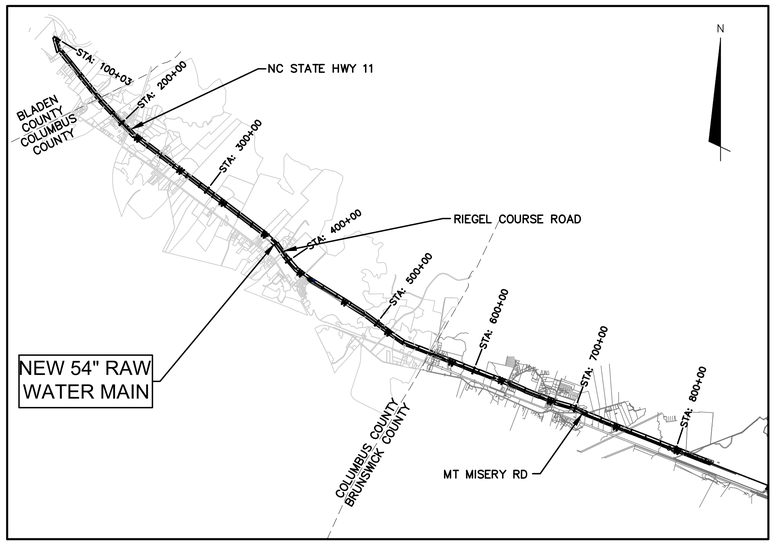
KINGS BLUFF
54" RAW WATER TRANSMISSION MAIN

McKim & Creed Project #05367-0038

ISSUED FOR BID -
NOT FOR CONSTRUCTION
JUNE 2019



VICINITY MAP
NOT TO SCALE

NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W BOAHN
6-27-19

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KINGS BLUFF RAW WATER TRANSMISSION MAIN
5367-0038
JUNE 2019

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NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOAHN
6-27-19

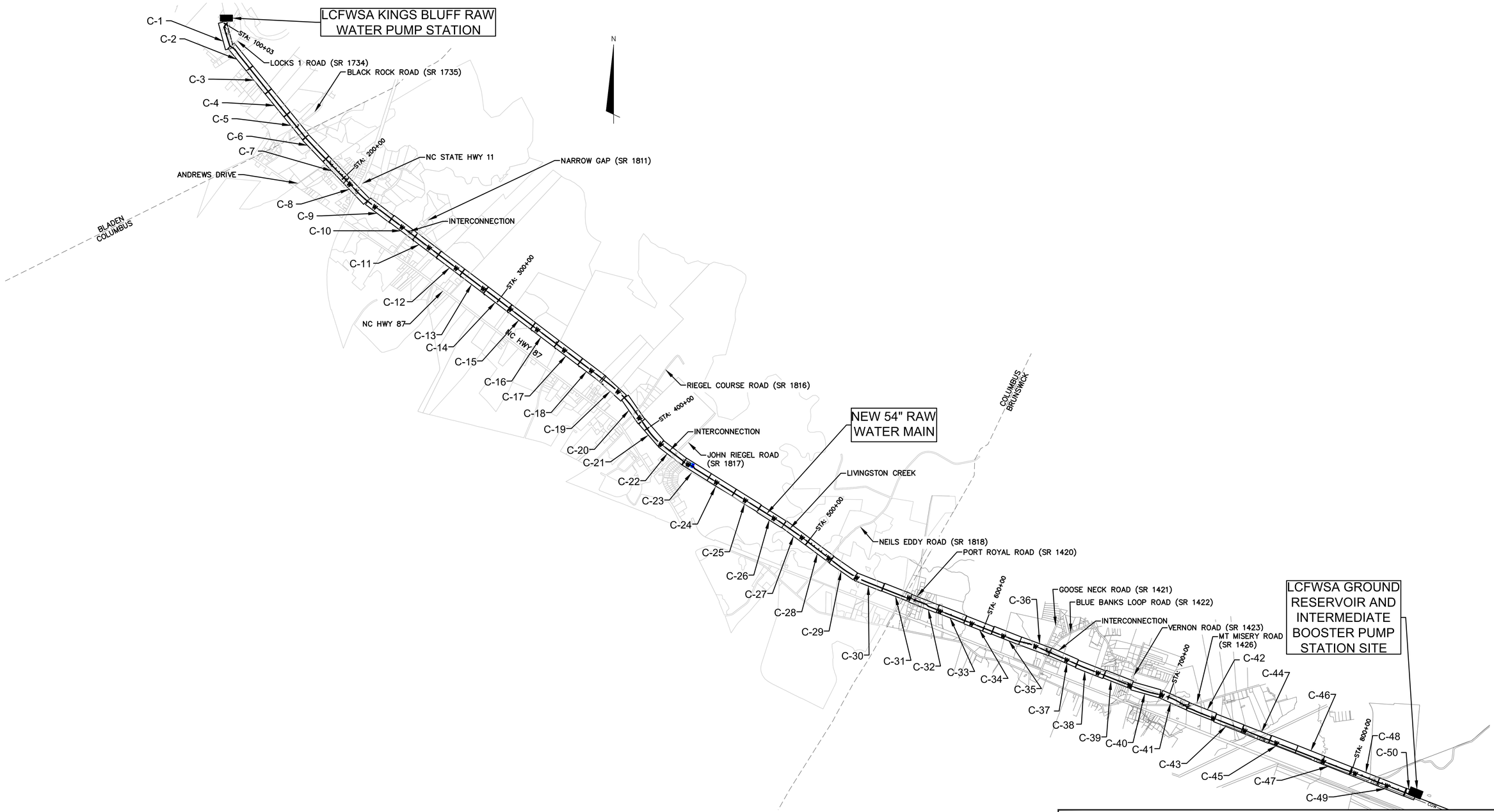
INDEX SHEET

CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

SHEET NO: **G-1A**



KEY SHEET

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REV:	DESCRIPTION	DATE:
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NORTH CAROLINA PROFESSIONAL SEAL 025912 ENGINEER ANTHONY W. BOAHN
6-2779

CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

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DATE: JUNE 2019
SCALE: AS SHOWN
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PROJECT NO. : 5367-0038

SHEET NO: G-2

NOTES:

1. ALL WORK SHALL COMPLY WITH APPLICABLE STATE, FEDERAL, AND LOCAL CODES, AND ALL NECESSARY LICENSES AND PERMITS SHALL BE OBTAINED BY THE CONTRACTOR AT HIS EXPENSE, UNLESS PREVIOUSLY OBTAINED BY THE OWNER AND PROVIDED AT THE PRE CONSTRUCTION CONFERENCE.

2. DEVIATION FROM THESE PLANS AND NOTES WITHOUT THE PRIOR WRITTEN CONSENT BY THE OWNER OR HIS REPRESENTATIVE OR THE ENGINEER MAY BE CAUSE FOR WORK TO BE UNACCEPTABLE.

3. ALL PIPE LINE CONSTRUCTION SHALL CONFORM TO NCDEQ REGULATIONS, AND TO CAPE FEAR PUBLIC UTILITY AUTHORITY TECHNICAL STANDARDS, AND SPECIFICATIONS.

4. ALL PIPE LENGTHS AND DISTANCES BETWEEN STRUCTURES ARE MEASURED FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE ALONG A HORIZONTAL PLANE.

5. LOCATIONS OF EXISTING SHOWN UTILITIES ARE APPROXIMATE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE SIZE, DEPTH, MATERIAL, AND LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION AND TO TAKE WHATEVER STEPS ARE NECESSARY TO PROVIDE FOR THEIR PROTECTION. THE ENGINEER HAS ATTEMPTED TO LOCATE AND INDICATE ALL EXISTING UTILITIES ON THE PLANS; HOWEVER, THIS INFORMATION IS SHOWN FOR THE CONTRACTOR'S CONVENIENCE ONLY. THE ENGINEER AND THE OWNER ASSUME NO RESPONSIBILITY FOR THE LOCATIONS OF UTILITIES SHOWN OR NOT SHOWN. AT LEAST 48 HOURS PRIOR TO DIGGING ON OR OFF SITE, THE CONTRACTOR SHALL HAVE ALL UTILITIES LOCATIONS LOCATED BY "NC 811" 1-800-632-4949, THE CONTRACTOR SHALL CONTACT ANY UTILITY COMPANY WHOSE UTILITIES ARE NOT LOCATED BY "NC 811" FOR EXACT LOCATION OF THEIR UTILITIES PRIOR TO STARTING CONSTRUCTION. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR AND/OR REPLACE ANY AND ALL DAMAGE MADE TO UTILITIES BY THE CONTRACTOR TO EXISTING CONDITIONS AT THE CONTRACTOR'S EXPENSE.

6. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY SHOULD ANY FIELD CONDITIONS BE ENCOUNTERED THAT VARY FROM THE INFORMATION PROVIDED IN THE CONTRACT DOCUMENTS.

7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH DUKE ENERGY A MINIMUM OF 30 DAYS PRIOR TO CONSTRUCTION FOR ANY ADDITIONAL SUPPORT OR RELOCATION OF EXISTING POWER POLES AS REQUIRED FOR PIPELINE INSTALLATION. ALL COSTS OF SUCH WORK SHALL BE PAID BY THE CONTRACTOR. DUKE ENERGY DISTRIBUTION LINE REPRESENTATIVE: MR. JERRY PEARSEN (910) 602-4377. DUKE ENERGY TRANSMISSION LINE REPRESENTATIVE: MR. BILL WILDER (910) 772-4903).

8. ALL PAVEMENT CUTS SHALL BE SAW CUT ALONG A STRAIGHT CONTINUOUS EDGE, CUT THROUGH ENTIRE PAVEMENT SECTION. PAVEMENT OVERLAYS REQUIRED PER NCDOT STANDARDS.

9. TRAFFIC ISLANDS, CURBS AND CONCRETE DRIVEWAYS SHALL BE REPLACED TO THE FIRST EXPANSION JOINT BEYOND THE TRENCH EXCAVATION LIMITS AND TO THE FULL WIDTH. TRAFFIC ISLANDS, CURBS AND CONCRETE DRIVEWAYS SHALL MATCH EXISTING.

10. THE CONTRACTOR SHALL REMOVE AND REINSTALL ALL EXISTING FENCE AS REQUIRED FOR PIPE INSTALLATION. ANY ADDITIONAL FENCE MATERIALS REQUIRED SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

11. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL SHEETING REQUIRED FOR THE INSTALLATION OF THE UTILITY, ALL EXCAVATIONS SHALL BE KEPT WITHIN THE DESIGNATED RIGHT OF WAY OR EASEMENT WIDTHS, EXCAVATION WITHIN PAVED AREAS SHALL BE KEPT TO A MINIMUM. SHEETING SHALL BE INSTALLED AS REQUIRED TO PROTECT EXISTING UTILITIES.

12. CONTRACTOR SHALL PLAN AND CONSTRUCT WORK SO AS TO CAUSE MINIMUM INCONVENIENCE TO THE OWNER AND PUBLIC. THE CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL AND ERECT AND MAINTAIN AT ALL TIMES DURING CONSTRUCTION OR TEMPORARY SUSPENSION OF WORK, SUITABLE BARRIERS, FENCES, SIGNS OR OTHER ADEQUATE PROTECTION, INCLUDING FLAG MEN AND WATCHMEN AS NECESSARY TO INSURE THE SAFETY OF THE PUBLIC AS WELL AS THOSE ENGAGED IN THE CONSTRUCTION WORK. CONSTRUCTION SIGNAGE SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF "CONSTRUCTION AND MAINTENANCE OPERATIONS SUPPLEMENT TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" BY THE NCDOT.

13. CLEARING REQUIREMENTS AND/OR CLEARING LIMITS ARE NOT DEPICTED ON PLANS. CLEARING THAT IS NOT SHOWN ON PLANS WILL BE NECESSARY FOR CONSTRUCTION. CONTRACTOR SHALL FIELD VERIFY REQUIRED CLEARING PRIOR TO SUBMITTING A BID AND SHALL INCLUDE COST TO PERFORM ALL CLEARING NECESSARY FOR CONSTRUCTION OF THE PROJECT IN THE COST OF THE WORK. THEREFORE NO SEPARATE PAYMENT FOR CLEARING SHALL BE MADE. ALL MATERIAL CLEARED AND GRUBBED BY THE CONTRACTOR IN ORDER TO CONSTRUCT THE WORK, SUCH AS TREES, VEGETATION, FENCING, ETC., SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE PROPERLY DISPOSED OF OFF-SITE AT A STATE APPROVED DISPOSAL SITE. RECEIVE ENGINEER'S APPROVAL FOR ANY LANDSCAPE REMOVAL.

14. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL VIDEOTAPE PIPE LINE ALIGNMENT INCLUDING ALL DRIVEWAYS, SIDEWALKS, ETC., TO BE DISTURBED WITHIN THE PROJECT CONSTRUCTION AREA. ALL DISTURBED AREAS SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER. VIDEO SHALL BE SUBMITTED TO THE ENGINEER AND OWNER PRIOR TO THE START OF CONSTRUCTION.

15. CONTRACTOR SHALL MAINTAIN AN APPROPRIATE CONSTRUCTION ENTRANCE FOR INGRESS/EGRESS TO EACH PROPERTY AT ALL TIMES.

16. LIMITS OF CONSTRUCTION ARE SHOWN AS ALLOWED LIMITS OF DISTURBANCE AND DO NOT GRANT RIGHT OF ENTRY TO PRIVATE PROPERTY. CONTRACTOR TO SECURE RIGHT OF ENTRY FOR ALL PROPERTIES OUTSIDE OF EASEMENTS & PUBLIC RIGHT-OF-WAY WHICH WILL BE DISTURBED OR ENCROACHED UPON DURING CONSTRUCTION. WHERE THE CONTRACTOR DETERMINES THAT ENCROACHMENT ONTO PRIVATE PROPERTY IS NECESSARY, AND AN EASEMENT HAS NOT BEEN PROVIDED, THE CONTRACTOR SHALL CONTACT INDIVIDUAL PROPERTY OWNERS AND OBTAIN WRITTEN APPROVAL FOR THAT ENCROACHMENT.

17. THE CONTRACTOR SHALL PROVIDE ALL SURVEY WHERE NECESSARY FOR CONSTRUCTION. ANY EXISTING STAKE OUT OR BENCHMARKS SHALL NOT BE USED BY THE CONTRACTOR.

20. CONTRACTOR SHALL NOTIFY HOME AND BUSINESS OWNERS AT LEAST 14 DAYS PRIOR TO ANY CONSTRUCTION ACTIVITY THAT WILL TAKE PLACE IN THEIR AREA.

21. CONTRACTOR SHALL REMOVE, STORE AND REPLACE ALL CONFLICTING MAIL BOXES, CULVERTS, HEADWALL, ORNAMENTAL STRUCTURES, ETC. WITHIN THE RIGHT OF WAY. CONFLICTING TREES WITHIN THE RIGHT OF WAY SHALL BE REMOVED AS DIRECTED BY THE ENGINEER BUT NOT REPLACED.

22. EROSION AND SEDIMENTATION CONTROL DEVICES SHALL BE INSTALLED ACCORDING TO NORTH CAROLINA SEDIMENT AND EROSION CONTROL STANDARDS AND AS DIRECTED BY THE ENGINEER. ALL DEVICES SHALL BE MAINTAINED SUCH THAT THEY FUNCTION AS INTENDED. AFTER COMPLETION OF THE PROJECT THE CONTRACTOR SHALL REMOVE ALL EROSION CONTROL DEVICES WHERE A GOOD STAND OF GRASS HAS BEEN ESTABLISHED AND EROSION IS NO LONGER EVIDENT. REMOVAL OF THE REMAINDER OF THE EROSION CONTROL DEVICES SHALL OCCUR AS OTHER AREAS ARE STABILIZED. REMOVAL OF THE EROSION CONTROL DEVICES SHALL BE PERMITTED ONLY WITH THE PRIOR APPROVAL OF THE ENGINEER. EROSION CONTROL DEVICES DEPICTED ON THE DRAWINGS ARE MINIMUM PERMIT REQUIREMENTS PER NCDEQ. CONTRACTOR SHALL PROVIDE ADDITIONAL EROSION CONTROL MEASURES AS REQUIRED TO CONTROL SEDIMENT FROM LEAVING THE SITE BASED ON HIS CONSTRUCTION ACTIVITIES.

23. ALL AREAS DISTURBED BY GRADING, EXCAVATION, AND GENERAL CONSTRUCTION SHALL BE SEEDED, MULCHED, AND RESTORED IN ACCORDANCE WITH NORTH CAROLINA SEDIMENT AND EROSION CONTROL STANDARDS.

24. EXISTING VEGETATION OUTSIDE OF THE CLEARING LIMITS TO REMAIN SHALL BE PROTECTED FROM DAMAGE.

25. ALL CONSTRUCTION ACTIVITY SHALL BE LIMITED TO PUBLIC RIGHT-OF-WAY AND OWNER OBTAINED EASEMENTS.

26. ANY AREAS THE CONTRACTOR UTILIZES FOR STOCKPILING SHALL HAVE ADEQUATE EROSION CONTROL MEASURES INSTALLED PER THE NORTH CAROLINA SEDIMENT AND EROSION CONTROL HANDBOOK. CONTRACTOR IS RESPONSIBLE FOR SECURING WRITTEN PERMISSION FROM PROPERTY OWNER PRIOR TO STOCKPILING MATERIAL.

27. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS CONSTRUCTION ACTIVITIES WITH THOSE OF OTHER CONTRACTORS AND OTHER ENTITIES INVOLVED IN ORDER TO ASSURE EFFICIENT AND ORDERLY INSTALLATION OF EACH PART OF THE WORK. COORDINATION CONFLICTS SHALL BE IMMEDIATELY DIRECTED TO THE ENGINEER.

28. THE CONTRACTOR SHALL NOT USE EXISTING SANITARY SEWERS AS A MEANS OF DEWATERING DURING CONSTRUCTION WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SURFACE WATER RUNOFF AND GROUND WATER FROM THE TRENCHES AND SHALL PROVIDE NECESSARY DEWATERING AND PUMPING EQUIPMENT FOR HANDLING THESE FLOWS DURING CONSTRUCTION. DEWATERING ACTIVITIES TO COMPLY WITH ALL FEDERAL, STATE, AND LOCAL LAWS. ANY ADDITIONAL PERMITS REQUIRED AS A RESULT OF DEWATERING ACTIVITIES ARE THE CONTRACTOR'S RESPONSIBILITY. ALL DEWATERING COSTS ARE CONSIDERED ANCILLARY TO THE COST OF WORK AND NO ADDITIONAL COMPENSATION WILL BE CONSIDERED FOR DEWATERING. EROSION CONTROL MEASURES SHOWN ON PLANS ARE DESIGNED FOR RAINFALL EVENTS ONLY AS PER NCDEQ REGULATIONS. ADDITIONAL MEASURES REQUIRED TO CONTAIN/CONTROL DEWATERING ACTIVITIES AND ASSOCIATED DISCHARGES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND INCLUDED IN THE COST OF THE WORK.

29. ANY AND ALL DISTURBED PROPERTY PINS SHALL BE RESET BY A PROFESSIONAL SURVEYOR LICENSED IN THE STATE OF NORTH CAROLINA.

30. EXISTING WATER & SEWER SERVICES DAMAGED AS A RESULT OF CONSTRUCTION SHALL BE REPAIRED/REPLACED/RELOCATED AS REQUIRED FOR CONSTRUCTION AT NO ADDITIONAL COST TO THE OWNER.

31. EXISTING SANITARY SEWER SYSTEMS SHALL REMAIN IN SERVICE AT ALL TIMES DURING CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK NECESSARY TO MAINTAIN FLOW THROUGH EXISTING SYSTEM DURING CONSTRUCTION (BYPASS PUMPING, PUMP & HAUL, PLUGS, ETC.) AT NO ADDITIONAL COST TO THE OWNER. BYPASS PUMPING PLAN MUST BE SUBMITTED PRIOR TO CONSTRUCTION AND APPROVED BEFORE LINE IS REMOVED FROM SERVICE.

32. CONTRACTOR SHALL HAVE ON SITE AT ALL TIMES REPAIR MATERIALS FOR ALL EXISTING PIPE LINES SHOWN ON THE PLANS. ALL REPAIR CLAMPS & HARDWARE MUST BE OF STAINLESS STEEL CONSTRUCTION.

33. NO PIPE JOINT SHALL EXCEED PIPE MANUFACTURER'S MAX. ALLOWABLE LIMITS FOR DEFLECTION OR CAPE FEAR PUBLIC UTILITY AUTHORITY'S MAX. ALLOWABLE DEFLECTION WHICHEVER IS LESS.

34. LIMITS OF CONSTRUCTION SHALL BE DEFINED AS WITHIN THE LIMITS OF DOT RIGHT-OF-WAY AND OWNER OBTAINED EASEMENTS DEPICTED ON THE DRAWINGS UNLESS OTHERWISE NOTED. ALL DAMAGES INCURRED AS A RESULT OF ACTIVITY OUTSIDE THE DESIGNED CONSTRUCTION LIMITS SHALL BE THE CONTRACTOR'S RESPONSIBILITY.

35. CONTRACTOR TO VERIFY SIZE, DEPTH, MATERIAL AND LOCATION FOR ALL UNDERGROUND UTILITIES PRIOR TO THE START OF CONSTRUCTION. TEST EXCAVATIONS TO DETERMINE SUCH INFORMATION SHALL BE DONE PRIOR TO CONSTRUCTION AT THE CONTRACTOR'S EXPENSE.

36. SEDIMENT & EROSION CONTROLS SHOWN ARE MINIMUM ALLOWABLE. CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION & MAINTENANCE OF ADDITIONAL SEDIMENT & EROSION CONTROLS AS REQUIRED TO COMPLY WITH ALL APPLICABLE FEDERAL, STATE & LOCAL LAWS.

37. BY SUBMITTING A BID THE CONTRACTOR ATTESTS THEY HAVE PERFORMED ALL SITE VERIFICATIONS AS REQUIRED TO BE CONFIDENT IN EXISTING CONDITIONS AND AS SUCH NO CLAIMS FOR ADDITIONAL PAYMENT SHALL BE CONSIDERED FOR FIELD CONDITIONS WHICH MAY DIFFER FROM WHAT IS SHOWN ON THE PLAN SHEETS.

38. SLOPES (INCLUDING CUTS, FILLS AND DITCH BANKS) THAT ARE STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL LEFT EXPOSED WILL, WITHIN SEVEN (7) CALENDAR DAYS AFTER COMPLETION OF ANY PHASE OF GRADING, BE PROVIDED WITH GROUNDCOVER. SLOPES THAT ARE 3 HORIZONTAL TO 1 VERTICAL OR FLATTER WILL BE PROVIDED WITH GROUNDCOVER WITHIN FOURTEEN (14) CALENDAR DAYS.

39. TEMPORARY CONSTRUCTION EXCAVATION SHORING SHALL COMPLY WITH LOCAL, STATE, & FEDERAL GOVERNING REGULATIONS, INCLUDING OSHA (29 CFR PART 1926) EXCAVATION TRENCH SAFETY STANDARDS.

40. STOCKPILES SHALL BE SETBACK A MINIMUM HORIZONTAL DISTANCE FROM THE TOP EDGE OF THE EXCAVATION EQUAL TO THE MAXIMUM DEPTH OF THE EXCAVATION, UNLESS A SHORING SYSTEM IS DESIGN BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NORTH CAROLINA TO HANDLE STOCKPILE SURCHARGE LOADS.

SYMBOL LEGEND

- FIRE HYDRANT
- LIGHT POLE
- POWER POLE
- GUY WIRE
- GAS VALVE
- EXISTING SANITARY SEWER MANHOLE
- SANITARY SEWER VALVE
- CLEANOUT
- CURB INLET (CI) OR CATCH BASIN (CB)
- GUTTER INLET (GI)
- STORM DRAIN MANHOLE
- YARD LIGHT
- ELECTRIC HANDHOLE
- FIBER OPTIC PEDESTAL
- FIBER OPTIC MARKER/FLAG
- MAILBOX
- CHECK DAM
- TURBIDITY CURTAIN
- IRF — IRON ROD FOUND
- WATER METER
- VALVE
- SIGN
- TELEPHONE PEDESTAL
- ELECTRICAL METER BOX
- TREE LINE/LANDSCAPING
- SILT FENCE
- CONTOUR
- SD — STORM PIPE
- T — UNDERGROUND TELEPHONE LINE
- FO — UNDERGROUND FIBER OPTIC LINE
- G — UNDERGROUND GAS MAIN
- X — FENCE
- W — WATERLINE
- GRAVITY SEWER MAIN
- OHE — OVERHEAD ELECTRIC LINE
- RIGHT OF WAY (SEE NOTE 18)
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- ALLOWABLE OPEN CUT TRENCH WIDTH
- DRIVEWAY/ROAD
- PT1-3 — GEOTECHNICAL BORING

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NORTH CAROLINA PROFESSIONAL SEAL 025912 ENGINEER ANTHONY W. BOARD
6-27-19

GENERAL NOTES AND LEGEND

CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

SHEET NO: G-3

Parcel ID on Plans	PARCEL NUMBER	DEED BOOK/PAGE	OWNER	ADDRESS
			BLADEN COUNTY	
1	221300282518	509/772	CAPE FEAR PUBLIC UTILITY AUTHORITY	235 GOVERNMENT CENTER DRIVE, WILMINGTON NC 28403
2	221300285931	113/050	CAPE FEAR PUBLIC UTILITY AUTHORITY	235 GOVERNMENT CENTER DRIVE, WILMINGTON NC 28403
3	221300184415	604/754, 95/105, 129/262, 113/262	ALEXANDER ALMA DANIEL	23835 NC 87 HWY EAST RIEGELWOOD NC 28456
4	221300279456	215/212	SNOWDEN GEORGE WASHINGTON	870 LOCKS RD. RIEGELWOOD NC 28456
5	221300367881	DEATH/CERT10 410/408	MACON BOBBY L	23338 NC HWY 87 EAST
6	221300455374	283/471	BREWER JAMES N	2340 BRYAN AVE. VENICE CA 90291
7	221300550097	478/518	CARTER HACKNEY & HUDSON LLC	102 OXFORD RD LUMBERTON NC 28358
8	221300544137	303/731-73	MYERS TILDA ANN BOLINGER	97 CORNWALLIS ROAD RIEGELWOOD NC 28456
9	221300535725	197/97	NC STATE HIGHWAY COMMISSION	PO BOX 197 RALEIGH NC 27604
10	221300536550	DEATH/CERT11	SANDERS OLIVIA B HEIRS	PO BIX 156 RIEGELWOOD NC 28456
11	221300532298	291/052	NEAL WILLIAM J ETUX EDITH	299 BLACKROCK ROAD RIEGELWOOD NC 28456
12	221300537164	291/052	BLANKS SHERMAN	PO BOX 957 RIEGELWOOD NC 28456
			COLUMBUS COUNTY	
13	2213.00-62-3775.000	387/860	BLANKS SHERMAN	PO BOX 957 RIEGELWOOD NC 28456
14	2213.00-72-7381.000		LANE JESSE B & VIRGENTA B	6407 S PLANK RD CAMERON NC 28326
16	2213.00-71-4642.000	479/504	GRAHAM LEON	421 ANDREWS DRIVE RIEGELWOOD NC 28456
17	2212.00-79-5417.000	534/98	F & J PROPERTIES	118 N CARDINAL DR. WILMINGTON NC 28405
18	2213.00-71-6564.000	1070/665	RAYNOR CASHA	324 WATERLINE WAY PO BOX 233 RIEGELWOOD NC 28456
20	2213.00-71-6303.000	754/828	CARR THERESA A & JEREMIAH	4515 BLUE BANKS LOOP ROAD LELAND NC 28451
19	2213.00-71-7447.000	743/589, 585/231	BANK OF AMERICA NA	100 N TRYON ST CHARLOTTE NC 28255
21	2213.00-71-8336.000	608/237	CAVANAUGH ARTHUR J (JR) & SONYA R	PO BOX 83 DELCO NC 28436
22	2213.00-71-9218.000	608/239	WYATT LISA	258 WATERLINE WAY RIEGELWOOD NC 28456
23	2213.00-71-9168.000	938/275	RIVERA CIRO Z	236 WATERLINE WAY PO BOX 12997 WILMINGTON NC 28405
24	2213.00-81-0161.000	1159/336	BROWN THEODORE C (JR) & BONITA D	32668 NC HWY 210 CURRIE NC 28435
25	2213.00-81-1041.000	1154/597	BOWEN E W	23588 NC 87 HWY E RIEGELWOOD NC 28456
26	2213.00-80-2819.000	629/90	MALDONADO NANCY ANN & FRANKIE	PO BOX 2034 SPRINGFIELD MA 01101
27	2213.00-80-3822.000	938/273	ROGERS LARRY RAY	PO BOX 419 RIEGELWOOD NC 28456
28	2213.00-80-4705.000	793/785	PETERSON RONNIE RAY	124 WATERLINE WAY RIEGELWOOD NC 28456
29	2213.00-80-8731.000	624/926	SAULS LAWRENCE J & LOUISE	3330 BRAGG DR. WILMINGTON NC 28409
30	2212.00-79-5417.000	534/98	F & J PROPERTIES	118 N CARDINAL DR. WILMINGTON NC 28405
31	2213.00-90-1067.000	874/387	GREEN CONNIE J	PO BOX 2805 GLEN ROSE TX 76043
32	2212.00-99-2160.000	487/764	EASON JERRY DONALD	6828 OLD STAGE HWY RIEGELWOOD NC 28456
33	2212.00-99-4742.000	932/306	ROBINSON ELWOOD NATHAN	716 BEAVER RIDGE DR. PO BOX 291 RIEGELWOOD NC 28456
34	2212.00-99-5675.000	868/19	PRIDGEN RONNIE PAUL & KIMBERLY ROBINSON PRIDGEN	716 BEAVER RIDGE RD. RIEGELWOOD NC 28456
35	2212.00-99-8698.000	861/138	PRIDGEN RONNIE PAUL & KIMBERLY ROBINSON PRIDGEN	716 BEAVER RIDGE RD. RIEGELWOOD NC 28456
36	2222.00-09-1365.000	947/678	MACARTNEY EARL F (III) & CORRINE G	PO BOX 454 RIEGELWOOD NC 28456
37	2222.00-07-2927.000	933/767	CAINES PAMELA SUE CARROLL	PO BOX 843 RIEGELWOOD NC 28456
38	2222.00-49-6364.000	1073/524	W3 CAPE FEAR LLC	2927 N KERR AVE. WILMINGTON NC 28405
39	2222.00-18-6023.000	912/97	MAUNEY CHRISTOPHER TODD (SR) & SUSAN C MAUNEY	400 NARROW GAP ROAD RIEGELWOOD NC 28456
41	2222.00-27-2575.000	1022/16	HEATH JIMMIE R	PO BOX 367 LELAND NC 28451
42	2222.00-26-2675.000	321/320	HEATH MARGARET B	3500 TALL PINE CT WILMINGTON NC 28409
43	2222.00-26-6483.000	1007/711	BLAKE JOHN ALAN	5692 OLD STAGE HWY RIEGELWOOD NC 28456
44	2222.00-36-2032.000	1035/30	SKIPPER PENNY BLAKE	5760 OLD STAGE HWY RIEGELWOOD NC 28456
45	2222.00-35-9819.000	786/398	BLAKE LLOYD ALAN & TONI A	5690 OLD STAGE HWY RIEGELWOOD NC 28456
46	2222.00-56-5030.000	668/577	TRAYNHAM DAVID D (SR) (TRUST)	PO BOX 30787 CHARLOTTE NC 28230
47	2222.00-63-9945.000	757/329	MOORE DAVID & LOUISE M JARRELL	5606 HILLWOOD STREET WILMINGTON NC 28409
48	2222.00-82-0923.000	209/637	WOODBURN WALTON A & NELLIE L	4678 OLD STAGE HWY RIEGELWOOD NC 28456
49	2232.00-04-8488.000	895/163	PRIEST JOSEPH G	5101 OLEANDER DR. WILMINGTON NC 28403
51	2232.00-11-6043.000	243/84	BROWN WILLIAM F & CATHERINE	1409 PARKLAND WAY LELAND NC 28451
52	2232.00-10-7397.000	1022/16	HEATH JIMMIE R	PO BOX 367 LELAND NC 28451
53	2231.01-18-9949.000	147/316	WILLIAMS MAGGIE H HEIRS	3864 GILLETTE DR. WILMINGTON NC 28403
54	2231.01-28-6537.000	10 E/326	CARROLL ALSON D (JR)	3254 MOBLEYS BRIDGE RD. GRIMELAND NC 27837
55	2231.01-48-8634.000	556/30	FEDERAL PAPER BOARD CO. INC	865 JOHN L RIEGEL RD. 28456 RIEGELWOOD NC 28456
56	2231.02-98-1989.000	190/33	FEDERAL PAPER BOARD CO. INC	865 JOHN L RIEGEL RD. 28456 RIEGELWOOD NC 28456
57	2241.00-13-9158.000	1064/921	CRONLY BLUFFS LLC	514 WAYNE DR WILMINGTON NC 28403
58	2231.04-91-9502.000	799/329	OAK BARK CORPORATION	1224 OLD STAGE HWY RIEGELWOOD NC 28456
59	2241.00-20-7826.000	1064/921	CRONLY BLUFFS LLC	514 WAYNE DRIVE WILMINGTON NC 28403
60	2240.00-49-4660.000	971/400	ELLIS ROBERT M & ENNIS B	410 ELLIS FARM RD RIEGELWOOD NC 28456
61	2241.00-30-4508.000	973/46	CARROLL MARGARET E & HUBERT	378 PINELAND RD RIEGELWOOD NC 28456
62	2241.00-40-2790.000	973/48	ATWOOD ROSA MARIA E	590 ELLIS FARM RD RIEGELWOOD NC 28456
63	2241.00-50-7692.000	869/765	TC&I TIMBER COMPANY LLC	ONE SW COLUMBIA STE 1700 PORTLAND OREGON 97258
64	2241.00-60-8752.000	424/365	SIMPSON JANIE LOUISE	3935 NORTHWEST ROAD LELAND NC 28451

Parcel ID on Plans	PARCEL NUMBER	DEED BOOK/PAGE	OWNER	ADDRESS
			BRUNSWICK COUNTY	
65-67	224000694219	375/576	BROWN WALTER	5485 PORT ROYAL RD. RIEGELWOOD NC 28456
68-70	224000698219	134/338	SIMPSON WILLIE & ETALS	5519 PORT ROYAL RD. RIEGELWOOD NC 28456
71	224000791448	80/83	GRAINGER GEORGE HRS	5494 PORT ROYAL RD. RIEGELWOOD NC 28456
72	224000794624	1407/965	FORMEY THEODORE ET GAILEY	820 THIERIOT AVE APT 5E BRONX, NY 10473
73A	224000793290	1407/959	GOODWIN WILLIAM J	5526 MILLS TRAIN NE RIEGELWOOD NC
74			JENNINGS HARVARD ELIZABETH	5524 MILLS TRAIL NE RIEGELWOOD, NC 28456
75	224000828781	2978/001	WALTERS MICHAEL P ETALS	PO BOX 457 TABOR CITY NC 28463
76-77	224000888701	3196/1091	GRICE JAMES DARREN ETUX CHRISTY	5400 NORTHWEST ROAD RIEGELWOOD NC 28456
78	225000097198	2495/1247	TC&I TIMBER COMPANY LLC	ONE SW COLUMBIA SUITE 1700 PORTLAND OR 97258
79A	225000177172	520/769	CARROLL CHARLES LEO ETUX SUSAN S	5014 NORTHWEST RD. NE RIEGELWOOD NC 28456
79	225000274580	1523/0105	CARROLL CHARLES R	5080 MEDLIN RD NE RIEGELWOOD NC 28456
80-81	225000373588	244/828	CAROL CARROLL M	5080 MEDLIN RD NE RIEGELWOOD NC 28456
82	225000460680	1298/1313	KEITH-PERRY LLC	PO BOX 20290 RALEIGH NC 27619
84	225002564741	1909/0291	CARROLL CHARLES L ET SUSAN S	5014 NORTHWEST RD. NE RIEGELWOOD NC 28456
85	225002654519	502/775	CARROLL CHARLES LEO ETUX SUSAN S	5014 NORTHWEST RD. NE RIEGELWOOD NC 28456
86	225002752005	2731/1383	VERNON ALEXANDER JEROME	2100 DOVER CT. WINDSOR CT 06095
87	225002752082	2731/1381	VERNON ALEXANDER JEROME	2100 DOVER CT. WINDSOR CT 06095
88	225002753070	2731/1379	VERNON ALEXANDER JEROME	2100 DOVER CT. WINDSOR CT 06095
89	225004744967	546/1063	VERNON ALEXANDER JEROME	2100 DOVER CT. WINDSOR CT 06095
90	225004745977	398/252	VERNON WILMA	4655 VERNON RD. LELAND NC 28451
91	225004746986	398/244	VERNON MARY	4655 VERNON RD. LELAND NC 28451
92	225004845659	1068/0319	PERKINS ROSALIND	246 NORTH COLONY CIRCLE
93	225004948792	3352/300	PETERSON NEDRY HARRY ETALS	31190 NE VERITAS LANE NEWBERG OR 97132
94, 95, 97	226001057037	238/264	PETERSON ELSIE	4514 MT MISERY RD NE LELAND NC 28451
96	226003033728	1121/468	PETERSON H O III	360 CROSSFIELD RD. KING OF PRUSSIA PA 19406
98	226003131606	1760/1045	PETERSON R GLEN	PO BOX 28675 RALEIGH NC 27611
99	226003137547	515/092	PETERSON NEDRY HARRY P	31180 NE VERITAS LANE NEWBERG OR 97132
100	226003232650	3442/1077	PETERSON H O III ETALS	PO BOX 28675 RALEIGH NC 27611
101	226003237392	3097/636	BUCHANAN SHEILA OWENS	715 DEWOIL PLANT RD. DELCO NC 28436
102	226003334318	3097/668	SPIVEY PAMELA	4439 MT MISERY RD. LELAND NC 28451
103	226003339563	3097/704	JENKINS RHONDA OWENS	10 BOURBON ST. LELAND NC 28451
104-105	226004524452	83/420	CORBETT BROTHERS	PO BOX 210 WILMINGTON NC 28401
106	226004817762	489/729	BRUNSWICK COUNTY C/O FINANCE DEPT.	PO BOX 249 BOLIVIA NC 28422
107	227003121569	2621/0652	REDMOND CAROL & ETALS	3400 RED BERRY DR WILMINGTON NC 28409
108	227004505402	3224/0367	SMM SOUTHEAST LLC	325 N LASALLE ST STE 550 CHICAGO IL 60654
109	217901293732	509/261	LOWER CAPE FEAR WATER AND SEWER AUTHORITY	1107 NEW POINTE BLVD #17 LELAND NC 28451

NOTE:

PARCEL NUMBER, DEED BOOK/PAGE #, OWNER AND ADDRESS INFORMATION SHOWN ON THIS SHEET IS BASED ON INFORMATION AVAILABLE FROM GIS AND TAX RECORDS. INFORMATION IS NOT GUARANTEED AND IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

McKIM&CREED
243 NORTH FRONT ST
WILMINGTON, NORTH CAROLINA 28401
TELE: (910) 343-1048
FAX: (910) 251-8282
LICENSE: F-1222

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

PROPERTY LOT NUMBER REFERENCE SHEET

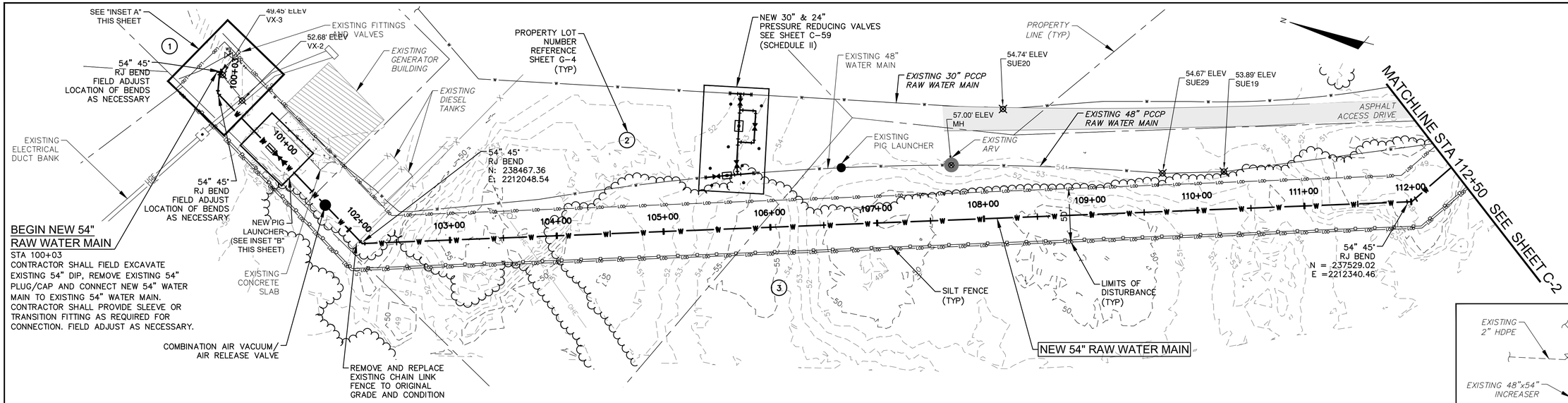
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOATH
6-27-19

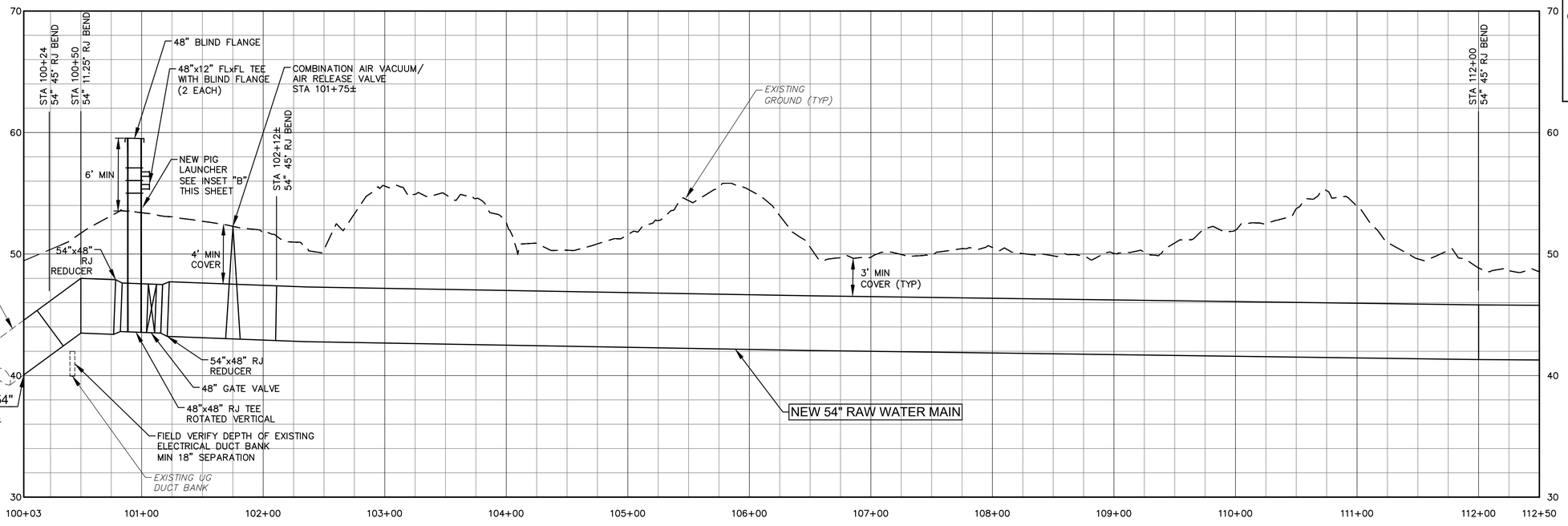
CAPE FEAR
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KINGS BLUFF RAW WATER TRANSMISSION MAIN

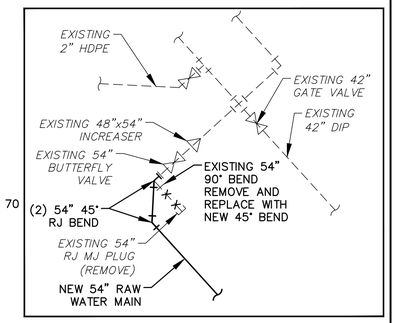
CAPE FEAR PUBLIC UTILITY AUTHORITY
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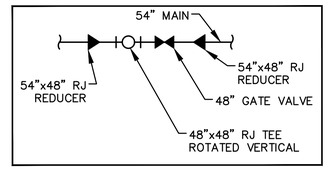
SHEET NO: **G-4**







INSET "A"
NTS



INSET "B"
NTS

GENERAL NOTES:
1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
6. NEW 54" RAW WATER MAIN SHALL BE WELDED STEEL PIPE (THICKNESS MIN = 0.22, LINING = CEMENT MORTAR, COATING = POLYURETHANE) OR DUCTILE IRON PIPE (PC 150, LINING = CEMENT MORTAR, COATING = ZINC). CONTRACTOR SHALL UTILIZE ONLY ONE MATERIAL UNLESS APPROVED BY ENGINEER OR MATERIAL IS SHOWN ON PLANS.

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)
5' 0 5' 10'
SCALE: 1"=5' (Vert.)

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NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOATH G-2179

54" RAW WATER MAIN PLAN AND PROFILE STA 100+03 TO STA 112+50

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

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SHEET NO: C-1

CROSSING BY OPEN CUT SEE SHEET C-51 FOR ROAD CROSSING DETAILS

30" RAW WATER MAIN REPLACEMENT SEE SHEET C-58

LOCKS 1 RD (SR 1734) (ASPHALT)

22.50° RJ BEND
N: 237352.56
E: 2212601.41

PROPERTY LINE (TYP)

PROPOSED PERMANENT UTILITY EASEMENT

EXISTING 48" PCCP RAW WATER MAIN

LIMITS OF DISTURBANCE (TYP)

CHECK DAM (TYP)

ELEV 9

20'

52.64' ELEV HUB VX-1

52.43' ELEV SUE 30-1

50.53' ELEV SUE28

48.45' ELEV SUE18

43.09' ELEV SUE17

ASPHALT ACCESS DRIVE

52.27' ELEV SUE 3

12" LINESTOP
12" GATE VALVE
12" PLUG
SEE SHEET C-58

R-1B

R-1A

115+00 116+00 117+00 118+00 119+00 120+00 121+00 122+00 123+00 124+00 125+00 126+00 127

114+00

113+00

112+00

EXISTING 2" WATER MAIN

51.38' ELEV SUE 30-2

RECONNECT WATER MAIN AS REQUIRED

A-1

75'

50'

EXISTING 2" WATER MAIN

EXISTING 12" RAW WATER MAIN

51.29' ELEV SUE 2

51.19' ELEV SUE 1

REMOVE AND REPLACE EXISTING CHAIN LINK FENCE TO ORIGINAL GRADE AND CONDITION

EXISTING 30" RAW WATER MAIN (CFPUA)

4

PROPERTY LOT NUMBER REFERENCE SHEET G-4 (TYP)

47.72' ELEV SUE 30-3

SILT FENCE (TYP)

5

NEW 54" RAW WATER MAIN

75' LCFWSA EASEMENT

50' CFPUA EASEMENT

42.86' ELEV SUE 30-4

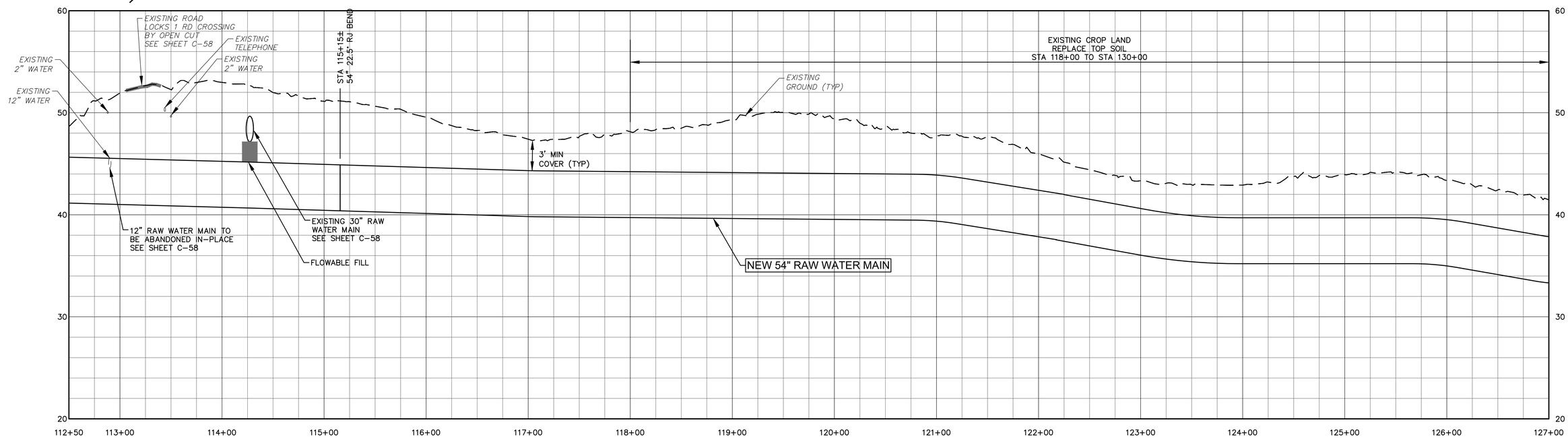
EXISTING SOIL DRIVE CONTRACTOR SHALL RESTORE TO ORIGINAL GRADE AND CONDITION

65' NCDOT R/W

12" RAW WATER MAIN TO BE ABANDONED IN-PLACE SEE SHEET C-58

MATCHLINE STA 112+00 SEE SHEET C-1

MATCHLINE STA 127+00 SEE SHEET C-3



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4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
6. NEW 54" RAW WATER MAIN SHALL BE WELDED STEEL PIPE (THICKNESS MIN = 0.22, LINING = CEMENT MORTAR, COATING = POLYURETHANE) OR DUCTILE IRON PIPE (PC 150, LINING = CEMENT MORTAR, COATING = ZINC). CONTRACTOR SHALL UTILIZE ONLY ONE MATERIAL UNLESS APPROVED BY ENGINEER OR MATERIAL IS SHOWN ON PLANS.

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

54" RAW WATER MAIN PLAN AND PROFILE STA 112+50 TO STA 127+00

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CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

SHEET NO: C-2

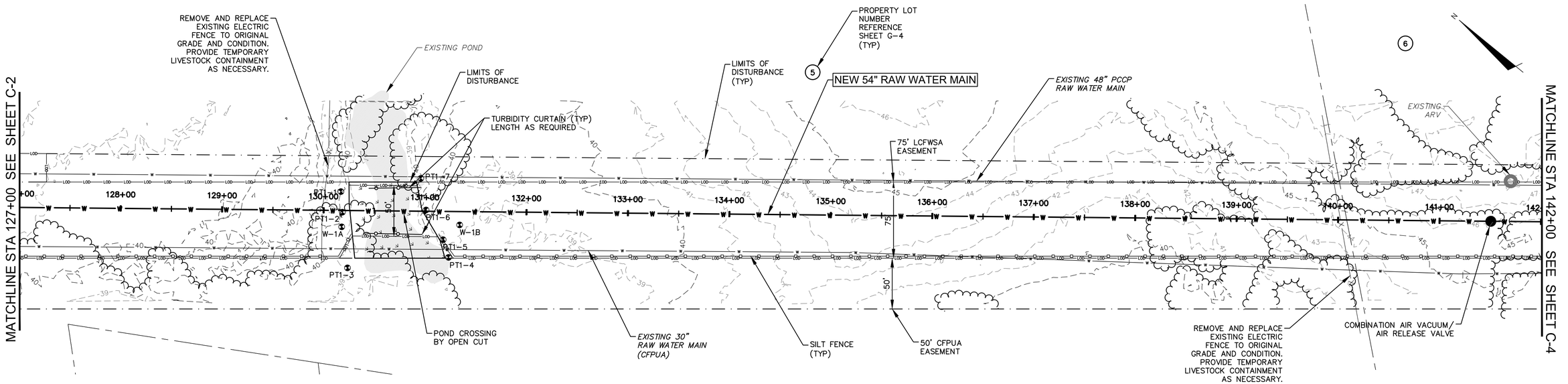
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOATH
6-21-19

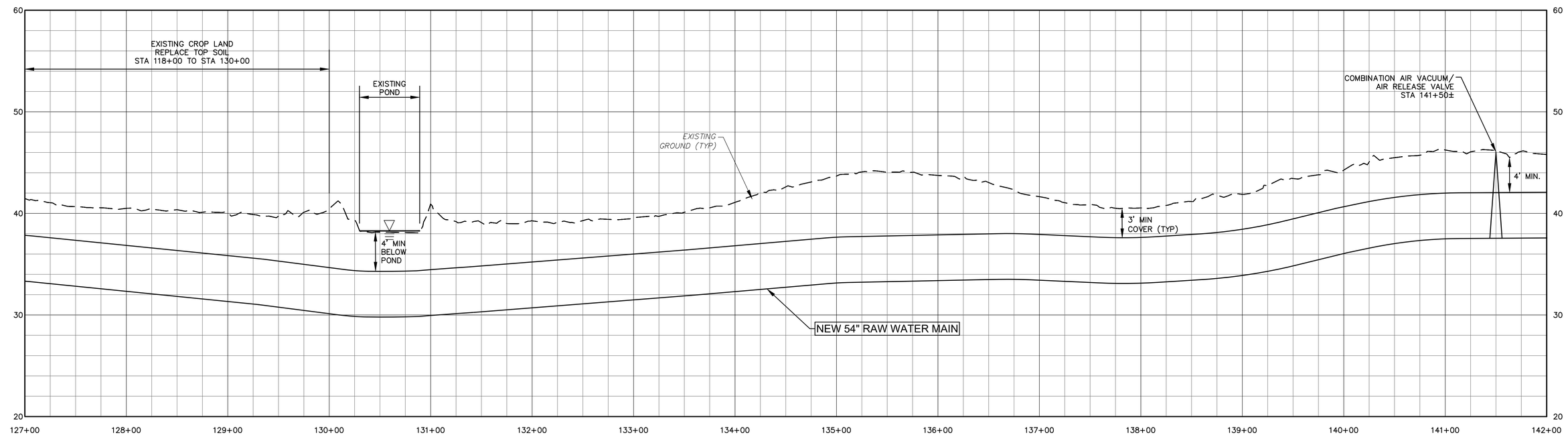
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GENERAL NOTES:

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5' 0 5' 10'
SCALE: 1"=5' (Vert.)

54" RAW WATER MAIN
PLAN AND PROFILE
STA 127+00 TO STA 142+00

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CAPE FEAR
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KINGS BLUFF RAW
WATER TRANSMISSION MAIN

NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOARD 6-2779

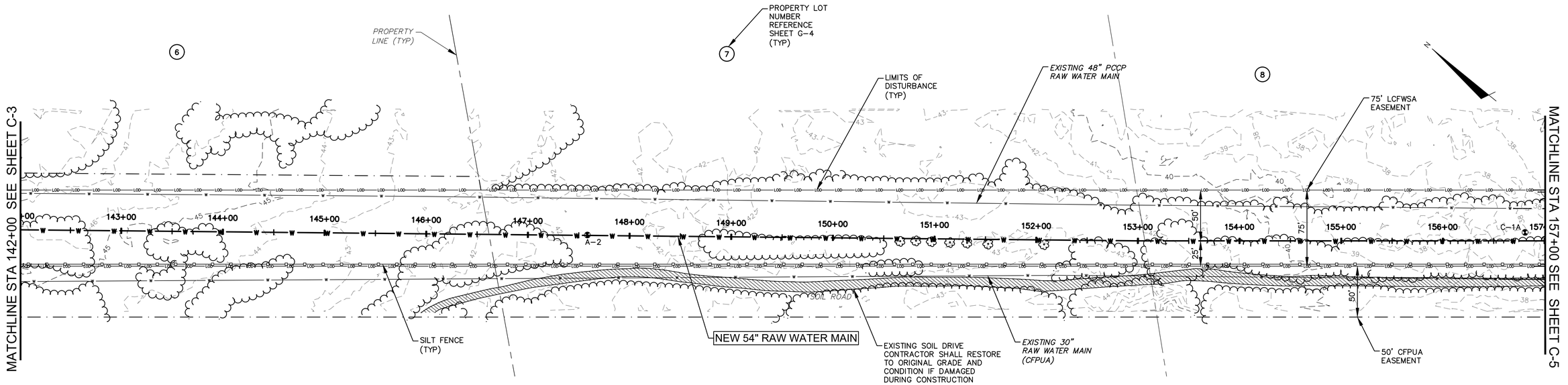
CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

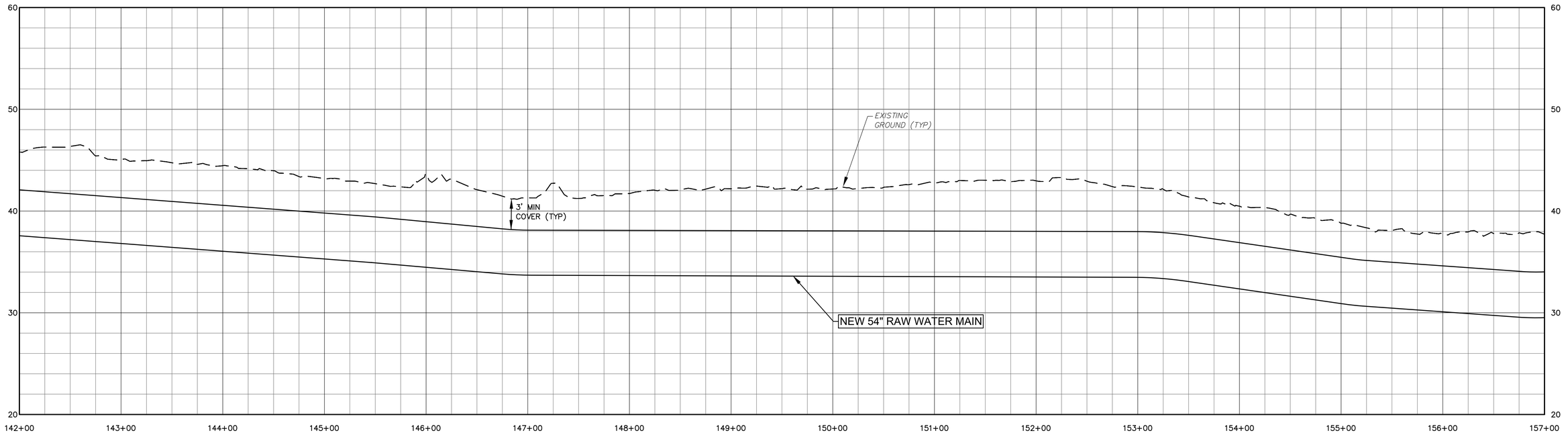
SHEET NO: C-3

McKIM&CREED
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TELE: (910) 343-1048
FAX: (910) 251-8282
LICENSE: F-1222

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
6. NEW 54" RAW WATER MAIN SHALL BE WELDED STEEL PIPE (THICKNESS MIN = 0.22, LINING = CEMENT MORTAR, COATING = POLYURETHANE) OR DUCTILE IRON PIPE (PC 150, LINING = CEMENT MORTAR, COATING = ZINC). CONTRACTOR SHALL UTILIZE ONLY ONE MATERIAL UNLESS APPROVED BY ENGINEER OR MATERIAL IS SHOWN ON PLANS.

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

54" RAW WATER MAIN
PLAN AND PROFILE
STA 142+00 TO STA 157+00

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

SHEET NO: C-4

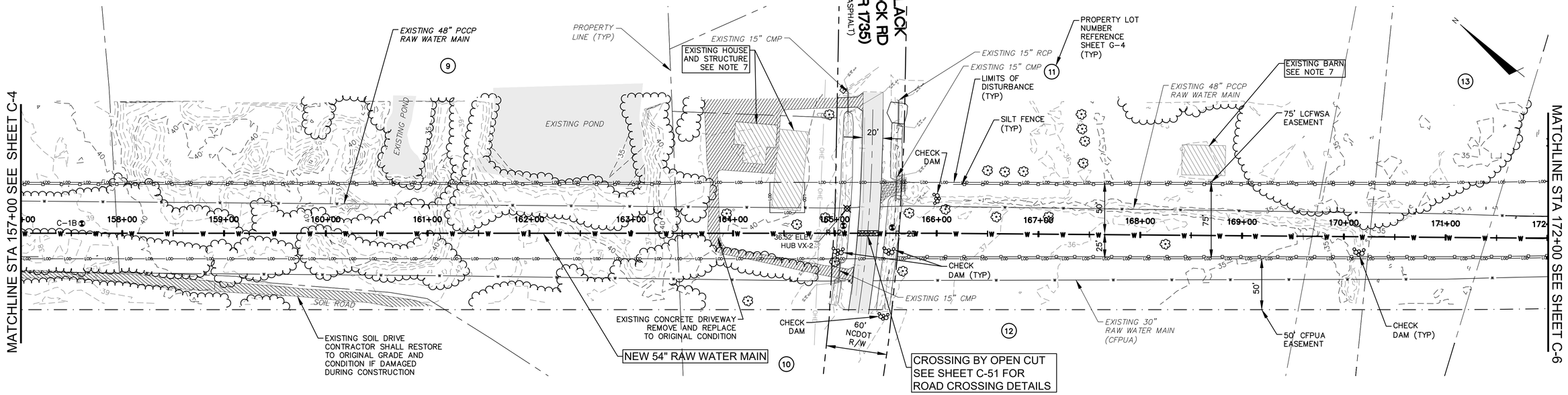
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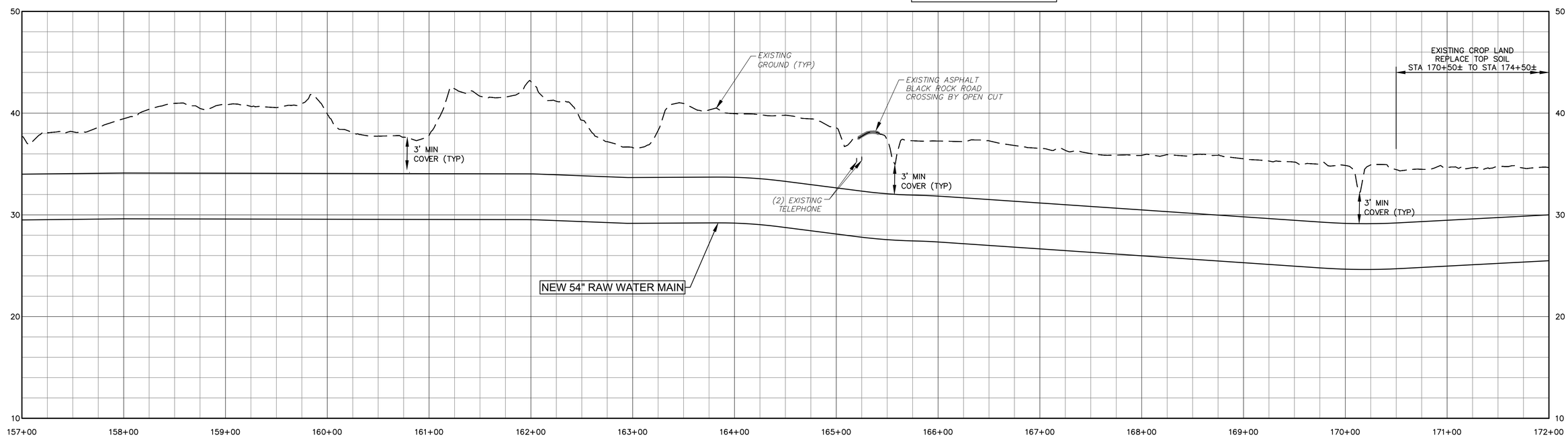
Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOAHN
6-21-19

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560





GENERAL NOTES:

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2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
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50' 0 50' 100'
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5' 0 5' 10'
SCALE: 1"=5' (Vert.)

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Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
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54" RAW WATER MAIN PLAN AND PROFILE STA 157+00 TO STA 172+00

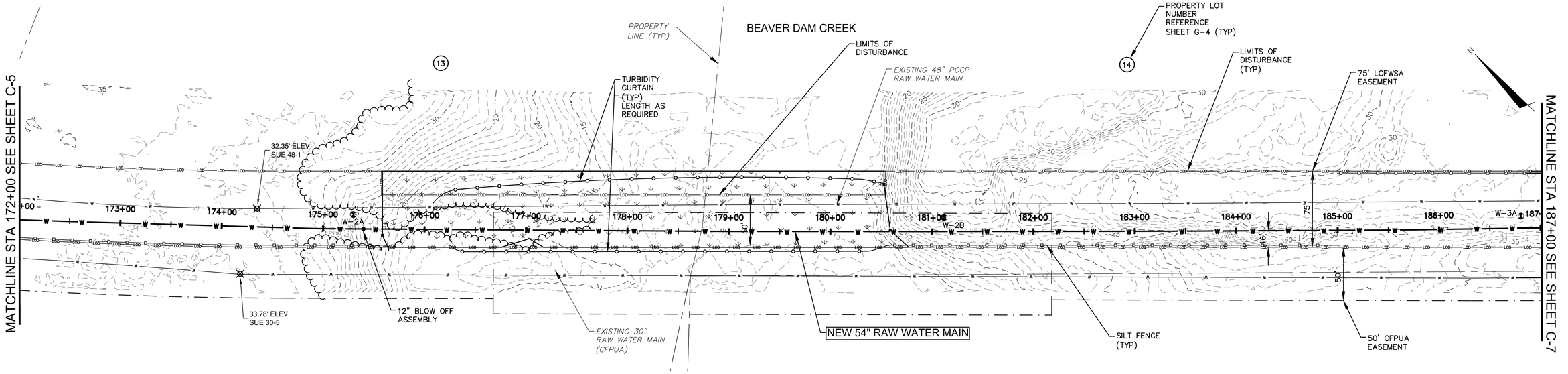
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOAHN 6-21-19

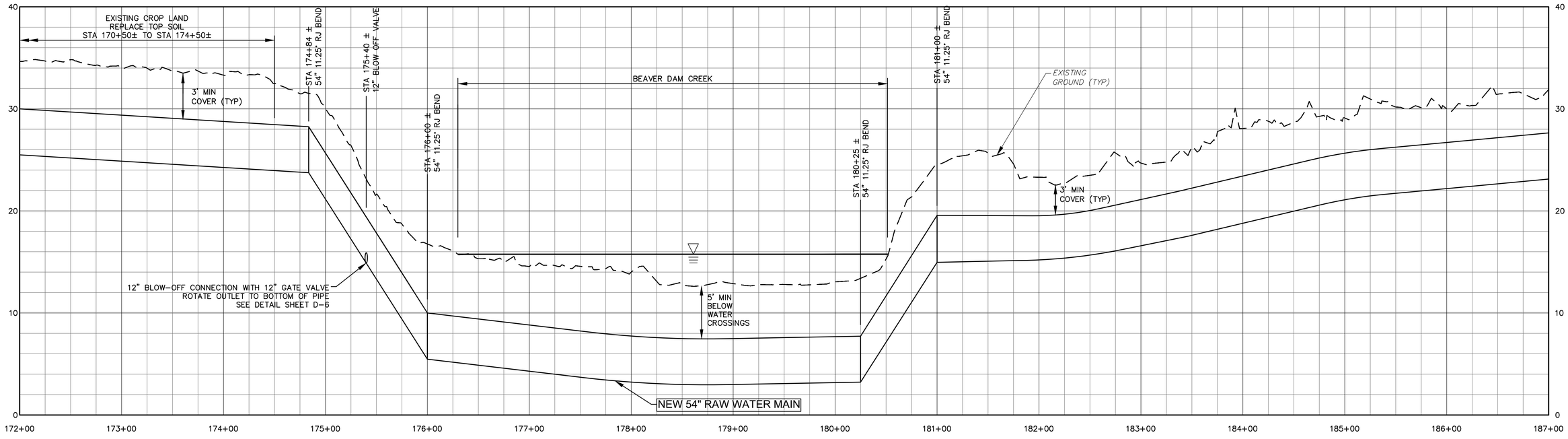
CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

SHEET NO: C-5





GENERAL NOTES:

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5' 0 5' 10'
SCALE: 1"=5' (Vert.)

54" RAW WATER MAIN PLAN AND PROFILE STA 172+00 TO STA 187+00

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

SHEET NO: C-6

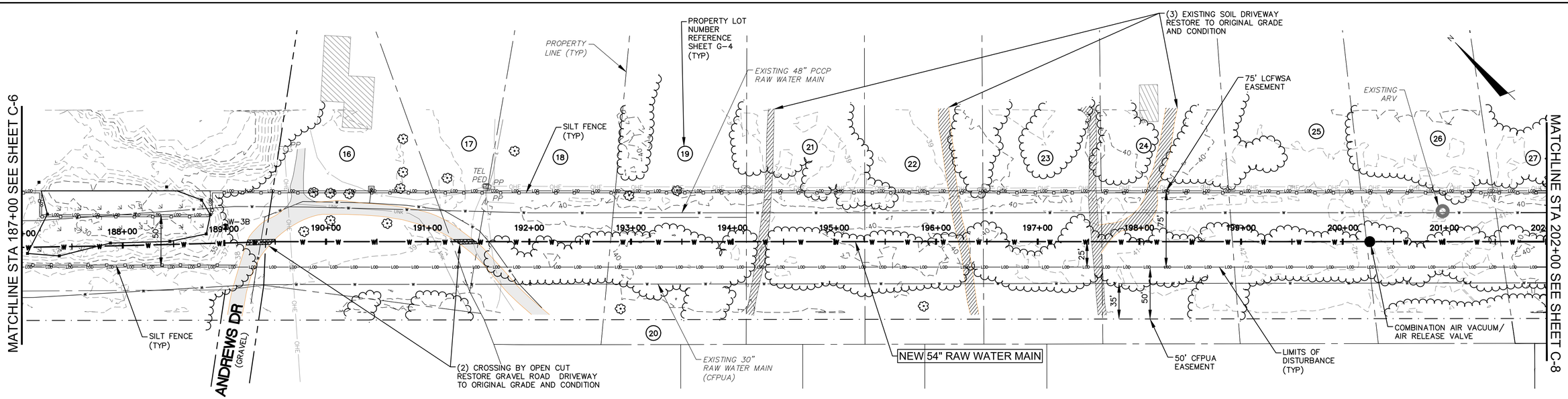
McKIM&CREED
243 NORTH FRONT ST
WILMINGTON, NORTH CAROLINA 28401
TELE: (910) 343-1048
FAX: (910) 251-8282
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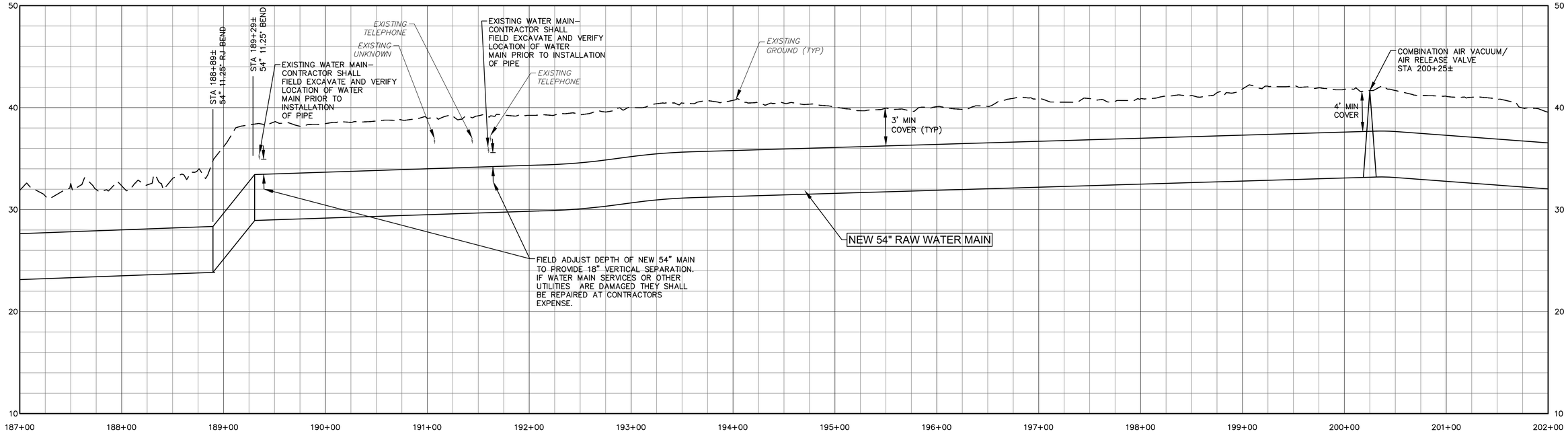
Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOAHN
6-27-19

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560





GENERAL NOTES:

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Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
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54" WATER MAIN PLAN AND PROFILE STA 187+00 TO STA 202+00

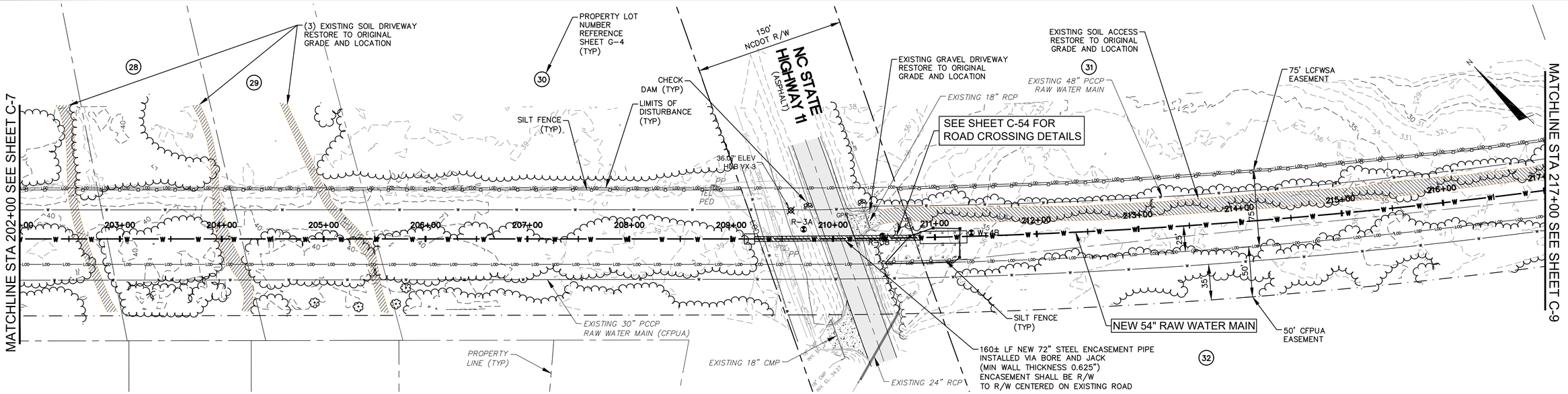
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOAHN 6-27-19

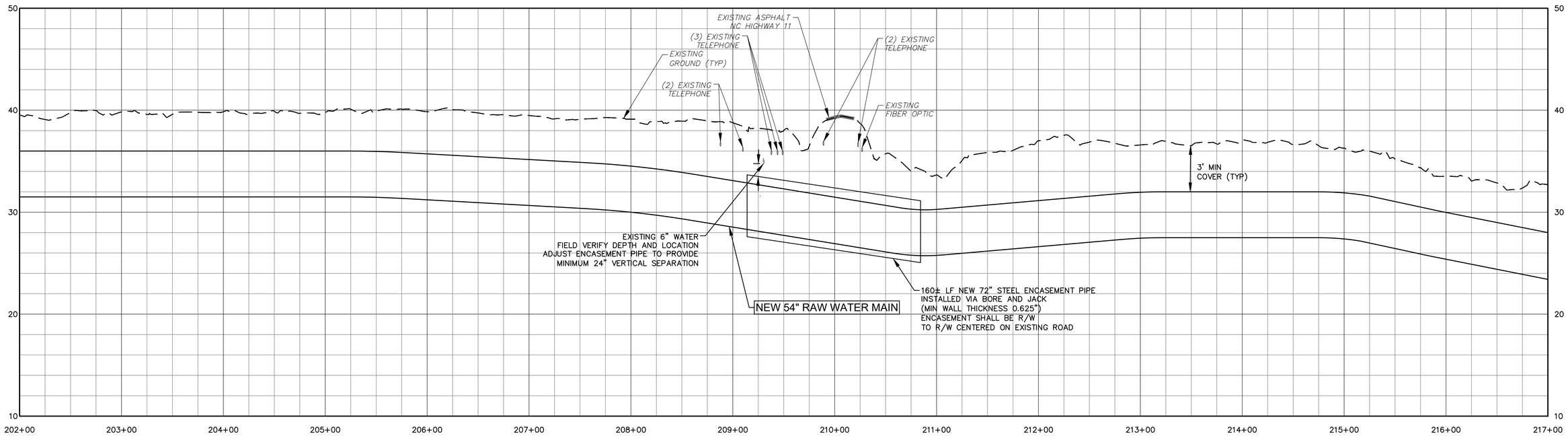
CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

SHEET NO: C-7





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
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SCALE: 1"=5' (Vert.)

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Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
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54" RAW WATER MAIN
PLAN AND PROFILE
STA 202+00 TO STA 217+00

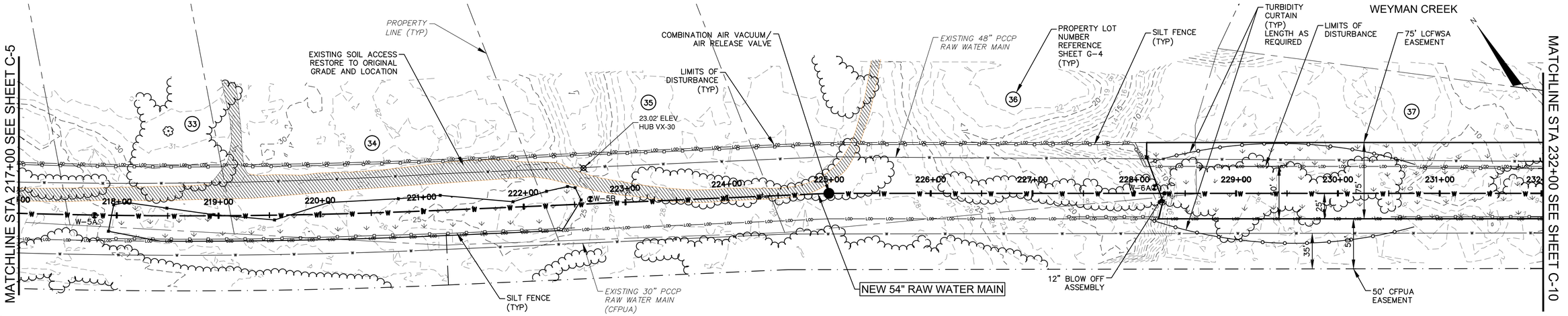
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOARD 6-21-19

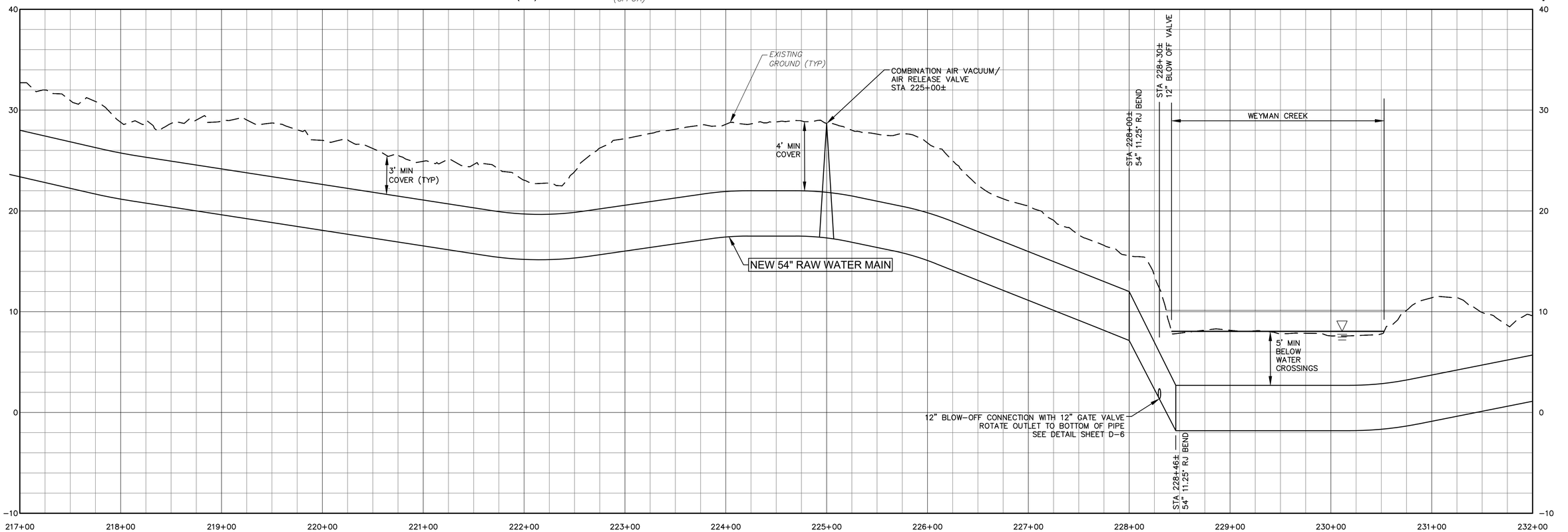
CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

SHEET NO: C-8





GENERAL NOTES:

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50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

54" RAW WATER MAIN PLAN AND PROFILE STA 217+00 TO STA 232+00

DATE:	JUNE 2019
SCALE:	AS SHOWN
DRAWN BY:	JPV
CHECKED BY:	AWB
PROJECT NO. :	5367-0038

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

SHEET NO: C-9

NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOARD 6-2779

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Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
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MATCHLINE STA 232+00 SEE SHEET C-9

MATCHLINE STA 247+00 SEE SHEET C-11

LIMITS OF DISTURBANCE (TYP)

PROPERTY LOT NUMBER REFERENCE SHEET G-4 (TYP)

EXISTING 48" PCCP RAW WATER MAIN

SILT FENCE (TYP)

75' LCFWSA EASEMENT

NEW 6' CHAINLINK FENCE WITH DOUBLE HUNG GATE AND 10" COMPACTED ABC WITH GEOFABRIC

NEW 48" RAW WATER MAIN LENGTH AS REQUIRED

48" PCCP ADAPTER

48"x48" TEE

48" GATE VALVE

SEE INSET "A" THIS SHEET

(2) 48" GATE VALVE

48" PCCP ADAPTER

54"x48" REDUCER

NARROW GAP RD (SR 1811) (ASPHALT)

CROSSING BY OPEN CUT SEE SHEET C-52 FOR ROAD CROSSING DETAILS

EXISTING BUILDINGS

EXISTING MOBILE HOME SEE NOTE 7

CHECK DAM

35.02' ELEV HUB VX-4

CHECK DAM

CHECK DAM

CHECK DAM

EXISTING 30" RAW WATER MAIN (CFPUA)

50' CFPUA EASEMENT

54"x48" REDUCER

48" GATE VALVE

48"x48" TEE

48" GATE VALVE

NEW 48" RAW WATER MAIN LENGTH AS REQUIRED

EXISTING 15" RCP

60' NCDOT R/W

EXISTING 15" CPP

CROSSING BY OPEN CUT GRADE AND CONDITION

EXISTING SOIL DRIVE RESTORE TO ORIGINAL

EXISTING STRUCTURE SEE NOTE 7

EXISTING ASPHALT BLACK ROCK ROAD CROSSING BY OPEN CUT

EXISTING TELEPHONE

EXISTING GROUND (TYP)

3' MIN COVER (TYP)

EXISTING UNKNOWN UTILITY CONTRACTOR TO FIELD VERIFY UNKNOWN UTILITY AND PROVIDE MINIMUM 24" VERTICAL SEPARATION

NEW 54" RAW WATER MAIN

STA 242+94± 54"x48" REDUCER

STA 243+12± 48" GATE VALVE

STA 243+26± 48"x48" TEE

STA 243+38± 48" GATE VALVE

STA 243+53± 54"x48" REDUCER

232+00 233+00 234+00 235+00 236+00 237+00 238+00 239+00 240+00 241+00 242+00 243+00 244+00 245+00 246+00 247+00

0 10 20 30 40

SCHEDULE II

SCHEDULE I

48" GATE VALVE
48" PCCP ADAPTER
48"x48" TEE
48" GATE VALVE
NEW 48" RAW WATER MAIN LENGTH AS REQUIRED
48" PCCP ADAPTER
48" GATE VALVE ROD VALVE TO TEE UNDER SCHEDULE I
54"x48" REDUCER
48" GATE VALVE
48"x48" TEE
NEW 54" RAW WATER MAIN
54"x48" REDUCER
48" GATE VALVE

INSET 'A'
NTS

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

GENERAL NOTES:

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2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
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54" RAW WATER MAIN PLAN AND PROFILE STA 232+00 TO STA 247+00

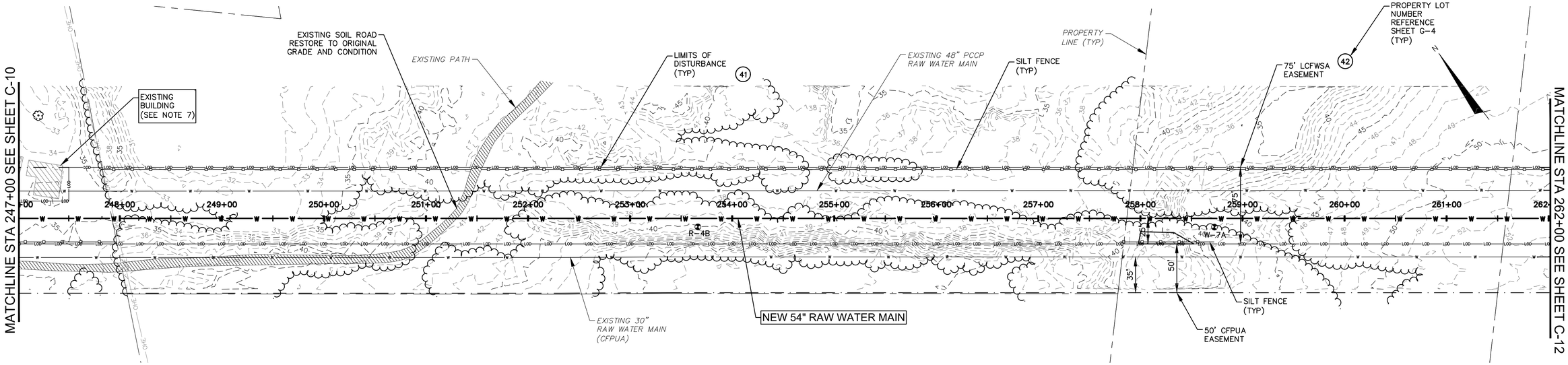
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOAHN 6-21-19

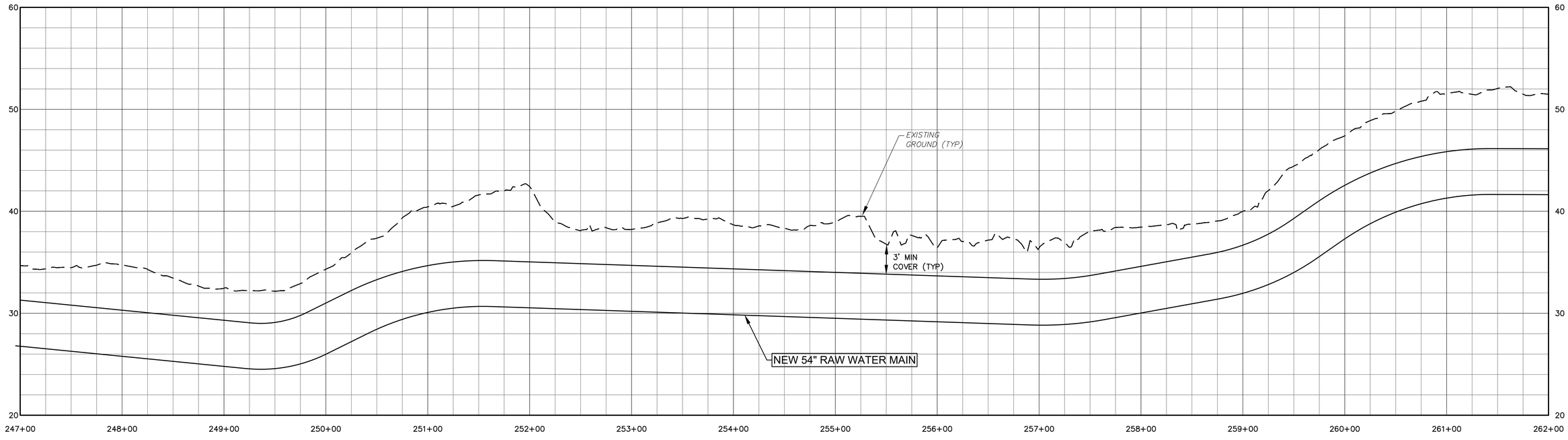
CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

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OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

SHEET NO: C-10





GENERAL NOTES:

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4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
6. NEW 54" RAW WATER MAIN SHALL BE WELDED STEEL PIPE (THICKNESS MIN = 0.22, LINING = CEMENT MORTAR, COATING = POLYURETHANE) OR DUCTILE IRON PIPE (PC 150, LINING = CEMENT MORTAR, COATING = ZINC). CONTRACTOR SHALL UTILIZE ONLY ONE MATERIAL UNLESS APPROVED BY ENGINEER OR MATERIAL IS SHOWN ON PLANS.
7. CONTRACTOR SHALL NOT DISTURB OR DAMAGE EXISTING STRUCTURE OR STRUCTURE FOUNDATION. CONTRACTOR SHALL PROVIDE GEOTECHNICAL INSTRUMENTATION AND MONITORING FOR THIS STRUCTURE.

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

McKIM&CREED
243 NORTH FRONT ST
WILMINGTON, NORTH CAROLINA 28401
TELE: (910) 343-1048
FAX: (910) 251-8282
LICENSE: F-1222

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

54" RAW WATER MAIN PLAN AND PROFILE STA 247+00 TO STA 262+00

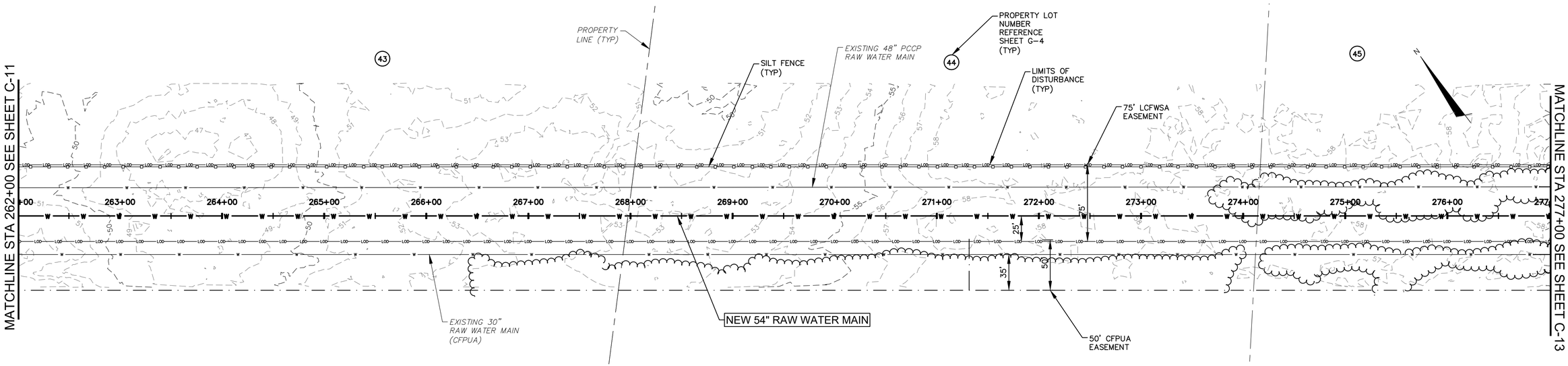
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOAHN
6-21-19

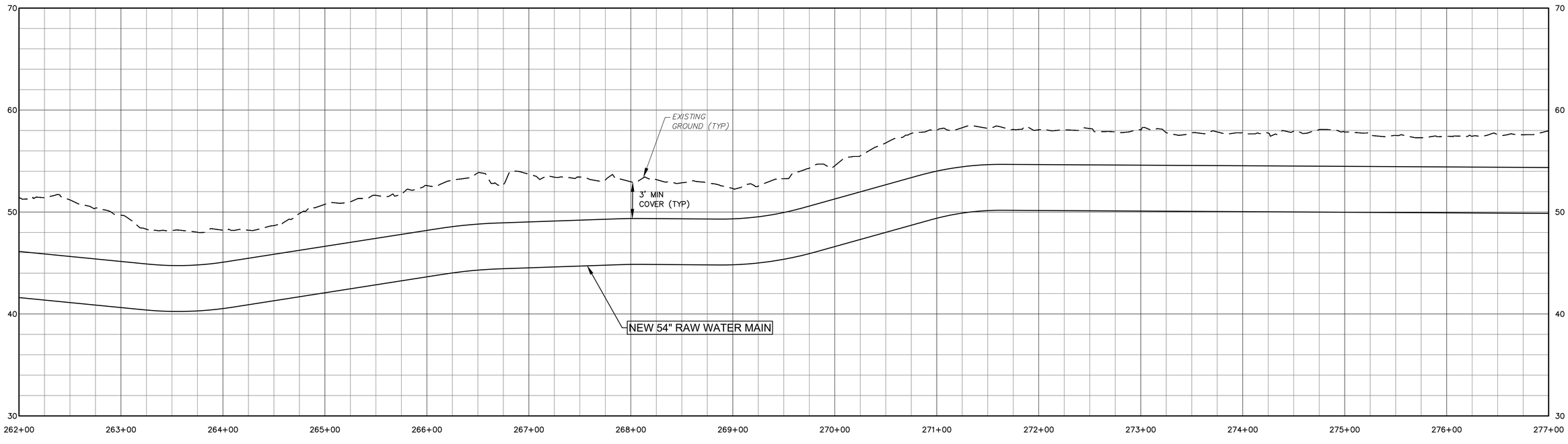
CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

SHEET NO: C-11





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
6. NEW 54" RAW WATER MAIN SHALL BE WELDED STEEL PIPE (THICKNESS MIN = 0.22, LINING = CEMENT MORTAR, COATING = POLYURETHANE) OR DUCTILE IRON PIPE (PC 150, LINING = CEMENT MORTAR, COATING = ZINC). CONTRACTOR SHALL UTILIZE ONLY ONE MATERIAL UNLESS APPROVED BY ENGINEER OR MATERIAL IS SHOWN ON PLANS.

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

McKIM&CREED
243 NORTH FRONT ST
WILMINGTON, NORTH CAROLINA 28401
TELE: (910) 343-1048
FAX: (910) 251-8282
LICENSE: F-1222

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REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOARD
6-21-19

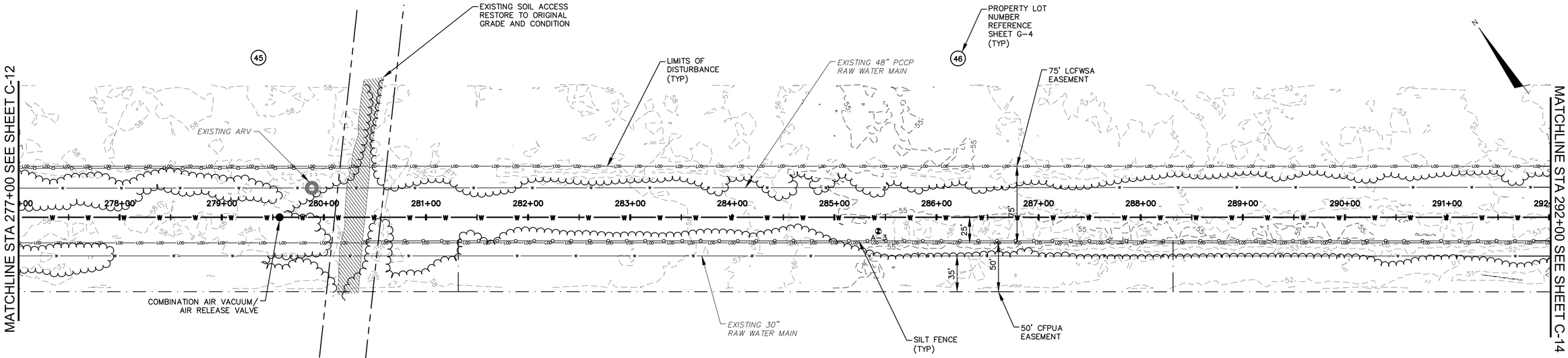
54" RAW WATER MAIN
PLAN AND PROFILE
STA 262+00 TO STA 277+00

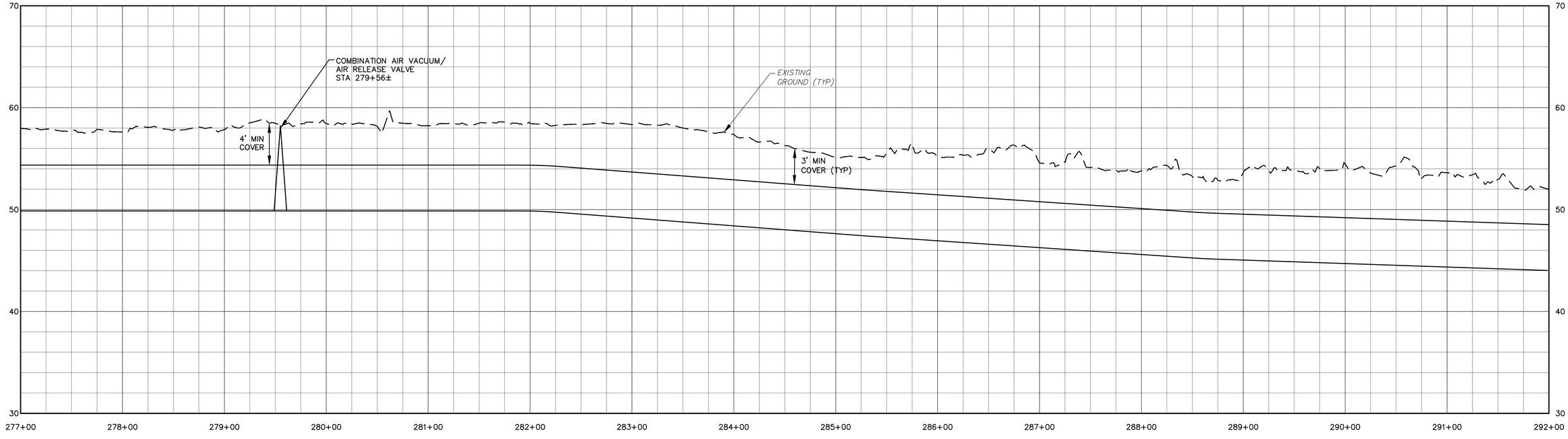
CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

SHEET NO: C-12





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
6. NEW 54" RAW WATER MAIN SHALL BE WELDED STEEL PIPE (THICKNESS MIN = 0.22, LINING = CEMENT MORTAR, COATING = POLYURETHANE) OR DUCTILE IRON PIPE (PC 150, LINING = CEMENT MORTAR, COATING = ZINC). CONTRACTOR SHALL UTILIZE ONLY ONE MATERIAL UNLESS APPROVED BY ENGINEER OR MATERIAL IS SHOWN ON PLANS.

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

McKIM&CREED
243 NORTH FRONT ST
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FAX: (910) 251-8282
LICENSE: F-1222

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

54" RAW WATER MAIN PLAN AND PROFILE STA 277+00 TO STA 292+00

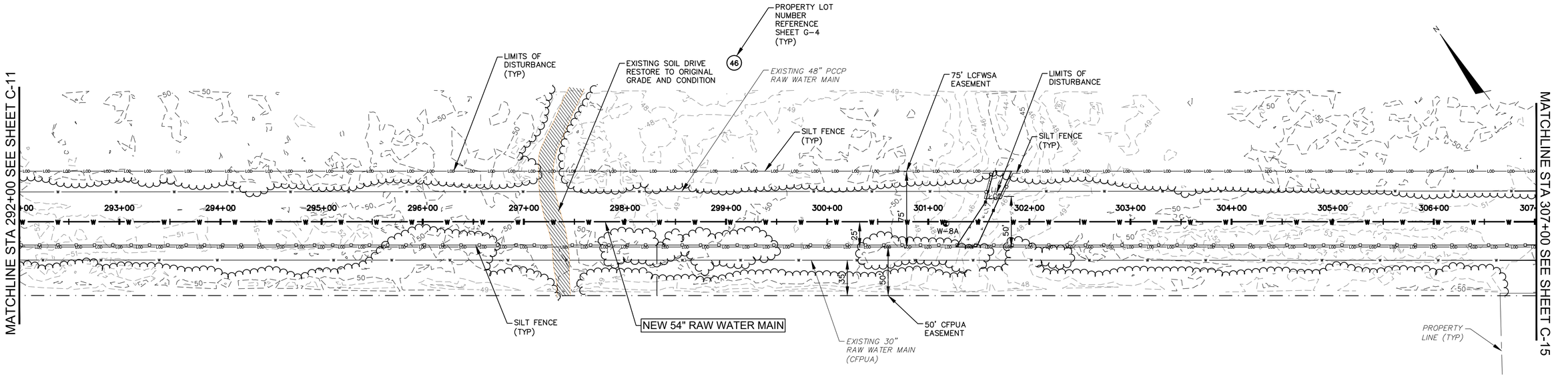
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOATH
6-21-19

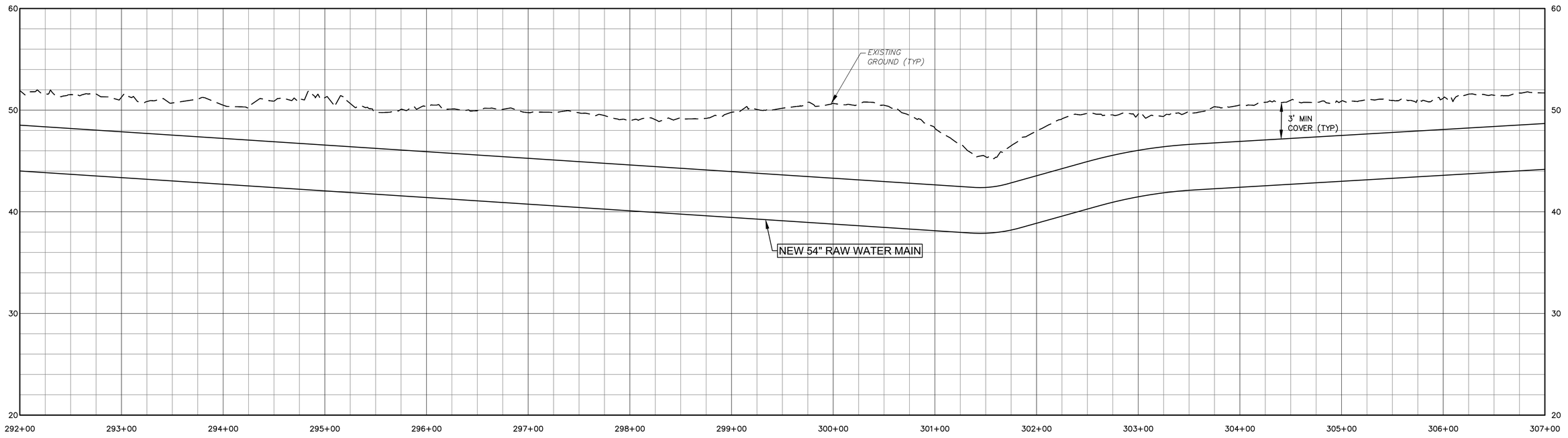
CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

SHEET NO: C-13





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
6. NEW 54" RAW WATER MAIN SHALL BE WELDED STEEL PIPE (THICKNESS MIN = 0.22, LINING = CEMENT MORTAR, COATING = POLYURETHANE) OR DUCTILE IRON PIPE (PC 150, LINING = CEMENT MORTAR, COATING = ZINC). CONTRACTOR SHALL UTILIZE ONLY ONE MATERIAL UNLESS APPROVED BY ENGINEER OR MATERIAL IS SHOWN ON PLANS.

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)
5' 0 5' 10'
SCALE: 1"=5' (Vert.)

McKIM&CREED
243 NORTH FRONT ST
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REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

54" RAW WATER MAIN PLAN AND PROFILE STA 292+00 TO STA 307+00

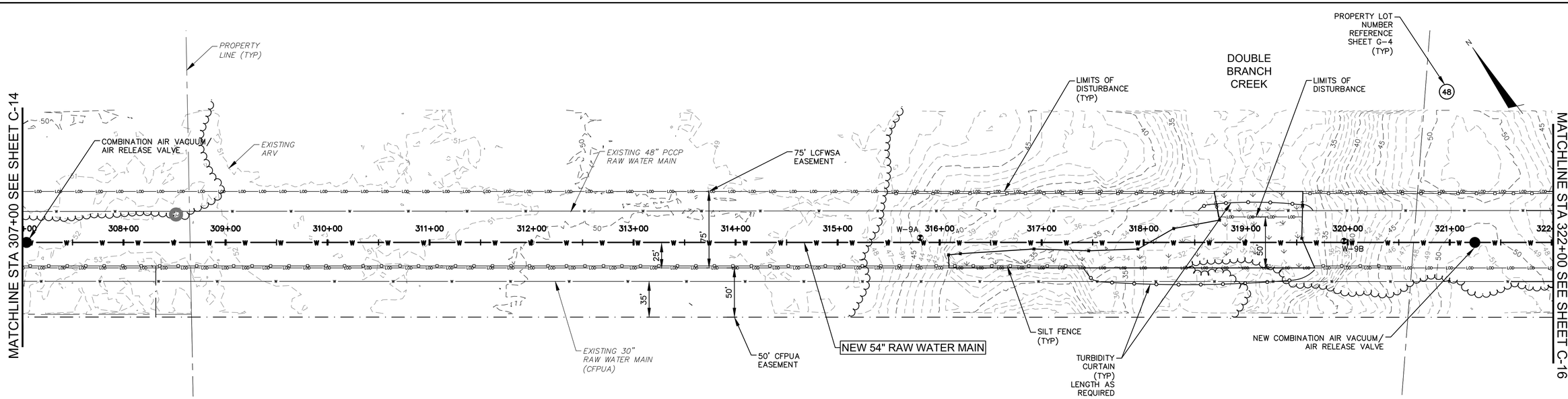
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOARD
6-27-19

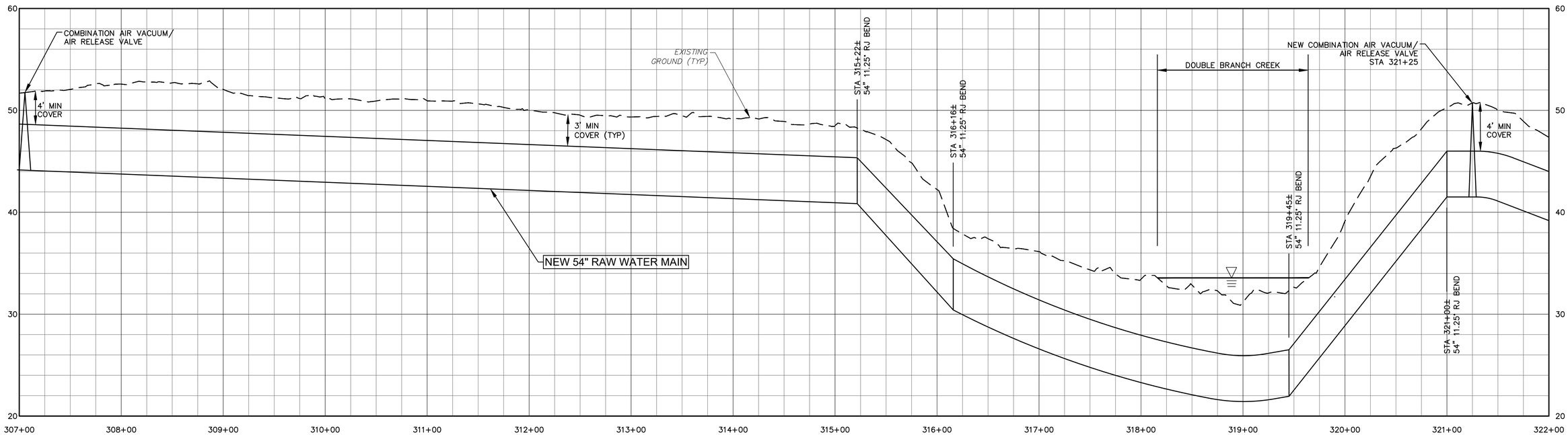
CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

SHEET NO: C-14





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
6. NEW 54" RAW WATER MAIN SHALL BE WELDED STEEL PIPE (THICKNESS MIN = 0.22, LINING = CEMENT MORTAR, COATING = POLYURETHANE) OR DUCTILE IRON PIPE (PC 150, LINING = CEMENT MORTAR, COATING = ZINC). CONTRACTOR SHALL UTILIZE ONLY ONE MATERIAL UNLESS APPROVED BY ENGINEER OR MATERIAL IS SHOWN ON PLANS.

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)
5' 0 5' 10'
SCALE: 1"=5' (Vert.)

54" RAW WATER MAIN PLAN AND PROFILE STA 307+00 TO STA 322+00

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

SHEET NO: C-15

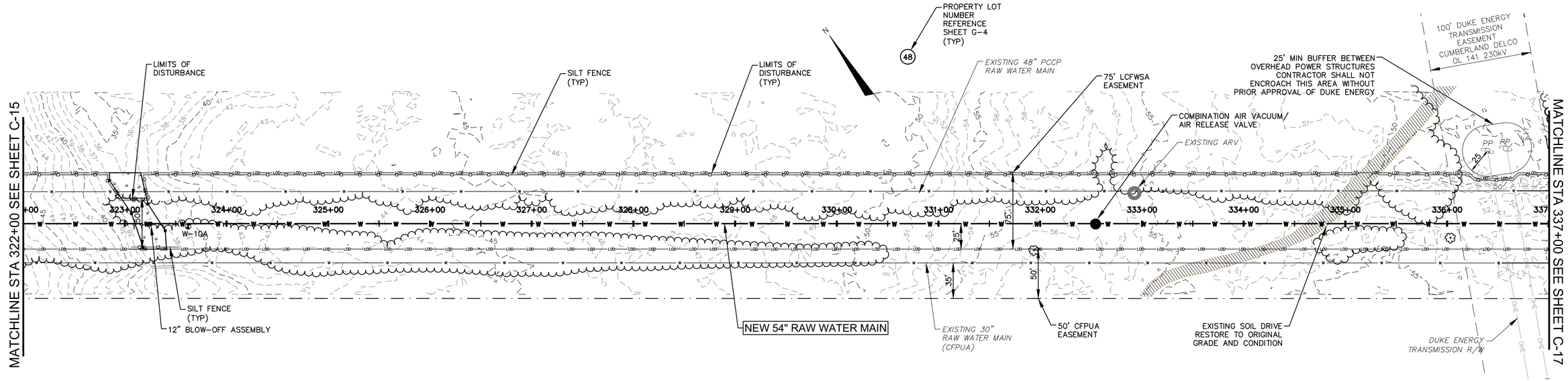
McKIM&CREED
243 NORTH FRONT ST
WILMINGTON, NORTH CAROLINA 28401
TELE: (910) 343-1048
FAX: (910) 251-8282
LICENSE: F-1222

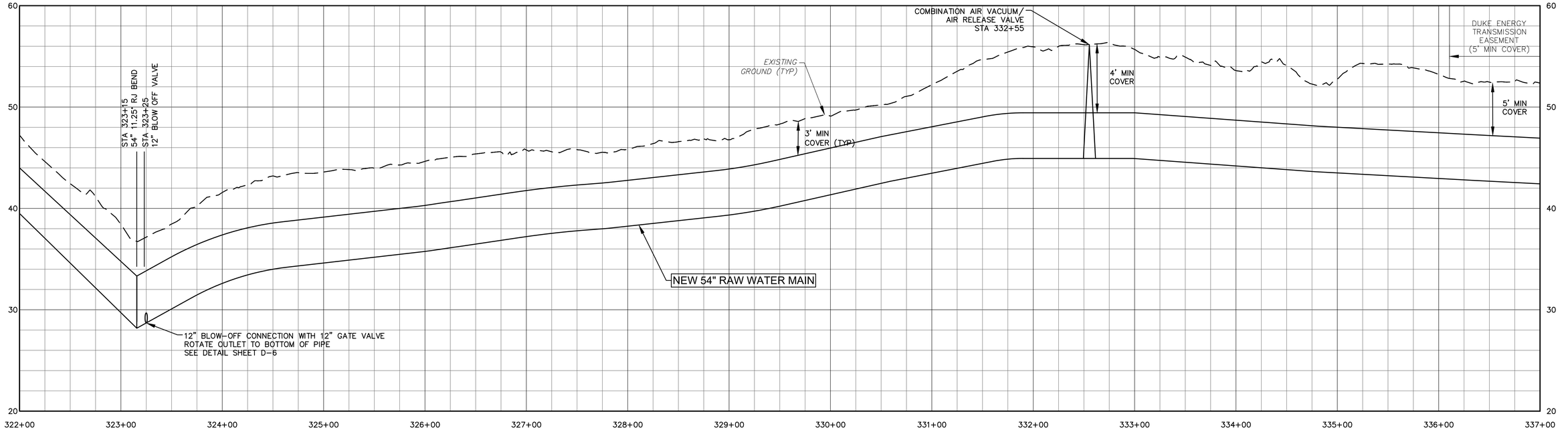
Cape Fear Public Utility Authority
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REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOARD
6-27-19

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
6. NEW 54" RAW WATER MAIN SHALL BE WELDED STEEL PIPE (THICKNESS MIN = 0.22, LINING = CEMENT MORTAR, COATING = POLYURETHANE) OR DUCTILE IRON PIPE (PC 150, LINING = CEMENT MORTAR, COATING = ZINC). CONTRACTOR SHALL UTILIZE ONLY ONE MATERIAL UNLESS APPROVED BY ENGINEER OR MATERIAL IS SHOWN ON PLANS.

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

McKIM&CREED
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WILMINGTON, NORTH CAROLINA 28401
TELE: (910) 343-1048
FAX: (910) 251-8282
LICENSE: F-1222

Cape Fear Public Utility Authority
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REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

54" RAW WATER MAIN PLAN AND PROFILE STA 322+00 TO STA 337+00

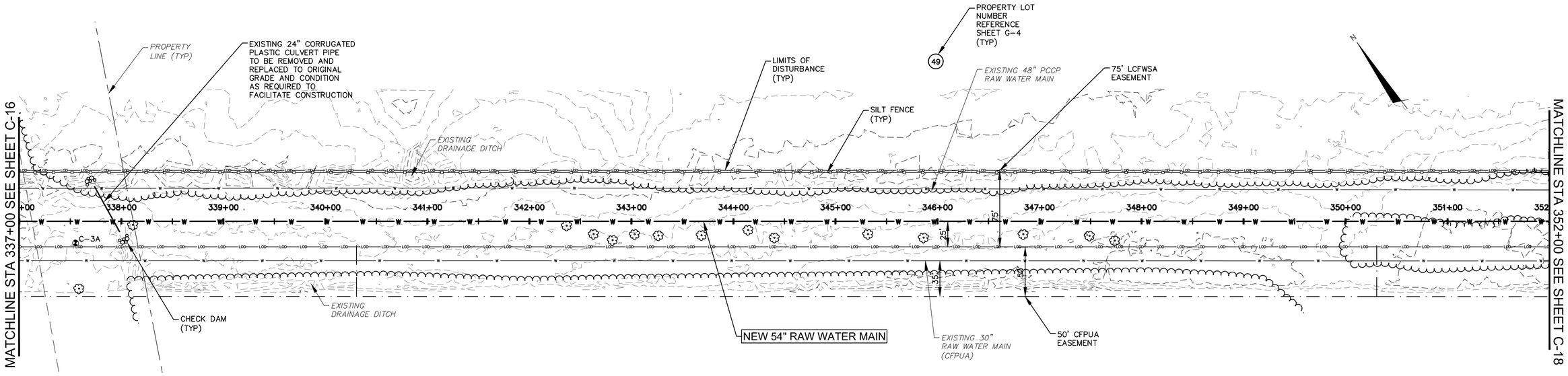
NORTH CAROLINA PROFESSIONAL SEAL 025912 ENGINEER ANTHONY W. BOARD 6-2779

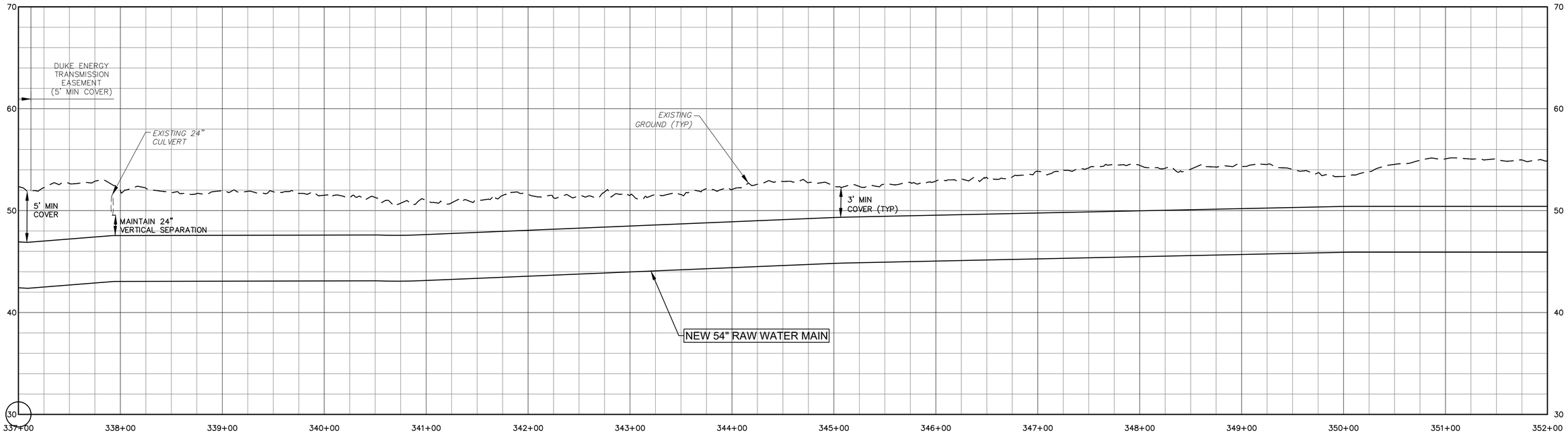
CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE:	JUNE 2019
SCALE:	AS SHOWN
DRAWN BY:	JPV
CHECKED BY:	AWB
PROJECT NO. :	5367-0038

SHEET NO: C-16





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
6. NEW 54" RAW WATER MAIN SHALL BE WELDED STEEL PIPE (THICKNESS MIN = 0.22, LINING = CEMENT MORTAR, COATING = POLYURETHANE) OR DUCTILE IRON PIPE (PC 150, LINING = CEMENT MORTAR, COATING = ZINC). CONTRACTOR SHALL UTILIZE ONLY ONE MATERIAL UNLESS APPROVED BY ENGINEER OR MATERIAL IS SHOWN ON PLANS.

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)
5' 0 5' 10'
SCALE: 1"=5' (Vert.)

54" RAW WATER MAIN PLAN AND PROFILE STA 337+00 TO STA 352+00

CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

SHEET NO: C-17

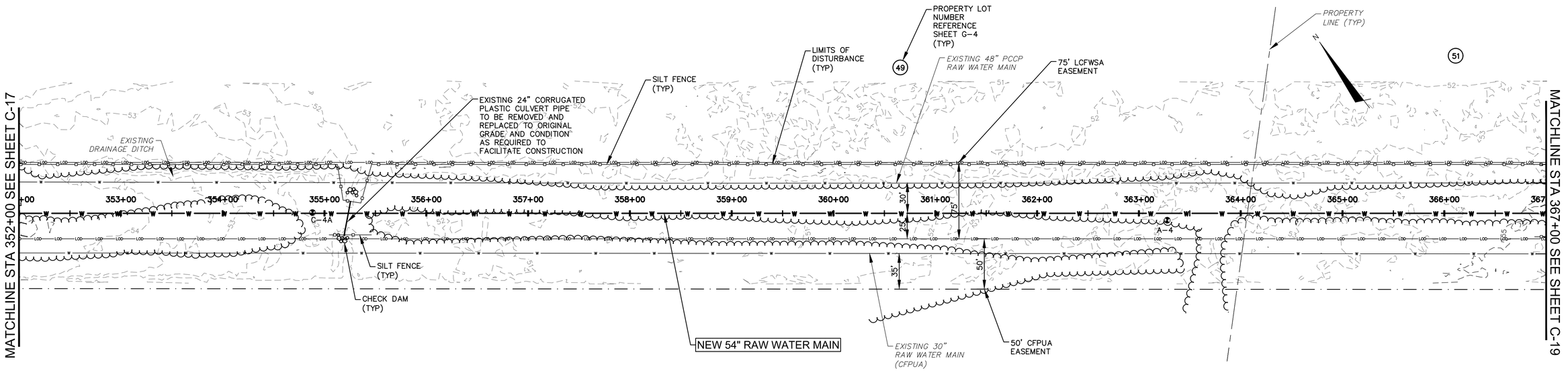
McKIM&CREED
243 NORTH FRONT ST
WILMINGTON, NORTH CAROLINA 28401
TELE: (910) 343-1048
FAX: (910) 251-8282
LICENSE: F-1222

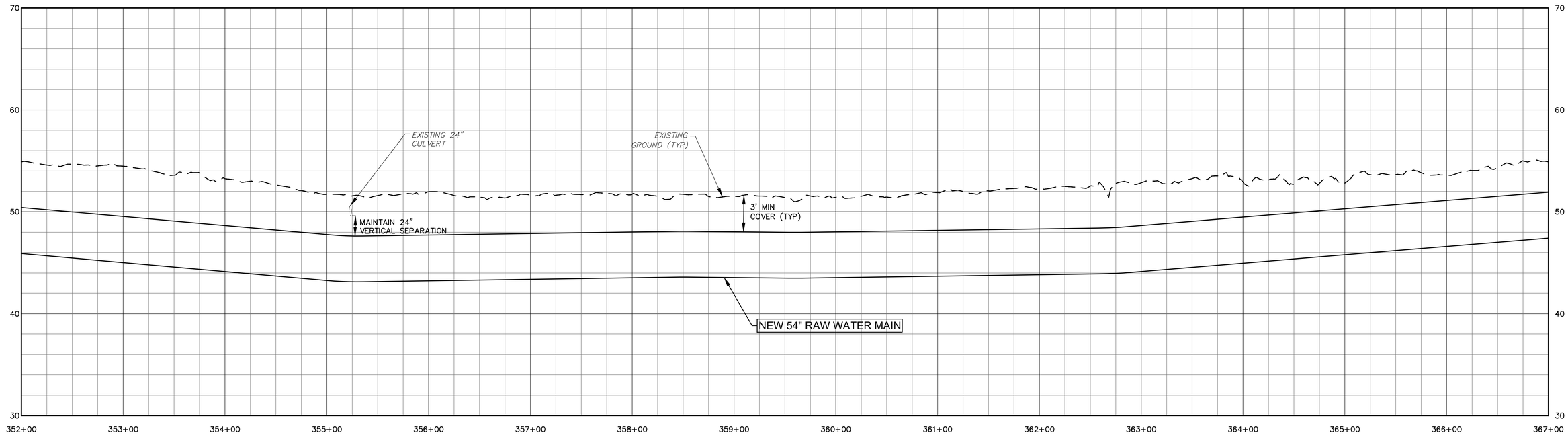
Cape Fear Public Utility Authority
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REV:	DESCRIPTION	DATE:
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NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOAHN
6-27-19

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
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50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

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SCALE: 1"=5' (Vert.)

McKIM&CREED
243 NORTH FRONT ST
WILMINGTON, NORTH CAROLINA 28401
TELE: (910) 343-1048
FAX: (910) 251-8282
LICENSE: F-1222

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

54" RAW WATER MAIN
PLAN AND PROFILE
STA 352+00 TO STA 367+00

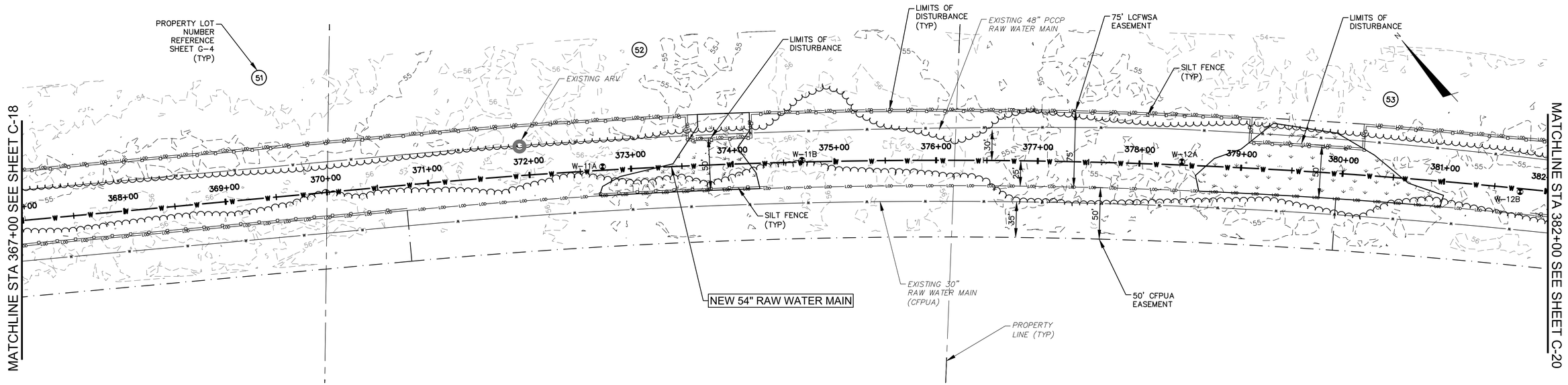
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOATH
6-21-19

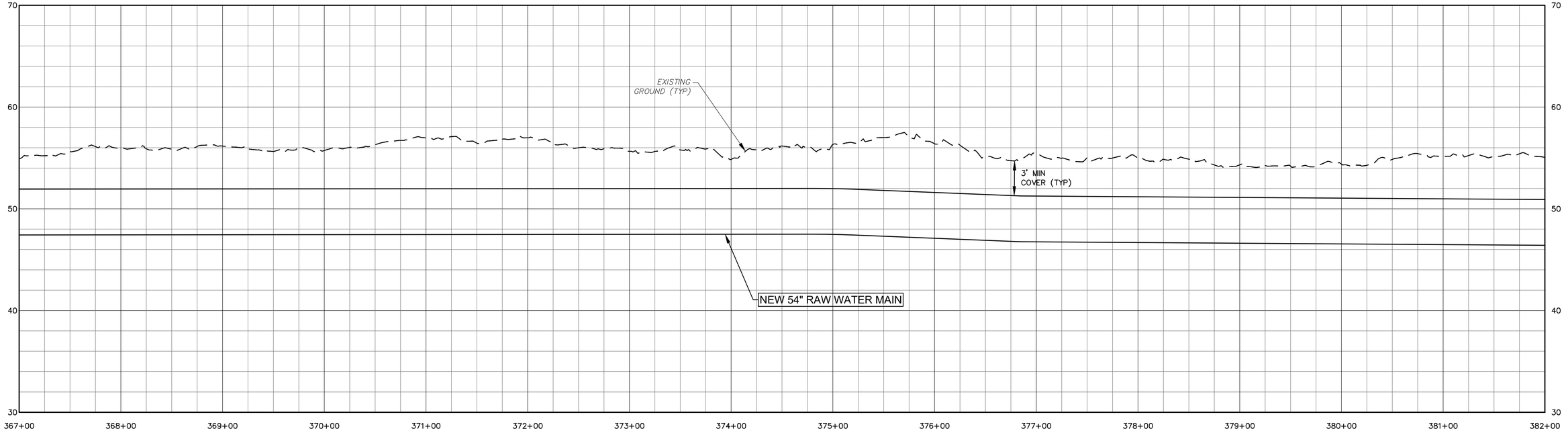
CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

SHEET NO:
C-18





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
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50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

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WILMINGTON, NORTH CAROLINA 28401
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FAX: (910) 251-8282
LICENSE: F-1222

Cape Fear Public Utility Authority
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REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

54" RAW WATER MAIN PLAN AND PROFILE STA 367+00 TO STA 382+00

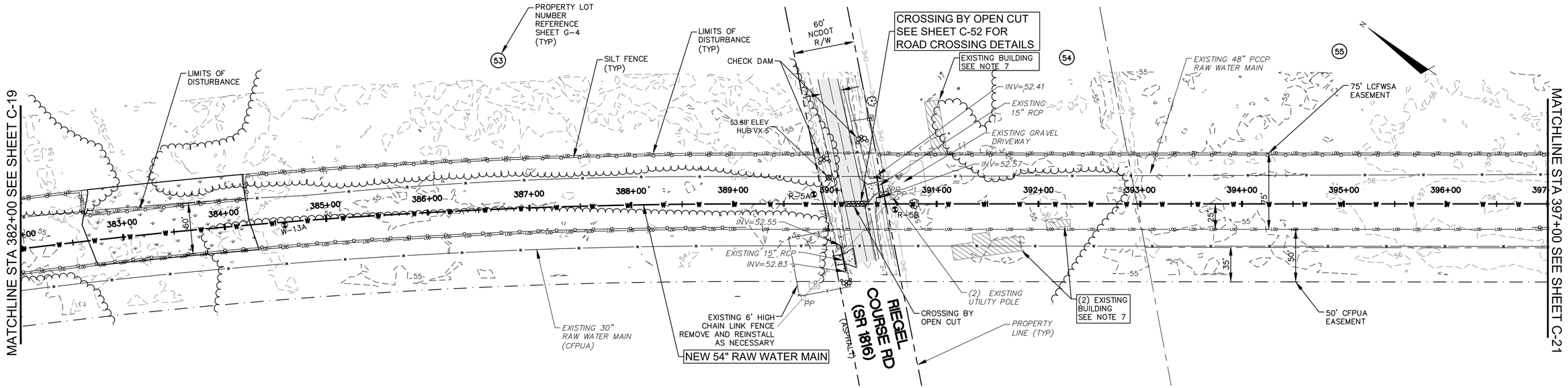
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOATIN
6-27-19

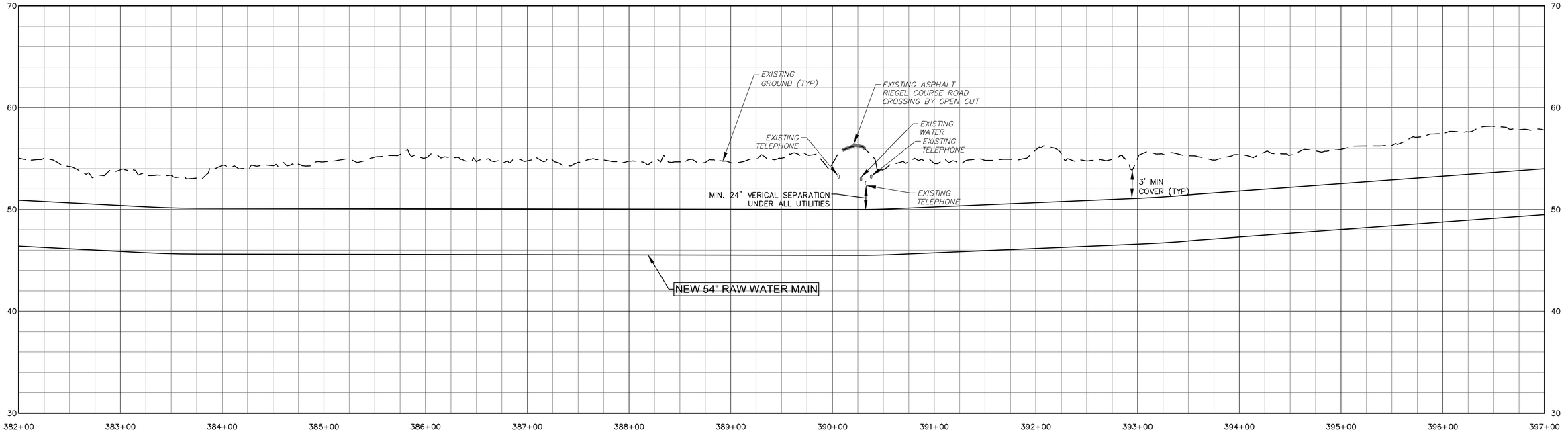
CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

SHEET NO: C-19





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
6. NEW 54" RAW WATER MAIN SHALL BE WELDED STEEL PIPE (THICKNESS MIN = 0.22, LINING = CEMENT MORTAR, COATING = POLYURETHANE) OR DUCTILE IRON PIPE (PC 150, LINING = CEMENT MORTAR, COATING = ZINC). CONTRACTOR SHALL UTILIZE ONLY ONE MATERIAL UNLESS APPROVED BY ENGINEER OR MATERIAL IS SHOWN ON PLANS.
7. CONTRACTOR SHALL NOT DISTURB OR DAMAGE EXISTING STRUCTURE OR STRUCTURE FOUNDATION. CONTRACTOR SHALL PROVIDE GEOTECHNICAL INSTRUMENTATION AND MONITORING FOR THIS STRUCTURE.

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

McKIM&CREED
243 NORTH FRONT ST
WILMINGTON, NORTH CAROLINA 28401
TELE: (910) 343-1048
FAX: (910) 251-8282
LICENSE: F-1222

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

54" RAW WATER MAIN
PLAN AND PROFILE
STA 382+00 TO STA 397+00

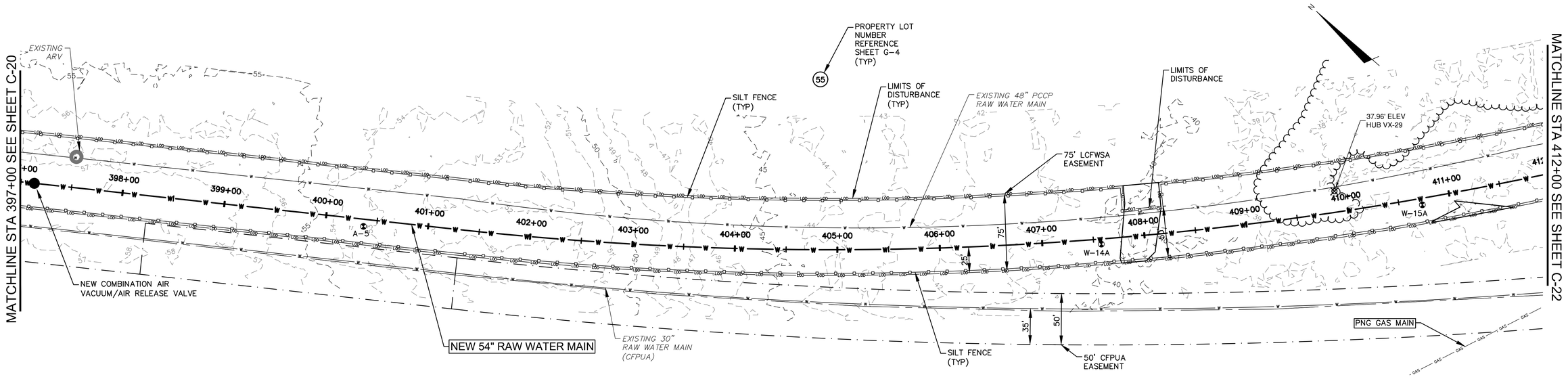
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOAHN 6-24-19

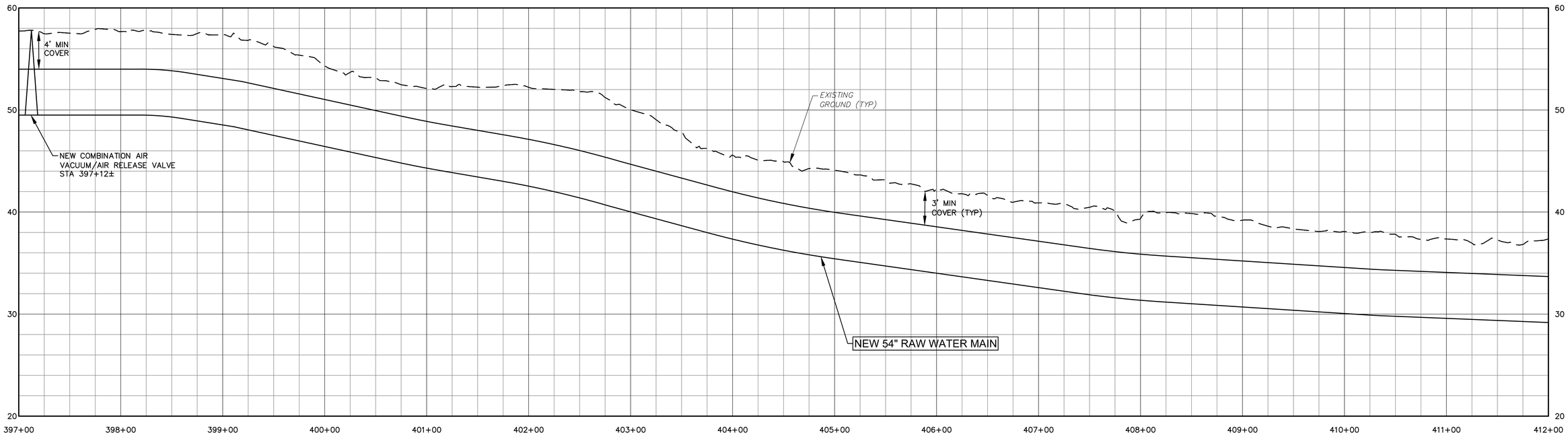
CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

SHEET NO:
C-20





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
6. NEW 54" RAW WATER MAIN SHALL BE WELDED STEEL PIPE (THICKNESS MIN = 0.22, LINING = CEMENT MORTAR, COATING = POLYURETHANE) OR DUCTILE IRON PIPE (PC 150, LINING = CEMENT MORTAR, COATING = ZINC). CONTRACTOR SHALL UTILIZE ONLY ONE MATERIAL UNLESS APPROVED BY ENGINEER OR MATERIAL IS SHOWN ON PLANS.

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

54" RAW WATER MAIN
PLAN AND PROFILE
STA 397+00 TO STA 412+00

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOARIN
6-21-19

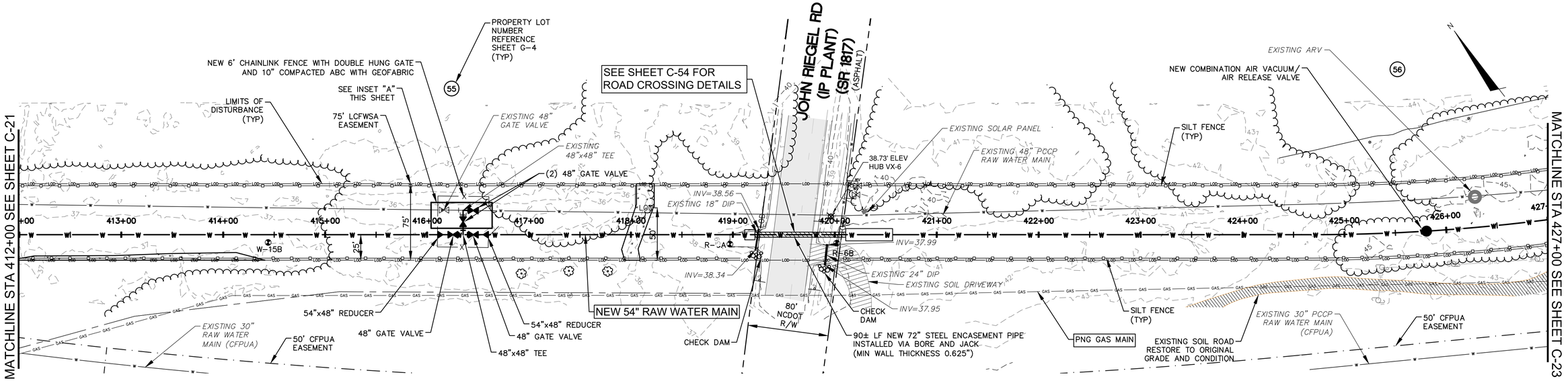
CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

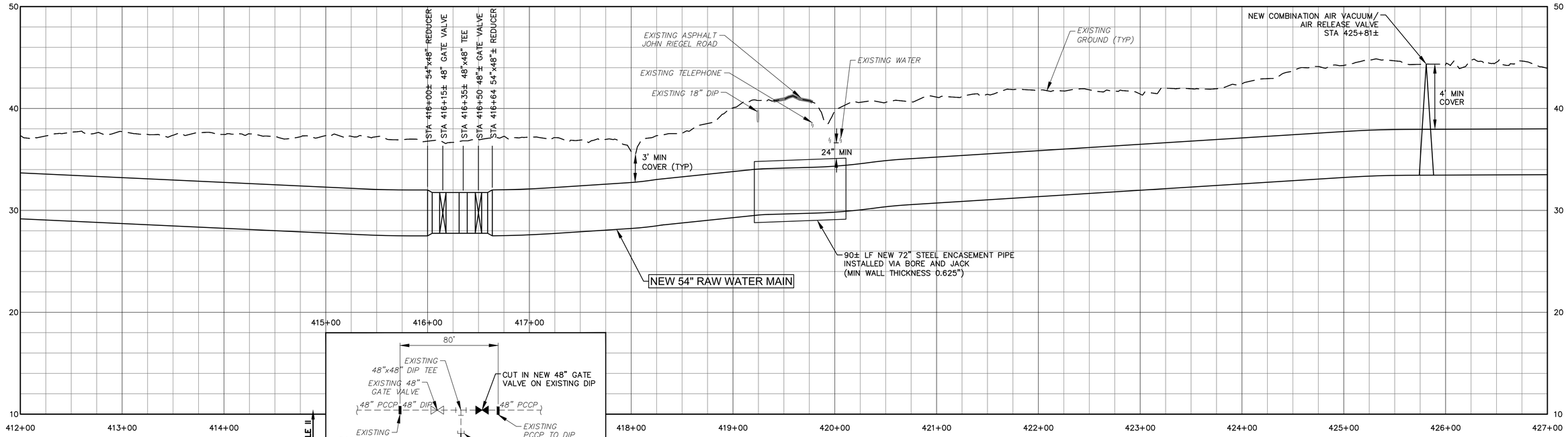
SHEET NO: C-21

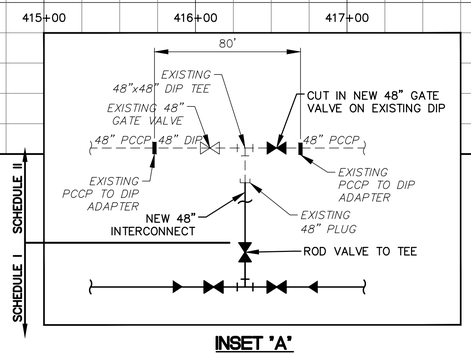
REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

McKIM&CREED
243 NORTH FRONT ST
WILMINGTON, NORTH CAROLINA 28401
TELE: (910) 343-1048
FAX: (910) 251-8282
LICENSE: F-1222

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.







INSET "A"
NTS

GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
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5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
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50' 0 50' 100'
SCALE: 1"=50' (Horiz.)
5' 0 5' 10'
SCALE: 1"=5' (Vert.)

54" RAW WATER MAIN PLAN AND PROFILE STA 412+00 TO STA 427+00

REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

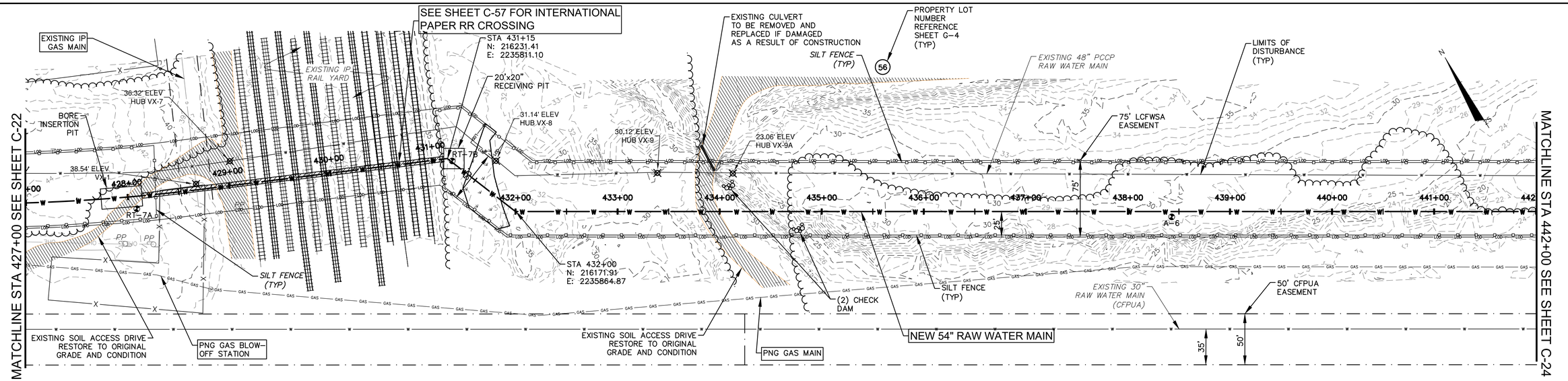
SHEET NO: C-22

McKIM&CREED
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LICENSE: F-1222

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NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOAHN
6-27-19

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560



GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
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50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

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REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

54" RAW WATER MAIN PLAN AND PROFILE STA 427+00 TO STA 442+00

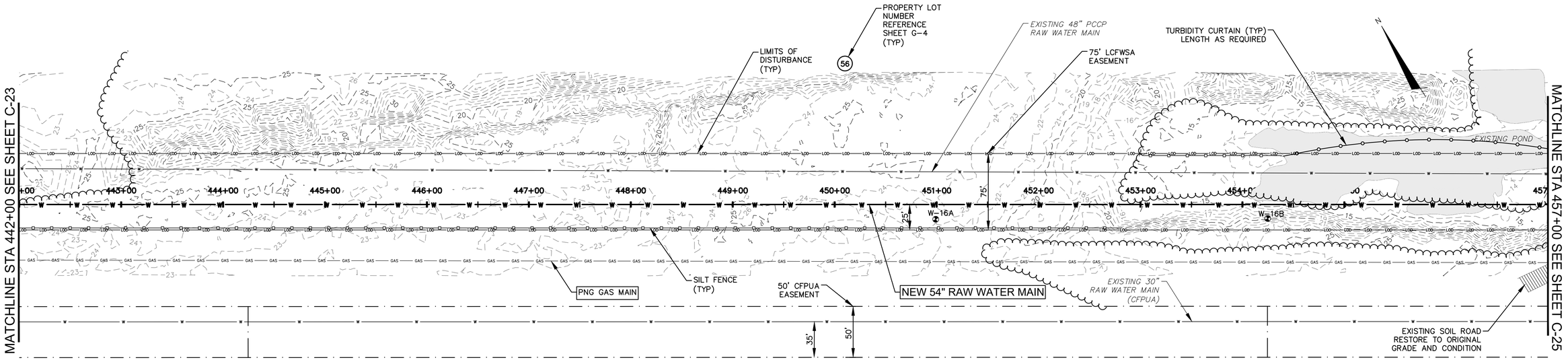
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. SOAPE
6-21-19

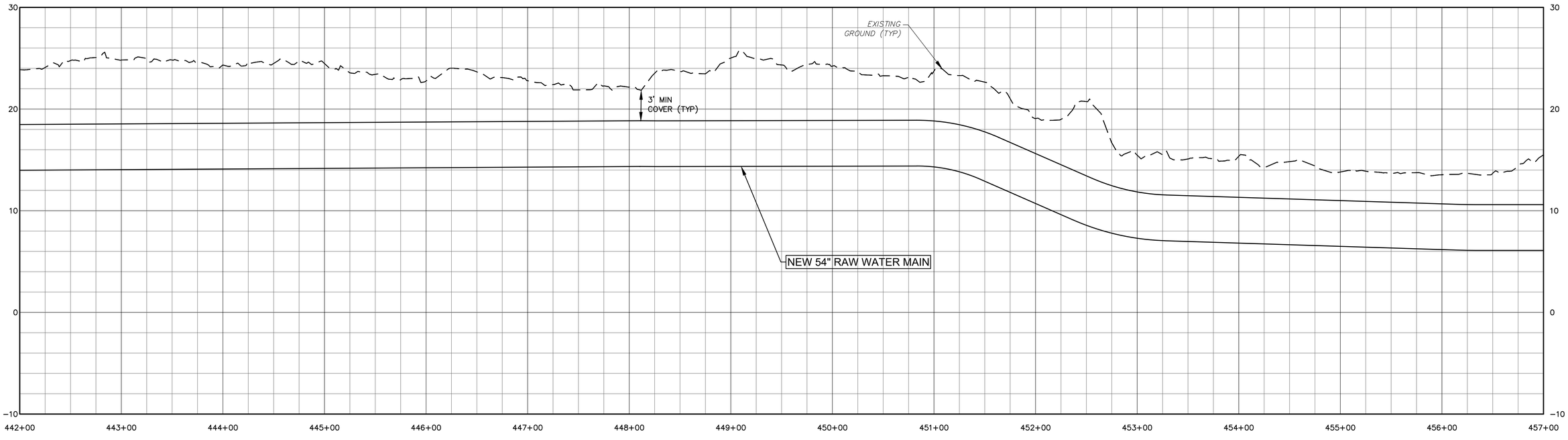
CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

SHEET NO: C-23





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
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50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

54" RAW WATER MAIN
PLAN AND PROFILE
STA 442+00 TO STA 457+00

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

McKIM&CREED
243 NORTH FRONT ST
WILMINGTON, NORTH CAROLINA 28401
TELE: (910) 343-1048
FAX: (910) 251-8282
LICENSE: F-1222

Cape Fear Public Utility Authority
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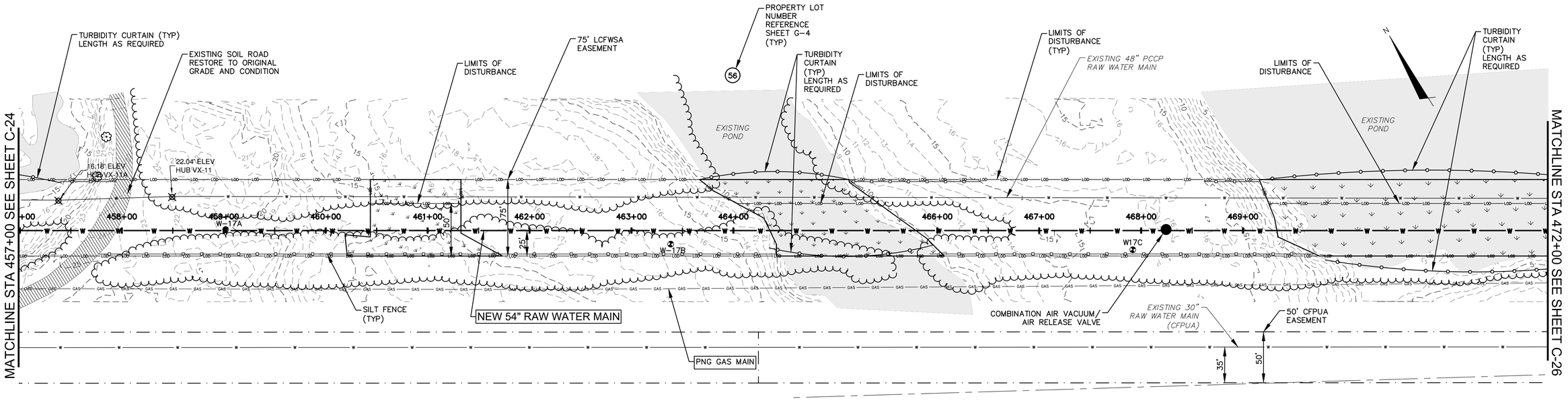
REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

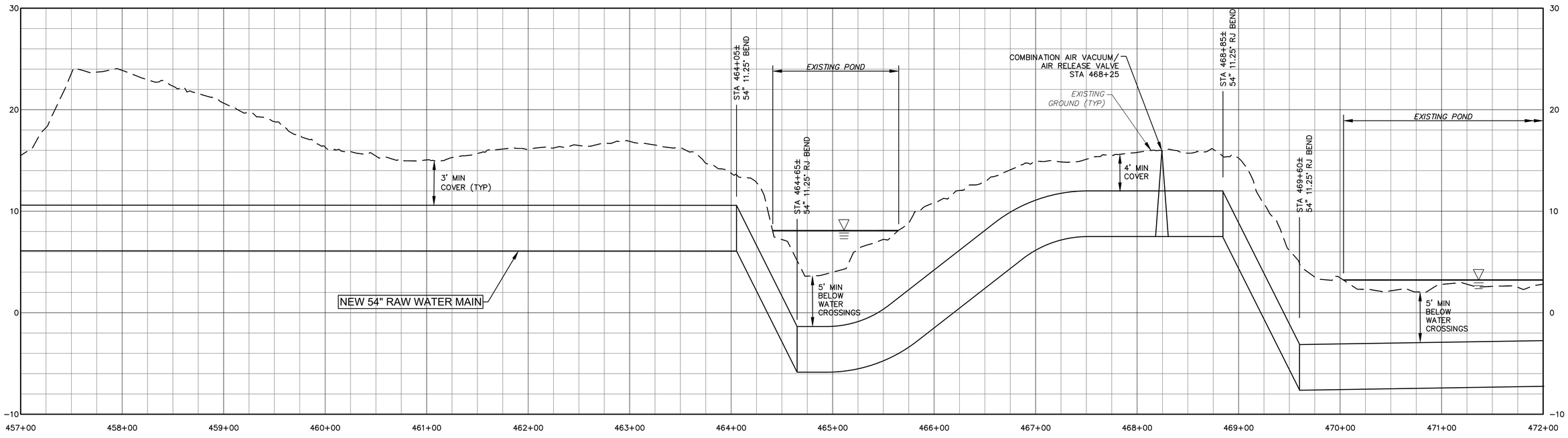
NORTH CAROLINA PROFESSIONAL SEAL 025312 ENGINEER ANTHONY W. BOAHN
6-27-19

CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

SHEET NO:
C-24





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
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50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

54" RAW WATER MAIN PLAN AND PROFILE STA 4597+00 TO STA 472+00

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

SHEET NO: C-25

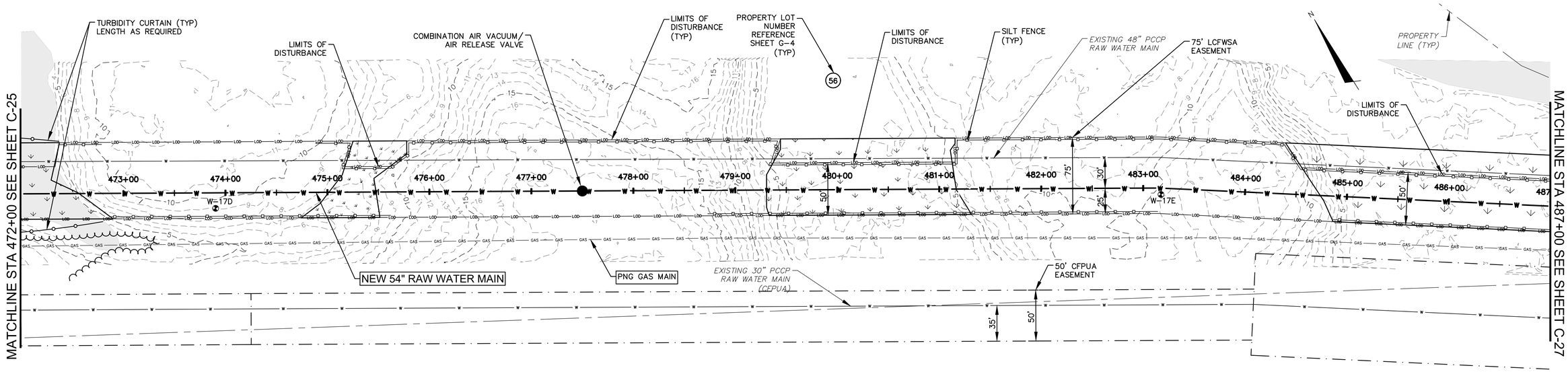
McKIM&CREED
243 NORTH FRONT ST
WILMINGTON, NORTH CAROLINA 28401
TELE: (910) 343-1048
FAX: (910) 251-8282
LICENSE: F-1222

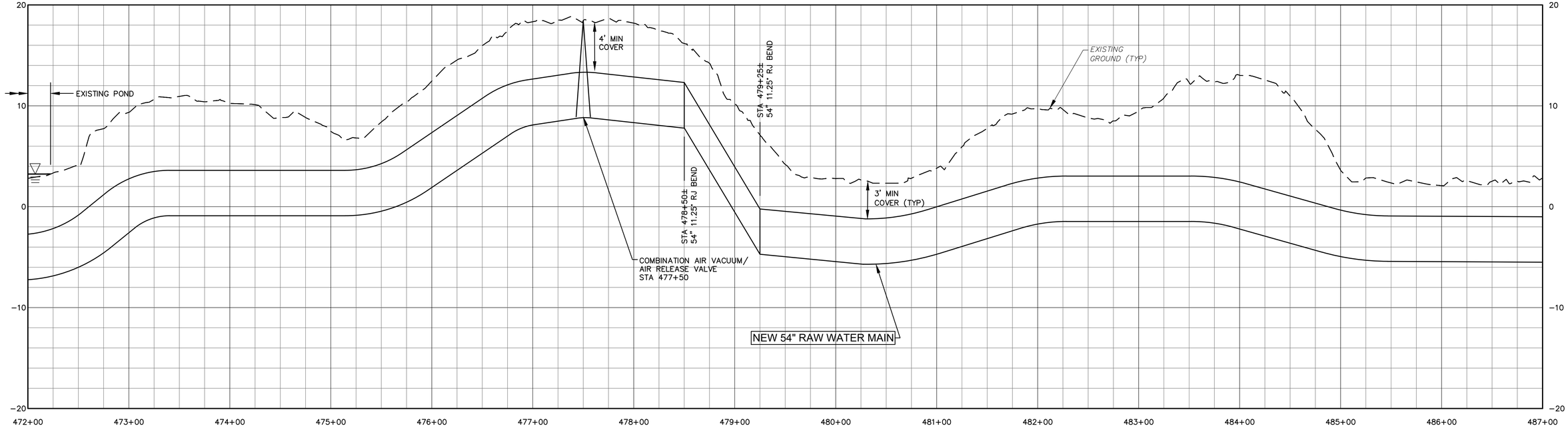
Cape Fear Public Utility Authority
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REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOARIN
6-27-19

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
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50' 0 50' 100'
SCALE: 1"=50' (Horiz.)
5' 0 5' 10'
SCALE: 1"=5' (Vert.)

McKIM&CREED
243 NORTH FRONT ST
WILMINGTON, NORTH CAROLINA 28401
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REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

54" RAW WATER MAIN PLAN AND PROFILE STA 472+00 TO STA 487+00

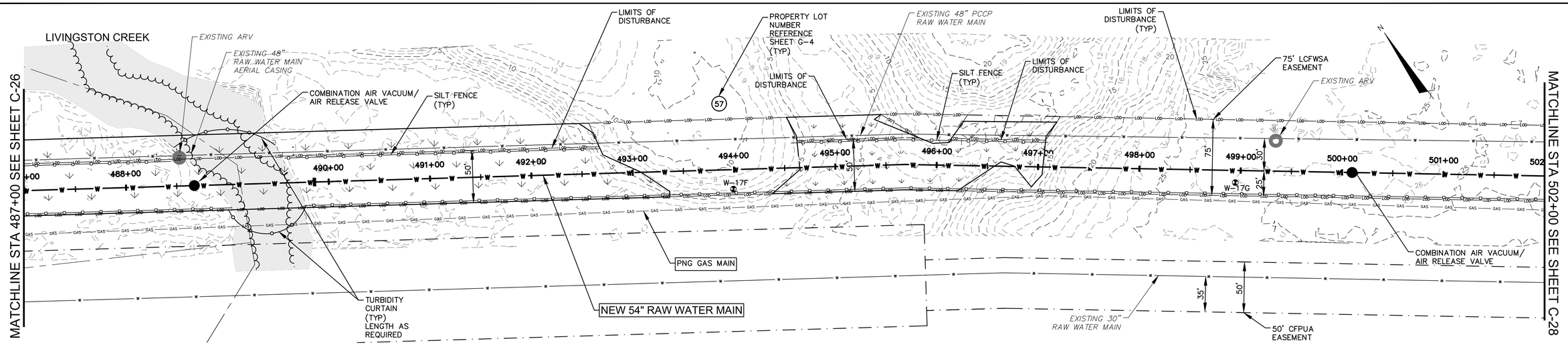
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOAHN
6-27-19

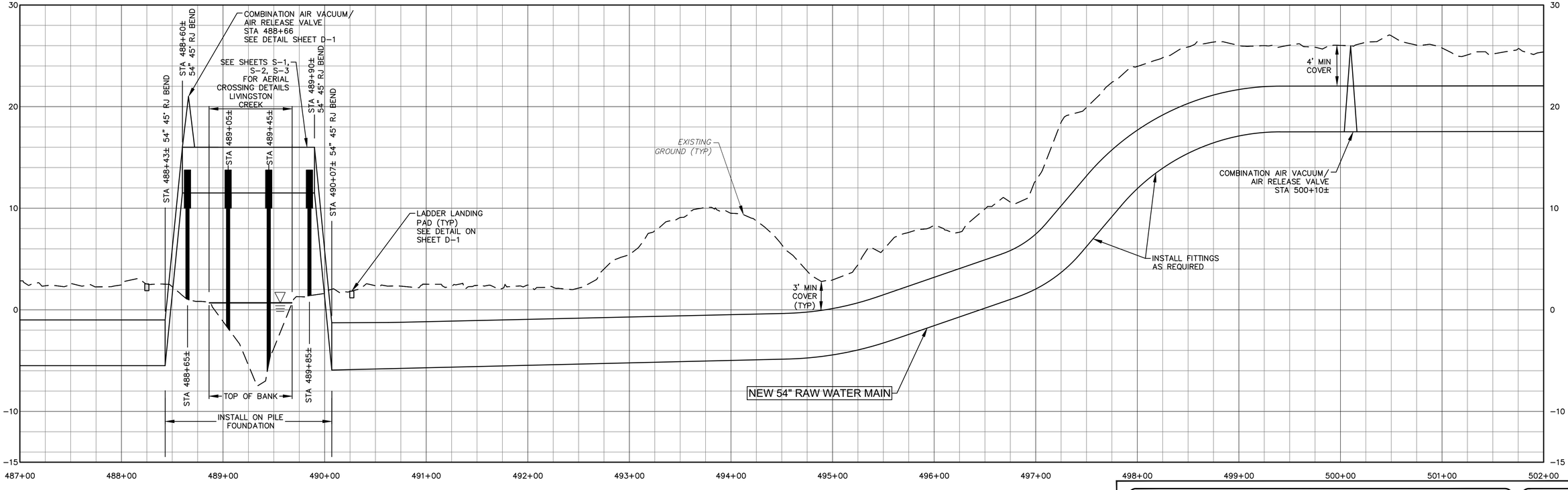
CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE:	JUNE 2019
SCALE:	AS SHOWN
DRAWN BY:	JPV
CHECKED BY:	AWB
PROJECT NO. :	5367-0038

SHEET NO: C-26





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
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50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

McKIM&CREED
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WILMINGTON, NORTH CAROLINA 28401
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FAX: (910) 251-8282
LICENSE: F-1222

Cape Fear Public Utility Authority
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REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

54" RAW WATER MAIN PLAN AND PROFILE STA 487+00 TO STA 502+00

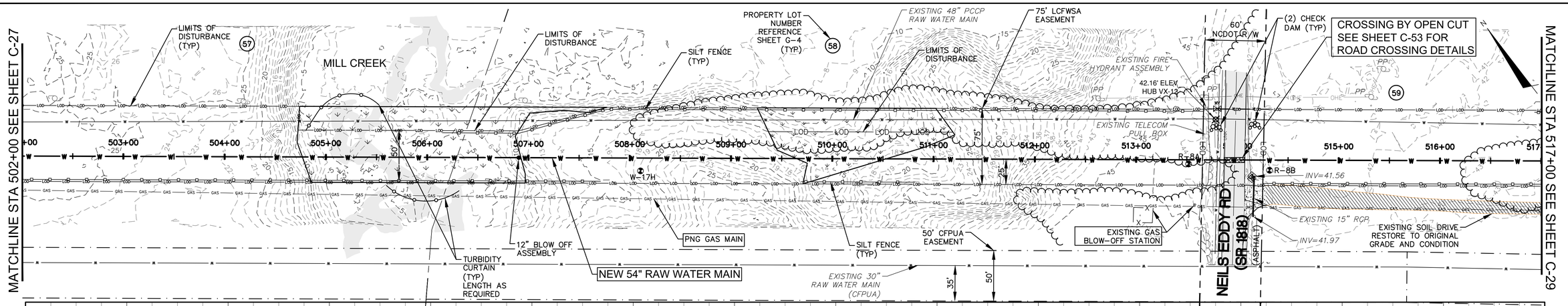
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOAHN
6-21-19

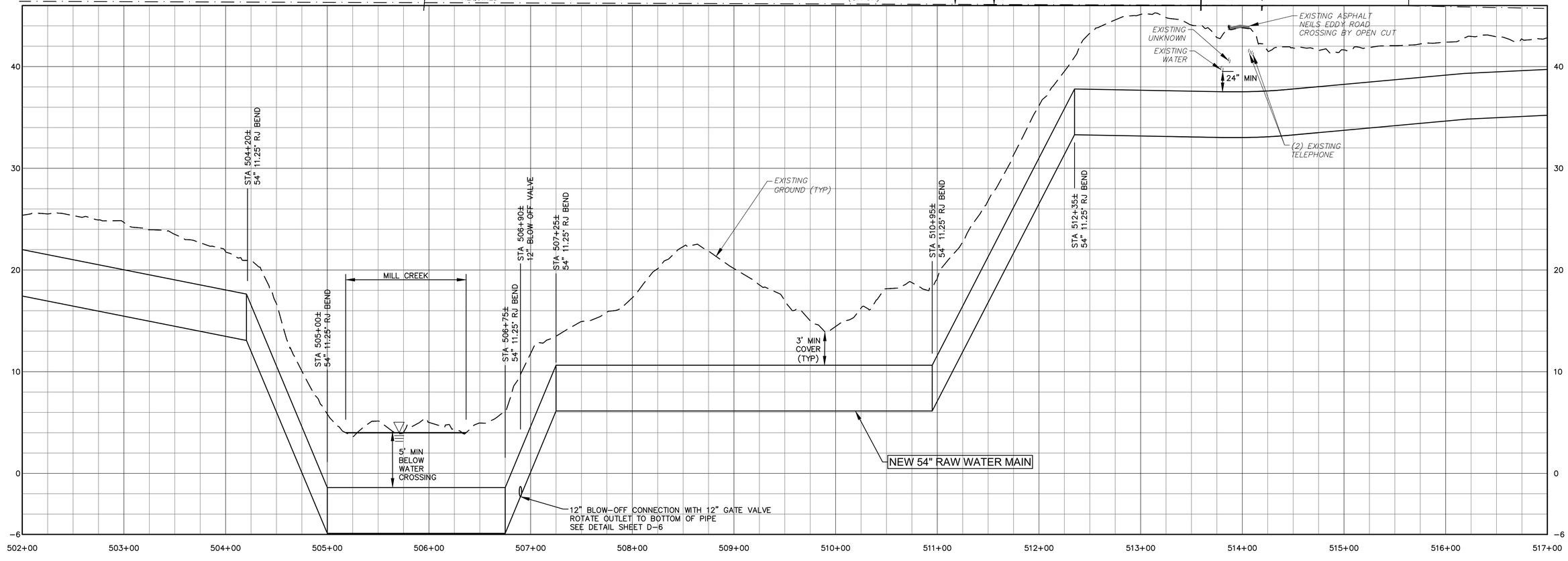
CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

SHEET NO: C-27





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
6. NEW 54" RAW WATER MAIN SHALL BE WELDED STEEL PIPE (THICKNESS MIN = 0.22, LINING = CEMENT MORTAR, COATING = POLYURETHANE) OR DUCTILE IRON PIPE (PC 150, LINING = CEMENT MORTAR, COATING = ZINC). CONTRACTOR SHALL UTILIZE ONLY ONE MATERIAL UNLESS APPROVED BY ENGINEER OR MATERIAL IS SHOWN ON PLANS.

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

54" RAW WATER MAIN PLAN AND PROFILE STA 502+00 TO STA 517+00

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

SHEET NO: C-28

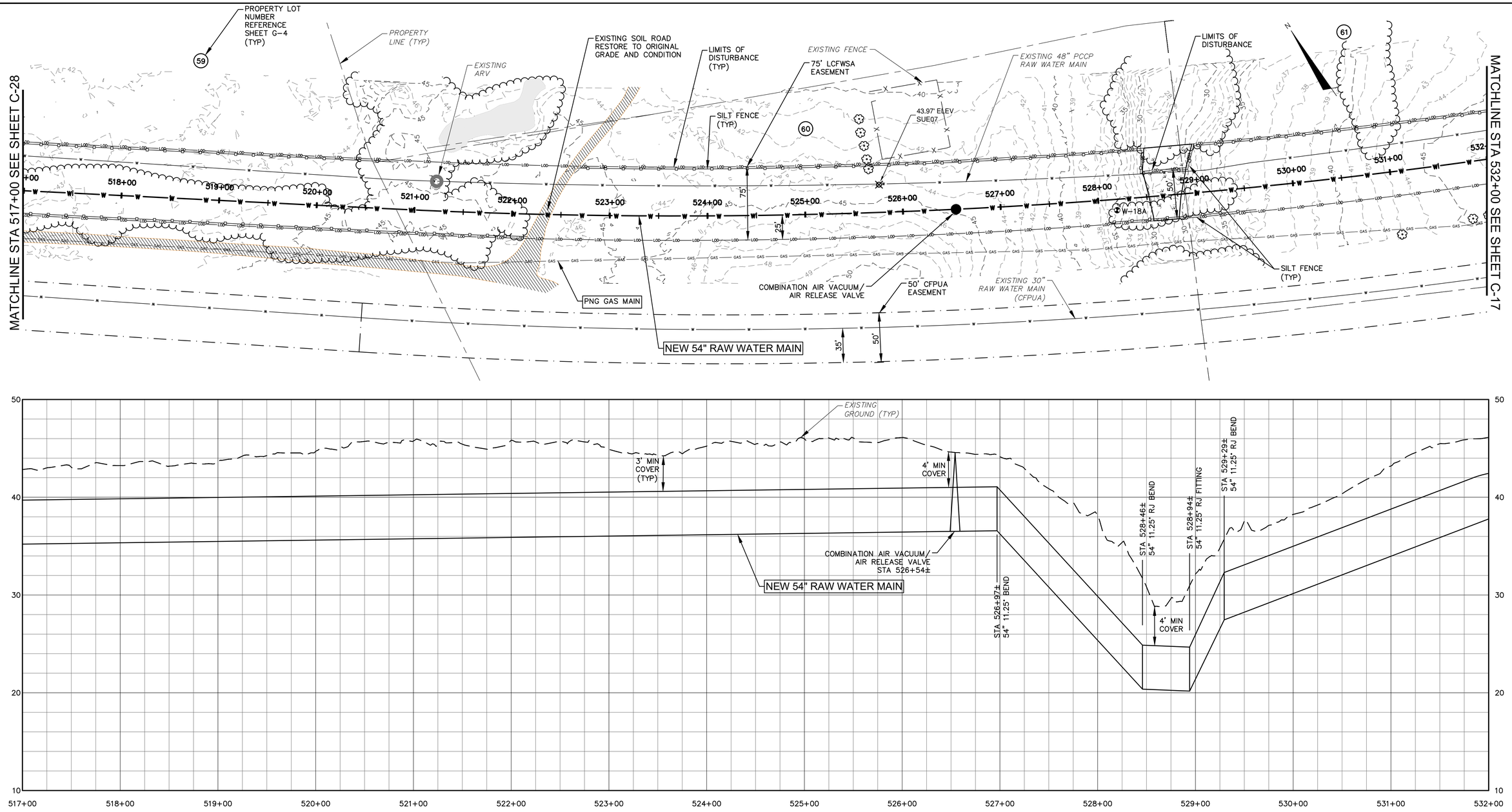
REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOARIN
6-27-19

McKIM & CREED
243 NORTH FRONT ST
WILMINGTON, NORTH CAROLINA 28401
TELE: (910) 343-1048
FAX: (910) 251-8282
LICENSE: F-1222

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560



GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
6. NEW 54" RAW WATER MAIN SHALL BE WELDED STEEL PIPE (THICKNESS MIN = 0.22, LINING = CEMENT MORTAR, COATING = POLYURETHANE) OR DUCTILE IRON PIPE (PC 150, LINING = CEMENT MORTAR, COATING = ZINC). CONTRACTOR SHALL UTILIZE ONLY ONE MATERIAL UNLESS APPROVED BY ENGINEER OR MATERIAL IS SHOWN ON PLANS.

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

McKIM&CREED
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REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

54" RAW WATER MAIN PLAN AND PROFILE STA 517+00 TO STA 532+00

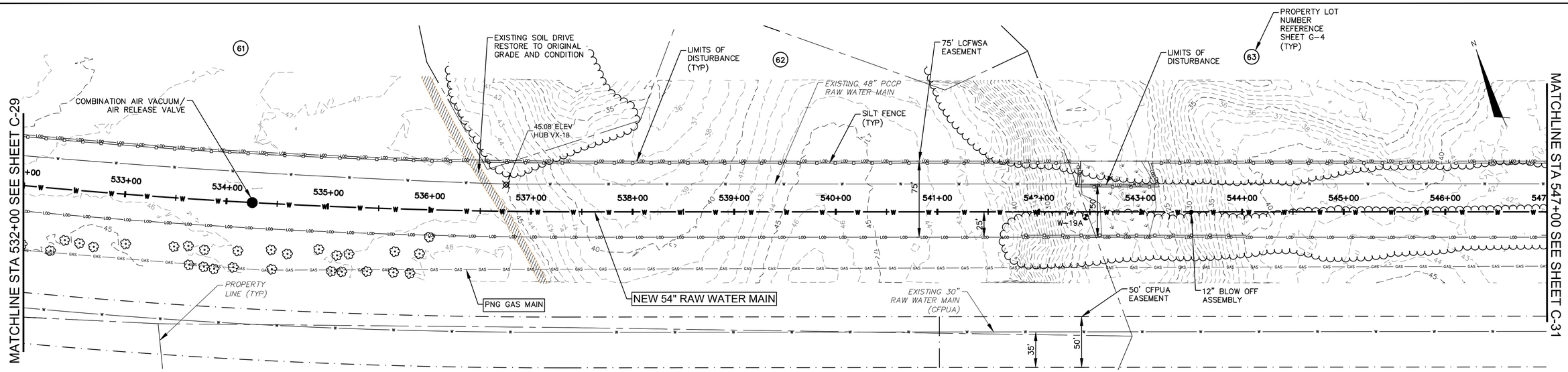
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOAHN
6-27-19

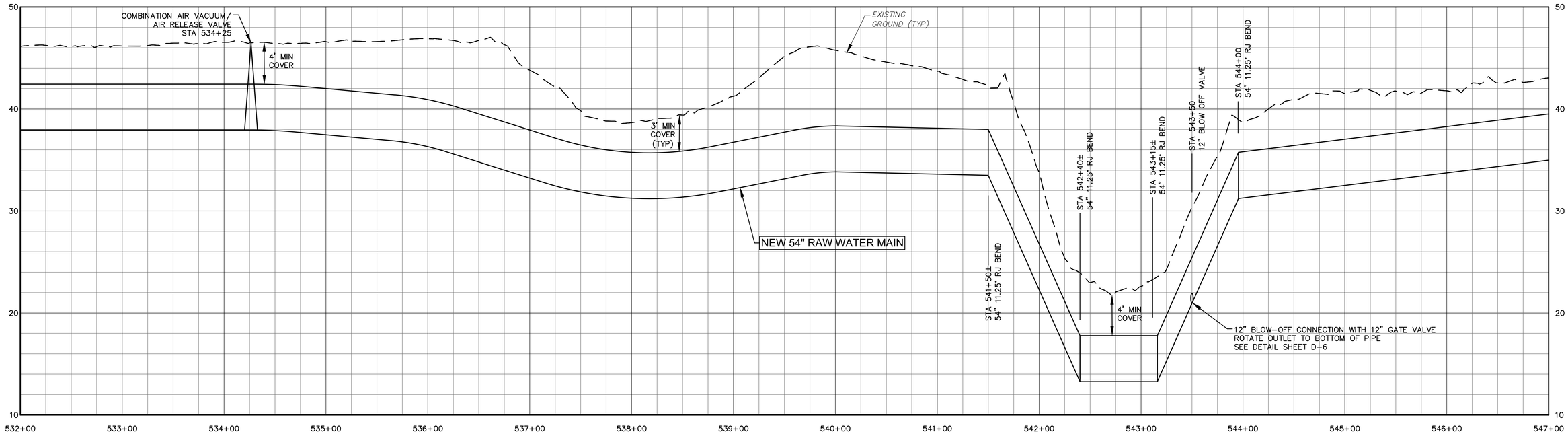
CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

SHEET NO: C-29





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
6. NEW 54" RAW WATER MAIN SHALL BE WELDED STEEL PIPE (THICKNESS MIN = 0.22, LINING = CEMENT MORTAR, COATING = POLYURETHANE) OR DUCTILE IRON PIPE (PC 150, LINING = CEMENT MORTAR, COATING = ZINC). CONTRACTOR SHALL UTILIZE ONLY ONE MATERIAL UNLESS APPROVED BY ENGINEER OR MATERIAL IS SHOWN ON PLANS.

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)
5' 0 5' 10'
SCALE: 1"=5' (Vert.)

McKIM&CREED
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FAX: (910) 251-8282
LICENSE: F-1222

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

54" RAW WATER MAIN PLAN AND PROFILE STA 532+00 TO STA 547+00

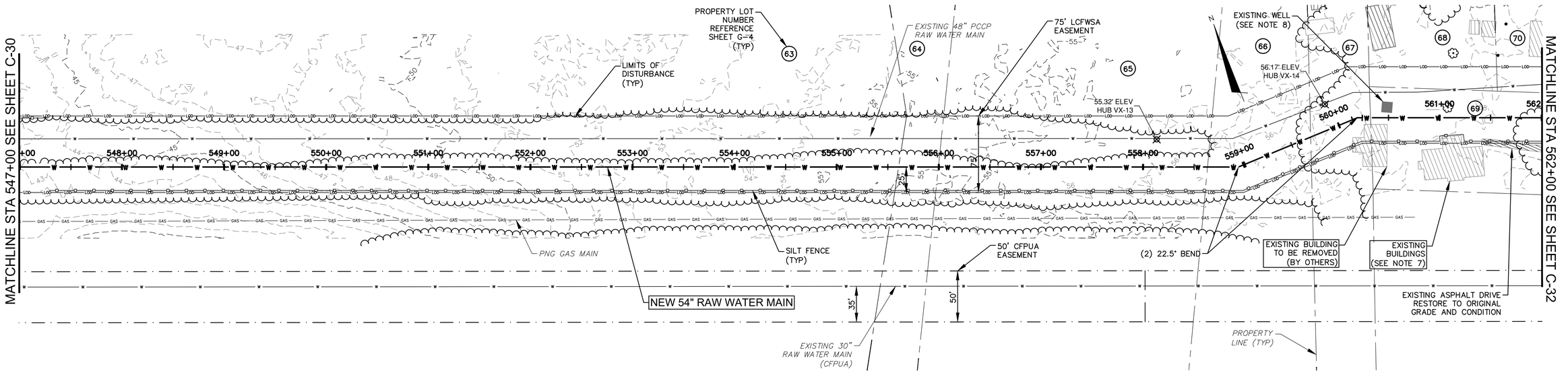
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOAHN
6-24-19

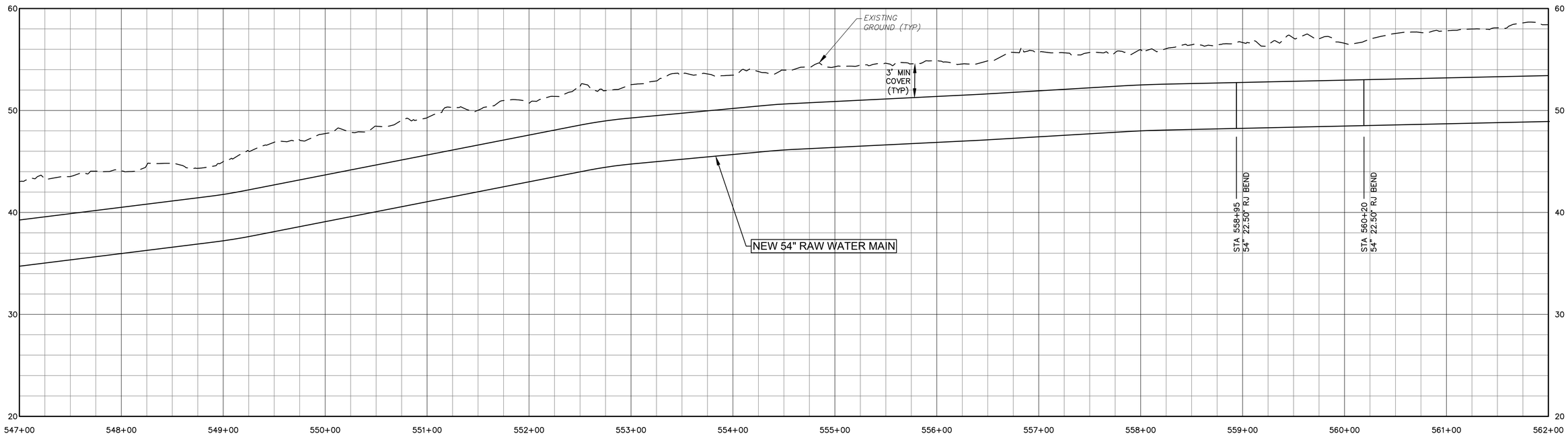
CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

SHEET NO: C-30





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
6. NEW 54" RAW WATER MAIN SHALL BE WELDED STEEL PIPE (THICKNESS MIN = 0.22, LINING = CEMENT MORTAR, COATING = POLYURETHANE) OR DUCTILE IRON PIPE (PC 150, LINING = CEMENT MORTAR, COATING = ZINC). CONTRACTOR SHALL UTILIZE ONLY ONE MATERIAL UNLESS APPROVED BY ENGINEER OR MATERIAL IS SHOWN ON PLANS.
7. CONTRACTOR SHALL NOT DISTURB OR DAMAGE EXISTING STRUCTURE OR STRUCTURE FOUNDATION. CONTRACTOR SHALL PROVIDE GEOTECHNICAL INSTRUMENTATION AND MONITORING FOR THIS STRUCTURE.
8. EXISTING WELL (ABANDONED). CONTRACTOR SHALL RE-CAP EXISTING WELL IF IMPACTED DURING CONSTRUCTION IN ACCORDANCE WITH APPLICABLE REGULATORY REQUIREMENTS.

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)
5' 0 5' 10'
SCALE: 1"=5' (Vert.)

54" RAW WATER MAIN
PLAN AND PROFILE
STA 547+00 TO STA 562+00

MCKIM&CREED
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TELE: (910) 343-1048
FAX: (910) 251-8282
LICENSE: F-1222

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

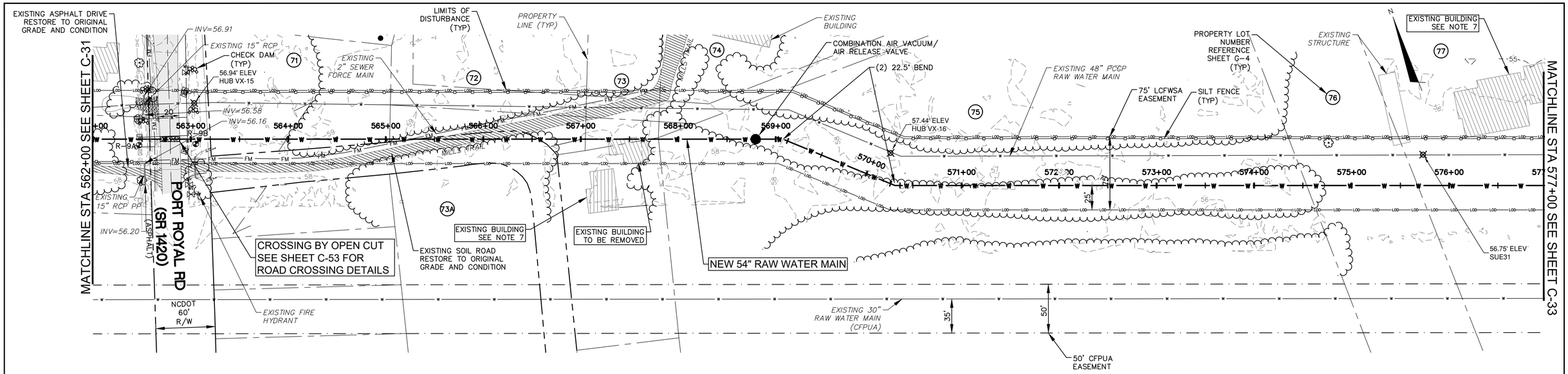
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOAHN
6-27-19

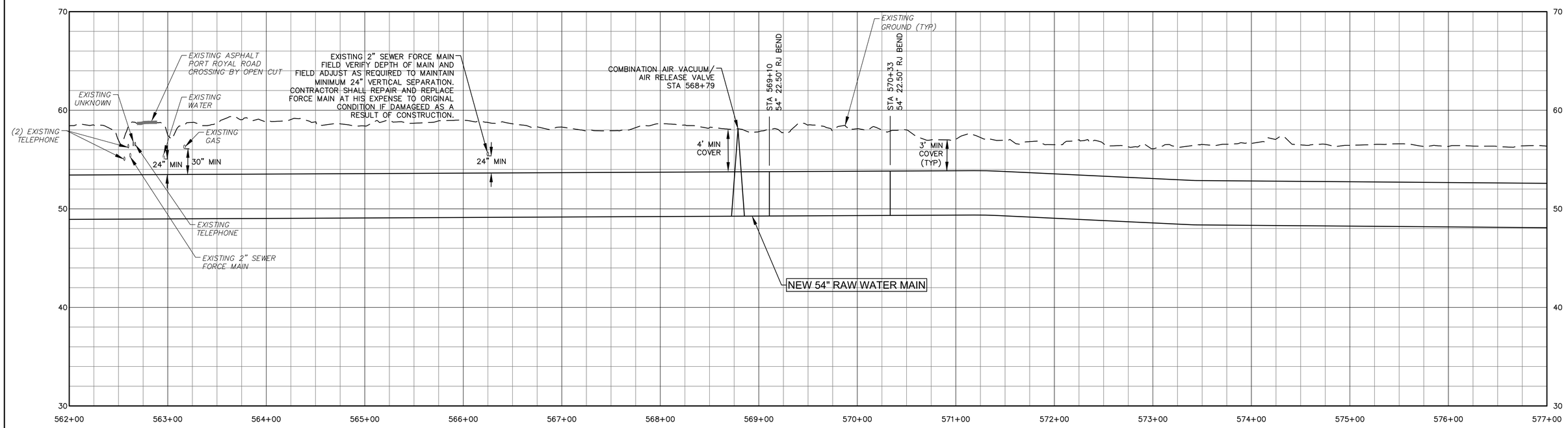
CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW
WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

SHEET NO: C-31





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
6. NEW 54" RAW WATER MAIN SHALL BE WELDED STEEL PIPE (THICKNESS MIN = 0.22, LINING = CEMENT MORTAR, COATING = POLYURETHANE) OR DUCTILE IRON PIPE (PC 150, LINING = CEMENT MORTAR, COATING = ZINC). CONTRACTOR SHALL UTILIZE ONLY ONE MATERIAL UNLESS APPROVED BY ENGINEER OR MATERIAL IS SHOWN ON PLANS.
7. CONTRACTOR SHALL NOT DISTURB OR DAMAGE EXISTING STRUCTURE OR STRUCTURE FOUNDATION. CONTRACTOR SHALL PROVIDE GEOTECHNICAL INSTRUMENTATION AND MONITORING FOR THIS STRUCTURE.

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

McKIM&CREED
243 NORTH FRONT ST
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FAX: (910) 251-8282
LICENSE: F-1222

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

54" RAW WATER MAIN PLAN AND PROFILE STA 562+00 TO STA 577+00

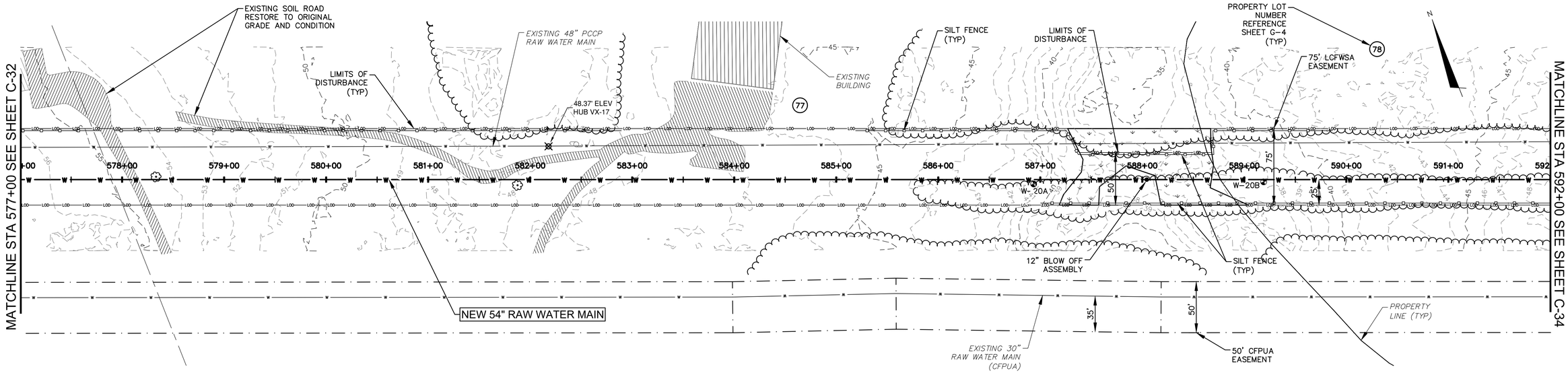
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOARIN
6-27-19

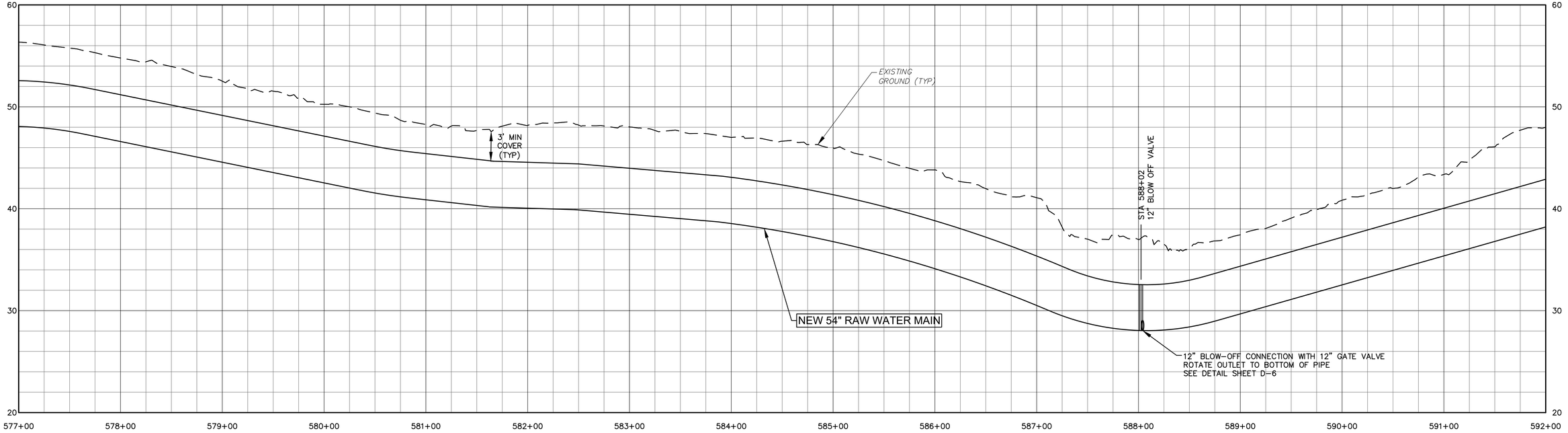
CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

SHEET NO: C-32





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
6. NEW 54" RAW WATER MAIN SHALL BE WELDED STEEL PIPE (THICKNESS MIN = 0.22, LINING = CEMENT MORTAR, COATING = POLYURETHANE) OR DUCTILE IRON PIPE (PC 150, LINING = CEMENT MORTAR, COATING = ZINC). CONTRACTOR SHALL UTILIZE ONLY ONE MATERIAL UNLESS APPROVED BY ENGINEER OR MATERIAL IS SHOWN ON PLANS.

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

McKIM&CREED
243 NORTH FRONT ST
WILMINGTON, NORTH CAROLINA 28401
TELE: (910) 343-1048
FAX: (910) 251-8282
LICENSE: F-1222

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

54" RAW WATER MAIN PLAN AND PROFILE STA 577+00 TO STA 592+00

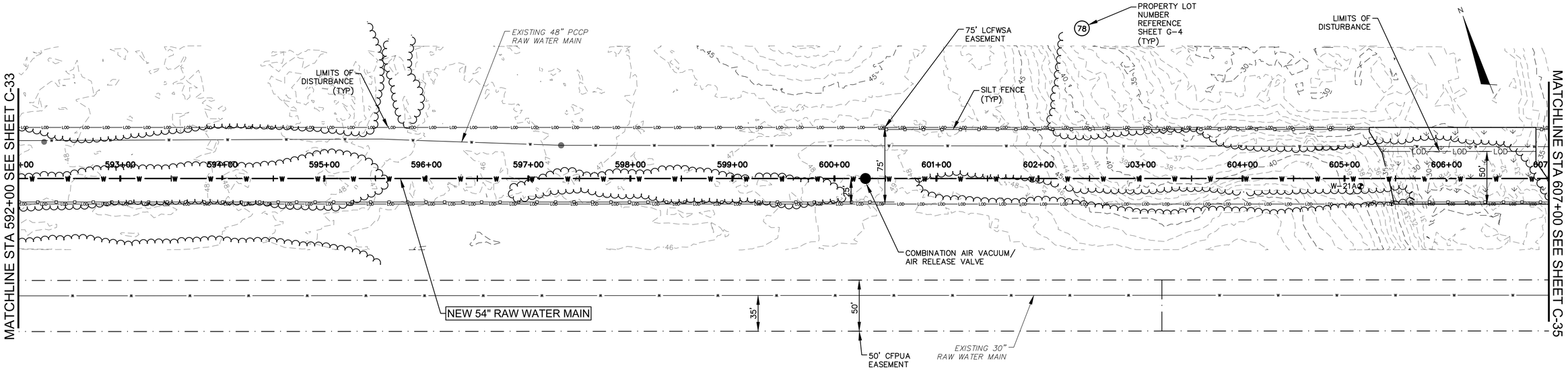
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOAHN
6-27-19

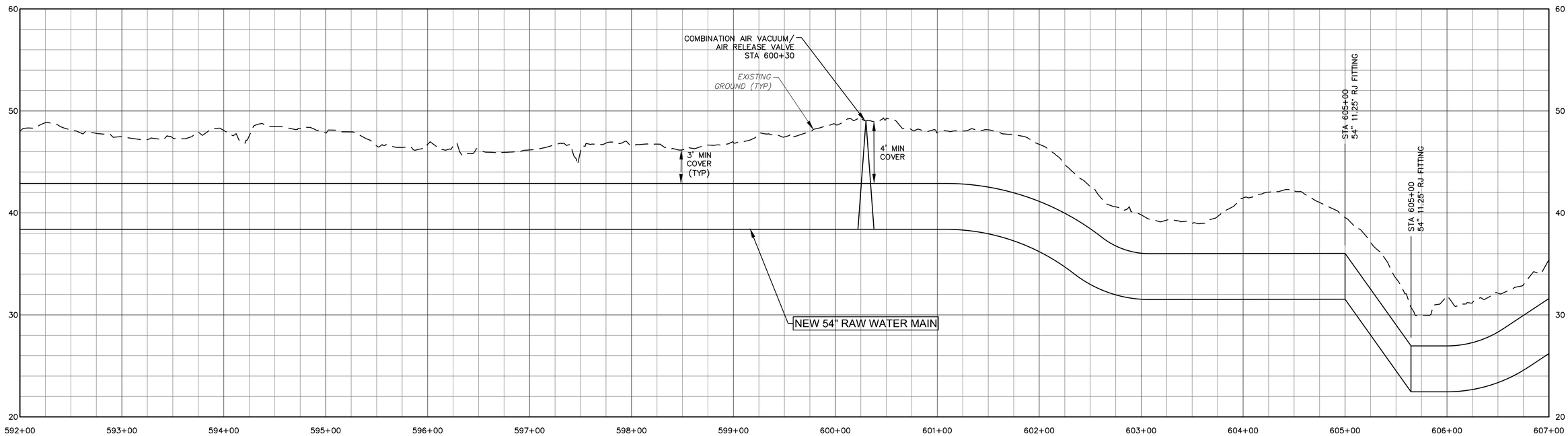
CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

SHEET NO: C-33





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
6. NEW 54" RAW WATER MAIN SHALL BE WELDED STEEL PIPE (THICKNESS MIN = 0.22, LINING = CEMENT MORTAR, COATING = POLYURETHANE) OR DUCTILE IRON PIPE (PC 150, LINING = CEMENT MORTAR, COATING = ZINC). CONTRACTOR SHALL UTILIZE ONLY ONE MATERIAL UNLESS APPROVED BY ENGINEER OR MATERIAL IS SHOWN ON PLANS.

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

54" RAW WATER MAIN PLAN AND PROFILE STA 592+00 TO STA 607+00

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

McKIM&CREED
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WILMINGTON, NORTH CAROLINA 28401
TELE: (910) 343-1048
FAX: (910) 251-8282
LICENSE: F-1222

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

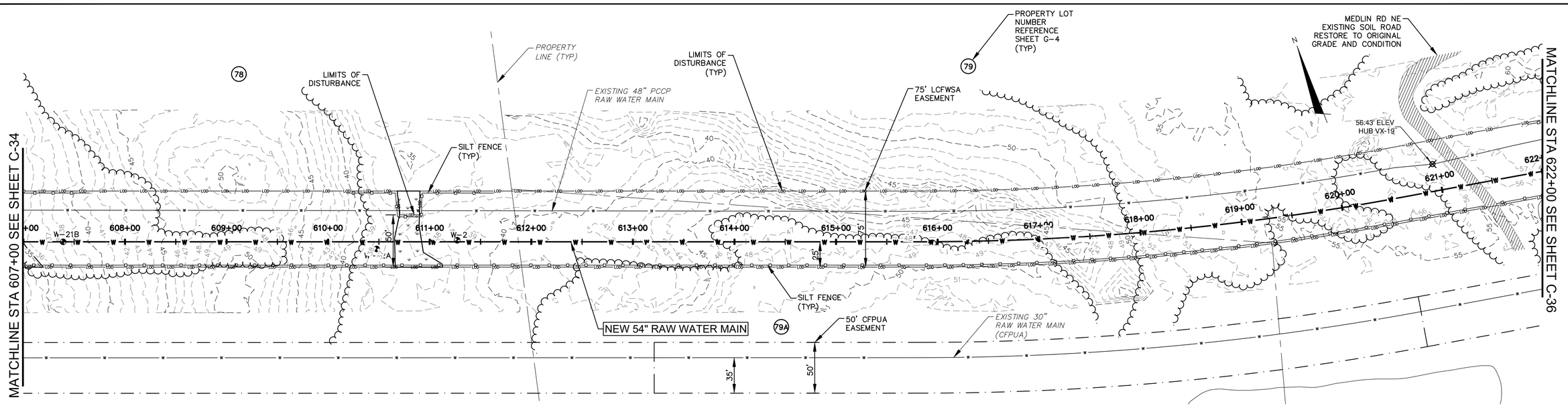
REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

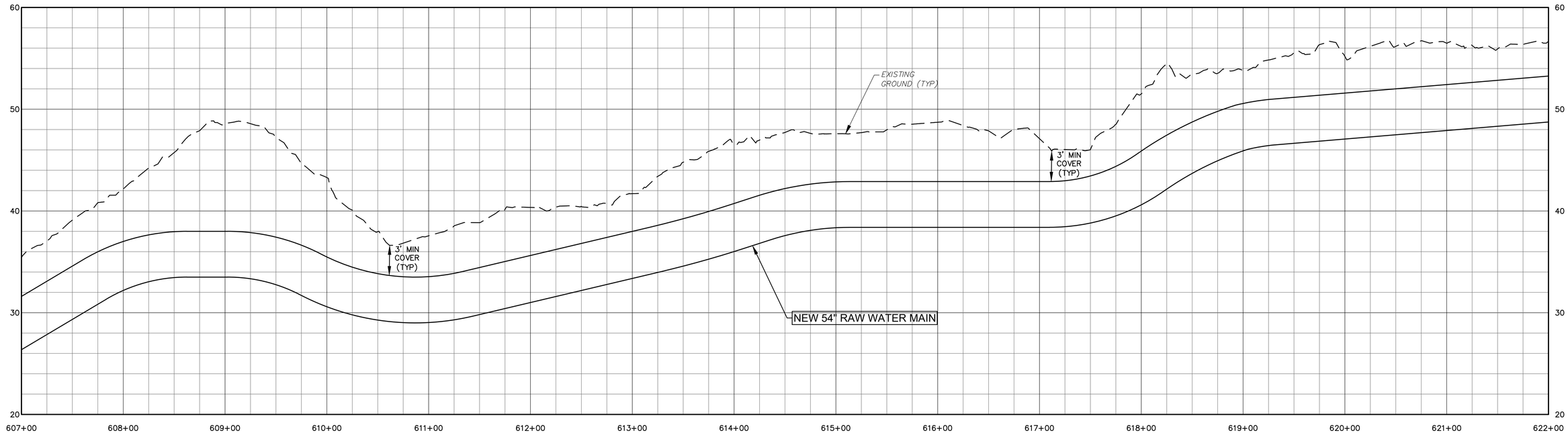
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOAHN 6-27-19

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

SHEET NO: C-34





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
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50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

McKIM&CREED
243 NORTH FRONT ST
WILMINGTON, NORTH CAROLINA 28401
TELE: (910) 343-1048
FAX: (910) 251-8282
LICENSE: F-1222

Cape Fear Public Utility Authority
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REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

54" RAW WATER MAIN PLAN AND PROFILE STA 610+00 TO STA 622+00

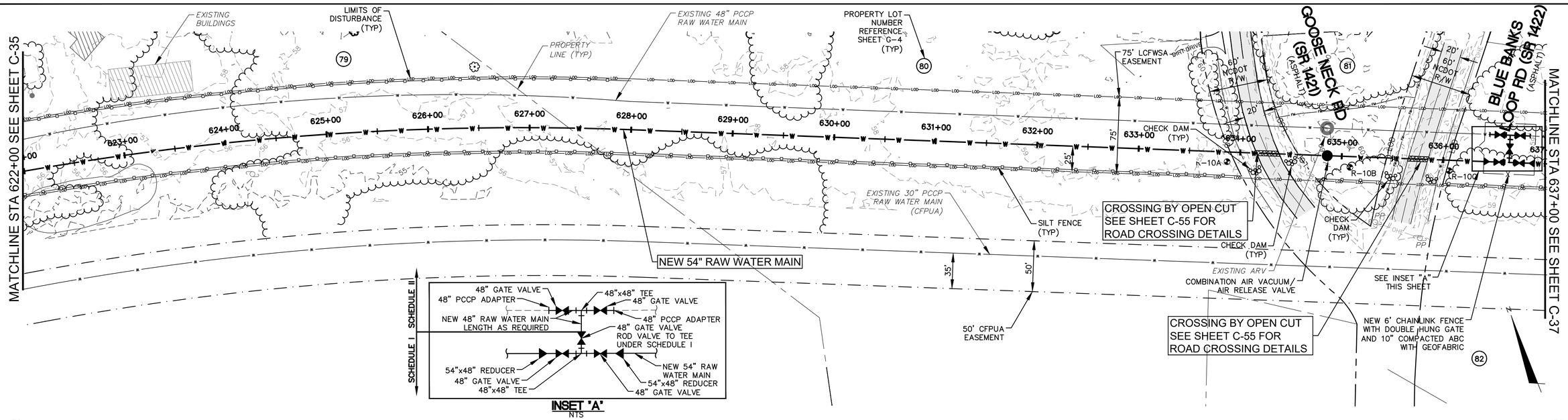
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOARIN
6-27-19

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

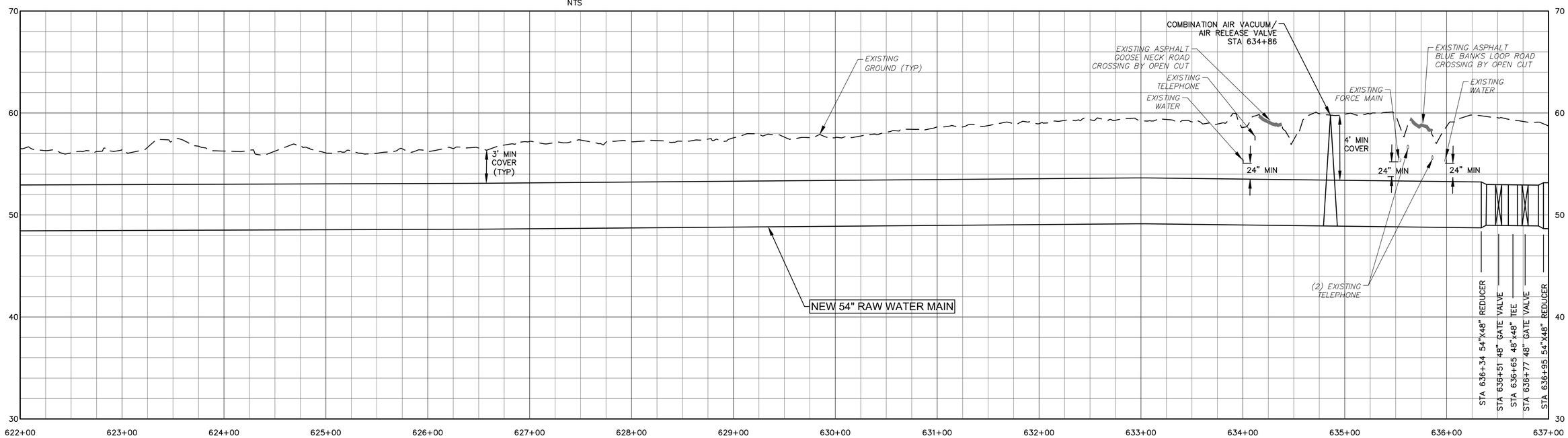
CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

SHEET NO: C-35



INSET 'A'
NTS



50' 0 50' 100'
SCALE: 1"=50' (Horiz.)
5' 0 5' 10'
SCALE: 1"=5' (Vert.)

GENERAL NOTES:
1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
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TELE: (910) 343-1048
FAX: (910) 251-8282
LICENSE: F-1222

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

54" RAW WATER MAIN PLAN AND PROFILE STA 622+00 TO STA 637+00

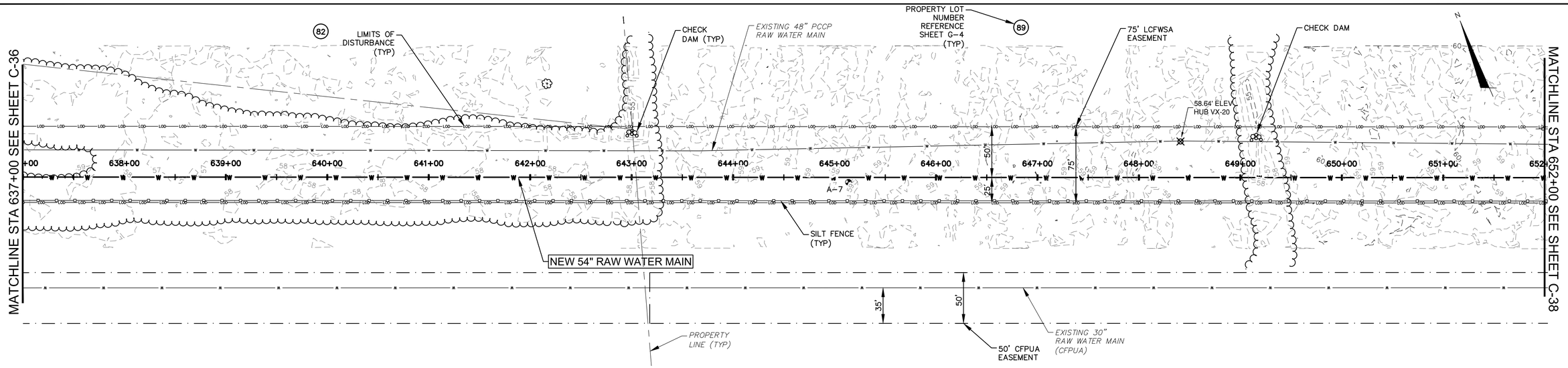
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOAHN
6-27-19

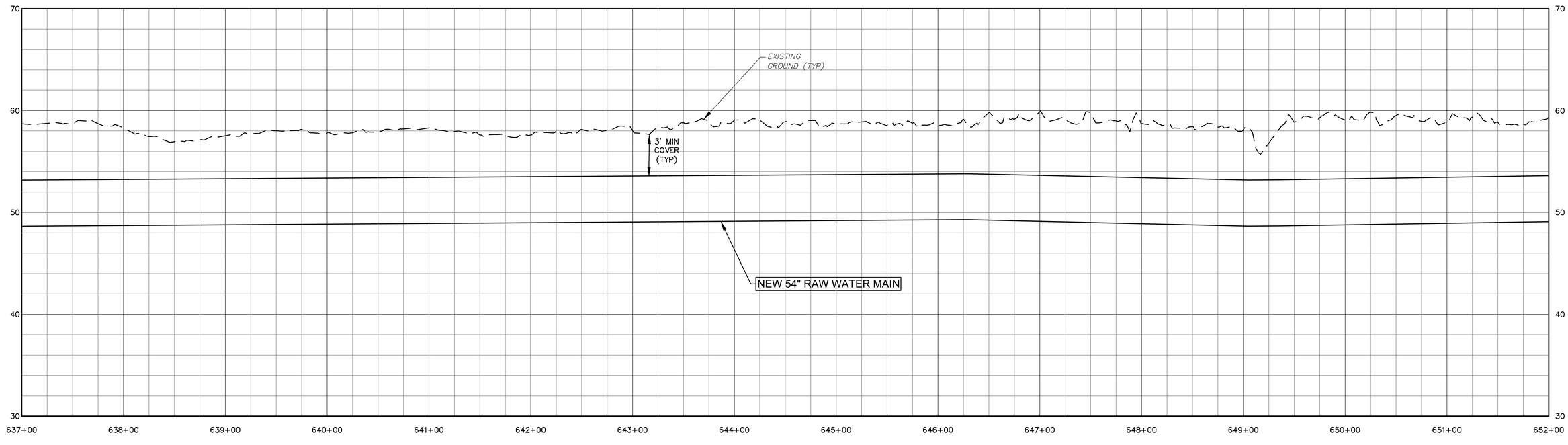
CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

SHEET NO: C-36





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
6. NEW 54" RAW WATER MAIN SHALL BE WELDED STEEL PIPE (THICKNESS MIN = 0.22, LINING = CEMENT MORTAR, COATING = POLYURETHANE) OR DUCTILE IRON PIPE (PC 150, LINING = CEMENT MORTAR, COATING = ZINC). CONTRACTOR SHALL UTILIZE ONLY ONE MATERIAL UNLESS APPROVED BY ENGINEER OR MATERIAL IS SHOWN ON PLANS.

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

McKIM&CREED
243 NORTH FRONT ST
WILMINGTON, NORTH CAROLINA 28401
TELE: (910) 343-1048
FAX: (910) 251-8282
LICENSE: F-1222

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

54" RAW WATER MAIN PLAN AND PROFILE STA 637+00 TO STA 652+00

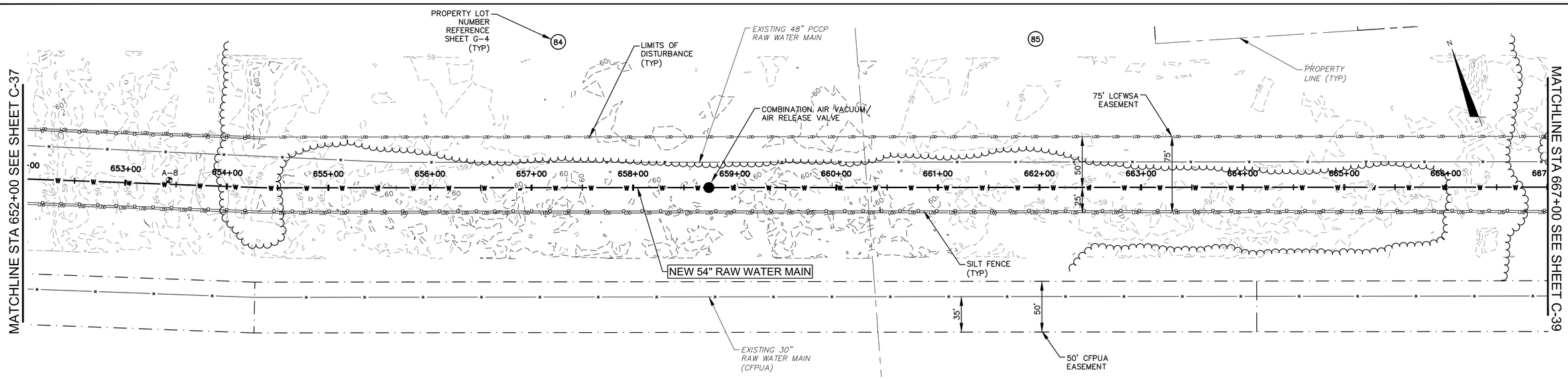
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOAHN 6-21-19

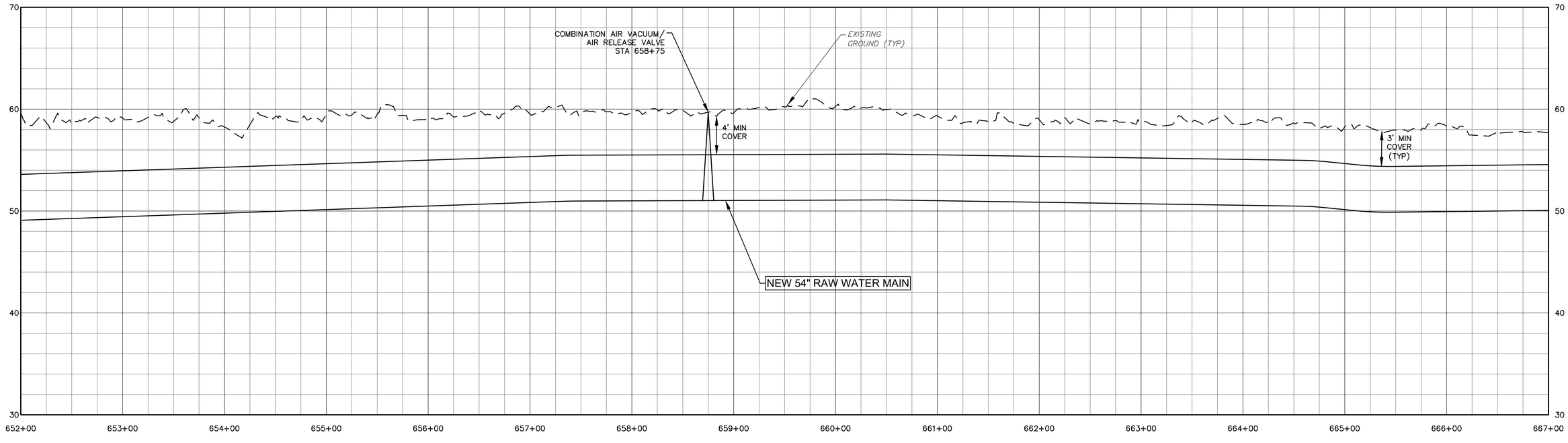
CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

SHEET NO: C-37





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
6. NEW 54" RAW WATER MAIN SHALL BE WELDED STEEL PIPE (THICKNESS MIN = 0.22, LINING = CEMENT MORTAR, COATING = POLYURETHANE) OR DUCTILE IRON PIPE (PC 150, LINING = CEMENT MORTAR, COATING = ZINC). CONTRACTOR SHALL UTILIZE ONLY ONE MATERIAL UNLESS APPROVED BY ENGINEER OR MATERIAL IS SHOWN ON PLANS.

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

54" RAW WATER MAIN
PLAN AND PROFILE
STA 652+00 TO STA 667+00

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

McKIM&CREED
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FAX: (910) 251-8282
LICENSE: F-1222

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

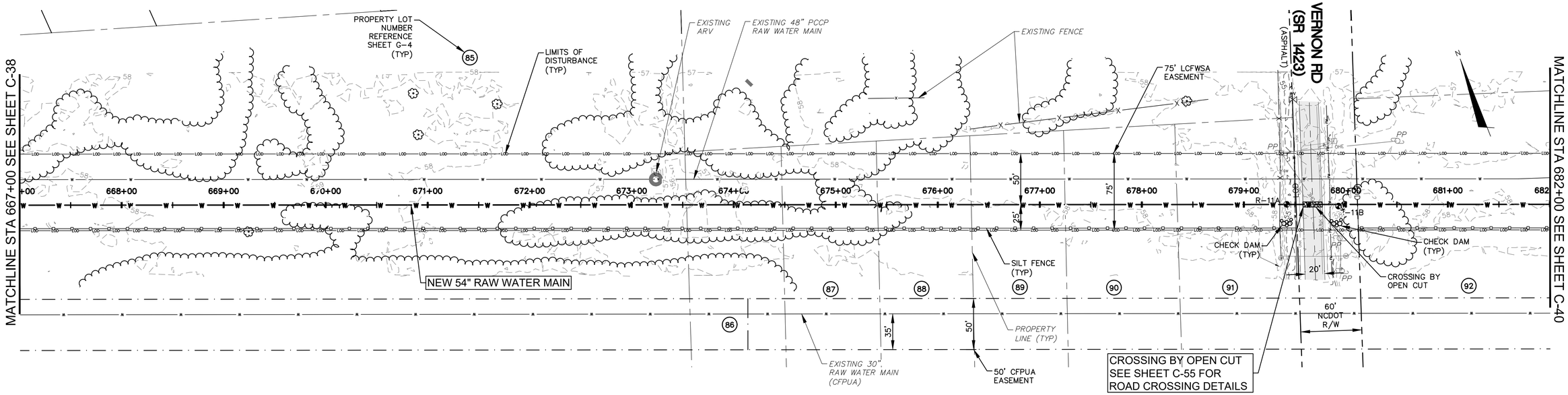
REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

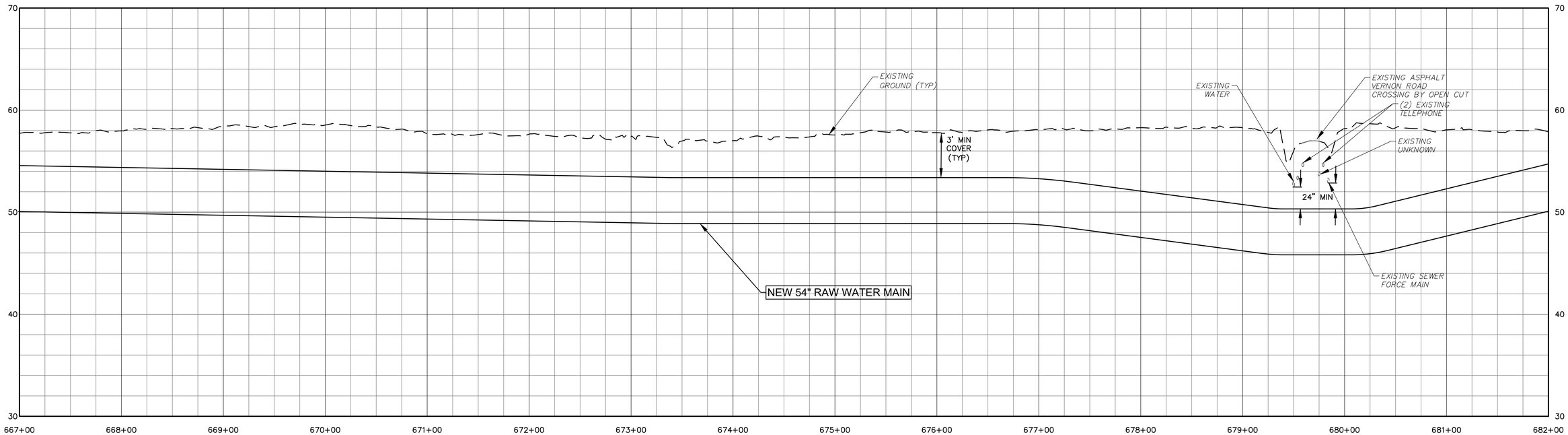
NORTH CAROLINA PROFESSIONAL SEAL 025312 ENGINEER ANTHONY W. BOAHN
6-27-19

CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

SHEET NO:
C-38





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
6. NEW 54" RAW WATER MAIN SHALL BE WELDED STEEL PIPE (THICKNESS MIN = 0.22, LINING = CEMENT MORTAR, COATING = POLYURETHANE) OR DUCTILE IRON PIPE (PC 150, LINING = CEMENT MORTAR, COATING = ZINC). CONTRACTOR SHALL UTILIZE ONLY ONE MATERIAL UNLESS APPROVED BY ENGINEER OR MATERIAL IS SHOWN ON PLANS.

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

MCKIM&CREED
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TELE: (910) 343-1048
FAX: (910) 251-8282
LICENSE: F-1222

Cape Fear Public Utility Authority
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REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

PLAN AND PROFILE
STA 667+00 TO STA 682+00

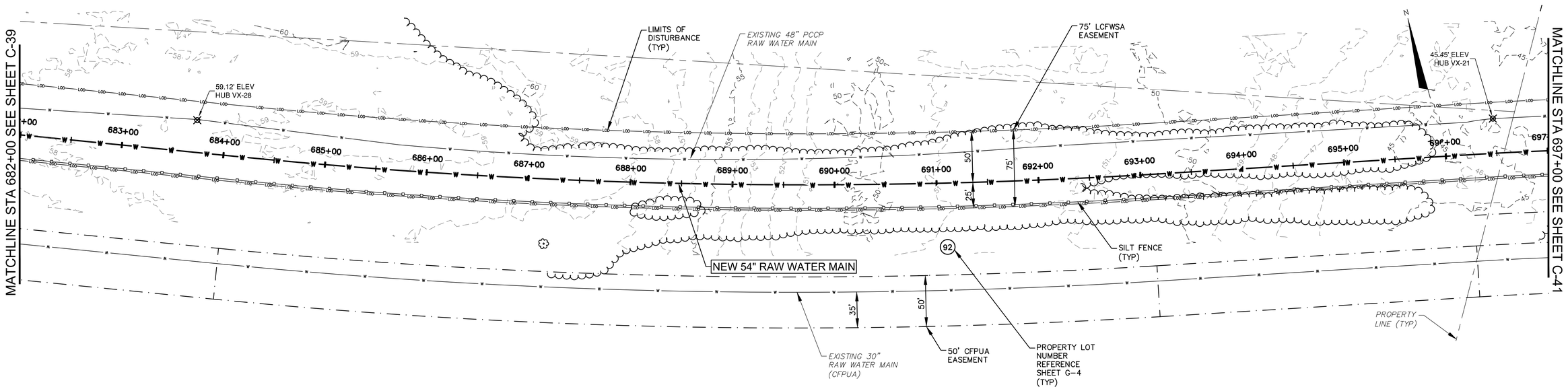
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOAHN
6-27-19

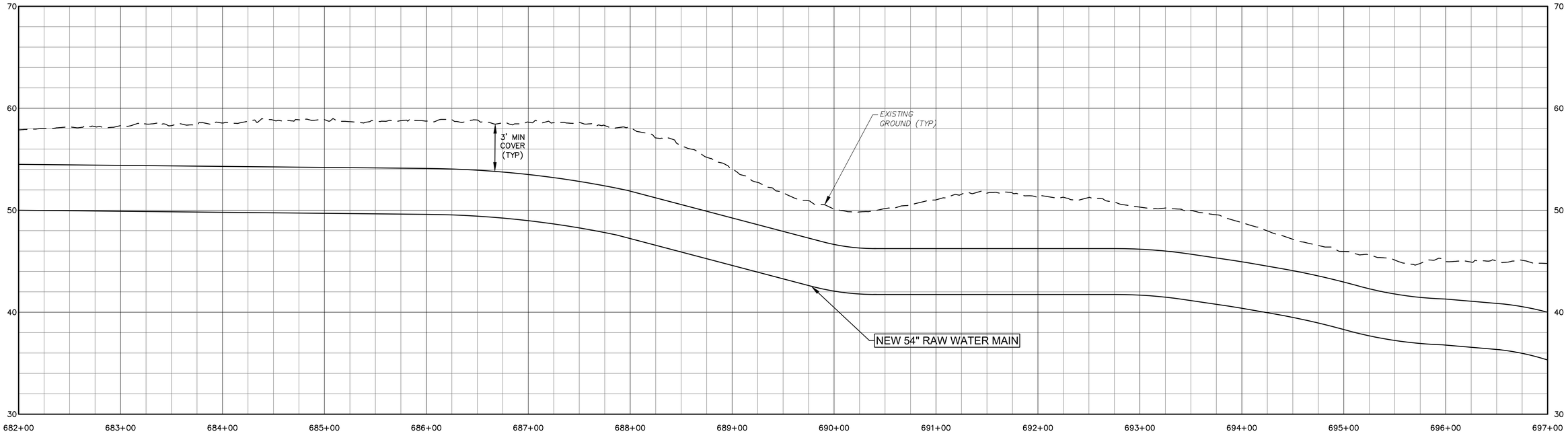
CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

SHEET NO: C-39





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
6. NEW 54" RAW WATER MAIN SHALL BE WELDED STEEL PIPE (THICKNESS MIN = 0.22, LINING = CEMENT MORTAR, COATING = POLYURETHANE) OR DUCTILE IRON PIPE (PC 150, LINING = CEMENT MORTAR, COATING = ZINC). CONTRACTOR SHALL UTILIZE ONLY ONE MATERIAL UNLESS APPROVED BY ENGINEER OR MATERIAL IS SHOWN ON PLANS.

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

54" RAW WATER MAIN
PLAN AND PROFILE
STA 682+00 TO STA 697+00

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

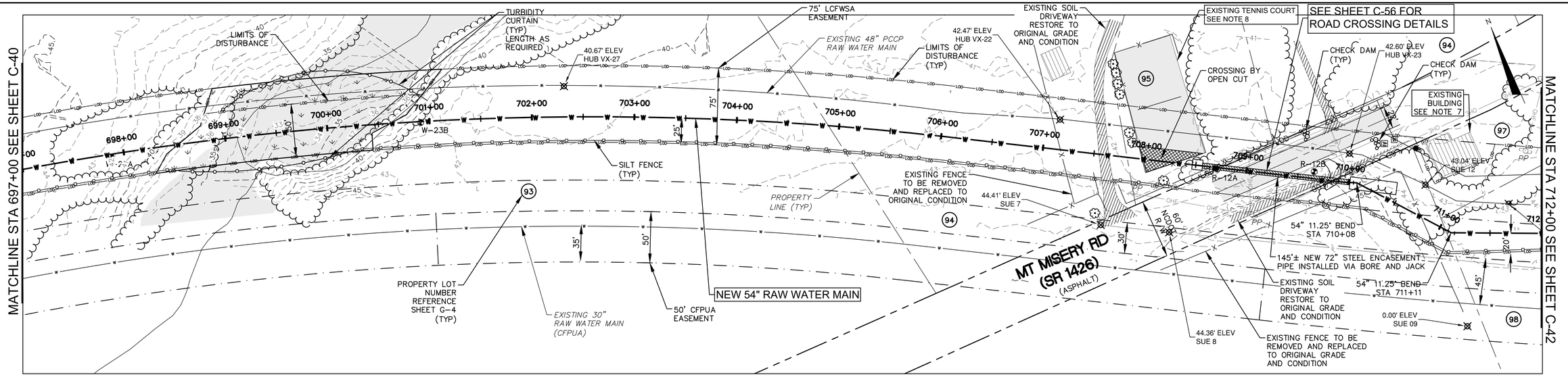
SHEET NO: **C-40**

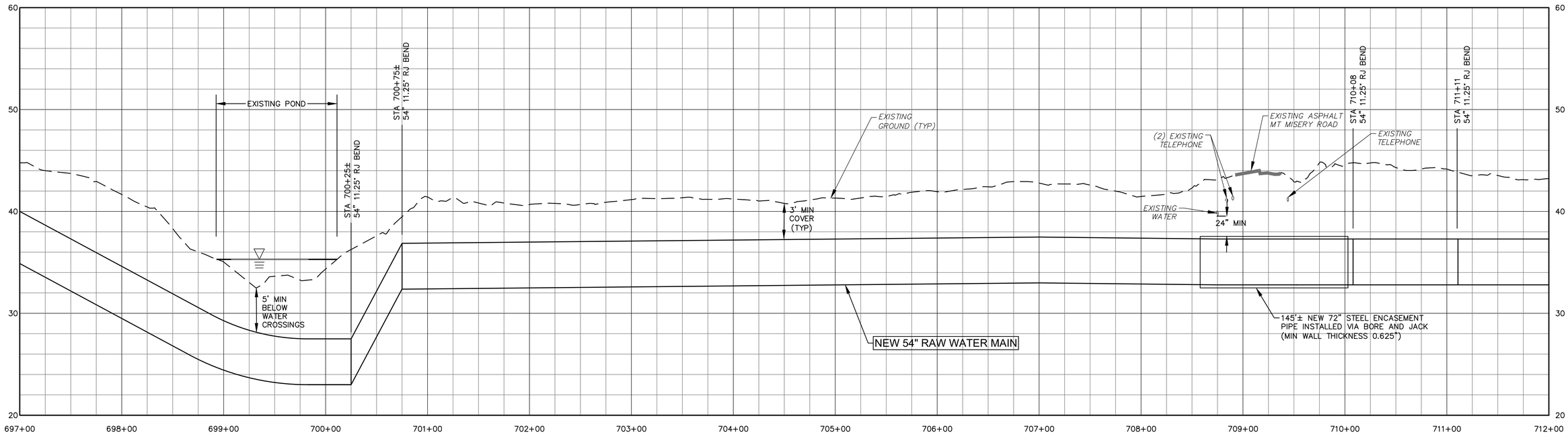
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOLAN
6-27-19

McKIM&CREED
243 NORTH FRONT ST
WILMINGTON, NORTH CAROLINA 28401
TELE: (910) 343-1048
FAX: (910) 251-8282
LICENSE: F-1222

Cape Fear Public Utility Authority
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REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
6. NEW 54" RAW WATER MAIN SHALL BE WELDED STEEL PIPE (THICKNESS MIN = 0.22, LINING = CEMENT MORTAR, COATING = POLYURETHANE) OR DUCTILE IRON PIPE (PC 150, LINING = CEMENT MORTAR, COATING = ZINC). CONTRACTOR SHALL UTILIZE ONLY ONE MATERIAL UNLESS APPROVED BY ENGINEER OR MATERIAL IS SHOWN ON PLANS.
7. CONTRACTOR SHALL NOT DISTURB OR DAMAGE EXISTING STRUCTURE OR STRUCTURE FOUNDATION. CONTRACTOR SHALL PROVIDE GEOTECHNICAL INSTRUMENTATION AND MONITORING FOR THIS STRUCTURE.
8. CONTRACTOR SHALL REMOVE AND REBUILD EXISTING TENNIS COURT TO INCLUDE NEW FENCE, NET, POSTS, LANDSCAPING AND STRIPING. SURFACE SHALL BE PROVIDED AS SURFACE CODE 'A' AS PER THE UNITED STATES TENNIS ASSOCIATION. LANDSCAPING SHALL BE RESTORED TO PRECONSTRUCTION CONDITIONS.

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)
5' 0 5' 10'
SCALE: 1"=5' (Vert.)

McKIM&CREED
243 NORTH FRONT ST
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FAX: (910) 251-8282
LICENSE: F-1222

Cape Fear Public Utility Authority
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REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

54" RAW WATER MAIN PLAN AND PROFILE STA 697+00 TO STA 712+00

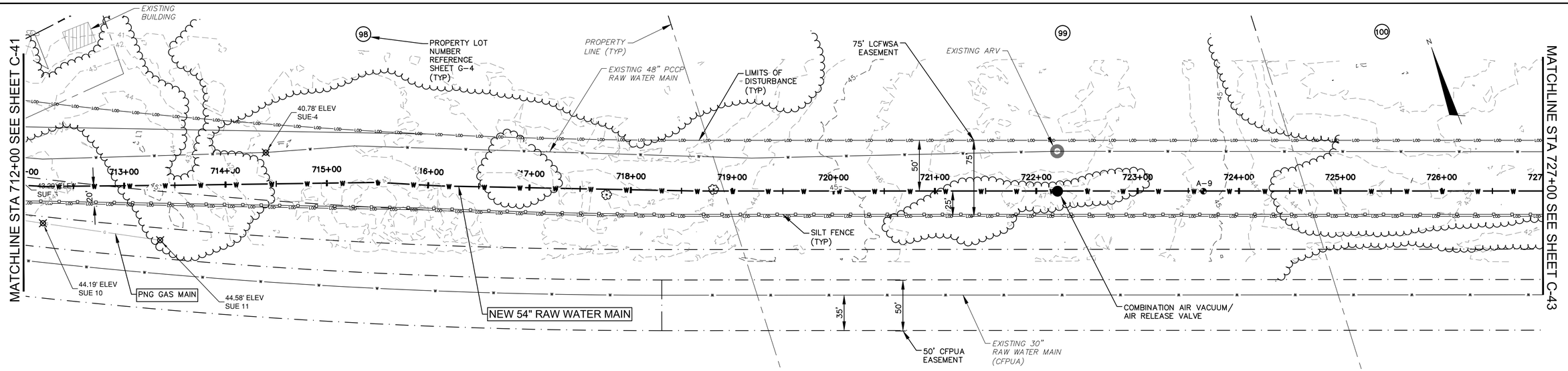
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOAHN
6-27-19

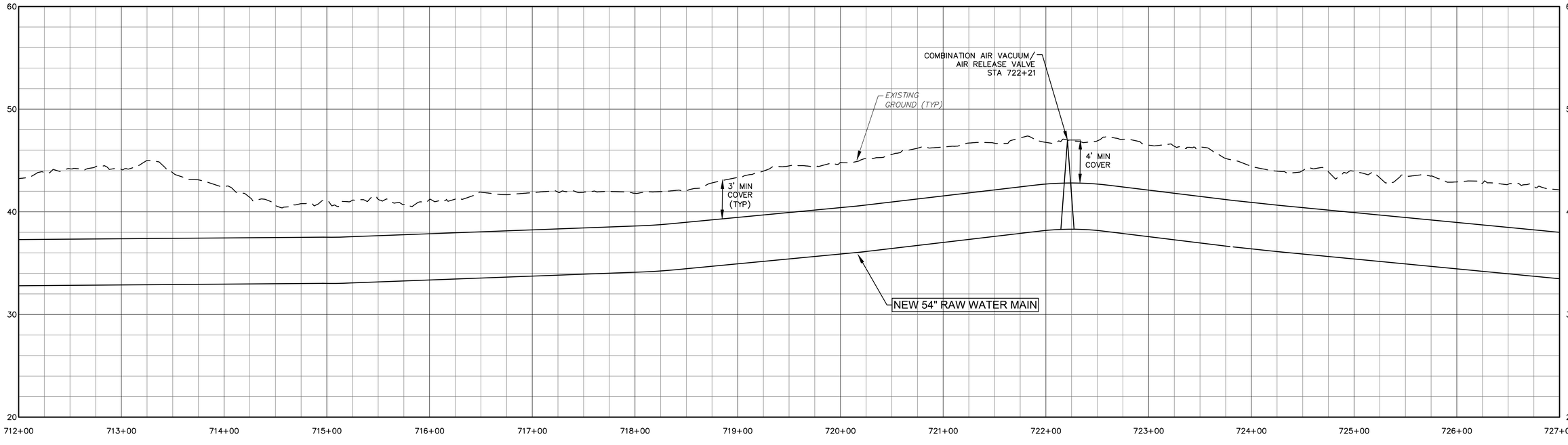
CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

SHEET NO: C-41





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
6. NEW 54" RAW WATER MAIN SHALL BE WELDED STEEL PIPE (THICKNESS MIN = 0.22, LINING = CEMENT MORTAR, COATING = POLYURETHANE) OR DUCTILE IRON PIPE (PC 150, LINING = CEMENT MORTAR, COATING = ZINC). CONTRACTOR SHALL UTILIZE ONLY ONE MATERIAL UNLESS APPROVED BY ENGINEER OR MATERIAL IS SHOWN ON PLANS.

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

54" RAW WATER MAIN PLAN AND PROFILE STA 712+00 TO STA 730+00

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

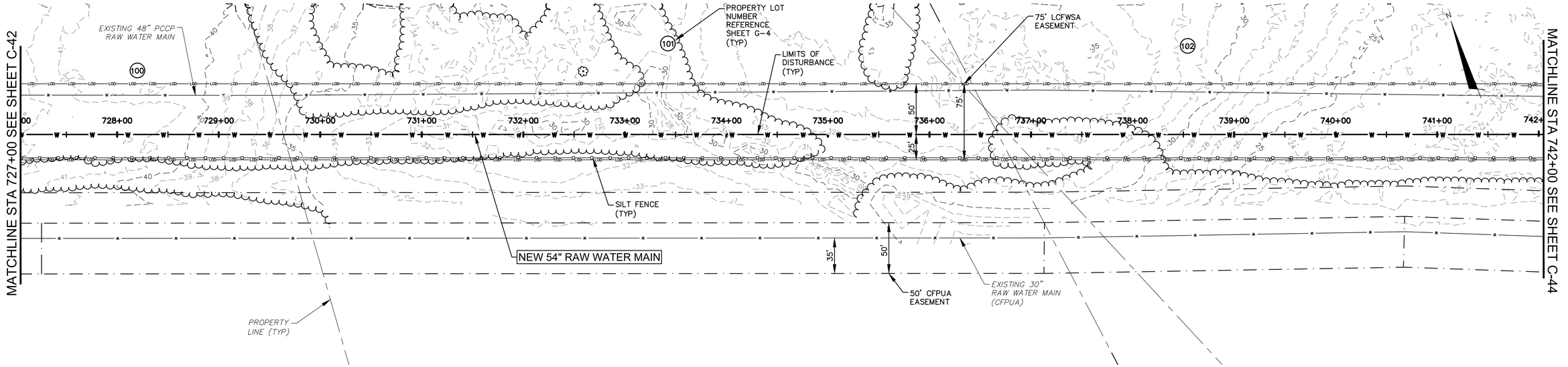
SHEET NO: C-42

McKIM&CREED
243 NORTH FRONT ST
WILMINGTON, NORTH CAROLINA 28401
TELE: (910) 343-1048
FAX: (910) 251-8282
LICENSE: F-1222

Cape Fear Public Utility Authority
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REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOAHN
6-27-19





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
6. NEW 54" RAW WATER MAIN SHALL BE WELDED STEEL PIPE (THICKNESS MIN = 0.22, LINING = CEMENT MORTAR, COATING = POLYURETHANE) OR DUCTILE IRON PIPE (PC 150, LINING = CEMENT MORTAR, COATING = ZINC). CONTRACTOR SHALL UTILIZE ONLY ONE MATERIAL UNLESS APPROVED BY ENGINEER OR MATERIAL IS SHOWN ON PLANS.

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

MCKIM&CREED
243 NORTH FRONT ST
WILMINGTON, NORTH CAROLINA 28401
TELE: (910) 343-1048
FAX: (910) 251-8282
LICENSE: F-1222

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

54" RAW WATER MAIN PLAN AND PROFILE STA 727+00 TO STA 742+00

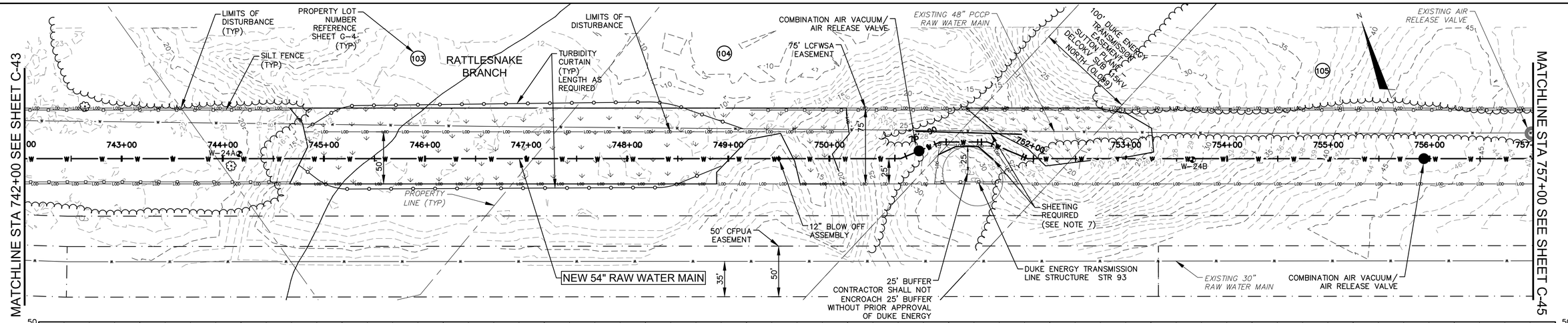
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOAHN
6-27-19

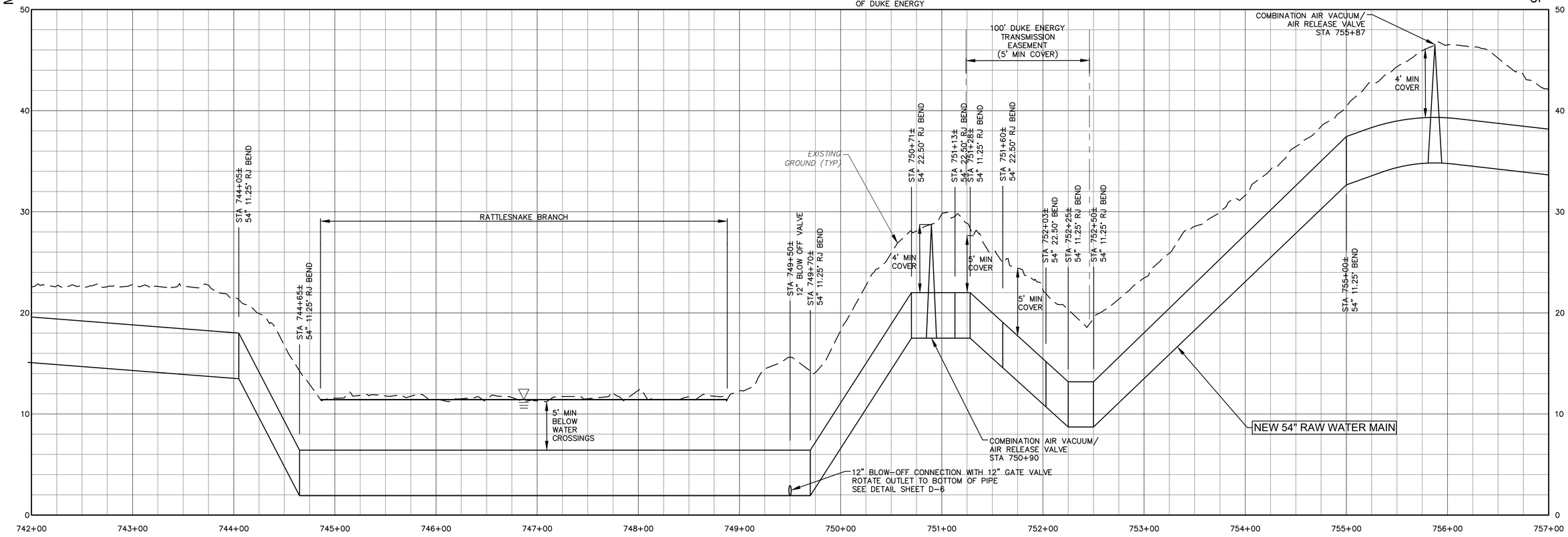
CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW
WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

SHEET NO: C-43





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
6. NEW 54" RAW WATER MAIN SHALL BE WELDED STEEL PIPE (THICKNESS MIN = 0.22, LINING = CEMENT MORTAR, COATING = POLYURETHANE) OR DUCTILE IRON PIPE (PC 150, LINING = CEMENT MORTAR, COATING = ZINC). CONTRACTOR SHALL UTILIZE ONLY ONE MATERIAL UNLESS APPROVED BY ENGINEER OR MATERIAL IS SHOWN ON PLANS.
7. CONTRACTOR SHALL INSTALL SHEETING AS REQUIRED TO INSTALL THE NEW RAW WATER MAIN AND PROTECT THE EXISTING RAW WATER MAIN AND THE DUKE ENERGY OVERHEAD POWER STRUCTURES. CONTRACTOR SHALL SUBMIT A PROPOSED SHEETING/SHORING PLAN FOR REVIEW MIN 30 DAYS PRIOR TO CONSTRUCTION.

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

McKIM&CREED
243 NORTH FRONT ST
WILMINGTON, NORTH CAROLINA 28401
TELE: (910) 343-1048
FAX: (910) 251-8282
LICENSE: F-1222

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

54" RAW WATER MAIN PLAN AND PROFILE STA 742+00 TO STA 757+00

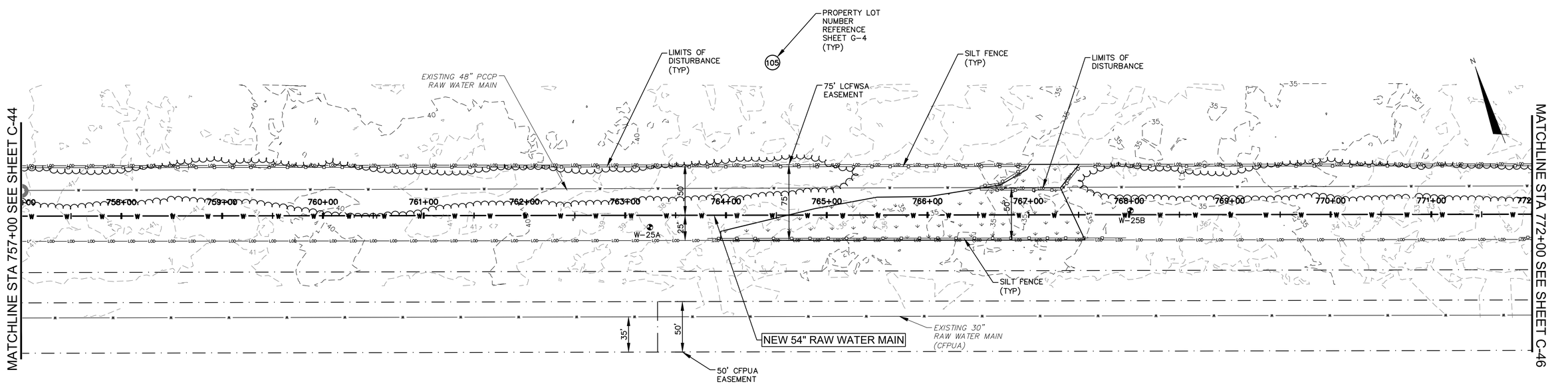
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOARIN 6-27-19

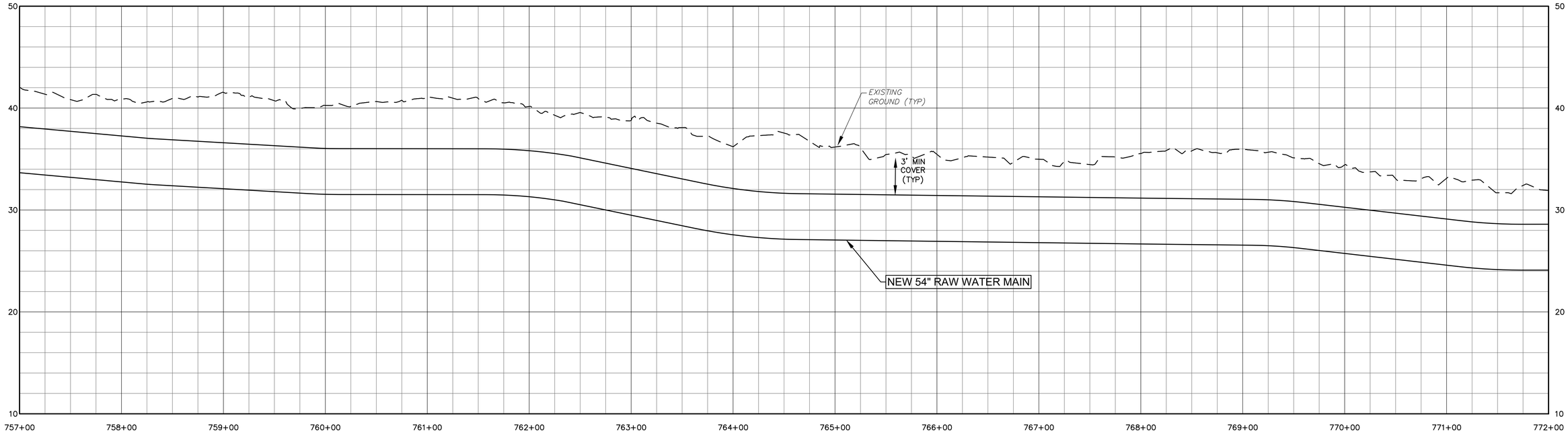
CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

SHEET NO: C-44





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
6. NEW 54" RAW WATER MAIN SHALL BE WELDED STEEL PIPE (THICKNESS MIN = 0.22, LINING = CEMENT MORTAR, COATING = POLYURETHANE) OR DUCTILE IRON PIPE (PC 150, LINING = CEMENT MORTAR, COATING = ZINC). CONTRACTOR SHALL UTILIZE ONLY ONE MATERIAL UNLESS APPROVED BY ENGINEER OR MATERIAL IS SHOWN ON PLANS.

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

McKIM&CREED
243 NORTH FRONT ST
WILMINGTON, NORTH CAROLINA 28401
TELE: (910) 343-1048
FAX: (910) 251-8282
LICENSE: F-1222

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

54" RAW WATER MAIN PLAN AND PROFILE STA 757+00 TO STA 772+00

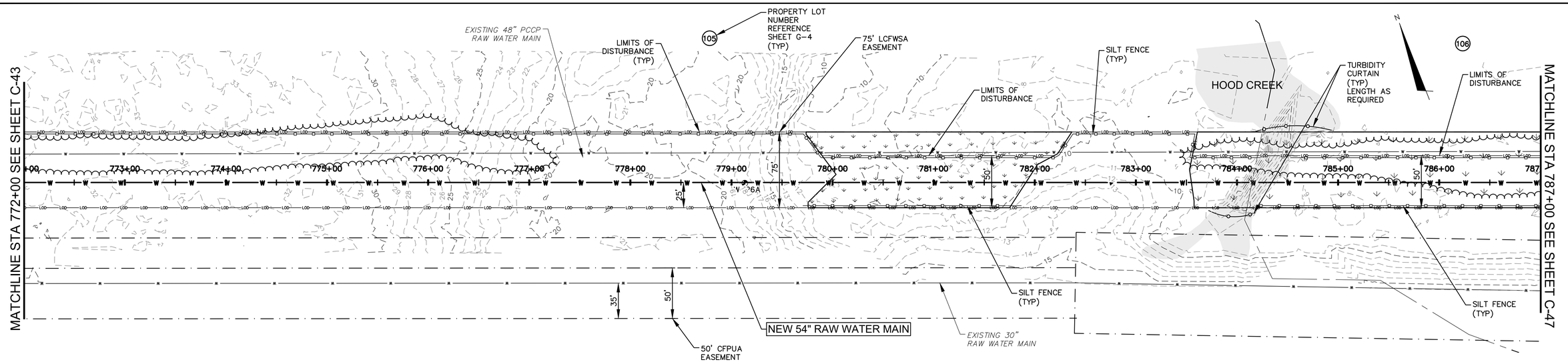
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOAHN
6-27-19

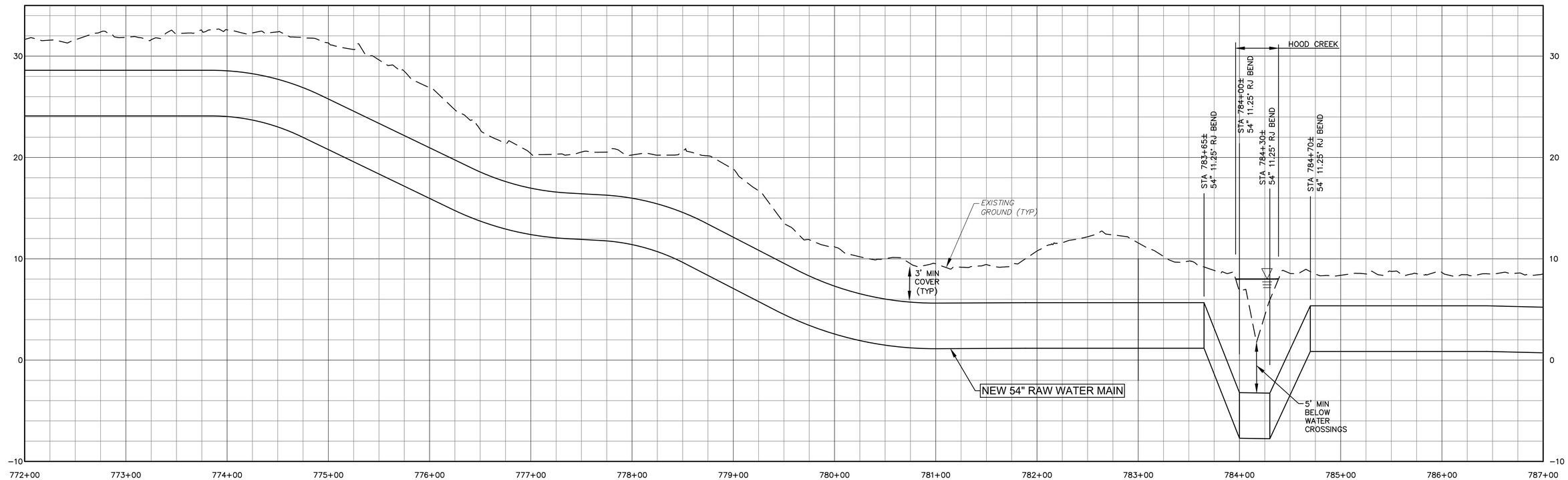
CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

SHEET NO: **C-45**





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
6. NEW 54" RAW WATER MAIN SHALL BE WELDED STEEL PIPE (THICKNESS MIN = 0.22, LINING = CEMENT MORTAR, COATING = POLYURETHANE) OR DUCTILE IRON PIPE (PC 150, LINING = CEMENT MORTAR, COATING = ZINC). CONTRACTOR SHALL UTILIZE ONLY ONE MATERIAL UNLESS APPROVED BY ENGINEER OR MATERIAL IS SHOWN ON PLANS.

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

McKIM&CREED
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LICENSE: F-1222

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

54" RAW WATER MAIN PLAN AND PROFILE STA 772+00 TO STA 787+00

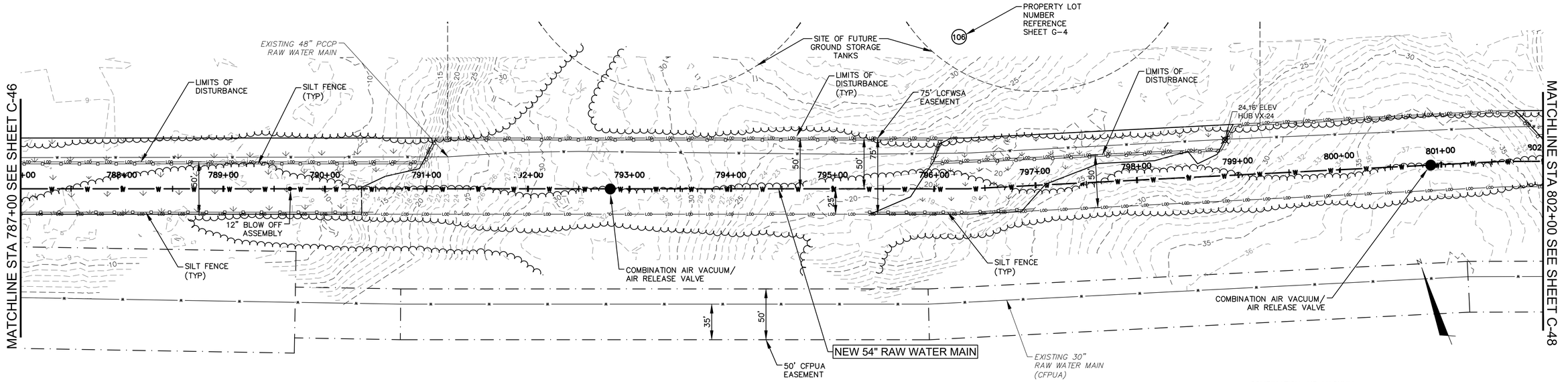
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOAHN
6-27-19

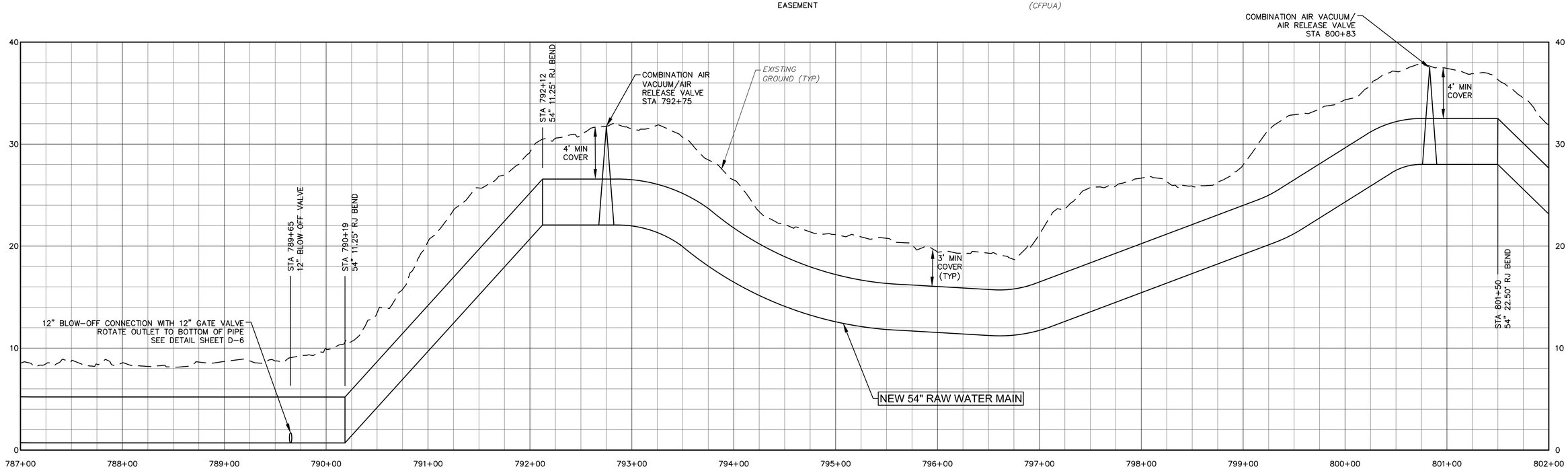
CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

SHEET NO: C-46





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
6. NEW 54" RAW WATER MAIN SHALL BE WELDED STEEL PIPE (THICKNESS MIN = 0.22, LINING = CEMENT MORTAR, COATING = POLYURETHANE) OR DUCTILE IRON PIPE (PC 150, LINING = CEMENT MORTAR, COATING = ZINC). CONTRACTOR SHALL UTILIZE ONLY ONE MATERIAL UNLESS APPROVED BY ENGINEER OR MATERIAL IS SHOWN ON PLANS.

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

54" RAW WATER MAIN PLAN AND PROFILE STA 787+00 TO STA 802+00

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

SHEET NO: C-47

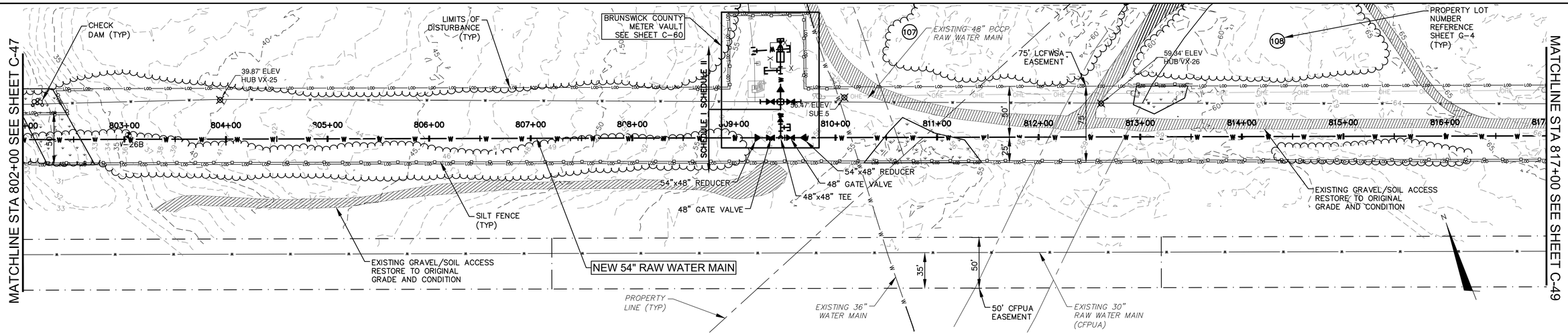
McKIM & CREED
243 NORTH FRONT ST
WILMINGTON, NORTH CAROLINA 28401
TELE: (910) 343-1048
FAX: (910) 251-8282
LICENSE: F-1222

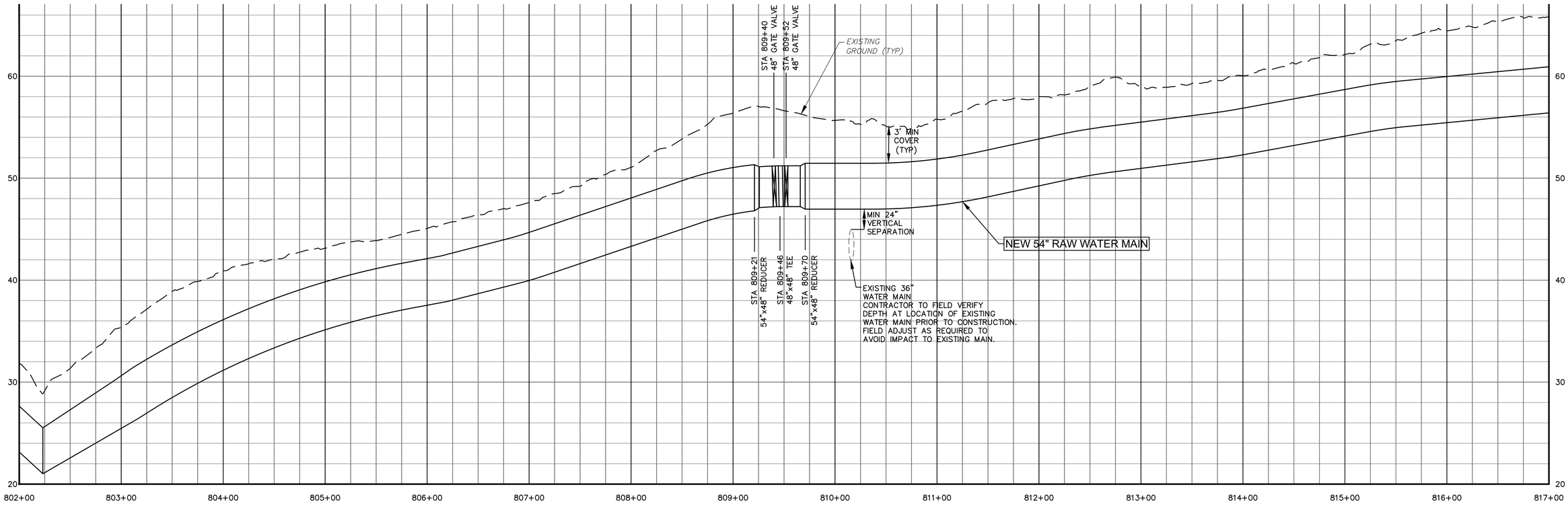
Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOATIN
6-21-19

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560





GENERAL NOTES:

1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
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50' 0 50' 100'
SCALE: 1"=50' (Horiz.)
5' 0 5' 10'
SCALE: 1"=5' (Vert.)

54" RAW WATER MAIN
PLAN AND PROFILE
STA 802+00 TO STA 817+00

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOAHN
6-24-19

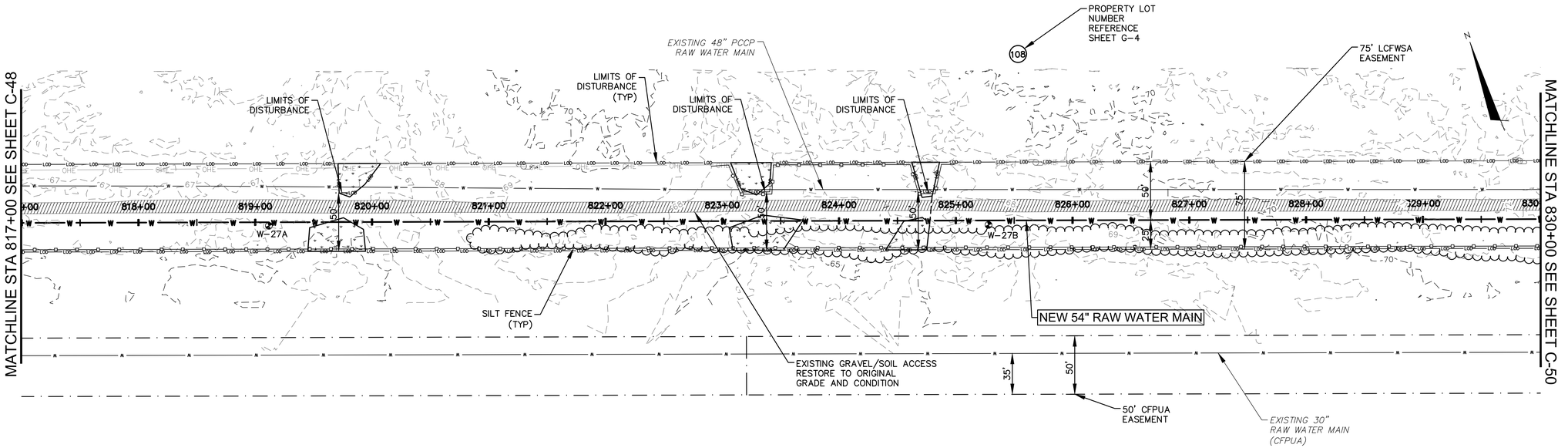
CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

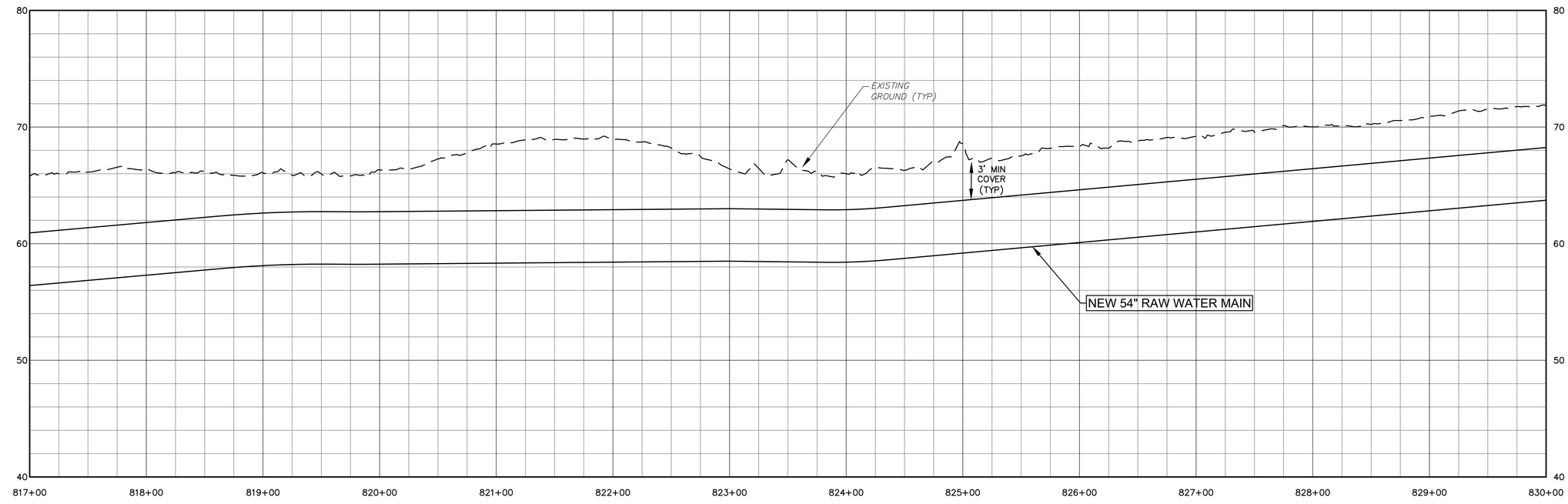
SHEET NO: C-48

McKIM&CREED
243 NORTH FRONT ST
WILMINGTON, NORTH CAROLINA 28401
TELE: (910) 343-1048
FAX: (910) 251-8282
LICENSE: F-1222

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
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GENERAL NOTES:

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2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
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50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

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REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

54" RAW WATER MAIN PLAN AND PROFILE STA 817+00 TO STA 830+00

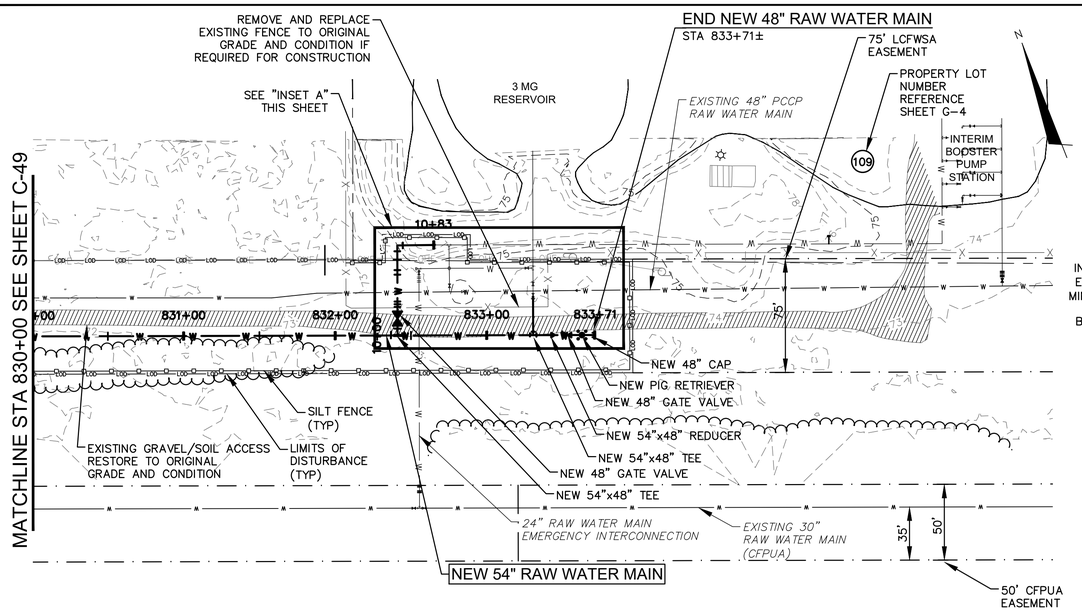
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOARIN
6-27-19

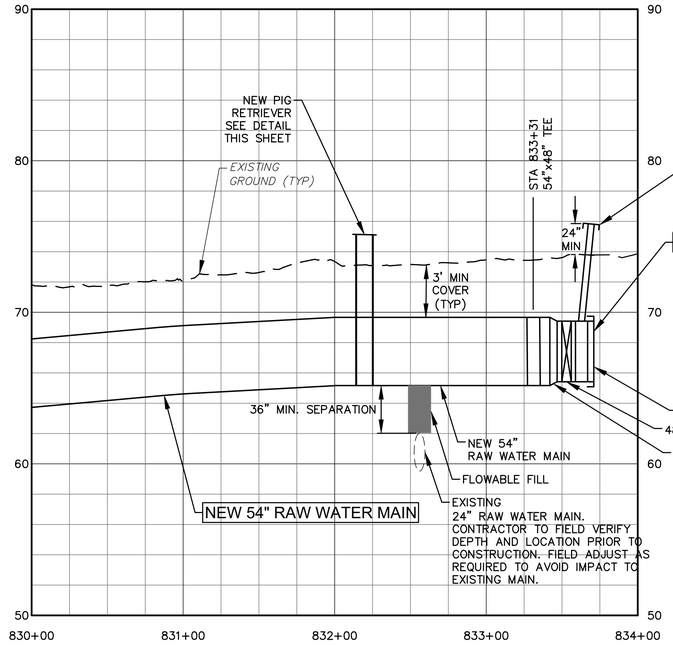
CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

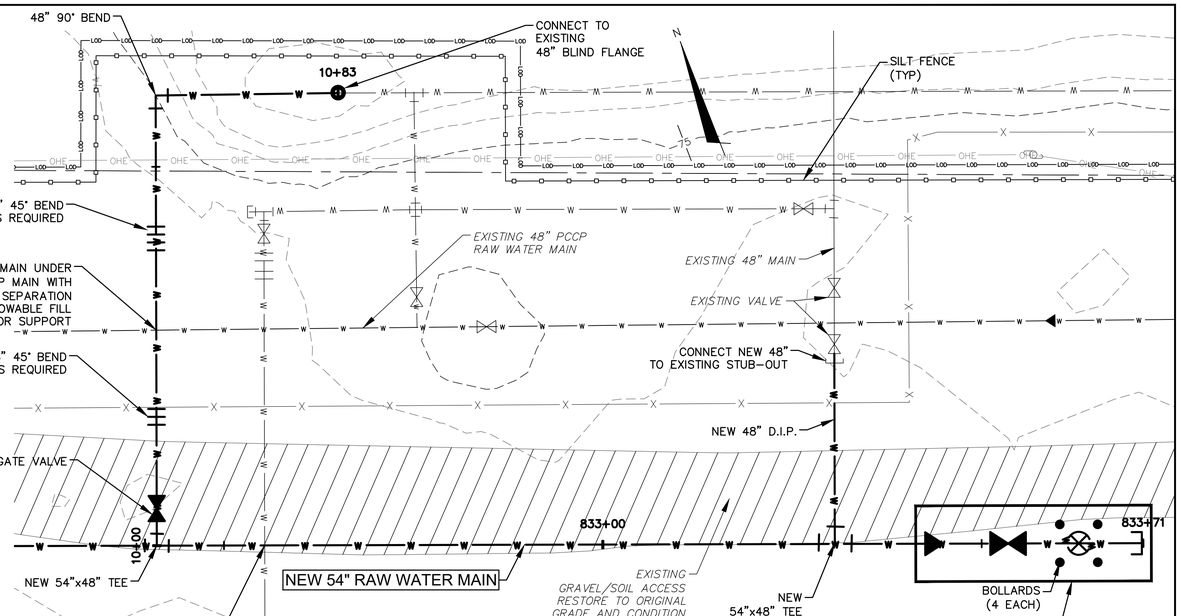
CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

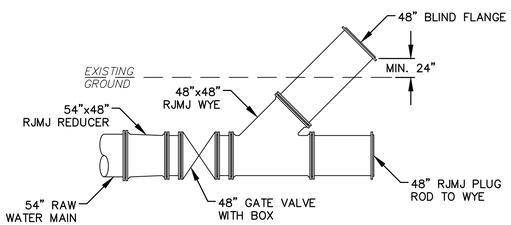
SHEET NO:
C-49







INSET 'A'
1" = 20'



PIG RETRIEVER DETAIL
N.T.S.

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)
5' 0 5' 10'
SCALE: 1"=5' (Vert.)

GENERAL NOTES:
1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
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McKIM&CREED
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LICENSE: F-1222

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

54" RAW WATER MAIN PLAN AND PROFILE STA 830+00 TO STA 833+71±

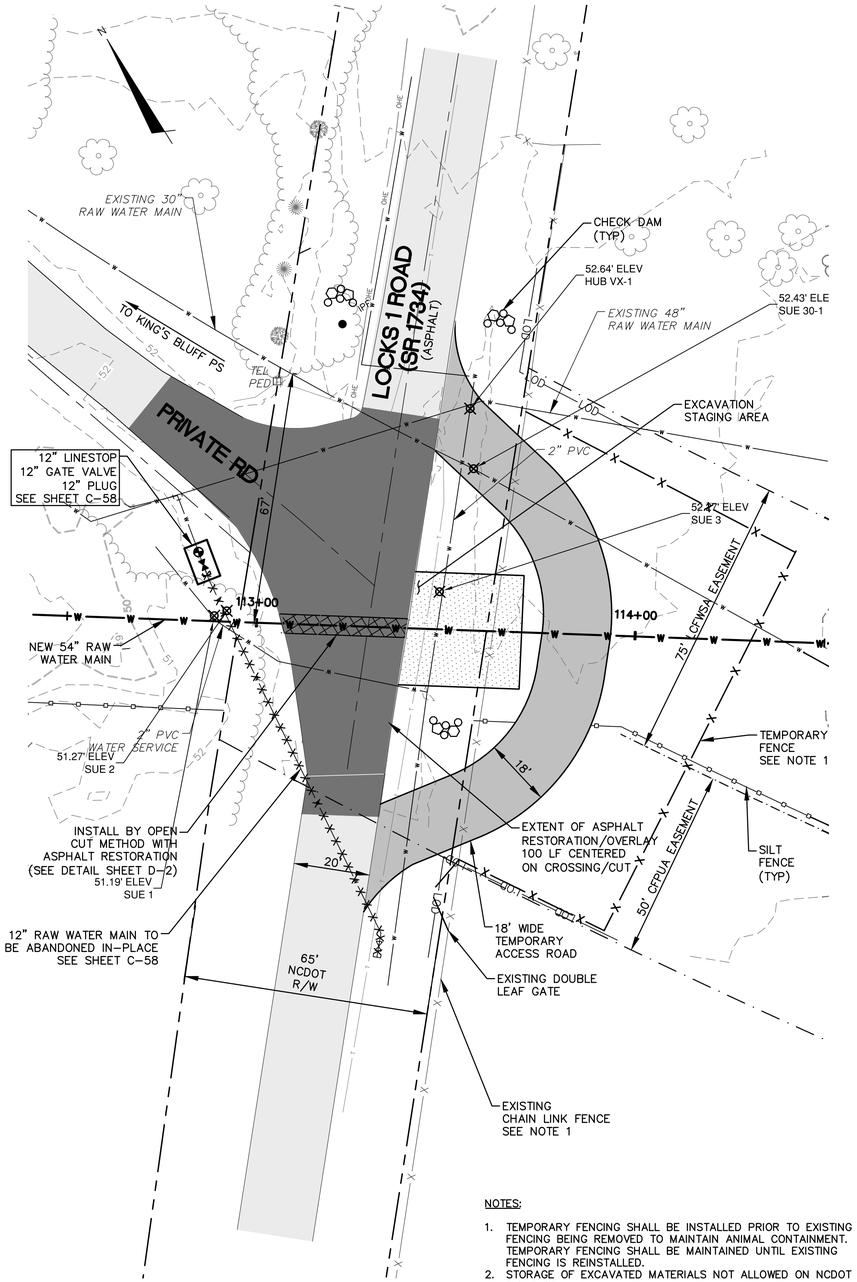
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOAHN 6-27-19

CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

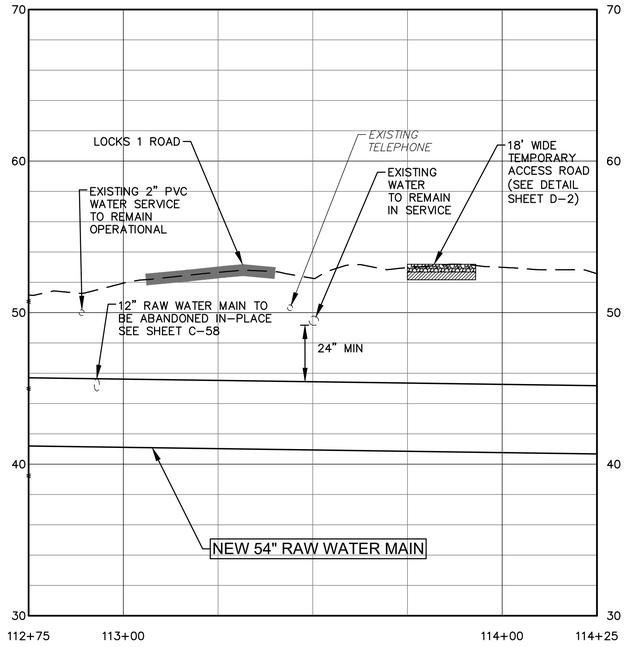
CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

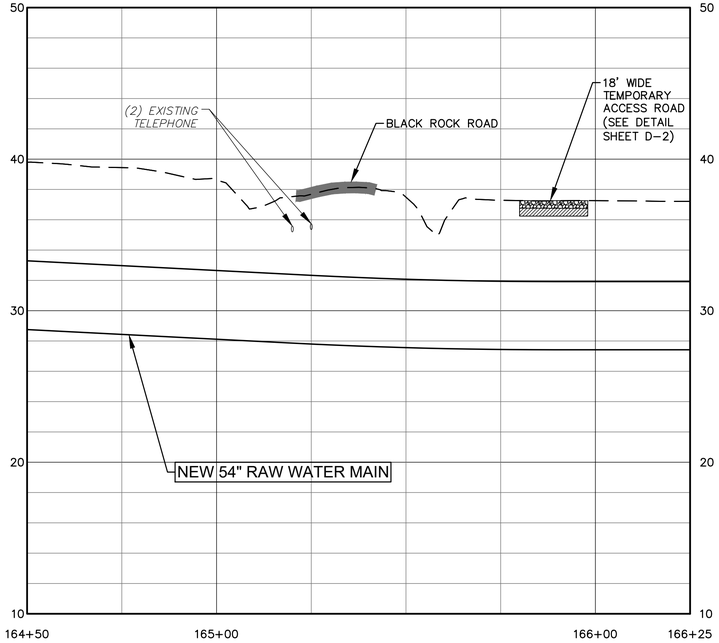
SHEET NO: **C-50**



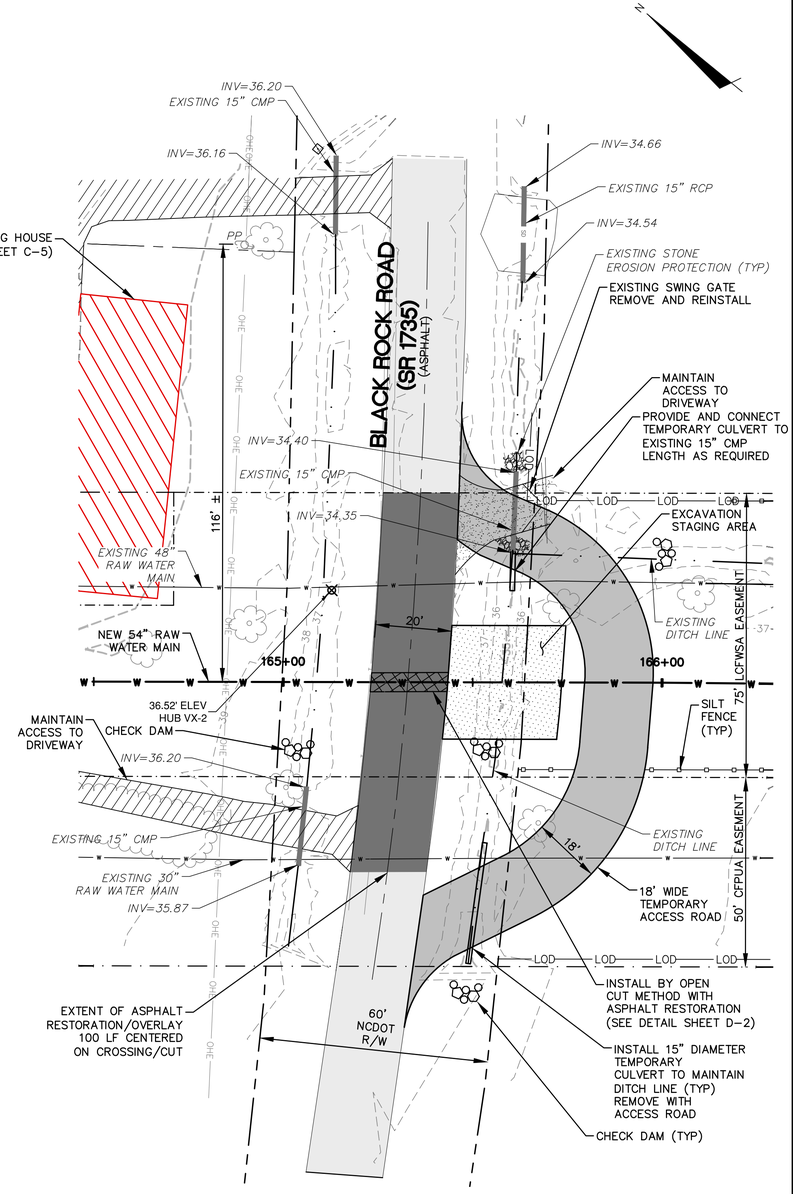
LOCKS 1 ROAD PLAN



LOCKS 1 ROAD PROFILE



BLACK ROCK ROAD PROFILE



BLACK ROCK ROAD PLAN

NOTES:

1. TEMPORARY FENCING SHALL BE INSTALLED PRIOR TO EXISTING FENCING BEING REMOVED TO MAINTAIN ANIMAL CONTAINMENT. TEMPORARY FENCING SHALL BE MAINTAINED UNTIL EXISTING FENCING IS REINSTALLED.
2. STORAGE OF EXCAVATED MATERIALS NOT ALLOWED ON NCDOT RIGHT OF WAY.
3. CONTRACTOR SHALL COMPLETE ALL WORK SHOWN WITHIN NCDOT RIGHT OF WAY, LCFWSA EASEMENT AND CFPUA EASEMENT.
4. PROVIDE FOR POSITIVE DRAINAGE AT ALL TIMES FOR CONSTRUCTION AND OPERATION OF THE TEMPORARY ROAD.
5. CONTRACTOR SHALL MAINTAIN TRAFFIC DURING CONSTRUCTION AND PROVIDE TRAFFIC CONTROL DEVICES PER NCDOT STANDARDS.

20' 0 20' 40'
SCALE: 1"=20' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

McKIM&CREED
243 NORTH FRONT ST
WILMINGTON, NORTH CAROLINA 28401
TELE: (910) 343-1048
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Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

ROAD INTERSECTION PLANS AND PROFILES

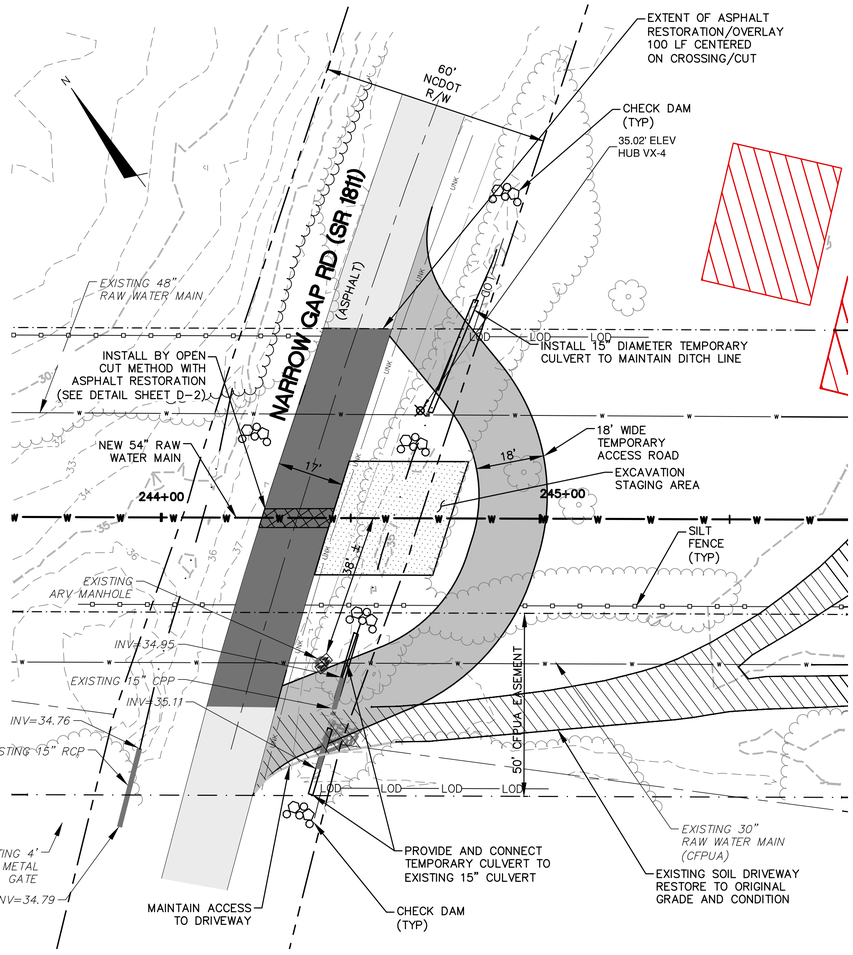
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOARD 6-2-19

CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

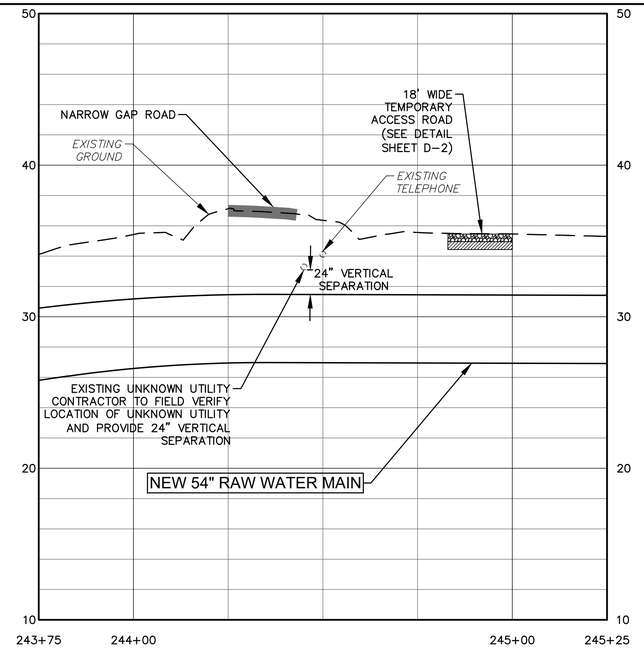
DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

SHEET NO: C-51

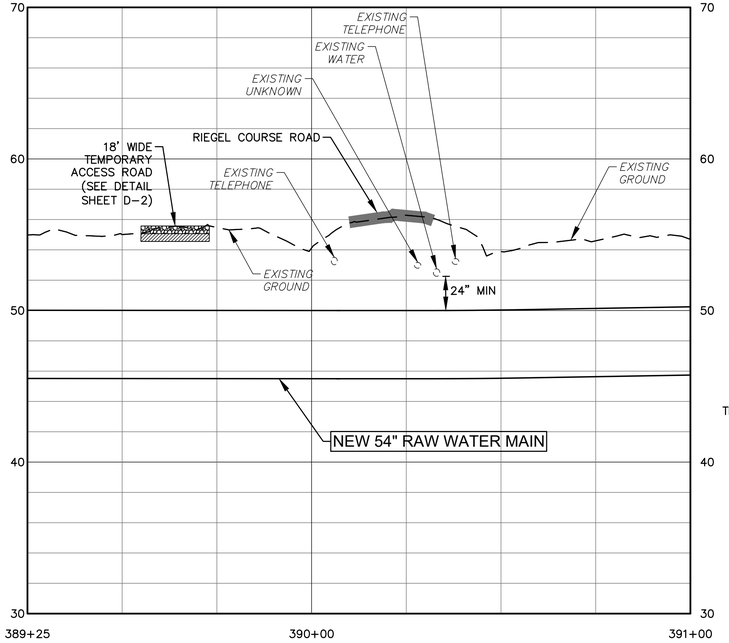


NARROW GAP ROAD PLAN

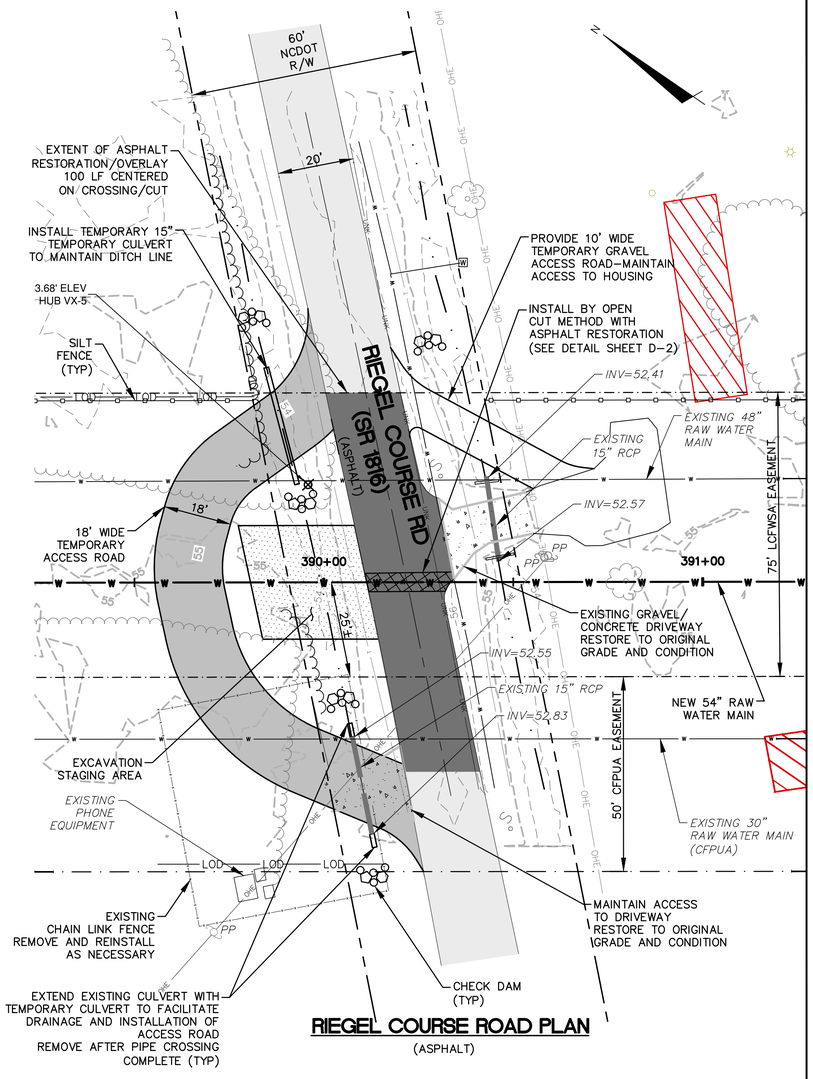
(ASPHALT)



NARROW GAP ROAD PROFILE



RIEGEL COURSE ROAD PROFILE



RIEGEL COURSE ROAD PLAN

(ASPHALT)

NOTES:

1. STORAGE OF EXCAVATED MATERIALS NOT ALLOWED ON NCDOT RIGHT OF WAY.
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3. PROVIDE FOR POSITIVE DRAINAGE AT ALL TIMES FOR CONSTRUCTION AND OPERATION OF THE TEMPORARY ROAD.
4. CONTRACTOR SHALL MAINTAIN TRAFFIC DURING CONSTRUCTION AND PROVIDE TRAFFIC CONTROL DEVICES PER NCDOT STANDARDS.

20' 0 20' 40'
SCALE: 1"=20' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

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0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

ROAD INTERSECTION PLANS AND PROFILES

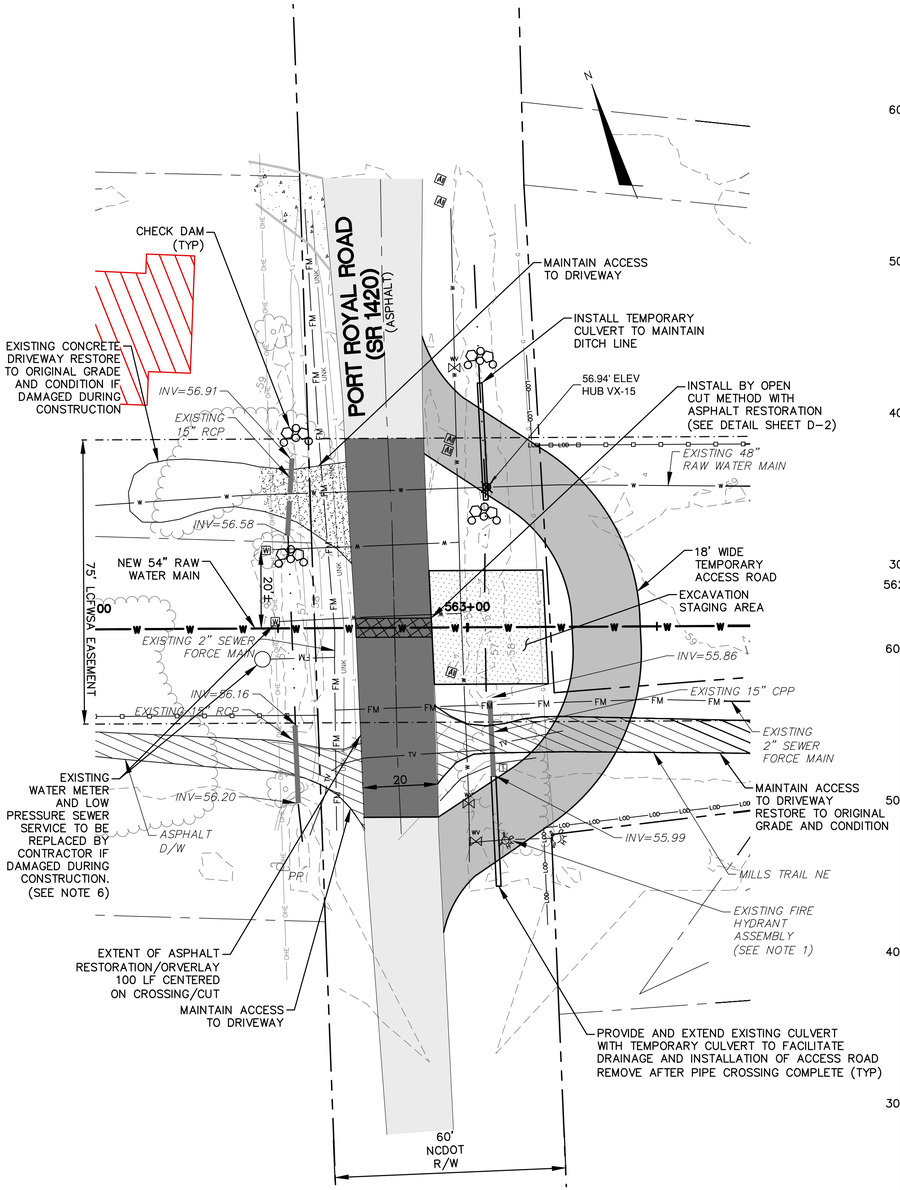
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOAHN
C-2179

CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

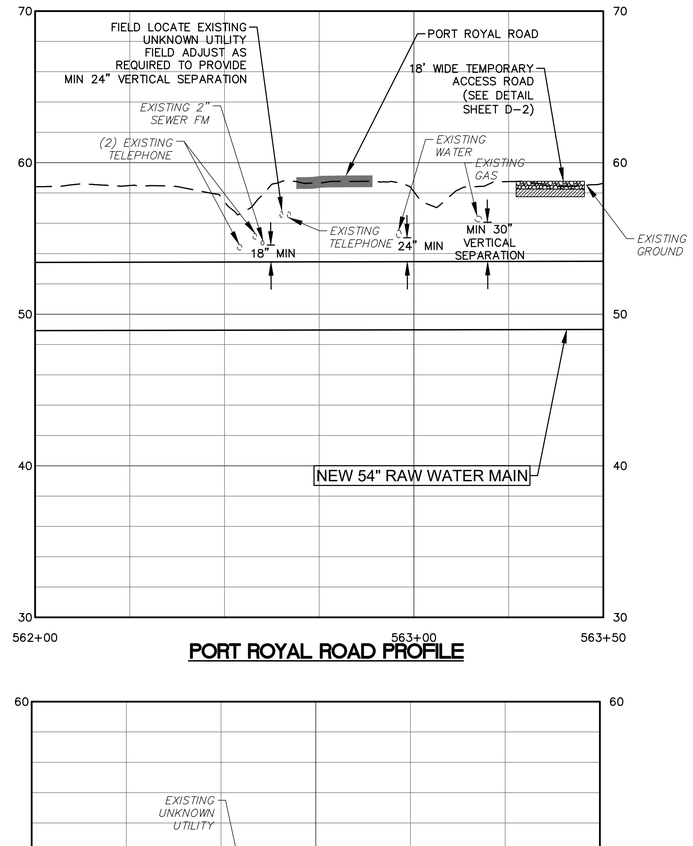
CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

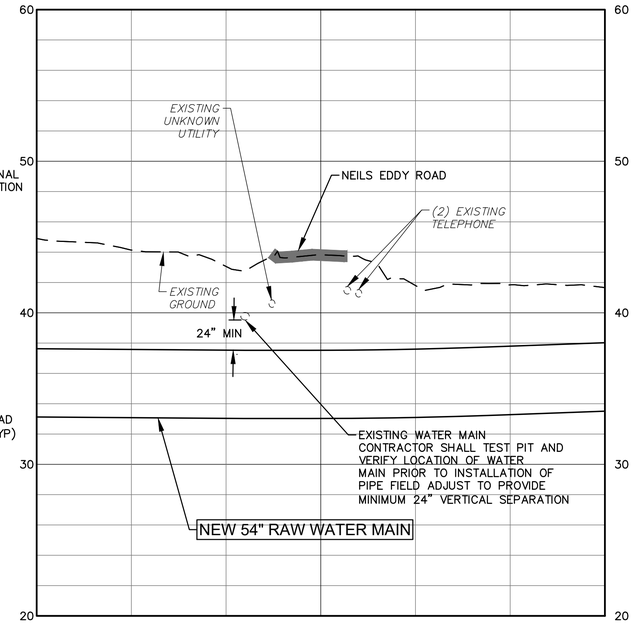
SHEET NO: C-52



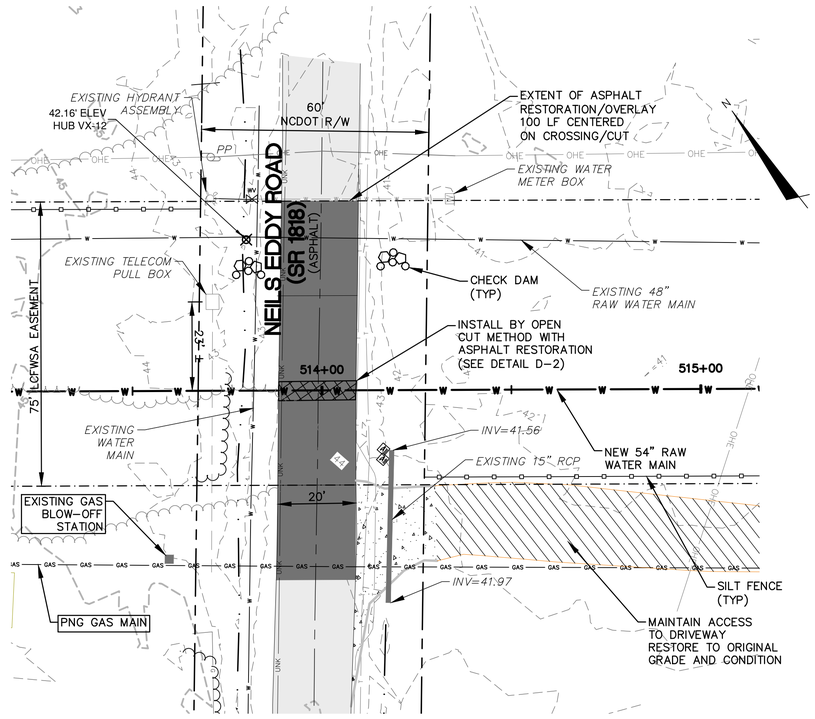
PORT ROYAL ROAD PLAN



PORT ROYAL ROAD PROFILE



NEILS EDDY ROAD PROFILE



NEILS EDDY ROAD PLAN

NOTES:

1. CONTRACTOR SHALL RELOCATE EXISTING HYDRANT OUTSIDE OF TEMPORARY ACCESS ROAD PRIOR TO ROAD CONSTRUCTION. AFTER ROAD IS REMOVED, RELOCATE HYDRANT TO ORIGINAL LOCATION. COST OF HYDRANT RELOCATION AND RE-INSTILLATION SHALL BE INCLUDED IN BASE BID.
2. STORAGE OF EXCAVATED MATERIAL NOT ALLOWED IN NCDOT RIGHT OF WAY.
3. CONTRACTOR SHALL COMPLETE ALL WORK SHOWN WITHIN NCDOT RIGHT OF WAY, LCFWSA EASEMENT AND CFPUA EASEMENT.
4. PROVIDE FOR POSITIVE DRAINAGE AT ALL TIMES FOR CONSTRUCTION AND OPERATION OF THE TEMPORARY ROAD.
5. CONTRACTOR SHALL MAINTAIN TRAFFIC DURING CONSTRUCTION AND PROVIDE TRAFFIC CONTROL DEVICES PER NCDOT STANDARDS.
6. CONTRACTOR SHALL PROVIDE TEMPORARY SERVICE CONNECTION FOR WATER AND SEWER SERVICE TO MAINTAIN SERVICE TO RESIDENTS, AS REQUIRED TO FACILITATE CONSTRUCTION. THIS SHALL BE INCLUDED IN THE COST OF THE WORK AND NO SEPARATE PAYMENTS SHALL BE MADE.

20' 0 20' 40'
SCALE: 1"=20' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

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TELE: (910) 343-1048
FAX: (910) 251-8282
LICENSE: F-1222

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Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

ROAD INTERSECTION PLANS AND PROFILES

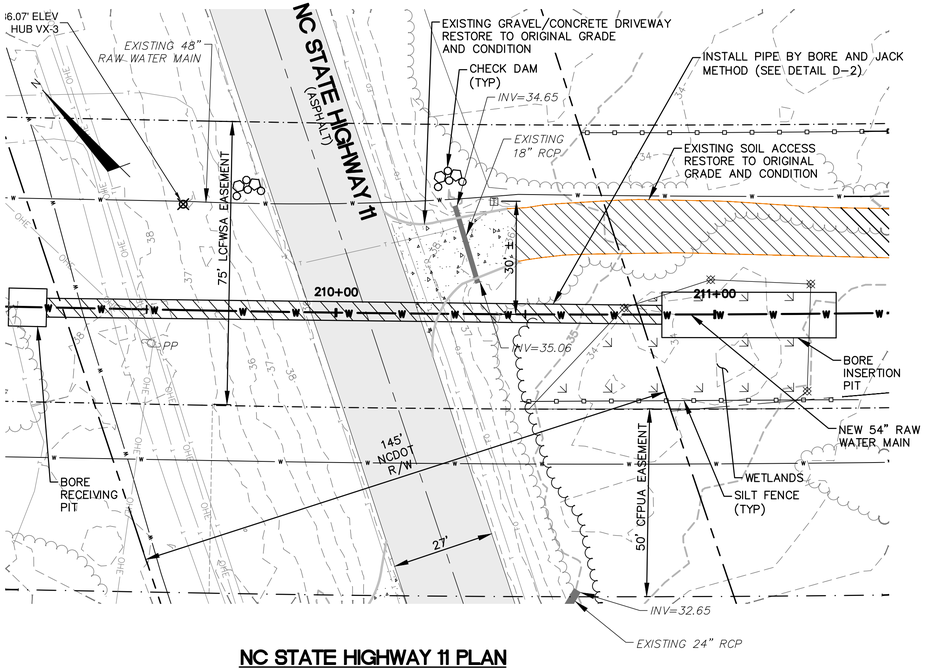
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOAHN
6-21-19

CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

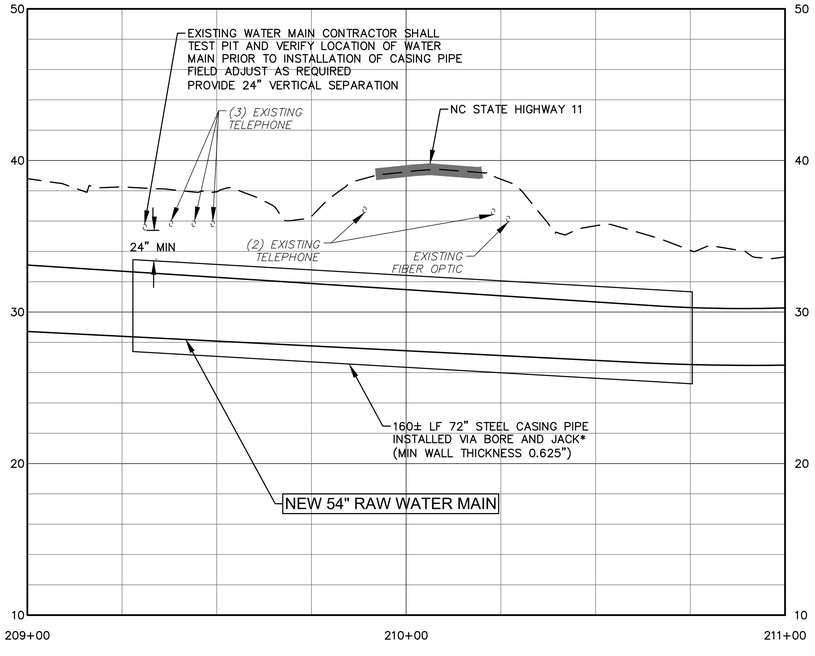
CAPE FEAR PUBLIC UTILITY AUTHORITY
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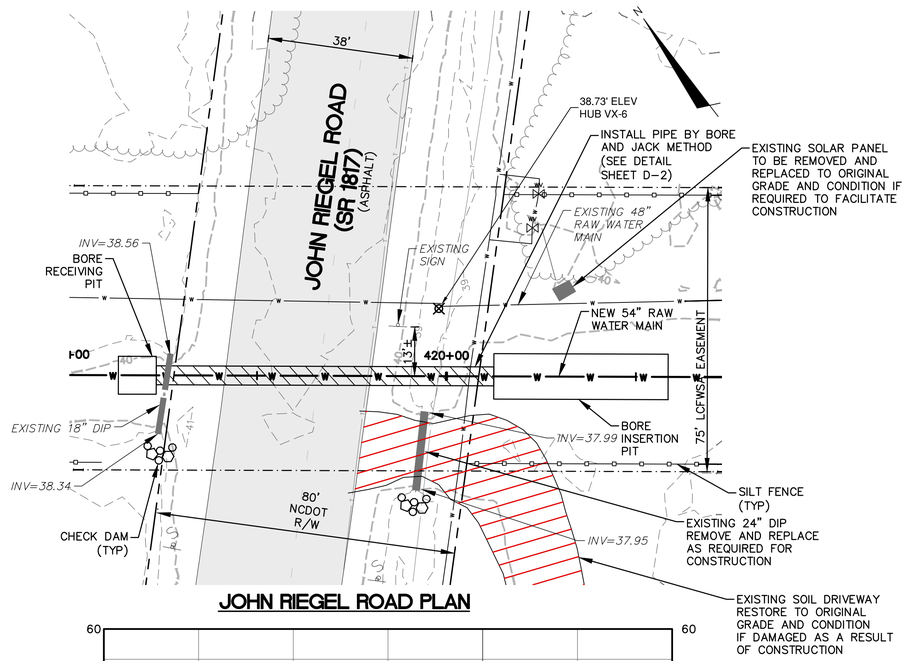
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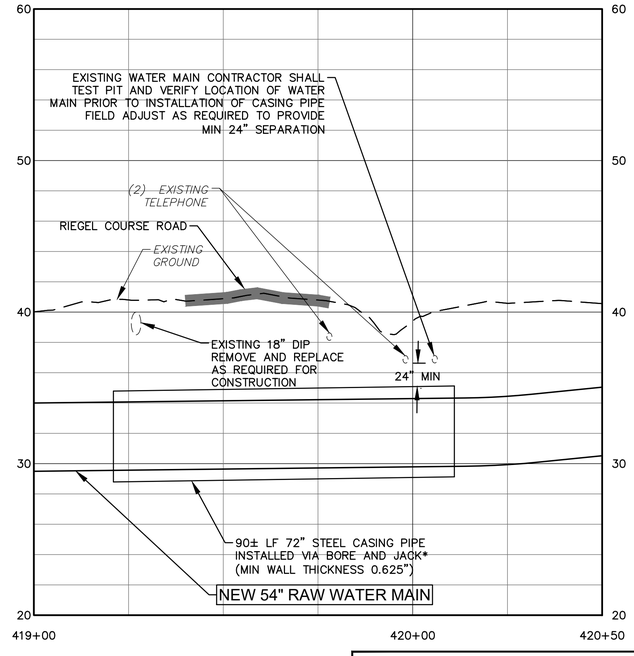
NC STATE HIGHWAY 11 PLAN



NC STATE HIGHWAY 11 PROFILE



JOHN RIEGEL ROAD PLAN



JOHN RIEGEL ROAD PROFILE

NOTES:

1. STORAGE OF EXCAVATED MATERIALS NOT ALLOWED ON NCDOT RIGHT OF WAY.
2. CONTRACTOR SHALL COMPLETE ALL WORK SHOWN WITHIN NCDOT RIGHT OF WAY, LCFWSA EASEMENT AND CFPUA EASEMENT.
3. PROVIDE FOR POSITIVE DRAINAGE AT ALL TIMES FOR CONSTRUCTION AND OPERATION OF THE TEMPORARY ROAD.

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6-21-19

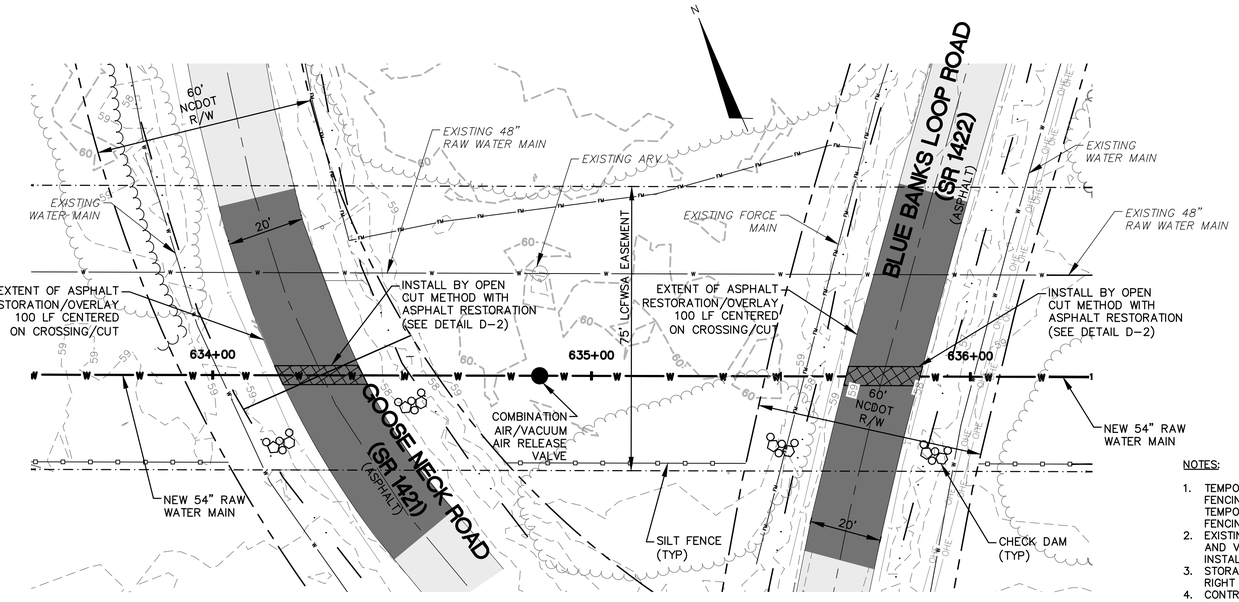
ROAD INTERSECTION PLANS AND PROFILES

CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
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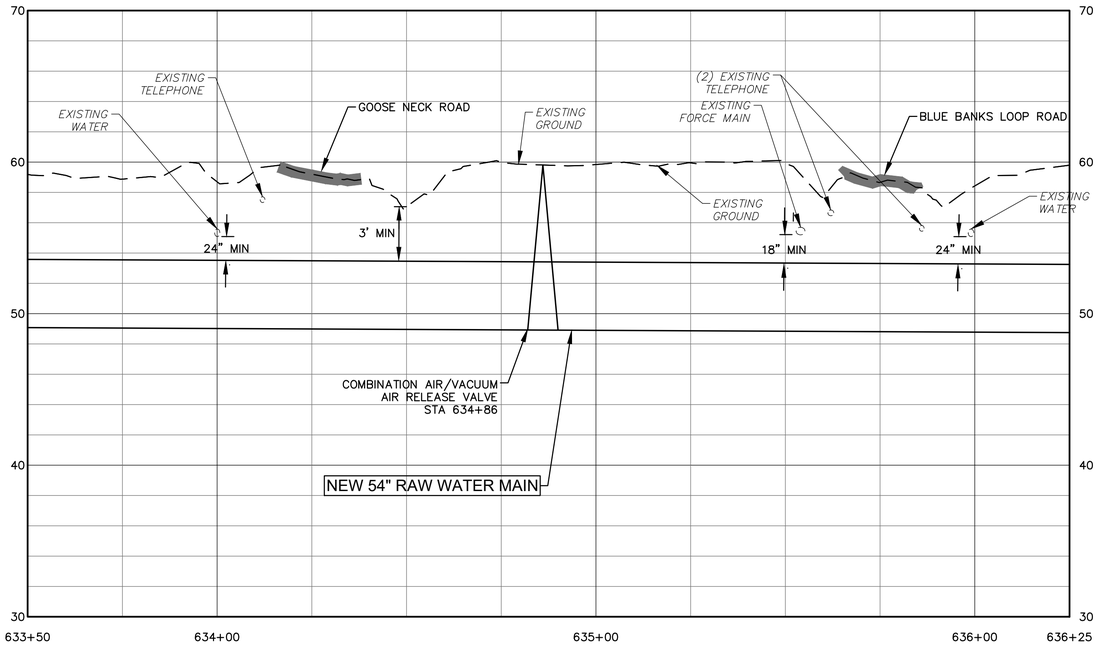
SHEET NO: C-54



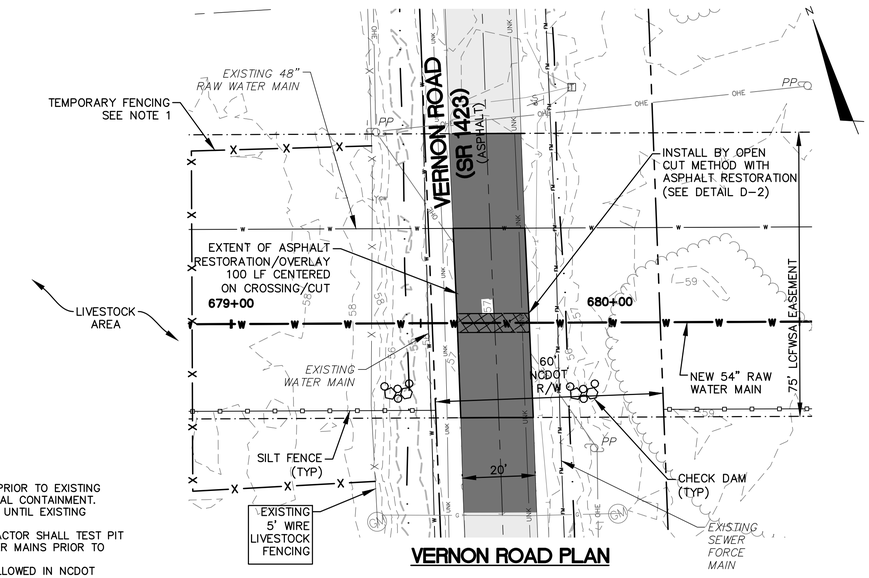
GOOSE NECK ROAD AND BLUE BANKS LOOP ROAD PLAN

NOTES:

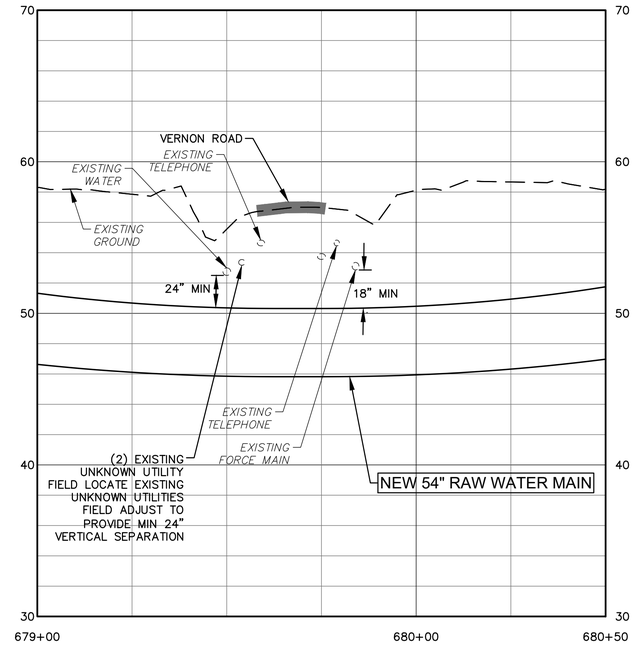
1. TEMPORARY FENCING SHALL BE INSTALLED PRIOR TO EXISTING FENCING BEING REMOVED TO MAINTAIN ANIMAL CONTAINMENT. TEMPORARY FENCING SHALL BE MAINTAINED UNTIL EXISTING FENCING IS REINSTALLED.
2. EXISTING WATER AND SEWER MAINS–CONTRACTOR SHALL TEST PIT AND VERIFY LOCATION OF WATER AND SEWER MAINS PRIOR TO INSTALLATION OF RAW WATER MAIN PIPE.
3. STORAGE OF EXCAVATED MATERIAL NOT ALLOWED IN NCDOT RIGHT OF WAY.
4. CONTRACTOR SHALL COMPLETE ALL WORK SHOWN WITHIN NCDOT RIGHT OF WAY, LCFWSA EASEMENT AND CFPUA EASEMENT.
5. PROVIDE FOR POSITIVE DRAINAGE AT ALL TIMES FOR CONSTRUCTION AND OPERATION OF THE TEMPORARY ROAD.
6. CONTRACTOR SHALL MAINTAIN TRAFFIC DURING CONSTRUCTION AND PROVIDE TRAFFIC CONTROL DEVICES PER NCDOT STANDARDS.



GOOSE NECK ROAD AND BLUE BANKS LOOP ROAD PROFILE



VERNON ROAD PLAN



VERNON ROAD PROFILE

20' 0 20' 40'
SCALE: 1"=20' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

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NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOAHN
C-2179

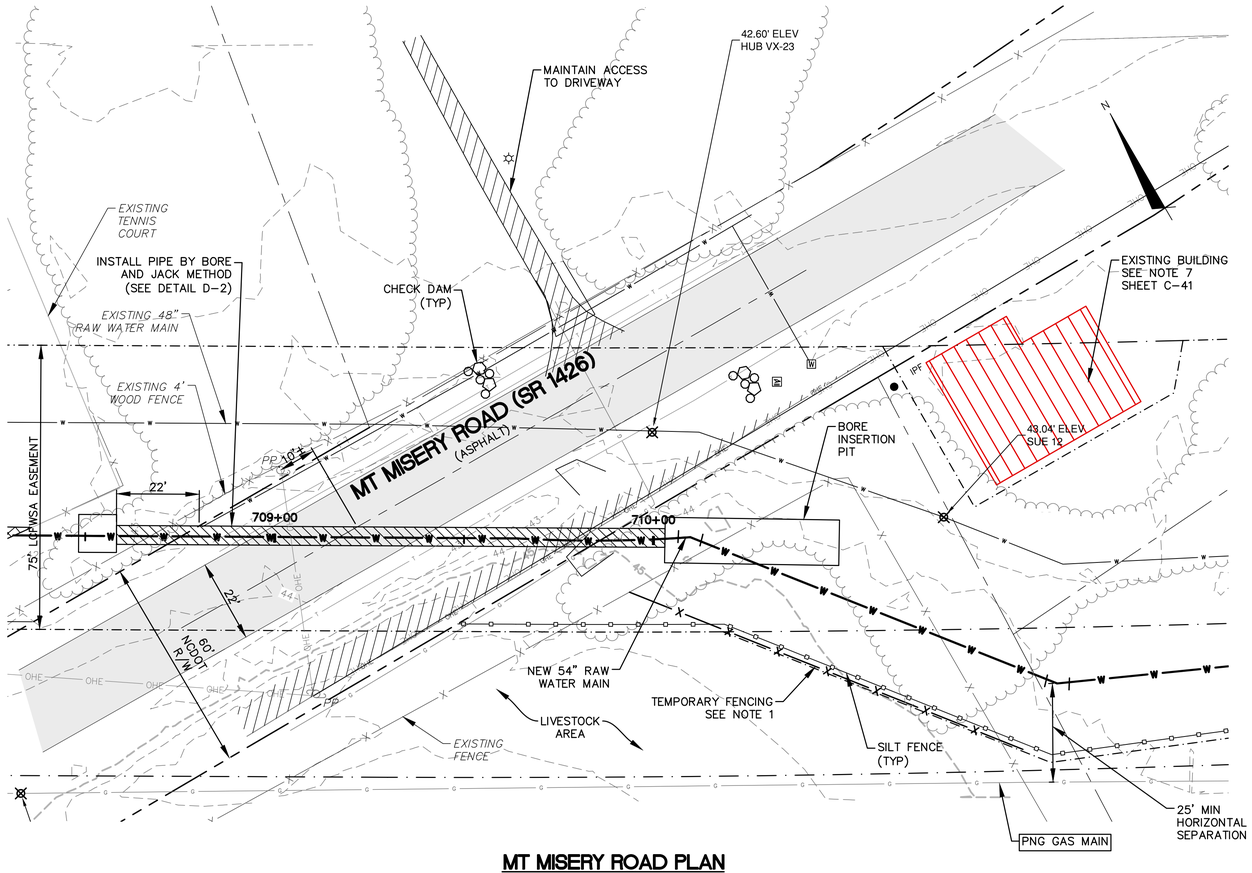
ROAD INTERSECTION PLANS AND PROFILES

CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

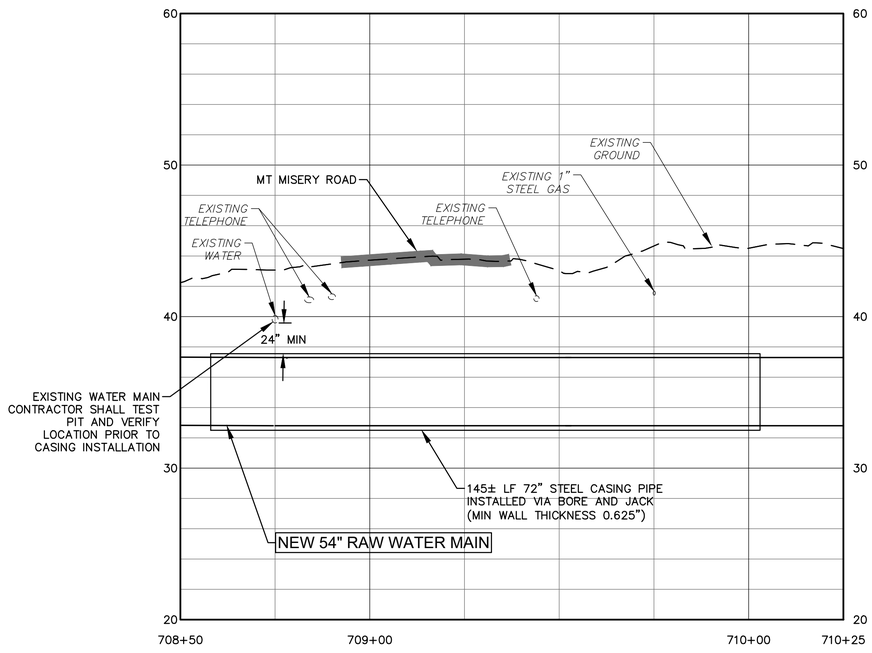
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235 GOVERNMENT CENTER DRIVE
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OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

SHEET NO:
C-55



MT MISERY ROAD PLAN



MT MISERY ROAD PROFILE

NOTES:

1. TEMPORARY FENCING SHALL BE INSTALLED PRIOR TO EXISTING FENCING BEING REMOVED TO MAINTAIN ANIMAL CONTAINMENT. TEMPORARY FENCING SHALL BE MAINTAINED UNTIL EXISTING FENCING IS REINSTALLED.
2. STORAGE OF EXCAVATED MATERIALS NOT ALLOWED ON NCDOT RIGHT OF WAY.
3. CONTRACTOR SHALL COMPLETE ALL WORK SHOWN WITHIN NCDOT RIGHT OF WAY, LCFWSA EASEMENT AND CFPUA EASEMENT.
4. PROVIDE FOR POSITIVE DRAINAGE AT ALL TIMES FOR CONSTRUCTION AND OPERATION OF THE TEMPORARY ROAD.

20' 0 20' 40'
SCALE: 1"=20' (Horiz.)
5' 0 5' 10'
SCALE: 1"=5' (Vert.)

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ROAD INTERSECTION PLANS AND PROFILES

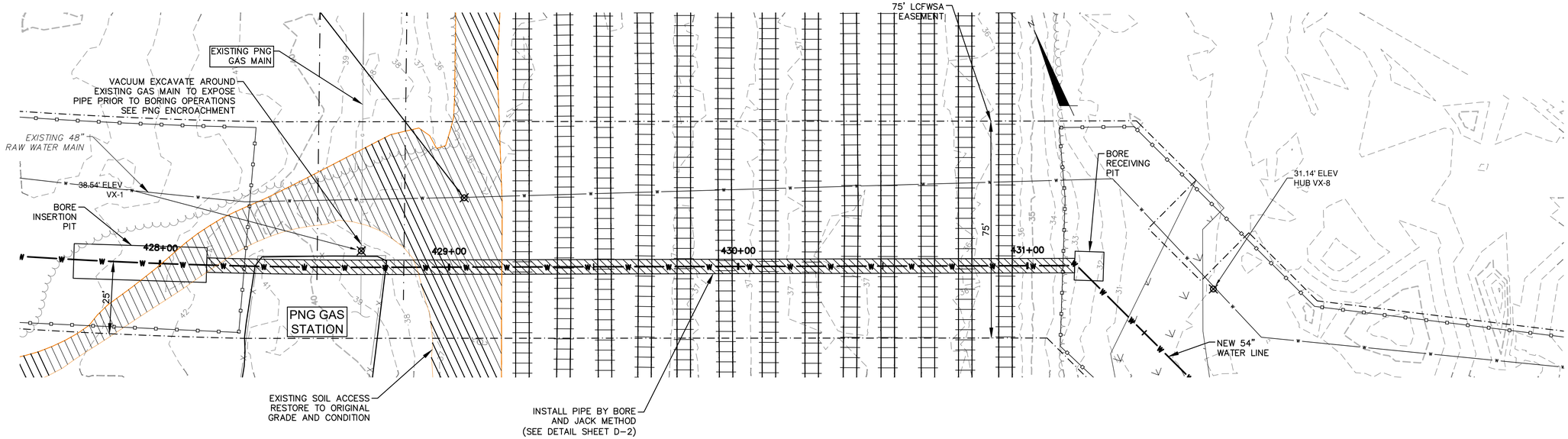
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOARD
6-21-19

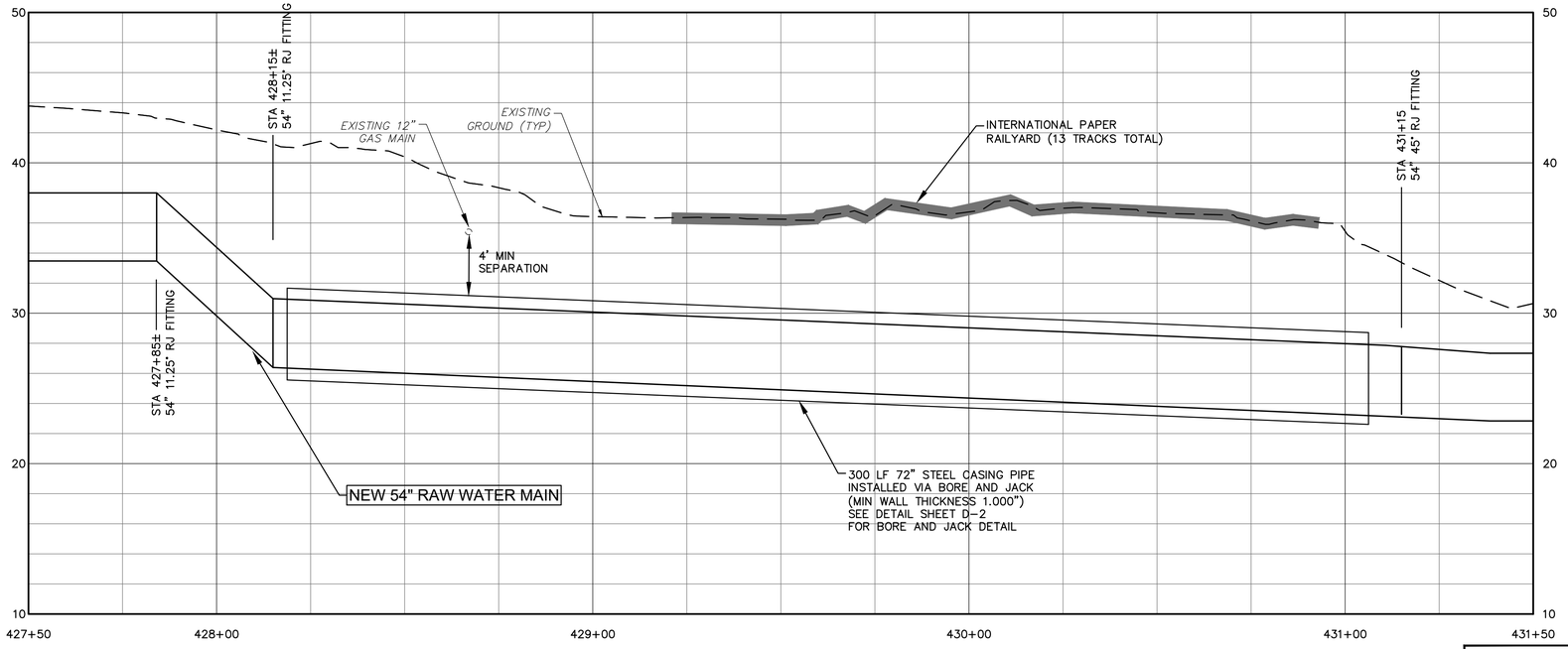
CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

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WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367-0038

SHEET NO: **C-56**





NOTES:

1. CONTRACTOR SHALL PROVIDE GEOTECHNICAL INSTRUMENTATION AND MONITORING OF RAIL YARD FOR INSTALLATION OF BORE ENCASEMENT PIPE AND RAW WATER MAIN UNDER IP RAIL AND TRACKS. CONTRACTOR SHALL SUBMIT MONITORING PLAN TO ENGINEER FOR REVIEW MINIMUM 30 DAYS PRIOR TO THE START OF CONSTRUCTION.

20' 0 20' 40'
SCALE: 1"=20' (Horiz.)

5' 0 5' 10'
SCALE: 1"=5' (Vert.)

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INTERNATIONAL PAPER RAIL YARD PLAN AND PROFILE

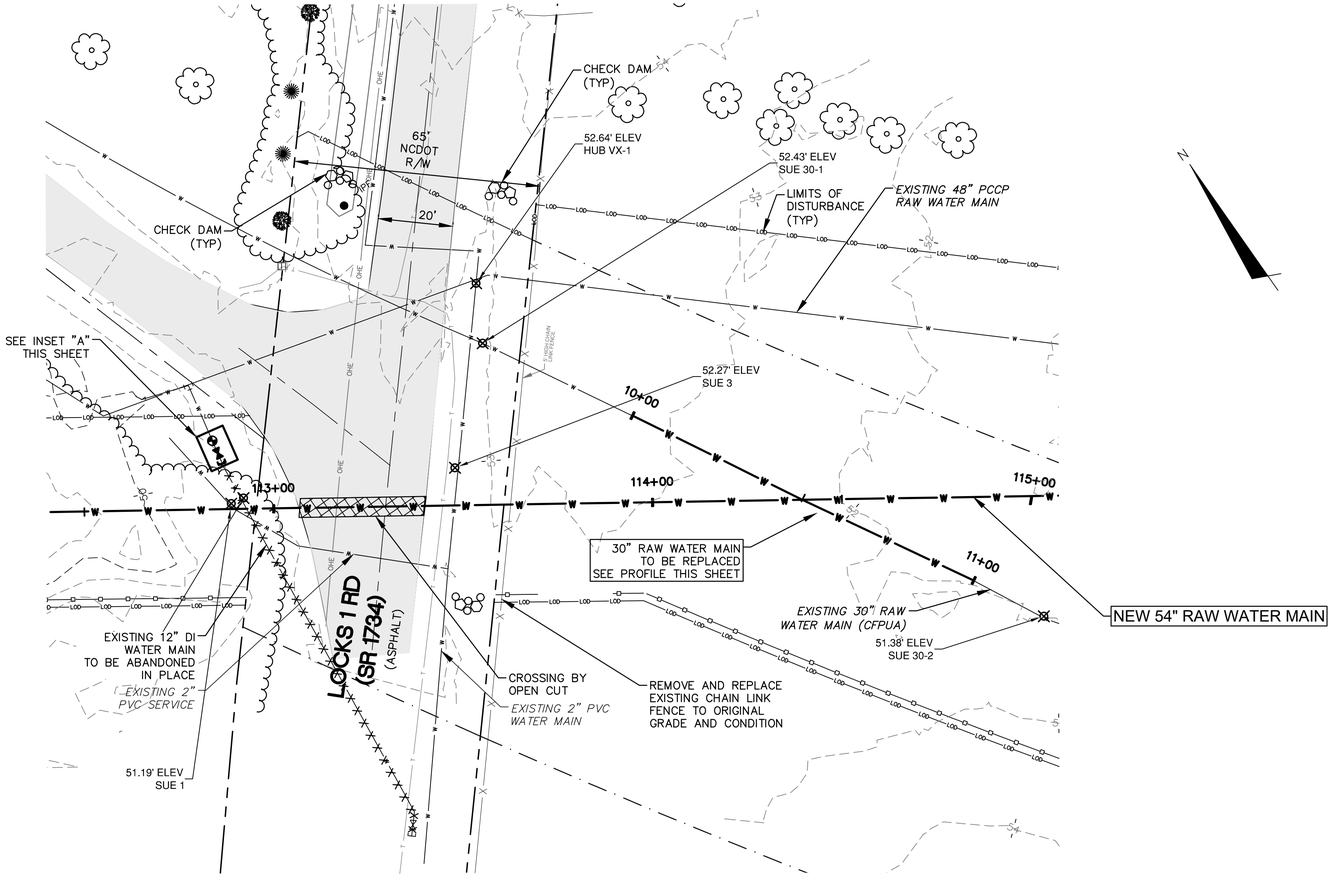
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOAHN
6-27-19

CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

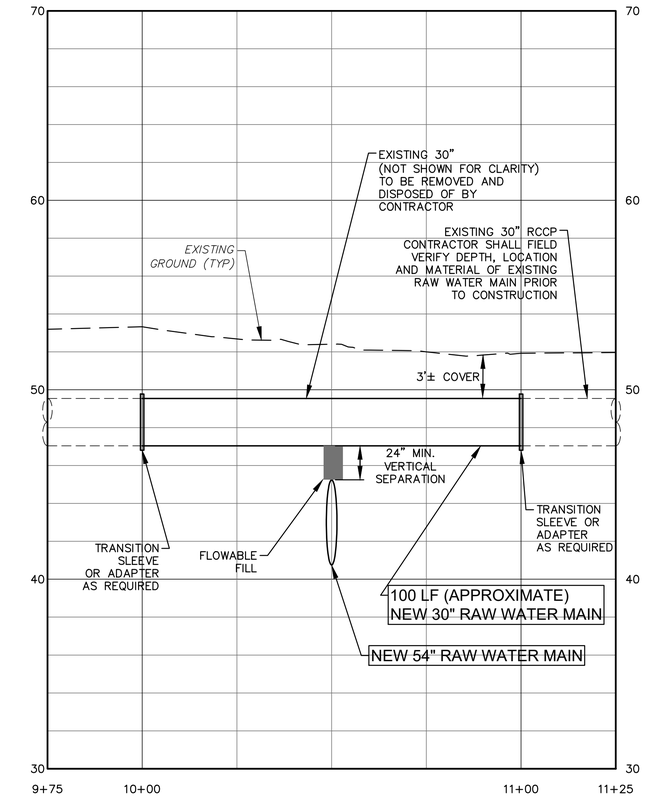
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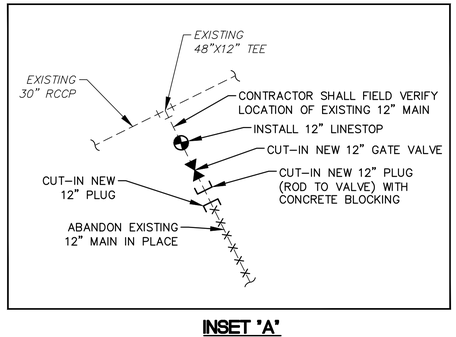
DATE: JUNE 2019
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PROJECT NO. : 5367-0038

SHEET NO:
C-57



PLAN VIEW
1" = 20'
SEE SHEET C-51
FOR DETAILS OF ROAD CROSSINGS





INSET "A"
NTS

20' 0 20' 40'
SCALE: 1"=20' (Horiz.)

4' 0 4' 8'
SCALE: 1"=4' (Vert.)

GENERAL NOTES:
1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN AND 30" WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
6. NEW 54" RAW WATER MAIN SHALL BE WELDED STEEL PIPE (THICKNESS MIN = 0.22, LINING = CEMENT MORTAR, COATING = POLYURETHANE) OR DUCTILE IRON PIPE (PC 150, LINING = CEMENT MORTAR, COATING = ZINC). CONTRACTOR SHALL UTILIZE ONLY ONE MATERIAL UNLESS APPROVED BY ENGINEER OR MATERIAL IS SHOWN ON PLANS.

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30" RAW WATER MAIN REPLACEMENT STA 10+00 TO STA 11+00

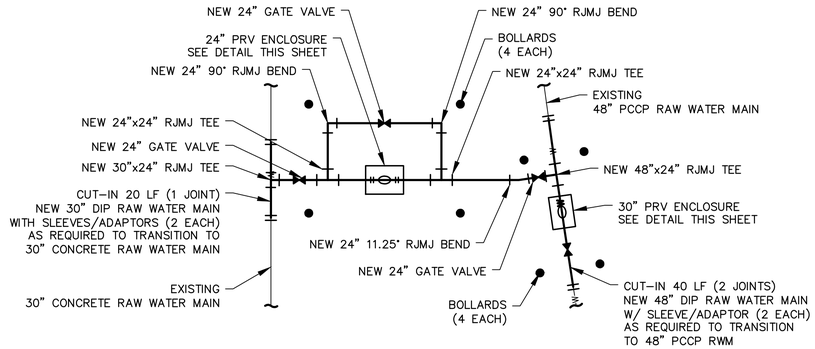
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOAHN
6-27-19

CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

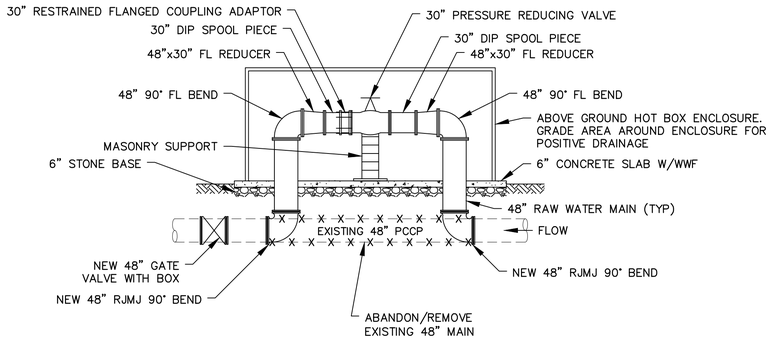
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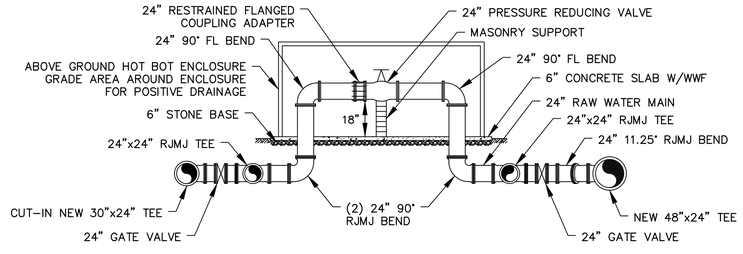
SHEET NO:
C-58



SCHEDULE II
30" AND 24" PRESSURE REDUCING VALVES
PLAN VIEW
1" = 20'
SEE SHEET C-1



SCHEDULE II
30" PRESSURE REDUCING VALVE ASSEMBLY DETAIL A
N.T.S.



SCHEDULE II
24" PRESSURE REDUCING VALVE ASSEMBLY DETAIL B
N.T.S.

20' 0 20' 40'
SCALE: 1"=20'

54" RAW WATER MAIN
PRESSURE REDUCING VALVE PLANS AND DETAILS

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
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PROJECT NO. : 5367-0038

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6-21-19

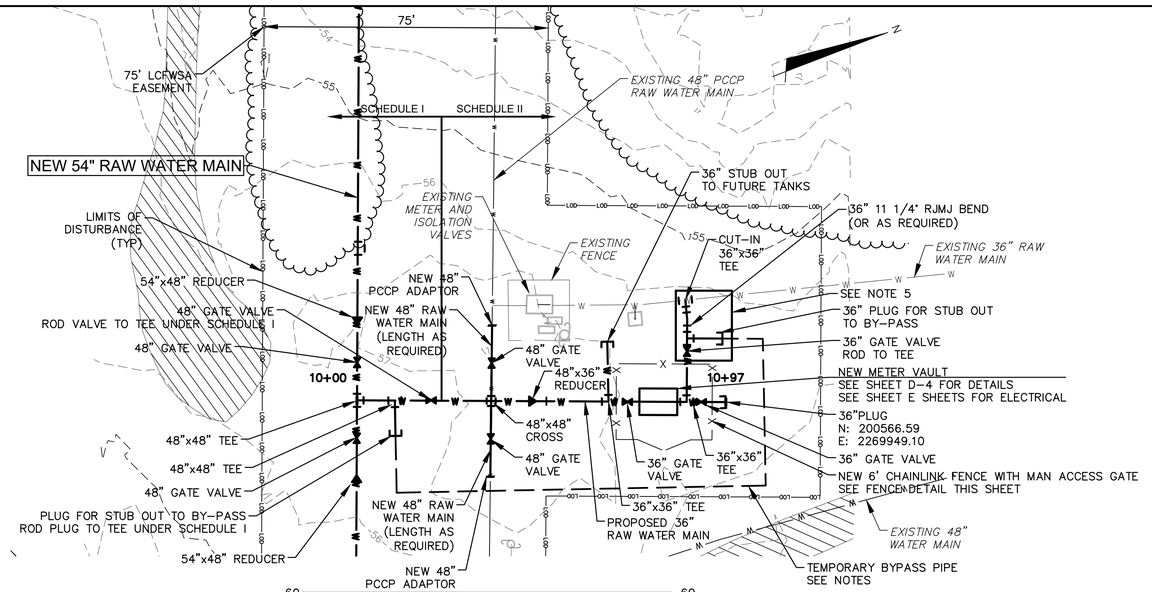
CAPE FEAR
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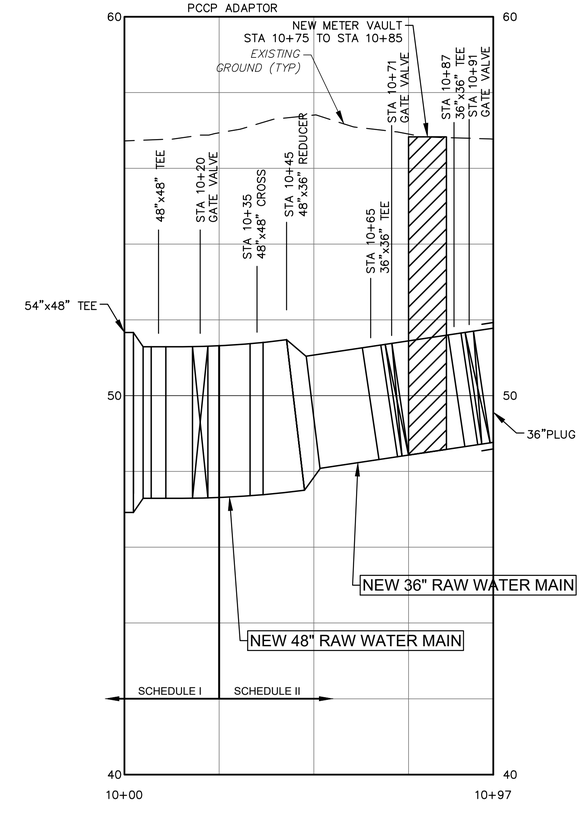
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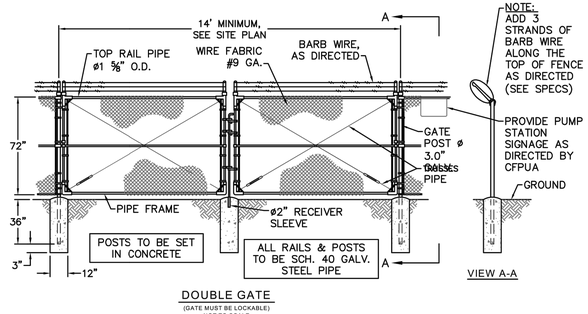
SHEET NO: C-59

NOTES

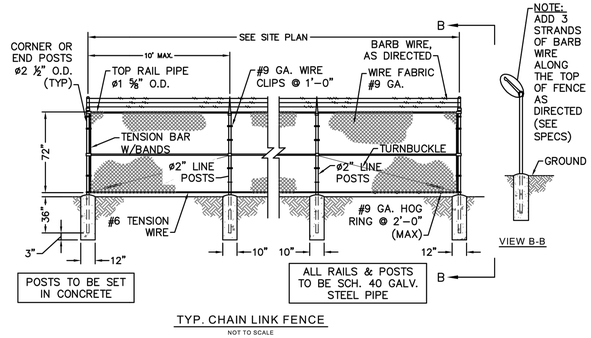
1. CONTRACTOR SHALL INSTALL A TEMPORARY BYPASS PIPE (MINIMUM 36" INSIDE DIAMETER) AS INDICATED ON THIS SHEET. BYPASS SHALL NOT BE INSTALLED UNTIL SCHEDULE I – 54" RAW WATER TRANSMISSION MAIN IS COMPLETE AND OPERATIONAL.
2. BYPASS PIPE CAN BE BURIED OR INSTALLED ABOVE GROUND AT CONTRACTOR'S DISCRETION. IF PIPE IS BURIED CONTRACTOR SHALL PROVIDE ALL FITTINGS, TRANSITIONS, RESTRAINTS, ETC. FOR A COMPLETE AND OPERATIONAL INSTALLATION OF THE PIPE. IF THE PIPE IS PLACED AT GROUND LEVEL, CONTRACTOR SHALL PROVIDE ALL FITTINGS, TRANSITIONS, RESTRAINTS, ETC. FOR A COMPLETE AND OPERATIONAL INSTALLATION OF THE PIPE. IF PIPE IS PLACED AT GROUND LEVEL, CONTRACTOR SHALL SECURE PIPE HORIZONTALLY AND VERTICALLY, AND PROVIDE PROTECTION FROM CONSTRUCTION ACTIVITIES AT ALL TIMES.
3. CONTRACTOR SHALL COORDINATE WITH BRUNSWICK COUNTY AND THE ENGINEER, MINIMUM 30 DAYS IN ADVANCE OF INSTALLING THE 36" X 36" CUT–IN TEE ON THE EXISTING 36" RAW WATER MAIN. CUT–IN OF TEE SHALL BE PLANNED AS NECESSARY TO MINIMIZE DOWNTIME TO THE WATER TREATMENT PLANT AND SHALL BE NO LONGER THAN 4 HOURS. CUT–IN AND SHUTDOWN MUST BE COMPLETED IN NON–PEAK, NIGHT–TIME HOURS.
4. STUB–OUT, VALVE AND TEMPORARY BY–PASS CONNECTION SHALL BE INSTALLED CONCURRENT WITH THE 36" X 36" CUT–IN TEE. VALVE SHALL BE RODDED TO TEE. WHEN CUT–IN TEE, STUB–OUT, AND VALVE ARE COMPLETE, CONTRACTOR SHALL INSTALL TEMPORARY BYPASS PIPE AND PLACE BYPASS IN OPERATION.
5. BYPASS SHALL OPERATE FOR MINIMUM 72 HOURS. AFTER 72 HOURS OF OPERATION AND APPROVAL FROM BRUNSWICK COUNTY, THE OWNER, AND ENGINEER, CONTRACTOR MAY PROCEED WITH REMAINING WORK FOR SCHEDULE II ON THIS PLAN SHEET.







DOUBLE GATE
(GATE MUST BE LOCKABLE)
NOT TO SCALE



TYP. CHAIN LINK FENCE
NOT TO SCALE

20' 0 20' 40'
SCALE: 1"=20' (Horiz.)
2' 0 2' 4'
SCALE: 1"=2' (Vert.)

GENERAL NOTES:
1. LAYOUT BASED ON STANDARD FITTING SIZES USING MAXIMUM JOINT DEFLECTION OF 2 DEGREES AND MINIMUM RADIUS OF 700 FT.
2. CONTRACTOR SHALL TAKE THE NECESSARY STEPS TO PROTECT THE EXISTING 48" RAW WATER MAIN.
3. ALL EXCAVATIONS (TRENCHING, BORING, BORE PITS, ETC) ARE UNCLASSIFIED. GEOTECHNICAL REPORT AND BORING LOGS HAVE BEEN PROVIDED IN PROJECT SPECIFICATIONS.
4. SITE SURVEY WAS PERFORMED BY MCKIM AND CREED IN 2017. ALL COORDINATES ARE TIED TO THE NORTH CAROLINA STATE PLAN COORDINATE SYSTEM (NAD 83 FEET).
5. THE LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
6. NEW 54" RAW WATER MAIN SHALL BE WELDED STEEL PIPE (THICKNESS MIN = 0.22, LINING = CEMENT MORTAR, COATING = POLYURETHANE) OR DUCTILE IRON PIPE (PC 150, LINING = CEMENT MORTAR, COATING = ZINC). CONTRACTOR SHALL UTILIZE ONLY ONE MATERIAL UNLESS APPROVED BY ENGINEER OR MATERIAL IS SHOWN ON PLANS.

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BRUNSWICK COUNTY METER VAULT

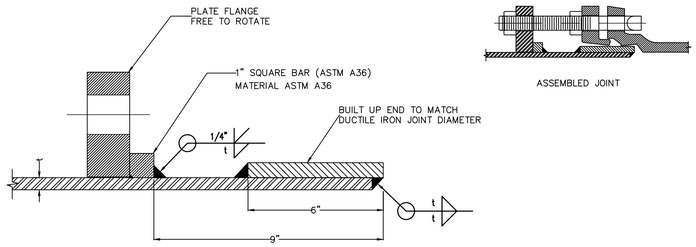
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOAHN
6-21-19

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

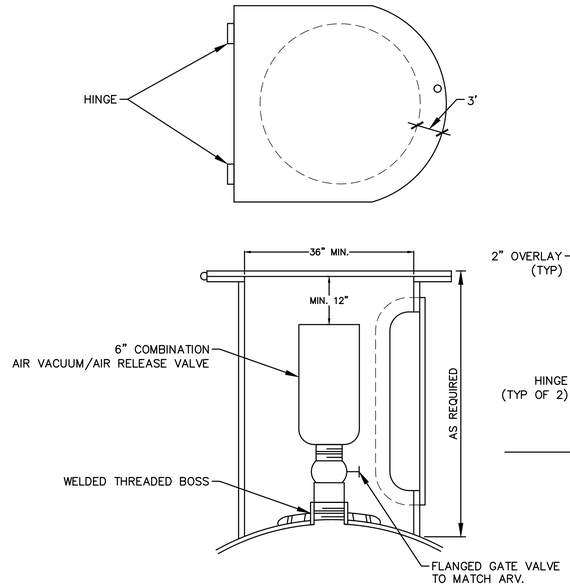
CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
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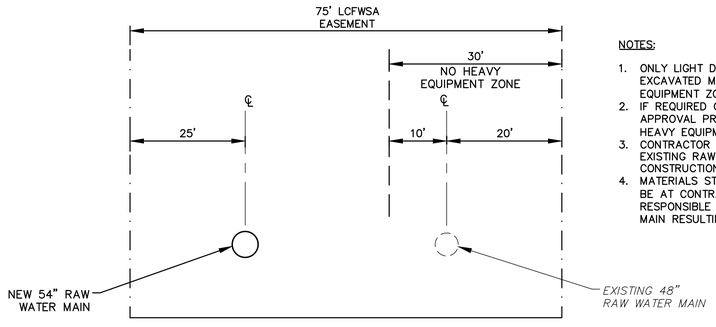
SHEET NO: C-60



THRUST RESTRAINT SYSTEM FOR MJ CONNECTION
NOT TO SCALE



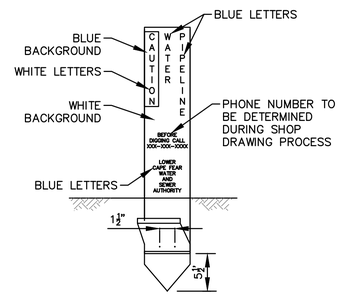
LIVINGSTON CREEK AIR VACUUM / AIR RELEASE DETAIL
NOT TO SCALE



EASEMENT EQUIPMENT ACCESS AND STAGING
NOT TO SCALE

NOTES:

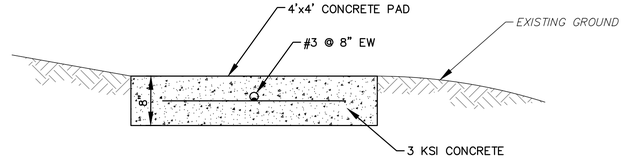
1. ONLY LIGHT DUTY VEHICLES, MATERIAL STORAGE AND EXCAVATED MATERIALS SHALL BE ALLOWED IN "NO HEAVY EQUIPMENT ZONE".
2. IF REQUIRED CONTRACTOR SHALL SUBMIT PLAN FOR APPROVAL PRIOR TO TRAVERSING HEAVY EQUIPMENT IN "NO HEAVY EQUIPMENT ZONE".
3. CONTRACTOR SHALL TAKE NECESSARY STEPS TO PROTECT EXISTING RAW WATER MAIN AT ALL TIMES DURING CONSTRUCTION.
4. MATERIALS STORED IN "NO HEAVY EQUIPMENT ZONE" SHALL BE AT CONTRACTOR'S OWN RISK. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING RAW WATER MAIN RESULTING FROM USE OF "NO HEAVY EQUIPMENT ZONE".



UTILITY MARKER DETAIL
NOT TO SCALE

NOTES:

1. MARKERS SHALL BE CARSONITE TYPE CUM-375 OR APPROVED EQUAL. MARKERS SHALL BE PIGMENTED WITH UV RESISTANT RESINS OR COATED WITH CLEAR UV RESISTANT COATING.
2. DECALS SHALL BE AS SHOWN AND PROVIDED ON UV RESISTANT BACKING WITH TEXT CONFORMING TO THE FEDERAL OFFICE OF PIPELINE SAFETY STANDARDS AND DENOTING THE STANDARD NO-DIG SYMBOLS.



LADDER LANDING PAD DETAIL
NOT TO SCALE

NOTES:

1. INSTALL PADS AT LOCATION DETERMINED BY OWNER IN THE FIELD.
2. LADDER BY OWNER.
3. SLOPE GRADE AWAY FROM PAD.
4. COST OF PADS SHALL BE INCLUDED IN BASE BID.

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54" RAW WATER MAIN DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOATH
6-21-19

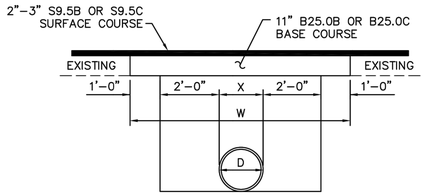
CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
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DATE: JUNE 2019
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PROJECT NO. : 5367-0038

SHEET NO: **D-1**

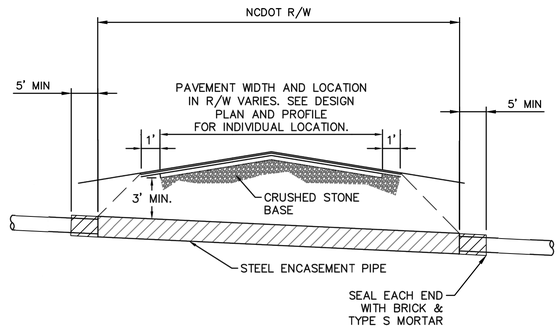
D	X	W
12"	1'–4"	7'–4"
15"	1'–7"	7'–7"
18"	1'–10"	7'–10"
24"	2'–6"	8'–6"
30"	3'–1"	9'–1"
36"	3'–8"	9'–8"
42"	4'–5"	10'–5"
48"	5'–0"	11'–0"
54"	5'–0"	11'–0"



PAVEMENT REPAIRS ON ROADS TO BE RESURFACED (PIPE IS PLACED UNDER EXISTING PAVEMENT)

NCDOT-PAVEMENT REPAIRS WS–3

NOT TO SCALE

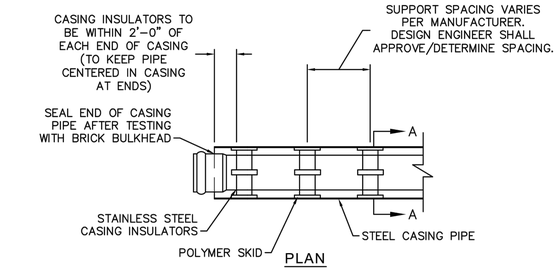


NOTES:

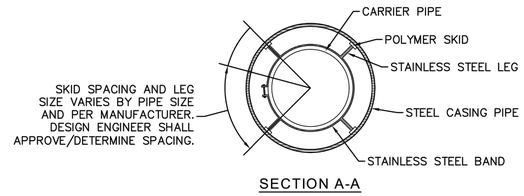
1. CASING WILL BE INSTALLED AT LINE AND GRADE SHOWN ON INDIVIDUAL PROFILE FOR EACH CROSSING. BORING/JACKING TO LINE AND GRADE IS REQUIRED.
2. TRACER WIRE SHALL BE TAPED AT 12' INTERVALS THROUGHOUT THE CASING.
3. PIPING THROUGH CASING SHALL BE RESTRAINED JOINT.
4. SEE DETAIL WS–8 FOR PIPE CASING SUPPORT DETAILS.
5. CASING SHALL EXTEND MIN 5' FROM NCDOT R/W.

TYPICAL BORING & JACKING DETAIL WS–7

NOT TO SCALE



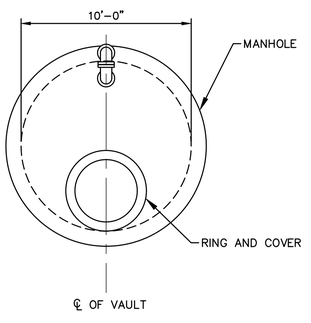
PLAN



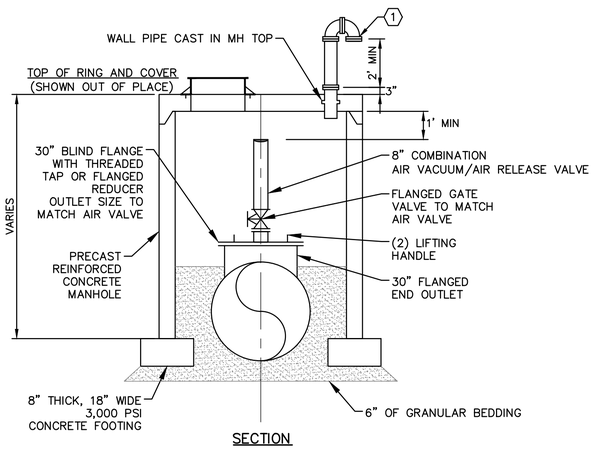
SECTION A-A

PIPE CASING SUPPORT DETAIL WS–8

NOT TO SCALE



TOP PLAN



SECTION

GENERAL NOTE:

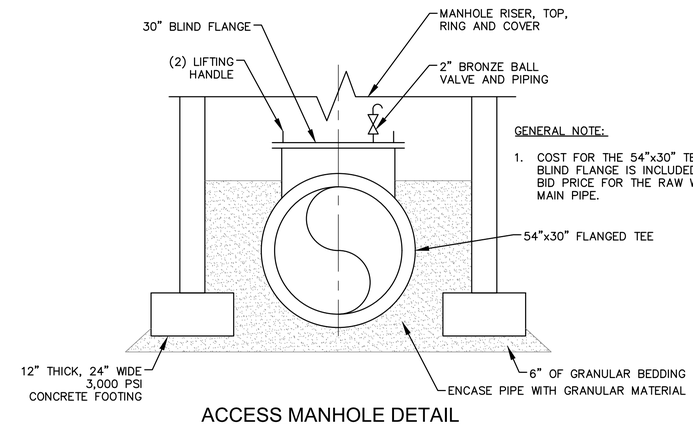
1. ALL PIPE AND FITTINGS SHALL BE STEEL OR DIP.

KEY NOTE:

(1) 8" VENT PIPE WITH FLANGED DIP RETURN BEND WITH STAINLESS STEEL INSECT SCREEN (SHOWN OUT OF PLACE), VENT PIPE SHALL BE DIP, PRIMED AND PAINTED PER PIPE MANUFACTURER'S RECOMMENDATIONS. COLOR TO BE SELECTED BY OWNER.

COMBINATION AIR VACUUM / AIR RELEASE VALVE

NOT TO SCALE

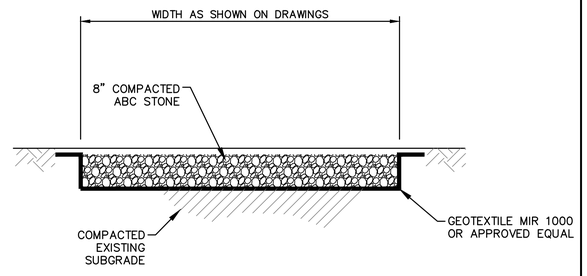


GENERAL NOTE:

1. COST FOR THE 54"x30" TEE AND BLIND FLANGE IS INCLUDED IN THE BID PRICE FOR THE RAW WATER MAIN PIPE.

ACCESS MANHOLE DETAIL

NOT TO SCALE



TEMPORARY ROAD DETAIL

NOT TO SCALE

NOTES:

1. CONTRACTOR SHALL INVESTIGATE FOR THE PRESENCE OF EXISTING UTILITIES AND/OR SERVICES NOT SHOWN ON CONTRACT DRAWINGS.
2. PROOF ROLL SUB GRADE IN PRESENCE OF ENGINEER PRIOR TO PLACEMENT OF FABRIC.
3. AREAS OBSERVED TO YIELD SHALL BE REMOVED AND REPLACED AT ENGINEERS DIRECTION.

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54" RAW WATER MAIN DETAILS

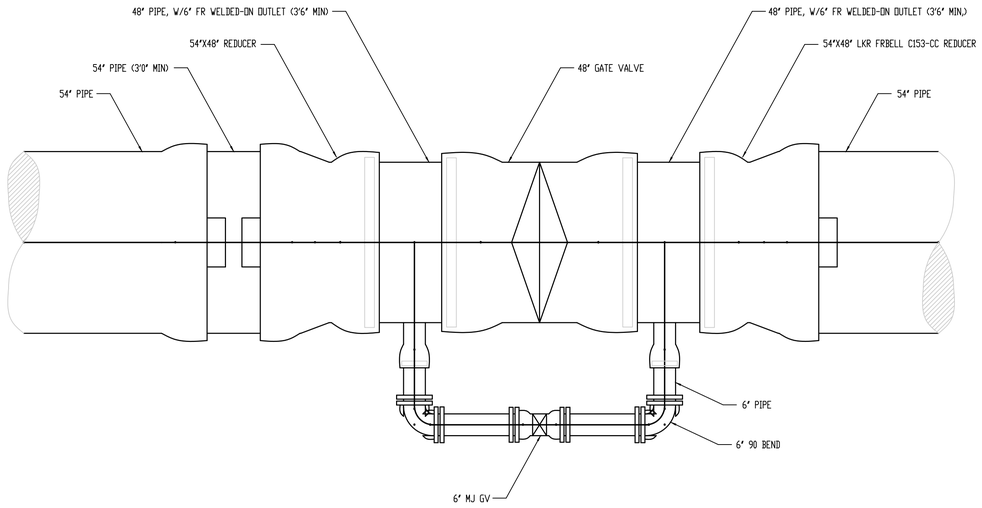
NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOATH 6-21-19

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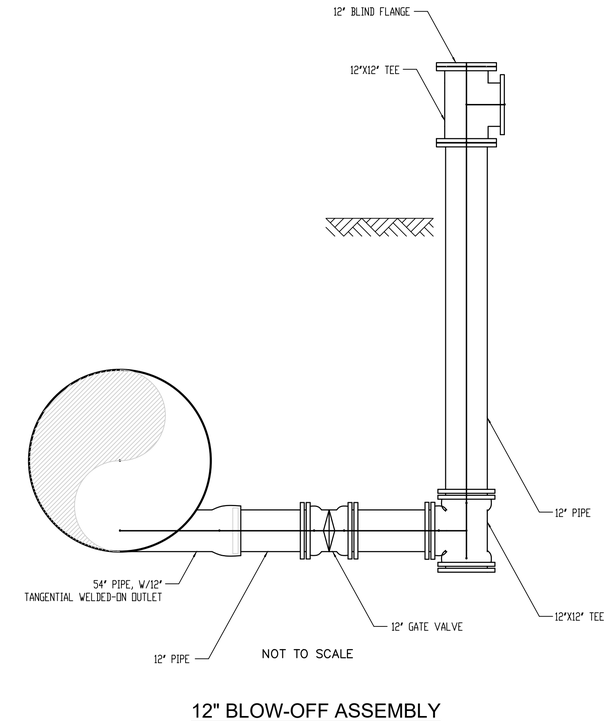
DATE: JUNE 2019
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SHEET NO: D-2



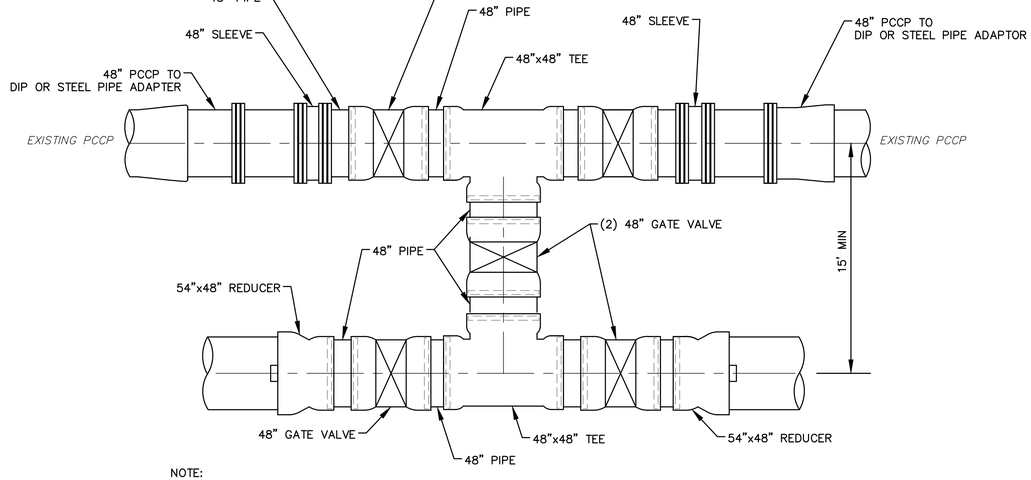
48" GATE VALVE WITH BYPASS CONNECTION

NOT TO SCALE



NOT TO SCALE

12" BLOW-OFF ASSEMBLY



NOTE:
1. GATE VALVE SHALL BE INSTALLED ON THEIR SIDE.
2. DRAWING SHOWN WITH STANDARD DUCTILE FITTINGS. INTERCONNECTIONS MAY BE CONSTRUCTED WITH STEEL OR D.I. PIPE
3. ALL CONNECTIONS SHALL BE RESTRAINED.

INTERCONNECTION WITH 48" PCCP RWM

NOT TO SCALE

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54" RAW WATER MAIN DETAILS

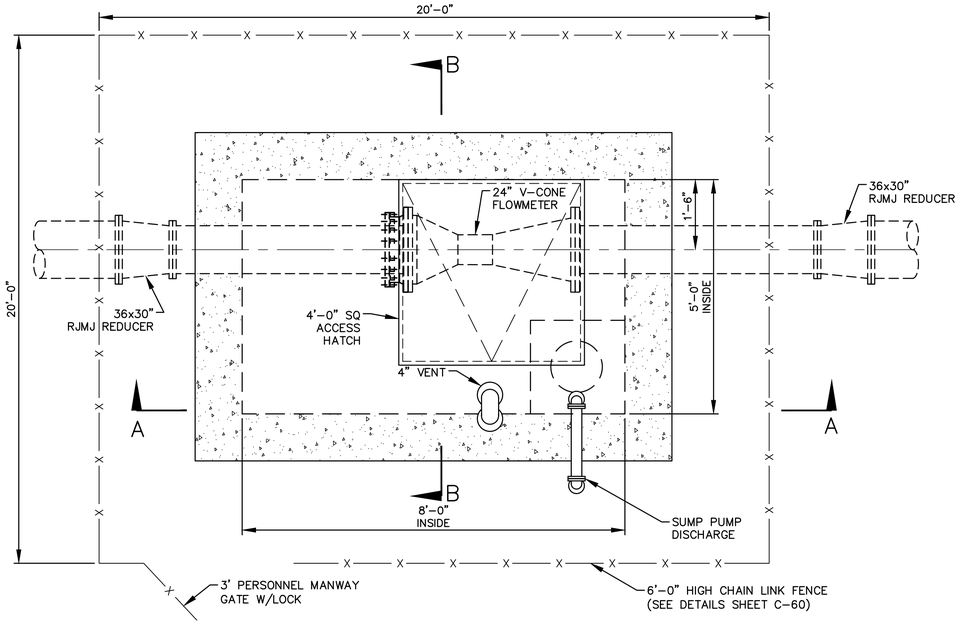
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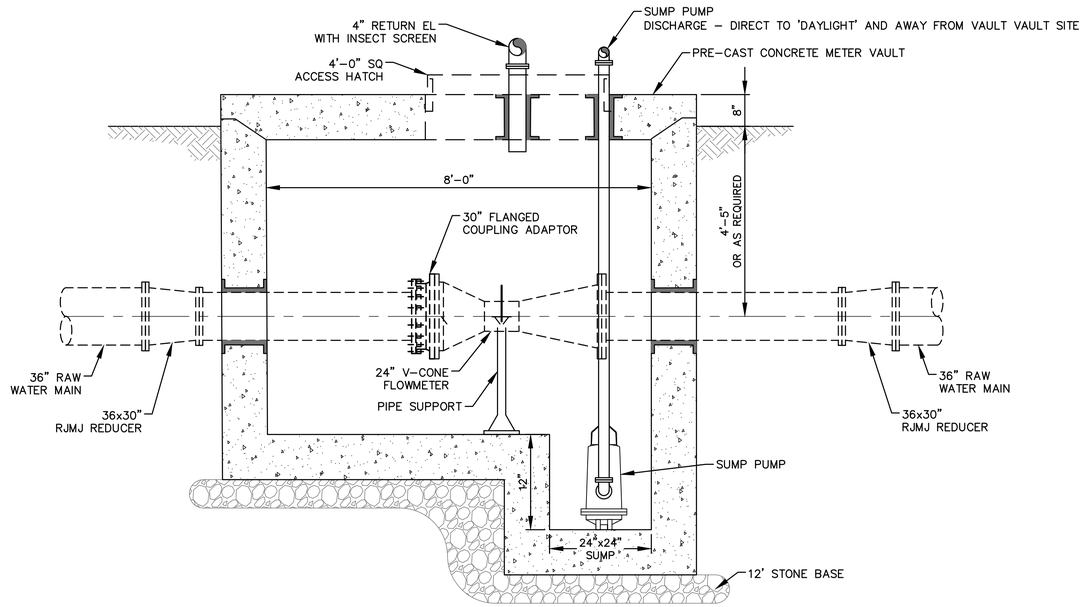
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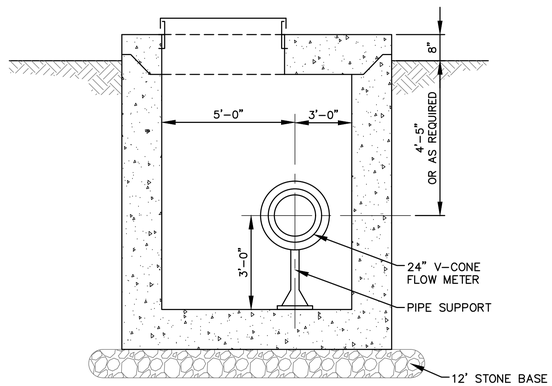
SHEET NO: **D-3**



PLAN
NOT TO SCALE
METER VAULT DETAILS



SECTION "A"
NOT TO SCALE
METER VAULT DETAILS



SECTION "B"
NOT TO SCALE
METER VAULT DETAILS

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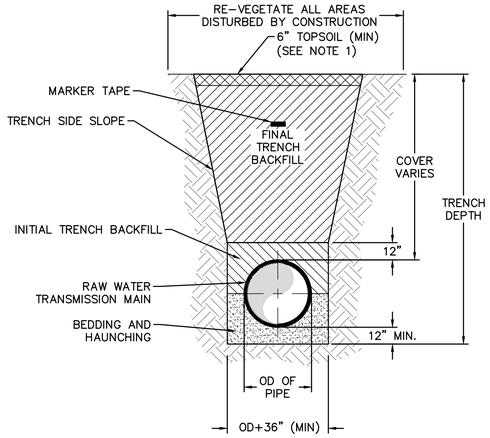
54" RAW WATER MAIN DETAILS

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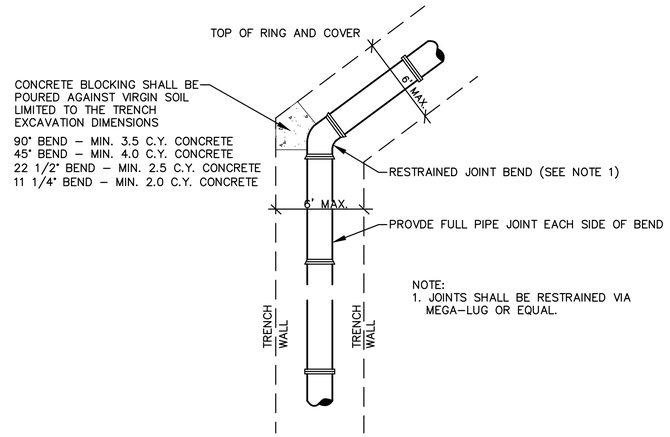
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SHEET NO:
D-4



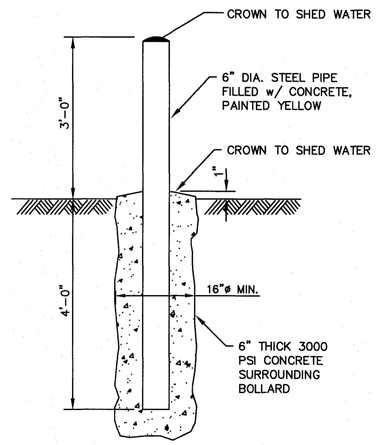
NOTES:
1. CONTRACTOR MAY ELECT TO STRIP AND STOCKPILE TOPSOIL AND REINSTALL UPON COMPLETION OF PIPE INSTALLATION.
2. REFER TO GEOTECHNICAL REPORT FOR SOIL CLASSIFICATION AND REQUIREMENTS FOR FINAL BACKFILL, INITIAL BACKFILL, BEDDING AND HAUNCHING.

TYPICAL PIPE EMBEDMENT DETAIL
NOT TO SCALE

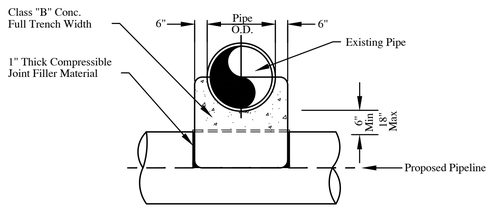


NOTE:
1. JOINTS SHALL BE RESTRAINED VIA MEGA-LUG OR EQUAL.

THRUST BLOCKING DETAIL
NOT TO SCALE



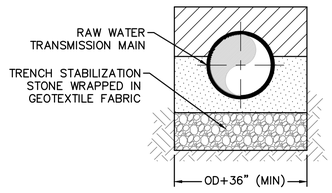
BOLLARD DETAIL
NOT TO SCALE



PROPOSED PIPELINE UNDER EXISTING PIPE

* FOR PIPELINES WHERE SUFFICIENT SEPARATION AND PROPER COMPACTION CANNOT BE ACHIEVED.

TYPICAL PIPELINE SUPPORT DETAIL
NOT TO SCALE



NOTES:
1. TRENCH STABILIZATION REQUIRED FOR WET OR SOFT AREAS AS DETERMINED BY THE ENGINEER.
2. DEPTH OF STONE SHALL BE 18" MINIMUM, OR AS DETERMINED BY THE ENGINEER.

TRENCH STABILIZATION DETAIL
NOT TO SCALE

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54" RAW WATER MAIN DETAILS

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SHEET NO: **D-5**

SEEDING SCHEDULE FOR STABILIZATION GRASS

SHOULDERS, SIDE DITCHES, SLOPES (MAX. 3:1)

DATE	TYPE	PLANTING RATE
AUG. 15 – NOV. 1	TALL FESCUE	300 LBS/ACRE
NOV. 1 – MAR. 1	TALL FESCUE & ABRUZZI RYE	300 LBS/ACRE 25 LBS/ACRE
MAR. 1 – APR. 15	TALL FESCUE	300 LBS/ACRE
APR. 15 – JUN. 30	HULLED COMMON BERMUDAGRASS	25 LBS/ACRE
JUL. 1 – AUG. 15	TALL FESCUE AND	120 LBS/ACRE
	*** BROWNTOP MILLET	35 LBS/ACRE
	*** OR SORGHUM – SUDAN HYBRIDS	30 LBS/ACRE

SHOULDERS, SIDE DITCHES, SLOPES (3:1 TO 2:1)

MAR. 1 – JUN. 1	SERICEA LESPEDEZA (SCARIFIED) &	50 LBS/ACRE
(MAR. 1 – APR. 15)	ADD TALL FESCUE	120 LBS/ACRE
(MAR. 1 – JUN. 30)	OR ADD WEEPING LOVERGRASS	10 LBS/ACRE
(MAR. 1 – JUN. 30)	OR ADD HULLED COMMON BERMUDAGRASS	25 LBS/ACRE
JUN. 1 – SEP. 1	*** TALL FESCUE AND	120 LBS/ACRE
	*** BROWNTOP MILLET	35 LBS/ACRE
	*** OR SORGHUM – SUDAN HYBRIDS	30 LBS/ACRE
SEP. 1 – MAR. 1	SERICEA LESPEDEZA (UNHULLED – UNSCARIFIED) AND TALL FESCUE	70 LBS/ACRE 120 LBS/ACRE
NOV. 1 – MAR. 1	ADD ABRUZZI RYE	25 LBS/ACRE

CONSULT CONSERVATION ENGINEER OR SOIL CONSERVATION SERVICE 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.

*** TEMPORARY -- RESEED ACCORDING TO OPTIMUM SEASON FOR DESIRED PERMANENT VEGETATION. DO NOT ALLOW TEMPORARY COVER TO GROW OVER 12" IN HEIGHT BEFORE MOWING,OTHERWISE FESCUE MAY BE SHADED OUT.

SEEDBED PREPARATION

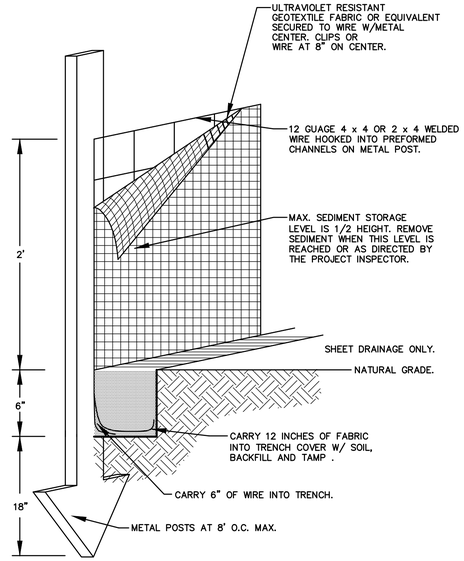
1. CHISEL COMPACTED AREAS AND SPREAD TOPSOIL 3 INCHES DEEP OVER ADVERSE SOIL CONDITIONS, IF AVAILABLE.
2. RIP THE ENTIRE AREA TO 6 INCHES DEPTH.
3. REMOVE ALL LOOSE ROCK, ROOTS, AND OTHER OBSTRUCTIONS LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM.
4. APPLY AGRICULTURAL LIME, FERTILIZER, AND SUPERPHOSPHATE UNIFORMLY AND MIX WITH SOIL (SEE BELOW*).
5. CONTINUE TILLAGE UNTIL A WELL – PULVERIZED, FIRM, REASONABLY UNIFORM SEEDBED IS PREPARED 4 TO 6 INCHES DEEP.
6. SEED ON A FRESHLY PREPARED SEEDBED AND COVER SEED LIGHTLY WITH SEEDING EQUIPMENT OR CULTIPACK AFTER SEEDING.
7. MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH.
8. INSPECT ALL SEEDED AREAS AND MAKE NECESSARY REPAIRS OR RESEEDINGS WITHIN THE PLANTING SEASON, IF POSSIBLE. IF STAND SHOULD BE OVER 60% DAMAGED REESTABLISHED FOLLOWING ORIGINAL LIME, FERTILIZER AND SEEDING RATES.
9. CONSULT CONSERVATION INSPECTOR ON MAINTENANCE TREATMENT AND FERTILIZATION AFTER PERMANENT COVER IS ESTABLISHED.

* APPLY: AGRICULTURAL LIMESTONE – 2 TONS/ACRE OR 3 TONS/ACRE IN CLAY SOILS
FERTILIZER – 1000 LBS/ACRE (10-10-10)
SUPERPHOSPHATE – 500 LBS/ACRE (20%)
MULCH – 2 TONS/ACRE (SMALL GRAIN STRAW)
ANCHOR – ASPHALT EMULSION AT 450 GAL./ACRE

STABILIZATION TIMEFRAMES

(Effective Aug. 3, 2011)

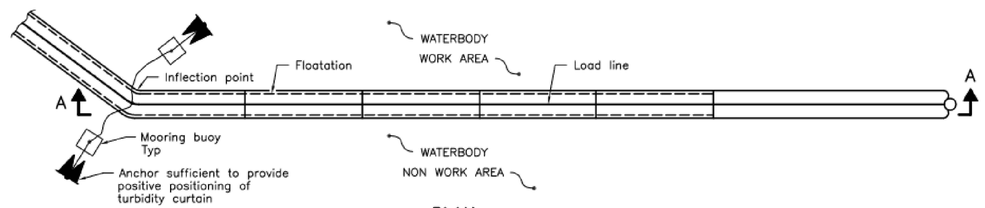
SITE AREA DESCRIPTION	STABILIZATION	TIMEFRAME EXCEPTIONS
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed.
Slopes 3:1 or flatter	14 days	7 days for slopes greater than 50' in length.
All other areas with slopes flatter than 4:1	14 days	None, except for perimeters and HQW Zones.



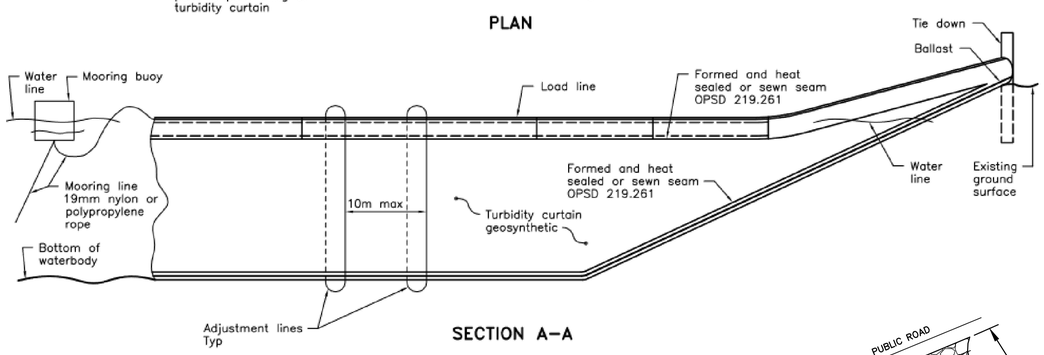
SILT FENCES SHOULD NOT BE USED AT PIPE OUTLETS OR IN AREAS OF CONCENTRATED FLOWS (CREEKS, DITCHLINES, SWALES ETC.).

SILT FENCE DETAIL

NOT TO SCALE



PLAN



SECTION A–A

A. FABRIC: 18–20 OZ PVC

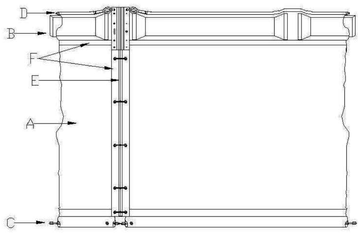
B. FLOTATION: 6"–12"

C. CHAIN BALLAST: 5/16"–3/8"

D. CABLE TENSION: 5/16" HG INSIDE POLY TUBING LOCATED ABOVE THE FLOTATION.

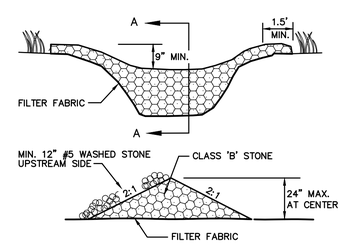
E. CONNECTION: BOLT ROPED ENDS CONSISTING OF ALUM CONNECTORS AT TOP AND #4 SS GROMMETS 12" APART AND FASTENED WITH PLASTIC WIRE TIES, STARTING BELOW THE CONNECTORS AND CONTINUING TO THE BOTTOM.

F. SEAMS: ALL SEAMS ARE DIALECTRIC OR THERMALLY BONDED TOGETHER.

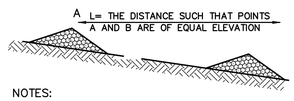


TURBIDITY CURTAIN

NOT TO SCALE



SECTION A – A



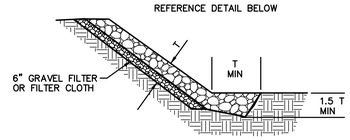
NOTES:

(1) STONE SHOULD BE PLACED OVER THE CHANNEL BANKS TO KEEP WATER FROM CUTTING AROUND THE DAM.

(2) STONE CHECK DAMS SHOULD BE SPACED IN A CHANNEL SO THAT THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION OF THE TOE OF UPSTREAM DAM.

STONE CHECK DAM DETAIL

NOT TO SCALE

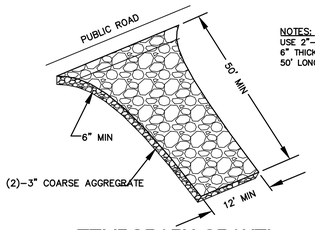


THE DIAMETER OF THE LARGEST STONE SHALL NOT EXCEED 1.5 TIMES THE SIZE OF THE RIP-RAP. (EX. 12" FOR 8") MINIMUM THICKNESS (T) SHOULD BE 1.5 TIMES THE MAXIMUM STONE DIAMETER, BUT IN NO CASE LESS THAN 6".

1. EACH RIP RAP PLACEMENT SHALL BE BEDDED IN EITHER A 6 INCH LAYER OF STABILIZATION STONE OR A TYPE II NON-BIODEGRADABLE FILTER FABRIC. PLACEMENT OF RIP-RAP SHALL IMMEDIATELY FOLLOW THE PLACEMENT OF THIS LAYER. KEEP VOIDS TO A MINIMUM AND FORM A DENSE WELL GRADED MASS OF STONE. DO NOT DISLODGE THE UNDERLYING BASE OF FILTER WHEN PLACING STONE. COST OF THE STONE BASE OR FILTER SHALL BE INCLUDED IN THE COST OF THE PLACING OF RIP-RAP.
2. MAXIMUM STONE SIZE WHEN USING 8 INCH D50 WILL BE 12 INCHES AND THE MINIMUM THICKNESS OF THE RIP-RAP LAYER SHALL BE 18 INCHES.
3. MAXIMUM SLOPE OF THE CHANNEL BANK SHALL NOT EXCEED 2.0 HORIZONTAL TO 1.0 VERTICAL. FINISHED GRADE OF THE RIP-RAP IS TO BLEND WITH THE SURROUNDING AREA.
4. INSPECT RIP-RAP PERIODICALLY FOR SCOUR OR DISLODGED STONES (ESPECIALLY AFTER SEVERE STORMS) AND WEED BRUSH GROWTH.

RIP RAP PLACEMENT DETAIL

NOT TO SCALE



NOTES:
USE 2"–3" WASHED STONE, 6" THICK, 12' WIDE (MIN), 50' LONG (MIN)

TEMPORARY GRAVEL CONSTRUCTION ENTRANCE

NOT TO SCALE

CONSTRUCTION SEQUENCE

1. INSTALL TEMPORARY SILT FENCING, CHECK DAMS, OR OTHER MEASURES AS SHOWN ON THE APPROVED PLANS, AND AS NOTED IN TECHNICAL SPECIFICATION SECTION 022410.
2. INSTALL TEMPORARY GRAVEL CONSTRUCTION ENTRANCE WHERE REQUIRED TO ACCESS WORK AREA.
3. PROTECT INLETS WITH SILT FENCING, SEDIMENT TRAPS OR OTHER APPROVED MEASURES AS SHOWN ON THE PLANS.
4. CALL FOR ONSITE INSPECTION BY ENVIRONMENTAL INSPECTOR AND OBTAIN CERTIFICATION OF COMPLIANCE, PRIOR TO CONSTRUCTION IN EACH AREA.
5. OPEN TRENCH, INSTALL PIPELINE, AND BACKFILL TRENCH.
6. STABILIZE SITE AS TRENCH IS RESTORED TO ORIGINAL GRADE WITH VEGETATION, PAVING, DITCH LININGS, ETC., AS NOTED IN TECHNICAL SPECIFICATION SECTIONS 022480, 022410, AND 022200.
7. WHEN VEGETATION HAS BECOME ESTABLISHED, AS NOTED IN TECHNICAL SPECIFICATION SECTION 022410, CALL FOR FINAL SITE INSPECTION BY ENVIRONMENTAL INSPECTOR.
8. REMOVE SILT FENCING & CHECK DAMS AFTER FINAL APPROVAL FROM ENVIRONMENTAL INSPECTOR.

McKIM&CREED
243 NORTH FRONT ST
WILMINGTON, NORTH CAROLINA 28401
TELE: (910) 343-1048
FAX: (910) 251-8282
LICENSE: F-1222

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

54" RAW WATER MAIN EROSION CONTROL DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 025512 ENGINEER ANTHONY W. BOAHN 6-27-19

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: JUNE 2019
SCALE: AS SHOWN
DRAWN BY: JPV
CHECKED BY: AWB
PROJECT NO. : 5367–0038

SHEET NO: D-6

TYPICAL ABBREVIATIONS

NOTE: ALL ABBREVIATIONS MAY NOT BE UTILIZED FOR THIS PROJECT

A, AMP	AMPERE
AFD	ADJUSTABLE FREQUENCY DRIVE
AFG	ABOVE FINISHED GRADE
AIT	ANALYTICAL INDICATION TRANSMITTER
AHU	AIR HANDLING UNIT
AIC	AMPERE INTERRUPTING CAPACITY
AL	ALUMINUM
ATS	AUTOMATIC TRANSFER SWITCH
BKR	BREAKER
C	CONDUIT
CAB	CABINET
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CKT	CIRCUIT
CLG	CEILING
CP	CONTROL PANEL
CR	CONTROL RELAY, CORROSION RESISTANT
CS	CONTROL SWITCH
CV	CONTROL VALVE
CT	CURRENT TRANSFORMER
CU	COPPER
DETD	DUAL ELEMENT TIME DELAY
EF	EXHAUST FAN
ELTU	ELECTRONIC TRIP UNIT
EMER	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSURE
EQUIP	EQUIPMENT
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EPRF	EXPLOSION PROOF
FA	FIRE ALARM
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FLA	FULL LOAD AMPS
FVNR	FULL VOLTAGE NON-REVERSING STARTER
FLOUR	FLUORESCENT
FMC	FLEXIBLE METALLIC CONDUIT
FWE	FURNISHED WITH EQUIPMENT
GEN	GENERATOR
G, GND	GROUND
GFIC	GROUND FAULT CIRCUIT INTERRUPTER
HH	HANDHOLE
HID	HIGH INTENSITY DISCHARGE
HOA	HAND-OFF-AUTO
HP	HORSE POWER
HPF	HIGH POWER FACTOR
HPS	HIGH PRESSURE SODIUM
HTR	HEATER
HV	HIGH VOLTAGE
Hz	HERTZ
IMC	INTERMEDIATE METALLIC CONDUIT (GALVANIZED)
JB	JUNCTION BOX
k	THOUSAND
kCMIL	THOUSAND CIRCULAR MILLS
kA	KILOVOLT AMPERE
kW	KILOWATTS
kWH	KILOWATT-HOURS
LED	LIGHT-EMITTING DIODE
LFMC	LIQUIDTIGHT FLEXIBLE METAL CONDUIT
LFNC	LIQUIDTIGHT FLEXIBLE NONMETALLIC CONDUIT
LIT	LEVEL INDICATION TRANSMITTER
LP	LIGHTING PANEL, LIGHT POLE
LTG	LIGHTING
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MDP	MAIN DISTRIBUTION PANEL
MFR	MANUFACTURER
MH	MANHOLE
MLO	MAIN LUGS ONLY
MSB	MAIN SWITCHBOARD
MTD	MOUNTED/MOUNTING
MTS	MANUAL TRANSFER SWITCH
MV	MEDIUM VOLTAGE
NEC	NATIONAL ELECTRIC CODE
N, NEU	NEUTRAL
NA	NOT APPLICABLE
NC	NORMALLY CLOSE
NO	NORMALLY OPEN
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
P	POLE
PA	PUBLIC ADDRESS
PB	PULL BOX, PUSH-BUTTON
PCP	PUMP CONTROL PANEL
PF	POWER FACTOR
ϕ, PH	PHASE
PIT	PRESSURE INDICATION TRANSMITTER
PLC	PROGRAMMABLE LOGIC CONTROLLER
PNL	PANEL
PP	POWER PANEL, POWER POLE
PT	POTENTIAL TRANSFORMER
PWR	POWER
REC	RECEPTACLE
RVSS	REDUCED VOLTAGE SOFT STARTER
REQ	REQUIRED
RM	ROOM
RMC	RIGID METAL CONDUIT (GALVANIZED)
RTU	REMOTE TELEMETRY UNIT
SCADA	SUPERVISORY CONTROL AND DATA ACQUISITION
SH	SHEET
SPEC	SPECIFICATION
SS	SELECTOR SWITCH
SST	STAINLESS STEEL
STP	SHIELDED TWISTED PAIR
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCH GEAR
TEL	TELEPHONE
T-M	THERMAL-MAGNETIC
TYP	TYPICAL
UG	UNDERGROUND
UH	UNIT HEATER
UON	UNLESS OTHERWISE NOTED
UTIL	UTILITY
UTP	UNSHIELDED TWISTED PAIR
V	VOLTS
VFD	VARIABLE FREQUENCY DRIVE
W	WIRE, WATT
WH	WATT-HOUR
WP	WEATHERPROOF
XFMR	TRANSFORMER

TYPICAL DEVICE SYMBOLS

- LIGHTING CONTROL SWITCH: UPPER-LEFT CHARACTER "a" DENOTES SWITCH DESIGNATION. LOWER-RIGHT CHARACTER "4" DENOTES SWITCH CONTROL
  3 - THREE-WAY SWITCH CONTROL
  4 - FOUR-WAY SWITCH CONTROL
  D - DIMMER CONTROL
  OS - OCCUPANCY SENSOR
  M - MOTOR RATED SWITCH
- LP-1, 5-20R: SIMPLEX RECEPTACLE.
- DUPLEX RECEPTACLE.
- QUADRAPLEX RECEPTACLE.
- VOICE (PHONE) OUTLET.
- DATA OUTLET.
- VOICE/DATA COMBINATION OUTLET.

WIRING DEVICE NOTES: IF SHOWN, UPPER-LEFT CHARACTERS DENOTE PANEL BOARD CIRCUIT FOR POWER OUTLETS. IF SHOWN, LOWER-RIGHT CHARACTERS DENOTE NEMA PLUG AND/OR RECEPTACLE CONFIGURATION.

- PM: POWER MONITOR
- A: AMMETER
- AS: AMMETER SWITCH
- V: VOLTMETER
- VS: VOLTMETER SWITCH
- FS: FLOAT/FLOW SWITCH
- LS: LIMIT SWITCH
- PS: PRESSURE SWITCH
- T: THERMOSTAT
- JB: JUNCTION BOX, SIZE PER NEC
- E: ELECTRICAL EQUIPMENT CONNECTION
- PULL OR JUNCTION BOX SIZE PER NEC REQUIREMENTS
- DISCONNECT SWITCH
- CLASS 1/DIVISION I/II CONDUIT SEAL-OFF FITTING
- CONTROL STATION
- STOP-START STATION
- LOCK-OUT-STOP SWITCH
  - LOCATED AT FIELD DEVICE
  - LOCATED AT MAIN CONTROL PANEL
  - LOCATED AT LOCAL CONTROL PANEL
  - MOUNTED ON DOOR
- INDUSTRIAL BATTERY SET W/MOUNTING RACK

TYPICAL DEVICE MOUNTING HEIGHTS

GENERAL NOTE:
DIMENSIONS ARE TO DEVICE TOP UNLESS NOTED OTHERWISE.

RECEPTACLES (INTERIOR PROCESS AREAS)	— 16" AFF
RECEPTACLES (EXTERIOR PROCESS AREAS)	— 48" AFF
LIGHT SWITCHES	— 48" AFF

GENERAL ELECTRICAL SYMBOLS

- CONTACT - NORMALLY CLOSED
- CONTACT - NORMALLY OPEN
- THREE POSITION SELECTOR SWITCH
- PUSHBUTTON, N.O., MOMENTARY CONTACT
- PUSHBUTTON, N.C., MOMENTARY CONTACT
- CONTROL POWER TRANSFORMER
- CURRENT TRANSFORMER
- LIMIT SWITCH
- TEMPERATURE SWITCH
- FLOAT SWITCH
- PRESSURE SWITCH
- FLOW SWITCH
- G: PILOT LIGHT - LETTER INDICATES COLOR R-RED, G-GREEN, W-WHITE, A-AMBER, ETC.
- MOTOR OVERLOAD RELAY HEATERS
- SOLENOID
- MOTOR SPACE HEATER
- CONTROL RELAY
- M, O/C: MOTOR OPERATED VALVE: M - MODULATING; O/C - OPEN/CLOSE
- S: SOLENOID VALVE
- LOAD BREAK
- AT / AF, 3P ELTU GFCI 100%: CIRCUIT BREAKER
- FUSE
- GROUND ROD
- DB110: RACEWAY SYSTEM CALL-OUTS: CT - CABLE TRAY; DB - DUCTBANK; EC - EXPOSED CONDUIT
- 042000: CONDUIT OR CABLE NUMBER

NOTES:
ALL SYMBOLS MAY NOT BE UTILIZED FOR THIS PROJECT. ADDITIONAL SYMBOLS NOT SHOWN ON THIS DRAWING MAY BE SHOWN ELSEWHERE ON THE ELECTRICAL DRAWINGS.

ANSI/IEEE DEVICE NUMBERS

27	UNDER VOLTAGE	59	OVER VOLTAGE
38	BEARING PROTECTION	74	ALARM RELAY
46	PHASE UNBALANCE	81	FREQUENCY
48	INCOMPLETE SEQUENCE	86	LOCK OUT
49	OVER TEMPERATURE	87	DIFFERENTIAL
51	TIMED OVERCURRENT		
51G	TIMED GROUND FAULT		

GENERAL ELECTRICAL SYMBOLS

- LP-3: CONDUIT HOMERUN TO EQUIPMENT SHOWN. LINE TYPE DESIGNATES CONCEALED, EXPOSED, ETC. NUMBERS/TEXT DESIGNATE HOMERUN EQUIPMENT (I.E. PANEL BOARD CIRCUIT NUMBER).
- GENERAL CONDUIT RUN CONCEALED IN FURRED WALLS AND CEILINGS, EXPOSED ELSEWHERE UNLESS OTHERWISE NOTED OR SPECIFIED.
- CONCEALED CONDUIT IN FLOOR SLAB, UNDERGROUND, ETC.
- EXISTING CABLE OR CONDUIT
- CONDUIT TURNED DOWN
- CONDUIT TURNED UP
- E: SITE ELECTRICAL
- E: EXISTING SITE ELECTRICAL
- T: SITE TELEPHONE
- T: EXISTING SITE TELEPHONE
- OHE: OVERHEAD ELECTRICAL UTILITY
- OHT: OVERHEAD TELEPHONE UTILITY
- UGE: UNDERGROUND ELECTRICAL UTILITY
- UGT: UNDERGROUND TELEPHONE UTILITY
- G: SITE GROUND
- G: EXISTING SITE GROUND
- 0A, 0F, 3R: NON-FUSED OR FUSED DISCONNECT SWITCH: TOP NUMBER DENOTES FUSE SIZE (NF=NON-FUSED). BOTTOM NUMBER DENOTES FRAME SIZE. RIGHT NUMBER DENOTES NEMA ENCLOSURE RATING.
- 2, CB, 0A, 0F, 3R: ENCLOSED CIRCUIT BREAKER: TOP NUMBER DENOTES TRIP. BOTTOM NUMBER DENOTES FRAME SIZE. RIGHT NUMBER DENOTES NEMA ENCLOSURE RATING.
- 0A, 0F, 3R: COMBINATION MAGNETIC MOTOR STARTER OR MOTOR CIRCUIT PROTECTOR WITH DISCONNECT SWITCH: LEFT NUMBER DENOTES NEMA STARTER SIZE. TOP NUMBER DENOTES FUSE SIZE OR MCP. BOTTOM NUMBER DENOTES FRAME SIZE. RIGHT NUMBER DENOTES NEMA ENCLOSURE.
- 3, FVNR: FULL VOLTAGE NON-REVERSING MOTOR STARTER. LEFT NUMBER DENOTES NEMA STARTER SIZE.
- RVSS: REDUCED VOLTAGE SOLID-STATE MOTOR STARTER.
- VFD: VARIABLE FREQUENCY MOTOR CONTROLLER.
- 52: ANSI/IEEE TYPE-52 AC POWER CIRCUIT BREAKER
- VACUUM STARTER
- HP: MOTOR (HP=RATED HORSEPOWER)
- M, 3~: AC MOTOR (THREE PHASE)
- M, 1~: AC MOTOR (SINGLE PHASE)
- M, ⎓: DC MOTOR

NOTES:
ALL SYMBOLS MAY NOT BE UTILIZED FOR THIS PROJECT. ADDITIONAL SYMBOLS NOT SHOWN ON THIS DRAWING MAY BE SHOWN ELSEWHERE ON THE ELECTRICAL DRAWINGS. IF REQUIRED, IEC RATINGS WILL INCLUDE THE "IEC" AND "IP" PREFIX.

LIGHTING SYMBOLS

- A1, a, LP-1: LIGHT FIXTURES (VARIOUS TYPES) - UPPERCASE CHARACTERS "A1" DENOTE FIXTURE TYPE, REFER TO LIGHTING SCHEDULE OR NOTES. NUMBER "LP-1" DENOTE LIGHTING PANEL AND/OR CIRCUIT NUMBER. LOWERCASE LETTER "a" DENOTES CONTROL SWITCH. DUAL SWITCHING INDICATED BY PAIRS OF LOWERCASE LETTERS. "NL" DENOTES NIGHT LIGHT, CIRCUIT AHEAD OF CONTROL SWITCHES.
- EMERGENCY LIGHT - BATTERY EQUIPPED EMERGENCY LIGHT, CIRCUIT AHEAD OF CONTROL SWITCHES. ADDITIONAL FIXTURE HEADS MAY BE SHOWN CONNECTED TO UNIT. IF SHOWN, UPPERCASE LETTER DENOTES FIXTURE TYPE, REFER TO LIGHTING SCHEDULE OR NOTES. NUMBER DENOTES LIGHTING PANEL CIRCUIT.

GENERAL ELECTRICAL NOTES

1. REFERENCE ALL SPECIFICATIONS AND CONTRACT DRAWINGS FOR ADDITIONAL REQUIREMENTS AND CONTRACT RESPONSIBILITIES PRIOR TO COMMENCING WORK.
2. REFERENCE ALL SPECIFICATIONS, CONTRACT DRAWINGS, AND BRUNSWICK COUNTY DESIGN GUIDANCE MANUAL FOR ADDITIONAL REQUIREMENTS AND CONTRACT RESPONSIBILITIES PRIOR TO COMMENCING WORK.
3. THE GENERAL NOTES STATED ON THIS DRAWING ARE APPLICABLE TO ALL ELECTRICAL DRAWINGS AND WORK UNDER CONTRACT UNLESS NOTED OTHERWISE.
4. ALL ELECTRICAL WORK SHALL COMPLY WITH THE CURRENT NFPA, NEC, NESC AND LOCAL CODES INCLUDING OWNERS STANDARDS AND REQUIREMENTS.
5. CONTRACTOR SHALL PLAN AND COORDINATE ELECTRICAL CONSTRUCTION WITH ALL CRAFT/TRADE TO ACHIEVE AN EFFICIENT AND EFFECTIVE ELECTRICAL INSTALLATION.
6. THE SCHEDULING AND DURATION OF ANY PROCESS OR FACILITY SHUTDOWN TO REMOVE AND/OR INSTALL EQUIPMENT SHALL BE COORDINATED IN ADVANCE WITH FACILITY MANAGEMENT, ENGINEER, OWNER OR OWNER REPRESENTATIVE.
7. 600V RATED ELECTRICAL EQUIPMENT SHALL HAVE AN AMPERE INTERRUPTING CAPACITY (AIC) EQUAL TO OR GREATER THAN 65kA.
8. ELECTRICAL EQUIPMENT SHALL BE ARRANGED AND INSTALLED TO COMPLY WITH ALL CODE-REQUIRED, MANUFACTURER-RECOMMENDED AND HEAT-DISSIPATION CLEARANCES. FINAL INSTALLATIONS SHALL COMPLY WITH NEC ARTICLE 110 FOR ALL CLEARANCE REQUIREMENTS.
9. NEW ELECTRICAL EQUIPMENT SHALL FIT INTO EXISTING AVAILABLE SPACE. CONTRACTOR IS RESPONSIBLE TO PROVIDE EQUIPMENT WHICH MEETS THE SPACE REQUIREMENTS.
10. TRANSITIONS THROUGH FINISHED GRADE AND CONCRETE SHALL BE PVC-COATED RGS CONDUIT OR AL CONDUIT PREPARED WITH A RUBBER-BASED PRIMER COATING FOLLOWED WITH TWO SPIRAL, HALF-LAPPED LAYERS OF 10-MIL POLYVINYL CHLORIDE BASED CORROSION PROTECTION TAPE EXTENDING 12-INCHES ABOVE AND BELOW TRANSITION.
11. EXPOSED CONDUIT SHALL BE AL CONDUIT; RGS, IMC AND EMT IS NOT ACCEPTABLE.
12. ELECTRICAL DRAWINGS DEPICT MAJOR DUCTBANK, CABLE-TRAY, BUS-DUCT, WIRE-WAY, TRENCH/FLOOR DUCTS, RACEWAY, CONDUIT, ETC., TO INCLUDE CABLE, CONDUCTOR AND WIRING IN SCHEMATIC AND/OR DIAGRAMMATIC FORMATS. THE CONTRACTOR SHALL REFERENCE ALL EQUIPMENT SPECIFICATIONS AND MANUFACTURER INSTRUCTIONS FOR ADDITIONAL INSTALLATION REQUIREMENTS.
13. RACEWAY INSTALLATION AND/OR ARRANGEMENT LAYOUTS ARE NOT TYPICALLY SHOWN ON THE CONTRACT DRAWINGS. CONTRACTOR SHALL DEVELOP LOGICAL GROUPINGS, ROUTING AND MARSHALLING OF DUCTBANK, CABLE-TRAY, BUS-DUCT, WIRE-WAY, TRENCH/FLOOR DUCT, RACEWAY, CONDUIT, ETC., THESE SHALL NOT BE ROUTED THROUGH OR INTERFERE WITH ANY STRUCTURAL ELEMENTS. CONTRACTOR SHALL SUBMIT THESE RACEWAY INSTALLATION AND/OR ARRANGEMENT LAYOUTS PER THE SPECIFICATIONS FOR REVIEW BY ENGINEER PRIOR TO INSTALLATION.
14. QUANTITY AND SIZING OF CONDUCTORS, CABLING, WIRING AND RESPECTIVE RACEWAYS DEPICTED ON THE CONTRACT DRAWINGS ARE BASED UPON SELECTED STANDARD ELECTRICAL COMPONENTS OR EQUIPMENT WITH DIRECT ROUTED CONNECTIONS. CONTRACTOR MAY SUBMIT FOR REVIEW BY ENGINEER AND PRIOR TO INSTALLATION, LOGICAL CONDUCTOR AND RACEWAY GROUPINGS IN COMPLIANCE WITH APPLICABLE CODES, STANDARDS AND SPECIFICATIONS WITHOUT ADDITIONAL COST TO OWNER.
15. RACEWAY ROUTINGS SHALL BE ORGANIZED AND GROUPED IN A PRACTICAL MANNER TO MINIMIZE CROSS-OVERS AND SADDLES. RACEWAY INSTALLATIONS SHALL BE ARRANGED TO ENTER EQUIPMENT FOR DIRECT CONDUCTOR TERMINATIONS
16. RACEWAYS SHALL BE INSTALLED CONCEALED UNLESS OTHERWISE NOTED OR SHOWN. THESE SHALL RUN PARALLEL TO LANDSCAPE AND STRUCTURAL FEATURES WHILE THE BENDS AND TURNS SHALL BE MADE BY MEANS OF LARGE RADII FITTINGS.
17. PROVIDE FLEXIBLE RACEWAY CONNECTIONS TO ALL EQUIPMENT SUBJECT TO MOVEMENT AND/OR VIBRATION. CONTRACTOR SHALL MAKE RACEWAY CONNECTIONS COMPLETE AND IN ACCORDANCE WITH THE SPECIFICATIONS.
18. CONTRACTOR SHALL PROVIDE ALL REQUIRED PULL BOXES, TERMINAL BOXES AND JUNCTION BOXES FOR INSTALLATION OF THE WIRING IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS THOUGH BOXES MAY NOT BE INDICATED ON THE CONTRACT DRAWINGS.
19. RACEWAY AND WIRING FOR LIGHTING, RECEPTACLES AND BRANCH CIRCUITS ARE NOT TYPICALLY SHOWN ON THE CONTRACT DRAWINGS BUT SHALL BE PROVIDED AS REQUIRED UNDER CONTRACT.
20. SPARE CONDUITS SHALL BE CAPPED OR PLUGGED WITH A PVC FITTING AND INCLUDE 200# TEST POLYPROPYLENE PULL STRING.
21. CONTRACTOR SHALL PROVIDE A CIRCUIT IDENTIFICATION LABEL AT EACH END OF EACH POWER, BRANCH, CONTROL AND INSTRUMENTATION CIRCUIT CABLE ASSEMBLY, CONDUCTOR OR WIRE.
22. NO SPLICES TO POWER CONDUCTORS AND/OR CABLING SHALL BE MADE WITHOUT ENGINEER APPROVAL. NO JUNCTIONS SHALL BE MADE BELOW GRADE WITHOUT APPROVAL OF ENGINEER.
23. CONTRACTOR SHALL PROVIDE ALL NECESSARY COMPONENTS REQUIRED FOR MAKING FINAL CONNECTIONS FOR ALL EQUIPMENT INSTALLED OR MODIFIED UNDER CONTRACT.
24. STRUT-CHANNEL SHALL NOT BE BENT, DRILLED, CUT OR OTHERWISE MODIFIED TO PRODUCE FITTINGS, BRACES OR BRACKETS FOR CONDUIT AND EQUIPMENT SUPPORTS.
25. MANUFACTURED STRUT-CHANNEL BRACES, BRACKETS, FITTINGS OR POST BASES SHALL BE PROVIDED AND INSTALLED WITH ASSOCIATED HARDWARE AND FASTENERS FOR CONDUIT AND EQUIPMENT SUPPORTS.
26. CONTRACTOR SHALL PROVIDE ALL SUPPORTS AND FASTENING HARDWARE FOR SWITCHBOARDS, PANELBOARDS, TRANSFORMERS, CONTROL PANELS, ETC., AS REQUIRED IN THE SPECIFICATIONS.
27. STRUCTURAL MEMBERS SHALL NOT BE DRILLED, CUT, WELDED TO, OR OTHERWISE MODIFIED WITHOUT PRIOR APPROVAL OF THE ENGINEER OF RECORD.

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ELECTRICAL GENERAL NOTES, ABBREVIATIONS, SYMBOLS AND LEGENDS

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KINGS BLUFF RAW
WATER TRANSMISSION MAIN

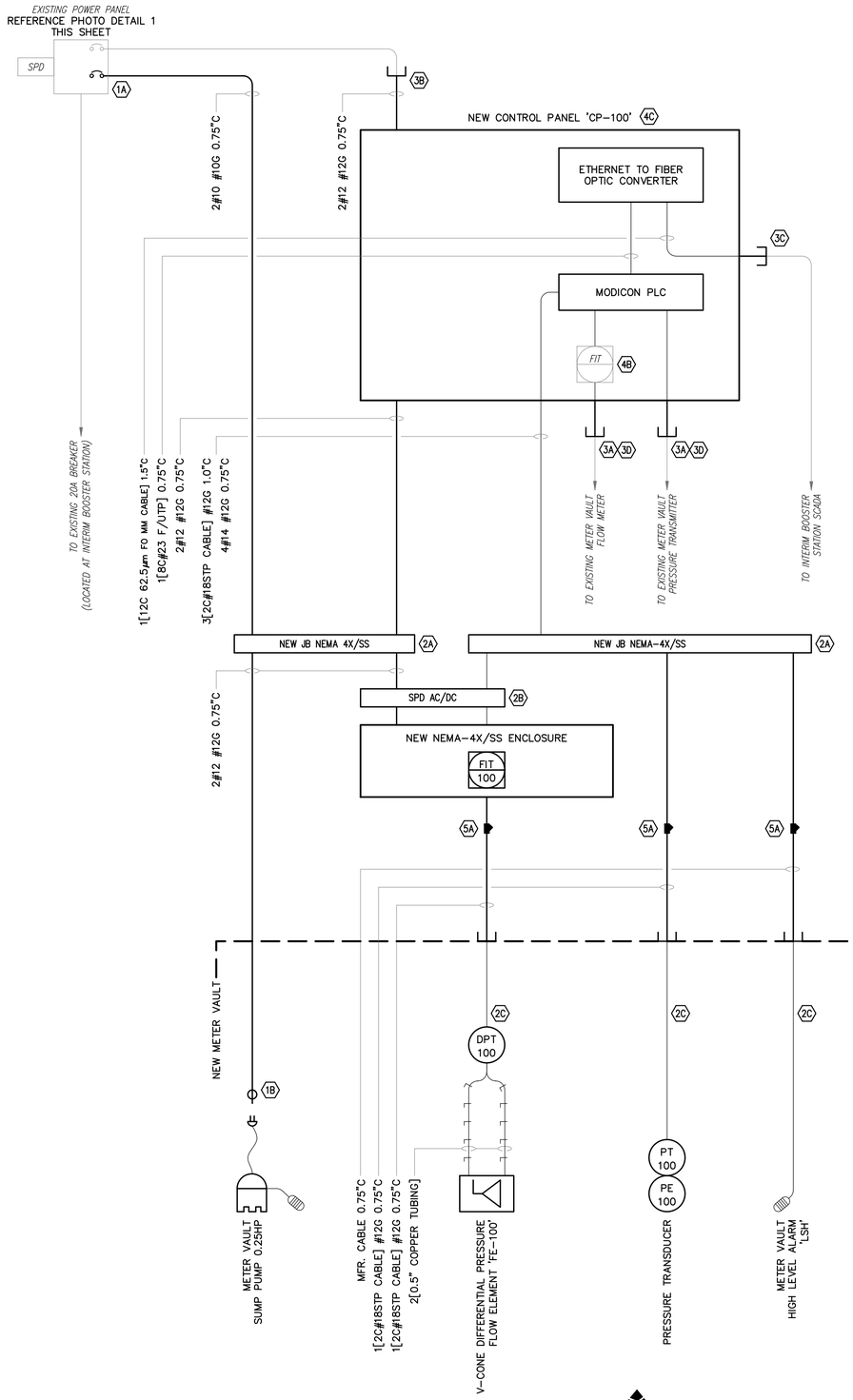
NORTH CAROLINA PROFESSIONAL SEAL 041530 ENGINEER JASON A GILLENTINE
29 JUN 2019

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WILMINGTON, NC 28403
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DATE: FEB 2019
SCALE: N/A
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PROJECT NO. : 5367-0038

E1

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POWER AND CONTROL RISER DIAGRAM
SCALE: N.T.S



1 – EXISTING POWER PANEL PHOTO DETAIL
SCALE: N.T.S



2 – EXISTING TOTALIZER PHOTO DETAIL
SCALE: N.T.S

GENERAL NOTES:

1. REFERENCE SHEET E1 FOR ELECTRICAL GENERAL NOTES, SYMBOLS, ABBREVIATIONS AND LEGENDS.
2. REFERENCE ALL SPECIFICATIONS, CONTRACT DRAWINGS, AND BRUNSWICK COUNTY DESIGN GUIDANCE MANUAL FOR ADDITIONAL REQUIREMENTS AND CONTRACT RESPONSIBILITIES PRIOR TO COMMENCING WORK.
3. ELECTRICAL CONTRACTOR SHALL REFERENCE ALL CONTRACT DRAWINGS PRIOR TO EXCAVATION AND INSTALLATION OF UNDERGROUND RACEWAYS, DUCTBANKS AND GROUNDING/BONDING COMPONENTS.
4. ALL ELECTRICAL ENCLOSURES SHALL BE NEMA-4X RATED PER CFPUA DESIGN GUIDANCE MANUAL.
5. ALL AC POWER CONDUCTORS FOR CIRCUITS LESS THAN 100A SHALL BE STRANDED COPPER 600V TYPE THHN/THWN 75°C.
6. ALL CONTROL CONDUCTORS RATED LESS THAN 120V SHALL BE STRANDED COPPER 300V TYPE THHN/THWN 75°C.
7. ALL EXPOSED CONDUIT SHALL BE MADE WITH ALUMINUM CONDUIT AND DIE-CAST ALUMINUM FITTINGS.
8. ALL UNDERGROUND CONDUIT SHALL BE PVC SCH-80.
9. TRANSITION FROM CONCRETE ENCASED PVC TO ALUMINUM INSIDE CONCRETE ENCASEMENT OR USE PVC-COATED RAC. COAT PORTION OF ALUMINUM CONDUIT INSIDE ENCASEMENT WITH ASPHALTIC URETHANE PAINT PER CFPUA DESIGN GUIDANCE MANUAL.

KEYNOTES:

1A PROVIDE AND INSTALL 20A CLASS-B GFIC CIRCUIT BREAKER IN EXISTING POWER PANEL TO SERVE 0.25HP METER VAULT SUMP PUMP LOAD.

1B PROVIDE AND INSTALL WATERTIGHT TWIST-LOCK RECEPTACLE ASSEMBLY (REFERENCE DETAIL ON SHEET E5)
HUBBELL RECEPTACLE P/N: HBL2310SW OR APPROVED EQUAL
HUBBELL PLUG P/N: HBL2311 OR APPROVED EQUAL

2A PROVIDE AND INSTALL NEMA-4X/SS JUNCTION BOX MOUNTED TO NEW EQUIPMENT RACK (REFERENCE DETAIL ON SHEET E5)

2B PROVIDE AND INSTALL NEMA-4X/SS SURGE PROTECTION DEVICE (REFERENCE DETAIL ON SHEET E5)
EDCO P/N: SLAC-22036 LC OR APPROVED EQUAL

2C PROVIDE CABLE OF SUFFICIENT LENGTH TO BE INSTALLED WITHOUT SPLICES

3A INTERCEPT AND EXTEND EXISTING RACEWAYS AND CONDUCTORS ROUTED FROM EXISTING METER VAULT TO NEW CONTROL PANEL 'CP-100' WITH NEW. ALL CABLES SHALL BE OF SUFFICIENT LENGTH TO BE INSTALLED WITHOUT SPLICES (REFERENCE SHEET E4 FOR CONTROL PANEL 'CP-100' DETAILS)

3B INTERCEPT EXISTING RACEWAYS ROUTED FROM EXISTING POLE-MOUNTED POWER PANEL TO NEW CONTROL PANEL 'CP-100' AND EXTEND WITH NEW FOR 120VAC POWER

3C INTERCEPT EXISTING CONDUIT ROUTED FROM INTERIM BOOSTER STATION TO NEW CONTROL PANEL 'CP-100' WITH NEW RACEWAYS FOR EXISTING FIBER OPTIC CABLING (REFERENCE SHEET E4 FOR CONTROL PANEL 'CP-100' DETAILS)

3D COORDINATE WORK ON EXISTING METER VAULT WITH NEW INSTALLATIONS TO LIMIT INTERRUPTION IN METERING SIGNALS AT PLANT TO MAXIMUM 24 HOURS

4A SAFELY REMOVE PRECISION DIGITAL TOTALIZER FROM EXISTING ENCLOSURE FOR INSTALLATION IN 'CP-100'.

4B INSTALL EXISTING PRECISION DIGITAL TOTALIZER ON DEAD-FRONT SWING-OUT PANEL IN NEW 'CP-100' ENCLOSURE. MOUNTING LOCATION SHALL BE COORDINATED TO ALLOW 6-INCH MINIMUM CLEARANCE BEHIND SWING-OUT PANEL FOR TOTALIZER. TERMINATE ALL POWER/CONTROL WIRING

4C CONNECTIONS SHOWN FOR 'CP-100' ARE INTENDED TO DEPICT DESIGN PURPOSE; REFERENCE SHEET E4 FOR 'CP-100' INSTALLATION DETAILS

5A PROVIDE AND INSTALL HAZARDOUS LOCATION SEAL-OFF FITTINGS WITH SEALANT FOR MOISTURE CONTROL:
POLYWATER: FST FOAM SEALANT OR APPROVED EQUAL

LIMITS OF ELECTRICAL DEMOLITION WORK

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ELECTRICAL
POWER AND CONTROL RISER DIAGRAM

NORTH CAROLINA PROFESSIONAL SEAL 041530 ENGINEER JASON A GILLENTINE
29 JUN 2019

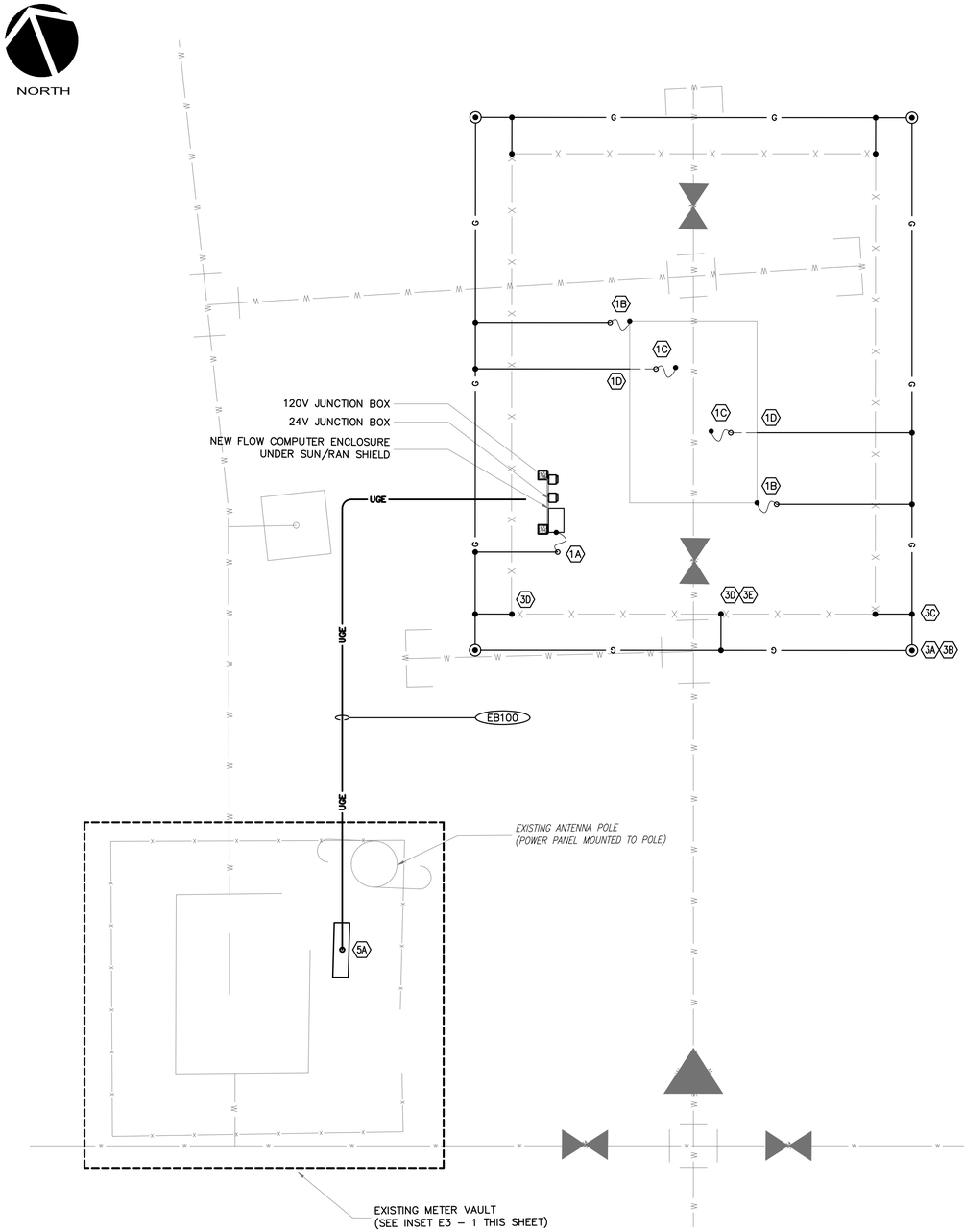
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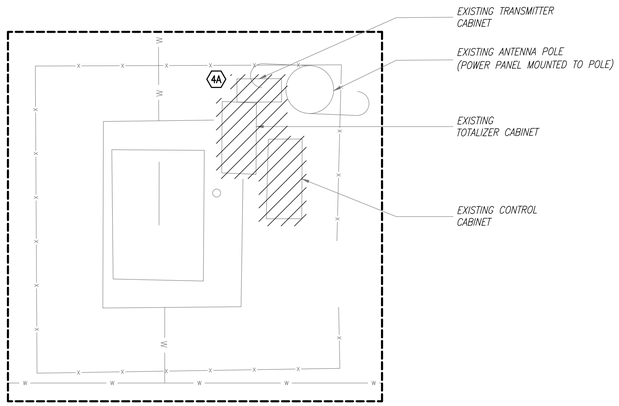
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DRAWN BY: RCR
CHECKED BY: JAG
PROJECT NO. : 5367-0038

E2

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ELECTRICAL SITE POWER AND GROUNDING PLAN
SCALE: 1/4" = 1' –0"



EXISTING METER VAULT DEMOLITION (INSET E3 – 1)
SCALE: 1/4" = 1' – 0"

GENERAL NOTES:

1. REFERENCE SHEET E1 FOR ELECTRICAL GENERAL NOTES, SYMBOLS, ABBREVIATIONS AND LEGENDS.
2. REFERENCE ALL SPECIFICATIONS, CONTRACT DRAWINGS, AND BRUNSWICK COUNTY DESIGN GUIDANCE MANUAL FOR ADDITIONAL REQUIREMENTS AND CONTRACT RESPONSIBILITIES PRIOR TO COMMENCING WORK.
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6. ALL CONTROL CONDUCTORS RATED LESS THAN 120V SHALL BE STRANDED COPPER 300V TYPE THHN/THWN 75°C.
7. ALL EXPOSED CONDUIT SHALL BE MADE WITH ALUMINUM CONDUIT AND DIE–CAST ALUMINUM FITTINGS.
8. ALL UNDERGROUND CONDUIT SHALL BE PVC SCH–80.
9. TRANSITION FROM CONCRETE ENCASED PVC TO ALUMINUM INSIDE CONCRETE ENCASEMENT OR USE PVC–COATED RAC. COAT PORTION OF ALUMINUM CONDUIT INSIDE ENCASEMENT WITH ASPHALTIC URETHANE PAINT PER CFPUA DESIGN GUIDANCE MANUAL.

KEYNOTES:

(1A) BOND ELECTRICAL EQUIPMENT AND/OR FRAMING SUPPORTS WITH BARE #2AWG TINNED CU WIRE WITH MECHANICAL LUG CONNECTIONS USING STAINLESS–STEEL ANTI–VIBRATION FASTENERS

(1B) BOND ALL METALLIC MAN–WAYS AND HATCHES WITH BARE #2AWG TINNED CU WIRE (2) LOCATIONS MINIMUM WITH MECHANICAL LUG CONNECTIONS USING STAINLESS–STEEL ANTI–VIBRATION FASTENERS

(1C) BOND FLOW–TUBE WITH BARE #2AWG TINNED CU WIRE WITH MECHANICAL LUG CONNECTIONS USING STAINLESS–STEEL ANTI–VIBRATION FASTENERS (REFERENCE DETAIL ON SHEET E5)

(1D) PROVIDE GROUND SLEEVE PER DETAIL ON SHEET E5 (TYPICAL ALL CONCRETE PENETRATIONS)

(3A) 3/4–INCH x 120–INCH CU–CLAD GROUND ROD (TYPICAL ALL)

(3B) EXOTHERMIC WELD 4/0AWG CABLE TO 3/4–INCH GROUND ROD: TYPE–GT OR EQUAL (TYPICAL ALL)

(3C) EXOTHERMIC WELD 4/0AWG CABLE RUN TO #2AWG CABLE TAP: TYPE–TA OR EQUAL (TYPICAL ALL)

(3D) PROVIDE AND INSTALL BONDING CONNECTIONS FROM FENCE POSTS TO PERIMETER GROUNDING RING WITH UL LISTED FENCE POST CLAMP (TYPICAL ALL FENCE POSTS):
HARGER P/N CPC1.5/2TP OR APPROVED EQUAL

(3E) PROVIDE AND INSTALL FLEXIBLE BONDING CONNECTIONS FROM FENCE POSTS TO FENCE GATES WITH UL LISTED CLAMPS AND FLEXIBLE BRAIDED CONDUCTORS (REFERENCE DETAIL ON SHEET E5):
HARGER P/N CPC1.5/2TP OR APPROVED EQUAL
HARGER P/N GS1.51252417/8F OR APPROVED EQUAL

(4A) REMOVE EXISTING TRANSMITTER CABINET, TOTALIZER CABINET AND CONTROL CABINET IN THEIR ENTIRETY TO INCLUDE BUT NOT LIMITED TO ALL INSTRUMENTATION, CABLE, AND SUPPORTS NOT BEING USED IN NEW DESIGN. EXISTING CONDUIT SHALL BE INTERCEPTED FOR USE WITH 'CP–100'. ALL ABANDONED CONDUIT SHALL BE CAPPED AND SEALED

(5A) PROVIDE AND INSTALL NEW CONTROL PANEL TO ACCEPT ALL NEW AND EXISTING POWER AND CONTROL WIRING FOR NEW AND EXISTING METER VAULTS AS SHOWN IN CONTRACT DOCUMENTS AND VERIFIED IN FIELD BY CONTRACTOR (REFERENCE SHEET E4)

DUCTBANK CALLOUTS:

(EB100) ROUTE THE FOLLOWING CONDUITS AND CABLES DIRECT–BURIED UNDERGROUND:
FROM EXISTING METER VAULT EQUIPMENT RACKS (REFERENCE SHEET E2):
a. 2[2#12 #12G 0.75"C] TO NEW 120V JUNCTION BOX
b. 3[2C#18STP CABLE], 4#14 #12G 0.75"C TO NEW 24V JUNCTION BOX

LIMITS OF ELECTRICAL DEMOLITION WORK

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ELECTRICAL
SITE POWER AND GROUNDING PLAN

NORTH CAROLINA PROFESSIONAL SEAL 041530 ENGINEER JASON A GILLENTINE
29 JUN 2019

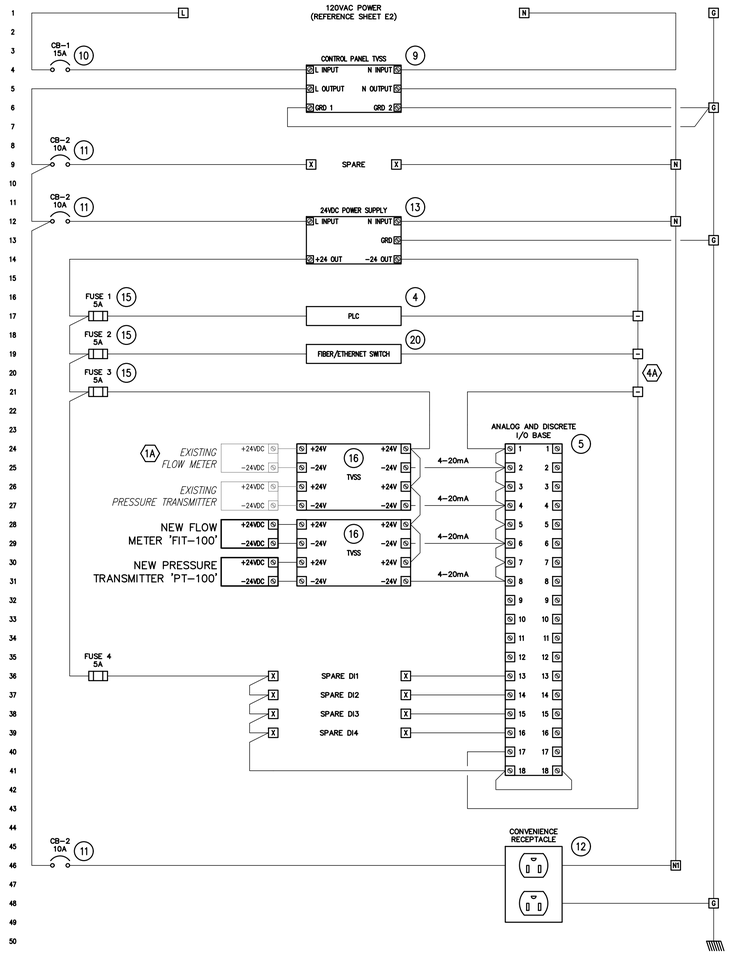
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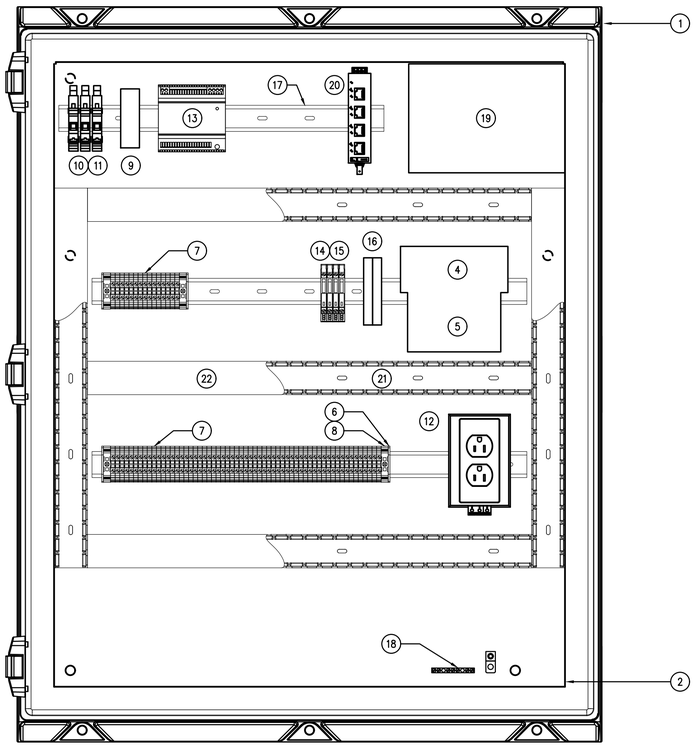
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DRAWN BY: RCR
CHECKED BY: JAG
PROJECT NO. : 5367–0038

E3

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CONTROL PANEL SCHEMATIC
SCALE: N.T.S



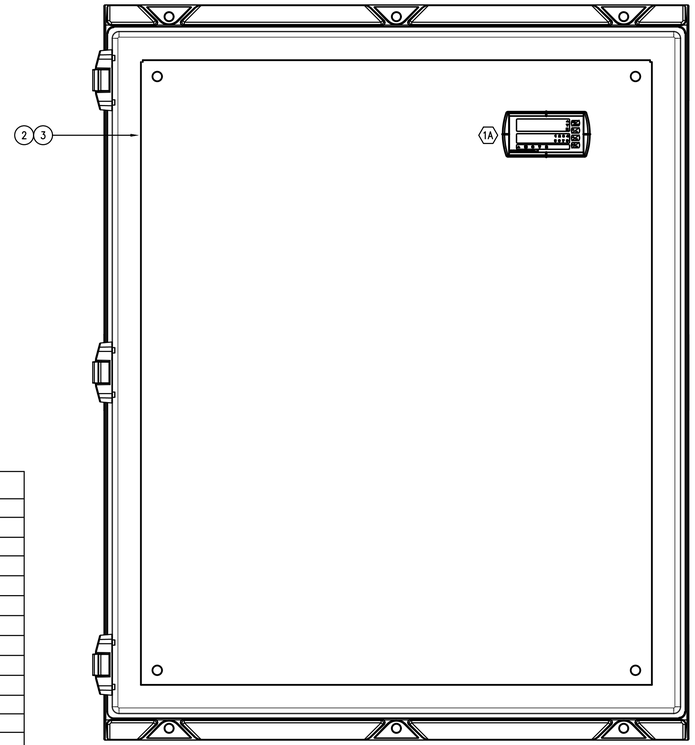
CONTROL SUB-PANEL LAYOUT
SCALE: N.T.S

GENERAL NOTES:

1. REFERENCE SHEET E1 FOR ELECTRICAL GENERAL NOTES, SYMBOLS, ABBREVIATIONS AND LEGENDS.
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9. TRANSITION FROM CONCRETE ENCASED PVC TO ALUMINUM INSIDE CONCRETE ENCASEMENT OR USE PVC-COATED RAC. COAT PORTION OF ALUMINUM CONDUIT INSIDE ENCASEMENT WITH ASPHALTIC URETHANE PAINT PER CFPUA DESIGN GUIDANCE MANUAL.

KEYNOTES:

(1A) INSTALL EXISTING PRECISION DIGITAL TOTALIZER ON DEAD-FRONT SWING-OUT PANEL IN NEW 'CP-100' ENCLOSURE. MOUNTING LOCATION SHALL BE COORDINATED TO ALLOW 6" MINIMUM CLEARANCE BEHIND DEAD-FRONT PANEL FOR TOTALIZER. TERMINATE ALL POWER/CONTROL WIRING



INTERIOR DEAD-FRONT PANEL LAYOUT
SCALE: N.T.S

BILL OF MATERIALS

ITEM	MANUFACTURER	PART NUMBER	DESCRIPTION
1	HOFFMAN	A36H3012SSLP	CONTINUOUS HINGE WITH CLAMPS NEMA-4X/SS
2	HOFFMAN	A36P30	WHITE SUBPANEL
3	HOFFMAN	ANADFK	SWING-OUT PANEL KIT FOR WALL-MOUNT ENCLOSURE
4	SCHNEIDER ELECTRIC	171CBU98090	UNITY M1E PROCESSOR - RS232/485 - ETHERNET - USB - I/O BUS
5	SCHNEIDER ELECTRIC	170AMM09000	ANALOG 4 CH. IN / 2 CH. OUT MODULE BASE WITH 24VDC I/O POINTS
6	PHOENIX CONTACT	0800886	E/NS 35 N TERMINAL BLOCK END STOPS
7	PHOENIX CONTACT	3044102	UT4 FEED-THROUGH TERMINAL BLOCK, 32 AMPS
8	PHOENIX CONTACT	3047028	END COVER - D-UT 2, 5/10
9	MTL SURGE	MA15/D/1/ST	120Vac MA15 Din RAIL RFI AND SURGE PROTECTOR DEVICE
10	SQUARE-D	9080GCB150	CIRCUIT PROTECTOR 125Vac, 15 AMPS
11	SQUARE-D	9080GCB100	CIRCUIT PROTECTOR 125Vac, 10 AMPS
12	PHOENIX CONTACT	EM-DUO-120/15	RAIL-MOUNTED DUAL POWER OUTLET, 120Vac/15 AMP RECEPTACLE
13	PHOENIX CONTACT	2868677	120Vac INPUT TO 24VDC POWER SUPPLY, 3.8 AMPS
14	WIELAND	57.904.5355.0	FUSE TERMINAL WK 4 / THSI5 U/VO
15	BUSSMAN	GMA5	5 AMP FUSE
16	COOPER BUSSMAN	BSPD24DING	24VDC SURGE PROTECTOR
17	IDEC	BNDN1000	DIN RAIL 35mm ALUMINUM 1M
18	SQUARE-D	PK9GTA	GROUND BAR KIT 9-TERMINALS
19	WELTRON	FIB-WM006	6-PORT SLIM FIBER BOX
20	PHOENIX CONTACT	2891453	ETHERNET SWITCH, 4 TP RJ45 PORTS, 1 FO PORT, 100Mbps FULL DUPLEX IN ST-D FORMAT
21	PANDUIT	G2X2LG6	2"x2" WIRE DUCT - GRAY
22	PANDUIT	C2LG6	2" WIRE DUCT COVER - GRAY

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ELECTRICAL
CONTROL PANEL DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 041530 ENGINEER JASON A GILLENTINE
29 JUN 2019

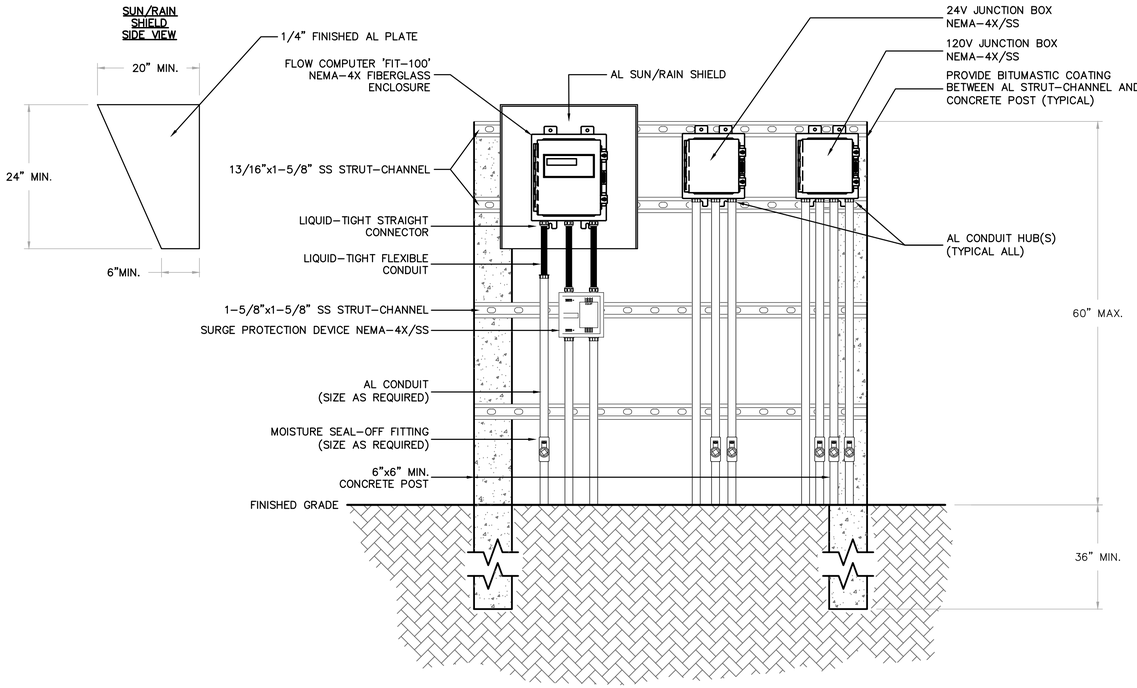
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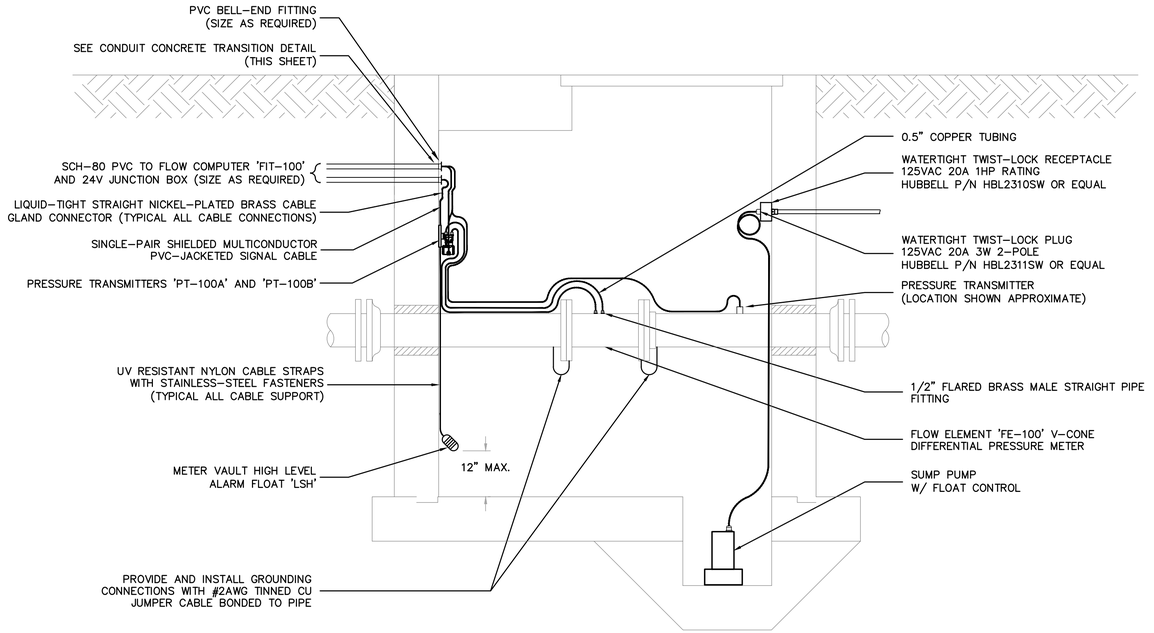
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SCALE: N/A
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E4

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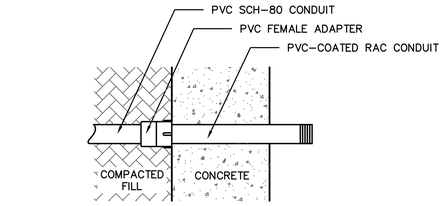




DETAIL NOTES:

1. METER VAULT DIMENSIONS AND DETAILS ARE SHOWN DIAGRAMMATIC, REFERENCE APPROVED SHOP DRAWINGS AND ACTUAL INSTALLATION PRIOR TO COMMENCING WORK
2. PROVIDE SUFFICIENT CABLE SLACK TO REMOVE FLOW TRANSMITTERS FROM VAULT WITHOUT DE-TERMINATING CABLES
3. SECURE CABLE SLACK IN COILS AND FASTEN WITH UV-RESISTANT CABLE-TIES
4. ALL CABLE FITTINGS SHALL BE NICKEL-PLATED BRASS AND IP66, IP67, IP68 AND DTS01:91 COMPLIANT FOR PROLONGED SUBMERSIBLE LOCATIONS
5. SUMP PUMP SHALL BE POWERED FROM 120VAC CLASS-B GFCI BREAKER
6. ALL PROCESS TUBING SHALL BE MADE WITH 1/2" COPPER, FLARED CONNECTIONS, AND BRASS FITTINGS IN ACCORDANCE WITH EQUIPMENT MANUFACTURER REQUIREMENTS.

TYPICAL METER VAULT ELECTRICAL INSTALLATION DETAIL
SCALE: N.T.S.



NOTES:

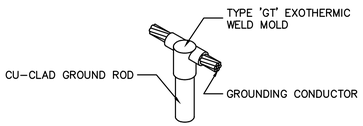
1. TRANSITIONS THROUGH FINISHED GRADE AND CONCRETE SHALL BE PVC-COATED RAC PREPARED WITH A RUBBER-BASED PRIMER COATING FOLLOWED WITH TWO SPIRAL, HALF-LAPPED LAYERS OF 10-MIL POLYVINYL CHLORIDE BASED CORROSION PROTECTION TAPE EXTENDING 12-INCHES ABOVE AND BELOW TRANSITION.

TYPICAL CONDUIT CONCRETE TRANSITION
SCALE: N.T.S.

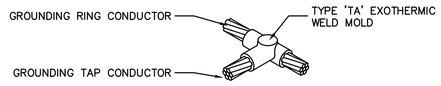
NOTES:

1. FILE AND ROUND ALL CORNERS SMOOTH, REAM ALL HOLES.
2. USE 316-SST FASTENERS AND HARDWARE UNLESS OTHERWISE NOTED.
3. PROVIDE ADDITIONAL CONCRETE POSTS FOR SPANS GREATER THAN 60".
4. FILL ALL MOISTURE SEAL-OFFS WITH DUCT SEALANT
   4.1. POLYWATER: FST FOAM SEALANT OR APPROVED EQUAL
5. SURGE PROTECTION DEVICE NEMA-4X/SS
   5.1. EDCO P/N: SLAC-22036 LC OR APPROVED EQUAL

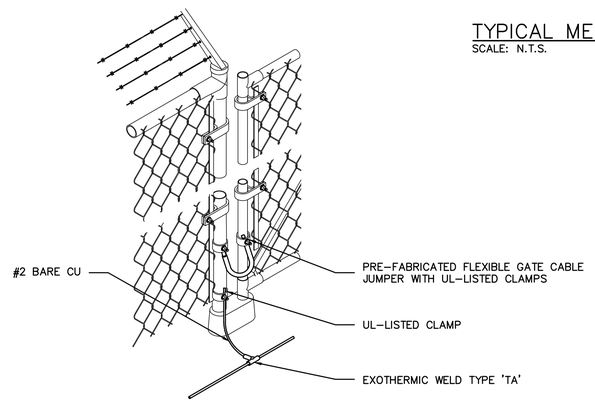
TYPICAL CONTROL PANEL FIELD MOUNTING DETAIL
SCALE: N.T.S.



EXOTHERMIC WELD 'GT' CONNECTION
SCALE: N.T.S.



EXOTHERMIC WELD 'TA' CONNECTION
SCALE: N.T.S.



FENCE & GATE GROUNDING DETAIL
SCALE: N.T.S.

ELECTRICAL INSTALLATION DETAILS
SCALE: N.T.S.

McKIM&CREED
243 NORTH FRONT ST
WILMINGTON, NORTH CAROLINA 28401
TELE: (910) 343-1048
FAX: (910) 251-8282
LICENSE: F-1222

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	JUN 2019

ELECTRICAL INSTALLATION DETAILS

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

NORTH CAROLINA PROFESSIONAL SEAL 041530 ENGINEER JASON A GILLENTINE
29 JUN 2019

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: FEB 2019
SCALE: N/A
DRAWN BY: RCR
CHECKED BY: JAG
PROJECT NO. : 5367-0038

E5

S:\5367\00038\90-Drawings\Electrical\Kings_Bluff_Raw_Water_Transmission\EH100_05367-0038.dwg, 7/1/2019 3:57 PM, Ryan Richey

GENERAL NOTES:

1.0 GENERAL

1.1 ALL WORK IS TO BE PERFORMED IN A GOOD, WORKMANLIKE AND PROFESSIONAL MANNER.

1.2 ALL CONSTRUCTION SHALL BE IN STRICT COMPLIANCE WITH THE REQUIREMENTS OF THE NORTH CAROLINA STATE BUILDING CODE, LATEST EDITION, OR LOCAL BUILDING CODE REQUIREMENTS IF MORE STRINGENT.

1.3 THESE DRAWINGS DO NOT SHOW PROVISIONS FOR SAFETY DURING CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO PROVIDE THE REQUIRED BRACING, SHORING, AND SAFETY DEVICES THROUGHOUT THE CONSTRUCTION OF THIS PROJECT.

2.0 COORDINATION

2.1 STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH AND COORDINATED WITH CIVIL DRAWINGS, INCLUDING VENDOR SUBMITTAL DRAWINGS AND OTHER CONTRACT DOCUMENTS.

2.2 ANY DISCREPANCIES BETWEEN ACTUAL CONDITIONS AND THOSE SHOWN ON THESE DRAWINGS ARE TO BE BROUGHT TO THE ATTENTION OF THE STRUCTURAL ENGINEER BEFORE WORK PROCEEDS, INCLUDING ORDERING AND FABRICATING MATERIALS.

2.3 INDEPENDENT TESTING OF MATERIALS SHALL BE PROVIDED AS DEFINED IN PROJECT SPECIFICATIONS. IN GENERAL PROJECT INVOLVES THE FOLLOWING:
- A. STEEL PILES.
- B. C.I.P. CONCRETE.
- C. STEEL.

2.4 IF COORDINATION OF INFORMATION PRESENTED CONFLICTS w/ THE PROJECT SPECIFICATIONS, THE DRAWINGS WILL TAKE PRECEDENCE.

2.5 IN GENERAL CALL-OUTS ARE FOR NEW CONSTRUCTION U.N.O.. EXISTING CONSTRUCTION CALL-OUTS, ELEVATIONS AND DIMENSIONS OF EXISTING STRUCTURES ARE BASED ON EXISTING RECORD DRAWINGS PROVIDED TO McKIM & CREED. THE (*) SYMBOL ON INDIVIDUAL FACILITY "STRUCTURAL" DRAWINGS INDICATES EXISTING CONSTRUCTION CALL-OUTS, CONDITIONS, ELEVATIONS AND DIMENSIONS TO BE FIELD VERIFIED BY THE GENERAL CONTRACTOR U.N.O. PRIOR TO CONSTRUCTION, INCLUDING ORDERING AND FABRICATING MATERIALS. RECORD DRAWINGS PROVIDED BY CAPE FEAR PUBLIC UTILITY AUTHORITY UTILIZED INCLUDES:
- A. NONE.

2.6 SPECIAL INSPECTIONS (IF APPLICABLE): ALL DEEP FOUNDATION PILES, REINF. STEEL, C.I.P. CONCRETE & STRUCTURAL STEEL ASSEMBLIES WORK SHALL BE REVIEWED AS STATED IN CONJUNCTION w/ THEIR RESPECTIVE NOTES BELOW, CHAPTER 17 OF THE NORTH CAROLINA STATE BUILDING CODE AND THE PROJECT SPECIAL INSPECTIONS STATEMENT IN THE PROJECT SPECIFICATIONS.

3.0 FOUNDATIONS

3.1 DEEP FOUNDATION PILE DESIGN IN ACCORDANCE WITH THE PROJECT GEOTECHNICAL REPORT AS PREPARED BY S&ME, INC. (PROJECT No. 1306-17-013, DATED JUNE 6, 2018).

3.2 PILE ASSEMBLIES SHALL CONSIST OF STEEL H-PILES IN CONFORMANCE w/ ASTM A572 OR ASTM A992.

3.3 STEEL H-PILES CAPACITY PER THE PROJECT GEOTECHNICAL REPORT IS AS FOLLOWS:
- a.) 25 KIPS (COMPRESSION).
- b.) 5 KIPS (LATERAL).

THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THESE VALUES PRIOR TO FOUNDATION CONSTRUCTION, OR DURING IF TEST PILES TO BE UTILIZED AS PRODUCTION PILES. IN AREAS WHERE THE INSTALLATION DOES NOT YIELD THE REQUIRED COMPRESSION & LATERAL LOADS, ADJUSTMENT IN THE PILE INSTALLATIONS MAY BE MADE BY THE ENGINEER BEFORE WORK PROCEEDS/CONTINUES. CONTRACTOR IS RESPONSIBLE FOR PERFORMING ANY SUCH ADJUSTMENTS.

3.4 BOTTOM OF PILE & TOP OF PILE ELEVATIONS SHALL NOT BE RAISED OR LOWERED WITHOUT APPROVAL OF THE STRUCTURAL ENGINEER.

3.5 PILE DRIVING INSTALLATION PROCEDURES TO BE IN ACCORDANCE w/ THE REQUIREMENTS OF THE PROJECT GEOTECHNICAL REPORT.

3.6 FABRICATE PILES IN LONGEST LENGTHS PRACTICAL TO ELIMINATE OR MINIMIZE FIELD SPLICING.

3.7 REFERENCE PROJECT GEOTECHNICAL REPORT FOR PILE LOCATIONS THAT MAY REQUIRE/ALLOW PRE-DRILLING.

3.8 PILES DRIVEN w/ DISPLACEMENT EXCEEDING 4" IN PLAN OR EXCEEDING 1% OUT-OF-PLUMB WILL BE REJECTED & REQUIRE NEW RE-DRIVEN PILES AT NO ADDITIONAL COST TO THE OWNER.

3.9 PILE DRIVING SHALL BE MONITORED & LOGGED & REVIEWED BY THE OWNER'S CONSTRUCTION REPRESENTATIVE DURING INSTALLATION. ALL MONITORING OF PILE INSTALLATIONS & PILE CONSTRUCTION SHOP DRAWING REVIEWS SHALL CONFORM TO THE REQUIREMENTS OF CHAPTER 17 OF THE NORTH CAROLINA STATE BUILDING CODE.

4.0 REINFORCING STEEL

4.1 BARS SHALL BE ROLLED FROM NEW BILLET-STEEL OF DOMESTIC MANUFACTURE CONFORMING TO "STANDARD SPECIFICATION FOR DEFORMED AND PLAIN BILLET STEEL BARS FOR CONCRETE REINFORCEMENT," ASTM A615, GRADE 60 AND SUPPLEMENTARY REQUIREMENT S-1.

4.2 DETAIL AND FABRICATE REINFORCING STEEL IN ACCORDANCE WITH THE AMERICAN CONCRETE INSTITUTE "ACI DETAILING MANUAL," LATEST PUBLICATION.

4.3 REINFORCING STEEL IN PLACE SHALL BE REVIEWED BY THE OWNER'S CONSTRUCTION REPRESENTATIVE PRIOR TO PLACEMENT OF CONCRETE. THE REVIEW SHALL CONFORM TO THE REQUIREMENTS OF CHAPTER 17 OF THE NORTH CAROLINA STATE BUILDING CODE.

4.4 WELDED WIRE FABRIC SHALL CONFORM TO "STANDARD SPECIFICATION FOR WELDED STEEL WIRE FABRIC FOR CONCRETE REINFORCEMENT," ASTM A1064.

4.5 FABRICATE CONTINUOUS BARS TO THE LONGEST PRACTICABLE LENGTHS.

4.6 REINFORCING STEEL SHALL NOT BE BENT AFTER BEING PARTIALLY EMBEDDED IN HARDENED CONCRETE.

4.7 BARS SHALL BE COLD BENT AND SHALL NOT BE HEATED FOR ANY REASON.

4.8 REINFORCING BARS SHALL NOT BE WELDED U.N.O. ON THE DRAWINGS.

4.9 REFERENCE DRAWINGS FOR REQUIREMENTS FOR LAP SPLICING REINFORCING STEEL IN CONCRETE. IT IS ACCEPTABLE TO LAP SPLICE NON "LCS" A MINIMUM 50 BAR DIAMETERS, UNLESS NOTED OTHERWISE.

4.12 LAP SPLICED BARS IN CONCRETE ARE TO BE WIRE TIED.

5.0 CONCRETE

5.1 IN GENERAL CONCRETE SHALL DEVELOP 4,000 psi MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS. REFERENCE "DESIGN CRITERIA" THIS DWG. & PROJECT SPECIFICATIONS, FOR APPLICATION & SPECIFIC CONCRETE MIX DESIGN REQUIREMENTS.

5.2 CONCRETE WORK SHALL CONFORM TO "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE", ACI 318 & TO "CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES", ACI 350 (LATEST EDITIONS).

5.3 CHAMFER EXPOSED EDGES OF CONCRETE 3/4 INCH, UNLESS NOTED OTHERWISE.

5.4 CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER CURING OF ALL CONCRETE. CURING METHODS SHALL CONFORM TO "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE", ACI 318, "CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES" ACI 350 AND "STANDARD PRACTICE FOR CURING CONCRETE," ACI 308, LATEST EDITIONS.

5.5 UNLESS NOTED OTHERWISE DOWELS SHALL BE THE SAME NUMBER AND SIZE AS THE LARGEST VERTICAL BAR TO WHICH THEY ARE SPLICED.

5.6 REFERENCE PROJECT SPECIFICATIONS FOR REQUIRED FINISHES.

5.7 CONTRACTOR SHALL SUBMIT REBAR SHOP DRAWINGS FOR APPROVAL TO OWNER PRIOR TO FABRICATION. DO NOT FABRICATE REINFORCING PRIOR TO RECEIPT OF APPROVED SHOP DRAWINGS.

5.8 CONCRETE MIXES TO BE REVIEWED BY THE OWNER'S CONSTRUCTION REPRESENTATIVE PRIOR TO PLACEMENT OF CONCRETE. COMPRESSIVE STRENGTH TEST CYLINDERS TO BE REVIEWED BY THE OWNER'S CONSTRUCTION REPRESENTATIVE THROUGHOUT CONCRETE CONSTRUCTION OF THE PROJECT. THESE REVIEWS SHALL CONFORM TO THE REQUIREMENTS OF CHAPTER 17 OF THE NORTH CAROLINA STATE BUILDING CODE.

5.9 CONCRETE ACCESSORIES AS FOLLOWS:
- a.) CAULK/SEALANT - SONOLASTIC MULTI COMPONENT HIGH PERFORMANCE POLYURETHANE SEALANT OR AN APPROVED EQUAL.
- d.) BONDING AGENT - SHALL BE STRUCTURAL EPOXY ADHESIVE CONFORMING TO ASTM C-881 TYPE I STRENGTH AND II, GRADE 2, CLASS B AND C WITH A MINIMUM BOND STRENGTH OF 1900 PSI.
  - 1.) SIKA ARMATEC 110 EpoCem OR AN APPROVED EQUAL.

6.0 GROUT

6.1 PROVIDE NON-SHRINK GROUT UNDER ALL COLUMN BASE PLATES AND BEAM BEARING PLATES AND ELSEWHERE AS INDICATED ON DRAWINGS. NON-SHRINK GROUT SHALL CONFORM TO ASTM C1107.

6.2 GROUT SHALL BE NON-METALLIC AND NON-STAINING AND HAVE A MINIMUM COMPRESSIVE STRENGTH OF 5,000 psi.

7.0 MASONRY (NOT APPLICABLE)

8.0 STRUCTURAL STEEL

8.1 STEEL SHALL CONFORM TO "STANDARD SPECIFICATION FOR STRUCTURAL STEEL," ASTM A36 (Fy=36 ksi) FOR ANGLES, PLATES & CHANNELS. WIDE FLANGE SECTIONS SHALL CONFORM TO ASTM A992 (Fy=50ksi). HOLLOW STEEL SECTIONS (HSS) SHALL CONFORM TO ASTM A500, GRADE B (Fy=46 ksi). STEEL PIPE SHALL CONFORM TO ASTM A53, GRADE B, (Fy=35 ksi).

8.2 STEEL WORK SHALL CONFORM TO "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL BUILDINGS", OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION, INC., (LATEST EDITION), INCLUDING ALL SUPPLEMENTS AND THE "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES", (LATEST EDITION).

8.3 CONNECTION BOLTS SHALL BE 3/4 INCH DIAMETER CONFORMING TO "STANDARD SPECIFICATION FOR HIGH-STRENGTH BOLTS FOR STRUCTURAL STEEL JOINTS", ASTM A325, UNLESS NOTED OTHERWISE CONNECTIONS ARE BEARING TYPE WITH THREADS EXCLUDED FROM SHEAR PLANES (A325x).

8.4 WELDING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE AMERICAN WELDING SOCIETY AWS D1.1 "STRUCTURAL WELDING CODE". WELDING SHALL BE PERFORMED BY CERTIFIED PERSONNEL WHO HAVE BEEN PREVIOUSLY QUALIFIED BY TEST PRESCRIBED IN THE AWS "STRUCTURAL WELDING CODE". ELECTRODES SHALL CONFORM TO AWS 5.5, E70XX.

8.5 THE CONTRACTOR SHALL PROVIDE ADEQUATE TEMPORARY BRACING, SHORING, AND GUYING OF STEEL FRAMING AGAINST WIND, CONSTRUCTION LOADS, AND OTHER TEMPORARY FORCES UNTIL SUCH PROTECTION IS NO LONGER REQUIRED FOR THE SAFE SUPPORT OF THE FRAMING.

8.6 ALL COPES, BLOCKS, CUTS, CUT-OFFS AND OTHER CUTTING OF STRUCTURAL MEMBERS SHALL HAVE ALL RE-ENTRANT CORNERS SHAPED, AND NOTCH-FREE TO A RADIUS OF AT LEAST 1/2 INCH. THE FILLET AND ITS CONTIGUOUS CUTS SHALL MEET WITHOUT OFFSET OR CUTTING PAST THE POINT OF TANGENCY.

8.7 OVERSIZED AND SLOTTED HOLES SHALL NOT BE USED FOR BOLTED CONNECTIONS ON THIS PROJECT EXCEPT AT LOCATIONS NOTED ON DRAWINGS.

8.8 SPLICING OF STRUCTURAL STEEL MEMBERS IS PROHIBITED WITHOUT THE APPROVAL OF THE STRUCTURAL ENGINEER, AS TO LOCATION AND TYPE OF SPLICE. ANY MEMBER HAVING A SPLICE NOT SHOWN AND DETAILED ON THE SHOP DRAWINGS WILL BE REPLACED.

8.9 ALL HOLES IN STRUCTURAL STEEL ARE TO BE PUNCHED OR DRILLED. FLAME CUTTING OF STEEL IS STRICTLY PROHIBITED.

8.10 ALL DESIGN, DETAILING, FABRICATION AND ERECTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION.

8.11 IN GENERAL SHOP CONNECTIONS SHALL BE EITHER WELDED OR BOLTED AND FIELD CONNECTIONS SHALL BE BOLTED UNLESS NOTED OTHERWISE.

8.12 FABRICATOR/CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR OWNER/ENGINEER APPROVAL PRIOR TO FABRICATION. ALL SHOP DRAWINGS MAY BE EXPEDITED IF THE FABRICATOR ADHERES CLOSELY TO THE DETAILS, NOTES, AND INSTRUCTIONS, SHOWN ON THE DRAWINGS.

8.13 ALL GALVANIZED MATERIALS THAT ARE FIELD CUT, FIELD WELDED OR DAMAGED IN SURFACE FINISH SHALL BE CLEANED AND RE-COATED w/ A 98% ZINC RICH OXIDE AND IN CONFORMANCE w/ THE PROJECT SPECIFICATIONS.

8.14 STRUCTURAL STEEL FRAMING & DECKING ERECTION TO BE REVIEWED BY THE THE OWNER'S CONSTRUCTION REPRESENTATIVE THROUGHOUT CONCRETE & STEEL CONSTRUCTION OF THE PROJECT. THESE REVIEWS SHALL CONFORM TO THE REQUIREMENTS OF CHAPTER 17 OF THE NORTH CAROLINA STATE BUILDING CODE.

9.0 ALUMINUM

9.1 ALUMINUM FABRICATION SHALL BE IN CONFORMANCE WITH THE ALUMINUM ASSOCIATION, INC. "SPECIFICATIONS FOR ALUMINUM STRUCTURES".

9.2 UNLESS NOTED OTHERWISE, MATERIALS SHALL BE:
a. PLATE & SHEET - ASTM B209; 6061-T6, 6061-T651 ALLOY.
b. EXTRUDED SHAPES - ASTM B221; 6061-T6, 6061-T651 ALLOY. PIPE SECTIONS ARE SCHEDULE 40 U.N.O..
c. CASTINGS - ASTM B108; 214 ALLOY.
d. BOLTS - ASTM A193; GRADE B8 OR, ASTM 276; TYPE 316 STAINLESS STEEL.
e. NUTS - ASTM A194; GRADE M, OR ASTM 276; TYPE 316 STAINLESS STEEL.

9.3 ALUMINUM SHALL BE SEPARATED FROM DIRECT CONTACT WITH OTHER MATERIALS (STEEL, CONCRETE, ETC.) BY PRESSURE SENSITIVE TAPE, BITUMASTIC COATING, OR OTHER PROTECTIVE METHOD SUBMITTED BY THE CONTRACTOR AND APPROVED BY THE OWNER'S CONSTRUCTION REPRESENTATIVE.

9.4 CONNECTIONS SHALL HAVE A MINIMUM OF TWO 3/4" DIAMETER STAINLESS STEEL BOLTS.

9.5 WELDING ALUMINUM SHALL CONFORM TO AWS D1.2 & AWS A5.10 AND THE REQUIREMENTS OF THE ALUMINUM ASSOCIATIONS "ALUMINUM DESIGN MANUAL" (LATEST EDITION) TABLE 7.1-1 FOR WELD FILLERS FOR WROUGHT ALLOYS.

9.6 REFERENCE PROJECT SPECIFICATIONS FOR HANDRAIL & GUARDRAIL REQUIREMENTS.

10.0 PRE-CAST CONCRETE (NOT APPLICABLE)

11.0 PRE-ENGINEERED TIMBER TRUSS (NOT APPLICABLE)

12.0 PRE-ENGINEERED METAL BUILDINGS (NOT APPLICABLE)

13.0 MISCELLANEOUS BUILDING MATERIALS

13.1 ALL MISCELLANEOUS MATERIALS ARE TO BE DELIVERED TO SITE & STAGED ON SITE PRIOR TO INSTALLATION. STORE ON SITE AS REQUIRED BY THE MATERIAL MANUFACTURER TO AVOID DAMAGE PRIOR TO INSTALLATION.

13.2 CAULK & SEALANT MATERIAL SHALL BE SONNEBORN SONOLASTIC "NP 1" ONE COMPONENT, MOISTURE CURING HIGH PERFORMANCE POLY-URETHANE SEALANT, OR AN APPROVED EQUAL.

14.0 ABBREVIATIONS

14.1 THE FOLLOWING LIST OF ABBREVIATIONS IS NOT INTENDED TO REPRESENT ALL THOSE USED ON THE DRAWINGS, BUT TO SUPPLEMENT THE MORE COMMON ABBREVIATIONS USED.

ADD'L	=	ADDITIONAL	LCS	=	LIQUID CONTAINMENT STRUCTURES
AL	=	ALUMINUM			
ALT.	=	ALTERNATE	LLH	=	LONG LEG HORZ.
BLDG.	=	BUILDING	LLV	=	LONG LEG VERT.
BLK.	=	BLOCK	L.P.	=	LOW POINT
BM.	=	BEAM	LSL	=	LONG SLOTTED
B.O.	=	BOTTOM OF	MAS.	=	MASONRY
BRG.	=	BEARING	MAT'L.	=	MATERIAL
C.I.P.	=	CAST-IN-PLACE	MFG.	=	MANUFACTURER
CLR.	=	CLEAR	MIN.	=	MINIMUM
CMU	=	CONC. MAS. UNIT	MTL.	=	METAL
C.O.	=	CLEAN OUT	NOM.	=	NOMINAL
COL	=	COLUMN	N.S.	=	NEAR SIDE
CONC.	=	CONCRETE	N.T.S.	=	NOT TO SCALE
CONN.	=	CONNECTION	O.C.	=	ON CENTER
CONST.	=	CONSTRUCTION	O/F	=	OUTSIDE FACE
CONT.	=	CONTINUOUS	O/H	=	OVERHANG
COORD.	=	COORDINATE	O/O	=	OUT TO OUT
CTR.	=	CENTER	OPNG.	=	OPENING
CTR'D.	=	CENTERED	OPP.	=	OPPOSITE
DBL.	=	DOUBLE	ORIENT.	=	ORIENTATION
DIR.	=	DIRECTION	PLCS.	=	PLACES
DWG.	=	DRAWING	P.P.	=	PUMP PAD
DWG.'s.	=	DRAWINGS	RAD.	=	RADIUS
EA.	=	EACH	REF.	=	REFERENCE
EL	=	ELEVATION	REINF.	=	REINFORCING
E.O.	=	EDGE OF	REQ'D.	=	REQUIRED
EQ.	=	EQUAL	RET.	=	RETAINING
EQUIP.	=	EQUIPMENT	ROT.	=	ROTATE
EXIST.	=	EXISTING	SIM.	=	SIMILAR
EXP.	=	EXPANSION	SPA.	=	SPACED
FLG.	=	FLANGE	SPECS.	=	SPECIFICATIONS
FDN.	=	FOUNDATION	S.S.	=	STAINLESS STEEL
F.S.	=	FAR SIDE	SSL	=	SHORT SLOTTED
FT.	=	FEET	STD.	=	STANDARD
FTG.	=	FOOTING	STL.	=	STEEL
GA.	=	GAGE	T&B	=	TOP & BOTTOM
GALV'D	=	GALVANIZED	T/D	=	TURN DOWN
HORZ.	=	HORIZONTAL	THK.	=	THICK
H.P.	=	HIGH POINT	THK'D	=	THICKENED
HRS.	=	HOURS	T.O.	=	TOP OF
I/F	=	INSIDE FACE	T.O.S	=	TOP OF STEEL
INFO.	=	INFORMATION	TYP.	=	TYPICAL
INTR.	=	INTERIOR	U.N.O.	=	UNLESS NOTED OTHERWISE
JST.	=	JOIST			
JT.	=	JOINT	XB	=	"X"-BRACING
KB	=	KNEE BRACE	VERT.	=	VERTICAL
			W.P.	=	WORK POINT

DESIGN LOADS:

DESIGN LOADS BASIS OF DESIGN:
NORTH CAROLINA STATE BUILDING CODE 2018 (INTERNATIONAL BUILDING CODE (IBC) 2015 w/ NC AMENDMENTS) & ASCE 7-10 FOR WIND & SEISMIC DESIGN

LIVE LOAD: 100 PSF ELEVATED WALKWAY
ROOF: N/A
SNOW: N/A
WIND ZONE: 150 mi/hr, EXPOSURE C, OCCUPANCY CATEGORY III

CALCULATED WIND BASE SHEARS: Vx = 4.9 k & Vy = 2.5 k

COMPONENTS & CLADDING WIND PRESSURES: NOT APPLICABLE

SEISMIC:
SEISMIC DESIGN PARAMETERS:

RESPONSE MODIFICATION COEFFICIENT	R	= 1.25
SPECTRAL RESPONSE ACCELERATION.....SHORT PERIOD	S(DS)	= 25.8%
SPECTRAL RESPONSE ACCELERATION.....1 SECOND PERIOD	S(D1)	= 16.0%
SEISMIC OCCUPANCY CATEGORY.....		= III
SITE CLASS.....		= D
SEISMIC DESIGN CATEGORY.....	SDC	= C
IMPORTANCE FACTOR.....	Ie	= 1.25

BASIC STRUCTURAL SYSTEM NON-BUILDING TYPE STRUCTURE:

"OTHER" SELF SUPPT. STRUCTURE NOT COVERED BY TABLE 15.4-2

ANALYSIS PROCEDURE = EQUIVALENT LATERAL FORCE

SEISMIC BASE SHEAR = Vx = Vy = 11.7 k

ARCHITECTURAL, MECHANICAL COMPONENTS ANCHORED? Y

SOIL BEARING: REF. "FOUNDATION" STRUCTURAL GENERAL NOTE 3.1

DESIGN CRITERIA:

CONCRETE 28 DAY COMPRESSIVE STRENGTH:	
SLAB-ON-GRADE:	f'c = 4,000 psi (NOT APPLICABLE)
EQUIPMENT PADS & PIPE ENCASEMENTS:	f'c = 3,000 psi (NOT APPLICABLE)
WALLS OF LIQUID CONTAINMENT STUCTURES (LCS):	f'c = 4,500 psi (NOT APPLICABLE)
SLABS OF LCS:	f'c = 4,500 psi (NOT APPLICABLE)
PILE ENCASEMENTS:	f'c = 4,000 psi
BELOW GRADE & RETAINING WALLS:	f'c = 4,000 psi (NOT APPLICABLE)
SIDEWALK, DRIVEWAY, CURB & GUTTER:	f'c = 3,000 psi (NOT APPLICABLE)
REINFORCING STEEL:	ASTM A615, GRADE 60
WELDED WIRE FABRIC:	ASTM A1064
STRUCTURAL STEEL:	REF. STRUCTURAL NOTE 8.1
ALUMINUM:	REF. STRUCTURAL NOTE 9.2
BOLTS SHALL BE 3/4"ø ASTM A325 OR TYPE 316 S.S.:	REF. STRUCTURAL NOTES 8.3 & 9.2.d
ANCHOR BOLTS SHALL BE 3/4"ø ASTM F-1554 OR ASTM A-36 (STEEL); TYPE 316 S.S. (ALUMINUM):	REF. DRAWING's
STEEL ELECTRODES SHALL CONFORM TO:	AWS 5.5 E70XX
ALUMINUM WELD FILLERS ALLOYS SHALL CONFORM TO:	AWS A5.10 (REF. STRUCTURAL NOTE 9.5)
SOIL BEARING CAPACITY:	REF. STRUCTURAL NOTE 3.1

LEGEND:

ENLARGED PLAN AREA, DETAIL =

CONC. WALL, PAD, ETC. =

GROUT =

GRATING =

DETAIL OR SECTION NUMBER/SHOWN ON SHEET = X.S-Y

PROJECT NORTH = NORTH

ELEVATION DATUM =

ELEVATION NUMBER/SHOWN ON SHEET = X.S-Y

ELEVATIONS X'-X" (Y.YY') = X'-X" = DISTANCE TO/FROM FACILITY REFERENCE EL 0'-0"
Y.YY' = EQUIVALENT SITE EL VERTICAL DATUM

McKIM&CREED
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LICENSE: F-1222

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID - NOT FOR CONSTRUCTION	JUL 2019

NORTH CAROLINA PROFESSIONAL SEAL 24995 ENGINEER WILLIAM F. BAND
07.01.19

STRUCTURAL GENERAL NOTES, DESIGN LOADS, DESIGN CRITERIA AND LEGEND

DATE: OCT 2018
SCALE: AS NOTED
DRAWN BY: WFB
CHECKED BY: AWB
PROJECT NO. : 5367-0038

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

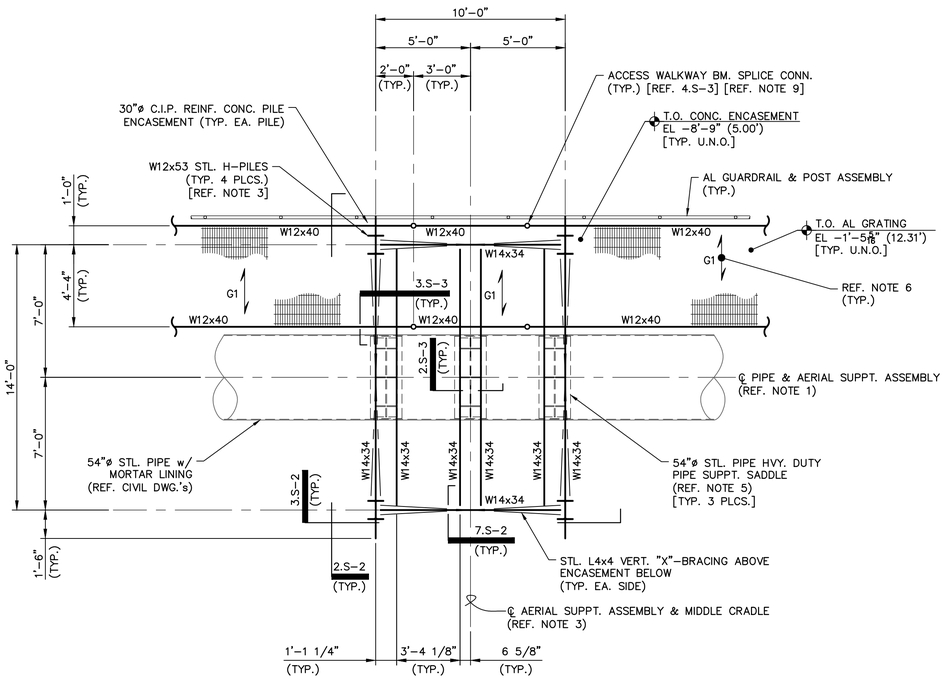
CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

SHEET NO: **S-1**

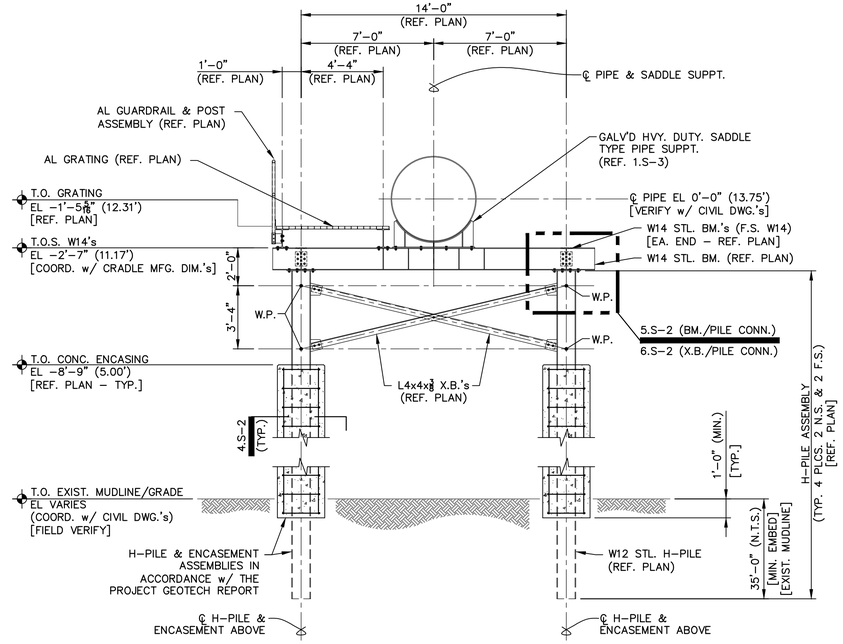
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AERIAL PIPE SUPPT. & PILE LAYOUT PLAN NOTES:

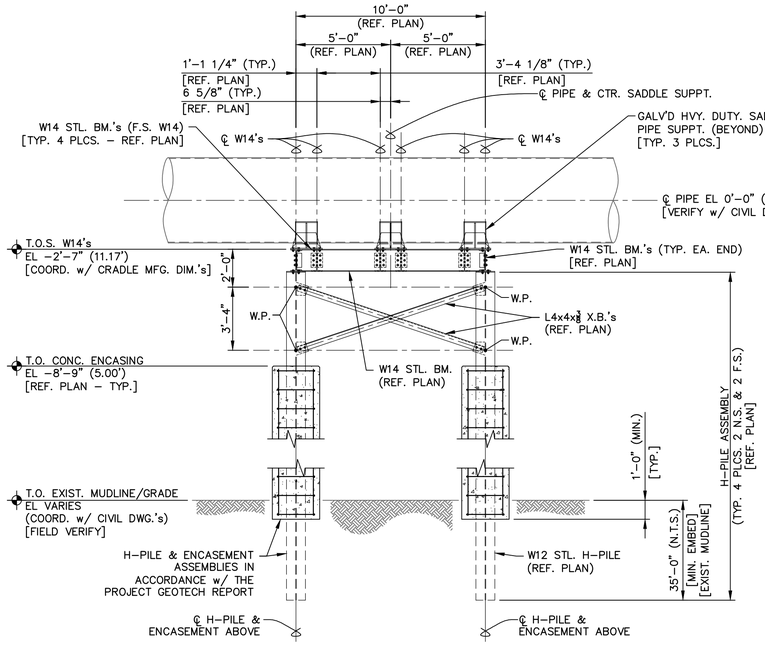
1. REFERENCE ELEVATION FOR THE AERIAL PIPE SUPPORT ASSEMBLIES IS THE PIPE CENTERLINE EL 0'-0" = 13'-9" (13.75'). ELEVATION DATUM IS IN ACCORDANCE w/ N.A.V.D.-83. REFERENCE CIVIL DWG.'s AS REQUIRED FOR COORDINATION & ADDITIONAL INFORMATION.
2. IN GENERAL COORDINATE THE FINAL GRADE, STREAM BED & WATER EL's AROUND THE AERIAL PIPE SUPPT. ASSEMBLIES w/ CIVIL DWG.'s AS REQUIRED.
3. THE AERIAL PIPE SUPPORT ASSEMBLIES CENTERLINE EQUAL's RAW WATER MAIN STATIONING. COORDINATE w/ CIVIL DRAWINGS AS REQUIRED & NOTE THE FOLLOWING:
   a.) STATIONING = 488+65, 489+05, 489+45 & 489+85.
4. STEEL H-PILES ARE PER THE RECOMMENDATIONS OF THE PROJECT GEOTECHNICAL REPORT ISSUED BY S&ME, INC. REFERENCE STRUCTURAL GENERAL NOTE 3.1 ON DWG. S-1. IN REGARDS TO STEEL H-PILE REQUIREMENTS NOTE THE FOLLOWING:
   a.) INSTALL STEEL PILES IN CONJUNCTION w/ THE RECOMMENDATIONS IN THE PROJECT GEOTECHNICAL REPORT AND THE PROJECT SPECIFICATIONS.
   b.) STEEL PILE CAPACITY PER THE PROJECT GEOTECHNICAL REPORT IS 25 KIPS (AXIAL COMPRESSION).
   c.) CONSTRUCT A TEST PILE AS RECOMMENDED PER THE PROJECT GEOTECH REPORT. IF TEST PILE CONFIRMS THE PROJECT GEOTECHNICAL REPORT RECOMMENDATIONS, MINIMUM PRODUCTION PILE EMBEDMENT LENGTH REQUIRED = 35'-0" (MIN.).
   d.) TYPICAL T.O. PILE CAP PLATE EL = -3'-9" (10.00').
5. HEAVY DUTY LARGE PIPE STEEL SADDLE ASSEMBLIES BY AAA TECHNOLOGY & SPECIALTIES CO., INC. (FIG. 5500) OR AN APPROVED EQUAL. CONNECT TO TOP FLG.'s OF THE W14 STEEL BEAM's. REFERENCE SECTIONS & DETAILS.
6. "⟶" SYMBOL ON PLAN INDICATES SPAN DIRECTION OF THE GRATING ASSEMBLIES MAIN BEARING BARS. IN GENERAL GRATING ASSEMBLIES ARE TO BE MANUFACTURED BY REPUTABLE VENDOR(S) EXPERIENCED IN MANUFACTURING THE ASSEMBLIES REQUIRED. GRATING ASSEMBLIES ARE TO INCLUDE RECTANGULAR MAIN BEARING BARS, RECTANGULAR CROSS BARS OR RODS, AND RECTANGULAR BANDING BARS ALONG PERIMETERS OF PANELS & AT OPENINGS. REFERENCE PROJECT SPECIFICATIONS, PLANS, SECTIONS & DETAILS FOR ADDITIONAL INFORMATION & REQUIREMENTS. NOTE THE FOLLOWING:
   a.) GRATING "G1" = 1¾" x ⅜" ALUMINUM IN ACCORDANCE w/ MFG.'s 19-4 "W" SERIES SPACE PROFILE.
   b.) GRATING PANELS SHALL BE ANCHORED TO PLATFORM STEEL w/ HOT-DIPPED GALV'D FASTENERS & TYPE AS RECOMMENDED BY THE MANUFACTURER.
   c.) COORDINATE w/ THE OWNER REGARDING REQUIREMENTS FOR SERRATED TOP SURFACE FINISH FOR SKID RESISTANCE.
7. ALL STRUCTURAL STEEL SECTIONS, FOR GRATING SUPPORT ASSEMBLIES & THE PIPE SUPPORT ASSEMBLIES SHALL BE HOT-DIPPED GALVANIZED.
8. ALL STRUCTURAL STEEL CONNECTION BOLTS FOR PILE BENT, PIPE SUPPORTS & WALKWAY SUPPORT ASSEMBLIES AND MISCELLANEOUS PIPE SUPPORTS SHALL BE HOT-DIPPED GALVANIZED U.N.O. ON PLANS, SECTIONS OR DETAILS FOR THE MISCELLANEOUS ASSEMBLIES.
9. FOR THE AERIAL PIPE SUPPORT ASSEMBLIES @ STA. 488+65 & 489+85 THE W12 BEAM ASSEMBLIES WILL NOT REQUIRE THE (2) SPLICE PER BEAM PATTERN INDICATED BETWEEN THE AERIAL PIPE SUPPT. END W14's. BECAUSE THESE STATION's HAVE BRIDGE WALKWAY END CONDITIONS (1) SPLICE PER BEAM TO BE REMOVED. REFERENCE PARTIAL PLAN 5.S3 FOR CLARIFICATION.
10. REFERENCE DWG. S-1 FOR STRUCTURAL GENERAL NOTES, DESIGN LOADS, DESIGN CRITERIA & ABBREVIATIONS LEGEND.



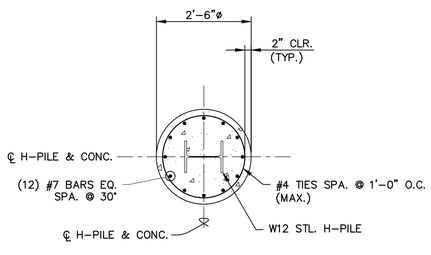
1 - PLAN - TYP. AERIAL PIPE SUPPT. ASSEMBLY & PILE LAYOUT
SCALE: 1/4" = 1'-0"



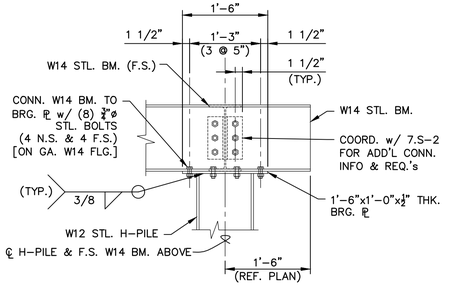
2 - SECTION - THRU AERIAL P.S. ASSEMBLY
SCALE: 1/4" = 1'-0"



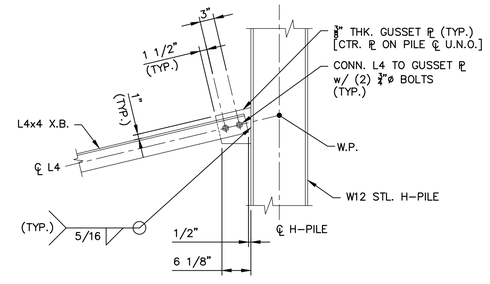
3 - SECTION - THRU AERIAL P.S. ASSEMBLY
SCALE: 1/4" = 1'-0"



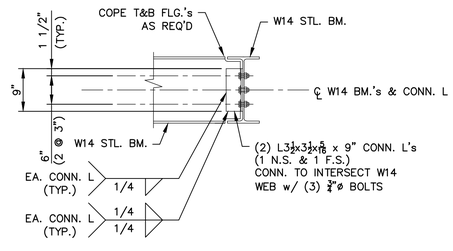
4 - SECTION - THRU CONC. ENCASEMENT
SCALE: 1/2" = 1'-0"



5 - DETAIL - W14 BM. / HP12 T.O. PILE CONN.
SCALE: 3/4" = 1'-0"



6 - DETAIL - HP12 / L4x4 X.B. CONN.
SCALE: 3/4" = 1'-0"



7 - SECTION - TYP. W14 BM. / W14 BM. CONN.
SCALE: 3/4" = 1'-0"

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STRUCTURAL
AERIAL SEWER PIPE SUPPT. / PILE LAYOUT PLANS, SECTIONS AND DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 24995 ENGINEER WILLIAM F. BAND
10-01-19

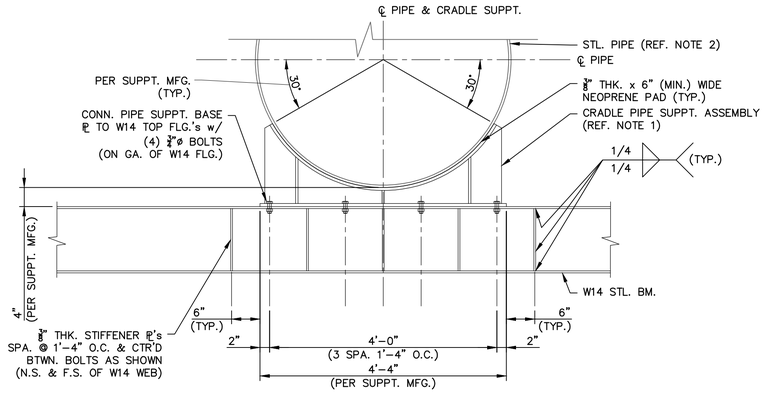
CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: OCT 2018
SCALE: AS NOTED
DRAWN BY: WFB
CHECKED BY: AWB
PROJECT NO. : 5367-0038

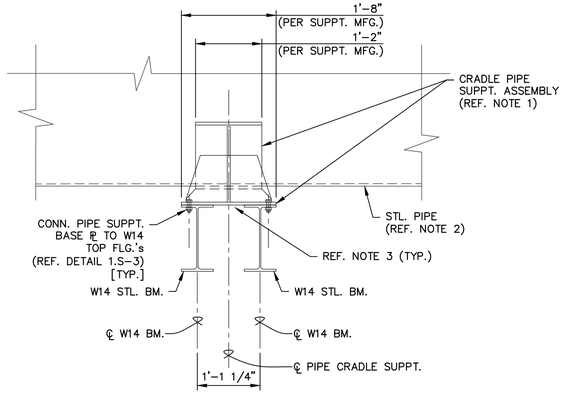
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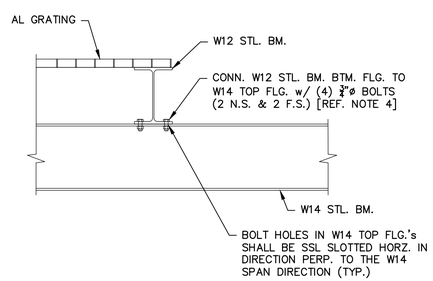
1 - DETAIL - W14 BM. / PIPE CRADLE CONN.

SCALE: 3/4" = 1'-0"



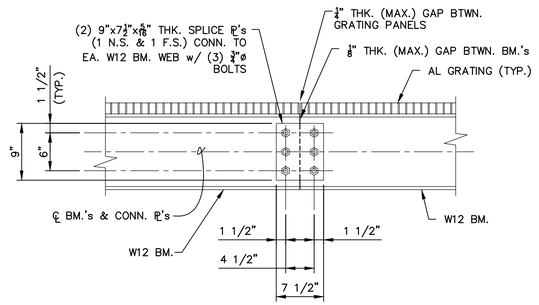
2 - SECTION - W14 BM.'s / PIPE CRADLE CONN.

SCALE: 3/4" = 1'-0"



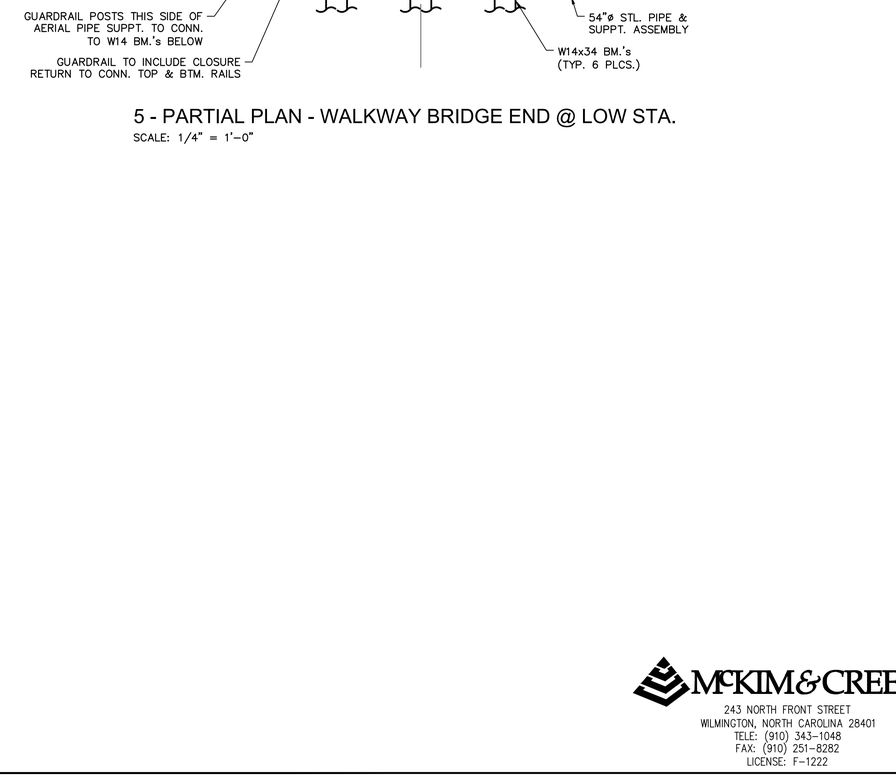
3 - SECTION - TYP. W14 BM. / W12 BM. CONN.

SCALE: 3/4" = 1'-0"



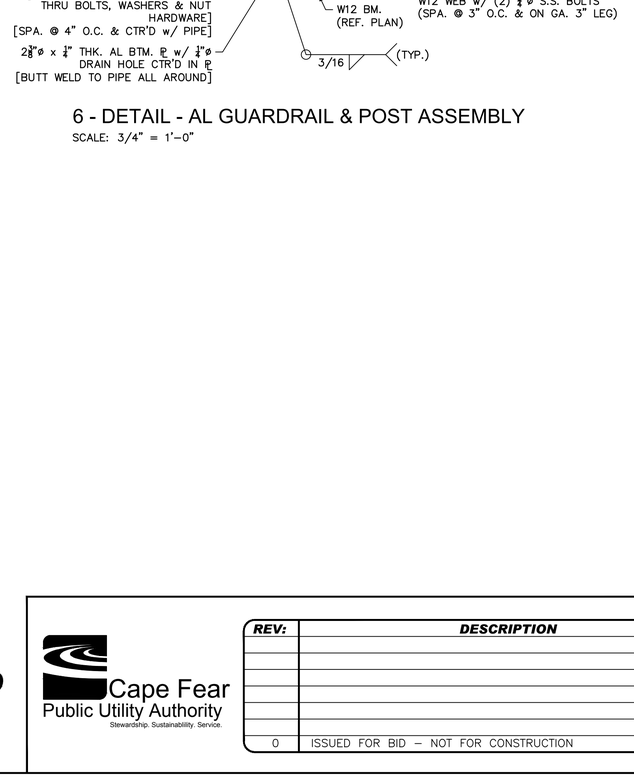
4 - DETAIL - TYP. W12 BM. SPLICE CONN.

SCALE: 3/4" = 1'-0"



5 - PARTIAL PLAN - WALKWAY BRIDGE END @ LOW STA.

SCALE: 1/4" = 1'-0"



6 - DETAIL - AL GUARDRAIL & POST ASSEMBLY

SCALE: 3/4" = 1'-0"

NOTES:

1. THE PIPE SUPPORT ASSEMBLY SHALL BE STEEL PLATE ASSEMBLY FABRICATED BY VENDOR w/ A HOT DIPPED GALV'D FINISH. ASSEMBLY SHALL INCLUDE BASE, WEB, STIFFENER & CRADLE SUPPORT PLATES BY THE VENDOR.
2. REFERENCE CIVIL DWG.'s & PROJECT SPECIFICATIONS FOR PIPE INFO & REQUIREMENTS.
3. PRIOR TO W14 STL. BM. FABRICATION CONTRACTOR SHALL VERIFY THE PIPE SUPPT. CRADLE MFG. DOES NOT REQUIRE CONTINUOUS SUPPT. OF THE ASSEMBLY BASE PLATE. IF CONTINUOUS SUPPT. IS REQUIRED, NOTE THE FOLLOWING:
   a.) INSTALL 4'-4" LONG x 6½" WIDE x 7/16" THK. PLATE BTWN. THE W14 TOP FLG.'s.
   b.) PLATE SHALL BE CONN. TO W14 FLG.'s w/ CONT. COMPLETE PENETRATION GROOVE SHOP WELDS.
4. REFERENCE DWG. S-1 FOR STRUCTURAL GENERAL NOTES, DESIGN LOADS, DESIGN CRITERIA & ABBREVIATIONS LEGEND.

STRUCTURAL
AERIAL SEWER PIPE SUPPT. / PILE LAYOUT ADDITIONAL SECTIONS AND DETAILS

DATE: OCT 2018
SCALE: AS NOTED
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CHECKED BY: AWB
PROJECT NO. : 5367-0038

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

NORTH CAROLINA PROFESSIONAL SEAL 24995 ENGINEER WILLIAM F. BAND
07.01.19

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

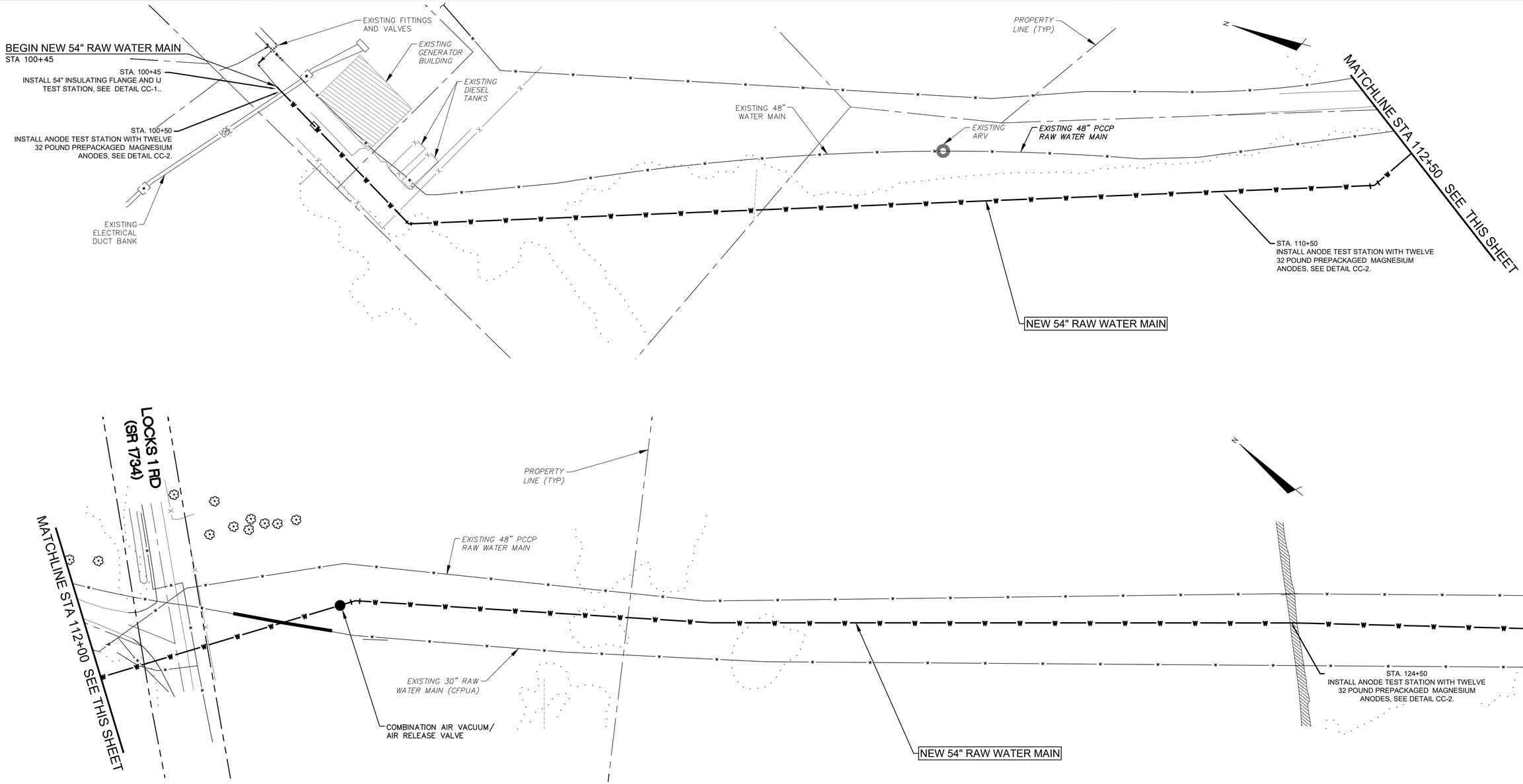
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50' 0 50' 100'

SCALE: 1"=50' (Horiz.)

54" RAW WATER MAIN
PLAN AND PROFILE
STA 100+45 TO STA 127+00

DATE: OCT 2018
SCALE: AS SHOWN
DRAWN BY: AMT
CHECKED BY: YZ
PROJECT NO. : 5367-0038

ENspecialty services

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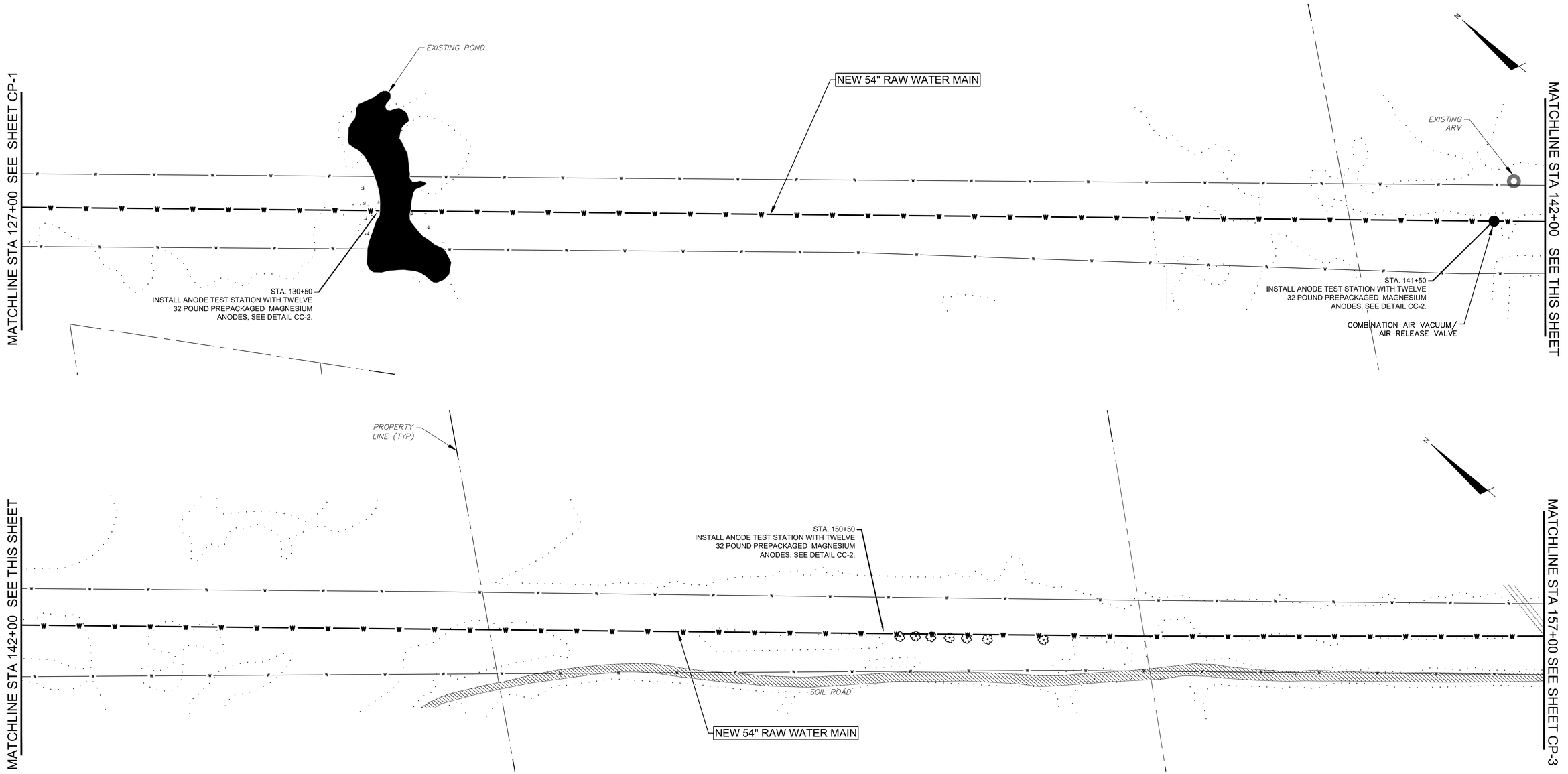
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06-26-2019
NORTH CAROLINA PROFESSIONAL SEAL 039007 ENGINEER DAVID J. KLIMAS

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

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WILMINGTON, NC 28403
OFFICE: (910)332-6560

SHEET NO: **CP-1**



50' 0 50' 100'

SCALE: 1"=50' (Horiz.)

54" RAW WATER MAIN
PLAN AND PROFILE
STA 127+00 TO STA 157+00

DATE: OCT 2018
SCALE: AS SHOWN
DRAWN BY: AMT
CHECKED BY: YZ
PROJECT NO. : 5367-0038

ENspecialty services

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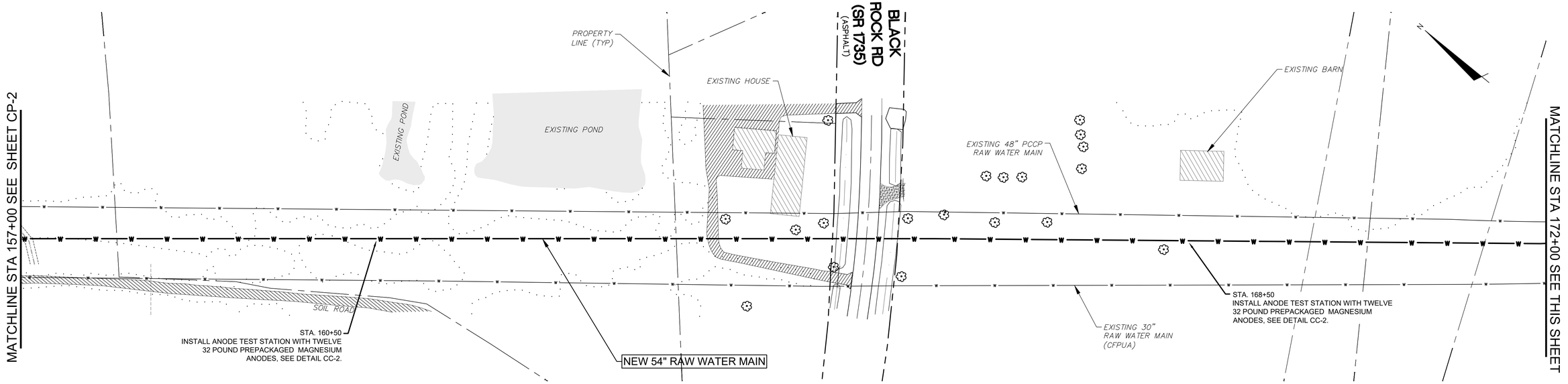
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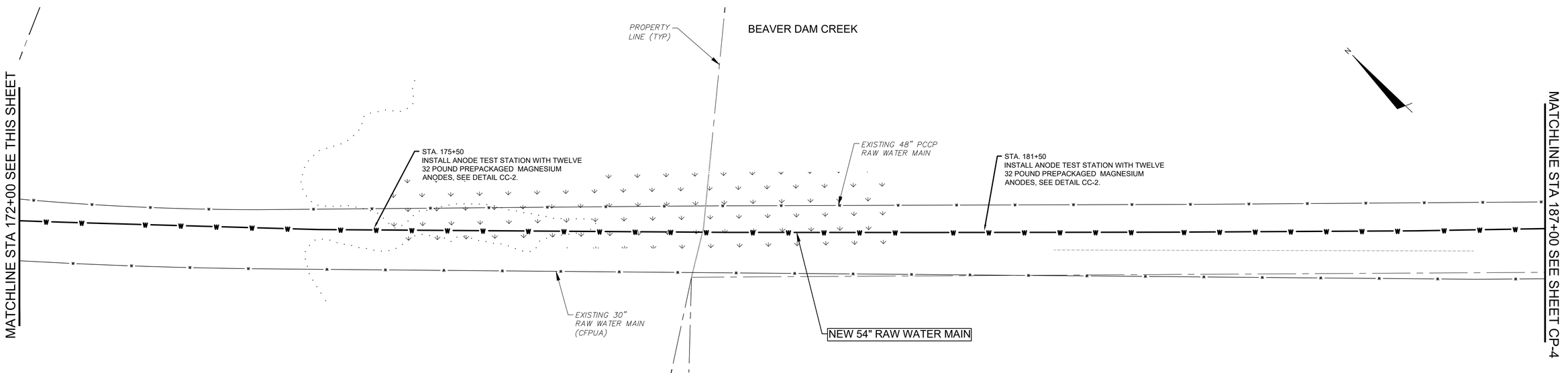
06-26-2019
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CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
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WILMINGTON, NC 28403
OFFICE: (910)332-6560

SHEET NO: **CP-2**





50' 0 50' 100'

SCALE: 1"=50' (Horiz.)

54" RAW WATER MAIN
PLAN AND PROFILE
STA 157+00 TO STA 187+00

DATE: OCT 2018
SCALE: AS SHOWN
DRAWN BY: AMT
CHECKED BY: YZ
PROJECT NO. : 5367-0038

06-26-2019
NORTH CAROLINA PROFESSIONAL SEAL 039007 ENGINEER DAVID J. KLIMAS

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

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SHEET NO: CP-3

ENspecialty services

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MATCHLINE STA 187+00 SEE SHEET CP-3

PROPERTY LINE (TYP)

EXISTING 48" PCCP RAW WATER MAIN

(3) EXISTING DRIVEWAY

STA. 189+00
INSTALL ANODE TEST STATION WITH TWELVE 32 POUND PREPACKAGED MAGNESIUM ANODES, SEE DETAIL CC-2.

ANDREWS DR (GRAVEL)

EXISTING 30" RAW WATER MAIN (CFPUA)

NEW 54" RAW WATER MAIN

STA. 200+50
INSTALL ANODE TEST STATION WITH TWELVE 32 POUND PREPACKAGED MAGNESIUM ANODES, SEE DETAIL CC-2.

EXISTING ARV

COMBINATION AIR VACUUM/ AIR RELEASE VALVE

MATCHLINE STA 202+00 SEE THIS SHEET

MATCHLINE STA 202+00 SEE THIS SHEET

(3) EXISTING DRIVEWAY

NC STATE HIGHWAY 11 (ASPHALT)

EXISTING DRIVEWAY

EXISTING PATH

EXISTING 48" PCCP RAW WATER MAIN

STA. 209+27
INSTALL CASING TEST STATION, SEE DETAIL CC-3.

GPR

EXISTING 30" PCCP RAW WATER MAIN (CFPUA)

PROPERTY LINE (TYP)

NEW 54" RAW WATER MAIN

STA. 211+50
INSTALL ANODE TEST STATION WITH TWELVE 32 POUND PREPACKAGED MAGNESIUM ANODES, SEE DETAIL CC-2.

STA. 210+80
INSTALL CASING TEST STATION, SEE DETAIL CC-3.

MATCHLINE STA 217+00 SEE SHEET CP-5

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

54" WATER MAIN
PLAN AND PROFILE
STA 187+00 TO STA 217+00

DATE: OCT 2018
SCALE: AS SHOWN
DRAWN BY: AMT
CHECKED BY: YZ
PROJECT NO. : 5367-0038

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

06-26-2019
NORTH CAROLINA PROFESSIONAL SEAL 039007 ENGINEER DAVID J. KLIMAS

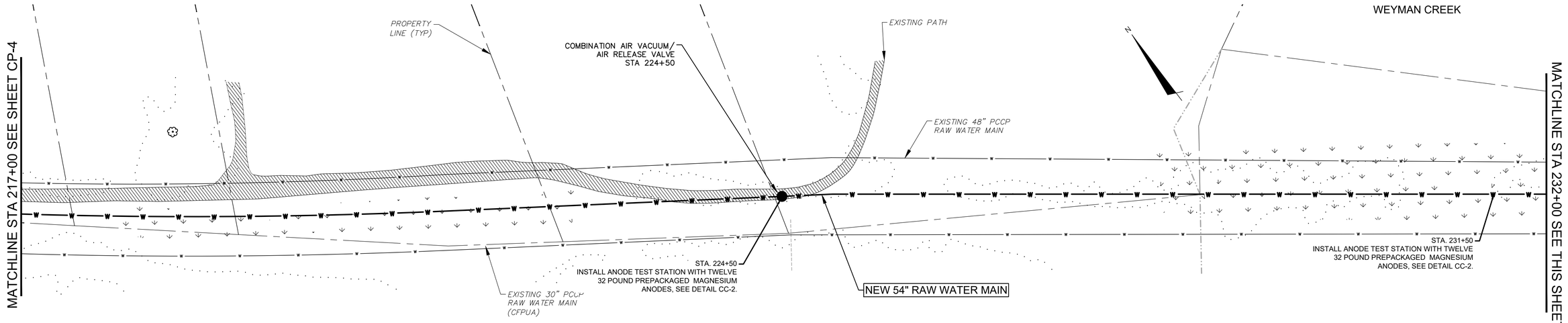
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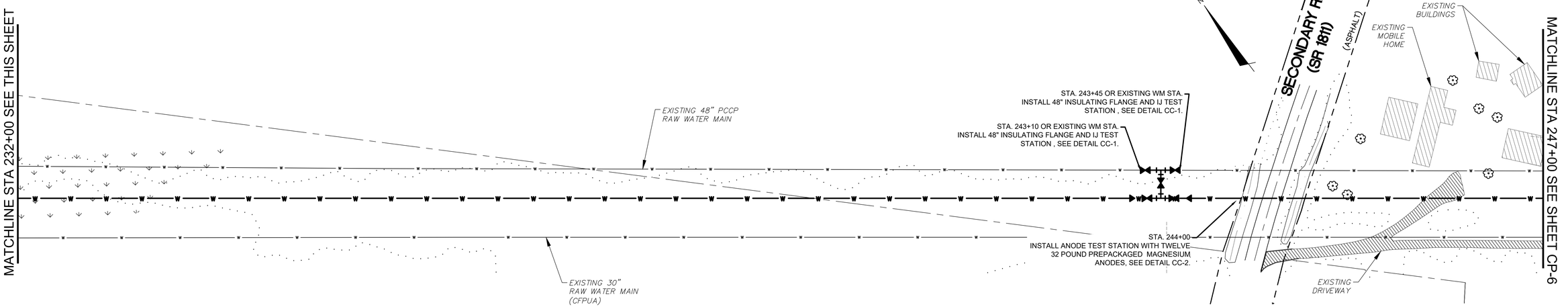
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ENspecialty services

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50' 0 50' 100'

SCALE: 1"=50' (Horiz.)

54" RAW WATER MAIN PLAN AND PROFILE STA 217+00 TO STA 247+00

DATE: OCT 2018
SCALE: AS SHOWN
DRAWN BY: AMT
CHECKED BY: YZ
PROJECT NO. : 5367-0038

ENspecialty services

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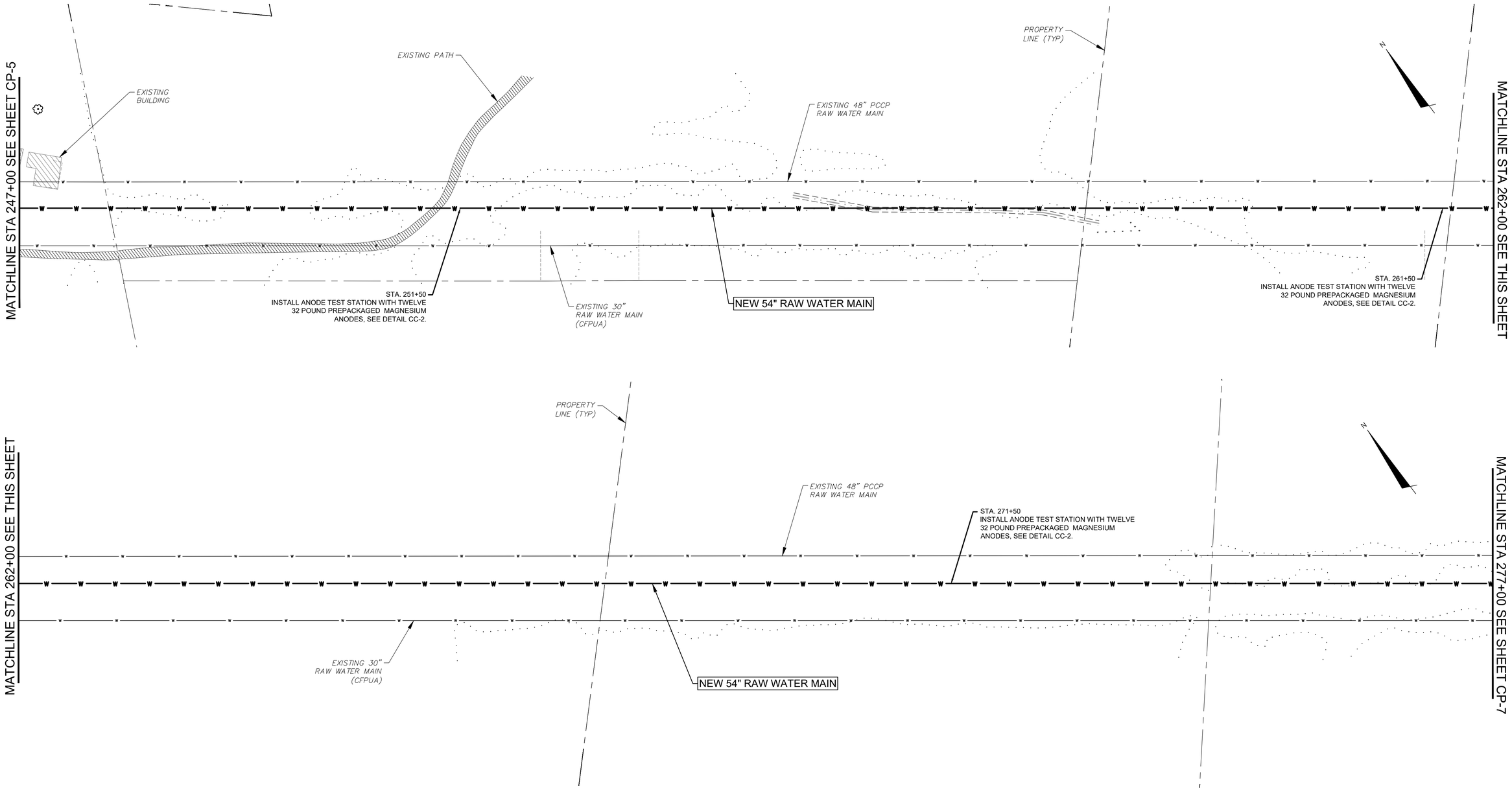
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06-26-2019
NORTH CAROLINA PROFESSIONAL SEAL 039007 ENGINEER DAVID J. KLIMAS

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
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OFFICE: (910)332-6560

SHEET NO: CP-5



50' 0 50' 100'

SCALE: 1"=50' (Horiz.)

54" RAW WATER MAIN
PLAN AND PROFILE
STA 247+00 TO STA 277+00

DATE: OCT 2018
SCALE: AS SHOWN
DRAWN BY: AMT
CHECKED BY: YZ
PROJECT NO. : 5367-0038

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

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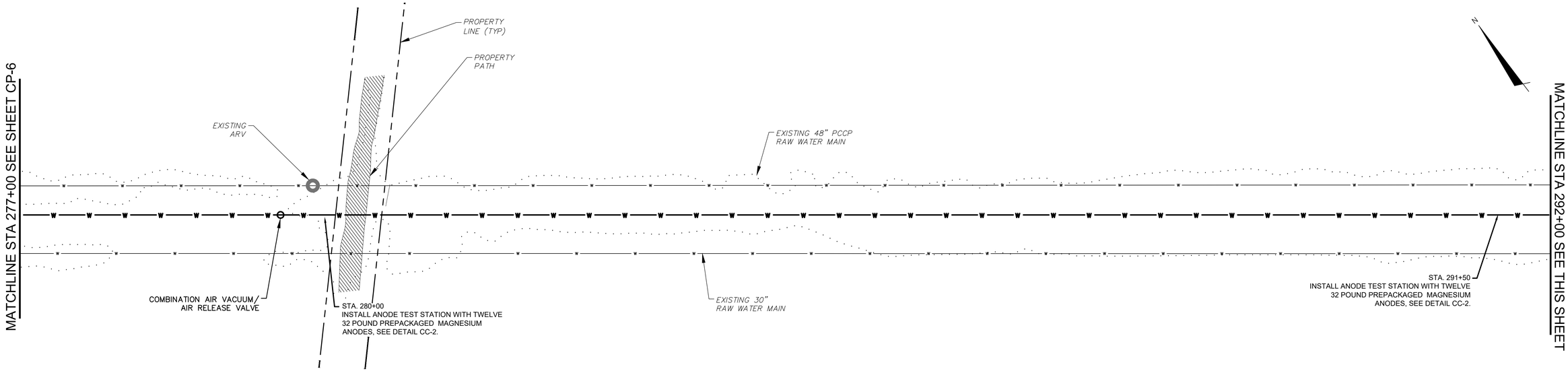
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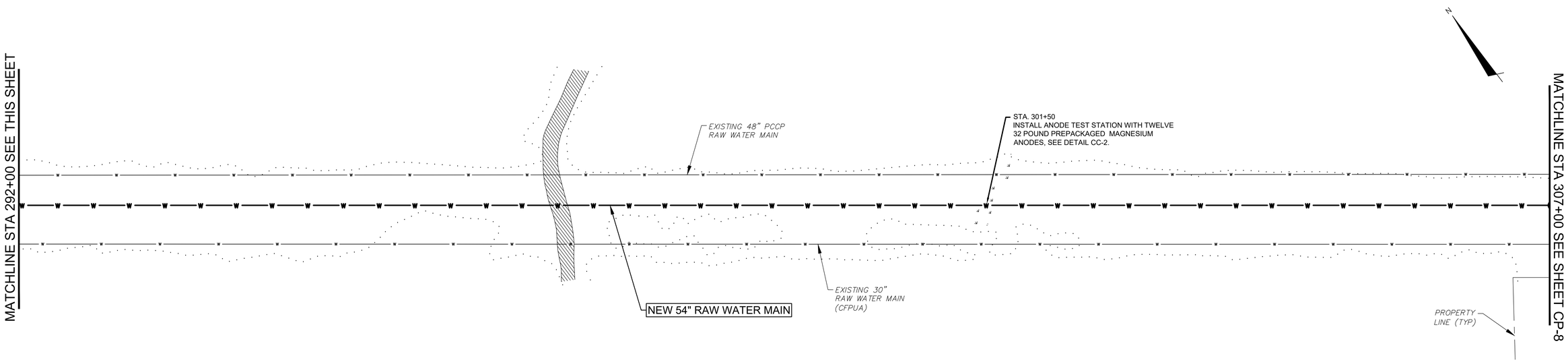
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ENspecialty services

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50' 0 50' 100'

SCALE: 1"=50' (Horiz.)

ENspecialty services

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06-26-2019
NORTH CAROLINA PROFESSIONAL SEAL 039007 ENGINEER DAVID J. KLIMAS

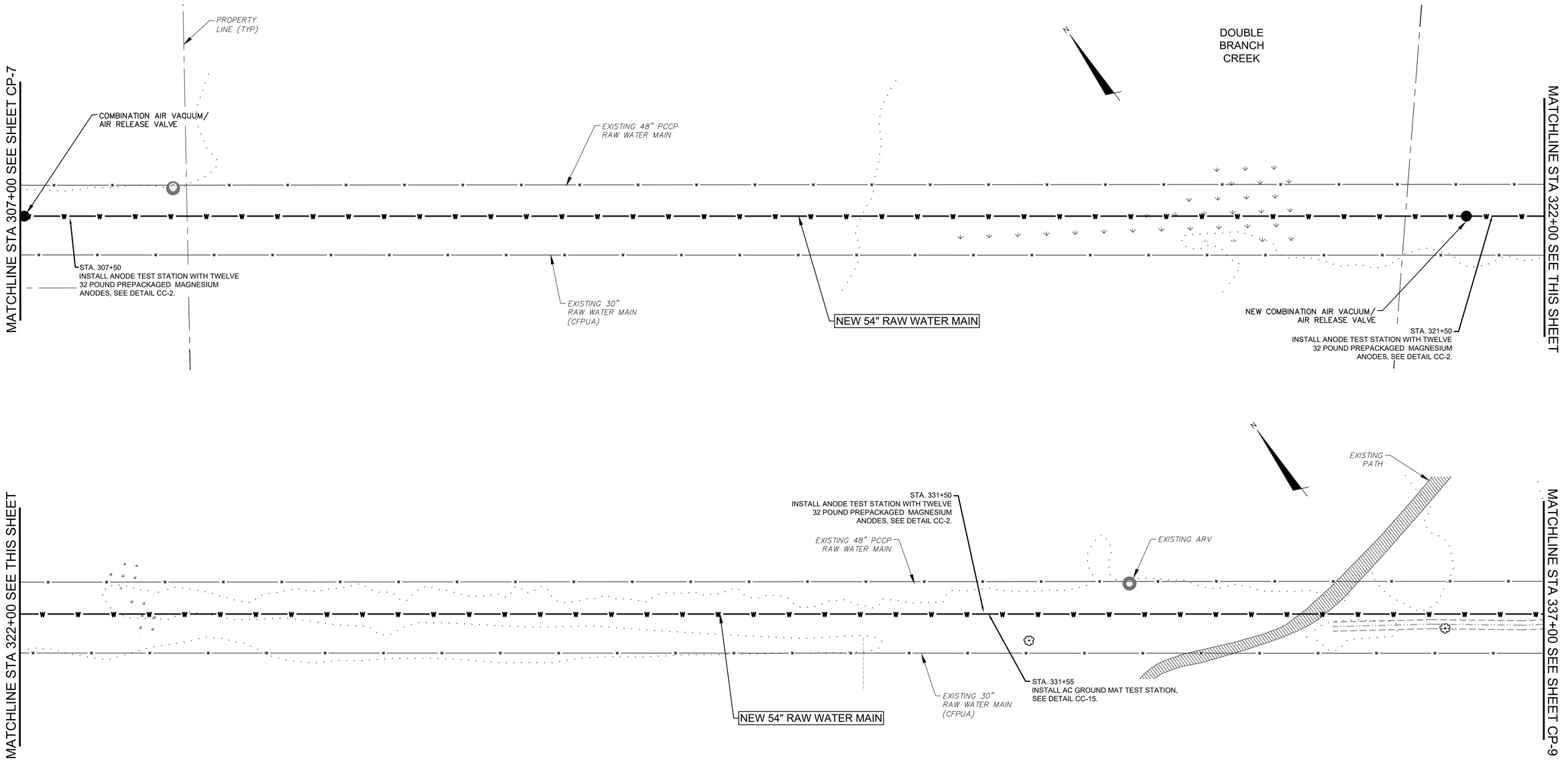
54" RAW WATER MAIN PLAN AND PROFILE STA 277+00 TO STA 307+00

DATE: OCT 2018
SCALE: AS SHOWN
DRAWN BY: AMT
CHECKED BY: YZ
PROJECT NO. : 5367-0038

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

SHEET NO: CP-7



50' 0 50' 100'

SCALE: 1"=50' (Horiz.)

54" RAW WATER MAIN PLAN AND PROFILE STA 307+00 TO STA 337+00

DATE: OCT 2018
SCALE: AS SHOWN
DRAWN BY: AMT
CHECKED BY: YZ
PROJECT NO. : 5367-0038

06-26-2019
NORTH CAROLINA PROFESSIONAL SEAL 039007 ENGINEER DAVID J. KLIMAS

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

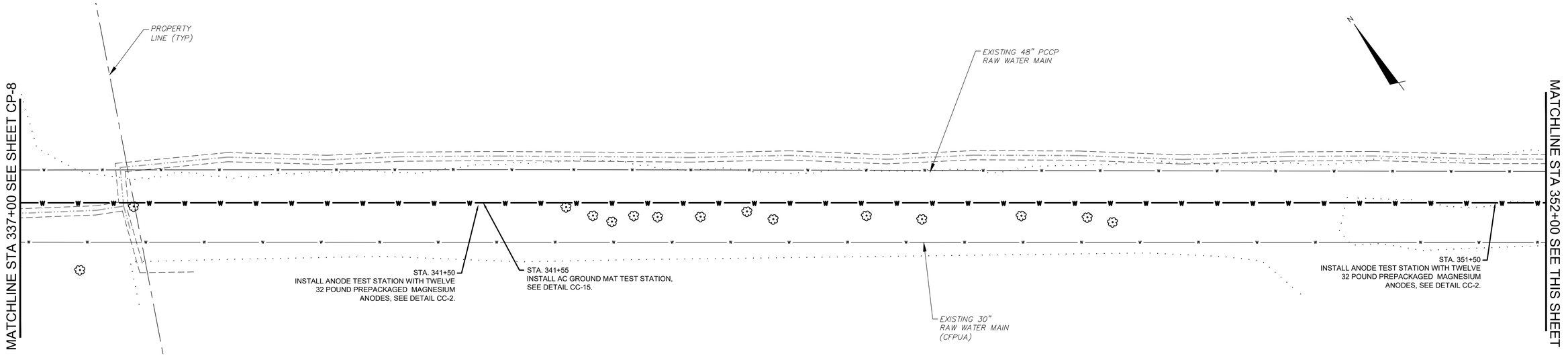
SHEET NO: CP-8

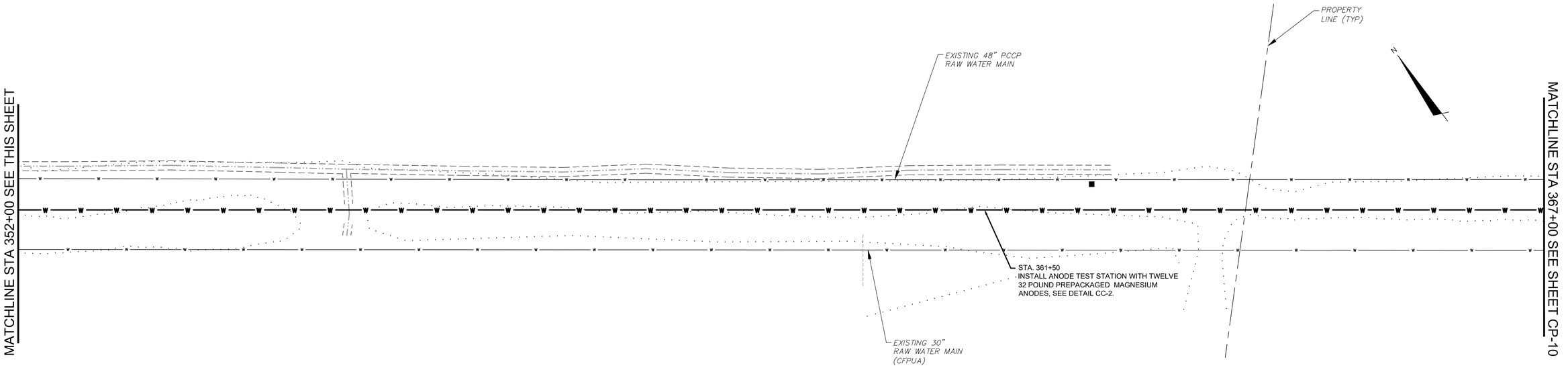
ENspecialty services

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	06/2019

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560





50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

54" RAW WATER MAIN
PLAN AND PROFILE
STA 337+00 TO STA 367+00

DATE: OCT 2018
SCALE: AS SHOWN
DRAWN BY: AMT
CHECKED BY: YZ
PROJECT NO. : 5367-0038

CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

06-26-2019
NORTH CAROLINA PROFESSIONAL SEAL 039007 ENGINEER DAVID J. KLIMAS

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

SHEET NO: CP-9

ENspecialty services

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
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MATCHLINE STA 367+00 SEE SHEET CP-9

EXISTING ARV

EXISTING 48" PCCP
RAW WATER MAIN

STA. 371+50
INSTALL ANODE TEST STATION WITH TWELVE
32 POUND PREPACKAGED MAGNESIUM
ANODES, SEE DETAIL CC-2.

EXISTING 30"
RAW WATER MAIN
(CFPUA)

PROPERTY
LINE (TYP)

STA. 381+50
INSTALL ANODE TEST STATION WITH TWELVE
32 POUND PREPACKAGED MAGNESIUM
ANODES, SEE DETAIL CC-2.

MATCHLINE STA 382+00 SEE THIS SHEET

MATCHLINE STA 382+00 SEE THIS SHEET

EXISTING 30"
RAW WATER MAIN
(CFPUA)

PROPERTY
LINE (TYP)

RIEGEL
COURSE RD
(SR 1816)

EXISTING. BUILDING

EXISTING
DRIVEWAY

EXISTING
UTILITY
POLE

EXISTING 48" PCCP
RAW WATER MAIN

(2) EXISTING
BUILDING

STA. 391+50
INSTALL ANODE TEST STATION WITH TWELVE
32 POUND PREPACKAGED MAGNESIUM
ANODES, SEE DETAIL CC-2.

MATCHLINE STA 397+00 SEE SHEET CP-11

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

54" RAW WATER MAIN
PLAN AND PROFILE
STA 367+00 TO STA 397+00

DATE: OCT 2018
SCALE: AS SHOWN
DRAWN BY: AMT
CHECKED BY: YZ
PROJECT NO. : 5367-0038

ENspecialty services

Cape Fear
Public Utility Authority
Stewardship. Sustainability. Service.

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06-26-2019
NORTH CAROLINA PROFESSIONAL
SEAL
039007
ENGINEER
DAVID J. KLIMAS

CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW
WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

SHEET NO:
CP-10

MATCHLINE STA 397+00 SEE SHEET CP-10

EXISTING ARV

NEW COMBINATION AIR VACUUM/AIR RELEASE VALVE

STA. 401+50
INSTALL ANODE TEST STATION WITH TWELVE 32 POUND PREPACKAGED MAGNESIUM ANODES, SEE DETAIL CC-2.

EXISTING 48" PCCP RAW WATER MAIN

EXISTING 30" RAW WATER MAIN (CFPUA)

STA. 411+50
INSTALL ANODE TEST STATION WITH TWELVE 32 POUND PREPACKAGED MAGNESIUM ANODES, SEE DETAIL CC-2.

PNG GAS MAIN

MATCHLINE STA 412+00 SEE THIS SHEET

MATCHLINE STA 412+00 SEE THIS SHEET

STA. 416+40
INSTALL 48" INSULATING FLANGE AND TEST STATION, SEE DETAIL CC-1.

EXISTING 48"x48" TEE

EXISTING 48" GATE VALVE

STA. 416+51 OR EXISTING WM STA.
INSTALL 48" VALVE INSULATING FLANGES WITH ANODE TEST STATION WITH TWO 30 POUND PREPACKAGED ZINC ANODES, SEE DETAIL CC-15.

JOHN RIEGEL RD (IP PLANT) (SR 1817)

STA. 419+26
INSTALL CASING TEST STATION, SEE DETAIL CC-3.

STA. 420+06
INSTALL CASING TEST STATION, SEE DETAIL CC-3.

STA. 421+50
INSTALL ANODE TEST STATION WITH TWELVE 32 POUND PREPACKAGED MAGNESIUM ANODES, SEE DETAIL CC-2.

EXISTING 48" PCCP RAW WATER MAIN

PNG GAS MAIN

EXISTING 30" RAW WATER MAIN (CFPUA)

NEW COMBINATION AIR VACUUM/ AIR RELEASE VALVE

EXISTING ARV

EXISTING 30" PCCP RAW WATER MAIN (CFPUA)

MATCHLINE STA 427+00 SEE SHEET CP-12

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

54" RAW WATER MAIN
PLAN AND PROFILE
STA 397+00 TO STA 427+00

DATE: OCT 2018
SCALE: AS SHOWN
DRAWN BY: AMT
CHECKED BY: YZ
PROJECT NO. : 5367-0038

ENspecialty services

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Stewardship. Sustainability. Service.

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06-26-2019
NORTH CAROLINA PROFESSIONAL SEAL 039007 ENGINEER DAVID J. KLIMAS

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

SHEET NO: CP-11

MATCHLINE STA 427+00 SEE SHEET CP-11

STA. 428+13
INSTALL CASING TEST STATION,
SEE DETAIL CC-3.

EXISTING IP
RAIL YARD

PNG GAS BLOW-
OFF STATION

STA. 431+11
INSTALL CASING TEST STATION,
SEE DETAIL CC-3.

EXISTING CULVERT

STA. 434+00
INSTALL ANODE TEST STATION WITH TWELVE
32 POUND PREPACKAGED MAGNESIUM
ANODES, SEE DETAIL CC-2.

STA. 434+05
INSTALL AC GROUND MAT TEST STATION,
SEE DETAIL CC-15.

PNG GAS MAIN

EXISTING 48" PCCP
RAW WATER MAIN

EXISTING 30"
RAW WATER MAIN
(CFPUA)

STA. 441+55
INSTALL AC GROUND MAT TEST STATION,
SEE DETAIL CC-15.

STA. 441+50
INSTALL ANODE TEST STATION WITH TWELVE
32 POUND PREPACKAGED MAGNESIUM
ANODES, SEE DETAIL CC-2.

MATCHLINE STA 442+00 SEE THIS SHEET

MATCHLINE STA 442+00 SEE THIS SHEET

EXISTING 48" PCCP
RAW WATER MAIN

PNG GAS MAIN

STA. 451+50
INSTALL ANODE TEST STATION WITH TWELVE
32 POUND PREPACKAGED MAGNESIUM
ANODES, SEE DETAIL CC-2.

EXISTING 30"
RAW WATER MAIN
(CFPUA)

MATCHLINE STA 457+00 SEE SHEET CP-13

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

54" RAW WATER MAIN
PLAN AND PROFILE
STA 427+00 TO STA 457+00

DATE: OCT 2018
SCALE: AS SHOWN
DRAWN BY: AMT
CHECKED BY: YZ
PROJECT NO. : 5367-0038

ENspecialty services

Cape Fear
Public Utility Authority
Stewardship. Sustainability. Service.

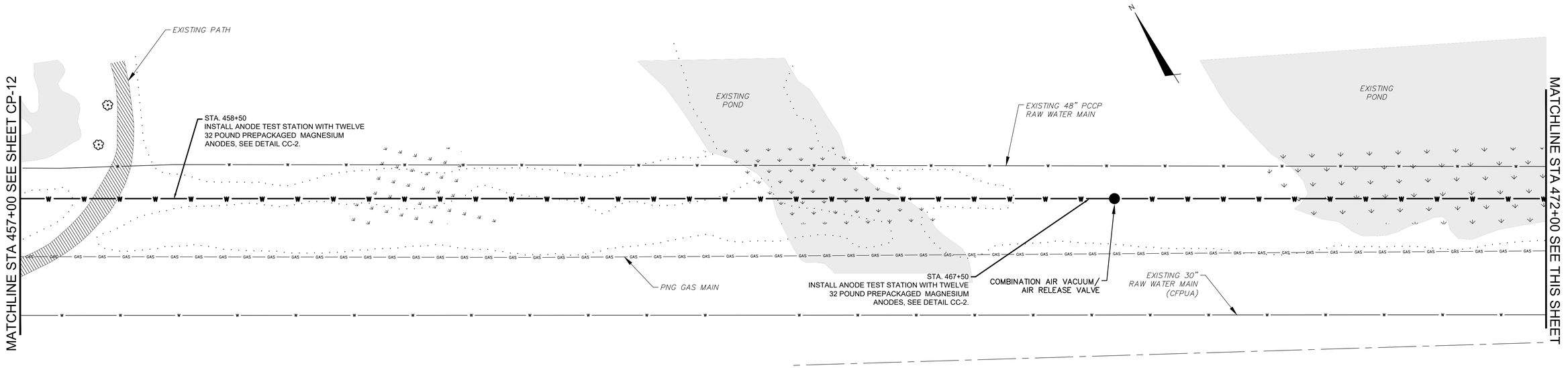
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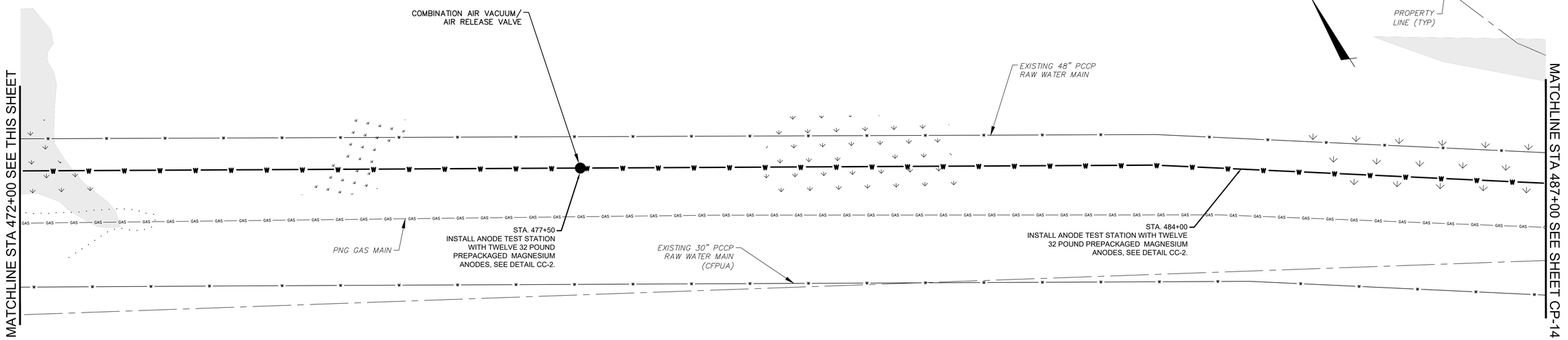
06-26-2019
NORTH CAROLINA PROFESSIONAL
SEAL 039007
ENGINEER
DAVID J. KLIMAS

CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

SHEET NO: CP-12





50' 0 50' 100'

SCALE: 1"=50' (Horiz.)

54" RAW WATER MAIN
PLAN AND PROFILE
STA 457+00 TO STA 487+00

DATE: OCT 2018
SCALE: AS SHOWN
DRAWN BY: AMT
CHECKED BY: YZ
PROJECT NO. : 5367-0038

ENspecialty services

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

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06-26-2019
NORTH CAROLINA PROFESSIONAL SEAL 039007 ENGINEER DAVID J. KLIMAS

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

SHEET NO: CP-13

MATCHLINE STA 487+00 SEE SHEET CP-13

EXISTING ARV

EXISTING 48" RAW WATER MAIN AERIAL CASING

BOND ALL NON WELDED PIPE JOINTS ON AERIAL CROSSING, SEE DETAIL CC-12.

COMBINATION AIR VACUUM/ AIR RELEASE VALVE

STA. 491+00
INSTALL ANODE TEST STATION WITH TWELVE 32 POUND PREPACKAGED MAGNESIUM ANODES, SEE DETAIL CC-2.

PNG GAS MAIN

EXISTING 48" PCCP RAW WATER MAIN

EXISTING ARV

COMBINATION AIR VACUUM/ AIR RELEASE VALVE

STA. 499+50
INSTALL ANODE TEST STATION WITH TWELVE 32 POUND PREPACKAGED MAGNESIUM ANODES, SEE DETAIL CC-2.

EXISTING 30" RAW WATER MAIN

MATCHLINE STA 502+00 SEE THIS SHEET

MATCHLINE STA 502+00 SEE THIS SHEET

EXISTING 48" PCCP RAW WATER MAIN

STA. 508+00
INSTALL ANODE TEST STATION WITH TWELVE 32 POUND PREPACKAGED MAGNESIUM ANODES, SEE DETAIL CC-2.

PNG GAS MAIN

EXISTING 30" RAW WATER MAIN (CFPUA)

NEILS EDDY RD (SR 1818)

STA. 515+00
INSTALL ANODE TEST STATION WITH TWELVE 32 POUND PREPACKAGED MAGNESIUM ANODES, SEE DETAIL CC-2.

MATCHLINE STA 517+00 SEE SHEET CP-15

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

54" RAW WATER MAIN
PLAN AND PROFILE
STA 487+00 TO STA 517+00

DATE: OCT 2018
SCALE: AS SHOWN
DRAWN BY: AMT
CHECKED BY: YZ
PROJECT NO. : 5367-0038

ENspecialty services

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

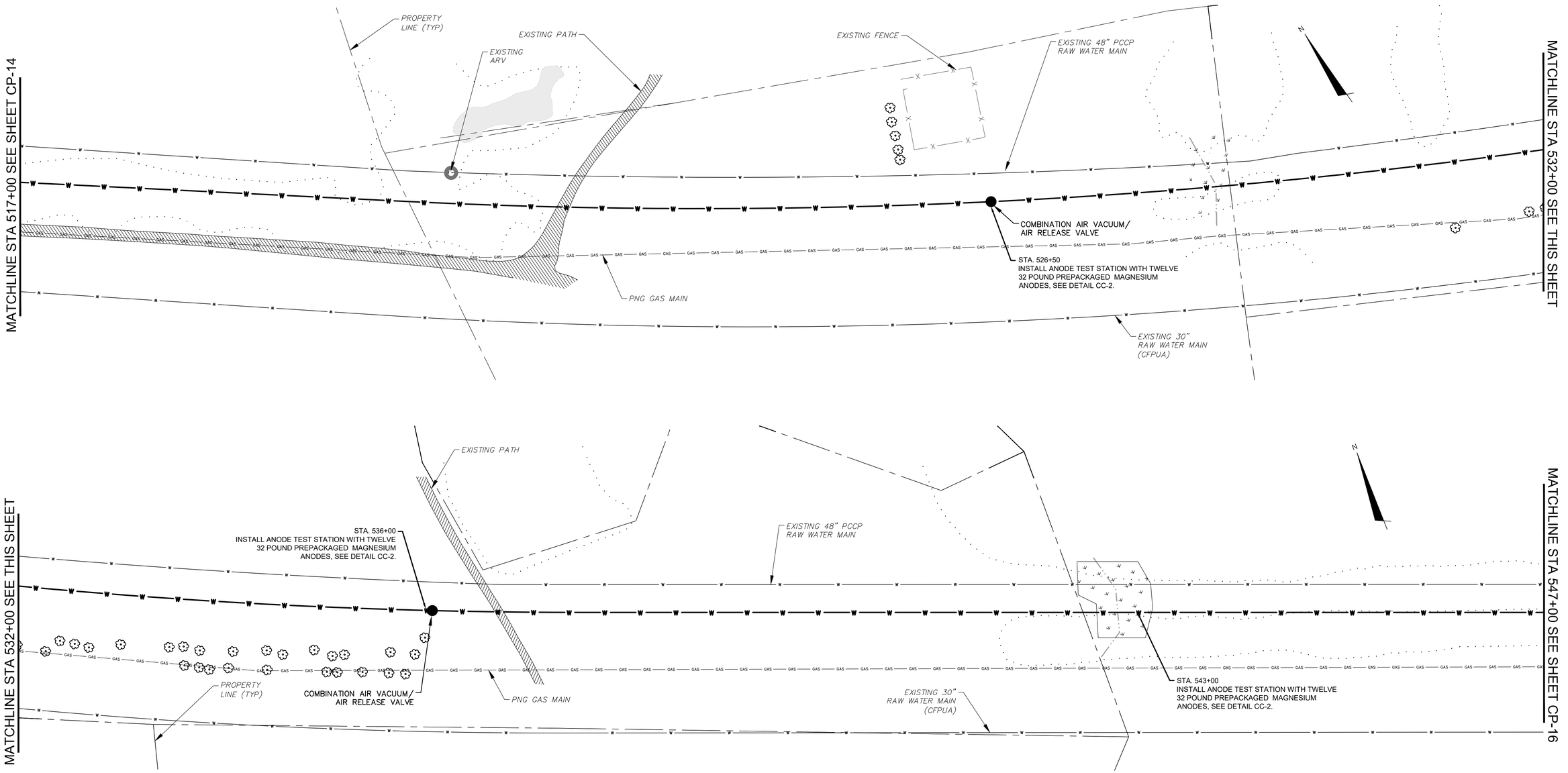
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06-26-2019
NORTH CAROLINA PROFESSIONAL SEAL 039007 ENGINEER DAVID J. KLIMAS

CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW
WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

SHEET NO: CP-14



50' 0 50' 100'

SCALE: 1"=50' (Horiz.)

54" RAW WATER MAIN PLAN AND PROFILE STA 517+00 TO STA 547+00

DATE: OCT 2018
SCALE: AS SHOWN
DRAWN BY: AMT
CHECKED BY: YZ
PROJECT NO. : 5367-0038

ENspecialty services

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

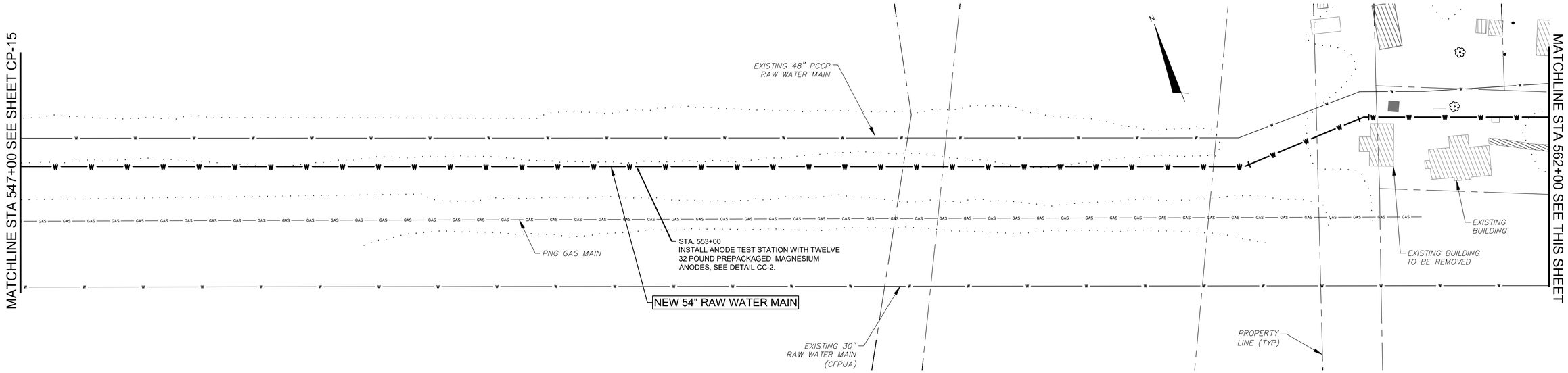
REV:	DESCRIPTION	DATE:
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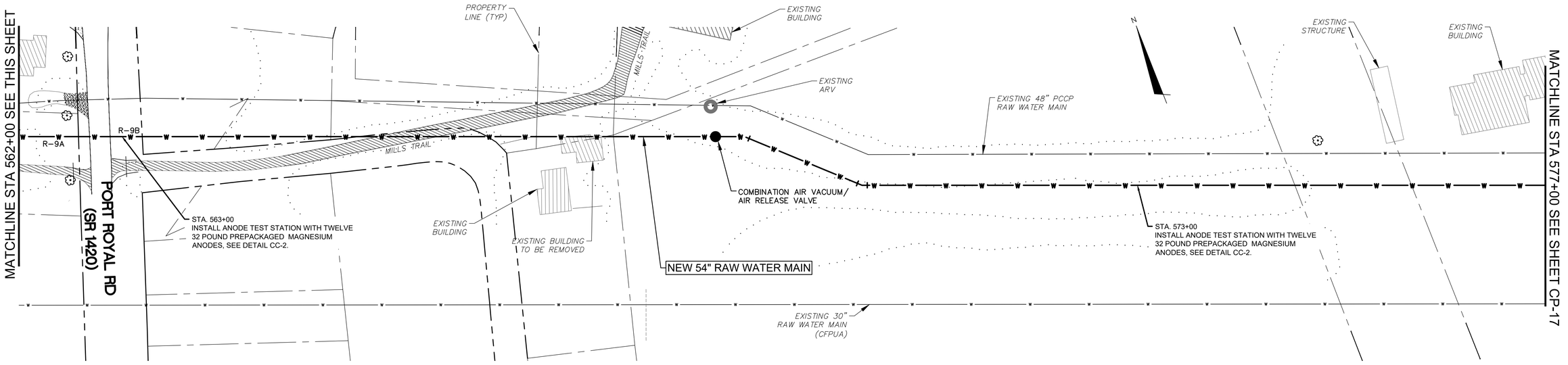
06-26-2019
NORTH CAROLINA PROFESSIONAL SEAL 039007 ENGINEER DAVID J. KLIMAS

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

SHEET NO: CP-15





50' 0 50' 100'

SCALE: 1"=50' (Horiz.)

54" RAW WATER MAIN
PLAN AND PROFILE
STA 547+00 TO STA 577+00

DATE: OCT 2018
SCALE: AS SHOWN
DRAWN BY: AMT
CHECKED BY: YZ
PROJECT NO. : 5367-0038

06-26-2019
NORTH CAROLINA PROFESSIONAL SEAL 039007 ENGINEER DAVID J. KLIMAS

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

SHEET NO: CP-16

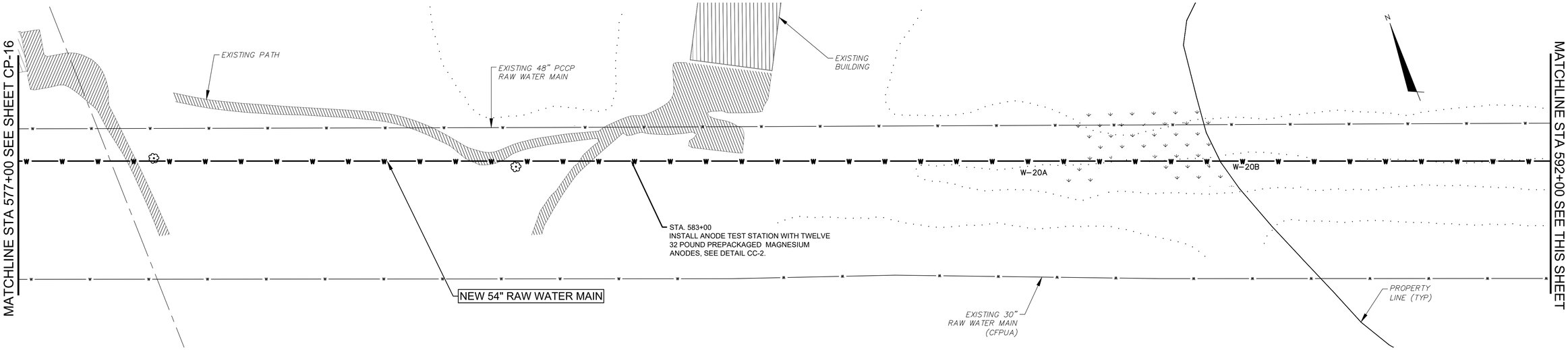
ENspecialty services

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
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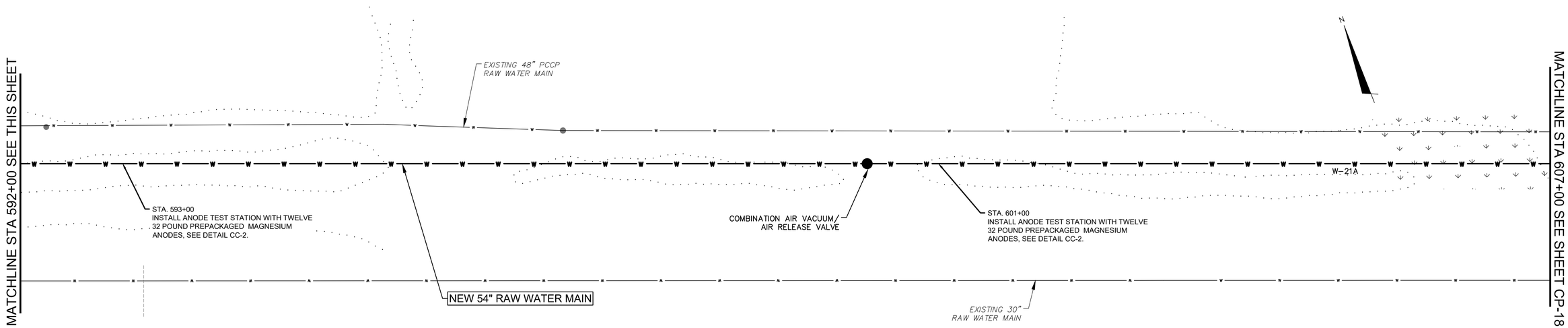
MATCHLINE STA 577+00 SEE SHEET CP-16

MATCHLINE STA 592+00 SEE THIS SHEET



MATCHLINE STA 592+00 SEE THIS SHEET

MATCHLINE STA 607+00 SEE SHEET CP-18



50' 0 50' 100'

SCALE: 1"=50' (Horiz.)

54" RAW WATER MAIN PLAN AND PROFILE STA 577+00 TO STA 607+00

DATE: OCT 2018
SCALE: AS SHOWN
DRAWN BY: AMT
CHECKED BY: YZ
PROJECT NO. : 5367-0038

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

06-26-2019
NORTH CAROLINA PROFESSIONAL SEAL 039007 ENGINEER DAVID J. KLIMAS

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

SHEET NO: CP-17

ENspecialty services

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
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MATCHLINE STA 607+00 SEE SHEET CP-17

MATCHLINE STA 622+00 SEE THIS SHEET

MEDLIN RD NE

PROPERTY LINE (TYP)

EXISTING 48" PCCP RAW WATER MAIN

W–21B

W–22B

W–22A

STA. 613+00
INSTALL ANODE TEST STATION WITH TWELVE 32 POUND PREPACKAGED MAGNESIUM ANODES, SEE DETAIL CC-2.

NEW 54" RAW WATER MAIN

EXISTING 30" RAW WATER MAIN (CFPUA)

N

MATCHLINE STA 622+00 SEE THIS SHEET

EXISTING BUILDINGS

PROPERTY LINE (TYP)

EXISTING 48" PCCP RAW WATER MAIN

STA. 623+00
INSTALL ANODE TEST STATION WITH TWELVE 32 POUND PREPACKAGED MAGNESIUM ANODES, SEE DETAIL CC-2.

NEW 54" RAW WATER MAIN

EXISTING 30" PCCP RAW WATER MAIN (CFPUA)

GOOSE NECK RD (SR 1421)

BLUE BANKS LOOP RD (SR 1422)

EXISTING ARV

R–10A

R–10B

R–10C

COMBINATION AIR VACUUM AIR RELEASE VALVE

STA. 635+00
INSTALL ANODE TEST STATION WITH TWELVE 32 POUND PREPACKAGED MAGNESIUM ANODES, SEE DETAIL CC-2.

STA. 636+75 OR EXISTING WM STA.
INSTALL 54" INSULATING FLANGE AND IJ TEST STATION, SEE DETAIL CC-1..

STA. 636+50 OR EXISTING WM STA
INSTALL 54" INSULATING FLANGE AND IJ TEST STATION, SEE DETAIL CC-1..

MATCHLINE STA 637+00 SEE SHEET CP-19

N

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

54" RAW WATER MAIN
PLAN AND PROFILE
STA 607+00 TO STA 637+00

DATE: OCT 2018
SCALE: AS SHOWN
DRAWN BY: AMT
CHECKED BY: YZ
PROJECT NO. : 5367–0038

06-26-2019
NORTH CAROLINA PROFESSIONAL SEAL 039007 ENGINEER DAVID J. KLIMAS

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

SHEET NO: CP-18

ENspecialty services

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	06/2019

MATCHLINE STA 637+00 SEE SHEET CP-18

MATCHLINE STA 652+00 SEE THIS SHEET

EXISTING 48" PCCP RAW WATER MAIN

A–7

STA. 640+00
INSTALL ANODE TEST STATION WITH TWELVE 32 POUND PREPACKAGED MAGNESIUM ANODES, SEE DETAIL CC-2.

NEW 54" RAW WATER MAIN

STA. 646+00
INSTALL ANODE TEST STATION WITH TWELVE 32 POUND PREPACKAGED MAGNESIUM ANODES, SEE DETAIL CC-2.

PROPERTY LINE (TYP)

EXISTING 30" RAW WATER MAIN (CFPUA)

MATCHLINE STA 652+00 SEE THIS SHEET

MATCHLINE STA 667+00 SEE SHEET CP-20

EXISTING 48" PCCP RAW WATER MAIN

COMBINATION AIR VACUUM/ AIR RELEASE VALVE

A–8

STA. 654+00
INSTALL ANODE TEST STATION WITH TWELVE 32 POUND PREPACKAGED MAGNESIUM ANODES, SEE DETAIL CC-2.

NEW 54" RAW WATER MAIN

EXISTING 30" RAW WATER MAIN (CFPUA)

PROPERTY LINE (TYP)

STA. 664+00
INSTALL ANODE TEST STATION WITH TWELVE 32 POUND PREPACKAGED MAGNESIUM ANODES, SEE DETAIL CC-2.

50' 0 50' 100'

SCALE: 1"=50' (Horiz.)

ENspecialty services

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

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NORTH CAROLINA PROFESSIONAL SEAL 039007 ENGINEER DAVID J. KLIMAS

54" RAW WATER MAIN PLAN AND PROFILE STA 637+00 TO STA 667+00

DATE: OCT 2018
SCALE: AS SHOWN
DRAWN BY: AMT
CHECKED BY: YZ
PROJECT NO. : 5367–0038

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

SHEET NO: CP-19

MATCHLINE STA 667+00 SEE SHEET CP-19

EXISTING FENCE

EXISTING 48" PCCP RAW WATER MAIN

EXISTING ARV

VERNON RD (SR 1423)

MATCHLINE STA 682+00 SEE THIS SHEET

R-11A

R-11B

NEW 54" RAW WATER MAIN

STA. 673+24
INSTALL ANODE TEST STATION WITH TWELVE 32 POUND PREPACKAGED MAGNESIUM ANODES, SEE DETAIL CC-2.

PROPERTY LINE (TYP)

EXISTING 30" RAW WATER MAIN (CFPUA)

MATCHLINE STA 682+00 SEE THIS SHEET

MATCHLINE STA 697+00 SEE SHEET CP-21

EXISTING 48" PCCP RAW WATER MAIN

STA. 684+00
INSTALL ANODE TEST STATION WITH TWELVE 32 POUND PREPACKAGED MAGNESIUM ANODES, SEE DETAIL CC-2.

STA. 694+00
INSTALL ANODE TEST STATION WITH TWELVE 32 POUND PREPACKAGED MAGNESIUM ANODES, SEE DETAIL CC-2.

NEW 54" RAW WATER MAIN

PROPERTY LINE (TYP)

EXISTING 30" RAW WATER MAIN (CFPUA)

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

ENspecialty services

Cape Fear Public Utility Authority
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06-26-2019
NORTH CAROLINA PROFESSIONAL SEAL 039007 ENGINEER DAVID J. KLIMAS

PLAN AND PROFILE
STA 667+00 TO STA 697+00

CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: OCT 2018
SCALE: AS SHOWN
DRAWN BY: AMT
CHECKED BY: YZ
PROJECT NO. : 5367-0038

SHEET NO:
CP-20

MATCHLINE STA 697+00 SEE SHEET CP-20

W–23A

W–23B

NEW 54" RAW WATER MAIN

EXISTING 48" PCCP RAW WATER MAIN

EXISTING 30" RAW WATER MAIN (CFPUA)

PROPERTY LINE (TYP)

EXISTING DRIVEWAY

EXISTING TENNIS COURT

EXISTING FENCE

STA. 707+50
INSTALL ANODE TEST STATION WITH TWELVE 32 POUND PREPACKAGED MAGNESIUM ANODES, SEE DETAIL CC-2.

STA. 708+74
INSTALL CASING TEST STATION, SEE DETAIL CC-3.

R–12A

R–12B

EXISTING BUILDING

STA. 709+84
INSTALL CASING TEST STATION, SEE DETAIL CC-3.

MT MISERY RD (SR 1426)
(ASPHALT)

N

MATCHLINE STA 712+00 SEE THIS SHEET

MATCHLINE STA 712+00 SEE THIS SHEET

EXISTING BUILDING

PROPERTY LINE (TYP)

EXISTING 48" PCCP RAW WATER MAIN

STA. 714+00
INSTALL ANODE TEST STATION WITH TWELVE 32 POUND PREPACKAGED MAGNESIUM ANODES, SEE DETAIL CC-2.

NEW 54" RAW WATER MAIN

EXISTING ARV

A–9

STA. 722+22
INSTALL ANODE TEST STATION WITH TWELVE 32 POUND PREPACKAGED MAGNESIUM ANODES, SEE DETAIL CC-2.

COMBINATION AIR VACUUM/ AIR RELEASE VALVE

EXISTING 30" RAW WATER MAIN (CFPUA)

N

MATCHLINE STA 727+00 SEE SHEET CP-22

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

54" RAW WATER MAIN
PLAN AND PROFILE
STA 697+00 TO STA 727+00

DATE: OCT 2018
SCALE: AS SHOWN
DRAWN BY: AMT
CHECKED BY: YZ
PROJECT NO. : 5367–0038

06-26-2019
NORTH CAROLINA PROFESSIONAL SEAL 039007 ENGINEER DAVID J. KLIMAS

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

SHEET NO: CP-21

ENspecialty services

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	06/2019

MATCHLINE STA 727+00 SEE SHEET CP-21

MATCHLINE STA 742+00 SEE THIS SHEET

EXISTING 48" PCCP RAW WATER MAIN

STA. 734+00
INSTALL ANODE TEST STATION WITH TWELVE 32 POUND PREPACKAGED MAGNESIUM ANODES, SEE DETAIL CC-2.

NEW 54" RAW WATER MAIN

EXISTING 30" RAW WATER MAIN (CFPUA)

PROPERTY LINE (TYP)

N

MATCHLINE STA 742+00 SEE THIS SHEET

RATTLESNAKE BRANCH

STA. 744+05
INSTALL AC GROUND MAT TEST STATION, SEE DETAIL CC-15.

STA. 744+00
INSTALL ANODE TEST STATION WITH TWELVE 32 POUND PREPACKAGED MAGNESIUM ANODES, SEE DETAIL CC-2.

PROPERTY LINE (TYP)

NEW 54" RAW WATER MAIN

COMBINATION AIR VACUUM/ AIR RELEASE VALVE

EXISTING 48" PCCP RAW WATER MAIN

COMBINATION AIR VACUUM/ AIR RELEASE VALVE

STA. 756+00
INSTALL ANODE TEST STATION WITH TWELVE 32 POUND PREPACKAGED MAGNESIUM ANODES, SEE DETAIL CC-2.

STA. 756+05
INSTALL AC GROUND MAT TEST STATION, SEE DETAIL CC-15.

EXISTING 30" RAW WATER MAIN

EXISTING 48" PCCP RAW WATER MAIN

N

MATCHLINE STA 757+00 SEE SHEET CP-23

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

54" RAW WATER MAIN
PLAN AND PROFILE
STA 727+00 TO STA 757+00

DATE: OCT 2018
SCALE: AS SHOWN
DRAWN BY: AMT
CHECKED BY: YZ
PROJECT NO. : 5367-0038

ENspecialty services

Cape Fear Public Utility Authority
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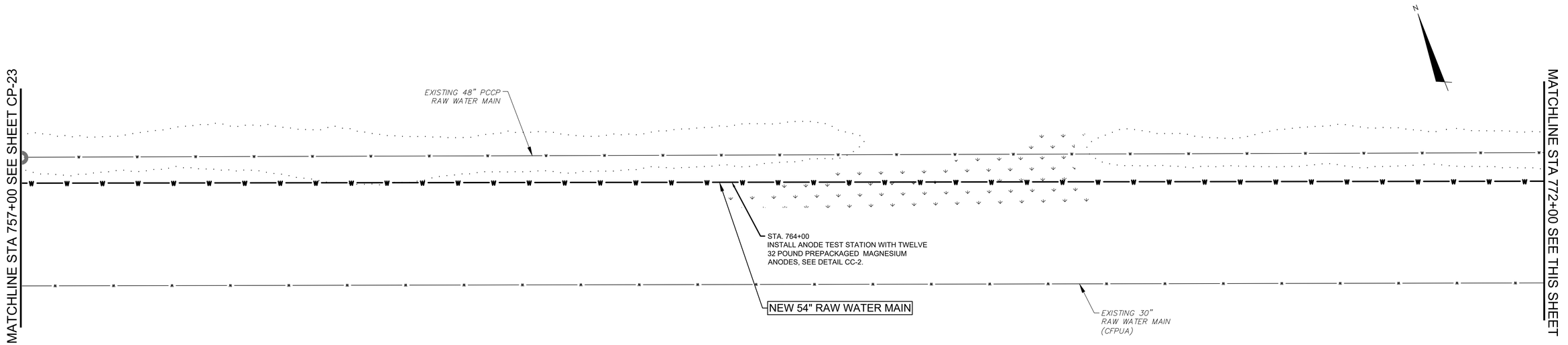
REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	06/2019

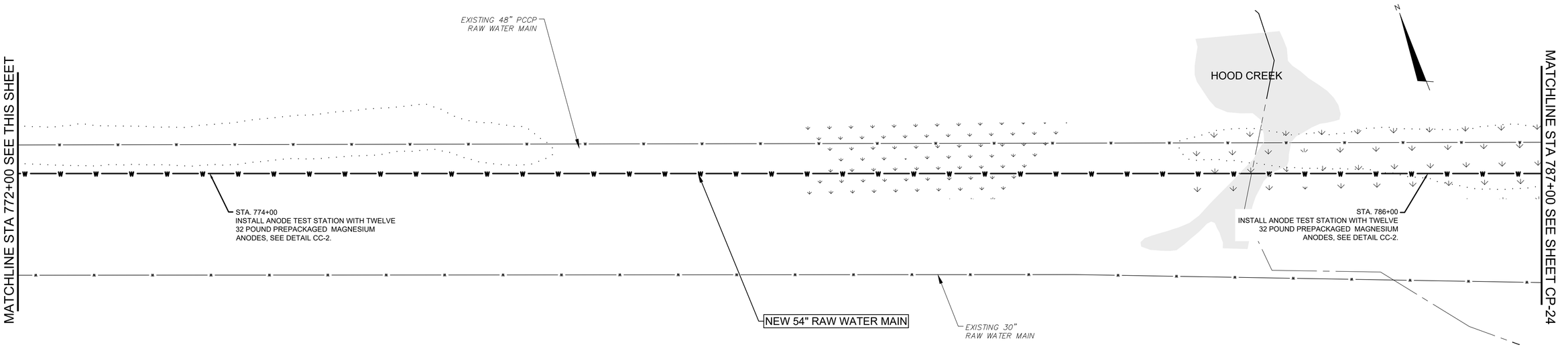
06-26-2019
NORTH CAROLINA PROFESSIONAL SEAL 039007 ENGINEER DAVID J. KLIMAS

CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

SHEET NO: CP-22





50' 0 50' 100'

SCALE: 1"=50' (Horiz.)

54" RAW WATER MAIN
PLAN AND PROFILE
STA 757+00 TO STA 787+00

DATE: OCT 2018
SCALE: AS SHOWN
DRAWN BY: AMT
CHECKED BY: YZ
PROJECT NO. : 5367-0038

06-26-2019
NORTH CAROLINA PROFESSIONAL SEAL 039007 ENGINEER DAVID J. KLIMAS

CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

SHEET NO: **CP-23**

ENspecialty services

Cape Fear Public Utility Authority
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235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

MATCHLINE STA 787+00 SEE SHEET CP-23

SITE OF FUTURE GROUND STORAGE TANKS

EXISTING 48" PCCP RAW WATER MAIN

COMBINATION AIR VACUUM/ AIR RELEASE VALVE

STA. 792+82
INSTALL ANODE TEST STATION WITH TWELVE 32 POUND PREPACKAGED MAGNESIUM ANODES, SEE DETAIL CC-2.

NEW 54" RAW WATER MAIN

EXISTING 30" RAW WATER MAIN (CFPUA)

COMBINATION AIR VACUUM/ AIR RELEASE VALVE

MATCHLINE STA 802+00 SEE THIS SHEET

MATCHLINE STA 802+00 SEE SHEET CP-25

STA. 809+20
INSTALL 48" INSULATING FLANGE AND IJ TEST STATION, SEE DETAIL CC-1.

EXISTING 36" WATER MAIN

EXISTING METER AND ISOLATION VALVES

STA. 809+25
INSTALL 48" INSULATING FLANGE AND IJ TEST STATION, SEE DETAIL CC-1.

STA. 809+65
INSTALL 48" INSULATING FLANGE AND IJ TEST STATION, SEE DETAIL CC-1.

EXISTING 48" PCCP RAW WATER MAIN

LOD

W-26B

STA. 804+00
INSTALL ANODE TEST STATION WITH TWELVE 32 POUND PREPACKAGED MAGNESIUM ANODES, SEE DETAIL CC-2.

NEW 54" RAW WATER MAIN

PROPERTY LINE (TYP)

EXISTING 30" RAW WATER MAIN (CFPUA)

STA. 814+00
INSTALL ANODE TEST STATION WITH TWELVE 32 POUND PREPACKAGED MAGNESIUM ANODES, SEE DETAIL CC-2.

MATCHLINE STA 817+00 SEE SHEET CP-25

50' 0 50' 100'
SCALE: 1"=50' (Horiz.)

54" RAW WATER MAIN
PLAN AND PROFILE
STA 787+00 TO STA 817+00

DATE: OCT 2018
SCALE: AS SHOWN
DRAWN BY: AMT
CHECKED BY: YZ
PROJECT NO. : 5367-0038

06-26-2019
NORTH CAROLINA PROFESSIONAL SEAL 039007 ENGINEER DAVID J. KLIMAS

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

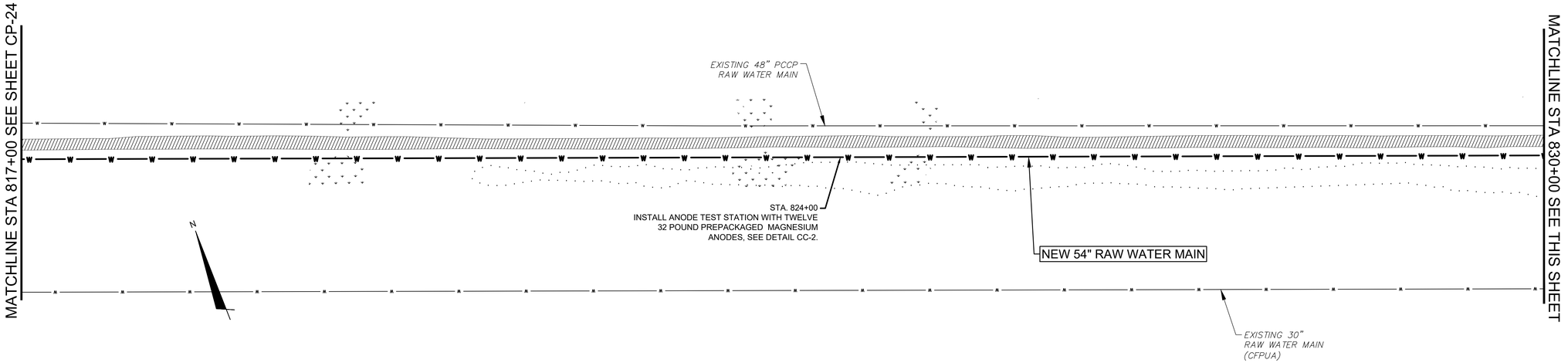
CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

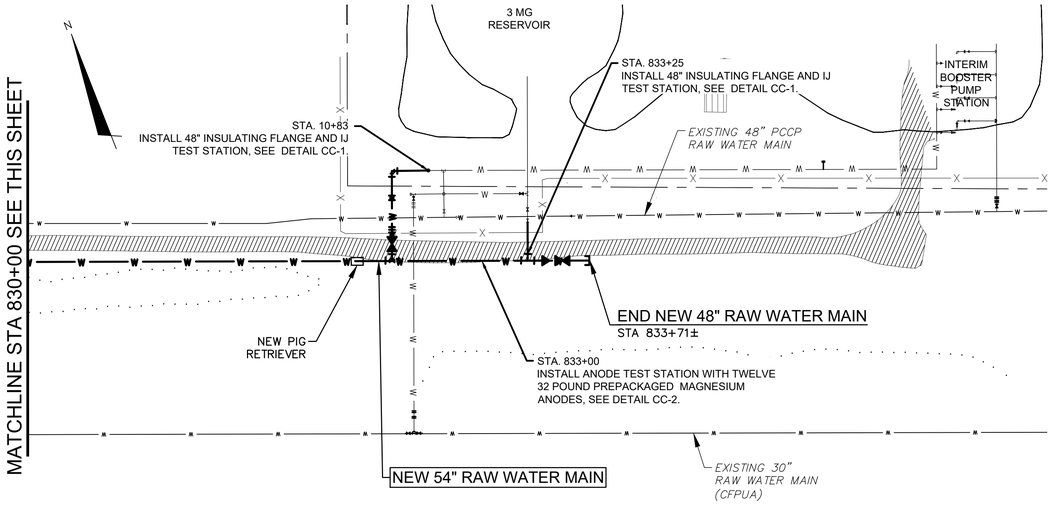
SHEET NO: CP-24

ENspecialty services

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	06/2019





50' 0 50' 100'

SCALE: 1"=50' (Horiz.)

ENspecialty services

Cape Fear Public Utility Authority
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REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	06/2019

06-26-2019
NORTH CAROLINA PROFESSIONAL
SEAL
039007
ENGINEER
DAVID J. KLIMAS

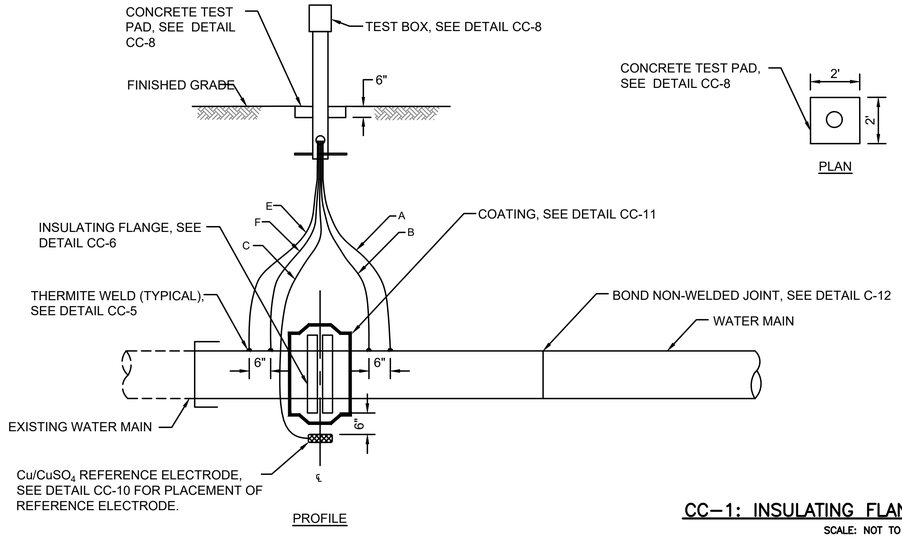
54" RAW WATER MAIN
PLAN AND PROFILE
STA 817+00 TO STA 833+71

DATE: OCT 2018
SCALE: AS SHOWN
DRAWN BY: AMT
CHECKED BY: YZ
PROJECT NO. : 5367–0038

CAPE FEAR
PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW
WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

SHEET NO:
CP-25



PROFILE

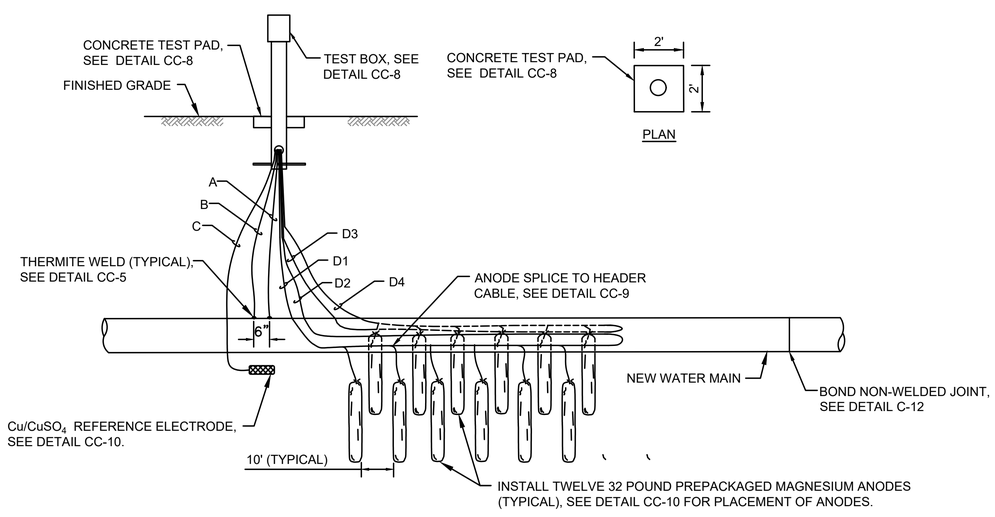
WIRING SCHEDULE					
DESCRIPTION	WIRE	TEST STATION TERMINAL	AWG WIRE SIZE	TYPE OF INSULATION	COLOR OF INSULATION
NEW WATER MAIN	A B	1 3	#8 #10	THWN/THHN THWN/THHN	BLUE BLUE
PERMANENT REFERENCE ELECTRODE	C	6	#12	THWN/THHN	YELLOW
EXISTING PIPE	E F	2 5	#8 #10	THWN/THHN THWN/THHN	WHITE WHITE

NOTES:

1. DO NOT SET TEST STATION IN ROADWAY. PLACE TEST BOX IN NON-PAVED AREA NEXT TO ROADWAY. ROUTE ALL WIRES TO PVC CONDUIT TO FINAL TEST BOX LOCATION IF THE TEST BOX IS NOT LOCATED DIRECTLY ABOVE THE MAIN IN A NON-PAVED AREA.
2. MAINTAIN SUFFICIENT SLACK IN THE TEST WIRES SO THAT THE WIRES CAN EXTEND A MINIMUM OF 18 INCHES FROM THE TEST BOX.

CC–1: INSULATING FLANGE TEST STATION

SCALE: NOT TO SCALE



WIRING SCHEDULE					
DESCRIPTION	WIRE	TEST STATION TERMINAL	AWG WIRE SIZE	TYPE OF INSULATION	COLOR OF INSULATION
NEW WATER MAIN	A B	1 3	#8 #10	THWN/THHN THWN/THHN	BLUE BLUE
PERMANENT REFERENCE ELECTRODE	C	6	#12	THWN/THHN	YELLOW
PREPACKAGED ANODE	D1 D2 D3 D4	4 4 7 7	#8 #8 #8 #8	HMWPE HMWPE HMWPE HMWPE	BLACK BLACK BLACK BLACK

NOTES:

1. DO NOT SET TEST STATION IN ROADWAY. PLACE TEST BOX IN NON-PAVED AREA NEXT TO ROADWAY. ROUTE ALL WIRES TO PVC CONDUIT TO FINAL TEST BOX LOCATION IF THE TEST BOX IS NOT LOCATED DIRECTLY ABOVE THE MAIN IN A NON-PAVED AREA.
2. MAINTAIN SUFFICIENT SLACK IN THE TEST WIRES SO THAT THE WIRES CAN EXTEND A MINIMUM OF 18 INCHES FROM THE TEST BOX.
3. INSTALL 0.01 OHM SHUNT BETWEEN TERMINAL #1 AND #4. INSTALL COPPER BAR BETWEEN TERMINAL #4 AND #7.

CC–2: ANODE TEST STATION

SCALE: NOT TO SCALE

ENspecialty services

Cape Fear Public Utility Authority
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NORTH CAROLINA PROFESSIONAL SEAL 039007 ENGINEER DAVID J. KLIMAS

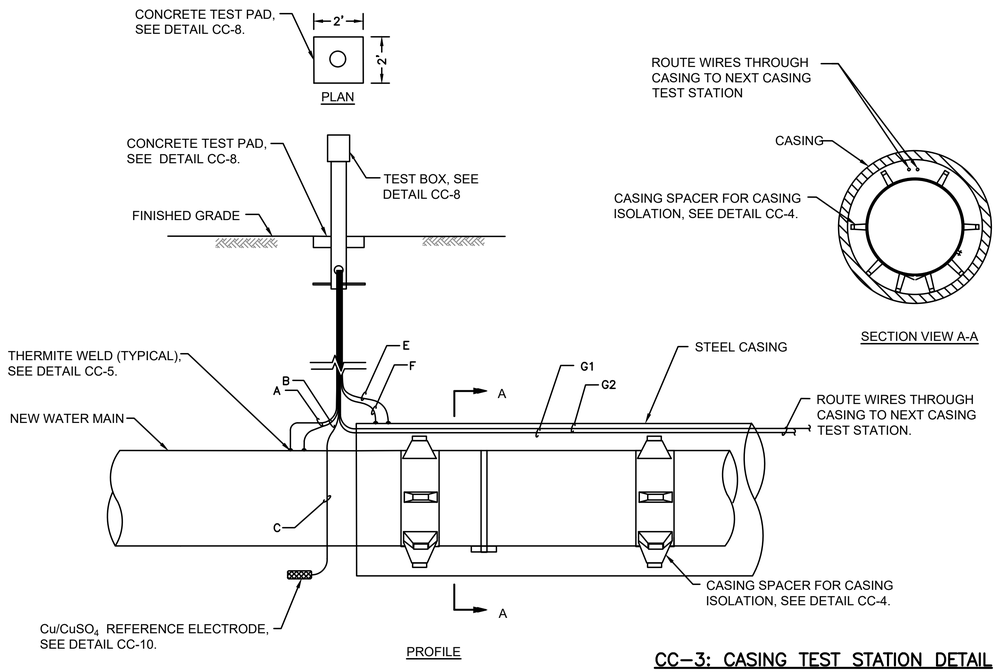
54" RAW WATER MAIN CATHODIC PROTECTION DETAILS 1

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

DATE: OCT 2018
SCALE: AS SHOWN
DRAWN BY: AMT
CHECKED BY: YZ
PROJECT NO. : 5367–0038

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

SHEET NO: CP-26



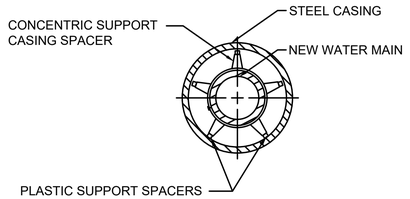
CC–3: CASING TEST STATION DETAIL

SCALE: NOT TO SCALE

WIRING SCHEDULE					
DESCRIPTION	WIRE	TEST STATION TERMINAL	AWG WIRE SIZE	TYPE OF INSULATION	COLOR OF INSULATION
NEW WATER MAIN	A B	1 3	#8 #10	THWN/THHN THWN/THHN	BLUE BLUE
PERMANENT REFERENCE ELECTRODE	C	6	#12	THWN/THHN	YELLOW
CASING PIPE	E F	2 5	#8 #10	THWN/THHN THWN/THHN	WHITE WHITE
ADJACENT CASING TEST STATION	G1 G2	7 7	#8 #8	HMWPE HMWPE	RED RED

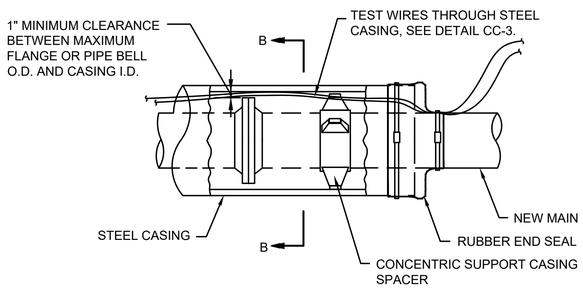
NOTES:

1. MAINTAIN SUFFICIENT SLACK IN THE TEST WIRES SO THAT THE WIRES CAN EXTEND A MINIMUM OF 18" FROM THE TEST BOX.
2. DO NOT SET TEST STATION IN ROADWAY. PLACE TEST BOX IN NON-PAVED AREA NEXT TO ROADWAY. ROUTE ALL WIRES TO PVC CONDUIT TO FINAL TEST BOX LOCATION IF THE TEST BOX IS NOT LOCATED DIRECTLY ABOVE THE MAIN IN A NON-PAVED AREA.



NOTES:

1. INSTALL RUBBER END SEALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
2. EACH LENGTH OF PIPE WITHIN THE TUNNEL SHALL BE SUPPORTED AND ELECTRICALLY ISOLATED FROM THE TUNNEL BY THE USE OF INSULATING CASING SPACERS. THE NUMBER OF CASING SPACERS AND THE SPACING BETWEEN THEM SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER OF THE CASING SPACERS, HOWEVER A MINIMUM OF THREE CASING SPACERS SHALL BE REQUIRED FOR EACH PIPE LENGTH. THE INSULATING SPACERS SHALL BE SIZED TO BE CAPABLE OF SUPPORTING THE WEIGHT OF THE CARRIER PIPE FILLED WITH WATER.

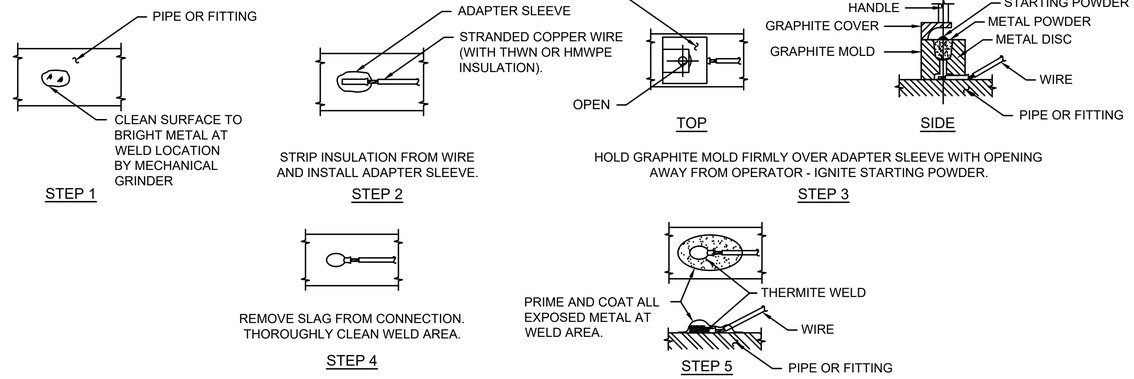


CC–4: CASING ISOLATION DETAIL

SCALE: NOT TO SCALE

NOTE:

THERMITE WELDS MADE TO PIPE AND/OR FITTINGS SHALL BE COATED WITH A PREFABRICATED ONE PIECE PLASTIC CAP FILLED WITH ELASTOMERIC MATERIAL, ROYSTON HANDY-CAP OR APPROVED EQUAL.



CC–5: THERMITE WELD

SCALE: NOT TO SCALE

ENspecialty services

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

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06-26-2019
NORTH CAROLINA PROFESSIONAL SEAL 039007 ENGINEER DAVID J. KLIMAS

54" RAW WATER MAIN CATHODIC PROTECTION DETAILS 2

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

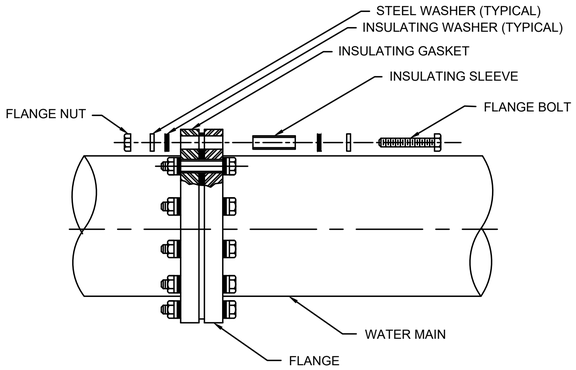
DATE: OCT 2018
SCALE: AS SHOWN
DRAWN BY: AMT
CHECKED BY: YZ
PROJECT NO. : 5367–0038

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

SHEET NO: CP-27

NOTES:

1. AFTER ASSEMBLY, TEST TO VERIFY THAT ISOLATION IS EFFECTIVE. IF ISOLATION IS NOT EFFECTIVE, REPAIR AS NECESSARY AND RETEST. THIS PROCESS SHALL CONTINUE UNTIL ISOLATION IS VERIFIED AS EFFECTIVE.
2. AFTER VERIFYING EFFECTIVE ISOLATION, COAT THE ENTIRE FLANGE AND ALL EXPOSED METAL INCLUDING BOLTS, NUTS, AND WASHERS WITH FOUR COMPONENTS OF DENSO OR TRENTON WAX TAPE COATING SYSTEM. COATING SYSTEM SHALL EXTEND A MINIMUM OF 12 INCHES ON EITHER SIDE OF FLANGE.
3. ALL INSULATING FLANGES TO BE PROVIDED WITH TEST STATION, SEE DETAIL CC-1.

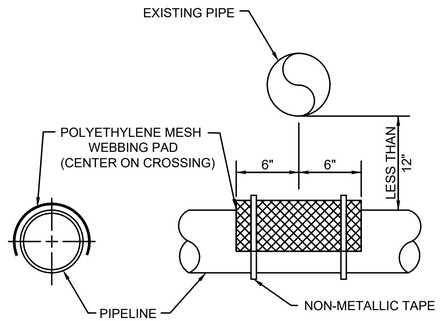


CC–6: INSULATING FLANGE

SCALE: NOT TO SCALE

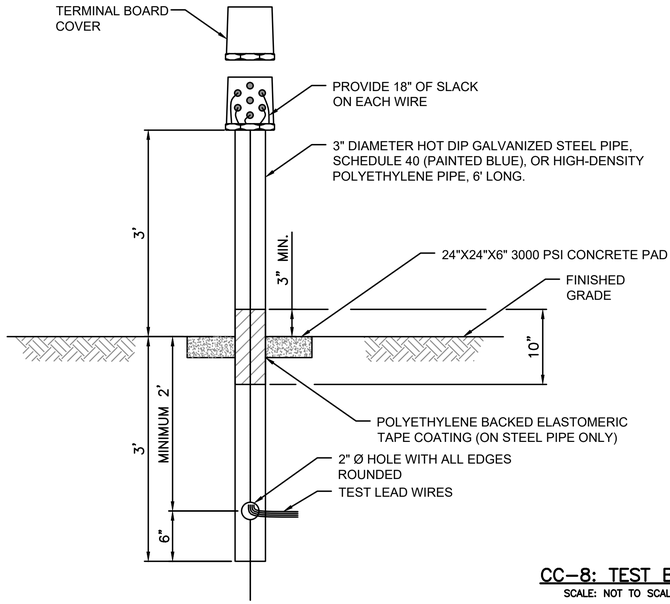
NOTE:

USE ONLY WHEN PIPES ARE LESS THAN 12" APART.



CC–7: SEPARATOR TO AVOID ELECTRICAL CONTACT

SCALE: NOT TO SCALE

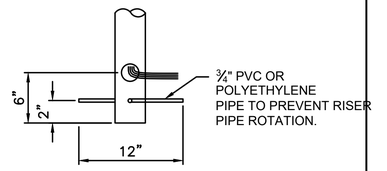


CC–8: TEST BOX

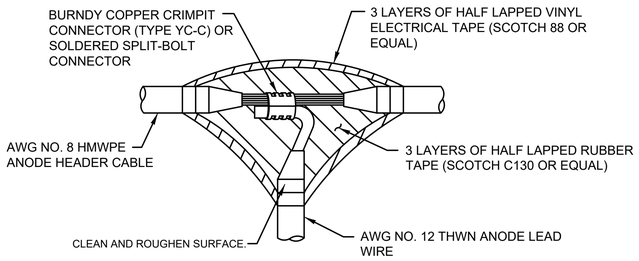
SCALE: NOT TO SCALE

NOTES:

1. WHERE TEST STATION IS NOT DIRECTLY OVER PIPELINE, USE DETECTABLE WARNING TAPE (YELLOW) OVER TEST WIRES, SEE SPECIFICATIONS.
2. LOCATE TEST STATION OUTSIDE OF THE PROPOSED OR EXISTING PAVED AREAS.



POLYETHYLENE PIPE INSTALLATION ONLY

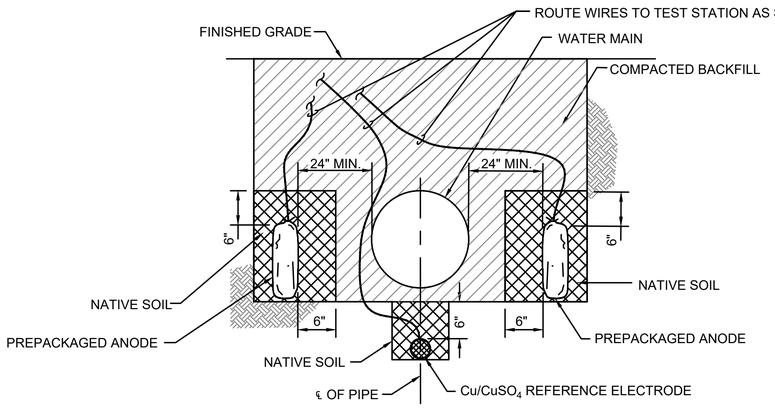


CC–9: ANODE HEADER CABLE SPLICE

SCALE: NOT TO SCALE

NOTE:

1. INSTALL ANODE AND REFERENCE ELECTRODE IN SOIL BACKFILL. DO NOT BACKFILL ANODE OR REFERENCE ELECTRODE WITH SAND OR STONE.
2. THE TOP OF THE ANODE SHOULD BE NO HIGHER THAN THE CROWN OF THE WATER MAIN, AND NO LOWER THAN THE SPRINGLINE OF THE WATER MAIN.



CC–10: ANODE AND REFERENCE ELECTRODE PLACEMENT

SCALE: NOT TO SCALE

ENspecialty services

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

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06-26-2019
NORTH CAROLINA PROFESSIONAL SEAL 039007 ENGINEER DAVID J. KLIMAS

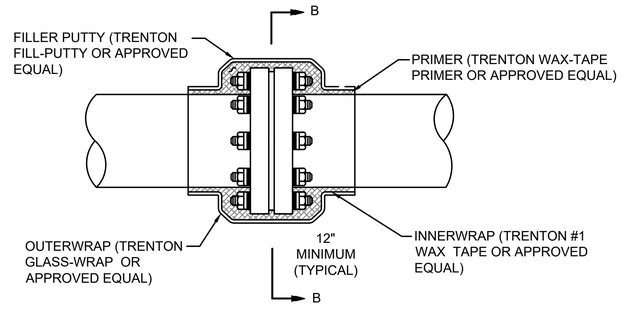
54" RAW WATER MAIN CATHODIC PROTECTION DETAILS 3

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

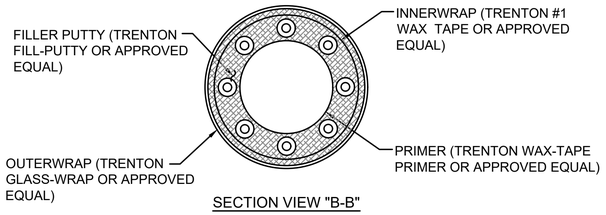
CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: OCT 2018
SCALE: AS SHOWN
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PROJECT NO. : 5367–0038

SHEET NO: CP-28



SIDE VIEW



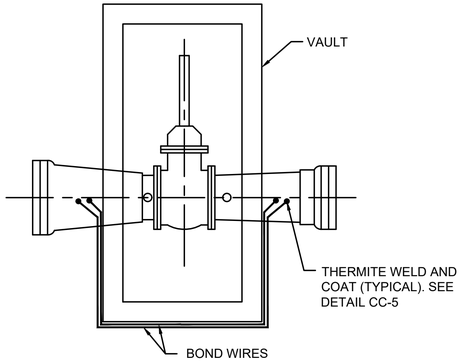
SECTION VIEW "B-B"

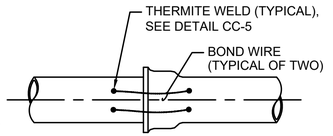
CC–11: COATING OF INSULATING FLANGE DETAIL

SCALE: NOT TO SCALE

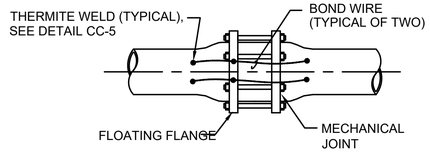
NOTES:

1. BOND ALL NON-WELDED JOINTS ON UNDERGROUND PIPING EXCEPT INSULATED JOINTS.
2. THERMITE WELD BONDING WIRES TO TOP OF PIPE OR FITTINGS, SEE DETAIL CC-5.
3. WIRE SIZE FOR BONDING JOINTS SHALL BE AS FOLLOWS:
   12" & SMALLER - AWG NO. 6
   16" TO 36" - AWG NO. 4
   LARGER THAN 36" - AWG NO. 2
4. PROVIDE SLACK IN ALL WIRES AND FASTEN TO VAULT TO PROTECT WIRES FROM DAMAGE.

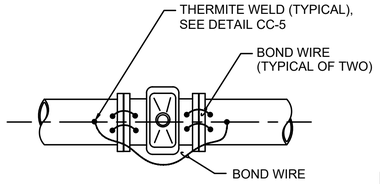




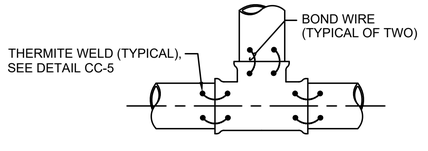
TYPICAL PIPE JOINT BOND



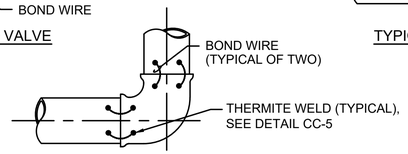
TYPICAL MECHANICAL COUPLING BOND



TYPICAL BONDING OF VALVE



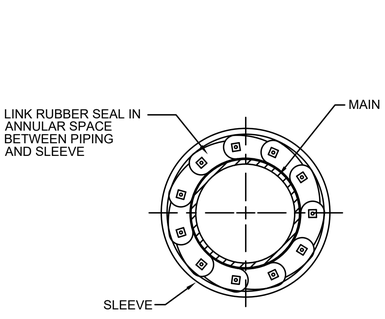
TYPICAL BONDING OF TEE

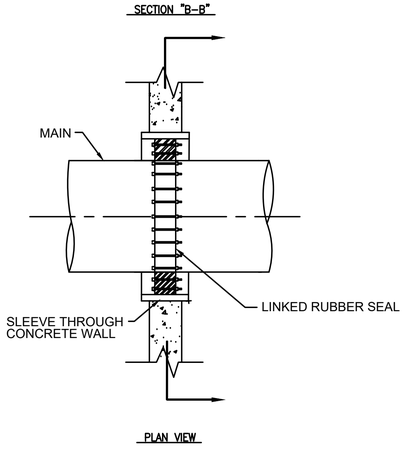


TYPICAL BONDING OF BEND, REDUCER OR SOLID SLEEVE

CC–12: TYPICAL JOINT BONDING FOR NON–WELDED JOINT

SCALE: NOT TO SCALE





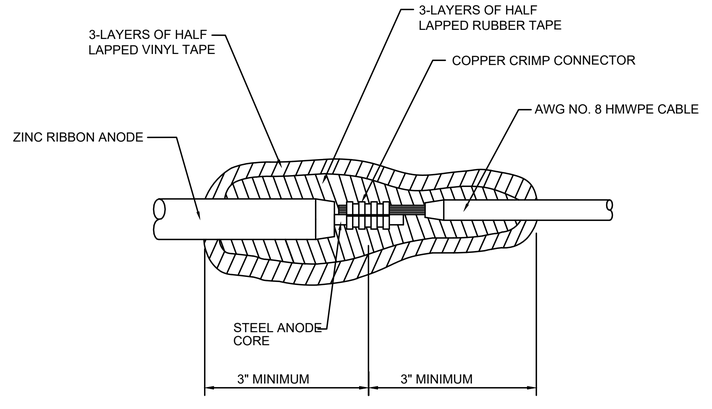
PLAN VIEW

NOTE:

INSTALL LINKED RUBBER SEAL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDED PROCEDURE.

CC–13: LINKED RUBBER SEAL

SCALE: NOT TO SCALE



CC–14: ZINC RIBBON CABLE SPLICE

SCALE: NOT TO SCALE

ENspecialty services

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	06/2019

54" RAW WATER MAIN CATHODIC PROTECTION DETAILS 4

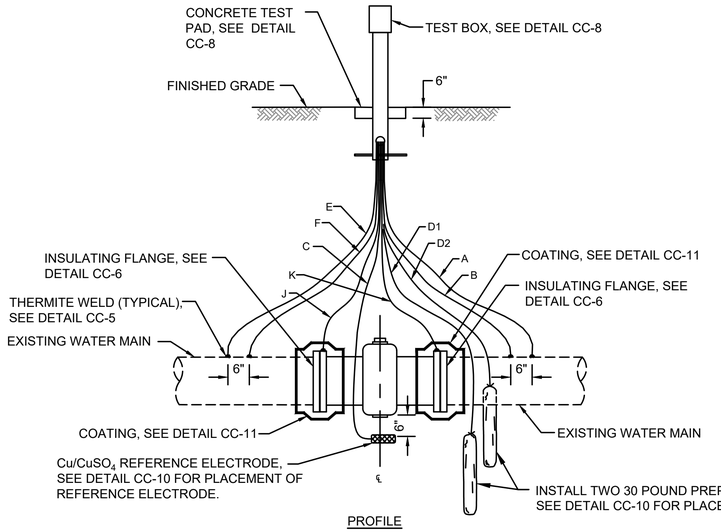
06-26-2019
NORTH CAROLINA PROFESSIONAL SEAL 039007 ENGINEER DAVID J. KLIMAS

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: OCT 2018
SCALE: AS SHOWN
DRAWN BY: AMT
CHECKED BY: YZ
PROJECT NO. : 5367–0038

SHEET NO: CP-29



PROFILE

WIRING SCHEDULE					
DESCRIPTION	WIRE	TEST STATION TERMINAL	AWG WIRE SIZE	TYPE OF INSULATION	COLOR OF INSULATION
EXISTING PIPE	A B	1 1	#8 #10	THWN/THHN THWN/THHN	WHITE WHITE
PERMANENT REFERENCE ELECTRODE	C	7	#12	THWN/THHN	YELLOW
ZINC ANODE	D1 D2	5 5	#12 #12	HMWPE HMWPE	BLACK BLACK
EXISTING PIPE	E F	6 6	#8 #10	THWN/THHN THWN/THHN	WHITE WHITE
VALVE	J K	3 4	#8 #10	THWN/THHN THWN/THHN	BLUE BLUE

NOTES:

1. MAINTAIN SUFFICIENT SLACK IN THE TEST WIRES SO THAT THE WIRES CAN EXTEND A MINIMUM OF 18" FROM THE TEST BOX.
2. DO NOT SET TEST STATION IN ROADWAY. PLACE TEST BOX IN NON-PAVED AREA NEXT TO ROADWAY. ROUTE ALL WIRES TO PVC CONDUIT TO FINAL TEST BOX LOCATION IF THE TEST BOX IS NOT LOCATED DIRECTLY ABOVE THE MAIN IN A NON-PAVED AREA.
3. INSTALL 0.01 OHM SHUNT BETWEEN TERMINAL #3 AND #5.

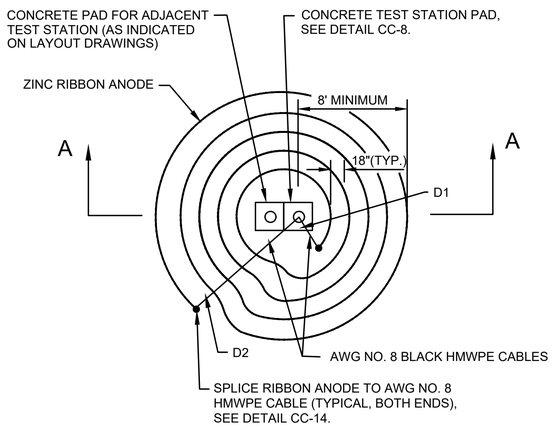
CC–15: VALVE INSULATING FLANGES WITH ANODES TEST STATION

SCALE: NOT TO SCALE

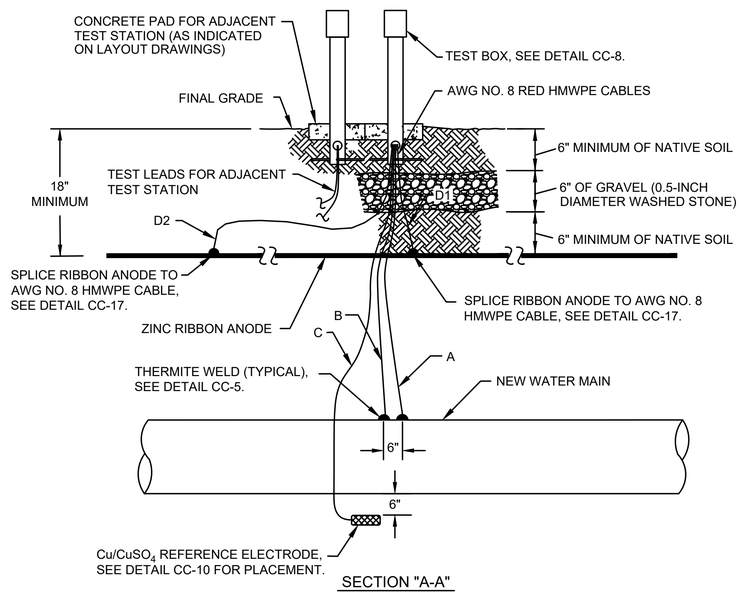
NOTES:

1. INSTALL 0.01 OHM SHUNT BETWEEN TERMINALS #1 AND #4.
2. DO NOT SET TEST STATION IN ROADWAY. PLACE TEST BOX IN NON-PAVED AREA NEXT TO ROADWAY. ROUTE ALL WIRES IN 2"Ø SCHEDULE 80 PVC CONDUIT TO FINAL TEST BOX LOCATION IF TEST BOX IS NOT LOCATED DIRECTLY ABOVE THE MAIN IN A NON-PAVED AREA.
3. MAINTAIN SUFFICIENT SLACK IN THE TEST WIRES SO THAT THE WIRES CAN EXTEND A MINIMUM OF 18" FROM THE TEST BOX.

WIRING SCHEDULE					
DESCRIPTION	WIRE	TEST STATION TERMINAL	AWG WIRE SIZE	TYPE OF INSULATION	COLOR OF INSULATION
NEW WATER MAIN	A B	1 3	#8 #10	THWN/THHN THWN/THHN	BLUE BLUE
ZINC RIBBON ANODE	D1 D2	4 7	#8 #8	HMWPE HMWPE	BLACK BLACK
PERMANENT REFERENCE ELECTRODE	C	6	#12	THWN/THHN	YELLOW



PLAN



SECTION "A-A"

CC–16: AC GROUND MAT TEST STATION

SCALE: NOT TO SCALE

ENspecialty services

Cape Fear Public Utility Authority
Stewardship. Sustainability. Service.

REV:	DESCRIPTION	DATE:
0	ISSUED FOR BID – NOT FOR CONSTRUCTION	06/2019

06-26-2019
NORTH CAROLINA PROFESSIONAL SEAL 039007 ENGINEER DAVID J. KLIMAS

54" RAW WATER MAIN CATHODIC PROTECTION DETAILS 5

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

DATE: OCT 2018
SCALE: AS SHOWN
DRAWN BY: AMT
CHECKED BY: YZ
PROJECT NO. : 5367–0038

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

SHEET NO: CP-30

TEST STATION INSALLATION SCHEDULE							
DRAWING #	PIPELINE STATION	PIPE SIZE (IN)	TEST STATION TYPE	DETAIL NUMBER	ANODE #	SIZE (LB)	MATERIAL
	100+45	54	IF	1	-	-	-
	100+50	54	ANODE	2	12	32	MAGNESIUM
	110+50	54	ANODE	2	12	32	MAGNESIUM
	124+50	54	ANODE	2	12	32	MAGNESIUM
	130+50	54	ANODE	2	12	32	MAGNESIUM
	141+50	54	ANODE	2	12	32	MAGNESIUM
	150+50	54	ANODE	2	12	32	MAGNESIUM
	160+50	54	ANODE	2	12	32	MAGNESIUM
	168+50	54	ANODE	2	12	32	MAGNESIUM
	175+50	54	ANODE	2	12	32	MAGNESIUM
	181+50	54	ANODE	2	12	32	MAGNESIUM
	189+00	54	ANODE	2	12	32	MAGNESIUM
	200+50	54	ANODE	2	12	32	MAGNESIUM
	209+27	54	CASING	3	-	-	-
	210+80	54	CASING	3	-	-	-
	211+50	54	ANODE	2	12	32	MAGNESIUM
	224+50	54	ANODE	2	12	32	MAGNESIUM
	231+50	54	ANODE	2	12	32	MAGNESIUM
	243+10	48	IF	1	-	-	-
	243+45	48	IF	1	-	-	-
	244+00	54	ANODE	2	12	32	MAGNESIUM
	251+50	54	ANODE	2	12	32	MAGNESIUM
	261+50	54	ANODE	2	12	32	MAGNESIUM
	271+50	54	ANODE	2	32	12	MAGNESIUM
	280+00	54	ANODE	2	32	12	MAGNESIUM
	291+50	54	ANODE	2	12	32	MAGNESIUM
	301+50	54	ANODE	2	12	32	MAGNESIUM
	307+50	54	ANODE	2	12	32	MAGNESIUM
	321+50	54	ANODE	2	12	32	MAGNESIUM
	331+50	54	ANODE	2	12	32	MAGNESIUM
	331+55	54	AC Ground Mat	16	1	-	ZINC
	341+50	54	ANODE	2	12	32	MAGNESIUM
	341+55	54	AC Ground Mat	16	1	-	MAGNESIUM
	351+50	54	ANODE	2	12	32	MAGNESIUM
	361+50	54	ANODE	2	12	32	MAGNESIUM
	371+50	54	ANODE	2	12	32	MAGNESIUM
	381+50	54	ANODE	2	12	32	MAGNESIUM
	391+50	54	ANODE	2	12	32	MAGNESIUM
	401+50	54	ANODE	2	12	32	MAGNESIUM
	411+50	54	ANODE	2	12	32	MAGNESIUM
	416+40	48	IF	1	-	-	-
	416+51	48	IF/Valve	15	2	32	ZINC
	419+26	54	CASING	3	-	-	-
	420+06	54	CASING	3	-	-	-
	421+50	54	ANODE	2	12	32	MAGNESIUM
	428+13	54	CASING	3	-	-	-
	431+11	54	CASING	3	-	-	-
	434+00	54	ANODE	2	12	32	MAGNESIUM
	434+05	54	AC Ground Mat	16	1	-	ZINC
	441+50	54	ANODE	2	12	32	MAGNESIUM
	441+55	54	AC Ground Mat	16	1	-	ZINC
	451+50	54	ANODE	2	12	32	MAGNESIUM
	458+50	54	ANODE	2	12	32	MAGNESIUM
	467+50	54	ANODE	2	12	32	MAGNESIUM
	477+50	54	ANODE	2	12	32	MAGNESIUM
	484+00	54	ANODE	2	12	32	MAGNESIUM
	491+00	54	ANODE	2	12	32	MAGNESIUM
	499+50	54	ANODE	2	12	32	MAGNESIUM
	508+00	54	ANODE	2	12	32	MAGNESIUM
	515+00	54	ANODE	2	12	32	MAGNESIUM
	526+50	54	ANODE	2	12	32	MAGNESIUM
	536+00	54	ANODE	2	12	32	MAGNESIUM
	543+00	54	ANODE	2	12	32	MAGNESIUM
	553+00	54	ANODE	2	12	32	MAGNESIUM
	563+00	54	ANODE	2	12	32	MAGNESIUM
	573+00	54	ANODE	2	12	32	MAGNESIUM
	583+00	54	ANODE	2	12	32	MAGNESIUM
	593+00	54	ANODE	2	12	32	MAGNESIUM

TEST STATION INSALLATION SCHEDULE							
DRAWING #	PIPELINE STATION	PIPE SIZE (IN)	TEST STATION TYPE	DETAIL NUMBER	ANODE #	SIZE (LB)	MATERIAL
	601+00	54	ANODE	2	12	32	MAGNESIUM
	613+00	54	ANODE	2	12	32	MAGNESIUM
	623+00	54	ANODE	2	12	32	MAGNESIUM
	635+00	54	ANODE	2	12	32	MAGNESIUM
	636+50	48	IF	1	-	-	-
	636+75	48	IF	1	-	-	-
	640+00	54	ANODE	2	12	32	MAGNESIUM
	646+00	54	ANODE	2	12	32	MAGNESIUM
	654+00	54	ANODE	2	12	32	MAGNESIUM
	664+00	54	ANODE	2	12	32	MAGNESIUM
	673+24	54	ANODE	2	12	32	MAGNESIUM
	684+00	54	ANODE	2	12	32	MAGNESIUM
	694+00	54	ANODE	2	12	32	MAGNESIUM
	707+50	54	ANODE	2	12	32	MAGNESIUM
	708+74	54	CASING	3	-	-	-
	709+84	54	CASING	3	-	-	-
	714+00	54	ANODE	2	12	32	MAGNESIUM
	722+22	54	ANODE	2	12	32	MAGNESIUM
	734+00	54	ANODE	2	12	32	MAGNESIUM
	744+00	54	ANODE	2	12	32	MAGNESIUM
	744+05	54	AC Ground Mat	16	1	-	ZINC
	756+00	54	ANODE	2	12	32	MAGNESIUM
	756+05	54	AC Ground Mat	16	1	-	ZINC
	764+00	54	ANODE	2	12	32	MAGNESIUM
	774+00	54	ANODE	2	12	32	MAGNESIUM
	786+00	54	ANODE	2	12	32	MAGNESIUM
	792+82	54	ANODE	2	12	32	MAGNESIUM
	804+00	54	ANODE	2	12	32	MAGNESIUM
	809+20	48	IF	1	-	-	-
	809+25	36	IF	1	-	-	-
	809+65	48	IF	1	-	-	-
	814+00	54	ANODE	2	1	-	MAGNESIUM
	824+00	54	ANODE	2	12	32	MAGNESIUM
	10+83 (48" WM)	48	IF	1	-	-	-
	833+00	54	ANODE	2	12	32	MAGNESIUM
	833+25	48	IF	1	-	-	-

CORROSION NOTES:

1. EXTERNALLY COAT ALL PCCP AND STEEL PIPING AND FITTINGS IN ACCORDANCE WITH THE SPECIFICATIONS.
2. ELECTRICAL ISOLATION IS REQUIRED FOR ALL CONNECTIONS TO NEW WATER MAIN AND BETWEEN DIFFERENT PIPE MATERIALS, SEE DETAIL CC-1.
3. INSTALL SEPERATOR MEASH ON WATER MAIN AT EXISTING UTILITY CROSSINGS IF THERE IS LESS THAN 12 INCHES OF SPACING BETWEEN THEM, SEE DETAIL CC-7.
4. BOND ALL NEW PIPE JOINTS EXCEPT THOSE THAT ARE SPECIFIED TO BE ELECTRICALLY ISOLATED, SEE DETAIL CC-12.
5. DO NOT SET TEST STATIONS IN ROADWAY. PLACE TEST STATION IN NON-PAVED AREA. ROUTE ALL WIRES IN PVC CONDUIT TO FINAL LOCATION.
6. INSTALL LINKED RUBBER SEALS AT VAULT LOCATIONS (IF ANY) TO ISOLATE PIPE FROM CONCRETE, SEE DETAIL CC-13.
7. WHEN THE TEST STATION IS NOT DIRECTLY OVER THE PIPELINE, PLACE YELLOW WARNING TAPE DIRECTLY ABOVE LEAD WIRES TO AVOID ACCIDENTAL DAMAGES. THE TAPE SHALL HAVE THE WORDS, "CAUTION CATHODIC PROTECTION CABLE BELOW," OR SIMILAR, CLEARLY VISIBLE IN REPEATING PATTERNS ALONG ITS ENTIRE LENGTH.
8. STEEL PIPE THAT WILL BE IN DIRECT CONTACT WITH POURED CONCRETE, SUCH AS THRUST BLOCKS, ETC., SHALL BE FIELD COATED WITH 20 MILS OF ROYSTON R-28 MASTIC OR APPROVED EQUAL.

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NORTH CAROLINA PROFESSIONAL SEAL 039007 ENGINEER DAVID J. KLIMAS

54" RAW WATER MAIN CATHODIC PROTECTION DETAILS 6

CAPE FEAR PUBLIC UTILITY AUTHORITY
KINGS BLUFF RAW WATER TRANSMISSION MAIN

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-6560

DATE: OCT 2018
SCALE: AS SHOWN
DRAWN BY: AMT
CHECKED BY: YZ
PROJECT NO. : 5367-0038

SHEET NO: CP-31