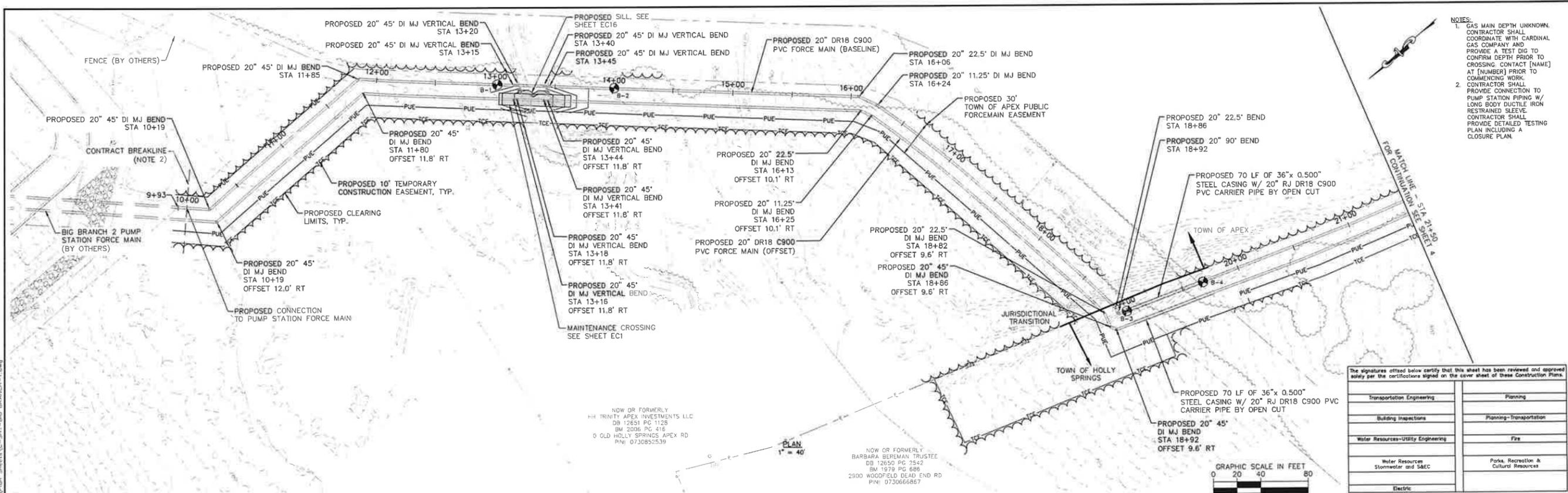


Plotted by: J. Speers, Layout 3 PLAN AND PROFILE, July 03, 2024, 11:19:44am, S:\100 Hazen and Spaw\100-005 Apex, Big Branch 2 PSM\10 - Drawings\Plan Sheets\C-311-BIG BRANCH-1.dwg



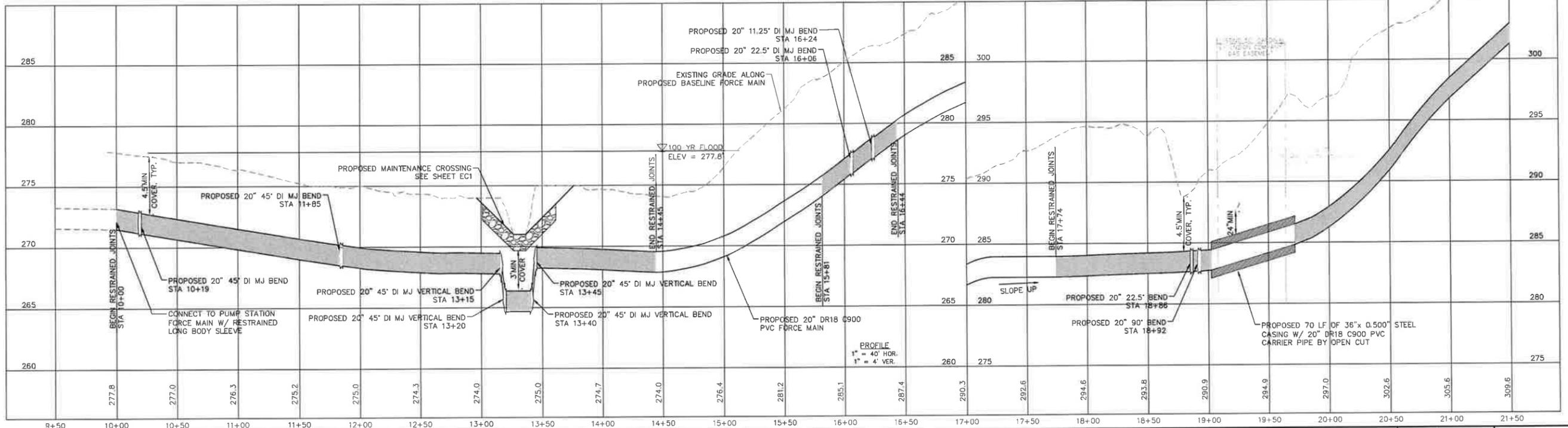
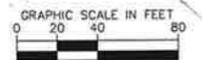
- NOTES:**
1. GAS MAIN DEPTH UNKNOWN. CONTRACTOR SHALL COORDINATE WITH CARDINAL GAS COMPANY AND PROVIDE A TEST DIG TO CONFIRM DEPTH PRIOR TO CROSSING CONTACT [NAME] AT [NUMBER] PRIOR TO COMMENCING WORK. CONTRACTOR SHALL PROVIDE CONNECTION TO PUMP STATION PIPING W/ LONG BODY DUCTILE IRON RESTRAINED SLEEVE. CONTRACTOR SHALL PROVIDE DETAILED TESTING PLAN INCLUDING A CLOSURE PLAN.

NOW OR FORMERLY
 HX TRINITY APEX INVESTMENTS LLC
 DB 12651 PG 1128
 BM 2006 PG 416
 0 OLD HOLLY SPRINGS APEX RD
 PIN: 0730852539

NOW OR FORMERLY
 BARBARA BEREMAN TRUSTEE
 DB 12650 PG 7542
 BM 1979 PG 686
 2800 WOODFIELD DEAD END RD
 PIN: 0730666867

The signatures attested below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	



No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	



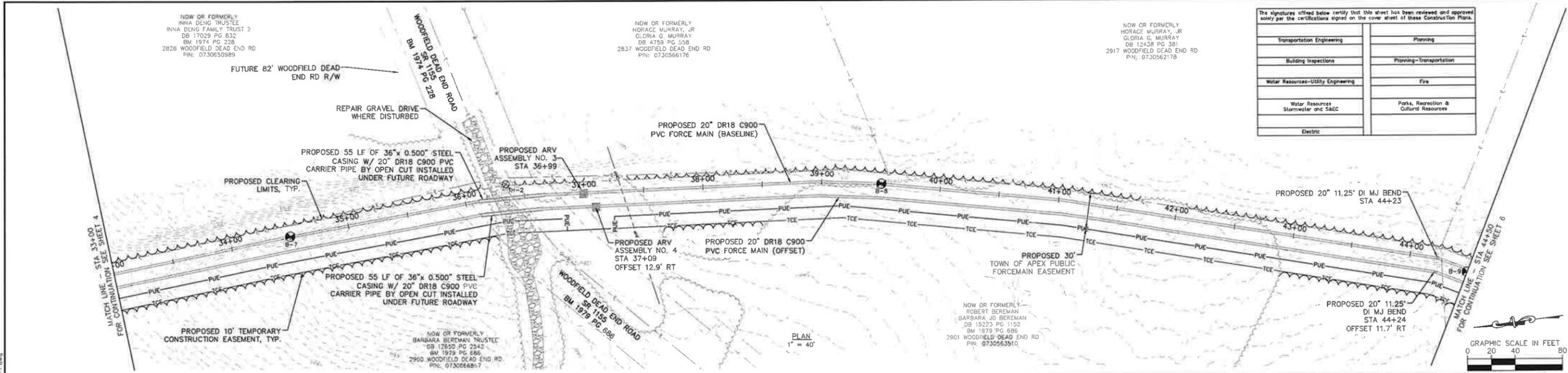
WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

FORCE MAIN PLAN AND PROFILE
STA 10+00 TO STA 21+50

CJS PROJ. #	100-005
DATE	07-05-2024
SCALE	1" = 40'
PROJECT ENGINEER	SDL
DESIGNED BY	JJS
DRAWN BY	JJS
CHECKED BY	SDL

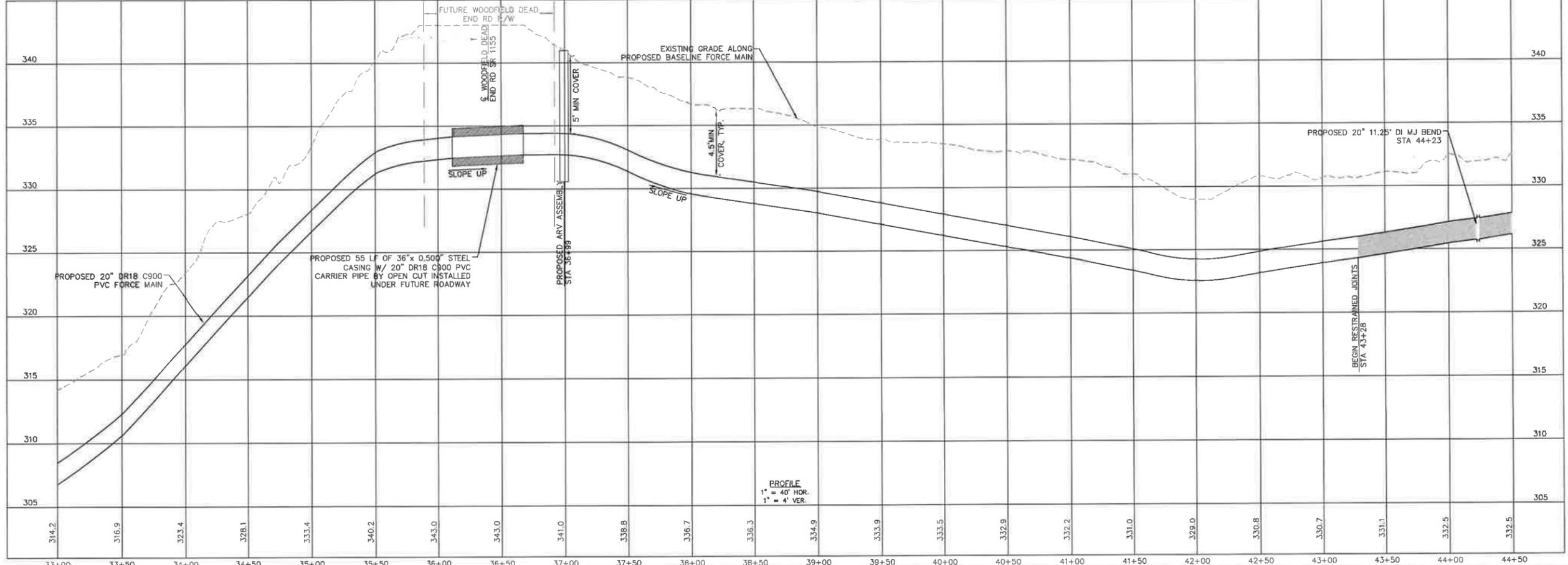
C1
 SHEET NUMBER
3 OF 60

Plotted By: J. Sparks, Layout 5 PLAN AND PROFILE, July 03, 2024, 11:20:21am, S:\100 Hazen and Sawyer\100-005 Apex, Big Branch 2 PWS\RD - Drawings\Plan Sheets\C-314-BIG BRANCH-1.dwg



The signatures offered below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&CC	Parks, Recreation & Cultural Resources
Electric	



No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	





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WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

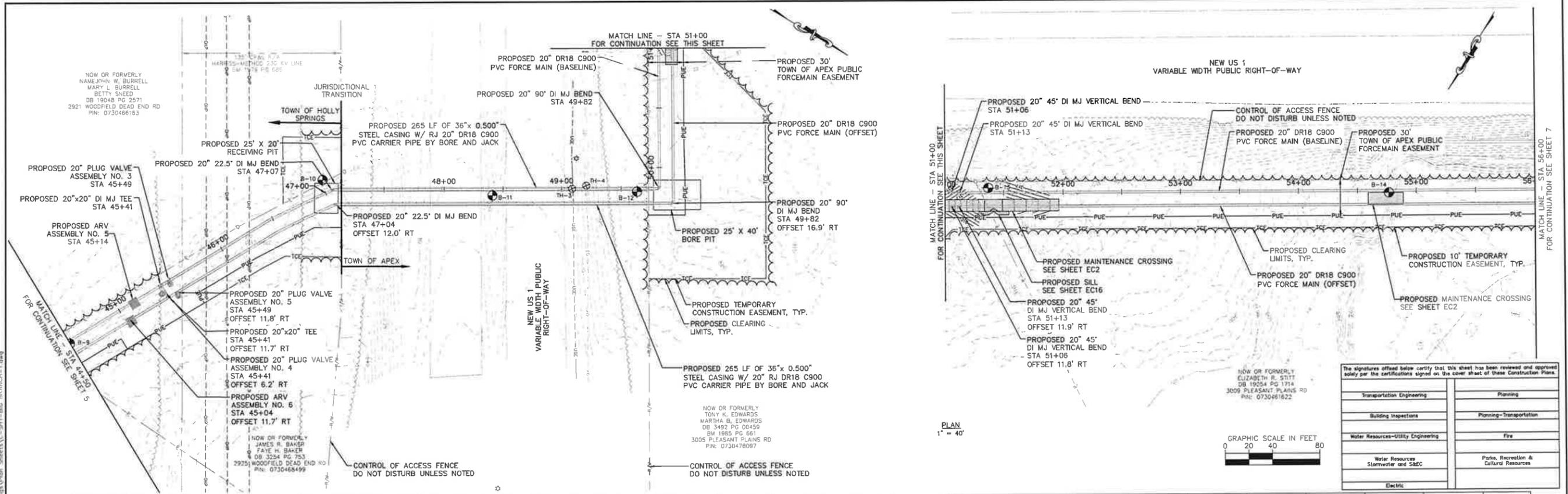
FORCE MAIN PLAN AND PROFILE
STA 33+00 TO STA 44+50

CJS PROJ #:	100-005
DATE:	07-05-2024
SCALE:	1" = 40'
PROJECT ENGINEER	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

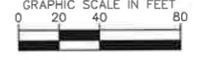
C3

SHEET NUMBER
5 OF 60

Printed By: J. Speers Layout: 6 PLAN AND PROFILE July 03, 2024 11:20:38am S:\100 Hazen and Sawyer\100-005 Apex Big Branch 2 PUMP - Drawings\Plan Sheets\C-511-BIG BRANCH-1.dwg

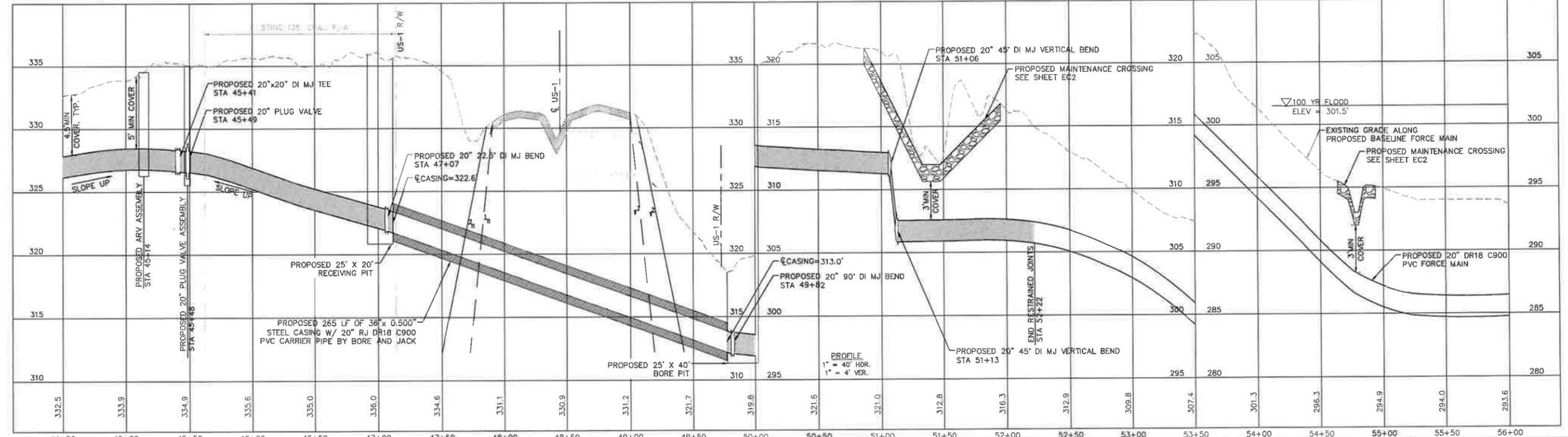


PLAN
1" = 40'



The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	



PROFILE
1" = 40' HOR.
1" = 4' VER.

1	PERMIT SUBMITTAL	7/5/2024	SDL
No.	REVISIONS	DATE	BY



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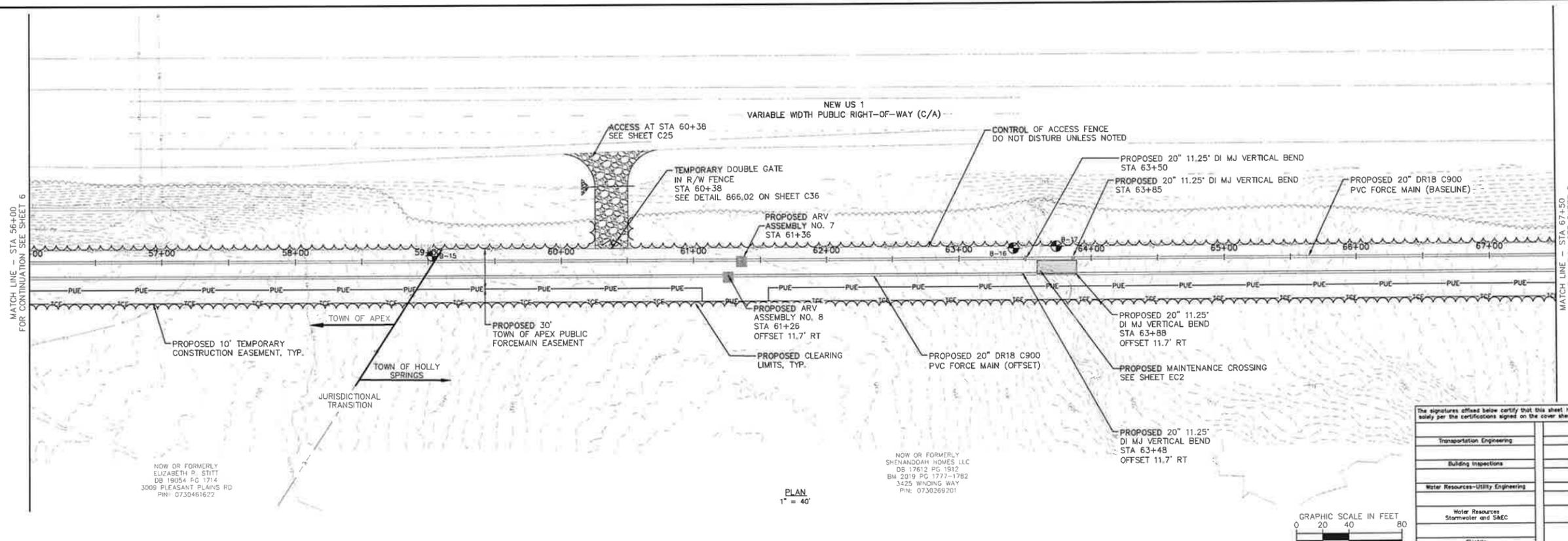
WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

FORCE MAIN PLAN AND PROFILE
STA 44+50 TO STA 56+00

CJS PROJ #	100-005
DATE	07-05-2024
SCALE	1" = 40'
PROJECT ENGINEER	SDL
DESIGNED BY	JJS
DRAWN BY	JJS
CHECKED BY	SDL

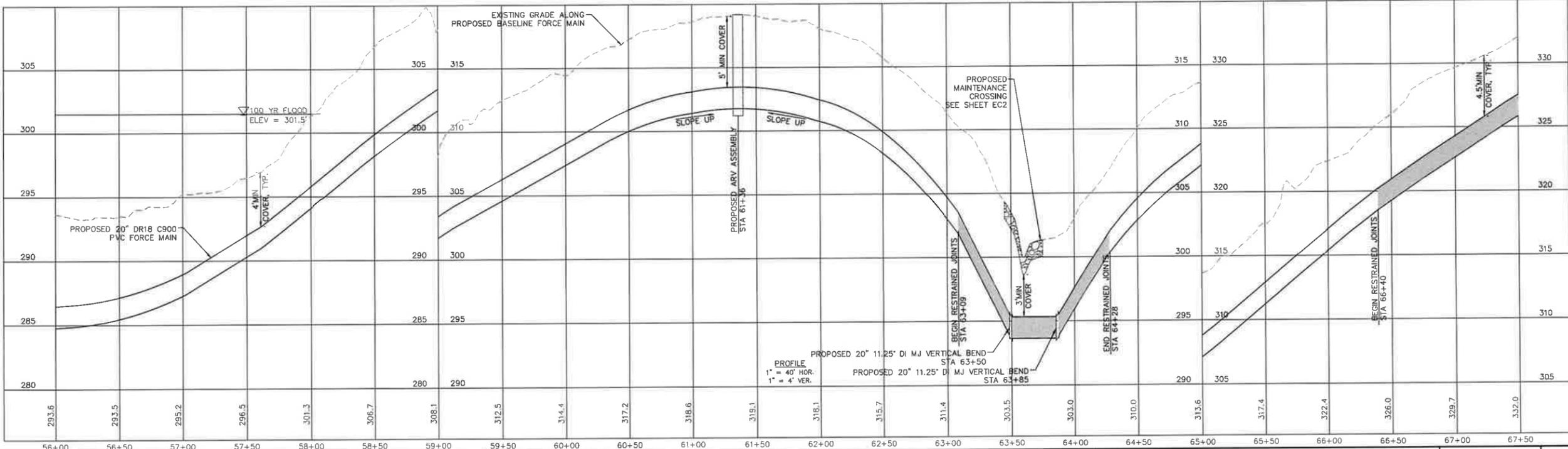
C4
SHEET NUMBER
6 OF 60

Project: Big Branch 2 Pump Station - Force Main
 Date: July 05, 2024
 11:20:53am
 S:\100 Hazen and Sawyer\100-005 Apex Big Branch 2 PWS\100 - Drawings\Plan Sheets\C-5-1-BIG BRANCH-1.dwg
 Plotted By: J. Spores
 Layout: 7 PLAN AND PROFILE



The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&C	Parks, Recreation & Cultural Resources
Electric	



No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	




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WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

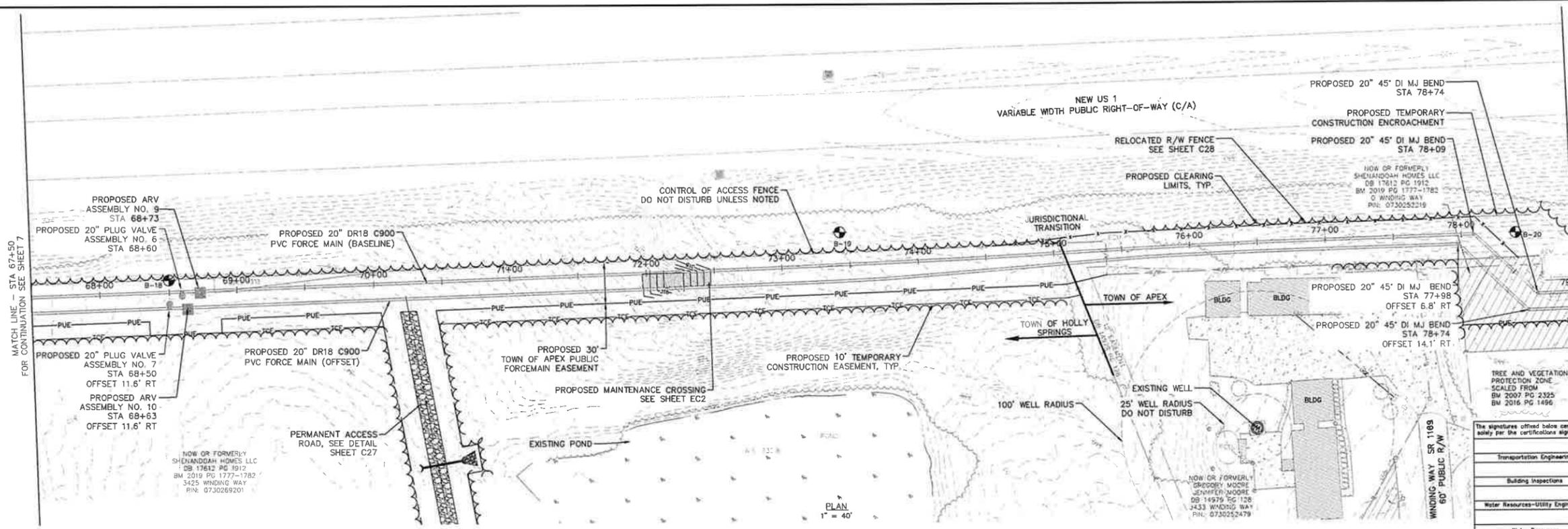
FORCE MAIN PLAN AND PROFILE
STA 56+00 TO STA 67+50

CJS PROJ #:	100-005
DATE:	07-05-2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

C5

SHEET NUMBER
7 OF 60

Printed By: J. Speeds - Layout B PLAN AND PROFILE - July 03, 2024 - 11:21:46am - S:\100 Hazen and Sawyer\100-005 Apex - Big Branch 2 PWS\100 - Drawings\Plan Sheets\C-6-1-BIG BRANCH-2.dwg



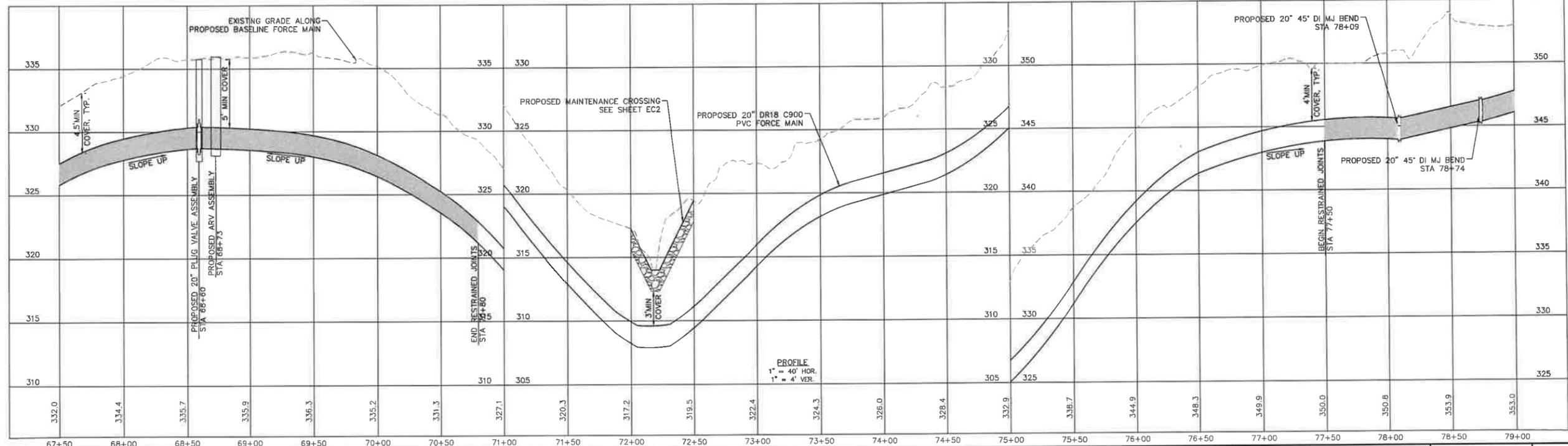
NOTES:
1. SEE SHEETS C28 AND C29 FOR FENCE MODIFICATION DETAILS

MATCH LINE - STA 78+00 FOR CONTINUATION SEE SHEET 9

GRAPHIC SCALE IN FEET
0 20 40 80

The signatures listed below certify that this sheet has been reviewed and approved solely for the certification signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	



No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	



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**WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN**

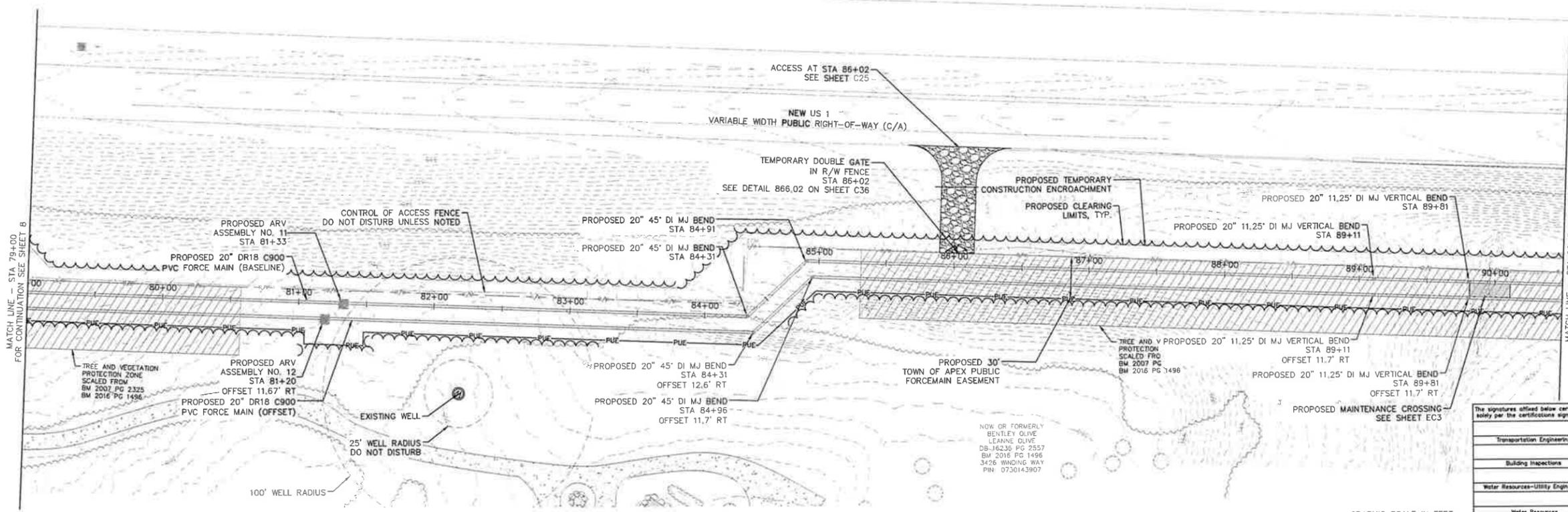
**FORCE MAIN PLAN AND PROFILE
STA 67+50 TO STA 79+00**

CJS PROJ #: 100-005
DATE: 07-05-2024
SCALE: 1" = 40'
PROJECT ENGINEER: SDL
DESIGNED BY: JUS
DRAWN BY: JUS
CHECKED BY: SDL

C6

SHEET NUMBER
8 OF 60

NOTES:
1. SEE SHEETS C29 AND C30 FOR FENCE MODIFICATION DETAILS.

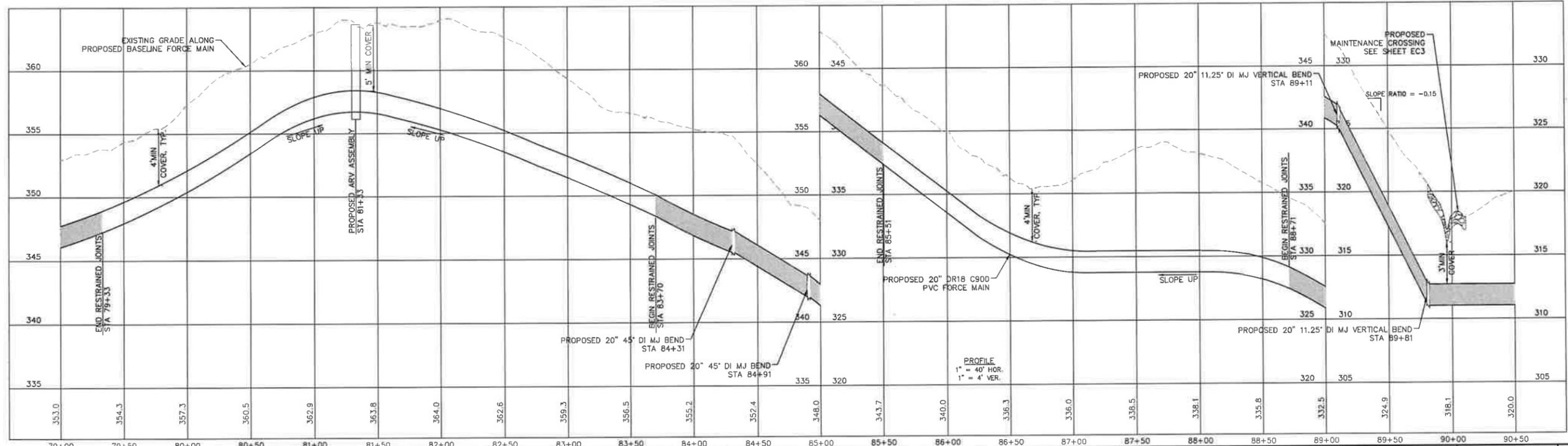


PLAN
1" = 40'



The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	



PROFILE
1" = 40' HOR.
1" = 4' VER.

Plotted by J. Speers Layout B PLAN AND PROFILE July 03, 2024 11:22:04am. S:\100 Hazen and Sawyer\100-005-Ape-Big Branch 2 PUMP Station\Drawings\Plan Sheets\VC-BHT-BIG BRANCH-2.dwg

No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	



WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

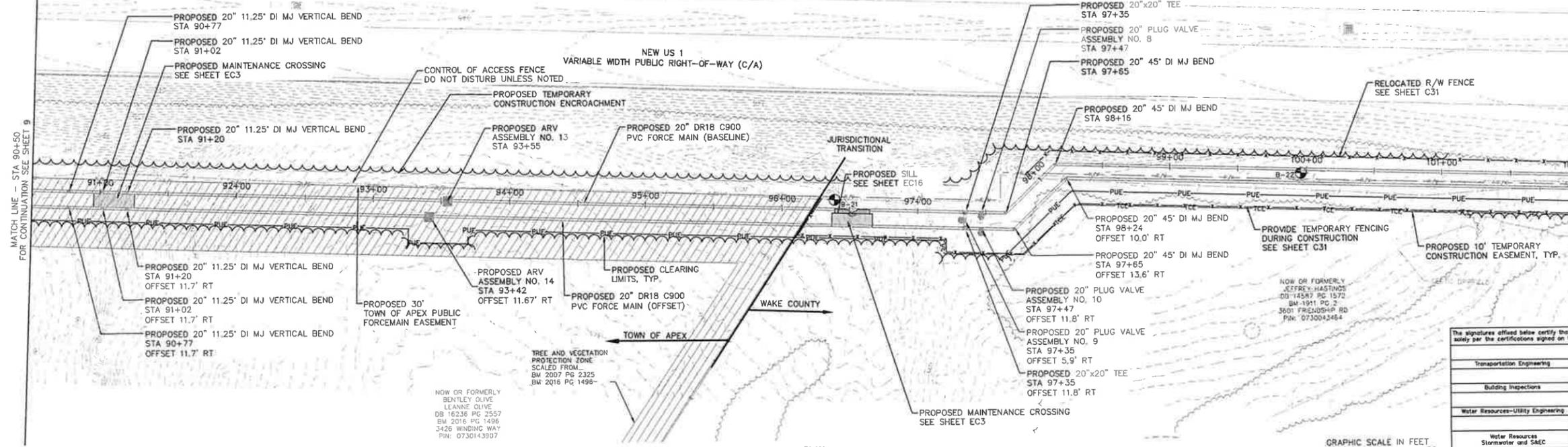
FORCE MAIN PLAN AND PROFILE
STA 79+00 TO STA 90+50

CJS PROJ #	100-005
DATE:	07-05-2024
SCALE:	1" = 40'
PROJECT ENGINEER	SDL
DESIGNED BY:	JUS
DRAWN BY:	JUS
CHECKED BY:	SDL

C7
SHEET NUMBER
9 OF 60

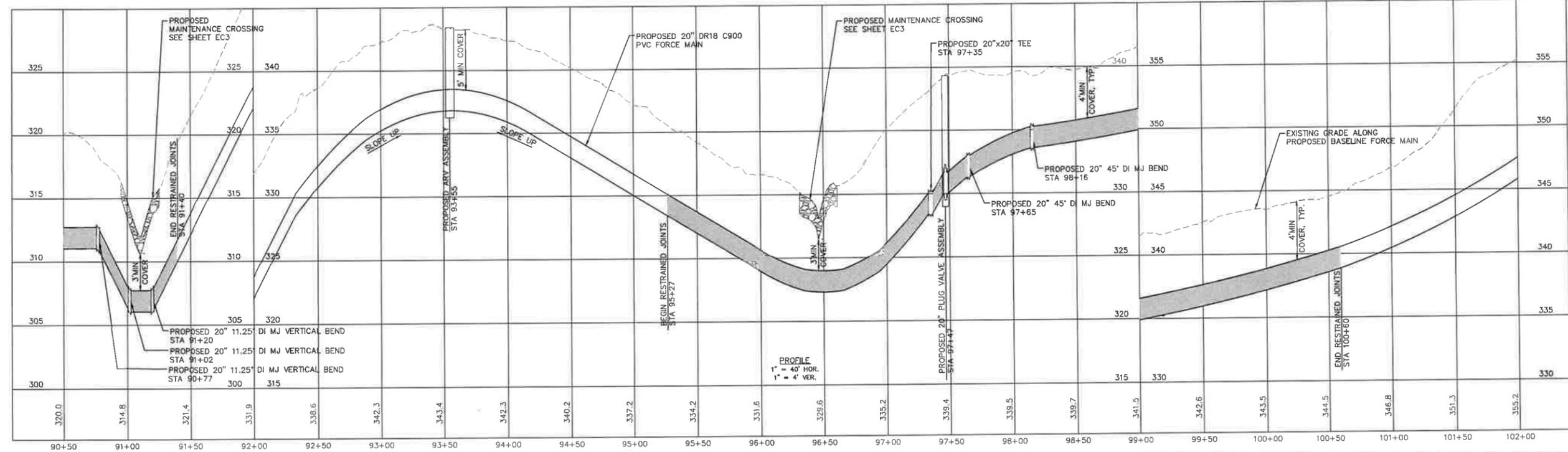
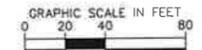
Printed By: J. Speers Level: 10 PLAN AND PROFILE July 03, 2024 11:22:19am S:\100 Hazen and Sawyer\100-005 Apex Big Branch 2 PWS\RD - Drawings\Plan Sheets\C-011-BIG BRANCH-2.dwg

NOTES:
 1. SEE SHEETS C29, C30, AND C31 FOR FENCE MODIFICATION DETAILS.



The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&E	Parks, Recreation & Cultural Resources
Electric	



No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	



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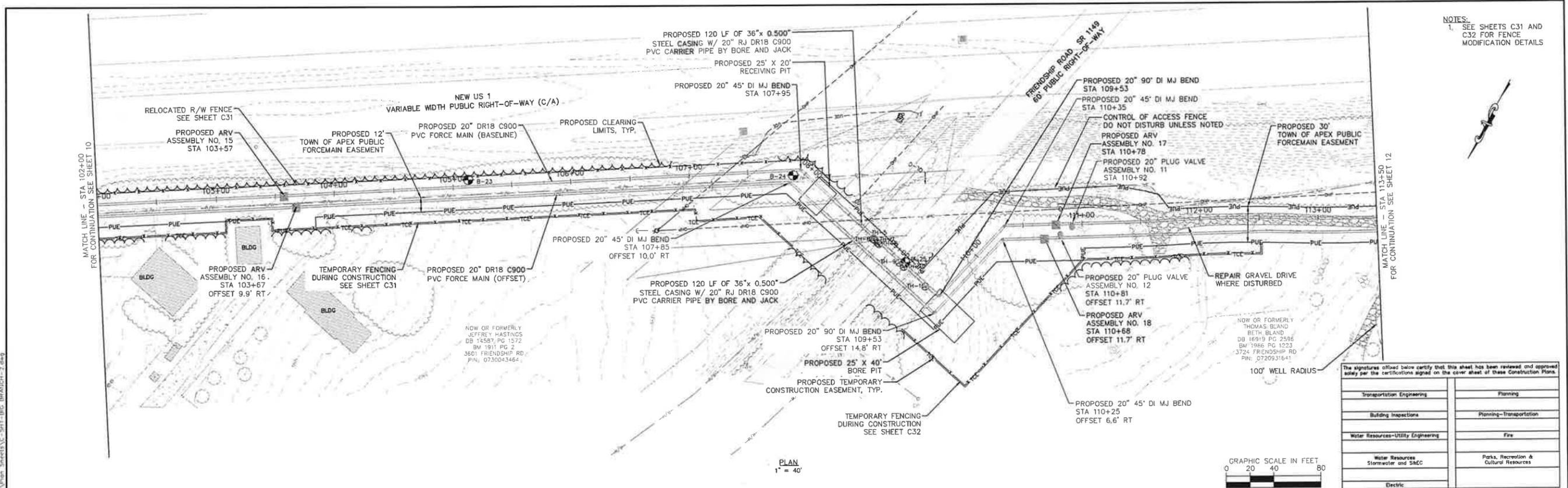
WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

FORCE MAIN PLAN AND PROFILE
STA 90+50 TO STA 102+00

CJS PROJ #:	100-005
DATE:	07-05-2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

C8
 SHEET NUMBER
10 OF 60

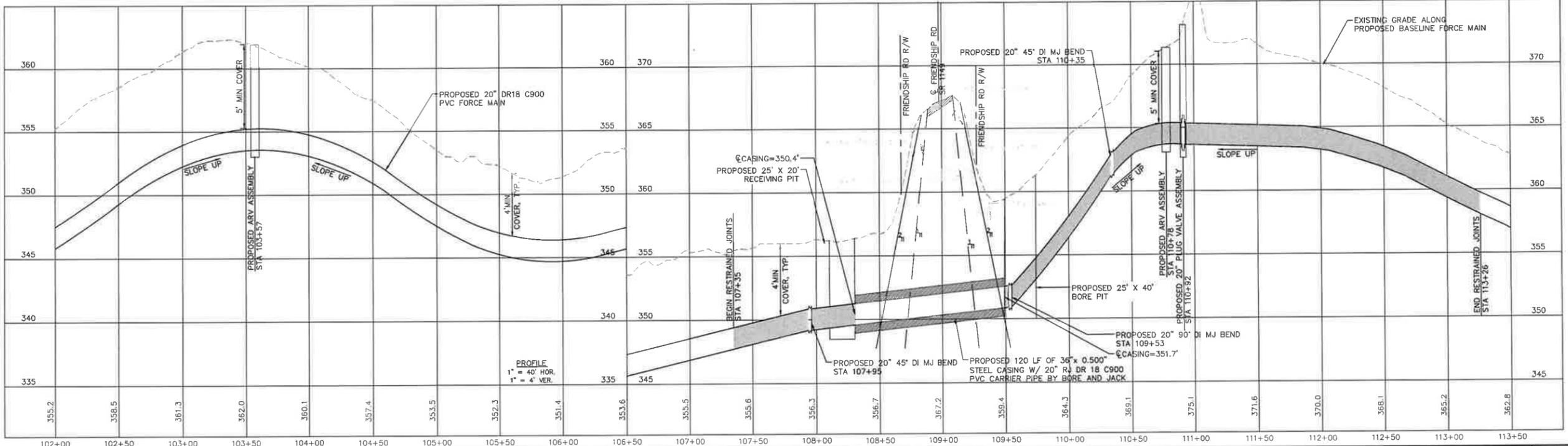
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NOTES:
 1. SEE SHEETS C31 AND C32 FOR FENCE MODIFICATION DETAILS

The signatures offset below certify that this sheet has been reviewed and approved in accordance with the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&C	Parks, Recreation & Cultural Resources
Electric	



No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	



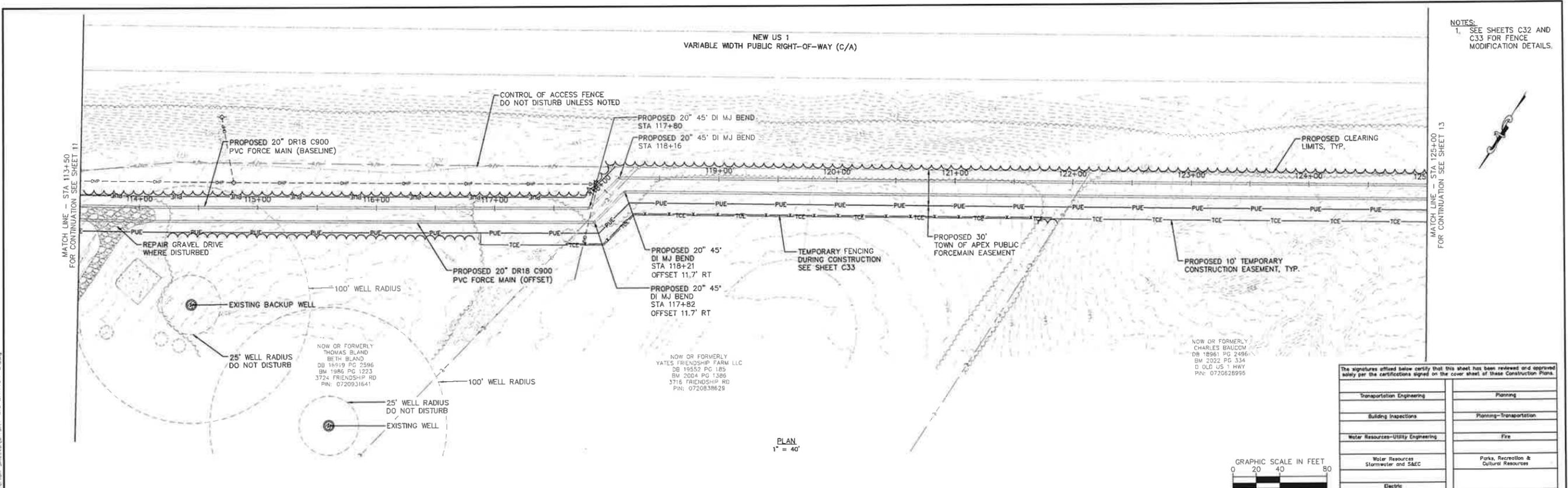
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 NC LICENSE #P-1611 WWW.CJS-CONVEYANCE.COM

WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

FORCE MAIN PLAN AND PROFILE
STA 102+00 TO STA 113+50

CJS PROJ #	100-005	C9
DATE	07-05-2024	
SCALE	1" = 40'	
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DESIGNED BY	JJS	
DRAWN BY	JJS	SHEET NUMBER
CHECKED BY	SDL	

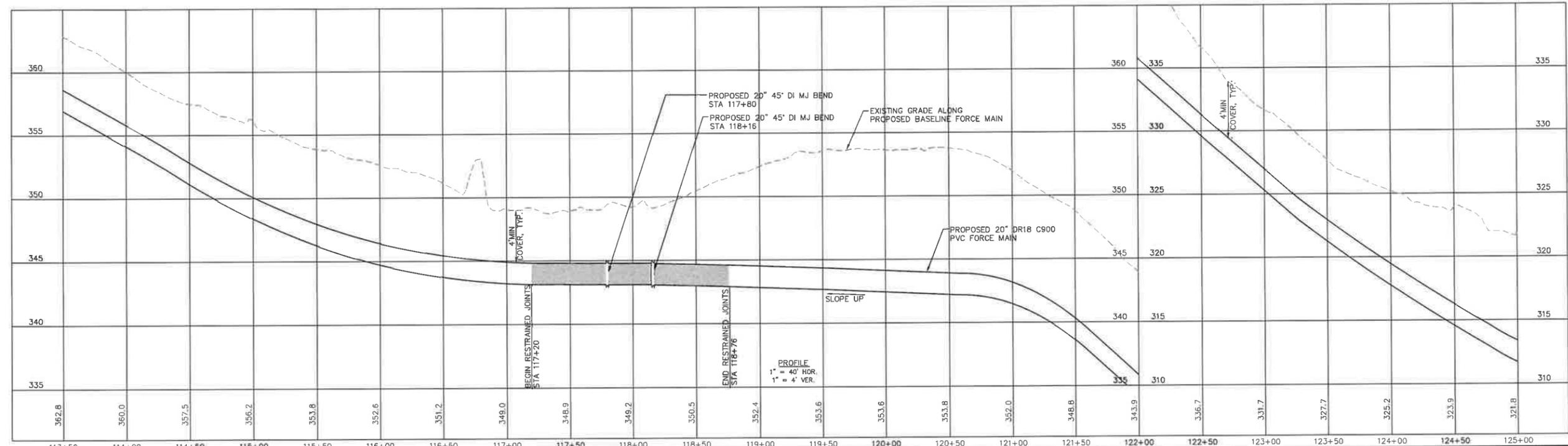
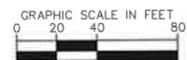
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NOTES:
 1. SEE SHEETS C32 AND C33 FOR FENCE MODIFICATION DETAILS.

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	



No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	



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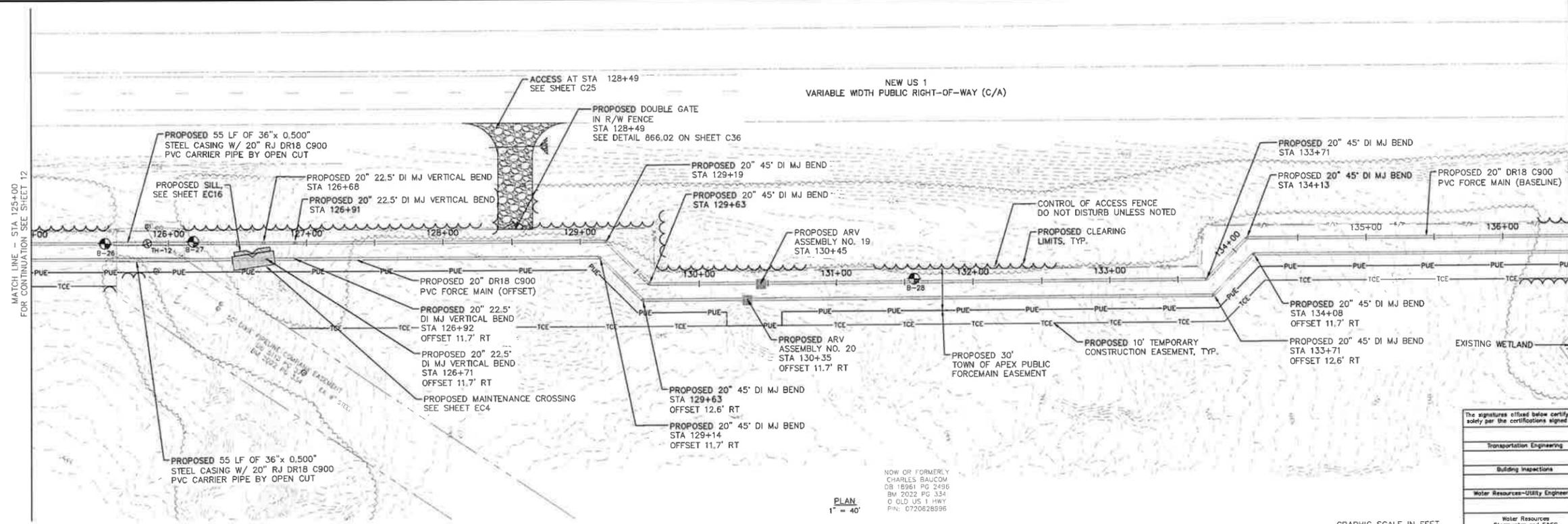
WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

FORCE MAIN PLAN AND PROFILE
STA 113+50 TO STA 125+00

CJS PROJ #:	100-005
DATE:	07-05-2024
SCALE:	1" = 40'
PROJECT ENGINEER	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

C10
 SHEET NUMBER
12 OF 60

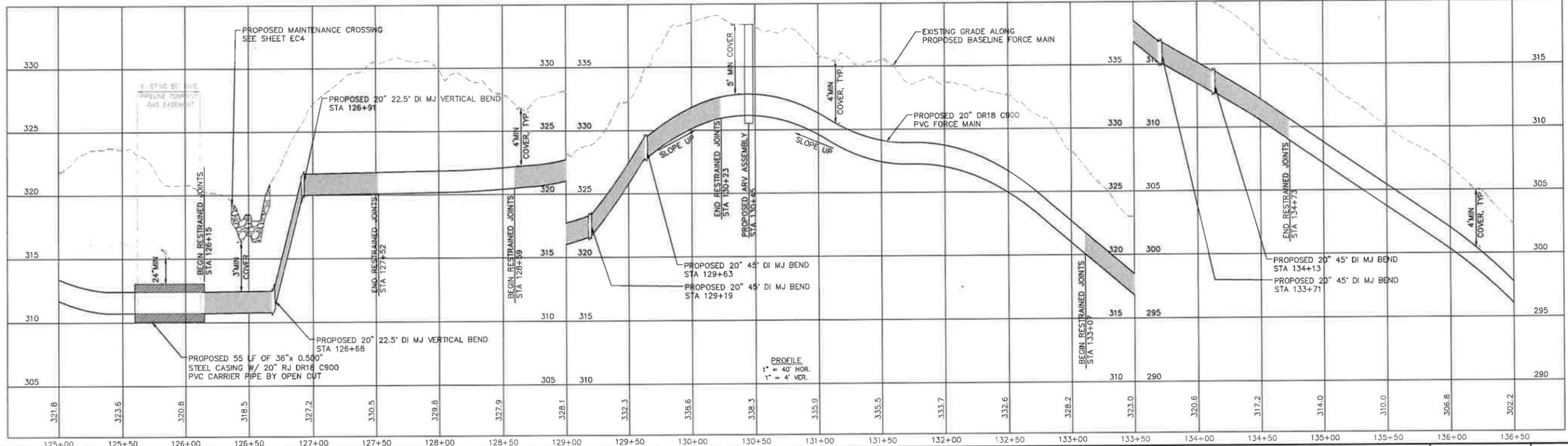
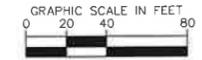
Project: J:\Specs\Layout\13 PLAN AND PROFILE July 03, 2024 11:23:50am S:\100 Hazen and Sawyer\100-000 Apex Big Branch 2 PWS\MD - Drawings\Plan Sheets\13-STA 125+00 TO STA 136+50 - C11.dwg
 Plotted By: J. Speers



- NOTES:**
- CONTRACTOR SHALL PLACE A ONE-CALL (811) AT LEAST 48-HOURS PRIOR TO CROSSING THE GAS PIPELINE. ENTERPRISE REPRESENTATIVE MUST BE ON-SITE TO PERFORM CROSSING.
 - CONTRACTOR SHALL SUPPORT THE GAS MAIN EVERY 10' IF EXPOSED VIA OPEN-CUT. IF ROCK IS ENCOUNTERED DURING GAS CROSSING, SPECIFIC PLANS SHALL BE SUPPLIED INDICATING CROSSING REVISIONS, SUBJECT TO REVIEW AND APPROVAL BY ENTERPRISE.

The signatures officed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&CC	Parks, Recreation & Cultural Resources
Electric	



No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	



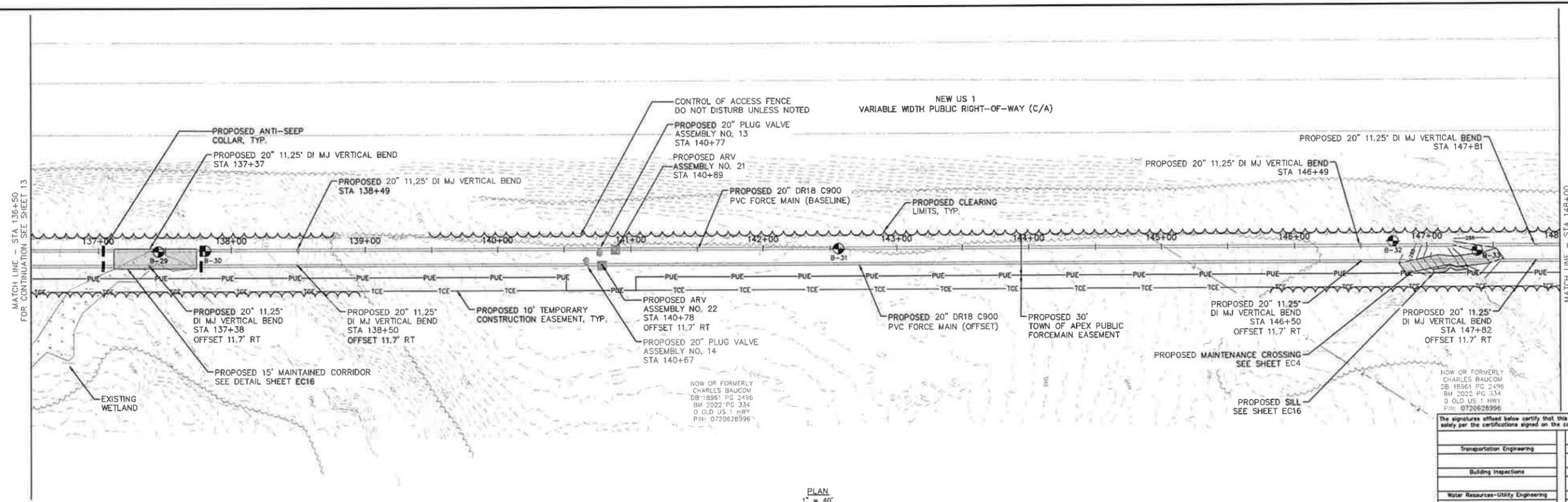
WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

FORCE MAIN PLAN AND PROFILE
STA 125+00 TO STA 136+50

CJS PROJ #	100-005
DATE	07-05-2024
SCALE	1" = 40'
PROJECT ENGINEER	SDL
DESIGNED BY	JJS
DRAWN BY	JJS
CHECKED BY	SDL

C11
 SHEET NUMBER
13 OF 60

Plotted By: J. Spang - Layout 11 - PLAN AND PROFILE - July 03, 2024 11:24:04am S:\100-10000-005_Apex_Big Branch_2_PWS\100-10000-005_Apex_Big Branch_2_PWS\100-10000-005_Apex_Big Branch_2_PWS\Drawings\Plan_Sheets\C-011-BIG BRANCH_2.dwg

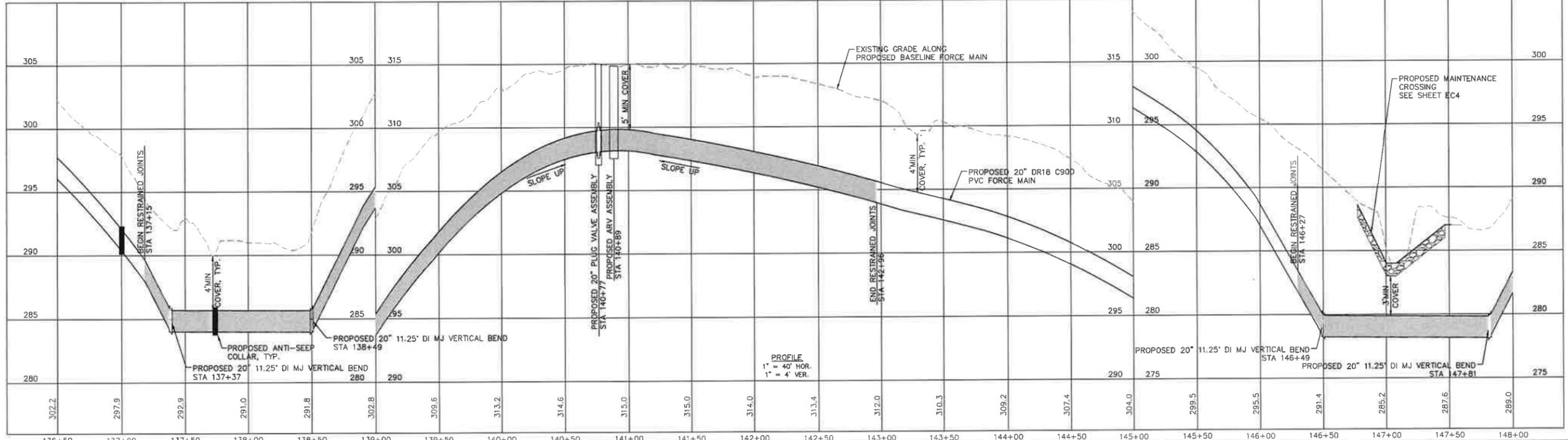


PLAN
1" = 40'



The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&C	Parks, Recreation & Cultural Resources
Electric	



1	PERMIT SUBMITTAL	7/5/2024	SDL
No.	REVISIONS	DATE	BY



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 NC LICENSE #P-1611 WWW.CJS.CONVEYANCE.COM

WATER RESOURCES DEPARTMENT
 TOWN OF APEX
 BIG BRANCH 2 PUMP STATION -
 FORCE MAIN

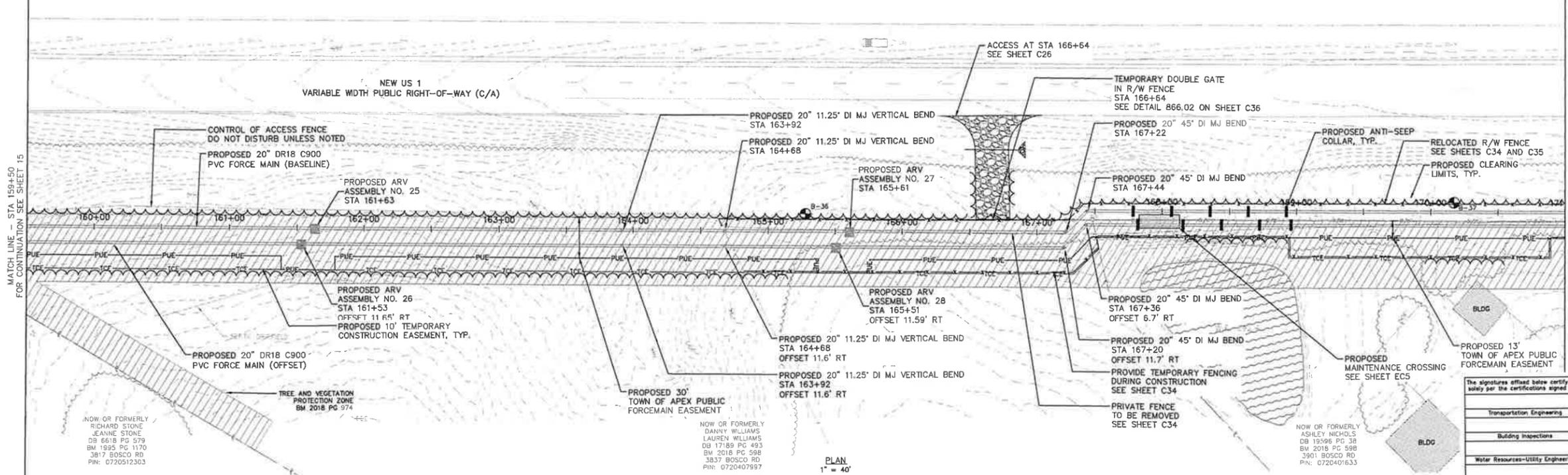
FORCE MAIN PLAN AND PROFILE
 STA 136+50 TO STA 148+00

CJS PROJ #	100-005
DATE	07-05-2024
SCALE	1" = 40'
PROJECT ENGINEER	SDL
DESIGNED BY	JJS
DRAWN BY	JJS
CHECKED BY	SDL

C12
 SHEET NUMBER
 14 OF 60

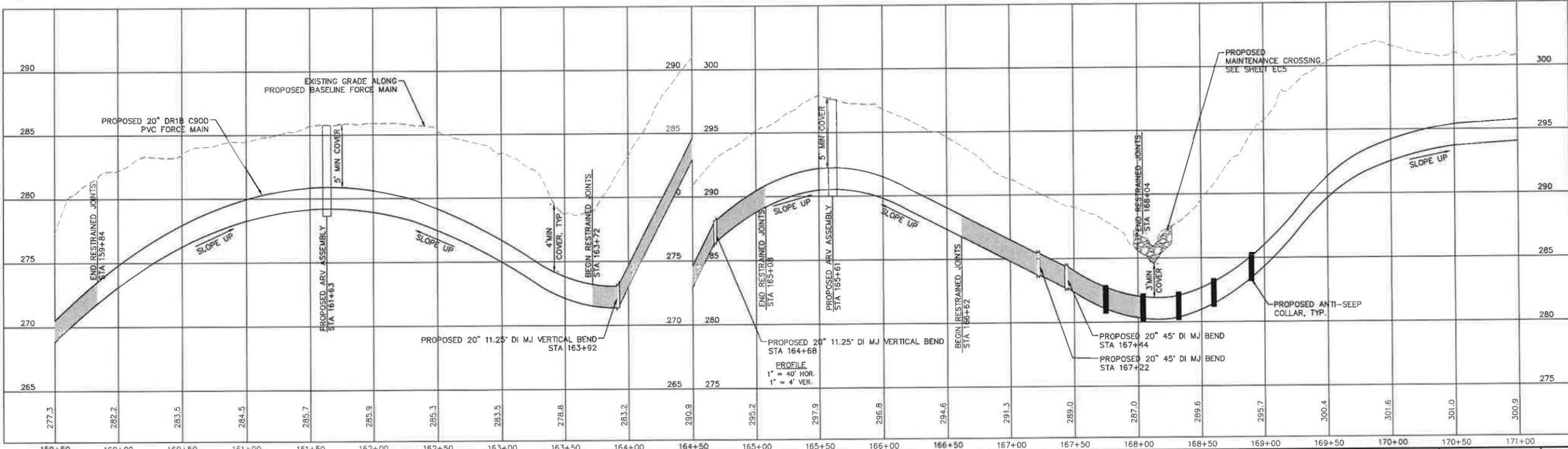
Plotted By: J. Spence, Layout 16, PLAN AND PROFILE, July 03, 2024, 11:24:31am, S:\100 Hazen and Sawyer\100-005_Apex_Big Branch 2 PWS\RD - Drmains\Plan Sheets\C-S11-BIG BRANCH-3.dwg

NOTES:
1. SEE SHEETS C34 AND C35 FOR FENCE MODIFICATION DETAILS.



The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and SAEC	Parks, Recreation & Cultural Resources
Electric	



No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	



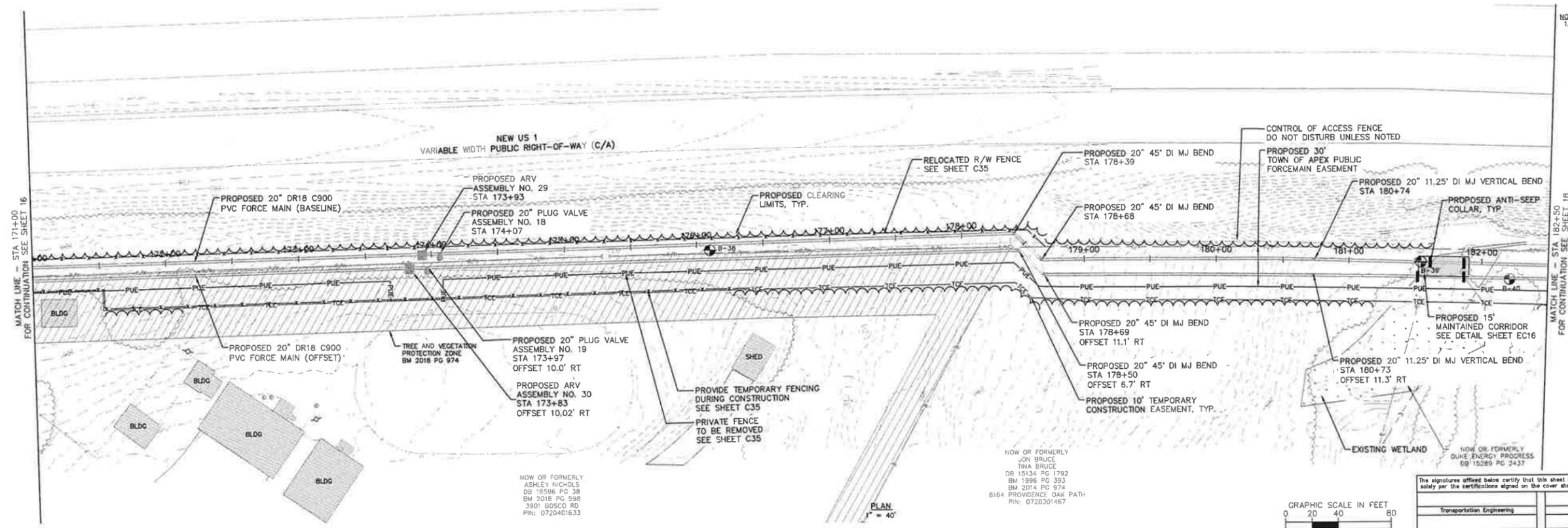
WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

FORCE MAIN PLAN AND PROFILE
STA 159+50 TO STA 171+00

CJS PROJ #:	100-005
DATE:	07-05-2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

C14
SHEET NUMBER
16 OF 60

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NOTES:
 1. SEE SHEET C35 FOR FENCE MODIFICATION DETAILS

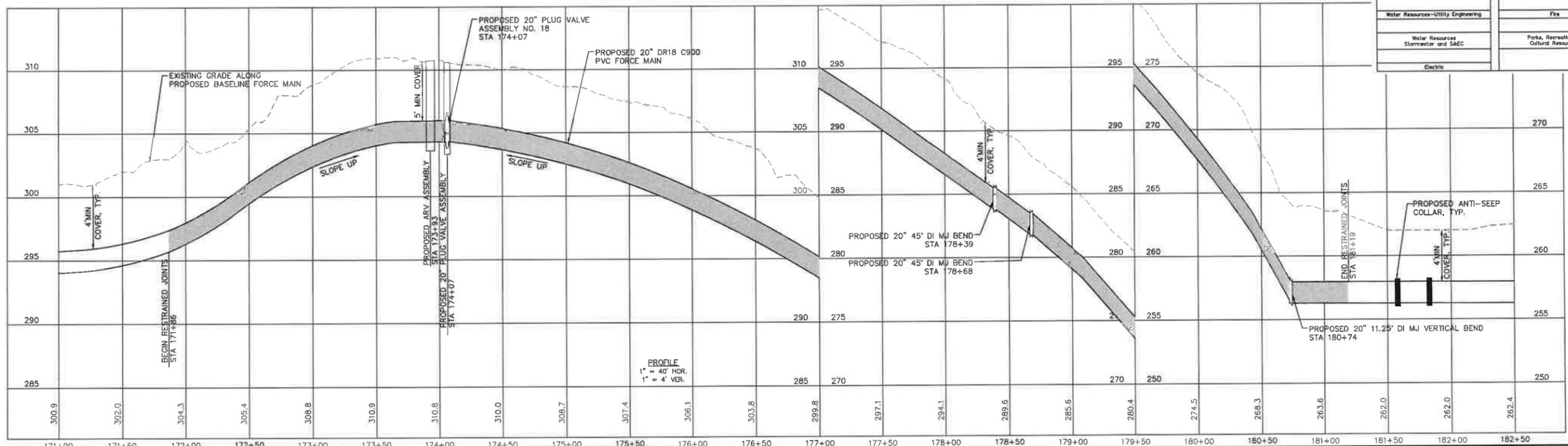


NOW OR FORMERLY
 JON BRUCE
 TINA BRUCE
 DB 15134 PG 1792
 BM 1398 PG 303
 BM 2014 PG 974
 PROVIDENCE OAK PATH
 PIN: 0720301467



The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&C	Parks, Recreation & Cultural Resources
Electric	



No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	



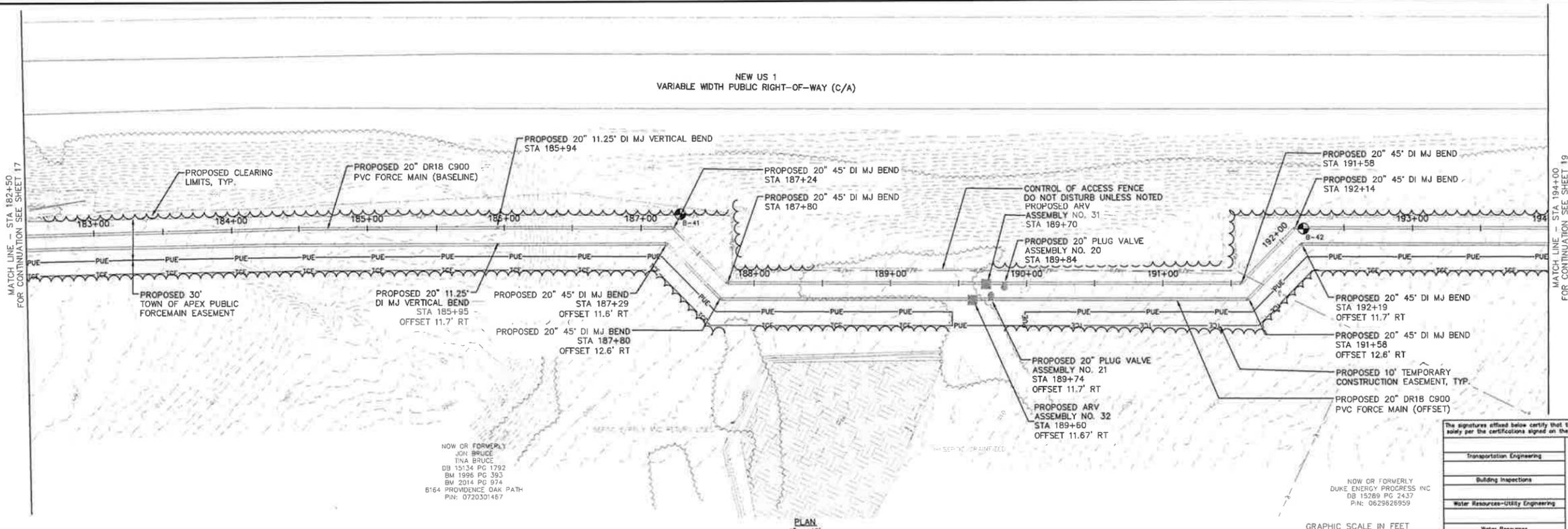

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WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

FORCE MAIN PLAN AND PROFILE
STA 171+00 TO STA 182+50

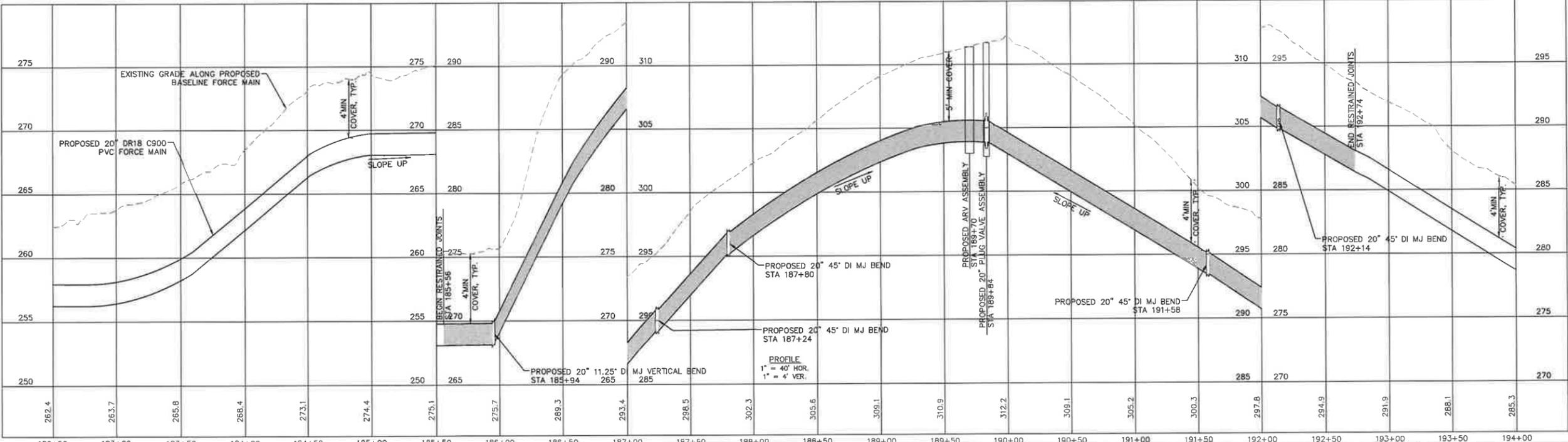
CJS PROJ #:	100-005	C15
DATE:	07-05-2024	
SCALE:	1" = 40'	
PROJECT ENGINEER:	SDL	
DESIGNED BY:	JUS	
CHECKED BY:	SDL	
SHEET NUMBER		17 OF 60

I:\Projects\18 FORCE MAIN PLAN AND PROFILE STA 182+50 TO STA 194+00 July 03, 2024 11:25:28am S:\1000 Hazen and Sawyer\190-000-Apex_Big Branch_2 PVS\80 - Drawings\Plan Sheets\18 FORCE MAIN PLAN AND PROFILE STA 182+50 TO STA 194+00 July 03, 2024 11:25:28am S:\1000 Hazen and Sawyer\190-000-Apex_Big Branch_2 PVS\80 - Drawings\Plan Sheets\18 FORCE MAIN PLAN AND PROFILE STA 182+50 TO STA 194+00 July 03, 2024 11:25:28am

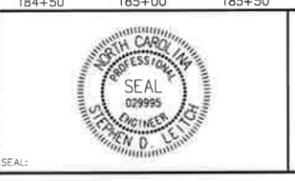


The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&C	Parks, Recreation & Cultural Resources
Electric	



No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	



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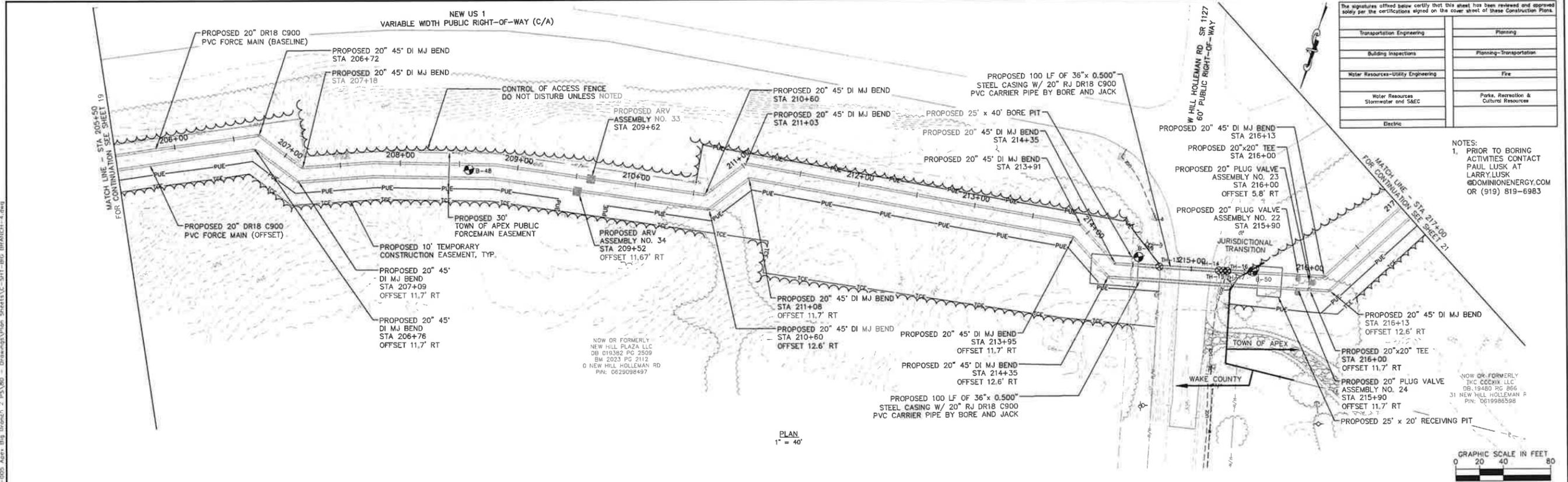
WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

FORCE MAIN PLAN AND PROFILE
STA 182+50 TO STA 194+00

CJS PROJ #:	100-005
DATE:	07-05-2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

C16
 SHEET NUMBER
18 OF 60

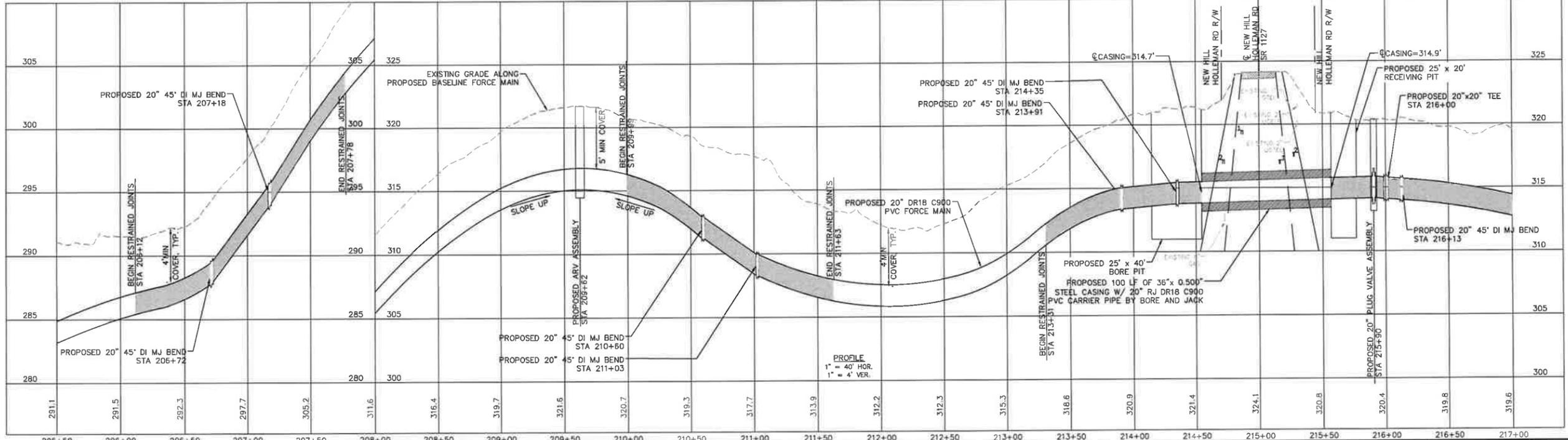
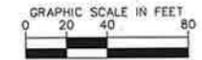
Plotted by J. Spence - Layout 20 FORCE MAIN PLAN AND PROFILE STA 205+50 TO STA 217+00 July 03, 2024 11:25:50am S:\1000 Hagan and Spence\100-005 Apex - Big Branch 2 - SR1 - BIG BRANCH-4.dwg



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Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

NOTES:
 1. PRIOR TO BORING ACTIVITIES CONTACT PAUL LUSK AT LARRY.LUSK@DOMINIONENERGY.COM OR (919) 819-6983



No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	



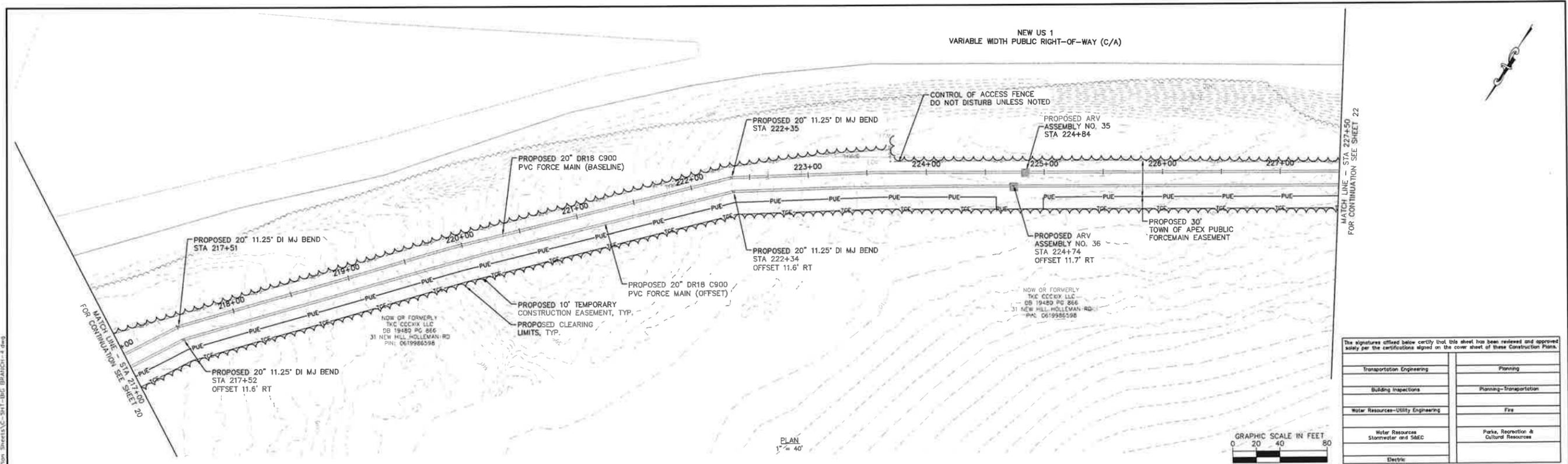
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 NC LICENSE #P-1611 WWW.CJS-CONVEYANCE.COM

**WATER RESOURCES DEPARTMENT
 TOWN OF APEX
 BIG BRANCH 2 PUMP STATION -
 FORCE MAIN**

**FORCE MAIN PLAN AND PROFILE
 STA 205+50 TO STA 217+00**

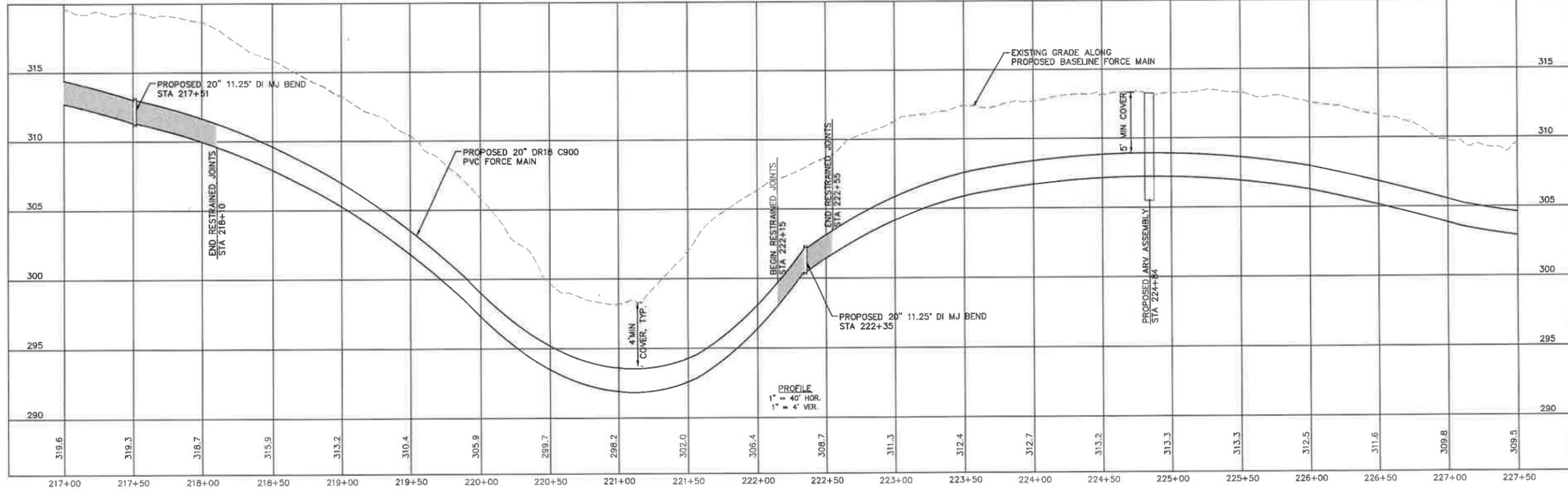
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DATE:	07-05-2024	
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DESIGNED BY:	JJS	
DRAWN BY:	JJS	SHEET NUMBER 20 OF 60
CHECKED BY:	SDL	

PLOTTED BY: J. SPENCER - LEVEL: 21 - PLAN AND PROFILE STA July 05, 2024, 11:26:00am - S:\100 Issues and Sheets\100-005-005-Appr-1kg-1000-2-HSA\RD - Drawings\Plan Sheets\C-211-BIG BRANCH-4.dwg



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Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	



No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	



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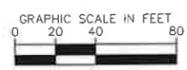
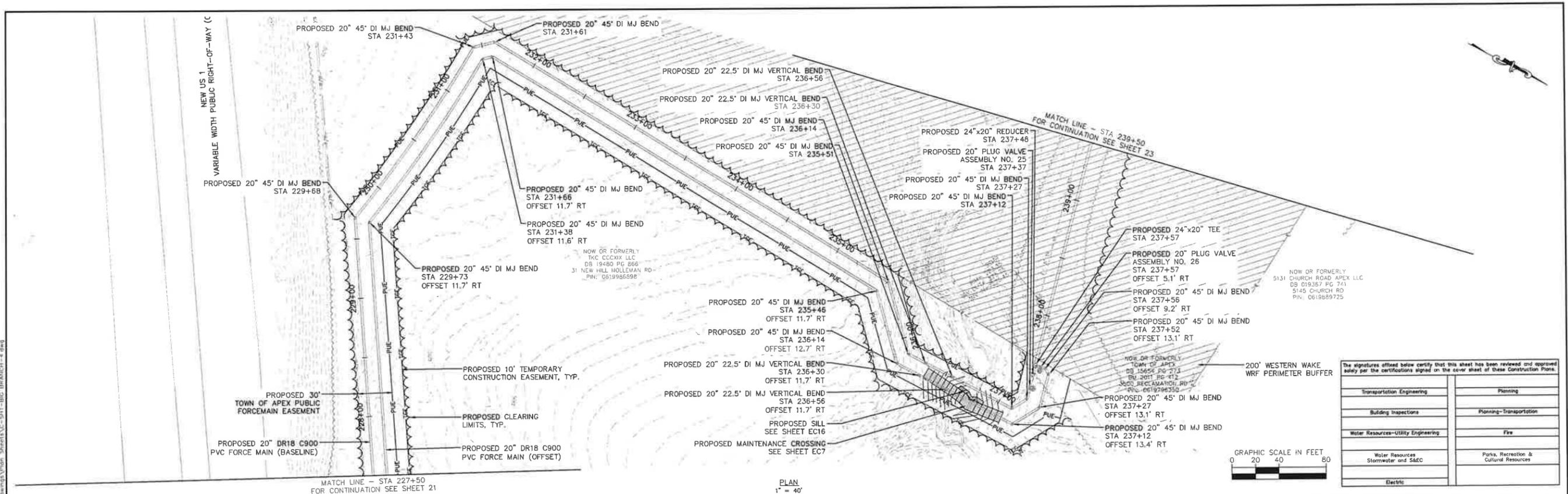
**WATER RESOURCES DEPARTMENT
TOWN OF APEX**

**BIG BRANCH 2 PUMP STATION -
FORCE MAIN**

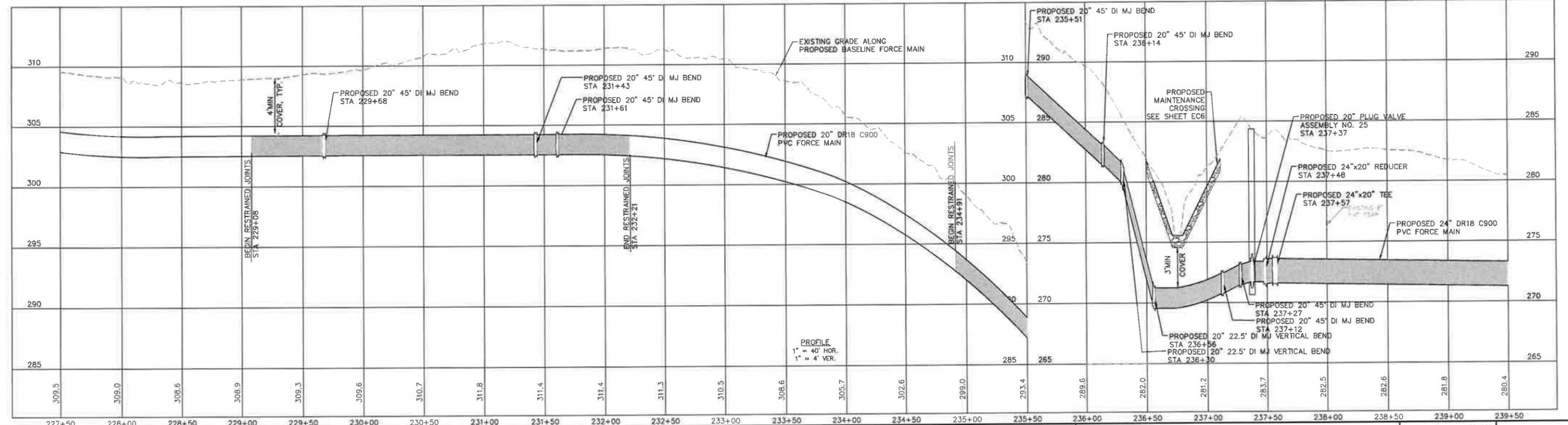
**FORCE MAIN PLAN AND PROFILE
STA 217+00 TO STA 227+50**

CJS PROJ #:	100-005	C19
DATE:	07-05-2024	
SCALE:	1" = 40'	
PROJECT ENGINEER:	SDL	
DESIGNED BY:	JUS	
DRAWN BY:	JUS	SHEET NUMBER 21 OF 60
CHECKED BY:	SDL	

Project: Big Branch 2 Pump Station, STA 227+50 to STA 239+50, July 03, 2024, 11:26:12am, S:\100 Hazen and Sawyer\100-005-Apex_Big Branch 2 Pump Station\Plan Sheets\C-211-BIG BRANCH-4.dwg
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Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	



No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	




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WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

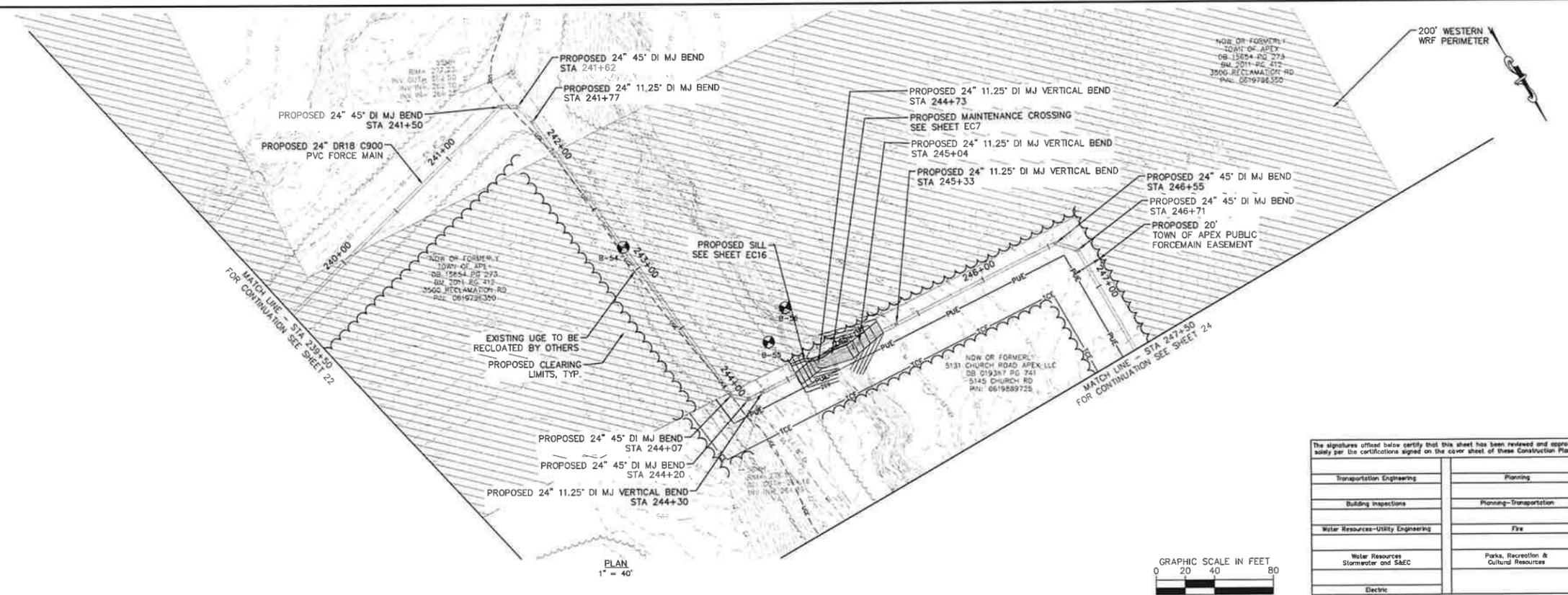
FORCE MAIN PLAN AND PROFILE
STA 227+50 TO STA 239+50

CJS PROJ #	100-005
DATE	07-05-2024
SCALE	1" = 40'
PROJECT ENGINEER	SDL
DESIGNED BY	JJS
DRAWN BY	JJS
CHECKED BY	SDL

C20

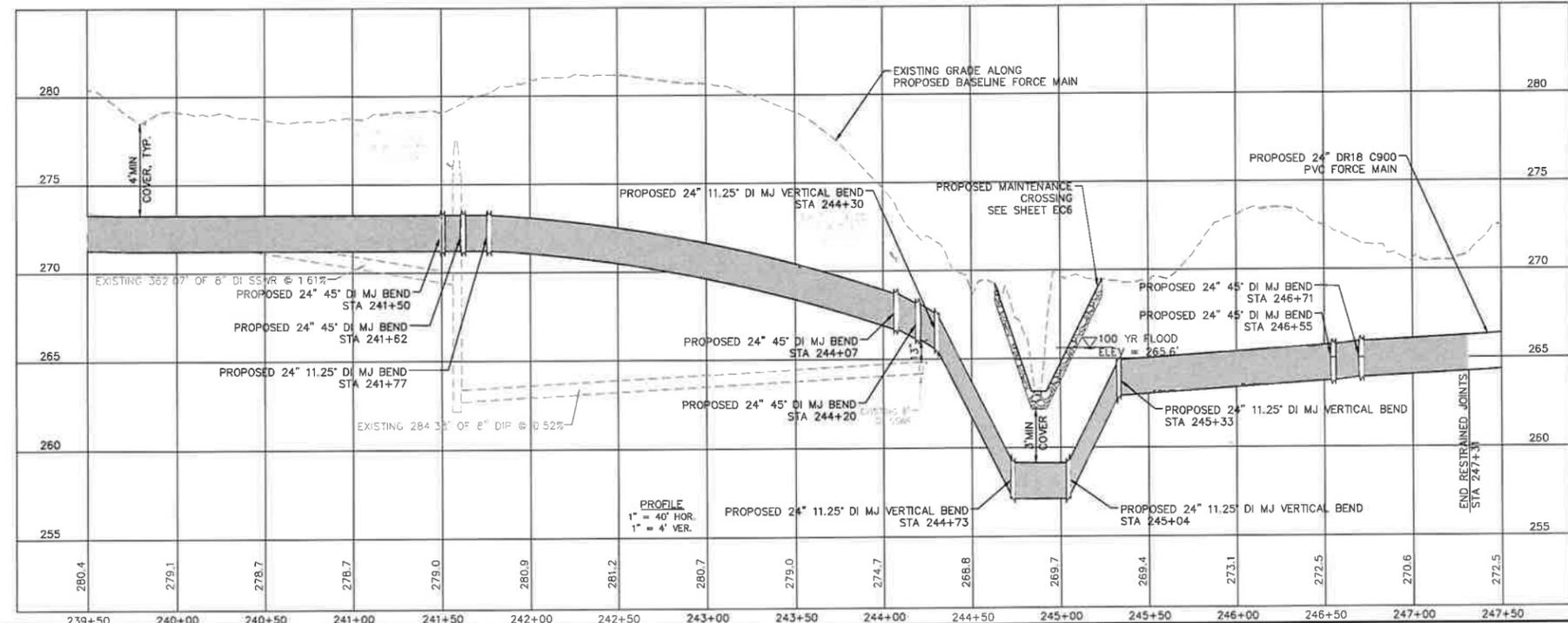
SHEET NUMBER
22 OF 60

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Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	



No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	



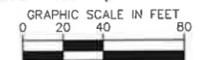
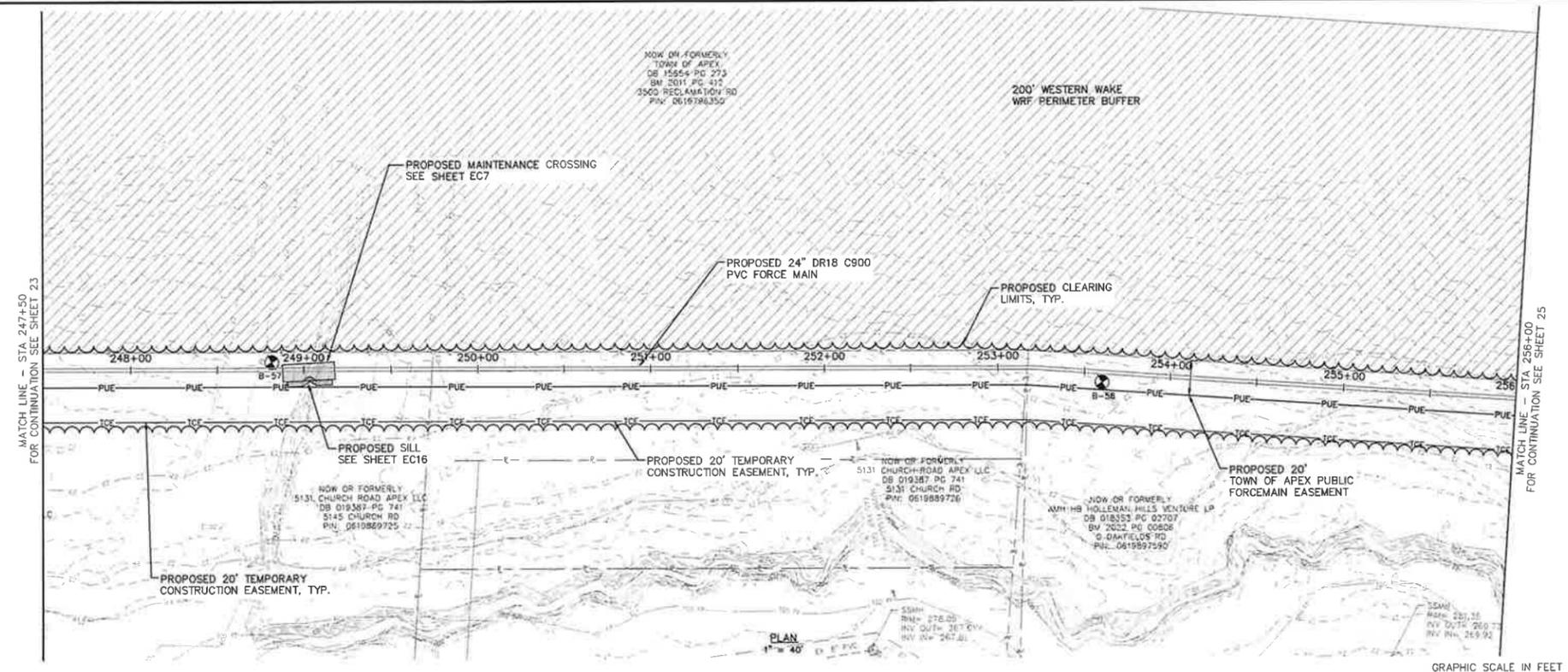
WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

FORCE MAIN PLAN AND PROFILE
STA 239+50 TO STA 247+50

CJS PROJ #:	100-005
DATE:	07-05-2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

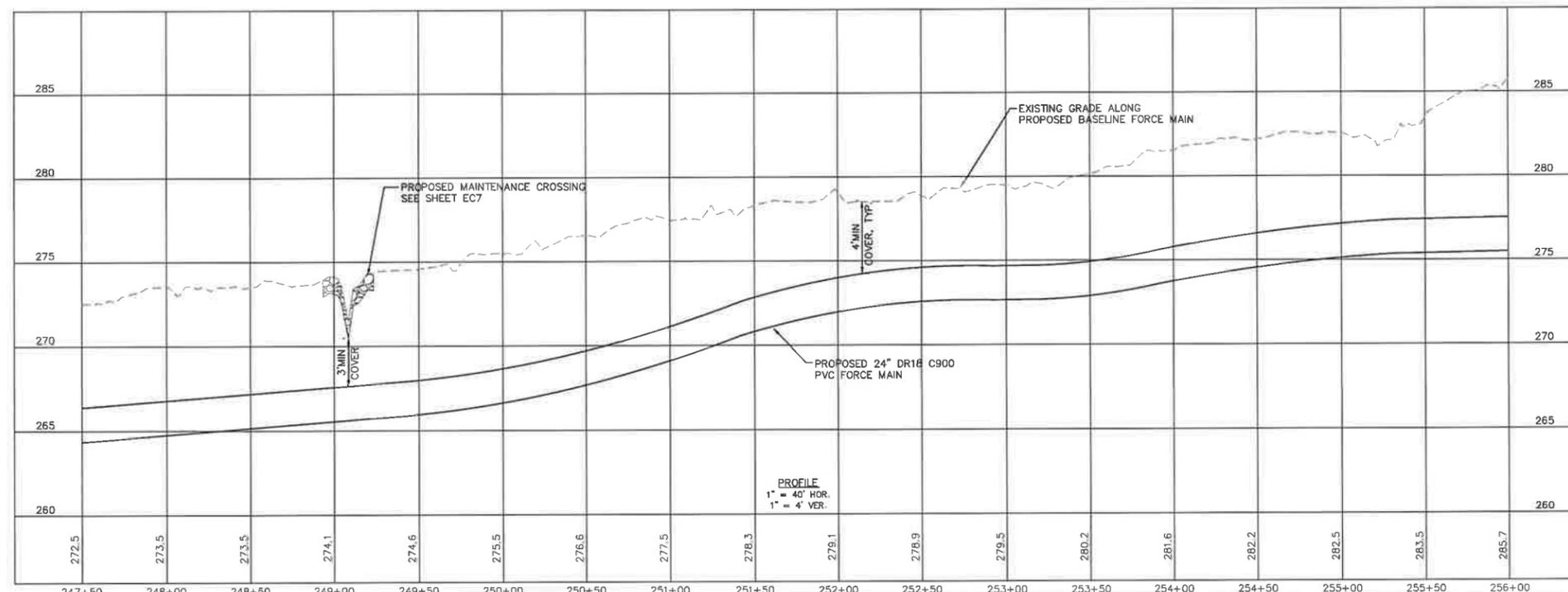
C21
 SHEET NUMBER
23 OF 60

Notated By: J. Stevens, Layout: 24 FORCE MAIN PLAN AND PROFILE, STA 247+50 TO STA 256+00, July 03, 2024, 11:26:28am, S:\VDO Hazen and Sawyer\100-005 Apex Big Branch 2 PWS\00 - Drawings\Plan Sheets\C-311-BIG BRANCH-4.dwg



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Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	



No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	



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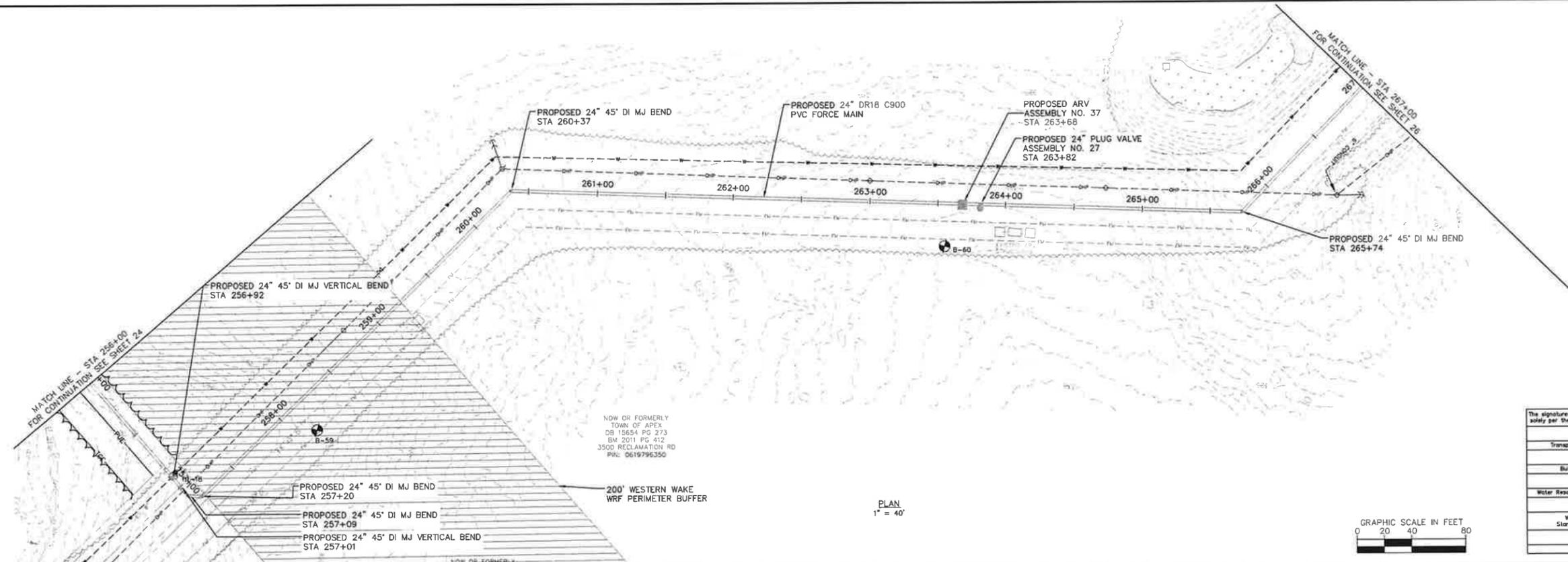
WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

FORCE MAIN PLAN AND PROFILE
STA 247+50 TO STA 256+00

CJS PROJ #:	100-005
DATE:	07-05-2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

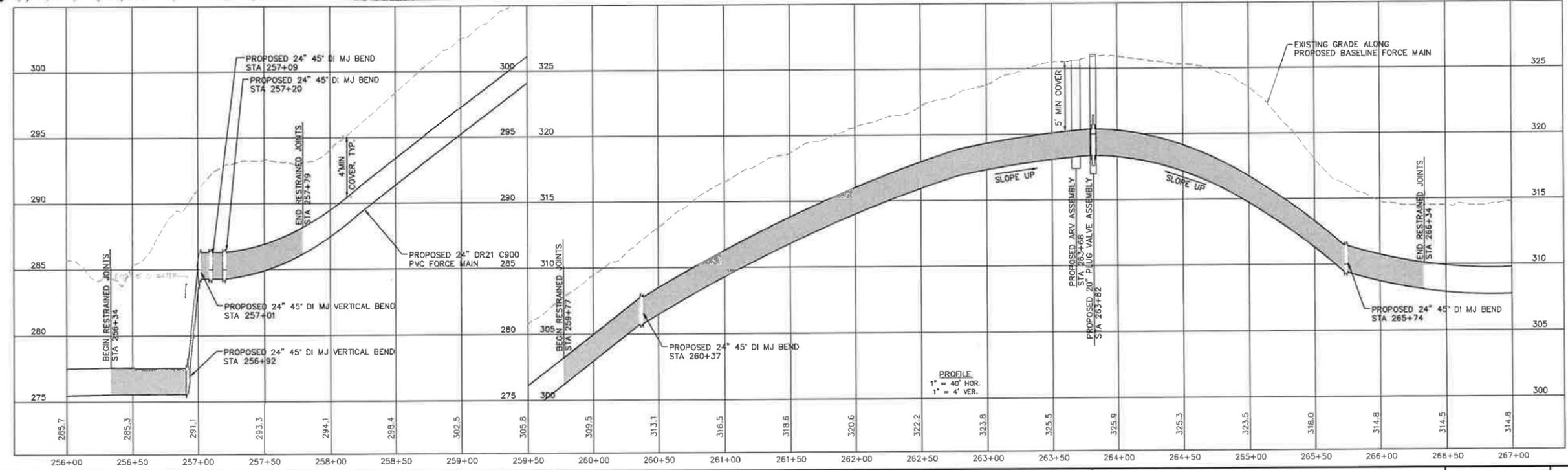
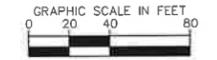
C22
 SHEET NUMBER
24 OF 60

Project By: J. Seeger, Layout 25 FORCE MAIN PLAN AND PROFILE STA 256+00 TO STA 267+00 TO July 03, 2024 11:26:41am \$:\100 Hazen and Sawyer\100-005-Ape-Big Branch 2 PWS\RD - Drawings\Plan Sheets\C-911-BIG BRANCH-4.dwg



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Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and SAEC	Parks, Recreation & Cultural Resources
Electric	



No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	



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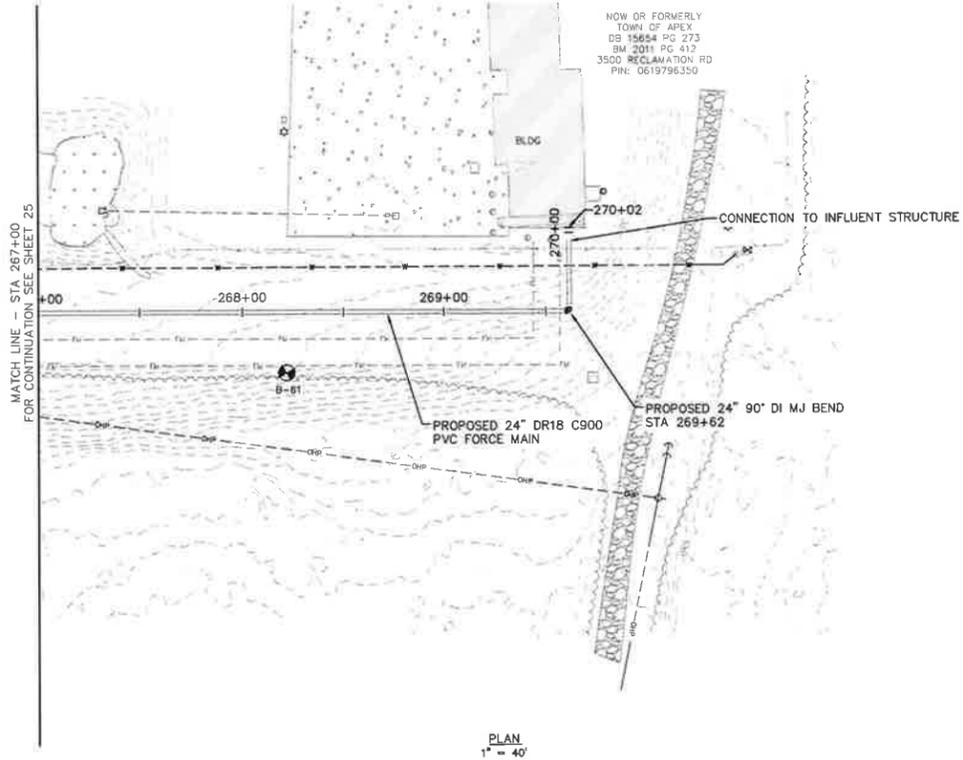
WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

FORCE MAIN PLAN AND PROFILE
STA 256+00 TO STA 267+00

CJS PROJ #:	100-005
DATE:	07-05-2024
SCALE:	1" = 20'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

C23
 SHEET NUMBER
25 OF 60

Plotted By: J. Seavers - Layout 20 PLAN AND PROFILE STA TO END July 03, 2024 02:23:17pm S:\100 Hazen and Sawyer\100-005_Alex_Big Branch 2_PSS\RD - Drawings\Plan Sheets\G-041-BIG BRANCH-4.dwg

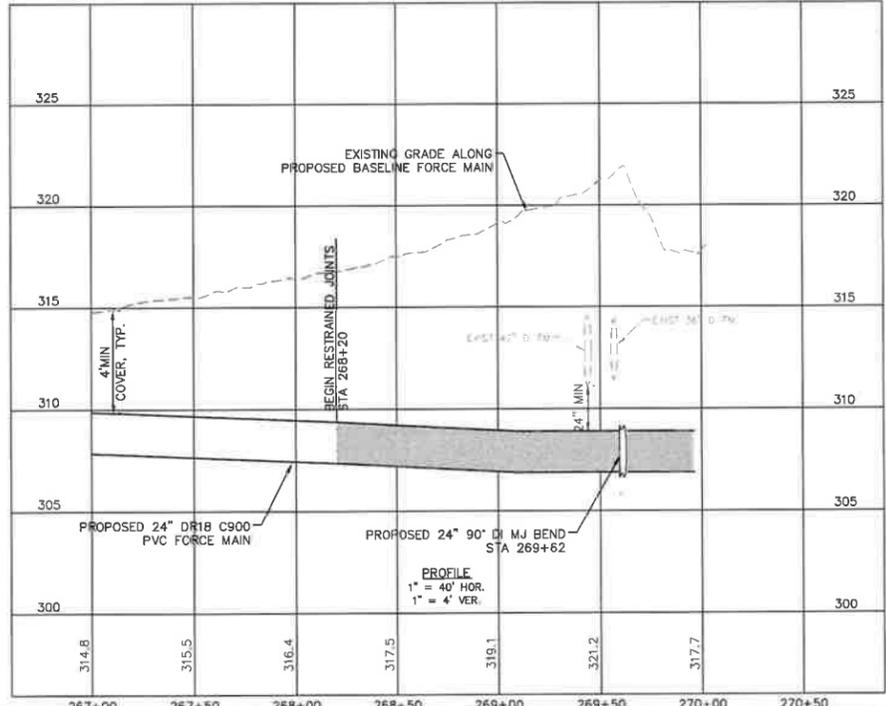


PLAN
1" = 40'



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Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	



PROFILE
1" = 40' HOR.
1" = 4' VER.

No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	

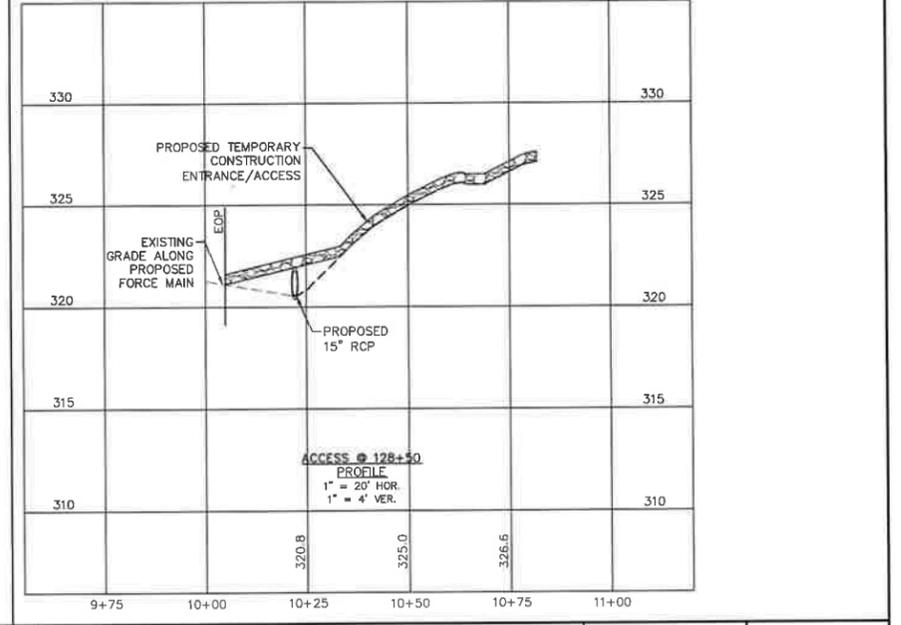
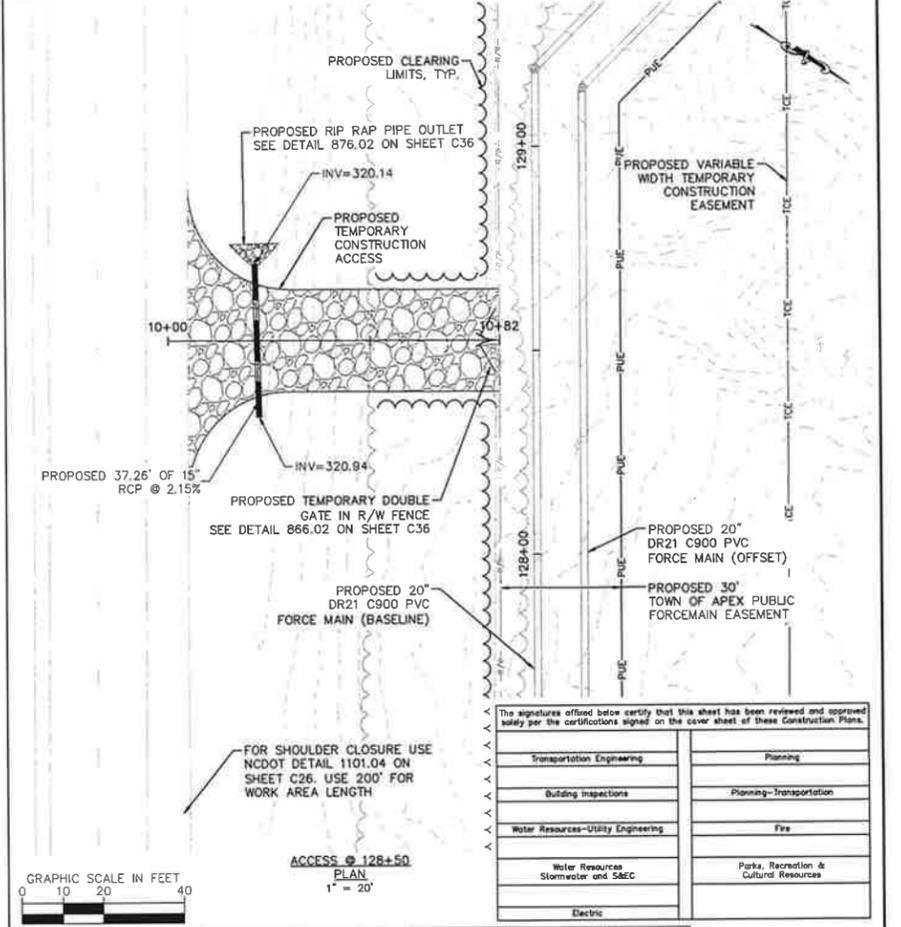
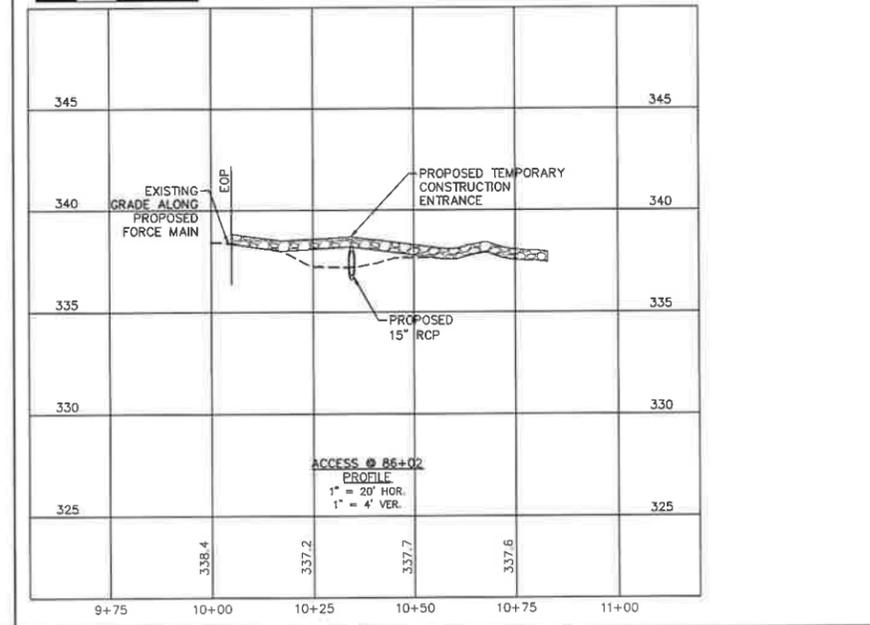
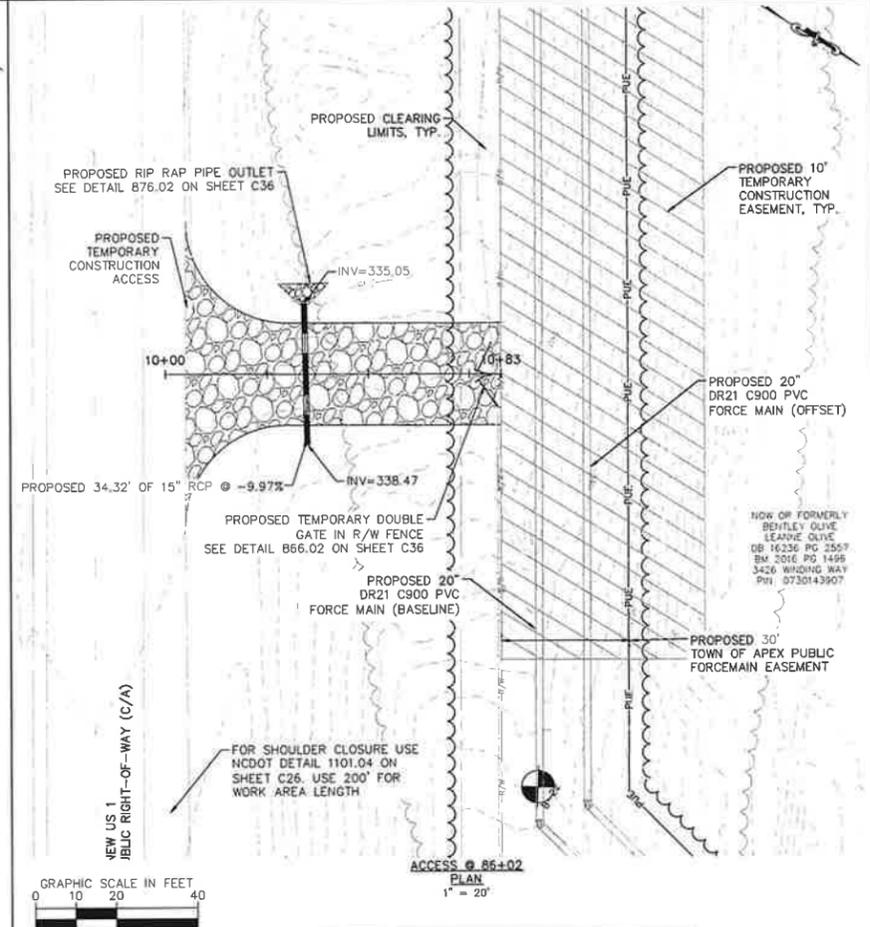
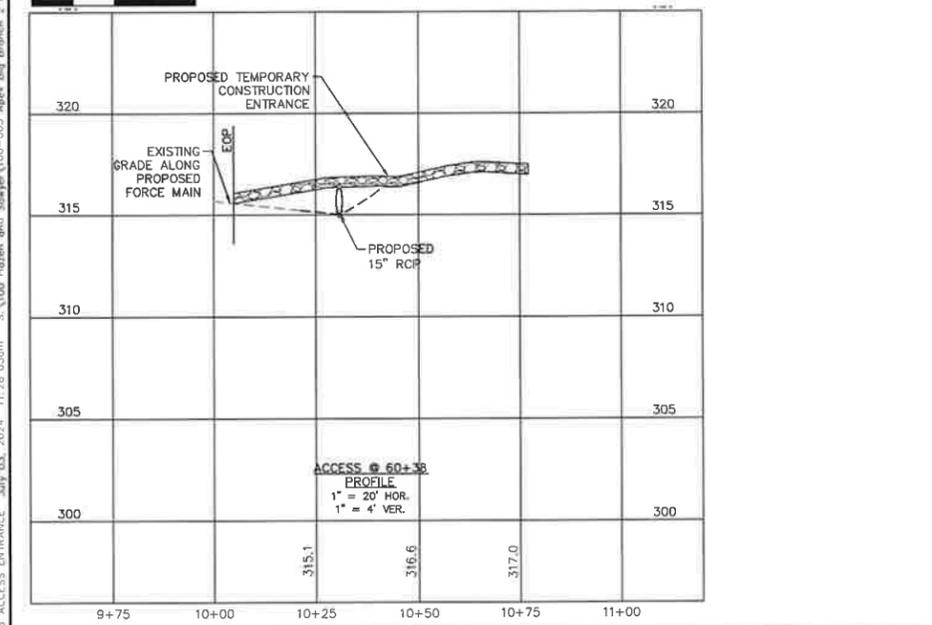
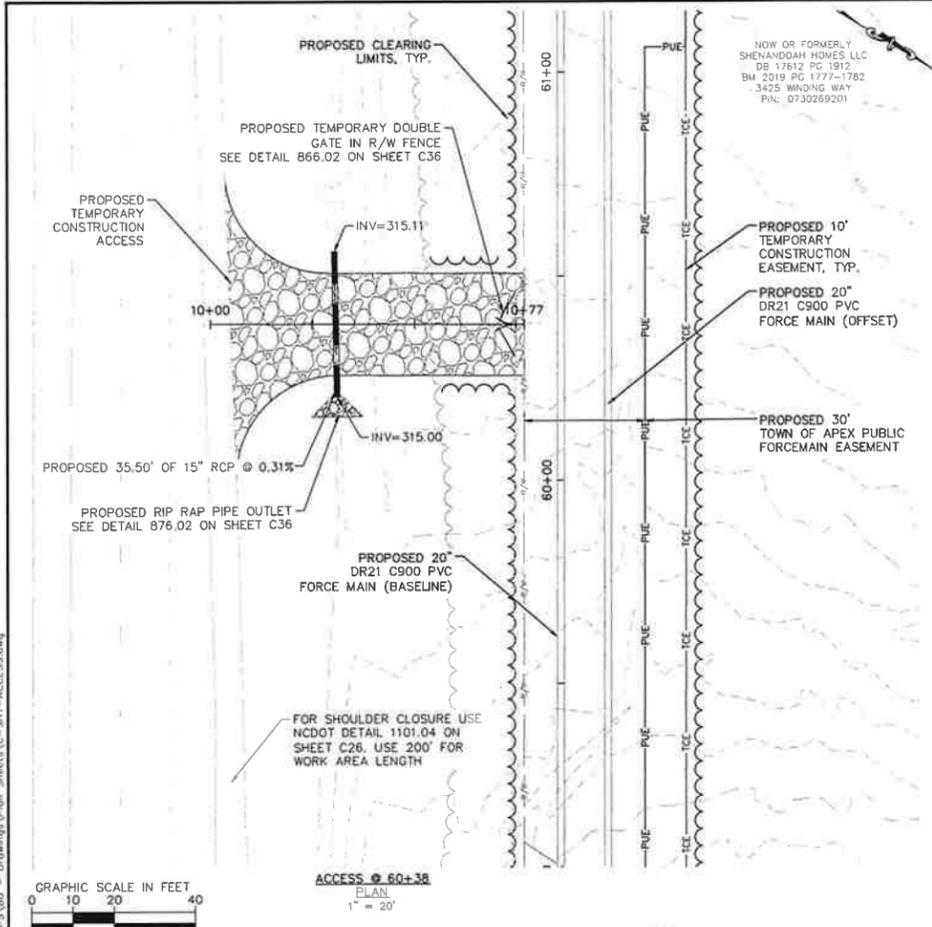


WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

FORCE MAIN PLAN AND PROFILE
STA 267+00 TO END

CJS PROJ #:	100-005	C24
DATE:	07-05-2024	
SCALE:	1" = 40'	
PROJECT ENGINEER:	SDL	
DESIGNED BY:	JUS	
DRAWN BY:	JUS	SHEET NUMBER 26 OF 60
CHECKED BY:	SDL	

Printed By: J. Speers Layout 26 ACCESS ENTRANCE July 01, 2024 11:28 0.30m S:\100 Hazen and Sawyer\100-000 Apex Big Branch 2 PWS\B0 - Drawings\Plan Sheets\C-SHT-ACCESS.dwg



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Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	



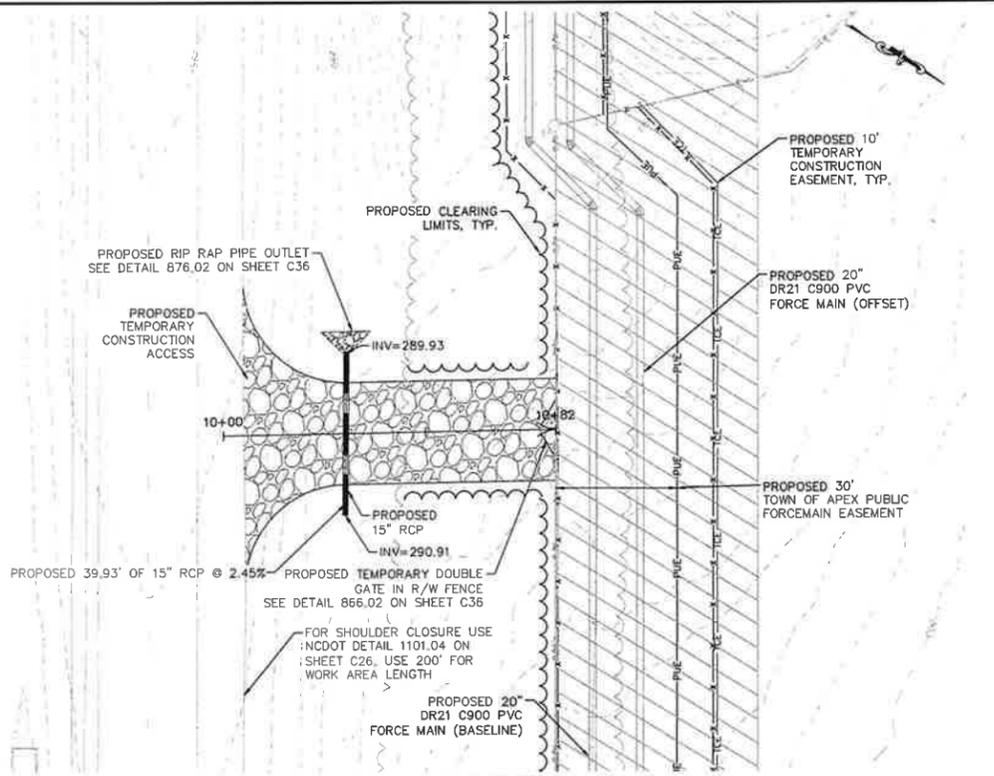
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WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

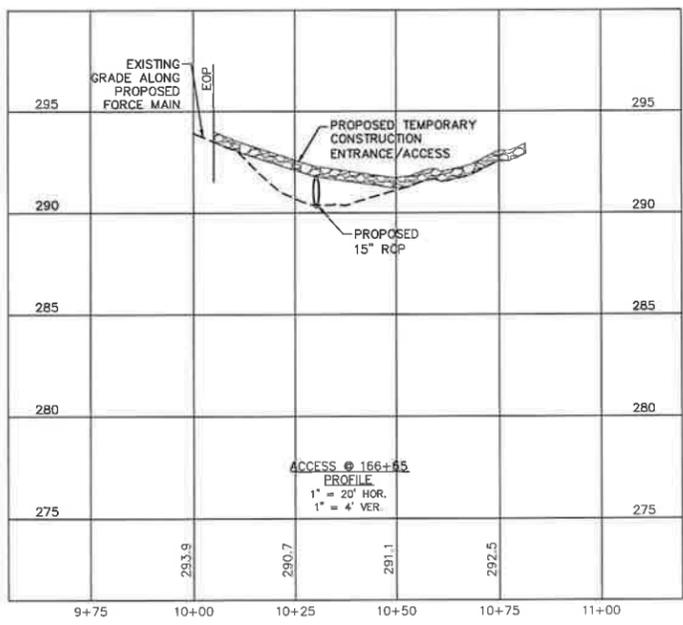
US 1 TEMPORARY ACCESS
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DESIGNED BY:	JUS	
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CHECKED BY:	SDL	

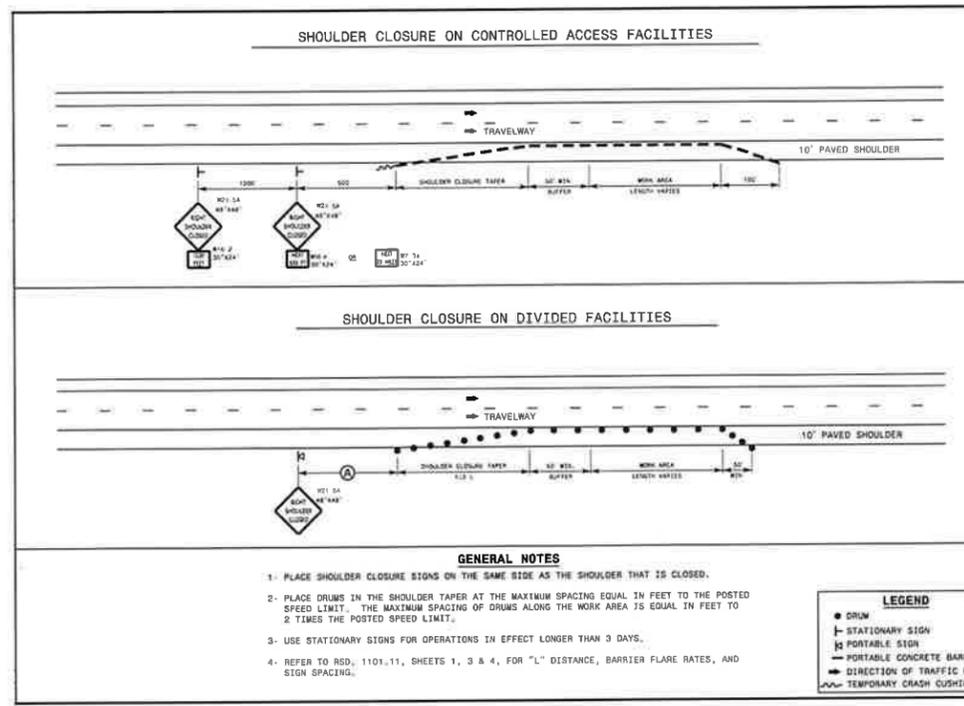
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ACCESS @ 166+65
PLAN
1" = 20'



ACCESS @ 166+65
PROFILE
1" = 20' HOR.
1" = 4' VER.

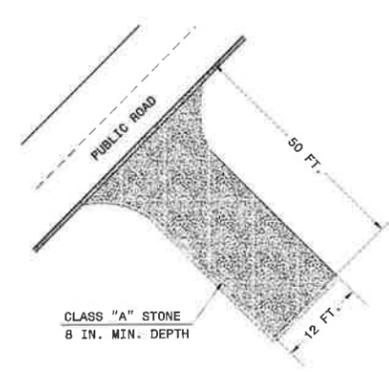


STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.
 ROADWAY STANDARD DRAWING FOR
TEMPORARY SHOULDER CLOSURES
 SHEET 1 OF 1
1101.04

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Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	IT&E
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.
 ENGLISH STANDARD DRAWING FOR
GRAVEL CONSTRUCTION ENTRANCE
 SHEET 1 OF 1
1607.01



- NOTES:**
- PROVIDE TURNING RADIUS SUFFICIENT TO ACCOMMODATE LARGE TRUCKS.
 - LOCATE ENTRANCE(S) TO PROVIDE FOR UTILIZATION BY ALL CONSTRUCTION VEHICLES.
 - MUST BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR DIRECT FLOW OF MUD ONTO STREETS. PERIODIC TOPDRESSING WITH STONE WILL BE NECESSARY.
 - ANY MATERIAL TRACKED ONTO THE ROADWAY MUST BE CLEANED UP IMMEDIATELY.
 - LOCATE GRAVEL CONSTRUCTION ENTRANCE AT ALL POINTS OF INGRESS AND EGRESS UNTIL SITE IS STABILIZED. PROVIDE FREQUENT CHECKS OF THE DEVICE AND TIMELY MAINTENANCE.
 - NUMBER AND LOCATION OF CONSTRUCTION ENTRANCES TO BE DETERMINED BY THE ENGINEER.
 - USE CLASS 'A' STONE OR OTHER COARSE AGGREGATE APPROVED BY THE ENGINEER.

NOTE: PLACE FILTER FABRIC BENEATH STONE

STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.
 ENGLISH STANDARD DRAWING FOR
GRAVEL CONSTRUCTION ENTRANCE
 SHEET 1 OF 1
1607.01

No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	



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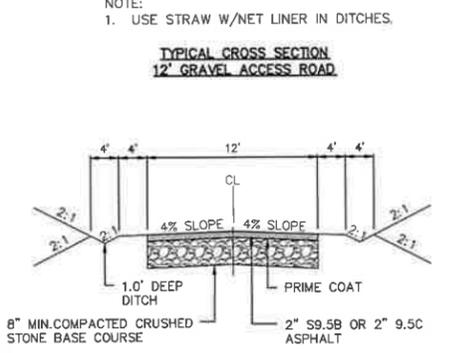
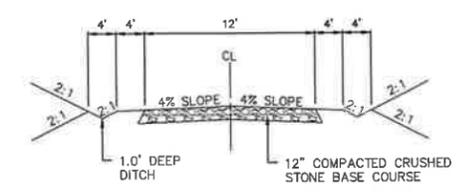
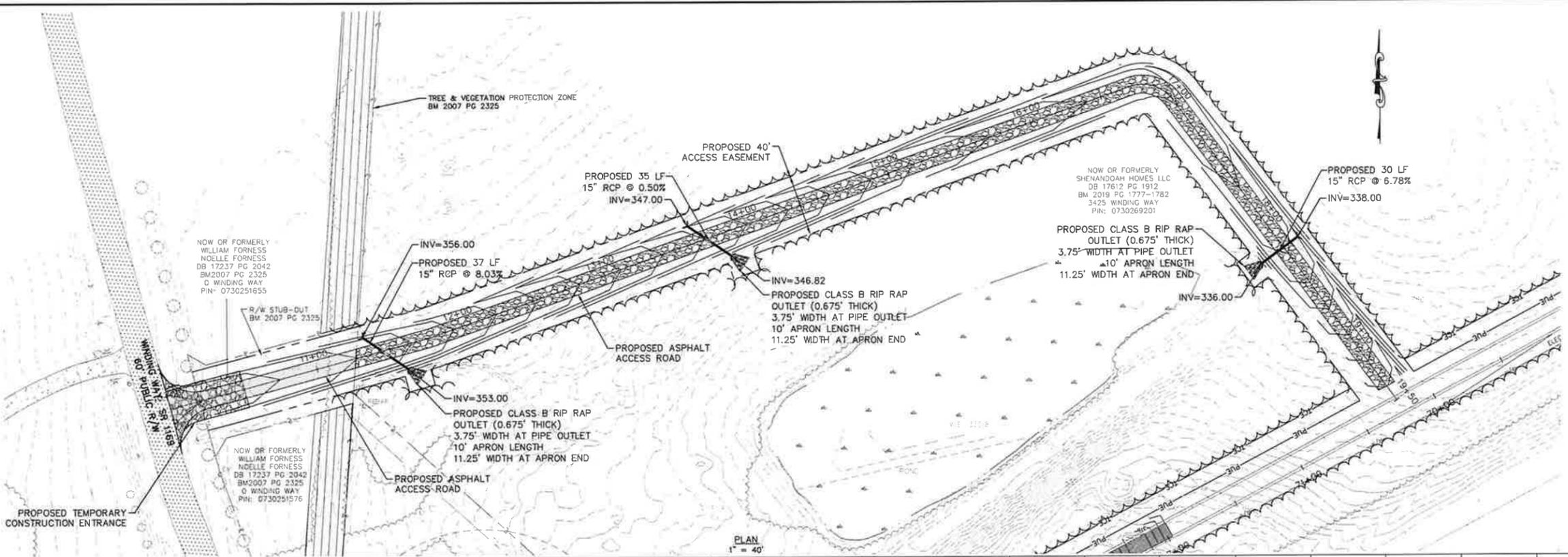
NC LICENSE #P-1611 WWW.CJS-CONVEYANCE.COM

**WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN**

**US 1 TEMPORARY ACCESS
ENTRANCE**

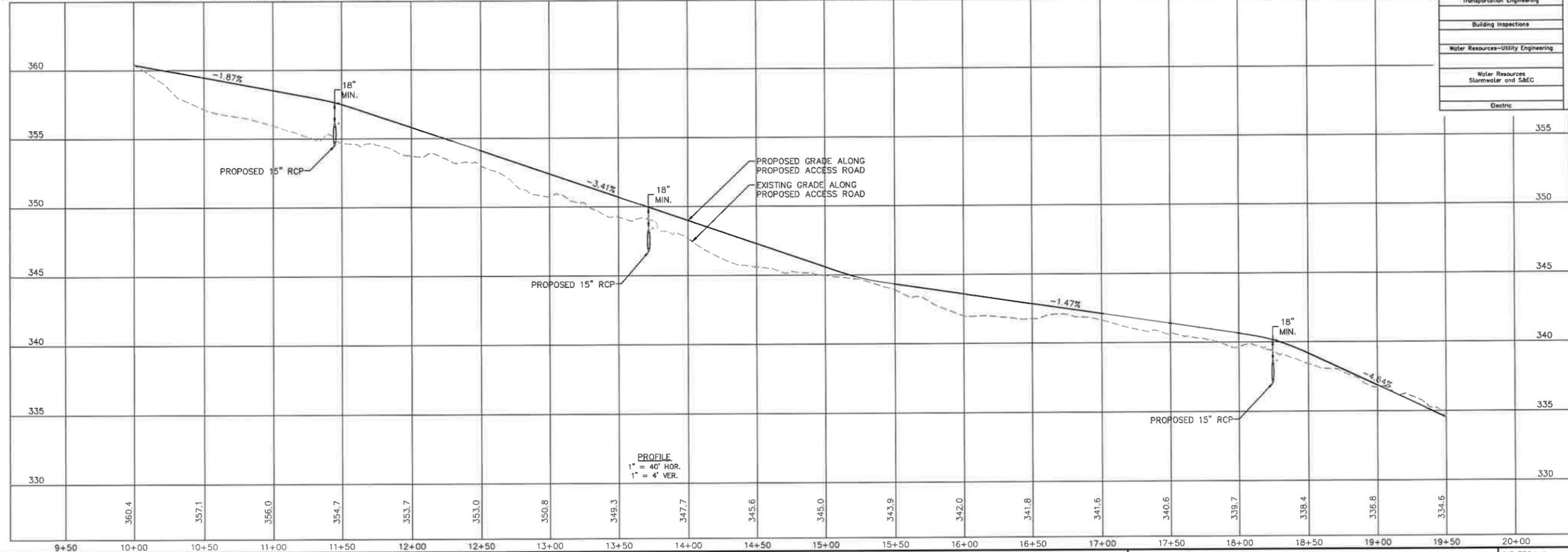
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DATE:	07-05-2024	
SCALE:	1" = 20'	
PROJECT ENGINEER:	SDL	
DESIGNED BY:	JJS	
DRAWN BY:	JJS	SHEET NUMBER 28 OF 60
CHECKED BY:	SDL	

Plotted By: J. Speers Layout: 28 ACCESS ROAD July 03, 2024 01:06:33pm S:\100 Hazen and Sawyer\100-005 Apex Big Branch 2 PWS\28 - Drawings\Plan Sheets\28 ACCESS ROAD.dwg



The signatures listed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	



No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	

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CARY, NC 27511
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**WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN**

ACCESS ROAD

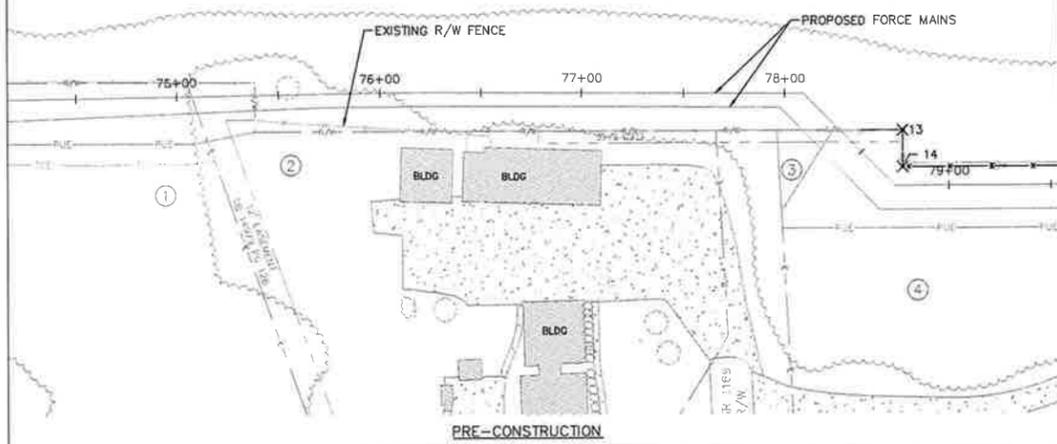
CJS PROJ. #: 100-005
DATE: 07-05-2024
SCALE: 1" = 40'
PROJECT ENGINEER: SDL
DESIGNED BY: JUS
DRAWN BY: JUS
CHECKED BY: SDL

C27

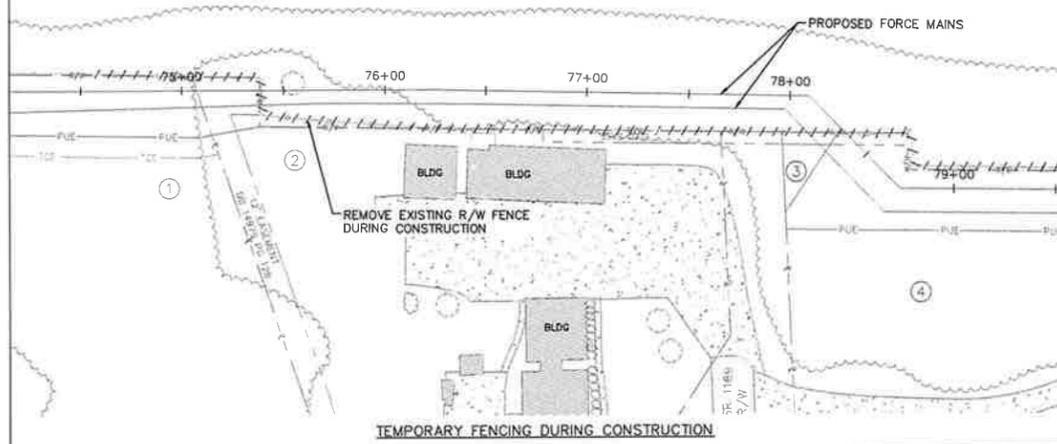
SHEET NUMBER
29 OF 60

Plotted By: J. Speers Layout: FENCE DETAIL - MOORE July 03, 2024 11:29:52am S:\100 Hazen and Sawyer\100-005 Apex Big Branch 2 PWS\60 - Drawings\Plan Sheets\C-SP1-FENCE.dwg

PROPERTY TABLE			
PROPERTY NUMBER	PROPERTY NUMBER	PROPERTY NUMBER	PROPERTY NUMBER
1	SHENANDOAH HOMES LLC	3425 WINDING WAY	730269201
2	GREGORY MOORE	3433 WINDING WAY	730252479
3	SHENANDOAH HOMES LLC	0 WINDING WAY	730252219
4	BENTLEY OLIVE	3426 WINDING WAY	730143907



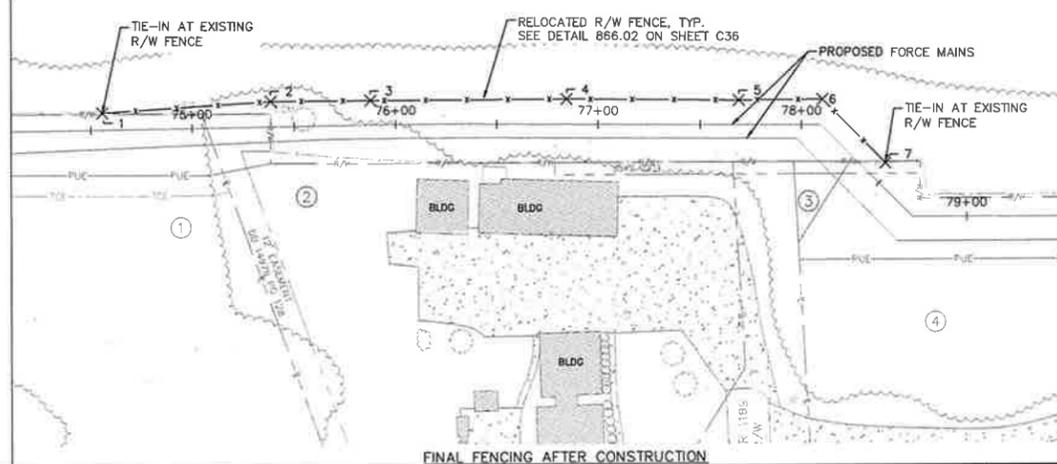
- NOTES:**
- R/W FENCE SHALL BE INSTALLED PER NCDOT DETAIL 866.02 ON SHEET C36,
 - TEMPORARY FENCES SHALL BE INSTALLED PER DETAIL ON SHEET C36,
 - ALL FENCING OTHER THAN R/W AND TEMPORARY FENCING SHALL MATCH EXISTING FENCING FOR EACH PARTICULAR PROPERTY.



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Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

FINAL FENCING POINT TABLE			
Point #	Northing	Eastng	Description
1	705448.42	2032537.72	TIE-IN AT R/W FENCE
2	705400.61	2032469.83	RELOCATED R/W FENCE
3	705374.81	2032428.20	RELOCATED R/W FENCE
4	705323.88	2032345.67	RELOCATED R/W FENCE
5	705280.65	2032273.14	RELOCATED R/W FENCE
6	705258.76	2032237.85	RELOCATED R/W FENCE
7	705269.30	2032195.02	TIE-IN AT R/W FENCE



LEGEND	EXISTING	PROPOSED
NCDOT R/W FENCE		
TEMPORARY WOVEN WIRE NO-CLIMB FENCE		
PERMANENT WOVEN WIRE NO-CLIMB FENCE		
WIRE FENCE		
PVC 3-RAIL FENCE		
WOOD 3-RAIL FENCE		
WOOD PRIVACY FENCE		



No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	



WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

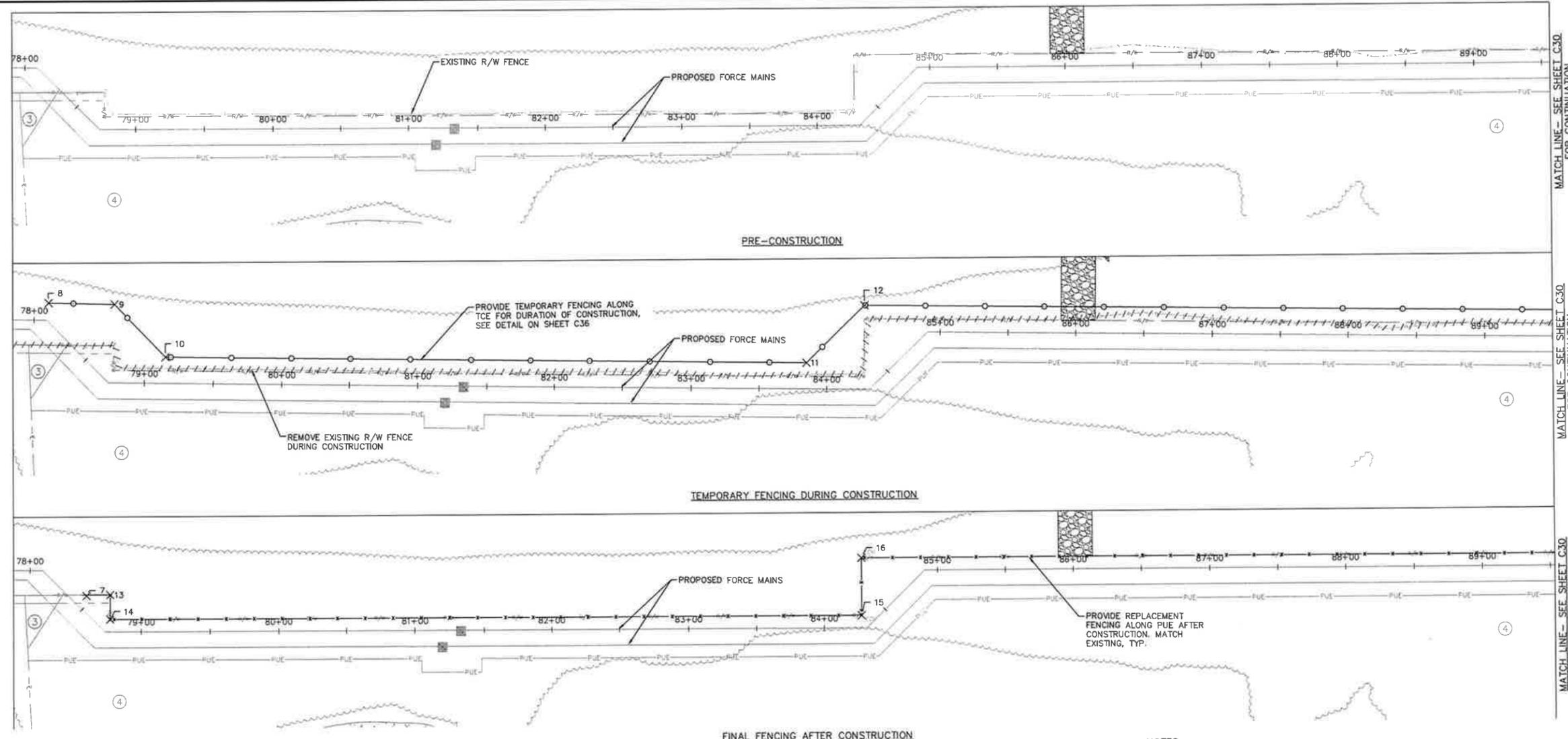
FENCE DETAIL- MOORE

CJS PROJ #	100-005
DATE	07-05-2024
SCALE	1" = 40'
PROJECT ENGINEER	SDL
DESIGNED BY	JJS
DRAWN BY	JJS
CHECKED BY	SDL

C28

SHEET NUMBER
30 OF 60

Plotted by J Spawers - Layout/FENCE DETAIL - OLIVE 1 - July 03, 2024 11:30:13am. S:\100 Hazen and Spawer\100-005 Apex Big Branch 2 PWS\MO - Drainage\Plan Sheets\C-SHT-FENCE.dwg



MATCH LINE - SEE SHEET C30 FOR CONTINUATION
 MATCH LINE - SEE SHEET C30 FOR CONTINUATION
 MATCH LINE - SEE SHEET C30 FOR CONTINUATION

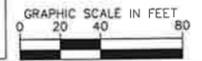
TEMPORARY FENCING POINT TABLE			
Point #	Northing	Eastng	Description
8	705258.76	2032237.85	BEGIN TEMPORARY FENCE
9	705233.91	2032196.35	TEMPORARY FENCE
10	705246.75	2032144.20	TEMPORARY FENCE
11	705001.91	2031743.37	TEMPORARY FENCE
12	704943.93	2031729.37	TEMPORARY FENCE

FINAL FENCING POINT TABLE			
Point #	Northing	Eastng	Description
7	705269.30	2032195.02	TIE-IN AT R/W FENCE
13	705259.77	2032180.87	R/W FENCE
14	705275.13	2032171.48	R/W FENCE
15	704988.43	2031702.12	R/W FENCE
16	704952.38	2031724.14	R/W FENCE

PROPERTY TABLE			
PROPERTY NUMBER	PROPERTY OWNER	PROPERTY ADDRESS	PIN NUMBER
3	SHENANDOAH HOMES LLC	0 WINDING WAY	730252219
4	BENTLEY OLIVE	3426 WINDING WAY	730143907

- NOTES:**
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LEGEND	EXISTING	PROPOSED
NCDOT R/W FENCE		
TEMPORARY WOVEN WIRE NO-CLIMB FENCE		
PERMANENT WOVEN WIRE NO-CLIMB FENCE		
WIRE FENCE		
PVC 3-RAIL FENCE		
WOOD 3-RAIL FENCE		
WOOD PRIVACY FENCE		



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Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and SAEC	Parks, Recreation & Cultural Resources
Electric	

No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	



WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

FENCE DETAIL- OLIVE 1

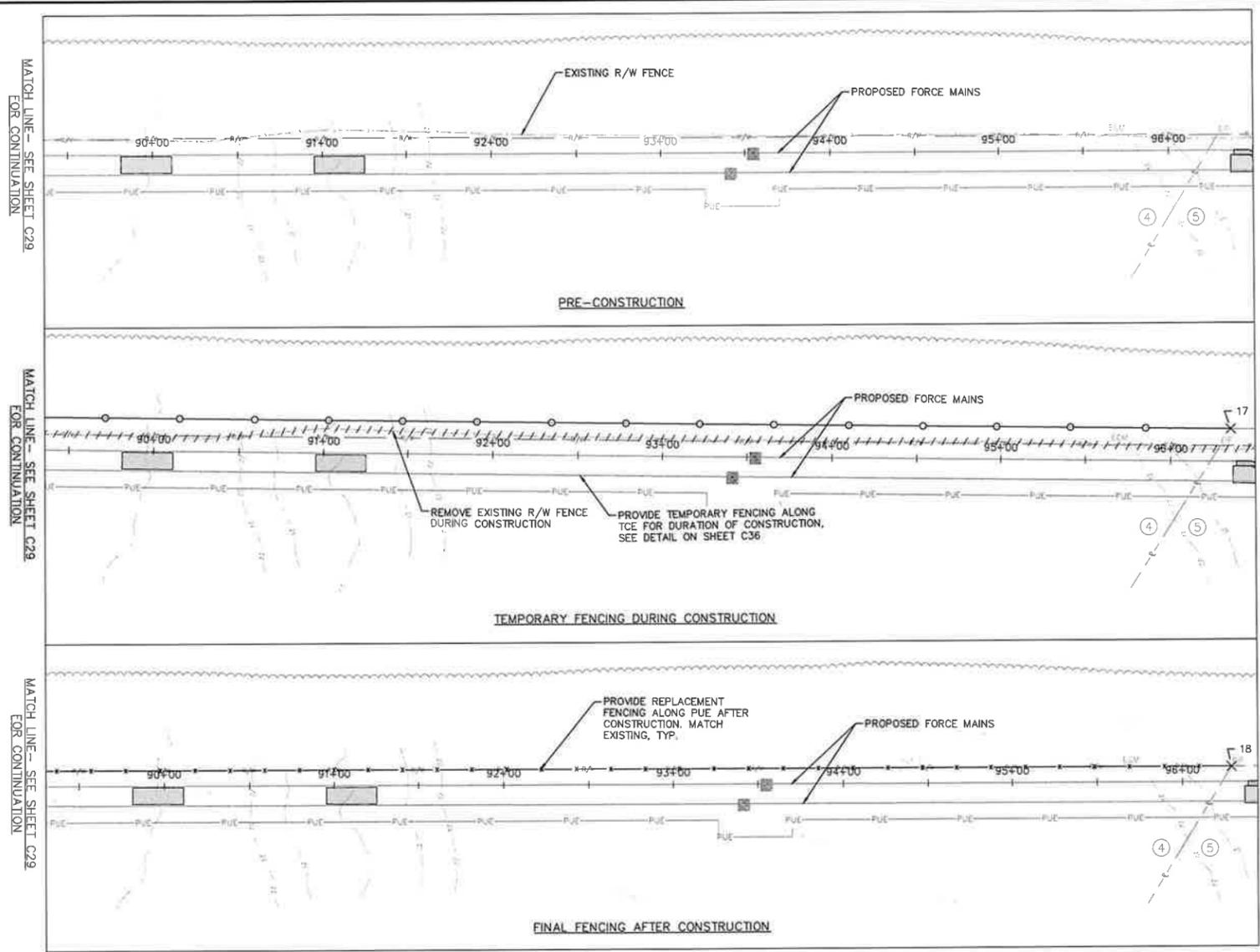
CJS PROJ #	100-005
DATE	07-05-2024
SCALE	1" = 40'
PROJECT ENGINEER	SDL
DESIGNED BY	JUS
DRAWN BY	JUS
CHECKED BY	SDL

C29
 SHEET NUMBER
31 OF 60

Plotted By: J. Seavers, Layout Fence Detail - Olive 2, July 03, 2024, 11:30:35am, S:\100 Hazen and Sawyer\100-005 Apex Big Branch 2 PWS\00 - Drawings\Plan Sheets\C-301-FENCE.dwg

TEMPORARY FENCING POINT TABLE			
Point #	Northing	Easting	Description
17	704323.28	2030713.21	END TEMPORARY FENCE

FINAL FENCING POINT TABLE			
Point #	Northing	Easting	Description
18	704335.03	2030713.26	TIE-IN R/W FENCE TO NEW R/W FENCE



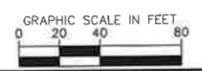
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Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and SAEC	Parks, Recreation & Cultural Resources
Electric	

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PROPERTY TABLE			
PROPERTY NUMBER	PROPERTY OWNER	PROPERTY ADDRESS	PIN NUMBER
4	BENTLEY OLIVE	3426 WINDING WAY	730143907
5	JEFFREY HASTINGS	3601 FRIENDSHIP RD	730043464

LEGEND	EXISTING	PROPOSED
NCDOT R/W FENCE		
TEMPORARY WOVEN WIRE NO-CLIMB FENCE		
PERMANENT WOVEN WIRE NO-CLIMB FENCE		
WIRE FENCE		
PVC 3-RAIL FENCE		
WOOD 3-RAIL FENCE		
WOOD PRIVACY FENCE		



No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	



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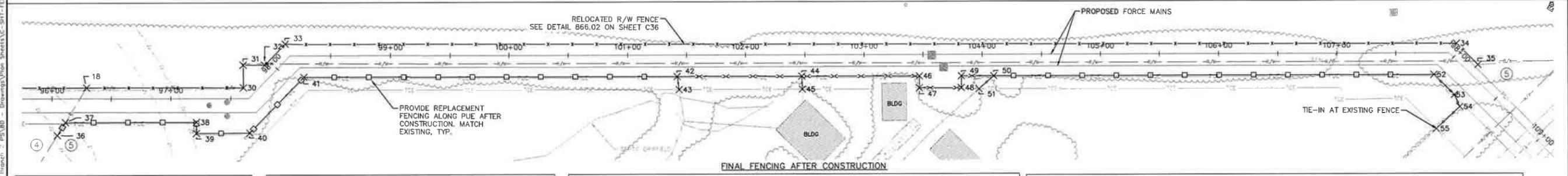
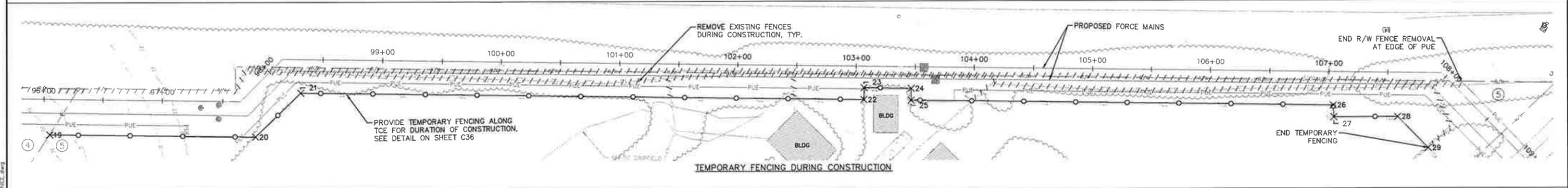
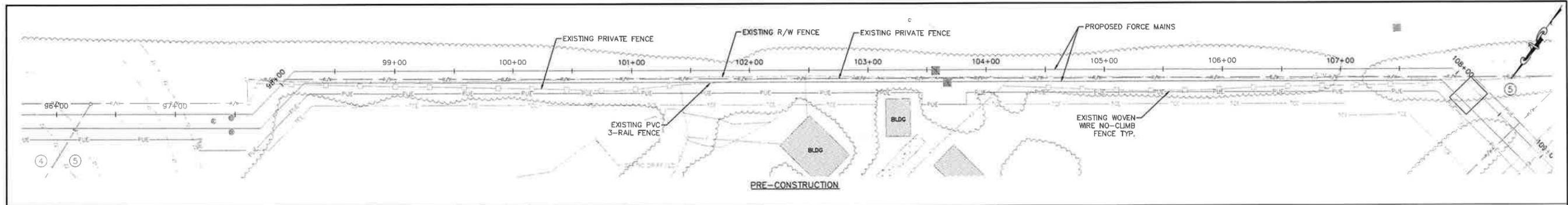
WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

FENCE DETAIL- OLIVE 2

CJS PROJ #: 100-005
 DATE: 07-05-2024
 SCALE: 1" = 40'
 PROJECT ENGINEER: SDL
 DESIGNED BY: JJS
 DRAWN BY: JJS
 CHECKED BY: SDL

C30

SHEET NUMBER
32 OF 60



Point #	Northing	Easting	Description
19	704380.94	2030713.20	BEGIN TEMPORARY FENCE
20	704290.51	2030565.80	TEMPORARY FENCE
21	704238.62	2030552.86	TEMPORARY FENCE
22	703990.58	2030147.36	TEMPORARY FENCE
23	703982.07	2030152.63	TEMPORARY FENCE
24	703961.20	2030118.50	TEMPORARY FENCE
25	703969.73	2030113.28	TEMPORARY FENCE
26	703783.41	2029808.47	TEMPORARY FENCE
27	703791.60	2029802.76	TEMPORARY FENCE
28	703762.64	2029757.01	TEMPORARY FENCE
29	703771.26	2029721.17	END TEMPORARY FENCE

Point #	Northing	Easting	Description
18	704335.03	2030713.26	TIE-IN R/W FENCE TO NEW R/W FENCE
30	704266.49	2030601.08	TIE-IN AT EXISTING R/W FENCE
31	704250.28	2030611.33	RELOCATED R/W FENCE
32	704240.76	2030595.54	RELOCATED R/W FENCE
33	704216.38	2030589.91	RELOCATED R/W FENCE
34	703701.77	2029744.67	RELOCATED R/W FENCE
35	703707.90	2029719.97	TIE-IN TO EXISTING R/W FENCE

Point #	Northing	Easting	Description
36	704382.38	2030713.45	BEGIN WOVEN WIRE NO-CLIMB FENCE
37	704369.45	2030713.39	WOVEN WIRE NO-CLIMB FENCE
38	704312.07	2030619.57	WOVEN WIRE NO-CLIMB FENCE
39	704320.13	2030614.65	WOVEN WIRE NO-CLIMB FENCE
40	704296.54	2030576.48	WOVEN WIRE NO-CLIMB FENCE
41	704232.12	2030561.68	WOVEN WIRE NO-CLIMB FENCE
42	704068.10	2030293.24	END WOVEN WIRE NO-CLIMB FENCE, BEGIN PVC 3-RAIL AND WOOD 3-RAIL FENCES
43	704076.66	2030285.96	TIE-IN WOOD 3-RAIL FENCE TO EXISTING WOOD 3-RAIL FENCE
44	704013.03	2030203.27	TIE-IN TO EXISTING WOOD 3-RAIL FENCE
45	704022.17	2030197.08	TIE-IN WOOD 3-RAIL FENCE TO EXISTING WOOD 3-RAIL FENCE
46	703961.20	2030118.50	PVC 3-RAIL FENCE

Point #	Northing	Easting	Description
47	703969.73	2030113.28	PVC 3-RAIL FENCE
48	703951.14	2030082.89	PVC 3-RAIL FENCE
49	703942.61	2030088.11	PVC 3-RAIL FENCE
50	703928.34	2030064.77	END PVC 3-RAIL FENCE, BEGIN WOVEN WIRE NO-CLIMB FENCE, TIE-IN TO WOOD 3-RAIL FENCE
51	703944.16	2030069.56	TIE-IN WOOD 3-RAIL FENCE TO EXISTING WOOD 3-RAIL FENCE
52	703734.15	2029747.03	END WOVEN WIRE NO-CLIMB FENCE, BEGIN WOOD 3-RAIL FENCE
53	703739.79	2029723.62	WOOD 3-RAIL FENCE
54	703746.29	2029714.47	WOOD 3-RAIL FENCE
55	703772.23	2029721.43	TIE-IN WOOD 3-RAIL FENCE TO EXISTING WOOD 3-RAIL FENCE

NOTES:

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Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

PROPERTY NUMBER	PROPERTY OWNER	PROPERTY ADDRESS	PIN NUMBER
4	BENTLEY OLIVE	3426 WINDING WAY	730143907
5	JEFFREY HASTINGS	3601 FRIENDSHIP RD	730043464

LEGEND	EXISTING	PROPOSED
NCDOT R/W FENCE		
TEMPORARY WOVEN WIRE NO-CLIMB FENCE		
PERMANENT WOVEN WIRE NO-CLIMB FENCE		
WIRE FENCE		
PVC 3-RAIL FENCE		
WOOD 3-RAIL FENCE		
WOOD PRIVACY FENCE		

GRAPHIC SCALE IN FEET
0 20 40 80

No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	

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WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

FENCE DETAIL- HASTINGS

CJS PROJ # 100-005
DATE: 07-05-2024
SCALE: 1" = 40'
PROJECT ENGINEER: SDL
DESIGNED BY: JUS
DRAWN BY: JUS
CHECKED BY: SDL

C31

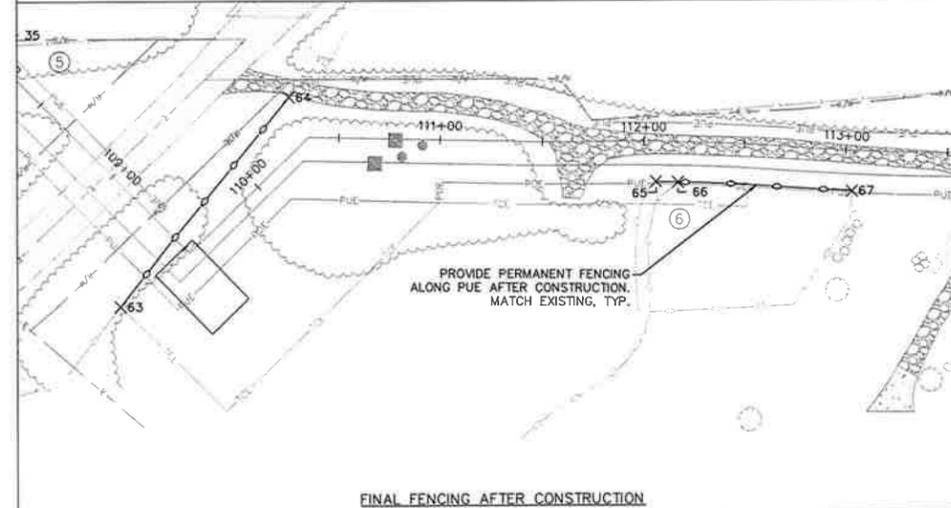
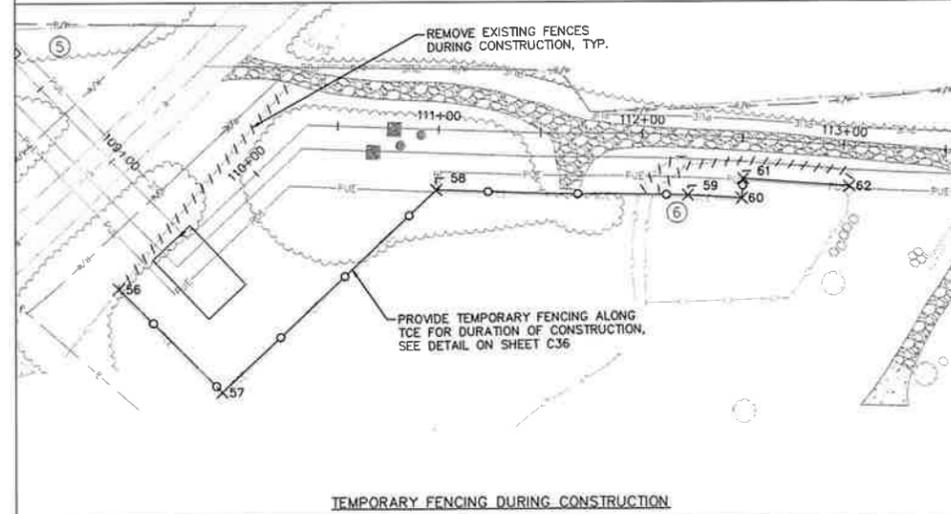
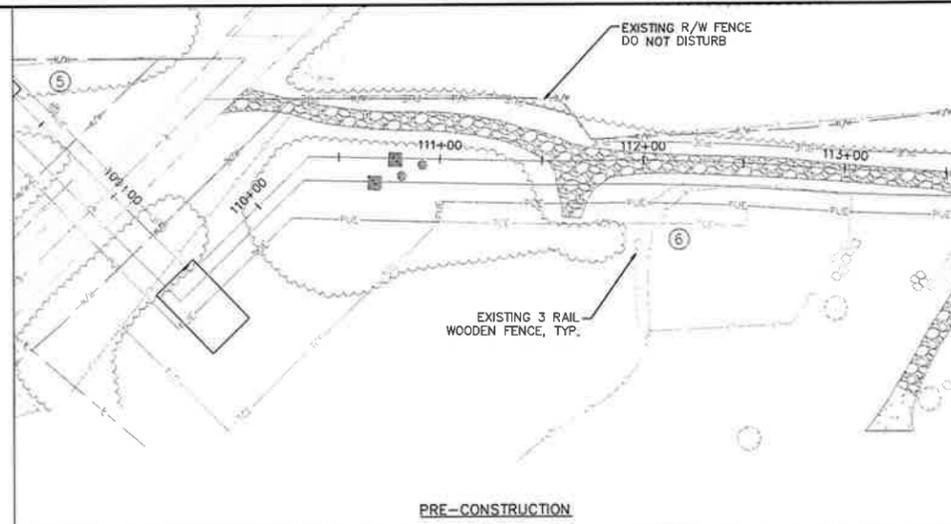
SHEET NUMBER
33 OF 60

Plotted By: J. Sanchez, Layout: FENCE DETAIL - HASTINGS.dwg, July 03, 2024, 11:31:02am, S:\100\100m\100-005\Apx-Big Branch 2 PUMP Station\Drawings\Plan Sheets\C31-FENCE.dwg

PROPERTY TABLE			
PROPERTY NUMBER	PROPERTY OWNER	PROPERTY ADDRESS	PIN NUMBER
5	JEFFREY HASTINGS	3601 FRIENDSHIP RD	730043464
6	THOMAS BLAND	3724 FRIENDSHIP RD	720931641

TEMPORARY FENCING POINT TABLE			
Point #	Northing	Eastng	Description
56	703788.35	2029606.80	BEGIN TEMPORARY FENCE
57	703804.67	2029536.80	TEMPORARY FENCE
58	703663.64	2029500.11	TEMPORARY FENCE
59	703600.10	2029393.84	TEMPORARY FENCE
60	703587.21	2029370.32	TEMPORARY FENCE
61	703578.62	2029374.78	TEMPORARY FENCE
62	703554.14	2029328.47	END TEMPORARY FENCE

FINAL FENCING POINT TABLE			
Point #	Northing	Eastng	Description
63	703789.35	2029606.91	TIE-IN WOOD 3-RAIL FENCE TO EXISTING WOOD 3-RAIL FENCE
64	703658.63	2029589.76	END WOOD 3-RAIL FENCE
65	703600.31	2029413.74	TIE-IN WOOD 3-RAIL FENCE TO EXISTING WOOD 3-RAIL FENCE
66	703594.90	2029404.22	TIE-IN WOOD 3-RAIL FENCE TO EXISTING WOOD 3-RAIL FENCE
67	703554.14	2029328.48	TIE-IN WOOD 3-RAIL FENCE TO EXISTING WOOD 3-RAIL FENCE



- NOTES:
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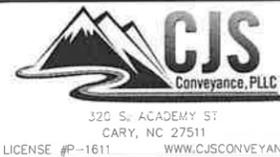
Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and SMEC	Parks, Recreation & Cultural Resources
Electric	

LEGEND	EXISTING	PROPOSED
NCDOT R/W FENCE		
TEMPORARY WOVEN WIRE NO-CLIMB FENCE		
PERMANENT WOVEN WIRE NO-CLIMB FENCE		
WIRE FENCE		
PVC 3-RAIL FENCE		
WOOD 3-RAIL FENCE		
WOOD PRIVACY FENCE		



Project By: Sooner, Layout: FENCE DETAIL - BLDG.DWG, July 01, 2024, 11:31:29am, S:\1000 Hazen and Sawyer\100-000 Apex Big Branch 2 PWS\DWG - Drawings\Plan_Sheets\C32-S31-FENCE.dwg

No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	



WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

FENCE DETAIL- BLAND

CJS PROJ #:	100-005
DATE:	07-05-2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JUS
DRAWN BY:	JUS
CHECKED BY:	SDL

C32

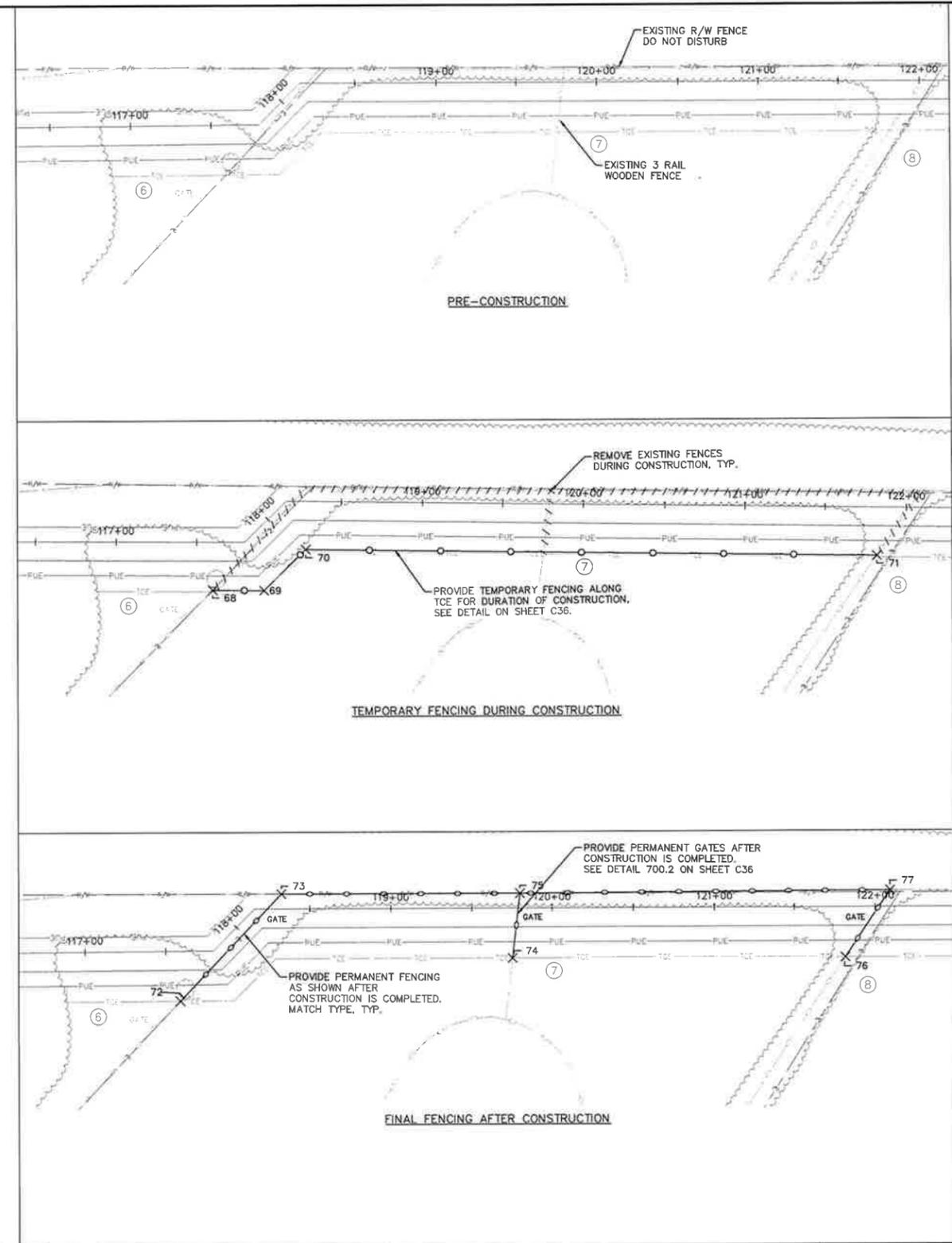
SHEET NUMBER
34 OF 60

Plotted By: J. Spencer, Location: FENCE DETAIL - YATES FRIENDSHIP FARM LLC, July 03, 2024, 11:31:53am, S:\100 Hazen and Sawyer\100-000 Apex Big Branch 2 PWS\BID - Drawings\Plan Sheets\C31-FENCE.dwg

PROPERTY TABLE			
PROPERTY NUMBER	PROPERTY OWNER	PROPERTY ADDRESS	PIN NUMBER
6	THOMAS BLAND	3724 FRIENDSHIP RD	720931641
7	YATES FRIENDSHIP FARM LLC	3716 FRIENDSHIP RD	720838629
8	CHARLES BAUCOM	0 OLD US 1 HIGHWAY	720628996

TEMPORARY FENCING POINT TABLE			
Point #	Northing	Easting	Description
68	703323.39	2028933.32	BEGIN TEMPORARY FENCING
69	703306.62	2028906.27	TEMPORARY FENCE
70	703271.39	2028897.86	TEMPORARY FENCE
71	703086.89	2028596.03	END TEMPORARY FENCING

FINAL FENCING POINT TABLE			
Point #	Northing	Easting	Description
72	703324.91	2028933.67	TIE-IN WOOD 3-PANEL FENCE TO EXISTING WOOD 3-PANEL FENCE
73	703235.97	2028914.69	TIE-IN WOOD 3-PANEL FENCE TO WOOD 3-PANEL FENCE
74	703195.59	2028771.93	TIE-IN WOOD 3-PANEL FENCE TO EXISTING WOOD 3-PANEL FENCE
75	703159.02	2028788.81	TIE-IN WOOD 3-PANEL FENCE TO WOOD 3-PANEL FENCE
76	703088.10	2028596.08	TIE-IN WOOD 3-PANEL FENCE TO EXISTING WOOD 3-PANEL FENCE
77	703038.49	2028593.93	TIE-IN WOOD 3-PANEL FENCE TO WOOD 3-PANEL FENCE



- NOTES:**
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Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and SAEC	Parks, Recreation & Cultural Resources
Electric	

LEGEND	EXISTING	PROPOSED
NCDOT R/W FENCE		
TEMPORARY WOVEN WIRE NO-CLIMB FENCE		
PERMANENT WOVEN WIRE NO-CLIMB FENCE		
WIRE FENCE		
PVC 3-RAIL FENCE		
WOOD 3-RAIL FENCE		
WOOD PRIVACY FENCE		



No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	



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Conveyance, PLLC

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CARY, NC 27511

NC LICENSE #P-1611 WWW.CJS-CONVEYANCE.COM

WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

FENCE DETAIL- YATES FRIENDSHIP
FARM LLC

CJS PROJ #: 100-005
DATE: 07-05-2024
SCALE: 1" = 40'
PROJECT ENGINEER: SDL
DESIGNED BY: JJS
DRAWN BY: JJS
CHECKED BY: SDL

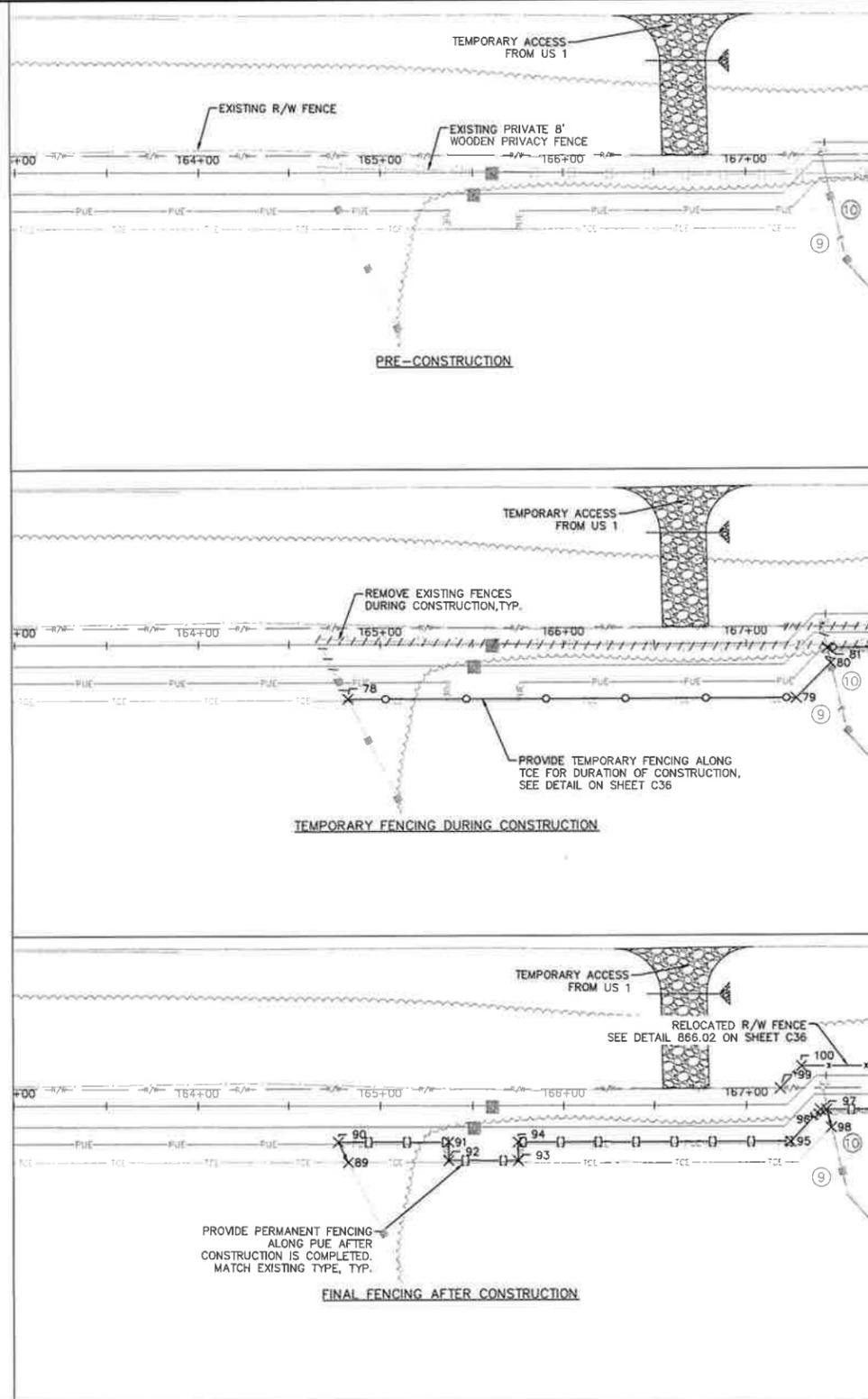
C33

SHEET NUMBER
35 OF 60

PROPERTY TABLE			
PROPERTY NUMBER	PROPERTY OWNER	PROPERTY ADDRESS	PIN NUMBER
9	DANNY RAY WILLIAMS	3837 BOSCO RD	720407997
10	ASHLEY NICHOLS	3901 BOSCO RD	720401633

TEMPORARY FENCING POINT TABLE			
Point #	Northing	Eastings	Description
78	700859.06	2024947.83	BEGIN TEMPORARY FENCE
79	700731.51	2024736.56	TEMPORARY FENCE
80	700705.44	2024732.18	TEMPORARY FENCE
81	700699.32	2024738.17	TEMPORARY FENCE

FINAL FENCING POINT TABLE			
Point #	Northing	Eastings	Description
89	700859.66	2024946.88	TIE-IN WIRE FENCE TO EXISTING WIRE FENCE
90	700853.11	2024957.27	END WIRE FENCE, BEGIN 8' WOOD PRIVACY FENCE
91	700821.99	2024906.23	8' WOOD PRIVACY FENCE
92	700830.53	2024901.02	8' WOOD PRIVACY FENCE
93	700810.73	2024868.54	8' WOOD PRIVACY FENCE
94	700802.19	2024873.74	8' WOOD PRIVACY FENCE
95	700724.61	2024746.46	8' WOOD PRIVACY FENCE
96	700701.35	2024741.57	8' WOOD PRIVACY FENCE
97	700699.59	2024738.69	TIE-IN CHICKEN WIRE FENCE TO 8' WOOD PRIVACY FENCE
98	700706.56	2024731.43	TIE-IN WIRE FENCE TO EXISTING WIRE FENCE
99	700702.85	2024766.39	TIE-IN AT EXISTING R/W FENCE
100	700686.49	2024762.82	RELOCATED R/W FENCE



MATCH LINE - SEE SHEET C35 FOR CONTINUATION

MATCH LINE - SEE SHEET C35 FOR CONTINUATION

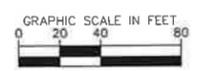
MATCH LINE - SEE SHEET C35 FOR CONTINUATION

- NOTES:
- R/W FENCE SHALL BE INSTALLED PER NCDOT DETAIL 866.02 ON SHEET C36.
 - TEMPORARY FENCES SHALL BE INSTALLED PER DETAIL ON SHEET C36.
 - ALL FENCING OTHER THAN R/W AND TEMPORARY FENCING SHALL MATCH EXISTING FENCING FOR EACH PARTICULAR PROPERTY.

The signatures listed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

LEGEND	EXISTING	PROPOSED
NCDOT R/W FENCE		
TEMPORARY WOVEN WIRE NO-CLIMB FENCE		
PERMANENT WOVEN WIRE NO-CLIMB FENCE		
WIRE FENCE		
PVC 3-RAIL FENCE		
WOOD 3-RAIL FENCE		
WOOD PRIVACY FENCE		



Plotted By: J. Speers - Layout FENCE DETAIL - WILLIAMS July 03, 2024 11:32:20am S:\100 Hazen and Sawyer\100-005 Apex Big Branch 2 PWS\80 - Drawings\Plan Sheets\C-SH-FENCE.dwg

No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	



CJS
Conveyance, PLLC

320 S. ACADEMY ST
CARY, NC 27511

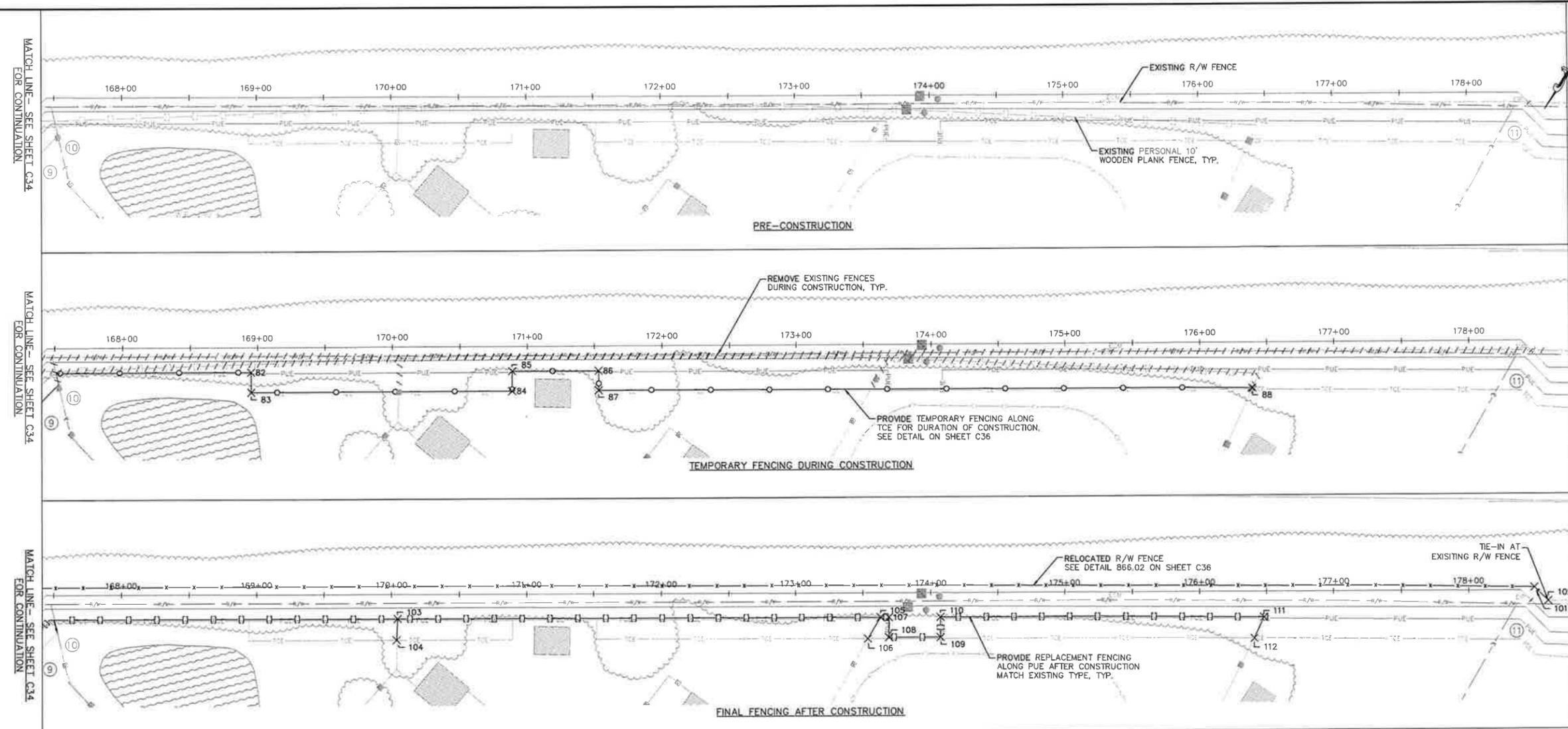
NC LICENSE #P-1611 WWW.CJSCONVEYANCE.COM

WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

FENCE DETAIL- WILLIAMS

CJS PROJ #	100-005	C34
DATE:	07-05-2024	
SCALE:	1" = 40'	
PROJECT ENGINEER:	SDL	
DESIGNED BY:	JJS	
DRAWN BY:	JJS	SHEET NUMBER
CHECKED BY:	SDL	36 OF 60

Plotted by: J. Speers - Layout Fence Detail - NICHOLS July 03, 2024 11:32:42am. S:\100 Hazen and Sawyer\100-005 Apex Big Branch 2 PWS\00 - Drawings\Plan Sheets\C-311-FENCE.dwg



Point #	Northing	Easting	Description
82	700624.16	2024615.09	TEMPORARY FENCE
83	700636.89	2024607.30	TEMPORARY FENCE
84	700535.95	2024442.35	TEMPORARY FENCE
85	700523.42	2024450.02	TEMPORARY FENCE
86	700489.72	2024394.74	TEMPORARY FENCE
87	700502.05	2024387.20	TEMPORARY FENCE
88	700249.98	2023971.80	END TEMPORARY FENCE

Point #	Northing	Easting	Description
101	700109.75	2023811.22	RELOCATED R/W FENCE
102	700113.08	2023797.30	TIE-IN TO EXISTING R/W FENCE
103	700567.09	2024521.74	TIE-IN WIRE FENCE TO 10' PRIVACY FENCE
104	700580.98	2024514.11	TIE-IN WIRE FENCE TO EXISTING WIRE FENCE
105	700380.42	2024215.69	TIE-IN WIRE FENCE TO 10' PRIVACY FENCE
106	700398.79	2024215.36	TIE-IN WIRE FENCE TO EXISTING WIRE FENCE
107	700377.19	2024210.38	10' WOOD PRIVACY FENCE
108	700389.90	2024202.65	10' WOOD PRIVACY FENCE
109	700370.12	2024170.12	10' WOOD PRIVACY FENCE
110	700357.37	2024177.88	10' WOOD PRIVACY FENCE
111	700232.78	2023971.72	END 10' WOOD PRIVACY FENCE, TIE-IN WIRE FENCE
112	700249.91	2023969.74	TIE-IN WIRE FENCE TO EXISTING WIRE FENCE

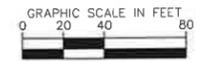
PROPERTY NUMBER	PROPERTY OWNER	PROPERTY ADDRESS	PIN NUMBER
9	DANNY RAY WILLIAMS	3837 BOSCO RD	720407997
10	ASHLEY NICHOLS	3901 BOSCO RD	720401633
11	JON BRUCE	B164 PROVIDENCE OAK PATH	720301467

The signatures attested below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&E	Parks, Recreation & Cultural Resources
Electric	

- NOTES:
- R/W FENCE SHALL BE INSTALLED PER NCDOT DETAIL 866.02 ON SHEET C36.
 - TEMPORARY FENCES SHALL BE INSTALLED PER DETAIL ON SHEET C36.
 - ALL FENCING OTHER THAN R/W AND TEMPORARY FENCING SHALL MATCH EXISTING FENCING FOR EACH PARTICULAR PROPERTY.

LEGEND	EXISTING	PROPOSED
NCDOT R/W FENCE		
TEMPORARY WOVEN WIRE NO-CLIMB FENCE		
PERMANENT WOVEN WIRE NO-CLIMB FENCE		
WIRE FENCE		
PVC 3-RAIL FENCE		
WOOD 3-RAIL FENCE		
WOOD PRIVACY FENCE		



No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	



WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION - FORCE MAIN

FENCE DETAIL- NICHOLS

CJS PROJ #	100-005	C35
DATE:	07-05-2024	
SCALE:	1" = 40'	
PROJECT ENGINEER	SDL	
DESIGNED BY:	JJS	
DRAWN BY:	JJS	SHEET NUMBER
CHECKED BY:	SDL	

Plotted By: Seneo Layout: 28 TOWN OF APEX STANDARD DETAILS July 03, 2024 11:33:07am S:\1000 Hazen and Sawyer\100-005 Apex Big Branch 2 PWS\2 - Drawings\Plan Sheets\100-005-SHT-DETAILS-TOWN OF APEX.dwg

TRENCH WIDTH
 MIN PIPE OUTSIDE DIA +8" EACH SIDE
 MAX PIPE OUTSIDE DIA +12" EACH SIDE

TRENCH DEPTH
 MIN PIPE OUTSIDE DIA +8" EACH SIDE
 MAX PIPE OUTSIDE DIA +12" EACH SIDE

NOTES:

- FOR TRENCHES REQUIRING SHORING & BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING & BRACING
- FLOWABLE FILL MAY BE REQUIRED AT THE DIRECTION OF THE WATER RESOURCES DIRECTOR
- NO STONES SHALL BE INCLUDED IN THE BACKFILL MATERIAL FOR AT LEAST 2 FEET ABOVE THE TOP OF THE PIPE
- PROVIDE RECESSES TO RECEIVE PIPE BELL
- UNDERCUT UNSUITABLE MATERIAL AS DIRECTED BY THE ENGINEER AND BACKFILL WITH APPROVED MATERIAL
- WHERE NECESSARY, TEMPORARILY DIVERT SURFACE WATER TO MAINTAIN A DRY CONDITION IN THE PIPE FOUNDATION DIRECT THIS TEMPORARY FLOW INTO SUITABLE EROSION CONTROL DEVICES
- NO ORGANIC MATERIAL PERMITTED FOR BACKFILLING

TOWN OF APEX STANDARDS **SANITARY SEWER PIPE BEDDING & BACKFILLING** **STD NO. 450.02**
 EFFECTIVE MARCH 23, 2021 **SHEET 1 OF 1**

NOTES:

- CASING SHALL BE UNCOATED SPIRAL WELDED STEEL SHEETING ASTM A132 GRADE B WITH A YIELD STRENGTH OF 34,000 PSI
- CROSSINGS ON NC DOT MAINTAINED ROADS TO BE IN ACCORDANCE WITH CURRENT NC DOT STANDARDS AND APPROVED ENCROACHMENT AGREEMENT
- IF STRAINED JOINT PIPE ONLY MEGLUGS ARE NOT PLANTED
- SUPPORTS SHALL BE MANUFACTURED BY ADVANCE PRODUCTS & SYSTEMS, INC. PIPELINE SEAL AND INSULATOR LTD. OR BWM COMPANY
- THREE SUPPORTS SHALL BE INSTALLED ON EACH PIPE SEGMENT
- LARGER ENCASUREMENT SIZES MAY BE UTILIZED AT THE DISCRETION OF THE DESIGN ENGINEER AND/OR CONTRACTOR FOR EASE OF INSTALLATION AS LONG AS ALL OTHER DESIGN CRITERIA IS MET
- ALL PIPES 36" AND LARGER SHALL REQUIRE 4 SUPPORTS

Casing Pipe Nominal Diameter (inches)	Casing Maximum Inside Diameter (inches)	Casing Nominal Wall Thickness (inches)
6	14	0.375
8	16	0.375
10	18	0.375
12	20	0.375
14	24	0.575
16	30	0.500
18	30	0.500
20	36	0.500
24	36	0.625
30	42	0.625
36	48	0.750
42	54	0.875

TOWN OF APEX STANDARDS **BORE & JACK** **STD NO. 450.06**
 EFFECTIVE MARCH 23, 2021 **SHEET 1 OF 1**

ROD REQUIREMENTS

SIZE OF 45 BEND	STATIC THRUST IN POUNDS	NO. OF RODS REQUIRED
6"	4,328	2
8"	7,684	4
10"	12,503	4
12"	17,312	4
14"	24,046	6
16"	30,779	6
18"	50,016	8
24"	69,252	8

NOTES:

- STEEL RODS AND BOLTS SHALL BE 3/4" HOT DIPPED GALVANIZED
- CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT BOLTS
- RESTRAINING MECHANICAL BOLTS TO BE USED AT ALL FITTINGS
- MUST USE DUCTILE IRON EYE BOLTS WHERE NECESSARY
- IF MAINLINE COVER MUST BE MAINTAINED ON ALL BENDS
- ADD MECHANICAL JOINT RESTRAINING BOLTS THROUGHOUT ASSEMBLY

TOWN OF APEX STANDARDS **VERTICAL BEND** **STD NO. 450.08**
 EFFECTIVE MARCH 23, 2021 **SHEET 1 OF 1**

NOTE:

- TRACER WIRE AND ACCESSORIES SHALL BE BLUE FOR WATER INSTALLATIONS AND GREEN FOR WASTEWATER INSTALLATIONS
- TEST STATIONS SHALL BE 2 1/2" DIAMETER WITH 2 TERMINALS, GREEN OR BLUE TOP AND BE EQUIVALENT TO BINGHAM AND TAYLOR MODEL P2258R OR COPPERHEAD MODEL LD21P AND SHALL BE INSTALLED IN A TOWN STANDARD VALVE BOX PER STANDARD DETAIL

TOWN OF APEX STANDARDS **TRACER WIRE** **STD NO. 450.13**
 EFFECTIVE MARCH 23, 2021 **SHEET 1 OF 1**

NOTES:

- WRAP FITTINGS IN 6 MIL PLASTIC BEFORE POURING CONCRETE (NO CONCRETE SHALL COVER BOLTS OR CLAMPS)
- ALL BLOCKING SHALL BE PLACED SO THAT THE PIPE END FITTING JOINTS WILL BE ACCESSIBLE FOR REPAIRS
- REACTION BLOCKING SHALL BE TO SUFFICIENT SIZE TO PREVENT THE FITTING FROM BLOWING OFF THE MAIN A MAXIMUM TEST PRESSURE
- FITTINGS SHALL BE BLOCKED TO SOLID UNDISTURBED EARTH WITH CONCRETE

TOWN OF APEX STANDARDS **ANTI-SEEP COLLAR** **STD NO. 450.10**
 EFFECTIVE MARCH 23, 2021 **SHEET 1 OF 1**

NO. (INCHES)	45° BEND	90° BEND	135° BEND	180° BEND
4	0.1	0.1	0.1	0.1
6	0.2	0.2	0.1	0.1
8	0.2	0.3	0.2	0.1
10	0.3	0.5	0.3	0.2
12	0.4	0.6	0.5	0.3
14	0.7	0.9	0.6	0.5
16	0.7	0.9	0.6	0.5
18	0.9	1.2	0.7	0.6
20	1.1	1.6	1.1	0.7
24	1.7	2.3	1.6	0.9

TOWN OF APEX STANDARDS **REACTION BLOCKING** **STD NO. 600.13**
 EFFECTIVE MARCH 23, 2021 **SHEET 1 OF 1**

GENERAL NOTES:

- L IS THE LENGTH OF THE RIPRAP APRON
- d = 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 12 INCHES
- A FILTER BLANKET OR FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIP RAP AND SOIL FOUNDATION
- IN A WELL-DEFINED CHANNEL EXTEND THE APRON UP THE CHANNEL BANKS TO 6 INCHES ABOVE THE MAXIMUM TAILWATER DEPTH OR THE TOP OF THE BANK, WHICHEVER IS LESS

MAINTENANCE NOTES:

- INSPECT OUTLET WEEKLY AND AFTER RUNOFF-PRODUCING EVENTS TO SEE IF ANY EROSION AROUND OR BELOW THE RIPRAP HAS OCCURRED OR IF STONES HAVE BEEN DISLODGED IMMEDIATELY MAKE ALL NEEDED REPAIRS TO PREVENT FURTHER DAMAGE

TOWN OF APEX STANDARDS **PIPE OUTLET** **STD NO. 400.18**
 EFFECTIVE JUNE 11, 2024 **SHEET 1 OF 1**

NOTES:

- EXCAVATE TO 4 INCHES BELOW THE PROPOSED PIPE ELEVATION
- PROVIDE 4 INCHES STONE BEDDING AND STONE BACKFILL TO SPRINGLINE
- WHERE BELL AND SPIGOT PIPE IS USED, PROVIDE RECESSES TO RECEIVE PIPE BELL
- UNDERCUT UNSUITABLE MATERIAL AS DIRECTED BY THE ENGINEER AND BACKFILL WITH STONE OR OTHER APPROVED MATERIAL
- BACKFILL MATERIAL SHALL BE APPROVED SUITABLE MATERIAL
- WHERE NECESSARY, TEMPORARILY DIVERT SURFACE WATER TO MAINTAIN A DRY CONDITION IN THE PIPE FOUNDATION DIRECT THIS TEMPORARY FLOW INTO SUITABLE EROSION CONTROL DEVICES

Pipe Diameter (in)	RCP		CSP		CAMP	
	MIN (in)	MAX (in)	MIN (in)	MAX (in)	MIN (in)	MAX (in)
15	12	28	12	150	12	88
18	12	28	12	151	12	88
21	12	28	12	113	12	89
24	12	28	12	96	12	89
30	12	28	12	79	12	87
36	12	28	12	65	12	87
42	12	28	12	55	12	80
48	12	28	12	48	12	76
54	12	28	12	56	12	81
60	24	28	12	50	12	78

TOWN OF APEX STANDARDS **STORM DRAIN PIPE BEDDING & BACKFILLING** **STD NO. 500.09**
 EFFECTIVE JUNE 11, 2024 **SHEET 1 OF 1**

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Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fee
Water Resources Stormwater and S&C	Parks, Recreation & Cultural Resources
Electric	

No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	



CJS Conveyance, PLLC
 320 S. ACADEMY ST
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 NC LICENSE #P-1611 WWW.CJSCONVEYANCE.COM

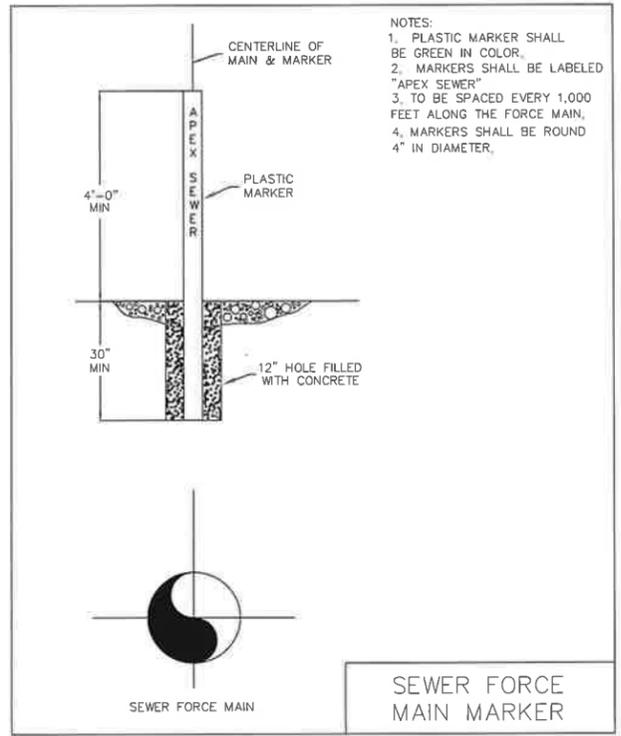
TOWN OF APEX
WATER RESOURCES DEPARTMENT
BIG BRANCH 2 PUMP STATION - FORCE MAIN

TOWN OF APEX STANDARD DETAILS

CJS PROJ. # 100-005
 DATE: 07-05-2024
 SCALE: N/A
 PROJECT ENGINEER: SDL
 DESIGNED BY: JJS
 DRAWN BY: JJS
 CHECKED BY: SDL

D1

SHEET NUMBER **39 OF 60**



NOTES:
 1. PLASTIC MARKER SHALL BE GREEN IN COLOR.
 2. MARKERS SHALL BE LABELED "APEX SEWER"
 3. TO BE SPACED EVERY 1,000 FEET ALONG THE FORCE MAIN.
 4. MARKERS SHALL BE ROUND 4" IN DIAMETER.

MAIN MARKER LOCATIONS			OFFSET		
Sheet	Main Marker Type	Stationing	Sheet	Main Marker Type	Stationing
C1	45° Bend	1019	C1	45° Bend	1019
C1	45° Bend	1185	C1	45° Bend	1180
C1	22.5° Bend	1606	C1	22.5° Bend	1613
C1	11.25° Bend	1624	C1	11.25° Bend	1625
C1	22.5° Bend	1886	C1	22.5° Bend	1882
C1	90° Bend	1892	C1	45° Bend	1886
C2	11.25° Bend	2750	C1	45° Bend	1892
C3	Force Main	3700	C2	11.25° Bend	2750
C3	11.25° Bend	4423	C3	Force Main	3700
C4	Tee	4541	C3	11.25° Bend	4424
C4	22.5° Bend	4707	C4	Tee	4541
C4	90° Bend	4982	C4	22.5° Bend	4704
C5	Force Main	5900	C4	90° Bend	4982
C6	Force Main	6900	C5	Force Main	5900
C6	45° Bend	7809	C6	Force Main	6900
C6	45° Bend	7874	C6	45° Bend	7798
C7	45° Bend	8431	C6	45° Bend	7874
C7	45° Bend	8491	C7	45° Bend	8431
C8	Force Main	9400	C7	45° Bend	8496
C8	Tee	9735	C8	Force Main	9400
C8	45° Bend	9765	C8	Tee	9735
C8	45° Bend	9816	C8	45° Bend	9765
C9	45° Bend	10795	C8	45° Bend	9824
C9	90° Bend	10953	C9	45° Bend	10785
C9	45° Bend	11035	C9	90° Bend	10953
C10	45° Bend	11780	C9	45° Bend	11025
C10	45° Bend	11816	C10	45° Bend	11782
C11	Force Main	12300	C10	45° Bend	11821
C11	45° Bend	12919	C11	Force Main	12300
C11	45° Bend	12963	C11	45° Bend	12914
C11	45° Bend	13371	C11	45° Bend	12963
C11	45° Bend	13413	C11	45° Bend	13371
C12	Force Main	14400	C11	45° Bend	13408
C13	Force Main	15100	C12	Force Main	14400
C13	Tee	15751	C13	Force Main	15100
C14	45° Bend	16722	C13	Tee	15751
C14	45° Bend	16744	C14	45° Bend	16720
C15	Force Main	17600	C14	45° Bend	16736
C15	45° Bend	17839	C15	Force Main	17600
C15	45° Bend	17868	C15	45° Bend	17850
C16	45° Bend	18724	C15	45° Bend	17869
C16	45° Bend	18780	C16	45° Bend	18729
C16	45° Bend	19158	C16	45° Bend	18780
C16	45° Bend	19214	C16	45° Bend	19158
C17	45° Bend	19988	C16	45° Bend	19219
C17	45° Bend	20016	C17	45° Bend	19993
C17	45° Bend	20324	C17	45° Bend	20016
C17	45° Bend	20352	C17	45° Bend	20324
C18	45° Bend	20672	C17	45° Bend	20357
C18	45° Bend	20718	C18	45° Bend	20676
C18	45° Bend	21060	C18	45° Bend	20709
C18	45° Bend	21103	C18	45° Bend	21086
C18	45° Bend	21391	C18	45° Bend	21129
C18	45° Bend	21435	C18	45° Bend	21408
C18	Tee	21600	C18	45° Bend	21453
C18	45° Bend	21613	C18	Tee	21600
C19	11.25° Bend	21751	C18	45° Bend	21613
C19	11.25° Bend	22235	C19	11.25° Bend	21752
C20	45° Bend	22968	C19	11.25° Bend	22234
C20	45° Bend	23143	C20	45° Bend	22968
C20	45° Bend	23161	C20	45° Bend	23138
C20	45° Bend	23551	C20	45° Bend	23166
C20	45° Bend	23614	C20	45° Bend	23546
C20	45° Bend	23712	C20	45° Bend	23614
C20	45° Bend	23727	C20	45° Bend	23712
C20	Reducer	23748	C20	45° Bend	23727
C20	Tee	23757	C20	45° Bend	23752
C21	45° Bend	24150	C20	45° Bend	23757
C21	45° Bend	24162			
C21	11.25° Bend	24177			
C21	45° Bend	24407			
C21	45° Bend	24420			
C21	45° Bend	24655			
C21	45° Bend	24671			
C22	Force Main	25200			
C23	45° Bend	25709			
C23	45° Bend	25720			
C23	45° Bend	26037			
C23	45° Bend	26574			
C24	90° Bend	26962			

BASELINE			OFFSET		
Sheet	Stationing	Distance From Last Tracer Wire	Sheet	Stationing	Distance From Last Tracer Wire
C1	1185	185	C1	1180	180
C1	1624	439	C1	1625	445
C1	1892	268	C1	1892	267
C2	2321	429	C2	2313	421
C2	2750	429	C2	2750	437
C2	3100	350	C2	3100	350
C3	3600	500	C3	3590	490
C3	4000	400	C3	4000	410
C3	4423	423	C3	4423	423
C4	4707	284	C4	4704	281
C4	4982	275	C4	4982	278
C4	5450	468	C4	5450	468
C5	5900	450	C5	5900	450
C5	6136	236	C5	6126	226
C5	6600	464	C5	6600	474
C6	6860	260	C6	6850	250
C6	7350	490	C6	7350	500
C6	7809	459	C6	7798	448
C7	8133	324	C7	8120	322
C7	8491	358	C7	8431	311
C7	8900	409	C7	8900	469
C8	9355	455	C8	9342	442
C8	9765	410	C8	9747	405
C8	10100	335	C8	10100	353
C9	10357	257	C9	10367	267
C9	10795	438	C9	10785	418
C9	11092	297	C9	11081	296
C10	11500	408	C10	11500	419
C10	11816	316	C10	11821	321
C11	12300	484	C11	12300	479
C11	12800	500	C11	12800	500
C11	13045	245	C11	13035	235
C11	13413	368	C11	13408	373
C12	13900	487	C12	13900	492
C12	14077	177	C12	14067	167
C12	14400	323	C12	14400	333
C13	14898	498	C13	14888	488
C13	15300	402	C13	15300	412
C13	15764	464	C13	15764	464
C14	16163	399	C14	16153	389
C14	16561	398	C14	16551	398
C14	16744	183	C14	16736	185
C15	17100	356	C15	17100	364
C15	17393	293	C15	17397	297
C15	17868	475	C15	17868	471
C16	18300	432	C16	18300	432
C16	18724	424	C16	18729	429
C16	18984	260	C16	18974	245
C16	19214	230	C16	19219	245
C17	19700	486	C17	19700	481
C17	19988	288	C17	19993	293
C17	20352	364	C17	20357	364
C18	20718	366	C18	20709	352
C18	21103	385	C18	21129	420
C18	21435	332	C18	21453	324
C18	21590	155	C18	21590	137
C19	21751	161	C19	21752	162
C19	22235	484	C19	22234	482
C19	22484	249	C19	22474	240
C20	22968	484	C20	22973	499
C20	23161	193	C20	23161	188
C20	23614	453	C20	23614	453
C20	23737	123	C20	23757	143
C21	24177	440			
C21	24671	494			
C22	25170	499			
C23	25670	500			
C23	26037	367			
C23	26382	345			
C24	26880	498			
C24	26962	82			

BIG BRANCH 2 PS - FORCE MAIN THRUST RESTRAINT TABLE		
SIZE (IN)	FITTING/ APPURTENANCE	THRUST RESTRAINT DISTANCE (LF)
20	11.25°	12
20	11.25° VERT	22
20	22.5°	24
20	22.5° VERT	45
20	45°	49
20	45° VERT	92
20	90°	118
20	PLUG VALVE	222
24x20	REDUCER	78
24	11.25°	14
24	11.25° VERT	26
24	22.5°	27
24	22.5° VERT	52
24	45°	57
24	45° VERT	107
24	90°	136
24	PLUG VALVE	258

The signatures of field below certify that this sheet has been reviewed and approved solely for the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

Project By: J. Seeger, Layout: STAVO480 DETAILS July 03, 2024 11:53:14am S:\100 Hazen and Sawyer\100-005 Apex Big Branch 2 PS\80 - Drawings\Plan Sheets\C-SH-DETAILS-TOWN OF APEX.dwg

No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	



TOWN OF APEX
 WATER RESOURCES DEPARTMENT
 BIG BRANCH 2 PUMP STATION - FORCE MAIN

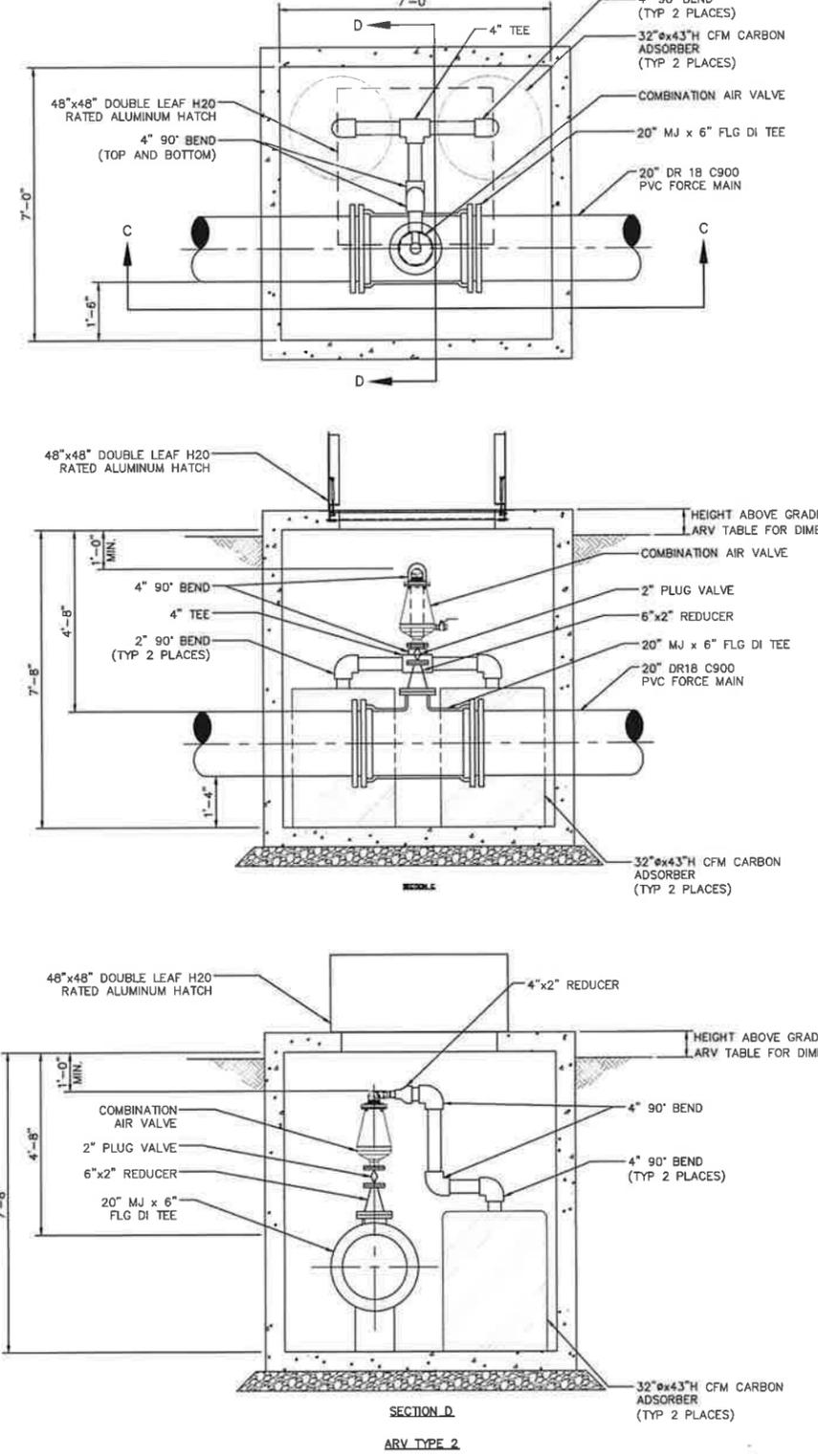
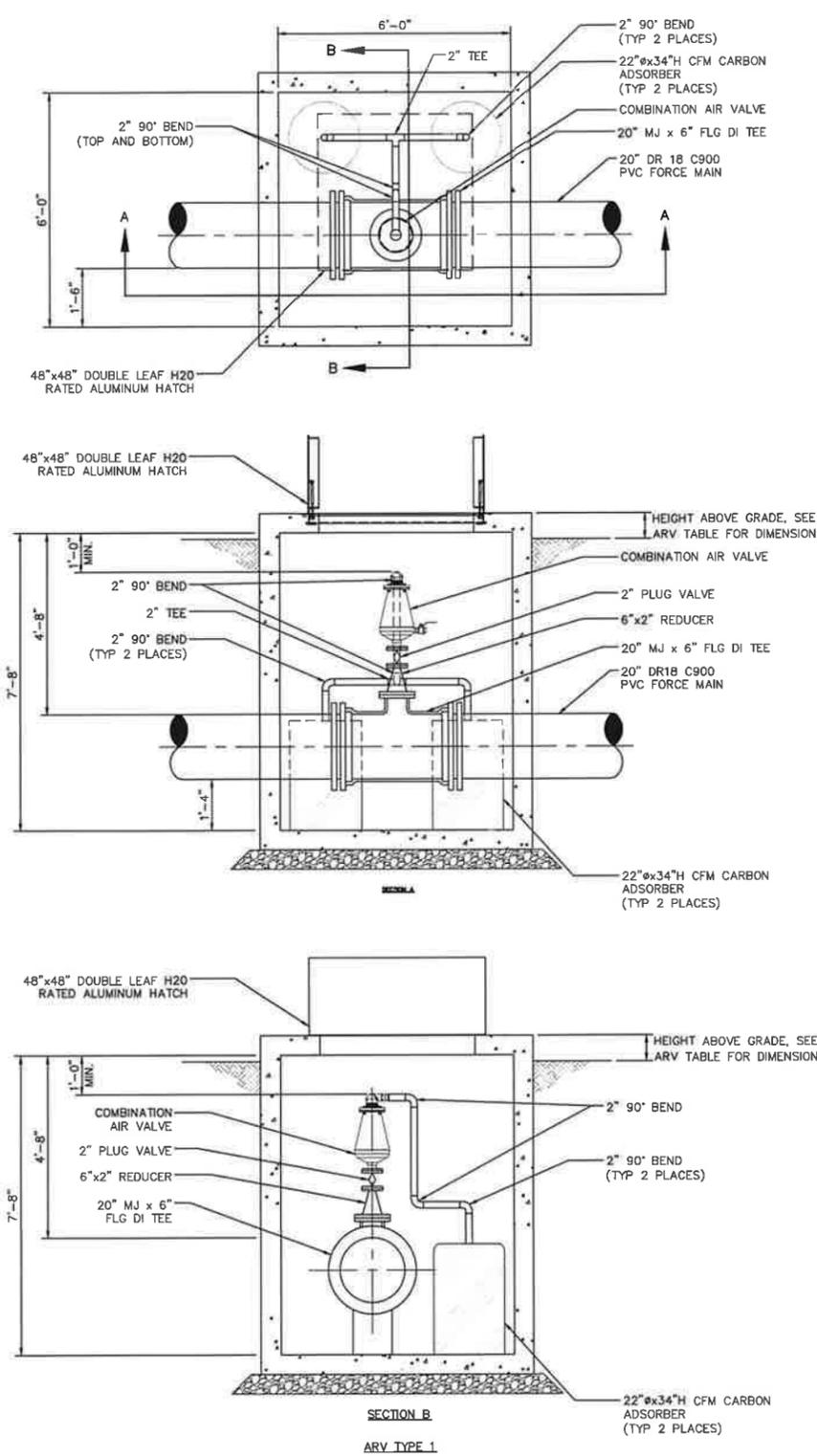
STANDARD DETAILS

CJS PROJ. #	100-005
DATE:	07-05-2024
SCALE:	N/A
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

D2

SHEET NUMBER
40 OF 60

Plotted By: J. Speers - Layout_37 ARV DETAIL July 03, 2024 11:33:24am S:\100 Hazen and Sawyer\100-005 Apex-Big Branch 2 PPS\100 - Drawings\Plan Sheets\C-SHT-Detail-S-TOWN OF APEX.dwg



ARV TABLE						
ARV NO.	STA	BASELINE/OFFSET	FORCE MAIN SIZE (IN)	DETAIL TYPE	ORIENTATION LOOKING DOWNSTREAM	HEIGHT ABOVE GRADE
1	23+21	BASELINE	20	2	LEFT	3'-0"
2	23+11	OFFSET	20	2	LEFT	3'-0"
3	36+99	BASELINE	20	1	LEFT	3'-0"
4	37+09	OFFSET	20	1	LEFT	3'-0"
5	45+14	BASELINE	20	2	LEFT	3'-0"
6	45+04	OFFSET	20	2	LEFT	3'-0"
7	61+36	BASELINE	20	2	LEFT	3'-0"
8	61+26	OFFSET	20	2	LEFT	3'-0"
9	68+73	BASELINE	20	2	LEFT	3'-0"
10	68+63	OFFSET	20	2	LEFT	3'-0"
11	81+33	BASELINE	20	1	LEFT	3'-0"
12	81+20	OFFSET	20	1	LEFT	3'-0"
13	93+55	BASELINE	20	1	LEFT	3'-0"
14	93+42	OFFSET	20	1	LEFT	3'-0"
15	103+57	BASELINE	20	1	LEFT	AT GRADE
16	103+67	OFFSET	20	1	LEFT	3'-0"
17	110+78	BASELINE	20	1	LEFT	AT GRADE
18	110+68	OFFSET	20	1	LEFT	AT GRADE
19	130+45	BASELINE	20	1	LEFT	3'-0"
20	130+35	OFFSET	20	1	LEFT	3'-0"
21	140+89	BASELINE	20	1	LEFT	3'-0"
22	140+78	OFFSET	20	1	LEFT	3'-0"
23	148+98	BASELINE	20	1	LEFT	3'-0"
24	148+88	OFFSET	20	1	LEFT	3'-0"
25	161+63	BASELINE	20	1	LEFT	3'-0"
26	161+53	OFFSET	20	1	LEFT	3'-0"
27	165+61	BASELINE	20	1	LEFT	3'-0"
28	165+51	OFFSET	20	1	LEFT	3'-0"
29	173+93	BASELINE	20	1	LEFT	AT GRADE
30	173+83	OFFSET	20	1	LEFT	3'-0"
31	189+70	BASELINE	20	1	LEFT	3'-0"
32	189+60	OFFSET	20	1	LEFT	3'-0"
33	209+62	BASELINE	20	1	LEFT	3'-0"
34	209+52	OFFSET	20	1	LEFT	3'-0"
35	224+84	BASELINE	20	1	LEFT	3'-0"
36	224+74	OFFSET	20	1	LEFT	3'-0"
37	263+68	BASELINE	24	1	LEFT	3'-0"

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Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&CC	Parks, Recreation & Cultural Resources
Electric	

No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	



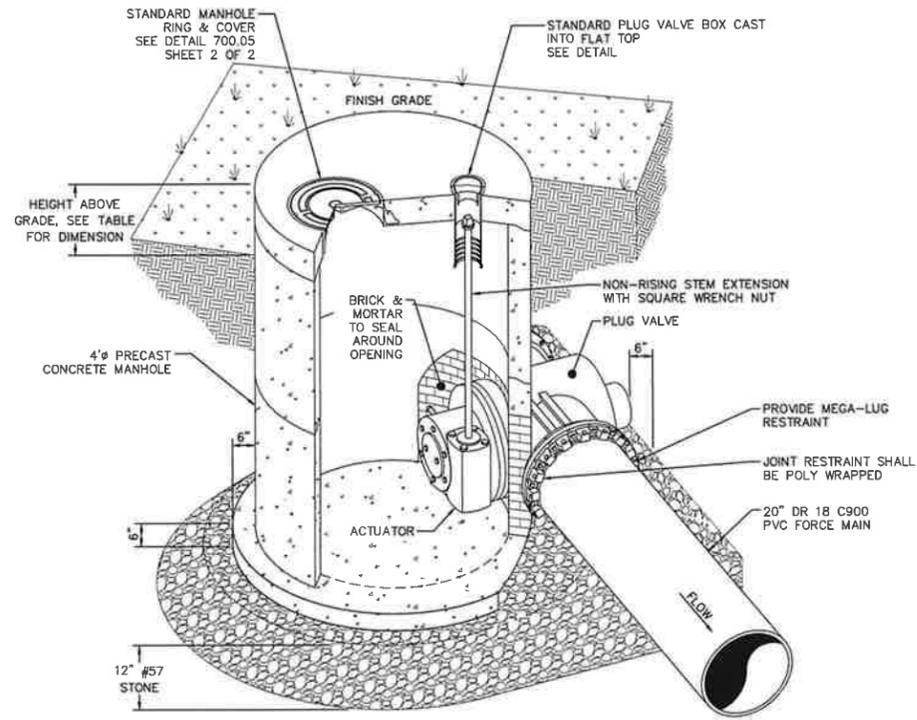
TOWN OF APEX
WATER RESOURCES DEPARTMENT
BIG BRANCH 2 PUMP STATION - FORCE MAIN

ARV DETAIL

CJS PROJ # 100-005
 DATE 07-05-2024
 SCALE N/A
 PROJECT ENGINEER: SDL
 DESIGNED BY: JJS
 DRAWN BY: JJS
 CHECKED BY: SDL

D3
 SHEET NUMBER
41 OF 60

Plotted By: J. Speers Layout: 38 PLUG VALVE DETAIL July 03, 2024 11:33:28am S:\100 Hazen and Sawyer\100-005 Apex Big Branch 2 PUMP STATION - DETAILS-TOWN OF APEX.dwg



NOTE:
 1. 50% OR LESS OF THE PIPE SHOULD BE IN THE MANHOLE.
 2. PROVIDE 4' COVER OVER VALVE MINIMUM.
 3. REFER TO PLANS FOR ARRANGEMENT AT EACH LOCATION.

PLUG VALVE

PLUG VALVE TABLE					
NO.	STA	BASELINE/OFFSET	VALVE SIZE (in)	ORIENTATION LOOKING DOWNSTREAM	HEIGHT ABOVE GRADE
1	23+08	BASELINE	20	RIGHT	3'-0"
2	22+98	OFFSET	20	LEFT	3'-0"
3	45+49	BASELINE	20	RIGHT	3'-0"
4	45+41	OFFSET	20	LEFT	3'-0"
5	45+49	OFFSET	20	LEFT	3'-0"
6	68+60	BASELINE	20	RIGHT	3'-0"
7	68+50	OFFSET	20	LEFT	3'-0"
8	97+47	BASELINE	20	RIGHT	3'-0"
9	97+35	OFFSET	20	LEFT	3'-0"
10	97+47	OFFSET	20	LEFT	3'-0"
11	110+92	BASELINE	20	RIGHT	AT GRADE
12	110+81	OFFSET	20	LEFT	AT GRADE
13	140+77	BASELINE	20	RIGHT	3'-0"
14	140+67	OFFSET	20	LEFT	3'-0"
15	157+64	BASELINE	20	RIGHT	3'-0"
16	157+51	OFFSET	20	LEFT	3'-0"
17	157+64	OFFSET	20	LEFT	3'-0"
18	174+07	BASELINE	20	RIGHT	AT GRADE
19	173+97	OFFSET	20	LEFT	3'-0"
20	189+84	BASELINE	20	RIGHT	3'-0"
21	189+74	OFFSET	20	LEFT	3'-0"
22	215+90	BASELINE	20	RIGHT	3'-0"
23	216+00	OFFSET	20	LEFT	3'-0"
24	215+90	OFFSET	20	LEFT	3'-0"
25	237+37	BASELINE	20	RIGHT	3'-0"
26	237+57	OFFSET	20	LEFT	3'-0"
27	263+82	BASELINE	24	RIGHT	3'-0"

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	



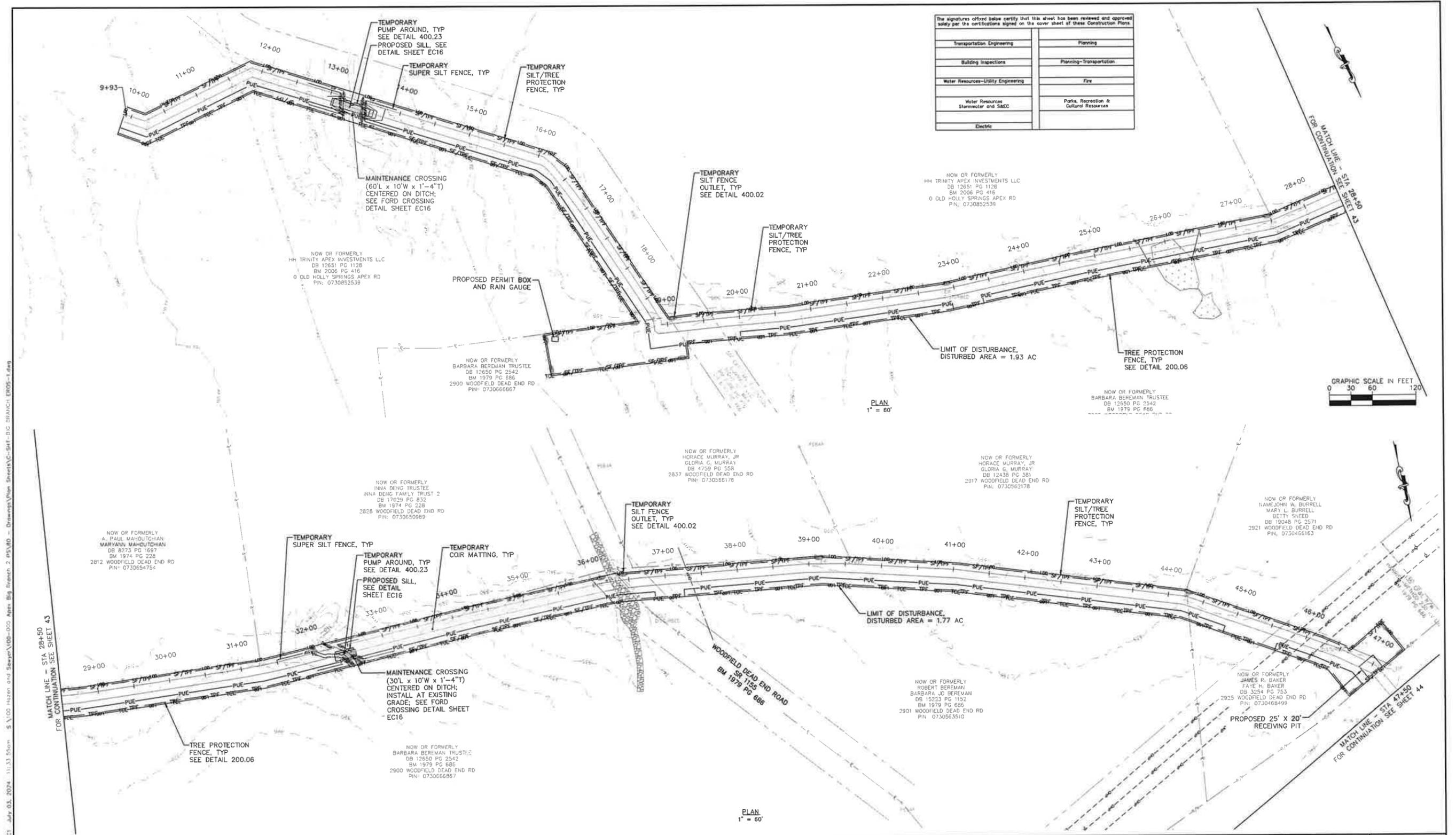
TOWN OF APEX
WATER RESOURCES DEPARTMENT
BIG BRANCH 2 PUMP STATION - FORCE MAIN

PLUG VALVE DETAIL

CJS PROJ #:	100-005
DATE:	07-05-2024
SCALE:	N/A
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

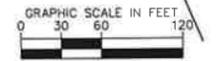
D4
 SHEET NUMBER
42 OF 60

Plotted by: J. Stearns, Layout ECT - July 01, 2024 - 11:33:55am - S:\100 Hazen and Sawyer\100-005 Apex Big Branch 2 PWS\Plan Sheets\VC-SIT-BIG BRANCH ENDS-1.dwg



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Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources-Stormwater and S&E/C	Parks, Recreation & Cultural Resources
Electric	



PLAN
1" = 60'

PLAN
1" = 60'

No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/9/2024	SDL	



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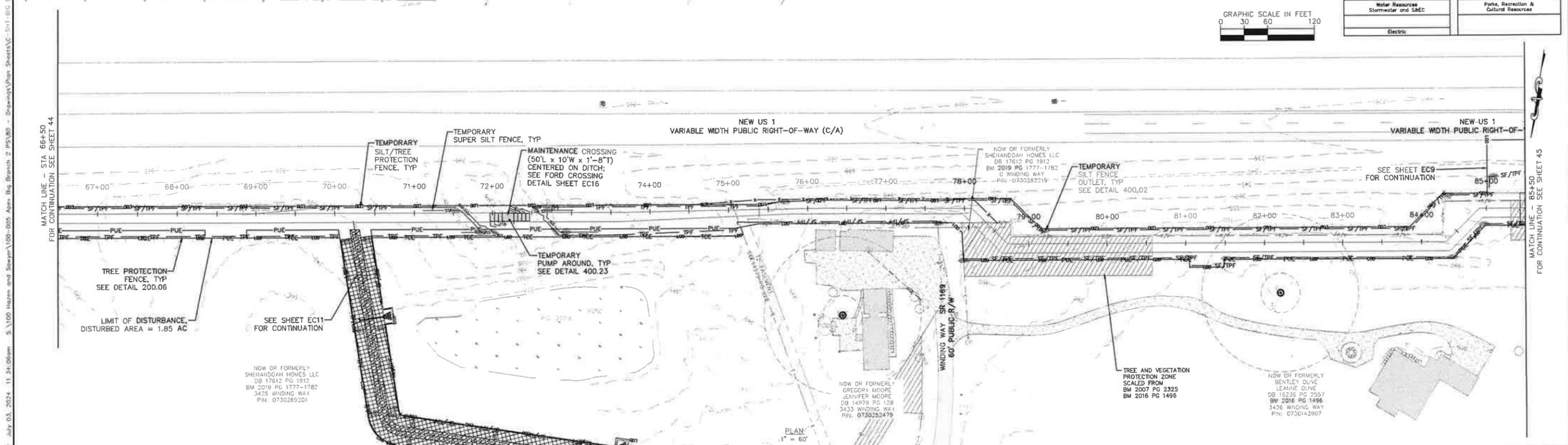
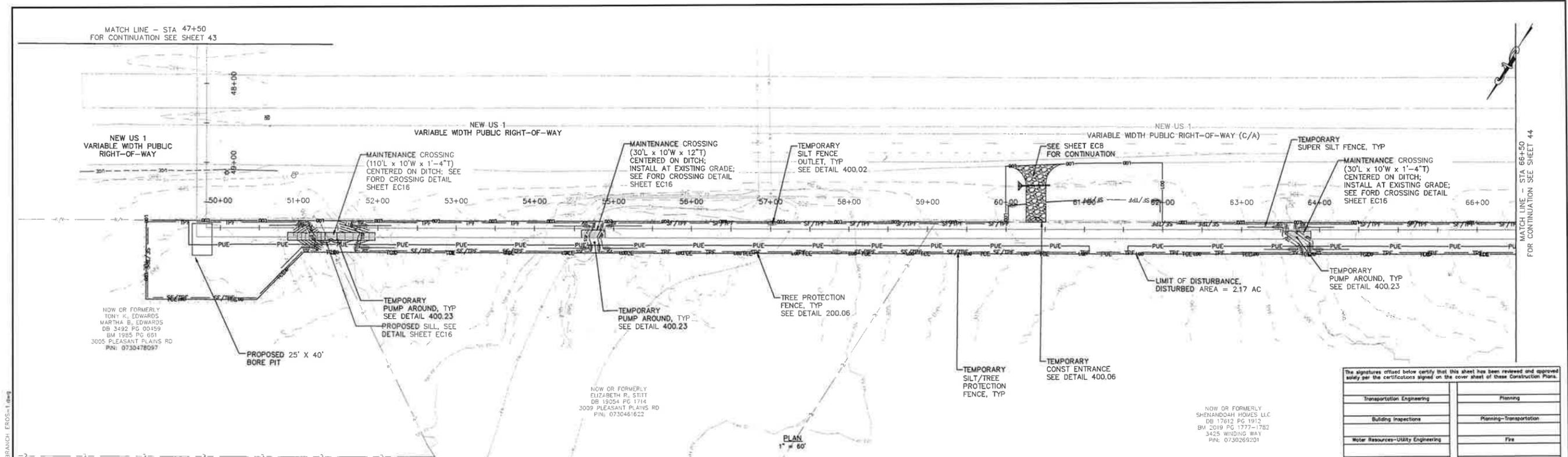
WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

EROSION CONTROL STA 10+00
TO STA 47+50

CJS PROJ #	100-005
DATE	07-05-2024
SCALE	1" = 60'
PROJECT ENGINEER	SDL
DESIGNED BY	JJS
DRAWN BY	JJS
CHECKED BY	SDL

EC1

SHEET NUMBER
43 OF 60



The signatures attested below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	



Plotted By: J. Spores - Layout EC2 - July 03, 2024, 11:44:06am - S:\100 Hazen and Sawyer\100-005-Apex Big Branch 2 PWS\RD - Greenway\Plan Sheets\EC-SHT-BIG BRANCH EROSION.dwg

1	PERMIT SUBMITTAL	7/5/2024	SDL
No.	REVISIONS	DATE	BY

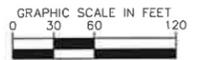
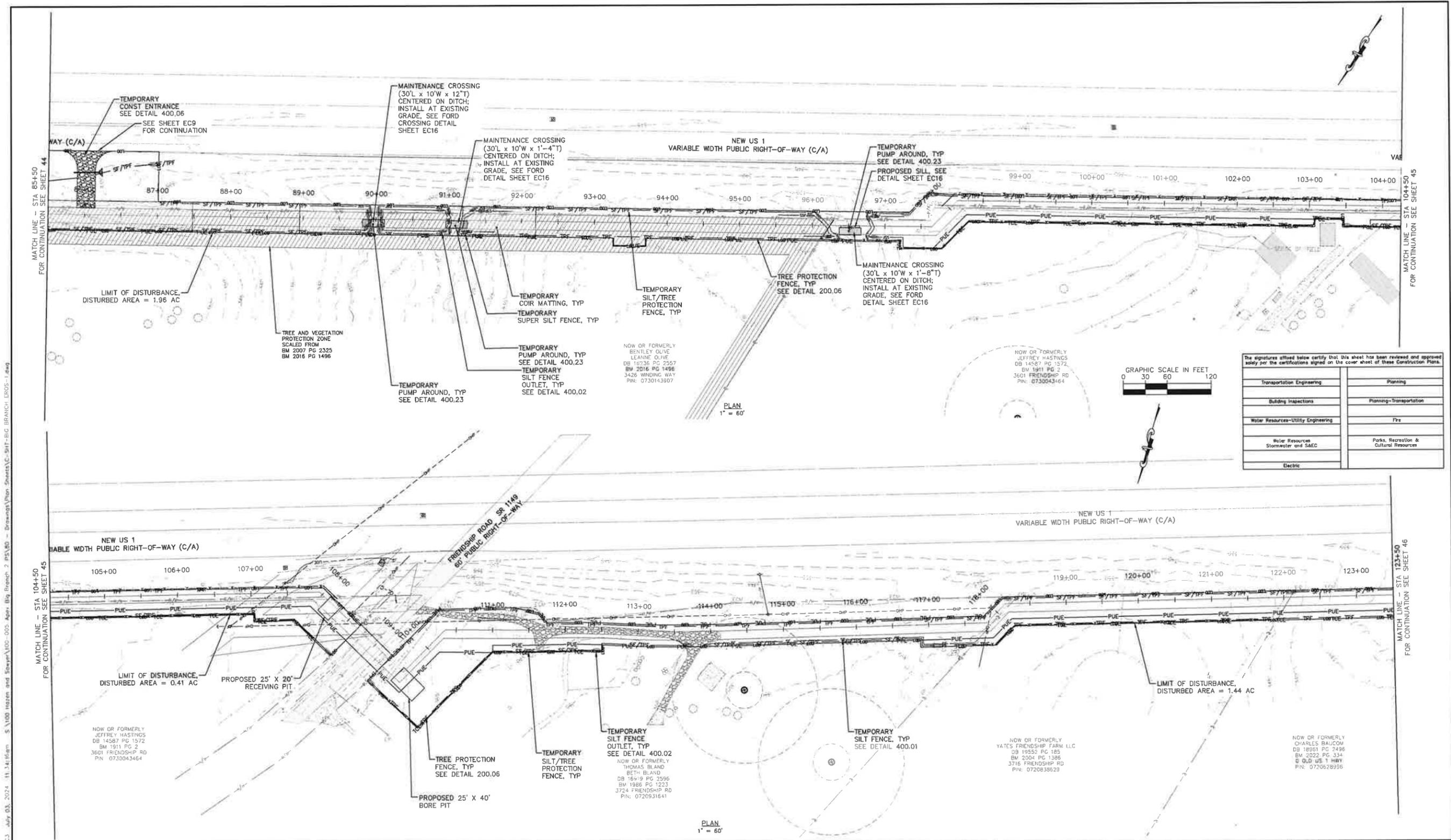


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WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

EROSION CONTROL STA 47+50
TO STA 85+50

CJS PROJ #	100-005	EC2
DATE:	07-05-2024	
SCALE:	1" = 60'	
PROJECT ENGINEER:	SDL	
DESIGNED BY:	JUS	
DRAWN BY:	JUS	SHEET NUMBER 44 OF 60
CHECKED BY:	SDL	



The signatures affixed below certify that this sheet has been reviewed and approved solely for the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and SAEC	Parks, Recreation & Cultural Resources
Electric	

Plotted By: J. Speers - Layout.EC3 July 03, 2024, 11:34:16am. S:\1000 Hazen and Sawyer\100-005 Apex Big Branch 2 PWS\RD - Drawings\Plan Sheets\EC-317-BIG BRANCH EROS-1.dwg

No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	



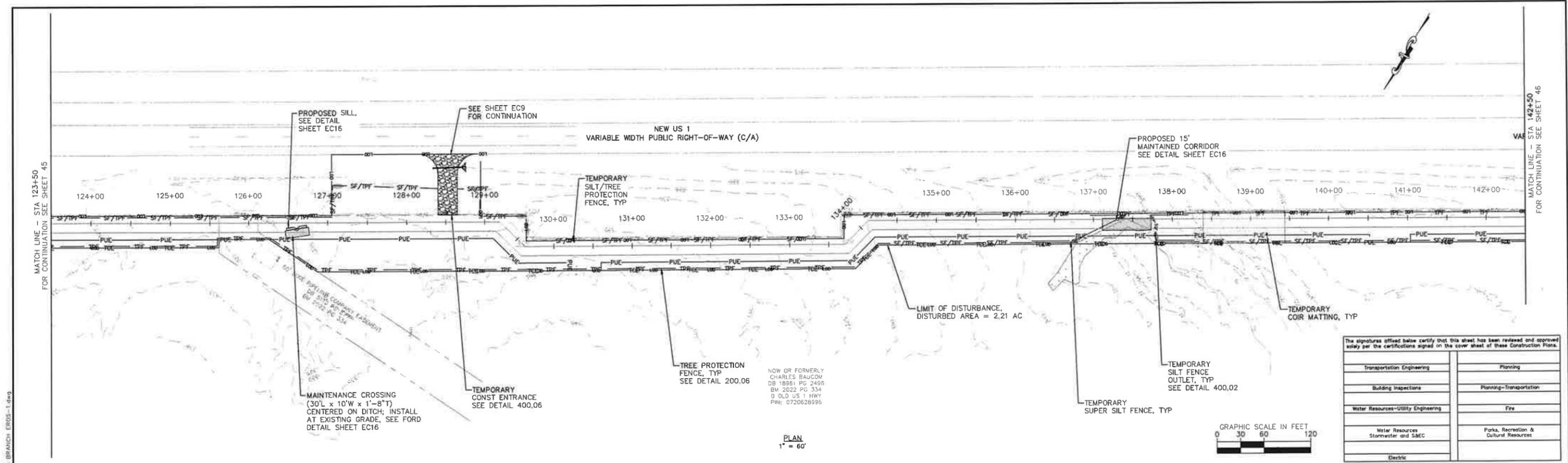
320 S. ACADEMY ST.
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WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

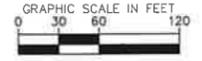
EROSION CONTROL STA 85+50
TO STA 123+50

CJS PROJ #	100-005
DATE	07-05-2024
SCALE	1" = 60'
PROJECT ENGINEER	SDL
DESIGNED BY	JJS
DRAWN BY	JJS
CHECKED BY	SDL

EC3
 SHEET NUMBER
45 OF 60

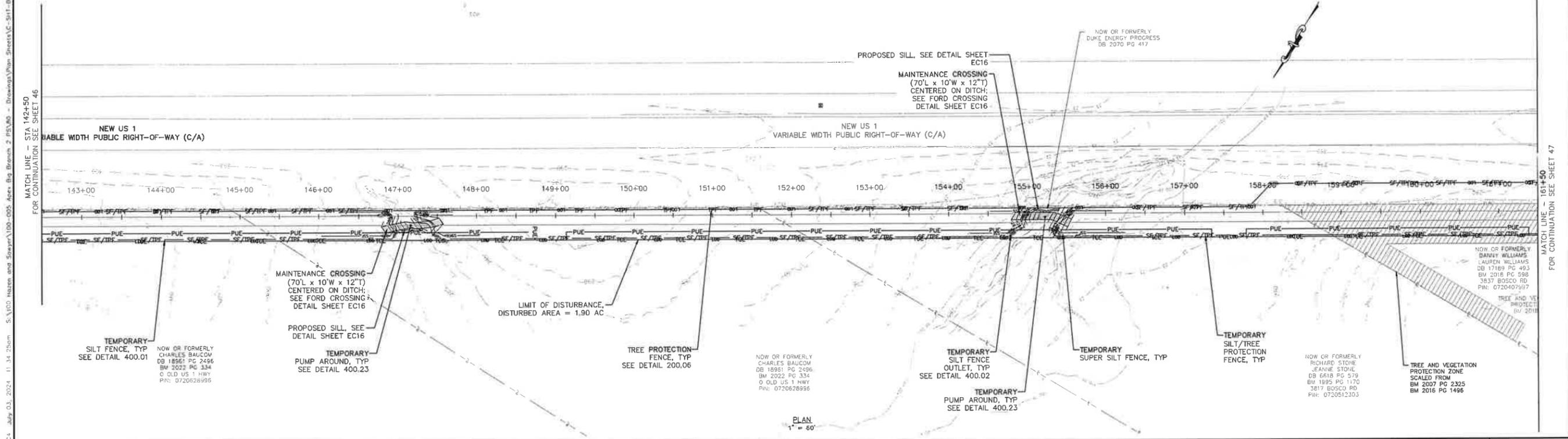


PLAN
1" = 60'



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Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	



PLAN
1" = 60'

Plotted: R:\Projects\2024\07\03_2024_11_14_25cm_S:\100\Hazen and Sawyer\100-005-Apex-Big Branch 2 PWS\00 - Drawings\Plan Sheets\EC-Sub-BIG BRANCH EROSION-1.dwg
 S:\100\Hazen and Sawyer\100-005-Apex-Big Branch 2 PWS\00 - Drawings\Plan Sheets\EC-Sub-BIG BRANCH EROSION-1.dwg

No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	

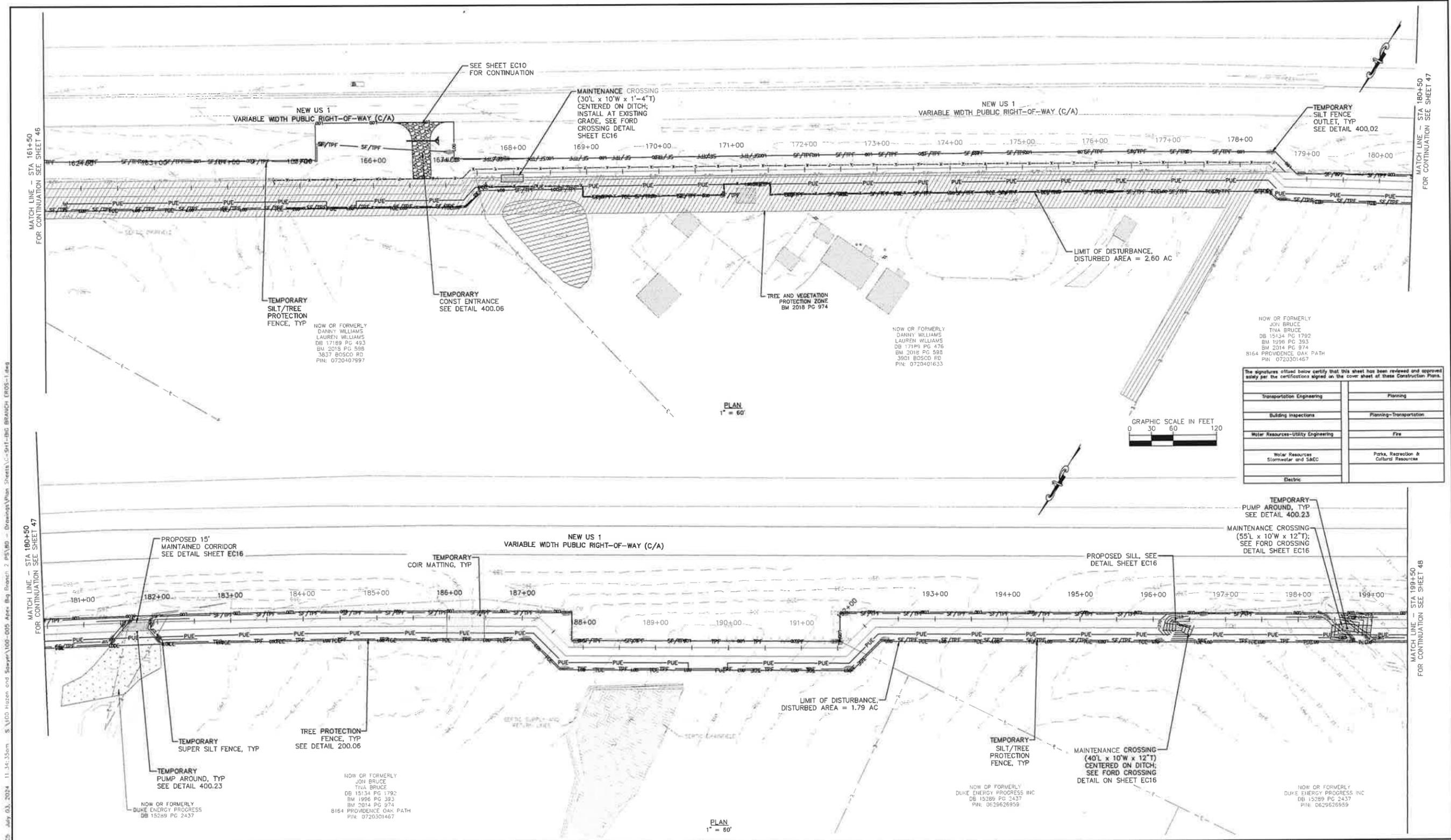


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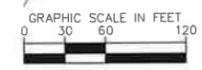
WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

EROSION CONTROL STA 123+50
TO STA 161+50

CJS PROJ #:	100-005	EC4
DATE:	07-05-2024	
SCALE:	1" = 60'	
PROJECT ENGINEER:	SDL	
DESIGNED BY:	JUS	
CHECKED BY:	JUS	
SHEET NUMBER		46 OF 60



PLAN
1" = 60'



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Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

Plotted by J. Spence - Layout ECR - July 03, 2024, 11:46:35am. S:\100 Hazen and Sawyer\100-005 Apex Big Branch 2 PUMPS\DWG BRANCH ECR05-1.dwg

No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	

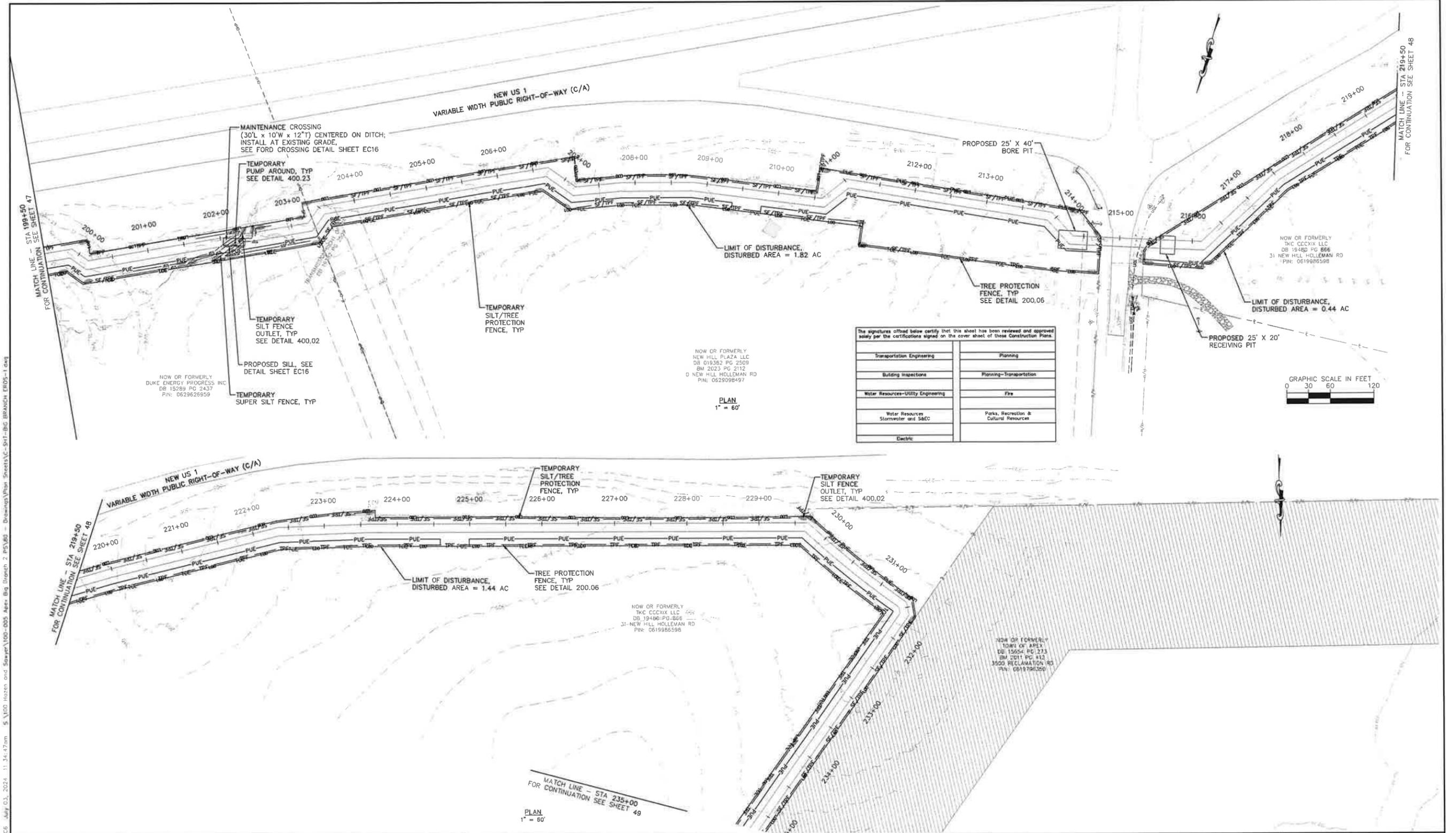


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WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

EROSION CONTROL STA 161+50
TO STA 199+50

CJS PROJ #	100-005	EC5
DATE:	07-05-2024	
SCALE:	1" = 60'	
PROJECT ENGINEER:	SDL	
DESIGNED BY:	JUS	
DRAWN BY:	JUS	SHEET NUMBER 47 OF 60
CHECKED BY:	SDL	



The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources-Slurries and S&EC	Parks, Recreation & Cultural Resources
Electric	

Plotted By: J. Speers, Layout EC6 July 03, 2024, 11:34:47am, S:\100 Hazen and Sawyer\100-005 Apex Big Branch 2 PWS\RD - Drawings\Plan Sheets\EC-511-BIG BRANCH ER05-1.dwg

No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	



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WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

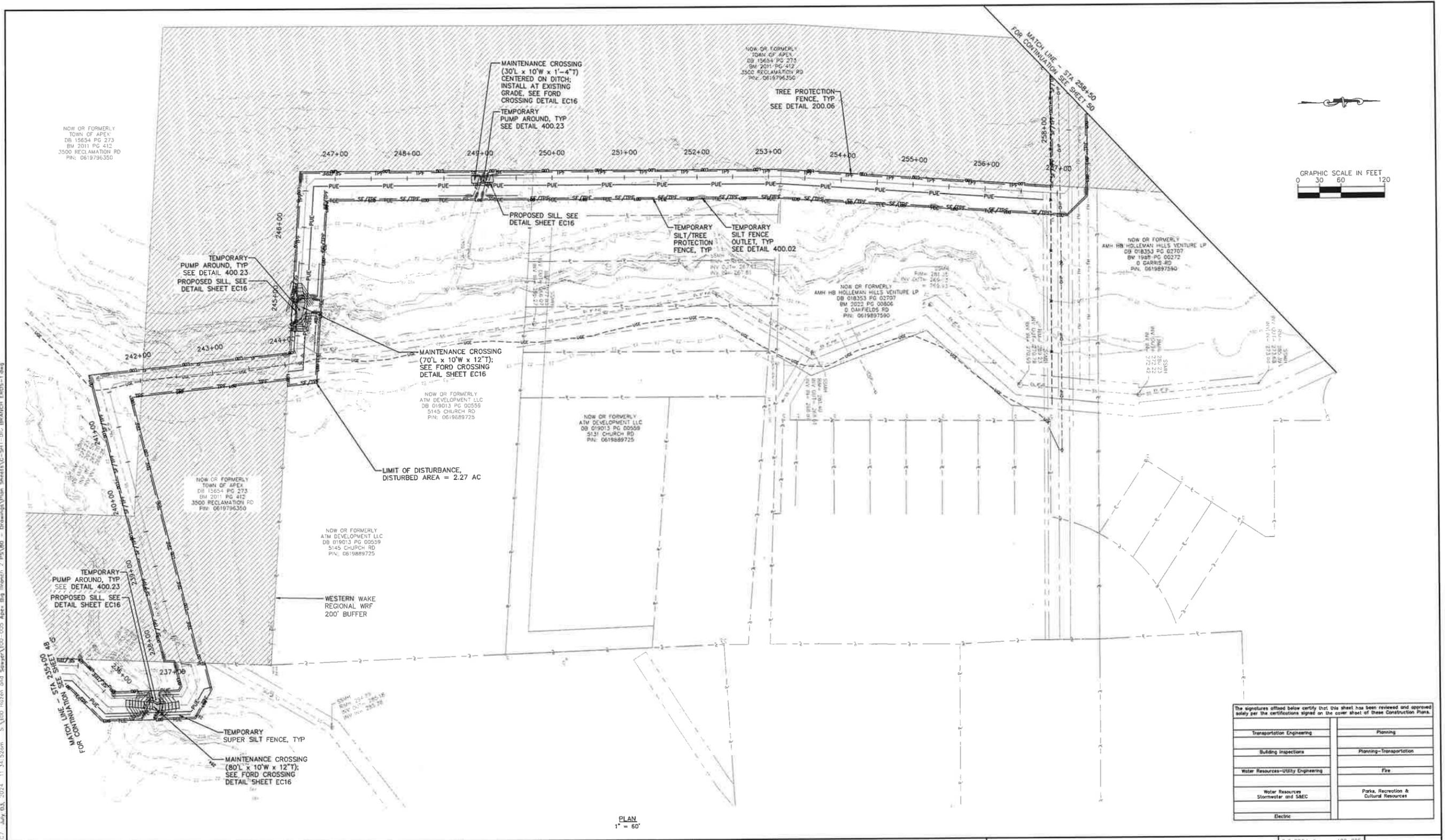
EROSION CONTROL STA 199+50
TO STA 235+00

CJS PROJ. #	100-005
DATE	07-05-2024
SCALE	1" = 60'
PROJECT ENGINEER	SDL
DESIGNED BY	JJS
DRAWN BY	JJS
CHECKED BY	SDL

EC6

SHEET NUMBER

48 OF 60



Plotted By: J. Seeger, Layout: EC7 - July 03, 2024, 11:34:52am, S:\100-Hazen and Sawyer\100-005-Ape-Big Branch 2 PWS\WD - Drawings\Plan Sheets\G-941-BIG BRANCH EROS-1.dwg

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Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

PLAN
1" = 60'

No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/9/2024	SDL	



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 CARY, NC 27511

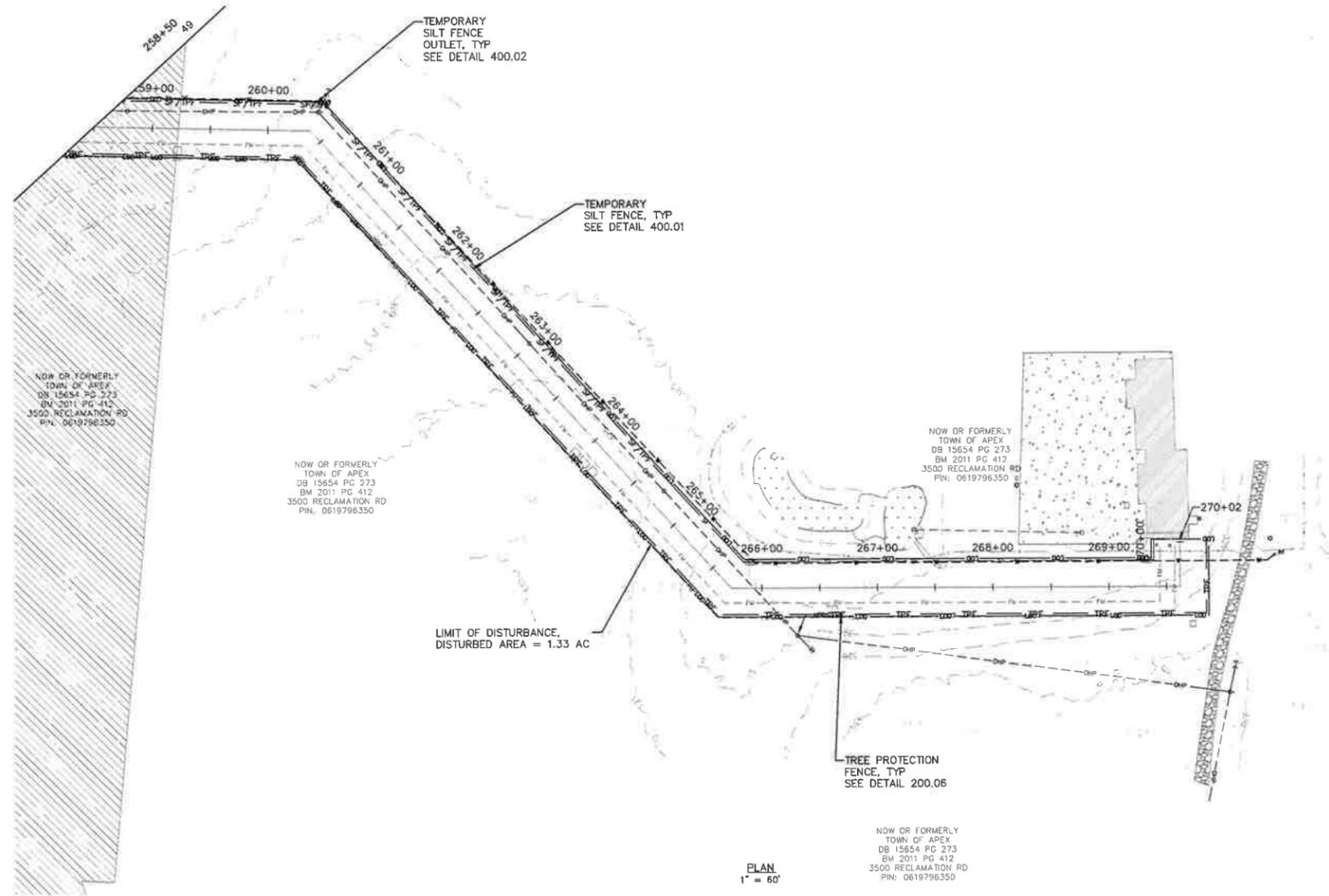
 NC LICENSE #P-1611 WWW.CJS-CONVEYANCE.COM

WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

EROSION CONTROL STA
235+00 TO STA 258+50

CJS PROJ #	100-005	EC7
DATE	07-05-2024	
SCALE	1" = 60'	
PROJECT ENGINEER	SDL	
DESIGNED BY	JJS	
CHECKED BY	SDL	
SHEET NUMBER		49 OF 60

Plotted By: J. Speers - Layout ECB - July 03, 2024 - I:\100 Hazen and Sawyer\100-005 Apex Big Branch 2 PWS\RD - Drawings\Plan Sheet\EC8-SHT-1.dwg BRANCH EROSION-1.dwg



PLAN
1" = 60'

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Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	



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 CARY, NC 27511
 NC LICENSE #P-1611 WWW.CJSCONVEYANCE.COM

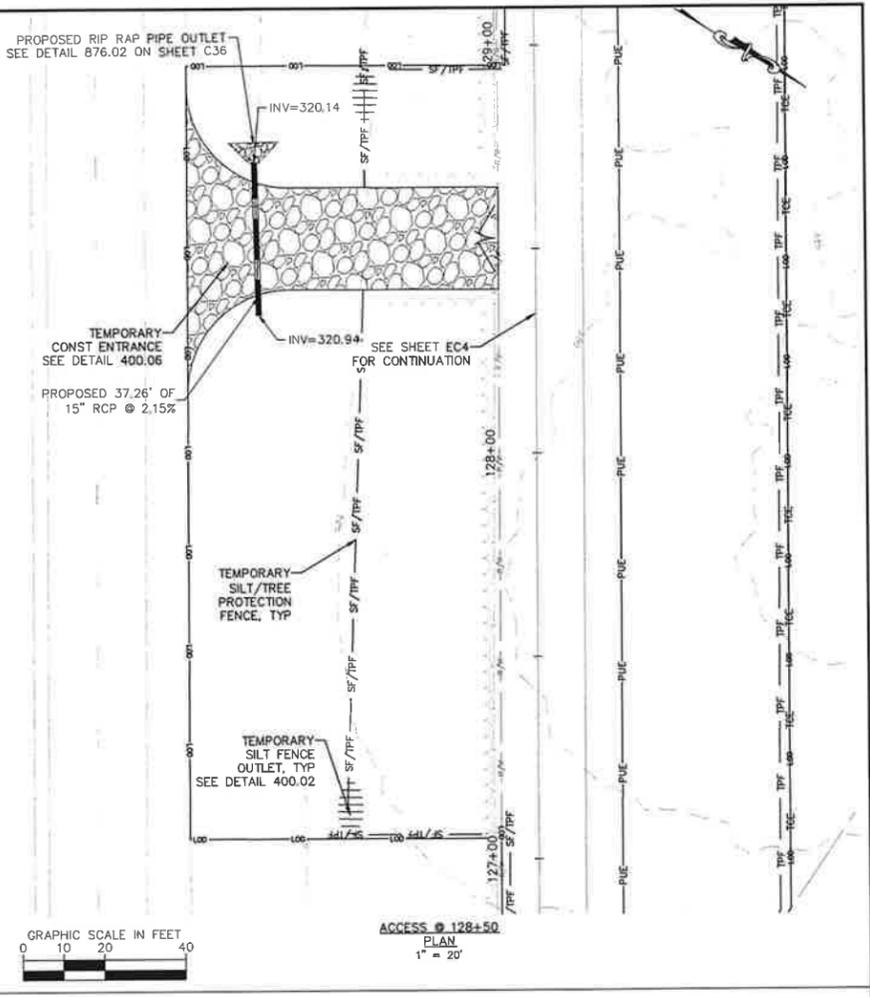
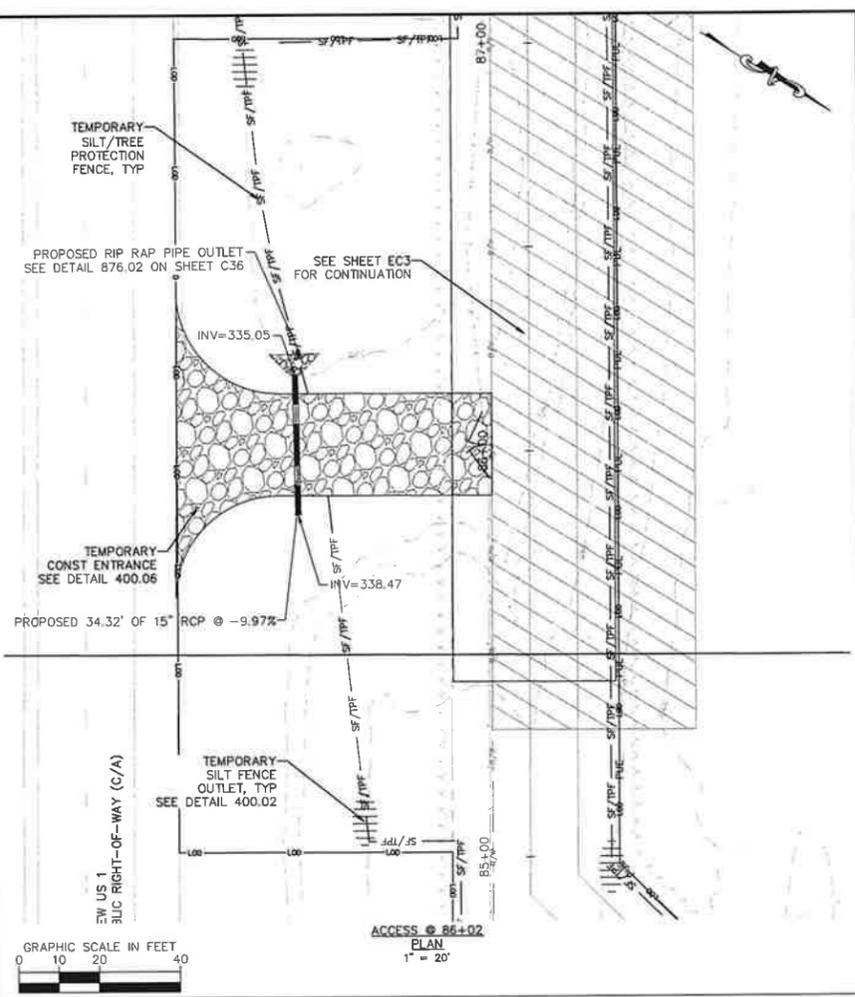
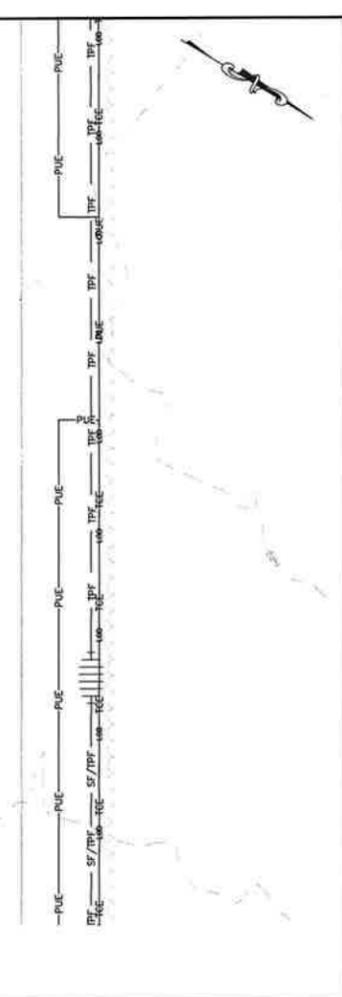
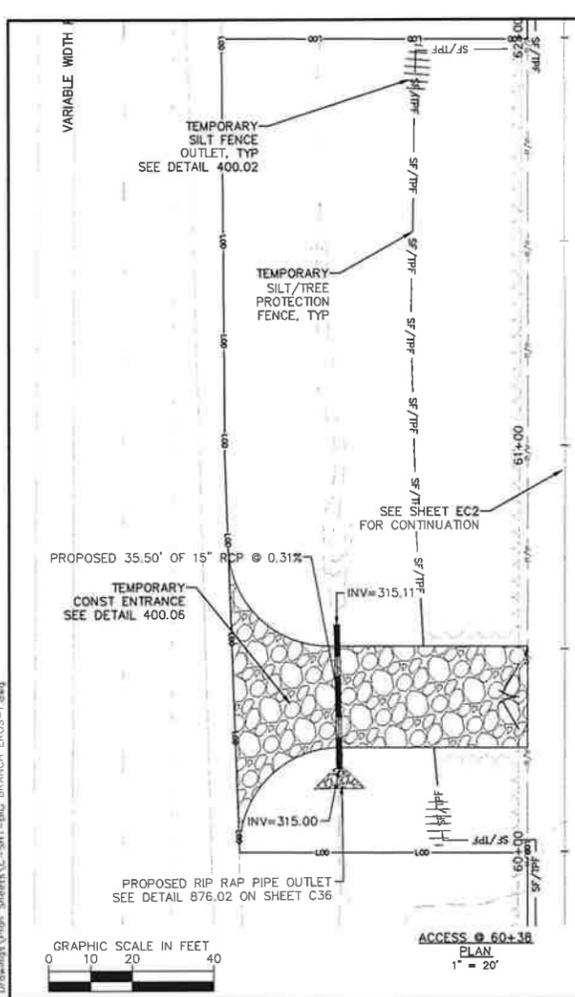
WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

EROSION CONTROL
STA 258+50 TO END

CJS PROJ #	100-005
DATE:	07-05-2024
SCALE:	1" = 60'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JUS
DRAWN BY:	JUS
CHECKED BY:	SDL

EC8
 SHEET NUMBER
50 OF 60

Printed By: J. Speers Layout: EC9 July 03, 2024 11:35:10am S:\100 Hazen and Sawyer\100-005 Apex Big Branch 2 PWS\RD - Drawings\Plan Sheets\EC-911-BIG BRANCH EROS-1.dwg



No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	




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 CARY, NC 27511
 NC LICENSE #P-1611 WWW.CJSCONVEYANCE.COM

WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

EROSION CONTROL US1
TEMPORARY ACCESS ENTRANCE

CJS PROJ #	100-005
DATE:	07-05-2024
SCALE:	1" = 20'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

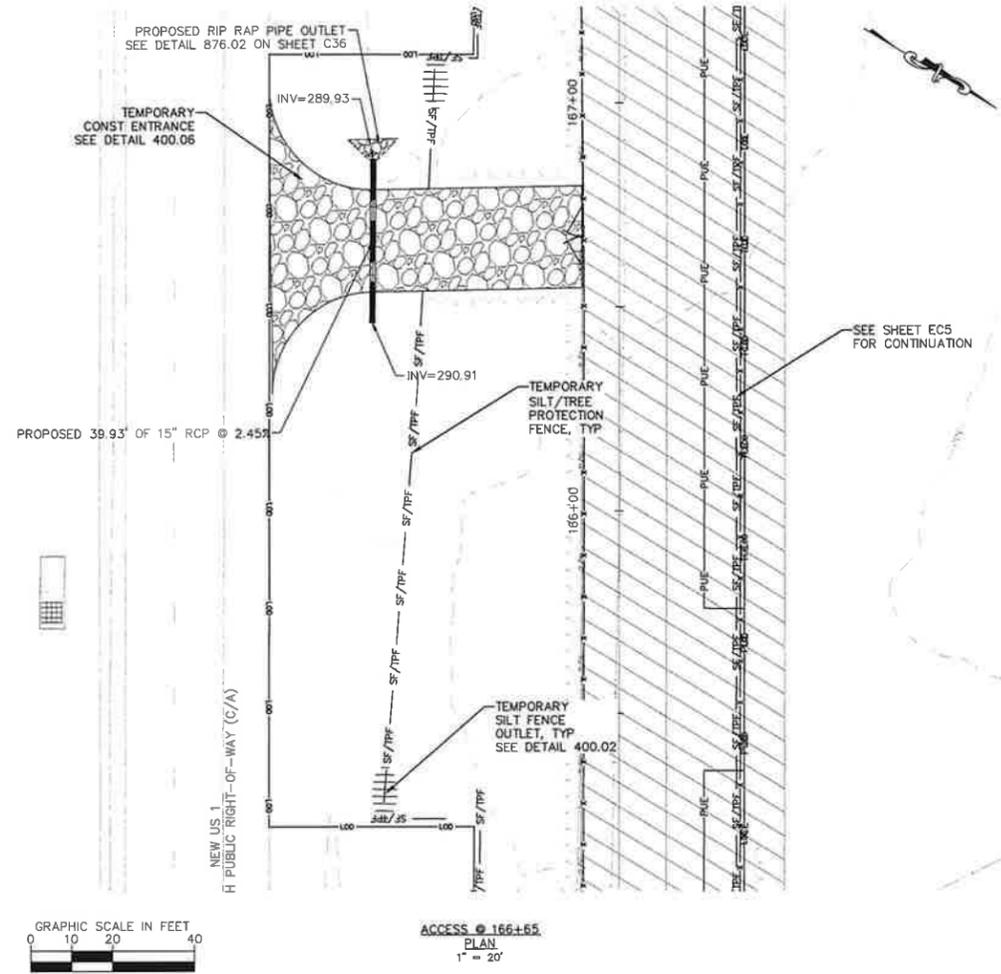
Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

EC9

SHEET NUMBER
51 OF 60

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Plotted By: J. Seavers Layout EC10 July 03, 2024 11:35:23am S:\100 Hazen and Sawyer\100-005-Ape1 Big Branch 2 PWS\10 - Design\Plan Sheets\EC - 511-BIG BRANCH EROS-1.dwg



ACCESS @ 166+65
 PLAN
 1" = 20'

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Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	



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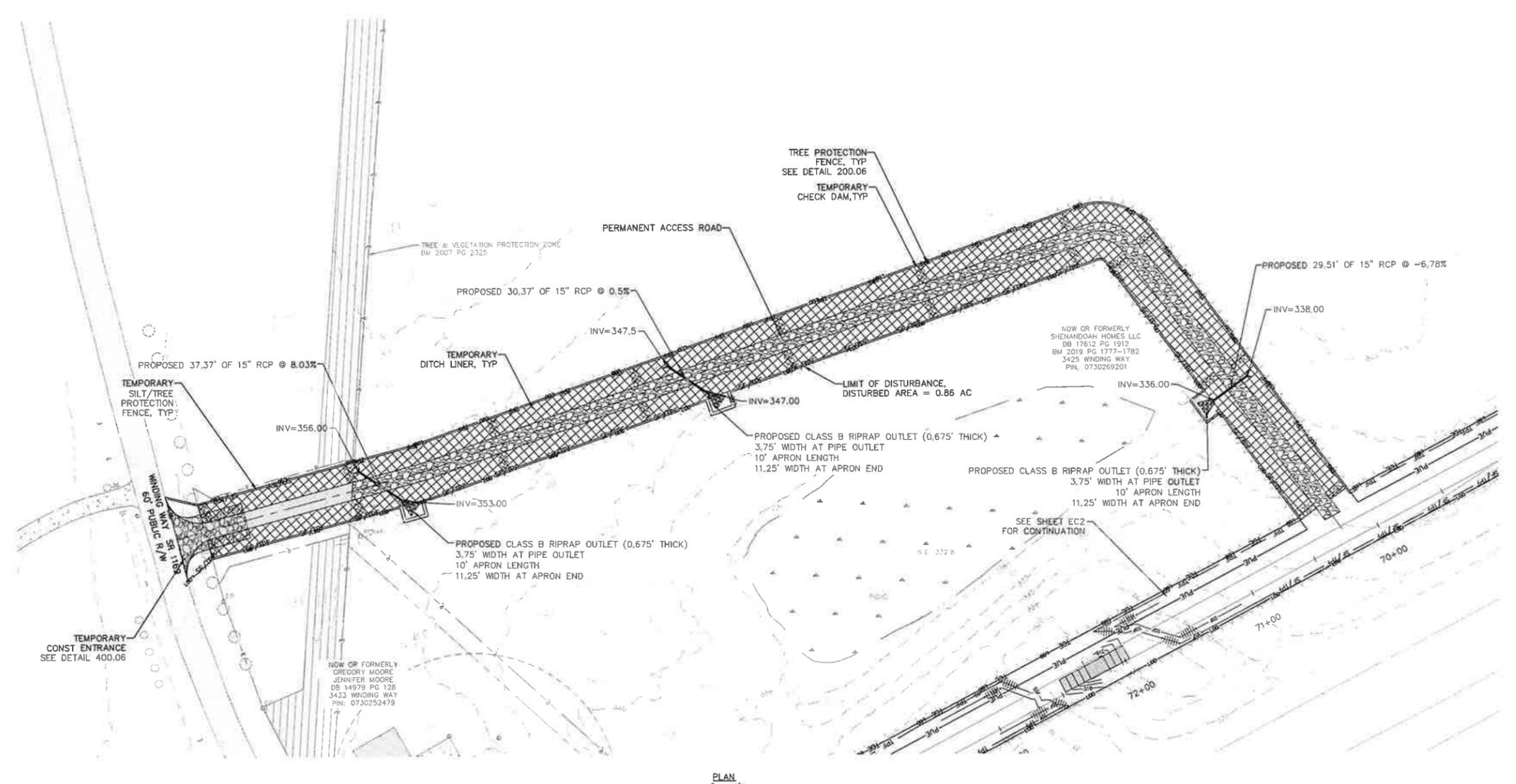
WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

EROSION CONTROL US1
TEMPORARY ACCESS
ENTRANCE

CJS PROJ #:	100-005
DATE:	07-05-2024
SCALE:	1"=20'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

EC10
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52 OF 60

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PLAN
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Building Inspections	Planning-Transportation
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Electric	

No.	REVISIONS	DATE	BY	SEAL
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WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

EROSION CONTROL
ACCESS ROAD

CJS PROJ #:	100-005
DATE:	07-05-2024
SCALE:	1"=40'
PROJECT ENGINEER	SDL
DESIGNED BY:	JUS
DRAWN BY:	JUS
CHECKED BY:	SDL

EC11
 SHEET NUMBER
53 OF 60

GENERAL EROSION AND SEDIMENT CONTROL MEASURES:

- UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE MINIMUM STANDARDS AND SPECIFICATIONS OF THE NORTH CAROLINA EROSION AND SEDIMENTATION CONTROL HANDBOOK.
- THE CONTRACTOR SHALL NOTIFY PLAN APPROVING AUTHORITY ONE WEEK PRIOR TO THE PRE-CONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENT OF LAND DISTURBING ACTIVITY, AND ONE WEEK PRIOR TO FINAL INSPECTION.
- ALL EROSION AND SEDIMENTATION CONTROL MEASURES ARE TO BE PLACED PRIOR TO CLEARING AND/OR LAND DISTURBANCE.
- FOR PRE-CONSTRUCTION LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THE PLANS (INCLUDING, BUT NOT LIMITED TO, OFF-SITE BORROW OR WASTE AREAS, STAGING OR STORAGE AREAS), THE CONTRACTOR SHALL PREPARE AND SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE DIRECTOR FOR REVIEW AND RECORD REGIONAL OFFICE FOR APPROVAL. CONTRACTOR SHALL PAY ALL FEES REQUIRED AND SHALL INSTALL NECESSARY MEASURES AT NO SEPARATE PAYMENT. THE CONTRACTOR SHALL PROVIDE THE OWNER AND THE OWNER'S REPRESENTATIVE A COPY OF THE AMENDED PERMIT.
- THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES, OTHER THAN THOSE SHOWN ON PLANS, NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE OWNER'S REPRESENTATIVE (NO SEPARATE PAYMENT).
- ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.
- ALL AREAS DISTURBED BY CONSTRUCTION UNLESS OTHERWISE APPROVED SHALL BE RESEED OR RESEED AS INDICATED AND STABILIZED.
- UNLESS A STREAM CROSSING IS PROPOSED, THE CONTRACTOR IS NOT PERMITTED TO CROSS ANY STREAM WITH ANY VEHICLE OR PIECE OF EQUIPMENT. CONTRACTOR TO NOTE THAT RIP RAP BANK STABILIZATION IS NOT CONSIDERED A STREAM CROSSING. IF A STREAM CROSSING IS NOT SHOWN, BUT ENCOUNTERED, CONTRACTOR MUST USE A BANK AND OUT APPROACH.
- DURING DE-WATERING OPERATIONS, WATER SHALL BE PUMPED INTO AN APPROVED FILTERING DEVICE PRIOR TO DISCHARGE TO RECEIVING OUTLET.
- THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RAINFALL-PRODUCING EVENT. NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.
- ALL TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED BY CONTRACTOR DURING STABILIZATION OR A SUFFICIENT GROUND COVER HAS BEEN ESTABLISHED AS DIRECTED BY THE OWNER'S REPRESENTATIVE. (NO SEPARATE PAYMENT)
- TEMPORARY GRADE CONSTRUCTION ENTRANCE SHALL BE REQUIRED AT ALL CONSTRUCTION STAGING AREA ENTRANCES AND ALL CONSTRUCTION ACCESS LOCATIONS INTO NONPAVED AREAS. (NO SEPARATE PAYMENT)
- WHEN CROSSING CREEK OR DRAINAGE WAY, THE CONTRACTOR SHALL INSTALL RIP-RAP WITH FABRIC ON DISTURBED BANKS AND CHANNELS AND RESTORE SLOPES TO ORIGINAL CONTOURS, BUT NOT STEEPER THAN 2:1 MAXIMUM. DISTURBED CREEK AREA SHALL BE STABILIZED IMMEDIATELY.
- LIMITS OF CONSTRUCTION ARE AS SHOWN ON PLANS FOR PERMANENT REPAIR WHEN INSIDE PAVEMENT AND EDGE OF PAVEMENT TO RIGHT-OF-WAY WHEN OUTSIDE PAVEMENT. UNLESS STATED OTHERWISE, CONTRACTOR SHALL BE MINIMAL THAT TOTAL PROJECT LIMITS OF DISTURBANCE IS INTENDED TO UNDER 1 ACRE AND WILL BE REQUIRED APPLY FOR AND OBTAIN A PERMIT FOR ADDITIONAL DISTURBED AREA INCLUDING BUT NOT LIMITED TO TRENCHED CONSTRUCTION AREAS, SPILL PILES, MATERIAL LANDFILL, AND EROSION CONTROL MEASURES.
- ANY AREAS WITHIN THE 15 FOOT BUFFER ZONE OF A CREEK OR NATURAL WATER COURSE MUST BE SEEDING AND MULCHED IMMEDIATELY AFTER LINE INSTALLATION IS COMPLETED WITHIN THE BUFFER ZONE.
- NO BORROW OR SPILL AREAS LOCATED ON SITE. ALL SPILL SHALL BE REMOVED AND LEGALLY DISPOSED OF OFF-SITE DAILY.
- CONTRACTOR SHALL RESTORE THE DISTURBED AREA TO EXISTING GRADE UNLESS SHOWN OTHERWISE ON THE DRAWINGS.
- CONCRETE MIXERS SHALL NOT RISE OUT ON PROJECT SITE UNLESS A CONCRETE WASHOUT EXISTS PER DETAIL.

EROSION CONTROL MAINTENANCE PLAN

- ALL EROSION CONTROL PRACTICES WILL BE CHECKED FOR STABILITY AND OPERATION FOLLOWING EVERY RAINFALL-PRODUCING EVENT BUT IN NO CASE LESS THAN ONCE EVERY WEEK. ANY NEEDED REPAIRS WILL BE MADE IMMEDIATELY TO MAINTAIN ALL PRACTICES AS DESIGNED.
- SEDIMENT WILL BE REMOVED FROM BEHIND THE SEDIMENT FENCE WHEN IT BECOMES ABOUT 0.5 FT DEEP AT THE FENCE. THE SEDIMENT FENCE WILL BE REPAIRED AS NECESSARY TO MAINTAIN A BARRIER.
- ALL UTILITY TRENCHES ARE TO BE PROTECTED FROM WATER INFILTRATION.
- SPILL PILES ARE TO BE CONTAINED AT ALL TIMES.
- ALL SEEDED AREAS WILL BE FERTILIZED, RE-SEED AS NECESSARY, AND MULCHED ACCORDING TO THE SPECIFICATIONS TO MAINTAIN A VIGOROUS, DENSE VEGETATION COVER. IF SEEDING FAILURE OCCURS, THOSE AREAS SHALL BE RE-SEED WITH ANNUAL VEGETATION, SUITABLE FOR THE TIME OF YEAR FOR TEMPORARY STABILIZATION AND PREPARED FOR PERMANENT SEEDING. SEEDING AND MULCHING WILL BE IN ACCORDANCE WITH SPECIFICATIONS.
- THE CONTRACTOR IS RESPONSIBLE FOR THE MAINTENANCE OF ALL EROSION CONTROL MEASURES AT ALL TIMES, WHETHER INSTALLED ACCORDING TO PLAN OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE OR THE OWNER'S REPRESENTATIVE (NO SEPARATE PAYMENT).

GROUND COVER STATUTES

PURSUANT TO G.S. 113A-67(7), PROVISIONS FOR PERMANENT GROUND COVER SUFFICIENT TO RESTRAIN EROSION MUST BE ACCOMPLISHED FOR ALL DISTURBED AREAS (SEE TABLE THIS SHEET FOR TIME FRAMES) FOLLOWING COMPLETION OF CONSTRUCTION OR DEVELOPMENT.

PLANNED SEDIMENTATION AND EROSION CONTROL PRACTICES

- TEMPORARY SEEDING TO BE INSTALLED AS PER SEEDING SPECIFICATIONS.
- PERMANENT SEEDING TO BE INSTALLED AS PER SEEDING SPECIFICATIONS. FERTILIZER, SEEDING AND MULCHING TO BE INSTALLED AS PER TEMPORARY AND PERMANENT SEEDING SPECIFICATIONS.
- SOODING TO PREVENT EROSION AND DAMAGE FROM SEDIMENT AND RUNOFF BY STABILIZING THE SOIL SURFACE WITH PERMANENT VEGETATION.
- MAINTENANCE: AFTER THE FIRST WEEK WATER AS NECESSARY TO MAINTAIN ADEQUATE MOISTURE IN THE ROOT ZONE AND PREVENT DORMANCY OF THE SOO. DO NOT REMOVE MORE THAN ONE-THIRD OF THE SHOOTS IN ANY MOWING. GRASS HEIGHT SHOULD BE MAINTAINED BETWEEN 2 AND 3 INCHES. AFTER THE FIRST CROPPING, AN ESTABLISHED SOO REQUIRES FERTILIZATION AND MAY ALSO REQUIRE LINE FOLLOW SOO. TEST RECOMMENDATIONS WHEN POSSIBLE.
- MULCHING TO PROTECT THE SOIL SURFACE FROM THE FORCES OF RAINFALL IMPACT AND OVERLAND FLOW. MULCH FOSTERS THE GROWTH OF VEGETATION, REDUCES EVAPORATION, INSULATES THE SOO, AND SUPPRESSES WEED GROWTH. MULCH IS FREQUENTLY USED TO ACCENT LANDSCAPE PLANTINGS.

MAINTENANCE
RESPECT ALL BULBS PERIODICALLY, AND AFTER RAINFALLS TO CHECK FOR RILL EROSION, DISLOCATION OR FAILURE. WHERE EROSION IS OBSERVED, APPLY ADDITIONAL MULCH. IF WASHOUT OCCURS, REMOVE THE SOO, RESEED AND REINSTALL MULCH. CONTINUE INSPECTIONS UNTIL VEGETATION IS FULLY ESTABLISHED.

6.41 OUTLET STABILIZATION STRUCTURE TO BE INSTALLED AS A PERMANENT STABILIZATION MEASURE AT THE OUTLET OF A CHANNEL OR CONDUIT BY REDUCING THE VELOCITY OF FLOW AND DISSIPATING ENERGY. THESE MEASURES WILL BE LOCATED PER PLANS AND CONSTRUCTED PER THE DETAIL.

MAINTENANCE INSPECT THE RIP-RAP OUTLET STRUCTURES WEEKLY AND AFTER EACH SIGNIFICANT RAINFALL EVENT (1/2 INCH OR GREATER) TO SEE IF ANY EROSION AROUND OR WITHIN THE RIP-RAP HAS TAKEN PLACE. ON IF THE STONES HAVE BEEN DISLOADED IMMEDIATELY MAKE ALL NEEDED REPAIRS TO PREVENT FURTHER DAMAGE.

6.52 INLET PROTECTION TEMPORARY INLET PROTECTION WILL BE INSTALLED AROUND THOSE INLETS, EITHER EXISTING OR PROPOSED, WHERE THERE IS POTENTIAL FOR SEDIMENT TO REACH THE INLET AND THEREFORE THE DOWNSTREAM SECTIONS. THESE MEASURES WILL BE LOCATED PER THE PLANS AND CONSTRUCTED PER THE DETAIL.

MAINTENANCE INSPECT THE BARRIER WEEKLY AND AFTER EACH SIGNIFICANT RAINFALL EVENT (1/2 INCH OR GREATER) AND MAKE REPAIRS AS NEEDED. REMOVE SEDIMENT AS NECESSARY TO PROVIDE ADEQUATE VOLUME FOR SUBSEQUENT RAINS. WHEN THE CONTRIBUTING DRAINAGE AREA HAS BEEN ADEQUATELY STABILIZED, REMOVE ALL MATERIALS AND ANY UNSTABLE SOIL, AND EITHER SALVAGE OR DISPOSE OF IT PROPERLY. BRING THE DISTURBED AREA TO PROPER GRADE, THEN SMOOTH AND COMPACT IT APPROPRIATELY. STABILIZE ALL BARE AREAS AROUND THE INLET.

6.55 ROCKPILE INLET PROTECTION SIMILAR TO BLOCK AND GRAVEL INLET PROTECTION, THIS MEASURE IS USED TO PREVENT SEDIMENT FROM FILTERING, ACCUMULATING AND BEING TRANSPORTED BY A STORM DRAINAGE SYSTEM DURING STABILIZATION OF DISTURBED DRAINAGE AREA. THIS MEASURE ALLOWS EARLY USE OF THE STORM DRAINAGE SYSTEM.

MAINTENANCE INSPECT THE ROCK PILE INLET PROTECTION AT LEAST WEEKLY AND AFTER EACH SIGNIFICANT RAINFALL EVENT (1/2 INCH OR GREATER) AND REPAIR IMMEDIATELY. REMOVE SEDIMENT AND RESTORE THE SEDIMENT STORAGE AREA TO ITS ORIGINAL DIMENSIONS WHEN THE TRENCH OR OTHER DEBRIS THAT COULD CLOG THE CHANNEL. WHEN THE TRAP PLACED THE SEDIMENT THAT IS REMOVED IN THE DESIGNATED DISPOSAL AREA AND REPLACE THE CONTAMINATED PART OF THE GRAVEL PACKING. CHECK THE STRUCTURE FOR DAMAGE. ANY RIP-RAP DISPLACED FROM THE STONE HORSESHOE MUST BE REPLACED IMMEDIATELY. AFTER ALL THE SEDIMENT PRODUCING AREAS HAVE BEEN STABILIZED, REMOVE THE STRUCTURE AND ALL THE UNSTABLE SEDIMENT. BRING THE AREA TO BLDK WITH THE ADJOINING AREAS AND PROVIDE PERMANENT GROUND COVER.

6.63 TEMPORARY SILT FENCE WILL RETAIN SEDIMENT FROM SMALL DISTURBED AREAS. SILT FENCE WILL BE PLACED ALONG SLOPES AS SHOWN ON CONSTRUCTION DETAILS.

MAINTENANCE INSPECT SEDIMENT FENCES AT LEAST WEEKLY AND AFTER EACH RAINFALL. MAKE ANY NEEDED REPAIRS IMMEDIATELY. SHOULD THE FABRIC OF A SEDIMENT FENCE COLLAPSE, TEAR, DISCONNECT, OR BECOME INFECTED, REPLACE IT PROMPTLY. REMOVE SEDIMENT DEPOSITS AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON THE FENCE. TAKE CARE TO AVOID UNDERMINING THE FENCE DURING CLEAN UP. REMOVE ALL FENCING MATERIALS AND UNSTABLE SEDIMENT DEPOSITS AND BRING THE AREA TO GRADE AND STABILIZE IT AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

6.83 CHECK DAM WILL BE INSTALLED TO REDUCE EROSION BY REDUCING THE VELOCITY OF THE FLOW.

MAINTENANCE INSPECT CHECK DAMS AND CHANNELS AT LEAST WEEKLY AND AFTER EACH SIGNIFICANT RAINFALL EVENT (1/2 INCH OR GREATER) AND REPAIR IMMEDIATELY. CLEAN OUT SEDIMENT, STRAW LIMBS, OR OTHER DEBRIS THAT COULD CLOG THE CHANNELS WHEN NEEDED. ANTICIPATE SUBMERGENCE AND DEPOSITION ABOVE THE CHECK DAM AND EROSION FROM HIGH FLOWS ALONG THE EDGES OF THE DAM. CORRECT ALL DAMAGES IMMEDIATELY. IF SIGNIFICANT EROSION OCCURS BETWEEN DAMS, ADDITIONAL MEASURES CAN BE TAKEN SUCH AS: INSTALLING A PROTECTIVE RIP-RAP LAYER IN THE PORTION OF THE CHANNEL.

REMOVE SEDIMENT ACCUMULATED BEHIND THE DAMS AS NEEDED TO PREVENT CHECK DAMS TO CHANNEL VEGETATION, ALLOW THE CHANNEL TO DRAIN THROUGH THE STONE CHECK DAM, AND PREVENT LARGE FLOWS FROM CARRYING SEDIMENT OVER THE DAM AND STORES TO DAMS AS NEEDED TO MAINTAIN DESIGN HEIGHT AND ACROSS SECTION.

SEEDING SCHEDULE

TO BE IN ACCORDANCE WITH CONTRACT SPECIFICATIONS

SEED SHALL BE SEED CERTIFIED TO BE THE LATEST SEASON'S CROP AND SHALL BE DELIVERED IN ORIGINAL SEALED PACKAGES BEARING THE PRODUCER'S GUARANTEED ANALYSIS FOR PERCENTAGES OF MIXTURES AND PURE LIVE SEED. THE PRODUCER'S SEED LABEL SHALL INDICATE IF THE MINIMUM PERCENT OF PURE LIVE SEED (WHICH SHALL BE 82.4% FOR BERMAUDA, 88 FOR RYE GRASS) THE MINIMUM PERCENT OF GERMINATING HARD SEED AND MAXIMUM PERCENT OF WEED SEED (NO MORE THAN 1.2% PERCENT FOR BERMAUDA, 0.5 PERCENT FOR RYE GRASS). SEED SHALL BE LABELED IN CONFORMANCE WITH THE DEPARTMENT OF AGRICULTURE RULES AND REGULATIONS UNDER THE FEDERAL SEED ACT AND APPLICABLE STATE SEED LAWS. SEED THAT HAS BECOME WET, MOLDY, OR OTHERWISE DAMAGED WILL NOT BE ACCEPTABLE.

THE FOLLOWING SEED MIXTURE SHALL BE USED:

DATE	TYPE	PLANTING RATE
APRIL 15 - SEPT 1	GERMAN MILLET	40 LBS/ACRE
AUG 15 - NOV 15	GRASS RYE	120 LBS/ACRE
NOV 1 - APRIL 1	GRASS RYE	120 LBS/ACRE

DATE	TYPE	PLANTING RATE
APRIL 15 - SEPT 1	K-31 FESCUE COMMON BERMAUDA CENTPEDE	80 LBS/ACRE 80 (HULLED) LBS/ACRE 8 LBS/ACRE
AUG 15 - NOV 15	K-31 FESCUE COMMON BERMAUDA CENTPEDE	120 LBS/ACRE 25 (HULLED) LBS/ACRE 9 LBS/ACRE
NOV 1 - APRIL 1	K-31 FESCUE COMMON BERMAUDA CENTPEDE	120 LBS/ACRE 25 (HULLED) LBS/ACRE 9 LBS/ACRE

NOTES:

- WHERE CONSTRUCTION CROSSES A PASTURE THAT HAS BEEN GRASSED, THE CONTRACTOR SHALL RE-SEED THE AREA WITH THE SAME TYPE OF GRASS AS FOUND ON THE SITE. ALL HIGHWAY RIGHTS-OF-WAY AND PRIVATE YARDS DISTURBED SHALL ALSO BE RE-SEED OR WITH THE SAME TYPE OF GRASS PREVIOUSLY FOUND. THE SEED MIXTURE SPECIFICATION SHALL BE USED AS A GUIDE AND THE CONTRACTOR IS CHARGED WITH THE RESPONSIBILITY OF SEEDING AREAS WITH THE PROPER TYPE OF GRASS THAT MATCHES THE EXISTING.
- CONSULT THE REGIONAL STATE EROSION CONTROL OFFICER FOR ADDITIONAL INFORMATION CONCERNING OTHER ALTERNATIVES FOR VEGETATION OF DENuded AREAS. THE ABOVE VEGETATION RATES ARE THOSE WHICH DO WELL UNDER LOCAL CONDITIONS. OTHER SEEDING RATE COMBINATIONS ARE POSSIBLE.

SOIL AMENDMENTS

LIME SHALL BE APPLIED AT THE RATE OF 4000 LBS PER ACRE. 10-10-10 COMMERCIAL FERTILIZER SHALL BE APPLIED AT THE RATE OF 1,000 POUNDS PER ACRE AND WELL WORKED IN TO THE TOP FOUR INCHES OF TOP SOIL. IF HYDROSEEDING, USE 500 POUNDS OF 10-10-10 FERTILIZER ON SLOPES STEEPER THAN 1/2 HORIZONTAL TO 1 VERTICAL, UNLESS A SOIL TEST INDICATES OTHERWISE.

MULCH

ALL SEEDED AREAS WILL BE MULCHED WITH TWO (2) TONS PER ACRE OF SMALL GRASS STRAW OR WOOD CELLULOSE FIBER SPREAD UNIFORMLY, APPROXIMATELY 1/4 OF

GROUND SHOULD BE VISIBLE TO AVOID SMOTHERING SEEDLINGS. ASPHALT EMULSION (ASTM D 677 AND ASTM D 2058) SHALL BE USED TO ANCHOR THE STRAW APPLIED AT 150 GALONS PER TON OF STRAW OR EQUIVALENT TO STABILIZE. ASPHALT EMULSION SHALL BE INSTALLED AT ALL TIMES. THE CONTRACTOR SHALL TAKE SUFFICIENT PRECAUTIONS TO PREVENT MULCH FROM ENTERING DRAINAGE STRUCTURES THROUGH DISPLACEMENT BY WIND, WATER OR OTHER CAUSES AND PROMPTLY REMOVE ANY BLOCKAGE WHICH MAY OCCUR.

MAINTENANCE
THE CONTRACTOR SHALL PROTECT AND MAINTAIN GRASSED AREAS AS NECESSARY TO ESTABLISH A UNIFORM TURF COMPOSED OF THE GRASSES SPECIFIED. THE CONTRACTOR SHALL RESEED ANY BARE AREAS AND REPAIR ALL ERODED AREAS.

WATERING OF SEEDED AREAS WILL BE REQUIRED DURING PERIODS OF DRY WEATHER TO PROMOTE MAXIMUM GROWTH. THE CONTRACTOR SHALL SUPPLEMENT NATURAL RAINFALL TO INSURE A MINIMUM OF ONE (1) INCH OF RAINFALL WEEKLY.

MAINTENANCE OF LAWNS BEGINS IMMEDIATELY AFTER THE AREA IS PLANTED AND CONTINUES FOR THE PERIOD REQUIRED TO ESTABLISH ACCEPTABLE LAWNS, BUT NOT LESS THAN SIXTY (60) DAYS AFTER INITIAL SEEDING, OR UNTIL PROVISIONAL ACCEPTANCE BY OWNER. MAINTAIN SEEDED AREAS BY WATERING, FERTILIZING, MOWING, WEEDING AND OTHER OPERATIONS SUCH AS ROLLING, REGROUNDING, REPLYING, AERATING, AND MULCHING AS REQUIRED TO ESTABLISH AN ACCEPTABLE LAWN FREE OF ERODED OR BARE AREAS.

CHANNEL STABILIZATION AND OUTLET PROTECTION

UPON COMPLETION OF REACHING FINAL PREPARED SUB GRADE FOR AREAS (SLOPES, CHANNELS AND OUTLET PROTECTION) TO BE PROTECTED AS INDICATED ON DRAWINGS, INSTALL FILTER FABRIC, PROTECT NO. 57 STONE BEDDING LAYER, AND APPROPRIATE RIP RAP. PREPARED SURFACE SHALL BE FREE OF DEBRIS, STONES AND OTHER DELETERIOUS MATERIAL THAT MAY BE INJURIOUS TO THE FABRIC OR PERFORMANCE OF THE SLOPE PROTECTION.

- GEOTEXTILE FABRICS, COIR MATTING OR SPECIAL MAT PROTECTION, SUCH AS FIBERGLASS ROPING OR STRAW AND NETTING, SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS TO PROVIDE STABILITY UNTIL THE VEGETATION IS FULLY ESTABLISHED. THESE REQUIREMENTS FOR SLOPE PROTECTION MAY INCLUDE AN ANCHOR TRENCH, SEAMING, STITCHING AND OVERLAPPING.
- RIP RAP FOR USE OF DESIGNATED ON THE DRAWINGS SHALL CONFORM TO NCDOT REQUIREMENTS FOR THE SPECIFIED CLASS (CLASS II, ETC.) AS INDICATED ON THE DRAWINGS.

SEEDBED PREPARATION

- CHISEL COMPACTED AREAS AND SPREAD TOPSOIL 3 INCHES DEEP OVER ADVERSE SOIL CONDITIONS, IF AVAILABLE.
- RIP THE ENTIRE AREA TO 8 INCHES DEPTH.
- REMOVE ALL LOOSE ROCK, ROOTS, AND OTHER OBSTRUCTIONS LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM.
- APPLY AGRICULTURAL LIME, FERTILIZER AND SUPER PHOSPHATE UNIFORMLY AND MIX WITH SOIL (SEE BELOW).
- CONTINUE TILLAGE UNTIL A WELL PULVERIZED, FIRM REASONABLY UNIFORM SEEDBED IS PREPARED TO 4 TO 6 INCHES DEEP.
- SEED ON A FRESHLY PREPARED SEEDBED AND COVER SEED LIGHTLY WITH SEEDING EQUIPMENT OR CUT/PACK AFTER SEEDING.
- MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH.
- INSPECT ALL SEEDED AREAS AND MAKE NECESSARY REPAIRS OR RESEEDING WITHIN THE PLANTING SEASON. IF POSSIBLE, ITF STAND SHOULD BE OVER 80% DAMAGED, REESTABLISH FOLLOWING ORIGINAL LINE, FERTILIZER AND SEEDING RATES.
- CONSULT STATE INSPECTOR ON MAINTENANCE TREATMENT AND FERTILIZER AFTER PERMANENT COVER IS ESTABLISHED.

*APPLY AGRICULTURAL LIMESTONE-4,000 LBS/ACRE
FERTILIZER: 1000 LBS/ACRE 10-10-10
SUPER PHOSPHATE: 600 LBS/ACRE 20% ANALYSIS
MULCH: 2 TONS/ACRE SMALL GRASS STRAW
ANOTHER: ASPHALT EMULSION @ 300 GAL/ACRE

MINIMUM REQUIREMENTS FOR SLOPE STABILIZATION

MINIMUM REQUIREMENTS	SLOPE
STABILIZED WITH GRASS	3:1 AND FLATTER
STABILIZED WITH SHRUBS OR VINES	3:1 TO 2:1
STABILIZED WITH RIP RAP	2:1
STABILIZED WITH RETAINING WALL	STEEPER THAN 1:5:1

SECTION E: GROUND STABILIZATION

Site Area Description	Required Ground Stabilization Timeframes	
	Stabilize within this many calendar days after ceasing land disturbance	Timeframe variations
(a) Perimeter dikes, swales, ditches, and perimeter slopes	7	None
(b) High Quality Water (HQW) Zones	7	None
(c) Slopes steeper than 3:1	7	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed. -7 days for slopes greater than 50' in length and with slopes steeper than 4:1 -7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed
(d) Slopes 3:1 to 4:1	14	-7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed unless there is zero slope
(e) Areas with slopes flatter than 4:1	14	

Note: After the permanent cessation of construction activities, any areas with temporary ground stabilization shall be converted to permanent ground stabilization as soon as practicable but in no case longer than 90 calendar days after the last land disturbing activity. Temporary ground stabilization shall be maintained in a manner to render the surface stable against accelerated erosion until permanent ground stabilization is achieved.

GENERAL EROSION AND SEDIMENTATION CONTROL CONSTRUCTION SEQUENCE

- OBTAIN ALL PERMITS AND PLAN APPROVALS FOR ANY ADDITIONAL CONSTRUCTION ENTRANCES AND STAGING AREAS.
- CONDUCT PRE-CONSTRUCTION CONFERENCE. CONTACT THE REGIONAL REGIONAL OFFICE AT LEAST 48 HOURS PRIOR TO COMMENCING LAND DISTURBING ACTIVITY. THE CONTACT NUMBER IS (919) 791-4202.
- INSTALL GRAVEL CONSTRUCTION ENTRANCES, SILT FENCES, TREE PROTECTION MARKERS AND TEMPORARY INLET PROTECTION.
- INSTALL TEMPORARY INLET PROTECTION FOR DRIVEWAY CURBS, CURB DRAIN PIPES AND CURBYARD DRETES.
- CLEAR AND GRUB ALL PERMANENT EASEMENTS WITHIN THE LIMITS OF DISTURBANCE AND ONLY THOSE PORTIONS OF THE TEMPORARY CONSTRUCTION EASEMENTS NECESSARY FOR CONSTRUCTION (OR AT CONTRACTOR'S DISCRETION).
- INSTALL WATER AND SEWER MAINS AS SHOWN. STRIP TOPSOIL DURING TRENCHING OPERATIONS AND SEPARATE FROM SUITABLE EXCAVATED MATERIAL. PROTECT STOCKPILED TOPSOIL FROM RUNOFF AND ANY STOCKPILED UNSTABLE EXCAVATED MATERIAL. IF SUCH MATERIAL IS NOT IMMEDIATELY DISPOSED OF OFF-SITE, SUITABLE EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF THE EXCAVATION WITH THE TRENCH BETWEEN THE MATERIAL AND THE SILT FENCE.
- INSPECT ALL EROSION AND SEDIMENT CONTROL DEVICES WEEKLY AND AFTER EVERY RAINFALL EVENT. PROVIDE APPROPRIATE MAINTENANCE MEASURES AFTER INSPECTION AND EACH RAIN EVENT.
- FOR SEWER AND WATER MAIN CONSTRUCTION IN STREETS, REMOVE ASPHALT IN TOWN-MAINTAINED STREETS ALONG PROPOSED SEWER AND WATER MAIN ALIGNMENTS BY MILLING WITH ZIPPER TYPE EQUIPMENT (0.007 MAXIMUM DISTURBANCE). REPAIR MILLINGS BACK OR PROVIDE ADEQ ROAD AND COMPACT TO PROVIDE AN ALL WEATHER SURFACE UNTIL SEWER OR WATER LINE INSTALLATION IS INITIATED. FOR SEWER AND WATER MAIN CONSTRUCTION IN NCDOT MAINTAINED AREAS, REMOVE ONLY PORTION OF PAVEMENT THAT CAN EITHER BE SAFELY PLACED AT END OF WORKING DAY OR PERMANENTLY PATCHED BY THE END OF EACH WORKING DAY.
- PROVIDE ADEQ STONE IN DISTURBED AREAS WITHIN TOWN-MAINTAINED STREETS AND COMPACT TO PROVIDE AN ALL WEATHER SURFACE TO MATCH EXISTING PAVEMENT SURFACES AS SEWER MAIN, LATERALS, WATER MAIN AND SERVICES (WHERE APPLICABLE) PROGRESSES IN TOWN-MAINTAINED STREETS. CONTRACTOR SHALL MAINTAIN ALL WEATHER SURFACE UNTIL PAVEMENT IS REPLACED.
- TEST AND INSPECT SEWER MAIN AND LATERALS AND WATER MAIN AND SERVICES (WHERE APPLICABLE).
- PATCH ALL PAVED SURFACES DISTURBED BY CONSTRUCTION ACTIVITIES WITH PERMANENT ASPHALT PATCH OVERLAY PERMANENT PATCHED AREAS WHERE APPLICABLE OR DESIGNATED ON DRAWINGS.
- SEED AND MULCH OR SOO ALL DISTURBED AREAS NOT OTHERWISE IMPROVED AND ESTABLISH PERMANENT GROUND COVER AS INDICATED. STABILIZATION OF DISTURBED AREA SHALL BE CONSISTENT WITH REQUIREMENTS AS INDICATED IN EROSION AND SEDIMENTATION CONTROL DETAILS.
- PRELIMINARY FINAL INSPECTION BY CONTRACTOR.
- PRELIMINARY FINAL INSPECTION BY OWNER AND CONTRACTOR TO CONFIRM PUNCH LIST.
- UPON APPROVAL FROM NCDOT AND OWNER, REMOVE TEMPORARY EROSION CONTROL MEASURES AND REESTABLISH ANY DISTURBED AREAS.
- CLOSE OUT PROJECT.
- STOCKPILES, LAYDOWNS OR WASTE AREAS, CONCRETE WASHOUTS, PORTABLE TOILETS, AND FUELS MUST BE LOCATED AT LEAST 50 FEET AWAY FROM ANY OPEN WATER CONVEYANCES, SUCH AS BASINS, DITCHES, STORM DRAIN INLETS, ETC. THE LOCATION OF THESE ACTIVITIES MAY BE FIELD ADJUSTED IF THE DISTANCE REQUIREMENTS ARE MET.
- WHEN THE PROJECT IS COMPLETE, AND PERMANENT GROUND COVER SUFFICIENT TO RESTRAIN EROSION HAS BEEN ESTABLISHED, THE PERMITTEE SHALL CONTACT DNR TO CLOSE OUT THE BASIC PLAN AFTER FURNISHING THE PERMITTEE WITH AN ELECTRONIC NOTICE OF TERMINATION (E-NOT) AT \$10 ANNUAL PERMIT FEE WILL BE CHARGED UNTIL THE E-NOT HAS BEEN RECEIVED.
- PER NPS REQUIREMENTS, RAIN GAUGE, SELF-INSPECTION RECORDS, PERMIT, CERTIFICATE OF COVERAGE, AND SAE PLAN ARE REQUIRED TO BE MAINTAINED ON SITE AND ACCESSIBLE DURING INSPECTION. IT IS RECOMMENDED THAT THESE ITEMS BE PLACED IN A PERMITS BOX AT THE BEGINNING OR ENTRANCE OF PROJECT.

TOWN OF APEX CONSTRUCTION SEQUENCE

- THROUGH DEVELOPMENT SERVICES AT (919) 372-7467, SCHEDULE A PRE-CONSTRUCTION MEETING WITH TOWN STAFF.
- REQUEST AN ANCHOR FEE FOR THE SAE PERFORMANCE GUARANTEE FROM DEVELOPMENT SERVICES AT (919) 248-3355.
- SUBMIT THE APPLICABLE SAE PERFORMANCE GUARANTEE TO DEVELOPMENT SERVICES AT 1055 WILSON STREET, APEX, NC 27602. THE EROSION CONTROL LETTER OF PLAN APPROVAL WILL NOT BE ISSUED UNTIL THE PERFORMANCE GUARANTEE HAS BEEN SUBMITTED.
- REQUEST A LETTER OF PLAN APPROVAL FOR SEDIMENTATION AND EROSION CONTROL MEASURES FROM WATER RESOURCES STAFF AT (919) 372-7470. SUBMIT THE FINANCIAL RESPONSIBILITY BOND FROM DEVELOPMENT SERVICES AT (919) 248-3355 FOR PLAN APPROVAL. FORM AT OR WITHIN 7 DAYS PRIOR TO THE PRE-CONSTRUCTION MEETING.
- COMPLETE AND SUBMIT AN ELECTRONIC NOTICE OF INTENT (E-NOT) FORM WITH NCDMNR REQUESTING A CERTIFICATE OF COVERAGE (COO) UNDER NCDMNR CONSTRUCTION STORMWATER GENERAL PERMIT. VISIT THE FOLLOWING WEBSITE: <https://www.ncdcmnr.gov/ncdcmnr/energy-environment/land-management/land-permits/submitting-a-permit-to-construction-or-rehabilitation>
- COMPLETE A GRADING PERMIT APPLICATION AND RECEIVE A GRADING PERMIT FROM THE INSPECTION & PERMITTING DEPARTMENT AS REQUIRED BY THE NORTH CAROLINA BUILDING CODE APPENDIX J FOR GRADING. BOTH GRADING PERMIT AND COO FROM NCDMNR MUST BE SUBMITTED TO THE ENVIRONMENTAL FIELD SERVICES SUPERVISOR PRIOR TO THE COMMENCEMENT OF ANY LAND DISTURBANCE ACTIVITY.
- COMPLETE A TREE PROTECTION FENCING INSTALLATION PERMIT APPLICATION THROUGH THE PLANNING DEPARTMENT.
- HAVE A SURVEYOR FLAG PROPERTY LINES, EASEMENTS, BUFFERS, TREE PROTECTION AREAS, AND FLAG THE PROTECTION LIMITS.
- CONTACT AN APEX PLANNING DEPARTMENT ZONING COMPLIANCE OFFICER AT (919) 248-3428 TO REQUEST APPROVAL FOR TREE PROTECTION FENCING LOCATIONS.
- INSTALL APPROVED TREE PROTECTION FENCING, SIGNS, AND/OR ANY OTHER PROTECTION MEASURES THAT MAY BE REQUIRED. CALL PLANNING AT (919) 248-3428 FOR A FINAL INSPECTION OF PROTECTION MEASURES. PLANNING WILL FORWARD APPROVAL TO WATER RESOURCES EROSION CONTROL FIELD STAFF.
- INSTALL GRAVEL CONSTRUCTION ENTRANCES, TEMPORARY DIVERSIONS, SILT FENCING, SEDIMENT BASINS, BYPASS CHANNELS, AND/OR OTHER MEASURES AS SHOWN ON THE APPROVED PLANS. CLEAN ONLY AS NECESSARY TO INSTALL THESE DEVICES.
- WHEN COMPLETED, CALL WATER RESOURCES EROSION CONTROL FIELD STAFF AT (919) 372-7470 FOR AN ON-SITE INSPECTION AND TO REQUEST A CERTIFICATE OF COMPLIANCE. WATER RESOURCES WILL ALSO FORWARD A COPY TO THE BUILDING INSPECTIONS & PERMITTING DEPARTMENT.
- POST GRADING PERMIT PROMINENTLY ON SITE AT ALL TIMES.
- BEGIN CLEARING, LOGGING, GRUBBING, AND ROUGH GRADE OF THE SITE IN ACCORDANCE WITH THE APPROVED GRADING PLAN.
- STOCKPILE A SUFFICIENT AMOUNT OF TOPSOIL TO COVER 3 INCHES OVER LANDSCAPED AREAS AT THE END OF THE PROJECT.
- INSTALL STORM SEWER, IF APPLICABLE, AND PROTECT INLETS WITH INLET PROTECTION DEVICES. SEDIMENT DEVICES AND OTHER APPROVED MEASURES AS SHOWN ON PLANS MAINTAIN SAE MEASURES AS NEEDED.
- AFTER COMPLETION OF ANY PHASE OF GRADING OR WHEN LAND-DISTURBING ACTIVITIES HAVE TEMPORARILY CEASED, ESTABLISH GROUND COVER ON SWALES AND DITCHES AND GRADED SLOPES STEEPER THAN 3:1 WITHIN 14 CALENDAR DAYS. SLOPES THAT ARE 3:1 OR FLATTER MUST ESTABLISH GROUND COVER WITHIN 14 CALENDAR DAYS.
- STABILIZE SITE AS AREAS ARE BROUGHT UP TO FINISHED GRADE WITHIN VEGETATION OR PAVING.
- TEMPORARY EROSION CONTROL MEASURES MUST BE INSTALLED, BE FUNCTIONING PROPERLY, AND BE MAINTAINED FOR THE DTYRE AREA CONTAINED WITHIN THE PLAT.
- REMOVE AND CLEAN ALL STORMWATER SYSTEM PIPES. CLEAN AND REMOVE SEDIMENT FROM TEMPORARY SEDIMENT HOLDING DEVICES. FOLLOW THE SOO CONSTRUCTION SEQUENCE FOUND ON THE GRADING AND/OR SCM DETAIL SHEET ON THE CONSTRUCTION PLAN SET.
- REMOVE ALL TEMPORARY DIVERSIONS, SILT FENCING, SEDIMENT BASINS, ETC. AND PROVIDE ADEQUATE COVER OR PAVE ANY RESULTING BARE AREAS. ALL PERMANENT EROSION CONTROL DEVICES SHOULD BE INSTALLED AT THIS POINT.

SEEDING MIXTURE	40 lbs/acre of: SEE CHART
SEEDING DATES	OPTIMAL SEEDING MONTHS: NOVEMBER, FEBRUARY, OR MARCH
SEEDING AMENDMENTS	Temporary seeding will be required on all stream restoration areas disturbed following oil land disturbing activities. All soil in planting areas shall be tested and the rate of fertilization and lining shall be in accordance with the test results. The planting of any species of fescue grass along or adjacent to streams and channels is prohibited unless otherwise approved by the Engineer. All areas shall be mulched for erosion control upon completion of construction activities or as soon as practicable but in no case longer than one (1) acre, a ground cover sufficient to restrain erosion must be planted or provided within 14 calendar days, whichever period is shorter, slopes shall be planted or otherwise provided with ground cover, dikes, or structures sufficient to restrain erosion. NOTE: USE PERMANENT STREAM BANK STABILIZATION.

STREAM RESTORATION PERMANENT SEEDING		
Scientific Name	Common Name	Seed %
<i>Andropogon virginicus</i>	Broomsedge	15
<i>Carex vulpinoidea</i>	Fan Sedge	10
<i>Chasmodon laxa</i>	Wood Oats	10
<i>Careopsis major</i>	Tackseed	5
<i>Elymus virginicus</i>	Virginia Wildrye	15
<i>Juncus effusus</i>	Soft Rush	5
<i>Leersia oryzoides</i>	Rice Cut Grass	10
<i>Panicum clandestinum</i>	Switchgrass	10
<i>Scirpus cyperinus</i>	Woolgrass	10

PERMANENT SEEDING FOR STREAM BANK STABILIZATION

SEEDING MIXTURE	TEMPORARY SEEDING FOR SUMMER AND WINTER SEASONS	
	SUMMER SEASON	WINTER SEASON
40 lbs/acre of: 50% Browntop Millet (Panicum bromimifolium), 50% Pearl Millet (Pennisetum glaucum)	50% Browntop Millet (Panicum bromimifolium)	50% Barley (Hordeum spp), 50% Winter Rye
SEEDING DATES	April 1 - October 1	October 1 - April 1
SEEDING AMENDMENTS	Temporary seeding will be required on all stream restoration areas disturbed following oil land disturbing activities. All soil in planting areas shall be tested and the rate of fertilization and lining shall be in accordance with the test results. The planting of any species of fescue grass along or adjacent to streams and channels is prohibited unless otherwise approved by the Engineer. All areas shall be mulched for erosion control upon completion of construction activities or as soon as practicable but in no case longer than one (1) acre, a ground cover sufficient to restrain erosion must be planted or provided within 14 calendar days, whichever period is shorter, slopes shall be planted or otherwise provided with ground cover, dikes, or structures sufficient to restrain erosion.	Temporary seeding will be required on all stream restoration areas disturbed following oil land disturbing activities. All soil in planting areas shall be tested and the rate of fertilization and lining shall be in accordance with the test results. The planting of any species of fescue grass along or adjacent to streams and channels is prohibited unless otherwise approved by the Engineer. All areas shall be mulched for erosion control upon completion of construction activities or as soon as practicable but in no case longer than one (1) acre, a ground cover sufficient to restrain erosion must be planted or provided within 14 calendar days, whichever period is shorter, slopes shall be planted or otherwise provided with ground cover, dikes, or structures sufficient to restrain erosion.

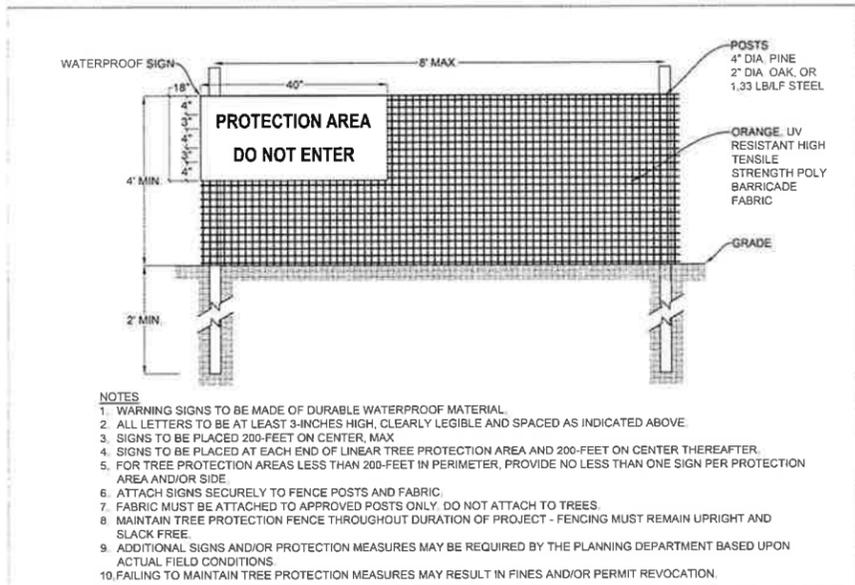
TEMPORARY SEEDING AND MULCHING FOR STREAM BANK STABILIZATION

The signatories affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	File
Water Resources Stormwater and S&C	Perks, Recreation & Cultural Resources
Electric	

Plotted By: J. Spencer - Layout 49 EROSION CONTROL NOTES - July 03, 2024, 11:36:05am - 5:1

Project File: S:\Projects\2024\07\03_2024_31-36\118m_5_1000\Hazen and Sawyer\100-000-Apex_Big Branch_2_P25100 - Drawings\Plan_Sheets\EC-011-BIG BRANCH APFC_EC_DETAILS.dwg
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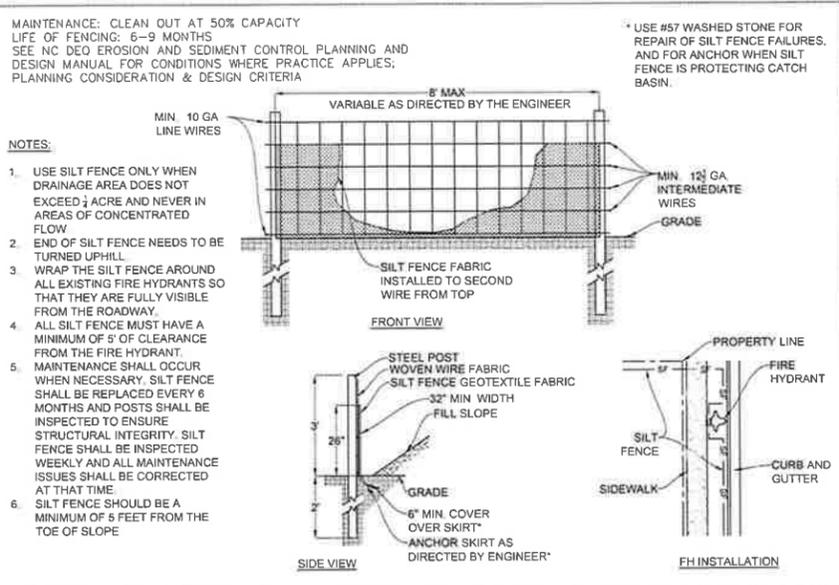


- NOTES**
1. WARNING SIGNS TO BE MADE OF DURABLE WATERPROOF MATERIAL.
 2. ALL LETTERS TO BE AT LEAST 3-INCHES HIGH, CLEARLY LEGIBLE AND SPACED AS INDICATED ABOVE.
 3. SIGNS TO BE PLACED 200-FEET ON CENTER, MAX.
 4. SIGNS TO BE PLACED AT EACH END OF LINEAR TREE PROTECTION AREA AND 200-FEET ON CENTER THEREAFTER.
 5. FOR TREE PROTECTION AREAS LESS THAN 200-FEET IN PERIMETER, PROVIDE NO LESS THAN ONE SIGN PER PROTECTION AREA AND/OR SIDE.
 6. ATTACH SIGNS SECURELY TO FENCE POSTS AND FABRIC.
 7. FABRIC MUST BE ATTACHED TO APPROVED POSTS ONLY. DO NOT ATTACH TO TREES.
 8. MAINTAIN TREE PROTECTION FENCE THROUGHOUT DURATION OF PROJECT - FENCING MUST REMAIN UPRIGHT AND SLACK FREE.
 9. ADDITIONAL SIGNS AND/OR PROTECTION MEASURES MAY BE REQUIRED BY THE PLANNING DEPARTMENT BASED UPON ACTUAL FIELD CONDITIONS.
 10. FAILING TO MAINTAIN TREE PROTECTION MEASURES MAY RESULT IN FINES AND/OR PERMIT REVOCATION.

TOWN OF APEX STANDARDS
EFFECTIVE: FEBRUARY 28, 2023

TREE PROTECTION FENCE

STD. NO. **200.06**
SHEET 1 OF 1

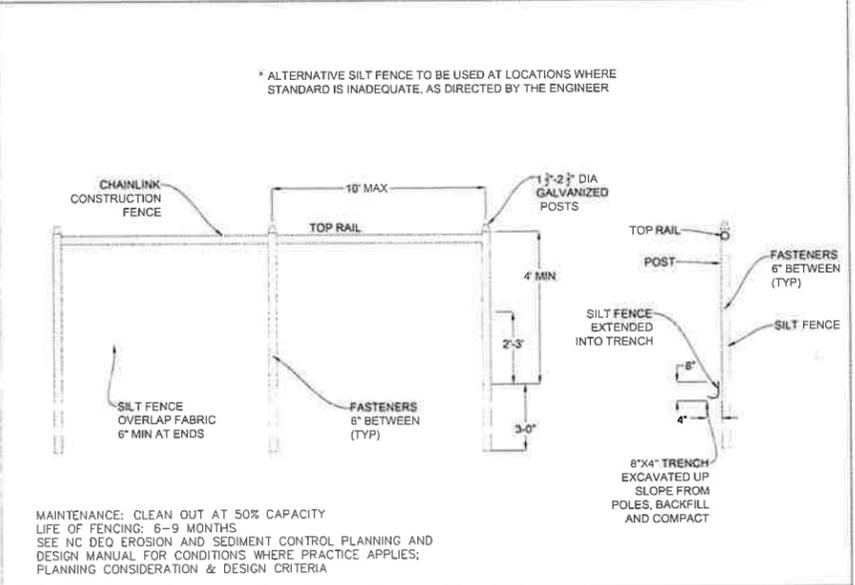


- MAINTENANCE:** CLEAN OUT AT 50% CAPACITY
LIFE OF FENCING: 6-9 MONTHS
SEE NC DEQ EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL FOR CONDITIONS WHERE PRACTICE APPLIES; PLANNING CONSIDERATION & DESIGN CRITERIA
- NOTES:**
1. USE SILT FENCE ONLY WHEN DRAINAGE AREA DOES NOT EXCEED 1/2 ACRE AND NEVER IN AREAS OF CONCENTRATED FLOW.
 2. END OF SILT FENCE NEEDS TO BE TURNED UP HILL.
 3. WRAP THE SILT FENCE AROUND ALL EXISTING FIRE HYDRANTS SO THAT THEY ARE FULLY VISIBLE FROM THE ROADWAY.
 4. ALL SILT FENCE MUST HAVE A MINIMUM OF 5' OF CLEARANCE FROM THE FIRE HYDRANT.
 5. MAINTENANCE SHALL OCCUR WHEN NECESSARY. SILT FENCE SHALL BE REPLACED EVERY 6 MONTHS AND POSTS SHALL BE INSPECTED TO ENSURE STRUCTURAL INTEGRITY. SILT FENCE SHALL BE INSPECTED WEEKLY AND ALL MAINTENANCE ISSUES SHALL BE CORRECTED AT THAT TIME.
 6. SILT FENCE SHOULD BE A MINIMUM OF 5 FEET FROM THE TOE OF SLOPE.
- * USE #57 WASHED STONE FOR REPAIR OF SILT FENCE FAILURES, AND FOR ANCHOR WHEN SILT FENCE IS PROTECTING CATCH BASIN.

TOWN OF APEX STANDARDS
EFFECTIVE: MAY 5, 2020

TEMPORARY SILT FENCE

STD. NO. **400.01**
SHEET 1 OF 2

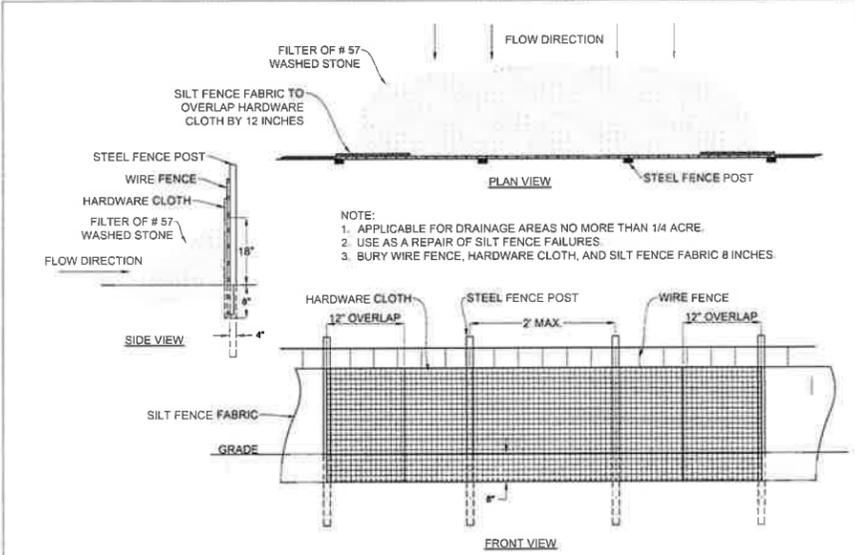


- * ALTERNATIVE SILT FENCE TO BE USED AT LOCATIONS WHERE STANDARD IS INADEQUATE, AS DIRECTED BY THE ENGINEER
- MAINTENANCE:** CLEAN OUT AT 50% CAPACITY
LIFE OF FENCING: 6-9 MONTHS
SEE NC DEQ EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL FOR CONDITIONS WHERE PRACTICE APPLIES; PLANNING CONSIDERATION & DESIGN CRITERIA

TOWN OF APEX STANDARDS
EFFECTIVE: MAY 5, 2020

TEMPORARY SILT FENCE

STD. NO. **400.01**
SHEET 2 OF 2

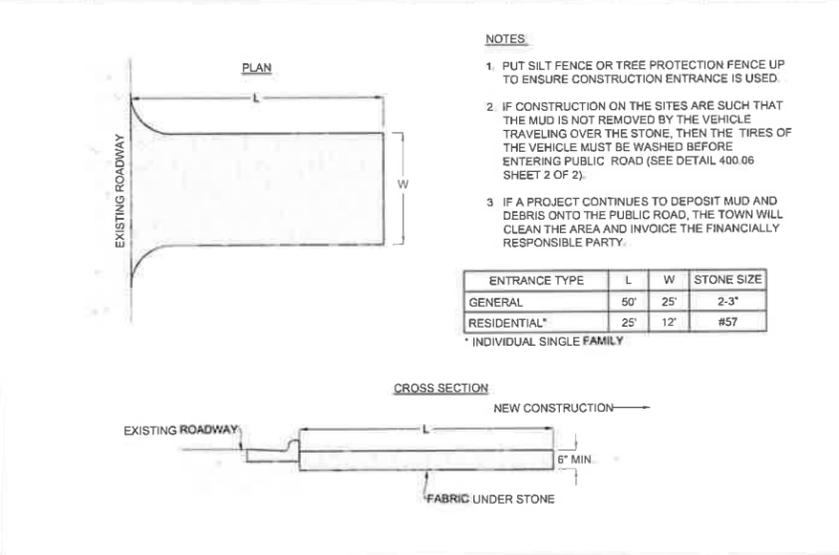


- NOTE:**
1. APPLICABLE FOR DRAINAGE AREAS NO MORE THAN 1/4 ACRE.
 2. USE AS A REPAIR OF SILT FENCE FAILURES.
 3. BURY WIRE FENCE, HARDWARE CLOTH, AND SILT FENCE FABRIC 8 INCHES.

TOWN OF APEX STANDARDS
EFFECTIVE: DECEMBER 21, 2010

TEMPORARY SILT FENCE OUTLET

STD. NO. **400.02**
SHEET 1 OF 1



- NOTES:**
1. PUT SILT FENCE OR TREE PROTECTION FENCE UP TO ENSURE CONSTRUCTION ENTRANCE IS USED.
 2. IF CONSTRUCTION ON THE SITES ARE SUCH THAT THE MUD IS NOT REMOVED BY THE VEHICLE TRAVELING OVER THE STONE, THEN THE TIRES OF THE VEHICLE MUST BE WASHED BEFORE ENTERING PUBLIC ROAD (SEE DETAIL 400.06 SHEET 2 OF 2).
 3. IF A PROJECT CONTINUES TO DEPOSIT MUD AND DEBRIS ONTO THE PUBLIC ROAD, THE TOWN WILL CLEAN THE AREA AND INVOICE THE FINANCIALLY RESPONSIBLE PARTY.

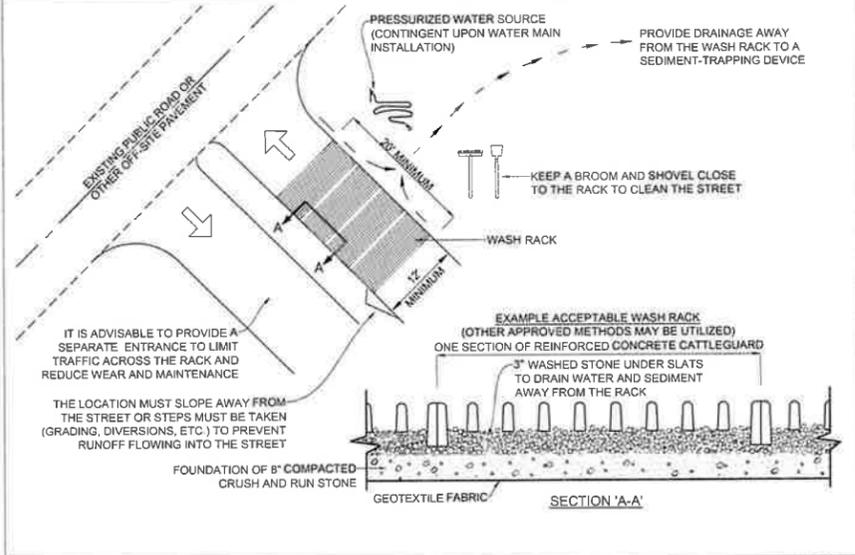
ENTRANCE TYPE	L	W	STONE SIZE
GENERAL	50'	25'	2-3"
RESIDENTIAL*	25'	12'	#57

* INDIVIDUAL SINGLE FAMILY

TOWN OF APEX STANDARDS
EFFECTIVE: JANUARY 20, 2015

CONSTRUCTION ENTRANCE

STD. NO. **400.06**
SHEET 1 OF 2



- EXAMPLE ACCEPTABLE WASH RACK (OTHER APPROVED METHODS MAY BE UTILIZED)**
ONE SECTION OF REINFORCED CONCRETE CATTLEGUARD
3" WASHED STONE UNDER SLATS TO DRAIN WATER AND SEDIMENT AWAY FROM THE RACK
- IT IS ADVISABLE TO PROVIDE A SEPARATE ENTRANCE TO LIMIT TRAFFIC ACROSS THE RACK AND REDUCE WEAR AND MAINTENANCE
- THE LOCATION MUST SLOPE AWAY FROM THE STREET OR STEPS MUST BE TAKEN (GRADING, DIVERSIONS, ETC.) TO PREVENT RUNOFF FLOWING INTO THE STREET
- PROVIDE DRAINAGE AWAY FROM THE WASH RACK TO A SEDIMENT-TRAPPING DEVICE
- KEEP A BROOM AND SHOVEL CLOSE TO THE RACK TO CLEAN THE STREET

TOWN OF APEX STANDARDS
EFFECTIVE: JANUARY 20, 2015

CONSTRUCTION ENTRANCE

STD. NO. **400.06**
SHEET 2 OF 2

- SILT FENCE OUTLET MAINTENANCE NOTES:**
1. INSPECT OUTLET STRUCTURES WEEKLY AND AFTER SIGNIFICANT (1 INCH OR GREATER) RAINFALL EVENTS TO SEE IF ANY EROSION AROUND OR BELOW THE WATTLE HAS TAKEN PLACE, OR IF STONES HAVE BEEN DISLODGED. IMMEDIATELY MAKE ALL NEEDED REPAIRS TO PREVENT FURTHER DAMAGE.

- CONSTRUCTION ENTRANCE MAINTENANCE NOTES:**
1. ADD ADDITIONAL STONE AND "FLUFF" TOP DRESSING WITH 2" STONE.
 2. SEE NC DEQ EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL FOR CONDITIONS WHERE PRACTICE APPLIES; PLANNING CONSIDERATION & DESIGN CRITERIA

No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SD	



CJS
 Conveyance, PLLC
 320 S. ACADEMY ST
 CARY, NC 27511
 NC LICENSE #P-1611 WWW.CJS-CONVEYANCE.COM

WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

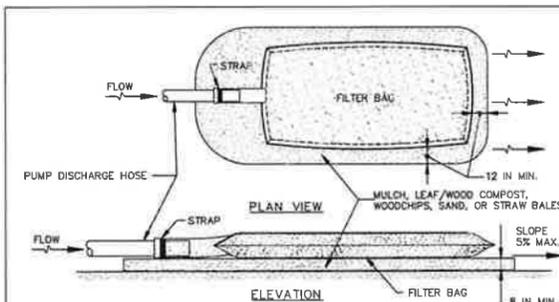
EROSION CONTROL DETAILS

CJS PROJ #:	100-005
DATE:	07-05-2024
SCALE:	INTS
PROJECT ENGINEER:	SD
DESIGNED BY:	JUS
DRAWN BY:	JUS
CHECKED BY:	SD

EC13

SHEET NUMBER
55 OF 60

Plotted By: j.berger | Date: July 03, 2024 11:36:35am | S:\100-Hooper and Sawyer\100-005-Apex-Big Branch 2 PWS\100 - Drawings\Plan Sheets\EC-Silt-Big Branch-APEX-EC-DETAILS.dwg

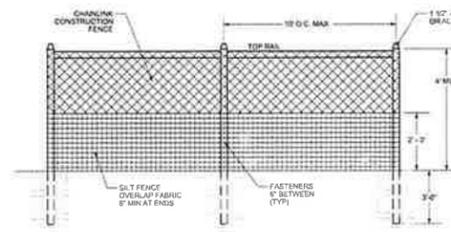


- CONSTRUCTION SPECIFICATIONS**
- TIGHTLY SEAL SLEEVE AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE.
 - PLACE FILTER BAG ON SUITABLE BASE (E.G., MULCH, LEAF/WOOD COMPOST, WOODCHIPS, SAND, OR STRAW BALES) LOCATED ON A LEVEL OR 5% MAXIMUM SLOPING SURFACE, DISCHARGE TO A STABILIZED AREA, EXTEND BASE A MINIMUM OF 12 INCHES FROM EDGES OF BAG.
 - CONTROL PUMPING RATE TO PREVENT EXCESSIVE PRESSURE WITHIN THE FILTER BAG IN ACCORDANCE WITH THE MANUFACTURER RECOMMENDATIONS. AS THE BAG FILLS WITH SEDIMENT, REDUCE PUMPING RATE.
 - REMOVE AND PROPERLY DISPOSE OF FILTER BAG UPON COMPLETION OF PUMPING OPERATIONS OR AFTER BAG HAS REACHED CAPACITY, WHICHEVER OCCURS FIRST. SPREAD THE DEWATERED SEDIMENT FROM THE BAG IN AN APPROVED UPLAND AREA AND STABILIZE WITH SEED AND MULCH BY THE END OF THE WORK DAY. RESTORE THE SURFACE AREA BENEATH THE BAG TO ORIGINAL CONDITION UPON REMOVAL OF THE DEVICE.
 - USE NONWOVEN GEOTEXTILE WITH DOUBLE STITCHED SEAMS USING HIGH STRENGTH THREAD. SIZE SLEEVE TO ACCOMMODATE A MAXIMUM 4 INCH DIAMETER PUMP DISCHARGE HOSE. THE BAG MUST BE MANUFACTURED FROM A NONWOVEN GEOTEXTILE THAT MEETS OR EXCEEDS MINIMUM AVERAGE ROLL VALUES (MARV) FOR THE FOLLOWING:

GRAB TENSILE	250 LB	ASTM D-4632
PUNCTURE	150 LB	ASTM D-4633
FLOW RATE	70 GAL/MIN/FT ²	ASTM D-4491
PERMITTIVITY (SEC ⁻¹)	1.2 SEC ⁻¹	ASTM D-4491
UV RESISTANCE	70% STRENGTH @ 500 HOURS	ASTM D-4355
APPARENT OPENING SIZE (AOS)	0.15-0.18 MM	ASTM D-4751
SEAM STRENGTH	90%	ASTM D-4632
 - REPLACE FILTER BAG IF BAG CLOGS OR HAS RIPS, TEARS, OR PUNCTURES. DURING OPERATION KEEP CONNECTION BETWEEN PUMP HOSE AND FILTER BAG WATER TIGHT. REPLACE BEDDING IF IT BECOMES DISPLACED.

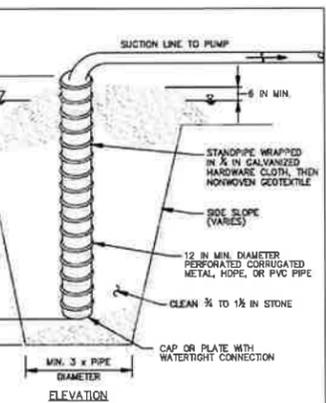
FILTER BAG
NTS

- FILTER BAG MAINTENANCE NOTES:**
- INSPECT INLET PIPE AND BAG FOR DAMAGE AND BLOCKAGE.
 - REPLACE BAG WHEN 3/4 FULL OF SEDIMENT



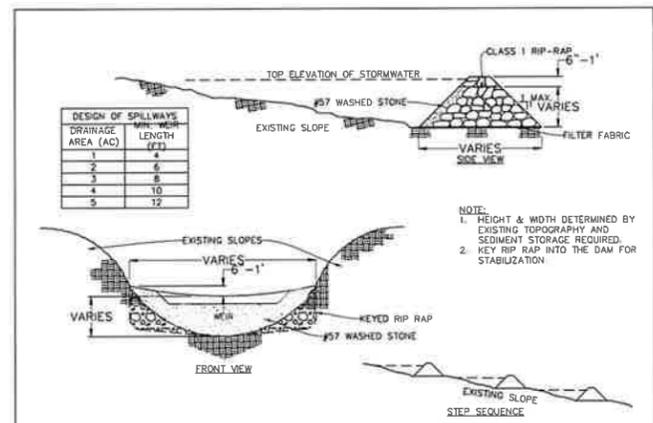
SUPER SILT FENCE
NTS

- MAINTENANCE:** CLEAN OUT AT 50% CAPACITY LIFE OF FENCING: 6-9 MONTHS
SEE NC DEP EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL FOR CONDITIONS WHERE PRACTICE APPLIES; PLANNING CONSIDERATION & DESIGN CRITERIA
- NOTES:**
- MAINTENANCE SHALL OCCUR WHEN NECESSARY. SILT FENCE SHALL BE REPLACED EVERY 6 MONTHS AND POSTS SHALL BE INSPECTED TO ENSURE STRUCTURAL INTEGRITY. SILT FENCE SHALL BE INSPECTED WEEKLY AND ALL MAINTENANCE ISSUES SHALL BE CORRECTED AT THAT TIME.
 - SILT FENCE SHOULD BE A MINIMUM OF 5 FEET FROM THE TOE OF SLOPE.



- CONSTRUCTION SPECIFICATIONS**
- USE 12 INCH OR LARGER DIAMETER CORRUGATED METAL HOPE, OR PVC PIPE WITH 1 INCH DIAMETER PERFORATIONS, 6 INCHES ON CENTER. BOTTOM OF PIPE MUST BE CAPPED WITH WATER TIGHT SEAL.
 - WRAP PIPE WITH 1/2 INCH GALVANIZED HARDWARE CLOTH AND WRAP NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVER THE HARDWARE CLOTH.
 - EXCAVATE PIT TO THREE TIMES THE PIPE DIAMETER AND FOUR FEET IN DEPTH. PLACE 3/4 TO 1 1/2 INCH STONE OR EQUIVALENT RECYCLED CONCRETE, 6 INCHES IN DEPTH PRIOR TO PIPE PLACEMENT.
 - SET TOP OF PIPE MINIMUM 12 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION.
 - BACKFILL PIT AROUND THE PIPE WITH 3/4 TO 1 1/2 INCH CLEAN STONE OR EQUIVALENT RECYCLED CONCRETE AND EXTEND STONE A MINIMUM OF 6 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION.
 - DISCHARGE TO A STABLE AREA AT A NONEROSIVE RATE.
 - A SUMP PIT REQUIRES FREQUENT MAINTENANCE. IF SYSTEM CLOGS, REMOVE PERFORATED PIPE AND REPLACE GEOTEXTILE AND STONE. KEEP POINT OF DISCHARGE FREE OF EROSION.

SUMP PIT
NTS

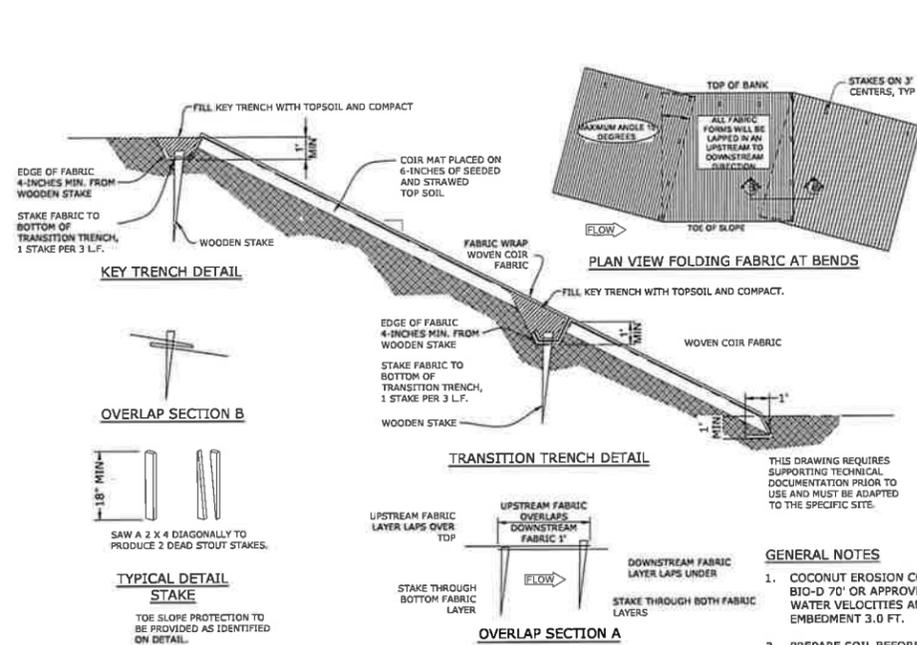


CHECK DAM
TOWN OF APEX STANDARDS
EFFECTIVE DECEMBER 1, 2022
STD. NO. 400.09
SHEET 1 OF 1

- CHECK DAM MAINTENANCE NOTES:**
- INSPECT CHECK DAMS WEEKLY AND AFTER EACH SIGNIFICANT RAINFALL EVENT (1/2 INCH OR GREATER). REMOVE ACCUMULATED SEDIMENT AND ANY DEBRIS.
 - THE CHECK DAM SHALL BE INSPECTED UNTIL LAND DISTURBANCE IS COMPLETE AND THE AREA ABOVE THE MEASURE HAS BEEN PERMANENTLY STABILIZED.

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fis
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	



GENERAL NOTES

- COCONUT EROSION CONTROL BLANKET SHALL BE 'ROLANKA BIC-D 70' OR APPROVED EQUAL, ABLE TO WITHSTAND 12 FPS WATER VELOCITIES AND 4.5 PSF SHEAR STRESS. FABRIC EMBEDMENT 3.0 FT.
- PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER AND SEED.
- BEGIN AT THE BOTTOM OF THE SLOPE, WORKING FROM DOWNSTREAM UP, AND ANCHOR FIBER MATTING IN A 12" DEEP INITIAL ANCHOR TRENCH. BACKFILL TRENCH AND TAMP EARTH FIRMLY.
- OVERLAP EDGES OF ADJACENT PARALLEL ROLLS 12" AND ANCHOR AT 12" CENTERS WITH THE UPPER ROLL OVERLAPPING THE TOP OF THE LOWER ROLL.
- WHEN FIBER MAT MUST BE SPLICED, PLACE END OVER END (SHINGLE STYLE IN DIRECTION OF FLOW) WITH 12" OVERLAP AND ANCHOR USING TWO STAGGERED ROWS OF STAKES AT 6" CENTERS. ADDITIONAL FASTENING MAY BE REQUIRED WHERE MATTING IS CUT TO INSTALL PLANTINGS.
- LAY FIBER MAT LOOSELY AND ANCHOR SUFFICIENTLY TO MAINTAIN DIRECT CONTACT WITH THE SOIL - DO NOT STRETCH.
- FOR SLOPES 2:1 AND STEEPER USE A MINIMUM OF (3) 18-INCH WOOD STAKES PER SQUARE YARD AND FOR SLOPES FLATTER THAN 2:1 USE A MINIMUM OF (2) 18-INCH WOOD STAKES PER SQUARE YARD. PROVIDE ADDITIONAL STAKING ALONG CHANNEL BOTTOM WHERE COIR MAT FORMS TOE OF SLOPE.
- WOOD STAKES SHALL BE ANGLED SUCH THAT EXPOSED PORTION (2"-4") FACES UPSTREAM.
- ANCHOR, FILL, AND COMPACT END OF FIBER MATTING IN 12"x6" TERMINAL ANCHOR TRENCH (MIRROR IMAGE OF INITIAL TRENCH).
- ANCHORING DIMENSIONS TO BE REDUCED IN AREAS OF NATURAL RESOURCES TO BE PROTECTED.
- EROSION CONTROL MATTING MAY BE EXTENDED UP STREAM BANK AS DIRECTED.

COIR FIBER MATTING MAINTENANCE NOTES:

- INSPECT ROLLED EROSION CONTROL PRODUCTS AT LEAST WEEKLY AND AFTER EACH SIGNIFICANT (1/2 INCH OR GREATER) RAINFALL EVENT, REPAIR IMMEDIATELY.
- GOOD CONTACT WITH THE GROUND MUST BE MAINTAINED. EROSION MUST NOT OCCUR BENEATH RECP.
- ANY AREAS OF THE RECP THAT ARE DAMAGED OR NOT IN CLOSE CONTACT WITH THE GROUND SHALL BE REPAIRED AND STAPLED.
- IF EROSION OCCURS DUE TO POORLY CONTROLLED DRAINAGE, THE PROBLEM SHALL BE FIXED AND THE ERODED AREA PROTECTED.
- MONITOR AND REPAIR THE RECP AS NECESSARY UNTIL THE GROUND COVER IS ESTABLISHED.

COIR FIBER MATTING OVER TOPSOIL
NTS

**WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN**

EROSION CONTROL DETAILS

CJS PROJ. #	100-005
DATE	07-05-2024
SCALE	1" = 20'
PROJECT ENGINEER	SDL
DESIGNED BY	JUS
DRAWN BY	JUS
CHECKED BY	SDL

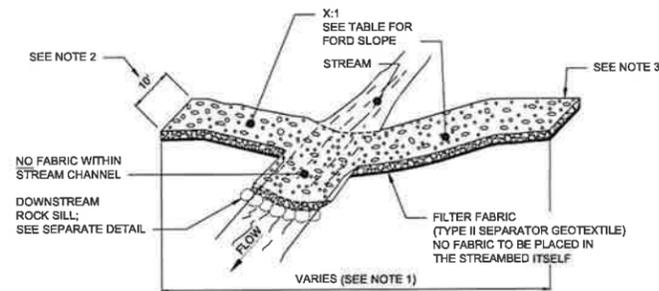
EC15

SHEET NUMBER
57 OF 60



No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	

Checked By: J. Speers, Layout: S. J. MANTENANCE CROSSING DETAILS July 03, 2024 11:36:40am S:\100 Hazen and Sawyer\100-000 Apex Big Branch 2 PWS\B0 - Drawings\Plan Sheets\C-SH1 - BIG BRANCH APEX EC DETAILS.dwg



NOTES:

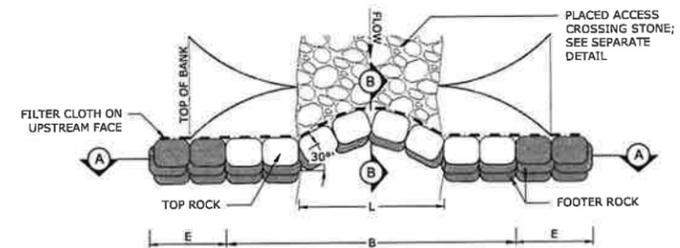
1. LENGTHS OF CROSSINGS WILL GENERALLY FOLLOW THE LENGTHS PRESCRIBED IN THE TABLE AND MAY BE VARIED IN THE FIELD TO NOT EXCEED MAXIMUM ALLOWABLE SLOPE.
2. STREAM CROSSING SHALL BE NO GREATER THAN 10 FEET WIDE BUT NO LESS THAN 8 FEET.
3. WHEN STREAM CROSSINGS ARE INSTALLED FOR THE CONSTRUCTION OF THE PIPELINE, TEMPORARY CONSTRUCTION ENTRANCES SHALL BE REQUIRED AT BOTH ENDS OF THE CROSSING. SEE SEPARATE DETAIL TEMPORARY CONSTRUCTION ENTRANCE DETAIL.
4. PERMANENT STREAM CROSSINGS TO REMAIN IN PLACE FROM TOP OF BANK TO TOP OF BANK UNLESS OTHERWISE NOTED ON THE DRAWINGS. PERMANENT WETLANDS CROSSING TO REMAIN IN PLACE THROUGH THE WETLANDS FROM BOUNDARY TO BOUNDARY UNLESS OTHERWISE NOTED ON THE DRAWINGS. MAXIMUM WIDTH SHALL BE 10 FT BUT NO LESS THAN 8 FEET.
5. FOR MIX MATERIAL TO BE PLACED AND THICKNESS SEE STONE MIXES TABLE.
6. ALL STONE MIXES ARE TO BE CHINKED WITH #2 STONE.

MAINTENANCE REQUIREMENTS:

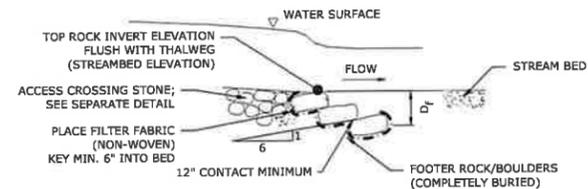
1. INSPECT WEEKLY AND AFTER EACH RAINFALL EVENT THAT PRODUCES 1/2 INCH OR MORE OF RAIN.
2. CHECK FOR CHANNEL BLOCKAGE, EROSION OF ABUTMENTS, CHANNEL DEGRADATION, RIRRAP DISPLACEMENT, SLOPE FAILURE, AND PIPING.
3. MAKE ALL NEEDED REPAIRS IMMEDIATELY.

PERMANENT STREAM/WETLAND CROSSING
NTS

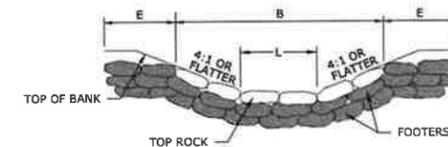
STREAM CROSSING SCHEDULE				
STATION	LENGTH	ACCESS FORD SLOPE	MIX	PLAN SHEET
13+34	60	10 TO 1	50/50 Blend of NCDOT Class A and NCDOT Class B	C-1
32+44	30	PER EX GRADE	50/50 Blend of NCDOT Class A and NCDOT Class B	C-2
51+40	110	5 TO 1 (EAST); 10 TO 1 (WEST)	50/50 Blend of NCDOT Class A and NCDOT Class B	C-4
54+74	30	PER EX GRADE	NCDOT Class A	C-4
63+74	30	PER EX GRADE	50/50 Blend of NCDOT Class A and NCDOT Class B	C-5
72+22	50	5 TO 1	NCDOT Class B	C-6
89+96	30	PER EX GRADE	NCDOT Class A	C-7
91+10	30	PER EX GRADE	50/50 Blend of NCDOT Class A and NCDOT Class B	C-8
96+52	30	PER EX GRADE	NCDOT Class B	C-8
126+61	30	PER EX GRADE	NCDOT Class B	C-11
147+14	70	5 TO 1 (EAST); PER GRADING PLAN (WEST)	NCDOT Class A	C-12
155+24	70	5 TO 1	NCDOT Class A	C-13
167+98	30	PER EX GRADE	50/50 Blend of NCDOT Class A and NCDOT Class B	C-14
196+36	40	5 TO 1	NCDOT Class A	C-17
198+71	55	5 TO 1	NCDOT Class A	C-17
202+19	30	PER EX GRADE	NCDOT Class A	C-17
236+76	80	5 TO 1 (EAST); 6 TO 1 (WEST)	NCDOT Class A	C-20
244+90	70	3.33 TO 1 (EAST); 5 TO 1 (WEST)	NCDOT Class A	C-21
249+03	30	PER EX GRADE	50/50 Blend of NCDOT Class A and NCDOT Class B	C-22



PLAN VIEW



SECTION B-B



SECTION A-A

NOTES:

1. SILL SHALL BE CONSTRUCTED BY EXCAVATING A TRENCH SLIGHTLY LARGER THAN THE SILL DIMENSIONS.
2. SILL SHALL BE PLACED ON FILTER CLOTH WHICH SHALL ALSO COMPLETELY COVER THE UPSTREAM FACE OF THE SILL.
3. TOP ROCKS SHALL BE SUPPORTED BY FOOTER ROCKS; ROCKS SHALL BEAR ON EACH OTHER (TOUCH) A MINIMUM OF 12 INCHES. ALL ROCKS TO BE SHINGLED UPSTREAM AND INTO STREAM BANK.
4. ROCKS ARE TO BE PLACED AT 6:1 WITH RESPECT TO HORIZONTAL.
5. ALL ROCKS SHALL BE INTERLOCKED MINIMIZING OR ELIMINATING GAPS WITH NO VOID/GAPS LARGER THAN 3 INCHES.
6. SILL ROCK BOULDERS SHALL BE FLUSH WITH FINISHED GRADE AND CUTOFF ROCKS SHALL EXTEND "E" FEET INTO BANKS.

ROCK SILL (RS) DETAIL
NTS

The signatures below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans

Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Design	

SILL STRUCTURE SCHEDULE

LOCATION	B	L	E	Df	MIN BOULDER DIMENSION	NOTES
	FT	FT	FT	FT	IN	
13+34	18	10	4	6	24	BOULDERS, FLAT AND STACKABLE
32+44	20	12	4	6	24	BOULDERS, FLAT AND STACKABLE
51+40	24	16	4	6	24	BOULDERS, FLAT AND STACKABLE
96+52	18	10	4	6	24	BOULDERS, FLAT AND STACKABLE
126+61	24	16	6	6	24	BOULDERS, FLAT AND STACKABLE
147+14	16	8	4	6	24	BOULDERS, FLAT AND STACKABLE
155+24	24	16	4	6	24	BOULDERS, FLAT AND STACKABLE
196+36	18	10	4	6	24	BOULDERS, FLAT AND STACKABLE
202+19	10	2	4	6	24	BOULDERS, FLAT AND STACKABLE
236+76	10	2	4	6	24	BOULDERS, FLAT AND STACKABLE
244+90	34	26	4	6	24	BOULDERS, FLAT AND STACKABLE
249+03	10	2	4	6	24	BOULDERS, FLAT AND STACKABLE

No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	



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CARY, NC 27511
NC LICENSE #P-1611 WWW.CJSCONVEYANCE.COM

WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

MAINTENANCE CROSSING DETAILS

CJS PROJ #:	100-005
DATE:	07-05-2024
SCALE:	1" = 20'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JIS
DRAWN BY:	JIS
CHECKED BY:	SDL

EC16

SHEET NUMBER
58 OF 60

Printed By: Sizers Layout: 55 EROSION CONTROL SELF INSPECTION July 03, 2024 11:36:50am S:\100 Hazen and Sawyer\100-000 Apey Big Branch 2 PWS\100 - Drawings\Plan Sheets\EG-SH-BIG BRANCH APEX EC DETAILS.dwg

**PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING**

SECTION A: SELF-INSPECTION
Self-inspections are required during normal business hours in accordance with the table below. When adverse weather or site conditions would cause the safety of the inspection personnel to be in jeopardy, the inspection may be delayed until the next business day on which it is safe to perform the inspection. In addition, when a storm event of equal to or greater than 1.0 inch occurs outside of normal business hours, the self-inspection shall be performed upon the commencement of the next business day. Any time when inspections were delayed shall be noted in the Inspection Record.

Inspect	Frequency (during normal business hours)	Inspection records must include:
(1) Rain gauge maintained in good working order	Daily	Daily rainfall amounts. If no daily rain gauge observations are made during weekend or holiday periods, and no individual-day rainfall information is available, record the cumulative rain measurement for those unattended days (and this will determine if a site inspection is needed). Days on which no rainfall occurred shall be recorded as "zero." The permittee may use another rain-monitoring device approved by the Division.
(2) E&SC Measures	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. Identification of the measures inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Indication of whether the measures were operating properly, 5. Description of maintenance needs for the measure, 6. Description, evidence, and date of corrective actions taken.
(3) Stormwater discharge outfalls (SDOs)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. Identification of the discharge outfalls inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Evidence of indicators of stormwater pollution such as oil sheen, floating or suspended solids or discoloration, 5. Indication of visible sediment leaving the site, 6. Description, evidence, and date of corrective actions taken.
(4) Perimeter of site	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	If visible sedimentation is found outside site limits, then a record of the following shall be made: 1. Actions taken to clean up or stabilize the sediment that has left the site limits, 2. Description, evidence, and date of corrective actions taken, and 3. An explanation as to the actions taken to control future releases.
(5) Streams or wetlands onsite or offsite (where accessible)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	If the stream or wetland has increased visible sedimentation or a stream has visible increased turbidity from the construction activity, then a record of the following shall be made: 1. Description, evidence and date of corrective actions taken, and 2. Records of the required reports to the appropriate Division Regional Office per Part III, Section C, Item (2)(a) of this permit.
(6) Ground stabilization measures	After each phase of grading	1. The phase of grading (installation of perimeter E&SC measures, clearing and grubbing, installation of storm drainage facilities, completion of all land-disturbing activity, construction or redevelopment, permanent ground cover). 2. Documentation that the required ground stabilization measures have been provided within the required timeframe or an assurance that they will be provided as soon as possible.

NOTE: The rain inspection resets the required 7 calendar day inspection requirement.

**PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING**

SECTION B: RECORDKEEPING
1. E&SC Plan Documentation
The approved E&SC plan as well as any approved deviation shall be kept on the site. The approved E&SC plan must be kept up-to-date throughout the coverage under this permit. The following items pertaining to the E&SC plan shall be kept on site and available for inspection at all times during normal business hours.

Item to Document	Documentation Requirements
(a) Each E&SC measure has been installed and does not significantly deviate from the locations, dimensions and relative elevations shown on the approved E&SC plan.	Initial and date each E&SC measure on a copy of the approved E&SC plan or complete, date and sign an inspection report that lists each E&SC measure shown on the approved E&SC plan. This documentation is required upon the initial installation of the E&SC measures or if the E&SC measures are modified after initial installation.
(b) A phase of grading has been completed.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate completion of the construction phase.
(c) Ground cover is located and installed in accordance with the approved E&SC plan.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate compliance with approved ground cover specifications.
(d) The maintenance and repair requirements for all E&SC measures have been performed.	Complete, date and sign an inspection report.
(e) Corrective actions have been taken to E&SC measures.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate the completion of the corrective action.

2. Additional Documentation to be Kept on Site
In addition to the E&SC plan documents above, the following items shall be kept on the site and available for inspectors at all times during normal business hours, unless the Division provides a site-specific exemption based on unique site conditions that make this requirement not practical:

(a) This General Permit as well as the Certificate of Coverage, after it is received.

(b) Records of inspections made during the previous twelve months. The permittee shall record the required observations on the Inspection Record Form provided by the Division or a similar inspection form that includes all the required elements. Use of electronically-available records in lieu of the required paper copies will be allowed if shown to provide equal access and utility as the hard-copy records.

3. Documentation to be Retained for Three Years
All data used to complete the e-NOI and all inspection records shall be maintained for a period of three years after project completion and made available upon request. [40 CFR 122.41]

**PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING**

SECTION C: REPORTING
1. Occurrences that Must be Reported
Permittees shall report the following occurrences:

(a) Visible sediment deposition in a stream or wetland.

(b) Oil spills if:

- They are 25 gallons or more,
- They are less than 25 gallons but cannot be cleaned up within 24 hours,
- They cause sheen on surface waters (regardless of volume), or
- They are within 100 feet of surface waters (regardless of volume).

(c) Releases of hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (Ref: 40 CFR 110.3 and 40 CFR 117.3) or Section 102 of CERCLA (Ref: 40 CFR 302.4) or G.S. 143-215.85.

(d) Anticipated bypasses and unanticipated bypasses.

(e) Noncompliance with the conditions of this permit that may endanger health or the environment.

2. Reporting Timeframes and Other Requirements
After a permittee becomes aware of an occurrence that must be reported, he shall contact the appropriate Division regional office within the timeframes and in accordance with the other requirements listed below. Occurrences outside normal business hours may also be reported to the Department's Environmental Emergency Center personnel at (800) 858-0368.

Occurrence	Reporting Timeframes (After Discovery) and Other Requirements
(a) Visible sediment deposition in a stream or wetland	<ul style="list-style-type: none"> Within 24 hours, an oral or electronic notification. Within 7 calendar days, a report that contains a description of the sediment and actions taken to address the cause of the deposition. Division staff may waive the requirement for a written report on a case-by-case basis. If the stream is named on the NC 303(d) list as impaired for sediment-related causes, the permittee may be required to perform additional monitoring, inspections or apply more stringent practices if staff determine that additional requirements are needed to assure compliance with the federal or state impaired-waters conditions.
(b) Oil spills and release of hazardous substances per Item 1(b)-(c) above	<ul style="list-style-type: none"> Within 24 hours, an oral or electronic notification. The notification shall include information about the date, time, nature, volume and location of the spill or release.
(c) Anticipated bypasses [40 CFR 122.41(m)(3)]	<ul style="list-style-type: none"> A report at least ten days before the date of the bypass, if possible. The report shall include an evaluation of the anticipated quality and effect of the bypass.
(d) Unanticipated bypasses [40 CFR 122.41(m)(3)]	<ul style="list-style-type: none"> Within 24 hours, an oral or electronic notification. Within 7 calendar days, a report that includes an evaluation of the quality and effect of the bypass.
(e) Noncompliance with the conditions of this permit that may endanger health or the environment [40 CFR 122.41(l)(7)]	<ul style="list-style-type: none"> Within 24 hours, an oral or electronic notification. Within 7 calendar days, a report that contains a description of the noncompliance, and its causes; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time noncompliance is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. [40 CFR 122.41(l)(6)]. Division staff may waive the requirement for a written report on a case-by-case basis.

**PART II, SECTION G, ITEM (4)
DRAW DOWN OF SEDIMENT BASINS FOR MAINTENANCE OR CLOSE OUT**

Sediment basins and traps that receive runoff from drainage areas of one acre or more shall use outlet structures that withdraw water from the surface when these devices need to be drawn down for maintenance or close out unless this is infeasible. The circumstances in which it is not feasible to withdraw water from the surface shall be rare (for example, times with extended cold weather). Non-surface withdrawals from sediment basins shall be allowed only when all of the following criteria have been met:

(a) The E&SC plan authority has been provided with documentation of the non-surface withdrawal and the specific time periods or conditions in which it will occur. The non-surface withdrawal shall not commence until the E&SC plan authority has approved these items,

(b) The non-surface withdrawal has been reported as an anticipated bypass in accordance with Part III, Section C, Item (2)(c) and (d) of this permit,

(c) Dewatering discharges are treated with controls to minimize discharges of pollutants from stormwater that is removed from the sediment basin. Examples of appropriate controls include properly sited, designed and maintained dewatering tanks, weir tanks, and filtration systems,

(d) Vegetated, upland areas of the sites or a properly designed stone pad is used to the extent feasible at the outlet of the dewatering treatment devices described in Item (c) above,

(e) Velocity dissipation devices such as check dams, sediment traps, and riprap are provided at the discharge points of all dewatering devices, and

(f) Sediment removed from the dewatering treatment devices described in Item (c) above is disposed of in a manner that does not cause deposition of sediment into waters of the United States.

NCG01 SELF-INSPECTION, RECORDKEEPING AND REPORTING

EFFECTIVE: 04/01/19

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans

Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fis
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

No.	REVISIONS	DATE	BY	SEAL
1	PERMIT SUBMITTAL	7/5/2024	SDL	



**WATER RESOURCES DEPARTMENT
TOWN OF APEX
BIG BRANCH 2 PUMP STATION -
FORCE MAIN**

**EROSION CONTROL
SELF INSPECTION**

CJS PROJ. #:	
DATE:	07-05-2024
SCALE:	N15
PROJECT ENGINEER:	SDL
DESIGNED BY:	JUS
DRAWN BY:	JUS
CHECKED BY:	SDL

EC18

SHEET NUMBER
60 OF 60

GENERAL NOTES:

- CONTRACTOR SHALL VERIFY FIELD CONDITIONS BEFORE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL VERIFY EXISTING ELEVATIONS AND DIMENSIONS WHERE NEW WORK WILL MATCH EXISTING. DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR RESOLUTION PRIOR TO THE COMMENCEMENT OF WORK.
- CONTRACTOR SHALL OBTAIN ALL THE NECESSARY PERMITS FROM THE APPROPRIATE AUTHORITIES, DEPARTMENTS, AND/OR AGENCIES HAVING JURISDICTION PRIOR TO COMMENCING WORK.
- CONTRACTOR SHALL TAKE CARE TO AVOID DAMAGE TO EXISTING PAVEMENT, TREES, VEGETATION, STRUCTURES, AND UTILITIES THAT ARE NOT INDICATED TO BE DEMOLISHED OR REMOVED. ANY DAMAGE TO EXISTING PAVEMENT, TREES, VEGETATION, STRUCTURES, AND UTILITIES NOT INDICATED TO BE DEMOLISHED OR REMOVED SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL CONTACT NORTH CAROLINA 811 AT PHONE NUMBER 811 OR 1-800-632-4949 TO REQUEST UNDERGROUND UTILITY LOCATION MARK-OUT AT LEAST THREE (3) WORKING DAYS BUT NO MORE THAN TEN (10) WORKING DAYS PRIOR TO BEGINNING EXCAVATION, INCLUDING SOIL DRILLING. THE CONTRACTOR SHALL ALSO CONTACT AND REQUEST UTILITY LOCATION MARK-OUT FROM BURIED UTILITY OWNERS WITH UTILITIES ON THE PROJECT SITE THAT ARE NOT PARTICIPANTS OF NORTH CAROLINA 811.
- WHERE PROPOSED WORK IS IN THE VICINITY OF UTILITY POLES, SUCH THAT SUPPORT OF THE POLE(S) WILL BE REQUIRED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE UTILITY OF THE WORK. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE UTILITY FOR SUPPORT OF THE POLE.
- WHERE OVERHEAD POWER LINES ARE PRESENT, CONTRACTOR MUST CONTACT THE UTILITY PRIOR TO CONSTRUCTION ACTIVITIES TO DETERMINE THE MINIMUM REQUIRED EQUIPMENT CLEARANCE (MEC) DISTANCE BASED UPON LINE STRENGTH.
- DURING EXCAVATION AND PLACEMENT OF UTILITIES, THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE SAFETY REGULATIONS AND SHALL SUBMIT TO THE ENGINEER FOR REVIEW SHEET PILING, SHORING AND/OR BRACING DESIGNS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER IN THE STATE OF NORTH CAROLINA AS MAY BE NECESSARY TO COMPLY WITH THESE REGULATIONS.
- ALL MATERIALS, CONSTRUCTION METHODS, AND WORKMANSHIP SHALL CONFORM WITH THE LATEST VERSION OF THE FOLLOWING STANDARDS:
 - TOWN OF APEX STANDARD SPECIFICATIONS
 - TOWN OF APEX UNIFIED DEVELOPMENT ORDINANCE
- GROUNDWATER FROM ALL DE-WATERING OPERATIONS SHALL BE DISCHARGED THROUGH A SEDIMENT FILTERING DEVICE TO AN ENVIRONMENTALLY ACCEPTABLE LOCATION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, OR AS DIRECTED BY THE ENGINEER.
- ALL TEMPORARY FACILITIES ARE SUBJECT TO THE SAME HEALTH AND SAFETY REQUIREMENTS AS PERMANENT FACILITIES, AS SPECIFIED IN THE CONTRACT DOCUMENTS AND HEALTH SAFETY PLAN (HASP), IF PRESENT.
- THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL DEBRIS GENERATED DURING THE PROJECT OFF SITE AT A PROPERLY PERMITTED DISPOSAL FACILITY.
- CONTRACTOR SHALL MAKE EVERY EFFORT TO SAVE AND MAINTAIN ALL PROPERTY IRONS, MONUMENTS, OTHER PERMANENT POINTS AND LINES OF REFERENCE AND CONSTRUCTION STAKES. A STATE OF NORTH CAROLINA REGISTERED LAND SURVEYOR AT THE CONTRACTOR'S EXPENSE SHALL REPLACE PROPERTY IRONS, MONUMENTS, AND OTHER PERMANENT POINTS OF REFERENCE DESTROYED BY THE CONTRACTOR.
- EXISTING UTILITIES ARE SHOWN FOR GENERAL INFORMATION ONLY AND MAY NOT BE ALL INCLUSIVE. CONTRACTOR IS TO DIG TEST PITS TO FIELD LOCATE ALL EXISTING UTILITIES THAT THE NEW SEWER MAIN AND APPURTENANCES CROSS OR COME IN CLOSE PROXIMITY TO WELL IN ADVANCE OF PIPE LAYING OR LINING OPERATIONS TO DETERMINE SIZE, ELEVATION AND LOCATION OF ALL UTILITIES. CONTRACTOR IS TO NOTIFY ENGINEER WITHIN 72 HOURS OF ANY CONFLICTS BETWEEN EXISTING UTILITIES AND PROPOSED ROUTE OF SEWER TO ALLOW ADEQUATE TIME FOR ENGINEER AND OWNER TO CONSIDER REALIGNMENT OR CHANGES THAT MAY BE REQUIRED.
- ALL SHORING WILL BE IN ACCORDANCE WITH OSHA TRENCHING STANDARDS PART 126, SUBPART P, AMENDED TO DATE. CONTRACTOR SHALL SUBMIT SHORING PLANS TO THE ENGINEER PRIOR TO EXCAVATION. SHORING PLANS SHALL BE SIGNED AND SEALED BY A NC PROFESSIONAL ENGINEER.
- FORCE MAIN TO BE LAID ON CONSTANT GRADE (UP OR DOWN) TO AVOID HIGH SPOTS BETWEEN AIR RELEASE VALVES. MIN 48 INCHES OF COVER UNLESS SHOWN OTHERWISE.
- DEFLECT PROPOSED FORCE MAIN AS NECESSARY. DO NOT EXCEED 75% OF MANUFACTURERS RECOMMENDED DEFLECTION.
- WHEN EXISTING UTILITY LINES ARE EXPOSED DURING CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE SUPPORT, AS NECESSARY, TO PREVENT DAMAGE TO THE EXISTING UTILITY. DAMAGE TO EXPOSED UTILITIES SHALL BE REPAIRED AT THE CONTRACTORS EXPENSE.
- WHERE MATERIAL IS PLACED ON ROADWAY PROVIDE SCREENINGS TO PREVENT DAMAGE TO PAVEMENT. CONTRACTOR SHALL REPAIR ANY PAVEMENT DAMAGED OUTSIDE THE DESIGNATED TRENCH AREA. ROADS IN WORK AREA TO BE CLEANED AT END OF EACH DAY.
- CONTRACTOR SHALL MAINTAIN ACCESS TO ALL AFFECTED PROPERTIES AT ALL TIMES DURING CONSTRUCTION.
- CONTRACTOR SHALL BE RESPONSIBLE FOR IMMEDIATELY CLEANING ANY SOIL WHICH IS TRACKED OFF WORK SITE.

SEDIMENT AND EROSION CONTROL NOTES:

- DUE TO THE NATURE OF THE WORK REQUIRED BY THIS CONTRACT, IT IS ANTICIPATED THE LOCATION AND NATURE OF EROSION AND SEDIMENT CONTROL MEASURES WILL BE ADJUSTED AS CONSTRUCTION PROGRESSES TO REFLECT THE CURRENT PHASE OF WORK. THE CONSTRUCTION SCHEDULE ADOPTED BY THE CONTRACTOR WILL IMPACT THE PLACEMENT AND NEED FOR SPECIFIC DEVICES REQUIRED FOR THE CONTROL OF EROSION. THE LOCATION AND EXTENT OF EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REVISED AT EACH PHASE OF CONSTRUCTION RESULTING IN A CHANGE OF EITHER THE QUANTITY OR DIRECTION OF SURFACE RUNOFF FROM THE CONSTRUCTION AREAS. EROSION AND SEDIMENT CONTROL MEASURES SHALL REMAIN IN PLACE AT THE CONCLUSION OF THE PROJECT.
- CONTRACTOR SHALL OBTAIN PRIOR APPROVAL FROM THE ENGINEER, OWNER, AND REGULATORY AGENCIES FOR DEVIATIONS FROM THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
- NO LAND DISTURBANCE, DEMOLITION OR CONSTRUCTION ACTIVITIES SHALL BEGIN UNTIL ALL PERIMETER EROSION AND SEDIMENT CONTROL MEASURES, INCLUDING, BUT NOT LIMITED TO, SILT FENCING, INLET PROTECTION, TEMPORARY DIVERSIONS, DIVERSION DITCHES, BASINS, AND CONSTRUCTION ENTRANCE HAVE BEEN INSTALLED AS SHOWN ON THE CONTRACT DRAWINGS. IF CLEARING IS REQUIRED FOR INSTALLATION OF A PARTICULAR MEASURE, ALL MEASURES NOT REQUIRING CLEARING SHALL BE INSTALLED FIRST. CLEARING OF THE NECESSARY LAND FOR INSTALLATION OF THE PARTICULAR MEASURE MAY THEN PROCEED. NO ADDITIONAL CLEARING AND GRUBBING MAY OCCUR UNTIL EROSION AND SEDIMENT CONTROL MEASURES ARE INSTALLED.
- CLEARING SHALL BE LIMITED AS MUCH AS POSSIBLE TO AREAS REQUIRED FOR CURRENT CONSTRUCTION ACTIVITIES. MASS CLEARING AND GRADING SHALL BE AVOIDED.
- ALL EROSION CONTROL MEASURES SHALL BE INSPECTED WITHIN 24 HOURS FOLLOWING EVERY RAINFALL EVENT GREATER THAN 1-INCH BUT IN NO CASE LESS THAN ONCE EVERY SEVEN CALENDAR DAYS.
- EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REPAIRED OR REPLACED IMMEDIATELY AS REQUIRED TO MAINTAIN PERFORMANCE OF MEASURE. MEASURES SHALL BE CLEANED WHEN SEDIMENT VOLUME REACHES 1/2 OF TOTAL VOLUME OF MEASURE. REMOVED SEDIMENT SHALL BE DISPOSED OF IN SUCH A MANNER AND LOCATION AS TO INSURE FURTHER SEDIMENT TRANSPORT DOES NOT OCCUR.
- CONTRACTOR SHALL INITIATE STABILIZATION MEASURES AS SOON AS PRACTICABLE ON STOCKPILES AND IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 7 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. THIS REQUIREMENT DOES NOT APPLY IN THE FOLLOWING INSTANCES:
 - WHERE THE INITIATION OF STABILIZATION MEASURES BY THE 7TH DAY AFTER CONSTRUCTION ACTIVITY TEMPORARILY OR PERMANENTLY CEASED IS PRECLUDED BY SNOW COVER OR FROZEN GROUND CONDITIONS, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE;
 - WHERE CONSTRUCTION ACTIVITY ON A PORTION OF THE SITE IS TEMPORARILY CEASED, AND EARTH-DISTURBING ACTIVITIES WILL BE RESUMED WITHIN FOURTEEN (14) DAYS, TEMPORARY STABILIZATION MEASURES NEED NOT BE INITIATED ON THAT PORTION OF THE SITE.
- ALL DISTURBED AREAS SHALL DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBANCE ACTIVITIES AND UNTIL FINAL STABILIZATION IS ACHIEVED. SEDIMENT-LADEN GROUNDWATER ENCOUNTERED DURING TRENCHING, BORING, OR OTHER ACTIVITIES SHALL BE PUMPED INTO A SEDIMENT TRAPPING DEVICE PRIOR TO BEING DISCHARGED INTO A STREAM, POND, SWALE, OR CATCH BASIN.
- SOIL STOCKPILE AND LAYDOWN AREAS SHALL HAVE PERIMETER SEDIMENT CONTROL MEASURES AND TEMPORARY OR PERMANENT STABILIZATION MEASURES INSTALLED AS SOON AS POSSIBLE AND AT COMPLETION OF STOCKPILING AND LAYDOWN ACTIVITIES. STOCKPILE SIDE SLOPES SHALL NOT EXCEED 3H:1V UNLESS APPROVED BY ENGINEER. TOP OF STOCKPILE SHALL BE GRADED WITH A MINIMUM 5% SLOPE TO INSURE PROPER DRAINAGE.
- ALL DISTURBED AREAS, EXCEPT FOR CONCRETE AND PAVED AREAS, SHALL BE FERTILIZED, SEEDED AND MULCHED IN ACCORDANCE WITH THE SPECIFICATIONS AND THE SEEDING SCHEDULE, AND RE-SEEDED AS NECESSARY, TO ESTABLISH AND MAINTAIN A VIGOROUS, DENSE VEGETATIVE COVER.
- ALL POINTS OF CONSTRUCTION INGRESS AND EGRESS SHALL BE PROTECTED TO PREVENT THE DEPOSITION OF MATERIALS ONTO TRAVERSED OFFSITE ROADWAYS. IF MATERIAL IS TRACKED ONTO OFFSITE ROADWAYS, IT SHALL BE REMOVED IMMEDIATELY. DO NOT UTILIZE A WATER HOSE TO CLEAN ROADS UNLESS THE RUNOFF IS DIRECTED TO A PROPERLY DESIGNED AND FUNCTIONING SEDIMENT CONTROL DEVICE. PROPER PRECAUTIONS SHALL BE TAKEN TO ENSURE THAT MATERIALS DEPOSITED ONTO OFFSITE ROADWAYS ARE REMOVED SO THAT THEY DO NOT ENTER YARD INLETS, CATCH BASINS, SEWERS, WETLANDS, SURFACE WATER BODIES, OR ROADSIDE SWALES.
- WHERE CONCRETE EQUIPMENT WASHING IS REQUIRED, THIS MUST BE DONE IN AN APPROVED "CONCRETE CONTAINMENT AREA". CONTRACTOR SHALL NOT DISCHARGE ANY CONCRETE WASHOUT WATER INTO SEWERS, SURFACE WATER BODIES OR ONTO THE GROUND. ALL WASHOUT WATER MUST BE REMOVED FROM THE SITE(S) DAILY.
- EARTHEN-MATERIAL STOCKPILES MUST BE LOCATED A MINIMUM OF 50' FROM STORM DRAINS AND STREAMS UNLESS NO REASONABLE ALTERNATIVES ARE AVAILABLE.
- ALL EARTHEN STOCKPILES AND SURCHARGE MOUNDS GREATER THAN 10' IN HEIGHT OR HAVING SIDE SLOPES GREATER THAN 3H:1V MUST BE ENCAPSULATED BY A DOUBLE ROW OF SILT FENCE. THE FIRST ROW OF SILT FENCE SHALL BE SPACED NO GREATER THAN 10' FROM THE TOE OF THE MOUND. THE SECOND ROW OF SILT FENCE SHALL BE SPACED 5' FROM THE FIRST ROW. IN THE EVENT THE SITE DOES NOT HAVE PERIMETER EROSION AND SEDIMENT CONTROLS INSTALLED, THEN DOUBLE ROW SILT FENCING IS REQUIRED REGARDLESS OF THE STOCKPILE OR SURCHARGE HEIGHT.
- DEDICATED AREAS FOR DEMOLITION, CONSTRUCTION, AND OTHER WASTES MUST BE LOCATED A MINIMUM OF 50' FROM STORM DRAINS AND STREAMS UNLESS NO REASONABLE ALTERNATIVES ARE AVAILABLE.
- PAVED ROADWAYS MUST BE KEPT CLEAN AT ALL TIMES. WATER SHALL NOT BE USED TO CLEAN ROADS UNLESS THE RUNOFF IS DIRECTED TO A PROPERLY DESIGNED AND FUNCTIONING SEDIMENT CONTROL DEVICE. WATER PUMPED OUT OF THE EXCAVATED AREAS CONTAINS SEDIMENTS THAT MUST BE REMOVED PRIOR TO DISCHARGING TO RECEIVING BODIES OF WATER USING REMOVABLE PUMPING STATIONS, SUMP PITS, PORTABLE SEDIMENTATION TANKS AND/OR SILT CONTROL BAGS.
- ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL REMAIN IN PLACE UNTIL CONSTRUCTION IS COMPLETE, PERMANENT VEGETATION IS ESTABLISHED ON ALL DISTURBED AREAS, AND LOCAL AUTHORITIES HAVE GIVEN PERMISSION FOR REMOVAL.

SYMBOLS

	TEL PED		WATER METER		SILT FENCE
	POWER POLE		WATER MANHOLE		YARD INLET PROTECTION
	TB20 SOIL BORING		SANITARY SEWER MH		CONSTRUCTION ENTRANCE
	TP-1 TEST PIT		STORM MANHOLE		TEMPORARY SEEDING
	ROCK OUTLET PROTECTION		SANITARY SEWER CLEANOUT		PERMANENT SEEDING
	STORMWATER FLOW		SANITARY SEWER VALVE		
	YARD INLET PROTECTION		LIGHT POLE		
	GRAVEL CONSTRUCTION ENTRANCE		ELECTRIC BOX		
			ELEC STRU		
			EXISTING IRON PIPE		

ABBREVIATIONS

EOP	EDGE OF PAVEMENT	G	GAS
LOC	LIMITS OF CONSTRUCTION	SS	SANITARY SEWER
OHE	OVERHEAD ELECTRIC	W	WATER
FOC	FIBER OPTIC CABLE	PL	PROPERTY LINE
LP	LIGHT POLE	CL	CENTER LINE
UGE	UNDERGROUND ELECTRIC	RECM	ROLLED EROSION CONTROL MATTING
PP	POWER POLE		

LINETYPES

	CREEK / DITCH
	100 YR FLOODPLAIN BOUNDARY
	500 YR FLOODPLAIN BOUNDARY
	EASEMENT BOUNDARY
	RIGHT-OF-WAY
	SILT FENCE
	TREE PROTECTION FENCE
	LIMITS OF DISTURBANCE
	GUARDRAIL

LEGEND

NEW	DEMO	EXISTING		NEW	EXISTING
			BUILDING/STRUCTURE		
			ASPHALT PAVEMENT		
			CONCRETE CURB AND GUTTER		
			CONCRETE PAD/PAVING		
			GRAVEL ROAD		
			RIPARIAN BUFFER		
			RCA EXTENTS		
			WETLANDS		
			SLOPE MATTING		
			CHANNEL LINING		
			WATER LINE		
			SANITARY SEWER LINE		
			FORCE MAIN		
			FUTURE FORCE MAIN		

File: C:\USERS\SNASH\WORKSPACE\Hazen and Sawyer\32044-004_Big Branch 2 Pump Station and Pipelines\PROJECT FILES\CIVIL\1027 AM PLOT DATE: 7/5/2024 10:38 AM BY: SNASH

PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	S. NASH		
DRAWN BY:	S. NASH		
CHECKED BY:	M. SANTOWASSO		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"		
REV	ISSUED FOR	DATE	BY
1	REGULATORY REVIEW	11/2023	BYP

FINAL DESIGN - DO NOT USE FOR CONSTRUCTION

Hazen
 HAZEN AND SAWYER
 4011 WESTCHASE BLVD. SUITE 500,
 RALEIGH, NC 27607
 LICENSE No.: C-0381

APEX
 NORTH CAROLINA
 BIG BRANCH 2
 PUMP STATION

CIVIL
 CIVIL GENERAL NOTES
 AND LEGEND

DATE:	APRIL 2024
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	C1

TOWN OF APEX REQUIRED SITE PLAN NOTES:

- NO SITE DEVELOPMENT ACTIVITY INCLUDING, BUT NOT LIMITED TO, TESTING, CLEARING, INSTALLATION OF S&E MEASURES, OR GRADING SHALL OCCUR UNTIL REQUIRED TREE PROTECTION FENCING HAS BEEN INSTALLED AND INSPECTED. A TREE PROTECTION FENCING INSTALLATION PERMIT MAY BE OBTAINED AT THE PLANNING DEPARTMENT OR ONLINE AT [HTTP://WWW.APEXNC.ORG/215/APPLICATIONS-SCHEDULES](http://www.apexnc.org/215/APPLICATIONS-SCHEDULES).
- TREE PROTECTION FENCING MUST BE PLACED:
 - ONE FOOT AWAY FROM ANY SAVED TREE FOR EACH INCH OF DIAMETER AT BREAST HEIGHT,
 - ALONG THE OUTSIDE LINE OF THE 100-YEAR FLOODPLAIN AND THE OUTSIDE EDGE OF ANY RIPARIAN BUFFER, AND
 - AT LEAST 10 FEET AWAY FROM ANY OTHER DESIGNATED RCA SUCH AS, BUT NOT LIMITED TO, HISTORIC BUILDINGS AND STRUCTURES, WETLANDS, AND PONDS.
- ADDITIONAL TREE PROTECTION FENCING MAY BE REQUIRED IN OTHER LOCATIONS CLOSE TO CONSTRUCTION ACTIVITY WHERE IT IS DEEMED NECESSARY BY THE ZONING ENFORCEMENT OFFICER; SUCH AREAS MAY INCLUDE, BUT ARE NOT LIMITED TO, COMMON PROPERTY LINES OR NEAR PUBLIC AREAS (SIDEWALKS, ETC.).
- IF BUILDINGS ARE TO BE DEMOLISHED, A COPY OF THE DEMOLITION NOTIFICATION FROM THE NC HEALTH HAZARD CONTROL UNIT AND AN ASBESTOS INSPECTION REPORT FROM A NC ACCREDITED ASBESTOS INSPECTOR MUST ACCOMPANY THE APPLICATION FOR THE DEMOLITION PERMIT WHICH MUST BE OBTAINED PRIOR TO THE START OF THE DEMOLITION.
- ALL GRADING AND SUPPORT STRUCTURES ASSOCIATED WITH ANY RETAINING STRUCTURE SHALL NOT ENCRoACH INTO ANY REQUIRED BUFFER OR PROTECTED AREA (E.G. RCA, THE CRITICAL ROOT ZONES OF TREES, PUBLIC UTILITY EASEMENTS AND RIGHTS-OF-WAY), AND SHALL BE CONTAINED ENTIRELY ON SITE.
- SITE ELEMENTS REQUIRED TO SATISFY RECREATIONAL REQUIREMENTS SUCH AS, BUT NOT LIMITED TO, PLAY FIELDS, GREENWAY TRAILS, AND ITEMS TYPICALLY ASSOCIATED WITH THEM (BENCHES, TRASH CONTAINERS, SIGNS, ETC.) MUST MEET ANY APPLICABLE STANDARDS FOUND IN THE TOWN OF APEX STANDARD SPECIFICATIONS AND STANDARD DETAILS AND THE REQUIREMENTS OF THE TOWN OF APEX PARKS AND RECREATION DEPARTMENT.
- THE SCREENING OF LOADING DOCKS, ROLL-OUT TRASH CONTAINERS, DUMPSTERS, OUTDOOR STORAGE, MECHANICAL AND HVAC EQUIPMENT, AND SIMILAR FACILITIES ON THE ROOF, GROUND, OR BUILDING SHALL MEET THE REQUIREMENTS OF UDO SEC. 8.2.8. SPECIFICALLY, SCREENING MUST BE DONE SO THAT:
 - IT IS INCORPORATED INTO THE OVERALL DESIGN THEME OF THE BUILDING AND LANDSCAPE.
 - SCREENING MATERIALS ARE NOT DIFFERENT FROM OR INFERIOR TO THE PRINCIPAL MATERIALS OF THE BUILDING OR LANDSCAPE, AND ARE SIMILAR IN MATERIALS AND COLOR.
 - SCREENED ITEMS ARE OUT OF VIEW FROM ADJACENT PROPERTIES AND PUBLIC STREETS, AND A TOTALLY OPAQUE SCREEN IS ACHIEVED.
 - ANY GROUND-MOUNTED HVAC OR OTHER MECHANICAL OR UTILITY EQUIPMENT SIX (6) FEET TALL OR HIGHER MUST BE FENCED AND LANDSCAPED.
 - DUMPSTER ENCLOSURES MUST MEET THE ABOVE REQUIREMENTS PLUS BE EIGHT (8) FEET TALL OR THE HEIGHT OF THE DUMPSTER, WHICHEVER IS GREATER, AND BE BUILT OF MASONRY MATERIAL WITH OPAQUE GATES. WHERE PRACTICABLE, SHRUBS OR OTHER PLANTS MUST BE PLANTED OUTSIDE THE ENCLOSURE TO VISUALLY SOFTEN THE APPEARANCE.
- ALL REQUIRED SITE ELEMENTS SHOWN WITHIN A PARTICULAR PHASE MUST BE INSTALLED BEFORE A FINAL CERTIFICATE OF OCCUPANCY MAY BE ISSUED FOR ANY BUILDING WITHIN THAT PHASE.
- PRIOR TO SCHEDULING A FINAL SITE INSPECTION, ALL SITE ITEMS (E.G. LIGHTING, LANDSCAPING, MULCHING, SCREENING FOR DUMPSTERS, MECHANICAL EQUIPMENT, HVAC, ETC., SEEDING & SITE STABILIZATION, AND PARKING AND PAVEMENT MARKING) MUST BE COMPLETED.
- INDIVIDUAL SIGNS ARE NOT APPROVED AS PART OF THE SITE PLAN APPROVAL PROCESS. A SEPARATE SIGN PERMIT MUST BE OBTAINED PRIOR TO INSTALLATION OF THE SIGN. MULTIPLE USE LOTS, NON-RESIDENTIAL SUBDIVISIONS AND MULTIPLE TENANT LOTS MUST SUBMIT A MASTER SIGN PLAN FOR APPROVAL.
- RETAINING SYSTEMS PROVIDING A CUMULATIVE VERTICAL RELIEF GREATER THAN FIVE FEET IN HEIGHT WITHIN A HORIZONTAL DISTANCE OF 50 FEET OR LESS, INCLUDING RETAINING WALLS OR MECHANICALLY STABILIZED EARTH WALLS, SHALL BE DESIGNED AND CONSTRUCTED UNDER THE RESPONSIBLE CHARGE OF A REGISTERED PROFESSIONAL ENGINEER AND COMPLY IN ALL ASPECTS WITH THE NC BUILDING CODE SEC. 1610. RETAINING SYSTEMS MEETING THESE CRITERIA WILL REQUIRE A SEPARATE BUILDING PERMIT PRIOR TO THE START OF WORK. ALL RETAINING WALLS AND OTHER RETENTION STRUCTURES MUST BE INTEGRALLY TINTED OR STAINED A MEDIUM OR DARK BROWN OR RUST COLOR OR BE COVERED WITH A MASONRY VENEER THAT IS A MEDIUM OR DARK BROWN OR RUST COLOR.
- A GRADING PERMIT, WHEN APPLICABLE, MAY ONLY BE ISSUED BY THE BUILDING INSPECTIONS DIVISION AFTER THE INSTALLATION AND APPROVAL OF TREE PROTECTION FENCING AND S&E MEASURES AND A CERTIFICATE OF COMPLIANCE HAS BEEN ISSUED BY THE WATER RESOURCES DEPARTMENT.
- PRIOR TO APPROVAL OF A FINAL PLAT OR ISSUANCE OF A CERTIFICATE OF OCCUPANCY FOR ANY DEVELOPMENT WHERE A STORMWATER CONTROL MEASURE (SCM) IS REQUIRED, CONTACT THE ENVIRONMENTAL PROGRAMS MANAGER AT 919-249-3413 TO DEMONSTRATE THAT THE REQUIRED STRUCTURE IS IN PLACE, IS OPERATIONAL, AND COMPLIES WITH ALL RELEVANT PORTIONS OF UDO SEC. 6.1.12 ENGINEERED STORMWATER CONTROLS. IF THE SCM IS USED AS PART OF A TEMPORARY EROSION CONTROL MEASURE, THE INSPECTION WILL OCCUR DURING THE APPROPRIATE PHASE OF CONSTRUCTION.
- ALL WATER AND SEWER LINES SHALL BE INSTALLED WITH A MINIMUM OF THREE (3) FEET OF COVER.
- MAINTAIN A MINIMUM OF 18 INCHES OF VERTICAL SEPARATION BETWEEN UTILITIES.
- VERIFY ALL ILLUSTRATED UTILITY CROSSINGS PRIOR TO CONSTRUCTION AND NOTIFY THE ENGINEER IF CONFLICTS ARE ENCOUNTERED.
- CONTRACTOR SHALL COORDINATE UTILITY RELOCATIONS OR ABANDONMENT WITH LOCAL UTILITY COMPANIES AS REQUIRED.
- ALL METERED CONNECTIONS TO TOWN POTABLE WATER SHALL HAVE A TOWN-APPROVED BACKFLOW PREVENTION ASSEMBLY INSTALLED.
- WATER AND SEWER SHALL BE AT LEAST 10 FEET Laterally FROM EXISTING OR PROPOSED SEWERS. WHERE LOCAL CONDITIONS PREVENT A SEPARATION OF AT LEAST 10 FEET, THE WATER MAIN MAY BE LAID CLOSER, PROVIDED THAT THE ELEVATION OF THE BOTTOM OF THE WATER MAIN IS AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER WITH A HORIZONTAL SEPARATION OF AT LEAST THREE (3) FEET.
- ALL NEW PUBLIC WATER AND SEWER LINES CONTAINED WITHIN A TOWN OF APEX PUBLIC UTILITY EASEMENT WILL REQUIRE A WATER DISTRIBUTION EXTENSION PERMIT AND/OR A GRAVITY SEWER EXTENSION PERMIT TO THE RELEASE OF CONSTRUCTION DRAWINGS. ALL WATER DISTRIBUTION EXTENSION PERMIT APPLICATIONS SHALL BE ACCOMPANIED BY A SEALED ENGINEER'S REPORT PER THE TOWN OF APEX SPEC BOOK. PLEASE CONTACT THE ENGINEERING DIVISION AT 919-249-3394 TO OBTAIN THESE PERMIT APPLICATIONS.

- A PLUMBING PERMIT ISSUED BY THE BUILDING INSPECTION DIVISION IS REQUIRED FOR ALL PLUMBING SYSTEMS, INCLUDING STORM DRAINAGE SYSTEMS, INSTALLED OUTSIDE THE PUBLIC RIGHT-OF-WAY OR A PUBLIC UTILITY EASEMENT. THESE SYSTEMS SHALL BE INSPECTED AND APPROVED BY THE PLUMBING INSPECTOR PRIOR TO COVERING. CONTACT THE BUILDING INSPECTIONS DIRECTOR AT 919-249-3381 FOR INFORMATION INCLUDING THE UTILIZATION OF A THIRD-PARTY INSPECTION AGENCY.
- IT IS THE RESPONSIBILITY OF THE OWNER OR HIS REPRESENTATIVE(S) TO LOCATE AND IDENTIFY ALL EXISTING AND PROPOSED UTILITIES AND TO CLEARLY IDENTIFY THEM ON THE APPROVED PLANS.
- NO PRIVATE UTILITY EASEMENTS SHALL BE ALLOWED TO BE COUNTED IN THE CALCULATIONS FOR BUFFERS, RCA, OR REQUIRED LANDSCAPE AREAS.
- ALL LANDSCAPING IS REQUIRED TO BE INSTALLED PRIOR TO A CERTIFICATE OF OCCUPANCY FOR THE PROJECT, OR IN THE CASE OF PHASED DEVELOPMENT, FOR THE PHASE OF THE PROJECT. IF THE APPLICANT CHOOSES TO DELAY THE INSTALLATION OF LANDSCAPING FROM APRIL 1 THROUGH SEPTEMBER 1, THEN THE APPLICANT SHALL PROVIDE A CASH BOND EQUAL TO 150% OF THE COST OF MATERIALS AND INSTALLATION, BASED ON THE HIGHEST ESTIMATE RECEIVED, TO ENSURE INSTALLATION OF THE REQUIRED LANDSCAPING. ADDITIONAL EXCEPTIONS MAY BE GRANTED BY THE PLANNING DIRECTOR IN ACCORDANCE WITH UDO SEC. 8.2.2.E.
- REQUIRED BUFFERS MUST MEET THE MINIMUM OPACITY REQUIREMENTS FOR THE PARTICULAR TYPE OF BUFFER AS DESCRIBED IN UDO SEC. 8.2.6.
- ANY VEGETATION THAT IS DEAD, SUBSTANDARD, UNHEALTHY, OF POOR STRUCTURAL QUALITY, OR MISSING SHALL BE REPLACED IN CONFORMANCE WITH TOWN STANDARDS.
- ALL PLANT MATERIAL SHALL BE ALLOWED TO REACH THEIR MATURE SIZE AND MAINTAINED AT THEIR MATURE SIZE. PLANTS SHALL NOT BE CUT OR SEVERELY PRUNED SO THAT THEIR NATURAL FORM IS IMPAIRED.
- ALL SLOPES EQUAL TO 2:1 SHALL BE STABILIZED WITH PERMANENT SLOPE RETENTION OR A SUITABLE COMBINATION OF PLANTINGS AND RETENTION DEVICES.
- SLOPES STEEPER THAN 3:1 BUT LESS THAN 2:1 SHALL BE STABILIZED WITH PERMANENT GROUND COVER, NOT WITH TURF GRASS.
- ALL OUTDOOR LIGHT FIXTURES SHALL BE LOCATED A MINIMUM OF 10 FEET FROM A PROPERTY OR RIGHT-OF-WAY LINE, AND AT LEAST TWO FEET AWAY FROM ANY REQUIRED PERIMETER OR STREETSCAPE BUFFER AND TREE SAVE AREA.
- LAMPS FOR NON-CUTOFF LIGHT FIXTURES SHALL NOT EXCEED 100 WATTS.
- WALL PACK LIGHT FIXTURES MUST BE FULLY SHIELDED, TRUE CUTOFF TYPE FIXTURES WITH A CONCEALED LAMP/LIGHT SOURCE. THE LIGHTING MUST BE DIRECTED DOWNWARD AND THE WATTAGE MUST NOT EXCEED 100 WATTS.
- FLOODLIGHTS OR OTHER TYPES OF LIGHTING ARE PROHIBITED UNLESS APPROVAL IS GIVEN THROUGH THE DEVELOPMENT REVIEW PROCESS AND REFLECTED ON THE APPROVED SITE PLAN.
- AWNINGS AND CANOPIES USED FOR ACCENTS OVER DOORS AND WINDOWS SHALL NOT BE INTERNALLY LIT.
- BEFORE CERTIFICATES OF OCCUPANCY ARE RELEASED, THE OWNER/BUILDER MUST SUPPLY THE TOWN WITH A FINAL LETTER OF CERTIFICATION FROM THE LIGHTING ENGINEER AND/OR LIGHTING MANUFACTURER VERIFYING THAT ALL SITE LIGHTING IS INSTALLED ACCORDING TO TOWN STANDARDS, THE APPROVED PLANS, AND ANY APPLICABLE CONDITIONS.
- ARCHITECTURAL CONSTRUCTION PLANS MUST ADHERE TO THE APPROVED SITE PLANS. ANY PROPOSED CHANGES MUST BE SUBMITTED TO THE PLANNING DEPARTMENT FOR APPROVAL.

TOWN OF APEX CONSTRUCTION SEQUENCE:

- THROUGH DEVELOPMENT SERVICES AT (919) 249-1106, SCHEDULE A PRE-CONSTRUCTION MEETING WITH TOWN STAFF.
- SUBMIT THE FINANCIAL RESPONSIBILITY/OWNERSHIP (FRO) FORM TO STORMWATER ENGINEERING AT (919) 372-7470.
- REQUEST AN INVOICE FOR THE S&E PERFORMANCE GUARANTEE FROM STORMWATER STAFF AT (919) 372-7470.
- SUBMIT THE APPLICABLE S&E PERFORMANCE GUARANTEE TO DEVELOPMENT SERVICES AT 105-B UPCHURCH STREET, APEX, NC 27502. THE EROSION CONTROL LETTER OF PLAN APPROVAL WILL NOT BE ISSUED UNTIL THE PERFORMANCE GUARANTEE AND FRO HAVE BEEN SUBMITTED.
- REQUEST A LETTER OF PLAN APPROVAL FOR SEDIMENTATION AND EROSION CONTROL MEASURES FROM WATER RESOURCES STAFF AT (919) 372-7470.
- COMPLETE AND SUBMIT AN ELECTRONIC NOTICE OF INTENT (e-NOI) FORM WITH NCDENR REQUESTING A CERTIFICATE OF COVERAGE (COC) UNDER THE NCG01 CONSTRUCTION STORMWATER GENERAL PERMIT. VISIT THE FOLLOWING WEBSITE: <https://deq.nc.gov/about/divisions/energy-mineral-land-resources/energy-mineral-land-permits/stormwater-permits/construction-sw>
- COC MUST BE SENT TO STORMWATER ENGINEER BEFORE MOVING TO NEXT STEP.
- COMPLETE A GRADING PERMIT APPLICATION AND RECEIVE A GRADING PERMIT FROM THE BUILDING INSPECTIONS & PERMITTING DEPARTMENT AS REQUIRED BY THE NORTH CAROLINA BUILDING CODE APPENDIX J FOR GRADING. **BOTH THE GRADING PERMIT AND CERTIFICATE OF COVERAGE FROM NCDENR MUST BE SUBMITTED TO STORMWATER ENGINEERING PRIOR TO THE COMMENCEMENT OF ANY LAND DISTURBANCE ACTIVITY.**
- COMPLETE A TREE/PROTECTION FENCING INSTALLATION PERMIT APPLICATION THROUGH THE PLANNING DEPARTMENT.
- HAVE A SURVEYOR FLAG PROPERTY LINES, EASEMENTS, BUFFERS, TREE PROTECTION AREAS, AND FLAG THE PROTECTION LIMITS.
- CONTACT AN APEX PLANNING DEPARTMENT ZONING COMPLIANCE OFFICER AT (919) 249-3426 TO REQUEST APPROVAL FOR TREE PROTECTION FENCING LOCATIONS.
- INSTALL APPROVED TREE PROTECTION FENCING, SIGNS, AND/OR ANY OTHER PROTECTION MEASURES THAT MAY BE REQUIRED. CALL PLANNING AT (919) 249-3426 FOR A FINAL INSPECTION OF PROTECTION MEASURES. PLANNING WILL FORWARD APPROVAL TO STORMWATER ENGINEERING EROSION CONTROL FIELD STAFF.
- INSTALL GRAVEL CONSTRUCTION ENTRANCE, TEMPORARY DIVERSIONS, SILT FENCING, SEDIMENT BASINS, BYPASS CHANNELS, AND/OR OTHER MEASURES AS SHOWN ON THE APPROVED PLANS. CLEAR ONLY AS NECESSARY TO INSTALL THESE DEVICES.
- WHEN COMPLETED, CALL STORMWATER ENGINEERING EROSION CONTROL FIELD STAFF AT (919) 372-7470 FOR AN ON-SITE INSPECTION AND TO REQUEST A CERTIFICATE OF COMPLIANCE. WATER RESOURCES WILL ALSO FORWARD A COPY TO THE BUILDING INSPECTIONS & PERMITTING DEPARTMENT.
- POST GRADING PERMIT PROMINENTLY ON SITE AT ALL TIMES.
- BEGIN CLEARING, LOGGING, GRUBBING, AND ROUGH GRADE OF THE SITE IN ACCORDANCE WITH THE APPROVED GRADING PLAN.
- STOCKPILE A SUFFICIENT AMOUNT OF TOPSOIL TO COVER 3 INCHES OVER LANDSCAPED AREAS AT THE END OF THE PROJECT.
- INSTALL STORM SEWER, IF APPLICABLE, AND PROTECT INLETS WITH INLET PROTECTION DEVICES, SEDIMENT DEVICES, AND/OR OTHER APPROVED MEASURES AS SHOWN ON PLANS. MAINTAIN S&E MEASURES AS NEEDED.
- AFTER COMPLETION OF ANY PHASE OF GRADING OR WHEN LAND-DISTURBING ACTIVITIES HAVE TEMPORARILY CEASED, ESTABLISH GROUND COVER ON SWALES AND DITCHES AND GRADED SLOPES STEEPER THAN 3:1 WITHIN 7 CALENDAR DAYS; SLOPES THAT ARE 3:1 OR FLATTER MUST ESTABLISH GROUND COVER WITHIN 14 CALENDAR DAYS.
- STABILIZE SITE AS AREAS ARE BROUGHT UP TO FINISHED GRADE WITH VEGETATION OR PAVING.
- PRIOR TO PLAT APPROVAL, ALL DISTURBED AREAS BOTH PUBLIC AND PRIVATE, MUST BE PROPERLY STABILIZED. ALL TEMPORARY EROSION CONTROL MEASURES MUST BE INSTALLED, BE FUNCTIONING PROPERLY AND BE MAINTAINED FOR THE ENTIRE AREA CONTAINED WITHIN THE PLAT.
- FLUSH AND CLEAN ALL STORMWATER SYSTEM PIPES. CLEAN AND REMOVE SEDIMENT FROM TEMPORARY SEDIMENT HOLDING DEVICES. FOLLOW THE SCM CONSTRUCTION SEQUENCE FOUND ON THE GRADING AND/OR SCM DETAILS SHEET ON THE CONSTRUCTION PLAN SET.
- REMOVE ALL TEMPORARY DIVERSIONS, SILT FENCING, SEDIMENT BASINS, ETC. AND PROVIDE ADEQUATE COVER OR PAVE ANY RESULTING BARE AREAS. ALL PERMANENT EROSION CONTROL DEVICES SHOULD BE INSTALLED AT THIS POINT.

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 PLOT DATE: 7/5/2024 10:38 AM BY: SNASH

PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	S. NASH		
DRAWN BY:	S. NASH		
CHECKED BY:	M. SANTOWASSO		
1	REGULATORY REVIEW	11/2023	BYP
REV	ISSUED FOR	DATE	BY

FINAL DESIGN -
DO NOT USE FOR
CONSTRUCTION



HAZEN AND SAWYER
4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381



BIG BRANCH 2
PUMP STATION

DATE:	APRIL 2024
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	C2

CIVIL
TOWN OF APEX NOTES

GROUND STABILIZATION AND MATERIALS HANDLING PRACTICES FOR COMPLIANCE WITH THE NCG01 CONSTRUCTION GENERAL PERMIT

IMPLEMENTING THE DETAILS AND SPECIFICATIONS ON THIS PLAN SHEET WILL RESULT IN THE CONSTRUCTION ACTIVITY BEING CONSIDERED COMPLIANT WITH THE GROUND STABILIZATION AND MATERIALS HANDLING SECTIONS OF NCG01 CONSTRUCTION GENERAL PERMIT (SECTIONS E AND F, RESPECTIVELY). THE PERMITTEE SHALL COMPLY WITH THE EROSION AND SEDIMENT CONTROL PLAN APPROVED BY THE DELEGATED AUTHORITY HAVING JURISDICTION. ALL DETAILS AND SPECIFICATIONS SHOWN ON THIS SHEET MAY NOT APPLY DEPENDING ON SITE CONDITIONS AND THE DELEGATED AUTHORITY HAVING JURISDICTION.

SECTION E: GROUND STABILIZATION

REQUIRED GROUND STABILIZATION TIMEFRAMES		
SITE AREA DESCRIPTION	STABILIZE WITHIN THIS MANY CALENDAR DAYS AFTER CEASING LAND DISTURBANCE	TIME FRAME VARIATIONS
(A) PERIMETER DIKES, SWALES, DITCHES, AND PERIMETER SLOPES	7	NONE
(B) HIGH WATER QUALITY (HWQ) ZONES	7	NONE
(C) SLOPES STEEPER THAN 3:1	7	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED
(D) SLOPES 3:1 TO 4:1	14	-7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH AND WITH SLOPES STEEPER THAN 4:1 -7 DAYS FOR PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES AND HWQ ZONES -10 DAYS FOR FALLS LAKE WATERSHED
(E) AREAS WITH SLOPES FLATTER THAN 4:1	14	-7 DAYS FOR PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND HWQ ZONES -10 DAYS FOR FALLS LAKE WATERSHED UNLESS THERE IS ZERO SLOPE

NOTE: AFTER THE PERMANENT CESSATION OF CONSTRUCTION ACTIVITIES, ANY AREAS WITH TEMPORARY GROUND STABILIZATION SHALL BE CONVERTED TO PERMANENT GROUND STABILIZATION AS SOON AS PRACTICABLE BUT IN NO CASE LONGER THAN 90 CALENDAR DAYS AFTER THE LAST LAND DISTURBING ACTIVITY. TEMPORARY GROUND STABILIZATION SHALL BE MAINTAINED IN A MANNER TO RENDER THE SURFACE STABLE AGAINST ACCELERATED EROSION UNTIL PERMANENT GROUND STABILIZATION IS ACHIEVED.

GROUND STABILIZATION SPECIFICATION

STABILIZE THE GROUND SUFFICIENTLY SO THAT RAIN WILL NOT DISLODGE THE SOIL. USE ONE OF THE TECHNIQUES IN THE TABLE BELOW:

TEMPORARY STABILIZATION	PERMANENT STABILIZATION
<ul style="list-style-type: none"> TEMPORARY GRASS SEED COVERED WITH STRAW OR OTHER MULCHES AND TACKIFIERS HYDROSEEDING ROLLED EROSION CONTROL PRODUCTS WITH OR WITHOUT TEMPORARY GRASS SEED APPROPRIATELY APPLIED STRAW OR OTHER MULCH PLASTIC SHEETING 	<ul style="list-style-type: none"> PERMANENT GRASS SEED COVERED WITH STRAW OR OTHER MULCHES AND TACKIFIERS GEOTEXTILE FABRICS SUCH AS PERMANENT SOIL REINFORCEMENT MATTING HYDROSEEDING SHRUBS OR OTHER PERMANENT PLANTINGS COVERED WITH MULCH UNIFORM AND EVENLY DISTRIBUTED GROUND COVER SUFFICIENT TO RESTRAIN EROSION STRUCTURAL METHODS SUCH AS CONCRETE, ASPHALT OR RETAINING WALLS ROLLED EROSION CONTROL PRODUCTS WITH GRASS SEED

EQUIPMENT AND VEHICLE MAINTENANCE

1. MAINTAIN VEHICLES AND EQUIPMENT TO PREVENT DISCHARGE OF FLUIDS.
2. PROVIDE DRIP PANS UNDER ANY STORED EQUIPMENT.
3. IDENTIFY LEAKS AND REPAIR AS SOON AS FEASIBLE, OR REMOVE LEAKING EQUIPMENT FROM THE PROJECT.
4. COLLECT ALL SPENT FLUIDS, STORE IN SEPARATE CONTAINERS AND PROPERLY DISPOSE AS HAZARDOUS WASTE (RECYCLE WHEN POSSIBLE).
5. REMOVE LEAKING VEHICLES AND CONSTRUCTION EQUIPMENT FROM SERVICE UNTIL THE PROBLEM HAS BEEN CORRECTED.
6. BRING USED FUELS, LUBRICANTS, COOLANTS, HYDRAULIC FLUIDS AND OTHER PETROLEUM PRODUCTS TO A RECYCLING OR DISPOSAL CENTER THAT HANDLES THESE MATERIALS.

LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE

1. NEVER BURY OR BURN WASTE. PLACE LITTER AND DEBRIS IN APPROVED WASTE CONTAINERS.
2. PROVIDE A SUFFICIENT NUMBER AND SIZE OF WASTE CONTAINERS (E.G. DUMPSTER, TRASH RECEPTACLE) ON SITE TO CONTAIN CONSTRUCTION AND DOMESTIC WASTES.
3. LOCATE WASTE CONTAINERS AT LEAST 50 FEET AWAY FROM STORM DRAIN INLETS AND SURFACE WATERS UNLESS NO OTHER ALTERNATIVES ARE REASONABLY AVAILABLE.
4. LOCATE WASTE CONTAINERS ON AREAS THAT DO NOT RECEIVE SUBSTANTIAL AMOUNTS OF RUNOFF FROM UPLAND AREAS AND DOES NOT DRAIN DIRECTLY TO A STORM DRAIN, STREAM OR WETLAND.
5. COVER WASTE CONTAINERS AT THE END OF EACH WORKDAY AND BEFORE STORM EVENTS OR PROVIDE SECONDARY CONTAINMENT. REPAIR OR REPLACE DAMAGED WASTE CONTAINERS.
6. ANCHOR ALL LIGHTWEIGHT ITEMS IN WASTE CONTAINERS DURING TIMES OF HIGH WINDS.
7. EMPTY WASTE CONTAINERS AS NEEDED TO PREVENT OVERFLOW. CLEAN UP IMMEDIATELY IF CONTAINERS OVERFLOW.
8. DISPOSE WASTE OFF-SITE AT AN APPROVED DISPOSAL FACILITY.
9. ON BUSINESS DAYS, CLEAN UP AND DISPOSE OF WASTE IN DESIGNATED WASTE CONTAINERS.

PAINT AND OTHER LIQUID WASTE

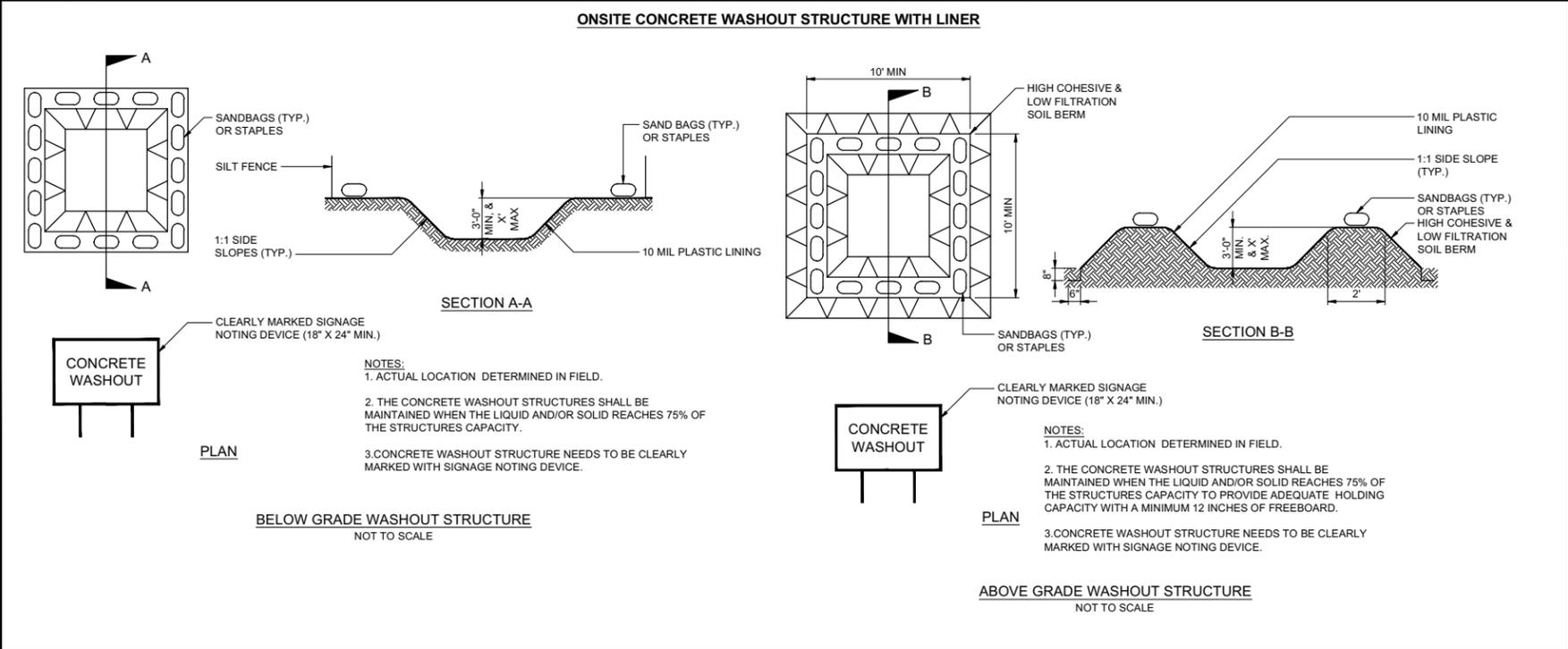
1. DO NOT DUMP PAINT AND OTHER LIQUID WASTE INTO STORM DRAINS, STREAMS OR WETLANDS.
2. LOCATE PAINT WASHOUTS AT LEAST 50 FEET AWAY FROM STORM DRAIN INLETS AND SURFACE WATERS UNLESS NO OTHER ALTERNATIVES ARE REASONABLY AVAILABLE.
3. CONTAIN LIQUID WASTES IN A CONTROLLED AREA.
4. CONTAINMENT MUST BE LABELED, SIZED AND PLACED APPROPRIATELY FOR THE NEEDS OF SITE.
5. PREVENT THE DISCHARGE OF SOAPS, SOLVENTS, DETERGENTS AND OTHER LIQUID WASTES FROM CONSTRUCTION SITES.

PORTABLE TOILETS

1. INSTALL PORTABLE TOILETS ON LEVEL GROUND, AT LEAST 50 FEET AWAY FROM STORM DRAINS, STREAMS OR WETLANDS UNLESS THERE IS NO ALTERNATIVE REASONABLY AVAILABLE. IF 50 FOOT OFFSET IS NOT ATTAINABLE, PROVIDE RELOCATION OF PORTABLE TOILET BEHIND SILT FENCE OR PLACE ON A GRAVEL PAD AND SURROUND WITH SAND BAGS.
2. PROVIDE STAKING OR ANCHORING OF PORTABLE TOILETS DURING PERIODS OF HIGH WINDS OR IN HIGH FOOT TRAFFIC AREAS.
3. MONITOR PORTABLE TOILETS FOR LEAKING AND PROPERLY DISPOSE OF ANY LEAKED MATERIAL. UTILIZE A LICENSED SANITARY WASTE HAULER TO REMOVE LEAKING PORTABLE TOILETS AND REPLACE WITH PROPERLY OPERATING UNIT.

EARTHEN STOCKPILE MANAGEMENT

1. SHOW STOCKPILE LOCATIONS ON PLANS. LOCATE EARTHEN-MATERIAL STOCKPILE AREAS AT LEAST 50 FEET AWAY FROM STORM DRAIN INLETS, SEDIMENT BASINS, PERIMETER SEDIMENT CONTROLS AND SURFACE WATERS UNLESS IT CAN BE SHOWN NO OTHER ALTERNATIVES ARE REASONABLY AVAILABLE.
2. PROTECT STOCKPILE WITH SILT FENCE INSTALLED ALONG TOE OF SLOPE WITH A MINIMUM OFFSET OF FIVE FEET FROM THE TOE OF STOCKPILE.
3. PROVIDE STABLE STONE ACCESS POINT WHEN FEASIBLE.
4. STABILIZE STOCKPILE WITHIN THE TIMEFRAMES PROVIDED ON THIS SHEET AND IN ACCORDANCE WITH THE APPROVED PLAN AND ANY ADDITIONAL REQUIREMENTS. SOIL STABILIZATION IS DEFINED AS VEGETATIVE, PHYSICAL OR CHEMICAL COVERAGE TECHNIQUES THAT WILL RESTRAIN ACCELERATED EROSION ON DISTURBED SOILS FOR TEMPORARY OR PERMANENT CONTROL NEEDS.



CONCRETE WASHOUTS

1. DO NOT DISCHARGE CONCRETE OR CEMENT SLURRY FROM THE SITE.
2. DISPOSE OF, OR RECYCLE SETTLED, HARDENED CONCRETE RESIDUE IN ACCORDANCE WITH LOCAL AND STATE SOLID WASTE REGULATIONS AND AT AN APPROVED FACILITY.
3. MANAGE WASHOUT FROM MORTAR MIXERS IN ACCORDANCE WITH THE ABOVE ITEM, AND IN ADDITION, PLACE THE MIXER AND ASSOCIATED MATERIALS ON IMPERVIOUS BARRIER AND WITHIN LOT PERIMETER SILT FENCE.
4. INSTALL TEMPORARY CONCRETE WASHOUTS PER LOCAL REQUIREMENTS, WHERE APPLICABLE. IF AN ALTERNATE METHOD OR PRODUCT IS TO BE USED, CONTACT YOUR APPROVAL AUTHORITY FOR REVIEW AND APPROVAL. IF LOCAL STANDARD DETAILS ARE NOT AVAILABLE, USE ONE OF THE TWO TYPES OF TEMPORARY CONCRETE WASHOUTS PROVIDED ON THIS DETAIL.
5. DO NOT USE CONCRETE WASHOUTS FOR DEWATERING OR STORING DEFECTIVE CURB OR SIDEWALK SECTIONS. STORMWATER ACCUMULATED WITHIN THE WASHOUT MAY NOT BE PUMPED INTO OR DISCHARGED TO THE STORM DRAIN SYSTEM OR RECEIVING SURFACE WATERS. LIQUID WASTE MUST BE PUMPED OUT AND REMOVED FROM PROJECT.
6. LOCATE WASHOUTS AT LEAST 50 FEET FROM STORM DRAIN INLETS AND SURFACE WATERS UNLESS IT CAN BE SHOWN THAT NO OTHER ALTERNATIVES ARE REASONABLY AVAILABLE. AT A MINIMUM, INSTALL PROTECTION OF STORM DRAIN INLET(S) CLOSEST TO THE WASHOUT WHICH COULD RECEIVE SPILLS OR OVERFLOW.
7. LOCATE WASHOUTS IN AN EASILY ACCESSIBLE AREA, ON LEVEL GROUND AND INSTALL A STONE ENTRANCE PAD IN FRONT OF THE WASHOUT. ADDITIONAL CONTROLS MAY BE REQUIRED BY THE APPROVING AUTHORITY.
8. INSTALL AT LEAST ONE SIGN DIRECTING CONCRETE TRUCKS TO THE WASHOUT WITHIN THE PROJECT LIMITS. POST SIGNAGE ON THE WASHOUT ITSELF TO IDENTIFY THIS LOCATION.
9. REMOVE LEAVINGS FROM THE WASHOUT WHEN AT APPROXIMATELY 75% CAPACITY TO LIMIT OVERFLOW EVENTS. REPLACE THE TARP, SAND BAGS OR OTHER TEMPORARY STRUCTURAL COMPONENTS WHEN NO LONGER FUNCTIONAL. WHEN UTILIZING ALTERNATIVE OR PROPRIETARY PRODUCTS, FOLLOW MANUFACTURER'S INSTRUCTIONS.
10. AT THE COMPLETION OF THE CONCRETE WORK, REMOVE REMAINING LEAVINGS AND DISPOSE OF IN AN APPROVED DISPOSAL FACILITY. FILL PIT, IF APPLICABLE, AND STABILIZE ANY DISTURBANCE CAUSED BY REMOVAL OF WASHOUT.

HERBICIDES, PESTICIDES AND RODENTICIDES

1. STORE AND APPLY HERBICIDES, PESTICIDES AND RODENTICIDES IN ACCORDANCE WITH LABEL RESTRICTIONS.
2. STORE HERBICIDES, PESTICIDES AND RODENTICIDES IN THEIR ORIGINAL CONTAINERS WITH THE LABEL, WHICH LISTS DIRECTIONS FOR USE, INGREDIENTS AND FIRST AID STEPS IN CASE OF ACCIDENTAL POISONING.
3. DO NOT STORE HERBICIDES, PESTICIDES AND RODENTICIDES IN AREAS WHERE FLOODING IS POSSIBLE OR WHERE THEY MAY SPILL OR LEAK INTO WELLS, STORMWATER DRAINS, GROUND WATER OR SURFACE WATER. IF A SPILL OCCURS, CLEAN AREA IMMEDIATELY.
4. DO NOT STOCKPILE THESE MATERIALS ONSITE.

HAZARDOUS AND TOXIC WASTE

1. CREATE DESIGNATED HAZARDOUS WASTE COLLECTION AREAS ON-SITE.
2. PLACE HAZARDOUS WASTE CONTAINERS UNDER COVER OR IN SECONDARY CONTAINMENT.
3. DO NOT STORE HAZARDOUS CHEMICALS, DRUMS OR BAGGED MATERIALS DIRECTLY ON THE GROUND.

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PROJECT ENGINEER:	B. PORTER				
DESIGNED BY:	S. NASH				
DRAWN BY:	S. NASH				
CHECKED BY:	M. SANTOWASSO				
1	REGULATORY REVIEW	11/2023	BYP	IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"
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FINAL DESIGN -
DO NOT USE FOR
CONSTRUCTION

Hazen

HAZEN AND SAWYER
4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA

BIG BRANCH 2
PUMP STATION

CIVIL
NCG01 GROUND STABILIZATION
AND MATERIALS HANDLING

DATE:	APRIL 2024
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	

**PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING**

SECTION A: SELF-INSPECTION

SELF-INSPECTIONS ARE REQUIRED DURING NORMAL BUSINESS HOURS IN ACCORDANCE WITH THE TABLE BELOW. WHEN ADVERSE WEATHER OR SITE CONDITIONS WOULD CAUSE THE SAFETY OF THE INSPECTION PERSONNEL TO BE IN JEOPARDY, THE INSPECTION MAY BE DELAYED UNTIL THE NEXT BUSINESS DAY ON WHICH IT IS SAFE TO PERFORM THE INSPECTION. IN ADDITION, WHEN A STORM EVENT OF EQUAL TO OR GREATER THAN 1.0 INCH OCCURS OUTSIDE OF NORMAL BUSINESS HOURS, THE SELF-INSPECTION SHALL BE PERFORMED UPON THE COMMENCEMENT OF THE NEXT BUSINESS DAY. ANY TIME WHEN INSPECTIONS WERE DELAYED SHALL BE NOTED IN THE INSPECTION RECORD.

REQUIRED GROUND STABILIZATION TIMEFRAMES		
INSPECT	FREQUENCY (DURING NORMAL BUSINESS HOURS)	INSPECTION RECORDS MUST INCLUDE:
(1) RAIN GAUGE MAINTAINED IN GOOD WORKING ORDER	DAILY	DAILY RAINFALL AMOUNTS. IF NO DAILY RAIN GAUGE OBSERVATIONS ARE MADE DURING WEEKEND OR HOLIDAY PERIODS, AND NO INDIVIDUAL-DAY RAINFALL INFORMATION IS AVAILABLE, RECORD THE CUMULATIVE RAIN MEASUREMENT FOR THOSE UNATTENDED DAYS (AND THIS WILL DETERMINE IF A SITE INSPECTION IS NEEDED). DAYS ON WHICH NO RAINFALL OCCURRED SHALL BE RECORDED AS "ZERO." THE PERMITTEE MAY USE ANOTHER RAIN-MONITORING DEVICE APPROVED BY THE DIVISION.
(2) E&SC MEASURES	AT LEAST ONCE PER 7 CALENDAR DAYS AND WITHIN 24 HOURS OF A RAIN EVENT ≥ 1.0 INCH IN 24 HOURS	1. IDENTIFICATION OF THE MEASURES INSPECTED. 2. DATE AND TIME OF THE INSPECTION. 3. NAME OF THE PERSON PERFORMING THE INSPECTION. 4. INDICATION OF WHETHER THE MEASURES WERE OPERATING PROPERLY. 5. DESCRIPTION OF MAINTENANCE NEEDS FOR THE MEASURE. 6. DESCRIPTION, EVIDENCE, AND DATE OF CORRECTIVE ACTIONS TAKEN.
(3) STORMWATER DISCHARGE OUTFALLS (SDOS)	AT LEAST ONCE PER 7 CALENDAR DAYS AND WITHIN 24 HOURS OF A RAIN EVENT ≥ 1.0 INCH IN 24 HOURS	1. IDENTIFICATION OF THE MEASURES INSPECTED. 2. DATE AND TIME OF THE INSPECTION. 3. NAME OF THE PERSON PERFORMING THE INSPECTION. 4. INDICATION OF WHETHER THE MEASURES WERE OPERATING PROPERLY. 5. DESCRIPTION OF MAINTENANCE NEEDS FOR THE MEASURE. 6. DESCRIPTION, EVIDENCE, AND DATE OF CORRECTIVE ACTIONS TAKEN.
(4) PERIMETER OF SITE	AT LEAST ONCE PER 7 CALENDAR DAYS AND WITHIN 24 HOURS OF A RAIN EVENT ≥ 1.0 INCH IN 24 HOURS	1. IF VISIBLE SEDIMENTATION IS FOUND OUTSIDE SITE LIMITS, THEN A RECORD OF THE FOLLOWING SHALL BE MADE: 2. ACTIONS TAKEN TO CLEAN UP OR STABILIZE THE SEDIMENT THAT HAS LEFT THE SITE LIMITS, 3. DESCRIPTION, EVIDENCE, AND DATE OF CORRECTIVE ACTIONS TAKEN, AND 4. AN EXPLANATION AS TO THE ACTIONS TAKEN TO CONTROL FUTURE RELEASES.
(5) STREAMS OR WETLANDS ONSITE OR OFFSITE (WHERE ACCESSIBLE)	AT LEAST ONCE PER 7 CALENDAR DAYS AND WITHIN 24 HOURS OF A RAIN EVENT ≥ 1.0 INCH IN 24 HOURS	1. IF THE STREAM OR WETLAND HAS INCREASED VISIBLE SEDIMENTATION OR A STREAM HAS VISIBLE INCREASED TURBIDITY FROM THE CONSTRUCTION ACTIVITY, THEN A RECORD OF THE FOLLOWING SHALL BE MADE: 2. DESCRIPTION, EVIDENCE AND DATE OF CORRECTIVE ACTIONS TAKEN, AND 3. RECORDS OF THE REQUIRED REPORTS TO THE APPROPRIATE DIVISION REGIONAL OFFICE PER PART III, SECTION C, ITEM (2)(A) OF THIS PERMIT.
(6) GROUND STABILIZATION MEASURES	AFTER EACH PHASE OF GRADING	1. THE PHASE OF GRADING (INSTALLATION OF PERIMETER E&SC MEASURES, CLEARING AND GRUBBING, INSTALLATION OF STORM DRAINAGE FACILITIES, COMPLETION OF ALL LAND-DISTURBING ACTIVITY, CONSTRUCTION OR REDEVELOPMENT, PERMANENT GROUND COVER). 2. DOCUMENTATION THAT THE REQUIRED GROUND STABILIZATION MEASURES HAVE BEEN PROVIDED WITHIN THE REQUIRED TIMEFRAME OR AN ASSURANCE THAT THEY WILL BE PROVIDED AS SOON AS POSSIBLE.

NOTE: THE RAIN INSPECTION RESETS THE REQUIRED 7 DAY CALENDAR DAY INSPECTION REQUIREMENT

**PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING**

SECTION B: RECORDKEEPING

1. E&SC PLAN DOCUMENTATION

THE APPROVED E&SC PLAN AS WELL AS ANY APPROVED DEVIATION SHALL BE KEPT ON THE SITE. THE APPROVED E&SC PLAN MUST BE KEPT UP-TO-DATE THROUGHOUT THE COVERAGE UNDER THIS PERMIT. THE FOLLOWING ITEMS PERTAINING TO THE E&SC PLAN SHALL BE KEPT ON SITE AND AVAILABLE FOR INSPECTION AT ALL TIMES DURING NORMAL BUSINESS HOURS.

ITEM TO DOCUMENT	INSPECTION RECORDS MUST INCLUDE:
(A) EACH E&SC MEASURE HAS BEEN INSTALLED AND DOES NOT SIGNIFICANTLY DEVIATE FROM THE LOCATIONS, DIMENSIONS AND RELATIVE ELEVATIONS SHOWN ON THE APPROVED E&SC PLAN.	INITIAL AND DATE EACH E&SC MEASURE ON A COPY OF THE APPROVED E&SC PLAN OR COMPLETE, DATE AND SIGN AN INSPECTION REPORT THAT LISTS EACH E&SC MEASURE SHOWN ON THE APPROVED E&SC PLAN. THIS DOCUMENTATION IS REQUIRED UPON THE INITIAL INSTALLATION OF THE E&SC MEASURES OR IF THE E&SC MEASURES ARE MODIFIED AFTER INITIAL INSTALLATION.
(B) A PHASE OF GRADING HAS BEEN COMPLETED.	INITIAL AND DATE A COPY OF THE APPROVED E&SC PLAN OR COMPLETE, DATE AND SIGN AN INSPECTION REPORT TO INDICATE COMPLETION OF THE CONSTRUCTION PHASE.
(C) GROUND COVER IS LOCATED AND INSTALLED IN ACCORDANCE WITH THE APPROVED E&SC PLAN.	INITIAL AND DATE A COPY OF THE APPROVED E&SC PLAN OR COMPLETE, DATE AND SIGN AN INSPECTION REPORT TO INDICATE COMPLIANCE WITH APPROVED GROUND COVER SPECIFICATIONS.
(D) THE MAINTENANCE AND REPAIR REQUIREMENTS FOR ALL E&SC MEASURES HAVE BEEN PERFORMED.	COMPLETE, DATE AND SIGN AN INSPECTION REPORT.
(E) CORRECTIVE ACTIONS HAVE BEEN TAKEN TO E&SC MEASURES.	INITIAL AND DATE A COPY OF THE APPROVED E&SC PLAN OR COMPLETE, DATE AND SIGN AN INSPECTION REPORT TO INDICATE THE COMPLETION OF THE CORRECTIVE ACTION.

2. ADDITIONAL DOCUMENTATION TO BE KEPT ON SITE

IN ADDITION TO THE E&SC PLAN DOCUMENTS ABOVE, THE FOLLOWING ITEMS SHALL BE KEPT ON THE SITE AND AVAILABLE FOR INSPECTORS AT ALL TIMES DURING NORMAL BUSINESS HOURS, UNLESS THE DIVISION PROVIDES A SITE-SPECIFIC EXEMPTION BASED ON UNIQUE SITE CONDITIONS THAT MAKE THIS REQUIREMENT NOT PRACTICAL:

- (A) THIS GENERAL PERMIT AS WELL AS THE CERTIFICATE OF COVERAGE, AFTER IT IS RECEIVED.
- (B) RECORDS OF INSPECTIONS MADE DURING THE PREVIOUS TWELVE MONTHS. THE PERMITTEE SHALL RECORD THE REQUIRED OBSERVATIONS ON THE INSPECTION RECORD FORM PROVIDED BY THE DIVISION OR A SIMILAR INSPECTION FORM THAT INCLUDES ALL THE REQUIRED ELEMENTS. USE OF ELECTRONICALLY-AVAILABLE RECORDS IN LIEU OF THE REQUIRED PAPER COPIES WILL BE ALLOWED IF SHOWN TO PROVIDE EQUAL ACCESS AND UTILITY AS THE HARD-COPY RECORDS.

3. DOCUMENTATION TO BE RETAINED FOR THREE YEARS

ALL DATA USED TO COMPLETE THE E-NOI AND ALL INSPECTION RECORDS SHALL BE MAINTAINED FOR A PERIOD OF THREE YEARS AFTER PROJECT COMPLETION AND MADE AVAILABLE UPON REQUEST. [40 CFR 122.41]

**PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING**

SECTION C: REPORTING

1. OCCURRENCES THAT MUST BE REPORTED

PERMITTEES SHALL REPORT THE FOLLOWING OCCURRENCES:

- (A) VISIBLE SEDIMENT DEPOSITION IN A STREAM OR WETLAND
- (B) OIL SPILLS IF:
 - THEY ARE 25 GALLONS OR MORE,
 - THEY ARE LESS THAN 25 GALLONS BUT CANNOT BE CLEANED UP WITHIN 24 HOURS,
 - THEY CAUSE SHEEN ON SURFACE WATERS (REGARDLESS OF VOLUME), OR
 - THEY ARE WITHIN 100 FEET OF SURFACE WATERS (REGARDLESS OF VOLUME).
- (C) RELEASES OF HAZARDOUS SUBSTANCES IN EXCESS OF REPORTABLE QUANTITIES UNDER SECTION 311 OF THE CLEAN WATER ACT (REF: 40 CFR 110.3 AND 40 CFR 117.3) OR SECTION 102 OF CERCLA (REF: 40 CFR 302.4) OR G.S. 143-215.85.
- (D) ANTICIPATED BYPASSES AND UNANTICIPATED BYPASS
- (E) NONCOMPLIANCE WITH THE CONDITIONS OF THIS PERMIT THAT MAY ENDANGER HEALTH OR THE ENVIRONMENT.

2. REPORTING TIMEFRAMES AND OTHER REQUIREMENTS

AFTER A PERMITTEE BECOMES AWARE OF AN OCCURRENCE THAT MUST BE REPORTED, HE SHALL CONTACT THE APPROPRIATE DIVISION REGIONAL OFFICE WITHIN THE TIMEFRAMES AND IN ACCORDANCE WITH THE OTHER REQUIREMENTS LISTED BELOW. OCCURRENCES OUTSIDE NORMAL BUSINESS HOURS MAY ALSO BE REPORTED TO THE DEPARTMENT'S ENVIRONMENTAL EMERGENCY CENTER PERSONNEL AT (800) 858-0368.

OCCURRENCE	REPORTING TIMEFRAME (AFTER DISCOVERY) AND OTHER REQUIREMENTS
(A) VISIBLE SEDIMENT DEPOSITION IN A STREAM OR WETLAND	<ul style="list-style-type: none"> • WITHIN 24 HOURS, AN ORAL OR ELECTRONIC NOTIFICATION. • WITHIN 7 CALENDAR DAYS, A REPORT THAT CONTAINS A DESCRIPTION OF THE SEDIMENT AND ACTIONS TAKEN TO ADDRESS THE CAUSE OF THE DEPOSITION. DIVISION STAFF MAY WAIVE THE REQUIREMENT FOR A WRITTEN REPORT ON A CASE-BY-CASE BASIS. • IF THE STREAM IS NAMED ON THE NC 303(D) LIST AS IMPAIRED FOR SEDIMENT-RELATED CAUSES, THE PERMITTEE MAY BE REQUIRED TO PERFORM ADDITIONAL MONITORING, INSPECTIONS OR APPLY MORE STRINGENT PRACTICES IF STAFF DETERMINE THAT ADDITIONAL REQUIREMENTS ARE NEEDED TO ASSURE COMPLIANCE WITH THE FEDERAL OR STATE IMPAIRED-WATERS CONDITIONS.
(B) OIL SPILLS AND RELEASE OF HAZARDOUS SUBSTANCES PER ITEM (B)-(C) ABOVE	<ul style="list-style-type: none"> • WITHIN 24 HOURS, AN ORAL OR ELECTRONIC NOTIFICATION. THE NOTIFICATION SHALL INCLUDE INFORMATION ABOUT THE DATE, TIME, NATURE, VOLUME AND LOCATION OF THE SPILL OR RELEASE.
(C) ANTICIPATED BYPASSES [40 CFR 122.41(M)(3)]	<ul style="list-style-type: none"> • A REPORT AT LEAST TEN DAYS BEFORE THE DATE OF THE BYPASS, IF POSSIBLE. THE REPORT SHALL INCLUDE AN EVALUATION OF THE ANTICIPATED QUALITY AND EFFECT OF THE BYPASS.
(D) UNANTICIPATED BYPASSES [40 CFR 122.41(M)(3)]	<ul style="list-style-type: none"> • WITHIN 24 HOURS, AN ORAL OR ELECTRONIC NOTIFICATION. • WITHIN 7 CALENDAR DAYS, A REPORT THAT INCLUDES AN EVALUATION OF THE QUALITY AND EFFECT OF THE BYPASS.
(E) NONCOMPLIANCE WITH THE CONDITIONS OF THIS PERMIT THAT MAY ENDANGER HEALTH OR THE ENVIRONMENT [40 CFR 122.41(L)(7)]	<ul style="list-style-type: none"> • WITHIN 24 HOURS, AN ORAL OR ELECTRONIC NOTIFICATION. • WITHIN 7 CALENDAR DAYS, A REPORT THAT CONTAINS A DESCRIPTION OF THE NONCOMPLIANCE, AND ITS CAUSES; THE PERIOD OF NONCOMPLIANCE, INCLUDING EXACT DATES AND TIMES, AND IF THE NONCOMPLIANCE HAS NOT BEEN CORRECTED, THE ANTICIPATED TIME NONCOMPLIANCE IS EXPECTED TO CONTINUE; AND STEPS TAKEN OR PLANNED TO REDUCE, ELIMINATE, AND PREVENT REOCCURRENCE OF THE NONCOMPLIANCE. [40 CFR 122.41(L)(6)]. • DIVISION STAFF MAY WAIVE THE REQUIREMENT FOR A WRITTEN REPORT ON A CASE-BY-CASE BASIS.

EROSION CONTROL MAINTENANCE NOTES:

ALL EROSION CONTROL MEASURES SHALL BE INSPECTED WEEKLY AND AFTER EACH RAINFALL EVENT OF ½ INCH IN 24 HOURS. ANY NEEDED REPAIRS SHALL BE MADE IMMEDIATELY TO PREVENT FURTHER DAMAGE AND EROSION. STRUCTURES AND MEASURES THAT SHALL BE INSPECTED ARE OUTLINED IN THE FOLLOWING SECTION. THE PERSON WHO PERFORMS THE INSPECTION SHALL MAINTAIN AND MAKE AVAILABLE A RECORD OF THE INSPECTION AT THE SITE OF THE LAND-DISTURBING ACTIVITY. THE RECORD SHALL SET OUT ANY SIGNIFICANT DEVIATION FROM THE APPROVED EROSION CONTROL PLAN, IDENTIFY ANY MEASURES THAT MAY BE REQUIRED TO CORRECT DEVIATION, AND DOCUMENT THE COMPLETION OF THOSE MEASURES. THE RECORD SHALL BE MAINTAINED UNTIL PERMANENT GROUND COVER HAS BEEN ESTABLISHED AS REQUIRED BY THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN.

CONSTRUCTION ENTRANCE:
 -- MAINTAIN GRAVEL PAD IN A CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING THE CONSTRUCTION SITE BY PERIODIC TOPDRESSING WITH 2-INCH STONE.

INLET PROTECTION:
 -- INSPECT FOR SIGNIFICANT EROSION AROUND THE EDGES. REMOVE SEDIMENT ACCUMULATED AND REPLACE WATTLE AND FILTER FABRIC WITH TEARS OR IF IT BECOMES INEFFECTIVE.

SILT BAG:
 -- ANY DAMAGE TO THE SILT BAG SHALL BE REPAIRED IMMEDIATELY.
 -- TEMPORARY SILT BAGS SHALL BE REPLACED WHEN 6 INCHES OF SEDIMENT HAS ACCUMULATED OR IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
 -- MONITOR SILT BAG REGULARLY FOR THE PRESENCE OF TURBID WATER BEING DISCHARGED. ANY TURBID WATER BEING DISCHARGED FROM THE BAG SHALL BE RESOLVED IMMEDIATELY. IF TEMPORARY BLOCKAGES ARE NOT FOUND, ASSUME THE BAG IS AT SEDIMENT CAPACITY AND REPLACE IMMEDIATELY.

SILT FENCE:
 -- INSPECT SEDIMENT FENCES AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL. MAKE ANY REQUIRED REPAIRS IMMEDIATELY.
 -- ANY FABRIC WHICH COLLAPSES, TEARS, DECOMPOSES, OR BECOMES INEFFECTIVE SHALL BE REPLACED IMMEDIATELY. ALL FABRIC SHALL BE REPLACED AFTER THE FIRST 6 MONTHS OF CONSTRUCTION ACTIVITY AND EVERY 6 MONTHS THEREAFTER UNTIL CONSTRUCTION ACTIVITIES ARE COMPLETE.
 -- REMOVE SEDIMENT DEPOSITS AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON THE FENCE. TAKE CARE TO AVOID UNDERMINING THE FENCE DURING CLEANOUT.

STABILIZED OUTLET:
 -- INSPECT AT LEAST WEEKLY AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN ½ INCH OF RAIN PER 24-HOUR PERIOD. REMOVE ACCUMULATED SEDIMENT AND REPLACE STONE IMPAIRED BY SEDIMENT AS NECESSARY.

TREE PROTECTION FENCE:
 -- ANY FABRIC WHICH COLLAPSES, TEARS, DECOMPOSES, OR BECOMES INEFFECTIVE SHALL BE REPLACED IMMEDIATELY. ALL FABRIC SHALL BE REPLACED AFTER THE FIRST 6 MONTHS OF CONSTRUCTION ACTIVITY AND EVERY 6 MONTHS THEREAFTER UNTIL CONSTRUCTION ACTIVITIES ARE COMPLETE.
 -- REMOVED SEDIMENT DEPOSITS AS NECESSARY TO REDUCE PRESSURE ON THE FENCE. TAKE CARE TO AVOID UNDERMINING THE FENCE DURING CLEANOUT.

RISER-BARREL SEDIMENT BASIN (WITH SKIMMER):
 -- INSPECT AT LEAST WEEKLY AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN ½ INCH OF RAIN PER 24-HOUR PERIOD. REMOVE ACCUMULATED SEDIMENT AND RESTORE BASIN TO ORIGINAL DIMENSIONS WHEN IT ACCUMULATES TO ONE-HALF THE DESIGN DEPTH. PLACE REMOVED SEDIMENT IN AN AREA WITH SEDIMENT CONTROLS. EXCAVATE SEDIMENT FROM THE ENTIRE BASIN, NOT JUST AROUND THE SKIMMER OR THE FIRST CELL.
 -- REPAIR THE BAFFLES IF THEY ARE DAMAGED. RE-ANCHOR THE BAFFLES IF WATER IS FLOWING UNDERNEATH OR AROUND THEM.
 -- CHECK THE EMBANKMENT, SPILLWAYS, AND OUTLET FOR EROSION DAMAGE, AND INSPECT THE EMBANKMENT FOR PIPING AND SETTLEMENT. MAKE ALL NECESSARY REPAIRS IMMEDIATELY. REMOVE ALL TRASH AND OTHER DEBRIS FROM THE RISER AND POOL AREAS.

SKIMMER:
 -- PULL THE SKIMMER TO ONE SIDE SO THAT THE SEDIMENT UNDERNEATH IT CAN BE EXCAVATED. MAKE SURE VEGETATION GROWING IN THE BOTTOM OF THE BASIN DOES NOT HOLD DOWN THE SKIMMER.
 -- IF THE SKIMMER IS CLOGGED WITH TRASH, PULL THE SKIMMER OVER TO THE SIDE OF THE BASIN AND REMOVE DEBRIS. REMOVE DEBRIS FROM ORIFICE INSIDE THE SKIMMER IF NECESSARY. USE A PLUMBER'S SNAKE OR FLUSH WITH WATER IF SKIMMER ARM OR BARREL PIPE IS CLOGGED.
 -- IF THE SKIMMER ARM OR BARREL PIPE IS CLOGGED, THE ORIFICE CAN BE REMOVED AND THE OBSTRUCTION CLEARED WITH A PLUMBER'S SNAKE OR BY FLUSHING WITH WATER. BE SURE AND REPLACE THE ORIFICE BEFORE REPOSITIONING THE SKIMMER.

CHECK DAM:
 -- INSPECT CHECK DAMS AND CHANNELS AT LEAST WEEKLY AND AFTER EACH SIGNIFICANT (1/2 INCH OR GREATER) RAINFALL EVENT AND REPAIR IMMEDIATELY. CLEAN OUT SEDIMENT, STRAW, LIMBS, OR OTHER DEBRIS THAT COULD CLOG THE CHANNEL WHEN NEEDED.

-- ANTICIPATE SUBMERGENCE AND DEPOSITION ABOVE THE CHECK DAM AND EROSION FROM HIGH FLOWS AROUND THE EDGES OF THE DAM. CORRECT ALL DAMAGE IMMEDIATELY. IF SIGNIFICANT EROSION OCCURS BETWEEN DAMS, ADDITIONAL MEASURES CAN BE TAKEN SUCH AS, INSTALLING A PROTECTIVE RIPRAP LINER IN THAT PORTION OF THE CHANNEL.
 -- REMOVE SEDIMENT ACCUMULATED BEHIND THE DAMS AS NEEDED TO PREVENT DAMAGE TO CHANNEL VEGETATION, ALLOW THE CHANNEL TO DRAIN THROUGH THE STONE CHECK DAM, AND PREVENT LARGE FLOWS FROM CARRYING SEDIMENT OVER THE DAM. ADD STONES TO DAMS AS NEEDED TO MAINTAIN DESIGN HEIGHT AND CROSS SECTION.

**PART II, SECTION G, ITEM (4)
DRAW DOWN OF SEDIMENT BASINS FOR MAINTENANCE OR CLOSE OUT**

SEDIMENT BASINS AND TRAPS THAT RECEIVE RUNOFF FROM DRAINAGE AREAS OF ONE ACRE OR MORE SHALL USE OUTLET STRUCTURES THAT WITHDRAW WATER FROM THE SURFACE WHEN THESE DEVICES NEED TO BE DRAWN DOWN FOR MAINTENANCE OR CLOSE OUT UNLESS THIS IS INFEASIBLE. THE CIRCUMSTANCES IN WHICH IT IS NOT FEASIBLE TO WITHDRAW WATER FROM THE SURFACE SHALL BE RARE (FOR EXAMPLE, TIMES WITH EXTENDED COLD WEATHER). NON-SURFACE WITHDRAWALS FROM SEDIMENT BASINS SHALL BE ALLOWED ONLY WHEN ALL OF THE FOLLOWING CRITERIA HAVE BEEN MET:

- (A) THE E&SC PLAN AUTHORITY HAS BEEN PROVIDED WITH DOCUMENTATION OF THE NON-SURFACE WITHDRAWAL AND THE SPECIFIC TIME PERIODS OR CONDITIONS IN WHICH IT WILL OCCUR. THE NON-SURFACE WITHDRAWAL SHALL NOT COMMENCE UNTIL THE E&SC PLAN AUTHORITY HAS APPROVED THESE ITEMS.
- (B) THE NON-SURFACE WITHDRAWAL HAS BEEN REPORTED AS AN ANTICIPATED BYPASS IN ACCORDANCE WITH PART III, SECTION C, ITEM (2)(C) AND (D) OF THIS PERMIT.
- (C) DEWATERING DISCHARGES ARE TREATED WITH CONTROLS TO MINIMIZE DISCHARGES OF POLLUTANTS FROM STORMWATER THAT IS REMOVED FROM THE SEDIMENT BASIN. EXAMPLES OF APPROPRIATE CONTROLS INCLUDE PROPERLY SITED, DESIGNED AND MAINTAINED DEWATERING TANKS, WEIR TANKS, AND FILTRATION SYSTEMS.
- (D) VEGETATED, UPLAND AREAS OF THE SITES OR A PROPERLY DESIGNED STONE PAD IS USED TO THE EXTENT FEASIBLE AT THE OUTLET OF THE DEWATERING TREATMENT DEVICES DESCRIBED IN ITEM (C) ABOVE.
- (E) VELOCITY DISSIPATION DEVICES SUCH AS CHECK DAMS, SEDIMENT TRAPS, AND RIPRAP ARE PROVIDED AT THE DISCHARGE POINTS OF ALL DEWATERING DEVICES, AND
- (F) SEDIMENT REMOVED FROM THE DEWATERING TREATMENT DEVICES DESCRIBED IN ITEM (C) ABOVE IS DISPOSED OF IN A MANNER THAT DOES NOT CAUSE DEPOSITION OF SEDIMENT INTO WATERS OF THE UNITED STATES.

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PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	S. NASH		
DRAWN BY:	S. NASH		
CHECKED BY:	M. SANTOWASSO		
1	REGULATORY REVIEW	11/20/23	BYP
REV	ISSUED FOR	DATE	BY

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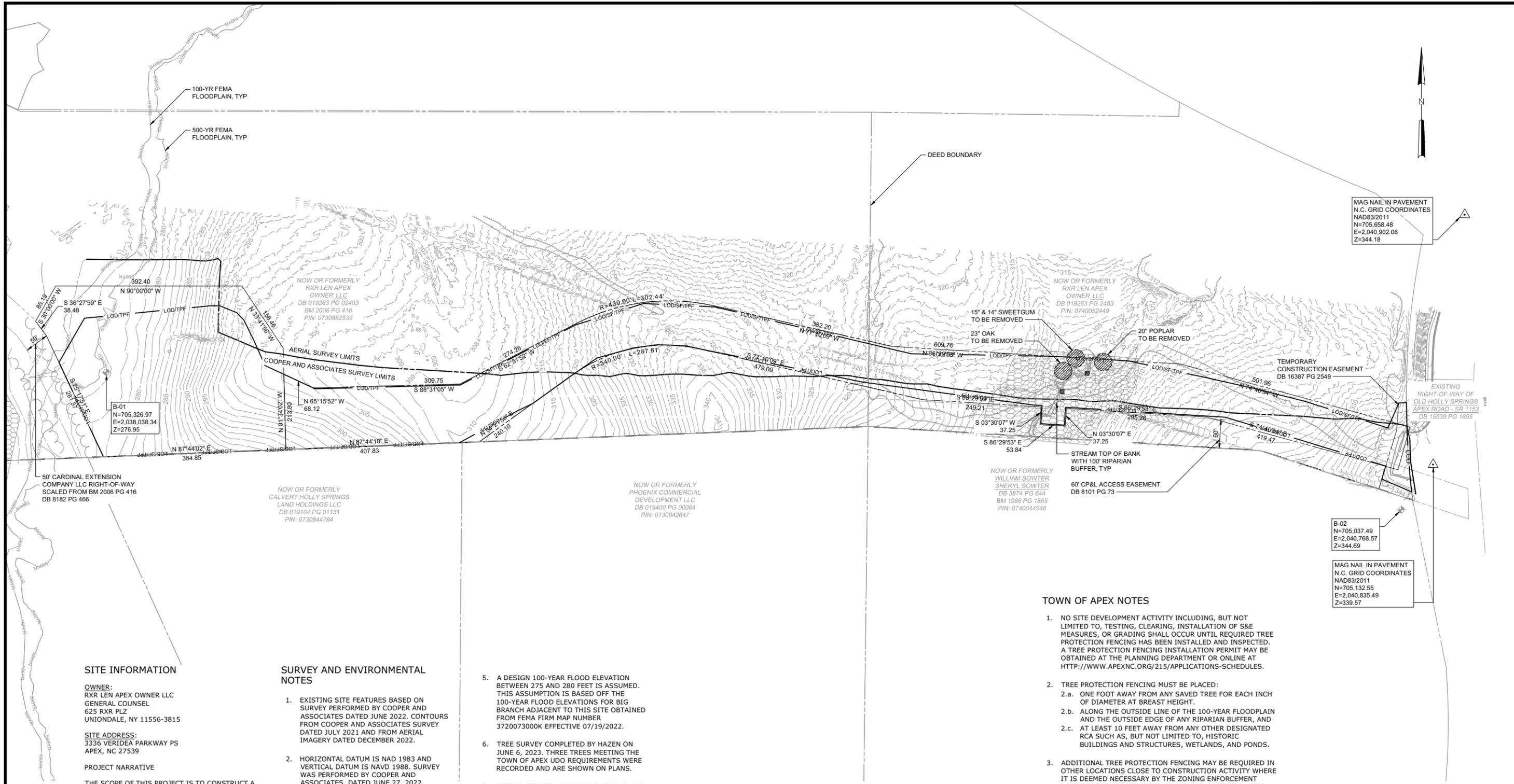
Hazen
 HAZEN AND SAWYER
 4011 WESTCHASE BLVD. SUITE 500,
 RALEIGH, NC 27607
 LICENSE No.: C-0381

APEX
 NORTH CAROLINA
 BIG BRANCH 2
 PUMP STATION

CIVIL
 NCG01 SELF-INSPECTION
 RECORDKEEPING AND REPORTING

DATE:	APRIL 2024
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	C4

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 PLOT DATE: 7/5/2024 10:38 AM BY: SNASH



MAG NAIL IN PAVEMENT
 N.C. GRID COORDINATES
 NAD83/2011
 N=705,658.48
 E=2,040,902.06
 Z=344.18

B-02
 N=705,037.49
 E=2,040,768.57
 Z=344.69

MAG NAIL IN PAVEMENT
 N.C. GRID COORDINATES
 NAD83/2011
 N=705,132.55
 E=2,040,835.49
 Z=339.57

TOWN OF APEX NOTES

1. NO SITE DEVELOPMENT ACTIVITY INCLUDING, BUT NOT LIMITED TO, TESTING, CLEARING, INSTALLATION OF S&E MEASURES, OR GRADING SHALL OCCUR UNTIL REQUIRED TREE PROTECTION FENCING HAS BEEN INSTALLED AND INSPECTED. A TREE PROTECTION FENCING INSTALLATION PERMIT MAY BE OBTAINED AT THE PLANNING DEPARTMENT OR ONLINE AT [HTTP://WWW.APEXNC.ORG/215/APPLICATIONS-SCHEDULES](http://WWW.APEXNC.ORG/215/APPLICATIONS-SCHEDULES).
2. TREE PROTECTION FENCING MUST BE PLACED:
 - 2.a. ONE FOOT AWAY FROM ANY SAVED TREE FOR EACH INCH OF DIAMETER AT BREAST HEIGHT.
 - 2.b. ALONG THE OUTSIDE LINE OF THE 100-YEAR FLOODPLAIN AND THE OUTSIDE EDGE OF ANY RIPARIAN BUFFER, AND
 - 2.c. AT LEAST 10 FEET AWAY FROM ANY OTHER DESIGNATED RCA SUCH AS, BUT NOT LIMITED TO, HISTORIC BUILDINGS AND STRUCTURES, WETLANDS, AND PONDS.
3. ADDITIONAL TREE PROTECTION FENCING MAY BE REQUIRED IN OTHER LOCATIONS CLOSE TO CONSTRUCTION ACTIVITY WHERE IT IS DEEMED NECESSARY BY THE ZONING ENFORCEMENT OFFICER; SUCH AREAS MAY INCLUDE, BUT ARE NOT LIMITED TO, COMMON PROPERTY LINES OR NEAR PUBLIC AREAS (SIDEWALKS, ETC.).
4. IF BUILDINGS ARE TO BE DEMOLISHED, A COPY OF THE DEMOLITION NOTIFICATION FROM THE NC HEALTH HAZARD CONTROL UNIT AND AN ASBESTOS INSPECTION REPORT FROM A NC ACCREDITED ASBESTOS INSPECTOR MUST ACCOMPANY THE APPLICATION FOR THE DEMOLITION PERMIT, WHICH MUST BE OBTAINED PRIOR TO START OF THE DEMOLITION.

SCALE: 1" = 100'



PLAN
 SCALE: 1"=100'

SITE INFORMATION

OWNER:
 RXR LEN APEX OWNER LLC
 GENERAL COUNSEL
 625 RXR PLZ
 UNIONDALE, NY 11556-3815

SITE ADDRESS:
 3336 VERIDEA PARKWAY PS
 APEX, NC 27539

PROJECT NARRATIVE

THE SCOPE OF THIS PROJECT IS TO CONSTRUCT A PUMP STATION FOR UPCOMING DEVELOPMENT IN THE TOWN OF APEX. WASTEWATER WILL BE CONVEYED THROUGH A NEW 42-INCH GRAVITY SEWER AND DUAL 20-INCH FORCE MAINS. STORMWATER RUNOFF WILL BE MANAGED THROUGH SWALES AND A STORMWATER POND.

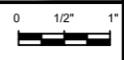
SURVEY AND ENVIRONMENTAL NOTES

1. EXISTING SITE FEATURES BASED ON SURVEY PERFORMED BY COOPER AND ASSOCIATES DATED JUNE 2022. CONTOURS FROM COOPER AND ASSOCIATES SURVEY DATED JULY 2021 AND FROM AERIAL IMAGERY DATED DECEMBER 2022.
2. HORIZONTAL DATUM IS NAD 1983 AND VERTICAL DATUM IS NAVD 1988. SURVEY WAS PERFORMED BY COOPER AND ASSOCIATES, DATED JUNE 27, 2022.
3. FLOODPLAIN INFORMATION BASED ON FEMA FIRM MAPS NUMBERS 3720073000K AND 3720074000K, MAPS EFFECTIVE JULY 19, 2022.
4. NO IMPACTS TO THE 100-YEAR FLOODPLAIN ARE INTENDED.

5. A DESIGN 100-YEAR FLOOD ELEVATION BETWEEN 275 AND 280 FEET IS ASSUMED. THIS ASSUMPTION IS BASED OFF THE 100-YEAR FLOOD ELEVATIONS FOR BIG BRANCH ADJACENT TO THIS SITE OBTAINED FROM FEMA FIRM MAP NUMBER 3720073000K EFFECTIVE 07/19/2022.
6. TREE SURVEY COMPLETED BY HAZEN ON JUNE 6, 2023. THREE TREES MEETING THE TOWN OF APEX UDO REQUIREMENTS WERE RECORDED AND ARE SHOWN ON PLANS.
7. SITE IS LOCATED WITHIN THE SECONDARY WATERSHED PROTECTION OVERLAY DISTRICT.
8. WETLANDS ARE NOT PRESENT ON SITE.

PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	S. NASH		
DRAWN BY:	S. NASH		
CHECKED BY:	M. SANTOWASSO		
1	REGULATORY REVIEW	11/2023	BYP
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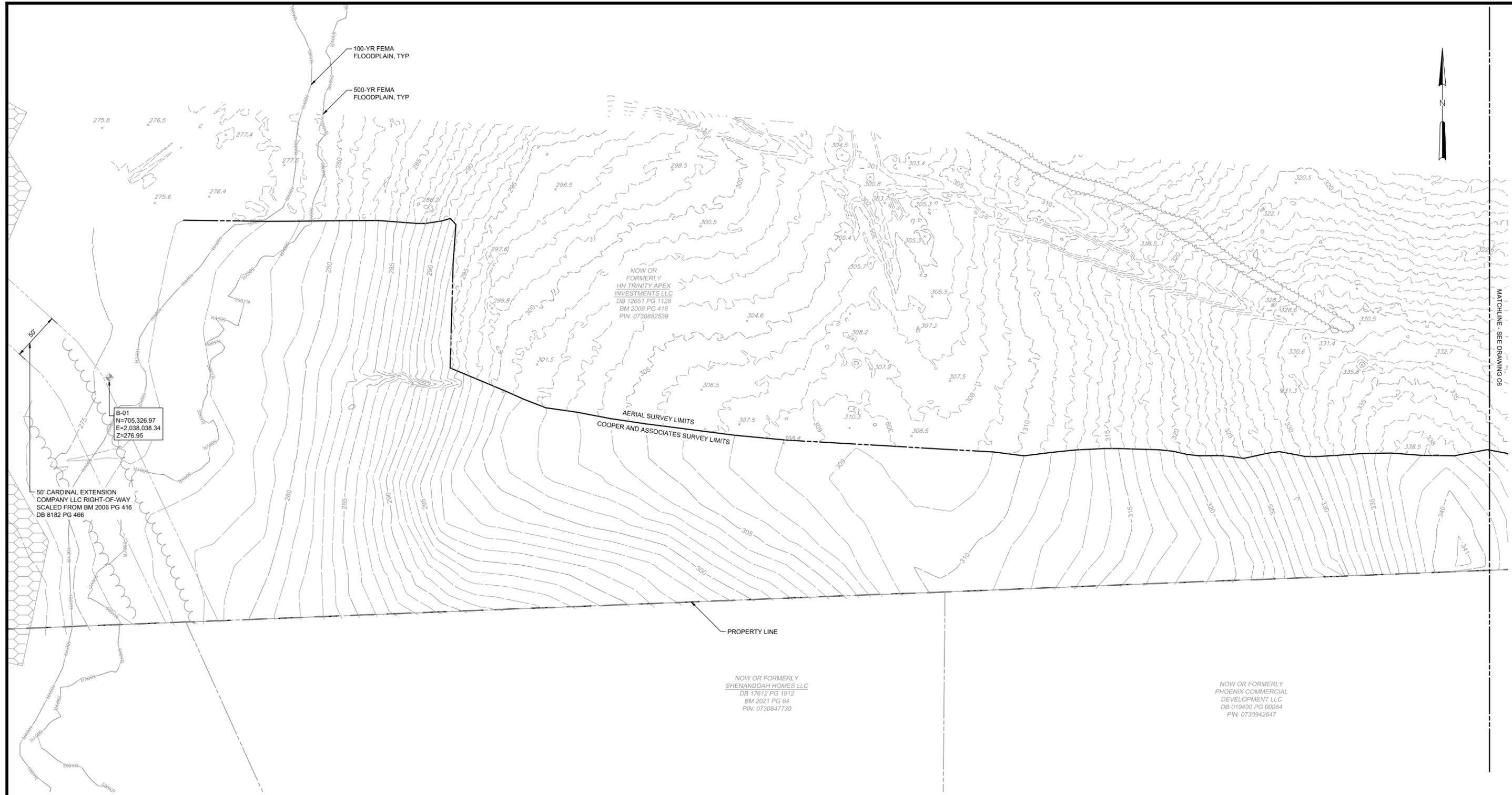


Hazen
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 RALEIGH, NC 27607
 LICENSE No.: C-0381

APEX
 NORTH CAROLINA
 BIG BRANCH 2
 PUMP STATION

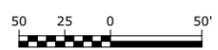
CIVIL
 OVERALL EXISTING CONDITIONS
 & DEMOLITION PLAN

DATE:	APRIL 2024
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	C5



PLAN
SCALE: 1"=50'

SCALE: 1" = 50'



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CHECKED BY:	M. SANTOWASSO		
1	REGULATORY REVIEW	11/2023	BYP
REV	ISSUED FOR	DATE	BY

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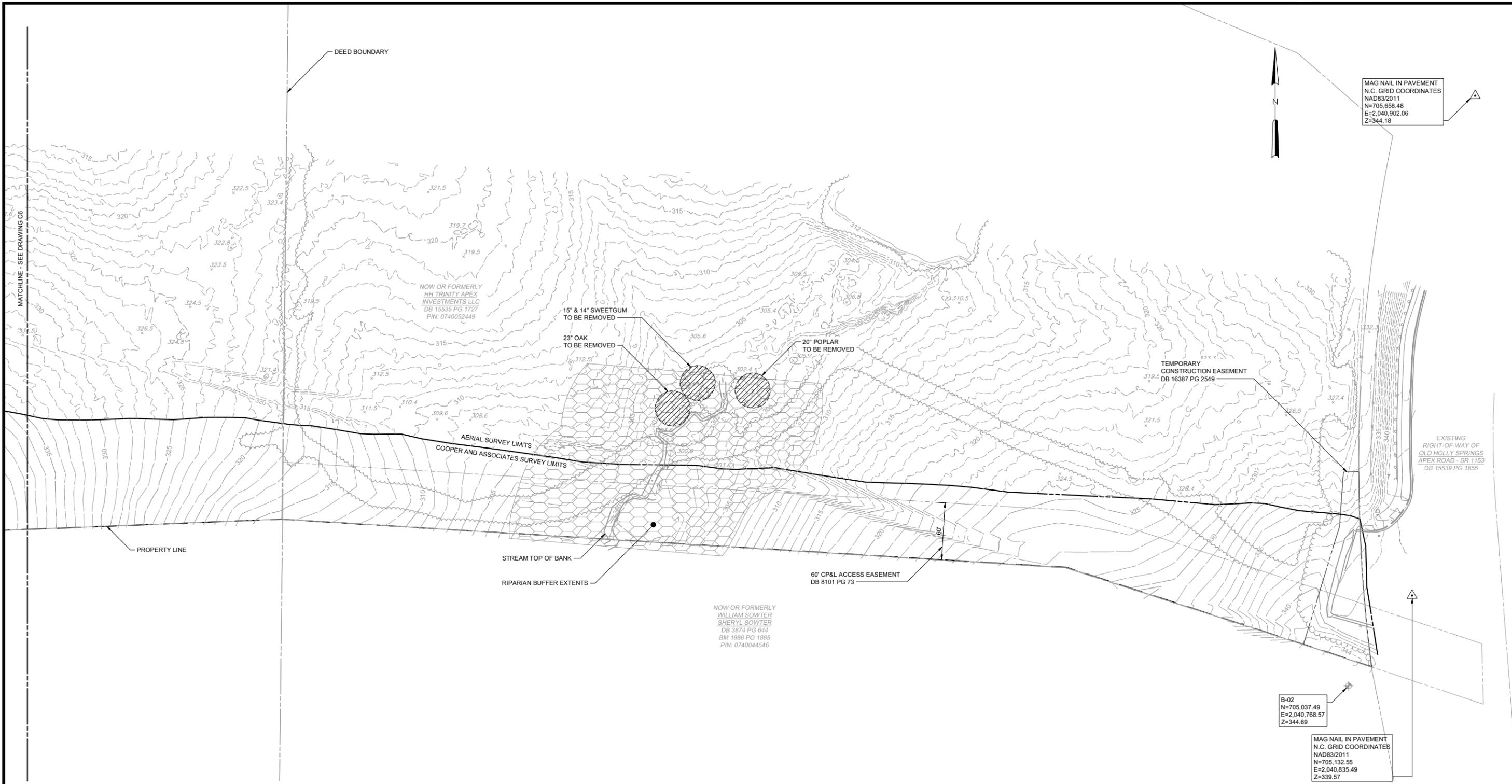
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APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

CIVIL
PARTIAL EXISTING
CONDITIONS PLAN - SHEET 1

DATE:	APRIL 2024
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	C6

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PLAN
SCALE: 1"=50'



PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	S. NASH		
DRAWN BY:	S. NASH		
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1	REGULATORY REVIEW	11/2023	BYP
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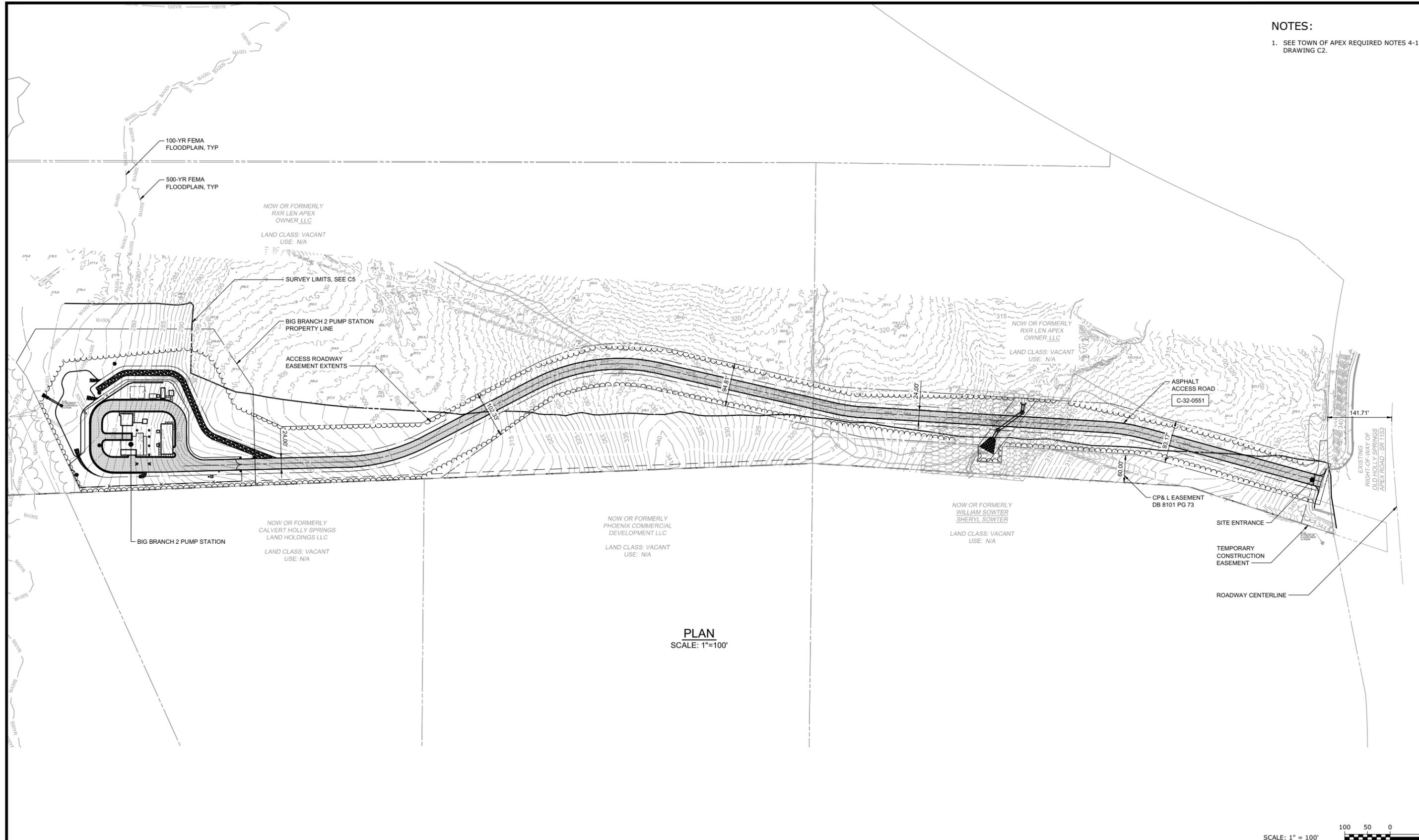
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APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

CIVIL
PARTIAL EXISTING
CONDITIONS PLAN - SHEET 2

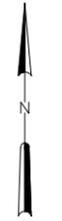
DATE:	APRIL 2024
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	C7

NOTES:
 1. SEE TOWN OF APEX REQUIRED NOTES 4-11 ON DRAWING C2.



PLAN
 SCALE: 1"=100'

SCALE: 1" = 100'



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PROJECT ENGINEER:	B. PORTER						
DESIGNED BY:	S. NASH						
DRAWN BY:	S. NASH						
CHECKED BY:	M. SANTOWASSO						
1	REGULATORY REVIEW	11/2023	BYP	IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0	1/2"	1"
REV	ISSUED FOR	DATE	BY				

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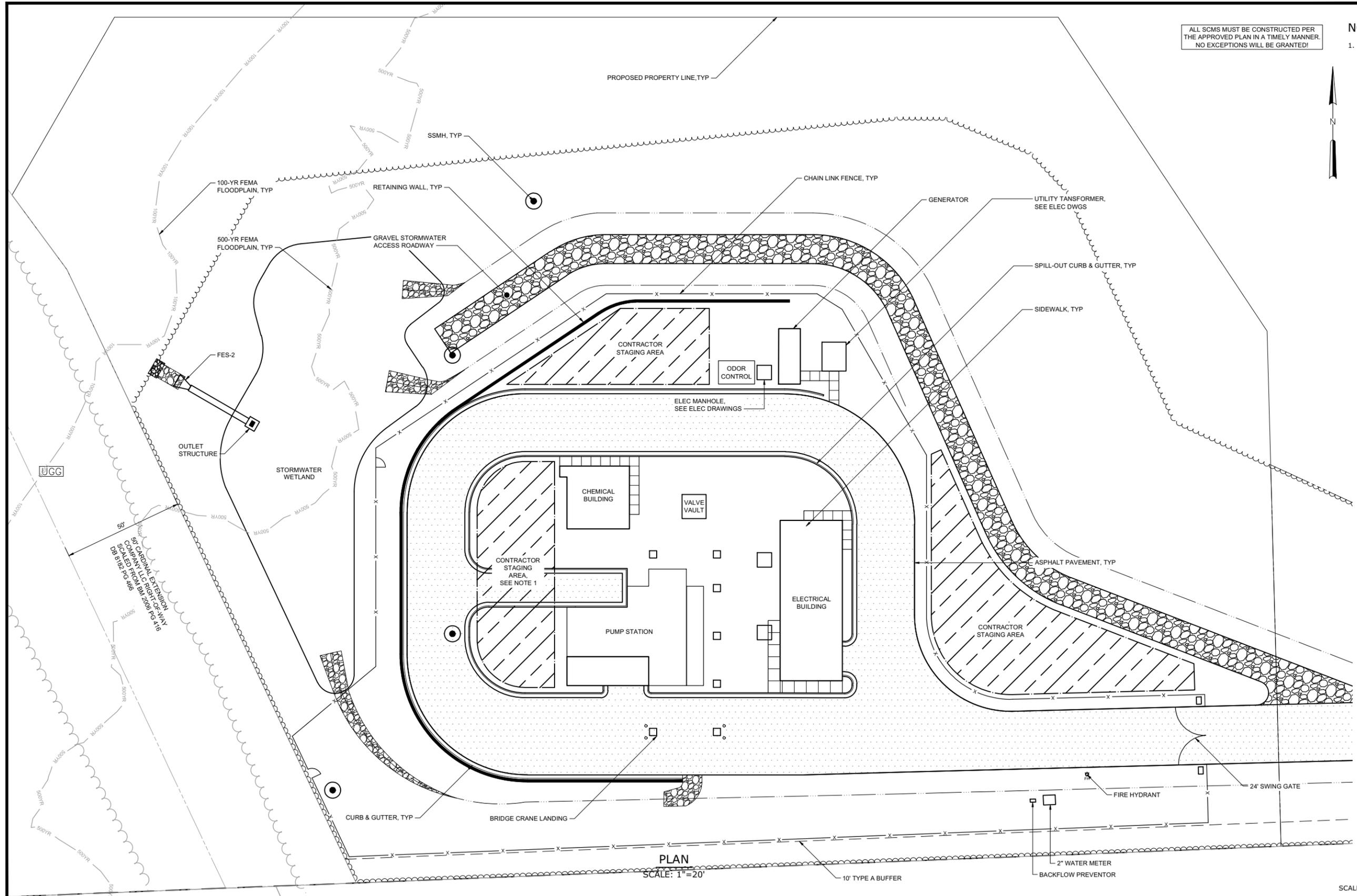
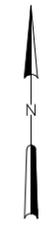
APEX
 NORTH CAROLINA
 BIG BRANCH 2
 PUMP STATION

CIVIL
 OVERALL SITE PLAN

DATE:	APRIL 2024
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	C8

ALL SCMS MUST BE CONSTRUCTED PER THE APPROVED PLAN IN A TIMELY MANNER. NO EXCEPTIONS WILL BE GRANTED!

NOTES:
 1. CONTRACTOR STAGING AREA MAY BE UTILIZED UNTIL THE INTERCEDING ROADWAY CONSTRUCTION OCCURS.



PLAN
 SCALE: 1" = 20'

SCALE: 1" = 20'

LEGEND

CONTRACTOR STAGING AREA

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PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	S. NASH		
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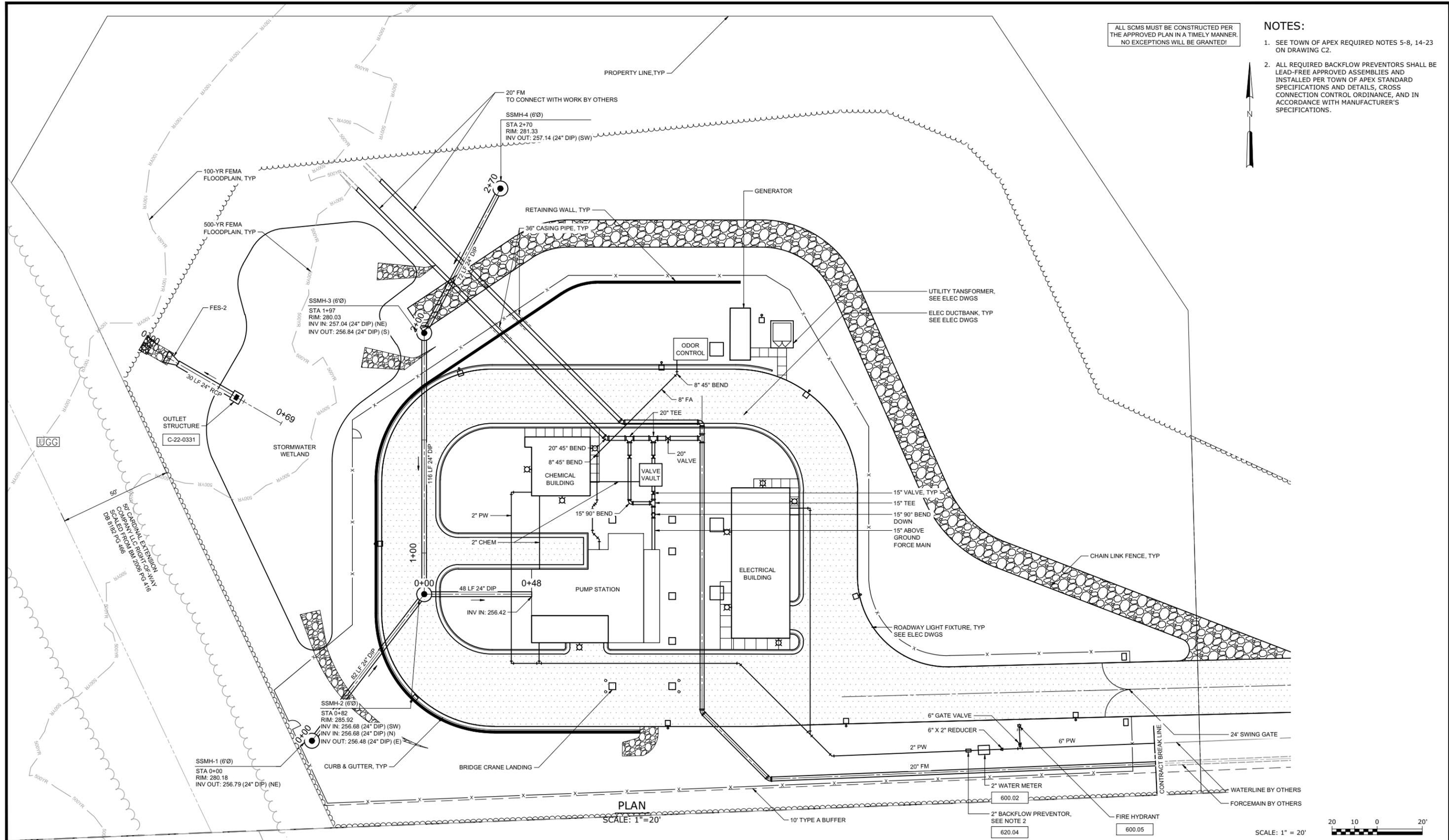
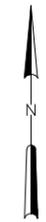
APEX
 NORTH CAROLINA
 BIG BRANCH 2
 PUMP STATION

CIVIL
 STAGING PLAN

DATE:	APRIL 2024
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	C10

ALL SCMS MUST BE CONSTRUCTED PER THE APPROVED PLAN IN A TIMELY MANNER. NO EXCEPTIONS WILL BE GRANTED!

- NOTES:**
1. SEE TOWN OF APEX REQUIRED NOTES 5-8, 14-23 ON DRAWING C2.
 2. ALL REQUIRED BACKFLOW PREVENTORS SHALL BE LEAD-FREE APPROVED ASSEMBLIES AND INSTALLED PER TOWN OF APEX STANDARD SPECIFICATIONS AND DETAILS, CROSS CONNECTION CONTROL ORDINANCE, AND IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.



PLAN
SCALE: 1" = 20'

SCALE: 1" = 20'

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DESIGNED BY:	S. NASH
DRAWN BY:	S. NASH
CHECKED BY:	M. SANTOWASSO
REGULATORY REVIEW	11/2023
ISSUED FOR	DATE
BY	

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

0 1/2" 1"

Hazen

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RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA

**BIG BRANCH 2
PUMP STATION**

**CIVIL
YARD PIPING PLAN**

DATE:	APRIL 2024
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	C11

ALL SCMS MUST BE CONSTRUCTED PER THE APPROVED PLAN IN A TIMELY MANNER. NO EXCEPTIONS WILL BE GRANTED!

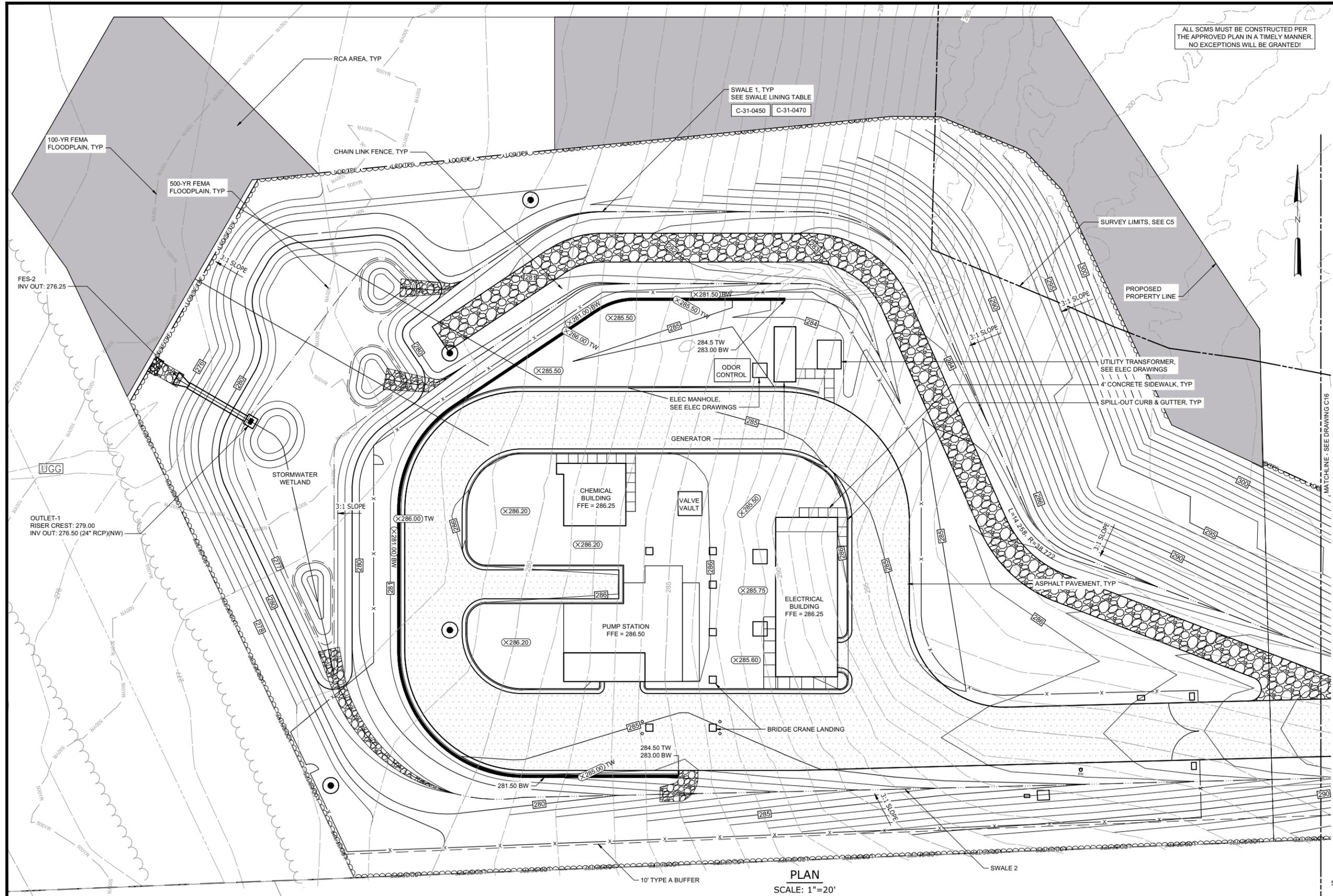
- NOTES:**
- SITE IS LOCATED WITHIN THE SECONDARY WATERSHED PROTECTION OVERLAY DISTRICT.
 - SEE TOWN OF APEX REQUIRED NOTES 5-8, 11-13 AND CONSTRUCTION SEQUENCE ON DRAWING C2.

TOWN OF APEX NOTES:

THE FOLLOWING MUST OCCUR PRIOR TO FINAL PLAT AND/OR CERTIFICATE OF OCCUPANCY (CO):

- ALL STORMWATER CONTROL MEASURES (SCMs) MUST BE INSTALLED IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DRAWINGS.
- TOWN SOIL EROSION & SEDIMENTATION CONTROL STAFF SHALL BE NOTIFIED AT LEAST 10 DAYS PRIOR TO THE DEWATERING OF A SEDIMENT BASIN AS REQUIRED BY THE NCG01 PERMIT.
- DURING THE SCM CONVERSION PROCESS, ALL EFFORTS SHALL BE MADE TO PROTECT DOWNSTREAM WATERS. THE DRAIN VALVE SHALL NOT BE LEFT OPEN AT ANY TIME DURING SCM CONVERSION. A SKIMMER DRAWDOWN SYSTEM SHALL BE INSTALLED AN UTILIZED UNTIL THE SCM IS FULLY CONVERTED.
- THE DESIGN ENGINEER MUST SUBMIT AN AS-BUILT PACKAGE WHICH MEETS ALL REQUIREMENTS PRESENTED IN THE TOWN SPEC BOOK INCLUDING A SIGNED AND SEALED CERTIFICATION STATEMENT.
- FOR SUBDIVISIONS ONLY, A 25% MAINTENANCE GUARANTEE IS REQUIRED TO BE SUBMITTED TO JEAN WEATHERMAN IN DEVELOPMENT SERVICES AT (919) 249-3394.
- THE APPROPRIATE EXECUTED SCM O&M AGREEMENT MUST BE RECORDED WITH DEVELOPMENT SERVICES.
- A FINAL INSPECTION BY THE STORMWATER & UTILITY ENGINEERING STAFF SHALL BE CONDUCTED ONCE THE AS BUILT SUBMITTAL HAS BEEN RECEIVED. ONCE APPROVED, STAFF WILL SEND AN OFFICIAL SCM APPROVAL LETTER TO THE OWNER.
- IN LIEU OF SCM COMPLETION AND FINAL APPROVAL BY STAFF, THE TOWN MAY ACCEPT A 125% PERFORMANCE GUARANTEE IN ACCORDANCE WITH UDO SECTION 6.1.12(G). THIS GUARANTEE WILL BE COLLECTED BY JEAN WEATHERMAN IN DEVELOPMENT SERVICES AT (919) 249-3394.
- ALL SCMs ARE REQUIRED TO BE COMPLETED FINAL CO (FOR A SITE PLAN) OR BY FINAL PLAT (FOR A SUBDIVISION).
- IF AN SCM COUNTS TOWARDS RCA, THE REQUIRED LANDSCAPING SHALL BE INSTALLED DURING THE APPROPRIATE GROWING SEASON AND COORDINATED WITH THE TOWN ZONING COMPLIANCE OFFICER AT (919) 249-3426.

SWALE LINING TABLE		
MINIMUM SHEAR STRESS REQ.		
SWALE I.D	TEMPORARY LINING	PERMANENT LINING
SWALE '1'	2.0 LB/FT ²	N/A
SWALE '2'	N/A	3.0 LB/FT ²



PLAN
SCALE: 1"=20'

SCALE: 1" = 20'

File: C:\USERS\SNASH\DRAWINGS\HAZEN AND SAWYER\32044-004_BIG BRANCH 2 PUMP STATION AND PIPELINES\PROJECT FILES\CIVIL\C12_SAVED BY: SNASH
 PLOT DATE: 7/5/2024 10:39 AM BY: SNASH

PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	S. NASH		
DRAWN BY:	S. NASH		
CHECKED BY:	M. SANTOWASSO		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"		
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2	REGULATORY REVIEW	08/2024	BYP
1	REGULATORY REVIEW	11/2023	BYP

FINAL DESIGN -
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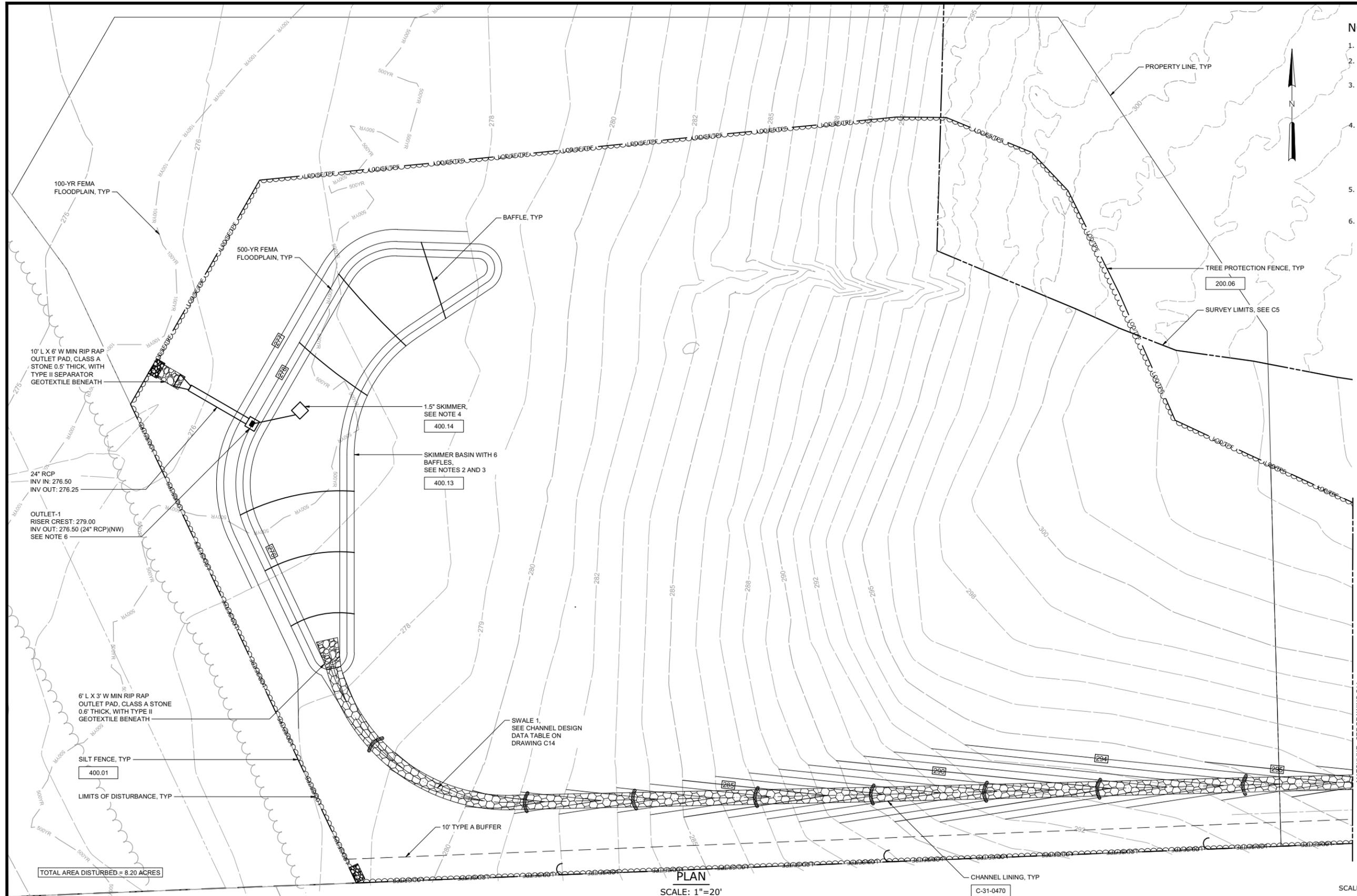
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4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

CIVIL
GRADING AND DRAINAGE
PLAN

DATE:	APRIL 2024
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	C12

- NOTES:**
1. SEE DRAWING C1 FOR EROSION CONTROL NOTES.
 2. SEE DRAWING C2 FOR TOWN OF APEX NOTES AND CONSTRUCTION SEQUENCE.
 3. OUTLET OF SKIMMER BASIN CHANNELS SHALL BE STABILIZED IMMEDIATELY UPON COMPLETION OF CONSTRUCTION WITH RIPRAP OUTLET PAD, AS SHOWN.
 4. SKIMMER BASIN INLET CHANNELS, SKIMMER BASIN, AND ALL OUTLETS SHALL BE STABILIZED IMMEDIATELY UPON COMPLETION OF CONSTRUCTION WITH TEMPORARY OR PERMANENT SEEDING AS APPROPRIATE FOR SEASON, RIPRAP, MATTING, OR OTHER APPROVED STABILIZATION MEASURES.
 5. STONE PAD SHALL BE IN CLOSE PROXIMITY OF THE SKIMMER BASIN FOR SKIMMER TO REST UPON.
 6. PERMANENT OUTLET STRUCTURE SHALL BE INSTALLED DURING INITIAL CONSTRUCTION OF SEDIMENT BASIN.



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 PLOT DATE: 7/5/2024 10:39 AM BY: SNASH

PLAN
SCALE: 1" = 20'

SCALE: 1" = 20'

PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	S. NASH		
DRAWN BY:	S. NASH		
CHECKED BY:	M. SANTOWASSO		
1	REGULATORY REVIEW	11/2023	BYP
REV	ISSUED FOR	DATE	BY

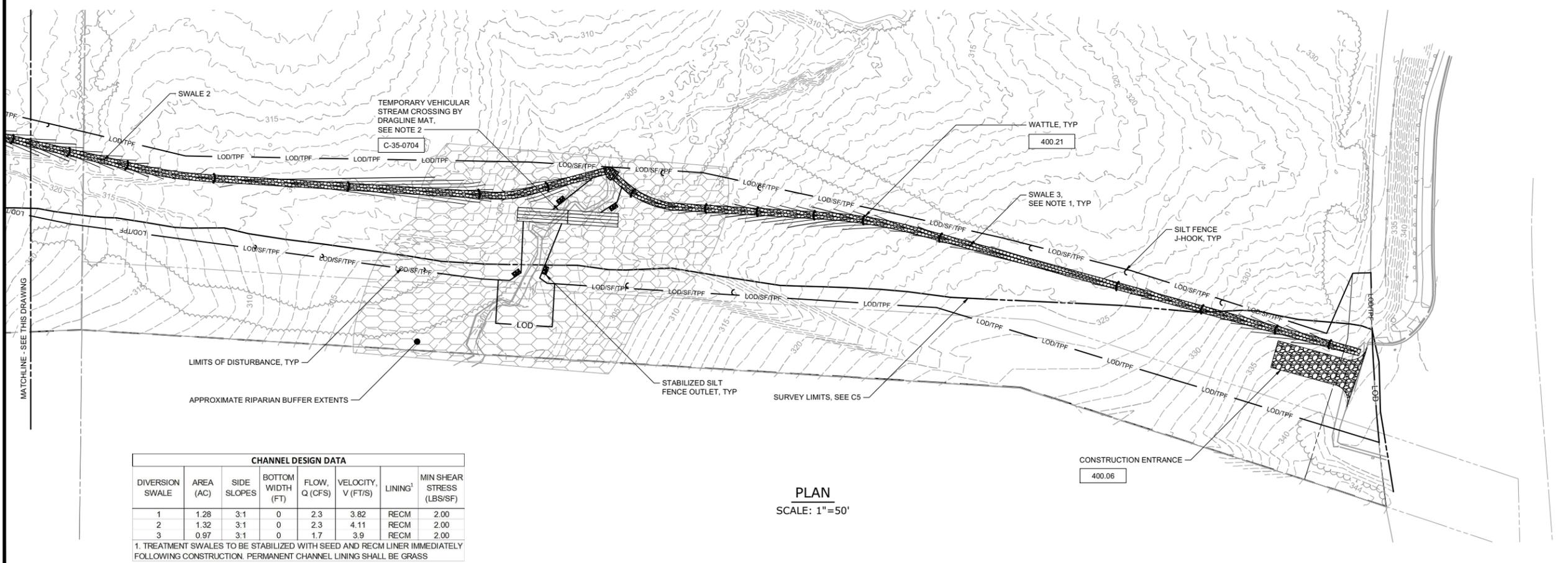
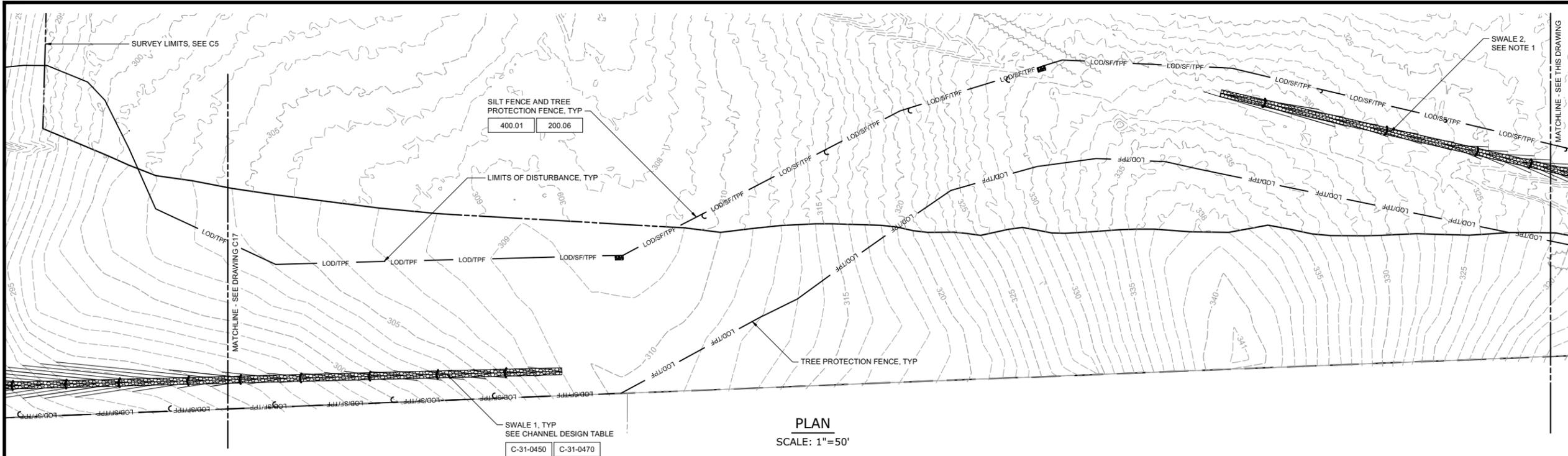
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APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

CIVIL
EROSION CONTROL PLAN -
PHASE I

DATE:	APRIL 2024
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	C13



CHANNEL DESIGN DATA							
DIVERSION SWALE	AREA (AC)	SIDE SLOPES	BOTTOM WIDTH (FT)	FLOW, Q (CFS)	VELOCITY, V (FT/S)	LINING ¹	MIN SHEAR STRESS (LBS/SF)
1	1.28	3:1	0	2.3	3.82	RECM	2.00
2	1.32	3:1	0	2.3	4.11	RECM	2.00
3	0.97	3:1	0	1.7	3.9	RECM	2.00

1. TREATMENT SWALES TO BE STABILIZED WITH SEED AND RECM LINER IMMEDIATELY FOLLOWING CONSTRUCTION. PERMANENT CHANNEL LINING SHALL BE GRASS

NOTES:

1. SEE DRAWING C1 FOR EROSION CONTROL NOTES.
2. SEE DRAWING C2 FOR TOWN OF APEX NOTES AND CONSTRUCTION SEQUENCE.
3. BYPASS PUMP SHALL BE USED AS CULVERT IS INSTALLED FOR JURISDICTIONAL STREAM. PUMP SHALL REMAIN IN PLACE UNTIL SUCH TIME THAT CULVERT AND STORM STRUCTURES ARE FULLY INSTALLED.
4. CONTRACTOR SHALL HAND CUT AND REMOVE VEGETATION ALONG STREAM BANKS WITH STUMPS AND ROOT SYSTEMS LEFT INTACT TO AVOID BANK DEGRADATION UNTIL PERMANENT CROSSING ARE INSTALLED AND FINAL STABILIZATION HAS BEEN ACHIEVED.
5. CONTRACTOR SHALL INSTALL STREAM CROSSING INITIALLY AND UTILIZE CROSSING UNTIL CULVERT HAS BEEN PLACED AND BACKFILLED.

File: C:\USERS\SNASH\WORK\PROJECT FILES\C14\BIG BRANCH 2 PUMP STATION AND PIPELINE\PROJECT FILES\C14\BIG BRANCH 2 PUMP STATION AND PIPELINE.dwg
 Plot Date: 7/5/2024 10:39 AM BY: SNASH

PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	S. NASH		
DRAWN BY:	S. NASH		
CHECKED BY:	M. SANTOWASSO		
1	REGULATORY REVIEW	11/2023	BYP
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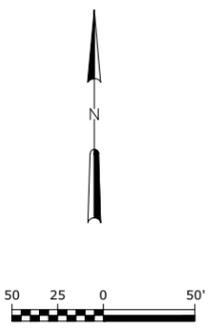
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APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

CIVIL
ROADWAY EROSION
CONTROL PLAN - PHASE I

DATE:	APRIL 2024
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	C14

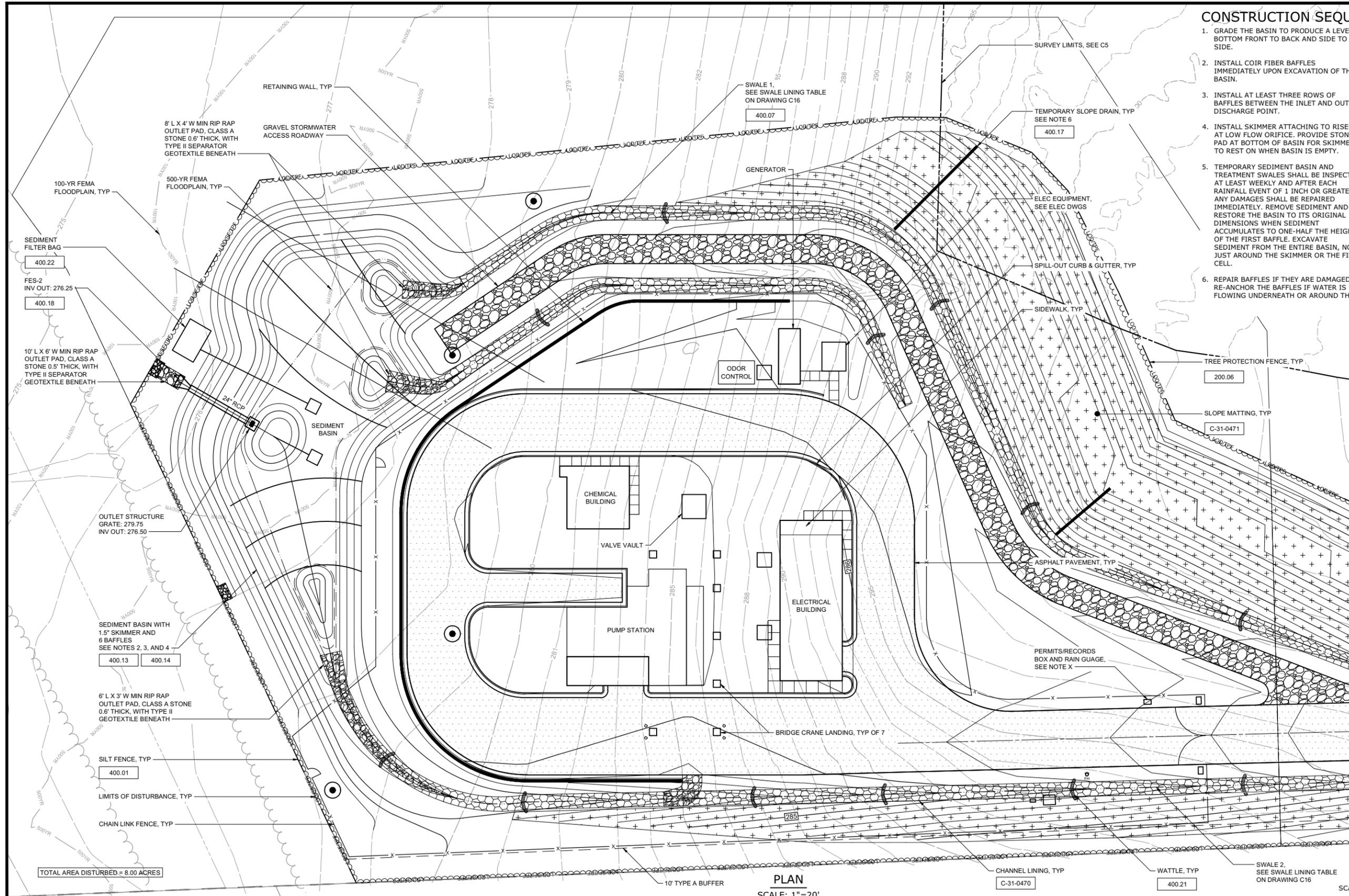


CONSTRUCTION SEQUENCE:

1. GRADE THE BASIN TO PRODUCE A LEVEL BOTTOM FRONT TO BACK AND SIDE TO SIDE.
2. INSTALL COIR FIBER BAFFLES IMMEDIATELY UPON EXCAVATION OF THE BASIN.
3. INSTALL AT LEAST THREE ROWS OF BAFFLES BETWEEN THE INLET AND OUTLET DISCHARGE POINT.
4. INSTALL SKIMMER ATTACHING TO RISER AT LOW FLOW ORIFICE. PROVIDE STONE PAD AT BOTTOM OF BASIN FOR SKIMMER TO REST ON WHEN BASIN IS EMPTY.
5. TEMPORARY SEDIMENT BASIN AND TREATMENT SWALES SHALL BE INSPECTED AT LEAST WEEKLY AND AFTER EACH RAINFALL EVENT OF 1 INCH OR GREATER. ANY DAMAGES SHALL BE REPAIRED IMMEDIATELY. REMOVE SEDIMENT AND RESTORE THE BASIN TO ITS ORIGINAL DIMENSIONS WHEN SEDIMENT ACCUMULATES TO ONE-HALF THE HEIGHT OF THE FIRST BAFFLE. EXCAVATE SEDIMENT FROM THE ENTIRE BASIN, NOT JUST AROUND THE SKIMMER OR THE FIRST CELL.
6. REPAIR BAFFLES IF THEY ARE DAMAGED. RE-ANCHOR THE BAFFLES IF WATER IS FLOWING UNDERNEATH OR AROUND THEM.
7. SHALL THE SKIMMER, ORIFICE, SKIMMER ARM, OR BARREL PIPE BECOME CLOGGED, INSPECT AND REPAIR IMMEDIATELY, REMOVING TRASH AND DEBRIS IF NECESSARY.
8. TEMPORARY SEDIMENT BASIN EMBANKMENT, SPILLWAYS, AND OUTLET SHALL BE CHECKED FOR EROSION DAMAGE AND SETTLEMENT. REMOVE ALL TRASH AND OTHER DEBRIS FROM THE RISER AND POOL AREA.
9. OUTLET OF SEDIMENT BASIN CHANNELS SHALL BE STABILIZED IMMEDIATELY UPON COMPLETION OF CONSTRUCTION WITH RIPRAP OUTLET PAD AS SHOWN
10. SEDIMENT BASIN INLET CHANNELS, SEDIMENT BASIN, AND ALL OUTLETS SHALL BE STABILIZED IMMEDIATELY UPON COMPLETION OF CONSTRUCTION WITH TEMPORARY OR PERMANENT SEEDING AS APPROPRIATE FOR SEASON, RIPRAP, MATTING, OR OTHER APPROVED STABILIZATION MEASURES.
11. UPON COMPLETION OF CONSTRUCTION, BAFFLES AND SKIMMER SHALL BE REMOVED FROM TEMPORARY SEDIMENT BASIN FOR CONVERSION TO A PERMANENT DRY POND AND INTERIOR OF POND STABILIZED WITH PERMANENT VEGETATION AS PER SEEDING SCHEDULE. ACCUMULATED SEDIMENT SHALL BE REMOVED FROM POND AND TREATMENT SWALES. RESTORE CHANNEL LINING AND VEGETATION AS NECESSARY.

NOTES:

1. SEE DRAWING C1 FOR EROSION CONTROL NOTES.
2. SEE DRAWING C2 FOR TOWN OF APEX NOTES AND CONSTRUCTION SEQUENCE.
3. OUTLET OF SKIMMER BASIN CHANNELS SHALL BE STABILIZED IMMEDIATELY UPON COMPLETION OF CONSTRUCTION WITH RIPRAP OUTLET PAD AS SHOWN.
4. SEDIMENT BASIN INLET CHANNELS, SEDIMENT BASIN, AND ALL OUTLETS SHALL BE STABILIZED IMMEDIATELY UPON COMPLETION OF CONSTRUCTION WITH TEMPORARY OR PERMANENT SEEDING AS APPROPRIATE FOR SEASON, RIPRAP, AND MULCHING, OR OTHER APPROVED STABILIZATION MEASURES.
5. STONE PAD SHALL BE IN CLOSE PROXIMITY OF SEDIMENT BASIN OUTLET STRUCTURE FOR SKIMMER TO REST UPON.
6. CONCRETE WASHOUT LOCATION SHOWN IS A SUGGESTION. CONTRACTOR SHALL LOCATE WASHOUT AS NEEDED BASED ON THEIR OPERATIONS.
7. TEMPORARY SLOPE DRAINS TO BE USED WHILE SLOPE IS BEING CONSTRUCTED AND REMAIN UNTIL SLOPE MATTING IS INSTALLED AND SLOPE IS STABILIZED.



PLAN
SCALE: 1"=20'

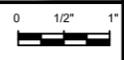
SCALE: 1" = 20'

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 PLOT DATE: 7/5/2024 10:39 AM BY: SNASH

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1	REGULATORY REVIEW	11/2023	BYP

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	S. NASH
DRAWN BY:	S. NASH
CHECKED BY:	M. SANTOWASSO

FINAL DESIGN -
DO NOT USE FOR
CONSTRUCTION



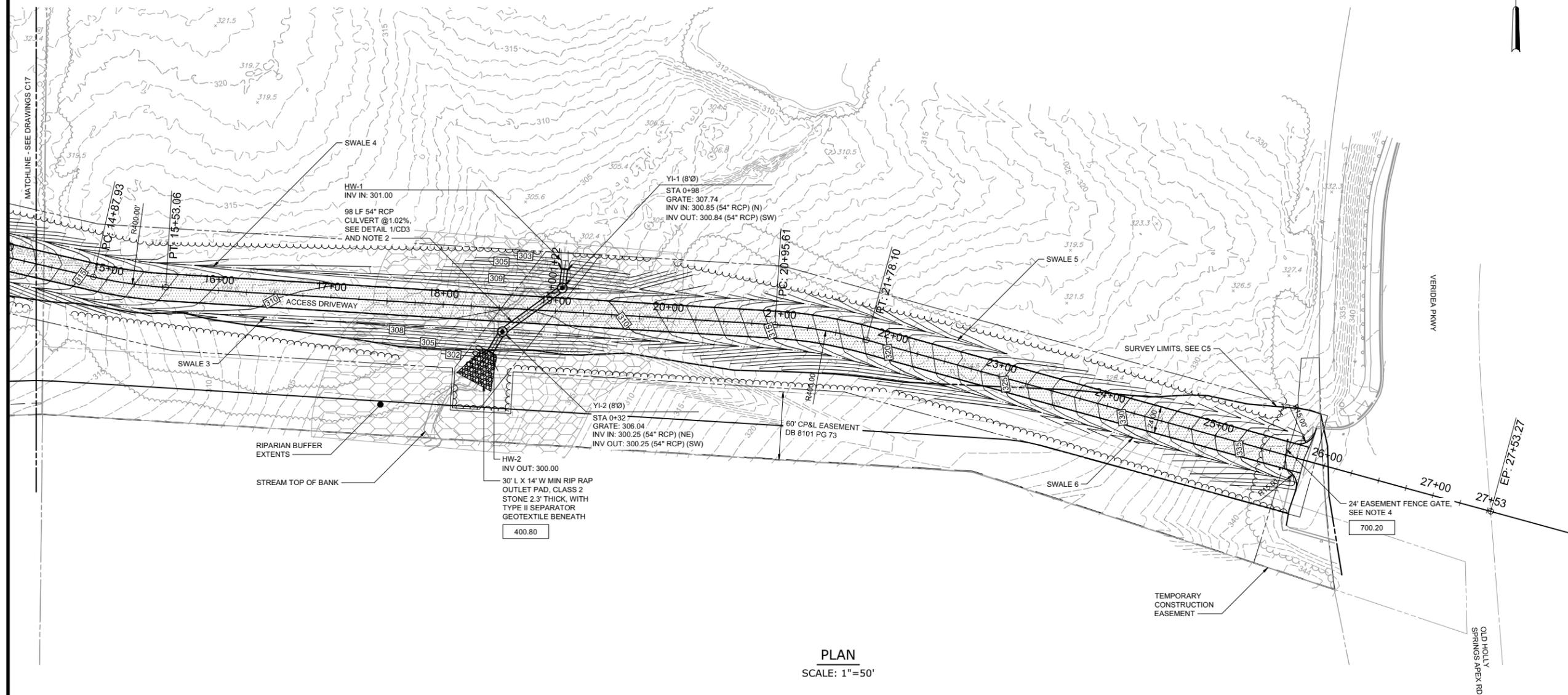
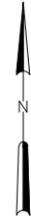
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APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

CIVIL
EROSION CONTROL PLAN -
PHASE II

DATE:	APRIL 2024
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	C15

- NOTES:**
1. SEE DRAWINGS C15-C16 FOR ROADWAY PROFILES.
 2. BYPASS PUMP SHALL BE USED AS CULVERT IS INSTALLED FOR JURISDICTIONAL STREAM. PUMP SHALL REMAIN IN PLACE UNTIL SUCH TIME THAT CULVERT AND STORM STRUCTURES ARE FULLY INSTALLED.
 3. THIS PROJECT MEETS THE SPIRIT AND INTENT OF SECTION E-5 IN NCDEQ'S SCM MANUAL FOR PUBLIC LINEAR TRANSPORTATION PROJECTS, THEREFORE THE PROJECT IMPLEMENTS THE NCDOT BMP TOOLBOX TO TREAT STORMWATER TO THE MEP.
 4. CONTRACTOR SHALL PLACE A SIGN ON OR TO THE SIDE OF THE EASEMENT FENCE GATE THAT STATES "PRIVATE PROPERTY, NO PUBLIC ACCESS AT ANY TIME".



PLAN
SCALE: 1"=50'



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 PLOT DATE: 7/5/2024 10:40 AM BY: SNASH

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	S. NASH
DRAWN BY:	S. NASH
CHECKED BY:	M. SANTOWASSO
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1 REGULATORY REVIEW	11/2023 BYP
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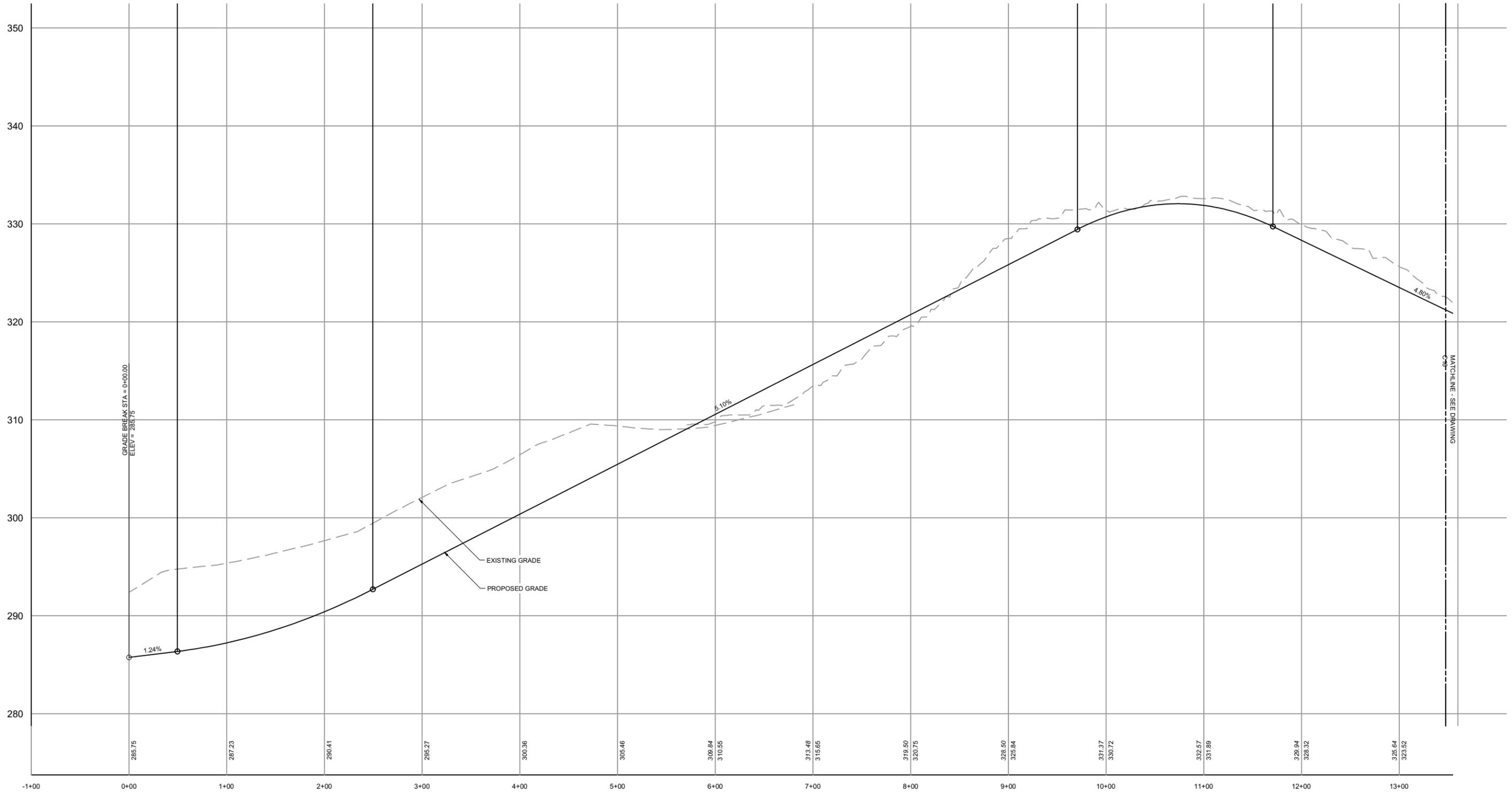
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APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

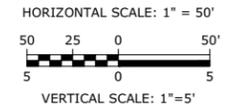
CIVIL
ROADWAY PLAN - SHEET 2

DATE:	APRIL 2024
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	C18

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PLAN
SCALE: 1" = 50'



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PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	S. NASH
DRAWN BY:	S. NASH
CHECKED BY:	M. SANTOWASSO

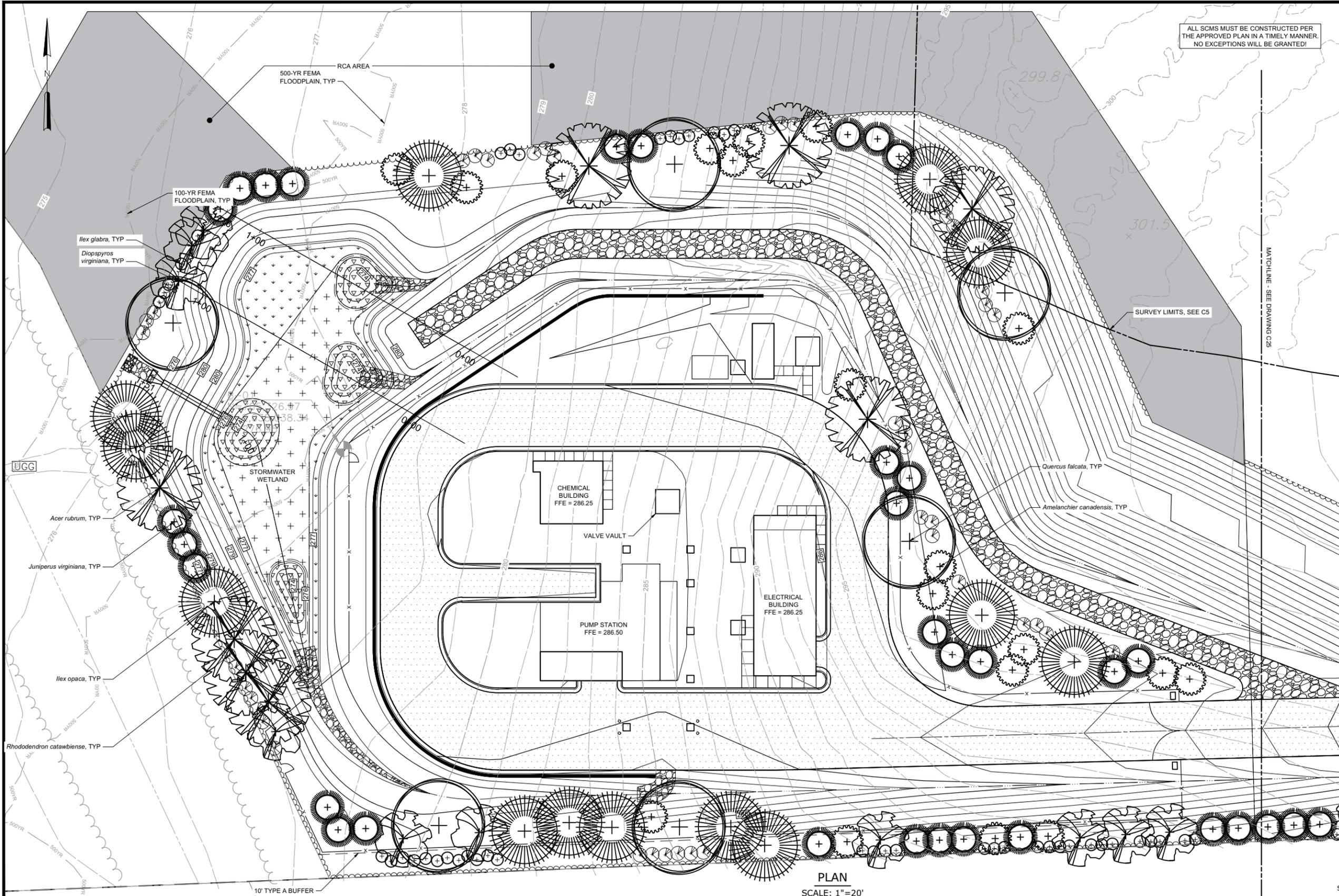
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APEX
 NORTH CAROLINA
 BIG BRANCH 2
 PUMP STATION

CIVIL
ROADWAY PROFILE -
SHEET 1

DATE:	APRIL 2024
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	C19



ALL SCMS MUST BE CONSTRUCTED PER THE APPROVED PLAN IN A TIMELY MANNER. NO EXCEPTIONS WILL BE GRANTED!

- NOTES:**
- SEE NOTES 9, 24-29 OF THE TOWN OF APEX REQUIRED NOTES ON DRAWING C2.
 - SEE PLANTING SCHEDULE, DRAWING C25.
 - SEE WET POND PLANTING PLAN AND SCHEDULE ON DRAWING C20.
 - SEE PLANTING DETAILS ON DRAWING CD12.

- LEGEND:**
- SHRUBS
- Ilex glabra* (inkberry)
 - Rhododendron catawbiense* (mountain rosebay)
- TREES
- Amelanchier canadensis* (shadblow serviceberry)
 - Acer rubrum* (red maple)
 - Diopspyras virginiana* (common persimmon)
 - Ilex opaca* (American holly)
 - Juniperus virginiana* (eastern red cedar)
 - Quercus falcata* (southern red oak)

PLAN
SCALE: 1" = 20'

SCALE: 1" = 20'

File: C:\USERS\SNASH\WORKSPACE\HAZEN AND SAWYER\PROJECT FILES\CIVIL\C21 Saved by: SNASH Save date: 5/9/2024 10:41 AM
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PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	S. NASH
DRAWN BY:	S. NASH
CHECKED BY:	M. SANTOWASSO
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APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

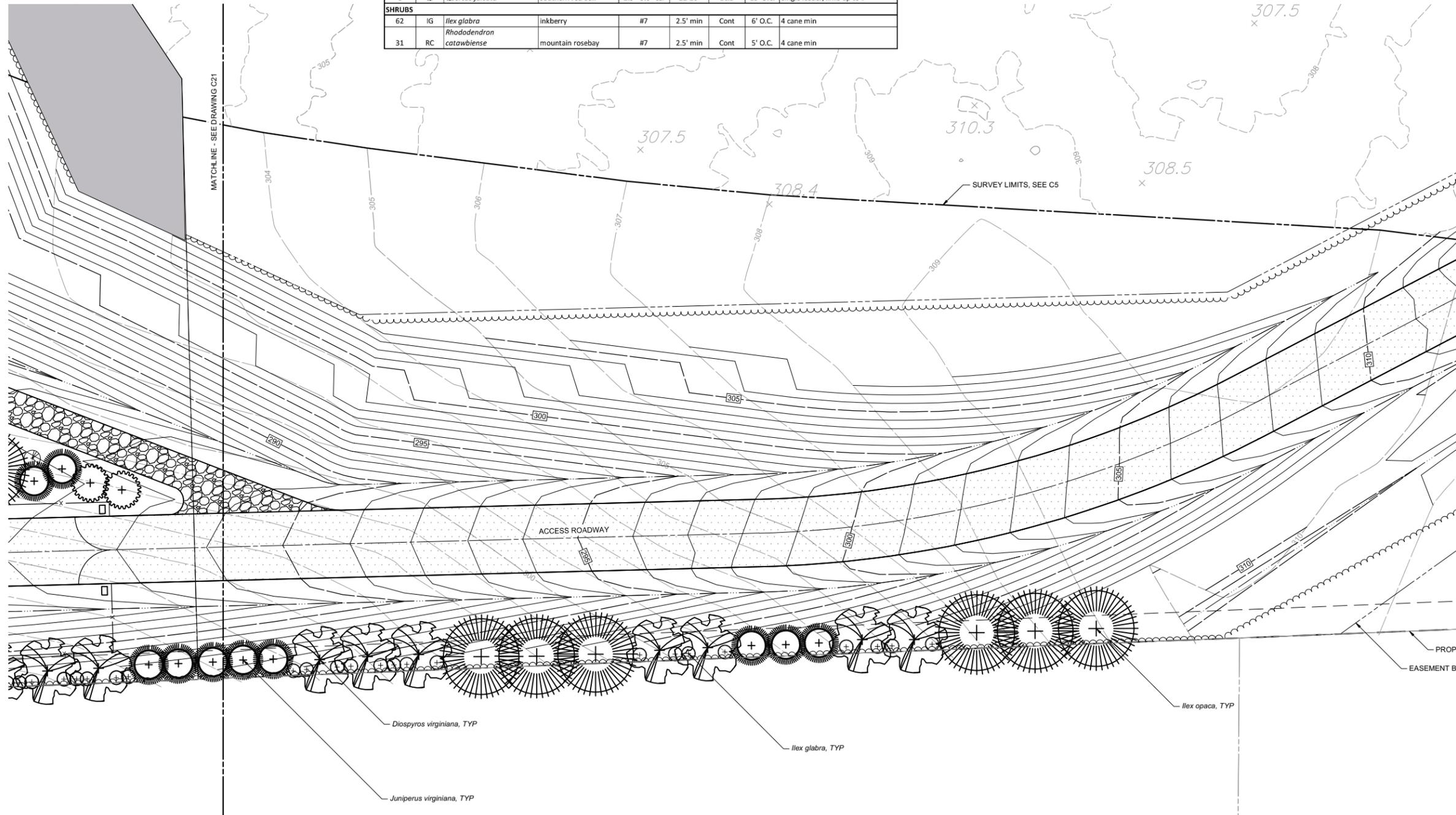
CIVIL
LANDSCAPING PLAN

DATE:	APRIL 2024
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	C21

PLANTING SCHEDULE								
Quantity	Symbol	Scientific Name	Common Name	Size	Height	Container	Spacing	Comments
TREES								
19	AC	<i>Amelanchier canadensis</i>	shadblow serviceberry	8/10' clump	8' min	B&B	15' O.C.	Multi-stem
8	AR	<i>Acer rubrum</i>	red maple	2.5 - 3.0" cal	12-16'	B&B	15' O.C.	Single leader, limb up to 7'
17	DV	<i>Diospyros virginiana</i>	common persimmon	2.5 - 3.0" cal	12-16'	B&B	15' O.C.	Single leader, limb up to 7'
18	IO	<i>Ilex opaca</i>	American holly	2.5 - 3.0" cal	8-9'	Cont	15' O.C.	Single leader, branched to ground; 25% male, 75% female
36	JV	<i>Juniperus virginiana</i>	eastern red cedar	2.5 - 3.0" cal	9-10'	Cont	15' O.C.	Single leader, branched to ground
6	QF	<i>Quercus falcata</i>	southern red oak	2.5 - 3.0" cal	12-16'	B&B	15' O.C.	Single leader, limb up to 7'
SHRUBS								
62	IG	<i>Ilex glabra</i>	inkberry	#7	2.5' min	Cont	6' O.C.	4 cane min
31	RC	<i>Rhododendron catawbiense</i>	mountain rosebay	#7	2.5' min	Cont	5' O.C.	4 cane min

- NOTES:**
- SEE NOTES 9, 24-29 OF THE TOWN OF APEX REQUIRED NOTES ON DRAWING C2.
 - SEE PLANTING SCHEDULE, THIS DRAWING.
 - SEE PLANTING DETAILS ON DRAWING CD12.

- LEGEND:**
- SHRUBS**
- Ilex glabra* (inkberry)
 - Rhododendron catawbiense* (mountain rosebay)
- TREES**
- Amelanchier canadensis* (shadblow serviceberry)
 - Acer rubrum* (red maple)
 - Diospyros virginiana* (common persimmon)
 - Ilex opaca* (American holly)
 - Juniperus virginiana* (eastern red cedar)
 - Quercus falcata* (southern red oak)



PLAN
SCALE: 1"=20' XREF

SCALE: 1" = ##'
0 ##'

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PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	R. HUNT		
DRAWN BY:	A. VECCHIO		
CHECKED BY:	S. NASH		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"		
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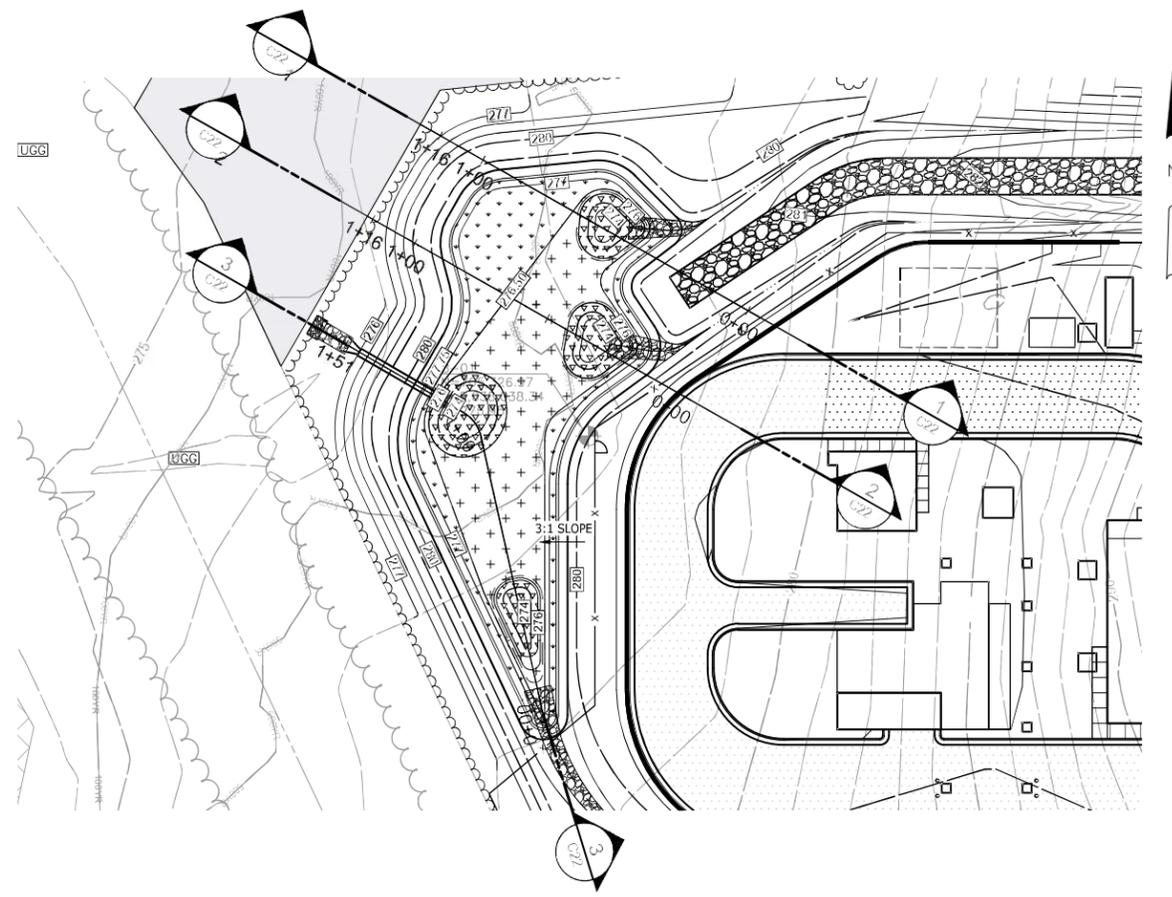
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APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

CIVIL
LANDSCAPING PLAN -
SHEET 2

DATE:	APRIL 2024
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	C22

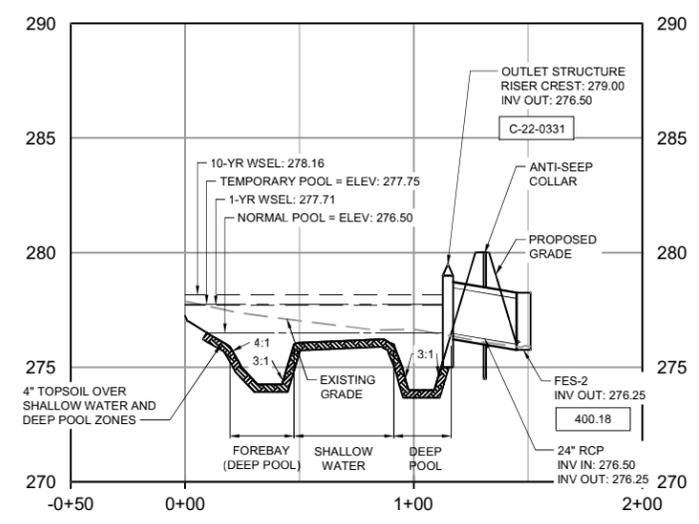


WETLAND PLAN
1" = 30'

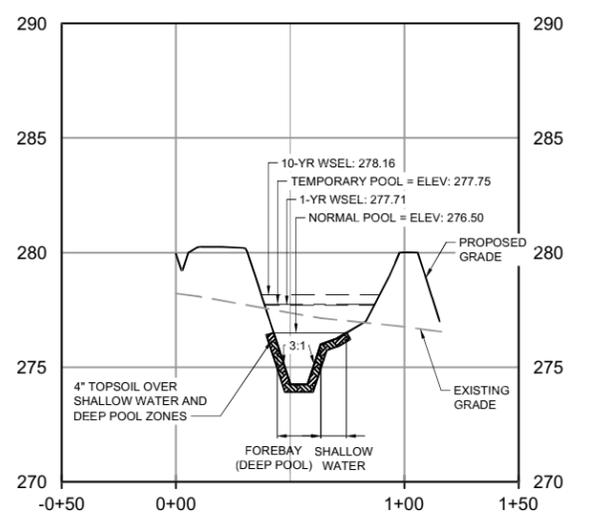
ALL SCMS MUST BE CONSTRUCTED PER THE APPROVED PLAN IN A TIMELY MANNER. NO EXCEPTIONS WILL BE GRANTED!

NOTES:

- NON-CLUMPING TURF GRASS SOD SHALL BE INSTALLED ON ALL SCM SLOPES AND TOP OF DAM.
- THE ENGINEER OF RECORD IS REQUIRED TO PHYSICALLY VISIT THE SITE DURING CONSTRUCTION OF THE SCM, AND PRIOR TO SEALING THE AS-BUILT PLANS FOR THE SCM.
- DURING CONSTRUCTION OF THE SCM DAM, GEOTECHNICAL TESTING MUST BE PERFORMED TO ENSURE PROPER SOIL COMPACTION IS ACHIEVED. THESE COMPACTION REPORTS MUST BE SUBMITTED AS PART OF THE SCM AS-BUILT PACKAGE.
- PRIOR TO BACK-FILLING OF THE SCM OUTLET STRUCTURE, PHOTOGRAPHIC EVIDENCE SHALL BE OBTAINED THAT DOCUMENTS CONSTRUCTION OF IMPORTANT SCM ELEMENTS. THIS INCLUDES INSTALLATION OF THE RISER, ANTI-FLOATATION, OUTLET PIPE, ANTI-SEEP MECHANISM, INLET PIPES, AND PLANTINGS. THESE PHOTOS MUST BE SUBMITTED AS PART OF THE SCM AS-BUILT PACKAGE.



SECTION 3 C22
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



PROFILE
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

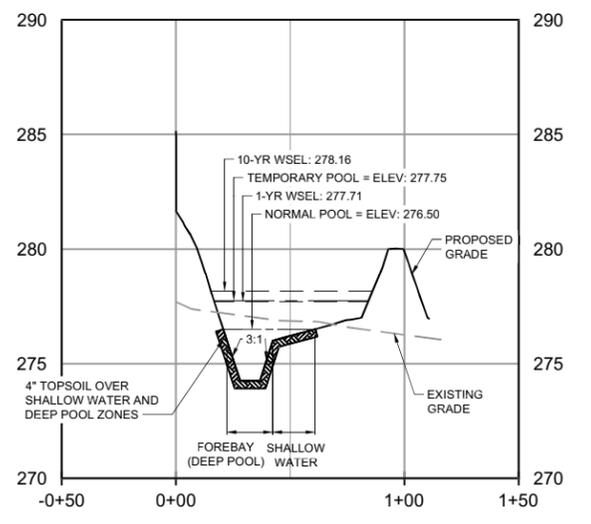
STORMWATER CONTROL MEASURE (SCM) CONSTRUCTION SEQUENCE

THE FOLLOWING MUST OCCUR PRIOR TO FINAL PLAT AND/OR CERTIFICATE OF OCCUPANCY:

- ALL STORMWATER CONTROL MEASURES (SCMS) MUST BE INSTALLED IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DRAWINGS.
- TOWN SOIL EROSION & SEDIMENTATION CONTROL STAFF SHALL BE NOTIFIED AT LEAST 10 DAYS PRIOR TO THE DEWATERING OF A SEDIMENT BASIN AS REQUIRED BY THE NCGO1 PERMIT
- DURING THE SCM CONVERSION PROCESS, ALL EFFORTS SHALL BE MADE TO PROTECT DOWNSTREAM WATERS. THE DRAIN VALVE SHALL NOT BE LEFT OPEN AT ANY TIME DURING SCM CONVERSION. A SKIMMER DRAWDOWN SYSTEM SHALL BE INSTALLED AND UTILIZED UNTIL THE SCM IS FULLY CONVERTED.
- THE DESIGN ENGINEER MUST SUBMIT AN AS-BUILT PACKAGE WHICH MEETS ALL REQUIREMENTS PRESENTED IN THE TOWN SPEC BOOK INCLUDING A SIGNED AND SEALED CERTIFICATION STATEMENT.
- FOR SUBDIVISIONS ONLY, A 25% MAINTENANCE GUARANTEE IS REQUIRED TO BE SUBMITTED TO JEAN WEATHERMAN IN DEVELOPMENT SERVICES AT (919) 249-3394.
- THE APPROPRIATE EXECUTED SCM O&M AGREEMENT MUST BE RECORDED WITH DEVELOPMENT SERVICES IN TOWN HALL.
- A FINAL INSPECTION BY STORMWATER & UTILITY ENGINEERING STAFF SHALL BE CONDUCTED ONCE THE AS-BUILT SUBMITTAL HAS BEEN RECEIVED. ONCE APPROVED, STAFF WILL SEND AN OFFICIAL SCM APPROVAL LETTER TO THE OWNER.
- IN LIEU OF SCM COMPLETION AND FINAL APPROVAL BY STAFF, THE TOWN MAY ACCEPT A 125% PERFORMANCE GUARANTEE IN ACCORDANCE WITH UDO SECTION 6.1.12(G). THIS GUARANTEE WILL BE COLLECTED BY JEAN WEATHERMAN IN DEVELOPMENT SERVICES AT (919) 249-3394.
- ALL SCMS ARE REQUIRED TO BE COMPLETED BY FINAL CO (FOR A SITE PLAN) OR BY FINAL PLAT (FOR A SUBDIVISION).
- IF AN SCM COUNTS TOWARDS RCA, THE REQUIRED LANDSCAPING SHALL BE INSTALLED DURING THE APPROPRIATE GROWING SEASON AND COORDINATED WITH THE TOWN ZONING COMPLIANCE OFFICER AT (919) 249-3426.

DEEP POOL	
SHALLOW WATER	
TEMPORARY INUNDATION	

ZONE	SCIENTIFIC NAME	COMMON NAME	SIZE	COUNT
DEEP POOL	NUPHAR LUTEA SSP. ADVENTA	YELLOW POND-LILY	2" PLUG	210
	NYMPHAEA ODORATA	AMERICAN WHITE WATERLILY	2" PLUG	210
	DULICHUM ARUNDINACEUM	THREE-WAY SEDGE	2" PLUG	110
SHALLOW WATER	ELEOCHARIS ACULARIS	NEEDLE SPIKERUSH	2" PLUG	110
	ORONTIUM AQUATICUM	GOLDEN CLUB	2" PLUG	110
	PELTANDRA VIRGINICA	ARROW ARUM	2" PLUG	110
	PONTERERIA CORDATA	PICKERELWEED	2" PLUG	110
	SAURURUS CERNUUS	LIZARD'S TAIL	2" PLUG	110
	SCHOENOPLECTUS TABERNAEMONTANI	SOFTSTEM BULRUSH	2" PLUG	120
	SPARGANIUM AMERICANUM	AMERICAN BUR-REED	2" PLUG	120
TEMPORARY INUNDATION	CAREX CRINITA	FRINGED SEDGE	2" PLUG	215
	CAREX LURIDA	LURID SEDGE	2" PLUG	215
	CAREX VULPINOIDEA	FOX SEDGE	2" PLUG	215
	DULICHUM ARUNDINACEUM	THREE-WAY SEDGE	2" PLUG	215
	HIBISCUS MOSHUETOS	MARSH HIBISCUS	1 GAL	215
	JUNCUS CORIACEUS	LEATHERY RUSH	2" PLUG	215
	PANICUM VIRGATUM	SWITCHGRASS	2" PLUG	215
	VERBENA HASTATA	SWAMP VERBENA	2" PLUG	215



PROFILE
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

File: C:\USERS\SNASH\WORK\PROJECTS\BIG BRANCH 2 PUMP STATION AND PIPELINE\PROJECT FILES\CIVIL\C23 Saved by RHUNT Save date: 7/5/2024 10:08 AM
 PLOT DATE: 7/5/2024 10:41 AM BY: SNASH

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	S. NASH
DRAWN BY:	S. NASH
CHECKED BY:	M. SANTOWASSO
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"

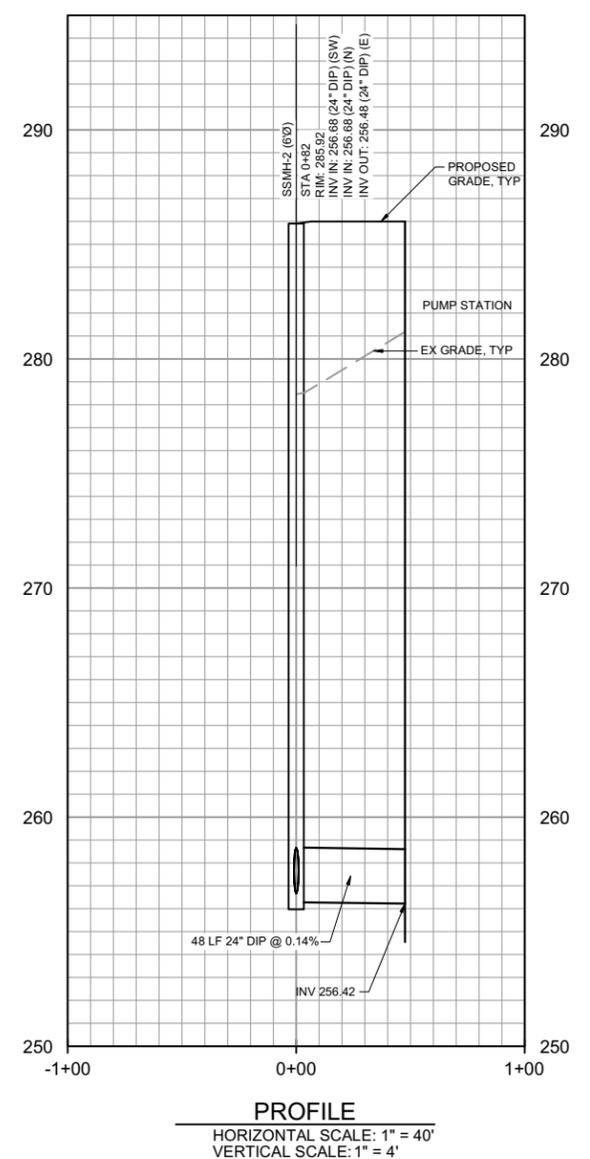
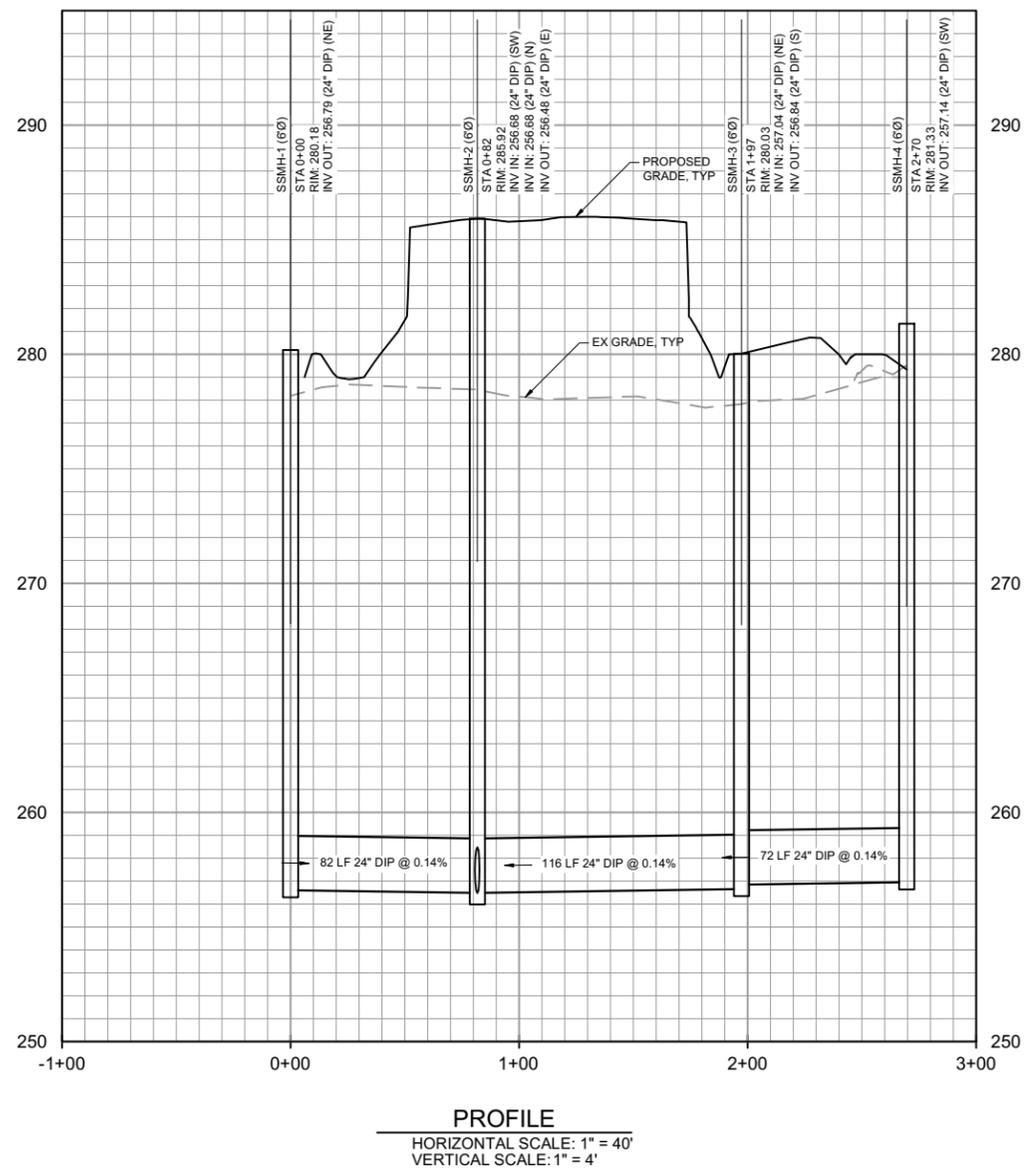
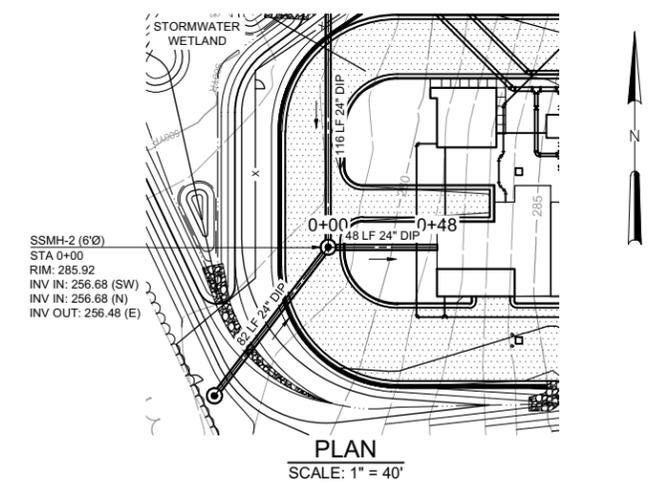
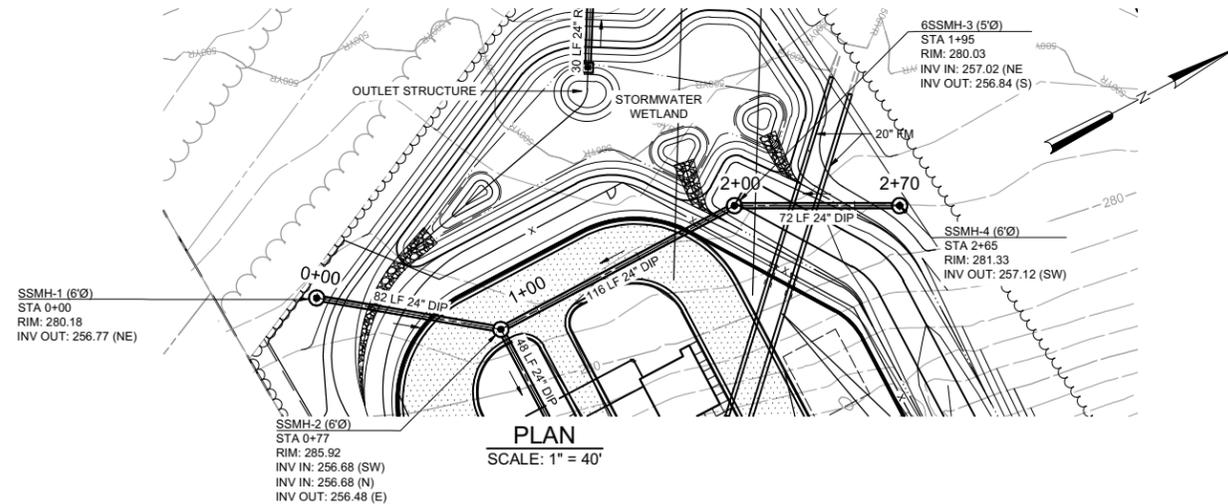
FINAL DESIGN - DO NOT USE FOR CONSTRUCTION

Hazen
HAZEN AND SAWYER
4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

CIVIL
STORMWATER CONTROL PLAN

DATE:	APRIL 2024
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	C23



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 PLOT DATE: 7/5/2024 10:41 AM BY: SNASH

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	S. NASH
DRAWN BY:	S. NASH
CHECKED BY:	M. SANTOWASSO
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	
1 REGULATORY REVIEW	11/2023 BYP
REV ISSUED FOR	DATE BY

FINAL DESIGN -
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 CONSTRUCTION

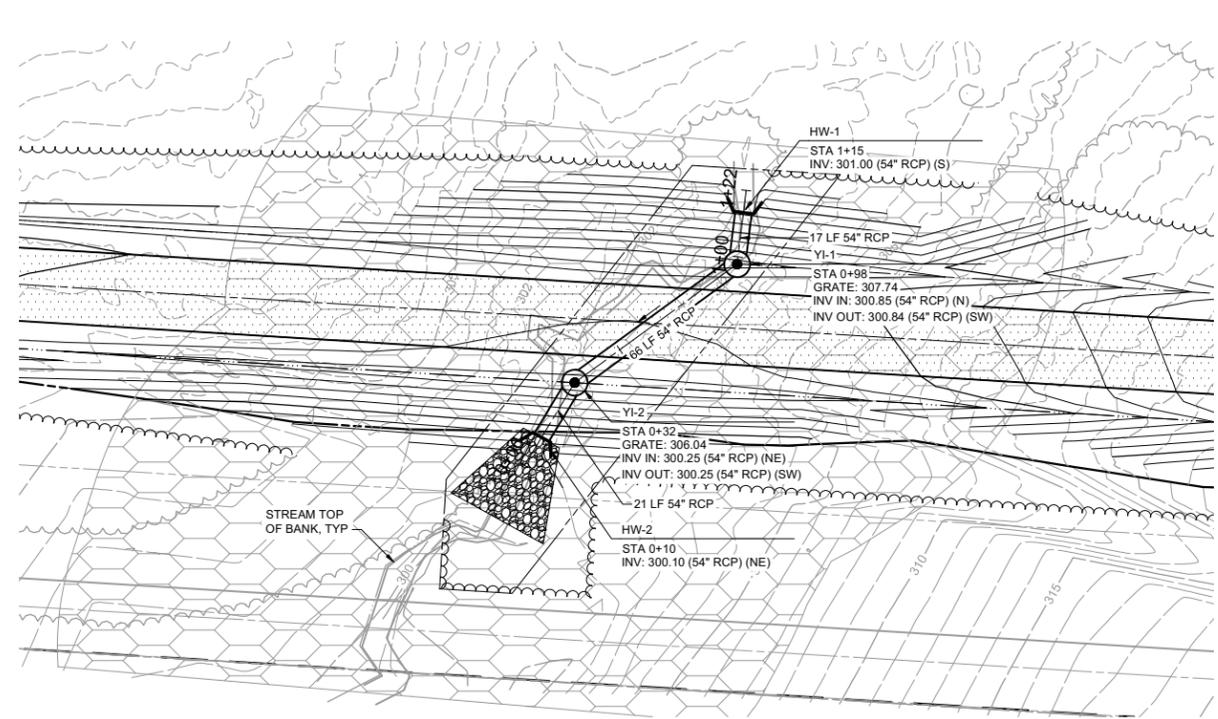
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BIG BRANCH 2
 PUMP STATION

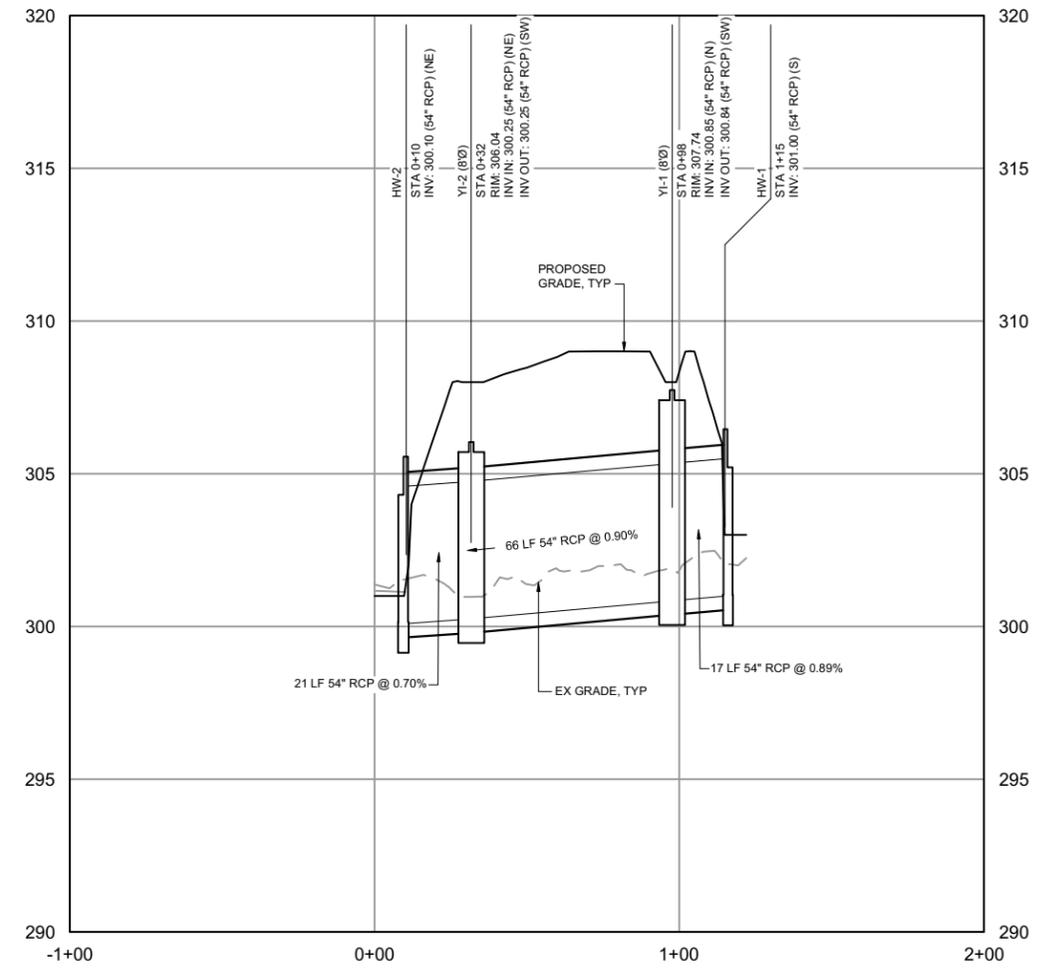
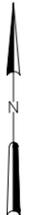
CIVIL
 PIPE PROFILES - SHEET 1

DATE:	APRIL 2024
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	C24

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 PLOT DATE: 7/5/2024 10:41 AM BY: SNASH



PLAN
1" = 30'

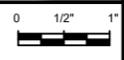


PROFILE
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'

REV	ISSUED FOR	DATE	BY
1	REGULATORY REVIEW	11/2023	BYP

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	S. NASH
DRAWN BY:	S. NASH
CHECKED BY:	M. SANTOWASSO

FINAL DESIGN -
DO NOT USE FOR
CONSTRUCTION

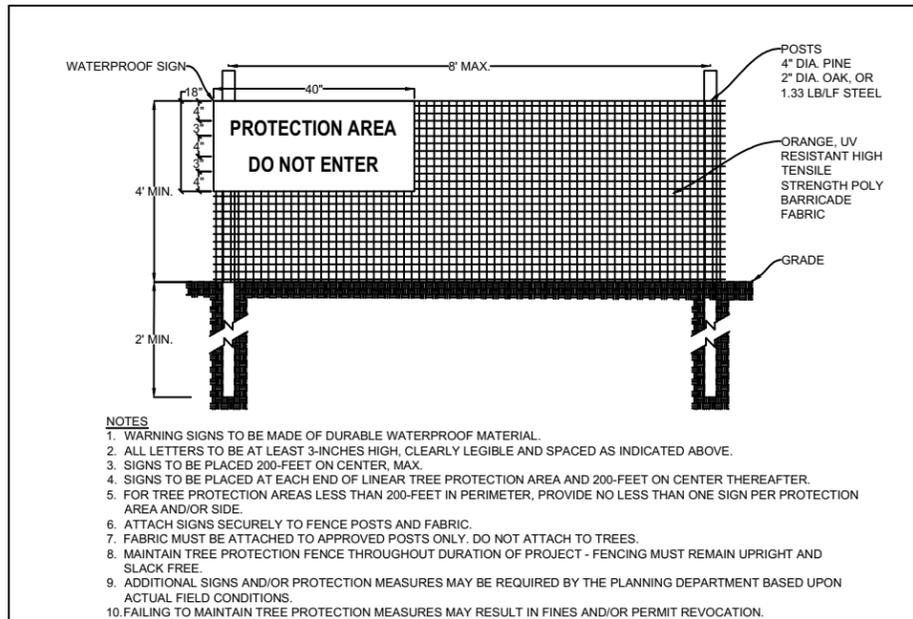


Hazen
HAZEN AND SAWYER
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RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

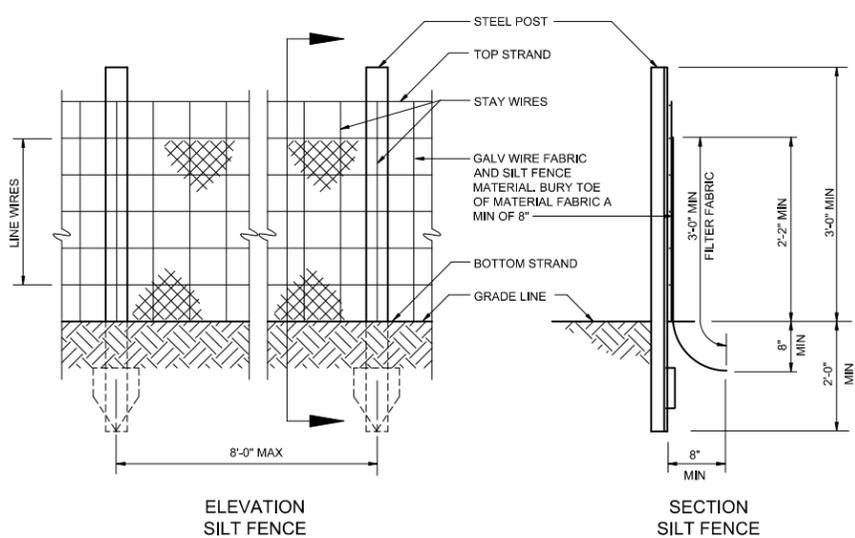
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PIPE PROFILES - SHEET 2

DATE:	APRIL 2024
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	C25



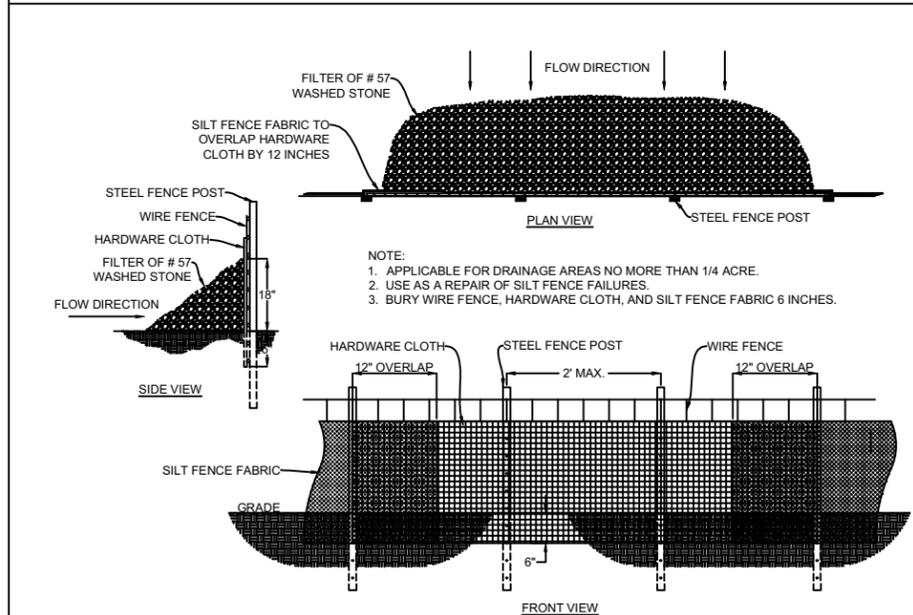
- NOTES**
1. WARNING SIGNS TO BE MADE OF DURABLE WATERPROOF MATERIAL.
 2. ALL LETTERS TO BE AT LEAST 3-INCHES HIGH, CLEARLY LEGIBLE AND SPACED AS INDICATED ABOVE.
 3. SIGNS TO BE PLACED 200- FEET ON CENTER, MAX.
 4. SIGNS TO BE PLACED AT EACH END OF LINEAR TREE PROTECTION AREA AND 200- FEET ON CENTER THEREAFTER.
 5. FOR TREE PROTECTION AREAS LESS THAN 200- FEET IN PERIMETER, PROVIDE NO LESS THAN ONE SIGN PER PROTECTION AREA AND/OR SIDE.
 6. ATTACH SIGNS SECURELY TO FENCE POSTS AND FABRIC.
 7. FABRIC MUST BE ATTACHED TO APPROVED POSTS ONLY. DO NOT ATTACH TO TREES.
 8. MAINTAIN TREE PROTECTION FENCE THROUGHOUT DURATION OF PROJECT - FENCING MUST REMAIN UPRIGHT AND SLACK FREE.
 9. ADDITIONAL SIGNS AND/OR PROTECTION MEASURES MAY BE REQUIRED BY THE PLANNING DEPARTMENT BASED UPON ACTUAL FIELD CONDITIONS.
 10. FAILING TO MAINTAIN TREE PROTECTION MEASURES MAY RESULT IN FINES AND/OR PERMIT REVOCATION.

TOWN OF APEX STANDARDS	TREE PROTECTION FENCE	STD. NO.
EFFECTIVE: FEBRUARY 28, 2023		200.06
		SHEET 1 OF 1



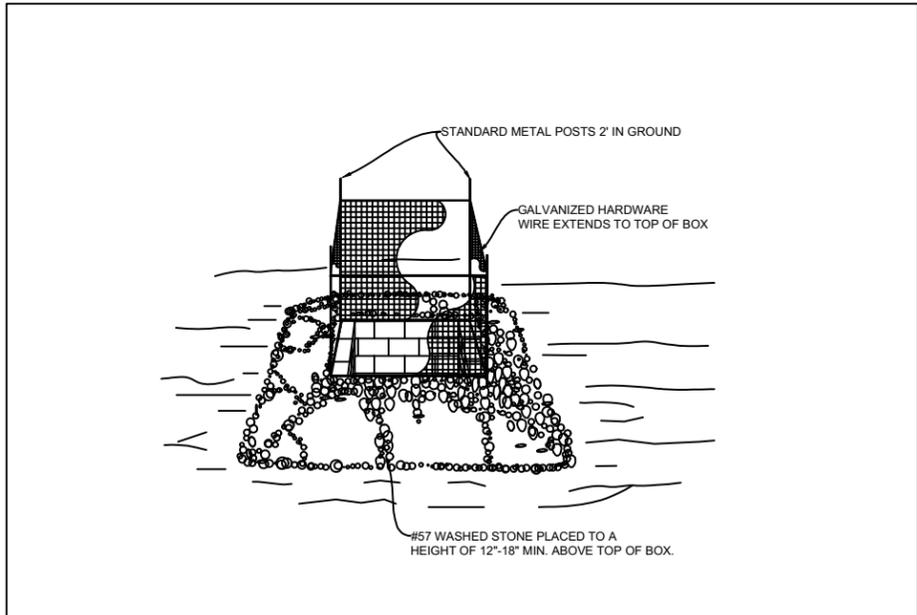
- ELEVATION SILT FENCE**
- SECTION SILT FENCE**
- NOTE:**
1. EXTRA STRENGTH SILT FENCE MATERIAL (AS APPROVED BY ENGINEER) WITH 6'-0" POST SPACING DOES NOT REQUIRE MESH SUPPORT FENCE.
 2. SILT FENCE MATERIAL SHALL BE WIRED DIRECTLY TO POST.

		C-31-0400
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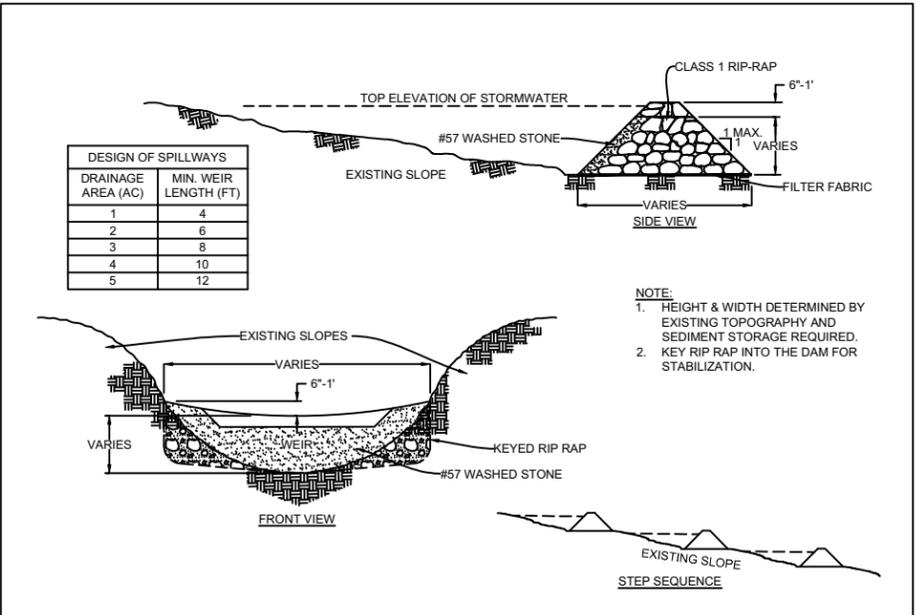


- NOTE:**
1. APPLICABLE FOR DRAINAGE AREAS NO MORE THAN 1/4 ACRE.
 2. USE AS A REPAIR OF SILT FENCE FAILURES.
 3. BURY WIRE FENCE, HARDWARE CLOTH, AND SILT FENCE FABRIC 6 INCHES.

TOWN OF APEX STANDARDS	TEMPORARY SILT FENCE OUTLET	STD. NO.
EFFECTIVE: DECEMBER 21, 2010		400.02
		SHEET 1 OF 1



TOWN OF APEX STANDARDS	CATCH BASIN & YARD INLET PROTECTION	STD. NO.
EFFECTIVE: DECEMBER 3, 2002		400.04
		SHEET 1 OF 1



- NOTE:**
1. HEIGHT & WIDTH DETERMINED BY EXISTING TOPOGRAPHY AND SEDIMENT STORAGE REQUIRED.
 2. KEY RIP RAP INTO THE DAM FOR STABILIZATION.

TOWN OF APEX STANDARDS	CHECK DAM	STD. NO.
EFFECTIVE: DECEMBER 3, 2002		400.05
		SHEET 1 OF 1

- MAINTENANCE NOTES:**
- PULL THE SKIMMER TO ONE SIDE SO THAT THE SEDIMENT UNDERNEATH IT CAN BE EXCAVATED. MAKE SURE VEGETATION GROWING IN THE BOTTOM OF THE BASIN DOES NOT HOLD DOWN THE SKIMMER.
 - IF THE SKIMMER IS CLOGGED WITH TRASH, PULL THE SKIMMER OVER TO THE SIDE OF THE BASIN AND REMOVE DEBRIS. REMOVE DEBRIS FROM ORIFICE INSIDE THE SKIMMER IF NECESSARY. USE A PLUMBER'S SNAKE OR FLUSH WITH WATER IF SKIMMER ARM OR BARREL PIPE IS CLOGGED.

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 PLOT DATE: 7/5/2024 10:41 AM BY: SNASH

PROJECT ENGINEER:	B. PORTER	
DESIGNED BY:	S. NASH	
DRAWN BY:	S. NASH	
CHECKED BY:	M. SANTOWASSO	
REGULATORY REVIEW	11/2023	BYP
ISSUED FOR	DATE	BY

FINAL DESIGN - DO NOT USE FOR CONSTRUCTION

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

0 1/2" 1"

Hazen

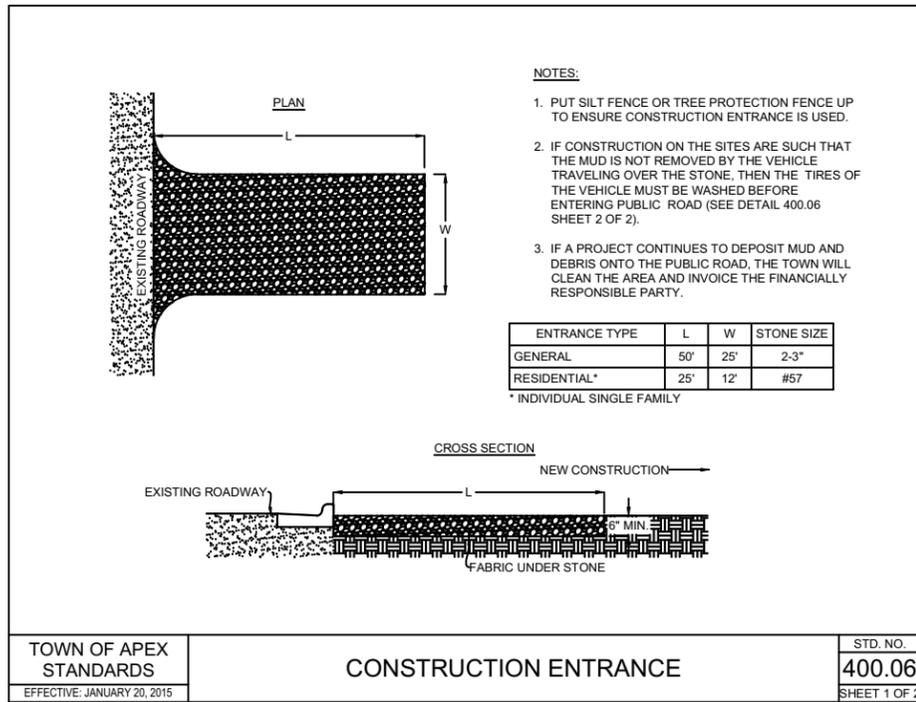
HAZEN AND SAWYER
4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA

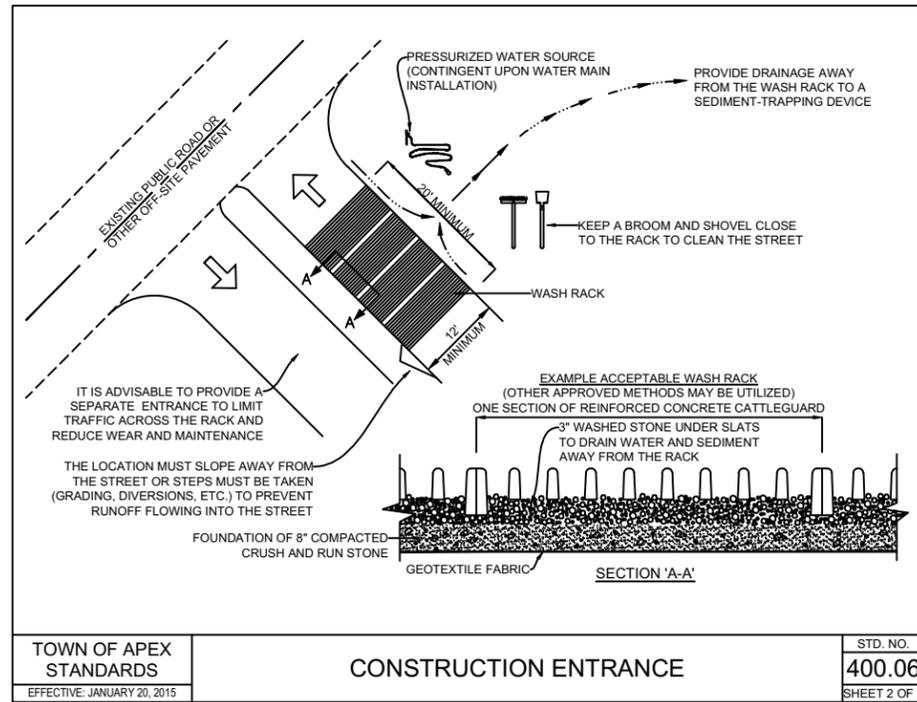
BIG BRANCH 2
PUMP STATION

CIVIL
STANDARD DETAILS

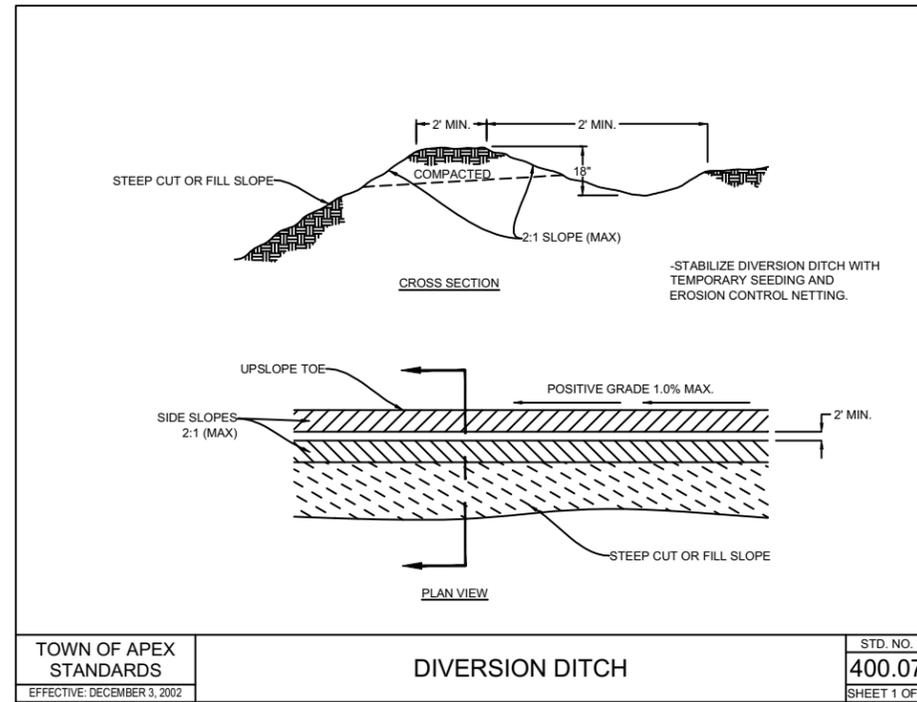
DATE:	APRIL 2024
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	CD1



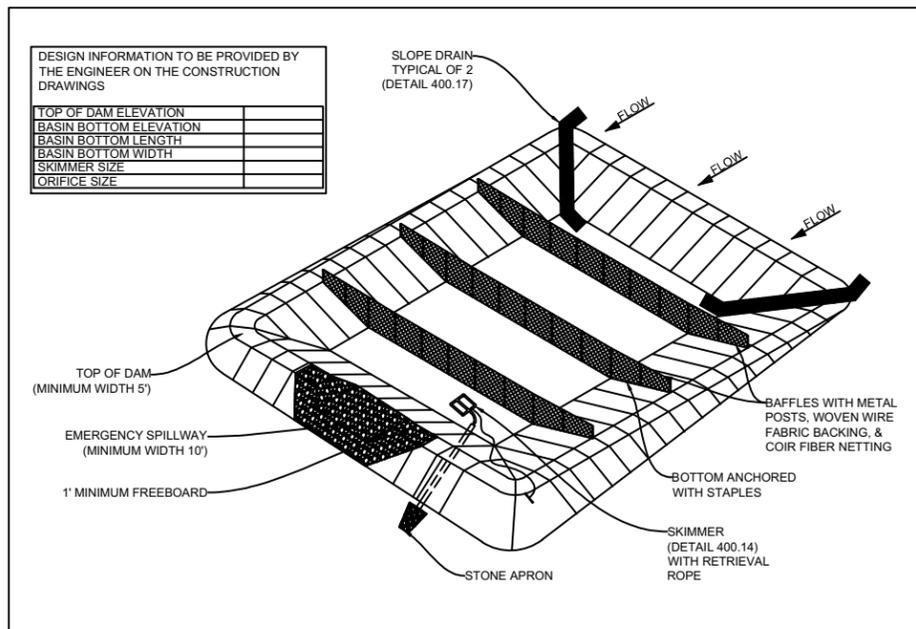
TOWN OF APEX STANDARDS	CONSTRUCTION ENTRANCE	STD. NO. 400.06
EFFECTIVE: JANUARY 20, 2015		SHEET 1 OF 2



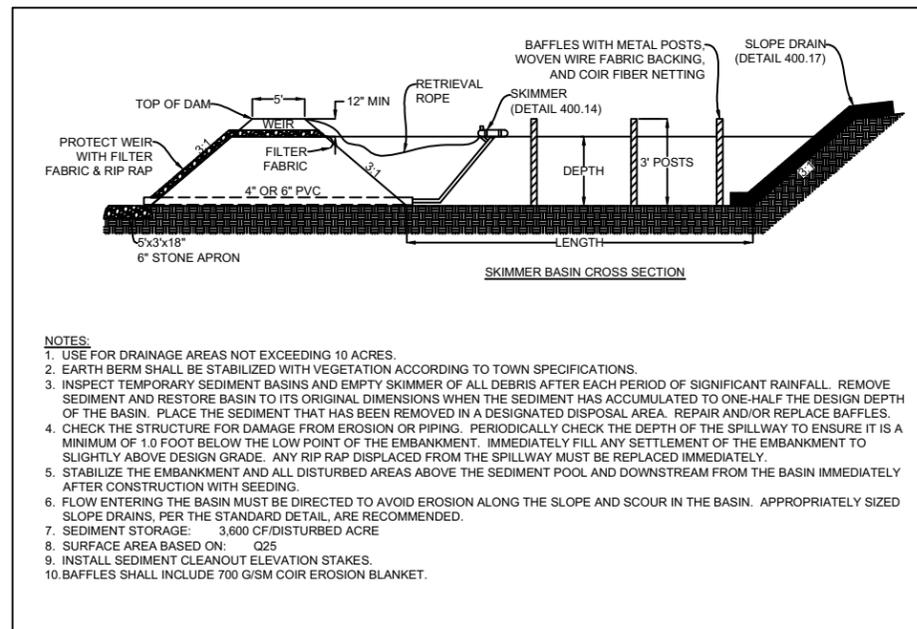
TOWN OF APEX STANDARDS	CONSTRUCTION ENTRANCE	STD. NO. 400.06
EFFECTIVE: JANUARY 20, 2015		SHEET 2 OF 2



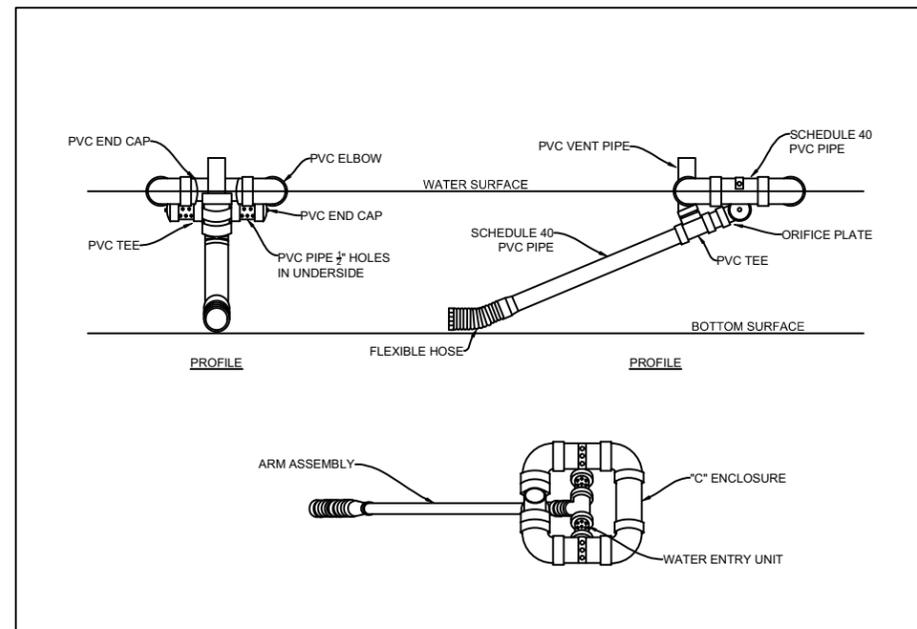
TOWN OF APEX STANDARDS	DIVERSION DITCH	STD. NO. 400.07
EFFECTIVE: DECEMBER 3, 2002		SHEET 1 OF 1



TOWN OF APEX STANDARDS	TEMPORARY SKIMMER SEDIMENT BASIN	STD. NO. 400.13
EFFECTIVE: JANUARY 20, 2015		SHEET 1 OF 2



TOWN OF APEX STANDARDS	TEMPORARY SKIMMER SEDIMENT BASIN	STD. NO. 400.13
EFFECTIVE: JANUARY 20, 2015		SHEET 2 OF 2



TOWN OF APEX STANDARDS	SKIMMER DETAIL	STD. NO. 400.14
EFFECTIVE: NOVEMBER 20, 2007		SHEET 1 OF 1

NOTE: PLACE STONE PAD IN BASIN FOR SKIMMER TO REST UPON.

MAINTENANCE NOTES:

- INSPECT AT LEAST WEEKLY AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 1/2 INCH OF RAIN PER 24-HOUR PERIOD. REMOVE ACCUMULATED SEDIMENT AND RESTORE BASIN TO ORIGINAL DIMENSIONS WHEN IT ACCUMULATES TO ONE-HALF THE DESIGN DEPTH. PLACE REMOVED SEDIMENT IN AN AREA WITH SEDIMENT CONTROLS.
- CHECK THE EMBANKMENT, SPILLWAYS, AND OUTLET FOR EROSION DAMAGE, AND INSPECT THE EMBANKMENT FOR PIPING AND SETTLEMENT. MAKE ALL NECESSARY REPAIRS IMMEDIATELY. REMOVE ALL TRASH AND OTHER DEBRIS FROM THE RISER AND POOL AREA.

MAINTENANCE NOTES:

- PULL THE SKIMMER TO ONE SIDE SO THAT THE SEDIMENT UNDERNEATH IT CAN BE EXCAVATED. MAKE SURE VEGETATION GROWING IN THE BOTTOM OF THE BASIN DOES NOT HOLD DOWN THE SKIMMER.
- IF THE SKIMMER IS CLOGGED WITH TRASH, PULL THE SKIMMER OVER TO THE SIDE OF THE BASIN AND REMOVE DEBRIS. REMOVE DEBRIS FROM ORIFICE INSIDE THE SKIMMER IF NECESSARY. USE A PLUMBER'S SNAKE OR FLUSH WITH WATER IF SKIMMER ARM OR BARREL PIPE IS CLOGGED.

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PROJECT ENGINEER:	B. PORTER	
DESIGNED BY:	S. NASH	
DRAWN BY:	S. NASH	
CHECKED BY:	M. SANTOWASSO	
REGULATORY REVIEW	11/2023	BYP
ISSUED FOR	DATE	BY

FINAL DESIGN - DO NOT USE FOR CONSTRUCTION

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RALEIGH, NC 27607
LICENSE No.: C-0381

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APPEX
NORTH CAROLINA

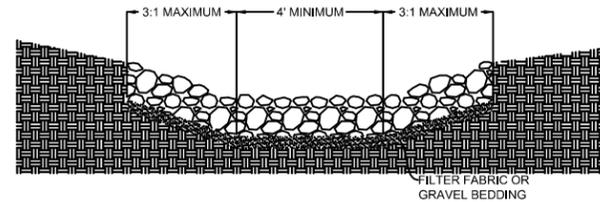
BIG BRANCH 2
PUMP STATION

CIVIL
STANDARD DETAILS

DATE:	APRIL 2024
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	CD2

NOTE:

1. TO BE USED WHERE EXCESSIVE STORMWATER VELOCITIES PROHIBIT VEGETATIVE LININGS AND WHEREVER STORMWATER OUTFALLS OVERLAP SEWER EASEMENTS.
2. STONE SIZE, TRENCH DEPTH, AND OVERALL WIDTH PER DESIGN.

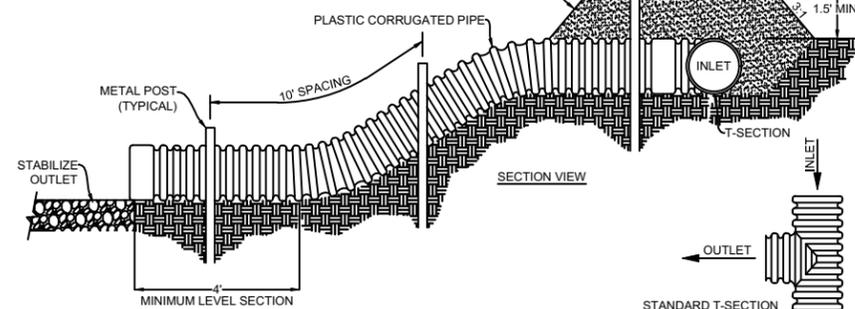


TOWN OF APEX STANDARDS
EFFECTIVE: MARCH 6, 2018

RIP RAP LINED CHANNELS

STD. NO. 400.15
SHEET 1 OF 1

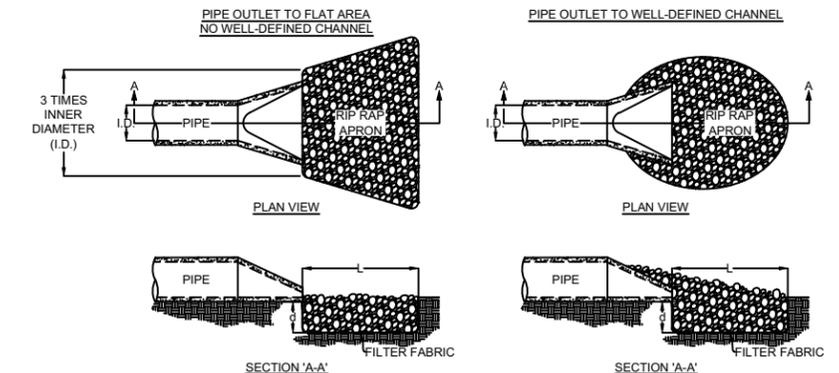
- NOTES:**
1. CONSTRUCT AN EARTHEN DIVERSION WITH A DIKE RIDGE TO DIRECT SURFACE RUNOFF INTO THE TEMPORARY SLOPE DRAIN.
 2. MAKE THE HEIGHT OF THE RIDGE OVER THE DRAIN CONDUIT A MINIMUM OF 1.5 FEET AND AT LEAST 6 INCHES HIGHER THAN THE ADJOINING RIDGE ON EITHER SIDE.
 3. THE LOWEST POINT OF THE DIVERSION RIDGE SHOULD BE A MINIMUM OF 1 FOOT ABOVE THE TOP OF THE DRAIN TO ALLOW THE DESIGN FLOW TO FREELY ENTER THE PIPE.
 4. PROTECT THE OUTLET OF THE SLOPE DRAIN FROM EROSION.
 5. MINIMUM PIPE DIAMETER = 10-INCH PIPE



TOWN OF APEX STANDARDS
EFFECTIVE: DECEMBER 21, 2010

TEMPORARY SLOPE DRAIN

STD. NO. 400.17
SHEET 1 OF 1



NOTES:

1. L = THE LENGTH OF THE RIPRAP APRON
2. d = 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 12 INCHES
3. A FILTER BLANKET OR FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIP RAP AND SOIL FOUNDATION.
4. IN A WELL-DEFINED CHANNEL EXTEND THE APRON UP THE CHANNEL BANKS TO 6 INCHES ABOVE THE MAXIMUM TAILWATER DEPTH OR THE TOP OF THE BANK, WHICHEVER IS LESS.

TOWN OF APEX STANDARDS
EFFECTIVE: DECEMBER 18, 2012

PIPE OUTLET

STD. NO. 400.18
SHEET 1 OF 1

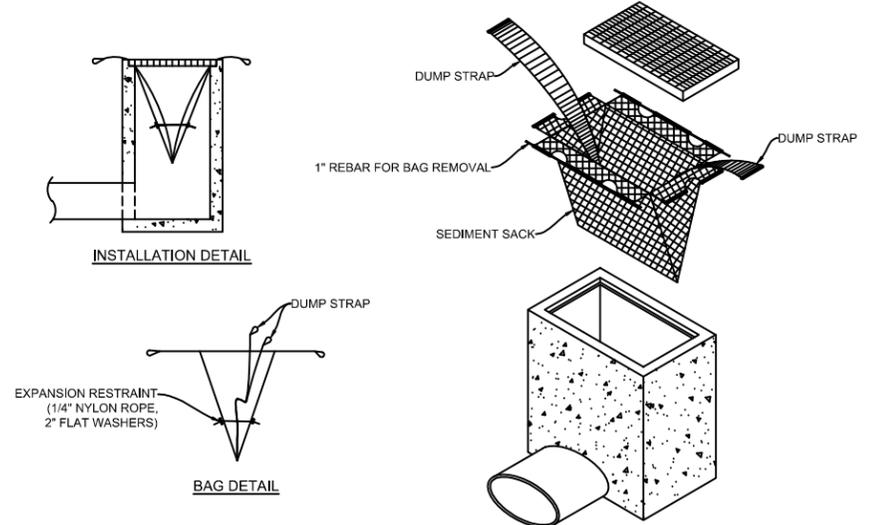
- MAINTENANCE NOTES:**
- INSPECT CHANNELS AT REGULAR INTERVALS AS WELL AS AFTER MAJOR RAINS, AND MAKE REPAIRS PROMPTLY.
 - GIVE SPECIAL ATTENTION TO THE OUTLET AND INLET SECTIONS AND OTHER POINTS WHERE CONCENTRATED FLOW ENTERS. CAREFULLY CHECK STABILITY AT ROAD CROSSINGS, AND LOOK FOR INDICATIONS OF PIPING, SCOUR HOLES, OR BANK FAILURES. MAKE REPAIRS IMMEDIATELY.
 - MAINTAIN ALL VEGETATION ADJACENT TO THE CHANNEL IN A HEALTHY, VIGOROUS CONDITION TO PROTECT THE AREA FROM EROSION AND SCOUR DURING OUT-OF-BANK FLOW.

- MAINTENANCE NOTES:**
- INSPECT THE SLOP DRAIN AND SUPPORTING DIVERSION AFTER EVERY RAINFALL, AND PROMPTLY MAKE NECESSARY REPAIRS.

- MAINTENANCE NOTES:**
- INSPECT RIPRAP OUTLET STRUCTURES WEEKLY AND AFTER SIGNIFICANT (1/2 INCH OR GREATER) RAINFALL EVENTS TO SEE IF ANY EROSION AROUND OR BELOW THE RIPRAP HAS TAKEN PLACE, OR IF STONES HAVE BEEN DISLODGED.
 - IMMEDIATELY MAKE ALL NEEDED REPAIRS TO PREVENT FURTHER DAMAGE.

RIP RAP OUTLET PROTECTION (ROP) TABLE

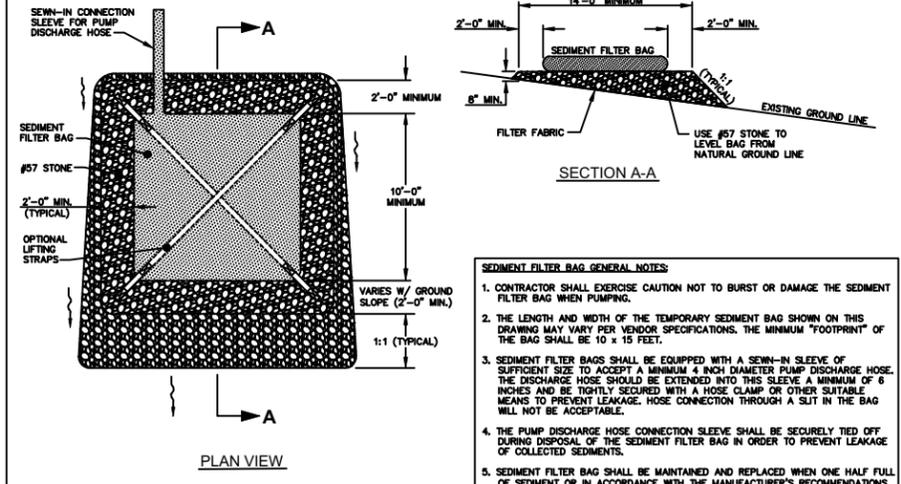
ROP TYPE	LENGTH, L (FT)	TOP, W1 (FT)	END, W2 (FT)	RIP RAP TYPE
I	6	6	6	CLASS B
II	12	6	6	CLASS B
III	10	6	6	CLASS B
IV	30	13.50	34.50	CLASS 2



TOWN OF APEX STANDARDS
EFFECTIVE: JANUARY 20, 2015

INLET SEDIMENT CONTROL DEVICE

STD. NO. 400.19
SHEET 1 OF 1

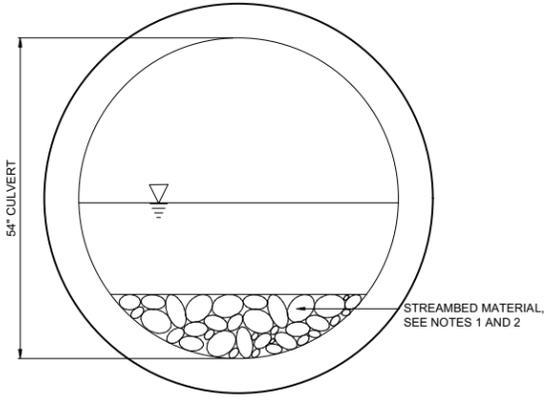


- SEDIMENT FILTER BAG GENERAL NOTES:**
1. CONTRACTOR SHALL EXERCISE CAUTION NOT TO BURST OR DAMAGE THE SEDIMENT FILTER BAG WHEN PUMPING.
 2. THE LENGTH AND WIDTH OF THE TEMPORARY SEDIMENT BAG SHOWN ON THIS DRAWING MAY VARY PER VENDOR SPECIFICATIONS. THE MINIMUM "FOOTPRINT" OF THE BAG SHALL BE 10 x 15 FEET.
 3. SEDIMENT FILTER BAGS SHALL BE EQUIPPED WITH A SEWN-IN SLEEVE OF SUFFICIENT SIZE TO ACCEPT A MINIMUM 4 INCH DIAMETER PUMP DISCHARGE HOSE. THE DISCHARGE HOSE SHOULD BE EXTENDED INTO THIS SLEEVE A MINIMUM OF 6 INCHES AND BE TIGHTLY SECURED WITH A HOSE CLAMP OR OTHER SUITABLE MEANS TO PREVENT LEAKAGE. HOSE CONNECTION THROUGH A SLIT IN THE BAG WILL NOT BE ACCEPTABLE.
 4. THE PUMP DISCHARGE HOSE CONNECTION SLEEVE SHALL BE SECURELY TIED OFF DURING DISPOSAL OF THE SEDIMENT FILTER BAG IN ORDER TO PREVENT LEAKAGE OF COLLECTED SEDIMENTS.
 5. SEDIMENT FILTER BAG SHALL BE MAINTAINED AND REPLACED WHEN ONE HALF FULL OF SEDIMENT OR IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

TOWN OF APEX STANDARDS
EFFECTIVE: MAY 5, 2020

FILTER BAG WITH GRAVEL PAD

STD. NO. 400.22
SHEET 1 OF 1



NOTES:

1. FILL WITHIN THE CULVERT SHALL BE PREVIOUSLY EXCAVATED STREAMBED MATERIAL. ANY EXISTING STREAMBED REMOVED FOR THE NEW CULVERT EXCAVATION SHALL BE STOCKPILED SEPARATE FROM ANY OTHER FILL AND INSTALLED AS STREAMBED MATERIAL WITHIN THE CULVERT ONCE IT IS INSTALLED. THE STREAMBED ELEVATION SHALL BE BROUGHT BACK TO EXISTING GRADE.
2. CULVERT SHALL BE INSTALLED WITH THE INVERT SUBMERGED SO THAT 12" OF THE PIPE IS BELOW THE INVERT ELEVATION OF THE EXISTING STREAMBED.

STREAM CULVERT

DETAIL	1
N.T.S.	CD3

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PROJECT ENGINEER:	B. PORTER						
DESIGNED BY:	S. NASH						
DRAWN BY:	S. NASH						
CHECKED BY:	M. SANTOWASSO						
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REV	ISSUED FOR	DATE	BY				

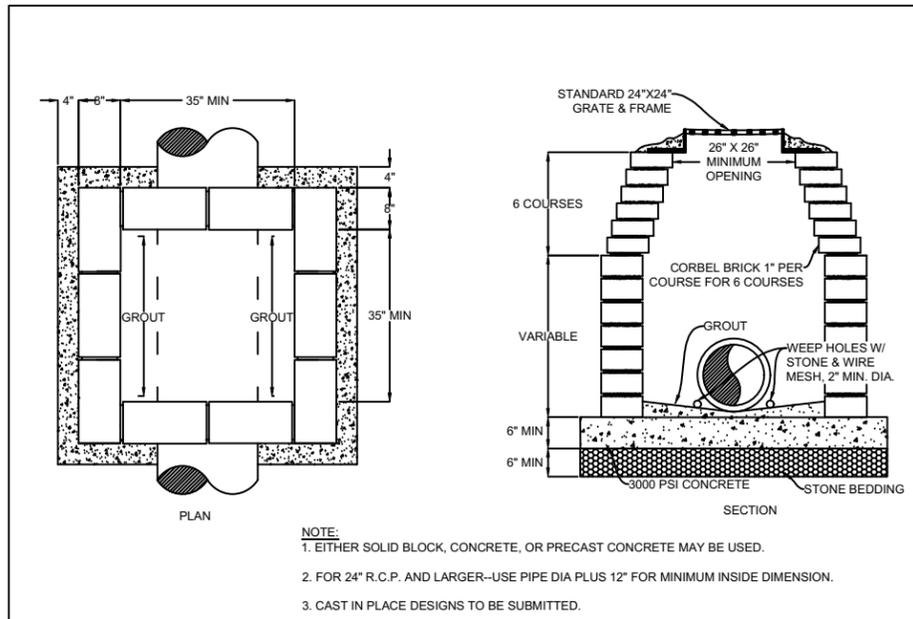
FINAL DESIGN - DO NOT USE FOR CONSTRUCTION

Hazen
HAZEN AND SAWYER
4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

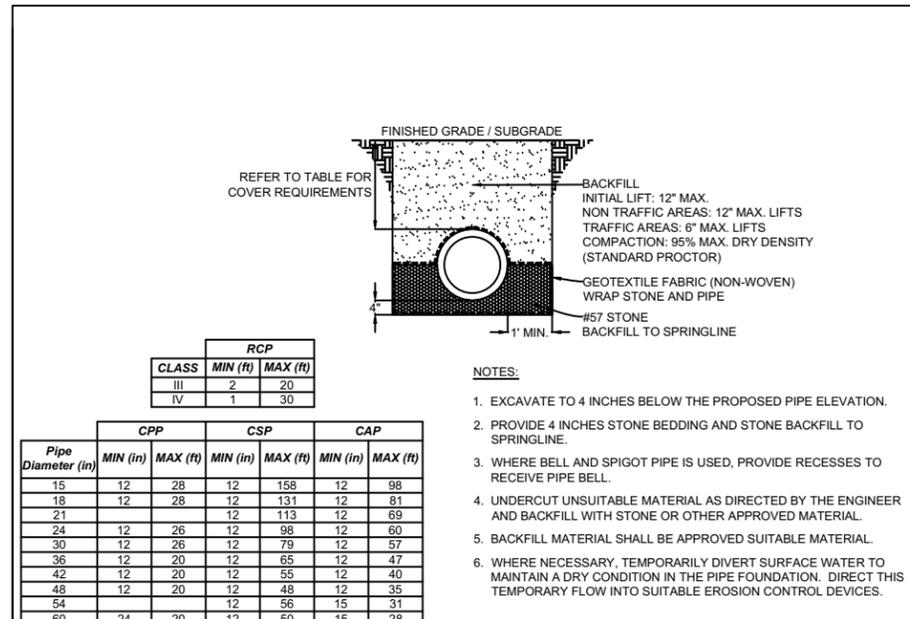
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DATE:	APRIL 2024
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	CD3



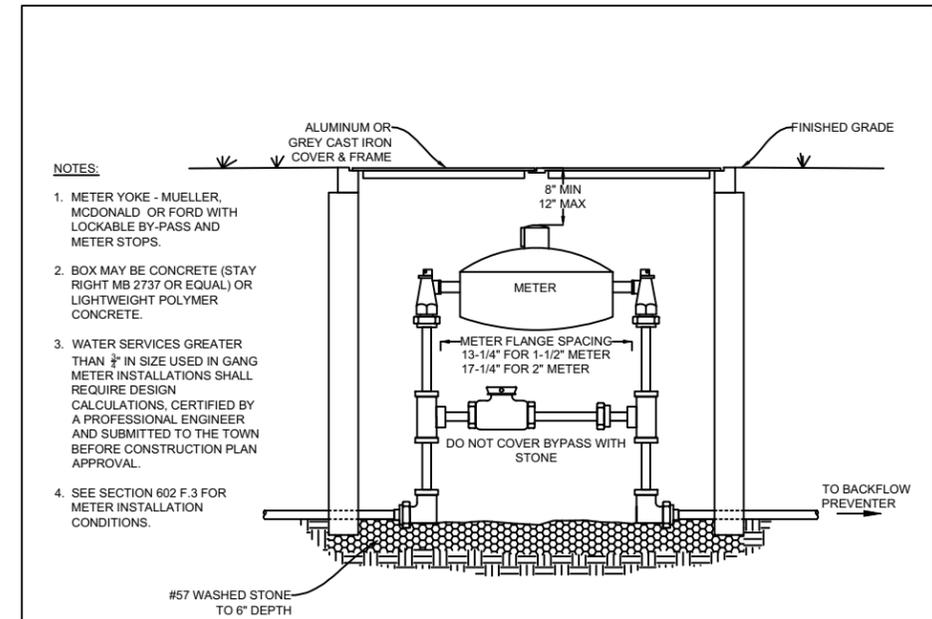
- NOTE:**
1. EITHER SOLID BLOCK, CONCRETE, OR PRECAST CONCRETE MAY BE USED.
 2. FOR 24" R.C.P. AND LARGER--USE PIPE DIA PLUS 12" FOR MINIMUM INSIDE DIMENSION.
 3. CAST IN PLACE DESIGNS TO BE SUBMITTED.

TOWN OF APEX STANDARDS	YARD INLET W/ GRATE & FRAME	STD. NO. 500.02
EFFECTIVE: DECEMBER 18, 2012		SHEET 1 OF 1



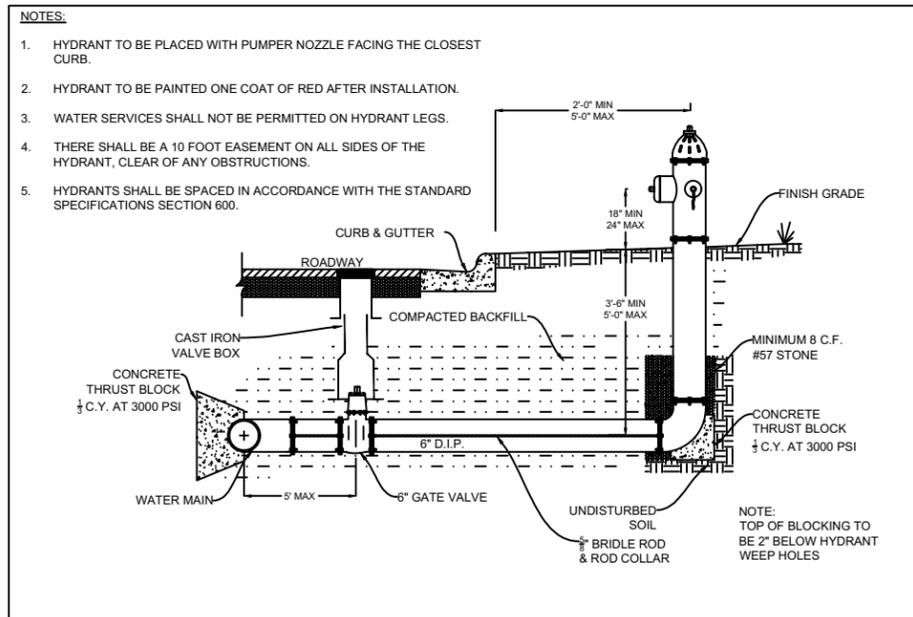
- NOTES:**
1. EXCAVATE TO 4 INCHES BELOW THE PROPOSED PIPE ELEVATION.
 2. PROVIDE 4 INCHES STONE BEDDING AND STONE BACKFILL TO SPRINGLINE.
 3. WHERE BELL AND SPIGOT PIPE IS USED, PROVIDE RECESSES TO RECEIVE PIPE BELL.
 4. UNDERCUT UNSUITABLE MATERIAL AS DIRECTED BY THE ENGINEER AND BACKFILL WITH STONE OR OTHER APPROVED MATERIAL.
 5. BACKFILL MATERIAL SHALL BE APPROVED SUITABLE MATERIAL.
 6. WHERE NECESSARY, TEMPORARILY DIVERT SURFACE WATER TO MAINTAIN A DRY CONDITION IN THE PIPE FOUNDATION. DIRECT THIS TEMPORARY FLOW INTO SUITABLE EROSION CONTROL DEVICES.

TOWN OF APEX STANDARDS	STORM DRAIN PIPE BEDDING & BACKFILLING	STD. NO. 500.09
EFFECTIVE: JUNE 5, 2018		SHEET 1 OF 1



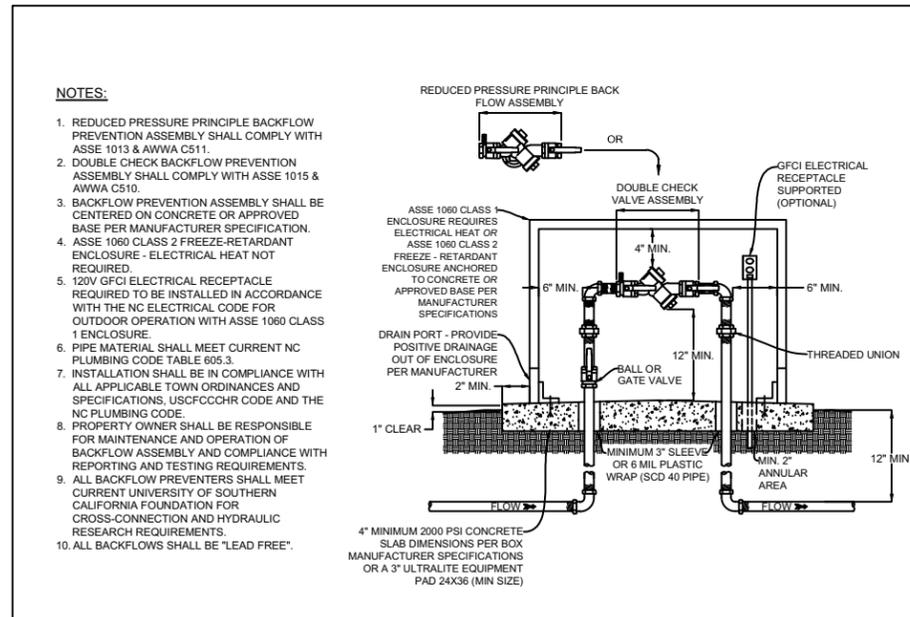
- NOTES:**
1. METER YOKE - MUELLER, MCDONALD OR FORD WITH LOCKABLE BY-PASS AND METER STOPS.
 2. BOX MAY BE CONCRETE (STAY RIGHT MB 2737 OR EQUAL) OR LIGHTWEIGHT POLYMER CONCRETE.
 3. WATER SERVICES GREATER THAN 3/4 IN SIZE USED IN GANG METER INSTALLATIONS SHALL REQUIRE DESIGN CALCULATIONS, CERTIFIED BY A PROFESSIONAL ENGINEER AND SUBMITTED TO THE TOWN BEFORE CONSTRUCTION PLAN APPROVAL.
 4. SEE SECTION 602 F.3 FOR METER INSTALLATION CONDITIONS.

TOWN OF APEX STANDARDS	1-1/2" & 2" METER INSTALLATION & VAULT	STD. NO. 600.02
EFFECTIVE: MARCH 23, 2021		SHEET 1 OF 1



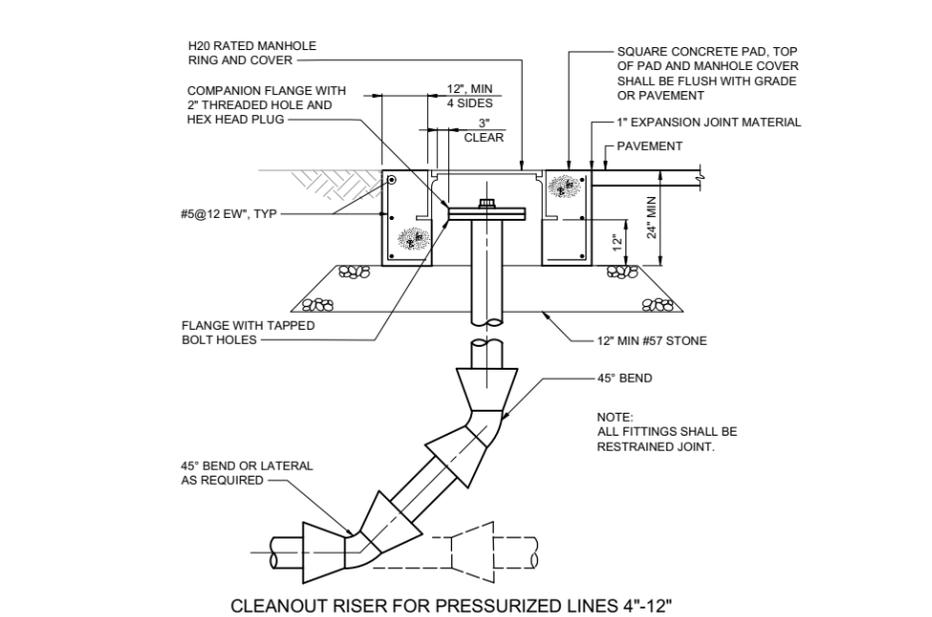
- NOTES:**
1. HYDRANT TO BE PLACED WITH PUMPER NOZZLE FACING THE CLOSEST CURB.
 2. HYDRANT TO BE PAINTED ONE COAT OF RED AFTER INSTALLATION.
 3. WATER SERVICES SHALL NOT BE PERMITTED ON HYDRANT LEGS.
 4. THERE SHALL BE A 10 FOOT EASEMENT ON ALL SIDES OF THE HYDRANT, CLEAR OF ANY OBSTRUCTIONS.
 5. HYDRANTS SHALL BE SPACED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 600.

TOWN OF APEX STANDARDS	HYDRANT INSTALLATION	STD. NO. 600.05
EFFECTIVE: MARCH 23, 2021		SHEET 1 OF 1



- NOTES:**
1. REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY SHALL COMPLY WITH ASSE 1013 & AWWA C511.
 2. DOUBLE CHECK BACKFLOW PREVENTION ASSEMBLY SHALL COMPLY WITH ASSE 1015 & AWWA C510.
 3. BACKFLOW PREVENTION ASSEMBLY SHALL BE CENTERED ON CONCRETE OR APPROVED BASE PER MANUFACTURER SPECIFICATION.
 4. ASSE 1060 CLASS 2 FREEZE-RETARDANT ENCLOSURE - ELECTRICAL HEAT NOT REQUIRED.
 5. 120V GFCI ELECTRICAL RECEPTACLE REQUIRED TO BE INSTALLED IN ACCORDANCE WITH THE NC ELECTRICAL CODE FOR OUTDOOR OPERATION WITH ASSE 1060 CLASS 1 ENCLOSURE.
 6. PIPE MATERIAL SHALL MEET CURRENT NC PLUMBING CODE TABLE 605.3.
 7. INSTALLATION SHALL BE IN COMPLIANCE WITH ALL APPLICABLE TOWN ORDINANCES AND SPECIFICATIONS, USCFCCRR CODE AND THE NC PLUMBING CODE.
 8. PROPERTY OWNER SHALL BE RESPONSIBLE FOR MAINTENANCE AND OPERATION OF BACKFLOW ASSEMBLY AND COMPLIANCE WITH REPORTING AND TESTING REQUIREMENTS.
 9. ALL BACKFLOW PREVENTERS SHALL MEET CURRENT UNIVERSITY OF SOUTHERN CALIFORNIA FOUNDATION FOR CROSS-CONNECTION AND HYDRAULIC RESEARCH REQUIREMENTS.
 10. ALL BACKFLOWS SHALL BE "LEAD FREE".

TOWN OF APEX STANDARDS	3/4" to 2" COMMERCIAL OUTDOOR BACKFLOW ASSEMBLY (DOMESTIC SERVICE)	STD. NO. 620.04
EFFECTIVE: MARCH 6, 2018		SHEET 1 OF 1



TOWN OF APEX STANDARDS	CLEANOUT RISER FOR PRESSURIZED LINES 4"-12"	STD. NO. C-33-0643
EFFECTIVE: MARCH 23, 2021		SHEET 1 OF 1

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PROJECT ENGINEER:	B. PORTER	
DESIGNED BY:	S. NASH	
DRAWN BY:	S. NASH	
CHECKED BY:	M. SANTOWASSO	
REGULATORY REVIEW	11/2023	BYP
ISSUED FOR	DATE	BY

FINAL DESIGN - DO NOT USE FOR CONSTRUCTION

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

0 1/2" 1"

Hazen

HAZEN AND SAWYER
4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

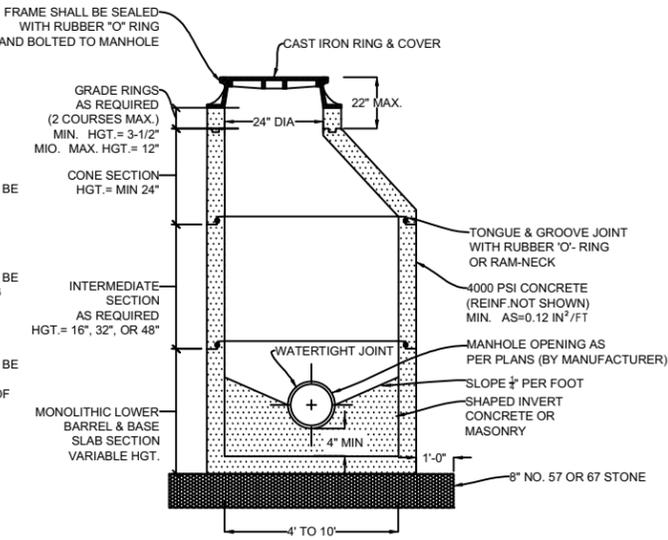
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NORTH CAROLINA

BIG BRANCH 2
PUMP STATION

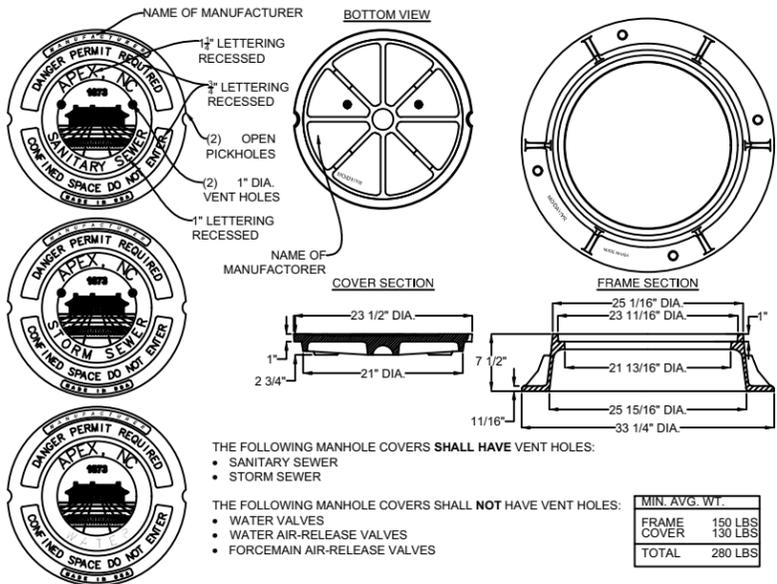
CIVIL
STANDARD DETAILS

DATE:	APRIL 2024
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	
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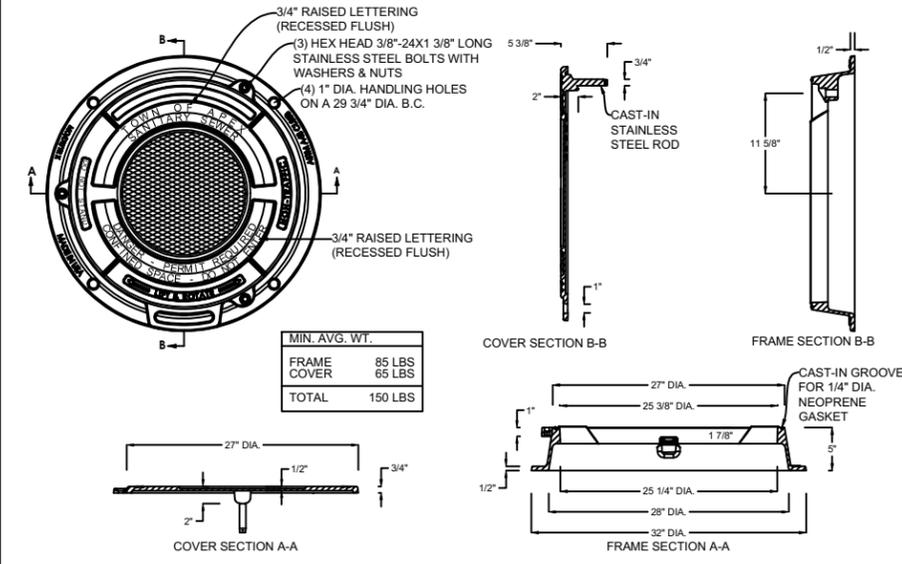
- NOTES:**
- FOR DEAD-END MANHOLES, THE INVERT SHALL BE EXTENDED THROUGH THE MANHOLE.
 - ON THE INTERIOR OF THE MANHOLE, ALL JOINTS BETWEEN SECTIONS SHALL BE PARGED WITH NON-SHRINK GROUT.
 - ON THE INTERIOR OF ALL MANHOLES, ALL JOINTS BETWEEN SECTIONS SHALL BE PARGED WITH PRECO-PLUG QUICK SETTING GROUT.
 - ON THE EXTERIOR OF ALL MANHOLES, ALL JOINTS BETWEEN SECTIONS SHALL BE CONTINUOUSLY WRAPPED WITH 12" WIDE WATERPROOF BITUMINOUS TAPE.
 - SEWER MANHOLES WITHIN 1200 FEET OF FORCE MAIN CONNECTION SHALL HAVE INTERIOR EPOXY COATED.



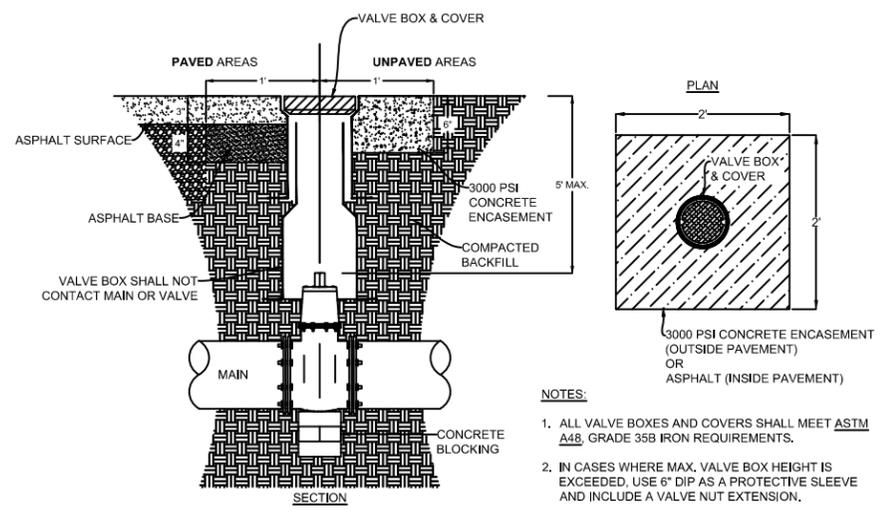
TOWN OF APEX STANDARDS PRECAST MANHOLE TRAFFIC RATED STD. NO. 700.04 SHEET 1 OF 3



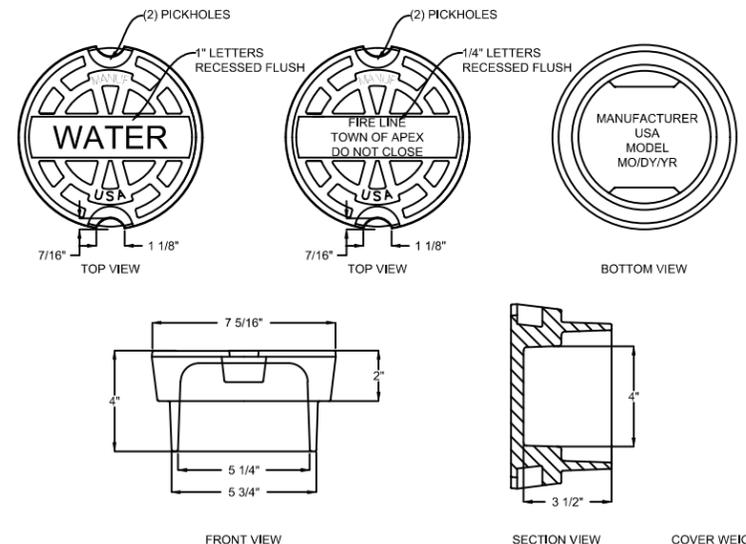
TOWN OF APEX STANDARDS MANHOLE RING & COVER (TYPE 1 - PAVED AREAS, H-20 RATED) STD. NO. 700.05 SHEET 1 OF 2



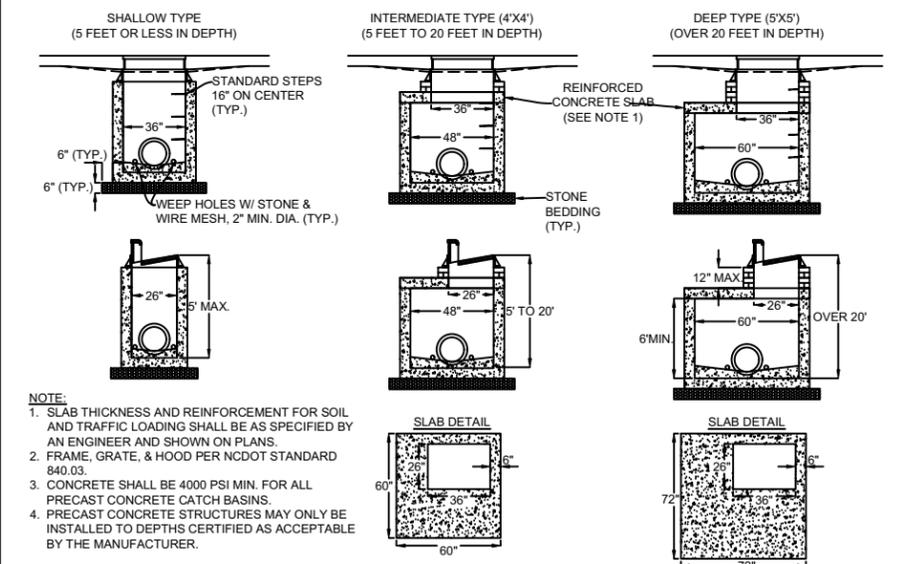
TOWN OF APEX STANDARDS MANHOLE RING & COVER (ROTATING WATERTIGHT - TYPE 2 - NON-TRAFFIC ONLY) STD. NO. 700.05 SHEET 2 OF 2



TOWN OF APEX STANDARDS VALVE BOX INSTALLATION STD. NO. 600.08 SHEET 1 OF 1



TOWN OF APEX STANDARDS VALVE COVER STD. NO. 600.09 SHEET 1 OF 1



TOWN OF APEX STANDARDS PRECAST CATCH BASIN DETAIL STD. NO. 500.05 SHEET 1 OF 1

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PROJECT ENGINEER:	B. PORTER				
DESIGNED BY:	S. NASH				
DRAWN BY:	S. NASH				
CHECKED BY:	M. SANTOWASSO				
1	REGULATORY REVIEW	11/2023	BYP	IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"
REV	ISSUED FOR	DATE	BY		

FINAL DESIGN - DO NOT USE FOR CONSTRUCTION

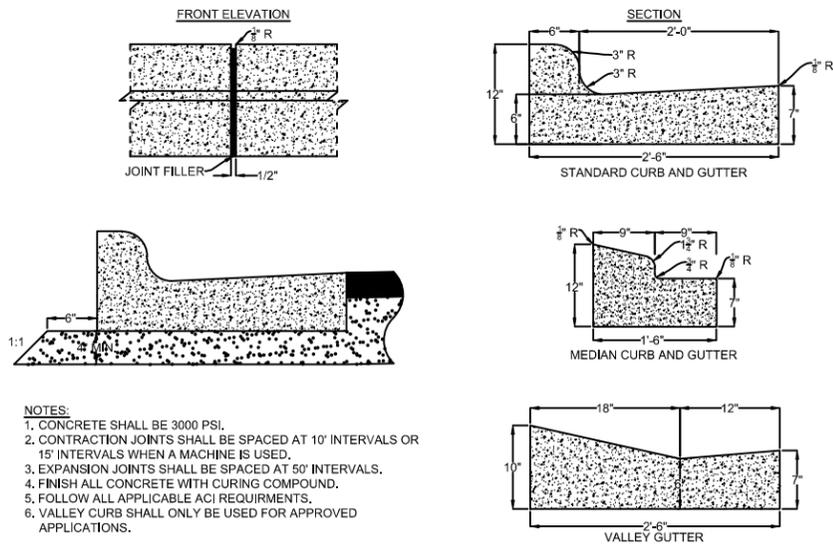
Hazen
HAZEN AND SAWYER
4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

CIVIL
STANDARD DETAILS

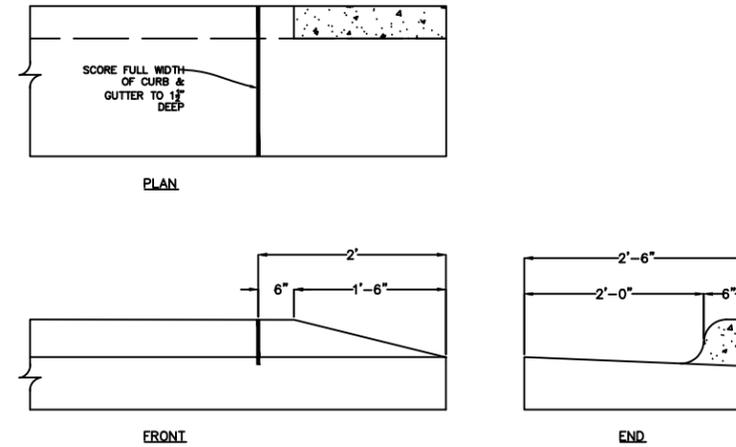
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HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	

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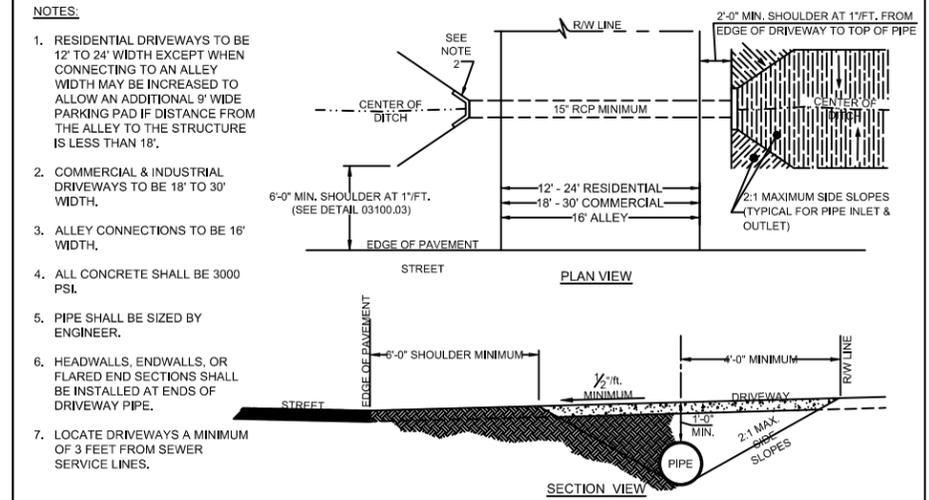


- NOTES:**
1. CONCRETE SHALL BE 3000 PSI.
 2. CONTRACTION JOINTS SHALL BE SPACED AT 10' INTERVALS OR 15' INTERVALS WHEN A MACHINE IS USED.
 3. EXPANSION JOINTS SHALL BE SPACED AT 50' INTERVALS.
 4. FINISH ALL CONCRETE WITH CURING COMPOUND.
 5. FOLLOW ALL APPLICABLE ACI REQUIREMENTS.
 6. VALLEY CURB SHALL ONLY BE USED FOR APPROVED APPLICATIONS.

TOWN OF APEX STANDARDS	CONCRETE CURB AND GUTTER	STD. NO. 300.03
EFFECTIVE: FEBRUARY 28, 2023		SHEET 1 OF 1

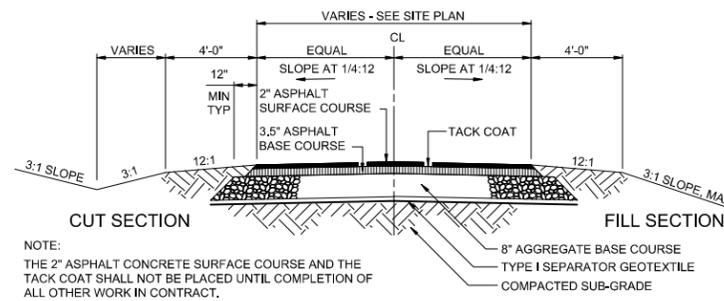


TOWN OF APEX STANDARDS	METHOD OF ENDING CURB	STD. NO. 300.05
EFFECTIVE: DECEMBER 3, 2002		SHEET 1 OF 1



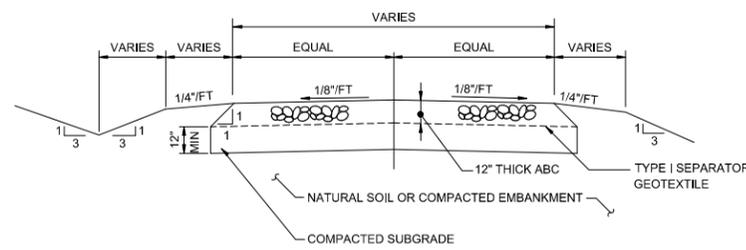
- NOTES:**
1. RESIDENTIAL DRIVEWAYS TO BE 12' TO 24' WIDTH EXCEPT WHEN CONNECTING TO AN ALLEY WIDTH MAY BE INCREASED TO ALLOW AN ADDITIONAL 9' WIDE PARKING PAD IF DISTANCE FROM THE ALLEY TO THE STRUCTURE IS LESS THAN 18'.
 2. COMMERCIAL & INDUSTRIAL DRIVEWAYS TO BE 18' TO 30' WIDTH.
 3. ALLEY CONNECTIONS TO BE 16' WIDTH.
 4. ALL CONCRETE SHALL BE 3000 PSI.
 5. PIPE SHALL BE SIZED BY ENGINEER.
 6. HEADWALLS, ENDWALLS, OR FLARED END SECTIONS SHALL BE INSTALLED AT ENDS OF DRIVEWAY PIPE.
 7. LOCATE DRIVEWAYS A MINIMUM OF 3 FEET FROM SEWER SERVICE LINES.

TOWN OF APEX STANDARDS	DRIVEWAY APRON (NO CURB & GUTTER)	STD. NO. 300.07
EFFECTIVE: APRIL 12, 2022		SHEET 2 OF 2

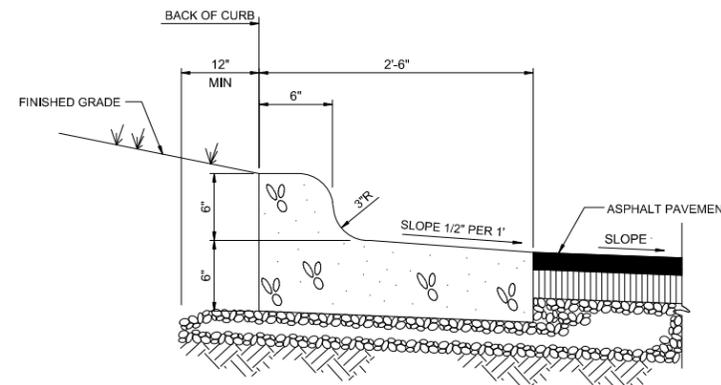


- NOTE:**
 THE 2" ASPHALT CONCRETE SURFACE COURSE AND THE TACK COAT SHALL NOT BE PLACED UNTIL COMPLETION OF ALL OTHER WORK IN CONTRACT.

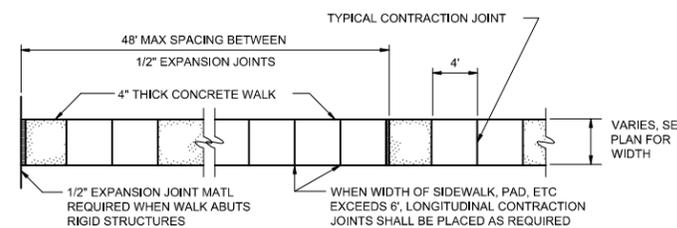
TYPICAL ROADWAY SECTION
C-32-0551



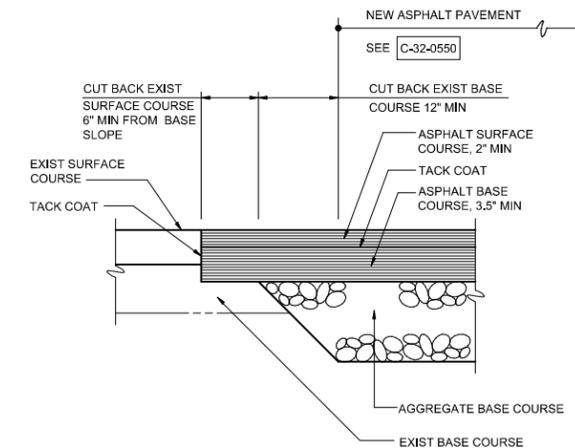
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C-32-0553



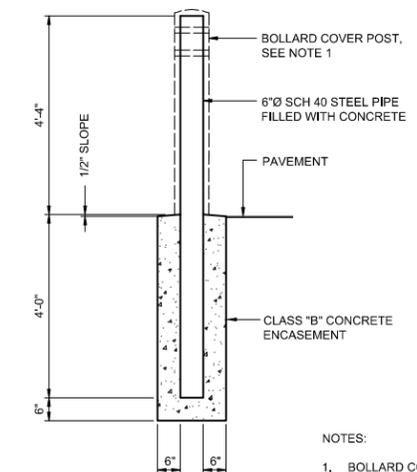
SPILL-OUT CURB AND GUTTER
C-32-0532



TYPICAL CONCRETE WALKWAY
C-32-0520



TYPICAL PAVEMENT JUNCTION
C-32-0556



- NOTES:**
1. BOLLARD COVER SHALL BE POST GUARD MODEL CL1386F 7'Øx52" HIGH, YELLOW WITH REFLECTIVE RED STRIPES, OR APPROVED EQUAL AND SECURED TO STEEL PIPE WITH COMPRESSIVE FOAM STRIPS.

BOLLARD TYPE 1
C-32-0540

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PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	S. NASH
DRAWN BY:	S. NASH
CHECKED BY:	M. SANTOWASSO
REGULATORY REVIEW	11/2023
ISSUED FOR	DATE
BY	BY

FINAL DESIGN -
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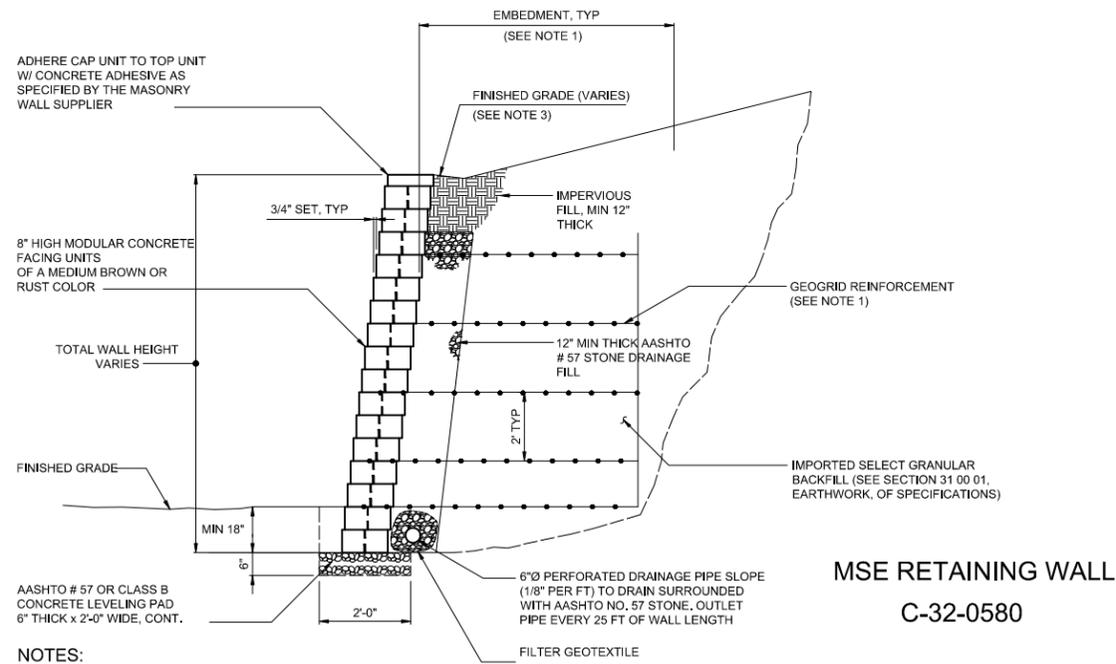
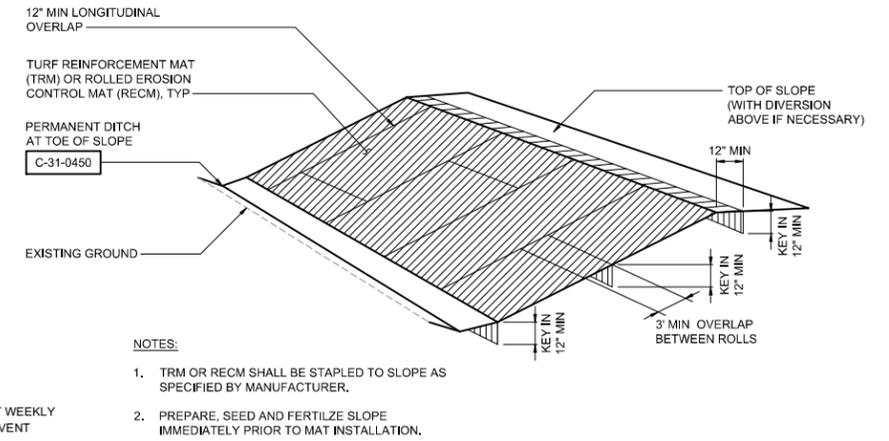
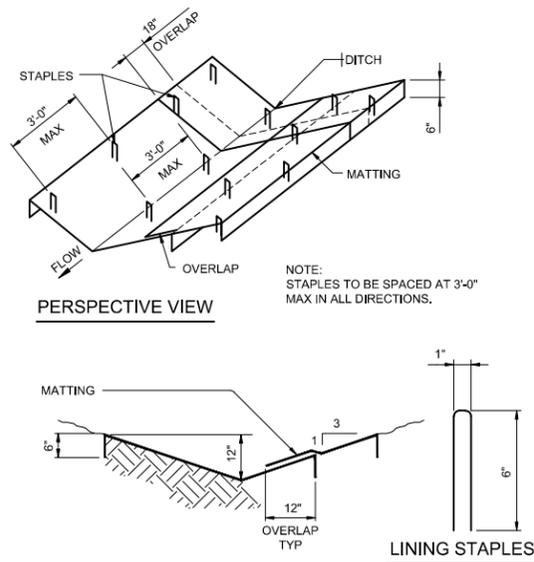
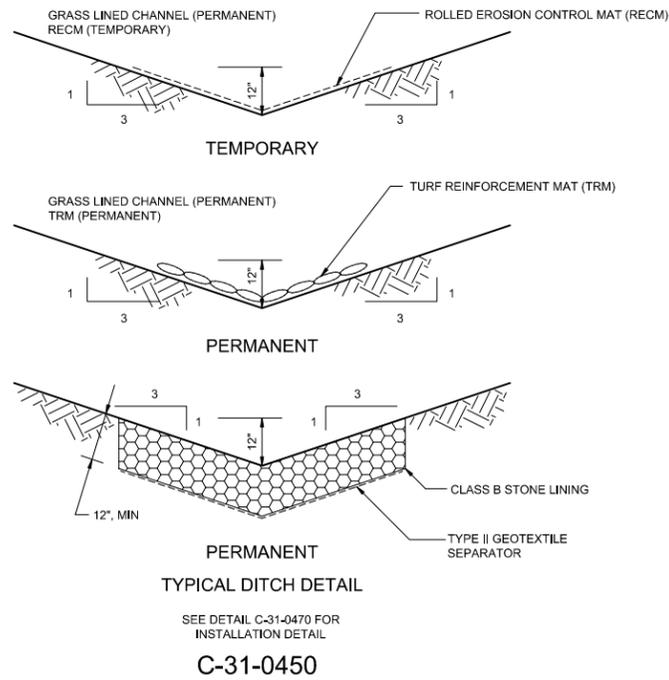
Hazen
 HAZEN AND SAWYER
 4011 WESTCHASE BLVD. SUITE 500,
 RALEIGH, NC 27607
 LICENSE No.: C-0381

APEX
 NORTH CAROLINA
 BIG BRANCH 2
 PUMP STATION

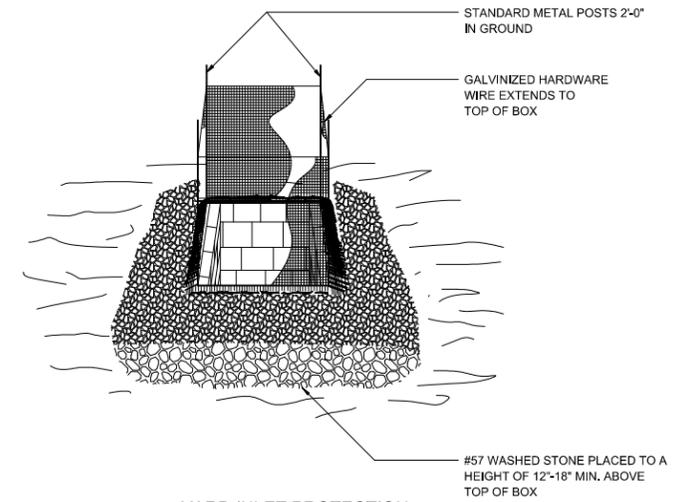
CIVIL
 STANDARD DETAILS

DATE:	APRIL 2024
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	

CD7



- NOTES:**
- GEOGRID REINFORCEMENT MATERIAL AND EMBEDMENT LENGTH TO BE ESTABLISHED BY PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA BASED UPON CURRENT AND PROJECTED LOADINGS AND PROPER DRAINAGE. MINIMUM GEOGRID LENGTH TO BE 0.75 TIMES THE MAXIMUM WALL HEIGHT AND TO BE UNIFORM FOR ALL LAYERS. SEE SPECIFICATION 31 34 19.13.
 - WALL BACKFILL MATERIAL USED IN DESIGN SHALL BE ON-SITE MATERIAL OR MATERIAL MATCHING WALL DESIGN PARAMETERS SHALL BE SUPPLIED BY CONTRACTOR AT NO ADDITIONAL COST. IT SHOULD BE ASSUMED BACKFILL MATERIAL IS NOT AVAILABLE ON SITE. SEE SPECIFICATION SECTION 32 32 35 FOR BACKFILL SPECIFICATIONS.
 - PROVIDE POSITIVE DRAINAGE AWAY FROM BACK OF WALL.
 - INCLUDE SUBGRADE LOADING FOR PARKING AREA WHERE APPLICABLE. DESIGN TO ACCOMMODATE H-20 LOADING AS MINIMUM.



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PROJECT ENGINEER:	B. PORTER				
DESIGNED BY:	S. NASH				
DRAWN BY:	S. NASH				
CHECKED BY:	M. SANTOWASSO				
1	REGULATORY REVIEW	11/2023	BYP	IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"
REV	ISSUED FOR	DATE	BY		

FINAL DESIGN -
DO NOT USE FOR
CONSTRUCTION

Hazen

HAZEN AND SAWYER
4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

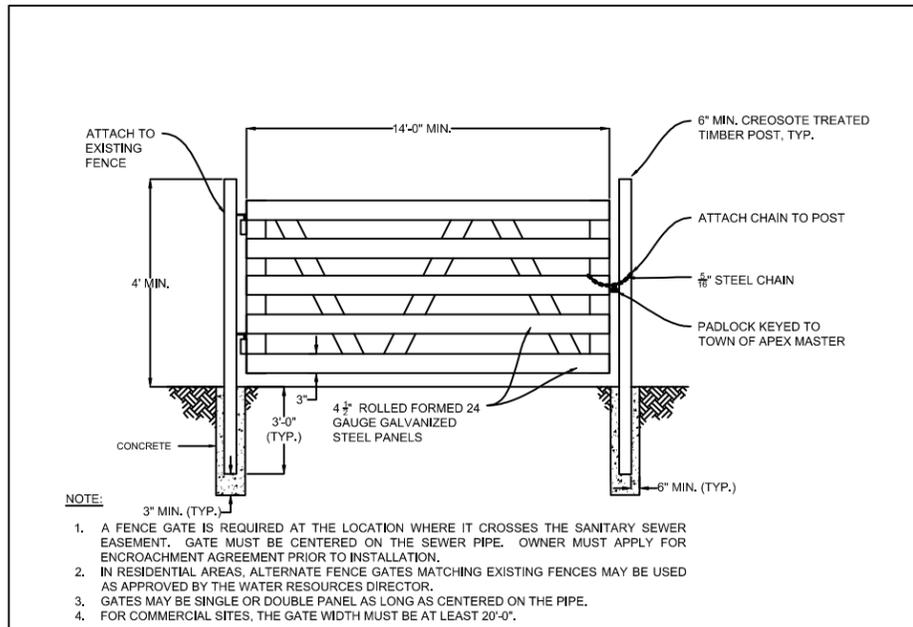
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NORTH CAROLINA

BIG BRANCH 2
PUMP STATION

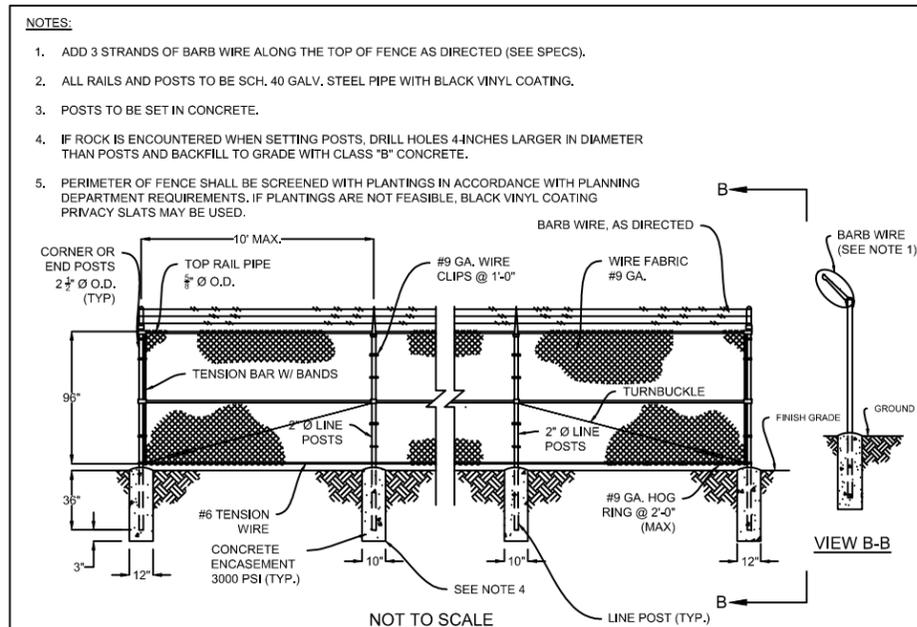
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STANDARD DETAILS

DATE:	APRIL 2024
HAZEN NO.:	32044-004
CONTRACT NO.:	1
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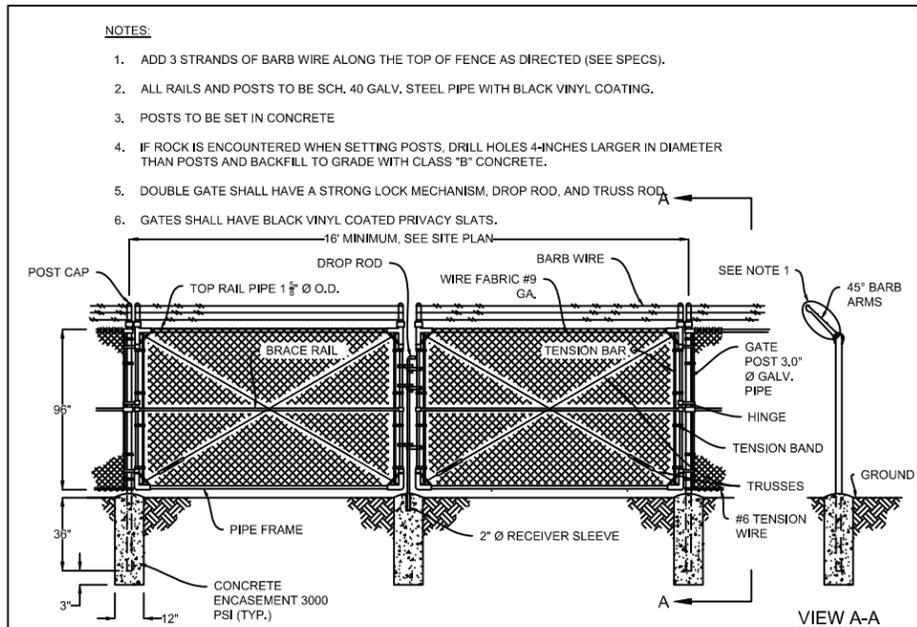
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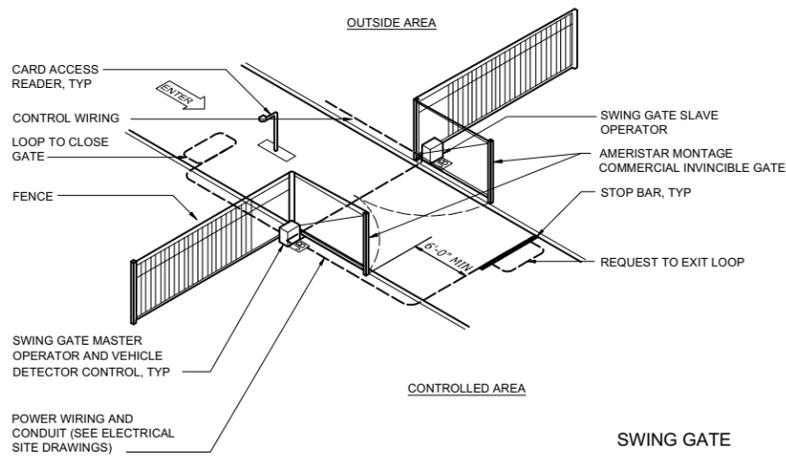
TOWN OF APEX STANDARDS	TYPICAL EASEMENT FENCE GATE	STD. NO.
EFFECTIVE: APRIL 12, 2022		700.20
		SHEET 1 OF 1



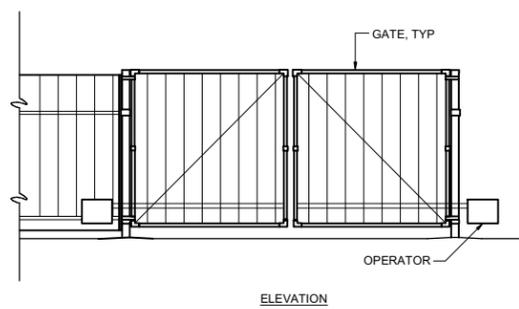
TOWN OF APEX STANDARDS	TYPICAL CHAIN LINK FENCE	STD. NO.
EFFECTIVE: FEBRUARY 28, 2023		800.07
		SHEET 1 OF 1



TOWN OF APEX STANDARDS	TYPICAL SECURITY DOUBLE GATE	STD. NO.
EFFECTIVE: MARCH 23, 2021		800.08
		SHEET 1 OF 1



SWING GATE
C-32-0511



NOTES:
1. SEE SPECIFICATION 32 31 13 AND 32 31 19 FOR ADDITIONAL INFORMATION.

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PROJECT ENGINEER:	B. PORTER				
DESIGNED BY:	S. NASH				
DRAWN BY:	S. NASH				
CHECKED BY:	M. SANTOWASSO				
1	REGULATORY REVIEW	11/2023	BYP	IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"
REV	ISSUED FOR	DATE	BY		

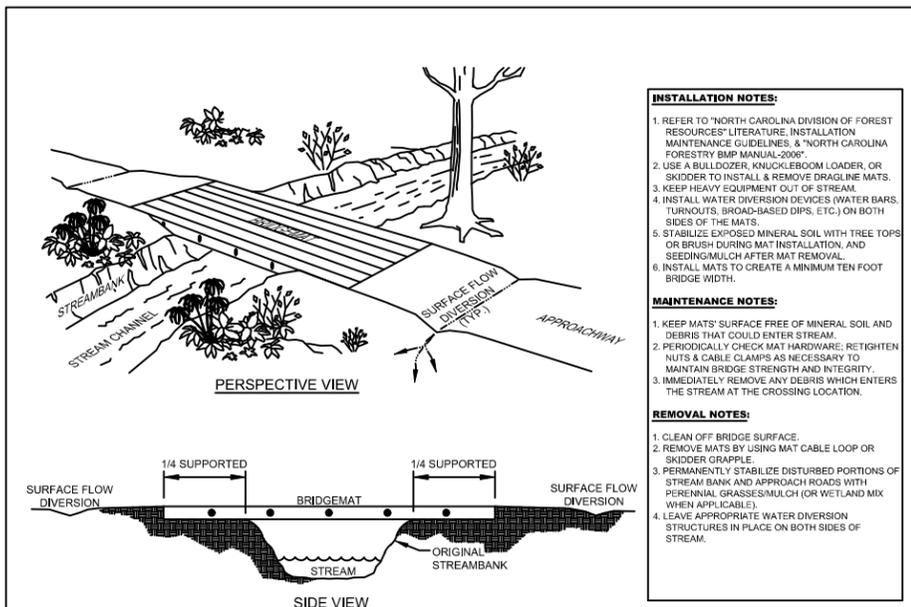
FINAL DESIGN -
DO NOT USE FOR
CONSTRUCTION

Hazen
HAZEN AND SAWYER
4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

CIVIL
STANDARD DETAILS

DATE:	APRIL 2024
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	CD9

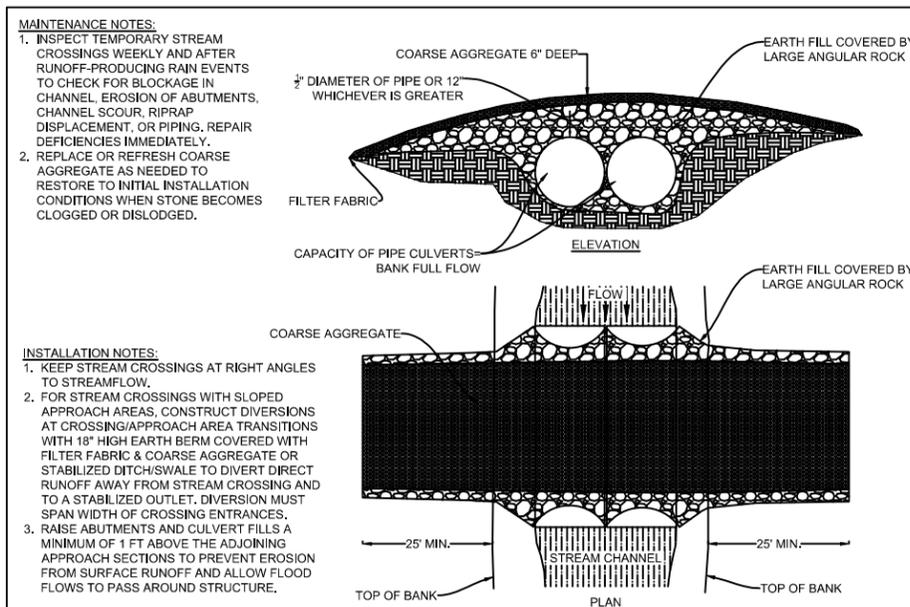


- INSTALLATION NOTES:**
- REFER TO "NORTH CAROLINA DIVISION OF FOREST RESOURCES" LITERATURE, INSTALLATION MAINTENANCE GUIDELINES, & "NORTH CAROLINA FORESTRY BMP MANUAL-2006".
 - USE A BULLDOZER, KNICKERBOOM LOADER, OR SKIDDER TO INSTALL & REMOVE DRAGLINE MATS.
 - KEEP HEAVY EQUIPMENT OUT OF STREAM.
 - INSTALL WATER DIVERSION DEVICES (WATER BARS, TURNOUTS, BROAD-BASED DIPS, ETC.) ON BOTH SIDES OF THE MATS.
 - STABILIZE EXPOSED MINERAL SOIL WITH TREE TOPS OR BRUSH DURING MAT INSTALLATION, AND SEEDING/MULCH AFTER MAT REMOVAL.
 - INSTALL MATS TO CREATE A MINIMUM TEN FOOT BRIDGE WIDTH.

- MAINTENANCE NOTES:**
- KEEP MATS SURFACE FREE OF MINERAL SOIL AND DEBRIS THAT COULD ENTER STREAM.
 - PERIODICALLY CHECK MAT HARDWARE; RETIGHTEN NUTS & CABLE CLAMPS AS NECESSARY TO MAINTAIN BRIDGE STRENGTH AND INTEGRITY.
 - IMMEDIATELY REMOVE ANY DEBRIS WHICH ENTERS THE STREAM AT THE CROSSING LOCATION.

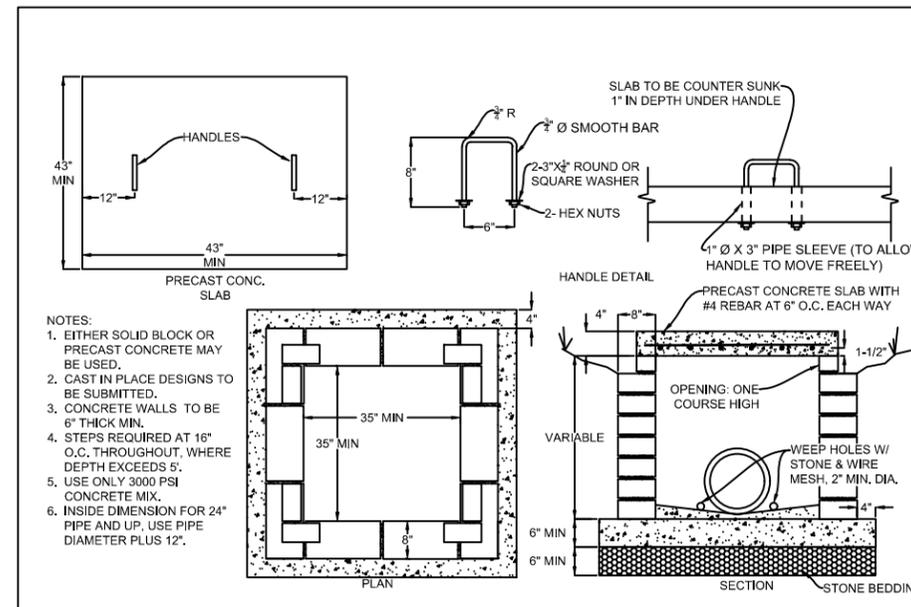
- REMOVAL NOTES:**
- CLEAN OFF BRIDGE SURFACE.
 - REMOVE MATS BY USING MAT CABLE LOOP OR SKIDDER GRAPPLE.
 - PERMANENTLY STABILIZE DISTURBED PORTIONS OF STREAM BANK AND APPROACH ROADS WITH PERENNIAL GRASSES/MULCH (OR WETLAND MIX WHEN APPLICABLE).
 - LEAVE APPROPRIATE WATER DIVERSION STRUCTURES IN PLACE ON BOTH SIDES OF STREAM.

TOWN OF APEX STANDARDS	TEMPORARY STREAM CROSSING	STD. NO. 400.11
EFFECTIVE: JANUARY 20, 2015		SHEET 1 OF 2



- INSTALLATION NOTES:**
- KEEP STREAM CROSSINGS AT RIGHT ANGLES TO STREAMFLOW.
 - FOR STREAM CROSSINGS WITH SLOPED APPROACH AREAS, CONSTRUCT DIVERSIONS AT CROSSING/APPROACH AREA TRANSITIONS WITH 18" HIGH EARTH BERM COVERED WITH FILTER FABRIC & COARSE AGGREGATE OR STABILIZED DITCH/SWALE TO DIVERT DIRECT RUNOFF AWAY FROM STREAM CROSSING AND TO A STABILIZED OUTLET. DIVERSION MUST SPAN WIDTH OF CROSSING ENTRANCES.
 - RAISE ABUTMENTS AND CULVERT FILLS A MINIMUM OF 1 FT ABOVE THE ADJOINING APPROACH SECTIONS TO PREVENT EROSION FROM SURFACE RUNOFF AND ALLOW FLOOD FLOWS TO PASS AROUND STRUCTURE.

TOWN OF APEX STANDARDS	TEMPORARY STREAM CROSSING	STD. NO. 400.11
EFFECTIVE: JUNE 11, 2024		SHEET 2 OF 2



- NOTES:**
- EITHER SOLID BLOCK OR PRECAST CONCRETE MAY BE USED.
 - CAST IN PLACE DESIGNS TO BE SUBMITTED.
 - CONCRETE WALLS TO BE 6" THICK MIN.
 - STEPS REQUIRED AT 16" O.C. THROUGHOUT, WHERE DEPTH EXCEEDS 5'.
 - USE ONLY 3000 PSI CONCRETE MIX.
 - INSIDE DIMENSION FOR 24" PIPE AND UP, USE PIPE DIAMETER PLUS 12".

TOWN OF APEX STANDARDS	YARD INLET W/ CONCRETE SLAB	STD. NO. 500.01
EFFECTIVE: DECEMBER 18, 2012		SHEET 1 OF 1

SEEDING SCHEDULE

APPLICATION RATES IN POUNDS/ACRE

SEED*** MIXTURE	PLANTING SEASON	LIME*	SEED	FERTILIZER*	STRAW MULCH*	TOPDRESSING (LB/AC)*	COMMENTS
P	FEB 15 - APRIL 30 SEPT 1 - OCT 31	4000	150	1000	4000	700-1000 OF 10-10-10 60 OF NITROGEN	
TW	JAN 1-MAY 1	2000	170	750	4000		OVERSEED WITH TYPE P SEED MIXTURE DURING NEXT PLANTING SEASON
TS	MAY 1 - AUG 15	2000	40	750	4000		OVERSEED WITH TYPE P SEED MIXTURE DURING NEXT PLANTING SEASON
TF	AUG 15 - DEC 30	2000	120	1,000	4000	50 OF NITROGEN IN MARCH	OVERSEED WITH TYPE P SEED MIXTURE DURING NEXT PLANTING SEASON

* LIME SHALL BE APPLIED AT A MINIMUM OF 2 TONS PER ACRE WITH 3 TONS PER ACRE IN CLAY SOILS. APPLICATION RATES AND/OR CHEMICAL ANALYSIS SHALL BE CONFIRMED OR ESTABLISHED BY SOIL TEST. TACK MULCH BY APPLYING AT 0.10 GAL/YD²

** FERTILIZER SHALL BE 10-10-10 ANALYSIS.

*** SEED MIXTURES TO BE USED ON THE PROJECT SHALL BE AS FOLLOWS:

- P - PERMANENT SEEDING (LB/AC)
150 KY-31 TALL FESCUE
- TF - TEMPORARY FALL SEEDING (LB/AC)
120 RYE (GRAIN)
- TW - TEMPORARY WINTER SEEDING (LB/AC)
40 GERMAN PEARL OR BROWN TOP MILLET
- TS - TEMPORARY SUMMER SEEDING (LB/AC)
120 RYE GRAIN

Seed Mixture	Planting Season	Total Seed (lb/ac)	Lime/Fertilizer (lb/ac)	Comments
P	Aug 15 - May 1	15 (pure live seed) ^a	Soil test ^b	Over-seed Type P seed mixture if planting outside of recommended planting season
TS	May 1-Aug. 15	10	Soil test ^b	Over-seed with Type P seed mixture
TW	Aug. 15-May 1	30	Soil test ^b	Over-seed with Type P seed mixture

- P^{c,d}
- 20% Baptisia spp. (*Baptisia ostralis*)
 - 20% River Oats (*Chasmanthium latifolium*)
 - 20% Bushy Bluestem (*Andropogon glomeratus*)
 - 8% Deertongue (*Dichanthelium clandestinum*)
 - 8% Little Bluestem (*Schizachyrium scoparium*)
 - 6% New York Ironweed (*Vernonia noveboracensis*)
 - 6% Purple Coneflower (*Echinacea purpurea*)
 - 6% Virginia Wildrye (*Elymus virginicus*)
 - 6% Soft Rush (*Juncus effusus*)

- TS
- Browntop Millet (*Urochloa ramosa*)
 - German Millet (*Setaria italica*)

- TW
- Wild Rye (*Elymus canadensis*)
 - Wheat (*Triticum aestivum*)

Note: P - Permanent Seeding
TS - Temporary Summer Seeding
TW - Temporary Fall, Winter, and Spring Seeding

Footnotes:

- a. Actual quantity of bulk seed is larger, and is calculated as the required pure live seed divided by both the germination and purity. Ensure seeds are properly stratified, if applicable, in order to achieve germination noted on seed tag.
- b. Application rates of lime and fertilizer shall be confirmed or established by soil test
- c. Acceptable substitutes per Section 6.24 of the NC Erosion and Sedimentation Control Planning and Design Manual must be approved by engineer. A total of nine species or more must be used in riparian areas.

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PROJECT ENGINEER:	B. PORTER				
DESIGNED BY:	S. NASH				
DRAWN BY:	S. NASH				
CHECKED BY:	M. SANTOWASSO				
1	REGULATORY REVIEW	11/2023	BYP	IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"
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Hazen

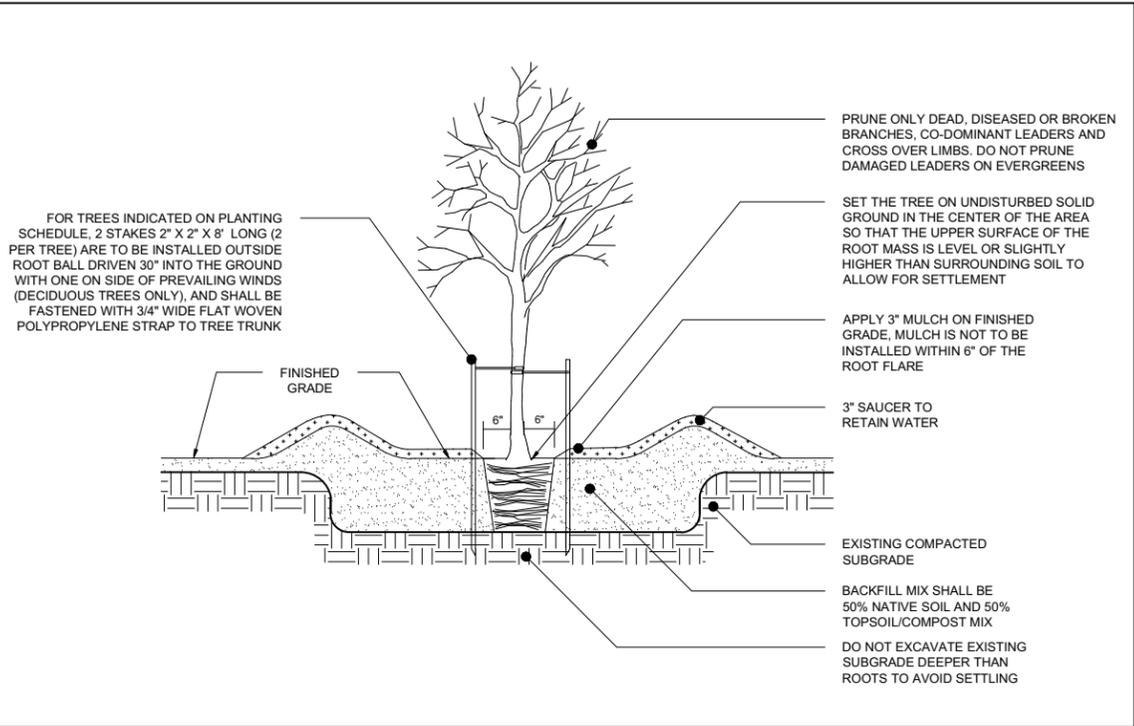
HAZEN AND SAWYER
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APEX
NORTH CAROLINA

BIG BRANCH 2
PUMP STATION

CIVIL
STANDARD DETAILS

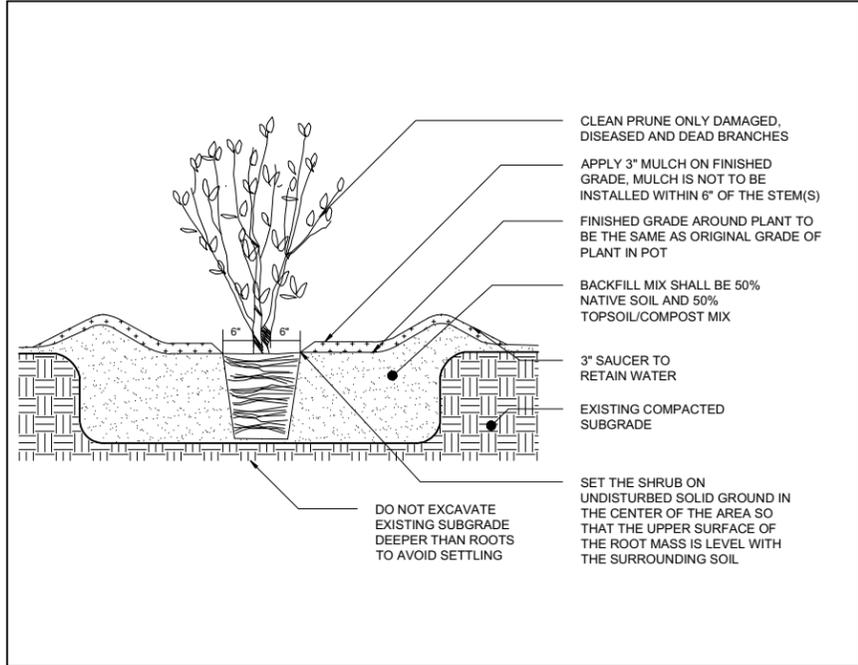
DATE:	APRIL 2024
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	
	CD10



NOTES:

1. PRUNING, IF NECESSARY, SHALL BE DONE BY A CERTIFIED ARBORIST.
2. NOTIFY ENGINEER IF IMPERVIOUS OR UNACCEPTABLE NATIVE SOIL TO BE REMOVED IS ENCOUNTERED IN TREE PIT LOCATIONS.
3. ROTOTILL/CULTIVATE SOILS TO A DEPTH EQUAL TO THE DEPTH OF ROOT BALL AND TWO TIMES THE DIAMETER OF THE ROOT BALL.
4. TAMP SOIL IN 6" LAYERS AROUND ROOT BALL AND WATER THOROUGHLY AFTER PLANTING. WATER THOROUGHLY AFTER EXCAVATION AND AFTER PLANT INSTALLATION.
5. COMPLETELY UNWRAP OR CUT GIRDLING ROOTS. DO NOT DAMAGE MAIN ROOTS OR ROOT BALL WHEN INSTALLING TREE.
6. FOR CONTAINER: REMOVE ROOT BALL FROM CONTAINER. LOOSEN POT-BOUND, SPIRALLY-GROWING ROOTS. FOR B&B: CUT TWINE AND REMOVE BURLAP AND WIRE BASKET.
7. REMOVE AND DISPOSE OF ALL NON-BIODEGRADABLES FROM PLANTING HOLES AND ROOT BALL.
8. REMOVE STAKES AFTER FIRST YEAR.

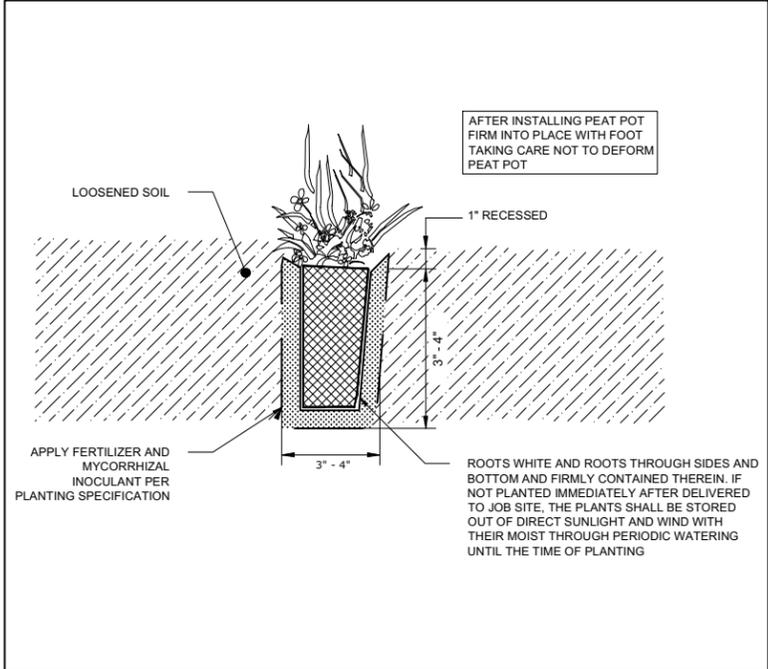
1 TYPICAL TREE PLANTING
N.T.S.



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3. ROTOTILL/CULTIVATE SOILS TO A DEPTH EQUAL TO THE DEPTH OF ROOT BALL AND TWO TIMES THE DIAMETER OF THE ROOT BALL.
4. TAMP SOIL IN 6" LAYERS AROUND ROOT BALL AND WATER THOROUGHLY AFTER PLANTING. WATER THOROUGHLY AFTER EXCAVATION AND AFTER PLANT INSTALLATION.
5. CONTAINER: REMOVE ROOT BALL FROM CONTAINER. LOOSEN POT-BOUND, SPIRALLY-GROWING AND GIRDLING ROOTS. B&B: CAREFULLY REMOVE TOP 1/3 OF BURLAP. CUT SEVERAL SLITS IN BURLAP TO FACILITATE ROOT PENETRATION.
6. REMOVE AND DISPOSE OF ALL NON-BIODEGRADABLES FROM PLANTING HOLES AND ROOT BALL.

2 SHRUB PLANTING
N.T.S.



NOTES:

1. ALL PLASTIC WRAP SHALL BE REMOVED PRIOR TO PLANTING.

3 HERBACEOUS AND PERENNIAL PLANTING
N.T.S.

File: C:\USERS\SNASH\SHDC\CD\CD\SHAZEN AND SAWYER\32044-004_BIG BRANCH 2 PUMP STATION AND PIPELINES\PROJECT FILES\CIVIL\CD12 Saved by: SNASH Save date: 4/6/2024 1:24 AM PLOT DATE: 7/5/2024 10:42 AM BY: SNASH

PROJECT ENGINEER:	B. PORTER				
DESIGNED BY:	E. MOSKALENKO				
DRAWN BY:	E. MOSKALENKO				
CHECKED BY:	S. NASH				
1	REGULATORY REVIEW	11/2023	BYP	IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"
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APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

CIVIL
LANDSCAPE DETAILS

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CONTRACT NO.:	1
DRAWING NUMBER:	CD12