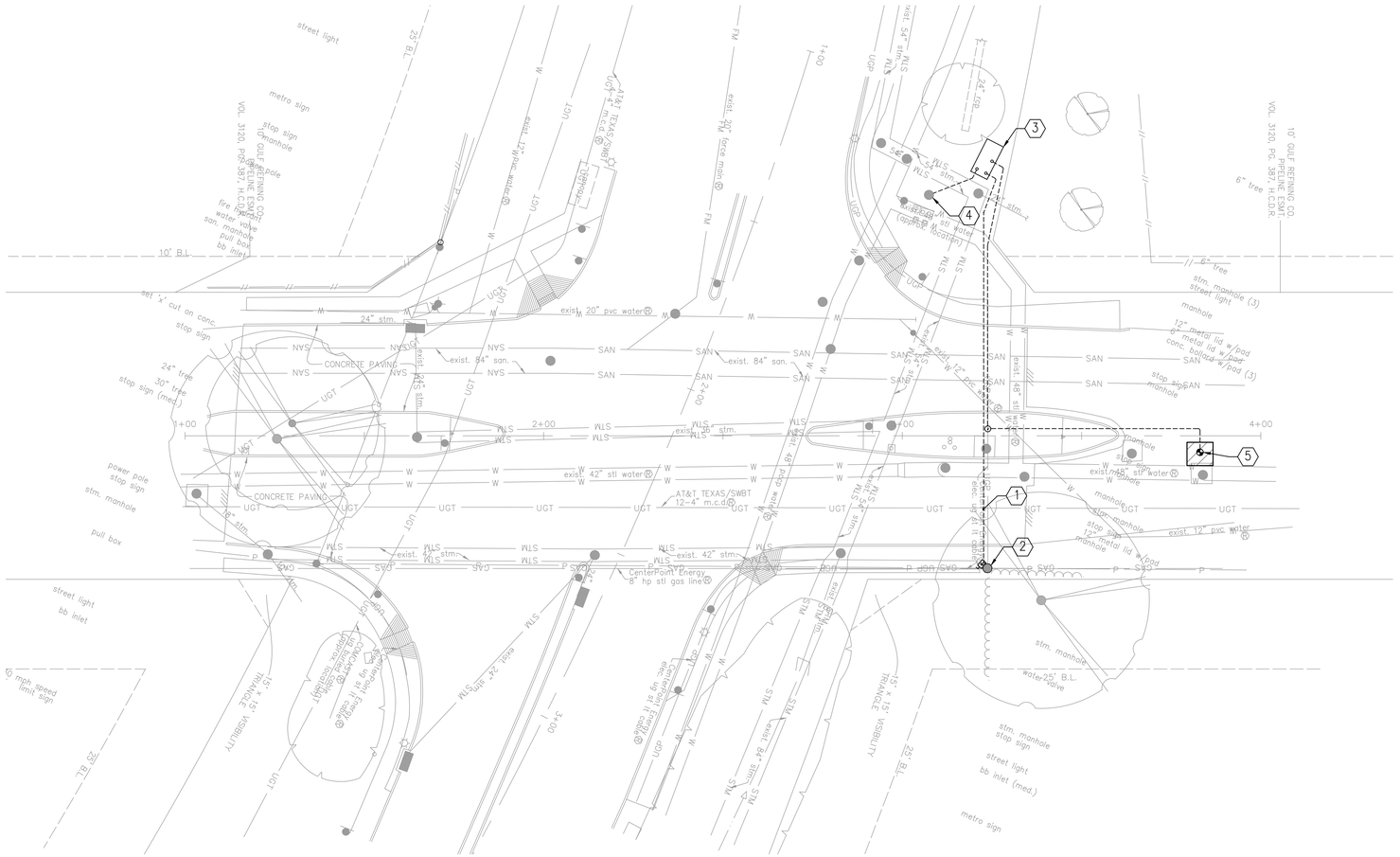
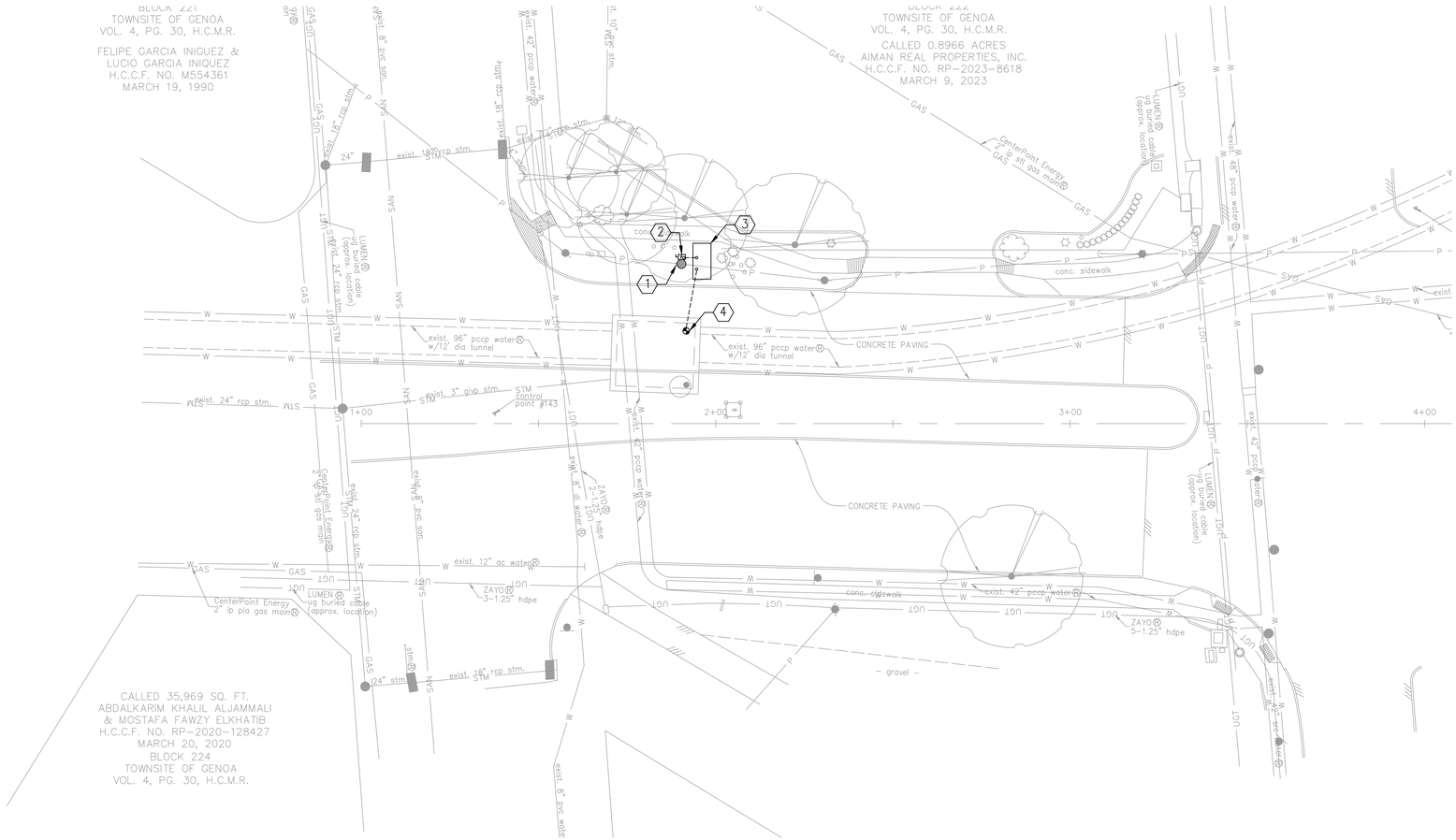
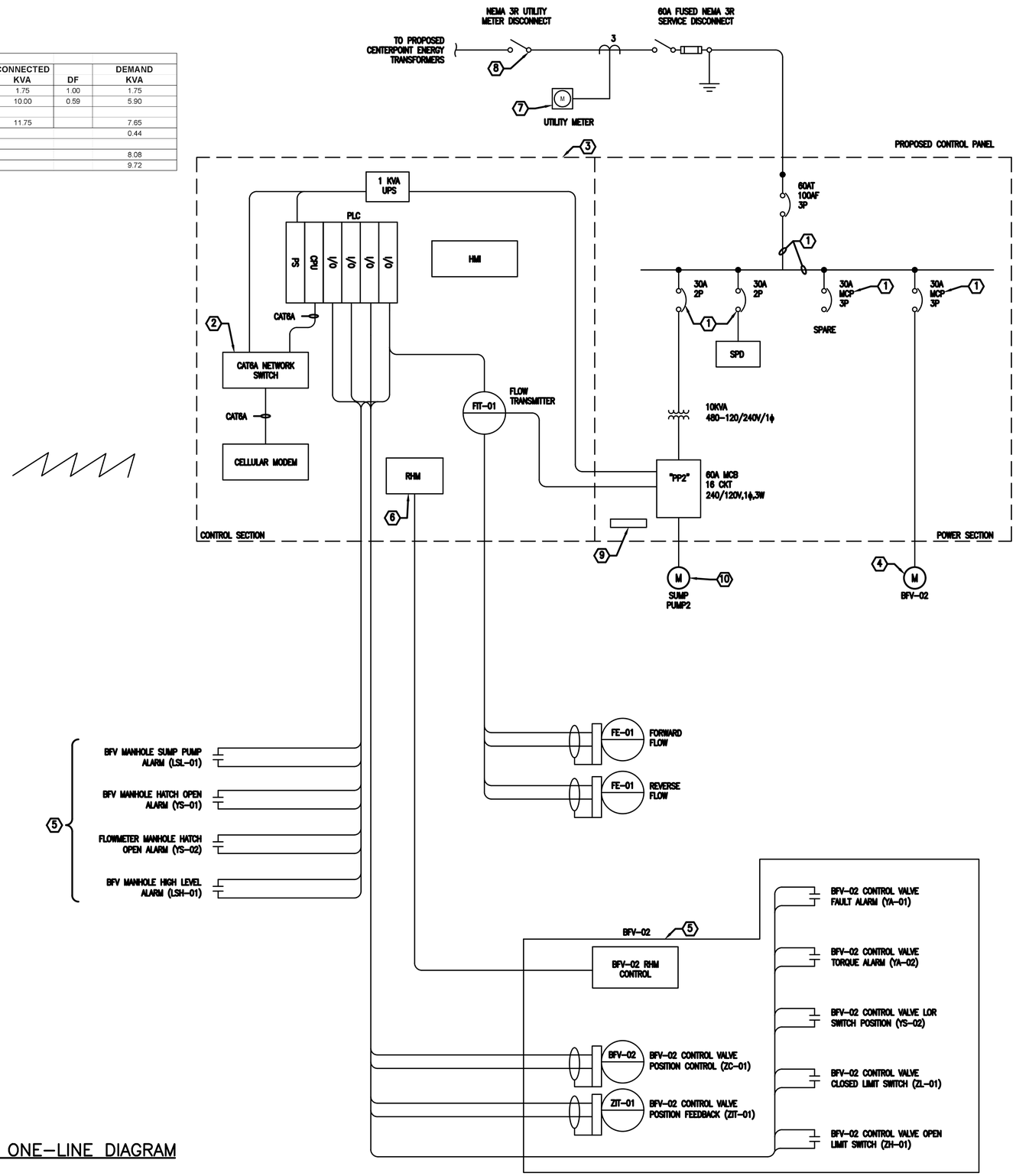
FILE PATH: P:\137\135-1001-001\4-Production-Working\4-1-BIM-CAD\Electrical\S-00701-001-3 E-001 SYMBOLS AND LEGEND SHEET.dwg


street light
metro sign
stop sign
manhole
power pole
fire hydrant
water valve
san. manhole
pull box
sq. inlet
VOL 3120 PG. 387 H.C.D.R.
GULF REFINING CO. PIPELINE EXMT.
10' B.L.
set 'x' cut on conc.
24" stm.
exist. 20" pvc water
exist. 84" san.
CONCRETE PAVING
24" tree
30" tree
stop sign (med.)
exist. 24" stm.
exist. 54" stm.
exist. 36" stm.
exist. 42" stl water
AT&T TEXAS/SWBT 12-4" m.c.d.
Centerpoint Energy 8" hp stl gas line
exist. 42" stm.
exist. 24" stm.
exist. 12" pvc water
exist. 48" stl water
exist. 12" pvc water
exist. 24" stm.
exist. 24" force main
exist. 12" pvc water
exist. 48" stl water
exist. 12" pvc water
exist. 48" stl water
exist. 12" pvc water
exist. 48" stl water


BLOCK 221
TOWNSITE OF GENOA
VOL. 4, PG. 30, H.C.M.R.
FELIPE GARCIA INIGUEZ &
LUCIO GARCIA INIQUEZ
H.C.C.F. NO. M554361
MARCH 19, 1990
BLOCK 222
TOWNSITE OF GENOA
VOL. 4, PG. 30, H.C.M.R.
CALLED 0.8966 ACRES
AIMAN REAL PROPERTIES, INC.
H.C.C.F. NO. RP-2023-8618
MARCH 9, 2023
CALLED 35,969 SQ. FT.
ABDALKARIM KHALIL ALJAMMALI
& MOSTAFA FAWZY ELKHATIB
H.C.C.F. NO. RP-2020-128427
MARCH 20, 2020
BLOCK 224
TOWNSITE OF GENOA
VOL. 4, PG. 30, H.C.M.R.
exist. 8" pvc san.
exist. 18" rcp stm.
exist. 42" pccp water
exist. 10" ws stm.
exist. 15" rcp stm.
exist. TXU elec. duct bank
exist. 24" rcp stm.
exist. 18" rcp stm.
LUMEN ug buried cable (approx. location)
conc. sidewalk
CenterPoint Energy 6" stl gas main
exist. 96" pccp water w/12' dia tunnel
CONCRETE PAVING
exist. 24" rcp stm.
exist. 3" giip stm.
STM control point #143
1+00
2+00
3+00
4+00
exist. 42" pccp water
exist. 8" pvc san.
exist. 8" di water
ZAYO 2-1.25" hdpe
exist. 24" rcp stm.
exist. 12" ac water
ZAYO 3-1.25" hdpe
ZAYO 5-1.25" hdpe
conc. sidewalk
gravel
exist. 18" rcp stm.
24" stm.
exist. 8" pvc water
exist. 42" pccp water
exist. 8" pvc san.
exist. 24" rcp stm.
exist. 18" rcp stm.
exist. 8" pvc san.
exist. 8" pvc water
exist. 42" pccp water
exist. 8" pvc san.
exist. 8" pvc water
exist. 8" pvc san.
exist. 8" pvc water
exist. 8" pvc san.
exist. 8" pvc

ELECTRICAL LOAD ANALYSIS - UTILITY FEED 2					
	MOTOR HP	MOTOR FLA	CONNECTED KVA	DF	DEMAND KVA
BFV-02	1.00	2.10	1.75	1.00	1.75
PP2 XFMR	-	-	10.00	0.59	5.90
SUB-TOTAL			11.75		7.65
25% LARGEST MOTOR					0.44
TOTAL:					8.08
DEMAND LOAD IN AMPS @480V, 3PH					9.72

EXISTING OPERATOR WORKSTATION (LOCATED SEWPP ADMINISTRATION BUILDING CONTROL ROOM



1 SITE 4B ELECTRICAL ONE-LINE DIAGRAM
SCALE: NOT TO SCALE

GENERAL NOTES:

1. PROPOSED EQUIPMENT SHOWN BY SOLID BOLD LINES.
2. REFER TO ELECTRICAL SCHEDULES SHEET FOR THE CONDUIT AND PANEL "PP2" SCHEDULES.

KEYED NOTES:

1. PROVIDE 480V, 100A, 3ϕ, 42 KAIC RATED POWER DISTRIBUTION BLOCK AND CIRCUIT BREAKERS AS INDICATED. DIN RAIL MOUNT WITHIN CONTROL PANEL.
2. PROVIDE INDUSTRIAL NETWORK SWITCH: IE-3100-8T2C CISCO AND POWER SUPPLY OR APPROVED EQUAL. PRIOR TO PURCHASE COORDINATE SWITCH REQUIREMENTS WITH CITY OF HOUSTON IT DEPARTMENT STANDARDS.
3. CONTROL PANEL. PROVIDE DOUBLE DOOR, NEMA 3R, WITH SWING OUT PANEL, STAINLESS STEEL ENCLOSURE. REFER TO ELECTRICAL SCHEMATICS SHEET FOR PROPOSED CONTROL PANEL SCHEMATIC. ELECTRICAL SCHEMATIC PROVIDED IN FUTURE SUBMITTAL.
4. REFER TO ELECTRICAL SCHEMATICS FOR PROPOSED BFV-02 CONTROL SCHEMATIC. ELECTRICAL SCHEMATIC PROVIDED IN FUTURE SUBMITTAL.
5. LOCATED IN BFV-02 OR FLOWMTER MANHOLE. REFER TO ELECTRICAL SITE PLAN FOR LOCATION.
6. REMOTE HAND MODULE. MOUNT WITHIN CONTROL PANEL ENCLOSURE. PROVIDED BY BFV-02 MOTOR ACTUATOR MANUFACTURER. REFER TO SPECIFICATION 15138.
7. PROVIDE METER SOCKET AND METER SOCKET ENCLOSURE PER CENTERPOINT ENERGY STANDARDS.
8. PROVIDE METER DISCONNECT SWITCH PER CENTERPOINT ENERGY STANDARDS. SIZE DISCONNECT SWITCH GREATER THAN OR EQUAL TO RATING OF UTILITY METER.
9. GROUND BAR.
10. COORDINATE POWER REQUIREMENTS OF SUMP PUMP WITH OTHER TRADES. HARDWIRED CIRCUIT SHOWN.

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567

PRIVATE UTILITY LINES SHOWN

Date:

CENTERPOINT ENERGY/ELECTRIC FACILITIES
ELECTRICAL FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION).

Date:

CENTERPOINT ENERGY/GAS FACILITIES
(GAS SERVICE LINES ARE NOT SHOWN). THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION.

Date:

AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

LAN

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

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Engineer: GASPAR D. GARCIA PE
Registration Number: 104970
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc.
Texas Registered Engineering Firm F-2614

CITY OF HOUSTON

HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3

60% SUBMITTAL

SITE 4B

ELECTRICAL ONE-LINE DIAGRAM

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 212 OF 244	

PEN TABLE: LAN-CCH-CIVIL.ctb
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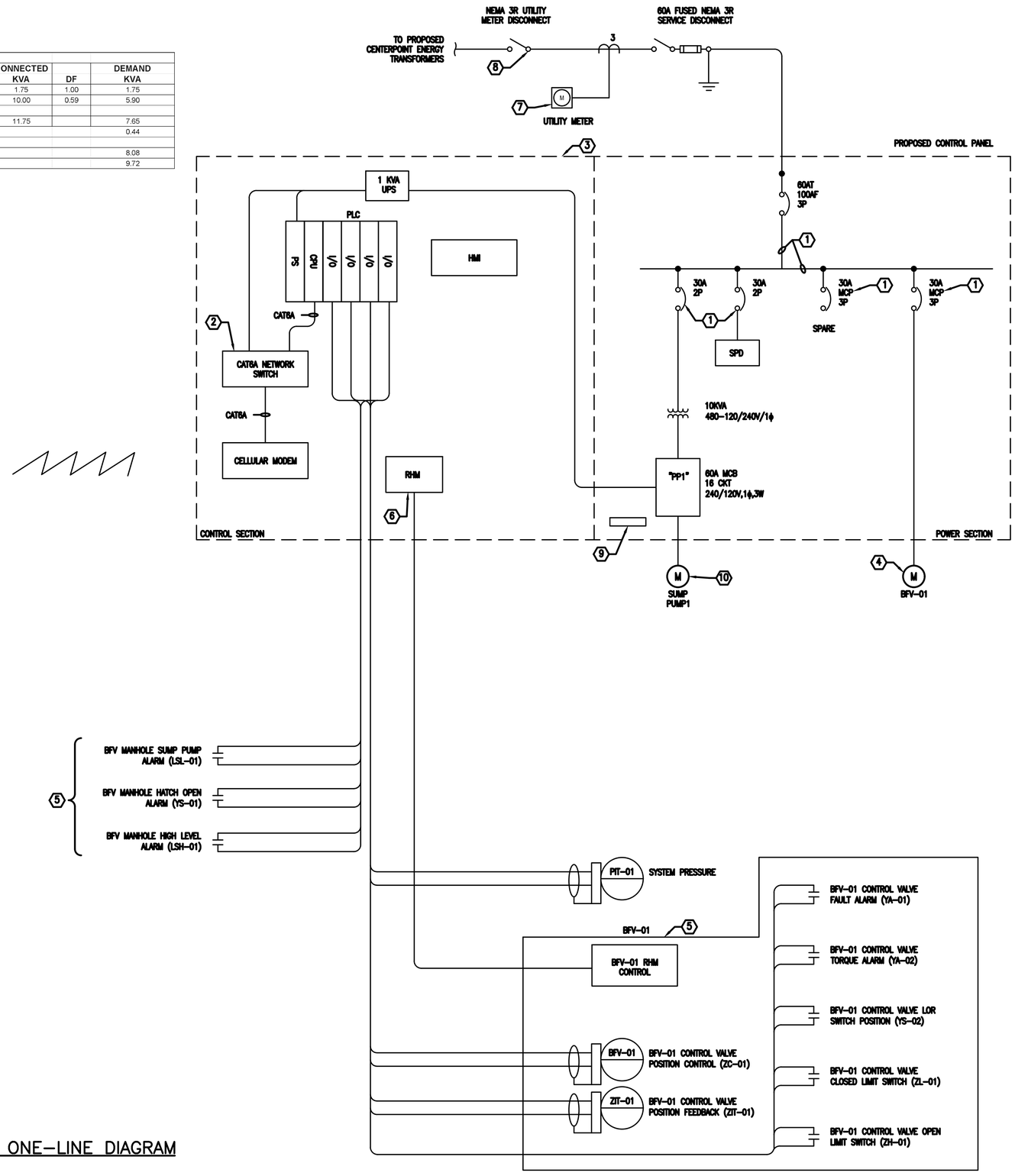
ELECTRICAL LOAD ANALYSIS - UTILITY FEED 1					
	MOTOR HP	MOTOR FLA	CONNECTED KVA	DF	DEMAND KVA
BFV-01	1.00	2.10	1.75	1.00	1.75
PP1 XFMR	-	-	10.00	0.59	5.90
SUB-TOTAL			11.75		7.65
25% LARGEST MOTOR					0.44
TOTAL:					8.08
DEMAND LOAD IN AMPS @480V, 3PH					9.72

EXISTING OPERATOR WORKSTATION (LOCATED SEWPP ADMINISTRATION BUILDING CONTROL ROOM



GENERAL NOTES:

1. PROPOSED EQUIPMENT SHOWN BY SOLID BOLD LINES.
2. REFER TO ELECTRICAL SCHEDULES SHEET FOR THE CONDUIT AND PANEL "PP1" SCHEDULES.

KEYED NOTES:

1. PROVIDE 480V, 100A, 3ϕ, 42 KAIC RATED POWER DISTRIBUTION BLOCK AND CIRCUIT BREAKERS AS INDICATED. DIN RAIL MOUNT WITHIN CONTROL PANEL.
2. PROVIDE INDUSTRIAL NETWORK SWITCH: IE-3100-8T2C CISCO AND POWER SUPPLY OR APPROVED EQUAL. PRIOR TO PURCHASE COORDINATE SWITCH REQUIREMENTS WITH CITY OF HOUSTON IT DEPARTMENT STANDARDS.
3. CONTROL PANEL. PROVIDE DOUBLE DOOR, NEMA 3R, WITH SWING OUT PANEL, STAINLESS STEEL ENCLOSURE. REFER TO ELECTRICAL SCHEMATICS SHEET FOR PROPOSED CONTROL PANEL SCHEMATIC. ELECTRICAL SCHEMATIC PROVIDED IN FUTURE SUBMITTAL.
4. REFER TO ELECTRICAL SCHEMATICS FOR PROPOSED BFV-01 CONTROL SCHEMATIC. ELECTRICAL SCHEMATIC PROVIDED IN FUTURE SUBMITTAL.
5. LOCATED IN BFV-01 MANHOLE. REFER TO ELECTRICAL SITE PLAN FOR LOCATION.
6. REMOTE HAND MODULE. MOUNT WITHIN CONTROL PANEL ENCLOSURE. PROVIDED BY BFV-01 MOTOR ACTUATOR MANUFACTURER. REFER TO SPECIFICATION 15138.
7. PROVIDE METER SOCKET AND METER SOCKET ENCLOSURE PER CENTERPOINT ENERGY STANDARDS.
8. PROVIDE METER DISCONNECT SWITCH PER CENTERPOINT ENERGY STANDARDS. SIZE DISCONNECT SWITCH GREATER THAN OR EQUAL TO RATING OF UTILITY METER.
9. GROUND BAR.
10. COORDINATE POWER REQUIREMENTS OF SUMP PUMP WITH OTHER TRADES. HARDWIRED CIRCUIT SHOWN.

1 SITE 4C ELECTRICAL ONE-LINE DIAGRAM
SCALE: NOT TO SCALE

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567

PRIVATE UTILITY LINES SHOWN

Date:

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Date:

AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

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Registration Number: 104970
Date:
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

CITY OF HOUSTON

HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3

60% SUBMITTAL

SITE 4C

ELECTRICAL ONE-LINE DIAGRAM

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
NOT TO SCALE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 213 OF 244	

PEN TABLE: LAN-CCH-CIVIL.ctb
USERNAME: Flemby, David
PLOTTED: 4/7/2025 8:43 PM
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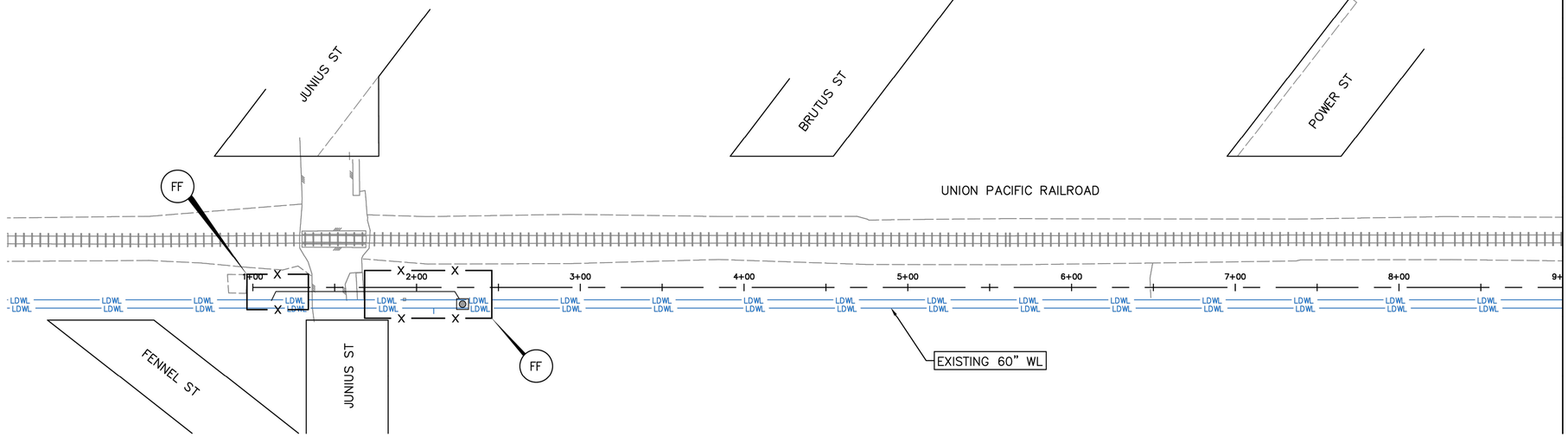

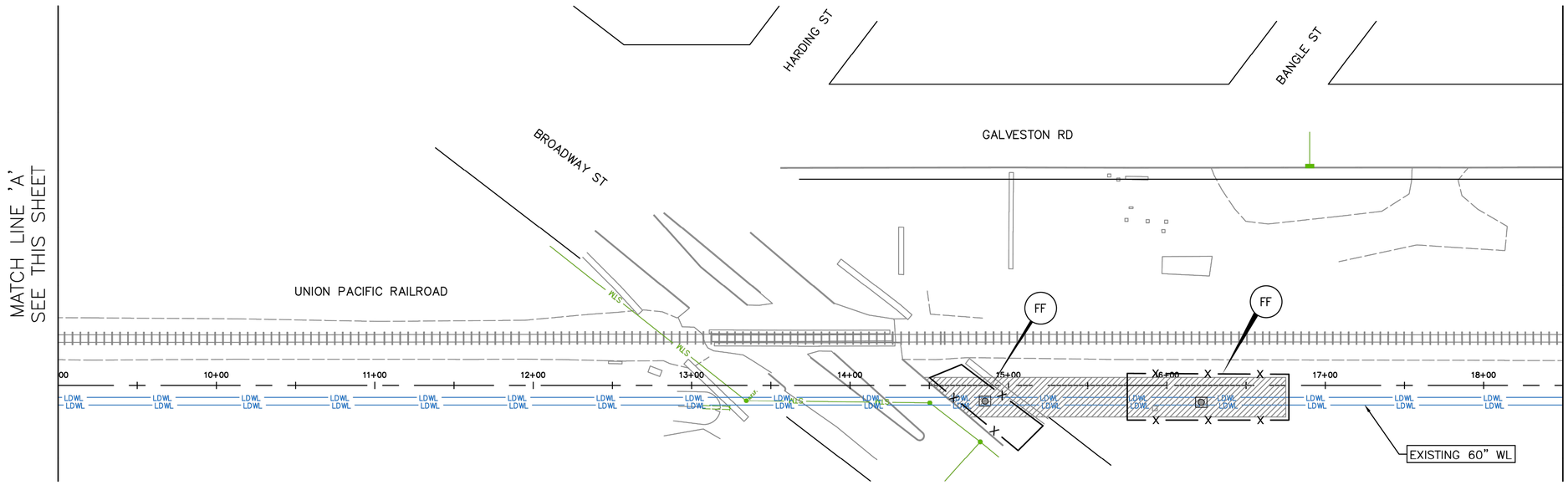

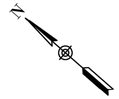

NO.	DATE	REVISION	APP.

LEGEND:

RFB	REINFORCED FILTER FABRIC FENCE
FF	FILTER FABRIC FENCE
ECL	EROSION CONTROL LOG
IPB–I	INLET PROTECTION BARRIER
IPB–II	INLET PROTECTION BARRIER FOR STAGE–II INLETS

NOTES:

1. CONTRACTOR SHALL MAINTAIN STABILIZED CONSTRUCTION ACCESS AT ALL THE TIME DURING CONSTRUCTION. REFER TO SWPPP REPORT FOR MAINTENANCE.
2. CONTRACTOR SHALL PROVIDE STABILIZED STAGING/PARKING AREA AS NEEDED.
3. MAINTENANCE AND INSPECTION OF EROSION/SEDIMENT CONTROL DEVICES SHALL BE PROVIDED PER SPEC 01410.
4. ADDITIONAL SWPPP MEASURES MAY BE APPLIED ADJACENT TO THE PROJECT AREA IF APPROPRIATE.
5. REFER TO STORM WATER POLLUTION DETAILS FOR NOTES AND DETAILS.

LAN Planning Engineering Program Management

KUO & ASSOCIATES
ENGINEERING + SURVEYING
10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713–975–8769
TX FIRM NO.: F–4578

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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SUDHEER GOUD SANGAM, P.E.
TEXAS REG. NO.: 111684

ON 03/28/2025
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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

SITE 1A

STORM WATER POLLUTION PREVENTION PLAN (SHEET 1 OF 6)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1"=40'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. ~~217~~ OF ~~244~~	

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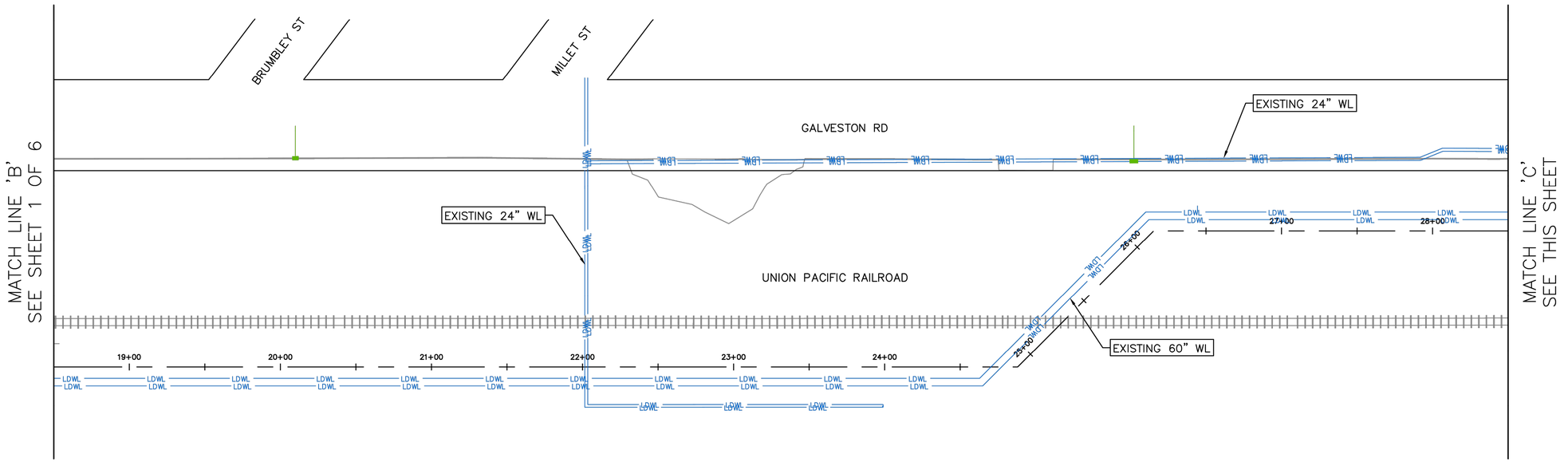

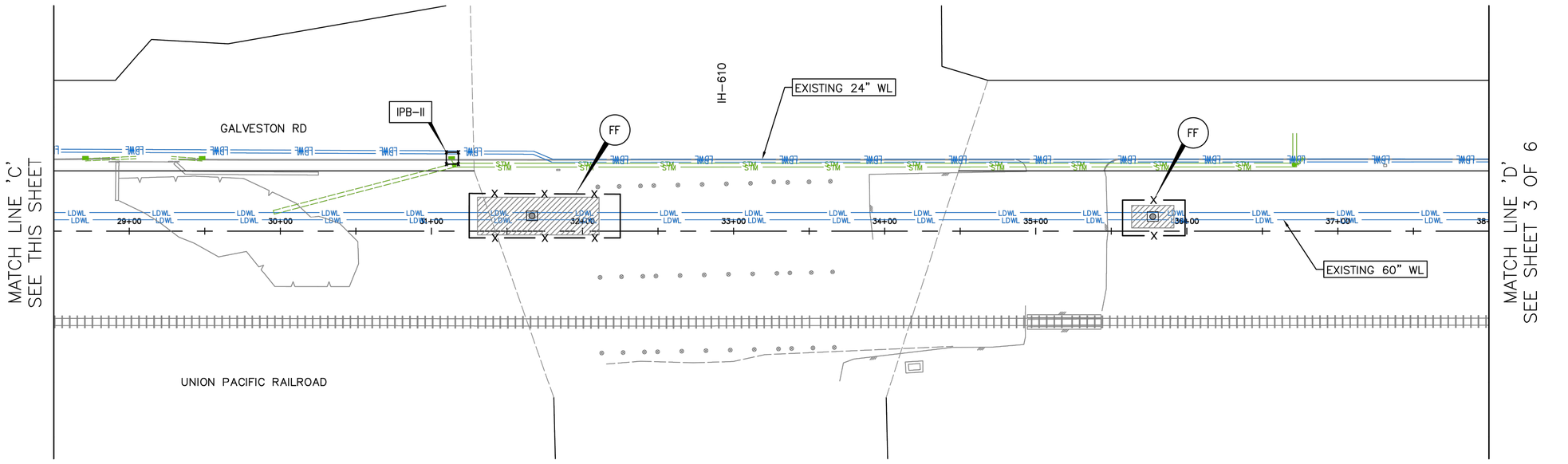

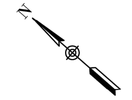

NO.	DATE	REVISION	APP.

LEGEND:

RFB	REINFORCED FILTER FABRIC FENCE
FF	FILTER FABRIC FENCE
ECL	EROSION CONTROL LOG
IPB–I	INLET PROTECTION BARRIER
IPB–II	INLET PROTECTION BARRIER FOR STAGE–II INLETS

NOTES:

1. CONTRACTOR SHALL MAINTAIN STABILIZED CONSTRUCTION ACCESS AT ALL THE TIME DURING CONSTRUCTION. REFER TO SWPPP REPORT FOR MAINTENANCE.
2. CONTRACTOR SHALL PROVIDE STABILIZED STAGING/PARKING AREA AS NEEDED.
3. MAINTENANCE AND INSPECTION OF EROSION/SEDIMENT CONTROL DEVICES SHALL BE PROVIDED PER SPEC 01410.
4. ADDITIONAL SWPPP MEASURES MAY BE APPLIED ADJACENT TO THE PROJECT AREA IF APPROPRIATE.
5. REFER TO STORM WATER POLLUTION DETAILS FOR NOTES AND DETAILS.

LAN Planning Engineering Program Management

KUO & ASSOCIATES
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HOUSTON, TX 77042
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

SITE 1A

STORM WATER POLLUTION PREVENTION PLAN (SHEET 2 OF 6)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1"=40'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 2X8 OF 2X4	

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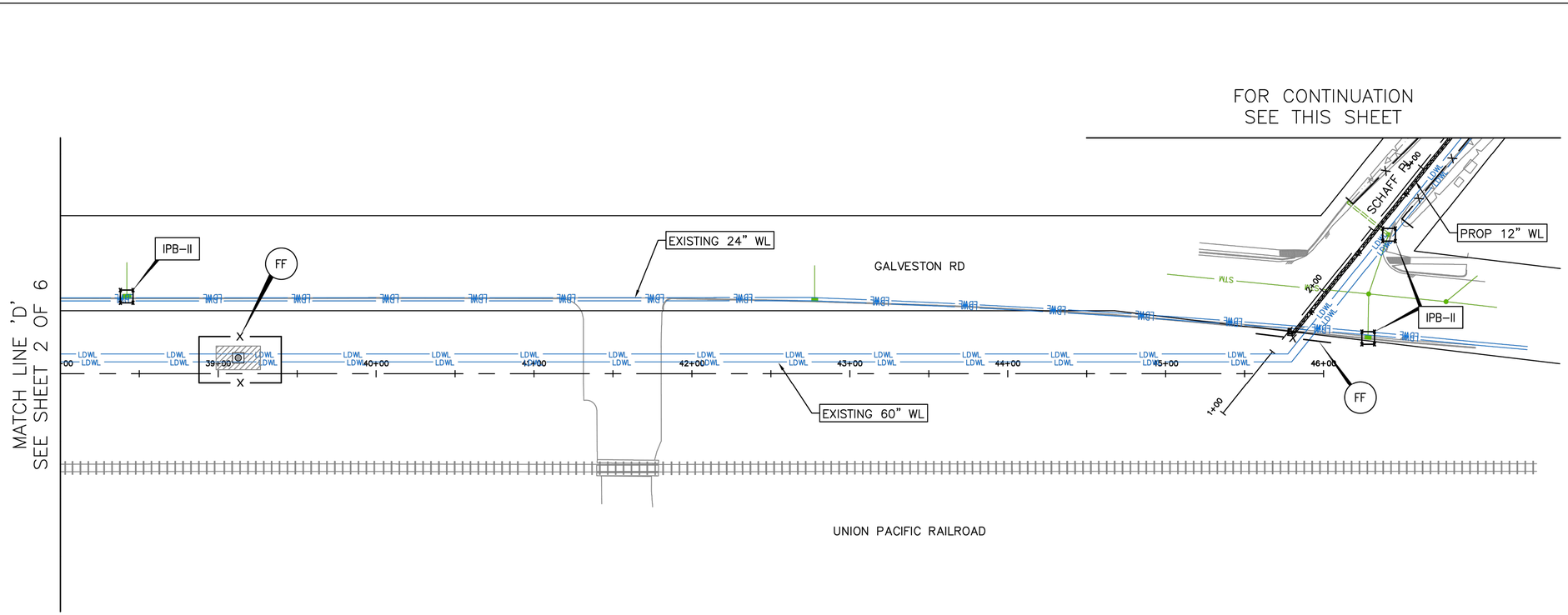

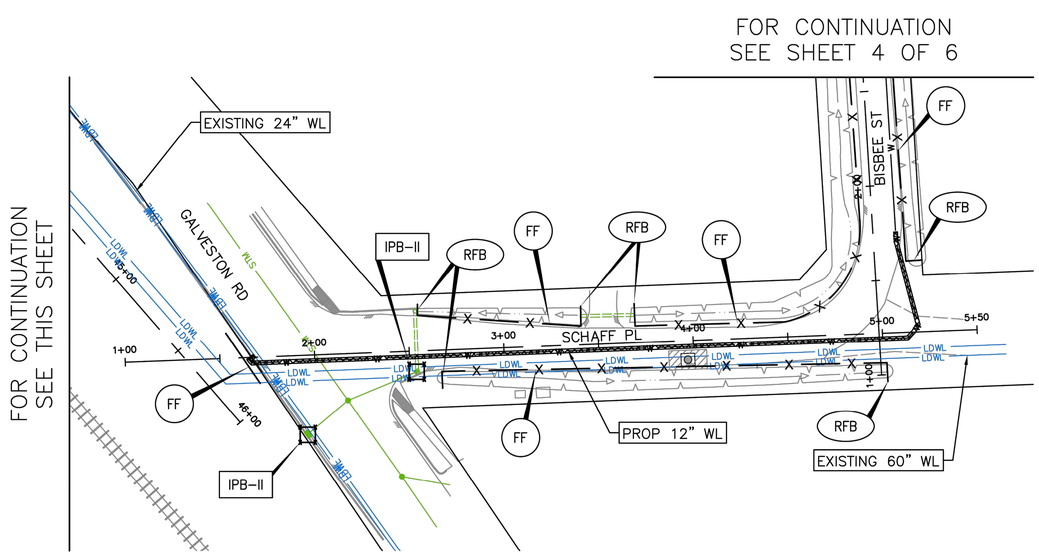

HORIZ:1"=40'

LEGEND:

RFB	REINFORCED FILTER FABRIC FENCE
FF	FILTER FABRIC FENCE
ECL	EROSION CONTROL LOG
IPB–I	INLET PROTECTION BARRIER
IPB–II	INLET PROTECTION BARRIER FOR STAGE–II INLETS

NOTES:

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2. CONTRACTOR SHALL PROVIDE STABILIZED STAGING/PARKING AREA AS NEEDED.
3. MAINTENANCE AND INSPECTION OF EROSION/SEDIMENT CONTROL DEVICES SHALL BE PROVIDED PER SPEC 01410.
4. ADDITIONAL SWPPP MEASURES MAY BE APPLIED ADJACENT TO THE PROJECT AREA IF APPROPRIATE.
5. REFER TO STORM WATER POLLUTION DETAILS FOR NOTES AND DETAILS.

NO.	DATE	REVISION	APP.

LAN Planning Engineering Program Management

KUO & ASSOCIATES ENGINEERING + SURVEYING
10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713–975–8769
TX FIRM NO.: F–4578

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

SITE 1A

STORM WATER POLLUTION PREVENTION PLAN (SHEET 3 OF 6)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1"=40'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. ~~2X8~~ OF ~~24~~	

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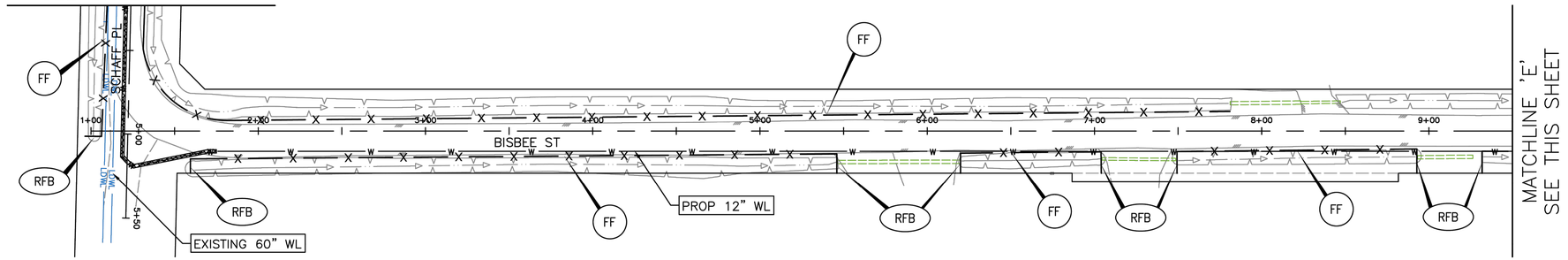

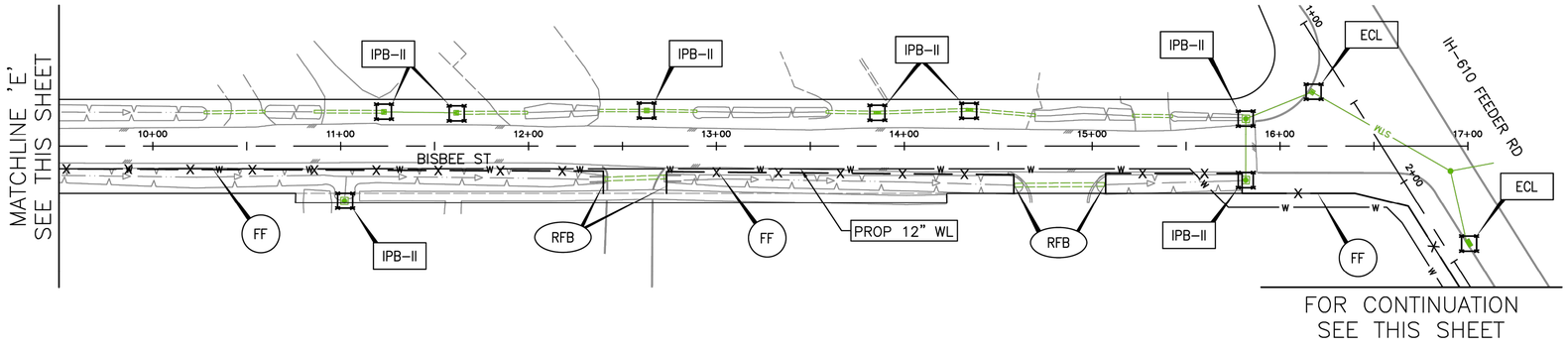

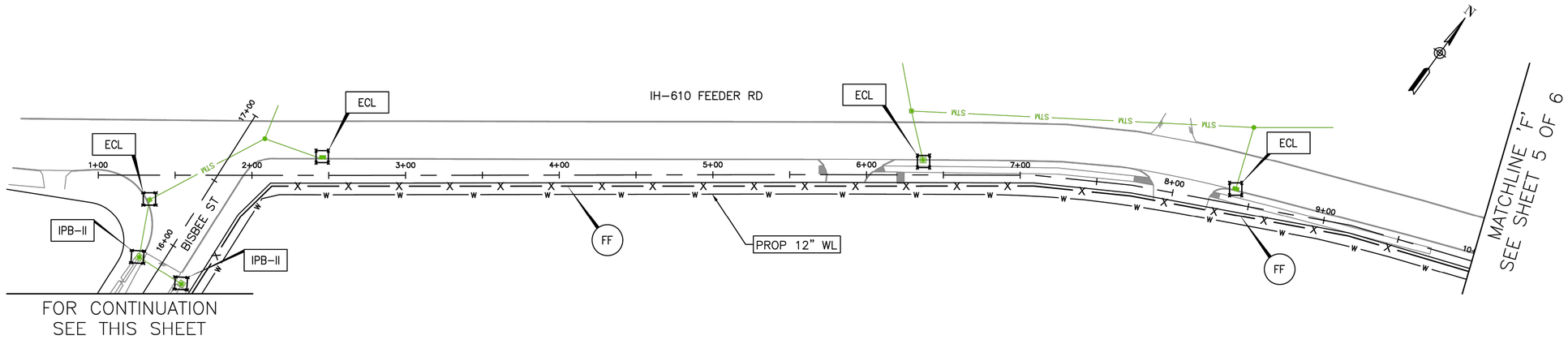

HORIZ:1"=40'

NO.	DATE	REVISION	APP.

LEGEND:

RFB	REINFORCED FILTER FABRIC FENCE
FF	FILTER FABRIC FENCE
ECL	EROSION CONTROL LOG
IPB–I	INLET PROTECTION BARRIER
IPB–II	INLET PROTECTION BARRIER FOR STAGE–II INLETS

NOTES:

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2. CONTRACTOR SHALL PROVIDE STABILIZED STAGING/PARKING AREA AS NEEDED.
3. MAINTENANCE AND INSPECTION OF EROSION/SEDIMENT CONTROL DEVICES SHALL BE PROVIDED PER SPEC 01410.
4. ADDITIONAL SWPPP MEASURES MAY BE APPLIED ADJACENT TO THE PROJECT AREA IF APPROPRIATE.
5. REFER TO STORM WATER POLLUTION DETAILS FOR NOTES AND DETAILS.

LAN Planning Engineering Program Management

KUO & ASSOCIATES
ENGINEERING + SURVEYING
10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713–975–8769
TX FIRM NO.: F–4578
SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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SUDHEER GOUD SANGAM, P.E.
TEXAS REG. NO.: 111684
ON 03/28/2025
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

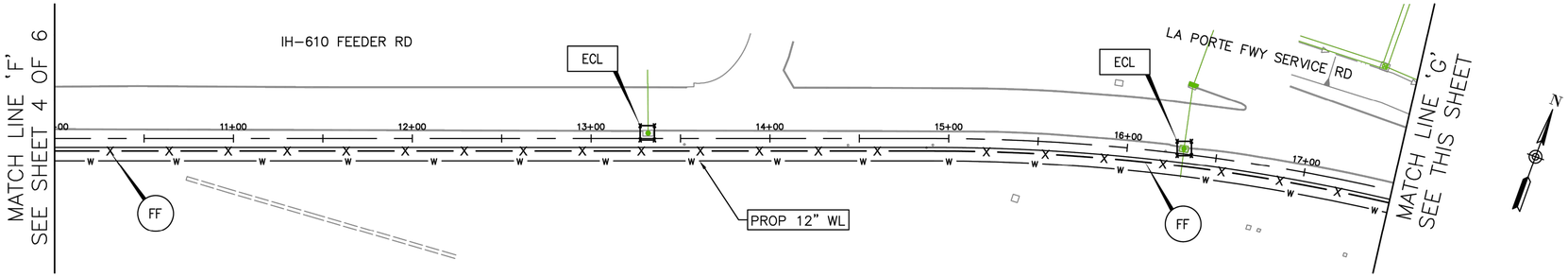
MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

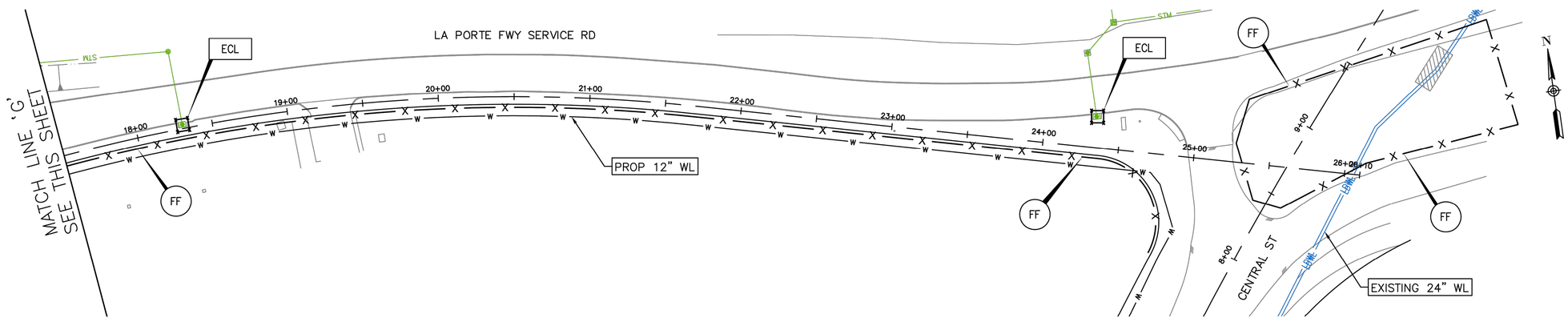
SITE 1A

STORM WATER POLLUTION PREVENTION PLAN (SHEET 4 OF 6)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1"=40'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. ~~23~~ 28 OF ~~24~~ 44	

S:\Proj-2024\24078 (P23077 LAN-LDWL-Pkg 3-Ph II)\Dwgs\Design\SWPPP\SWPPP - Site 1A.dwg plotted on Mar 28, 2025 - 5:56pm





0' 40' 80'
HORIZ:1"=40'

NO.	DATE	REVISION	APP.

LEGEND:

RFB	REINFORCED FILTER FABRIC FENCE
FF	FILTER FABRIC FENCE
ECL	EROSION CONTROL LOG
IPB–I	INLET PROTECTION BARRIER
IPB–II	INLET PROTECTION BARRIER FOR STAGE–II INLETS

NOTES:

1. CONTRACTOR SHALL MAINTAIN STABILIZED CONSTRUCTION ACCESS AT ALL THE TIME DURING CONSTRUCTION. REFER TO SWPPP REPORT FOR MAINTENANCE.
2. CONTRACTOR SHALL PROVIDE STABILIZED STAGING/PARKING AREA AS NEEDED.
3. MAINTENANCE AND INSPECTION OF EROSION/SEDIMENT CONTROL DEVICES SHALL BE PROVIDED PER SPEC 01410.
4. ADDITIONAL SWPPP MEASURES MAY BE APPLIED ADJACENT TO THE PROJECT AREA IF APPROPRIATE.
5. REFER TO STORM WATER POLLUTION DETAILS FOR NOTES AND DETAILS.

LAN Planning Engineering Program Management

KUO & ASSOCIATES
ENGINEERING + SURVEYING
10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713-975-8769
TX FIRM NO.: F-4578

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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SUDHEER GOUD SANGAM, P.E.
TEXAS REG. NO.: 111684
ON 03/28/2025
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

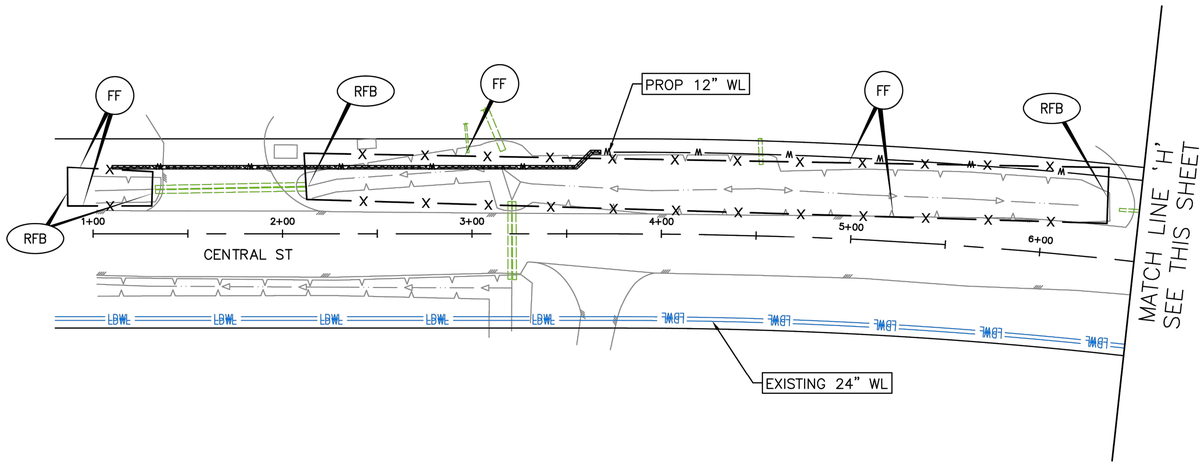
MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

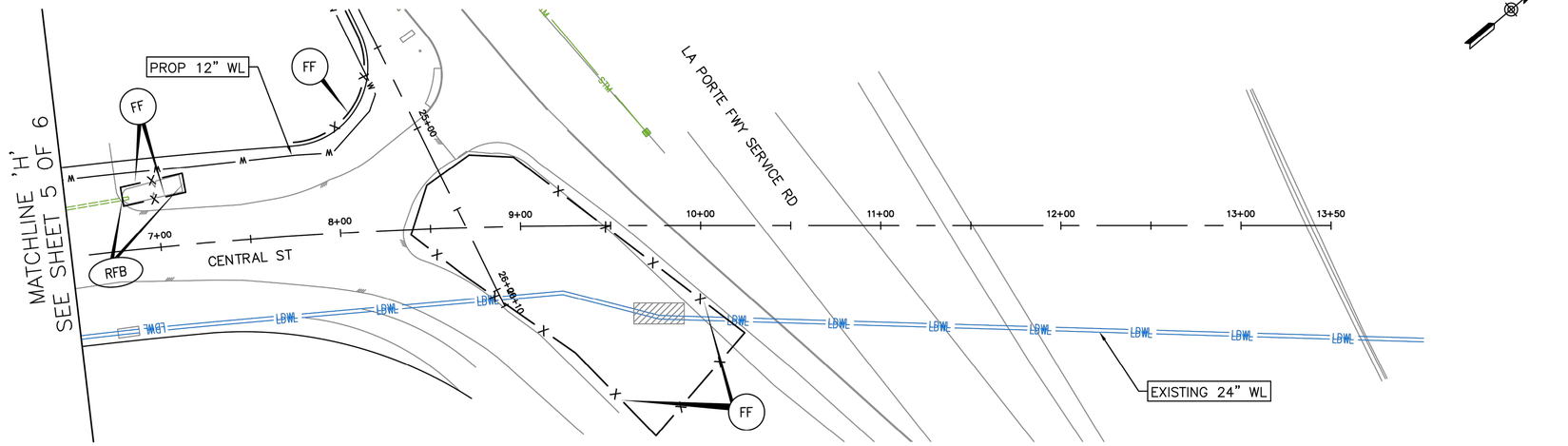
SITE 1A

STORM WATER POLLUTION PREVENTION PAN (SHEET 5 OF 6)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1"=40'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 23 OF 24	

S:\Proj-2024\24078 (P23077 LAN-LDWL-Pkg 3-Ph II)\Dwgs\Design\SWPPP\SWPPP - Site 1A.dwg plotted on Mar 28, 2025 - 5:57pm





HORIZ:1"=40'

LEGEND:

RFB	REINFORCED FILTER FABRIC FENCE
FF	FILTER FABRIC FENCE
ECL	EROSION CONTROL LOG
IPB–I	INLET PROTECTION BARRIER
IPB–II	INLET PROTECTION BARRIER FOR STAGE–II INLETS

NOTES:

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4. ADDITIONAL SWPPP MEASURES MAY BE APPLIED ADJACENT TO THE PROJECT AREA IF APPROPRIATE.
5. REFER TO STORM WATER POLLUTION DETAILS FOR NOTES AND DETAILS.

NO.	DATE	REVISION	APP.

LAN Planning Engineering Program Management

KUO & ASSOCIATES
ENGINEERING + SURVEYING
10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713-975-8769
TX FIRM NO.: F-4578

SURVEYED BY:
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
SITE 1A
STORM WATER POLLUTION PREVENTION PAN (SHEET 6 OF 6)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1"=40'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 233 OF 244	

S:\Proj-2024\24078 (P23077 LAN-LDWL-Pkg 3-Ph II)\Dwgs\Design\SWPPP\SWPPP - Site 1A.dwg plotted on Mar 28, 2025 - 6:00pm

NO.	DATE	REVISION	APP.

N

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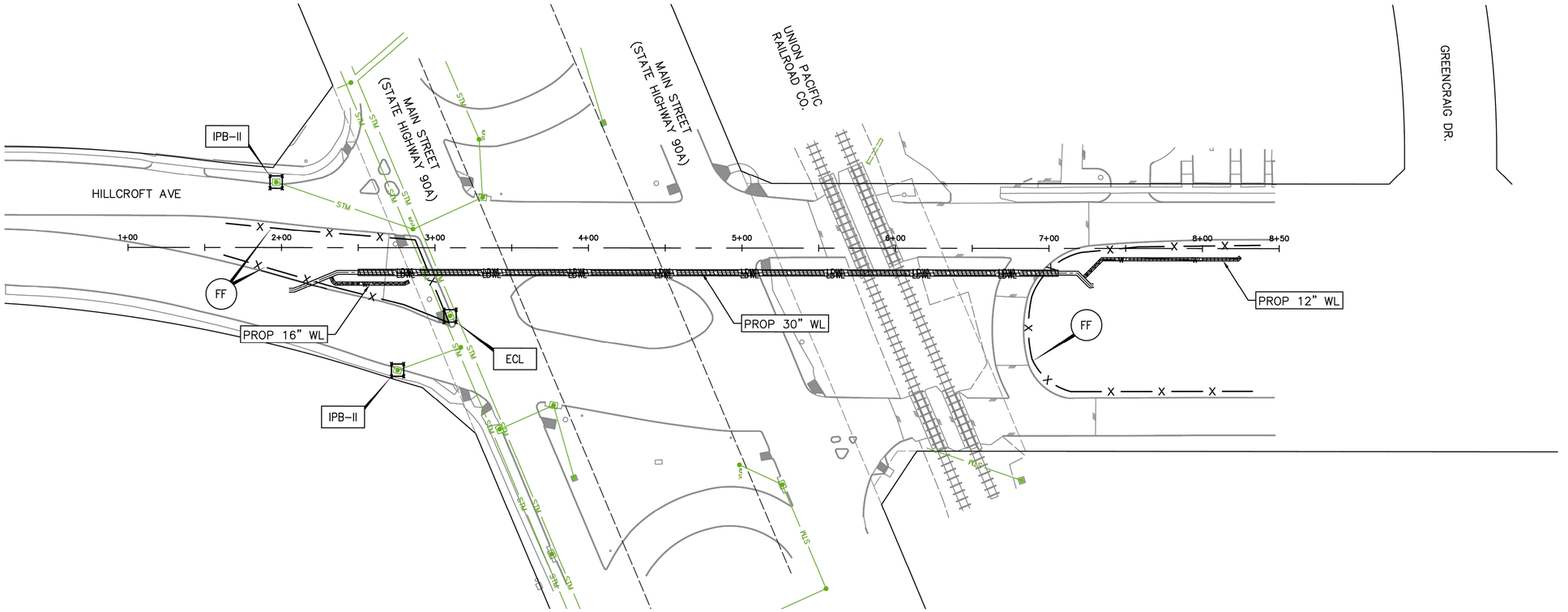
HORIZ:1"=40'



LEGEND:

RFB	REINFORCED FILTER FABRIC FENCE
FF	FILTER FABRIC FENCE
ECL	EROSION CONTROL LOG
IPB–I	INLET PROTECTION BARRIER
IPB–II	INLET PROTECTION BARRIER FOR STAGE–II INLETS

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

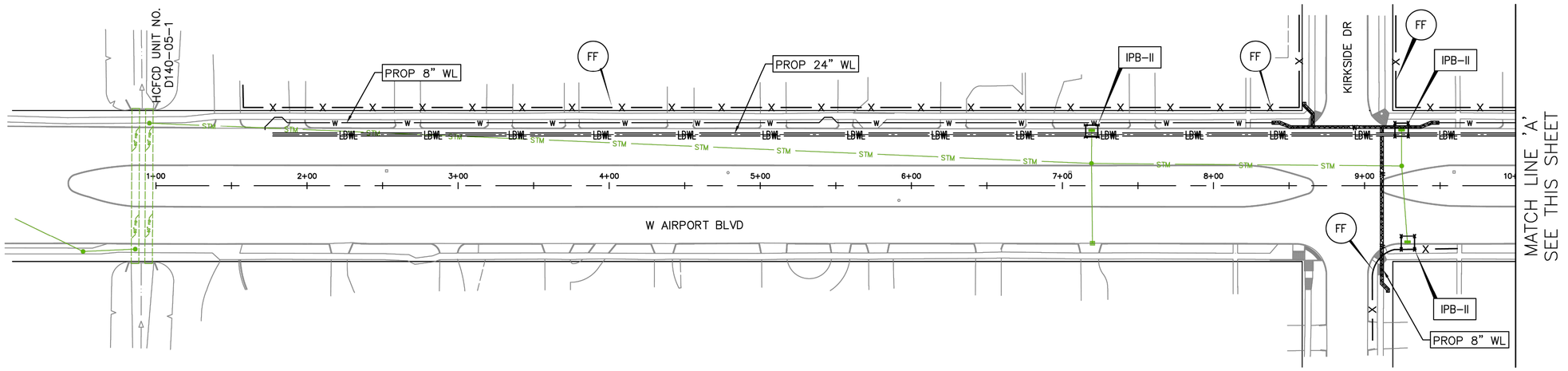
MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

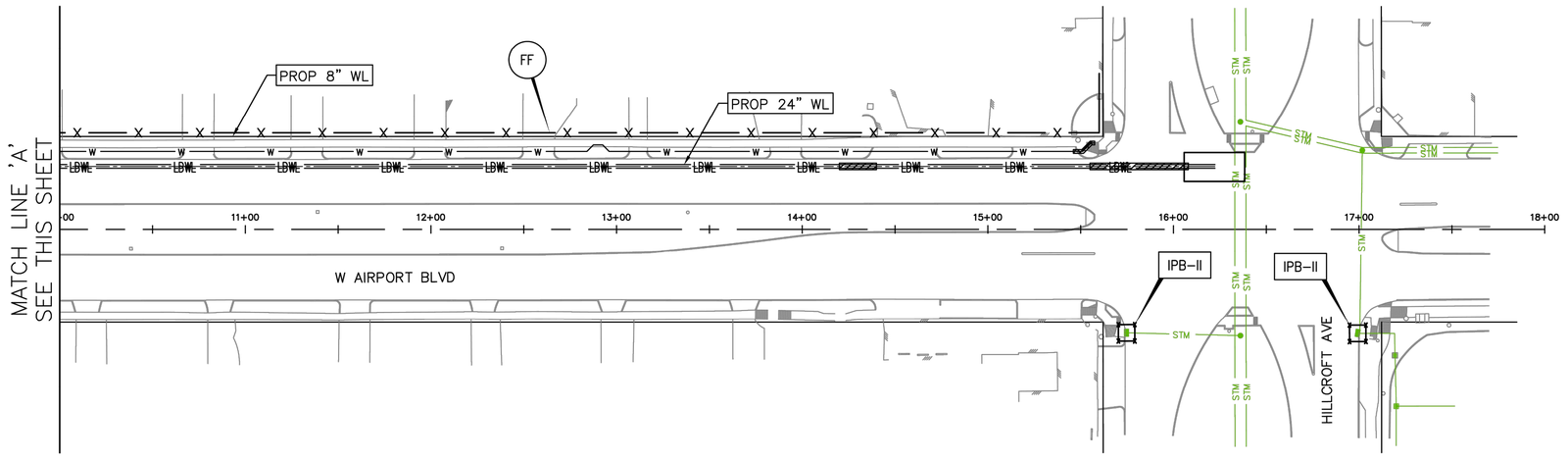
SITE 2

STORM WATER POLLUTION PREVENTION PAN (SHEET 1 OF 1)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1"=40'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. ~~233~~ OF ~~244~~	

S:\Proj–2024\24078 (P23077 LAN–LDWL–Pkg 3–Ph II)\Dwgs\Design\SWPPP\SWPPP – Site 2.dwg plotted on Mar 28, 2025 – 6:04pm





N

0' 40' 80'
HORIZ:1"=40'

NO.	DATE	REVISION	APP.

LEGEND:

RFB	REINFORCED FILTER FABRIC FENCE
FF	FILTER FABRIC FENCE
ECL	EROSION CONTROL LOG
IPB-I	INLET PROTECTION BARRIER
IPB-II	INLET PROTECTION BARRIER FOR STAGE-II INLETS

NOTES:

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HOUSTON PUBLIC WORKS

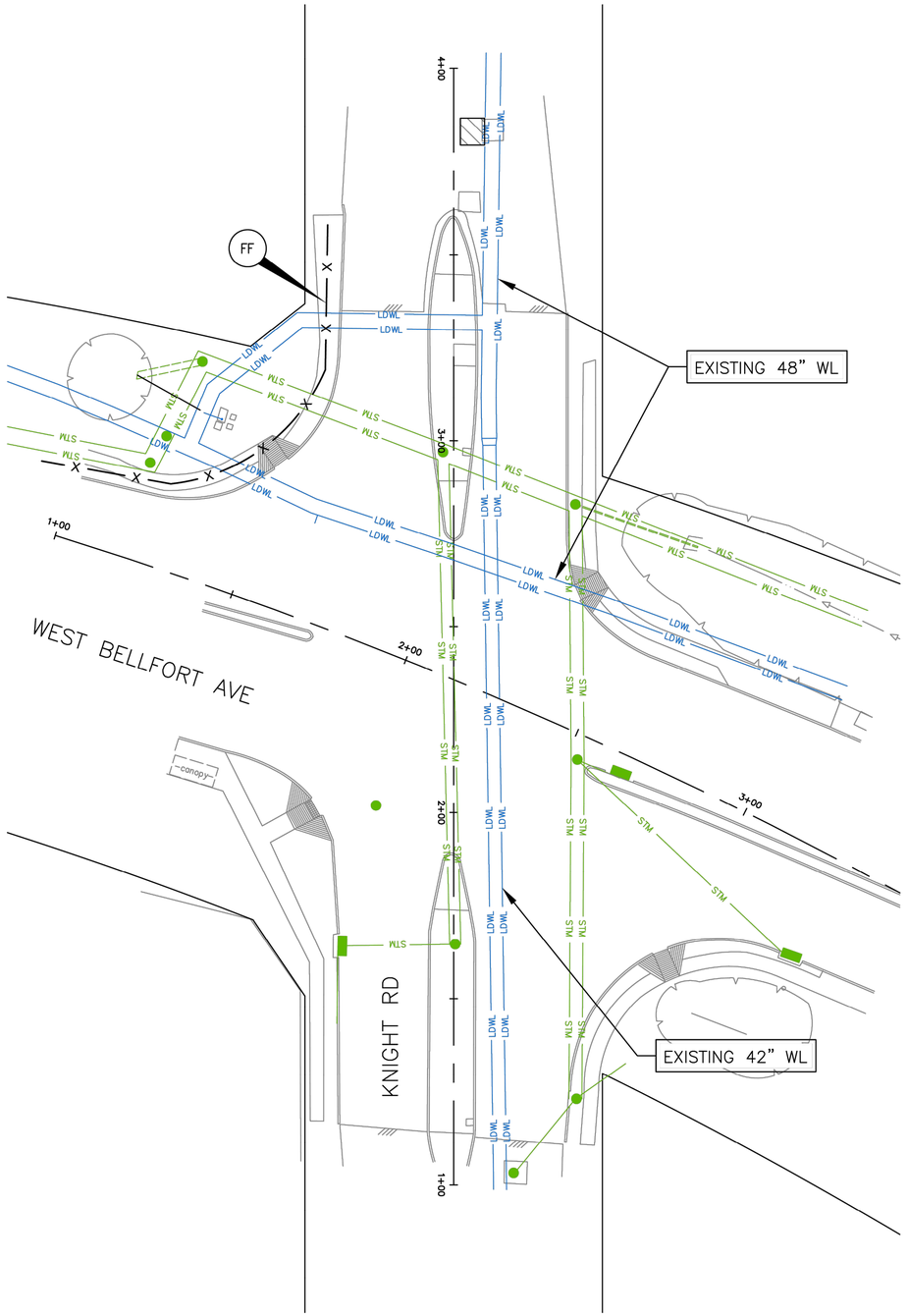
MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3

SITE 3

STORM WATER POLLUTION PREVENTION PLAN (SHEET 1 OF 1)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1"=40'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 23 OF 24	

S:\Proj-2024\24078 (P23077 LAN-LDWL-Pkg 3-Ph II)\Dwgs\Design\SWPPP\SWPPP - Site 3.dwg plotted on Mar 28, 2025 - 6:09pm



N

0' 20' 40'

HORIZ:1"=20'

NO.	DATE	REVISION	APP.

LEGEND:

RFB	REINFORCED FILTER FABRIC FENCE
FF	FILTER FABRIC FENCE
ECL	EROSION CONTROL LOG
IPB–I	INLET PROTECTION BARRIER
IPB–II	INLET PROTECTION BARRIER FOR STAGE–II INLETS

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KUO & ASSOCIATES
ENGINEERING + SURVEYING
10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
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TX FIRM NO.: F–4578

SURVEYED BY:
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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

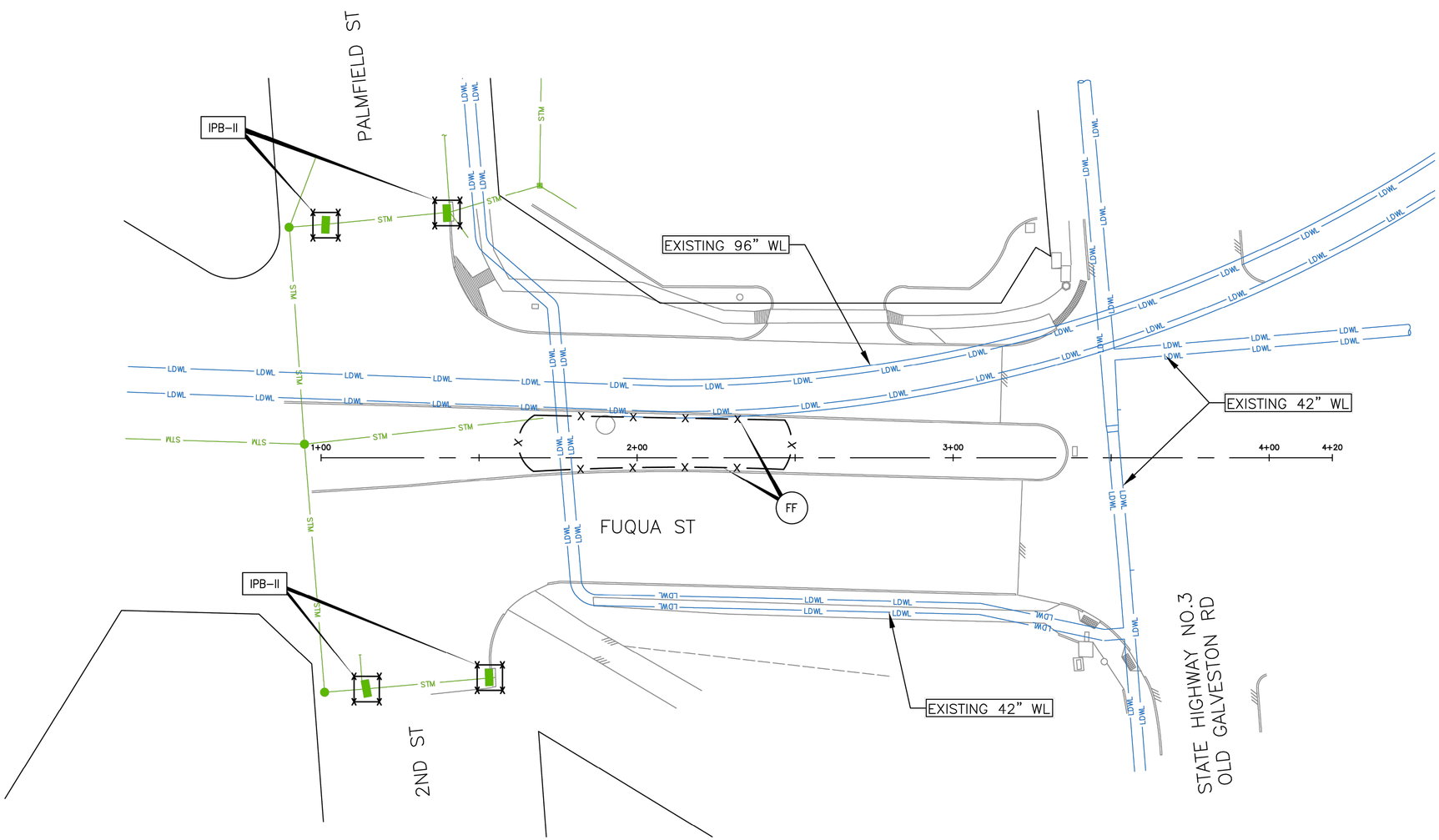
MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

SITE 4B

STORM WATER POLLUTION PREVENTION PLAN (SHEET 1 OF 1)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1"=20'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. ~~233~~ OF ~~244~~	

S:\Proj–2024\24078 (P23077 LAN–LDWL–Pkg 3–Ph II)\Dwgs\Design\SWPPP\SWPPP – Site 4B.dwg plotted on Mar 28, 2025 – 6:11pm



0' 20' 40'
HORIZ:1"=20'

NO.	DATE	REVISION	APP.

LEGEND:

RFB	REINFORCED FILTER FABRIC FENCE
FF	FILTER FABRIC FENCE
ECL	EROSION CONTROL LOG
IPB–I	INLET PROTECTION BARRIER
IPB–II	INLET PROTECTION BARRIER FOR STAGE–II INLETS

NOTES:

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5. REFER TO STORM WATER POLLUTION DETAILS FOR NOTES AND DETAILS.

LAN Planning Engineering Program Management

KUO & ASSOCIATES
ENGINEERING + SURVEYING
10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713-975-8769
TX FIRM NO.: F-4578

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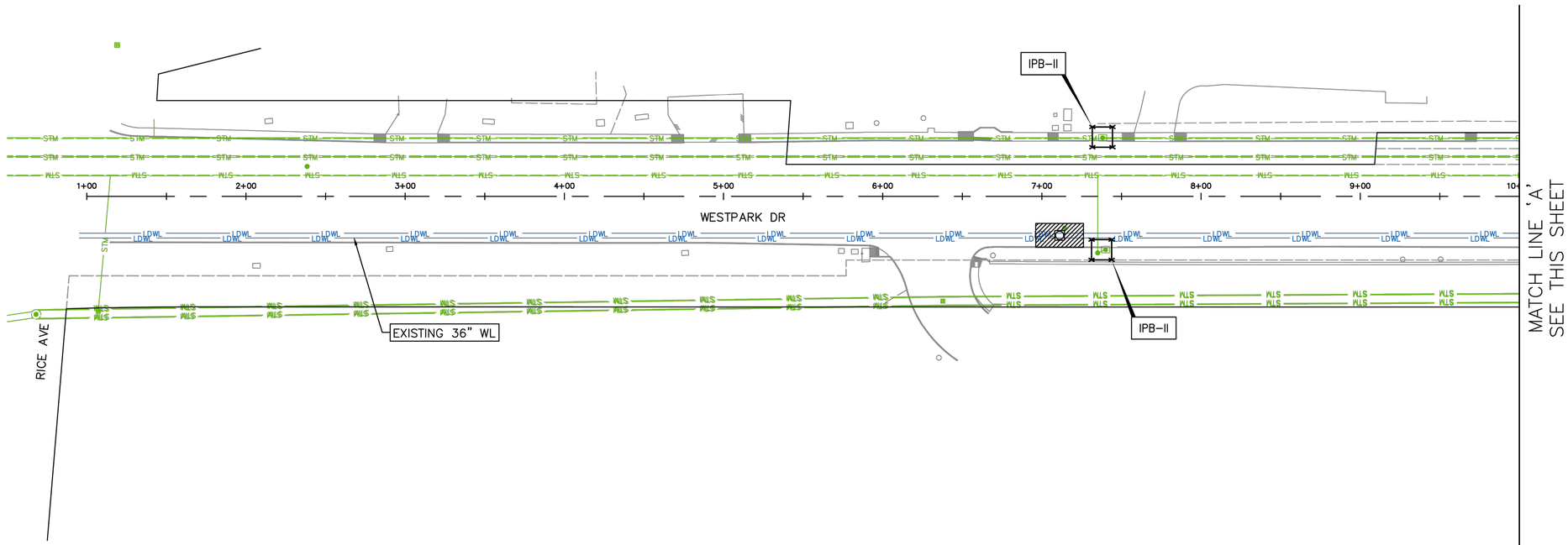
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
SITE 4C

STORM WATER POLLUTION PREVENTION PLAN (SHEET 1 OF 1)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1"=20'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. ~~236~~ OF ~~244~~	

S:\Proj-2024\24078 (P23077 LAN-LDWL-Pkg 3-Ph II)\Dwgs\Design\SWPPP\SWPPP - Site 4C.dwg plotted on Mar 28, 2025 - 6:25pm







0' 40' 80'
HORIZ:1"=40'

NO.	DATE	REVISION	APP.

LEGEND:

—x—x—	
RFB	REINFORCED FILTER FABRIC FENCE
FF	FILTER FABRIC FENCE
ECL	EROSION CONTROL LOG
IPB–I	INLET PROTECTION BARRIER
IPB–II	INLET PROTECTION BARRIER FOR STAGE–II INLETS

NOTES:

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HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
SITE 5
STORM WATER POLLUTION PREVENTION PLAN (SHEET 1 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1"=40'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 237 OF 244	

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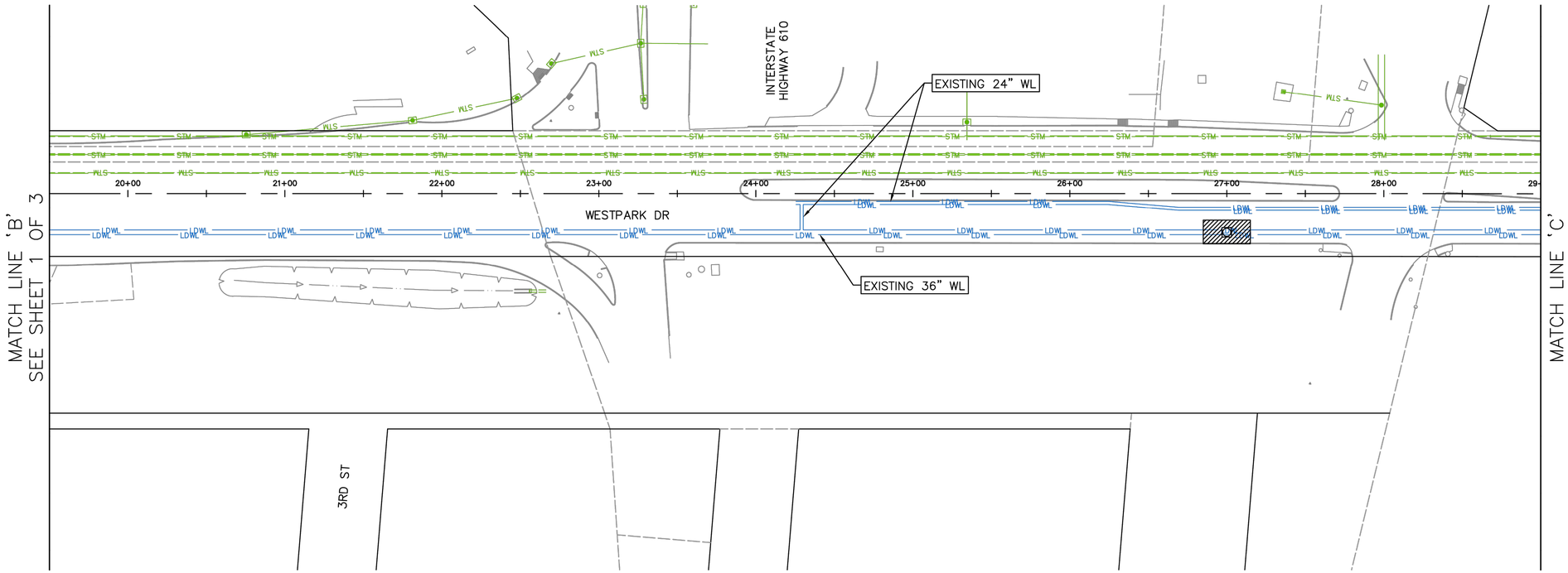

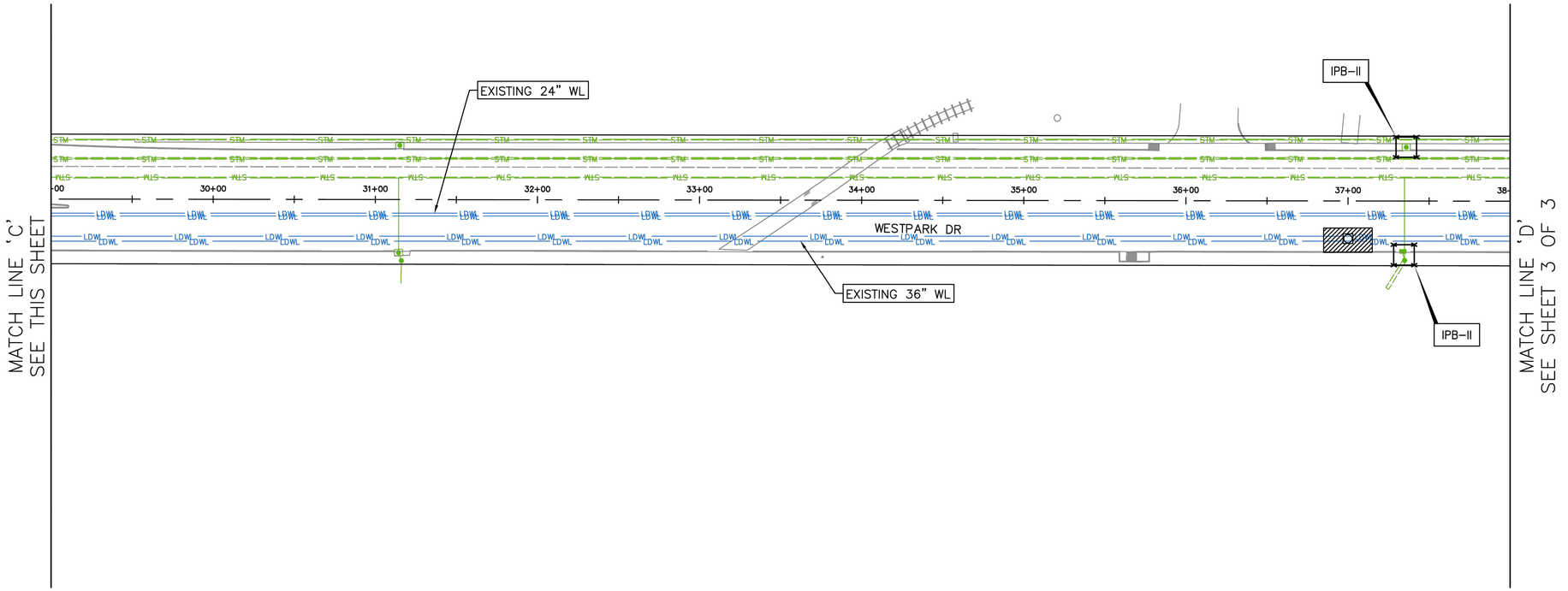

N

0' 40' 80'
HORIZ:1"=40'

NO.	DATE	REVISION	APP.

LEGEND:

RFB	REINFORCED FILTER FABRIC FENCE
FF	FILTER FABRIC FENCE
ECL	EROSION CONTROL LOG
IPB–I	INLET PROTECTION BARRIER
IPB–II	INLET PROTECTION BARRIER FOR STAGE–II INLETS

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HOUSTON, TX 77042
713-975-8769
TX FIRM NO.: F-4578

SURVEYED BY:
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

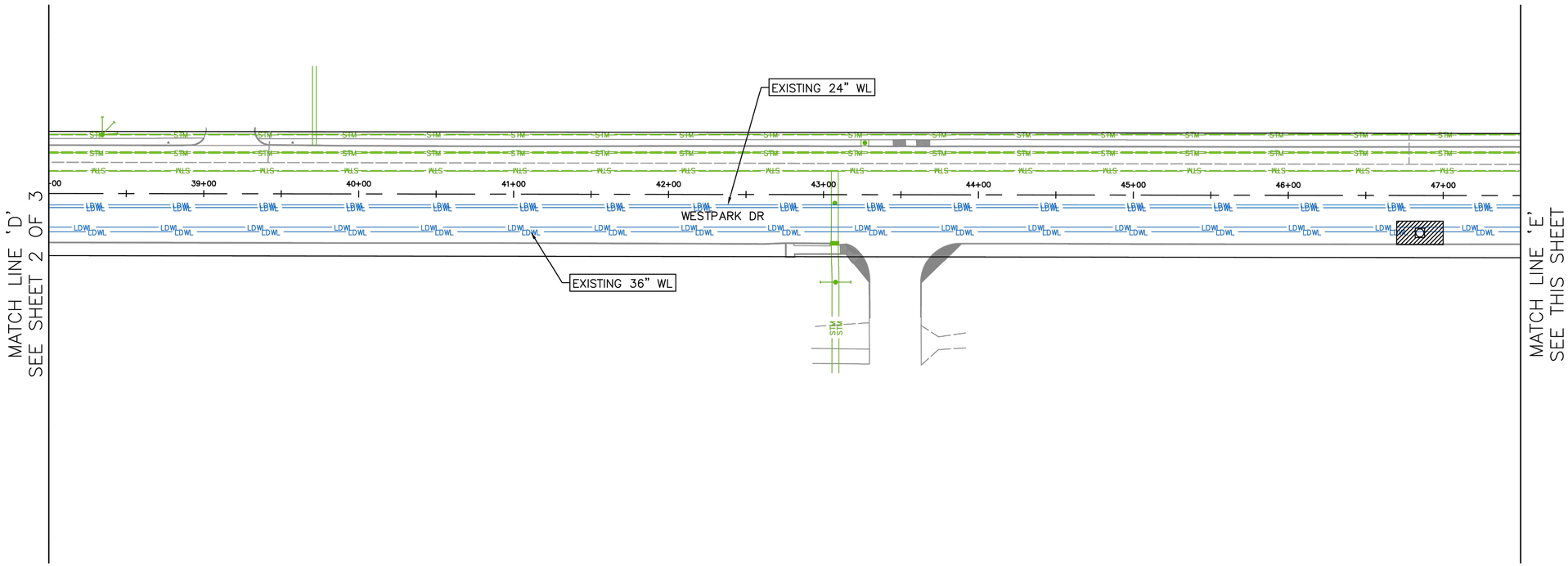
MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

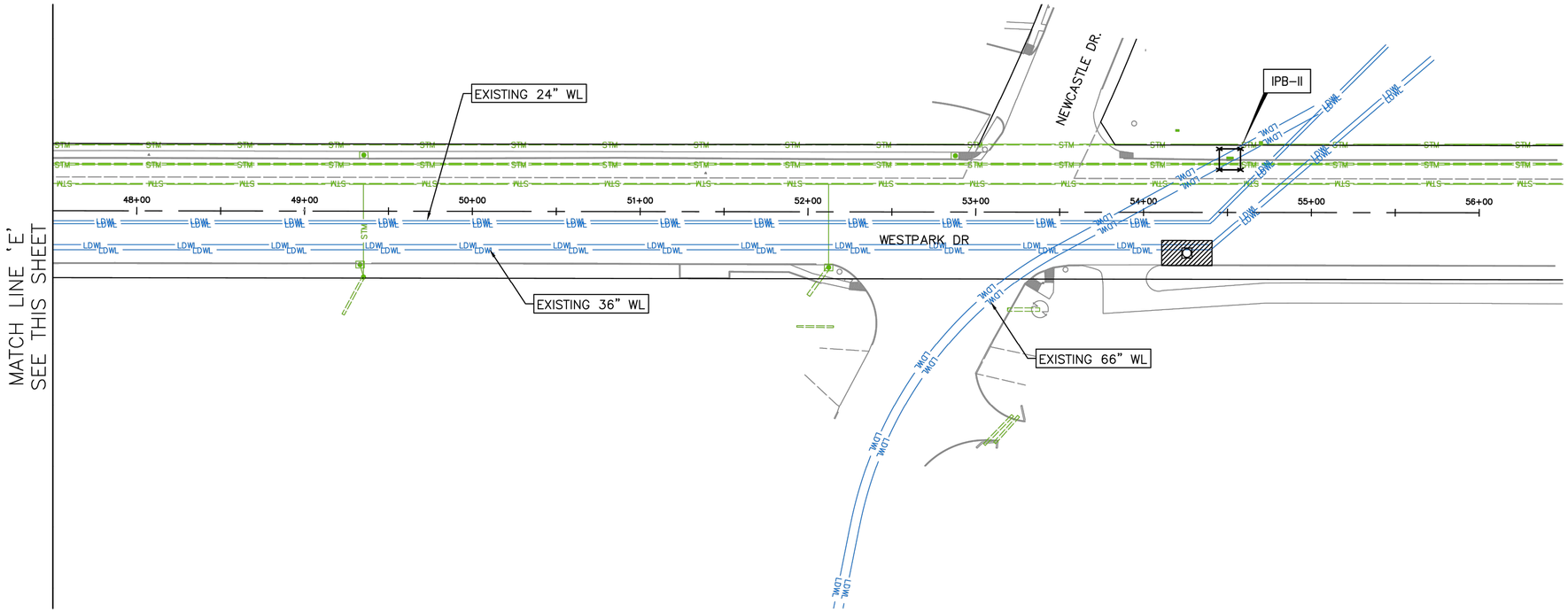
SITE 5

STORM WATER POLLUTION PREVENTION PLAN (SHEET 2 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1"=40'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 238 OF 244	

S:\Proj-2024\24078 (P23077 LAN-LDWL-Pkg 3-Ph II)\Dwgs\Design\SWPPP\SWPPP - Site 5.dwg plotted on Mar 28, 2025 - 6:31pm





N

0' 40' 80'
HORIZ:1"=40'

NO.	DATE	REVISION	APP.

LEGEND:

RFB	REINFORCED FILTER FABRIC FENCE
FF	FILTER FABRIC FENCE
ECL	EROSION CONTROL LOG
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IPB–II	INLET PROTECTION BARRIER FOR STAGE–II INLETS

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HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

SITE 5

STORM WATER POLLUTION PREVENTION PLAN (SHEET 3 OF 3)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1"=40'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 238 OF 244	

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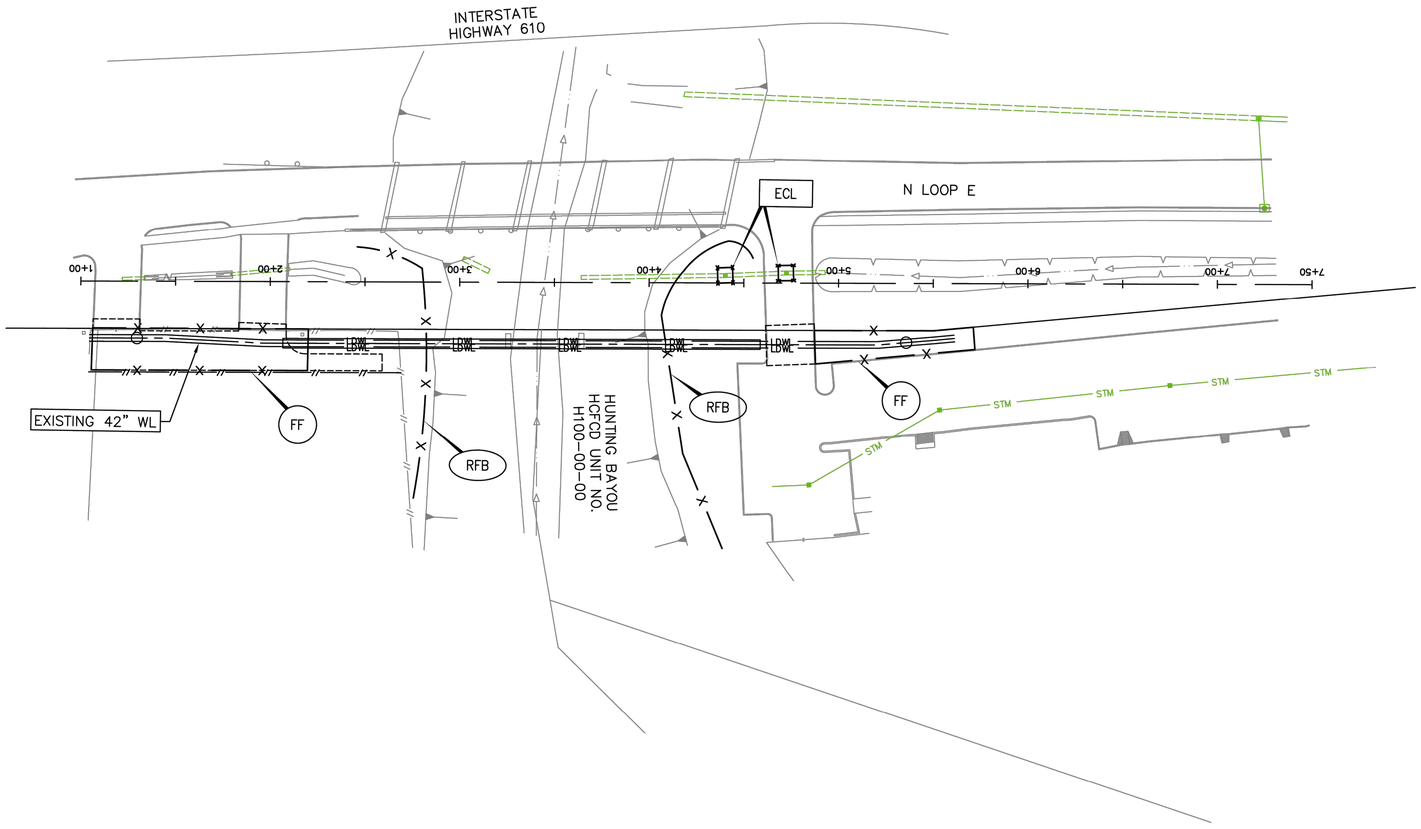

N

0' 40' 80'

HORIZ:1"=40'

NO.	DATE	REVISION	APP.

LEGEND:

—x—x—	
RFB	REINFORCED FILTER FABRIC FENCE
FF	FILTER FABRIC FENCE
ECL	EROSION CONTROL LOG
IPB–I	INLET PROTECTION BARRIER
IPB–II	INLET PROTECTION BARRIER FOR STAGE–II INLETS

NOTES:

1. CONTRACTOR SHALL MAINTAIN STABILIZED CONSTRUCTION ACCESS AT ALL THE TIME DURING CONSTRUCTION. REFER TO SWPPP REPORT FOR MAINTENANCE.
2. CONTRACTOR SHALL PROVIDE STABILIZED STAGING/PARKING AREA AS NEEDED.
3. MAINTENANCE AND INSPECTION OF EROSION/SEDIMENT CONTROL DEVICES SHALL BE PROVIDED PER SPEC 01410.
4. ADDITIONAL SWPPP MEASURES MAY BE APPLIED ADJACENT TO THE PROJECT AREA IF APPROPRIATE.
5. REFER TO STORM WATER POLLUTION DETAILS FOR NOTES AND DETAILS.

LAN Planning Engineering Program Management

KUO & ASSOCIATES
ENGINEERING + SURVEYING
10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713-975-8769
TX FIRM NO.: F-4578

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF

SUDHEER GOUD SANGAM, P.E.
TEXAS REG. NO.: 111684

ON 03/28/2025
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CITY OF HOUSTON

HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

SITE 6

STORM WATER POLLUTION PREVENTION PLAN (SHEET 1 OF 1)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1"=40'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. ~~230~~ 233 OF ~~244~~ 247	

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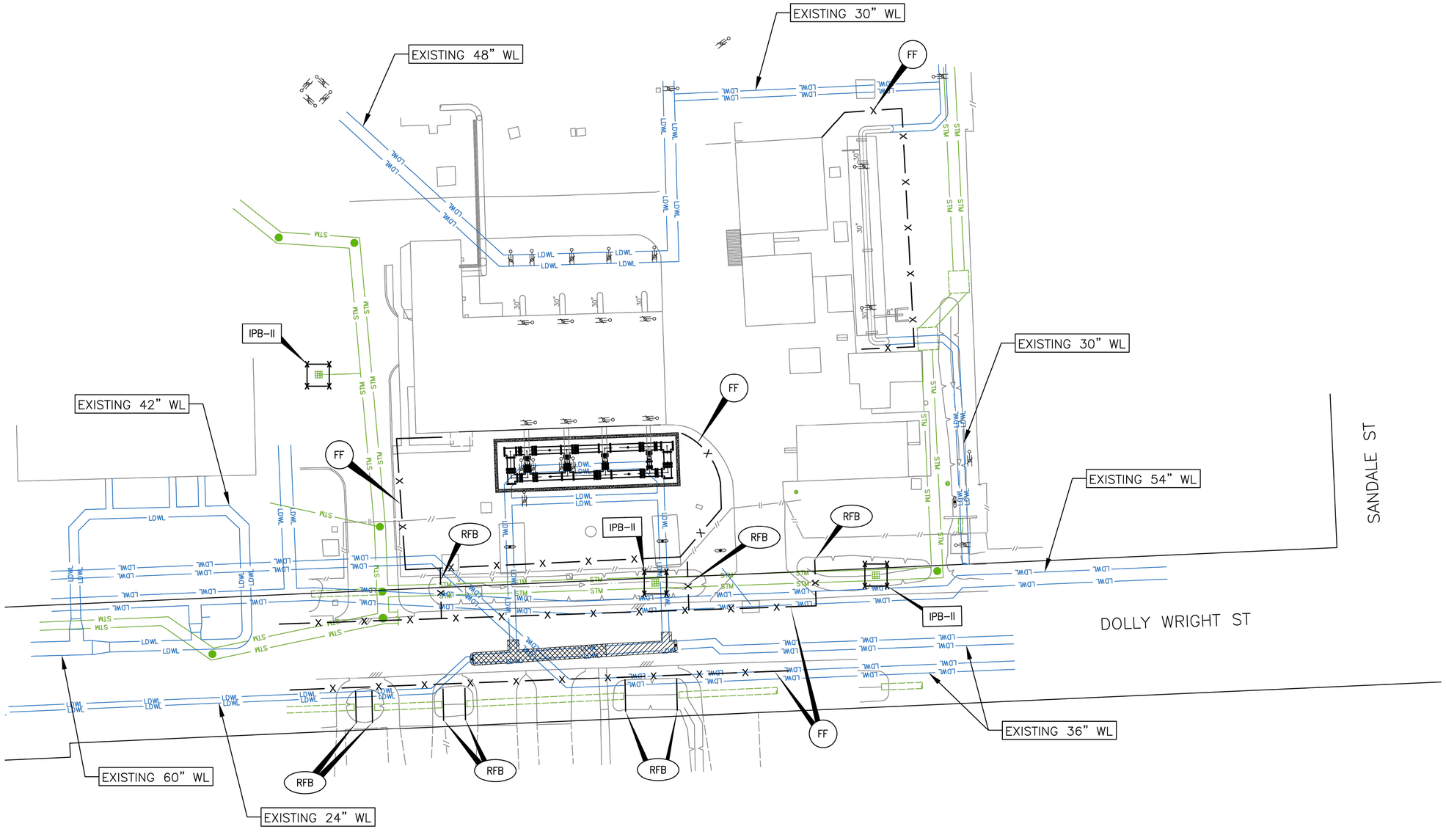

N

0' 20' 40'
HORIZ:1"=20'

NO.	DATE	REVISION	APP.

LEGEND:

- RFB — REINFORCED FILTER FABRIC FENCE
- FF — FILTER FABRIC FENCE
- ECL — EROSION CONTROL LOG
- IPB–I — INLET PROTECTION BARRIER
- IPB–II — INLET PROTECTION BARRIER FOR STAGE–II INLETS

NOTES:

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4. ADDITIONAL SWPPP MEASURES MAY BE APPLIED ADJACENT TO THE PROJECT AREA IF APPROPRIATE.
5. REFER TO STORM WATER POLLUTION DETAILS FOR NOTES AND DETAILS.

LAN Planning Engineering Program Management

KUO & ASSOCIATES ENGINEERING + SURVEYING
10300 WESTOFFICE DR. SUITE 800
HOUSTON, TX 77042
713–975–8769
TX FIRM NO.: F–4578

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

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SUDHEER GOUD SANGAM, P.E.
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3
SITE 7

STORM WATER POLLUTION PREVENTION PLAN (SHEET 1 OF 1)

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1"=20'	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. ~~23~~ 1 OF ~~24~~ 1	

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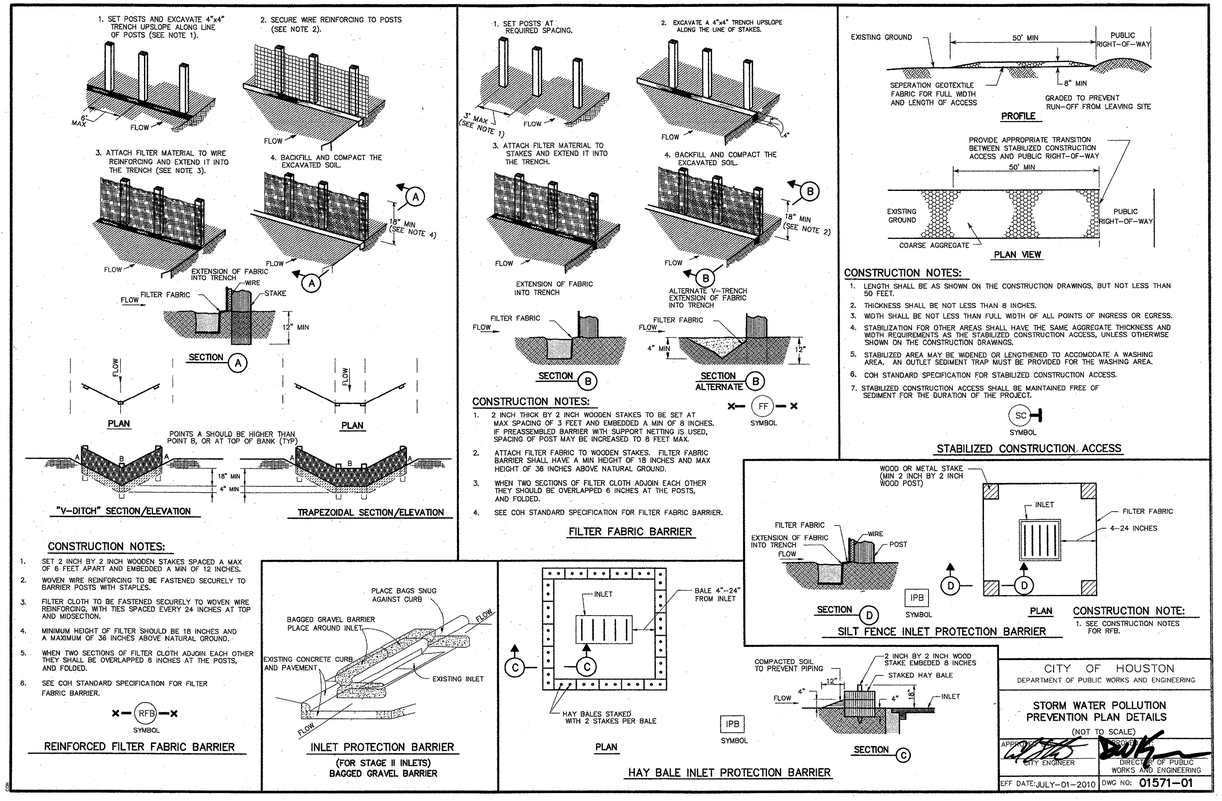

NO.	DATE	REVISION	APP.

NOTICE:
AT LEAST 48 HOURS BEFORE EXCAVATION IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567

PRIVATE UTILITY LINES SHOWN

Date:

CENTERPOINT ENERGY/ELECTRIC FACILITIES
ELECTRICAL FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES – NOT TO BE USED FOR CONFLICT VERIFICATION).

Date:

CENTERPOINT ENERGY/GAS FACILITIES
(GAS SERVICE LINES ARE NOT SHOWN). THIS SIGNATURE NOT TO BE USED FOR CONFLICT VERIFICATION.

Date:

AT&T TEXAS/SBC UTILITY LINES SHOWN
APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

EFF DATE: XXXX-XX-20XX

DWG NO: XXXXX-XX

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S, SUITE 400
HOUSTON, TX 77042

PH: 713-266-6900
TEXAS REGISTERED ENGINEERING FIRM F-2614

SURVEYED BY:
KUO & ASSOCIATES
FB NO. 000000

INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of interim review under the authority of Engineer: CHRISTINE H. KIRBY, PE
Registration Number: 94776
Date: 04/03/2025
Lockwood, Andrews & Newnam, Inc. Texas Registered Engineering Firm F-2614

CITY OF HOUSTON
HOUSTON PUBLIC WORKS STANDARD

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3
60% SUBMITTAL

STORM WATER POLLUTION PREVENTION PLAN DETAILS

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
NONE	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 232 OF 244	

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PLOTED: 4/7/2025 8:44 PM
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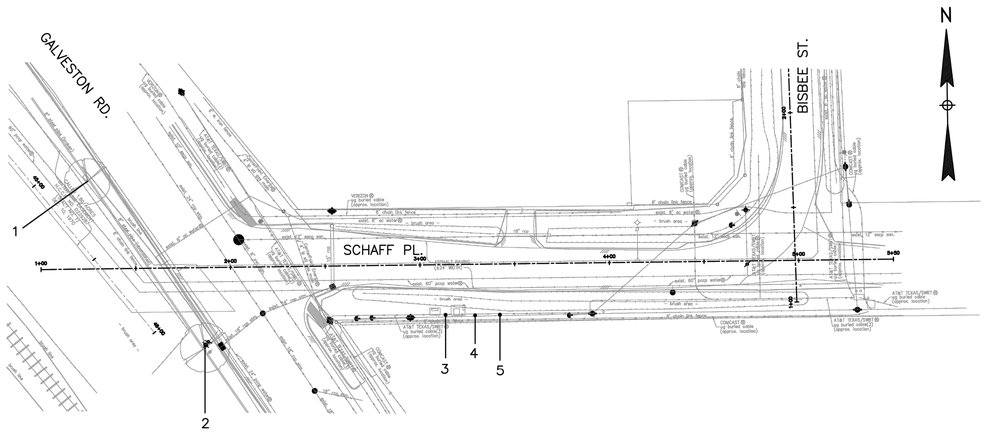

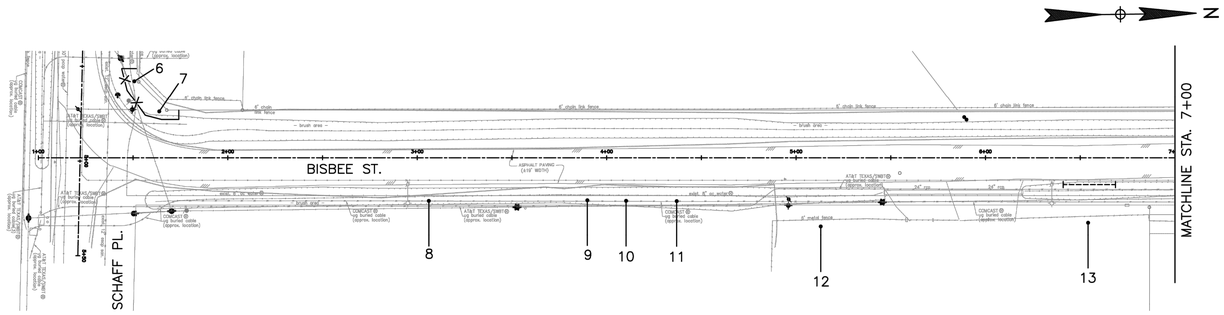

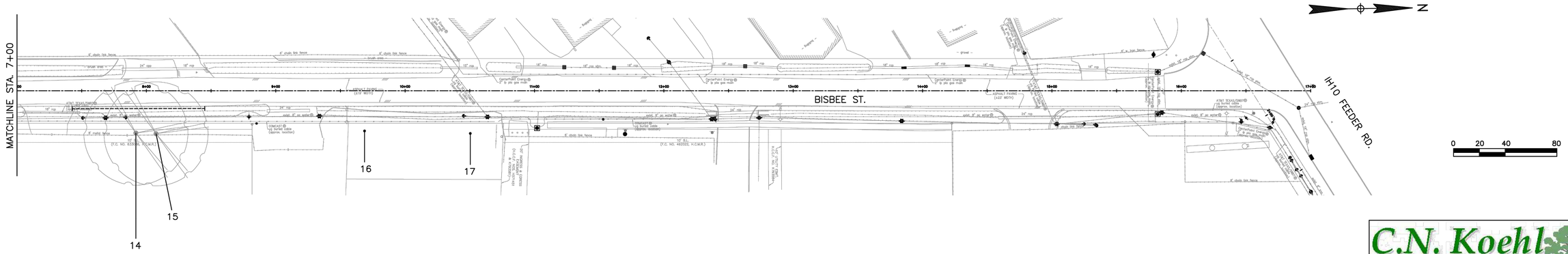

Tree No.	Location	Description	Chapter 33 Status	Comments	Treatment
Trees on Schaff Place					
1	Not available	11" Mulberry	Not protected		
2	Not available	17" Mulberry	Not protected		
3	8500 Schaff Pl	11" Parkinsonia	Protected	Topped by CPE, Not impacted	
4	8500 Schaff Pl	14" Sugarberry	Not protected	Topped by CPE, Not impacted	
5	8500 Schaff Pl	21" Sugarberry	Protected	Topped by CPE	Clearance prune
Trees on Bisbee Street					
6	2535 Galveston Rd	7" Live Oak	Protected		Fence
7	2535 Galveston Rd	11" Live Oak	Protected		Fence
8	2625 Bisbee	15" Mulberry	Not protected	Topped by CPE, Not impacted	
9	2625 Bisbee	18" Tallow	Not protected	Topped by CPE, Not impacted	
10	2625 Bisbee	12" Tallow	Not protected	Topped by CPE, Not impacted	
11	2625 Bisbee	17" Sugarberry	Not protected	Topped by CPE, Not impacted	
12	2617 Bisbee	21" Tallow	Not protected	Private tree, not impacted	
13	2603 Bisbee	23" Live Oak	Protected	Corridor tree, 50% dieback	Root prune for water line
14	2535 Bisbee	42" Live Oak	Protected	Corridor tree	Root prune for water line
15	2535 Bisbee	37" Live Oak	Protected	Corridor tree	Root prune for water line
16	2515 Bisbee	27" Pecan	Protected	Corridor tree, 50% dieback	
17	2515 Bisbee	25" Cottonwood	Not protected	Private tree, not impacted	

NOTE:

1. THIS TREE PROTECTION PLAN WAS DEVELOPED WITH INFORMATION PROVIDED BY DESIGN ENGINEER IN DRAWINGS DATED MARCH 2025. THE PLAN CONSIDERS ALL FITTINGS, VERTICAL OFFSETS AND AREAS OF NECESSARY EXCAVATION. CHANGES MADE TO DESIGN MAY COMPROMISE THE TREE PROTECTION PLAN. REFER SPECIFICATIONS 01562 AND 02915. CONDITION OF EACH TREE IS BASED ON VISUAL EVALUATION AT TIME OF DESIGN. CONDITION AND STRUCTURAL INTEGRITY OF EACH TREE IS NOT GUARANTEED BY DESIGNER AT ANY POINT IN THE FUTURE, AS ENVIRONMENTAL AND MAINTENANCE INFLUENCES ON EACH TREE CAN NOT BE DETERMINED BY DESIGNER.
2. CN KOEHL URBAN FORESTRY, INC. HAS NOT BEEN CONTRACTED TO COMPLETE ANY TREE RISK ASSESSMENTS ON THIS PROJECT–THIS TPP INCLUDES PROTECTION MEASURES FOR SPECIES OF TREES PROTECTED BY APPLICABLE ORDINANCE ONLY. CN KOEHL URBAN FORESTRY, INC. DOES NOT GUARANTEE CONDITION OR STRUCTURAL INTEGRITY OF ANY TREES LOCATED ON OR ADJACENT TO THIS PROJECT.
3. IN AREA WHERE INDIVIDUAL TREES HAVE NOT BEEN TIED IN BY SURVEY APPROXIMATE LOCATION IS INDICATED ON TPP WITH A DOT AND TREE NUMBER. ACCURACY OF REPRESENTED LOCATION IS NOT GUARANTEED BY CN KOEHL URBAN FORESTRY, INC.

TREE PRESERVATION PLAN LEGEND

- 1 — TREE NUMBER/LOCATION
- (1) — TREE TO BE REMOVED
- –X–X– — TREE PROTECTION FENCE
- |------| — ROOT PRUNING TRENCH

NO.	DATE	REVISION	APP.

C.N. Koehl
Urban Forestry, Inc.
210 Stone Bush Ct. ◦ Katy, Texas 77493
281–391–0022 ckoehl@koehlurbanforestry.com

APPROVED:

LAN

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S
SUITE 400
HOUSTON, TX 77042

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

TREE PROTECTION PLAN

SHEET 1 OF 12

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1"=20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 233 OF 244	

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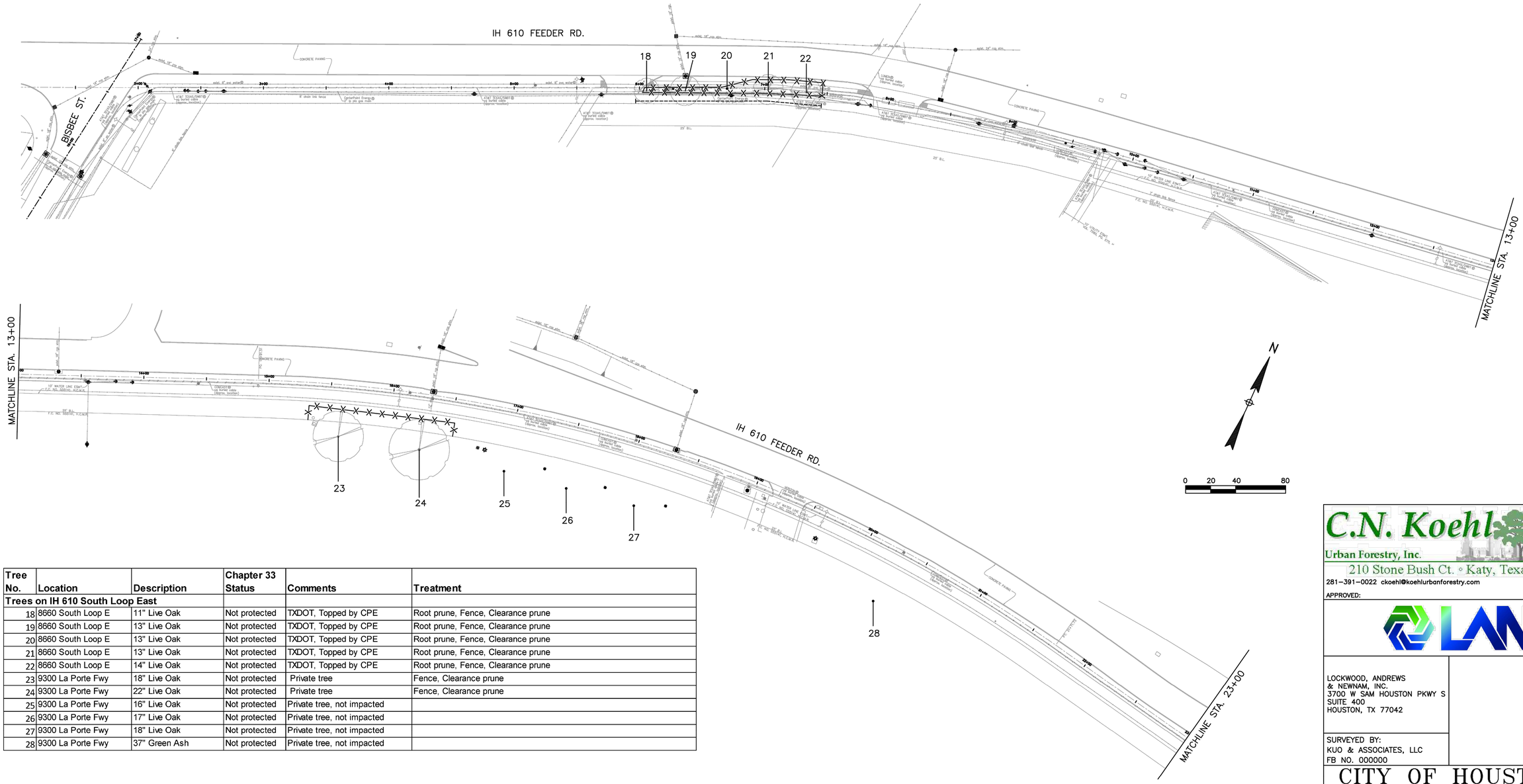

Tree No.	Location	Description	Chapter 33 Status	Comments	Treatment
Trees on IH 610 South Loop East					
18	8660 South Loop E	11" Live Oak	Not protected	TXDOT, Topped by CPE	Root prune, Fence, Clearance prune
19	8660 South Loop E	13" Live Oak	Not protected	TXDOT, Topped by CPE	Root prune, Fence, Clearance prune
20	8660 South Loop E	13" Live Oak	Not protected	TXDOT, Topped by CPE	Root prune, Fence, Clearance prune
21	8660 South Loop E	13" Live Oak	Not protected	TXDOT, Topped by CPE	Root prune, Fence, Clearance prune
22	8660 South Loop E	14" Live Oak	Not protected	TXDOT, Topped by CPE	Root prune, Fence, Clearance prune
23	9300 La Porte Fwy	18" Live Oak	Not protected	Private tree	Fence, Clearance prune
24	9300 La Porte Fwy	22" Live Oak	Not protected	Private tree	Fence, Clearance prune
25	9300 La Porte Fwy	16" Live Oak	Not protected	Private tree, not impacted	
26	9300 La Porte Fwy	17" Live Oak	Not protected	Private tree, not impacted	
27	9300 La Porte Fwy	18" Live Oak	Not protected	Private tree, not impacted	
28	9300 La Porte Fwy	37" Green Ash	Not protected	Private tree, not impacted	

TREE PRESERVATION PLAN LEGEND

- 1 — TREE NUMBER/LOCATION
- (1) — TREE TO BE REMOVED
- —X—X— TREE PROTECTION FENCE
- ⊢-----⊣ ROOT PRUNING TRENCH

NOTE:

1. THIS TREE PROTECTION PLAN WAS DEVELOPED WITH INFORMATION PROVIDED BY DESIGN ENGINEER IN DRAWINGS DATED MARCH 2025. THE PLAN CONSIDERS ALL FITTINGS, VERTICAL OFFSETS AND AREAS OF NECESSARY EXCAVATION. CHANGES MADE TO DESIGN MAY COMPROMISE THE TREE PROTECTION PLAN. REFER SPECIFICATIONS 01562 AND 02915. CONDITION OF EACH TREE IS BASED ON VISUAL EVALUATION AT TIME OF DESIGN. CONDITION AND STRUCTURAL INTEGRITY OF EACH TREE IS NOT GUARANTEED BY DESIGNER AT ANY POINT IN THE FUTURE, AS ENVIRONMENTAL AND MAINTENANCE INFLUENCES ON EACH TREE CAN NOT BE DETERMINED BY DESIGNER.
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NO.	DATE	REVISION	APP.

C.N. Koehl
Urban Forestry, Inc.
210 Stone Bush Ct. ◦ Katy, Texas 77493
281–391–0022 ckoehl@koehlurbanforestry.com

APPROVED:

LAN

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S
SUITE 400
HOUSTON, TX 77042

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

TREE PROTECTION PLAN

SHEET 2 OF 12

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1"=20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 234 OF 245	

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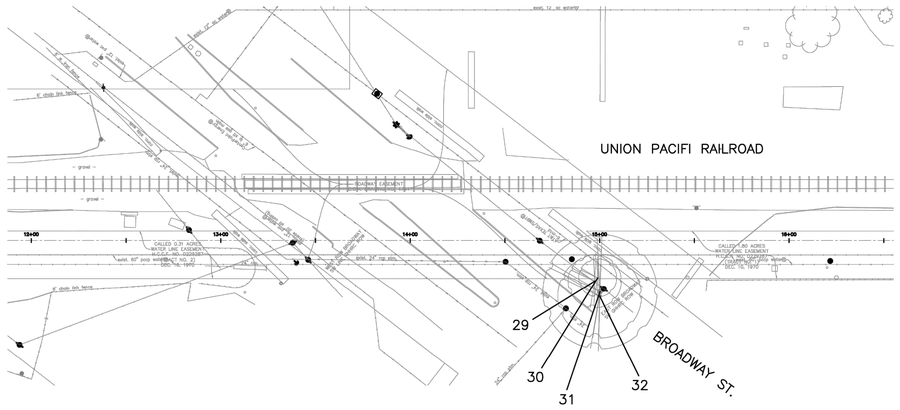

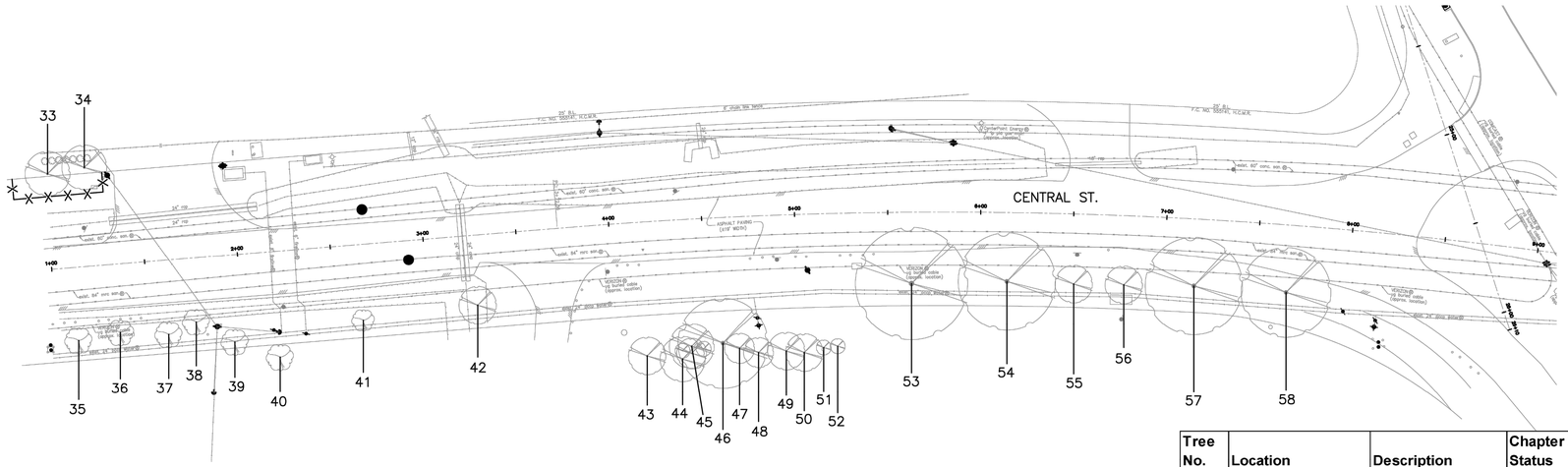

NOTE:

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TREE PRESERVATION PLAN LEGEND

- 1 — TREE NUMBER/LOCATION
- ① — TREE TO BE REMOVED
- –X–X– TREE PROTECTION FENCE
- ⊢-----⊣ ROOT PRUNING TRENCH

Tree No.	Location	Description	Chapter 33 Status	Comments	Treatment
Trees on Galveston Road					
29	2003 Broadway	12" Sugarberry	Not protected	Private tree	Clearance prune
30	2003 Broadway	15" Sugarberry	Not protected	Private tree	Clearance prune
31	2003 Broadway	24" Tallow	Not protected	Private tree	
32	2003 Broadway	21" Sugarberry	Not protected	Private tree	
Trees on Central Street					
33	9300 La Porte Fwy	9" Live Oak	Not protected	Topped by CPE, Private tree	Fence, Clearance prune
34	9300 La Porte Fwy	12" Live Oak	Not protected	Topped by CPE, Private tree	Fence, Clearance prune
35	Milby Park	10" Crepe Myrtle	Not protected	Ball moss, Not impacted	
36	Milby Park	9" Crepe Myrtle	Not protected	Ball moss, Not impacted	
37	Milby Park	9" Crepe Myrtle	Not protected	Ball moss, Not impacted	
38	Milby Park	10" Crepe Myrtle	Not protected	Ball moss, Not impacted	
39	Milby Park	8" Crepe Myrtle	Not protected	Ball moss, Not impacted	
40	Milby Park	9" Crepe Myrtle	Not protected	Ball moss, Not impacted	
41	Milby Park	7" Crepe Myrtle	Not protected	Ball moss, Not impacted	
42	Milby Park	8" Black Will	Not protected		
43	Milby Park	8" Baldcypress	Protected	Not impacted	
44	Milby Park	7" Baldcypress	Protected	Not impacted	
45	Milby Park	7" Baldcypress	Protected	Not impacted	
46	Milby Park	15" American Elm	Protected	Not impacted	
47	Milby Park	5" Baldcypress	Protected	Not impacted	
48	Milby Park	5" Baldcypress	Protected	Not impacted	
49	Milby Park	8" Baldcypress	Protected	Not impacted	
50	Milby Park	8"" Baldcypress	Protected	Not impacted	
51	Milby Park	4" Baldcypress	Protected	Not impacted	
52	Milby Park	4" Baldcypress	Protected	Not impacted	
53	Milby Park	24" Live Oak	Protected	Not impacted	
54	Milby Park	26" Live Oak	Protected	Not impacted	
55	Milby Park	11" Live Oak	Protected	Not impacted	
56	Milby Park	10" Live Oak	Protected	Not impacted	
57	Milby Park	22" Live Oak	Protected	Not impacted	
58	Milby Park	25" Live Oak	Protected	40% dieback, Not impacted	

NO.	DATE	REVISION	APP.

0 20 40 80

C.N. Koehl
Urban Forestry, Inc.
210 Stone Bush Ct. ◦ Katy, Texas 77493
281–391–0022 ckoehl@koehlurbanforestry.com

APPROVED:

LAN

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S
SUITE 400
HOUSTON, TX 77042

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

TREE PROTECTION PLAN

SHEET 3 OF 12

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1"=20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 235 OF ~~244~~	

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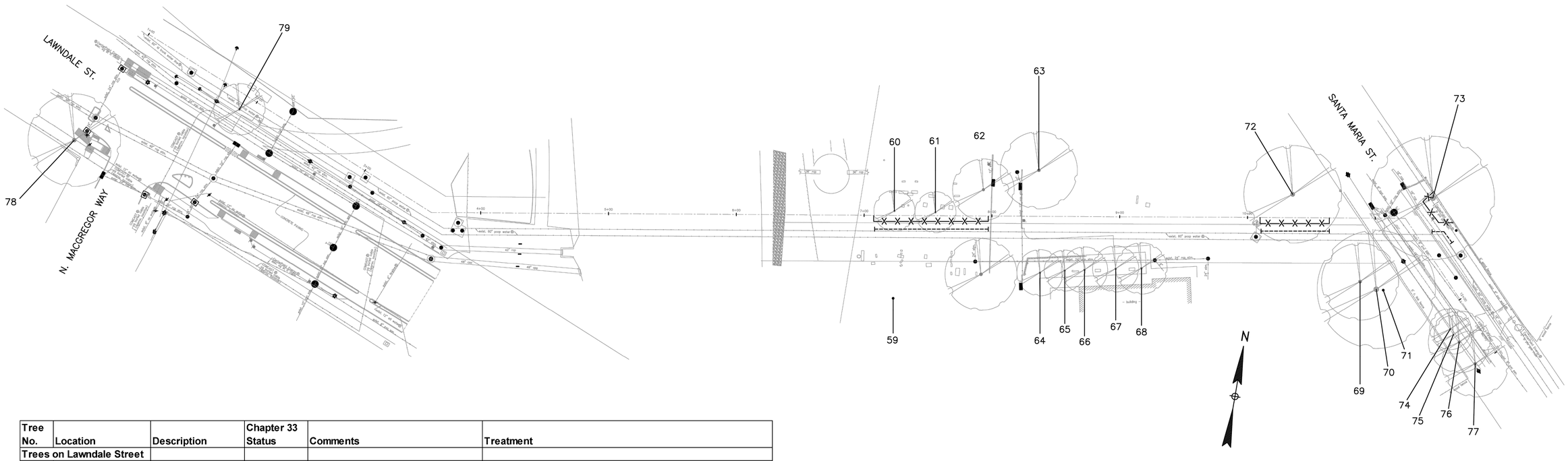

Tree No.	Location	Description	Chapter 33 Status	Comments	Treatment
Trees on Lawndale Street					
59	6900 Lawndale	29" Live Oak	Not protected	Private tree, not impacted	
60	6900 Lawndale	15" Live Oak	Not protected	Private tree	IF excavation occurs - Root prune, Fence, Clearance prune
61	6900 Lawndale	14" Live Oak	Not protected	Private tree	IF excavation occurs - Root prune, Fence, Clearance prune
62	6900 Lawndale	21" Bradford Pear	Not protected	Private tree	IF excavation occurs - Root prune, Fence, Clearance prune
63	6900 Lawndale	23" Live Oak	Not protected	Private tree, not impacted	
64	6900 Lawndale	18" Crepe Myrtle	Not protected	Topped, Private tree, Not impacted	
65	6900 Lawndale	16" Crepe Myrtle	Not protected	Topped, Private tree, Not impacted	
66	6900 Lawndale	18" Crepe Myrtle	Not protected	Topped, Private tree, Not impacted	
67	6900 Lawndale	19" Crepe Myrtle	Not protected	Topped, Private tree, Not impacted	
68	6900 Lawndale	17" Crepe Myrtle	Not protected	Topped, Private tree, Not impacted	
69	6900 Lawndale	21" Tallow	Not protected	Private tree, not impacted	
70	6900 Lawndale	23" Sugarberry	Not protected	Private tree, not impacted	
71	6900 Lawndale	18" Tallow	Not protected	Private tree, not impacted	
72	6900 Lawndale	33" Sweetgum	Not protected	25% dieback, Private tree	IF excavation occurs - Root prune, Fence, Clearance prune
73	7006 Santa Maria	43" Water Oak	Protected	50% dieback, Poor	Root prune, Fence, Clearance prune
74	6900 Lawndale	10" Ligustrum	Not protected		
75	6900 Lawndale	9" Ligustrum	Not protected		
76	6900 Lawndale	15" Ligustrum	Not protected		
77	6900 Lawndale	14" Ligustrum	Not protected		
78	6700 Lawndale	28" Live Oak	Protected	Not impacted	
79	6747 Lawndale	16" Live Oak	Not protected	Private tree, not impacted	

NOTE:
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TREE PRESERVATION PLAN LEGEND

- 1 — TREE NUMBER/LOCATION
- (1) — TREE TO BE REMOVED
- –X–X– — TREE PROTECTION FENCE
- ⊢------⊣ — ROOT PRUNING TRENCH

NO.	DATE	REVISION	APP.

C.N. Koehl
Urban Forestry, Inc.
210 Stone Bush Ct. ◦ Katy, Texas 77493
281–391–0022 ckoehl@koehlurbanforestry.com

APPROVED:

LAN

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S
SUITE 400
HOUSTON, TX 77042

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

TREE PROTECTION PLAN

SHEET 4 OF 12

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1"=20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 236 OF 245	

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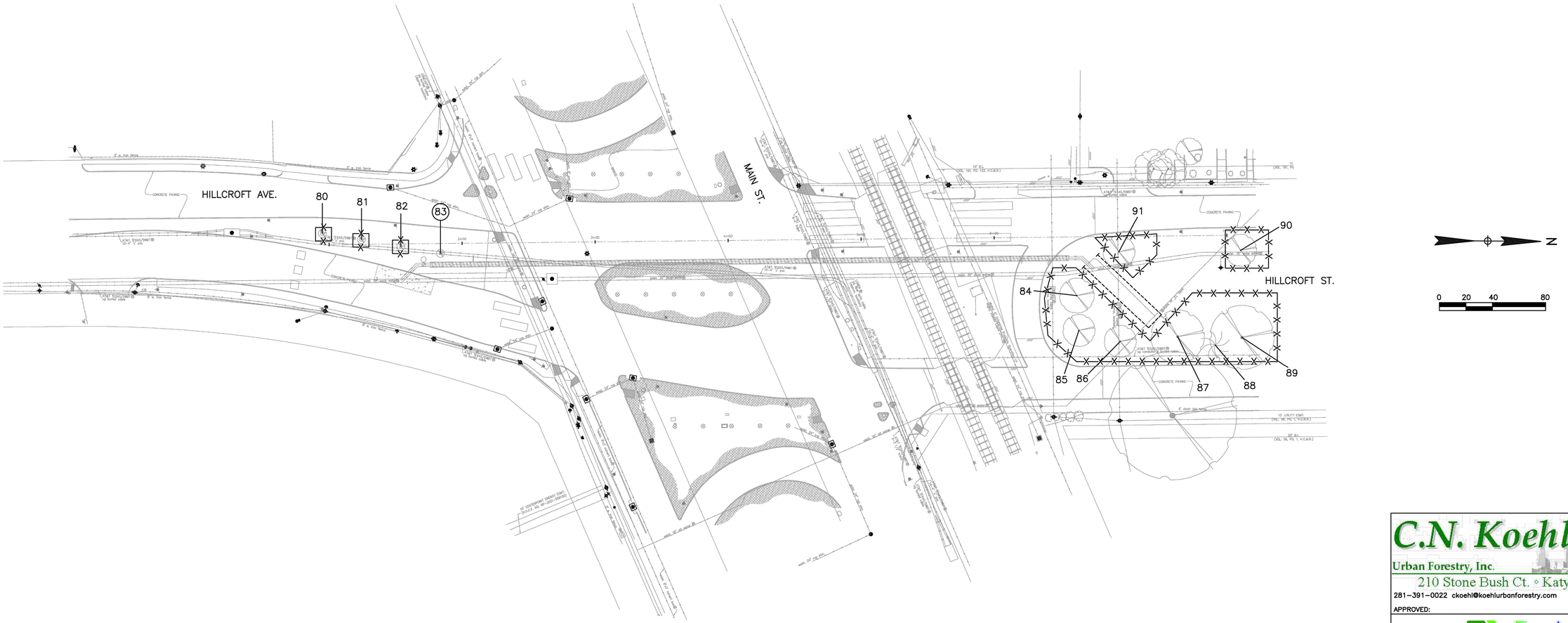

Tree No.	Location	Description	Chapter 33 Status	Comments	Treatment
Trees on Hilcroft Avenue					
80	Median	4" Baldcypress	Protected		Fence
81	Median	4" Baldcypress	Protected		Fence
82	Median	4" Baldcypress	Protected		Fence
83	Median	4" Baldcypress	Protected	Remove for waterline	Remove tree, Provide 4" in replacement or credits
84	Median	13" Live Oak	Protected		Root prune, Fence, Clearance prune
85	Median	12" Live Oak	Protected		Fence
86	Median	10" Live Oak	Protected		Root prune, Fence, Clearance prune
87	Median	24" Live Oak	Protected		Root prune, Fence, Clearance prune
88	Median	19" Pine	Protected		Fence
89	Median	22" Live Oak	Protected		Fence
90	Median	14" Live Oak	Protected		Fence
91	Median	12" Live Oak	Protected		Root prune, Fence, Clearance prune

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

TREE PROTECTION PLAN

SHEET 5 OF 12

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1"=20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 237 OF 245	

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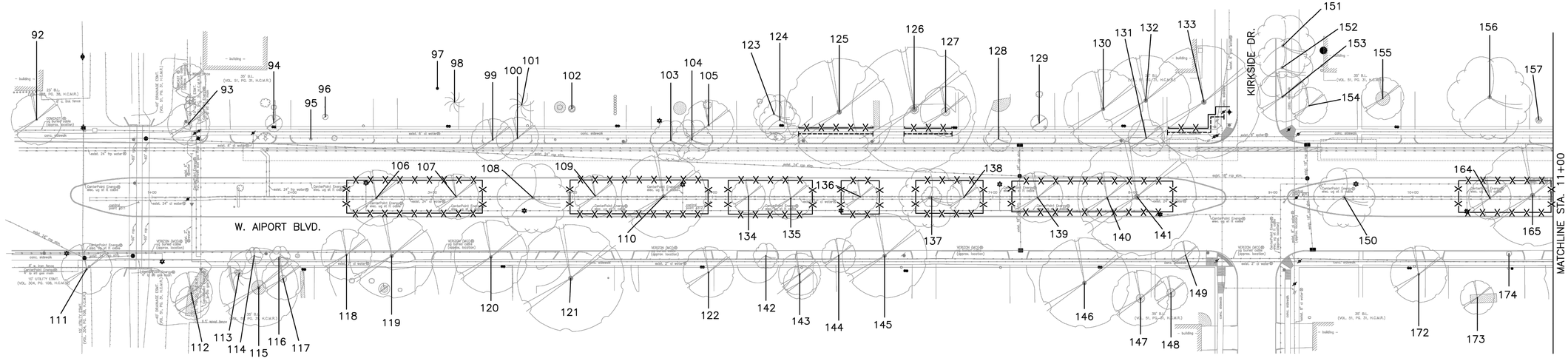

Tree No.	Location	Description	Chapter 33 Status	Comments	Treatment
Trees on W. Airport Blvd.					
92	6108 W Airport	16" Magnolia	Not protected	Private tree, not impacted	
93	6040 W Airport	21" Tallow	Not protected	Private tree, not impacted	
94	6040 W Airport	9" Redbud	Not protected	Dead, private tree	
95	6042 W Airport	2" Crepe Myrtle	Not protected		
96	6042 W Airport	3" Red Cedar	Not protected	Private tree, not impacted	
97	6038 W Airport	32" Water Oak	Not protected	Private tree, not impacted	
98	6034 W Airport	18" Pine	Not protected	Dead, private tree	
99	6034 W Airport	Stump	Not protected		
100	6034 W Airport	18" Tallow	Not protected	80% dieback	
101	6034 W Airport	20" Pine	Not protected	Dead, private tree	
102	6030 W Airport	2" Little Gem Magnolia	Not protected	Private tree, not impacted	
103	6026 W Airport	10" Crepe Myrtle	Not protected		
104	6026 W Airport	8" Crepe Myrtle	Not protected		
105	6026 W Airport	8" Crepe Myrtle	Not protected	Private tree, not impacted	
106	Median	25" Live Oak	Protected		Fence, Clearance prune
107	Median	19" Live Oak	Protected		Fence, Clearance prune
108	Median	15" Crepe Myrtle	Not protected		
109	Median	18" Live Oak	Protected		Fence, Clearance prune
110	Median	27" Shumard Oak	Protected	40% dieback	Fence, Clearance prune
111	6255 W Airport	21" Raintree	Not protected	Freeze damage, Private tree	
112	6039 W Airport	17" Pecan	Not protected	Private tree, not impacted	
113	6039 W Airport	18" Pine	Not protected	Private tree, not impacted	
114	6039 W Airport	2" Crepe Myrtle	Not protected		
115	6039 W Airport	33" Live Oak	Protected	Corridor tree, not impacted	
116	6039 W Airport	2" Crepe Myrtle	Not protected		
117	6039 W Airport	21" Pine	Not protected	Dead, private tree	
118	6035 W Airport	24" Live Oak	Protected	Not impacted	
119	6035 W Airport	26" Live Oak	Protected	Not impacted	
120	6031 W Airport	27" Live Oak	Protected	Not impacted	
121	6027 W Airport	41" Live Oak	Protected	Not impacted	
122	6019 W Airport	15" Juniper	Not protected	Private tree, not impacted	
123	6022 W Airport	5" Crepe Myrtle	Not protected	Private tree, not impacted	
124	6022 W Airport	5" Crepe Myrtle	Not protected	Private tree, not impacted	
125	6018 W Airport	46" Arizona Ash	Not protected	Private tree	Root prune for waterline, Fence, Clearance prune

Tree No.	Location	Description	Chapter 33 Status	Comments	Treatment
Trees on W. Airport Blvd.					
126	6014 W Airport	29" Arizona Ash	Not protected	Private tree	Root prune for waterline, Fence, Clearance prune
127	6014 W Airport	8" Arizona Ash	Not protected	Private tree, not impacted	
128	6010 W Airport	9" Crepe Myrtle	Not protected		
129	6010 W Airport	9" Mulberry	Not protected	50% dieback, Private	
130	6006 W Airport	28" Arizona Ash	Not protected	80% dieback, Private	
131	6002 W Airport	15" Tallow	Not protected		
132	6002 W Airport	35" Water Oak	Not protected	Conks on trunk, Private	
133	6002 W Airport	37" Live Oak	Protected	Corridor tree	Root prune for waterline, Fence, Clearance prune
134	Median	13" Live Oak	Protected		Fence, Clearance prune
135	Median	20" Live Oak	Protected		Fence, Clearance prune
136	Median	14" Live Oak	Protected		Fence, Clearance prune
137	Median	11" Crepe Myrtle	Not protected		
138	Median	18" Live Oak	Protected		Fence, Clearance prune
139	Median	21" Live Oak	Protected		Fence, Clearance prune
140	Median	14" Tallow	Not protected		Clearance prune
141	Median	33" Arizona Ash	Protected		Fence, Clearance prune
142	6019 W Airport	10" Crepe Myrtle	Not protected		
143	6019 W Airport	17" Pine	Not protected	Private tree, not impacted	
144	6015 W Airport	11" Shumard Oak	Protected	Not impacted	
145	6015 W Airport	28" Shumard Oak	Protected	Not impacted	
146	6007 W Airport	34" Live Oak	Protected	Corridor tree, not impacted	
147	6003 W Airport	15" Magnolia	Not protected	Private tree, not impacted	
148	6003 W Airport	16" Magnolia	Not protected	40% dieback, Private	
149	6003 W Airport	11" Tallow	Not protected		
150	Median	16" Crepe Myrtle	Not protected		
151	5934 W Airport	10" Crepe Myrtle	Not protected		
152	5934 W Airport	11" Crepe Myrtle	Not protected		
153	5934 W Airport	13" Tallow	Not protected		
154	5934 W Airport	15" Magnolia	Not protected	Dead, private tree	
155	5934 W Airport	18" Live Oak	Not protected	50% dieback, Private	
156	5926 W Airport	15" Crepe Myrtle	Not protected	Private tree, not impacted	
157	5926 W Airport	2" Crepe Myrtle	Not protected	Private tree, not impacted	
164	Median	21" Pine	Protected		Fence, Clearance prune
165	Median	28" Live Oak	Protected		Fence, Clearance prune
172	5931 W Airport	22" Tallow	Not protected	Private tree, not impacted	
173	5927 W Airport	10" Sweet Viburnum	Not protected	Private tree, not impacted	
174	5923 W Airport	3" Arizona Ash	Not protected		

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TREE PRESERVATION PLAN LEGEND

- 1 — TREE NUMBER/LOCATION
- (1) — TREE TO BE REMOVED
- –X–X– — TREE PROTECTION FENCE
- |------| — ROOT PRUNING TRENCH

N

0 20 40 80

NO.	DATE	REVISION	APP.

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

TREE PROTECTION PLAN

SHEET 6 OF 12

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1"=20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 238 OF 244	

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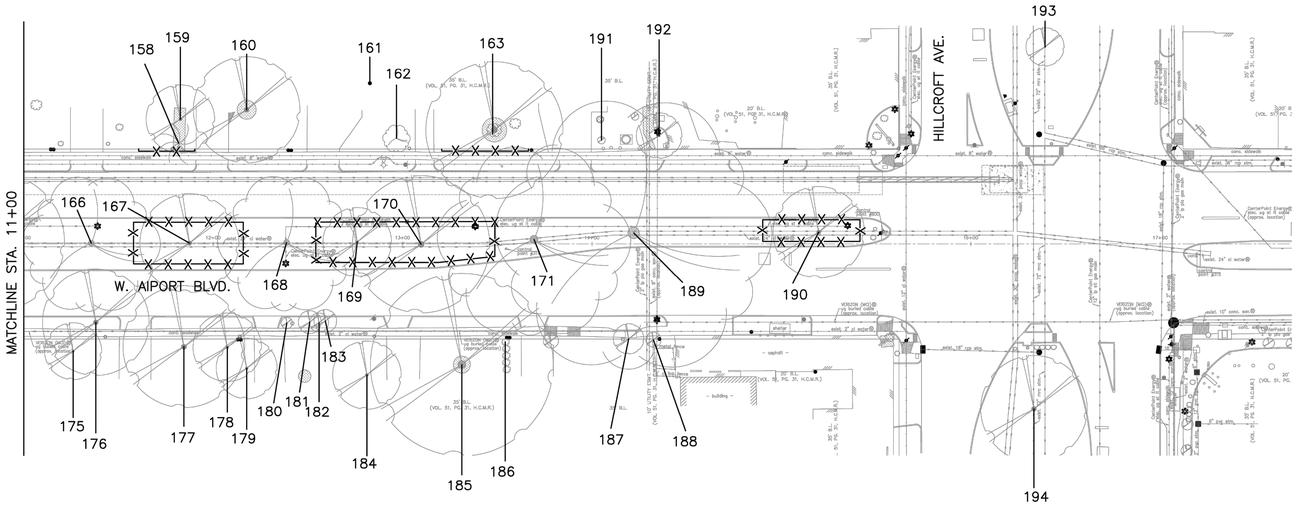

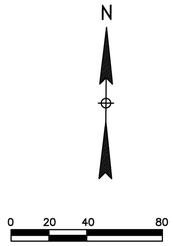

NO.	DATE	REVISION	APP.

Tree No.	Location	Description	Chapter 33 Status	Comments	Treatment
Trees on W. Airport Blvd.					
158	5918 W Airport	18" Pine	Not protected	Private tree	Trenchless on small diameter, Fence
159	5918 W Airport	26" Sycamore	Protected	Corridor tree	Trenchless on small diameter, Fence
160	5918 W Airport	35" Arizona Ash	Not protected	Private tree	
161	5914 W Airport	33" Live Oak	Protected	Corridor tree	Clearance prune
162	5914 W Airport	5" Crepe Myrtle	Not protected	Private tree, not impacted	
163	5910 W Airport	32" Arizona Ash	Not protected	Private tree	Trenchless on small diameter, Fence
166	Median	10" Crepe Myrtle	Not protected	80% dieback	
167	Median	25" Live Oak	Protected		Fence, Clearance prune
168	Median	15" Crepe Myrtle	Not protected	70% dieback	
169	Median	23" Live Oak	Protected		Fence, Clearance prune
170	Median	29" Live Oak	Protected		Fence, Clearance prune
171	Median	15" Crepe Myrtle	Not protected	50% dieback, Poor	
175	5923 W Airport	19" Pine	Not protected	Private tree, not impacted	
176	5923 W Airport	35" Arizona Ash	Protected	Trunk decay, Poor, not impacted	
177	5919 W Airport	38" Live Oak	Protected	Corridor tree, not impacted	
178	5919 W Airport	24" Water Oak	Protected	Corridor tree, not impacted	
179	5919 W Airport	18" Water Oak	Not protected	Private tree, not impacted	
180	5915 W Airport	2" Arizona Ash	Not protected		
181	5915 W Airport	9" Water Oak	Protected	Not impacted	
182	5915 W Airport	6" Water Oak	Protected	Not impacted	
183	5915 W Airport	9" Water Oak	Protected	Not impacted	
184	5915 W Airport	27" Water Oak	Protected	Corridor tree, not impacted	
185	5911 W Airport	36" Live Oak	Protected	Corridor tree, not impacted	
186	5911 W Airport	3" Photinia	Not protected	Dead	
187	5907 W Airport	12" Sugarberry	Not protected		
188	5907 W Airport	6" Sugarberry	Not protected		
189	Median	16" Crepe Myrtle	Not protected	60% dieback	
190	Median	27" Live Oak	Protected		Fence, Clearance prune
191	5906 W Airport	2" Bradford Pear	Not protected	Private tree, not impacted	
192	5906 W Airport	16" Sugarberry	Not protected	Private tree	Clearance prune
193	Median	11" Cedar Elm	Protected	Not impacted	
194	Median	28" Live Oak	Protected	Not impacted	

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TREE PRESERVATION PLAN LEGEND

- 1 — TREE NUMBER/LOCATION
- (1) — TREE TO BE REMOVED
- –X–X– — TREE PROTECTION FENCE
- |------| — ROOT PRUNING TRENCH

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

TREE PROTECTION PLAN

SHEET 7 OF 12

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1"=20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 239 OF 245	

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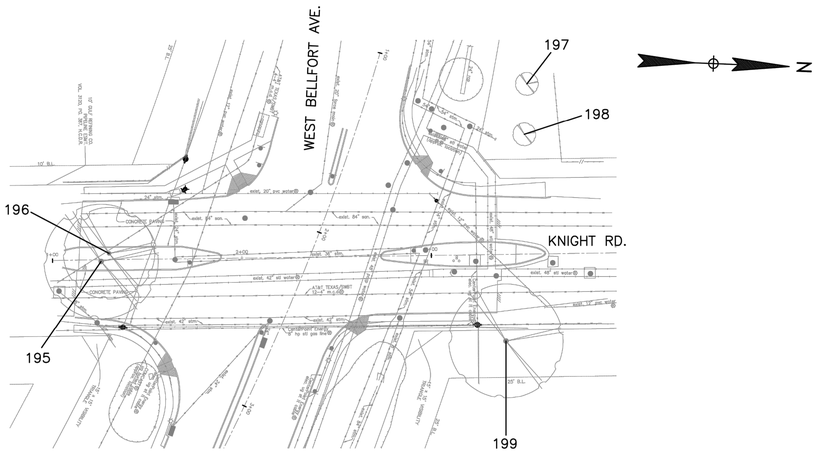

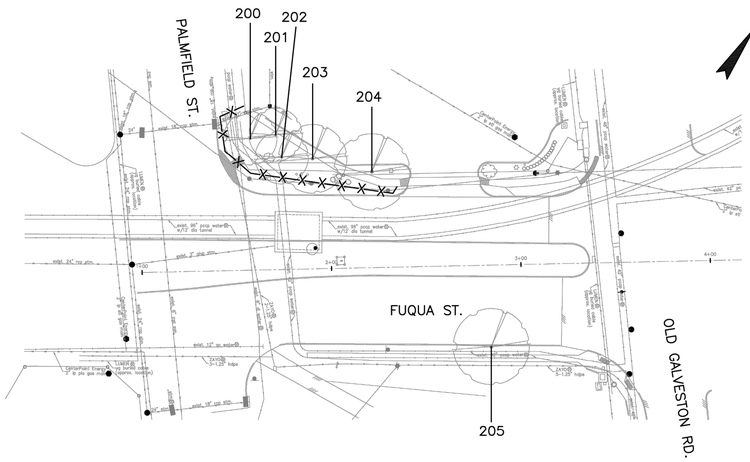

Tree No.	Location	Description	Chapter 33 Status	Comments	Treatment
Trees on Knight Road					
195	Median	14" Crepe Myrtle	Not protected		
196	Median	15" Crepe Myrtle	Not protected		
197	1604 W Bellfort	5" Baldcypress	Not protected	Private tree, not impacted	
198	1604 W Bellfort	5" Baldcypress	Not protected	Private tree, not impacted	
199	9051 Knight	26" Sugarberry	Not protected	Private tree, not impacted	
Trees on Fuqua Street					
200	9900 Galveston Rd	14" Live Oak	Protected	Topped, Branch tears	Fence
201	9900 Galveston Rd	16" Live Oak	Protected	Topped, Branch tears	Fence
202	9900 Galveston Rd	18" Live Oak	Protected	Topped, Branch tears	Fence
203	9900 Galveston Rd	17" Live Oak	Protected	Topped, Branch tears	Fence
204	9900 Galveston Rd	17" Live Oak	Protected	Topped, Branch tears	Fence
205	10002 Galveston Rd	27" American Elm	Protected	Not impacted	

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TREE PRESERVATION PLAN LEGEND

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–X–X–	TREE PROTECTION FENCE
⊢-----⊣	ROOT PRUNING TRENCH

0 20 40 80

NO.	DATE	REVISION	APP.

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TREE PROTECTION PLAN

SHEET 8 OF 12

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1"=20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 240 OF 244	

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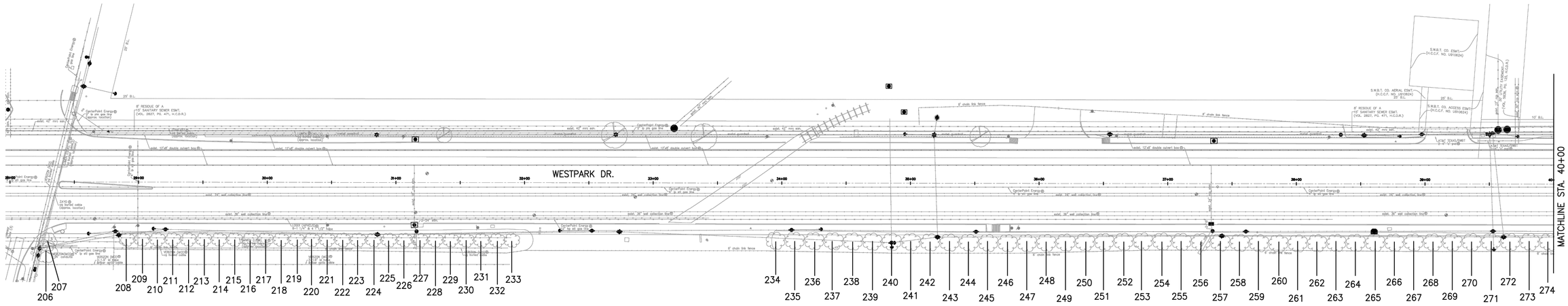
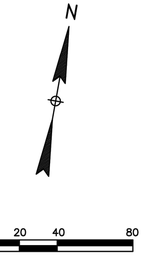


Tree No.	Location	Description	Chapter 33 Status	Comments	Treatment
Trees on Westpark Drive					
206	4828 1/2 Loop Central	7" Crepe Myrtle	Not protected	Topped	
207	4828 1/2 Loop Central	9" Crepe Myrtle	Not protected		
208	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
209	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
210	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
211	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
212	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
213	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
214	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
215	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
216	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
217	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
218	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
219	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
220	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
221	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
222	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
223	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
224	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
225	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
226	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
227	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
228	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
229	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
230	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
231	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
232	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
233	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
234	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
235	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
236	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
237	4828 1/2 Loop Central	8" Juniper	Not protected	Dead	
238	4828 1/2 Loop Central	8" Juniper	Not protected	Dead	
239	4828 1/2 Loop Central	8" Juniper	Not protected	Dead	

Tree No.	Location	Description	Chapter 33 Status	Comments	Treatment
Trees on Westpark Drive					
240	4828 1/2 Loop Central	8" Juniper	Not protected	Dead	
241	4828 1/2 Loop Central	8" Juniper	Not protected	Dead	
242	4828 1/2 Loop Central	8" Juniper	Not protected	Dead	
243	4828 1/2 Loop Central	8" Juniper	Not protected	Dead	
244	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
245	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
246	4828 1/2 Loop Central	8" Juniper	Not protected	Dead	
247	4828 1/2 Loop Central	8" Juniper	Not protected	Dead	
248	4828 1/2 Loop Central	8" Juniper	Not protected	Dead	
249	4828 1/2 Loop Central	8" Juniper	Not protected	Dead	
250	4828 1/2 Loop Central	8" Juniper	Not protected	Dead	
251	4828 1/2 Loop Central	8" Juniper	Not protected	Dead	
252	4828 1/2 Loop Central	8" Juniper	Not protected	Dead	
253	4828 1/2 Loop Central	8" Juniper	Not protected	Dead	
254	4828 1/2 Loop Central	8" Juniper	Not protected	Dead	
255	4828 1/2 Loop Central	8" Juniper	Not protected	Dead	
256	4828 1/2 Loop Central	8" Juniper	Not protected	Dead	
257	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
258	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
259	4828 1/2 Loop Central	8" Juniper	Not protected	Dead	
260	4828 1/2 Loop Central	8" Juniper	Not protected	Dead	
261	4828 1/2 Loop Central	8" Juniper	Not protected	Dead	
262	4828 1/2 Loop Central	8" Juniper	Not protected	Dead	
263	4828 1/2 Loop Central	8" Juniper	Not protected	Dead	
264	4828 1/2 Loop Central	8" Juniper	Not protected	Dead	
265	4828 1/2 Loop Central	8" Juniper	Not protected	Dead	
266	4828 1/2 Loop Central	8" Juniper	Not protected	Dead	
267	4828 1/2 Loop Central	8" Juniper	Not protected	Dead	
268	4828 1/2 Loop Central	8" Juniper	Not protected	Dead	
269	4828 1/2 Loop Central	8" Juniper	Not protected	Dead	
270	4828 1/2 Loop Central	8" Juniper	Not protected	Dead	
271	4828 1/2 Loop Central	8" Juniper	Not protected	Dead	
272	4828 1/2 Loop Central	8" Juniper	Not protected	Dead	
273	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
274	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	



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TREE PRESERVATION PLAN LEGEND

- 1 — TREE NUMBER/LOCATION
- (1) — TREE TO BE REMOVED
- –X–X– TREE PROTECTION FENCE
- ROOT PRUNING TRENCH

NO.	DATE	REVISION	APP.

C.N. Koehl
Urban Forestry, Inc.
210 Stone Bush Ct. ◦ Katy, Texas 77493
281–391–0022 ckoehl@koehlurbanforestry.com

APPROVED:

LAN

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S
SUITE 400
HOUSTON, TX 77042

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

TREE PROTECTION PLAN

SHEET 9 OF 12

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1"=20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 241 OF 245	

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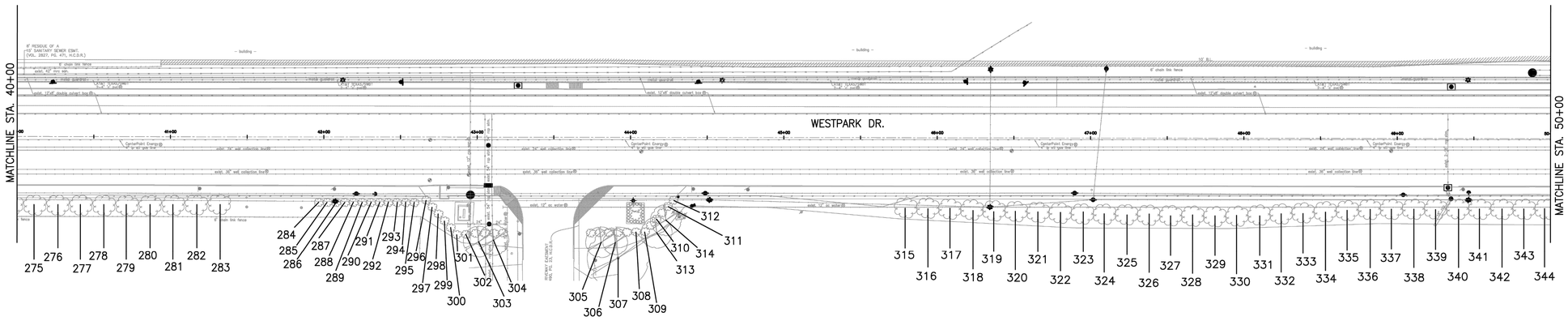
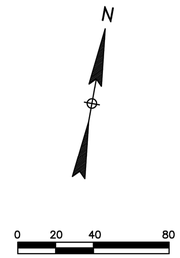


Tree No.	Location	Description	Chapter 33 Status	Comments	Treatment
Trees on Westpark Drive					
275	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
276	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
277	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
278	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
279	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
280	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
281	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
282	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
283	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
284	4828 1/2 Loop Central	2" Oleander	Not protected	Freeze damage, Poor	
285	4828 1/2 Loop Central	2" Oleander	Not protected	Freeze damage, Poor	
286	4828 1/2 Loop Central	2" Oleander	Not protected	Freeze damage, Poor	
287	4828 1/2 Loop Central	2" Oleander	Not protected	Freeze damage, Poor	
288	4828 1/2 Loop Central	2" Oleander	Not protected	Freeze damage, Poor	
289	4828 1/2 Loop Central	2" Oleander	Not protected	Freeze damage, Poor	
290	4828 1/2 Loop Central	2" Oleander	Not protected	Freeze damage, Poor	
291	4828 1/2 Loop Central	2" Oleander	Not protected	Freeze damage, Poor	
292	4828 1/2 Loop Central	2" Oleander	Not protected	Freeze damage, Poor	
293	4828 1/2 Loop Central	2" Oleander	Not protected	Freeze damage, Poor	
294	4828 1/2 Loop Central	2" Oleander	Not protected	Freeze damage, Poor	
295	4828 1/2 Loop Central	2" Oleander	Not protected	Freeze damage, Poor	
296	4828 1/2 Loop Central	2" Oleander	Not protected	Freeze damage, Poor	
297	4828 1/2 Loop Central	2" Oleander	Not protected	Freeze damage, Poor	
298	4828 1/2 Loop Central	5" Olive	Not protected	Freeze damage, Poor	
299	4828 1/2 Loop Central	5" Olive	Not protected	Freeze damage, Poor	
300	4828 1/2 Loop Central	5" Olive	Not protected	Freeze damage, Poor	
301	4828 1/2 Loop Central	5" Olive	Not protected	Freeze damage, Poor	
302	4828 1/2 Loop Central	5" Olive	Not protected	Freeze damage, Poor	
303	4828 1/2 Loop Central	5" Olive	Not protected	Freeze damage, Poor	
304	4828 1/2 Loop Central	5" Olive	Not protected	Freeze damage, Poor	
305	4828 1/2 Loop Central	5" Olive	Not protected	Freeze damage, Poor	
306	4828 1/2 Loop Central	5" Olive	Not protected	Freeze damage, Poor	
307	4828 1/2 Loop Central	5" Olive	Not protected	Freeze damage, Poor	
308	4828 1/2 Loop Central	5" Olive	Not protected	Freeze damage, Poor	
309	4828 1/2 Loop Central	5" Olive	Not protected	Freeze damage, Poor	

Tree No.	Location	Description	Chapter 33 Status	Comments	Treatment
Trees on Westpark Drive					
310	4828 1/2 Loop Central	5" Olive	Not protected	Freeze damage, Poor	
311	4828 1/2 Loop Central	5" Olive	Not protected	Freeze damage, Poor	
312	4828 1/2 Loop Central	5" Olive	Not protected	Freeze damage, Poor	
313	4828 1/2 Loop Central	5" Olive	Not protected	Freeze damage, Poor	
314	4828 1/2 Loop Central	5" Olive	Not protected	Freeze damage, Poor	
315	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
316	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
317	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
318	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
319	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
320	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
321	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
322	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
323	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
324	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
325	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
326	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
327	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
328	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
329	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
330	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
331	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
332	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
333	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
334	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
335	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
336	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
337	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
338	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
339	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
340	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
341	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
342	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
343	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
344	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	



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TREE PRESERVATION PLAN LEGEND

1	TREE NUMBER/LOCATION
(1)	TREE TO BE REMOVED
–X–X–	TREE PROTECTION FENCE
⊢-----⊣	ROOT PRUNING TRENCH

C.N. Koehl
Urban Forestry, Inc.
210 Stone Bush Ct. ◦ Katy, Texas 77493
281–391–0022 ckoehl@koehlurbanforestry.com

APPROVED:

LAN

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S
SUITE 400
HOUSTON, TX 77042

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

TREE PROTECTION PLAN

SHEET 10 OF 12

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1"=20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 242 OF 244	

NO.	DATE	REVISION	APP.

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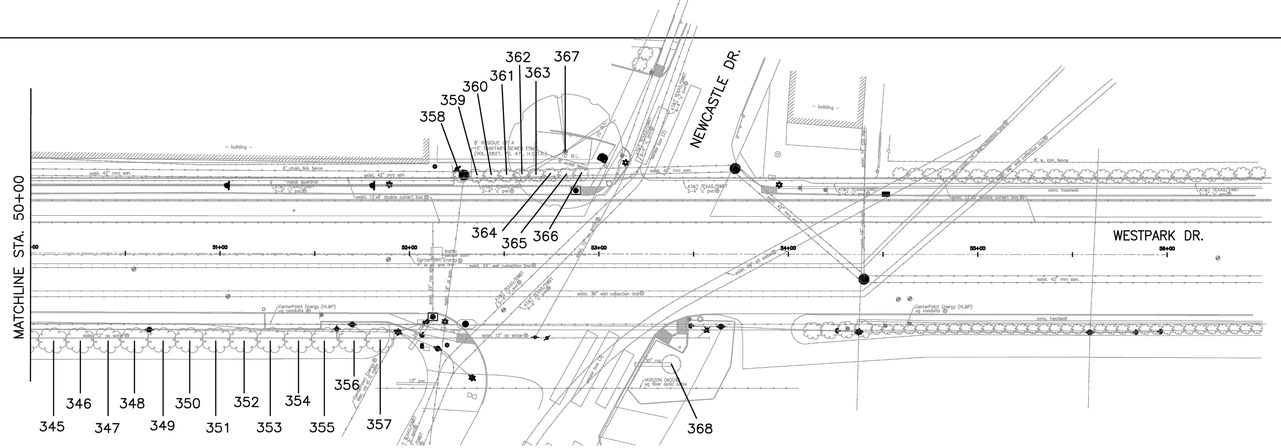

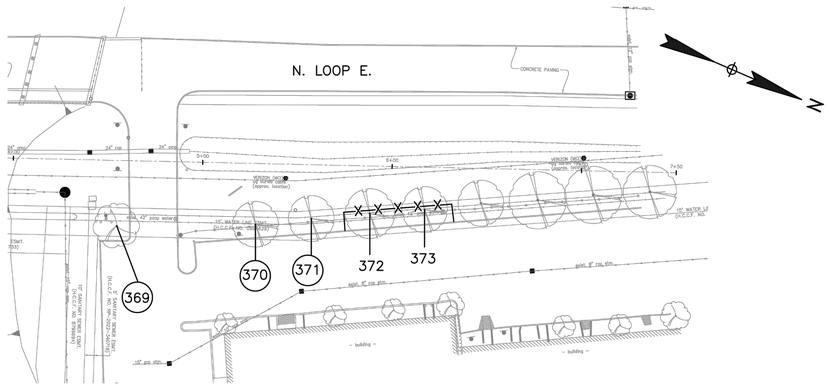

Tree No.	Location	Description	Chapter 33 Status	Comments	Treatment
Trees on Westpark Drive					
345	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
346	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
347	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
348	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
349	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
350	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
351	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
352	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
353	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
354	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
355	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
356	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
357	4828 1/2 Loop Central	8" Juniper	Not protected	Spider mite & borer damage	
358	4655 Wild Indigo	3" Oleander	Not protected	Freeze damage, Poor	
359	4655 Wild Indigo	3" Oleander	Not protected	Freeze damage, Poor	
360	4655 Wild Indigo	3" Oleander	Not protected	Freeze damage, Poor	
361	4655 Wild Indigo	3" Oleander	Not protected	Freeze damage, Poor	
362	4655 Wild Indigo	3" Oleander	Not protected	Freeze damage, Poor	
363	4655 Wild Indigo	3" Oleander	Not protected	Freeze damage, Poor	
364	4655 Wild Indigo	3" Oleander	Not protected	Freeze damage, Poor	
365	4655 Wild Indigo	3" Oleander	Not protected	Freeze damage, Poor	
366	4655 Wild Indigo	3" Oleander	Not protected	Freeze damage, Poor	
367	4655 Wild Indigo	27" Live Oak	Protected	Corridor tree, not impacted	
368	Not available	17" Lacebark Elm	Protected	Not impacted	
Trees on IH 610 N Loop E					
369	9009 Ih 610 N Loop E	11" Crepe Myrtle	Not protected	Easement tree	Remove tree, No replacement required
370	9009 Ih 610 N Loop E	13" Cedar Elm	Not protected	Easement tree	Remove tree, No replacement required
371	9009 Ih 610 N Loop E	16" Cedar Elm	Not protected	Easement tree	Remove tree, No replacement required
372	9009 Ih 610 N Loop E	18" Cedar Elm	Not protected	Easement tree	Fence
373	9009 Ih 610 N Loop E	12" Cedar Elm	Not protected	Easement tree	Fence

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TREE PRESERVATION PLAN LEGEND

- 1 — TREE NUMBER/LOCATION
- (1) — TREE TO BE REMOVED
- –X–X– TREE PROTECTION FENCE
- ----- ROOT PRUNING TRENCH

0 20 40 80

NO.	DATE	REVISION	APP.

C.N. Koehl
Urban Forestry, Inc.
210 Stone Bush Ct. ◦ Katy, Texas 77493
281–391–0022 ckoehl@koehlurbanforestry.com

APPROVED:

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS–PACKAGE 3

TREE PROTECTION PLAN

SHEET 11 OF 12

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S–000701–0041–3	
DRAWING SCALE	
H: 1"=20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 243 OF 244	

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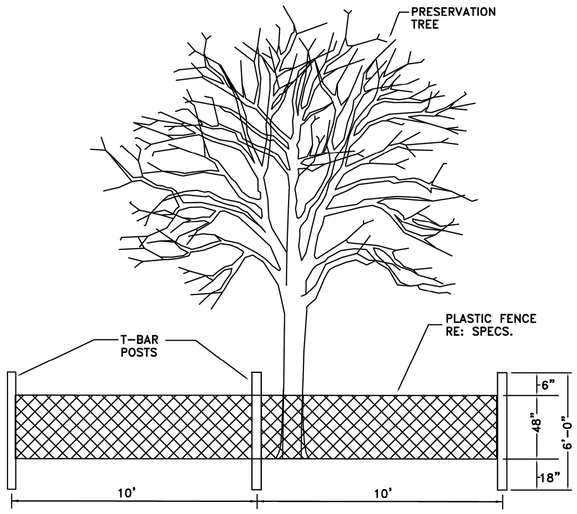
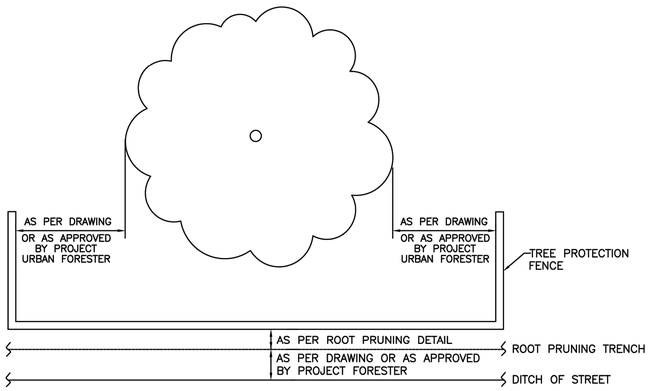


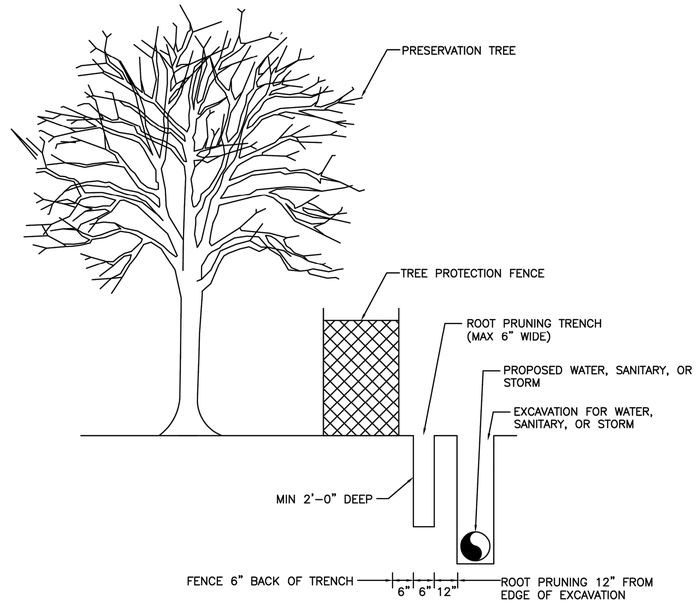
TREE PROTECTION FENCING DETAIL A

NOT TO SCALE



TREE PROTECTION FENCING DETAIL B

NOT TO SCALE



ROOT PRUNE FOR WATER, SANITARY, OR STORM LINE

NOT TO SCALE

Tree Removal List

Tree No.	Location	Description	Replacement requirement
83	Median	4" Baldcypress	4
369	9009 Ih 610 N Loop E	11" Crepe Myrtle	0
370	9009 Ih 610 N Loop E	13" Cedar Elm	0
371	9009 Ih 610 N Loop E	16" Cedar Elm	0
		TOTAL REPLACEMENT INCHES REQUIRED	**4**

Tree Replacement List

Quantity	Caliper Size	Species	Container/Tree Spade size
		TOTAL REPLACEMENT INCHES INCLUDED IN PLAN	**0**

NOTE: Tree replacement locations are not shown on plans. Contractor must coordinate with City of Houston Urban Forestry and Houston Public Works prior to PURCHASING trees. This project may not have adequate room for all required replacement trees without creating regulatory sign or traffic/pedestrian visibility issues. Number of trees and planting locations will be determined by City of Houston Urban Forestry in construction phase. Trees that are planted are to be maintained and watered for 2 years following planting per standard spec 02915. Timing of planting may be delayed in periods of drought with mandatory water restrictions in place-timing to be coordinated with City of Houston Urban Forestry. Trees in esplanade groupings to be planted in common bed with 4" of hardwood mulch between trees.

Trees are to be maintained and watered for 2 years following planting per standard spec 02915. Timing of planting may be delayed in periods of drought with mandatory water restrictions in place-timing to be coordinated with City of Houston Forestry.

Tree replacement locations shall comply with Houston Public Works spec sections 02811, 02911, 02912, 02915, 02921 & 02922. In general trees along sides of street right of ways shall be no closer than 3' to back of curb or 20' from another tree. Trees in medians shall be no closer than 6' back of curb, 75' from an intersection, 50' to a median cut, or 20' from another tree. Contractor to coordinate locations with City Forestry and HPW prior to PURCHASING trees. All replacement trees called out on plans may not be planted on project relative to coordination with listed parties.

Cash Allowance Due Parks from HPW for Balance of Mitigation Not Planted on Project

	Required Mitigation total	Mitigation rate/inch	
0-5.99"	4	$ 289.47	$ 1,157.88
6-11.99"		482.47	$ -
12" +		643.3	$ -
		TOTAL REQUIRED MITIGATION FEE	**$ 1,157.88**

Arboriculturally Significant Tree List

Tree No.	Location	Description
14	2535 Bisbee	42" Live Oak
15	2535 Bisbee	37" Live Oak
16	2515 Bisbee	27" Pecan
53	Milby Park	24" Live Oak
54	Milby Park	26" Live Oak
58	Milby Park	25" Live Oak
73	7006 Santa Maria	43" Water Oak
78	6700 Lawndale	28" Live Oak
87	Median	24" Live Oak
106	Median	25" Live Oak
110	Median	27" Shumard Oak
115	6039 W Airport	33" Live Oak
118	6035 W Airport	24" Live Oak
119	6035 W Airport	26" Live Oak
120	6031 W Airport	27" Live Oak
121	6027 W Airport	41" Live Oak
145	6015 W Airport	28" Shumard Oak
146	6007 W Airport	34" Live Oak
159	5918 W Airport	26" Sycamore
161	5914 W Airport	33" Live Oak
165	Median	28" Live Oak
167	Median	25" Live Oak
170	Median	29" Live Oak
177	5919 W Airport	38" Live Oak
178	5919 W Airport	24" Water Oak
184	5915 W Airport	27" Water Oak
185	5911 W Airport	36" Live Oak
190	Median	27" Live Oak
194	Median	28" Live Oak
205	10002 Galveston Rd	27" American Elm
367	4655 Wild Indigo	27" Live Oak

Trees Identified by City of Houston Forestry/Parks & Recreation Department as Arboriculturally Significant are identified here and/or in treatment schedule included on TPP sheets. Arboriculturally Significant trees are to be pruned under direct supervision of City of Houston Forestry. Minimal pruning will be allowed for construction equipment access, and in some cases no pruning will be allowed. Contractor must review conditions around and/or under the canopy of Arboriculturally Significant trees and consider restrictions when preparing cost estimate and planning construction equipment that will be necessary to accomplish design installation with minimal to no tree pruning.

NO.	DATE	REVISION	APP.

C.N. Koehl
Urban Forestry, Inc.
210 Stone Bush Ct. ◦ Katy, Texas 77493
281-391-0022 ckoehl@koehlurbanforestry.com

APPROVED:

LAN

LOCKWOOD, ANDREWS & NEWNAM, INC.
3700 W SAM HOUSTON PKWY S
SUITE 400
HOUSTON, TX 77042

SURVEYED BY:
KUO & ASSOCIATES, LLC
FB NO. 000000

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

MISCELLANEOUS LDWL IMPROVEMENTS-PACKAGE 3

TREE PROTECTION PLAN

SHEET 12 OF 12

WBS NUMBER	FOR CITY OF HOUSTON USE ONLY
S-000701-0041-3	
DRAWING SCALE	
H: 1"=20' V: N/A	
CITY OF HOUSTON PM	
ANH H. BOYD, P.E.	
SHEET NO. 244 OF 244	

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