

CONSTRUCTION DRAWINGS FOR KNIGHTDALE STATION R7

(SECTIONS A, B & C) KNIGHTDALE, WAKE COUNTY, NORTH CAROLINA

ORIGINAL: APRIL 12, 2018
REVISION: FEBRUARY 21, 2019

INDEX OF SHEETS	
Sheet Title	Sheet Number
COVER	0.0
EXISTING CONDITIONS	1.1
OVERALL SITE PLAN	2.0
SITE PLAN	2.1
SITE PLAN	2.2
PAVEMENT MARKING & SIGNAGE PLAN	2.3
OVERALL UTILITY PLAN	3.0
UTILITY PLAN	3.1
UTILITY PLAN	3.2
OVERALL STORM DRAINAGE AND GRADING PLAN	4.0
STORM DRAINAGE PLAN	4.1
STORM DRAINAGE PLAN	4.2
STORM DRAINAGE CHARTS	4.3
GRADING PLAN	4.4
GRADING PLAN	4.5
OVERALL EROSION CONTROL PLAN	5.0
EROSION CONTROL PLAN	5.1
EROSION CONTROL PLAN	5.2
EROSION CONTROL PLAN	5.3
CHALLENGER LANE PLAN AND PROFILE	6.1
ARISTOCRAT LANE PLAN AND PROFILE	6.2
GREAT VALLEY WAY PLAN AND PROFILE	6.3
BOSTONIAN DRIVE PLAN AND PROFILE STA. 10+00.00 TO 17+50.00	6.4
BOSTONIAN DRIVE PLAN AND PROFILE STA. 17+50.00 TO 25+00.00	6.5
EDISONRAIL LANE PLAN AND PROFILE	6.6
MOUNT ROYAL PLACE PLAN AND PROFILE	6.7
CAROLINIAN AVENUE PLAN AND PROFILE STA. 50+88.79 TO 58+98.00	6.8
SS OUTFALL J PLAN AND PROFILE	6.9
SCM 7 PLANS & DETAILS	7.0
ROADWAY DETAILS	8.1
STORM DRAINAGE DETAILS	8.2
EROSION CONTROL DETAILS	8.3
WATER UTILITY DETAILS	8.4
SEWER UTILITY DETAILS	8.5
LANDSCAPE PLAN	L1.0
LANDSCAPE DETAILS	L1.1

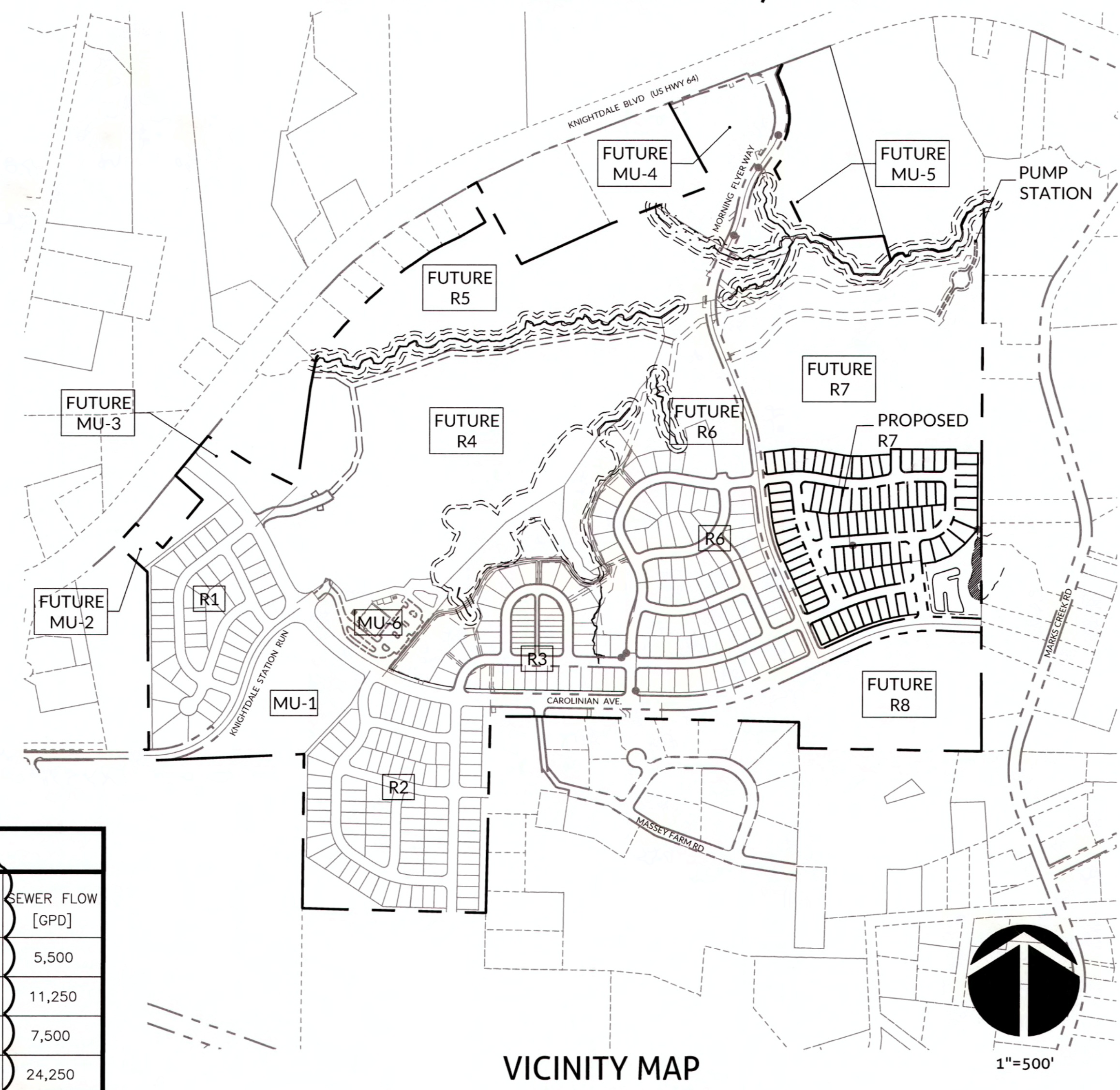
SITE DATA TABLE	
KNIGHTDALE PROJECT No.	S-2-16
OWNER	KNIGHTDALE INVESTORS, LLC.
PARCEL PIN No.	1764065984
EXISTING ZONING	GR8
PROPOSED ZONING	GR8
PROPOSED USE	SINGLE FAMILY
TOTAL PHASE AREA	25.0 AC
RECREATIONAL OPEN SPACE (ACTIVE)	N/A
RECREATIONAL OPEN SPACE (PASSIVE)	0.10 AC
TOTAL OPEN SPACE	3.48 AC
MAXIMUM DENSITY ALLOWED (UNITS/ACRE)	N/A
PROPOSED DENSITY (UNITS/ACRE)	3.9
TOTAL NUMBER OF LOTS ALLOWED	N/A
TOTAL NUMBER OF LOTS PROVIDED	97
TOTAL LINEAR FEET IN STREETS (PUBLIC)	4,919 LF
TOTAL LINEAR FEET OF CURB & GUTTER (30")	9,458 LF
TOTAL LINEAR FEET OF CURB & GUTTER (18")	1,441 LF
TOTAL LINEAR FEET OF SIDEWALK	9,223 LF
LINEAR FEET IN WATERLINES (8 IN)	4,235 LF
LINEAR FEET IN WATERLINES (8 IN)	800 LF
LINEAR FEET IN WATERLINES (12 IN)	5,222 LF
TOTAL LINEAR FEET IN WATERLINES	5,778 LF
TOTAL LINEAR FEET IN STORM DRAINAGE	4,888 LF
TOTAL LINEAR FEET IN SEWER LINES (8 IN)	24,250
PROJECTED WATER USAGE (GPD)	24,250
PROJECTED SEWER USAGE (GPD)	24,250
(250 GPD/UNIT)	
(250 GPD/UNIT)	
LOTS 259-355	
MINIMUM LOT WIDTH REQUIRED	N/A
LOT WIDTH (TYP.)	50 LF & 60 LF
MINIMUM LOT AREA PROVIDED	5,504 SF
MEDIAN LOT AREA PROVIDED	6,496 SF
AVERAGE LOT AREA PROVIDED	6,744 SF
LOT SETBACKS	
FRONT YARD	10 FT
REAR YARD	25 FT
SIDE YARD	20% OF LOT WIDTH (AGGREGATE)
	-5 FT MIN. SETBACK PER SIDE
	(WIDTH 60' OR GREATER)
	-3 FT MIN. SETBACK PER SIDE
	(WIDTH LESS THAN 60')
* PER UDO SECTION 4.6(C)(3), ACCESSORY BUILDINGS SHALL BE A MINIMUM OF 5' FROM ANY PRINCIPAL BUILDING OR OTHER ACCESSORY BUILDING.	
** PER UDO SECTION 4.6(C)(1)(c), ACCESSORY BUILDINGS SHALL NOT EXCEED 800 SF; COLLECTIVELY COVER MORE THAN 20% OF THE TOTAL COMBINED AREA OF THE LOTS' REAR AND SIDE YARDS; INDIVIDUALLY EXCEED THE HEIGHT OF THE PRINCIPAL BUILDING.	

SIGNATURE SET AMENDMENTS	
REVISION	DATE:
△ SEWER, STORM, EROSION CONTROL AND WATERLINE REVISIONS	02/21/19

INFRASTRUCTURE DATA											
SECTIONS	AREA [AC]	UNITS	STREETS [LF]	30" CURB & GUTTER [LF]	18" CURB & GUTTER [LF]	SIDEWALK [LF]	8" WATER MAIN [LF]	2" WATER MAIN [LF]	STORM DRAINAGE [LF]	8" SEWER MAIN [LF]	SEWER FLOW [GPD]
SECTION A	8.5	22	1,944	3,750	1,441	3,651	1,208	800	2,510	3,155	5,500
SECTION B	9.6	45	1,797	3,433	-	3,365	1,841	-	2,622	1,190	11,250
SECTION C	6.9	30	1,178	2,275	-	2,207	1,186	-	646	543	7,500
TOTAL	25.0	97	4,919	9,458	1,441	9,223	4,235	800	5,778	4,888	24,250

DEVELOPER/OWNER
KNIGHTDALE INVESTORS, LLC.
P.O. BOX 3557
CARY, NC 27519

ATTN: THAD MOORE
TELEPHONE: (919) 481-3000
FAX: (919) 677-8600



PREPARED BY:
WithersRavenel
Engineers | Planners | Surveyors
115 MacKenan Drive | Cary, NC 27511 | t: 919.469.3340 | license #: C-0832 | www.withersravenel.com

ATTENTION CONTRACTORS
THE CONSTRUCTION CONTRACTOR RESPONSIBLE FOR THE EXTENSION OF WATER AND SEWER, AS APPROVED IN THESE PLANS, IS RESPONSIBLE FOR CONTACTING THE PUBLIC UTILITIES DEPARTMENT AT (919) 986-4540 AT LEAST 24 HOURS PRIOR TO BEGINNING ANY CONSTRUCTION.
FAILURE TO NOTIFY BOTH CITY DEPARTMENTS IN ADVANCE OF BEGINNING CONSTRUCTION WILL RESULT IN THE ISSUANCE OF MONETARY FINES AND REQUIRE REINSTALLATION OF ANY WATER OR SEWER FACILITIES NOT INSPECTED AS A RESULT OF THIS NOTIFICATION FAILURE.
FAILURE TO CALL FOR INSPECTION, INSTALL A DOWNSTREAM PLUG, HAVE PERMITTED PLANS ON THE JOB SITE, OR ANY OTHER VIOLATION OF CITY OF RALEIGH STANDARDS WILL RESULT IN A FINE AND POSSIBLE EXCLUSION FROM FUTURE WORK IN THE CITY OF RALEIGH.

PUBLIC WATER DISTRIBUTION/EXTENSION SYSTEM
THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S PUBLIC WATER SYSTEM AS SHOWN ON THIS PLAN. THE MATERIAL AND CONSTRUCTION METHODS USED FOR THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY'S PUBLIC UTILITIES HANDBOOK.
CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PERMIT # W-3533 (Rev.)
AUTHORIZATION TO CONSTRUCT Thad Moore, Sample
DATE 3/25/19

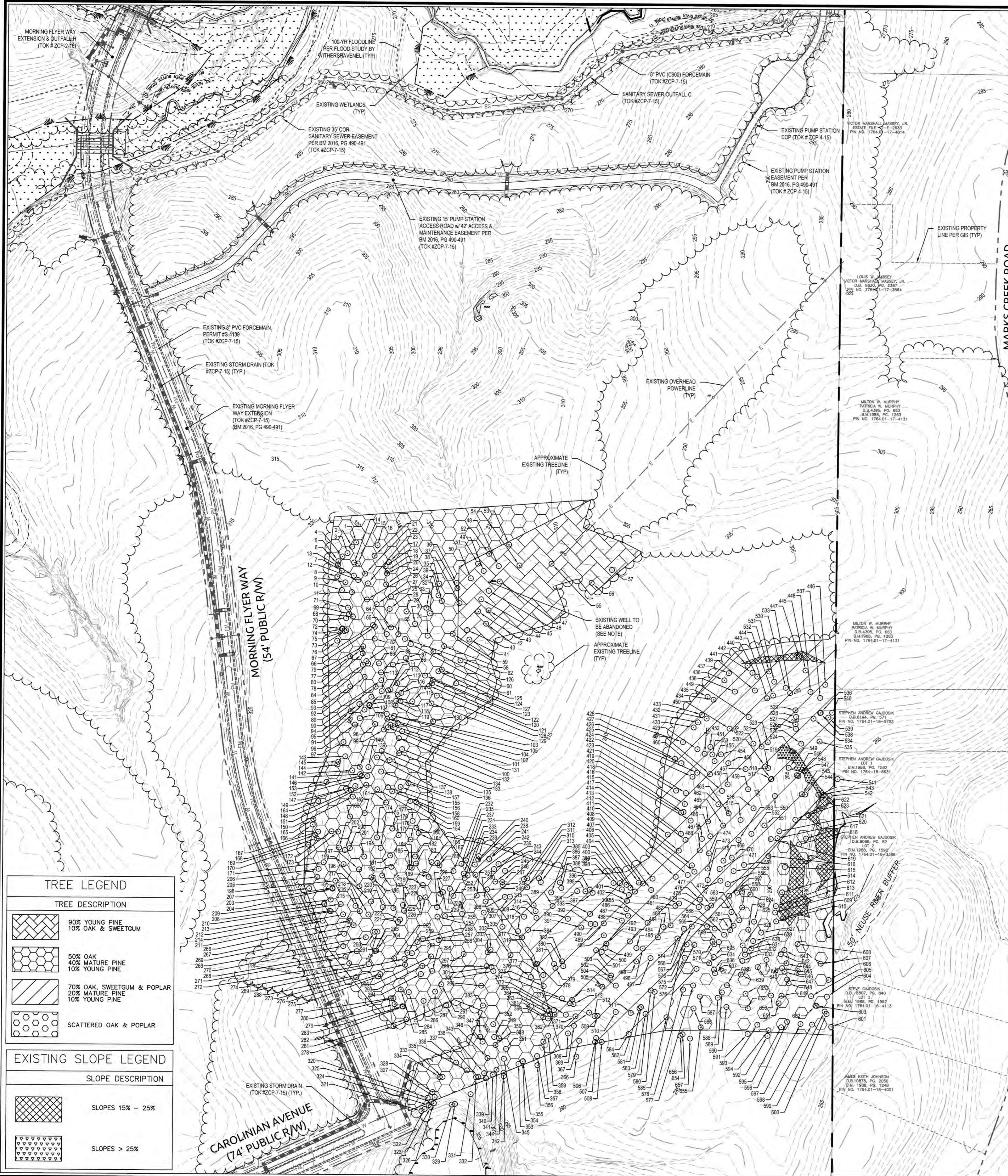
PUBLIC SEWER COLLECTION/EXTENSION SYSTEM
THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S PUBLIC SEWER SYSTEM AS SHOWN ON THIS PLAN. THE MATERIAL AND CONSTRUCTION METHODS USED FOR THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY'S PUBLIC UTILITIES HANDBOOK.
CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PERMIT # S-4417 (Rev.)
AUTHORIZATION TO CONSTRUCT Thad Moore, Sample
DATE 3/25/19

CITY OF RALEIGH
ALL CONSTRUCTION MUST BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL RULES AND REGULATIONS.
TRANSPORTATION SERVICES N/A
PUBLIC UTILITIES 3/25/19
STORMWATER N/A
PLANNING N/A
FIRE N/A
URBAN FORESTRY N/A

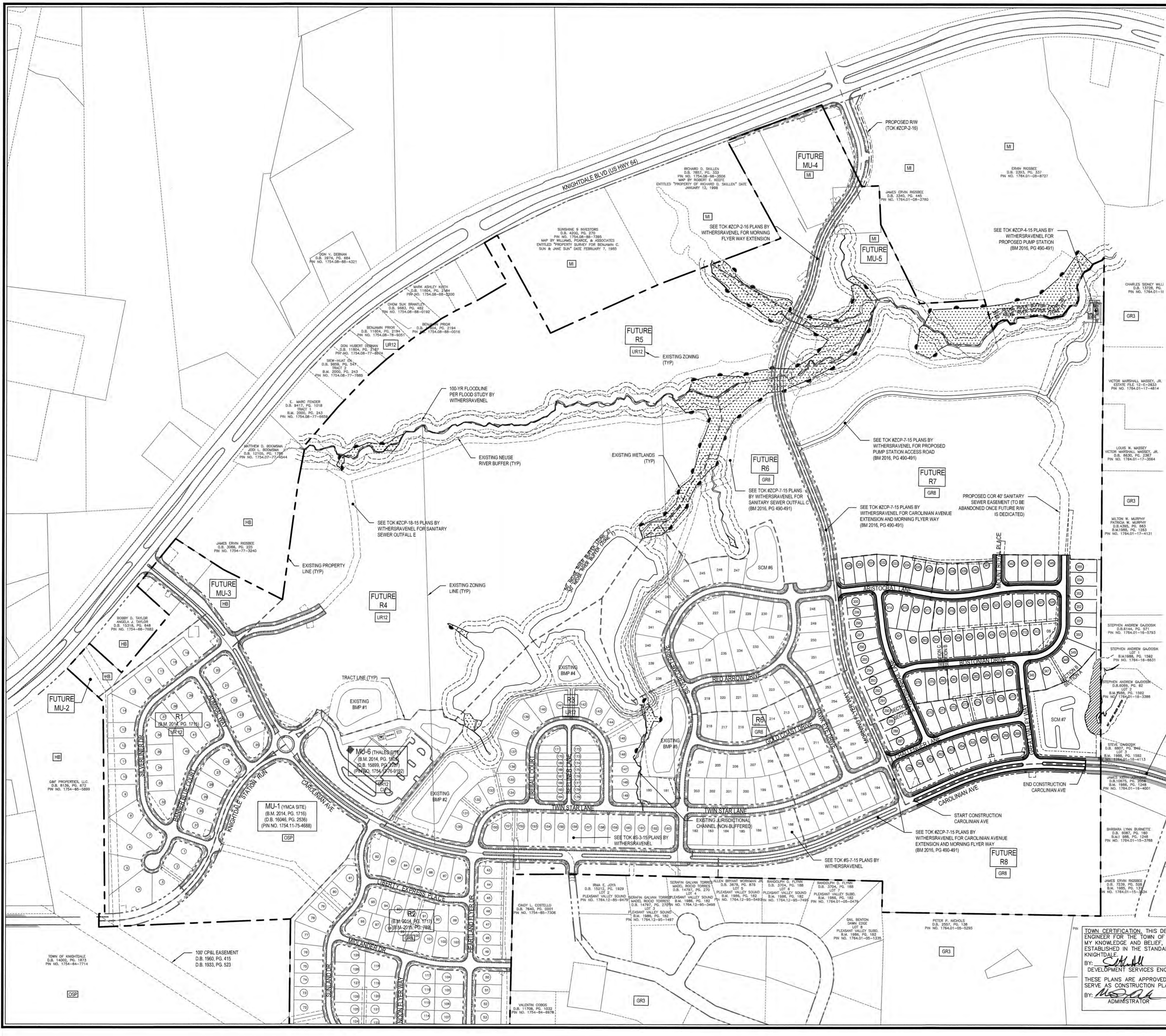
TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.
BY: [Signature] DATE: 6/13/2019
DEVELOPMENT SERVICES ENGINEER
BY: [Signature] DATE: 6/19/2019
ADMINISTRATOR

TOWN APPROVED STANDARDS SHALL CONTROL. IN THE EVENT OF A CONFLICT OR INCONSISTENCY BETWEEN THESE CONSTRUCTION DRAWINGS AND THE TOWN OF KNIGHTDALE'S APPROVED STANDARDS FOR THIS PROJECT, THE APPROVED STANDARDS SHALL CONTROL. TOWN OF KNIGHTDALE APPROVED STANDARDS SHALL MEAN ALL DEVELOPMENT DOCUMENTS NECESSARY FOR APPROVAL FOR THE PROPERTY INCLUDING, BUT NOT LIMITED TO, ANY SPECIAL USE PERMIT, SUBDIVISION PLAN, SITE PLAN, SUBDIVISION (S), PHASING SCHEDULE, DEVELOPMENT AGREEMENT, UTILITY ALLOCATION AGREEMENT ANNEXATION AGREEMENT, THE TOWN OF KNIGHTDALE STANDARD SPECIFICATION AND DETAILS MANUAL, AND APPLICABLE PROVISIONS OF THE NORTH CAROLINA STATE BUILDING CODE.

PROFESSIONAL DESIGN ENGINEER CERTIFICATION. THESE IMPROVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING DRAWINGS AND WITH THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE. I, JOHN C. HANATOLVA, PE CERTIFY THAT THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE HAVE BEEN THOROUGHLY CHECKED AND FOUND TO BE APPLICABLE TO THIS PROJECT. ALL EXCEPTIONS TO THE APPLICABLE TOWN STANDARDS HAVE BEEN PREVIOUSLY APPROVED BY THE TOWN OF KNIGHTDALE AND SAID EXCEPTIONS ARE SHOWN ON SHEET(S) 4/6.
BY: [Signature] PE
DATE: 2/21/19
PROFESSIONAL ENGINEER
SEAL 31982
J. C. HANATOLVA



TREE SURVEY		TREE SURVEY		TREE SURVEY		TREE SURVEY		TREE SURVEY		TREE SURVEY		TREE SURVEY	
TREE ID	DESCRIPTION	TREE ID	DESCRIPTION	TREE ID	DESCRIPTION	TREE ID	DESCRIPTION	TREE ID	DESCRIPTION	TREE ID	DESCRIPTION	TREE ID	DESCRIPTION
1	21.0 PINE	101	18.0 PINE	201	18.0 PINE	301	18.0 PINE	401	18.0 PINE	501	20.0 SWEETGUM	601	18.0 PINE
2	34.0 OAK	102	21.0 PINE	202	18.0 PINE	302	22.0 OAK	402	18.0 PINE	502	18.0 PINE	602	18.0 OAK
3	27.0 OAK	103	32.0 WILLOW OAK	203	24.0 PINE	303	18.0 PINE	403	17.0 PINE	503	24.0 OAK	603	14.0 MAPLE
4	35.0 OAK	104	18.0 PINE	204	18.0 WILLOW OAK	304	18.0 PINE	404	18.0 PINE	504	20.0 OAK	604	20.0 MULTISTEM MAPLE
5	28.0 OAK	105	18.0 PINE	205	18.0 WILLOW OAK	305	18.0 PINE	405	18.0 PINE	505	21.5 SWEETGUM	605	12.5 OAK
6	18.0 OAK	106	25.0 PINE	206	18.0 PINE	306	18.0 PINE	406	18.0 PINE	506	14.5 SWEETGUM	606	21.0 OAK
7	15.5 PINE	107	18.0 PINE	207	28.0 MULTISTEM OAK	307	18.0 PINE	407	14.5 SWEETGUM	507	14.5 SWEETGUM	607	13.0 OAK
8	15.5 WILLOW OAK	108	23.0 PINE	208	18.0 WILLOW OAK	308	14.0 POPLAR	408	17.0 SWEETGUM	508	13.0 OAK	608	18.0 OAK
9	27.0 PINE	109	23.0 PINE	209	18.0 WILLOW OAK	309	18.0 WILLOW OAK	409	12.0 POPLAR	509	23.0 OAK	609	18.0 PINE
10	12.0 OAK	110	18.0 PINE	210	17.0 PINE	310	18.0 MULTISTEM POPLAR	410	33.0 OAK	510	18.0 OAK	610	13.0 OAK
11	17.5 WHITE OAK	111	21.0 PINE	211	18.0 OAK	311	25.0 OAK	411	25.0 OAK	511	17.0 OAK	611	20.0 OAK
12	17.0 OAK	112	13.5 PINE	212	18.0 MULTISTEM SWEETGUM	312	22.5 SWEETGUM	412	18.0 OAK	512	25.0 OAK	612	20.0 OAK
13	14.5 OAK	113	20.0 PINE	213	18.0 SWEETGUM	313	18.0 MULTISTEM OAK	413	25.0 OAK	513	18.0 OAK	613	17.0 POPLAR
14	38.0 OAK	114	21.0 PINE	214	17.0 PINE	314	15.5 SWEETGUM	414	17.0 MAPLE	514	23.0 OAK	614	14.0 OAK
15	27.0 OAK	115	27.0 LOCUST	215	23.0 PINE	315	15.0 SWEETGUM	415	33.0 OAK	515	15.5 SWEETGUM	615	23.0 OAK
16	18.0 OAK	116	16.0 PINE	216	23.0 PINE	316	24.0 OAK	416	14.5 OAK	516	15.0 POPLAR	616	31.0 OAK
17	28.0 WILLOW OAK	117	15.0 PINE	217	22.0 PINE	317	28.0 OAK	417	18.0 MULTISTEM OAK	517	17.0 POPLAR	617	13.0 OAK
18	18.0 OAK	118	18.0 PINE	218	18.0 MULTISTEM OAK	318	18.0 OAK	418	18.0 PINE	518	18.0 OAK	618	14.0 POPLAR
19	15.0 OAK	119	17.0 PINE	219	18.0 PINE	319	17.5 POPLAR	419	21.0 OAK	519	13.0 POPLAR	619	18.0 OAK
20	21.0 OAK	120	25.0 PINE	220	18.0 HICKORY	320	12.5 PINE	420	36.0 OAK	520	14.0 OAK	620	15.0 OAK
21	21.0 MULTISTEM OAK	121	15.0 PINE	221	20.0 PINE	321	18.0 PINE	421	14.0 OAK	521	16.0 MULTISTEM POPLAR	621	18.0 OAK
22	17.0 OAK	122	20.0 PINE	222	17.0 PINE	322	16.0 PINE	422	18.0 OAK	522	13.5 OAK	622	14.5 MAPLE
23	14.0 OAK	123	18.0 WILLOW OAK	223	23.5 OAK	323	15.0 PINE	423	16.0 MULTISTEM POPLAR	523	22.5 SWEETGUM	623	13.5 OAK
24	13.0 OAK	124	25.0 PINE	224	18.0 SWEETGUM	324	17.0 PINE	424	14.5 MULTISTEM POPLAR	524	26.0 OAK	624	12.5 OAK
25	33.0 OAK	125	23.0 OAK	225	18.0 POPLAR	325	12.5 PINE	425	15.0 POPLAR	525	14.5 OAK	625	17.5 OAK
26	31.0 POPLAR	126	24.0 OAK	226	13.0 OAK	326	18.0 PINE	426	17.5 MULTISTEM MAPLE	526	13.0 OAK	626	23.0 OAK
27	23.0 OAK	127	20.0 OAK	227	25.0 POPLAR	327	14.0 PINE	427	20.0 OAK	527	18.0 OAK	627	20.0 MAPLE
28	24.0 PINE	128	18.0 MULTISTEM OAK	228	25.0 OAK	328	12.5 PINE	428	13.5 WILLOW OAK	528	27.0 OAK	628	17.0 PINE
29	30.0 OAK	129	18.0 PINE	229	45.0 MULTISTEM POPLAR	329	16.0 POPLAR	429	12.0 POPLAR	529	31.0 OAK	629	17.0 OAK
30	27.0 OAK	130	12.0 POPLAR	230	16.0 POPLAR	330	49.5 MULTISTEM PINE	430	12.0 POPLAR	530	28.5 OAK	630	28.0 OAK
31	52.0 MULTISTEM OAK	131	18.0 SWEETGUM	231	18.0 POPLAR	331	18.0 PINE	431	15.0 WILLOW OAK	531	22.5 OAK	631	21.5 OAK
32	17.0 OAK	132	14.5 PINE	232	15.0 PINE	332	13.5 SWEETGUM	432	12.0 OAK	532	21.5 SWEETGUM	632	14.0 OAK
33	17.0 OAK	133	30.0 MULTISTEM OAK	233	18.0 POPLAR	333	15.0 PINE	433	23.0 OAK	533	18.0 PINE	633	17.5 OAK
34	38.0 MULTISTEM OAK	134	32.0 MULTISTEM SWEETGUM	234	18.0 POPLAR	334	15.0 PINE	434	20.0 MULTISTEM OAK	534	41.5 MULTISTEM POPLAR	634	19.0 OAK
35	33.0 OAK	135	32.0 WILLOW OAK	235	12.0 POPLAR	335	18.0 PINE	435	17.0 SWEETGUM	535	32.0 MAPLE	635	19.0 OAK
36	14.5 HICKORY	136	45.0 MULTISTEM POPLAR	236	13.0 MAPLE	336	26.0 OAK	436	18.0 OAK	536	13.0 MAPLE	636	17.0 MULTISTEM POPLAR
37	30.0 OAK	137	23.0 PINE	237	13.0 SWEETGUM	337	18.0 PINE	437	13.0 WILLOW OAK	537	18.0 OAK	637	23.0 OAK
38	27.0 OAK	138	28.5 WILLOW OAK	238	15.0 OAK	338	18.0 PINE	438	14.5 OAK	538	23.5 PINE	638	14.5 OAK
39	27.0 OAK	139	32.0 WILLOW OAK	239	14.0 POPLAR	339	15.0 PINE	439	23.0 OAK	539	18.0 MAPLE	639	17.0 POPLAR
40	18.0 OAK	140	14.0 SWEETGUM	240	16.0 OAK	340	21.5 PINE	440	18.0 SWEETGUM	540	21.0 MAPLE	640	17.0 OAK
41	53.0 MULTISTEM HICKORY	141	32.0 WILLOW OAK	241	22.0 OAK	341	13.5 PINE	441	18.0 PINE	541	13.0 OAK	641	21.0 OAK
42	40.5 WILLOW OAK	142	38.0 WILLOW OAK	242	13.0 WILLOW OAK	342	29.0 OAK	442	18.0 OAK	542	22.0 MAPLE	642	22.5 OAK
43	22.0 OAK	143	16.5 SWEETGUM	243	12.5 WILLOW OAK	343	13.0 POPLAR	443	12.5 OAK	543	14.5 OAK	643	18.0 MULTISTEM MAPLE
44	34.0 WILLOW OAK	144	23.0 PINE	244	34.0 OAK	344	29.0 OAK	444	25.0 OAK	544	18.5 OAK	644	19.0 MAPLE
45	27.5 OAK	145	28.0 PINE	245	12.5 PINE	345	14.0 PINE	445	28.0 OAK	545	28.5 OAK	645	18.0 OAK
46	27.5 OAK	146	27.5 SWEETGUM	246	13.0 POPLAR	346	18.0 POPLAR	446	28.0 OAK	546	18.0 POPLAR	646	17.0 OAK
47	30.0 OAK	147	18.0 WILLOW OAK	247	16.0 PINE	347	18.0 POPLAR	447	32.0 MAPLE	547	13.0 POPLAR	647	20.0 OAK
48	27.5 OAK	148	14.0 WILLOW OAK	248	20.0 POPLAR	348	22.0 PINE	448	27.0 MAPLE	548	25.0 OAK	648	17.5 OAK
49	23.5 WILLOW OAK	149	18.5 PINE	249	18.0 OAK	349	18.0 OAK	449	22.0 WILLOW OAK	549	18.5 OAK	649	13.0 MAPLE
50	38.0 WILLOW OAK	150	15.0 SWEETGUM	250	19.0 OAK	350	22.5 OAK	450	38.0 OAK	550	17.5 OAK	650	19.0 OAK
51	48.5 WILLOW OAK	151	21.0 PINE	251	12.0 MAPLE	351	27.0 OAK	451	13.0 POPLAR	551	18.5 POPLAR	651	13.0 OAK
52	35.5 OAK	152	21.0 WILLOW OAK	252	14.5 POPLAR	352	12.5 SWEETGUM	452	14.5 POPLAR	552	21.0 POPLAR	652	19.0 OAK
53	21.0 OAK	153	32.0 WILLOW OAK	253	13.5 OAK	353	16.5 OAK	453	12.5 POPLAR	553	15.0 POPLAR	653	20.0 OAK
54	32.5 WILLOW OAK	154	18.0 PINE	254	21.5 POPLAR	354	25.5 OAK	454	12.5 POPLAR	554	25.5 OAK	654	28.0 OAK
55	22.0 OAK	155	28.0 POPLAR	255	14.0 OAK	355	31.5 OAK	455	13.5 POPLAR	555	23.5 OAK	655	12.5 POPLAR
56	48.0 MULTISTEM OAK	156	13.0 OAK	256	17.0 OAK	356	15.5 PINE	456	18.0 POPLAR	556	23.0 OAK	656	17.0 OAK
57	13.0 PRUNUS HICKORY	157	15.5 SWEETGUM	257	32.0 OAK	357	32.0 OAK	457	17.0 POPLAR	557	22.5 POPLAR	657	17.5 OAK
58	24.0 MULTISTEM OAK	158	18.0 OAK	258	18.0 OAK	358	28.0 MULTISTEM MAPLE	458	18.5 POPLAR	558	21.0 OAK	658	17.5 OAK
59	23.0 SWEETGUM	159	27.0 MULTISTEM SWEETGUM	259	30.0 MULTISTEM OAK	359	18.5 OAK	459	18.5 MULTISTEM POPLAR	559	12.0 OAK	659	17.5 OAK
60	35.0 WILLOW OAK	160	26.0 MULTISTEM POPLAR	260	15.0 SWEETGUM	360	18.5 OAK	460	31.0 OAK	560	25.0 OAK	660	17.5 OAK
61	28.0 OAK	161	17.0 PINE	261	14.0 OAK	361	21.0 PINE	461	13.0 SWEETGUM	561	21.0 MAPLE	661	17.5 OAK
62	22.0 PINE	162	18.5 PINE	262	27.0 OAK	362	15.5 PINE	462	18.5 OAK	562	22.5 OAK	662	18.0 OAK
63	20.0 WHITE OAK	163	27.5 WILLOW OAK	263	24.0 PINE	363	20.0 OAK	463	15.5 OAK	563	17.5 OAK	663	17.0 OAK
64	15.0 PINE	164	20.0 OAK	264	14.0 POPLAR	364	24.0 OAK	464	25.0 OAK	564	14.5 OAK	664	18.0 OAK
65	28.0 PINE	165	22.0 WILLOW OAK	265	12.0 POPLAR	365	17.0 OAK	465	18.0 MAPLE	565	18.0 OAK	665	18.0 OAK
66	28.0 HICKORY	166	18.0 PINE	266	21.0 SWEETGUM	366	17.5 OAK	466	13.0 OAK	566	28.0 MULTISTEM OAK	666	18.0 OAK
67	23.0 OAK	167	18.0 PINE	267	13.0 OAK	367	18.0 SWEETGUM	467	18.0 OAK	567	18.0 PINE	667	18.0 OAK
68	18.0 PINE	168	18.0 PINE	268	14.0 SWEETGUM	368	14.0 OAK	468	14.0 OAK	568	24.0 OAK	668	17.0 OAK
69	28.0 OAK	169	15.0 PINE	269	14.0 SWEETGUM	369	19.0 POPLAR	469	18.5 MAPLE	569	13.0 PINE	669	17.0 OAK
70	20.0 OAK	170	26.0 MULTISTEM OAK	270	19.0 OAK	370	19.0 OAK	470	19.0 POPLAR	570	18.0 OAK	670	17.0 OAK
71	18.0 OAK	171	26.0 PINE	271	36.0 OAK	371	25.0 PINE	471	23.5 OAK	571	13.5 OAK	671	14.0 OAK
72	18.0 WILLOW OAK	172	13.0 CEDAR	272	18.0 PINE	372	23.0 OAK	472	18.0 PINE	572	13.5 OAK	672	14.0 OAK
73	29.0 WILLOW OAK	173	13.0 HICKORY	273	15.0 PINE	373	18.0 PINE	473	12.0 OAK	573	14.0 OAK	673	14.0 OAK
74	18.0 PINE	174	18.0 MULTISTEM SWEETGUM	274	38.0 MULTISTEM SWEETGUM	374	16.5 OAK	474	26.0 OAK	574	13.0 OAK	674	14.0 OAK
75	17.0 PINE	175	13.0 OAK	275	17.5 SWEETGUM	375	24.0 PINE	475	20.0 OAK	575	18.0 OAK	675	14.0 OAK
76	21.0 PINE	176	14.5 SWEETGUM	276	14.5 SWEETGUM	376	18.5 OAK	476	13.0 OAK	576	18.0 POPLAR	676	18.0 OAK
77	28.0 WILLOW OAK	177	17.5 SWEETGUM	277	18.0 POPLAR	377	14.0 OAK	477	14.0 OAK	577	18.0 OAK	677	18.0 OAK
78	14.0 OAK	178	17.0 SWEETGUM	278	14.0 MULTISTEM SWEETGUM	378	17.0 POPLAR	478	14.5 PINE	578	20.0 POPLAR	678	14.5 OAK
79	17.0 WILLOW OAK	179	17.0 POPLAR	279	14.0 MULTISTEM SWEETGUM	379	27.0 PINE	479	29.0 OAK	579	13.0 OAK	679	14.5 OAK
80	18.0 WILLOW OAK	180	19.5 PINE	280	14.0 OAK	380	31.0 PINE	480	18.5 PINE	580	48.0 OAK	680	17.0 OAK
81	21.0 HICKORY	181	16.0 POPLAR	281	22.0 SWEETGUM	381	18.5 MAPLE	481	24.0 OAK	581	17.0 OAK	681	17.0 OAK
82	21.0 HICKORY	182	17.5 PINE	282	27.0 PINE	382	12.5 MAPLE	482	12.5 OAK	582	22.5 OAK	682	17.0 OAK
83	17.0 WILLOW OAK	183	17.0 PINE	283	19.0 SWEETGUM	383	12.5 OAK	483	18.0 OAK	583	13.5 POPLAR	683	17.0 OAK
84	23.0 OAK	184	15.0 PINE	284	38.0 OAK	384	38.0 OAK	484	30.5 MAPLE	584	17.0 OAK	684	17.0 OAK
85	19.0 LOC												



SITE DATA

TOTAL SITE AREA: 278.81 AC

PROPOSED ZONING

TRACT	AREA (AC)	EXISTING PROPOSED ZONING	PROPOSED USE
R7	25.0 AC	GR8	SF

SF: SINGLE - FAMILY

* TRACT AREAS ARE BASED ON GROSS AREAS INCLUDING OPEN SPACE, RIPARIAN BUFFERS, & PROPOSED RIGHT-OF-WAYS.

TREE CANOPY SUMMARY

OVERALL TREE COVER AREA REQUIRED PER UAA = 8.90 AC

TREE COVER AREA PROVIDED W/ R1 & R2 (BM 2014, PG 1716) = 2.16 AC

TREE COVER AREA PROVIDED W/ R3 (TO BE DEDICATED) = 0.79 AC

TREE COVER AREA PROVIDED W/ R4 (TO BE DEDICATED) = 1.34 AC

TREE COVER AREA PROVIDED W/ R7 (TO BE DEDICATED) = 0.36 AC

TREE COVER AREA PROVIDED W/ R1,R2,R3,R6,R7 = 4.65 AC

PROJECT AREA - R1 & R2 = 41.89 AC

PROJECT AREA - R3 = 20.01 AC

PROJECT AREA - R6 = 30.90 AC

PROJECT AREA - R7 = 25.00 AC

THALES = 4.55 AC

THALES = 8.89 AC

TOTAL TRACT AREA APPROVED/RECORDED (TO DATE) = 130.45 AC

TOTAL SITE ACREAGE = 278.81 AC

TREE CANOPY AREA REQUIRED (TO DATE) = (130.45 AC) x (8.9 AC) = 4.16 AC

TOTAL TRACT AREA APPROVED/RECORDED (TO DATE) = 130.45 AC

TOTAL SITE ACREAGE = 278.81 AC

4.68 AC PROVIDED > 4.16 AC REQUIRED (TO DATE)

REMAINING TREE COVER AREA REQUIRED FOR FUTURE PHASES PER UAA = 4.22 AC

RECREATIONAL OPEN SPACE SUMMARY

OVERALL RECREATIONAL OPEN SPACE REQUIRED PER UAA = 17.00 AC (8.50 AC ACTIVE)

OPEN SPACE AREA PROVIDED W/ R1 & R2 = 7.83 AC (ACTIVE)

OPEN SPACE AREA PROVIDED W/ R3 = 2.87 AC (ACTIVE & PASSIVE)

OPEN SPACE AREA PROVIDED W/ R6 = 1.33 AC (ACTIVE & PASSIVE)

OPEN SPACE AREA PROVIDED W/ R7 = 0.10 AC (PASSIVE)

OPEN SPACE AREA PROVIDED W/ R1,R2,R3,R6, R7 = 12.73 AC

9.55 AC (ACTIVE)

3.18 AC (PASSIVE)

TOTAL TRACT AREA APPROVED/RECORDED (TO DATE) = 130.35 AC

TOTAL SITE ACREAGE = 278.81 AC

OPEN SPACE AREA REQUIRED (TO DATE) = (130.35 AC) x (17.0 AC) = 7.95 AC (3.97 ACTIVE)

12.73 AC PROVIDED > 7.95 AC REQUIRED (TO DATE)

REMAINING RECREATIONAL OPEN SPACE REQUIRED FOR FUTURE PHASES PER UAA = 4.27 AC (0.00 AC ACTIVE)

TREE PROTECTION

TOTAL TREES	12"-23.9" DBH	24"-35.9" DBH	36"-47.9" DBH	48"-59.9" DBH	60"-71.9" DBH	REPLACEMENT TREES NEEDED*
TIER 1	1	-	1	-	-	-
TIER 2	28	20	8	-	-	36
TIER 3	64	-	63	1	-	129

*PER TOK UDO SECTION 8.5, REPLACEMENT TREES FOR TIER 2 AND TIER 3 SHALL BE PLANTED AT A RATE OF 1 TREE PER 12" DBH.

NOTE: 165 - REPLACEMENT TREES WILL BE REQUIRED TO BE PLANTED. REPLACEMENT TREES WILL BE PLANTED IN PROPOSED BUFFER YARD LOCATIONS OR OPEN SPACE. SEE LANDSCAPE PLAN FOR BUFFER YARD PLANTING DETAIL.

100' CRP EASEMENT
D.B. 1990, PG. 415
D.B. 1933, PG. 523

CITY OF RALEIGH

ALL CONSTRUCTION MUST BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL RULES AND REGULATIONS.

TRANSPORTATION SERVICES N/A

PUBLIC UTILITIES E.A. 4/30/18

STORMWATER N/A

PLANNING N/A

FIRE N/A

URBAN FORESTRY N/A

TOWN CERTIFICATION

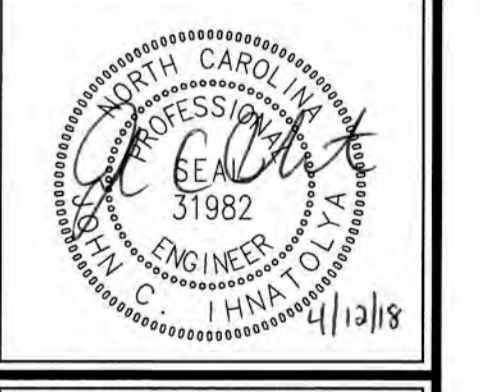
THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: S.M. AU DATE: 4-17-18
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: M. S. ... DATE: 5-10-18
ADMINISTRATOR

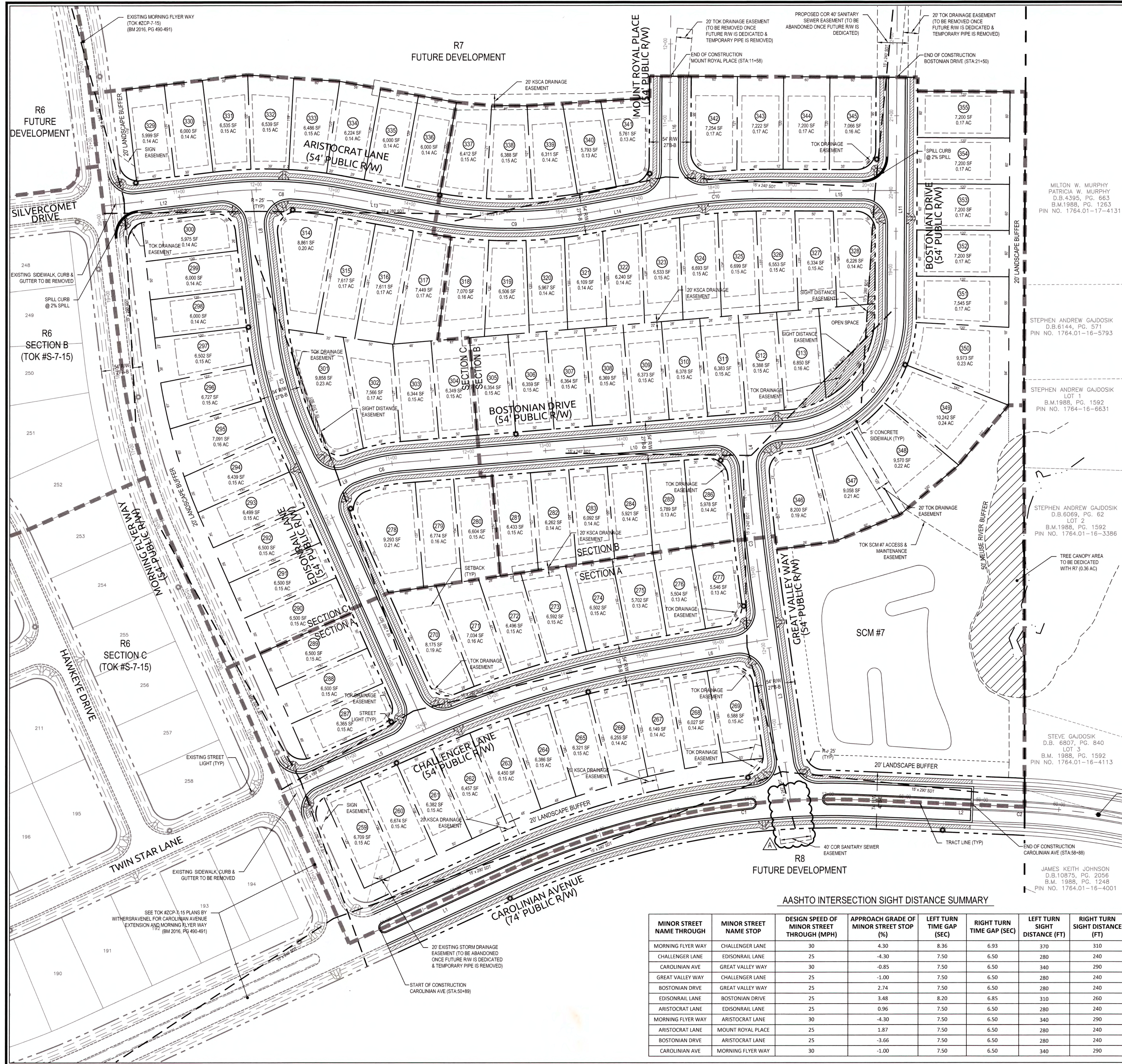
GRAPHIC SCALE
1 inch = 200 ft.



Revisions

Rev	Description	Date
1	TOK Comments	09/07/16
2	TOK Comments	12/08/17
3	TOK Comments	04/11/18

Sheet No. **2.0**



- GENERAL NOTES**
- SEE SHEET 2.0 FOR EXISTING ZONING AND PROPOSED ZONING.
 - BOUNDARY SURVEY AND TOPOGRAPHIC SURVEY PERFORMED BY WITHERSRAVENEL, INC. OFFSITE TOPOGRAPHIC INFORMATION PROVIDED BY NCDLAR.
 - WETLANDS AND STREAM BUFFERS DELINEATED AND SURVEYED BY WITHERSRAVENEL.
 - PROPERTY ANNEXED INTO TOWN OF KNIGHTDALE SEPT. 3, 2013.
 - WATER ALLOCATION HAS BEEN AWARDED BASED ON THE UTILITY ALLOCATION AND INFRASTRUCTURE AGREEMENT, D.B. 014722, PAGES 01758 - 01813 & SUBSEQUENT AMENDMENTS.
 - STREET LIGHTS SHALL BE PROVIDED FOR R7 PER UDO SECTION 11.5 - STREET LIGHTING POLICY. IF UPDATES FROM THE TOWN'S STANDARD LIGHT SPECIFICATION ARE REQUESTED, THE DEVELOPER WILL BE REQUIRED TO PAY THE DIFFERENCE IN THE COSTS TO MAINTAIN THE DESIRED FIXTURE AND POLE COVERING A PERIOD OF 10 YEARS.
 - ALL DISTANCES ARE HORIZONTAL GROUND DISTANCES.
 - THIS PROPERTY DOES NOT LIE WITHIN THE FEMA FLOODPLAIN PER MAP NUMBER 3720175400J AND 3720175400I, WITH AN EFFECTIVE DATE OF MAY 2, 2006.
 - DIVISION OF WATER QUALITY (DWQ) AND/OR UNITED STATES ARMY CORPS OF ENGINEERS (USACE) APPROVAL SHALL BE REQUIRED PRIOR TO CONSTRUCTION WITHIN WETLANDS OR STREAM BUFFER AREAS.
 - THE TURNOUT RADIUS AT ALL INTERSECTIONS SHALL BE A MINIMUM OF 30 FEET MEASURED AT THE BACK OF CURB UNLESS OTHERWISE NOTED.
 - ALL RIGHT-OF-WAY SHOWN HEREIN IS PUBLIC RIGHT-OF-WAY, UNLESS OTHERWISE NOTED.
 - NO SIGHT OBSTRUCTION OR PARTIALLY OBSTRUCTING WALL, FENCE, FOLIAGE, BERM, SIGN, OR PARKED VEHICLE BETWEEN THE HEIGHTS OF TWO (2) AND EIGHT (8) ABOVE THE CURB LINE ELEVATION OR THE NEAREST TRAVELED WAY IF NO CURB EXISTS SHALL BE PLACED WITHIN A SIGHT TRIANGLE.

LINE TABLE

LINE	BEARING	DISTANCE
L1	N65°18'50"E	176.01
L2	S87°34'17"E	195.80
L3	N8°04'44"W	263.72
L4	N4°38'33"W	65.3
L5	N66°04'57"E	217.20
L6	N80°17'34"E	149.39
L7	N23°55'03"W	413.27
L8	N6°37'45"W	185.45
L9	N69°04'57"E	55.08
L10	N85°21'27"E	505.64
L11	N0°18'09"E	309.72
L12	N83°22'15"E	150.92
L13	S79°46'10"E	123.12
L14	N79°40'11"E	89.01
L15	S89°41'51"E	158.97
L16	N0°18'09"E	158.06

CURVE TABLE

CURVE	RADIUS	LENGTH	CHORD	BEARING
C1	1000.00'	473.24'	468.84'	N78°52'16"E
C2	1000.00'	13.13'	284.64'	S79°23'22"E
C3	2500.00'	149.95'	149.93'	N6°21'38"W
C4	1200.00'	297.62'	296.86'	N73°11'15"E
C5	475.00'	143.33'	142.78'	N15°16'24"W
C6	200.00'	56.81'	56.62'	N77°13'12"E
C7	150.00'	222.67'	202.78'	N42°49'48"E
C8	530.00'	155.96'	155.40'	S88°11'58"E
C9	570.00'	204.55'	203.45'	N89°57'00"E
C10	830.00'	154.03'	153.81'	N84°59'10"E

CONNECTIVITY INDEX:

	LINKS	NODES	INDEX
R7	13	10	1.3

SITE IMPERVIOUS - R7 A-C

TOTAL TRACT AREA	25.0 AC
SUBDIVISION ROADWAYS & SIDEWALKS	4.0 AC
LOT IMPERVIOUS AREA (BY LOTS @ 3.500 SF/LOT)	7.79 AC
PROPOSED PERCENT IMPERVIOUS (11.79 AC/25.0 AC)	47.2%
EXISTING PERCENT IMPERVIOUS (49 AC/25.0 AC) (MORNING FLYER WAY & CAROLINIAN AVENUE)	2.0%

PROPOSED POSTED SPEED LIMIT

ROAD	SPEED LIMIT
CHALLENGER LANE	25 MPH
ARISTOCRAT LANE	25 MPH
GREAT VALLEY WAY	25 MPH
BOSTONIAN DRIVE	25 MPH
EDISONRAIL LANE	25 MPH
MOUNT ROYAL PLACE	25 MPH
CAROLINIAN AVENUE	25 MPH

PROPOSED STREET CLASSIFICATION

ROAD	CLASSIFICATION
CHALLENGER LANE	LOCAL STREET
ARISTOCRAT LANE	LOCAL STREET
GREAT VALLEY WAY	LOCAL STREET
BOSTONIAN DRIVE	LOCAL STREET
EDISONRAIL LANE	LOCAL STREET
MOUNT ROYAL PLACE	LOCAL STREET
CAROLINIAN AVENUE	AVENUE

CITY OF RALEIGH

ALL CONSTRUCTION MUST BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL RULES AND REGULATIONS.

TRANSPORTATION SERVICES: N/A

PUBLIC UTILITIES: *3/23/19*

STORMWATER: N/A

PLANNING: N/A

FIRE: N/A

URBAN FORESTRY: N/A

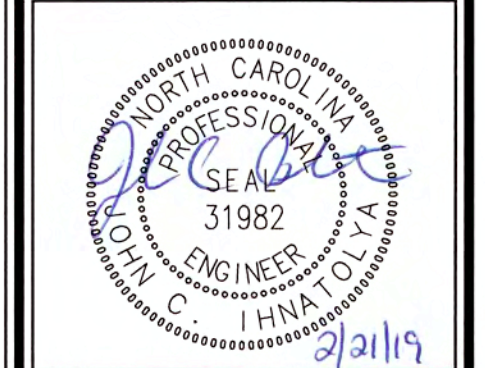


KNIGHTDALE STATION R7 (SECTION A, B & C)

KNIGHTDALE, WAKE COUNTY, NORTH CAROLINA

SITE PLAN

Job No. 02090251.91
 Date 06/21/16
 Drawn By CED
 Designer JCI



Revisions

1	TOK Comments	09/07/16
2	TOK Comments	12/08/17
3	TOK Comments	04/11/18
4	Sever Outfall 3 Revisions	02/21/19

Sheet No. **2.1**

AASHTO INTERSECTION SIGHT DISTANCE SUMMARY

MINOR STREET NAME THROUGH	MINOR STREET NAME STOP	DESIGN SPEED OF MINOR STREET THROUGH (MPH)	APPROACH GRADE OF MINOR STREET STOP (%)	LEFT TURN TIME GAP (SEC)	RIGHT TURN TIME GAP (SEC)	LEFT TURN SIGHT DISTANCE (FT)	RIGHT TURN SIGHT DISTANCE (FT)
MORNING FLYER WAY	CHALLENGER LANE	30	4.30	8.36	6.93	370	310
CHALLENGER LANE	EDISONRAIL LANE	25	-4.30	7.50	6.50	280	240
CAROLINIAN AVE	GREAT VALLEY WAY	30	-0.85	7.50	6.50	340	290
GREAT VALLEY WAY	CHALLENGER LANE	25	-1.00	7.50	6.50	280	240
BOSTONIAN DRIVE	GREAT VALLEY WAY	25	2.74	7.50	6.50	280	240
EDISONRAIL LANE	BOSTONIAN DRIVE	25	3.48	8.20	6.85	310	260
ARISTOCRAT LANE	EDISONRAIL LANE	25	0.96	7.50	6.50	280	240
MORNING FLYER WAY	ARISTOCRAT LANE	30	-4.30	7.50	6.50	340	290
ARISTOCRAT LANE	MOUNT ROYAL PLACE	25	1.87	7.50	6.50	280	240
BOSTONIAN DRIVE	ARISTOCRAT LANE	25	-3.66	7.50	6.50	280	240
CAROLINIAN AVE	MORNING FLYER WAY	30	-1.00	7.50	6.50	340	290

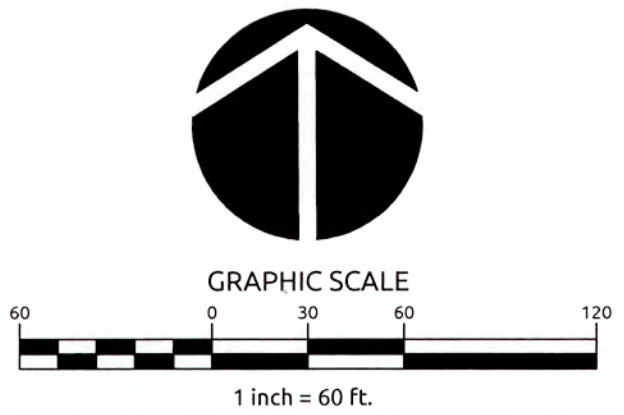
ALL MATERIALS & CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH ALL CITY OF RALEIGH & TOWN OF KNIGHTDALE DESIGN STANDARDS, DETAILS, AND SPECIFICATIONS.

TOWN CERTIFICATION, THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

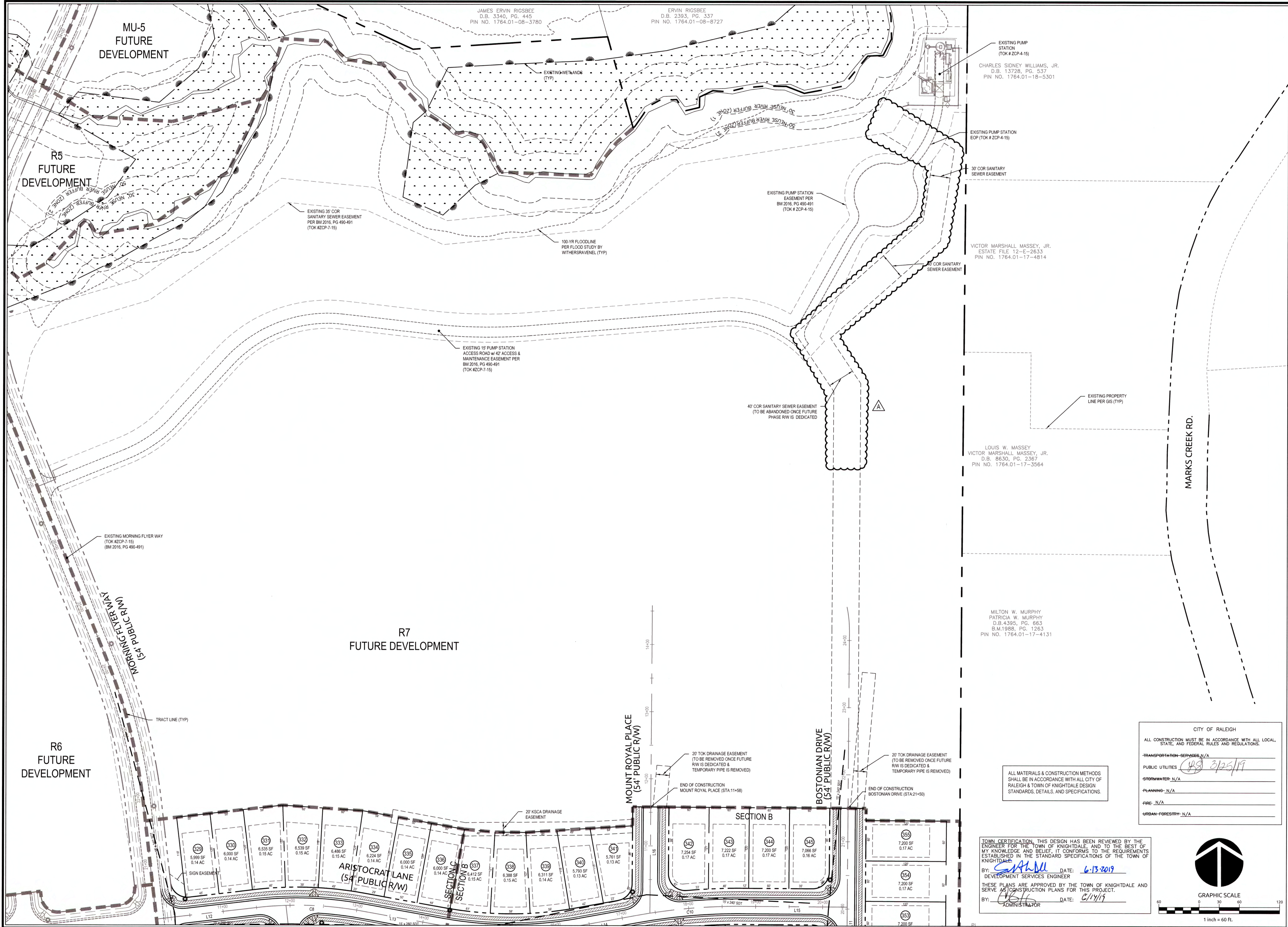
BY: *SAJANU* DATE: *6-13-2019*
 DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

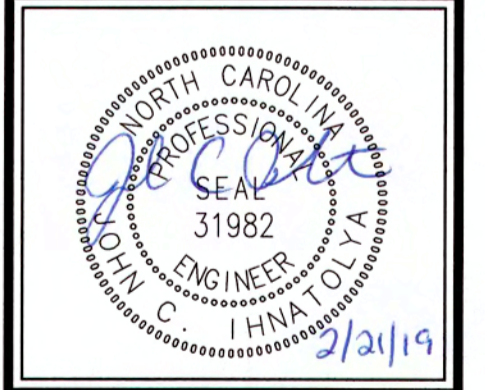
BY: *JCI* DATE: *6/19/19*
 ADMINISTRATOR



K:\02090251\02090251_19_Knightdale Station R7 CAD Construction Drawings\2.1 SITE PLAN.dwg - WithersRavenel - February 20, 2019 10:59:59 AM - DORISYA COLLEEN



Job No.	02090251.91	Drawn By	CED
Date	06/21/16	Designer	JCI



Revisions	
1	TOK Comments 09/07/16
2	TOK Comments 12/08/17
3	TOK Comments 04/11/18
4	Sewer Outfall J Revisions 02/21/19

EXISTING PUMP STATION (TOK # ZCP-4-15)
 CHARLES SIDNEY WILLIAMS, JR.
 D.B. 13728, PG. 537
 PIN NO. 1764.01-18-5301

EXISTING PUMP STATION EOP (TOK # ZCP-4-15)

VICTOR MARSHALL MASSEY, JR.
 ESTATE FILE 12-E-2633
 PIN NO. 1764.01-17-4814

LOUIS W. MASSEY
 VICTOR MARSHALL MASSEY, JR.
 D.B. 8630, PG. 2367
 PIN NO. 1764.01-17-3564

MILTON W. MURPHY
 PATRICIA W. MURPHY
 D.B. 4395, PG. 663
 B.M. 1988, PG. 1263
 PIN NO. 1764.01-17-4131

ALL MATERIALS & CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH ALL CITY OF RALEIGH & TOWN OF KNIGHTDALE DESIGN STANDARDS, DETAILS, AND SPECIFICATIONS.

CITY OF RALEIGH

ALL CONSTRUCTION MUST BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL RULES AND REGULATIONS.

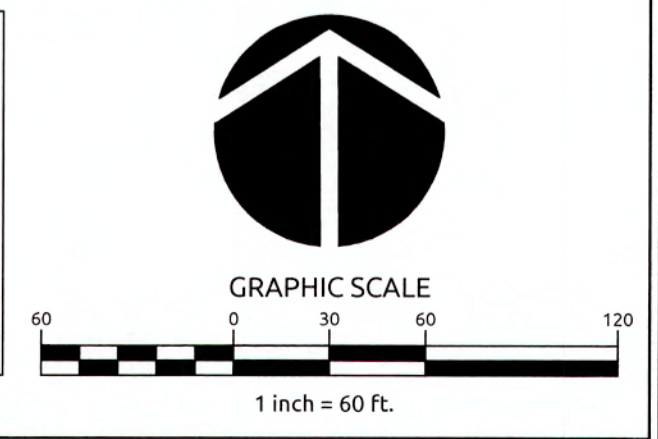
TRANSPORTATION SERVICES	N/A
PUBLIC UTILITIES	48 3/25/19
FORMWATER	N/A
PLANNING	N/A
FIRE	N/A
URBAN FORESTRY	N/A

TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

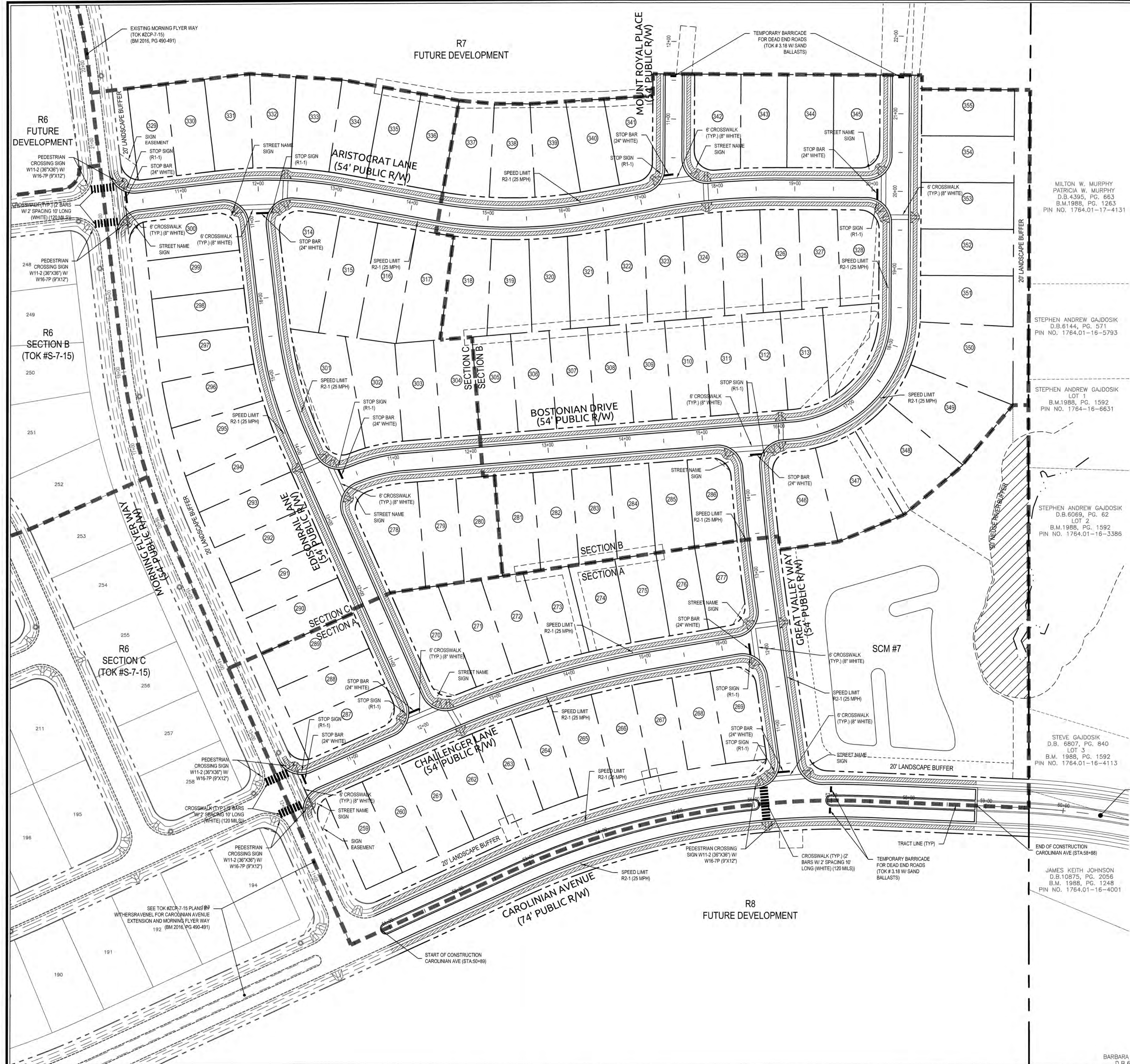
BY: *[Signature]* DATE: 6-13-2019
 DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: *[Signature]* DATE: 6/14/19
 ADMINISTRATOR



K:\09\06\02090251.91\Knightdale Station R7 CAD\Construction\Drawings\2.2 SITE PLAN.dwg, Wednesday, February 22, 2019 11:05:04 AM, D:\BRYAN COLLIER



- PAVEMENT MARKINGS & SIGNAGE NOTES**
1. ALL PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH TOWN OF KNIGHTDALE STANDARDS & SPECIFICATIONS, LATEST REVISIONS.
 2. ALL PAVEMENT MARKINGS SHALL BE THERMOPLASTIC IN ACCORDANCE WITH TOWN OF KNIGHTDALE STANDARDS.
 3. ALL SIGNAGE SHALL BE IN ACCORDANCE WITH MUTCD, LATEST REVISION.
 4. STREET SIGNS SHALL FOLLOW THE TOWN OF KNIGHTDALE DETAIL 3.17.

MILTON W. MURPHY
PATRICIA W. MURPHY
D.B. 4395, PG. 663
B.M. 1988, PG. 1263
PIN NO. 1764.01-17-4131

STEPHEN ANDREW GAJDOSIK
D.B. 6144, PG. 571
PIN NO. 1764.01-16-5793

STEPHEN ANDREW GAJDOSIK
LOT 1
B.M. 1988, PG. 1592
PIN NO. 1764-16-6631

STEPHEN ANDREW GAJDOSIK
D.B. 6069, PG. 62
LOT 2
B.M. 1988, PG. 1592
PIN NO. 1764.01-16-3386

STEVE GAJDOSIK
D.B. 6807, PG. 840
LOT 3
B.M. 1988, PG. 1592
PIN NO. 1764.01-16-4113

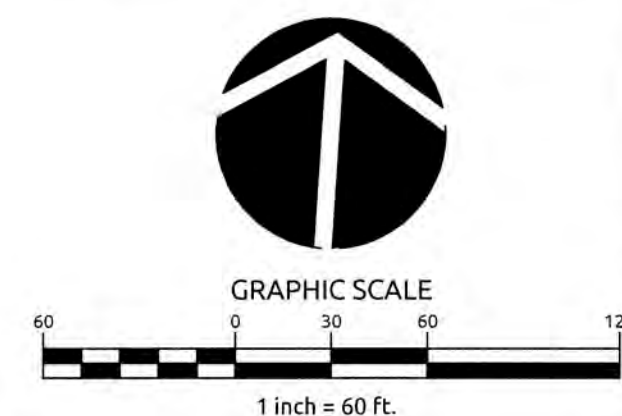
JAMES KEITH JOHNSON
D.B. 10875, PG. 2056
B.M. 1988, PG. 1248
PIN NO. 1764.01-16-4001

TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

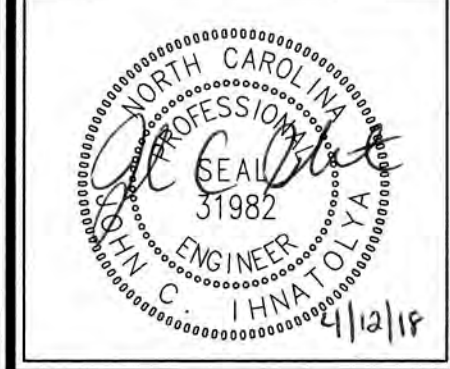
BY: *[Signature]* DATE: 4.19.18
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: *[Signature]* DATE: 8-16-18
ADMINISTRATOR

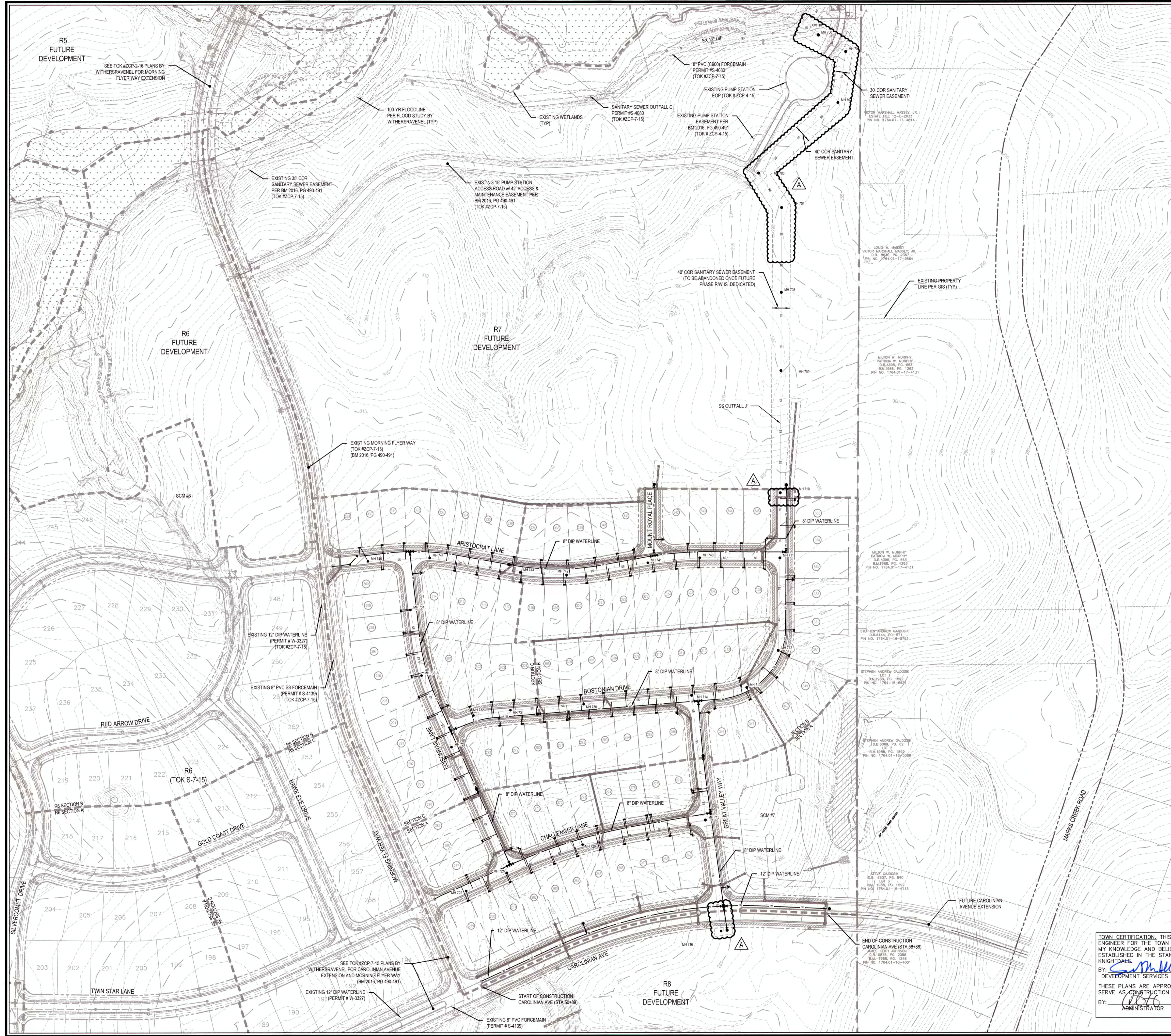


Job No.	0209025191	Drawn By	CED
Date	06/21/16	Designer	JCI



Revisions		
1	TOK Comments	09/07/16
2	TOK Comments	12/08/17
3	TOK Comments	04/11/18

K:\0709-0209025191 Knightdale Station R7\CD\Construction Drawings\6 SIGNAGE PLAN.dwg, Wednesday, April 11, 2018 9:25:58 AM - DURTKA COLLEEN



EXISTING UTILITY NOTE:
 ALL EXISTING WATERMAINS & DOWNSTREAM SEWER FACILITIES TO WHICH THIS PROJECT CONNECTS SHALL BE ACCEPTED BY THE CITY OF RALEIGH FOR MAINTENANCE PRIOR TO RELEASE OF 1ST CO IN KNIGHTDALE STATION, R-7 PHASE OF DEVELOPMENT (SECTIONS A, B, C). REF: 2014 EDITION OF CORPUD HANDBOOK, PAGES 25-32

ATTENTION CONTRACTORS

THE CONSTRUCTION CONTRACTOR RESPONSIBLE FOR THE EXTENSION OF WATER AND SEWER, AS APPROVED IN THESE PLANS, IS RESPONSIBLE FOR CONTACTING THE PUBLIC UTILITIES DEPARTMENT AT (919) 998-4540 AT LEAST 24 HOURS PRIOR TO BEGINNING ANY CONSTRUCTION.

FAILURE TO NOTIFY BOTH CITY DEPARTMENTS IN ADVANCE OF BEGINNING CONSTRUCTION WILL RESULT IN THE ISSUANCE OF MONETARY FINES AND REQUIRE REINSTALLATION OF ANY WATER OR SEWER FACILITIES NOT INSPECTED AS A RESULT OF THIS NOTIFICATION FAILURE.

FAILURE TO CALL FOR INSPECTION, INSTALL A DOWNSTREAM PLUG, HAVE PERMITTED PLANS ON THE JOB SITE, OR ANY OTHER VIOLATION OF CITY OF RALEIGH STANDARDS WILL RESULT IN A FINE AND POSSIBLE EXCLUSION FROM FUTURE WORK IN THE CITY OF RALEIGH.

PUBLIC SEWER COLLECTION/EXTENSION SYSTEM

THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S PUBLIC SEWER SYSTEM AS SHOWN ON THIS PLAN. THE MATERIAL AND CONSTRUCTION METHODS USED FOR THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY'S PUBLIC UTILITIES HANDBOOK.

CITY OF RALEIGH
 PUBLIC UTILITIES DEPARTMENT PERMIT # 5-2417(Ae.v)
 AUTHORIZATION TO CONSTRUCT Approved Sample
 DATE 3/25/19

PUBLIC WATER DISTRIBUTION/EXTENSION SYSTEM

THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S PUBLIC WATER SYSTEM AS SHOWN ON THIS PLAN. THE MATERIAL AND CONSTRUCTION METHODS USED FOR THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY'S PUBLIC UTILITIES HANDBOOK.

CITY OF RALEIGH
 PUBLIC UTILITIES DEPARTMENT PERMIT # W-3533(Ae.v)
 AUTHORIZATION TO CONSTRUCT Approved Sample
 DATE 3/25/19

CITY OF RALEIGH

ALL CONSTRUCTION MUST BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL RULES AND REGULATIONS.

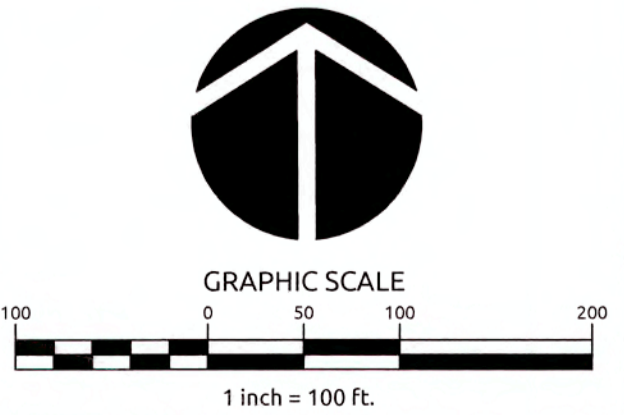
TRANSPORTATION SERVICES N/A
 PUBLIC UTILITIES 43 3/25/19
 STORMWATER N/A
 PLANNING N/A
 FIRE N/A
 URBAN FORESTRY N/A

TOWN CERTIFICATION. THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

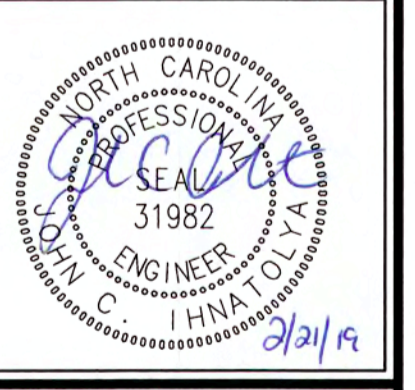
BY: [Signature] DATE: 6/13/2019
 DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: [Signature] DATE: 6/14/19
 ADMINISTRATOR

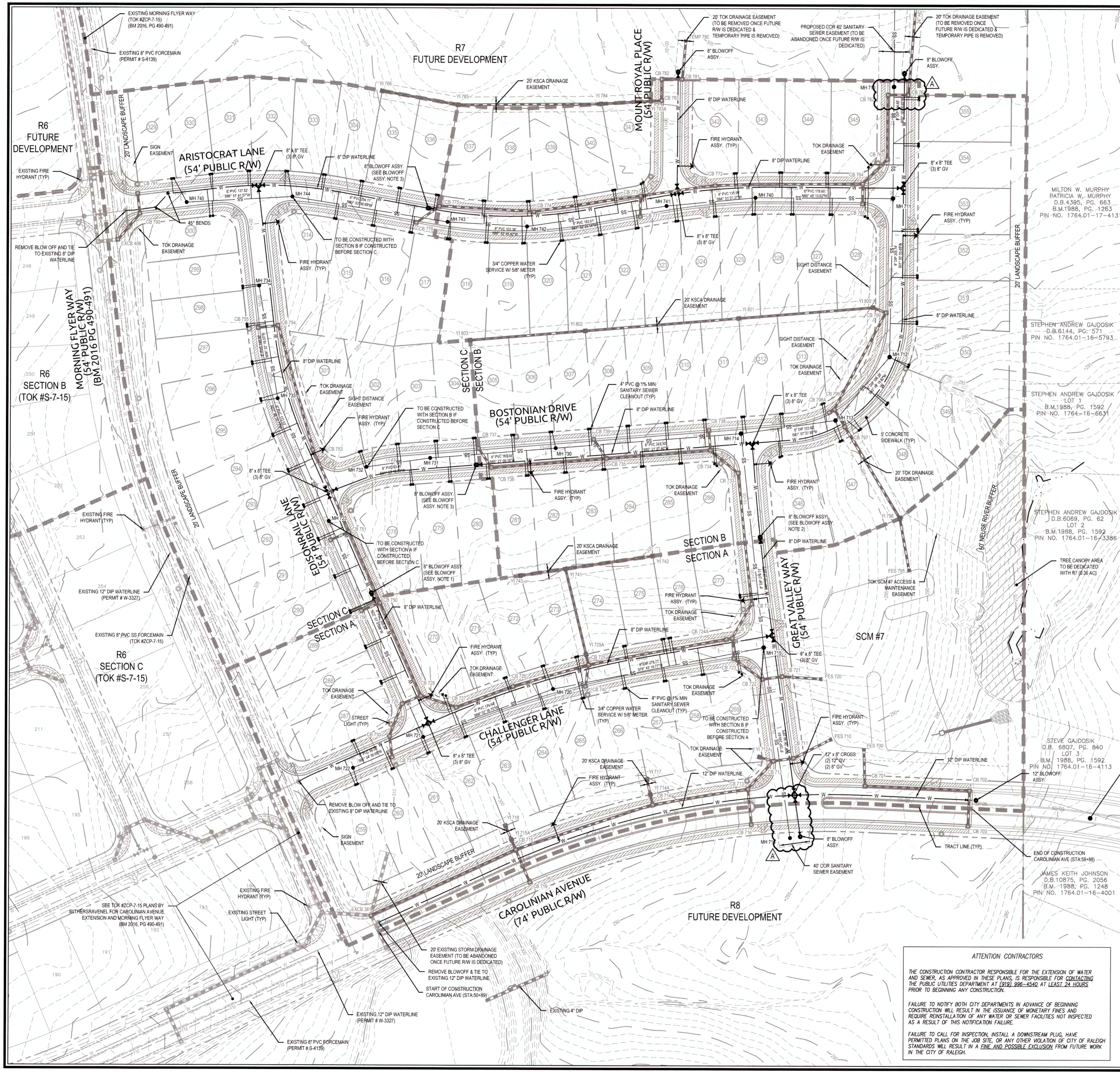


Job No. 02090251.91 Drawn By CED
 Date 06/21/16 Designer JCI



Revisions		
1	TOK Comments	09/07/16
2	TOK Comments	12/08/17
3	TOK Comments	04/11/18
4	Sewer Outfall J Revisions	02/21/19

K:\09\0250251\0251_19_Knightdale Station R7 CAD\Construction Drawings\3.0 OVERALL UTILITY PLAN.dwg - Wednesday, February 20, 2019 12:05:52 PM - DWGTEXTA.COLEN



UTILITY NOTES

- ALL MATERIALS & CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH CITY OF RALEIGH DESIGN STANDARDS, DETAILS & SPECIFICATIONS (REFERENCE CORPUD HANDBOOK, CURRENT EDITION)
- UTILITY SEPARATION REQUIREMENTS:
 - A DISTANCE OF 100' SHALL BE MAINTAINED BETWEEN SANITARY SEWER & ANY PRIVATE OR PUBLIC WATER SUPPLY SOURCE SUCH AS AN IMPOUNDED RESERVOIR USED AS A SOURCE OF DRINKING WATER. IF ADEQUATE LATERAL SEPARATION CANNOT BE ACHIEVED, FERROUS SANITARY SEWER PIPE SHALL BE SPECIFIED & INSTALLED TO WATERLINE SPECIFICATIONS. HOWEVER, THE MINIMUM SEPARATION SHALL NOT BE LESS THAN 25' FROM A PRIVATE WELL OR 50' FROM A PUBLIC WELL.
 - WHEN INSTALLING WATER &/OR SEWER MAINS, THE HORIZONTAL SEPARATION BETWEEN UTILITIES SHALL BE 10'. IF THIS SEPARATION CANNOT BE MAINTAINED DUE TO EXISTING CONDITIONS, THE VARIATION ALLOWED IF THE WATER MAIN IS IN A SEPARATE TRENCH WITH THE ELEVATION OF THE WATER MAIN AT LEAST 18" ABOVE THE TOP OF THE SEWER & MUST BE APPROVED BY THE PUBLIC UTILITIES DIRECTOR. ALL DISTANCES ARE MEASURED FROM OUTSIDE DIAMETER TO OUTSIDE DIAMETER.
 - WHERE IT IS IMPOSSIBLE TO OBTAIN PROPER SEPARATION, OR ANYTIME A SANITARY SEWER PASSES OVER A WATERMAIN, DIP MATERIALS OR STEEL ENCASUREMENT EXTENDED 10' ON EACH SIDE OF CROSSING MUST BE SPECIFIED & INSTALLED TO WATERLINE SPECIFICATIONS.
 - 5.0' MINIMUM HORIZONTAL SEPARATION IS REQUIRED BETWEEN ALL SANITARY SEWER & STORM SEWER FACILITIES, UNLESS DIP MATERIAL IS SPECIFIED FOR SANITARY SEWER.
 - MAINTAIN 18" MIN. VERTICAL SEPARATION AT ALL WATERMAIN & RCP STORM DRAIN CROSSINGS; MAINTAIN 24" MIN. VERTICAL SEPARATION AT ALL SANITARY SEWER & RCP STORM DRAIN CROSSINGS. WHERE ADEQUATE SEPARATIONS CANNOT BE ACHIEVED, SPECIFY DIP MATERIALS & A CONCRETE CRADLE HAVING 6" MIN. CLEARANCE (PER CORPUD DETAILS W-41 & S-49)
 - ALL OTHER UNDERGROUND UTILITIES SHALL CROSS WATER & SEWER FACILITIES WITH 18" MIN. VERTICAL SEPARATION REQUIRED.
- ANY NECESSARY FIELD REVISIONS ARE SUBJECT TO REVIEW & APPROVAL OF AN AMENDED PLAN &/OR PROFILE BY THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PRIOR TO CONSTRUCTION.
- CONTRACTOR SHALL MAINTAIN CONTINUOUS WATER & SEWER SERVICE TO EXISTING RESIDENCES & BUSINESSES THROUGHOUT CONSTRUCTION OF PROJECT. ANY NECESSARY SERVICE INTERRUPTIONS SHALL BE PRECEDED BY A 24 HOUR ADVANCE NOTICE TO THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT.
- 3.0' MINIMUM COVER IS REQUIRED ON ALL WATER MAINS & SEWER FORCE MAINS; 4.0' MINIMUM COVER IS REQUIRED ON ALL REUSE MAINS.
- IT IS THE DEVELOPER'S RESPONSIBILITY TO ABANDON OR REMOVE EXISTING WATER & SEWER SERVICES NOT BEING USED IN DEVELOPMENT OF A SITE UNLESS OTHERWISE DIRECTED BY THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT. THIS INCLUDES INSTALLING TAP AT MAIN & REMOVAL OF SERVICE FROM ROW OR EASEMENT PER CORPUD HANDBOOK PROCEDURE.
- INSTALL 3/4" COPPER WATER SERVICES WITH METERS LOCATED AT ROW OR WITHIN A 2X2' WATERLINE EASEMENT IMMEDIATELY ADJACENT. NOTE: IT IS THE APPLICANT'S RESPONSIBILITY TO PROPERLY SIZE THE WATER SERVICE FOR EACH CONNECTION TO PROVIDE ADEQUATE FLOW & PRESSURE.
- INSTALL 4" PVC SEWER SERVICES @ 1.0% MINIMUM GRADE WITH CLEANOUTS LOCATED AT ROW OR EASEMENT LINE & SPACED EVERY 75' LINEAR FEET MAXIMUM.
- PRESSURE REDUCING VALVES ARE REQUIRED ON ALL WATER SERVICES EXCEEDING 80 PSI; BACKWATER VALVES ARE REQUIRED ON ALL SANITARY SEWER SERVICES HAVING BUILDING DRAINS LOWER THAN 1.0' ABOVE THE NEXT UPSTREAM MANHOLE.
- ALL ENVIRONMENTAL PERMITS APPLICABLE TO THE PROJECT MUST BE OBTAINED FROM NCDWQ, USACE &/OR FEMA FOR ANY RIPARIAN BUFFER, WETLAND &/OR FLOODPLAIN IMPACTS (RESPECTIVELY) PRIOR TO CONSTRUCTION.
- NDOT /RAILROAD ENCROACHMENT AGREEMENTS ARE REQUIRED FOR ANY UTILITY WORK (INCLUDING MAIN EXTENSIONS & SERVICE TAPS) WITHIN STATE OR RAILROAD ROW PRIOR TO CONSTRUCTION.
- GREASE INTERCEPTOR / OIL WATER SEPARATOR SIZING CALCULATIONS & INSTALLATION SPECIFICATIONS SHALL BE APPROVED BY THE CORPUD FOG PROGRAM COORDINATOR PRIOR TO ISSUANCE OF A BUILDING PERMIT. CONTACT TIM BEASLEY AT (919) 996-2334 OR TIMOTHY.BEASLEY@RALEIGHNC.GOV FOR MORE INFORMATION.
- CROSS-CONNECTION CONTROL PROTECTION DEVICES ARE REQUIRED BASED ON DEGREE OF HEALTH HAZARD INVOLVED AS LISTED IN APPENDIX-B OF THE RULES GOVERNING PUBLIC WATER SYSTEMS IN NORTH CAROLINA. THESE GUIDELINES ARE THE MINIMUM REQUIREMENTS. THE DEVICES SHALL MEET AMERICAN SOCIETY OF SANITARY ENGINEERING (ASSE) STANDARDS OR BE ON THE UNIVERSITY OF SOUTHERN CALIFORNIA APPROVAL LIST. THE DEVICES SHALL BE INSTALLED AND TESTED (BOTH INITIAL AND PERIODIC TESTING THEREAFTER) IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS OR THE LOCAL CROSS-CONNECTION CONTROL PROGRAM, WHICHEVER IS MORE STRINGENT. CONTACT JOANIE HARTLEY AT (919) 996-5923 OR JOANIE.HARTLEY@RALEIGHNC.GOV FOR MORE INFORMATION.

UTILITY PHASING NOTES

- SHOULD SECTION 'A' BE CONSTRUCTED INDEPENDENTLY OF SECTIONS 'B' AND 'C', A 40' CITY OF RALEIGH SANITARY SEWER EASEMENT SHALL BE DEDICATED FROM THE MH710 TO THE PHASE LINE BETWEEN MH714 & MH715.
- SHOULD SECTION 'C' BE CONSTRUCTED INDEPENDENTLY OF SECTIONS 'A' AND 'B', A 40' CITY OF RALEIGH SANITARY SEWER EASEMENT SHALL BE DEDICATED FROM MH710 TO THE PHASE LINE BETWEEN MH743 & MH740, MH730 & MH731 AND MH721 & MH723.

BLOWOFF ASSEMBLY NOTES

- BLOWOFF ASSEMBLY SHOWN CORRECTLY IF SECTION A PRECEDES SECTION C, REVERSE BLOW OFF ASSEMBLY DIRECTION IF SECTION C PRECEDES A.
- BLOWOFF ASSEMBLY SHOWN CORRECTLY IF SECTION A PRECEDES SECTION B, REVERSE BLOW OFF ASSEMBLY DIRECTION IF SECTION B PRECEDES A.
- BLOWOFF ASSEMBLY SHOWN CORRECTLY IF SECTION B PRECEDES SECTION C, REVERSE BLOW OFF ASSEMBLY DIRECTION IF SECTION C PRECEDES B.

EXISTING WATER & SEWER NOTE:
 TOK #2CP-7-15 WATER & SEWER LINES SHOWN CORRESPOND TO COR PERMIT #W-3327 AND #S-4080.

ALL MATERIALS & CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH ALL CITY OF RALEIGH & TOWN OF KNIGHTDALE DESIGN STANDARDS, DETAILS, AND SPECIFICATIONS.

EXISTING UTILITY NOTE:
 ALL EXISTING WATER MAINS & DOWNSTREAM SEWER FACILITIES TO WHICH THIS PROJECT CONNECTS SHALL BE ACCEPTED BY THE CITY OF RALEIGH FOR MAINTENANCE PRIOR TO RELEASE OF 1ST CO IN KNIGHTDALE STATION, R7 PHASE OF DEVELOPMENT (SECTIONS A, B, C). REF: 2014 EDITION OF CORPUD HANDBOOK, PAGES 25-32

CITY OF RALEIGH
 ALL CONSTRUCTION MUST BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL RULES AND REGULATIONS.

TRANSPORTATION SERVICES N/A
 PUBLIC UTILITIES 488 3/25/19
 STORMWATER N/A
 PLANNING N/A
 FIRE N/A
 URBAN FORESTRY N/A

PUBLIC SEWER COLLECTION/EXTENSION SYSTEM

THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S PUBLIC SEWER SYSTEM AS SHOWN ON THIS PLAN. THE MATERIAL AND CONSTRUCTION METHODS USED FOR THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY'S PUBLIC UTILITIES HANDBOOK.

CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PERMIT # 5-4417 (Rev)
 AUTHORIZATION TO CONSTRUCT 4 years m. Sample
 DATE 3/25/19

PUBLIC WATER DISTRIBUTION/EXTENSION SYSTEM

THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S PUBLIC WATER SYSTEM AS SHOWN ON THIS PLAN. THE MATERIAL AND CONSTRUCTION METHODS USED FOR THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY'S PUBLIC UTILITIES HANDBOOK.

CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PERMIT # W-3533 (Rev)
 AUTHORIZATION TO CONSTRUCT 4 years m. Sample
 DATE 3/25/19

ATTENTION CONTRACTORS

THE CONSTRUCTION CONTRACTOR RESPONSIBLE FOR THE EXTENSION OF WATER AND SEWER, AS APPROVED IN THESE PLANS, IS RESPONSIBLE FOR CONTACTING THE PUBLIC UTILITIES DEPARTMENT AT (919) 996-4362 AT LEAST 24 HOURS PRIOR TO BEGINNING ANY CONSTRUCTION.

FAILURE TO NOTIFY BOTH CITY DEPARTMENTS IN ADVANCE OF BEGINNING CONSTRUCTION WILL RESULT IN THE ISSUANCE OF MONETARY FINES AND REQUIRE REINSTALLATION OF ANY WATER OR SEWER FACILITIES NOT INSPECTED AS A RESULT OF THIS NOTIFICATION FAILURE.

FAILURE TO CALL FOR INSPECTION, INSTALL A DOWNSTREAM PLUG, HAVE PERMITTED PLANS ON THE JOB SITE, OR ANY OTHER VIOLATION OF CITY OF RALEIGH STANDARDS WILL RESULT IN A FINE AND POSSIBLE EXCLUSION FROM FUTURE WORK IN THE CITY OF RALEIGH.

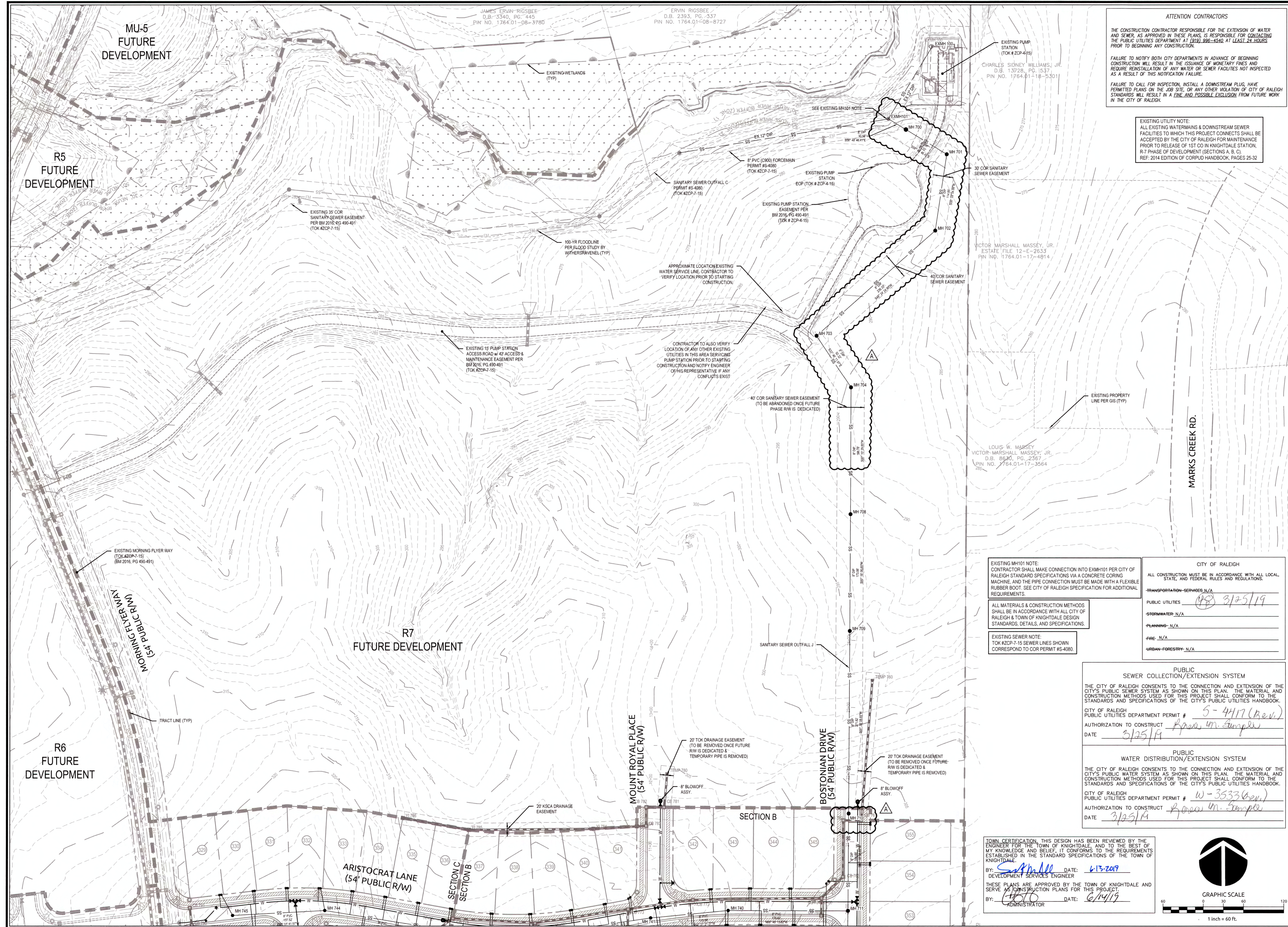
TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: [Signature] DATE: 6/13/2019
 DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: [Signature] DATE: 6/14/19
 ADMINISTRATOR

GRAPHIC SCALE
 1 inch = 60 ft.



ATTENTION CONTRACTORS

THE CONSTRUCTION CONTRACTOR RESPONSIBLE FOR THE EXTENSION OF WATER AND SEWER AS SHOWN IN THESE PLANS IS RESPONSIBLE FOR CONTACTING THE PUBLIC UTILITIES DEPARTMENT AT (919) 596-4540 AT LEAST 24 HOURS PRIOR TO BEGINNING ANY CONSTRUCTION.

FAILURE TO NOTIFY BOTH CITY DEPARTMENTS IN ADVANCE OF BEGINNING CONSTRUCTION WILL RESULT IN THE ISSUANCE OF MONETARY FINES AND REQUIRE REINSTALLATION OF ANY WATER OR SEWER FACILITIES NOT INSPECTED AS A RESULT OF THIS NOTIFICATION FAILURE.

FAILURE TO CALL FOR INSPECTION, INSTALL A DOWNSIDE PLUG, HAVE PERMITTED PLANS ON THE JOB SITE, OR ANY OTHER VIOLATION OF CITY OF RALEIGH STANDARDS WILL RESULT IN A FINE AND POSSIBLE EXCLUSION FROM FUTURE WORK IN THE CITY OF RALEIGH.

EXISTING UTILITY NOTE:
 ALL EXISTING WATERMANS & DOWNSTREAM SEWER FACILITIES TO WHICH THIS PROJECT CONNECTS SHALL BE ACCEPTED BY THE CITY OF RALEIGH FOR MAINTENANCE PRIOR TO RELEASE OF 1ST CO IN KNIGHTDALE STATION, R-7 PHASE OF DEVELOPMENT (SECTIONS A, B, C).
 REF: 2014 EDITION OF CORPUD HANDBOOK, PAGES 25-32

CITY OF RALEIGH

ALL CONSTRUCTION MUST BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL RULES AND REGULATIONS.

TRANSPORTATION-SERVICES: N/A

PUBLIC UTILITIES: (48) 3/25/19

STORMWATER: N/A

PLANNING: N/A

FIRE: N/A

URBAN-FORESTRY: N/A

PUBLIC SEWER COLLECTION/EXTENSION SYSTEM

THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S PUBLIC WATER SYSTEM AS SHOWN ON THIS PLAN. THE MATERIAL AND CONSTRUCTION METHODS USED FOR THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY'S PUBLIC UTILITIES HANDBOOK.

CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PERMIT # 5-4417 (Rev.)

AUTHORIZATION TO CONSTRUCT: *[Signature]*

DATE: 3/25/19

PUBLIC WATER DISTRIBUTION/EXTENSION SYSTEM

THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S PUBLIC WATER SYSTEM AS SHOWN ON THIS PLAN. THE MATERIAL AND CONSTRUCTION METHODS USED FOR THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY'S PUBLIC UTILITIES HANDBOOK.

CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PERMIT # W-3533 (Rev.)

AUTHORIZATION TO CONSTRUCT: *[Signature]*

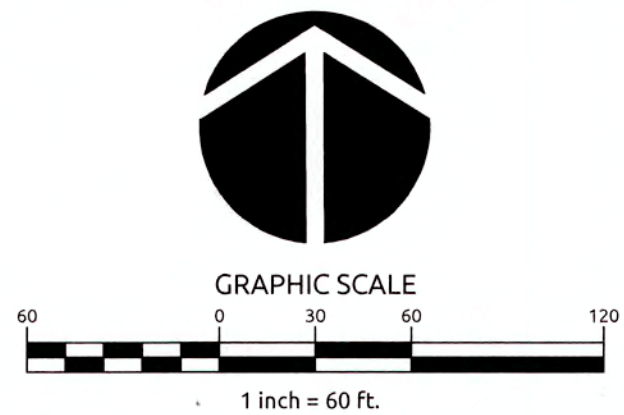
DATE: 3/25/19

TOWN CERTIFICATION THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

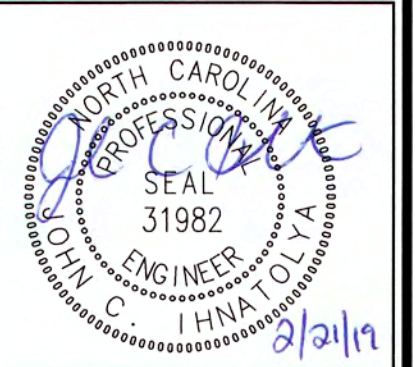
BY: *[Signature]* DATE: 6/13/2019
 DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: *[Signature]* DATE: 6/14/19
 ADMINISTRATOR



Job No:	02090251.91	Drawn By:	CEJ
Date:	06/21/16	Designer:	JCI



Revisions

1	TOK Comments	09/07/16
2	TOK Comments	12/08/17
3	TOK Comments	04/11/18
4	Sewer Outfall J Revisions	02/21/19

K:\09\0250\090251.91\Knightdale Station R7 CAD Construction Drawings\3.2 UTILITY PLAN.dwg - Wednesday, February 25, 2019 12:28:06 PM - DURITA COLLEEN



- GRADING AND DRAINAGE NOTES:**
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE STANDARD SPECIFICATIONS & DETAILS.
 - BOUNDARY SURVEY AND TOPOGRAPHIC SURVEY PERFORMED BY WITHERSRAVENEL, INC. OFFSITE TOPOGRAPHIC INFORMATION PROVIDED BY NC LIDAR.
 - WETLANDS AND STREAM BUFFERS DELINEATED AND SURVEYED BY WITHERSRAVENEL, INC.
 - THIS PROPERTY DOES NOT LIE WITHIN THE FEMA FLOODPLAIN PER MAP NUMBER 3720175400J AND 3720176400J, WITH AN EFFECTIVE DATE OF MAY 2, 2006.
 - RECEIVING WATERCOURSE: UNNAMED TRIBUTARY OF MARKS CREEK IN THE NEUSE RIVER BASIN.
 - THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING CONSTRUCTION. THE LOCATION OF EXISTING UTILITIES SHOWN ON THE PLANS IS BASED ON THE BEST AVAILABLE INFORMATION, BUT CAN BE CONSIDERED ONLY AS APPROXIMATE.
 - ALL STORM DRAINAGE PIPE SHALL HAVE A MINIMUM COVER OF 2 FEET TO THE PIPE CROWN IN TRAFFIC, UNLESS APPROVED BY THE TOWN OF KNIGHTDALE.
 - ALL STORM DRAINAGE PIPE SHALL HAVE A MINIMUM COVER OF 1 FOOT TO THE PIPE CROWN IN NON-TRAFFIC AREAS.
 - STORM SEWER PIPE ENDS SHALL BE FURNISHED WITH REINFORCED CONCRETE PIPE FLARED END SECTION UNLESS OTHERWISE SPECIFIED ON PLANS.
 - EACH DRAINAGE STRUCTURE SHALL HAVE A SHAPED INVERT CONSTRUCTED FROM CONCRETE PER TOWN OF KNIGHTDALE STANDARD SPECIFICATIONS.
 - ENERGY DISSIPATORS SHALL BE INSTALLED AT ALL STORM SEWER DISCHARGE POINTS. A FABRIC OR WASHED STONE BARRIER SHALL BE INSTALLED BETWEEN THE DISSIPATION PAD AND THE NATURAL GROUND.
 - STORM PIPE TRENCH EXCAVATION AND BACKFILLING SHALL BE PERFORMED IN ACCORDANCE WITH TOWN OF KNIGHTDALE STANDARD SPECIFICATIONS AND DETAILS. PLEASE CONTACT THE TOWN OF KNIGHTDALE DEVELOPMENT SERVICES ENGINEER PRIOR TO THE INSTALLATION OF ALL STORM DRAIN PIPE. STORMWATER CALCULATIONS ARE BASED ON A MAXIMUM 3,500 SF OF IMPERVIOUS AREA PER LOT.
 - ALL STORM DRAINAGE PIPE SHALL BE CLASS III REINFORCED CONCRETE PIPE (RCP) UNLESS NOTED OTHERWISE.
 - DISCHARGE BASED ON 10-YR STORM EVENT UNLESS NOTED OTHERWISE.
 - CB=CATCH BASIN; FES=FLARED END SECTION; JB=JUNCTION BOX; YI=YARD INLET (TOK #5.04); DI=DROP INLET (TOK #5.04)
 - RIM ELEVATION GIVEN FOR CB IS TOP OF CURB, YI OPENING INVERT FOR SLAB TOP OR TOP OF GRATE FOR GRATED INLET, DI IS TOP OF GRATE FOR GRATED INLET, JB IS TOP OF RIM.
 - "TOK DRAINAGE EASEMENT" = PUBLIC EASEMENT. "KSCA DRAINAGE EASEMENT" = KNIGHTDALE STATION COMMUNITY ASSOCIATION, INC.
 - ALL PUBLIC STORM DRAINAGE FRAMES, GRATES, & HOODS SHALL BE STAMPED W/ "DRAINS TO RIVER" IN ACCORDANCE WITH TOWN OF KNIGHTDALE STANDARDS.
 - THE USE OF WAFFLE BOXES IS NOT PERMITTED WITHIN PUBLIC RIGHTS OF WAY AND PUBLIC DRAINAGE EASEMENTS.
 - THE CONTRACTOR WILL BE RESPONSIBLE FOR INSTALLING STEPS IN STORM DRAINAGE BOXES GREATER THAN OR EQUAL TO 5.0 FEET DEPTH. THE STEPS SHALL BE INSTALLED ON 16 INCH CENTERS AND SECURED PER TOWN OF KNIGHTDALE SPECIFICATIONS.

ALL MATERIALS & CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH ALL CITY OF RALEIGH & TOWN OF KNIGHTDALE DESIGN STANDARDS, DETAILS, AND SPECIFICATIONS.

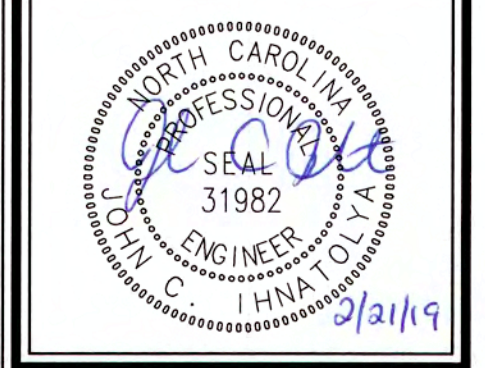


**KNIGHTDALE STATION
R7
(SECTION A, B & C)**

KNIGHTDALE, WAKE COUNTY, NORTH CAROLINA

**OVERALL STORM
DRAINAGE AND GRADING
PLAN**

Job No.	02090251.91	Drawn By	CED
Date	06/21/16	Designer	JCI



CITY OF RALEIGH
ALL CONSTRUCTION MUST BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL RULES AND REGULATIONS.

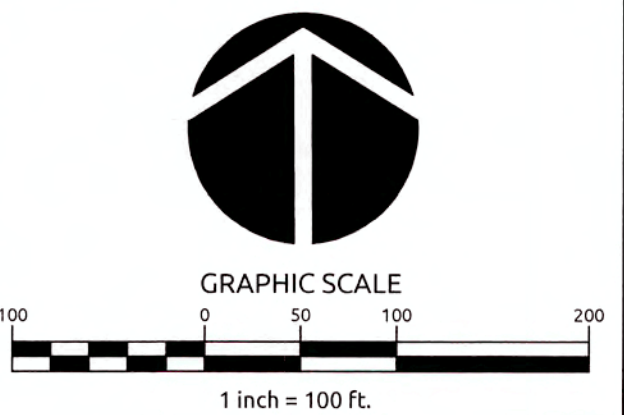
TRANSPORTATION SERVICES	N/A
PUBLIC UTILITIES	N/A
STORMWATER	N/A
PLANNING	N/A
FIRE	N/A
URBAN FORESTRY	N/A

TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

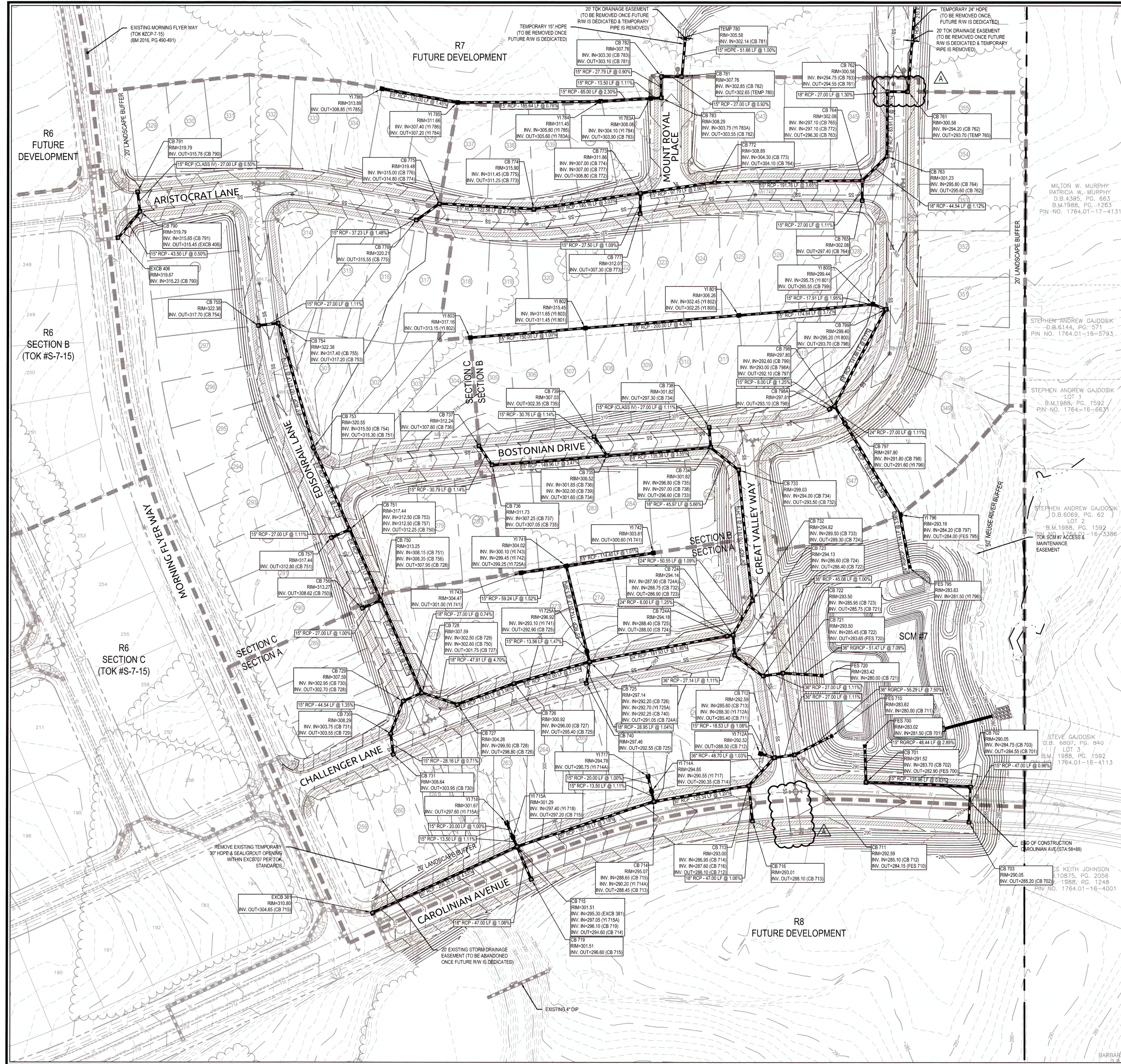
BY: *[Signature]* DATE: 6/13/2019
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: *[Signature]* DATE: 6/14/19
ADMINISTRATOR



K:\2016\02090251.91_Overall Storm Drainage and Grading Plan.dwg - Wednesday, February 20, 2019 12:56:42 PM - D:\AREA COLLETT

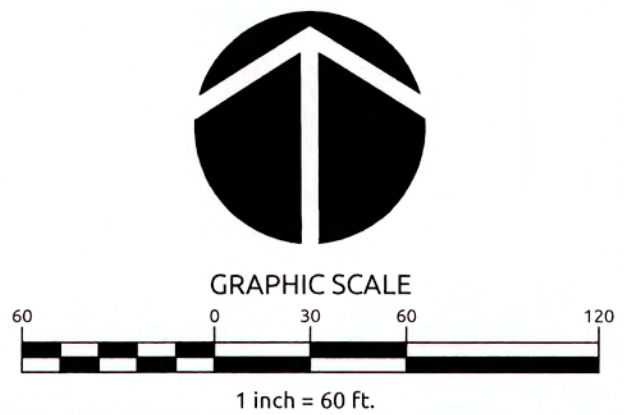


K:\09\0250\090251\1\Knightdale Station R7\CADD\Construction Drawings\4.1 STORM DRAINAGE PLAN.dwg, Wednesday, February 20, 2019 11:28:09 PM - CURTIS, COLLEEN

ALL MATERIALS & CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH ALL CITY, STATE, AND FEDERAL RULES AND REGULATIONS. ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

CITY OF RALEIGH	
ALL CONSTRUCTION MUST BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL RULES AND REGULATIONS.	
TRANSPORTATION SERVICES	N/A
PUBLIC UTILITIES	N/A
STORMWATER	N/A
PLANNING	N/A
FIRE	N/A
URBAN FORESTRY	N/A

TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.
 BY: [Signature] DATE: 6/13/2019
 DEVELOPMENT SERVICES ENGINEER
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 BY: [Signature] DATE: 6/11/19
 ADMINISTRATOR



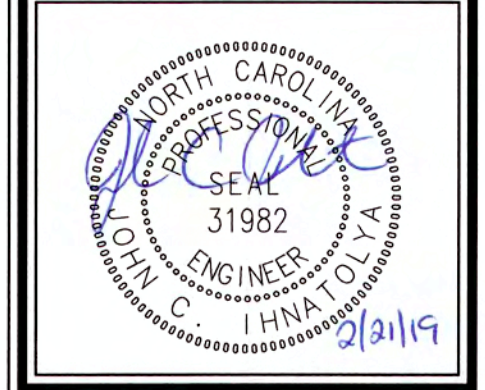
WithersRavenel
 Engineers | Planners | Surveyors

115 MacKinnon Drive, Cary, NC 27511 | T: 919.469.3340 | License # C-6832 | www.withersravenel.com

KNIGHTDALE STATION R7
(SECTION A, B & C)
 KNIGHTDALE, WAKE COUNTY, NORTH CAROLINA

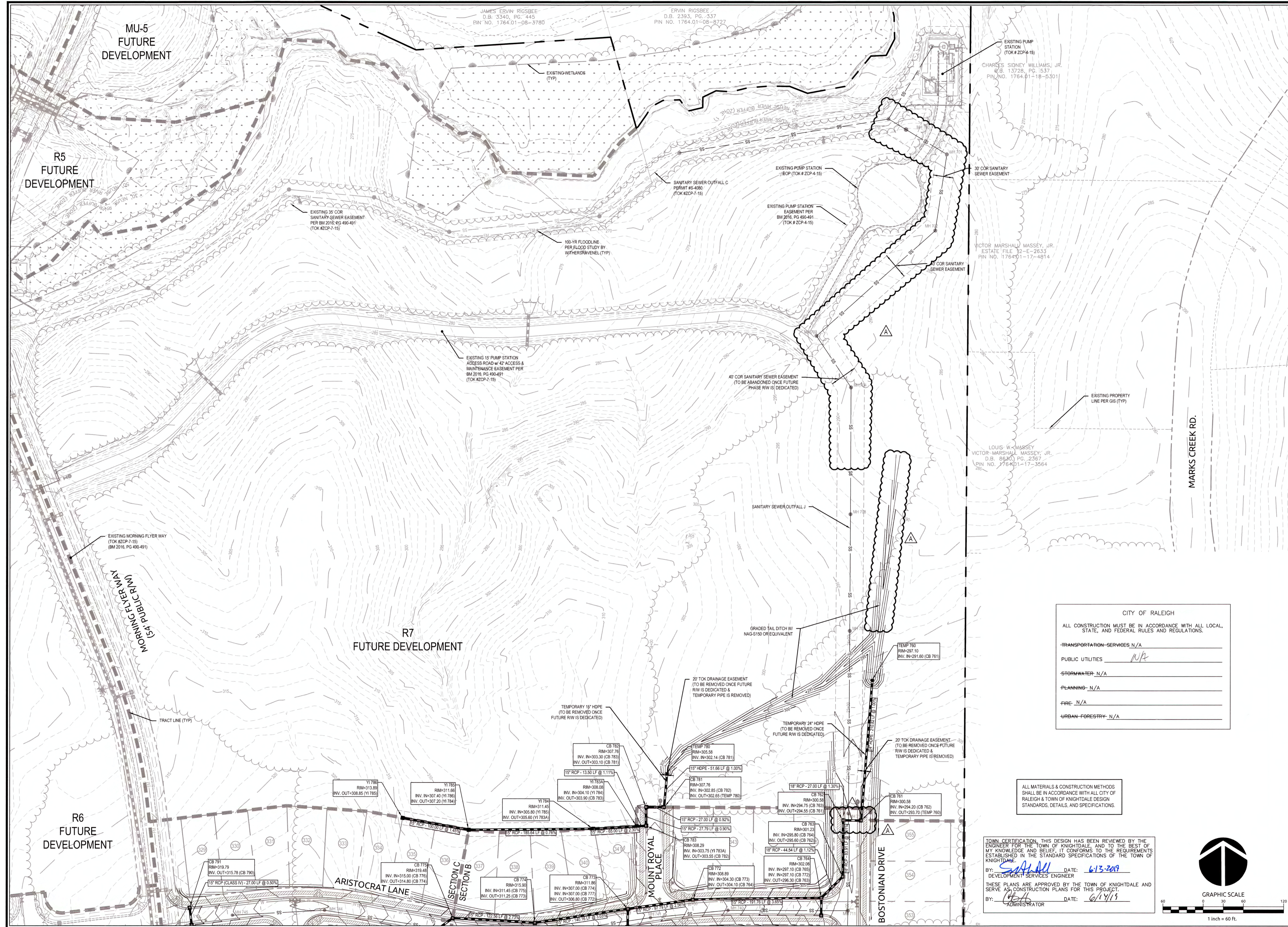
STORM DRAINAGE PLAN

Job No.	02090251.91	Drawn By	CEJ
Date	06/21/16	Designer	JCI



Revisions	
1	TOK Comments 09/07/16
2	TOK Comments 12/08/17
3	TOK Comments 04/11/18
4	Sewer Outfall J Revisions 02/21/19

Sheet No.
4.1



CITY OF RALEIGH
 ALL CONSTRUCTION MUST BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL RULES AND REGULATIONS.

TRANSPORTATION SERVICES: N/A
 PUBLIC UTILITIES: *NP*
 STORMWATER: N/A
 PLANNING: N/A
 FIRE: N/A
 URBAN FORESTRY: N/A

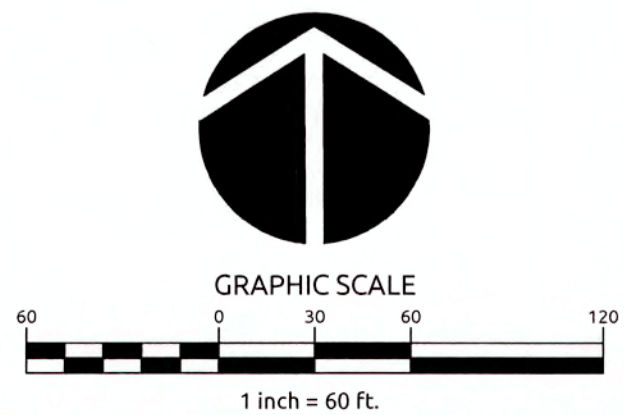
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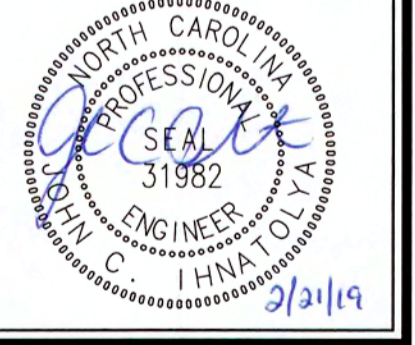
BY: *[Signature]* DATE: 6-13-2019
 DEVELOPMENT SERVICES ENGINEER

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BY: *[Signature]* DATE: 6/14/19
 ADMINISTRATOR



Job No:	02090251.91	Drawn By:	CEJ
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K:\09\0250\090251\1 Knightdale Station R7 CAD Construction Drawings\4.2 STORM DRAINAGE PLAN.dwg: Wednesday, February 20, 2019 12:13:03 PM: DURYEA, COLLEEN

STRUCTURE SCHEDULE

FES 700

STORM STRUCTURE TABLE					
STRUCTURE	RIM EL	STRUCTURE IN	INVERT IN	INVERT OUT	STRUCTURE DEPTH
CB 701	291.52	CB 702	283.70	282.90	6.82
CB 702	290.05	CB 703	284.75	284.55	5.50
CB 703	290.05			285.20	4.85

FES 710

STORM STRUCTURE TABLE					
STRUCTURE	RIM EL	STRUCTURE IN	INVERT IN	INVERT OUT	STRUCTURE DEPTH
CB 711	292.59	CB 712	285.10	284.15	8.44
CB 712	292.59	CB 713 YI 712A	285.60 288.30	285.40	7.19
CB 713	293.00	CB 714 CB 716	286.95 287.60	286.10	6.90
CB 714	295.07	CB 715 YI 714A	288.65 290.20	288.45	6.62
CB 715	301.51	EXCB 381 YI 715A CB 719	295.30 297.05 296.10	294.60	6.91
CB 716	293.01			288.10	4.91
CB 719	301.51			296.60	4.91
EXCB 381	310.80			304.65	6.15
YI 712A	292.52			288.50	4.02
YI 714A	294.85	YI 717	290.55	290.35	4.50
YI 715A	301.29	YI 718	297.40	297.20	4.09
YI 717	294.78			290.75	4.03
YI 718	301.67			297.60	4.07

FES 720

STORM STRUCTURE TABLE					
STRUCTURE	RIM EL	STRUCTURE IN	INVERT IN	INVERT OUT	STRUCTURE DEPTH
CB 721	293.50	CB 722	285.45	283.65	9.85
CB 722	293.50	CB 723	285.95	285.75	7.75
CB 723	294.13	CB 724	286.60	286.40	7.73
CB 724	294.14	CB 724A CB 732	287.90 288.75	286.90	7.24
CB 724A	294.18	CB 725	288.40	288.00	6.18
CB 725	297.14	CB 726 YI 725A CB 740	292.20 292.70 292.25	291.05	6.09
CB 726	300.92	CB 727	296.00	295.40	5.52
CB 727	304.26	CB 728	299.50	298.80	5.46
CB 728	307.59	CB 729 CB 750	302.50 302.60	301.75	5.84
CB 729	307.59	CB 730	302.95	302.70	4.89
CB 730	308.29	CB 731	303.75	303.55	4.74
CB 731	308.64			303.95	4.69
CB 732	294.82	CB 733	289.50	289.30	5.52
CB 733	299.03	CB 734	294.00	293.50	5.74
CB 734	301.82	CB 735 CB 738	296.80 297.00	296.60	5.22
CB 735	306.52	CB 736 CB 739	301.85 302.00	301.60	4.92
CB 736	311.73	CB 737	307.25	307.05	4.68
CB 737	312.24			307.60	4.64
CB 738	301.82			297.30	4.52
CB 739	307.03			302.35	4.68
CB 740	297.46			292.55	4.91
CB 750	313.25	CB 751 CB 756	308.15 308.35	307.95	5.30
CB 751	317.44	CB 753 CB 757	312.50 312.50	312.25	5.19
CB 753	320.55	CB 754	315.50	315.30	5.25
CB 754	322.38	CB 755	317.40	317.20	5.18
CB 755	322.38			317.70	4.68
CB 756	313.27			308.62	4.65
CB 757	317.44			312.80	4.64
YI 725A	296.92	YI 741	293.10	292.90	4.02
YI 741	304.02	YI 743 YI 742	300.10 299.45	299.25	4.77
YI 742	303.81			300.60	3.21
YI 743	304.47			301.00	3.47

TEMP 760

STORM STRUCTURE TABLE					
STRUCTURE	RIM EL	STRUCTURE IN	INVERT IN	INVERT OUT	STRUCTURE DEPTH
CB 761	300.58	CB 762	294.20	293.70	6.88
CB 762	300.58	CB 763	294.75	294.55	6.03
CB 763	301.23	CB 764	295.80	295.60	5.63
CB 764	302.08	CB 765 CB 772	297.10 297.10	296.30	5.78
CB 765	302.08			297.40	4.68
CB 772	308.89	CB 773	304.30	304.10	4.79
CB 773	311.86	CB 774 CB 777	307.00 307.00	306.80	5.06
CB 774	315.90	CB 775	311.45	311.25	4.65
CB 775	319.48	CB 776	315.00	314.80	4.68
CB 776	320.21			315.55	4.66
CB 777	312.01			307.30	4.71

EXCB 406

STORM STRUCTURE TABLE					
STRUCTURE	RIM EL	STRUCTURE IN	INVERT IN	INVERT OUT	STRUCTURE DEPTH
CB 790	319.79	CB 791	315.65	315.45	4.35
CB 791	319.79			315.78	4.01
EXCB 406	319.67	CB 790	315.23		4.44

TEMP 780

STORM STRUCTURE TABLE					
STRUCTURE	RIM EL	STRUCTURE IN	INVERT IN	INVERT OUT	STRUCTURE DEPTH
CB 781	307.76	CB 782	302.85	302.65	5.11
CB 782	307.76	CB 783	303.30	303.10	4.66
CB 783	308.29	YI 783A	303.75	303.55	4.74
YI 783A	308.08	YI 784	304.10	303.90	4.18
YI 784	311.45	YI 785	305.80	305.60	5.85
YI 785	311.66	YI 786	307.40	307.20	4.46
YI 786	313.89			308.85	5.04

FES 795

STORM STRUCTURE TABLE					
STRUCTURE	RIM EL	STRUCTURE IN	INVERT IN	INVERT OUT	STRUCTURE DEPTH
CB 797	297.80	CB 798	291.80	291.60	6.20
CB 798	297.80	CB 799 CB 798A	292.60 293.00	292.10	5.70
CB 798A	297.81			293.10	4.71
CB 799	299.40	YI 800	295.20	293.70	5.70
YI 796	293.19	CB 797	284.20	284.00	9.19
YI 800	299.44	YI 801	295.75	295.55	3.89
YI 801	306.26	YI 802	302.45	302.25	4.01
YI 802	315.45	YI 803	311.65	311.45	4.00
YI 803	317.16			313.15	4.01

PIPE SCHEDULE

FES 700

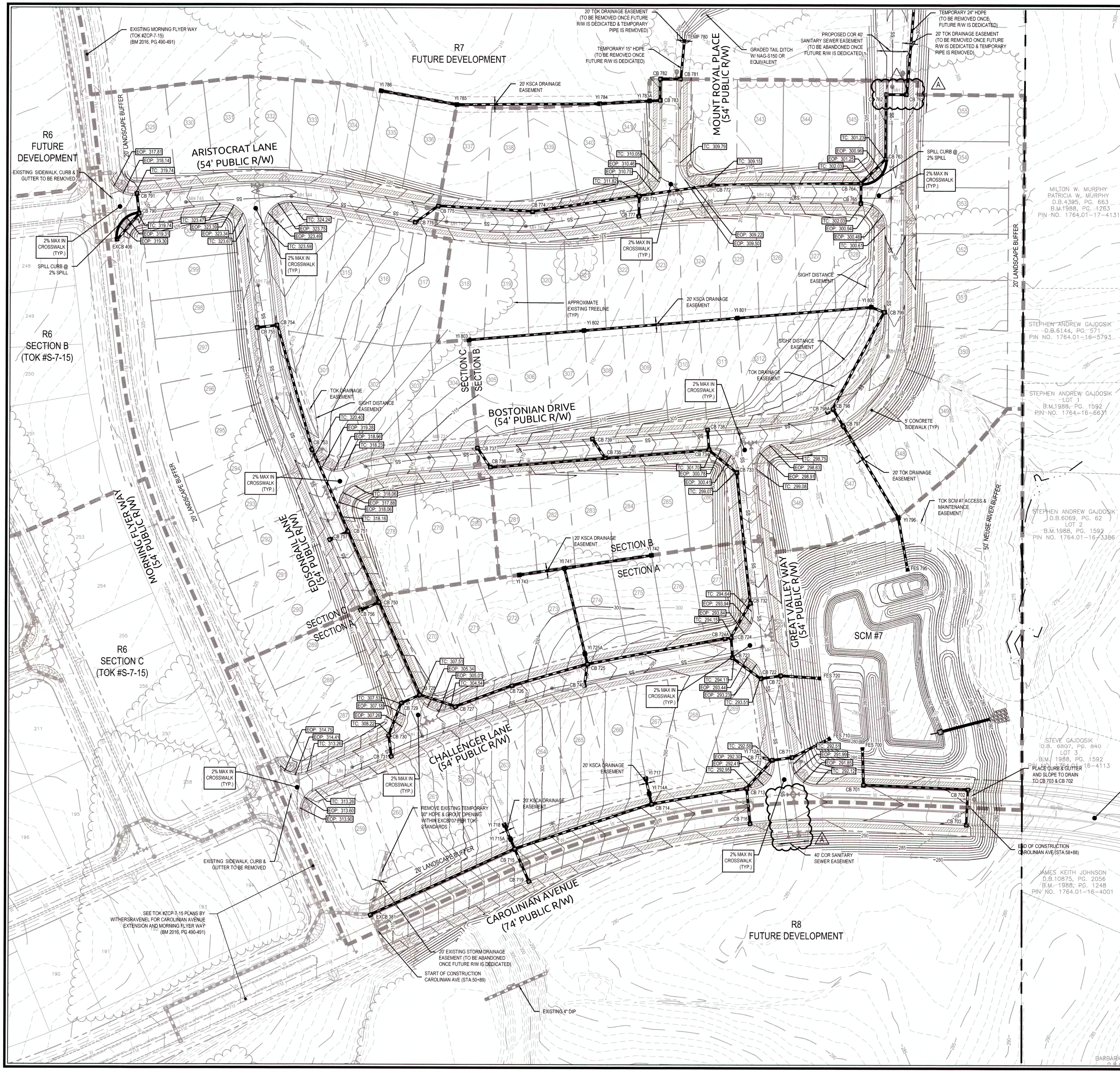
STORM SYSTEM DATA							
UPSTREAM STRUCTURE	DOWNSTREAM STRUCTURE	SIZE	LENGTH	SLOPE	MATERIAL	UPSTREAM INVERT	DOWNSTREAM INVERT
CB 701	FES 700	15	48.44	2.89%	RGRCP	282.90	281.50
CB 702	CB 701	15	135.96	0.63%	RCP	284.55	283.70
CB 703	CB 702	15	47.00	0.96%	RCP	285.20	284.75

FES 710

STORM SYSTEM DATA							
UPSTREAM STRUCTURE	DOWNSTREAM STRUCTURE	SIZE	LENGTH	SLOPE	MATERIAL	UPSTREAM INVERT	DOWNSTREAM INVERT
CB 711	FES 710	36	55.29	7.50%	RGRCP	284.15	280.00
CB 712	CB 711	36	27.00	1.11%	RCP	285.40	285.10
CB 713	CB 712	36	48.70	1.03%	RCP	286.10	285.60
CB 714	CB 713	30	125.34	1.20%	RCP	288.45	286.95
CB 715	CB 714	30	187.16	3.18%	RCP	294.60	288.65
CB 716	CB 715	18	47.00	1.06%	RCP	288.10	287.60
CB 719	CB 715	18	47.00	1.06%	RCP	296.60	296.10
EXCB 381	CB 715	30	206.35	4.53%	RCP	304.65	295.30
YI 712A	CB 712	15	18.53	1.08%	RCP	288.50	288.30
YI 714A	CB 714	15	13.50	1.11%	RCP	290.35	290.20
YI 715A	CB 715	15	13.50	1.11%	RCP	297.20	297.05
YI 717	YI 714A	15	20.00	1.00%	RCP	290.75	290.55
YI 718	YI 715A	15	20.00	1.00%	RCP	297.60	297.40

FES 720

STORM SYSTEM DATA							
UPSTREAM STRUCTURE	DOWNSTREAM STRUCTURE	SIZE	LENGTH	SLOPE	MATERIAL	UPSTREAM INVERT	DOWNSTREAM INVERT
CB 721	FES 720	36	51.47	7.09%	RGRCP	283.65	280.00
CB 722	CB 721	36	27.00	1.11%	RCP	285.75	285.45
CB 723	CB 722	36	45.08	1.00%	RCP	286.40	285.95
CB 724	CB 723	36	27.14	1.11%	RCP	286.90	286.60
CB 724A	CB 724	24	8.00	1.25%	RCP	288.00	287.90
CB 725	CB 724A	24	181.93	1.46%	RCP	291.05	288.40
CB 726	CB 725	18	102.00	3.14%	RCP	295.40	292.20
CB 727	CB 726	18	78.63	3.56%	RCP	298.80	296.00
CB 728	CB 727	18	47.91	4.70%	RCP	301.75	299.50
CB 729	CB 728	18	27.00	0.74%	RCP	302.70	302.50
CB 730	CB 729	15	44.54	1.35%	RCP	303.55	302.95
CB 731	CB 730	15	28.16	0.71%	RCP	303.95	303.75
CB 732	CB 724	24	50.55	1.09%	RCP	289.30	288.75
CB 733	CB 732	24	170.78	2.34%	RCP	293.50	289.50
CB 734	CB 733	18	45.97	5.66%	RCP	296.60	294.00
CB 735	CB 734	18	135.38	3.55%	RCP	301.60	296.80
CB 736	CB 735	15	149.96	3.47%	RCP	307.05	301.85
CB 737	CB 736	15	30.79	1.14%	RCP	307.60	307.25
CB 738	CB 734	15	27.00	1.11%	RCP (CLASS IV)	297.30	297.00
CB 739	CB 735	15	30.76	1.14%	RCP	302.35	302.00
CB 740	CB 725	18	28.95	1.04%	RCP	292.55	292.25
CB 750	CB 728	18	131.59	4.07%	RCP	307.95	302.60
CB 751	CB 750	18	100.42	4.08%	RCP	312.25	308.15
CB 753	CB 751	18	116.30	2.41%	RCP	315.30	312.50
CB 754	CB 753	15	167.67	1.01%	RCP	317.20	315.50
CB 755	CB 754	15	27.00	1.11%	RCP	317.70	317.40
CB 756	CB 750	15	27.00	1.00%	RCP	308.62	308.35
CB 757	CB 751	15	27.00	1.11%	RCP	312.80	312.50
YI 725A	CB 725	15	13.56	1.47%	RCP	292.90	292.70
YI 741	YI 725A	15	114.20	5.39%	RCP	299.25	293.10
YI 742	YI 741	15	114.40	1.01%	RCP	300.60	299.45
YI 743	YI 741	15	59.24	1.52%	RCP	301.00	300.10



GRADING AND DRAINAGE NOTES:

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE STANDARD SPECIFICATIONS & DETAILS.
2. BOUNDARY SURVEY AND TOPOGRAPHIC SURVEY PERFORMED BY WITHERSRAVENEL, INC. OFFSITE TOPOGRAPHIC INFORMATION PROVIDED BY NC LIDAR.
3. WETLANDS AND STREAM BUFFERS DELINEATED AND SURVEYED BY WITHERSRAVENEL, INC.
4. THIS PROPERTY DOES NOT LIE WITHIN THE FEMA FLOODPLAIN PER MAP NUMBER 3720175400J AND 3720176400J, WITH AN EFFECTIVE DATE OF MAY 2, 2006.
5. RECEIVING WATERCOURSE: UNNAMED TRIBUTARY OF MARKS CREEK IN THE NEUSE RIVER BASIN.
6. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING CONSTRUCTION. THE LOCATION OF EXISTING UTILITIES SHOWN ON THE PLANS IS BASED ON THE BEST AVAILABLE INFORMATION, BUT CAN BE CONSIDERED ONLY AS APPROXIMATE.
7. ALL STORM DRAINAGE PIPE SHALL HAVE A MINIMUM COVER OF 2 FEET TO THE PIPE CROWN IN TRAFFIC, UNLESS APPROVED BY THE TOWN OF KNIGHTDALE.
8. ALL STORM DRAINAGE PIPE SHALL HAVE A MINIMUM COVER OF 1 FOOT TO THE PIPE CROWN IN NON-TRAFFIC AREAS.
9. STORM SEWER PIPE ENDS SHALL BE FURNISHED WITH REINFORCED CONCRETE PIPE FLARED END SECTION UNLESS OTHERWISE SPECIFIED ON PLANS.
10. EACH DRAINAGE STRUCTURE SHALL HAVE A SHAPED INVERT CONSTRUCTED FROM CONCRETE PER TOWN OF KNIGHTDALE STANDARD SPECIFICATIONS.
11. ENERGY DISSIPATORS SHALL BE INSTALLED AT ALL STORM SEWER DISCHARGE POINTS. A FABRIC OR WASHED STONE BARRIER SHALL BE INSTALLED BETWEEN THE DISSIPATION PAD AND THE NATURAL GROUND. STORM PIPE TRENCH EXCAVATION AND BACKFILLING SHALL BE PERFORMED IN ACCORDANCE WITH TOWN OF KNIGHTDALE STANDARD SPECIFICATIONS AND DETAILS. PLEASE CONTACT THE TOWN OF KNIGHTDALE DEVELOPMENT SERVICES ENGINEER PRIOR TO THE INSTALLATION OF ALL STORM DRAIN PIPE. STORMWATER CALCULATIONS ARE BASED ON A MAXIMUM 3,500 SF OF IMPERVIOUS AREA PER LOT.
12. ALL STORM DRAINAGE PIPE SHALL BE CLASS III REINFORCED CONCRETE PIPE (RCP) UNLESS NOTED OTHERWISE.
13. DISCHARGE BASED ON 10-YR STORM EVENT UNLESS NOTED OTHERWISE.
14. CB=CATCH BASIN; FES=FLARED END SECTION; JB=JUNCTION BOX; YI=YARD INLET (TOK #5.04); DI=DROP INLET (TOK #5.04)
15. RIM ELEVATION GIVEN FOR CB IS TOP OF CURB, YI OPENING INVERT FOR SLAB TOP OR TOP OF GRATE FOR GRATED INLET, DI IS TOP OF GRATE FOR GRATED INLET, JB IS TOP OF RIM.
17. 'TOK DRAINAGE EASEMENT' = PUBLIC EASEMENT. 'KSCA DRAINAGE EASEMENT' = KNIGHTDALE STATION COMMUNITY ASSOCIATION, INC.
18. ALL PUBLIC STORM DRAINAGE FRAMES, GRATES, & HOODS SHALL BE STAMPED W/ 'DRAINS TO RIVER' IN ACCORDANCE WITH TOWN OF KNIGHTDALE STANDARDS.
19. THE USE OF WAFFLE BOXES IS NOT PERMITTED WITHIN PUBLIC RIGHTS OF WAY AND PUBLIC DRAINAGE EASEMENTS.
20. THE CONTRACTOR WILL BE RESPONSIBLE FOR INSTALLING STEPS IN STORM DRAINAGE BOXES GREATER THAN OR EQUAL TO 5.0 FEET DEPTH. THE STEPS SHALL BE INSTALLED ON 16 INCH CENTERS AND SECURED PER TOWN OF KNIGHTDALE SPECIFICATIONS.

ALL MATERIALS & CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH ALL CITY OF RALEIGH & TOWN OF KNIGHTDALE DESIGN STANDARDS, DETAILS, AND SPECIFICATIONS.

CITY OF RALEIGH

ALL CONSTRUCTION MUST BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL RULES AND REGULATIONS.

TRANSPORTATION SERVICES: N/A

PUBLIC UTILITIES: N/A

STORMWATER: N/A

PLANNING: N/A

FIRE: N/A

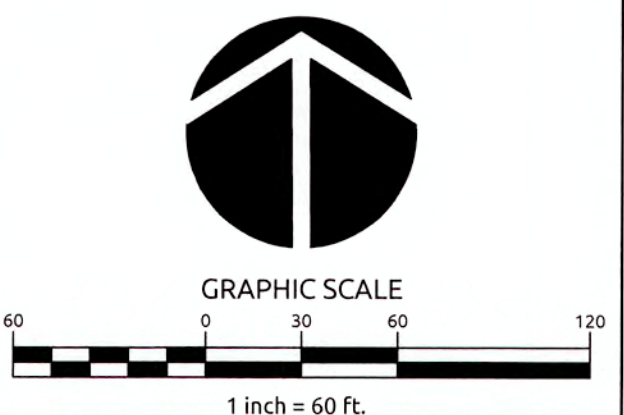
URBAN FORESTRY: N/A

TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: James Keith Johnson DATE: 6/13/2019
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: Barbara DATE: 6/14/19
ADMINISTRATOR



WithersRavenel
Engineers | Planners | Surveyors

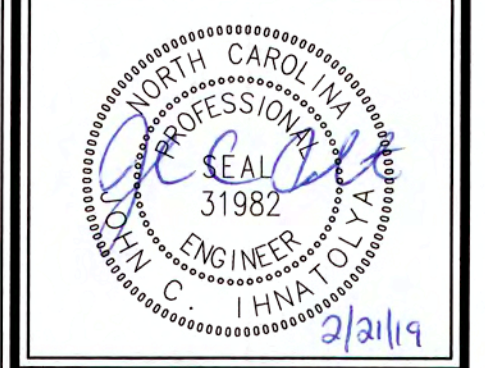
115 MackKenan Drive | Cary, NC 27511 | P: 919-469-3340 | License #: C-0832 | www.withersravenel.com

**KNIGHTDALE STATION
R7
(SECTION A, B & C)**

KNIGHTDALE, WAKE COUNTY, NORTH CAROLINA

GRADING PLAN

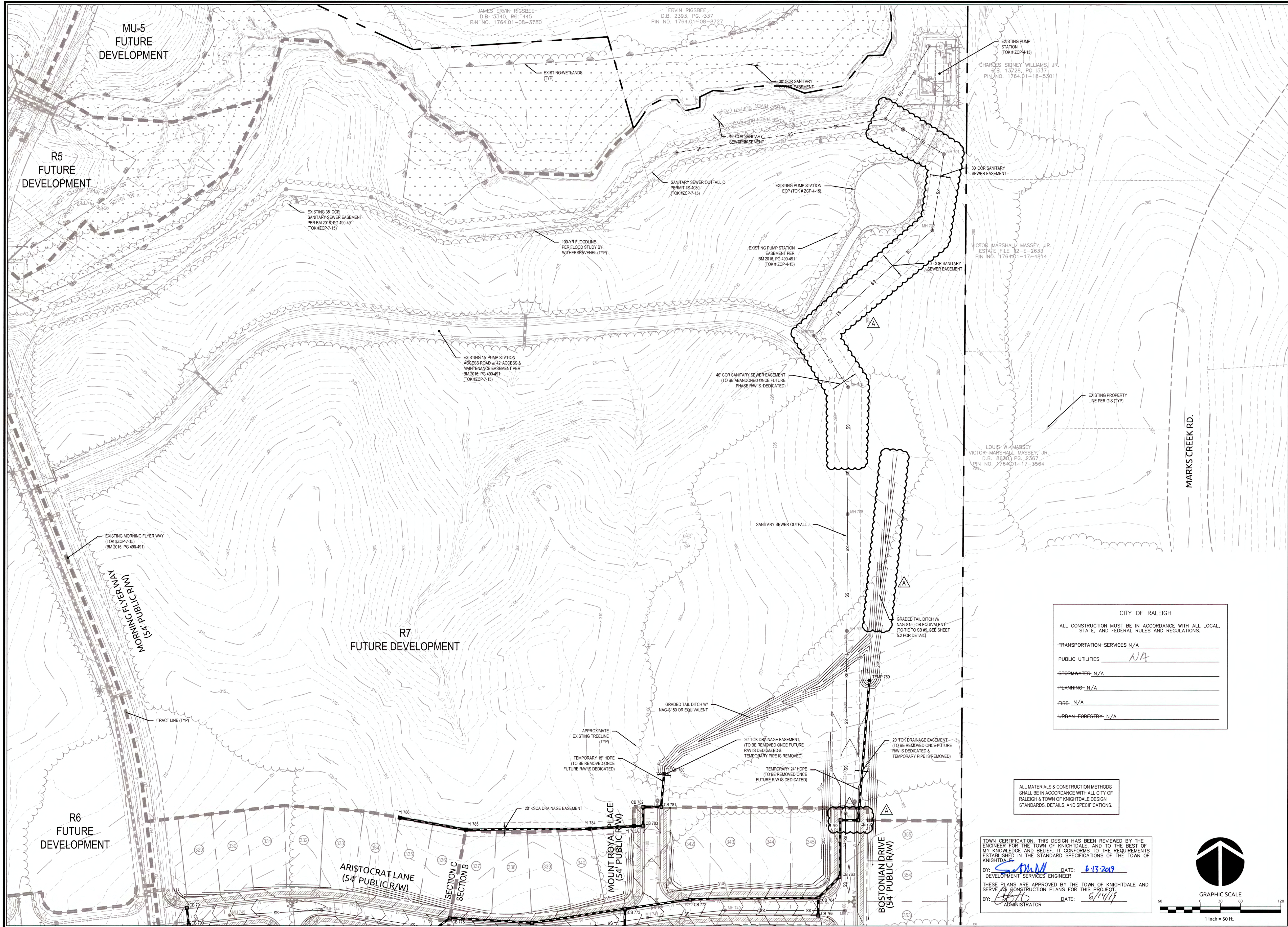
Job No.	02090251-91	Drawn By	CED
Date	06/21/16	Designer	JCI



Revisions		
1	TOK Comments	09/07/16
2	TOK Comments	12/08/17
3	TOK Comments	04/11/18
4	Sewer Outfall J Revisions	02/21/19

Sheet No.
4.4

K:\02090251-91\Knightdale Station R7\CAD\Construction Drawings\4.4 GRADING PLAN.dwg, Wednesday, February 20, 2019 12:23:19 PM - D:\PTEA - COLLEEN



JAMES ERVIN RIGSBEE
D.B. 3340, PG. 445
PIN NO. 1764.01-08-3780

ERVIN RIGSBEE
D.B. 2393, PG. 337
PIN NO. 1764.01-08-8727

EXISTING PUMP STATION
(TOK # ZCP-4-15)
CHARLES SIDNEY WILLIAMS, JR.
R.B. 13728, PG. 1537
PIN NO. 1764.01-18-5301

VICTOR MARSHALL MASSEY, JR.
ESTATE FILE 12-E-2633
PIN NO. 1764.01-17-4814

LOUIS W. MASSEY
VICTOR MARSHALL MASSEY, JR.
D.B. 8530, PG. 2367
PIN NO. 1764.01-17-3564

CITY OF RALEIGH	
ALL CONSTRUCTION MUST BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL RULES AND REGULATIONS.	
TRANSPORTATION SERVICES	N/A
PUBLIC UTILITIES	N/A
STORMWATER	N/A
PLANNING	N/A
FIRE	N/A
URBAN FORESTRY	N/A

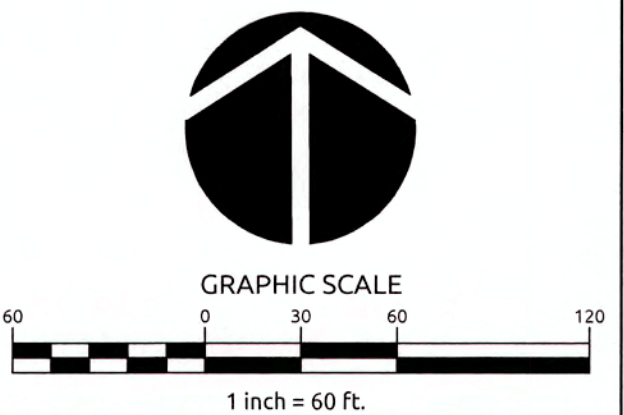
ALL MATERIALS & CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH ALL CITY OF RALEIGH & TOWN OF KNIGHTDALE DESIGN STANDARDS, DETAILS, AND SPECIFICATIONS.

TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: *[Signature]* DATE: 6-13-2019
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: *[Signature]* DATE: 6/14/19
ADMINISTRATOR

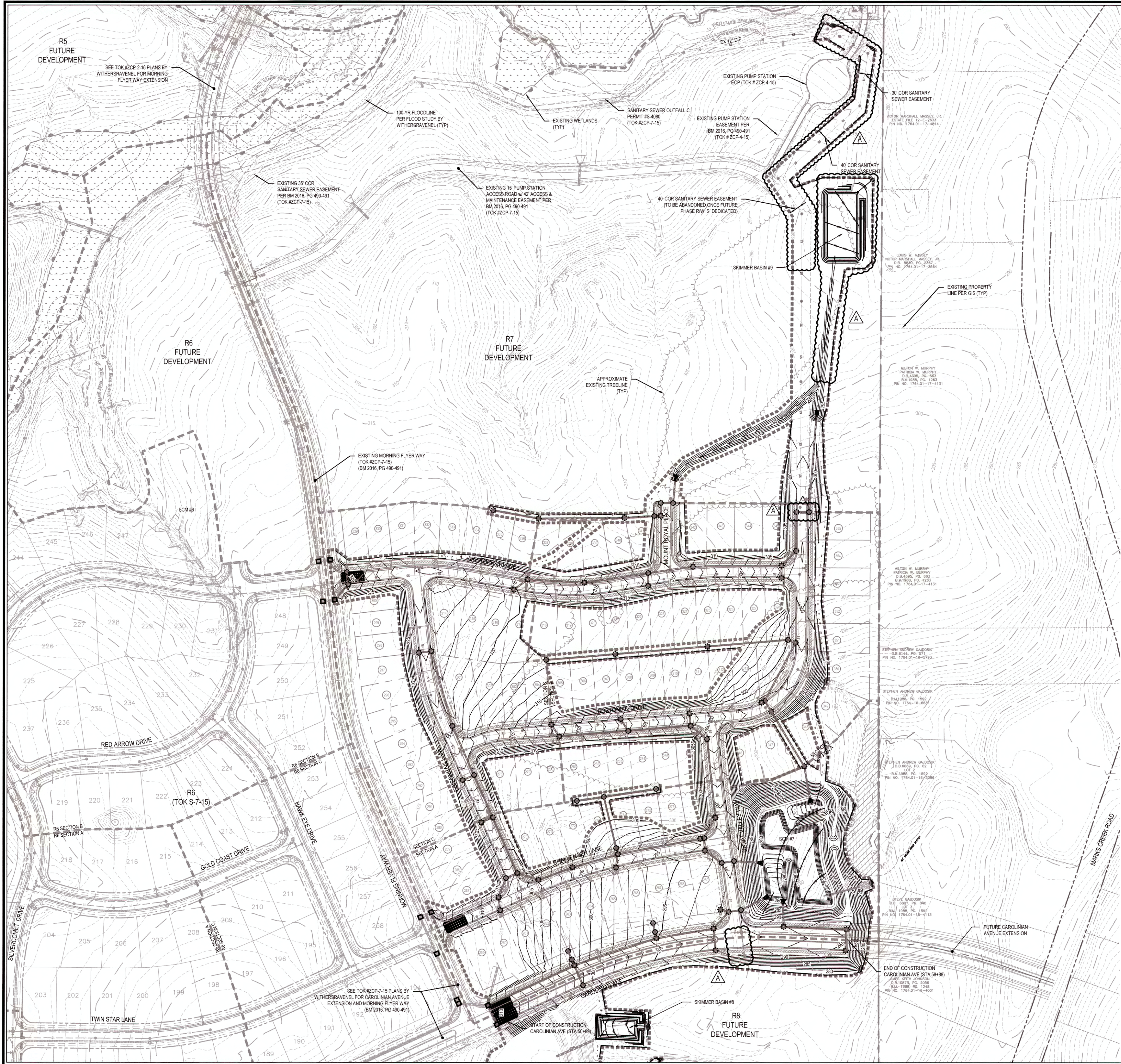


Job No.	02090251.91	Drawn By	CEJ
Date	06/21/16	Designer	JCI

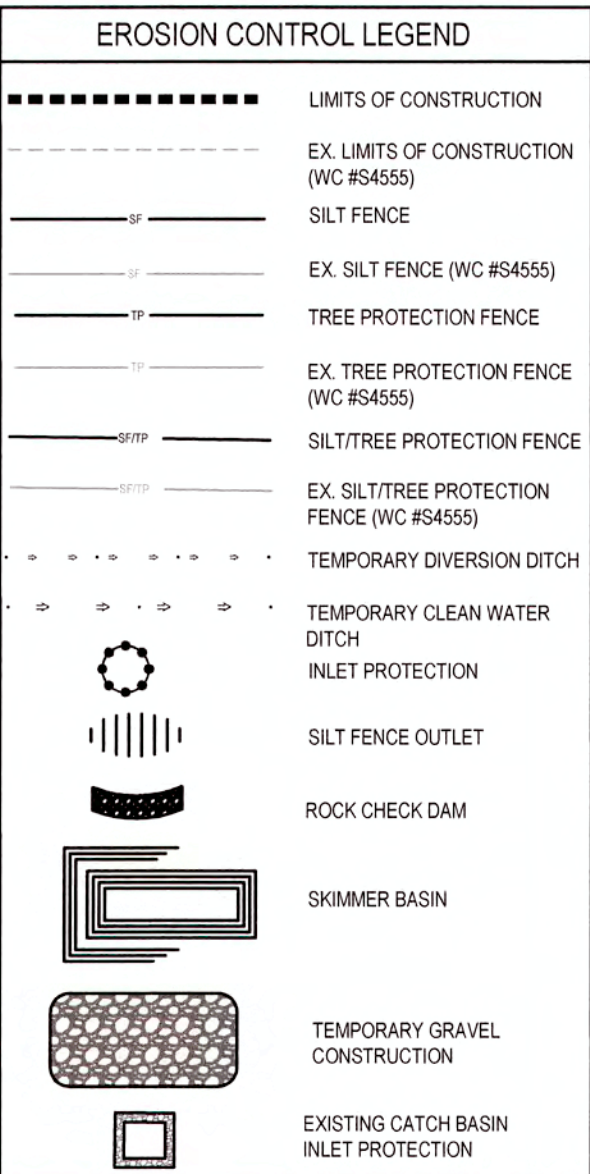


Revisions	
1	TOK Comments 09/07/16
2	TOK Comments 12/08/17
3	TOK Comments 04/11/18
4	Sewer Outfall J Revisions 02/21/19

C:\02090251\02090251.dwg Knightdale Station R7 CAD Construction Drawings\4.5 GRADING PLAN.dwg Wednesday, February 23, 2019 12:25:24 PM - D:\RVA COLLEEN



- EROSION CONTROL AND STORM DRAINAGE NOTES:**
1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE STANDARD SPECIFICATIONS & DETAILS.
 2. BOUNDARY SURVEY AND TOPOGRAPHIC SURVEY PERFORMED BY WITHERSRAVENEL, INC. OFFSITE TOPOGRAPHIC INFORMATION PROVIDED BY NC LIDAR.
 3. WETLANDS AND STREAM BUFFERS DELINEATED AND SURVEYED BY WITHERSRAVENEL, INC.
 4. THIS PROPERTY DOES NOT LIE WITHIN THE FEMA FLOODPLAIN PER MAP NUMBER 3720175400D AND 3720176400J, WITH AN EFFECTIVE DATE OF MAY 2, 2006.
 5. RECEIVING WATERCOURSE: UNNAMED TRIBUTARY OF MARKS CREEK IN THE NEUSE RIVER BASIN.
 6. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING CONSTRUCTION. THE LOCATION OF EXISTING UTILITIES SHOWN ON THE PLANS IS BASED ON THE BEST AVAILABLE INFORMATION, BUT CAN BE CONSIDERED ONLY AS APPROXIMATE.
 7. ALL STORM DRAINAGE PIPE SHALL HAVE A MINIMUM COVER OF 2 FEET TO THE PIPE CROWN IN TRAFFIC, UNLESS APPROVED BY THE TOWN OF KNIGHTDALE.
 8. ALL STORM DRAINAGE PIPE SHALL HAVE A MINIMUM COVER OF 1 FOOT TO THE PIPE CROWN IN NON-TRAFFIC AREAS.
 9. STORM SEWER PIPE ENDS SHALL BE FURNISHED WITH REINFORCED CONCRETE PIPE FLARED END SECTION UNLESS OTHERWISE SPECIFIED ON PLANS.
 10. EACH DRAINAGE STRUCTURE SHALL HAVE A SHAPED INVERT CONSTRUCTED FROM CONCRETE, AND A BENCH WITH A MAXIMUM 5:1 SLOPE. THE BENCH SHALL BEGIN AT A HEIGHT OF ONE-HALF THE PIPE DIAMETER FOR 12 TO 24 INCH PIPE, ONE-THIRD THE PIPE DIAMETER FOR 30 - 48 INCH PIPE, AND ONE-FOURTH THE DIAMETER FOR PIPE GREATER THAN 48 INCHES.
 11. ENERGY DISSIPATORS SHALL BE INSTALLED AT ALL STORM SEWER DISCHARGE POINTS. A FABRIC OR WASHED STONE BARRIER SHALL BE INSTALLED BETWEEN THE DISSIPATION PAD AND THE NATURAL GROUND.
 12. STORM PIPE TRENCH EXCAVATION AND BACKFILLING SHALL BE PERFORMED IN ACCORDANCE WITH TOWN OF KNIGHTDALE STANDARD SPECIFICATIONS AND DETAILS.
 13. A PRECONSTRUCTION MEETING SHALL BE REQUIRED FOR THIS CONSTRUCTION.
 14. GRAVEL CONSTRUCTION ENTRANCE PADS SHALL BE CONSTRUCTED AT EACH POINT OF CONSTRUCTION ACCESS TO EACH PROPERTY. NOTE: IT SHALL BE THE DEVELOPER'S RESPONSIBILITY TO SEE THAT THE CONSTRUCTION ENTRANCE PADS ARE PROPERLY MAINTAINED SO THAT MUD IS NOT TRACKED ONTO ADJACENT STREETS. IN THE EVENT THAT THE GRAVEL CONSTRUCTION ENTRANCES ARE NOT PROPERLY MAINTAINED, OR ARE OTHERWISE INEFFECTIVE, THE TOWN REPRESENTATIVE MAY ISSUE A STOP WORK ORDER OR ANY OTHER EQUITABLE REMEDY PROVIDED BY THE TOWN OF KNIGHTDALE LIDC OR NO GENERAL STATUTES. THE STOP WORK ORDER SHALL REMAIN IN EFFECT UNTIL SUCH TIME AS THE PADS ARE RESTORED AND REPLENISHED AND UNTIL ANY RESULTING MUD AND DEBRIS HAS BEEN REMOVED FROM THE ADJACENT STREETS BY THE CONTRACTOR.
 15. TO MINIMIZE DAMAGE TO EXISTING TREES NEAR THE INTERIOR EDGE OF BUFFERS AND STREETSCAPES, THE CONTRACTOR SHALL CUT MINIMUM 2" TRENCHES ALONG LIMITS OF DISTURBANCE, SO AS TO CUT, RATHER THAN TEAR, ROOTS.
 16. THE TREE PROTECTION FENCE SHALL BE MAINTAINED ON THE SITE UNTIL ALL SITE WORK IS COMPLETED AND THE FINAL SITE INSPECTION PRIOR TO THE CERTIFICATE OF OCCUPANCY (CO) IS SCHEDULED. THE FENCING SHALL BE REMOVED PRIOR TO FINAL SITE INSPECTION FOR THE CO.
 17. THE PROJECT WILL MEET ALL THE REQUIREMENTS RELATIVE TO THE STORMWATER CONTROL MEASURES AND ENGINEERED STORMWATER CONTROL STRUCTURES AS OUTLINED IN THE TOWN OF KNIGHTDALE STANDARD SPECIFICATIONS AND DETAILS MANUAL (CHAPTER 6 SECTION 6.3).
 18. GRADING OF INDIVIDUAL LOTS WITHIN THE MAJOR SUBDIVISION SHALL NOT BEGIN WITHOUT FIRST OBTAINING A BUILDING PERMIT FROM THE ADMINISTRATOR AND SHALL BE LIMITED TO THOSE AREAS COMPRISING THE BUILDING FOOTPRINT, DRIVEWAY AND A MINIMAL AREA SURROUNDING THE BUILDING FOOTPRINT TO ACCOMMODATE CONSTRUCTION EQUIPMENT PER IUD SECTION 6.2(B).
 19. CONTRACTOR SHALL INSTALL PROPER EROSION CONTROL MEASURES TO ENSURE THAT SEDIMENTATION DURING LOT CLEARING WILL BE MINIMIZED.
 20. CONTRACTOR SHALL MAINTAIN ALL EROSION CONTROL STRUCTURES DURING THE LIFE OF THE PROJECT.
 21. CONTRACTOR SHALL CONSTRUCT DIVERSION DITCHES AS NECESSARY TO ENSURE ALL SEDIMENT IS DIRECTED INTO EROSION CONTROL MEASURES.
 22. CONTRACTOR SHALL INSTALL TEMPORARY SLOPE DRAINS PER DETAIL (SHEET 8.3) AT LOCATIONS WHERE TEMPORARY DIVERSION DITCHES DISCHARGE INTO A SKIMMER BASIN AS TO AVOID SLOPE EROSION.
 23. TOPSOIL SHALL BE WASTED OFFSITE OR AT APPROVED STOCKPILE AREA ON SITE.
 24. ALL STORM DRAINAGE PIPE SHALL BE PROTECTED DURING CONSTRUCTION IN ACCORDANCE WITH TOWN OF KNIGHTDALE DETAILS AND SPECIFICATIONS.
 25. CONTRACTOR SHALL PROVIDE RIP RAP DISSIPATION PADS AT STORM DRAINAGE PIPE DISCHARGE POINTS AS REQUIRED TO ENSURE POSITIVE DRAINAGE.
 26. ALL CLEARING LIMITS SHALL BE CLEARLY IDENTIFIED AND STAKED PRIOR TO ANY CONSTRUCTION. THE TOWN SHALL BE GIVEN 24-HOUR NOTICE PRIOR TO BEGINNING CLEARING OPERATIONS.
 27. ALL EARTHWORK SHALL BE COMPLETED IN ACCORDANCE WITH THE TOWN OF KNIGHTDALE STANDARD SPECIFICATIONS AND CONSTRUCTION DETAILS MANUAL (SECTION 2.05).
 28. STABILIZATION SHALL BE IN ACCORDANCE WITH NPDES STORMWATER DISCHARGE PERMIT (SEE TABLE ON SHEET 8.3).
 29. MASS GRADING IS NOT PERMITTED ON LOTS 60' & GREATER.



ATTENTION CONTRACTORS

THE CONSTRUCTION CONTRACTOR RESPONSIBLE FOR THE EXTENSION OF WATER AND SEWER, AS APPROVED IN THESE PLANS, IS RESPONSIBLE FOR CONTACTING THE PUBLIC UTILITIES DEPARTMENT AT (919) 998-4542 AT LEAST 24 HOURS PRIOR TO BEGINNING ANY CONSTRUCTION.

FAILURE TO NOTIFY BOTH CITY DEPARTMENTS IN ADVANCE OF BEGINNING CONSTRUCTION WILL RESULT IN THE ISSUANCE OF MONETARY FINES AND REQUIRE REINSTALLATION OF ANY WATER OR SEWER FACILITIES NOT INSPECTED AS A RESULT OF THIS NOTIFICATION FAILURE.

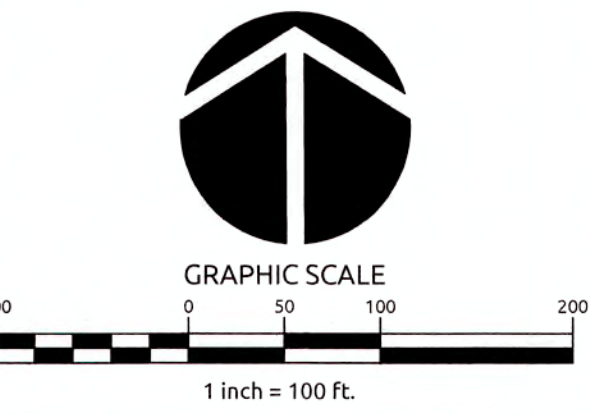
FAILURE TO CALL FOR INSPECTION, INSTALL A DOWNSTREAM PLUG, HAVE PERMITTED PLANS ON THE JOB SITE, OR ANY OTHER VIOLATION OF CITY OF RALEIGH STANDARDS WILL RESULT IN A FINE AND POSSIBLE EXCLUSION FROM FUTURE WORK IN THE CITY OF RALEIGH.

TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

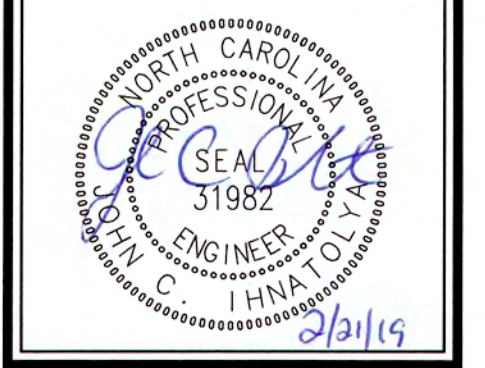
BY: *[Signature]* DATE: 6/13/2019
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: *[Signature]* DATE: 6/14/19
ADMINISTRATOR



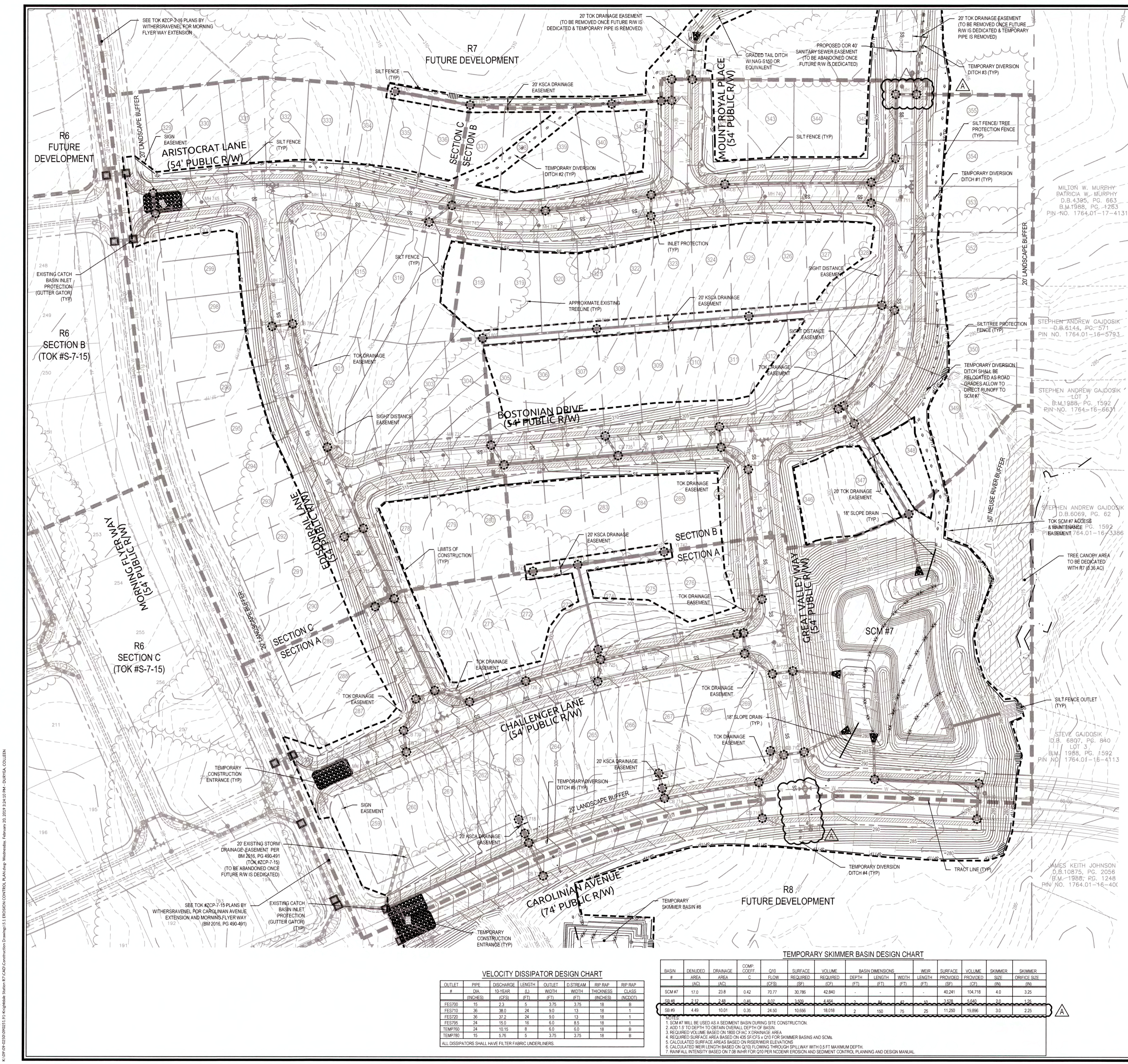
Job No.	02090251.91	Drawn By	CED
Date	06/21/16	Designer	JCI



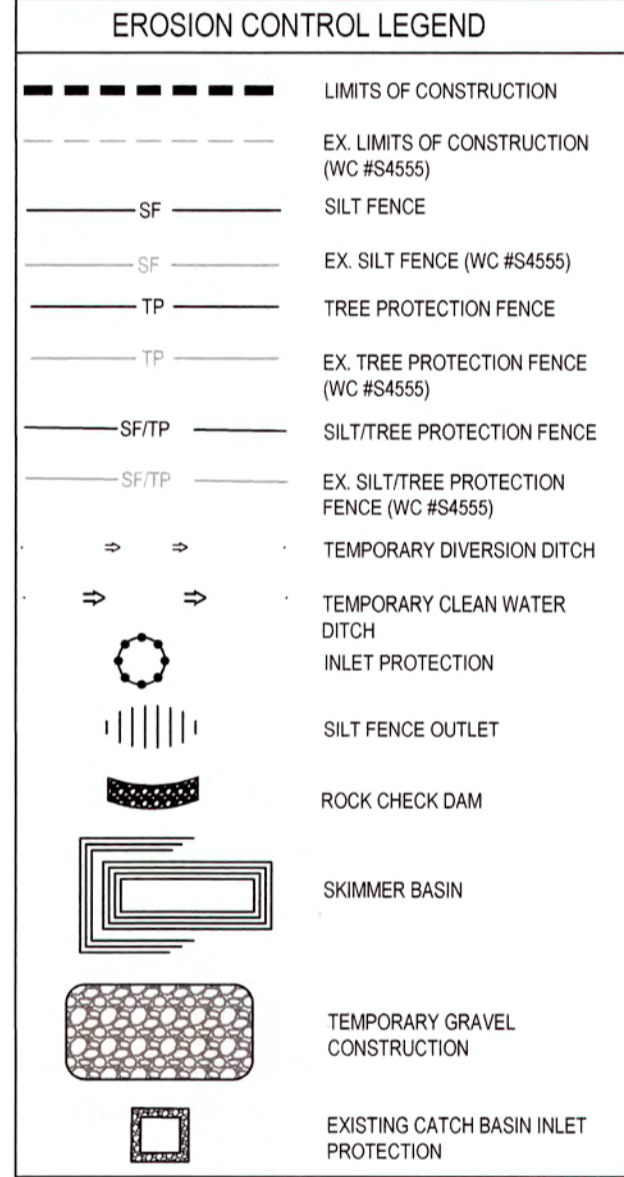
Revisions

1	TOK Comments	09/07/16
2	TOK Comments	12/08/17
3	TOK Comments	04/11/18
4	Sewer Outfall J Revisions	02/21/19

C:\09\09\02090251\02090251_01\Knightdale Station R7 CAD Construction Drawings\05 OVERALL EROSION CONTROL.dwg, Wednesday, February 20, 2019 12:35:14 PM - BURKEA, COLLEEN



- CONSTRUCTION SEQUENCE**
- SCHEDULE A PRECONSTRUCTION CONFERENCE WITH THE WATERSHED MANAGER, DEBBIE TANNER, 919-842-7142. OBTAIN A LAND-DISTURBING PERMIT.
 - INSTALL GRAVEL CONSTRUCTION PAD, TEMPORARY DIVERSIONS, SILT FENCE, SEDIMENT BASINS OR OTHER MEASURES AS SHOWN ON THE APPROVED PLAN. CLEAR ONLY AS NECESSARY TO INSTALL THESE DEVICES. SEED TEMPORARY DIVERSIONS, BERMS AND BASINS IMMEDIATELY AFTER CONSTRUCTION. INSTALL INLET PROTECTION TO EXISTING CATCH BASINS.
 - CALL 919-842-7142 FOR AN ONSITE INSPECTION BY THE WATERSHED MANAGER TO OBTAIN A CERTIFICATE OF COMPLIANCE.
 - BEGIN CLEARING AND GRUBBING. MAINTAIN DEVICES AS NEEDED. ROUGH GRADE SITE.
 - INSTALL STORM SEWER, IF SHOWN, AND PROTECT INLETS WITH BLOCK AND GRAVEL INLET CONTROLS, SEDIMENT TRAPS OR OTHER APPROVED MEASURES AS SHOWN ON THE PLAN. BEGIN CONSTRUCTION, BUILDING, ETC.
 - STABILIZE SITE AS AREAS ARE BROUGHT UP TO FINISH GRADE WITH VEGETATION, PAVING, DITCH LININGS, ETC. SEED AND MULCH DENUEDED AREAS PER GROUND STABILIZATION TIME FRAMES.
 - WHEN CONSTRUCTION IS COMPLETE AND ALL AREAS ARE STABILIZED COMPLETELY, CALL 919-842-7142 FOR AN INSPECTION BY THE WATERSHED MANAGER.
 - IF SITE IS APPROVED, REMOVE TEMPORARY DIVERSIONS, SILT FENCE, SEDIMENT BASINS, ETC. AND SEED OUT OR STABILIZE ANY RESULTING BARE AREAS. ALL REMAINING PERMANENT EROSION CONTROL DEVICES, SUCH AS VELOCITY DISSIPATORS, SHOULD NOW BE INSTALLED.
 - WHEN VEGETATION HAS BECOME ESTABLISHED, CALL FOR A FINAL SITE INSPECTION BY THE WATERSHED MANAGER, 919-842-7142. OBTAIN A CERTIFICATE OF COMPLETION.



EROSION CONTROL NOTE:
FOREBAY WILL NOT BE REQUIRED WHILE SCM IS ACTING AS AN EROSION CONTROL DEVICE.

EXISTING EROSION CONTROL NOTE:
EXISTING EROSION CONTROL MEASURES PER WC PERMIT #5455 SHALL BE REMOVED AS NEEDED TO ACCOMMODATE R7A-C CONSTRUCTION.

CONSTRUCTION SEQUENCE NOTE:
SEE SHEET 5.3 FOR BASIN REMOVAL SEQUENCE.

DENUDED AREA = 18.75 AC

TEMPORARY SKIMMER BASIN DESIGN CHART

BASIN #	AREA (AC)	DISCHARGE (GPM)	COMP. COEFF.	Q10 (CFS)	SURFACE AREA (SQ FT)	VOLUME (CU FT)	DEPTH (FT)	WIDTH (FT)	LENGTH (FT)	WEIR LENGTH (FT)	SURFACE AREA (SQ FT)	VOLUME (CU FT)	SKIMMER SIZE (IN)	SKIMMER SIZE (IN)
SCM #7	17.0	23.8	0.42	70.77	30,786	42,840	2.5	40.241	104.718	4.0	3.25			
SB #9	2.12	2.48	0.36	8.07	3,490	4,851	2.5	14.2	3.228	5.840	2.0	1.25		
SB #8	4.49	10.01	0.36	24.50	10,656	18,018	2.5	15.0	11.250	15.986	3.0	2.25		

NOTES:
 1. SCM #7 WILL BE USED AS A SEDIMENT BASIN DURING SITE CONSTRUCTION.
 2. ADD 1.5' TO DEPTH TO OBTAIN OVERALL DEPTH OF BASIN.
 3. REQUIRED VOLUME BASED ON 1800 CFAC X DRAINAGE AREA.
 4. CALCULATED SURFACE AREA BASED ON USE SPEC # 010 FOR SKIMMER BASINS AND SCM.
 5. CALCULATED SURFACE AREAS BASED ON RISERWEIR ELEVATIONS.
 6. CALCULATED WEIR LENGTH BASED ON Q10 FLOWING THROUGH SPILLWAY WITH 0.5 FT MINIMUM DEPTH.
 7. RAINFALL INTENSITY BASED ON 7.08 IN/HR FOR Q10 PER NCDCR EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL.

VELOCITY DISSIPATOR DESIGN CHART

OUTLET #	PIPE DIA (INCHES)	DISCHARGE (GPM)	LENGTH (FT)	OUTLET WIDTH (FT)	D. STREAM WIDTH (FT)	RIP RAP WIDTH (INCHES)	RIP RAP THICKNESS (INCHES)	RIP RAP CLASS
FES700	15	2.3	5	3.75	3.75	18	1	B
FES710	36	38.0	24	9.0	13	18	1	B
FES720	36	37.2	24	9.0	13	18	1	B
FES735	24	15.0	16	6.0	8.5	18	1	B
TEMP#9	24	10.15	8	6.0	6.0	18	6	B
TEMP#8	15	5.75	5	3.75	3.75	18	1	B

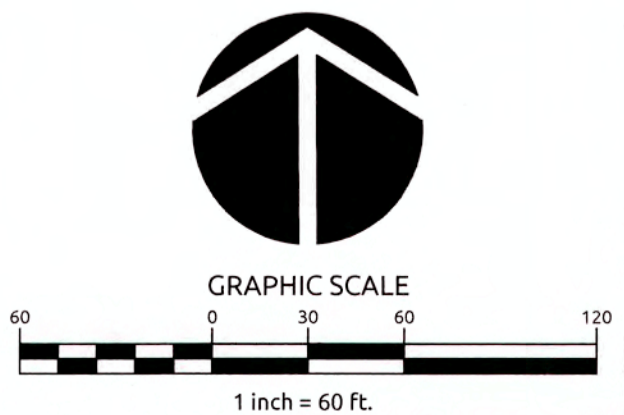
ALL DISSIPATORS SHALL HAVE FILTER FABRIC UNDERLINERS.

TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: *[Signature]* DATE: 6/15/2019
 DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: *[Signature]* DATE: 6/14/19
 ADMINISTRATOR



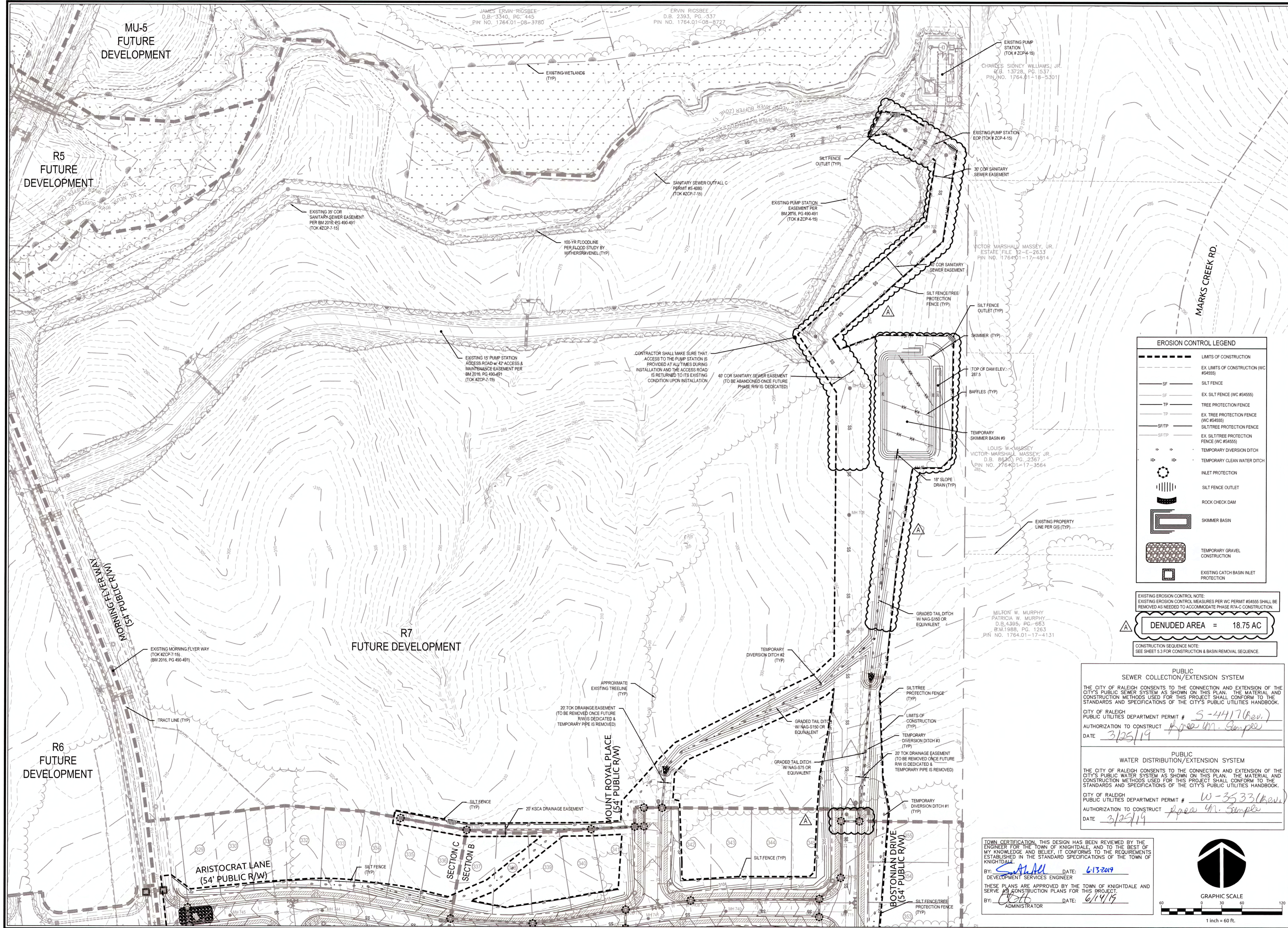
Job No. 02090251.91 Drawn By CED
 Date 06/21/16 Designer JCI



Revisions

1	TOK Comments	09/07/16
2	TOK Comments	12/08/17
3	TOK Comments	04/11/18
4	Sever Outfall J Revisions	02/21/19

K:\09\02090251.91\Knightdale Station R7\CADD\Construction Drawings\5.1 EROSION CONTROL PLAN.dwg - Wednesday, February 20, 2020 3:44:10 PM - DOURYA, COLLEEN



EROSION CONTROL LEGEND

---	LIMITS OF CONSTRUCTION
---	EX. LIMITS OF CONSTRUCTION (WC #5455)
SF	SILT FENCE
SF	EX. SILT FENCE (WC #5455)
TP	TREE PROTECTION FENCE
TP	EX. TREE PROTECTION FENCE (WC #5455)
SF/TP	SILT/TREE PROTECTION FENCE
SF/TP	EX. SILT/TREE PROTECTION FENCE (WC #5455)
---	TEMPORARY DIVERSION DITCH
---	TEMPORARY CLEAN WATER DITCH
---	INLET PROTECTION
---	SILT FENCE OUTLET
---	ROCK CHECK DAM
---	SKIMMER BASIN
---	TEMPORARY GRAVEL CONSTRUCTION
---	EXISTING CATCH BASIN INLET PROTECTION

EXISTING EROSION CONTROL NOTE:
EXISTING EROSION CONTROL MEASURES PER WC PERMIT #5455 SHALL BE REMOVED AS NEEDED TO ACCOMMODATE PHASE R7A-C CONSTRUCTION.

DUENED AREA = 18.75 AC

CONSTRUCTION SEQUENCE NOTE:
SEE SHEET S3 FOR CONSTRUCTION & BASIN REMOVAL SEQUENCE.

PUBLIC SEWER COLLECTION/EXTENSION SYSTEM

THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S PUBLIC SEWER SYSTEM AS SHOWN ON THIS PLAN. THE MATERIAL AND CONSTRUCTION METHODS USED FOR THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY'S PUBLIC UTILITIES HANDBOOK.

CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PERMIT # S-4417 (Rev.)
AUTHORIZATION TO CONSTRUCT Approved: Simple
DATE 3/25/19

PUBLIC WATER DISTRIBUTION/EXTENSION SYSTEM

THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S PUBLIC WATER SYSTEM AS SHOWN ON THIS PLAN. THE MATERIAL AND CONSTRUCTION METHODS USED FOR THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY'S PUBLIC UTILITIES HANDBOOK.

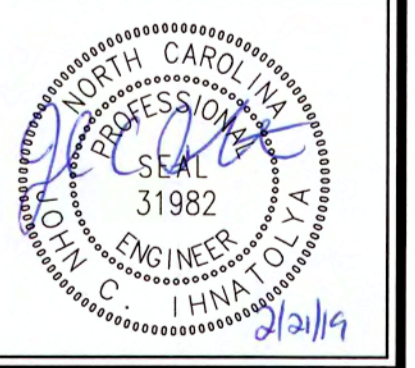
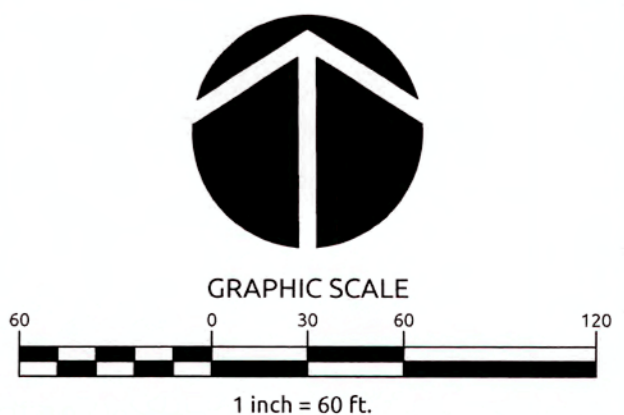
CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PERMIT # W-3533 (Rev.)
AUTHORIZATION TO CONSTRUCT Approved: Simple
DATE 3/25/19

TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: [Signature] DATE: 6/13/2019
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: [Signature] DATE: 6/14/19
ADMINISTRATOR



Revisions

1	TOK Comments	09/07/16
2	TOK Comments	12/08/17
3	TOK Comments	04/11/18
4	Sewer Outfall J Revisions	02/21/19

K:\WP\02090251\0251.91 Knightdale Station R7\CD Construction Drawings\03 EROSION CONTROL PLAN.dwg WithersRavenel February 20, 2019 3:26:55 PM COURTNEY COLLEEN



- BASIN REMOVAL SEQUENCE**
- SCHEDULE A SITE MEETING WITH THE ENVIRONMENTAL ENGINEER/CONSULTANT TO DETERMINE IF A BASIN CAN BE REMOVED. INSTALL SILT FENCING OR OTHER TEMPORARY EROSION CONTROL MEASURES AS NEEDED PRIOR TO REMOVAL OF THE BASIN.
 - REMOVE BASIN(S) AND ASSOCIATED TEMPORARY DIVERSION DITCHES. IF CULVERT PIPES NEED TO BE EXTENDED, PERFORM THIS OPERATION AT THIS TIME. FINE GRADE AREA IN PREPARATION FOR SEEDING.
 - PERFORM SEEDBED PREPARATION, SEED, MULCH, AND ASPHALT TACK ANY RESULTING BARE AREAS IMMEDIATELY.
 - INSTALL VELOCITY DISSIPATORS AND/OR LEVEL SPREADERS AS REQUIRED ON THE EROSION CONTROL PLAN.
 - WHEN SITE IS FULLY STABILIZED, CALL ENVIRONMENTAL ENGINEER/CONSULTANT FOR APPROVAL OF REMOVING REMAINING TEMPORARY EROSION CONTROL MEASURES AND ADVICE ON WHEN SITE CAN BE ISSUED A CERTIFICATE OF COMPLETION.

POND DEWATERING SEQUENCE

THE CONTRACTOR SHALL DRAIN EXISTING POND USING A SIPHON OR A PUMP. ALL WATER THAT IS DRAINED FROM THE EXISTING POND USING A PUMP OR A SIPHON SHALL BE DRAINED THROUGH A FILTER BAG LOCATED NORTH OF SB #8. EXISTING POND SHALL BE PUMPED OR SIPHONED FROM THE TOP DOWN. ONCE POND IS DRAINED THE CONTRACTOR SHALL BREACH THE DAM JUST ABOVE SB #8 AND DIRECT ALL RUNOFF TOWARDS SB #8. CONTRACTOR SHALL WORK WITH PROJECT GEOTECHNICAL ENGINEER TO REMOVE UNSUITABLE SOILS FROM THE POND TO FILL DEWATERED POND WITH STRUCTURAL MATERIAL SUITABLE FOR FUTURE DEVELOPMENT (INFRASTRUCTURE AND HOME CONSTRUCTION) WITHIN POND FOOTPRINT.

EROSION CONTROL LEGEND

---	LIMITS OF CONSTRUCTION
---	EX. LIMITS OF CONSTRUCTION (WC #5455)
SF	SILT FENCE
SF	EX. SILT FENCE (WC #5455)
TP	TREE PROTECTION FENCE
TP	EX. TREE PROTECTION FENCE (WC #5455)
SFT/TP	SILT/TREE PROTECTION FENCE
SFT/TP	EX. SILT/TREE PROTECTION FENCE (WC #5455)
- - -	TEMPORARY DIVERSION DITCH
- - -	TEMPORARY CLEAN WATER DITCH
○	INLET PROTECTION
	SILT FENCE OUTLET
⌒	ROCK CHECK DAM
□	SKIMMER BASIN
▨	TEMPORARY GRAVEL CONSTRUCTION
□	EXISTING CATCH BASIN INLET PROTECTION

DUENED AREA = 18.75 AC

EROSION CONTROL NOTE:
FOREBAY WILL NOT BE REQUIRED WHILE SCM IS ACTING AS AN EROSION CONTROL DEVICE.

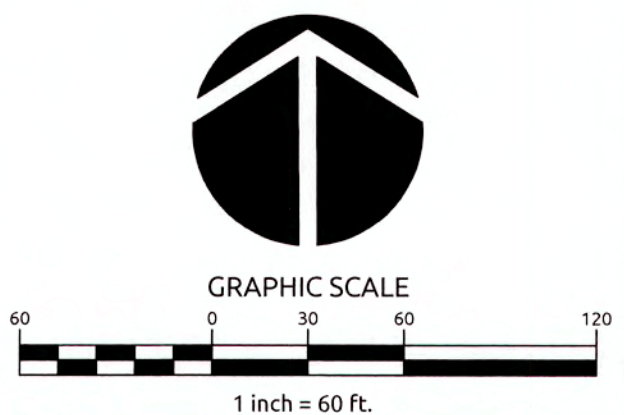
EXISTING EROSION CONTROL NOTE:
EXISTING EROSION CONTROL MEASURES PER WC PERMIT #5455 SHALL BE REMOVED AS NEEDED TO ACCOMMODATE PHASE R7A-C CONSTRUCTION.

TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

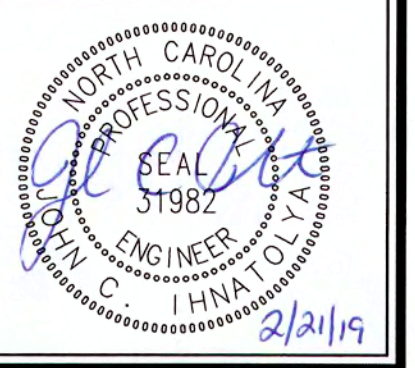
BY: *[Signature]* DATE: 6-13-2017
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: *[Signature]* DATE: 6/14/17
ADMINISTRATOR



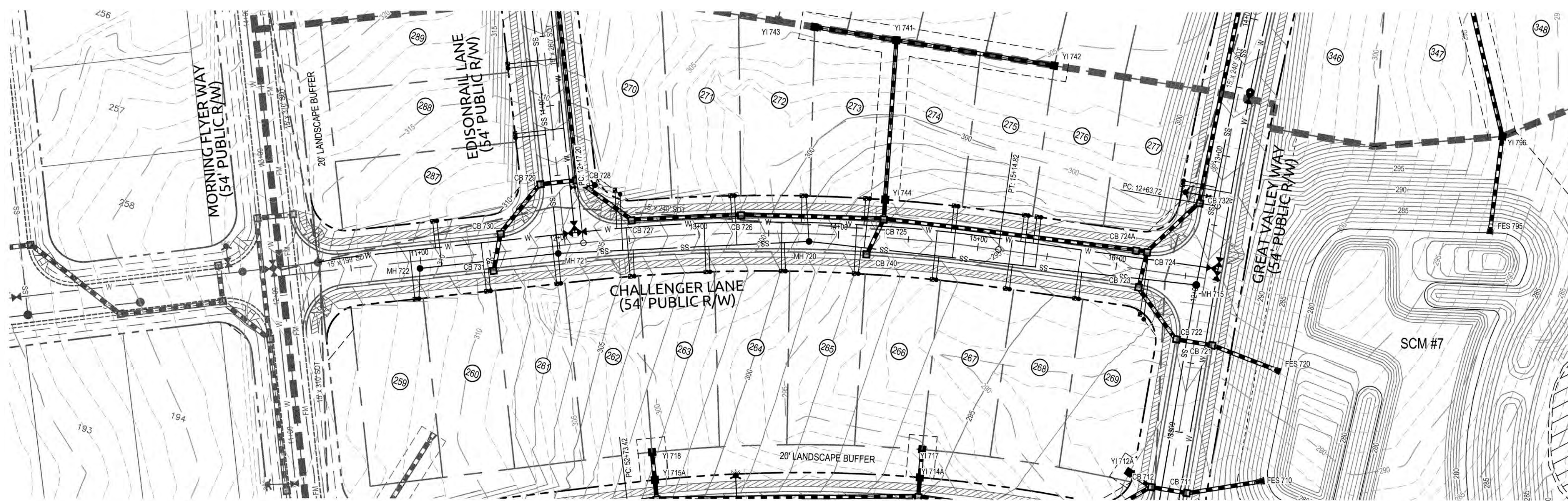
Job No. 02090251.91 Drawn By CED
Date 06/21/16 Designer JCI



Revisions

1	TOK Comments	09/07/16
2	TOK Comments	12/08/17
3	TOK Comments	04/11/18
4	Sewer Outfall J Revisions	02/21/19

K:\09\02090251.91\Knightdale Station R7\CAD\Construction Drawings\5.3 EROSION CONTROL PLAN.dwg Wednesday, February 20, 2019 12:03 PM - CURYEA, COLLEEN



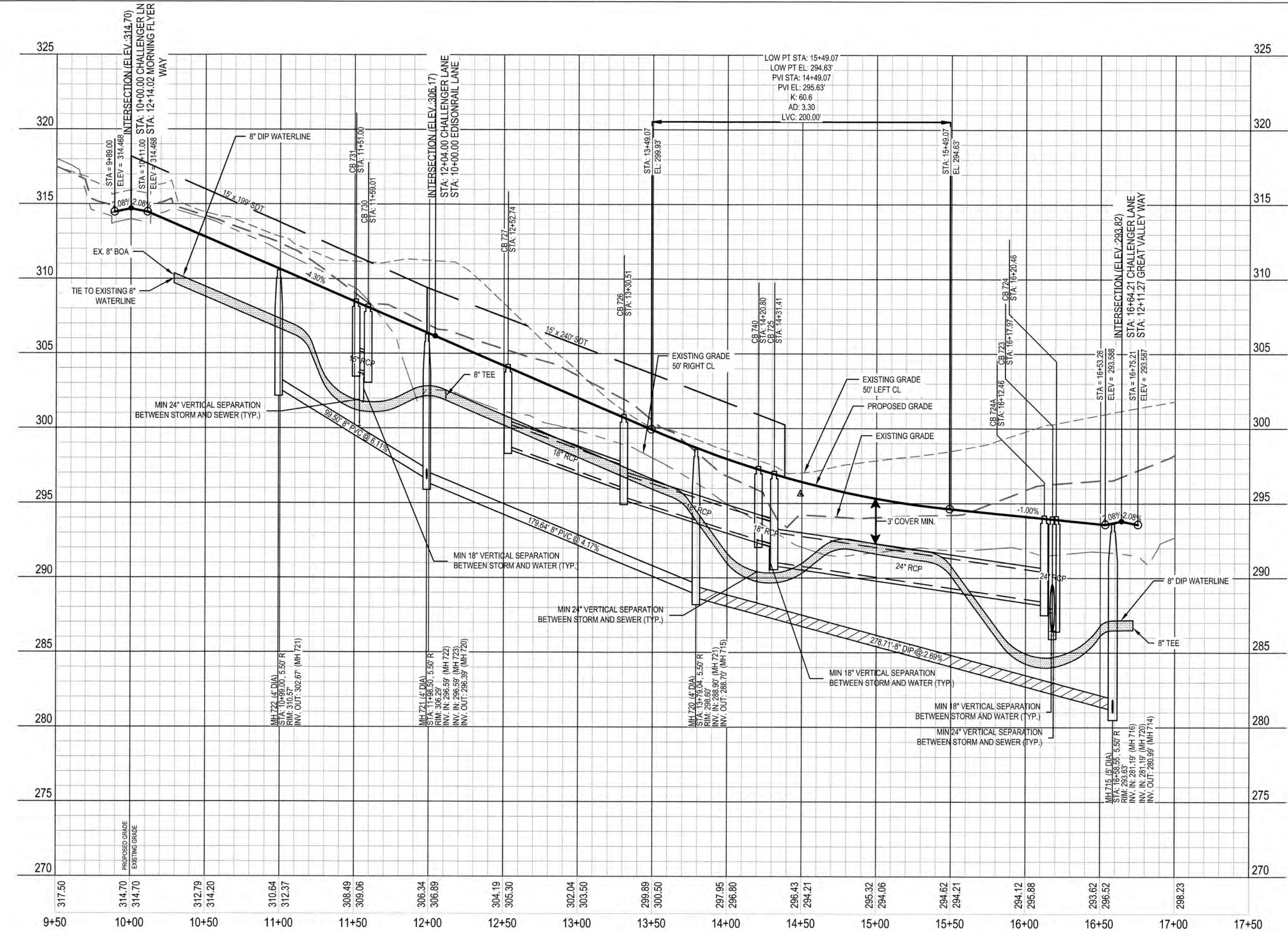
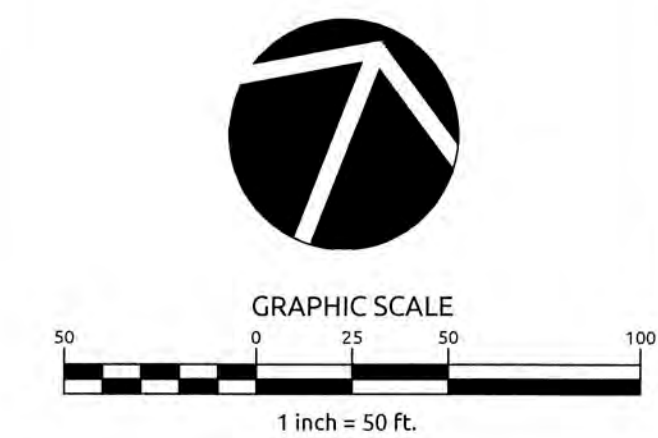
CHALLENGER LANE

PUBLIC SEWER COLLECTION/EXTENSION SYSTEM
 THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S PUBLIC SEWER SYSTEM AS SHOWN ON THIS PLAN. THE MATERIAL AND CONSTRUCTION METHODS USED FOR THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY'S PUBLIC UTILITIES HANDBOOK.
 CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PERMIT # S-4917
 AUTHORIZATION TO CONSTRUCT E. H. Haugaard
 DATE 4/30/18

PUBLIC WATER DISTRIBUTION/EXTENSION SYSTEM
 THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S PUBLIC WATER SYSTEM AS SHOWN ON THIS PLAN. THE MATERIAL AND CONSTRUCTION METHODS USED FOR THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY'S PUBLIC UTILITIES HANDBOOK.
 CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PERMIT # W-3533
 AUTHORIZATION TO CONSTRUCT E. H. Haugaard
 DATE 4/30/18

TOWN CERTIFICATION, THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.
 BY: [Signature] DATE: 4/19/18
 DEVELOPMENT SERVICES ENGINEER
 THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
 BY: [Signature] DATE: 8.16.18
 ADMINISTRATOR

CITY OF RALEIGH
 ALL CONSTRUCTION MUST BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL RULES AND REGULATIONS.
 TRANSPORTATION SERVICES N/A
 PUBLIC UTILITIES E.H. 4/30/18
 STORMWATER N/A
 PLANNING N/A
 FIRE N/A
 URBAN FORESTRY N/A



WATERLINE NOTE:
 IF MINIMUM CLEARANCE CANNOT BE ACHIEVED WITHOUT EXCEEDING MAXIMUM PIPE DEFLECTION FOR THE WATERLINE, THEN CONTRACTOR TO INSTALL 45° VERTICAL BENDS PER COR DETAIL W-12.

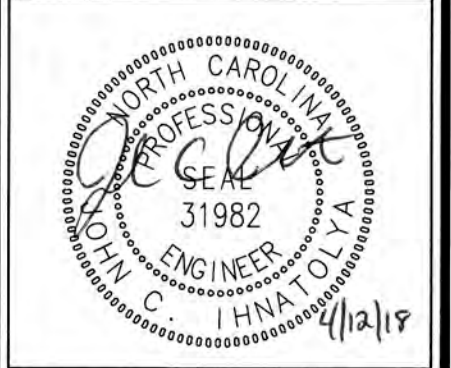
CLASS 1 STRUCTURAL MATERIAL NOTE:
 CLASS 1 STRUCTURAL MATERIAL REQUIRED FROM EXISTING GROUND TO SPRING LINE OF PROPOSED STORM PIPE IN FILL CONDITIONS SEE LATEST TOK STANDARD SPECIFICATIONS.

ATTENTION CONTRACTORS
 THE CONSTRUCTION CONTRACTOR RESPONSIBLE FOR THE EXTENSION OF WATER AND SEWER, AS APPROVED IN THESE PLANS, IS RESPONSIBLE FOR CONTACTING THE PUBLIC UTILITIES DEPARTMENT AT (919) 996-4544 AT LEAST 24 HOURS PRIOR TO BEGINNING ANY CONSTRUCTION.
 FAILURE TO NOTIFY BOTH CITY DEPARTMENTS IN ADVANCE OF BEGINNING CONSTRUCTION WILL RESULT IN THE ISSUANCE OF MONETARY FINES AND REQUIRE REINSTALLATION OF ANY WATER OR SEWER FACILITIES NOT INSPECTED AS A RESULT OF THIS NOTIFICATION FAILURE.
 FAILURE TO CALL FOR INSPECTION, INSTALL A DOWNSTEAM PLUG, HAVE PERMITTED PLANS ON THE JOB SITE, OR ANY OTHER VIOLATION OF CITY OF RALEIGH STANDARDS WILL RESULT IN A FINE AND POSSIBLE EXCLUSION FROM FUTURE WORK IN THE CITY OF RALEIGH.

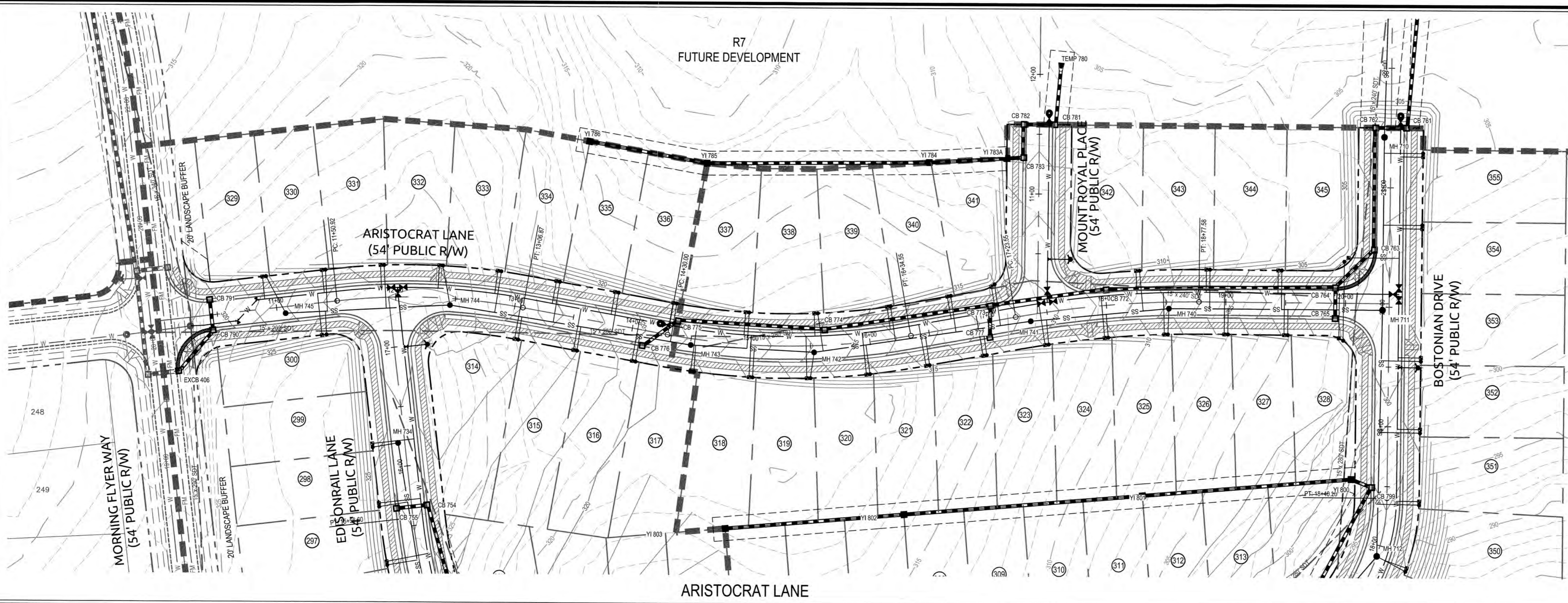
SCALE:
 1" = 50' HORIZ.
 1" = 5' VERT.

K:\09\2025092519\Knightdale Station R7\CAD\Construction Drawings\1 - 6 PLAN AND PROFILE.dwg, Wednesday, April 11, 2018 10:43:35 AM - CURTIS A. COLLEN

Job No. 02090251.91 Drawn By CED
 Date 06/21/16 Designer JCI



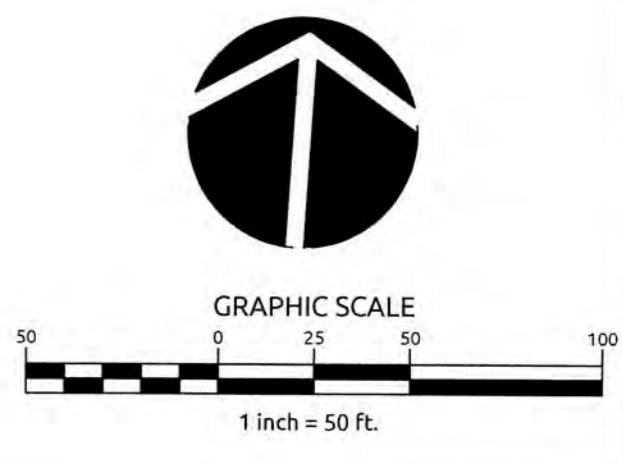
Revisions		
1	TOK Comments	09/07/16
2	TOK Comments	12/08/17
3	TOK Comments	04/11/18



PUBLIC SEWER COLLECTION/EXTENSION SYSTEM
 THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S PUBLIC SEWER SYSTEM AS SHOWN ON THIS PLAN. THE MATERIAL AND CONSTRUCTION METHODS USED FOR THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY'S PUBLIC UTILITIES HANDBOOK.
 CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PERMIT # S-4417
 AUTHORIZATION TO CONSTRUCT Eui Haugland
 DATE 4/30/18

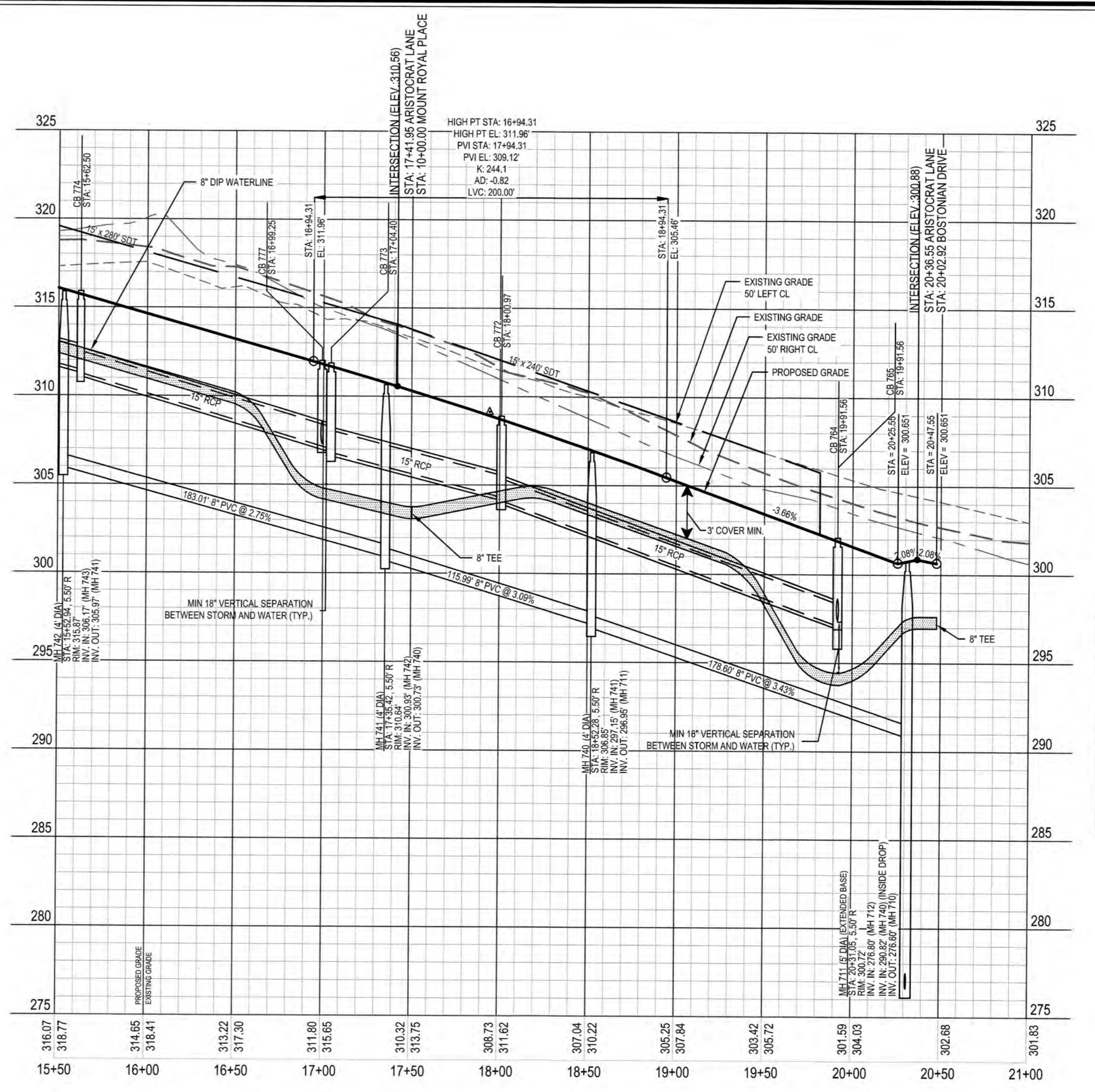
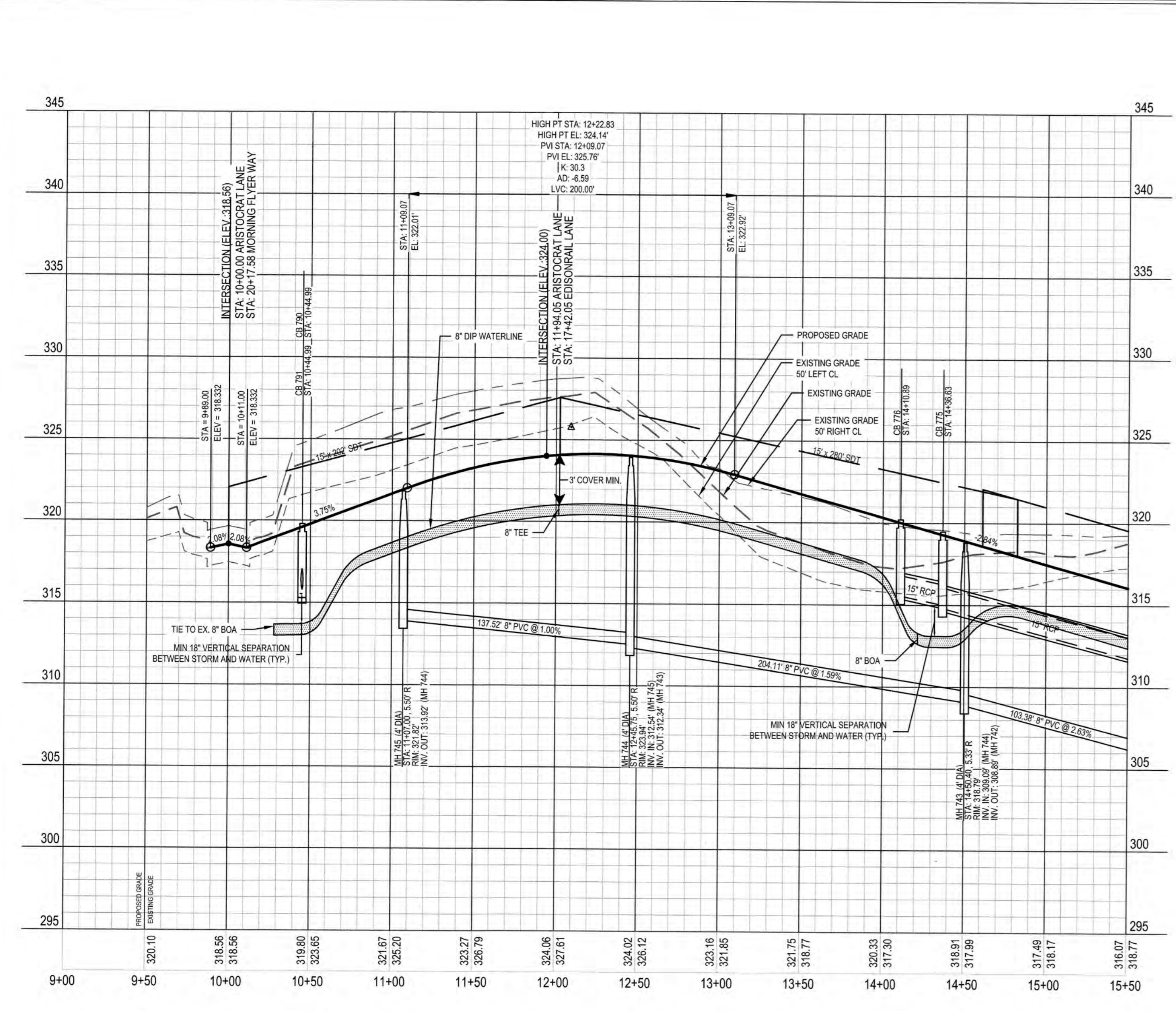
PUBLIC WATER DISTRIBUTION/EXTENSION SYSTEM
 THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S PUBLIC WATER SYSTEM AS SHOWN ON THIS PLAN. THE MATERIAL AND CONSTRUCTION METHODS USED FOR THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY'S PUBLIC UTILITIES HANDBOOK.
 CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PERMIT # W-3533
 AUTHORIZATION TO CONSTRUCT Eui Haugland
 DATE 4/30/18

TOWN CERTIFICATION, THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.
 BY: SALMI DATE: 4.19.18
 DEVELOPMENT SERVICES ENGINEER
 THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
 BY: ADMINISTRATOR DATE: 6.16.18



WithersRavenel
 Engineers | Planners | Surveyors

KNIGHTDALE STATION R7
 (SECTION A, B & C)
 KNIGHTDALE, WAKE COUNTY, NORTH CAROLINA



SCALE:
 1" = 50' HORIZ.
 1" = 5' VERT.

WATERLINE NOTE:
 IF MINIMUM CLEARANCE CANNOT BE ACHIEVED WITHOUT EXCEEDING MAXIMUM PIPE DEFLECTION FOR THE WATERLINE, THEN CONTRACTOR TO INSTALL 45° VERTICAL BENDS PER COR DETAIL W-12.

CLASS 1 STRUCTURAL MATERIAL NOTE:
 CLASS 1 STRUCTURAL MATERIAL REQUIRED FROM EXISTING GROUND TO SPRING LINE OF PROPOSED STORM PIPE IN FILL CONDITIONS. SEE LATEST TOK STANDARD SPECIFICATIONS.

CITY OF RALEIGH
 ALL CONSTRUCTION MUST BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL RULES AND REGULATIONS.

TRANSPORTATION SERVICES N/A
 PUBLIC UTILITIES E.H. 4/30/18
 STORMWATER N/A
 PLANNING N/A
 FIRE N/A
 URBAN FORESTRY N/A

ATTENTION CONTRACTORS

THE CONSTRUCTION CONTRACTOR RESPONSIBLE FOR THE EXTENSION OF WATER AND SEWER AS APPROVED IN THESE PLANS IS RESPONSIBLE FOR CONTACTING THE PUBLIC UTILITIES DEPARTMENT AT (919) 586-4540 AT LEAST 24 HOURS PRIOR TO BEGINNING ANY CONSTRUCTION.

FAILURE TO NOTIFY BOTH CITY DEPARTMENTS IN ADVANCE OF BEGINNING CONSTRUCTION WILL RESULT IN THE ISSUANCE OF MONETARY FINES AND REQUIRE REINSTALLATION OF ANY WATER OR SEWER FACILITIES NOT INSPECTED AS A RESULT OF THIS NOTIFICATION FAILURE.

FAILURE TO CALL FOR INSPECTION, INSTALL A DOWNSTREAM PLUG, HAVE PERMITTED PLANS ON THE JOB SITE, OR ANY OTHER VIOLATION OF CITY OF RALEIGH STANDARDS WILL RESULT IN A FINE AND POSSIBLE EXCLUSION FROM FUTURE WORK IN THE CITY OF RALEIGH.

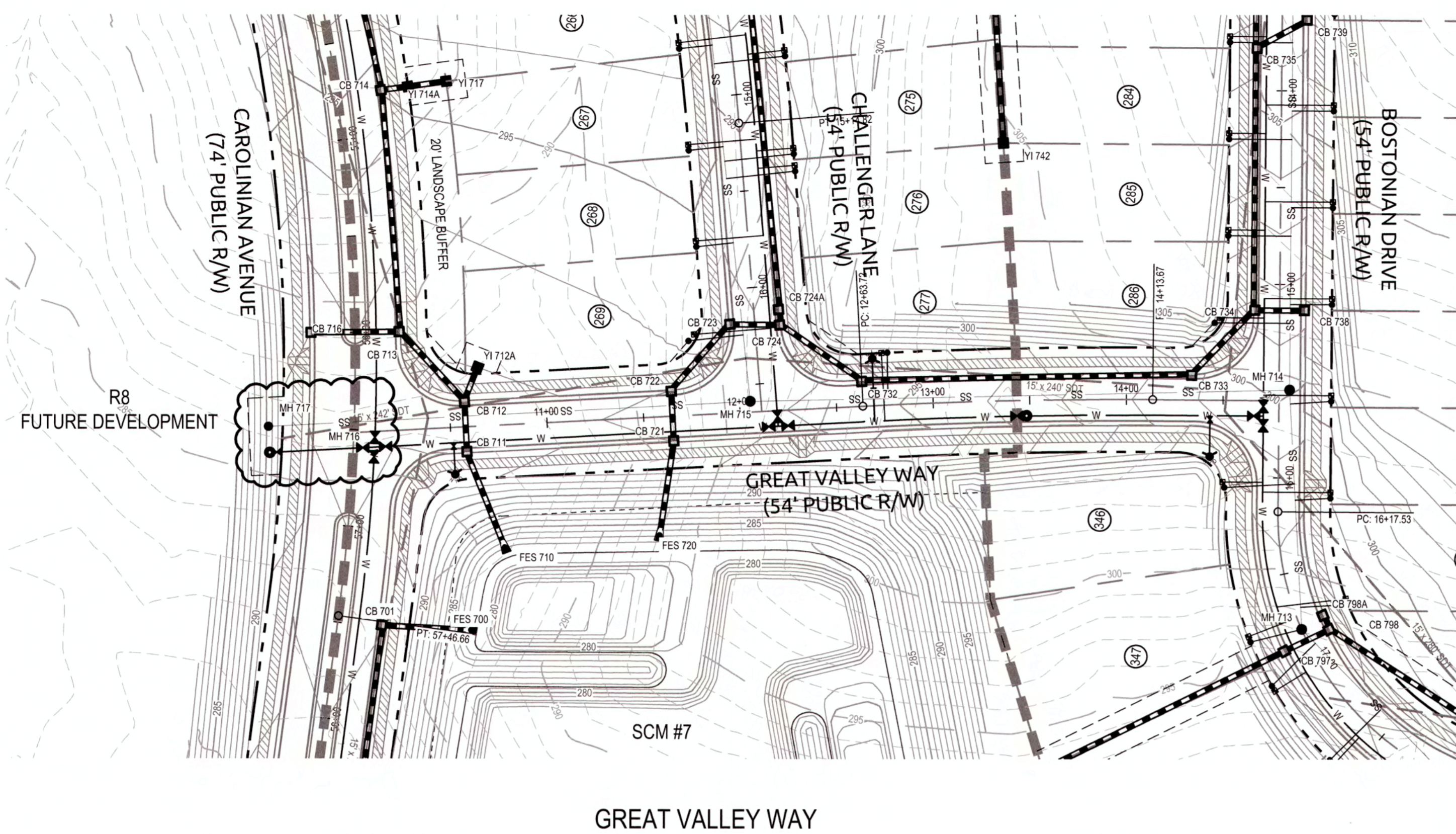
ARISTOCRAT LANE
PLAN AND PROFILE

Job No. 0209025191 Drawn By CED
 Date 06/21/16 Designer JCI

Revisions		
1	TOK Comments	09/07/16
2	TOK Comments	12/08/17
3	TOK Comments	04/11/18

Sheet No.
6.2

K:\09\0209025191 Knightdale Station R7 CAD Construction Drawings\1 - 8 PLAN AND PROFILE.dwg, Wednesday, April 11, 2018 10:42:24 AM - D:\RICK COLLEEN

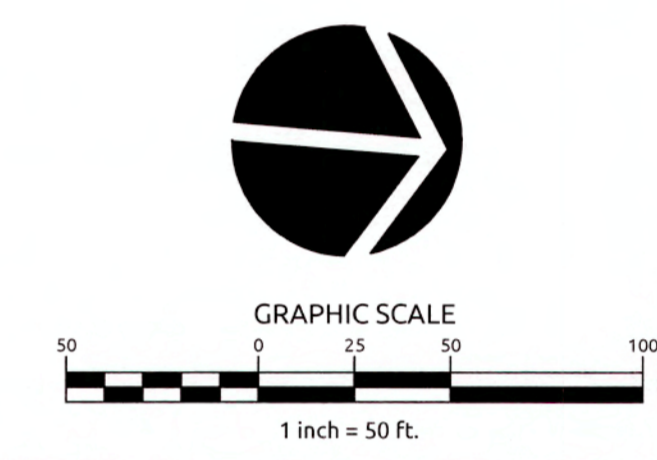


CITY OF RALEIGH
 ALL CONSTRUCTION MUST BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL RULES AND REGULATIONS.
 TRANSPORTATION SERVICES N/A
 PUBLIC UTILITIES (43) 3/25/19
 STORMWATER N/A
 PLANNING N/A
 FIRE N/A
 URBAN FORESTRY N/A

PUBLIC SEWER COLLECTION/EXTENSION SYSTEM
 THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S PUBLIC SEWER SYSTEM AS SHOWN ON THIS PLAN. THE MATERIAL AND CONSTRUCTION METHODS USED FOR THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY'S PUBLIC UTILITIES HANDBOOK.
 CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PERMIT # 5-44117 (Rev.)
 AUTHORIZATION TO CONSTRUCT By: M. Sample
 DATE 3/25/19

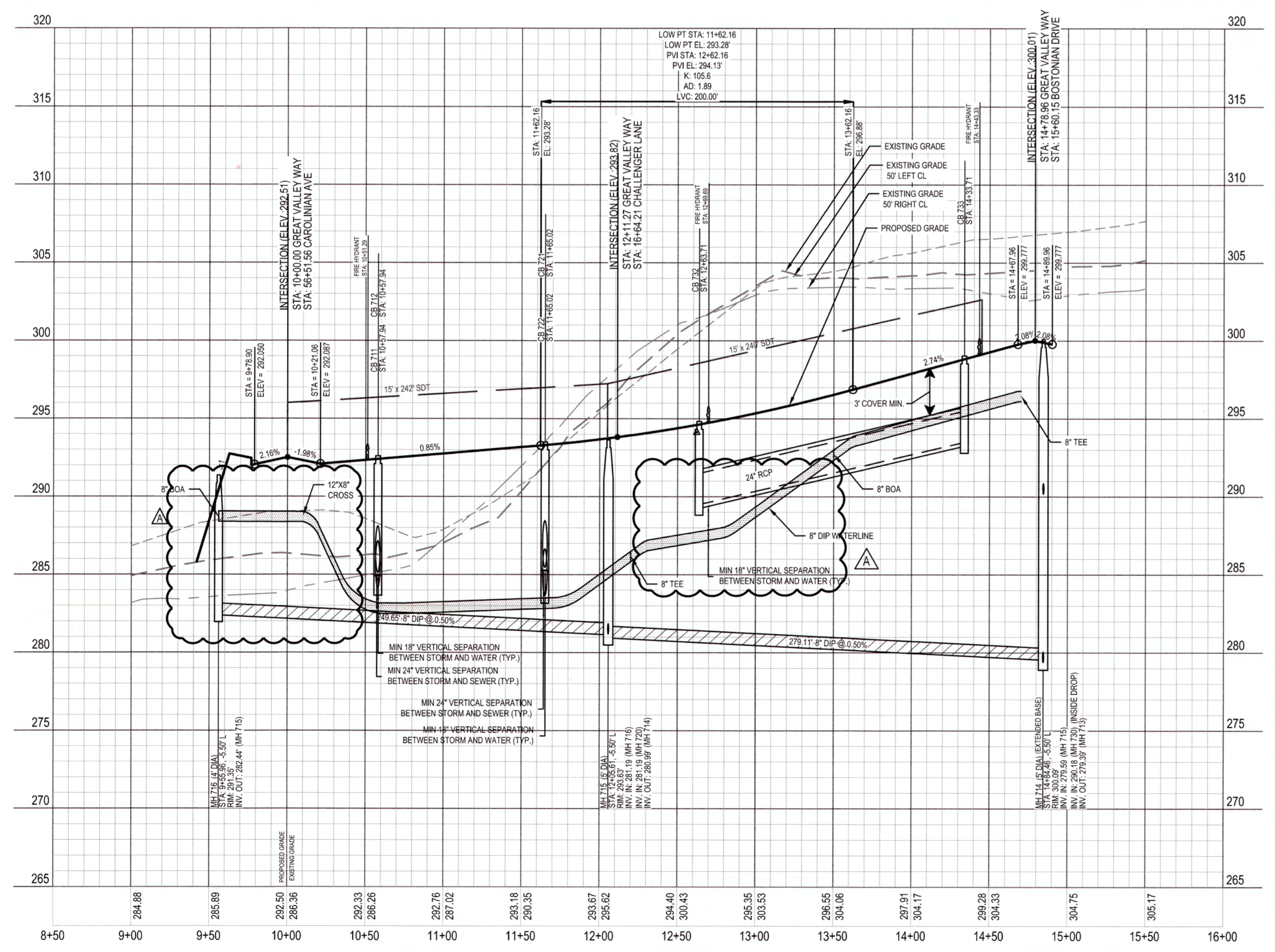
PUBLIC WATER DISTRIBUTION/EXTENSION SYSTEM
 THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S PUBLIC WATER SYSTEM AS SHOWN ON THIS PLAN. THE MATERIAL AND CONSTRUCTION METHODS USED FOR THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY'S PUBLIC UTILITIES HANDBOOK.
 CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PERMIT # W-3535 (Rev.)
 AUTHORIZATION TO CONSTRUCT By: M. Sample
 DATE 3/25/19

TOWN CERTIFICATION, THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.
 BY: [Signature] DATE: 6-13-2019
 DEVELOPMENT SERVICES ENGINEER
 THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
 BY: [Signature] DATE: 6/14/19
 ADMINISTRATOR



WithersRavenel
 Engineers | Planners | Surveyors

KNIGHTDALE STATION
 R7
 (SECTION A, B & C)
 KNIGHTDALE, WAKE COUNTY, NORTH CAROLINA



WATERLINE NOTE:
 IF MINIMUM CLEARANCE CANNOT BE ACHIEVED WITHOUT EXCEEDING MAXIMUM PIPE DEFLECTION FOR THE WATERLINE, THEN CONTRACTOR TO INSTALL 45° VERTICAL BENDS PER COR DETAIL W-12.

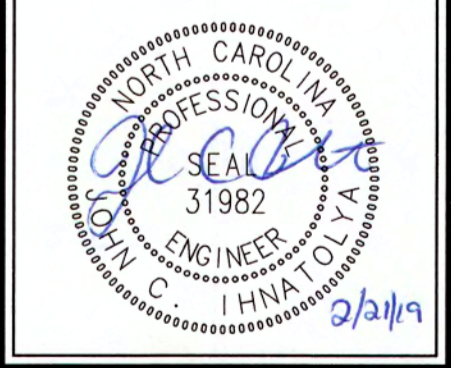
CLASS 1 STRUCTURAL MATERIAL NOTE:
 CLASS 1 STRUCTURAL MATERIAL REQUIRED FROM EXISTING GROUND TO SPRING LINE OF PROPOSED STORM PIPE IN FILL CONDITIONS. SEE LATEST TOK STANDARD SPECIFICATIONS.

ATTENTION CONTRACTORS
 THE CONSTRUCTION CONTRACTOR RESPONSIBLE FOR THE EXTENSION OF WATER AND SEWER, AS APPROVED IN THESE PLANS, IS RESPONSIBLE FOR CONTACTING THE PUBLIC UTILITIES DEPARTMENT AT (919) 996-4540 AT LEAST 24 HOURS PRIOR TO BEGINNING ANY CONSTRUCTION.
 FAILURE TO NOTIFY BOTH CITY DEPARTMENTS IN ADVANCE OF BEGINNING CONSTRUCTION WILL RESULT IN THE ISSUANCE OF MONETARY FINES AND REQUIRE REINSTALLATION OF ANY WATER OR SEWER FACILITIES NOT INSPECTED AS A RESULT OF THIS NOTIFICATION FAILURE.
 FAILURE TO CALL FOR INSPECTION, INSTALL A DOWNSTREAM PLUG, HAVE PERMITTED PLANS ON THE JOB SITE, OR ANY OTHER VIOLATION OF CITY OF RALEIGH STANDARDS WILL RESULT IN A FINE AND POSSIBLE EXCLUSION FROM FUTURE WORK IN THE CITY OF RALEIGH.

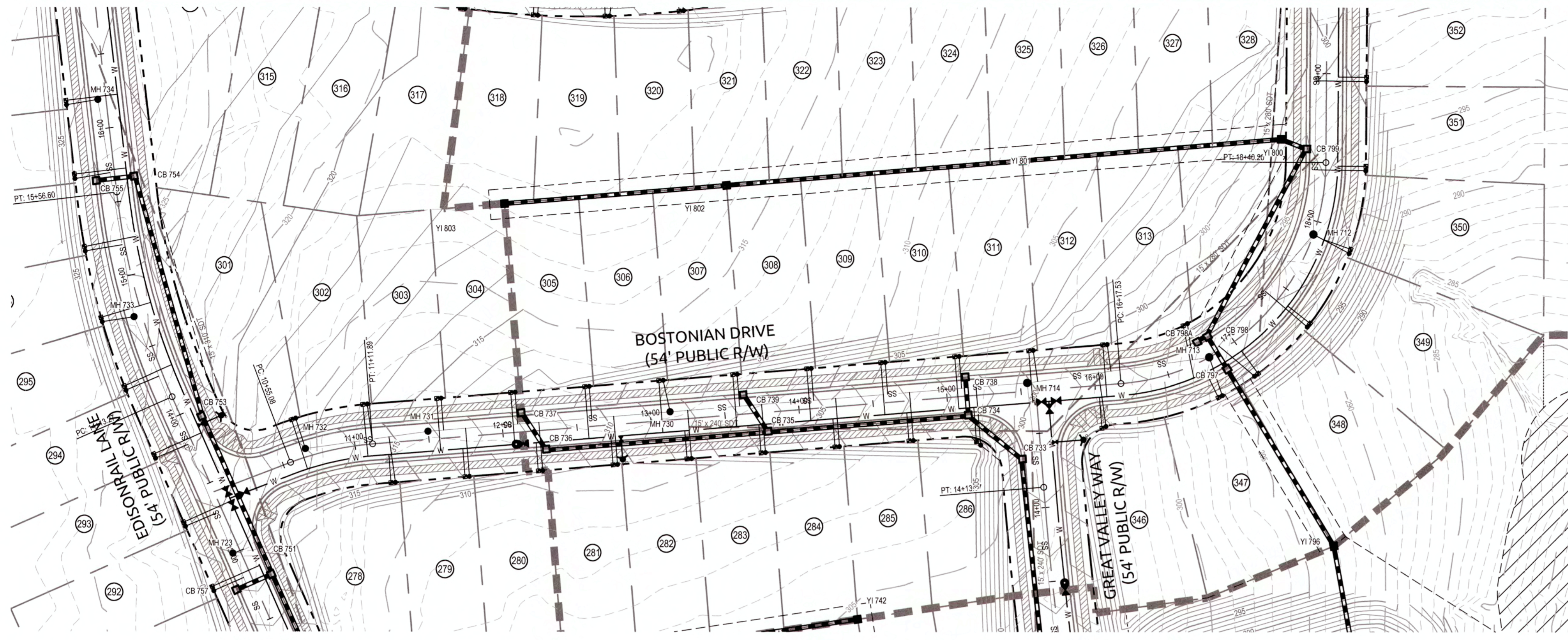
SCALE:
 1" = 50' HORIZ.
 1" = 5' VERT.

K:\09\0209\02021\1 - Knightdale Station R7\CAD\Construction Drawings\1 - 6.9 PLAN AND PROFILE.dwg, Thursday, February 21, 2019 3:08:57 PM - DUREYA, COLLEEN

Job No. 0209020191 Drawn By CED
 Date 06/21/16 Designer JCI



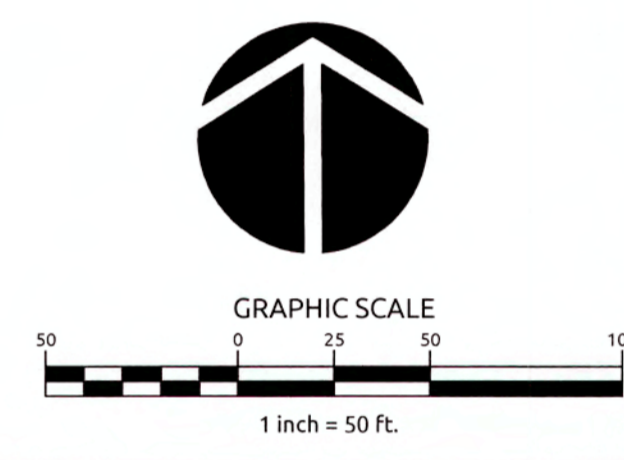
Revisions		
1	TOK Comments	09/07/16
2	TOK Comments	12/08/17
3	TOK Comments	04/11/18
4	Sewer Outfall J Revisions	02/21/19



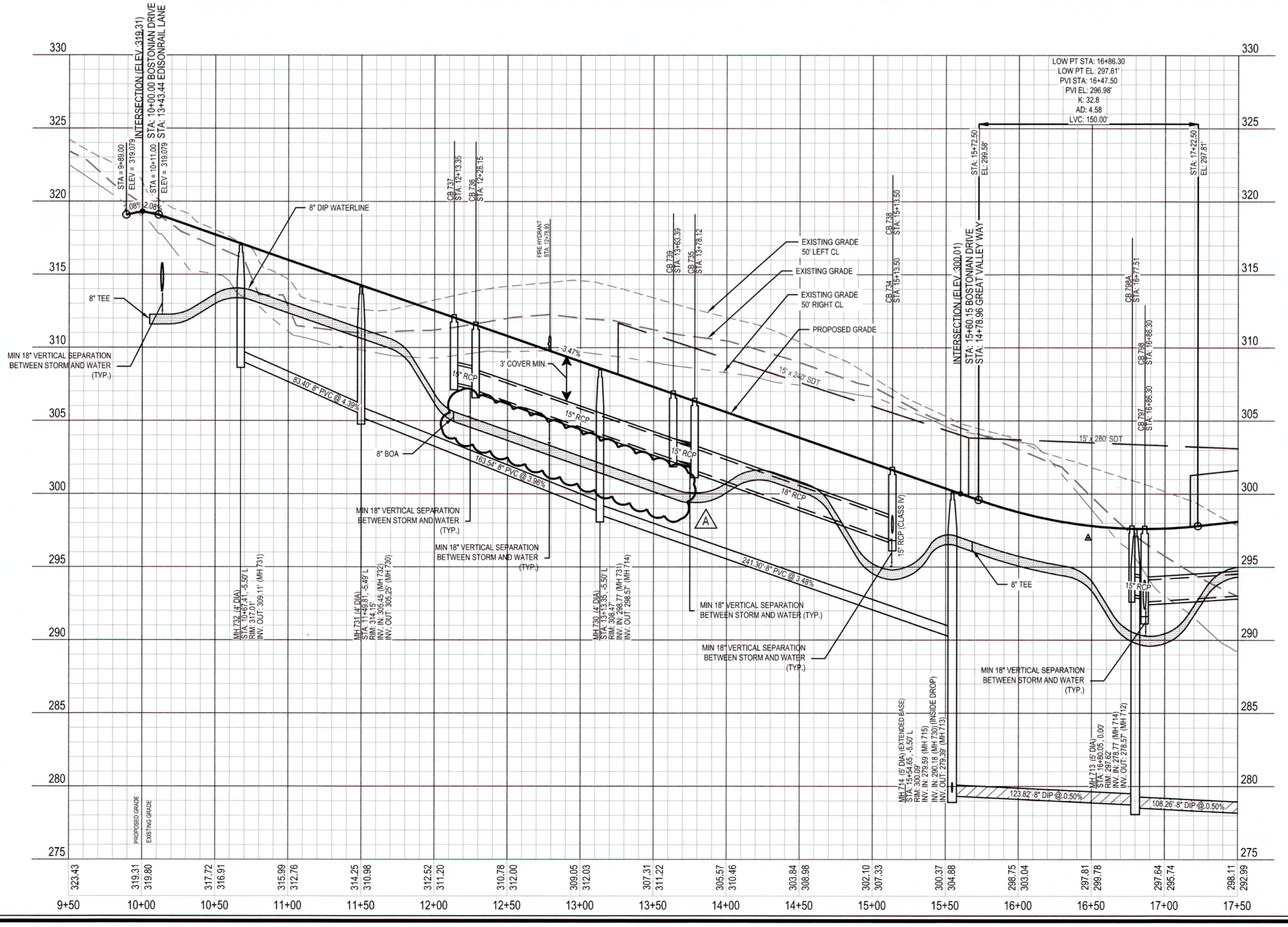
PUBLIC SEWER COLLECTION/EXTENSION SYSTEM
 THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S PUBLIC SEWER SYSTEM AS SHOWN ON THIS PLAN. THE MATERIAL AND CONSTRUCTION METHODS USED FOR THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY'S PUBLIC UTILITIES HANDBOOK.
 CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PERMIT # 5-44117 (Rev)
 AUTHORIZATION TO CONSTRUCT James M. Sample
 DATE 3/25/19

PUBLIC WATER DISTRIBUTION/EXTENSION SYSTEM
 THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S PUBLIC WATER SYSTEM AS SHOWN ON THIS PLAN. THE MATERIAL AND CONSTRUCTION METHODS USED FOR THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY'S PUBLIC UTILITIES HANDBOOK.
 CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PERMIT # W-3533 (Rev)
 AUTHORIZATION TO CONSTRUCT James M. Sample
 DATE 3/25/19

TOWN CERTIFICATION, THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.
 BY: S. Atwell DATE: 6/13/2019
 DEVELOPMENT SERVICES ENGINEER
 THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
 BY: ABTC DATE: 6/14/19
 ADMINISTRATOR



BOSTONIAN DRIVE



WATERLINE NOTE:
 IF MINIMUM CLEARANCE CANNOT BE ACHIEVED WITHOUT EXCEEDING MAXIMUM PIPE DEFLECTION FOR THE WATERLINE, THEN CONTRACTOR TO INSTALL 45° VERTICAL BENDS PER COR DETAIL W-12.

CLASS 1 STRUCTURAL MATERIAL NOTE:
 CLASS 1 STRUCTURAL MATERIAL REQUIRED FROM EXISTING GROUND TO SPRING LINE OF PROPOSED STORM PIPE IN FILL CONDITIONS. SEE LATEST TOK STANDARD SPECIFICATIONS.

SCALE:
 1" = 50' HORIZ.
 1" = 5' VERT.

CITY OF RALEIGH
 ALL CONSTRUCTION MUST BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL RULES AND REGULATIONS.
 TRANSPORTATION SERVICES N/A
 PUBLIC UTILITIES 3/25/19
 STORMWATER N/A
 PLANNING N/A
 FIRE N/A
 URBAN FORESTRY N/A

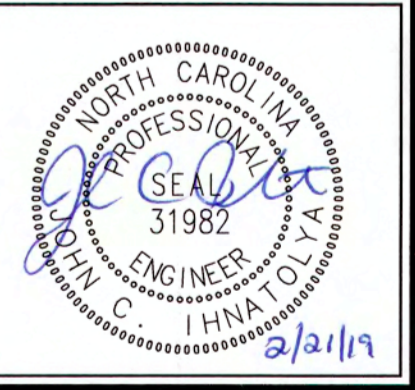
ATTENTION CONTRACTORS
 THE CONSTRUCTION CONTRACTOR RESPONSIBLE FOR THE EXTENSION OF WATER AND SEWER, AS APPROVED IN THESE PLANS, IS RESPONSIBLE FOR CONTACTING THE PUBLIC UTILITIES DEPARTMENT AT (919) 996-4560 AT LEAST 24 HOURS PRIOR TO BEGINNING ANY CONSTRUCTION.
 FAILURE TO NOTIFY BOTH CITY DEPARTMENTS IN ADVANCE OF BEGINNING CONSTRUCTION WILL RESULT IN THE ISSUANCE OF MONETARY FINES AND REQUIRE REINSTALLATION OF ANY WATER OR SEWER FACILITIES NOT INSPECTED AS A RESULT OF THIS NOTIFICATION FAILURE.
 FAILURE TO CALL FOR INSPECTION, INSTALL A DOWNSTREAM PLUG, HAVE PERMITTED PLANS ON THE JOB SITE, OR ANY OTHER VIOLATION OF CITY OF RALEIGH STANDARDS WILL RESULT IN A FINE AND POSSIBLE EXCLUSION FROM FUTURE WORK IN THE CITY OF RALEIGH.

WithersRavenel
 Engineers | Planners | Surveyors
 115 MacKenzie Drive | Cary, NC 27511 | 919-469-3340 | License # C-6821 www.withersravenel.com

KNIGHTDALE STATION
 R7
 (SECTION A, B & C)
 KNIGHTDALE, WAKE COUNTY, NORTH CAROLINA

BOSTONIAN DRIVE
 PLAN AND PROFILE
 STA. 10+00.00 TO 17+50.00

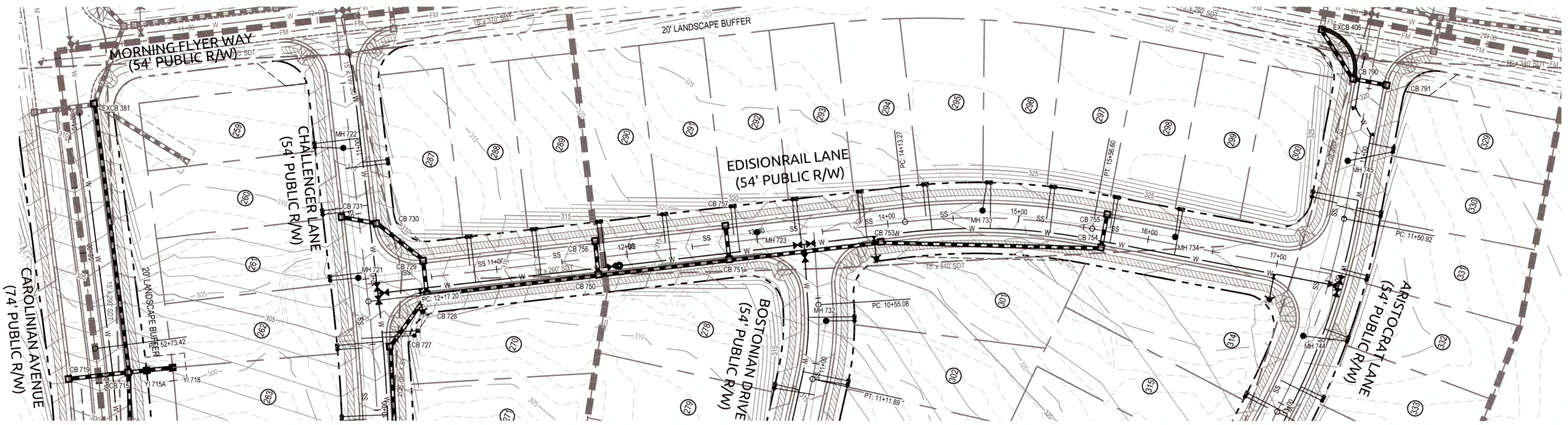
Job No. 0290251.91 Drawn By CED
 Date 06/21/16 Designer JCI



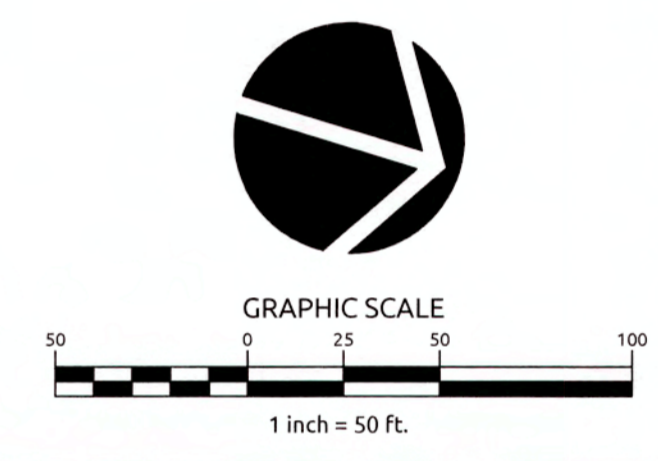
Revisions		
1	TOK Comments	09/07/16
2	TOK Comments	12/08/17
3	TOK Comments	04/11/18
4	Sewer Outfall J Revisions	02/21/19

Sheet No.
 6.4

K:\09\0250\025191\Knightdale Station R7\CAD\Construction Drawings\A1 - A9 PLAN AND PROFILE.dwg, Thursday, February 21, 2019 3:10:08 PM - DUNYEA, COLLEEN



EDISONRAIL LANE



PUBLIC SEWER COLLECTION/EXTENSION SYSTEM
 THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S PUBLIC SEWER SYSTEM AS SHOWN ON THIS PLAN. THE MATERIAL AND CONSTRUCTION METHODS USED FOR THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY'S PUBLIC UTILITIES HANDBOOK.
 CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PERMIT # 5-4417 (Rev)
 AUTHORIZATION TO CONSTRUCT Approved: Sample
 DATE 3/25/19

PUBLIC WATER DISTRIBUTION/EXTENSION SYSTEM
 THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S PUBLIC WATER SYSTEM AS SHOWN ON THIS PLAN. THE MATERIAL AND CONSTRUCTION METHODS USED FOR THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY'S PUBLIC UTILITIES HANDBOOK.
 CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PERMIT # W-3533 (Rev)
 AUTHORIZATION TO CONSTRUCT Approved: Sample
 DATE 3/25/19

TOWN CERTIFICATION, THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.
 BY: S. Stahl DATE: 6/13/2019
 DEVELOPMENT SERVICES ENGINEER
 THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
 BY: C. Goto DATE: 6/14/19
 ADMINISTRATOR

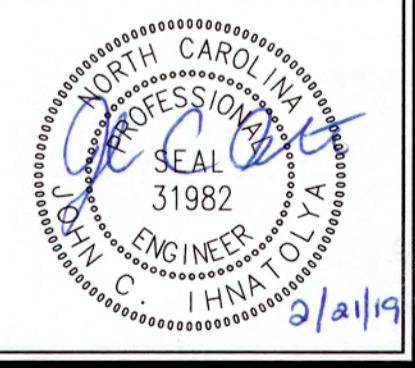
WithersRavenel
 Engineers | Planners | Surveyors

115 MacKinnon Drive | Cary, NC 27511 | 919.469.3300 | License # C-6832 | www.withersravenel.com

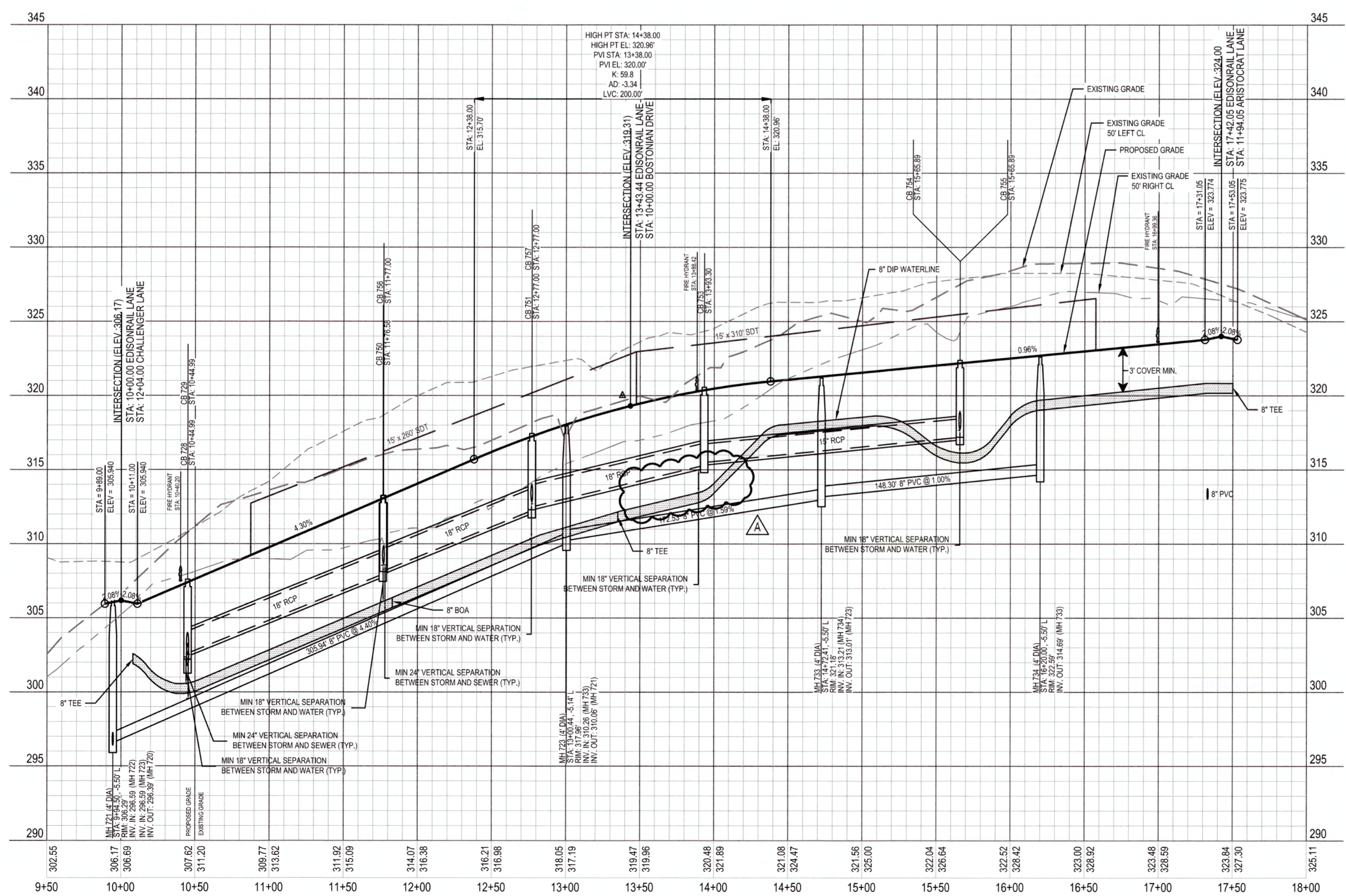
KNIGHTDALE STATION R7
 (SECTION A, B & C)
 KNIGHTDALE, WAKE COUNTY, NORTH CAROLINA

EDISONRAIL LANE
 PLAN AND PROFILE

Job No. 02090251.91
 Date 06/21/16
 Drawn By CED
 Designer JCI



Revisions		
1	TOK Comments	09/07/16
2	TOK Comments	12/08/17
3	TOK Comments	04/11/18
4	Sewer Outfall J Revisions	02/21/19



WATERLINE NOTE:
 IF MINIMUM CLEARANCE CANNOT BE ACHIEVED WITHOUT EXCEEDING MAXIMUM PIPE DEFLECTION FOR THE WATERLINE, THEN CONTRACTOR TO INSTALL 45' VERTICAL BENDS PER COR DETAIL W-12.

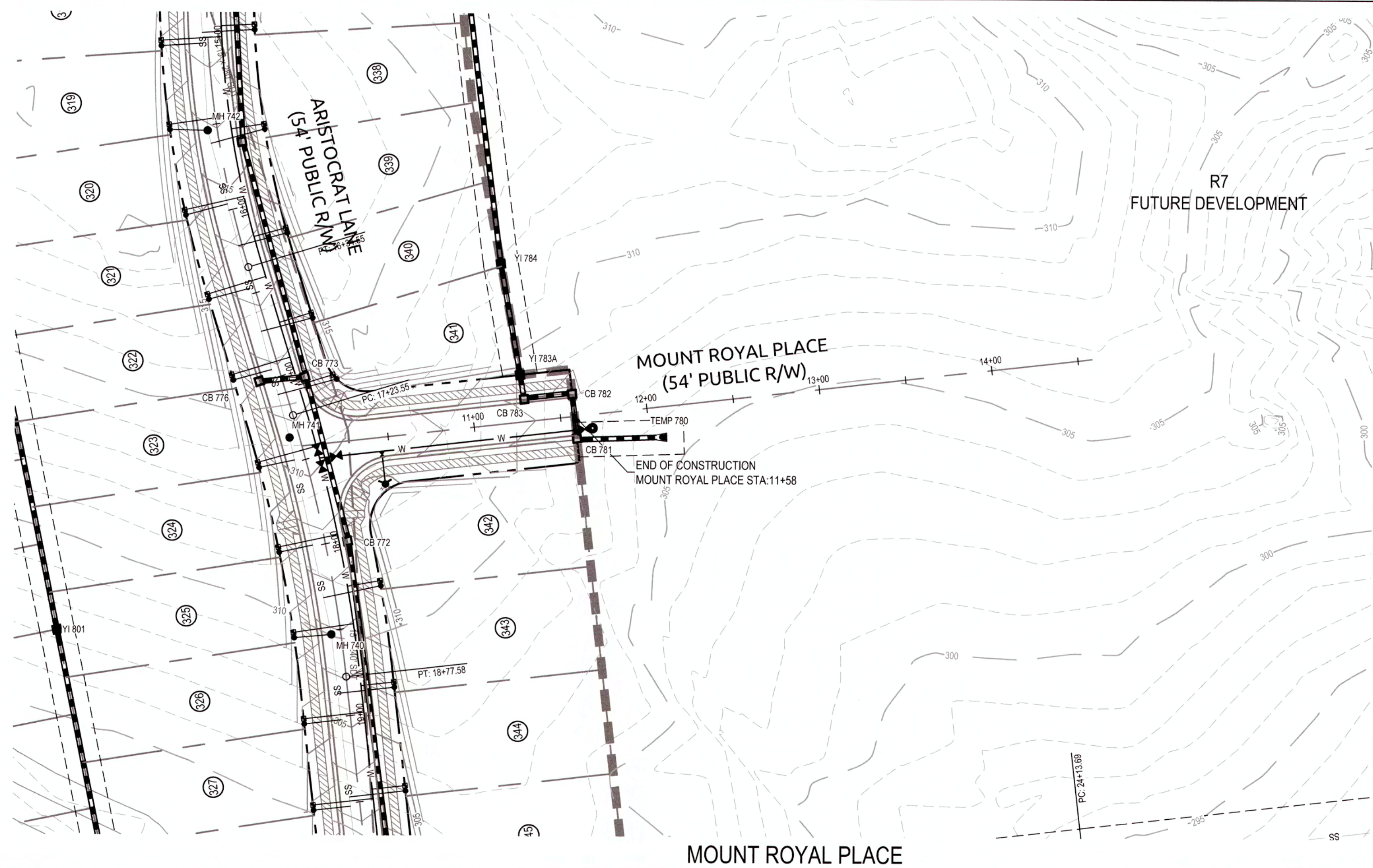
CLASS 1 STRUCTURAL MATERIAL NOTE:
 CLASS 1 STRUCTURAL MATERIAL REQUIRED FROM EXISTING GROUND TO SPRING LINE OF PROPOSED STORM PIPE IN FILL CONDITIONS. SEE LATEST TOK STANDARD SPECIFICATIONS.

SCALE:
 1" = 50' HORIZ.
 1" = 5' VERT.

CITY OF RALEIGH
 ALL CONSTRUCTION MUST BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL RULES AND REGULATIONS.
 TRANSPORTATION SERVICES: N/A
 PUBLIC UTILITIES: 3/25/19
 STORMWATER: N/A
 PLANNING: N/A
 FIRE: N/A
 URBAN FORESTRY: N/A

ATTENTION CONTRACTORS
 THE CONSTRUCTION CONTRACTOR RESPONSIBLE FOR THE EXTENSION OF WATER AND SEWER, AS APPROVED IN THESE PLANS, IS RESPONSIBLE FOR CONTACTING THE PUBLIC UTILITIES DEPARTMENT AT (919) 996-4540 AT LEAST 24 HOURS PRIOR TO BEGINNING ANY CONSTRUCTION.
 FAILURE TO NOTIFY BOTH CITY DEPARTMENTS IN ADVANCE OF BEGINNING CONSTRUCTION WILL RESULT IN THE ISSUANCE OF MONETARY FINES AND REQUIRE REINSTALLATION OF ANY WATER OR SEWER FACILITIES NOT INSPECTED AS A RESULT OF THIS NOTIFICATION FAILURE.
 FAILURE TO CALL FOR INSPECTION, INSTALL A DOWNSTREAM PLUG, HAVE PERMITTED PLANS ON THE JOB SITE, OR ANY OTHER VIOLATION OF CITY OF RALEIGH STANDARDS WILL RESULT IN A FINE AND POSSIBLE EXCLUSION FROM FUTURE WORK IN THE CITY OF RALEIGH.

K:\07\0250\020251-19 Knightdale Station R7 CAD Construction Drawings\A.1 - 49 MAIN AND PROFILES.dwg, Thursday, February 21, 2019 3:11:09 PM - DURTIA, COLLEEN



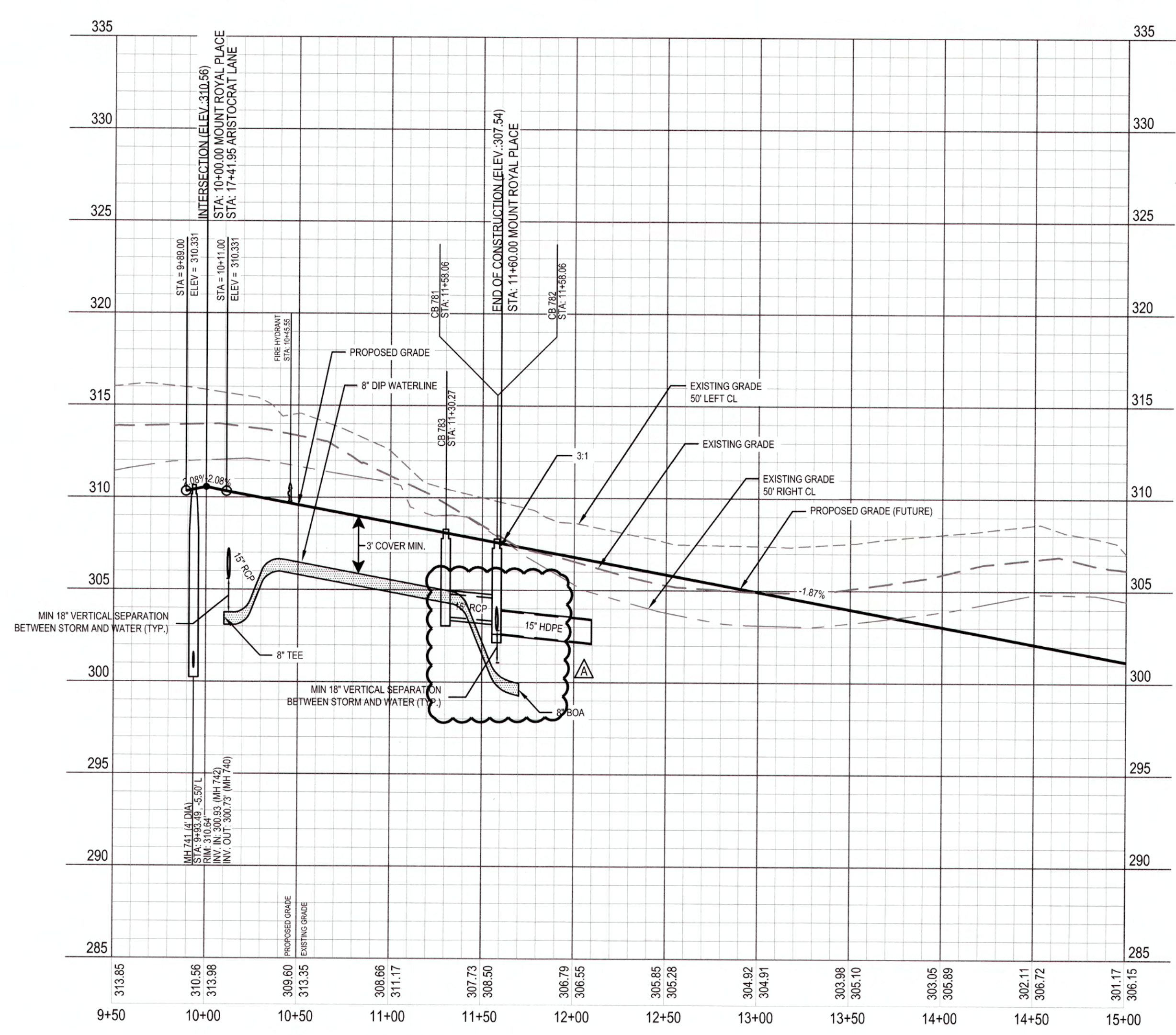
PUBLIC SEWER COLLECTION/EXTENSION SYSTEM
 THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S PUBLIC SEWER SYSTEM AS SHOWN ON THIS PLAN. THE MATERIAL AND CONSTRUCTION METHODS USED FOR THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY'S PUBLIC UTILITIES HANDBOOK.
 CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PERMIT # 5-4117 (New)
 AUTHORIZATION TO CONSTRUCT Approved M. Sample
 DATE 3/25/19

PUBLIC WATER DISTRIBUTION/EXTENSION SYSTEM
 THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S PUBLIC WATER SYSTEM AS SHOWN ON THIS PLAN. THE MATERIAL AND CONSTRUCTION METHODS USED FOR THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY'S PUBLIC UTILITIES HANDBOOK.
 CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PERMIT # W-4633 (New)
 AUTHORIZATION TO CONSTRUCT Approved M. Sample
 DATE 3/25/19

TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.
 BY: [Signature] DATE: 6-13-2019
 DEVELOPMENT SERVICES ENGINEER
 THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
 BY: [Signature] DATE: 6/14/19
 ADMINISTRATOR

WithersRavenel
 Engineers | Planners | Surveyors
 115 MacKenzie Drive | Cary, NC 27511 | E 919-469-3340 | License # C-0832 | www.withersravenel.com

KNIGHTDALE STATION R7 (SECTION A, B & C)
 KNIGHTDALE, WAKE COUNTY, NORTH CAROLINA



WATERLINE NOTE:
 IF MINIMUM CLEARANCE CANNOT BE ACHIEVED WITHOUT EXCEEDING MAXIMUM PIPE DEFLECTION FOR THE WATERLINE, THEN CONTRACTOR TO INSTALL 45° VERTICAL BENDS PER COR DETAIL W-12.

CLASS 1 STRUCTURAL MATERIAL NOTE:
 CLASS 1 STRUCTURAL MATERIAL REQUIRED FROM EXISTING GROUND TO SPRING LINE OF PROPOSED STORM PIPE IN FILL CONDITIONS. SEE LATEST TOK STANDARD SPECIFICATIONS.

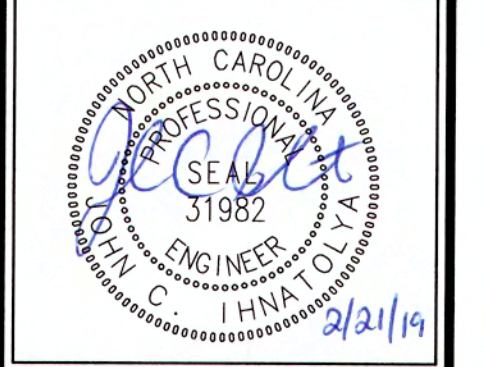
SCALE:
 1" = 50' HORIZ.
 1" = 5' VERT.

CITY OF RALEIGH
 ALL CONSTRUCTION MUST BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL RULES AND REGULATIONS.
 TRANSPORTATION SERVICES: N/A
 PUBLIC UTILITIES: 48 3/25/19
 STORMWATER: N/A
 PLANNING: N/A
 FIRE: N/A
 URBAN FORESTRY: N/A

ATTENTION CONTRACTORS
 THE CONSTRUCTION CONTRACTOR RESPONSIBLE FOR THE EXTENSION OF WATER AND SEWER, AS APPROVED IN THESE PLANS, IS RESPONSIBLE FOR CONTACTING THE PUBLIC UTILITIES DEPARTMENT AT (919) 996-4542 AT LEAST 24 HOURS PRIOR TO BEGINNING ANY CONSTRUCTION.
 FAILURE TO NOTIFY BOTH CITY DEPARTMENTS IN ADVANCE OF BEGINNING CONSTRUCTION WILL RESULT IN THE ISSUANCE OF MONETARY FINES AND REQUIRE REINSTALLATION OF ANY WATER OR SEWER FACILITIES NOT INSPECTED AS A RESULT OF THIS NOTIFICATION FAILURE.
 FAILURE TO CALL FOR INSPECTION, INSTALL A DOWNSTREAM PLUG, HAVE PERMITTED PLANS ON THE JOB SITE, OR ANY OTHER VIOLATION OF CITY OF RALEIGH STANDARDS WILL RESULT IN A FINE AND POSSIBLE EXCLUSION FROM FUTURE WORK IN THE CITY OF RALEIGH.

MOUNT ROYAL PLACE PLAN AND PROFILE

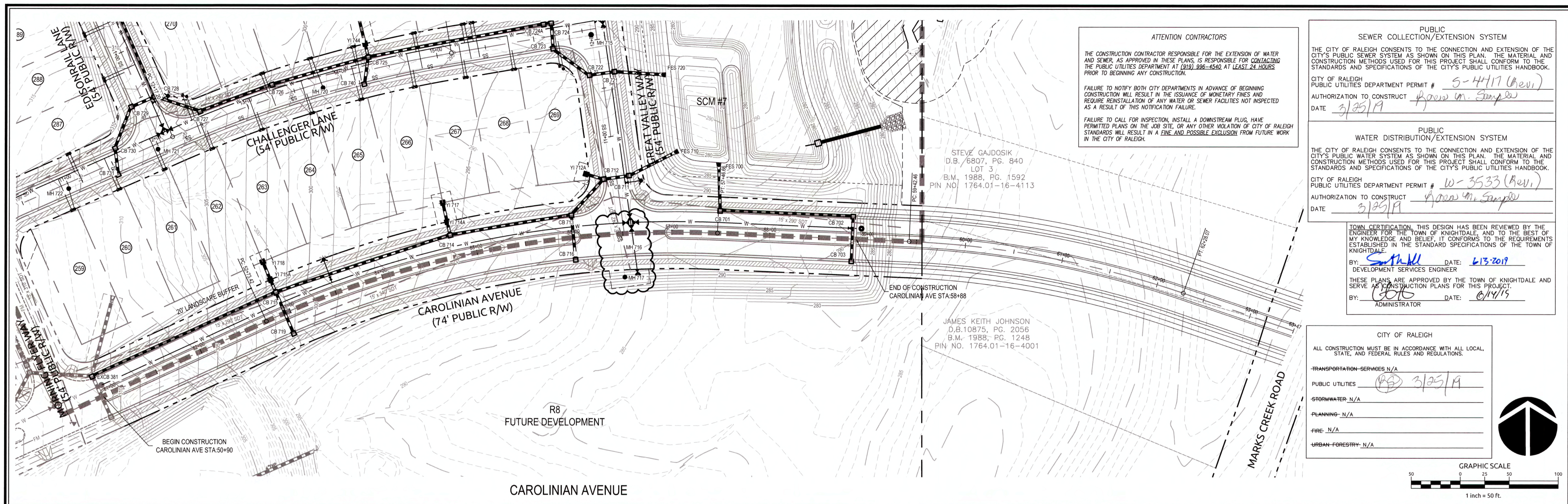
Job No. 02090251.91 Drawn By CED
 Date 06/21/16 Designer JCI



Revisions	Date
1 TOK Comments	09/07/16
2 TOK Comments	12/08/17
3 TOK Comments	04/11/18
4 Sewer Outfall J Revisions	02/21/19

Sheet No. **6.7**

K:\09\0250\020251.91\Knightdale Station R7\CAD\Construction Drawings\A.1 - PLAN AND PROFILE.dwg - Wednesday, February 20, 2019 1:59:15 PM - BURVA, COLLEEN



ATTENTION CONTRACTORS

THE CONSTRUCTION CONTRACTOR RESPONSIBLE FOR THE EXTENSION OF WATER AND SEWER, AS APPROVED IN THESE PLANS, IS RESPONSIBLE FOR CONTACTING THE PUBLIC UTILITIES DEPARTMENT AT (919) 586-4540 AT LEAST 24 HOURS PRIOR TO BEGINNING ANY CONSTRUCTION.

FAILURE TO NOTIFY BOTH CITY DEPARTMENTS IN ADVANCE OF BEGINNING CONSTRUCTION WILL RESULT IN THE ISSUANCE OF MONETARY FINES AND REQUIRE REINSTALLATION OF ANY WATER OR SEWER FACILITIES NOT INSPECTED AS A RESULT OF THIS NOTIFICATION FAILURE.

FAILURE TO CALL FOR INSPECTION, INSTALL A DOWNSTREAM PLUG, HAVE PERMITTED PLANS ON THE JOB SITE, OR ANY OTHER VIOLATION OF CITY OF RALEIGH STANDARDS WILL RESULT IN A FINE AND POSSIBLE EXCLUSION FROM FUTURE WORK IN THE CITY OF RALEIGH.

STEVE GAJDOSIK
D.B. 6807, PG. 840
LOT 3
B.M., 1988, PG. 1592
PIN NO. 1764.01-16-4113

JAMES KEITH JOHNSON
D.B. 10875, PG. 2056
B.M., 1988, PG. 1248
PIN NO. 1764.01-16-4001

PUBLIC SEWER COLLECTION/EXTENSION SYSTEM

THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S PUBLIC SEWER SYSTEM AS SHOWN ON THIS PLAN. THE MATERIAL AND CONSTRUCTION METHODS USED FOR THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY'S PUBLIC UTILITIES HANDBOOK.

CITY OF RALEIGH
PUBLIC UTILITIES DEPARTMENT PERMIT # 5-4417 (Rev.)
AUTHORIZATION TO CONSTRUCT James W. Sample
DATE 3/25/19

PUBLIC WATER DISTRIBUTION/EXTENSION SYSTEM

THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S PUBLIC WATER SYSTEM AS SHOWN ON THIS PLAN. THE MATERIAL AND CONSTRUCTION METHODS USED FOR THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY'S PUBLIC UTILITIES HANDBOOK.

CITY OF RALEIGH
PUBLIC UTILITIES DEPARTMENT PERMIT # W-3533 (Rev.)
AUTHORIZATION TO CONSTRUCT James W. Sample
DATE 3/25/19

TOWN CERTIFICATION THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: [Signature] DATE: 6/13/2019
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: [Signature] DATE: 6/14/19
ADMINISTRATOR

CITY OF RALEIGH

ALL CONSTRUCTION MUST BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL RULES AND REGULATIONS.

TRANSPORTATION SERVICES: N/A

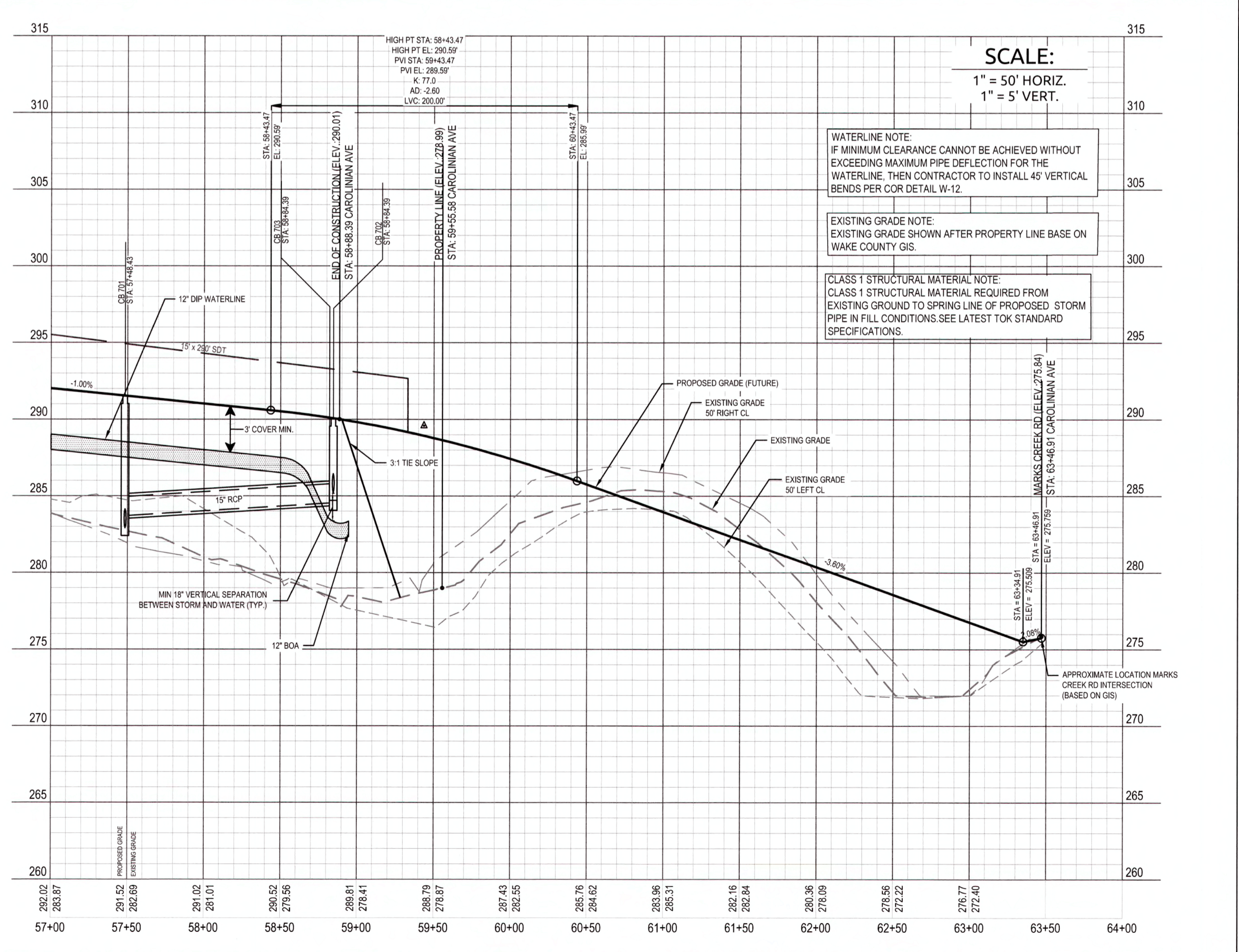
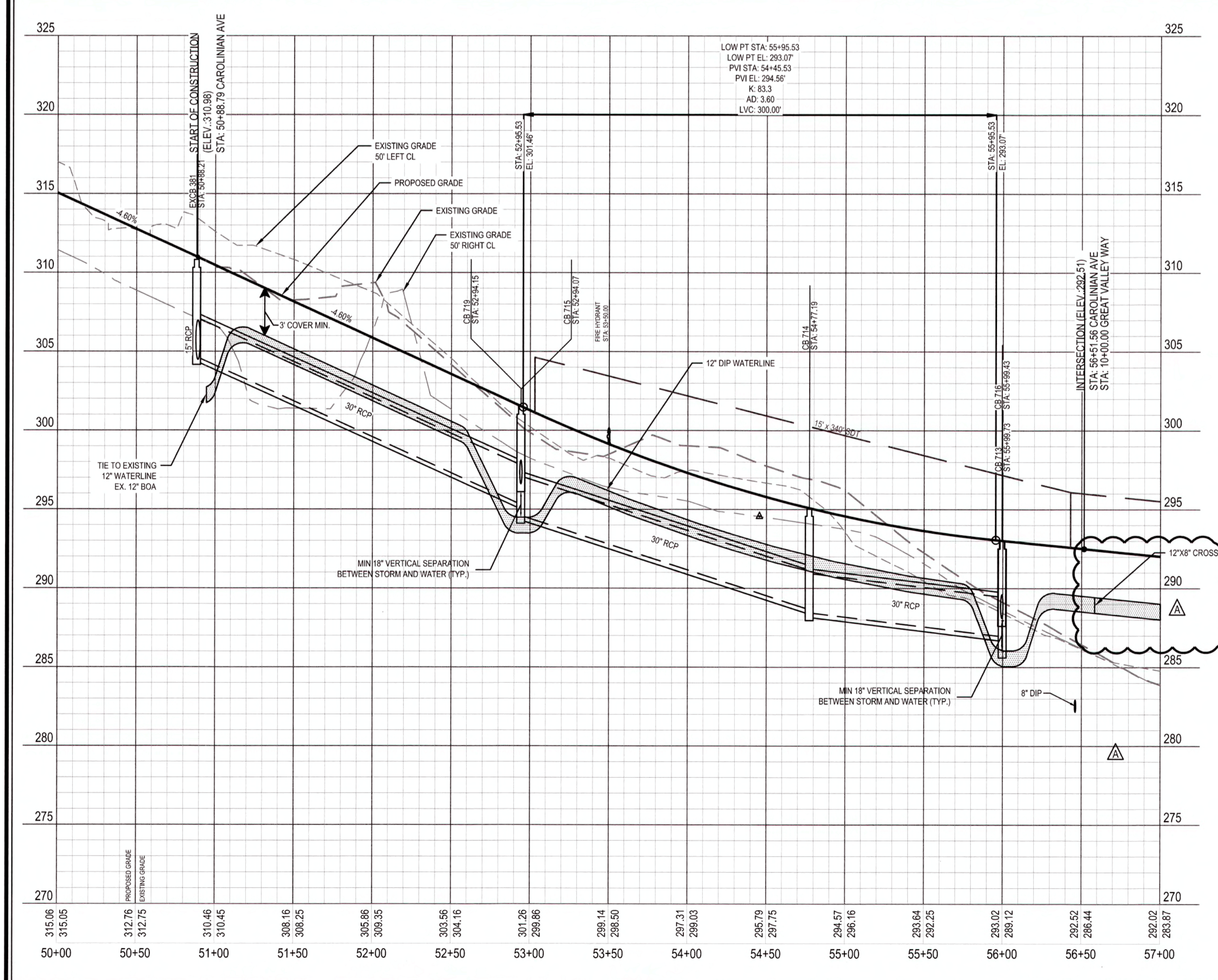
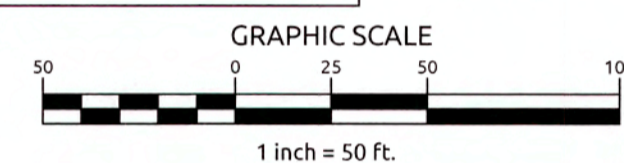
PUBLIC UTILITIES: 3/25/19

STORMWATER: N/A

PLANNING: N/A

FIRE: N/A

URBAN FORESTRY: N/A



SCALE:
1" = 50' HORIZ.
1" = 5' VERT.

WATERLINE NOTE:
IF MINIMUM CLEARANCE CANNOT BE ACHIEVED WITHOUT EXCEEDING MAXIMUM PIPE DEFLECTION FOR THE WATERLINE, THEN CONTRACTOR TO INSTALL 45 VERTICAL BENDS PER COR DETAIL W-12.

EXISTING GRADE NOTE:
EXISTING GRADE SHOWN AFTER PROPERTY LINE BASE ON WAKE COUNTY GIS.

CLASS 1 STRUCTURAL MATERIAL NOTE:
CLASS 1 STRUCTURAL MATERIAL REQUIRED FROM EXISTING GROUND TO SPRING LINE OF PROPOSED STORM PIPE IN FILL CONDITIONS. SEE LATEST TOK STANDARD SPECIFICATIONS.

WithersRavenel
Engineers | Planners | Surveyors

KNIGHTDALE STATION R7 (SECTION A, B & C)
KNIGHTDALE, WAKE COUNTY, NORTH CAROLINA

CAROLINIAN AVENUE PLAN AND PROFILE STA. 50+88.79 TO 58+98.00

Job No. 02090251.91 Drawn By CED
Date 06/21/16 Designer JCI

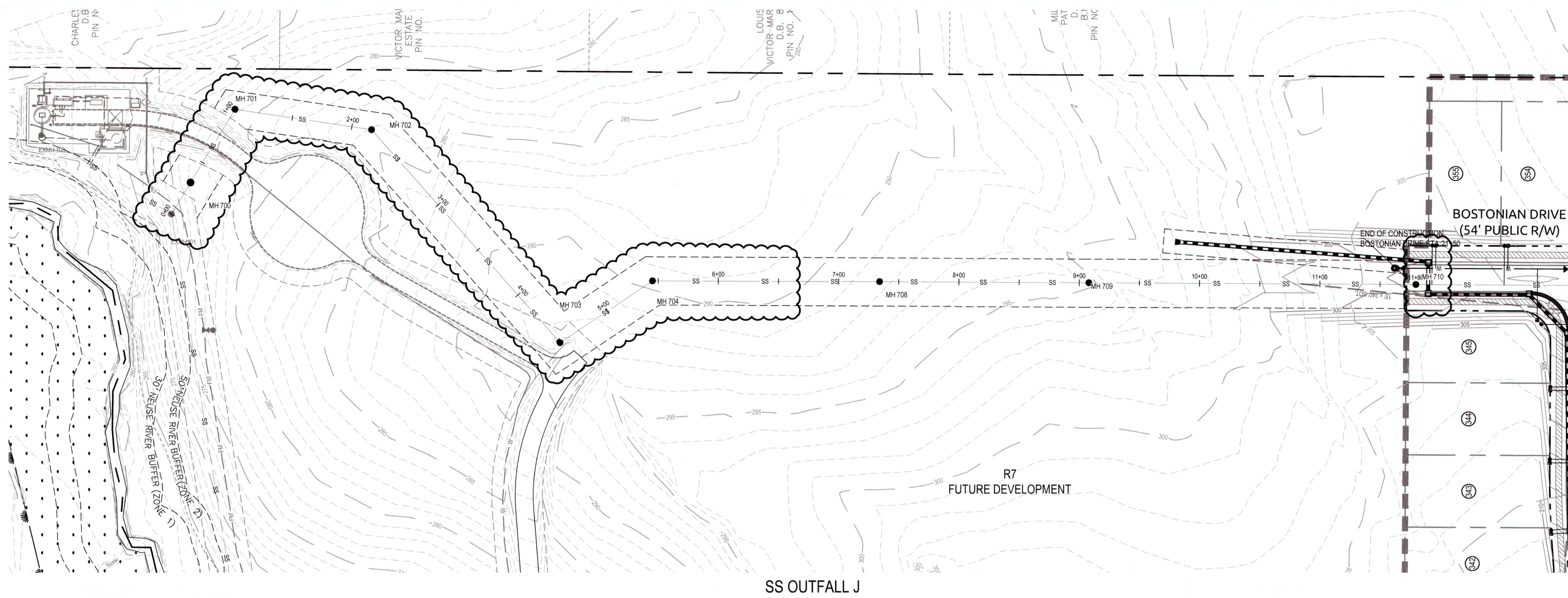
Professional Engineer Seal:
JAMES W. SAMPLE
No. 31982
Date: 3/25/19

Revisions:

1	TOK Comments	09/07/16
2	TOK Comments	12/08/17
3	TOK Comments	04/11/18
4	Sewer Outfall J Revisions	02/21/19

Sheet No. **6.8**

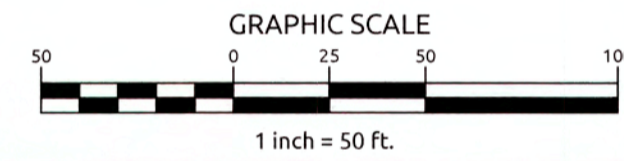
C:\09\0259\0259\11\Knightdale Station R7\CAD Construction Drawings\1 - 4.8 P&A AND PROFILE.dwg, Wednesday, February 20, 2019 10:05:34 AM, DURBA, COLLEEN



PUBLIC SEWER COLLECTION/EXTENSION SYSTEM
 THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S PUBLIC SEWER SYSTEM AS SHOWN ON THIS PLAN. THE MATERIAL AND CONSTRUCTION METHODS USED FOR THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY'S PUBLIC UTILITIES HANDBOOK.
 CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PERMIT # S-4117 (New)
 AUTHORIZATION TO CONSTRUCT Agnes M. Stapp
 DATE 3/25/19

PUBLIC WATER DISTRIBUTION/EXTENSION SYSTEM
 THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S PUBLIC WATER SYSTEM AS SHOWN ON THIS PLAN. THE MATERIAL AND CONSTRUCTION METHODS USED FOR THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY'S PUBLIC UTILITIES HANDBOOK.
 CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PERMIT # W-3533 (New)
 AUTHORIZATION TO CONSTRUCT Agnes M. Stapp
 DATE 3/25/19

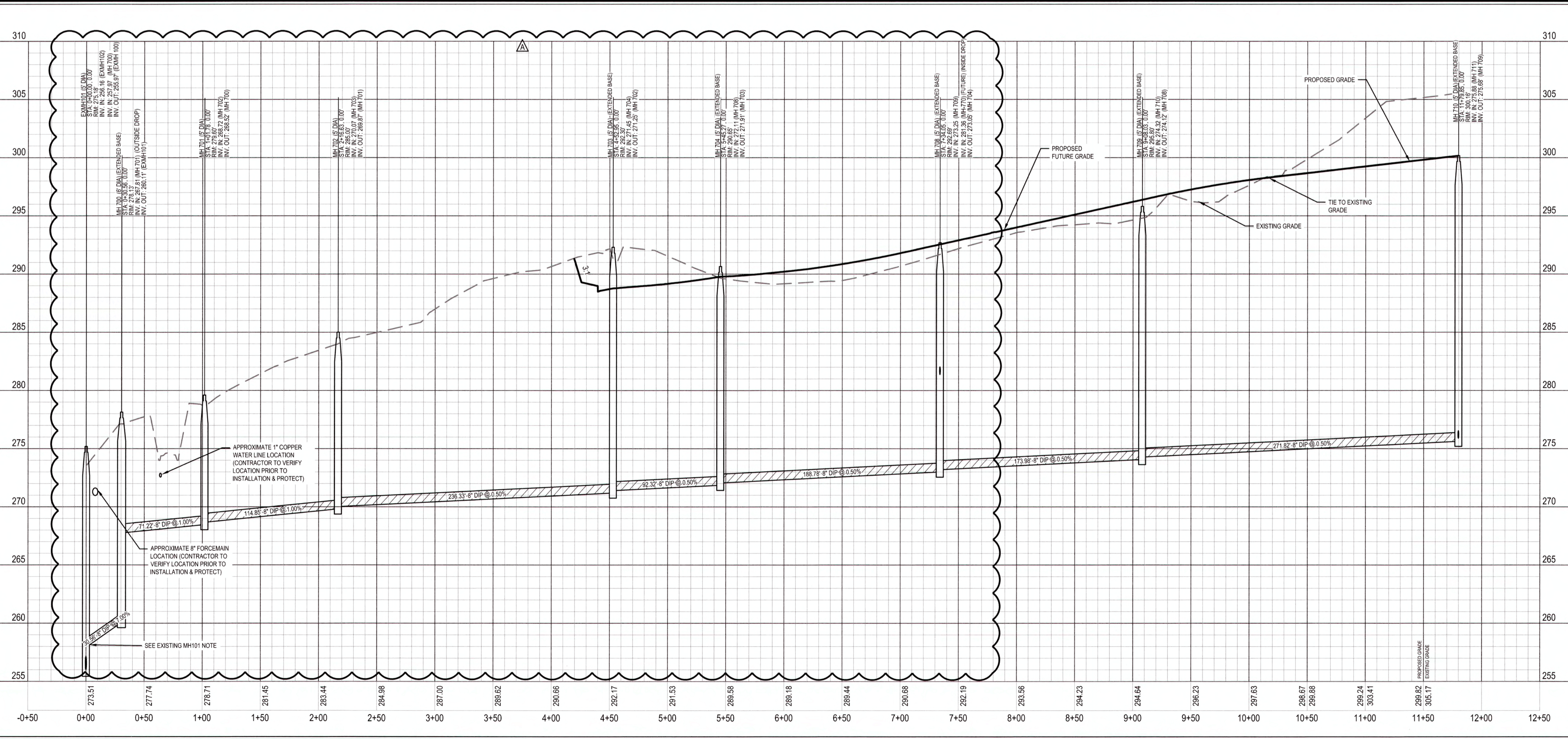
TOWN CERTIFICATION, THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.
 BY: [Signature] DATE: 6/13/2019
 DEVELOPMENT SERVICES ENGINEER
 THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
 BY: [Signature] DATE: 6/14/19
 ADMINISTRATOR



WithersRavenel
 Engineers | Planners | Surveyors

115 MacKinnon Drive | Cary, NC 27511 | E: 919.469.3340 | License #: C-0832 | www.withersravenel.com

KNIGHTDALE STATION R7 (SECTION A, B & C)
 KNIGHTDALE, WAKE COUNTY, NORTH CAROLINA



SCALE:
 1" = 50' HORIZ.
 1" = 5' VERT.

EXISTING MH101 NOTE:
 CONTRACTOR SHALL MAKE CONNECTION INTO EXM101 PER COR STANDARD SPECIFICATIONS VIA A CONCRETE CORING MACHINE, AND THE PIPE CONNECTION MUST BE MADE WITH A FLEXIBLE RUBBER BOOT. SEE COR SPECIFICATION FOR ADDITIONAL REQUIREMENTS.

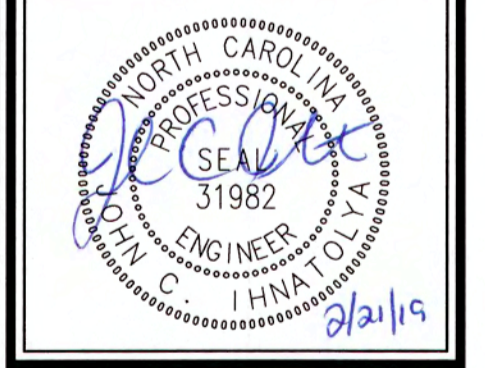
CITY OF RALEIGH
 ALL CONSTRUCTION MUST BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL RULES AND REGULATIONS.

TRANSPORTATION SERVICES: N/A
 PUBLIC UTILITIES: [Signature] 3/25/19
 STORMWATER: N/A
 PLANNING: N/A
 FIRE: N/A
 URBAN FORESTRY: N/A

ATTENTION CONTRACTORS
 THE CONSTRUCTION CONTRACTOR RESPONSIBLE FOR THE EXTENSION OF WATER AND SEWER, AS APPROVED IN THESE PLANS, IS RESPONSIBLE FOR CONTACTING THE PUBLIC UTILITIES DEPARTMENT AT (919) 998-4582 AT LEAST 24 HOURS PRIOR TO BEGINNING ANY CONSTRUCTION.
 FAILURE TO NOTIFY BOTH CITY DEPARTMENTS IN ADVANCE OF BEGINNING CONSTRUCTION WILL RESULT IN THE ISSUANCE OF MONETARY FINES AND REQUIRE REINSTALLATION OF ANY WATER OR SEWER FACILITIES NOT INSPECTED AS A RESULT OF THIS NOTIFICATION FAILURE.
 FAILURE TO CALL FOR INSPECTION, INSTALL A DOWNSTREAM PLUG, HAVE PERMITTED PLANS ON THE JOB SITE, OR ANY OTHER VIOLATION OF CITY OF RALEIGH STANDARDS WILL RESULT IN A FINE AND POSSIBLE EXCLUSION FROM FUTURE WORK IN THE CITY OF RALEIGH.

SS OUTFALL J PLAN AND PROFILE

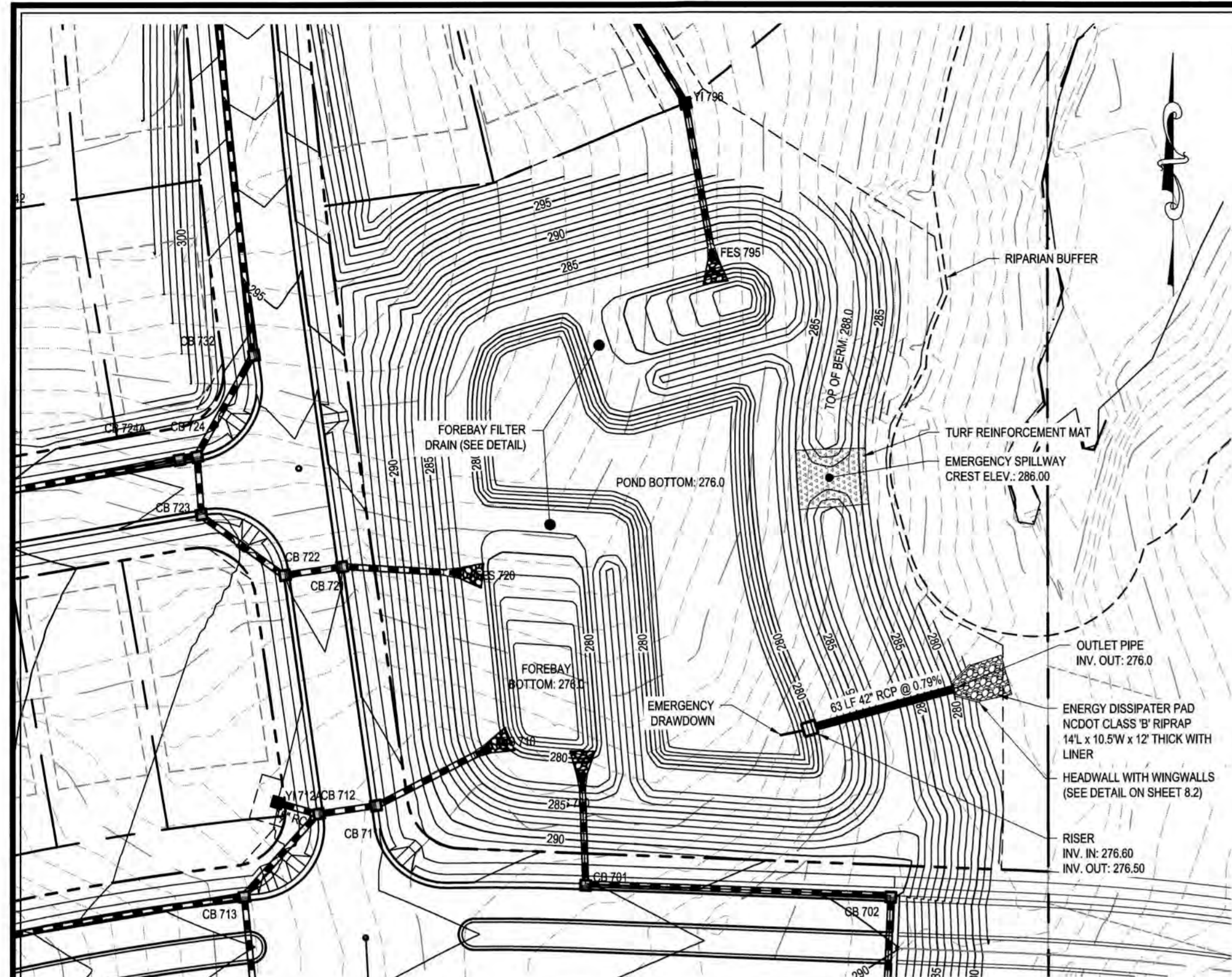
Job No. 02090251.91 Drawn By CED
 Date 06/21/16 Designer JCI



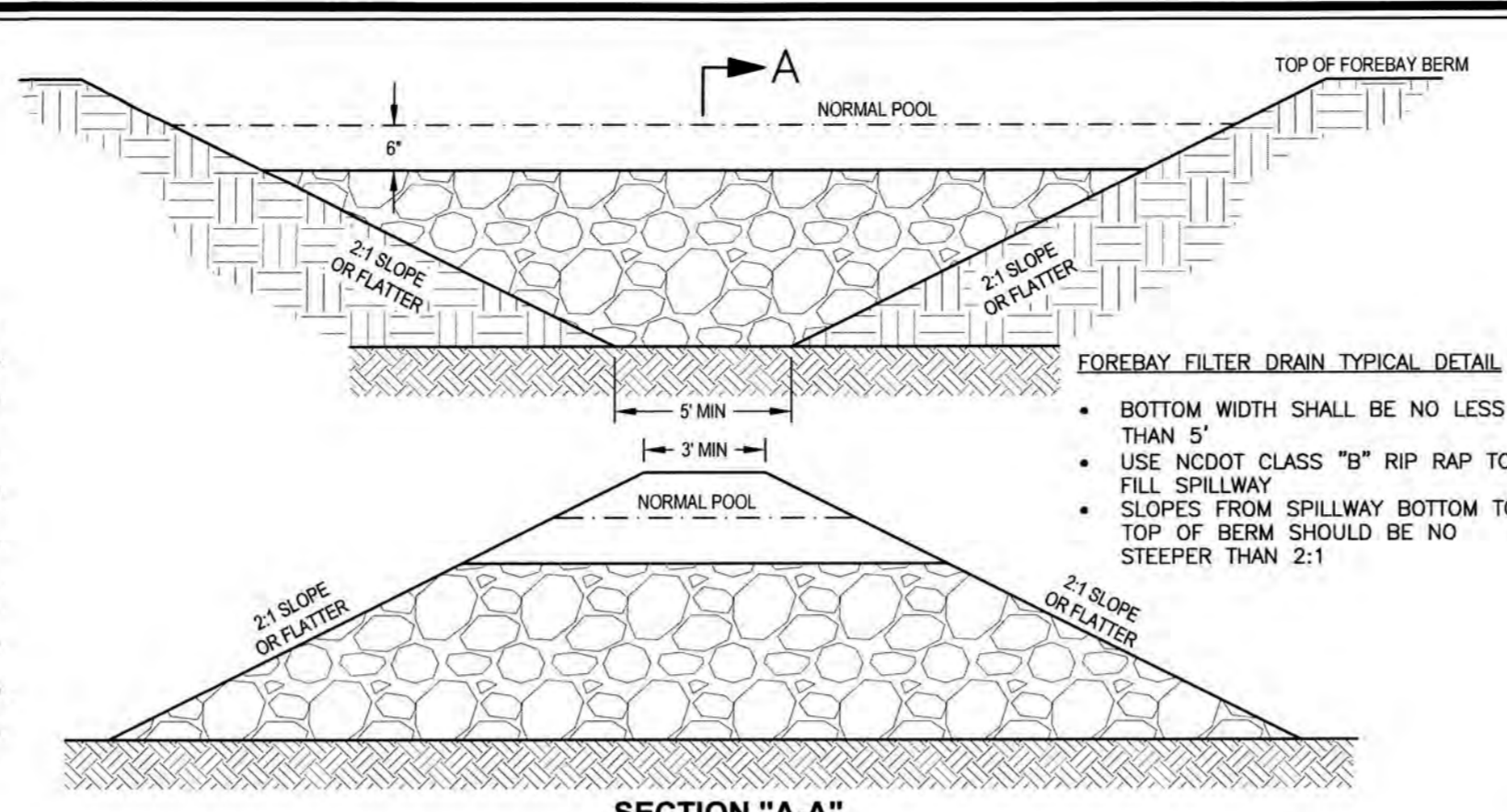
Revisions		
1	TOK Comments	09/07/16
2	TOK Comments	12/08/17
3	TOK Comments	04/11/18
4	Sewer Outfall J Revisions	02/21/19

Sheet No.
6.9

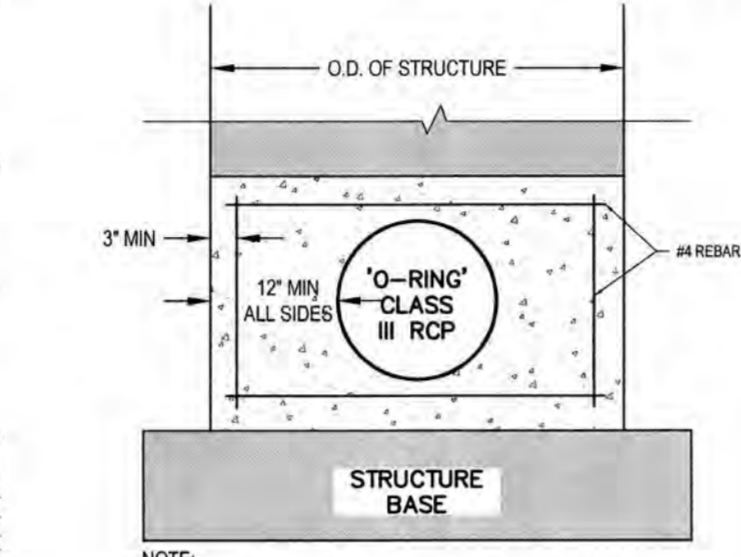
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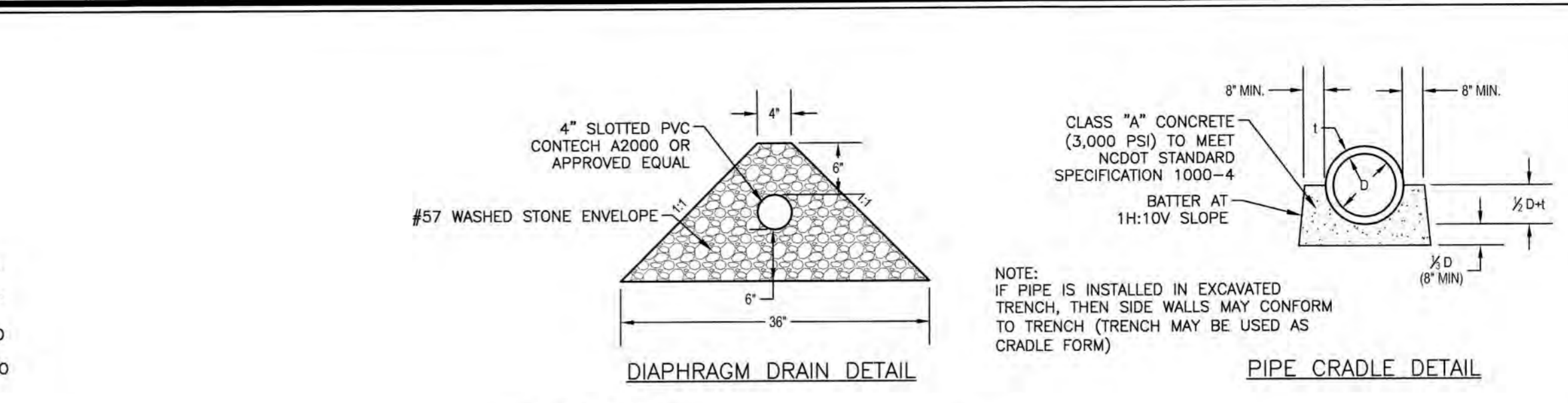
SCM #7 - WETPOND (PLAN VIEW)
1" = 50'



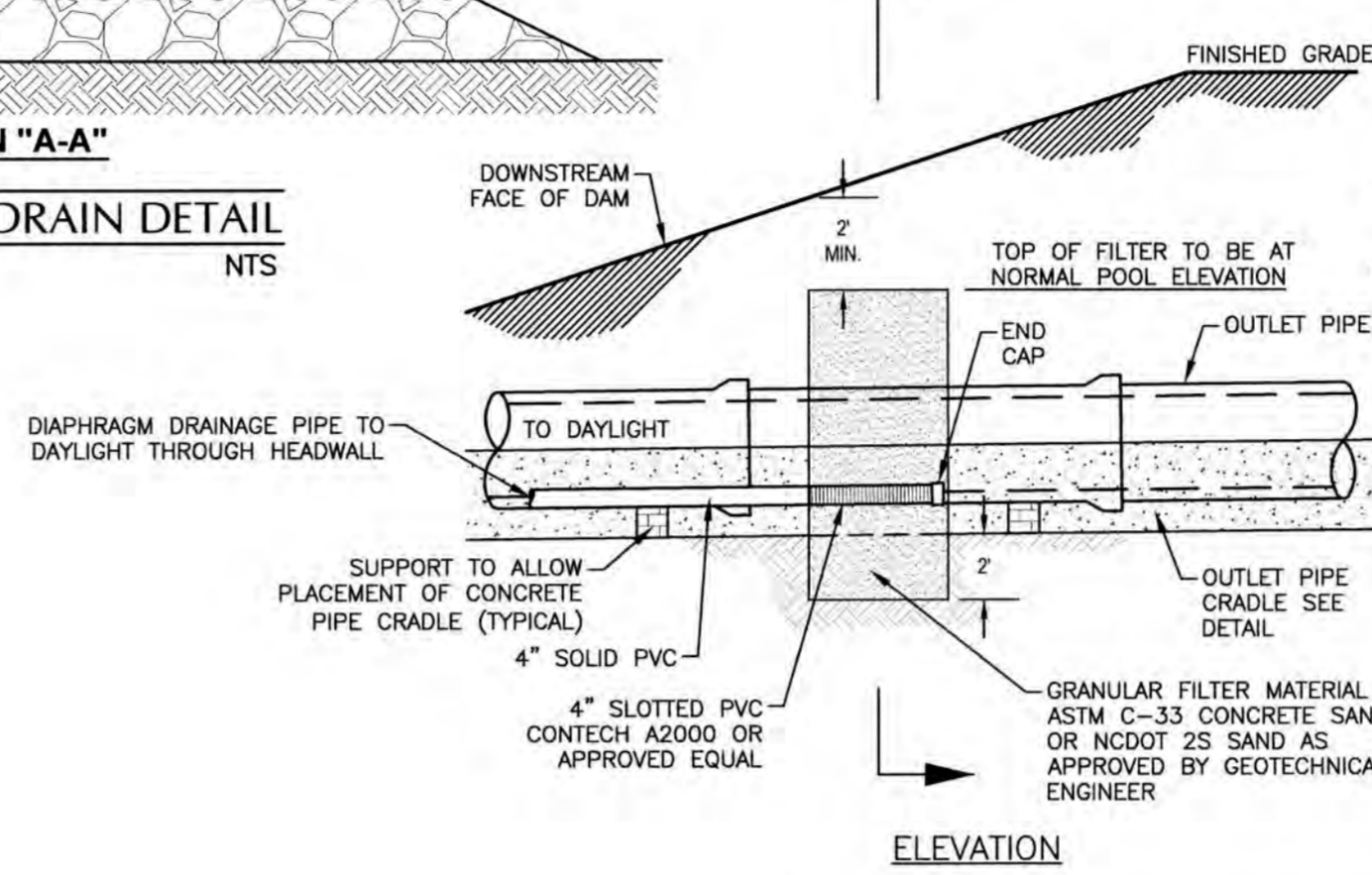
SECTION "A-A"
FOREBAY FILTER DRAIN DETAIL
NTS



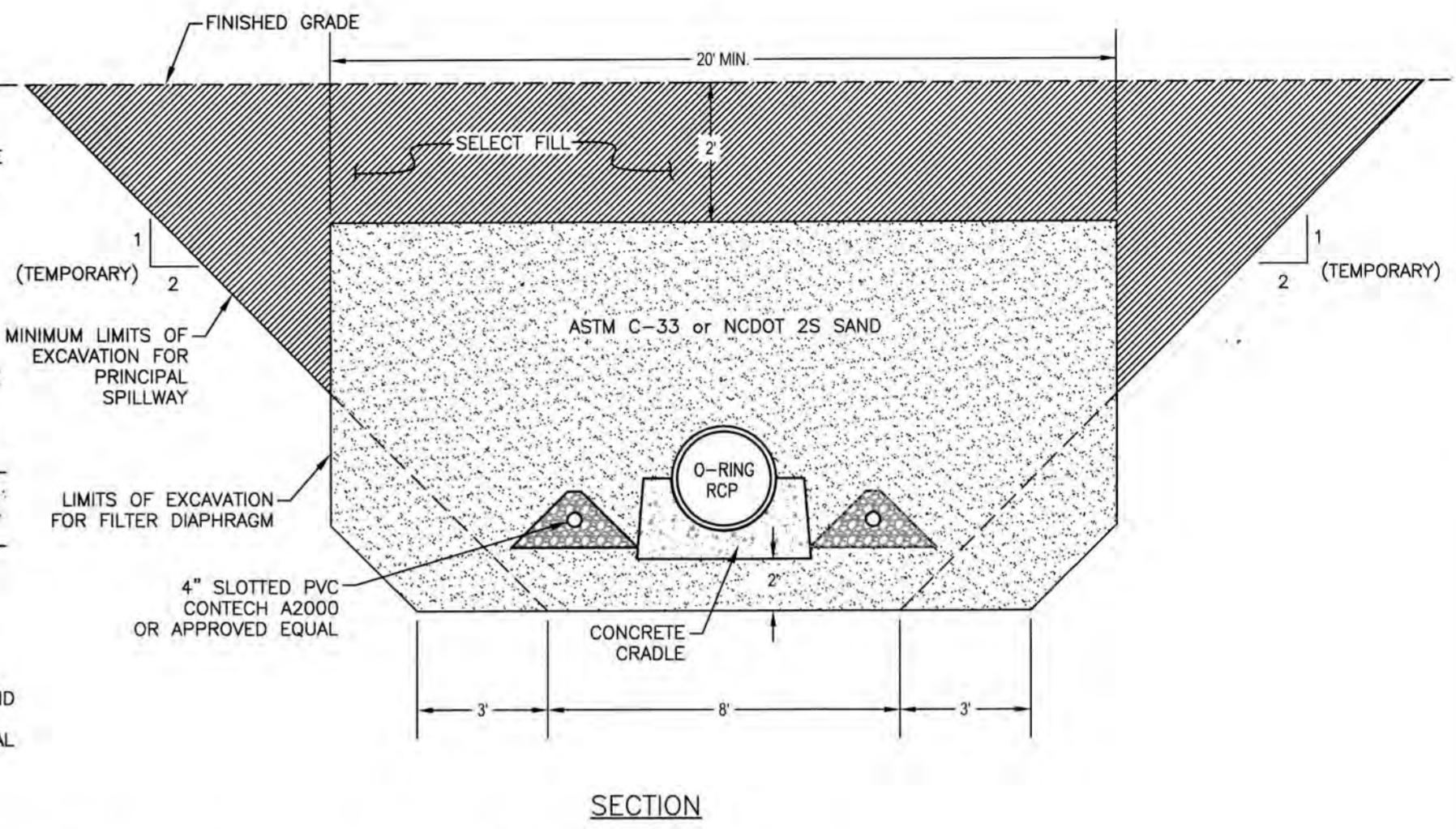
CONCRETE COLLAR DETAIL
NTS



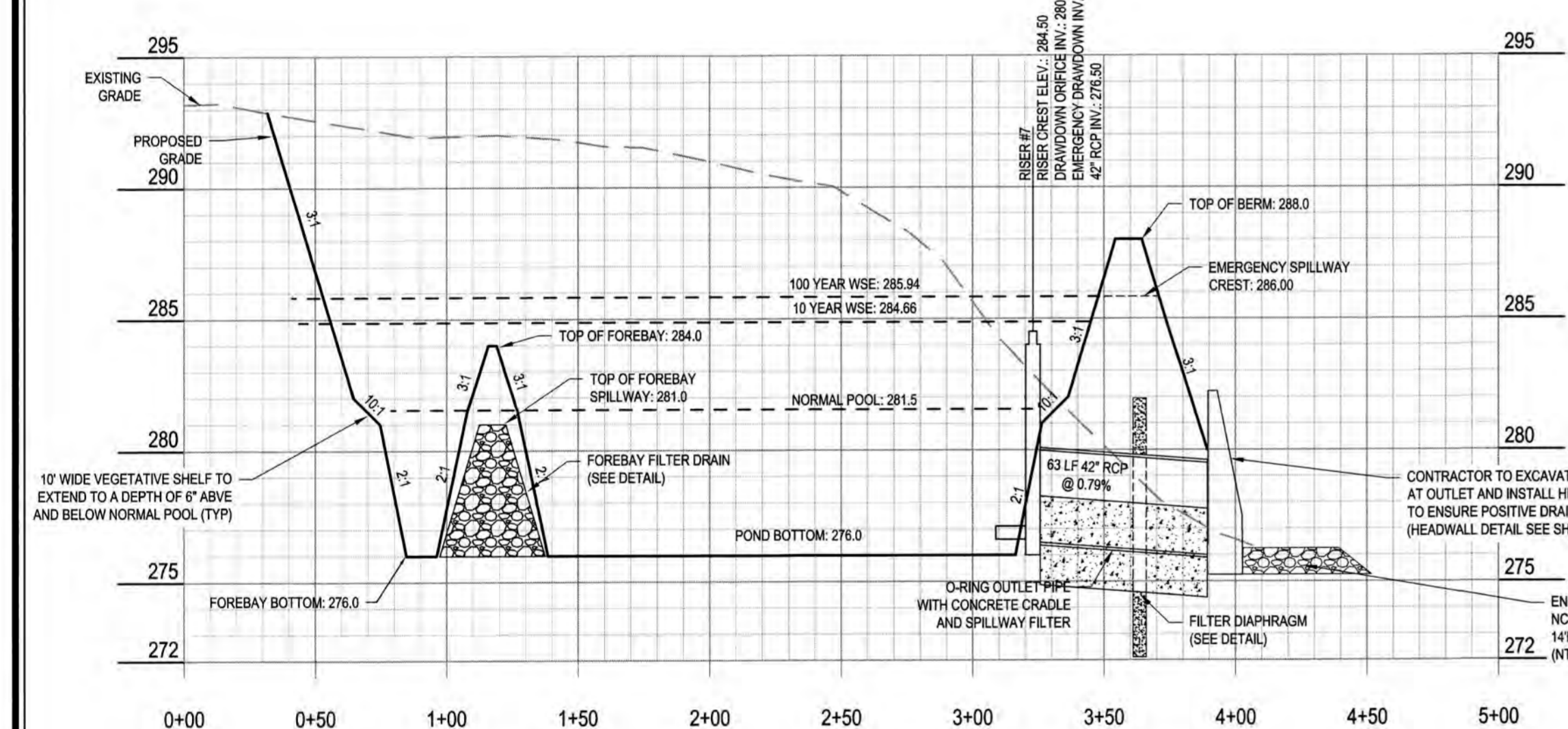
DIAPHRAGM DRAIN DETAIL
PIPE CRADLE DETAIL



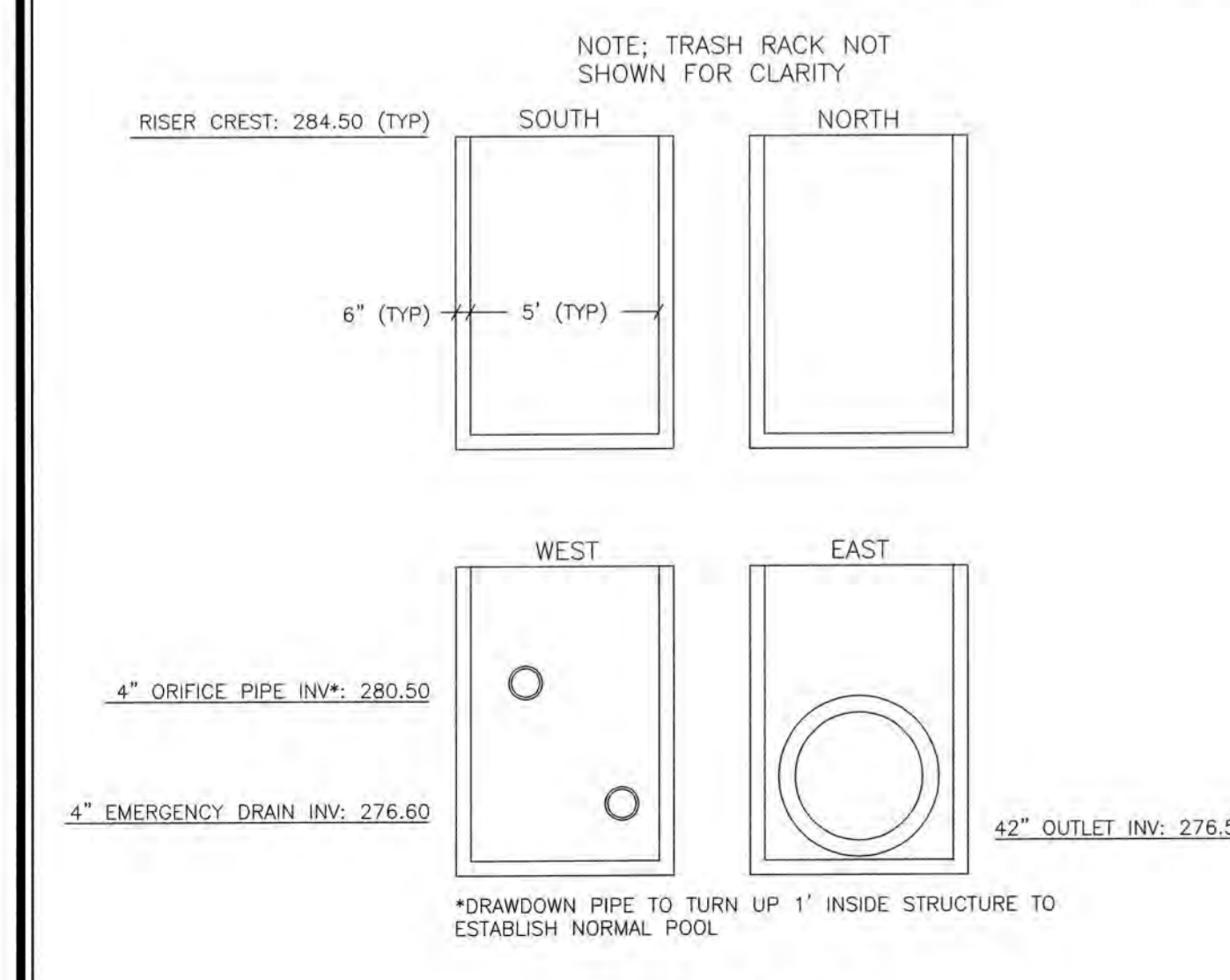
OUTLET PIPE FILTER DIAPHRAGM & CONCRETE CRADLE DETAIL
NTS



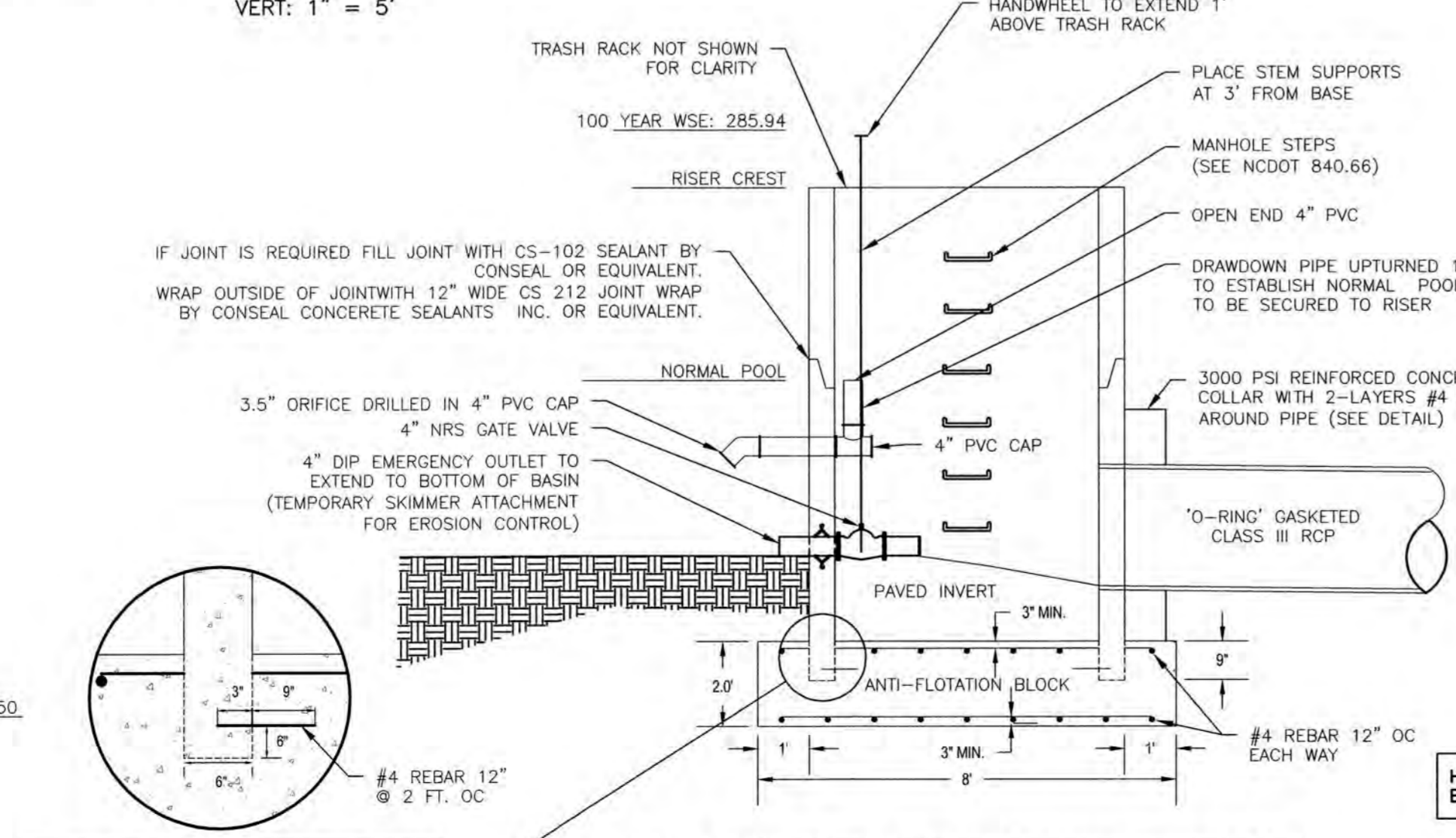
SECTION



SCM #7 - WETPOND (SECTION VIEW)
HORIZ: 1" = 50'
VERT: 1" = 5'

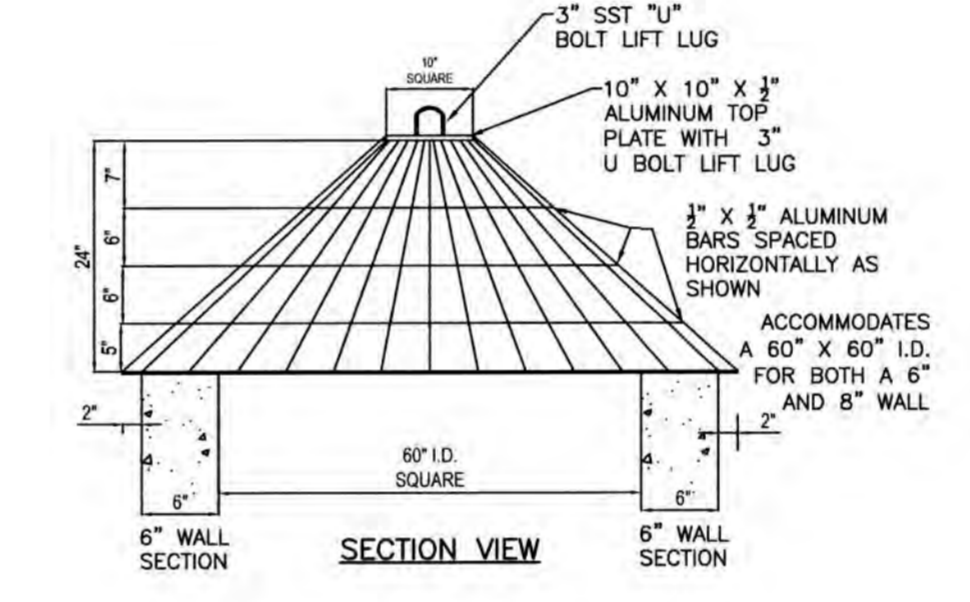


RISER #7 DETAILS
NTS

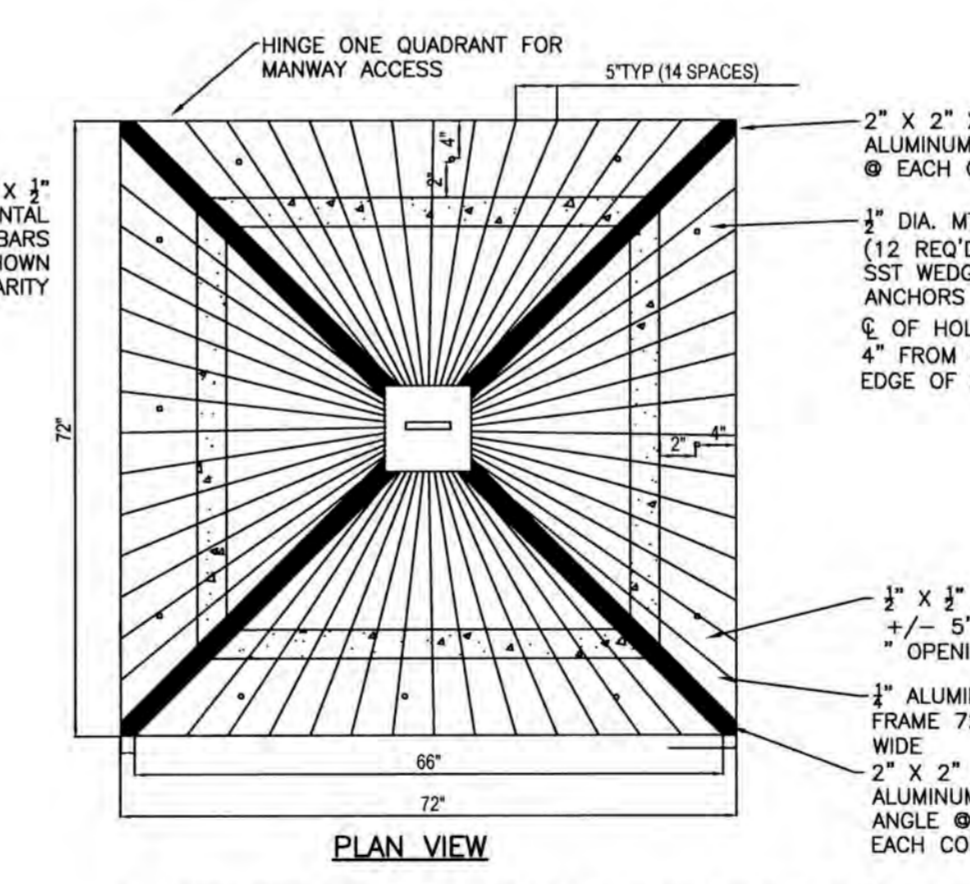


ANCHOR DETAIL (TYPICAL)
NTS

SCM RISER & DRAWDOWN DEVICE DETAIL
NTS



SECTION VIEW



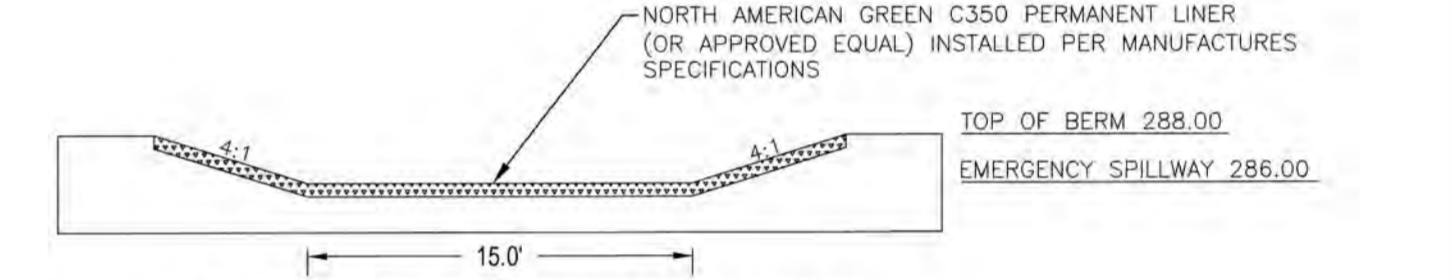
PLAN VIEW

- TRASH RACK DETAIL BASED ON POMONA PIPE PRODUCTS "STANDARD ALUMINUM BAR & ANGLE PEAKED ROOF TRASH RACK WITH ONE QUADRANT HINGED FOR MANWAY ACCESS TO FIT 5'x5' I.D. CONCRETE RISER WITH 6" OR 8" THICK WALLS".
- TRASH RACK TO BE POWDER-COATED BLACK.

TRASH RACK DETAIL
NTS

SCM#7 DESIGN DATA		
	DIMENSIONS	ELEV.
TOP OF BERM	10' WIDE	288.00
100 YEAR WSE		285.94
EMERGENCY SPILLWAY CREST ELEV.	15' WIDE	286.00
RISER CREST ELEVATION	5' ID x 5' ID RCP BOX	284.50
NORMAL POOL	27,875 SQFT MIN.	281.50
DRAWDOWN ORIFICE *	3.5"	280.50
POND BOTTOM	10,778 SQFT	276.00
OUTLET PIPE INVERT UP	63 LF 42" RCP	276.50
OUTLET PIPE INVERT DOWN	Ø 0.79%	276.00

*DRAWDOWN PIPE TO TURN UP 1' INSIDE STRUCTURE TO ESTABLISH NORMAL POOL



EMERGENCY SPILLWAY DETAILS
NTS

- STORMWATER SCM NOTES:**
- PRIOR TO CONSTRUCTION, ANY DISCREPANCIES IN THE PLANS SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE DESIGN ENGINEER FOR RESOLUTION.
 - ALL CONSTRUCTION TO BE IN ACCORDANCE WITH ALL TOWN OF KNIGHTDALE STANDARDS AND SPECIFICATIONS
 - GEOTECHNICAL ENGINEER SHALL EVALUATE SOILS ON SITE FOR SUITABILITY OF DAM CONSTRUCTION AND SLOPE STABILITY. PROFESSIONAL CERTIFICATION OF EMBANKMENT CONSTRUCTION IS REQUIRED FOR AS-BUILT CERTIFICATION.
 - DAM TO BE CONSTRUCTED PER THE FOLLOWING SPECIFICATIONS UNLESS SUPERSEDED BY GEOTECHNICAL ENGINEER'S RECOMMENDATIONS:
 - BORROW MATERIALS FOR USE AS EMBANKMENT FILL SHALL BE FREE OF ORGANICS, ROOTS AND OTHER WOODY VEGETATION OR ORGANIC DEBRIS. MATERIALS SHALL CONSIST OF SOILS WHICH CLASSIFY AS SC, SM, CL, CL-CH AND ML IN ACCORDANCE WITH THE UNIFIED CLASSIFICATION SYSTEM OR AS APPROVED BY THE GEOTECHNICAL ENGINEER WITH A MAXIMUM PARTICLE SIZE SHALL OF 3" OR LESS IN MEAN DIAMETER.
 - FILL SHALL BE PLACED IN 8" (MAXIMUM) LOOSE LIFTS UNDER THE SUPERVISION OF THE GEOTECHNICAL ENGINEER. FILL SHALL BE BROUGHT UP BY BENCHING INTO THE EXISTING SLOPE. THE MAXIMUM HEIGHT OF 2FT SHALL BE USED FOR EACH BENCH LIFT TAKING CARE TO REMOVE ROOT STRUCTURES AS THE FILL PROCEEDS. SURFACE OF EACH LIFT SHALL BE SCARIFIED PRIOR TO PLACEMENT OF THE NEXT LIFT IN ORDER TO EFFECTIVELY TIE THE LIFT LIFTS TOGETHER.
 - ALL COMPACTION SHALL BE TESTED BY THE SAND CONE METHOD (ASTM D-1586) OR NUCLEAR METHOD AT A RATE OF AT LEAST ONE TEST PER 5,000 SF PER ONE FOOT OF COMPACTED FILL THICKNESS IN GENERAL AREA FILLS AND ONE TEST PER 50 LINEAL FEET PER LIFT ALONG THE BARREL. THE MINIMUM COMPACTION SHOULD BE 95% OF THE MAXIMUM STANDARD PROCTOR DENSITY (ASTM D-698) AT MOISTURE CONTENTS VARYING FROM 2 PERCENT BELOW TO 3 PERCENT ABOVE OPTIMUM MOISTURE CONTENT TO WITHIN 3FT OF THE FINAL GRADE.
 - IF DURING CONSTRUCTION, THE SEASONAL HIGH WATER TABLE IS IDENTIFIED WITHIN 6 INCHES OF THE PROPOSED NORMAL POOL ELEVATION BY THE GEOTECHNICAL ENGINEER, THE INSTALLATION OF A CLAY LINER IS NOT NECESSARY. IF THE SEASONAL HIGH WATER TABLE IS IDENTIFIED OUTSIDE OF THE ABOVE LIMITS OR NOT ENCOUNTERED, IT IS RECOMMENDED THAT A CLAY LINER BE INSTALLED TO MAINTAIN NORMAL POOL ELEVATION, SUITABLE HABITAT FOR LITTORAL SHELF VEGETATION, AND DESIGN AESTHETICS. CONSULT ENGINEER AND OWNER REGARDING THE INSTALLATION OF A CLAY LINER PRIOR TO SCM CONVERSION.
 - STOCKPILED TOPSOILS USED IN PLANTING AREAS SHALL CONTAIN AT LEAST 10% ORGANIC MATERIAL. PROFESSIONAL CERTIFICATION OF PLANTING SOIL MATERIALS IS REQUIRED.
 - DURING CONSTRUCTION, THIS SCM IS TO BE USED AS AN EROSION CONTROL DEVICE. THE FOREBAY WILL NOT BE REQUIRED WHILE SCM IS ACTING AS AN EROSION CONTROL DEVICE.
 - ALL PERMANENT STRUCTURES (I.E. RISER BOX, OUTLET PIPES, CONCRETE CRADLES, SPILLWAY FILTER, ETC.) ARE TO BE INSTALLED WITH THE INITIAL DAM CONSTRUCTION.
 - CONTRACTOR TO PROVIDE SHOP DRAWINGS TO THE DESIGN ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ORDERING STRUCTURES.
 - ONCE THE SITE HAS BEEN STABILIZED, CONTRACTOR SHALL OBTAIN APPROVAL BY EROSION CONTROL INSPECTOR IN ORDER TO REMOVE EROSION CONTROL DEVICES.
 - ONCE ALL SEDIMENT AND EROSION CONTROL DEVICES HAVE BEEN REMOVED, THE SCM SHALL BE CONVERTED TO A PERMANENT SCM.
 - ALL SEDIMENT SHALL BE REMOVED AND DISPOSED OF PROPERLY.
 - FOREBAY AND VEGETATED SHELFS SHALL BE CONSTRUCTED PER THIS PLAN.
 - VEGETATED SHELFS SHALL BE PLANTED PER PLANT SCHEDULE ON LANDSCAPING PLAN SHEET.
 - TOWN OF KNIGHTDALE REQUIRES FINAL CERTIFICATION OF SCM BY PROFESSIONAL ENGINEER.
 - STOCKPILED TOPSOILS USED IN PLANTING AREAS SHALL CONTAIN AT LEAST 10% ORGANIC MATERIAL. PROFESSIONAL CERTIFICATION OF PLANTING SOIL MATERIALS IS REQUIRED.
 - FOLLOWING SCM CONVERSION TO A PERMANENT SCM, THE TOWN OF KNIGHTDALE WILL BE PROVIDED AS-BUILT PLANS OF THE SCM. CONTACT TOWN OF KNIGHTDALE FOR FINAL CERTIFICATION OF SCM UNDER CONSTRUCTION HAS BEEN COMPLETED.

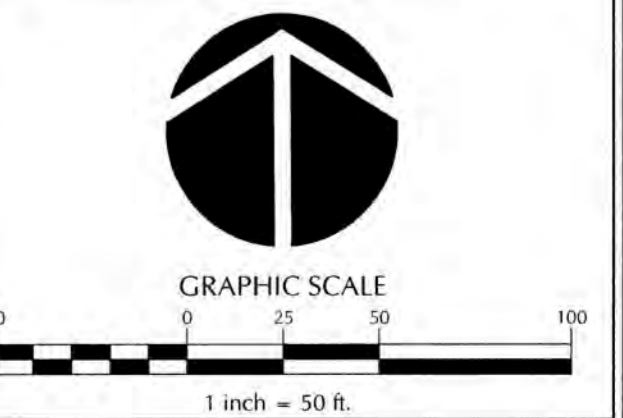
- CLAY LINER SPECIFICATIONS**
- THE CLAY LINER FOR THE WETPOND SHALL BE AT LEAST 8" THICK AND MEET THE FOLLOWING SPECIFICATIONS:
- UNIFIED SOIL CLASSIFICATION SYSTEM DESIGNATION OF CL, CH, ML, SC
 - MINIMUM OF 40% PASSING #200 SIEVE
 - MINIMUM PLASTICITY INDEX OF 12
 - MAXIMUM INFILTRATION RATE OF 0.01 IN/HR.
 - A MINIMUM OF 2 TESTS OF EACH ABOVE PARAMETER SHALL BE COMPLETED BY THE CONTRACTOR ON THE LINER MATERIAL AND PRESENTED TO THE ENGINEER FOR APPROVAL.
 - COMPACTION TO A MINIMUM OF 93% PER ASTM D698, AND WITHIN 3% OF THE OPTIMUM MOISTURE CONTENT (1 COMPACTION DENSITY TEST PER 2500 SQ. FT.)
- THE CLAY LINER SHALL BE PLACED UNDER THE BOTTOM OF THE BMP NORMAL POOL TO A THICKNESS OF 8 INCHES. A MINIMUM OF 4 INCHES OF TOPSOIL SHALL BE THE FINISHED GRADE AS SHOWN ON THE DRAWINGS AND/OR DETAILS. CARE SHALL BE TAKEN WHEN TRACKING IN THE TOPSOIL TO NOT PUNCTURE OR DAMAGE THE CLAY. A CLAY/SOIL MIXTURE MAY BE USED IF THE ABOVE SPECIFICATIONS ARE SATISFIED AND WITH WRITTEN APPROVAL BY THE ENGINEER.

TOWN CERTIFICATION. THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: *[Signature]* DATE: 4-19-11
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: *[Signature]* DATE: 3-16-10
ADMINISTRATOR

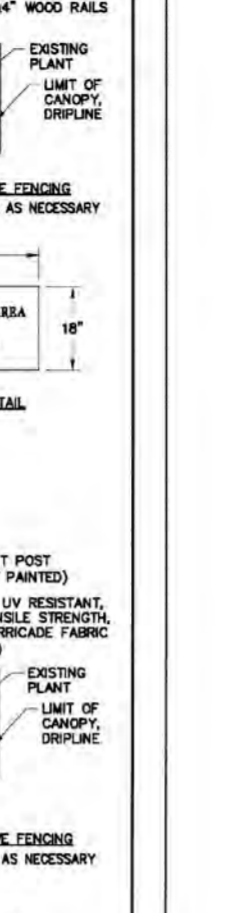
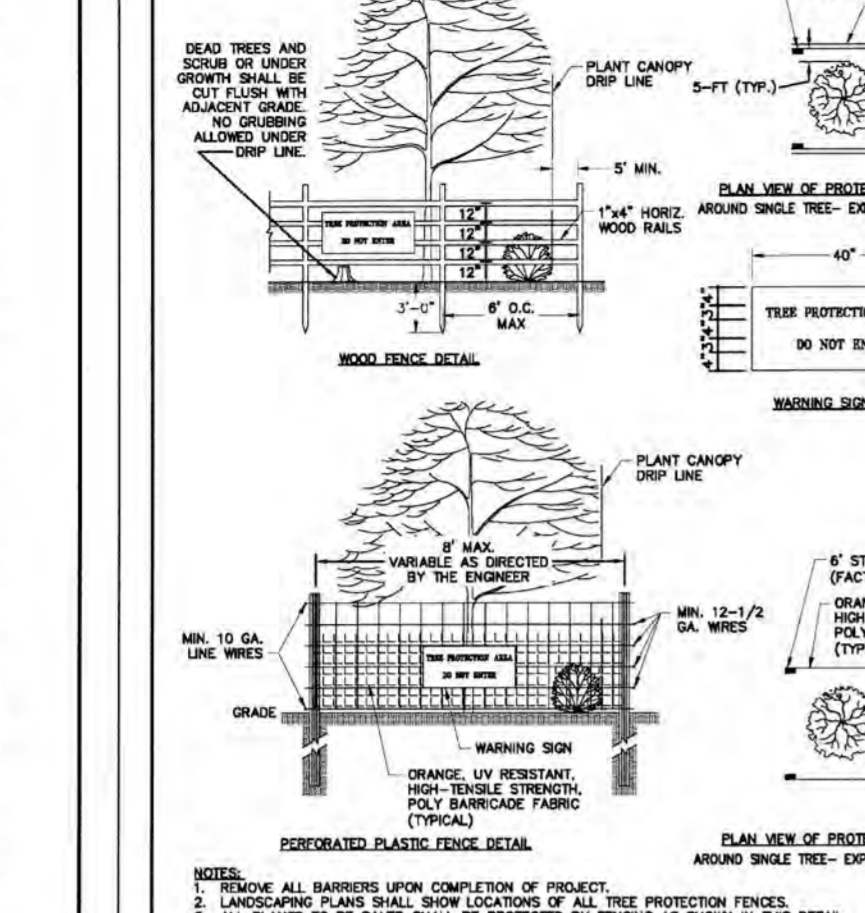


Job No.	02090251.91	Drawn By	CEJ
Date	06/21/10	Designer	JCI



Revisions		
1	TOK Comments	09/07/16
2	TOK Comments	12/08/17
3	TOK Comments	04/11/18

SEEDING SCHEDULE		
SEEDING PERIOD	SEEDING TYPE	APPLICATION RATE (LBS/ACRE)
AUGUST 15 - NOVEMBER 01	FALL FESCUE	300
NOVEMBER 01 - MARCH 01	FALL FESCUE AND HARRIS RYE	25
MARCH 01 - APRIL 15	FALL FESCUE	300
APRIL 15 - JUNE 30	MULLED COMMON BERMUDAGRASS	25
JULY 01 - AUGUST 15	FALL FESCUE AND HARRIS RYE	30
SLOPES 2:1 TO 3:1		
MARCH 01 - JUNE 01	BERNICE LEPREUXIA (SEAMIFIED) AND FALL FESCUE	150
MARCH 01 - APRIL 15	MEYNE LOVEGRASS OR MULLED COMMON BERMUDAGRASS	25
MARCH 01 - JUNE 30	FALL FESCUE AND HARRIS RYE	150
JUNE 01 - SEPTEMBER 01	FALL FESCUE AND HARRIS RYE	30
SEPTEMBER 01 - MARCH 01	FALL FESCUE AND HARRIS RYE	150
NOVEMBER 01 - MARCH 01	FALL FESCUE AND HARRIS RYE	25



Environmental Services

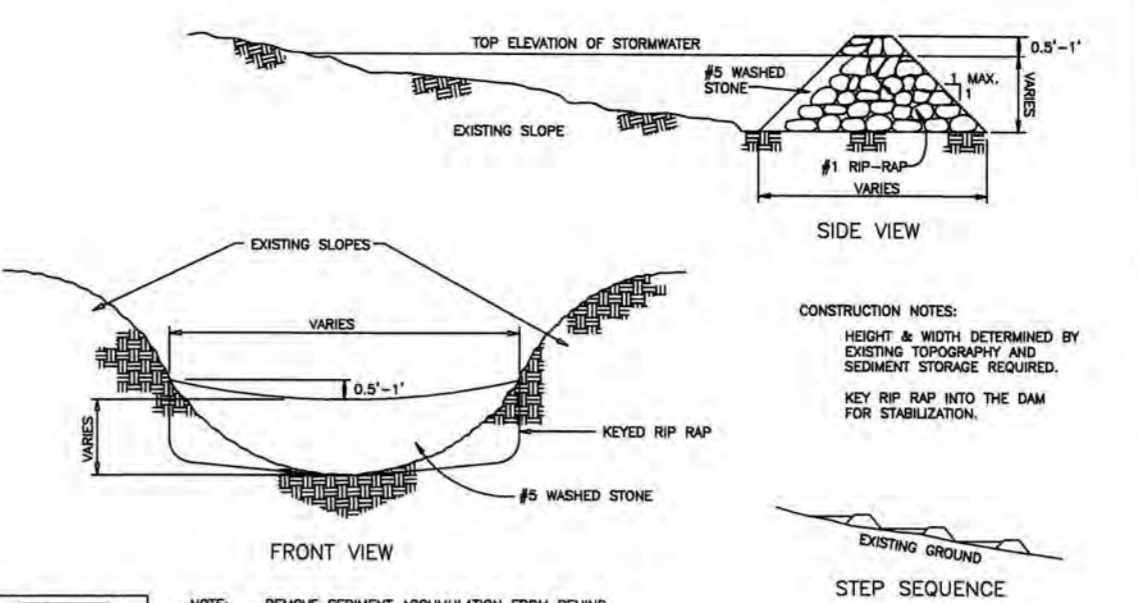
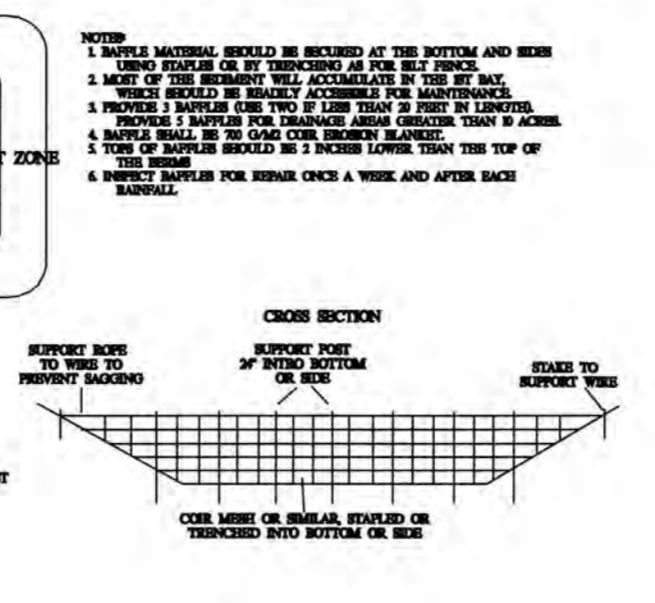
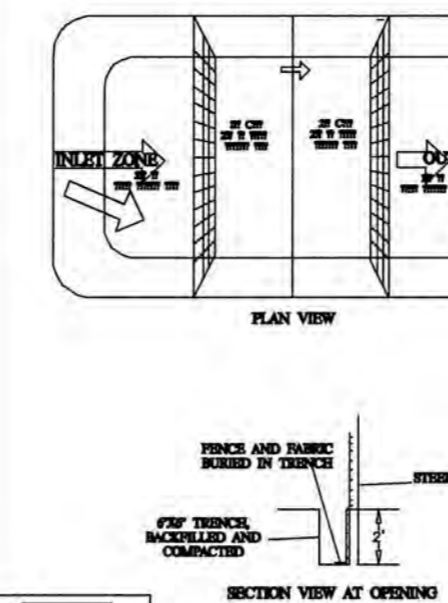
Effective September 1, 2008
Soil stockpiles shall be located on the approved plan and shall adhere to the following requirements:

Design Criteria:

- A 25-foot temporary maintenance and access easement shall be shown around all proposed stockpiles (erosion control measures surrounding the stockpile shall be shown at the outer limit of this easement).
- Stockpile footprints shall be setback a minimum of 25' from adjacent property lines.
- A note shall be provided on the approved plan that stockpile height shall not exceed 35 feet.
- Stockpile slopes shall be 2:1 or flatter.
- Approved BMPs shall be shown on a plan to control any potential sediment loss from a stockpile.
- Stockpiling materials adjacent to a ditch, drainage, watercourse, wetland, stream buffer, or other body of water shall be avoided unless an alternative location is demonstrated to be unavoidable.
- Stockpiling materials adjacent to a ditch, drainage, watercourse, wetland, stream buffer, or other body of water shall be avoided unless an alternative location is demonstrated to be unavoidable.
- Any concentrated flow likely to affect the stockpile shall be diverted to an approved BMP.
- Off-site spoil or borrow areas must be in compliance with Wake County UDO and State Regulations. All spoil areas over an acre are required to have an approved sediment control plan. Developer/contractor shall notify Wake County of any off-site disposal of soil, prior to disposal. Fill of F3/M, F4/M, F5/M and Non-Construction Areas are prohibited except as otherwise provided by subsection 14-131-2 of the Wake County Unified Development Ordinance (certifications and permits required).

Maintenance Requirements to be noted on the Plan:

- Stockpiling or covering stockpiles with hay or straw is required and will reduce erosion problems. Turf should be kept in at the top of the slope to keep water from running underneath the plastic.
- If a stockpile is to remain for future use after the project is complete (holders, etc.), the financial responsible party must notify Wake County of a new responsibility party for that stockpile.
- The approved plan shall provide for the use of grated sediment and mulching as a continual base while the stockpile is in use.
- Establish and maintain a vegetative buffer at the toe of the slope (where practical).



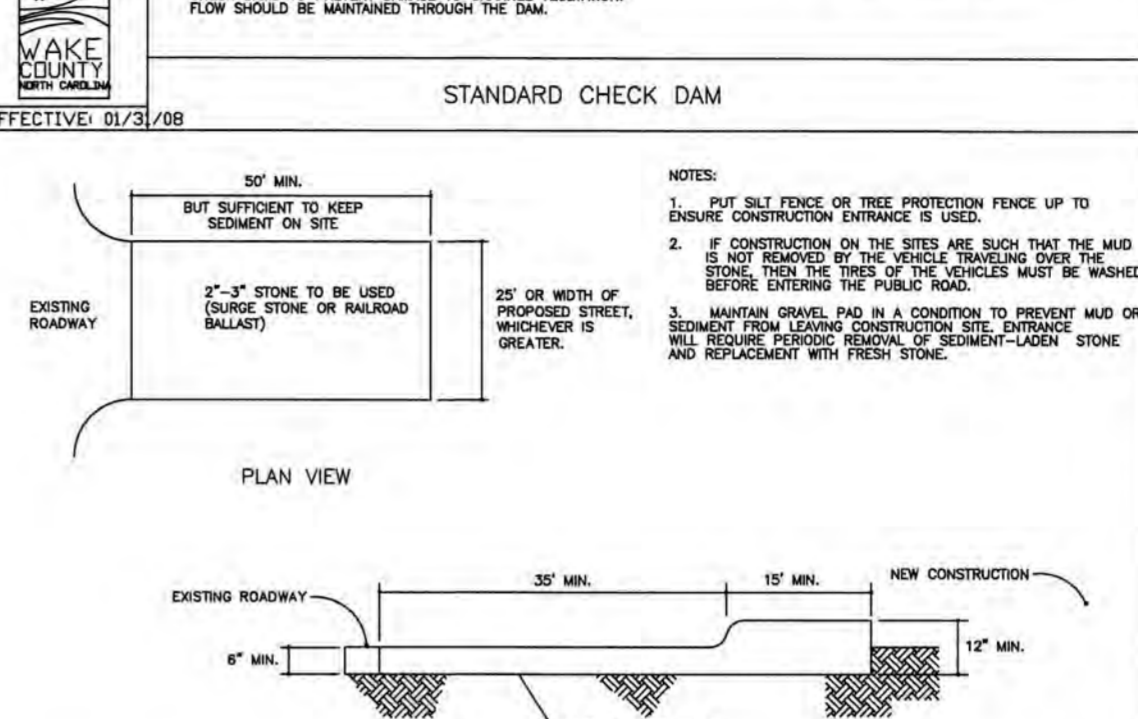
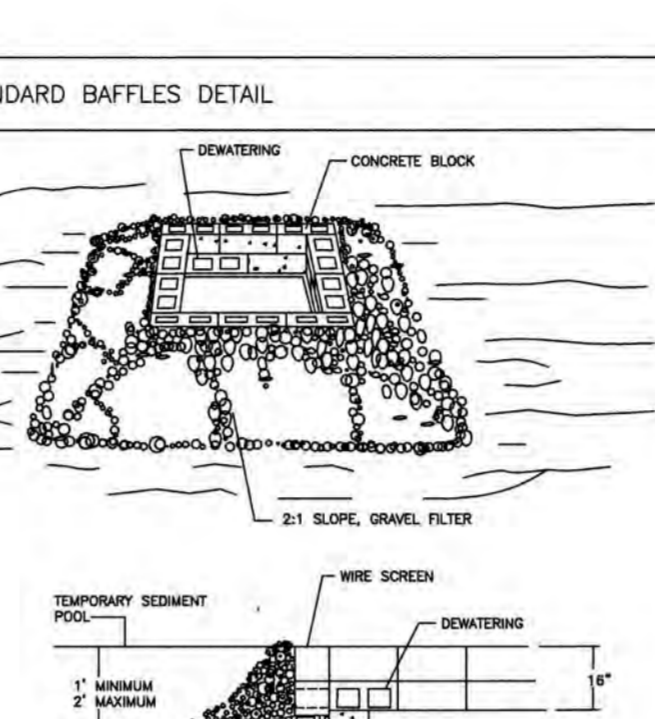
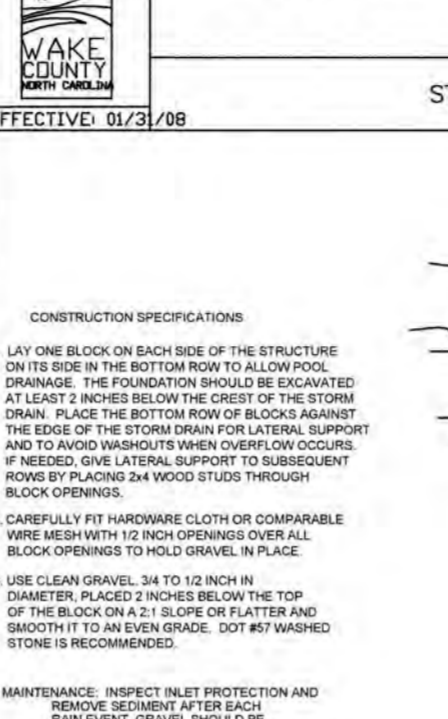
GROUND STABILIZATION		
SITE AREA DESCRIPTION	STABILIZATION TIME FRAME	STABILIZATION TIME FRAME EXCEPTIONS
PERIMETER DICES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (H2O) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 3:1, 14 DAYS ARE ALLOWED.
SLOPES FLATTER THAN 3:1	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50 FEET IN LENGTH
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE (EXCEPT FOR PERIMETERS AND H2O ZONES)

Extensions of time may be approved by the permitting authority based on weather or other site-specific conditions that make compliance impracticable. (Section 11.02(06))

REVISIONS	DESCRIPTION	DATE
1	ADDED	01/31/08

REVISIONS	DESCRIPTION	DATE
1	ADDED	01/31/08

REVISIONS	DESCRIPTION	DATE
1	ADDED	01/31/08

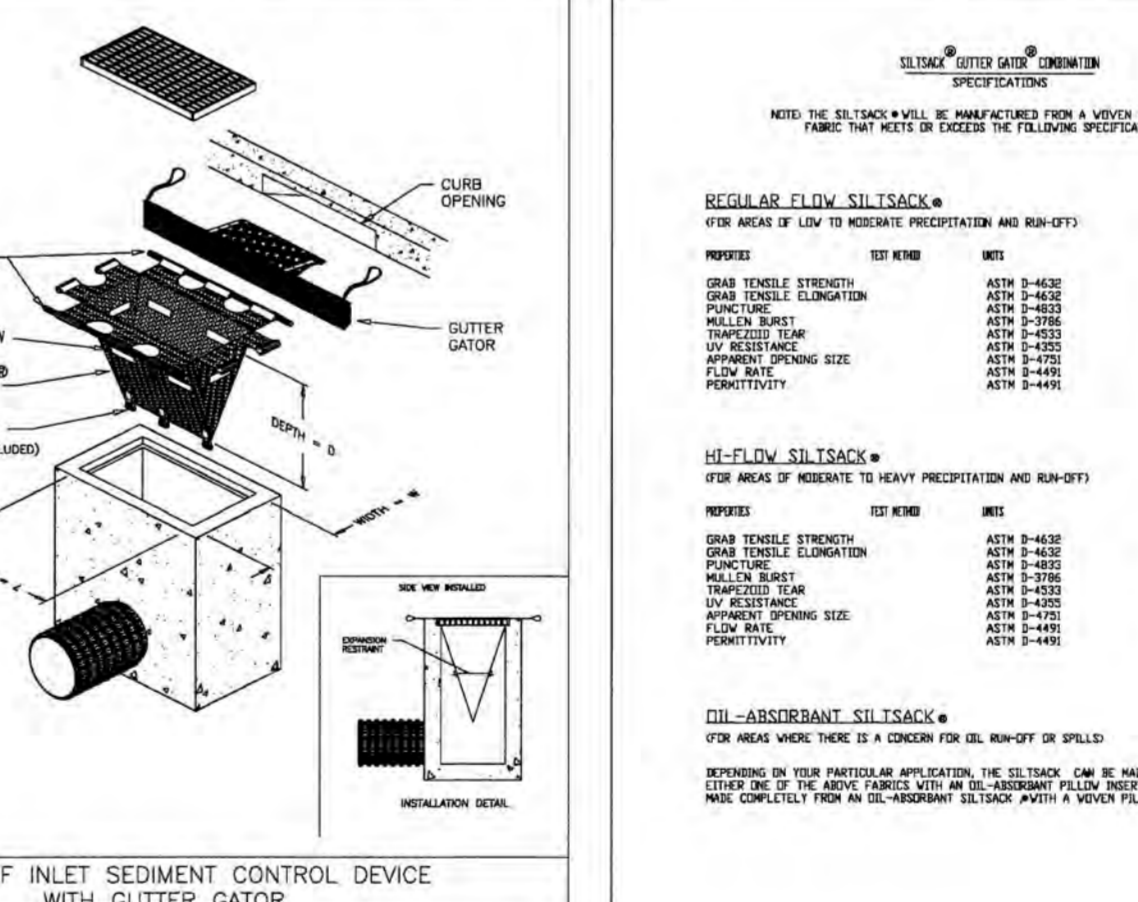
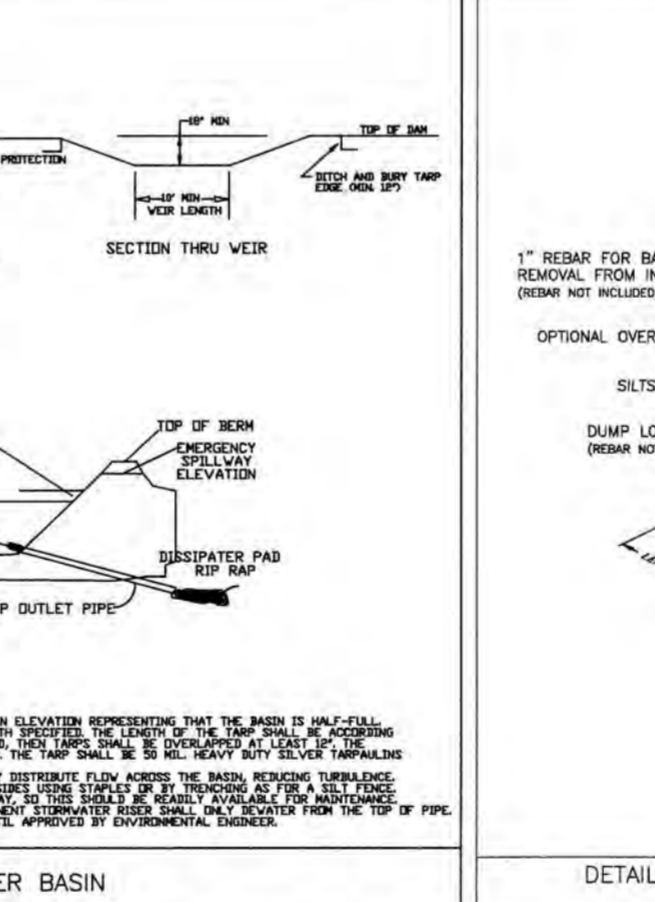
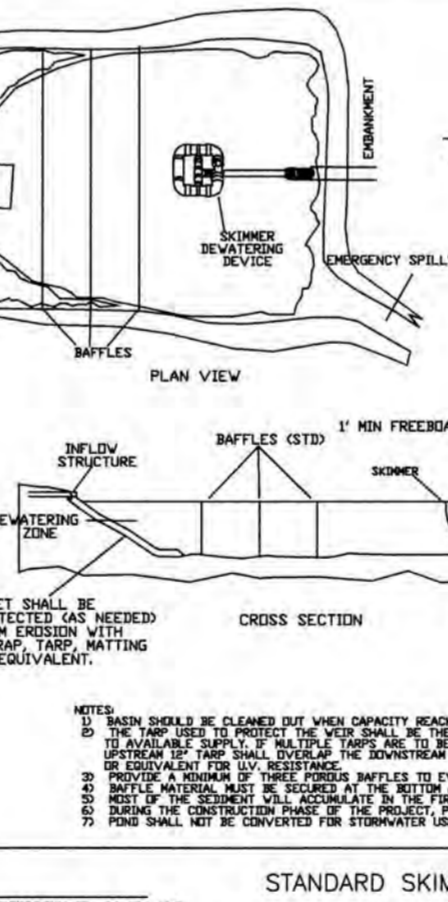
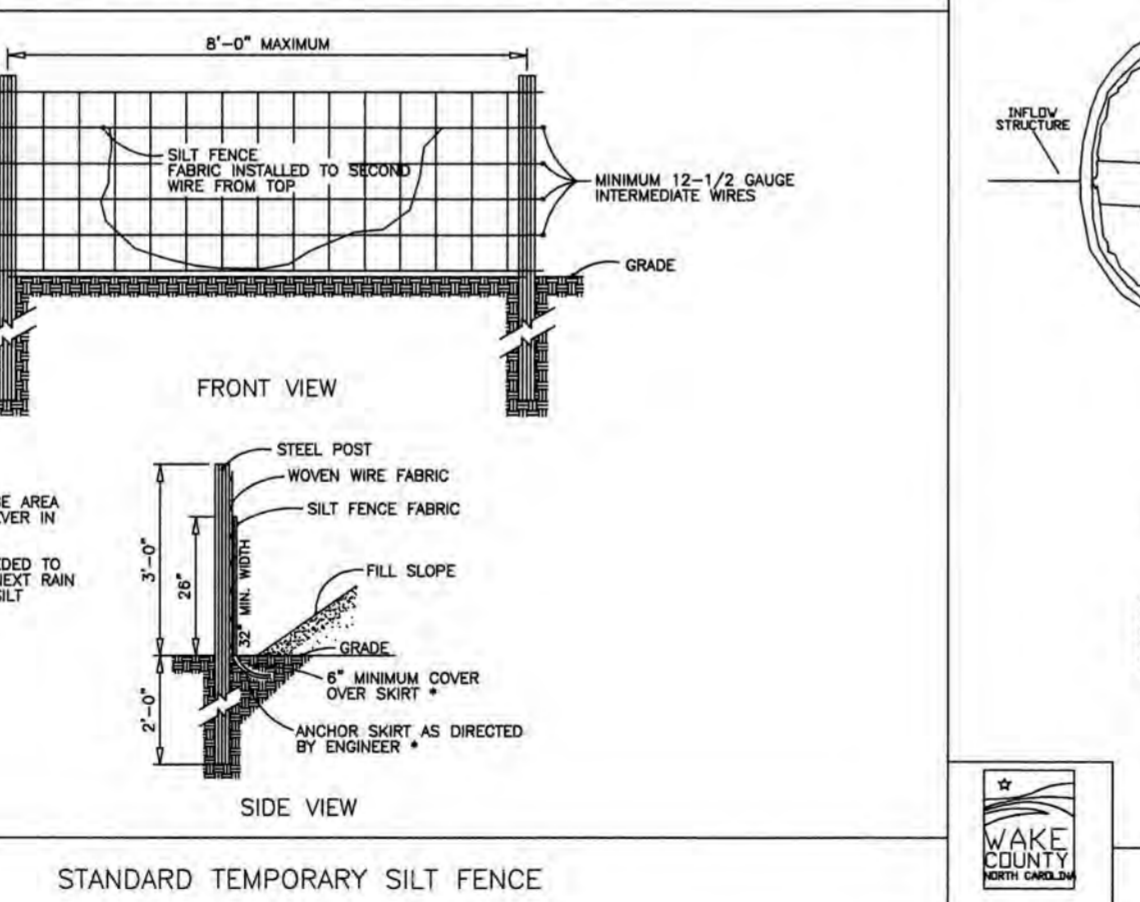
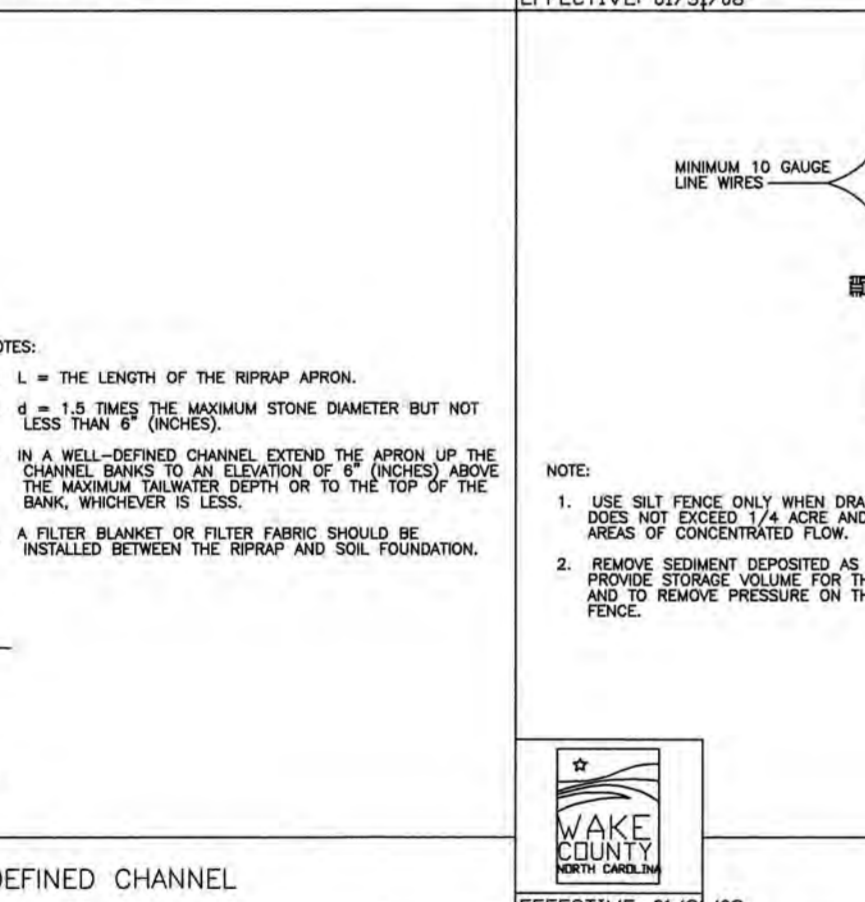
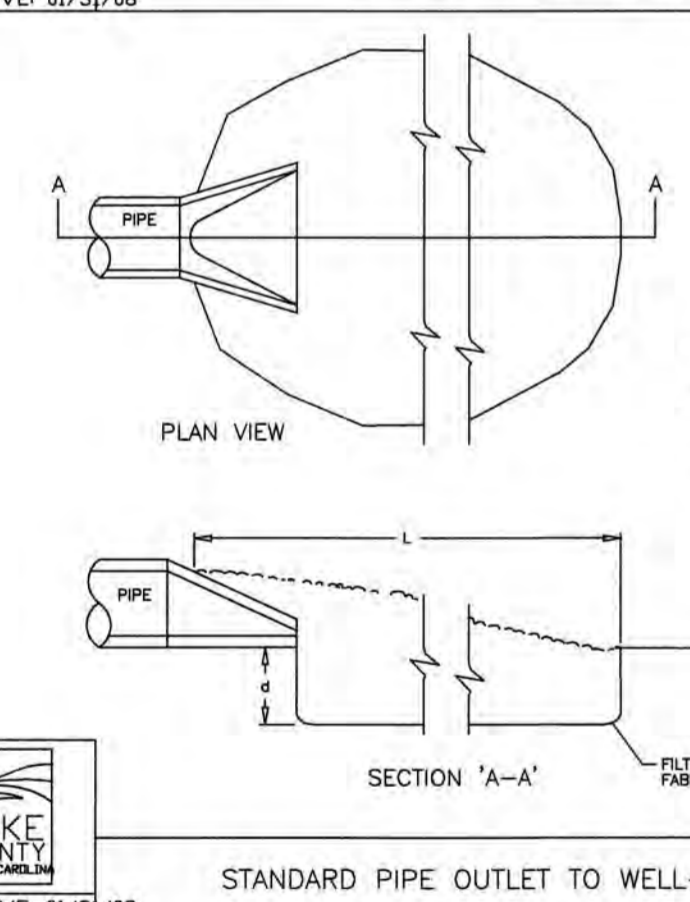
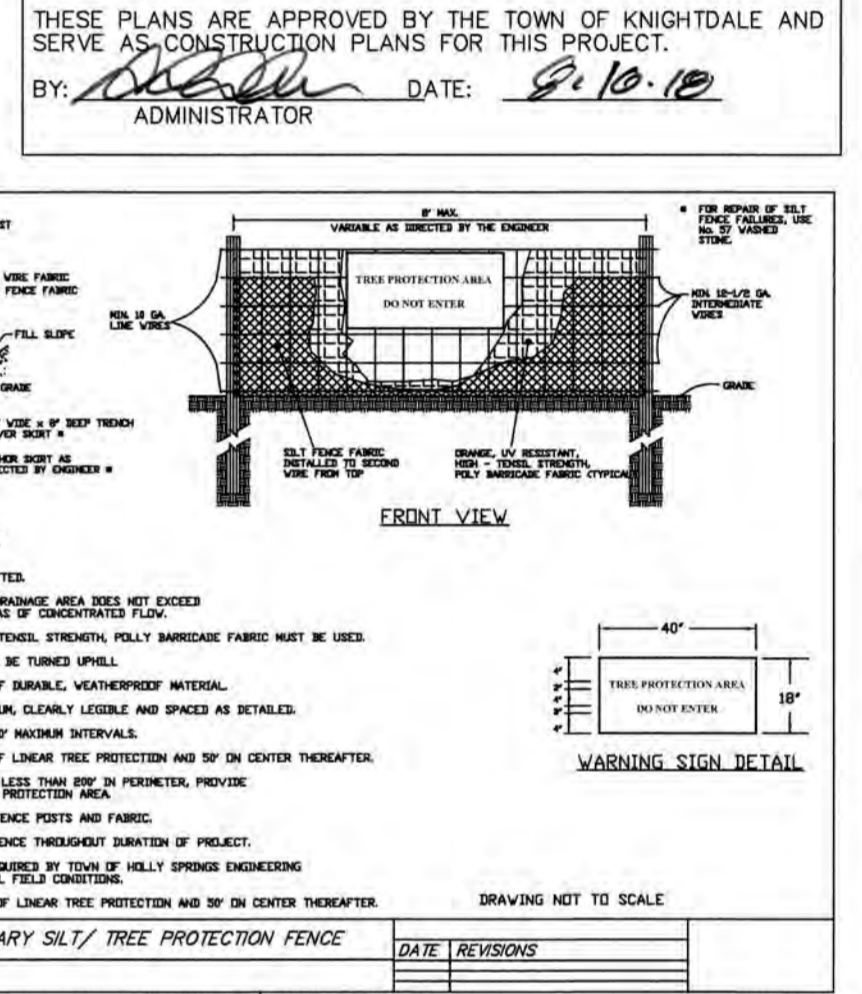
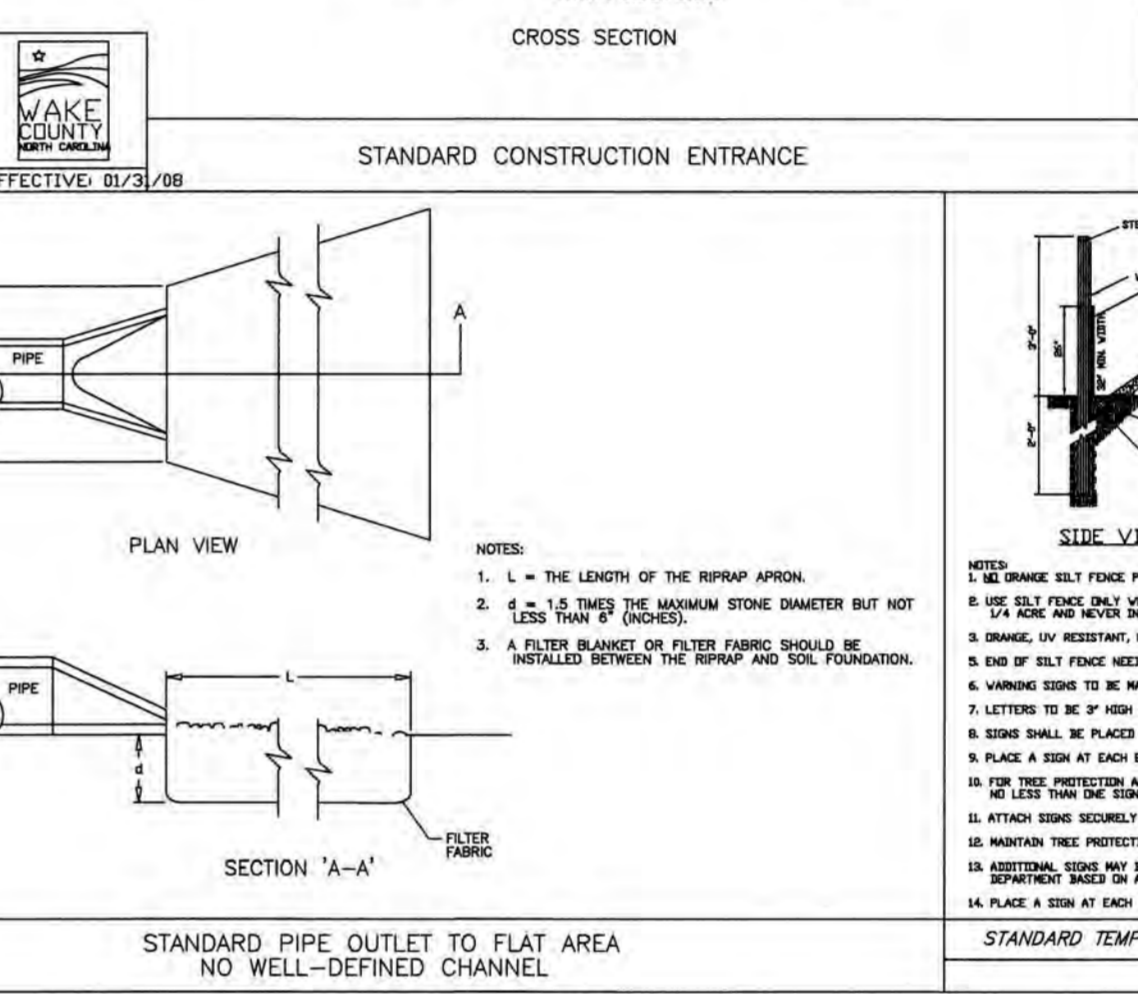
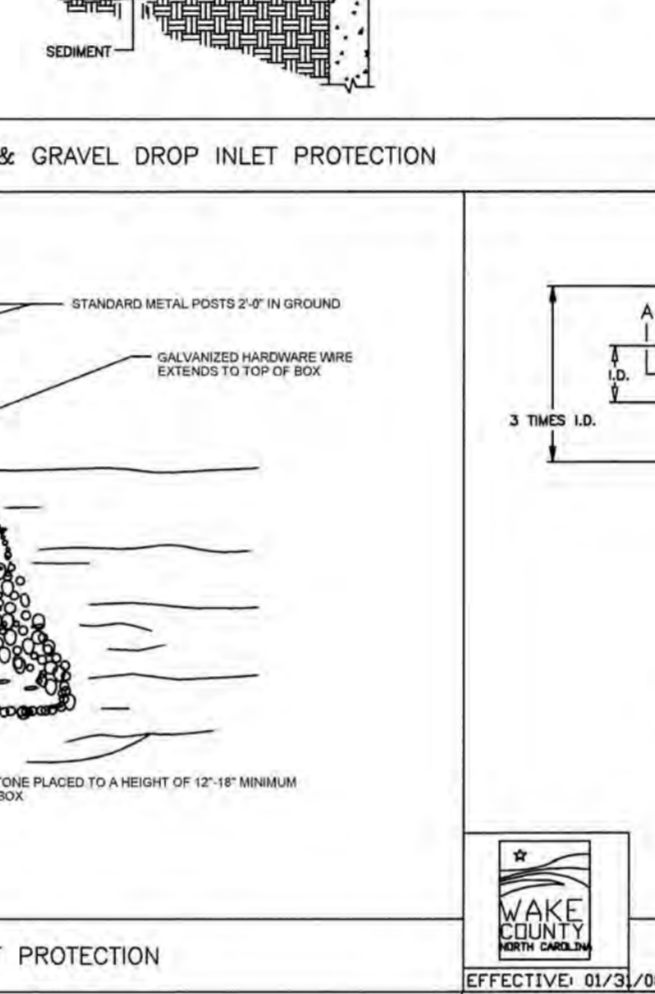
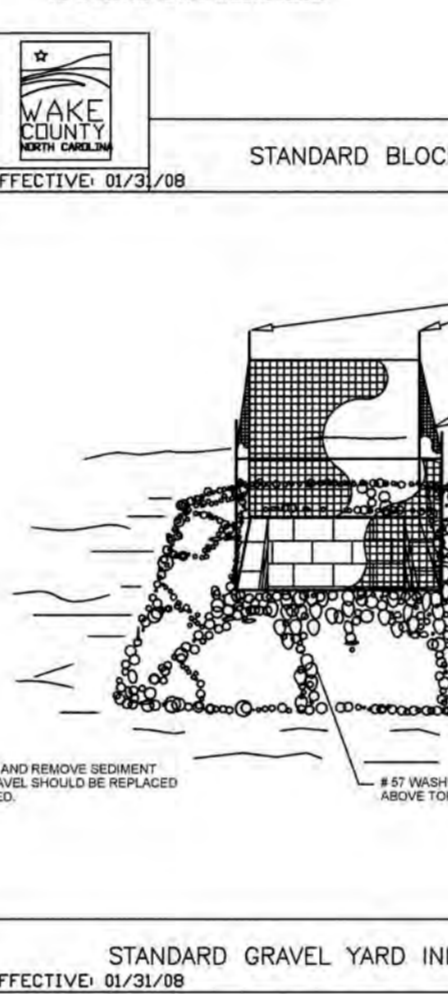
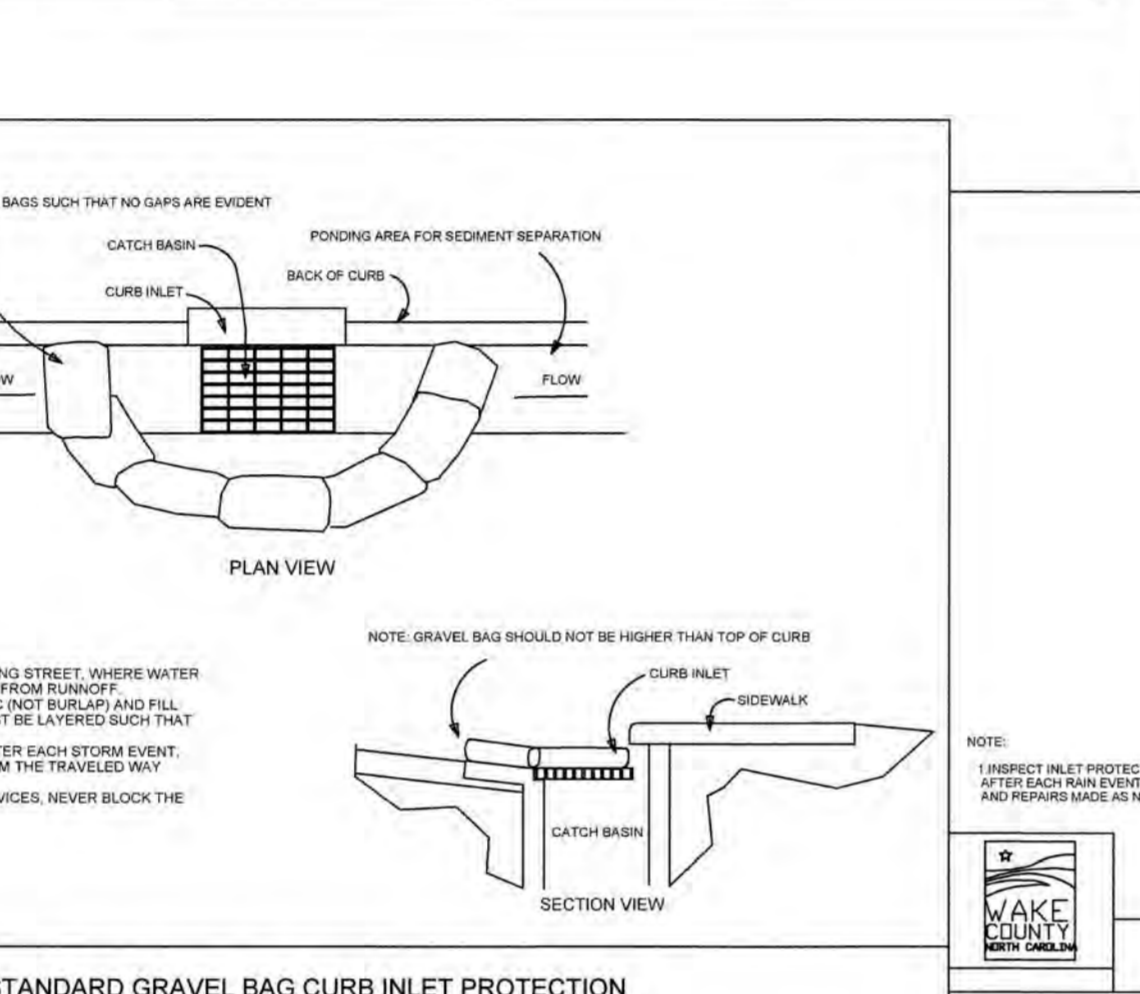
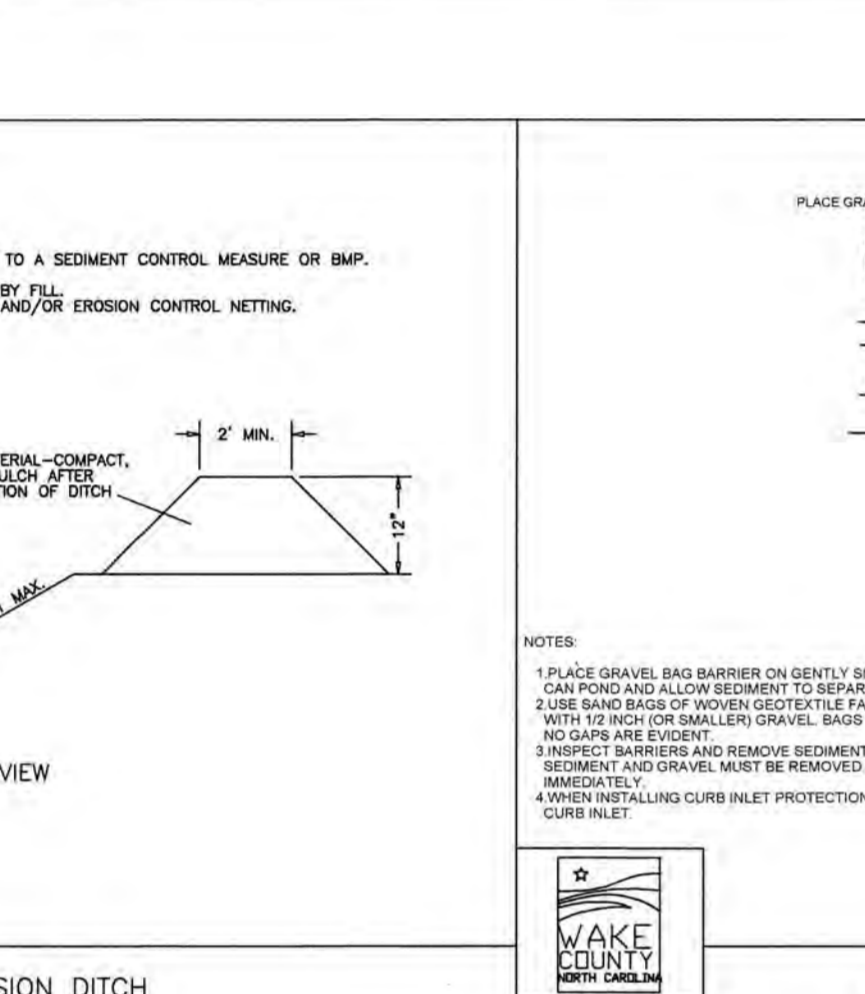
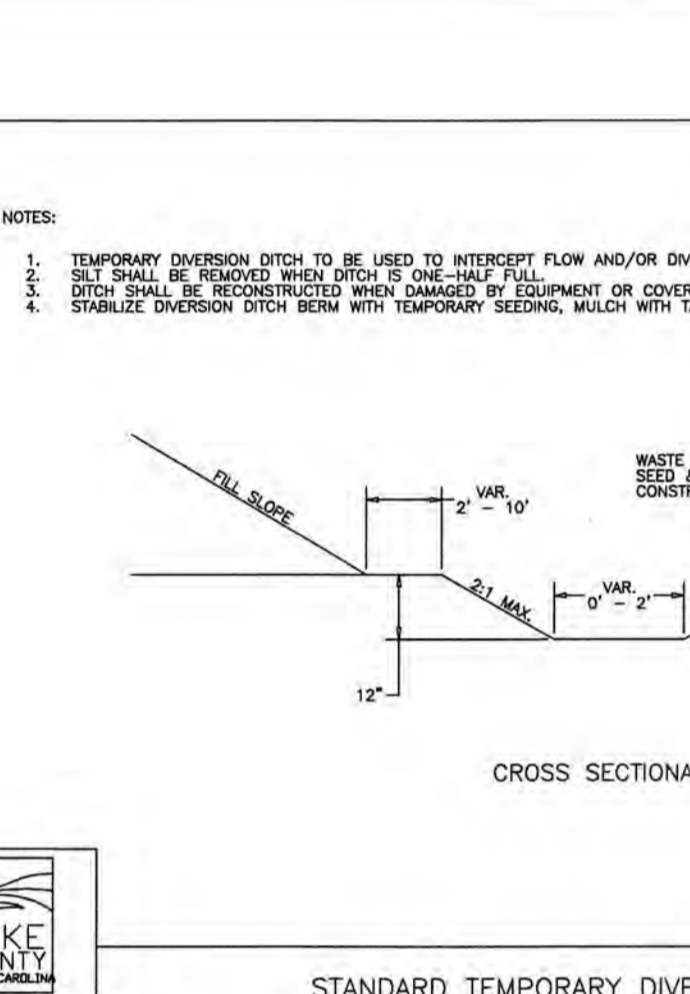


TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

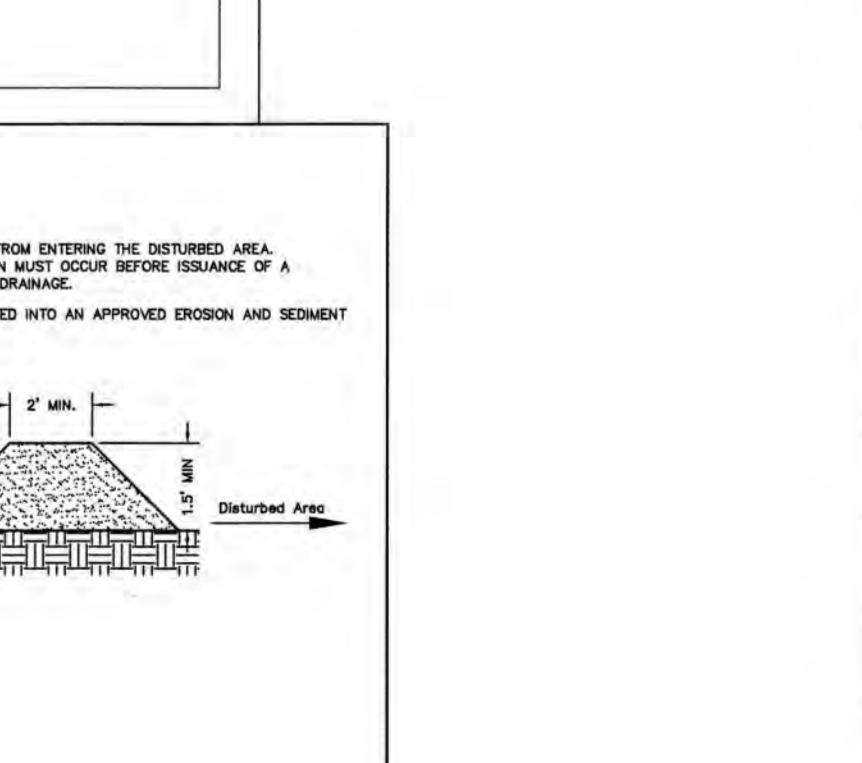
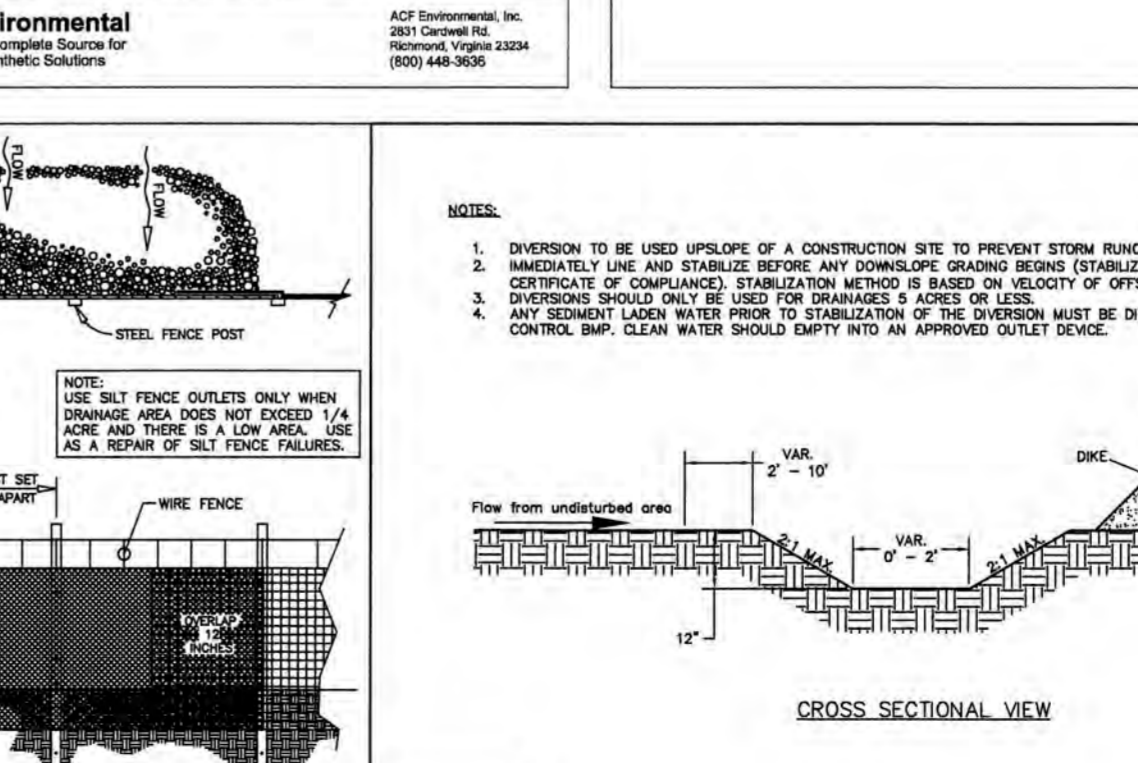
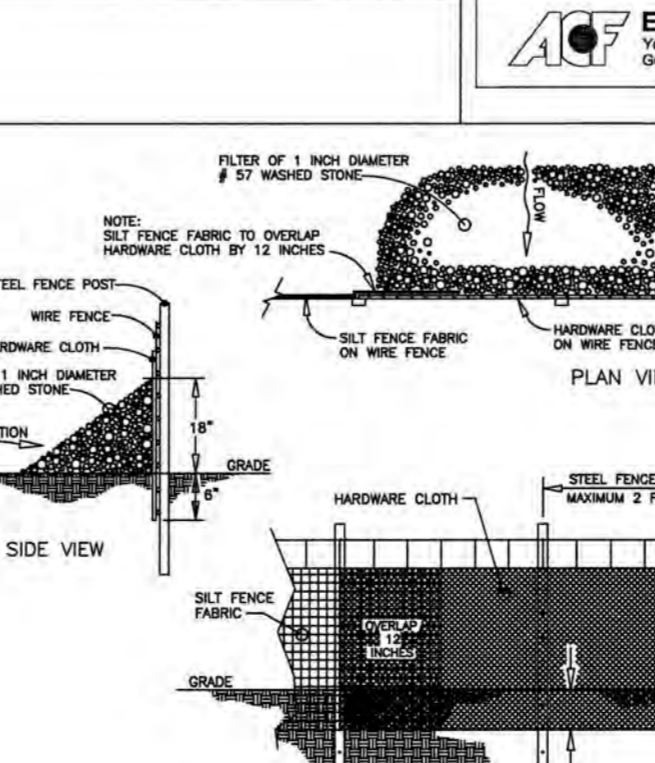
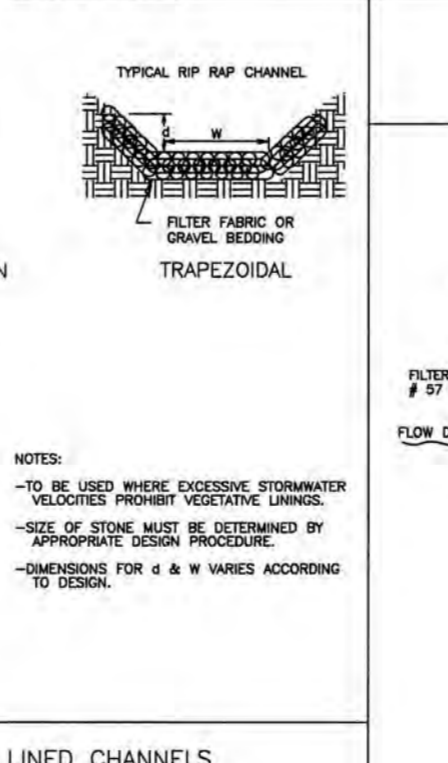
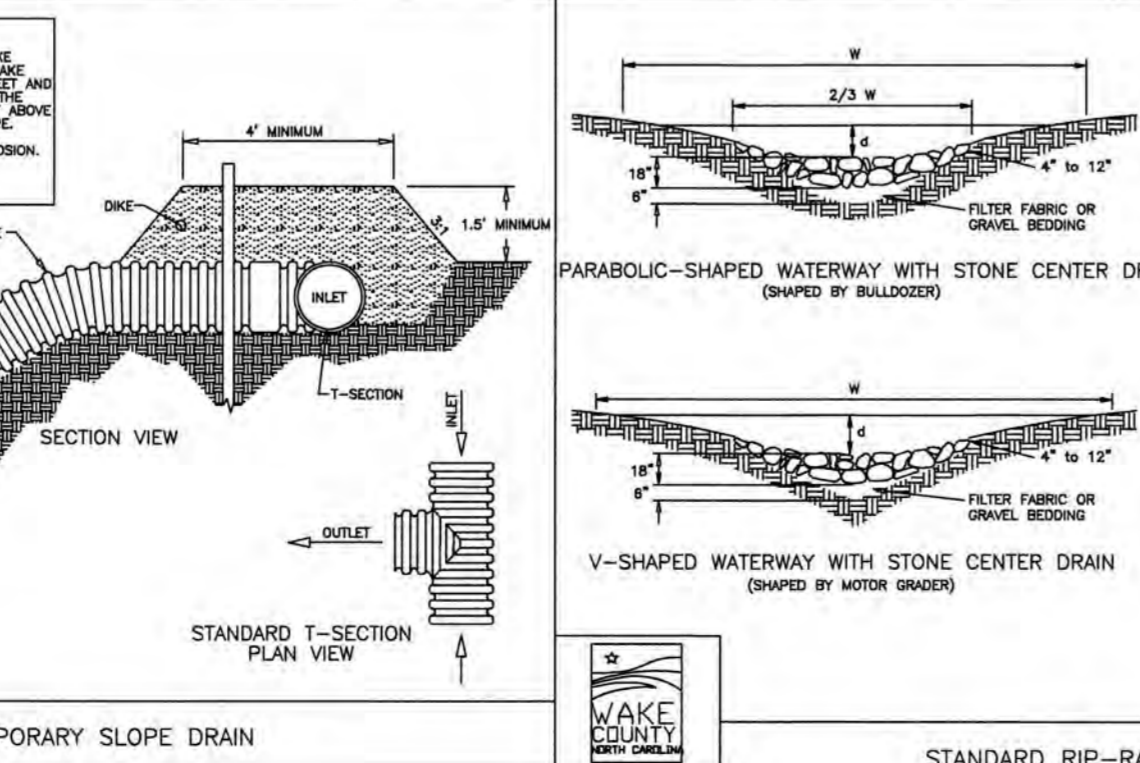
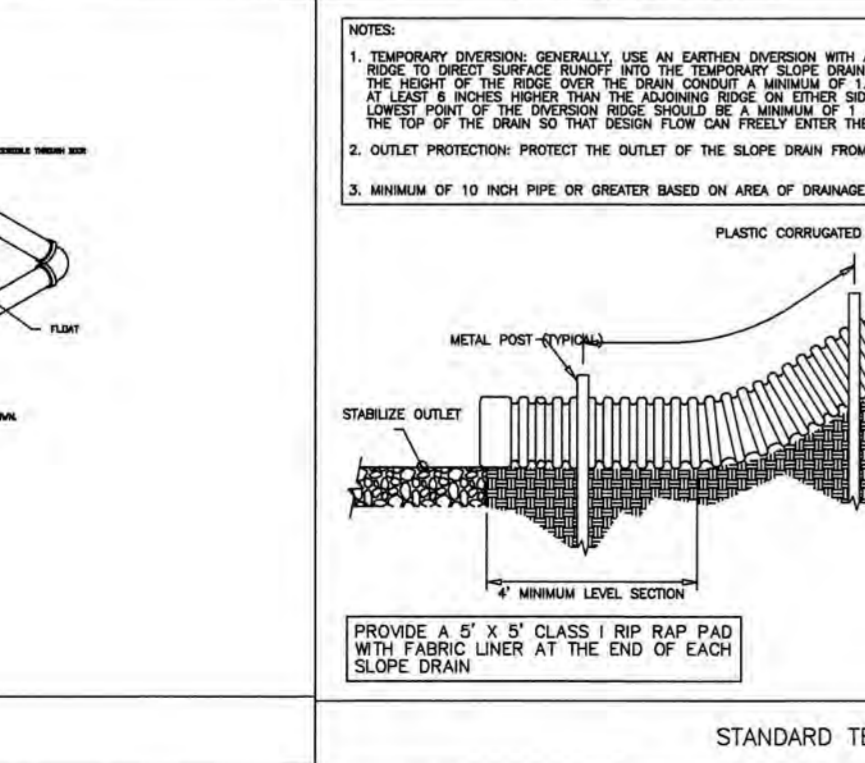
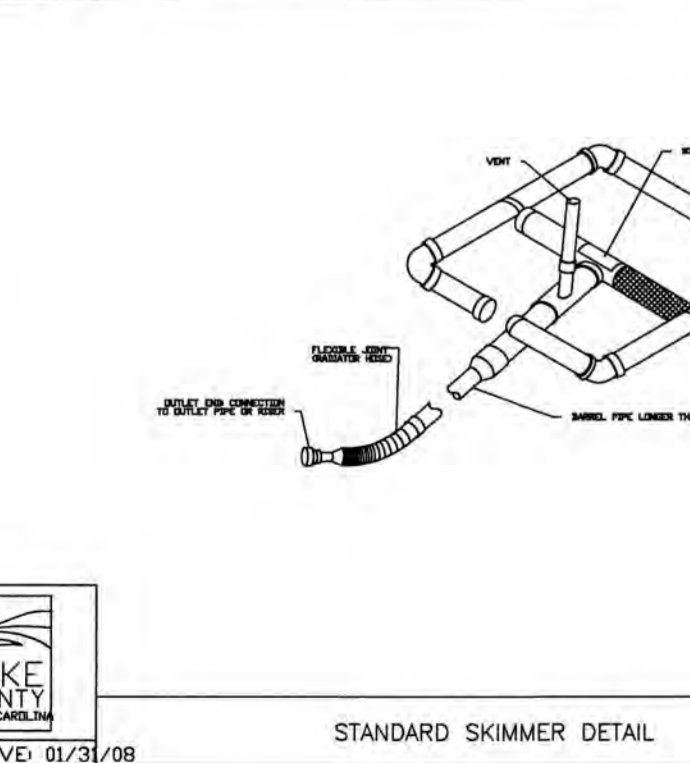
BY: *[Signature]* DATE: 4/19/08
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: *[Signature]* DATE: 9/10/10
ADMINISTRATOR



REGULAR FLOW SILTSTACK		
INLET SIZE	MIN	MAX
12" DIA	12" DIA	12" DIA
18" DIA	18" DIA	18" DIA
24" DIA	24" DIA	24" DIA
30" DIA	30" DIA	30" DIA
36" DIA	36" DIA	36" DIA
42" DIA	42" DIA	42" DIA
48" DIA	48" DIA	48" DIA
54" DIA	54" DIA	54" DIA
60" DIA	60" DIA	60" DIA
PERFORATION	1/2" DIA	1/2" DIA



WithersRavenel
Engineers | Planners | Surveyors

KNIGHTDALE STATION
R7
(SECTION A, B & C)

EROSION CONTROL
DETAILS

Job No.	0209025191	Drawn By	CEJ
Date	06/21/16	Designer	JCI
Revisions			
1	TOK Comments	09/07/16	
2	TOK Comments	12/08/17	
3	TOK Comments	04/11/18	

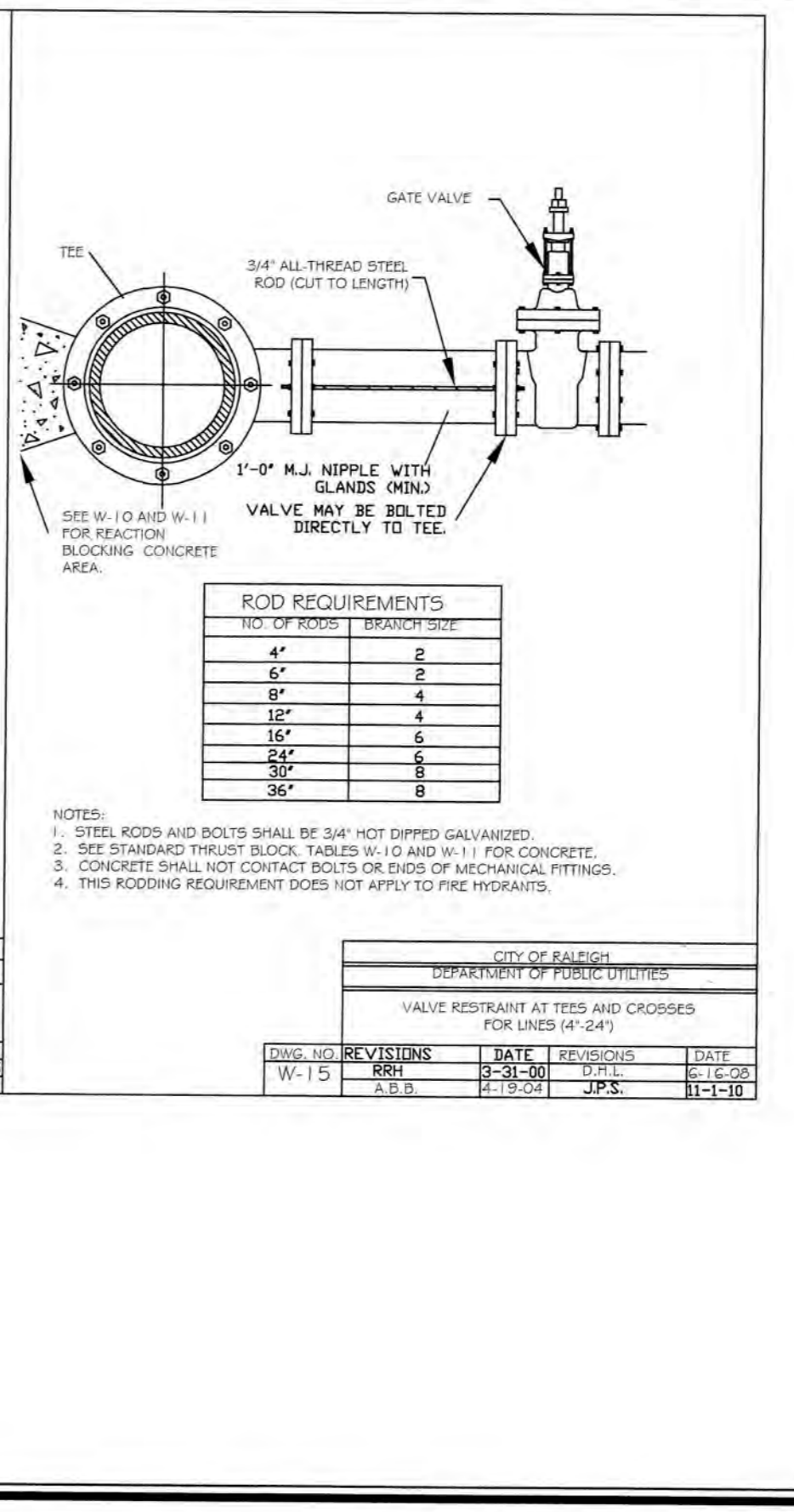
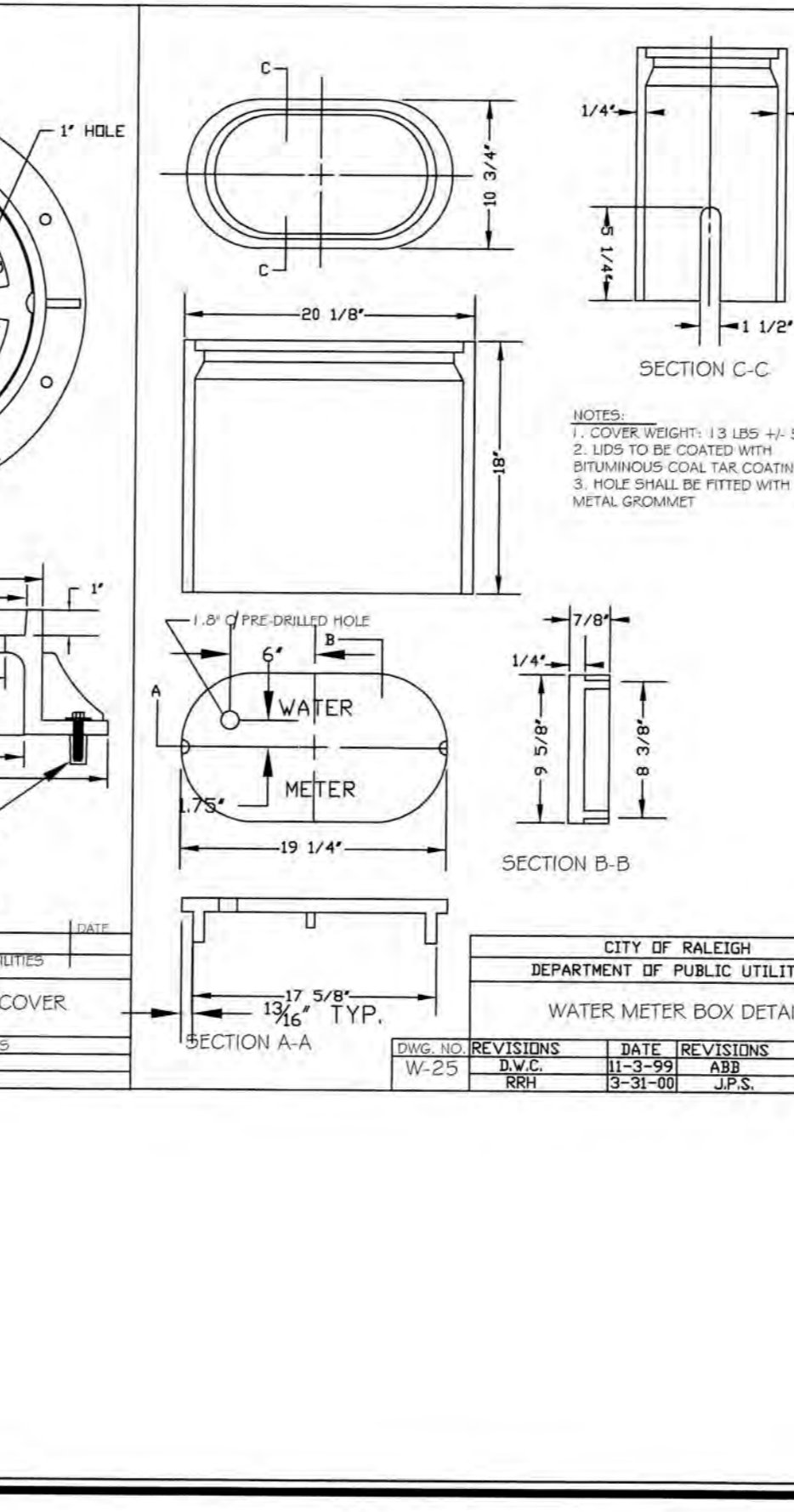
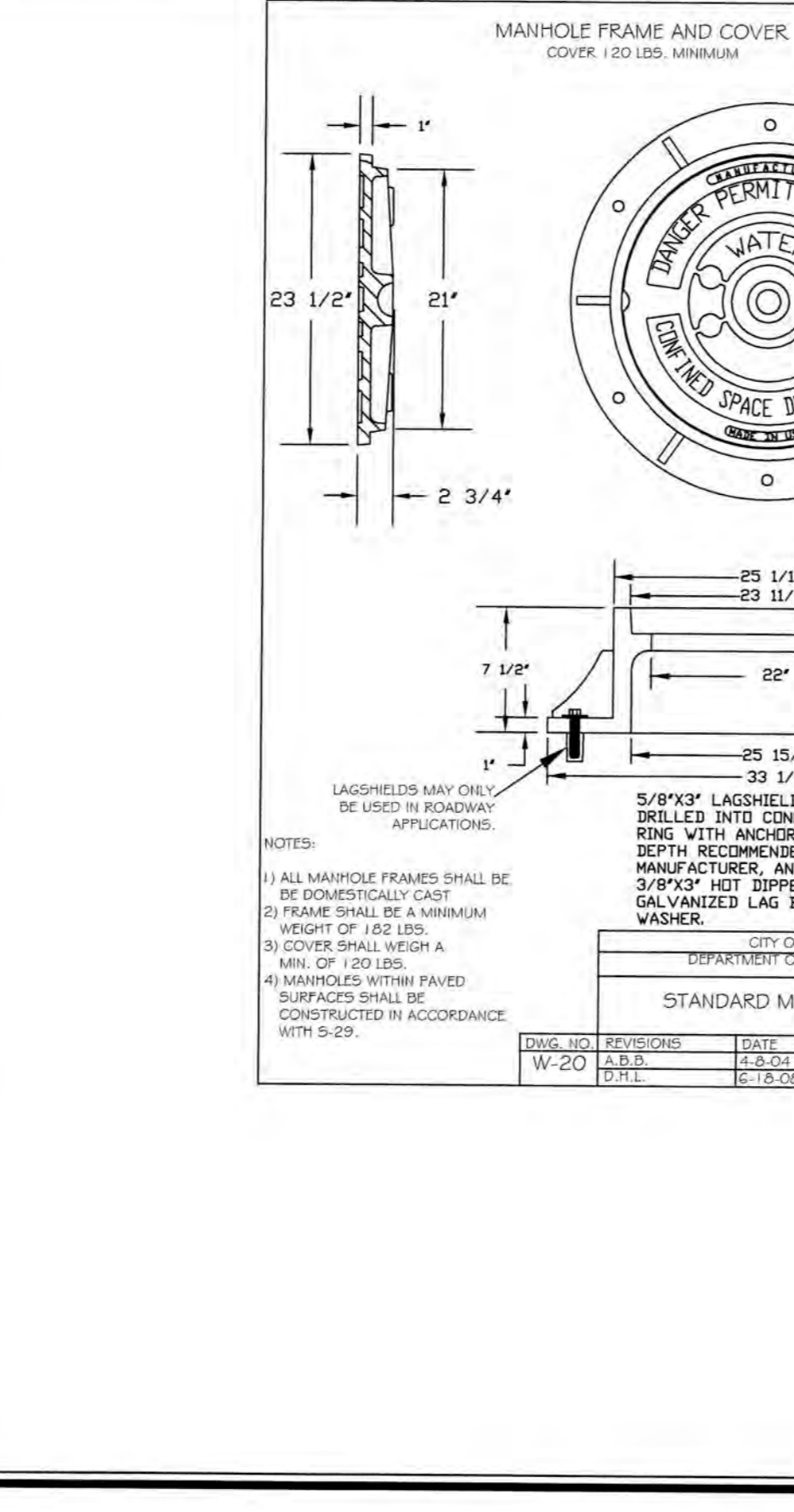
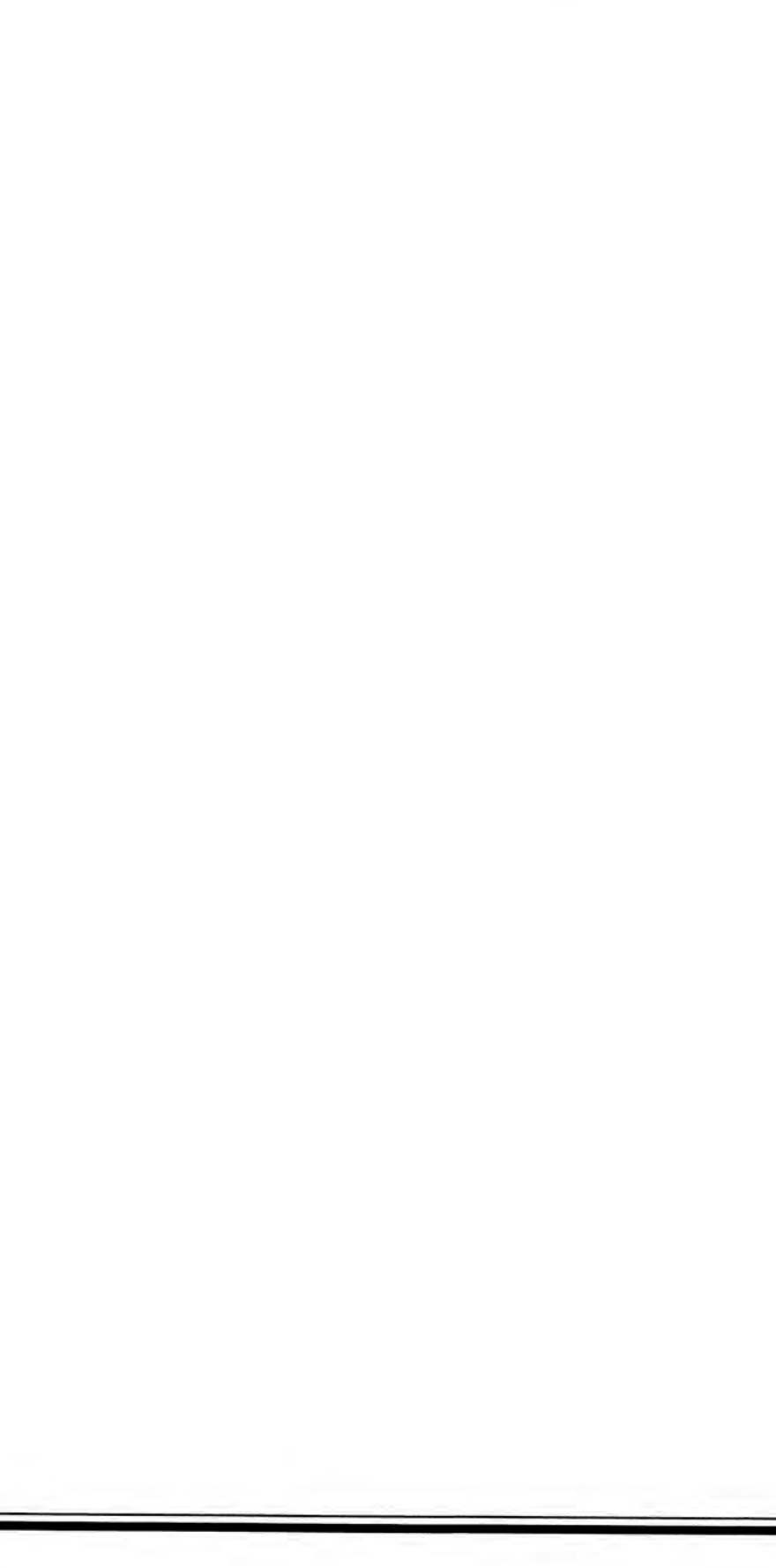
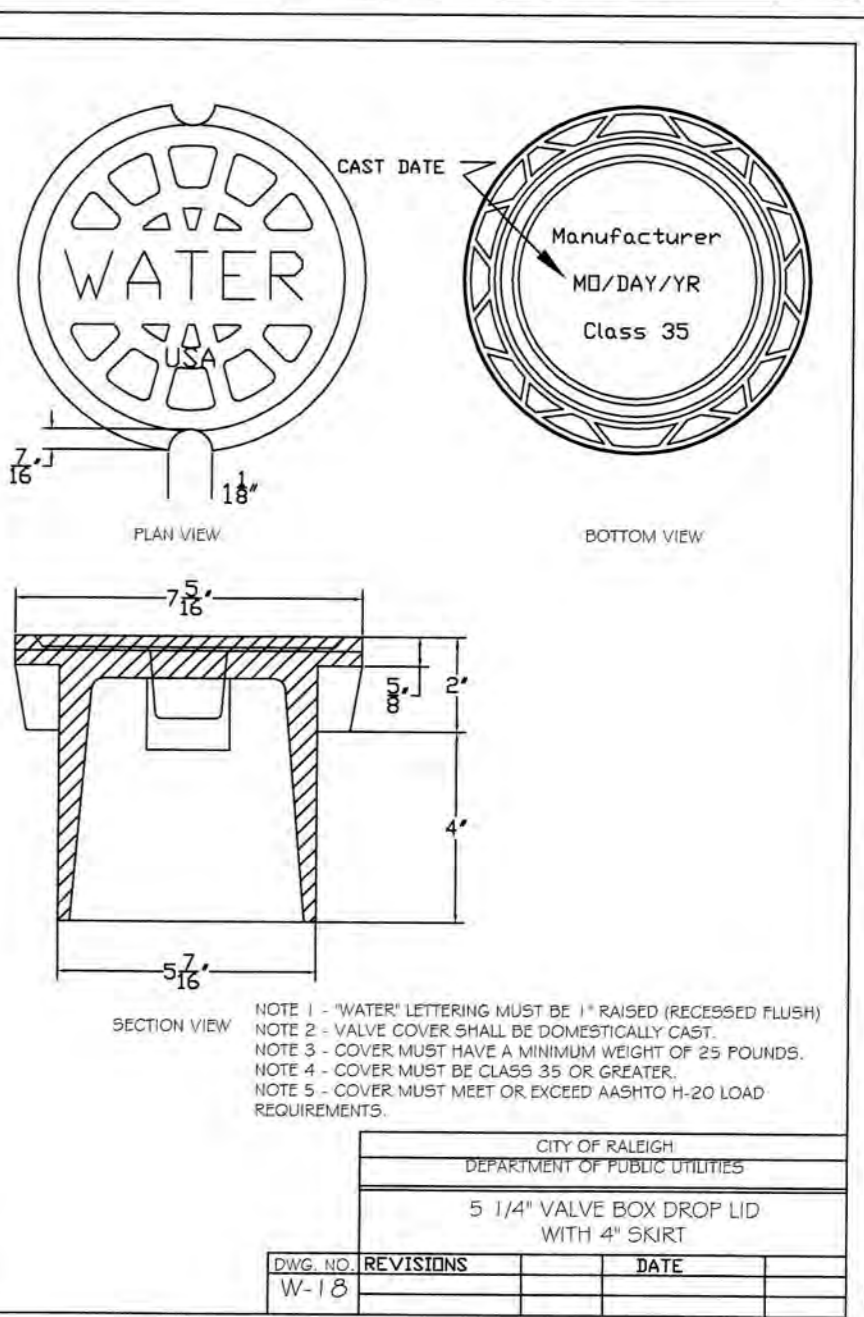
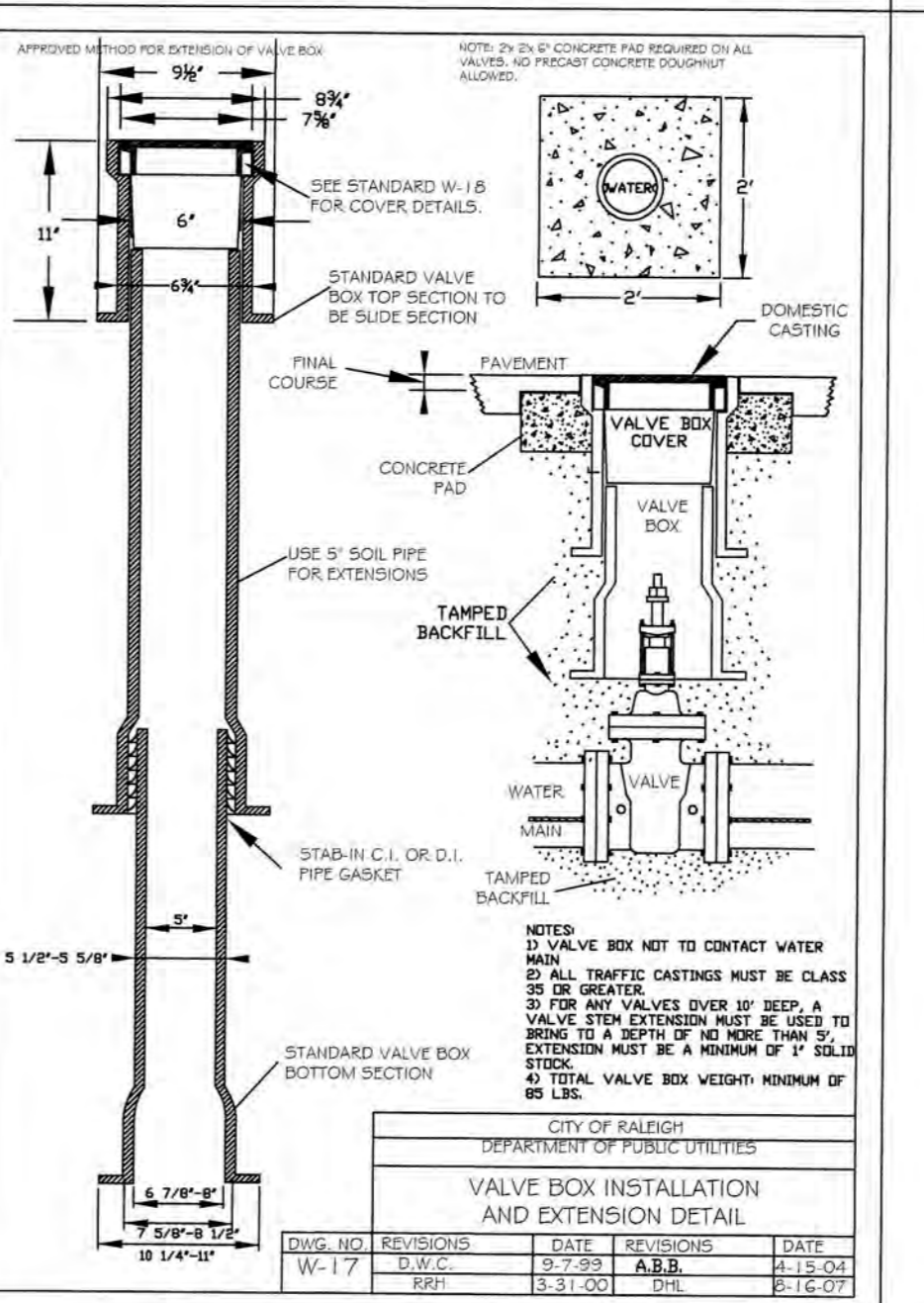
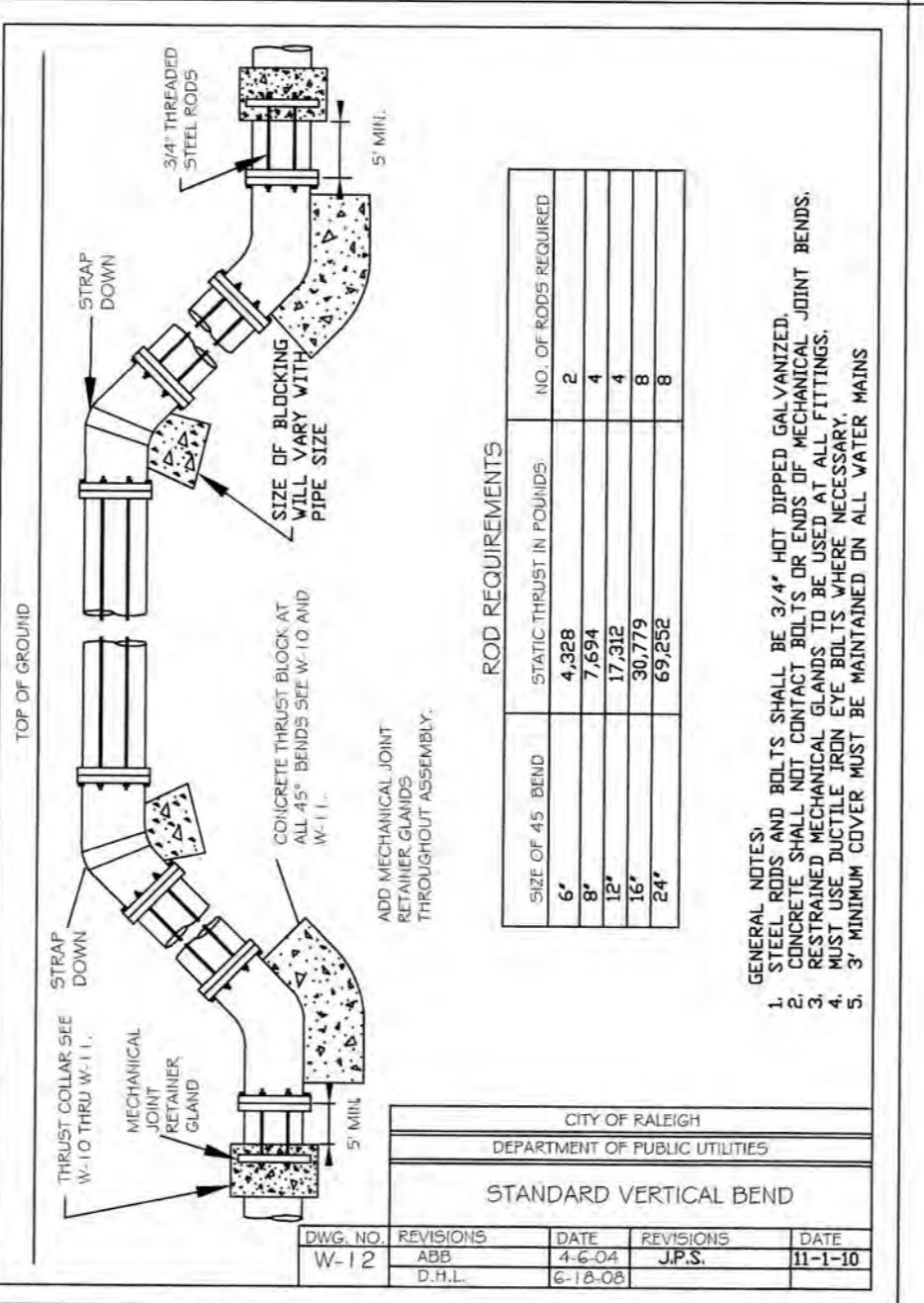
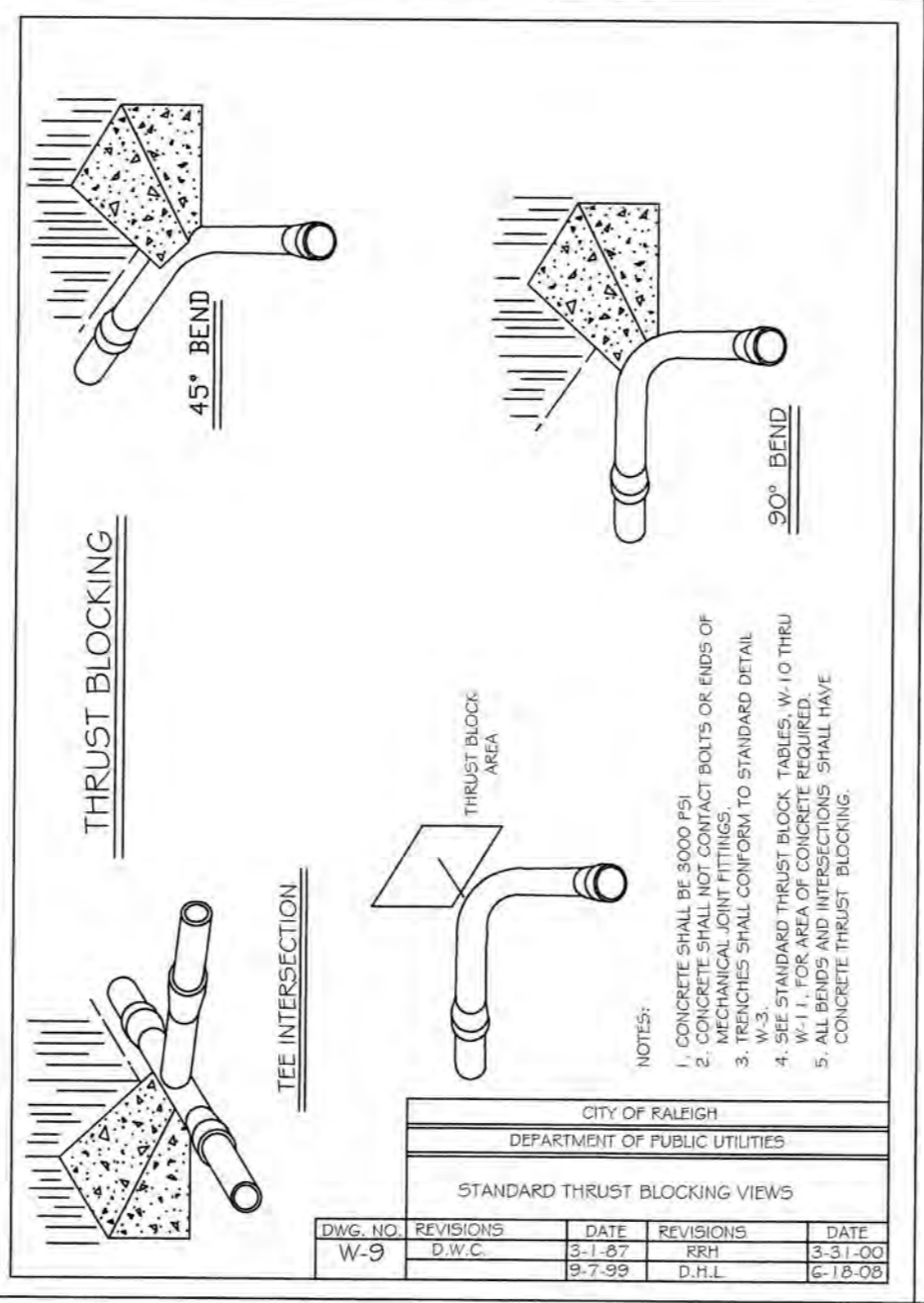
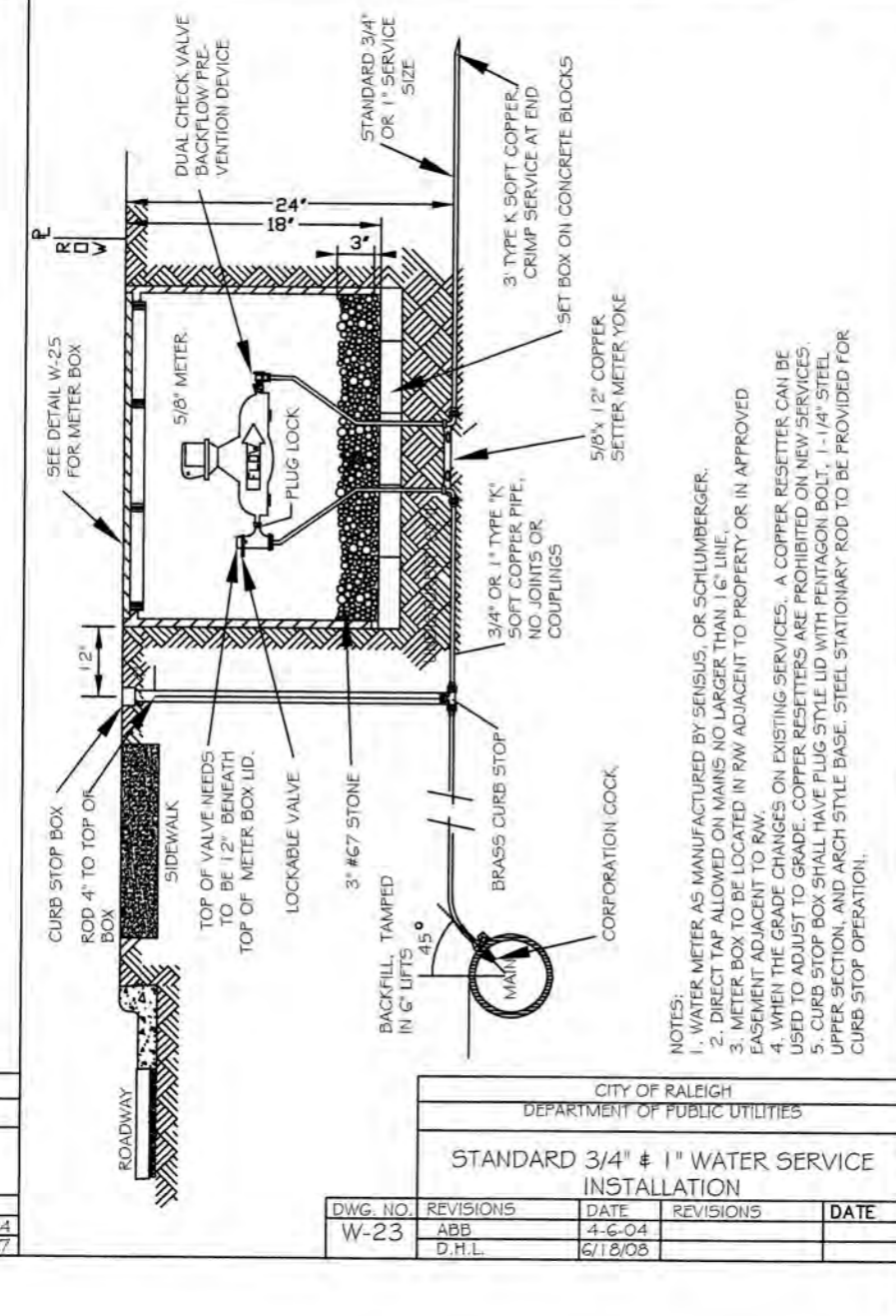
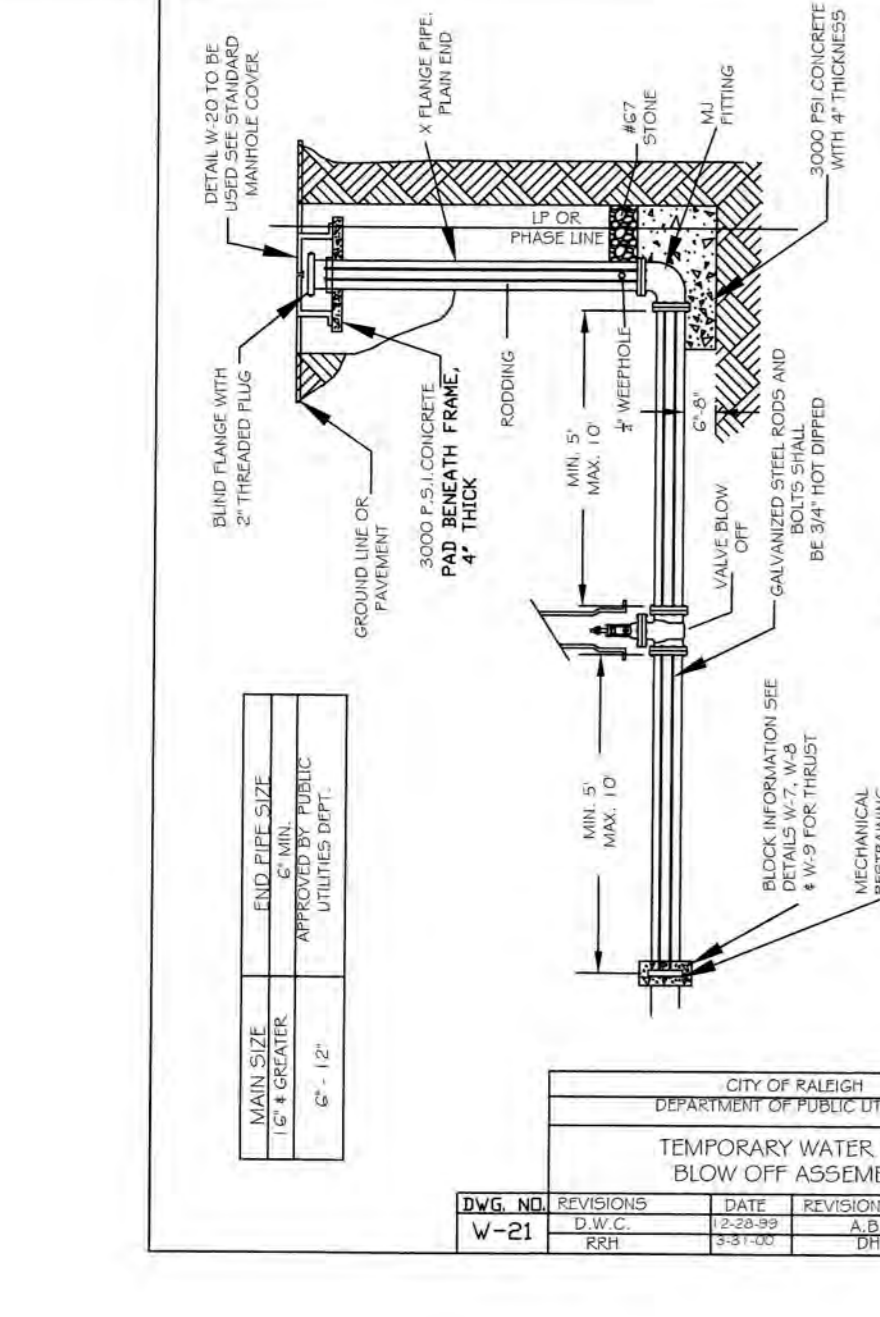
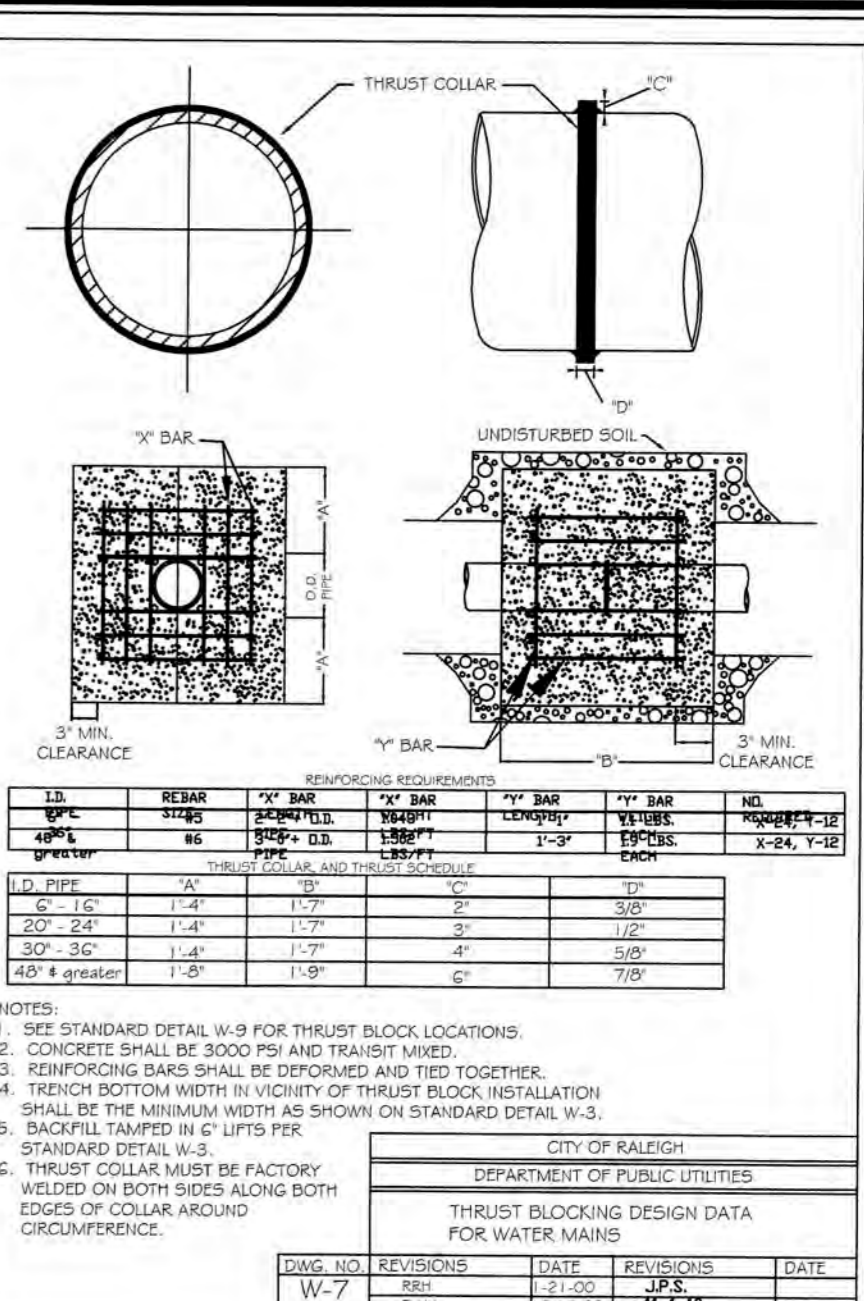
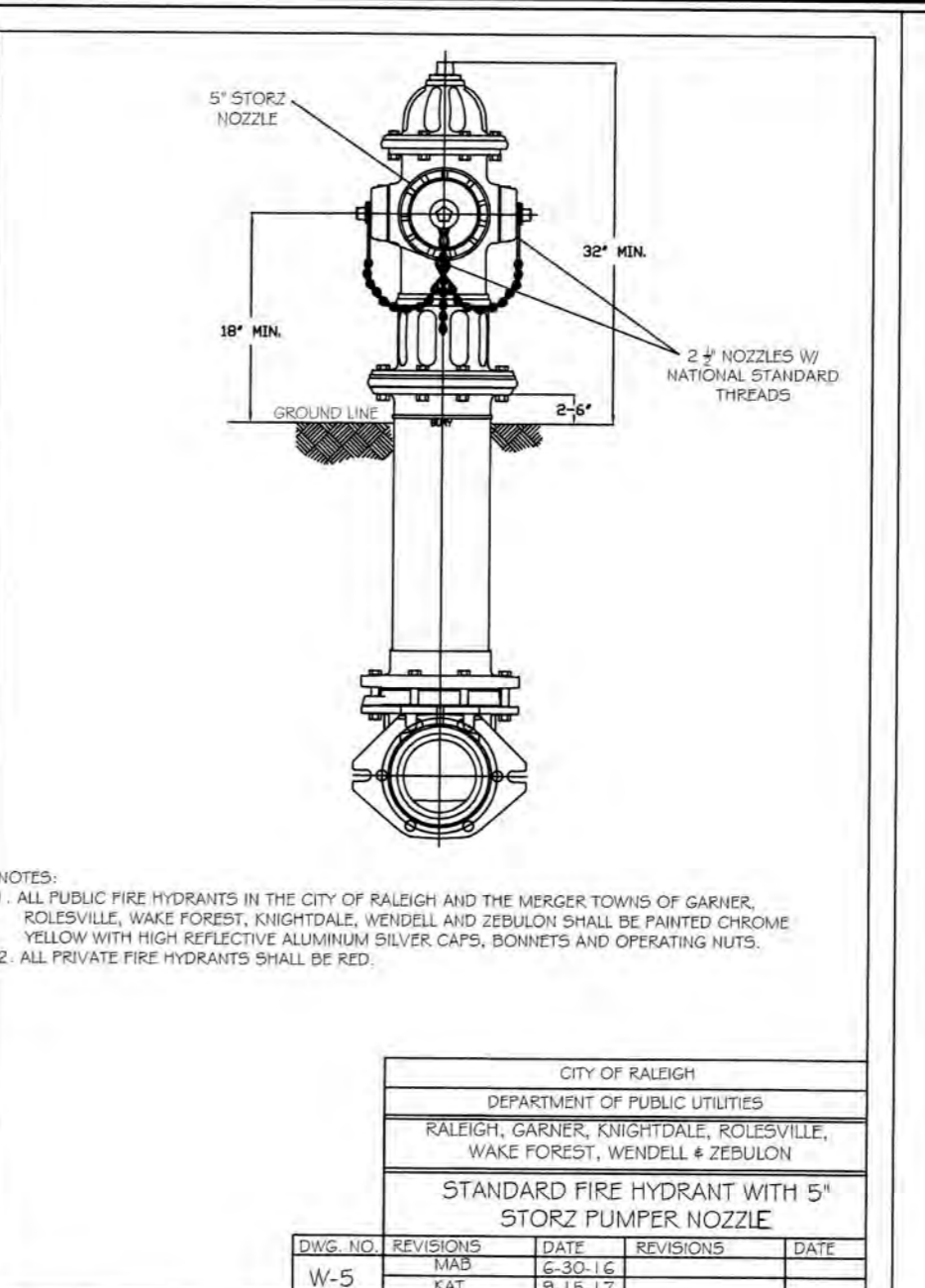
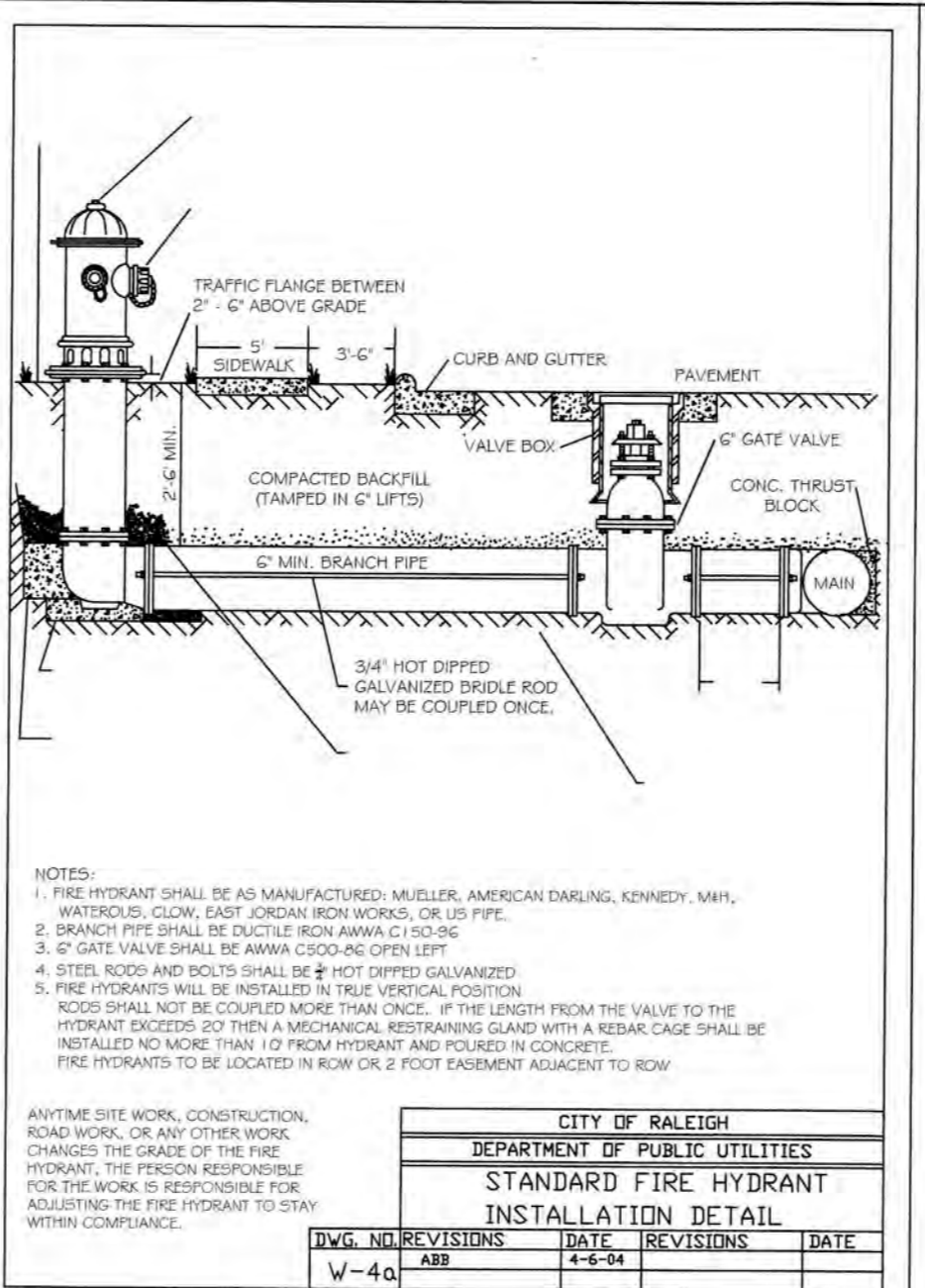
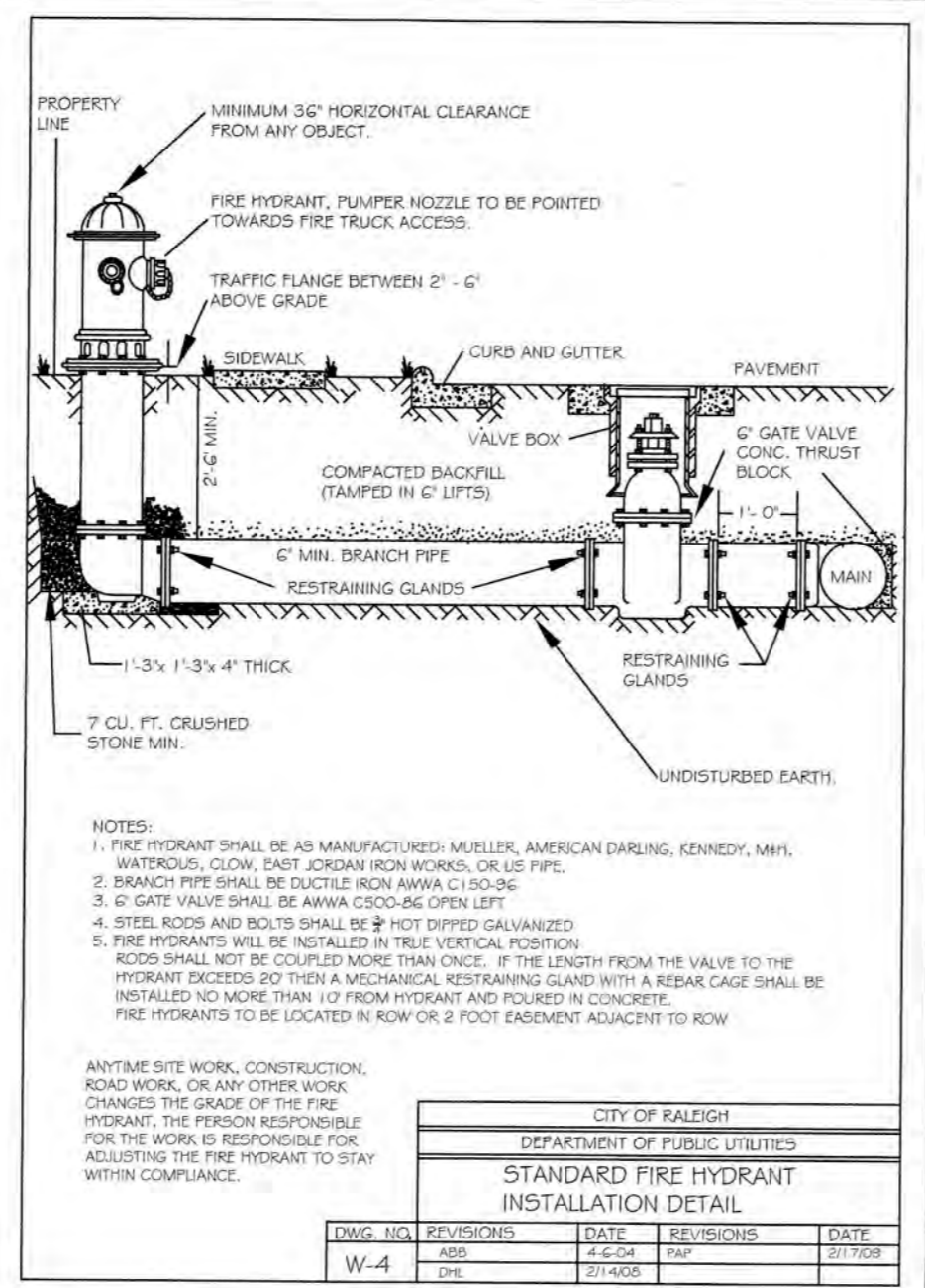
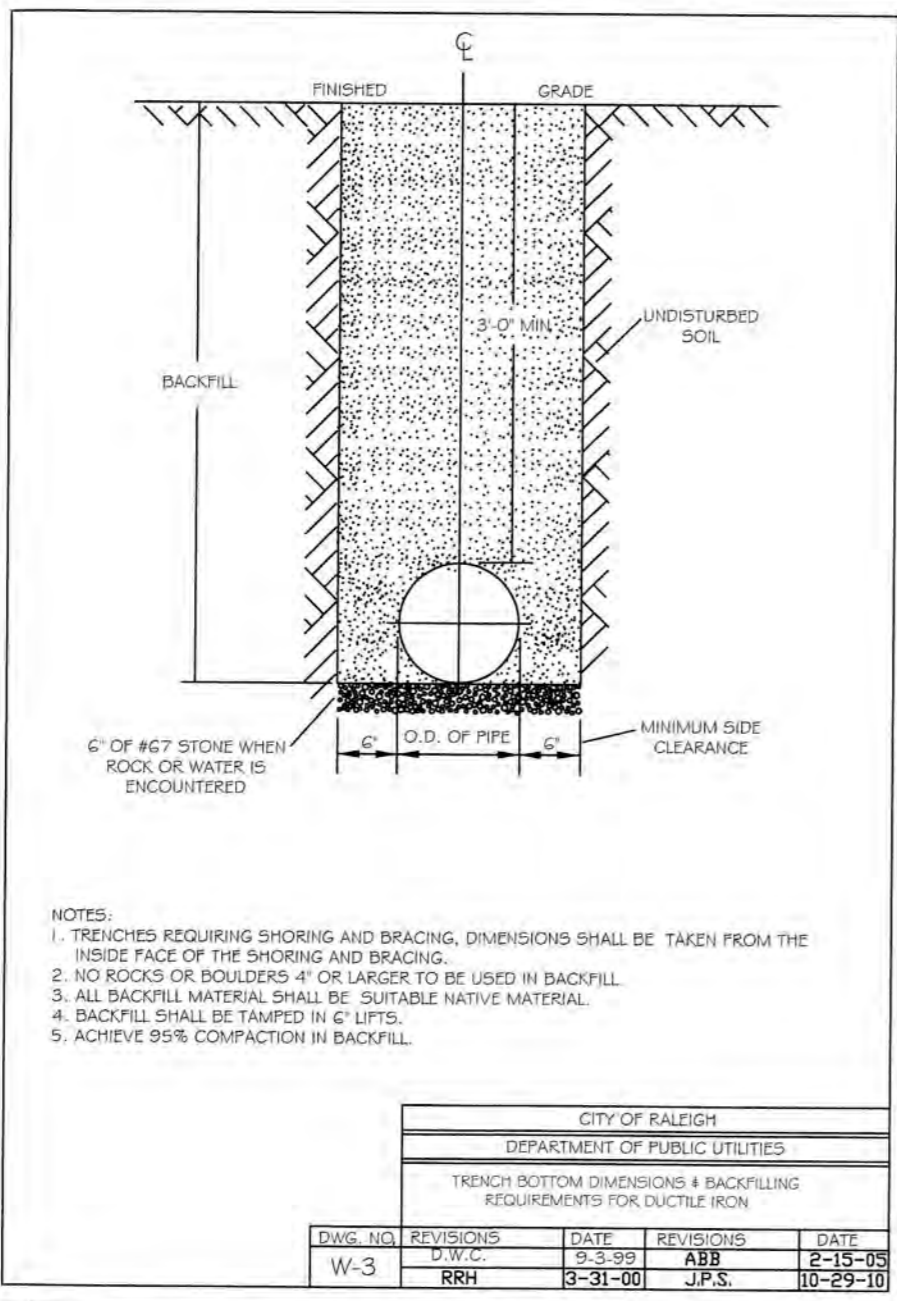
REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS
BASED ON TEST PRESSURE OF 200 P.S.I.

ANGLE	1" DIA.	2" DIA.	3" DIA.	4" DIA.	6" DIA.	8" DIA.	10" DIA.	12" DIA.	15" DIA.	18" DIA.	24" DIA.	30" DIA.
5°												
11 1/4°	1.108	1	1	1	1	1	1	2	1			
22 1/2°	2.207	1	2	2	1	1	1	3	1			
45°	4.328	2	3	3	1	1	2	5	1			
90°	7.996	2	4	5	1	1	2	8	1			
FLUG	5.655	2	3	4	1	1	2	6	1			
6"												
11 1/4°	1.970	1	1	2	1	1	1	2	1			
22 1/2°	3.922	1	2	3	1	1	1	4	1			
45°	7.694	2	4	5	1	1	2	8	1			
90°	14.215	4	8	9	2	2	4	15	2			
FLUG	10.053	3	5	6	2	2	3	10	1			
12"												
11 1/4°	4.433	2	3	3	1	1	2	5	1			
22 1/2°	8.826	3	5	6	2	2	3	9	1			
45°	17.312	5	9	11	3	3	5	18	2			
90°	31.983	8	16	19	4	4	8	32	4			
FLUG	22.619	6	12	14	3	3	6	23	3			
16"												
11 1/4°	7.981	2	4	5	1	1	2	8	1			
22 1/2°	15.991	4	8	10	2	2	4	16	2			
45°	30.779	8	16	19	4	4	8	32	4			
90°	56.861	15	29	35	8	8	15	57	6			
FLUG	40.213	10	21	25	5	5	10	41	5			

REACTION BEARING AREAS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH SIDE AT AN ANGLE OF 90° TO THE THRUST VECTOR.

USE 6" - 90 BEND VALUE FOR HYDRANTS FOR ADDITIONAL SAFETY FACTOR.

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-10	ADD	1-23-09	ADD	2-11-09



CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES

ALL CONSTRUCTION MUST BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL RULES AND REGULATIONS.

TRANSPORTATION-SERVICES N/A
PUBLIC UTILITIES **E.A. 4/30/10**
STORMWATER-N/A
PLANNING-N/A
FIRE-N/A
URBAN-FORESTRY-N/A

NOTES:
1. STEEL RODS AND BOLTS SHALL BE 3/4\"/>

WithersRavenel
Engineers | Planners | Surveyors

KNIGHTDALE STATION
R7
(SECTION A, B & C)

KNIGHTDALE, WAKE COUNTY, NORTH CAROLINA

WATER UTILITY DETAILS

Job No. 0209025191 Drawn By CED
Date 06/21/16 Designer JCI

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
31982
ENGINEER
C. J. HANCOCK
4/10/18

Revisions:
1 TOK Comments 09/07/16
2 TOK Comments 12/08/17
3 TOK Comments 04/11/18

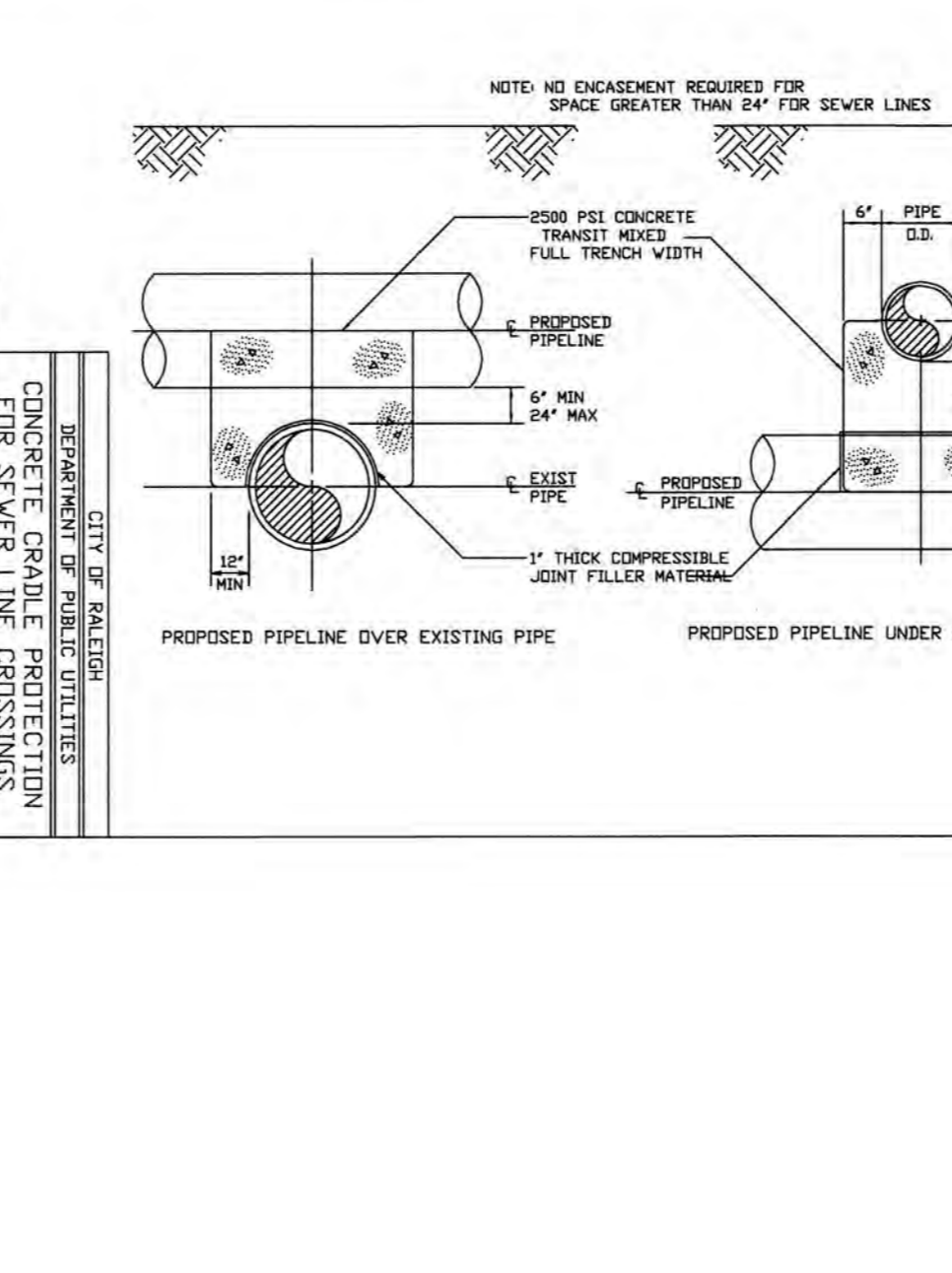
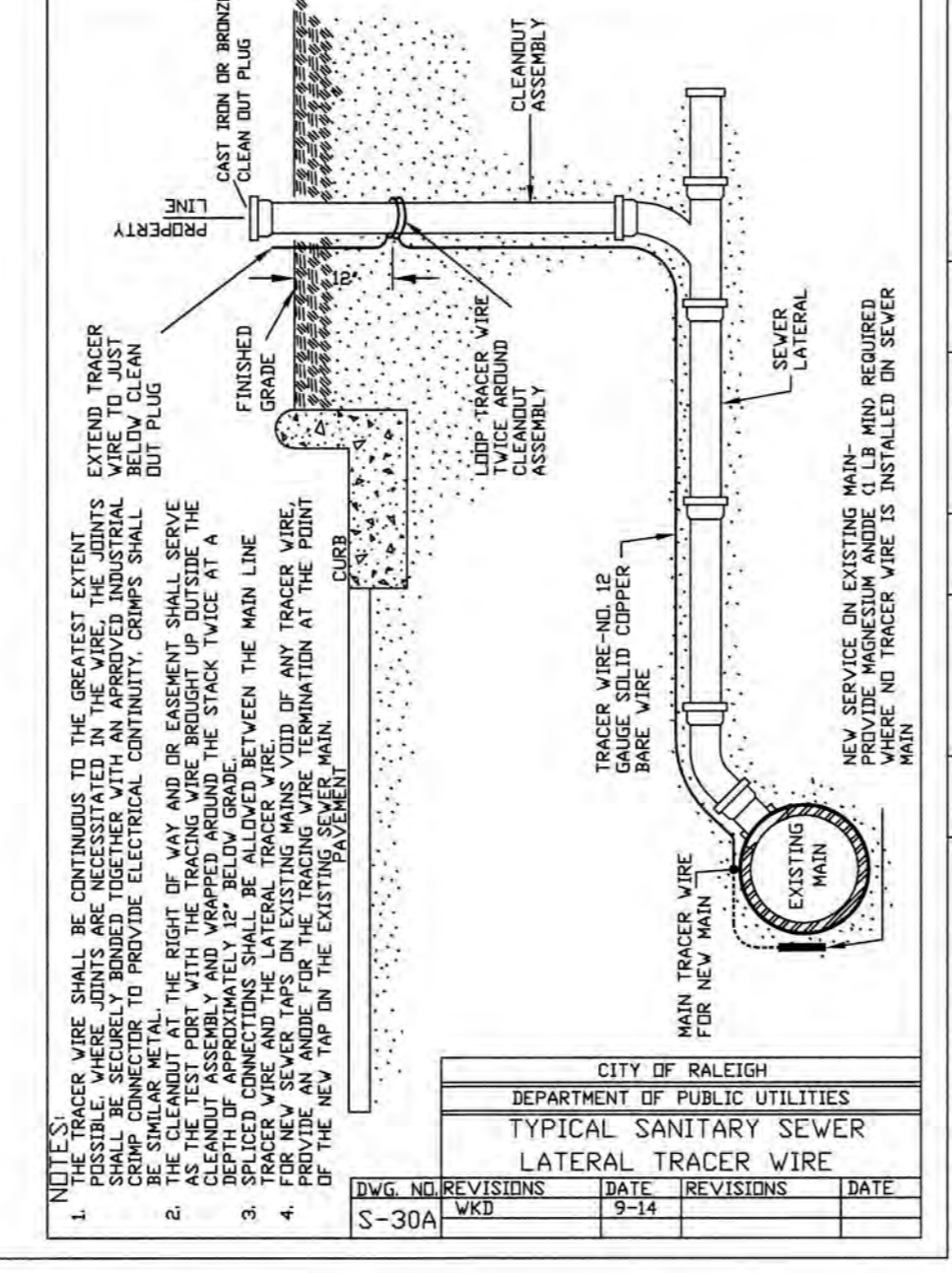
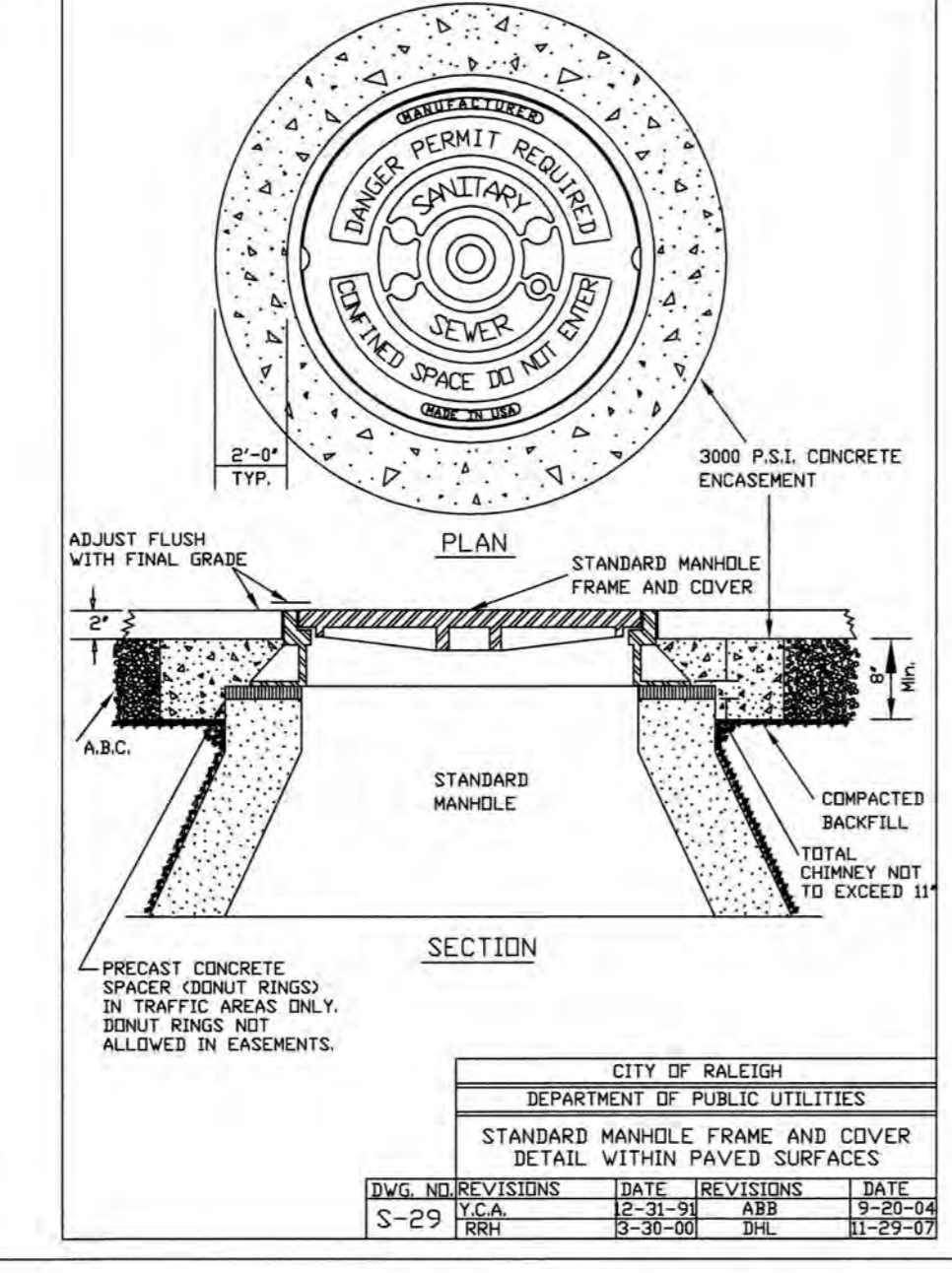
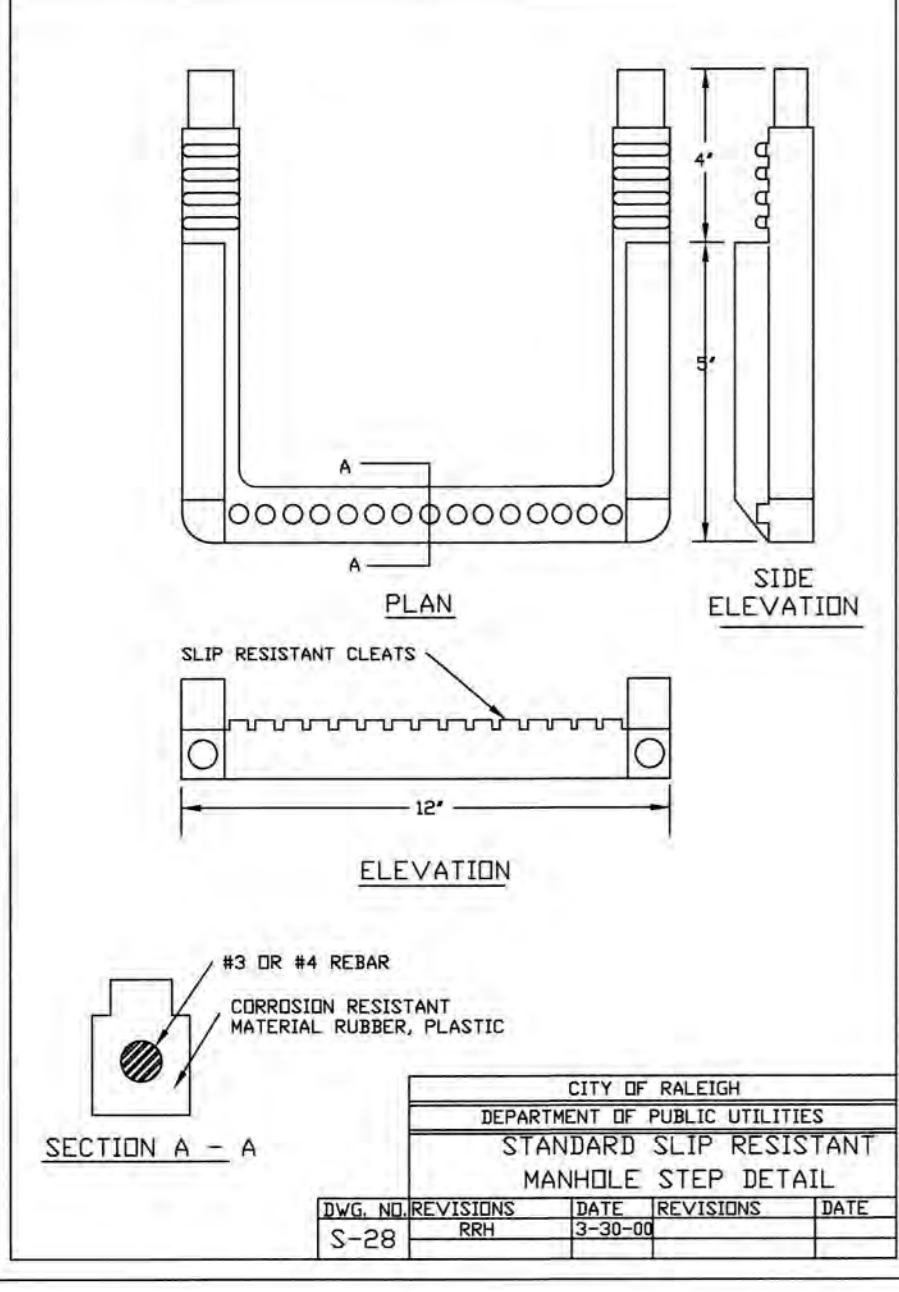
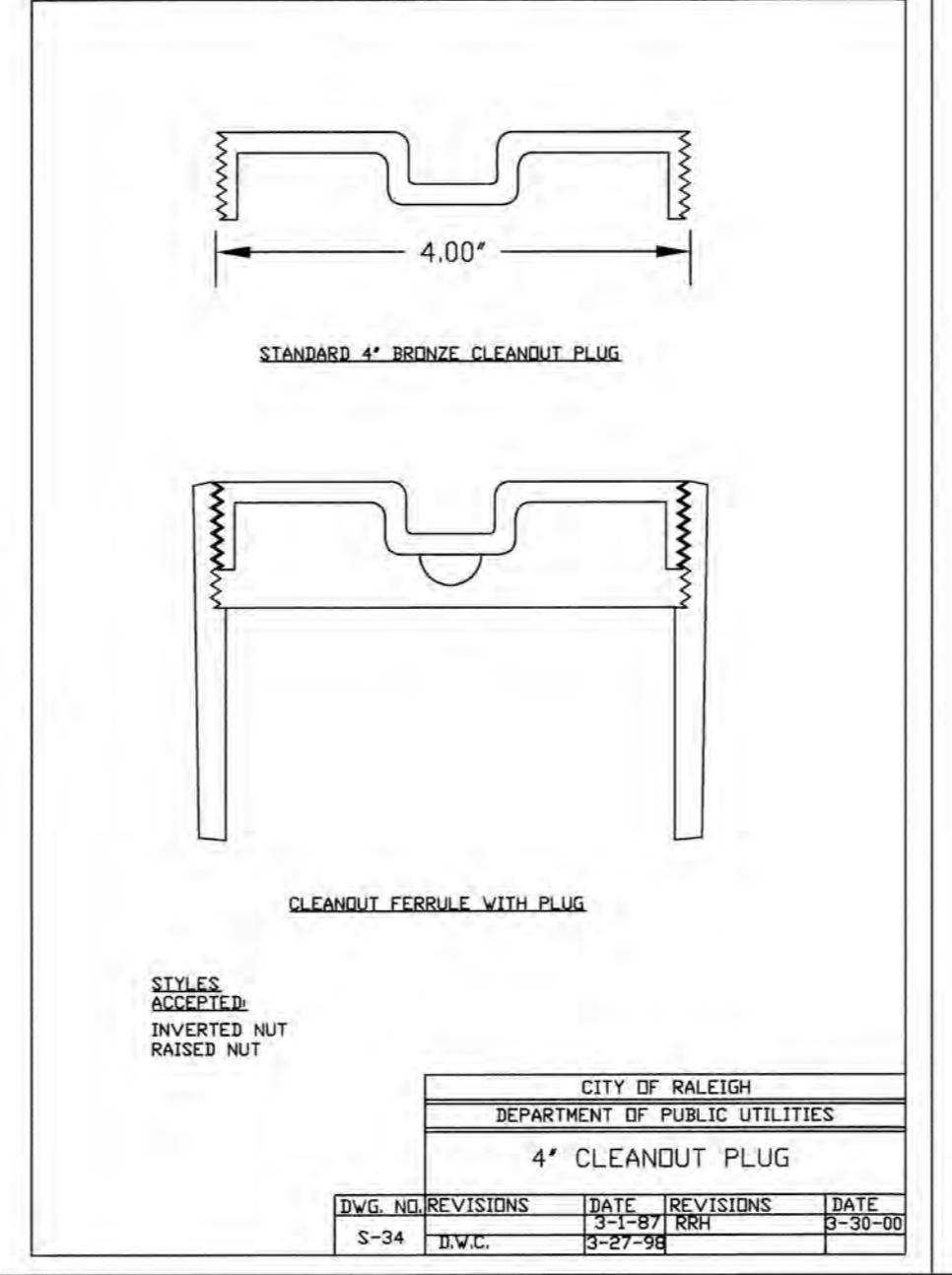
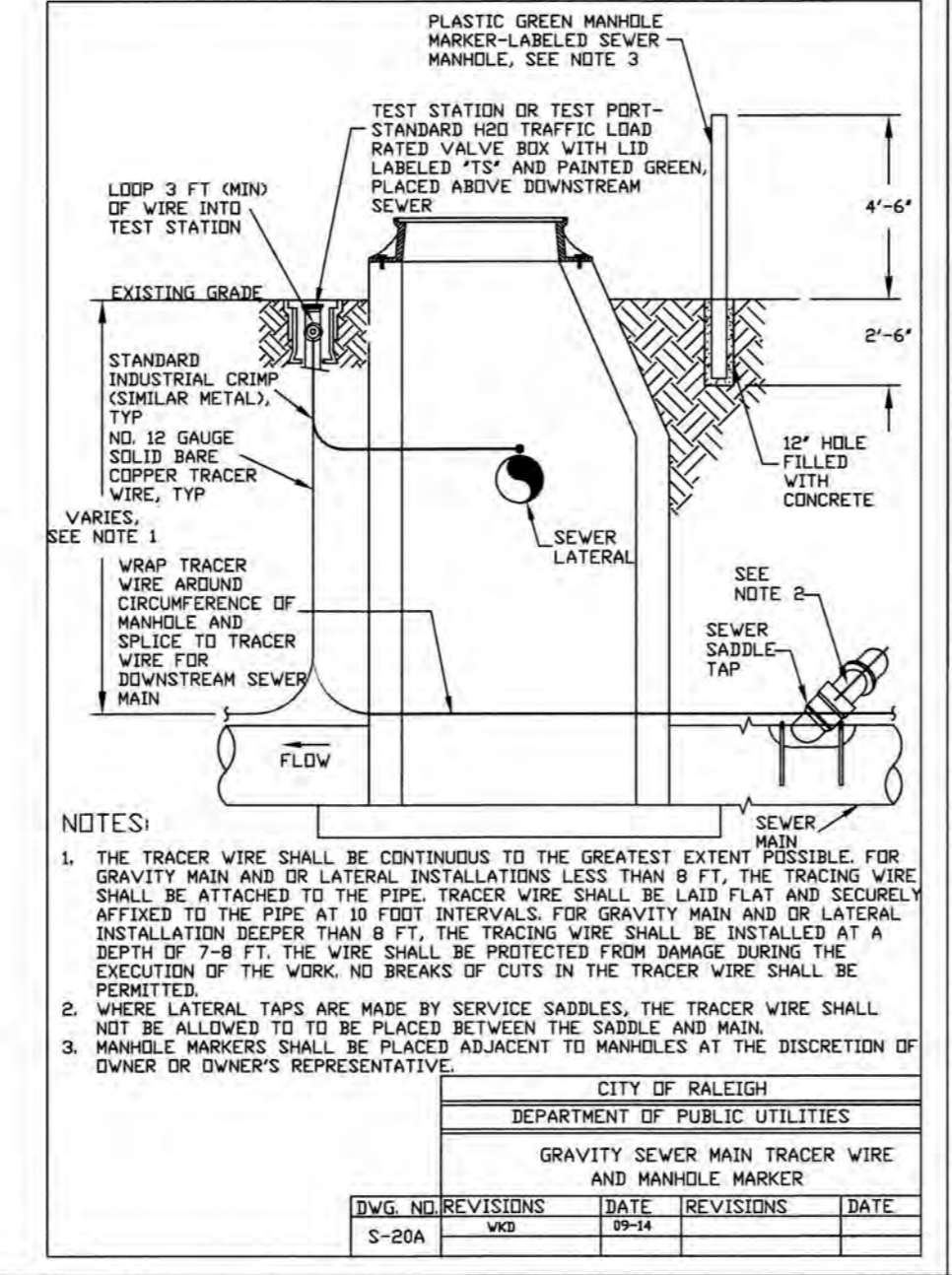
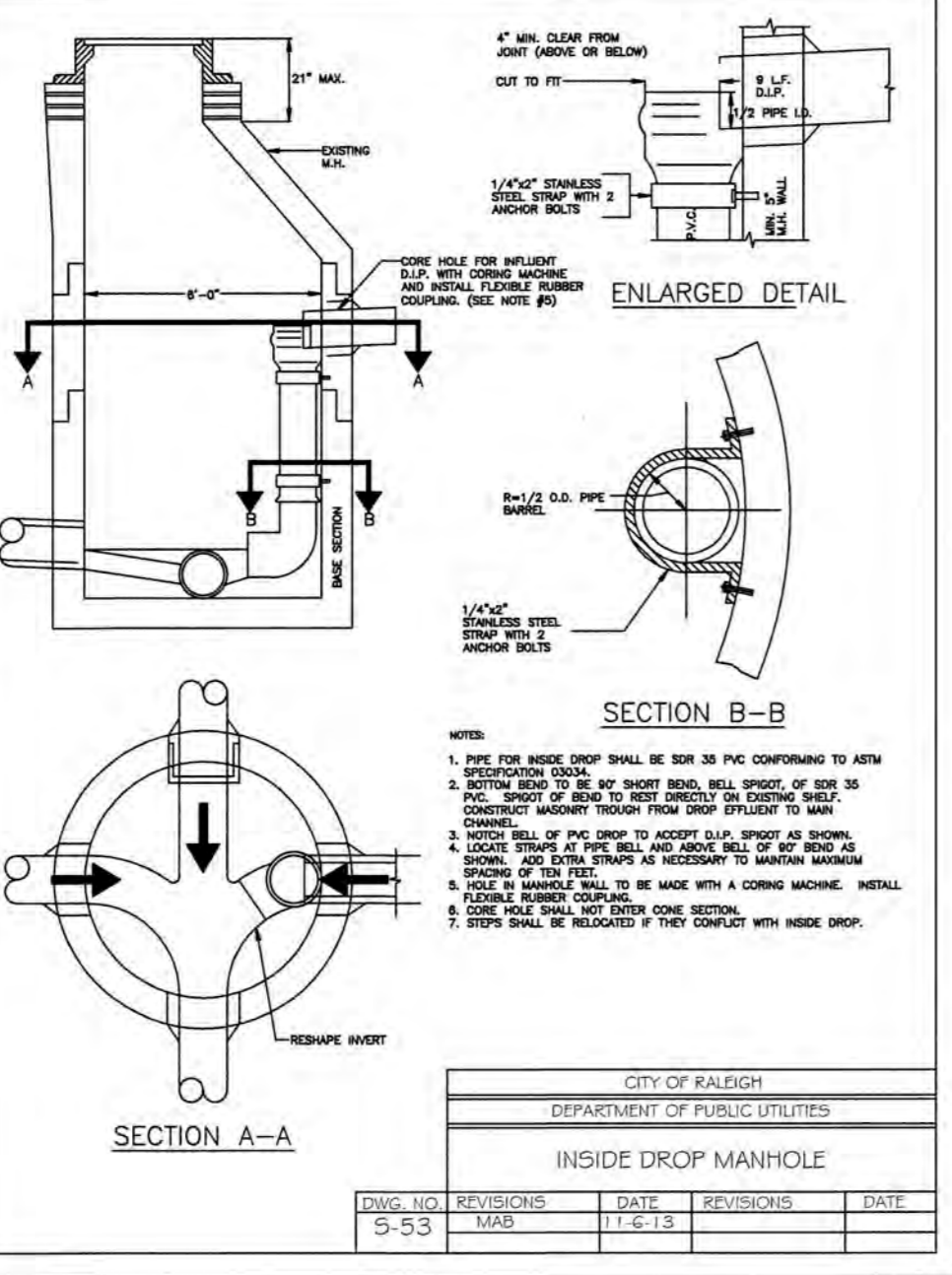
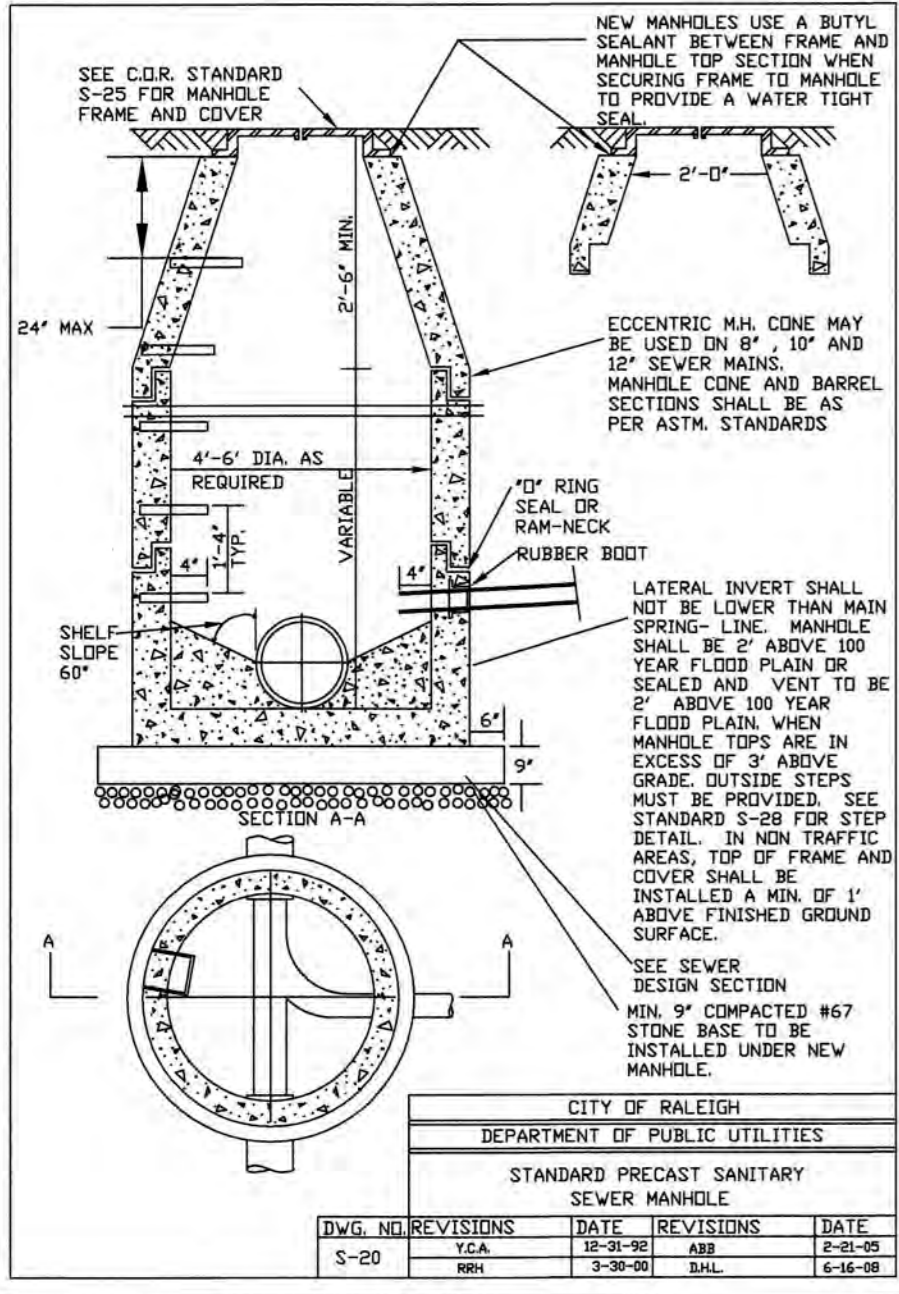
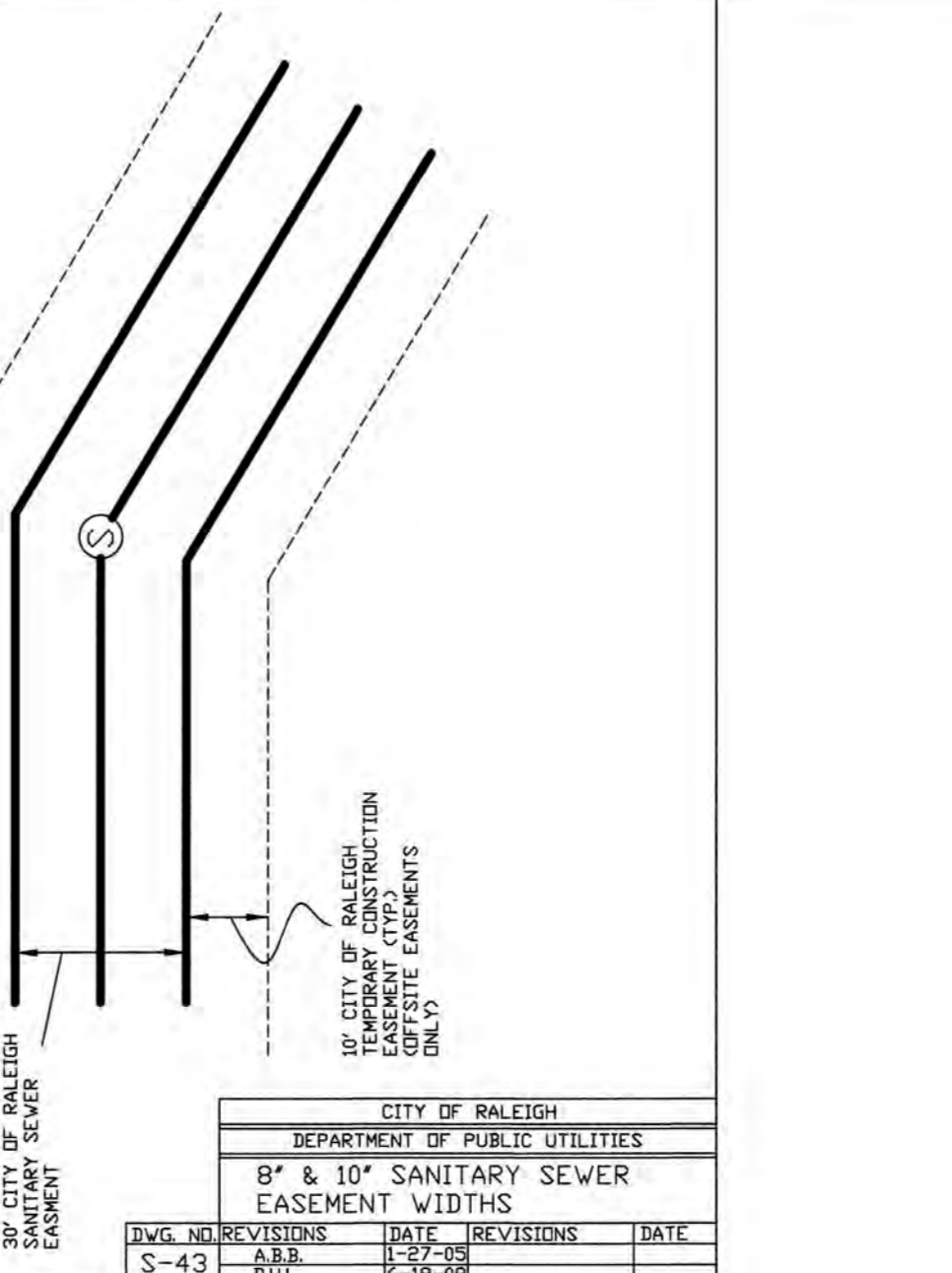
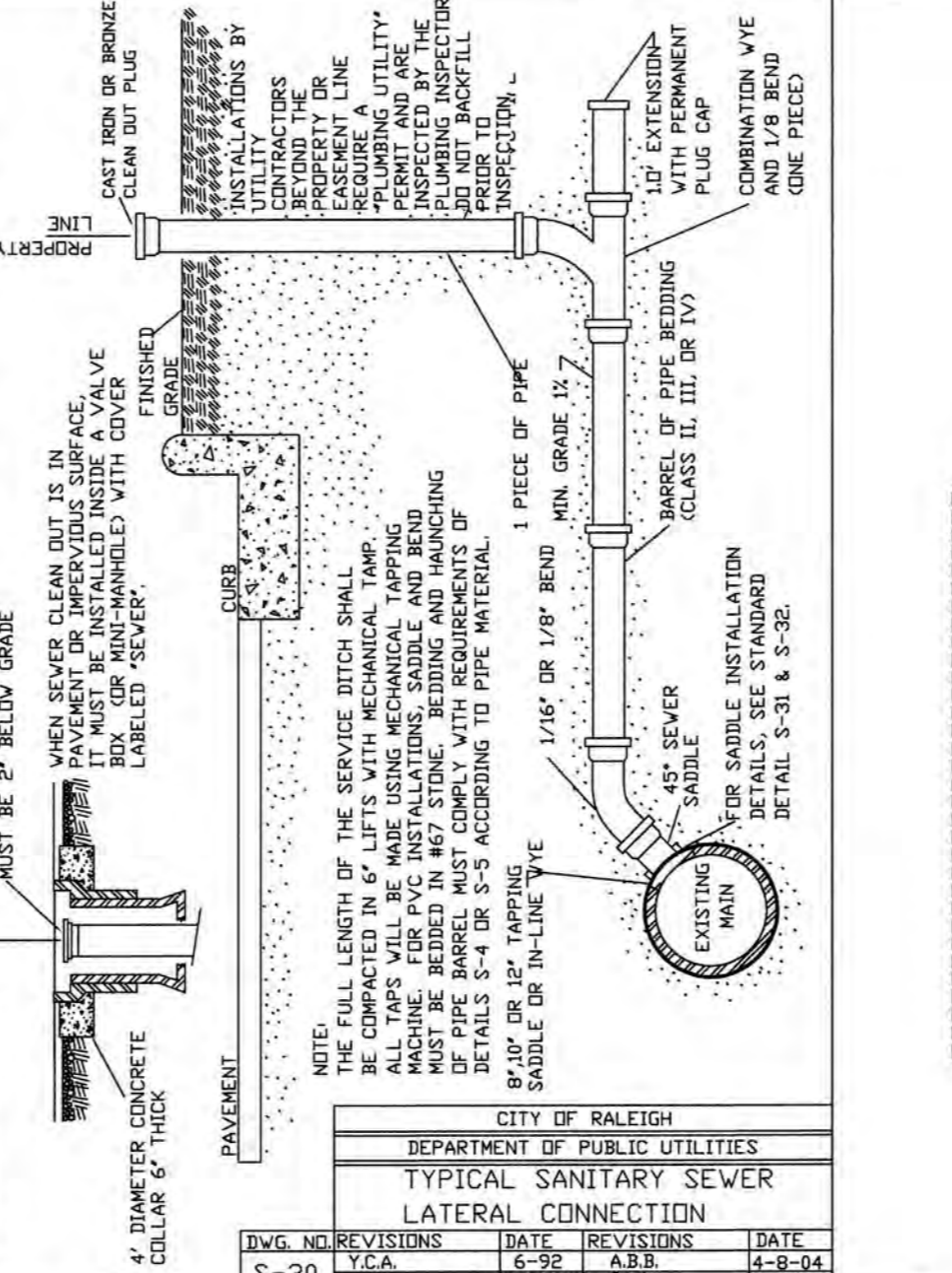
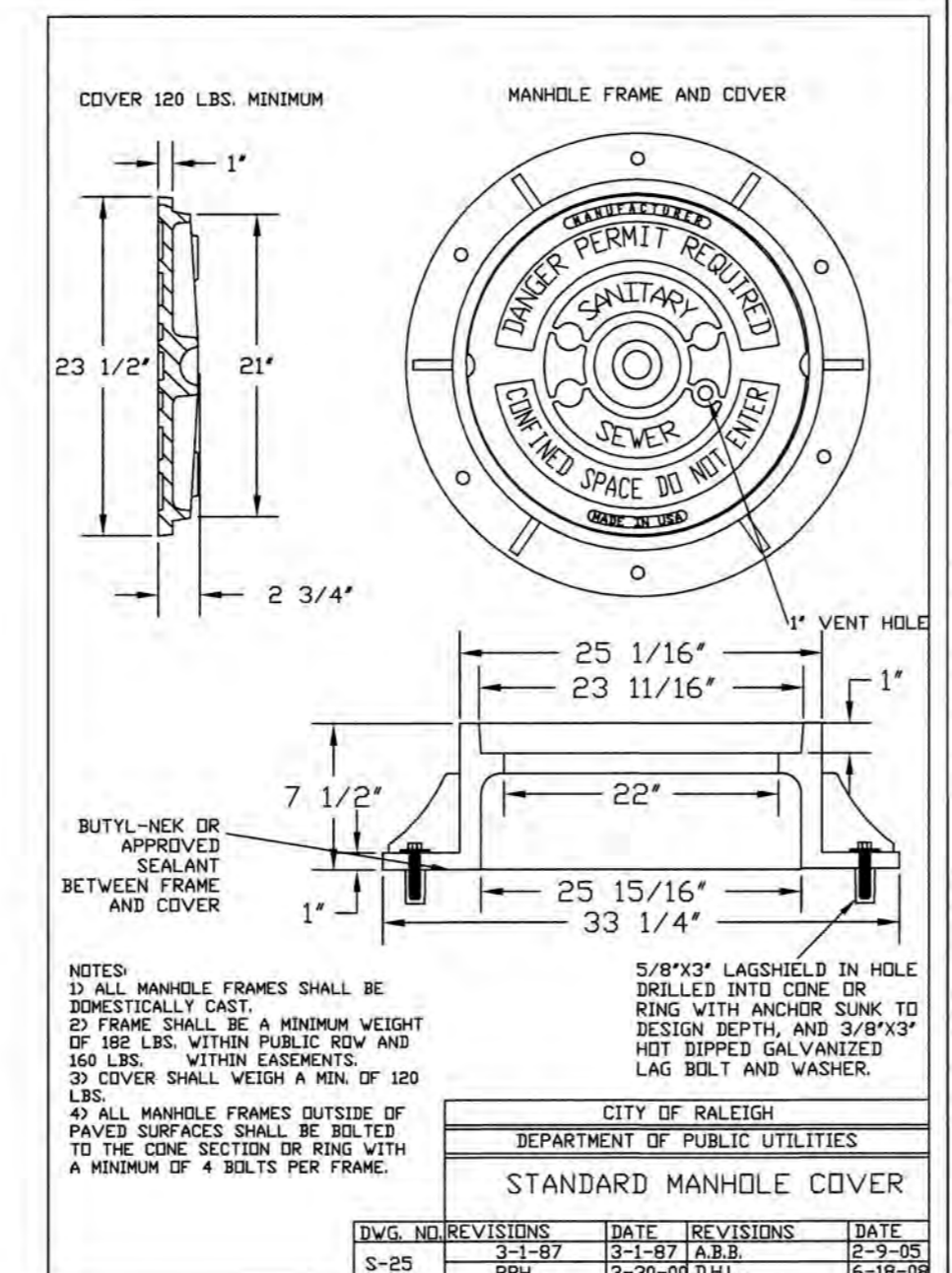
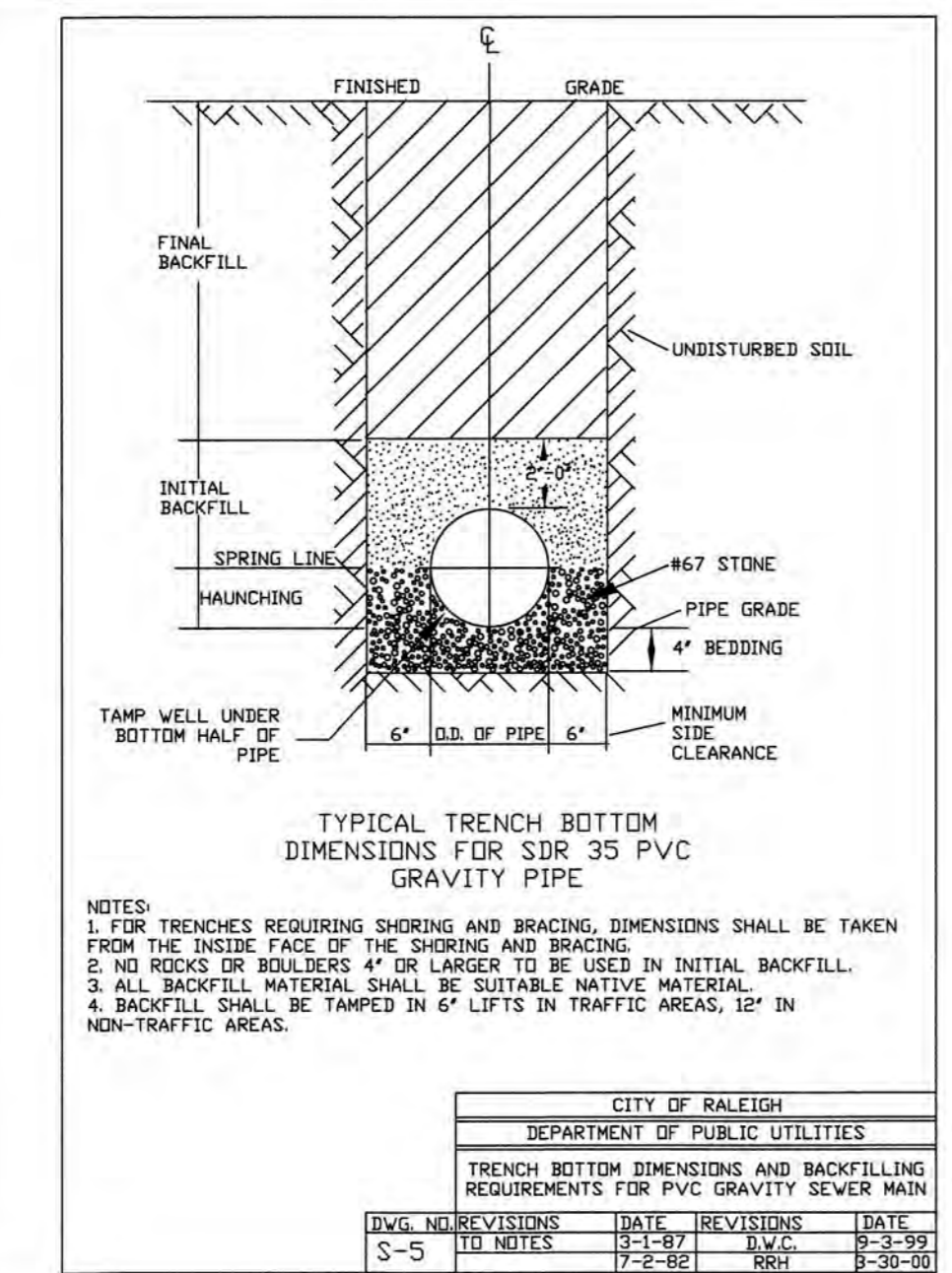
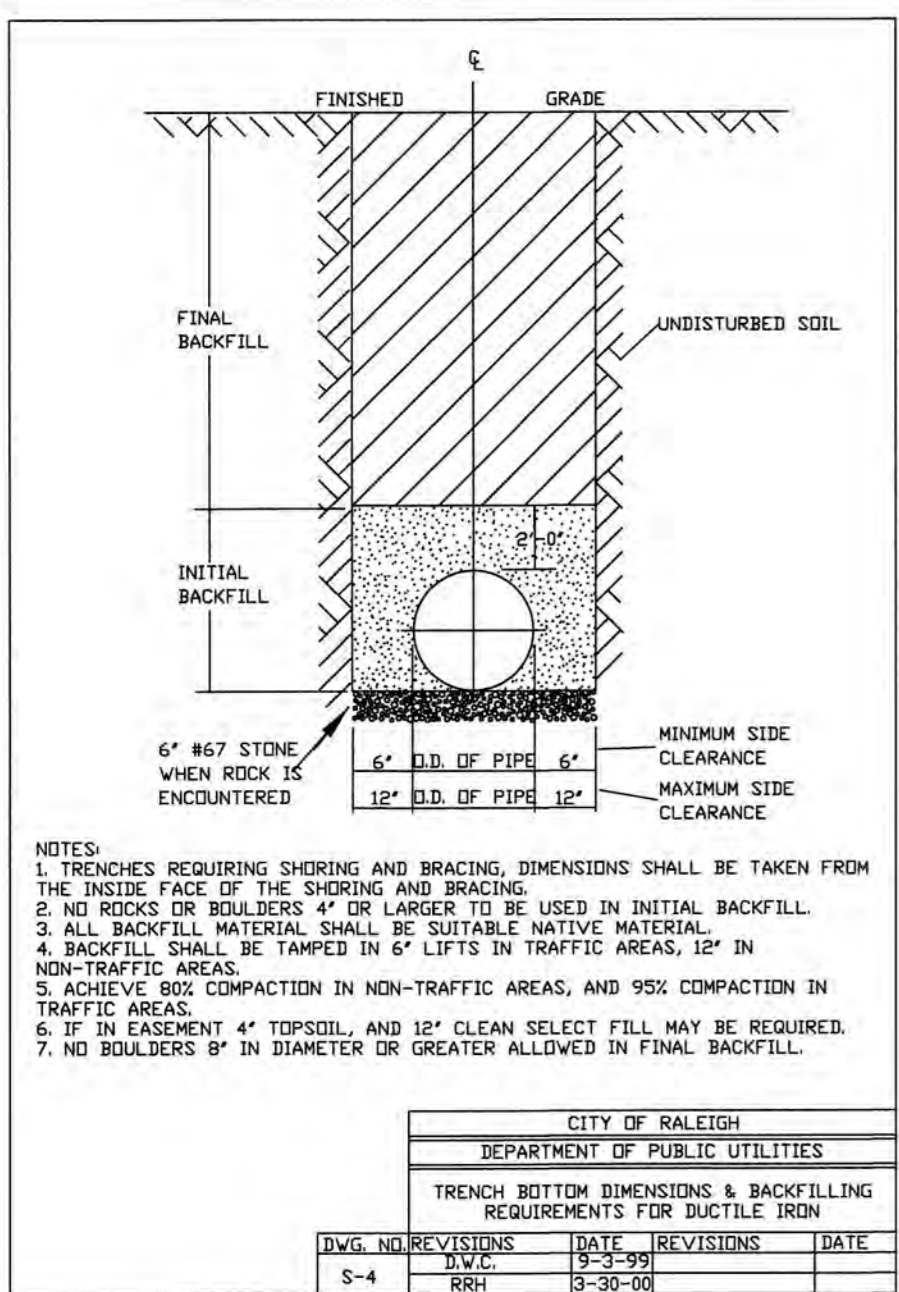
JOHN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: **John** DATE: **4-19-18**
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: **John** DATE: **8-10-18**
ADMINISTRATOR

Sheet No. **8.4**



CITY OF RALEIGH
ALL CONSTRUCTION MUST BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL RULES AND REGULATIONS.
TRANSPORTATION-SERVICES N/A
PUBLIC UTILITIES **ETH 4/30/18**
STORMWATER N/A
PLANNING N/A
FIRE N/A
URBAN-FORESTRY N/A

TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.
BY: **S. McMill** DATE: **4-19-18**
DEVELOPMENT SERVICES ENGINEER
THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
BY: **S. McMill** DATE: **8-16-18**
ADMINISTRATOR



KNIGHTDALE STATION R-7 : INTERNAL STREETSCAPE PLANT SCHEDULE 09.07.16

PLANT TYPE	QTY	KEY	BOTANICAL NAME	COMMON NAME	ROOT	SIZE	HEIGHT	NOTES
CANOPY STREET TREES	23	GBA	Ginkgo biloba 'Autumn Gold'	Autumn Ginkgo	B&B	2"	8'	MATCHED, 40' O.C.
	27	PCH	Platanus chinensis	Chinese Platanus	B&B	2"	8'	MATCHED, 40' O.C.
	43	LPA	Ulmus parvifolia 'Allee'	Allee Lacebark Elm	B&B	2"	8'	MATCHED, 40' O.C.
	48	QUA	Quercus acutissima	Sawtooth Oak	B&B	2"	8'	MATCHED, 40' O.C.
	32	ZSM	Zelkova serrata 'ZSFKF'	Myriam Japanese Zelkova	B&B	2"	8'	MATCHED, 40' O.C.

KNIGHTDALE STATION R-7 : CAROLINIAN AVENUE MEDIAN PLANT SCHEDULE 09.07.16

PLANT TYPE	QTY	KEY	BOTANICAL NAME	COMMON NAME	ROOT	SIZE	HEIGHT	NOTES
UNDERSTORY TREES	15	LIM	Lagerstromia indica 'Muskogee'	Muskogee Crape Myrtle	B&B	1 1/4"	6' min.	MATCHED
	10	PSO	Prunus serrulata 'Okame'	Okame Cherry	B&B	1 1/4"	6' min.	MATCHED
SHRUBS & GROUNDCOVER	30	AGC	Abelia x grandiflora 'Confetti'	Confetti Glossy Abelia	CONT.	3 Gal	18" min.	39" O.C.
	20	JHH	Juniperus horizontalis 'Hagedorn'	Good Vibrations Juniper	CONT.	3 Gal	18" min.	48" O.C.
	21	LCC	Loropetalum chinense 'Crimson Fire'	Crimson Fire Chinese Witchhazel	CONT.	3 Gal	18" min.	39" O.C.
	60	PAH	Pennisetum alopecuroides 'Hamelii'	Hamelii Fountain Grass	CONT.	3 Gal	18" min.	24" O.C.

KNIGHTDALE STATION R7: LANDSCAPE YARD & TREE REPLACEMENT PLANT SCHEDULE 09.07.16

PLANT TYPE	QTY	KEY	BOTANICAL NAME	COMMON NAME	ROOT	SIZE	HEIGHT	NOTES
CANOPY TREES	19	CDO	Cedrus deodara	Deodar Cedar	B&B	2"	8-10'	MATCHED
	27	MGG	Magnolia grandiflora 'Greenback'	Greenback So. Magnolia	B&B	2"	8-10'	MATCHED
	21	ADM	Acer rubrum 'October Glory'	October Glory Maple	B&B	2 1/2"	12-14'	MATCHED
	23	LSR	Liquidambar styraciflua 'Rotundiloba'	Fruitless Sweetgum	B&B	2 1/2"	12-14'	MATCHED
	19	QUS	Quercus shumardii	Shumard Oak	B&B	2 1/2"	12-14'	MATCHED
	27	LTU	Liriodendron tulipifera	Tulip Poplar	B&B	2 1/2"	12-14'	MATCHED
	29	PTD	Pinus taeda	Loblolly Pine	B&B	2 1/2"	12-14'	MATCHED
	80	ICH	Ilex crenata 'Chesapeake'	Chesapeake Holly	CONT.	3 Gal	18"-24"	MATCHED, 3' O.C.
	77	PLC	Prunus laurocerasus 'Compacta'	Dwarf English Laurel	CONT.	3 Gal	18"-24"	MATCHED, 3' O.C.
	79	JSG	Juniperus chinensis 'Sea Green'	Sea Green Juniper	CONT.	3 Gal	18"-24"	MATCHED, 3' O.C.
	82	BTR	Berberis thunbergii 'Rose Glow'	Rose Glow Barberry	CONT.	3 Gal	18"-24"	MATCHED, 3' O.C.

- GENERAL LANDSCAPE NOTES**
- TREE PROTECTION FENCE SHALL SURROUND ALL EXISTING PLANTINGS AND EXISTING BUFFER AREAS WHERE APPLICABLE AND SHALL BE MAINTAINED UNTIL ALL SITE WORK IS COMPLETE. THE FENCE SHALL BE REMOVED PRIOR TO THE FINAL SITE INSPECTION FOR THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY.
 - WHERE EXISTING OR PROPOSED VEGETATION FAILS TO FUNCTION ADEQUATELY AS REQUIRED, THE TOWN OF KNIGHTDALE SITE INSPECTOR RESERVES THE RIGHT TO REQUIRE SUPPLEMENTAL PLANTINGS IN ADDITION TO THOSE SHOWN ON THE LANDSCAPE PLAN BASED ON ACTUAL FIELD CONDITIONS.
 - NO CHANGES TO ANY ASPECT OF THIS SITE PLAN, INCLUDING BUT NOT LIMITED TO LANDSCAPING, GRADING, BUILDING ELEVATIONS (ESPECIALLY COLOR), LIGHTING, OR UTILITIES WILL BE MADE WITHOUT THE APPROVAL OF THE TECHNICAL REVIEW COMMITTEE OF THE TOWN OF KNIGHTDALE.
 - ALL EXTERIOR SITE LIGHTING WILL BE DESIGNED TO PREVENT OFF-SITE GLARE.
 - THE SITE SHALL BE STABILIZED AND SEEDED PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY (CO).
 - ALL ABOVE GROUND UTILITY EQUIPMENT (AND FACILITIES ASSOCIATED WITH ON-SITE ELECTRIC, TELEPHONE, GAS, CABLE, OR OTHER SIMILAR UTILITY) AND ENCLOSED TRASH CONTAINMENT SHALL BE SCREENED BY THE ELEMENTS OF A TYPE B (SEMI-OPAQUE) BUFFER YARD TO A SIX (6) FEET IN HEIGHT OR THE HEIGHT OF THE UTILITY OR ENCLOSURE, WHICHEVER IS LESS.
 - ALL RIP RAP PADS, DETENTION PONDS, AND OTHER STORMWATER RELATED DEVICES SHALL BE SCREENED WITH EVERGREEN PLANTINGS TO REDUCE VISUAL IMPACT FROM OFF-SITE.
 - NO TREE SHALL BE LOCATED WITHIN TEN FEET OF A LIGHT POLE OR 12 FEET FROM ELECTRICAL TRANSFORMERS.
 - THIS PLAN IS FOR PLANTING PURPOSES ONLY. FOR INFORMATION REGARDING ROAD WORK GEOMETRY, GRADING, WALLS, UTILITIES, ETC., REFER TO THE CIVIL DRAWINGS.
 - ALL PLANTS AND PLANTING PROCEDURES SHALL MEET OR EXCEED A N.L.A. STANDARDS AS SET FORTH IN "AMERICAN STANDARD FOR NURSERY STOCK", 2004 OR LATER EDITION.
 - ALL TREES AND SHRUBS SHALL BE FULL, WELL-BRANCHED PLANTS WHICH ARE CHARACTERISTIC TO THE SPECIES.
 - ALL CANOPY TREES TO BE A MINIMUM OF 2" CALIPER AND 8' HEIGHT. ALL UNDERSTORY TREES 1 1/2" CALIPER, 6' HEIGHT AND SHRUBS 18", 3 GAL. CONTAINER AT TIME OF INSTALLATION.
 - NO FENCING SHALL BE PLACED WITHIN BUFFER AREAS UNLESS INSTALLED AT ONE TIME FOR THE ENTIRE LENGTH OF THE BUFFER OR STREET SCAPE. NEITHER INDIVIDUAL LOT OWNERS NOR THE H.O.A. SHALL INSTALL FENCES IN A PIECEMEAL FASHION. PRIOR TO PLACING A FENCE IN A BUFFER OR STREETSCAPE, THE FENCE SHALL BE SUBMITTED TO AND APPROVED BY THE TOWN OF KNIGHTDALE.
 - PLANT MATERIAL LOCATED WITHIN A REQUIRED SIGHT DISTANCE MAINTENANCE EASEMENT SHALL BE MAINTAINED AT A HEIGHT LESS THAN 24 INCHES OR LIMBED UP TO A MINIMUM HEIGHT OF SIX FEET.
 - ALL PLANT BEDS TO BE MULCHED WITH A MINIMUM OF 3" OF CLEAN PINE STRAW OR SHREDDED HARDWOOD BARK AT THE DISCRETION OF THE DEVELOPER. ALL PLANT GROUPINGS SHALL BE MULCHED AS ONE BED.
 - RESIDENTIAL LANDSCAPING:
 - EACH SINGLE-FAMILY OR DUPLEX LOT SHALL CONTAIN A MINIMUM OF ONE (1) CANOPY TREE FOR EACH TWO THOUSAND (2,000) SQUARE FEET OF LOT AREA OR FRACTION THEREOF UP TO 20,000 SQUARE FEET IN LOT AREA. ANY PORTION OF THE RESIDENTIAL LOT OCCUPIED BY A RECORDED UTILITY EASEMENT SHALL NOT BE INCLUDED AS PART OF THE TOTAL LOT AREA. THE LOCATION OF PLANTING TO ACCOUNT FOR PHYSICAL CONDITIONS MAY BE ADJUSTED BY THE ADMINISTRATOR.
 - THE USE OF EXISTING TREES MEETING THE FOLLOWING STANDARDS TO SATISFY THIS REQUIREMENT IS ENCOURAGED. EXISTING LARGE SHADE TREES OVER SIX (6) INCHES IN CALIPER AS MEASURED AT DBH (DIAMETER BREST HEIGHT) MAY BE COUNTED TOWARDS FULFILLING THIS REQUIREMENT.
 - REQUIRED STREET TREES MAY NOT BE COUNTED TOWARDS THE FULFILLMENT OF THIS RESIDENTIAL LANDSCAPING REQUIREMENT. APART FROM REQUIRED STREET TREES, ALL OTHER TREES REQUIRED UNDER THIS CHAPTER SHALL BE PLANTED WITHIN THE PRIVATE LOT.
 - A LIGHTING PLAN SHALL BE SUBMITTED BY THE UTILITY PROVIDER TO KNIGHTDALE DEVELOPMENT SERVICES FOR APPROVAL PRIOR TO THE INSTALLATION OF ALL REQUIRED LIGHTING. THE LIGHTING PLAN SHALL DESIGNATE THE PROPOSED LOCATION OF ALL LIGHT POLES AND SHALL BE IN COMPLIANCE WITH SECTIONS 8.10 AND 16.88 AS WELL AS CHAPTER 11 OF THE TOWN OF KNIGHTDALE UDO. IF A PROPOSED LIGHT POLE LOCATION SHOULD PRESENT A CONFLICT WITH EXISTING OR PROPOSED VEGETATION ACCORDING TO THE APPROVED CONSTRUCTION DRAWINGS, THE LANDSCAPING PLAN SHALL BE REVISED TO COMPLY WITH THE TOWN OF KNIGHTDALE UDO REQUIREMENTS. ALL REVISIONS ARE SUBJECT TO TOWN OF KNIGHTDALE APPROVAL.

- KNIGHTDALE UDO REQUIREMENTS**
- STREET TREE PLANTINGS
- CANOPY TREES SHALL BE INSTALLED AT A MINIMUM AVERAGE DISTANCE OF 40 FEET ON CENTER IN A PLANTING STRIP MINIMUM OF FIVE FEET IN WIDTH, WHERE OVERHEAD UTILITIES EXIST PRIOR TO DEVELOPMENT, AND ARE IN CONFLICT WITH PROPOSED CANOPY TREES, UNDERSTORY TREES MAY BE SUBSTITUTED WITH APPROVAL.
 - IF UNDERSTORY TREES SUBSTITUTED, THEY HAVE TO BE PLANTED 20 FEET ON CENTER AND SPECIES SHALL BE APPROVED BY THE TOWN OF KNIGHTDALE PRIOR TO INSTALLATION.
 - STREET TREES SHALL BE PLACED AT LEAST 10 FEET FROM LIGHT POLES AND 12 FEET FROM ELECTRICAL TRANSFORMERS.
 - STREET TREES SHALL BE DECIDUOUS HARDWOODS.
 - ANY ABOVE GROUND UTILITIES HAVE TO BE SCREENED IN ACCORDANCE WITH UDO SECTION 8.7.

MINIMUM PLANTING REQUIREMENTS

TOTAL LENGTH OF BUFFER = 2,213 L.F.

TREE REPLACEMENT QUANTITY CALCULATIONS REFER TO SHEET 20 OVERALL SITE PLAN FOR TREE REPLACEMENT CALCULATIONS.

TOTAL TREE REPLACEMENT REQUIRED = 195

40% EVERGREEN PROVIDED = 99

60% DECIDUOUS PROVIDED = 99

- ALL BERMS SHALL NOT EXCEED:**
- A SLOPE WITH MAXIMUM RISE OF ONE (1) FOOT TO A RUN OF THREE (3) FEET.
 - A MAXIMUM HEIGHT OF FOUR (4) FEET AND A MINIMUM TOP OF BERM WIDTH OF TWO (2) FEET.
 - BERMS SHALL BE STABILIZED WITH A GROUND COVER OR OTHER SUITABLE VEGETATION OR PERMANENT SLOPE RETENTION DEVICE.
 - BERMS TALLER THAN FOUR (4) FEET SHALL BE APPROVED BY THE ADMINISTRATOR ON A CASE BY CASE BASIS, BUT SHALL CONFORM TO THE SLOPE AND WIDTH RESTRICTIONS AS PREVIOUSLY DETAILED.

CITY OF RALEIGH

ALL CONSTRUCTION MUST BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL RULES AND REGULATIONS.

TRANSPORTATION SERVICES: N/A

PUBLIC UTILITIES: E.H. 4/30/18

STORMWATER: N/A

PLANNING: N/A

FIRE: N/A

URBAN FORESTRY: N/A

TOWN CERTIFICATION, THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

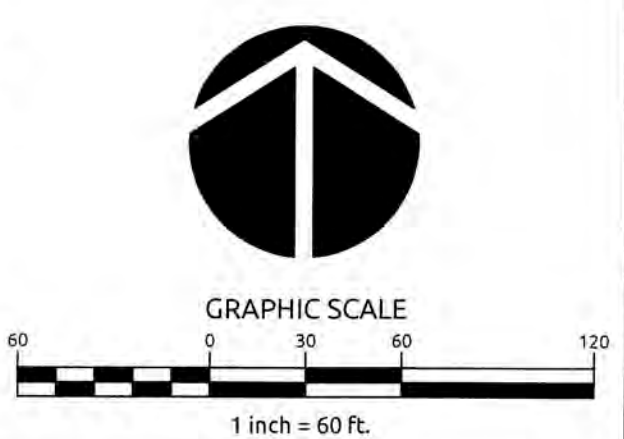
BY: [Signature] DATE: 4-19-18

DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: [Signature] DATE: 8-16-18

ADMINISTRATOR



WithersRavenel
Engineers | Planners | Surveyors

115 MackKnan Drive, Cary, NC 27511 | 919.469.3340 | license # C-0832 | www.withersravenel.com

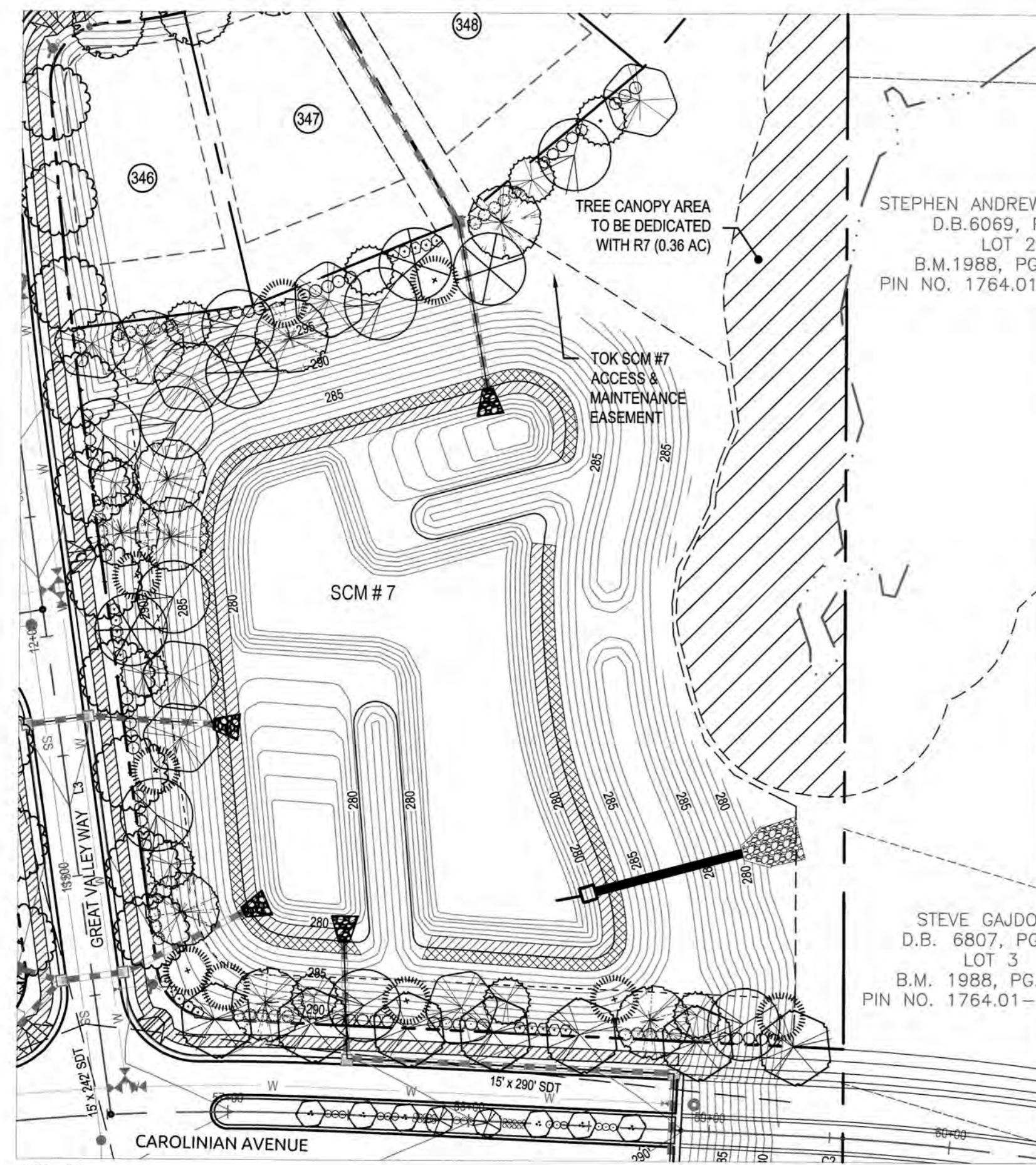
KNIGHTDALE STATION R7 (SECTION A, B & C)

LANDSCAPE PLAN

Job No. 02090251.91 Drawn By CED
Date 06/21/16 Designer JCI

Revisions:
1 TOK Comments 09/07/16
2 TOK Comments 12/08/17
3 TOK Comments 04/06/18

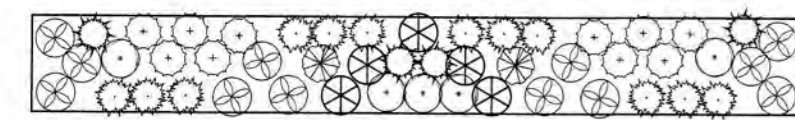
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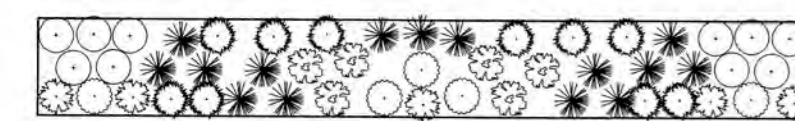
STEPHEN ANDREW
D.B. 6069, P
LOT 2
B.M. 1988, PG.
PIN NO. 1764-01

STEVE GAJDO
D.B. 6807, PG
LOT 3
B.M. 1988, PG.
PIN NO. 1764-01

SCM #7
SCALE 1" = 50'



TYPICAL WETLAND SHALLOW WATER HERBACEOUS PLANTING DETAIL (SCM #7)
(+/- 200 S.F.) NTS



TYPICAL WETLAND SHALLOW LAND HERBACEOUS PLANTING DETAIL (SCM #7)
(+/- 200 S.F.) NTS

PLANT TYPE	QTY	BOTANICAL NAME	COMMON NAME	ROOT	CALIPER	NOTES
HERBACEOUS	119	Azorus calamus	Sweet Flag	CONT.	1 Gal.	24" O.C.
	79	Azorus calamus 'Variegata'	Variegated Sweet Flag	CONT.	1 Gal.	24" O.C.
	79	Peltandra virginica	Arrow arum	CONT.	1 Gal.	24" O.C.
	238	Pontedericia cordata	Pickersweed	CONT.	4" Pot.	24" O.C.
	79	Sagittaria arifolia	Broadleaf Arrowhead	CONT.	1 Gal.	24" O.C.
	80	Saururus cernuus	Lizard's tail	CONT.	4" Pot.	24" O.C.
119	Scheuchzeria palustris	Solstem Butah	CONT.	4" Pot.	24" O.C.	

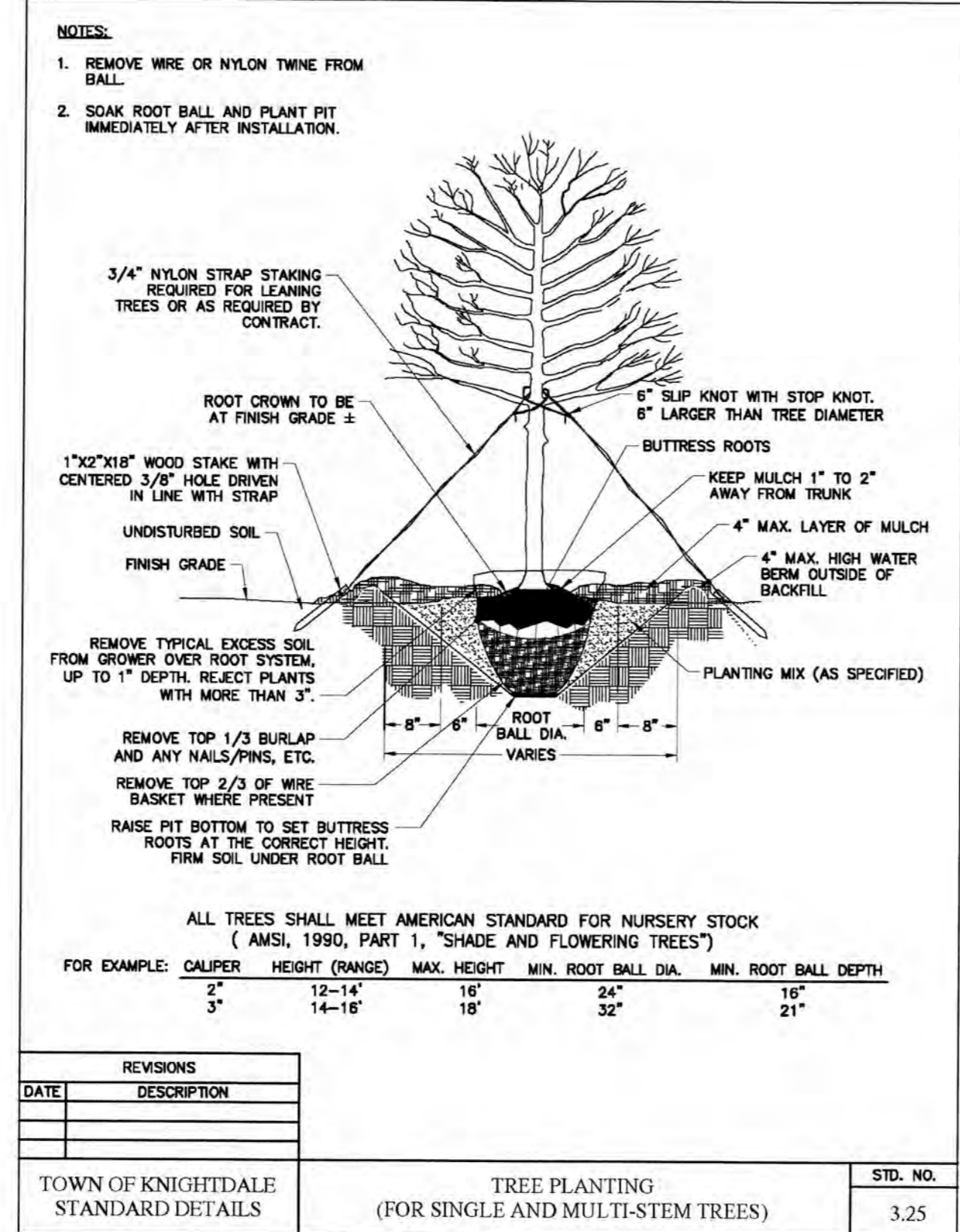
PLANT TYPE	QTY	BOTANICAL NAME	COMMON NAME	ROOT	CALIPER	NOTES
HERBACEOUS	169	Carex stricta	Tussock Sedge	CONT.	4" Pot.	24" O.C.
	125	Iris versicolor	Northern Blue Flag Iris	CONT.	4" Pot.	24" O.C.
	125	Iris virginica	Southern Blue Flag Iris	CONT.	4" Pot.	24" O.C.
	169	Juncus effusus	Soft Rush	CONT.	4" Pot.	24" O.C.
	125	Lobelia cardinalis	Cardinal Flower	CONT.	4" Pot.	24" O.C.
	125	Scirpus opeffimus	Woolgrass	CONT.	1 Gal.	24" O.C.

SHALLOW WATER (NORMAL POOL TO 6" BELOW) = 3,169 SF
VEGETATION REQUIRED: 50 HERB. PLANTS / 200 SF = 793 PLANTS
VEGETATION PROVIDED: 793 PLANTS

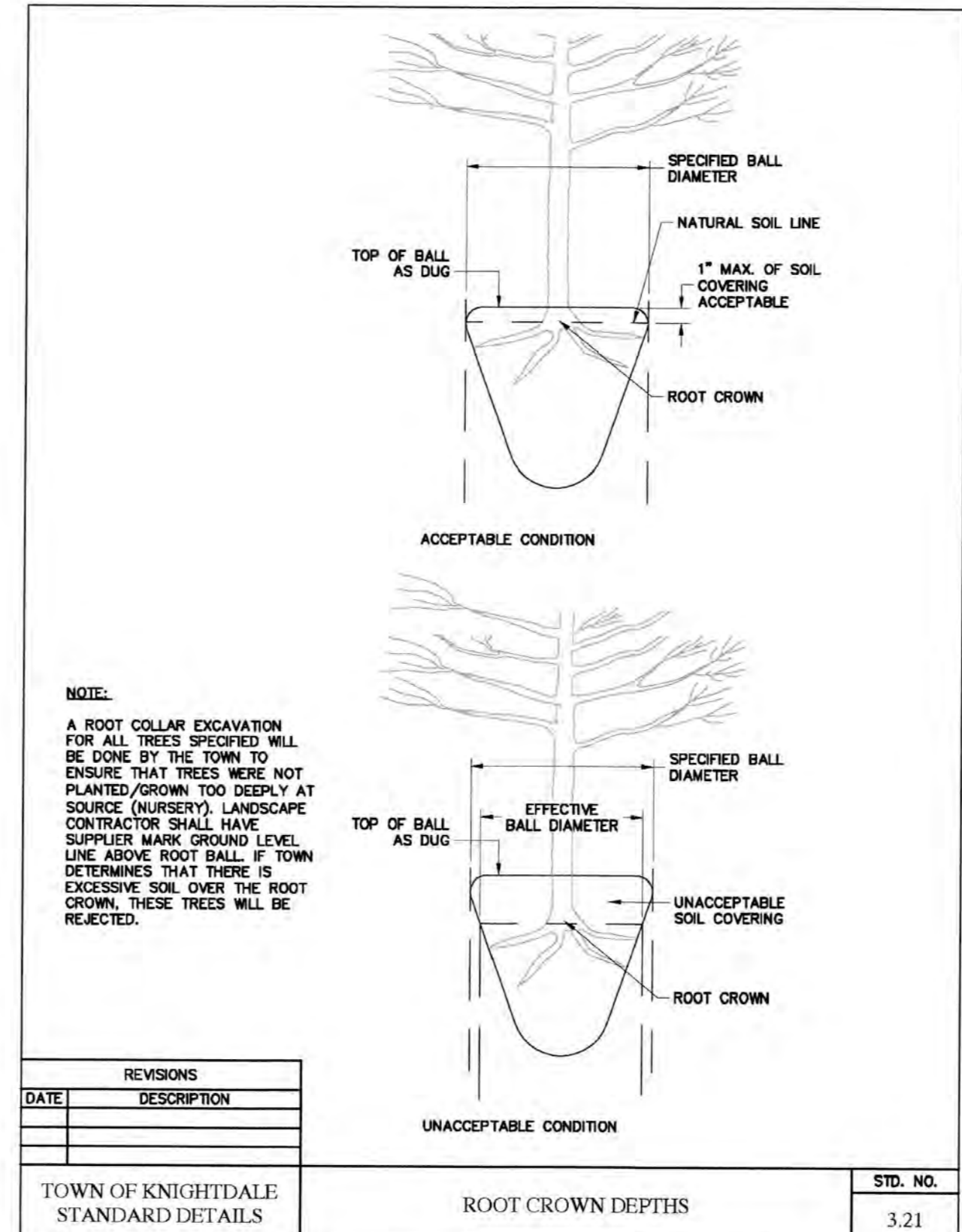
SHALLOW LAND (NORMAL POOL TO 6" ABOVE) = 3,352 SF
REQUIRED VEGETATION: 50 HERB. PLANTS / 200 SF = 838 PLANTS
VEGETATION PROVIDED: 838 PLANTS

NOTES (NCDWQ BMP MANUAL SECTION 6.6.2 (2007)):
PLANTING AND AFTER CARE
IN GENERAL, FALL AND WINTER ARE OPTIMAL FOR PLANTING IN NORTH CAROLINA. THERE ARE SOME EXCEPTIONS. SHALLOW WATER PLANTS SHOULD BE INSTALLED BETWEEN APRIL 1 AND JULY 15 IN NORTH CAROLINA. WINTER PLANTING IS DIFFICULT WITH SHALLOW WATER PLANTS.

ALL UPLAND SLOPES OF THE BMP SHALL BE SEEDED WITH GRASS OR WILDFLOWER SEED. THE USE OF PESTICIDES AND FERTILIZERS SHALL BE MINIMIZED OR ELIMINATED. A ONE TIME APPLICATION OF FERTILIZER IS ALLOWABLE TO HELP ESTABLISHMENT. THE DESIGN OF THE PLANTINGS SHALL MINIMIZE THE NEED FOR HERBICIDES, FERTILIZERS, PESTICIDES, OR SOIL AMENDMENTS.



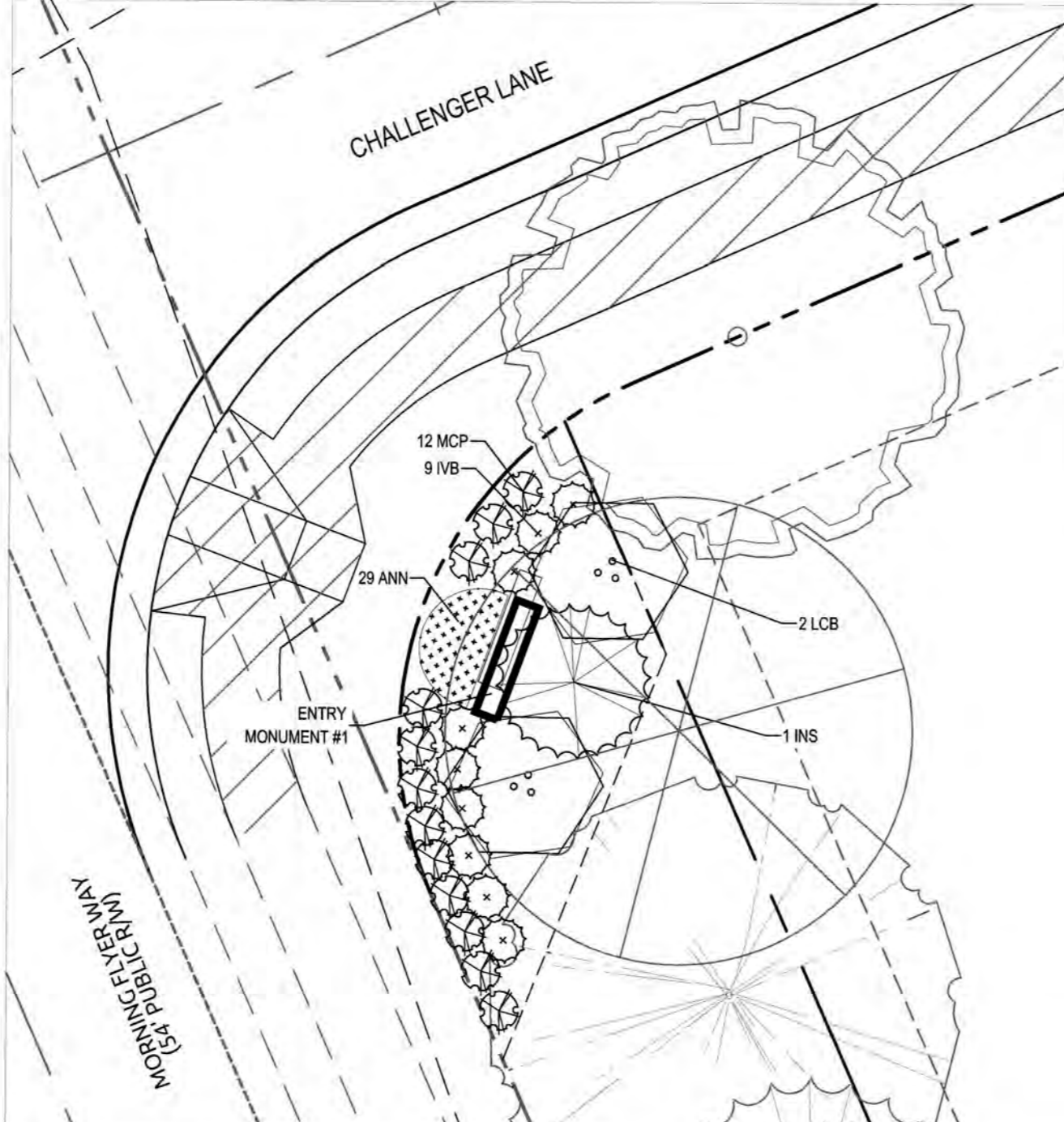
REVISIONS	DATE	DESCRIPTION	STD. NO.
TOWN OF KNIGHTDALE STANDARD DETAILS		TREE PLANTING (FOR SINGLE AND MULTI-STEM TREES)	3.25



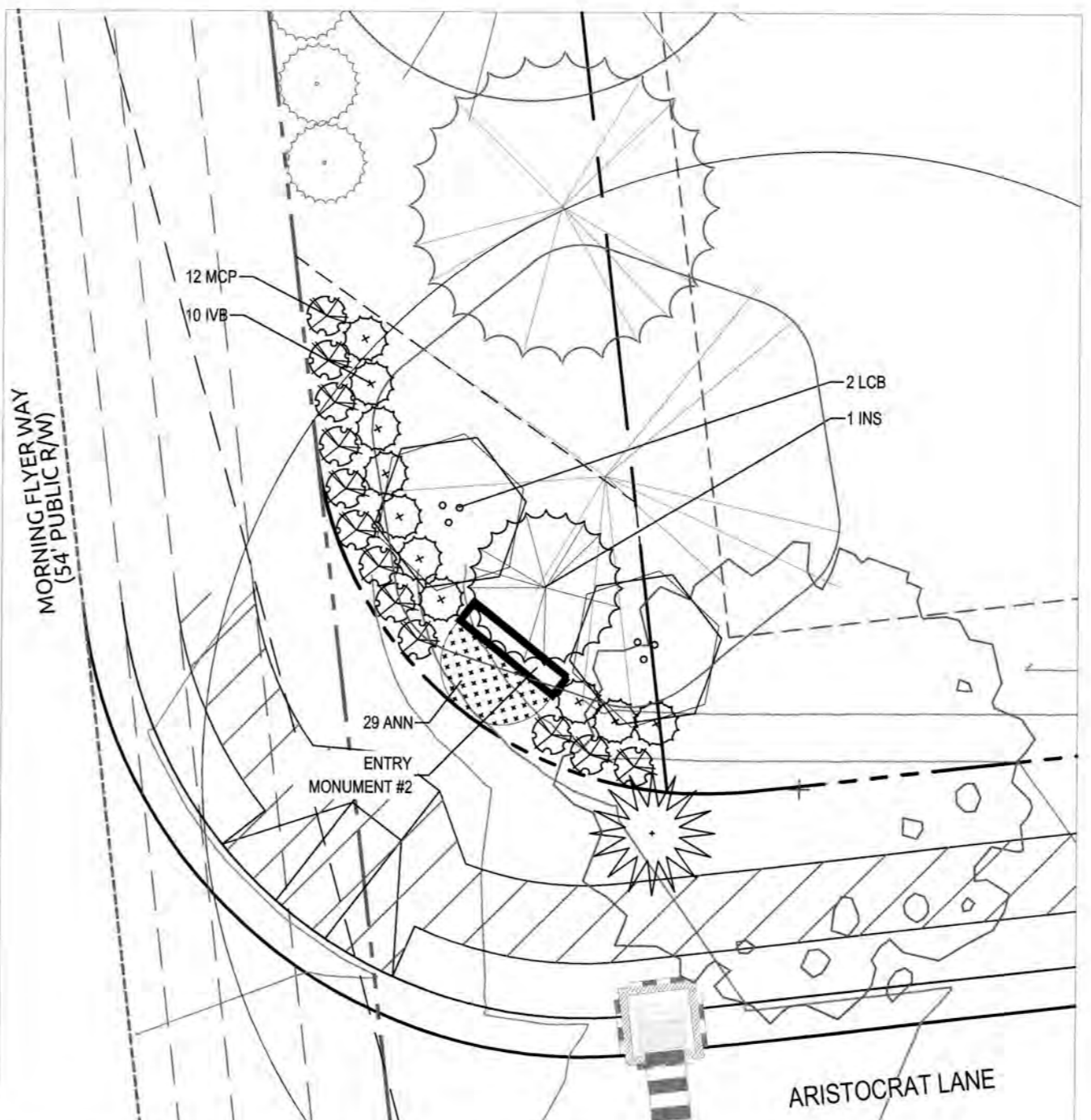
REVISIONS	DATE	DESCRIPTION	STD. NO.
TOWN OF KNIGHTDALE STANDARD DETAILS		ROOT CROWN DEPTHS	3.21

SEEDING SCHEDULE		
MAXIMUM SLOPE 3:1		
SEEDING PERIOD	SEEDING TYPE	APPLICATION RATE (LBS/ACRE)
AUGUST 15 - NOVEMBER 01	TALL FESCUE	300
NOVEMBER 01 - MARCH 01	TALL FESCUE AND ABRUZZI RYE	300
MARCH 01 - APRIL 15	TALL FESCUE	25
APRIL 15 - JUNE 30	HULLED COMMON BERMUDAGRASS	300
JULY 01 - AUGUST 15	*BROWNTOP MILLET OR *SORGHUM-SUDAN HYBRIDS	25
SLOPES 2:1 TO 3:1		
MARCH 01 - JUNE 01	SERICEA LESPEDEZA (SCARIFIED) AND	50
MARCH 01 - APRIL 15	TALL FESCUE OR	120
MARCH 01 - JUNE 30	WEEPING LOVEGRASS OR HULLED COMMON BERMUDAGRASS	10
JUNE 01 - SEPTEMBER 01	*TALL FESCUE AND *BROWNTOP MILLET OR *SORGHUM-SUDAN HYBRIDS	25
SEPTEMBER 01 - MARCH 01	SERICEA LESPEDEZA (UNHULLED, USCARIFIED) AND TALL FESCUE OR	30
NOVEMBER 01 - MARCH 01	ABRUZZI RYE	70
		120
		25

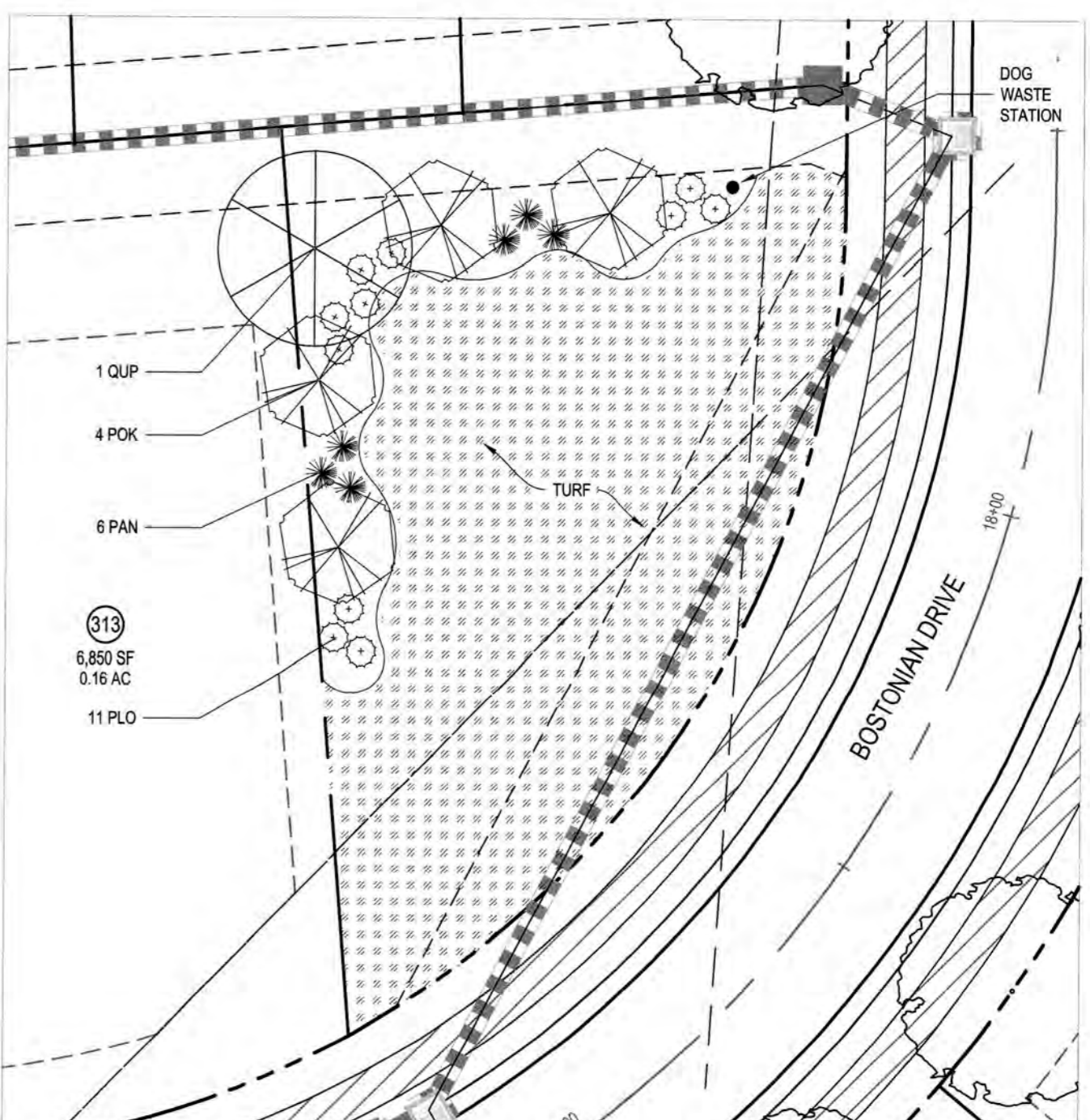
REVISIONS	DATE	DESCRIPTION	STD. NO.
TOWN OF KNIGHTDALE STANDARD DETAILS		SEEDING SCHEDULE	2.01



ENTRY MONUMENT #1
SCALE 1" = 10'



ENTRY MONUMENT #2
SCALE 1" = 10'



OPEN SPACE DETAIL LANDSCAPE PLAN
SCALE 1" = 20'

PLANT TYPE	QTY	KEY	BOTANICAL NAME	COMMON NAME	ROOT	SIZE	HEIGHT	NOTES
SHRUBS & GROUND COVER	2	INS	Ilex x 'Nellie R. Stevens'	Nellie Stevens Holly	B&B	2'	8'-10'	MATCHED
	4	LCB	Lagerstromia indica 'Carolina Beauty'	Carolina Beauty Crape Myrtle	B&B	2'	8'-10'	MATCHED
	19	IVB	Ilex vomitoria 'Bordeaux'	Bordeaux Dwarf Yaupon Holly	CONT.	3 Gal.	18'-24"	36" O.C.
	58		Seasonal Color	Annual Plantings	CONT.	Flat	12" O.C. (1,15)	
GRASSES	24	MCP	Muhlenbergia capillaris	Pink Muly Grass	CONT.	3 Gal.	18'-24"	MATCHED; 3' O.C.

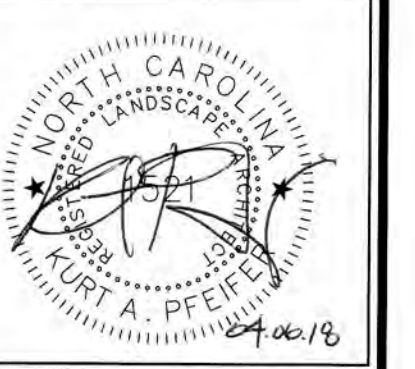
PLANT TYPE	QTY	KEY	BOTANICAL NAME	COMMON NAME	ROOT	SIZE	HEIGHT	NOTES
SHRUBS & GROUND COVER	1	QUP	Quercus prinus	Willow Oak	B&B	2 1/2'	12'-14'	MATCHED
	4	POK	Prunus serotina 'Okame'	Okame Cherry	B&B	2'	8'-10'	MATCHED
	11	PLO	Prunus laurocerasus 'Otto Luken'	Otto Luken laurel	CONT.	3 Gal.	18'-24"	MATCHED; 3' O.C.
	6	PAN	Pennisetum alopecuroides 'Hameln'	Hameln Fountain Grass	CONT.	3 Gal.	18'-24"	MATCHED; 3' O.C.

CITY OF RALEIGH
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TRANSPORTATION-SERVICES N/A
PUBLIC UTILITIES - E.R. 4/30/18
STORMWATER - N/A
PLANNING - N/A
FIRE - N/A
URBAN-FORESTRY - N/A

TOWN CERTIFICATION. THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.
BY: [Signature] DATE: 4.19.18
DEVELOPMENT SERVICES ENGINEER
THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
BY: [Signature] DATE: 6.16.18
ADMINISTRATOR



Job No. 02090251.91 Drawn By CED
Date 06/21/16 Designer JCI



Revisions	1	2	3
TOK Comments	09/07/16		
TOK Comments	12/08/17		
TOK Comments	04/06/18		