WEST HARRIS COUNTY REGIONAL WATER AUTHORITY
SURFACE WATER SUPPLY PROJECT

CONTRACT S3-A1

42-INCH WATER LINE ALONG CENTERPOINT ENERGY CORRIDOR FROM SOUTH OF CLAY ROAD TO CONNECTION TO SEGMENT C

WHCRWA NFBWA

SURFACE WATER SUPPLY PROJECT

48 HOUR NOTICE

CONTRACTOR SHALL NOTIFY HARRIS COUNTY PRIOR TO COMMENCING CONSTRUCTION AND/OR BACKFILLING ANY UTILITIES. CONTRACTOR(S) TO CONTACT MARC BARBE WITH PUBLIC REVIEW DEPARTMENT @ (713-274-3937) OR (marc.barbe@hcpid.ord)

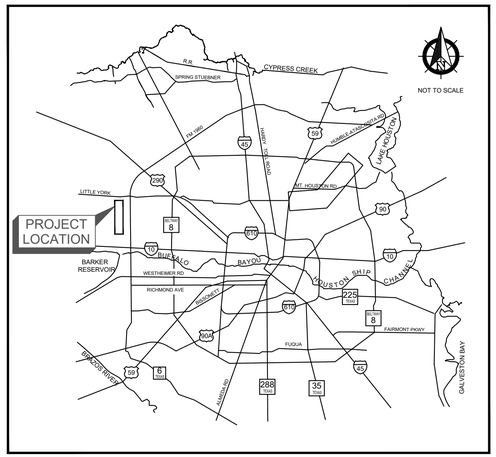
*CONSTRUCTION IN HARRIS COUNTY FLOOD CONTROL DISCTRICT RIGHT-OF-WAY REQUIRES:

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

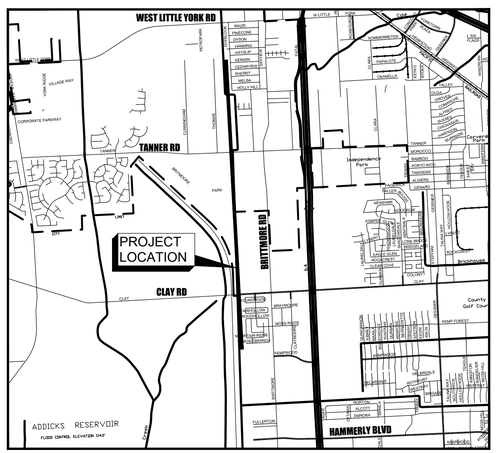
1.) HCFCD RIGHT-OF-WAY NOTIFICATION (PERMIT)
2.) HCFCD 48-HR PRE-CONSTRUCTION NOTICE

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
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.

100% SUBMITTAL



VICINITY MAP



VICINITY MAP

KEY MAP NO. 409X, 449B, 449F, 449K, 449P
GIMS MAP NO. 4861B, 4861D, 4860B, 4860D
ZIP CODE NO. 77041, 77043

WEST HARRIS COUNTY REGIONAL WATER AUTHORITY
BOARD OF DIRECTORS

LARRY A. WEPPLER	DIRECTOR PRECINCT #1
JOHN WHEELER	DIRECTOR PRECINCT #2
ERIC HANSEN	DIRECTOR PRECINCT #3
MICHAEL THORNHILL	DIRECTOR PRECINCT #4
MIKE OWENS	DIRECTOR PRECINCT #5
DOUGLAS C. POSTLE	DIRECTOR PRECINCT #6
GARY STRUZICK	DIRECTOR PRECINCT #7
MARK G. JANNECK	DIRECTOR PRECINCT #8
DENNIS GORDEN	DIRECTOR PRECINCT #9

NORTH FORT BEND WATER AUTHORITY
BOARD OF DIRECTORS

DAVID SPELL	DIRECTOR PRECINCT #1
ROBERT DARDEN	DIRECTOR PRECINCT #2
BRUCE FAY	DIRECTOR PRECINCT #3
MELONY F. GAY	DIRECTOR PRECINCT #4
ROBERT L. PATTON	DIRECTOR PRECINCT #5
PETER HOUGHTON	DIRECTOR PRECINCT #6
PAT HEBERT	DIRECTOR PRECINCT #7

DESIGN VARIANCE GIVEN BY CITY ENGINEER BY EMAIL DATED 1/22/2019. CITY SIGNATURES DO NOT REPRESENT COMPLIANCE WITH THE CITY'S DESIGN STANDARDS, ONLY ACKNOWLEDGEMENT OF THE PROJECT FOR THE PURPOSES OF CONSTRUCTION AND PERMITTING.

CONSTRUCTION ACTIVIES ALLOWED ONLY IN AREAS WHERE THE AUTHORITY HAS EASEMENTS OR THE LEGAL RIGHT TO BE PRESENT

ONE-CALL NOTIFICATION SYSTEM
CALL BEFORE YOU DIG!!!
(713) 223-4567
(New Statewide Number Outside Houston)
1-800-545-6005

ISSUE DATE: 03/19/2020

ILMS NO.
C.O.H. LOG. NO.

WHCRWA / NFBWA - SURFACE WATER SUPPLY PROJECT
\\pzhou\data\bbi\Enviro\1900000003 - WHCRWA 42 Inch Segment 3A_CADD\Drawings\000G-DTCOVR.dwg May 27, 2020-11:23pm chuddleston

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT
Program Manager
DANNENBAUM ENGINEERING CORPORATION

NO.	DATE	REVISION	APP.

Binkley & Barfield consulting engineers
Binkley & Barfield, Inc. | TxEng F-257
1710 Seamist Dr, Houston, TX 77008
713.869.3433 | BinkleyBarfield.com

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:
CHRISTOPHER L. CAMPBELL
91713
MAY 2020

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE
TRAFFIC SIGNAL	

CITY ENGINEER DATE
DIRECTOR OF HOUSTON PUBLIC WORKS DATE

SHEET NO 1 OF 81 SHEETS

FOR CITY OF HOUSTON USE ONLY

1. PAVING

(FOR H.C. PUBLIC R.O.W. ONLY)

DESIGN THICKNESS OF PAVING	STABILIZED SUBGRADE DEPTH	DESIGN STRENGTH OF CONCRETE	STEEL SPACING		REINFORCE STEEL SIZE
			LONG.	TRANS.	
(IN.)	(IN.)	(PSI)	(IN.)	(IN.)	(#5 MIN.)

DRIVEWAYS (in H.C. ROW only)

I. NUMBER OF DRIVEWAY APPROACHES PROPOSED INCLUDE WIDENING OR REPAVING EXISTING DRIVEWAYS AS WELL AS NEW DRIVEWAYS

DRWY	WIDTH	MATERIAL	CULVERT?	CULVERT LENGTH	NEAREST X-STREET	DIST. TO X-STREET
1						
2						
3						
4						
5						

II. HARRIS COUNTY STANDARD DRIVEWAY DETAIL APPEARS ON SHEET ____

FIRE APPARATUS ACCESS ROAD

☐ REQUIRED AND SHOWN ON SHEET(S) _____
☐ NOT REQUIRED DUE TO _____

CURBING

I. ISLANDS AND MEDIANS REQUIRE STANDARD 6" CURBING

II. ☐ STANDARD 6" CURBING PROPOSED
☐ 4" x 12" CURBING PROPOSED EXCEPT AT MEDIANS AND ISLANDS

TRAFFIC CONSIDERATIONS

I. MEDIAN CUTS
☐ NO MEDIAN CUT OR RELOCATION IS PROPOSED
☐ MEDIAN MODIFICATIONS ARE SHOWN ON SHEET _____

II. LEFT / RIGHT TURN LANE
☐ NO LEFT / RIGHT TURN LANE IS PROPOSED
☐ LEFT / RIGHT TURN LANE IS SHOWN ON SHEET _____

III. TRAFFIC CONTROL PLAN
☐ NO WORK IN THE RIGHT OF WAY IS PROPOSED THAT WOULD INTERFERE WITH TRAFFIC FLOW
☐ TRAFFIC CONTROL SHOWN ON SHEET _____

IV. TRAFFIC SIGNAL
☐ NO TRAFFIC SIGNAL IS EXISTING / PROPOSED
☐ EXISTING TRAFFIC SIGNAL DEVICES (T.C. BOXES AND LOOPS) SHOWN ON SHEET _____
☐ PROPOSED TRAFFIC SIGNAL (BY OTHERS)

V. TRAFFIC IMPACT ANALYSIS
☐ NO TRAFFIC IMPACT ANALYSIS IS REQUIRED
☐ TRAFFIC IMPACT ANALYSIS HAS BEEN APPROVED ON DATE:_____
PLAN TITLE: _____
HCPID PROJECT NO.: _____

2. RESIDENTIAL / SUBDIVISION DRAINAGE

PROPOSED DRAINAGE SYSTEM TYPE
☐ STORM SEWER
☐ ROADSIDE DITCH
☐ LOW IMPACT DEVELOPMENT (LID)

II. DESIGN METHOD USED
☐ CITY OF HOUSTON _____ YEAR FREQUENCY
☐ OTHER: _____

III. DRAINAGE SYSTEM OUTFALLS DIRECTLY TO EXISTING
☐ DETENTION POND (APPROVED H.C. PRJ NO.): _____
DETENTION POND MAINTAINED BY: _____
☐ HCFCD DRAINAGE DITCH UNIT NO.: _____
☐ H.C. ROADSIDE DITCH (ROAD NAME): _____
☐ H.C. STORM SEWER (APPROVED H.C. PRJ NO.): _____

IV. H.C. OUTFALL CALCULATIONS
☐ ROADSIDE DITCH OUTFALL:
ALLOWABLE OUTFALL RATE: 0.0027 x _____ LF Frontage = _____ (CFS)
PROPOSED OUTFALL RATE: _____ (CFS), CALCULATIONS PROVIDED ON SHEET ___
☐ STORM SEWER OUTFALL
CAPACITY ALLOCATED TO TRACT FROM D. A. MAP: _____ (CFS)
FROM DRAINAGE AREA MAP DATED: _____
PREPARED BY: _____
APPROVED H.C. PROJECT NO.: _____
ACTUAL OUTFALL RATE: _____ (CFS), CALCULATIONS PROVIDED ON SHEET ___

V. DETENTION PROVIDED BY
☐ DETENTION BASIN IS PART THIS PLAN SET. SERVICE AREA MAP IS ON SHEET ___
☐ REGIONAL DETENTION BASIN SYSTEM (APPROVED H.C. PRJ NO.): _____

PROPOSED STORM SEWER IS SUBMERGED (AGREEMENT MUST BE PROVIDED).
STATIC W.S.E. @ OUTFALL IS _____

OFFSITE SHEET FLOW: (100 YEAR)

OFFSITE SHEET FLOW MAPPING, TOTAL DISCHARGE CALCULATIONS, AND DESIGN ACCOMODATIONS ARE SHOWN ON SHEET _____ OR, AS PRESENTED IN THE APPROVED DRAINAGE STUDY ENTITLED _____.

TOTAL ACREAGE = ____
TOTAL DISCHARGE = ____

NOTE: ALL OFFSITE SHEET FLOW FROM ADJACENT PROPERTIES MUST BE IDENTIFIED AND PROPERLY ACCOUNTED FOR IN THE PROJECT. THE SIGNING ENGINEER HEREBY CERTIFIES THAT THESE AREAS HAVE BEEN ADDRESSED.

3. COMMERCIAL / OTHER SITE DRAINAGE

I. PROPOSED DRAINAGE AREA
☐ NEW DEVELOPMENT AREA: _____
☐ RE-DEVELOPMENT AREA (NET NEW DEVELOPED AREA): _____
☐ LOW IMPACT DEVELOPMENT (LID)

II. DETENTION VOLUME
NEW AREA_____X_____*=_____ACRE FEET
DETENTION REQUIRED
*☐ .65 (CHANNEL)
*☐ .75 (STM SWR)
*☐ 1.00 (RD. DITCH)
*☐ OTHER: _____

PROPOSED DETENTION VOLUME = _____ ACRE FEET
PROPOSED DETENTION VOLUME CALCULATIONS ARE SHOWN ON SHEET _____

DETENTION VOLUME PROVIDED BY EXISTING DETENTION POND
APPROVED H.C. PROJECT NO.: _____
DETENTION POND SERVICE AREA MAP IS PROVIDED ON SHEET _____

III. OUTFALL
OUTFALL TO ☐ H.C. ROADSIDE DITCH
☐ EXISTING H.C. STORM SEWER
☐ OTHER _____
☐ ROADSIDE DITCH OUTFALL:
ALLOWABLE OUTFALL RATE: 0.0027 x _____ LF Frontage = _____ (CFS)
PROPOSED OUTFALL RATE: _____ (CFS), CALCULATIONS PROVIDED ON SHEET ___
☐ STORM SEWER OUTFALL
CAPACITY ALLOCATED TO TRACT FROM D. A. MAP: _____ (CFS)
FROM DRAINAGE AREA MAP DATED: _____
PREPARED BY: _____
APPROVED H.C. PROJECT NO.: _____
ACTUAL OUTFALL RATE: _____ (CFS), CALCULATIONS PROVIDED ON SHEET ___

IV. PUMPED DETENTION FACILITIES
VOLUME THAT GRAVITY FLOWS:_____ACRE FEET
VOLUME THAT IS PUMPED:_____ACRE FEET
ENTRANCE VELOCITY INTO ROADSIDE DITCH OR STORM SEWER: _____
PUMP SPECIFICATIONS AND AUTOMATIC SHUTOFF PLAN FOR ROADSIDE DITCH & STORM SEWER OUTFALLS APPEAR ON SHEET _____

V. FLOW RESTRICTOR SIZE
OUTFALL PIPE SIZE: _____
RESTRICTOR PIPE SIZE: _____

NOTE: ALL ROADSIDE DITCH OUTFALLS REQUIRE EROSION CONTROL MEASURES. RIPRAP IS NOT ALLOWED AS AN EROSION CONTROL MEASURE IN HARRIS COUNTY ROW. ALL PUMPED DETENTION OUTFALLS TO ROADSIDE DITCHES REQUIRE MANHOLE W/ LEADS.

4. WATER AND WASTEWATER

I. COMMERCIAL PROJECTS

DOES PROPERTY HAVE EXISTING AND/OR PROPOSED UTILITIES?
☒ YES ☐ NO

IF YES, CHECK THE BOX THAT APPLIES TO THIS PROJECT
☒ PUBLIC WATER & SANITARY
☐ PRIVATE WATER WELL & SEPTIC SYSTEM
☐ PUBLIC WATER & PRIVATE SEPTIC SYSTEM
☐ PRIVATE WATER WELL & PUBLIC SANITARY

NOTE: PUBLIC UTILITIES REQUIRE A LETTER FROM THE DISTRICT/ MUNICIPALITY AUTHORIZING SERVICE & CONNECTION. THIS IS REQUIRED FOR PLAN APPROVAL.

UTILITY DISTRICT/MUNICIPALITY NAME: _____

NOTE: SEPTIC SYSTEMS REQUIRE H.C. WASTE WATER REVIEW

H.C. SEPTIC PERMIT/REQUEST NO. _N/A____

NOTE: ALL EXISTING AND PROPOSED UTILITIES MUST BE ACCURATELY SHOWN & LABELED ON THE SITE PLANS.

II. SUBDIVISION PROJECTS

☐ UTILITY DISTRICT/MUNICIPALITY NAME: _____
☐ PRIVATE WATER & WASTE WATER SYSTEMS
☐ PRIVATE WATER & INDIVIDUAL OSSF
☐ INDIVIDUAL WATER WELL & OSSF

NOTE: A COPY OF TCEQ APPROVAL FOR PRIVATE WATER & WASTE WATER SYSTEMS IS REQUIRED FOR PLAN APPROVAL.

*NOTE: DEDICATED UNDERGROUND FIRE LINES MUST BE SUBMITTED TO THE HARRIS COUNTY FIRE PROTECTION GROUP FOR REVIEW AND PERMITTING BY THE UNDERGROUND FIRE LINE CONTRACTOR. CIVIL REIVEW DOES **NOT** REVIEW OR APPROVE UNDERGROUND FIRE LINES FOR THE FIRE PROTECTION SYSTEMS.*

WASTEWATER TREATMENT PLANTS

H.C. WWTP REVIEW:

IS THE PROPOSED PROJECT A NEW WWTP SITE OR A REHAB/EXPANSION OF AN EXISTING WWTP SITE? YES ☐ NO ☐

IF YES, IS A HARRIS COUNTY DOMESTIC WASTEWATER TREATMENT PLANT EXPRES REVIEW SHEET ATTACHED AND COMPLETED ACCORDING TO INSTRUCTIONS? YES ☐ NO ☐

REFER TO:
WWW.ENG.HCTX.NET/PERMITS/WASTEWATER/REGULATIONS-STANDARDS-DETAILS FOR DOMESTIC WWTP ERS FORM

10. PERMITS REQUIRED

DOES THE PROPERTY HAVE ANY VIOLATIONS? IF SO PLEASE PROVIDE ALL VIOLATION NUMBERS. _____

☐ STORM WATER QUALITY
☐ SEPTIC (EXISTING) ☐ SEPTIC (PROPOSED)
☐ CIVIL SITE WORK (PHASE II PERMIT CLASS I (non-floodplain))
☐ CIVIL SITE WORK (PHASE II PERMIT CLASS II (floodplain))
☐ DRIVEWAY WITH CULVERT _____ CURB AND GUTTER _____
☐ BUILDING PERMITS (NO. OF BUILDINGS = _____) ☐ CRITICAL FACILITY
☐ SUBDIVISION INFRASTRUCTURE PHASE II (NO. OF LOTS = _____)
☐ NOTICE OF DETENTION AFFIDAVIT REQUIRED
☐ MUD MAINTENANCE AGREEMENT REQUIRED
NOTES: _____

WORK IN HARRIS COUNTY R.O.W.

☐ UTILITY WORK _____
☐ LEFT TURN LANE _____
☒ OTHER CONSTRUCTION 42 INCH WATER LINE _____

NOTES:
A PERMIT IS REQUIRED FOR EACH SCOPE OF WORK ON SITE.
A NOTIFICATION IS REQUIRED FOR EACH SCOPE OF WORK IN HC OR HCFCD ROW.
REFER TO www.eng.hctx.net/permits FOR EACH SCOPE OF WORK IN HC OR IN HCFCD ROW.

BENCHMARK REQUIREMENTS FOR PROPOSED BRIDGES AND OR NEW RESIDENTIAL SUBIDIVSIONS

When the County Engineer has determined that a new benchmark will be required to be established for the proposed project, the developer shall be required to install a benchmark per section 8.0, part 2 of the Harris County Infrastructure Regulations.

Is a new Benchmark required for this project? (*to be determined by Harris County*) [__] yes [__] no

If a new Benchmark is required, the proposed benchmark information is shown on sheets ____

5. DESCRIPTION OF PROPERTY

I. LEGAL DESCRIPTION
A. ACREAGE: _____
B. ☐ SUBDIVISION: _____
_____
☐ SURVEY & ABSTRACT: _____
_____
C. ADJACENT ROADS: CLAY RD., BRITTMOORE PARK DR., AND TANNER RD.

II. PLATTING
A. SUBDIVISION PLAT
☐ PROPOSED PLAT / REPLAT
☐ RECORDED PLAT / REPLAT
PLAT NAME: _____
_____
B. STREETS PROPOSED
☐ PUBLIC
☐ PRIVATE
☐ PUBLIC & PRIVATE
☐ NONE

III. JURISDICTIONS
☒ CITY OF HOUSTON
☒ ETJ, CITY OF HOUSTON
☐ ETJ, CITY OF _____
☐ NO ETJ

IV. HCAD ACCOUNT NOS. (ALL) KEY MAP PAGE _____
KEY MAP PAGE'S - 409X, 449B,F, AND K
046230000004 (SOUTH BEGINING)
0650190000072 (NORTH END)

V. UNOBSTRUCTED VISIBILITY EASEMENT (U.V.E.)
☐ REQUIRED AND SHOWN ON SHEET(S) _____
☒ NOT REQUIRED

NOTE: ALL APPROVED, FINAL PLATS AND ASSOCIATED CPC101 FORMS MUST BE INCLUDED WITH PLAN SUBMITTAL.
☐ CONFORMING SUBDIVISION
☐ NON-CONFORMING SUBDIVISION
☐ PARTIALLY NON-CONFORMING SUBDIVISION

6. STORMWATER QUALITY

I. SWPPP: CONSTRUCTION MEASURES. (Complete for ALL projects)
☒ DISTURBS >1AC. SITE PLAN & DETAILS ON SHEET(S) 75 - 80
☐ DISTURBS <1AC. N/A

II. APPLICABILITY FOR PERMANENT FEATURES. (must be completed on all projects)
EXEMPT NEW DEVELOPMENT:
☐ PROJECT IS ON A PARCEL (A COMMON PLAN OF DEVELOPMENT) LESS THAN 5 ACRES. (must be verified with plat)
EXEMPT REDEVELOPMENT;
☐ PROJECT DOES NOT MEET THE DEFINITION OF SIGNIFICANT REDEVELOPMENT (Part A, Sec. 2.39 of Regulations of Harris County, Texas for Stormwater Quality Management)
EXEMPT GRANDFATHERED;
☐ PROJECT'S DRAINAGE TIES DIRECTLY INTO AN EXISTING DRAINAGE SYSTEM PRIOR TO OCTOBER 1, 2001.
(FOR VERIFICATION: PROVIDE ORIGINAL DRAINAGE AREA MAP INCLUDING CALCULATIONS)
GENERAL:
☒ PROJECT'S SWQ REQUIREMENTS FALL WITHIN THE JURISDICTION OF: HOUSTON
☐ STORMWATER QUALITY PERMIT REQUIREMENT IS COVERED BY AN EXISTING SWQMP WITHIN PROJECT TITLE: _____
HARRIS COUNTY PROJECT NO._____ & SWQ PERMIT NO._____
STORMWATER QUALITY MANAGEMENT PLAN;
☐ SITE PLAN ON SHEET(S) _____

III. PERMANENT SWQ FEATURES. (COMPLETE IF NOT EXEMPT)
☐ VEGETATIVE CONTROLS USED: (FILTER STRIP, GRASSY SWALE, URBAN FORESTRY) DETAILS AND CALCULATIONS APPEAR ON SHEET(S) _____
☐ POND STRUCTURE USED (WET, DRY, WETLANDS) DETAILS AND CALCULATIONS APPEAR ON SHEET(S) _____
☐ HYDRODYNAMIC TYPE SEPARATOR MODEL: _____
☐ OTHER(S): _____

7. FLOOD PLAIN STATUS

I. GENERAL INFORMATION
FIRM PANEL(S) FOR PROPERTY: 48201C0630L
FIRM PANEL(S) DATE: JUNE 18, 2007
STATUS OF PROPERTY ON MAP
☐ ENTIRELY LOCATED IN UNSHADED ZONE "X"
☒ LOCATED PARTIALLY OR ENTIRELY IN ANY "A" ZONE OR SHADED ZONE "X", DELINEATE FLOODPLAIN BOUNDARY ON CONSTRUCTION DRAWINGS (DRAINAGE LAYOUT PG. NO._____) (1% BASE FLOOD LEVEL 94 TO 105) (0.2% BASE FLOOD LEVEL_____)
☐ SITE REMOVED FROM FLOODPLAIN BY LOMR, LOMR-F, LOMA CASE NO._____ REVISED FLOODPLAIN IS SHOWN ON SHEET_____
ELEVATION INFORMATION
BENCHMARK USED
☐ HARRIS COUNTY FLOODPLAIN REFERENCE MARK
☐ HARRIS-GALVESTON COASTAL SUBSIDENCE DISTRICT BENCHMARK (FOR COASTAL AREAS)
DESCRIPTION OF BENCHMARK INCLUDING ELEVATION, DATUM AND YEAR OF ADJUSTMENT *(2001 ADJ.)* WHCRWA MONUMENT CP-30-093 ALUMINUM DISK SET IN CONCRETE SOUTH OF TANNER RD. APPROX. 1,480 FT WEST OF BRITTMOORE PARK RD. ELEV. 103.07 NAD83 (2001 ADJ.)

II. FLOOD PLAIN DETERMINATION BASED ON GROUND ELEVATION
☐ PROPERTY LIES ENTIRELY ABOVE THE BASE FLOOD LEVEL AND IN SHADED ZONE "X"
☐ PROPERTY LIES PARTIALLY OR ENTIRELY BELOW THE BASE FLOOD LEVEL

III. FLOODPLAIN STORAGE SUMMARY (APPLIES ONLY TO PORTION OF LAND LOCATED WITHIN FLOODPLAIN AS DELINEATED BY FIRM PANEL).
A. TOTAL VOLUME OF MATERIAL PROPOSED TO BE MOVED OR PLACED WITHIN THE FIRM DELINEATED FLOODPLAIN (FILL, BASE, CONCRETE, ASPHALT, ETC.):
BELOW 0.2% BASE FLOOD ELEVATION _____ (2001 ADJ.) _____ CUBIC YARDS
B. TOTAL VOLUME OF MATERIAL PROPOSED TO BE REMOVED FROM THE FIRM DELINEATED FLOODPLAIN:
BELOW 0.2% BASE FLOOD ELEVATION _____ (2001 ADJ.) _____ CUBIC YARDS
C. FILL AREA & VOLUME CALCULATIONS ARE SHOWN ON SHEET _____

IV. ☐LOMR REQUIRED ☐CLOMR REQUIRED VERIFIED BY: _____

8. CURB RAMPS

A. ARE CURB RAMPS THAT CONNECT TO PUBLIC STREETS PROPOSED IN THIS SET OF PLANS? [ ] YES [ ] NO

9. LANDSCAPING

☐ REQUIRED AND SHOWN ON SHEET(S) _____
☐ NOT REQUIRED

FOR PROJECTS LOCATED IN ANY FLOODPLAIN

Development constructed or placed in accordance with these plans will comply with all provisions of the Regulations of Harris County, Texas for Floodplain Management.
No net fill is allowed in the flood plain and no fill is allowed in the floodway.
FOUNDATION NOTES: (*Applies to only buildings or building additions requiring a class II permit*)
All water heaters, furnaces, air conditioning units, electrical distribution panels, and any other mechanical or electrical equipment must be elevated in accordance with Section 4.05 of Harris County Floodplain regulations.
Any electrical circuit serving a light switch or outlet located below the base (100-year) flood elevation shall be dropped from above and be on a separate breaker.
All materials used below the (100-year) base flood elevation are on approved FEMA Technical Bulletin 2-08 as Class 5 water-resistant, and approved in accordance with FEMA Technical Bulletin 1-08 for foundation openings.
Critical facilities located in the 0.2% or 500yr floodplain or 1% or 100yr floodplain shall have the lowest floor elevated to 3 feet or more above the 0.2% flood elevation, or 24 inches above the crown of the adjacent road, which ever results in a higher elevation.
Floodproofing and sealing measures must be taken to ensure that toxic substances will not be displaced by or released into floodwaters.
Access routes elevated to or above the level of the base flood shall be provided to all critical facilities to the extent possible.
A completed as-built certificate must be submitted after the structure is complete and before it is occupied.
The County Engineer's Office will post a final inspection notice on the structure once all requirements have been met.
No fill may be used to elevate structures in the 1% or 100yr flood plain. Structures may be constructed on an open foundation, such as piers, or on continuous foundation walls with properly sized and located openings. All foundations are required to be designed by a registered professional engineer.
All structures shall be designed to withstand a three second gust basic wind speed of 120mph.
*Completed ***Elevation Certificates** to be submitted: one at permitting, a second after the slab is poured or sub-floor is installed and before the framing starts, and a third is required once construction is finished. *(PER CURRENT FIRM PANEL) to the Harris County Engineering Department, 10555 Northwest Freeway, Suite 120, Houston, TX 77092*

HARRIS COUNTY ENGINEERING DEPARTMENT - PERMIT OFFICE NOTE:

THE PERMIT MANAGER SIGNATURE REPRESENTS THE FOLLOWING:
- THE COMPLETION OF REVIEW OF THESE PLANS
- INTERPOSE NO OBJECTION TO THE PROPOSED DESIGN ON PRIVATE PROPERTY
- APPROVAL OF WORK IN HARRIS COUNTY MAINTAINED RIGHT OF WAY
- APPROVAL OF WORK IN PROPOSED HARRIS COUNTY RIGHT OF WAY THAT IS TO BE ACCEPTED BY THE COUNTY

HCED SIGNATURE BLOCK:

THE PROJECT WAS REVIEWED, HOWEVER, THIS DOES NOT MEAN THE ENTIRE PROJECT, INCLUDING ALL SUPPORTING DATA AND CALCULATIONS HAVE BEEN COMPLETELY CHECKED AND VERIFIED. THESE DRAWINGS ARE SIGNED, DATED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF TEXAS, WHICH THEREFORE CONVEYS THE ENGINEER'S RESPONSIBILITY AND ACCOUNTABILITY. THIS DOES NOT RELIEVE ANY PARTY FROM COMPLYING WITH APPROPRIATE FEDERAL, STATE AND LOCAL ENVIRONMENTAL RULES, LAWS, AND REGULATIONS AND ANY OTHER LEGALLY ADOPTED REGULATION OR ORDINANCE RELATED TO LAND DEVELOPMENT. IF THE CITY SIGNATURES ARE REQUIRED BY ORDINANCE, COUNTY PERMITS WILL NOT BE ISSUED UNTIL SUCH SIGNATURES ARE OBTAINED. PLAN APPROVAL EXPIRATION TO BE IN ACCORDANCE WITH LOCAL GOVERNEMENT CODE CH. 245.

ENGINEER'S CERTIFICATION

I, CHRIS CAMPBELL , A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, DO HEREBY CERTIFY THAT THE INFORMATION PRESENTED ON THIS SHEET IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND THAT I AM NOT VIOLATING ANY PROVISION OF THE CURRENT TEXAS ENGINEERING PRACTICE ACT AND RULES CONCERNING THE PRACTICE OF ENGINEERING AND PROFESSIONAL ENGINEERING LICENSURE.

ANY VIOLATIONS WILL BE FORWARDED TO THE HARRIS COUNTY DISTRICT ATTORNEY'S OFFICE FOR PROSECUTION.

THE COMPLETED PROJECT CONSISTS OF DRAWING SHEETS 1 THRU 81

SIGNATURE _____ DATE _____

SEAL
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:
CHRISTOPHER L. CAMPBELL
97133
MAY 2020

REVISIONS

NOTE: REVISION BLOCK IS TO BE USED ONLY FOR CHANGES MADE AFTER PLANS HAVE BEEN APPROVED BY HARRIS COUNTY.

DATE	SHEET NO.	DESCRIPTION	P.E. INITIAL	H.C. APPROVED DATE

HARRIS COUNTY
ENGINEERING DEPARTMENT
REVIEW SHEET

VERSION 19.0 SEPTEMBER 1, 2019

HC PROJECT NO. HCFCD PROJECT NO.

1. PROPERTY DESCRIPTION

I. LOCATION INFORMATION

A. HARRIS COUNTY COMMISSIONER'S PRECINCT:
☐ 1 ☐ 2 ☒ 3 ☒ 4

B. KEY MAP: 409X, 449B, F, AND K

C. ADDRESS: 0 BRITTMOORE (OFF) ROAD, HOUSTION TX., 77043

II. LEGAL DESCRIPTION

A. ACREAGE: _____

B. ☐ SUBDIVISION: _____

☐ SURVEY & ABSTRACT: _____

C. ADJACENT ROADS: CLAY RD., BRITTMOORE PARK DR., AND TANNER RD.

III. PLATTING

A. SUBDIVISION PLAT
☐ PROPOSED PLAT / REPLAT
☐ RECORDED PLAT / REPLAT

PLAT NAME: _____

B. STREETS PROPOSED
☐ PUBLIC
☐ PRIVATE
☐ PUBLIC & PRIVATE
☐ NONE

IV. JURISDICTIONS

☒ CITY OF HOUSTON
☒ ETJ, CITY OF HOUSTON
☐ ETJ, CITY OF _____
☐ NO ETJ
☐ UTILITY DISTRICT (NAME)_____

V. HCAD ACCOUNT NOS. (ALL)

046230000004 (SOUTH BEGINING)
0650190000072 (NORTH END)

2. SITE DETENTION DRAINAGE

I. PROPOSED DRAINAGE AREA

☐ NEW DEVELOPMENT AREA: _____
☐ RE-DEVELOPMENT AREA (AMOUNT INCREASED IMPERVIOUS AREA): _____
☐ LOW IMPACT DEVELOPMENT (LID)
METHOD/DESCRIPTION _____

II. METHODOLOGY

HCFCD PCPM DETENTION METHOD USED:
☐ METHOD 1 (LESS THAN 20 ACRES)
☐ METHOD 2 (20 ACRES TO 640 ACRES)
☐ METHOD 3 (GREATER THAN 640 ACRES)
☐ OTHER _____

III. DETENTION VOLUME & OUTFALL

OUTFALL TO:
☐ .65, H.C.F.C.D. CHANNEL, (H.C.F.C.D. UNIT NO.) _____
☐ .75, EXISTING STORM SEWER (OWNER & OPERATOR) _____
☐ 1.00, ROADSIDE DITCH, (OWNER & ROAD NAME) _____
☐ OTHER (OWNER & OPERATOR) _____

IV. STORMWATER DETENTION BASIN INFORMATION

A. HCFCD PCPM SUMMARY TABLE SEE SHEET _____ OF THESE PLANS.

DETENTION BASIN SERVICE AREA			acres	
STORM EVENT	50% EXCEEDANCE (2-YEAR)	10% EXCEEDANCE (10-YEAR)	1% EXCEEDANCE (100-YEAR)	
MAXIMUM ALLOWABLE OUTFLOW (PRE-DEVELOPMENT PEAK FLOW)				
MAXIMUM OUTFLOW PROVIDED (PEAK FLOW FROM BASIN)				
LOWEST NATURAL/FINISHED GROUND OR FINISHED FLOOR ELEVATION ESTIMATE				
DESIGN WATER SURFACE ELEVATION				
MINIMUM STORAGE REQUIRED (ac-ft)				
DETENTION STORAGE PROVIDED (ac-ft)				
STORAGE RATE PROVIDED (ac-ft/ac)				
OUTFLOW VELOCITY INTO CHANNEL (ft/sec)				
DRAIN TIME – 1% ONLY (hours)				
EMERGENCY OVERFLOW (TYPE, SIZE, ELEVATION, ETC.)				

B. DETENTION BASIN TO BE MAINTAINED BY _____

C. DETENTION SERVICE AREA MAP ON SHEET _____

D. ADDITIONAL CRITERIA FOR PUMPED DETENTION BASINS
VOLUME OF PUMPED 1% EXCEEDANCE STORAGE VOLUME = _____ ACF _____ % OF TOTAL VOLUME
MAXIMUM DESIGN OUTFLOW VELOCITY INTO HCFCD CHANNEL = _____ FT/SEC
DRAIN TIME FOR BASIN = _____ HOURS BASED ON _____HEAD CONDITIONS

V. DETENTION PROVIDED IN OTHER PLANS:

HCFCD PROJECT No. _____ DATE SIGNED BY HCFCD: _____
PLAN TITLE _____
DETENTION POND SERVICE AREA MAP IS PROVIDED ON SHEET _____
ENGINEERING FIRM _____
DETENTION BASIN MAINTAINED BY: _____

VI. FLOW RESTRICTOR SIZE

OUTFALL PIPE SIZE: _____
RESTRICTOR PIPE SIZE: _____
RESTRICTOR PLATE DIMENSION: _____

VII. DETENTION PROVIDED BY

☐ REGIONAL DETENTION BASIN SYSTEM (APPROVED H.C. PRJ NO.): _____

FOR PROJECTS LOCATED IN ANY FLOODPLAIN

Development constructed or placed in accordance with these plans will comply with all provisions of the designated Floodplain Administrator.

No net fill is allowed in the flood plain and no fill is allowed in the floodway.

OFFSITE SHEET FLOW: (100 YEAR)

OFFSITE SHEET FLOW MAPPING, TOTAL DISCHARGE CALCULATIONS, AND DESIGN ACCOMODATIONS ARE SHOWN ON SHEET ____ OR, AS PRESENTED IN THE APPROVED DRAINAGE STUDY ENTITLED _____.

TOTAL ACREAGE = ____
TOTAL DISCHARGE = ____

NOTE: ALL OFFSITE SHEET FLOW FROM ADJACENT PROPERTIES MUST BE IDENTIFIED AND PROPERLY ACCOUNTED FOR IN THE PROJECT. THE SIGNING ENGINEER HEREBY CERTIFIES THAT THESE AREAS HAVE BEEN ADDRESSED.

3. SWQ DISCHARGE INTO FCD FACILITY

I. SWPPP: CONSTRUCTION MEASURES. (Must complete)

☒ DISTURBS >1AC. SITE PLAN & DETAILS ON SHEET(S) 75 - 80
☐ DISTURBS <1AC. N/A

*II. APPLICABILITY FOR PERMANENT FEATURES. (Must complete)

EXEMPT NEW DEVELOPMENT:
☐ PROJECT IS ON A PARCEL (A COMMON PLAN OF DEVELOPMENT) LESS THAN 5 ACRES. (Must be verified with plat)

EXEMPT REDEVELOPMENT;
☒ PROJECT DOES NOT MEET THE DEFINITION OF SIGNIFICANT REDEVELOPMENT (Part A,Sec. 2.39 of Regulations of Harris County, Texas for Stormwater Quality Management)

EXEMPT GRANDFATHERED:
☐ PROJECT'S DRAINAGE TIES DIRECTLY INTO AN EXISTING DRAINAGE SYSTEM PRIOR TO OCTOBER 1, 2001.
(FOR VERIFICATION: PROVIDE ORIGINAL DRAINAGE AREA MAP INCLUDING CALCULATIONS)

GENERAL:
☒ PROJECT'S SWQ REQUIREMENTS FALL WITHIN THE JURISDICTION OF: HOUSTON
☐ STORMWATER QUALITY PERMIT REQUIREMENT IS COVERED BY AN EXISTING SWQMP WITHIN PROJECT TITLE: _____
HARRIS COUNTY PROJECT No _____ & SWQ PERMIT No.

STORMWATER QUALITY MANAGEMENT PLAN:
☐ SITE PLAN ON SHEET(S)

III. PERMANENT SWQ FEATURES. (COMPLETE IF NOT EXEMPT)

☐ VEGETATIVE CONTROLS USED: (FILTER STRIP, GRASSY SWALE, URBAN FORESTRY DETAILS AND CALCULATIONS APPEAR ON SHEET(S) _____
☐ POND STRUCTURE USED (WET, DRY, WETLANDS) DETAILS AND CALCULATIONSAPPEAR ON SHEET(S)_____
☐ HYDRODYNAMIC TYPE SEPARATOR MODEL: _____
☐ OTHER(S): _____

4. FLOOD PLAIN STATUS

I. GENERAL INFORMATION

FIRM PANEL(S) FOR PROPERTY: 48201C0630L
FIRM PANEL(S) DATE: JUNE 18, 2007

STATUS OF PROPERTY ON MAP
☐ ENTIRELY LOCATED IN UNSHADED ZONE "X"
☒ LOCATED PARTIALLY OR ENTIRELY IN ANY "A" ZONE OR SHADED ZONE "X", DELINEARK FLOODPLAIN BOUNDARY ON CONSTRUCTION DRAWINGS (DRAINAGE LAYOUT PG. NO._____) (1% BASE FLOOD LEVEL_____) (0.2% BASE FLOOD LEVEL_____)
☐ SITE REMOVED FROM FLOODPLAIN BY LOMR, LOMR-F, LOMA CASE NO._____ REVISED FLOODPLAIN IS SHOWN ON SHEET_____

ELEVATION INFORMATION
BENCHMARK USED
☐ HARRIS COUNTY FLOODPLAIN REFERENCE MARK
☐ HARRIS-GALVESTON COASTAL SUBSIDENCE DISTRICT BENCHMARK (FOR COASTAL AREAS)
DESCRIPTION OF BENCHMARK INCLUDING ELEVATION, DATUM AND YEAR OF ADJUSTMENT ***(2001 ADJ.)*** WHCRWA MONUMENT CP-30-253 ALUMINUM DISK SET IN CONCRETE SOUTH OF TANNER RD. APPROX. 1,480 FT WEST OF BRITTMOORE PARK RD. ELEV. 103.07 NAD83 (2001 ADJ.)

II. FLOOD PLAIN DETERMINATION BASED ON GROUND ELEVATION

☐ PROPERTY LIES ENTIRELY ABOVE THE BASE FLOOD LEVEL AND IN SHADED ZONE "X"
☐ PROPERTY LIES PARTIALLY OR ENTIRELY BELOW THE BASE FLOOD LEVEL

III. FLOODPLAIN STORAGE SUMMARY
(APPLIES ONLY TO PORTION OF LAND LOCATED WITHIN FEMA REGULATORY FLOODPLAIN).

A. TOTAL VOLUME OF MATERIAL PROPOSED TO BE MOVED OR PLACED WITHIN THE FIRM DELINEATED FLOODPLAIN (FILL, BASE, CONCRETE, ASPHALT, ETC.):
BELOW 0.2% BASE FLOOD ELEVATION (2001 ADJ.) _____ CUBIC YARDS 0

B. TOTAL VOLUME OF MATERIAL PROPOSED TO BE REMOVED FROM THE FIRM DELINEATED FLOODPLAIN:
BELOW 0.2% BASE FLOOD ELEVATION (2001 ADJ.) _____ CUBIC YARDS 0
INCLUDING CALCULATIONS)

C. FILL AREA & VOLUME CALCULATIONS ARE SHOWN ON SHEET _____

5. WORK IN HCFCD RIGHT-OF-WAY

I. TYPE OF WORK TO BE PERFORMED IN HCFCD HCFCD ROW

A. BOND/NOTIFICATION INFORMATION
☐ HCFCD WATERSHED _____
☐ HCFCD UNIT No. _____
☐ NUMBER OF OUTFALLS _____
☐ UTILITY CROSSING
☐ ROADWAY BRIDGE/CULVERT CROSSING
☐ FILL ACTIVITY
☐ REHABILITATION OF CHANNEL
☐ MAINTENANCE
☐ TEMPORARY CROSSING
☐ TRAIL (LENGTH) _____
☒ OTHER _____
COST OF WORK IN HCFCD ROW _____

II. USACE ENVIRONMENTAL PERMIT

☐ US ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT NUMBER(S) _____
☐ US ARMY CORPS OF ENGINEERS INDIVIDUAL PERMITS
☐ OTHER
☒ NO PERMITS REQUIRED
EXPLAIN: _____

III. REFERENCE / BASIS OF DETERMINATION

☒ ENVIRONMENTAL CONSULTANT REPORT
BY GEOTEST ENGINEERING, INC.
REPORT TITLE _____
REPORT DATE _____
☐ OTHER _____

NOTES:
I. – III. REQUIRED ON PROJECTS WITH WORK IN A HCFCD CHANNEL. PLEASE REFERENCE SECTION 17 OF THE FLOOD CONTROL DISTRICT POLICY, CRITERIA, AND PROCEDURE MANUAL FOR MORE INFORMATION.

IV. HCFCD STANDARD NOTES: SEE SHEET 5 OF THESE PLANS.

V. HCFCD STANDARD DETAILS: SEE SHEET _____ OF THESE PLANS.

VI. HCFCD ACCESS PLAN: SEE SHEET _____ OF THESE PLANS.

VII. REFER TO THE FOLLOWING PLAN SHEETS: 16, 29, 30, 50, & 51
FOR EXISTING AND PROPOSED RIGHT(S) OF WAY INCLUDING DELINEATION AND RECORDING INFORMATION PER HCFCD POLICY, CRITERIA, & PROCEDURE MANUAL (i.e., DRAINAGE EASEMENT, FEE STRIP, ETC.) AND GRANTEE (e.g. COH, HCFCD, PUBLIC, TXDOT, ETC.)

6. REPORTS/AGREEMENTS

I. HCFCD ACCEPTED REPORTS (ALL)

STORMWATER DRAINAGE DESIGN REPORT
REPORT TITLE _____
HCFCD PROJECT #_____
ENGINEERING FIRM _____
REPORT ACCEPTANCE DATE _____

GEOTECHNICAL INVESTIGATION REPORT
REPORT TITLE _____
HCFCD PROJECT #_____
ENGINEERING FIRM _____
REPORT ACCEPTANCE DATE _____

HCFCD APPROVED VARIANCE
DESCRIPTION OF VARIANCE _____
DOCUMENT ID #_____
VARIANCE ACCEPTANCE DATE _____

II. AGREEMENT TYPE & No.;

☐ INTERLOCAL (ILA): _____
☐ HCFCD MAINTENANCE _____
☐ TURF ESTABLISHMENT _____
☐ OTHER _____

HCFCD SIGNATURE BLOCK

PROJECT NAME: WHCRWA CONTRACT S3-A1
ADDRESS: 0 BRITTMOORE (OFF) ROAD, HOUSTION TX., 77043

WAS ACCEPTED BY HARRIS COUNTY FLOOD CONTROL DISTRICT FOR THE PURPOSES LISTED BELOW:

HARRIS COUNTY FLOOD CONTROL DISTRICT

INTERPOSE NO OBJECTION

BY_____
FOR ITEMS LOCATED OUTSIDE OF HCFCD RIGHT-OF-WAY

APPROVED:

BY_____
FOR ITEMS LOCATED WITHIN EXISTING HCFCD RIGHT-OF-WAY

APPROVED:

BY_____
FOR ITEMS LOCATED WITHIN PROPOSED HCFCD RIGHT-OF-WAY

NO REVIEW REQUIRED:

BY_____
FINAL PERMITTING BY OTHERS

ADDITIONAL COMMENTS:

THE PROJECT WAS REVIEWED, HOWEVER, THIS DOES NOT MEAN THE ENTIRE PROJECT, INCLUDING ALL SUPPORTING DATA AND CALCULATIONS HAVE BEEN COMPLETELY CHECKED AND VERIFIED. THESE DRAWINGS ARE SIGNED, DATED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF TEXAS, WHICH THEREFORE CONVEYS THE ENGINEER'S RESPONSIBILITY AND ACCOUNTABILITY. THIS DOES NOT RELIEVE ANY PARTY FROM COMPLYING WITH APPROPRIATE FEDERAL, STATE AND LOCAL ENVIRONMENTAL RULES, LAWS, AND REGULATIONS AND ANY OTHER LEGALLY ADOPTED REGULATION OR ORDINANCE RELATED TO LAND DEVELOPMENT. IF THE CITY SIGNATURES ARE REQUIRED BY ORDINANCE, COUNTY PERMITS WILL NOT BE ISSUED UNTIL SUCH SIGNATURES ARE OBTAINED. PLAN APPROVAL EXPIRATION TO BE IN ACCORDANCE WITH LOCAL GOVERNEMENT CODE CH. 245.

ENGINEER'S CERTIFICATION

I, CHRIS CAMPBELL , A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, DO HEREBY CERTIFY THAT THE INFORMATION PRESENTED ON THIS SHEET IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND THAT I AM NOT VIOLATING ANY PROVISION OF THE CURRENT TEXAS ENGINEERING PRACTICE ACT AND RULES CONCERNING THE PRACTICE OF ENGINEERING AND PROFESSIONAL ENGINEERING LICENSURE.

ANY VIOLATIONS WILL BE FORWARDED TO THE HARRIS COUNTY DISTRICT ATTORNEY'S OFFICE FOR PROSECUTION.

THE COMPLETED PROJECT CONSISTS OF DRAWING SHEETS 1 THRU 81.

_____ _____
SIGNATURE DATE

SEAL
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.
CHRISTOPHER L. CAMPBELL
91713
MAY 2020

REVISIONS

NOTE: REVISION BLOCK IS TO BE USED ONLY FOR CHANGES MADE AFTER PLANS HAVE BEEN APPROVED BY HARRIS COUNTY FLOOD CONTROL.

DATE	SHEET NO.	DESCRIPTION	P.E. INITIAL	H.C.F.C.D APPROVED DATE

HARRIS COUNTY FLOOD CONTROL PROJECT NO.

SHEET NUMBER 3 OF 81

HARRIS COUNTY
FLOOD CONTROL DISTRICT
REVIEW SHEET

VERSION 1.0 OCTOBER 2019

DRAWING LIST

DWG No	SHEET	DESCRIPTION
	1	COVER SHEET
	2	EXPRESS REVIEW
	3	FLOOD CONTROL DISTRICT REVIEW
	4	INDEX SHEET LEGEND & ABBREVIATIONS
	5	GENERAL CONSTRUCTION NOTES
	6	SURVEY CONTROL MAP SHEET 1 OF 5
	7	SURVEY CONTROL MAP SHEET 2 OF 5
	8	SURVEY CONTROL MAP SHEET 3 OF 5
	9	SURVEY CONTROL MAP SHEET 4 OF 5
	10	SURVEY CONTROL MAP SHEET 5 OF 5
	11	SHEET LAYOUT SHEET 1 OF 5
	12	SHEET LAYOUT SHEET 2 OF 5
	13	SHEET LAYOUT SHEET 3 OF 5
	14	SHEET LAYOUT SHEET 4 OF 5
	15	SHEET LAYOUT SHEET 5 OF 5
	16	FLOODPLAIN MITIGATION PLAN
	17	BASELINE 'A' STA. 5+00 TO STA. 9+00 PLAN & PROFILE
	18	BASELINE 'A' STA. 9+00 TO STA. 14+00 PLAN VIEW
	19	BASELINE 'A' STA. 9+00 TO STA. 14+00 PROFILE VIEW
	20	BASELINE 'A' STA. 14+00 TO STA. 19+00 PLAN & PROFILE
	21	BASELINE 'A' STA. 19+00 TO STA. 24+00 PLAN & PROFILE
	22	BASELINE 'A' STA. 24+00 TO STA. 29+00 PLAN & PROFILE
	23	BASELINE 'A' STA. 29+00 TO STA. 34+00 PLAN & PROFILE
	24	BASELINE 'A' STA. 34+00 TO STA. 39+00 PLAN VIEW
	25	BASELINE 'A' STA. 34+00 TO STA. 39+00 PROFILE VIEW
	26	BASELINE 'A' STA. 39+00 TO STA. 44+00 PLAN & PROFILE
	27	BASELINE 'A' STA. 44+00 TO STA. 49+00 PLAN & PROFILE
	28	BASELINE 'A' STA. 49+00 TO STA. 54+00 PLAN & PROFILE
	29	BASELINE 'A' STA. 54+00 TO STA. 59+00 PLAN VIEW
	30	BASELINE 'A' STA. 54+00 TO STA. 59+00 PROFILE VIEW
	31	BASELINE 'A' STA. 59+00 TO STA. 64+00 PLAN & PROFILE
	32	BASELINE 'A' STA. 64+00 TO STA. 69+00 PLAN & PROFILE
	33	BASELINE 'A' STA. 69+00 TO STA. 74+00 PLAN & PROFILE
	34	BASELINE 'A' STA. 74+00 TO STA. 79+00 PLAN & PROFILE
	35	BASELINE 'A' STA. 79+00 TO STA. 83+00 PLAN & PROFILE
	36	BASELINE 'A' STA. 83+00 TO STA. 88+00 PLAN & PROFILE
	37	BASELINE 'A' STA. 88+00 TO STA. 93+00 PLAN & PROFILE
	38	BASELINE 'A' STA. 93+00 TO STA. 98+00 PLAN & PROFILE
	39	BASELINE 'A' STA. 98+00 TO STA. 102+00 PLAN & PROFILE
	40	BASELINE 'A' STA. 102+00 TO STA. 106+00 PLAN VIEW
	41	BASELINE 'A' STA. 102+00 TO STA. 106+00 PROFILE VIEW
	42	BASELINE 'A' STA. 106+00 TO STA. 111+00 PLAN VIEW
	43	BASELINE 'A' STA. 106+00 TO STA. 111+00 PROFILE VEIW
	44	BASELINE 'A' STA. 111+00 TO STA. 115+00 PLAN VIEW
	45	BASELINE 'A' STA. 111+00 TO STA. 115+00 PROFILE VIEW
	46	BASELINE 'A' STA. 115+00 TO STA. 120+00 PLAN & PROFILE
	47	BASELINE 'A' STA. 120+00 TO STA. 125+00 PLAN & PROFILE
	48	BASELINE 'A' STA. 125+00 TO STA. 129+00 PLAN VIEW

DRAWING LIST

DWG No	SHEET	DESCRIPTION
	49	BASELINE 'A' STA. 125+00 TO STA. 129+00 PROFILE VIEW
	50	BASELINE 'A' STA. 129+00 TO STA. 134+00 PLAN VIEW
	51	BASELINE 'A' STA. 129+00 TO STA. 134+00 PROFILE VIEW
	52	BASELINE 'A' STA. 134+00 TO STA. 139+00 PLAN & PROFILE
	53	BASELINE 'A' STA. 139+00 TO STA. 144+00 PLAN & PROFILE
	54	BASELINE 'A' STA. 144+00 TO STA. 148+00 PLAN & PROFILE
D-01	55	PROJECT SIGN
D-02	56	STEEL PIPE DETAILS
D-03	57	PRESTRESSED CONCRETE CYLINDER PIPE DETAILS
D-04	58	EXCAVATION BEDDING AND BACKFILL DETAILS
D-05	59	TRENCH DAM DETAILS
D-06	60	AIR VALVE DETAILS (SHEET 1 OF 2)
D-07	61	AIR VALVE DETAILS (SHEET 2 OF 2)
D-08	62	LARGE DIAMETER ACCESS MANHOLE AND MANWAY DETAILS
D-09	63	VALVE AND SERVICE MANHOLE DETAILS
D-10	64	MANHOLE COVER DETAILS
D-11	65	STANDARD WATER LINE DETAILS
D-12	66	TUNNEL AND CASING DETAILS
	67	PAVEMENT REPAIR DETAILS
CP-1	68	CATHODIC PROTECTION DETAILS
CP-2	69	CATHODIC PROTECTION DETAILS
CP-3	70	CATHODIC PROTECTION DETAILS
CP-4	71	CATHODIC PROTECTION DETAILS
CP-5	72	CATHODIC PROTECTION DETAILS
CP-6	73	CATHODIC PROTECTION DETAILS
CP-7	74	CATHODIC PROTECTION DETAILS
	75	STORM WATER POLLUTION PREVENTION PLAN SHEET 1 OF 5
	76	STORM WATER POLLUTION PREVENTION PLAN SHEET 2 OF 5
	77	STORM WATER POLLUTION PREVENTION PLAN SHEET 3 OF 5
	78	STORM WATER POLLUTION PREVENTION PLAN SHEET 4 OF 5
	79	STORM WATER POLLUTION PREVENTION PLAN SHEET 5 OF 5
	80	SWPPP DETAILS
	81	TRAFFIC CONTROL PLAN

STANDARD ABBREVIATIONS

@	AT
AI/VR	AIR RELEASE/VACUUM RELEASE
B.L.	BUILDING LINE
B/F	BLIND FLANGE
B.F.V.	BUTTERFLY VALVE
BL.	BASELINE
B/S	BACKSLOPE
C.L.	CENTER LINE
CLR.	CLEARANCE
C-C	CENTER TO CENTER
C.O.	CLEAN OUT
CONC.	CONCRETE
CP	CATHODIC PROTECTION
C.G.M.P.	CORRUGATED GALVANIZED METAL PIPE
C.M.P.	CORRUGATED METAL PIPE
D.E.	DRAINAGE EASEMENT
DESC.	DESCRIPTION
D.I.C.L.	DUCTILE IRON CEMENT LINED
D.I.P.	DUCTILE IRON PIPE
DIA.	DIAMETER
D/W	DRIVEWAY
E.	EAST
E.P.	EDGE OF PAVEMENT
EL.	ELEVATION
ENT.	ENTERGY
ESMT	EASEMENT
EXIST.	EXISTING
F.H.	FIRE HYDRANT
F.L.	FLOOD LIGHT
F.M.	FORCE MAIN OR FLOW METER
F.V.	FLUSHING VALVE
FL.	FLOW LINE
FOC	FIBER OPTIC CABLE
G.V.	GATE VALVE
GRP	GROUNDWATER REDUCTION PROGRAM
H.M.A.C.	HOT MIX ASPHALTIC CONCRETE
H.P.	HIGH PRESSURE
I.P.	INTERMEDIATE PRESSURE
I.R.	IRON ROD
INFL.	INFLUENT
INV. EL.	INVERT ELEVATION
L.F.	LINEAR FEET
L.U.S.T.	LEAKING UNDERGROUND STORAGE TANK
LT.	LEFT
M.A.	MAINTENANCE ACCESS
M.C.D.	MULTI CONDUIT DUCT
M.H.	MANHOLE
MAX.	MAXIMUM
MIN.	MINIMUM
N.	NORTH
N.G.	NATURAL GROUND
N.F.V.	NOT FIELD VERIFIED
P.C.	POINT OF CURVATURE
P.O.C.	POINT ON CURVE
PI.	POINT OF INTERSECTION
PL	PROPERTY LINE
P.R.C.	POINT OF REVERSE CURVE
PRV	PRESSURE REDUCING VALVE
P.T.	POINT OF TANGENCY
PT.	POINT
PROP.	PROPOSED
PVI	POINT OF VERTICAL INTERSECTION
PVMT.	PAVEMENT
PLM	PIPELINE MARKER
R.	RADIUS
R.C.P.	REINFORCED CONCRETE PIPE
R.O.W.	RIGHT-OF-WAY
R.P.	RADIUS POINT
RED.	REDUCER
(R)	RECORD DRAWING NOT FIELD VERIFIED
RT.	RIGHT
S.	SOUTH
SJRA	SAN JACINTO RIVER AUTHORITY
S.S.	SIDE SLOPE
S.S.E.	SANITARY SEWER EASEMENT
SAN.	SANITARY
SB/BH	SOIL BORING/ BORE HOLE
SWBT	AT&T TEXAS/SWBT
STA.	STATION
STL	STEEL
STM.	STORM
SWR.	SEWER
T.C.	TOP OF CURB
T.C.E.	TEMPORARY CONSTRUCTION EASEMENT
TP	TOP OF PAVEMENT
TYP.	TYPICAL
U.E.	UTILITY EASEMENT
VPI.	VERTICAL POINT INTERSECTION
W.	WEST
W.L.	WATERLINE
W.L.E.	WATER LINE EASEMENT
w/	WITH

EXISTING PLAN LEGEND

- SHRUB OR BUSH
- TREE
- SAN MANHOLE, STORM MANHOLE
- AT&T TEXAS/SWBT MANHOLE
- CLEANOUT
- GAS METER
- GAS VALVE
- FIRE HYDRANT
- WATER METER
- WATER VALVE
- POWER POLE, TELEPHONE & ELEC. POLE
- DOWN GUY
- STORM "B" INLET
- STORM "B-B" INLET
- STORM INLET, GRATE
- TRAFFIC SIGNAL, SIGNAL POLE
- IRON ROD/POLE
- WOOD POST, BRICK COLUMN, BRICK PILLAR
- TRAFFIC, METRO, BUSINESS, STOP SIGNS
- AT&T TEXAS/SWBT PEDESTAL, HISTORICAL MARKER
- W.H.C.R.W.A. SURVEY MARKER, MONUMENT MARKER
- SOIL BORING LOCATION
- SOIL BORING & PIEZOMETER LOCATION
- MAILBOX
- METAL POST
- UTILITY MARKER
- PIPELINE MARKER
- FIBER OPTIC CABLE MARKER
- LIGHT STANDARD
- ELECTRICAL BOX
- HEDGE
- CURB LINE
- LOT LINES
- EASEMENT LINE
- EDGE OF ASPHALT
- CULVERT PIPE
- BASELINE
- CHAIN LINK, WOOD FENCE
- GAS LINE OR PIPELINE
- AT&T TEXAS/SWBT LINE
- CENTERPOINT ENERGY CONDUIT
- CENTERPOINT ENERGY OVERHEAD LINES
- PROPERTY LINE (R.O.W.)
- SAN SEWER LINE 24" DIA. & SMALLER
- SAN SEWER LINE 30" DIA. & LARGER
- STM SEWER LINE 24" DIA. & SMALLER
- STM SEWER LINE 30" DIA & LARGER
- WATER LINE 24" DIA. & SMALLER
- WATER LINE 30" DIA & LARGER

EXISTING PROFILE LEGEND

- BASELINE, CENTER LINE OF RIGHT-OF-WAY
- R.O.W. LINE N & E
- R.O.W. LINE S & W
- DITCH OR CURB LINE N & E
- DITCH OR CURB LINE S & W
- GAS LINE
- AT&T TEXAS/SWBT CONDUIT
- SAN SEWER LINE 24" DIA. & SMALLER
- SAN SEWER LINE 30" DIA. & LARGER
- STM SEWER LINE 24" DIA. & SMALLER
- STM SEWER LINE 30" DIA & LARGER
- WATER LINE 24" DIA. & SMALLER
- WATER LINE 30" DIA & LARGER
- PIPELINE MARKER
- INFORMATION OBTAINED FROM RECORD DRAWINGS, NOT FIELD VERIFIED.

PROPOSED PLAN LEGEND

- T.S.V. & BOX
- BUTTERFLY VALVE
- STORM "BB" INLET
- ACCESS MANHOLE
- CATHODIC PROTECTION RECTIFIER AND DEEP ANODE
- AIR VENT w/3 BOLLARDS
- AIR VENT w/1 BOLLARD
- CATHODIC PROTECTION TEST STATION
- WHCRWA EASEMENT LINE
- WATER LINE 24" AND SMALLER
- WATER LINE 30" DIA & LARGER
- WATER LINE 24" DIA & SMALLER IN TUNNEL
- WATER LINE 30" DIA & LARGER IN TUNNEL

PROPOSED PROFILE LEGEND

- WATER LINE 24" DIA & SMALLER
- WATER LINE 30" DIA & LARGER
- WATER LINE 30" DIA & LARGER TRENCHLESS
- GATE VALVE w/BOX
- BUTTERFLY VALVE w/OPERATOR M.H.
- INTERNAL ELLIPTICAL DISHED HEAD PLUG
- MANHOLE, AI/VR

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM ENGINEERING CORPORATION

Binkley & Barfield consulting engineers
Binkley & Barfield, Inc. | TxEng F-257
1710 Seamist Dr, Houston, TX 77008
713.869.3433 | BinkleyBarfield.com

INTERIM REVIEW ONLY
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CHRISTOPHER L. CAMPBELL
Engineer
91713
Registration Number
MAY 2020
Date

SEGMENT S3-A1

INDEX SHEET
LEGEND & ABBREVIATIONS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.
HORIZ:
VERT:
SHEET NO. 4 OF 81
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

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GENERAL CONSTRUCTION NOTES

1. THERE WILL BE NO SEPARATE PAYMENT FOR WORK SHOWN ON THESE PLANS UNLESS OTHERWISE SPECIFICALLY ESTABLISHED IN BID SECTION OF CONTRACT DOCUMENTS. INCLUDE COST OF THIS WORK IN CONTRACT UNIT PRICE FOR ITEMS OF WHICH THIS WORK IS A COMPONENT OR INCIDENTAL TO.
2. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF EXISTING FACILITIES PRIOR TO CONSTRUCTION OF PROPOSED FACILITIES. ANY DAMAGE TO EXISTING FACILITIES INCURRED AS A RESULT OF CONSTRUCTION OPERATIONS WILL BE REPAIRED AT CONTRACTOR'S EXPENSE.
3. CONTRACTOR SHALL REMAIN FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE TO EXISTING PUBLIC OR PRIVATE UTILITY LINES, INCLUDING BUT NOT LIMITED TO WATER MAINS, WASTEWATER COLLECTION SYSTEMS, AND STORM SEWERS, DURING CONSTRUCTION.
4. REMOVE EXISTING PLUGS AND CONNECT PROPOSED UTILITY LINES AS INDICATED ON PLANS.
5. VERIFY LOCATION OF UNDERGROUND UTILITIES AND NOTIFY THE FOLLOWING AGENCIES 48-HRS PRIOR TO EXCAVATING NEAR EXISTING FACILITIES:
   A) TEXAS 811 AT (800) 245-4545
   B) LONE STAR NOTIFICATION CENTER AT (800) 669-8344
   C) TEXAS EXCAVATION SAFETY SYSTEM INC. AT (800) 344-8377.
6. COMPLY WITH ALL FEDERAL, STATE, AND LOCAL LAWS AND ALL REGULATIONS OF UTILITY COMPANIES CONCERNING SAFETY AND HEALTH PRACTICES.
7. INCLUDE PRICE OF ALL BEDDING AND BACKFILL OF TYPE REQUIRED IN PRICE BID PER LINEAR FOOT OF PIPE.
8. ALL SEWER TRENCHES UNDER OR WITHIN 1-FT OF PROPOSED AND/OR FUTURE PAVEMENT OR CURB SHALL BE BACKFILLED WITH 1-1/2 SACKS OF CEMENT PER CUBIC YARD CEMENT-STABILIZED SAND TO A POINT 1-FT BELOW PAVEMENT SUBGRADE. REMAINING BACKFILL SHALL BE MADE WITH COMPACTED SUITABLE MATERIAL PER SPECIFICATIONS.
9. OWNER WILL FURNISH INITIAL LABORATORY TESTS. SUBSEQUENT TESTING DUE TO FAILED TESTS SHALL BE AT CONTRACTOR'S EXPENSE. COPY OF ALL TEST RESULTS SHALL BE SUBMITTED TO ENGINEER.
10. DAILY REMOVE ALL MUD, DIRT, AND DEBRIS DEPOSITED OR DROPPED ON EXISTING PAVEMENT DUE TO CONSTRUCTION ACTIVITY. MATERIAL THAT IS HAZARDOUS TO TRAFFIC SHALL BE REMOVED IMMEDIATELY.
11. ALL TRAFFIC CONTROL AND WARNING SIGNS SHALL BE IN ACCORDANCE WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
12. WHEN TRENCH CONDITION WARRANTS USE OF DEWATERING SYSTEMS, THEIR USE SHALL BE REQUESTED BY CONTRACTOR AND APPROVED BY OWNER.
13. THESE PLANS DO NOT EXTEND OR INCLUDE DESIGNS OR SYSTEMS PERTAINING TO THE SAFETY OF THE CONTRACTOR OR ITS EMPLOYEES, AGENTS, OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. SEAL OF THE REGISTERED PROFESSIONAL ENGINEER(S) HEREON DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED IN THESE PLANS. CONTRACTOR SHALL INDEPENDENTLY PREPARE AND/OR OBTAIN THE APPROPRIATE SAFETY SYSTEMS.
14. PROTECT ALL TREES DURING CONSTRUCTION. NO TREES SHALL BE REMOVED WITHOUT OWNER'S PERMISSION, UNLESS OTHERWISE SPECIFIED IN PLANS.
15. GIVE NOTICE TO ALL AUTHORIZED INSPECTORS, SUPERINTENDENTS, OR PERSONS IN CHARGE OF PRIVATE AND PUBLIC UTILITIES OR RAILROADS AFFECTED BY OPERATIONS PRIOR TO COMMENCEMENT OF WORK. OBTAIN ALL NECESSARY CONSTRUCTION PERMITS PRIOR TO STARTING CONSTRUCTION.
16. OBTAIN ALL PERMITS REQUIRED BY REGULATION OF HARRIS COUNTY, TEXAS FOR FLOOD PLAIN MANAGEMENT PRIOR TO STARTING CONSTRUCTION.
17. OBTAIN ALL PERMITS REQUIRED BY HARRIS COUNTY, TEXAS PRIOR TO STARTING CONSTRUCTION OF UTILITIES AND/OR CULVERTS WITHIN HARRIS COUNTY ROAD RIGHTS-OF-WAY, IF APPLICABLE.
18. NOTIFY HARRIS COUNTY ENGINEERING DEPARTMENT BY WRITTEN NOTIFICATION 48-HRS IN ADVANCE OF STARTING CONSTRUCTION, FOLLOWED BY TELEPHONE NOTIFICATION AT (713) 316-3561 24-HRS IN ADVANCE OF STARTING CONSTRUCTION. A COPY OF WRITTEN NOTIFICATION SHALL BE SENT TO ENGINEER.
19. ALL DISTURBED AREAS OR AREAS AFFECTED BY CONSTRUCTION IN BOTH PRIVATE AND PUBLIC PROPERTIES SHALL BE CLEANED AND RETURNED TO EXISTING OR BETTER CONDITIONS. DISTURBED VEGETATED AREAS SHALL BE HYDRO-MULCHED UNLESS OTHERWISE NOTED ON THE PLANS. DISTURBED SWALES AND OTHER DRAINAGE FACILITIES SHALL BE RESTORED AND REMAIN FUNCTIONAL AFTER CONSTRUCTION. DISTURBED AREAS WITHIN HCFCD RIGHTS-OF-WAY AND/OR EASEMENTS SHALL BE FULLY RESTORED IN ACCORDANCE WITH APPLICABLE HCFCD STANDARD CONSTRUCTION SPECIFICATIONS.
20. ALL OPEN TRENCHES, TUNNEL SHAFTS, OR OTHER EXCAVATIONS SHALL BE SECURED IN ACCORDANCE WITH OSHA REQUIREMENTS.
21. ALL OPEN CUTS ON PAVEMENTS SHALL BE REPLACED AND REPAIRED PER DETAILS. STEEL PLATES SHALL BE USED AS WARRANTED TO PROVIDE A CONTINUOUS TRAFFIC FLOW AFTER WORKING HOURS.
22. ALL HIKE AND BIKE TRAILS SHALL BE REPLACED IF DAMAGED OR REMOVED DURING CONSTRUCTION.
23. RESTORE ALL SPRINKLER AND/OR IRRIGATION SYSTEMS DISTURBED DURING CONSTRUCTION TO ORIGINAL CONDITION OR BETTER, NO SEPARATE PAY.
23. CONTRACTOR WILL BE RESPONSIBLE FOR REPLACING DAMAGED FENCING OUTSIDE OF WHAT IS SPECIFIED IN THE PLANS AT NO COST TO OWNER.

WATER MAIN CONSTRUCTION NOTES

1. ALL NEWLY INSTALLED PIPES, COATINGS, AND RELATED PRODUCTS SHALL CONFORM TO ANSI/NSF STANDARDS AND MUST BE CERTIFIED BY AN ORGANIZATION ACCREDITED BY ANSI.
2. UNLESS OTHERWISE INDICATED ON THE PLANS, ALL WATER MAIN TRENCHES SHALL BE BACKFILLED WITH BANK-RUN SAND TO A POINT 1-FT OVER TOP OF PIPE. REMAINING BACKFILL SHALL BE MADE WITH COMPACTED SUITABLE MATERIAL PER SPECIFICATIONS. ALL TRENCHES WITHIN HCFCD RIGHTS-OF-WAY AND/OR EASEMENTS SHALL BE BACKFILLED AND RESTORED IN ACCORDANCE WITH APPLICABLE HCFCD STANDARD CONSTRUCTION SPECIFICATIONS.
3. CONTACT DISTRICT OPERATOR PRIOR TO MAKING ANY CONNECTION(S) TO EXISTING WATER MAINS AND/OR ANYTIME A VALVE ON AN EXISTING WATER MAIN IS TO BE OPENED OR CLOSED.
   DISTRICT NAME:
   OPERATOR COMPANY:
   OPERATOR CONTACT:
   CONTACT PHONE #:
4. ALLOW A MINIMUM OF 1-FT VERTICAL AND 4-FT HORIZONTAL CLEARANCE BETWEEN PROPOSED WATER MAINS AND OTHER EXISTING OR PROPOSED UTILITIES. WATER MAINS CROSSING STORM SEWERS SHALL HAVE A MINIMUM OF 2-FT VERTICAL CLEARANCE.
5. WHEN A WATER MAIN IS PLACED NEAR A SANITARY SEWER MANHOLE, IT SHALL HAVE A MINIMUM OF 9-FT WALL TO WALL SEPARATION. WHERE A WATER MAIN PARALLELS A SANITARY SEWER, 9-FT SEPARATION SHALL BE MAINTAINED IN ALL DIRECTIONS. IF THE 9-FT SEPARATION CANNOT BE ACHIEVED, BOTH SEWER PIPE AND JOINTS SHALL HAVE A MINIMUM PRESSURE RATING OF 150-PSI AND MANHOLES SHALL BE WATER TIGHT. VERTICAL SEPARATION SHALL BE A MINIMUM OF 2-FT BETWEEN OUTSIDE DIAMETERS AND HORIZONTAL SEPARATION SHALL BE A MINIMUM OF 4-FT BETWEEN OUTSIDE DIAMETERS.
6. ALL WATER MAINS WITHIN DEDICATED EASEMENTS SHALL HAVE A MINIMUM 6-FT OF COVER FROM NATURAL GROUND. ALL WATER MAINS WITHIN RIGHTS-OF-WAY WITH IMPROVED ROADWAY SHALL HAVE A MINIMUM 6-FT OF COVER FROM EXISTING OR PROPOSED TOP OF CURB (TOC). ALL WATER MAINS WITHIN RIGHTS-OF-WAY WITH UNIMPROVED ROADWAY SHALL HAVE A MINIMUM 8-FT OF COVER FROM NATURAL GROUND.
7. UNLESS OTHERWISE SHOWN ON PLANS, CONSTRUCT WATER MAINS WITH ONE JOINT OF PIPE BEYOND PROPOSED VALVES AND PLUGS FOR FUTURE LINES.
8. VALVES SHALL BE EQUIPPED WITH OPERATING NUT EXTENSIONS TO WITHIN 4-FT OF NATURAL GROUND IN ACCORDANCE WITH SPECIFICATIONS.
9. INSTALL RESTRAINED JOINTS AS NECESSARY AND AS SHOWN TO ENSURE INTEGRITY OF THE WATER MAIN AT TEST PRESSURE. THIS WORK IS INCIDENTAL TO WATER MAIN INSTALLATION, NO SEPARATE PAY.
10. ALL WATER MAINS SHALL BE INSTALLED BY OPEN CUT METHODS UNLESS OTHERWISE INDICATED ON PLANS OR DIRECTED BY ENGINEER.
11. PROVIDE DETECTABLE WARNING TAPE FOR NON-METALLIC PIPING, PER SPECIFICATIONS.
12. WHEN CROSSING AN EXISTING STORM SEWER USING OPEN CUT METHODS, WATER MAIN TRENCH ZONE, AS DEFINED IN THE SPECIFICATIONS AND DETAILS, SHALL BE BACKFILLED FOR 3-FT TO 5-FT EITHER SIDE OF STORM SEWER WITH CEMENT STABILIZED SAND TO SPRING LINE OF STORM SEWER.
13. ALL WATER MAINS 24-IN AND LARGER IN DIAMETER SHALL BE PRE-STRESSED CONCRETE CYLINDER PIPE (AWWA C301), BAR-WRAPPED CONCRETE CYLINDER PIPE (AWWA C303), STEEL PIPE, OR DUCTILE IRON PIPE, UNLESS OTHERWISE INDICATED ON PLANS.
14. MECHANICAL RESTRAINED JOINTS TO BE USED IN PLACE OF WELDED RESTRAINED JOINTS IF DUCTILE IRON PIPE (DIP) IS USED.

CONTRACTOR WORK ZONE NOTES

1. MAINTAIN TWO LANES OPEN WHEN WORKING IN BOULEVARD SECTIONS. RESIDENTIAL SECTIONS WILL MAINTAIN ONE LANE OPEN WITH ADEQUATE SIGNAGE AND/OR FLAGMEN TO FACILITATE USE OF LANE.
2. DRIVEWAY ACCESS SHALL BE MAINTAINED OPEN AFTER WORKING HOURS. A MINIMUM OF ONE DRIVEWAY ACCESS SHALL BE MAINTAINED OPEN AT ALL TIMES TO COMMERCIAL, APARTMENT, AND/OR NON-RESIDENTIAL DEVELOPMENTS. SCHOOL DRIVEWAYS SHALL BE MAINTAINED OPEN WHERE PRACTICAL WHEN SCHOOL IS SESSION. IN THE EVENT THAT SCHOOL DRIVEWAYS WILL BE IMPACTED IN ANY WAY, COORDINATE ALL WORK WITH SCHOOL.
3. THE LENGTH OF WORK ZONE SHALL BE MINIMIZED WITHIN HARRIS COUNTY RIGHTS-OF-WAY AND/OR EASEMENTS. THERE SHALL NOT BE MORE THAN 200-FT OF TRENCH OPEN AT ANY ONE TIME. CONSTRUCTION ZONE SHALL BE A ROLLING CONSTRUCTION ZONE WITH APPROPRIATE TRANSITIONS ON EACH END.
4. LANES SHALL NOT BE CLOSED AT A SIGNALIZED INTERSECTION UNLESS APPROVED BY HARRIS COUNTY ENGINEER. AN APPROPRIATE TRANSITION AS DEFINED IN TRAFFIC CONTROL PLAN SHALL BE PROVIDED AT SIGNALIZED INTERSECTIONS.
5. SEPARATION DISTANCES FOR INSTALLATION OF POTABLE WATER DISTRIBUTION LINES AND WASTEWATER COLLECTION LINES, WASTEWATER FORCE MAINS AND OTHER CONVEYANCES/APPURTENANCES IDENTIFIED AS POTENTIAL SOURCES OF CONTAMINATION MUST CONFORM TO TEXAS COMMISSION ON ENVIRONMENTAL QUALITY RULES AND REGULATIONS.
6. TEMPORARY EPOXY-GLUED PAVEMENT BUTTONS OR "CONSTRUCTION GRADE" TAPE PAVEMENT MARKERS SHALL BE USED ON PERMANENT PAVEMENT TO REMAIN IN-PLACE TO ELIMINATE GRINDING AND SCARRING OF SURFACE.
7. CARE SHALL BE TAKEN TO PROVIDE FOR TEMPORARY PEDESTRIAN TRAFFIC AND CROSSING AT AREAS SUCH AS SCHOOLS, PARKS, AND SHOPPING AREAS.
8. WORK SHALL BE CONFINED TO WEST HARRIS COUNTY REGIONAL WATER AUTHORITY WATER MAIN OR CONSTRUCTION EASEMENTS OR TO AREAS IDENTIFIED ON PLANS.

SANITARY SEWER CONSTRUCTION NOTES

1. GRAVITY SANITARY SEWERS AND FORCE MAINS SHALL BE INSTALLED IN ACCORDANCE WITH CITY OF HOUSTON STANDARD SPECIFICATIONS. ONLY PRE-CAST CONCRETE MANHOLES WILL BE ALLOWED.
2. SANITARY SEWERS CROSSING WATER MAINS SHALL BE DUCTILE IRON PIPE WITH A MINIMUM 150-PSI RATED WATER PRESSURE (AWWA C151), DOUBLE WRAPPED IN 8-MIL POLYETHYLENE OR POLYVINYL CHLORIDE PIPE DR 18 (AWWA C900 OR C905).
3. INTERIOR LINING FOR DUCTILE IRON PIPE SANITARY SEWER SHALL BE PROVIDED IN ACCORDANCE WITH PIPE MANUFACTURER'S RECOMMENDATIONS AND CONFORM TO REQUIREMENTS OF EITHER ASTM D1248, ASTM D1653, OR ASTM D16 TYPE V. MINIMUM LINING THICKNESS TO BE 40-MILS, REGARDLESS OF COATING RECOMMENDED BY MANUFACTURER. NO CEMENT MORTAR LINING OR BITUMINOUS LINING WILL BE ALLOWED.
4. UNLESS OTHERWISE NOTED ON PLANS, WHERE SANITARY SEWER MANHOLES ARE LOCATED WITHIN EASEMENTS, RIM ELEVATION SHALL BE SET 3-IN ABOVE NATURAL GROUND AND/OR FINISHED GRADE. WHERE SANITARY SEWER MANHOLES ARE LOCATED WITHIN 100-YEAR FLOOD PLAIN, RIM ELEVATION SHALL BE SET 12-IN ABOVE 100 YEAR FLOOD ELEVATION OR SHALL BE SEALED.
5. PROVIDE ADEQUATE THRUST BLOCKING AT ALL FORCE MAIN BENDS TO WITHSTAND PRESSURE TEST.
6. INSTALL OVER FORCE MAIN LINES "TERRA TAPE" OR APPROVED EQUAL. TAPE TO BE CONTINUOUSLY LABELED "NON POTABLE WATER". SUCH WORK IS INCIDENTAL TO FORCE MAIN INSTALLATION, REPAIR, OR REPLACEMENT, NO SEPARATE PAY.
7. ALL SEMI-RIGID SEWER PIPE SHALL BE TESTED FOR DEFLECTION. TESTING SHALL BE PERFORMED 30-DAYS AFTER BACKFILL OPERATIONS ARE COMPLETED AND PRIOR TO OTHER TESTING OF SEWER SYSTEMS. TEST FOR DEFLECTION BY PULLING A HAND LINE WITH AN ATTACHED MANDREL DEVICE THROUGH PIPE (NO MECHANICAL PULLING DEVICE ALLOWED). MANDREL TO HAVE AN OUTSIDE DIAMETER EQUAL TO 95% OF THE NOMINAL DIAMETER OF PIPE BEING TESTED. MANDREL TO BE MANUFACTURED WITH A MINIMUM OF SEVEN (7) RUNNERS, WITH EACH RUNNER BEING A MINIMUM OF 5-IN LONG. ANY PIPE NOT MEETING TEST REQUIREMENTS SHALL BE REMOVED AND REPLACED AT CONTRACTOR'S EXPENSE. PAYMENT FOR THIS WORK TO BE INCLUDED IN UNIT PRICE BID PER LINEAR FOOT OF SEWER IN APPROPRIATE SIZE.

STORM SEWER CONSTRUCTION NOTES

1. ALL STORM SEWERS AND LEADS SHALL BE REINFORCED CONCRETE PIPE (RCP), CLASS III (ASTM C76), WITH RUBBER GASKET JOINTS (ASTM C443), 24-IN DIAMETER MINIMUM, UNLESS OTHERWISE NOTED ON PLANS.
2. ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. ANY DRAINAGE DITCH OR STRUCTURE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO THE SATISFACTION OF THE OWNING AUTHORITY. ALL CONSTRUCTION STORM RUNOFF SHALL COMPLY WITH THE STORM WATER MANAGEMENT HANDBOOK FOR CONSTRUCTION ACTIVITIES AS PREPARED BY HARRIS COUNTY, HCFCD, AND THE CITY OF HOUSTON AND SHALL BE IN COMPLIANCE WITH THE NPDES REQUIREMENTS.

STANDARD HARRIS COUNTY NOTES FOR PLANS

1. AUTHORIZATION NOTICE ISSUED BY HARRIS COUNTY PUBLIC INFRASTRUCTURE ENGINEERING DEPARTMENT PERMIT OFFICE REQUIRED PRIOR TO CONSTRUCTION OF UTILITIES OR LEFT TURN LANES WITHIN HARRIS COUNTY RIGHTS-OF-WAY. CONTACT HARRIS COUNTY PERMIT OFFICE (713) 956-3000.
2. AUTHORIZATION NOTICE ISSUED BY HARRIS COUNTY PUBLIC INFRASTRUCTURE ENGINEERING DEPARTMENT PERMIT OFFICE REQUIRED PRIOR TO CONSTRUCTION WITHIN HARRIS COUNTY FLOOD CONTROL RIGHT-OF-WAY. CONTACT HARRIS COUNTY PERMIT OFFICE (713) 956-3000.
3. VENT PIPES WITHIN HARRIS COUNTY RIGHTS-OF-WAY SHALL BE BREAKAWAY, PER DETAILS, UNLESS OTHERWISE INDICATED ON DRAWINGS AND APPROVED BY HARRIS COUNTY PUBLIC INFRASTRUCTURE ENGINEERING DEPARTMENT.
4. CONTRACTOR IS FULLY RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED BY THE "REGULATIONS OF HARRIS COUNTY, TEXAS FOR FLOOD PLAIN MANAGEMENT" PRIOR TO START OF CONSTRUCTION.

STANDARD HCFCD NOTES FOR PLANS

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 DEVELOPMENT COORDINATION AND INSPECTION 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 OR COMPLIANCE WITH NATIONWIDE PERMIT, IF APPLICABLE, TO HCFCD, 9900 NORTHWEST FREEWAY, HOUSTON, TEXAS 77092, ATTN: DEVELOPMENT COORDINATION AND INSPECTION DEPT. BY HAND DELIVERY, BY EMAIL DCID@HCFCD.ORG, 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 DEVELOPMENT COORDINATION AND INSPECTION SECTION 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. PERFORM ALL ACTIVITIES WITHIN HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY IN ACCORDANCE WITH THE MOST RECENT HARRIS COUNTY FLOOD CONTROL DISTRICT STANDARD SPECIFICATIONS BOOK.
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.

UTILITY NOTES

CENTERPOINT ENERGY FACILITIES

CAUTION: UNDERGROUND GAS FACILITIES

LOCATIONS OF CENTERPOINT ENERGY MAIN LINES **(TO INCLUDE CENTERPOINT ENERGY, INTRASTATE PIPELINE, LLC. WHERE APPLICABLE)** ARE SHOWN IN AN APPROXIMATE LOCATION ONLY. SERVICE LINES ARE USUALLY NOT SHOWN. **OUR SIGNATURE ON THESE PLANS ONLY INDICATES THAT OUR FACILITIES ARE SHOWN IN APPROXIMATE LOCATION. IT DOES NOT IMPLY THAT A CONFLICT ANALYSIS HAS BEEN MADE.** 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) 207-5463 OR (713) 945-8037 (7:00 A.M. TO 4:30 P.M.) 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 REGAREDING GAS LINES CALL (713) 659-3552 OR (713) 207-4200.

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

WARNING: **OVERHEAD ELECTRICAL LINES**

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 PERSON 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-FT OF LIVE OVERHEAD HIGH VOLTAGE LINES.

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

AT&T TEXAS/SWBT FACILITIES

1. THE LOCATIONS OF AT&T TEXAS/SBWT 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 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE UNDERGROUND LINES FIELD LOCATED.
3. WHEN EXCAVATING WITHIN 18-IN 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/SBWT 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/SBWT 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 MR. 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.

TEXAS WATER DEVELOPMENT BOARD NOTES

1. AS PER AN AGREEMENT WITH THE UNITED STATES ARMY COPS OF ENGINEERS (PROJECT NO. SWG-2016-00931) THE AUTHORITY AGREES TO USE TRENCHLESS CONSTRUCTION METHODS AT ALL STREAM CROSSINGS;
2. IN ACCORDANCE WITH THE NATIONAL FLOOD INSURANCE PROGRAM, PRIOR TO CONSTRUCTION WITHIN ANY GIVEN FLOODPLAIN, A FLOODPLAIN PERMIT MUST BE OBTAINED FROM THE LOCAL FLOODPLAIN ADMINISTRATOR;
3. STANDARD EMERGENCY CONDITION FOR THE DISCOVERY OF CULTURAL RESOURCES; AND
4. STANDARD EMERGENCY CONDITION FOR THE DISCOVERY OF THREATENED AND ENDANGERED SPECIES.

STORM SEWER QUALITY PRE-CONSTRUCTION INSPECTION REQUIREMENTS

1. CONTACT THE HARRIS COUNTY STORM WATER QUALITY PERMITTING SECTION AT (713) 956-3000 FOR A PRE-CONSTRUCTION INSPECTION PRIOR TO COMMENCING ANY CLEARING OR CONSTRUCTION ACTIVITIES AT THE PROJECT SITE.

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM
ENGINEERING CORPORATION

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.

Binkley & Barfield consulting engineers
Binkley & Barfield, Inc. | TxEng F-257
1710 Seamist Dr, Houston, TX 77008
713.869.3433 | BinkleyBarfield.com

INTERIM REVIEW ONLY
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CHRISTOPHER L. CAMPBELL
Engineer
91713
Registration Number
MAY 2020
Date

SEGMENT S3-A1

GENERAL CONSTRUCTION NOTES

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.

HORIZ:
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SHEET NO. 5 OF 81

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

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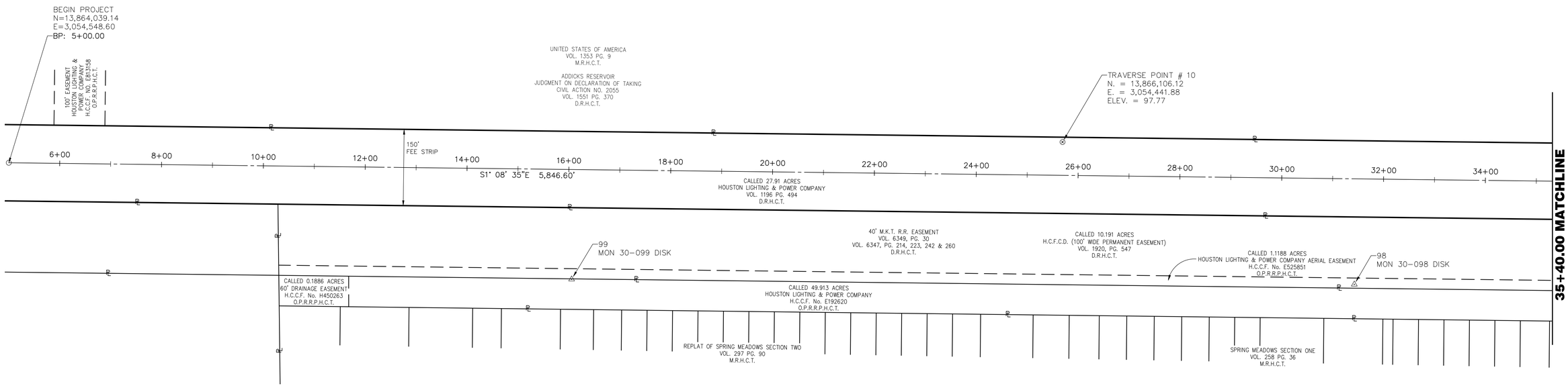

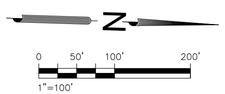

LEGEND:

SURVEY ABSTRACT LINE (APPROX. LOCATION)		CONTROL POINT	⊗
PROPERTY LINE	℄	PROPERTY CORNER	○
ALIGNMENT BASELINE		F.C. No.	FILM CODE NUMBER
EASEMENT		H.C.C.F.	HARRIS COUNTY CLERK'S FILE
OVERHEAD POWERLINES	P	O.P.R.R.P.H.C.T.	OFFICIAL PUBLIC RECORDS REAL PROPERTY HARRIS COUNTY, TX
CHAIN LINK FENCE		D.R.H.C.T.	DEED RECORDS HARRIS COUNTY, TX
BARBWIRE FENCE	x	M.R.H.C.T.	MAP RECORDS HARRIS COUNTY, TX
POWER POLE			

NOTES:

1. COORDINATES AND BEARINGS SHOWN HEREON ARE BASED ON THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204). ALL DISTANCES AND COORDINATES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY THE COMBINED PROJECT SCALE FACTOR OF 0.99990615. COORDINATES ARE BASED ON THE NORTH AMERICAN DATUM OF 1983 (NAD 83) CORS ADJUSTMENT AS DERIVED FROM REDUNDANT RTK GPS OBSERVATIONS.
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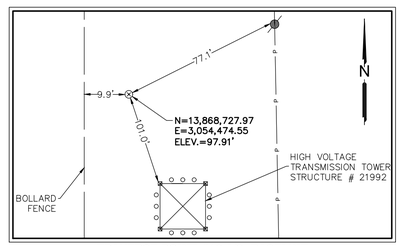
4. SURVEYED ON THE GROUND IN FEBRUARY, 2019.
5. VERTICAL CONTROL DATUM IS BASED ON EXISTING CONTROL PROVIDED BY BBI, INC. (AS PROVIDED BY MCKIM & CREED'S "MONUMENTATION BASE MAP" FOR W.H.C.R.W.A., DATED AUGUST, 2013) AND SECONDARY CONTROL WAS ESTABLISHED BY DIFFERENTIAL LEVELING FROM EXISTING PRIMARY CONTROL.
6. UNITS ARE U.S. SURVEY FEET.
7. ALIGNMENT BASELINE PROVIDED BY BBI, INC.

SECONDARY CONTROL

POINT #	NORTHING	EASTING	ELEVATION	STATION	OFFSET	DESCRIPTION
10	13,866,106.12	3,054,441.88	97.77	25+68.70	65.46 LT	SET 5/8" IRC STAMPED BASELINE CORP

WHCRA CONTROL MONUMENTS

POINT #	NORTHING	EASTING	ELEVATION	STATION	OFFSET	DESCRIPTION
98	13,866,687.74	3,054,703.31	96.91	31+44.99	207.52 RT	FOUND DISK MONUMENT 30-098
99	13,865,151.13	3,054,742.34	96.52	16+07.90	215.89 RT	FOUND DISK MONUMENT 30-099



TRAVERSE POINT #10 5/8" BASELINE PLASTIC CAPPED IRON ROD

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM ENGINEERING CORPORATION

BASELINE
BASELINE CORPORATION
Professional Surveyors
Baseline Corporation | TxSurv F-10030200
1750 Seamist Dr, Ste 160, Houston, TX 77008
713.869.0155 | BaselineSurveyors.net

STATE OF TEXAS REGISTERED ANDREW T. GALINDO 6113 PROFESSIONAL LAND SURVEYOR
04/27/2020

SEGMENT S3 - A1

WHCRWA SEGMENT 3 A1 PROJECT
SURVEY CONTROL MAP
5+00.00 TO 35+40.00

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.

HORIZ: 1" = 100'
VERT: N/A

SHEET NO. 6 OF 81 | DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PLOTTED: 4/27/2020 12:50 PM PEN TABLE: Baseline_BW.stb

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Standard Details Ver. Jan. 2019

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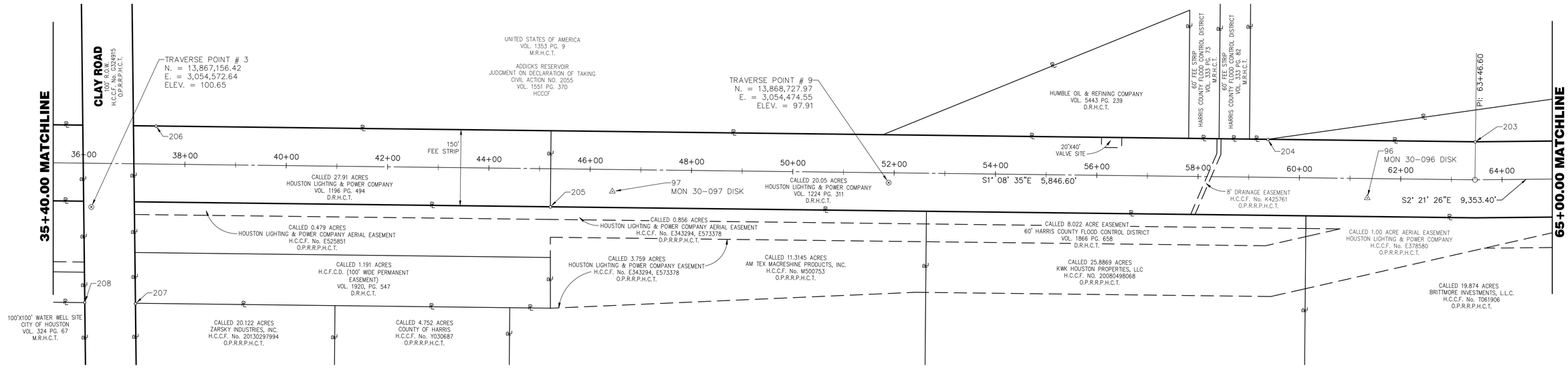

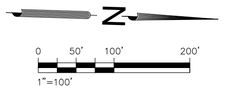

LEGEND:

SURVEY ABSTRACT LINE (APPROX. LOCATION)		CONTROL POINT	⊗
PROPERTY LINE	RL	PROPERTY CORNER	○
ALIGNMENT BASELINE		F.C. No.	FILM CODE NUMBER
EASEMENT		H.C.C.F.	HARRIS COUNTY CLERK'S FILE
OVERHEAD POWERLINES	P	O.P.R.R.P.H.C.T.	OFFICIAL PUBLIC RECORDS REAL PROPERTY HARRIS COUNTY, TX
CHAIN LINK FENCE		D.R.H.C.T.	DEED RECORDS HARRIS COUNTY, TX
BARBWIRE FENCE	x x x	M.R.H.C.T.	MAP RECORDS HARRIS COUNTY, TX
POWER POLE			

NOTES:

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6. UNITS ARE U.S. SURVEY FEET.
7. ALIGNMENT BASELINE PROVIDED BY BBI, INC.

FOUND MONUMENTS

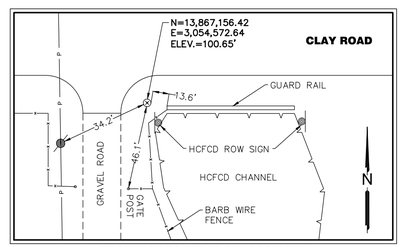
POINT #	NORTHING	EASTING	ELEVATION	STATION	OFFSET	DESCRIPTION
203	13,869,882.52	3,054,357.30	99.00	63+47.62	74.68 LT	FND 1" IRON PIPE
204	13,869,473.51	3,054,365.64	98.67	59+36.94	74.50 LT	FND 5/8" IR
205	13,868,062.08	3,054,543.62	97.24	45+22.24	75.28 RT	FND 1" IRON PIPE
206	13,867,279.05	3,054,409.08	97.99	37+42.05	74.86 LT	FND 5/8" IR W/CAP STAMPED "PBS&J "
207	13,867,249.73	3,054,760.49	98.59	37+05.72	275.90 RT	FND 5/8" IR
208	13,867,149.51	3,054,761.23	97.70	36+05.51	274.64 RT	FND 5/8" IR BENT

SECONDARY CONTROL

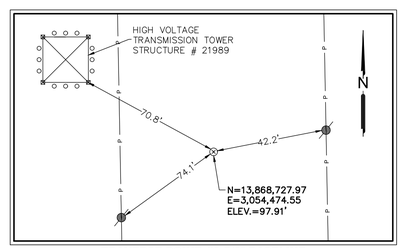
POINT #	NORTHING	EASTING	ELEVATION	STATION	OFFSET	DESCRIPTION
3	13,867,156.42	3,054,572.64	100.65	36+16.18	86.23 RT	SET 5/8" IRC STAMPED BASELINE CORP
9	13,868,727.97	3,054,474.55	97.91	51+89.37	19.51 RT	SET 5/8" IRC STAMPED BASELINE CORP

WHCRA CONTROL MONUMENTS

POINT #	NORTHING	EASTING	ELEVATION	STATION	OFFSET	DESCRIPTION
96	13,869,673.12	3,054,474.69	98.44	61+34.33	38.51 RT	FOUND DISK MONUMENT 30-096
97	13,868,183.36	3,054,509.32	97.29	46+44.18	43.41 RT	FOUND DISK MONUMENT 30-097



TRAVERSE POINT #3 5/8" BASELINE PLASTIC CAPPED IRON ROD



TRAVERSE POINT #9 5/8" BASELINE PLASTIC CAPPED IRON ROD

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM ENGINEERING CORPORATION

BASELINE
BASELINE CORPORATION
Professional Surveyors
Baseline Corporation | TxSurv F-10030200
1750 Seamist Dr, Ste 160, Houston, TX 77008
713.869.0155 | BaselineSurveyors.net

STATE OF TEXAS REGISTERED ANDREW T. GALINDO 6113 PROFESSIONAL LAND SURVEYOR
04/27/2020

SEGMENT S3 - A1

WHCRWA SEGMENT 3 A1 PROJECT SURVEY CONTROL MAP 35+40.00 TO 65+00.00

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE
FILE NO.	HORIZ: 1" = 100'
	VERT: N/A
SHEET NO. 7 OF 81	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

NO.	DATE	REVISION	APP.

PLOTTED: 4/27/2020 12:52 PM PEN TABLE: Baseline_BW.stb

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Standard Details Ver. Jan. 2019

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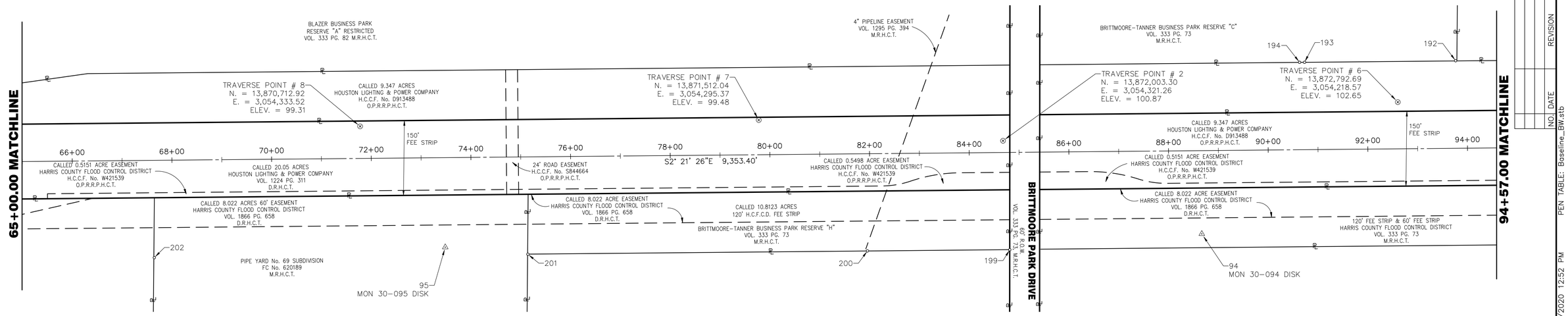

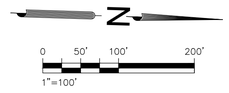

FOUND MONUMENTS

POINT #	NORTHING	EASTING	ELEVATION	STATION	OFFSET	DESCRIPTION
192	13,872,905.95	3,054,131.92	103.21	93+77.76	175.52 LT	FND 5/8" IR
193	13,872,603.01	3,054,144.72	102.23	90+74.55	175.19 LT	FND 1/2" IR
194	13,872,593.12	3,054,145.09	104.31	90+64.65	175.23 LT	FND 1/2" IR W/CAP STAMPED "RPLS 4966"
195	13,872,065.87	3,053,965.41	101.65	85+45.24	376.45 LT	CHISELED PLUS (SCRIBE)
196	13,872,060.67	3,053,798.81	100.87	85+46.89	543.12 LT	FND 5/8" IR
197	13,871,989.11	3,053,421.64	100.57	84+90.91	922.91 LT	FND 5/8" IR
198	13,872,033.44	3,054,853.95	100.97	84+76.29	510.01 RT	FND 5/8" IR W/CAP STAMPED "GRULLER"
199	13,872,023.88	3,054,539.12	101.78	84+79.69	195.05 RT	FND 5/8" IR W/CAP STAMPED "GRULLER"
200	13,871,738.45	3,054,550.58	100.92	81+94.03	194.77 RT	FND 5/8" IR
201	13,871,057.57	3,054,578.96	100.85	75+12.56	195.12 RT	FND 5/8" IR W/CAP STAMPED "ILLEGIBLE"
202	13,870,308.52	3,054,609.74	100.39	67+62.87	195.07 RT	FND 3/8" IR W/CAP STAMPED "LANDTECH"

SECONDARY CONTROL

POINT #	NORTHING	EASTING	ELEVATION	STATION	OFFSET	DESCRIPTION
2	13,872,003.30	3,054,321.26	100.87	84+68.08	23.46 LT	SET 5/8" IRC STAMPED BASELINE CORP
6	13,872,792.69	3,054,218.57	102.65	92+61.03	93.60 LT	SET 5/8" IRC STAMPED BASELINE CORP
7	13,871,512.04	3,054,295.37	99.48	79+78.30	69.54 LT	SET 5/8" IRC STAMPED BASELINE CORP
8	13,870,712.92	3,054,333.52	99.31	71+78.29	64.28 LT	SET 5/8" IRC STAMPED BASELINE CORP

WHCRA CONTROL MONUMENTS

POINT #	NORTHING	EASTING	ELEVATION	STATION	OFFSET	DESCRIPTION
94	13,872,407.96	3,054,495.11	102.71	88+65.25	166.88 RT	FOUND DISK MONUMENT 30-094
95	13,870,891.35	3,054,570.22	99.84	73+46.84	179.551 RT	FOUND DISK MONUMENT 30-095

LEGEND:

SURVEY ABSTRACT LINE (APPROX. LOCATION)		CONTROL POINT	⊗
PROPERTY LINE	PL	PROPERTY CORNER	○
ALIGNMENT BASELINE		F.C. No.	FILM CODE NUMBER
EASEMENT		H.C.C.F.	HARRIS COUNTY CLERK'S FILE
OVERHEAD POWERLINES	P	O.P.R.R.P.H.C.T.	OFFICIAL PUBLIC RECORDS REAL PROPERTY HARRIS COUNTY, TX
CHAIN LINK FENCE		D.R.H.C.T.	DEED RECORDS HARRIS COUNTY, TX
BARBWIRE FENCE	x x x	M.R.H.C.T.	MAP RECORDS HARRIS COUNTY, TX
POWER POLE			

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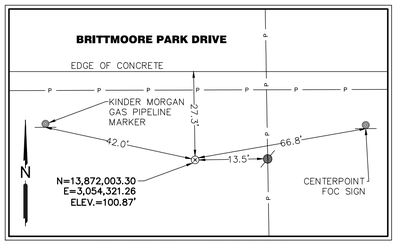
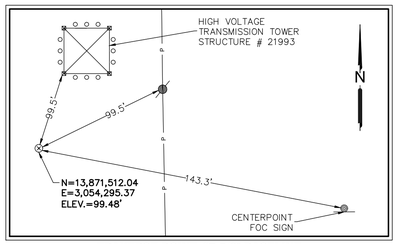
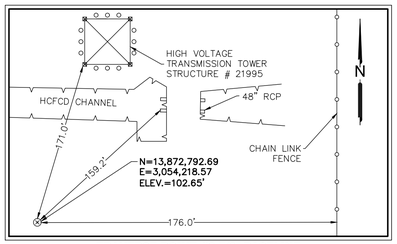


TRAVERSE POINT #2 5/8" BASELINE PLASTIC CAPPED IRON ROD



TRAVERSE POINT #7 5/8" BASELINE PLASTIC CAPPED IRON ROD



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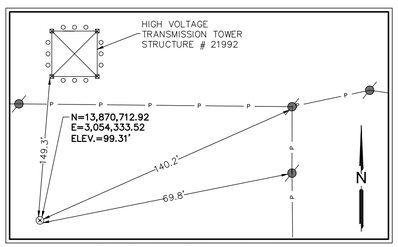

TRAVERSE POINT #8 5/8" BASELINE PLASTIC CAPPED IRON ROD

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM ENGINEERING CORPORATION

BASELINE CORPORATION
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STATE OF TEXAS REGISTERED
ANDREW T. GALINDO
6113
PROFESSIONAL LAND SURVEYOR
04/27/2020

SEGMENT S3 - A1

WHCRWA SEGMENT 3 A1 PROJECT SURVEY CONTROL MAP 65+00.00 TO 94+57.00

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE
FILE NO.	HORIZ: 1" = 100' VERT: N/A
SHEET NO. 8 OF 81	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

NO.	DATE	REVISION	APP.

PLOTTED: 4/27/2020 12:52 PM PEN TABLE: Baseline_BW.stb

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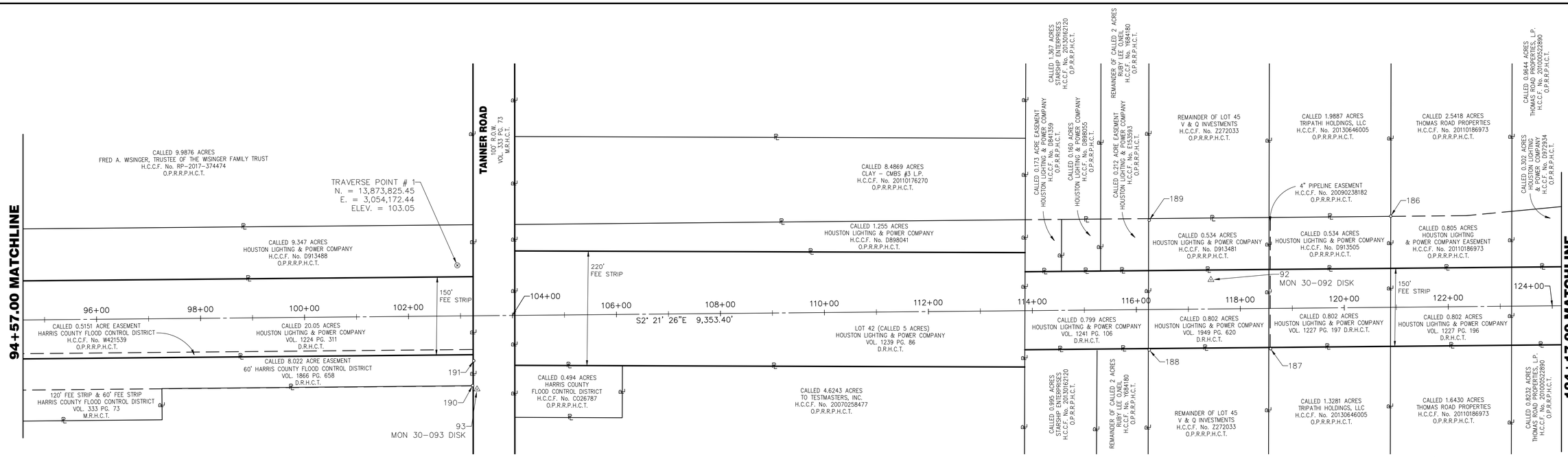
Standard Details Ver. Jan. 2019



0 50' 100' 200'
1"=100'

LEGEND:

SURVEY ABSTRACT LINE (APPROX. LOCATION)		CONTROL POINT	⊗
PROPERTY LINE	℄	PROPERTY CORNER	○
ALIGNMENT BASELINE		F.C. No.	FILM CODE NUMBER
EASEMENT		H.C.C.F.	HARRIS COUNTY CLERK'S FILE
OVERHEAD POWERLINES	P	O.P.R.R.P.H.C.T.	OFFICIAL PUBLIC RECORDS REAL PROPERTY HARRIS COUNTY, TX
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POWER POLE			

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FOUND MONUMENTS

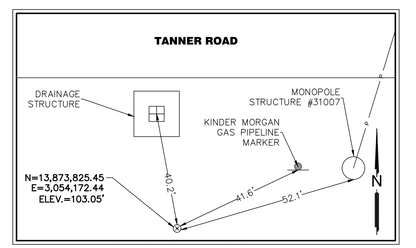
POINT #	NORTHING	EASTING	ELEVATION	STATION	OFFSET	DESCRIPTION
186	13,875,616.83	3,054,020.56	103.32	120+90.92	175.30 LT	FND 5/8" IR
187	13,875,393.91	3,054,282.80	104.45	118+57.41	77.55 RT	FND 5/8" IR W/CAP STAMPED "SOUTH TEXAS SURVEYING"
188	13,875,160.82	3,054,292.56	104.26	116+24.11	77.72 RT	FND 5/8" IR W/CAP STAMPED "SOUTH TEXAS SURVEYING"
189	13,875,152.84	3,054,043.12	104.43	116+26.40	171.84 LT	FND 5/8" IR W/CAP STAMPED "SOUTH TEXAS SURVEYING"
190	13,873,862.20	3,054,402.51	102.85	103+22.07	134.16 RT	FND 5/8" IR
191	13,873,862.90	3,054,354.78	103.00	103+24.73	86.51 RT	CHISELED PLUS (SCRIBE)

SECONDARY CONTROL

POINT #	NORTHING	EASTING	ELEVATION	STATION	OFFSET	DESCRIPTION
1	13,873,825.45	3,054,172.44	103.05	102+94.81	97.21 LT	SET 5/8" IRC STAMPED BASELINE CORP

WHCRA CONTROL MONUMENTS

POINT #	NORTHING	EASTING	ELEVATION	STATION	OFFSET	DESCRIPTION
92	13,875,275.03	3,054,154.03	104.47	117+43.92	56.00 LT	FOUND DISK MONUMENT 30-092
93	13,873,870.93	3,054,409.28	103.07	103+30.51	141.29 RT	FOUND DISK MONUMENT 30-093



TRAVERSE POINT #1 5/8" BASELINE PLASTIC CAPPED IRON ROD

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM ENGINEERING CORPORATION

BASELINE
BASELINE CORPORATION
Professional Surveyors
Baseline Corporation | TxSurv F-10030200
1750 Seamist Dr, Ste 160, Houston, TX 77008
713.869.0155 | BaselineSurveyors.net

STATE OF TEXAS REGISTERED
ANDREW T. GALINDO
6113
PROFESSIONAL LAND SURVEYOR
04/27/2020

SEGMENT S3 - A1

WHCRWA SEGMENT 3 A1 PROJECT
SURVEY CONTROL MAP
94+57.00 TO 124+17.00

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

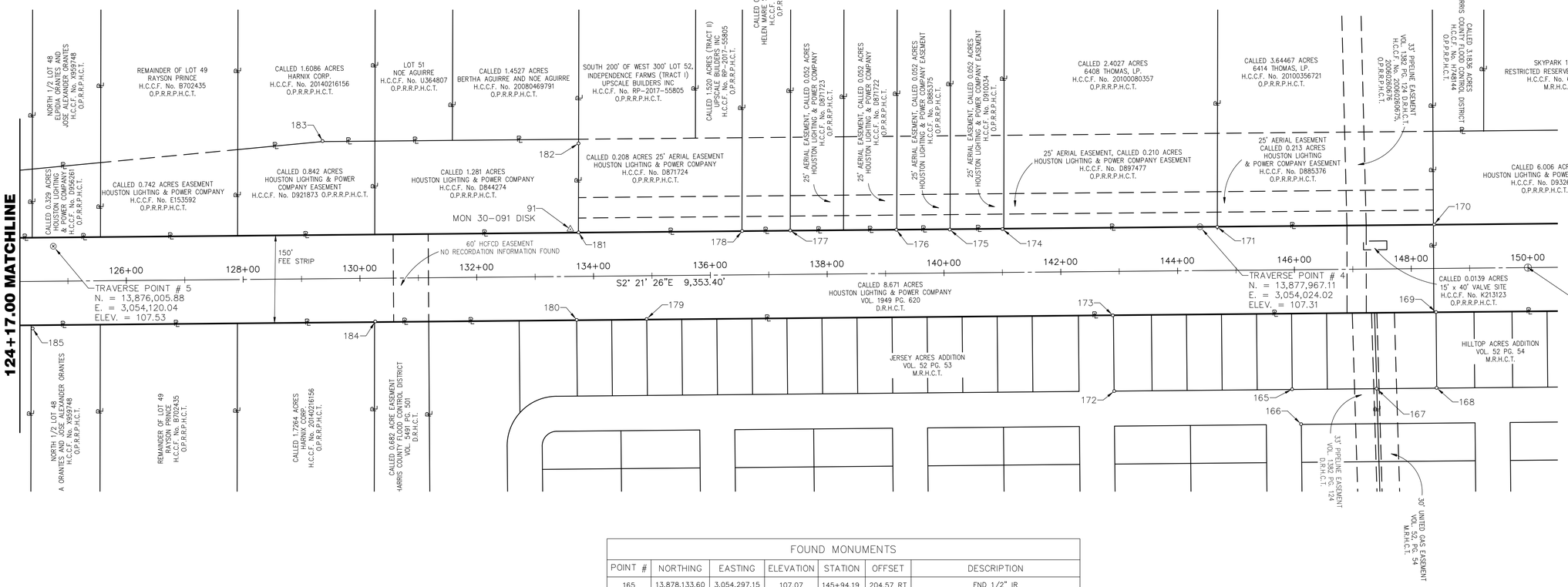
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE
FILE NO.	HORIZ: 1" = 100'
	VERT: N/A
SHEET NO. 9 OF 81	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

Standard Details Ver. Jan. 2019

PLOTTED: 4/27/2020 12:53 PM PEN TABLE: Baseline_BW.stb

FILE PATH: H:\2019\19006 BBI WHCRWA Segment 3-A1 Survey\Data\dwg\V-CONTROL MAP-19006 BW.dwg



0 50' 100' 200'
1"=100'

LEGEND:

SURVEY ABSTRACT LINE (APPROX. LOCATION)		CONTROL POINT	⊗
PROPERTY LINE	PL	PROPERTY CORNER	○
ALIGNMENT BASELINE		F.C. No.	FILM CODE NUMBER
EASEMENT		H.C.C.F.	HARRIS COUNTY CLERK'S FILE
OVERHEAD POWERLINES	P	O.P.R.R.P.H.C.T.	OFFICIAL PUBLIC RECORDS REAL PROPERTY HARRIS COUNTY, TX
CHAIN LINK FENCE		D.R.H.C.T.	DEED RECORDS HARRIS COUNTY, TX
BARBWIRE FENCE	x x x	M.R.H.C.T.	MAP RECORDS HARRIS COUNTY, TX
POWER POLE			

NOTES:

1. COORDINATES AND BEARINGS SHOWN HEREON ARE BASED ON THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204). ALL DISTANCES AND COORDINATES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY THE COMBINED PROJECT SCALE FACTOR OF 0.99990615. COORDINATES ARE BASED ON THE NORTH AMERICAN DATUM OF 1983 (NAD 83) CORS ADJUSTMENT AS DERIVED FROM REDUNDANT RTK GPS OBSERVATIONS.
2. PRIMARY CONTROL SHOWN HEREON PROVIDED BY BBI, INC. (AS PROVIDED BY MCKIM & CREED'S "MONUMENTATION BASE MAP" FOR W.H.C.R.W.A., DATED AUGUST, 2013) AND WAS VERIFIED BY BASELINE CORPORATION.
3. ABSTRACTING DATA AS PROVIDED BY W.H.C.R.W.A., "SECOND SOURCE-SEGMENT 3" MANUSCRIPT (PREFORMED BY COTTON SURVEYING COMPANY, LAST REVISED 10-8-2014), AND UPDATED ACCORDING TO LATEST HARRIS COUNTY APPRAISAL DISTRICT DATA IN FEBRUARY 2019 BY BASELINE CORPORATION. EASEMENTS OR OTHER MATTERS OF RECORD MAY EXIST THAT ARE NOT SHOWN HEREON.
4. SURVEYED ON THE GROUND IN FEBRUARY, 2019.
5. VERTICAL CONTROL DATUM IS BASED ON EXISTING CONTROL PROVIDED BY BBI, INC. (AS PROVIDED BY MCKIM & CREED'S "MONUMENTATION BASE MAP" FOR W.H.C.R.W.A., DATED AUGUST, 2013) AND SECONDARY CONTROL WAS ESTABLISHED BY DIFFERENTIAL LEVELING FROM EXISTING PRIMARY CONTROL.
6. UNITS ARE U.S. SURVEY FEET.
7. ALIGNMENT BASELINE PROVIDED BY BBI, INC.

FOUND MONUMENTS

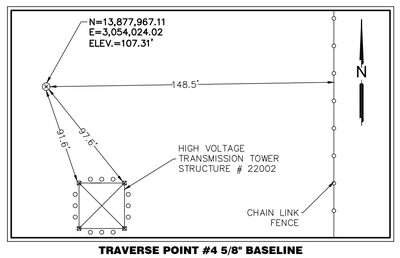
POINT #	NORTHING	EASTING	ELEVATION	STATION	OFFSET	DESCRIPTION
165	13,878,133.60	3,054,297.15	107.07	145+94.19	204.57 RT	FND 1/2" IR
166	13,878,150.82	3,054,356.44	106.35	146+08.96	264.52 RT	FND 3/4" IR
167	13,878,278.09	3,054,291.54	105.45	147+38.79	204.90 RT	FND 1/2" IR
168	13,878,380.76	3,054,286.98	105.78	148+41.56	204.57 RT	FND 1" IRON PIPE
169	13,878,375.69	3,054,157.23	106.16	148+41.83	74.72 RT	FND 1" IRON PIPE
170	13,878,367.60	3,054,007.29	106.02	148+39.91	75.42 LT	FND 1" IRON PIPE
171	13,877,996.58	3,054,023.41	106.58	144+68.54	74.57 LT	FND 5/8" IR BENT
172	13,877,829.26	3,054,310.11	105.19	142+89.57	205.00 RT	FND 1/2" IR
173	13,877,822.79	3,054,180.56	106.64	142+88.44	75.30 RT	FND 1" IRON PIPE
174	13,877,629.20	3,054,038.65	106.09	141+00.85	74.46 LT	FND 5/8" IR
175	13,877,539.07	3,054,042.48	106.63	140+10.64	74.34 RT	FND 1" IRON PIPE
176	13,877,447.68	3,054,045.73	106.32	139+19.19	74.85 LT	FND 1/2" IR
177	13,877,266.14	3,054,052.80	106.49	137+37.51	75.25 LT	FND 5/8" IR
178	13,877,183.75	3,054,056.24	106.63	136+55.05	75.20 LT	FND 1/2" IR W/CAP STAMPED "PRECISION"
179	13,877,025.17	3,054,212.18	106.03	134+90.19	74.09 RT	FND 1/2" IR
180	13,876,905.54	3,054,217.48	107.23	133+70.44	74.46 RT	FND 1/2" IR
181	13,876,903.89	3,054,067.56	106.13	133+74.96	75.40 LT	FND 1/2" IR W/CAP STAMPED "PRECISION"
182	13,876,898.98	3,053,915.27	107.63	133+76.32	227.76 LT	FND 1/2" IR W/CAP STAMPED "PRECISION"
183	13,876,460.87	3,053,925.16	109.23	129+38.17	235.90 LT	FND 1/2" IR W/CAP STAMPED "PRECISION"
184	13,876,560.88	3,054,231.19	107.49	130+25.51	73.99 RT	FND 5/8" IR
185	13,875,975.12	3,054,261.97	107.43	124+38.98	80.64 RT	FND 5/8" IR W/CAP STAMPED "PREJEAN #4925"

SECONDARY CONTROL

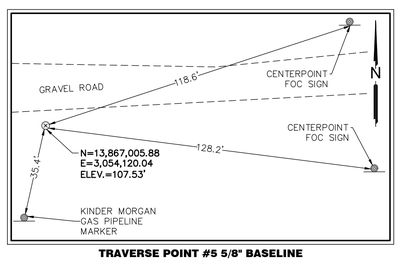
POINT #	NORTHING	EASTING	ELEVATION	STATION	OFFSET	DESCRIPTION
4	13,877,967.11	3,054,024.02	107.31	144.39.07	75.18 LT	SET 5/8" IRC STAMPED BASELINE CORP
5	13,876,005.88	3,054,120.04	107.53	124+75.55	59.90 LT	SET 5/8" IRC STAMPED BASELINE CORP

WHCRA CONTROL MONUMENTS

POINT #	NORTHING	EASTING	ELEVATION	STATION	OFFSET	DESCRIPTION
91	13,876,889.68	3,054,062.69	106.11	133+60.96	80.85 LT	FOUND DISK MONUMENT 30-091



TRAVERSE POINT #4 5/8" BASELINE PLASTIC CAPPED IRON ROD



TRAVERSE POINT #5 5/8" BASELINE PLASTIC CAPPED IRON ROD

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM ENGINEERING CORPORATION

BASELINE
BASELINE CORPORATION
Professional Surveyors
Baseline Corporation | TxSurv F-10030200
1750 Seamist Dr, Ste 160, Houston, TX 77008
713.869.0155 | BaselineSurveyors.net

STATE OF TEXAS REGISTERED ANDREW T. GALINDO 6113 PROFESSIONAL LAND SURVEYOR
04/27/2020

SEGMENT S3 - A1

WHCRWA SEGMENT 3 A1 PROJECT SURVEY CONTROL MAP 124+17.00 TO 150+50.00

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE
FILE NO.	HORIZ: 1" = 100' VERT: N/A
SHEET NO. 10 OF 81	DRAWING SCALE

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Standard Details Ver. Jan. 2019

PLOTTED: 4/27/2020 12:54 PM PEN TABLE: Baseline_BW.stb

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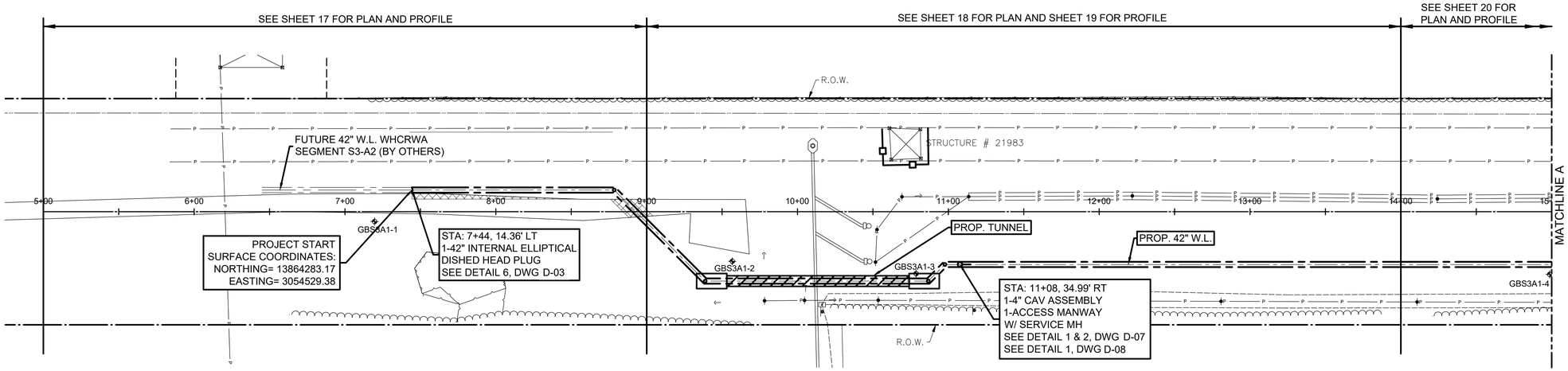

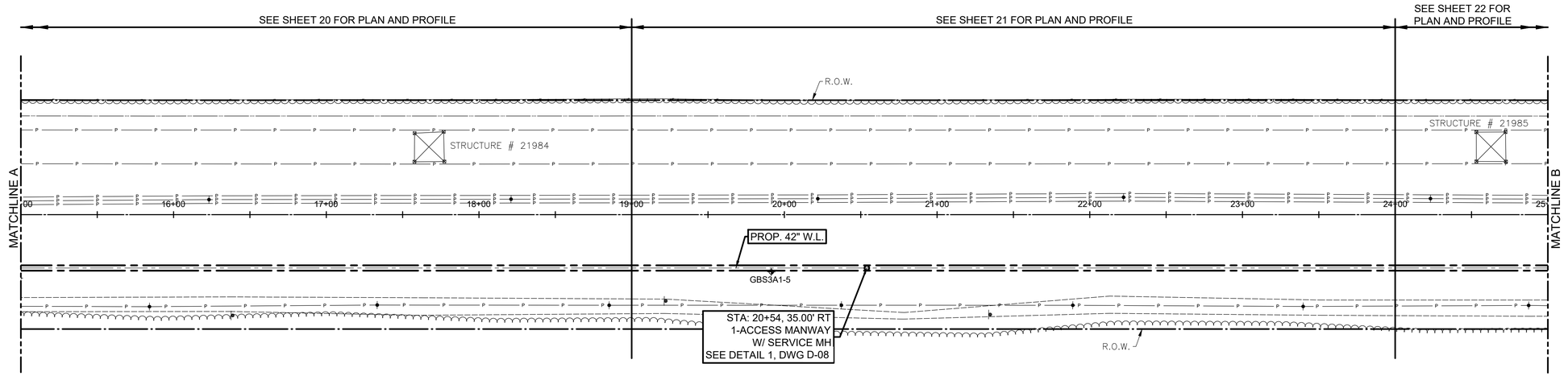

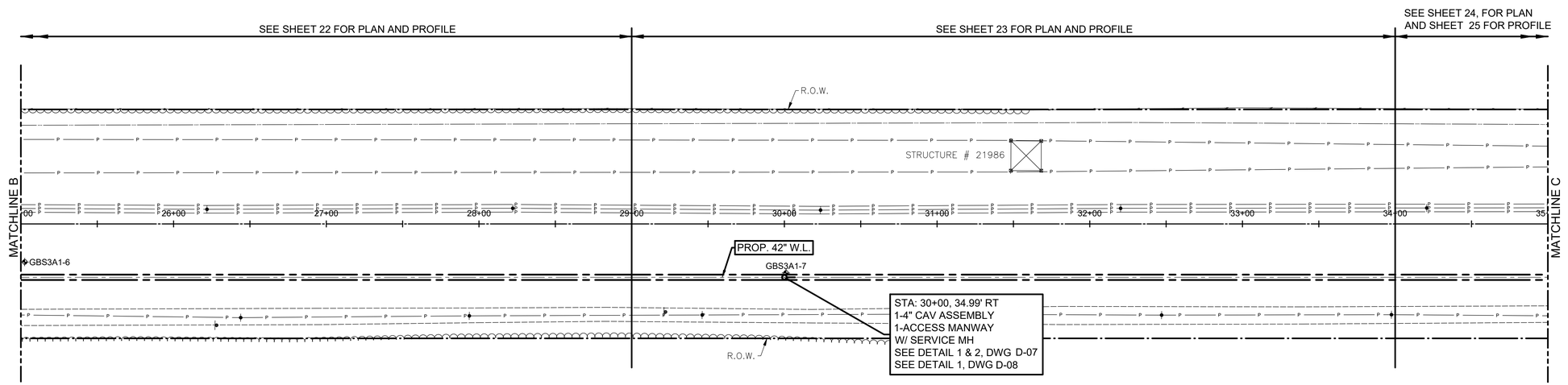

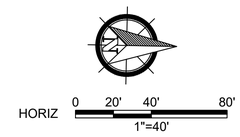

NO.	DATE	REVISION	APP.

BENCHMARKS:

MONUMENT 30-099
N 13,865,151.13, E 3,054,742.34
ELEV. 96.52
STA. 16+07.90, 215.89 RT
NAD 83, CORS ADJUSTMENT

BENCHMARKS:

MONUMENT 30-098
N 13,866,687.74, E 3,054,703.31
ELEV. 96.91
STA. 31+44.99, 207.52 RT
NAD 83, CORS ADJUSTMENT

WHCRWA | NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM
ENGINEERING CORPORATION

Binkley & Barfield consulting engineers
Binkley & Barfield, Inc. | TxEng F-257
1710 Seamist Dr, Houston, TX 77008
713.869.3433 | BinkleyBarfield.com

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CHRISTOPHER L. CAMPBELL
Engineer
91713
Registration Number
MAY 2020
Date

SEGMENT S3-A1

SHEET LAYOUT
SHEET 1 OF 5

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.	HORIZ: 1"=40' VERT:
SHEET NO. 11 OF 81	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

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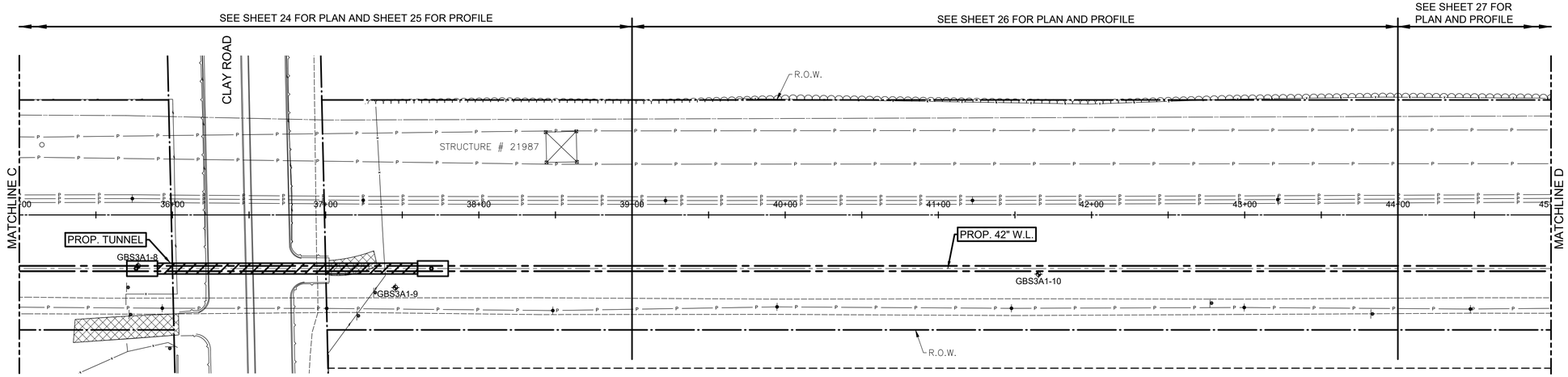

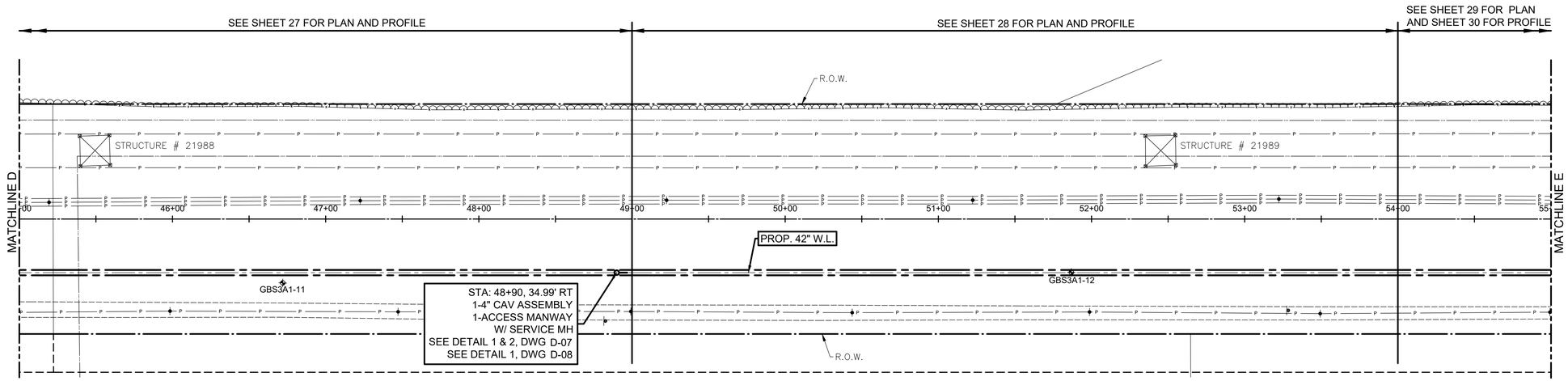

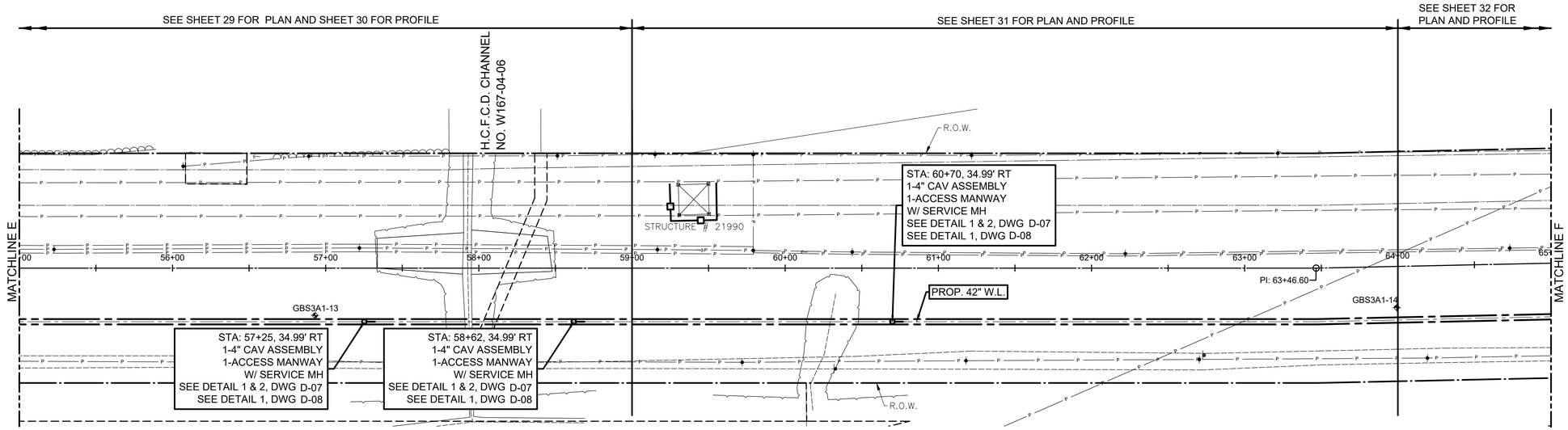

HORIZ 0 20' 40' 80'
1"=40'

NO.	DATE	REVISION	APP.

BENCHMARKS:

MONUMENT 30-097
N 13,868,183.36, E 3,054,509.32
ELEV. 97.29
STA. 46+44.18, 43.41 RT
NAD 83, CORS ADJUSTMENT

BENCHMARKS:

MONUMENT 30-096
N 13,869,673.12, E 3,054,474.69
ELEV. 98.44
STA. 61+34.33, 38.51 RT
NAD 83, CORS ADJUSTMENT

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM ENGINEERING CORPORATION

Binkley & Barfield consulting engineers
Binkley & Barfield, Inc. | TxEng F-257
1710 Seamist Dr, Houston, TX 77008
713.869.3433 | BinkleyBarfield.com

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Engineer
91713
Registration Number
MAY 2020
Date

SEGMENT S3-A1

SHEET LAYOUT
SHEET 2 OF 5

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.	HORIZ: 1"=40' VERT:
SHEET NO. 12 OF 81	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

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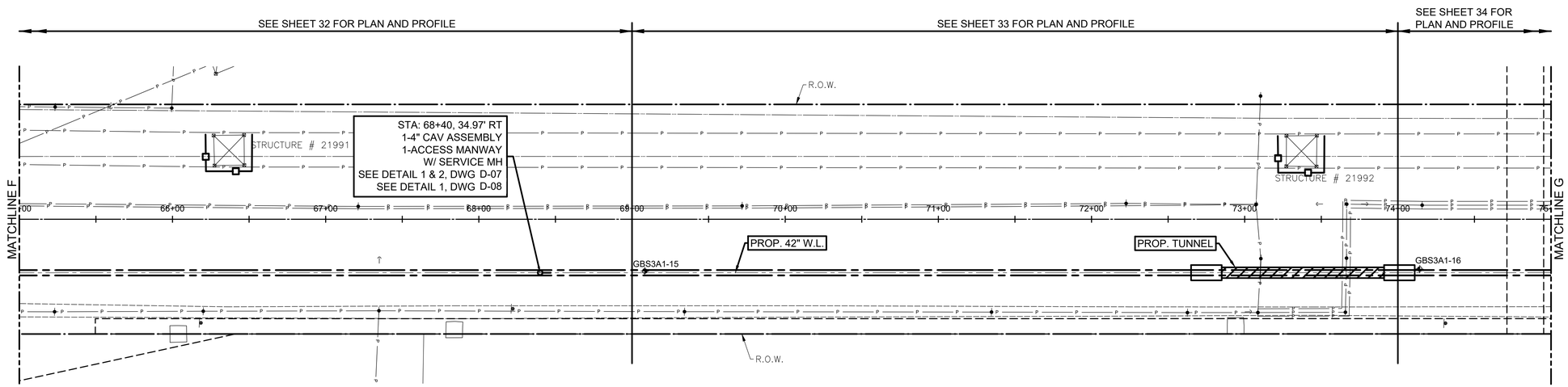

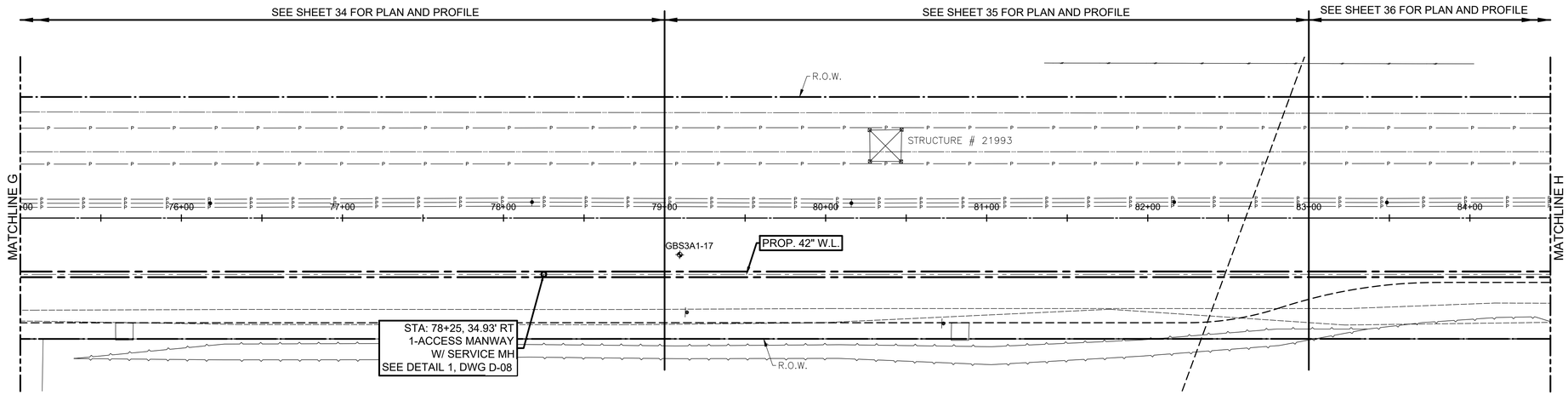

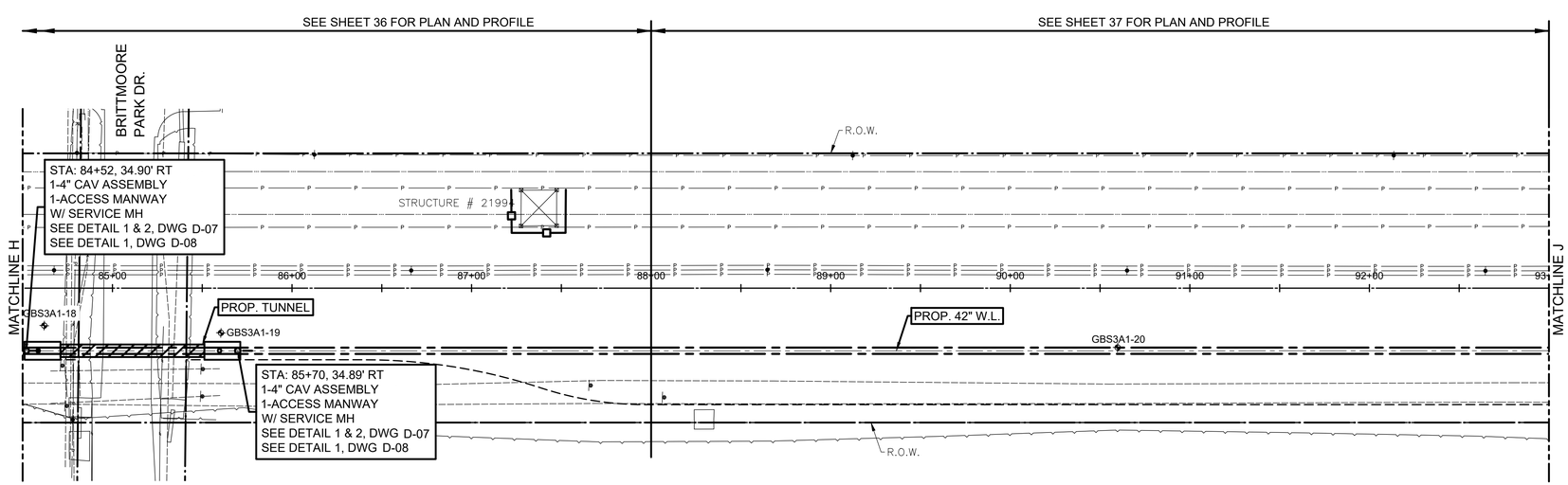

HORIZ 0 20' 40' 80'
1"=40'

NO.	DATE	REVISION	APP.

BENCHMARKS:

MONUMENT 30-095
N 13,870,891.35, E 3,054,570.22
ELEV. 99.84
STA. 73+46.84, 179.551 RT
NAD 83, CORS ADJUSTMENT

BENCHMARKS:

MONUMENT 30-094
N 13,872,407.96, E 3,054,495.11
ELEV. 102.71
STA. 88+65.25, 166.88 RT
NAD 83, CORS ADJUSTMENT

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM ENGINEERING CORPORATION

Binkley & Barfield consulting engineers
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Engineer
91713
Registration Number
MAY 2020
Date

SEGMENT S3-A1

SHEET LAYOUT
SHEET 3 OF 5

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.	HORIZ: 1"=40' VERT:
SHEET NO. 13 OF 81	DRAWING SCALE

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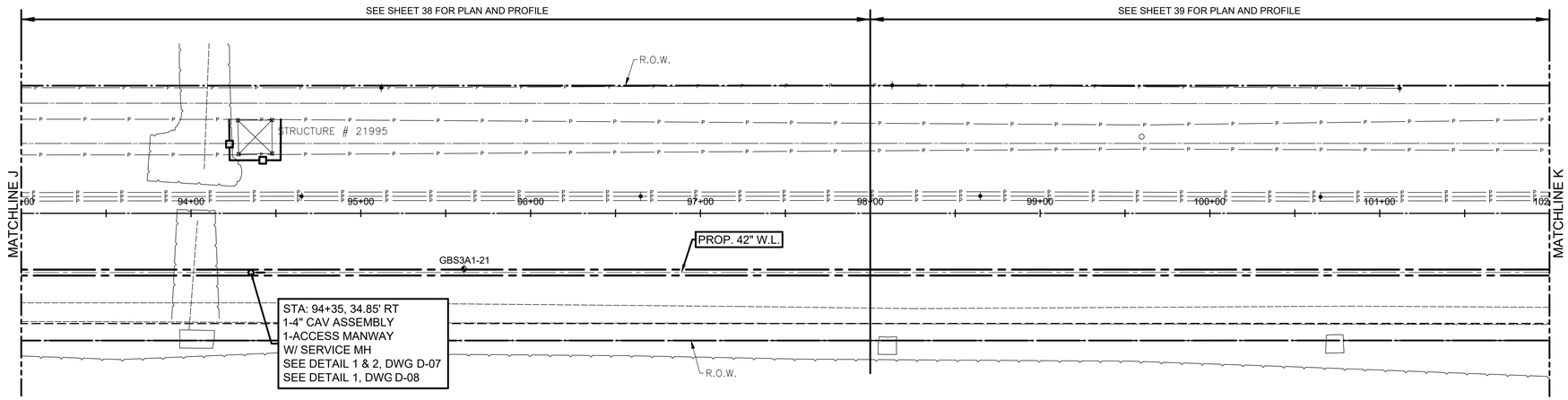

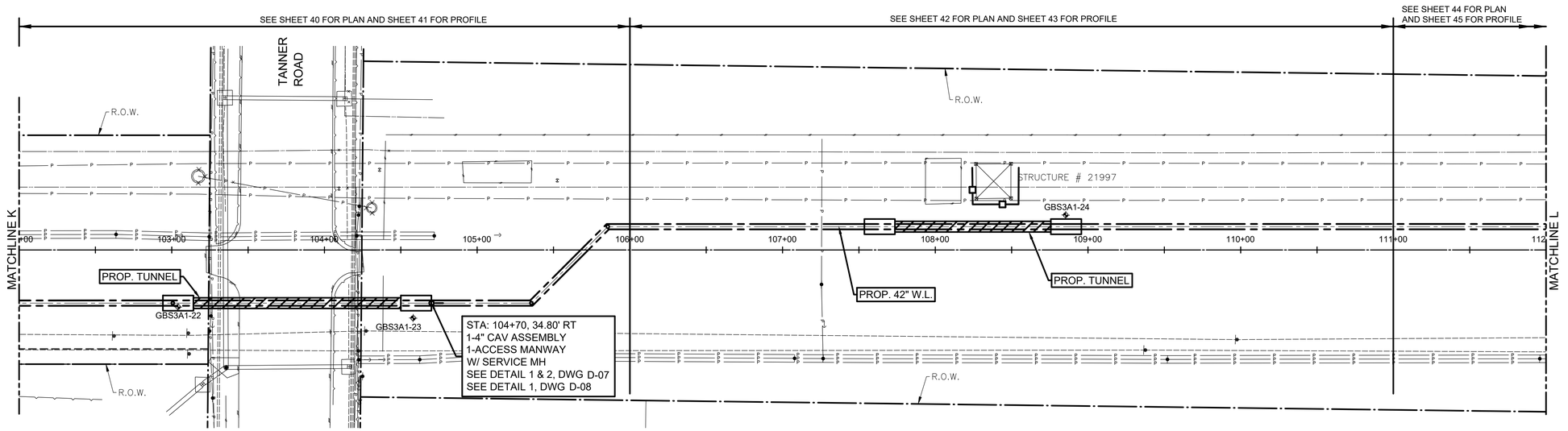

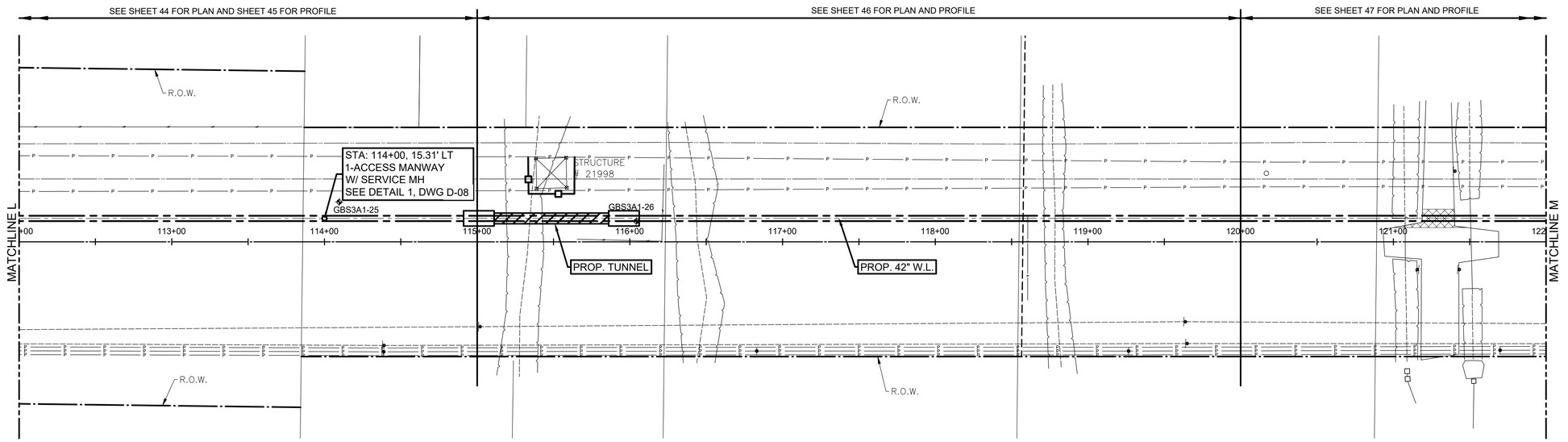

HORIZ 0 20' 40' 80'
1"=40'

BENCHMARKS:

MONUMENT 30-093
N 13,873,870.93, E 3,054,409.28
ELEV. 103.07
STA. 103+30.51, 141.29 RT
NAD 83, CORS ADJUSTMENT

BENCHMARKS:

MONUMENT 30-092
N 13,875,275.03, E 3,054,154.03
ELEV. 104.47
STA. 117+43.92, 56.00 LT
NAD 83, CORS ADJUSTMENT

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM ENGINEERING CORPORATION

Binkley & Barfield consulting engineers
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Registered
91713
Registration Number
MAY 2020
Date

SEGMENT S3-A1

SHEET LAYOUT
SHEET 4 OF 5

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.	HORIZ: 1"=40' VERT:
SHEET NO. 14 OF 81	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

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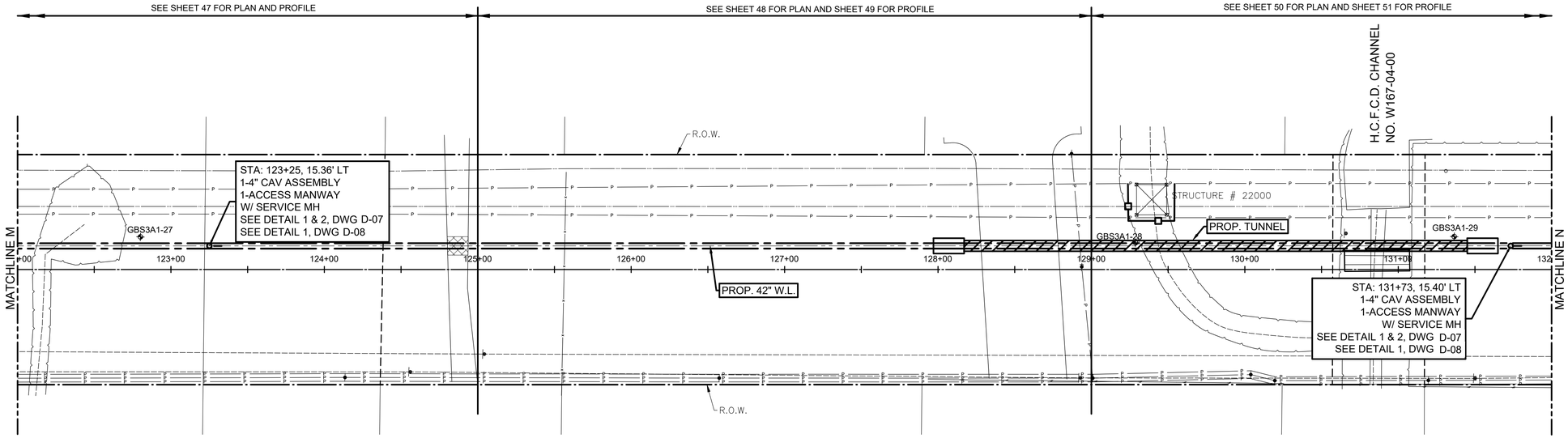

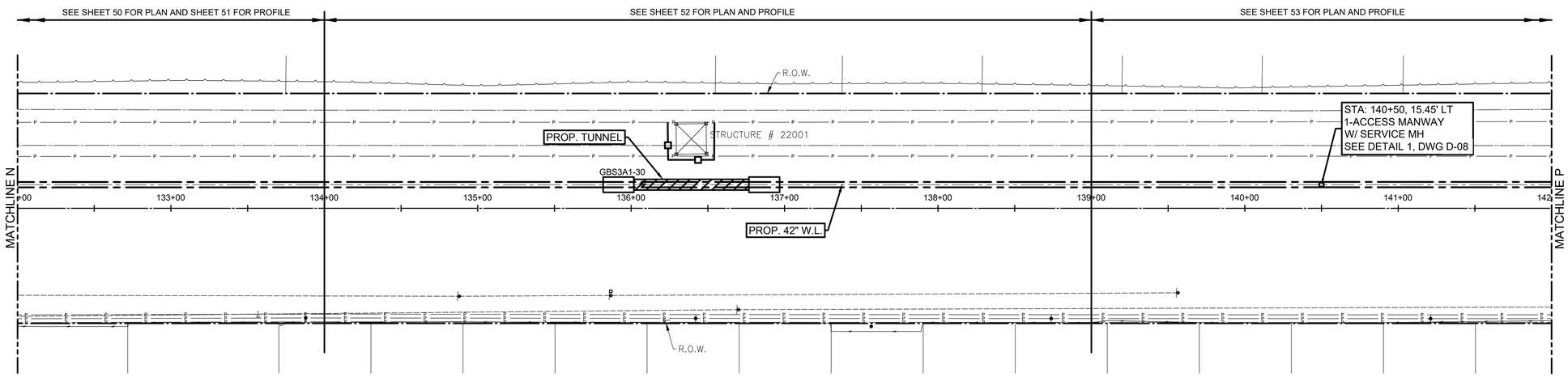

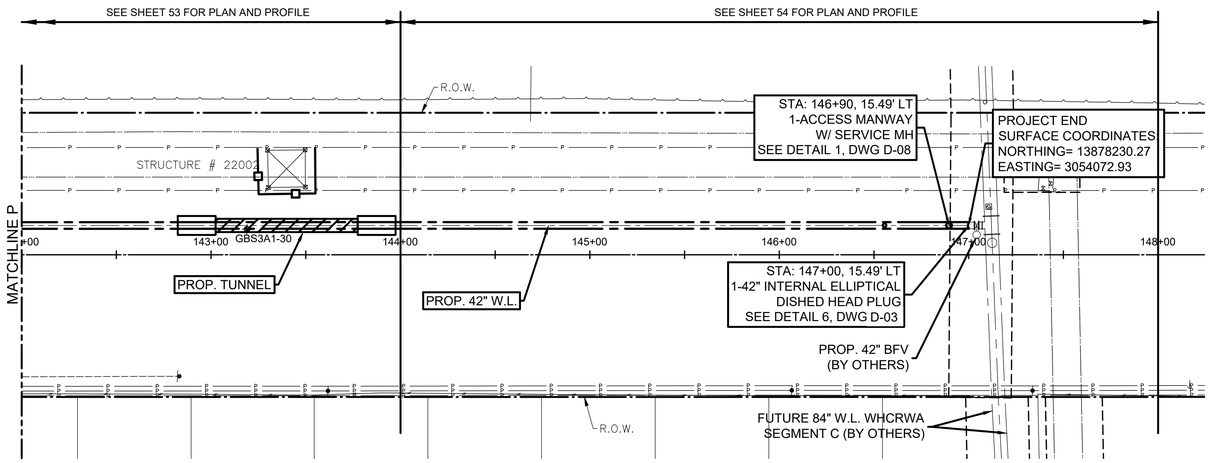

HORIZ 0 20' 40' 80'
1"=40'

NO.	DATE	REVISION	APP.

BENCHMARKS:

MONUMENT 30-091
N 13,876,889.68, E 3,054,062.69
ELEV. 106.11
STA. 133+60.96, 80.85 LT
NAD 83, CORS ADJUSTMENT

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM ENGINEERING CORPORATION

Binkley & Barfield consulting engineers
Binkley & Barfield, Inc. | TxEng F-257
1710 Seamist Dr, Houston, TX 77008
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CHRISTOPHER L. CAMPBELL
Engineer
91713
Registration Number
MAY 2020
Date

SEGMENT S3-A1

SHEET LAYOUT
SHEET 5 OF 5

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.

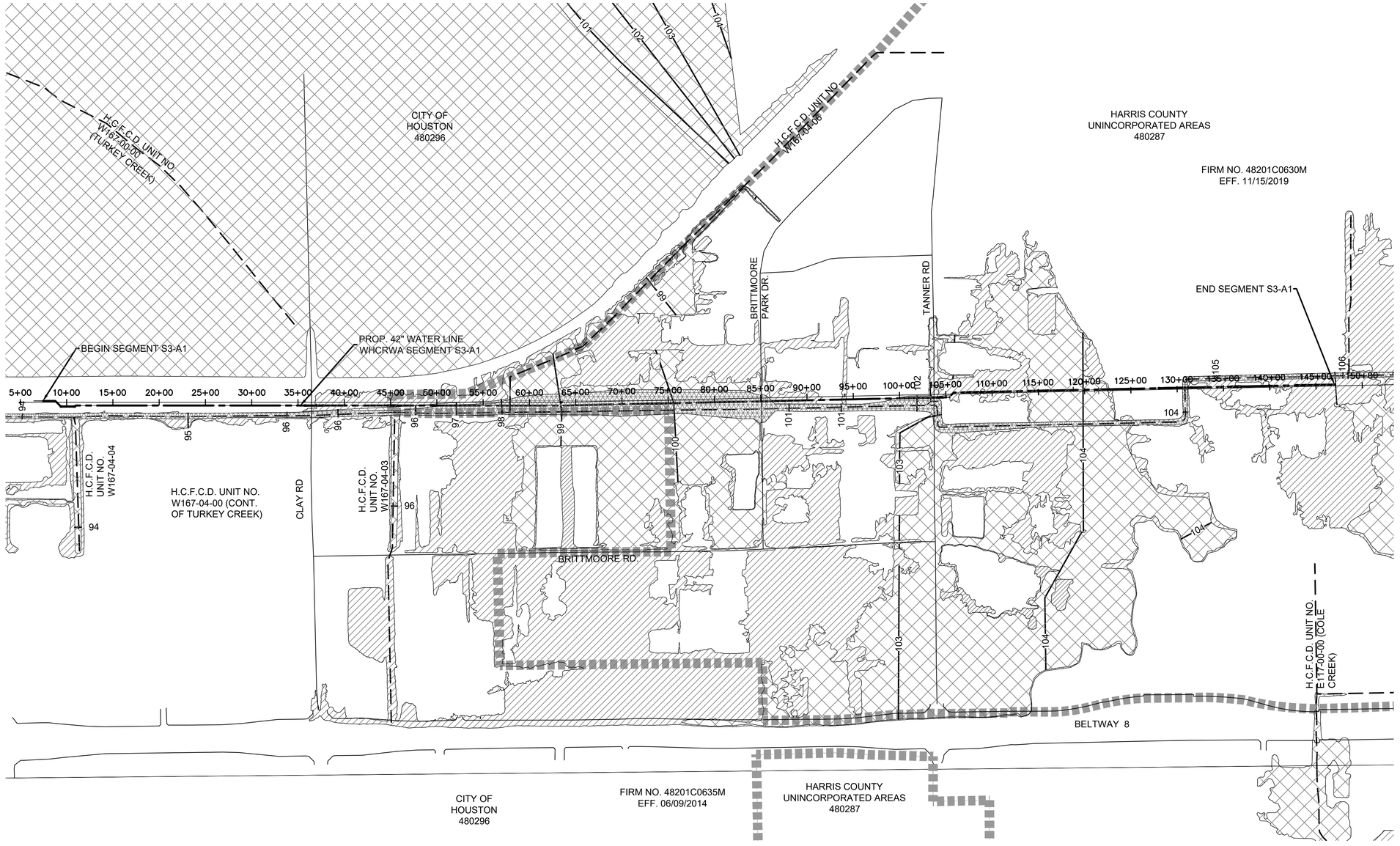
HORIZ: 1"=40'
VERT:

SHEET NO. 15 OF 81

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PLOTTED: 5/27/2020 11:32 PM
PEN TABLE: WHCRWA_22x34.ctb
FILE PATH: \\pzhou\data\bbi\Enviro\1900000003 - WHCRWA 42 Inch Segment 3A_CADD\Drawings\001C-PLsity.dwg



HORIZ 0 300' 600' 1200'
1"=600'

NO.	DATE	REVISION	APP.

500-YR CUT AND FILL VOLUMES
NET CUT AND FILL VOLUME = 00.00 CY
NET CUT VOLUME = CROSS SECTIONAL AREA X HORIZONTAL LENGTH = XX.X CY
NET FILL VOLUME = CROSS SECTIONAL AREA X HORIZONTAL LENGTH = XX.X CY

NOTES:

1. CONTACT THE CITY OF HOUSTON AND/OR HARRIS COUNTY FLOODPLAIN MANAGEMENT OFFICES (832-394-8854)(713-274-3824) 48 HOURS PRIOR TO ANY WORK WITHIN THE FLOODPLAIN.
2. SEE SHEETS 17 - 54 FOR 42" WATER LINE PLAN AND PROFILES.
3. BASE FLOOD ELEVATIONS AND THE 100-YEAR FLOODPLAIN ELEVATIONS VARY THROUGHOUT THE PROJECT ALIGNMENT AS SHOWN ON THIS OVERALL SHEET. DATA SHOWN HEREON IS BASED ON INFORMATION PRESENTED IN FEMA FLOOD INSURANCE MAP NO. 48201C0630M AND 48201C0635M DATED 11/15/2019 AND 06/09/2014, RESPECTIVELY.
4. THE GROUND SURFACE IN THE PROJECT AREA SHALL BE RESTORED TO ITS EXISTING CONDITION AND ELEVATION, I.E., BACKFILL OPERATIONS TO MATCH EXISTING GROUND ELEVATIONS.
5. EXCESS SOIL TO BE HAULED OFF OF PROJECT SITE.
6. EXCESS SPOILS, MATERIAL, AND/OR CONSTRUCTION DEBRIS SHALL BE REMOVED DAILY FROM THE SPECIAL FLOOD HAZARD AREA. TO CHECK THE FLOOD ZONE OF THE DISPOSAL LOCATIONS, CONTACT THE FLOODPLAIN MANAGEMENT OFFICE AT 832-394-8854.

BENCHMARKS:

MONUMENT 30-099
N 13,865,151.13, E 3,054,742.34
ELEV. 96.52
STA. 16+07.90, 215.89 RT
NAD 83, CORS ADJUSTMENT

LEGEND:

- FLOODWAY
- 100-YR FLOODPLAIN AREAS OF 1% ANNUAL CHANCE FLOOD EVENT (ZONE AE)
- 500-YR FLOODPLAIN AREAS OF 0.2% ANNUAL CHANCE FLOOD EVENT (ZONE X)
- XX — BASE FLOOD ELEVATION (100-YR)
- HARRIS COUNTY/CITY OF HOUSTON/ CITY OF JERSEY VILLAGE BOUNDARY

WHCRWA NFBWA
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SEGMENT S3-A1

FLOODPLAIN MITIGATION PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.	HORIZ: 1"=600' VERT:
SHEET NO. 16 OF 81	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PEN TABLE: WHCRWA_22x34.ctb
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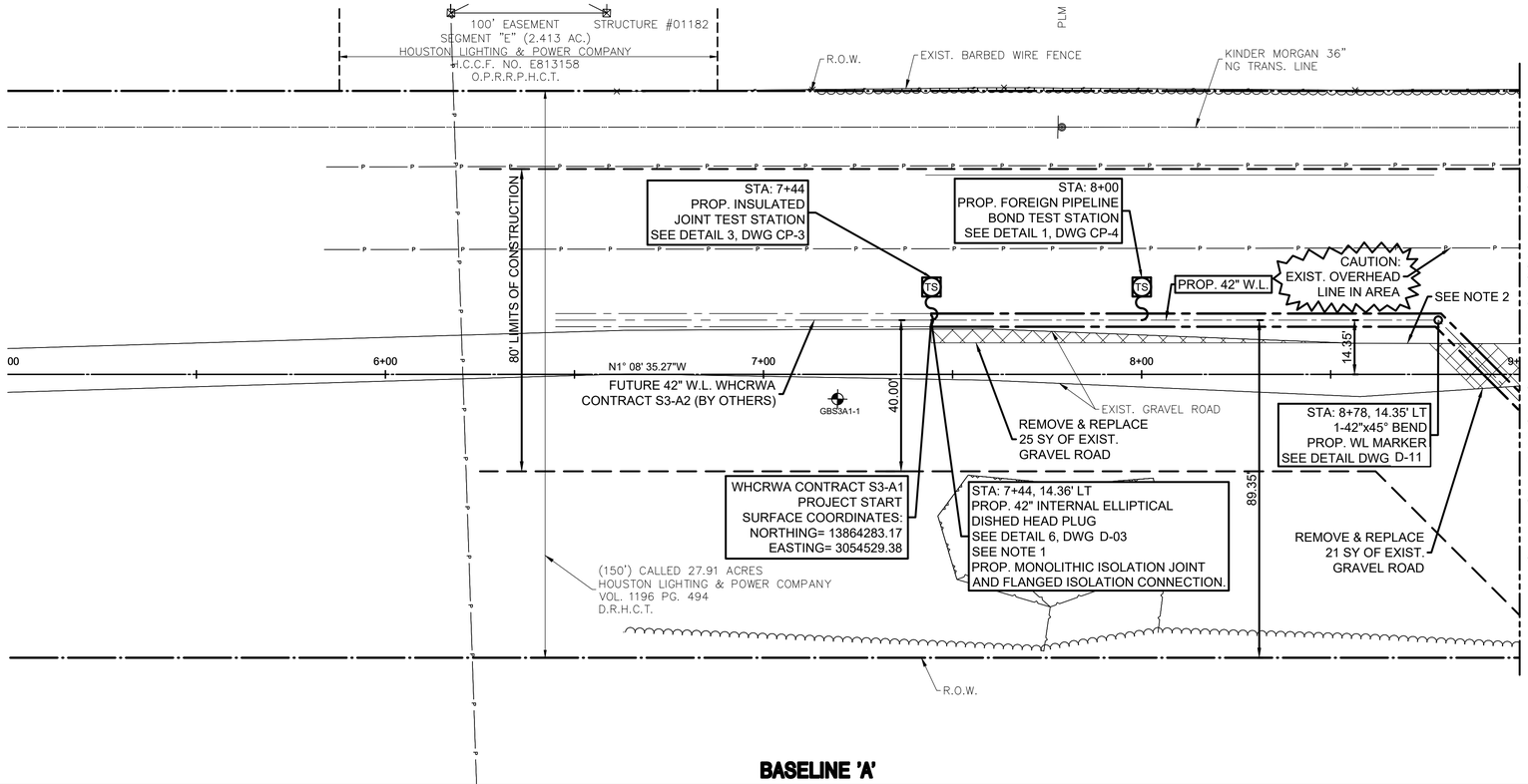
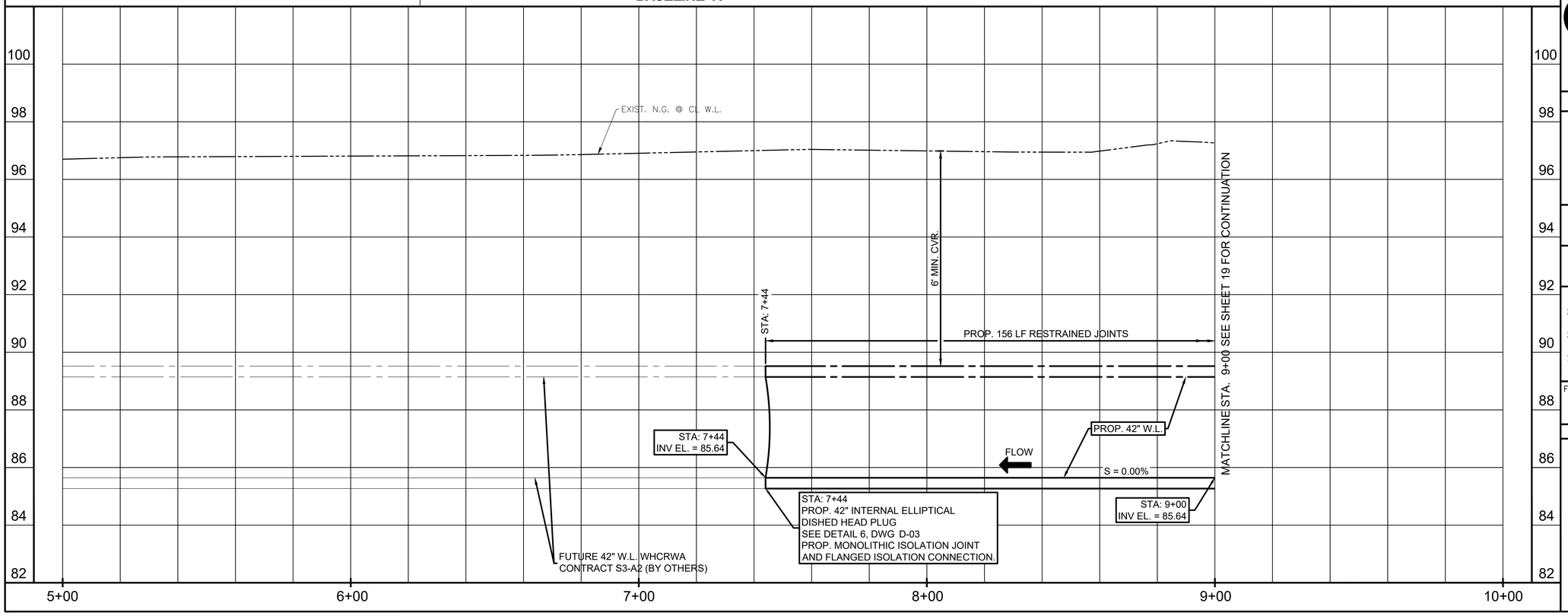


BASELINE 'A'



BENCHMARKS:

MONUMENT 30-099
N 13,865,151.13, E 3,054,742.34
ELEV. 96.52
STA. 16+07.90, 215.89 RT
NAD 83, CORS ADJUSTMENT
SURFACE TO GRID CONVERSION FACTOR: 0.99990615

NOTES:

1. CONTRACTOR SHALL INSTALL 42-INCH INTERNAL ELLIPTICAL DISHED HEAD PLUG IF FUTURE 42-INCH WATER LINE (WHCRWA CONTRACT S3-2A) IS NOT IN PLACE AT THE TIME OF CONSTRUCTION. IF WHCRWA CONTRACT S3-2A IS EXISTING, CONTRACTOR SHALL REMOVE PLUG FROM EXISTING 42-INCH WATER LINE AND CONNECT AFTER SUCCESSFUL HYDROSTATIC TESTING.
2. CONTRACTOR SHALL RESTORE DAMAGED GRAVEL ROAD OUTSIDE OF REMOVAL AND REPLACEMENT LIMITS AS NEEDED AT NO ADDITIONAL COST TO OWNER.

HORIZ 0 10' 20' 40' 1"=20'
VERT 0 1' 2' 4' 1"=2'

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM ENGINEERING CORPORATION

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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91713
MAY 2020
Date

SEGMENT S3-A1

BASELINE 'A' STA. 5+00 TO STA. 9+00 PLAN & PROFILE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.

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

SHEET NO. 17 OF 81

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PLOTTED: 5/27/2020 11:35 PM PEN TABLE: WHCRWA_22x34.ctb
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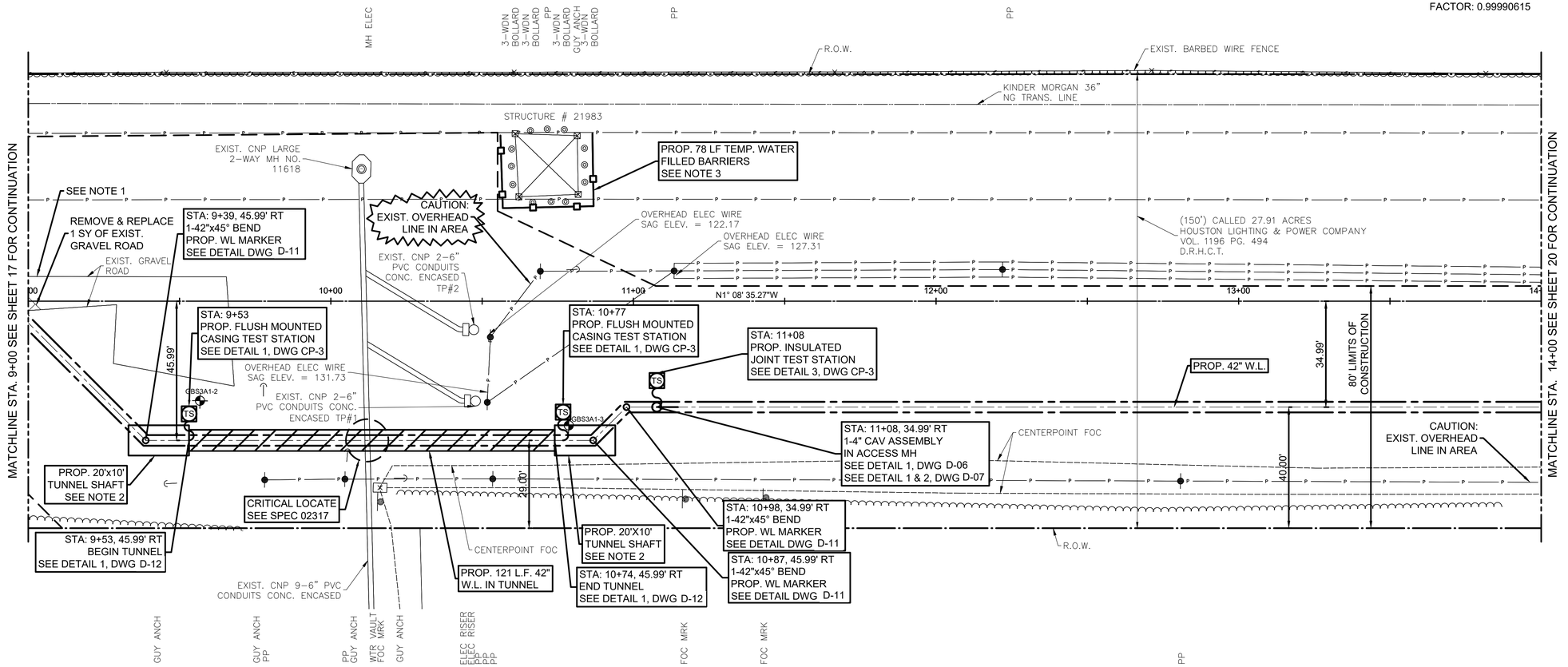
BENCHMARKS:

MONUMENT 30-099
N 13,865,151.13, E 3,054,742.34
ELEV. 96.52
STA. 16+07.90, 215.89 RT
NAD 83, CORS ADJUSTMENT
SURFACE TO GRID CONVERSION
FACTOR: 0.99990615

HORIZ 0 10' 20' 40'
1"=20'



BASELINE 'A'

SEE SHEET 19 FOR PROFILE

NOTE:

1. CONTRACTOR SHALL RESTORE DAMAGED GRAVEL ROAD OUTSIDE OF REMOVAL AND REPLACEMENT LIMITS AS NEEDED AT NO ADDITIONAL COST TO OWNER.
2. CONTRACTOR IS RESPONSIBLE FOR DESIGN OF TUNNEL SHAFTS. REFER TO SPECIFICATION SECTION 02400.
3. CONTRACTOR SHALL INSTALL AND MAINTAIN WATER-FILLED TRITON BARRIER (TL-2) DURING CONSTRUCTION. BARRIERS SHALL SURROUND EXISTING OVERHEAD POWER TOWERS, AS SHOWN AND PER HARRIS COUNTY SPECIFICATION ITEM NO. 698.

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM ENGINEERING CORPORATION

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91713
Registration Number
MAY 2020
Date

SEGMENT S3-A1

BASELINE 'A'
STA. 9+00 TO STA. 14+00
PLAN VIEW

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.	HORIZ: 1"=20' VERT:
SHEET NO. 18 OF 81	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PEN TABLE: WHCRWA_22x34.ctb
PLOTTED: 5/27/2020 11:37 PM
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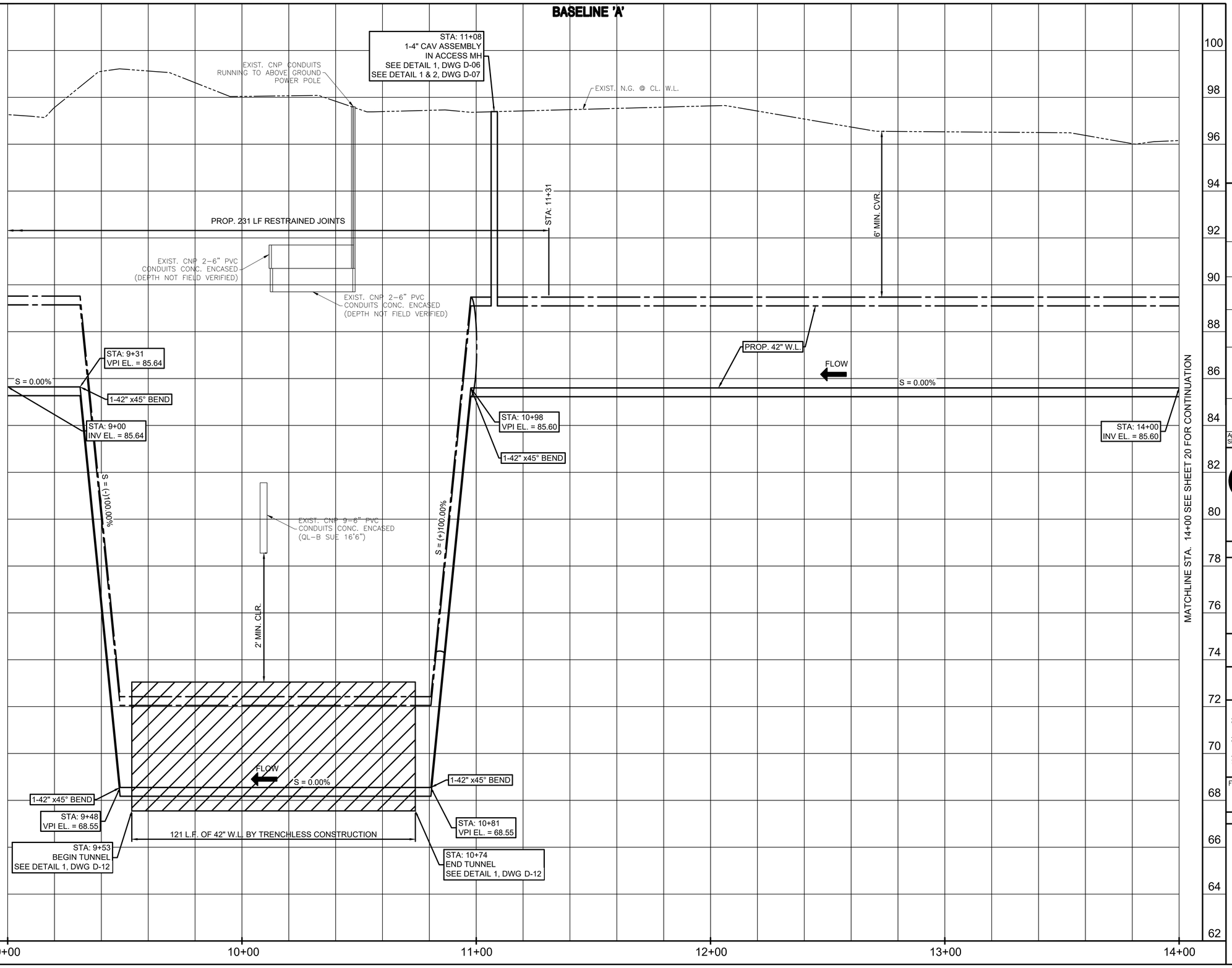
SEE SHEET 18 FOR PLAN VIEW

BASELINE 'A'



NO.	DATE	REVISION	APP.

HORIZ 0 10' 20' 40' — 1"=20'

VERT 0 1' 2' 4' — 1"=2'

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
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ENGINEERING CORPORATION

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91713
Registration Number
MAY 2020
Date

SEGMENT S3-A1

BASELINE 'A'
STA. 9+00 TO STA. 14+00
PROFILE VIEW

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.

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

SHEET NO. 19 OF 81

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PEN TABLE: WHCRWA_22x34.ctb
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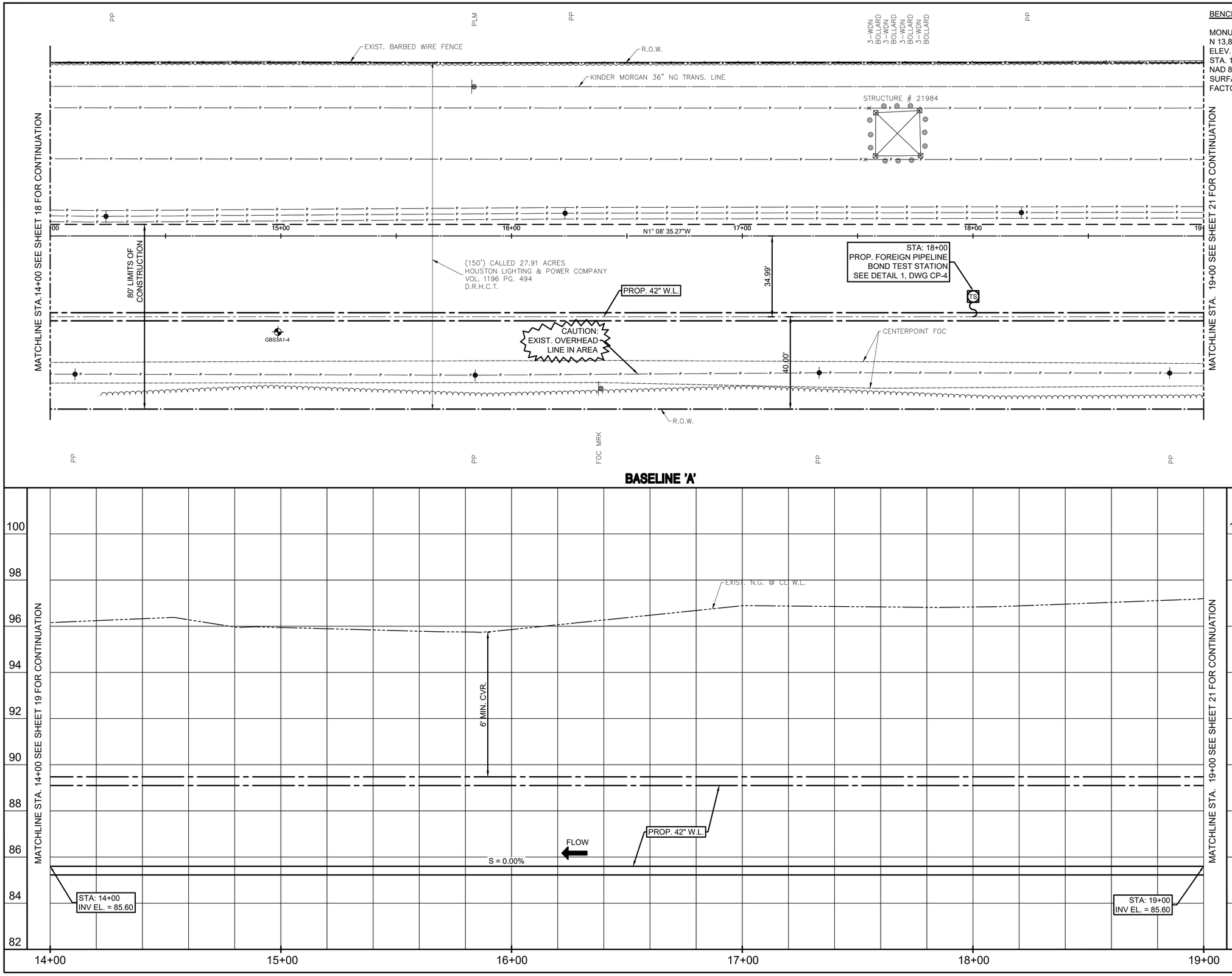

BENCHMARKS:

MONUMENT 30-099
N 13,865,151.13, E 3,054,742.34
ELEV. 96.52
STA. 16+07.90, 215.89 RT
NAD 83, CORS ADJUSTMENT
SURFACE TO GRID CONVERSION
FACTOR: 0.99990615

HORIZ 0 10' 20' 40'
1"=20'

VERT 0 1' 2' 4'
1"=2'

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
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ENGINEERING CORPORATION

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91713
MAY 2020
Date

SEGMENT S3-A1

BASELINE 'A'
STA. 14+00 TO STA. 19+00
PLAN & PROFILE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.

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

SHEET NO. 20 OF 81

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: \\pdhou\data\bb\Enviro\1900000003 - WHCRWA 42 Inch Segment 3A_CADD\Drawings\003C-Plwtrl.dwg
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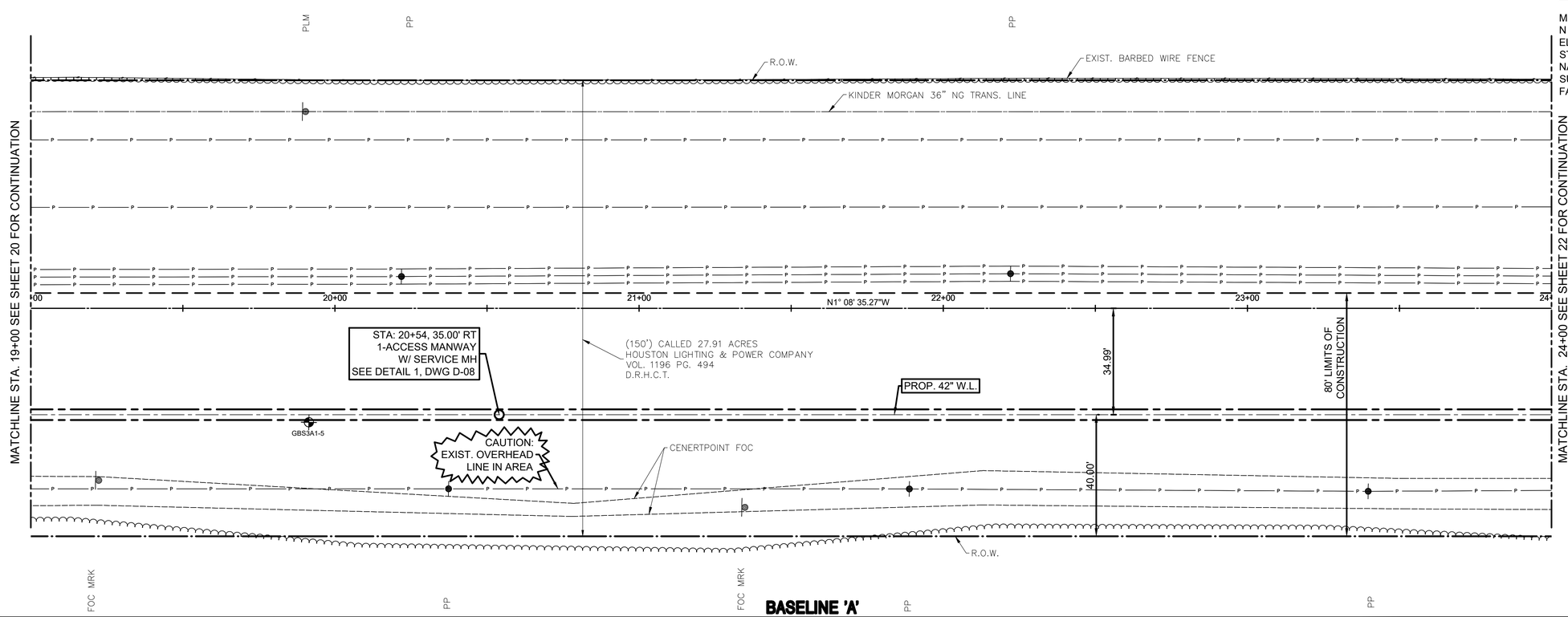
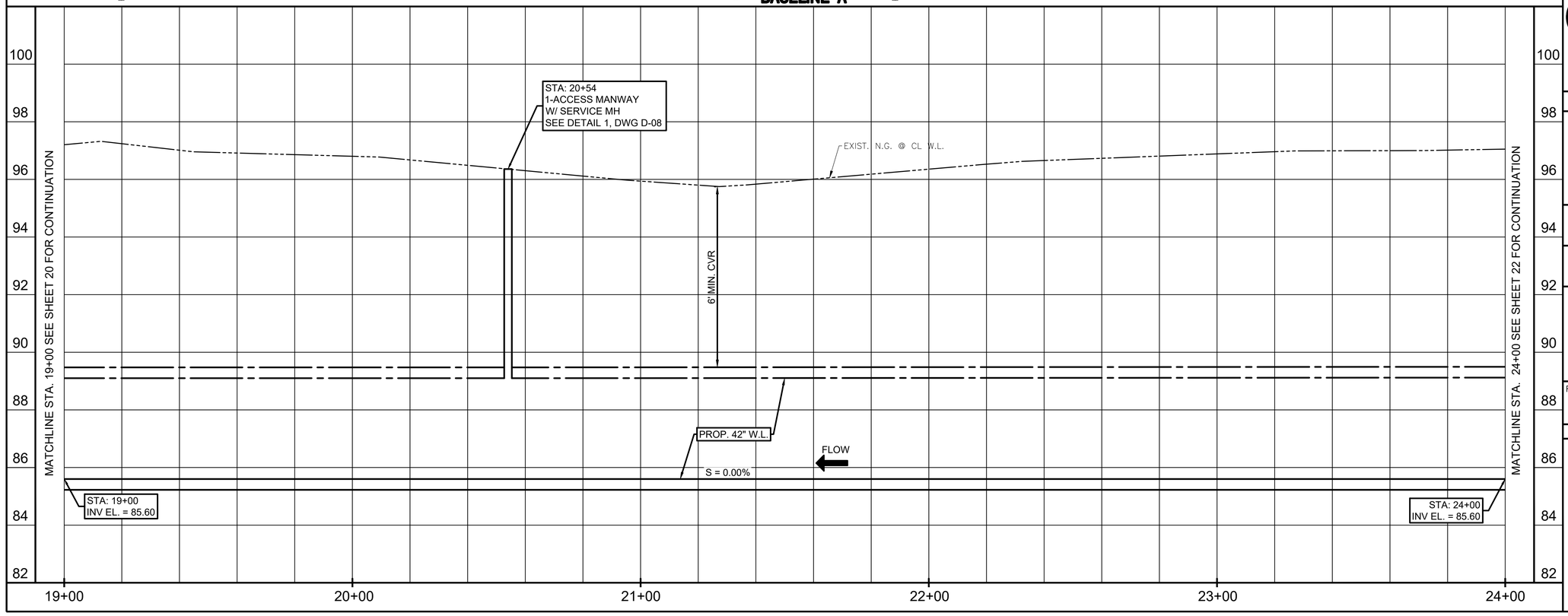


BASELINE 'A'



BENCHMARKS:

MONUMENT 30-099
N 13,865,151.13, E 3,054,742.34
ELEV. 96.52
STA. 16+07.90, 215.89 RT
NAD 83, CORS ADJUSTMENT
SURFACE TO GRID CONVERSION
FACTOR: 0.99990615

HORIZ 0 10' 20' 40'
1"=20'

VERT 0 1' 2' 4'
1"=2'

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM
ENGINEERING CORPORATION

NOTICE:
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91713
MAY 2020
Date

SEGMENT S3-A1

BASELINE 'A'
STA. 19+00 TO STA. 24+00
PLAN & PROFILE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.

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

SHEET NO. 21 OF 81

DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

PEN TABLE: WHCRWA_22x34.ctb
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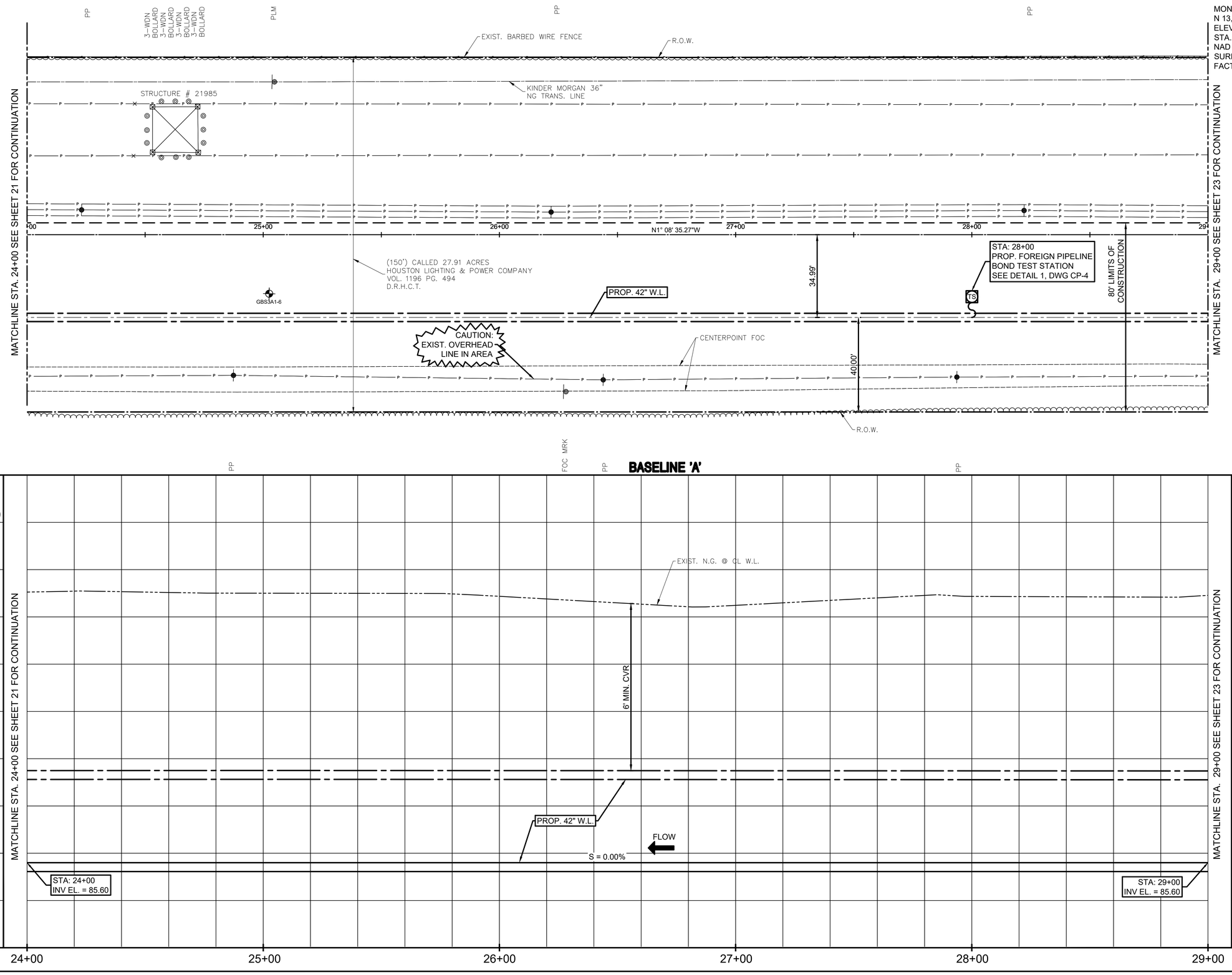

BENCHMARKS:

MONUMENT 30-098
N 13,866,687.74, E 3,054,703.31
ELEV. 96.91
STA. 31+44.99, 207.52 RT
NAD 83, CORS ADJUSTMENT
SURFACE TO GRID CONVERSION
FACTOR: 0.99990615

NO.	DATE	REVISION	APP.

HORIZ 0 10' 20' 40' — 1"=20'

VERT 0 1' 2' 4' — 1"=2'

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

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Registration Number
MAY 2020
Date

SEGMENT S3-A1

BASELINE 'A' STA. 24+00 TO STA. 29+00 PLAN & PROFILE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.

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

SHEET NO. 22 OF 81

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PLOTTED: 5/27/2020 11:42 PM PEN TABLE: WHCRWA_22x34.ctb

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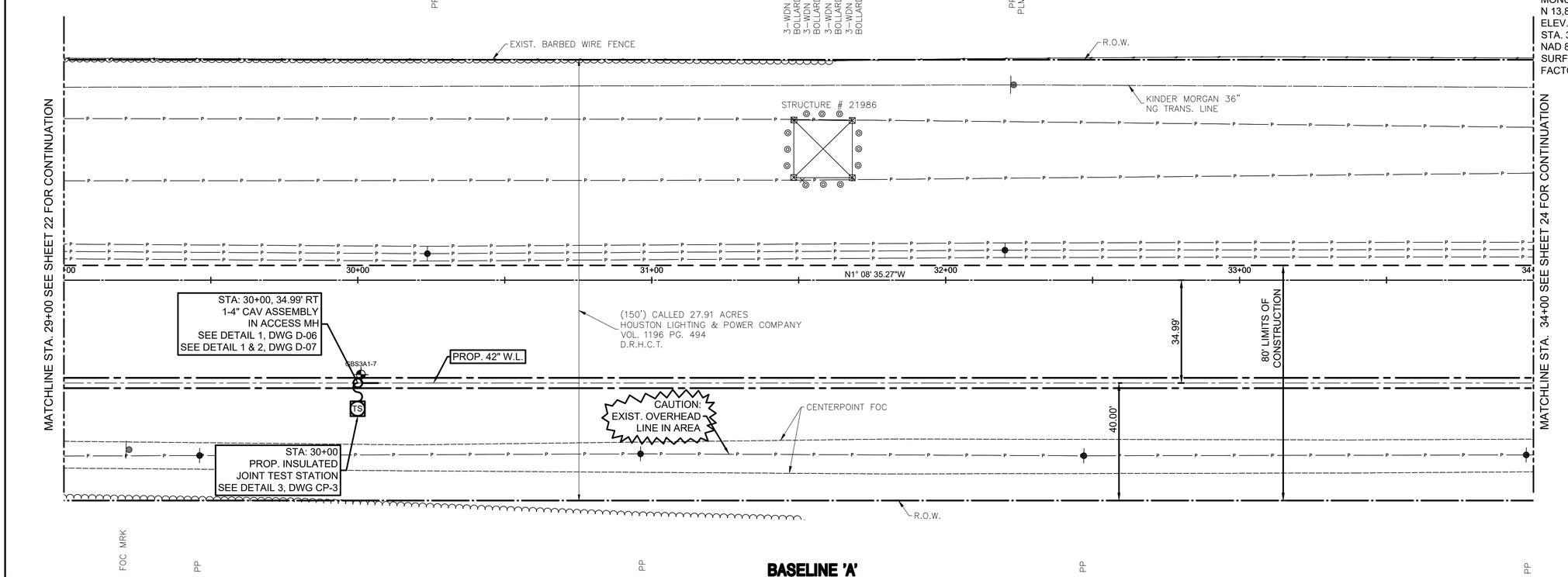
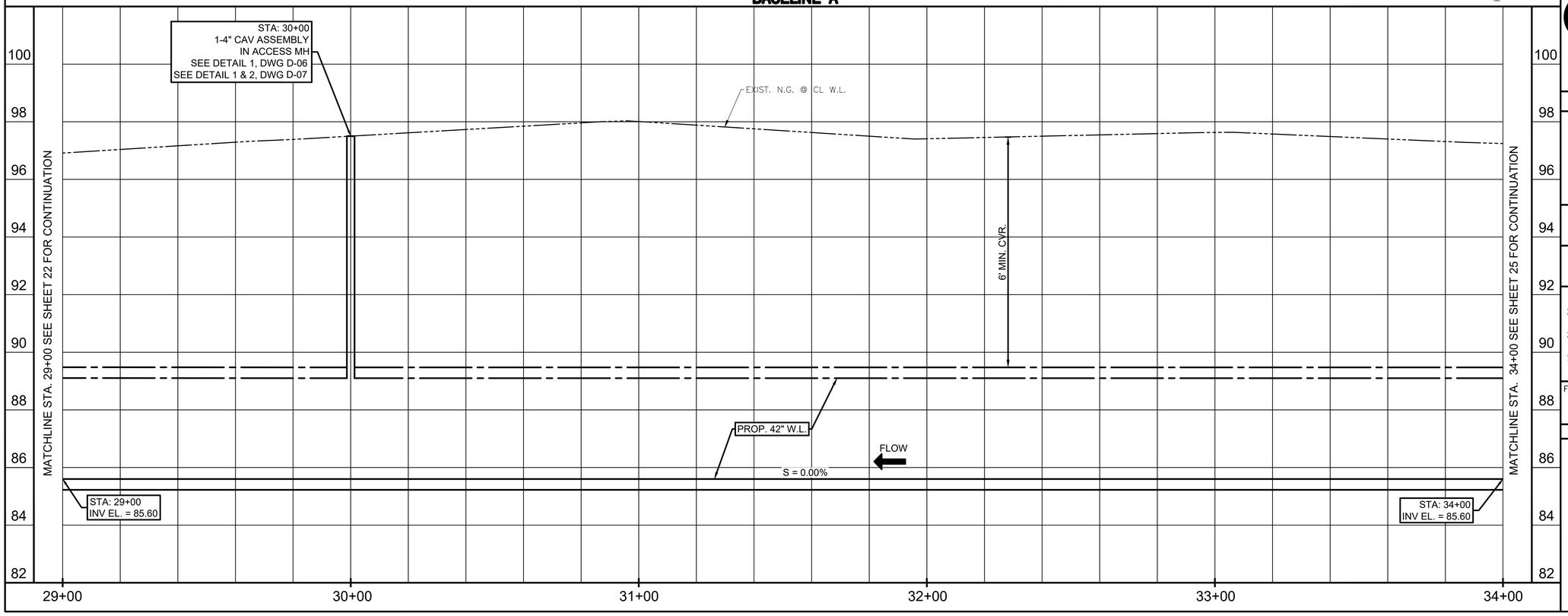


BASELINE 'A'



BENCHMARKS:

MONUMENT 30-098
N 13,866,687.74, E 3,054,703.31
ELEV. 96.91
STA. 31+44.99, 207.52 RT
NAD 83, CORS ADJUSTMENT
SURFACE TO GRID CONVERSION
FACTOR: 0.99990615

HORIZ 0 10' 20' 40' — 1"=20'

VERT 0 1' 2' 4' — 1"=2'

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM
ENGINEERING CORPORATION

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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Date

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Signature valid for one year.

Binkley & Barfield consulting engineers

Binkley & Barfield, Inc. | TxEng F-257
1710 Seamist Dr, Houston, TX 77008
713.869.3433 | BinkleyBarfield.com

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:
CHRISTOPHER L. CAMPBELL
Engineer
91713
MAY 2020
Date

SEGMENT S3-A1

BASELINE 'A'
STA. 29+00 TO STA. 34+00
PLAN & PROFILE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.

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

SHEET NO. 23 OF 81

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PLOTTED: 5/27/2020 11:44 PM PEN TABLE: WHCRWA_22x34.ctb

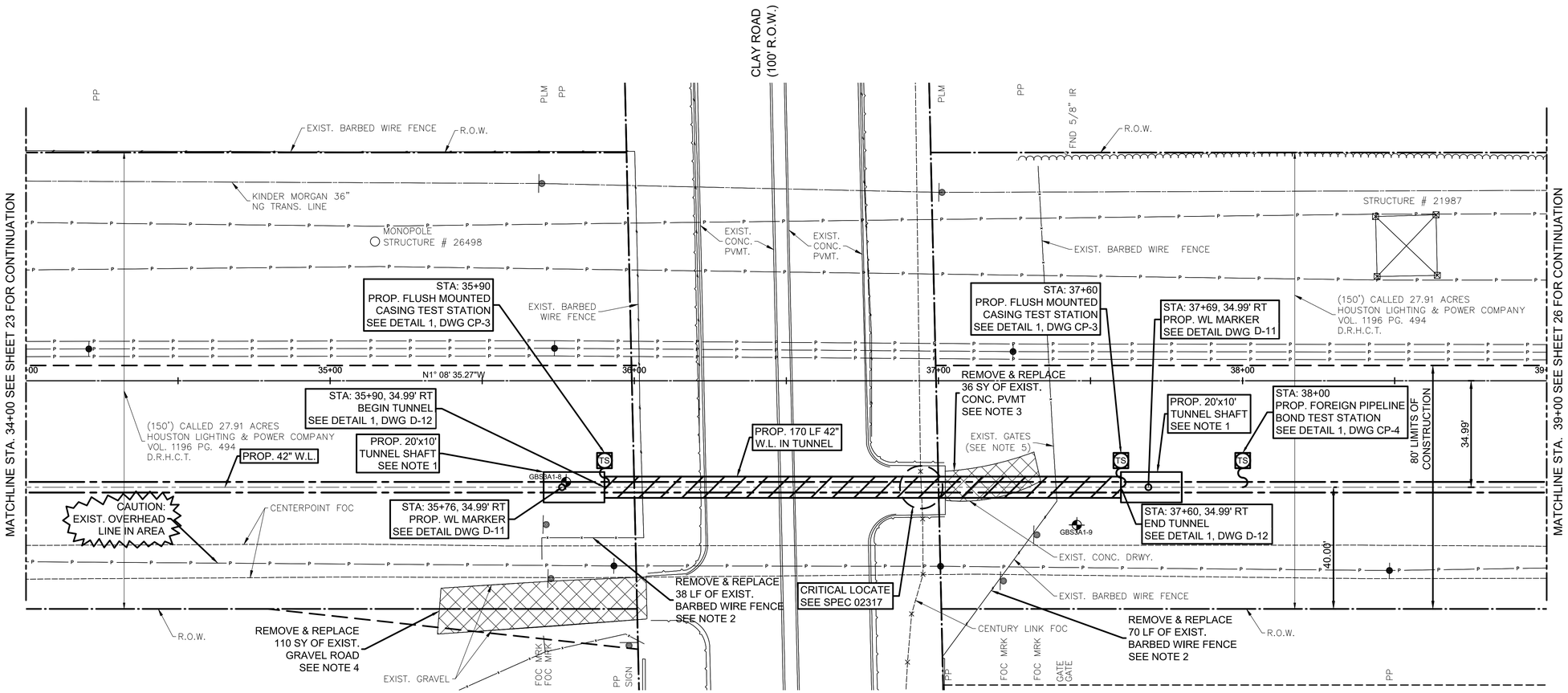
FILE PATH: \\pathou\data\bb\Enviro\190000003 – WHCRWA 42 Inch Segment 3A_CADD\Drawings\006C-PLwtrl.dwg

BENCHMARKS:

MONUMENT 30-098
N 13,866,687.74, E 3,054,703.31
ELEV. 96.91
STA. 31+44.99, 207.52 RT
NAD 83, CORS ADJUSTMENT
SURFACE TO GRID CONVERSION
FACTOR: 0.99990615

HORIZ 0 10' 20' 40'
1"=20'

NO.	DATE	REVISION	APP.



BASELINE 'A'

SEE SHEET 25 FOR PROFILE VIEW

NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR DESIGN OF TUNNEL SHAFTS. REFER TO SPECIFICATION SECTION 02400.
2. CONTRACTOR SHALL REMOVE AND REPLACE EXISTING FENCE WITHIN CONSTRUCTION LIMITS TO EXISTING CONDITION OR BETTER.
3. CONTRACTOR SHALL REPAIR OR REPLACE EXISTING CONCRETE DRIVEWAY TO ORIGINAL CONDITION OR BETTER WITH HIGH EARLY STRENGTH CONCRETE, AS NECESSARY.
4. CONTRACTOR SHALL RESTORE EXISTING GRAVEL DRIVEWAY TO ORIGINAL CONDITION OR BETTER, AS NECESSARY.
5. CONTRACTOR SHALL REMOVE AND REPLACE EXISTING GATE WITH SAME TYPE AND LENGTH.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM
ENGINEERING CORPORATION

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CHRISTOPHER L. CAMPBELL
Engineer
91713
Registration Number
MAY 2020
Date

SEGMENT S3-A1

BASELINE 'A'
STA. 34+00 TO STA. 39+00
PLAN VIEW

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.	HORIZ: 1"=20' VERT:
SHEET NO. 24 OF 81	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PEN TABLE: WHCRWA_22x34.ctb
PLOTTED: 5/27/2020 11:45 PM
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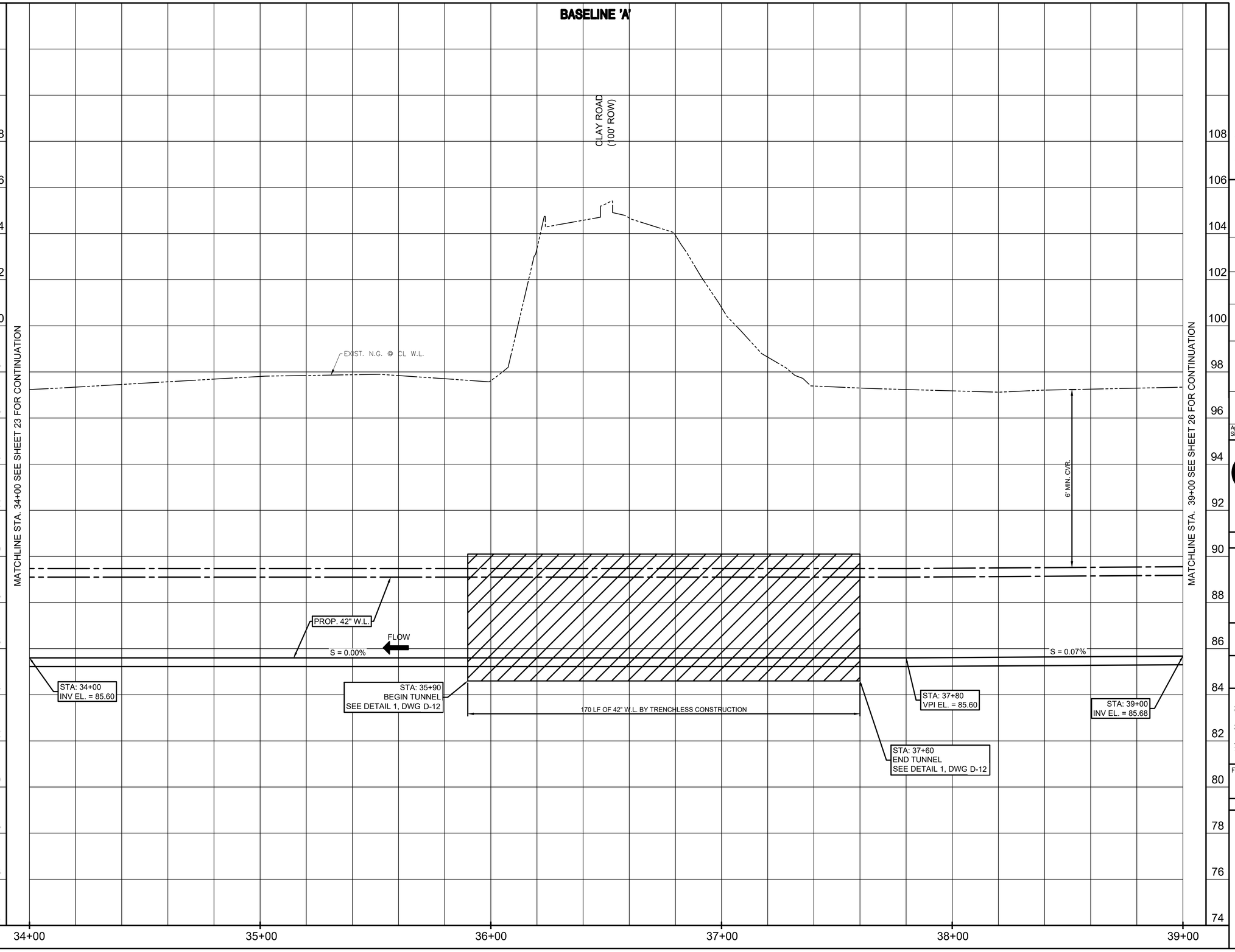
SEE SHEET 24 FOR PLAN VIEW

BASELINE 'A'



NO.	DATE	REVISION	APP.

HORIZ 0 10' 20' 40'
1"=20'

VERT 0 1' 2' 4'
1"=2'

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
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91713
MAY 2020

SEGMENT S3-A1

BASELINE 'A'
STA. 34+00 TO STA. 39+00
PROFILE VIEW

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.

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

SHEET NO. 25 OF 81

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PEN TABLE: WHCRWA_22x34.ctb
PLOTTED: 5/27/2020 11:46 PM
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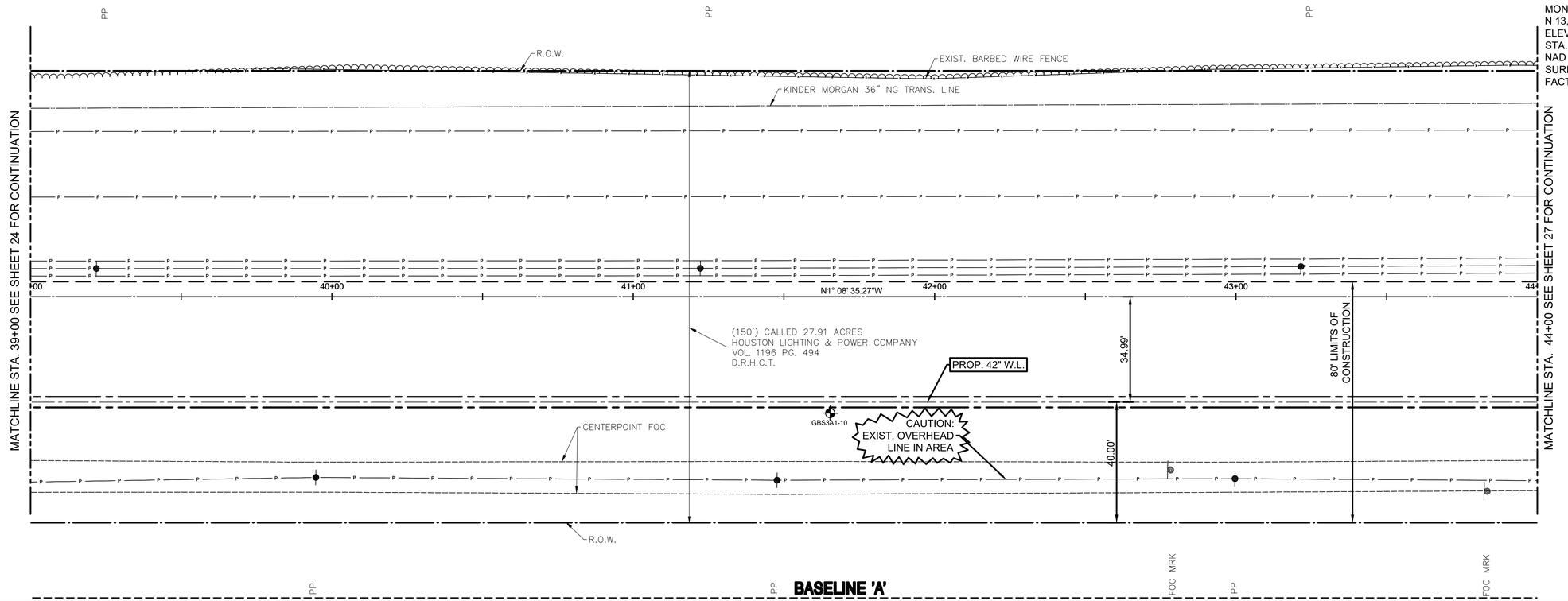

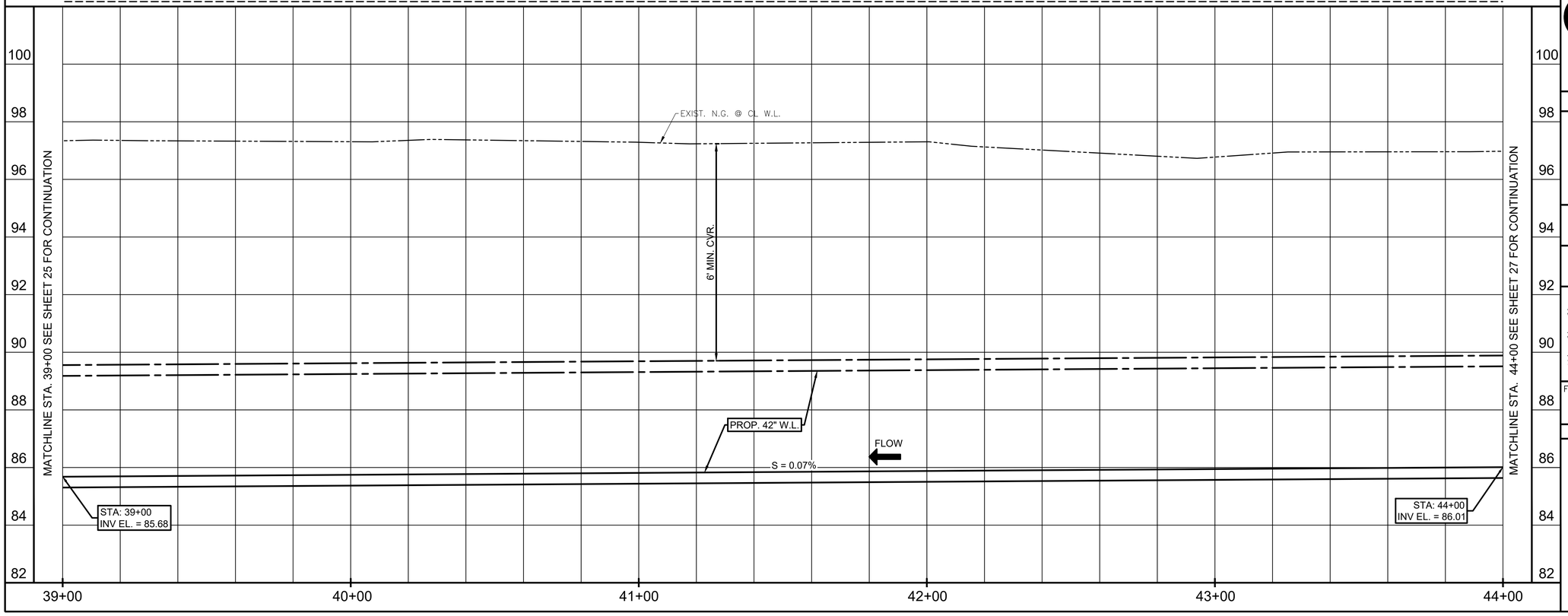

BENCHMARKS:

MONUMENT 30-097
N 13,868,183.36, E 3,054,509.32
ELEV. 97.29
STA. 46+44.18, 43.41 RT
NAD 83, CORS ADJUSTMENT
SURFACE TO GRID CONVERSION
FACTOR: 0.99990615

HORIZ 0 10' 20' 40' 1"=20'

VERT 0 1' 2' 4' 1"=2'

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM ENGINEERING CORPORATION

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CHRISTOPHER L. CAMPBELL
Registered
91713
MAY 2020
Date

SEGMENT S3-A1

BASELINE 'A'
STA. 39+00 TO STA. 44+00
PLAN & PROFILE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.

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

SHEET NO. 26 OF 81

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PLOTTED: 5/27/2020 11:47 PM
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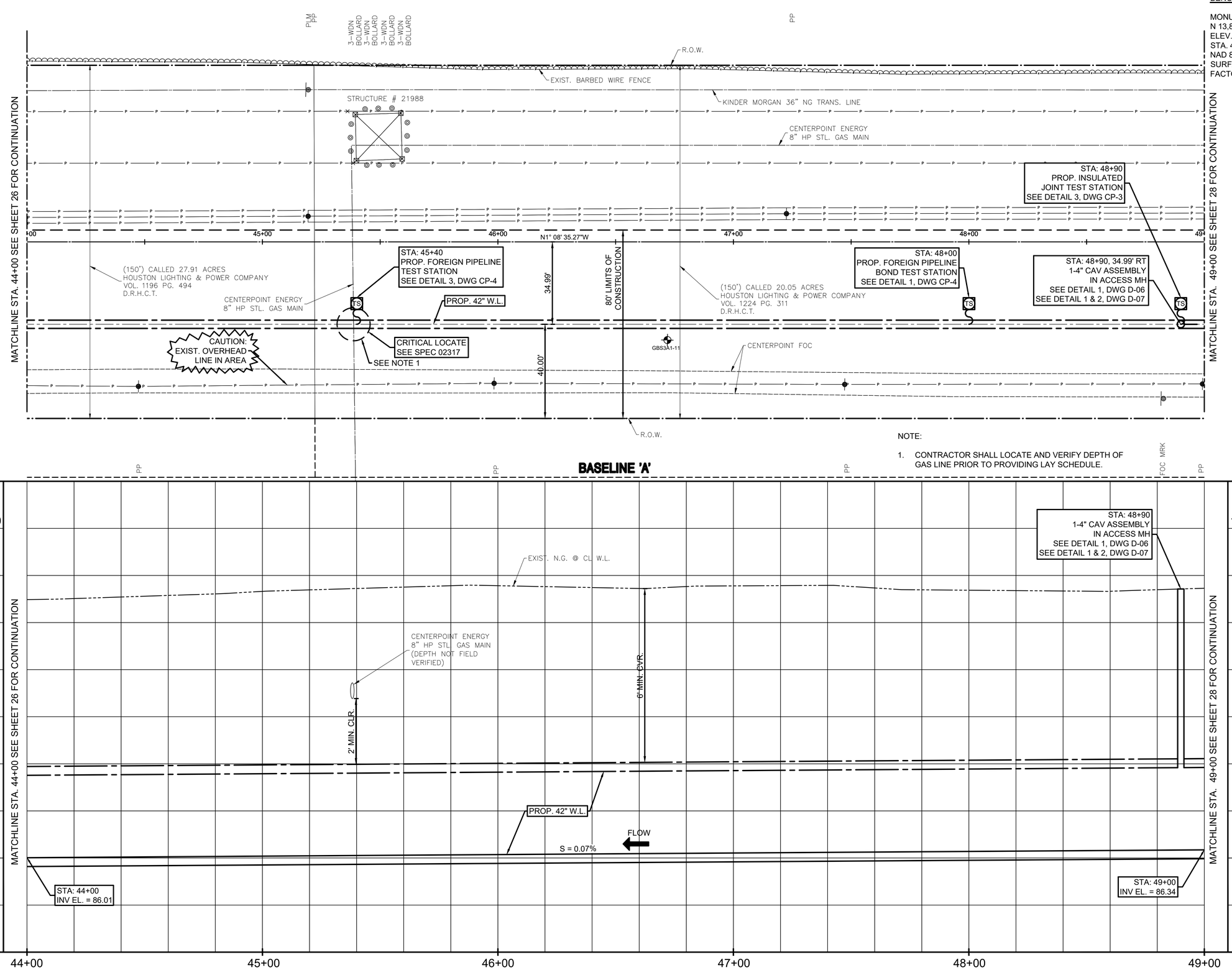

NOTE:

1. CONTRACTOR SHALL LOCATE AND VERIFY DEPTH OF GAS LINE PRIOR TO PROVIDING LAY SCHEDULE.

BENCHMARKS:

MONUMENT 30-097
N 13,868,183.36, E 3,054,509.32
ELEV. 97.29
STA. 46+44.18, 43.41 RT
NAD 83, CORS ADJUSTMENT
SURFACE TO GRID CONVERSION
FACTOR: 0.99990615

HORIZ 0 10' 20' 40' 1"=20'

VERT 0 1' 2' 4' 1"=2'

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
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ENGINEERING CORPORATION

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CHRISTOPHER L. CAMPBELL
Name
91713
Registration Number
MAY 2020
Date

SEGMENT S3-A1

BASELINE 'A'
STA. 44+00 TO STA. 49+00
PLAN & PROFILE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.

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

SHEET NO. 27 OF 81

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PEN TABLE: WHCRWA_22x34.ctb
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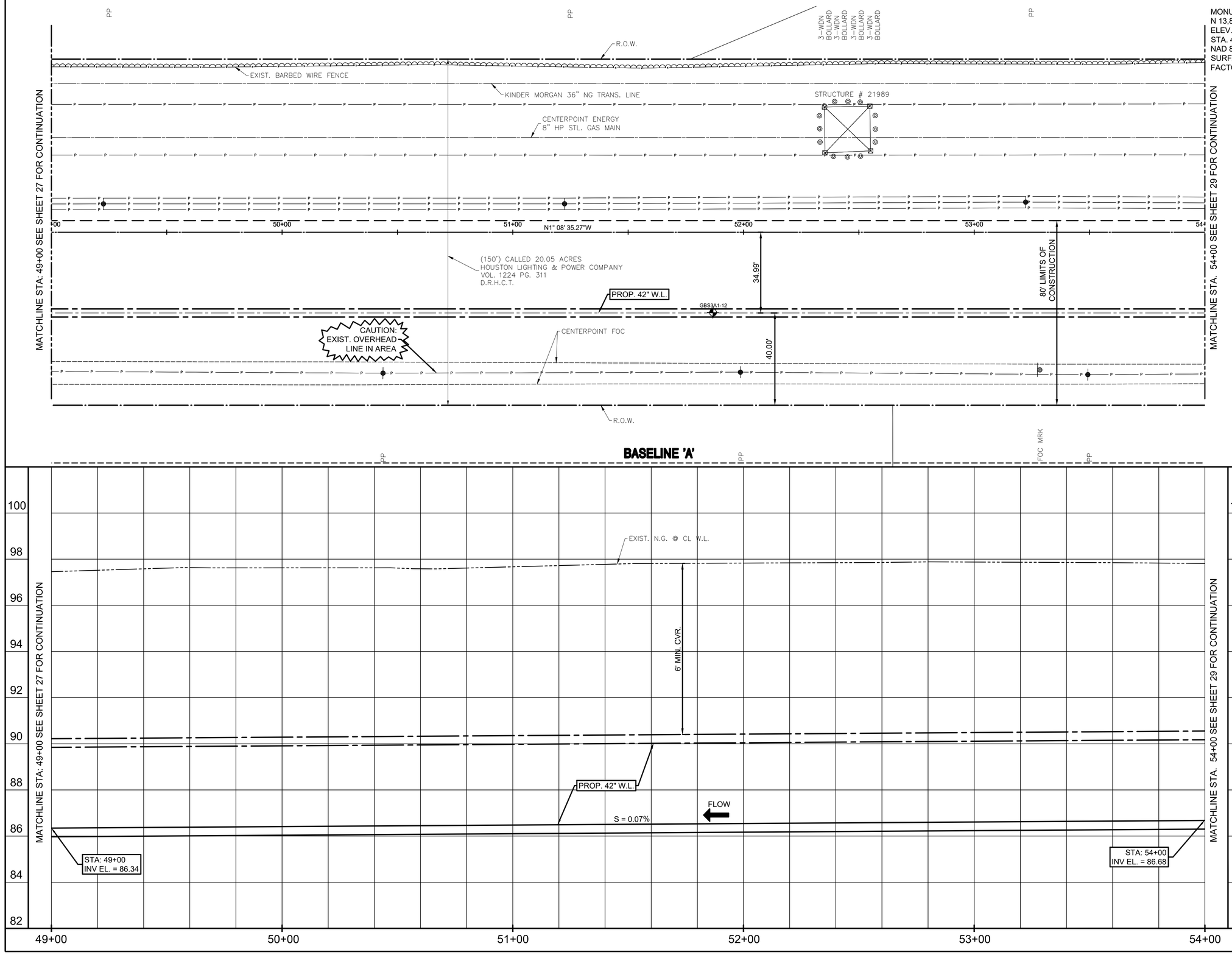

BENCHMARKS:

MONUMENT 30-097
N 13,868,183.36, E 3,054,509.32
ELEV. 97.29
STA. 46+44.18, 43.41 RT
NAD 83, CORS ADJUSTMENT
SURFACE TO GRID CONVERSION
FACTOR: 0.99990615

HORIZ 0 10' 20' 40' 1"=20'

VERT 0 1' 2' 4' 1"=2'

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
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Registered Professional Engineer
91713
MAY 2020
Date

SEGMENT S3-A1

BASELINE 'A' STA. 49+00 TO STA. 54+00 PLAN & PROFILE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.

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

SHEET NO. 28 OF 81

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PLOTTED: 5/27/2020 11:50 PM PEN TABLE: WHCRWA_22x34.ctb

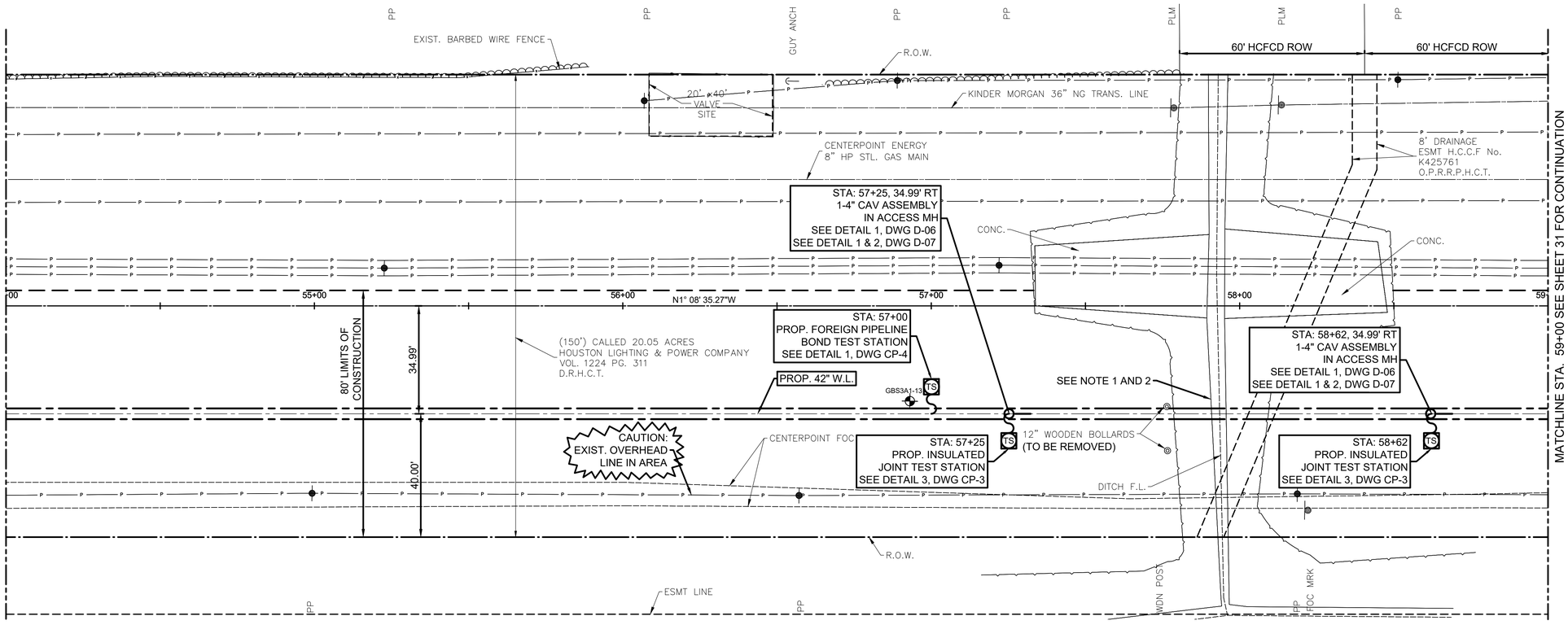
FILE PATH: \\pdhou\data\bb\Enviro\190000003 - WHCRWA 42 Inch Segment 3A_CADD\Drawings\010C-Pwtrl.dwg

BENCHMARKS:

MONUMENT 30-096
N 13,869,673.12, E 3,054,474.69
ELEV. 98.44
STA. 61+34.33, 38.51 RT
NAD 83, CORS ADJUSTMENT
SURFACE TO GRID CONVERSION
FACTOR: 0.99990615

HORIZ 0 10' 20' 40'
1"=20'

NO.	DATE	REVISION	APP.



BASELINE 'A'

SEE SHEET 30 FOR PROFILE VIEW

*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 dcid@hcfcd.org
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.

NOTES:

1. SEE SPECIFICATION SECTION 01110 FOR DIVERSION REQUIREMENTS.
2. CONTRACTOR SHALL CONSTRUCT 42" WATER LINE CROSSING OF HCFCD UNIT NO. W167-04-06 BY OPEN CUT METHODS DURING DRY WEATHER CONDITIONS. CONTRACTOR SHALL PROVIDE EITHER EARTHEN BERM OR INFLATABLE COFFER DAMS UP AND DOWN STREAM OF CROSSING, AS NECESSARY. CONTRACTOR TO UTILIZE DIVERSION PUMPING FOR ANY DRY WEATHER FLOWS WITHIN THE CHANNEL, IF REQUIRED. CONTRACTOR TO REPLACE EXISTING DITCH TO EXISTING CONDITION OR BETTER. NO SEPARATE PAY.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM ENGINEERING CORPORATION

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Engineer
91713
Registration Number
MAY 2020
Date

SEGMENT S3-A1

BASELINE 'A'
STA. 54+00 TO STA. 59+00
PLAN VIEW

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.	HORIZ: 1"=20' VERT:
SHEET NO. 29 OF 81	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PEN TABLE: SWSP_34x22_PDF.ctb
PLOTTED: 5/28/2020 8:32 AM
FILE PATH: \\pzhou\data\bbi\Enviro\900000003 - WHCRWA 42 Inch Segment 3A_CADD\Drawings\011C-Plwtr.dwg

SEE SHEET 29 FOR PROFILE VIEW

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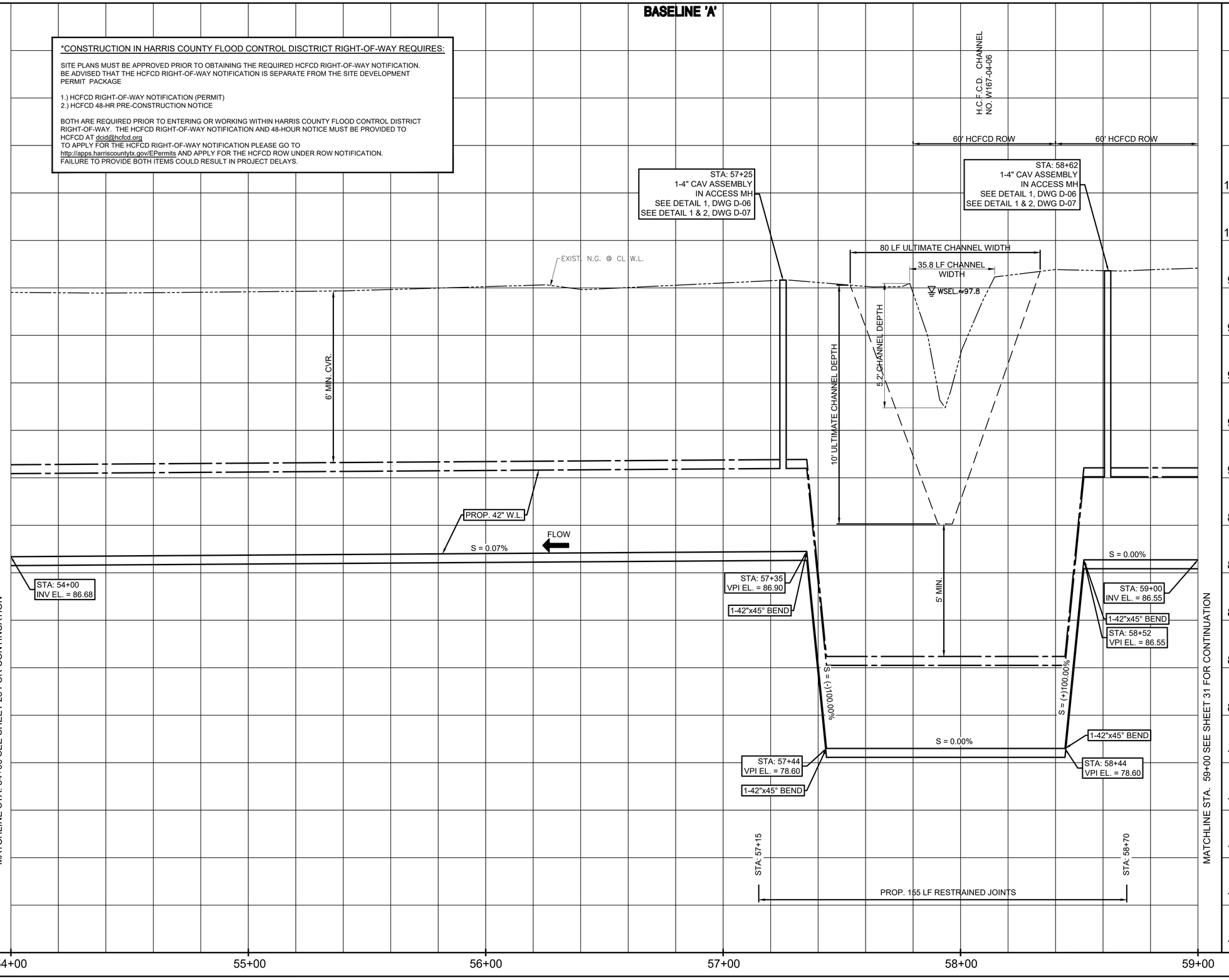

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91713
MAY 2020

SEGMENT S3-A1

BASELINE 'A'
STA. 54+00 TO STA. 59+00
PROFILE VIEW

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.	HORIZ: 1"=20' VERT: 1"=2'
SHEET NO. 30 OF 81	DRAWING SCALE

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PEN TABLE: SWSP_34x22_PDF.ctb
PLOTTED: 5/28/2020 9:00 AM
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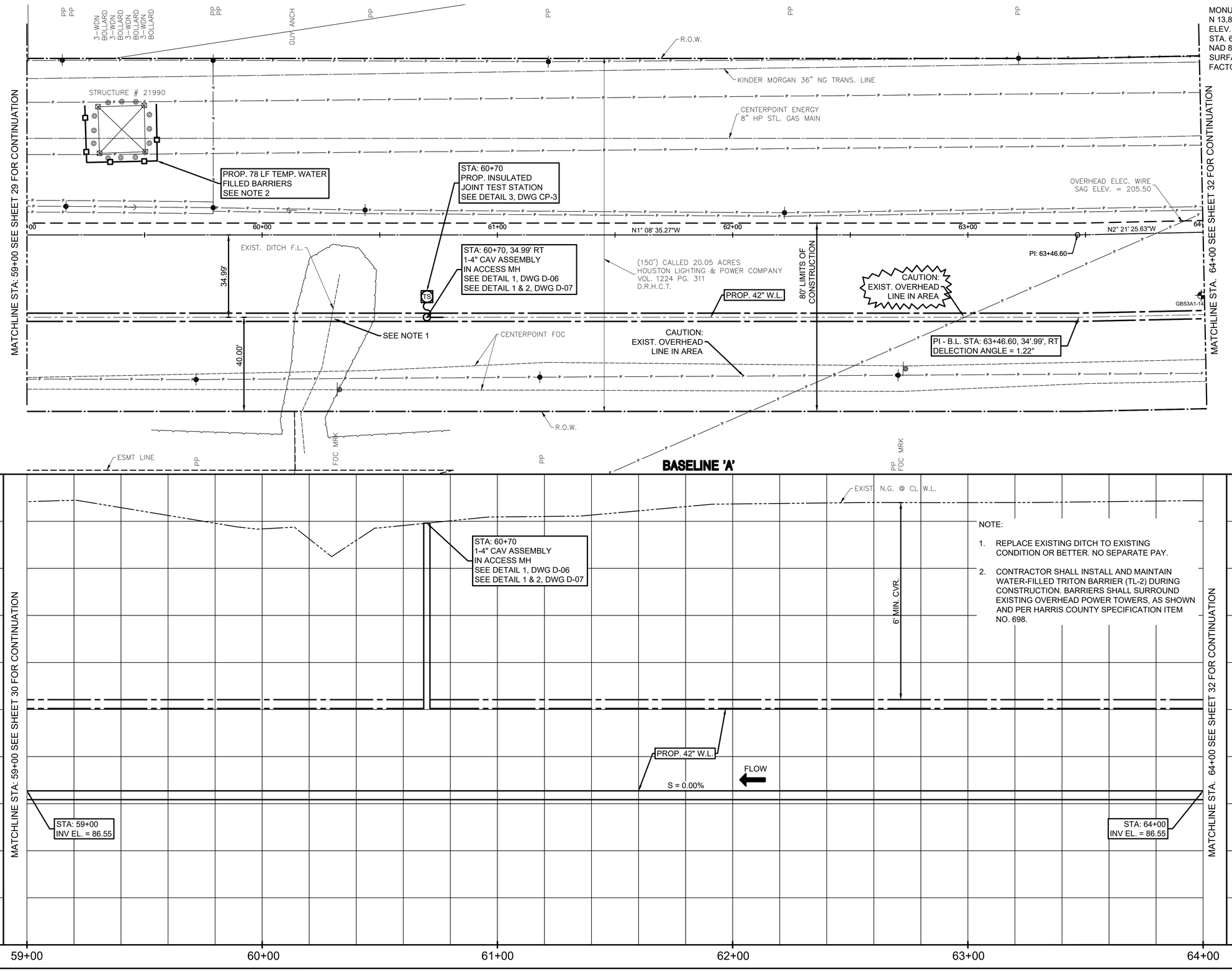

BENCHMARKS:

MONUMENT 30-096
N 13,869,673.12, E 3,054,474.69
ELEV. 98.44
STA. 61+34.33, 38.51 RT
NAD 83, CORS ADJUSTMENT
SURFACE TO GRID CONVERSION
FACTOR: 0.99990615

HORIZ 0 10' 20' 40' 1"=20'

VERT 0 1' 2' 4' 1"=2'

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM ENGINEERING CORPORATION

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

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

Binkley & Barfield consulting engineers
Binkley & Barfield, Inc. | TxEng F-257
1710 Seamist Dr, Houston, TX 77008
713.869.3433 | BinkleyBarfield.com

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:
CHRISTOPHER L. CAMPBELL
Engineer
91713
Registration Number
MAY 2020
Date

SEGMENT S3-A1

BASELINE 'A' STA. 59+00 TO STA. 64+00 PLAN & PROFILE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.

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

SHEET NO. 31 OF 81

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PEN TABLE: WHCRWA_22x34.ctb
PLOTTED: 5/27/2020 11:54 PM
FILE PATH: \\pzhou\data\bbi\Enviro\1900000003 - WHCRWA 42 Inch Segment 3A_CADD\Drawings\012C-PLwtr.dwg

NOTE:

1. CONTRACTOR SHALL INSTALL AND MAINTAIN WATER-FILLED TRITON BARRIER (TL-2) DURING CONSTRUCTION. BARRIERS SHALL SURROUND EXISTING OVERHEAD POWER TOWERS, AS SHOWN AND PER HARRIS COUNTY SPECIFICATION ITEM NO. 698.

BENCHMARKS:

MONUMENT 30-096
N 13,869,673.12, E 3,054,474.69
ELEV. 98.44
STA. 61+34.33, 38.51 RT
NAD 83, CORS ADJUSTMENT
SURFACE TO GRID CONVERSION FACTOR: 0.99990615

HORIZ 0 10' 20' 40' 1"=20'

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NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
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SEGMENT S3-A1

BASELINE 'A'
STA. 64+00 TO STA. 69+00
PLAN & PROFILE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.	HORIZ: 1"=20' VERT: 1"=2'
SHEET NO. 32 OF 81	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

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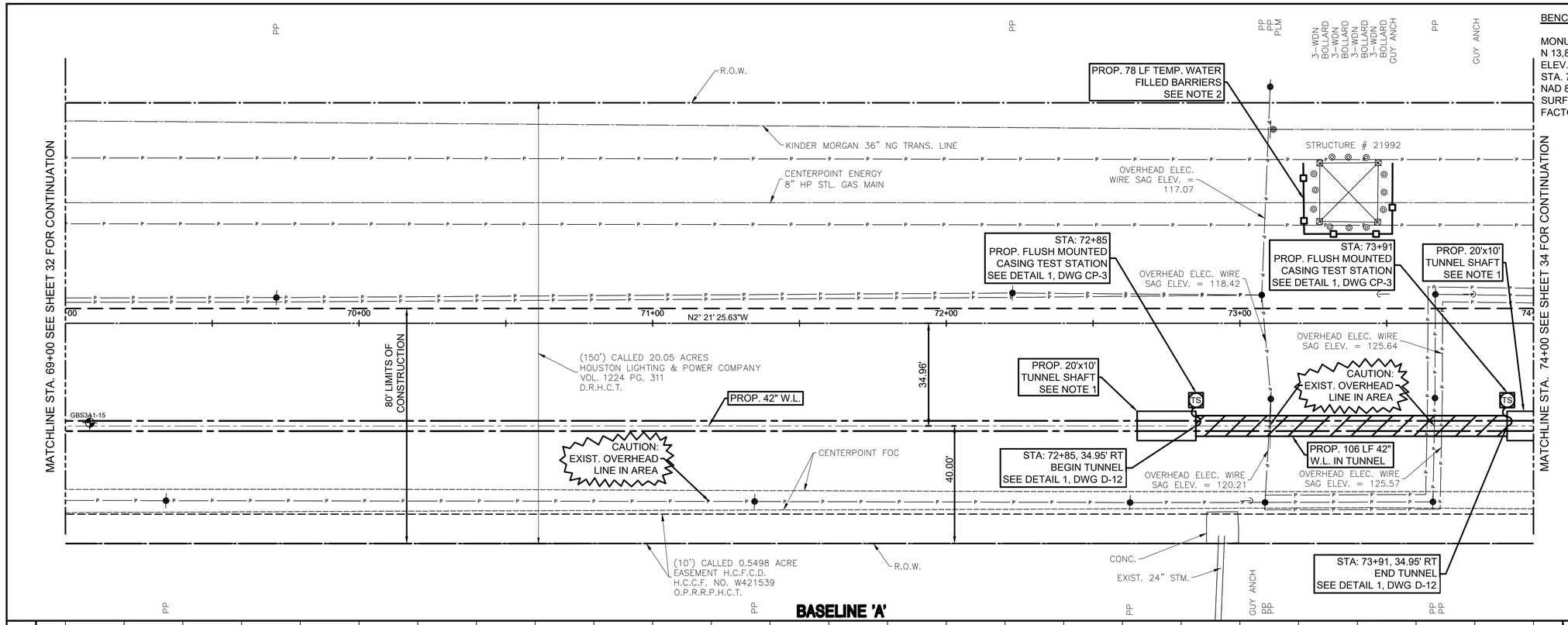

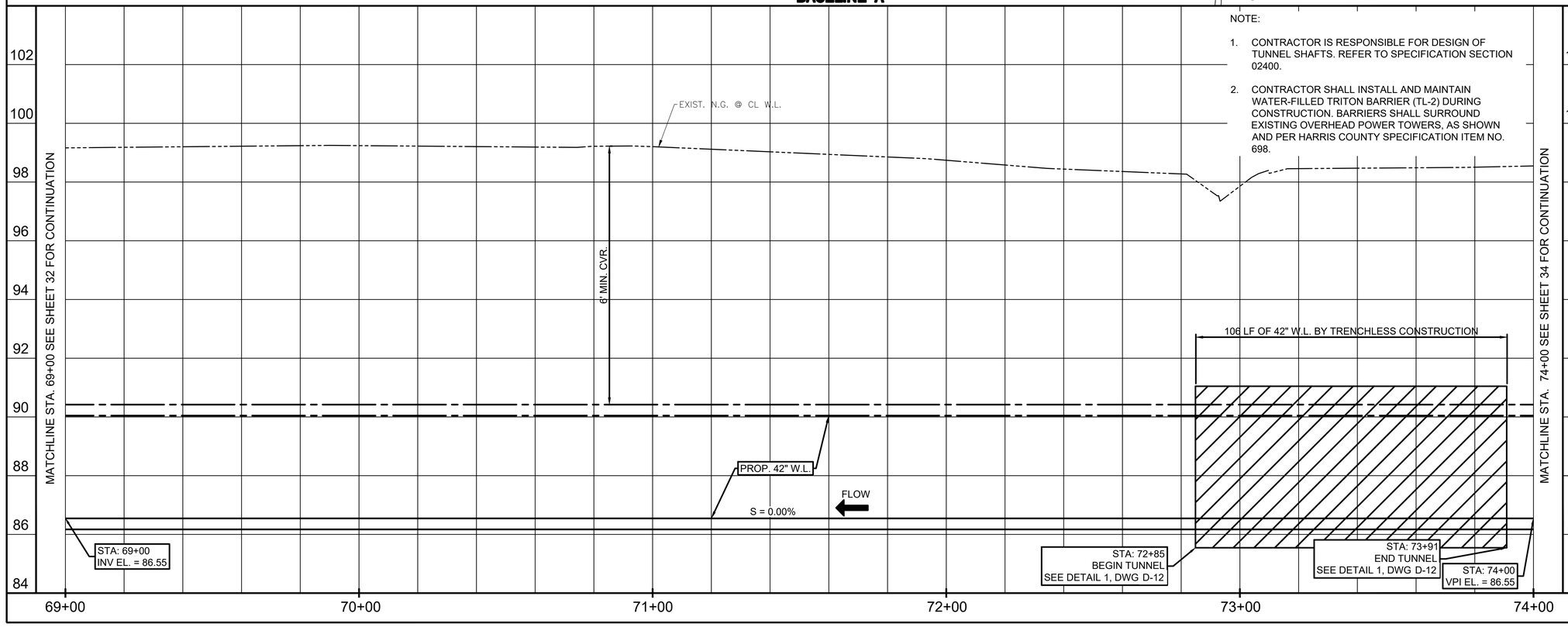

NOTE:

1. CONTRACTOR IS RESPONSIBLE FOR DESIGN OF TUNNEL SHAFTS. REFER TO SPECIFICATION SECTION 02400.
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BENCHMARKS:

MONUMENT 30-095
N 13,870,891.35, E 3,054,570.22
ELEV. 99.84
STA. 73+46.84, 179.551 RT
NAD 83, CORS ADJUSTMENT
SURFACE TO GRID CONVERSION FACTOR: 0.99990615

NO.	DATE	REVISION	APP.

HORIZ 0 10' 20' 40' — 1"=20'

VERT 0 1' 2' 4' — 1"=2'

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM ENGINEERING CORPORATION

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Engineer
91713
Registration Number
MAY 2020
Date

SEGMENT S3-A1

BASELINE 'A' STA. 69+00 TO STA. 74+00 PLAN & PROFILE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.

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

SHEET NO. 33 OF 81

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PLOTTED: 5/27/2020 11:57 PM
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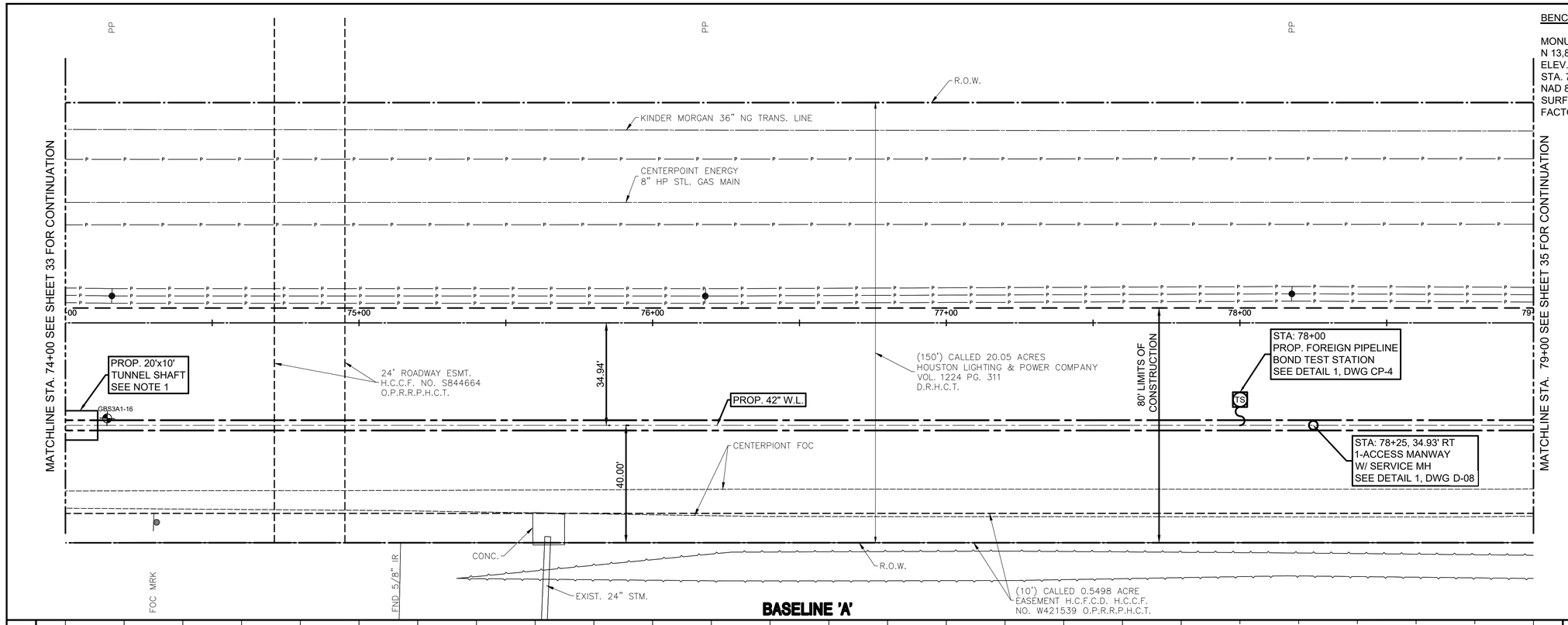

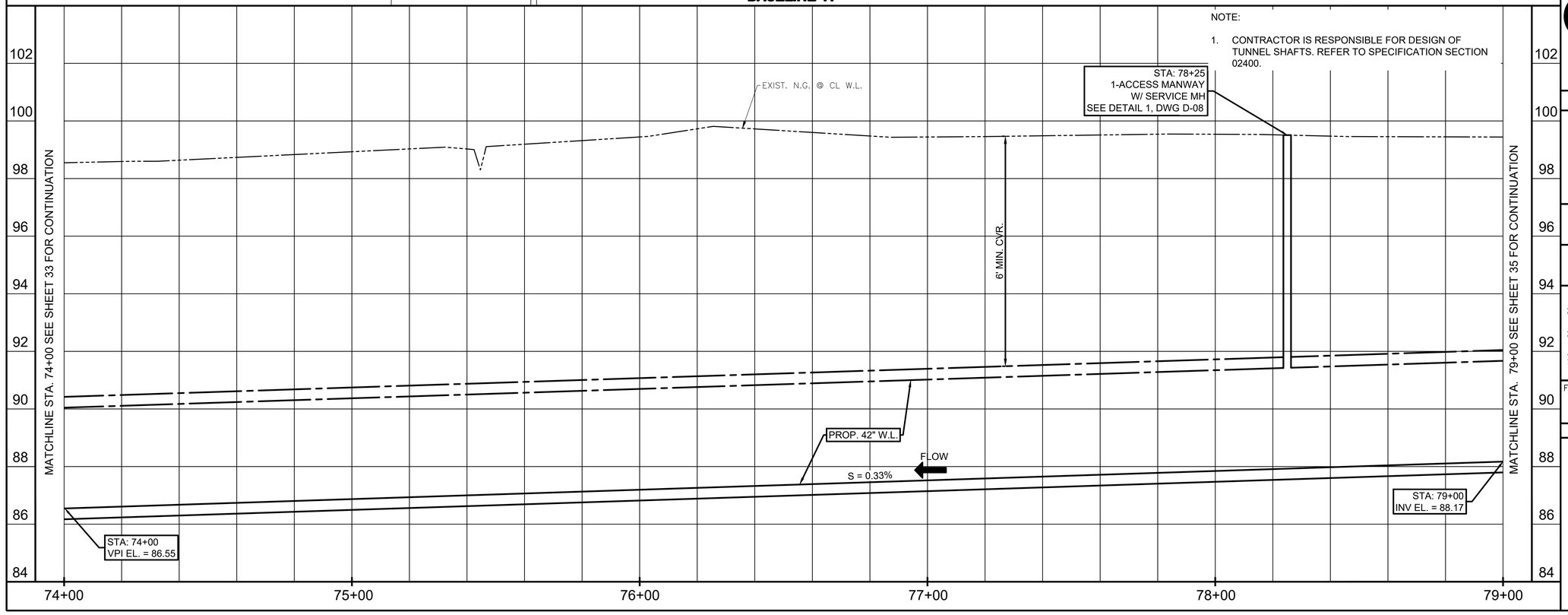

BENCHMARKS:

MONUMENT 30-095
N 13,870,891.35, E 3,054,570.22
ELEV. 99.84
STA. 73+46.84, 179.551 RT
NAD 83, CORS ADJUSTMENT
SURFACE TO GRID CONVERSION
FACTOR: 0.99990615

HORIZ 0 10' 20' 40' 1"=20'

VERT 0 1' 2' 4' 1"=2'

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM
ENGINEERING CORPORATION

NOTICE:

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91713
Registration Number
MAY 2020
Date

SEGMENT S3-A1

BASELINE 'A'
STA. 74+00 TO STA. 79+00
PLAN & PROFILE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.	HORIZ: 1"=20' VERT: 1"=2'
SHEET NO. 34 OF 81	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

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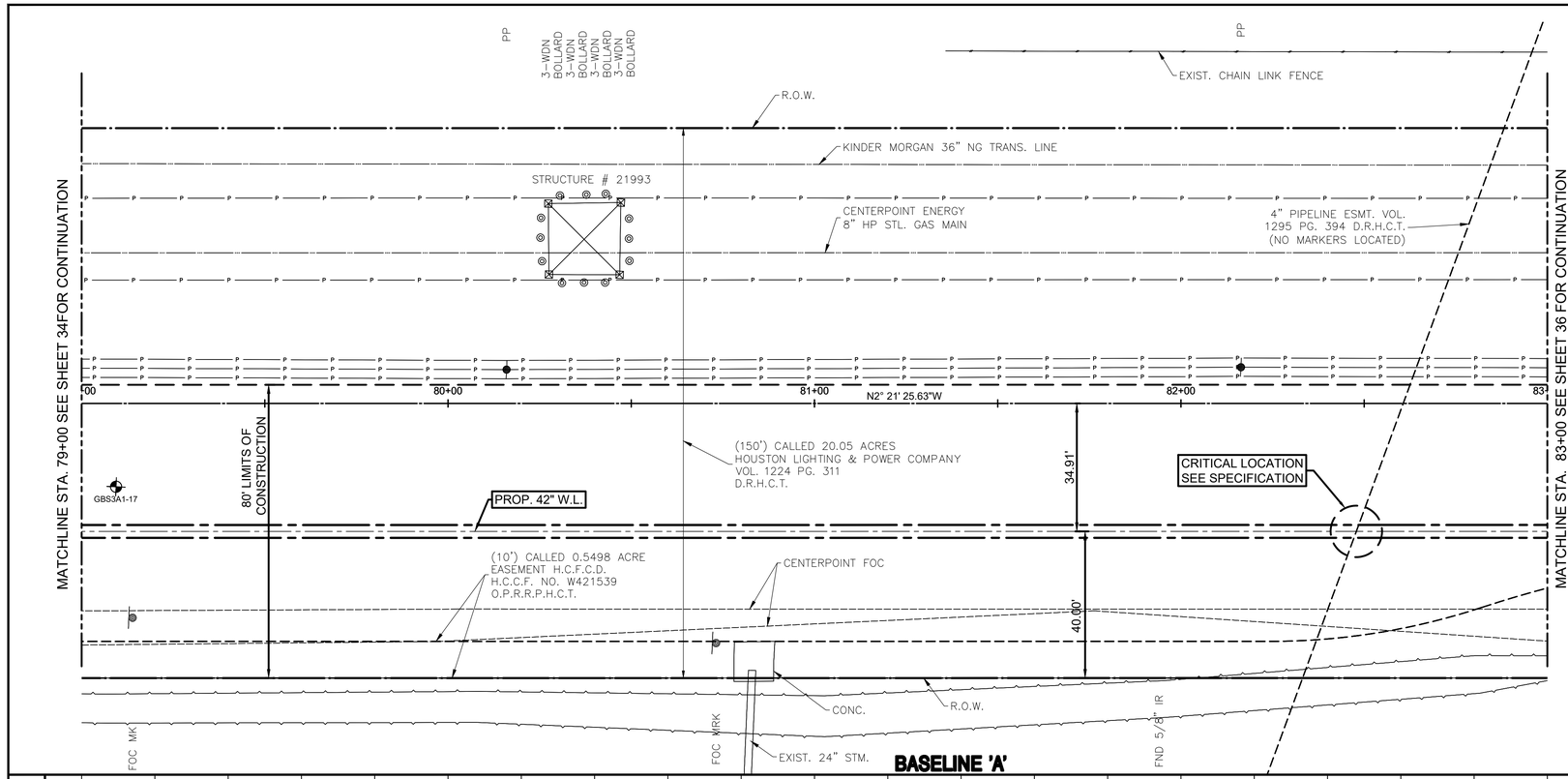

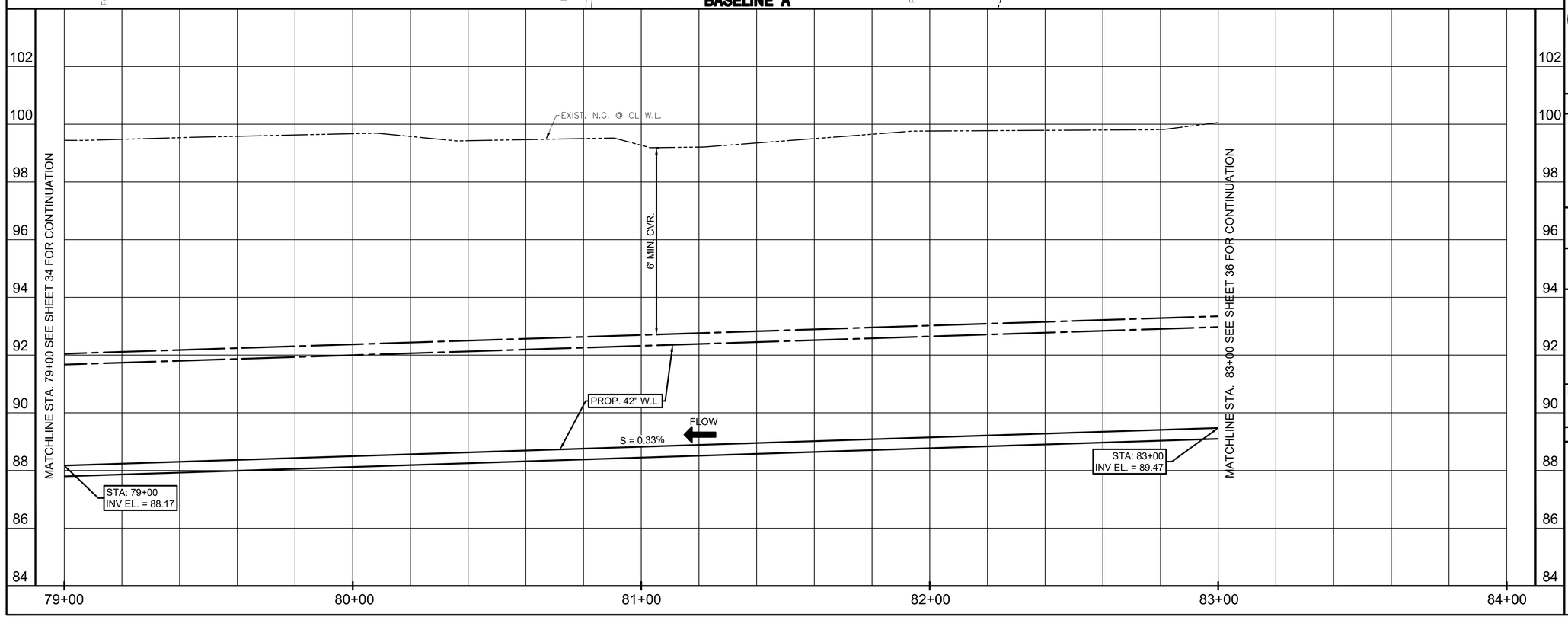

BENCHMARKS:

MONUMENT 30-094
N 13,872,407.96, E 3,054,495.11
ELEV. 102.71
STA. 88+65.25, 166.88 RT
NAD 83, CORS ADJUSTMENT
SURFACE TO GRID CONVERSION
FACTOR: 0.99990615

HORIZ 0 10' 20' 40' 1"=20'

VERT 0 1' 2' 4' 1"=2'

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM ENGINEERING CORPORATION

NOTICE:

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Name
91713
Registration Number
MAY 2020
Date

SEGMENT S3-A1

BASELINE 'A' STA. 79+00 TO STA. 83+00 PLAN & PROFILE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.

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

SHEET NO. 35 OF 81

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PLOTTED: 5/27/2020 11:59 PM
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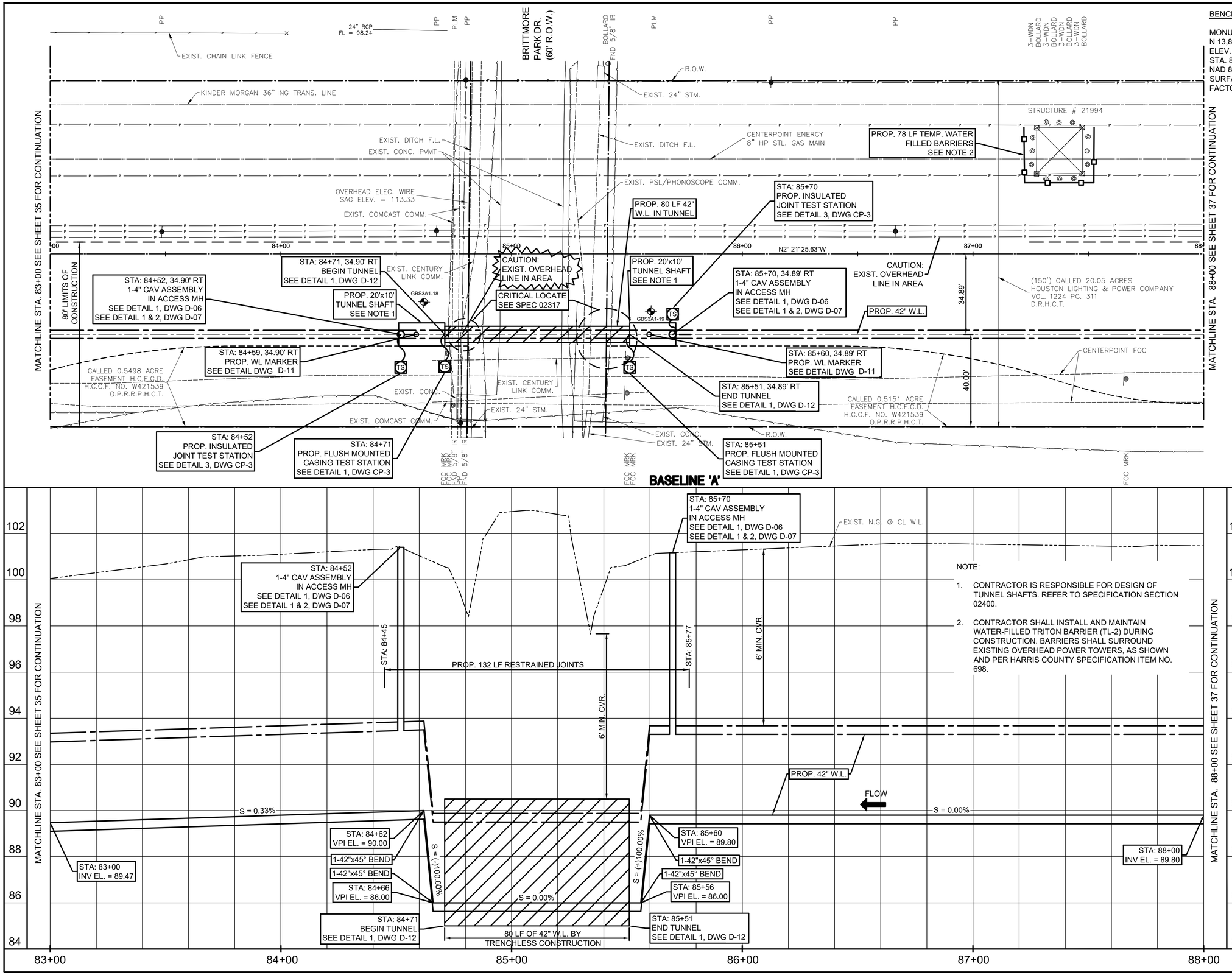

BENCHMARKS:

MONUMENT 30-094
N 13,872,407.96, E 3,054,495.11
ELEV. 102.71
STA. 88+65.25, 166.88 RT
NAD 83, CORS ADJUSTMENT
SURFACE TO GRID CONVERSION FACTOR: 0.99990615

HORIZ 0 10' 20' 40' 1"=20'

VERT 0 1' 2' 4' 1"=2'

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM ENGINEERING CORPORATION

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SEGMENT S3-A1

BASELINE 'A' STA. 83+00 TO STA. 88+00 PLAN & PROFILE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.

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

SHEET NO. 36 OF 81

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

NOTE:

1. CONTRACTOR IS RESPONSIBLE FOR DESIGN OF TUNNEL SHAFTS. REFER TO SPECIFICATION SECTION 02400.
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PLOTTED: 5/28/2020 8:15 AM PEN TABLE: SWSP_34x22_PDF.ctb
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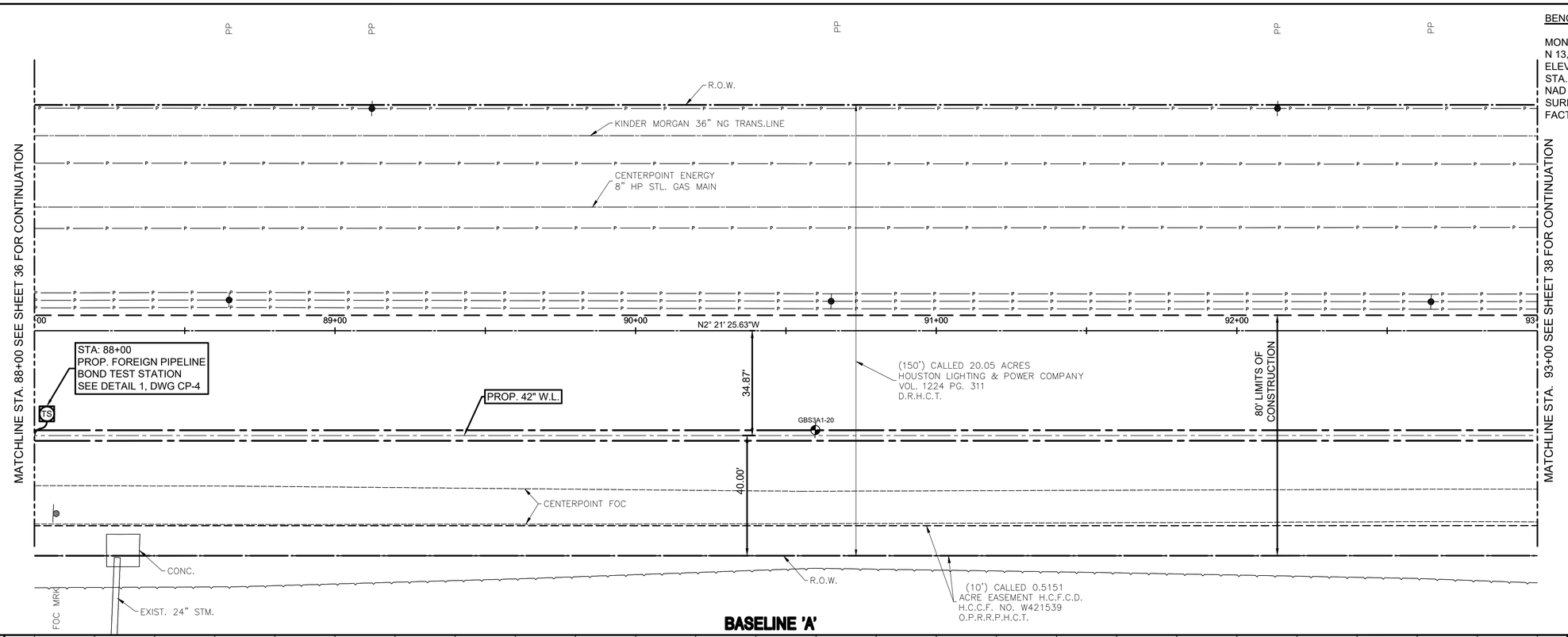
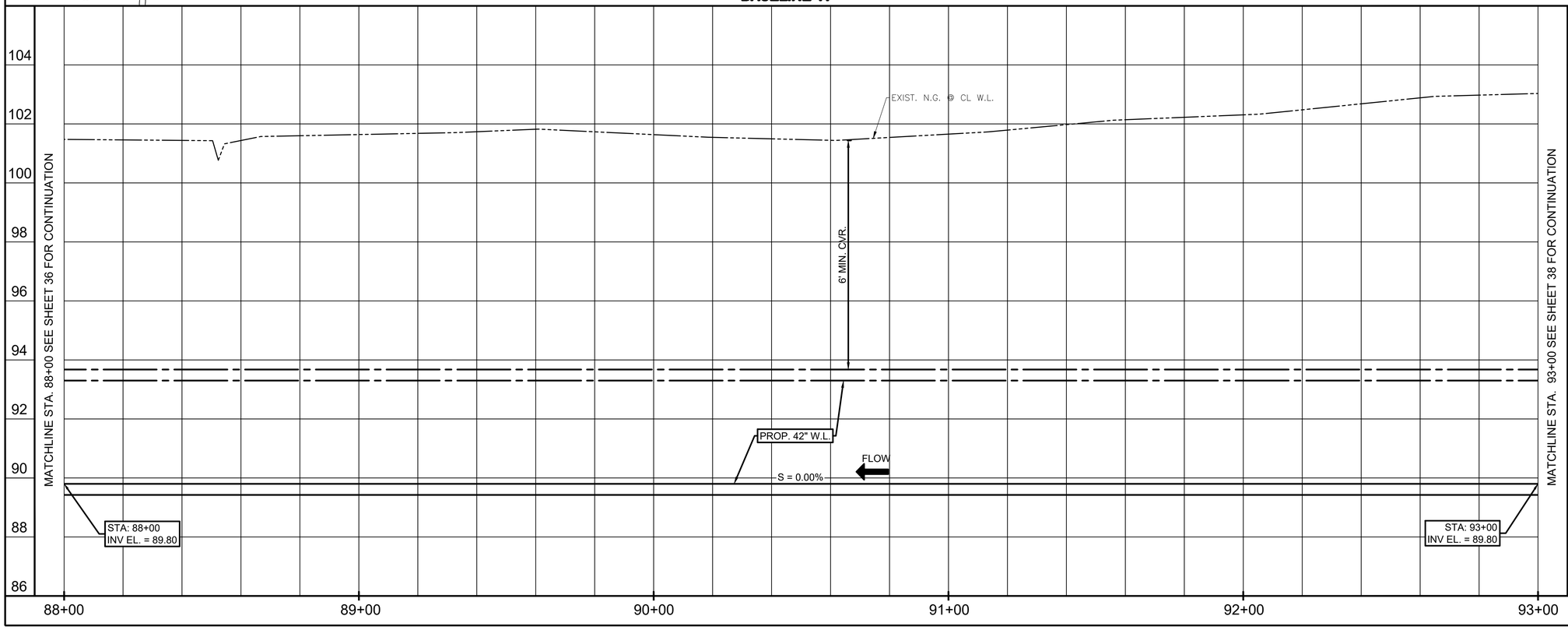


BASELINE 'A'



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NO.	DATE	REVISION	APP.

WHCRWA NFBWA
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ENGINEERING CORPORATION

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SEGMENT S3-A1

BASELINE 'A'
STA. 88+00 TO STA. 93+00
PLAN & PROFILE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.	HORIZ: 1"=20' VERT: 1"=2'
SHEET NO. 37 OF 81	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PEN TABLE: SWSP-34x22-PDF.ctb
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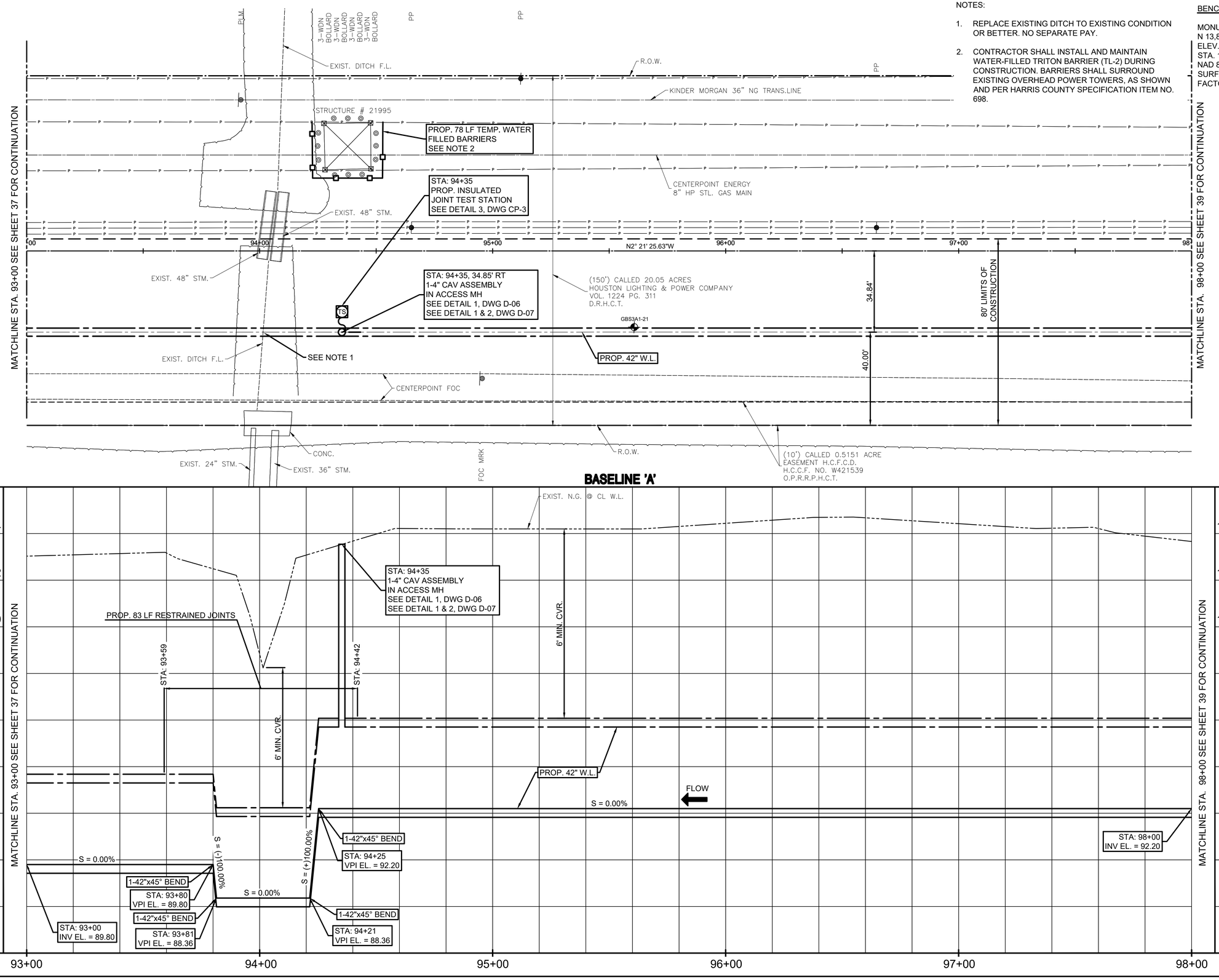

BASELINE 'A'

NOTES:

1. REPLACE EXISTING DITCH TO EXISTING CONDITION OR BETTER. NO SEPARATE PAY.
2. CONTRACTOR SHALL INSTALL AND MAINTAIN WATER-FILLED TRITON BARRIER (TL-2) DURING CONSTRUCTION. BARRIERS SHALL SURROUND EXISTING OVERHEAD POWER TOWERS, AS SHOWN AND PER HARRIS COUNTY SPECIFICATION ITEM NO. 698.

BENCHMARKS:

MONUMENT 30-093
N 13,873,870.93, E 3,054,409.28
ELEV. 103.07
STA. 103+30.51, 141.29 RT
NAD 83, CORS ADJUSTMENT
SURFACE TO GRID CONVERSION FACTOR: 0.99990615

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NO.	DATE	REVISION	APP.

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SURFACE WATER SUPPLY PROJECT

Program Manager
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SEGMENT S3-A1

BASELINE 'A' STA. 93+00 TO STA. 98+00 PLAN & PROFILE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.	HORIZ: 1"=20' VERT: 1"=2'
SHEET NO. 38 OF 81	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PEN TABLE: WHCRWA_22x34.ctb
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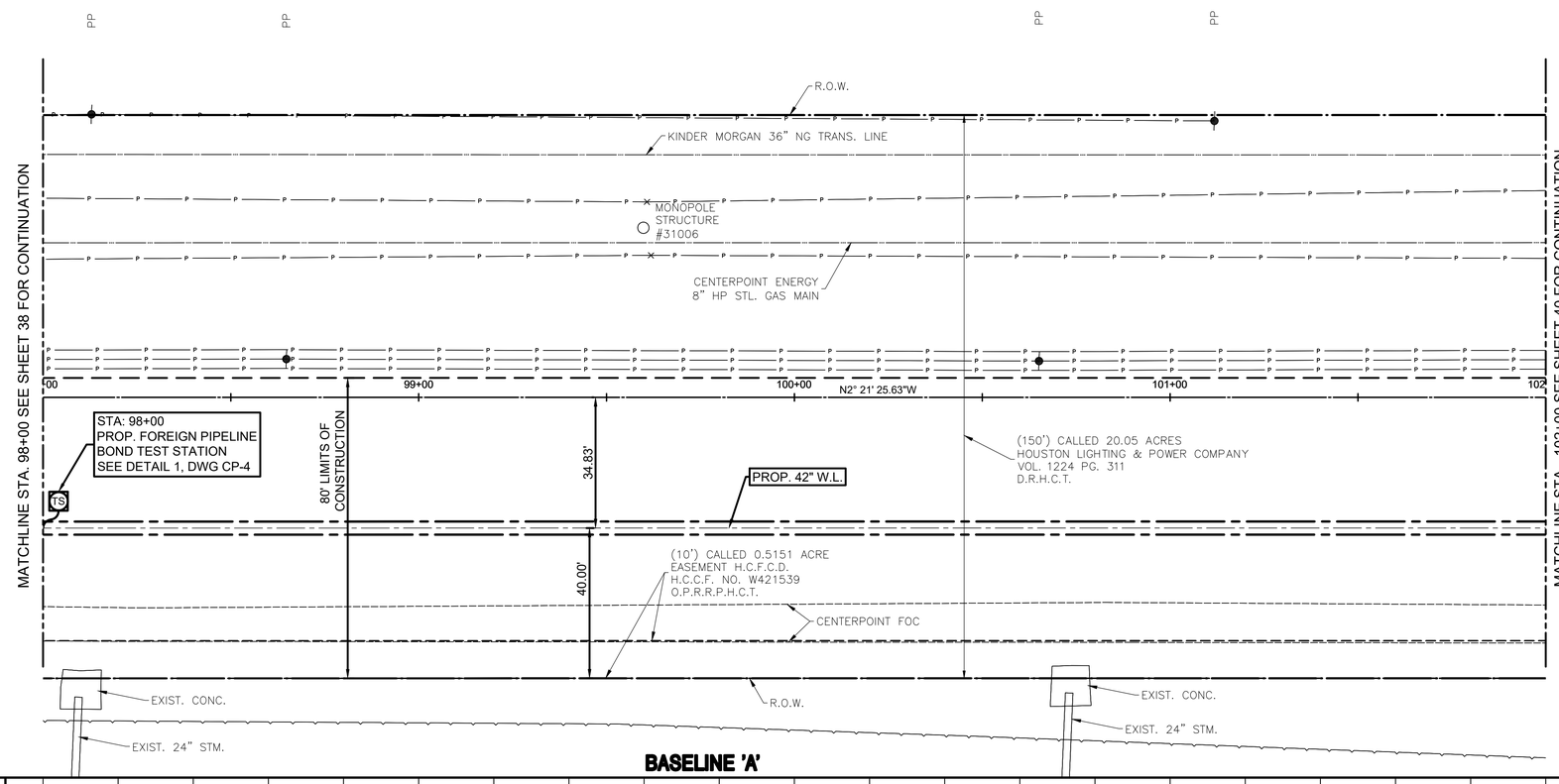
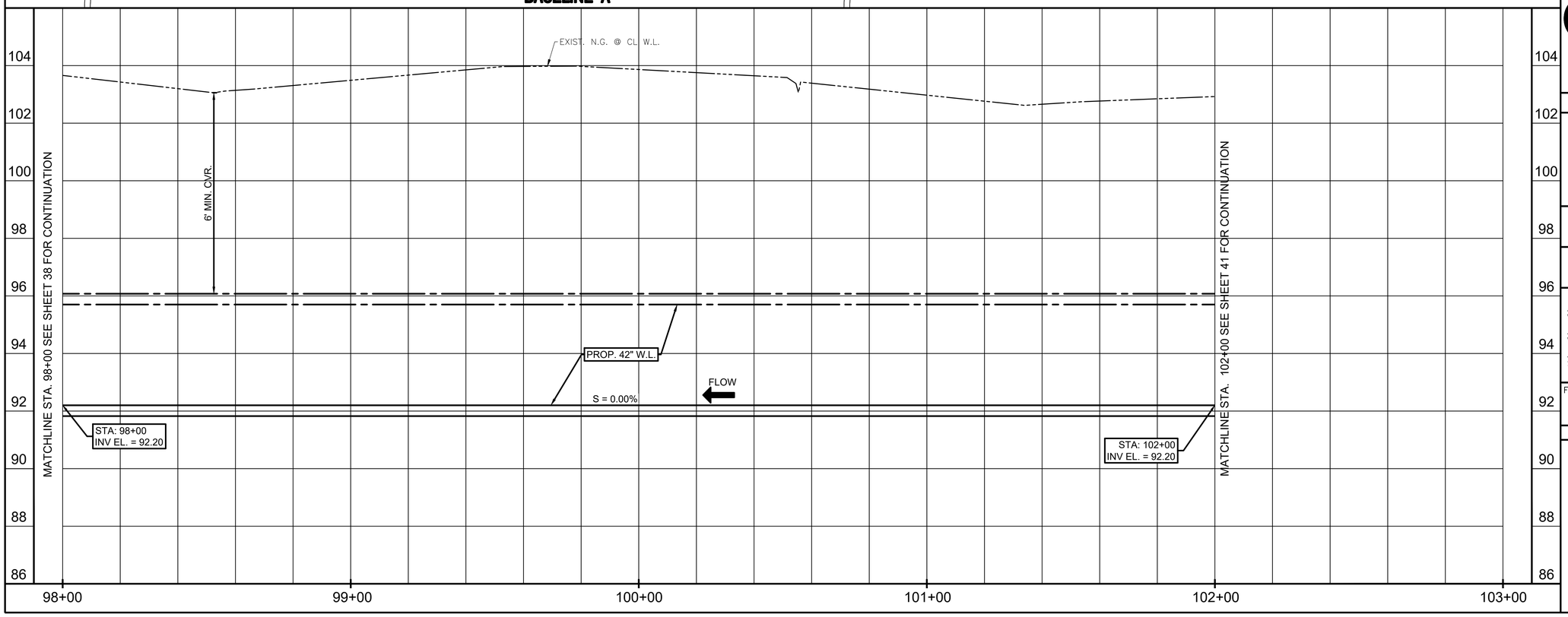


BASELINE 'A'



BENCHMARKS:

MONUMENT 30-093
N 13,873,870.93, E 3,054,409.28
ELEV. 103.07
STA. 103+30.51, 141.29 RT
NAD 83, CORS ADJUSTMENT
SURFACE TO GRID CONVERSION
FACTOR: 0.99990615

HORIZ 0 10' 20' 40'
1"=20'

VERT 0 1' 2' 4'
1"=2'

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM
ENGINEERING CORPORATION

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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713.869.3433 | BinkleyBarfield.com

INTERIM REVIEW ONLY
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CHRISTOPHER L. CAMPBELL
Registered Professional Engineer
91713
MAY 2020
Date

SEGMENT S3-A1

BASELINE 'A'
STA. 98+00 TO STA. 102+00
PLAN & PROFILE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.

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

SHEET NO. 39 OF 81

DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

PLOTTED: 5/28/2020 12:04 AM PEN TABLE: WHCRWA_22x34.ctb

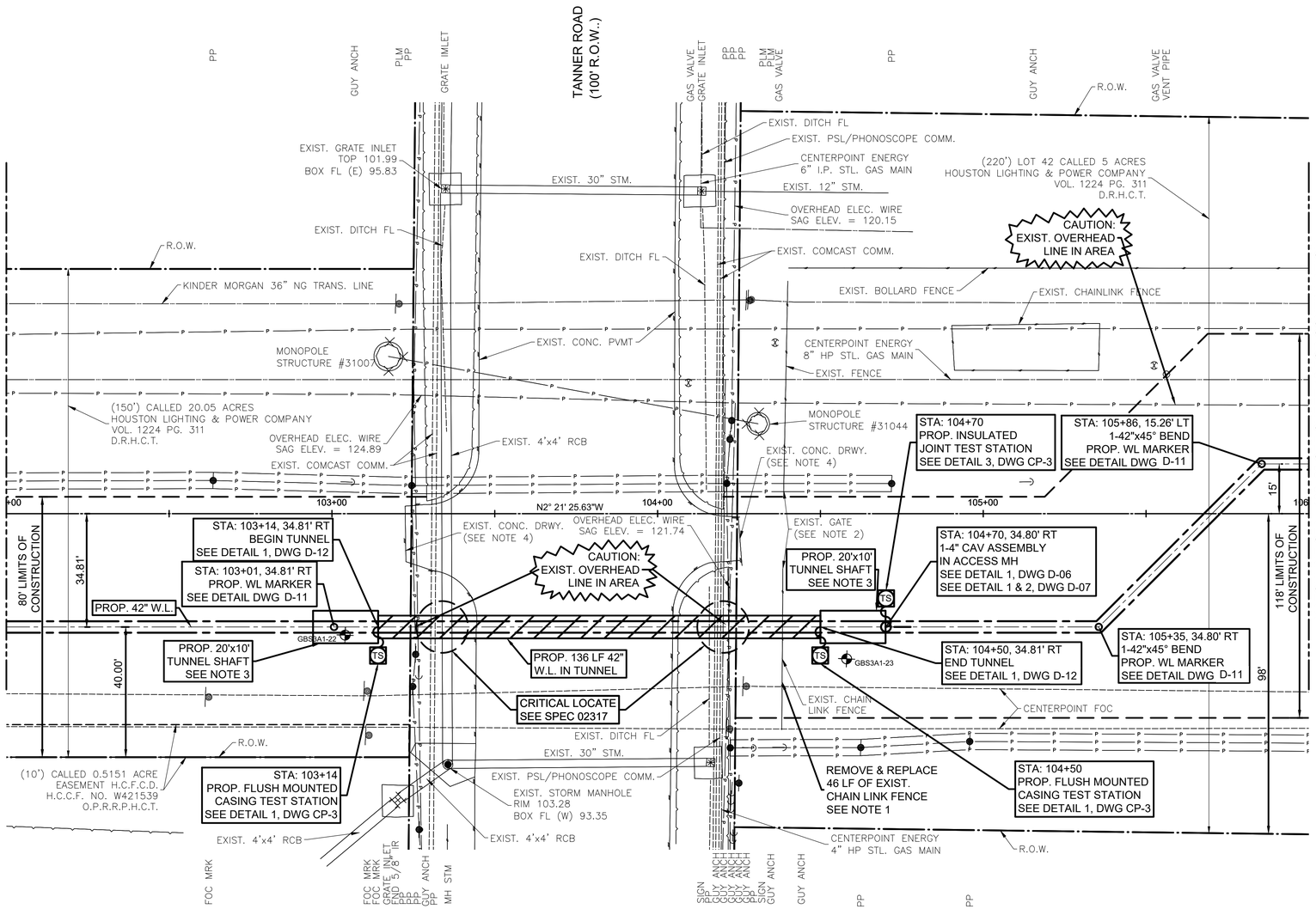
FILE PATH: \\pathos\data\bb\Enviro\190000003 – WHCRWA 42 Inch Segment 3A_CADD\Drawings\020C–Plwtrl.dwg

BENCHMARKS:

MONUMENT 30-093
N 13,873,870.93, E 3,054,409.28
ELEV. 103.07
STA. 103+30.51, 141.29 RT
NAD 83, CORS ADJUSTMENT
SURFACE TO GRID CONVERSION
FACTOR: 0.99990615

HORIZ 0 10' 20' 40'
1"=20'

NO.	DATE	REVISION	APP.



BASELINE 'A'

SEE SHEET 41 FOR PROFILE

NOTES:

1. CONTRACTOR SHALL REMOVE AND REPLACE EXISTING FENCE, AS NECESSARY FOR CONSTRUCTION, WITHIN CONSTRUCTION LIMITS TO EXISTING CONDITION OR BETTER.
2. CONTRACTOR SHALL REMOVE AND REPLACE EXISTING GATE, AS NECESSARY FOR CONSTRUCTION, WITH SAME TYPE AND LENGTH.
3. CONTRACTOR IS RESPONSIBLE FOR DESIGN OF TUNNEL SHAFTS. REFER TO SPECIFICATION SECTION 02400.
4. CONTRACTOR SHALL REPAIR OR REPLACE EXISTING CONCRETE DRIVEWAY AS NECESSARY. THIS WORK IS INCIDENTAL TO CONSTRUCTION OF THE WATER LINE.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM
ENGINEERING CORPORATION

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CHRISTOPHER L. CAMPBELL
Engineer
91713
Registration Number
MAY 2020
Date

SEGMENT S3-A1

BASELINE 'A'
STA. 102+00 TO STA. 106+00
PLAN VIEW

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.	HORIZ: 1"=20' VERT: 1"=2'
SHEET NO. 40 OF 81	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PEN TABLE: WHCRWA_22x34.ctb
PLOTTED: 5/28/2020 12:05 AM
FILE PATH: \\pzhou\data\bb\Enviro\1900000003 – WHCRWA 42 Inch Segment 3A_CADD\Drawings\021C-PLwtrl.dwg

SEE SHEET 40 FOR PLAN VIEW

BASELINE 'A'

MATCHLINE STA. 102+00 SEE SHEET 39 FOR CONTINUATION

MATCHLINE STA. 106+00 SEE SHEET 43 FOR CONTINUATION

TANNER ROAD
(100' ROW)

EXIST. N.G. @ CL W.L.

STA: 104+70
1-4" CAV ASSEMBLY
IN ACCESS MH
SEE DETAIL 1, DWG D-06
SEE DETAIL 1 & 2, DWG D-07

6' MN. CVR.

EXIST. 4" GAS (DEPTH
TO BE FIELD VERIFIED)

EXIST. 4'x4' RCB
(SIZE NOT FIELD VERIFIED)

2' MN. CLR.

2' MN. CLR.

PROP. 42" W.L.

FLOW

S = 0.00%

S = 0.00%

STA: 102+00
INV EL. = 92.20

1-42"x45° BEND

STA: 103+04
VPI EL. = 92.20

S = (-)100.00%

S = (+)100.00%

STA: 104+60
VPI EL. = 91.80

1-42"x45° BEND

STA: 106+00
INV EL. = 91.80

1-42"x45° BEND

S = 0.00%

1-42"x45° BEND

STA: 103+09
VPI EL. = 86.70

STA: 104+55
VPI EL. = 86.70

STA: 103+14
BEGIN TUNNEL
SEE DETAIL 1, DWG D-12

136 LF OF 42" W.L. BY TRENCHLESS CONSTRUCTION

STA: 104+50
END TUNNEL
SEE DETAIL 1, DWG D-12

STA: 102+83

PROP. 317 LF RESTRAINED JOINTS

78 80 82 84 86 88 90 92 94 96 98 100 102 104 106 108

102+00 103+00 104+00 105+00 106+00 107+00

HORIZ 0 10' 20' 40'
1"=20'

VERT 0 1' 2' 4'
1"=2'

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

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ENGINEERING CORPORATION

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91713
MAY 2020

SEGMENT S3-A1

BASELINE 'A'
STA. 102+00 TO STA. 106+00
PROFILE VIEW

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.

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

SHEET NO. 41 OF 81

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PLOTTED: 5/28/2020 8:20 AM PEN TABLE: SWSP_34x22_PDF.ctb
FILE PATH: \\pathaa\data\bb\Enviro\190000003 – WHCRWA 42 Inch Segment 3A_CADD\Drawings\021C-PRwtr.dwg

BENCHMARKS:

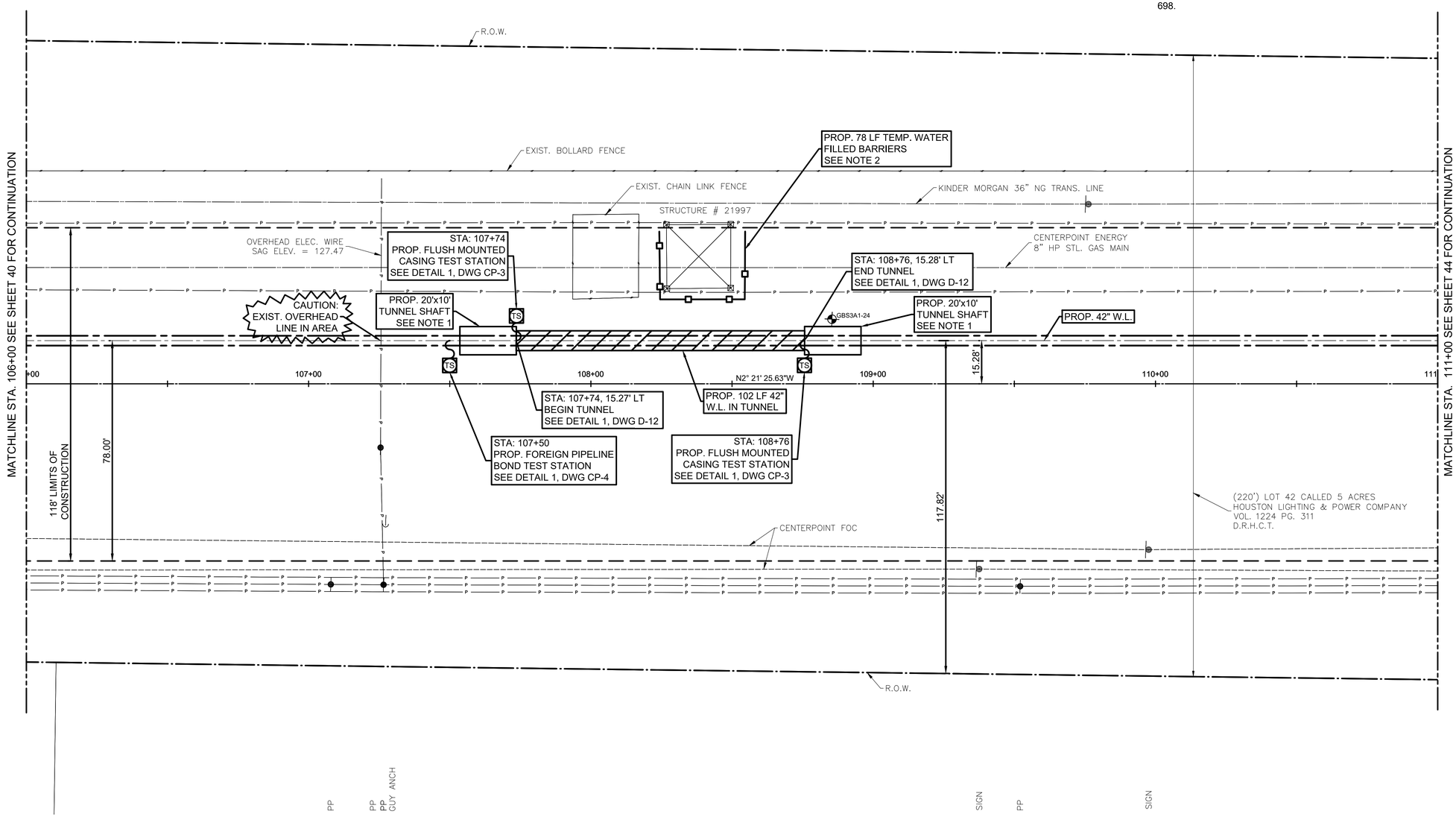
MONUMENT 30-093
N 13,873,870.93, E 3,054,409.28
ELEV. 103.07
STA. 103+30.51, 141.29 RT
NAD 83, CORS ADJUSTMENT
SURFACE TO GRID CONVERSION
FACTOR: 0.99990615

HORIZ 0 10' 20' 40'
1"=20'

NOTE:

1. CONTRACTOR IS RESPONSIBLE FOR DESIGN OF TUNNEL SHAFTS. REFER TO SPECIFICATION SECTION 02400.
2. CONTRACTOR SHALL INSTALL AND MAINTAIN WATER-FILLED TRITON BARRIER (TL-2) DURING CONSTRUCTION. BARRIERS SHALL SURROUND EXISTING OVERHEAD POWER TOWERS, AS SHOWN AND PER HARRIS COUNTY SPECIFICATION ITEM NO. 698.

PLM



BASELINE 'A'

SEE SHEET 43 FOR PROFILE

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM
ENGINEERING CORPORATION

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Engineer
91713
Registration Number
MAY 2020
Date

SEGMENT S3-A1

BASELINE 'A'
STA. 106+00 TO STA. 111+00
PLAN VIEW

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

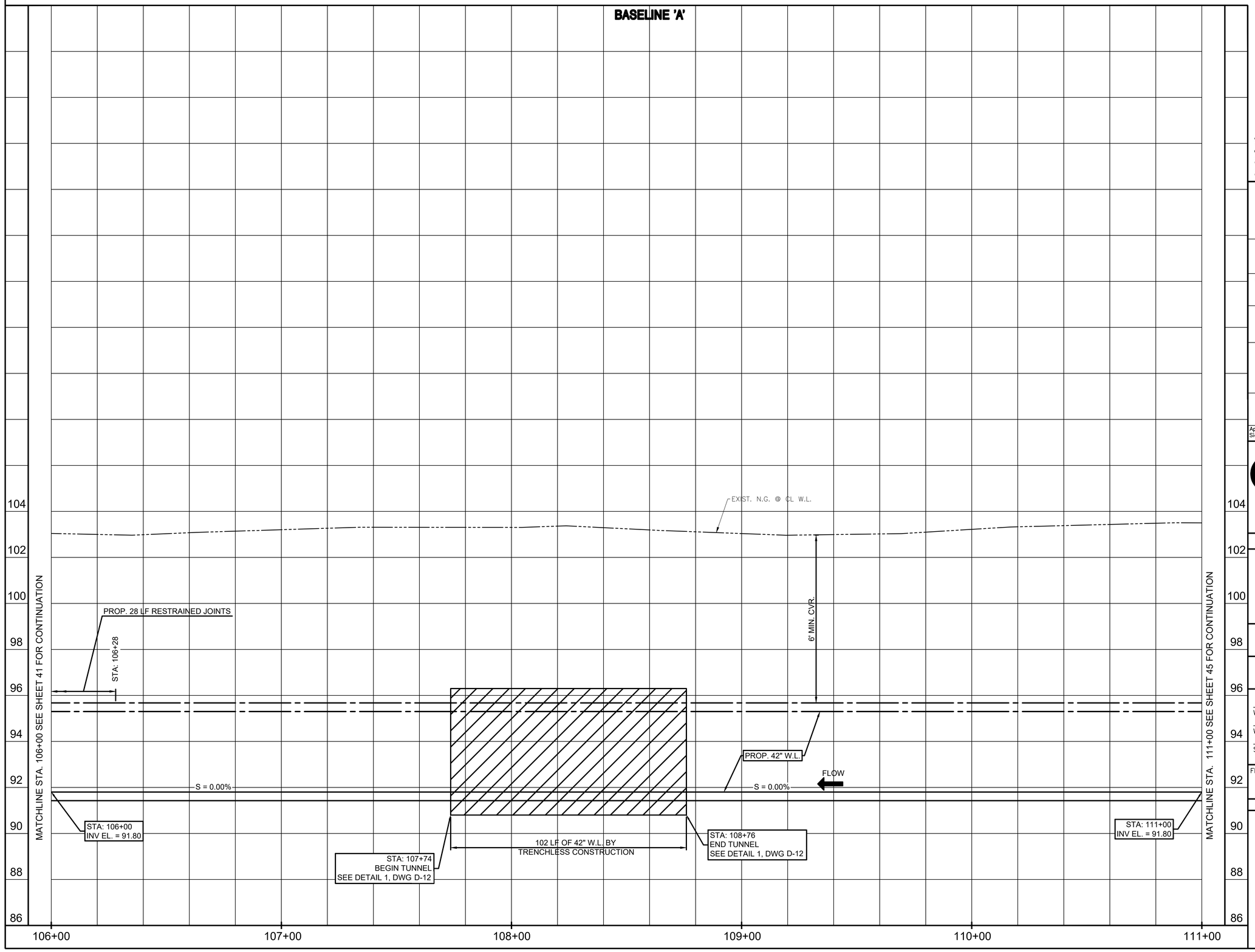
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.	HORIZ: 1"=20' VERT:
SHEET NO. 42 OF 81	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PEN TABLE: WHCRWA_22x34.ctb
PLOTTED: 5/28/2020 12:08 AM
FILE PATH: \\pzhou\data\bb\Enviro\1900000003 – WHCRWA 42 Inch Segment 3A_CADD\Drawings\022C-PLwtrl.dwg

SEE SHEET 42 FOR PLAN VIEW



HORIZ 0 10' 20' 40'
1"=20'

VERT 0 1' 2' 4'
1"=2'

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

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Date

SEGMENT S3-A1

BASELINE 'A'
STA. 106+00 TO STA. 111+00
PROFILE VEIW

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.

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

SHEET NO. 43 OF 81

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PEN TABLE: WHCRWA_22x34.ctb
PLOTTED: 5/28/2020 12:09 AM
FILE PATH: \\bzhou\data\bbi\Enviro\1900000003 - WHCRWA 42 Inch Segment 3A_CADD\Drawings\022C-PRwtrl.dwg

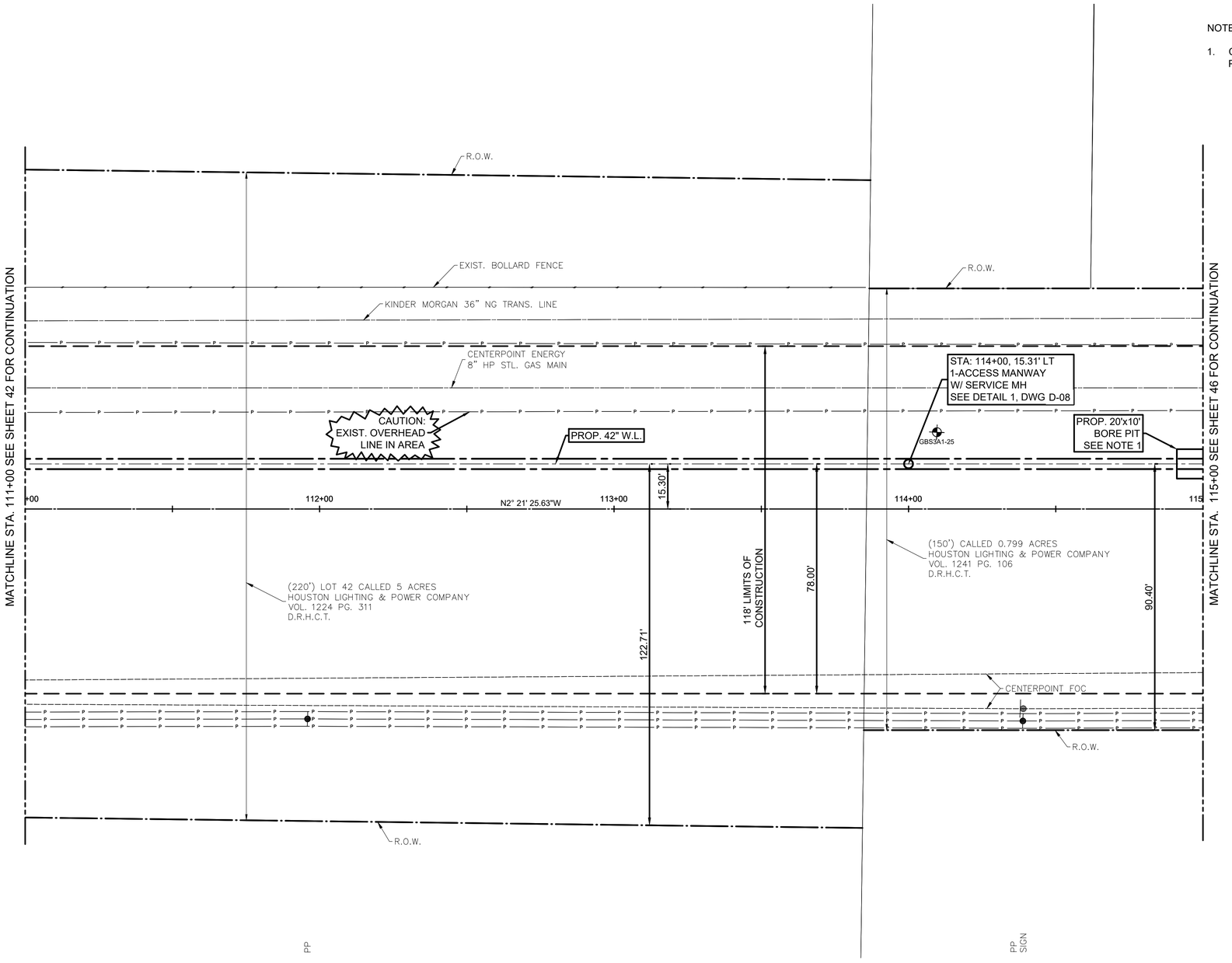
BENCHMARKS:

MONUMENT 30-092
N 13,875,275.03, E 3,054,154.03
ELEV. 104.47
STA. 117+43.92, 56.00 LT
NAD 83, CORS ADJUSTMENT
SURFACE TO GRID CONVERSION
FACTOR: 0.99990615

HORIZ 0 10' 20' 40'
1"=20'

NOTE:

1. CONTRACTOR IS RESPONSIBLE FOR DESIGN OF BORE PITS. REFER TO SPECIFICATION SECTION 02400.



BASELINE 'A'

SEE SHEET 45 FOR PROFILE

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM
ENGINEERING CORPORATION

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Engineer
91713
Registration Number
MAY 2020
Date

SEGMENT S3-A1

BASELINE 'A'
STA. 111+00 TO STA. 115+00
PLAN VIEW

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

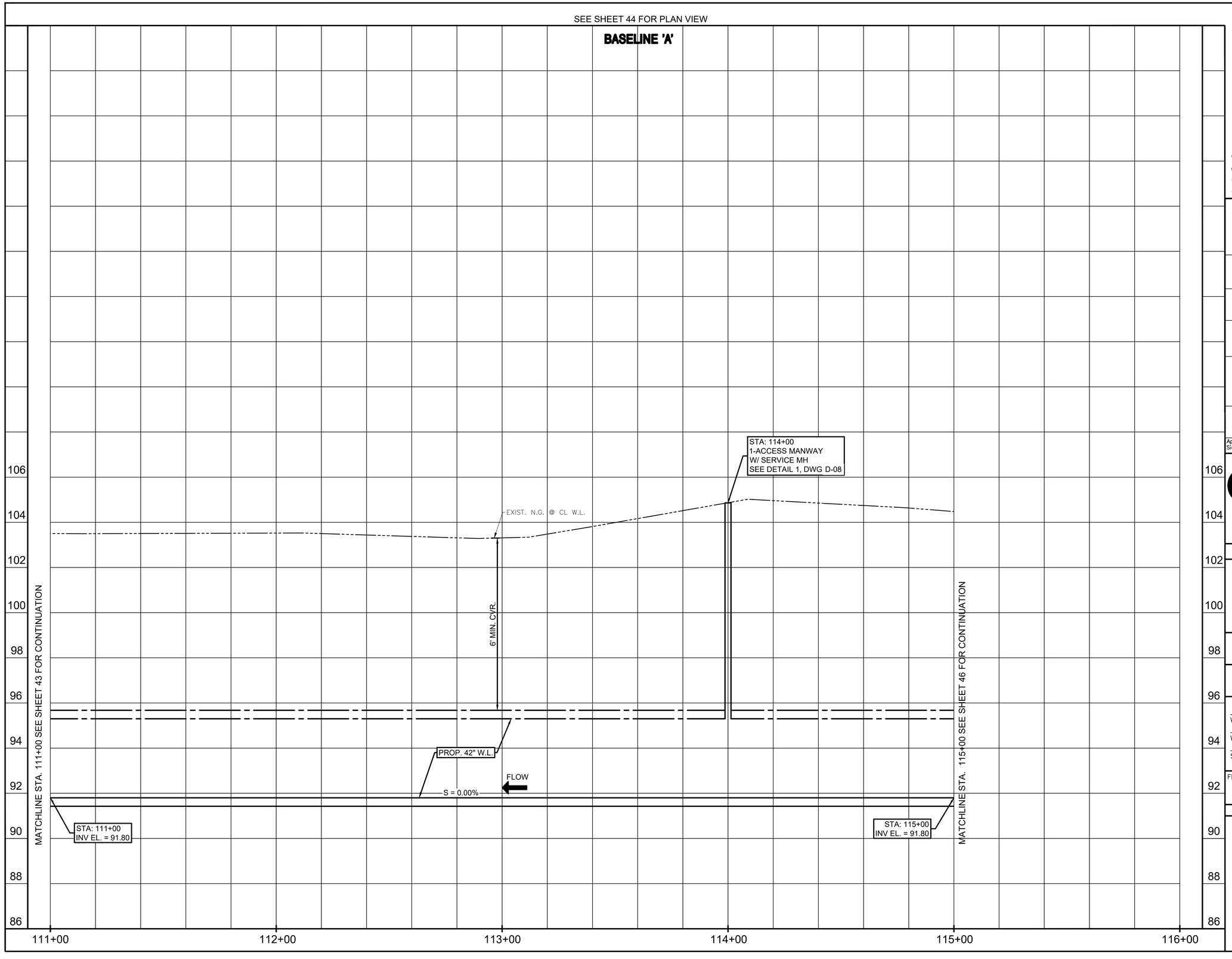
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.	HORIZ: 1"=20' VERT:
SHEET NO. 44 OF 81	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PEN TABLE: WHCRWA_22x34.ctb
PLOTTED: 5/28/2020 12:10 AM
FILE PATH: \\pzhou\data\bbi\Enviro\900000003 - WHCRWA 42 Inch Segment 3A_CADD\Drawings\023C-Plwtr.dwg

SEE SHEET 44 FOR PLAN VIEW



HORIZ 0 10' 20' 40' 1"=20'

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NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

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91713
MAY 2020

SEGMENT S3-A1

BASELINE 'A'
STA. 111+00 TO STA. 115+00
PROFILE VIEW

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.

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

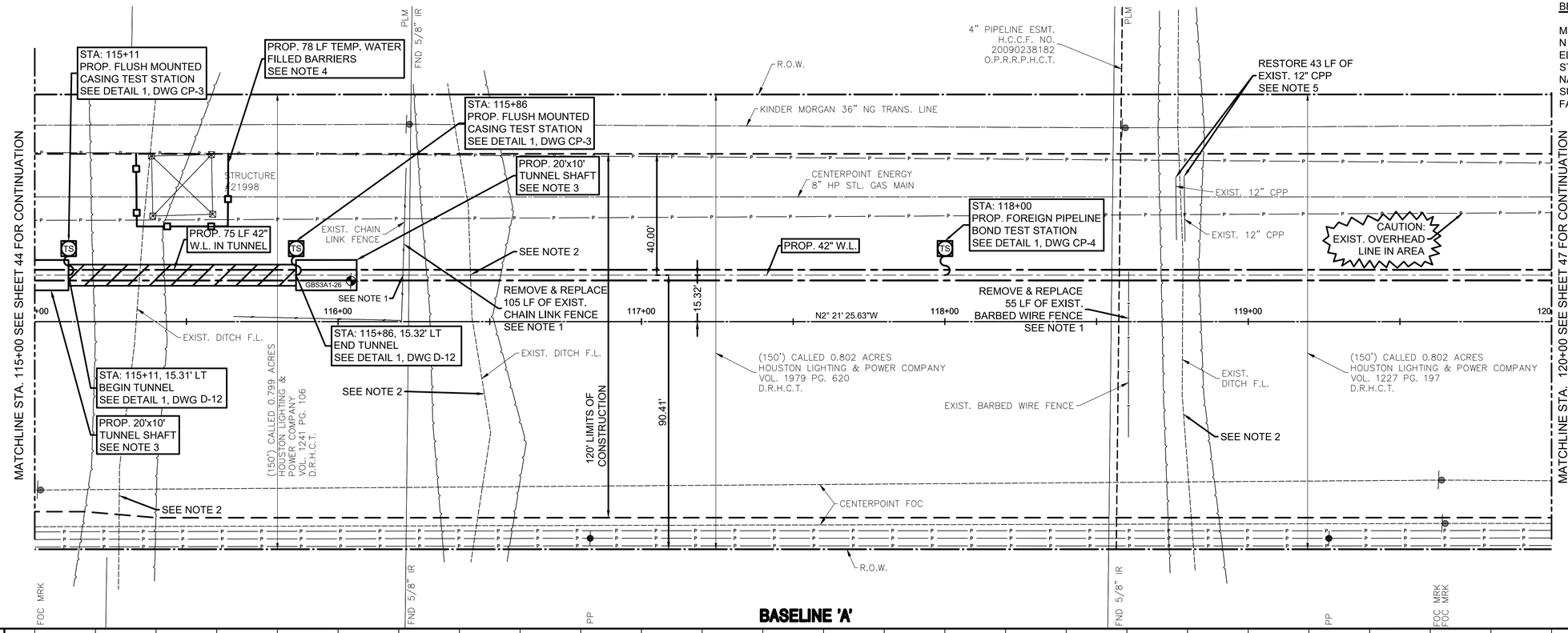
SHEET NO. 45 OF 81

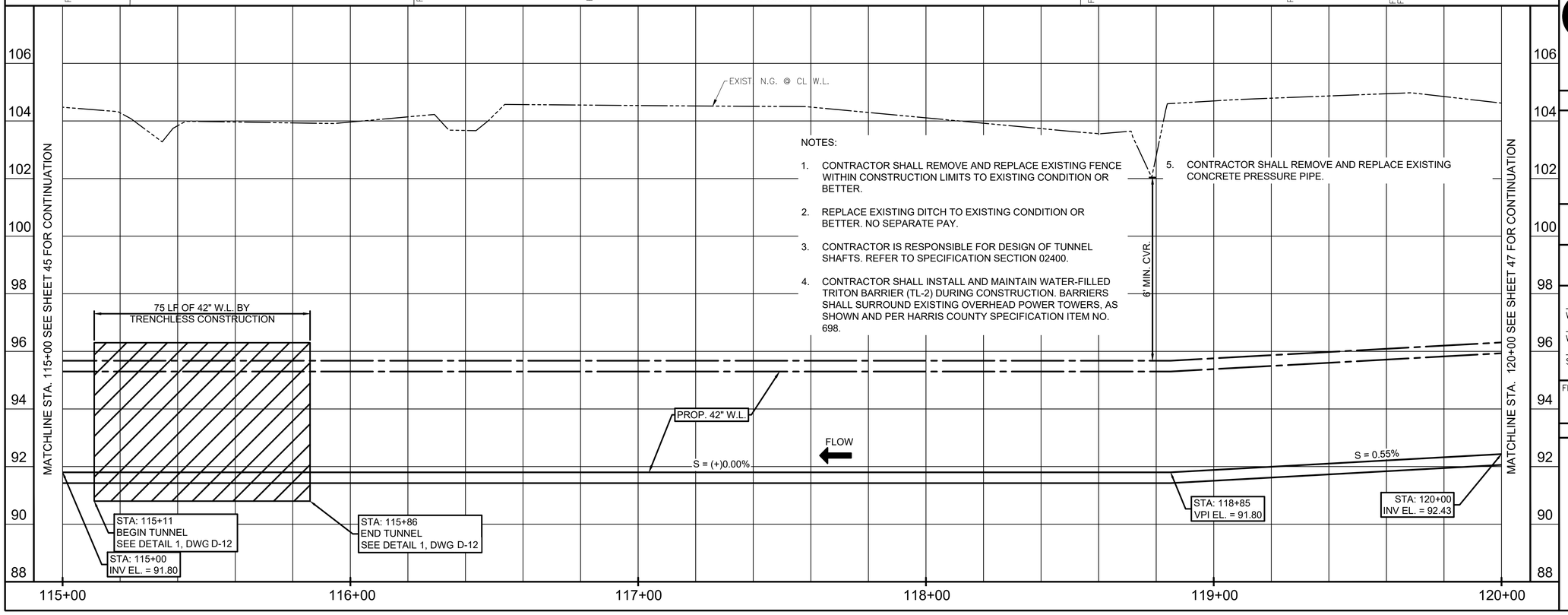
DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PLOTTED: 5/28/2020 12:11 AM PEN TABLE: WHCRWA_22x34.ctb

FILE PATH: \\pzhou\data\bbi\Enviro\1900000003 – WHCRWA 42 Inch Segment 3A_CADD\Drawings\023C–PRwtrl.dwg





BENCHMARKS:

MONUMENT 30-092
N 13,875,275.03, E 3,054,154.03
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STA. 117+43.92, 56.00 LT
NAD 83, CORS ADJUSTMENT
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FACTOR: 0.99990615

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NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

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Registration Number
MAY 2020
Date

SEGMENT S3-A1

BASELINE 'A'
STA. 115+00 TO STA. 120+00
PLAN & PROFILE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

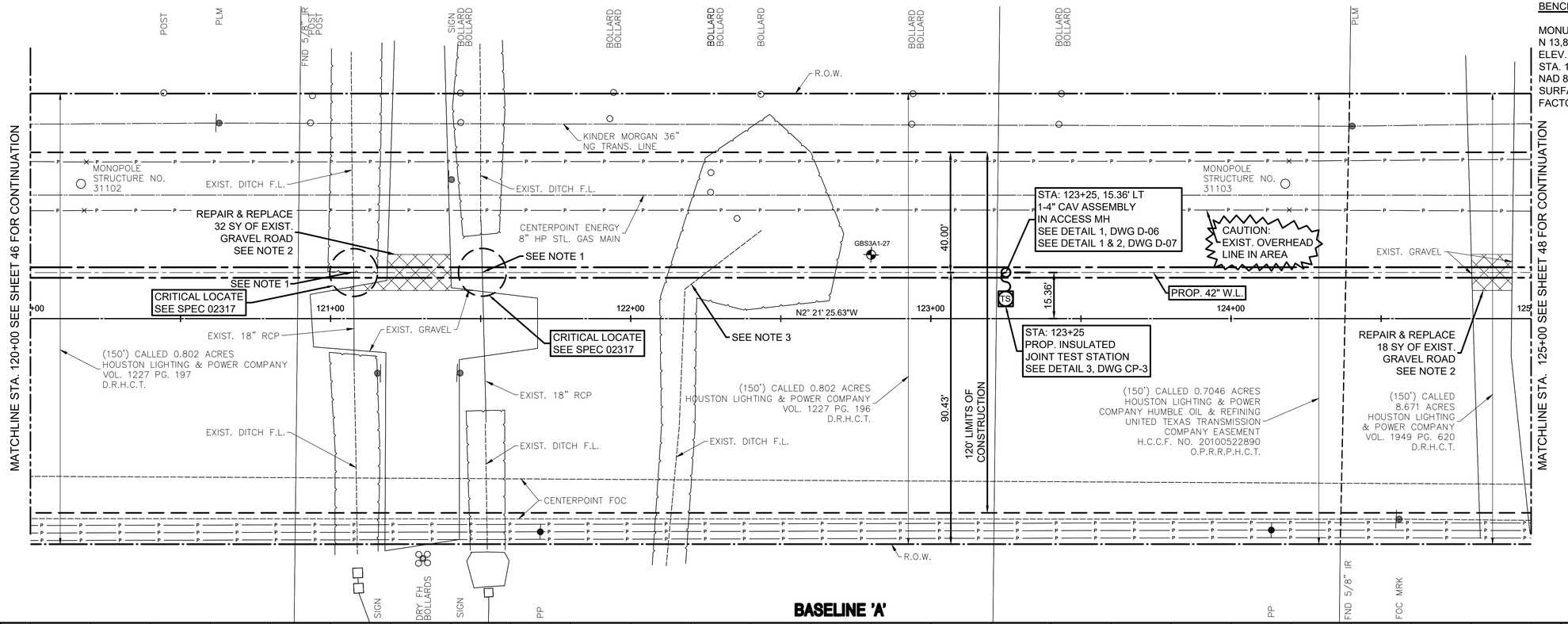
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

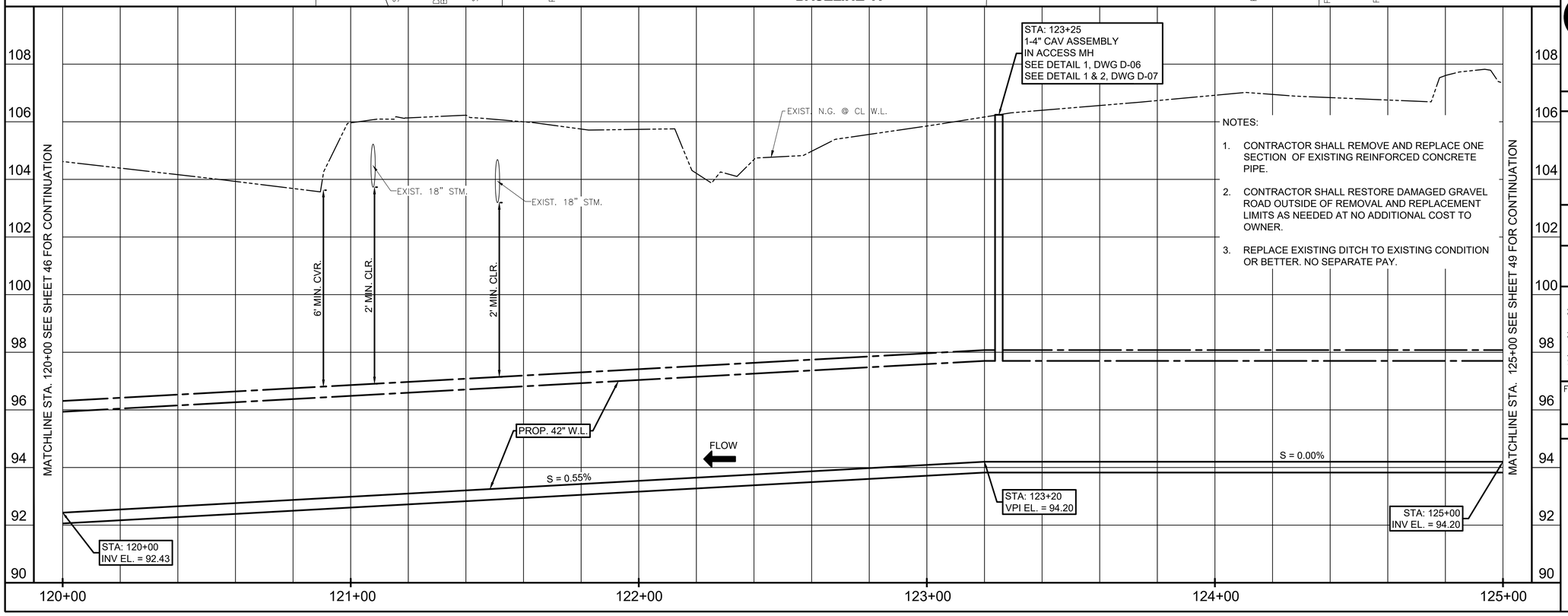
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.	HORIZ: 1"=20' VERT: 1"=2'
SHEET NO. 46 OF 81	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PEN TABLE: WHCRWA_22x34.ctb
PLOTTED: 5/28/2020 12:12 AM
FILE PATH: \\pzhou\data\bb\Enviro\1900000003 - WHCRWA 42 Inch Segment 3A_CADD\Drawings\024C-PLwtr.dwg





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NAD 83, CORS ADJUSTMENT
SURFACE TO GRID CONVERSION
FACTOR: 0.99990615

HORIZ 0 10' 20' 40' 1"=20'

VERT 0 1' 2' 4' 1"=2'

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM
ENGINEERING CORPORATION

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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Binkley & Barfield consulting engineers

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1710 Seamist Dr, Houston, TX 77008
713.869.3433 | BinkleyBarfield.com

INTERIM REVIEW ONLY
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CHRISTOPHER L. CAMPBELL
Registered
91713
MAY 2020
Date

SEGMENT S3-A1

BASELINE 'A'
STA. 120+00 TO STA. 125+00
PLAN & PROFILE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.

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

SHEET NO. 47 OF 81

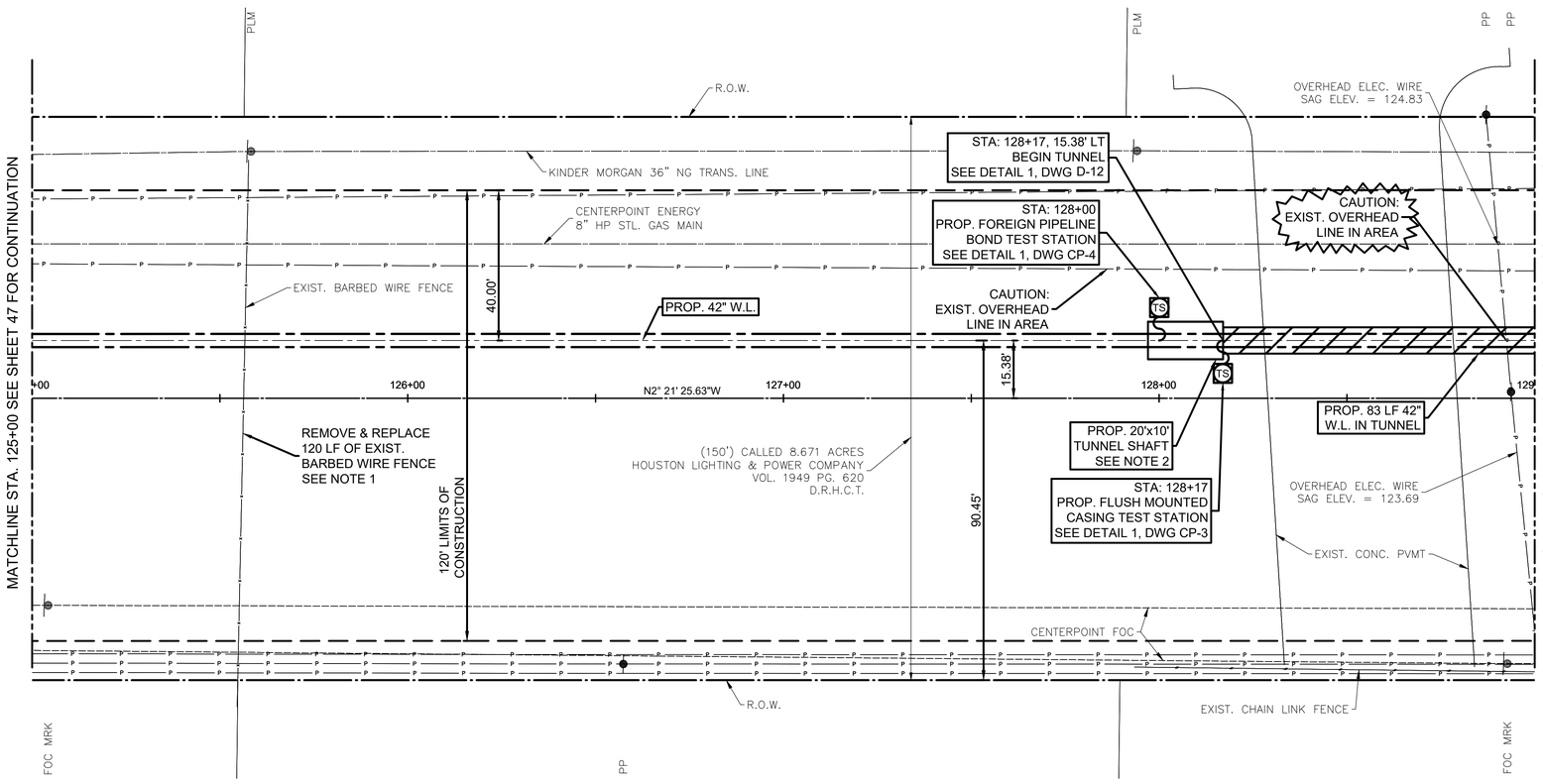
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

PEN TABLE: WHCRWA_22x34.ctb
PLOTTED: 5/28/2020 12:14 AM
FILE PATH: \\pthou\data\bb\Enviro\190000003 - WHCRWA 42 Inch Segment 3A_CADD\Drawings\025C-Plwtrl.dwg

BENCHMARKS:

MONUMENT 30-091
N 13,876,889.68, E 3,054,062.69
ELEV. 106.11
STA. 133+60.96, 80.85 LT
NAD 83, CORS ADJUSTMENT
SURFACE TO GRID CONVERSION
FACTOR: 0.99990615

HORIZ 0 10' 20' 40'
1"=20'



BASELINE 'A'

SEE SHEET 49 FOR PROFILE

NOTE:

1. CONTRACTOR SHALL REMOVE AND REPLACE EXISTING FENCE WITHIN CONSTRUCTION LIMITS TO EXISTING CONDITION OR BETTER.
2. CONTRACTOR IS RESPONSIBLE FOR DESIGN OF TUNNEL SHAFTS. REFER TO SPECIFICATION SECTION 02400.
3. CONTRACTOR SHALL REPAIR DAMAGED CONCRETE PAVING WITH HIGH EARLY STRENGTH CONCRETE AS NEEDED AT NO ADDITIONAL COST TO OWNER.

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM
ENGINEERING CORPORATION

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CHRISTOPHER L. CAMPBELL
Engineer
91713
Registration Number
MAY 2020
Date

SEGMENT S3-A1

BASELINE 'A'
STA. 125+00 TO STA. 129+00
PLAN VIEW

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.	HORIZ: 1"=20' VERT:
SHEET NO. 48 OF 81	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PEN TABLE: WHCRWA_22x34.ctb
PLOTTED: 5/28/2020 12:15 AM
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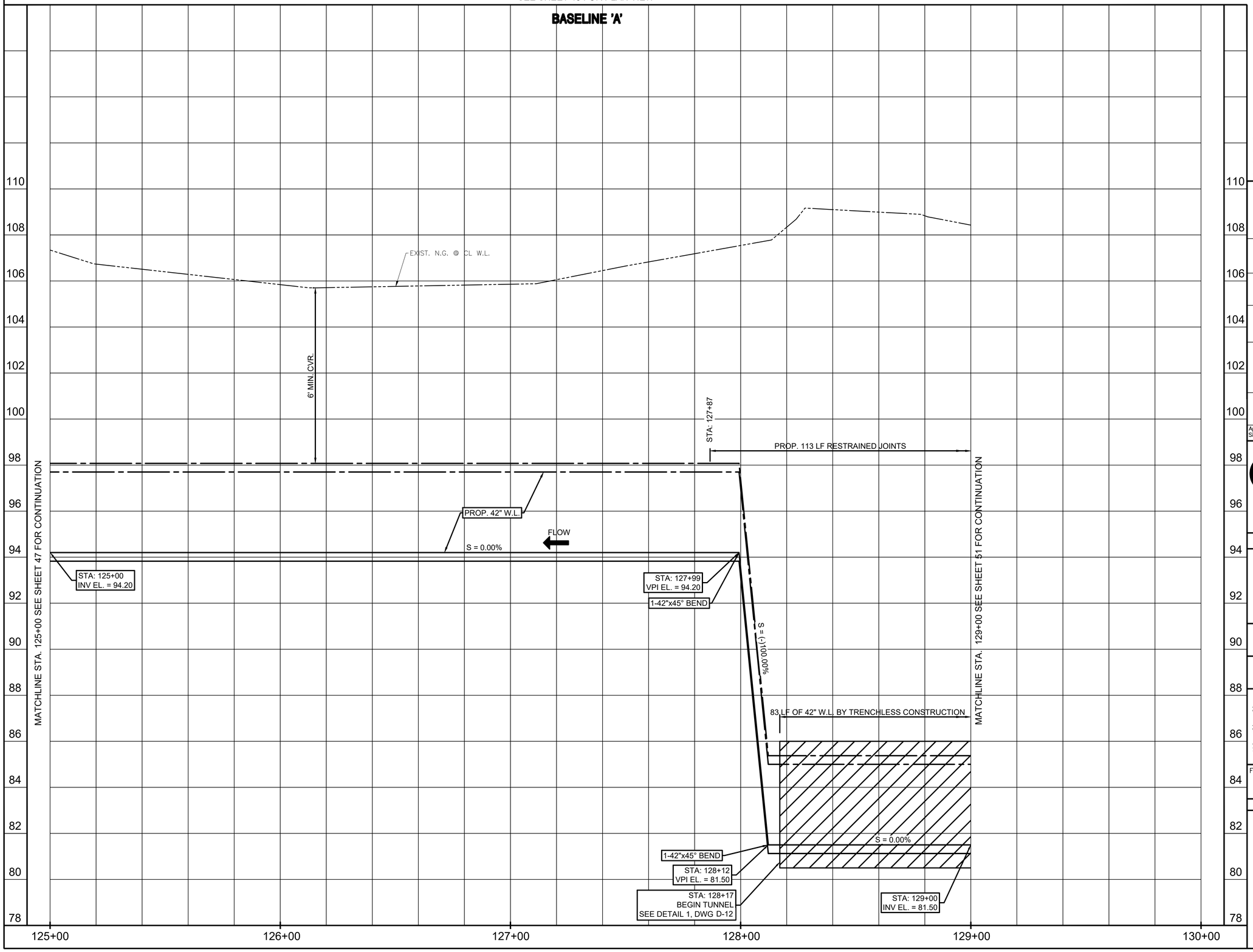
SEE SHEET 48 FOR PLAN VIEW

BASELINE 'A'



HORIZ 0 10' 20' 40'
1"=20'

VERT 0 1' 2' 4'
1"=2'

NO.	DATE	REVISION	APP.

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91713
MAY 2020

SEGMENT S3-A1

BASELINE 'A'
STA. 125+00 TO STA. 129+00
PROFILE VIEW

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.	HORIZ: 1"=20' VERT: 1"=2'
SHEET NO. 49 OF 81	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PEN TABLE: WHCRWA_22x34.ctb
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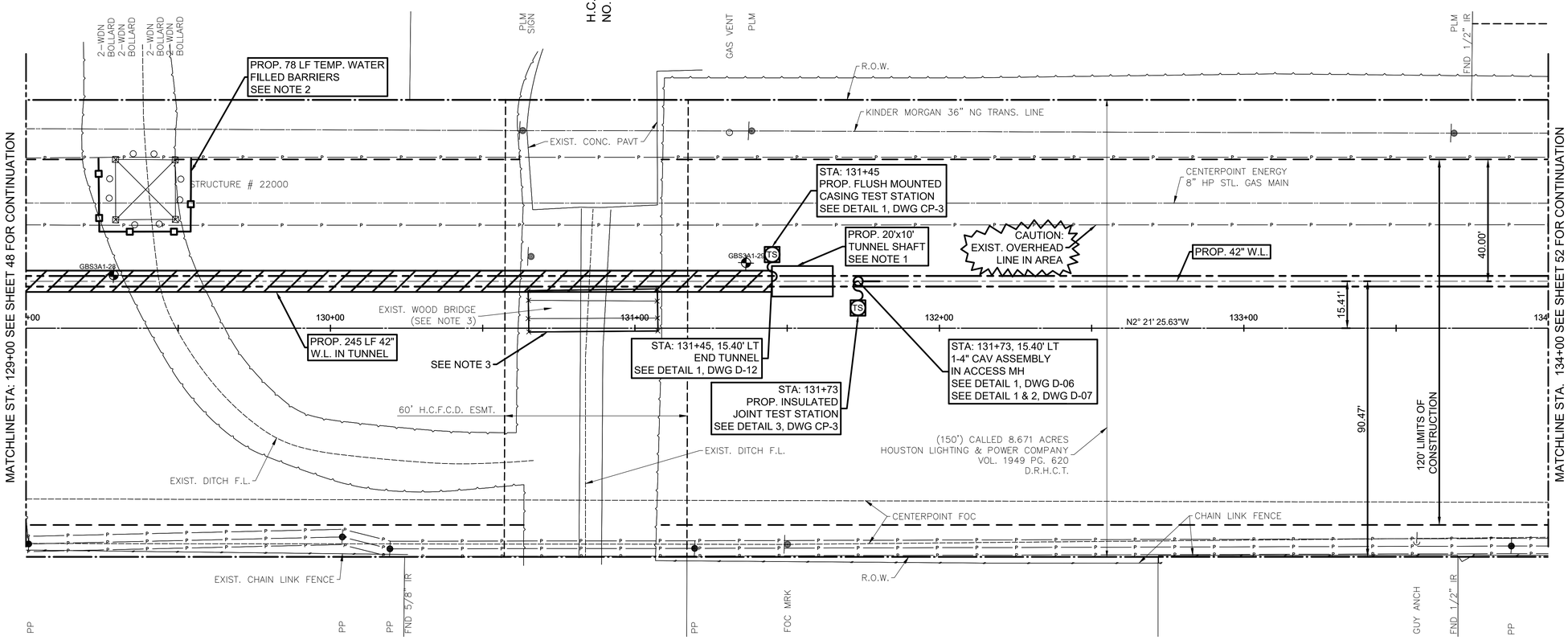
BENCHMARKS:

MONUMENT 30-091
N 13,876,889.68, E 3,054,062.69
ELEV. 106.11
STA. 133+60.96, 80.85 LT
NAD 83, CORS ADJUSTMENT
SURFACE TO GRID CONVERSION
FACTOR: 0.99990615

HORIZ 0 10' 20' 40'
1"=20'



BASELINE 'A'

SEE SHEET 51 FOR PROFILE

*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
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.

NOTE:

1. CONTRACTOR IS RESPONSIBLE FOR DESIGN OF TUNNEL SHAFTS. REFER TO SPECIFICATION SECTION 02400.
2. CONTRACTOR SHALL INSTALL AND MAINTAIN WATER-FILLED TRITON BARRIER (TL-2) DURING CONSTRUCTION. BARRIERS SHALL SURROUND EXISTING OVERHEAD POWER TOWERS, AS SHOWN AND PER HARRIS COUNTY SPECIFICATION ITEM NO. 698.
3. CONTRACTOR SHALL REPLACE EXISTING WOOD BRIDGE IF DAMAGED DURING CONSTRUCTION. NO SEPARATE PAY.

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM ENGINEERING CORPORATION

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VERIFICATION OF PRIVATE UTILITY LINES

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Date

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Registered
91713
Registration Number
MAY 2020
Date

SEGMENT S3-A1

BASELINE 'A'
STA. 129+00 TO STA. 134+00
PLAN VIEW

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.

HORIZ: 1"=20'
VERT:

SHEET NO. 50 OF 81

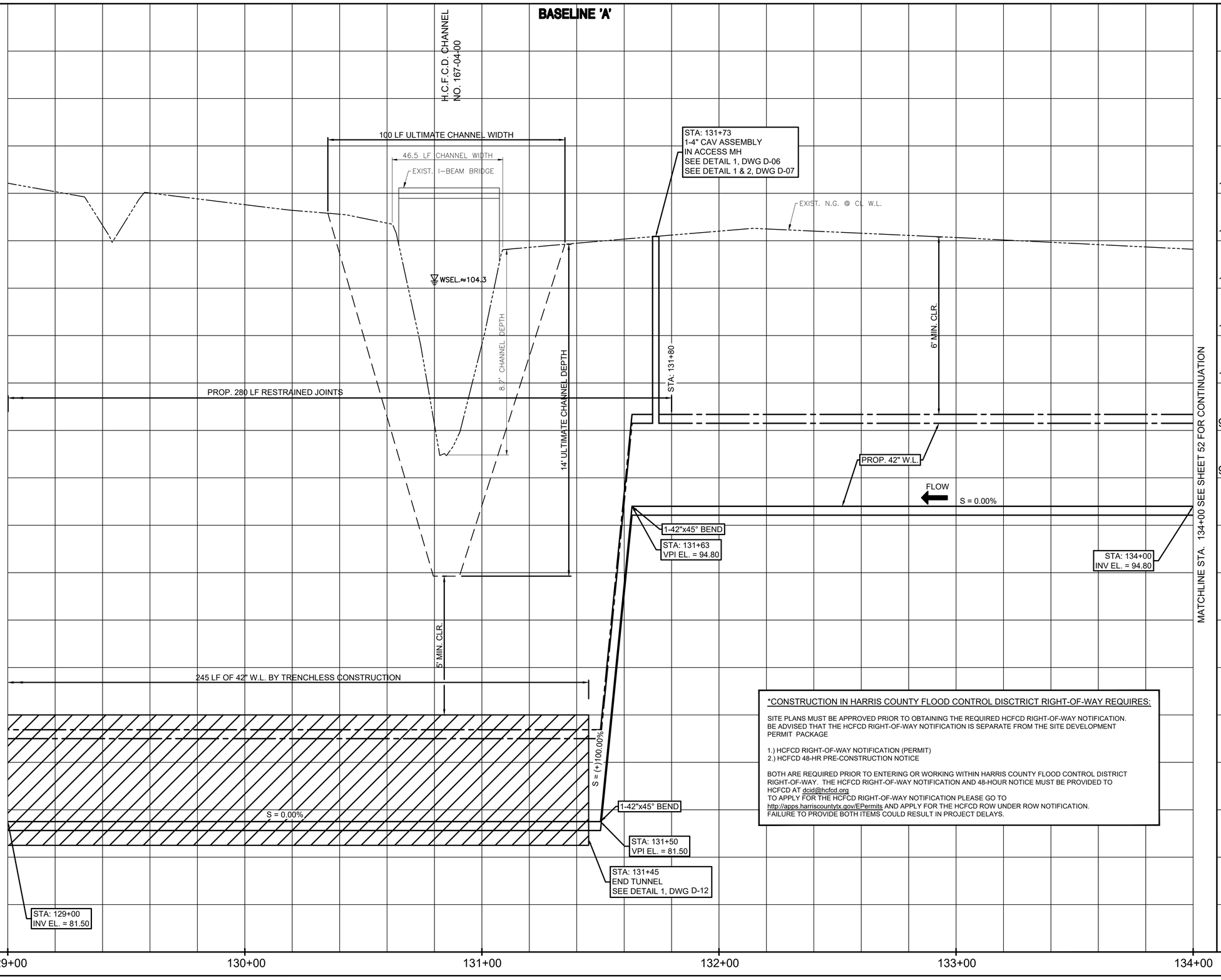
DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PEN TABLE: WHCRWA_22x34.ctb
PLOTTED: 5/28/2020 12:17 AM
FILE PATH: \\pzhou\data\bb\Enviro\1900000003 - WHCRWA 42 inch Segment 3A_CADD\Drawings\027C-PLwrl.dwg

SEE SHEET 50 FOR PLAN VIEW

BASELINE 'A'



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NO.	DATE	REVISION	APP.

HORIZ 0 10' 20' 40' 1"=20'
VERT 0 1' 2' 4' 1"=2'

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM
ENGINEERING CORPORATION

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91713
MAY 2020

SEGMENT S3-A1

BASELINE 'A'
STA. 129+00 TO STA. 134+00
PROFILE VIEW

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.
HORIZ: 1"=20'
VERT: 1"=2'
SHEET NO. 51 OF 81
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

PEN TABLE: WHCRWA_22x34.ctb
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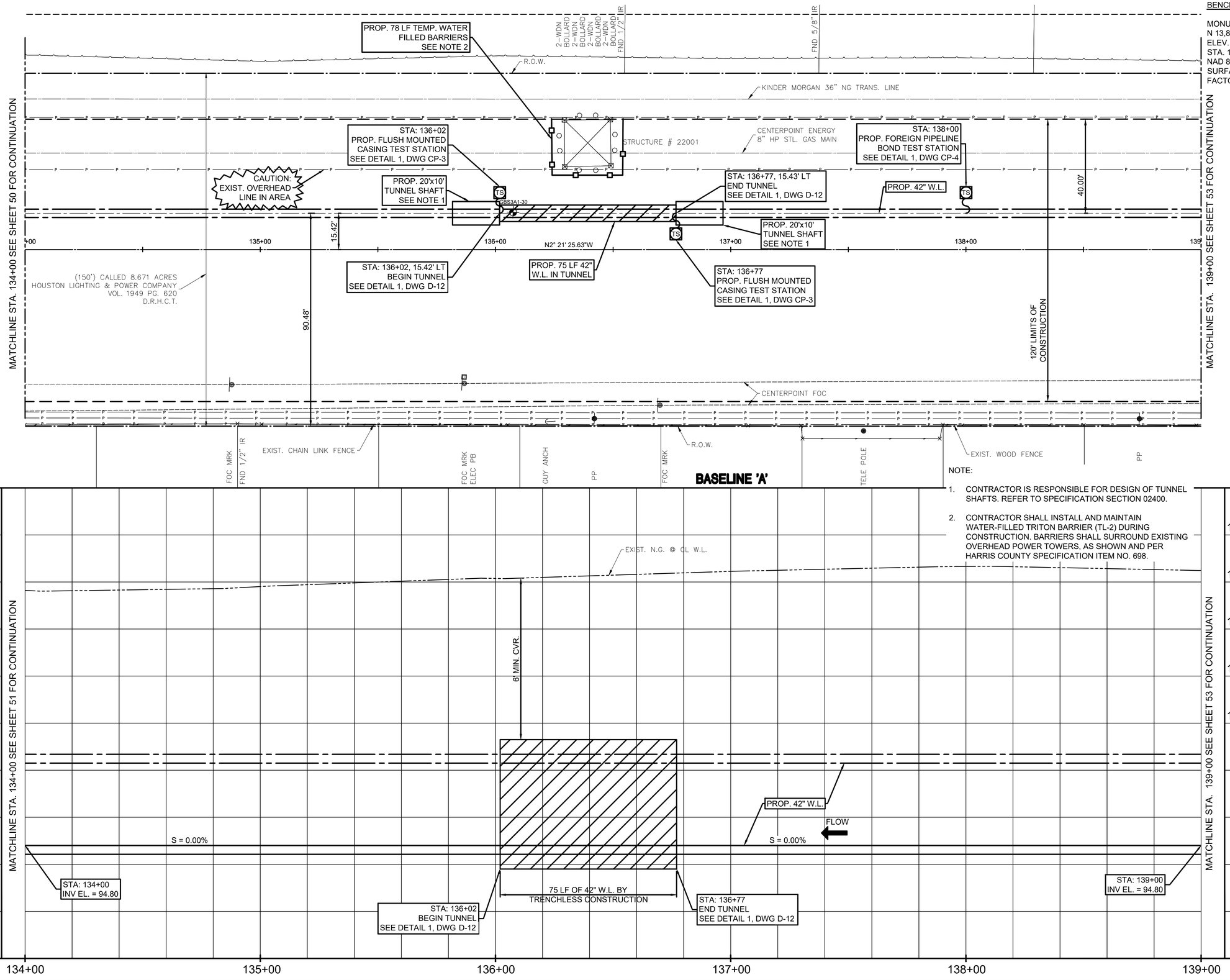

BENCHMARKS:

MONUMENT 30-091
N 13,876,889.68, E 3,054,062.69
ELEV. 106.11
STA. 133+60.96, 80.85 LT
NAD 83, CORS ADJUSTMENT
SURFACE TO GRID CONVERSION FACTOR: 0.99990615

HORIZ 0 10' 20' 40' 1"=20'

VERT 0 1' 2' 4' 1"=2'

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

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SEGMENT S3-A1

BASELINE 'A' STA. 134+00 TO STA. 139+00 PLAN & PROFILE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.

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

SHEET NO. 52 OF 81

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

NOTE:

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FILE PATH: \\pzhou\data\bb\Enviro\1900000003 - WHCRWA 42 inch Segment 3A_CADD\Drawings\0280-PLwtr.dwg
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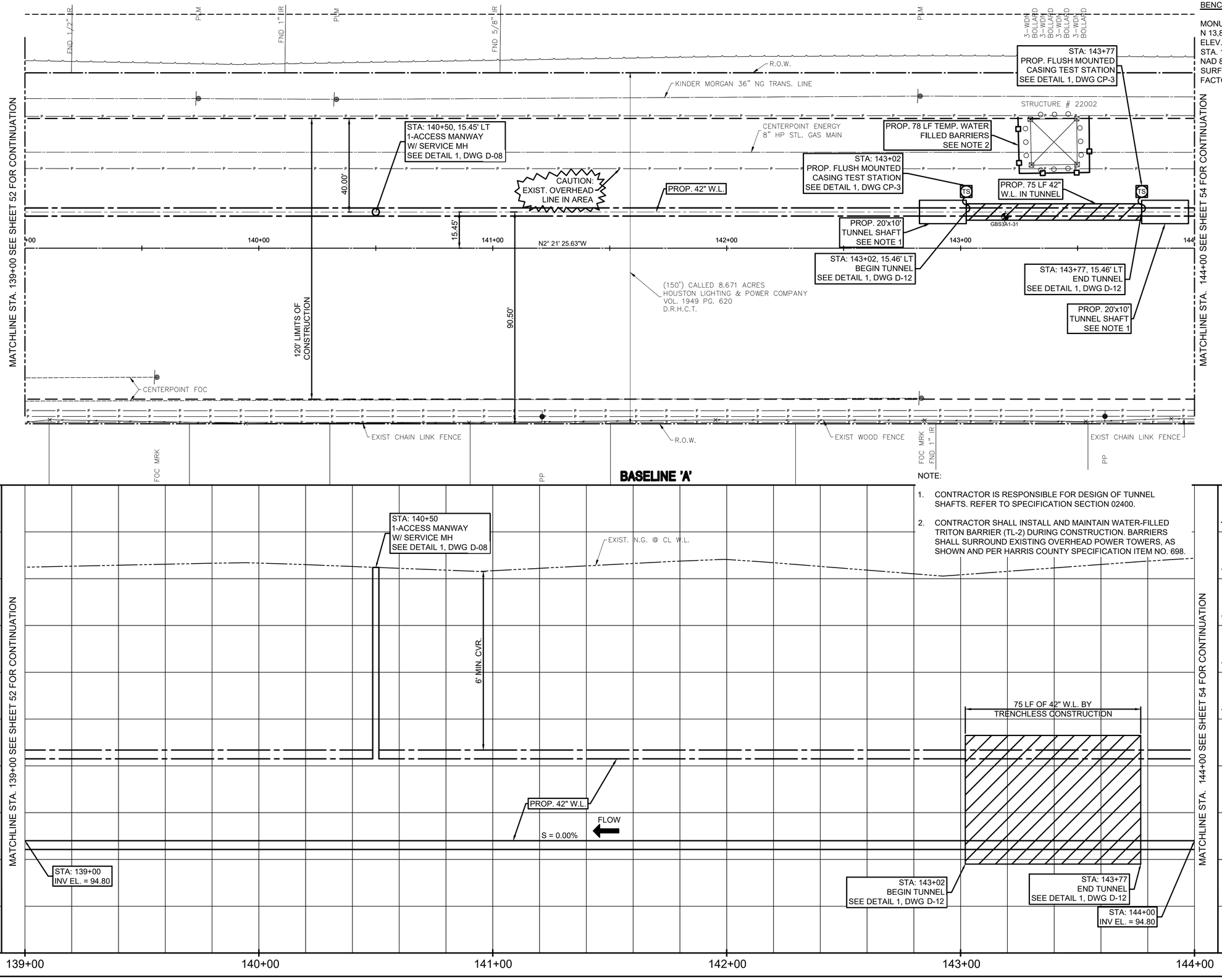
PLOTTED: 5/28/2020 12:20 AM



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BENCHMARKS:

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N 13,876,889.68, E 3,054,062.69
ELEV. 106.11
STA. 133+60.96, 80.85 LT
NAD 83, CORS ADJUSTMENT
SURFACE TO GRID CONVERSION
FACTOR: 0.99990615

HORIZ 0 10' 20' 40' 1"=20'

VERT 0 1' 2' 4' 1"=2'

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM ENGINEERING CORPORATION

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Registered Professional Engineer
91713
MAY 2020
Date

SEGMENT S3-A1

BASELINE 'A'
STA. 139+00 TO STA. 144+00
PLAN & PROFILE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.

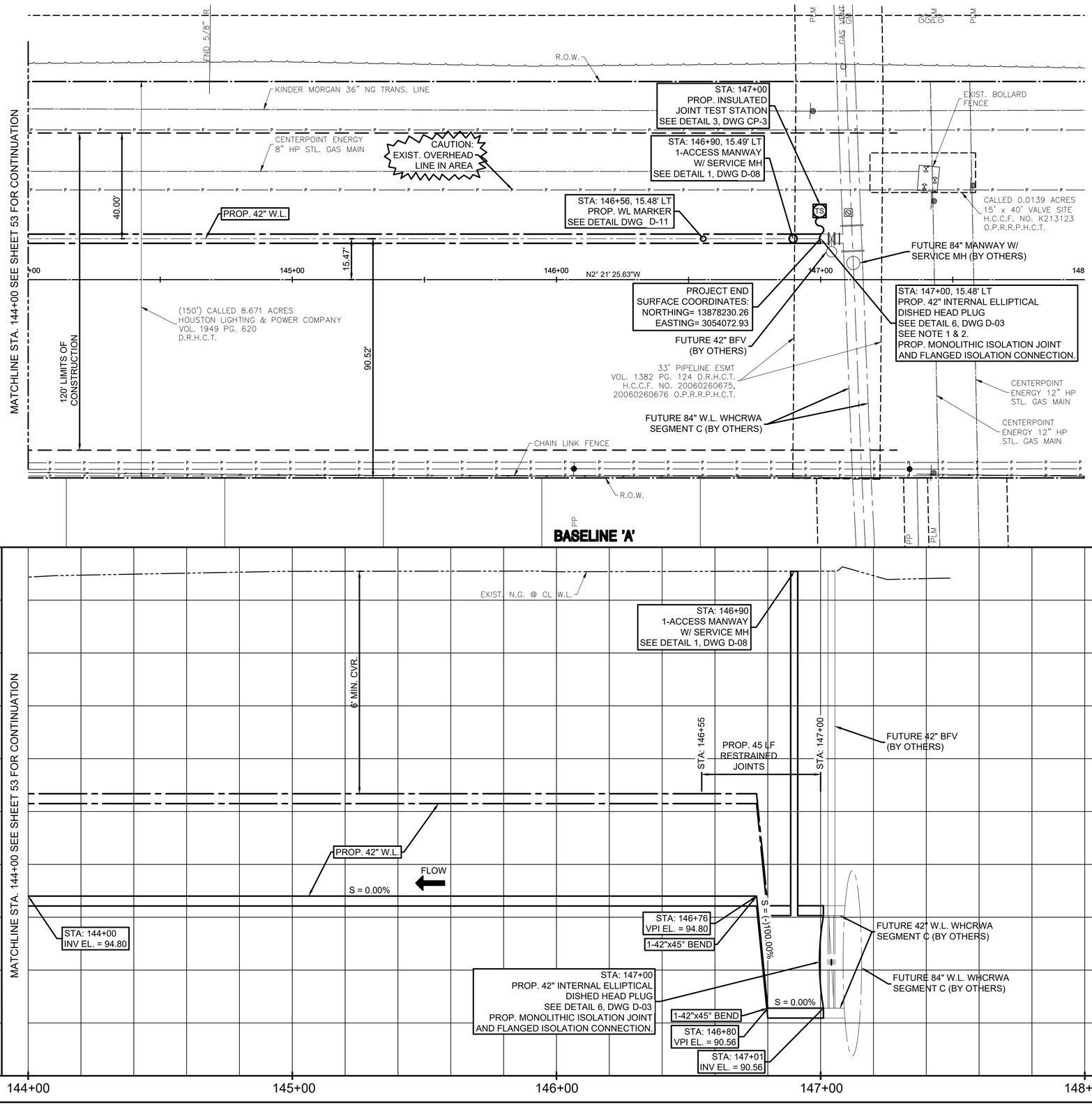
HORIZ: 1"=20'
VERT: 1"=2'

SHEET NO. 53 OF 81

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PLOTTED: 5/28/2020 12:21 AM PEN TABLE: WHCRWA_22x34.ctb
FILE PATH: \\pathou\data\bb\Enviro\1900000003 – WHCRWA 42 Inch Segment 3A_CADD\Drawings\029C–Plwtrl.dwg



BENCHMARKS:

MONUMENT 30-091
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ELEV. 106.11
STA. 133+60.96, 80.85 LT
NAD 83, CORS ADJUSTMENT
SURFACE TO GRID CONVERSION FACTOR: 0.99990615

HORIZ 0 10' 20' 40' 1"=20'

VERT 0 1' 2' 4' 1"=2'

NOTE:

1. CONTRACTOR SHALL INSTALL 42-INCH INTERNAL ELLIPTICAL DISHED HEAD PLUG IF FUTURE 42-INCH WATER LINE (SWSP SEGMENT C) IS NOT IN PLACE AT THE TIME OF CONSTRUCTION. IF SWSP SEGMENT C IS EXISTING, CONTRACTOR SHALL REMOVE PLUG FROM EXISTING 42-INCH WATER LINE AND CONNECT AFTER SUCCESSFUL HYDROSTATIC TESTING.
2. FIELD VERIFY LOCATION OF EXISTING WATER LINE (SEGMENT C) AND MAKE ANY NECESSARY ADJUSTMENTS TO LINE AND GRADE TO ASSURE PROPER TIE-IN. IF NECESSARY, PRIOR TO FABRICATION OF PIPE AND FITTINGS AND AT NO ADDITIONAL COST TO OWNER.

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM
ENGINEERING CORPORATION

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Number
91713
Registered Engineer
MAY 2020
Date

SEGMENT S3-A1

BASELINE 'A' STA. 144+00 TO STA. 148+00 PLAN & PROFILE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.

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

SHEET NO. 54 OF 81

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PEN TABLE: WHCRWA_22x34.ctb

PLOTTED: 5/28/2020 12:23 AM

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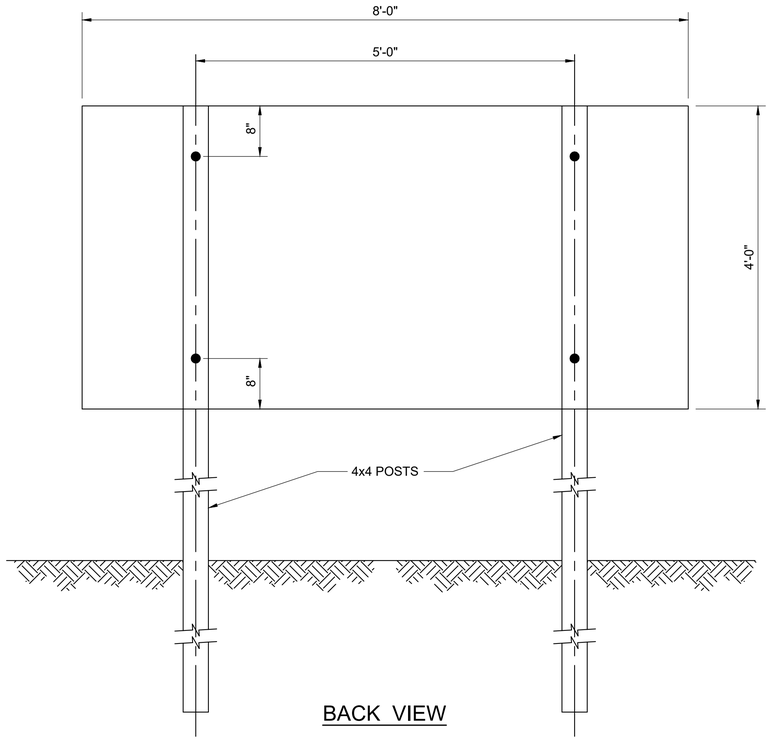
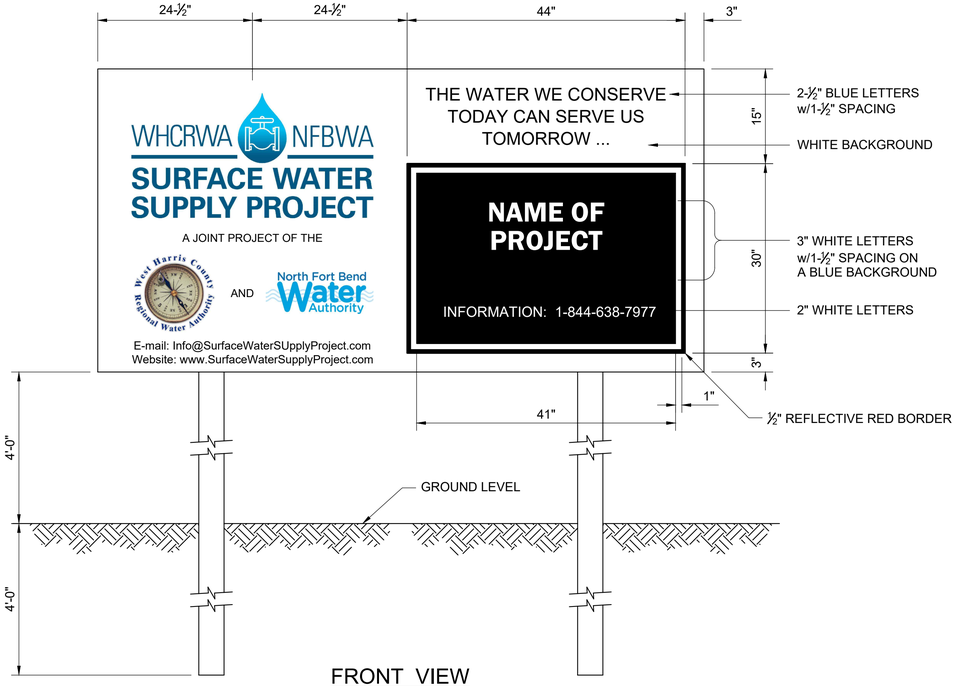


BACK VIEW



FRONT VIEW

1 -- CONSTRUCTION PROJECT SIGN

SCALE:1"=1'-0"

1' 6" 0 1' 2'

1"=1'-0"

NOTES:
1. CONTRACTOR TO PROVIDE 3 SIGNS. NO SEPARATE PAY.
2. SIGNS TO BE INSTALLED AT LOCATIONS AS DIRECTED BY ENGINEER.

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM
ENGINEERING CORPORATION

Binkley & Barfield
consulting engineers
Binkley & Barfield, Inc. | TxEng F-257
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CHRISTOPHER L. CAMPBELL
Engineer
91713
Registration Number
MAY 2020
Date

SEGMENT S3-A1

PROJECT SIGN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.	HORIZ: AS NOTED VERT:
SHEET NO. 55 OF 81	DRAWING SCALE

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Standard Details Ver. March 2020

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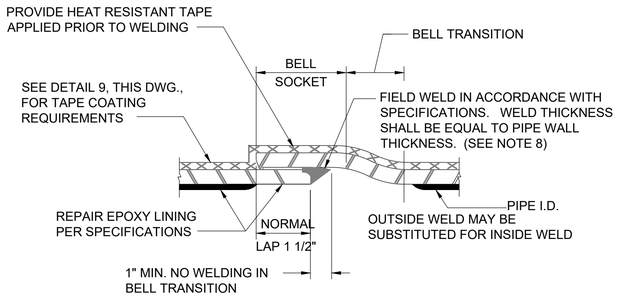
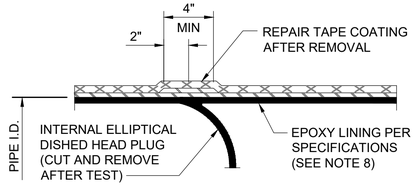
FILE PATH: \\pzhou\data\bbi\Enviro\900000003 - WHCRWA 42 Inch Segment 3A_CADD\Drawings\001C-DTpsign.dwg

NOTES:
OUTSIDE WELD MAY BE SUBSTITUTED FOR INSIDE WELD

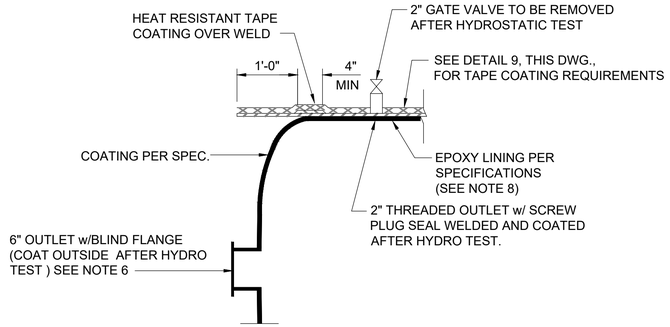


1 --- LAP-WELD FIELD JOINT - STEEL PIPE w/EPOXY LINING

(FOR WATER MAINS 36-INCH DIAMETER AND LARGER).

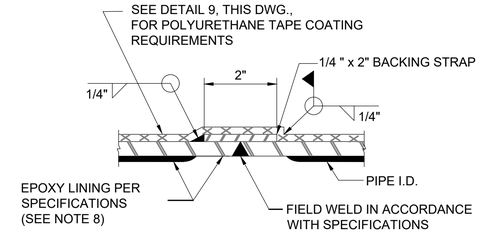


2 --- INTERNAL ELLIPTICAL DISHED HEAD PLUG REMOVAL STEEL PIPE



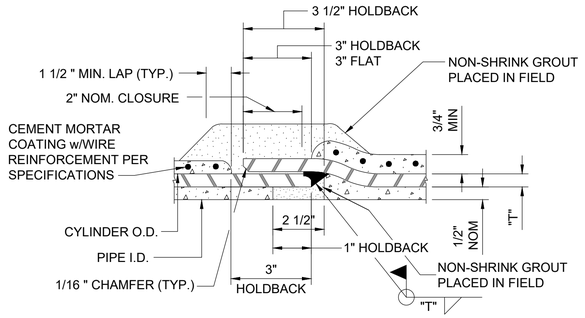
3 --- INTERNAL ELLIPTICAL DISHED HEAD PLUG STEEL PIPE

(SEE NOTE 7)



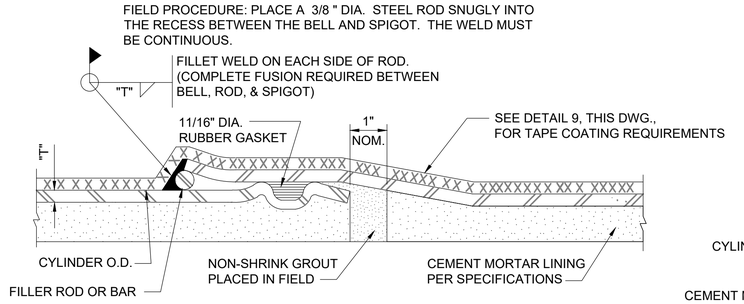
4 --- BUTT WELD FIELD JOINT - STEEL PIPE (TAPE COATED)

(FOR WATER MAINS 36-INCH DIAMETER AND LARGER).



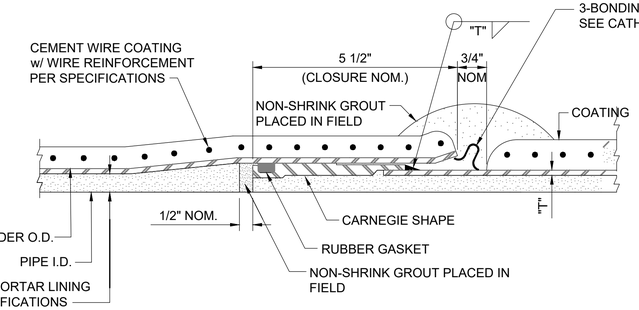
5 --- LAP-WELD FIELD JOINT - STEEL PIPE w/ CEMENT MORTAR COATING

(FOR WATER MAINS 36-INCH DIAMETER AND LARGER).

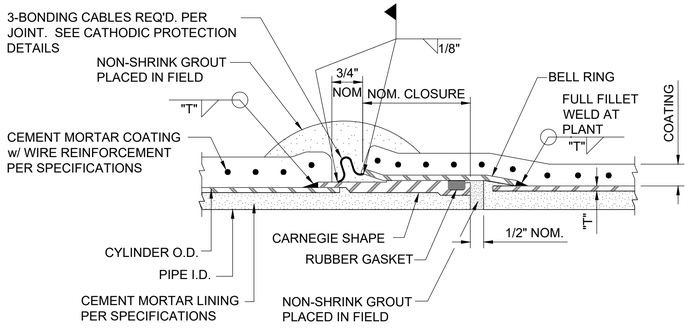


6 --- FIELD WELDED O-RING JOINT

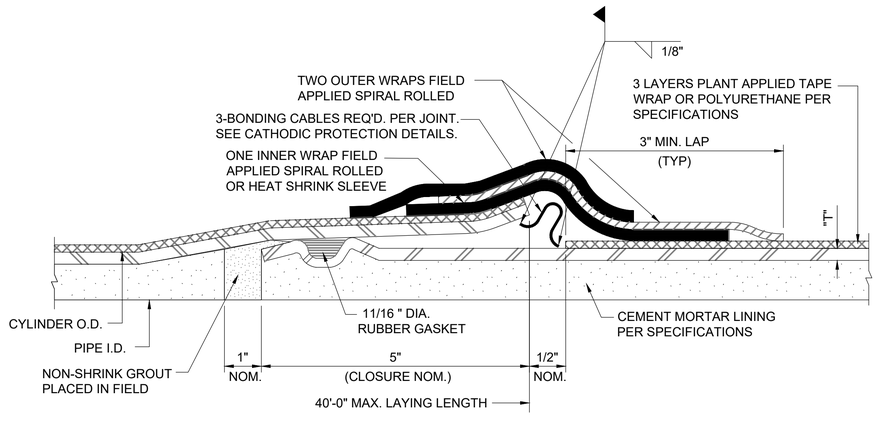
1. (FOR ADJUSTMENTS ONLY AS APPROVED BY ENGINEER AND PIPE MANUFACTURER. SEE DETAIL 9, THIS DWG., FOR DIMENSIONS)
2. REFER TO DETAIL 1 OR 5 FOR STANDARD WELDED (FOR WATER MAINS 36-INCH DIAMETER AND LARGER) JOINTS.



7 --- ROLLED JOINT STEEL PIPE



8 --- CARNEGIE JOINT - STEEL PIPE



9 --- O-RING STEEL PIPE JOINT DETAIL

(CEMENT MORTAR LINED & TAPE WRAPPED)

GENERAL NOTES:

1. T = STEEL PIPE WALL 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. REFER TO SPECIFICATIONS FOR POLYURETHANE ALTERNATIVE TO TAPE OR CEMENT MORTAR COATING.
4. DETAILS 1,2,3 AND 4 SHOW EPOXY LINING. CEMENT MORTAR LINING TO BE SIMILAR TO DETAILS ON THIS SHEET SHOWING CEMENT MORTAR LINED PIPE, AS APPROVED BY ENGINEER.
5. DETAILS 5, 6, 7 AND 8 SHOW CEMENT MORTAR COATING. TAPE COATING TO BE SIMILAR TO DETAIL 9, THIS SHEET, AS APPROVED BY ENGINEER.
6. INSTALL 6 INCH FLANGED OUTLETS ON EITHER SIDE OF THE DISHED HEAD PLUG.
7. DISHED HEAD PLUGS SHALL BE CAPABLE OF WITHSTANDING THE HYDROSTATIC TEST PRESSURE FROM EITHER SIDE, WITH THE OPPOSITE SIDE EMPTY OF WATER.
8. SEE SPECIFICATIONS FOR REPAIR OF EPOXY LINING
9. 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.

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
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91713
Registration Number
MAY 2020
Date

SEGMENT S3-A1

STEEL PIPE DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.	HORIZ: AS NOTED VERT:
SHEET NO. 56 OF 81	DRAWING SCALE

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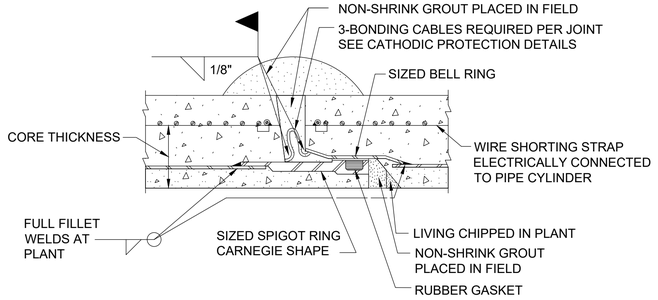
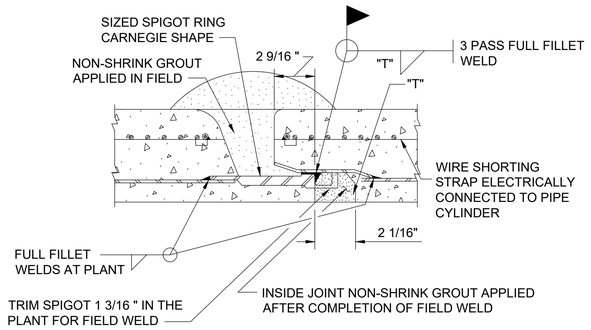
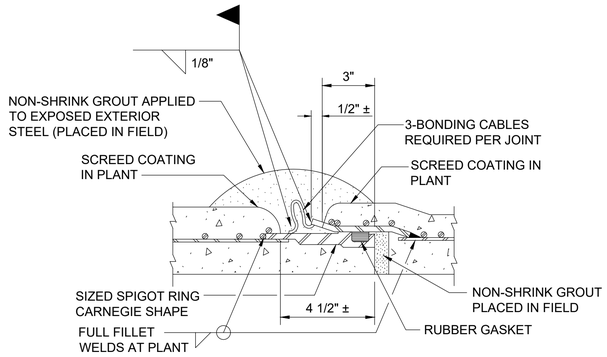


1 JOINT - EMBEDDED CYLINDER PIPE

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.



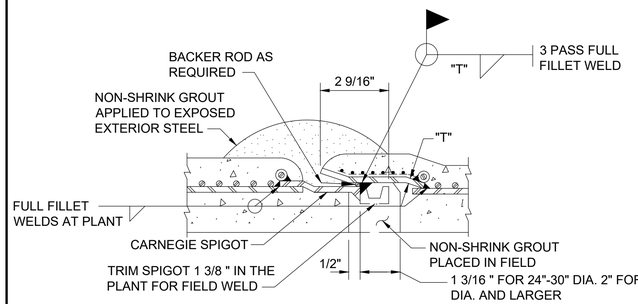
2 WELDED JOINT - EMBEDDED CYLINDER PIPE
(FOR WATER MAINS 36-INCHES DIAMETER AND LARGER)



3 JOINT - LINED CYLINDER PIPE
(FOR WATER MAINS LESS THAN 36-INCHES IN DIAMETER)

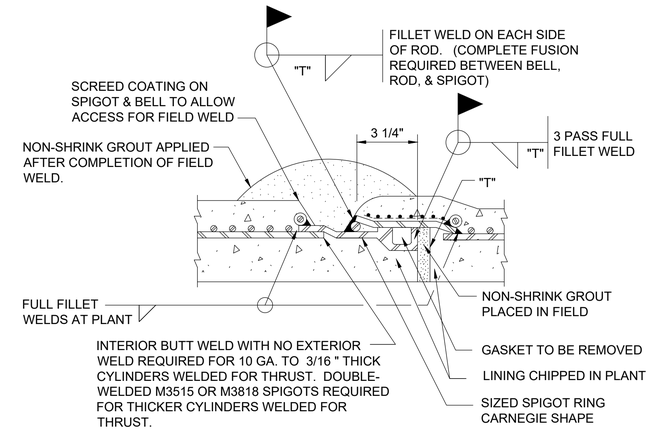
GENERAL NOTES:

1. T = PIPE WALL THICKNESS AND SIZE OF FILLET ATTACHMENT WELD.
2. P = STEEL CYLINDER PERIMETER.
3. INSTALL 6-INCH FLANGED OUTLETS ON EITHER SIDE OF THE DISHED HEAD PLUG
4. DISHED HEAD PLUGS SHALL BE CAPABLE OF WITHSTANDING THE HYDROSTATIC TEST PRESSURE FROM EITHER SIDE, WITH THE OPPOSITE SIDE EMPTY OF WATER.
5. 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.

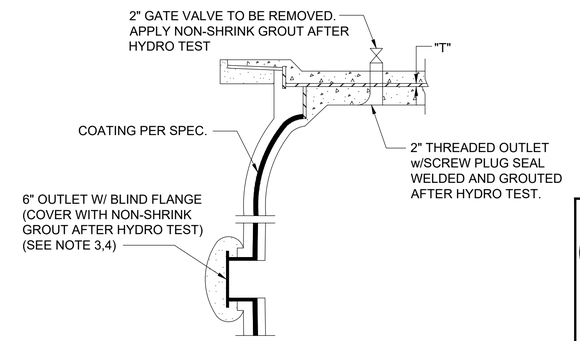


FIELD PROCEDURE: WITH THE JOINT ENGAGED THE INSIDE WELD WILL BE MADE BY ACCESS THROUGH THE PIPE. THE WELD MUST BE CONTINUOUS AND WATER TIGHT. THE JOINT GROUT SHALL THEN BE PLACED AS SHOWN.

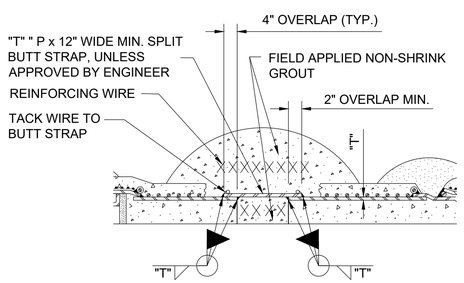
4 WELDED JOINT w/TRIMMED SPIGOT LINED CYLINDER PIPE
(FOR WATER MAINS 36-INCH DIAMETER AND LARGER)



5 WELDED JOINT - LINED CYLINDER PIPE
1. FIELD PROCEDURE: PLACE A 3/8" DIA STEEL ROD SNUGLY INTO THE RECESS BETWEEN THE BELL AND SPIGOT. THE WELD MUST BE CONTINUOUS.
(FOR WATER MAINS LESS THAN 36-INCHES IN DIAMETER)



INTERNAL ELLIPTICAL DISHED HEAD PLUG LINED CYLINDER PIPE
6
(CONCRETE EMBEDDED CYLINDER PIPE IS SIMLAR, AS APPROVED BY ENGINEER) (SEE NOTE 4)

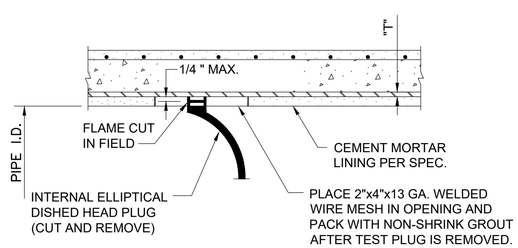


(INTERNAL WELD NOT REQUIRED FOR 30" DIAMETER PIPE AND SMALLER)

7 CLOSURE PIECE
(STEEL PIPE SIMILAR)

NOTE:

1. WELD SIZE MATCH THICKNESS OF BUTT STRAP AND CARRIER PIPE, AS COMMENDED BY THE PIPE MANUFACTURER
2. INTERNAL WELD NOT REQUIRED FOR 30" DIAMETER PIPE AND SMALLER
3. NO ANGULAR DEFLECTION ALLOWED



INTERNAL ELLIPTICAL DISHED HEAD PLUG REMOVAL EMBEDDED CYLINDER PIPE
8
CONCRETE EMBEDDED CYLINDER PIPE SHOWN
(CONCRETE LINED CYLINDER PIPE IS SIMILAR, AS APPROVED BY ENGINEER)

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM ENGINEERING CORPORATION

Binkley & Barfield consulting engineers
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91713
Registration Number
MAY 2020
Date

SEGMENT S3-A1

PRESTRESSED CONCRETE CYLINDER PIPE DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.
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SHEET NO. 57 OF 81
DRAWING SCALE
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D-03

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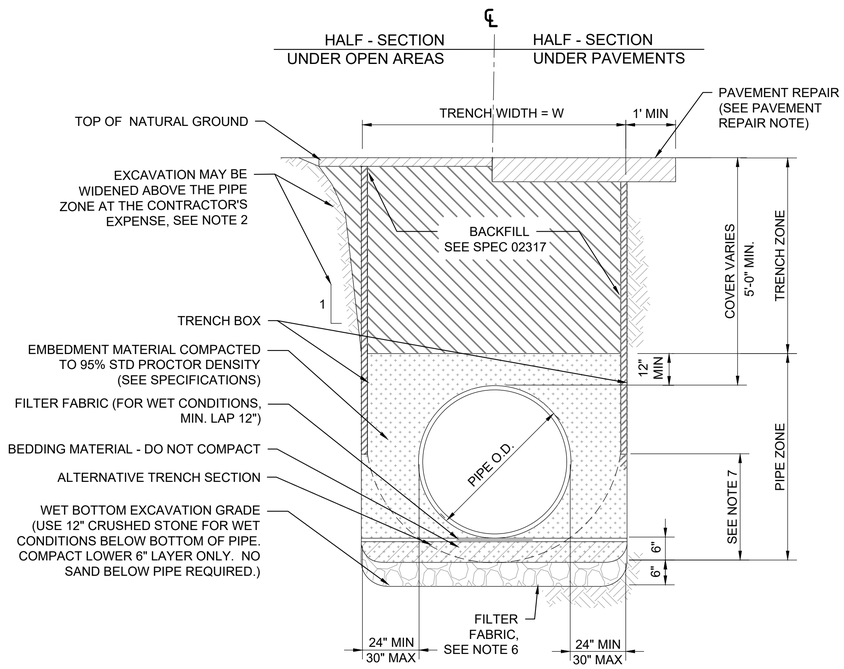

1 TYPICAL TRENCH SECTION OPTION A

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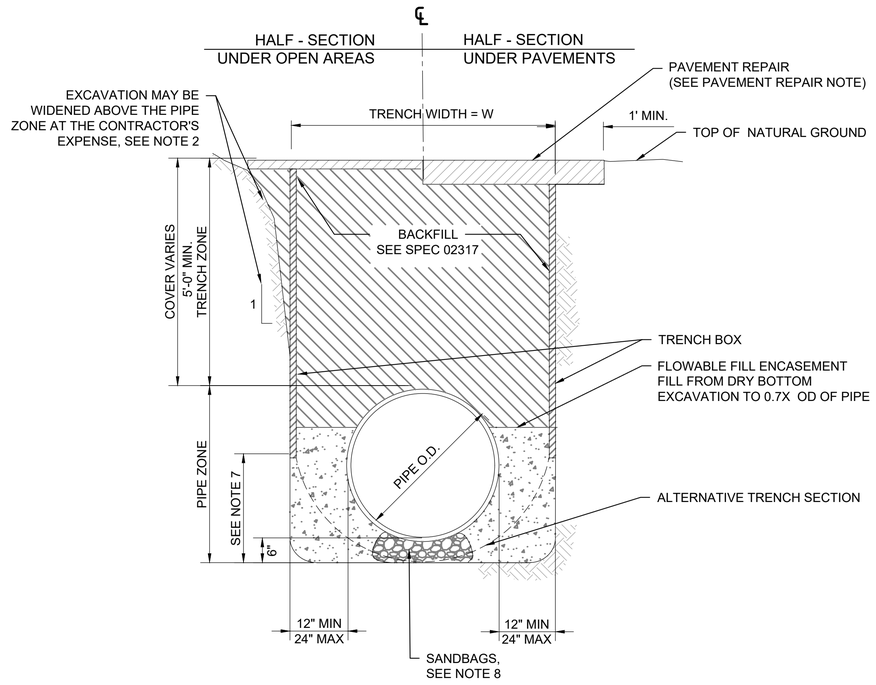
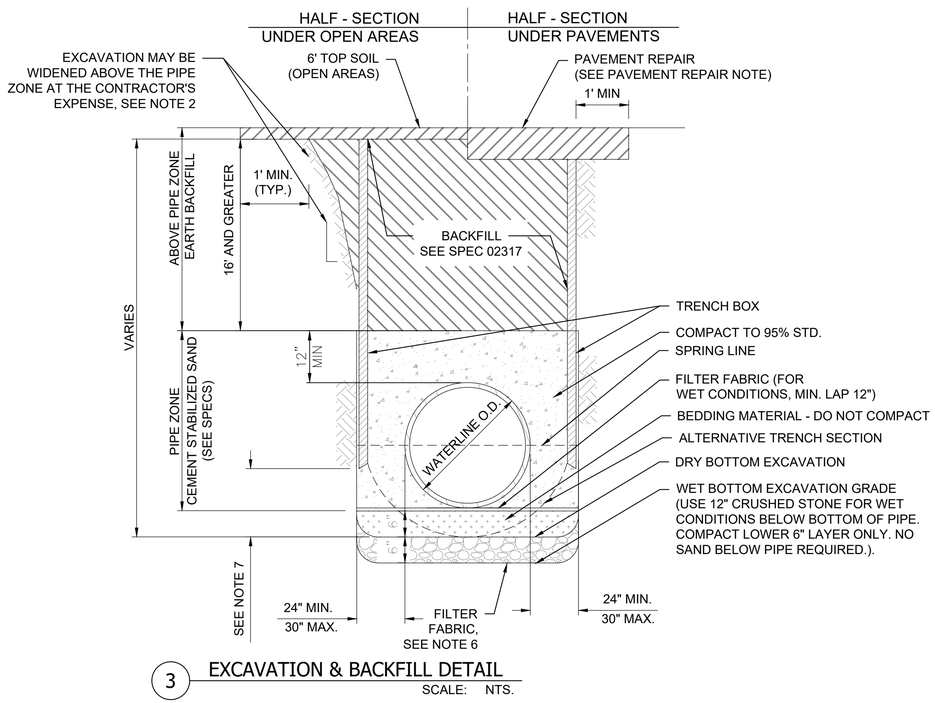


2 FLOWABLE FILL ENCASEMENT OPTION B

SCALE: NTS.



3 EXCAVATION & BACKFILL DETAIL

SCALE: NTS.

DETAIL 3 APPLICABLE IN THE FLOWING AREAS:
- WATER MAIN WITH HEIGHT OF COVER GREATER THAN 16'
- TUNNEL SHAFT LIMITS
- PPCA LIMITS

GENERAL NOTE:

1. BACKFILL TO NATURAL GROUND SURFACE UNLESS OTHERWISE SHOWN ON PLAN AND PROFILE DRAWINGS
2. SEE TRENCH SAFETY SYSTEM SPECIFICATION FOR MAXIMUM ALLOWABLE SLOPES AND TRENCH BOX REQUIREMENTS.
3. FOR WET BOTTOM EXCAVATION LIMITS OF CRUSHED STONE, EXTEND AS SHOWN. PROVIDE FILTER FARIC AROUND CRUSHED STONE.
4. PIPE EMBEDMENT ZONE MUST BE FILLED AND RECOMPACTED TO PROPER DENSITIES AFTER MOVING SUPPORT SYSTEM FORWARD.
5. USE FILTER FABRIC OR POLYETHYLENE WRAP AS A BOND BREAKER BETWEEN CEMENT STABILIZED SAND AND PIPE.
6. REFER TO SPEC 02317 FOR GEOTEXTILE REQUIREMENTS AROUND EMBEDMENT.
7. ADJUST HEIGHT OF UNSUPPORTED TRENCH AS NEEDED FOR SAFE CONDITIONS.
8. PROVIDE SANDBAGS FOR FLOWABLE FILL ENCASEMENT TO SUPPORT PIPE TO CORRECT GRADE ABOVE TRENCH BOTTOM. USE ONE SUPPORT 5 FEET FROM EACH END AND AT 10 FEET O.C. FOR THE MIDDLE. FOR PIPE FURNISHED IN 12 FOOT LENGTHS, USE ONE SUPPORT 3 FEET FROM EACH END.
9. IN WETLAND AREAS WITH OPEN-CUT CONSTRUCTION, STRIP AND STOCKPILE 6" OF TOPSOIL. RESTORE TOPSOIL AFTER BACKFILLING TO MATCH PRE-CONSTRUCTION GRADE. SEE PLAN AND PROFILE SHEETS FOR AREAS WITH DELINEATED WETLANDS.

PAVEMENT REPAIR NOTES:

1. REMOVE AND REPLACE PAVEMENT AS SHOWN IN DRAWINGS.
2. PAVEMENT REPLACEMENT TO BE DONE IN ACCORDANCE WITH COUNTY OR CITY STANDARDS.
3. NEW CONCRETE PAVEMENTS TO BE SAME THICKNESS AS EXISTING, UNLESS OTHERWISE DIRECTED BY THE WHCRWA.
4. STREETS OR DRIVEWAYS SHALL BE REPAIRED OR REPLACED USING HIGH EARLY STRENGTH CONCRETE AS INDICATED ON DRAWINGS, ACCORDING TO PAVEMENT REPLACEMENT SCHEDULE WHERE PROVIDED, OR AS DIRECTED BY WHCRWA.
5. ANY REMOVAL AND REPLACEMENT OF PAVEMENT NOT IDENTIFIED ON THE DRAWINGS SHALL BE COORDINATED WITH THE ENGINEER AND THE WHCRWA.
6. WHEN CURB IS REMOVED AND REPLACED, INSTALL 1 FOOT STRIP OF SOD GRASS BEHIND CURB TO PREVENT EROSION UNTIL GRASS IS ESTABLISHED.
7. ROADWAY EXCAVATION, SITE GRADING, AND HYDROMULCH SEEDING OR SODDING WITHIN R.O.W. AND/OR LIMITS OF CONSTRUCTION SHALL BE IN ACCORDANCE WITH CONSTRUCTION SPECIFICATIONS.

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
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MAY 2020
Date

SEGMENT S3-A1

EXCAVATION BEDDING AND BACKFILL DETAILS

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.

HORIZ: AS NOTED
VERT:

SHEET NO. 58 OF 81

DRAWING SCALE

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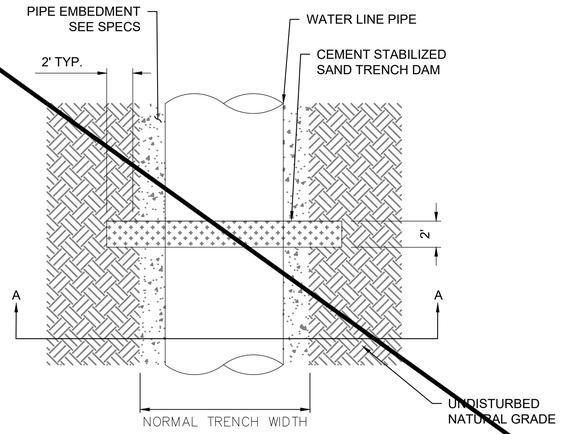
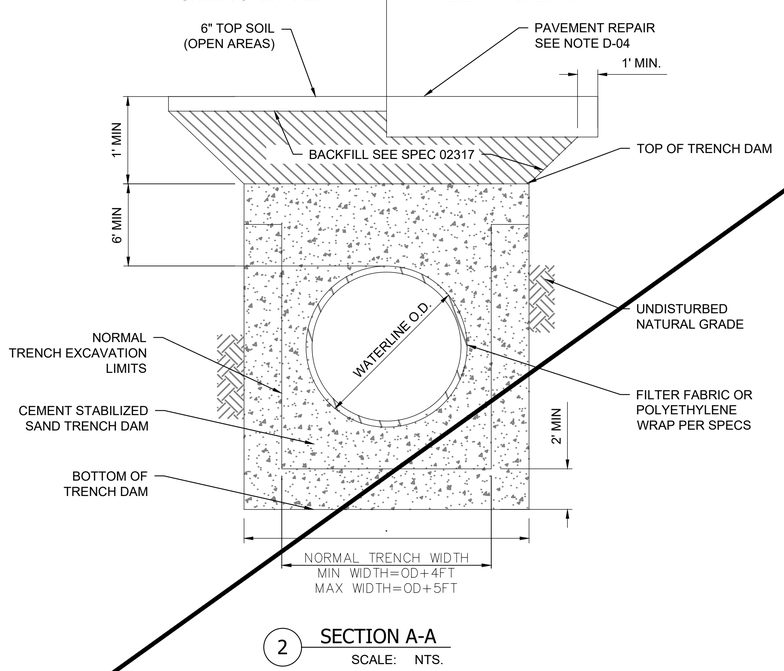
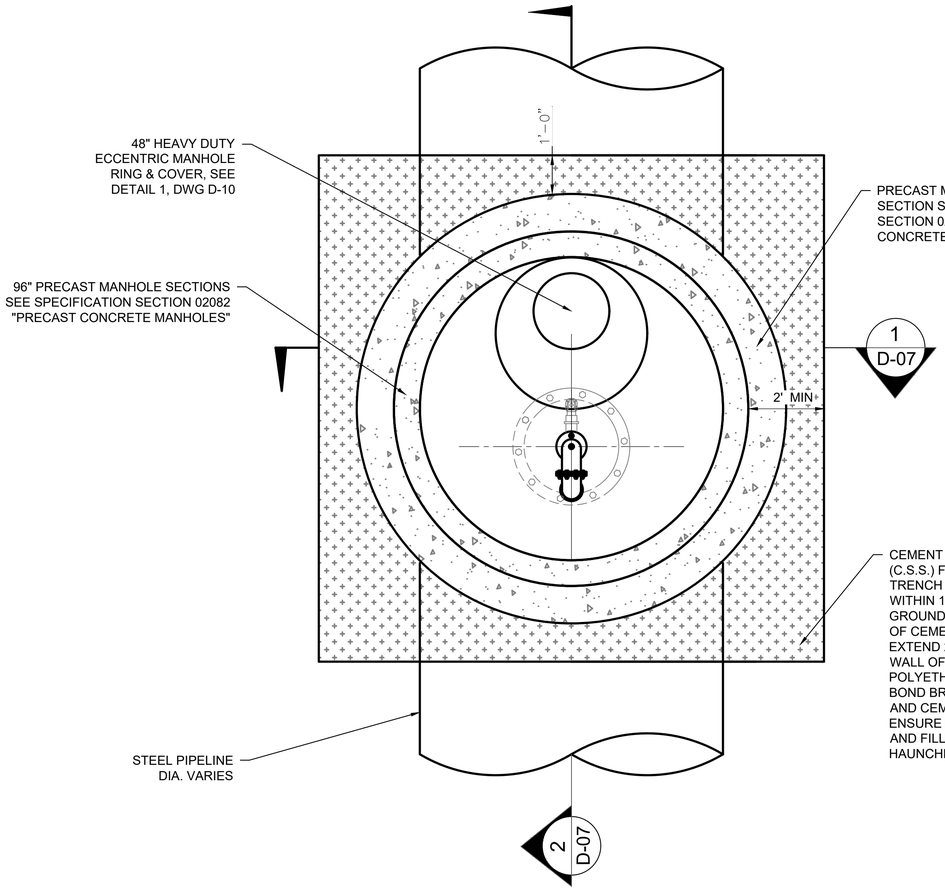


1 TRENCH DAM DETAIL
SCALE: NTS.



2 SECTION A-A
SCALE: NTS.

TRENCH DAM LOCATION		
NO.	BASE LINE	NO.



1 COMBINATION AIR VALVE ASSEMBLY IN ACCESS MANHOLE & PIPING PLAN

SCALE: NTS.

D-06

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
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SEGMENT S3-A1

AIR VALVE DETAILS
(SHEET 1 OF 2)

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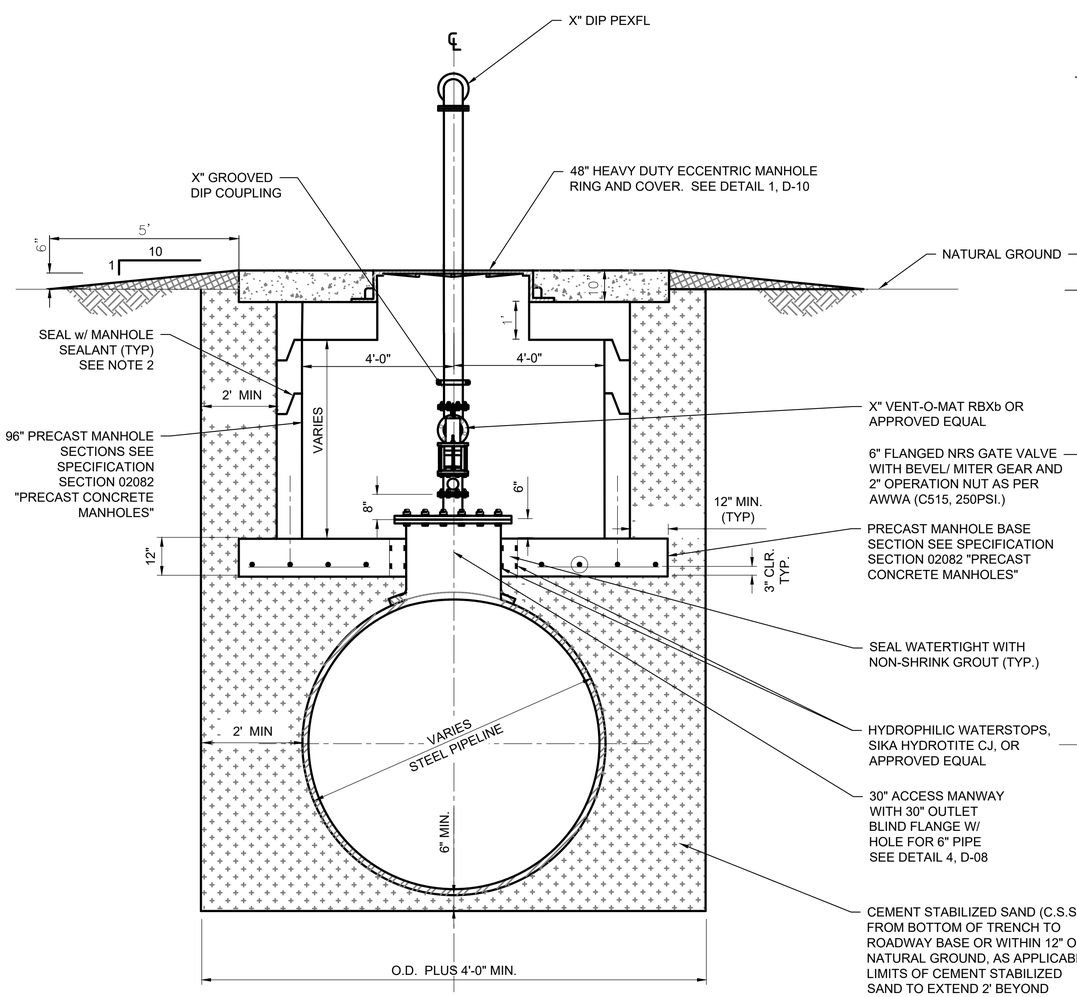
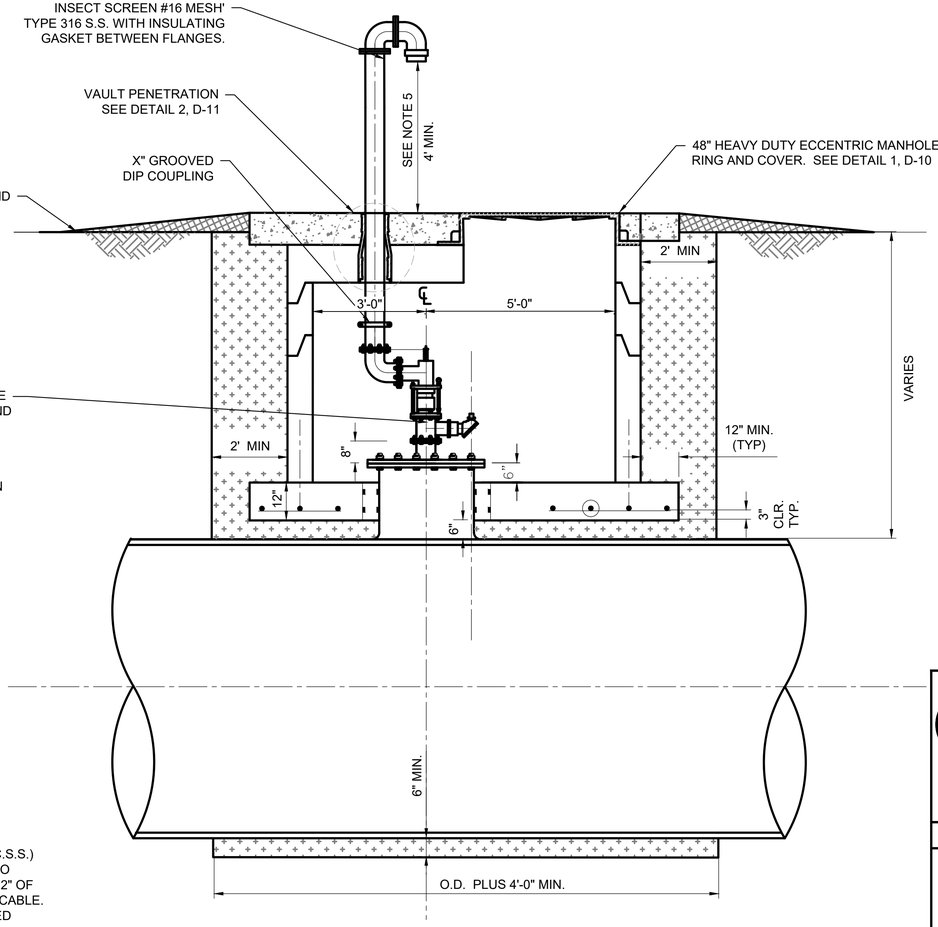


1 COMBINATION AIR VALVE ASSEMBLY IN ACCESS MANHOLE

SCALE: NTS.



2 COMBINATION AIR VALVE ASSEMBLY IN ACCESS MANHOLE

SCALE: NTS.

GENERAL NOTES:

1. SEE AWWA C207 FOR METHOD OF ATTACHMENT FOR RING TO OUTLET PIPE.
2. PROVIDE RAM-NEK OR APPROVED EQUAL BETWEEN PRECAST SEGMENTS OF THE MANHOLE.
3. PROVIDE AN APPROVED PETROLATUM BASED TAPE ENCAPSULATING ALL BOLTS IN ACCESS MANHOLE.
4. COATING FOR EXPOSED DUCTILE IRON AND STEEL PIPE AND FITTING IN VAULT SHALL CONFORM TO SPECIFICATION 02518.
5. VERIFY THAT LOCATION OF VENT PIPE SCREEN IS 1 FOOT ABOVE 100-YEAR FLOOD PLAIN ELEVATION OR 4 FEET ABOVE NATURAL GROUND ELEVATION, WHICHEVER IS HIGHER.

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM ENGINEERING CORPORATION

Binkley & Barfield consulting engineers
Binkley & Barfield, Inc. | TxEng F-257
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CHRISTOPHER L. CAMPBELL
Engineer
91713
Registration Number
MAY 2020
Date

SEGMENT S3-A1

AIR VALVE DETAILS
(SHEET 2 OF 2)

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

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SHEET NO. 61 OF 81	DRAWING SCALE

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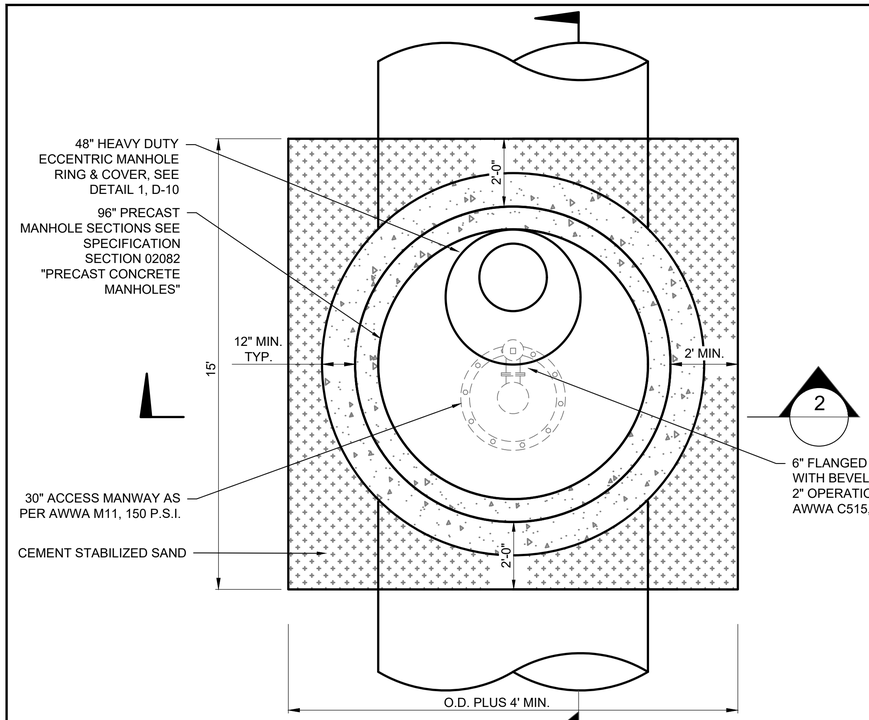
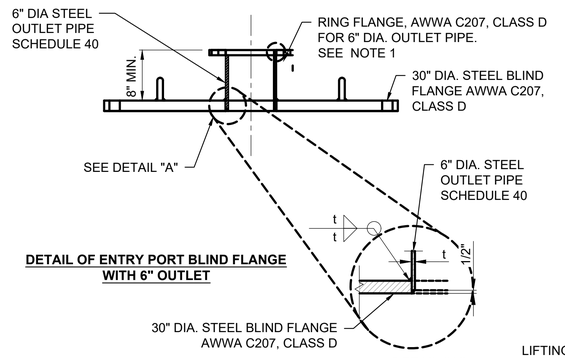


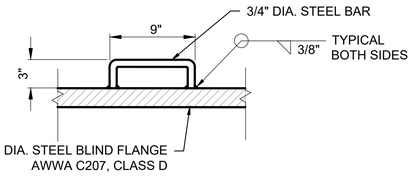
1 ACCESS MANHOLE AND MANWAY DETAIL

SCALE: NTS.

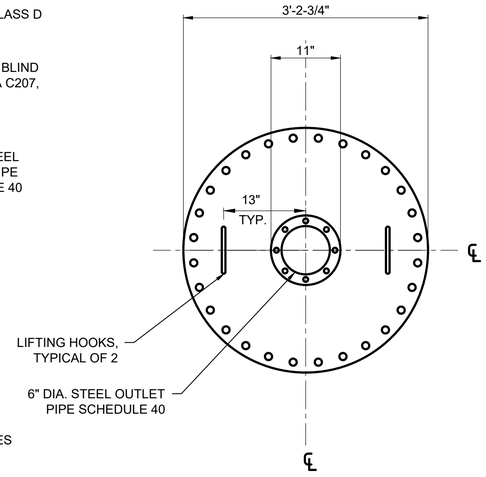


DETAIL OF ENTRY PORT BLIND FLANGE WITH 6" OUTLET

DETAIL "A"



LIFTING HOOK DETAIL



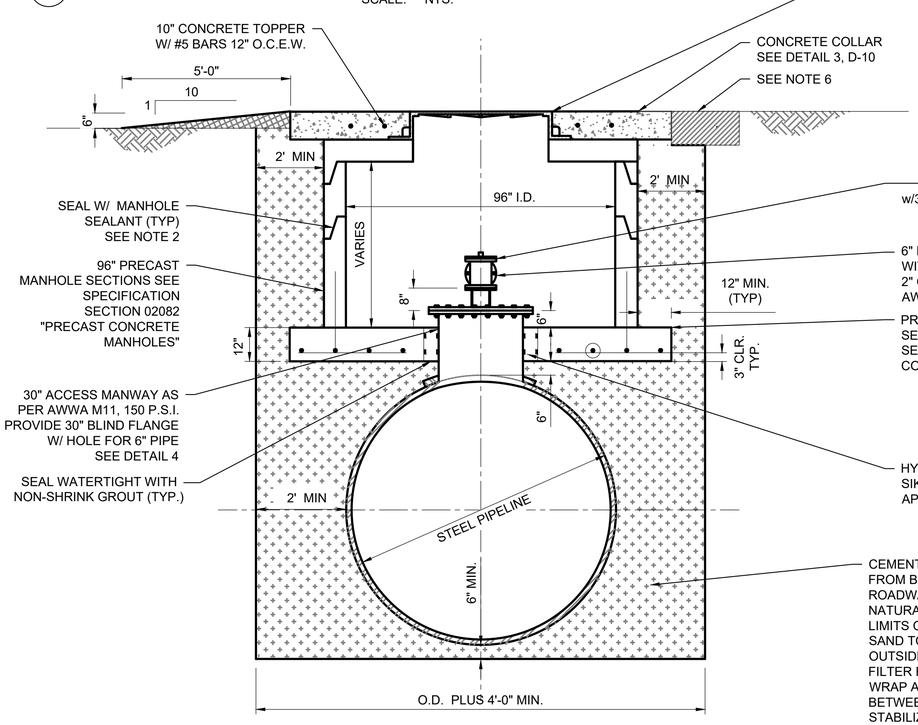
LIFTING HOOK LOCATION DETAIL

4 BLIND FLANGE DETAILS FOR ACCESS MANHOLE MANWAY

SCALE: NTS.

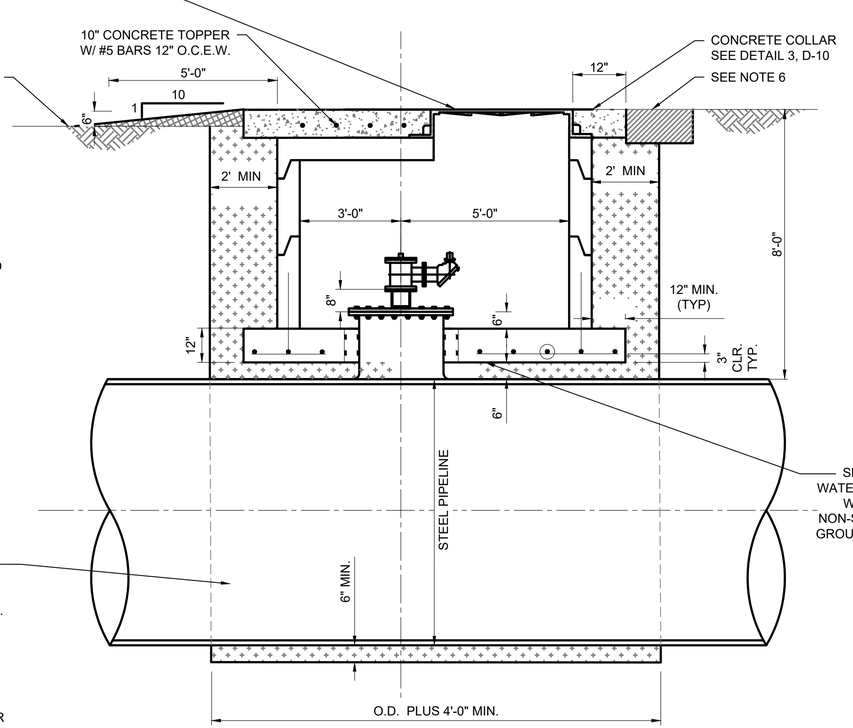
GENERAL NOTES:

1. SEE AWWA C207 FOR METHOD OF ATTACHMENT FOR RING TO OUTLET PIPE.
2. PROVIDE RAM-NEK OR APPROVED EQUAL BETWEEN PRECAST SEGMENTS OF THE MANHOLE.
3. PROVIDE AN APPROVED PETROLATUM BASED TAPE ENCAPSULATING ALL BOLTS IN ACCESS MANHOLE.
4. FOR MANHOLE GREATER THAN OR EQUAL TO 8 FEET DEEP, PROVIDE FIXED LADDER WITH FALL PROTECTION SYSTEM: MILLER SAFE-T CLIMB OR APPROVED EQUAL.
5. COATING FOR EXPOSED DUCTILE IRON AND STEEL PIPE AND FITTING IN MANHOLE SHALL CONFORM TO SPECIFICATION 02518.
6. FOR PAVEMENT REPAIR, SEE "PAVEMENT REPAIR NOTES" ON SHEET D-04.
7. ALL STRUCTURAL CONCRETE TO HAVE MIN. COMPRESSIVE STRENGTH OF 4,500 P.S.I. AS SPECIFIED IN SECTION 03315-CONCRETE FOR UTILITY CONSTRUCTION.



2 ACCESS MANHOLE AND MANWAY SECTION

SCALE: NTS. VIEW 1



3 ACCESS MANHOLE AND MANWAY SECTION

SCALE: NTS. VIEW 2

6" D.I. BLIND FLANGE w/3/4" CORPORATION STOP

6" FLANGED NRS GATE VALVE WITH BEVEL/ MITER GEAR AND 2" OPERATION NUT AS PER AWWA (C515, 250PSI.)

PRECAST MANHOLE BASE SECTION SEE SPECIFICATION SECTION 02082 "PRECAST CONCRETE MANHOLES"

HYDROPHILIC WATERSTOPS, SIKA HYDROTITE CJ, OR APPROVED EQUAL

CEMENT STABILIZED SAND (C.S.S.) FROM BOTTOM OF TRENCH TO ROADWAY BASE OR WITHIN 12" OF NATURAL GROUND, AS APPLICABLE. LIMITS OF CEMENT STABILIZED SAND TO EXTEND 2' BEYOND OUTSIDE WALL OF MANHOLE. USE FILTER FABRIC OR POLYETHYLENE WRAP AS A BOND BREAKER BETWEEN PIPE AND CEMENT STABILIZED SAND. ENSURE PROPER COMPACTION AND FILLING OF C.S.S. IN PIPE HAUNCHES.

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

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91713
MAY 2020

SEGMENT S3-A1

LARGE DIAMETER ACCESS MANHOLE AND MANWAY DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.

HORIZ: N.T.S.
VERT:

SHEET NO. 62 OF 81

DRAWING SCALE

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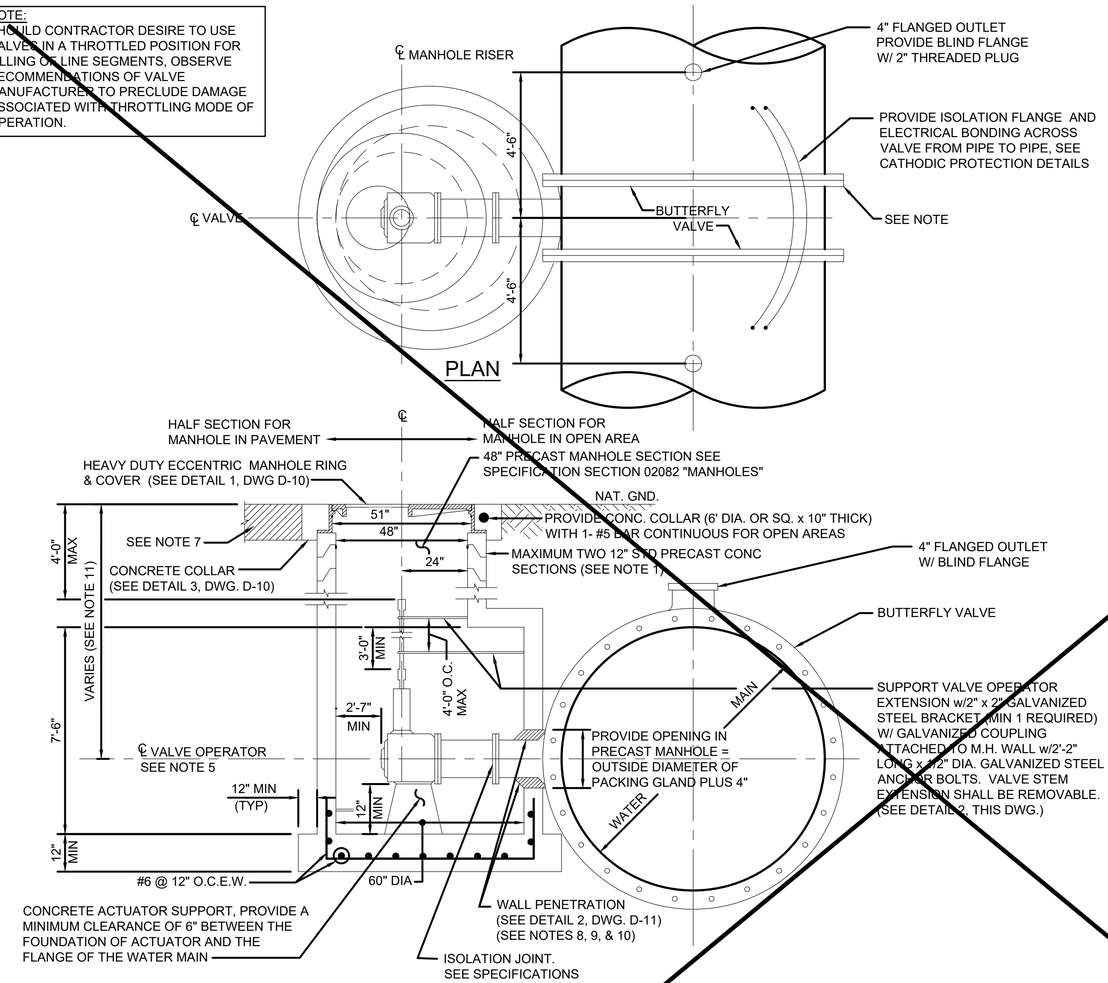
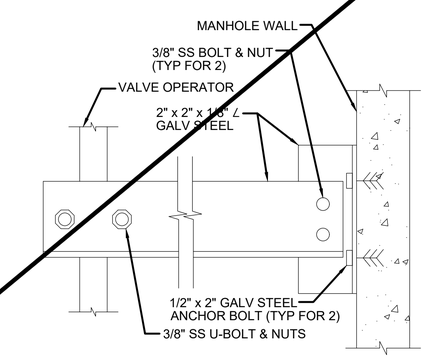
NOTE:
SHOULD CONTRACTOR DESIRE TO USE VALVES IN A THROTTLED POSITION FOR FILLING OF LINE SEGMENTS, OBSERVE RECOMMENDATIONS OF VALVE MANUFACTURER TO PRECLUDE DAMAGE ASSOCIATED WITH THROTTLING MODE OF OPERATION.



ELEVATION

1 BUTTERFLY VALVES w/OPERATOR MANHOLE

(FOR WATER MAINS 30-INCHES AND LARGER IN DIAMETER)



2 VALVE OPERATOR SUPPORT

GENERAL NOTES:

1. PROVIDE RAMNEK OR APPROVED EQUAL BETWEEN PRECAST SEGMENTS OF THE MANHOLE.
2. PROVIDE AN APPROVED PETROLEUM BASED TAPE ENCAPSULATING ALL BOLTS IN MANHOLES & VAULTS.
3. ALL JOINTS SHALL BE BONDED, BONDING DETAILS AT ISOLATION/ BUTTERFLY VALVES. SEE THE CATHODIC PROTECTION DETAILS.
4. 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 EXPOXY.
5. 2" OPERATING NUT ON LARGE DIAMETER BUTTERFLY VALVES SHALL TURN CLOCKWISE TO OPEN VALVE. ABOVE - GROUND & PLANT VALVES SHALL OPEN COUNTER CLOCKWISE.
6. PLACE MANHOLE ON COMPACTED (95% SPD) BOTTOM.
7. FOR PAVEMENT REPAIR, SEE "PAVEMENT REPAIR NOTES" ON SHEET D-04.
8. POLYSULFIDE SEALANT EXTERIOR SIDE OF WALL PENETRATION ONLY.
9. SOLID SYNTHETIC RUBBER INTERLOCKING MODULAR LINKS w/STAINLESS STEEL BOLTS AND NUTS, THUNDERLINE LINK SEAL, OR APPROVED EQUAL.
10. IF MANHOLE IS CAST IN PLACE CONSTRUCTION, PROVIDE DETAIL(S) FOR WALL PENETRATION INCLUDING EXTRA REINFORCING. DETAILS TO BE SEALED BY PROFESSIONAL ENGINEER LICENSED IN TEXAS.
11. FOR MANHOLES DEEPER THAN 16 FEET, INCREASE SIZE OF ACCESS MANHOLES TO 72-INCH OR 84-INCH DIAMETER & PROVIDE FIXED LADDER WITH SAF-T-CLIMB OR APPROVED EQUAL.
12. FOR CONCRETE COLLAR SEE MANHOLE COVER DETAILS

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Engineer
91713
Registration Number
MAY 2020
Date

SEGMENT S3-A1

VALVE AND SERVICE MANHOLE DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

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HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
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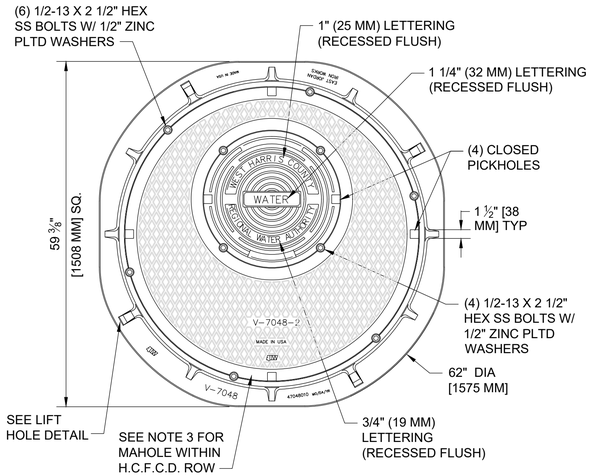
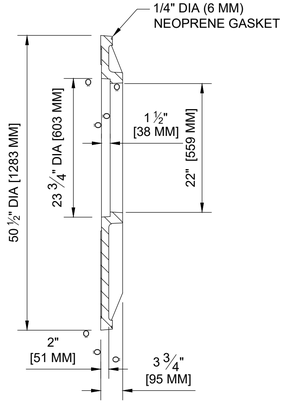
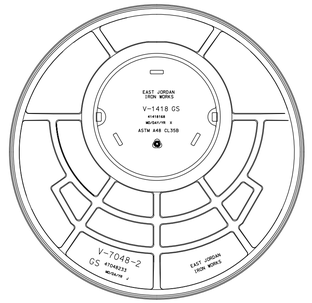
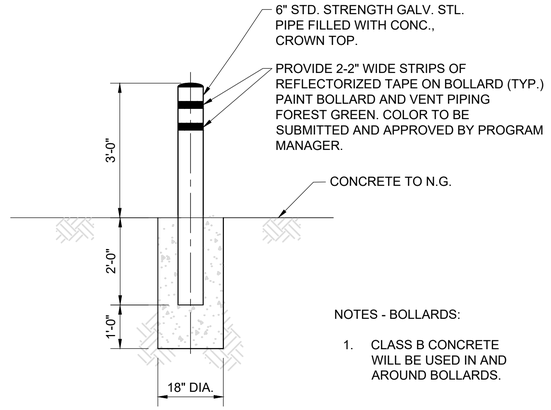




OUTER COVER SECTION



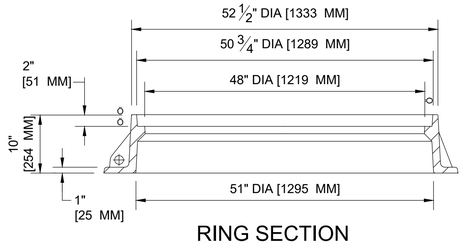
BOTTOM VIEW OF COVERS



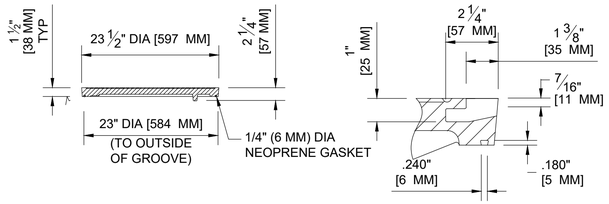
NOTES - BOLLARDS:

1. CLASS B CONCRETE WILL BE USED IN AND AROUND BOLLARDS.

2 BOLLARD DETAIL
SCALE: NTS

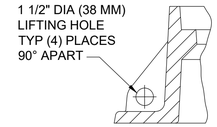


RING SECTION



INNER COVER SECTION

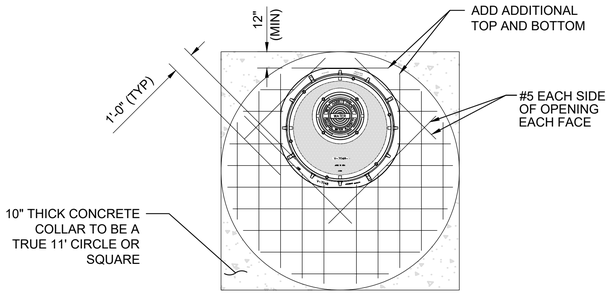
PICKHOLE & GASKET GROOVE DETAIL



LIFT HOLE DETAIL

1 HEAVY DUTY MANHOLE RING AND COVER

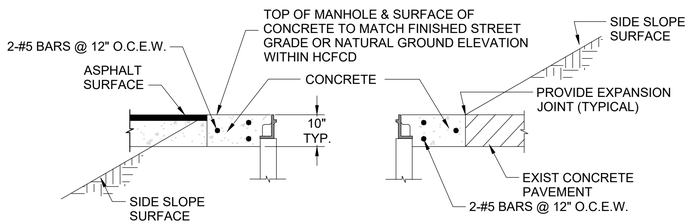
(MANHOLE RING AND COVER TO BE EAST JORDAN IRON WORKS (EJIW) OR EQUAL)
SCALE: NTS



PLAN

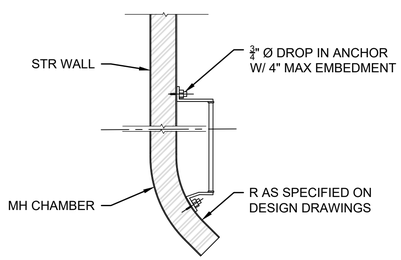
NOTES:

1. CONSTRUCT THE FINAL 2 FEET OF THE MANHOLE AND PLACE CONCRETE WITHIN BLOCKOUT AFTER STREET PAVEMENT HAS BEEN INSTALLED OR NATURAL GROUND HAS BEEN RE-ESTABLISHED.
2. ALL MANHOLE COVERS WITHIN HCFCD R.O.W. SHALL BE FLUSH WITH NATURAL GROUND, SEALED, AND BOLTED.
3. FOR HEAVY DUTY MANHOLE RING, SEE DETAIL 1, THIS DWG.
4. REINFORCEMENT DEPICTED IN DETAIL IS FOR CIRCULAR CONCRETE COLLAR CONFIGURATION. EXTEND REINFORCEMENT PER SPECIFICATIONS IF SQUARE CONCRETE COLLAR IS USED.
5. CENTER MANHOLE COVER IN A 6' DIAMETER COLLAR FOR BFV MANHOLE.
6. INSTALL SQUARE COLLAR w/BOLLARDS @ CORNERS WITHIN CENTERPOINT ENERGY CORRIDOR. SEE DETAIL 2, THIS SHEET.

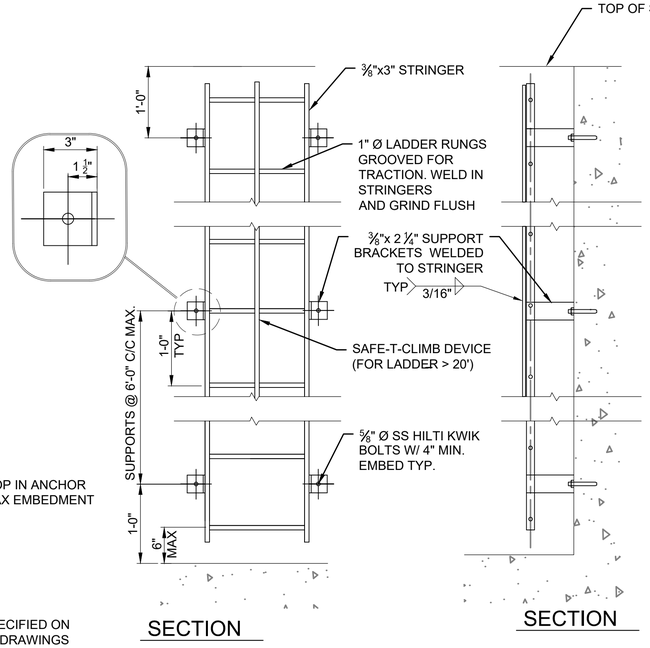


SECTION

3 CONCRETE COLLAR
SCALE: NTS



LADDER DETAIL
SCALE: NTS.



NOTES:

1. ALL LADDER MEMBERS SHALL BE GALVANIZED STEEL UNLESS OTHERWISE NOTED.

NO.	DATE	REVISION	APP.

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SEGMENT S3-A1

MANHOLE COVER DETAILS

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WASTE WATER	FACILITIES
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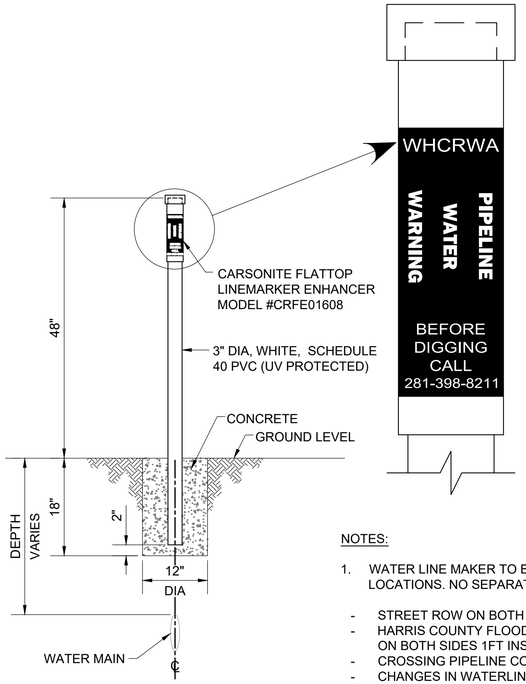
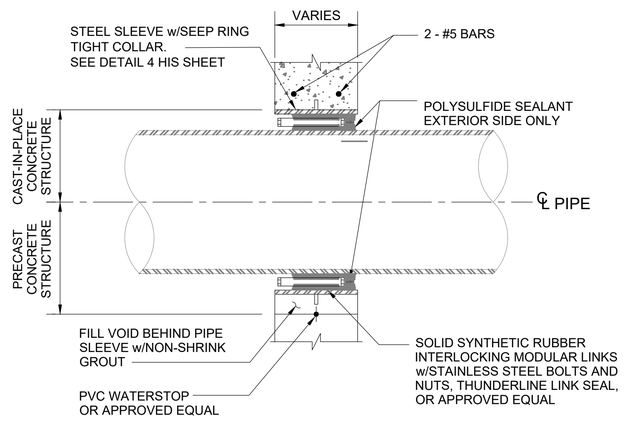


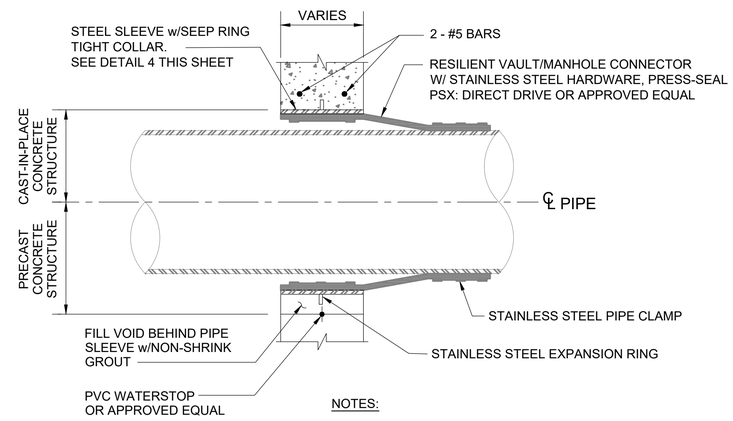
NOTES:

1. WATER LINE MAKER TO BE INSTALLED AT THE FOLLOWING LOCATIONS. NO SEPARATE PAY
   - STREET ROW ON BOTH SIDES 1FT INSIDE ROW.
   - HARRIS COUNTY FLOOD CONTROL DRAINAGE EASEMENTS ON BOTH SIDES 1FT INSIDE ROW.
   - CROSSING PIPELINE CORRIDORS ON BOTH SIDES.
   - CHANGES IN WATERLINE HORIZONTAL DIRECTION GREATER THAN 20 DEGREES.

1 -- WATER LINE MARKER

SCALE: NTS.



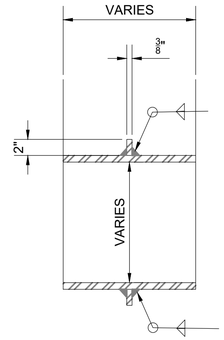


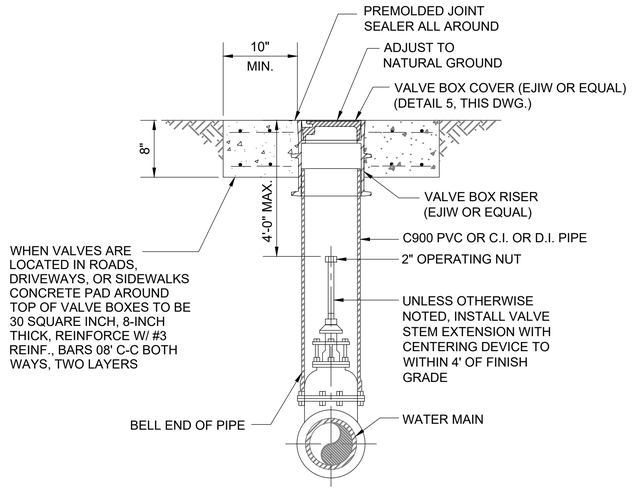
NOTES:

1. POLYSULFIDE SEALANT EXTERIOR SIDE ONLY.
2. SOLID SYNTHETIC RUBBER INTERLOCKING MODULAR LINKS w/STAINLESS STEEL BOLTS AND NUTS, THUNDERLINE LINK SEAL, OR APPROVED EQUAL.
3. IF MANHOLE IS CAST IN PLACE CONSTRUCTION, PROVIDE DETAIL(S) FOR WALL PENETRATION INCLUDING EXTRA REINFORCING. DETAILS TO BE SEALED BY A PROFESSIONAL ENGINEER LICENSED IN TEXAS.
4. CAST OR CORE PENETRATION W/IN MANUFACTURER'S SPECIFIED TOLERANCES FOR THE PRODUCT. INSTALL CONNECTOR PER MANUFACTURER RECOMMENDATIONS.
5. COORDINATE WITH SEAL MANUFACTURER FOR SIZE OF STEEL SLEEVE.

2 -- TYPICAL WALL PENETRATION DETAIL

SCALE: NTS.





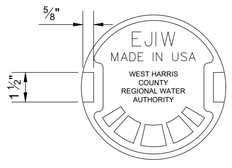
3 -- VALVE BOX DETAIL

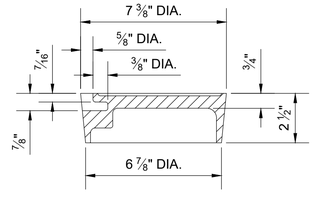
SCALE: NTS.

NOTES:
1. ~ WEIGHTS FRAME - 45 LBS, COVER - 10 LBS
2. MATERIAL - GRAY IRON ASTM A48 CL35B

4 -- STEEL SLEEVE W/SEEP RING

SCALE: NTS.





5 -- VALVE BOX COVER DETAIL

(EAST JORDAN IRON WORKS (EJIW) OR EQUAL)

SCALE: NTS.

D-11

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM
ENGINEERING CORPORATION

Binkley & Barfield consulting engineers
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CHRISTOPHER L. CAMPBELL
Engineer
91713
Registration Number
MAY 2020
Date

SEGMENT S3-A1

STANDARD
WATER LINE DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.	HORIZ: N.T.S. VERT:
SHEET NO. 65 OF 81	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PLOTTED: 5/28/2020 12:27 AM
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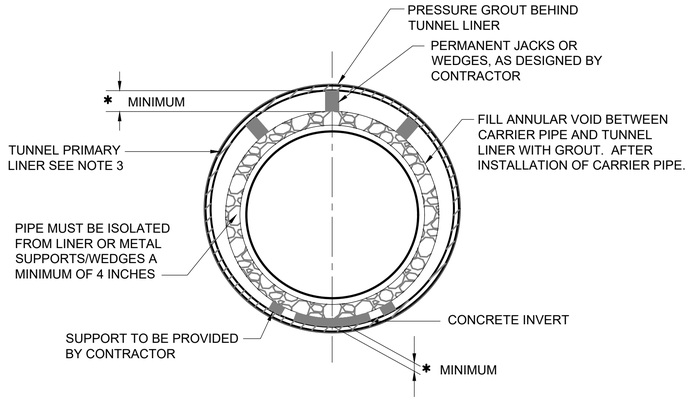


TUNNEL NOTES:

1. DETAIL IS FOR PRESTRESSED CONCRETE CYLINDER PIPE (STEEL PIPE 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. CONTRACTOR TO PROVIDE SUBMITTAL OF THE TUNNEL LINER DESIGN SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF TEXAS.
4. PROVIDE CATHODIC PROTECTION FOR LINER.
5. ALL JOINTS WITHIN LIMITS OF CASING MUST BE RESTRAINED.

* SEE SPECIFICATION 02425-TUNNEL EXCAVATION AND PRIMARY LINER

1 / --- TUNNEL DETAIL

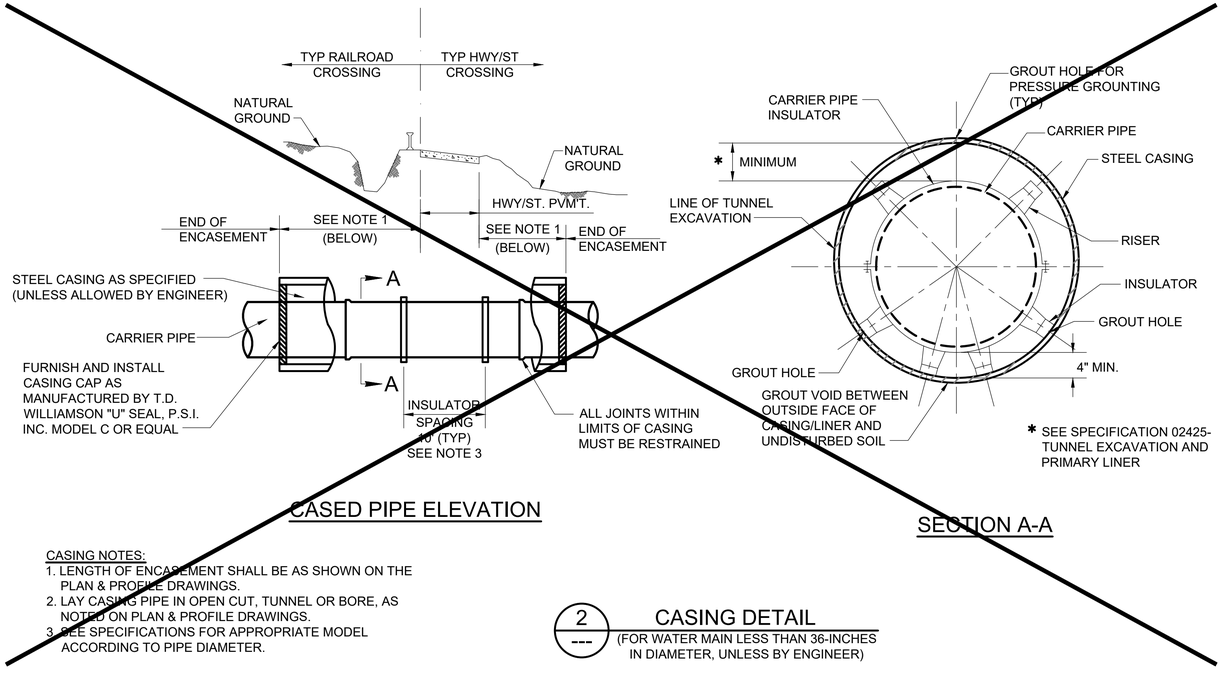
(FOR WATER MAIN 36-INCHES DIAMETER AND LARGER)

MINIMUM TUNNEL LINER / CASING SIZES AND THICKNESS

LOCATION	WATER MAIN DIAMETER (IN)	PIPE MATERIAL	NOMINAL DIA/WALL THICKNESS (NOTE 1) (IN)		CASING I.D. / WALL THICKNESS
			2-FLANGE LINER PLATE (SEE NOTE 2)	4-FLANGE LINER PLATE	
STA. 9+53 TO STA. 10+74	42	PCCP BAR-WRAPPED STEEL	66/0.0747 62/0.0747 56/0.0747	66/0.1046 62/0.1046 56/0.1046	65.374/0.313 59.374/0.313 59.374/0.313
STA. 35+90 TO STA. 37+60	42	PCCP BAR-WRAPPED STEEL	66/0.0747 62/0.0747 56/0.0747	66/0.1046 62/0.1046 56/0.1046	65.374/0.313 59.374/0.313 59.374/0.313
STA. 72+85 TO STA. 73+91	42	PCCP BAR-WRAPPED STEEL	66/0.0747 62/0.0747 56/0.0747	66/0.1046 62/0.1046 56/0.1046	65.374/0.313 59.374/0.313 59.374/0.313
STA. 84+71 TO STA. 85+51	42	PCCP BAR-WRAPPED STEEL	66/0.0747 62/0.0747 56/0.0747	66/0.1046 62/0.1046 56/0.1046	65.374/0.313 59.374/0.313 59.374/0.313
STA. 103+14 TO STA. 104+50	42	PCCP BAR-WRAPPED STEEL	66/0.0747 62/0.0747 56/0.0747	66/0.1046 62/0.1046 56/0.1046	65.374/0.313 59.374/0.313 59.374/0.313
STA. 107+74 TO STA. 108+76	42	PCCP BAR-WRAPPED STEEL	66/0.0747 62/0.0747 56/0.0747	66/0.1046 62/0.1046 56/0.1046	65.374/0.313 59.374/0.313 59.374/0.313
STA. 115+11 TO STA. 115+86	42	PCCP BAR-WRAPPED STEEL	66/0.0747 62/0.0747 56/0.0747	66/0.1046 62/0.1046 56/0.1046	65.374/0.313 59.374/0.313 59.374/0.313
STA. 128+17 TO STA. 131+45	42	PCCP BAR-WRAPPED STEEL	66/0.0747 62/0.0747 56/0.0747	66/0.1046 62/0.1046 56/0.1046	65.374/0.313 59.374/0.313 59.374/0.313
STA. 136+02 TO STA. 136+77	42	PCCP BAR-WRAPPED STEEL	66/0.0747 62/0.0747 56/0.0747	66/0.1046 62/0.1046 56/0.1046	65.374/0.313 59.374/0.313 59.374/0.313
STA. 143+02 TO STA. 143+77	42	PCCP BAR-WRAPPED STEEL	66/0.0747 62/0.0747 56/0.0747	66/0.1046 62/0.1046 56/0.1046	65.374/0.313 59.374/0.313 59.374/0.313

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.
3. ALL JOINTS WITHIN LIMITS OF CASING MUST BE RESTRAINED.



CASING NOTES:

1. LENGTH OF ENCASEMENT SHALL BE AS SHOWN ON THE PLAN & PROFILE DRAWINGS.
2. LAY CASING PIPE IN OPEN CUT, TUNNEL OR BORE, AS NOTED ON PLAN & PROFILE DRAWINGS.
3. SEE SPECIFICATIONS FOR APPROPRIATE MODEL ACCORDING TO PIPE DIAMETER.

2 / --- CASING DETAIL

(FOR WATER MAIN LESS THAN 36-INCHES IN DIAMETER, UNLESS BY ENGINEER)

NO.	DATE	REVISION	APP.

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MAY 2020
Date

SEGMENT S3-A1

TUNNEL AND CASING DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.

HORIZ: N.T.S.
VERT:

SHEET NO. 66 OF 81

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

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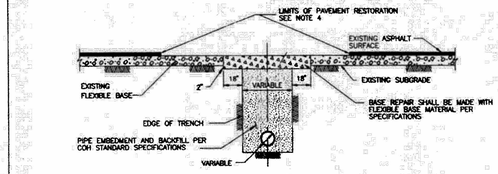
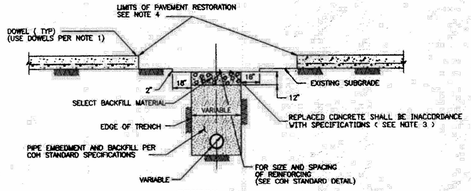


SECTION (A)

REPAIR OF FLEXIBLE BASE PAVEMENT



SECTION (B)

REPAIR OF REINFORCED CONCRETE PAVEMENT

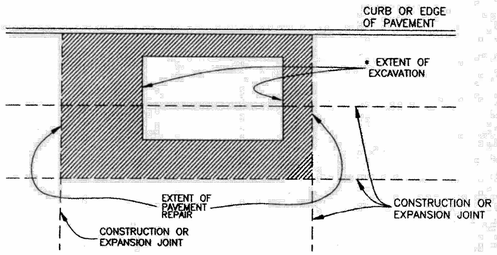
NOTE:

1. EXPOSE 15" OF REINFORCING STEEL AT PROPOSED SAWED JOINT. IF NO REINFORCING STEEL EXISTS, USE HORIZONTAL DOWELS. HORIZONTAL DOWELS SHALL BE # 6 BARS, 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 FOR PAVEMENT RESTORATION LIMITS.

CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION	
PAVEMENT REPAIR DETAILS FOR STREET CUTS (NOT TO SCALE)	
APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: OCT-01-2002	DWG NO: 02902-01

CONCRETE PAVEMENT RESTORATION

AGE OF PAVEMENT LESS THAN OR EQUAL TO 5 YEARS



NOTES:

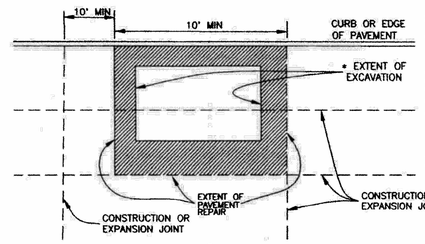
1. EXTENT OF PAVEMENT REPAIR SHALL BE PERPENDICULAR AND PARALLEL TO TRAVEL WAY.
2. REPLACE ENTIRE PANEL WIDTH AND LENGTH TO NEAREST CONSTRUCTION OR EXPANSION JOINT BEYOND EDGE OF EXCAVATION.
3. SAW CUT AND EXPOSE 15" OF REINFORCING STEEL WITHIN EXISTING PAVEMENT. PROVIDE HORIZONTAL DOWELS (PER SPECIFICATION SECTION 02902-01) 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 SPECIFICATIONS 02764 AND 02767.

* EXTENT OF EXCAVATION INCLUDES 18" OVERCUT AS SHOWN ON STANDARD DETAIL 02902-01.

CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP	
Street Cut Pavement Replacement CONCRETE PAVEMENT LESS THAN 5 YRS IN AGE (NOT TO SCALE)	
APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JUNE 2002	DWG NO: 02951-01

CONCRETE PAVEMENT RESTORATION

AGE OF PAVEMENT GREATER THAN 5 YEARS



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 EDGE OF EXCAVATION IS LESS THAN 10' FROM EXISTING CONSTRUCTION OR EXPANSION JOINT, REPLACE PAVEMENT TO EXISTING JOINT.
4. SAW CUT AND EXPOSE 15" OF REINFORCING STEEL AROUND EDGE OF PANEL REPLACEMENT. PROVIDE HORIZONTAL DOWELS (PER SPECIFICATION SECTION 02902-01) 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 SPECIFICATIONS 02764 AND 02767.

* EXTENT OF EXCAVATION INCLUDES 18" OVERCUT AS SHOWN ON STANDARD DETAIL 02902-01.

CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP	
Street Cut Pavement Replacement CONCRETE PAVEMENT OVER 5 YRS IN AGE (NOT TO SCALE)	
APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JUNE 2002	DWG NO: 02951-02

NO.	DATE	REVISION	APP.

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SEGMENT S3-A1

PAVEMENT REPAIR DETAILS

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.	HORIZ: VERT:
SHEET NO. 67 OF 81	DRAWING SCALE

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CATHODIC PROTECTION TEST STATION SCHEDULE				
TEST STATION NO.	STATION NO.	TEST STATION TYPE	STRUCTURES	DETAIL REFERENCE
1	7+44	INSULATED JOINT TEST STATION	CONNECT TO S3-A2	3-CP3, 4-CP3, 1-CP6, 1-CP7, AND 3-CP7
2	7+75	INSULATED JOINT TEST STATION	4" ARV (DWG D-07 DETAIL 1&2)	3-CP3, 4-CP3, 1-CP6, 1-CP7, AND 3-CP7
3	8+00	FOREIGN PIPELINE BOND TEST STATION	PARALLEL 36" KM GAS	1-CP4, 2-CP4, 1-CP6, AND 1-CP7
4	9+53	CASING TEST STATION	SOUTH END CASING	1-CP3, 2-CP3, 1-CP6, AND 1-CP7
5	10+77	CASING TEST STATION	NORTH END CASING	1-CP3, 2-CP3, 1-CP6, AND 1-CP7
6	11+15	INSULATED JOINT TEST STATION	4" ARV (DWG D-07 DETAIL 1&2)	3-CP3, 4-CP3, 1-CP6, 1-CP7, AND 3-CP7
7	18+00	FOREIGN PIPELINE BOND TEST STATION	PARALLEL 36" KM GAS	1-CP4, 2-CP4, 1-CP6, AND 1-CP7
8	25+00	INSULATED JOINT TEST STATION	4" ARV (DWG D-07 DETAIL 1&2)	3-CP3, 4-CP3, 1-CP6, 1-CP7, AND 3-CP7
9	28+00	FOREIGN PIPELINE BOND TEST STATION	PARALLEL 36" KM GAS	1-CP4, 2-CP4, 1-CP6, AND 1-CP7
10	35+90	CASING TEST STATION	SOUTH END CASING	1-CP3, 2-CP3, 1-CP6, AND 1-CP7
11	37+60	CASING TEST STATION	NORTH END CASING	1-CP3, 2-CP3, 1-CP6, AND 1-CP7
12	38+00	FOREIGN PIPELINE BOND TEST STATION	PARALLEL 36" KM GAS	1-CP4, 2-CP4, 1-CP6, AND 1-CP7
13	39+10	INSULATED JOINT TEST STATION	4" ARV (DWG D-07 DETAIL 1&2)	3-CP3, 4-CP3, 1-CP6, 1-CP7, AND 3-CP7
14	45+40	FOREIGN PIPELINE TEST STATION	8" CENTERPOINT GAS	3-CP4, 4-CP4, 2-CP6, AND 1-CP7
15	48+00	FOREIGN PIPELINE BOND TEST STATION	PARALLEL 36" KM GAS	1-CP4, 2-CP4, 1-CP6, AND 1-CP7
16	58+00	FOREIGN PIPELINE BOND TEST STATION	PARALLEL 36" KM GAS	1-CP4, 2-CP4, 1-CP6, AND 1-CP7
17	58+64	INSULATED JOINT TEST STATION	4" ARV (DWG D-07 DETAIL 1&2)	3-CP3, 4-CP3, 1-CP6, 1-CP7, AND 3-CP7
18	68+00	FOREIGN PIPELINE BOND TEST STATION	PARALLEL 36" KM GAS	1-CP4, 2-CP4, 1-CP6, AND 1-CP7
19	72+85	CASING TEST STATION	SOUTH END CASING	1-CP3, 2-CP3, 1-CP6, AND 1-CP7
20	73+91	CASING TEST STATION	NORTH END CASING	1-CP3, 2-CP3, 1-CP6, AND 1-CP7
21	78+00	FOREIGN PIPELINE BOND TEST STATION	PARALLEL 36" KM GAS	1-CP4, 2-CP4, 1-CP6, AND 1-CP7
22	84+71	CASING TEST STATION	SOUTH END CASING	1-CP3, 2-CP3, 1-CP6, AND 1-CP7
23	85+51	CASING TEST STATION	NORTH END CASING	1-CP3, 2-CP3, 1-CP6, AND 1-CP7
24	85+73	INSULATED JOINT TEST STATION	4" ARV (DWG D-07 DETAIL 1&2)	3-CP3, 4-CP3, 1-CP6, 1-CP7, AND 3-CP7
25	88+00	FOREIGN PIPELINE BOND TEST STATION	PARALLEL 36" KM GAS	1-CP4, 2-CP4, 1-CP6, AND 1-CP7
26	98+00	FOREIGN PIPELINE BOND TEST STATION	PARALLEL 36" KM GAS	1-CP4, 2-CP4, 1-CP6, AND 1-CP7
27	103+14	CASING TEST STATION	SOUTH END CASING	1-CP3, 2-CP3, 1-CP6, AND 1-CP7
28	104+34	CASING TEST STATION	NORTH END CASING	1-CP3, 2-CP3, 1-CP6, AND 1-CP7
29	104+57	INSULATED JOINT TEST STATION	4" ARV (DWG D-07 DETAIL 1&2)	3-CP3, 4-CP3, 1-CP6, 1-CP7, AND 3-CP7
30	107+50	FOREIGN PIPELINE BOND TEST STATION	PARALLEL 36" KM GAS	1-CP4, 2-CP4, 1-CP6, AND 1-CP7
31	108+01	CASING TEST STATION	SOUTH END CASING	1-CP3, 2-CP3, 1-CP6, AND 1-CP7
32	108+76	CASING TEST STATION	NORTH END CASING	1-CP3, 2-CP3, 1-CP6, AND 1-CP7
33	115+11	CASING TEST STATION	SOUTH END CASING	1-CP3, 2-CP3, 1-CP6, AND 1-CP7
34	115+86	CASING TEST STATION	NORTH END CASING	1-CP3, 2-CP3, 1-CP6, AND 1-CP7
35	118+00	FOREIGN PIPELINE BOND TEST STATION	PARALLEL 36" KM GAS	1-CP4, 2-CP4, 1-CP6, AND 1-CP7
36	123+25	INSULATED JOINT TEST STATION	4" ARV (DWG D-07 DETAIL 1&2)	3-CP3, 4-CP3, 1-CP6, 1-CP7, AND 3-CP7
37	128+00	FOREIGN PIPELINE BOND TEST STATION	PARALLEL 36" KM GAS	1-CP4, 2-CP4, 1-CP6, AND 1-CP7
38	129+02	CASING TEST STATION	SOUTH END CASING	1-CP3, 2-CP3, 1-CP6, AND 1-CP7
39	131+45	CASING TEST STATION	NORTH END CASING	1-CP3, 2-CP3, 1-CP6, AND 1-CP7
40	131+75	INSULATED JOINT TEST STATION	4" ARV (DWG D-07 DETAIL 1&2)	3-CP3, 4-CP3, 1-CP6, 1-CP7, AND 3-CP7
41	136+02	CASING TEST STATION	SOUTH END CASING	1-CP3, 2-CP3, 1-CP6, AND 1-CP7
42	136+77	CASING TEST STATION	NORTH END CASING	1-CP3, 2-CP3, 1-CP6, AND 1-CP7
43	138+00	FOREIGN PIPELINE BOND TEST STATION	PARALLEL 36" KM GAS	1-CP4, 2-CP4, 1-CP6, AND 1-CP7
44	143+02	CASING TEST STATION	SOUTH END CASING	1-CP3, 2-CP3, 1-CP6, AND 1-CP7
45	143+77	CASING TEST STATION	NORTH END CASING	1-CP3, 2-CP3, 1-CP6, AND 1-CP7
46	146+77	BUTTERFLY VALVE ISOLATION JOINT TEST STATION	42" BFV (DWG D-09 DETAIL 1)	1-CP5, 2-CP5, 1-CP6, AND 1-CP7
47	147+00	INSULATED JOINT TEST STATION	CONNECT TO SSWL SEGMENT C	3-CP3, 4-CP3, 1-CP6, 1-CP7, AND 3-CP7

IMPRESSED ANODE & RECTIFIER SCHEDULE											
DIA	PIPE MATERIAL	RECTIFIER NO.	STATION NO.	SIZE		ANODES		DIA (INCHES)	ANODE WELL DEPTH (FEET)	STRUCTURE	DETAIL REFERENCE
				AMPS	VOLTS	NO.	TYPE				
42"	DIELECTRIC COATED STEEL (C200)	1	69+78	10	15	4	High Silicon Cast Iron (2684)	10	118	42" WATER LINE	1-CP2, 2-CP2, 3-CP2, 4-CP2, 5-CP2, AND 2-CP6
42"	MORTAR COATED STEEL (C301/C303)	1	34+89	25	25	14	High Silicon Cast Iron (3884)	12	238	42" WATER LINE	1-CP2, 2-CP2, 3-CP2, 4-CP2, 5-CP2, AND 2-CP6
		2	104+67								
42"	DUCTILE IRON W/ POLYETHYLENE COATING (C151)	1	69+78	20	20	13	High Silicon Cast Iron (2684)	10	226	42" WATER LINE	1-CP2, 2-CP2, 3-CP2, 4-CP2, 5-CP2, AND 2-CP6

GALVANIC ANODE BED SCHEDULE						
DIA	PIPE MATERIAL	STATION NO.	ANODES		SPACING (FT)	DETAIL REFERENCE
			NO.	TYPE		
42"	DIELECTRIC COATED STEEL (C200)	13+96	12	60 LB. MAGNESIUM	10	2-CP6, 2-CP7, 1-CP8, 2-CP8, AND 3-CP8
		41+87	12	60 LB. MAGNESIUM	10	2-CP6, 2-CP7, 1-CP8, 2-CP8, AND 3-CP8
		69+78	12	60 LB. MAGNESIUM	10	2-CP6, 2-CP7, 1-CP8, 2-CP8, AND 3-CP8
		97+70	12	60 LB. MAGNESIUM	10	2-CP6, 2-CP7, 1-CP8, 2-CP8, AND 3-CP8
		125+61	12	60 LB. MAGNESIUM	10	2-CP6, 2-CP7, 1-CP8, 2-CP8, AND 3-CP8

NOTE: THE IMPRESSED AND GALVANIC SCHEDULE IS APPLICABLE FOR THE SELECTED PROJECT PIPE MATERIAL SELECTION OF IMPRESSED OR GALVANIC SYSTEM TO BE MADE BY CONTRACTOR

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM ENGINEERING CORPORATION

STATE OF TEXAS
CHRISTOPHER L. SHELDON
112184
LICENSED PROFESSIONAL ENGINEER

01/23/2020
V&A Consulting Engineers, Inc
Texas Registered Engineering Firm F-9154

CONTRACT S3-A1

CATHODIC PROTECTION DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

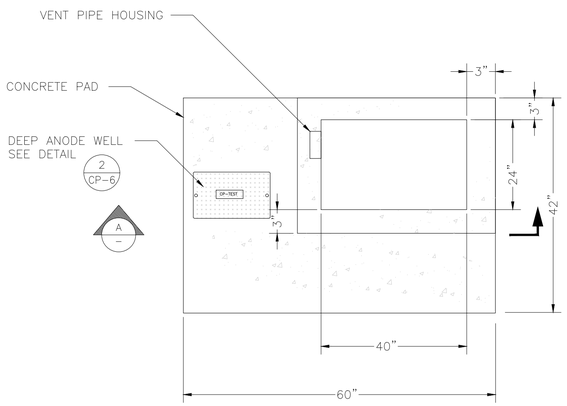
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO. CP-1	HORIZ: VERT:
SHEET NO. 68 OF 81	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: V:\Projects\2019\0001 Thru 0099\19-0026 WHCRWA SWSP\Drawings\CP Drawings\Segment 3\3A1\CP Drawings_3A1_20200428.dwg PLOT STYLE: _SWSP 34x22 PDF.ctb PLOTTED: 4/28/2020 12:44 PM

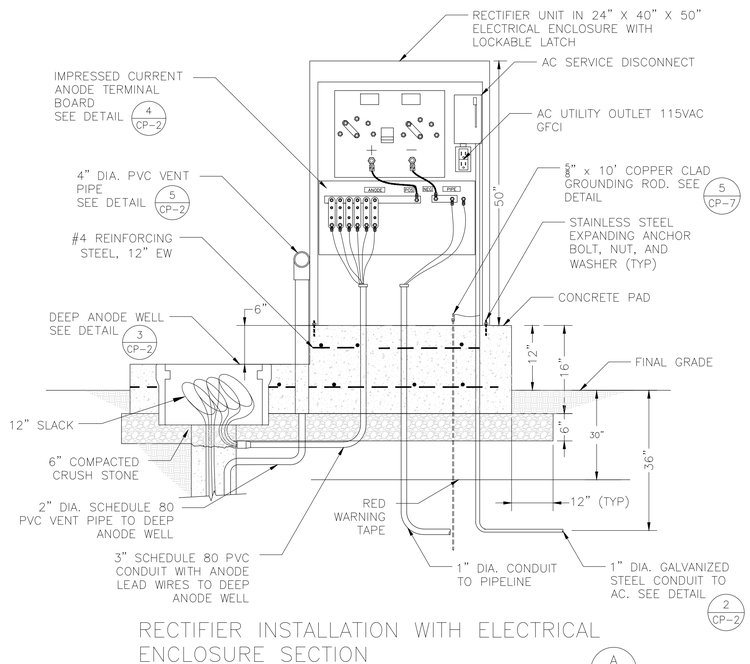


NOTE:

RECTIFIER DOOR SHALL FACE AWAY FROM THE STREET

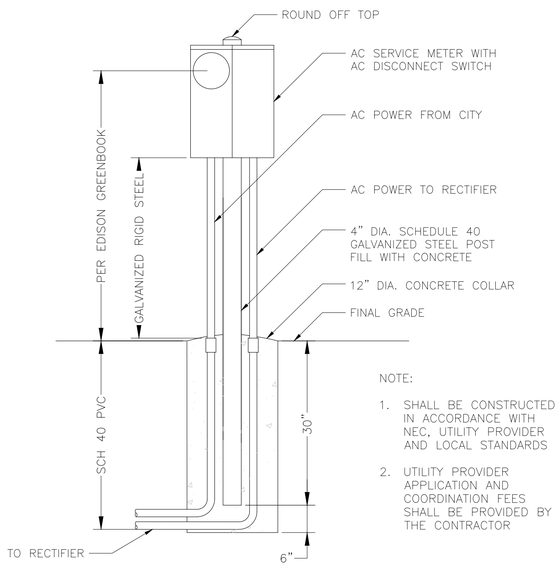
CATHODIC PROTECTION RECTIFIER AND DEEP ANODE WELL INSTALLATION PLAN VIEW

NTS — 1 CP-2



RECTIFIER INSTALLATION WITH ELECTRICAL ENCLOSURE SECTION

NTS — A –

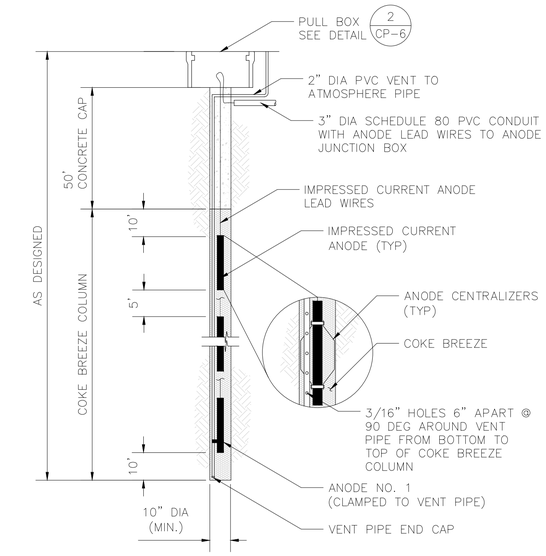


NOTE:

1. SHALL BE CONSTRUCTED IN ACCORDANCE WITH NEC, UTILITY PROVIDER AND LOCAL STANDARDS
2. UTILITY PROVIDER APPLICATION AND COORDINATION FEES SHALL BE PROVIDED BY THE CONTRACTOR

AC SERVICE METER

NTS — 2 CP-2

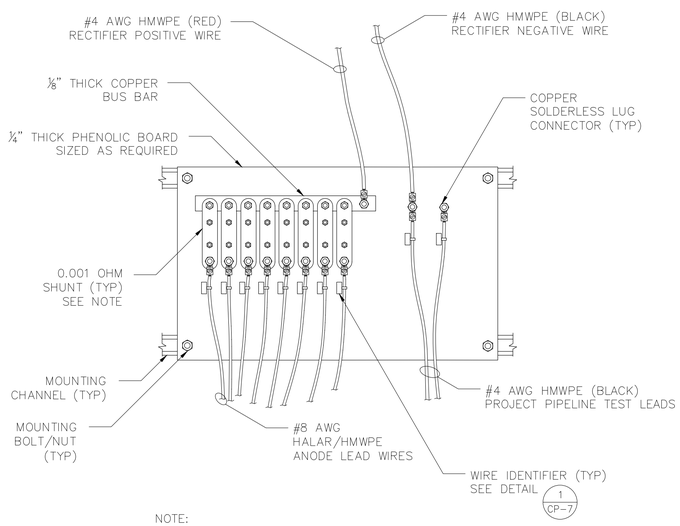


NOTE:

STEEL CASING OPTIONAL

DEEP ANODE WELL DETAIL

NTS — 3 CP-2

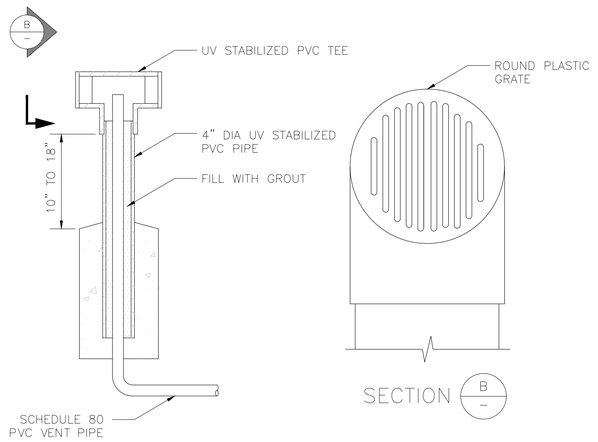


NOTE:

SEE IMPRESSED ANODE SCHEDULE FOR TYPE AND QUANTITY.

IMPRESSED CURRENT ANODE TERMINAL BOARD DETAIL

NTS — 4 CP-2



VENT PIPE HOUSING

NTS — 5 CP-2

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM ENGINEERING CORPORATION

STATE OF TEXAS — CHRISTOPHER L. SHELDON — 112184 — LICENSED PROFESSIONAL ENGINEER

01/23/2020
V&A Consulting Engineers, Inc
Texas Registered Engineering Firm F-9154

CONTRACT S3-A1

CATHODIC PROTECTION DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO. CP-2	HORIZ: / VERT:
SHEET NO. 69 OF 81	DRAWING SCALE

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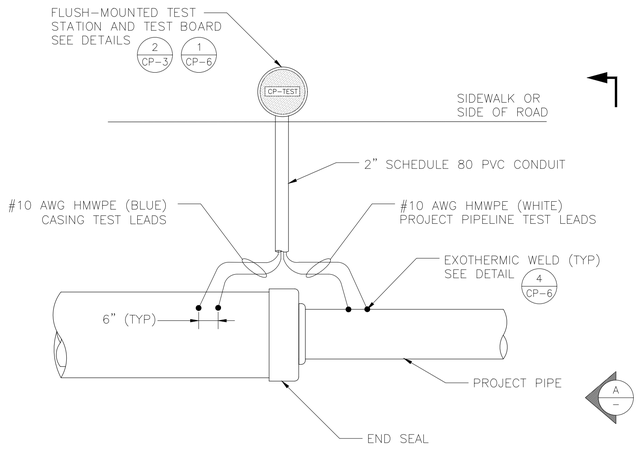
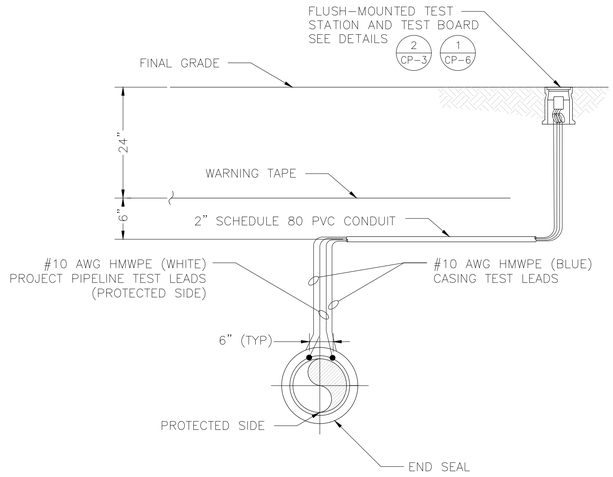
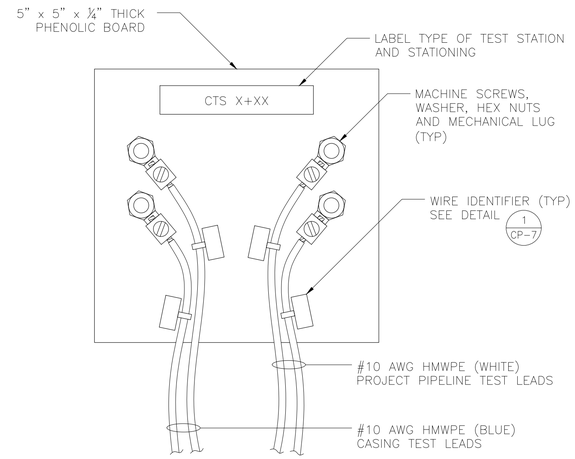


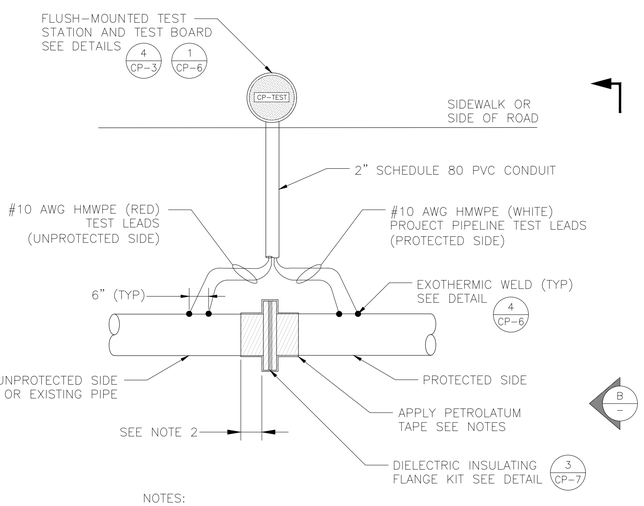
CASING TEST STATION (CTS) PLAN VIEW
NTS
1 CP-3



CASING TEST STATION (CTS) SECTION
NTS
A –



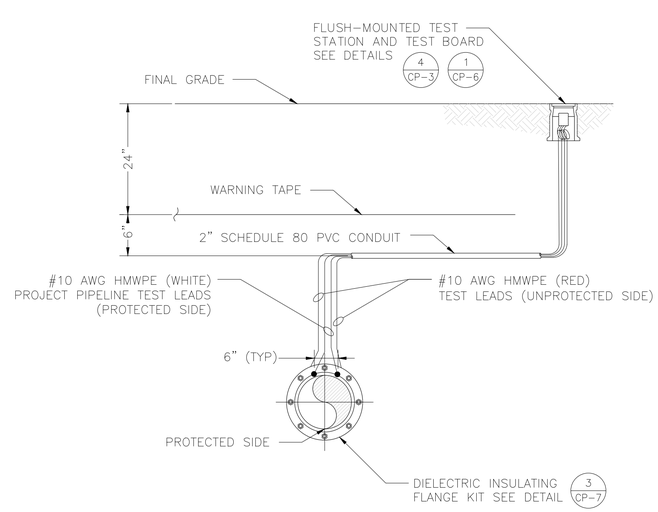
CASING TEST STATION (CTS) TERMINAL BOARD DETAIL
NTS
2 CP-3



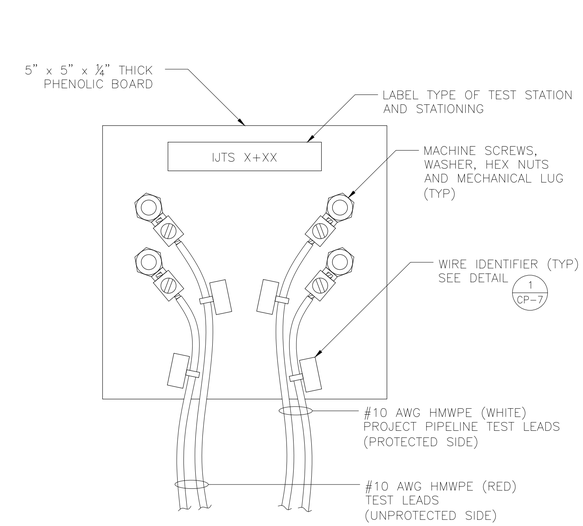
NOTES:

1. DO NOT APPLY PETROLATUM TAPE IF COUPLING IS LOCATED ABOVE GRADE OR IN A VAULT.
2. WRAP FITTING IN PETROLATUM WAX TAPE AND OVERLAP PIPE BY 12".

INSULATING JOINT TEST STATION (IJTS) PLAN VIEW
NTS
3 CP-3



INSULATING JOINT TEST STATION (IJTS) PROFILE VIEW
NTS
B –



INSULATING JOINT TEST STATION (IJTS) TERMINAL BOARD DETAIL
NTS
4 CP-3

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM ENGINEERING CORPORATION

STATE OF TEXAS
CHRISTOPHER L. SHELDON
112184
LICENSED PROFESSIONAL ENGINEER
01/23/2020
V&A Consulting Engineers, Inc
Texas Registered Engineering Firm F-9154

CONTRACT S3-A1

CATHODIC PROTECTION DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO. CP-3	HORIZ: VERT:
SHEET NO. 70 OF 81	DRAWING SCALE

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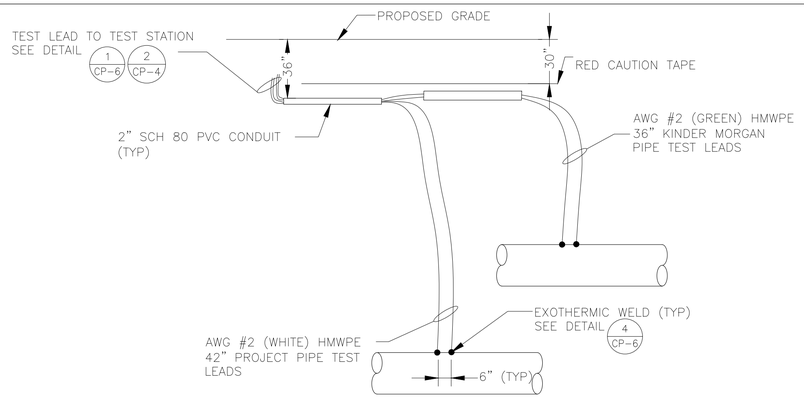
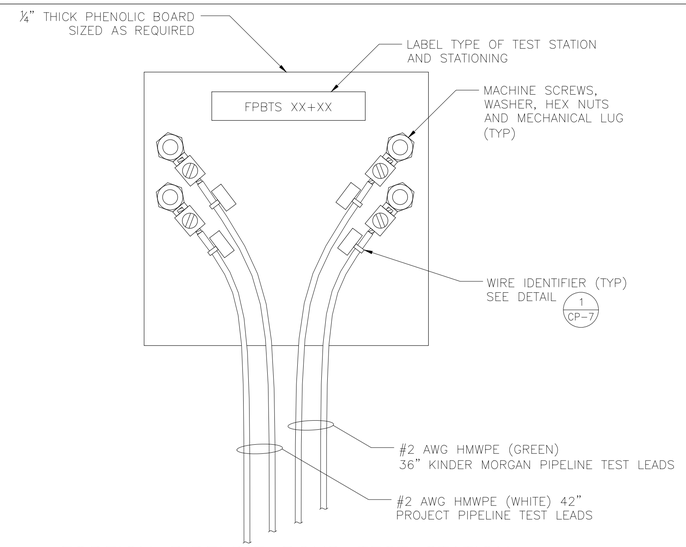


NOTES:

1. CONNECTIONS TO FOREIGN PIPELINES SHALL BE MADE BY THE OWNER'S REPRESENTATIVE.

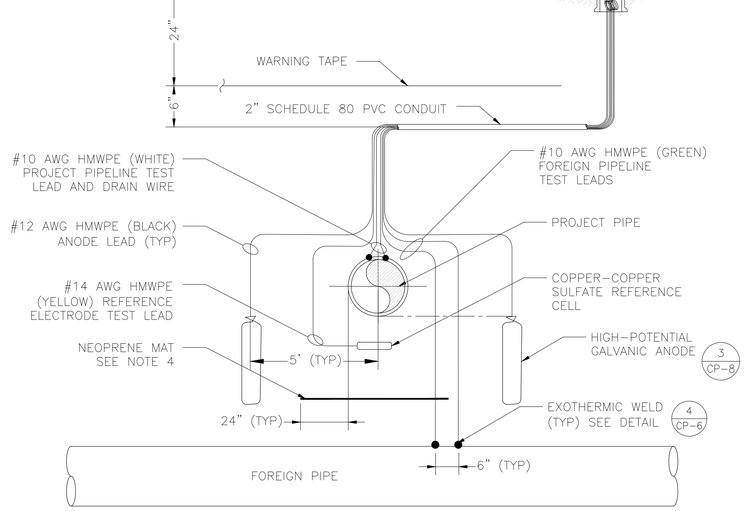
FOREIGN PIPELINE BOND TEST STATION (FPBTS)

NTS — 1/CP-4



FOREIGN PIPELINE BOND TEST STATION (FPBTS) TERMINAL BOARD DETAIL

NTS — 2/CP-4

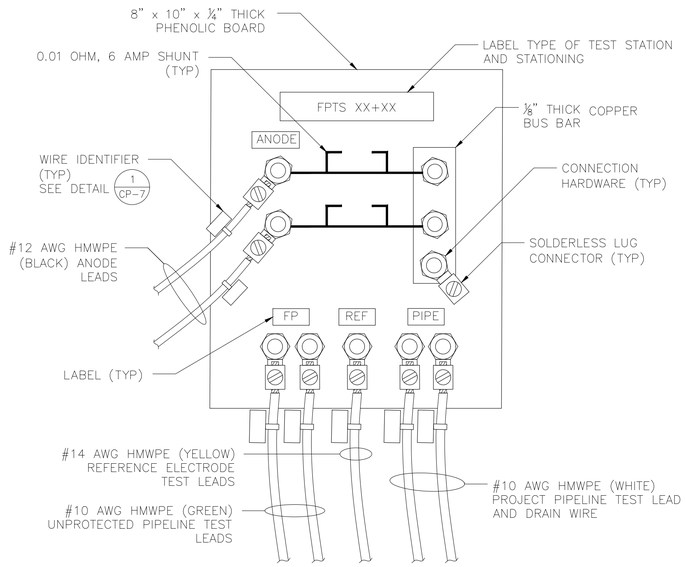


NOTES:

1. CONNECTIONS TO FOREIGN PIPELINES SHALL BE MADE BY THE OWNER'S REPRESENTATIVE.
2. INSTALL COPPER-COPPER SULFATE REFERENCE CELL MIDWAY BETWEEN PROJECT PIPELINE AND NEOPRENE MAT.
3. TOP OF ANODE SHALL BE ALIGNED WITH THE BOTTOM OF THE PROJECT PIPELINE.
4. NEOPRENE MAT SHALL EXTEND 24" (MIN.) BEYOND PROJECT PIPE EDGE ON EACH SIDE, SEE DETAIL. 4/CP-7

FOREIGN PIPELINE TEST STATION (FPTS)

NTS — 3/CP-4



FOREIGN PIPELINE TEST STATION (FPTS) TERMINAL BOARD DETAIL

NTS — 4/CP-4

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM ENGINEERING CORPORATION

CHRISTOPHER L. SHELDON 112184 LICENSED PROFESSIONAL ENGINEER
01/23/2020
V&A Consulting Engineers, Inc
Texas Registered Engineering Firm F-9154

CONTRACT S3-A1

CATHODIC PROTECTION DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO. CP-4	HORIZ: VERT:
SHEET NO. 71 OF 81	DRAWING SCALE

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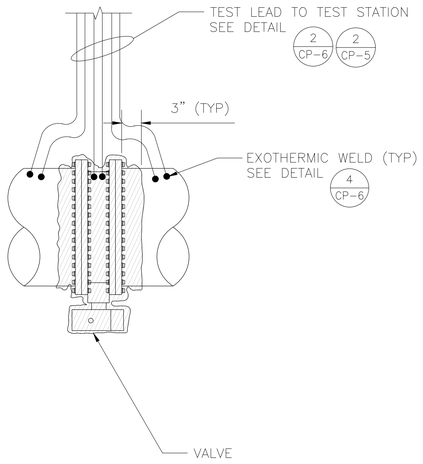
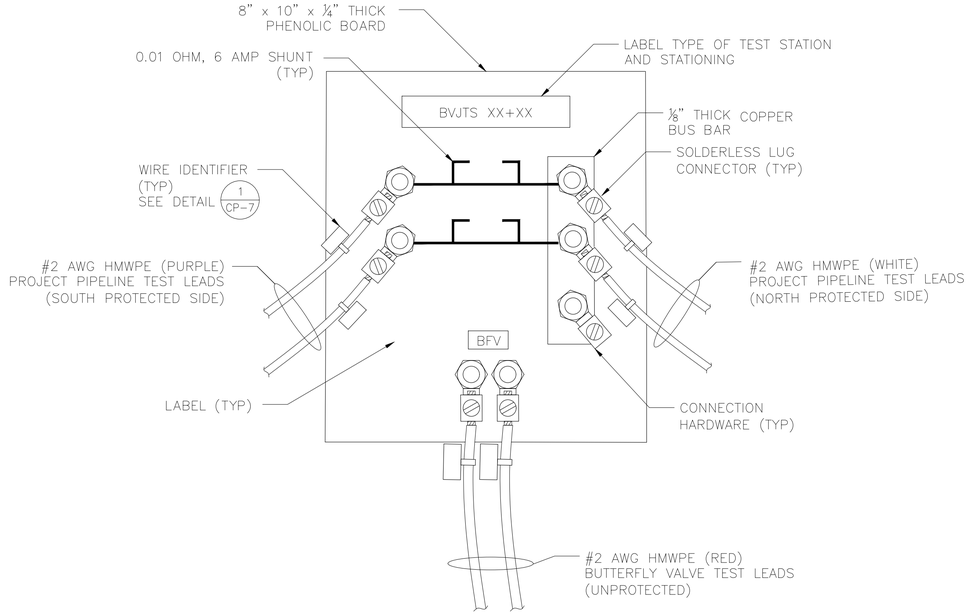


BUTTERFLY VALVE ISOLATION JOINT TEST STATION (BVJTS)

NTS

1
CP-5



BUTTERFLY VALVE ISOLATION JOINT TEST STATION (BVJTS) TERMINAL BOARD DETAIL

NTS

2
CP-5

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM ENGINEERING CORPORATION

STATE OF TEXAS
CHRISTOPHER L. SHELDON
112184
LICENSED PROFESSIONAL ENGINEER

01/23/2020
V&A Consulting Engineers, Inc
Texas Registered Engineering Firm F-9154

CONTRACT S3-A1

CATHODIC PROTECTION DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO. CP-5	HORIZ: VERT:
SHEET NO. 72 OF 81	DRAWING SCALE

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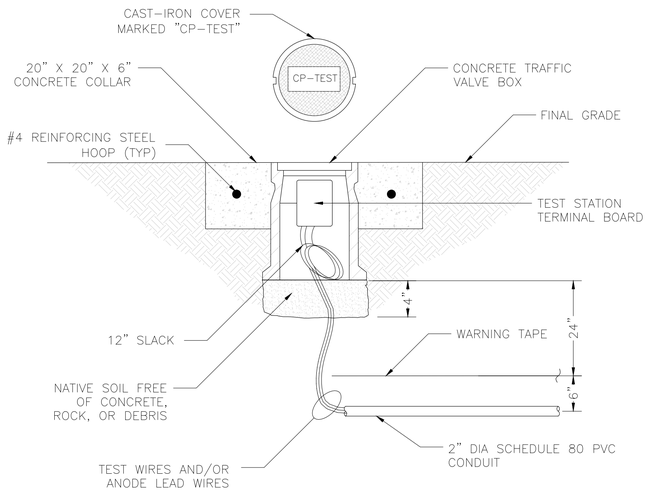
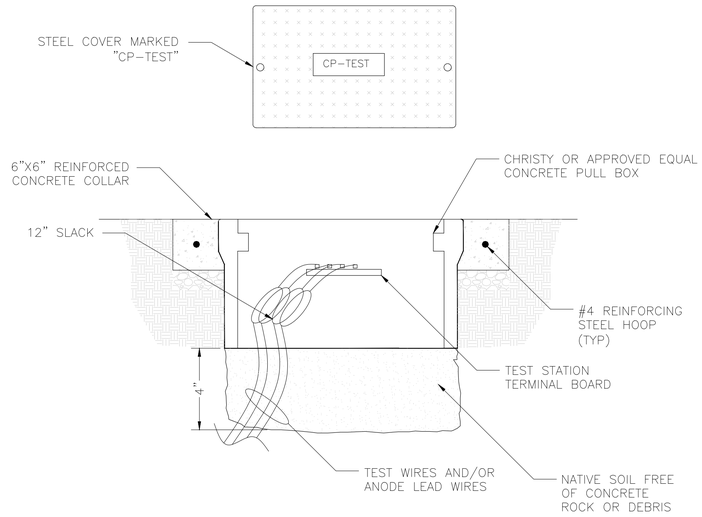


SOFT SURFACE FLUSH-MOUNTED TEST STATION DETAIL

NTS

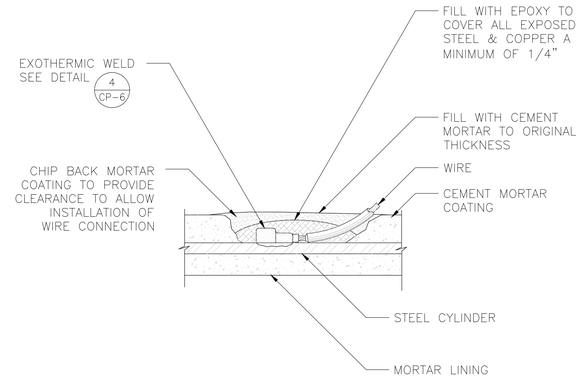
1 / CP-6



FLUSH-MOUNTED PULL BOX TEST STATION DETAIL

NTS

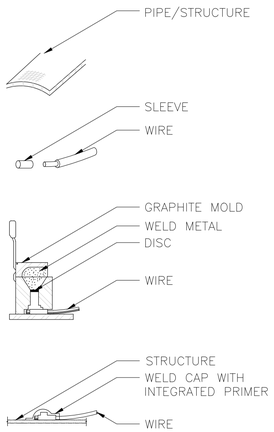
2 / CP-6



MORTAR COATED STEEL PIPE WIRE CONNECTION C303

NTS

3 / CP-6

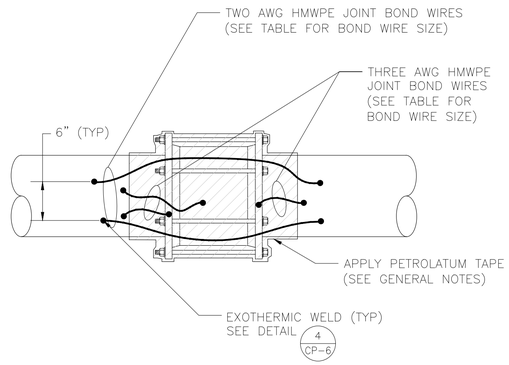


1. GRIND PIPE/STRUCTURE TO BARE METAL AND CLEAN SURFACE. GROUND AREA SHALL BE LARGE ENOUGH FOR EXOTHERMIC WELD AND SMALL ENOUGH TO BE COMPLETELY COVERED BY WELD CAP.
2. STRIP INSULATION FROM WIRE AND ATTACH SLEEVE.
3. HOLD MOLD FIRMLY WITH OPENING AWAY FROM OPERATOR. IGNITE WITH FLINT GUN. REMOVE SLAG FROM CONNECTION WITH CHIPPING HAMMER. TEST WELD WITH 22 OZ HAMMER.
4. COVER CONNECTION WITH WELD CAP WITH INTEGRATED PRIMER. REPAIR ALL DAMAGE TO COATING AND LINING IN ACCORDANCE WITH COATING AND LINING MFG RECOMMENDATIONS.
5. ALL WELDS SHALL BE 6" APART AT MINIMUM.
6. FOR MORTAR COATED PIPE, SEE DETAIL 3 / CP-6

EXOTHERMIC WELD DETAIL FOR DUCTILE IRON AND STEEL PIPE

NTS

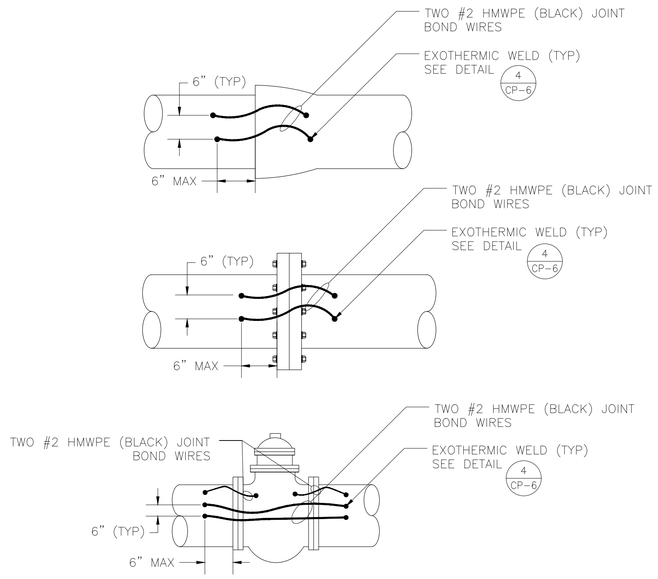
4 / CP-6



FLEXIBLE COUPLING JOINT BOND DETAIL

NTS

5 / CP-6



PIPE JOINT BONDING DETAILS FOR NON-INSULATED JOINTS

NTS

6 / CP-6

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM ENGINEERING CORPORATION

CHRISTOPHER L. SHELDON
112184
LICENSED PROFESSIONAL ENGINEER
01/23/2020
V&A Consulting Engineers, Inc
Texas Registered Engineering Firm F-9154

CONTRACT S3-A1

CATHODIC PROTECTION DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO. CP-6	HORIZ: / VERT:
SHEET NO. 73 OF 81	DRAWING SCALE

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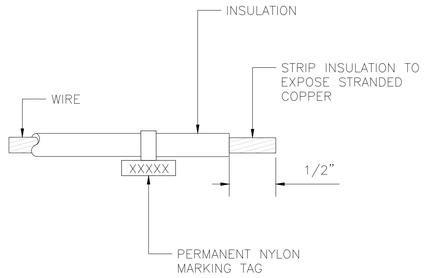
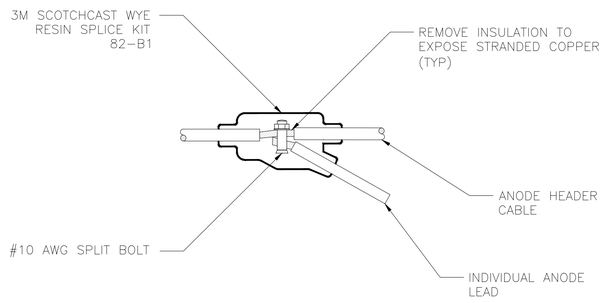
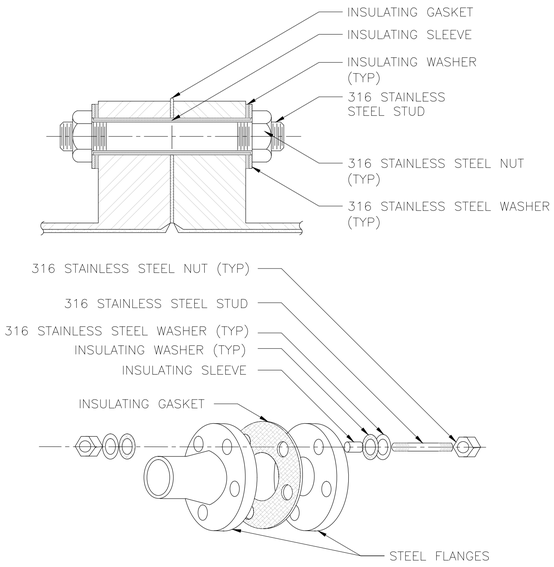


STRUCTURE	LABEL
TRANSMISSION LINE	TL
IJ PROTECTED SIDE WATER LINE	XX" PRO IJ WL
IJ UNPROTECTED SIDE WATER LINE	XX" UNPRO IJ WL
ANODE	ANODE
CASING	CASING
FOREIGN PIPELINE	FPL

WIRE IDENTIFIER DETAIL
NTS
1 CP-7



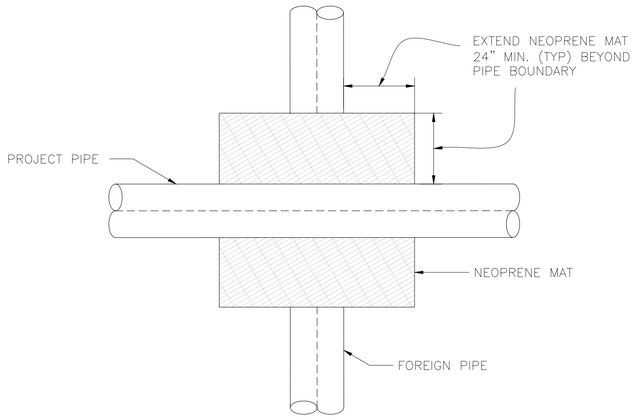
WYE WIRE SPLICE DETAIL
NTS
2 CP-7



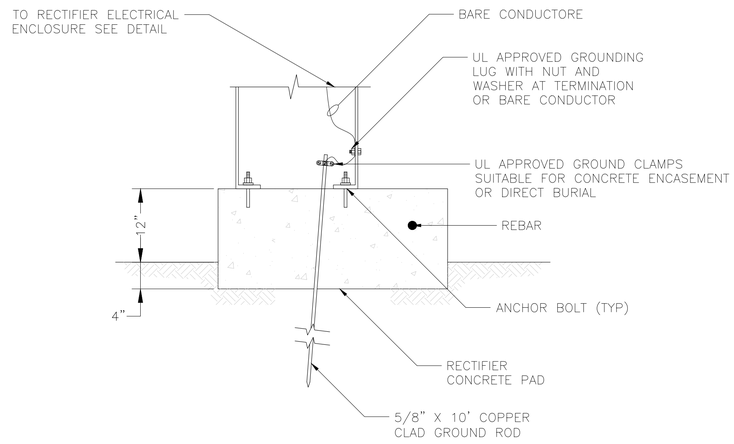
NOTE:

PETROLATUM WAX TAPE NOT SHOWN

DIELECTRIC INSULATING FLANGE KIT DETAIL WITH SECTION VIEW
NTS
3 CP-7



NEOPRENE MAT INSTALLATION DETAIL
PLAN VIEW
NTS
4 CP-7



NOTE:

THE GROUND ROD SHALL BE INSTALLED OBLIQUELY THROUGH THE FOUNDATION IN UNDISTURBED SOIL AT AN ANGLE NOT TO EXCEED 45° FROM VERTICAL.

GROUNDING ROD
NTS
5 CP-7

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM ENGINEERING CORPORATION

STATE OF TEXAS
CHRISTOPHER L. SHELDON
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01/23/2020
V&A Consulting Engineers, Inc
Texas Registered Engineering Firm F-9154

CONTRACT S3-A1

CATHODIC PROTECTION DETAILS

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO. CP-7	HORIZ: VERT:
SHEET NO. 74 OF 81	DRAWING SCALE

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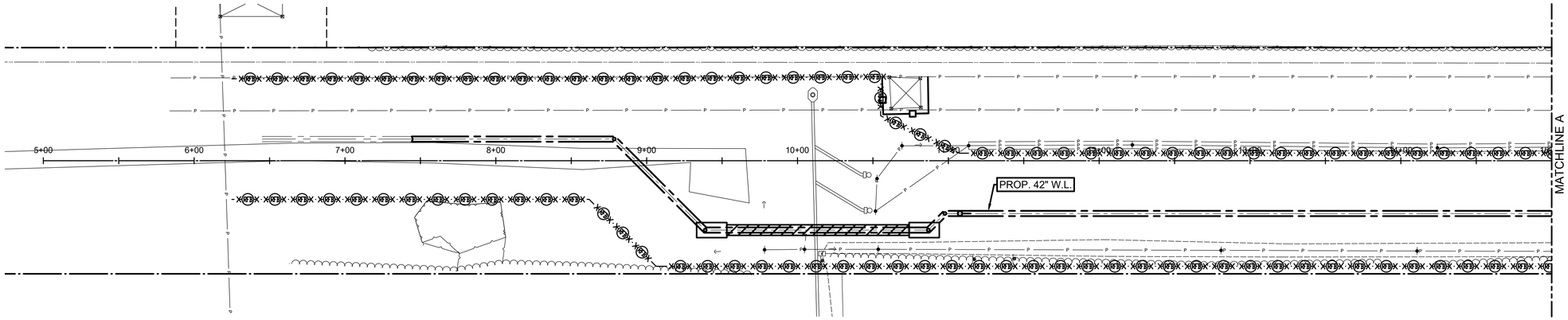
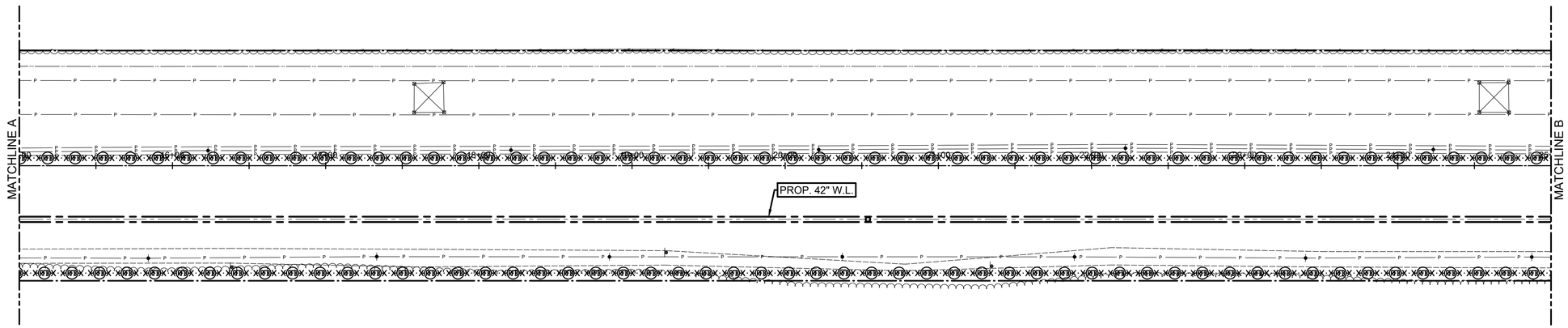
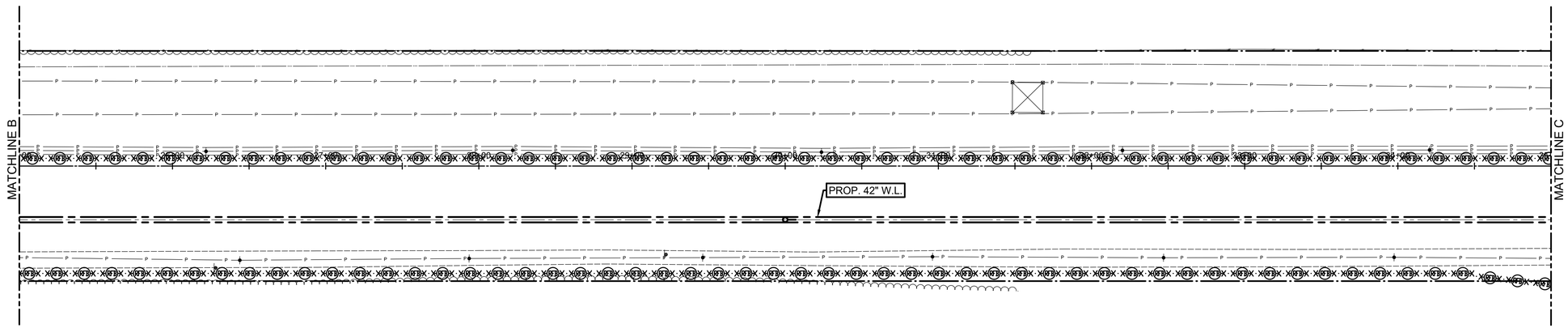
FILE PATH: V:\Projects\2019\0001 Thru 0099\19-0026 WHCRWA SWSP\Drawings\CP Drawings\Segment 3\3A1\CP Drawings_3A1_20200428.dwg PLOT STYLE: _SWSP 34x22 PDF.ctb PLOTTED: 4/28/2020 12:44 PM







HORIZ 0 20' 40' 80'
1"=40'

NO.	DATE	REVISION	APP.

LEGEND:

- REINFORCED FILTER FABRIC BARRIER
- SC STABILIZED CONSTRUCTION ENTRANCE

NOTES:

1. STAGE I AND STAGE II INLET PROTECTION BARRIERS ARE NOT APPLIED IN THIS PROJECT.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM
ENGINEERING CORPORATION

Binkley & Barfield consulting engineers
Binkley & Barfield, Inc. | TxEng F-257
1710 Seamist Dr, Houston, TX 77008
713.869.3433 | BinkleyBarfield.com

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CHRISTOPHER L. CAMPBELL
Engineer
91713
Registration Number
MAY 2020
Date

SEGMENT S3-A1

STORM WATER POLLUTION PREVENTION PLAN SHEET 1 OF 5

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.	HORIZ: 1"=40' VERT:
SHEET NO. 75 OF 81	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PLOTTED: 5/28/2020 12:29 AM PEN TABLE: WHCRWA_22x34.ctb

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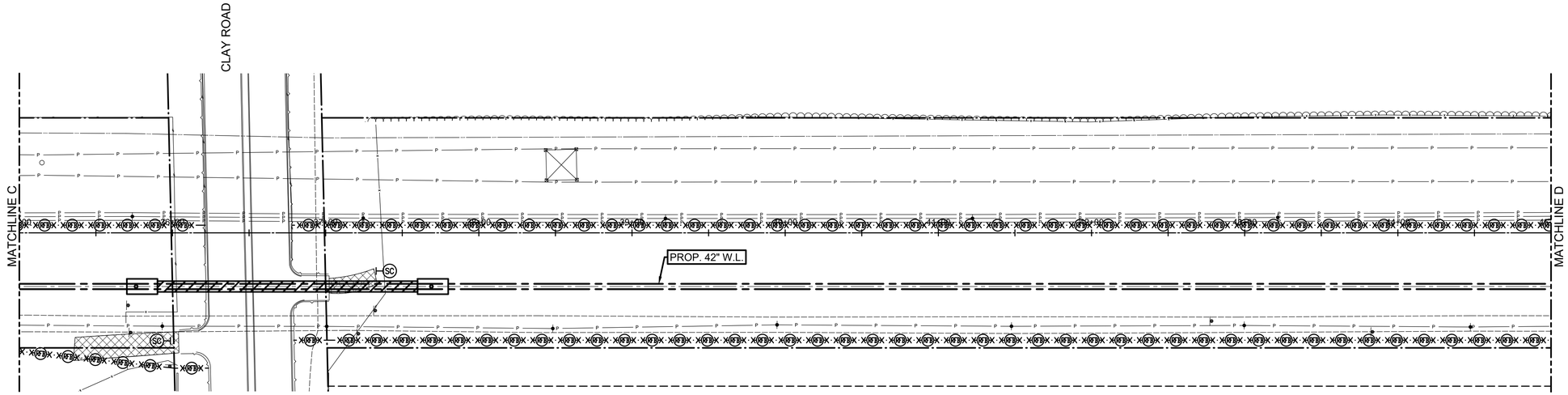

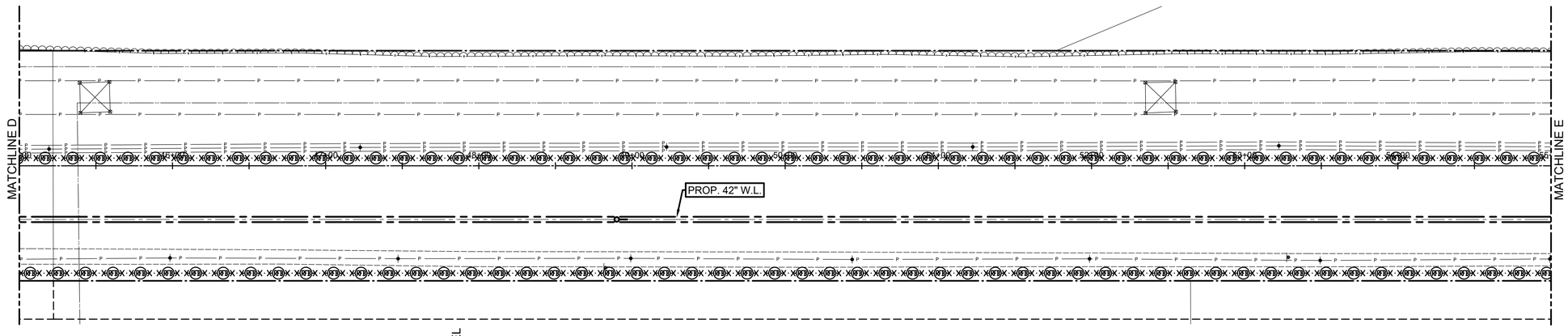

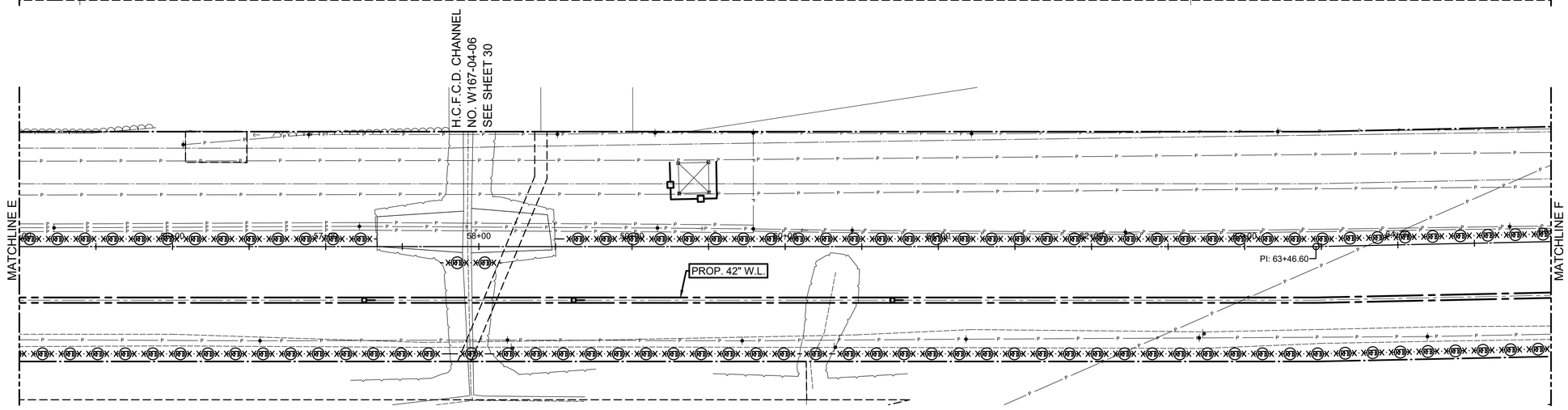

HORIZ 0 20' 40' 80'
1"=40'

NO.	DATE	REVISION	APP.

LEGEND:

REINFORCED FILTER FABRIC BARRIER

SC STABILIZED CONSTRUCTION ENTRANCE

NOTES:

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WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

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DANNENBAUM ENGINEERING CORPORATION

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MAY 2020
Date

SEGMENT S3-A1

STORM WATER POLLUTION PREVENTION PLAN
SHEET 2 OF 5

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.	HORIZ: 1"=40' VERT:
SHEET NO. 76 OF 81	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PLOTTED: 5/28/2020 12:29 AM PEN TABLE: WHCRWA_22x34.ctb
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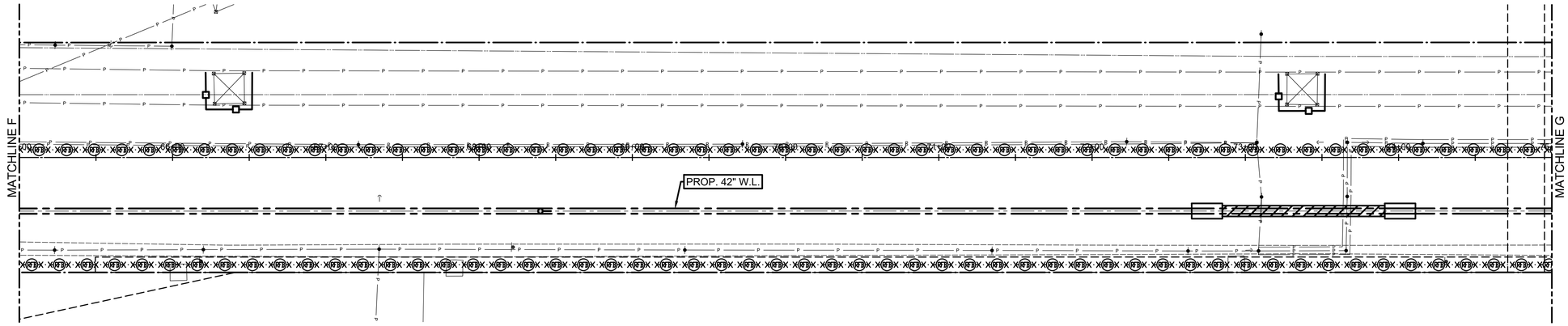

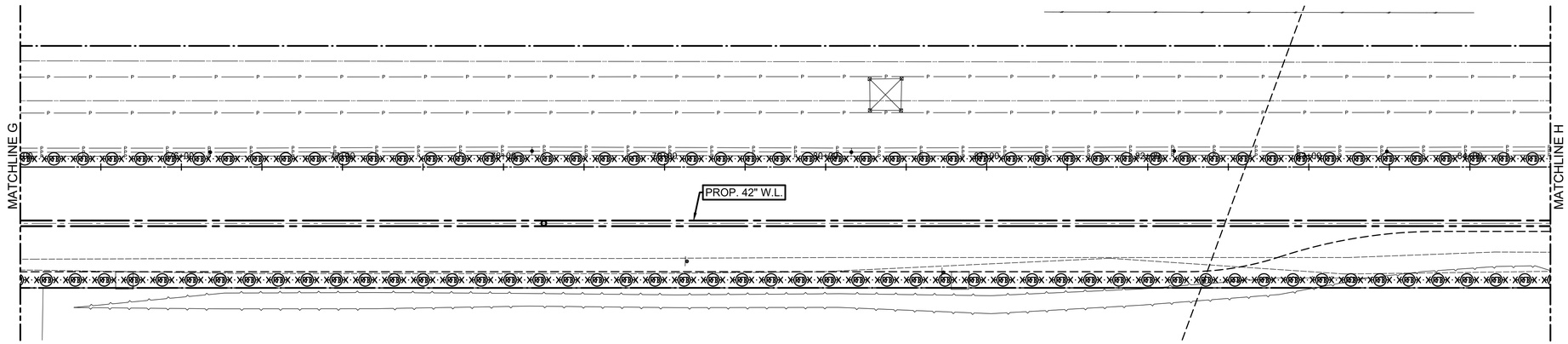

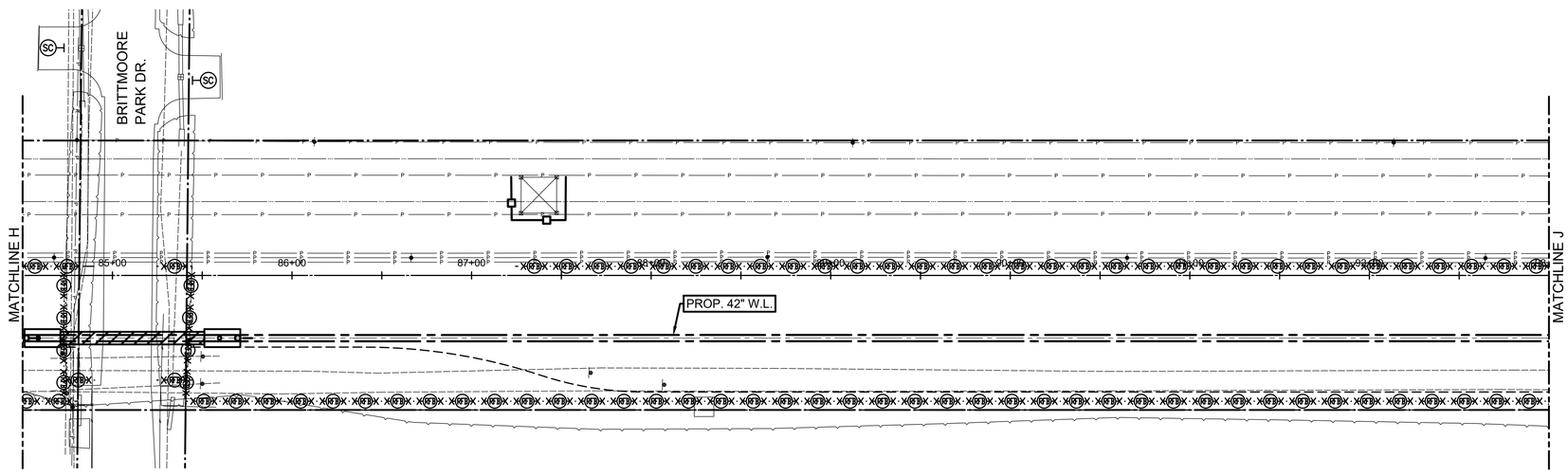

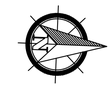

NO.	DATE	REVISION	APP.

LEGEND:

REINFORCED FILTER FABRIC BARRIER

STABILIZED CONSTRUCTION ENTRANCE

NOTES:

1. STAGE I AND STAGE II INLET PROTECTION BARRIERS ARE NOT APPLIED IN THIS PROJECT.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM
ENGINEERING CORPORATION

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Engineer
Registration Number
MAY 2020
Date

SEGMENT S3-A1

STORM WATER POLLUTION PREVENTION PLAN
SHEET 3 OF 5

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.	HORIZ: 1"=40' VERT:
SHEET NO. 77 OF 81	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PEN TABLE: WHCRWA_22x34.ctb
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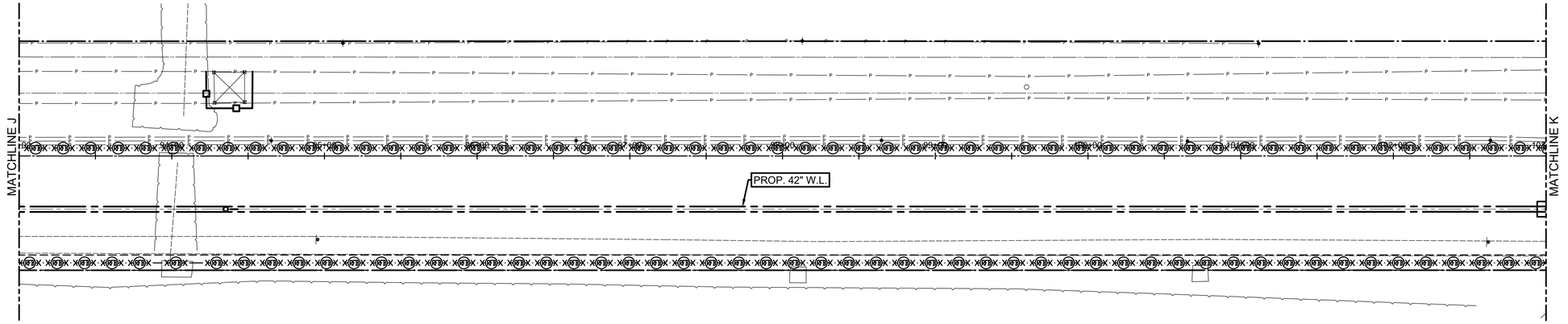

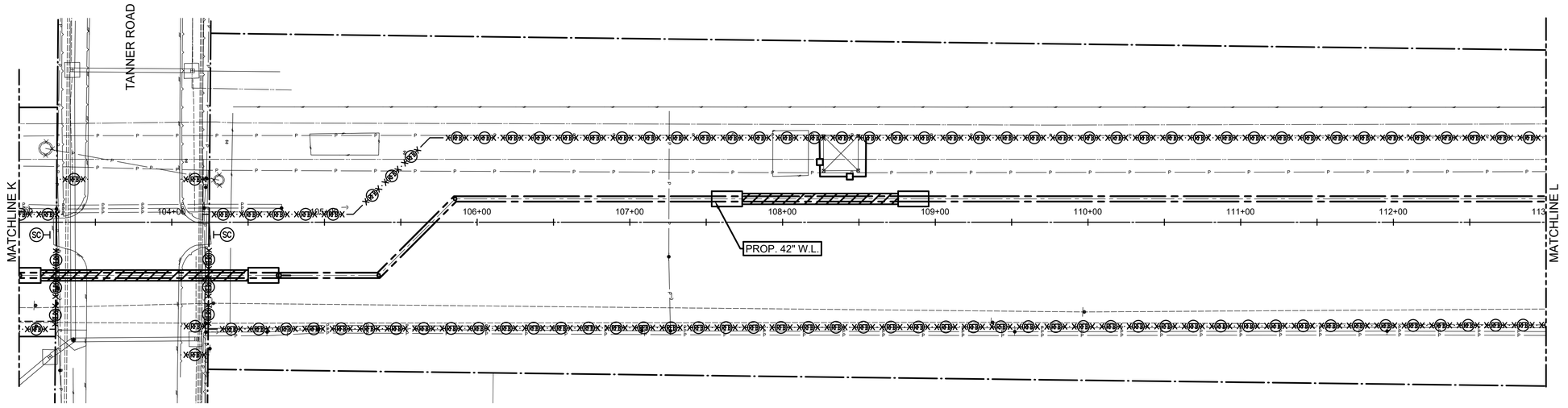

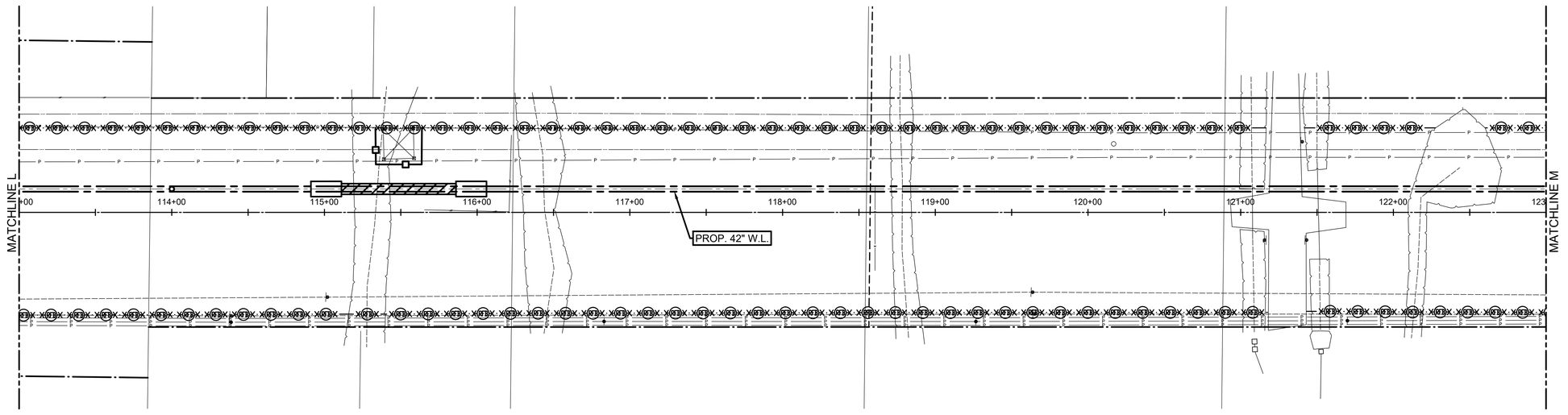

HORIZ 0 20' 40' 80'
1"=40'

NO.	DATE	REVISION	APP.

LEGEND:

REINFORCED FILTER FABRIC BARRIER

STABILIZED CONSTRUCTION ENTRANCE

NOTES:

1. STAGE I AND STAGE II INLET PROTECTION BARRIERS ARE NOT APPLIED IN THIS PROJECT.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
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ENGINEERING CORPORATION

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Registration Number
MAY 2020
Date

SEGMENT S3-A1

STORM WATER POLLUTION PREVENTION PLAN
SHEET 4 OF 5

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.	HORIZ: 1"=40' VERT:
SHEET NO. 78 OF 81	DRAWING SCALE

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PLOTTED: 5/28/2020 12:30 AM PEN TABLE: WHCRWA_22x34.ctb

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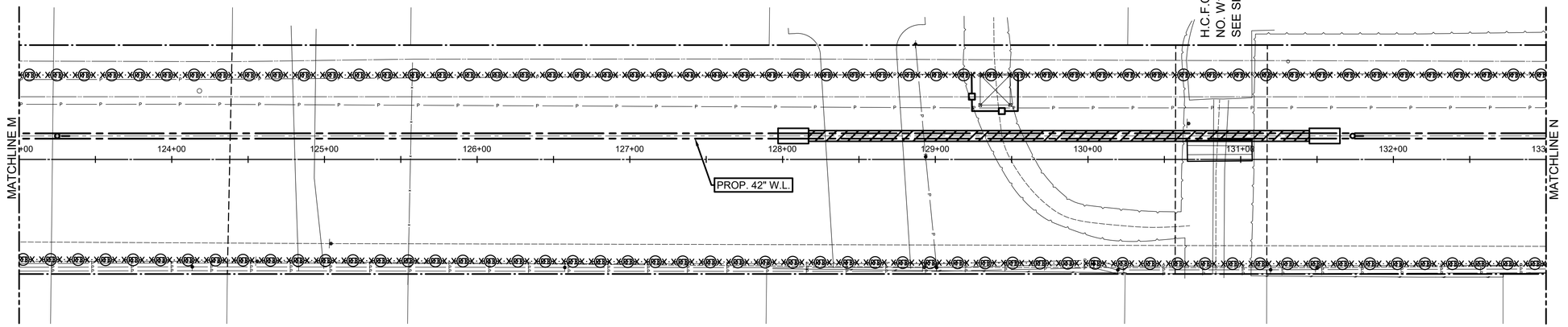

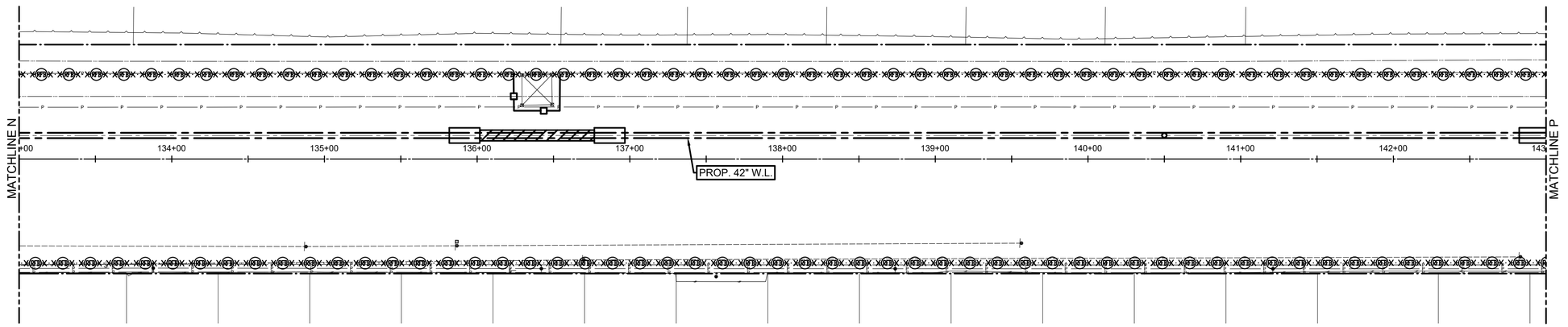

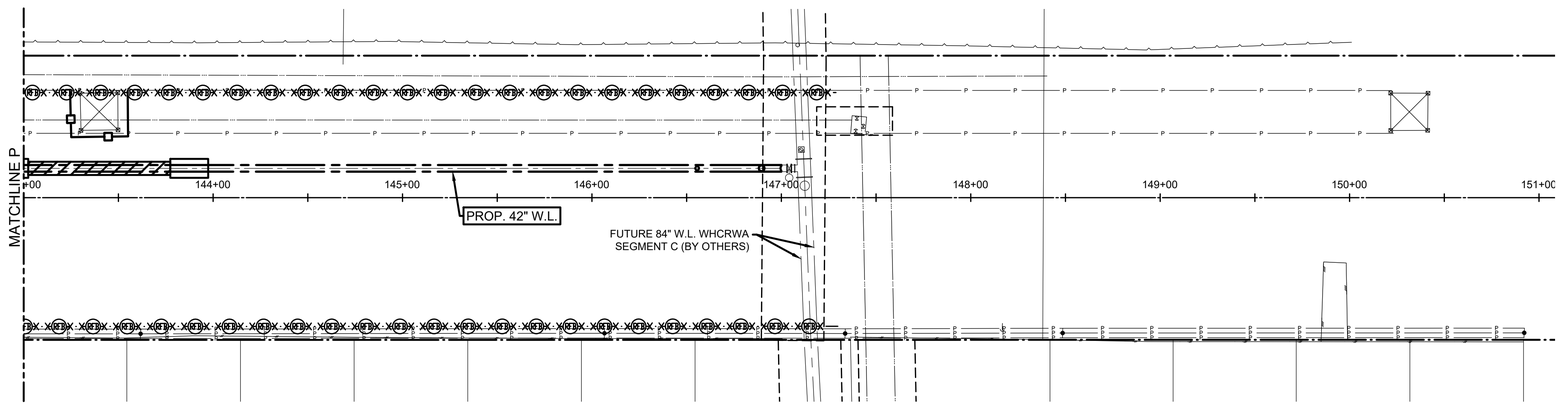

NO.	DATE	REVISION	APP.

LEGEND:

REINFORCED FILTER FABRIC BARRIER

STABILIZED CONSTRUCTION ENTRANCE (SC)

NOTES:

1. STAGE I AND STAGE II INLET PROTECTION BARRIERS ARE NOT APPLIED IN THIS PROJECT.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM ENGINEERING CORPORATION

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Registration Number
MAY 2020
Date

SEGMENT S3-A1

STORM WATER POLLUTION PREVENTION PLAN
SHEET 5 OF 5

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.

HORIZ: 1"=40'
VERT:

SHEET NO. 79 OF 81

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PLOTTED: 5/28/2020 12:30 AM
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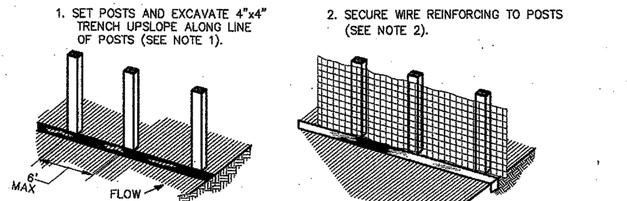
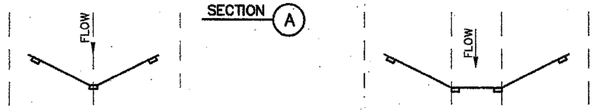
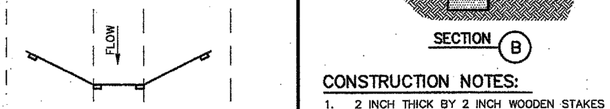


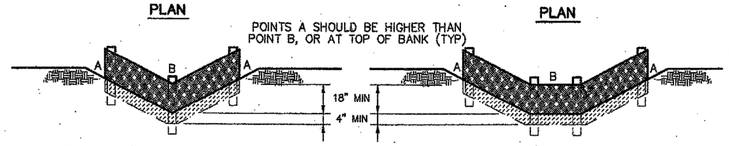
SECTION (A)



PLAN



PLAN



"V-DITCH" SECTION/ELEVATION

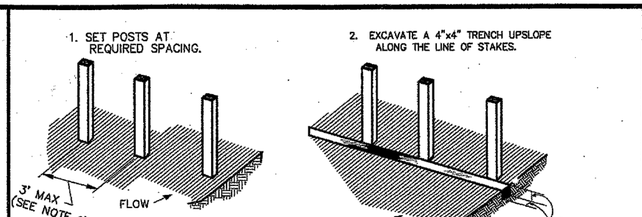
TRAPEZOIDAL SECTION/ELEVATION

CONSTRUCTION NOTES:

1. SET 2 INCH BY 2 INCH WOODEN STAKES SPACED A MAX OF 6 FEET APART AND EMBEDDED A MIN OF 12 INCHES.
2. WOVEN WIRE REINFORCING TO BE FASTENED SECURELY TO BARRIER POSTS WITH STAPLES.
3. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE REINFORCING, WITH TIES SPACED EVERY 24 INCHES AT TOP AND MIDSECTION.
4. MINIMUM HEIGHT OF FILTER SHOULD BE 18 INCHES AND A MAXIMUM OF 36 INCHES ABOVE NATURAL GROUND.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED 6 INCHES AT THE POSTS, AND FOLDED.
6. SEE COH STANDARD SPECIFICATION FOR FILTER FABRIC BARRIER.

×— (RFB) —×
SYMBOL

REINFORCED FILTER FABRIC BARRIER



SECTION (B)

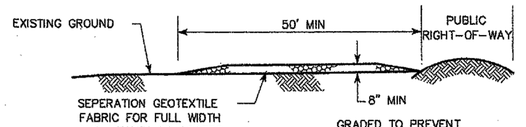
SECTION ALTERNATE (B)

×— (FF) —×
SYMBOL

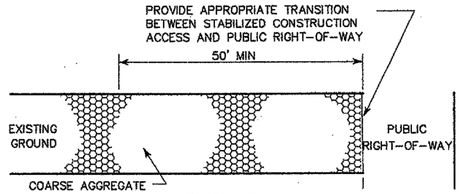
CONSTRUCTION NOTES:

1. 2 INCH THICK BY 2 INCH WOODEN STAKES TO BE SET AT MAX SPACING OF 3 FEET AND EMBEDDED A MIN OF 8 INCHES. IF PREASSEMBLED BARRIER WITH SUPPORT NETTING IS USED, SPACING OF POST MAY BE INCREASED TO 8 FEET MAX.
2. ATTACH FILTER FABRIC TO WOODEN STAKES. FILTER FABRIC BARRIER SHALL HAVE A MIN HEIGHT OF 18 INCHES AND MAX HEIGHT OF 36 INCHES ABOVE NATURAL GROUND.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHOULD BE OVERLAPPED 6 INCHES AT THE POSTS, AND FOLDED.
4. SEE COH STANDARD SPECIFICATION FOR FILTER FABRIC BARRIER.

FILTER FABRIC BARRIER



PROFILE



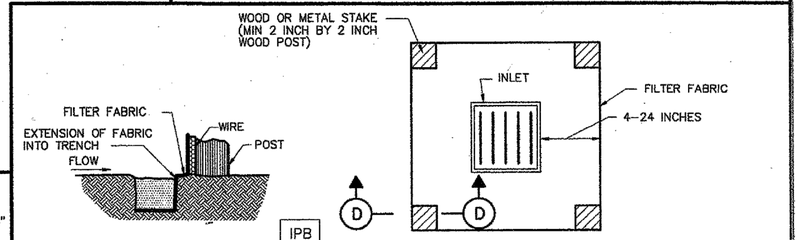
PLAN VIEW

CONSTRUCTION NOTES:

1. LENGTH SHALL BE AS SHOWN ON THE CONSTRUCTION DRAWINGS, BUT NOT LESS THAN 50 FEET.
2. THICKNESS SHALL BE NOT LESS THAN 8 INCHES.
3. WIDTH SHALL BE NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
4. STABILIZATION FOR OTHER AREAS SHALL HAVE THE SAME AGGREGATE THICKNESS AND WIDTH REQUIREMENTS AS THE STABILIZED CONSTRUCTION ACCESS, UNLESS OTHERWISE SHOWN ON THE CONSTRUCTION DRAWINGS.
5. STABILIZED AREA MAY BE WIDENED OR LENGTHENED TO ACCOMODATE A WASHING AREA. AN OUTLET SEDIMENT TRAP MUST BE PROVIDED FOR THE WASHING AREA.
6. COH STANDARD SPECIFICATION FOR STABILIZED CONSTRUCTION ACCESS.
7. STABILIZED CONSTRUCTION ACCESS SHALL BE MAINTAINED FREE OF SEDIMENT FOR THE DURATION OF THE PROJECT.

SC
SYMBOL

STABILIZED CONSTRUCTION ACCESS



SECTION (D)

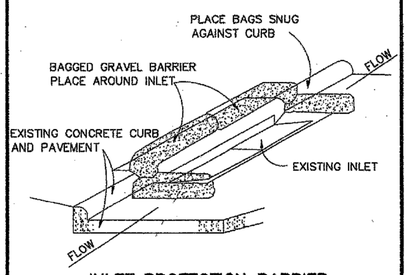
IPB
SYMBOL

PLAN

CONSTRUCTION NOTE:

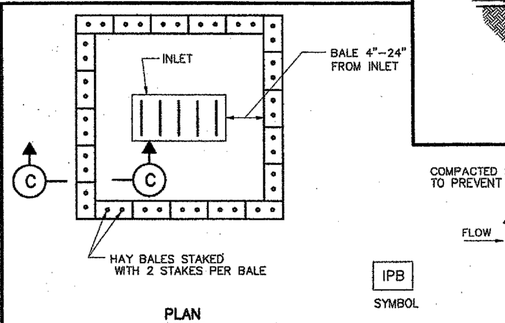
1. SEE CONSTRUCTION NOTES FOR RFB.

SILT FENCE INLET PROTECTION BARRIER



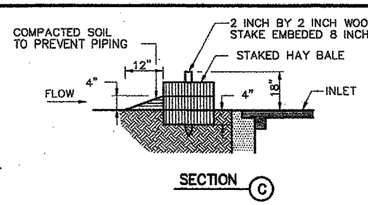
INLET PROTECTION BARRIER

(FOR STAGE II INLETS)
BAGGED GRAVEL BARRIER



PLAN

IPB
SYMBOL



SECTION (C)

HAY BALE INLET PROTECTION BARRIER

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

STORM WATER POLLUTION PREVENTION PLAN DETAILS

(NOT TO SCALE)

APPROVED — CITY ENGINEER

APPROVED — DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF DATE: JULY-01-2010

DWG NO: 01571-01

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM
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MAY 2020

SEGMENT S3-A1

SWPPP DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER | STORM WATER QUALITY
WASTE WATER | FACILITIES
STORM WATER | TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.

HORIZ: N.T.S.
VERT:

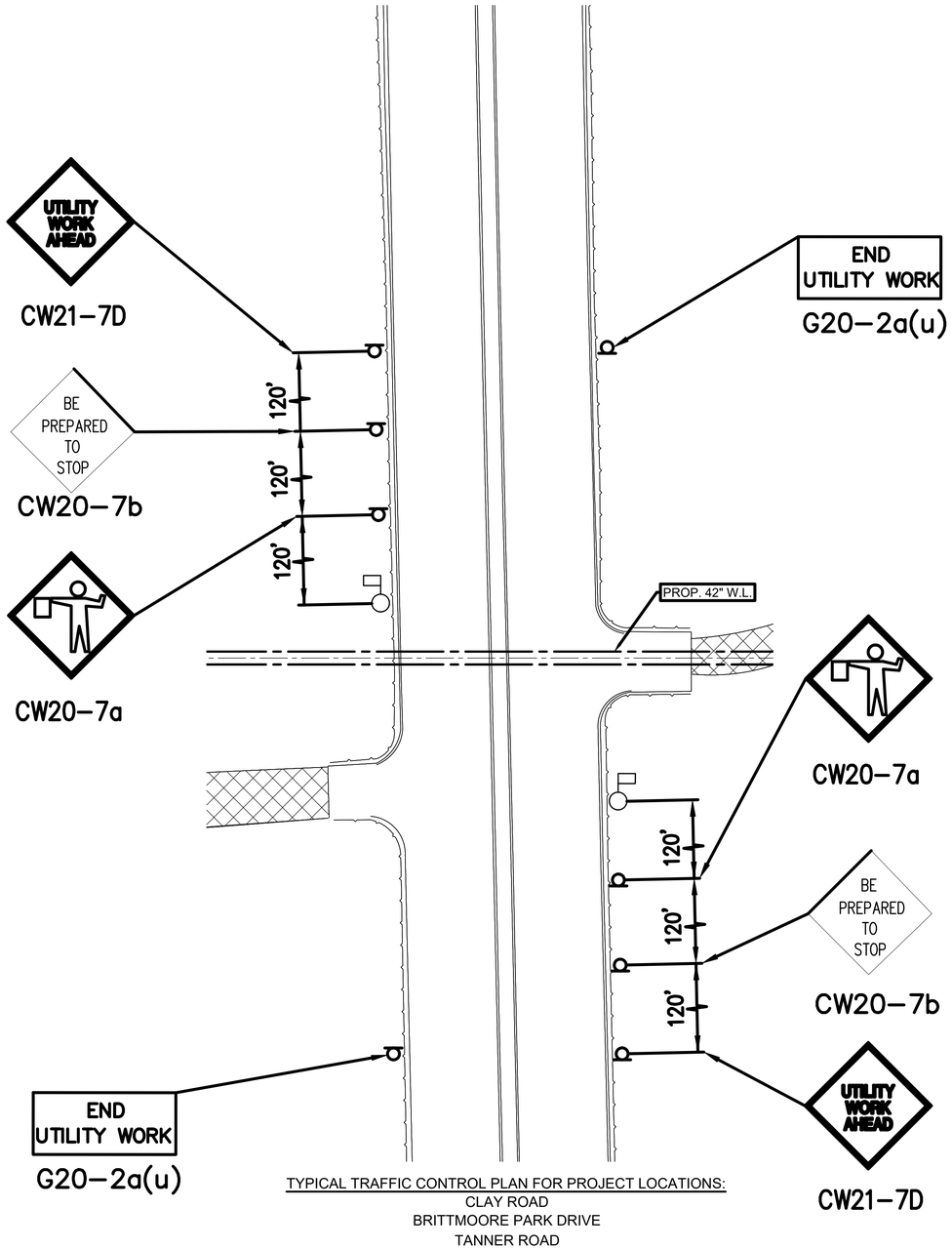
SHEET NO. 80 OF 81

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PLOTTED: 5/28/2020 12:30 AM PEN TABLE: WHCRWA_22x34.ctb

FILE PATH: \\bzhou\data\bb\Enviro\1900000003 - WHCRWA 42 inch Segment 3A_CADD\Drawings\001C-DTswppp.dwg



TYPICAL TRAFFIC CONTROL PLAN FOR PROJECT LOCATIONS:
CLAY ROAD
BRITTMOORE PARK DRIVE
TANNER ROAD

TYPICAL TRANSITION LENGTHS
AND
SUGGESTED MAXIMUM SPACING OF DEVICES

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Device On a Taper	On a Tangent
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'–75'
35		205'	225'	245'	35'	70'–90'
40		265'	295'	320'	40'	80'–100'
45	L=WS	450'	495'	540'	45'	90'–110'
50		500'	550'	600'	50'	100'–125'
55		550'	605'	660'	55'	110'–140'
60		600'	660'	720'	60'	120'–150'
65		650'	715'	780'	65'	130'–175'

* 85th Percentile Speed may be used on roads where traffic speeds normally exceed the posted speed limit.
** Taper lengths have been rounded off.

CONSTRUCTION WARNING
SIGN SPACING

Posted Speed or 85% Speed (MPH)	X Min. Distance (feet)
30 or less	120
35	160
40	240
45	320
50	400
55	500
65	750

X=SIGN SPACING
L=TAPER
2XL=TANGENT

HORIZ 0 10' 20' 40'
1"=20'

NO.	DATE	REVISION	APP.

WHCRWA NFBWA
SURFACE WATER SUPPLY PROJECT

Program Manager
DANNENBAUM ENGINEERING CORPORATION

Binkley & Barfield consulting engineers
Binkley & Barfield, Inc. | TxEng F-257
1710 Seamist Dr, Houston, TX 77008
713.869.3433 | BinkleyBarfield.com

INTERIM REVIEW ONLY
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CHRISTOPHER L. CAMPBELL
Engineer
91713
Registration Number
MAY 2020
Date

SEGMENT S3-A1

TRAFFIC CONTROL PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO.	HORIZ: 1"=20'
	VERT: ----
SHEET NO. 81 OF 81	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

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