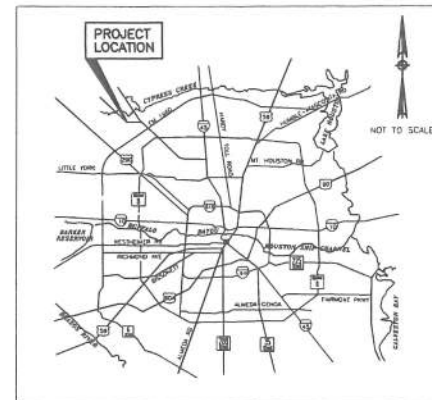


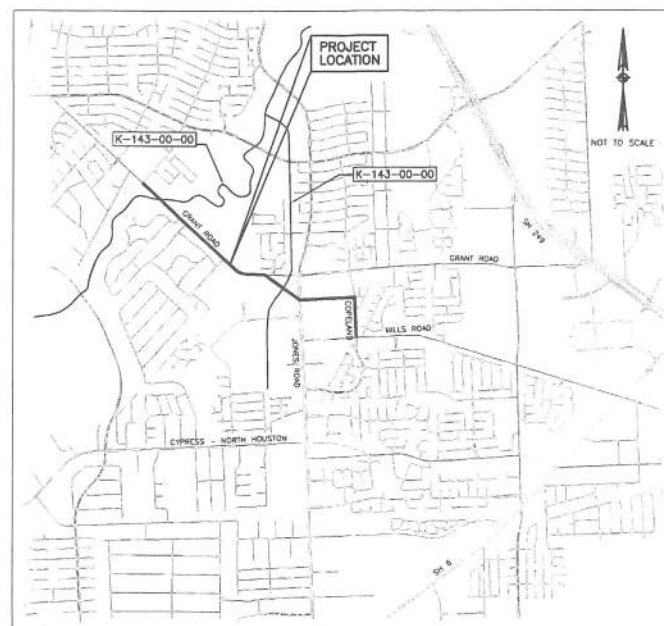
# NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY

## PROJECT 28-B

### PROPOSED 60" AND 54" WATER LINE ALONG GRANT ROAD AND COPELAND ROAD



LOCATION MAP



VICINITY MAP

KEY MAP NO 000  
GIMS MAP NO 00000



TEXAS WATER  
DEVELOPMENT BOARD  
REVIEWED: *Matthew Young P.E.*  
APPROVED: *Matthew Young P.E.*  
DATE: *May 21, 2020*

48 Hour Notice: Contractor shall notify Harris County prior To Commencing Construction and/or Backfilling any utilities. Contractor(S) to contact Public Review Department @ (713-274-3931) or [public.review@hccpd.org](mailto:public.review@hccpd.org)

A Notification issued by HC Infrastructure Department-Permits Office- is required for proposed work within Harris County Right-of-Way. The project must be approved prior to obtaining the required Notification. A Notification must be obtained separately from a site development permit package. For additional information please visit: [http://hccpd.org/permits/pr\\_notification\\_of\\_construction.html](http://hccpd.org/permits/pr_notification_of_construction.html) or contact Public Review Inspections Department @ (713)274-3931

#### GENERAL MANAGER

JIMMIE SCHINDEWOLF, P.E.

#### BOARD MEMBERS

ALAN J. RENDL  
KELLY P. FESSLER  
LENOX A. SIGLER  
RON GRAHAM  
JAMES D. PULLIAM

#### \*Construction in Harris County Flood Control District right-Of-Way

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 separated 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@hccfd.org](mailto:dcid@hccfd.org).

To apply for the HCFCD Right-of-Way Notification please go to <http://apps.harriscountytexas.gov/EPermits> and apply for the HCFCD ROW under ROW Notification.

Failure to provide both items could result in project delays.

**AECOM**

AECOM TECHNICAL SERVICES, INC.  
19219 KATY FREEWAY, SUITE 100  
HOUSTON, TEXAS 77094-1009  
281.546.2400  
WWW.AECOM.COM  
TBP REG. NO. F-3580

**DANNENBAUM**

ENGINEERING CORPORATION  
T.B.P.E. FIRM REGISTRATION #392  
3100 WEST ALABAMA HOUSTON, TEXAS 77086 (713) 520-9570



GENERAL MANAGER, NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY

ISSUE DATE: MAY, 2020

REF. NO.  
01

SHEET  
No: 1 OF 99

REVISION DATE: 1/12/17

PROJECT 28-B

1. PAVING

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

Table with columns: DESIGN THICKNESS OF PAVING, STABILIZED SUBGRADE DEPTH, DESIGN STRENGTH OF CONCRETE, STEEL SPACING (LONG, TRANS).

DRIVEWAYS (in H.C. ROW only)

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

Table with columns: DRWY, WIDTH, MATERIAL, CULVERT?, CULVERT LENGTH, NEAREST X-STREET, DIST. TO X-STREET.

II. HARRIS COUNTY STANDARD DRIVEWAY DETAIL APPEARS ON SHEET FIRE APPARATUS ACCESS ROAD

III. 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
II. LEFT / RIGHT TURN LANE
III. TRAFFIC CONTROL PLAN
IV. TRAFFIC SIGNAL
V. TRAFFIC IMPACT ANALYSIS

7. FLOOD CONTROL DISTRICT CRITERIA

STORMWATER DETENTION BASIN ROUTING TABLE
Table with columns: RAINFALL EVENT FREQUENCY, PRE-DEVELOPED PEAK RUNOFF (CFS), POST-DEVELOPED PEAK RUNOFF (CFS), MAXIMUM WATER PEAK OUTFLOW (CFS), MAXIMUM WATER SURFACE ELEVATION, STORAGE VOLUME (CU YD), STORAGE RATE (AC-FT PER AC).

STORMWATER DETENTION FOR THE PROPOSED WORK CONTAINED IN THESE PLANS IS PROVIDED BY OTHER PLANS:
III. HCFCD STANDARD NOTES: SEE SHEET 4 OF THESE PLANS.
III. HCFCD STANDARD DETAILS: SEE SHEET OF THESE PLANS.
IV. REFER TO PLAN SHEETS 8-10 FOR EXISTING AND PROPOSED RIGHT OF WAY DELINEATION AND COMPLETE RECORDING INFORMATION TO INCLUDE CLERK'S FILE NUMBERS, TYPE OF ESTATE (E.G., DRAINAGE EASEMENT, FEE STRIP, ETC.) AND GRANTEE (E.G., COH, HCFCD, PUBLIC, TxDOT, ETC.)

2. RESIDENTIAL / SUBDIVISION DRAINAGE

- I. PROPOSED DRAINAGE SYSTEM TYPE
II. DESIGN METHOD USED
III. DRAINAGE SYSTEMS OUTFALLS DIRECTLY TO EXISTING
IV. H.C. OUTFALL CALCULATION
V. DETENTION PROVIDED BY
OFFSITE SHEET FLOW (100 YEAR)
NOTE: ALL OFFSITE SHEET FLOW FROM ADJACENT PROPERTIES MUST BE IDENTIFIED AND PROPERLY ACCOUNTED FOR IN THE PROJECT.

3. COMMERCIAL / OTHER SITE DRAINAGE

- I. PROPOSED DRAINAGE AREA
II. DETENTION VOLUME
III. OUTFALL
IV. PUMPED DETENTION FACILITIES
V. FLOW RESTRICTOR SIZE
NOTE: ALL ROADSIDE DITCH OUTFALLS REQUIRE EROSION CONTROL MEASURES.

4. WATER AND WASTEWATER

- I. COMMERCIAL PROJECTS
II. SUBDIVISION PROJECTS (NO NEW SERVICE OR DEMAND)
NOTE: A COPY OF HCED APPROVAL FOR PRIVATE WATER & WASTE WATER SYSTEMS IS REQUIRED FOR PLAN APPROVAL.

5. DESCRIPTION OF PROPERTY

- I. LEGAL DESCRIPTION
II. PLATTING
III. JURISDICTIONS
IV. HEAD ACCOUNT NOS. (ALL)
V. UNOBSTRUCTED VISIBILITY EASEMENT (U.V.E.)
NOTE: ALL APPROVED, FINAL PLATS AND ASSOCIATED CPC101 FORMS MUST BE INCLUDED WITH PLAN SUBMITTAL.

6. STORM WATER QUALITY

- I. SWPPP: CONSTRUCTION MEASURES
II. APPLICABILITY FOR PERMANENT FEATURES
III. PERMANENT SWQ FEATURES
HARRIS COUNTY PROJECT NO. & SWQ PERMIT NO.

8. FLOOD PLAIN STATUS

- I. GENERAL INFORMATION
II. FLOOD PLAIN DETERMINATION BASED ON GROUND ELEVATION
III. FLOODPLAIN STORAGE SUMMARY
IV. LOMR REQUIRED
V. FLOODPLAIN STORAGE SUMMARY

9. WORK IN HCFCD RIGHT-OF-WAY

- I. TYPE OF WORK TO BE PERFORMED IN CHANNEL
II. USAGE ENVIRONMENTAL PERMIT
III. REFERENCE / BASIS OF DETERMINATION

10. PERMITS REQUIRED

- DOES THE PROPERTY HAVE ANY VIOLATIONS? IF SO PLEASE PROVIDE ALL VIOLATION NUMBERS.
WORK IN HARRIS COUNTY R.O.W.
NOTE: A PERMIT IS REQUIRED FOR EACH SCOPE OF WORK ON SITE.

11. CURB RAMPS

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

12. LANDSCAPING

[ ] REQUIRED AND SHOWN ON SHEET(S)
[X] NOT REQUIRED

HCED SIGNATURE BLOCK

NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY, PROJECT 28-B, PROPOSED 60" AND 54" WATER LINE ALONG GRANT ROAD AND COPELAND ROAD
PROJECT NAME:
ADDRESS: GRANT ROAD, MATZKE ROAD AND COPELAND ROAD
WAS ACCEPTED BY THE FOLLOWING GROUPS FOR THE PURPOSES LISTED BELOW:
ENGINEERING DIVISION

BY INTERPOSE NO OBJECTION DATE
BY AS TO LOCATION OF ITEMS IN COUNTY RIGHT OF WAY DATE
BY AS TO PAVING AND/OR DRAINAGE ONLY DATE
BY AS TO STORM WATER QUALITY DATE
ADDITIONAL COMMENTS: AB

HARRIS COUNTY FLOOD CONTROL DISTRICT

INTERPOSE NO OBJECTION
BY FOR ITEMS LOCATED OUTSIDE OF HCFCD RIGHT-OF-WAY DATE
BY FOR ITEMS LOCATED WITHIN EXISTING HCFCD RIGHT-OF-WAY DATE
BY FOR ITEMS LOCATED WITHIN PROPOSED HCFCD RIGHT-OF-WAY DATE
ADDITIONAL COMMENTS: WCB

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. THESE SIGNATURES ARE VALID FOR A MAXIMUM OF TWO YEARS.

ENGINEER'S CERTIFICATION

I, CARL D. MCCONNELL, 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 99.



REVISIONS

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

Table with columns: DATE, SHEET NO., DESCRIPTION, P.E. INITIAL, H.C. APPROVED DATE.

HARRIS COUNTY ENGINEERING DEPARTMENT REVIEW SHEET

LAST MODIFIED: Oct 03, 2019 - 7:49am BY USER: yimy
DWG. LOCATION: G:\1110\4876-01 NHCRWA PROJECT 28-B\CAD\Drawings\General\
DWG. NAME: 4876-01\_02.dwg



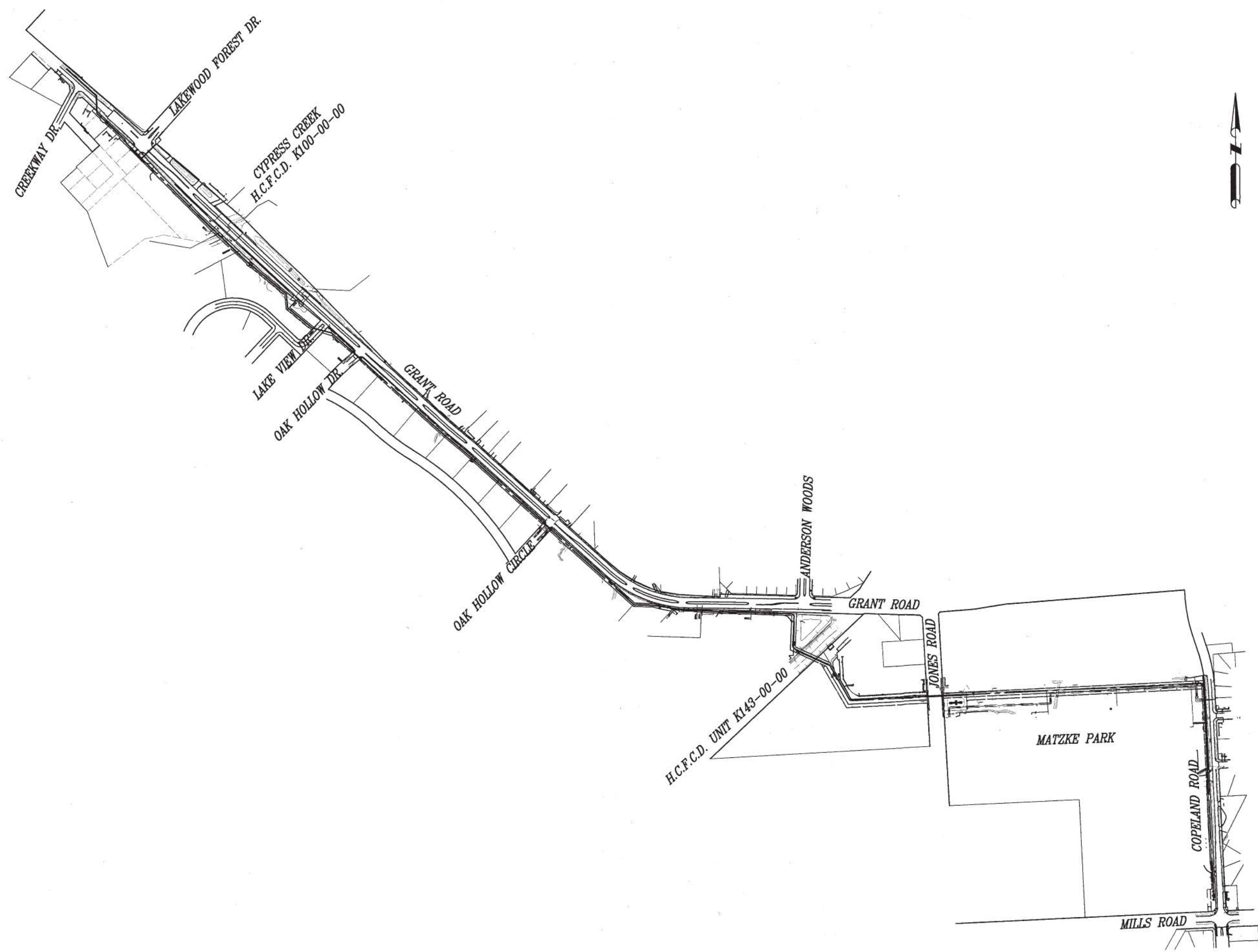
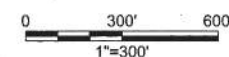
No.	Date	Revisions	App.

**BENCHMARK:**

FLOODPLAIN REFERENCE MARK NUMBER 110125 IS A HCFCO BRASS DISK STAMPED K100 BM10 ON EAST SIDEWALK OF GRANT ROAD BRIDGE OVER CYPRESS CREEK APPROXIMATELY 0.90 MILE WEST OF JONES ROAD IN KEYMAP 369A IN THE CYPRESS WATERSHED NEAR STREAM K100-00-00 ELEV. 127.25 FEET NAVD 1988 2001 ADJUSTMENT

**HORIZONTAL DATUM:**

ALL HORIZONTAL COORDINATES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. THE COORDINATES & DISTANCES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE FACTOR OF 0.999870017 (TxDOT factor).  
100 YR FL=125.00'



**AECOM**  
AECOM TECHNICAL SERVICES, INC.  
19219 KATY FREEWAY, SUITE 100  
HOUSTON, TEXAS 77094-1008  
281.646.2400  
WWW.AECOM.COM  
TSP# REG. NO. F-3580

NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY  
PROJECT 28-B  
PROPOSED 60" AND 54" WATER LINE ALONG GRANT ROAD AND COPELAND ROAD

**PROJECT OVERALL LAYOUT SHEET**



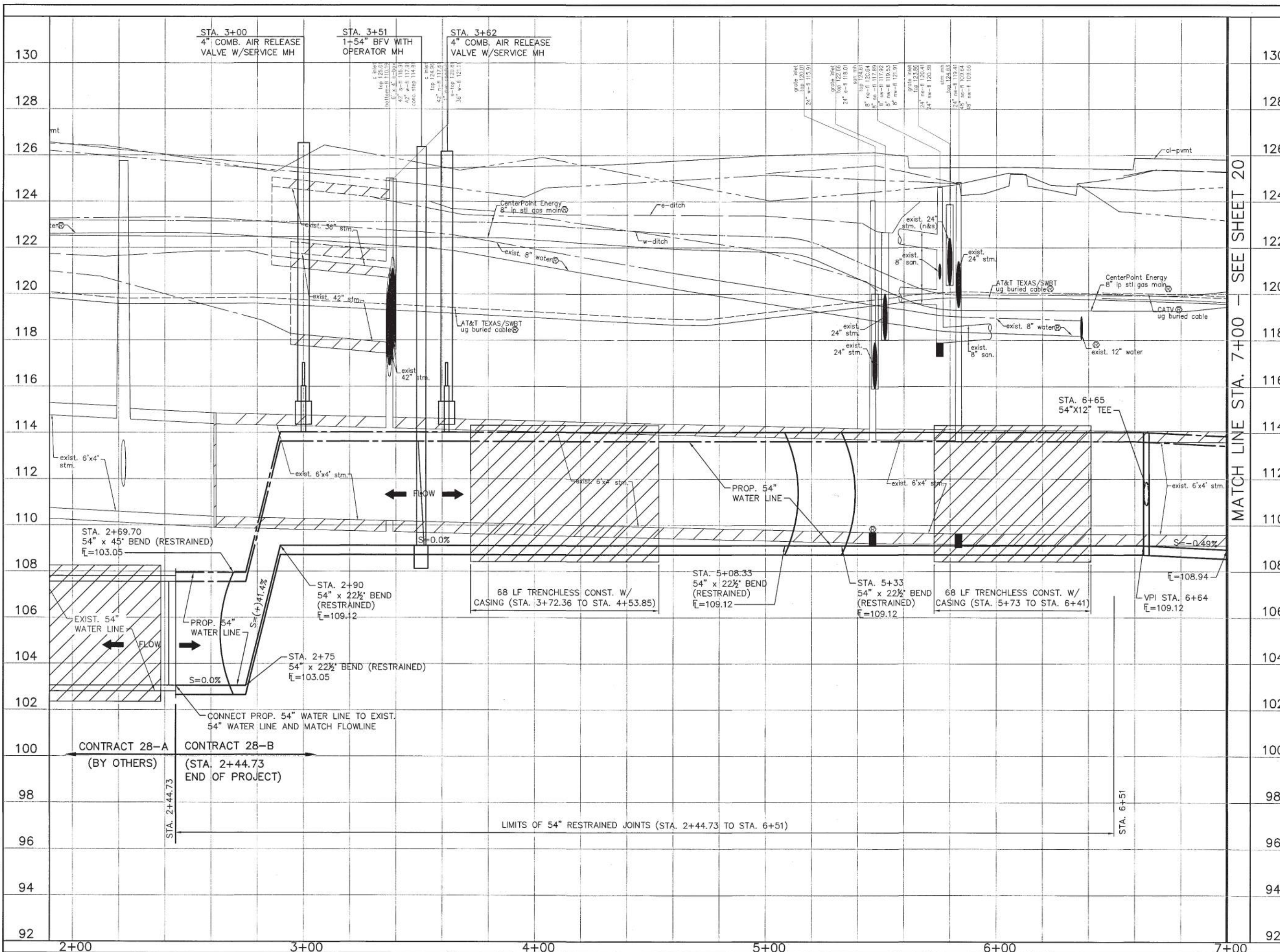
DRAWN BY: \_\_\_\_\_ CHECKED BY: \_\_\_\_\_

**DANNENBAUM**  
ENGINEERING CORPORATION  
T.B.P.E. FIRM REGISTRATION #392  
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

LAST MODIFIED: Jan 21, 2020 - 9:50am BY USER: yfmv  
DWG. LOCATION: G:\1110\4876-01 NHCRWA PROJECT 28-B\ACAD\Drawings\General\  
DWG. NAME: 4876-01\_05.dwg



LAST MODIFIED: Jan 21, 2020 - 9:50am BY USER: yimvy  
 DWG. LOCATION: G:\1110\4876-01 NHCRWA PROJECT 28-B\ACAD\Drawings\Civil  
 DWG. NAME: 4876-01\_18.dwg



No.	Date	Revisions	App.

MATCH LINE STA. 7+00 - SEE SHEET 20

HORIZ 0 10' 20' 40'

1"=20'

VERT 0 1' 2' 4'

1"=2'

TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED CALL CENTERPOINT ENERGY AT 713-257-2222.

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

PRIVATE UTILITY LINES SHOWN

*AP. ch* Date: 1-23-20  
 CENTERPOINT ENERGY/UNDERGROUND ELECTRICAL FACILITIES VERIFICATION ONLY

*AP. ch* Date: 1-23-20  
 CENTERPOINT ENERGY/NATURAL GAS FACILITIES VERIFICATION ONLY.

*AP. ch* Date: 1-22-20  
 APPROVED FOR AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES ONLY. SIGNATURE VALID FOR ONE YEAR.

**North Harris County REGIONAL WATER Authority**

**AECOM** AECOM TECHNICAL SERVICES, INC. 19219 KATY FREEWAY, SUITE 100 HOUSTON, TEXAS 77064-1009 281.646.2400 WWW.AECOM.COM TSP# REG. NO. F-3580

NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY PROJECT 28-B PROPOSED 60" AND 54" WATER LINE ALONG GRANT ROAD AND COPELAND ROAD

**GRANT ROAD BASELINE PROFILE STA. 2+00 TO 7+00**

STATE OF TEXAS  
 CARL D. MCCONNELL  
 97585  
 LICENSED PROFESSIONAL ENGINEER  
*Carl D. McConnell*  
 1/23/2020

DRAWN BY: CHECKED BY:

**DANNENBAUM** ENGINEERING CORPORATION T.B.P.E. FIRM REGISTRATION #392 3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-8570

SHEET No. 18 OF 99

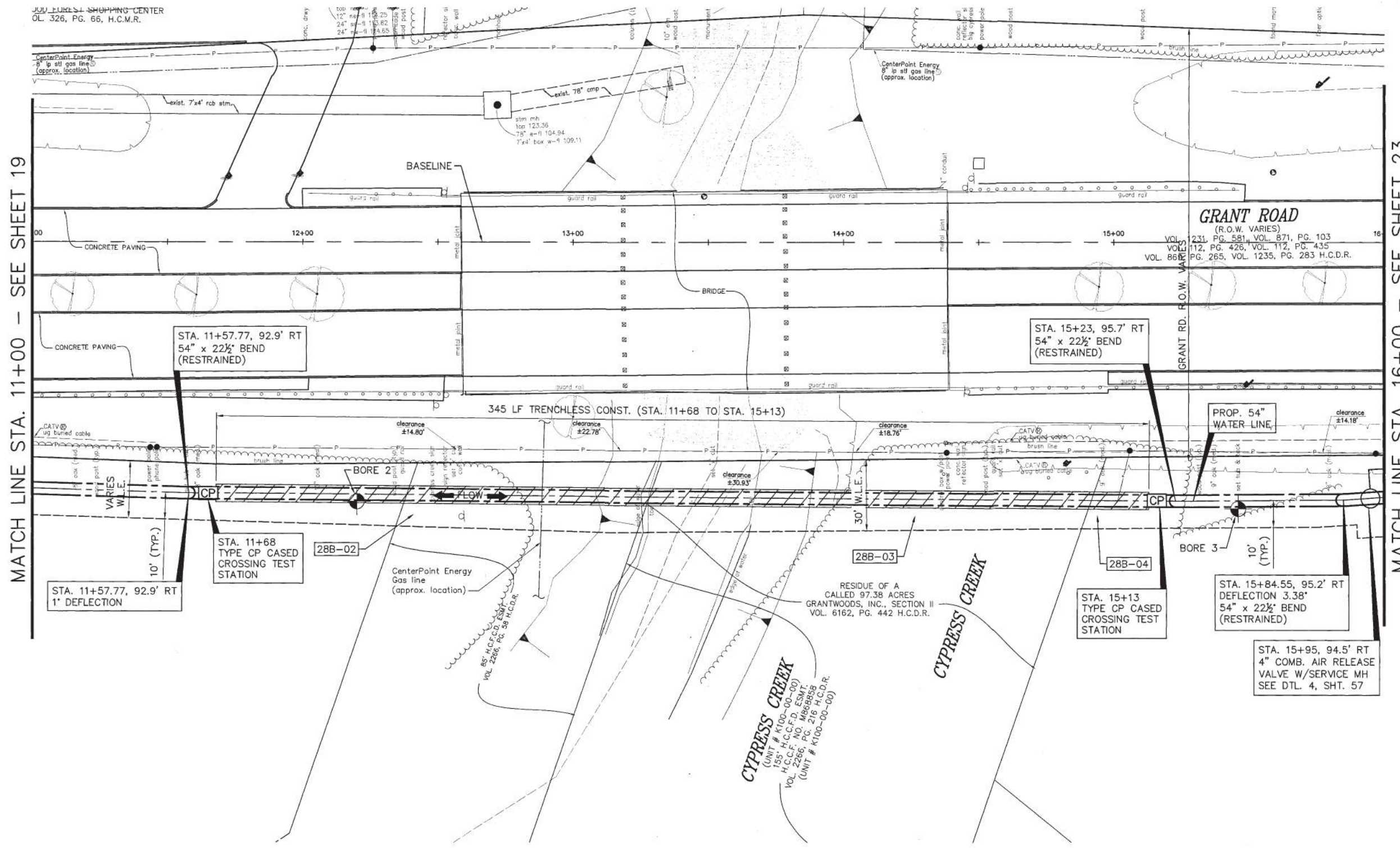
No.	Date	Revisions	App.

**BENCHMARK:**

FLOODPLAIN REFERENCE MARK NUMBER 110125 IS A HCFC BRASS DISK STAMPED K100 BM10 ON EAST SIDEWALK OF GRANT ROAD BRIDGE OVER CYPRESS CREEK APPROXIMATELY 0.90 MILE WEST OF JONES ROAD IN KEYMAP 369A IN THE CYPRESS WATERSHED NEAR STREAM K100-00-00 ELEV. 127.25 FEET NAVD 1988 2001 ADJUSTMENT

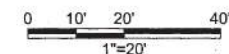
**HORIZONTAL DATUM:**

ALL HORIZONTAL COORDINATES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. THE COORDINATES & DISTANCES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE FACTOR OF 0.999870017 (TxDOT factor). 100 YR FL=125.00'



MATCH LINE STA. 11+00 - SEE SHEET 19

MATCH LINE STA. 16+00 - SEE SHEET 23



TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED CALL CENTERPOINT ENERGY AT 713-207-2222.

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

**PRIVATE UTILITY LINES SHOWN**

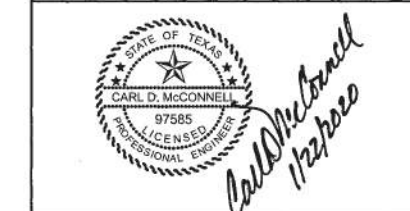
*Alph* Date: 1-23-20  
CENTERPOINT ENERGY/UNDERGROUND ELECTRICAL FACILITIES VERIFICATION ONLY  
(ONE SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES - NOT TO BE USED FOR CONFLICT VERIFICATIONS) SIGNATURE VALID FOR SIX MONTHS.

*Alph* Date: 1-23-20  
CENTERPOINT ENERGY/NATURAL GAS FACILITIES VERIFICATION ONLY.  
(ONE SIGNATURE VERIFIES THAT YOU HAVE SHOWN ALL NATURAL GAS LINES CORRECTLY - NOT TO BE USED FOR CONFLICT VERIFICATIONS) SIGNATURE VALID FOR SIX MONTHS.

*Seant* Date: 1-22-20  
Approved for AT&T Texas/SWBT underground conduit facilities only. SIGNATURE VALID FOR ONE YEAR.



NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY  
PROJECT 28-B  
PROPOSED 60" AND 54" WATER LINE ALONG GRANT ROAD AND COPELAND ROAD  
**GRANT ROAD BASELINE PLAN**  
STA. 11+00 TO 16+00



DRAWN BY: \_\_\_\_\_ CHECKED BY: \_\_\_\_\_

**DANNENBAUM**  
ENGINEERING CORPORATION  
T.B.P.E. FIRM REGISTRATION #392  
3100 WEST ALABAMA HOUSTON, TEXAS 77056 (713) 520-9570

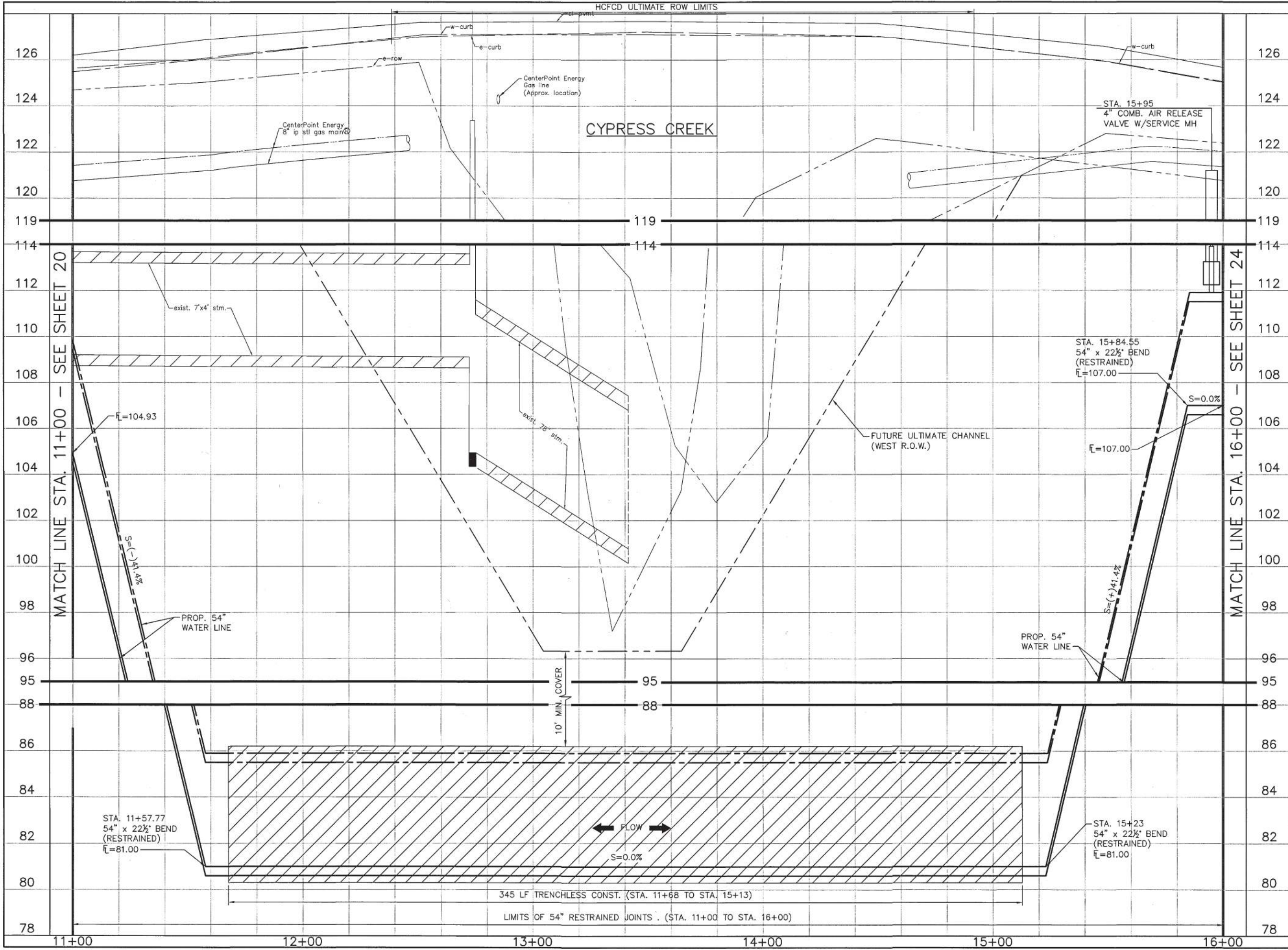
LAST MODIFIED: Jan 21, 2020 - 9:51am BY USER: yimvy  
DWG. LOCATION: G:\1110\4876-01 NHCRWA PROJECT 28-B\ACAD\Drawings\Civil\ DWG. NAME: 4876-01\_21.dwg

**CAUTION:**  
EXISTING GAS PIPELINE LOCATIONS AND ELEVATIONS HAVE NOT BEEN VERIFIED. CONTRACTOR RESPONSIBLE FOR FIELD VERIFICATION OF UNDERGROUND PIPELINES.

THE LOCATION OF THE BURIED CABLES WITHIN THE PROJECT LIMITS HAVE NOT BEEN VERIFIED. BEFORE COMMENCING WORK CALL 1-800-344-8377 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE UNDERGROUND LINES FIELD-LOCATED.

**CAUTION:**  
OVERHEAD POWER LINES.

LAST MODIFIED: Jan 21, 2020 - 9:51am BY USER: yimvy  
 DWG. LOCATION: G:\1110\4876-01 NHCRWA PROJECT 28-B\ACAD\Drawings\Civil\  
 DWG. NAME: 4876-01\_22.dwg



No.	Date	Revisions	App.

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

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

TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED CALL CENTERPOINT ENERGY AT 713-257-2222.

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

PRIVATE UTILITY LINES SHOWN

*Alch* Date: 1-23-20  
 CENTERPOINT ENERGY/UNDERGROUND ELECTRICAL FACILITIES VERIFICATION ONLY  
 ONE SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES - NOT TO BE USED FOR COMPLETE VERTICAL SIGNATURE VALID FOR SIX MONTHS.

*Alch* Date: 1-23-20  
 CENTERPOINT ENERGY/NATURAL GAS FACILITIES VERIFICATION ONLY.  
 ONE SIGNATURE VERIFIES THAT YOU HAVE SHOWN ONP NATURAL GAS LINES CORRECTLY - NOT TO BE USED FOR CONFLICT VERIFICATION.  
 (GAS SERVICE LINES ARE NOT SHOWN) SIGNATURE VALID FOR SIX MONTHS.

*Alch* Date: 1-23-20  
 Approved for AT&T Texas/SWBT underground conduit facilities only.  
 SIGNATURE VALID FOR ONE YEAR.

**North Harris County REGIONAL WATER Authority**

**AECOM** AECOM TECHNICAL SERVICES, INC.  
 13215 KATY FREEWAY, SUITE 100  
 HOUSTON, TEXAS 77094-1009  
 281.646.2400  
 WWW.AECOM.COM  
 TBPE REG. NO. F-3580

NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY  
 PROJECT 28-B  
 PROPOSED 60" AND 54" WATER LINE ALONG GRANT ROAD AND COPELAND ROAD

**GRANT ROAD BASELINE PROFILE**  
 STA. 11+00 TO 16+00

STATE OF TEXAS  
 CARL D. MCCONNELL  
 97585  
 LICENSED PROFESSIONAL ENGINEER  
*Carl D. McConnell*  
 1/22/2020

DRAWN BY: CHECKED BY:

**DANNENBAUM**  
 ENGINEERING CORPORATION  
 T.B.P.E. FIRM REGISTRATION #392  
 3100 WEST ALABAMA HOUSTON, TEXAS 77056 (713) 520-9570

SHEET No: 22 of 99



No.	Date	Revisions	App.

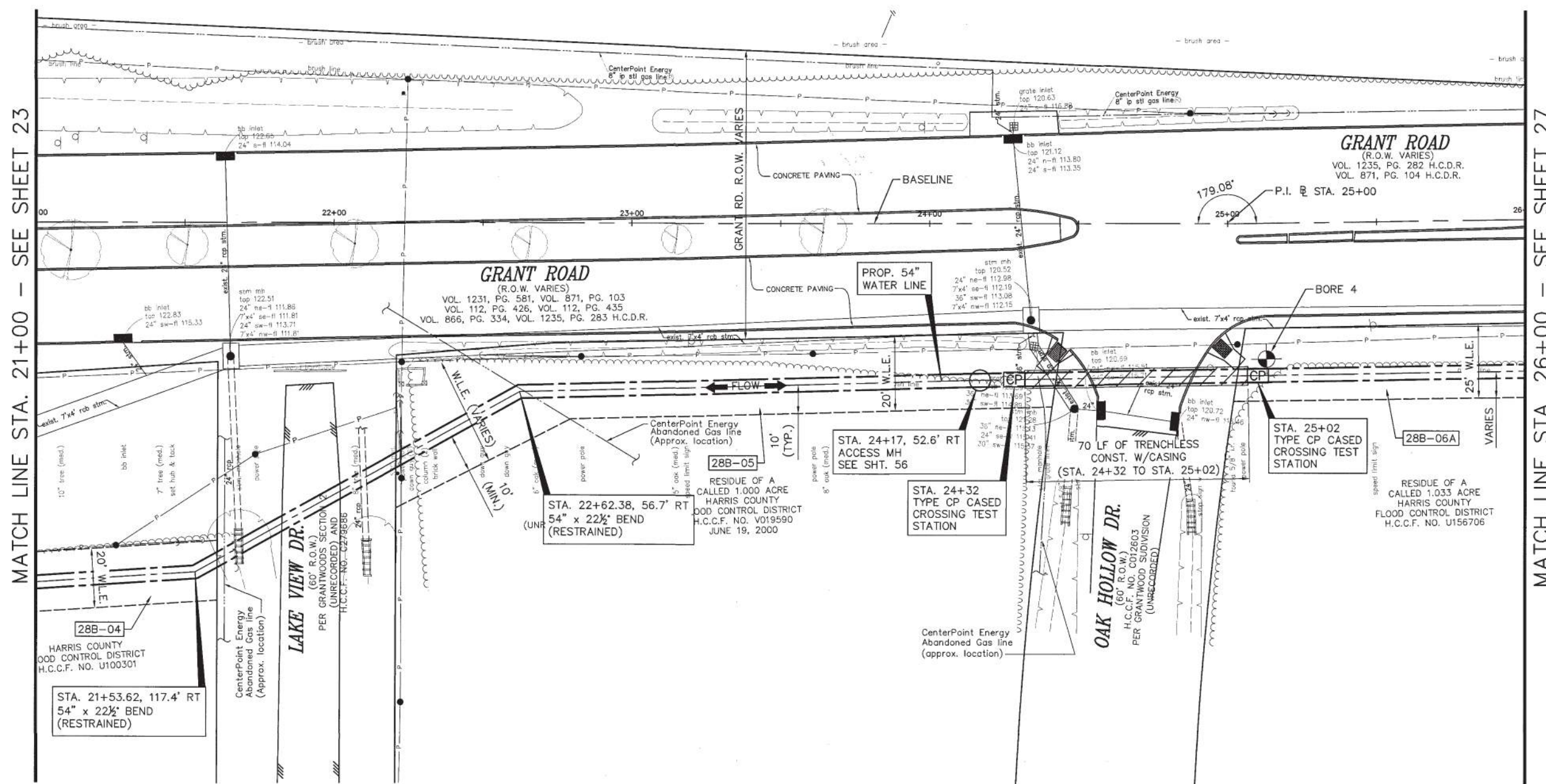
**CAUTION:**  
EXISTING GAS PIPELINE LOCATIONS  
AND ELEVATIONS HAVE NOT BEEN VERIFIED.  
CONTRACTOR RESPONSIBLE FOR FIELD  
VERIFICATION OF UNDERGROUND PIPELINES.

THE LOCATION OF THE BURIED CABLES WITHIN THE  
PROJECT LIMITS HAVE NOT BEEN VERIFIED. BEFORE  
COMMENCING WORK CALL 1-800-344-8377 A MINIMUM  
OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE  
UNDERGROUND LINES FIELD-LOCATED.

**CAUTION:**  
OVERHEAD POWER LINES.

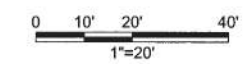
**BENCHMARK:**  
FLOODPLAIN REFERENCE MARK NUMBER 110125 IS A HCFCD  
BRASS DISK STAMPED K100 BM10 ON EAST SIDEWALK OF  
GRANT ROAD BRIDGE OVER CYPRESS CREEK APPROXIMATELY  
0.90 MILE WEST OF JONES ROAD IN KEYMAP 369A IN THE  
CYPRESS WATERSHED NEAR STREAM K100-00-00  
ELEV. 127.25 FEET NAVD 1988 2001 ADJUSTMENT

**HORIZONTAL DATUM:**  
ALL HORIZONTAL COORDINATES ARE BASED ON TEXAS STATE  
PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83.  
THE COORDINATES & DISTANCES SHOWN ARE SURFACE AND  
MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE  
FACTOR OF 0.999870017 (TxDOT factor).  
100 YR FL=125.00'



MATCH LINE STA. 21+00 - SEE SHEET 23

MATCH LINE STA. 26+00 - SEE SHEET 27



TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED CALL CENTERPOINT ENERGY AT 713-207-2322.

**NOTICE:**  
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT 48 HOURS BEFORE YOU DO SO THAT UNDERGROUND LINES CAN BE MARKED. THIS VERIFICATION DOES NOT PAULF YOUR OBLIGATION TO CALL 811.

**PRIVATE UTILITY LINES SHOWN**

*W. E. H.* Date: 1-23-20  
CENTERPOINT ENERGY/UNDERGROUND ELECTRICAL FACILITIES VERIFICATION ONLY

*W. E. H.* Date: 1-23-20  
CENTERPOINT ENERGY/NATURAL GAS FACILITIES VERIFICATION ONLY.

*J. Paul* Date: 1-22-20  
Approved for AT&T Texas/SWBT underground conduit facilities only. SIGNATURE VALID FOR ONE YEAR



**AECOM**  
AECOM TECHNICAL SERVICES, INC.  
15219 KATY FREDWAY, SUITE 100  
HOUSTON, TEXAS 77054-1008  
281.546.2400  
WWW.AECOM.COM  
TSPC REG. NO. F-3580

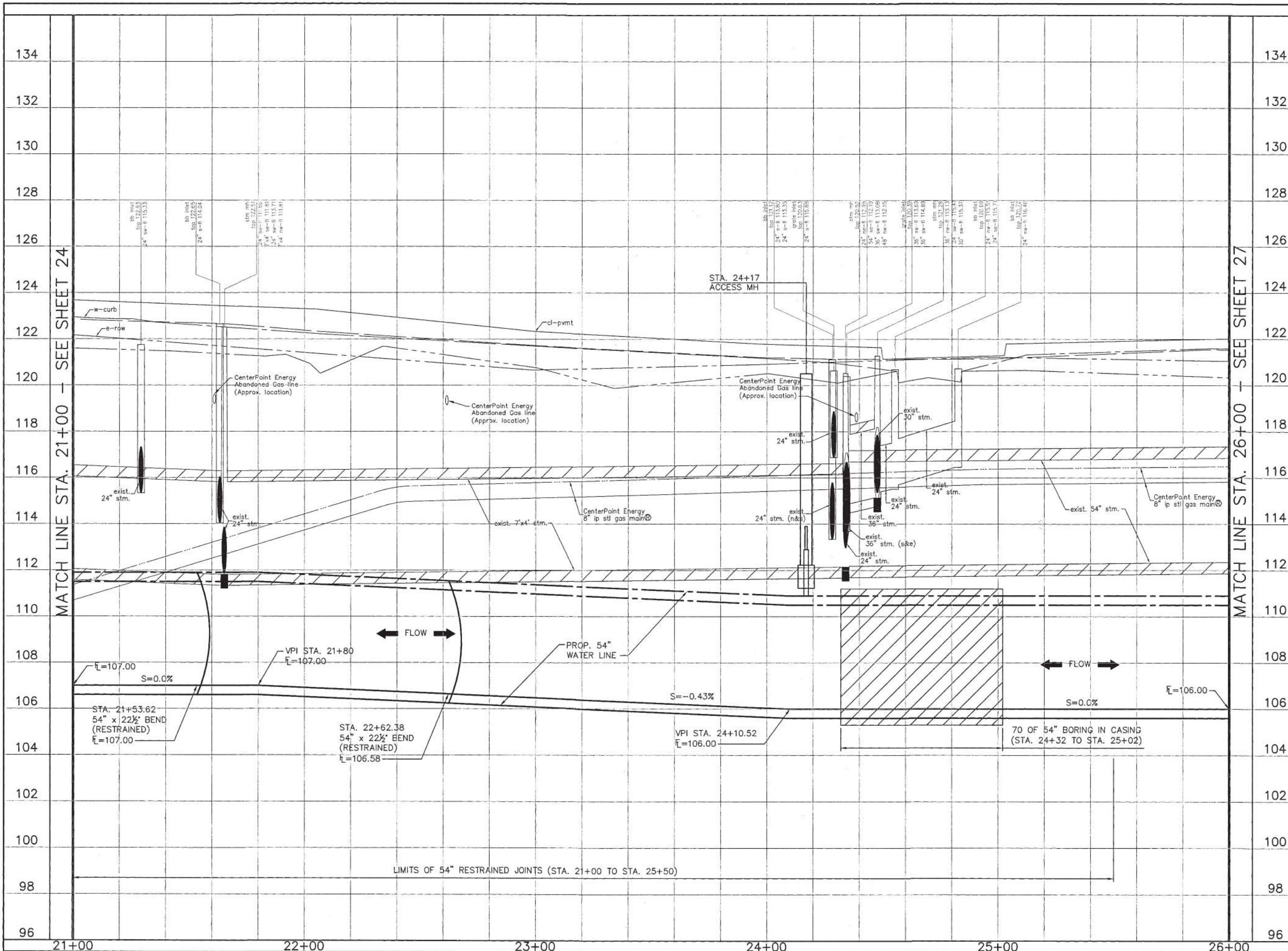
**NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY**  
PROJECT 28-B  
PROPOSED 60" AND 54" WATER LINE ALONG GRANT ROAD AND COPELAND ROAD  
**GRANT ROAD BASELINE PLAN**  
STA. 21+00 TO 26+00

STATE OF TEXAS  
CARL D. MCCONNELL  
97585  
LICENSED PROFESSIONAL ENGINEER  
*Carl D. McConnell*  
1/22/2020

DRAWN BY: CHECKED BY:  
**DANNENBAUM**  
ENGINEERING CORPORATION  
T.B.P.E. FIRM REGISTRATION #392  
3100 WEST ALABAMA HOUSTON, TEXAS 77058 (713) 520-9570

LAST MODIFIED: Jan 21, 2020 - 11:14am BY USER: jimmy  
DWG. LOCATION: G:\1110\4876-01 NHCRWA PROJECT 28-B\ACAD\Drawings\Civil  
DWG. NAME: 4876-01\_25.dwg

LAST MODIFIED: Jan 21, 2020 - 11:14am  
 BY USER: yimw  
 DWG. LOCATION: G:\1110\4876-01 NHCRA PROJECT 28-B\ACAD\Drawings\Civil  
 DWG. NAME: 4876-01\_26.dwg



No.	Date	Revisions	App.

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

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

TO AVOID FOR LINES TO BE TURNED OFF OR MOVED CALL CENTERPOINT ENERGY AT 713-207-2222.

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

PRIVATE UTILITY LINES SHOWN

*Alfred* Date: 1-23-20  
 CENTERPOINT ENERGY/UNDERGROUND ELECTRICAL FACILITIES VERIFICATION ONLY  
 (THE SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES - NOT TO BE USED FOR CONFLICT VERIFICATION) SIGNATURE VALID FOR SIX MONTHS.

*Alfred* Date: 1-23-20  
 CENTERPOINT ENERGY/NATURAL GAS FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES THAT YOU HAVE SHOWN CHP NATURAL GAS LINES CORRECTLY. NOT TO BE USED FOR CONFLICT VERIFICATION.)  
 (THE SIGNATURE VERIFIES NOT SHOWN SIGNATURE VALID FOR SIX MONTHS.)

*Alfred* Date: 1-22-20  
 Approved for AT&T Texas/SWBET underground conduit facilities only. SIGNATURE VALID FOR ONE YEAR.

**North Harris County REGIONAL WATER Authority**

**AECOM**  
 AECOM TECHNICAL SERVICES, INC.  
 19219 KATY FREEMAN, SUITE 100  
 HOUSTON, TEXAS 77064-1009  
 281.646.2400  
 WWW.AECOM.COM  
 TBPE REG. NO. F-3580

NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY  
 PROJECT 28-B  
 PROPOSED 60" AND 54" WATER LINE ALONG GRANT ROAD AND COPELAND ROAD

**GRANT ROAD BASELINE PROFILE  
 STA. 21+00 TO 26+00**

**DANNENBAUM**  
 ENGINEERING CORPORATION  
 T.B.P.E. FIRM REGISTRATION #392  
 3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

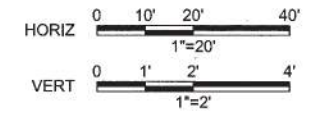
DRAWN BY: \_\_\_\_\_ CHECKED BY: \_\_\_\_\_

SHEET No. 26 OF 99

No.	Date	Revisions	App.

**BENCHMARK:**  
 FLOODPLAIN REFERENCE MARK NUMBER 110125 IS A HCFCO BRASS DISK STAMPED K100 BM10 ON EAST SIDEWALK OF GRANT ROAD BRIDGE OVER CYPRESS CREEK APPROXIMATELY 0.90 MILE WEST OF JONES ROAD IN KEYMAP 369A IN THE CYPRESS WATERSHED NEAR STREAM K100-00-00 ELEV. 127.25 FEET NAVD 1988 2001 ADJUSTMENT

**HORIZONTAL DATUM:**  
 ALL HORIZONTAL COORDINATES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. THE COORDINATES & DISTANCES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE FACTOR OF 0.999870017 (1xDOT factor).  
 100 YR FL=125.00'



TO AVOID FOR LINES TO BE TURNED OFF OR MOVED CALL CENTERPOINT ENERGY AT 713-257-2222.

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

PRIVATE UTILITY LINES SHOWN

*alpk* Date: 1-23-20  
 CENTERPOINT ENERGY/UNDERGROUND ELECTRICAL FACILITIES VERIFICATION ONLY

*alpk* Date: 1-23-20  
 CENTERPOINT ENERGY/NATURAL GAS FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES - NOT TO BE USED FOR CONDUIT VERIFICATION) SIGNATURE VALID FOR SIX MONTHS.

*alpk* Date: 1-23-20  
 CENTERPOINT ENERGY/NATURAL GAS FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES THAT YOU HAVE SHOWN ONP NATURAL GAS LINES CORRECTLY - NOT TO BE USED FOR CONDUIT VERIFICATION) (ONE SERVICE LINE IS NOT SHOWN) SIGNATURE VALID FOR SIX MONTHS.

*alpk* Date: 1-22-20  
 Approved for AT&T Texas/SWBT underground conduit facilities only. SIGNATURE VALID FOR ONE YEAR



**AECOM**  
 AECOM TECHNICAL SERVICES, INC.  
 16219 KATY FREEWAY, SUITE 100  
 HOUSTON, TEXAS 77054-1009  
 281.646.2400  
 WWW.AECOM.COM  
 TEXAS REG. NO. F-3580

NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY  
 PROJECT 28-B  
 PROPOSED 60" AND 54" WATER LINE ALONG GRANT ROAD AND COPELAND ROAD

**GRANT ROAD BASELINE  
 PLAN AND PROFILE  
 STA. 26+00 TO 31+00**

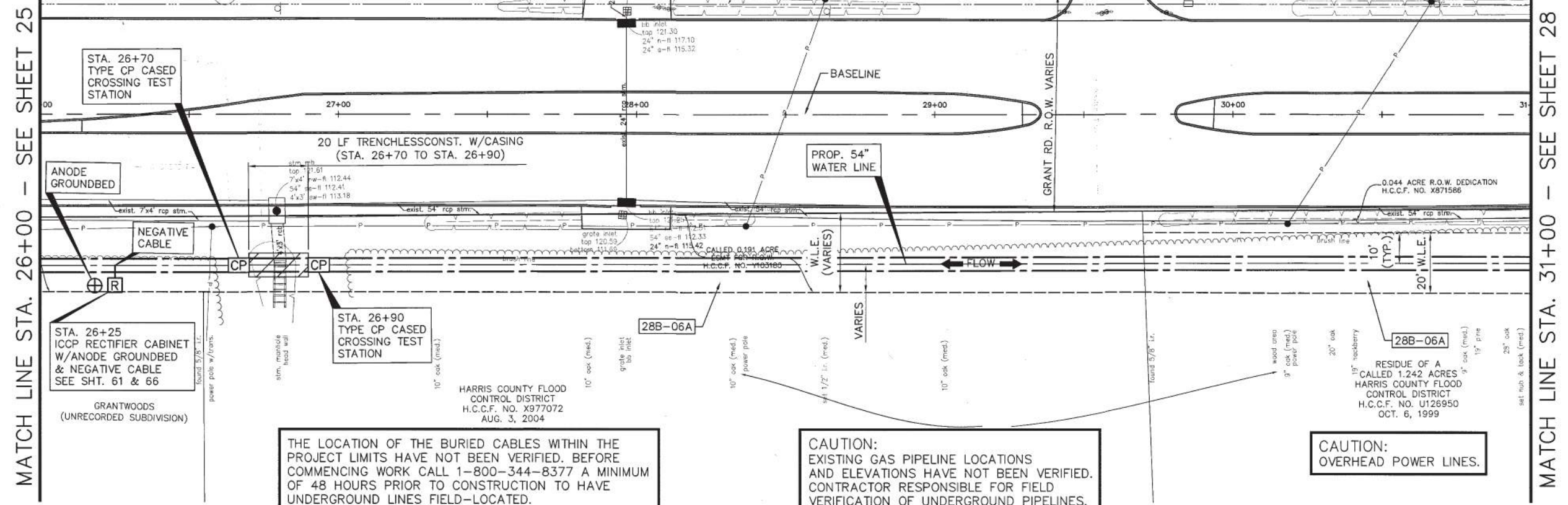


*Carl D. McConnell*  
 1/22/2020

DRAWN BY: CHECKED BY:

**DANNENBAUM**  
 ENGINEERING CORPORATION  
 T.B.P.E. FIRM REGISTRATION #392  
 3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

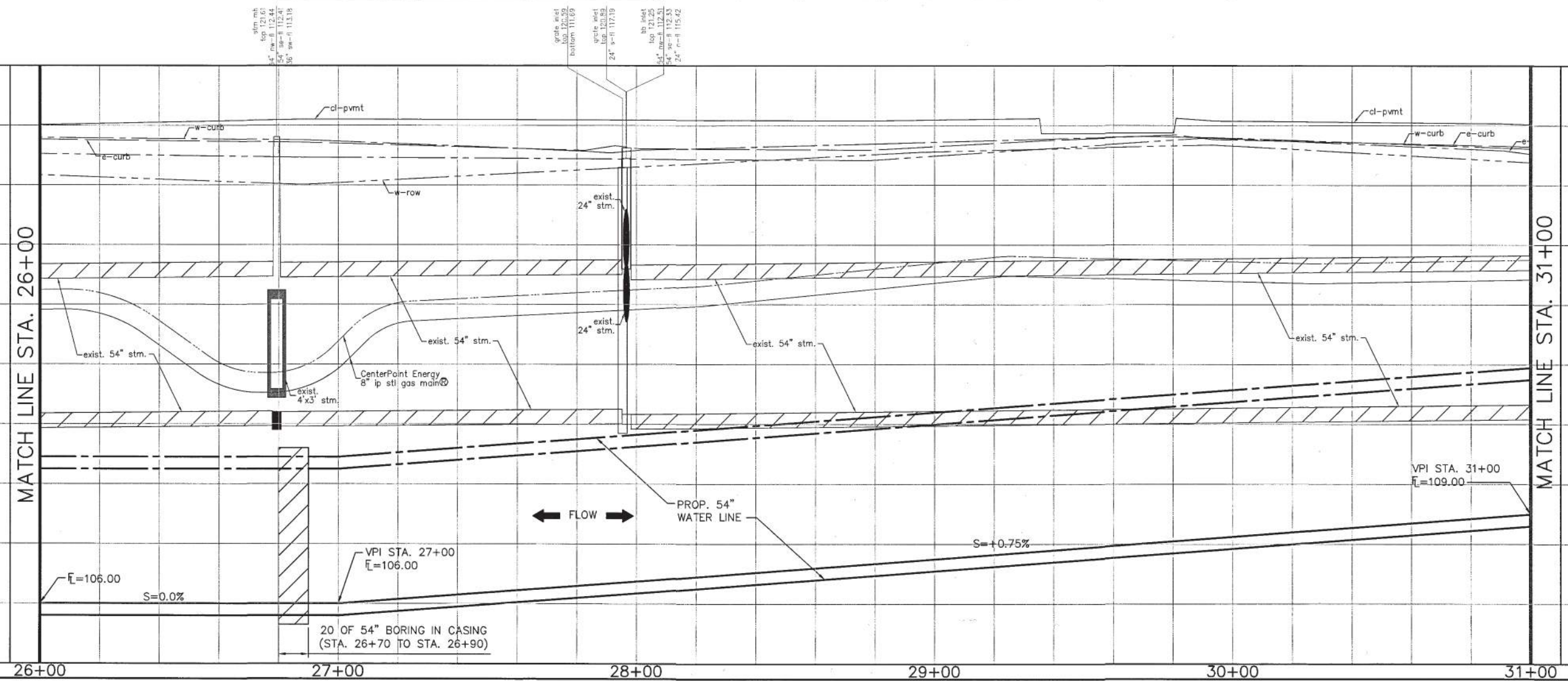
SHEET No. 27 OF 99



THE LOCATION OF THE BURIED CABLES WITHIN THE PROJECT LIMITS HAVE NOT BEEN VERIFIED. BEFORE COMMENCING WORK CALL 1-800-344-8377 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE UNDERGROUND LINES FIELD-LOCATED.

**CAUTION:**  
 EXISTING GAS PIPELINE LOCATIONS AND ELEVATIONS HAVE NOT BEEN VERIFIED. CONTRACTOR RESPONSIBLE FOR FIELD VERIFICATION OF UNDERGROUND PIPELINES.

**CAUTION:**  
 OVERHEAD POWER LINES.



LAST MODIFIED: Jan 21, 2020 - 11:15am BY USER: yimvy  
 DWG. LOCATION: G:\1110\4876-01 NHCRWA PROJECT 28-B\ACAD\Drawings\Civil  
 DWG. NAME: 4876-01\_27.dwg

MATCH LINE STA. 26+00 - SEE SHEET 25

MATCH LINE STA. 31+00 - SEE SHEET 28

No.	Date	Revisions	App.

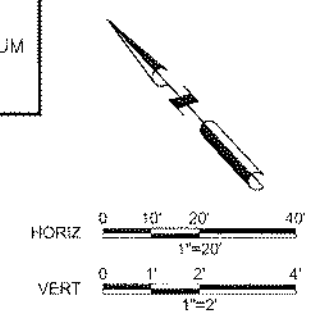
**BENCHMARK:**  
 FLOODPLAIN REFERENCE MARK NUMBER 110125 IS A HOT-DIP BRASS DISK STAMPED 110125 ON EAST SIDEWALK OF GRANT ROAD BRIDGE OVER CYPRESS CREEK APPROXIMATELY 0.90 MILE WEST OF JONES ROAD IN KEYMAR 389A IN THE CYPRESS WATERSHED NEAR STREAM 1100-00-00. ELEV. 421.25 FEET NAVD 1988 2001 ADJUSTMENT.

**HORIZONTAL DATUM:**  
 ALL HORIZONTAL COORDINATES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. THE COORDINATES & ELEVATIONS SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE FACTOR OF 0.999970017 (1:007 factor).  
 100 YR FL=125.00'

**CAUTION:**  
 OVERHEAD POWER LINES.

**CAUTION:**  
 EXISTING GAS PIPELINE LOCATIONS AND ELEVATIONS HAVE NOT BEEN VERIFIED. CONTRACTOR RESPONSIBLE FOR FIELD VERIFICATION OF UNDERGROUND PIPELINES.

THE LOCATION OF THE BURIED CABLES WITHIN THE PROJECT LIMITS HAVE NOT BEEN VERIFIED. BEFORE COMMENCING WORK CALL 1-800-344-8377 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE UNDERGROUND LINES FIELD-LOCATED.

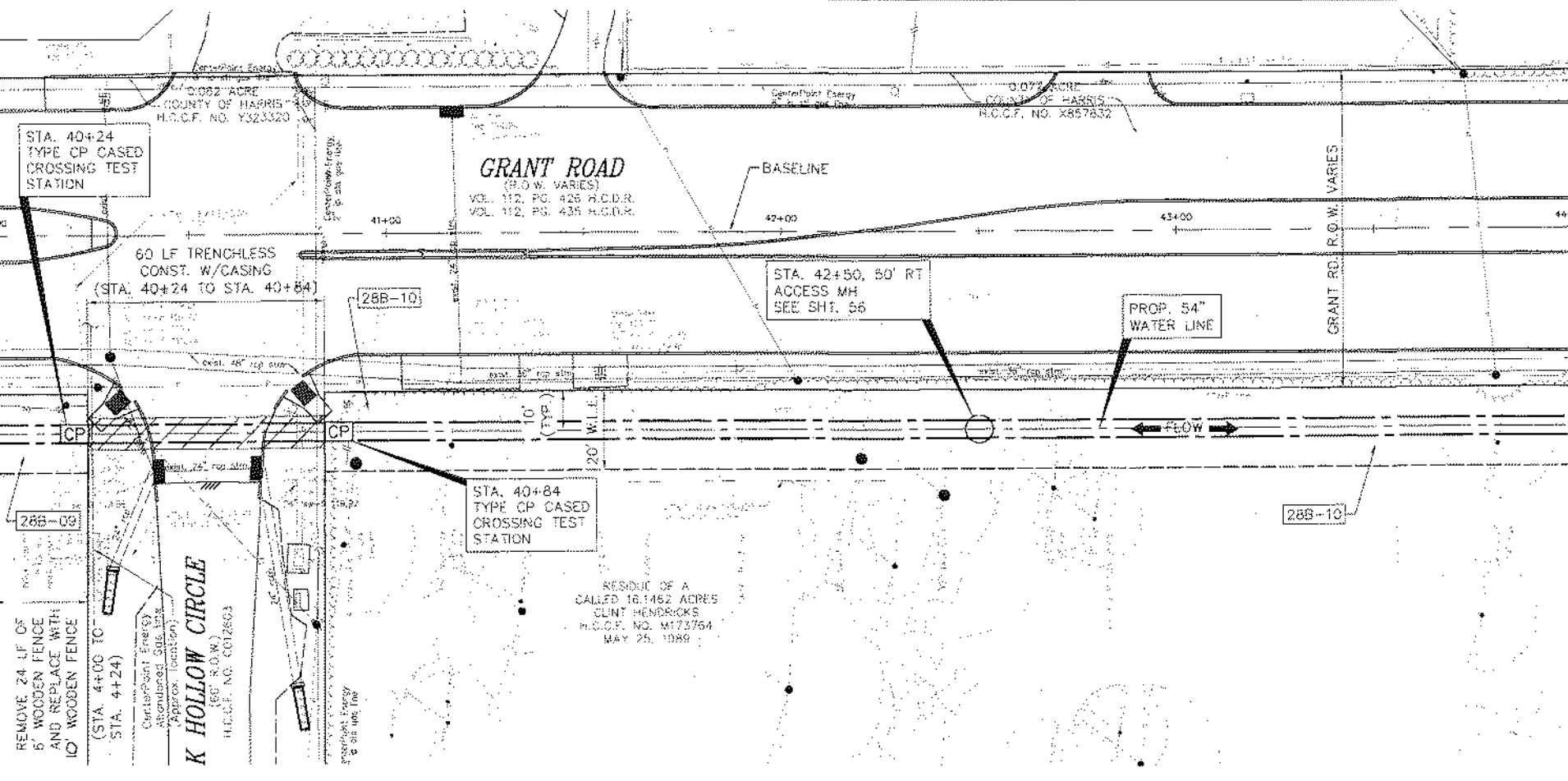


**RIGHT OF WAY AND EASEMENT AGREEMENT, PARCEL 28B-09**

1. THE PORTIONS OF THE FENCE RUNNING ALONG THE WESTERLY BOUNDARY OF PARCEL 28B-09, ADJACENT TO OAK HOLLOW DR., AND THE PORTIONS OF THE FENCE RUNNING ALONG THE WESTERLY BOUNDARY OF PARCEL 28B-09 ADJACENT TO THE PARK THAT ARE REMOVED BY THE AUTHORITY FOR CONSTRUCTION OF THE WATER PIPELINE SHALL BE REPLACED WITH A WOODEN FENCES THE SAME HEIGHT AND SIMILAR IN KIND TO THE EXISTING FENCES.

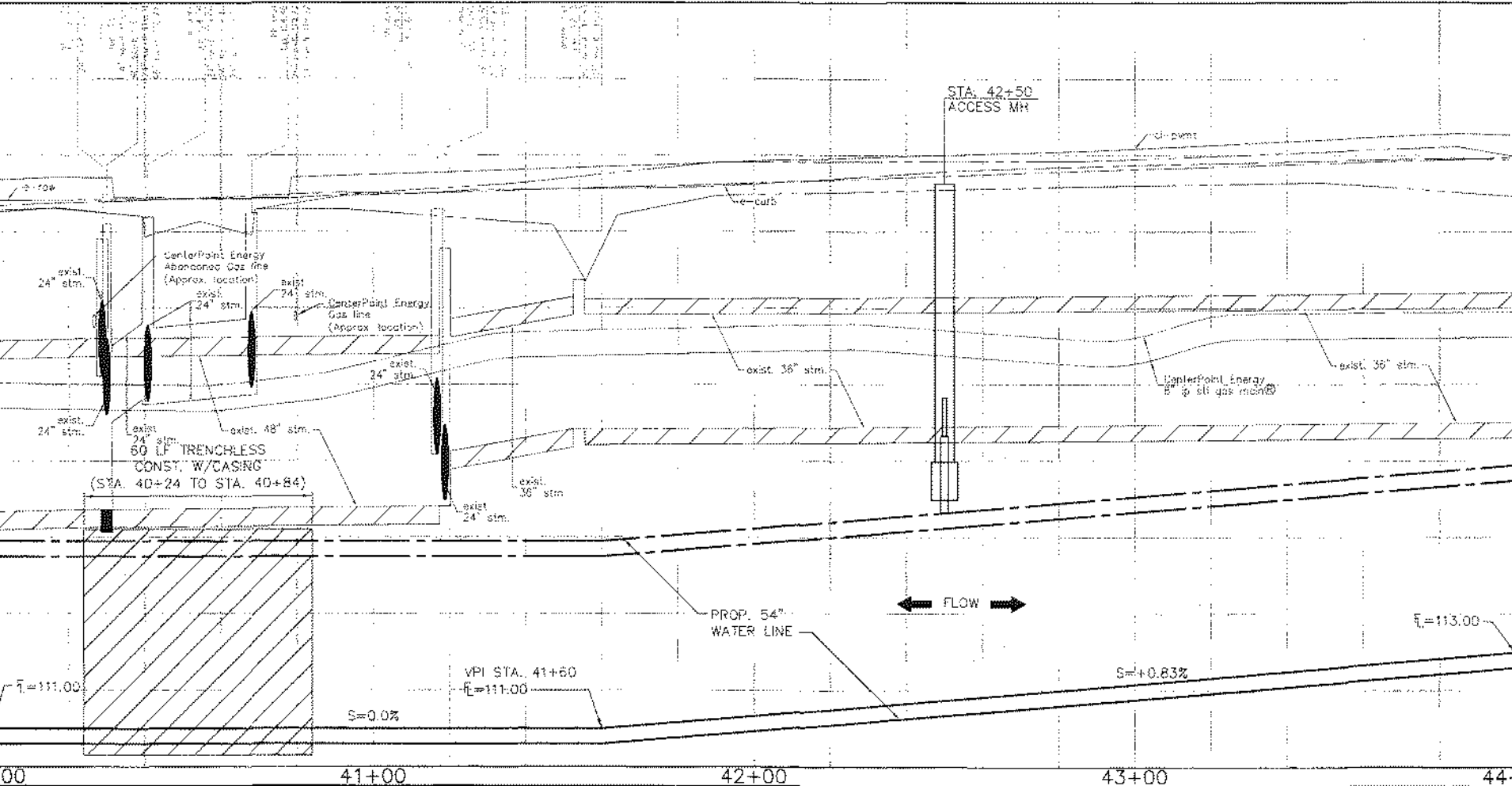
MATCH LINE STA. 40+00 - SEE SHEET 29

MATCH LINE STA. 44+00 - SEE SHEET 31



MATCH LINE STA. 40+00

MATCH LINE STA. 44+00



10. UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE TO CENTERLINE UNLESS OTHERWISE NOTED.  
 FOR YOUR SAFETY, YOU ARE ADVISED TO CALL 811 AT LEAST 48 HOURS BEFORE ANY EXCAVATION OR OTHER WORK THAT MAY DISTURB UNDERGROUND UTILITIES. THIS SERVICE IS PROVIDED FOR INFORMATION ONLY. IT IS NOT A GUARANTEE OF THE LOCATION OR DEPTH OF ANY UTILITIES.

**PRIVATE UTILITY LINES SHOWN**

*[Signature]* DATE 1-23-20  
 CENTERPOINT ENERGY/UNDERGROUND ELECTRICAL FACILITIES VERIFICATION ONLY

*[Signature]* DATE 1-23-20  
 CENTERPOINT ENERGY/NATURAL GAS FACILITIES VERIFICATION ONLY. THIS SERVICE VERIFIES THAT YOU HAVE SHOWN ON MAPS AND LISTS CORRECTLY. THIS SERVICE DOES NOT VERIFY THE LOCATION OR DEPTH OF ANY UTILITIES.

*[Signature]* DATE 1-22-20  
 APPROVED FOR AECOM TEXAS/SUBMIT UNDERGROUND CONSULT FACILITIES ONLY. SIGNATURE VALID FOR 120 DAYS.

**North Harris County REGIONAL WATER Authority**

**AECOM**  
 AECOM TECHNICAL SERVICES, INC.  
 19219 KATY FRECKWAL, SUITE 100  
 HOUSTON, TEXAS 77058-1259  
 281.648.2400  
 WWW.AECOM.COM  
 TEXAS REG. NO. F-35960

NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY  
 PROJECT 28-B  
 PROPOSED 60" AND 54" WATER LINE ALONG GRANT ROAD AND COPELAND ROAD

**GRANT ROAD BASELINE  
 PLAN AND PROFILE  
 STA. 40+00 TO 44+00**

STATE OF TEXAS  
 CARL D. MACDONNELL  
 87585  
 PROFESSIONAL ENGINEER

DRAWN BY: [Signature] CHECKED BY: [Signature]

**DANNENBAUM**  
 ENGINEERING CORPORATION  
 F.B.P.E. FIRM REGISTRATION #382  
 3100 WEST ALABAMA, HOUSTON, TEXAS 77058 (713) 520-8570

SHEET No: 30 of 99

LAST MODIFIED: Jan 21, 2020 9:57am BY: jusef\_yimmi  
 DWG. LOCATION: C:\1110\48781-01\_MFCRWA\_PROJECT\_28-B\AECOM\Drawings\Civil  
 DWG. NAME: 28-B-01\_30.dwg

No.	Date	Revisions	App.

**CAUTION:**  
EXISTING GAS PIPELINE LOCATIONS  
AND ELEVATIONS HAVE NOT BEEN VERIFIED.  
CONTRACTOR RESPONSIBLE FOR FIELD  
VERIFICATION OF UNDERGROUND PIPELINES.

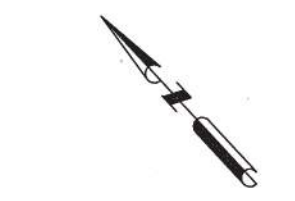
THE LOCATION OF THE BURIED CABLES WITHIN THE  
PROJECT LIMITS HAVE NOT BEEN VERIFIED. BEFORE  
COMMENCING WORK CALL 1-800-344-8377 A MINIMUM  
OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE  
UNDERGROUND LINES FIELD-LOCATED.

CALLED 0.0024 ACRES  
COY. L. BASKIN, SR.  
H.C.C.F. NO. RP-2016-316B41  
JULY 20, 2016

**BENCHMARK:**  
FLOODPLAIN REFERENCE MARK NUMBER 110125 IS A HCFCD  
BRASS DISK STAMPED K100 BM10 ON EAST SIDEWALK OF  
GRANT ROAD BRIDGE OVER CYPRESS CREEK APPROXIMATELY  
0.90 MILE WEST OF JONES ROAD IN KEYMAP 369A IN THE  
CYPRESS WATERSHED NEAR STREAM K100-00-00  
ELEV. 127.25 FEET NAVD 1988 2001 ADJUSTMENT

**HORIZONTAL DATUM:**  
ALL HORIZONTAL COORDINATES ARE BASED ON TEXAS STATE  
PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83.  
THE COORDINATES & DISTANCES SHOWN ARE SURFACE  
AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE  
FACTOR OF 0.999870017 (TxDOT factor).  
100 YR FL=125.00'

**CAUTION:**  
OVERHEAD POWER LINES.



TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED CALL CENTERPOINT ENERGY AT 713-207-2222.  
**NOTE:**  
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS VERIFICATION DOES NOT REPLACE YOUR OBLIGATION TO CALL 811.

PRIVATE UTILITY LINES SHOWN

*APRIL* Date: 1-22-20  
CENTERPOINT ENERGY/UNDERGROUND ELECTRICAL FACILITIES VERIFICATION ONLY

*APRIL* Date: 1-22-20  
CENTERPOINT ENERGY/NATURAL GAS FACILITIES VERIFICATION ONLY.  
NOT TO BE USED FOR CONDUIT VERIFICATION.  
(GAS SERVICE LINES ARE NOT SHOWN. SIGNATURE VALID FOR SIX MONTHS.)

*APRIL* Date: 1-22-20  
Approved for AT&T Texas/SWBT underground conduit facilities only.  
SIGNATURE VALID FOR ONE YEAR



AECOM TECHNICAL SERVICES, INC.  
10219 KATY FREEWAY, SUITE 100  
HOUSTON, TEXAS 77054-1009  
281.546.2400  
WWW.AECOM.COM  
TSP# REG. NO. F-3580

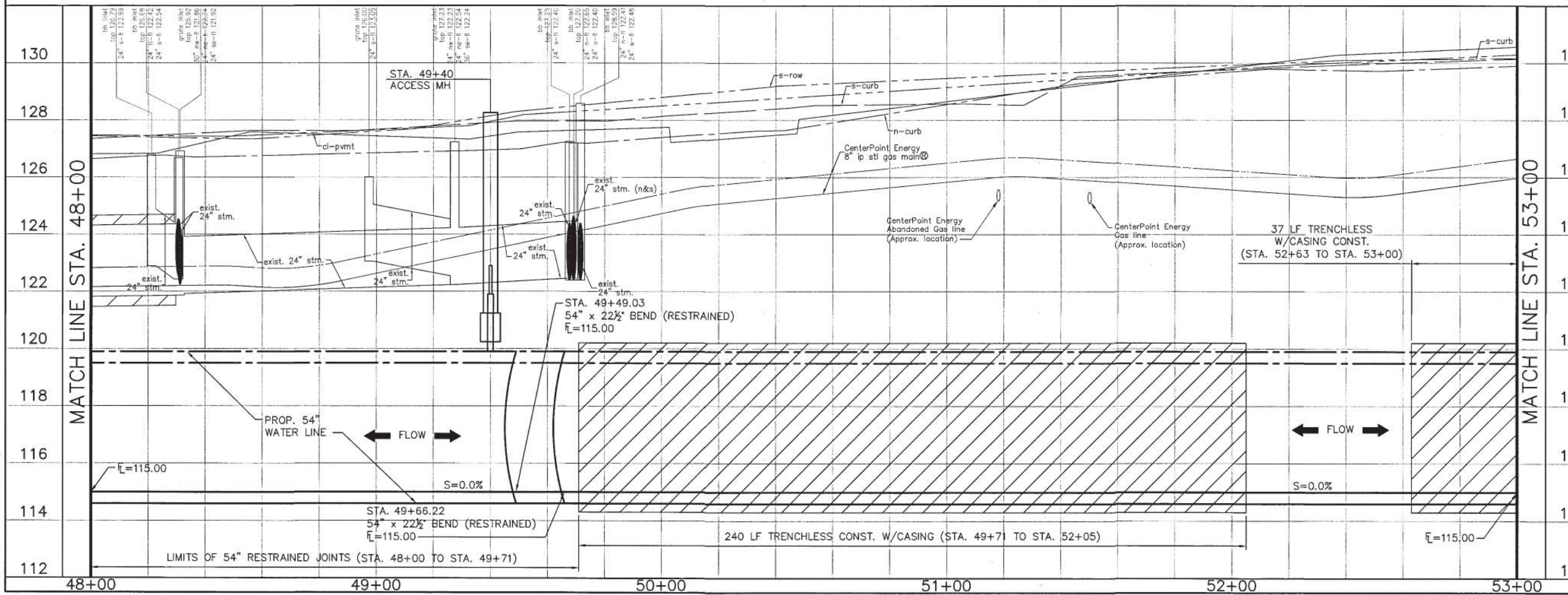
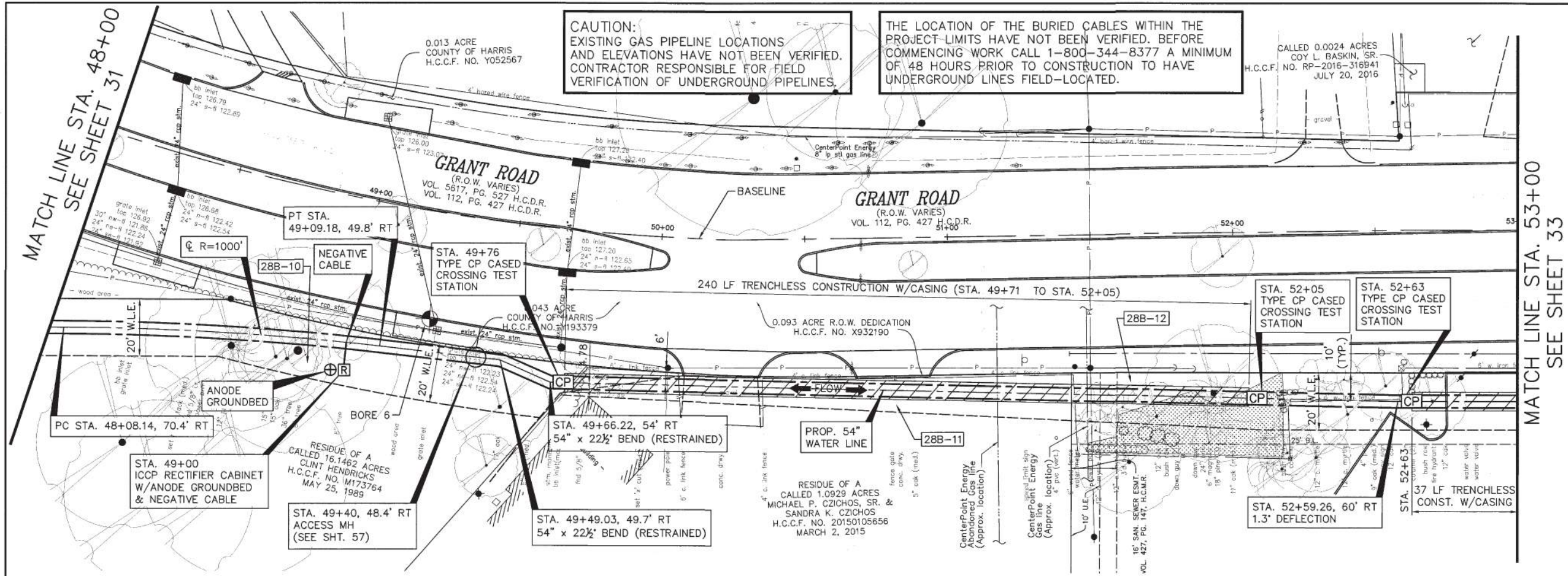
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY  
PROJECT 28-B  
PROPOSED 60" AND 54" WATER LINE ALONG GRANT  
ROAD AND COPELAND ROAD  
**GRANT ROAD BASELINE  
PLAN AND PROFILE  
STA. 48+00 TO 53+00**

STATE OF TEXAS  
CARL D. MCCONNELL  
97585  
LICENSED PROFESSIONAL ENGINEER

*Carl D. McConnell*  
1/22/2020

DANNENBAUM  
ENGINEERING CORPORATION  
T.B.P.E. FIRM REGISTRATION #392  
3100 WEST ALABAMA HOUSTON, TEXAS 77058 (713) 520-9570

SHEET  
No. 32 OF 99



LAST MODIFIED: Jan 21, 2020 - 10:00am BY USER: jimmy  
DWG. LOCATION: G:\1110\4876-01 NHCRWA PROJECT 28-B\ACAD\Drawings\Civil\  
DWG. NAME: 4876-01\_32.dwg

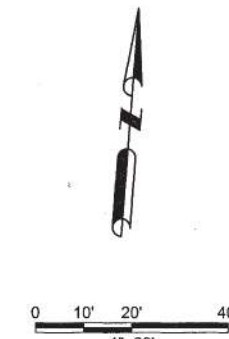
No.	Date	Revisions	App.

**BENCHMARK:**

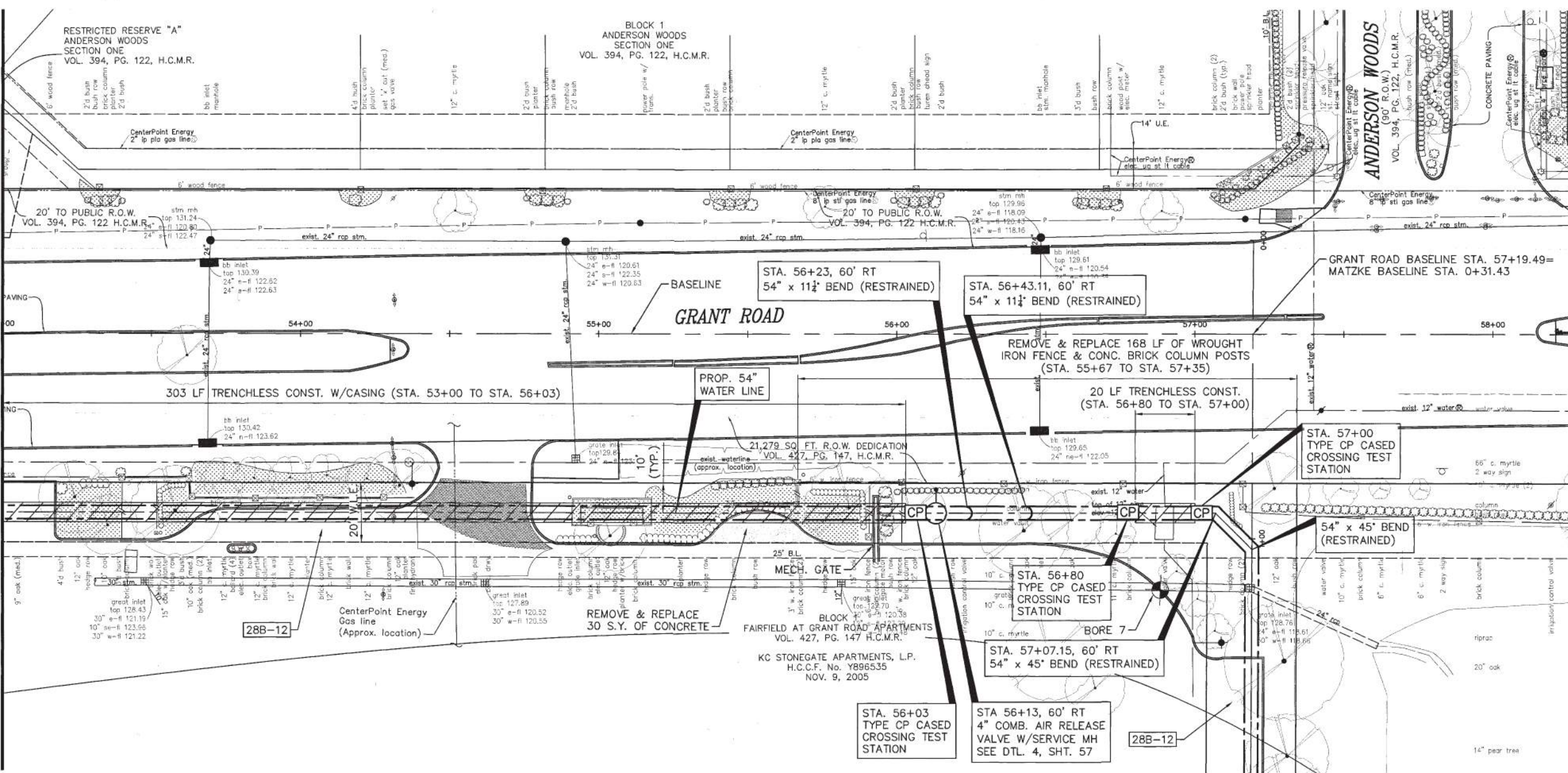
FLOODPLAIN REFERENCE MARK NUMBER 110125 IS A HCFCD BRASS DISK STAMPED K100 BMT0 ON EAST SIDEWALK OF GRANT ROAD BRIDGE OVER CYPRESS CREEK APPROXIMATELY 0.90 MILE WEST OF JONES ROAD IN KEYMAP 369A IN THE CYPRESS WATERSHED NEAR STREAM K100-00-00 ELEV. 127.25 FEET NAVD 1988 2001 ADJUSTMENT

**HORIZONTAL DATUM:**

ALL HORIZONTAL COORDINATES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. THE COORDINATES & DISTANCES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE FACTOR OF 0.999870017 (1xDOT factor).  
100 YR FL=125.00'



MATCH LINE STA. 53+00 - SEE SHEET 32



FOR CONTINUATION  
SEE SHEET 35

**CAUTION:**  
EXISTING GAS PIPELINE LOCATIONS AND ELEVATIONS HAVE NOT BEEN VERIFIED. CONTRACTOR RESPONSIBLE FOR FIELD VERIFICATION OF UNDERGROUND PIPELINES.

THE LOCATION OF THE BURIED CABLES WITHIN THE PROJECT LIMITS HAVE NOT BEEN VERIFIED. BEFORE COMMENCING WORK CALL 1-800-344-8377 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE UNDERGROUND LINES FIELD-LOCATED.

**CAUTION:**  
OVERHEAD POWER LINES.

TO AVOID FOR LINES TO BE TURNED OFF OR MOVED CALL CENTERPOINT ENERGY AT 713-207-2222.

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

PRIVATE UTILITY LINES SHOWN

*Alfa* DATE: 1-23-20  
CENTERPOINT ENERGY/UNDERGROUND ELECTRICAL FACILITIES VERIFICATION ONLY

*Alfa* DATE: 1-23-20  
CENTERPOINT ENERGY/NATURAL GAS FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES THAT YOU HAVE SHOWN ALL NATURAL GAS LINES EXISTING. NOT TO BE USED FOR CONFLICT VERIFICATION.) (GAS SERVICE LINES ARE NOT SHOWN). SIGNATURE VALID FOR SIX MONTHS.

*Carl D. McConnell* DATE: 1-22-20  
Approved for AT&T Texas/SWBT underground conduit facilities only. SIGNATURE VALID FOR ONE YEAR.



**AECOM**  
AECOM TECHNICAL SERVICES, INC.  
19219 KATY FREEWAY, SUITE 100  
HOUSTON, TEXAS 77064-1009  
281-546-2400  
WWW.AECOM.COM  
TSP# REG. NO. F-3580

NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY  
PROJECT 28-9  
PROPOSED 60" AND 54" WATER LINE ALONG GRANT ROAD AND COPELAND ROAD  
**GRANT ROAD BASELINE PLAN**  
STA. 53+00 TO 58+00

*Carl D. McConnell*  
1/22/20

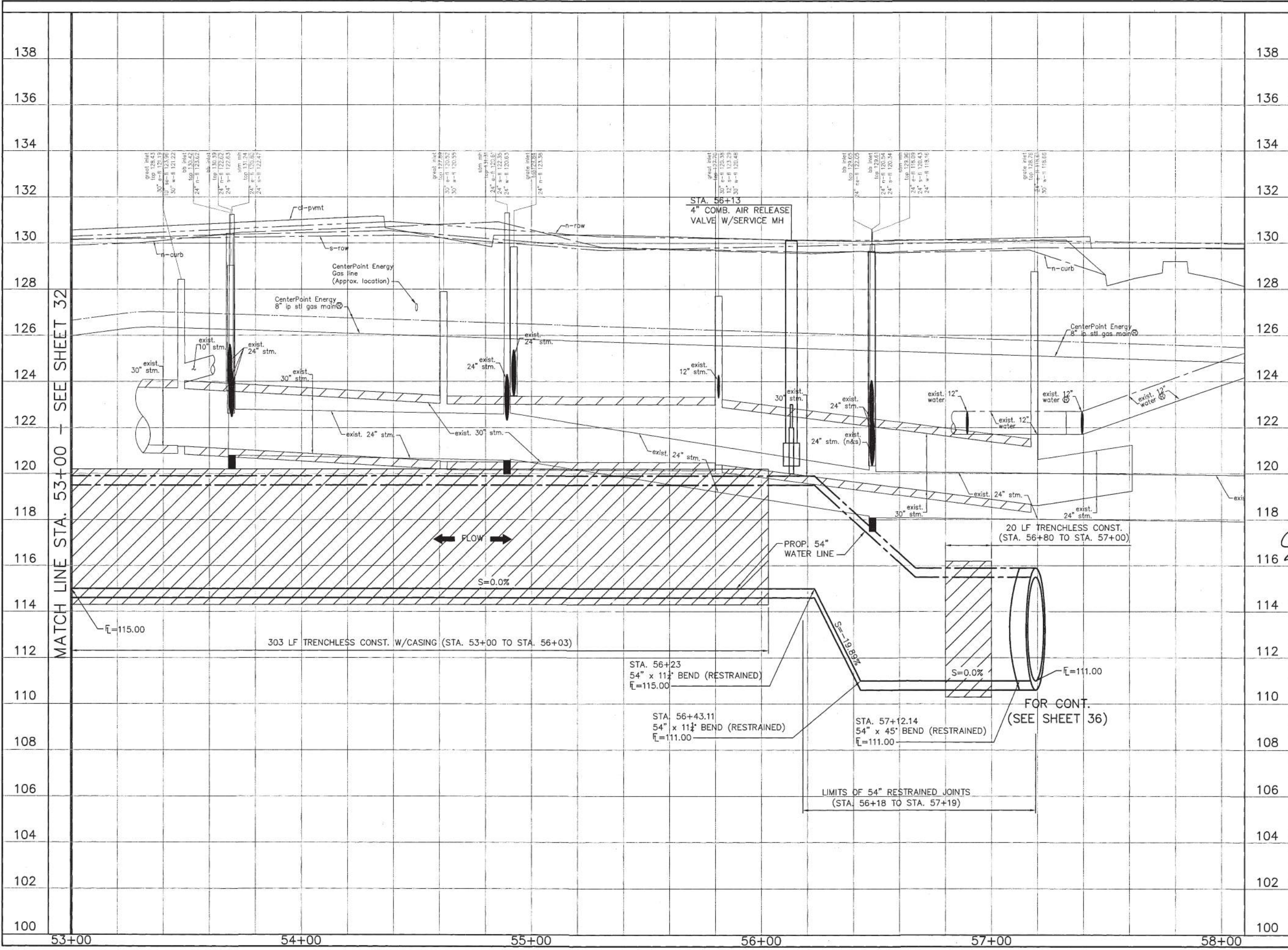
STATE OF TEXAS  
CARL D. MCCONNELL  
97585  
LICENSED PROFESSIONAL ENGINEER

DRAWN BY: \_\_\_\_\_ CHECKED BY: \_\_\_\_\_

**DANNENBAUM**  
ENGINEERING CORPORATION  
T.B.P.E. FIRM REGISTRATION #392  
3100 WEST ALABAMA HOUSTON, TEXAS 77058 (713) 520-8570

LAST MODIFIED: Jan 21, 2020 - 10:01am BY USER: yimv  
DWC LOCATION: C:\1110\4876-01 NHCRWA PROJECT 28-BVACAD\Drawings\Civil\  
DWC NAME: 4876-01\_33.dwg

LAST MODIFIED: Jan 21, 2020 - 10:01am BY USER: jimmy  
 DWG. LOCATION: C:\1110\4876-01\NHCRA PROJECT 28-B\CAD\Drawings\Civil\



MATCH LINE STA. 53+00 - SEE SHEET 32

No.	Date	Revisions	App.

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

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

TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED CALL CENTERPOINT ENERGY AT 713-257-2222.

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

PRIVATE UTILITY LINES SHOWN

*[Signature]* Date: 1-23-20  
 CENTERPOINT ENERGY/UNDERGROUND ELECTRICAL FACILITIES  
 (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES - NOT TO BE USED FOR CONFLICT VERIFICATION) SIGNATURE VALID FOR SIX MONTHS.

*[Signature]* Date: 1-23-20  
 CENTERPOINT ENERGY/NATURAL GAS FACILITIES VERIFICATION ONLY.  
 (THIS SIGNATURE VERIFIES THAT YOU HAVE SHOWN OUR NATURAL GAS LINES ACCURATELY - NOT TO BE USED FOR CONFLICT VERIFICATION) GAS SERVICE LINES ARE NOT SHOWN. SIGNATURE VALID FOR SIX MONTHS.

*[Signature]* Date: 1-22-20  
 APPROVED FOR AT&T TEXAS/SWBUT UNDERGROUND CONDUIT FACILITIES ONLY  
 SIGNATURE VALID FOR ONE YEAR

**North Harris County REGIONAL WATER Authority**

**AECOM** AECOM TECHNICAL SERVICES, INC.  
 15219 KATY FREEWAY, SUITE 100  
 HOUSTON, TEXAS 77094-1009  
 281.546.2400  
 WWW.AECOM.COM  
 TBPE REG. NO. F-3580

NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY  
 PROJECT 28-B  
 PROPOSED 60" AND 54" WATER LINE ALONG GRANT ROAD AND COPPELAND ROAD

**GRANT ROAD BASELINE PROFILE  
 STA. 53+00 TO 58+00**

*[Professional Seal]*  
 CARL D. MCGONNELL  
 97585  
 LICENSED PROFESSIONAL ENGINEER  
 Date: 1/22/20

DRAWN BY: CHECKED BY:

**DANNENBAUM**  
 ENGINEERING CORPORATION  
 T.B.P.E. FIRM REGISTRATION #392  
 3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

SHEET No. 34 OF 99

No.	Date	Revisions	App.

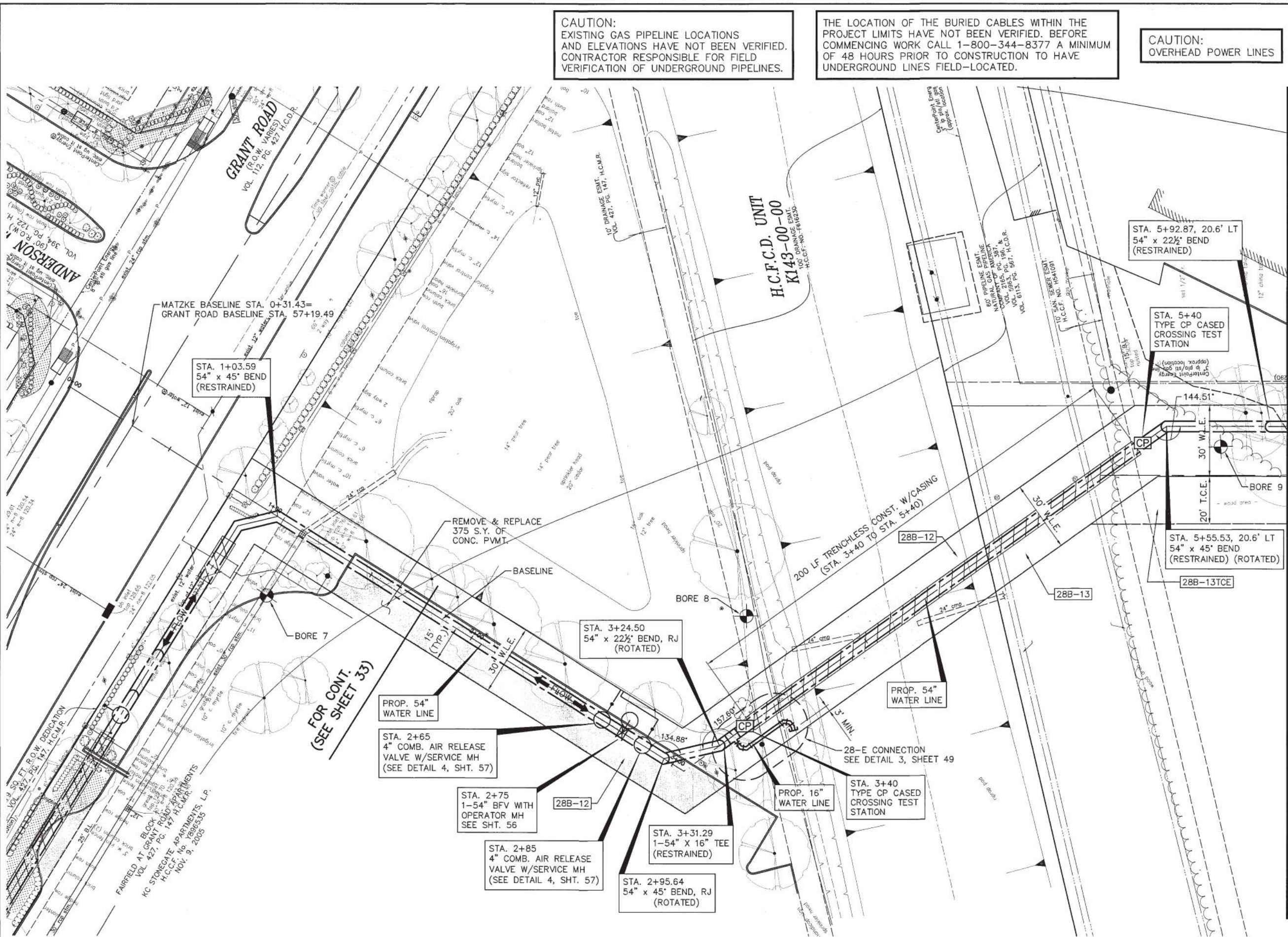
**CAUTION:**  
EXISTING GAS PIPELINE LOCATIONS  
AND ELEVATIONS HAVE NOT BEEN VERIFIED.  
CONTRACTOR RESPONSIBLE FOR FIELD  
VERIFICATION OF UNDERGROUND PIPELINES.

THE LOCATION OF THE BURIED CABLES WITHIN THE  
PROJECT LIMITS HAVE NOT BEEN VERIFIED. BEFORE  
COMMENCING WORK CALL 1-800-344-8377 A MINIMUM  
OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE  
UNDERGROUND LINES FIELD-LOCATED.

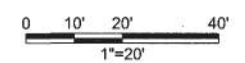
**CAUTION:**  
OVERHEAD POWER LINES

**BENCHMARK:**  
FLOODPLAIN REFERENCE MARK NUMBER 110125 IS A HCFCD  
BRASS DISK STAMPED K100 BM10 ON EAST SIDEWALK OF  
GRANT ROAD BRIDGE OVER CYPRESS CREEK APPROXIMATELY  
0.90 MILE WEST OF JONES ROAD IN KEYMAP 369A IN THE  
CYPRESS WATERSHED NEAR STREAM K100-00-00  
ELEV. 127.25 FEET NAVD 1988 2001 ADJUSTMENT

**HORIZONTAL DATUM:**  
ALL HORIZONTAL COORDINATES ARE BASED ON TEXAS STATE  
PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83.  
THE COORDINATES & DISTANCES SHOWN ARE SURFACE AND  
MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE  
FACTOR OF 0.999870017 (TxDOT factor).  
100 YR FL=125.00'



MATCH LINE STA. 6+00 - SEE SHEET 37



TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED CALL CENTERPOINT ENERGY AT 713-257-2222.

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

**PRIVATE UTILITY LINES SHOWN**

*alch* Date: 1-23-20  
CENTERPOINT ENERGY/UNDERGROUND ELECTRICAL FACILITIES VERIFICATION ONLY

*alch* Date: 1-23-20  
CENTERPOINT ENERGY/NATURAL GAS FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES THAT YOU HAVE SHOWN CNP NATURAL GAS LINES CORRECTLY. NOT TO BE USED FOR CONDUIT VERIFICATION.) (GAS SERVICE LINES (NOT SHOWN) SIGNATURE VALID FOR SIX MONTHS.)

*alch* Date: 1-22-20  
Approved for AT&T Texas/SWIT underground conduit facilities only. SIGNATURE VALID FOR ONE YEAR.



**AECOM**  
AECOM TECHNICAL SERVICES, INC.  
18219 KATY FREEWAY, SUITE 100  
HOUSTON, TEXAS 77054-1008  
281.646.2400  
WWW.AECOM.COM  
TPEC REG. NO. F-3580

**NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY**  
PROJECT 28-B  
PROPOSED 60" AND 54" WATER LINE ALONG GRANT ROAD AND COPELAND ROAD  
**MATZKE PARK BASELINE PLAN**  
STA. 1+00 TO 6+00

STATE OF TEXAS  
CARL D. MCCONNELL  
97585  
LICENSED PROFESSIONAL ENGINEER  
*Carl D. McConnell*  
1/22/2020

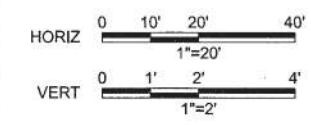
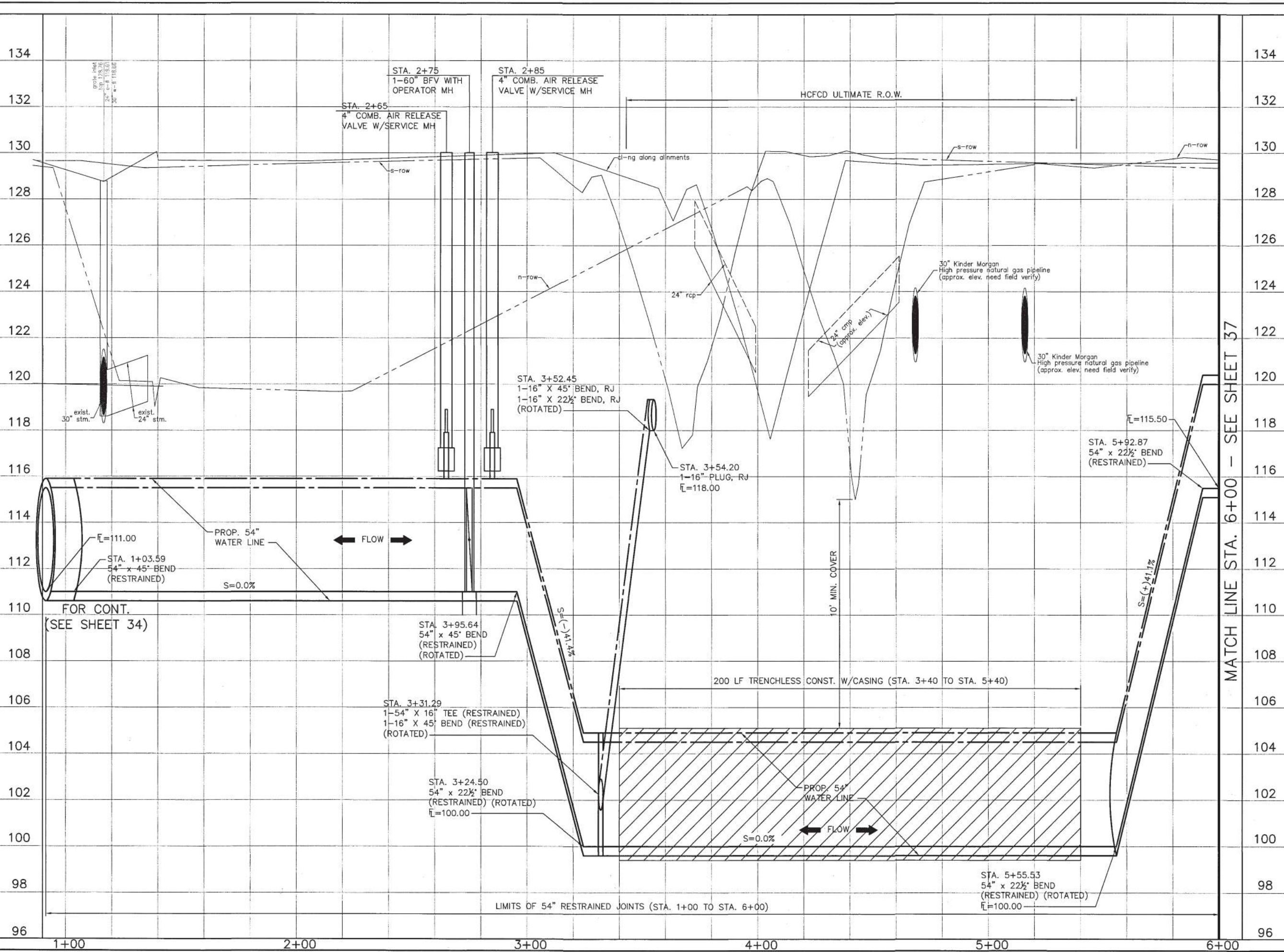
DRAWN BY: CHECKED BY:

**DANNENBAUM**  
ENGINEERING CORPORATION  
T.B.P.E. FIRM REGISTRATION #392  
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

LAST MODIFIED: Jan 21, 2020 - 10:01am BY USER: jimmy  
DWG. LOCATION: G:\1110\4876-01 NHCRA PROJECT 28-B\ACAD\Drawings\Civil  
DWG. NAME: 4876-01\_35.dwg



No.	Date	Revisions	App.



TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED CALL CENTERPOINT ENERGY AT 713-207-2222.

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

PRIVATE UTILITY LINES SHOWN

*al.e* Date: 1-23-20  
CENTERPOINT ENERGY/UNDERGROUND ELECTRICAL FACILITIES VERIFICATION ONLY

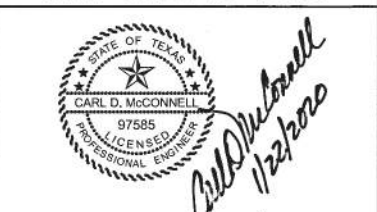
*al.h* Date: 1-23-20  
CENTERPOINT ENERGY/NATURAL GAS FACILITIES VERIFICATION ONLY. THIS SIGNATURE VERIFIES THAT YOU HAVE SHOWN CNP NATURAL GAS LINES CORRECTLY - NOT TO BE USED FOR CONDUIT VERIFICATION. (GAS SERVICE LINES ARE NOT SHOWN) SIGNATURE VALID FOR SIX MONTHS.

*J. Grant* Date: 1-22-20  
Approved for AT&T Texas/SWBT underground conduit facilities only. SIGNATURE VALID FOR ONE YEAR.



**AECOM**  
AECOM TECHNICAL SERVICES, INC.  
19219 KATY FREEWAY, SUITE 100  
HOUSTON, TEXAS 77058-1009  
281.646.2400  
WWW.AECOM.COM  
TSP# REG. NO. F-3580

NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY  
PROJECT 28-B  
PROPOSED 60" AND 54" WATER LINE ALONG GRANT ROAD AND COPELAND ROAD  
**MATZKE PARK BASELINE PROFILE**  
STA. 1+00 TO 6+00



DRAWN BY: \_\_\_\_\_ CHECKED BY: \_\_\_\_\_

**DANNENBAUM**  
ENGINEERING CORPORATION  
T.B.P.E. FIRM REGISTRATION #392  
3100 WEST ALABAMA HOUSTON, TEXAS 77068 (713) 520-8570

LAST MODIFIED: Jan 21, 2020 - 10:02am BY USER: jimvy  
 DWG. LOCATION: G:\1110\4876-01 NHCRWA PROJECT 28-B\ACAD\Drawings\Civil\  
 DWG. NAME: 4876-01\_36.dwg

No.	Date	Revisions	App.

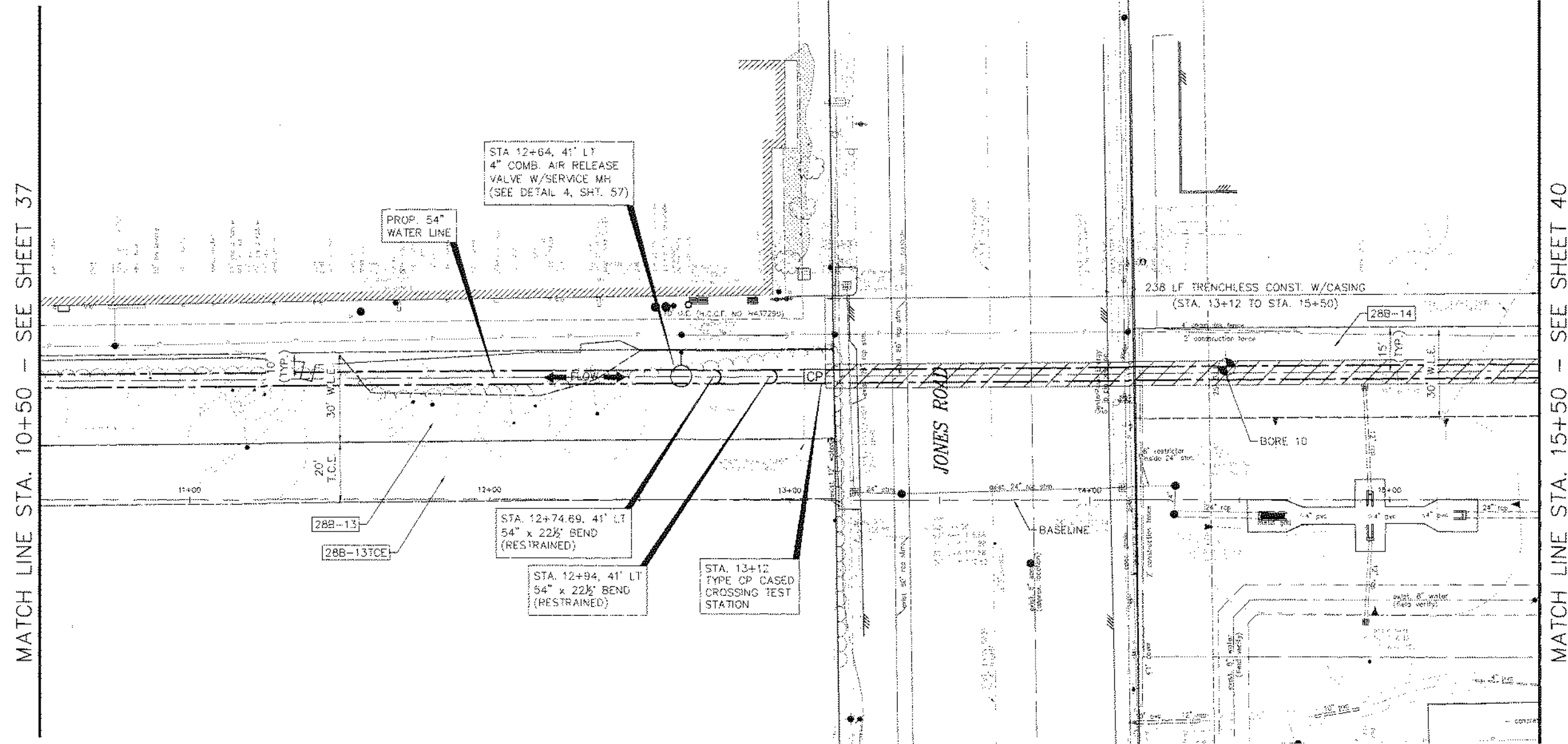
**BENCHMARK:**  
 FLOODPLAIN REFERENCE MARK NUMBER 110125 IS A HOLED BRASS DISK STAMPED K101 SMD3 ON EAST SIDEWALK OF GRANT ROAD BRIDGE OVER CYPRESS CREEK APPROXIMATELY 0.93 MILE WEST OF JONES ROAD IN KEYMAP 365A IN THE CYPRESS WATERSHED NEAR STREAM K100-03-00 ELEV. 127.25 FEET NAVD 1988 2001 ADJUSTMENT

**HORIZONTAL DATUM:**  
 ALL HORIZONTAL COORDINATES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. THE COORDINATES & DISTANCES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE FACTOR OF 0.999870017 (TxDOT factor).  
 100 YR FL=125.00'

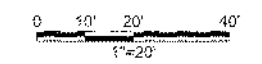
**CAUTION:**  
 EXISTING GAS PIPELINE LOCATIONS AND ELEVATIONS HAVE NOT BEEN VERIFIED. CONTRACTOR RESPONSIBLE FOR FIELD VERIFICATION OF UNDERGROUND PIPELINES.

THE LOCATION OF THE BURIED CABLES WITHIN THE PROJECT LIMITS HAVE NOT BEEN VERIFIED. BEFORE COMMENCING WORK CALL 1-800-344-8377 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE UNDERGROUND LINES FIELD-LOCATED.

**CAUTION:**  
 OVERHEAD POWER LINES



SEE CONSTRUCTION NOTICES ON SHEET 38 FOR CONSTRUCTION REQUIREMENTS ON CYPRESS FAIRBANKS RD PROPERTY.



TO AVOID THE LINES TO BE TURNED ON OR OFF TO THE CONTRACTOR, ADVISE THE UTILITY COMPANY AT 311-551-2222.

**NOTICE:**  
 FOR YOUR SAFETY, YOU ARE REQUESTED TO STAY AWAY TO ONE (1) MILE AT ALL TIMES BEFORE YOU DO SO THAT UNDERGROUND LINES CAN BE MARKED. THIS VERIFICATION DOES NOT GUARANTEE THE DEPTH OR LOCATION OF THE LINES.

**PRIVATE UTILITY LINES SHOWN**

*Alch* 1-27-20  
 CENTERPOINT ENERGY/UNDERGROUND ELECTRICAL FACILITIES VERIFICATION ONLY

*Alch* 1-27-20  
 CENTERPOINT ENERGY/NATURAL GAS FACILITIES VERIFICATION ONLY. (SEE SIGNATURE VERIFIED THAT YOU HAVE SHOWN ALL NATURAL GAS LINES AND TO BE USED FOR CONDUCTIVITY MONITORING)

*Alch* 1-27-20  
 Approved for AT&T Texas/SMBT underground conduct facilities only. SEPARATE VALUATION FOR EACH YEAR.



**AECOM**  
 AECOM TECHNICAL SERVICES, INC.  
 18219 KATY FREEWAY, SUITE 100  
 HOUSTON, TEXAS 77054-1008  
 281.848.2400  
 WWW.AECOM.COM  
 TYPE REG. NO. F-3560

NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY  
 PROJECT 28-B  
 PROPOSED 60" AND 54" WATER LINE ALONG GRANT ROAD AND COPELAND ROAD  
**MATZKE PARK BASELINE PLAN**  
 STA. 10+50 TO 15+50



DESIGNED BY: \_\_\_\_\_ CHECKED BY: \_\_\_\_\_

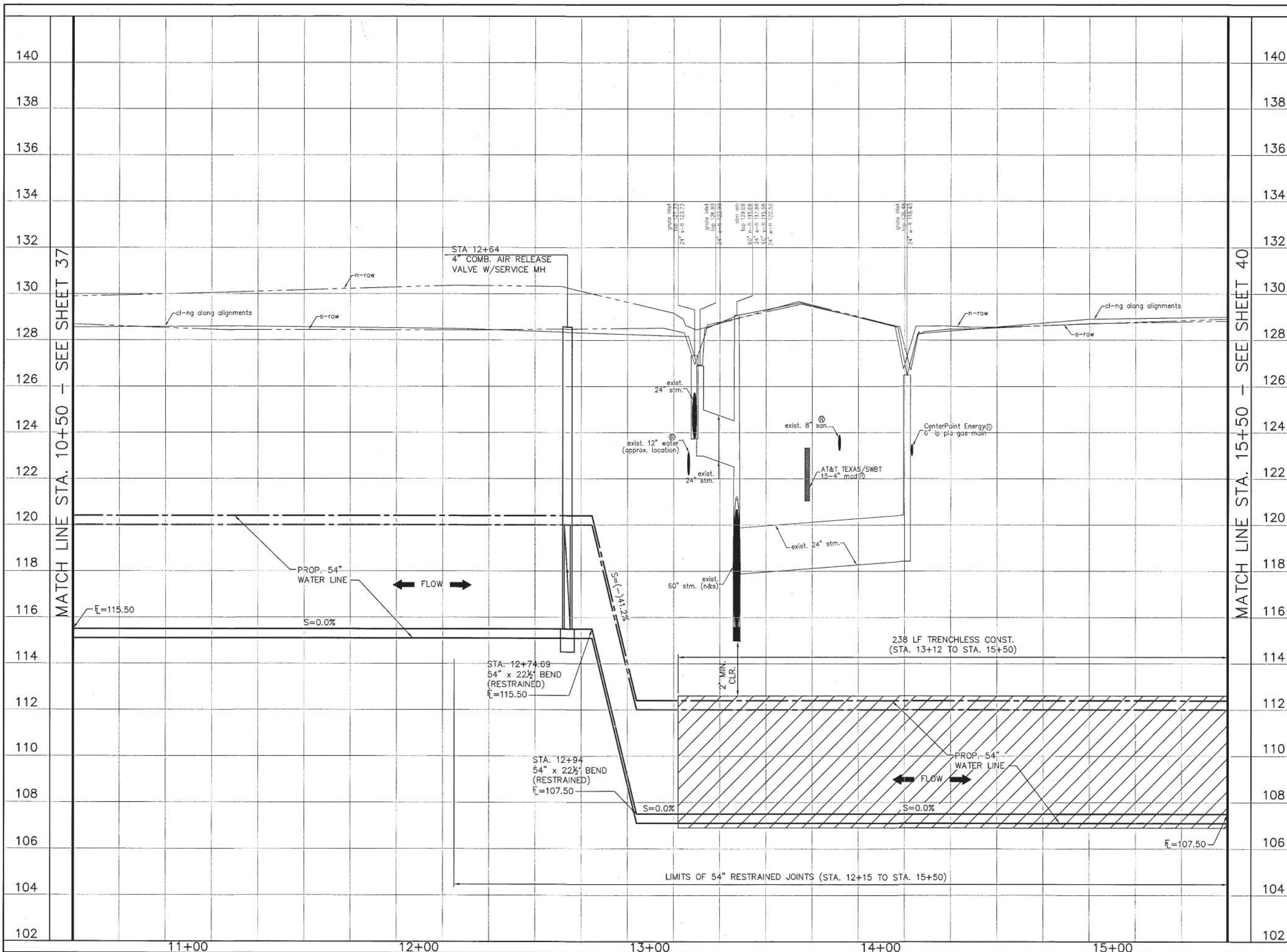
**DANNENBAUM**  
 ENGINEERING CORPORATION  
 T.B.P.E. FIRM REGISTRATION #392  
 3100 WEST ALABAMA HOUSTON, TEXAS 77026 (713) 526-0570

LAST MODIFIED: Jan 21, 2020 - 11:17am BY USER: jrbv  
 DWG. LOCATION: G:\1110\4876-01 MPCRWA PROJECT 28-B\KAD\Drawings\Civil  
 DWG. NAME: 4876-01\_38.dwg

MATCH LINE STA. 10+50 - SEE SHEET 37

MATCH LINE STA. 15+50 - SEE SHEET 40

LAST MODIFIED: Jan 21, 2020 - 11:17am BY USER: yjmvy  
 DWG. LOCATION: G:\1110\4876-01 NHCRWA PROJECT 28-B\ACAD\Drawings\Civil  
 DWG. NAME: 4876-01\_39.dwg



No.	Date	Revisions	App.

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

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

TO ARRIVE FOR LINES TO BE TURNED OFF OR MOVED CALL CENTERPOINT ENERGY AT 713-207-2222.

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

PRIVATE UTILITY LINES SHOWN

*alch* Date: 1-23-20  
 CENTERPOINT ENERGY/UNDERGROUND ELECTRICAL FACILITIES VERIFICATION ONLY

*alch* Date: 1-23-20  
 CENTERPOINT ENERGY/NATURAL GAS FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES THAT YOU HAVE SHOWN ONP NATURAL GAS LINES. NOT TO BE USED FOR CONDUIT IDENTIFICATION.) (GAS SERVICE LINES ARE NOT SHOWN.) SIGNATURE VALID FOR SIX MONTHS.

*alch* Date: 1-22-20  
 Approved for AT&T Texas/SWBT underground conduit facilities only. SIGNATURE VALID FOR ONE YEAR.

**North Harris County REGIONAL WATER Authority**

**AECOM**  
 AECOM TECHNICAL SERVICES, INC.  
 16219 KATY FREEWAY, SUITE 100  
 HOUSTON, TEXAS 77054-1009  
 281.646.2400  
 WWW.AECOM.COM  
 TYPE REG. NO. F-3580

NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY  
 PROJECT 28-B  
 PROPOSED 60" AND 54" WATER LINE ALONG GRANT ROAD AND COPELAND ROAD

**MATZKE PARK BASELINE PROFILE  
 STA. 10+50 TO 15+50**

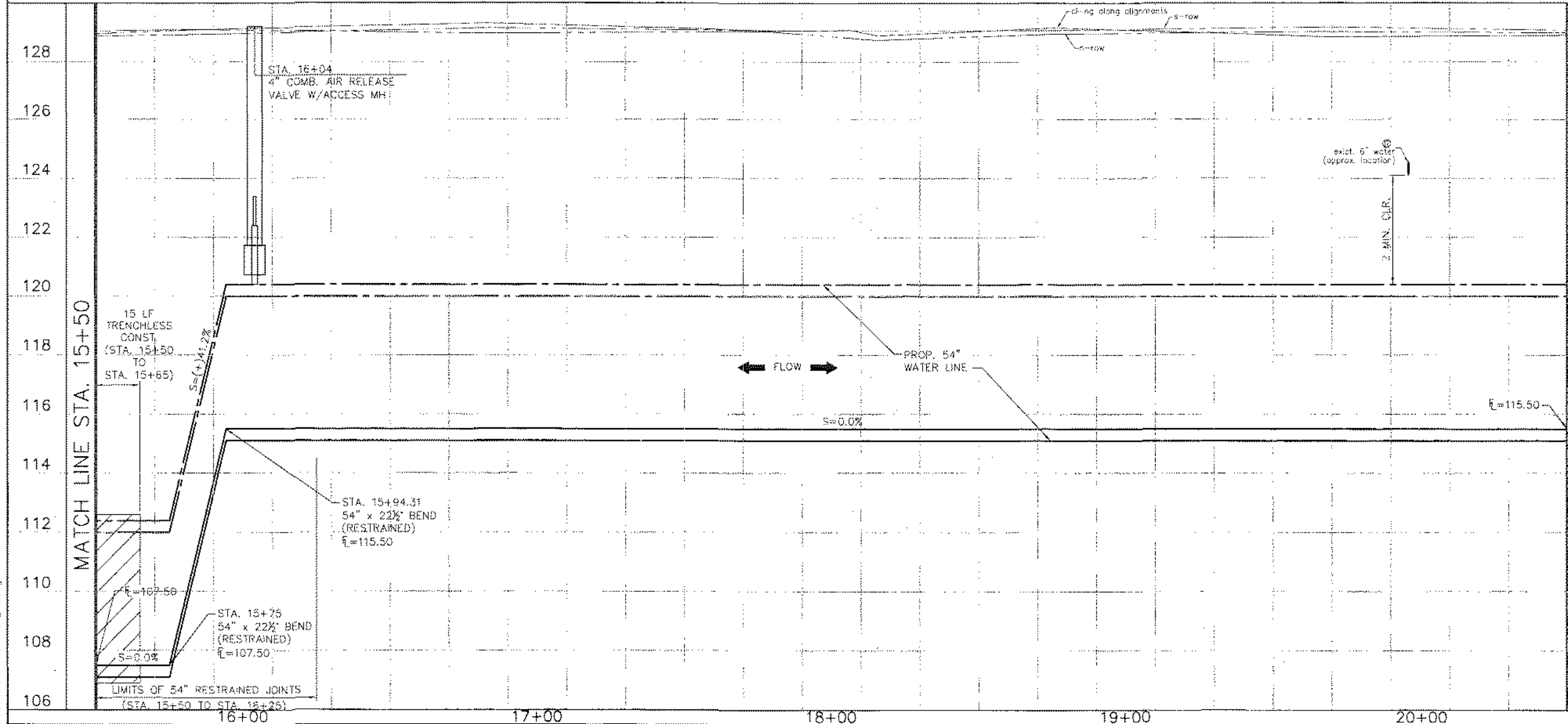
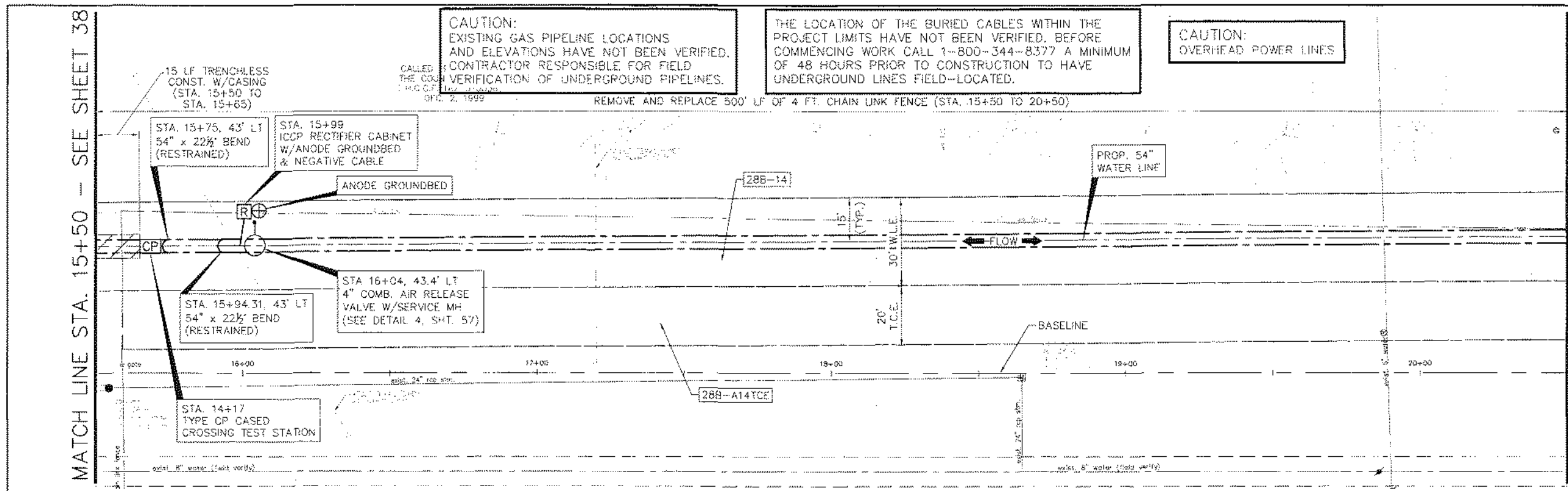
STATE OF TEXAS  
 CARL D. MCCONNELL  
 97585  
 LICENSED PROFESSIONAL ENGINEER  
*Carl D. McConnell*  
 1/22/2020

DRAWN BY: CHECKED BY:

**DANNENBAUM**  
 ENGINEERING CORPORATION  
 T.B.P.E. FIRM REGISTRATION #392  
 3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

SHEET No: 39 OF 99

LAST MODIFIED: Jan 21, 2020 11:13am BY USER: ymwy  
 DWG. LOCATION: C:\1110\4976-01\NEORWA\PROJECT 28-B\ACAD\Drawings\Civil\  
 DWG. NAME: 4876-01\_40.dwg



**CAUTION:**  
EXISTING GAS PIPELINE LOCATIONS  
AND ELEVATIONS HAVE NOT BEEN VERIFIED.  
CONTRACTOR RESPONSIBLE FOR FIELD  
VERIFICATION OF UNDERGROUND PIPELINES.

THE LOCATION OF THE BURIED CABLES WITHIN THE  
PROJECT LIMITS HAVE NOT BEEN VERIFIED. BEFORE  
COMMENCING WORK CALL 1-800-344-8377 A MINIMUM  
OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE  
UNDERGROUND LINES FIELD-LOCATED.

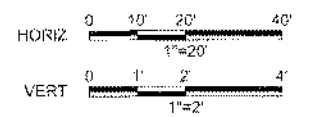
**CAUTION:**  
OVERHEAD POWER LINES

No.	Date	Revisions	By

**BENCHMARK:**  
FLOODPLAIN REFERENCE MARK NUMBER 110125 IS A HOFOO  
BRASS DISK STAMPED K100 BM10 ON EAST SIDEWALK OF  
GRANT ROAD BRIDGE OVER CYPRESS CREEK APPROXIMATELY  
0.60 MILE WEST OF JONES ROAD IN KEYMAP 365A IN THE  
CYPRESS WATERSHED NEAR STREAM K100-00-00  
ELEV. 127.25 FEET NAVD 1988 2000 ADJUSTMENT

**HORIZONTAL DATUM:**  
ALL HORIZONTAL COORDINATES ARE BASED ON TEXAS STATE  
PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83.  
THE COORDINATES & DISTANCES SHOWN ARE SURFACE AND  
MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE  
FACTOR OF 0.99976017 (TVDOT Factor).  
100 YR FL=125.00'

SEE CONSTRUCTION NOTES ON SHEET 4 FOR CONSTRUCTION  
REQUIREMENTS ON CYPRESS PARBANKS 3RD PROPERTY



TO ALLOW FOR LINES TO BE RUNNED BY AN UNDERGROUND CONTRACTOR  
(REFER TO 28-B-02-2022)

**NOTICE:**  
FOR OUR SAFETY, YOU ARE REQUESTED TO STOP WORK ON ALL LINES AT ALL TIMES BEFORE  
YOU ARE SO FULLY INSTRUCTED. PLEASE CALL 811 TO REPORT ANY UNEXPECTED  
RESULTS. YOUR COOPERATION IS APPRECIATED.

**PRIVATE UTILITY LINES SHOWN**

*all* DATE: 1-22-20  
CENTERPOINT ENERGY/UNDERGROUND ELECTRICAL FACILITIES  
VERIFICATION ONLY

*all* DATE: 1-22-20  
CENTERPOINT ENERGY/NATURAL GAS FACILITIES VERIFICATION ONLY.  
THIS SERVICE LINES ARE SHOWN AND YOU HAVE BEEN ADVISED THAT THESE LINES  
MAY NOT BE USED FOR CONSTRUCTION. CONTACT THE UTILITY COMPANY FOR  
THE SERVICE LINES BEFORE ANY CONSTRUCTION WORK FOR THE WORK.

*all* DATE: 1-22-20  
Approved for A/E/C/ CONTRACT/SUBMIT UNDERGROUND CONDUIT FACILITIES ONLY  
SIGNATURE VALID FOR ONE YEAR



**AECOM**  
AECOM TECHNICAL SERVICES, INC.  
19215 NASH FREEWAY, SUITE 100  
HOUSTON, TEXAS 77064-1000  
281.846.2400  
WWW.AECOM.COM  
TSP# REG. NO. F-3580

NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY  
PROJECT 28-B  
PROPOSED 60" AND 54" WATER LINE ALONG GRANT  
ROAD AND COPELAND ROAD  
**MATZKE PARK BASELINE  
PLAN AND PROFILE  
STA. 15+50 TO 20+50**



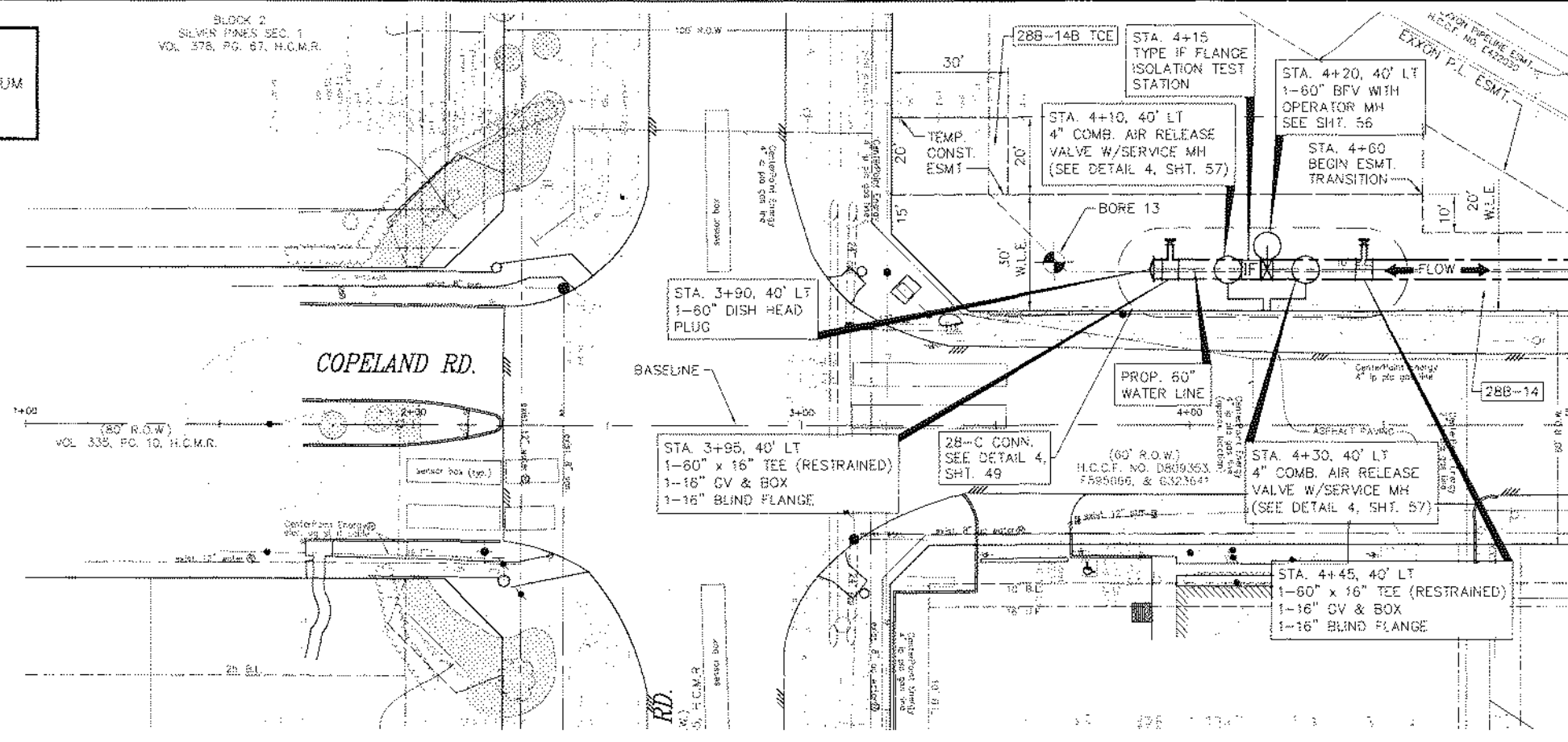
DRAWN BY: \_\_\_\_\_ CHECKED BY: \_\_\_\_\_

**DANNENBAUM**  
ENGINEERING CORPORATION  
T.B.P.E. FIRM REGISTRATION #392  
3100 WEST ALABAMA HOUSTON, TEXAS 77056 (713) 620-6670

THE LOCATION OF THE BURIED CABLES WITHIN THE PROJECT LIMITS HAVE NOT BEEN VERIFIED. BEFORE COMMENCING WORK CALL 1-800-344-8377 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE UNDERGROUND LINES FIELD-LOCATED.

CAUTION: EXISTING GAS PIPELINE LOCATIONS AND ELEVATIONS HAVE NOT BEEN VERIFIED. CONTRACTOR RESPONSIBLE FOR FIELD VERIFICATION OF UNDERGROUND PIPELINES.

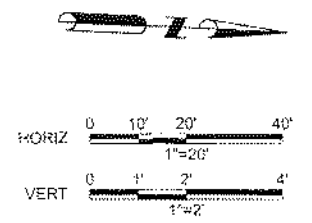
CAUTION: OVERHEAD POWER LINES



**BENCHMARK:**  
FLOODPLAIN REFERENCE MARK NUMBER 110125 IS A HCPD BRASS DISK STAMPED 4100 BM10 ON EAST SIDEWALK OF GRANT ROAD BRIDGE OVER CYPRESS CREEK APPROXIMATELY 0.90 MILE WEST OF JONES ROAD IN KENNESAW AREA IN THE CYPRESS WATERSHED NEAR STATION 4100+00-00 ELEV. 127.25 FEET NAVD 1988 2001 ADJUSTMENT

**HORIZONTAL DATUM:**  
ALL HORIZONTAL COORDINATES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH ZONAL ZONE, NAD83. THE COORDINATES & DISTANCES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE FACTOR OF 0.999870017 (TxDOT Factor) 100 YR FL=125.0'

SEE CONSTRUCTION NOTES ON SHEET 4 FOR CONSTRUCTION REQUIREMENTS ON CYPRESS PARKWAY ISD PROPERTY



TO BEING FOR USE TO BE TAKEN OFF OR ADDED CALL ENGINEER  
UNLESS AT 713-207-2222

DATE: 1-23-20

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



**AECOM**  
AECOM TECHNICAL SERVICES, INC.  
16219 KATY FREEWAY, SUITE 100  
HOUSTON, TEXAS 77094-1009  
281.648.2400  
WWW.AECOM.COM  
FIRM REG. NO. F-3580

NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY  
PROJECT 28-B  
PROPOSED 60" AND 54" WATER LINE ALONG GRANT ROAD AND COPELAND ROAD  
**COPELAND ROAD BASELINE PLAN AND PROFILE**  
STA. 1+00 TO 5+00



DRAWN BY: [Signature] CHECKED BY: [Signature]

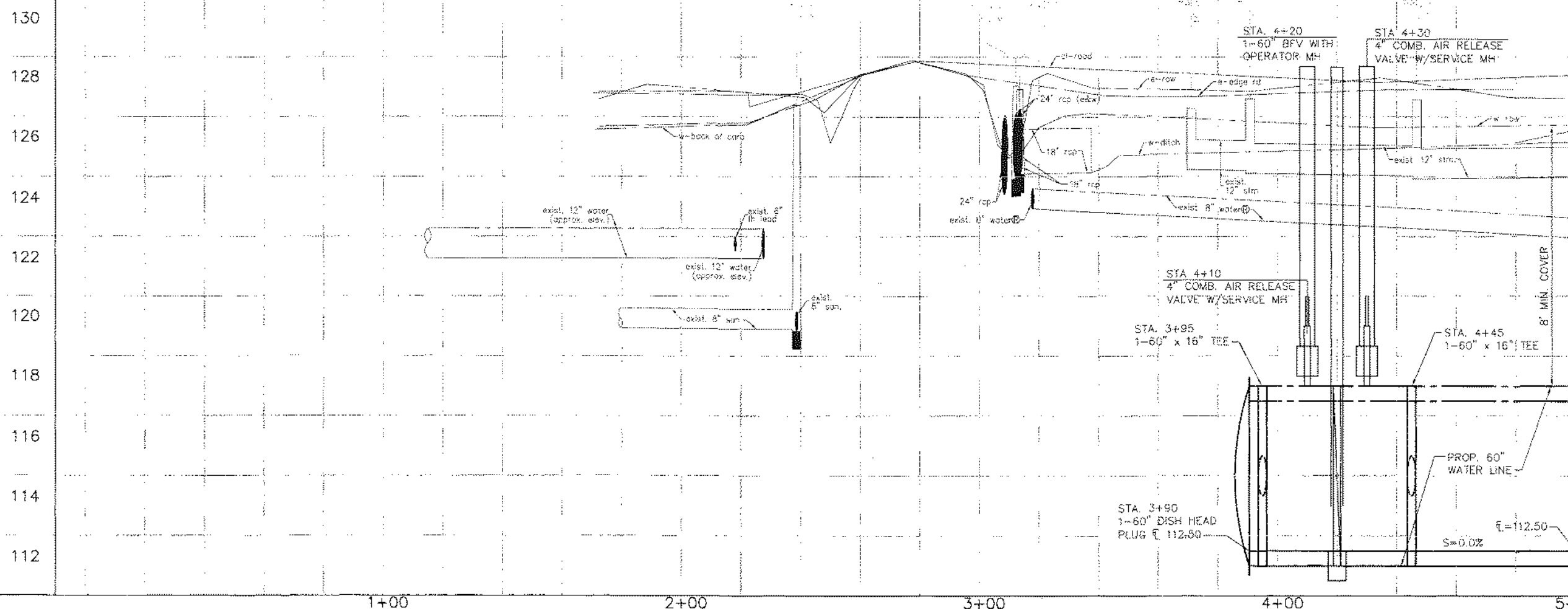
**DANNENBAUM**  
ENGINEERING CORPORATION  
T.B.P.E. FIRM REGISTRATION #392  
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 530-6670

SHEET No: 43 of 99

LAST MODIFIED: Jan 21, 2020 1:22am BY USER: ymwy DWG LOCATION: C:\1110\4876-01\MISC\DWG\PROJECT 28-B\ACAD\Drawings\civl\ DWG NAME: 28-B-01\_43.dwg

MATCH LINE STA. 5+00 - SEE SHEET 44

MATCH LINE STA. 5+00



1+00 2+00 3+00 4+00 5+00



No.	Date	Description	APP.

MATCH LINE STA. 10+00 - SEE SHEET 44

MATCH LINE STA. 15+00 - SEE SHEET 46

RESTRICTED RESERVE "A"  
CYPRESS FAIRBANKS ISD  
BLEVEL MIDDLE SCHOOL AND  
MATZKE ELEMENTARY  
F.O. NO. 530272, H.C.M.R.

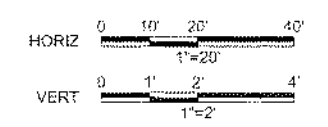
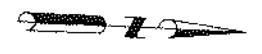
**CAUTION:**  
EXISTING GAS PIPELINE LOCATIONS  
AND ELEVATIONS HAVE NOT BEEN VERIFIED.  
CONTRACTOR RESPONSIBLE FOR FIELD  
VERIFICATION OF UNDERGROUND PIPELINES.

**BENCHMARK:**  
FLOODPLAIN REFERENCE MARK NUMBER 110125 IS A HOT-DIP BRASS DISK STAMPED K100 (M10) ON EAST SIDEWALK OF GRANT ROAD BRIDGE OVER CYPRESS CREEK APPROXIMATELY 0.90 MILE WEST OF JONES ROAD IN AC-MAP 369A IN THE CYPRESS WATERSHED NEAR STREAM K100-00-00 ELEV. 127.25 FEET NAVD 1988 2001 ADJUSTMENT

**HORIZONTAL DATUM:**  
ALL HORIZONTAL COORDINATES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. THE COORDINATES & DISTANCES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE FACTOR OF 0.999870017 (FACTOR).  
100 YR FL=125.00'

**CAUTION:**  
OVERHEAD POWER LINES

SEE CONSTRUCTION NOTES ON SHEET 4 FOR CONSTRUCTION REQUIREMENTS ON CYPRESS FAIRBANKS ISD PROPERTY



TO ARRANGE FOR LINES TO BE REMOVED OR TO BE MOVED CALL CENTERPOINT ENERGY AT 713-339-7272

**PRIVATE UTILITY LINES SHOWN**

*Rich* 1-33-20  
CENTERPOINT ENERGY/UNDERGROUND ELECTRICAL FACILITIES VERIFICATION ONLY

*Rich* 1-27-16  
CENTERPOINT ENERGY/NATURAL GAS FACILITIES VERIFICATION ONLY. THIS SERVICE OFFERS THAT WORK SHALL BE PERFORMED AND LINES OPERATED. NOT TO BE USED FOR CONDUIT PROPOSALS FOR SERVICE LINES NOT SHOWN. VALID FOR SIX MONTHS.

*Janet* 1-22-20  
Approved for AT&T Texas/SWB underground conduit facilities only. SIGNATURE VALID FOR ONE YEAR.



**AECOM**  
AECOM TECHNICAL SERVICES, INC.  
19223 KATY FREEWAY, SUITE 100  
HOUSTON, TEXAS 77064-1009  
281.448.4400  
WWW.AECOM.COM  
TEPE REG. NO. T-3560

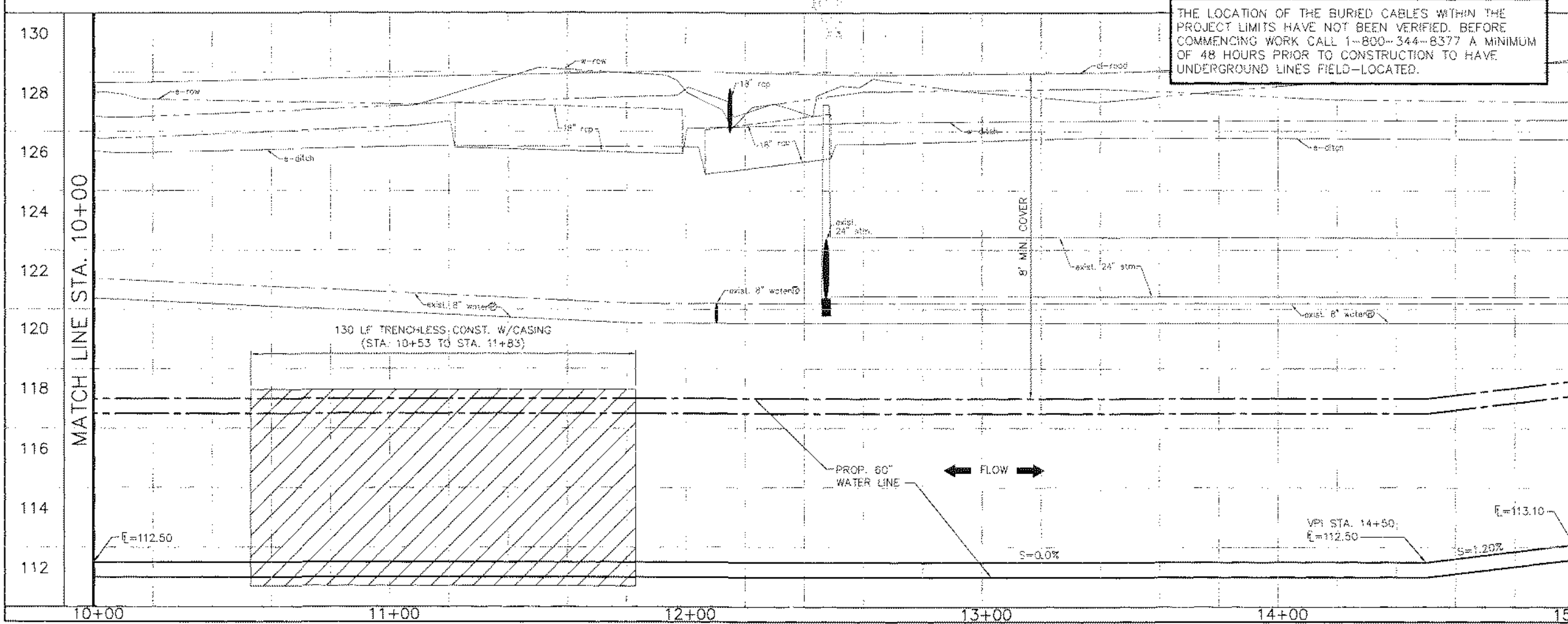
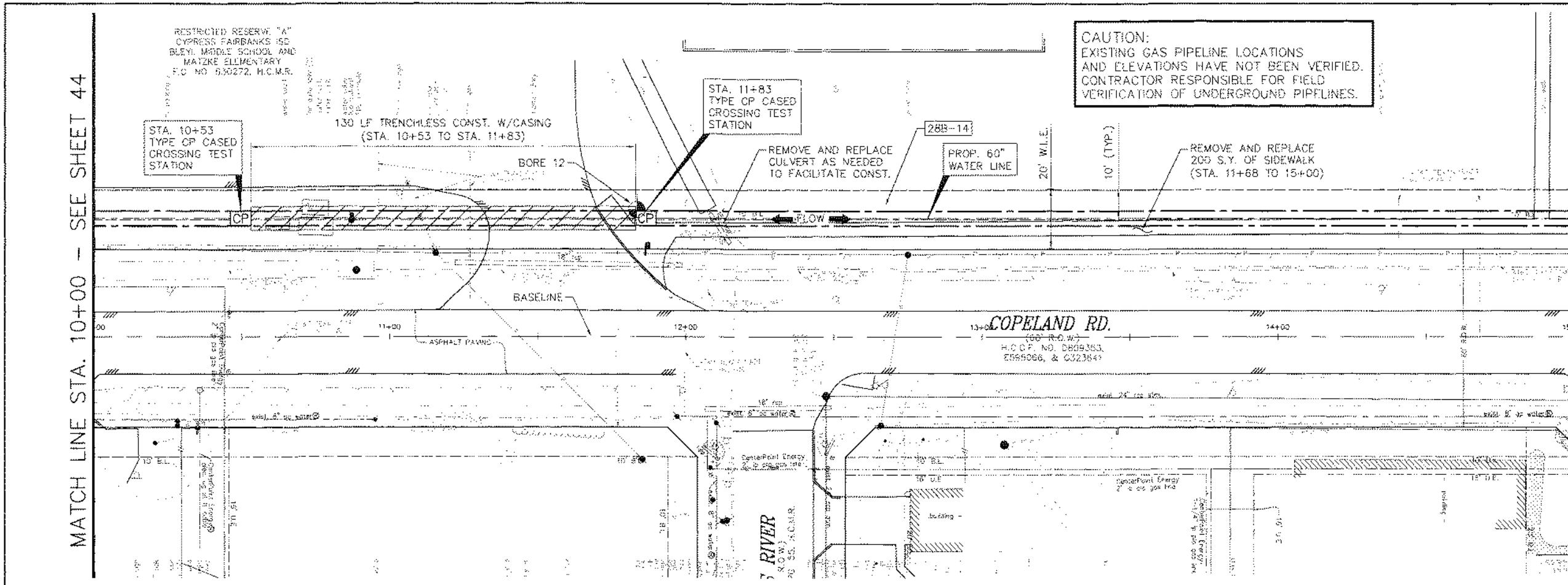
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY  
PROJECT 28-B  
PROPOSED 60" AND 64" WATER LINE ALONG GRANT ROAD AND COPELAND ROAD  
**COPELAND ROAD BASELINE PLAN AND PROFILE**  
STA. 10+00 TO 15+00



DANNENBAUM  
ENGINEERING CORPORATION  
T.B.P.E. FIRM REGISTRATION #992  
3100 WEST ALABAMA HOUSTON, TEXAS 77056 (713) 529-9570

SHEET No. 45 of 99

LAST MODIFIED: Jan 21, 2020 - 11:25am BY USER: jmyou  
DWG. LOCATION: C:\11\G\0879-01\SHDRWA PROJECT 28-B\FINAL\Drawings\Civil  
DWG. NAME: 2878-01\_45.dwg



THE LOCATION OF THE BURIED CABLES WITHIN THE PROJECT LIMITS HAVE NOT BEEN VERIFIED. BEFORE COMMENCING WORK CALL 1-800-344-8377 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE UNDERGROUND LINES FIELD-LOCATED.

MATCH LINE STA. 15+00





No.	Date	Revisions	App.

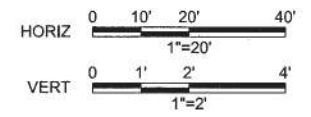
**BENCHMARK:**  
 FLOODPLAIN REFERENCE MARK NUMBER 110125 IS A HCFCD BRASS DISK STAMPED K100 BM10 ON EAST SIDEWALK OF GRANT ROAD BRIDGE OVER CYPRESS CREEK APPROXIMATELY 0.90 MILE WEST OF JONES ROAD IN KEYMAP 369A IN THE CYPRESS WATERSHED NEAR STREAM K100-00-00 ELEV. 127.25 FEET NAVD 1988 2001 ADJUSTMENT

**HORIZONTAL DATUM:**  
 ALL HORIZONTAL COORDINATES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. THE COORDINATES & DISTANCES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE FACTOR OF 0.999870017 (TxDOT factor).  
 100 YR FL=125.00'

**CAUTION:**  
 OVERHEAD POWER LINES.

**CAUTION:**  
 EXISTING GAS PIPELINE LOCATIONS AND ELEVATIONS HAVE NOT BEEN VERIFIED. CONTRACTOR RESPONSIBLE FOR FIELD VERIFICATION OF UNDERGROUND PIPELINES.

THE LOCATION OF THE BURIED CABLES WITHIN THE PROJECT LIMITS HAVE NOT BEEN VERIFIED. BEFORE COMMENCING WORK CALL 1-800-344-8377 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE UNDERGROUND LINES FIELD-LOCATED.



TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED CALL CENTERPOINT ENERGY AT 713-267-2222.  
 FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS VERIFICATION DOES NOT FULFILL YOUR OBLIGATION TO CALL 811.

PRIVATE UTILITY LINES SHOWN

*Carl D. McConnell* Date: 1-23-20  
 CENTERPOINT ENERGY/UNDERGROUND ELECTRICAL FACILITIES VERIFICATION ONLY  
 (THE SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES - NOT TO BE USED FOR CONDUIT VERIFICATION) SIGNATURE VALID FOR SIX MONTHS.  
*Carl D. McConnell* Date: 1-23-20  
 CENTERPOINT ENERGY/NATURAL GAS FACILITIES VERIFICATION ONLY.  
 (THE SIGNATURE VERIFIES THAT YOU HAVE SHOWN CNP NATURAL GAS LINES NOT TO BE USED FOR CONDUIT VERIFICATION.) SIGNATURE VALID FOR SIX MONTHS.  
*Carl D. McConnell* Date: 1-22-20  
 Approved for AT&T Texas/SWBT underground conduit facilities only. SIGNATURE VALID FOR ONE YEAR.



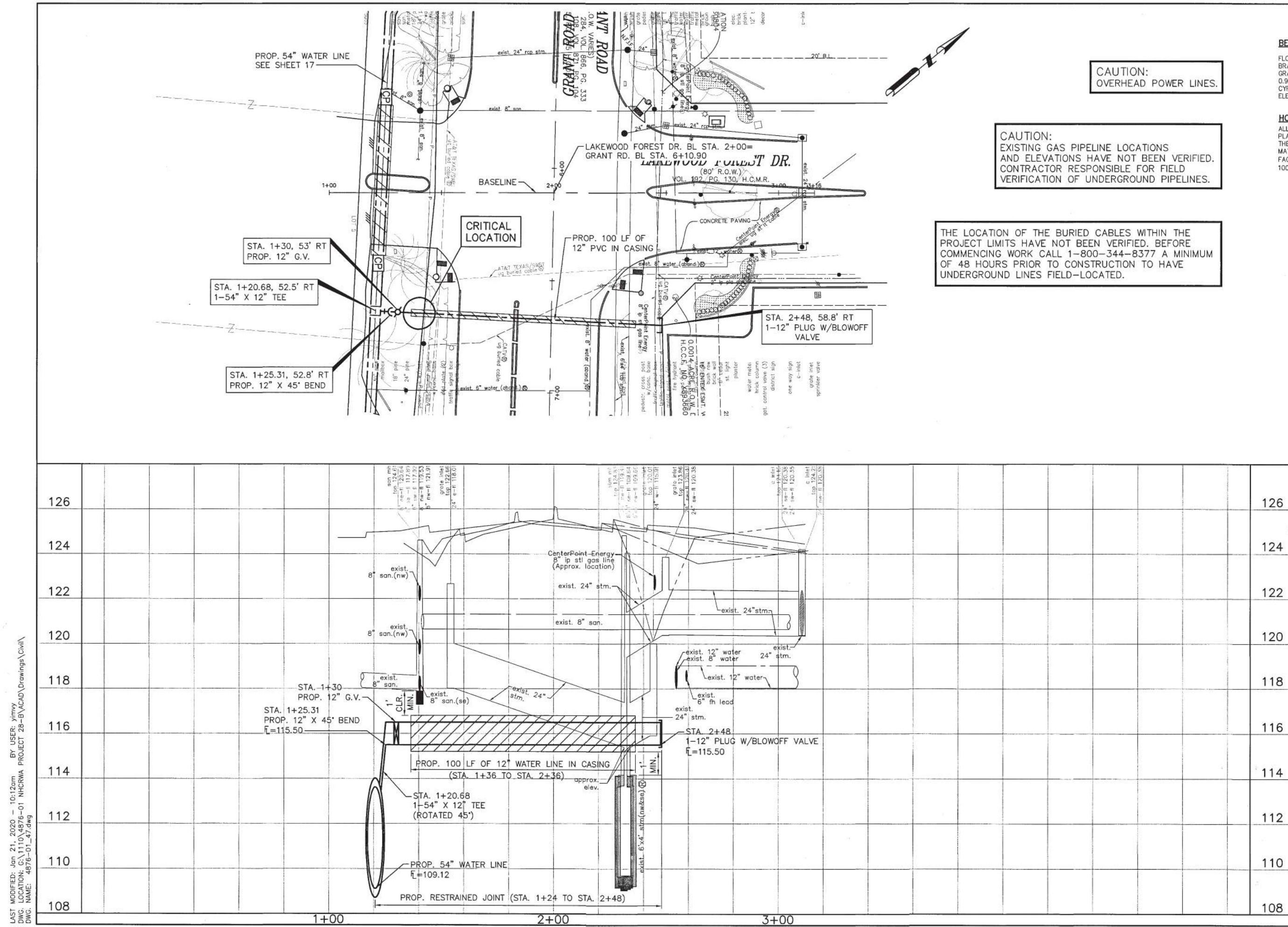
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY  
 PROJECT 28-B  
 PROPOSED 60" AND 54" WATER LINE ALONG GRANT ROAD AND COPELAND ROAD

LAKWOOD FOREST DR.  
 BASELINE PLAN AND PROFILE  
 STA. 1+00 TO 3+00



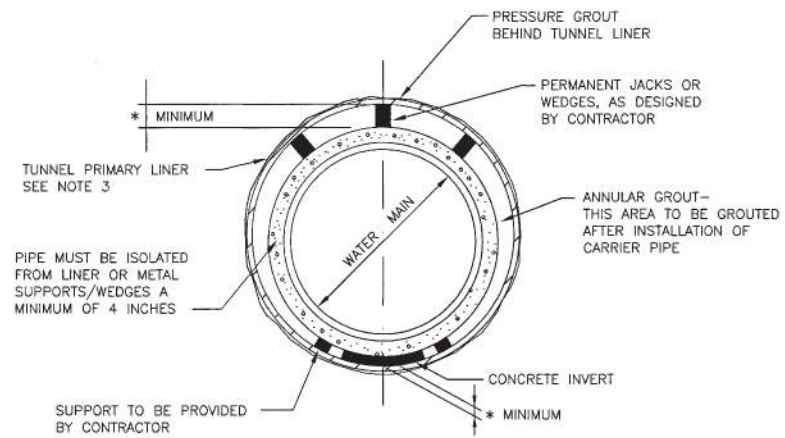
DRAWN BY: CHECKED BY:

**DANNENBAUM**  
 ENGINEERING CORPORATION  
 T.B.P.E. FIRM REGISTRATION #392  
 3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570



LAST MODIFIED: Jan 21, 2020 - 10:12am BY USER: jimmy  
 DWG. LOCATION: G:\1110\4876-01 NHCRWA PROJECT 28-B\ACAD\Drawings\Civil\  
 DWG. NAME: 4876-01\_47.dwg

No.	Date	Revisions	App.

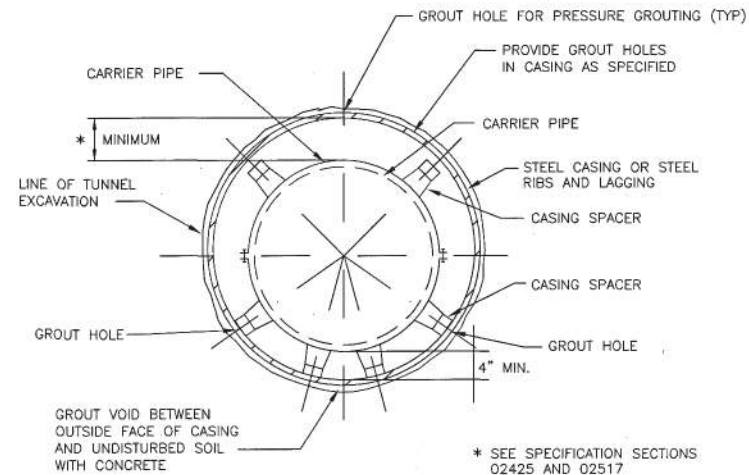


**NOTES:**

1. DETAIL IS FOR PRESTRESSED CONCRETE CYLINDER PIPE (STEEL PIPE AND D.I.P. ALTERNATE SIMILAR).
2. MINIMUM CLEARANCES SHOWN ON THE PLAN & PROFILE DRAWINGS ARE TO THE O.D. OF TUNNEL LINER. ADJUST PROFILE AS REQUIRED TO MAINTAIN CLEARANCES IDENTIFIED. NO SEPARATE PAY.
3. CONTRACTOR TO PROVIDE SUBMITTAL OF THE TUNNEL LINER DESIGN SIGNED AND SEALED BY A PROFESSIONAL ENGINEER.

\* SEE SPECIFICATION SECTIONS 02425 AND 02517

**1 TUNNEL DETAIL**  
(FOR WATER MAINS 36 INCHES AND LARGER)

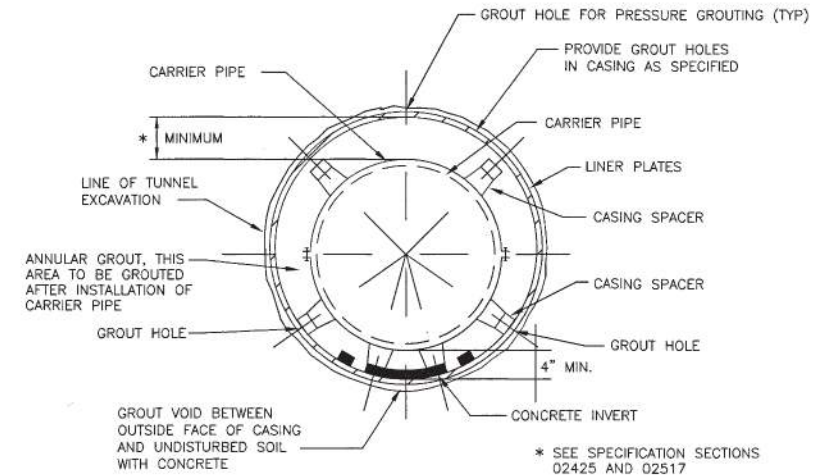


**NOTES:**

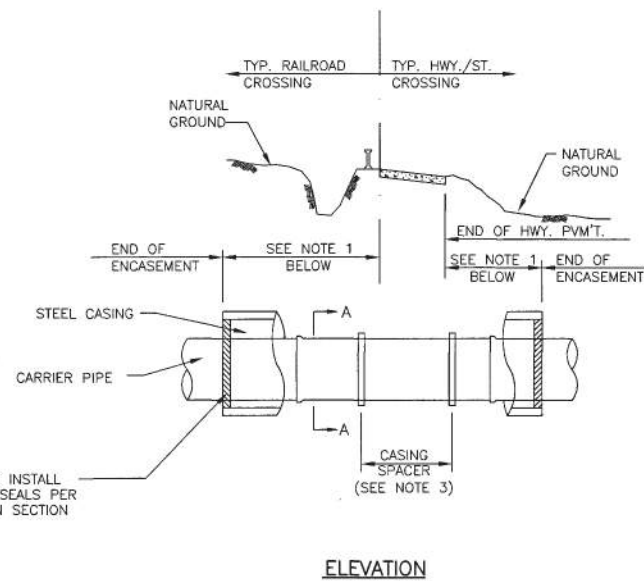
1. DETAIL IS FOR PVC PIPE (PRESTRESSED CONCRETE CYLINDER PIPE, STEEL PIPE, AND D.I.P. ALTERNATE SIMILAR).
2. MINIMUM CLEARANCES SHOWN ON THE PLAN & PROFILE DRAWINGS ARE TO THE O.D. OF TUNNEL LINER. ADJUST PROFILE AS REQUIRED TO MAINTAIN CLEARANCES IDENTIFIED. NO SEPARATE PAY.
3. CONTRACTOR TO PROVIDE SUBMITTAL OF THE TUNNEL LINER DESIGN SIGNED AND SEALED BY A PROFESSIONAL ENGINEER.

\* SEE SPECIFICATION SECTIONS 02425 AND 02517

**2 TUNNEL DETAIL**  
(FOR WATER MAINS LESS THAN 36 INCHES WITH STEEL CASING OR STEEL RIBS AND LADDING)



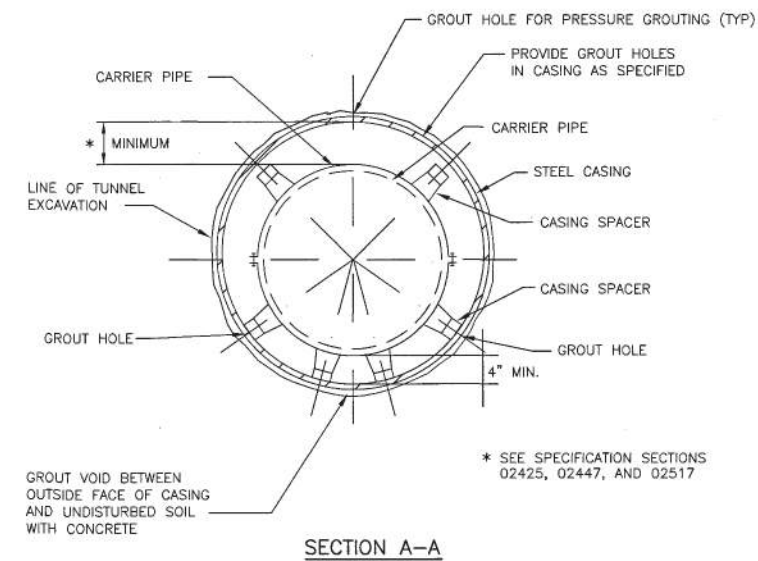
**3 TUNNEL DETAIL**  
(FOR WATER MAINS LESS THAN 36 INCHES WITH LINER PLATES)



**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 SPECIFICATION SECTIONS 02447 AND 02517 FOR APPROPRIATE MODEL ACCORDING TO PIPE DIAMETER.

**4 CASING DETAIL FOR DRY SLURRY AUGERING OF PIPE AND CONDUIT**  
(FOR WATER MAINS LESS THAN 36-INCHES IN DIAMETER)



**NOTE**

1. ALL CASING IN PPCM AREA TO BE GROUTED.

\* SEE SPECIFICATION SECTIONS 02425, 02447, AND 02517

**North Harris County  
REGIONAL WATER  
Authority**

---

**AECOM**

AECOM TECHNICAL SERVICES, INC.  
18219 KATY FREEWAY, SUITE 100  
HOUSTON, TEXAS 77054-1009  
281.646.2400  
WWW.AECOM.COM  
TPE REG. NO. F-3580

---

NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY  
PROJECT 28-B  
PROPOSED 60" AND 54" WATER LINE ALONG GRANT  
ROAD AND COPELAND ROAD

**TUNNEL AND  
CASING DETAILS**

---

*Carl D. McConnell*  
11/27/2020

---

**DANNENBAUM**  
ENGINEERING CORPORATION  
T.B.P.E. FIRM REGISTRATION #392  
3100 WEST ALABAMA HOUSTON, TEXAS 77096 (713) 520-9570

---

SHEET No: **54** OF 99

LAST MODIFIED: Jan 21, 2020 - 10:13am  
 DWG. LOCATION: C:\1110\4876-01\_NHCRWA PROJECT 28-B\CADD\Drawings\Details  
 DWG. NAME: 4876-01\_34.dwg  
 BY USER: yimvy  
 PROJECT 28-B\CADD\Drawings\Details

P:\NHCRWA\CADD\Drawings\Autocad 2004\Tunnel & Casing Details.dwg