

BSR	SMS	SNP	JRM	SMS	NO.	BY	CHK	APP
-	-	-	-	-	06/22/2017	06/22/2016	04/07/2016	04/07/2016
RECORD DRAWINGS				REVISIONS AND RECORD OF ISSUE				
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Building a World of Difference

Black & Veatch Corporation
Kansas City, Missouri

**BEDFORD REGIONAL WATER AUTHORITY
SMITH MOUNTAIN LAKE WTP &
LAKES TO FOREST WATER LINE EXTENSION**

CONTRACT E - WATER MAIN KEY PLAN

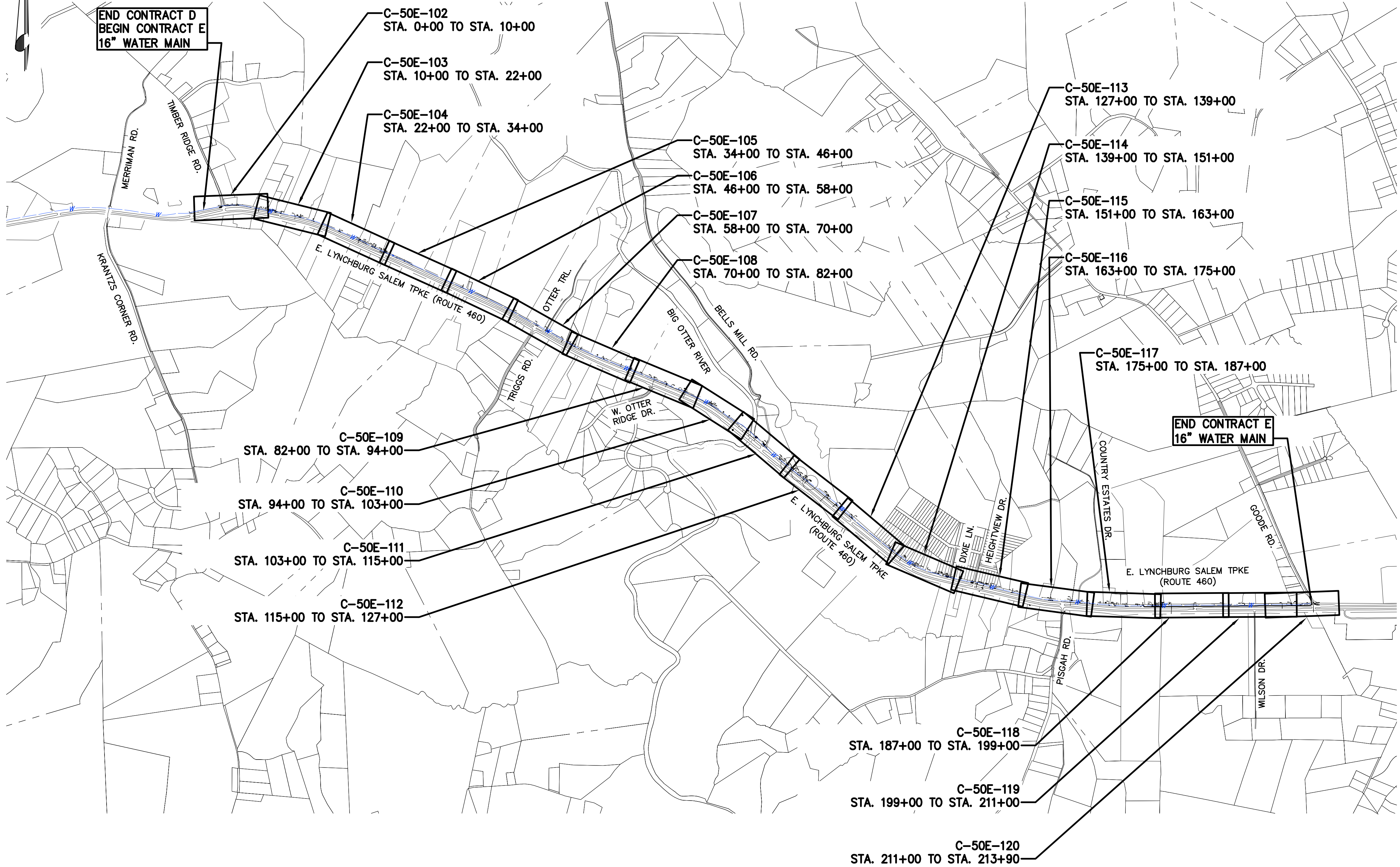
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DETAILED: SNP
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APPROVED: SMS
DATE: 04-2016

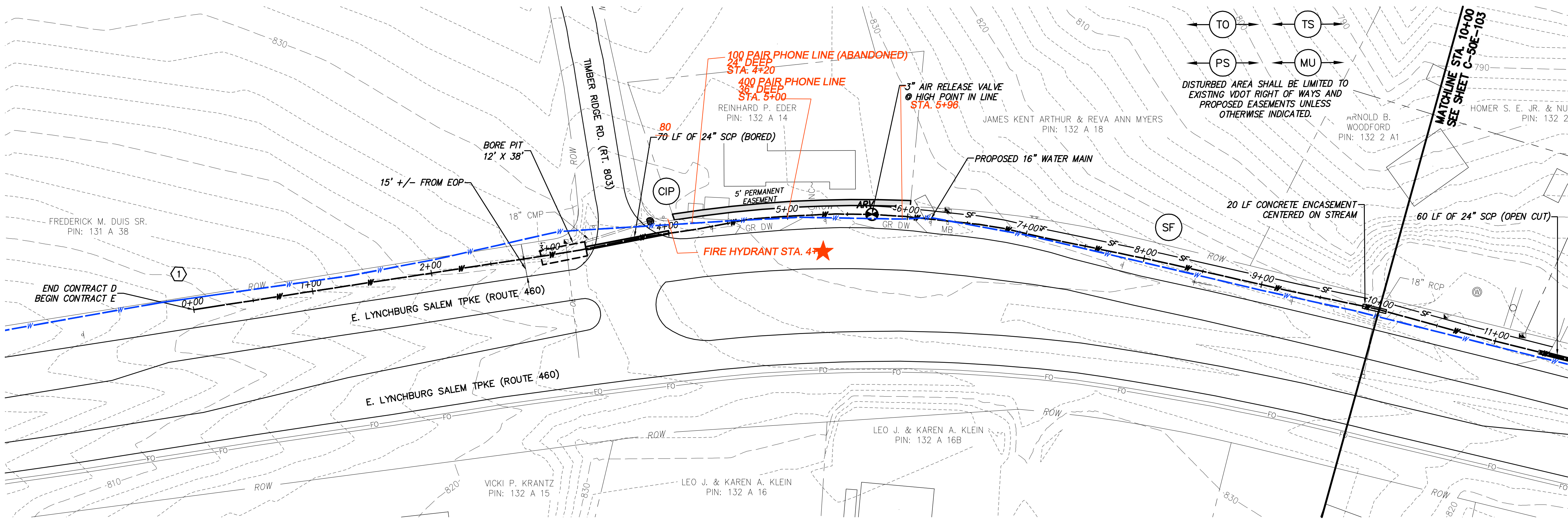
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PROJECT NO.
27872

C-50E-101
SHEET
OF

SHEET LIST TABLE	
SHEET NUMBER	SHEET TITLE
C-50E-101	CONTRACT E - WATER MAIN KEY PLAN
C-50E-102	CONTRACT E WATER MAIN - PLAN AND PROFILE EAST LYNCHBURG SALEM TPKE (RT 460) STA. 0+00 TO STA. 10+00
C-50E-103	CONTRACT E WATER MAIN - PLAN AND PROFILE EAST LYNCHBURG SALEM TPKE (RT 460) STA. 10+00 TO STA. 22+00
C-50E-104	CONTRACT E WATER MAIN - PLAN AND PROFILE EAST LYNCHBURG SALEM TPKE (RT 460) STA. 22+00 TO STA. 34+00
C-50E-105	CONTRACT E WATER MAIN - PLAN AND PROFILE EAST LYNCHBURG SALEM TPKE (RT 460) STA. 34+00 TO STA. 46+00
C-50E-106	CONTRACT E WATER MAIN - PLAN AND PROFILE EAST LYNCHBURG SALEM TPKE (RT 460) STA. 46+00 TO STA. 58+00
C-50E-107	CONTRACT E WATER MAIN - PLAN AND PROFILE EAST LYNCHBURG SALEM TPKE (RT 460) STA. 58+00 TO STA. 70+00
C-50E-108	CONTRACT E WATER MAIN - PLAN AND PROFILE EAST LYNCHBURG SALEM TPKE (RT 460) STA. 70+00 TO STA. 82+00
C-50E-109	CONTRACT E WATER MAIN - PLAN AND PROFILE EAST LYNCHBURG SALEM TPKE (RT 460) STA. 82+00 TO STA. 94+00
C-50E-110	CONTRACT E WATER MAIN - PLAN AND PROFILE EAST LYNCHBURG SALEM TPKE (RT 460) STA. 94+00 TO STA. 103+00
C-50E-111	CONTRACT E WATER MAIN - PLAN AND PROFILE EAST LYNCHBURG SALEM TPKE (RT 460) STA. 103+00 TO STA. 115+00
C-50E-112	CONTRACT E WATER MAIN - PLAN AND PROFILE EAST LYNCHBURG SALEM TPKE (RT 460) STA. 115+00 TO STA. 127+00
C-50E-113	CONTRACT E WATER MAIN - PLAN AND PROFILE EAST LYNCHBURG SALEM TPKE (RT 460) STA. 127+00 TO STA. 139+00
C-50E-114	CONTRACT E WATER MAIN - PLAN AND PROFILE EAST LYNCHBURG SALEM TPKE (RT 460) STA. 139+00 TO STA. 151+00
C-50E-115	CONTRACT E WATER MAIN - PLAN AND PROFILE EAST LYNCHBURG SALEM TPKE (RT 460) STA. 151+00 TO STA. 163+00
C-50E-116	CONTRACT E WATER MAIN - PLAN AND PROFILE EAST LYNCHBURG SALEM TPKE (RT 460) STA. 163+00 TO STA. 175+00
C-50E-117	CONTRACT E WATER MAIN - PLAN AND PROFILE EAST LYNCHBURG SALEM TPKE (RT 460) STA. 175+00 TO STA. 187+00
C-50E-118	CONTRACT E WATER MAIN - PLAN AND PROFILE EAST LYNCHBURG SALEM TPKE (RT 460) STA. 187+00 TO STA. 199+00
C-50E-119	CONTRACT E WATER MAIN - PLAN AND PROFILE EAST LYNCHBURG SALEM TPKE (RT 460) STA. 199+00 TO STA. 211+00
C-50E-120	CONTRACT E WATER MAIN - PLAN AND PROFILE EAST LYNCHBURG SALEM TPKE (RT 460) STA. 211+00 TO STA. 213+90

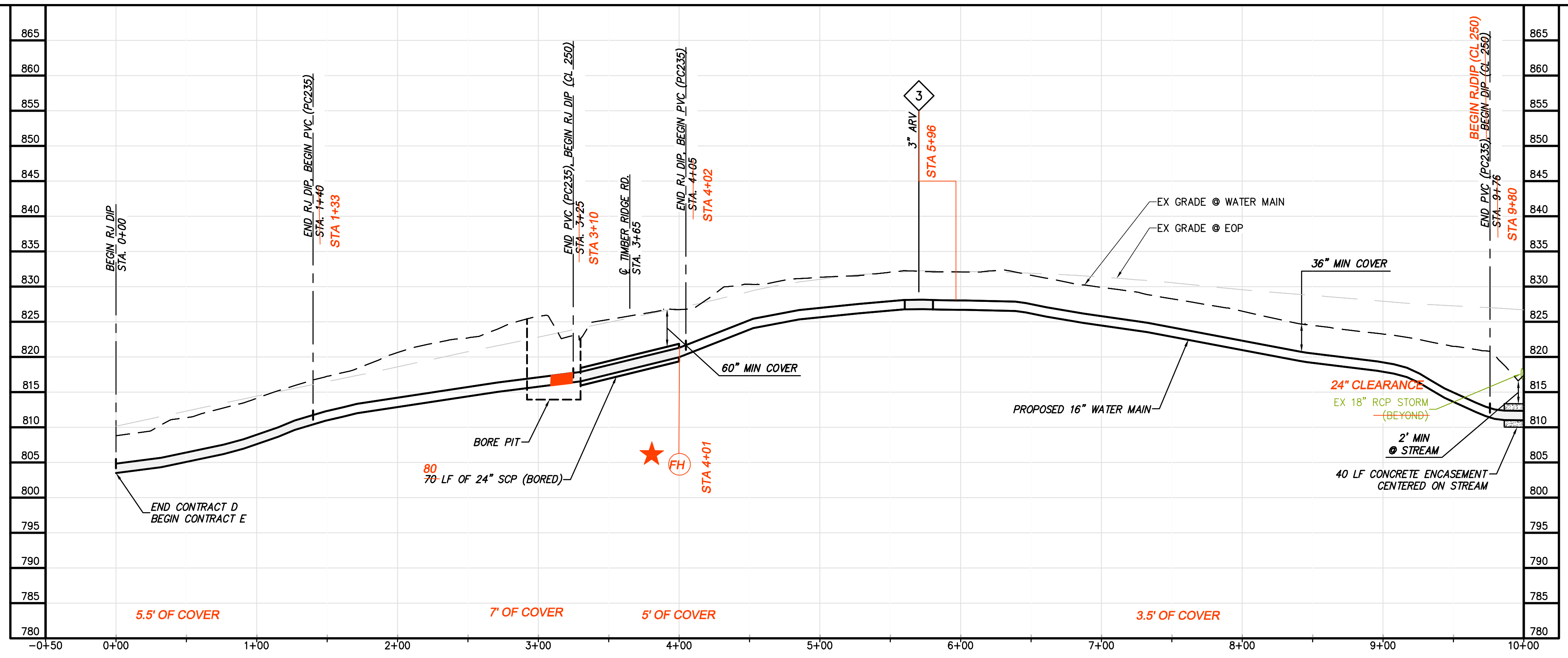




WATER MAIN PLAN

★ FIRE HYDRANT, 16" X 6" TEE, (2) 6"-45° BEND, 3' OF 6" DIP, (2) ANCHOR COUPLINGS, 6" GATE VALVE, (ALL RESTRAINED)

- GENERAL NOTES:**
- A. 16-IN WATER MAIN:
 - 1. PIPING:
 - a. PVC: PRESSURE CLASS 165-DR25, 200-DR21, AND 235-DR18 AS NOTED.
 - b. DIP (INCLUDES ALL RJ): PRESSURE CLASS 250 AND 350 AS NOTED
 - 2. VALVES: RATED FOR WORKING PRESSURE OF 250 PSI
 - 3. TEST PRESSURES WILL VARY BASED ON OPERATING CONDITIONS, ELEVATION CHANGES AND PIPE PRESSURE CLASSES. PC165 WILL BE TESTED AT 150 PSI, PC200 AT 200 PSI, PC235 AT 225 PSI, AND DIP AT RIVER CROSSINGS WILL BE TESTED AT MIN. 250 PSI UNLESS NOTED OTHERWISE.
 - B. VALVES, BLOW-OFFS AND AIR RELEASE VALVES LOCATIONS ARE APPROXIMATE. FINAL LOCATIONS ARE TO BE FIELD DETERMINED.
 - C. CONTRACTOR MAY PROVIDE TEMPORARY BLOW-OFFS, AIR RELEASE VALVES AND TEST PORTS AS NEEDED FOR TESTING AND FLUSHING.
- SPECIFIC NOTES**
- ① COORDINATE TIE-IN AND TESTING W/ CONTRACTOR FOR CONTRACT D.



WATER MAIN PROFILE

ALL RED LINE ITEMS SHOWN REPRESENT UTILITIES EITHER INSTALLED OR FOUND EXISTING DURING THE COURSE OF CONSTRUCTION AND HAVE BEEN OVERLAID ON PLANS PREPARED BY CHA FOR BLACK & VEATCH WITH ALL PARTIES PERMISSION. THE PLANS AS ORIGINALLY DESIGNED FOR BLACK & VEATCH BY CHA ARE NOT MODIFIED OR CHANGED IN ANY CAPACITY BY THE RED LINE OVERLAY.

CHIA

1901 Innovation Drive, Suite 2100
Overland Park, KS 66209
Main: (913) 852-8848 • Fax: (913) 852-8849 • www.chiacorporation.com

0 50 100

Scale in feet

GENERAL NOTES:

A. 16-IN WATER MAIN:

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SPECIFIC NOTES

① COORDINATE TIE-IN AND TESTING W/ CONTRACTOR FOR CONTRACT D.

DESIGNED: JRM

DETAILED: SNP

CHECKED: BSR

APPROVED: SMS

DATE: 04-2016

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PROJECT NO.

27872

C-50E-102

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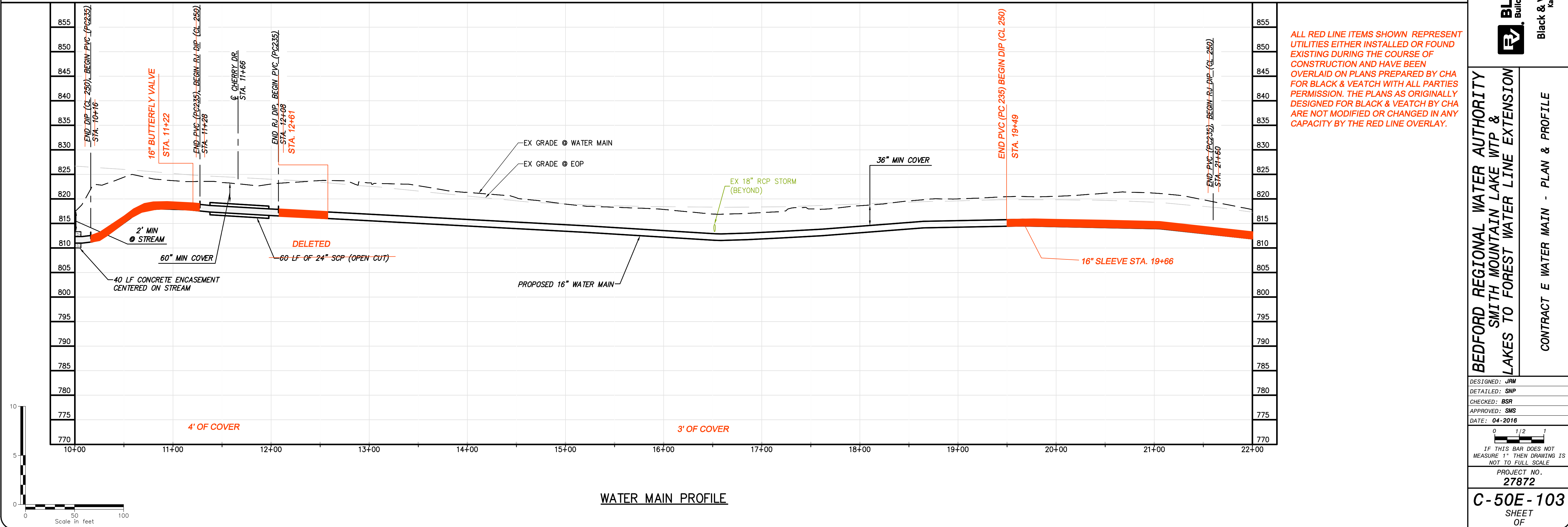
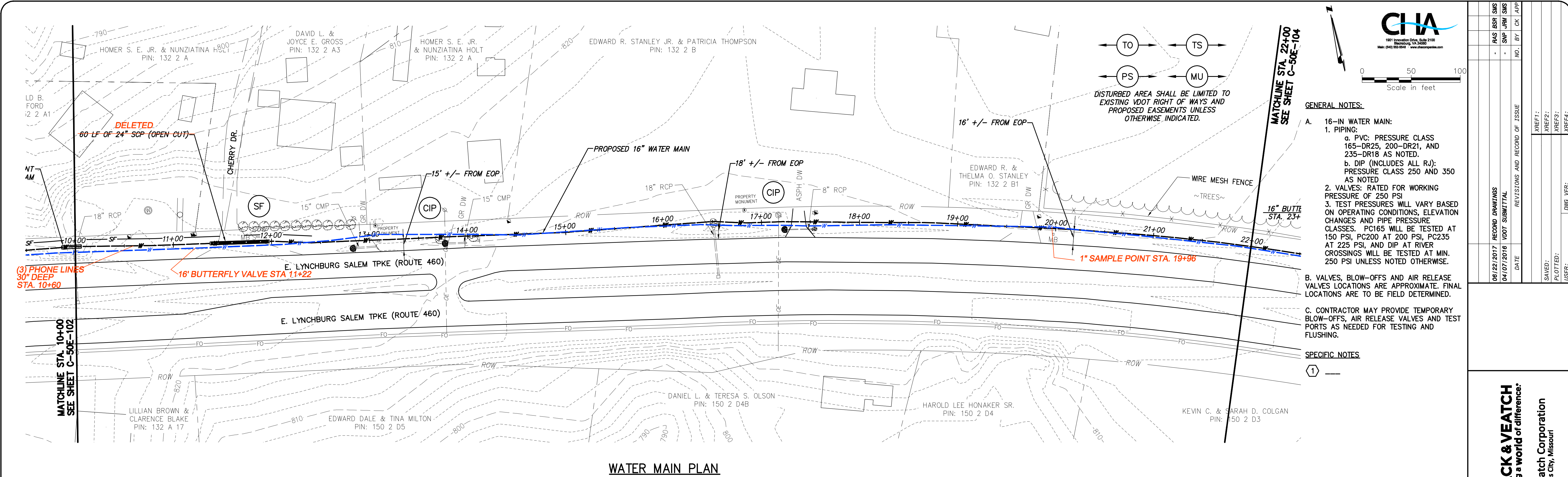
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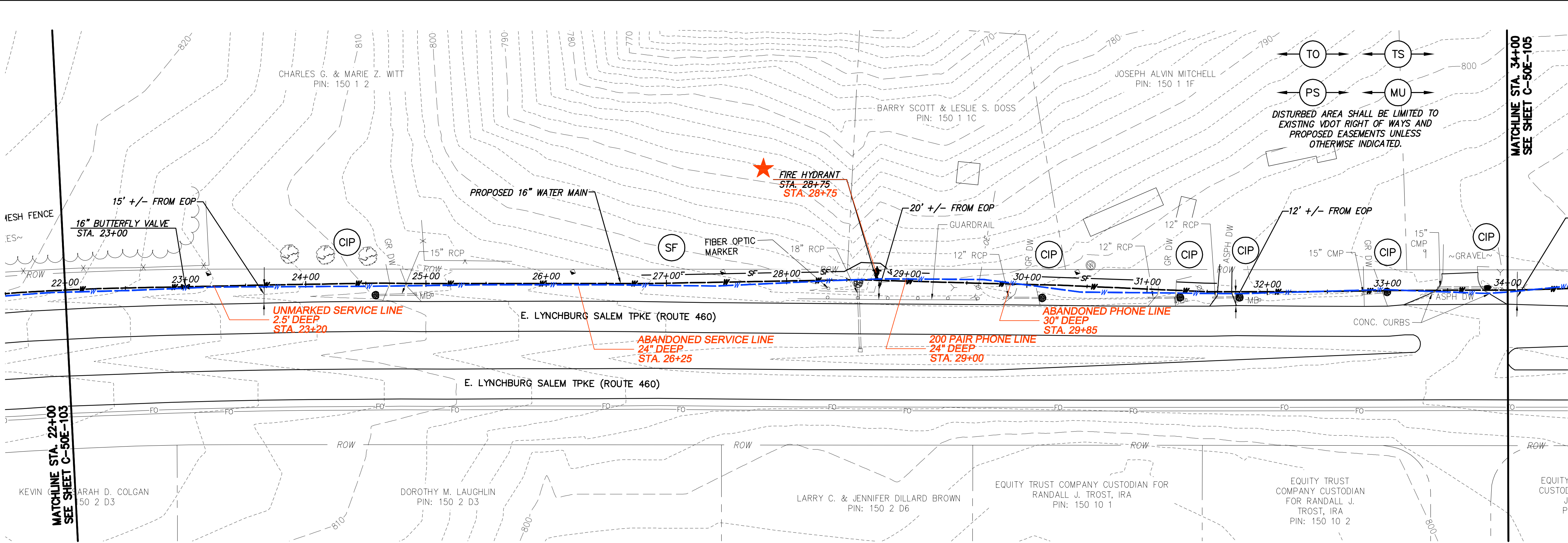
Kansas City, Missouri

BEDFORD REGIONAL WATER AUTHORITY

SMITH MOUNTAIN LAKE WTP & LAKES TO FOREST WATER LINE EXTENSION

CONTRACT E WATER MAIN - PLAN & PROFILE





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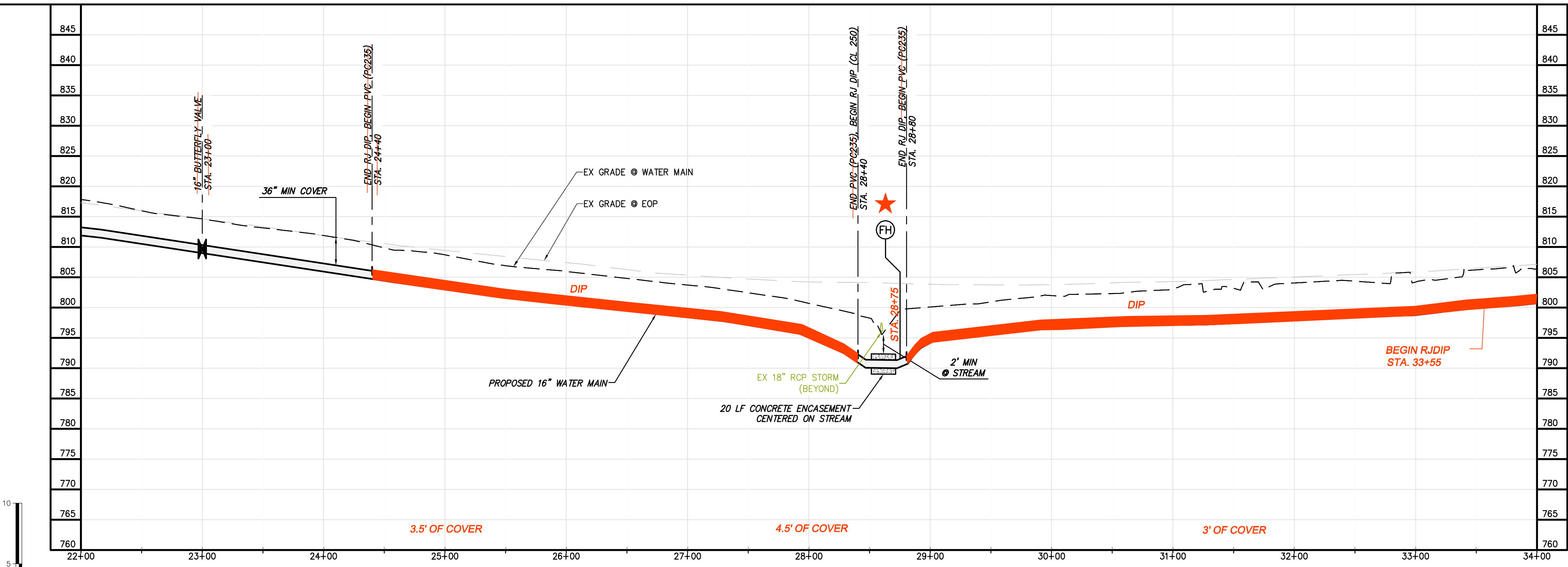
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SPECIFIC NOTES

1

WATER MAIN PLAN ★ FIRE HYDRANT, 16" X 6" TEE, 1.5' OF 6" DIP, 6" GATE VALVE, 1.5' OF 6" DIP (ALL RESTRAINED)



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WATER MAIN PROFILE

DESIGNED: JRM
DETAILED: SNP
CHECKED: BSR
APPROVED: SMS
DATE: 04-2016

PROJECT NO.
27872

C-50E-104
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SMITH MOUNTAIN LAKE WTP &
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CONTRACT E WATER MAIN - PLAN & PROFILE

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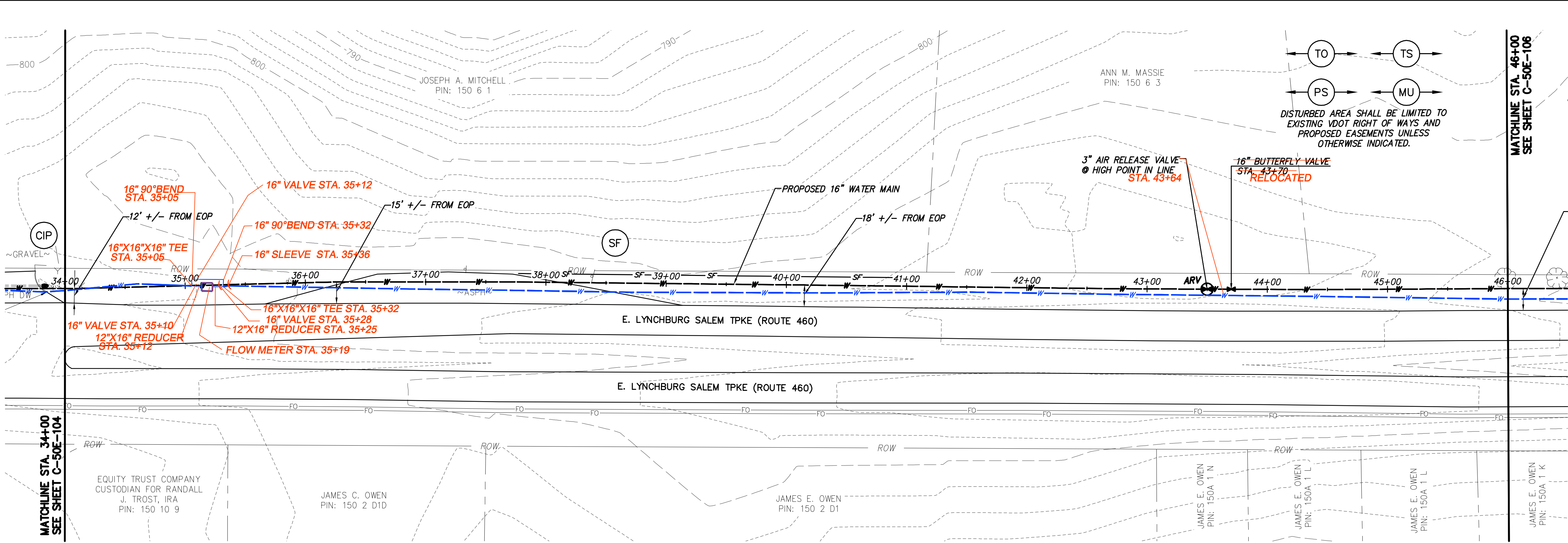
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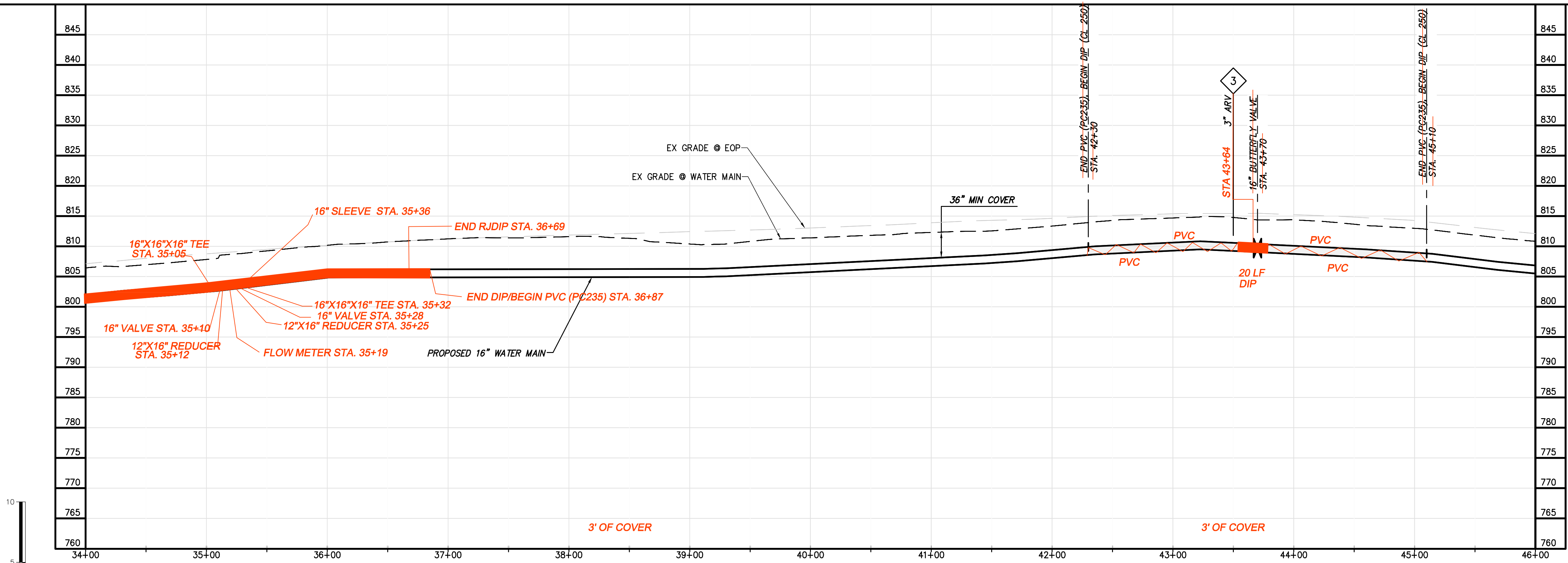
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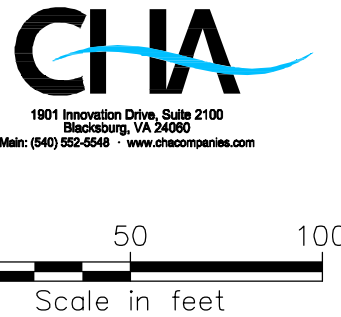


WATER MAIN PLAN



WATER MAIN PROFILE

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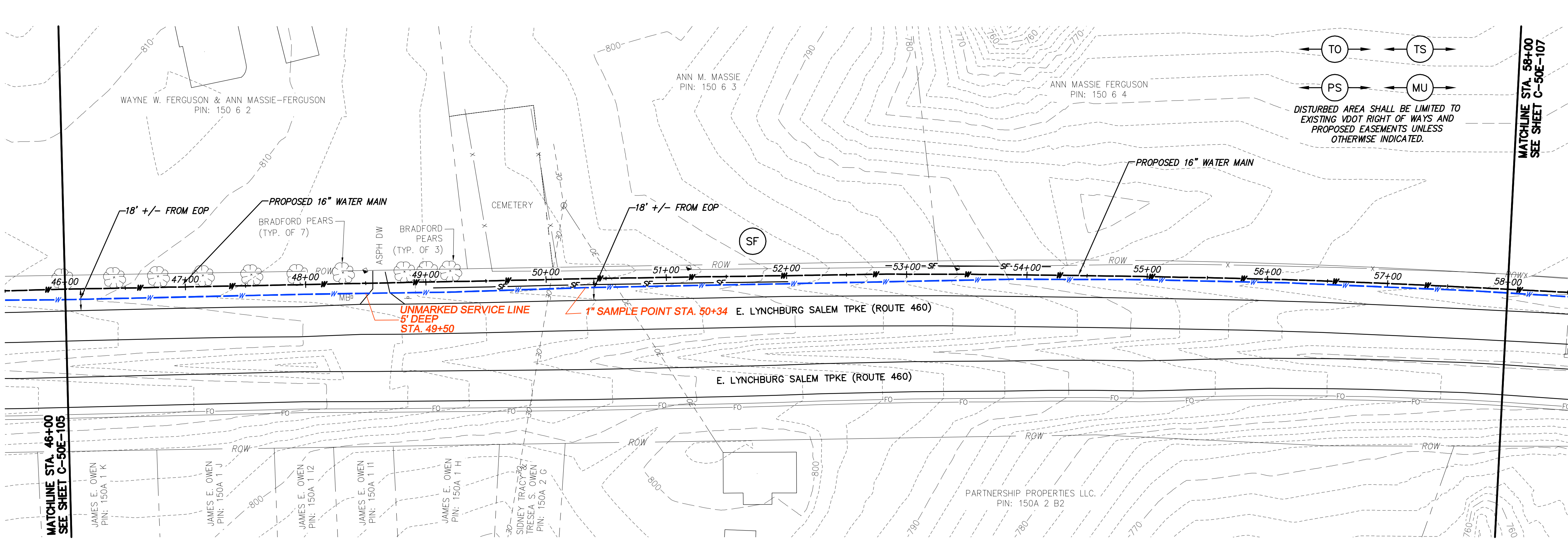
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C-50E-105	
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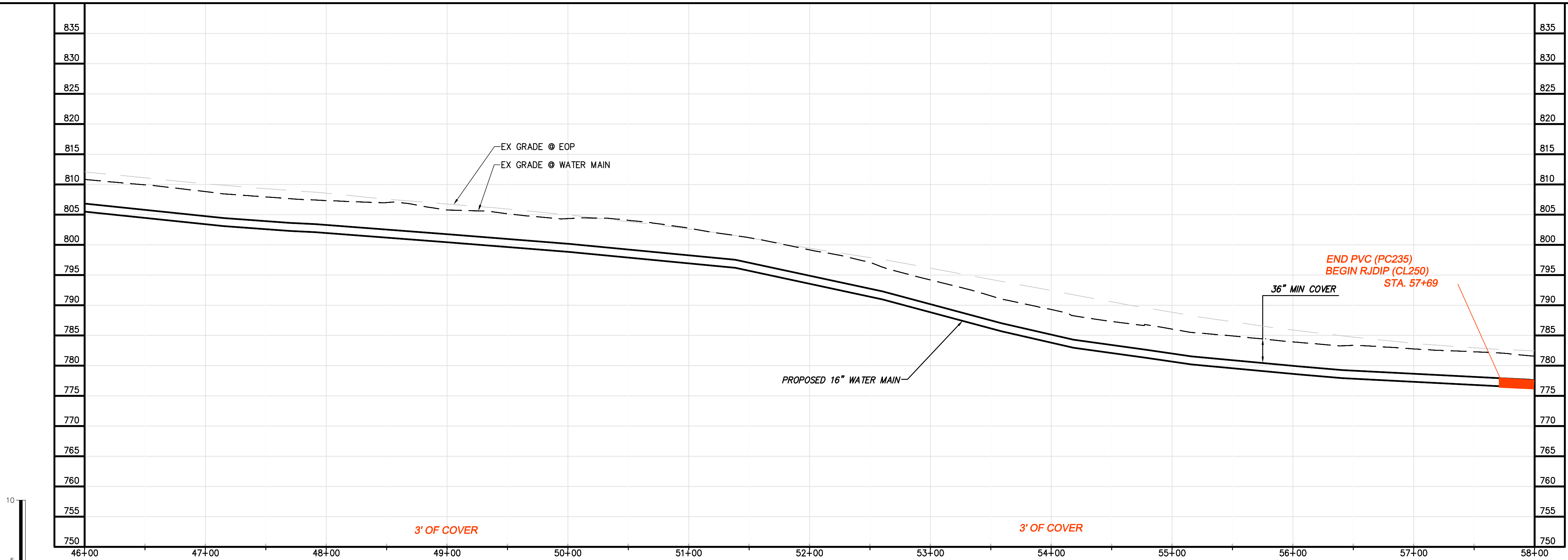
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BEDFORD REGIONAL WATER AUTHORITY
SMITH MOUNTAIN LAKE WTP &
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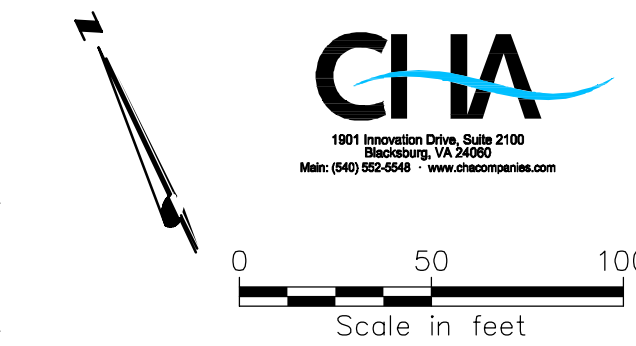
CONTRACT E WATER MAIN - PLAN & PROFILE



WATER MAIN PLAN



WATER MAIN PROFILE



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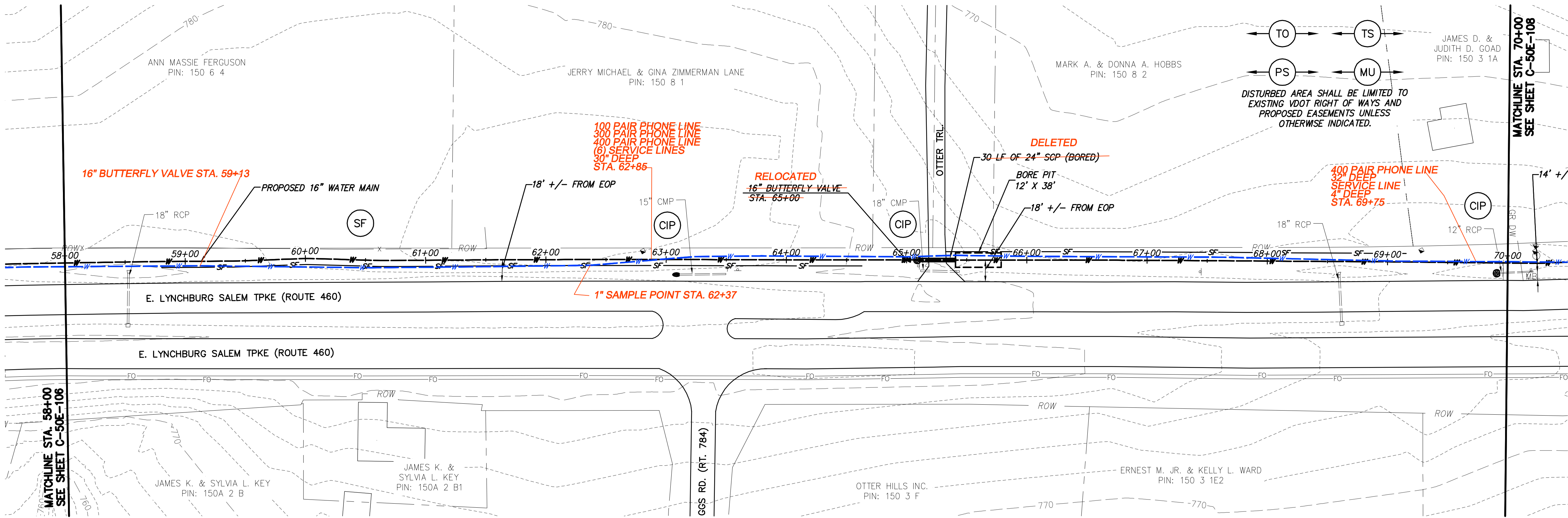
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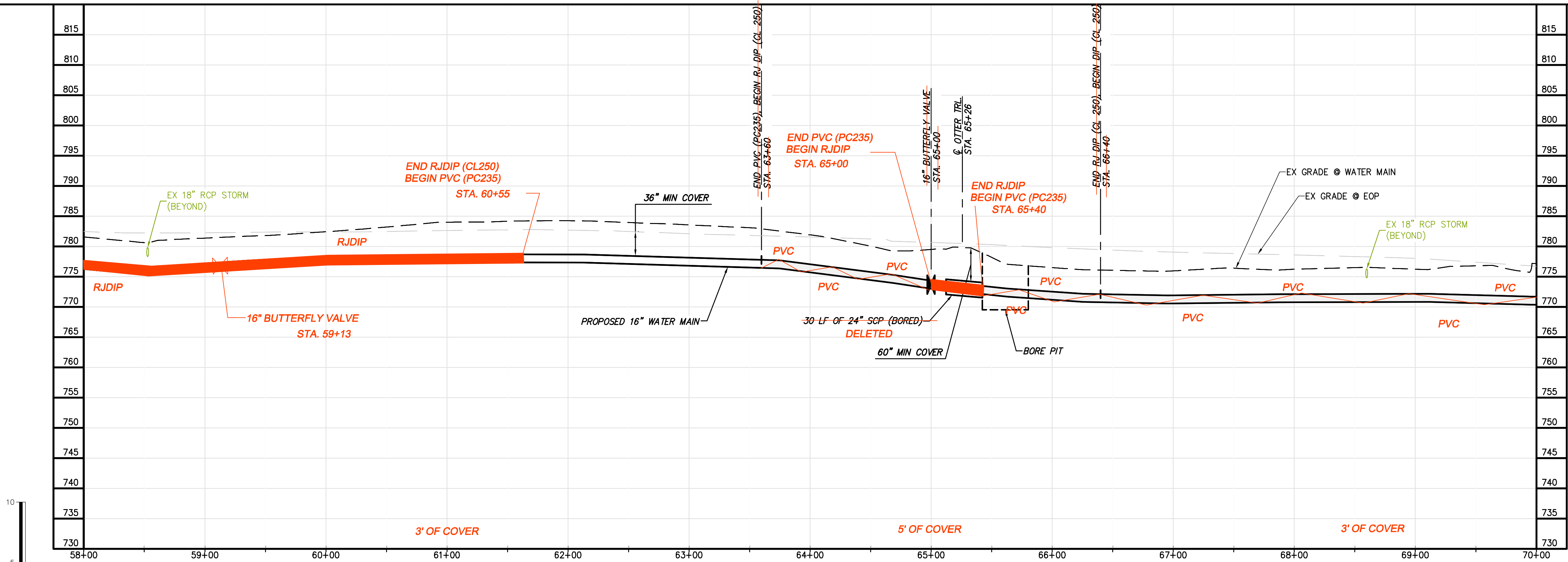
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Kansas City, Missouri

BEDFORD REGIONAL WATER AUTHORITY
SMITH MOUNTAIN LAKE WTP &
LAKES TO FOREST WATER LINE EXTENSION

CONTRACT E WATER MAIN - PLAN & PROFILE



WATER MAIN PLAN



WATER MAIN PROFILE

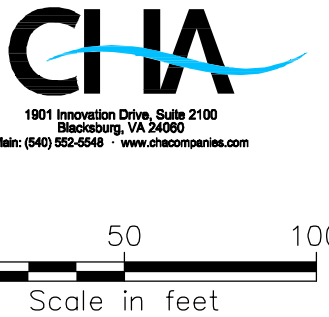
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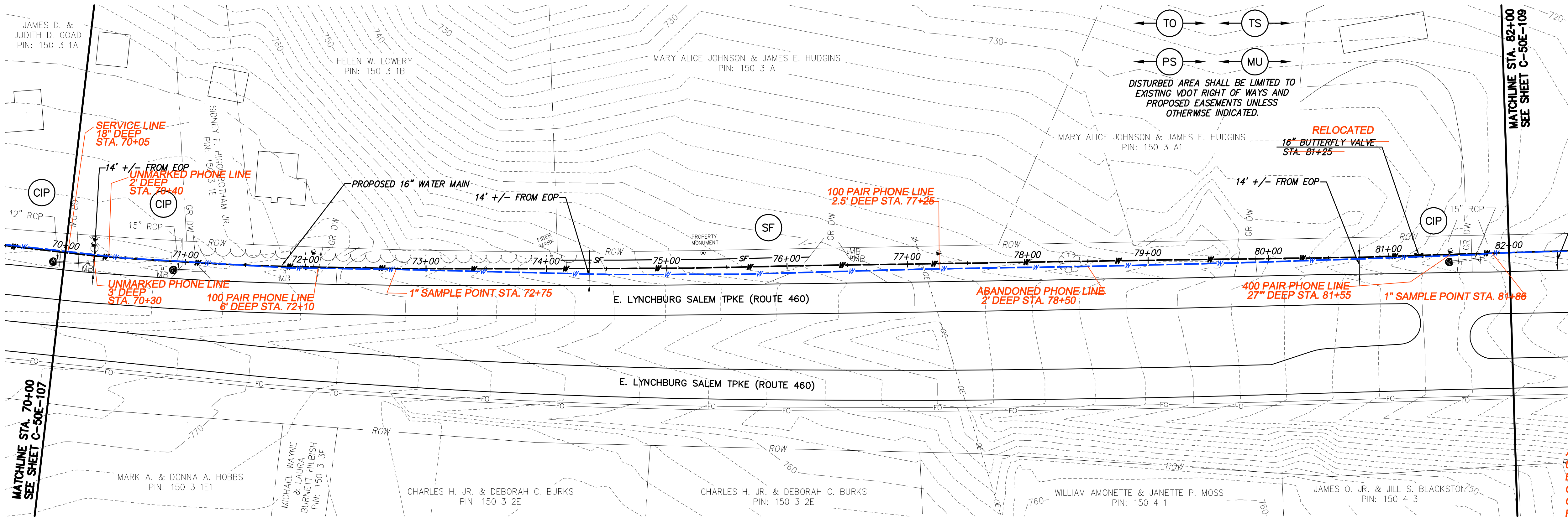
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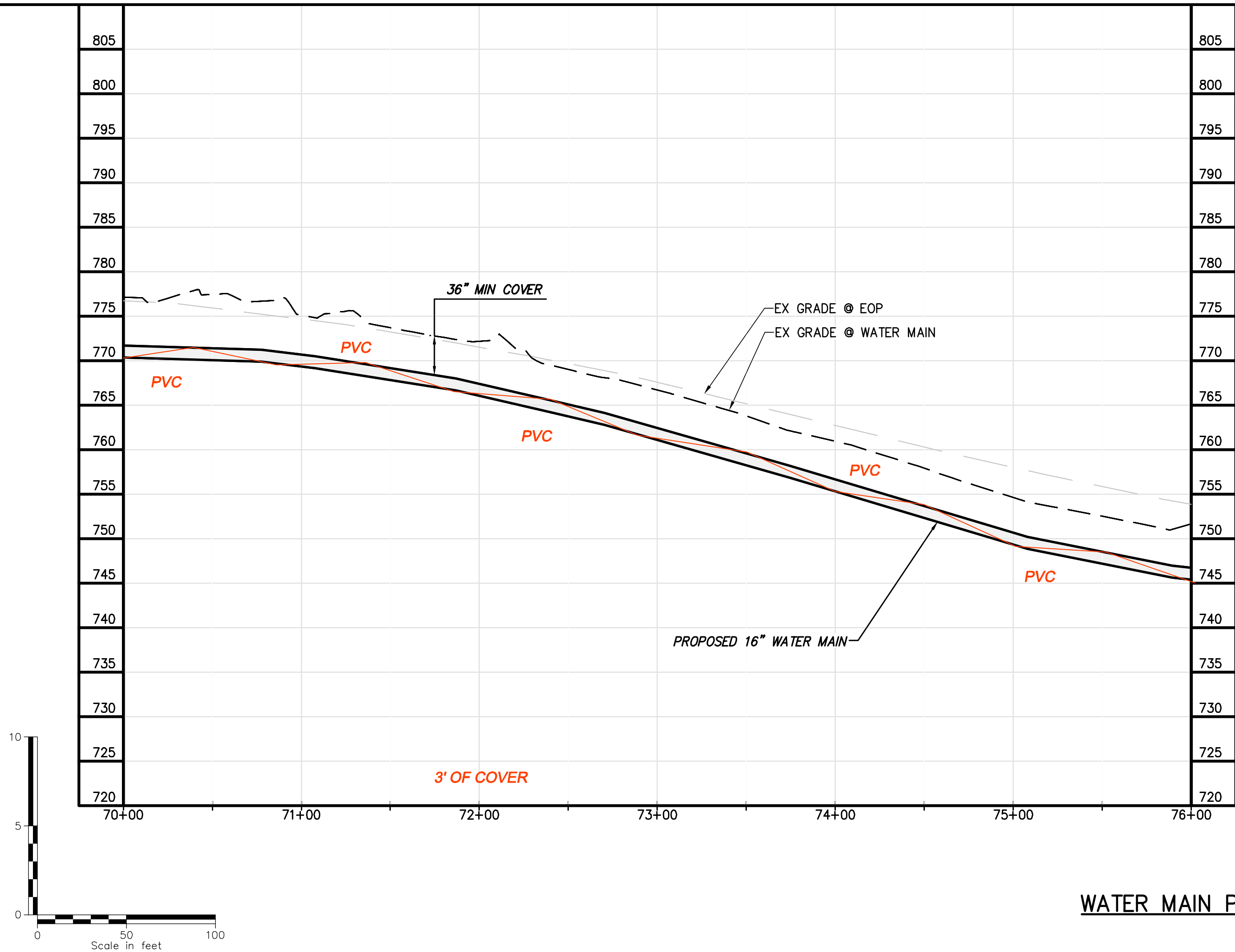
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Kansas City, Missouri

BEDFORD REGIONAL WATER AUTHORITY
SMITH MOUNTAIN LAKE WTP & LAKES TO FOREST WATER LINE EXTENSION

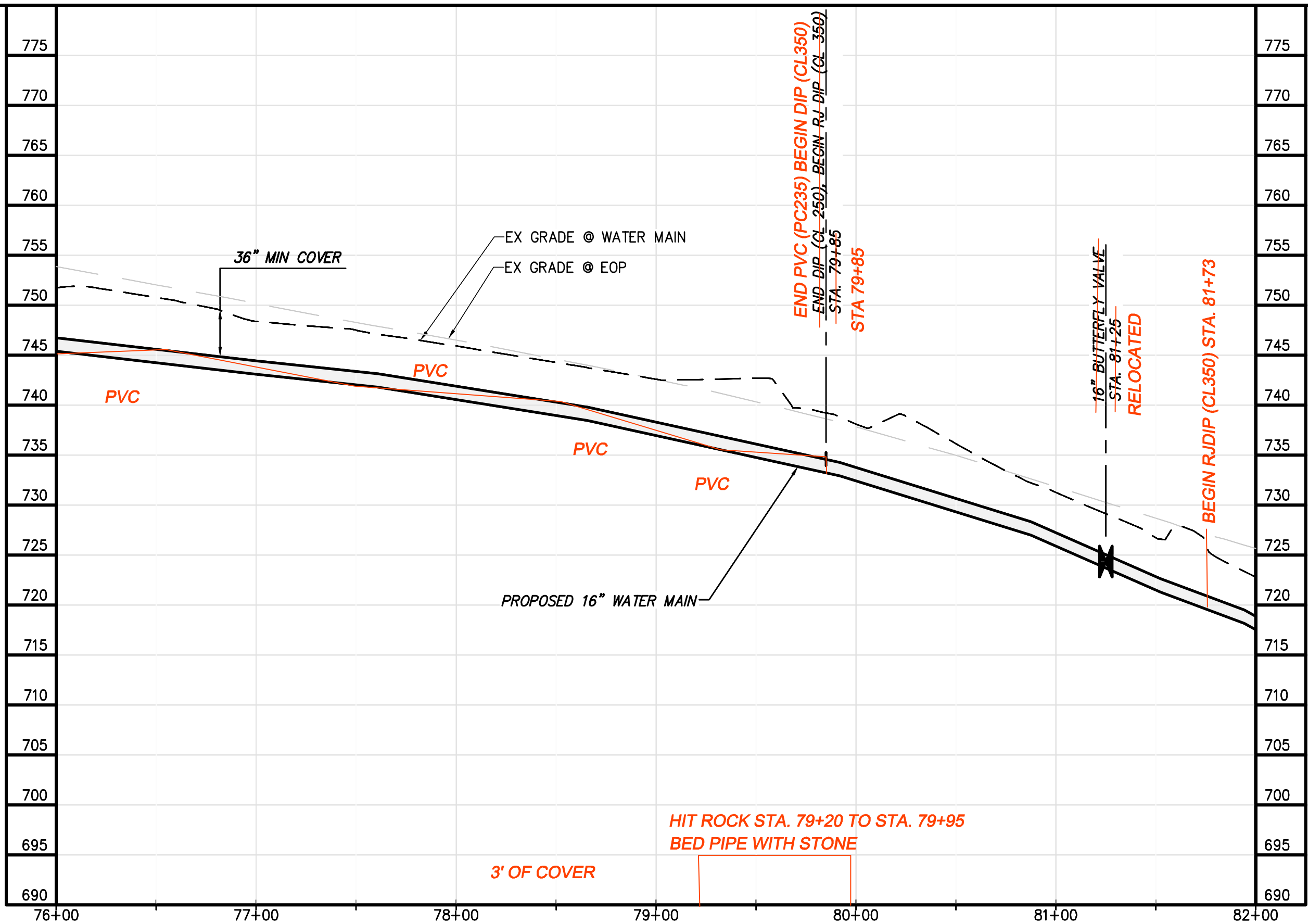
CONTRACT E WATER MAIN - PLAN & PROFILE



WATER MAIN PLAN



WATER MAIN PROFILE



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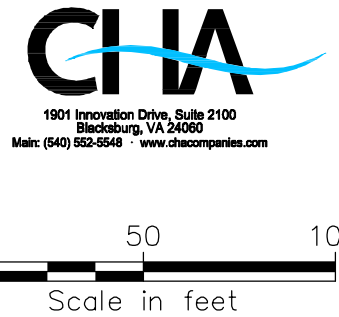
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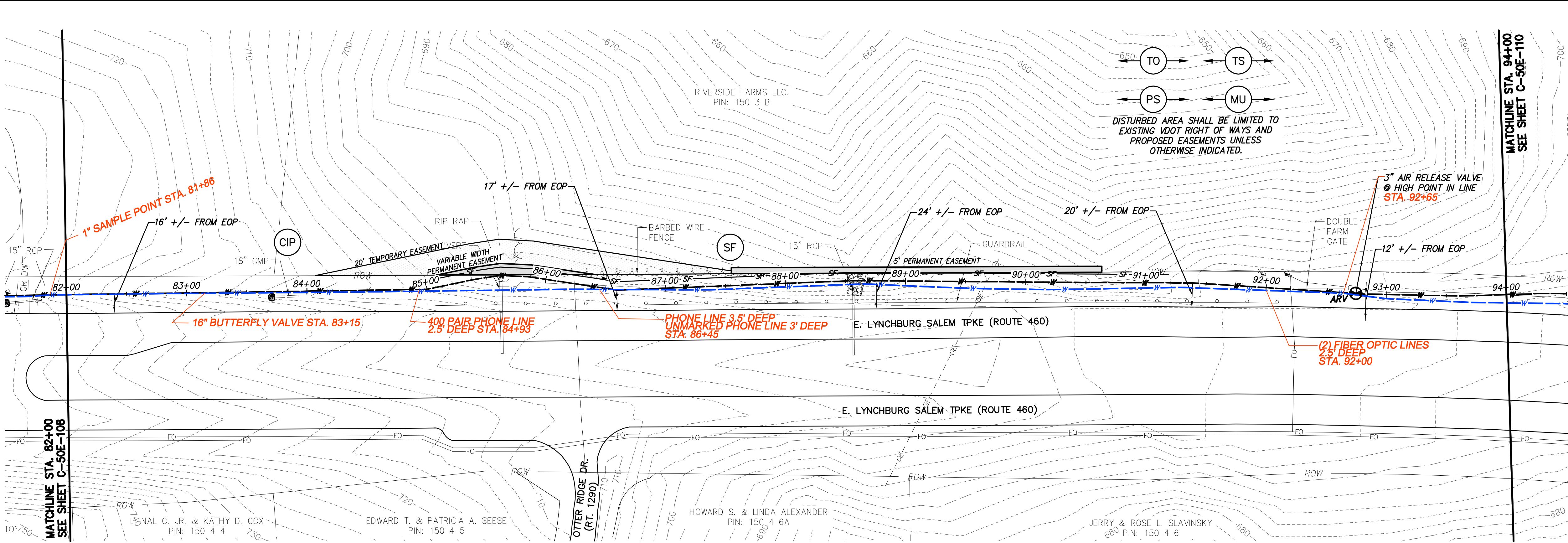
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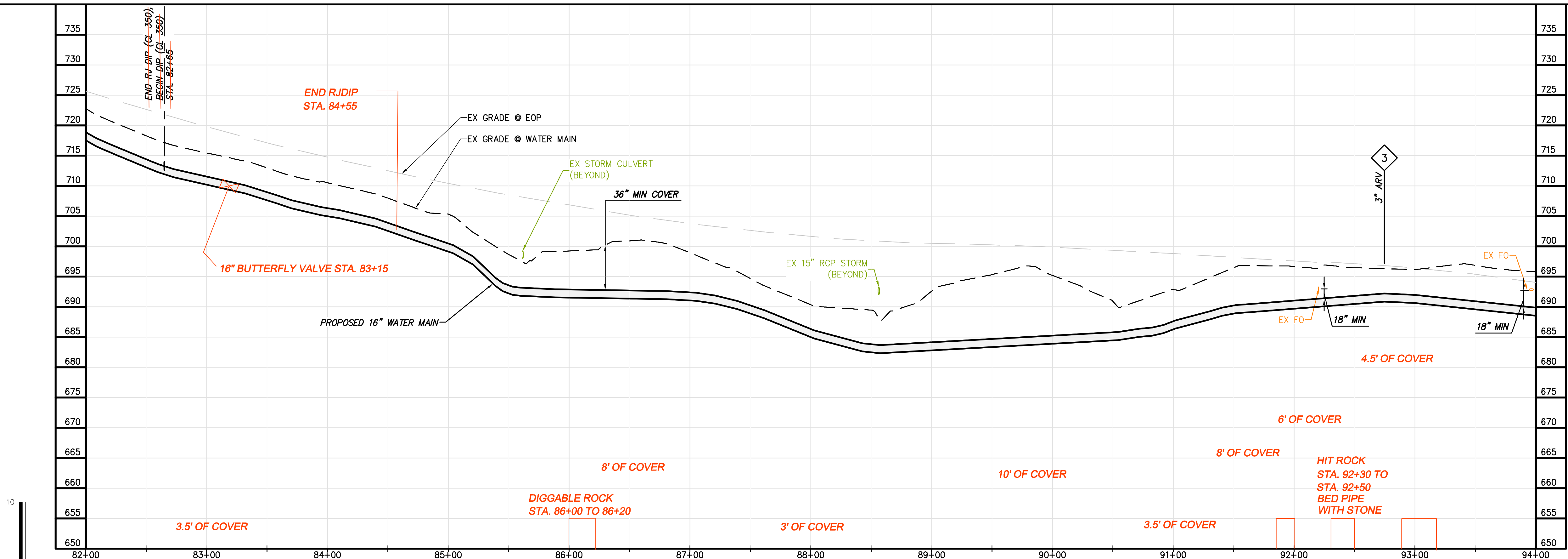
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DESIGNED: JRM
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DATE: 04-2016
PROJECT NO. 27872
C-50E-108 SHEET OF



WATER MAIN PLAN



WATER MAIN PROFILE

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OF

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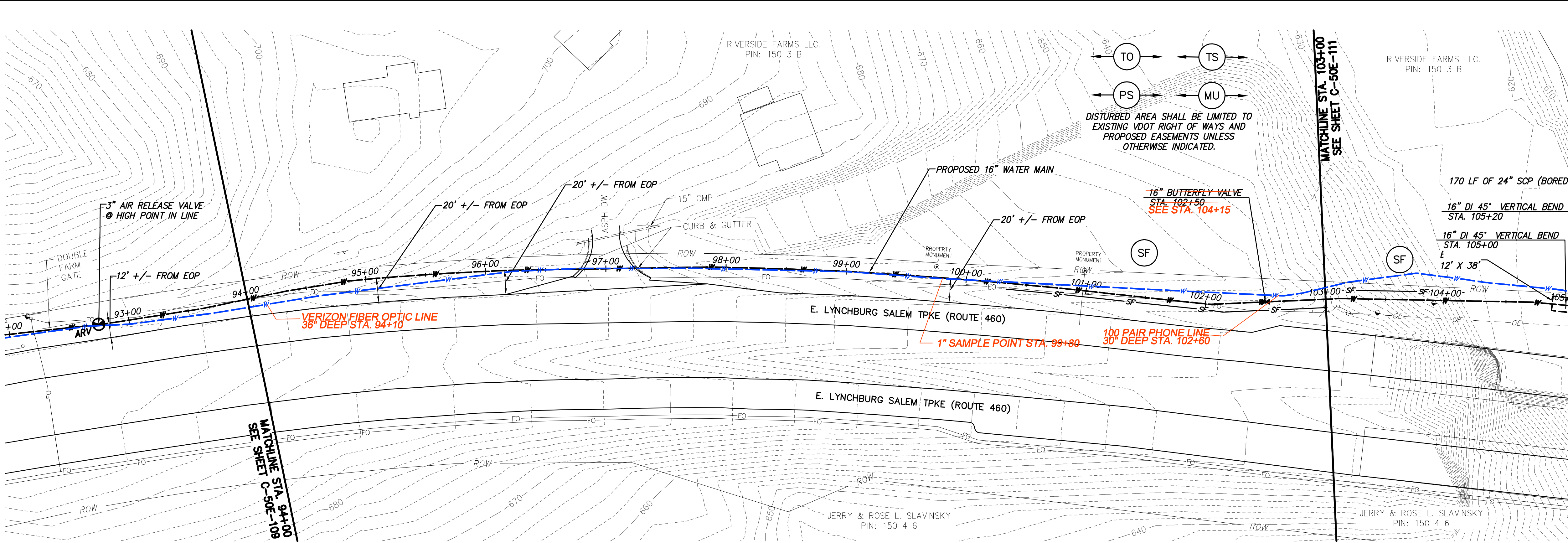
Black & Veatch Corporation
Kansas City, Missouri

CONTRACT E WATER MAIN - PLAN & PROFILE

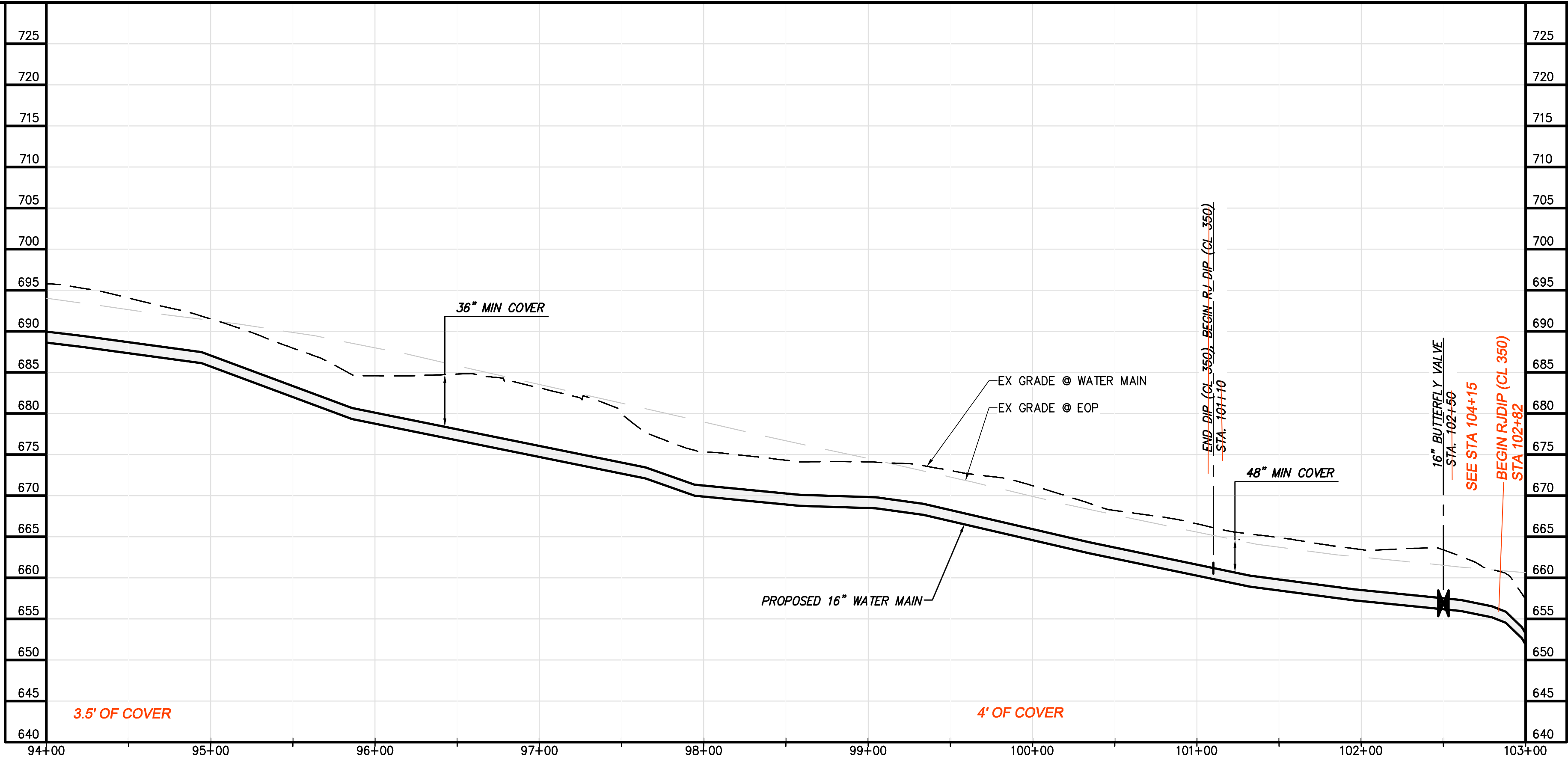
CHA
1901 Innovation Drive, Suite 2100
Overland Park, KS 66209
Main: (913) 852-8848 • www.chacorporate.com

0 50 100
Scale in feet

0 1/2 1
IF THIS BAR DOES NOT
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NOT TO FULL SCALE



WATER MAIN PLAN



WATER MAIN PROFILE

CHIA
1901 Innovation Drive, Suite 2100
Bloomington, IN 47403
Main: (317) 852-8848 • www.chiacorporate.com

Scale in feet
0 50 100

GENERAL NOTES:

A. 16-IN WATER MAIN:
1. PIPING:
a. PVC: PRESSURE CLASS 165-DR25, 200-DR21, AND 235-DR18 AS NOTED.
b. DIP (INCLUDES ALL RJ): PRESSURE CLASS 250 AND 350 AS NOTED
2. VALVES: RATED FOR WORKING PRESSURE OF 250 PSI
3. TEST PRESSURES WILL VARY BASED ON OPERATING CONDITIONS, ELEVATION CHANGES AND PIPE PRESSURE CLASSES. PC165 WILL BE TESTED AT 150 PSI, PC200 AT 200 PSI, PC235 AT 225 PSI, AND DIP AT RIVER CROSSINGS WILL BE TESTED AT MIN. 250 PSI UNLESS NOTED OTHERWISE.

B. VALVES, BLOW-OFFS AND AIR RELEASE VALVES LOCATIONS ARE APPROXIMATE. FINAL LOCATIONS ARE TO BE FIELD DETERMINED.

C. CONTRACTOR MAY PROVIDE TEMPORARY BLOW-OFFS, AIR RELEASE VALVES AND TEST PORTS AS NEEDED FOR TESTING AND FLUSHING.

SPECIFIC NOTES
① —

ALL RED LINE ITEMS SHOWN REPRESENT UTILITIES EITHER INSTALLED OR FOUND EXISTING DURING THE COURSE OF CONSTRUCTION AND HAVE BEEN OVERLAID ON PLANS PREPARED BY CHA FOR BLACK & VEATCH WITH ALL PARTIES PERMISSION. THE PLANS AS ORIGINALLY DESIGNED FOR BLACK & VEATCH BY CHA ARE NOT MODIFIED OR CHANGED IN ANY CAPACITY BY THE RED LINE OVERLAY.

DESIGNED: JRM	PROJECT NO. 27872
DETAILED: SNP	C-50E-110
CHECKED: BSR	SHEET OF
APPROVED: SMS	
DATE: 04-2016	

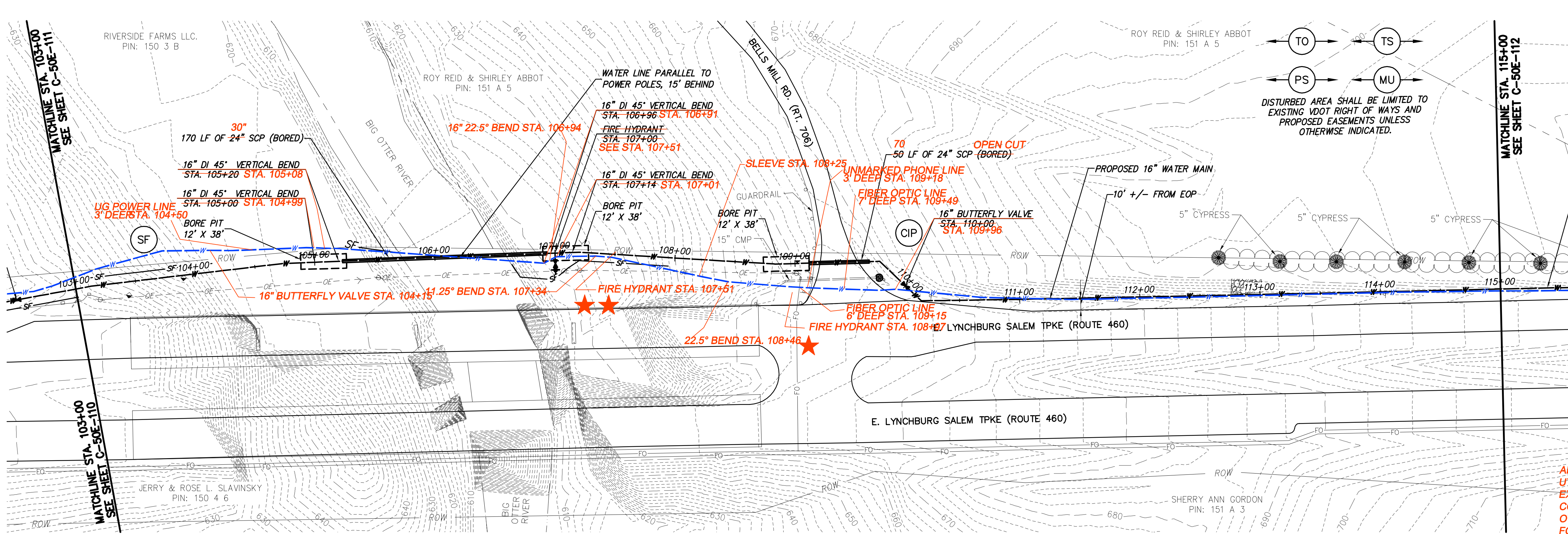
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Black & Veatch Corporation
Kansas City, Missouri

BEDFORD REGIONAL WATER AUTHORITY
SMITH MOUNTAIN LAKE WTP & LAKES TO FOREST WATER LINE EXTENSION

CONTRACT E WATER MAIN - PLAN & PROFILE



GENERAL NOTES:

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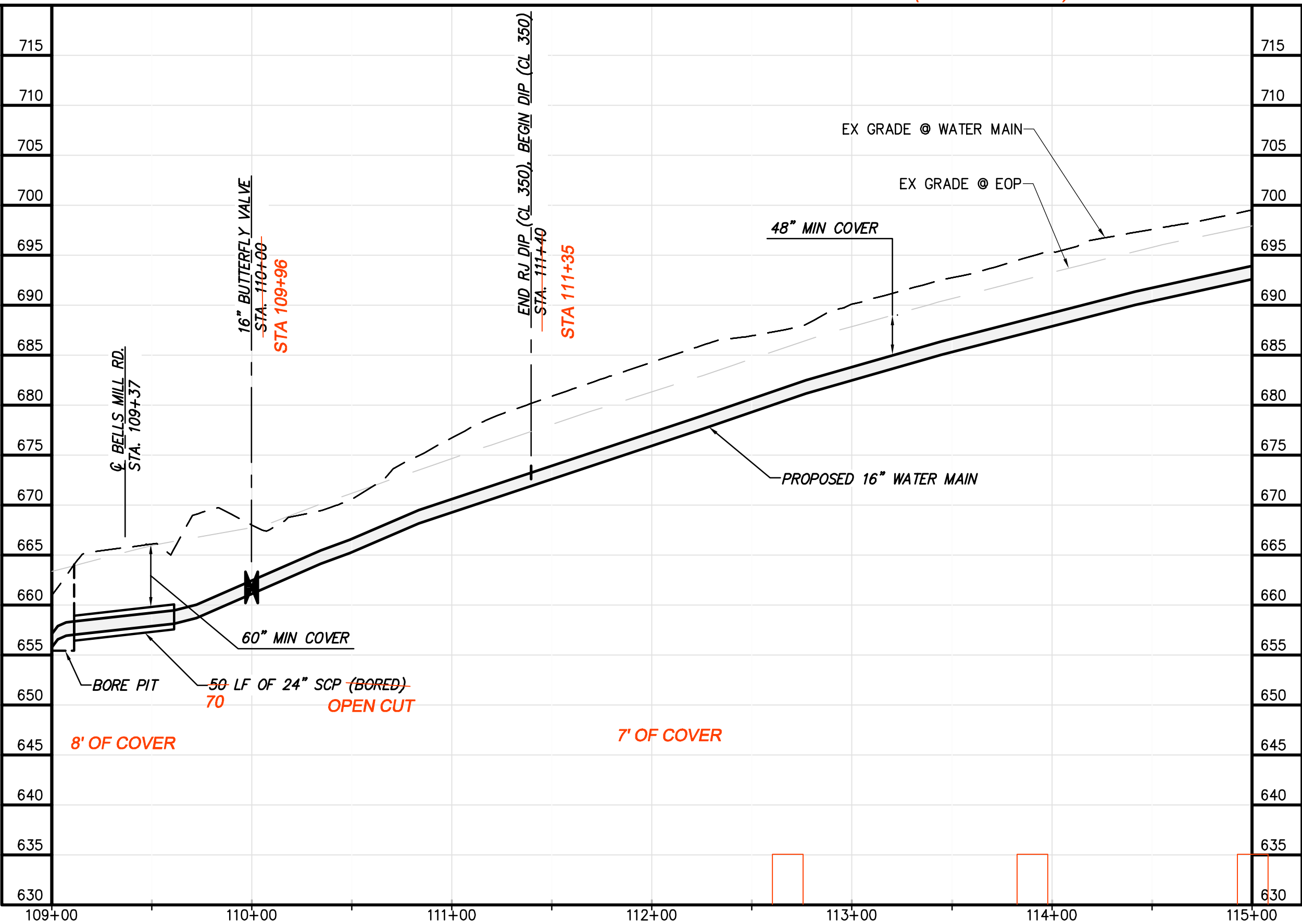
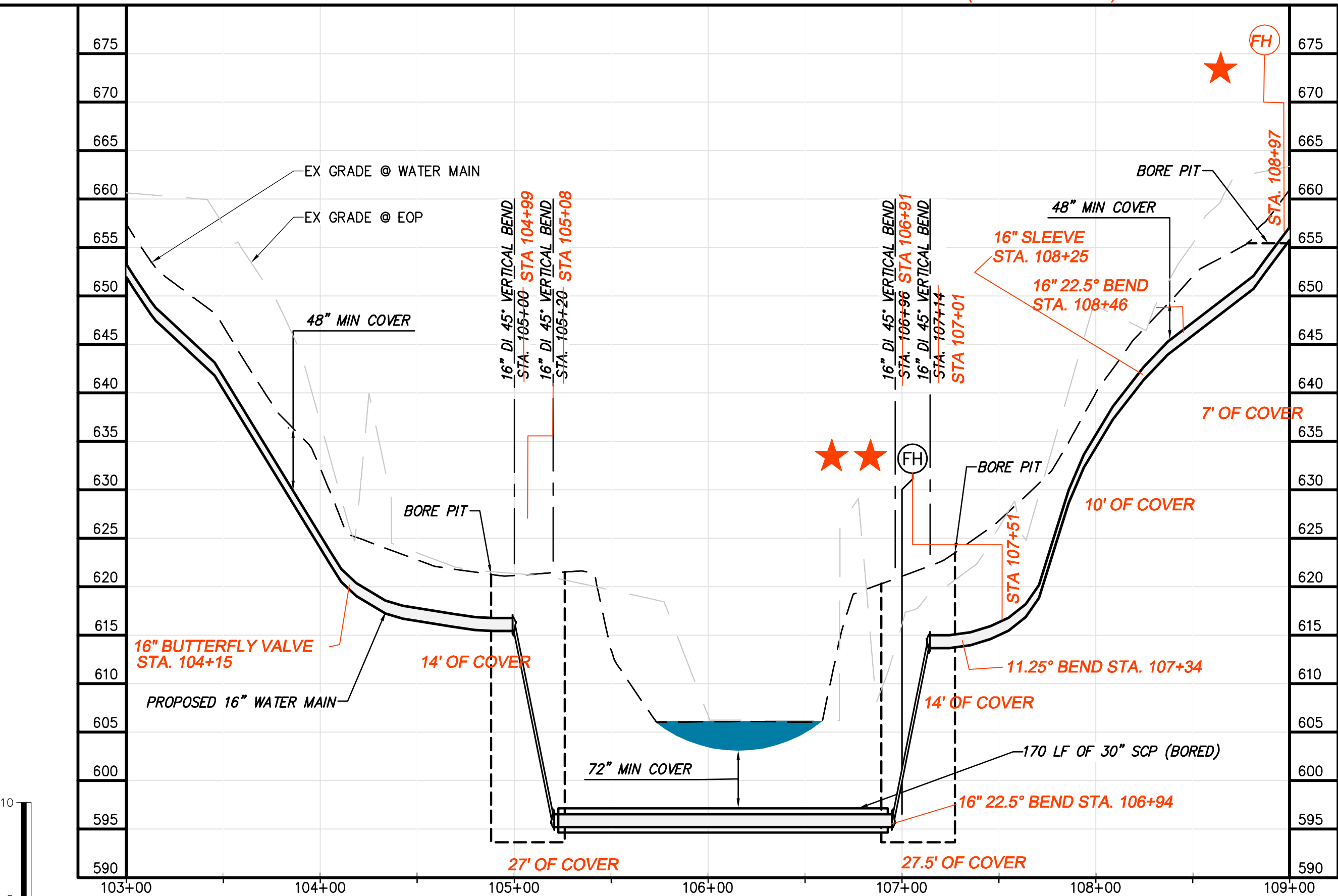
★★ FIRE HYDRANT, 16" X 6" TEE, 3' OF 6" DIP, 6" - 45° BEND, 43" OF 6" DIP, 6" GATE VALVE, ANCHOR COUPLING

(ALL RESTRAINED)

WATER MAIN PLAN

★★ FIRE HYDRANT, 16" X 6" TEE, 6"- 90° BEND, 2' OF 6" DIP , 6" GATE VALVE, (2) ANCHOR COUPLINGS

(ALL RESTRAINED)



WATER MAIN PROFILE

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Black & Veatch Corporation
Kansas City, Missouri

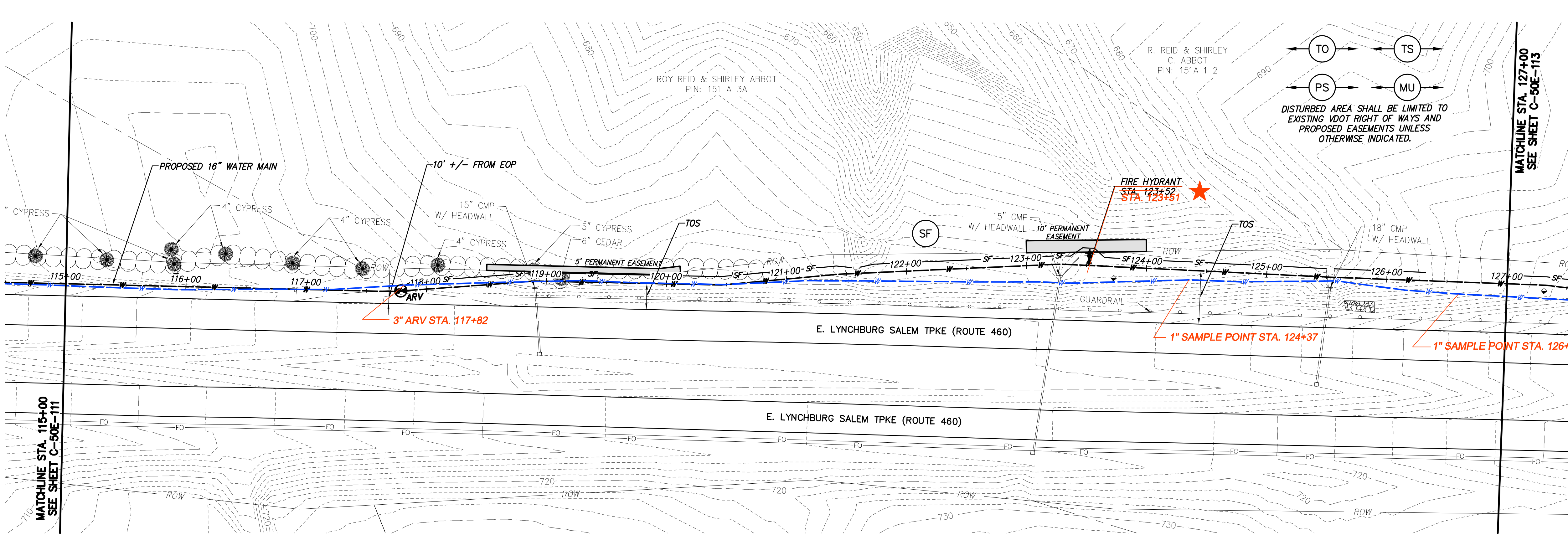
BEDFORD REGIONAL WATER AUTHORITY
SMITH MOUNTAIN LAKE WTP &
LAKES TO FOREST WATER LINE EXTENSION
CONTRACT E WATER MAIN - PLAN & PROFILE

DESIGNED: JRM
DETAILED: SNP
CHECKED: BSR
APPROVED: SMS
DATE: 04-2016

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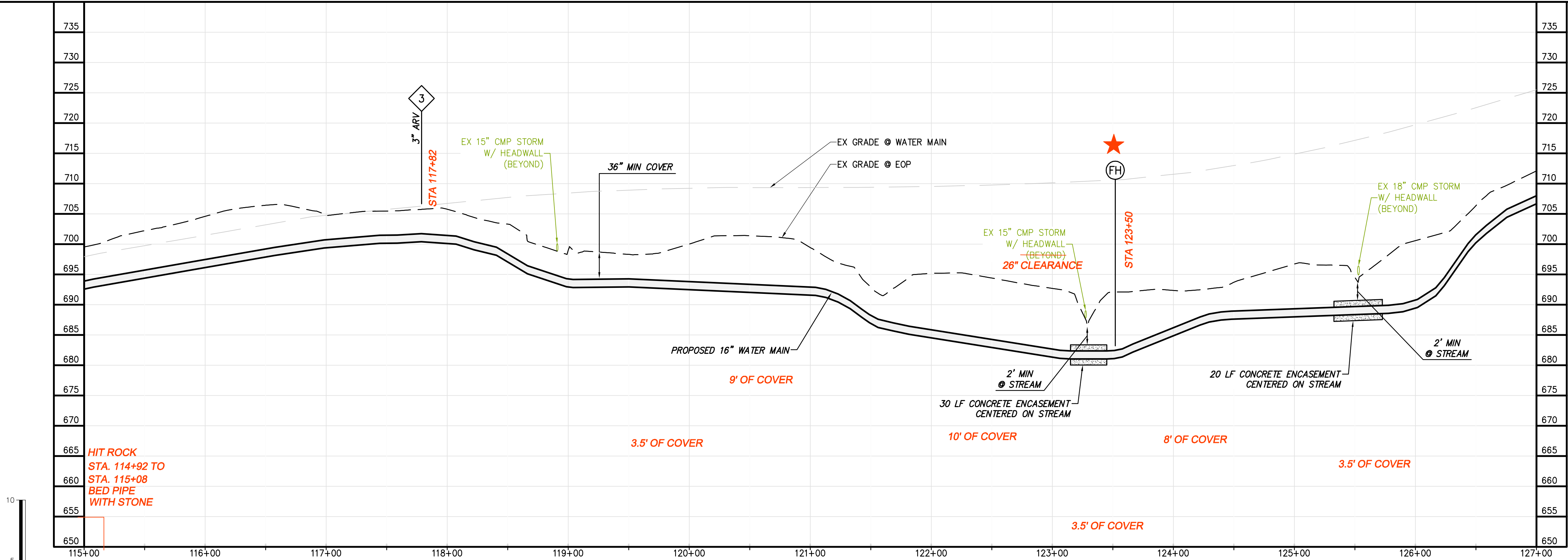
PROJECT NO.
27872

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SHEET
OF



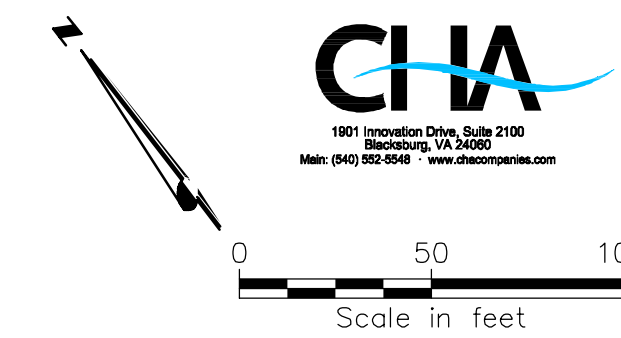
WATER MAIN PLAN

★ FIRE HYDRANT, 16" X 6" TEE, 36" OF 6" DIP, 6" - 45° BEND, 43" OF 6" DIP, 6" GATE VALVE, ANCHOR COUPLING (ALL RESTRAINED)



WATER MAIN PROFILE

ALL RED LINE ITEMS SHOWN REPRESENT UTILITIES EITHER INSTALLED OR FOUND EXISTING DURING THE COURSE OF CONSTRUCTION AND HAVE BEEN OVERLAID ON PLANS PREPARED BY CHA FOR BLACK & VEATCH WITH ALL PARTIES PERMISSION. THE PLANS AS ORIGINALLY DESIGNED FOR BLACK & VEATCH BY CHA ARE NOT MODIFIED OR CHANGED IN ANY CAPACITY BY THE RED LINE OVERLAY.

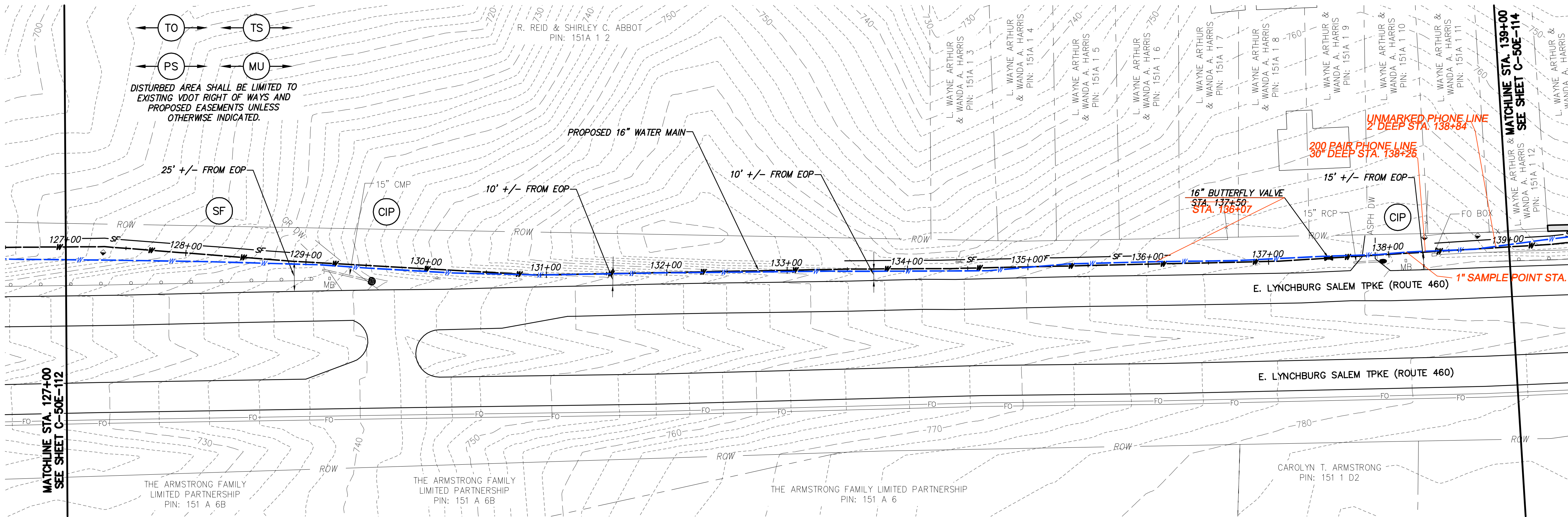


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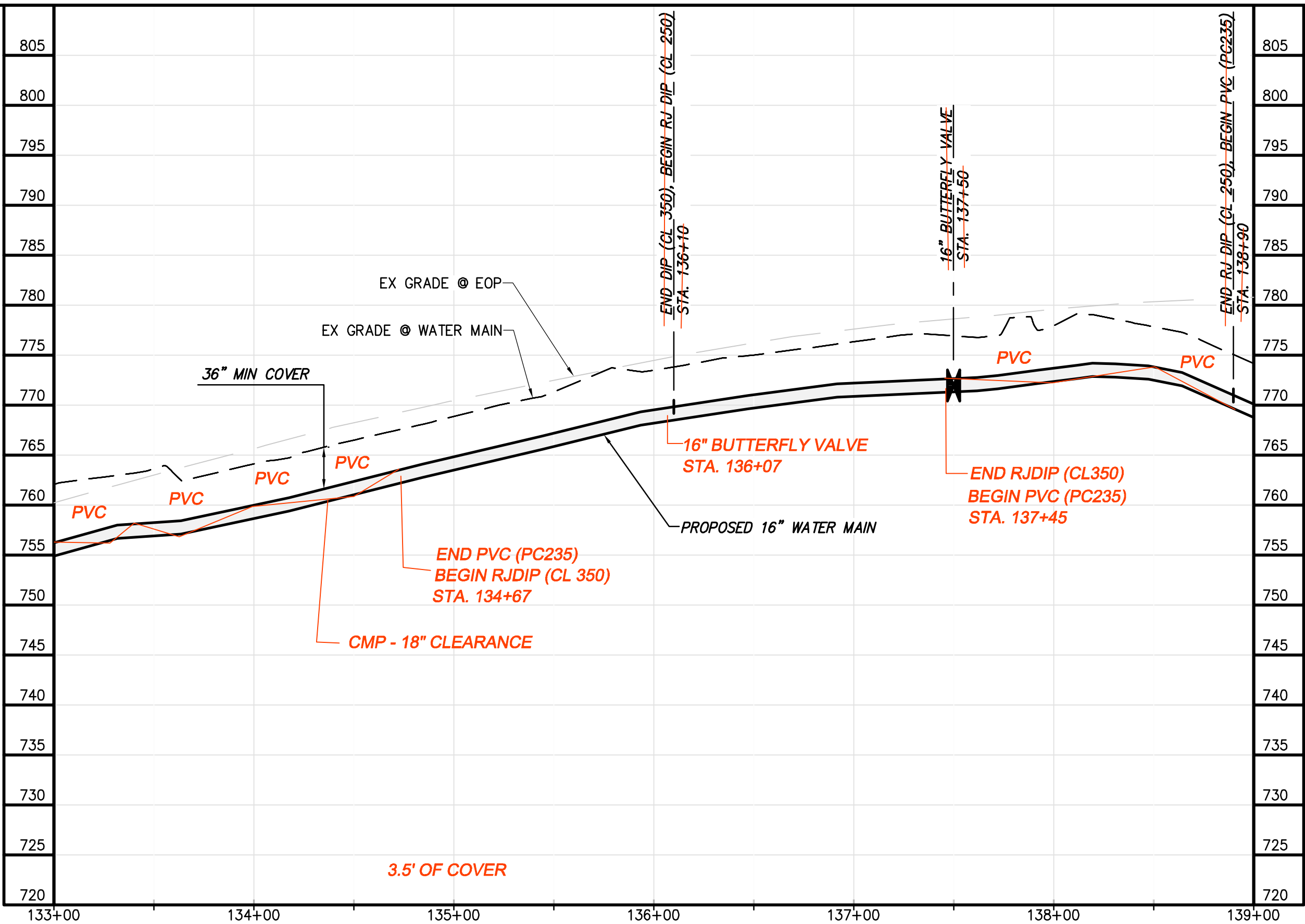
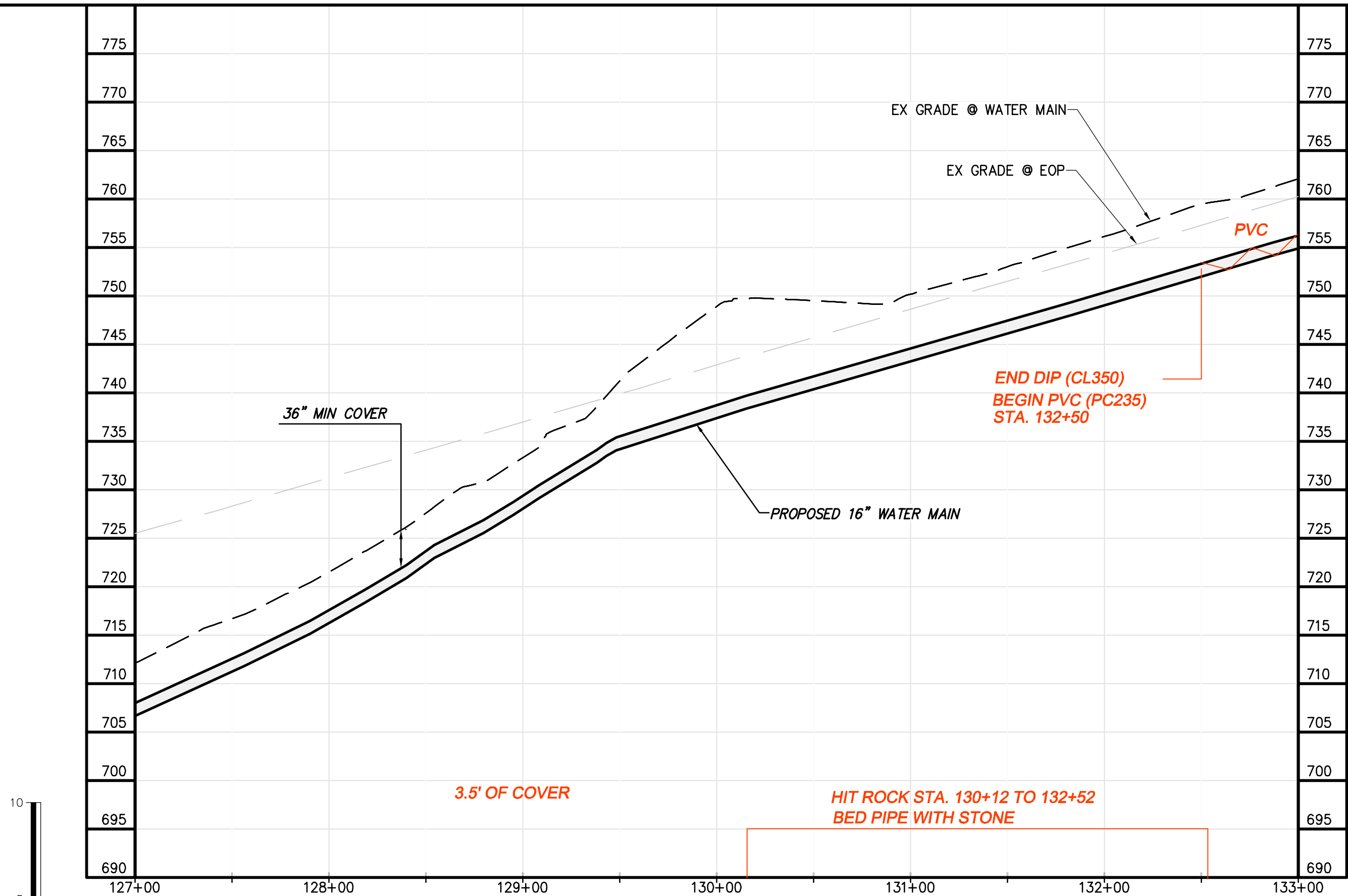
SPECIFIC NOTES

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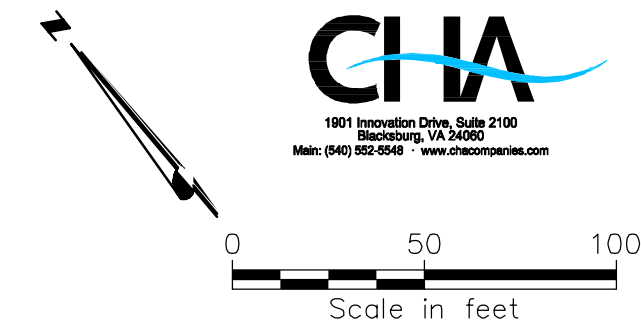
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DETAILED: SNP		SHEET OF	
CHECKED: BSR		C-50E-112	
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DATE: 04-2016		IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	
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BEDFORD REGIONAL WATER AUTHORITY SMITH MOUNTAIN LAKE WTP & LAKES TO FOREST WATER LINE EXTENSION		CONTRACT E WATER MAIN - PLAN & PROFILE	
BLACK & VEATCH Building a World of Difference		Black & Veatch Corporation Kansas City, Missouri	
06/22/2017 RECORD DRAWINGS		NO. BY CK APP	
04/07/2016 VDOT SUBMITTAL		REVISED: VDOT	
DATE		REVISIONS AND RECORD OF ISSUE	
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PLOTTED:		VREF2:	
USER:		VREF3:	
DWG. VER:		VREF4:	



WATER MAIN PLAN



WATER MAIN PROFILE



GENERAL NOTES:

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DATE

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Building a World of Difference

Black & Veatch Corporation
Kansas City, Missouri

BEDFORD REGIONAL WATER AUTHORITY

SMITH MOUNTAIN LAKE WTP & LAKES TO FOREST WATER LINE EXTENSION

CONTRACT E WATER MAIN - PLAN & PROFILE

DESIGNED: JRM

DETAILED: SNP

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APPROVED: SMS

DATE: 04-2016

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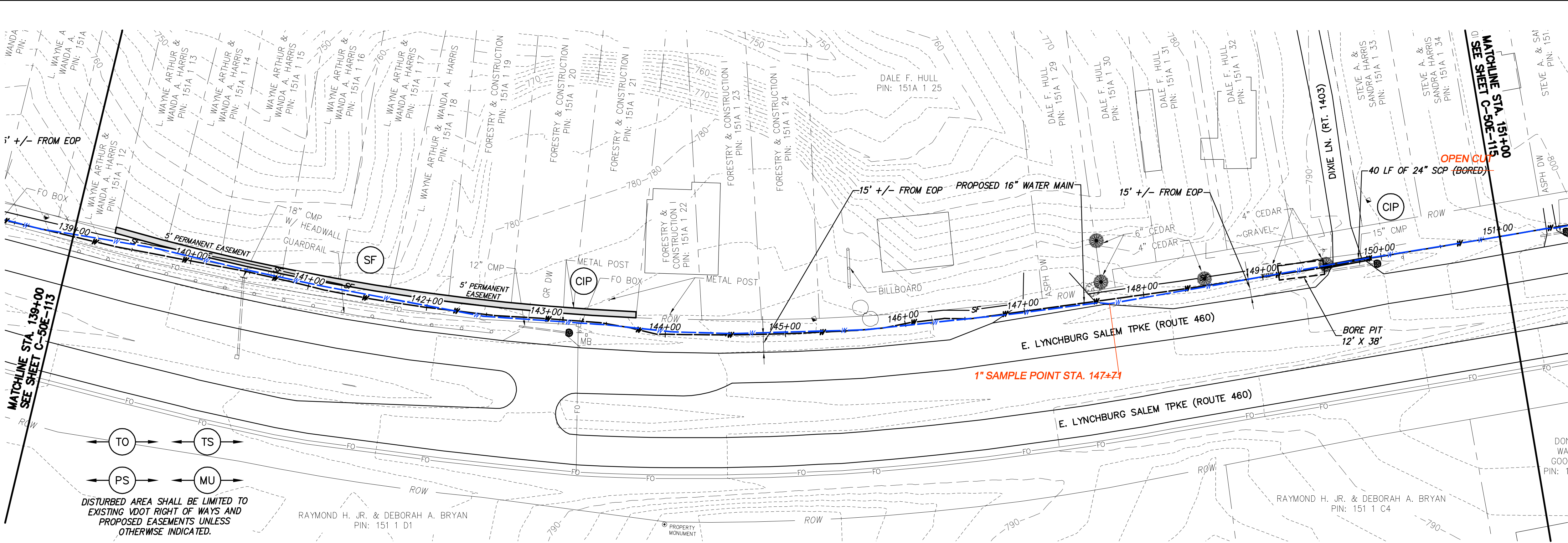
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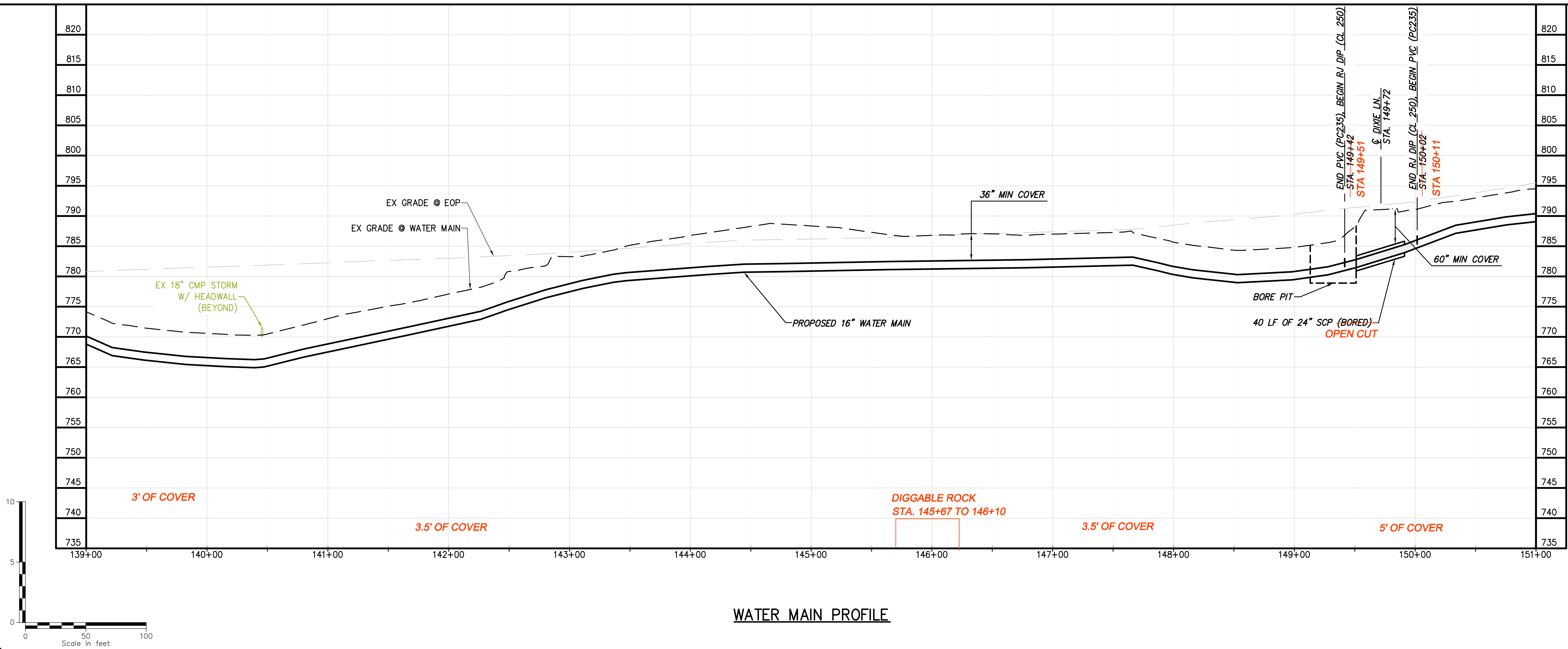
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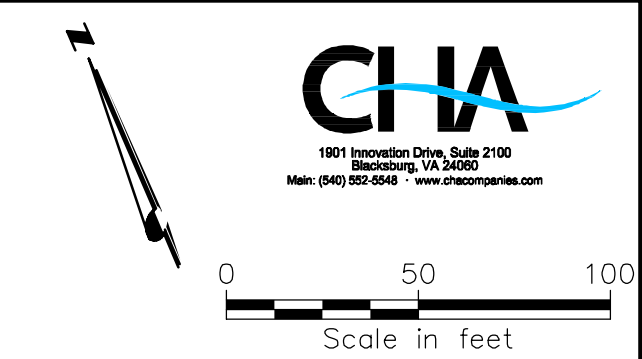
SHEET OF



WATER MAIN PLAN



WATER MAIN PROFILE



GENERAL NOTES:

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SPECIFIC NOTES

DOI WA GOO PIN: 1

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DATE: 04-2016

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Overland Park, KS 66209

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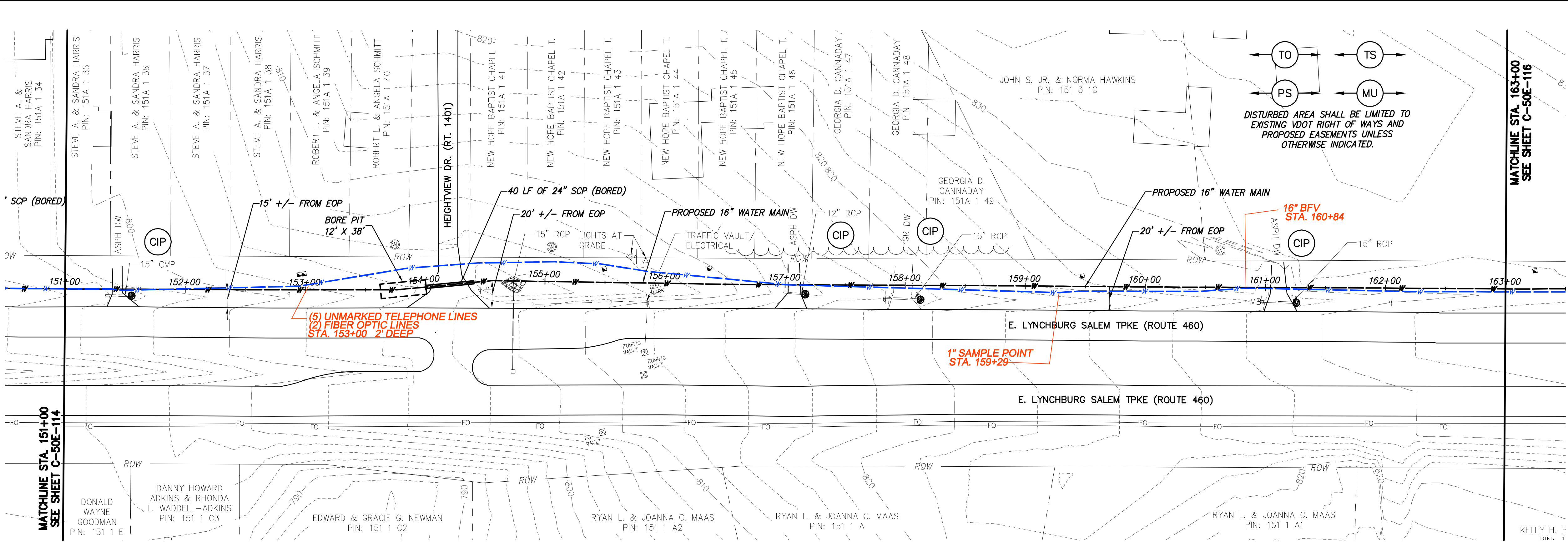
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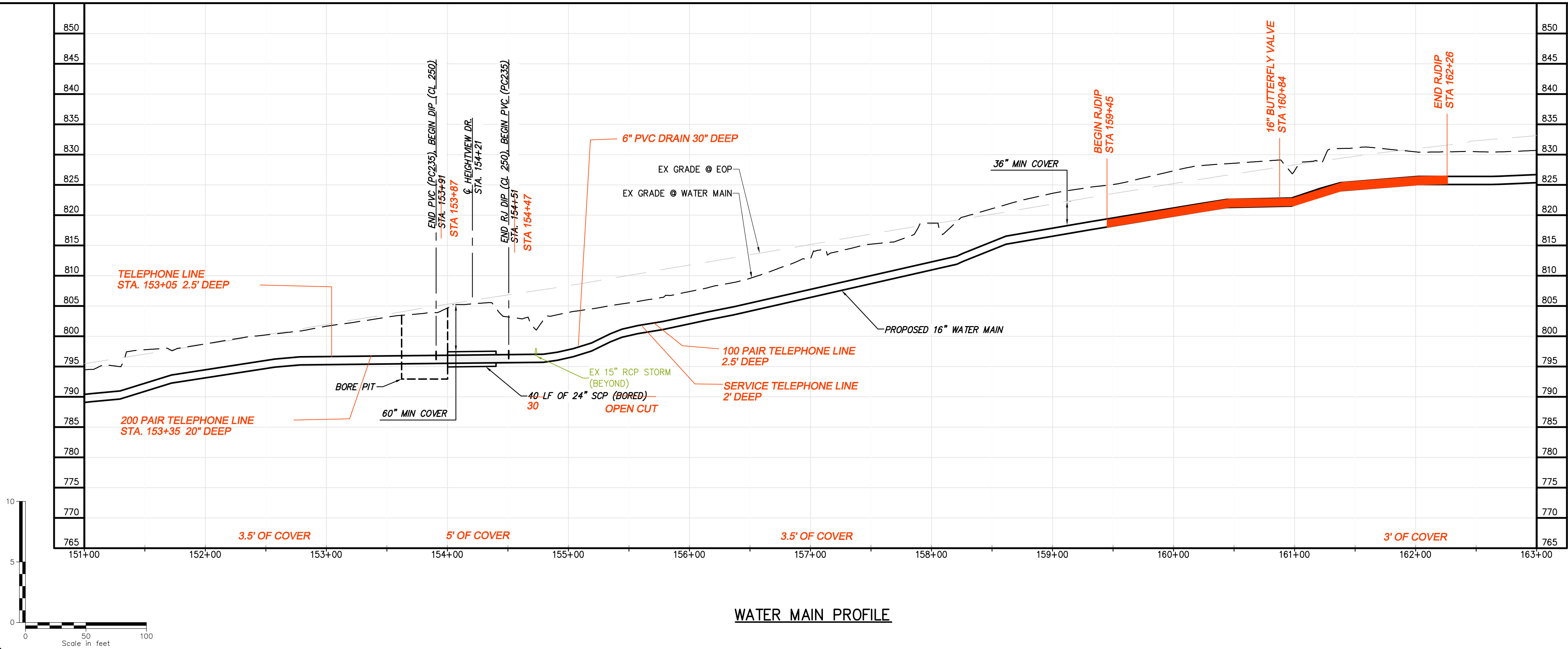
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Black & Veatch Corporation

Kansas City, Missouri



WATER MAIN PLAN



WATER MAIN PROFILE

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- SPECIFIC NOTES**
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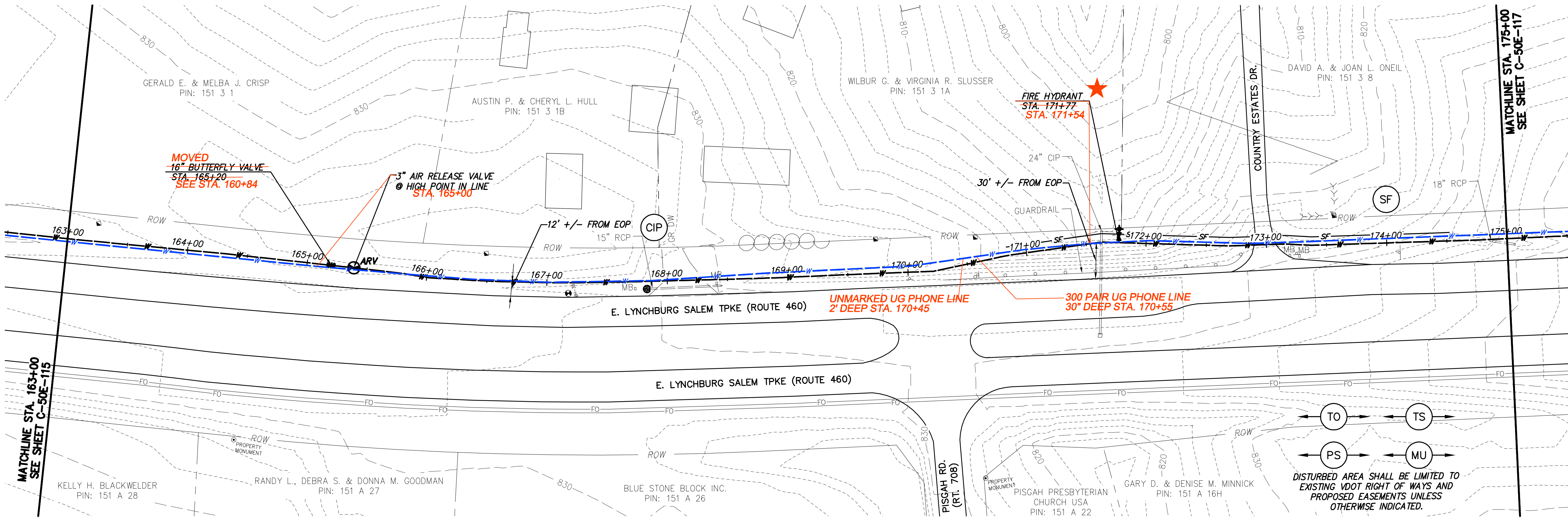
Black & Veatch Corporation

Kansas City, Missouri

BEDFORD REGIONAL WATER AUTHORITY

SMITH MOUNTAIN LAKE WTP & LAKES TO FOREST WATER LINE EXTENSION

CONTRACT E WATER MAIN - PLAN & PROFILE



GENERAL NOTES:

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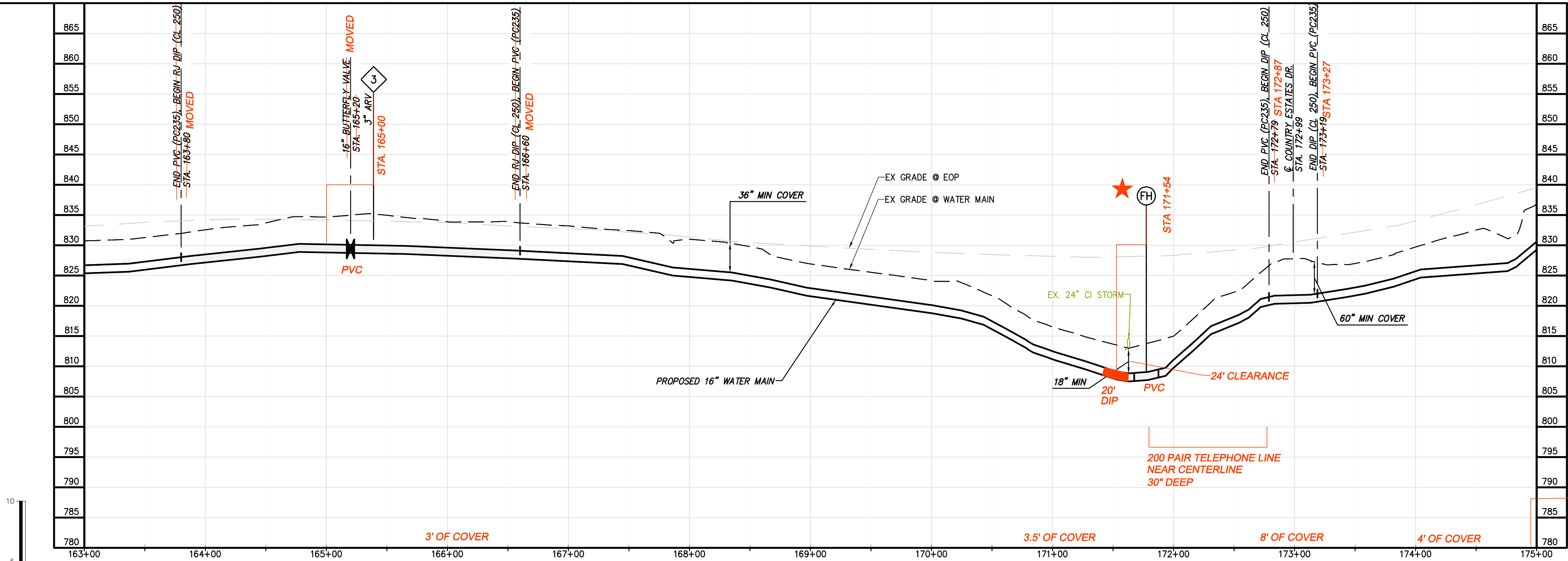
SPECIFIC NOTES

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PS MU
DISTURBED AREA SHALL BE LIMITED TO EXISTING VDOT RIGHT OF WAYS AND PROPOSED EASEMENTS UNLESS OTHERWISE INDICATED.

WATER MAIN PLAN

★ FIRE HYDRANT, 16" X 6" TEE, 3.5' - 6" DIP, ANCHOR COUPLING, 6" GATE VALVE (ALL RESTRAINED)



ALL RED LINE ITEMS SHOWN REPRESENT UTILITIES EITHER INSTALLED OR FOUND EXISTING DURING THE COURSE OF CONSTRUCTION AND HAVE BEEN OVERLAID ON PLANS PREPARED BY CHA FOR BLACK & VEATCH WITH ALL PARTIES PERMISSION. THE PLANS AS ORIGINALLY DESIGNED FOR BLACK & VEATCH BY CHA ARE NOT MODIFIED OR CHANGED IN ANY CAPACITY BY THE RED LINE OVERLAY.

WATER MAIN PROFILE

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Kansas City, Missouri

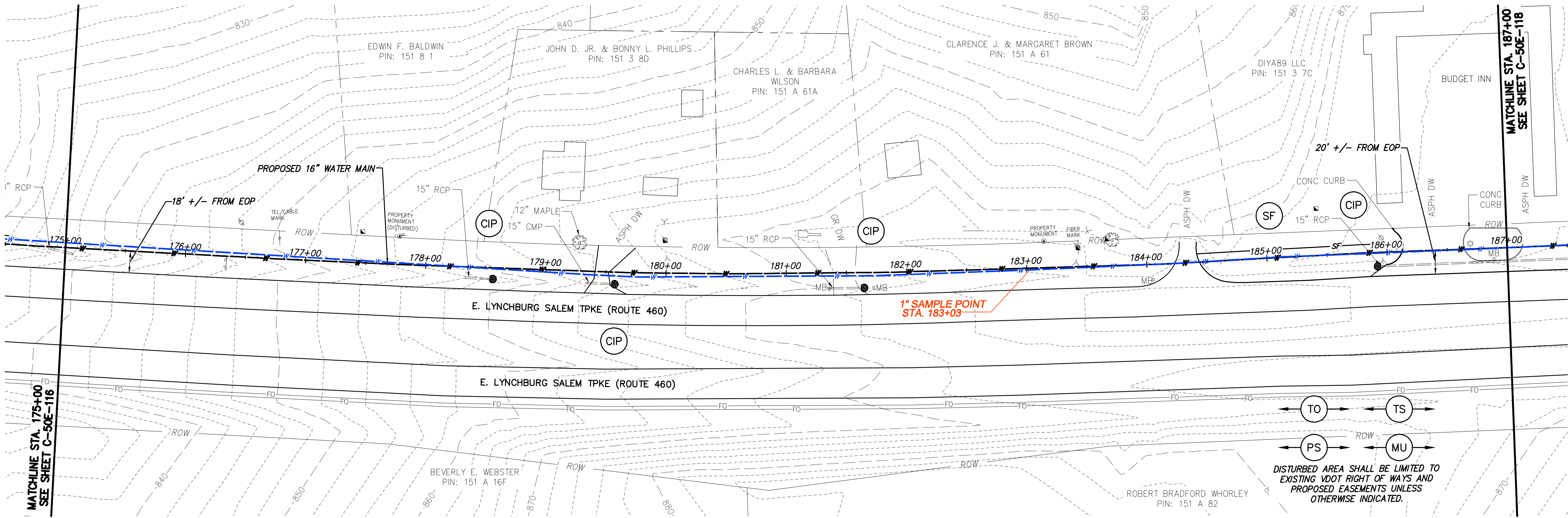
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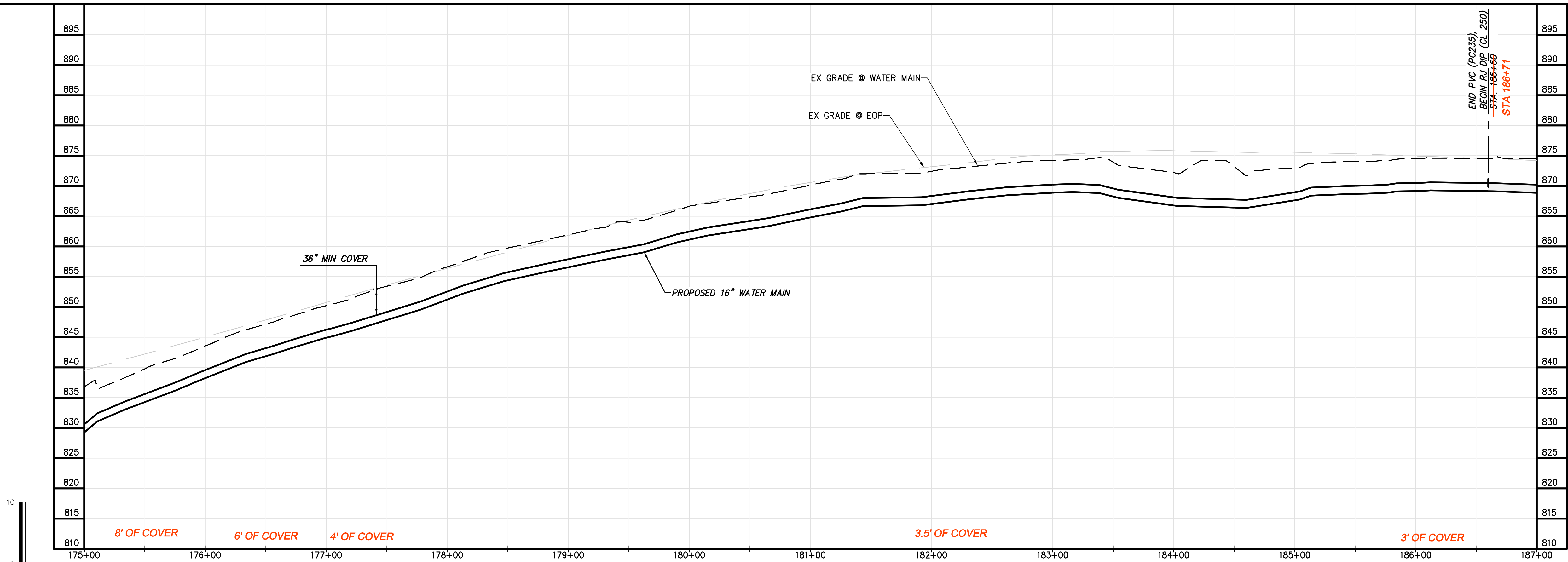
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OF



WATER MAIN PLAN



WATER MAIN PROFILE

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Scale in feet

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C-50E-117
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OF

RECORD DRAWINGS
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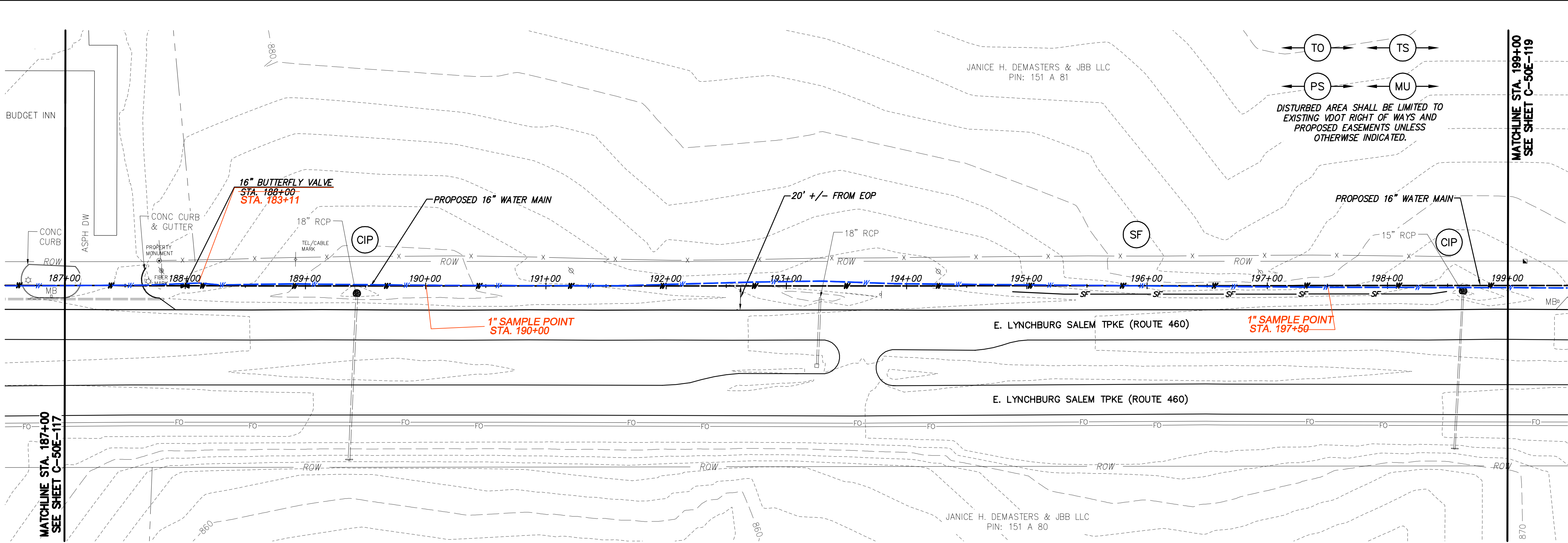
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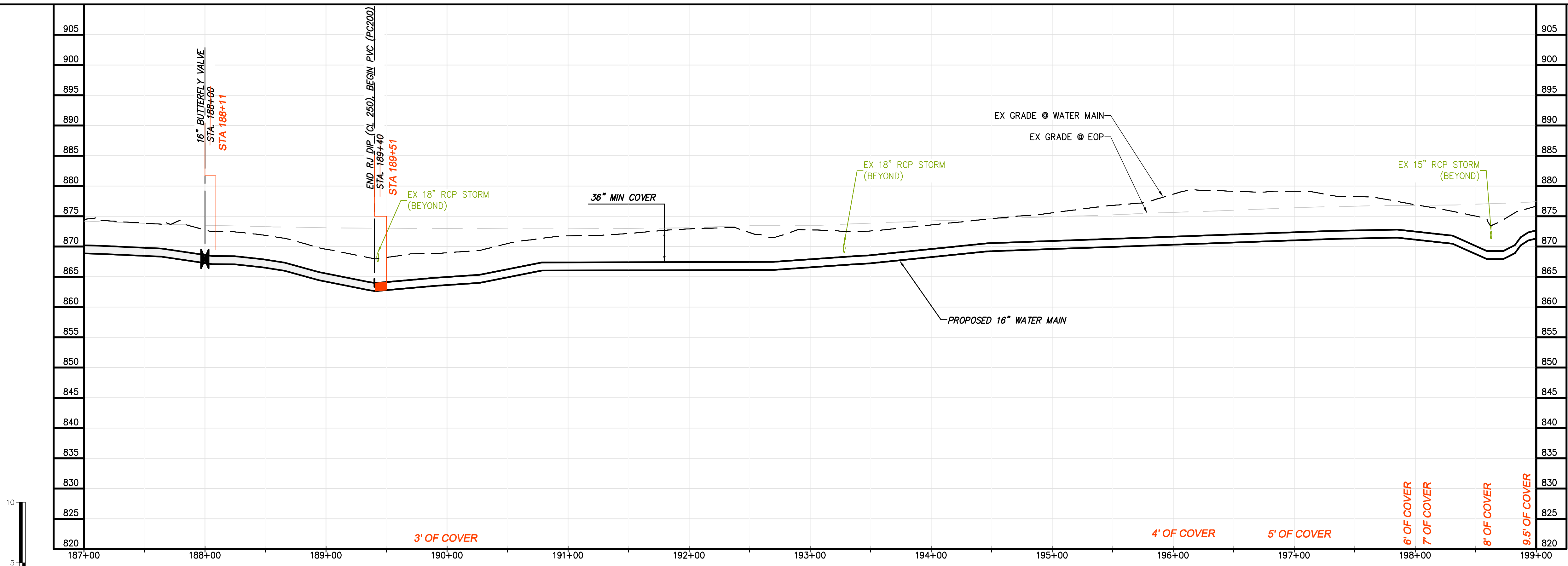
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BEDFORD REGIONAL WATER AUTHORITY
SMITH MOUNTAIN LAKE WTP &
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CONTRACT E WATER MAIN - PLAN & PROFILE



WATER MAIN PLAN



WATER MAIN PROFILE

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APPROVED: SMS

DATE: 04-2016

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IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
27872

C-50E-118
SHEET
OF

06/22/2017	RECORD DRAWINGS	04/07/2016	VDOT SUBMITTAL	NO.	BY	CHK	APP
				REVISIONS AND RECORD OF ISSUE			
				XREF1:			
				XREF2:			
				XREF3:			
				XREF4:			
				USER:			
				DWG. VER:			

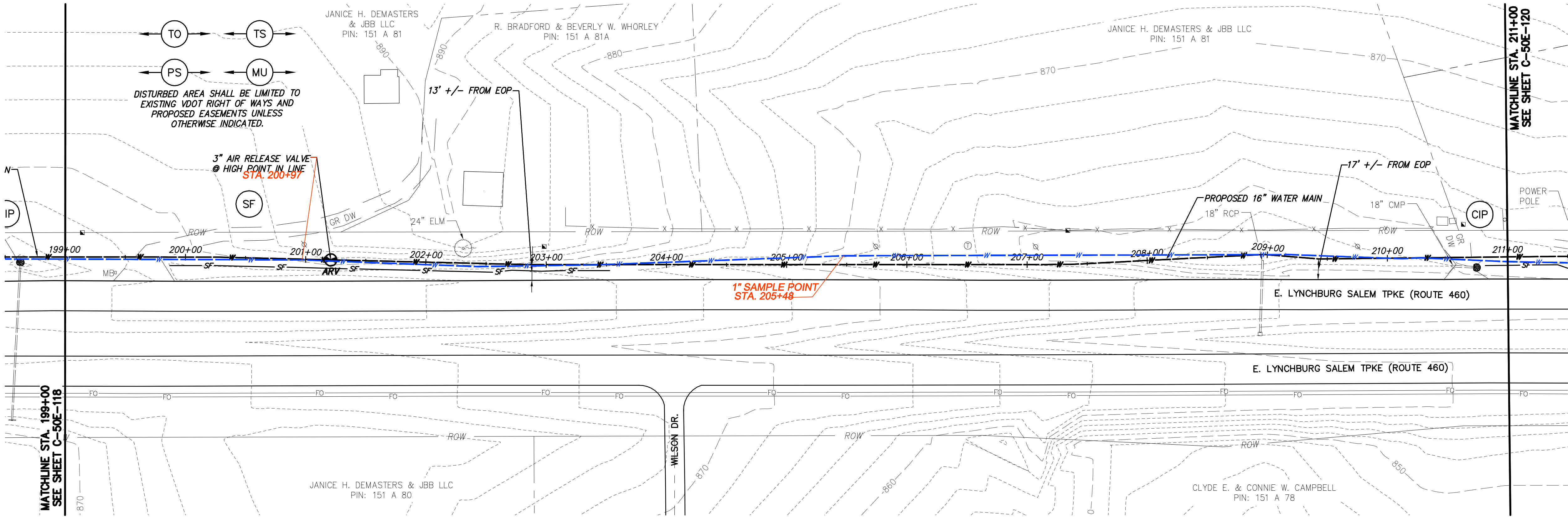
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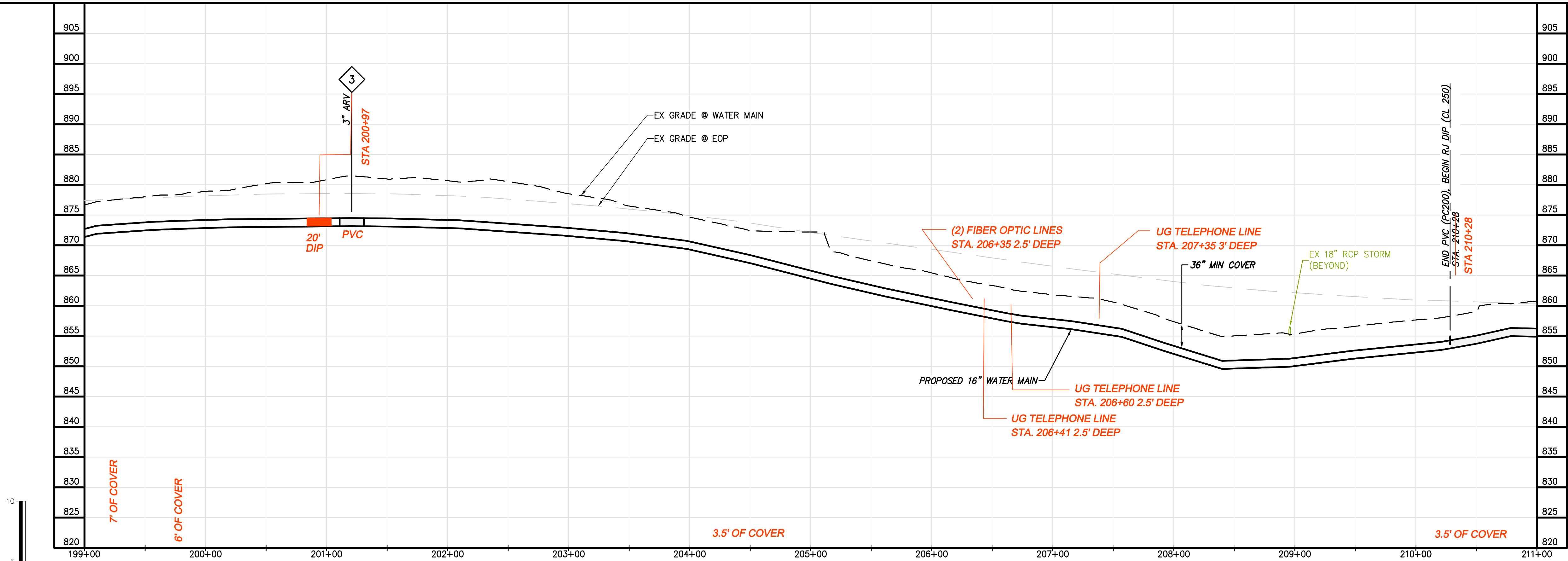
Black & Veatch Corporation
Kansas City, Missouri

BEDFORD REGIONAL WATER AUTHORITY
SMITH MOUNTAIN LAKE WTP &
LAKES TO FOREST WATER LINE EXTENSION

CONTRACT E WATER MAIN - PLAN & PROFILE



WATER MAIN PLAN



WATER MAIN PROFILE

ALL RED LINE ITEMS SHOWN REPRESENT UTILITIES EITHER INSTALLED OR FOUND EXISTING DURING THE COURSE OF CONSTRUCTION AND HAVE BEEN OVERLAID ON PLANS PREPARED BY CHA FOR BLACK & VEATCH WITH ALL PARTIES PERMISSION. THE PLANS AS ORIGINALLY DESIGNED FOR BLACK & VEATCH BY CHA ARE NOT MODIFIED OR CHANGED IN ANY CAPACITY BY THE RED LINE OVERLAY.

- GENERAL NOTES:
- A. 16-IN WATER MAIN:
1. PIPING:
- a. PVC: PRESSURE CLASS 165-DR25, 200-DR21, AND 235-DR18 AS NOTED.
- b. DIP (INCLUDES ALL RJ): PRESSURE CLASS 250 AND 350 AS NOTED
2. VALVES: RATED FOR WORKING PRESSURE OF 250 PSI
3. TEST PRESSURES WILL VARY BASED ON OPERATING CONDITIONS, ELEVATION CHANGES AND PIPE PRESSURE CLASSES. PC165 WILL BE TESTED AT 150 PSI, PC200 AT 200 PSI, PC235 AT 225 PSI, AND DIP AT RIVER CROSSINGS WILL BE TESTED AT MIN. 250 PSI UNLESS NOTED OTHERWISE.
- B. VALVES, BLOW-OFFS AND AIR RELEASE VALVES LOCATIONS ARE APPROXIMATE. FINAL LOCATIONS ARE TO BE FIELD DETERMINED.
- C. CONTRACTOR MAY PROVIDE TEMPORARY BLOW-OFFS, AIR RELEASE VALVES AND TEST PORTS AS NEEDED FOR TESTING AND FLUSHING.

SPECIFIC NOTES

1

06/22/2017 RECORD DRAWINGS

04/07/2016 VDOT SUBMITTAL

DATE

REVISIONS AND RECORD OF ISSUE

NO. BY CK APP

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SAVED:

PLOTTED:

USER:

YREF1:

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YREF3:

YREF4:

DWG. VER:

CHA

1901 Innovation Drive, Suite 2100
Baltimore, MD 21206
Main: (410) 852-8848 • www.chacorporation.com

0 50 100

Scale in feet

DESIGNED: JRM

DETAILED: SNP

CHECKED: BSR

APPROVED: SMS

DATE: 04-2016

0 1/2 1

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.

27872

C-50E-119

SHEET OF

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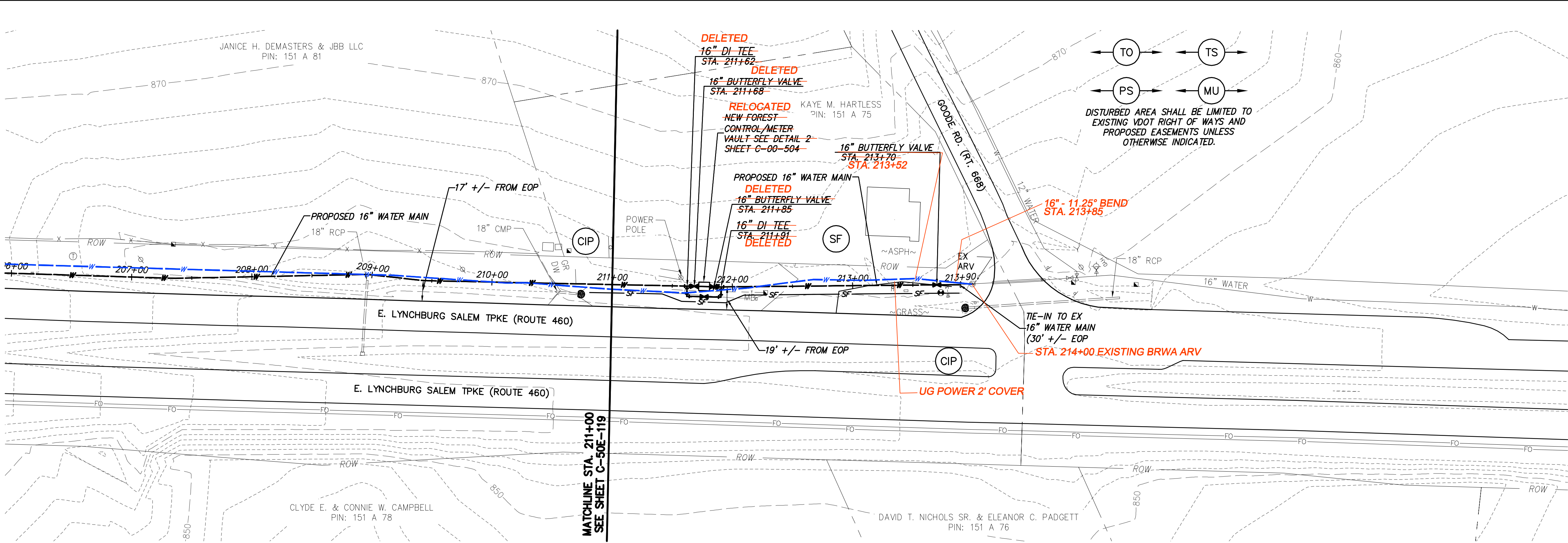
Black & Veatch Corporation

Kansas City, Missouri

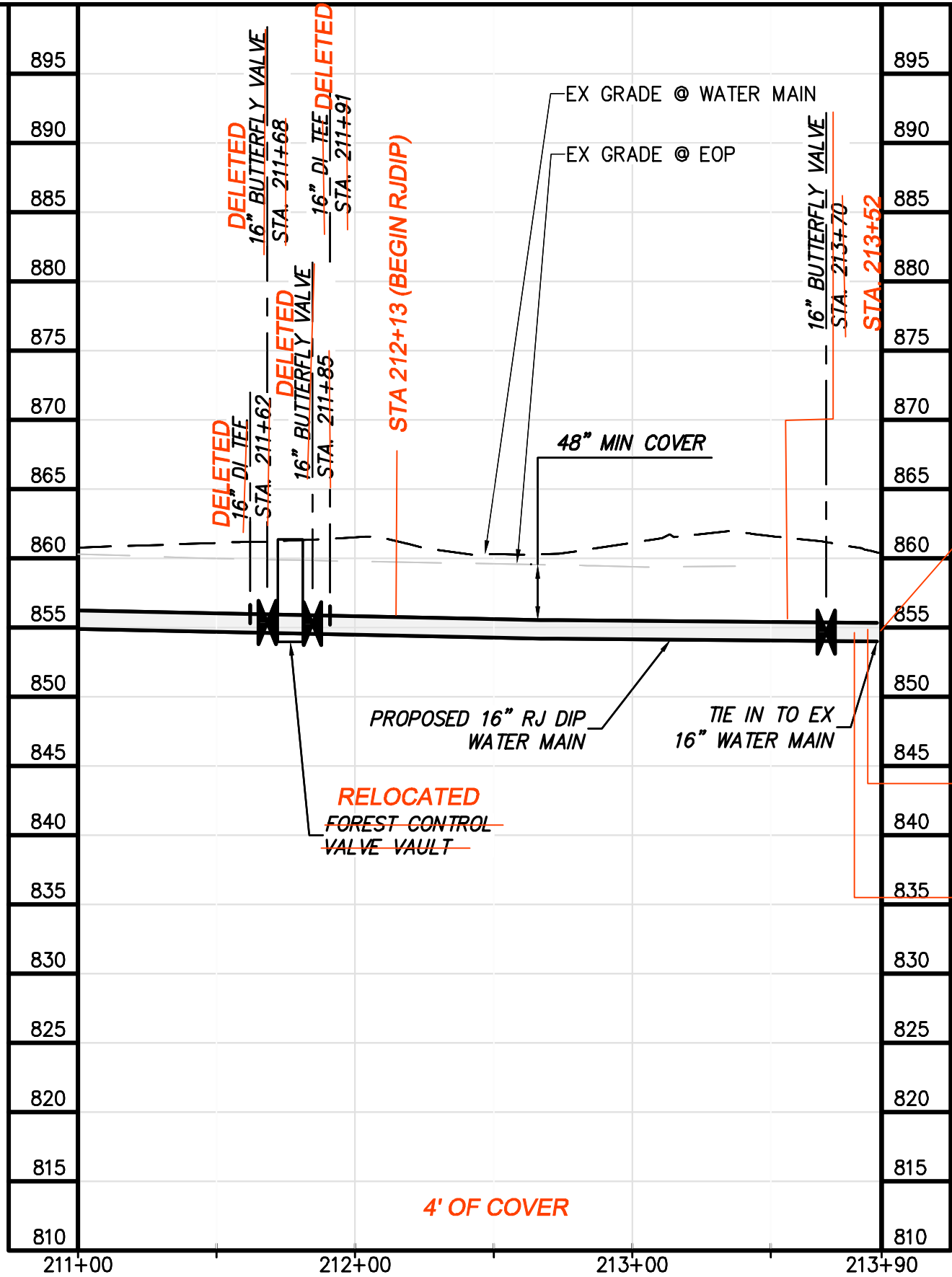
BEDFORD REGIONAL WATER AUTHORITY

SMITH MOUNTAIN LAKE WTP & LAKES TO FOREST WATER LINE EXTENSION

CONTRACT E WATER MAIN - PLAN & PROFILE



WATER MAIN PLAN



WATER MAIN PROFILE

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SPECIFIC NOTES

1. COORDINATE TIE-IN TO EXISTING WATERLINE WITH BRWA.
2. COORDINATE POWER DROP WITH AEP



NO.	BY	CHK	APP
1	BSR	SMS	
2	SNP	JRM	SMS
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Black & Veatch Corporation
Kansas City, Missouri

BEDFORD REGIONAL WATER AUTHORITY
SMITH MOUNTAIN LAKE WTP &
LAKES TO FOREST WATER LINE EXTENSION

CONTRACT E WATER MAIN - PLAN & PROFILE

DESIGNED: JRM
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PROJECT NO. 27872
C-50E-120 SHEET OF