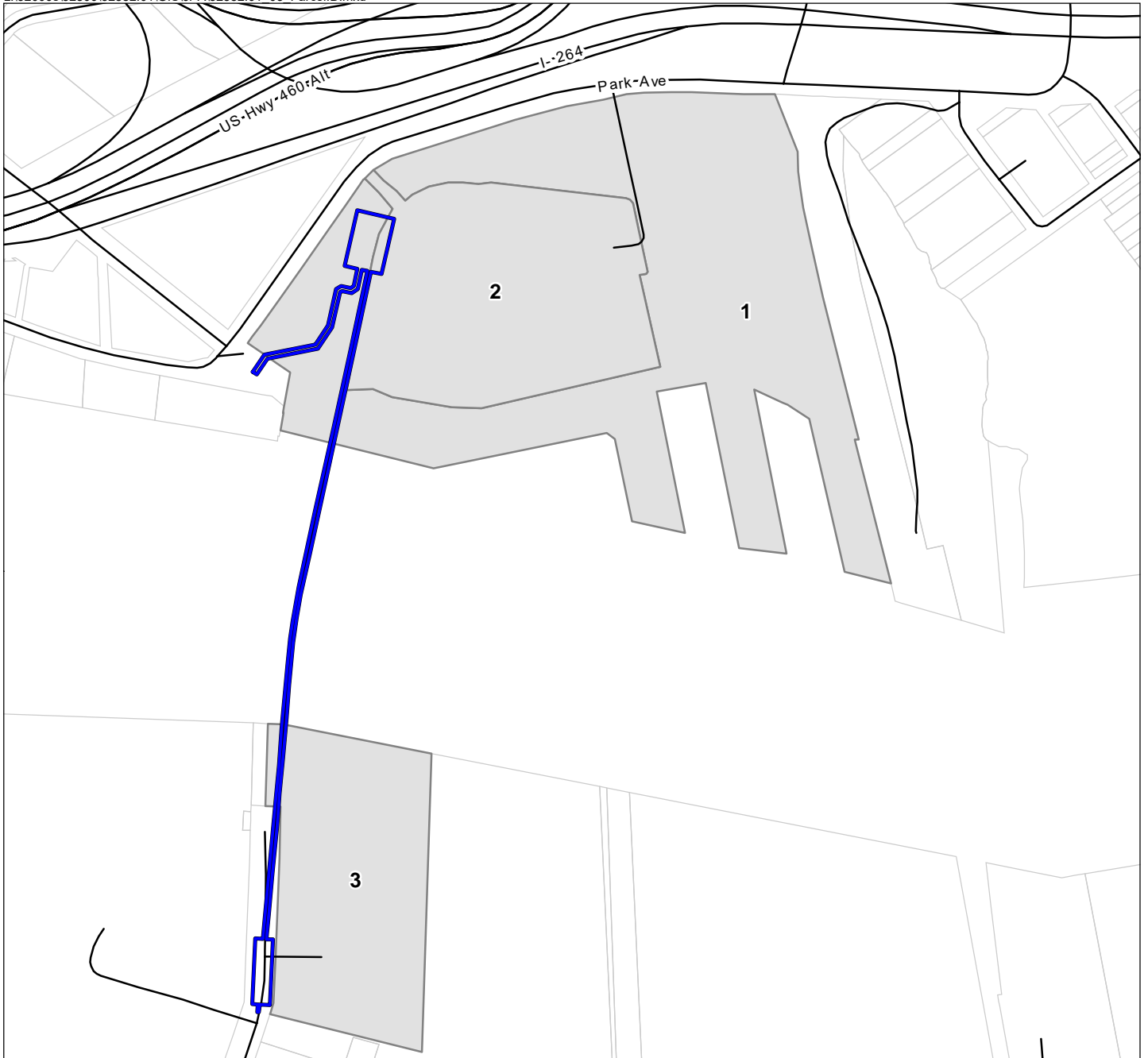


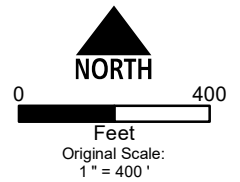
L:\32000s\32800\32882.01\GIS\JPA\32882.01_03_ParcelID.mxd



Map Number	Parcel ID	Property Address	Owner Name	Owner Mailing Address
1	1437334962	200 PARK AVENUE	City Of Norfolk	810 Union St Rm 900 Norfolk VA 23510-2717
2	1437238963	200 PARK AVENUE	Norfolk Tides - Lessee	201 E Brambleton Ave Norfolk VA 23510
3	1437224069	150 SOUTH MAIN STREET	Colonna's Ship Yard, Incorporated	400 E Indian River Rd Norfolk VA 23523-1756

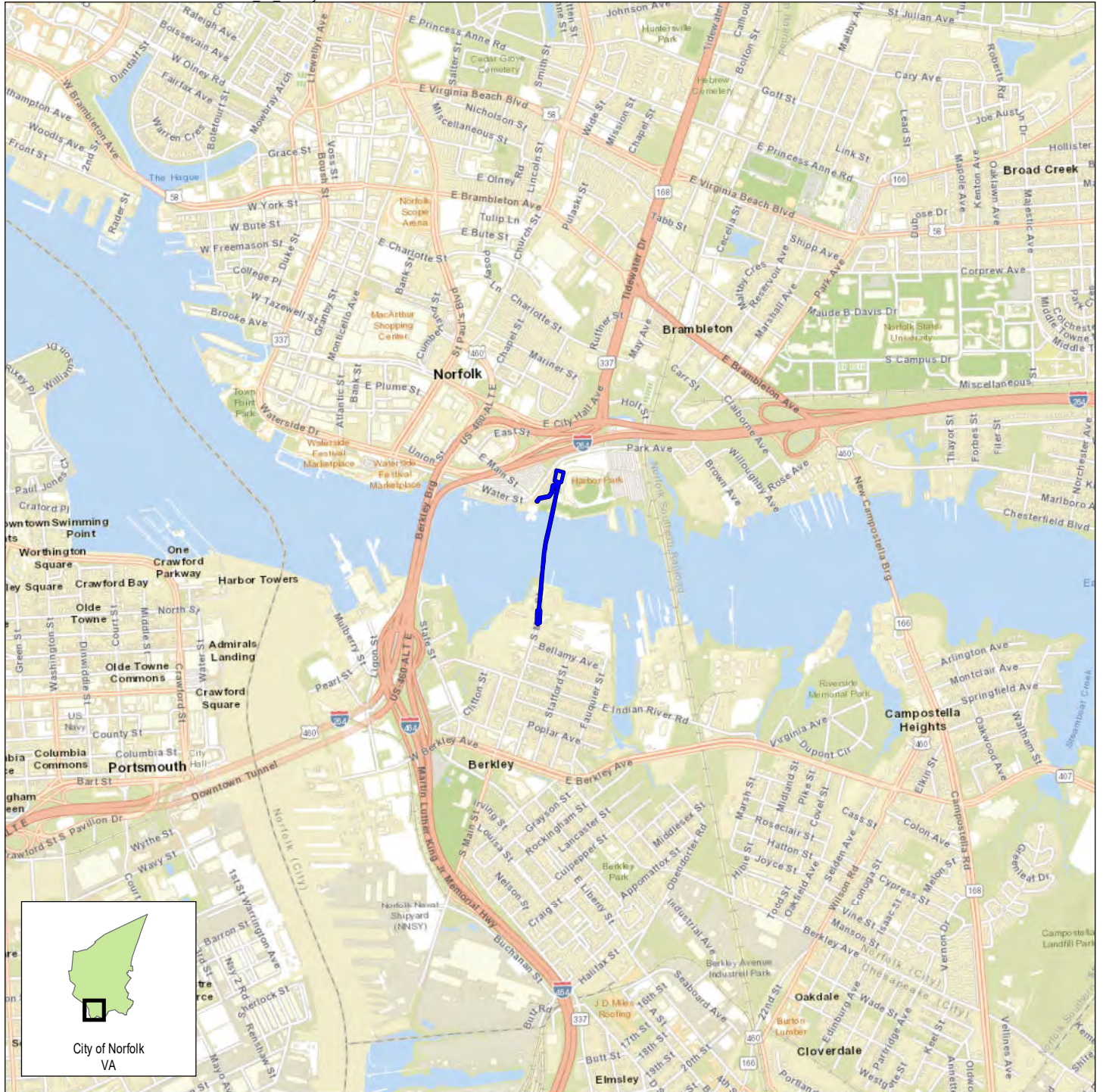
LOD
 Parcel ID

Parcel ID Map
NCSRM 24-Inch Water Main HDD
WSSI #32882.01



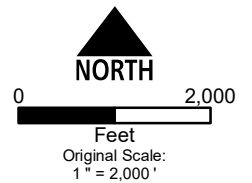
Source: City of Norfolk Digital Data

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 LOD

Vicinity Map
 NCSR 24-Inch Water Main HDD
 WSSI #32882.01

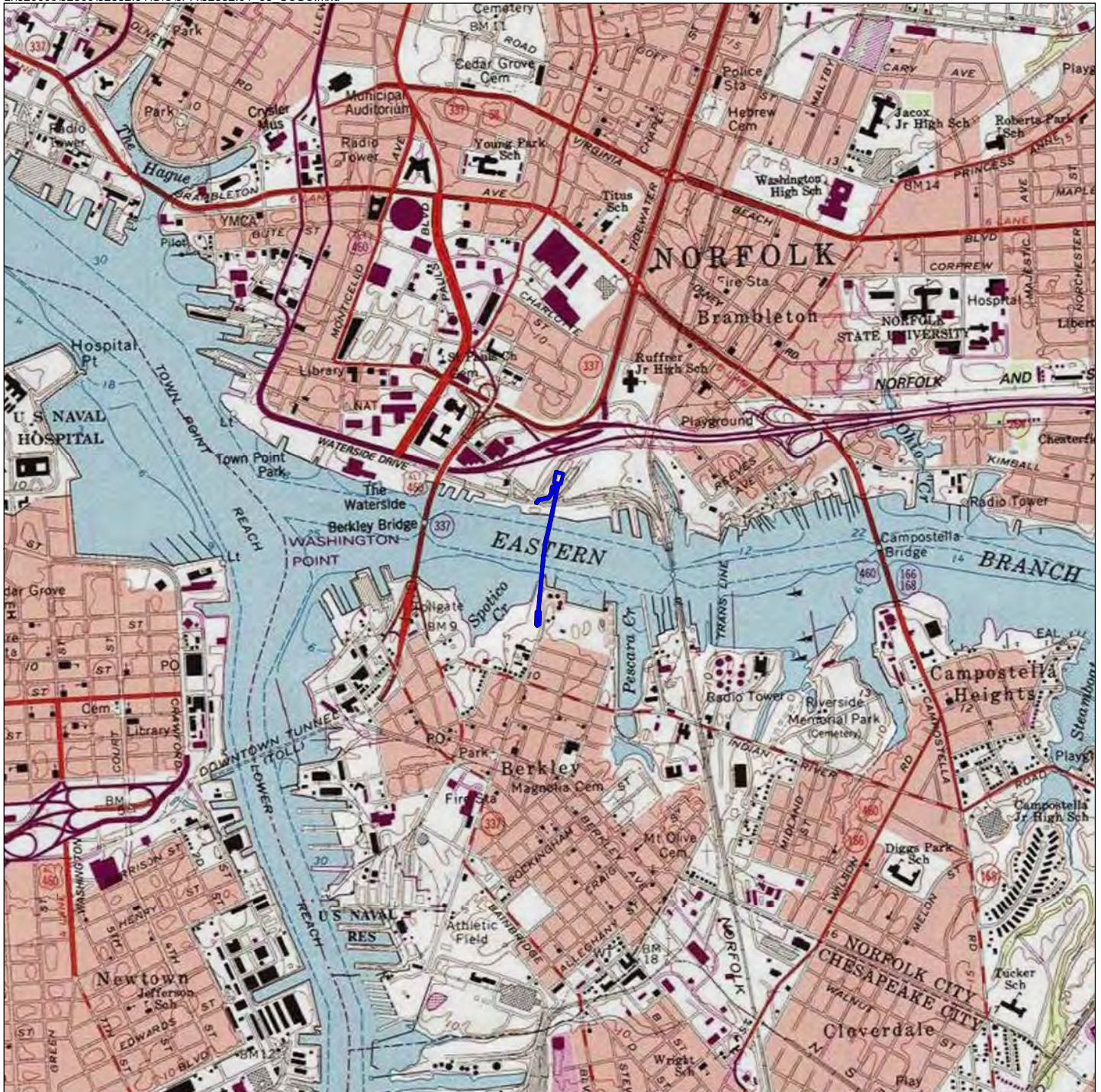



Address: 200 Park Ave Norfolk, VA 23510
Source: World Street Map - ESRI

Wetland Studies and Solutions, Inc.
a DAVEY company

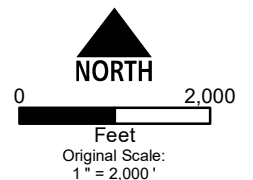
Exhibit 4

L:\32000s\32800\32882.01\GIS\JPA\32882.01_05_USGS.mxd



 LOD: ±1.1 acres

USGS 7.5' Quadrangle Map
NCSR 24-Inch Water Main HDD
WSSI #32882.01



Norfolk South, VA 2000
 Latitude: 36°50'28"N (36.841111)
 Longitude: 76°16'49"W (-76.280427)
 Hydrologic Unit Code (HUC): 020802080204
 HUC12 Name: Eastern Branch Elizabeth River
 COE Region: Atlantic and Gulf Coastal Plain

Wetland Studies and Solutions, Inc.

a **DAVEY** company

Received by VMRC August 29, 2023 /blh

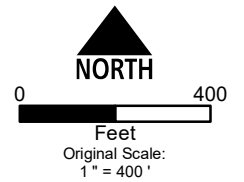
Exhibit 5

L:\32000s\32800\32882.01\GIS\JPA\32882.01_06_Nearmap.mxd



 LOD

February 2023 Natural Color Imagery
NCSRM 24-Inch Water Main HDD
WSSI #32882.01



Source: Nearmap®

Wetland Studies and Solutions, Inc.

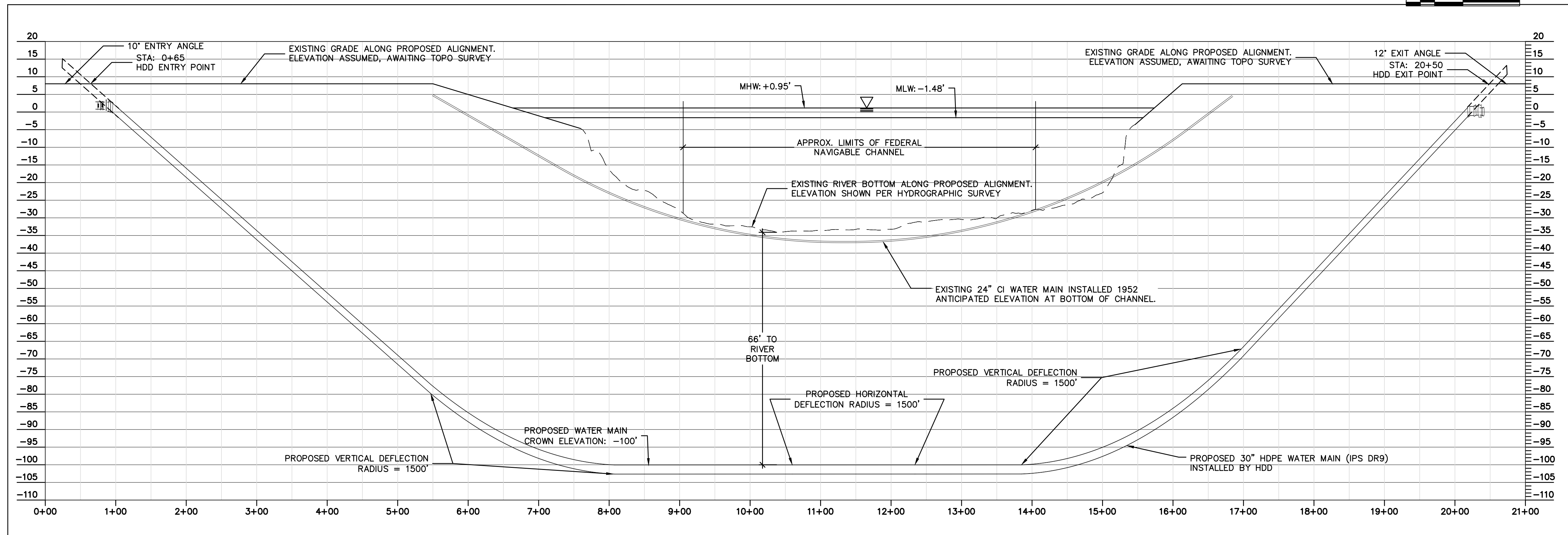
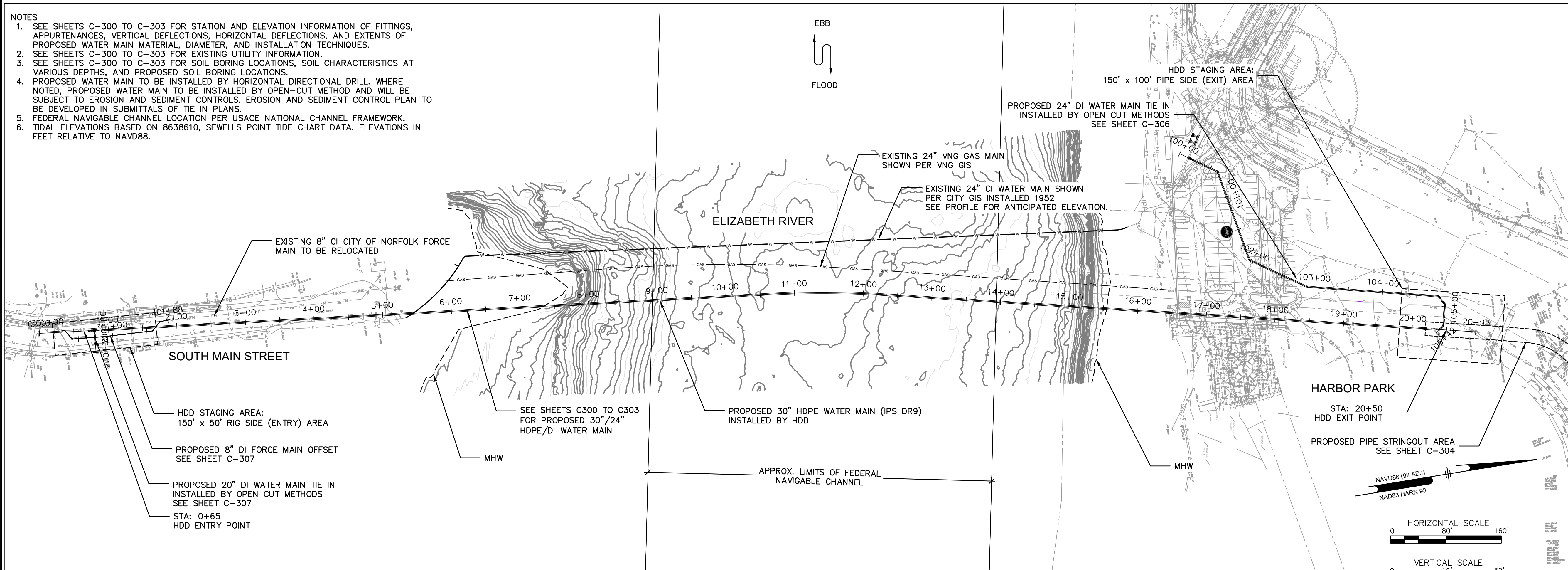
a **DAVEY** company

Received by VMRC August 29, 2023 /blh

Exhibit 6

NOTES

- SEE SHEETS C-300 TO C-303 FOR STATION AND ELEVATION INFORMATION OF FITTINGS, APPURTENANCES, VERTICAL DEFLECTIONS, HORIZONTAL DEFLECTIONS, AND EXTENTS OF PROPOSED WATER MAIN MATERIAL, DIAMETER, AND INSTALLATION TECHNIQUES.
- SEE SHEETS C-300 TO C-303 FOR EXISTING UTILITY INFORMATION.
- SEE SHEETS C-300 TO C-303 FOR SOIL BORING LOCATIONS, SOIL CHARACTERISTICS AT VARIOUS DEPTHS, AND PROPOSED SOIL BORING LOCATIONS.
- PROPOSED WATER MAIN TO BE INSTALLED BY HORIZONTAL DIRECTIONAL DRILL. WHERE NOTED, PROPOSED WATER MAIN TO BE INSTALLED BY OPEN-CUT METHOD AND WILL BE SUBJECT TO EROSION AND SEDIMENT CONTROLS. EROSION AND SEDIMENT CONTROL PLAN TO BE DEVELOPED IN SUBMITTALS OF THE IN PLANS.
- FEDERAL NAVIGABLE CHANNEL LOCATION PER USACE NATIONAL CHANNEL FRAMEWORK.
- TIDAL ELEVATIONS BASED ON 8638610, SEWELLS POINT TIDE CHART DATA. ELEVATIONS IN FEET RELATIVE TO NAVD88.



HDD OVERVIEW

BY	
DATE	
DESCRIPTION	
REV.	



LEGAL ENTITY:
ARCADIS U.S., INC.
295 BENDIX ROAD, SUITE 240
VIRGINIA BEACH, VA 23452

CITY OF NORFOLK OFFICE OF RESILIENCE
COASTAL STORMWATER RISK MANAGEMENT
UTILITY CONFLICT ENGINEERING SERVICES
HDD OVERVIEW

DESIGNED BY: J. ROBERTS
DRAWN BY: J. HOOPER
CHECKED BY: M. MULL
APPROVED BY:
DATE: AUG 2023

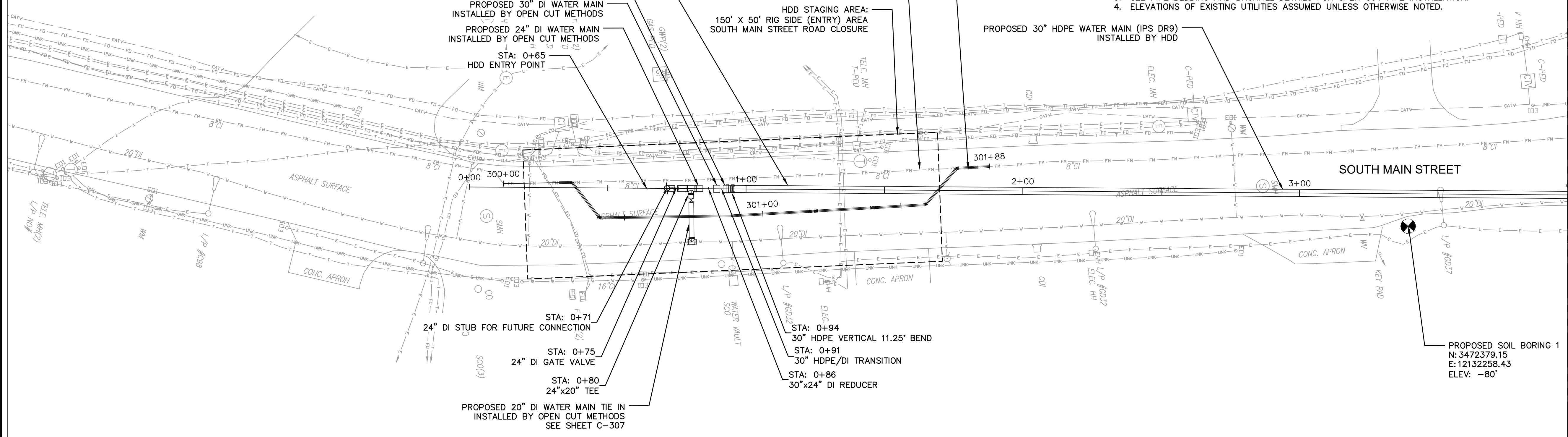
OFFICE OF RESILIENCE
501 BOUSH STREET
NORFOLK, VA 23510

SEALS
NOT FOR CONSTRUCTION

ER No: PCTS No:
FILE NAME: C_HDD_PLANT_BACKUP
DATE: AUG 2023 SCALE: AS SHOWN

SHEET C-300

HDD NOTE:
DESIGN BORE PATH ELEVATIONS SHOWN ARE BASED ON CONCEPTUAL MODELING WITH ASSUMED VALUES FOR SLURRY DENSITY, SLURRY ADDITIVES, SLURRY PRESSURE, TOOLING, DRILL ROD DIAMETER, OPERATIONAL PRODUCTION RATES, AND IN-FIELD MITIGATION MEASURES. ACTUAL HDD BOREHOLE ELEVATION SHALL BE DETERMINED BY CONTRACTOR'S ENGINEER TO MINIMIZE FOR HYDROFRACTURE AND MEET ALL PERFORMANCE SPECIFICATIONS. IN ALL CASES, MINIMUM DEPTH TO TOP OF BOREHOLE SHALL BE 25 FEET BELOW WATER CHANNELS.



- NOTES**
1. PROPOSED WATER MAIN TO BE INSTALLED BY HORIZONTAL DIRECTIONAL DRILL. WHERE NOTED, PROPOSED WATER MAIN TO BE INSTALLED BY OPEN-CUT METHOD AND WILL BE SUBJECT TO EROSION AND SEDIMENT CONTROLS. EROSION AND SEDIMENT CONTROL PLAN TO BE DEVELOPED IN FUTURE SUBMITTALS OF TIE IN PLANS.
 2. LIMITS OF DISTURBANCE LIMITED TO PIPE ENTRY AND EXIT AREAS. LIMITS OF DISTURBANCE NOTED ON PLANS. EXISTING SITE CONDITIONS TO BE RESTORED TO ORIGINAL CONDITION PER RESTORATION DETAILS. SEE SHEET C-501.
 3. SEE PIPE BEDDING AND BACKFILL DETAILS FOR OPEN CUT PIPE INSTALLATION.
 4. ELEVATIONS OF EXISTING UTILITIES ASSUMED UNLESS OTHERWISE NOTED.

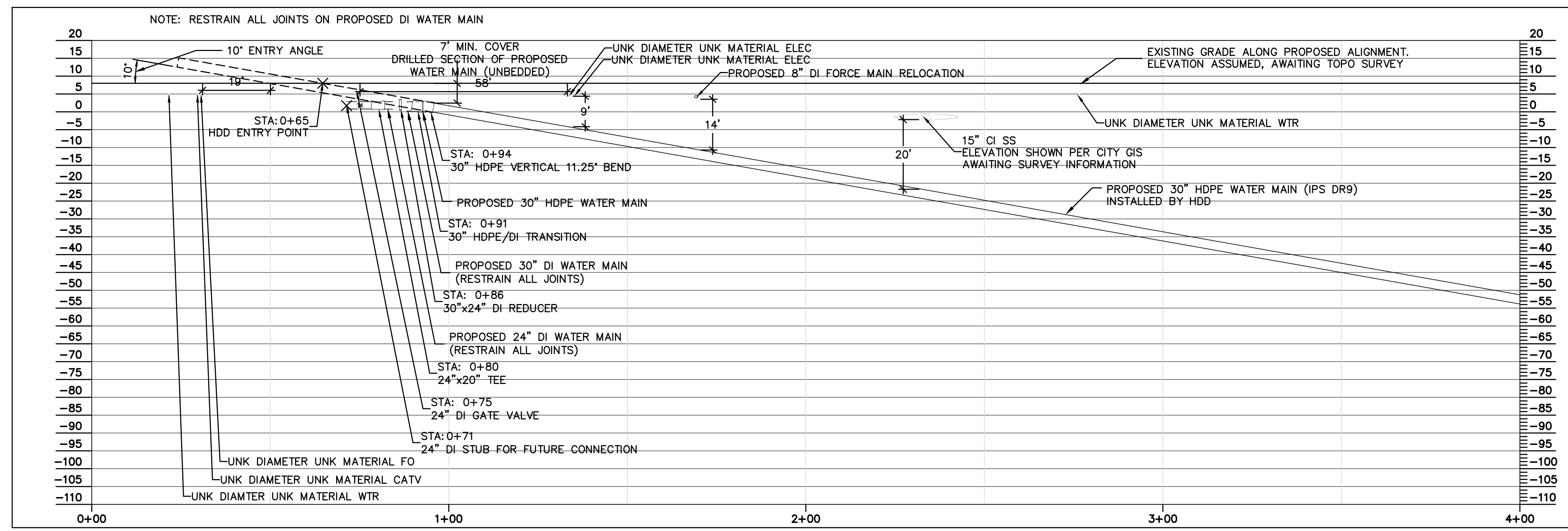
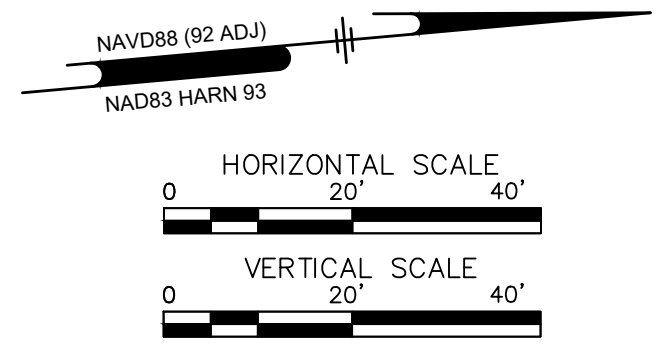


LEGAL ENTITY:
ARCADIS U.S., INC.
295 BENDIX ROAD, SUITE 240
VIRGINIA BEACH, VA 23452

MATCHLINE SEE SHEET C-301
STA: 4+00

CITY OF NORFOLK OFFICE OF RESILIENCE
COASTAL STORMWATER RISK MANAGEMENT
UTILITY CONFLICT ENGINEERING SERVICES

PLAN & PROFILE



PROPOSED 30\"/>

DESIGNED BY: J. ROBERTS
DRAWN BY: J. HOOPER
CHECKED BY: M. MULL
APPROVED BY:
DATE: AUG 2023

OFFICE OF RESILIENCE
501 BOUSH STREET
NORFOLK, VA 23510

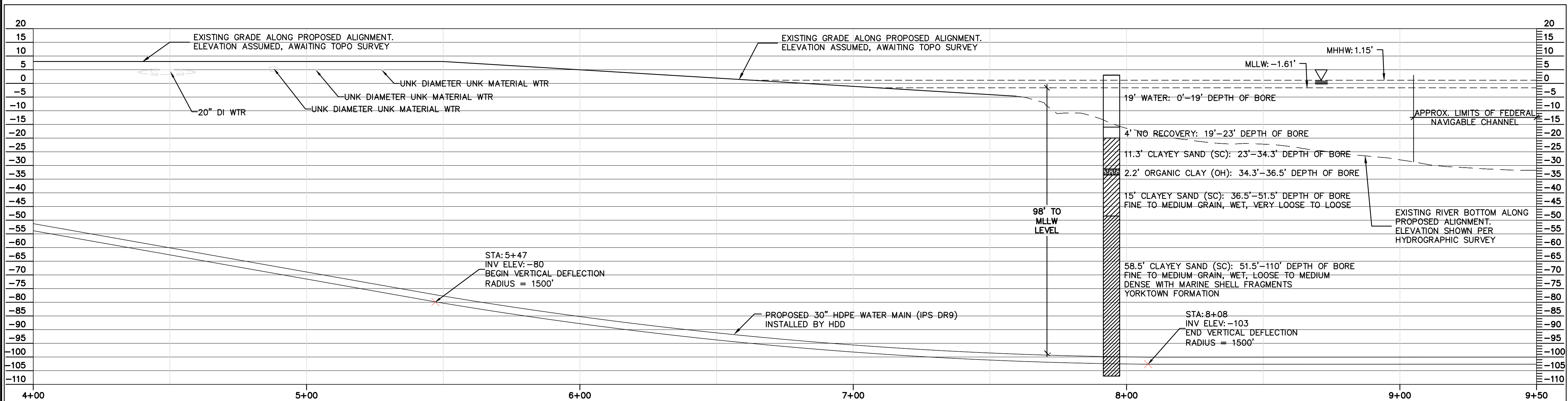
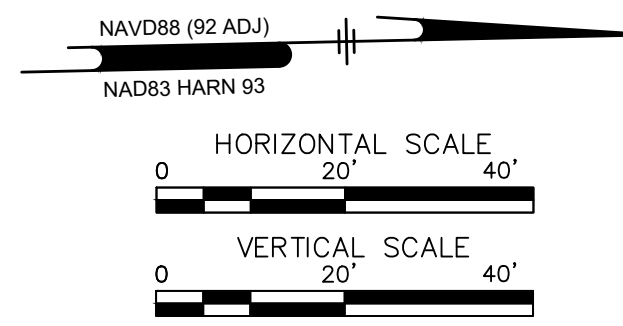
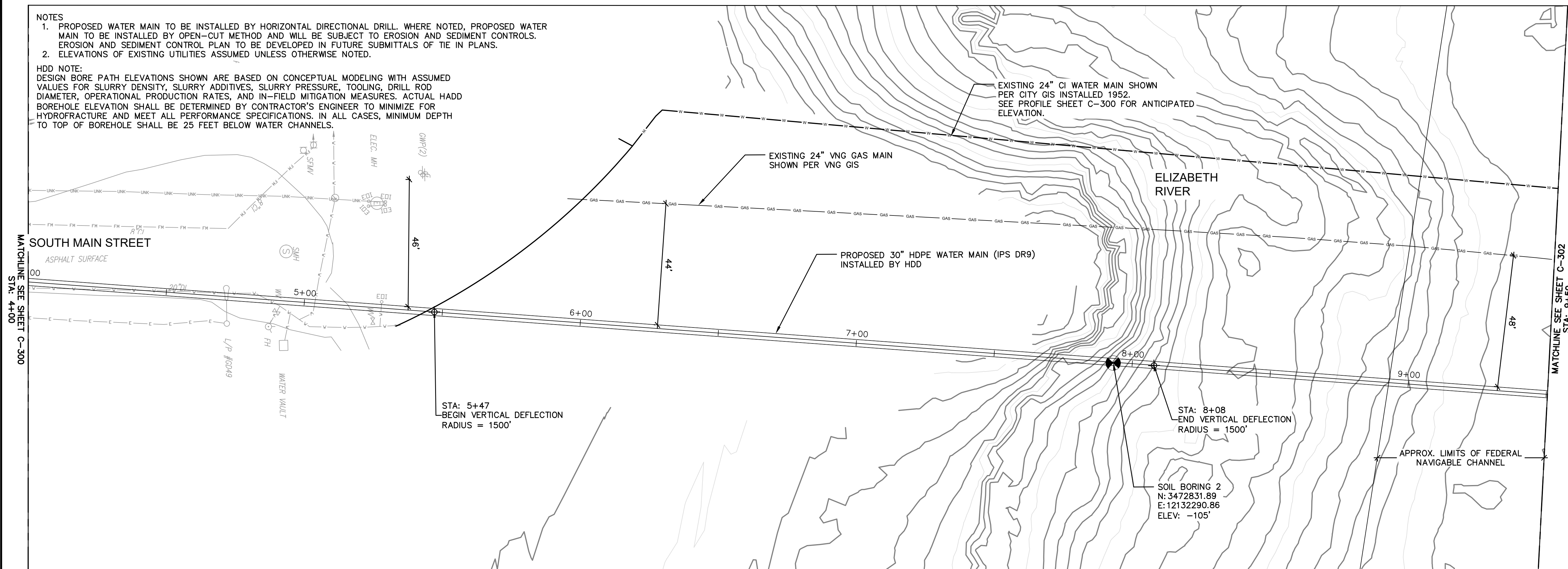
SEALS

NOT FOR CONSTRUCTION

ER No: PCTS No:
FILE NAME: C_HDD_PLANT_BACKUP
DATE: AUG 2023 SCALE: AS SHOWN
SHEET C-301

NOTES
 1. PROPOSED WATER MAIN TO BE INSTALLED BY HORIZONTAL DIRECTIONAL DRILL. WHERE NOTED, PROPOSED WATER MAIN TO BE INSTALLED BY OPEN-CUT METHOD AND WILL BE SUBJECT TO EROSION AND SEDIMENT CONTROLS. EROSION AND SEDIMENT CONTROL PLAN TO BE DEVELOPED IN FUTURE SUBMITTALS OF TIE IN PLANS.
 2. ELEVATIONS OF EXISTING UTILITIES ASSUMED UNLESS OTHERWISE NOTED.

HDD NOTE:
 DESIGN BORE PATH ELEVATIONS SHOWN ARE BASED ON CONCEPTUAL MODELING WITH ASSUMED VALUES FOR SLURRY DENSITY, SLURRY ADDITIVES, SLURRY PRESSURE, TOOLING, DRILL ROD DIAMETER, OPERATIONAL PRODUCTION RATES, AND IN-FIELD MITIGATION MEASURES. ACTUAL HADD BOREHOLE ELEVATION SHALL BE DETERMINED BY CONTRACTOR'S ENGINEER TO MINIMIZE FOR HYDROFRACTURE AND MEET ALL PERFORMANCE SPECIFICATIONS. IN ALL CASES, MINIMUM DEPTH TO TOP OF BOREHOLE SHALL BE 25 FEET BELOW WATER CHANNELS.



PROPOSED 30" HDPE WATER MAIN STA 4+00 - 9+50

REV.	DATE	DESCRIPTION

ARCADIS
 LEGAL ENTITY:
 ARCADIS U.S., INC.
 295 BENDIX ROAD, SUITE 240
 VIRGINIA BEACH, VA 23452

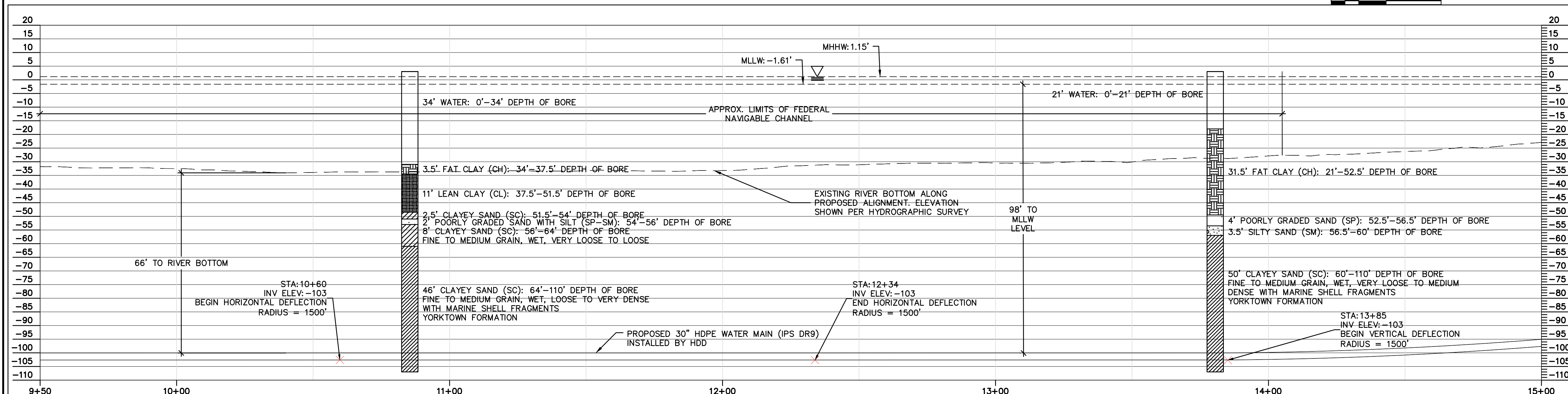
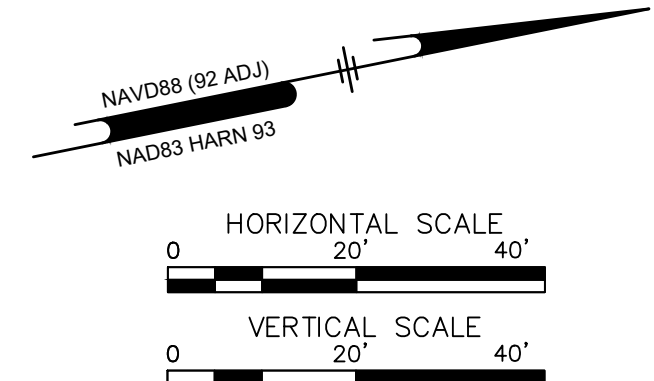
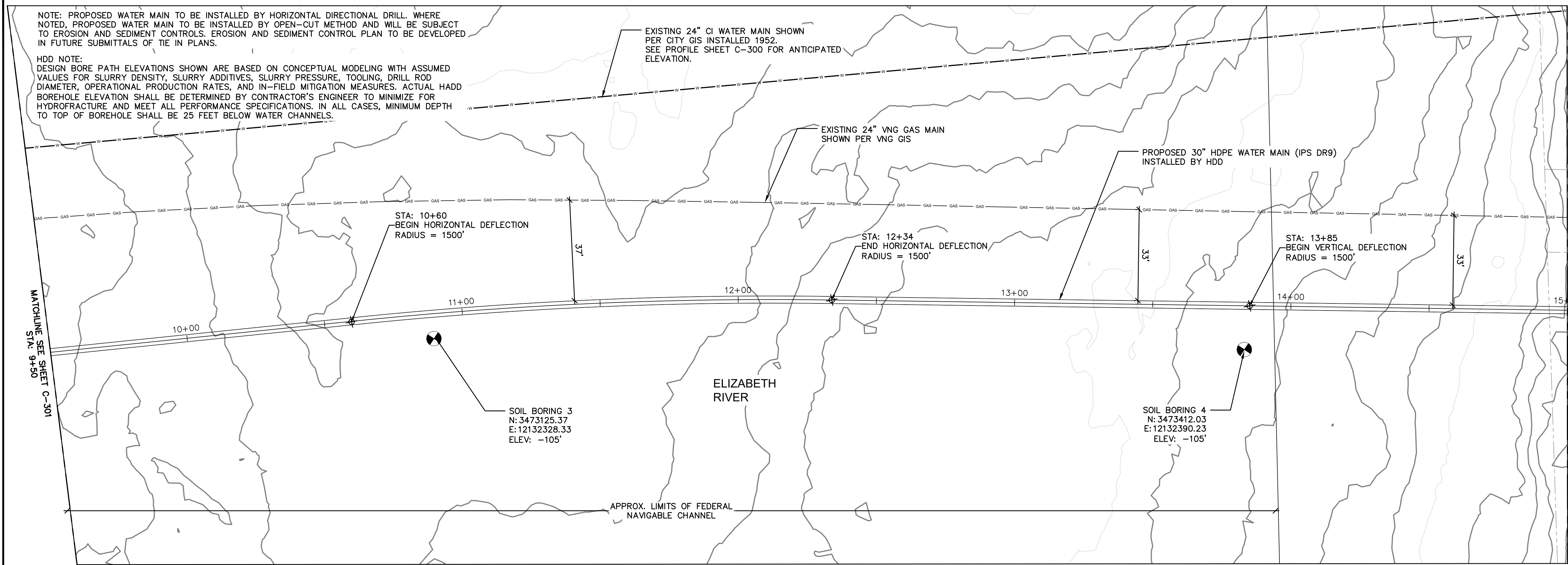
CITY OF NORFOLK OFFICE OF RESILIENCE
 COASTAL STORMWATER RISK MANAGEMENT
 UTILITY CONFLICT ENGINEERING SERVICES
 PLAN & PROFILE

DESIGNED BY: J. ROBERTS
 DRAWN BY: J. HOOPER
 CHECKED BY: M. MULL
 APPROVED BY: _____
 DATE: AUG 2023

OFFICE OF RESILIENCE
 501 BOUSH STREET
 NORFOLK, VA 23510

SEALS
 NOT FOR CONSTRUCTION

ER No: _____ PCTS No: _____
 FILE NAME: C_HDD_PLANT_BACKUP
 DATE: AUG 2023 SCALE: AS SHOWN
SHEET C-302



PROPOSED 30" HDPE WATER MAIN STA 9+50 - 15+00

BY	DATE	DESCRIPTION



LEGAL ENTITY:
ARCADIS U.S., INC.
295 BENDIX ROAD, SUITE 240
VIRGINIA BEACH, VA 23452

CITY OF NORFOLK OFFICE OF RESILIENCE
COASTAL STORMWATER RISK MANAGEMENT
UTILITY CONFLICT ENGINEERING SERVICES

PLAN & PROFILE

DESIGNED BY: J. ROBERTS
DRAWN BY: J. HOOPER
CHECKED BY: M. MULL
APPROVED BY: _____
DATE: AUG 2023

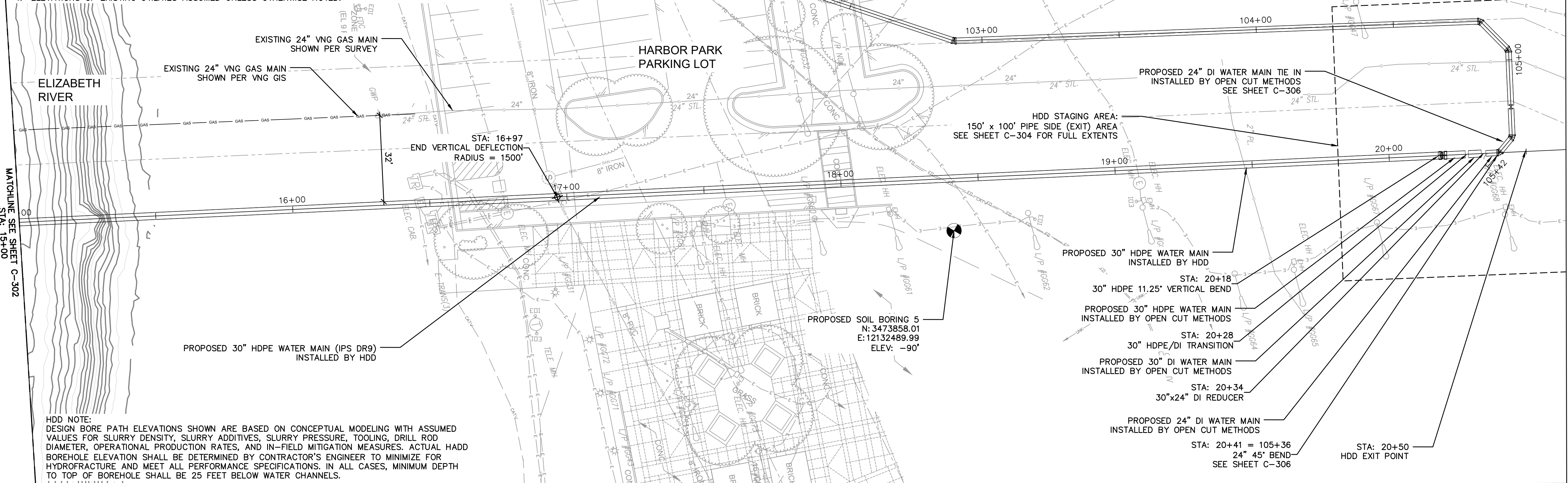
OFFICE OF RESILIENCE
501 BOUSH STREET
NORFOLK, VA 23510

SEALS
NOT FOR CONSTRUCTION

ER No: _____ PCTS No: _____
FILE NAME: C_HDD_PLAN1_BACKUP
DATE: AUG 2023 SCALE: AS SHOWN
SHEET C-303

NOTES

1. PROPOSED WATER MAIN TO BE INSTALLED BY HORIZONTAL DIRECTIONAL DRILL. WHERE NOTED, PROPOSED WATER MAIN TO BE INSTALLED BY OPEN-CUT METHOD AND WILL BE SUBJECT TO EROSION AND SEDIMENT CONTROLS. EROSION AND SEDIMENT CONTROL PLAN TO BE DEVELOPED IN FUTURE SUBMITTALS OF THE IN PLANS.
2. LIMITS OF DISTURBANCE LIMITED TO PIPE ENTRY AND EXIT AREAS. LIMITS OF DISTURBANCE NOTED ON PLANS. EXISTING SITE CONDITIONS TO BE RESTORED TO ORIGINAL CONDITION PER RESTORATION DETAILS. SEE SHEET C-501.
3. SEE PIPE BEDDING AND BACKFILL DETAILS SHEET C-501 FOR OPEN CUT PIPE INSTALLATION.
4. ELEVATIONS OF EXISTING UTILITIES ASSUMED UNLESS OTHERWISE NOTED.



HDD NOTE:
DESIGN BORE PATH ELEVATIONS SHOWN ARE BASED ON CONCEPTUAL MODELING WITH ASSUMED VALUES FOR SLURRY DENSITY, SLURRY ADDITIVES, SLURRY PRESSURE, TOOLING, DRILL ROD DIAMETER, OPERATIONAL PRODUCTION RATES, AND IN-FIELD MITIGATION MEASURES. ACTUAL HADD BOREHOLE ELEVATION SHALL BE DETERMINED BY CONTRACTOR'S ENGINEER TO MINIMIZE FOR HYDROFRACTURE AND MEET ALL PERFORMANCE SPECIFICATIONS. IN ALL CASES, MINIMUM DEPTH TO TOP OF BOREHOLE SHALL BE 25 FEET BELOW WATER CHANNELS.

BY	
DATE	
DESCRIPTION	
REV.	

ARCADIS
LEGAL ENTITY:
ARCADIS U.S., INC.
295 BENDIX ROAD, SUITE 240
VIRGINIA BEACH, VA 23462

CITY OF NORFOLK OFFICE OF RESILIENCE
COASTAL STORMWATER RISK MANAGEMENT
UTILITY CONFLICT ENGINEERING SERVICES
PLAN & PROFILE

DESIGNED BY: J. ROBERTS
DRAWN BY: J. HOOPER
CHECKED BY: M. MULL
APPROVED BY:
DATE: AUG 2023

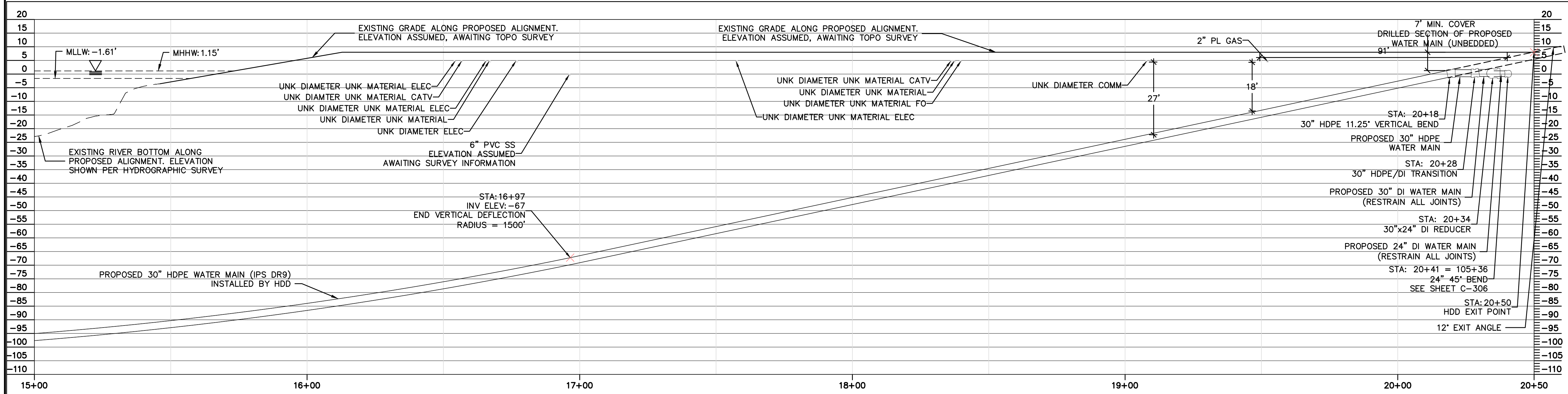
OFFICE OF RESILIENCE
501 BOUSH STREET
NORFOLK, VA 23510

SEALS
NOT FOR CONSTRUCTION

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DATE: AUG 2023 SCALE: AS SHOWN

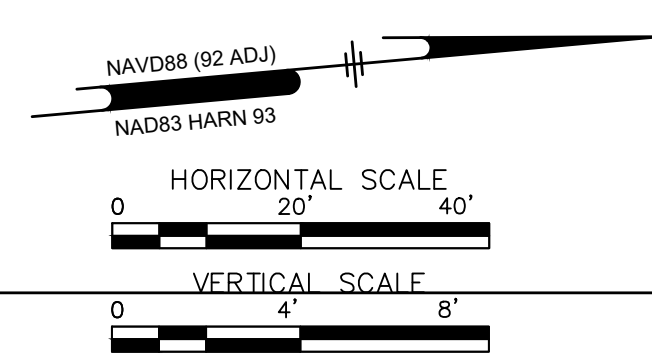
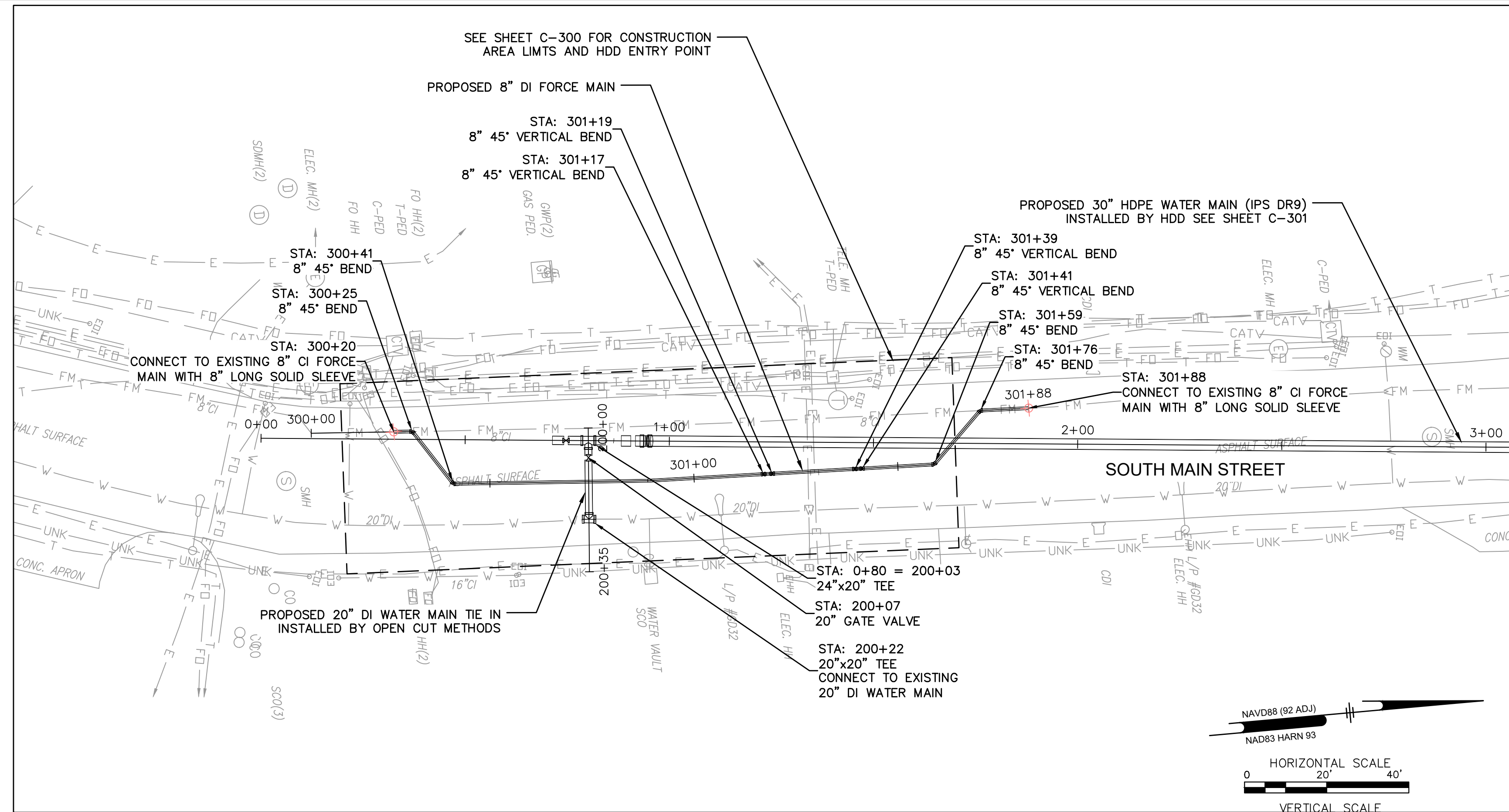
SHEET C-304

NOTE: RESTRAIN ALL JOINTS ON PROPOSED DI WATER MAIN



PROPOSED 30"/24" HDPE/DI WATER MAIN STA 15+00 - 20+50

- NOTES
- PROPOSED WATER MAIN TO BE INSTALLED BY HORIZONTAL DIRECTIONAL DRILL. WHERE NOTED, PROPOSED WATER MAIN TO BE INSTALLED BY OPEN-CUT METHOD AND WILL BE SUBJECT TO EROSION AND SEDIMENT CONTROLS. EROSION AND SEDIMENT CONTROL PLAN TO BE DEVELOPED IN FUTURE SUBMITTALS OF THE IN PLANS.
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 - SEE PIPE BEDDING AND BACKFILL DETAILS FOR OPEN CUT PIPE INSTALLATION.
 - ELEVATIONS OF EXISTING UTILITIES ASSUMED UNLESS OTHERWISE NOTED.



REV.	DESCRIPTION	DATE	BY

ARCADIS
 LEGAL ENTITY:
 ARCADIS U.S., INC.
 295 BENDIX ROAD, SUITE 240
 VIRGINIA BEACH, VA 23452

CITY OF NORFOLK OFFICE OF RESILIENCE
 COASTAL STORMWATER RISK MANAGEMENT
 UTILITY CONFLICT ENGINEERING SERVICES
 EXISTING 8" FORCE MAIN OFFSET
 PROPOSED 20" WATER MAIN TIE IN

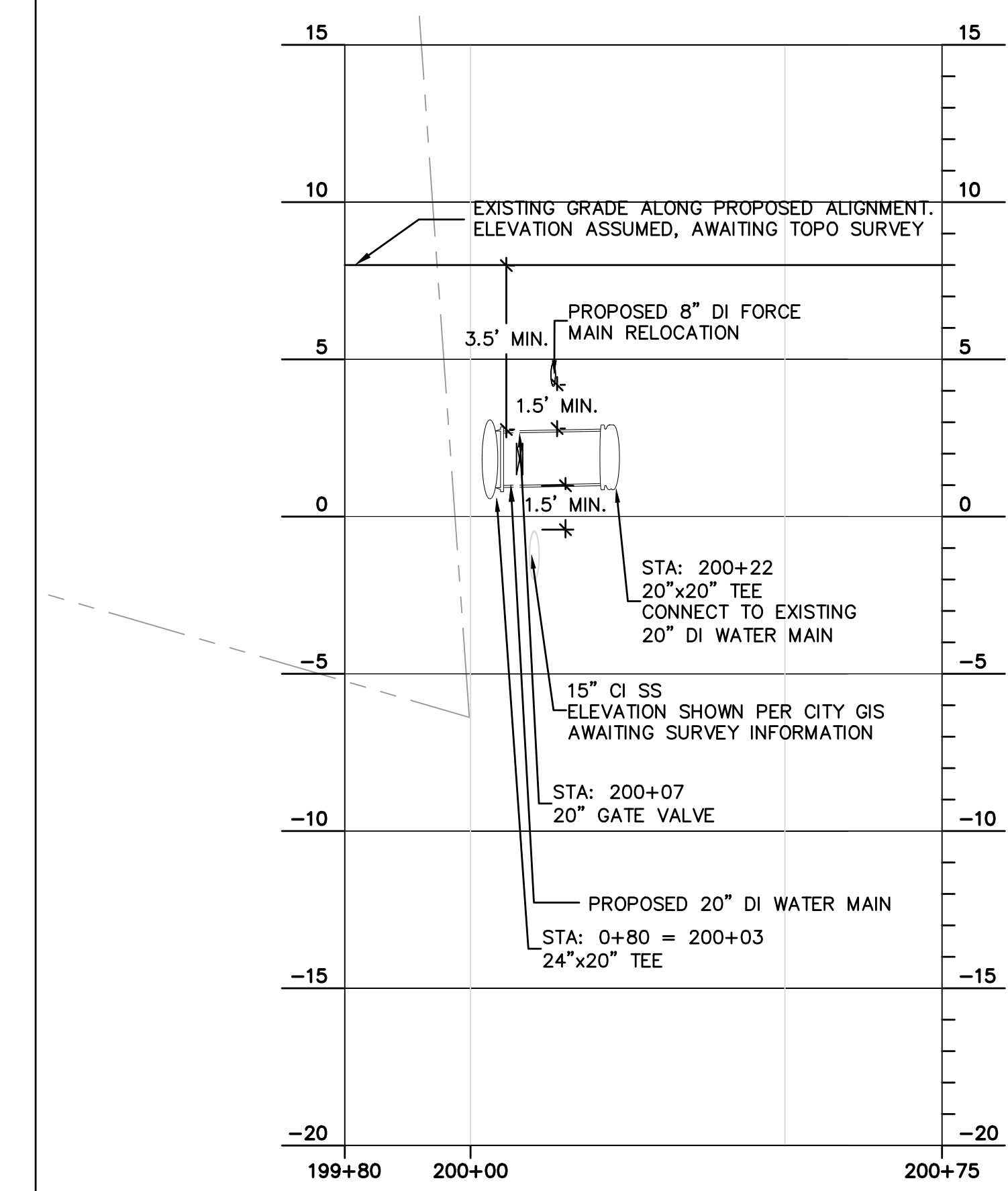
DESIGNED BY: J. ROBERTS
 DRAWN BY: J. HOOPER
 CHECKED BY: M. MULL
 APPROVED BY:
 DATE: AUG 2023

OFFICE OF RESILIENCE
 501 BOUSH STREET
 NORFOLK, VA 23510

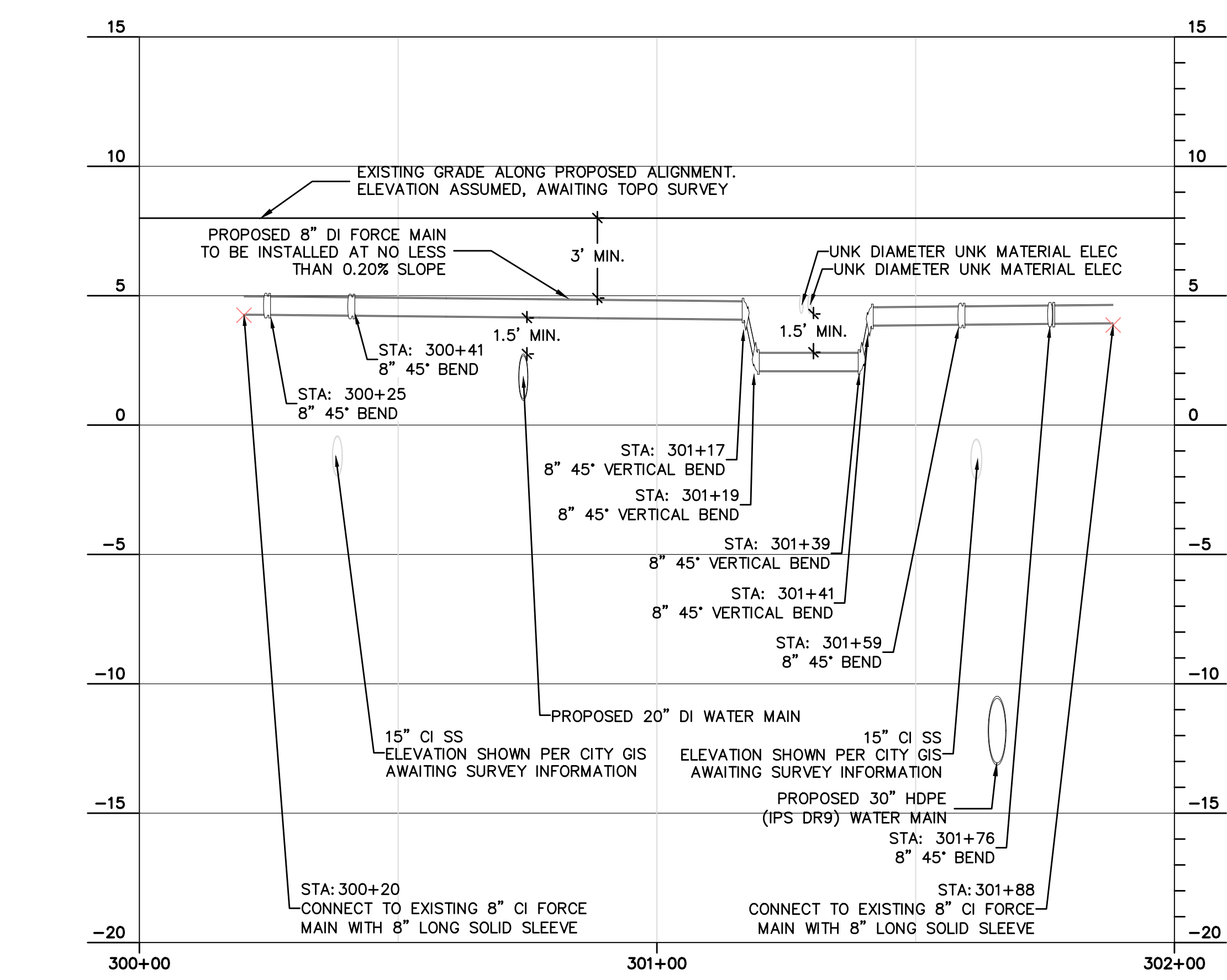
SEALS
 NOT FOR CONSTRUCTION

ER No: PCTS No:
 FILE NAME: C_HDD_PLAN1_TIEINBACKUP
 DATE: AUG 2023 SCALE: AS SHOWN
SHEET C-307

NOTE: RESTRAIN ALL JOINTS ON PROPOSED DI WATER MAIN



PROPOSED 20" DI WATER MAIN TIE IN SOUTH MAIN STREET



PROPOSED 8" DI FORCE MAIN OFFSET SOUTH MAIN STREET