

CONSTRUCTION DRAWINGS FOR POPLAR CREEK VILLAGE PHASE IV

KNIGHTDALE, NC

FIRST SUBMITTAL: AUGUST 14, 2020
SECOND SUBMITTAL: OCTOBER 02, 2020
TOK PROJECT #ZMA-7-19

***STREET NAME APPLICATION HAS BEEN SUBMITTED AND IS AWAITING APPROVAL

PROJECT TIMELINE

PROJECTED SUBDIVISION COMPLETION DATE	NOVEMBER 2021
PROJECTED FIRST OCCUPANCY DATE	MARCH 2022
ANTICIPATED COMPLETION OF UNITS BY YEAR	2022: 30 2023: 25

SITE DATA

KNIGHTDALE PROJECT NO.	ZMA-7-19
PARCEL PIN NO.	1743822316
PARCEL AREA (ACRES)	17.49
EXISTING ZONING	RT
PROPOSED ZONING	GR3-PUD
EXISTING USE	OPEN LAND
PROPOSED USE	SINGLE FAMILY
PROPOSED DENSITY (UNITS/ACRE)	3.14
PROPOSED NUMBER OF UNITS	55
TYPICAL	
LOT WIDTH (FRONT LOAD)	57 FT
LOT WIDTH (REAR LOAD)	n/a
LOT AREAS	
MINIMUM LOT AREA PROVIDED	6180 SF
MEDIAN LOT AREA PROVIDED	7438 SF
AVERAGE LOT AREA PROVIDED	8038 SF
RECREATIONAL OPEN SPACE	
ACTIVE	0.65 AC
PASSIVE	0.82 AC
SETBACKS	
FRONT	10
SIDE	6
REAR	25
MINIMUM DRIVEWAY LENGTH	35

INFRASTRUCTURE DATA

AREA [AC]	UNITS [TOTAL]	STREETS [LF]	30" CURB & GUTTER [LF]	SIDEWALK [LF]	6" WATER MAIN [LF]	8" WATER MAIN [LF]	12" WATER MAIN [LF]	STORM DRAINAGE [LF]	8" SEWER MAIN [LF]	SEWER FLOW [GPD]
17.49	55	2,416	5,065	5,130	-	2,787	-	3,066	2,267	13,750

APPROVED ALTERNATIVE DESIGN STANDARDS

THIS PROJECT WAS APPROVED WITH THE FOLLOWING DEVIATIONS FROM THE TOWN OF KNIGHTDALE TYPICAL STANDARDS.

DESIGN ELEMENT	TYPICAL MINIMUM STANDARD	PROPOSED MINIMUM STANDARD	JUSTIFICATION / COMMENTS
MINIMUM LOT WIDTH FOR FRONT-LOAD DWELLINGS	80'	57'	THIS DEVIATION IS NEEDED IN ORDER TO MAINTAIN CONSISTENCY WITH THE EXISTING PHASES OF POPLAR CREEK VILLAGE.
CONNECTIVITY INDEX / RATIO	1.4	1.0	MINIMUM CONNECTIVITY INDEX REQUIREMENTS ARE INTENDED TO PROVIDE FOR GOOD INTERCONNECTIVITY AND REDUCE THE NUMBER CUL-DE-SACS. THIS PROJECT INCLUDES ONLY TWO (2) NEW SUBDIVISION STREETS, ONE OF WHICH HAS CONNECTIONS AT EACH END. A RATIO OF 1.4 IS DIFFICULT TO ACHIEVE ON SMALL-SCALE PROJECTS SUCH AS THIS ONE DUE TO THE FACT THAT THE REQUIRED NODES AT EACH EXTERNAL CONNECTION RESULT HAVE A MORE NEGATIVE IMPACT ON THE RATIO THAN WOULD A LARGER PROJECT. THIS DEVIATION IS NEEDED IN ORDER TO PROVIDE CONNECTIVITY TO THE EXTENT PRACTICAL GIVEN THE SIZE OF THE PROJECT.
MASS GRADING COMPLIANCE			THIS PROJECT WILL BE MASS-GRADED INCLUDING THE RESIDENTIAL BUILDING LOTS. PER UDO SECTION 6.2.B.3.A. RESIDENTIAL SUBDIVISIONS WITH LOTS LESS THAN 60' WIDE ARE EXEMPT FROM THE RESIDENTIAL CLEARING AND GRADING REQUIREMENTS OF SECTION 6.2.B. THIS PROJECT IS A RESIDENTIAL SUBDIVISION WITH LOTS LESS THAN 60' WIDE; THEREFORE, SECTION 6.2.B DOES NOT APPLY.

WATER ALLOCATION

POPLAR CREEK VILLAGE - PHASE IV WATER ALLOCATION FOR THIS PROJECT IS PROVIDED VIA PRIOR UTILITY ALLOCATION AGREEMENT FOR POPLAR CREEK VILLAGE PHASES 1 - 3

CONTACT LIST

PERSON TO CONTACT REGARDING STAFF COMMENTS OR QUESTIONS:
BRAD HART, PROJECT MANAGER
WITHERSRAVENEL, INC.
115 MACKENAN DRIVE, CARY, NC 27511
TELEPHONE: (919) 469-3340
bhart@withersravenel.com

DEVELOPER/OWNER

BLACKRIDGE PROPERTIES, LLC
414 FORSYTH STREET
RALEIGH, NC 27609

ATTN: STUART POULSEN
TELEPHONE: (919) 624-5458
EMAIL: stuartpoulsen@gmail.com

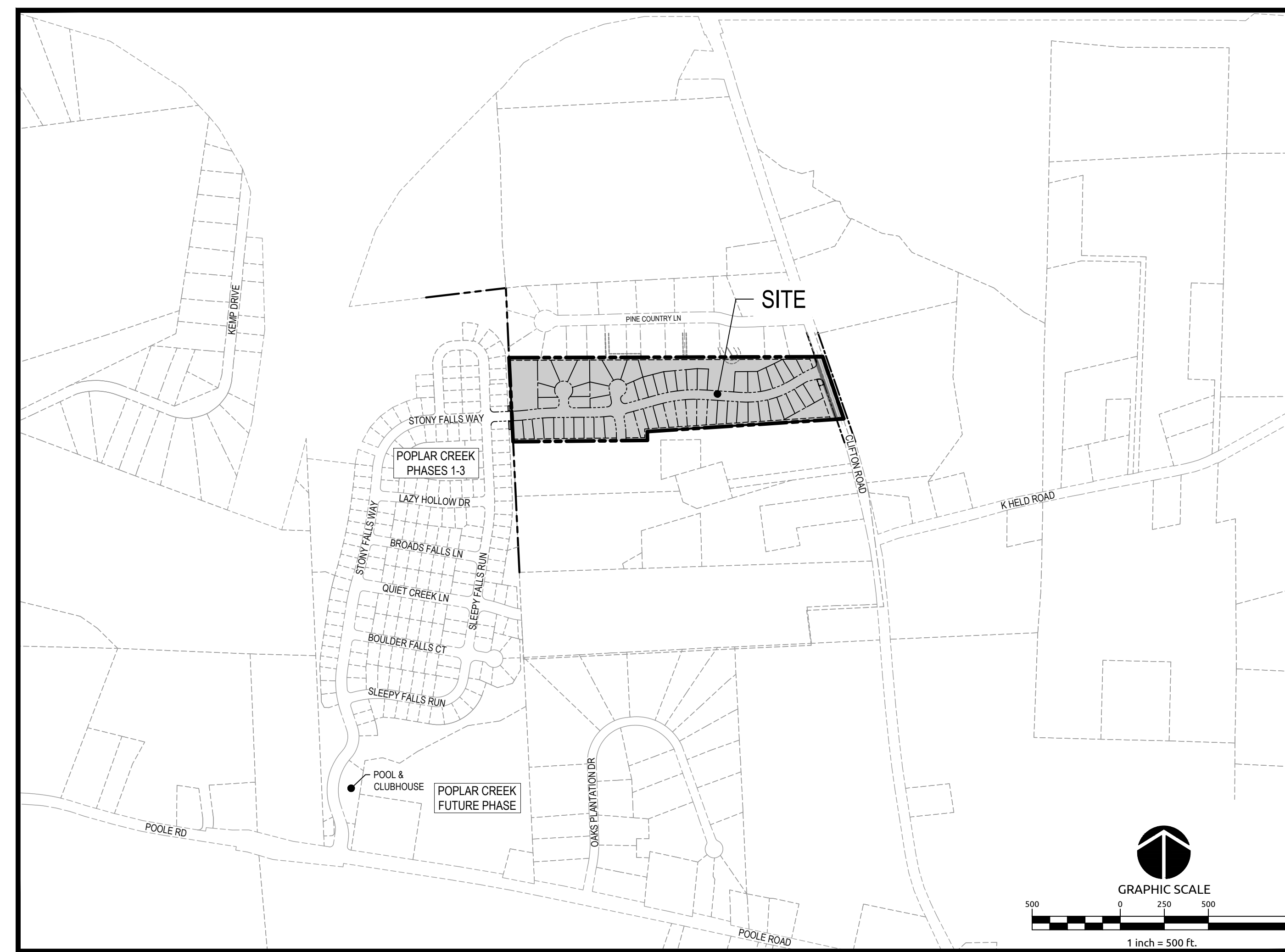
PREPARED BY:

WithersRavenel
Engineers | Planners | Surveyors

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

INDEX OF SHEETS

COVER	SHT 0.0
OVERALL EXISTING CONDITIONS	SHT 1.0
DEMOLITION PLAN	SHT 1.1
DEMOLITION PLAN	SHT 1.2
OVERALL SITE PLAN	SHT 2.0
SITE PLAN	SHT 2.1
SITE PLAN	SHT 2.2
PAVEMENT MARKING & SIGNAGE PLAN	SHT 2.3
PAVEMENT MARKING & SIGNAGE PLAN	SHT 2.4
OPEN SPACE & TREE CANOPY PLAN	SHT 2.5
OVERALL UTILITY PLAN	SHT 3.0
UTILITY PLAN	SHT 3.1
UTILITY PLAN	SHT 3.2
OVERALL STORM DRAINAGE PLAN	SHT 4.0
STORM DRAINAGE PLAN	SHT 4.1
STORM DRAINAGE PLAN	SHT 4.2
STORM DRAINAGE CHARTS	SHT 4.3
GRADING PLAN	SHT 5.0
GRADING PLAN	SHT 5.1
STAGE 1 - EROSION CONTROL PLAN	SHT 6.0
STAGE 2 - EROSION CONTROL PLAN	SHT 6.1
POND DRAINAGE PLAN	SHT 6.2
SCM PLAN & DETAILS	SHT 7.0
SCM RISER DETAILS	SHT 7.1
CULVERT PLAN & DETAILS	SHT 7.2
STONY FALLS WAY PLAN & PROFILE	SHT 8.0
STONY FALLS WAY & ROCKY TRAIL COURT PLAN & PROFILE	SHT 8.1
FOGGY POINT TRAIL PLAN & PROFILE	SHT 8.2
CLIFTON ROAD IMPROVEMENT PLAN	SHT 9.0
CLIFTON ROAD X-SECTIONS	SHT 9.1
ROADWAY DETAILS	SHT 10.1
WATER UTILITY DETAILS	SHT 10.2
SEWER UTILITY DETAILS	SHT 10.3
STORM DRAINAGE DETAILS	SHT 10.4
EROSION CONTROL DETAILS	SHT 10.5
NCDEQ NCG01 DETAILS	SHT 10.6
APPROVED BUILDING ELEVATIONS	SHT 11.0
OVERALL LANDSCAPE PLAN	SHT L1.0
LANDSCAPE PLAN	SHT L1.1
LANDSCAPE PLAN	SHT L1.2
LANDSCAPE DETAILS	SHT L2.0
LIGHTING PLAN	SHT SL1.0



CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

Electronic Approval: This approval is being issued electronically. This approval is valid upon the signature of a City of Raleigh Review Officer below. The City will retain a copy of the approved plans. Any work authorized by this approval must proceed in accordance with the plans kept on file with the City. This electronic approval may not be edited once issued. Any modification to the approval once issued will invalidate this approval.

City of Raleigh Development Approval _____
Raleigh Water Review Officer

SITE PERMITTING APPROVAL

Water and Sewer Permits (if applicable)
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-4727**

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-3725**

The City of Raleigh consents to the connection to its public sewer system and extension of the private sewer collection 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 # _____

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: _____ DATE: _____
TOWN ENGINEER
THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
BY: _____ DATE: _____
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 PLAT(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.

ATTENTION CONTRACTORS

The Construction Contractor responsible for the extension of water, sewer, and/or gas, as approved in these plans, is responsible for contacting the Public Utilities Department at (919) 996-5450 at least twenty-four hours prior to beginning any of their 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 Jobsite, 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.

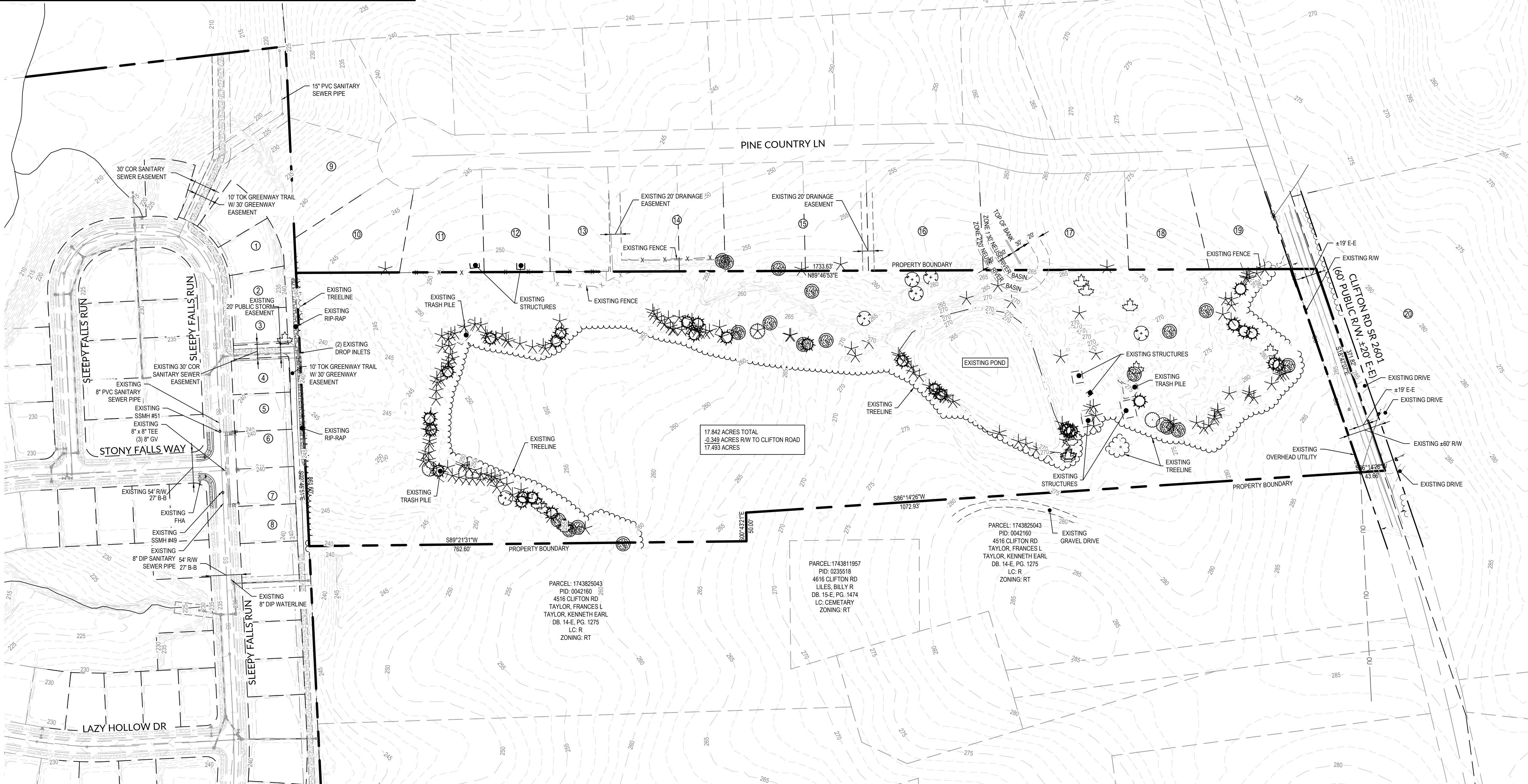
PROFESSIONAL DESIGN ENGINEER CERTIFICATION: THESE IMPROVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING DRAWINGS AND WITH THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE. I, COLLEEN BURNEY, PE, CERTIFY THAT THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE HAVE BEEN THOROUGHLY 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) _____ OF THESE DRAWINGS.

BY: _____
DATE: _____
**PRELIMINARY
NOT APPROVED FOR
CONSTRUCTION**
LEEN E. DIJK



NUMBER	PARCEL	PID	MAILING ADDRESS	OWNER INFO	DB	PG.	ZONING
1	1743721538	0458321	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	NMX
2	1743721346	0458320	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	NMX
3	1743721445	0458319	4717 SLEEPY FALLS RUN	BROWN, WILLIAM R. JR BROWN, GWENDOLYN JACKSON	017459	1868	NMX
4	1743721346	0458318	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	NMX
5	1743829392	0458398	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	NMX
**6	1743721157	0458316	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	NMX
**7	1743721157	0458315	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	NMX
8	1743721160	0458314	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	NMX
9	1743722752	099969	120 PINE COUNTRY LANE	SAULT, CAROLYN	9155	138	GR3
10	1743723622	099970	119 PINE COUNTRY LANE	MAXWELL, MICHAEL	14957	1973	GR3
11	1743724682	099965	117 PINE COUNTRY LANE	MOLINA, SALVADOR MOLINA MARIA GUEVARA	9018	1822	GR3
12	1743725684	0099966	115 PINE COUNTRY LANE	CARONZO - DIAZ, GONZALO CARONZO CASTELLANO, BLANCA ROSA ESCOB	12204	1583	GR3
13	1743727604	0099967	113 PINE COUNTRY LANE	BIRCH, HOWARD REGINALD III	12161	563	GR3
14	1743728644	0099963	111 PINE COUNTRY LANE	KEETER, JOHN	13521	705	GR3
15	1743820675	0099960	109 PINE COUNTRY LANE	SHORNOCK, JEFFERY J	13615	2130	GR3
16	1743822685	0099959	202 MACKENAN DR.	AQUA NORTH CAROLINA INC.	13547	76	GR3
17	1743825614	0099956	105 PINE COUNTRY LANE	TEUSCHER, RICHARD DALE	5233	234	GR3
18	1743827605	0099958	103 PINE COUNTRY LANE	WRIGHT, GREGORY H WRIGHT, RAFFAELA M	7211	699	GR3
19	1743828644	0099962	4500 CLIFFORD RD	NIXON, DORIS LEWTER	8399	2701	GR3
20	1743923384	0192190	4425 CLIFFORD RD	EARLY, RHONDA B	8779	502	RT

- GENERAL NOTES:**
- PROJECT BOUNDARY INFORMATION SHOWN IS BASED ON A RECORDED PLAT BY WALLACE G. CLARK, JR. - REGISTERED LAND SURVEYOR TITLED "SURVEY FOR MAMIE TODD LIES", DATED MARCH 28, 1997, AS RECORDED AT THE WAKE COUNTY REGISTER OF DEEDS, MAP BOOK 1597, PAGE 666.
 - SURROUNDING AND ADJACENT PARCEL INFORMATION IS BASED ON WAKE COUNTY GIS DATA.
 - LIMITS OF NEUSE RIPARIAN BUFFERS ARE BASED ON NCDEQ-DWR BUFFER DETERMINATION LETTER, RRO #19-328 DATED AUGUST 5TH, 2019.
 - LIMITS OF JURISDICTIONAL STREAM AND WETLANDS ARE BASED ON FIELD DELINEATION BY WITHERSRAVENEL, INC. AND USACE CONFIRMATION OF JURISDICTIONAL DETERMINATION BASED ON SITE VISIT ON 07/26/19. REFERENCE USACE ACTION ID #SAW-2019-01418. NO WETLANDS WERE FOUND ON SITE.
 - PROPERTY IS CURRENTLY NOT IN TOWN OF KNIGHTDALE ETJ.
 - BOUNDARY AND TOPOGRAPHIC INFORMATION BASED ON SURVEY BY WITHERSRAVENEL, INC.
 - THIS PROPERTY DOES NOT LIE WITHIN THE FEMA FLOODPLAIN PER MAP NUMBER 3720174300J WITH AN EFFECTIVE DATE OF MAY 2, 2006.



17.842 ACRES TOTAL
0.348 ACRES RW TO CLIFTON ROAD
17.493 ACRES

PARCEL 1743825043
PID: 0042160
4516 CLIFTON RD
TAYLOR, FRANCES L
TAYLOR, KENNETH EARL
DB: 14-E, PG. 1275
L.C.R.
ZONING: RT

PARCEL 174381957
PID: 0235518
4616 CLIFTON RD
LILES, BILLY R
DB: 15-E, PG. 1474
L.C. CEMETARY
ZONING: RT

PARCEL 1743825043
PID: 0042160
4516 CLIFTON RD
TAYLOR, FRANCES L
TAYLOR, KENNETH EARL
DB: 14-E, PG. 1275
L.C.R.
ZONING: RT

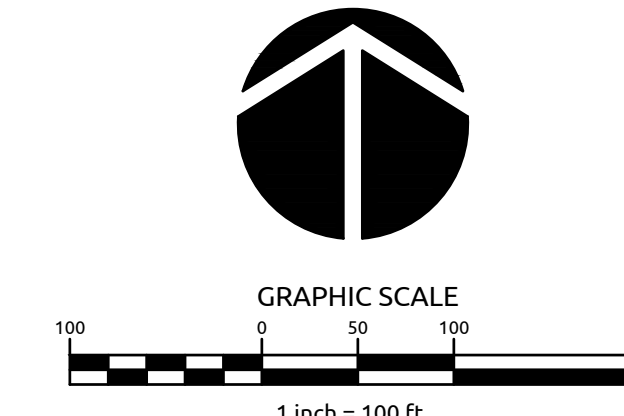
ALL MATERIALS & CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH ALL CITY OF RALEIGH & TOWN OF KNIGHTDALE DESIGN STANDARDS, DETAILS, AND SPECIFICATIONS.

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: _____ DATE: _____
DEVELOPMENT SERVICES ENGINEER

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

BY: _____ DATE: _____
ADMINISTRATOR



WithersRavenel
Engineers | Planners | Surveyors

115 McKennan Drive, Cary, NC 27511 | T: 919-469-3940 | License # C-6832 | www.withersravenel.com

**POPLAR CREEK VILLAGE
PHASE IV**

TOWN OF KNIGHTDALE, NORTH CAROLINA

**OVERALL EXISTING
CONDITIONS**

Job No.	02190259	Drawn By	WR
Date	08/14/20	Designer	WR



Revisions	1	PER TOK COMMENTS	10/02/20
-----------	---	------------------	----------

Sheet No.
1.0

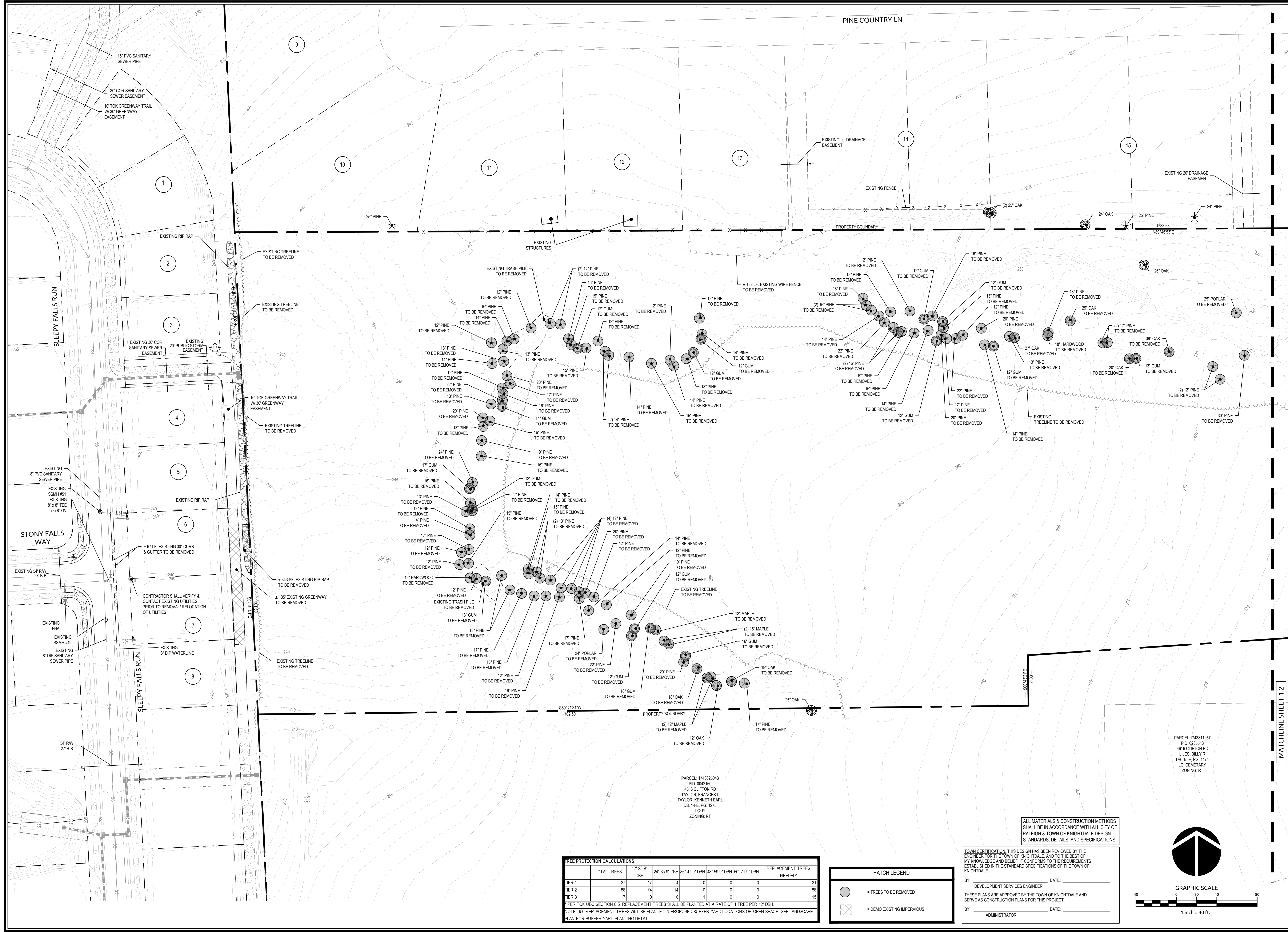
K:\1743923384\1743923384.dwg - Plot - October 2, 2020 10:26:58 AM - PLOT1.DWG

Job No.	02190259	Drawn By	WR
Date	08/14/20	Designer	WR



Revisions	1	PER TOK COMMENTS	10/02/20
-----------	---	------------------	----------

Sheet No.	1.1
-----------	-----



TREE PROTECTION CALCULATIONS

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	27	17	4	0	0	21
TIER 2	88	74	14	0	0	88
TIER 3	7	0	6	1	0	15

* PER TOK UDDO SECTION 8.6, REPLACEMENT TREES SHALL BE PLANTED AT A RATE OF 1 TREE PER 12" DBH.
NOTE: 150 REPLACEMENT TREES WILL BE PLANTED IN PROPOSED BUFFER YARD LOCATIONS OR OPEN SPACE. SEE LANDSCAPE PLAN FOR BUFFER YARD PLANTING DETAIL.

HATCH LEGEND

- = TREES TO BE REMOVED
- = DEMO EXISTING IMPERVIOUS

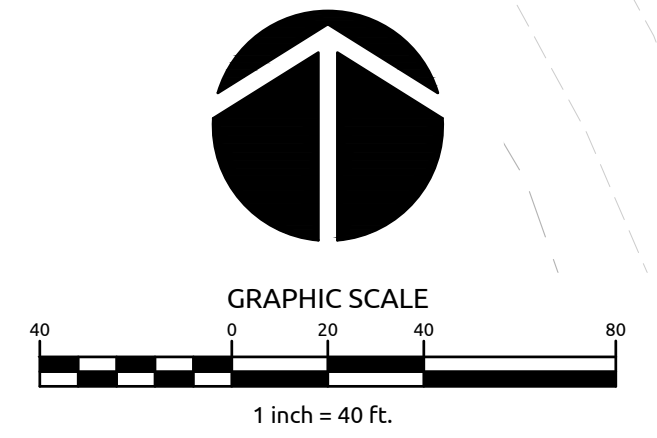
ALL MATERIALS & CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH ALL CITY OF RALEIGH & TOWN OF KNIGHTDALE DESIGN STANDARDS, DETAILS, AND SPECIFICATIONS.

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: _____ DATE: _____
DEVELOPMENT SERVICES ENGINEER

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

BY: _____ DATE: _____
ADMINISTRATOR



K:\17\1743811957\1743811957.dwg - 08/14/20 10:52:59 AM - PLOT: 1743811957.dwg

**POPLAR CREEK VILLAGE
PHASE IV**

TOWN OF KNIGHTDALE, NORTH CAROLINA

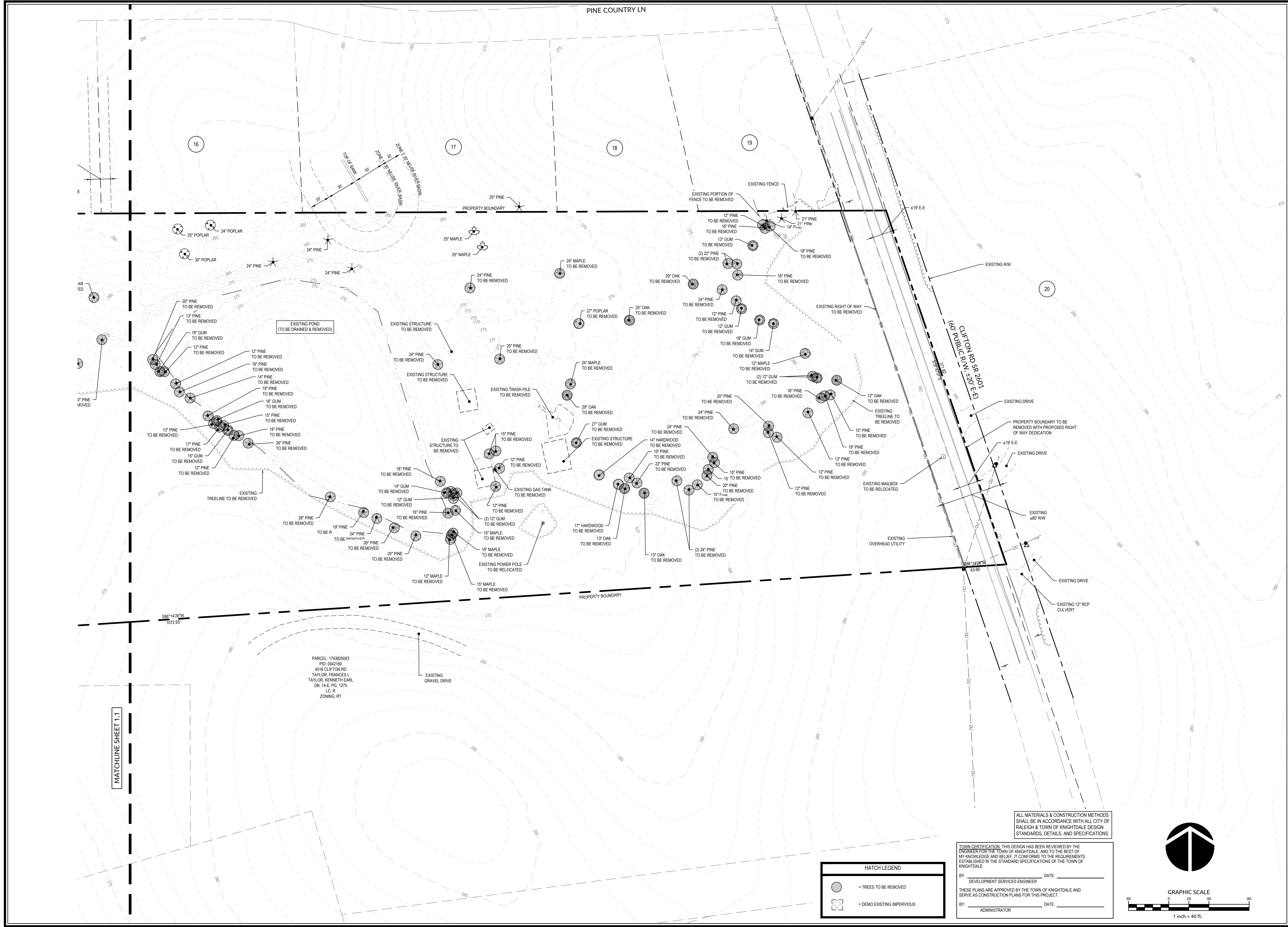
DEMOLITION PLAN

Job No.	02190259	Drawn By	WR
Date	08/14/20	Designer	WR



Revisions		
1	PER TOK COMMENTS	10/02/20

Sheet No.	1.2
-----------	-----



MATCHLINE SHEET 1.1

PARCEL: 1743825043
PID: 0042160
4516 CLIFTON RD
TAYLOR, FRANCES L
TAYLOR, KENNETH EARL
DB. 14-E, PG. 1275
LC, R
ZONING: RT

HATCH LEGEND

	= TREES TO BE REMOVED
	= DEMO EXISTING IMPERVIOUS

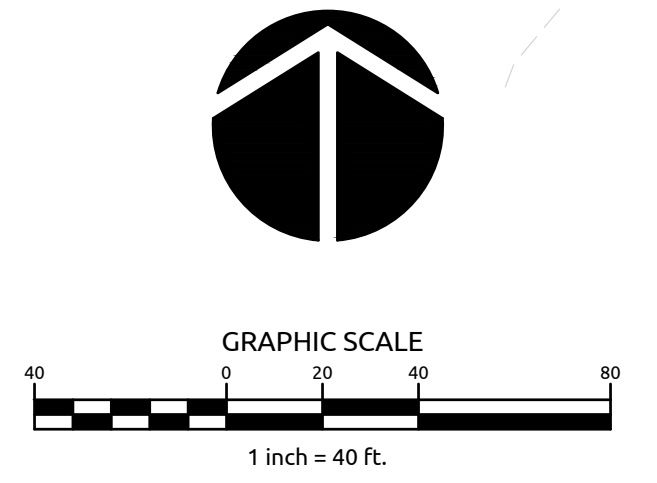
TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: _____ DATE: _____
DEVELOPMENT SERVICES ENGINEER

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

BY: _____ DATE: _____
ADMINISTRATOR

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



K:\1743825043\1743825043.dwg - 08/14/20 10:52:57 AM - PLOT: STD10A

EXISTING ADJOINER INFO:							
NUMBER	PARCEL:	PID:	MAILING ADDRESS	OWNER INFO	DB	PG.	ZONING:
1	1743721538	0458321	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	NMX
2	1743721346	0458320	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	NMX
3	1743721445	0458319	4717 SLEEPY FALLS RUN	BROWN, WILLIAM R. JR. BROWN, GWENDOLYN JACKSON	017459	1868	NMX
4	1743721346	0458318	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	NMX
5	1743629392	0458398	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	NMX
**6	1743721157	0458316	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	NMX
**7	1743721157	0458315	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	NMX
8	1743721160	0458314	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	NMX
9	1743722752	099969	120 PINE COUNTRY LANE	SAULT, CAROLYN	9155	138	GR.3
10	1743723622	099970	119 PINE COUNTRY LANE	MAXWELL, MICHAEL	14957	1973	GR.3
11	1743724662	099965	117 PINE COUNTRY LANE	MOLINA, SALVADOR MOLINA MARIA GUEVARA	9018	1822	GR.3
12	1743725684	099966	115 PINE COUNTRY LANE	CARONZO - DIAZ, GONZALO CARONZO CASTELLANO, BLANCA ROSA ESCOB	12204	1583	GR.3
13	1743727604	099967	113 PINE COUNTRY LANE	BIRCH, HOWARD REGINALD III	12161	563	GR.3
14	1743728644	099963	111 PINE COUNTRY LANE	KEETER, JOHN	13521	705	GR.3
15	1743820675	099960	109 PINE COUNTRY LANE	SHORNOCK, JEFFERY J	13615	2130	GR.3
16	1743822685	099959	202 MACKENAN DR.	AQUA NORTH CAROLINA INC.	13547	76	GR.3
17	1743825614	099956	105 PINE COUNTRY LANE	TEUSCHER, RICHARD DALE	5233	234	GR.3
18	1743827605	099958	103 PINE COUNTRY LANE	WRIGHT, GREGORY H	7211	699	GR.3
19	1743828644	099962	4500 CLIFFORD RD	NIXON, DORIS LEWTER	8399	2701	GR.3
20	1743823384	0192190	4425 CLIFFORD RD	EARLY, TROY O EARLY, RHONDA B	8779	502	RT

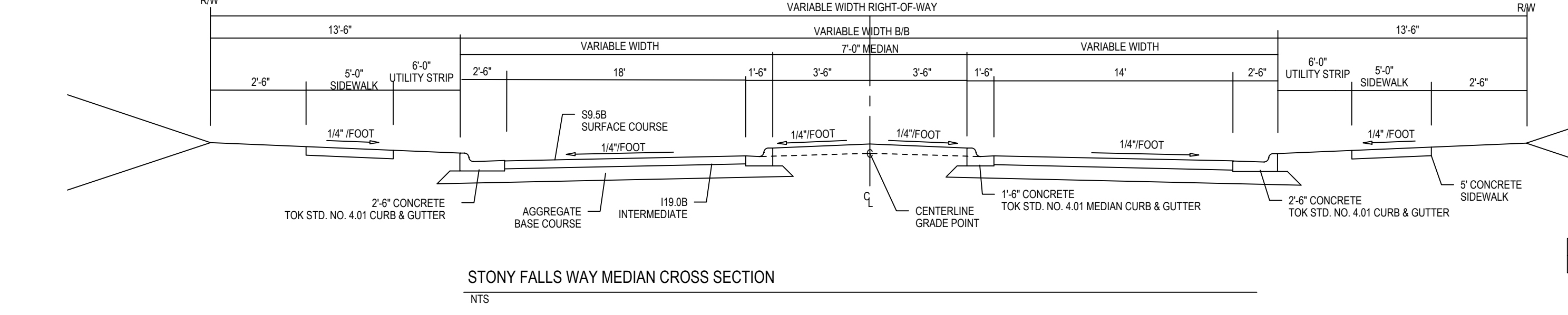
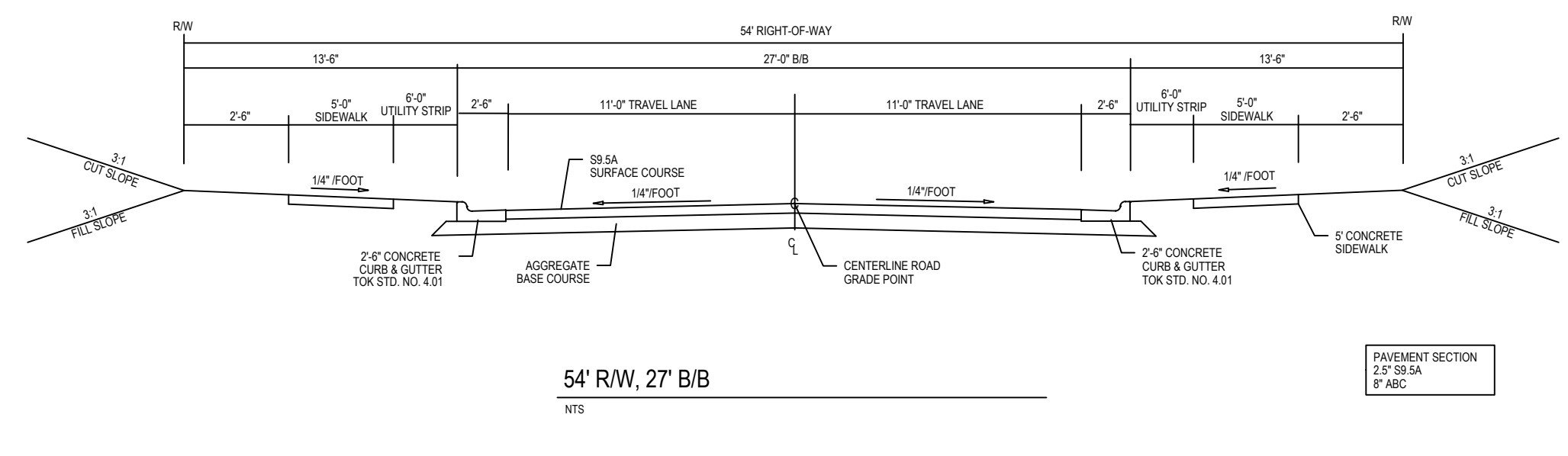
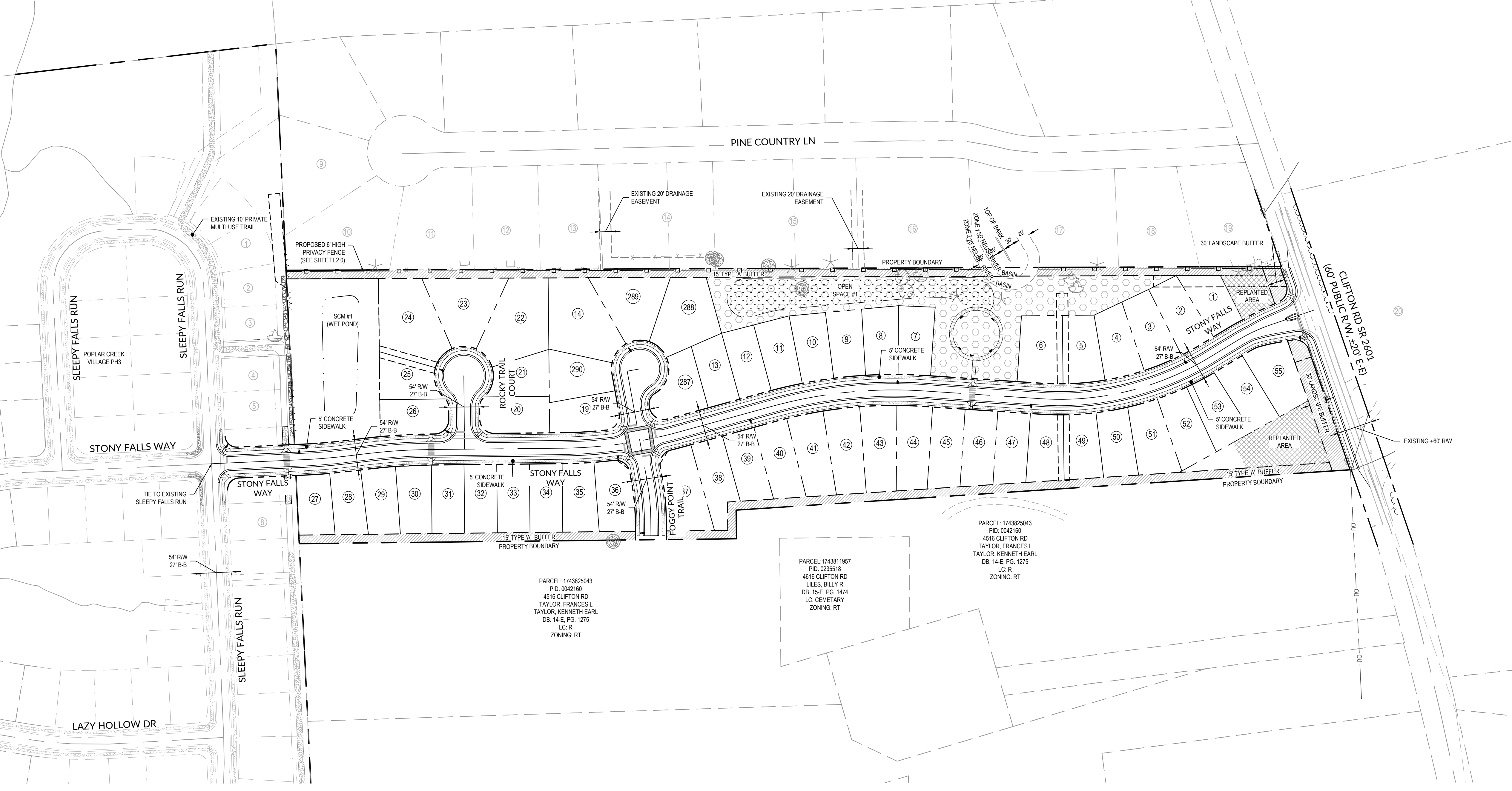
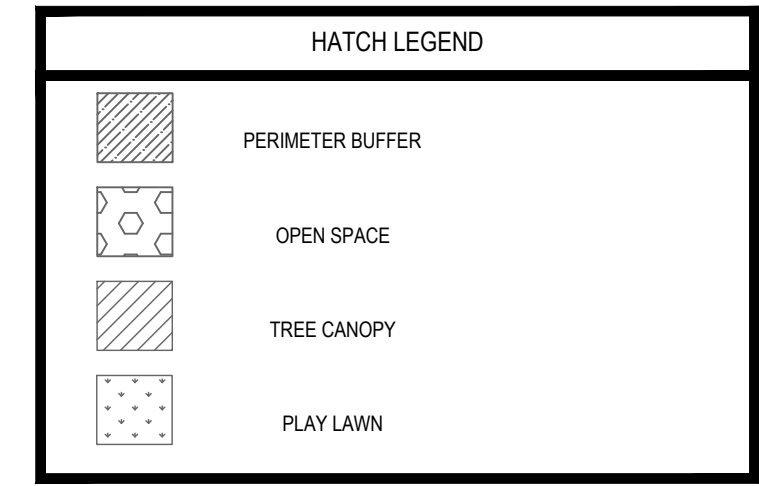
PROJECT TIMELINE	
PROJECTED SUBDIVISION COMPLETION DATE	NOVEMBER 2021
PROJECTED FIRST OCCUPANCY DATE	MARCH 2022
ANTICIPATED COMPLETION OF UNITS BY YEAR	2022: 30 2023: 25

- GENERAL NOTES:**
- SEE SHEET 1.0 FOR EXISTING ZONING AND PROPOSED ZONING.
 - PROJECT BOUNDARY INFORMATION SHOWN IS BASED ON A RECORDED PLAT BY WALLACE G. CLARK, JR. - REGISTERED LAND SURVEYOR TITLED, "SURVEY FOR MAMIE TODD LIES", DATED MARCH 26, 1997, AS RECORDED AT THE WAKE COUNTY REGISTER OF DEEDS, MAP BOOK 1997, PAGE 668.
 - SURROUNDING AND ADJACENT PARCEL INFORMATION IS BASED ON WAKE COUNTY GIS DATA.
 - LIMITS OF NEUSE RIPARIAN BUFFERS ARE BASED ON NCEQ/DWR BUFFER DETERMINATION LETTER, RRO #19-328 DATED AUGUST 5TH, 2019.
 - LIMITS OF JURISDICTIONAL STREAM AND WETLANDS ARE BASED ON FIELD DELINEATION BY WITHERSRAVENEL, INC. AND USACE CONFIRMATION OF JURISDICTIONAL DETERMINATION BASED ON SITE VISIT ON 07/26/19. REFERENCE USACE ACTION ID #SAW-2019-01418.
 - PROPERTY IS CURRENTLY NOT IN TOWN OF KNIGHTDALE E.T.J.
 - STREET LIGHTS SHALL BE PROVIDED FOR POPLAR CREEK PH IV PER UDO SECTION 11.5 - STREET LIGHTING POLICY. IF UPGRADES FROM THE TOWN'S STANDARD LIGHT SPECIFICATION ARE REQUESTED, THE DEVELOPER WILL BE REQUIRED TO PAY THE TOWN 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 3720174300J WITH AN EFFECTIVE DATE OF MAY 2, 2006.
 - THE TURNOUT RADIUS AT ALL INTERSECTIONS SHALL BE A MINIMUM OF 30 FEET MEASURED AT THE BACK OF CURB UNLESS OTHERWISE NOTED. THE TURNOUT RADIUS AT ALL INTERSECTIONS MEASURED AT THE BACK OF CURB.
 - 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 IN NO CURB EXISTS SHALL BE PLACED WITH IN A SIGHT TRIANGLE.
 - MAIL KIOSK IS LOCATED IN POPLAR CREEK PHASES 1-3.

ROAD	SPEED LIMIT	CLASSIFICATION
STONY FALLS WAY	25 MPH	LOCAL STREET
ROCKY TRAIL COURT	25 MPH	LOCAL STREET
FOGGY POINT TRAIL	25 MPH	LOCAL STREET

CONNECTIVITY INDEX:		
LINKS	NODES	INDEX
6	6	10

SITE IMPERVIOUS	
TOTAL TRACT AREA	17.48 AC
SUBDIVISION ROADWAYS, SIDEWALKS, & PARK	2.42 AC
LOT IMPERVIOUS AREA (85 LOTS @ 4000 SF)	5.05 AC
TOTAL IMPERVIOUS	7.47 AC
PROPOSED PERCENT IMPERVIOUS	42.71 %



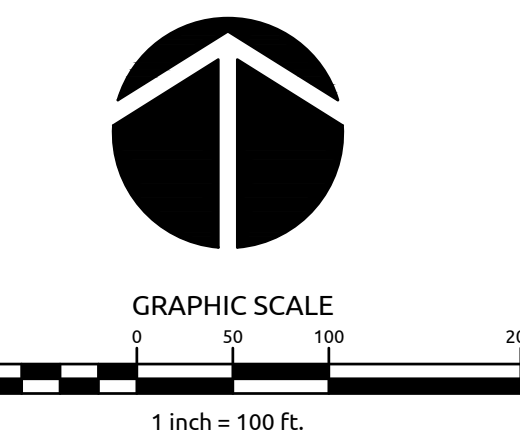
TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: _____ DATE: _____
DEVELOPMENT SERVICES ENGINEER

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

BY: _____ DATE: _____
ADMINISTRATOR

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



WithersRavenel
Engineers | Planners | Surveyors

**POPLAR CREEK VILLAGE
PHASE IV**

OVERALL SITE PLAN

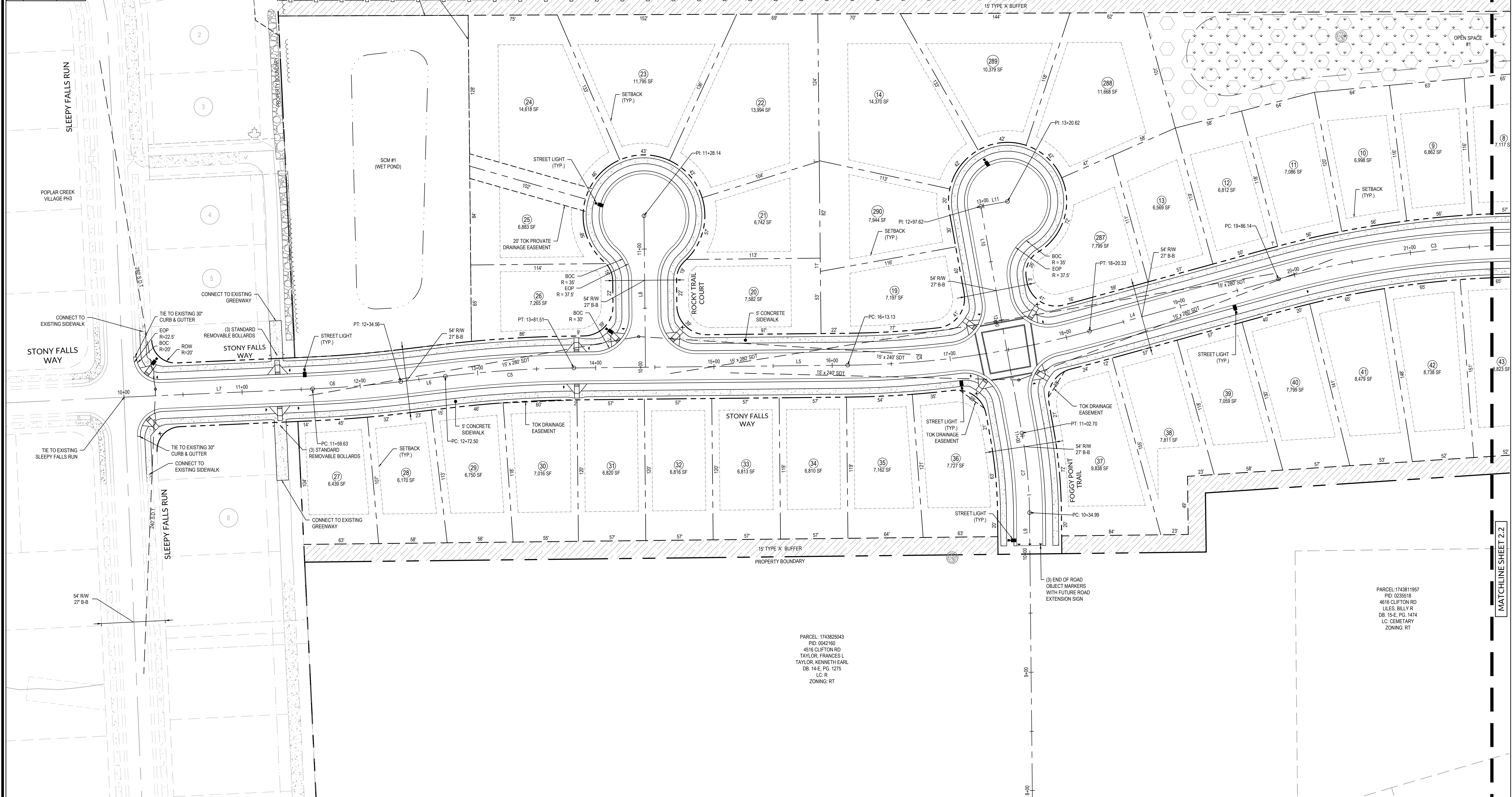
Job No.	02190259	Drawn By	WR
Date	08/14/20	Designer	WR



Revisions	
1	PER TOK COMMENTS 10/02/20

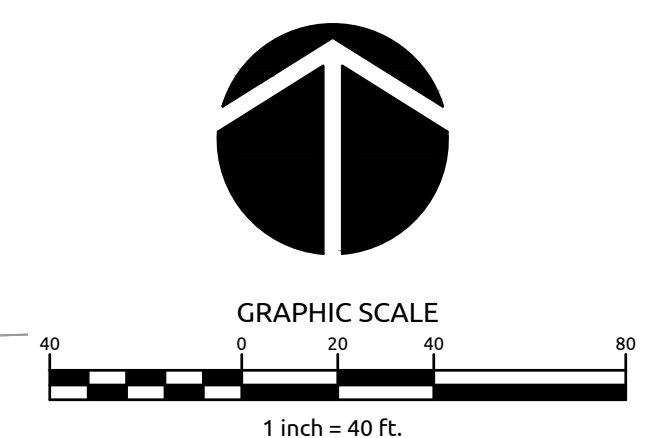
K:\17\1743825043\02190259\Drawings\Subdivision\Construction\2.0-2.01E_Plan\Site Plan.dwg, Friday, October 2, 2020 11:52:21 AM - YORIC STEINEN

LINE TABLE			CURVE TABLE				
LINE	BEARING	DISTANCE	CURVE	RADIUS	LENGTH	CHORD	BEARING
L1	N71°16'00"E	77.98'	C1	300.00'	65.96'	65.83'	N84°58'05"E
L2	N68°40'10"E	57.38'	C2	500.00'	306.56'	301.80'	N76°14'08"E
L3	S86°11'55"E	204.70'	C3	800.00'	268.42'	267.16'	N84°11'22"E
L4	N74°34'38"E	165.81'	C4	800.00'	207.20'	206.63'	N81°59'50"E
L5	N89°25'02"E	231.61'	C5	1000.00'	109.02'	108.96'	N88°17'39"E
L6	N83°10'16"E	37.94'	C6	1000.00'	74.93'	74.91'	N85°19'03"E
L7	N87°27'51"E	159.63'	C7	400.00'	67.71'	67.63'	N5°25'55"W
L8	N0°34'58"W	128.14'					
L9	N0°34'58"W	34.99'					
L10	N10°16'52"W	194.93'					
L11	N79°43'08"E	23.00'					



AASHTO SIGHT DISTANCE						Calculated				Proposed			
Major Street Name (Through)	Minor Street Name (Stop)	Design Speed of Major 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)	Left Turn Sight Distance (ft)	Right Turn Sight Distance (ft)	Left Turn Sight Distance (ft)	Right Turn Sight Distance (ft)	Left Turn Sight Distance (ft)	Right Turn Sight Distance (ft)
CLIFTON ROAD	STONY FALLS WAY	25	2.08	7.50	6.50	276	239	280	240	276	239	280	240
SLEEPY FALLS RUN	STONY FALLS WAY	25	-4.14	7.50	6.50	276	239	280	240	276	239	280	240
STONY FALLS WAY	ROCKY TRAIL COURT	25	-1.60	7.50	6.50	276	239	280	240	276	239	280	240
STONY FALLS WAY	FOGGY POINT TRAIL	25	1.60	7.50	6.50	276	239	280	240	276	239	280	240
STONY FALLS WAY	FOGGY POINT TRAIL	25	-4.50	7.50	6.50	276	239	280	240	276	239	280	240

HATCH LEGEND	
	PERIMETER BUFFER
	OPEN SPACE
	TREE CANOPY
	PLAY LAWN



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: _____ DATE: _____
 DEVELOPMENT SERVICES ENGINEER

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

BY: _____ DATE: _____
 ADMINISTRATOR

WithersRavenel
 Engineers | Planners | Surveyors

115 McKinnon Drive, Cary, NC 27511 | Tel: 919-469-3300 | License # C-6832 | www.withersravenel.com

**POPLAR CREEK VILLAGE
 PHASE IV**

TOWN OF KNIGHTDALE, NORTH CAROLINA

SITE PLAN

MATCHLINE SHEET 2.2

Job No.	02190259	Drawn By	WR
Date	08/14/20	Designer	WR



Revisions	Date
1 PER TOK COMMENTS	10/02/20

Sheet No.
2.1

K:\10174\2020\1020259.dwg - from road address\cadd\dwg\cadd\construction\2020\1020259.dwg - 10/14/2020 11:52:25 AM - 10:06:00 AM

**POPLAR CREEK VILLAGE
PHASE IV**

TOWN OF KNIGHTDALE, NORTH CAROLINA

SITE PLAN

Job No.	02190259	Drawn By	WR
Date	08/14/20	Designer	WR

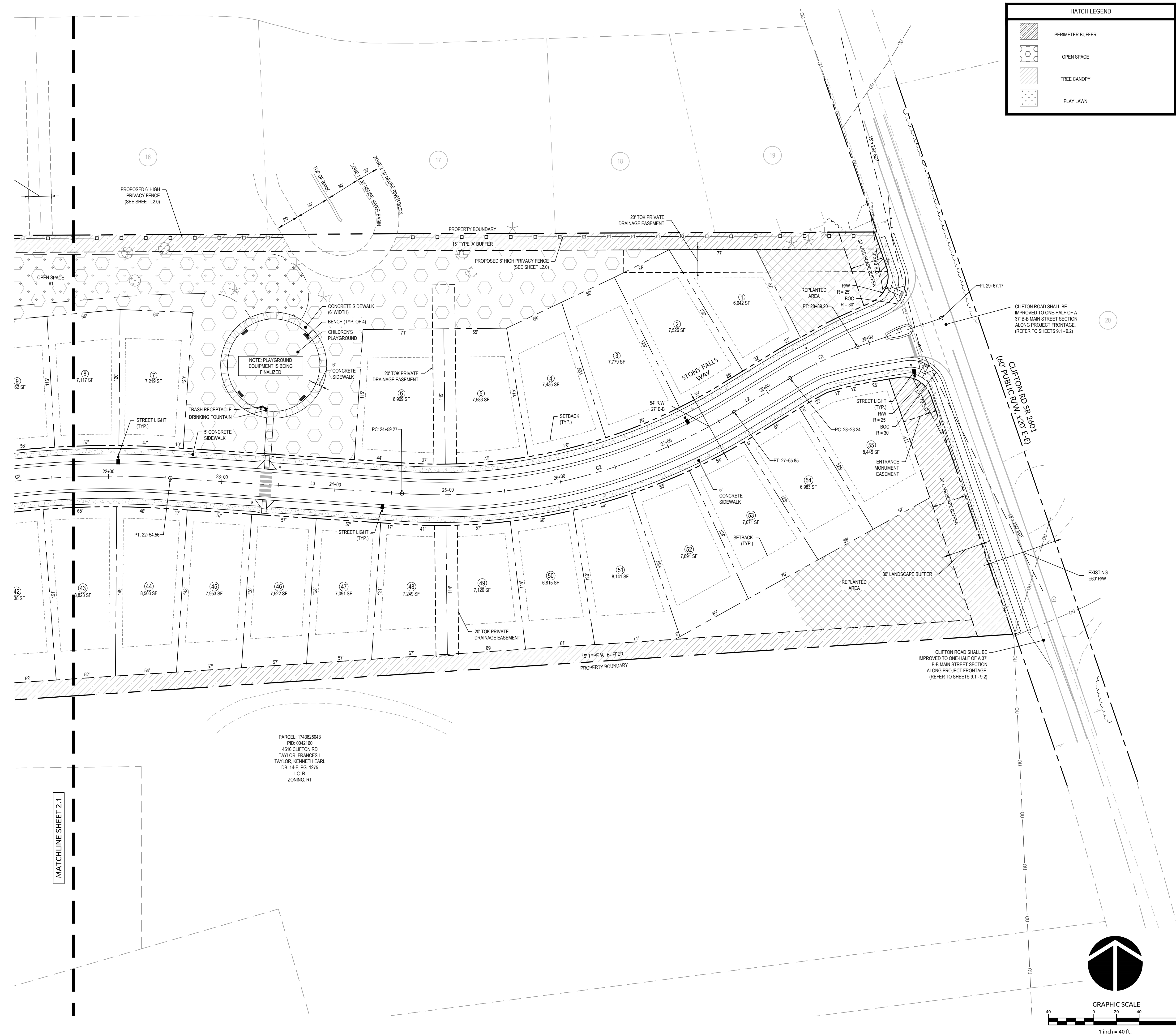


Revisions	1	PER TOK COMMENTS	10/02/20
-----------	---	------------------	----------

Sheet No.
2.2

CURVE TABLE				LINE TABLE	
CURVE	RADIUS	LENGTH	CHORD	BEARING	DISTANCE
C1	300.07	65.96	65.83	N84°58'05"E	L1 N71°16'00"E 77.98
C2	500.07	306.58	301.80	N76°14'08"E	L2 N58°40'10"E 57.38
C3	800.07	268.42	267.16	N84°11'22"E	L3 S86°11'55"E 204.70
C4	800.07	207.20	206.63	N81°59'50"E	L4 N74°34'38"E 165.81
C5	1000.07	109.02	108.96	N86°17'39"E	L5 N89°25'02"E 231.61
C6	1000.07	74.93	74.91	N85°19'03"E	L6 N83°10'16"E 37.84
C7	400.07	67.71	67.63	N5°25'55"W	L7 N87°27'51"E 159.63
					L8 N0°34'58"W 128.14
					L9 N0°34'58"W 34.99
					L10 N10°16'52"W 184.93
					L11 N79°43'08"E 23.00

HATCH LEGEND	
	PERIMETER BUFFER
	OPEN SPACE
	TREE CANOPY
	PLAY LAWN



PARCEL: 1743825043
PID: 0042160
4516 CLIFTON RD
TAYLOR, FRANCES L
TAYLOR, KENNETH EARL
DB: 14-E, PG: 1275
LC: R
ZONING: RT

MATCHLINE SHEET 2.1

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

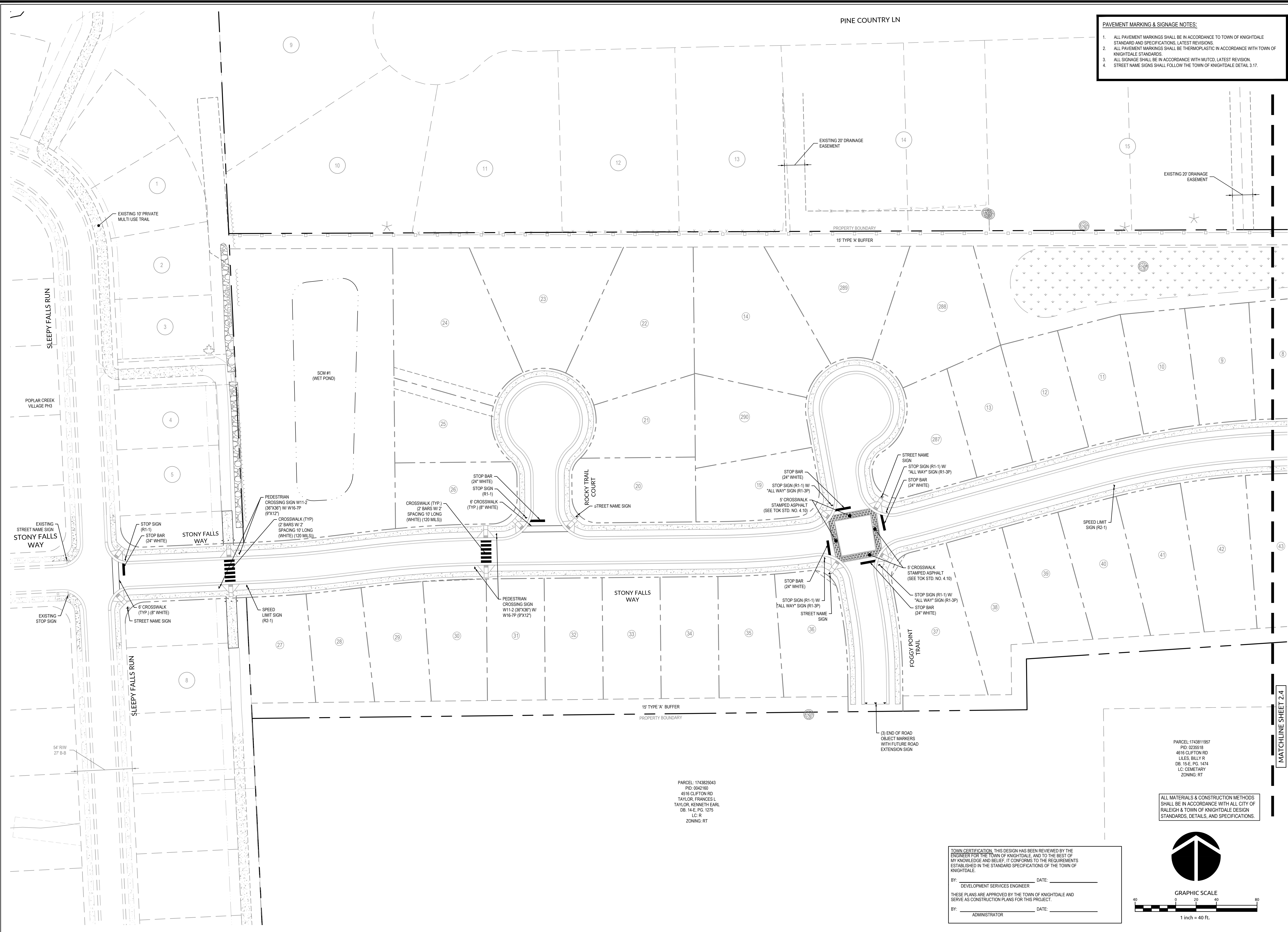
TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: _____ DATE: _____
DEVELOPMENT SERVICES ENGINEER

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

BY: _____ DATE: _____
ADMINISTRATOR

K:\17\1743825043\0259\0259.dwg - from road address\0259\0259.dwg - 10/14/2020 11:52:27 AM - YORIC STEINEN



- PAVEMENT MARKING & SIGNAGE NOTES:**
1. ALL PAVEMENT MARKINGS SHALL BE IN ACCORDANCE TO TOWN OF KNIGHTDALE STANDARD AND 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 NAME SIGNS SHALL FOLLOW THE TOWN OF KNIGHTDALE DETAIL 3.17.

Job No.	02190259	Drawn By	WR
Date	08/14/20	Designer	WR



Revisions		
1	PER TOK COMMENTS	10/02/20

K:\17\170259\170259.dwg - from road address\road\170259.dwg - 2.3 - PAVEMENT MARKING & SIGNAGE PLAN - 10/02/20 11:51:41 AM - YORR - STEPHEN

PARCEL: 174362043
PID: 0042160
4516 CLIFTON RD
TAYLOR, FRANCES L
TAYLOR, KENNETH EARL
DB: 14-E, PG. 1275
LC: R
ZONING: RT

PARCEL: 174381157
PID: 0235518
4616 CLIFTON RD
LILES, BILLY JR
DB: 15-E, PG. 1474
LC: CEMETARY
ZONING: RT

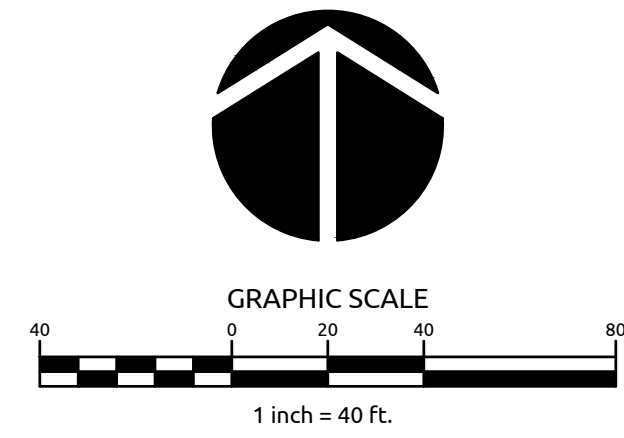
ALL MATERIALS & CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH ALL CITY OF RALEIGH & TOWN OF KNIGHTDALE DESIGN STANDARDS, DETAILS, AND SPECIFICATIONS.

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: _____ DATE: _____
DEVELOPMENT SERVICES ENGINEER

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

BY: _____ DATE: _____
ADMINISTRATOR



MATCHLINE SHEET 2.4

**POPLAR CREEK VILLAGE
PHASE IV**

TOWN OF KNIGHTDALE, NORTH CAROLINA

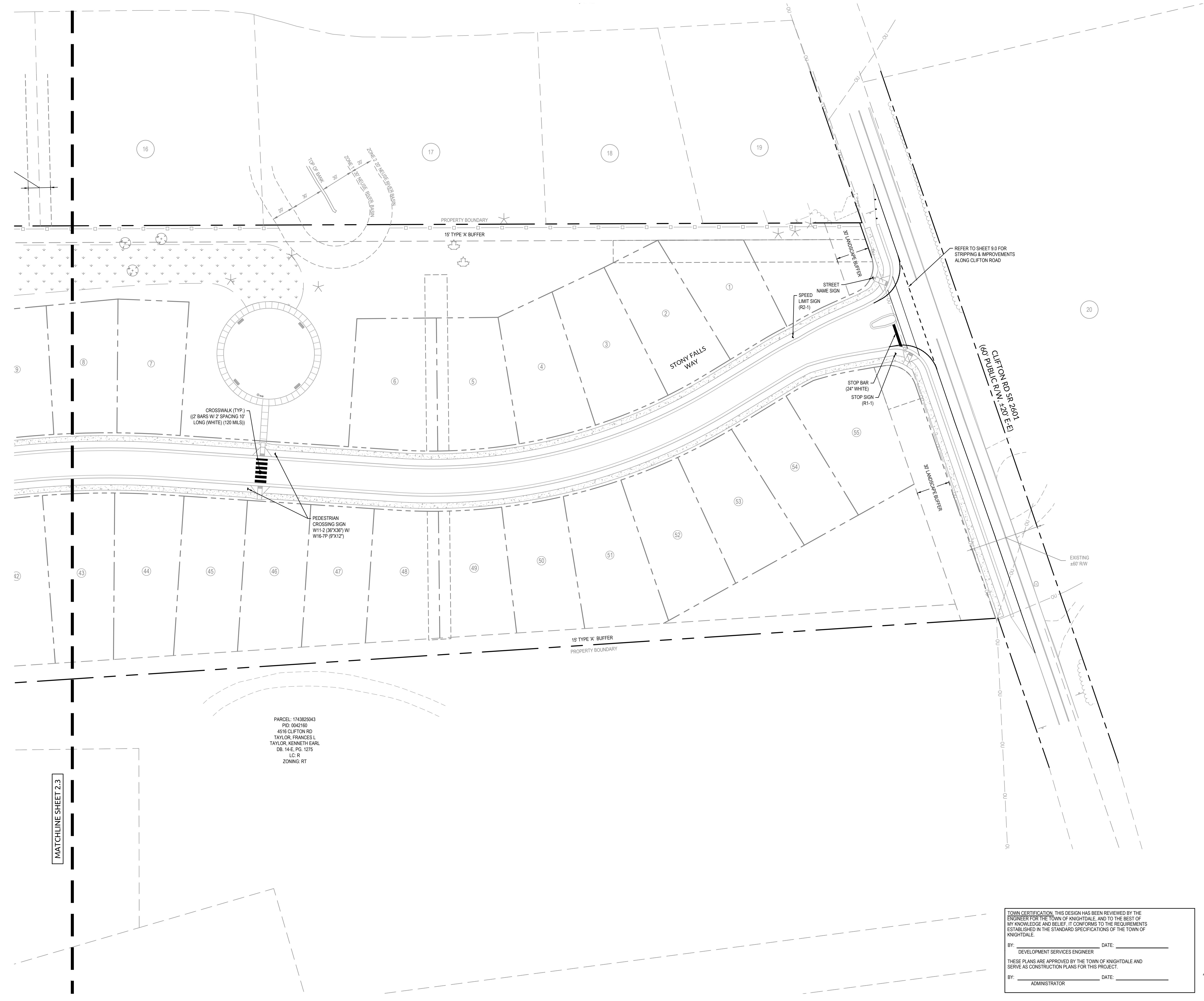
**PAVEMENT MARKING &
SIGNAGE PLAN**

Job No.	02190259	Drawn By	WR
Date	08/14/20	Designer	WR



Revisions		
1	PER TOK COMMENTS	10/02/20

Sheet No.
2.4



MATCHLINE SHEET 2.3

PARCEL: 1743825043
PID: 0042160
4516 CLIFTON RD
TAYLOR, FRANCES L
TAYLOR, KENNETH EARL
DB: 14-E, PG: 1275
LC: R
ZONING: RT

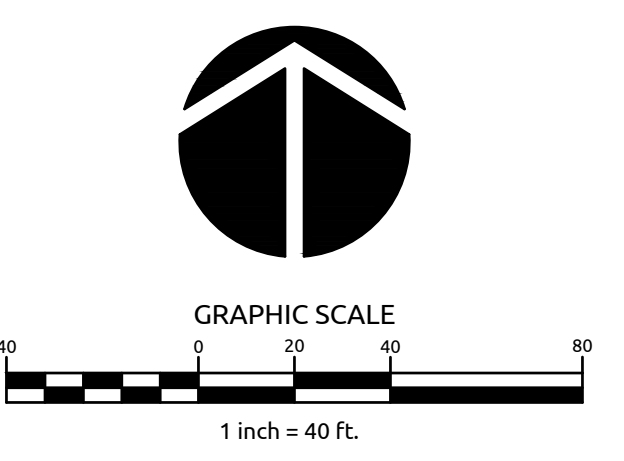
TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: _____ DATE: _____
DEVELOPMENT SERVICES ENGINEER

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

BY: _____ DATE: _____
ADMINISTRATOR

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



K:\1743825043\0259.dwg - from road address\1743825043.dwg - 2.4 - PAVEMENT MARKING & SIGNAGE PLAN.dwg - Friday, October 2, 2020 11:53:52 AM - VICKI STEPHEN

**POPLAR CREEK VILLAGE
PHASE IV**

TOWN OF KNIGHTDALE, NORTH CAROLINA

**OPEN SPACE & TREE
CANOPY PLAN**

Job No. 02190259 Drawn By WR
Date 08/14/20 Designer WR



Revisions
1 PER TOK COMMENTS 10/02/20

Sheet No.
2.5

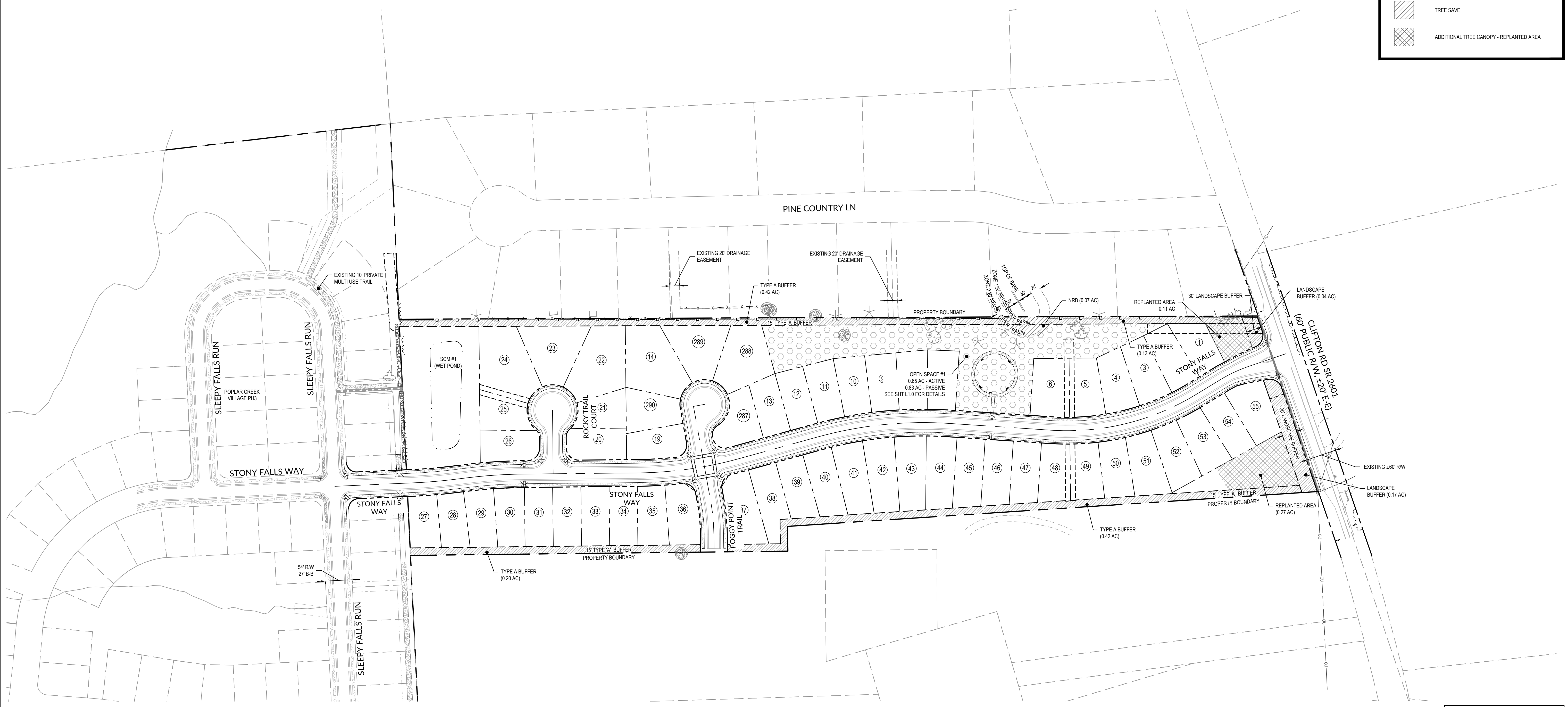
REQUIRED OPEN SPACE CALCULATIONS		
TOTAL AREA	17.49	AC
LOT COUNT	55	
TOTAL BEDROOMS (LOTS* 3.5)	192.50	BR
ACREAGE WITHIN 1/4 MILE OF PUBLIC OPEN SPACE	13.23	AC
ACREAGE WITHIN 1/2 - 1/4 MILE OF PUBLIC OPEN SPACE	4.26	AC
BEDROOMS WITHIN 1/4 MILE	146	BR
BEDROOMS WITHIN 1/4 - 1/2 MILE	47	BR
OPEN SPACE NEEDED (1/4 MILE) (260 SF/BR)	37859	SF
OPEN SPACE NEEDED (1/4 MILE - 1/2 MILE) (290 SF/BR)	18286	SF
TOTAL RECREATIONAL OPEN SPACE REQUIRED	56145	SF
	1.29	AC

OPEN SPACE CALCULATIONS			
REQUIRED OPEN SPACE	1.29	AC	
O.S. #1	0.65	AC	ACTIVE
O.S. #1	0.82	AC	PASSIVE
TOTAL OPEN SPACE	1.47	AC	

TREE CANOPY CALCULATIONS		
TOTAL AREA	17.49	AC
PERIMETER (P)	4475	LF
TREE CANOPY AREA (P * 20 LF) / 43560	2.05	AC
TOTAL LOT AREA (< 10% max)	11.75	%
TREE CANOPY AREA REQUIRED (10 % AREA)	1.175	AC
NRB	0.07	AC
LANDSCAPE BUFFERS PROVIDED	1.38	AC
TREE CANOPY PROVIDED	1.45	AC
ADDITIONAL SPACE REQUIRED	0.30	AC
ADDITIONAL SPACE - MATURE FOREST	0.00	AC
ADDITIONAL SPACE - REPLANTED NEEDED	0.37	AC
ADDITIONAL SPACE - REPLANTED PROVIDED	0.38	AC
TOTAL CANOPY AREA PROVIDED	1.83	AC

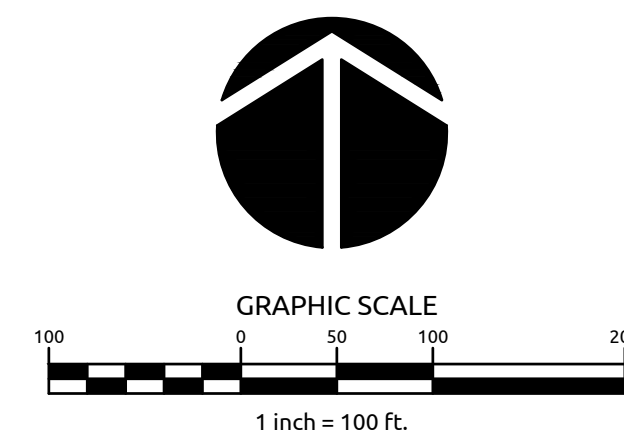
REPLANTED AREAS NOTE:
FOR REPLANTED AREAS, SEE SHEET L2.0 LANDSCAPE DETAILS FOR RE-PLANTING INSTRUCTIONS.

HATCH LEGEND	
	PERIMETER BUFFER
	OPEN SPACE
	TREE SAVE
	ADDITIONAL TREE CANOPY - REPLANTED AREA



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

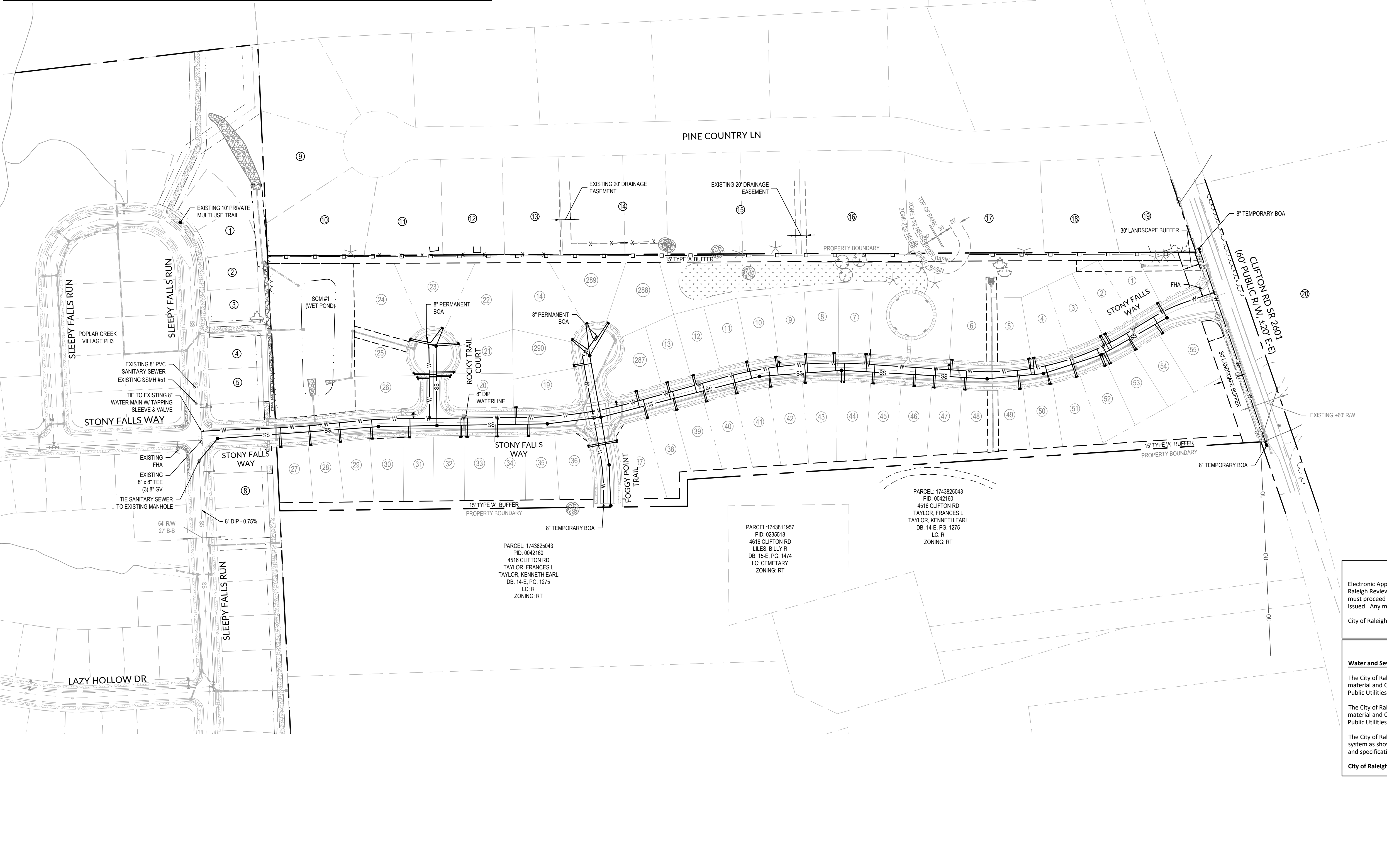
TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.
BY: _____ DATE: _____
DEVELOPMENT SERVICES ENGINEER
THESE PLANS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



K:\01\192501\0259\02190259.dwg - from road address\cadd\dwg\cadd\construction\2.5 OPEN SPACE AND TREE CANOPY.dwg - Friday, October 2, 2020 11:56:05 AM - YORIK STEINER

NUMBER	PARCEL	PID	MAILING ADDRESS	OWNER INFO	DB	PG.	ZONING
1	1743721538	0458321	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	NMX
2	1743721346	0458320	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	NMX
3	1743721445	0458319	4717 SLEEPY FALLS RUN	BROWN, WILLIAM R JR, BROWN, GWENDOLYN JACKSON	017459	1868	NMX
4	1743721346	0458318	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	NMX
5	1743629392	0458398	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	NMX
**6	1743721157	0458316	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	NMX
**7	1743721157	0458315	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	NMX
8	1743721160	0458314	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	NMX
9	1743722752	099969	120 PINE COUNTRY LANE	SAULT, CAROLYN	9155	138	GR3
10	1743723622	099970	119 PINE COUNTRY LANE	MAXWELL, MICHAEL	14957	1973	GR3
11	1743724682	099965	117 PINE COUNTRY LANE	MOLINA, SALVADOR MOLINA MARIA GUEVARA	9018	1822	GR3
12	1743725684	0099966	115 PINE COUNTRY LANE	CARONZO - DIAZ, GONZALO CARONZO CASTELLANO, BLANCA ROSA ESCOB	12204	1583	GR3
13	1743727604	0099967	113 PINE COUNTRY LANE	BIRCH, HOWARD REGINALD III	12161	563	GR3
14	1743728644	0099963	111 PINE COUNTRY LANE	KEETER, JOHN	13521	705	GR3
15	1743820675	0099960	109 PINE COUNTRY LANE	SHORNOCK, JEFFERY J	13615	2130	GR3
16	1743822685	0099959	202 MACKENAN DR.	AQUA NORTH CAROLINA INC.	13547	76	GR3
17	1743825614	0099956	105 PINE COUNTRY LANE	TEUSCHER, RICHARD DALE	5233	234	GR3
18	1743827605	0099958	103 PINE COUNTRY LANE	WRIGHT, GREGORY H	7211	699	GR3
19	1743828644	0099962	4500 CLIFFORD RD	NIXON, DORIS LEWTER EARLY, TROY O	8399	2701	GR3
20	1743823384	0192190	4425 CLIFFORD RD	EARLY, RHONDA B	8779	502	RT

- UTILITY NOTES:**
- ALL MATERIALS & CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH CITY OF RALEIGH DESIGN STANDARDS, DETAILS & SPECIFICATIONS (REFERENCE CORPUS HANDBOOK, CURRENT EDITION)
 - UTILITY SEPARATION REQUIREMENTS:
 - A DISTANCE OF 10' 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 & 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 CORPUS 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 REDEVELOPMENT OF A SITE UNLESS OTHERWISE DIRECTED BY THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT. THIS INCLUDES ABANDONING TAP AT MAIN & REMOVAL OF SERVICE FROM ROW OR EASEMENT PER CORPUS HANDBOOK PROCEDURE.
 - INSTALL 3/4" COPPER WATER SERVICES WITH METERS LOCATED AT ROW OR WITHIN A 2'X2' 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 @ 10% 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 NCDOW, USACE & OR FEMA FOR ANY RIPARIAN BUFFER, WETLAND & OR FLOODPLAIN IMPACTS (RESPECTIVELY) PRIOR TO CONSTRUCTION.
 - NCDOT /RAILROAD ENCRoACHMENT AGREEMENTS ARE REQUIRED FOR ANY UTILITY WORK (INCLUDING MAIN EXTENSIONS & SERVICE TAPS) WITHIN STATE OR RAILROAD ROW PRIOR TO CONSTRUCTION.
 - 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@RALEIGH.NC.GOV FOR MORE INFORMATION.
- WATER METER NOTE:**
CLEANOUTS CAN BE ON THE PROPERTY LINE BUT WATER METERS MUST BE FULLY IN THE RIGHT OF WAY OR IN A 2'X2' CORWLE



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: _____ DATE: _____
DEVELOPMENT SERVICES ENGINEER

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

BY: _____ DATE: _____
ADMINISTRATOR

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

Electronic Approval: This approval is being issued electronically. This approval is valid upon the signature of a City of Raleigh Review Officer below. The City will retain a copy of the approved plans. Any work authorized by this approval must proceed in accordance with the plans kept on file with the City. This electronic approval may not be edited once issued. Any modification to the approval once issued will invalidate this approval.

City of Raleigh Development Approval _____
Raleigh Water Review Officer

SITE PERMITTING APPROVAL

Water and Sewer Permits (if applicable)

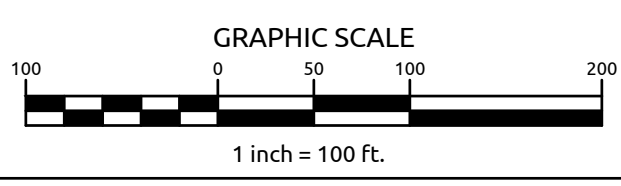
The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. **City of Raleigh Public Utilities Department Permit # S-4727**

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-3725**

The City of Raleigh consents to the connection to its public sewer system and extension of the private sewer collection 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 # _____

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



WithersRavenel
Engineers | Planners | Surveyors

115 McKennan Drive, Cary, NC 27511 | t: 919-469-3300 | license # C-6832 | www.withersravenel.com

**POPLAR CREEK VILLAGE
PHASE IV**

TOWN OF KNIGHTDALE, NORTH CAROLINA

OVERALL UTILITY PLAN

Job No.	02190259	Drawn By	WR
Date	08/14/20	Designer	WR

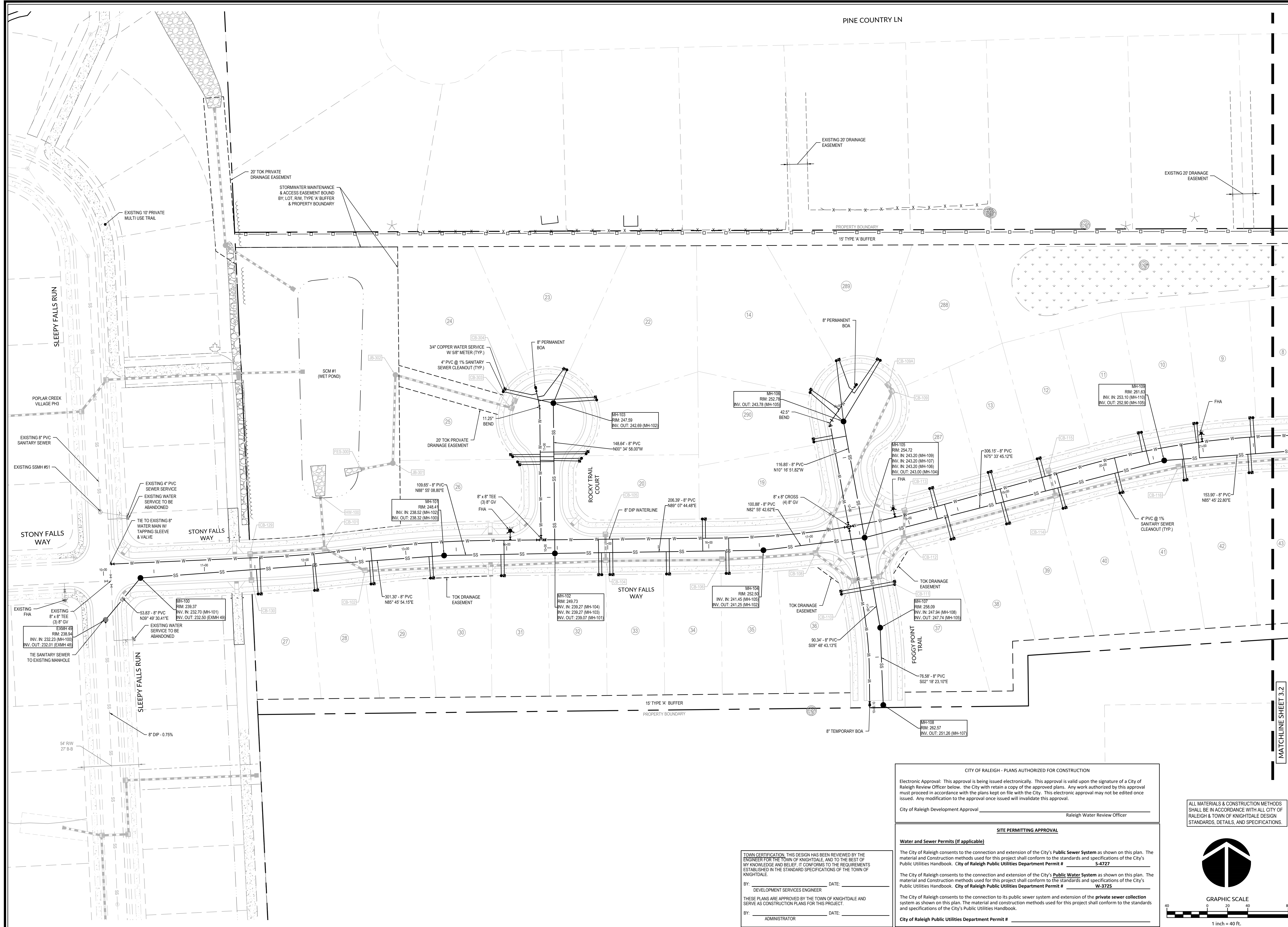


PRELIMINARY
NOT APPROVED FOR
CONSTRUCTION

Revisions		
1	PER TOK COMMENTS	10/02/20

Sheet No.
3.0

K:\17\1743825614\1743825614.dwg - 10/14/2020 11:52:22 AM - 10/14/2020 11:52:22 AM



Job No.	02190259	Drawn By	WR
Date	08/14/20	Designer	WR



Revisions	DESCRIPTION	DATE
1	PER TOK COMMENTS	10/02/20

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

Electronic Approval: This approval is being issued electronically. This approval is valid upon the signature of a City of Raleigh Review Officer below. The City with retain a copy of the approved plans. Any work authorized by this approval must proceed in accordance with the plans kept on file with the City. This electronic approval may not be edited once issued. Any modification to the approval once issued will invalidate this approval.

City of Raleigh Development Approval _____
Raleigh Water Review Officer

SITE PERMITTING APPROVAL

Water and Sewer Permits (if applicable)

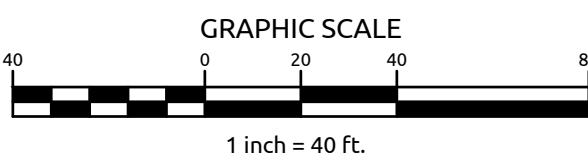
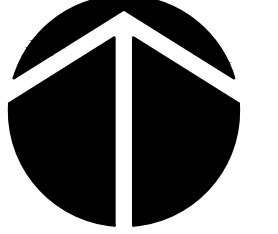
The City of Raleigh consents to the connection and extension of the City's **Public Sewer System** as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. **City of Raleigh Public Utilities Department Permit # S-4727**

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-3725**

The City of Raleigh consents to the connection to its public sewer system and extension of the **private sewer collection** 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 # _____

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: _____ DATE: _____
DEVELOPMENT SERVICES ENGINEER

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

BY: _____ DATE: _____
ADMINISTRATOR

K:\10\192501\0259\afternoon\add\addition\CD\drawings\utility\3.1 UTILITY PLAN.dwg Friday, October 2, 2020 11:54:25 AM - 10/2/20 11:58:04 AM

**POPLAR CREEK VILLAGE
PHASE IV**

TOWN OF KNIGHTDALE, NORTH CAROLINA

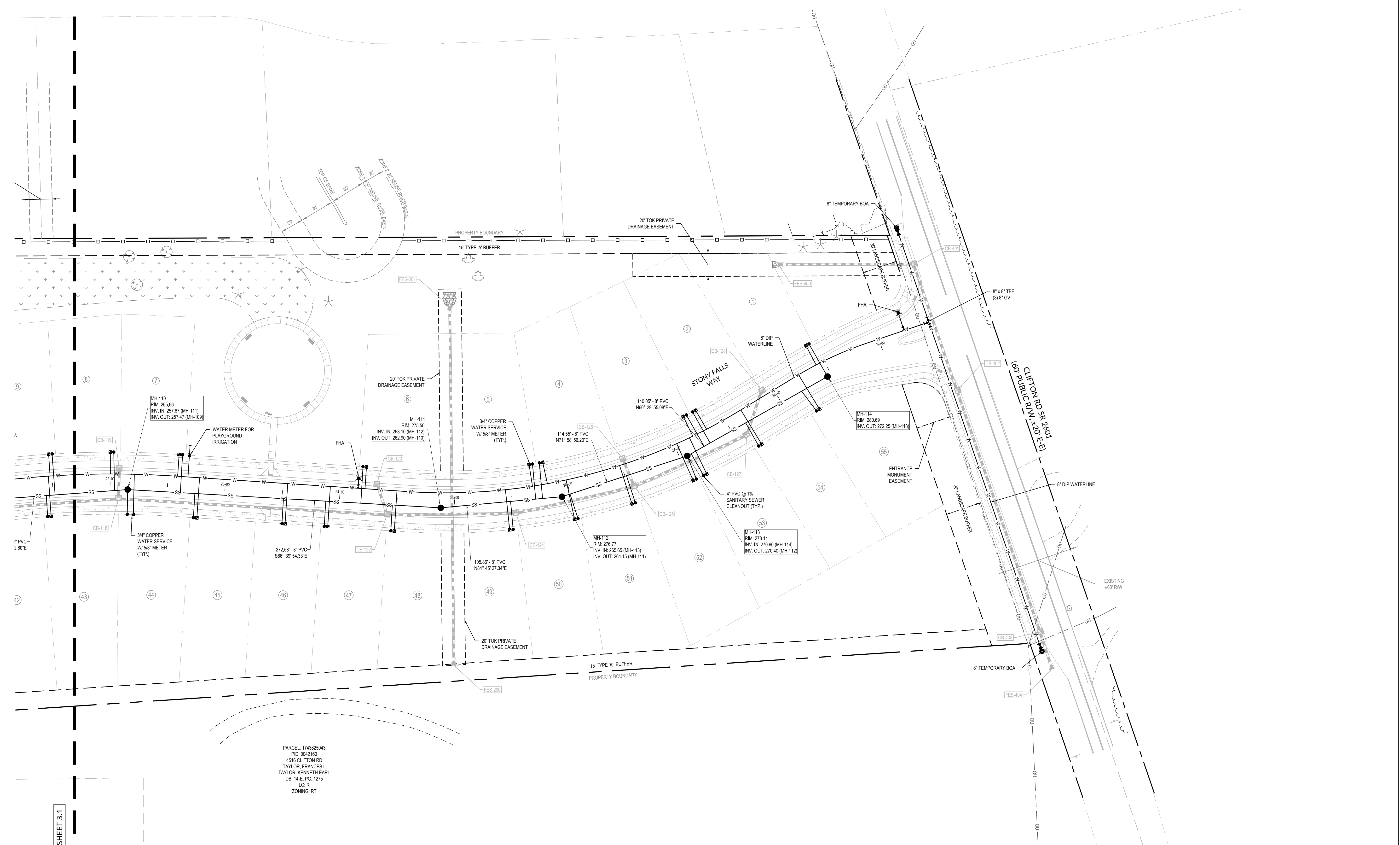
UTILITY PLAN

Job No.	02190259	Drawn By	WR
Date	08/14/20	Designer	WR



Revisions	Date
1 PER TOK COMMENTS	10/02/20

Sheet No.
3.2



PARCEL: 1743825043
PID: 0042160
4516 CLIFTON RD
TAYLOR, FRANCES L
TAYLOR, KENNETH EARL
DB: 14-E, PG. 1275
LC: R
ZONING: RT

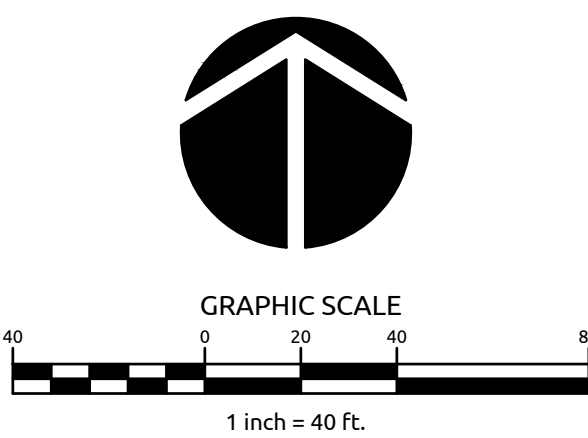
MATCHLINE SHEET 3.1

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION
Electronic Approval: This approval is being issued electronically. This approval is valid upon the signature of a City of Raleigh Review Officer below. The City will retain a copy of the approved plans. Any work authorized by this approval must proceed in accordance with the plans kept on file with the City. This electronic approval may not be edited once issued. Any modification to the approval once issued will invalidate this approval.
City of Raleigh Development Approval _____
Raleigh Water Review Officer _____

SITE PERMITTING APPROVAL
Water and Sewer Permits (if applicable)
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-4727**
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-3725**
The City of Raleigh consents to the connection to its public sewer system and extension of the **private sewer collection** 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 # _____

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: _____ DATE: _____
DEVELOPMENT SERVICES ENGINEER
THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
BY: _____ DATE: _____
ADMINISTRATOR

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



K:\01\19\0259\0259.dwg - from web address\cadd\ralemat\web\construction\3.2\3.2 UTILITY PLAN.dwg - Friday, October 2, 2020 11:52:28 AM - 100% (1/18/20)

EXISTING ADJOINER INFO:							
NUMBER	PARCEL:	PID:	MAILING ADDRESS	OWNER INFO	DB	PG.	ZONING:
1	1743721538	045821	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	NMX
2	1743721346	045820	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	NMX
3	1743721445	045819	4717 SLEEPY FALLS RUN	BROWN, WILLIAM R. JR. BROWN, GWENDOLYN JACKSON	017459	1868	NMX
4	1743721346	045818	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	NMX
5	1743629392	0458398	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	NMX
**6	1743721157	0458316	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	NMX
**7	1743721157	0458315	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	NMX
8	1743721160	0458314	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	NMX
9	1743722752	099969	120 PINE COUNTRY LANE	SAULT, CAROLYN	9155	138	GR3
10	1743723622	099970	119 PINE COUNTRY LANE	MAXWELL, MICHAEL	14957	1973	GR3
11	1743724662	099965	117 PINE COUNTRY LANE	MOLINA, SALVADOR MOLINA MARIA GUEVARA	9018	1822	GR3
12	1743725684	0099966	115 PINE COUNTRY LANE	CARONZO - DIAZ, GONZALO CARONZO CASTELLANO, BLANCA ROSA ESCOB	12204	1583	GR3
13	1743727604	0099967	113 PINE COUNTRY LANE	BIRCH, HOWARD REGINALD III	12161	563	GR3
14	1743728644	0099963	111 PINE COUNTRY LANE	KEETER, JOHN	13521	705	GR3
15	1743820675	0099960	109 PINE COUNTRY LANE	SHORNOCK, JEFFERY J	13615	2130	GR3
16	1743822685	0099959	202 MACKENAN DR.	AQUA NORTH CAROLINA INC.	13547	76	GR3
17	1743825614	0099966	105 PINE COUNTRY LANE	TEUSCHER, RICHARD DALE	5233	234	GR3
18	1743827605	0099968	103 PINE COUNTRY LANE	WRIGHT, GREGORY H	7211	699	GR3
19	1743828644	0099962	4500 CLIFFORD RD	NIXON, DORIS LEWTER	8399	2701	GR3
20	1743823384	0192190	4425 CLIFFORD RD	EARLY, TROY O EARLY, RHONDA B	8779	502	RT



- GRADING AND DRAINAGE NOTES:**
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE STANDARD SPECIFICATIONS & DETAILS.
 - PROJECT BOUNDARY INFORMATION SHOWN IS BASED ON A RECORDED PLAT BY WALLACE G. CLARK, JR. - REGISTERED LAND SURVEYOR TITLED, "SURVEY FOR MAMIE TODD LIES," DATED MARCH 26, 1997, AS RECORDED AT THE WAKE COUNTY REGISTER OF DEEDS, MAP BOOK 1997, PAGE 668.
 - SURROUNDING AND ADJACENT PARCEL INFORMATION IS BASED ON WAKE COUNTY GIS DATA.
 - EXISTING TOPOGRAPHY SHOWN ON THIS PLAN IS BASED ON GIS LIDAR DATA.
 - LIMITS OF NEUSE RIPARIAN BUFFERS ARE BASED ON NCDEQ DWR BUFFER DETERMINATION LETTER, RRO #19-328 DATED AUGUST 5TH, 2019.
 - LIMITS OF JURISDICTIONAL STREAM AND WETLANDS ARE BASED ON FIELD DELINEATION BY WITHERSRAVENEL, INC. AND USACE CONFIRMATION OF JURISDICTIONAL DETERMINATION BASED ON SITE VISIT ON 07/26/19. REFERENCE USACE ACTION ID #SAW-2019-01418 THIS PROPERTY DOES NOT LIE WITHIN THE FEMA FLOODPLAIN PER MAP NUMBER 3720174300J WITH AN EFFECTIVE DATE OF MAY 2, 2006.
 - RECEIVING WATERCOURSE: 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 PLAN 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 DRAINAGE 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 03); DI-DROP INLET (TOK #5 04)
 - RIM ELEVATION GIVEN FOR CB IS TOP OF CURB, YI OPENING INVERT FOR SLAB TOP, DI IS TOP OF GRATE FOR GRATED INLET, JB IS TOP OF RIM.
 - TOK DRAINAGE EASEMENT-PUBLIC EASEMENT
 - 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 RIGHT OF WAY AND PUBLIC DRAINAGE EASEMENTS.
 - THE CONTRACTOR WILL BE RESPONSIBLE FOR INSTALLING STEPS IN THE 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.

MASS GRADING COMPLIANCE STATEMENT:
 THIS PROJECT WILL BE MASS-GRADED INCLUDING THE RESIDENTIAL BUILDING LOTS. PER LDD SECTION 6.2.3 & 6.4 RESIDENTIAL SUBDIVISIONS WITH LOTS LESS THAN 67' WIDE ARE EXEMPT FROM THE RESIDENTIAL CLEARING AND GRADING REQUIREMENTS OF SECTION 6.2.B. THIS PROJECT IS A RESIDENTIAL SUBDIVISION WITH LOTS LESS THAN 67' WIDE, THEREFORE, SECTION 6.2.B DOES NOT APPLY.

WithersRavenel
 Engineers | Planners | Surveyors

115 MackKinn Drive, Cary, NC 27511 | t: 919-469-3300 | license # C-6832 | www.withersravenel.com

**POPLAR CREEK VILLAGE
 PHASE IV**

TOWN OF KNIGHTDALE, NORTH CAROLINA

**OVERALL STORM DRAINAGE
 PLAN**

Job No.	02190259	Drawn By	WR
Date	08/14/20	Designer	WR



Revisions	1	PER TOK COMMENTS	10/02/20
-----------	---	------------------	----------

Sheet No.
4.0

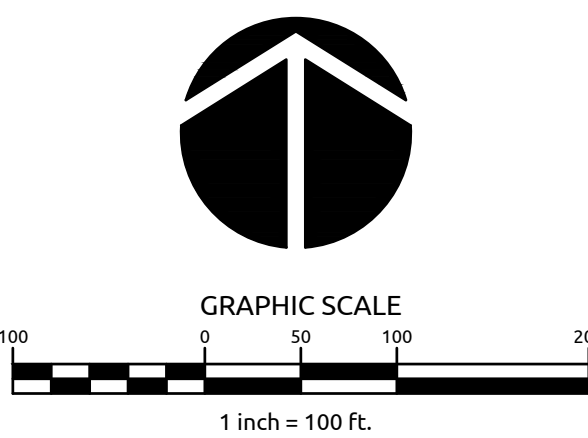
ALL MATERIALS & CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH ALL CITY OF RALEIGH & TOWN OF KNIGHTDALE DESIGN STANDARDS, DETAILS, AND SPECIFICATIONS.

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: _____ DATE: _____
 DEVELOPMENT SERVICES ENGINEER

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

BY: _____ DATE: _____
 ADMINISTRATOR



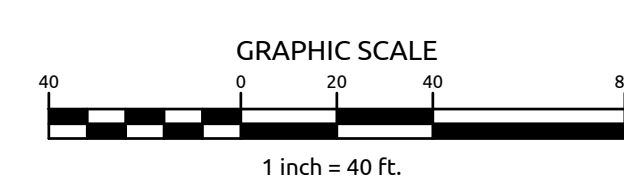
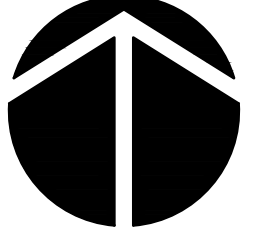
K:\1743825614\1743825614.dwg - 08/14/20 11:54:53 AM - YORIS STEPHEN

Job No.	02190259	Drawn By	WR
Date	08/14/20	Designer	WR



Revisions	1 PER TOK COMMENTS	10/02/20
-----------	--------------------	----------

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.

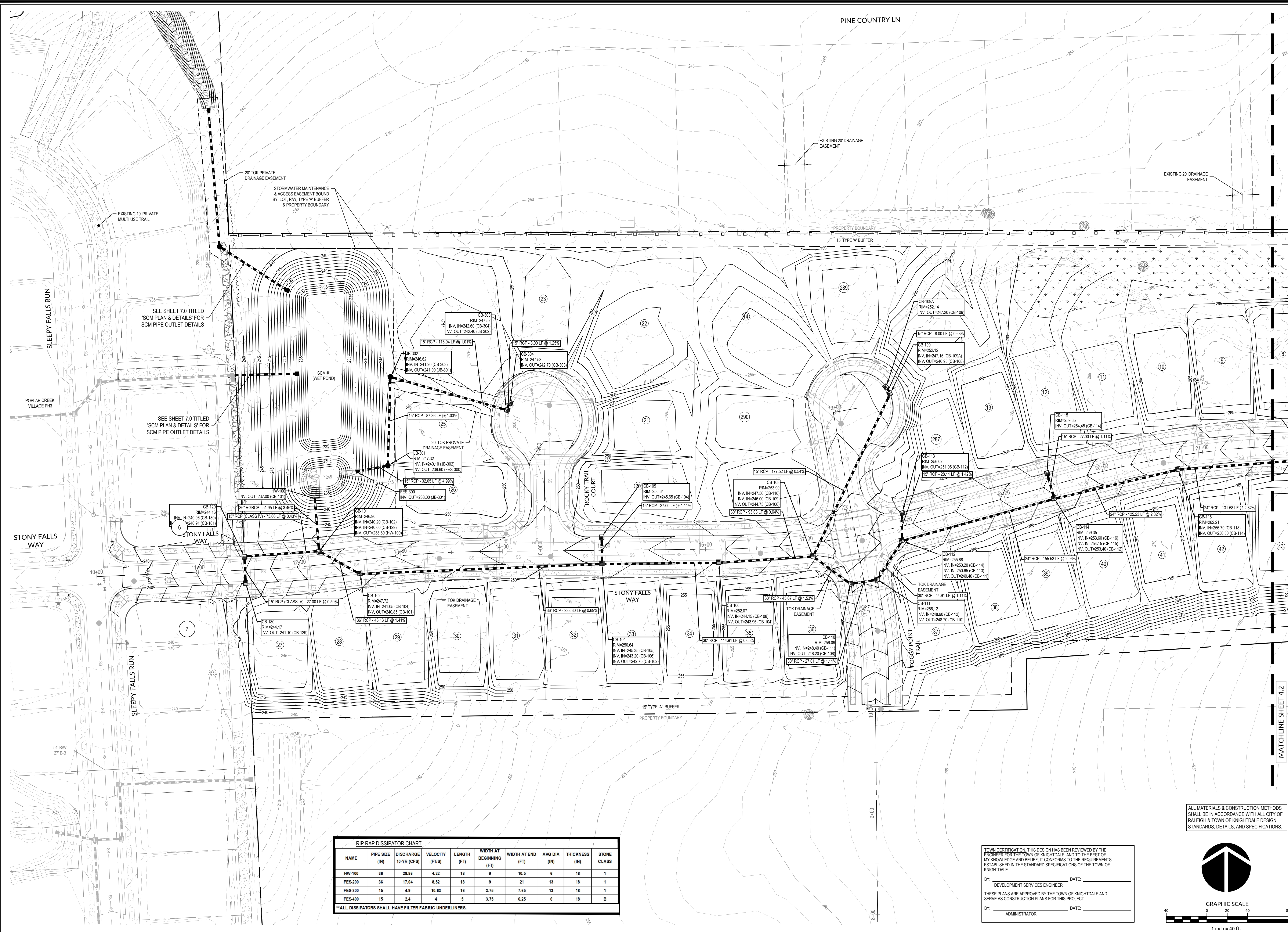
BY: _____ DATE: _____
DEVELOPMENT SERVICES ENGINEER

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

BY: _____ DATE: _____
ADMINISTRATOR

NAME	PIPE SIZE (IN)	DISCHARGE 10-YR (CFS)	VELOCITY (FT/S)	LENGTH (FT)	WIDTH AT BEGINNING (FT)	WIDTH AT END (FT)	AVG DIA (IN)	THICKNESS (IN)	STONE CLASS
HW-100	36	29.86	4.22	18	9	10.5	6	18	1
FES-200	36	17.04	8.62	18	9	21	13	18	1
FES-300	15	4.9	10.63	16	3.75	7.65	13	18	1
FES-400	15	2.4	4	5	3.75	6.25	6	18	B

*ALL DISSIPATORS SHALL HAVE FILTER FABRIC UNDERLINERS.



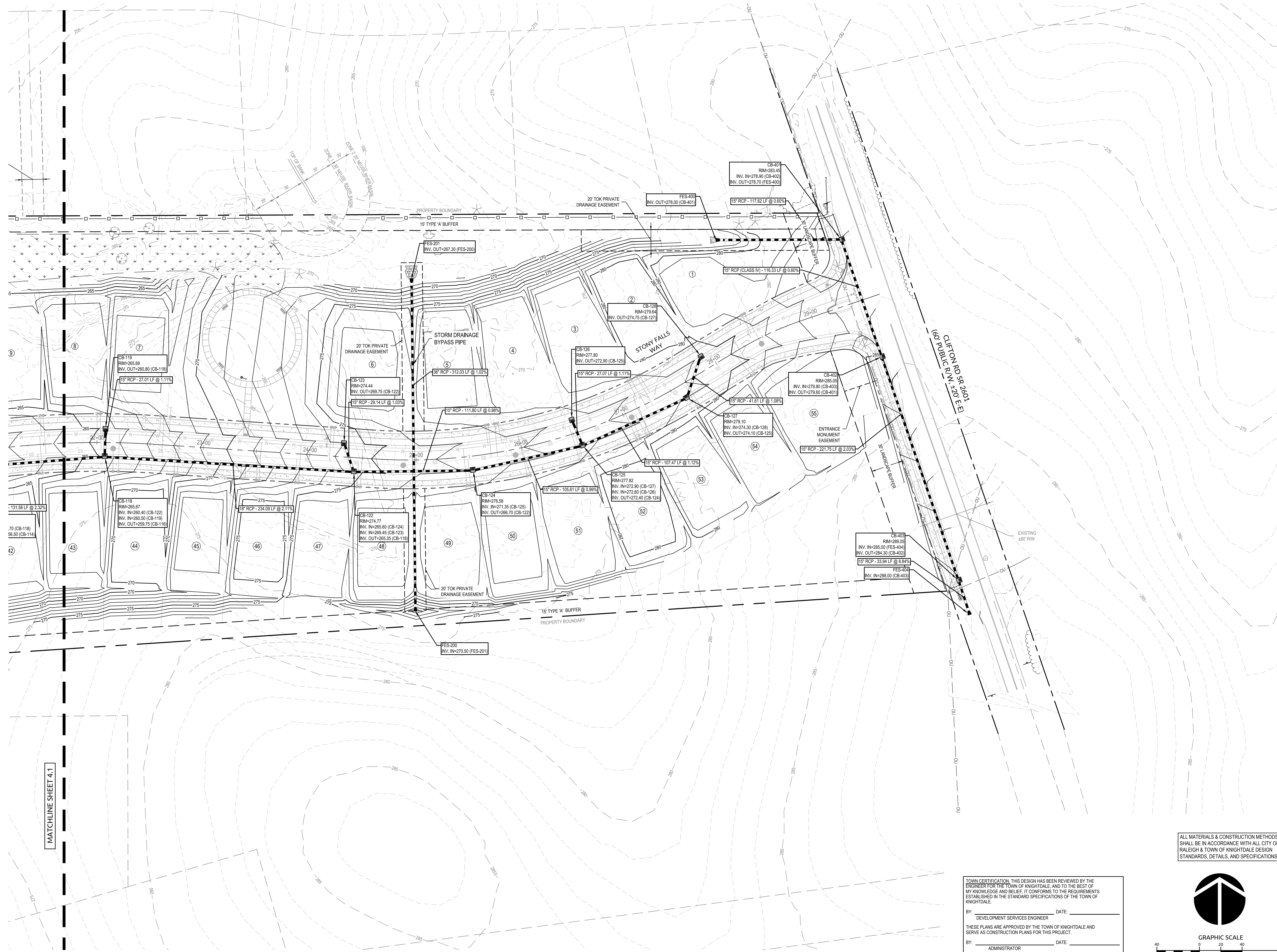
K:\10\19\0259\0259.dwg - from road address\road\0259.dwg - 14-2-2010 11:45:57 AM - YORIS STEPHEN

MATCHLINE SHEET 4.2

SEE SHEET 7.0 TITLED 'SCM PLAN & DETAILS' FOR SCM PIPE OUTLET DETAILS

SEE SHEET 7.0 TITLED 'SCM PLAN & DETAILS' FOR SCM PIPE OUTLET DETAILS

K:\17\170259\170259.dwg - from road address\CAD\dwg\170259.dwg - 10/02/20 11:55:56 AM - YORIS STEPHEN



MATCHLINE SHEET 4.1

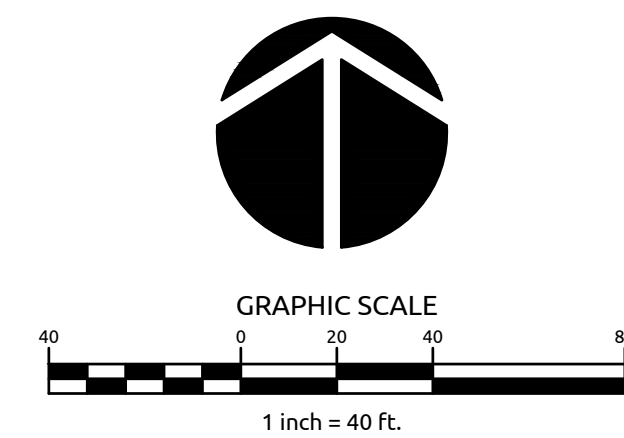
TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: _____ DATE: _____
DEVELOPMENT SERVICES ENGINEER

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

BY: _____ DATE: _____
ADMINISTRATOR

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



**POPLAR CREEK VILLAGE
PHASE IV**

TOWN OF KNIGHTDALE, NORTH CAROLINA

STORM DRAINAGE PLAN

Job No.	02190259	Drawn By	WR
Date	08/14/20	Designer	WR



Revisions		
1	PER TOK COMMENTS	10/02/20

Sheet No.	4.2
-----------	-----

K:\17\17-0250\17-0250-01\Drawings\DWG\Storm\StormDrainage.dwg, 10/2/20 11:35:52 AM, YORIS STEPHEN

STORM SYSTEM DATA							
DOWNSTREAM STRUCTURE	UPSTREAM STRUCTURE	SIZE	LENGTH	SLOPE	MATERIAL	DOWNSTREAM INVERT	UPSTREAM INVERT
CB-101	CB-129	15	73.66	0.43%	RCP (CLASS IV)	240.60	240.91
CB-101	CB-102	36	46.13	1.41%	RCP	240.20	240.85
CB-102	CB-104	36	238.30	0.69%	RCP	241.05	242.70
CB-104	CB-105	15	27.00	1.11%	RCP	245.35	245.65
CB-104	CB-106	30	114.91	0.65%	RCP	243.20	243.95
CB-106	CB-108	30	93.03	0.64%	RCP	244.15	244.75
CB-108	CB-109	15	177.52	0.54%	RCP	246.00	246.95
CB-108	CB-110	30	45.67	1.53%	RCP	247.50	248.20
CB-109	CB-109A	15	8.00	0.63%	RCP	247.15	247.20
CB-110	CB-111	30	27.01	1.11%	RCP	248.40	248.70
CB-111	CB-112	30	44.91	1.11%	RCP	248.90	249.40
CB-112	CB-113	15	28.11	1.42%	RCP	250.65	251.05
CB-112	CB-114	24	155.53	2.06%	RCP	250.20	253.40
CB-114	CB-115	15	27.00	1.11%	RCP	254.15	254.45
CB-114	CB-116	24	125.23	2.32%	RCP	253.60	256.50
CB-116	CB-118	24	131.58	2.32%	RCP	256.70	259.75
CB-118	CB-119	15	27.01	1.11%	RCP	260.50	260.80
CB-118	CB-122	18	234.09	2.11%	RCP	260.40	265.35
CB-122	CB-124	15	111.80	0.98%	RCP	265.60	266.70
CB-122	CB-123	15	29.14	1.03%	RCP	269.45	269.75

STORM SYSTEM DATA							
DOWNSTREAM STRUCTURE	UPSTREAM STRUCTURE	SIZE	LENGTH	SLOPE	MATERIAL	DOWNSTREAM INVERT	UPSTREAM INVERT
CB-124	CB-125	15	105.61	0.99%	RCP	271.35	272.40
CB-125	CB-126	15	27.07	1.11%	RCP	272.60	272.90
CB-125	CB-127	15	107.47	1.12%	RCP	272.90	274.10
CB-127	CB-128	15	41.61	1.08%	RCP	274.30	274.75
CB-129	CB-130	15	27.00	0.50%	RCP (CLASS IV)	240.96	241.10
CB-303	CB-304	15	8.00	1.25%	RCP	242.60	242.70
CB-401	CB-402	15	116.33	0.60%	RCP (CLASS IV)	278.90	279.60
CB-402	CB-403	15	221.75	2.03%	RCP	279.80	284.30
CB-403	FES-404	15	33.94	8.84%	RCP	285.00	288.00
FES-201	FES-200	36	312.03	1.02%	RCP	267.30	270.50
FES-300	JB-301	15	32.05	4.99%	RCP	238.00	239.60
FES-400	CB-401	15	117.62	0.60%	RCP	278.00	278.70
HW-100	CB-101	36	51.95	3.46%	RGRCP	237.00	238.80
JB-301	JB-302	15	87.36	1.03%	RCP	240.10	241.00
JB-302	CB-303	15	118.94	1.01%	RCP	241.20	242.40

STORM STRUCTURE TABLE				
STRUCTURE	RIM EL	STRUCTURE IN	INVERT IN	INVERT OUT
CB-101	246.90	CB-102 CB-129	240.20 240.60	238.80
CB-102	247.72	CB-104	241.05	240.85
CB-104	250.64	CB-105 CB-106	245.35 243.20	242.70
CB-105	250.64			245.65
CB-106	252.07	CB-108	244.15	243.95
CB-108	253.90	CB-110 CB-109	247.50 246.00	244.75
CB-109	252.12	CB-109A	247.15	246.95
CB-109A	252.14			247.20
CB-110	256.09	CB-111	248.40	248.20
CB-111	256.12	CB-112	248.90	248.70
CB-112	255.88	CB-114 CB-113	250.20 250.65	249.40
CB-113	256.02			251.05
CB-114	259.35	CB-116 CB-115	253.60 254.15	253.40
CB-115	259.35			254.45
CB-116	262.21	CB-118	256.70	256.50
CB-118	265.67	CB-122 CB-119	260.40 260.50	259.75
CB-119	265.69			260.80
CB-122	274.77	CB-124 CB-123	265.60 269.45	265.35
CB-123	274.44			269.75
CB-124	276.58	CB-125	271.35	266.70

STORM STRUCTURE TABLE				
STRUCTURE	RIM EL	STRUCTURE IN	INVERT IN	INVERT OUT
CB-125	277.82	CB-127 CB-126	272.90 272.60	272.40
CB-126	277.80			272.90
CB-127	279.10	CB-128	274.30	274.10
CB-128	279.64			274.75
CB-129	244.16	CB-130	240.96	240.91
CB-130	244.17			241.10
CB-303	247.52	CB-304	242.60	242.40
CB-304	247.53			242.70
CB-401	283.45	CB-402	278.90	278.70
CB-402	285.05	CB-403	279.80	279.60
CB-403	289.05	FES-404	285.00	284.30
FES-200	273.92			270.50
FES-201	270.72	FES-200	267.30	
FES-300	239.52	JB-301	238.00	
FES-400	280.22	CB-401	278.00	
FES-404	289.52			288.00
HW-100	240.83	CB-101	237.00	
JB-301	247.32	JB-302	240.10	239.60
JB-302	246.62	CB-303	241.20	241.00

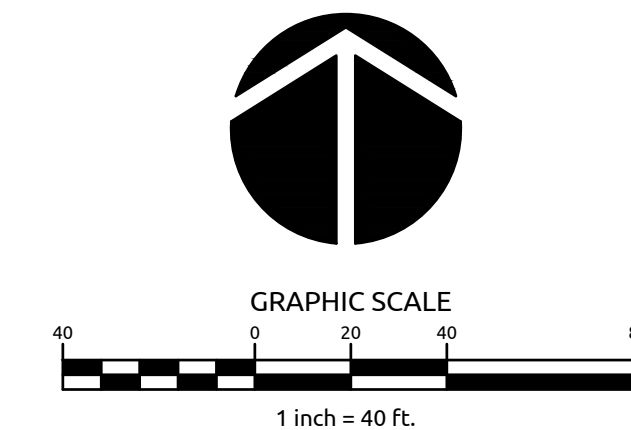
TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: _____ DATE: _____
DEVELOPMENT SERVICES ENGINEER

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

BY: _____ DATE: _____
ADMINISTRATOR

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



**POPLAR CREEK VILLAGE
PHASE IV**

TOWN OF KNIGHTDALE, NORTH CAROLINA

STORM DRAINAGE CHARTS

Job No. 02190259 Drawn By WR
Date 08/14/20 Designer WR



Revisions		
1	PER TOK COMMENTS	10/02/20



MASS GRADING COMPLIANCE STATEMENT:
 THIS PROJECT WILL BE MASS-GRADED INCLUDING THE RESIDENTIAL BUILDING LOTS. PERUDO SECTION 6.2.B.3.A RESIDENTIAL SUBDIVISIONS WITH LOTS LESS THAN 60' WIDE ARE EXEMPT FROM THE RESIDENTIAL CLEARING AND GRADING REQUIREMENTS OF SECTION 6.2.B. THIS PROJECT IS A RESIDENTIAL SUBDIVISION WITH LOTS LESS THAN 60' WIDE, THEREFORE, SECTION 6.2.B DOES NOT APPLY.

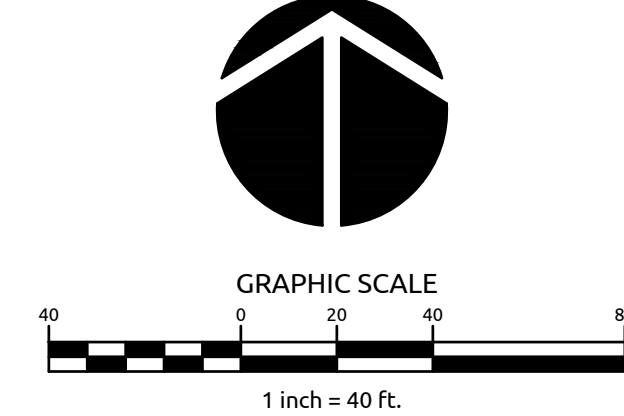
ALL MATERIALS & CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH ALL CITY OF RALEIGH & TOWN OF KNIGHTDALE DESIGN STANDARDS, DETAILS, AND SPECIFICATIONS.

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: _____ DATE: _____
 DEVELOPMENT SERVICES ENGINEER

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

BY: _____ DATE: _____
 ADMINISTRATOR



Job No.	02190259	Drawn By	WR
Date	08/14/20	Designer	WR



Revisions		
1	PER TOK COMMENTS	10/02/20

K:\17\170259\170259.dwg - from road address\170259\170259.dwg - 08/14/20 11:35:52 AM - VCRK - STP/WRK

MATCHLINE SHEET 5.1

**POPLAR CREEK VILLAGE
PHASE IV**

TOWN OF KNIGHTDALE, NORTH CAROLINA

GRADING PLAN

Job No.	02190259	Drawn By	WR
Date	08/14/20	Designer	WR



Revisions		
1	PER TOK COMMENTS	10/02/20

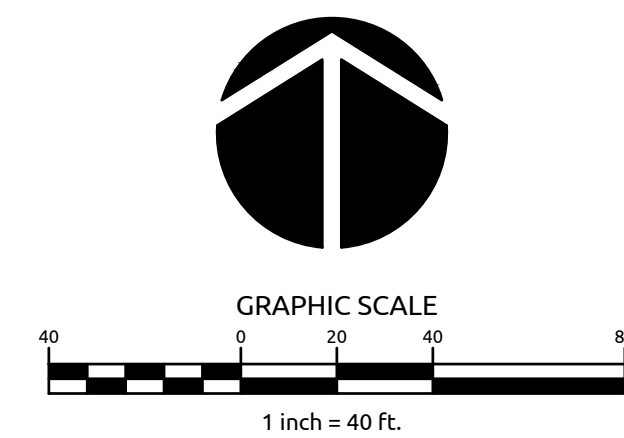
Sheet No.
5.1



MASS GRADING COMPLIANCE STATEMENT:
THIS PROJECT WILL BE MASS-GRADED INCLUDING THE RESIDENTIAL BUILDING LOTS. PER UDO SECTION 6.2.B.3.A RESIDENTIAL SUBDIVISIONS WITH LOTS LESS THAN 60' WIDE ARE EXEMPT FROM THE RESIDENTIAL CLEARING AND GRADING REQUIREMENTS OF SECTION 6.2.B. THIS PROJECT IS A RESIDENTIAL SUBDIVISION WITH LOTS LESS THAN 60' WIDE; THEREFORE, SECTION 6.2.B DOES NOT APPLY.

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: _____ DATE: _____
DEVELOPMENT SERVICES ENGINEER
THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
BY: _____ DATE: _____
ADMINISTRATOR



MATCHLINE SHEET 5.0

K:\19\190259\0259.dwg from web address\cadd\drawings\constructions\5.1_081820.dwg Plotted: Friday, October 2, 2020 11:35:59 AM - VCRK: STP/WRK

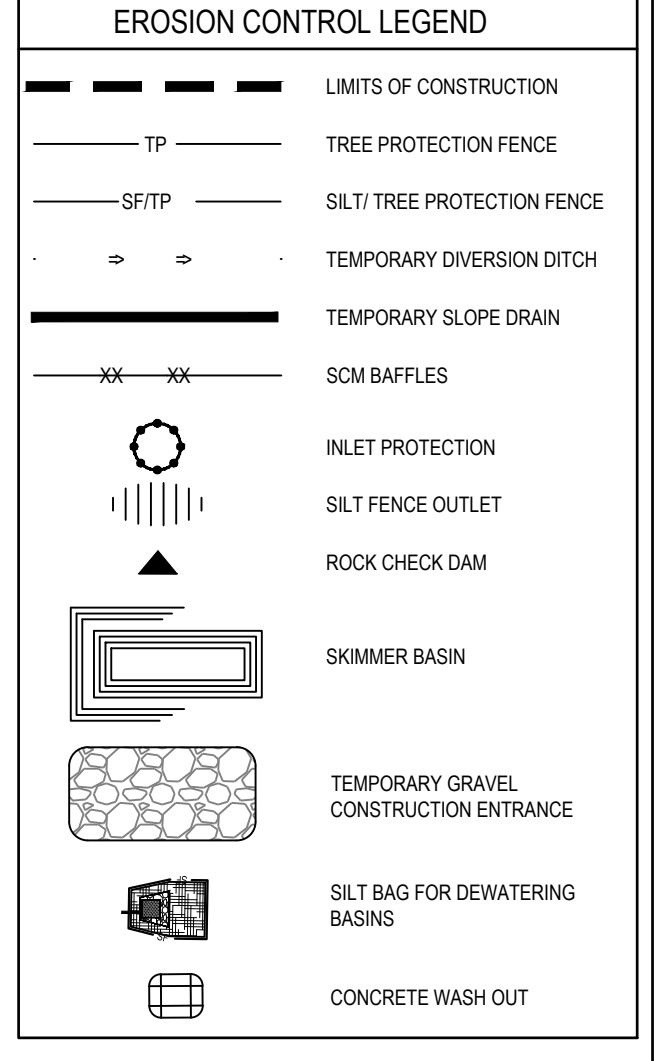
- CONSTRUCTION SEQUENCE:**
- SCHEDULE A PRECONSTRUCTION CONFERENCE WITH THE WATERSHED MANAGER, KARYN PAGEAU, 919-796-8769. OBTAIN A LAND-DISTURBING PERMIT.
 - INSTALL GRAVEL CONSTRUCTION PAD, TEMPORARY DIVERSIONS, SILT FENCE, SEDIMENT BASINS OR OTHER MEASURES AS SHOWN ON THE APPROVED PLAN. CLEAR ONLY AS NECESSARY TO INSTALL THESE DEVICES. SEED TEMPORARY DIVERSIONS, BERMS AND BASINS IMMEDIATELY AFTER CONSTRUCTION. INSTALL INLET PROTECTION TO EXISTING CATCH BASINS.
 - DUE TO FILL REQUIRED FOR FINAL GRADE OF BMP, THE RISER STRUCTURE INSTALLED SHALL BE DELAYED UNTIL THE SITE IS BROUGHT UP TO GRADE.
 - CALL 919-796-8769 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 DENUDED 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, 919-796-8769. OBTAIN A CERTIFICATE OF COMPLETION.

- EROSION CONTROL & STORM 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.
 - LIMITS OF JURISDICTIONAL STREAM AND WETLANDS ARE BASED ON FIELD DELINEATION BY WITHERSRAVENEL, INC. AND USACE CONFIRMATION OF JURISDICTIONAL DETERMINATION BASED ON SITE VISIT ON 07/26/19. REFERENCE USAGE ACTION ID #54W-2019-01418.
 - THIS PROPERTY DOES NOT LIE WITHIN THE FEMA FLOODPLAIN PER MAP NUMBER 3720174300J WITH AN EFFECTIVE DATE OF MAY 2, 2006.
 - RECEIVING WATERCOURSE: UNNAMED TRIBUTARY 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, 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.
 - 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.
 - A PRECONSTRUCTION MEETING SHALL BE REQUIRED FOR THIS CONSTRUCTION.
 - 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 UDO OR NC GENERAL STATUTES. THE STOP WORK ORDER SHALL REMAIN IN EFFECT UNTIL SUCH TIME AS THE PADS ARE RESTORED AND REFRESHED AND UNTIL ANY RESULTING MUD AND DEBRIS HAS BEEN REMOVED FROM THE ADJACENT STREETS BY THE CONTRACTOR.
 - 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.
 - 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.
 - 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).
 - 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 UDO SECTION 6.2(B).
 - CONTRACTOR SHALL INSTALL PROPER EROSION CONTROL MEASURES TO ENSURE THAT SEDIMENTATION DURING LOT CLEARING WILL BE MINIMIZED.
 - CONTRACTOR SHALL MAINTAIN ALL EROSION CONTROL STRUCTURES DURING THE LIFE OF THE PROJECT.
 - CONTRACTOR SHALL CONSTRUCT DIVERSION DITCHES AS NECESSARY TO ENSURE ALL SEDIMENT IS DIRECTED INTO EROSION CONTROL MEASURES.
 - CONTRACTOR SHALL INSTALL TEMPORARY SLOPE DRAINS PER DETAIL (SHEET 10.5) AT LOCATIONS WHERE TEMPORARY DIVERSION DITCHES DISCHARGE INTO A SKIMMER BASIN AS TO AVOID SLOPE EROSION.
 - TOPSOIL SHALL BE WASTED OFFSITE OR AT APPROVED STOCKPILE AREA ON SITE. STOCKPILE HEIGHT SHALL NOT EXCEED 35 FEET WITH SLOPES 2:1 OR FLATTER.
 - ALL STORM DRAINAGE PIPE SHALL BE PROTECTED DURING CONSTRUCTION IN ACCORDANCE WITH TOWN OF KNIGHTDALE DETAILS AND SPECIFICATIONS.
 - CONTRACTOR SHALL PROVIDE RIP RAP DISSIPATOR PADS AT STORM DRAINAGE PIPE DISCHARGE POINTS AS REQUIRED TO ENSURE POSITIVE DRAINAGE.
 - 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.
 - ALL EARTHWORK SHALL BE COMPLETED IN ACCORDANCE WITH THE TOWN OF KNIGHTDALE STANDARD SPECIFICATIONS AND CONSTRUCTION DETAILS MANUAL (SECTION 2.05).
 - STABILIZATION SHALL BE IN ACCORDANCE WITH NPDES STORMWATER DISCHARGE PERMIT (SEE TABLE ON SHEET 8.3).
 - MASS GRADING IS NOT PERMITTED ON LOTS 60' & GREATER.

MASS GRADING COMPLIANCE STATEMENT:
THIS PROJECT WILL BE MASS GRADDED INCLUDING THE RESIDENTIAL BUILDING LOTS. PER UDO SECTION 6.2 B.3 A RESIDENTIAL SUBDIVISIONS WITH LOTS LESS THAN 60' WIDE ARE EXEMPT FROM THE RESIDENTIAL CLEARING AND GRADING REQUIREMENTS OF SECTION 6.2 B. THIS PROJECT IS A RESIDENTIAL SUBDIVISION WITH LOTS LESS THAN 60' WIDE; THEREFORE, SECTION 6.2 B DOES NOT APPLY.

DENUDED AREA = 16.10 AC

EROSION CONTROL BLANKET NOTE:
- PROVIDE EROSION CONTROL BLANKET. (SEE DETAIL SPT 10.5)



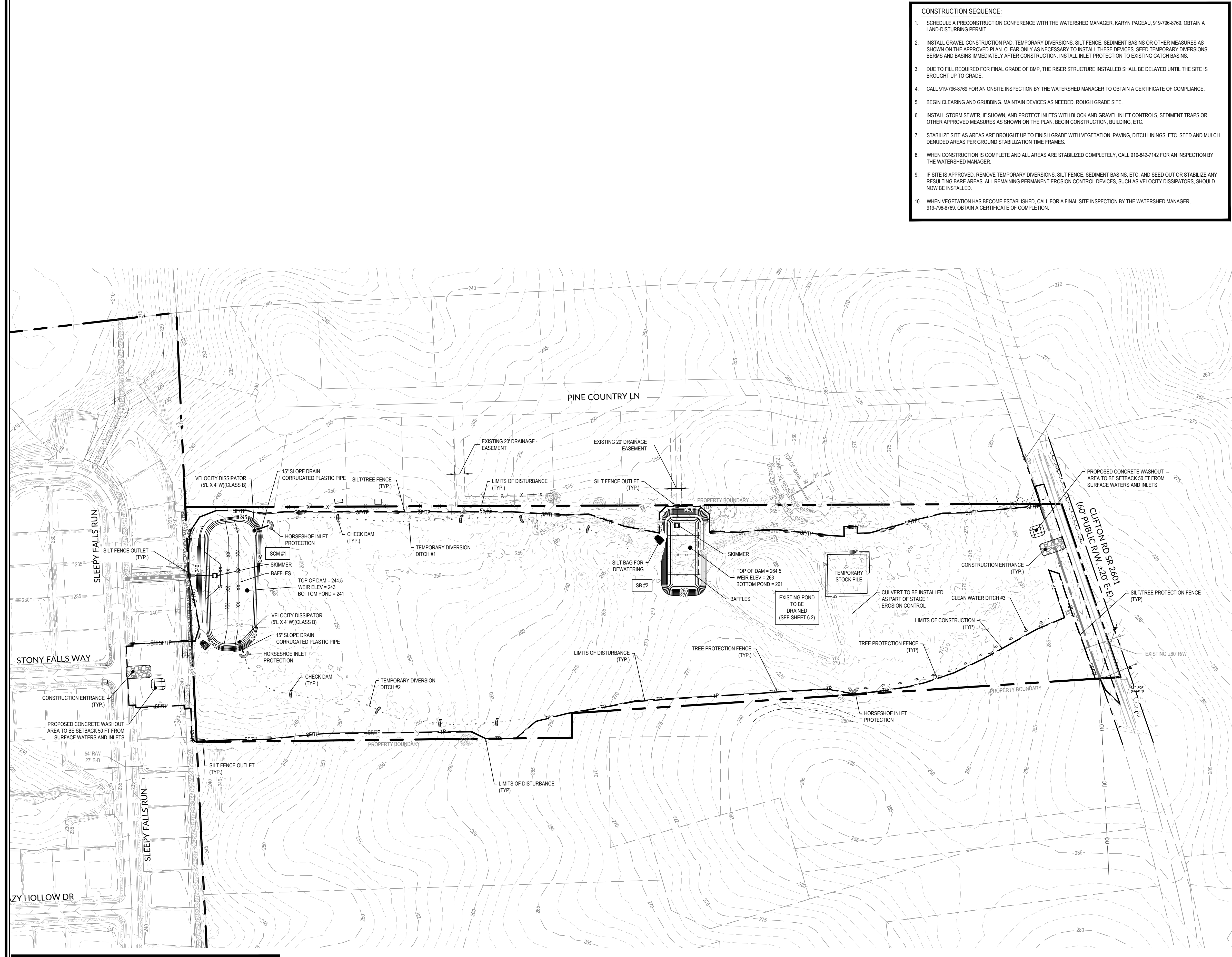
ALL MATERIALS & CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH ALL CITY OF RALEIGH & TOWN OF KNIGHTDALE DESIGN STANDARDS, DETAILS, AND SPECIFICATIONS.

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: _____ DATE: _____
DEVELOPMENT SERVICES ENGINEER

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

BY: _____ DATE: _____
ADMINISTRATOR



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

TEMPORARY SKIMMER BASIN DESIGN CHART

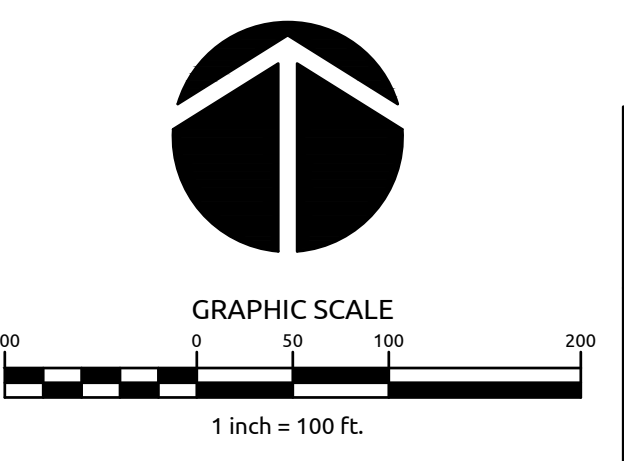
BASIN	TYPE	DRAINAGE AREA [AC]	DENUDED AREA [AC]	COMPOSITE RATIONAL C	PEAK FLOW Q10 [CFS]	BASIN DIMENSIONS			WEIR LENGTH [FT]	VOLUME REQUIRED [CF]	VOLUME PROVIDED [CF]	SURFACE AREA REQ. [SF]	SURFACE PROVIDED [SF]	SKIMMER SIZE [IN]	SKIMMER ORIFICE SIZE [IN]
						DEPTH [FT]	LENGTH [FT]	WIDTH [FT]							
**SCM #1	SKIMMER	13.7	8.0	0.38	37.9	SEE E.C. PLAN			40	24,678	42,404	16,568	21,202	3.0	2.50
SB #2	SKIMMER	5.9	4.7	0.44	18.9	2.0	290.0	42.0	20	10,638	17,592	8,217	10,500	3.0	2.00

NOTES: 1' OF FREEBOARD IS SHOWN PROVIDED FOR THE BASINS. VOLUME CALCULATION DOES NOT INCLUDE FREEBOARD. SURFACE AREA REQUIREMENT FOR A SKIMMER SEDIMENT BASIN DETERMINED PER NC DENR EROSION CONTROL MANUAL (435 SF/CFS FOR 10 YR STORM). VOLUME REQUIREMENT FOR A SKIMMER SEDIMENT BASIN DETERMINED PER NC DENR EROSION CONTROL MANUAL (1800 CF PER DRAINAGE AREA). 10-YR RAINFALL INTENSITY = 7.22
**SCM #1 SKIMMER DRAINAGE AREA HAS ADDITIONAL AREA TO ACCOUNT FOR POST EROSION CONTROL CONDITIONS.

TEMPORARY DIVERSION DITCH CHART

NAME	RATIONAL C	DRAINAGE AREA [AC]	Q10 [CFS]	SLOPE (%)	CALCULATED DEPTH [FT]	CALCULATED SHEAR STRESS [LBS/FT ²]	CALCULATED VELOCITY [FT/S]	TYPE OF LINER
TEMPORARY DIVERSION DITCH #1	0.50	3.00	10.83	2.9	0.66	1.19	4.91	S75
TEMPORARY DIVERSION DITCH #2	0.35	4.26	10.77	3.3	0.64	1.32	5.14	S75
CLEAN WATER DITCH #3	0.22	4.53	7.20	2.5	0.56	0.87	4.15	S75

NOTES:
1 RAINFALL INTENSITY BASED ON THE 10 YEAR S' 7.22
2 CALCULATED DEPTH & CALCULATED BASED ON FLOWMASTER OUTPUT.
3 NAG S75: NORTH AMERICAN GREEN S75 OR EQUAL
NAG S150: NORTH AMERICAN GREEN S150 OR EQUAL
NAG SC150: NORTH AMERICAN GREEN SC150 OR EQUAL



K:\19\190259\190259.dwg: 08/14/20 10:06:10 AM: 108K: STPHN

- 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.

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

- EROSION CONTROL & STORM 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.
 - LIMITS OF JURISDICTIONAL STREAM AND WETLANDS ARE BASED ON FIELD DELINEATION BY WITHERSRAVENEL, INC. AND USACE CONFIRMATION OF JURISDICTIONAL DETERMINATION BASED ON SITE VISIT ON 07/26/19. REFERENCE USACE ACTION ID #54W-2019-01418.
 - THIS PROPERTY DOES NOT LIE WITHIN THE FEMA FLOODPLAIN PER MAP NUMBER 3720174300J WITH AN EFFECTIVE DATE OF MAY 2, 2006.
 - RECEIVING WATERCOURSE: UNNAMED TRIBUTARY 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, 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.
 - 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.
 - A PRECONSTRUCTION MEETING SHALL BE REQUIRED FOR THIS CONSTRUCTION.
 - 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 UDO OR NC 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.
 - 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.
 - 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.
 - 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).
 - 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 UDO SECTION 6.2(B).
 - CONTRACTOR SHALL INSTALL PROPER EROSION CONTROL MEASURES TO ENSURE THAT SEDIMENTATION DURING LOT CLEARING WILL BE MINIMIZED.
 - CONTRACTOR SHALL MAINTAIN ALL EROSION CONTROL STRUCTURES DURING THE LIFE OF THE PROJECT.
 - CONTRACTOR SHALL CONSTRUCT DIVERSION DITCHES AS NECESSARY TO ENSURE ALL SEDIMENT IS DIRECTED INTO EROSION CONTROL MEASURES.
 - CONTRACTOR SHALL INSTALL TEMPORARY SLOPE DRAINS PER DETAIL (SHEET 10.5) AT LOCATIONS WHERE TEMPORARY DIVERSION DITCHES DISCHARGE INTO A SKIMMER BASIN AS TO AVOID SLOPE EROSION.
 - TOPSOIL SHALL BE WASTED OFFSITE OR AT APPROVED STOCKPILE AREA ON SITE.
 - ALL STORM DRAINAGE PIPE SHALL BE PROTECTED DURING CONSTRUCTION IN ACCORDANCE WITH TOWN OF KNIGHTDALE DETAILS AND SPECIFICATIONS.
 - CONTRACTOR SHALL PROVIDE RIP RAP DISSIPATOR PADS AT STORM DRAINAGE PIPE DISCHARGE POINTS AS REQUIRED TO ENSURE POSITIVE DRAINAGE.
 - 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.
 - ALL EARTHWORK SHALL BE COMPLETED IN ACCORDANCE WITH THE TOWN OF KNIGHTDALE STANDARD SPECIFICATIONS AND CONSTRUCTION DETAILS MANUAL (SECTION 2.05).
 - STABILIZATION SHALL BE IN ACCORDANCE WITH NPDES STORMWATER DISCHARGE PERMIT (SEE TABLE ON SHEET 8.3).
 - MASS GRADING IS NOT PERMITTED ON LOTS 60' & GREATER.

MASS GRADING COMPLIANCE STATEMENT:
THIS PROJECT WILL BE MASS-GRADED INCLUDING THE RESIDENTIAL BUILDING LOTS. PER UDO SECTION 6.2.B.3.A RESIDENTIAL SUBDIVISIONS WITH LOTS LESS THAN 60' WIDE ARE EXEMPT FROM THE RESIDENTIAL CLEARING AND GRADING REQUIREMENTS OF SECTION 6.2.B. THIS PROJECT IS A RESIDENTIAL SUBDIVISION WITH LOTS LESS THAN 60' WIDE; THEREFORE, SECTION 6.2.B DOES NOT APPLY.

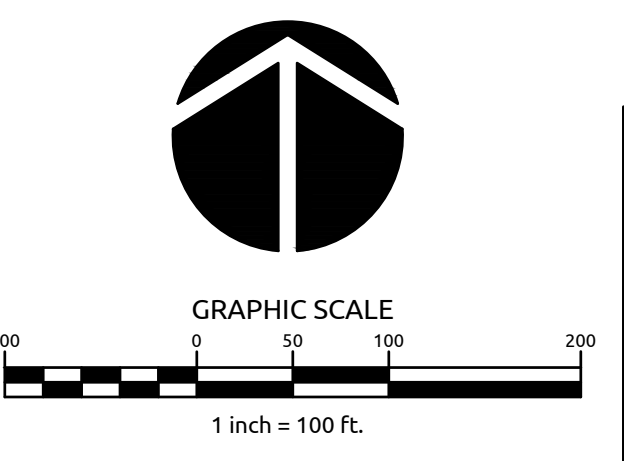
EROSION CONTROL BLANKET NOTE:
PROVIDE EROSION CONTROL BLANKET. (SEE DETAIL SPT 10.3)

DENUDED AREA = 16.10 AC

EROSION CONTROL LEGEND

---	LIMITS OF CONSTRUCTION
— TP —	TREE PROTECTION FENCE
— SPT —	SILT/TREE PROTECTION FENCE
— D —	TEMPORARY DIVERSION DITCH
— SD —	TEMPORARY SLOPE DRAIN
XX XX	SCM Baffles
— I —	INLET PROTECTION
— O —	SILT FENCE OUTLET
— R —	ROCK CHECK DAM
— S —	SKIMMER BASIN
— G —	TEMPORARY GRAVEL CONSTRUCTION ENTRANCE
— B —	SILT BAG FOR DEWATERING BASINS
— C —	CONCRETE WASH OUT

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

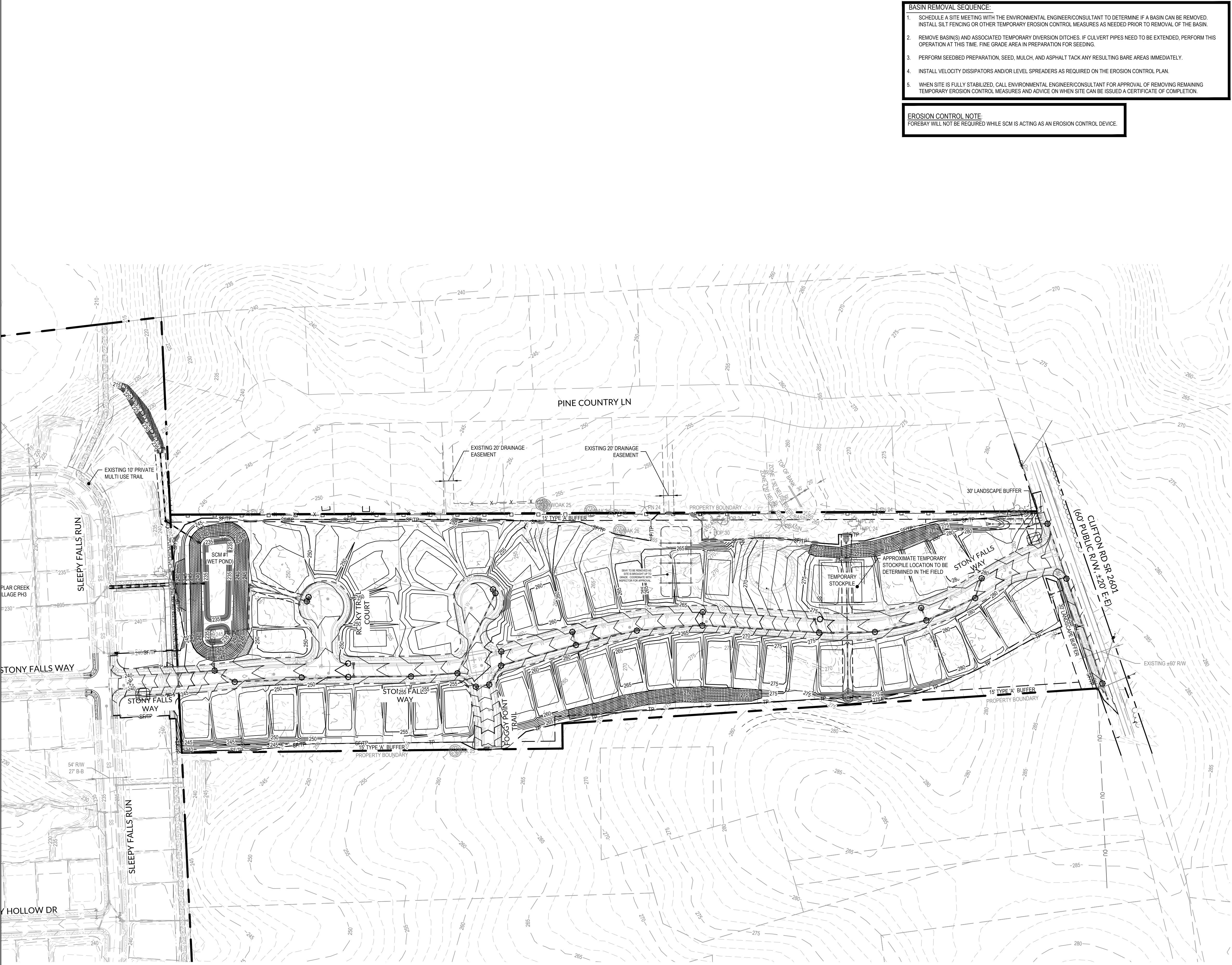


TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: _____ DATE: _____
DEVELOPMENT SERVICES ENGINEER

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

BY: _____ DATE: _____
ADMINISTRATOR



Job No.	02190259	Drawn By	WR
Date	08/14/20	Designer	WR

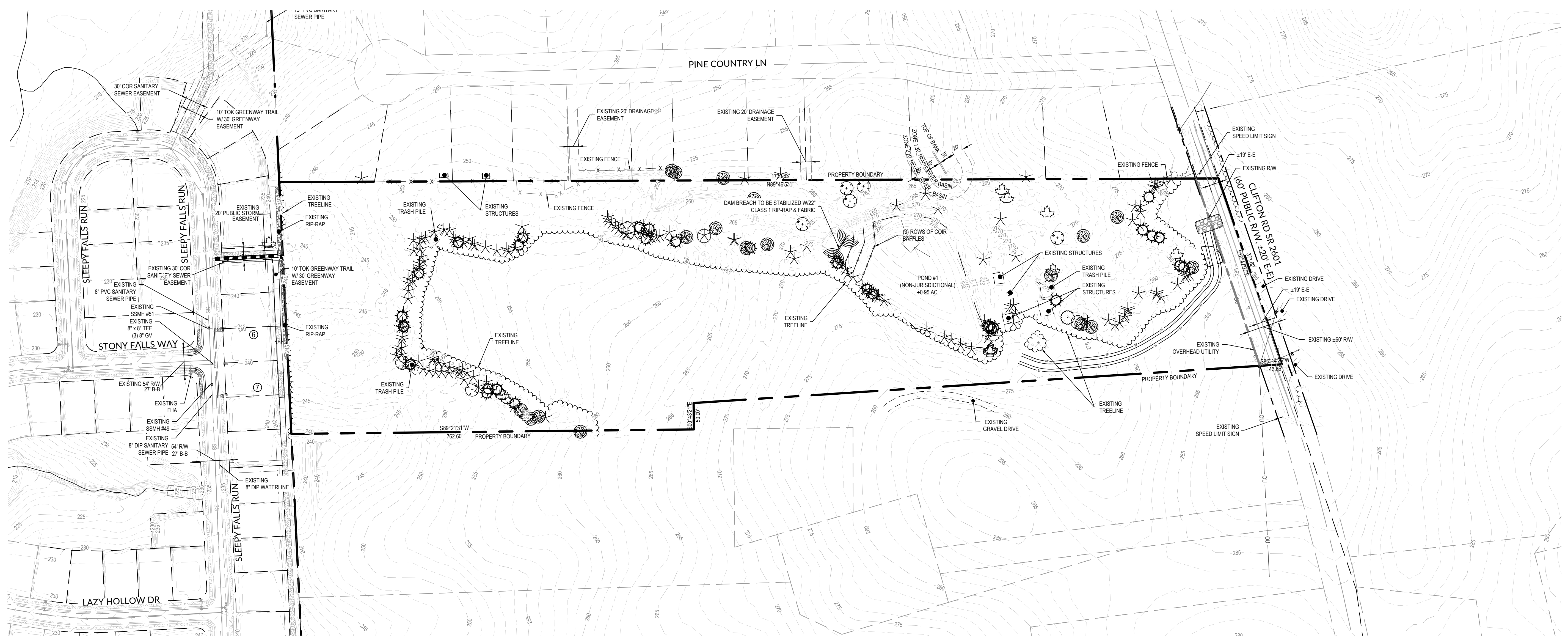


Revisions

1	PER TOK COMMENTS	10/02/20
---	------------------	----------

K:\19\190259\190259.dwg - from seed address\seed\CAD\drawings\erosion_control\6.1 STAGE 2 EROSION CONTROL PLAN.dwg - Friday, October 2, 2020 11:35:53 AM - 1096.81 BT/Min

- GENERAL NOTES:**
- PROJECT BOUNDARY INFORMATION SHOWN IS BASED ON A RECORDED PLAT BY WALLACE G. CLARK, JR., REGISTERED LAND SURVEYOR TITLED, "SURVEY FOR MAMIE TODD BEE", DATED MARCH 26, 1997, AS RECORDED AT THE WAKE COUNTY REGISTER OF DEEDS, MAP BOOK 1997, PAGE 668.
 - SURROUNDING AND ADJACENT PARCEL INFORMATION IS BASED ON WAKE COUNTY GIS DATA.
 - LIMITS OF NEUSE RIPARIAN BUFFERS ARE BASED ON NCDEQ-DWR BUFFER DETERMINATION LETTER, RRO #19-328 DATED AUGUST 5TH, 2019.
 - LIMITS OF JURISDICTIONAL STREAM AND WETLANDS ARE BASED ON FIELD DELINEATION BY WITHERSRAVENEL, INC. AND USACE CONFIRMATION OF JURISDICTIONAL DETERMINATION BASED ON SITE VISIT ON 07/26/19. REFERENCE USACE ACTION ID #SAW-2019-01418.
 - PROPERTY IS CURRENTLY NOT IN TOWN OF KNIGHTDALE ETJ.
 - BOUNDARY AND TOPOGRAPHIC INFORMATION BASED ON SURVEY BY WITHERSRAVENEL, INC.
 - THIS PROPERTY DOES NOT LIE WITHIN THE FEMA FLOODPLAIN PER MAP NUMBER 3720174300J WITH AN EFFECTIVE DATE OF MAY 2, 2006.



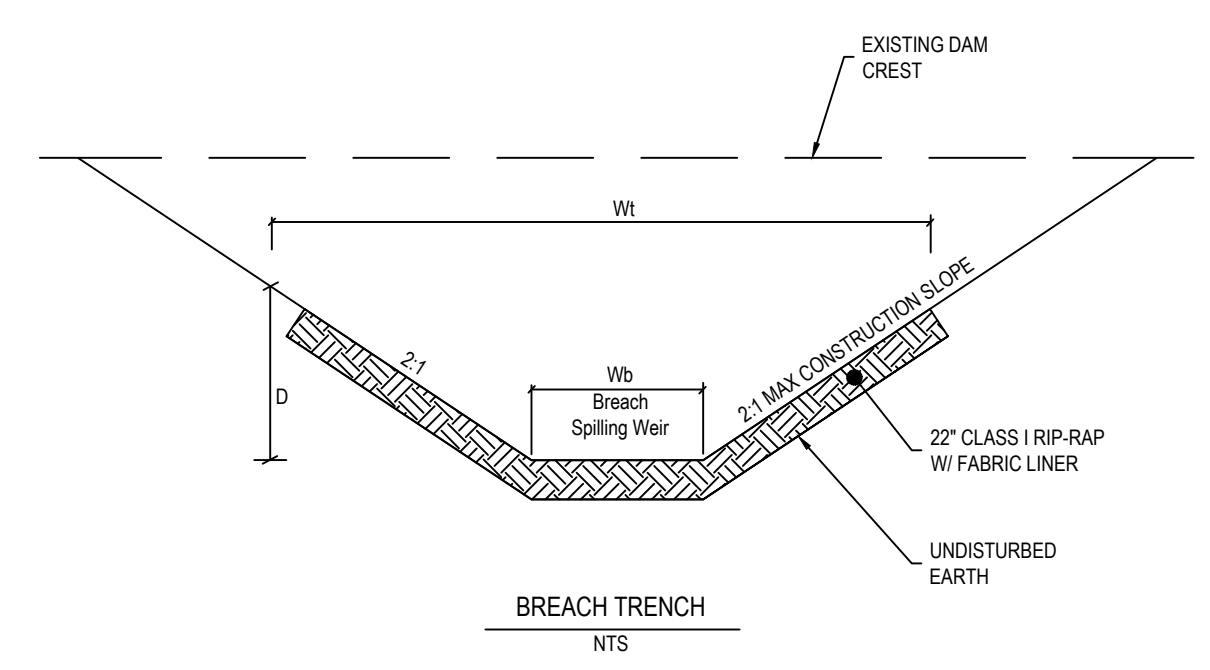
Job No.	02190259	Drawn By	WR
Date	08/14/20	Designer	WR



Revisions	Date
1 PER TOK COMMENTS	10/02/20

Sheet No.	6.2
-----------	-----

- CONTROLLED DAM BREACH CONSTRUCTION SEQUENCE:**
- OBTAIN APPROVAL FROM TOWN OF HOLLY SPRINGS STORMWATER DIVISION.
 - CONTRACTOR MUST VERIFY THAT NO UTILITIES ARE PRESENT IN THE EXCAVATION AREA PRIOR TO COMMENCING THE DAM BREACH. CONTACT NORTH CAROLINA ONE CALL AT 1-800-632-4845.
 - CONTRACTOR SHALL PROVIDE PUMP TO LOWER WATER LEVEL. PLACE RIP-RAP AT DISCHARGE POINT OF BREACH PUMP LINE TO DETER EROSION AT OUTLET. DISCHARGE SHALL BE CONDUCTED IN A MANNER TO PREVENT SEDIMENTATION DOWNSTREAM. CONTINUE PUMPING AS NEEDED TO COMPLETELY DRAIN POND & THEN INSTALL TOA STANDARD 400.09 FILTER BERM AROUND BREACH. SITE CONDITIONS MAY DICTATE THAT THIS AREA BE "FLOODED" IN BY CONTRACTOR BEFORE HE IS ABLE TO CONSTRUCT THE FILTER BERM.
 - FILL IN POND WITH SUITABLE SOIL AND ROUGH GRADE.
 - SEED ALL DISTURBED AREAS DUE TO CONSTRUCTION ACTIVITIES PER SEEDING SCHEDULE.



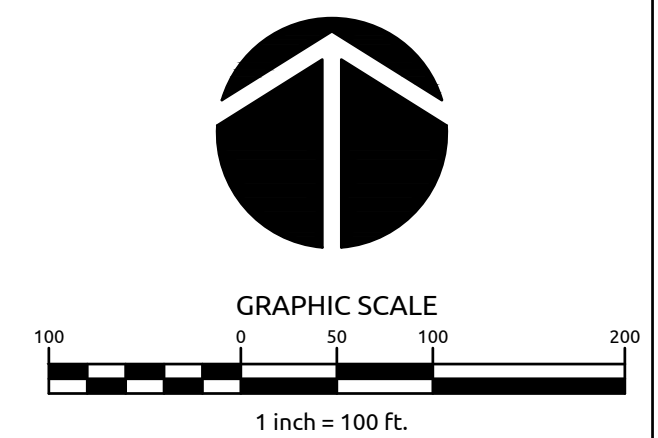
POND NAME	DRAINAGE AREA [AC]	Q10 [CFS]	Q100 [CFS]	Wb	Wt	D
1	8	19.7	26.5	3	10	3

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.

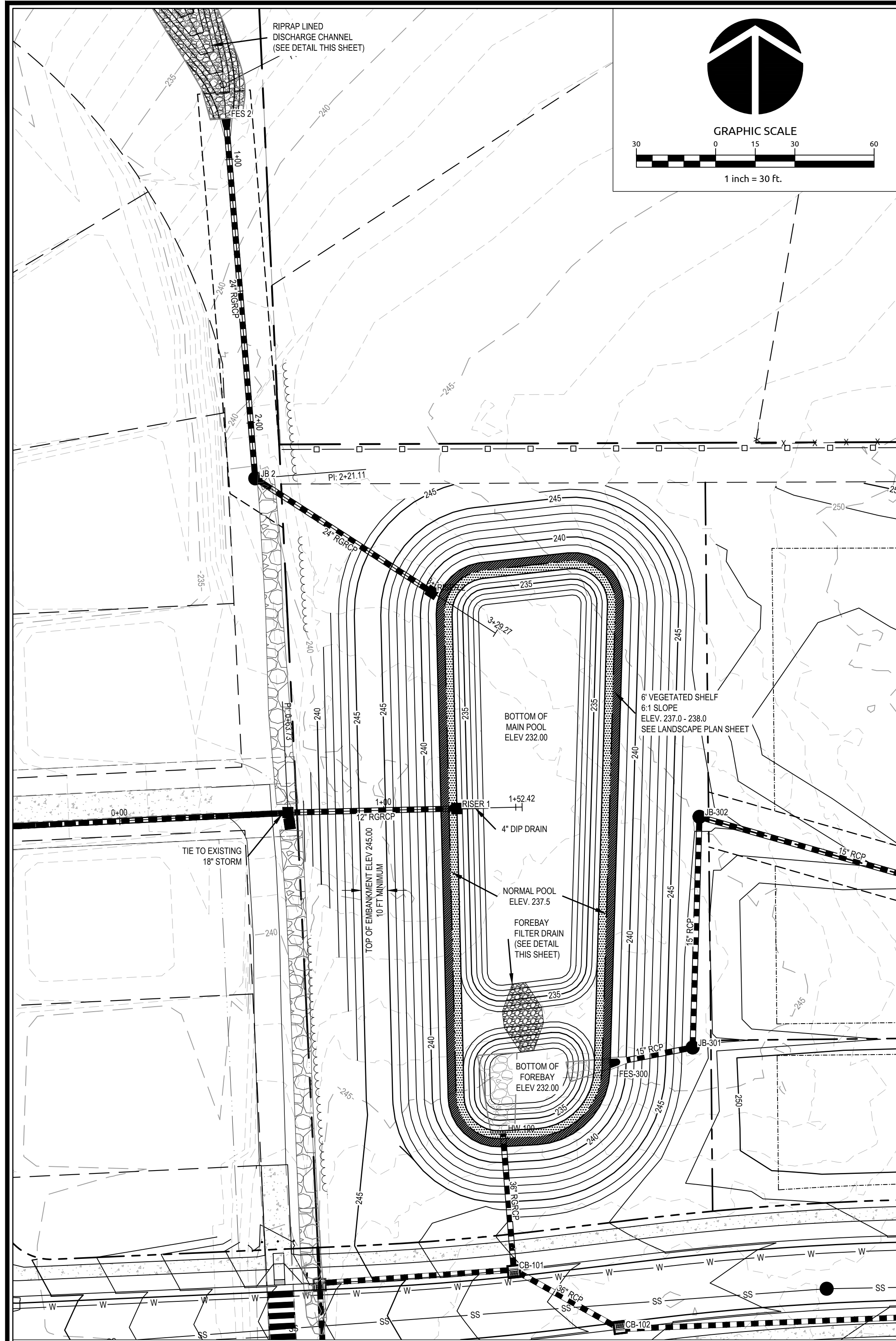
BY: _____ DATE: _____
DEVELOPMENT SERVICES ENGINEER

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

BY: _____ DATE: _____
ADMINISTRATOR



K:\19\190259\190259.dwg from web address\cadd\drawings\construction\6.2 Pond Drainage Plan.dwg Plot Date: 08/14/20 10:35:53 AM - YORK STEPHEN



STORMWATER MEASURE (SCM) NOTES:

- PRIOR TO BEGINNING 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 APPLICABLE FEDERAL, STATE (I.E. MINIMUM DESIGN CRITERIA) AND LOCAL STANDARDS AND SPECIFICATIONS HEREBY INCORPORATED BY REFERENCE.
- SCMS ON THE PROJECT MUST BE LOCATED ON COMMON OPEN SPACE, HAVE AN ACCESS AND MAINTENANCE EASEMENTS LOCATED AROUND THEM AND INCLUDE AN OPERATIONS AND MAINTENANCE MANUAL AND MAINTENANCE AGREEMENT.
- GEOTECHNICAL ENGINEER SHALL EVALUATE SOILS 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 FILL LIFTS TOGETHER.
 - ALL COMPACTION SHALL BE TESTED BY THE SAND CONE METHOD (ASTM D-1556) OR NUCLEAR METHOD (ASTM D-6938) 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.
- EMBANKMENT AND SIDE SLOPES OF THE BASIN SHALL BE STABILIZED PER SEEDING SCHEDULE ON EROSION CONTROL DETAILS SHEET OR SOODED. SEE LANDSCAPE PLAN FOR FURTHER PLANTING DETAILS.
- DURING CONSTRUCTION, THE SCM IS TO BE USED AS AN EROSION CONTROL DEVICE. THE FOREBAY SHALL NOT BE INSTALLED WHILE SCM IS ACTING AS AN EROSION CONTROL DEVICE.
- THE FOREBAY SHALL BE CONSTRUCTED PER THE SAME METHODS AS THE DAM (SEE NOTE 5).
- ALL PERMANENT STRUCTURES (I.E. WEIR WALLS, ETC) ARE TO BE INSTALLED WITH THE INITIAL DAM CONSTRUCTION.
- CONTRACTOR TO PROVIDE STRUCTURAL DRAWINGS TO THE DESIGN ENGINEER FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
- 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 SHELF SHALL BE CONSTRUCTED PER PLANT SCHEDULE ON LANDSCAPE PLAN.
 - VEGETATED SHELF SHALL BE PLANTED PER PLANT SCHEDULE ON LANDSCAPE PLAN.
 - FINAL CERTIFICATION OF THE SCM BY A PROFESSIONAL ENGINEER IS REQUIRED.
- CLAY LINER SPECIFICATIONS:**

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 AT 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.

THE CLAY LINER FOR THE WET POND 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 PROVIDED FROM AN APPROVED LABORATORY 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.)

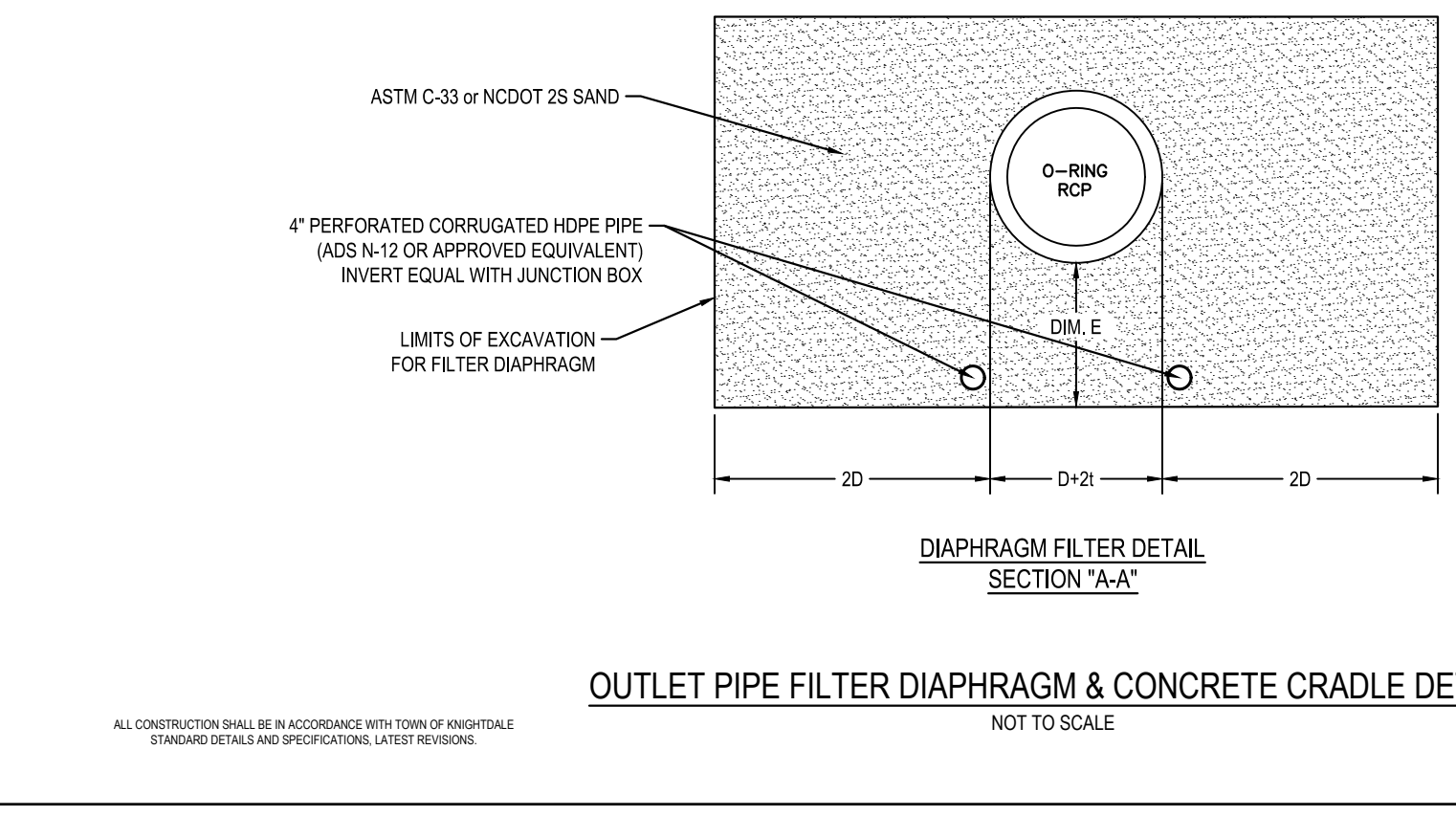
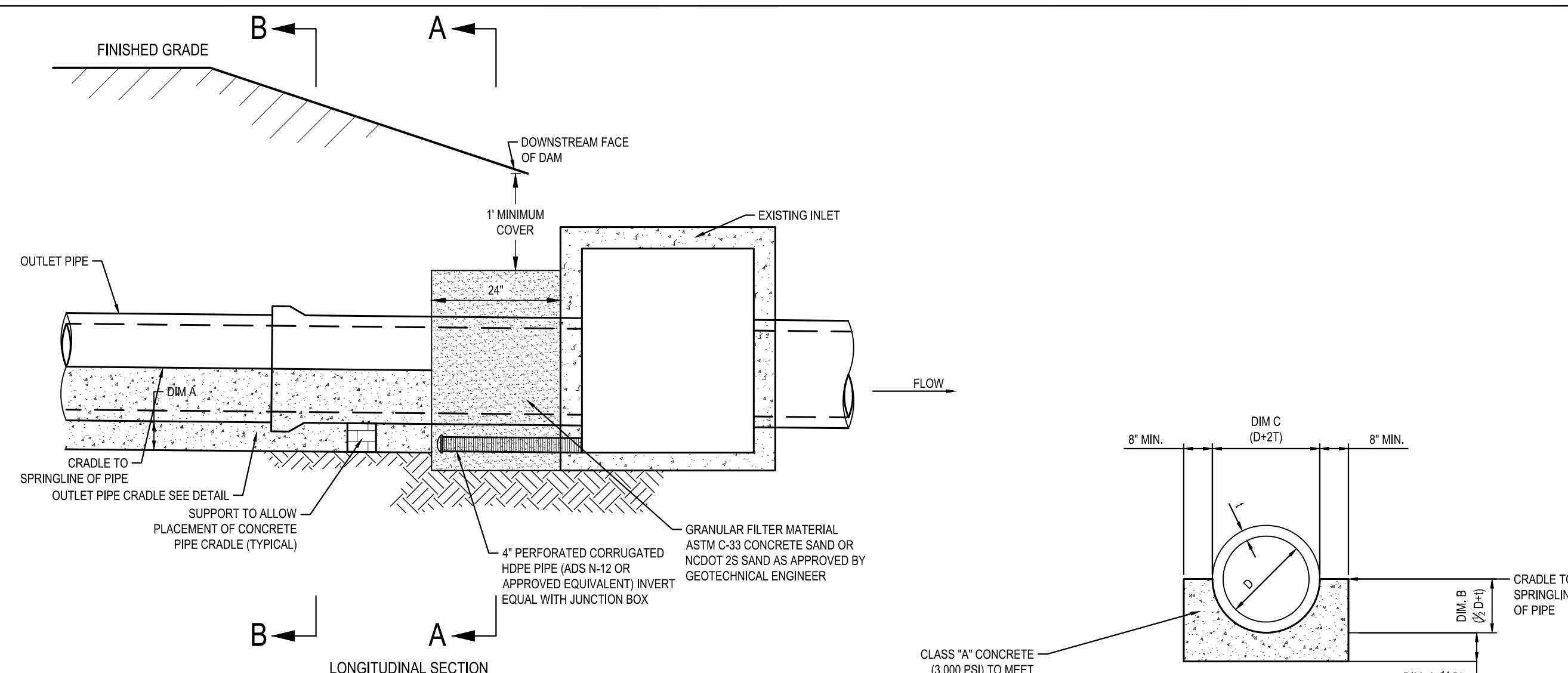
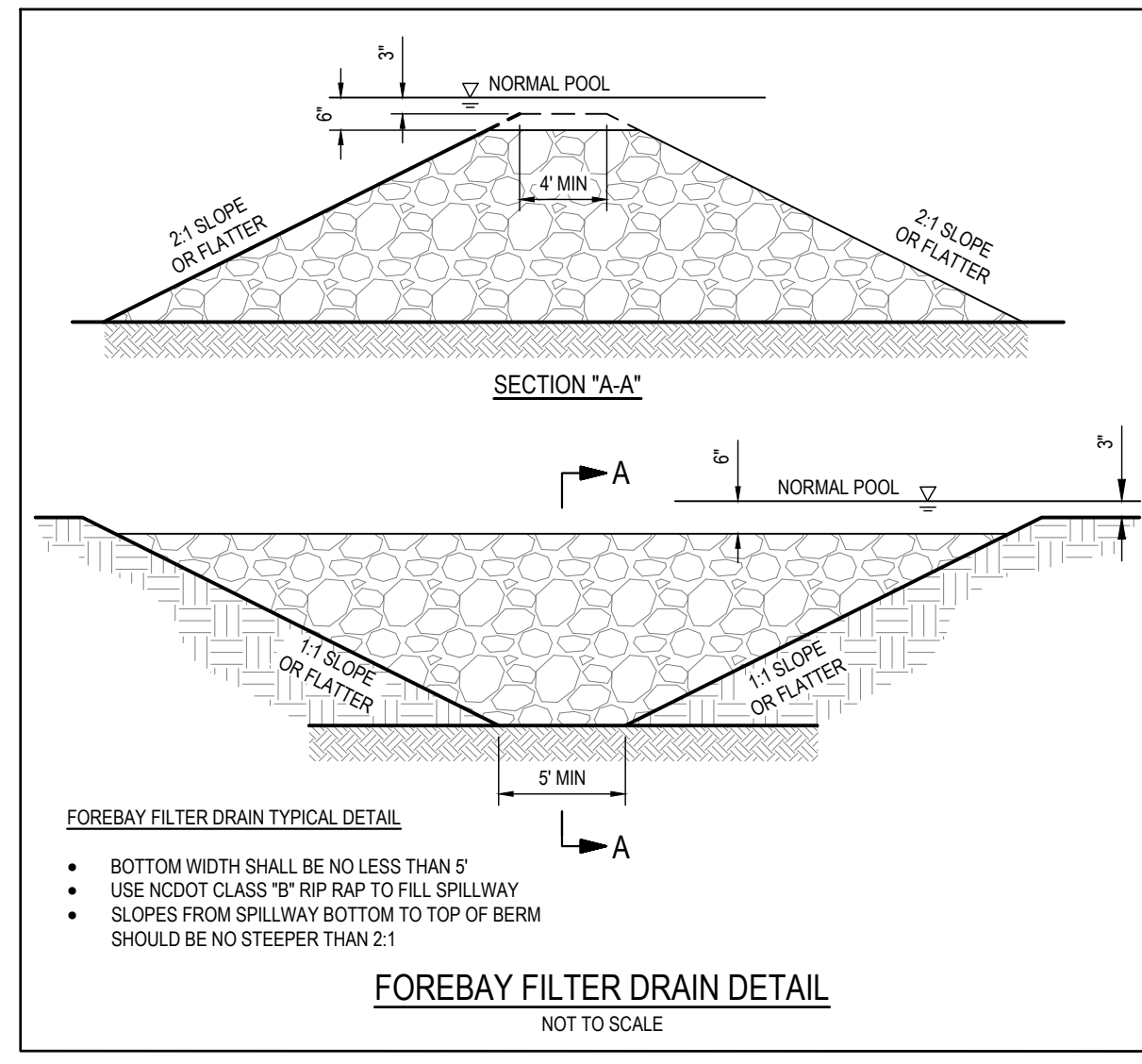
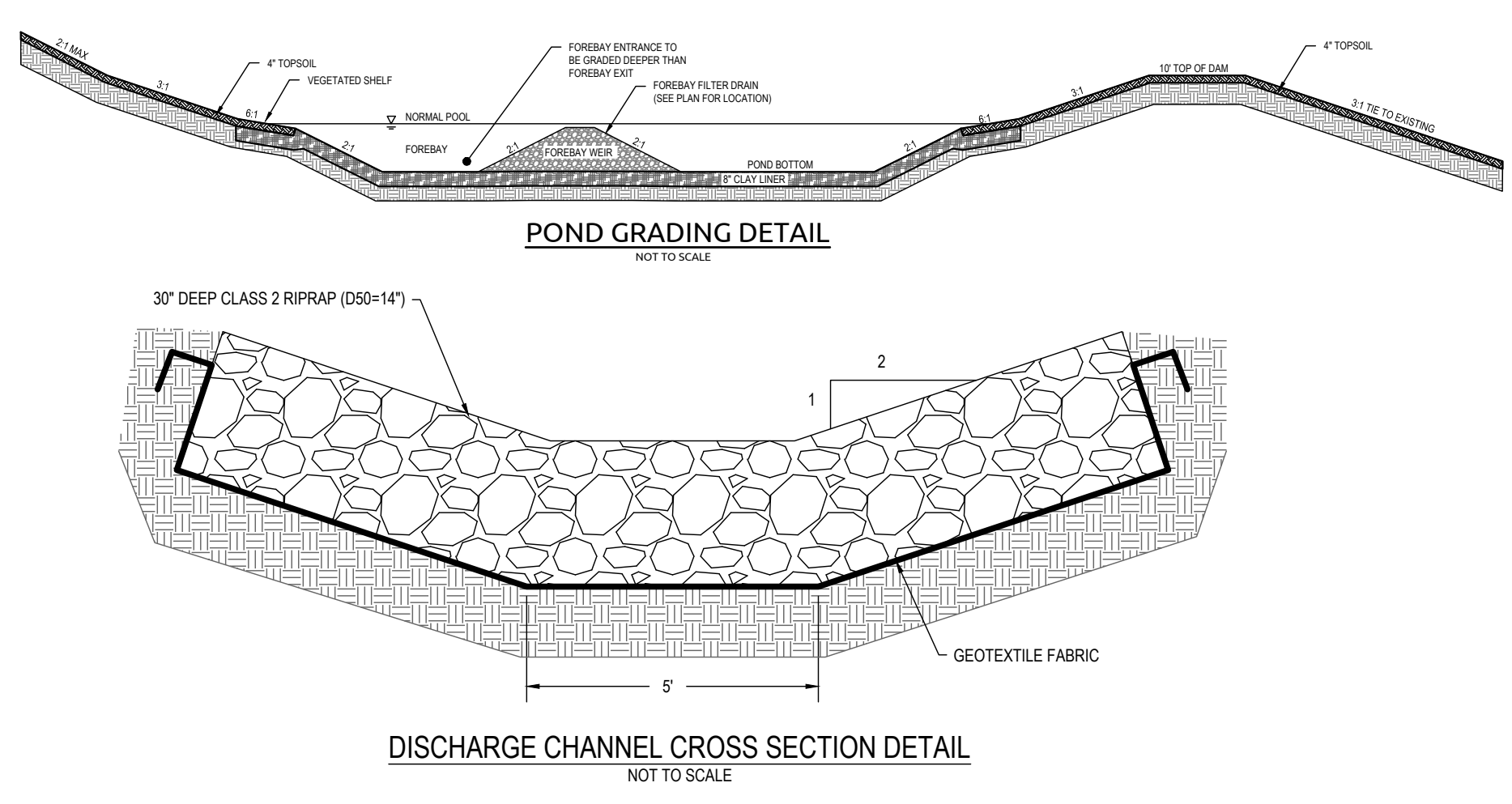
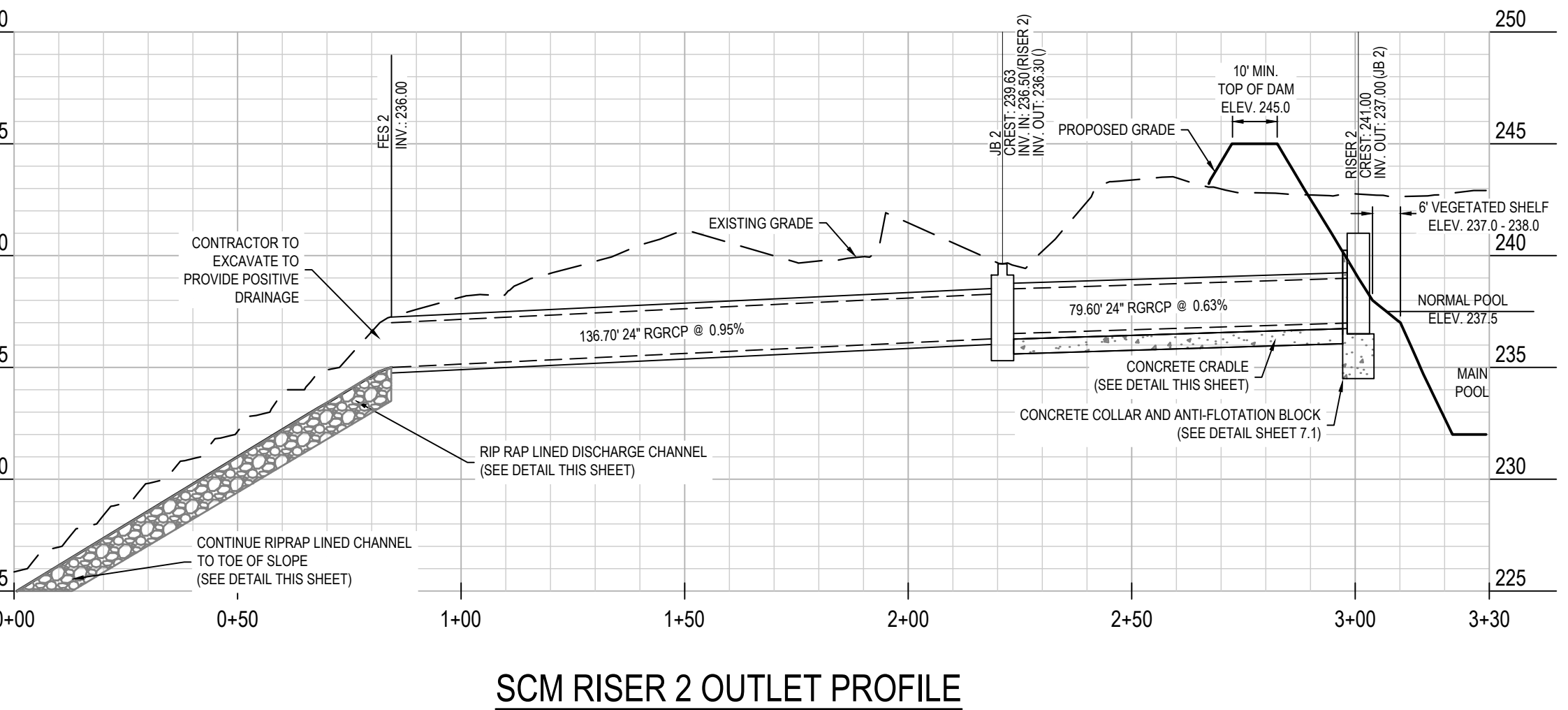
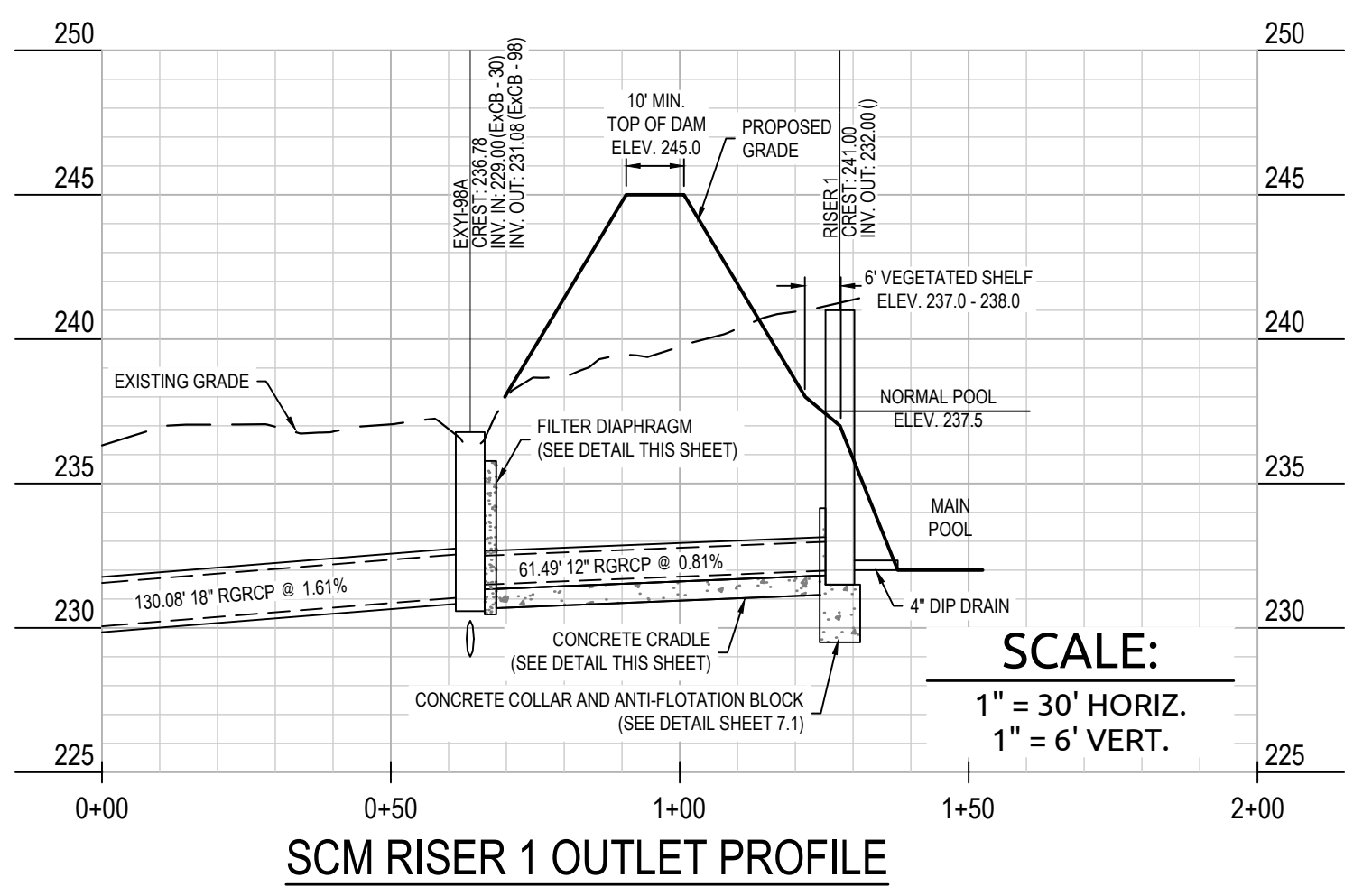
THE CLAY LINER SHALL BE PLACED UNDER THE BOTTOM OF THE SCM PERMANENT POOL TO A THICKNESS OF 8 INCHES. A MINIMUM OF 4 INCHES OF TOPSOIL SHALL BE THE FINISHED GRADE AS SHOWN ON THE DRAWINGS AND/OR DETAILS. CARE SHALL BE TAKEN WHEN TRACKING IN THE TOPSOIL TO NOT FRACTURE OR DAMAGE THE CLAY. A CLAY/SOIL, NO ORGANICS, MIXTURE MAY BE USED IF THE ABOVE SPECIFICATIONS ARE SATISFIED AND WITH WRITTEN APPROVAL BY THE ENGINEER.
- PRECAST CONCRETE MATERIALS NOTES:**
 - ALL PRECAST CONCRETE STRUCTURES SHALL CONFORM TO ASTM C913 (RECTANGULAR) OR C478 (ROUND).
 - ALL REINFORCED CONCRETE PIPE SHALL CONFORM TO ASTM C76, CLASS III (UNLESS OTHERWISE NOTED).
 - CRACK JOINTS SHALL CONFORM TO ASTM C443 & ASTM C361.
 - NON O-RING JOINTS SHALL CONFORM TO ASTM C390.

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: _____ DATE: _____
 TOWN ENGINEER

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

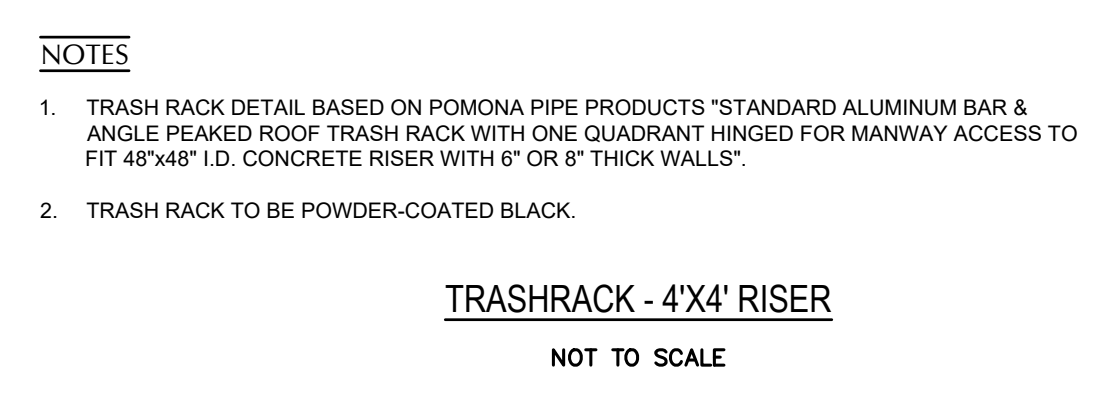
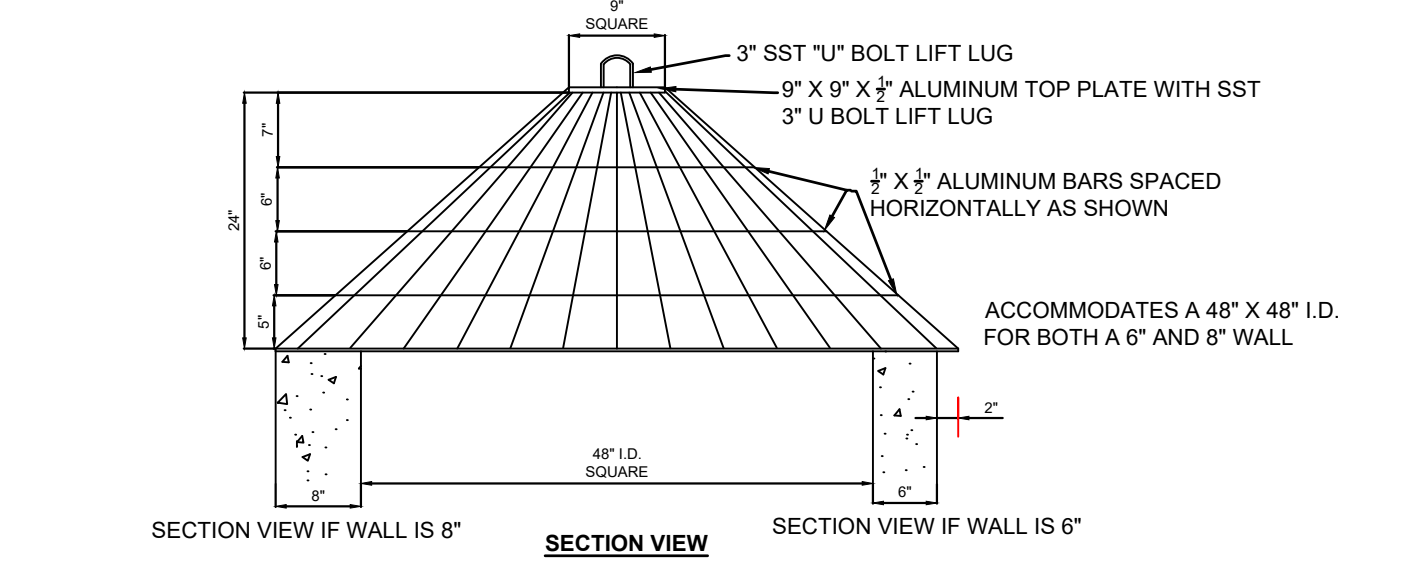
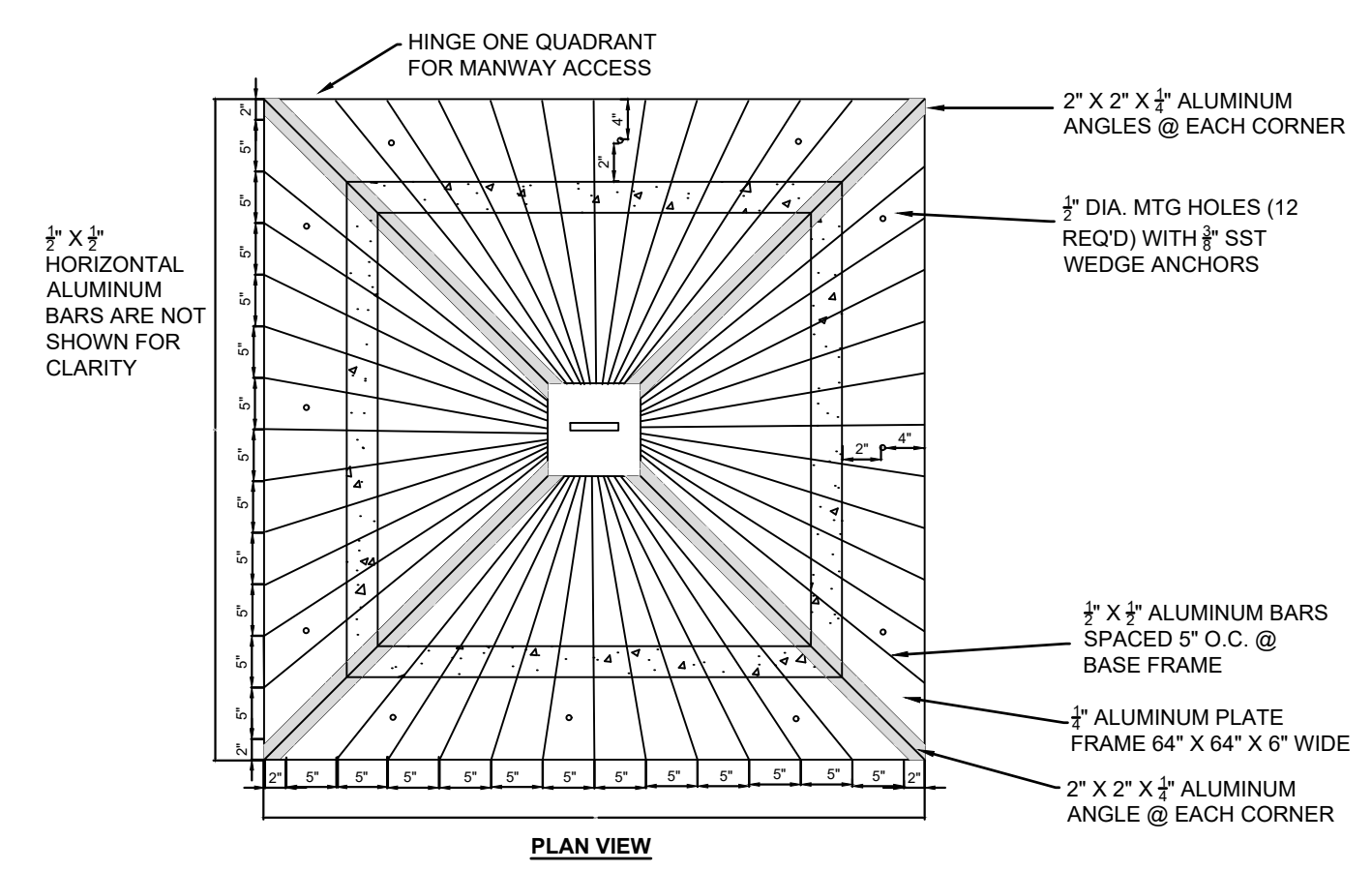
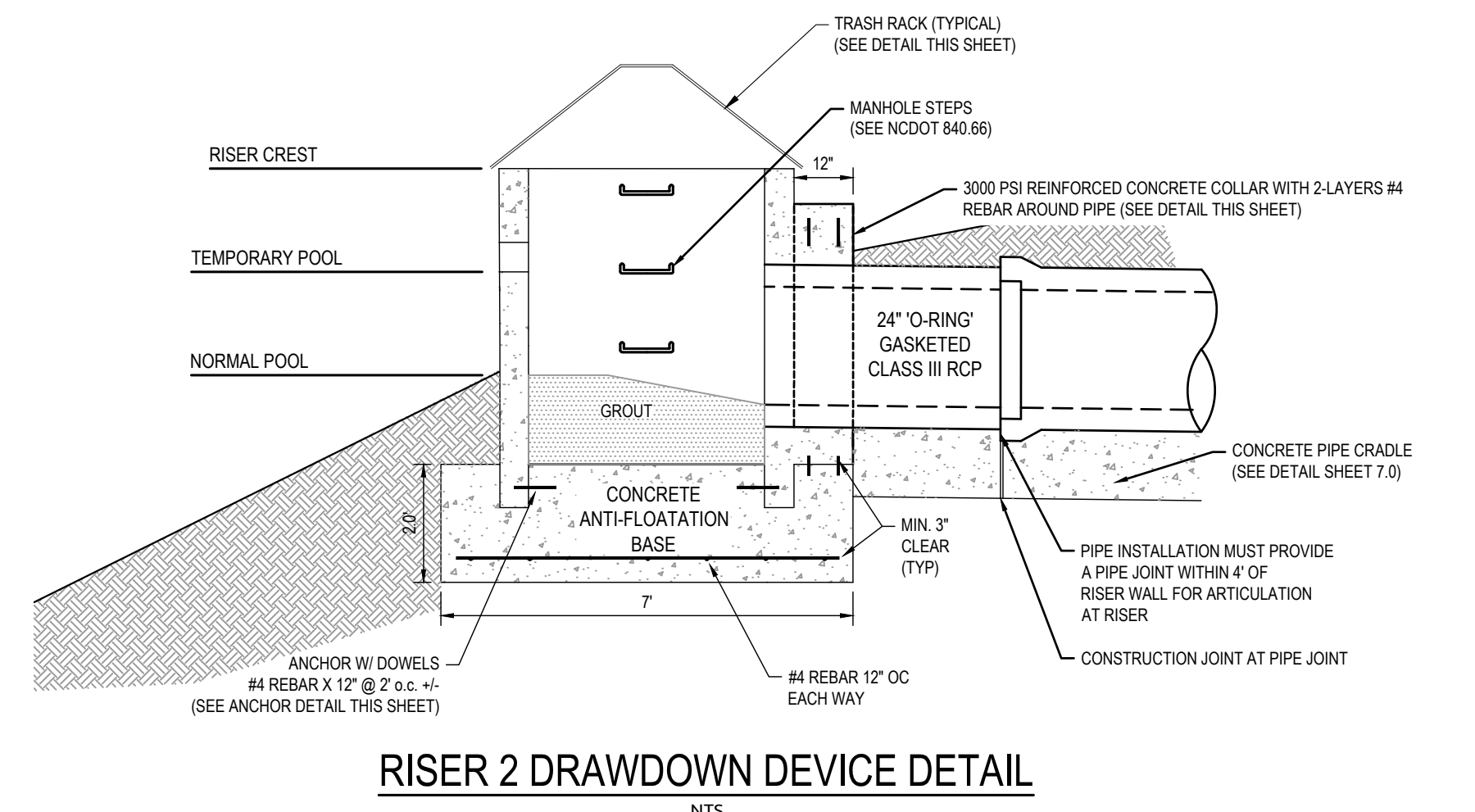
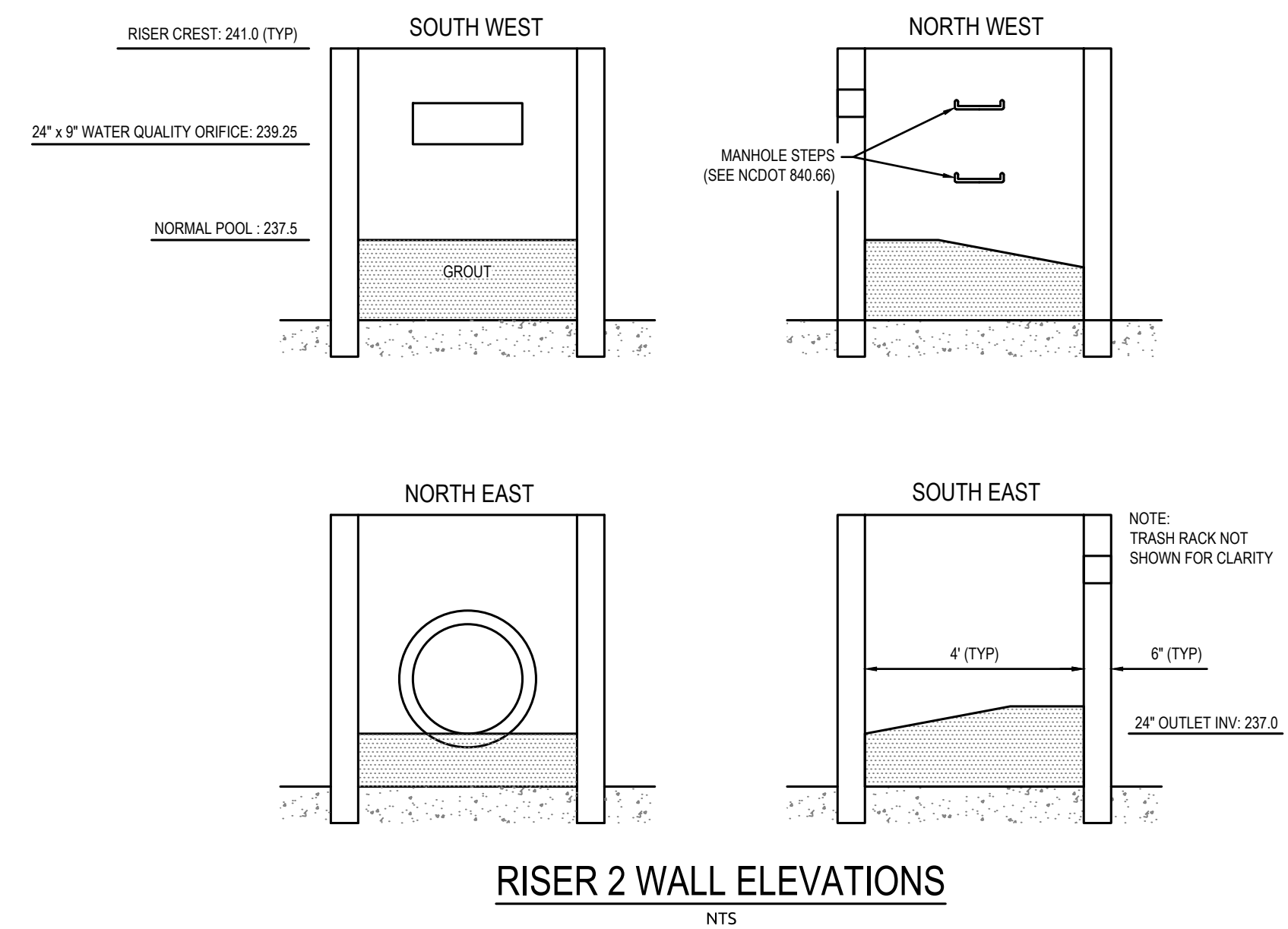
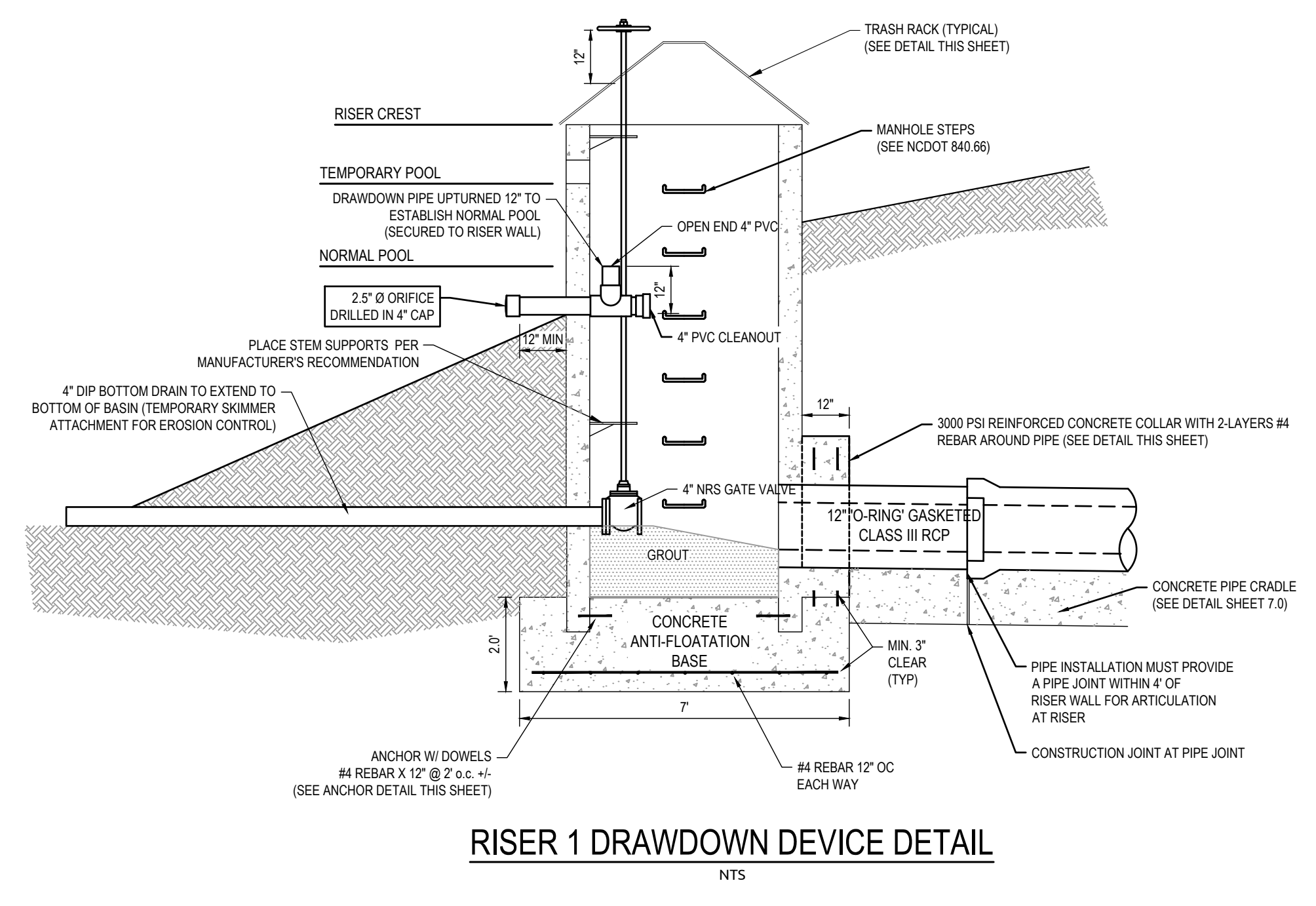
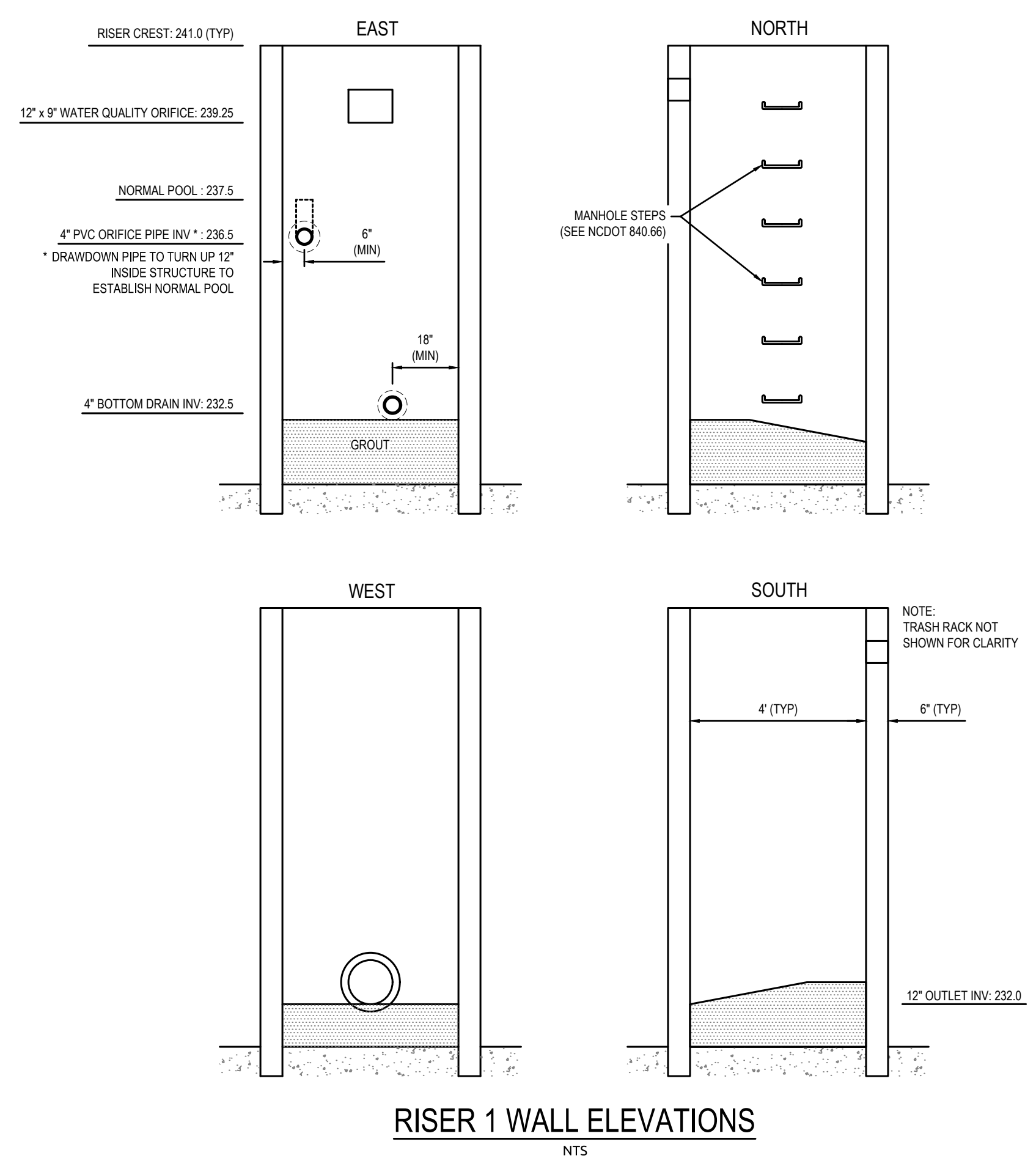
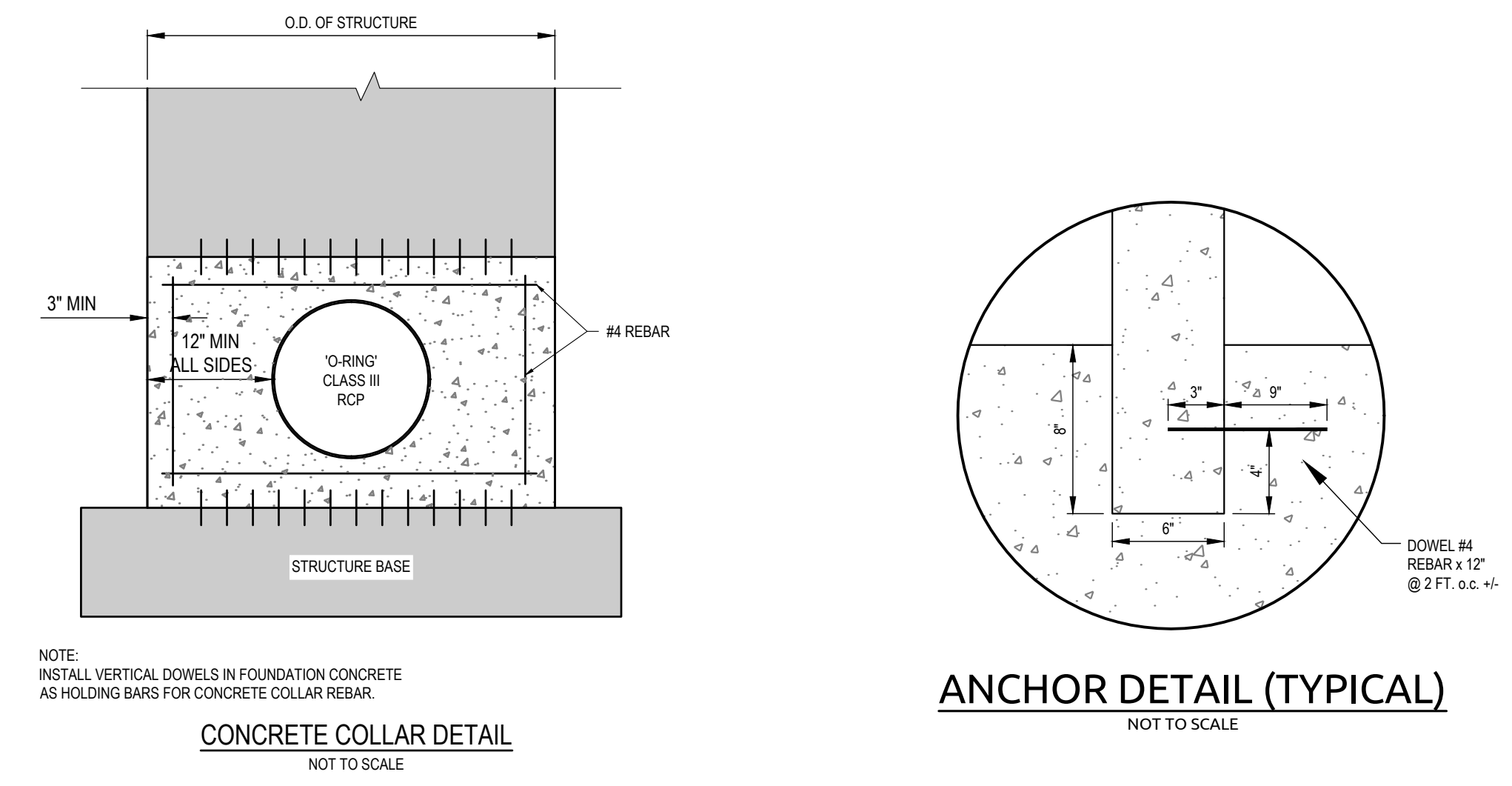
BY: _____ DATE: _____
 ADMINISTRATOR



NOTE:
 IF PIPE IS INSTALLED IN EXCAVATED TRENCH, THEN SIDE WALLS MAY CONFORM TO TRENCH (TRENCH MAY BE USED AS CRADLE FORM)

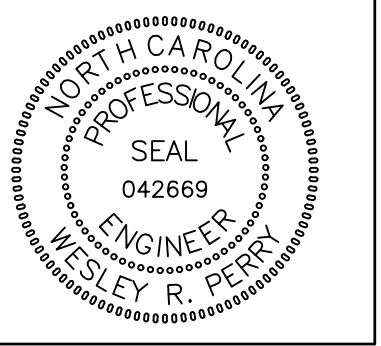
NOMINAL PIPE SIZE	DIM A* (1/3 D)	DIM B (1/2 D + 1)	DIM C (D + 2)	DIM D (PIPE ID)	DIM E (DIM A + 4")	DIM F (WALL)
12	8	8.5	17	12	12	2.5
24	8	15.0	30	24	12	3.0
30	10	18.5	37	30	14	3.5
36	12	22.0	44	36	16	4.0
42	14	25.5	51	42	18	4.5
48	16	29.0	58	48	20	5.0

ALL DIMENSIONS IN INCHES
 DIM A - 8" MINIMUM

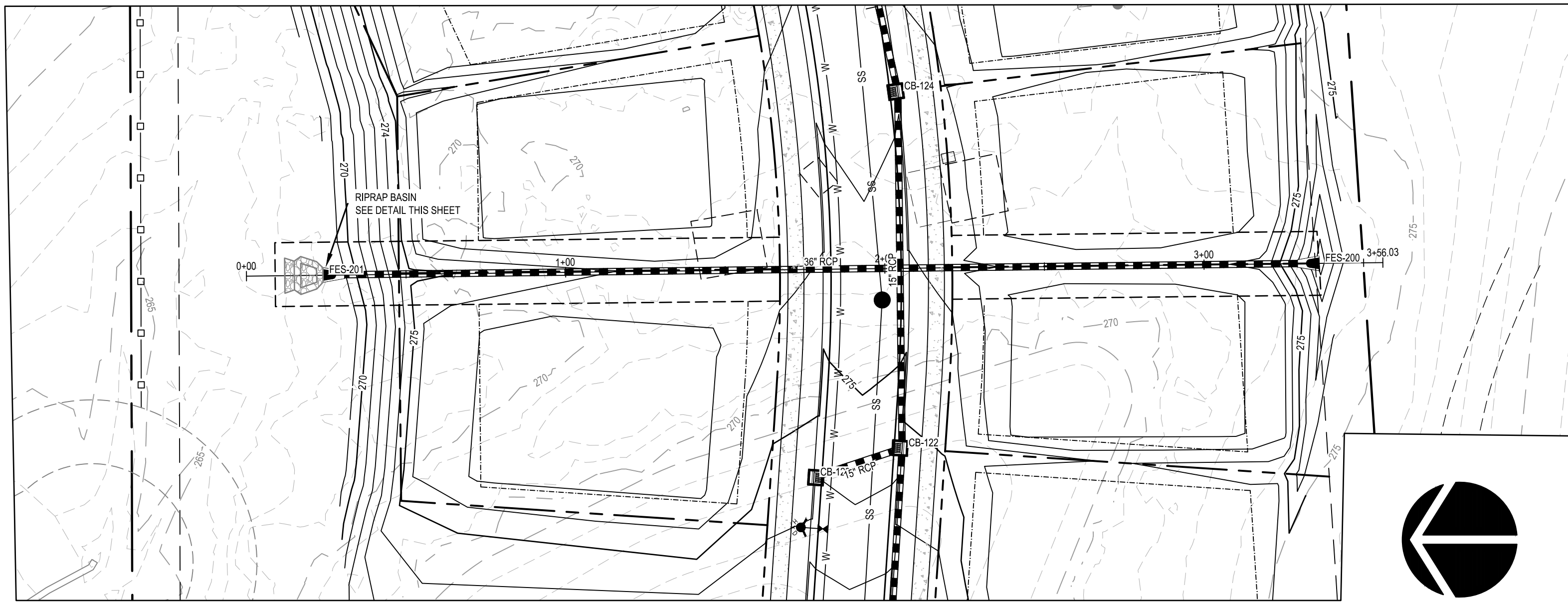


- NOTES**
- TRASH RACK DETAIL BASED ON POMONA PIPE PRODUCTS "STANDARD ALUMINUM BAR & ANGLE PEAKED ROOF TRASH RACK WITH ONE QUADRANT HINGED FOR MANWAY ACCESS TO FIT 48X48 I.D. CONCRETE RISER WITH 6" OR 8" THICK WALLS."
 - TRASH RACK TO BE POWDER-COATED BLACK.

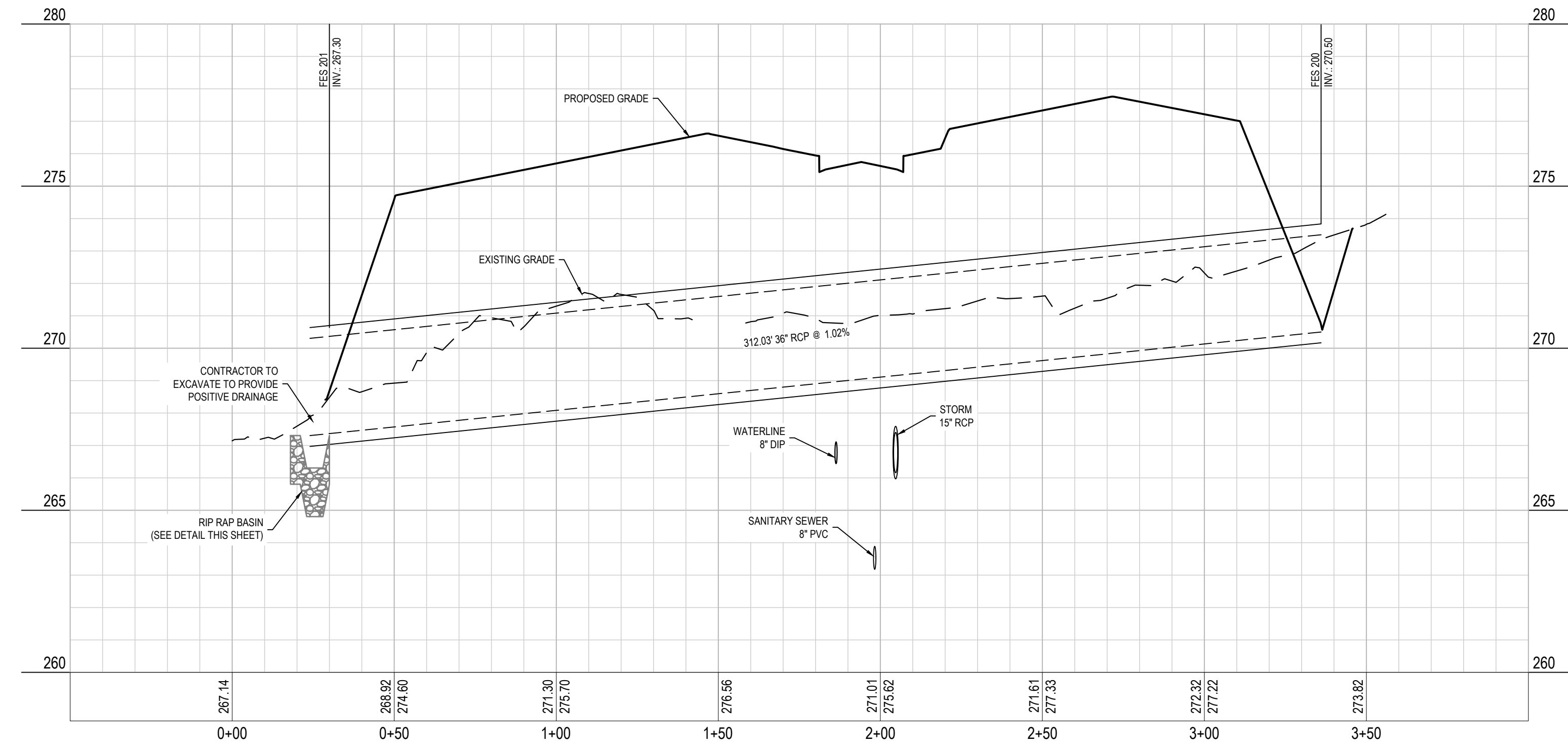
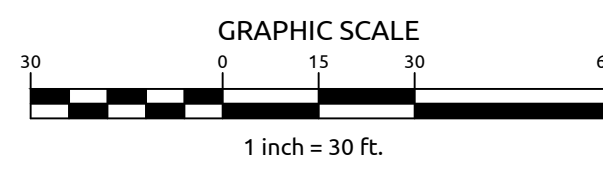
K:\1\17\2020\190259\Drawings\scm_riser_details\scm_riser_details.dwg (Construction) 25/08/20 11:52:22 AM 1096L STP/EN



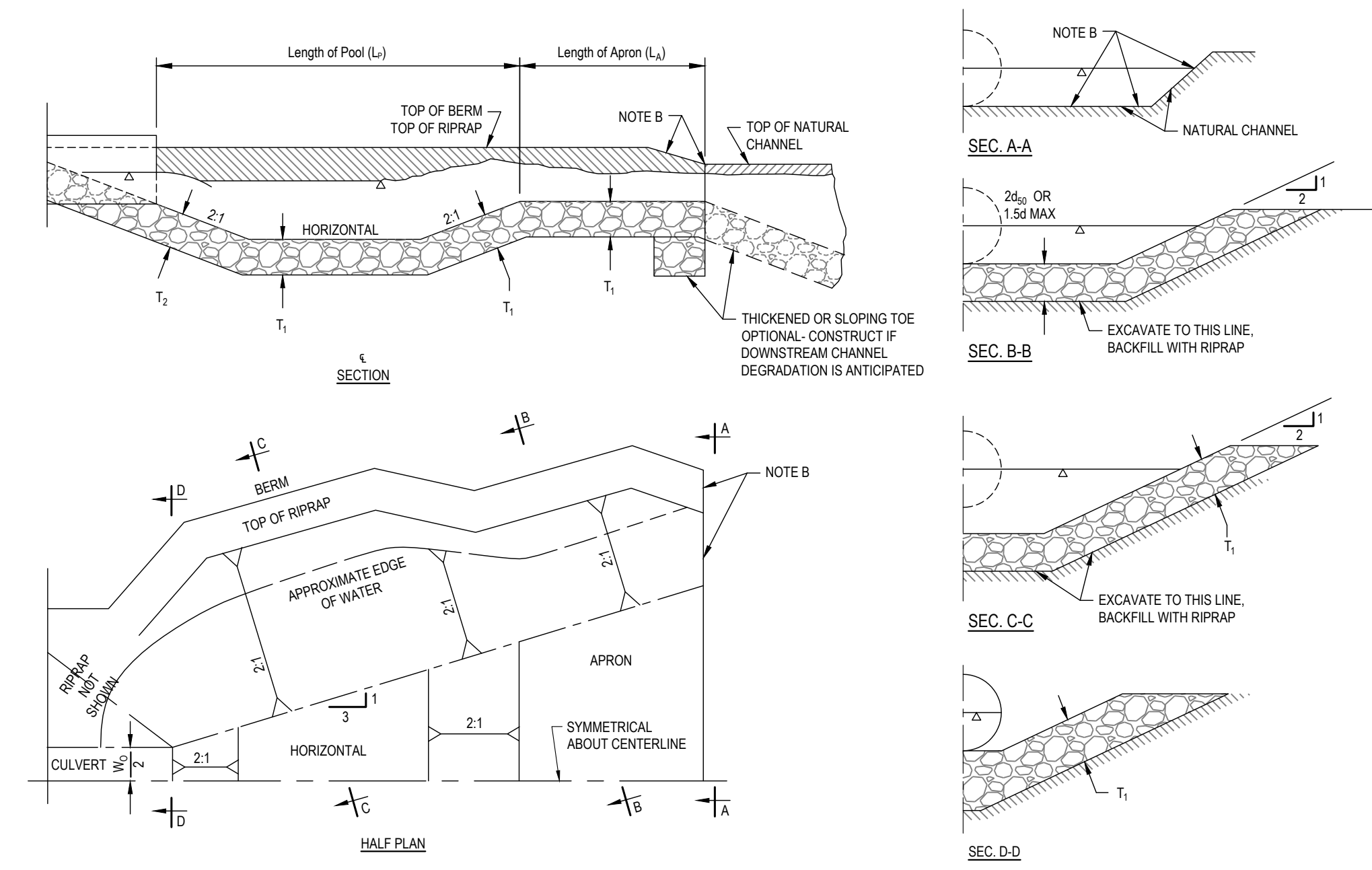
Revisions	Comments	Date
1	PER TOK COMMENTS	10/02/20



FES 200 - FES 201 PLAN



FES 200 - FES 201 PROFILE



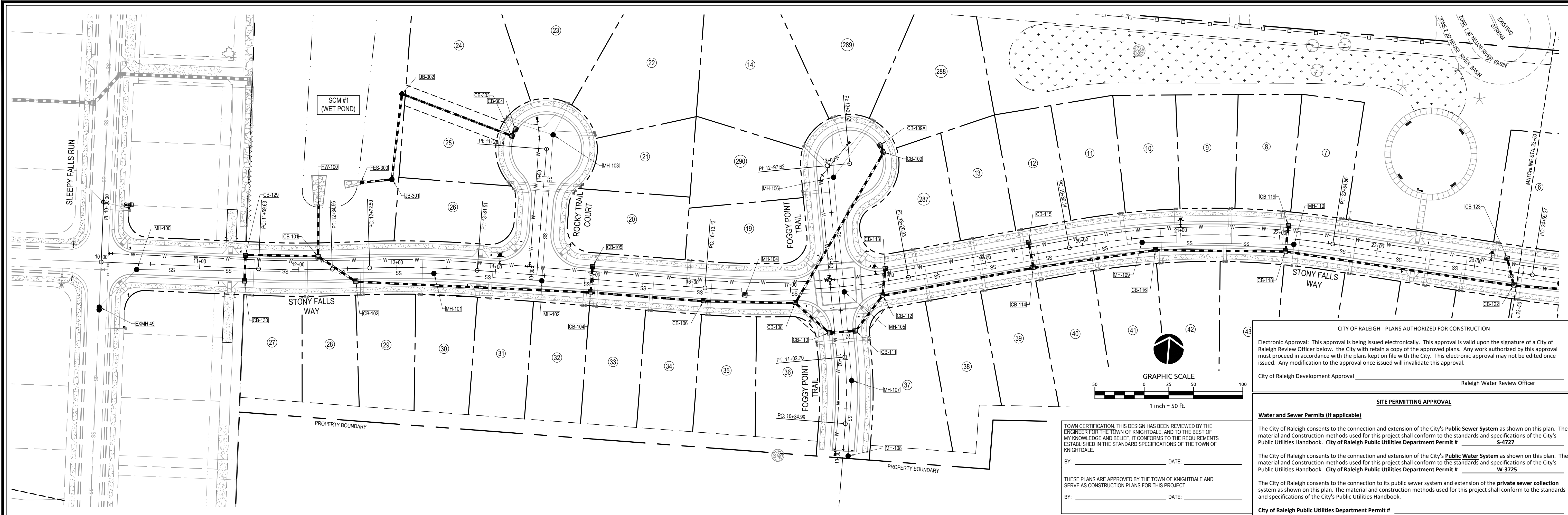
NOTE A - IF EXIT VELOCITY OF BASIN IS SPECIFIED, EXTEND BASIN AS REQUIRED TO OBTAIN SUFFICIENT CROSS-SECTIONAL AREA AT SECTION A-A SUCH THAT Q_{exit} (CROSS SECTION AREA AT SEC. A-A) = SPECIFIED EXIT VELOCITY.
NOTE B - WARP BASIN TO CONFORM TO NATURAL STREAM CHANNEL. TOP OF RIPRAP IN FLOOR OF BASIN SHOULD BE AT THE SAME ELEVATION OR LOWER THAN NATURAL CHANNEL BOTTOM AT SEC. A-A.

OUTLET ID	L_p	L_a	H_s	T_1	T_2	W_0	CLASS
STREET A1 CULVERT	9.0	3.0	1.0	1.5	2.0	3	NCDOT 'B'

RIP RAP STILLING BASIN DETAIL
NOT TO SCALE

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: _____ DATE: _____
TOWN ENGINEER
THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
BY: _____ DATE: _____
ADMINISTRATOR

K:\19\190259\190259.dwg - 08/14/20 11:52:25 AM - 106% STRIKEIN



CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

Electronic Approval: This approval is being issued electronically. This approval is valid upon the signature of a City of Raleigh Review Officer below. The City will retain a copy of the approved plans. Any work authorized by this approval must proceed in accordance with the plans kept on file with the City. This electronic approval may not be edited once issued. Any modification to the approval once issued will invalidate this approval.

City of Raleigh Development Approval _____ Raleigh Water Review Officer _____

SITE PERMITTING APPROVAL

Water and Sewer Permits (if applicable)

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 # 5-4727**

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-3725**

The City of Raleigh consents to the connection to its public sewer system and extension of the **private sewer collection 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 # _____

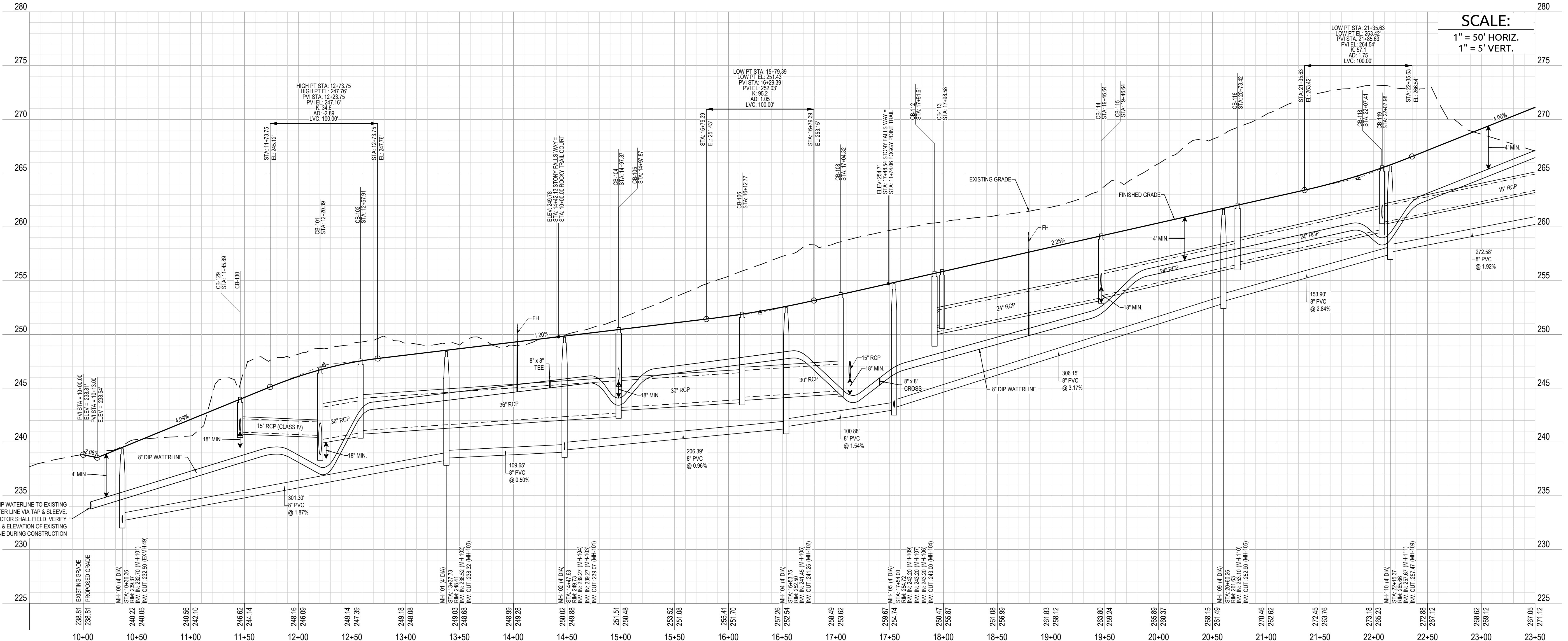
TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: _____ DATE: _____

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

BY: _____ DATE: _____

STONY FALLS WAY

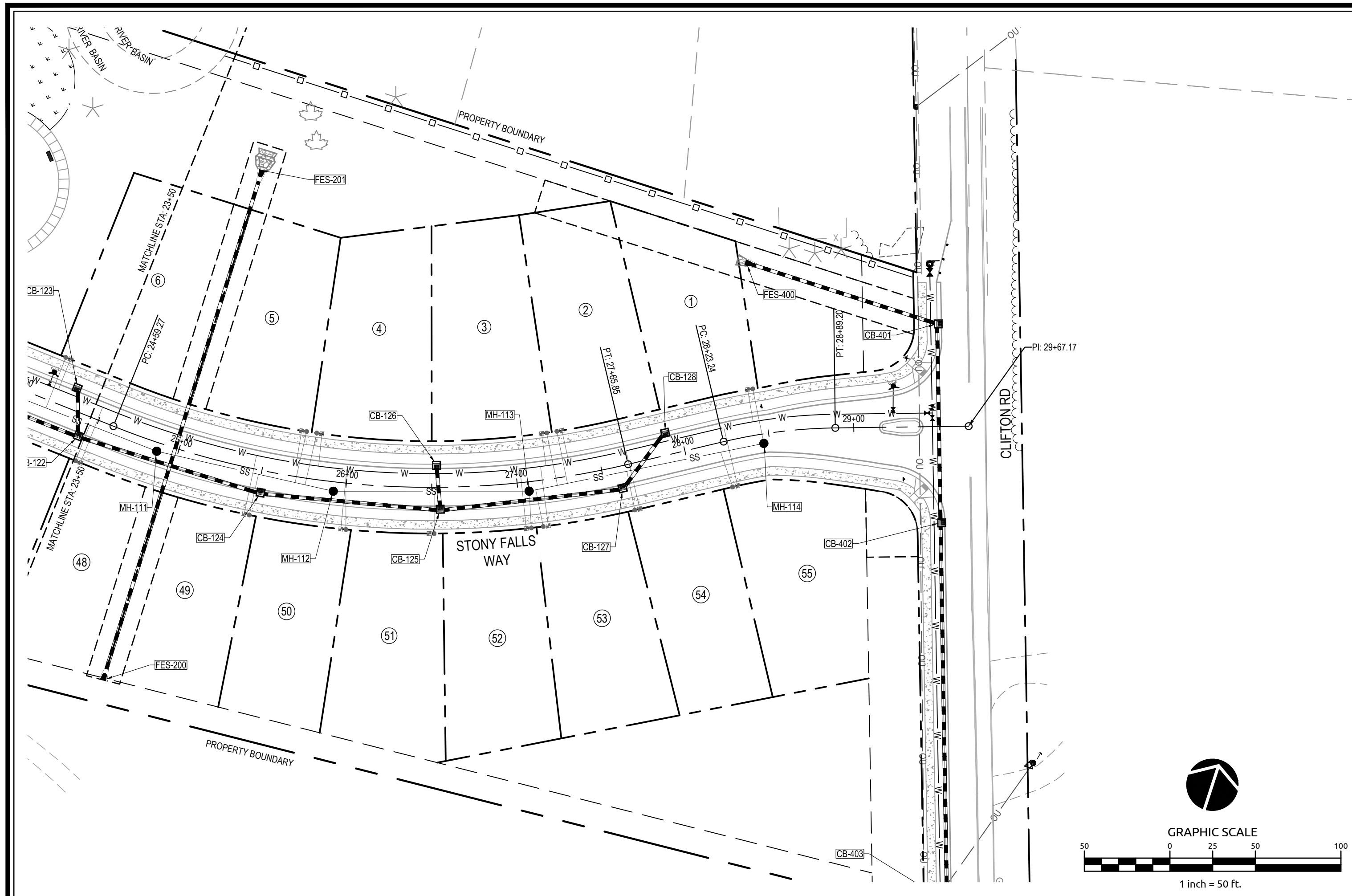


Job No.	02190259	Drawn By	WR
Date	08/14/20	Designer	WR

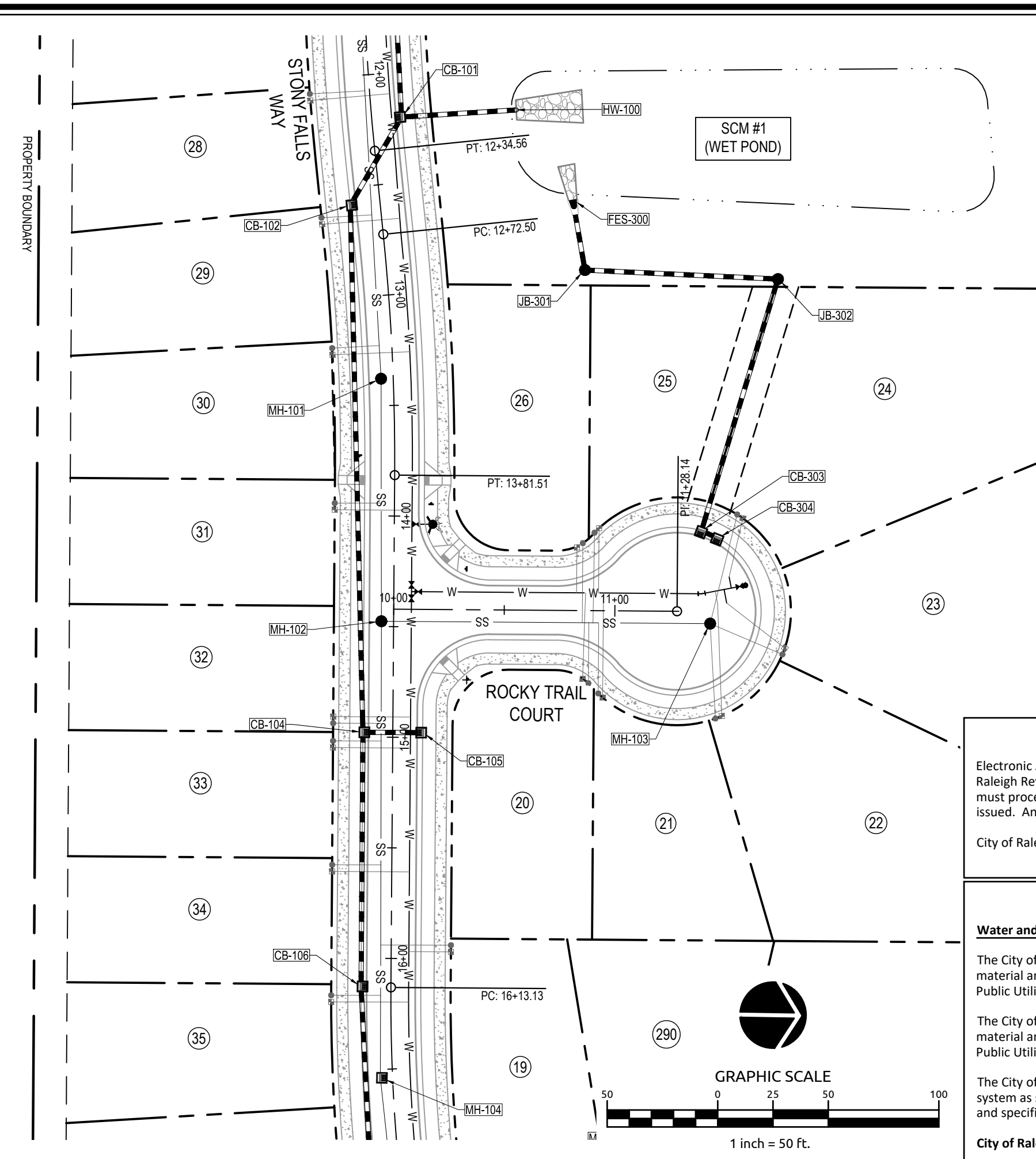


Revisions	1 PER TOK COMMENTS	10/02/20
-----------	--------------------	----------

K:\1719\2020\10259\Drawings\plan\stonyfallsway\stonyfallsway.dwg, October 2, 2020 11:38:48 AM - PLOTX, STD100



STONY FALLS WAY



ROCKY TRAIL COURT

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

Electronic Approval: This approval is being issued electronically. This approval is valid upon the signature of a City of Raleigh Review Officer below. The City will retain a copy of the approved plans. Any work authorized by this approval must proceed in accordance with the plans kept on file with the City. This electronic approval may not be edited once issued. Any modification to the approval once issued will invalidate this approval.

City of Raleigh Development Approval _____ Raleigh Water Review Officer _____

SITE PERMITTING APPROVAL

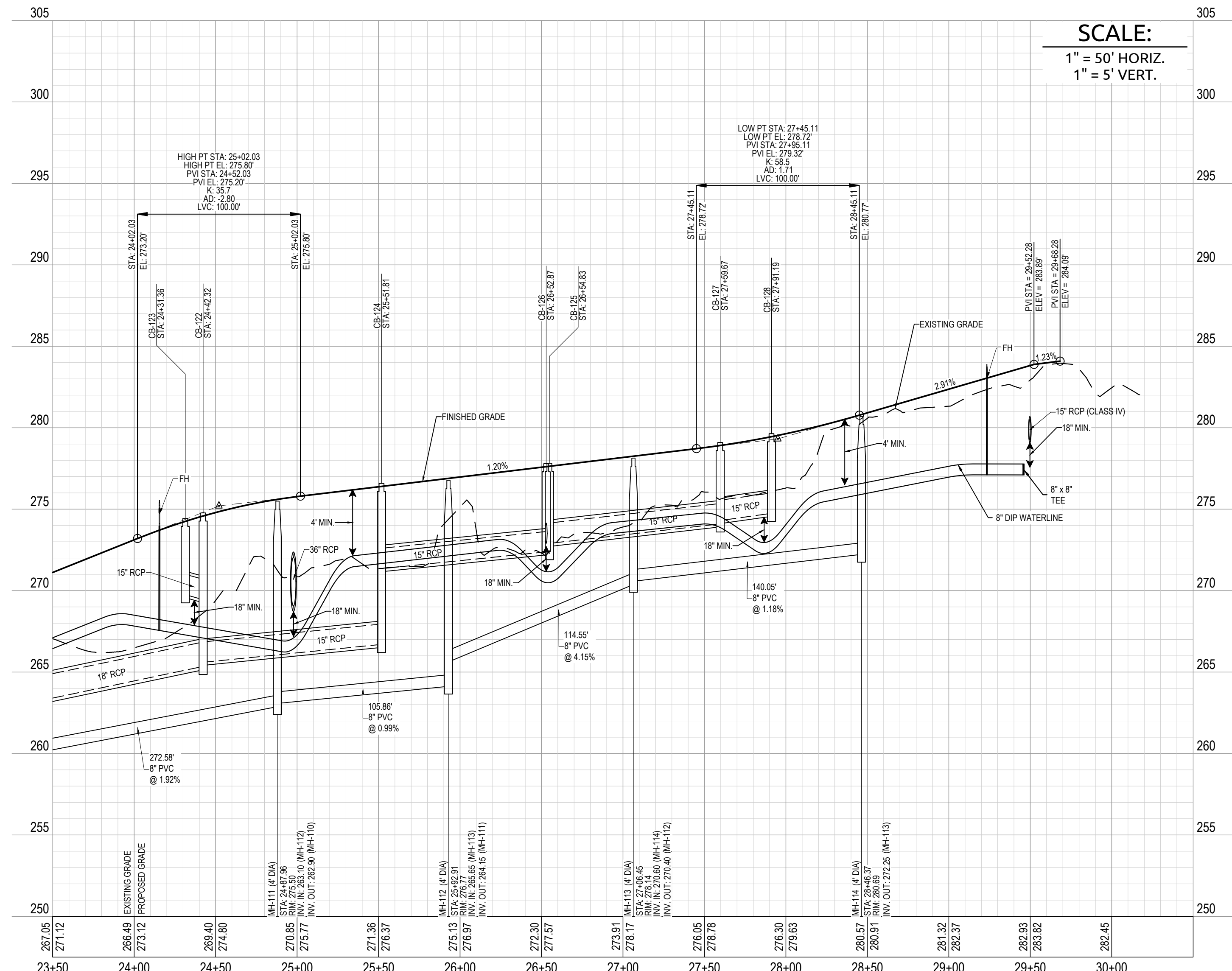
Water and Sewer Permits (if applicable)

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-4727**

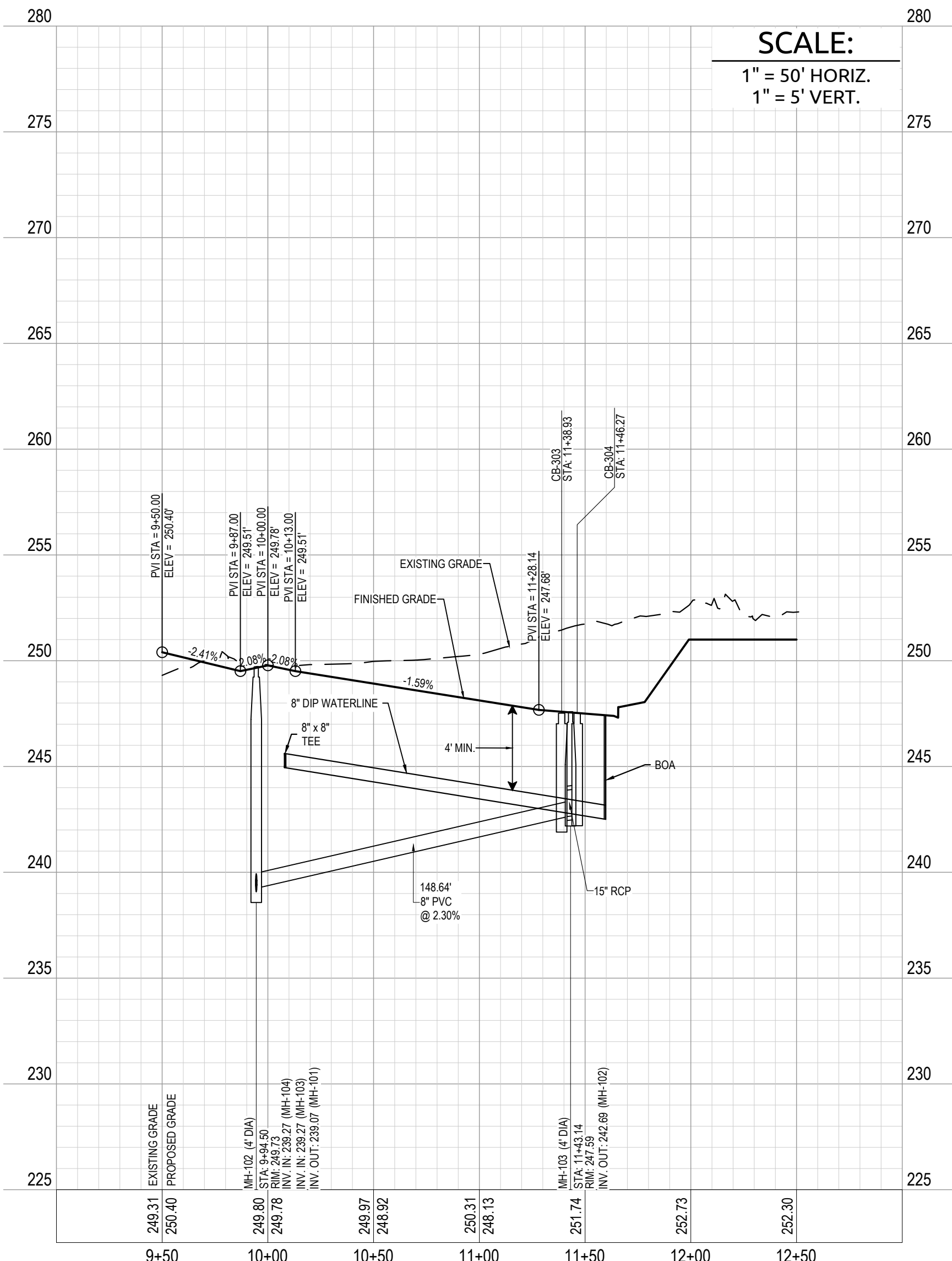
The City of Raleigh consents to the connection and extension of the City's Public Water System as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. **City of Raleigh Public Utilities Department Permit # W-3725**

The City of Raleigh consents to the connection to its public sewer system and extension of the private sewer collection 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 # _____



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



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

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: _____ DATE: _____
DEVELOPMENT SERVICES ENGINEER

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

BY: _____ DATE: _____
ADMINISTRATOR

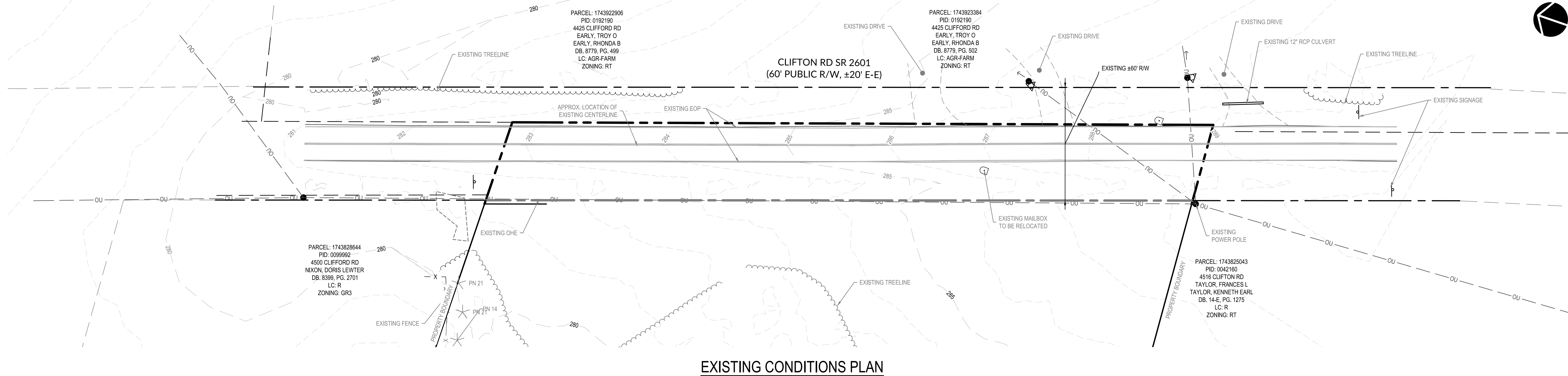
Job No.	02190259	Drawn By	WR
Date	08/14/20	Designer	WR



Revisions	Date
1 PER TOK COMMENTS	10/02/20

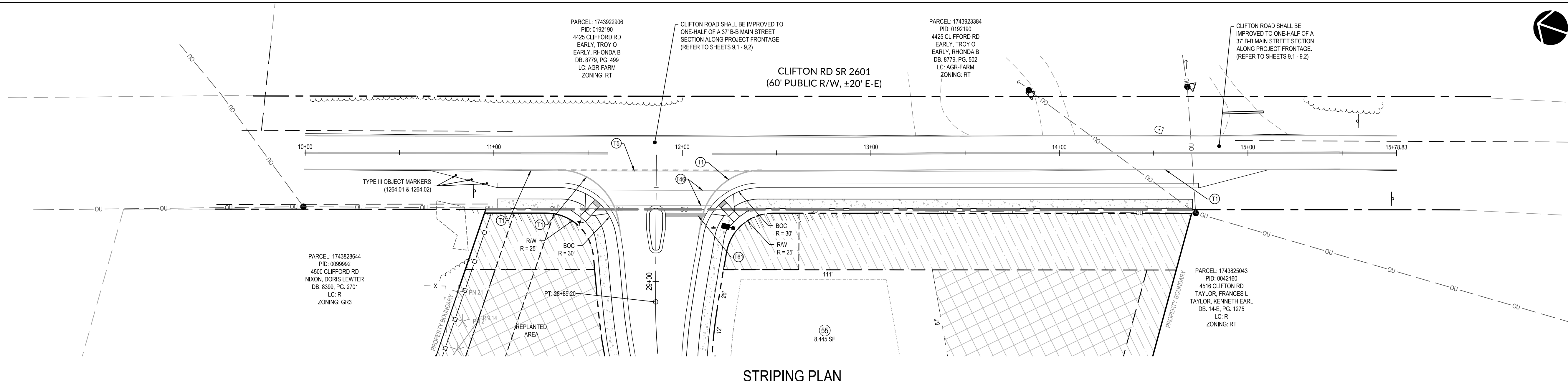
K:\19\2020\102529\Drawings\DWG\DWG\102529-08.dwg, October 2, 2020 11:56:52 AM YORK, STEPHEN

- NOTES:**
1. WIDENING SHALL VARY AS SHOWN.
 2. PAVEMENT MARKING PLAN TO BE PROVIDED TO NCDOT.
 3. CONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO CONSTRUCTION.
 4. EXISTING CROSS SLOPE SHALL BE HELD AND SHOULDERS ADJUSTED AS NECESSARY.
 5. CALCULATIONS BASED ON NCDOT POLICY ON STREET AND DRIVEWAY ACCESS TO NORTH CAROLINA HIGHWAYS.
 6. DESIGN SPEED IS 40 MPH.

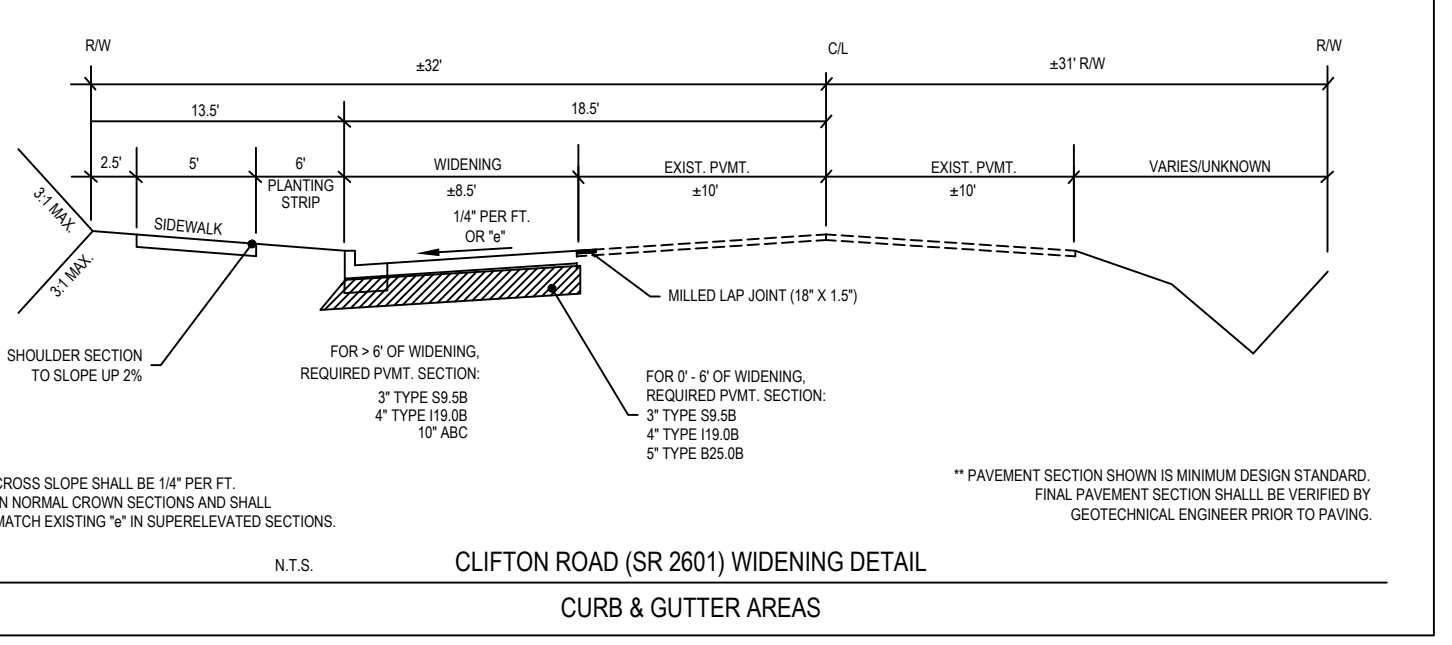
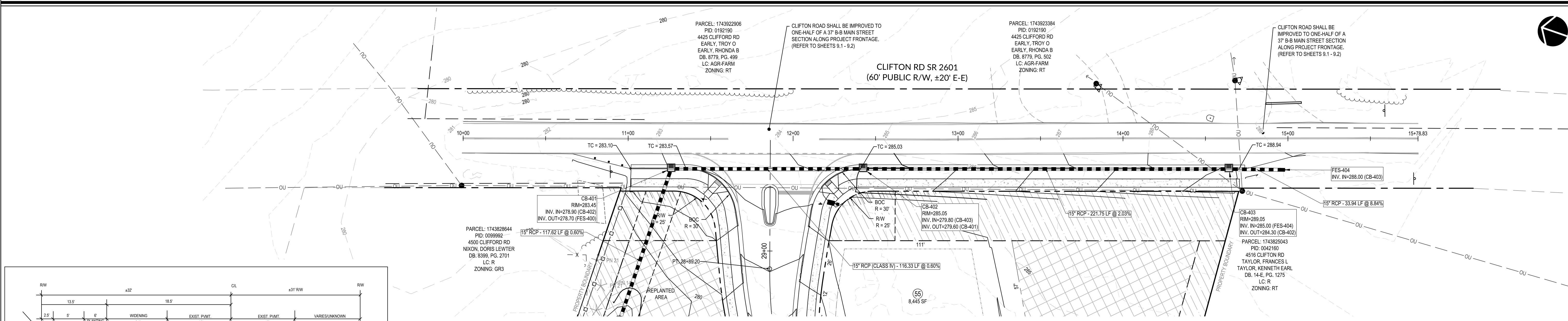


- PAVEMENT MARKING/SIGNAGE NOTES:**
1. PERMANENT MARKINGS SHALL BE THERMOPLASTIC AND INSTALLED AFTER FINAL OVERLAY IS COMPLETE.
 2. ALL PAVEMENT MARKINGS SHALL BE CONSTRUCTED IN ACCORDANCE WITH NCDOT STANDARDS AND SPECIFICATIONS.
 3. PREMARKINGS SHALL BE APPROVED BY ENGINEER (919)372-7448 & NCDOT TRAFFIC DIVISION ENGINEER (919) 560-6856 PRIOR TO COMPLETION.
 4. MONOLITHIC ISLANDS ARE REQUIRED TO HAVE A MINIMUM 6" OFFSET FROM ANY STRIPING.
 5. ALL SIGNAGE SHALL BE IN ACCORDANCE WITH MUTCD STANDARDS & SPECIFICATIONS.

PAVEMENT STRIPING LEGEND	
SYMBOL	DESCRIPTION
(T1)	WHITE EDGE LINE (4", 90 MIL)
(T2)	WHITE SOLID LANE LINE (4", 90 MIL)
(T4)	3 FT. - 9 FT./SP WHITE MINISKIP (4", 90 MIL)
(T5)	2 FT. - 6 FT./SP WHITE MINISKIP (4", 90 MIL)
(T11)	YELLOW SINGLE CENTER (4", 90 MIL)
(T12)	10 FT. YELLOW SKIP (4", 90 MIL)
(T13)	YELLOW DOUBLE CENTER LINE (4", 90 MIL)
(T14)	2 FT. - 6 FT./SP YELLOW MINISKIP (4", 90 MIL)
(T42)	YELLOW DIAGONAL (8", 90 MIL)
(T43)	WHITE CROSSWALK LINE (8", 90 MIL)
(T6)	WHITE STOPBAR (24", 90 MIL)



NOTE: ALL PAVEMENT MARKINGS SHALL BE THERMO PLASTIC AND SHALL FOLLOW THE LATEST NCDOT STANDARDS AND SPECIFICATIONS FOR PAVEMENT MARKINGS.

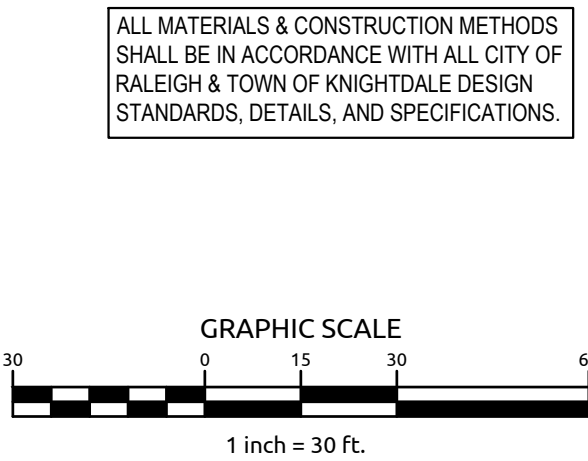


TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: _____ DATE: _____
DEVELOPMENT SERVICES ENGINEER

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

BY: _____ DATE: _____
ADMINISTRATOR



Job No.	02190259	Drawn By	WR
Date	08/14/20	Designer	WR



Revisions	
1	PER TOK COMMENTS 10/02/20

K:\1743922906\1743922906.dwg (1743922906) - 10/20/20 11:57:51 AM - TDK: S.T.B./E.N.

**POPLAR CREEK VILLAGE
PHASE IV**

TOWN OF KNIGHTDALE, NORTH CAROLINA

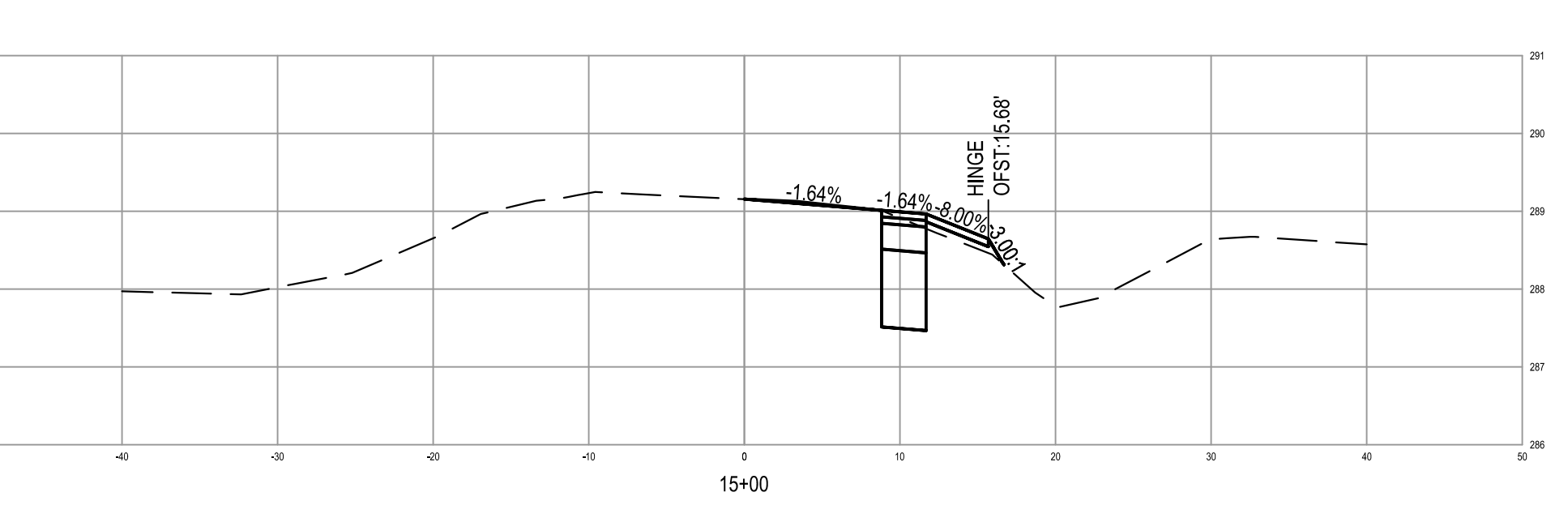
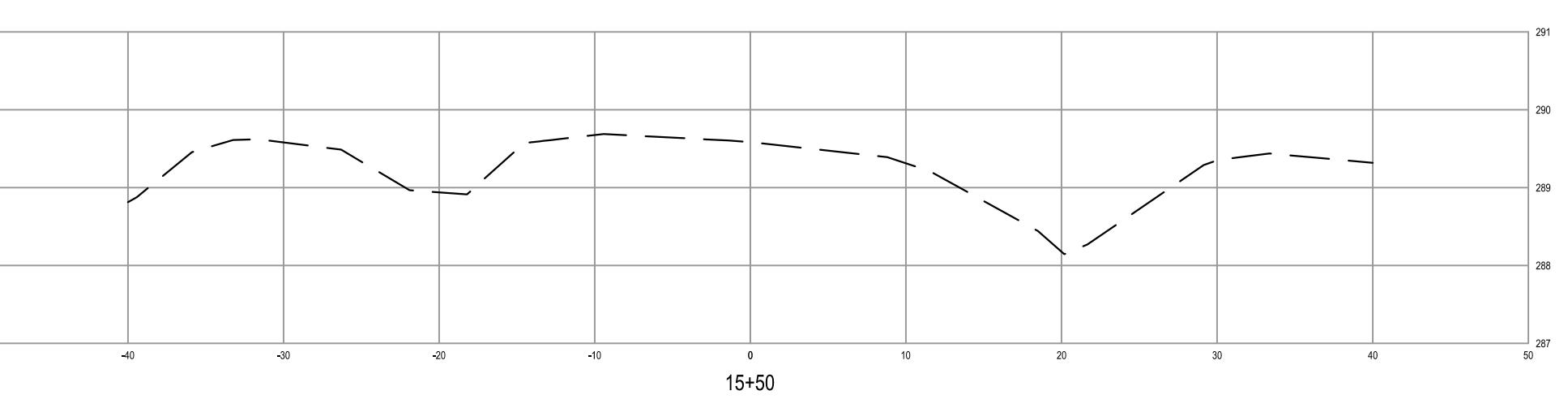
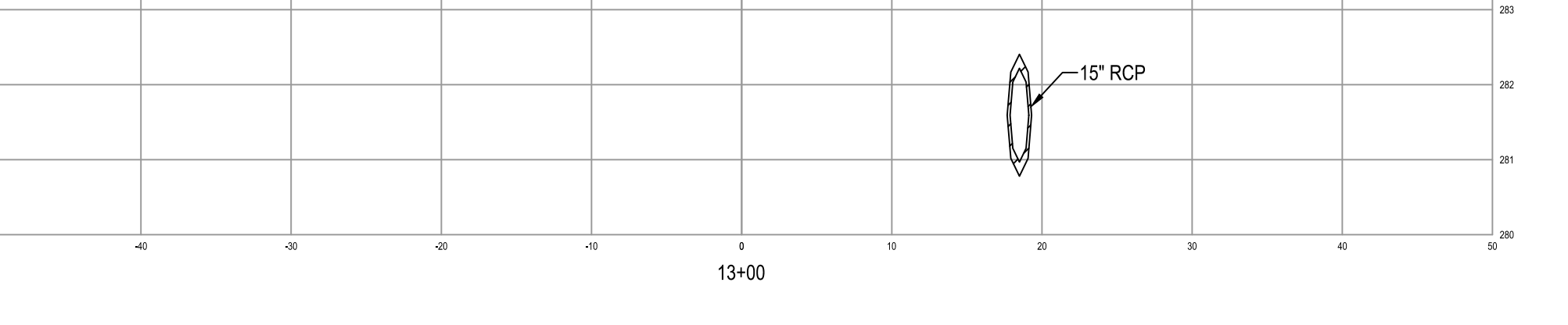
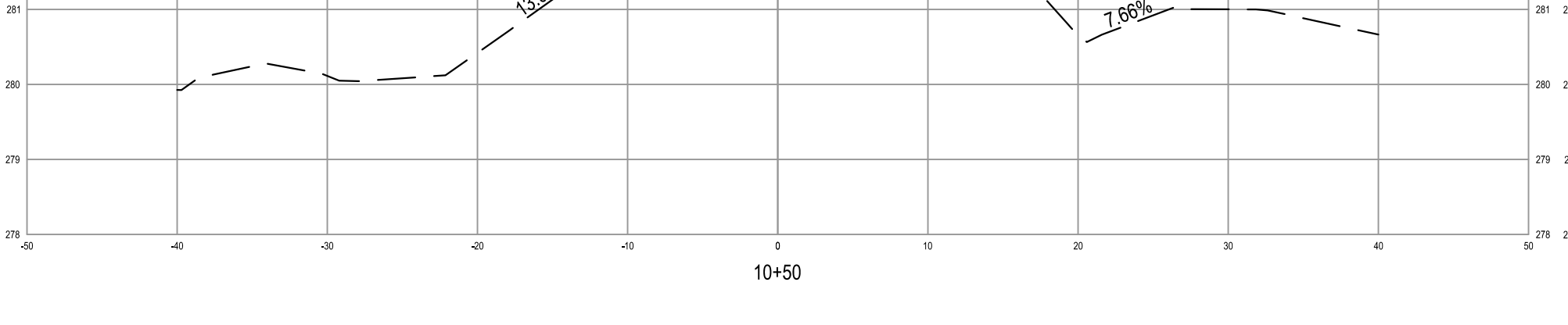
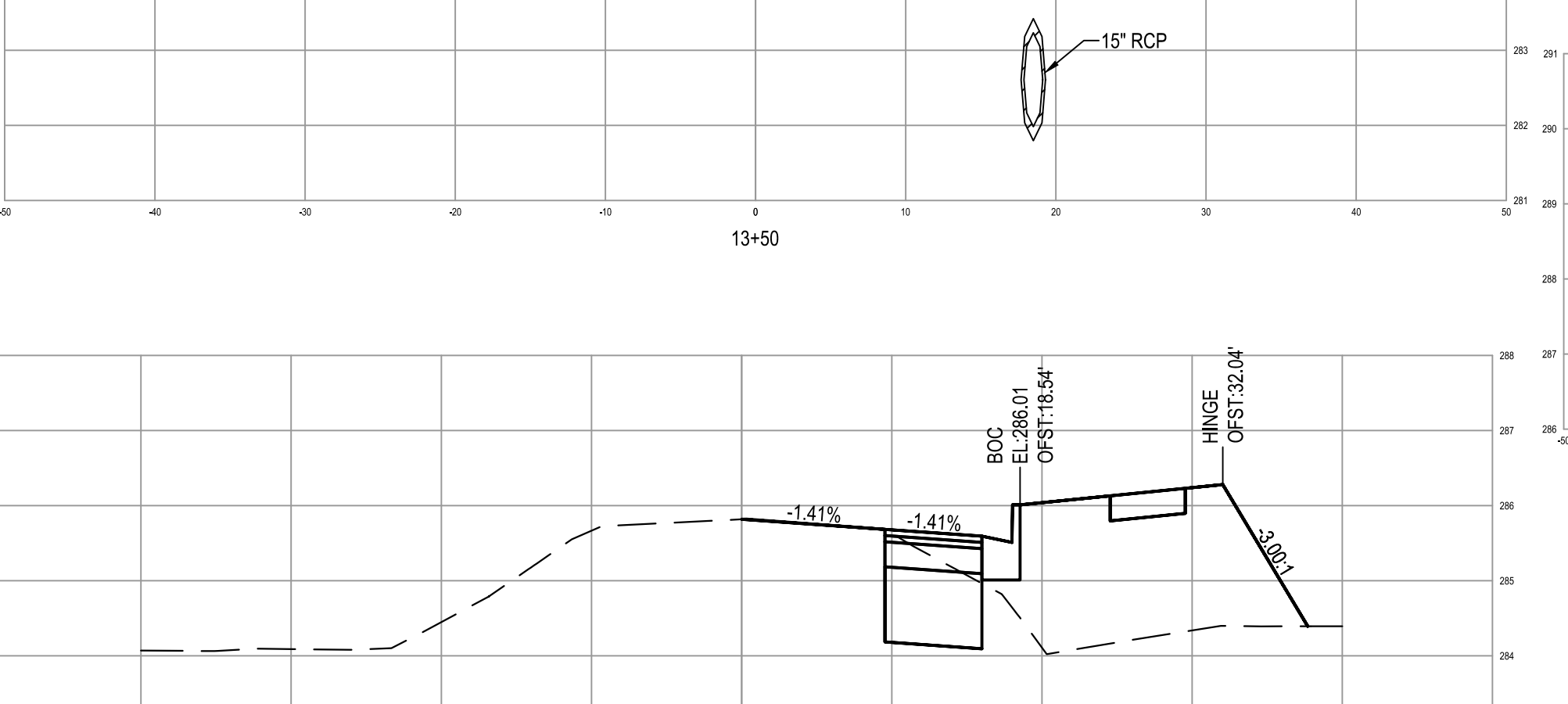
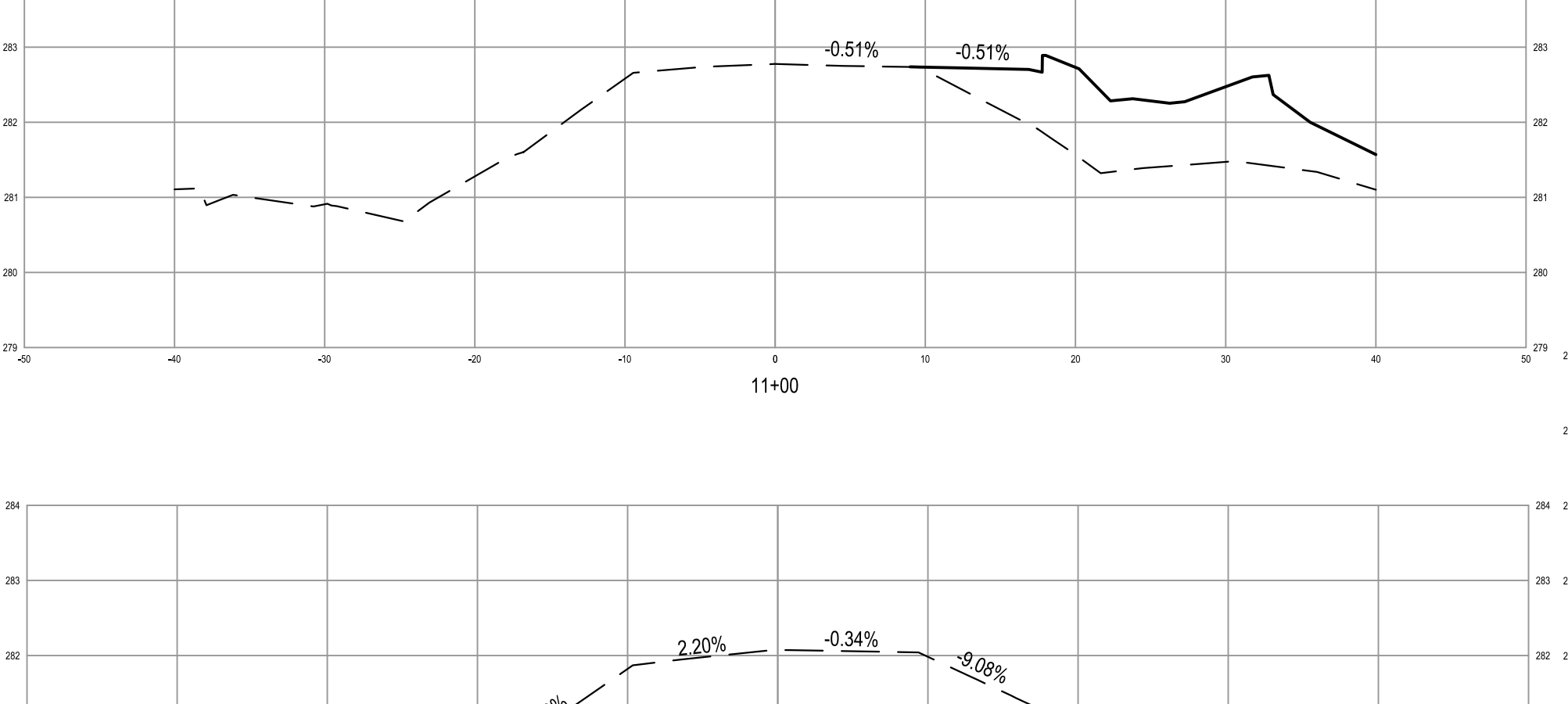
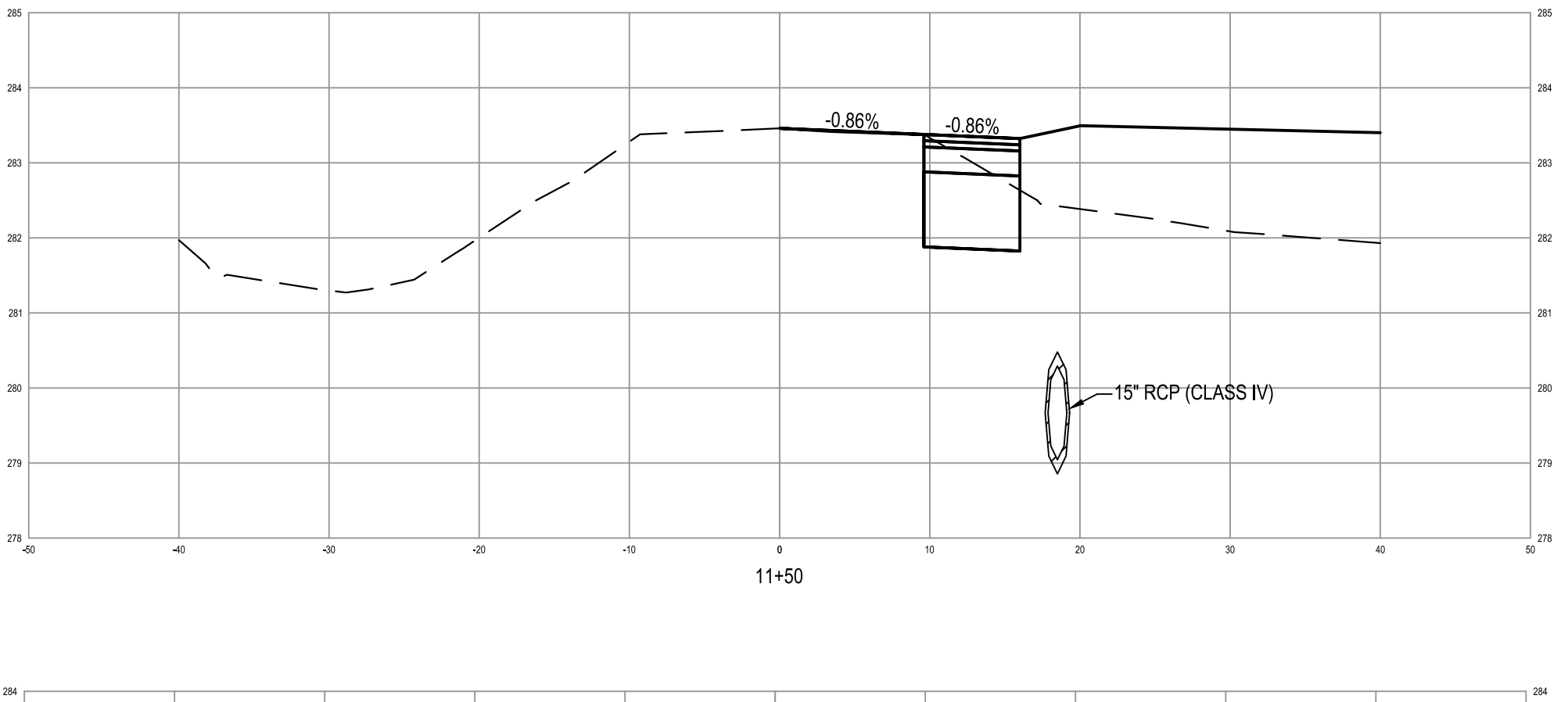
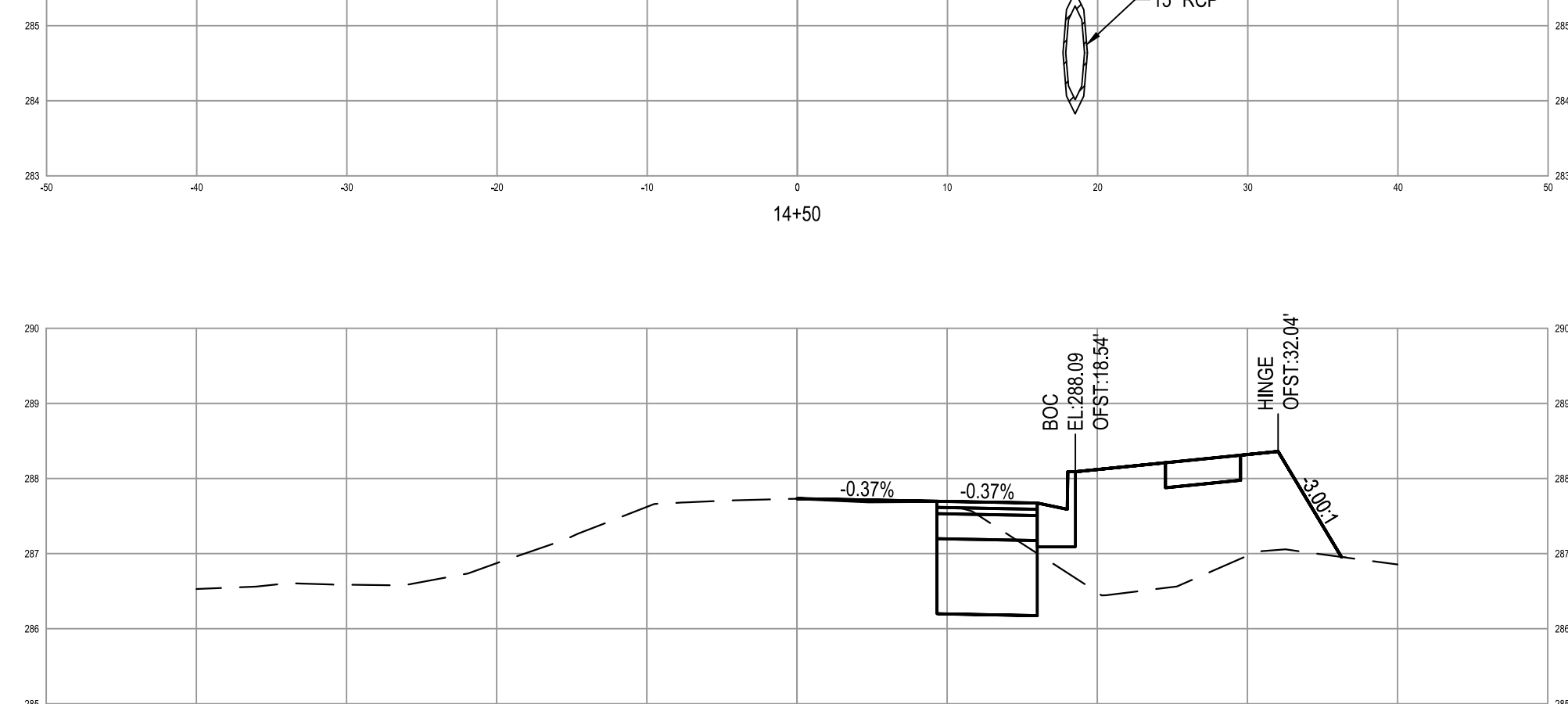
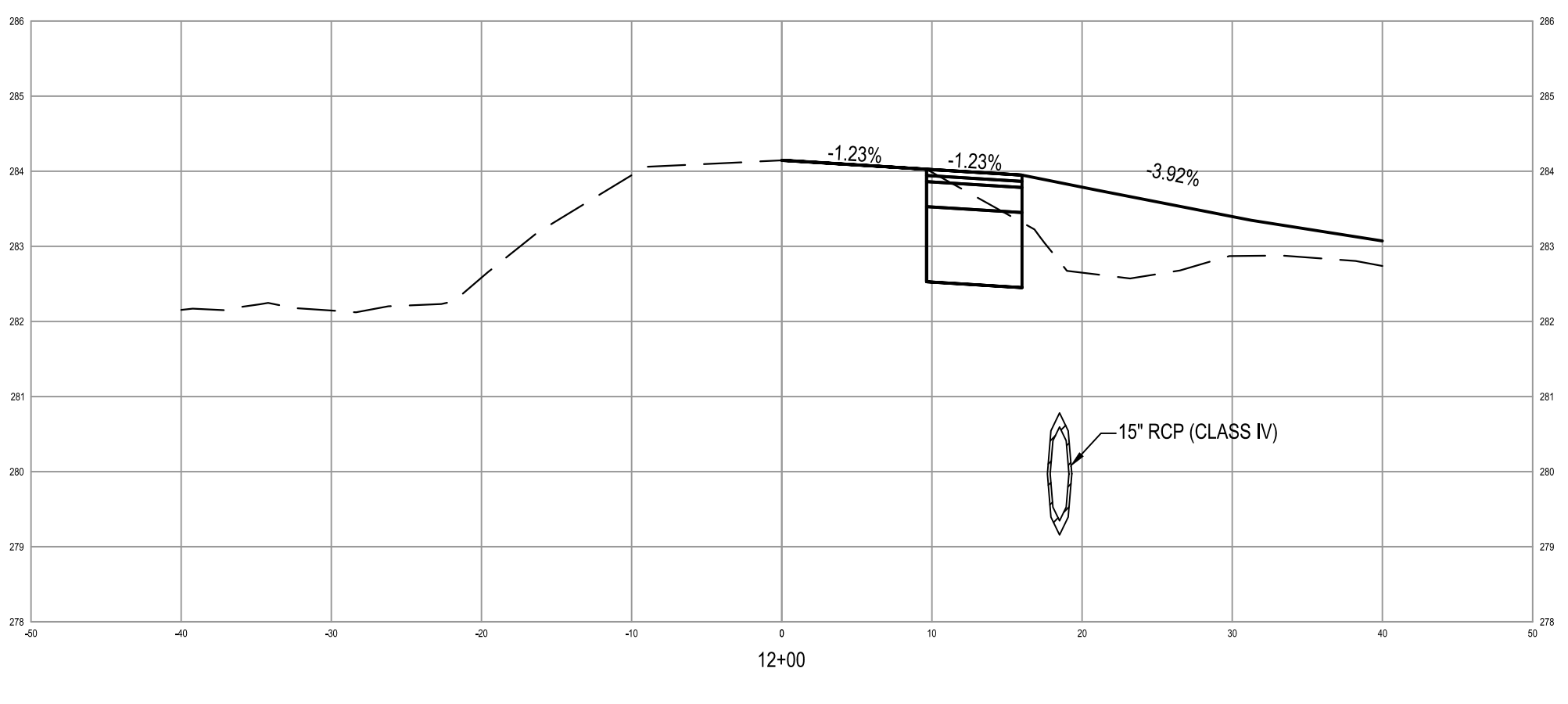
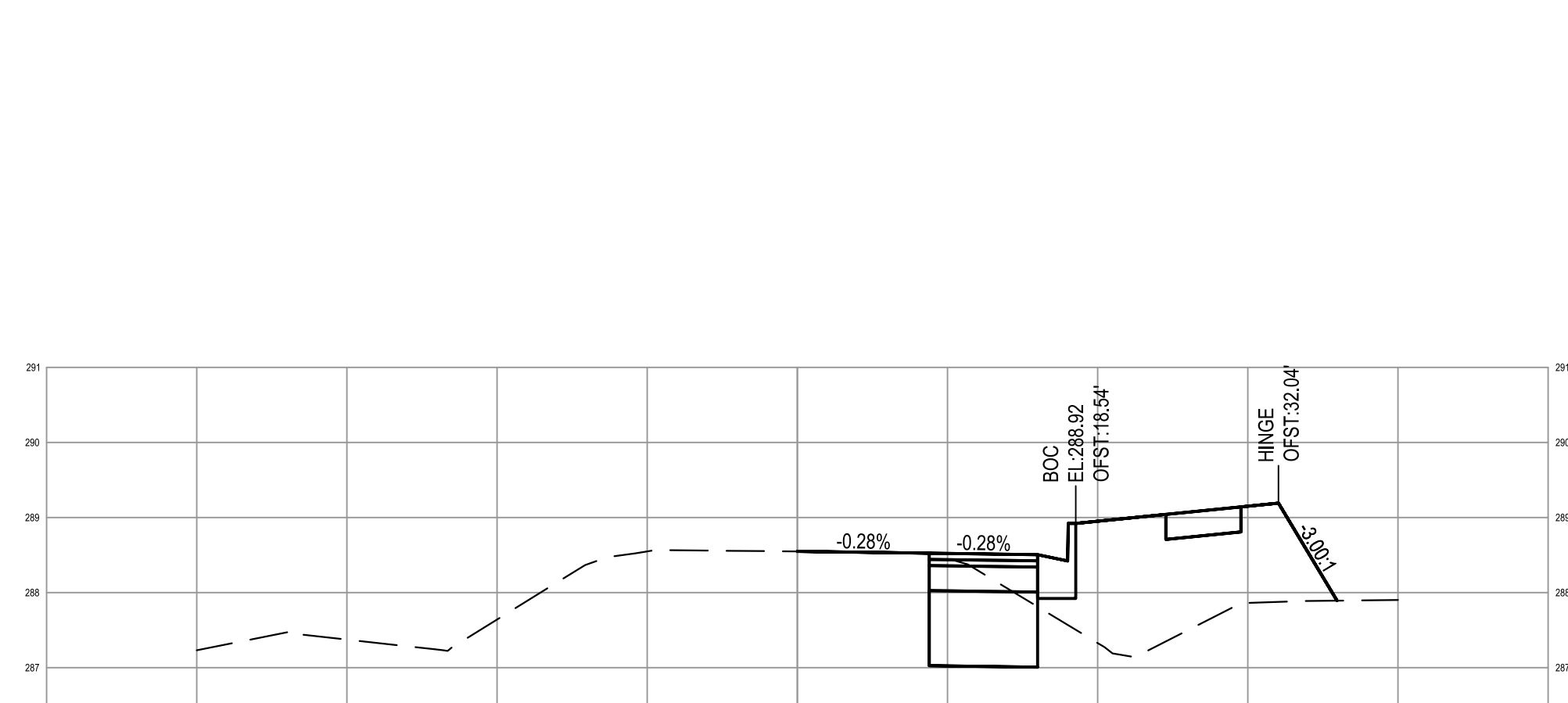
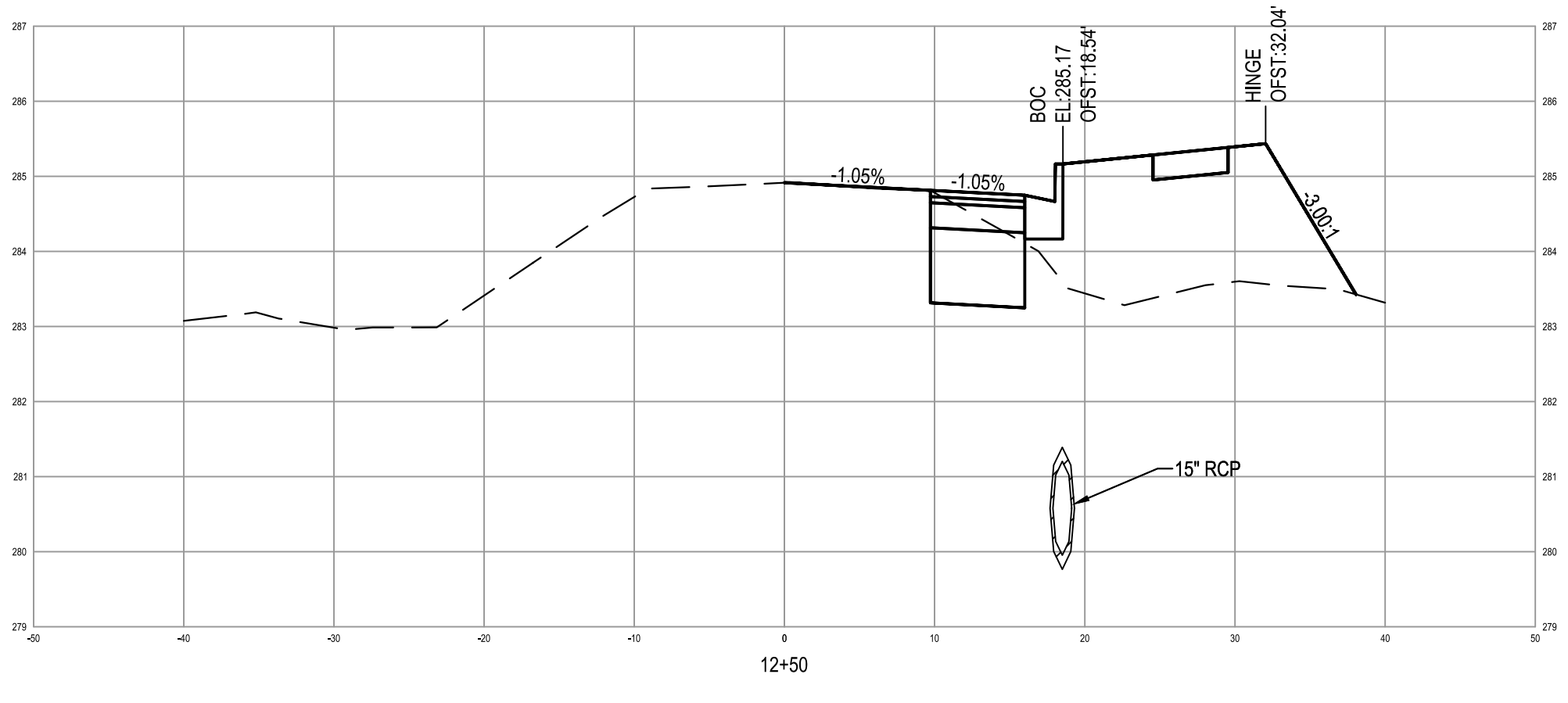
**CLIFTON ROAD
X-SECTIONS**

Job No. 02190259 Drawn By WR
Date 08/14/20 Designer WR



Revisions	DATE
1 PER TOK COMMENTS	10/02/20

Sheet No.
9.1



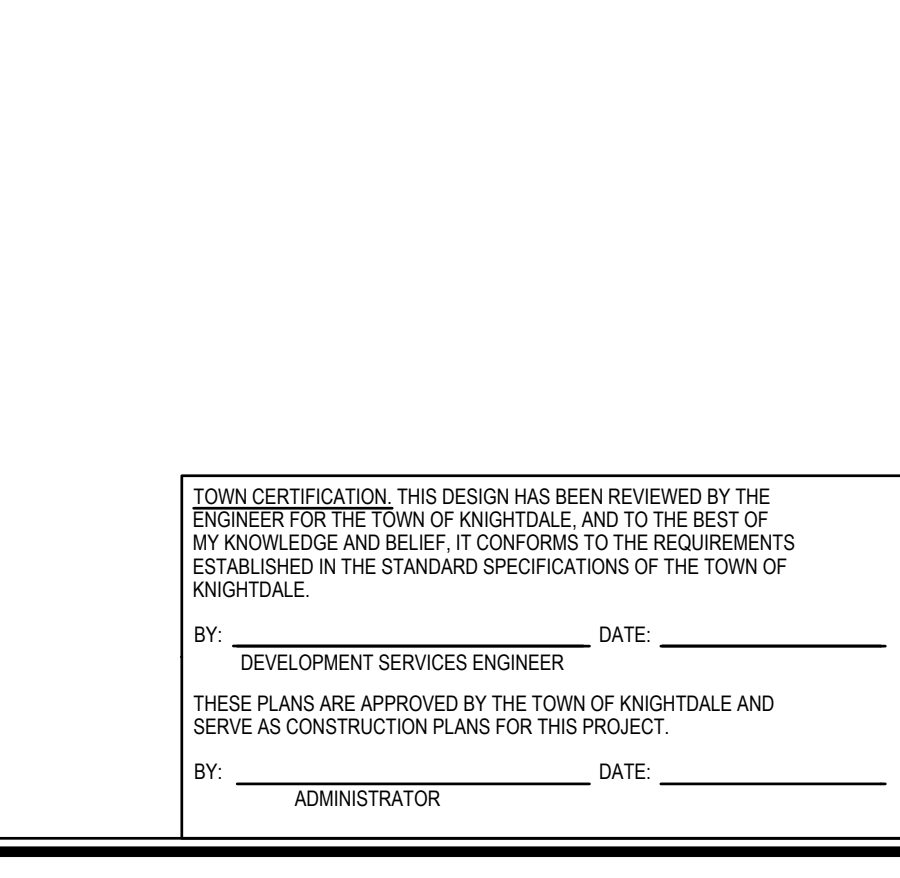
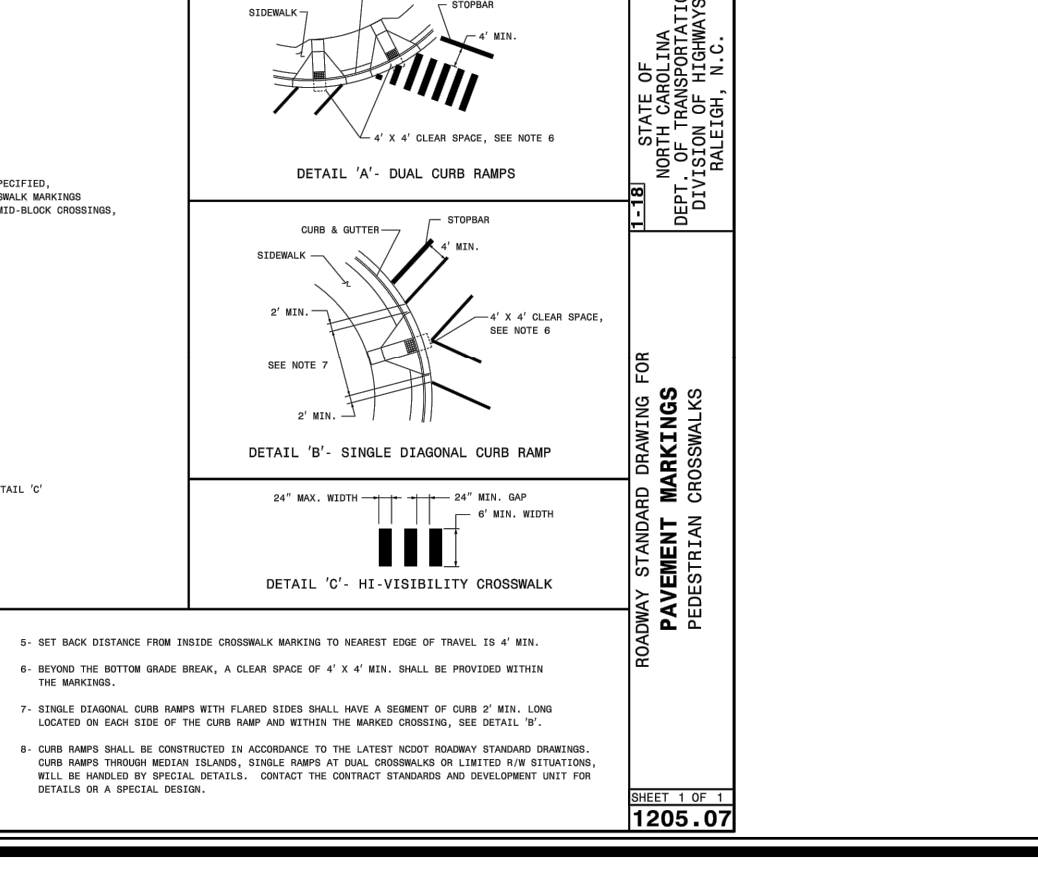
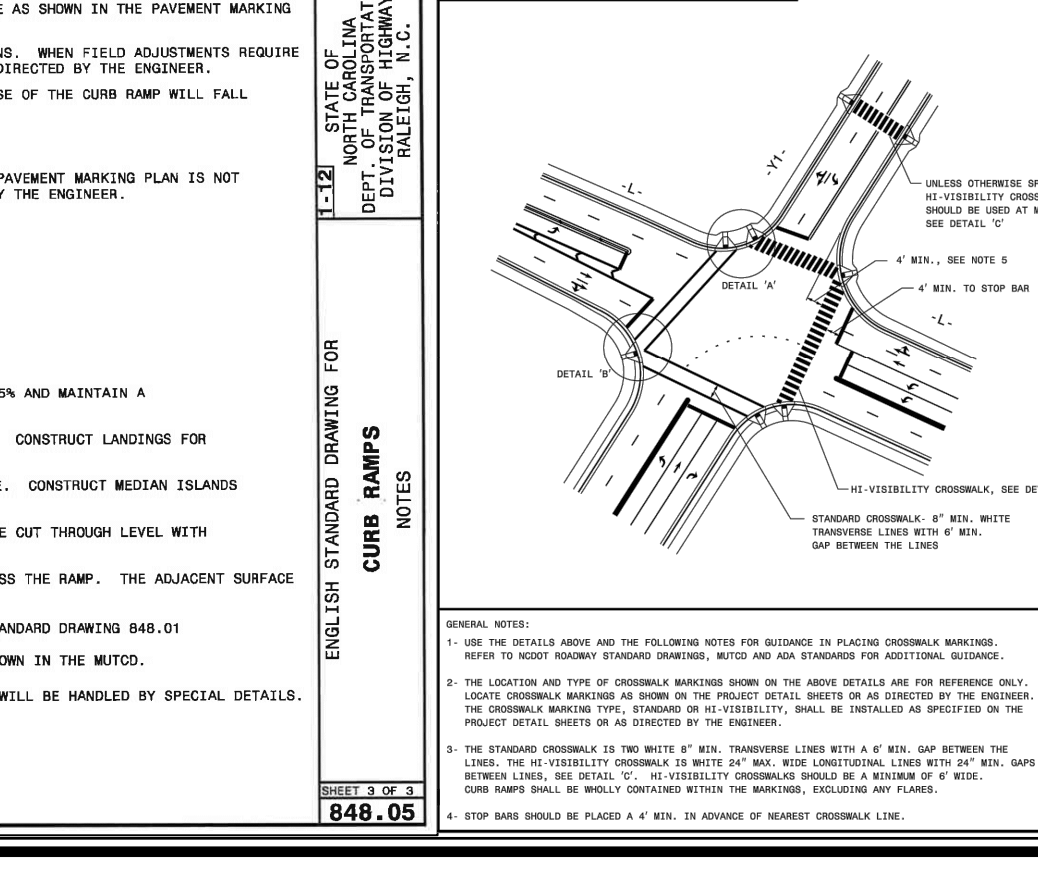
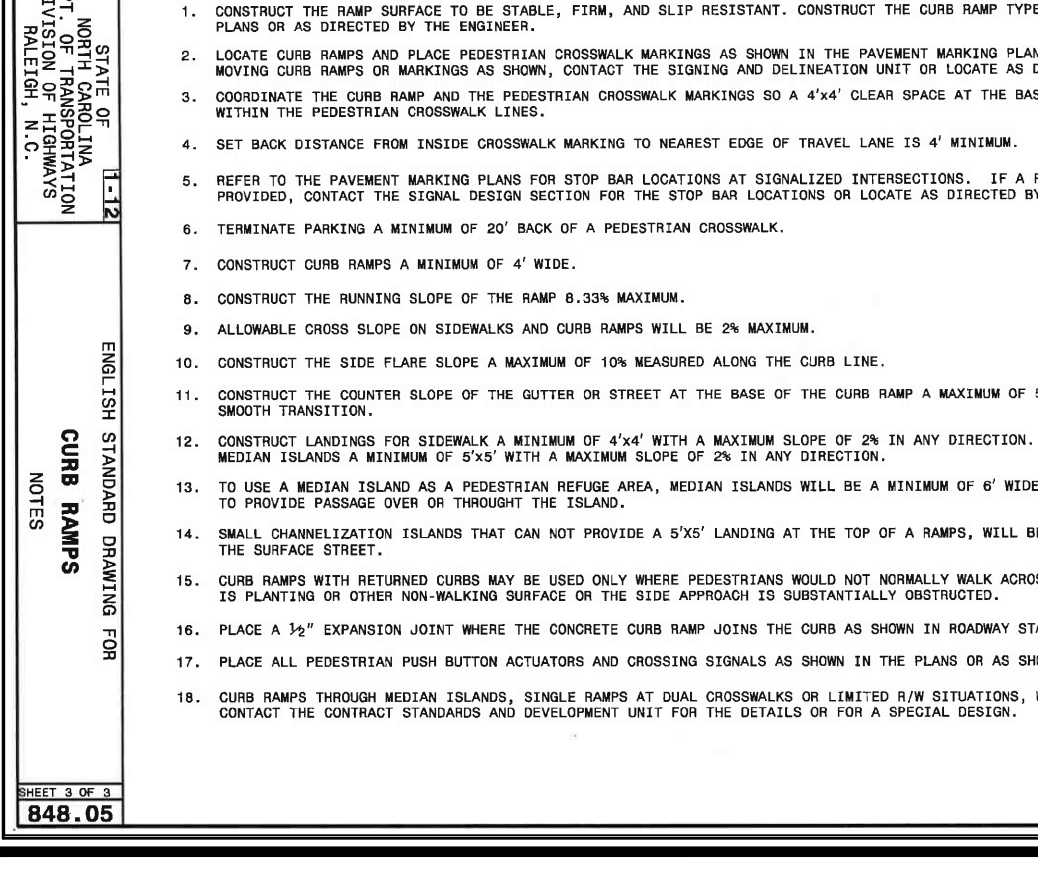
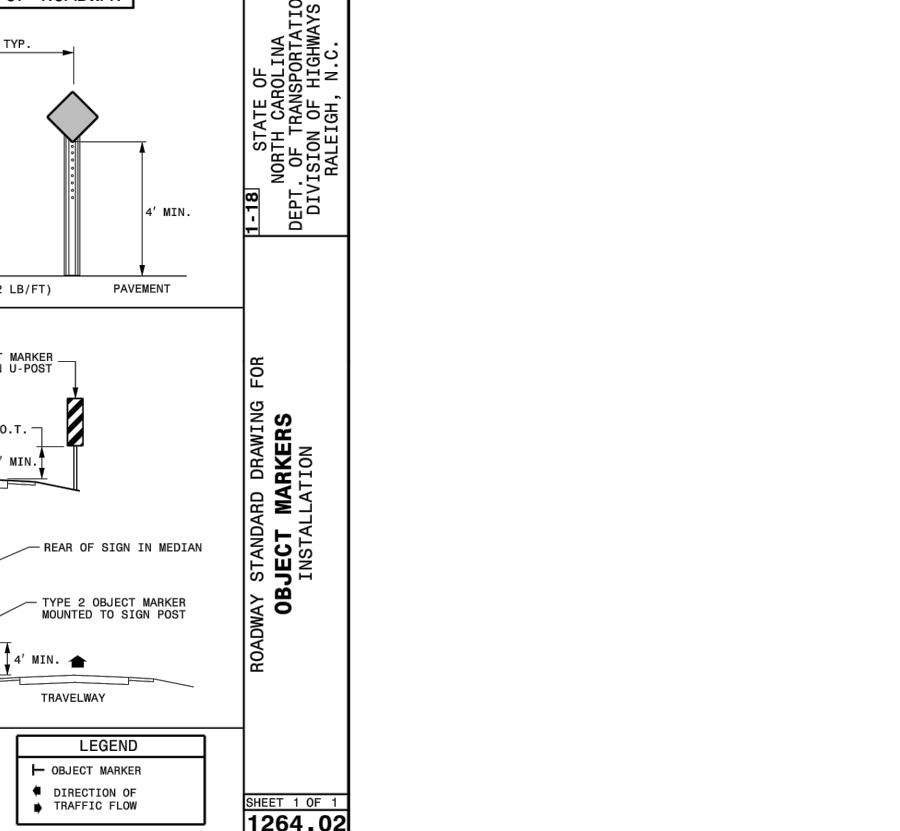
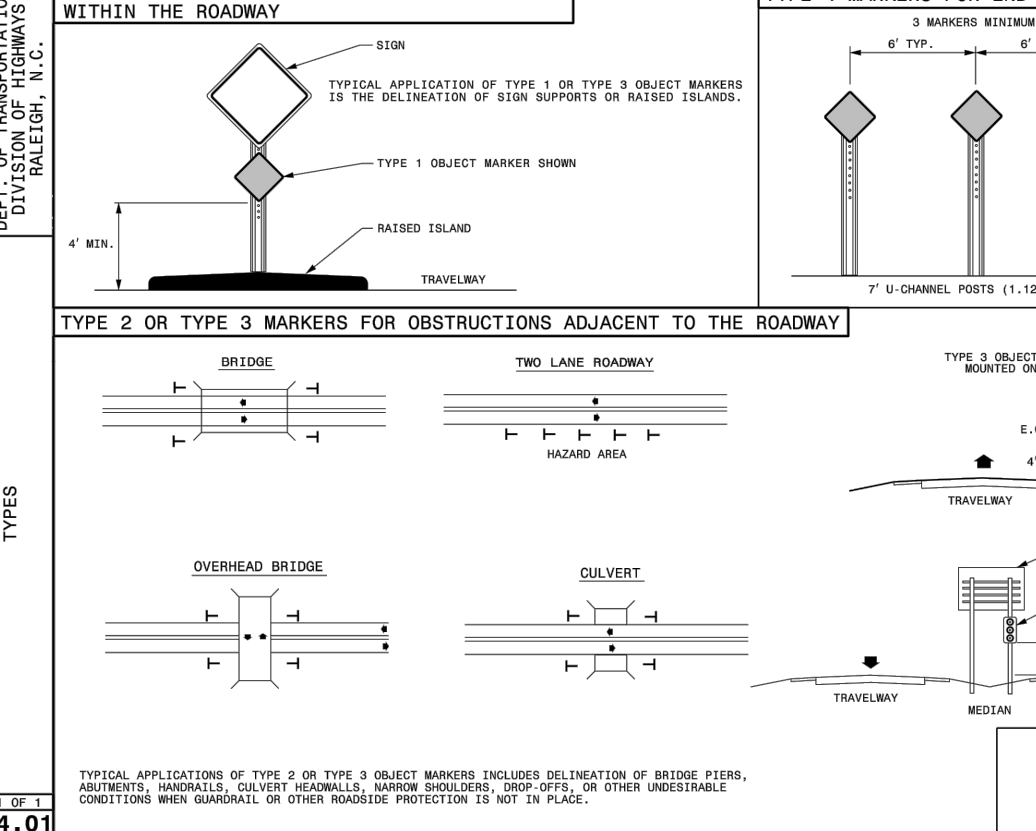
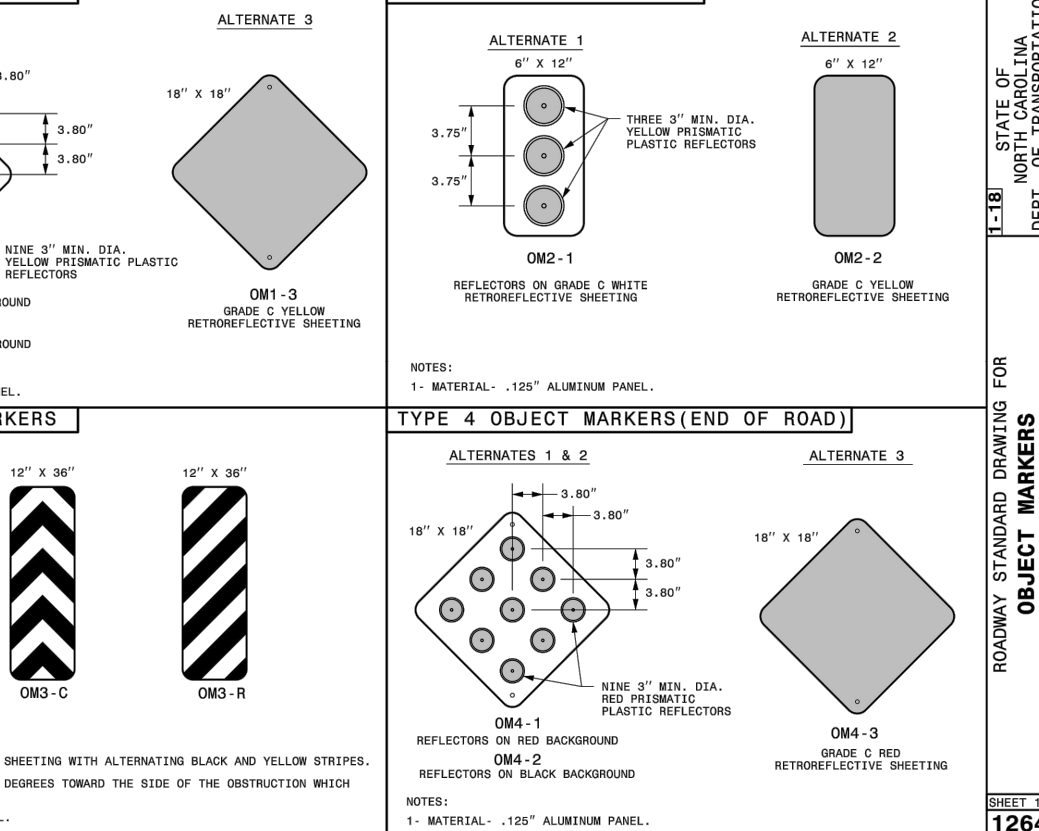
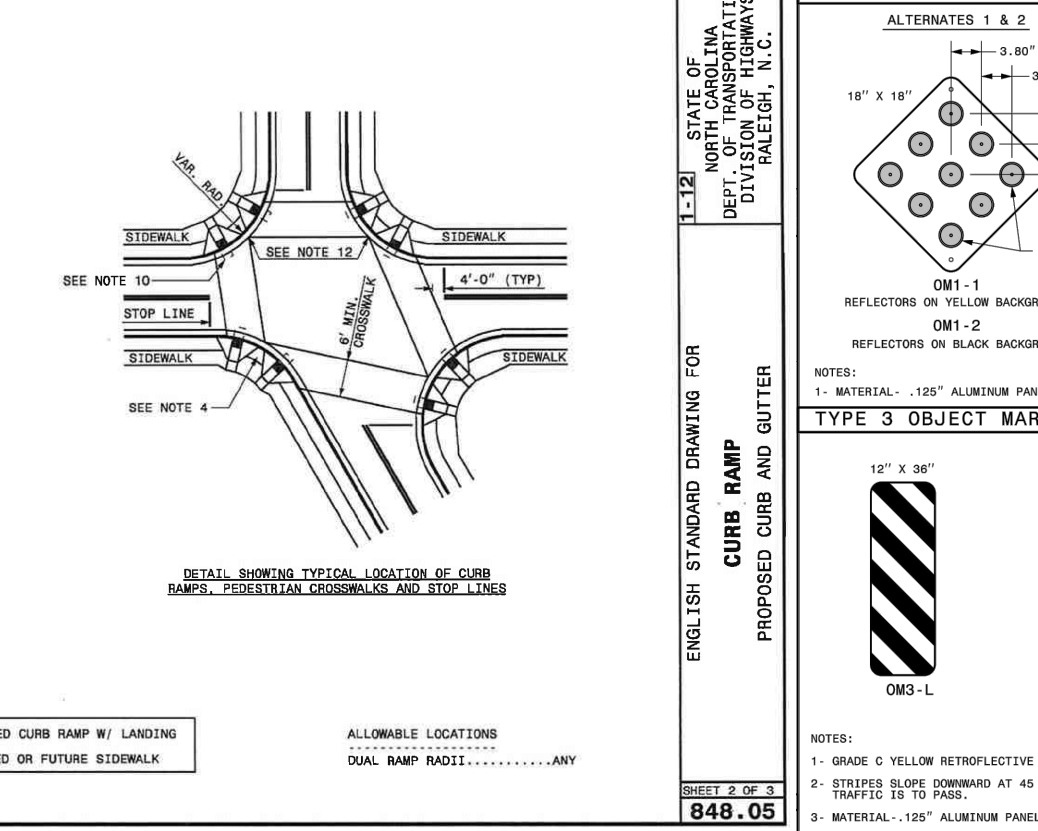
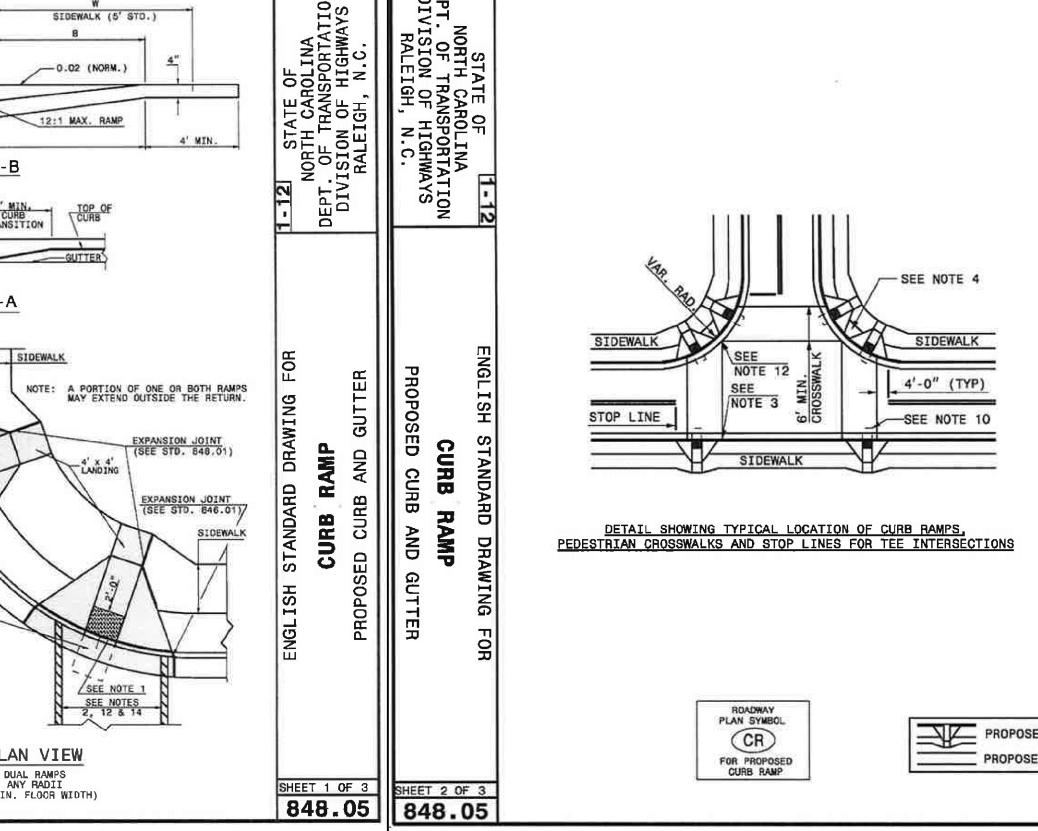
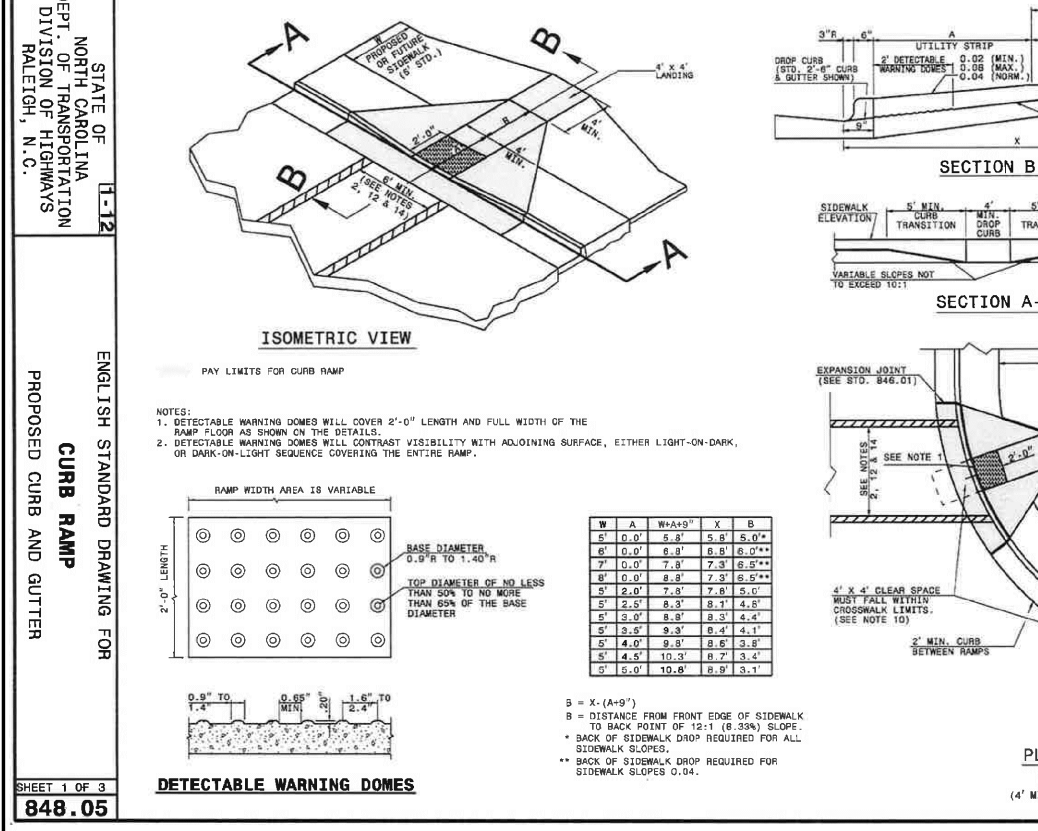
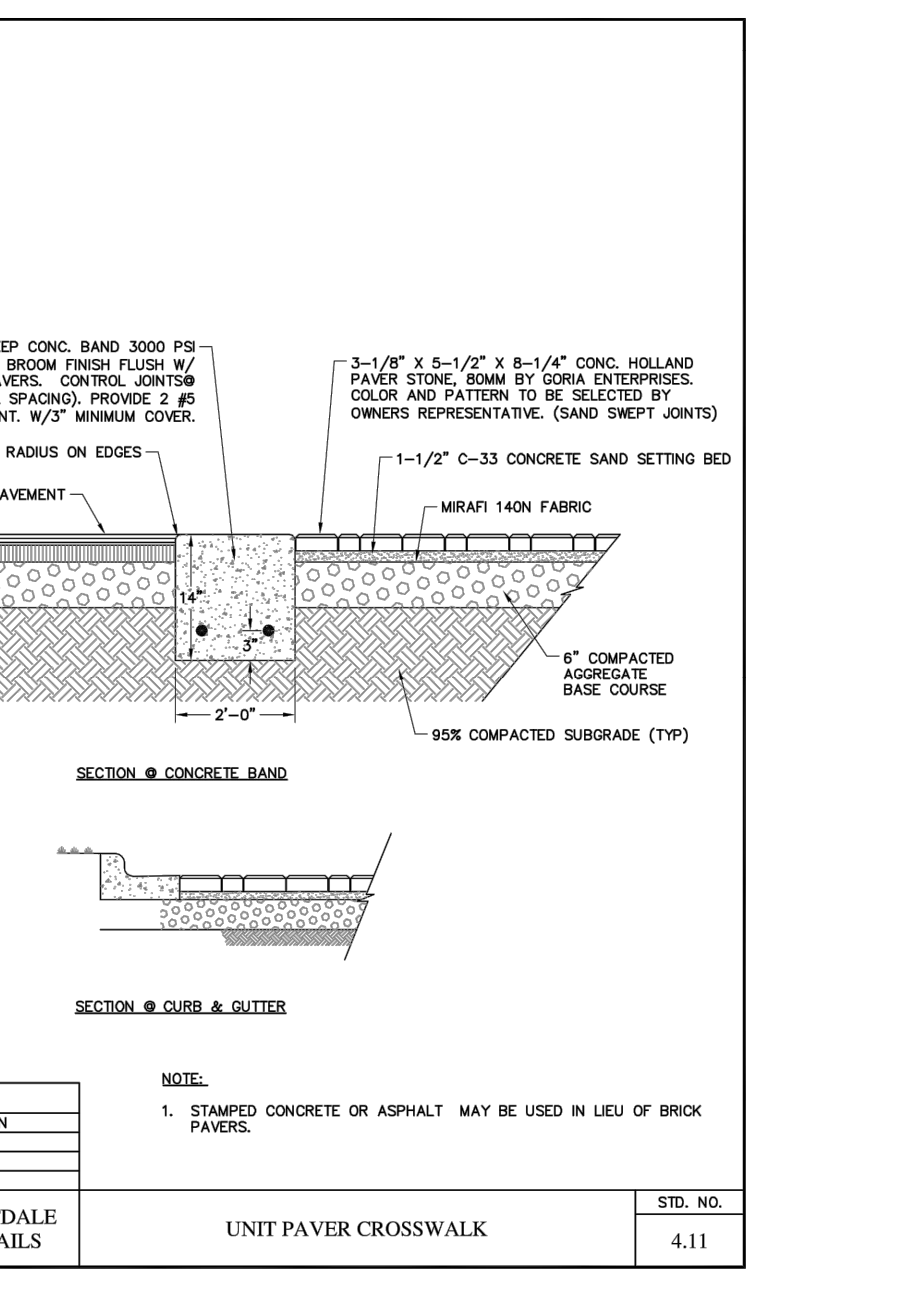
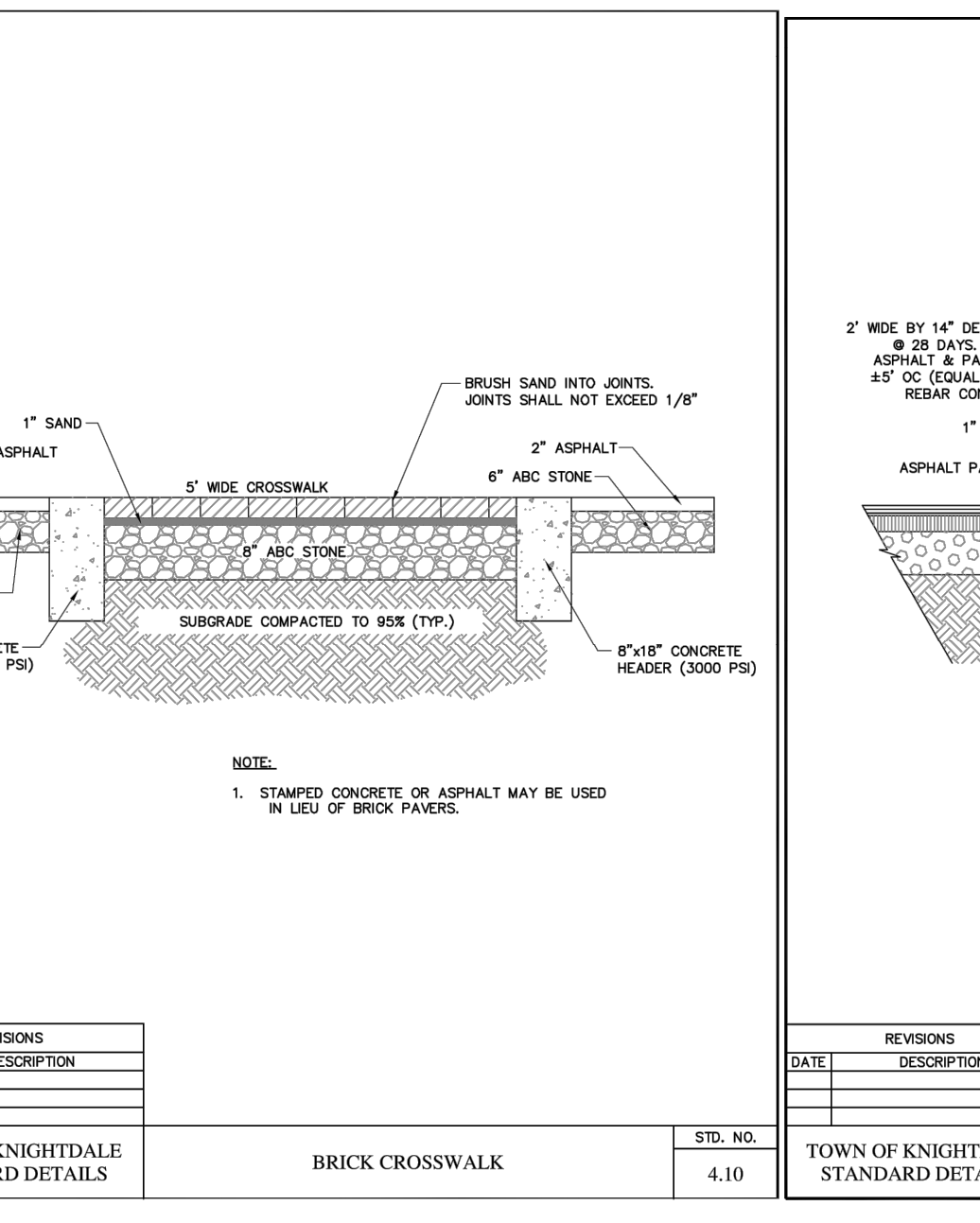
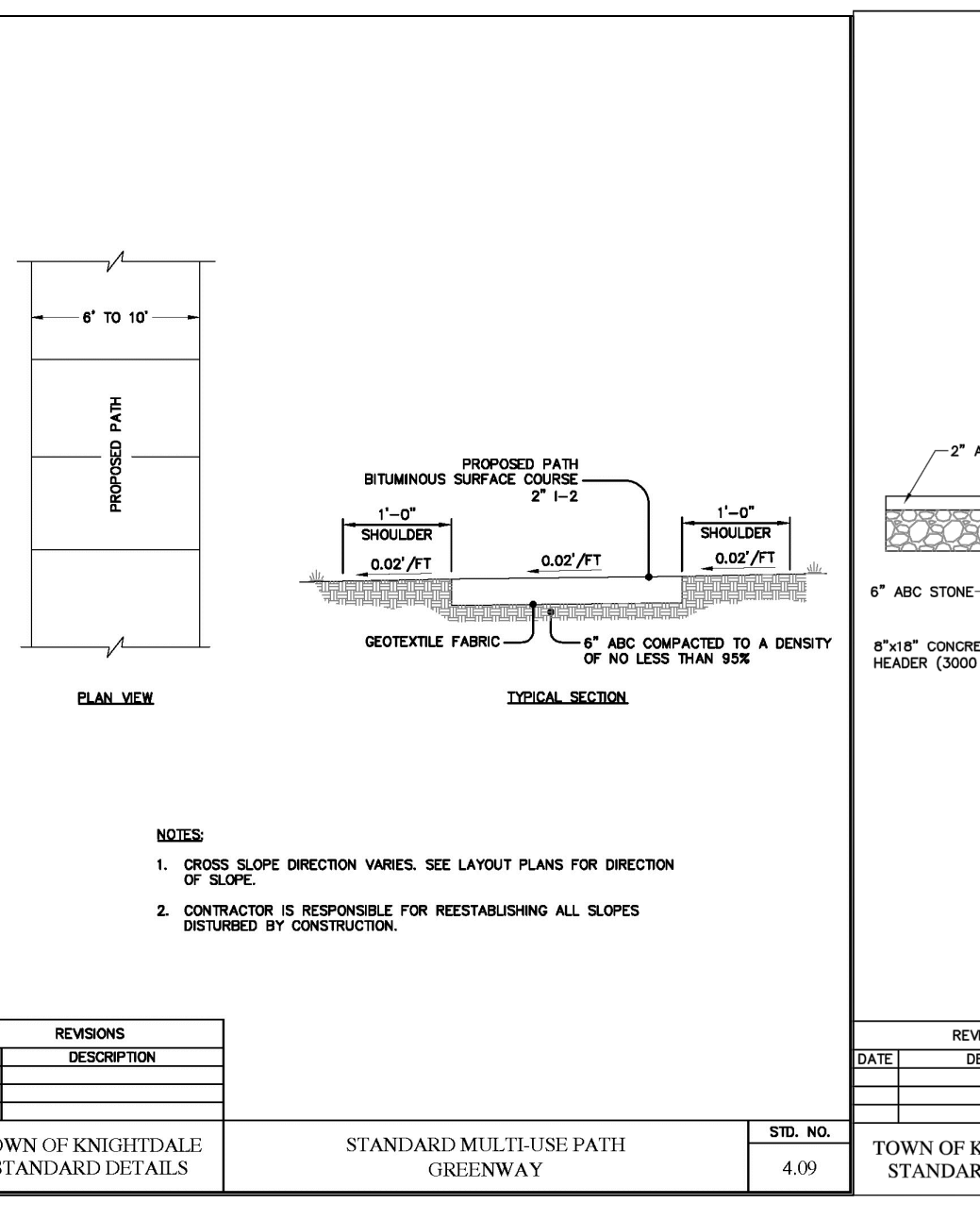
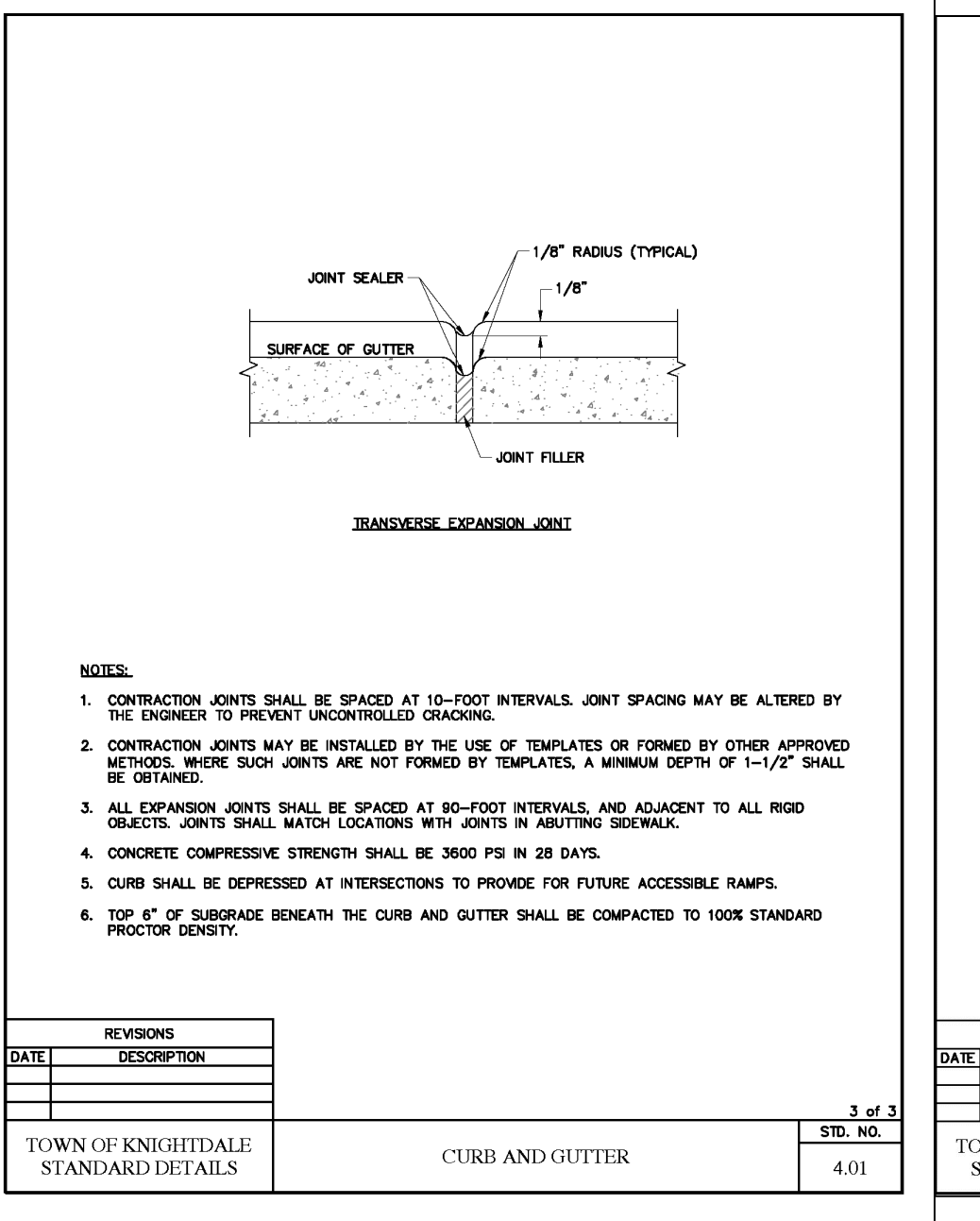
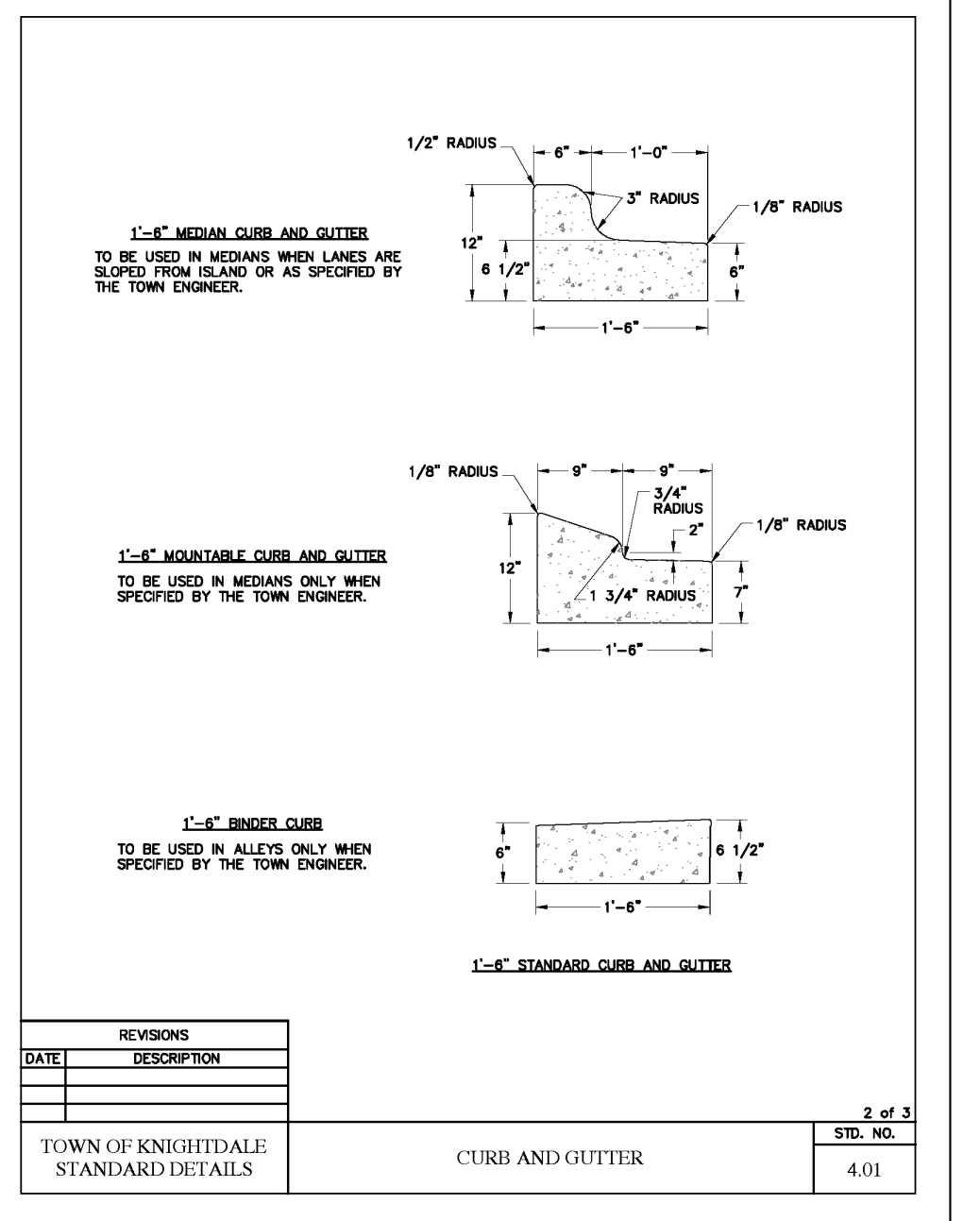
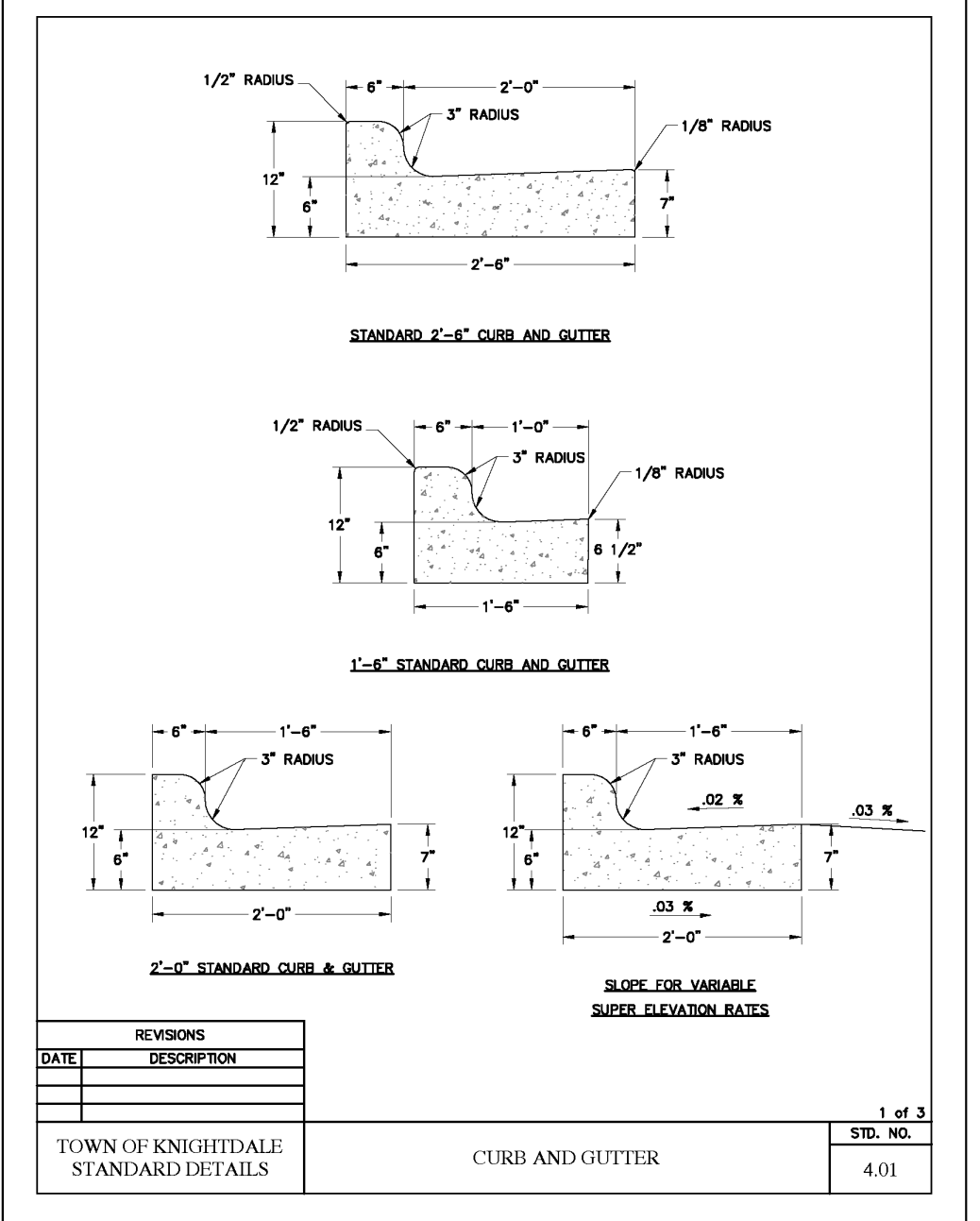
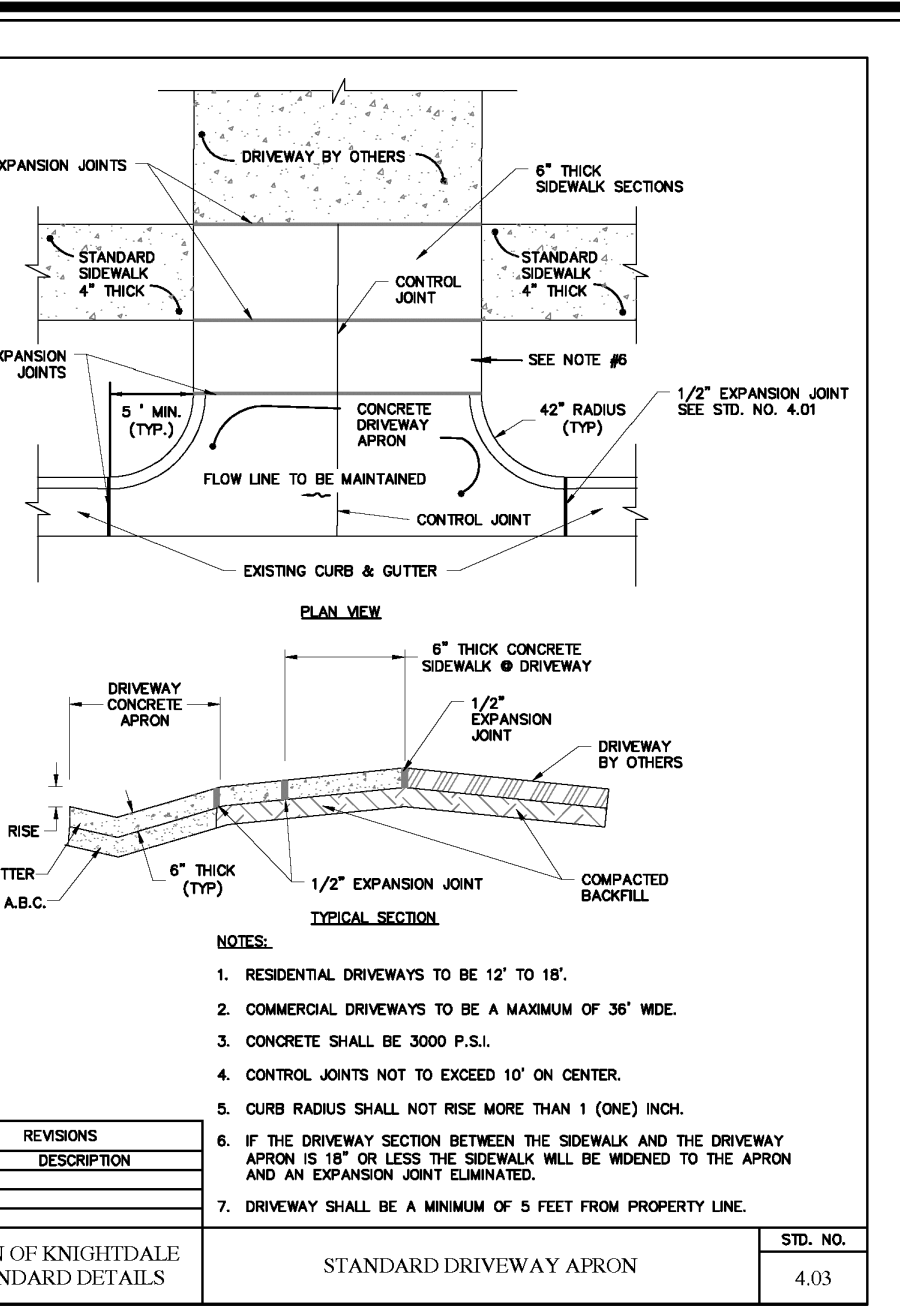
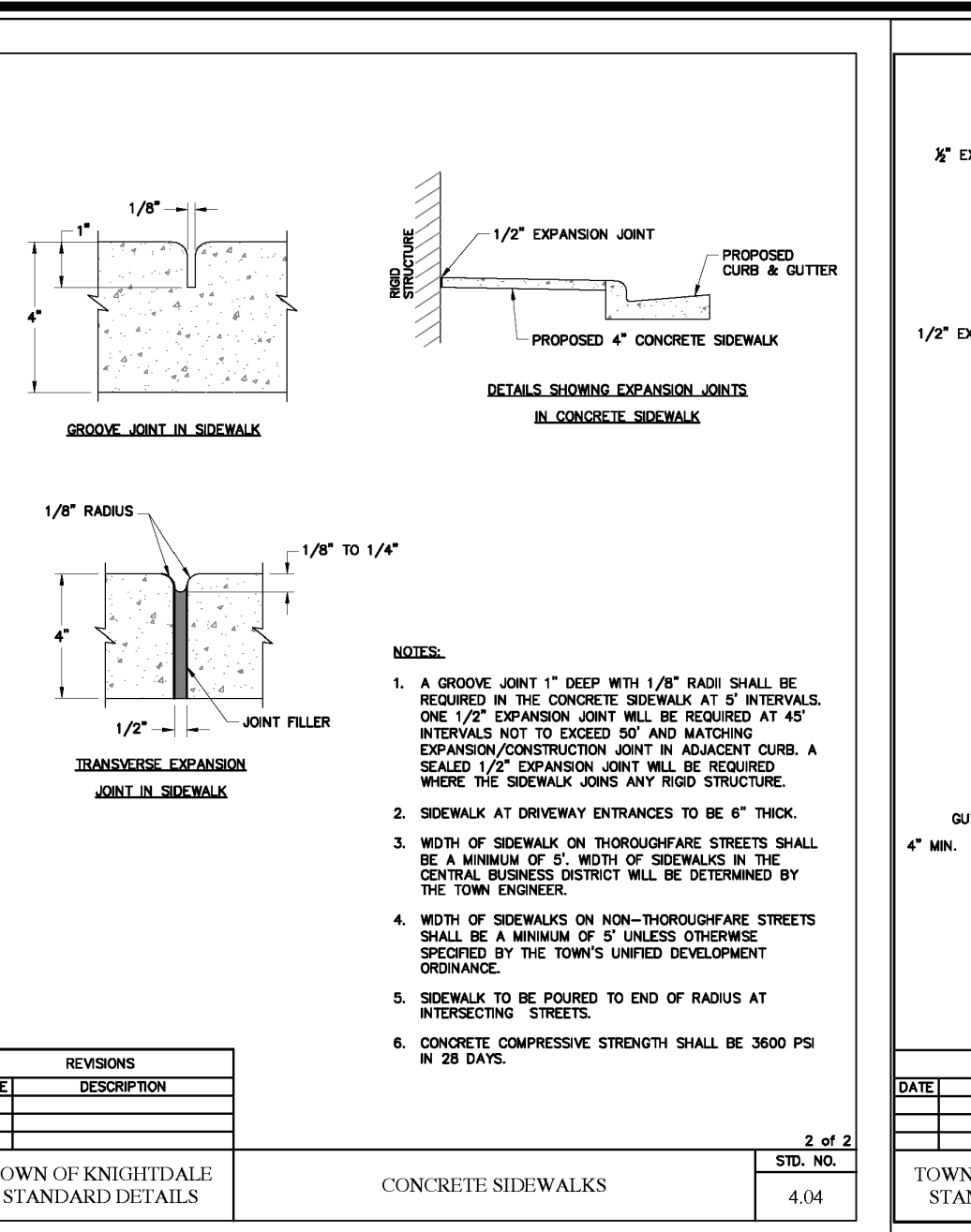
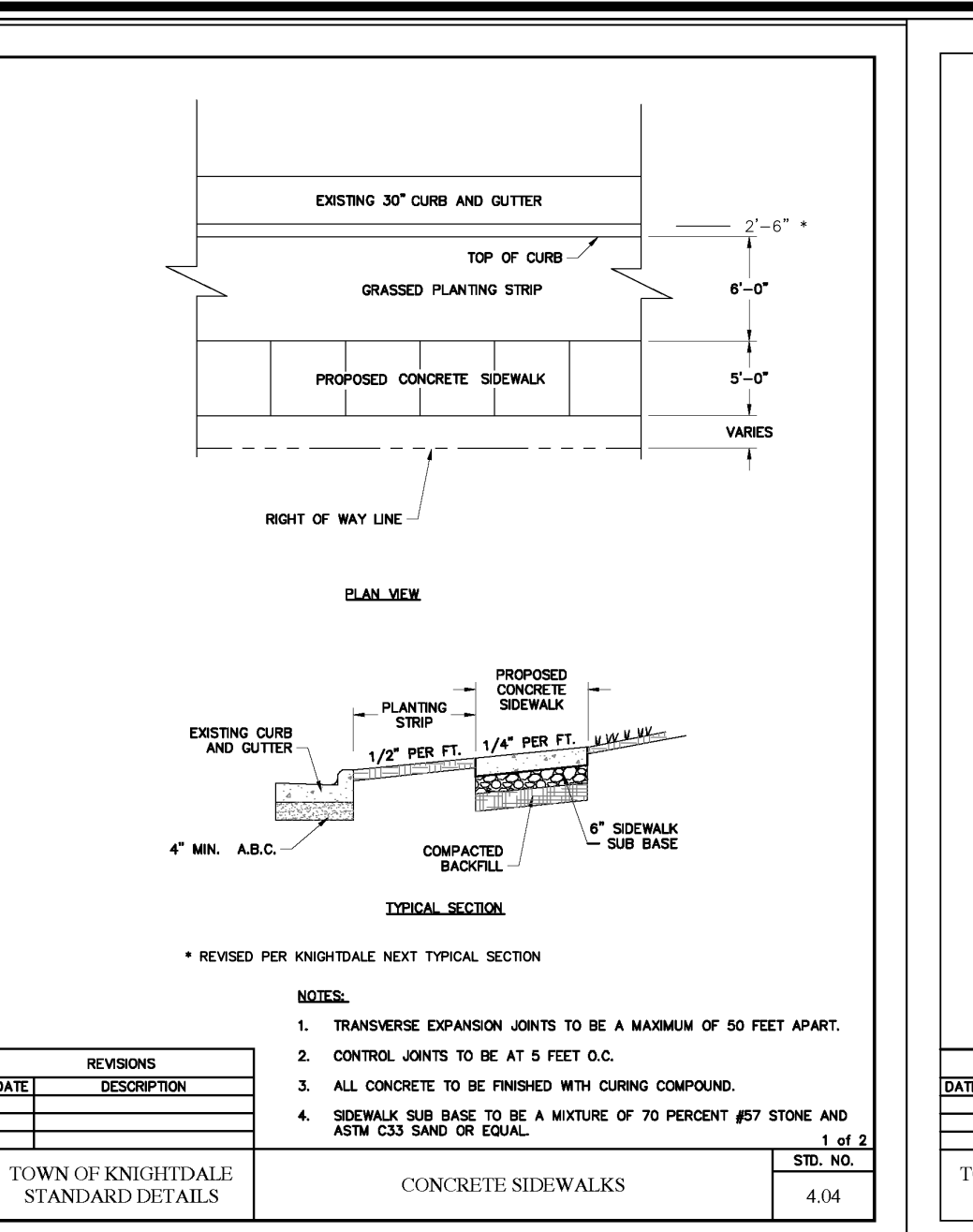
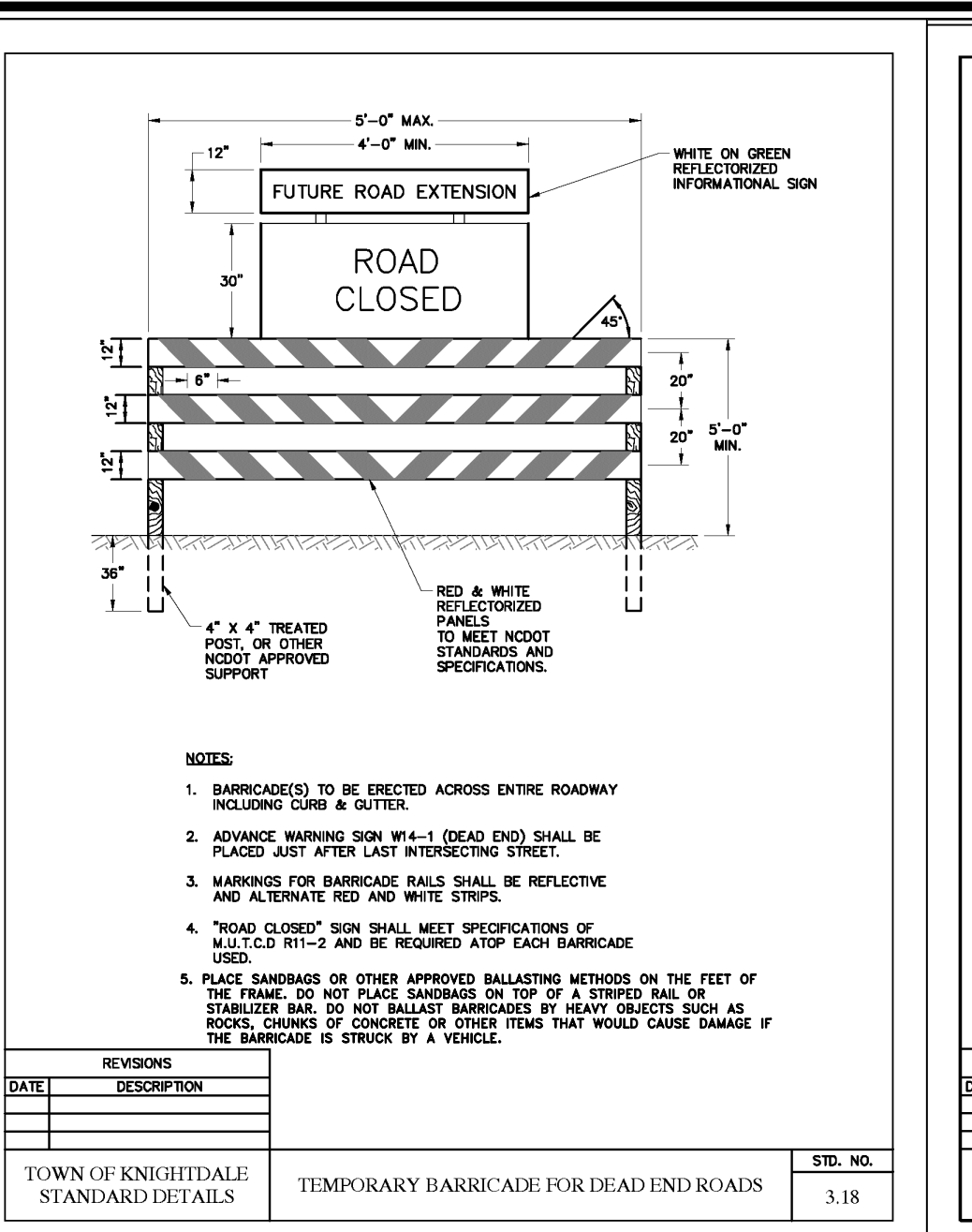
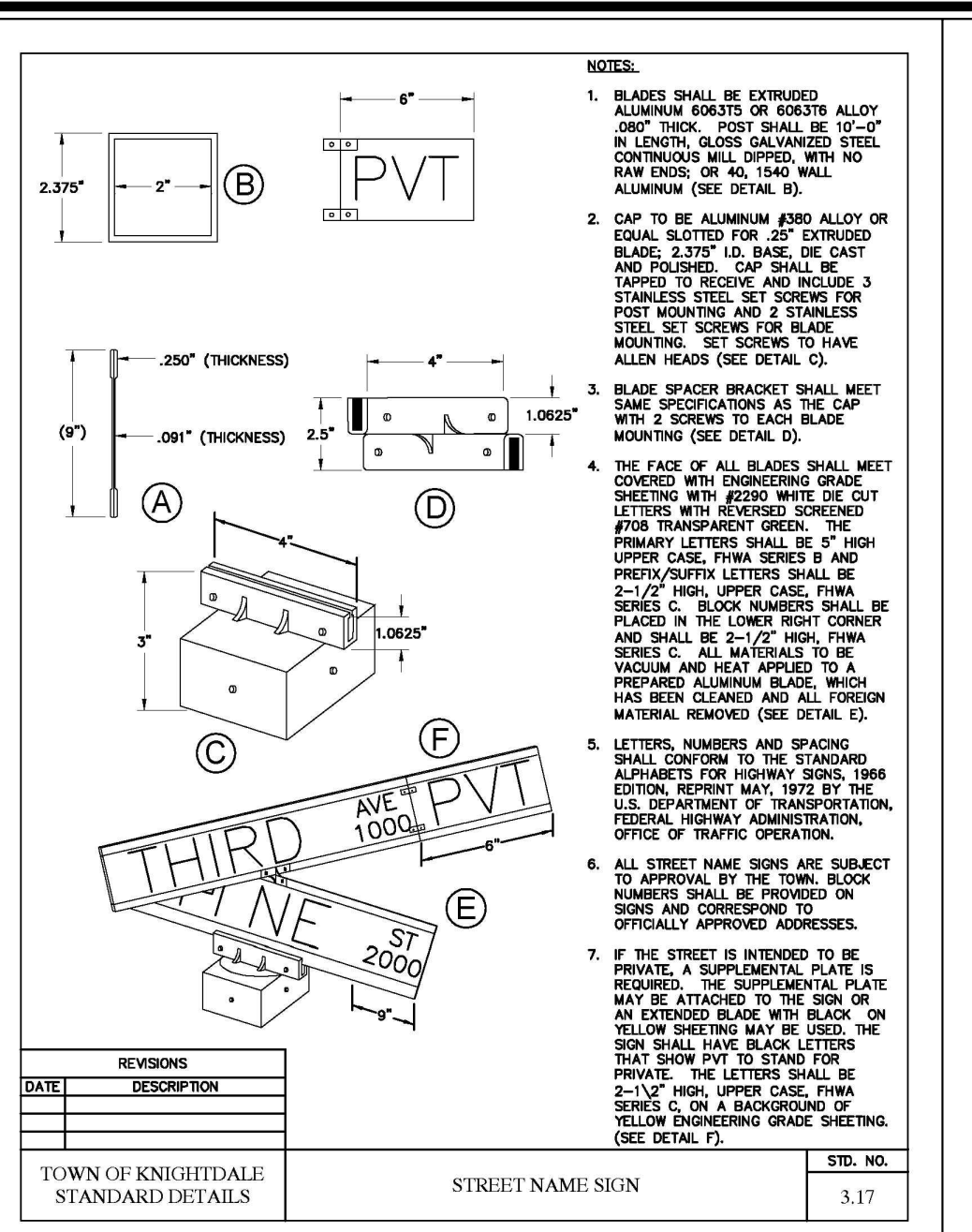
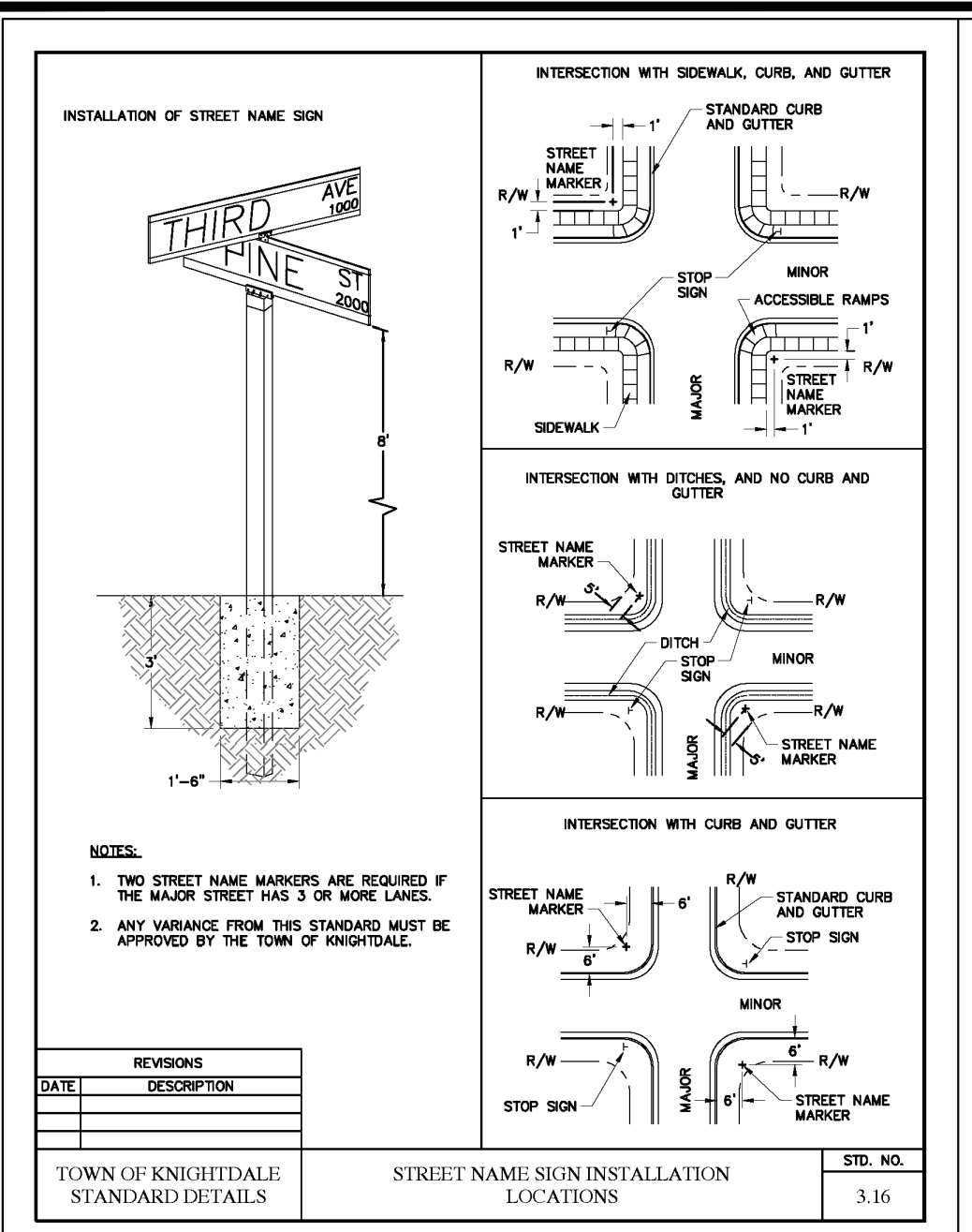
TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: _____ DATE: _____
DEVELOPMENT SERVICES ENGINEER

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

BY: _____ DATE: _____
ADMINISTRATOR

K:\10\190259\10259.dwg from web address\10259.dwg - Project: Poplar Creek Village, October 2, 2020 11:27:35 AM - 10%_170818.rvt



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

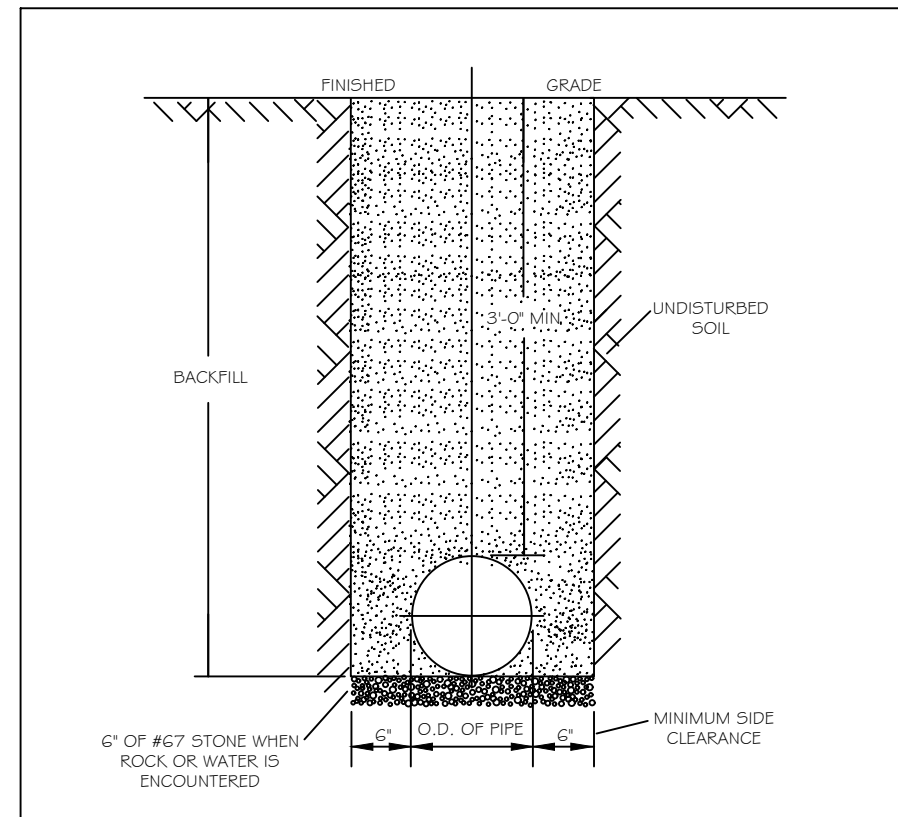
ALL AREAS GIVEN IN SQUARE FEET									
PIPE DIA. IN	REAR	TOP	SIDE	FRONT	VALVE	VALVE	FRONT	TOP	REAR
6"	1.108	1	1	1	1	1	1	1	1
8"	1.508	2	2	2	2	2	2	2	2
10"	2.207	3	3	3	3	3	3	3	3
12"	3.207	4	4	4	4	4	4	4	4
14"	4.433	5	5	5	5	5	5	5	5
16"	5.886	6	6	6	6	6	6	6	6
18"	7.565	7	7	7	7	7	7	7	7
20"	9.468	8	8	8	8	8	8	8	8
22"	11.595	9	9	9	9	9	9	9	9
24"	13.942	10	10	10	10	10	10	10	10
26"	16.503	11	11	11	11	11	11	11	11
28"	19.272	12	12	12	12	12	12	12	12
30"	22.253	13	13	13	13	13	13	13	13
32"	25.448	14	14	14	14	14	14	14	14
34"	28.850	15	15	15	15	15	15	15	15
36"	32.453	16	16	16	16	16	16	16	16
38"	36.259	17	17	17	17	17	17	17	17
40"	40.261	18	18	18	18	18	18	18	18

REACTION BEARING AREAS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH SIDE AT AN ANGLE OF 30° TO THE THRUST VECTOR.

USE 6" - 30' BEND VALUE FOR HYDRANTS FOR ADDITIONAL SAFETY FACTOR.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
THRUST BLOCKING DESIGN QUANTITY TABLE

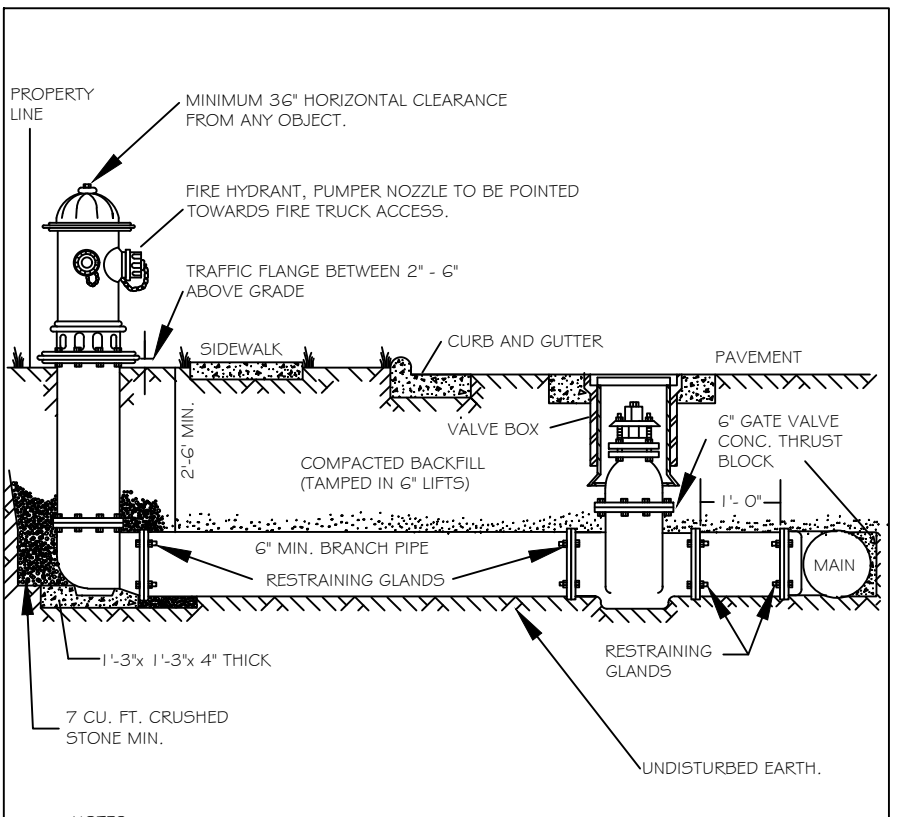
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-10	REV	12-23-99	A.B.B.	11-24-04
	D.T.L.	6-16-07		



NOTES:
1. TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
2. NO ROCKS OR BOLLERS 4" OR LARGER TO BE USED IN BACKFILL.
3. ALL BACKFILL MATERIAL SHALL BE SUFFICIENT NATIVE MATERIAL.
4. BACKFILL SHALL BE TAMPED IN 6" LIFTS.
5. ACHIEVE 95% COMPACTION IN BACKFILL.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
TRENCH BOTTOM DIMENSIONS & BACKFILL REQUIREMENTS FOR SIGHTLINE

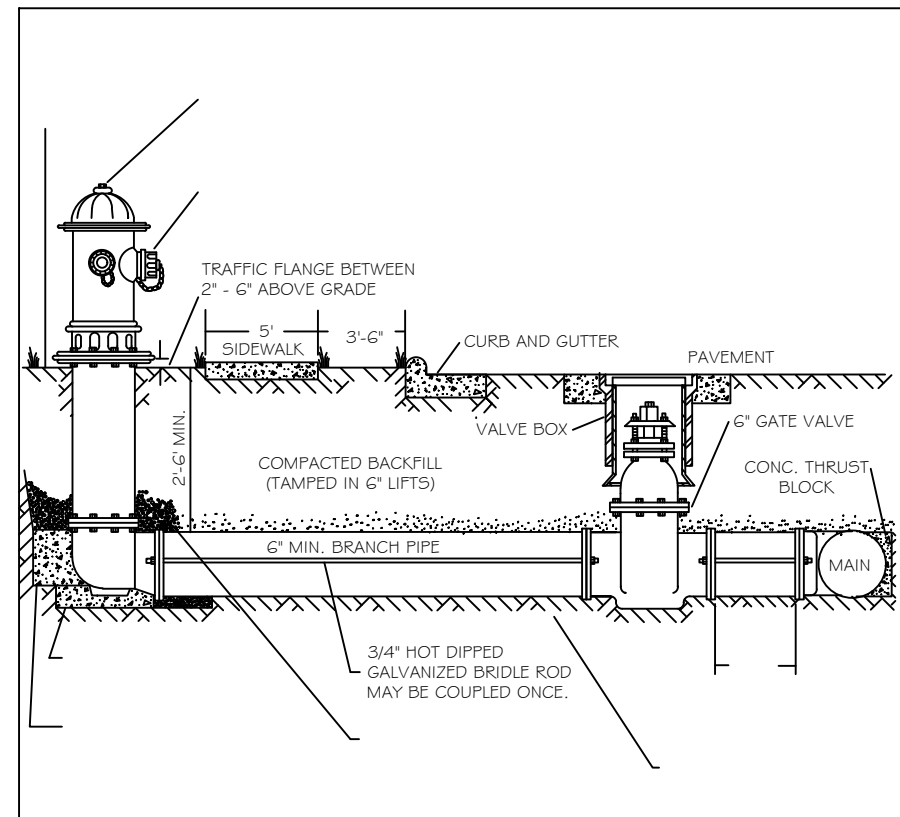
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-3	REV	8-31-99	A.B.B.	10-29-05
	D.T.L.	8-31-00	J.P.S.	10-29-05



NOTES:
1. FIRE HYDRANT SHALL BE AS MANUFACTURED: MULLER, AMERICAN DARLING, KENNEDY, MH, WATERLOUS, CLOW, EAST JORDAN IRON WORKS, OR US PIPE.
2. BRANCH PIPE SHALL BE SUFFICIENT ABOVE GROUND.
3. GATE VALVE SHALL BE ANNA C500-AS OPEN LEFT.
4. STEEL RODS AND BOLTS SHALL BE 3/4\"/>

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD FIRE HYDRANT INSTALLATION DETAIL

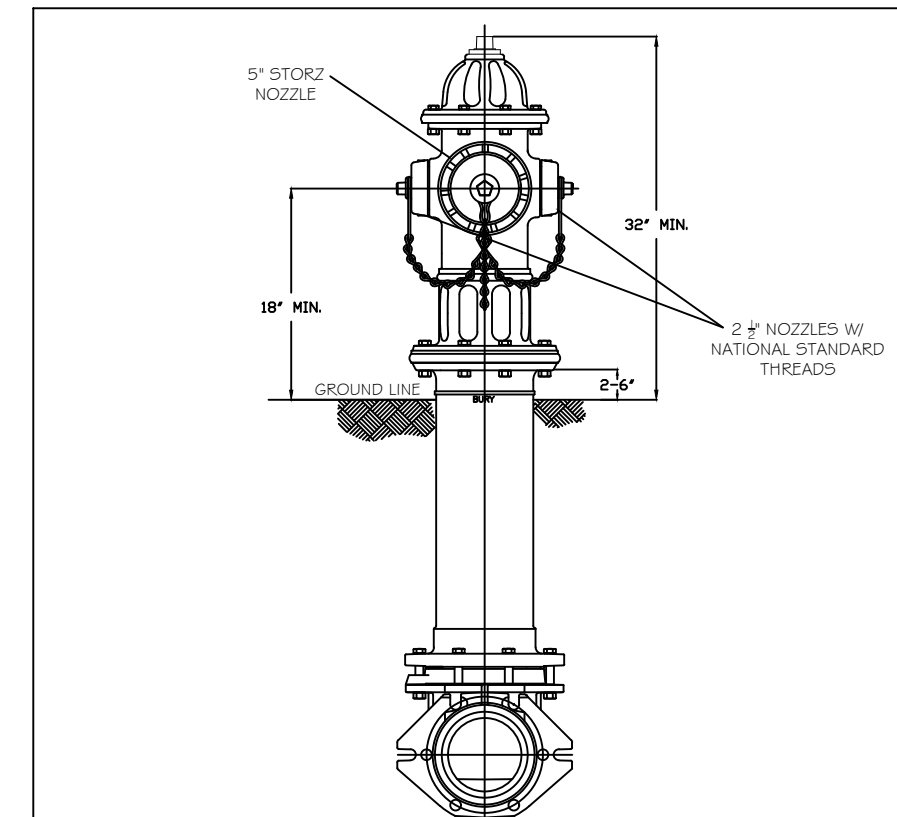
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-4	REV	4-20-04	F.H.P.	07/09
	D.T.L.	07/09		



NOTES:
1. FIRE HYDRANT SHALL BE AS MANUFACTURED: MULLER, AMERICAN DARLING, KENNEDY, MH, WATERLOUS, CLOW, EAST JORDAN IRON WORKS, OR US PIPE.
2. BRANCH PIPE SHALL BE SUFFICIENT ABOVE GROUND.
3. GATE VALVE SHALL BE ANNA C500-AS OPEN LEFT.
4. STEEL RODS AND BOLTS SHALL BE 3/4\"/>

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD FIRE HYDRANT INSTALLATION DETAIL

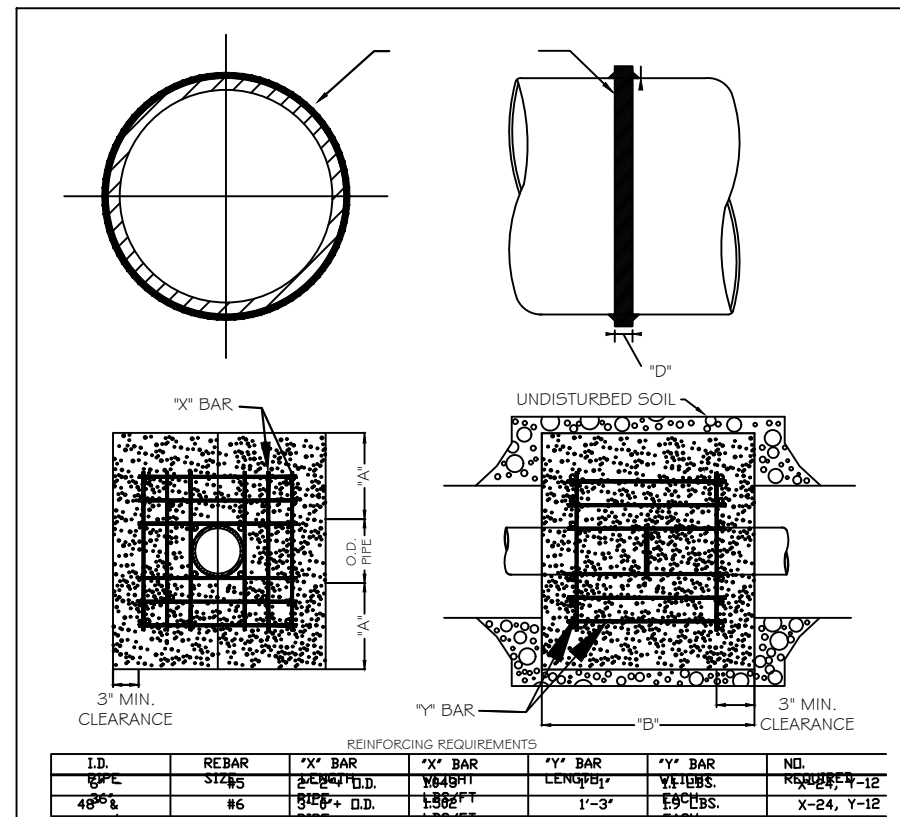
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-4	REV	4-6-04	A.B.B.	07/09
	D.T.L.	07/09		



NOTES:
1. ALL PUBLIC FIRE HYDRANTS IN THE CITY OF RALEIGH AND THE MERGER TOWNS OF GARNER, ROLFSVILLE, WAKE FOREST, KNIGHTDALE, WENDELL AND ZEBULON SHALL BE PAINTED CHROME YELLOW WITH HIGH REFLECTIVE ALUMINUM SILVER CAPS, BONNETS AND OPERATING NUTS.
2. ALL PRIVATE FIRE HYDRANTS SHALL BE RED.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD FIRE HYDRANT WITH 5\"/>

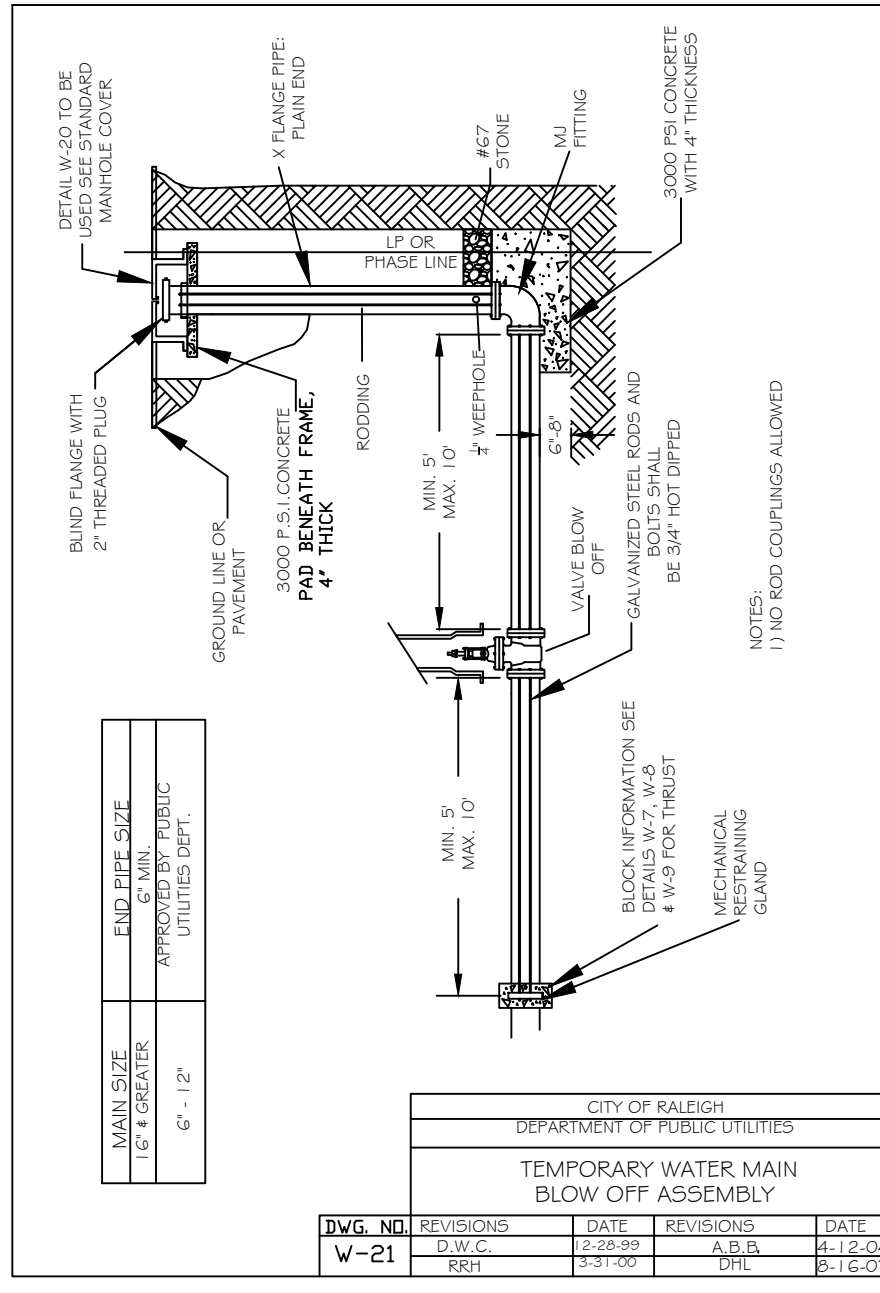
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-5	REV	6-30-16		
	D.T.L.	03/15/17		



NOTES:
1. SIZE STANDARD DETAIL W-9 FOR THRUST BLOCK LOCATIONS.
2. CONCRETE SHALL BE 3000 PSI AND TRANSIT MIXED.
3. REINFORCING BARS SHALL BE DEFORMED AND TIED TOGETHER.
4. TRENCH BOTTOM WIDTH IN VICINITY OF THRUST BLOCK INSTALLATION SHALL BE THE MINIMUM WIDTH AS SHOWN ON STANDARD DETAIL W-3.
5. BACKFILL TAMPED IN 6\"/>

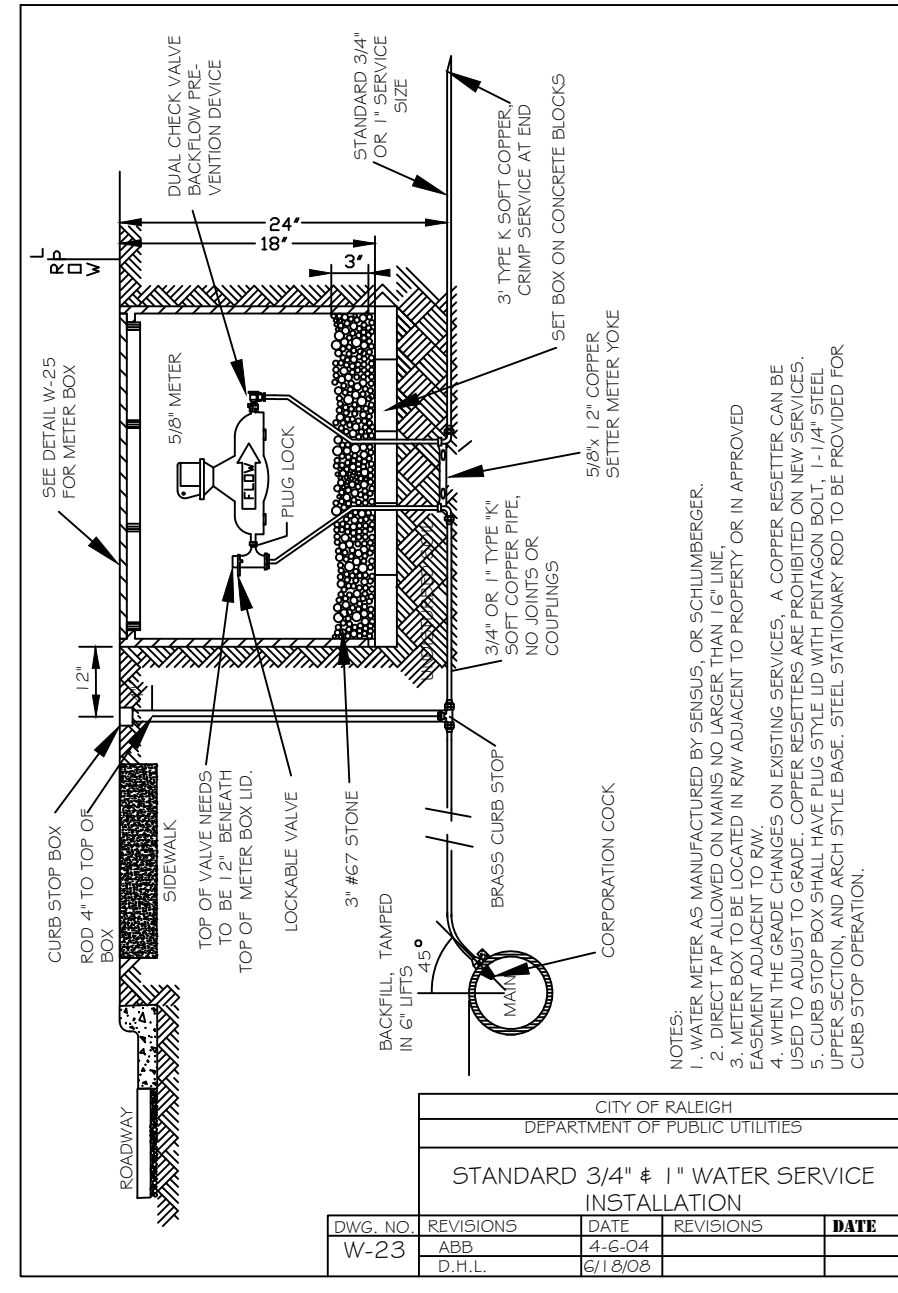
CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
THRUST BLOCKING DESIGN DATA FOR WATER MAINS

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-7	REV	2-1-00	J.P.S.	10-29-05
	D.T.L.	07-18-05		



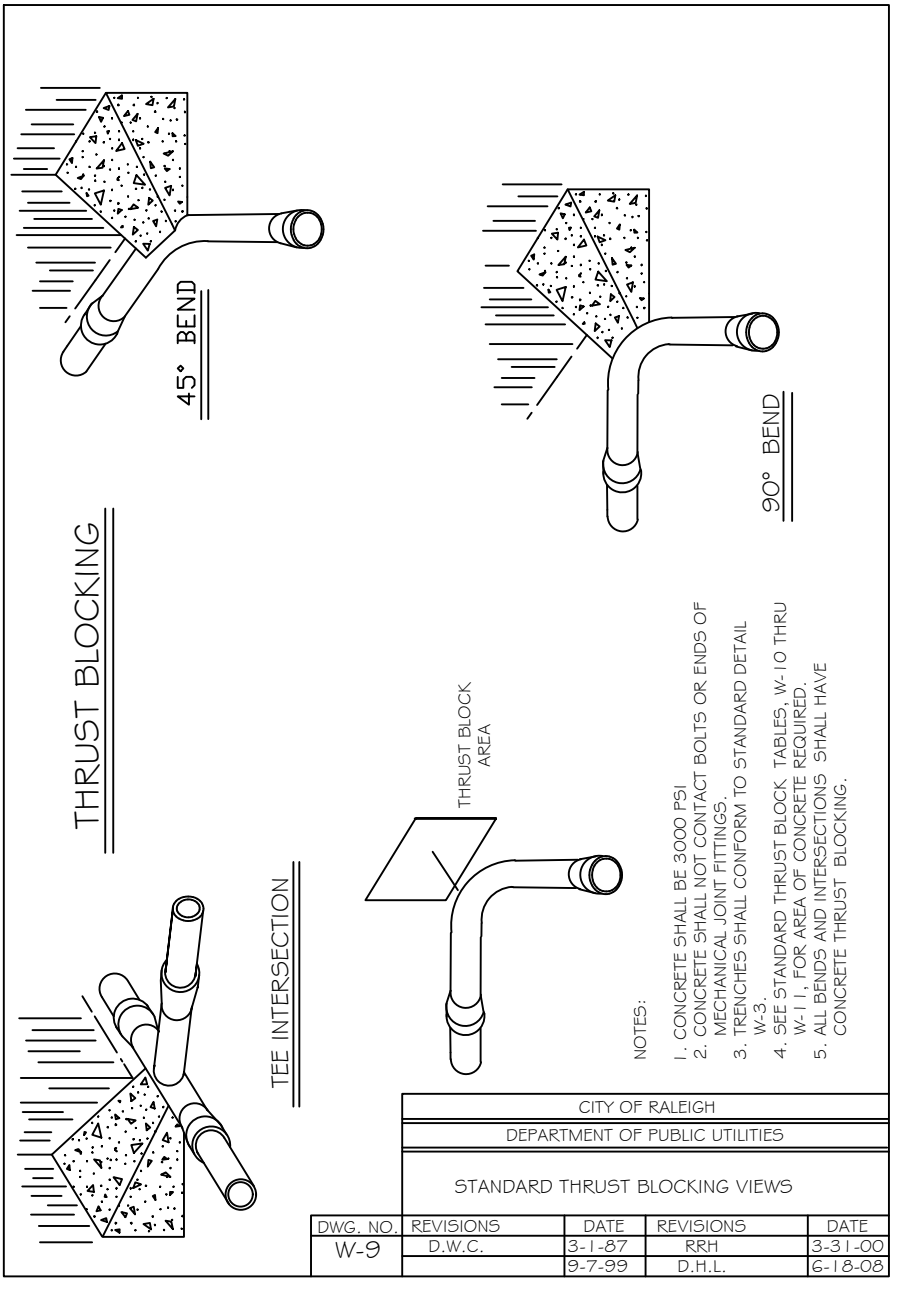
CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
TEMPORARY WATER MAIN BLOW OFF ASSEMBLY

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-21	REV	12-29-99	A.B.B.	11-24-04
	D.T.L.	6-16-07		



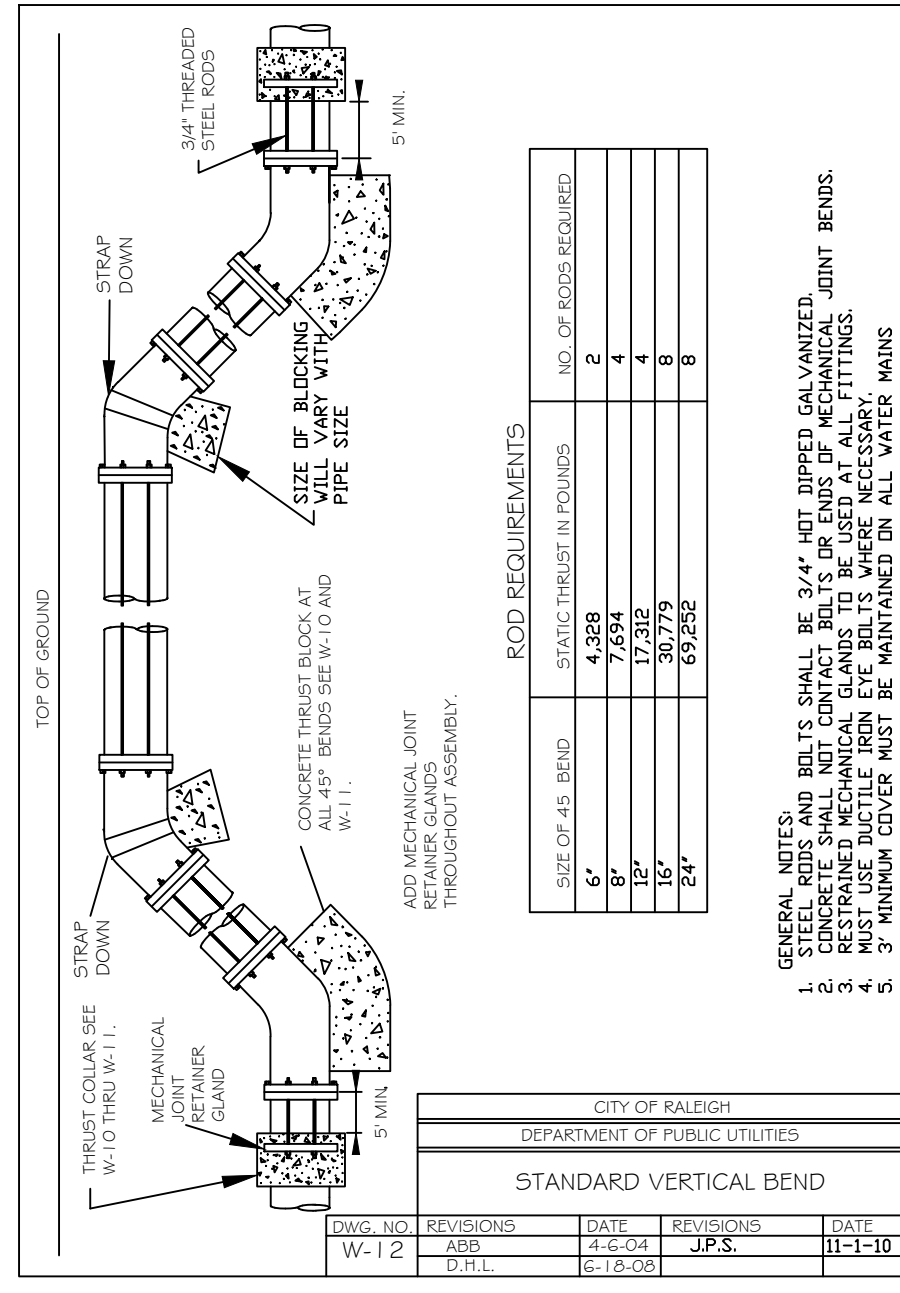
CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD 3/4\"/>

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-23	REV	4-20-04		
	D.T.L.	6-16-07		



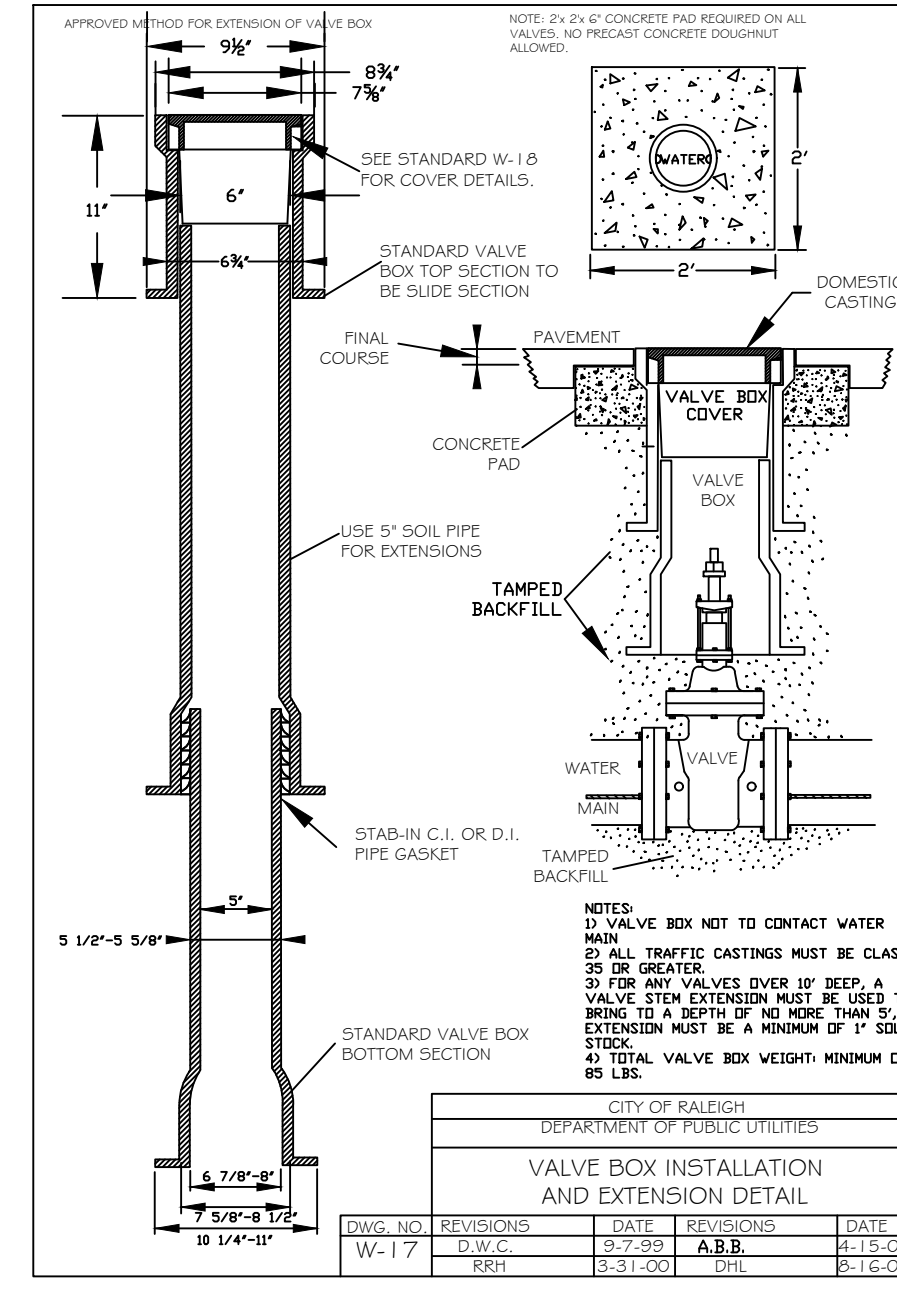
CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD THRUST BLOCKING VIEWS

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-9	REV	8-7-99	REV	03-1-00
	D.T.L.	6-16-07		



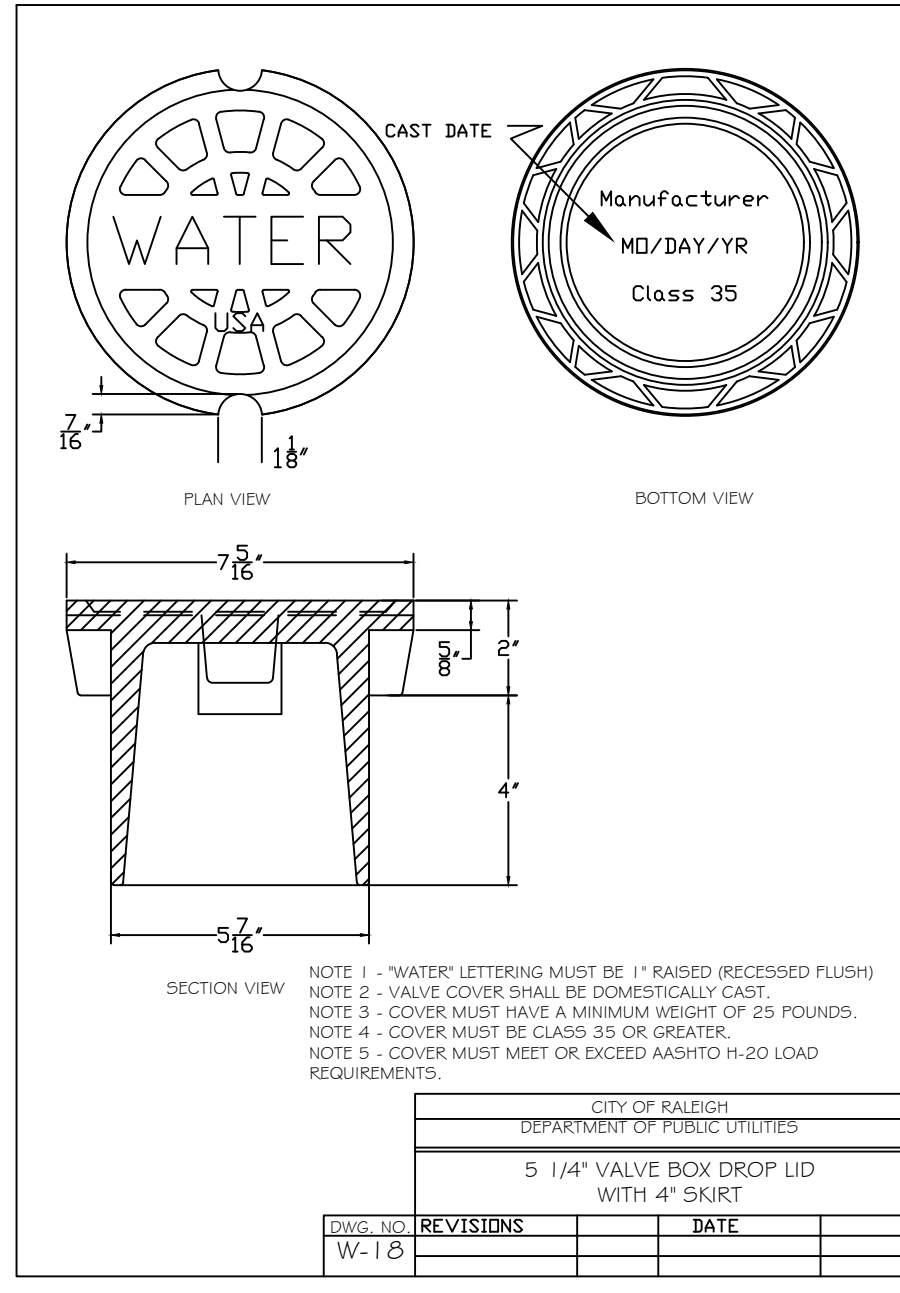
CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD VERTICAL BEND

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-12	REV	4-20-04		
	D.T.L.	6-16-07		



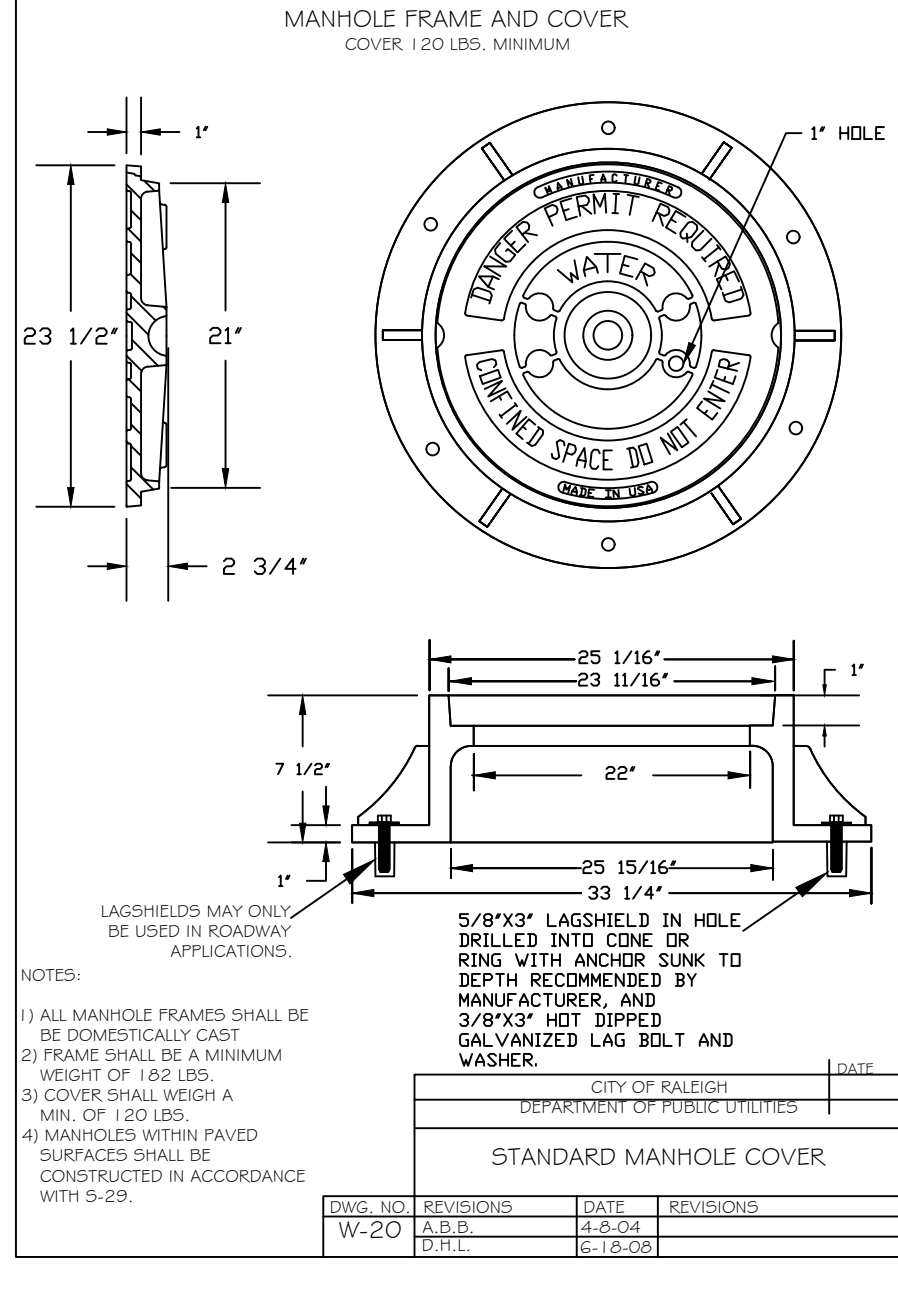
CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
VALVE BOX INSTALLATION AND EXTENSION DETAIL

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-17	REV	3-31-00	REV	11-18-04
	D.T.L.	6-16-07		



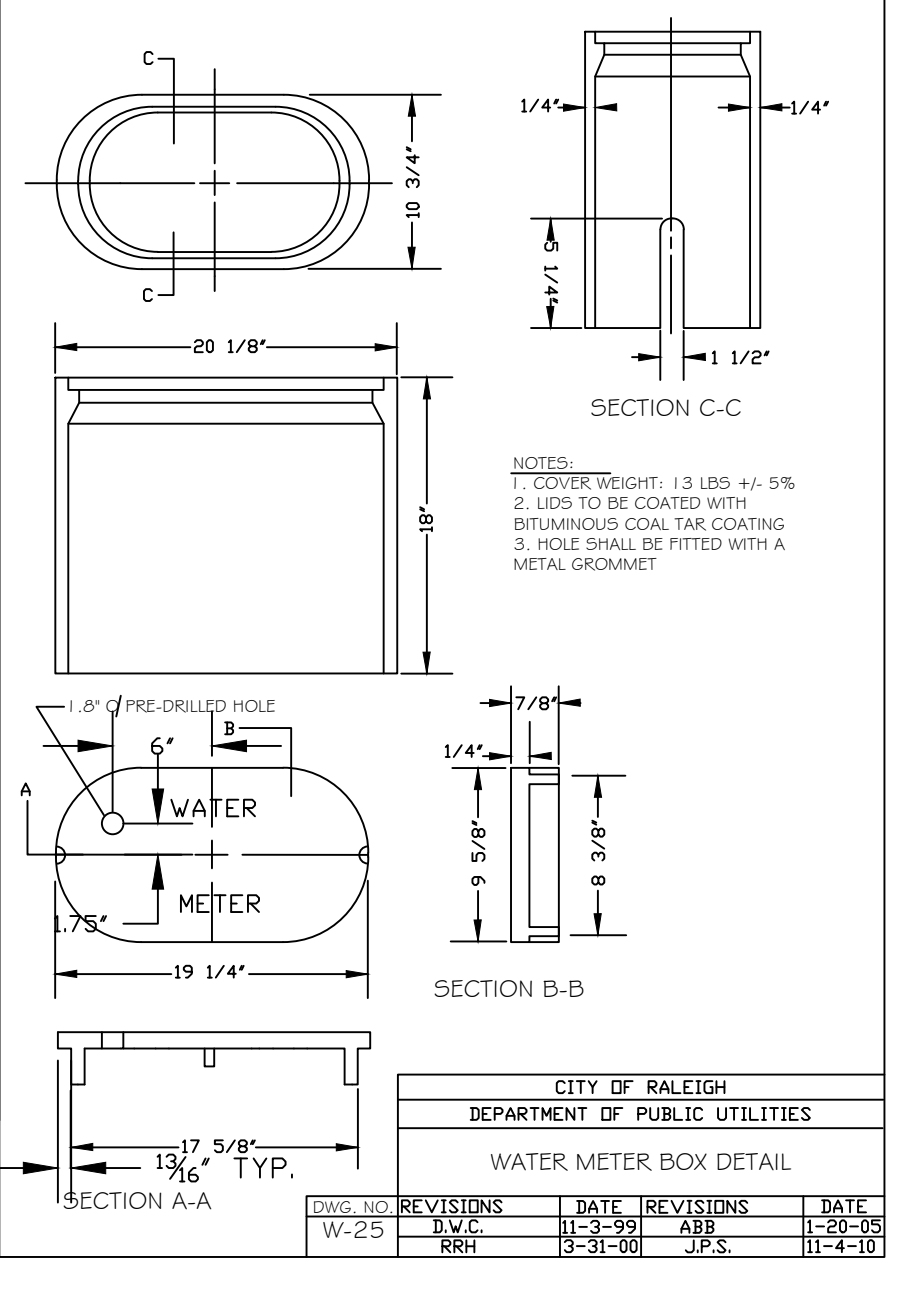
CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
5 1/4\"/>

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-18	REV	12-29-99	A.B.B.	11-24-04
	D.T.L.	6-16-07		



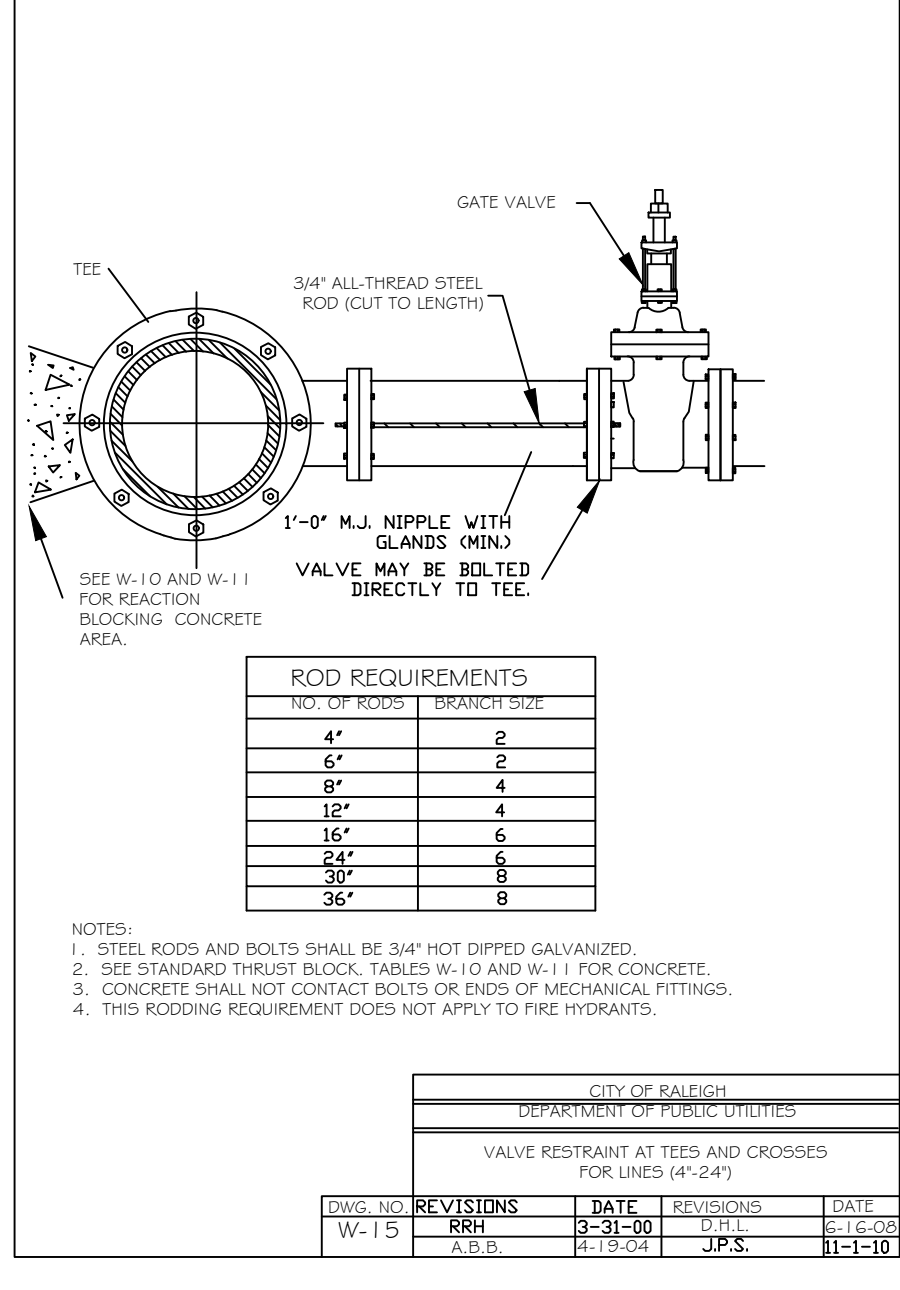
CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD MANHOLE COVER

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-20	A.B.B.	4-6-04		
	D.T.L.	6-16-07		



CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
WATER METER BOX DETAIL

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-25	REV	11-3-99	A.B.B.	11-30-05
	REV	8-31-00	J.P.S.	11-4-10



CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
VALVE RESTRAINT AT TEES AND CROSSES FOR LINES (4\"/>

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-15	REV	4-6-04		
	D.T.L.	6-16-07		

SITE PERMITTING APPROVAL

Electronic Approval: This approval is being issued electronically. This approval is valid upon the signature of a City of Raleigh Water Review Officer below. The City with retain a copy of the approved plans. Any work authorized by this approval must proceed in accordance with the plans kept on file with the City. This electronic approval may not be edited once issued. Any modification to the approval once issued will invalidate this approval.

City of Raleigh Development Approval _____
Raleigh Water Review Officer _____

Water and Sewer Permits (If applicable)

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-4727**

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-3725**

The City of Raleigh consents to the connection to its public sewer system and extension of the **private sewer collection 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 # _____

WithersRavenel
Engineers | Planners | Surveyors

115 McKinn Drive, Cary, NC 27511 | t: 919-469-3300 | f: 919-469-3300 | www.withersravenel.com

POPLAR CREEK VILLAGE PHASE IV

TOWN OF KNIGHTDALE, NORTH CAROLINA

WATER UTILITY DETAILS

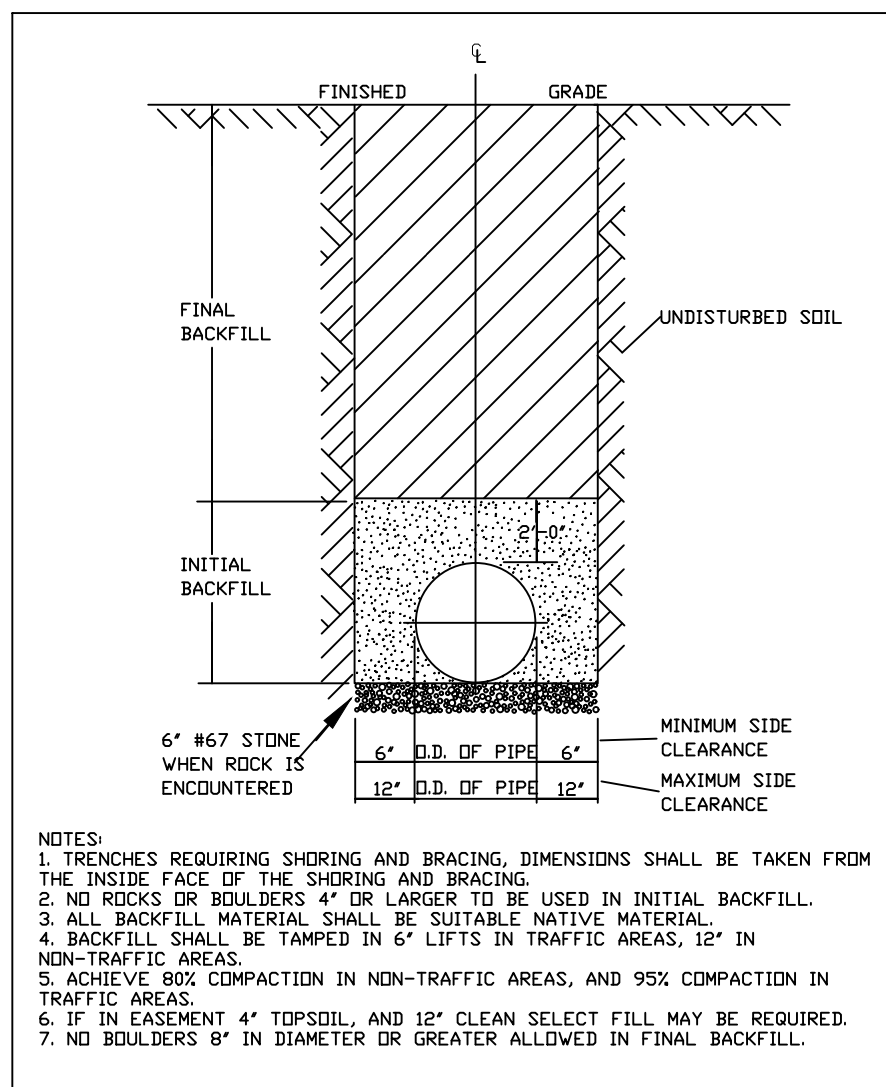
Job No. 02190259
Date 08/14/20
Drawn By WR
Designer WR

PRELIMINARY NOT APPROVED FOR CONSTRUCTION

JOHN CAROLINA PROFESSIONAL ENGINEERS
OLLEEN E. DURIE, P.E.

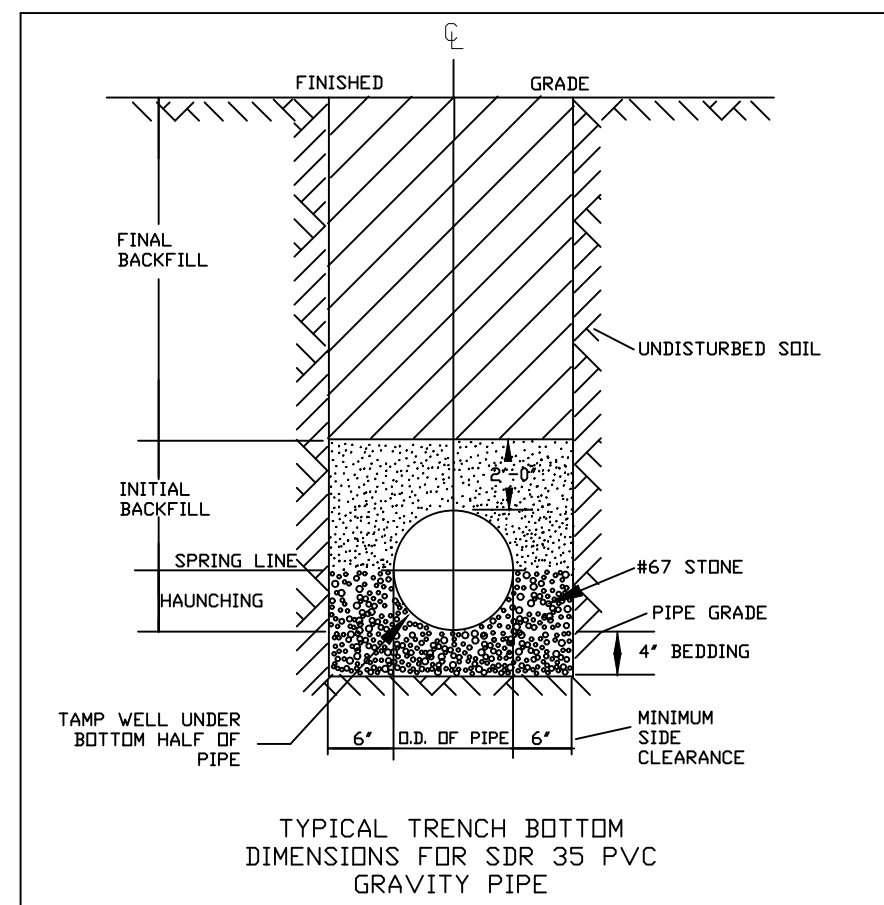
Revisions
1 PER TOK COMMENTS 10/02/20

Sheet No. **10.2**



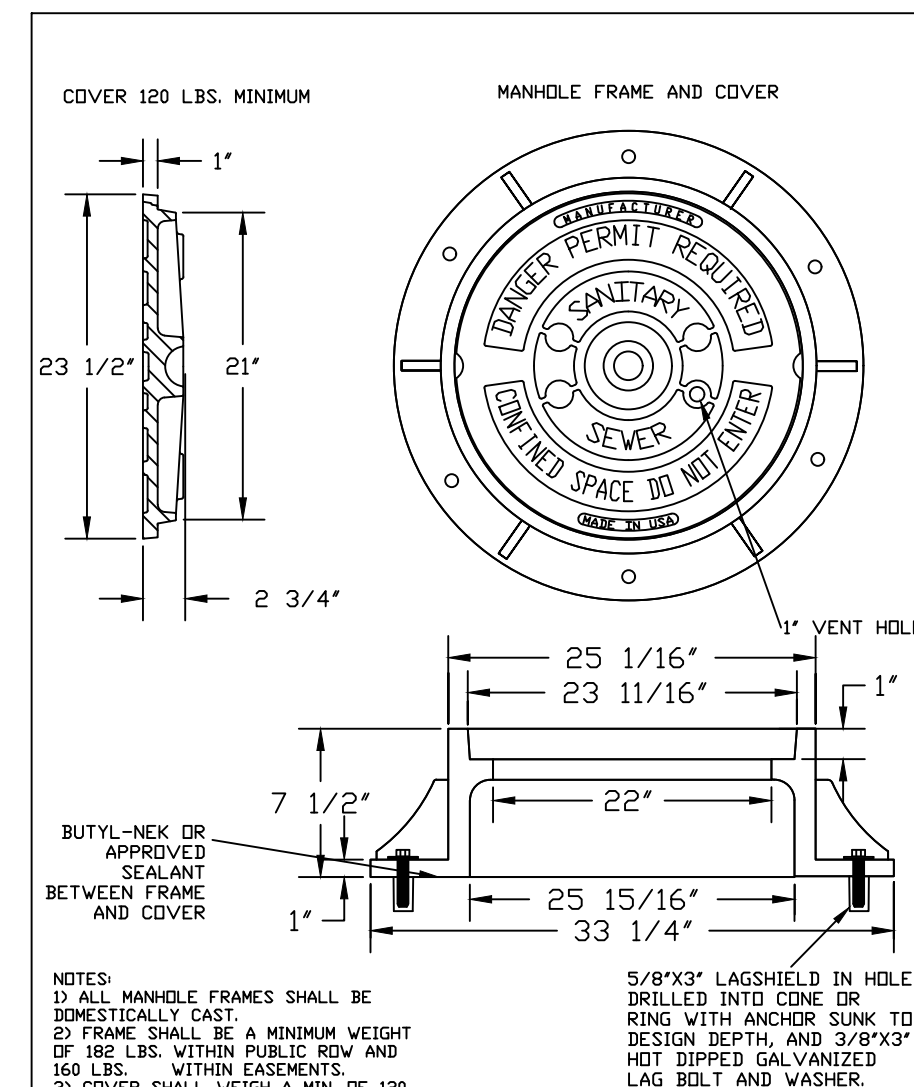
- NOTES:
1. TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
 2. NO ROCKS OR BOULDERS 4" OR LARGER TO BE USED IN INITIAL BACKFILL.
 3. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
 4. BACKFILL SHALL BE TAMPED IN 6" LIFTS IN TRAFFIC AREAS, 12" IN NON-TRAFFIC AREAS.
 5. ACHIEVE 80% COMPACTION IN NON-TRAFFIC AREAS, AND 95% COMPACTION IN TRAFFIC AREAS.
 6. IF IN EASEMENT 4" TOPSOIL, AND 12" CLEAN SELECT FILL MAY BE REQUIRED.
 7. NO BOULDERS 8" IN DIAMETER OR GREATER ALLOWED IN FINAL BACKFILL.

CITY OF RALEIGH			
DEPARTMENT OF PUBLIC UTILITIES			
TRENCH BOTTOM DIMENSIONS & BACKFILLING REQUIREMENTS FOR BUTTLE IRON			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-4	RRH	9-2-99	RRH



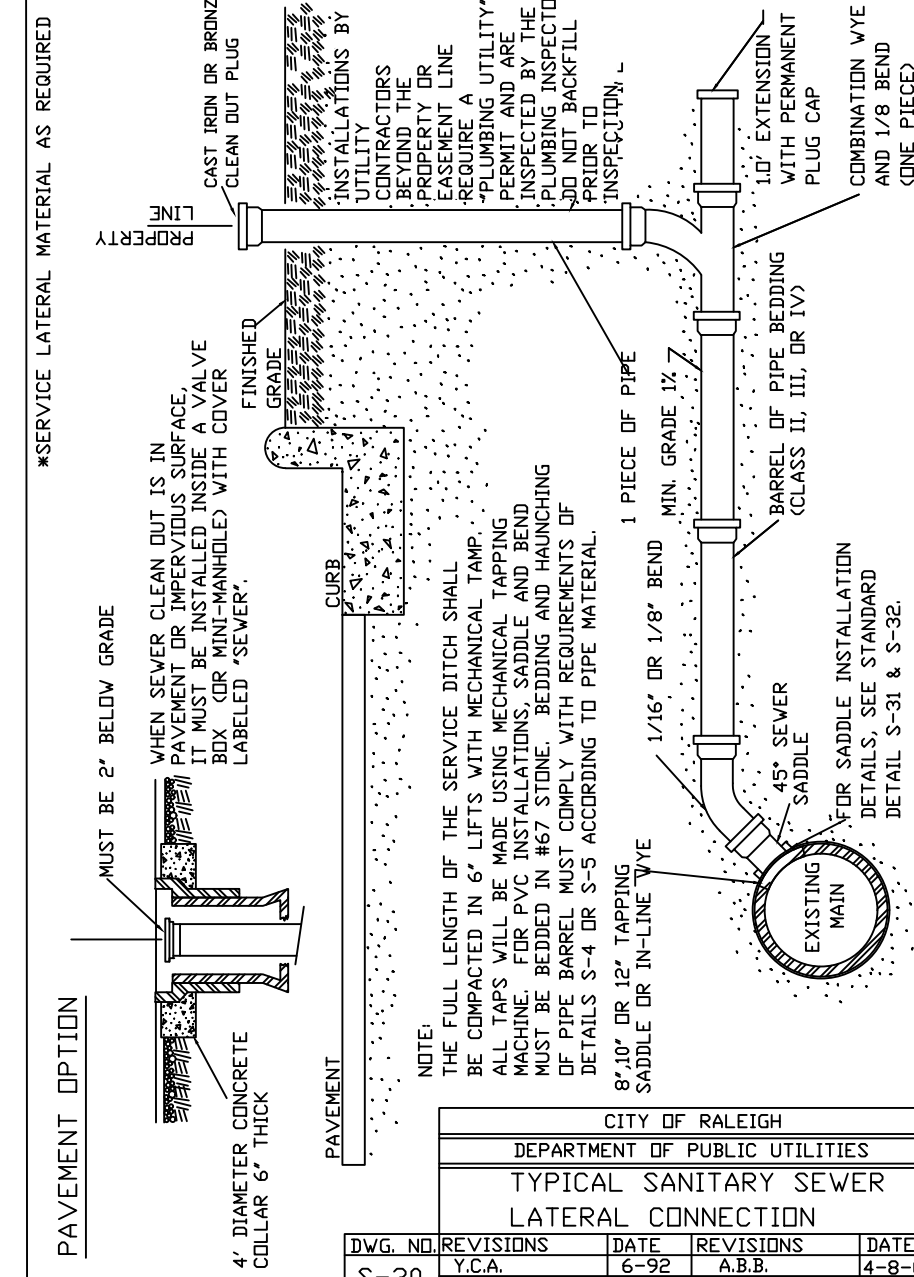
- NOTES:
1. FOR TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
 2. NO ROCKS OR BOULDERS 4" OR LARGER TO BE USED IN INITIAL BACKFILL.
 3. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
 4. BACKFILL SHALL BE TAMPED IN 6" LIFTS IN TRAFFIC AREAS, 12" IN NON-TRAFFIC AREAS.

CITY OF RALEIGH			
DEPARTMENT OF PUBLIC UTILITIES			
TRENCH BOTTOM DIMENSIONS & BACKFILLING REQUIREMENTS FOR PVC GRAVITY SEWER MAIN			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-5	RRH	9-2-99	RRH



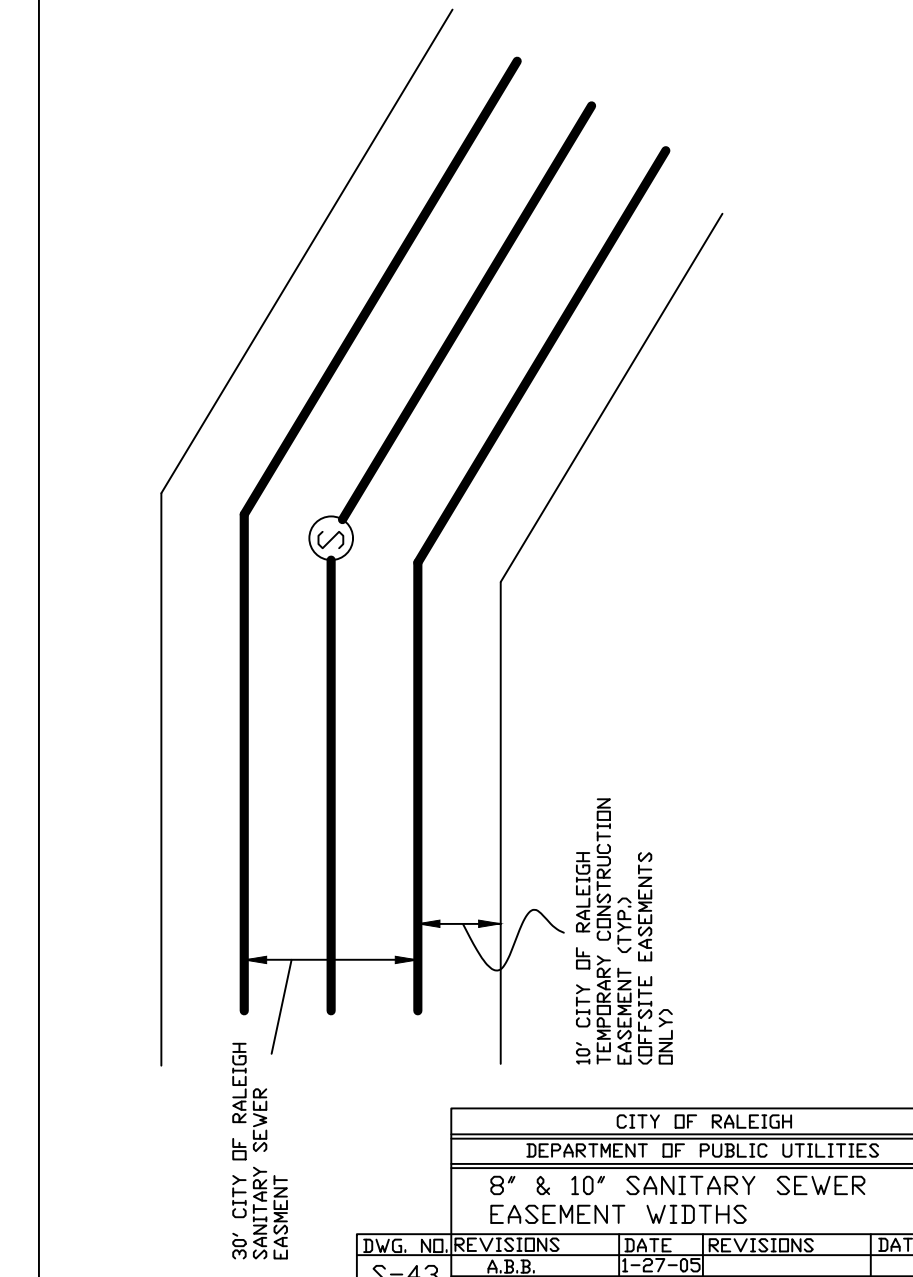
- NOTES:
1. ALL MANHOLE FRAMES SHALL BE DOMESTICALLY CAST.
 2. FRAME SHALL BE A MINIMUM WEIGHT OF 150 LBS. WITHIN PUBLIC ROW AND 160 LBS. WITHIN EASEMENTS.
 3. COVER SHALL WEIGH A MIN. OF 120 LBS.
 4. ALL MANHOLE FRAMES OUTSIDE OF PAVED SURFACES SHALL BE BELTED TO THE CORE SECTION OR RING WITH A MINIMUM OF 4 BOLTS PER FRAME.

CITY OF RALEIGH			
DEPARTMENT OF PUBLIC UTILITIES			
STANDARD MANHOLE COVER			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-25	RRH	9-1-87	RRH
		12-20-00	DHL
		16-18-08	

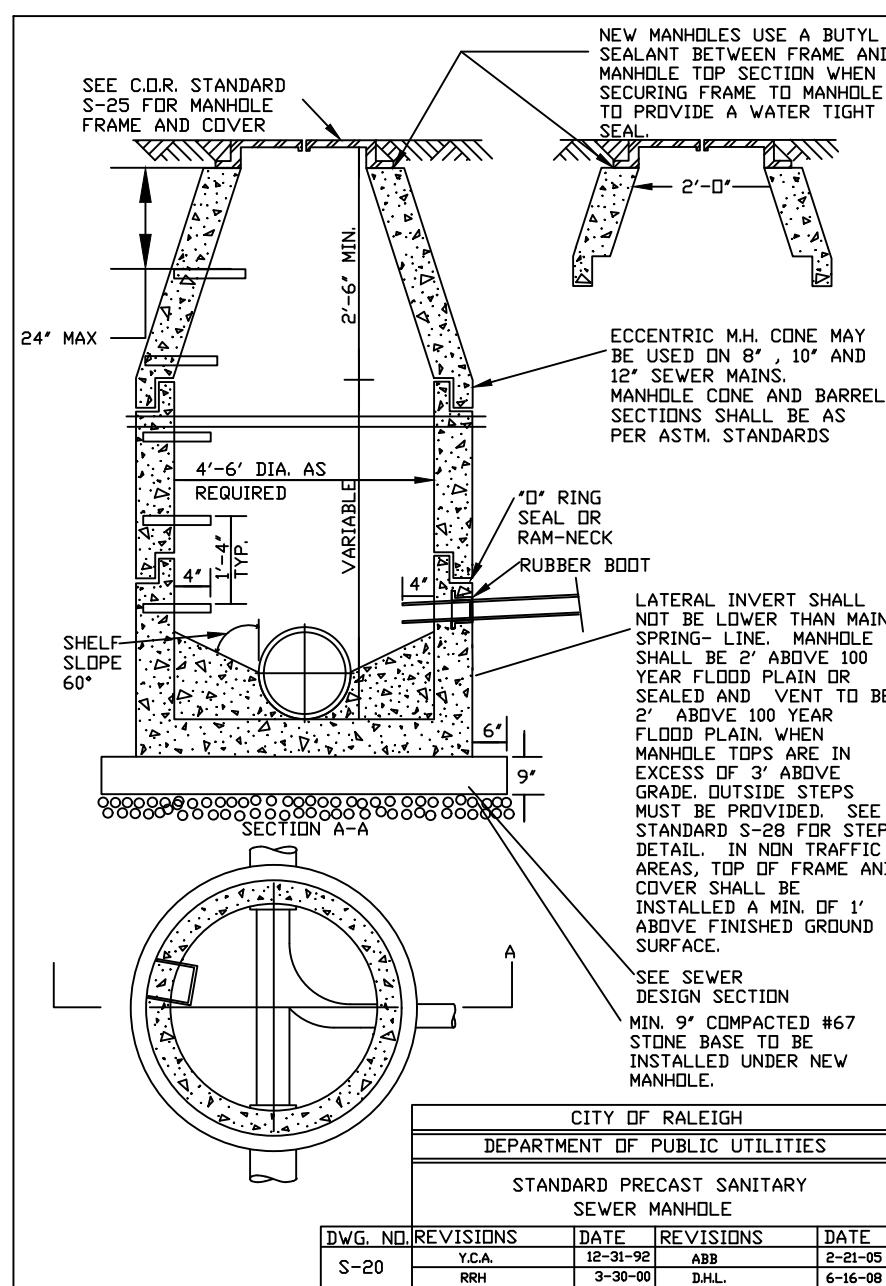


- NOTE:
- THE FULL LENGTH OF THE SERVICE DITCH SHALL BE MADE USING MECHANICAL TAPPING MACHINE. ALL TAPS SHALL BE MADE USING MECHANICAL TAPPING MACHINE. ALL TAPS SHALL BE MADE USING MECHANICAL TAPPING MACHINE. ALL TAPS SHALL BE MADE USING MECHANICAL TAPPING MACHINE.

CITY OF RALEIGH			
DEPARTMENT OF PUBLIC UTILITIES			
TYPICAL SANITARY SEWER LATERAL CONNECTION			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-30	RRH	9-2-99	RRH
		12-20-00	DHL
		16-18-08	

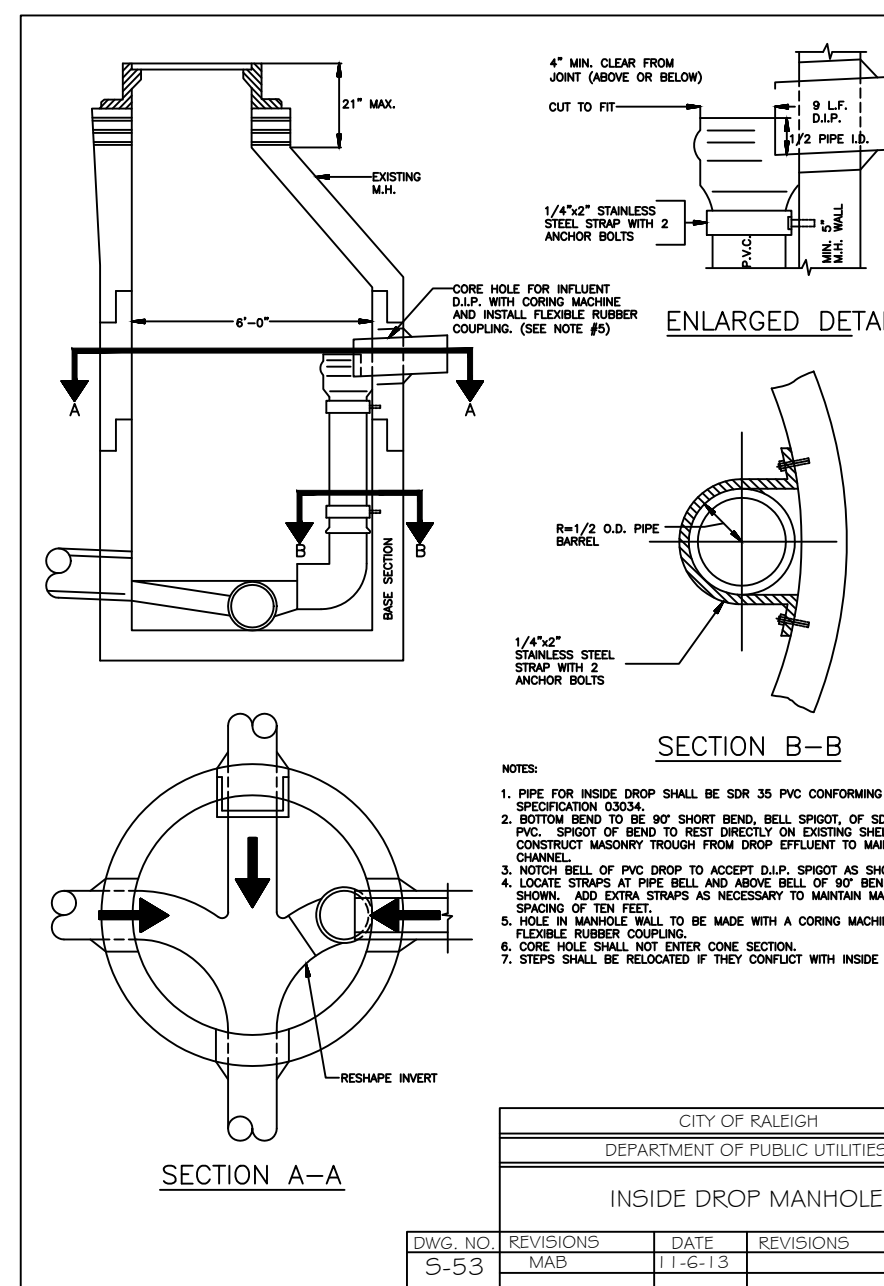


CITY OF RALEIGH			
DEPARTMENT OF PUBLIC UTILITIES			
8" & 10" SANITARY SEWER EASEMENT WIDTHS			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-43	RRH	9-2-99	RRH
		12-20-00	DHL
		16-18-08	



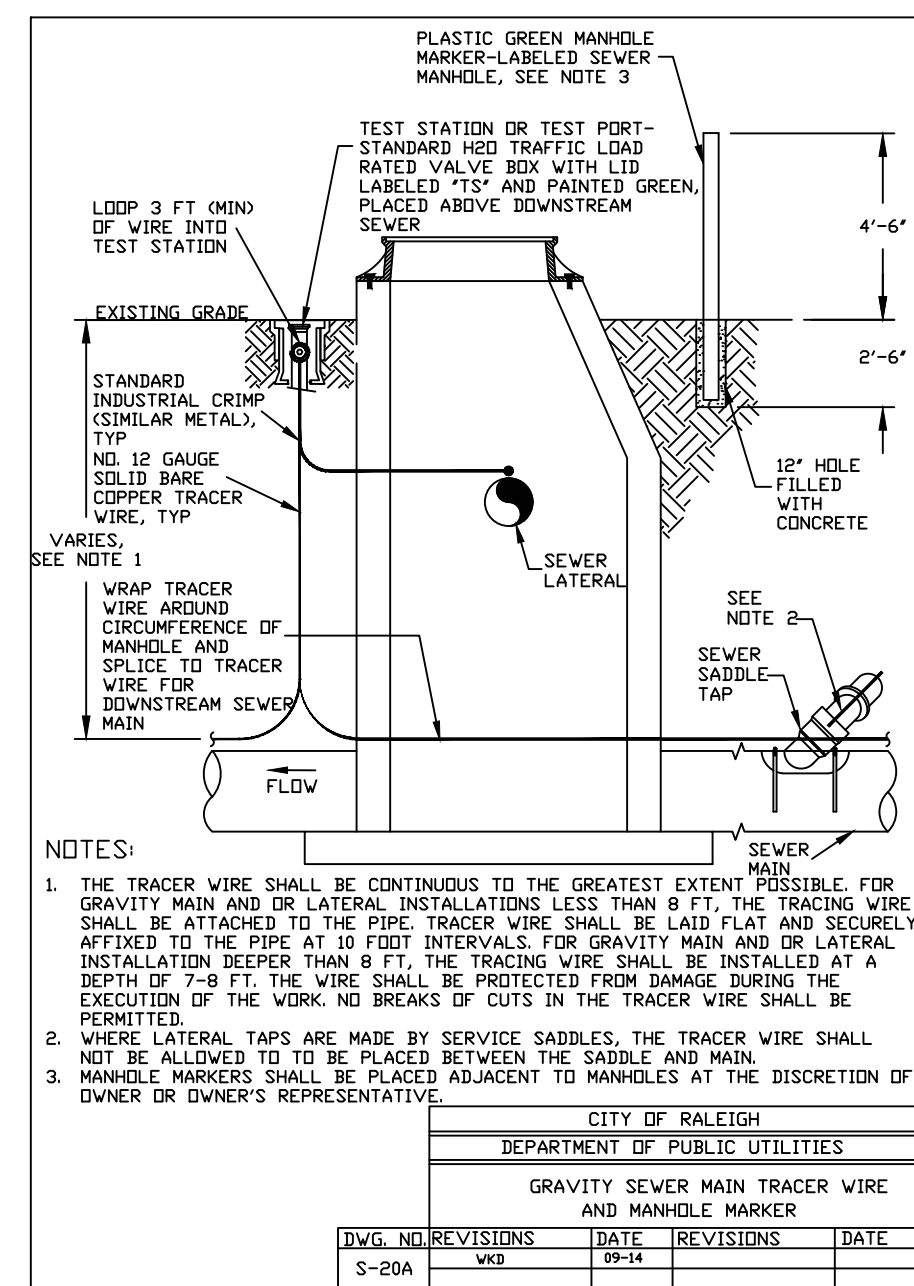
- NOTES:
1. NEW MANHOLES USE A BUTYL SEALANT BETWEEN FRAME AND MANHOLE TOP SECTION WHEN SECURING FRAME TO MANHOLE TO PROVIDE A WATER TIGHT JOINT (DOOR OR BELOW).
 2. ECCENTRIC MH. COUPLER MAY BE USED ON 8", 10" AND 12" SEWER MAINS. MANHOLE COUPLER AND BARREL SECTIONS SHALL BE AS PER ASTM STANDARDS.
 3. LATERAL INVERT SHALL NOT BE LOWER THAN MAIN SPRING-LINE. MANHOLE SHALL BE 2" ABOVE 100 YEAR FLOOD PLAIN OR SEALED AND VENT TO 2" ABOVE 100 YEAR FLOOD PLAIN WHEN MANHOLE TIPS ARE IN EASEMENT.
 4. GRADE OUTSIDE STEPS MUST BE PROTECTED. SEE STANDARD S-28 FOR STEP DETAIL. IN NON TRAFFIC AREAS, TOP OF FRAME AND COVER SHALL BE INSTALLED A MIN. OF 1" ABOVE FINISHED GROUND SURFACE.
 5. SEE SEWER DESIGN SECTION MIN. 9" COMPACTED #67 STONE BASE TO BE INSTALLED UNDER NEW MANHOLE.

CITY OF RALEIGH			
DEPARTMENT OF PUBLIC UTILITIES			
STANDARD PRECAST SANITARY SEWER MANHOLE			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-20	RRH	9-2-99	RRH



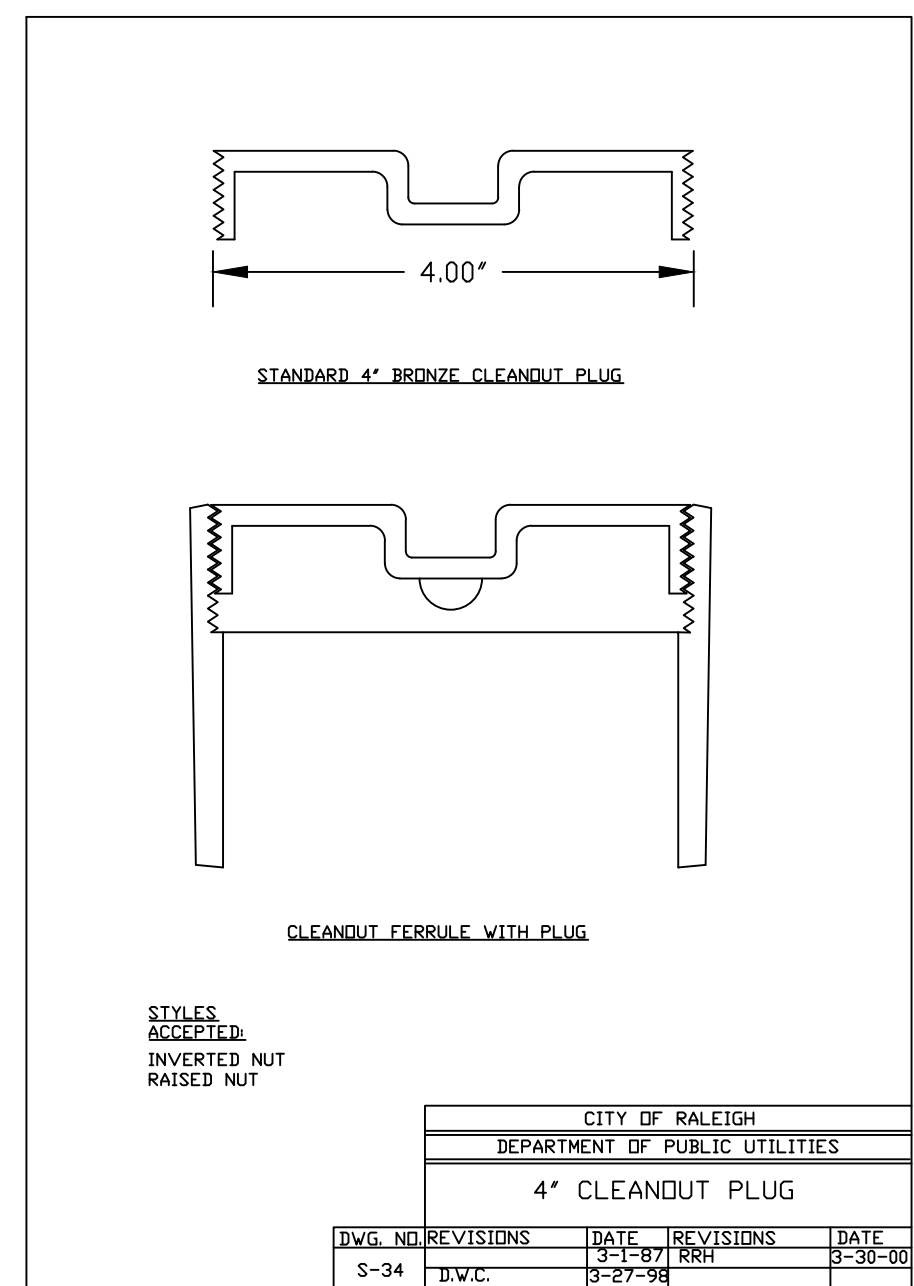
- NOTES:
1. PIPE FOR INSIDE DROP SHALL BE SDR 35 PVC CONFORMING TO ASTM SPECIFICATION D-3052.
 2. TOP OF PIPE SHALL BE 2" ABOVE FINISHED GROUND SURFACE.
 3. COVER SHALL WEIGH A MIN. OF 120 LBS.
 4. ALL MANHOLE FRAMES OUTSIDE OF PAVED SURFACES SHALL BE BELTED TO THE CORE SECTION OR RING WITH A MINIMUM OF 4 BOLTS PER FRAME.

CITY OF RALEIGH			
DEPARTMENT OF PUBLIC UTILITIES			
INSIDE DROP MANHOLE			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-53	RRH	1-16-13	RRH



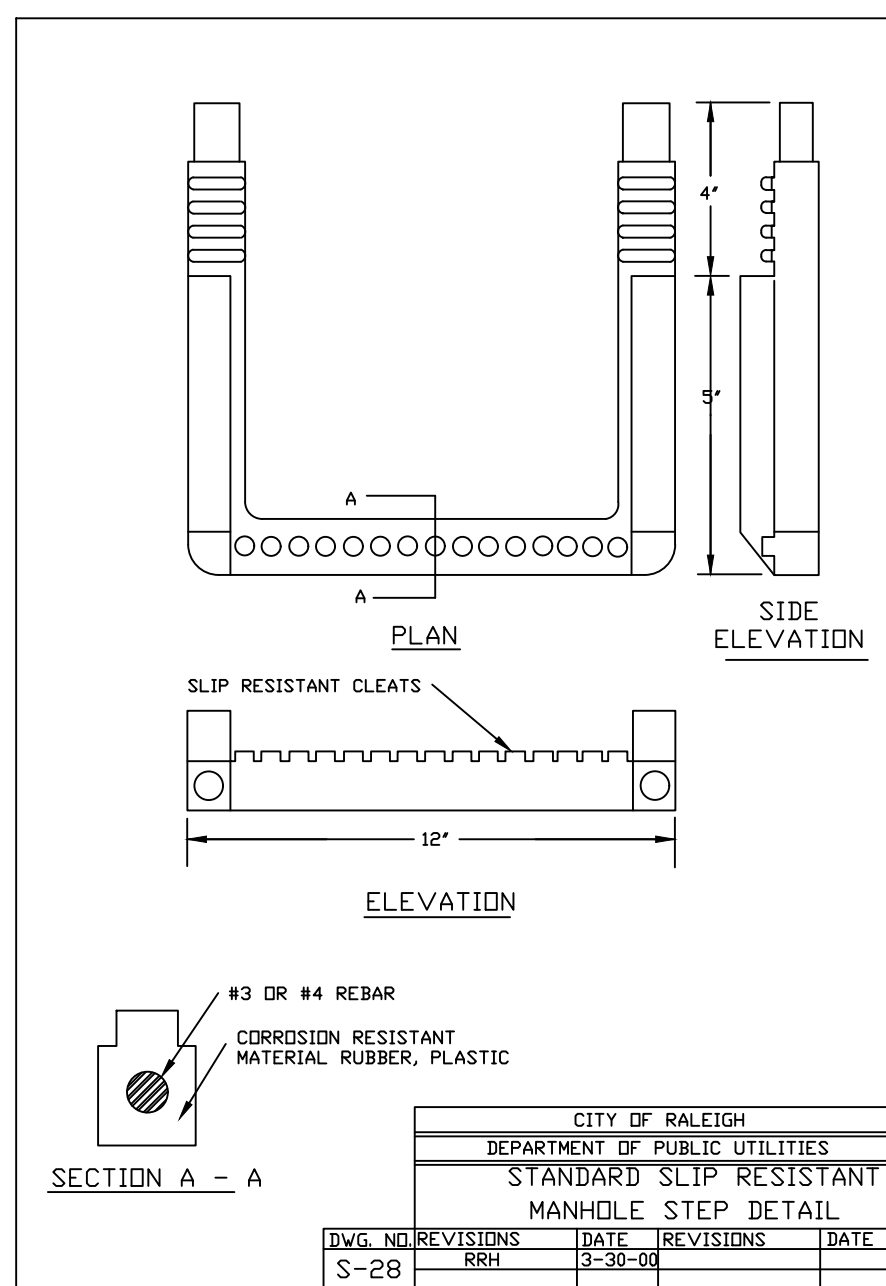
- NOTES:
1. THE TRACER WIRE SHALL BE CONTINUOUS TO THE GREATEST EXTENT POSSIBLE FOR GRAVITY MAIN AND OR LATERAL INSTALLATIONS LESS THAN 8 FT. THE TRACING WIRE SHALL BE ATTACHED TO THE PIPE. TRACER WIRE SHALL BE LAID FLAT AND SECURELY AFFIXED TO THE PIPE AT 10 FOOT INTERVALS. FOR GRAVITY MAIN AND OR LATERAL INSTALLATION DEEPER THAN 8 FT. THE TRACER WIRE SHALL BE INSTALLED AT A DEPTH OF 7-8 FT. THE WIRE SHALL BE PROTECTED FROM DAMAGE DURING THE EXECUTION OF THE WORK. NO BREAKS OF CUTS IN THE TRACER WIRE SHALL BE PERMITTED.
 2. WHERE LATERAL TAPS ARE MADE BY SERVICE SADDLES, THE TRACER WIRE SHALL NOT BE ALLOWED TO BE PLACED BETWEEN THE SADDLE AND MAIN.
 3. MANHOLE MARKERS SHALL BE PLACED ADJACENT TO MANHOLES AT THE DISCRETION OF OWNER OR OWNER'S REPRESENTATIVE.

CITY OF RALEIGH			
DEPARTMENT OF PUBLIC UTILITIES			
GRAVITY SEWER MAIN TRACER WIRE AND MANHOLE MARKER			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-20A	RRH	9-14	RRH



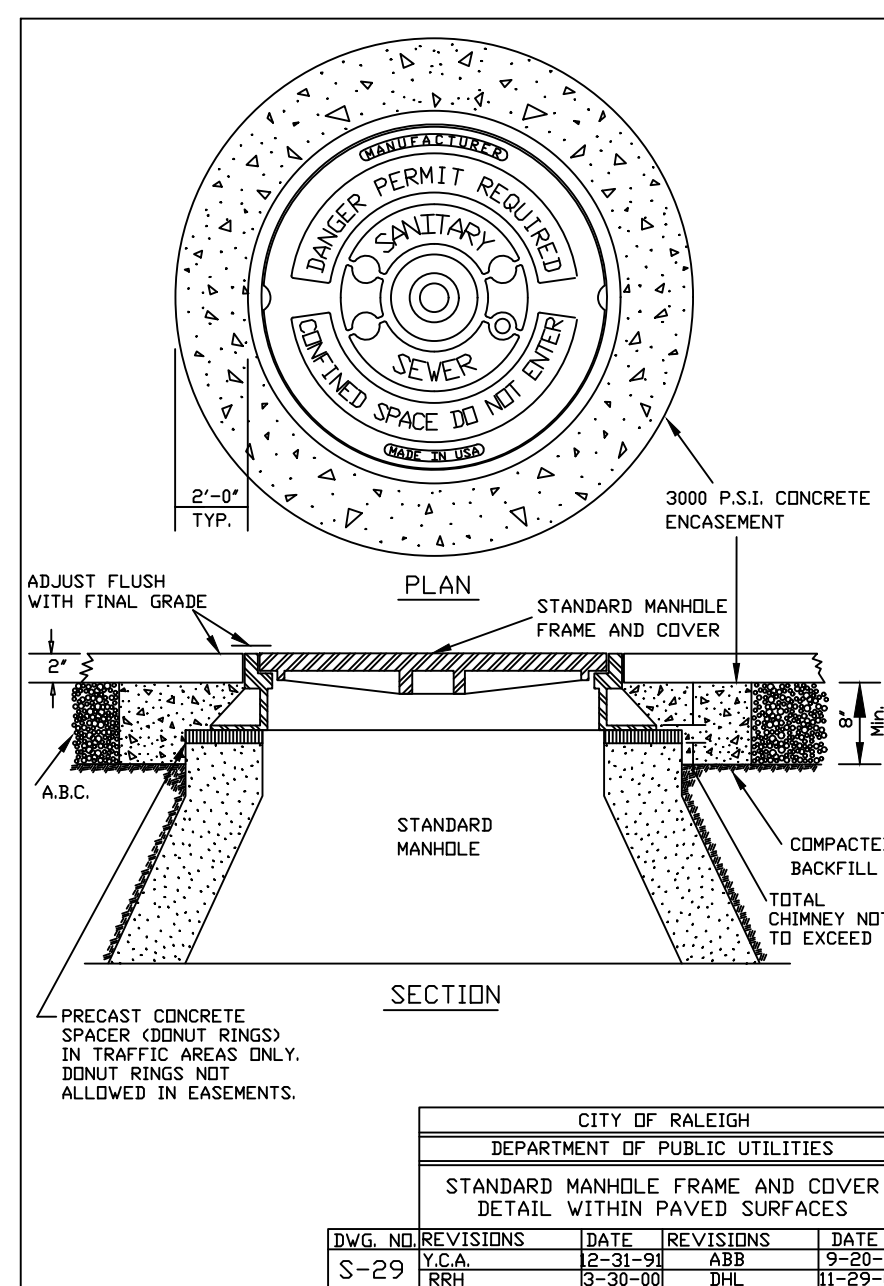
- NOTES:
1. THE TRACER WIRE SHALL BE CONTINUOUS TO THE GREATEST EXTENT POSSIBLE FOR GRAVITY MAIN AND OR LATERAL INSTALLATIONS LESS THAN 8 FT. THE TRACING WIRE SHALL BE ATTACHED TO THE PIPE. TRACER WIRE SHALL BE LAID FLAT AND SECURELY AFFIXED TO THE PIPE AT 10 FOOT INTERVALS. FOR GRAVITY MAIN AND OR LATERAL INSTALLATION DEEPER THAN 8 FT. THE TRACER WIRE SHALL BE INSTALLED AT A DEPTH OF 7-8 FT. THE WIRE SHALL BE PROTECTED FROM DAMAGE DURING THE EXECUTION OF THE WORK. NO BREAKS OF CUTS IN THE TRACER WIRE SHALL BE PERMITTED.
 2. WHERE LATERAL TAPS ARE MADE BY SERVICE SADDLES, THE TRACER WIRE SHALL NOT BE ALLOWED TO BE PLACED BETWEEN THE SADDLE AND MAIN.
 3. MANHOLE MARKERS SHALL BE PLACED ADJACENT TO MANHOLES AT THE DISCRETION OF OWNER OR OWNER'S REPRESENTATIVE.

CITY OF RALEIGH			
DEPARTMENT OF PUBLIC UTILITIES			
4" CLEANOUT PLUG			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-34	RRH	9-2-99	RRH



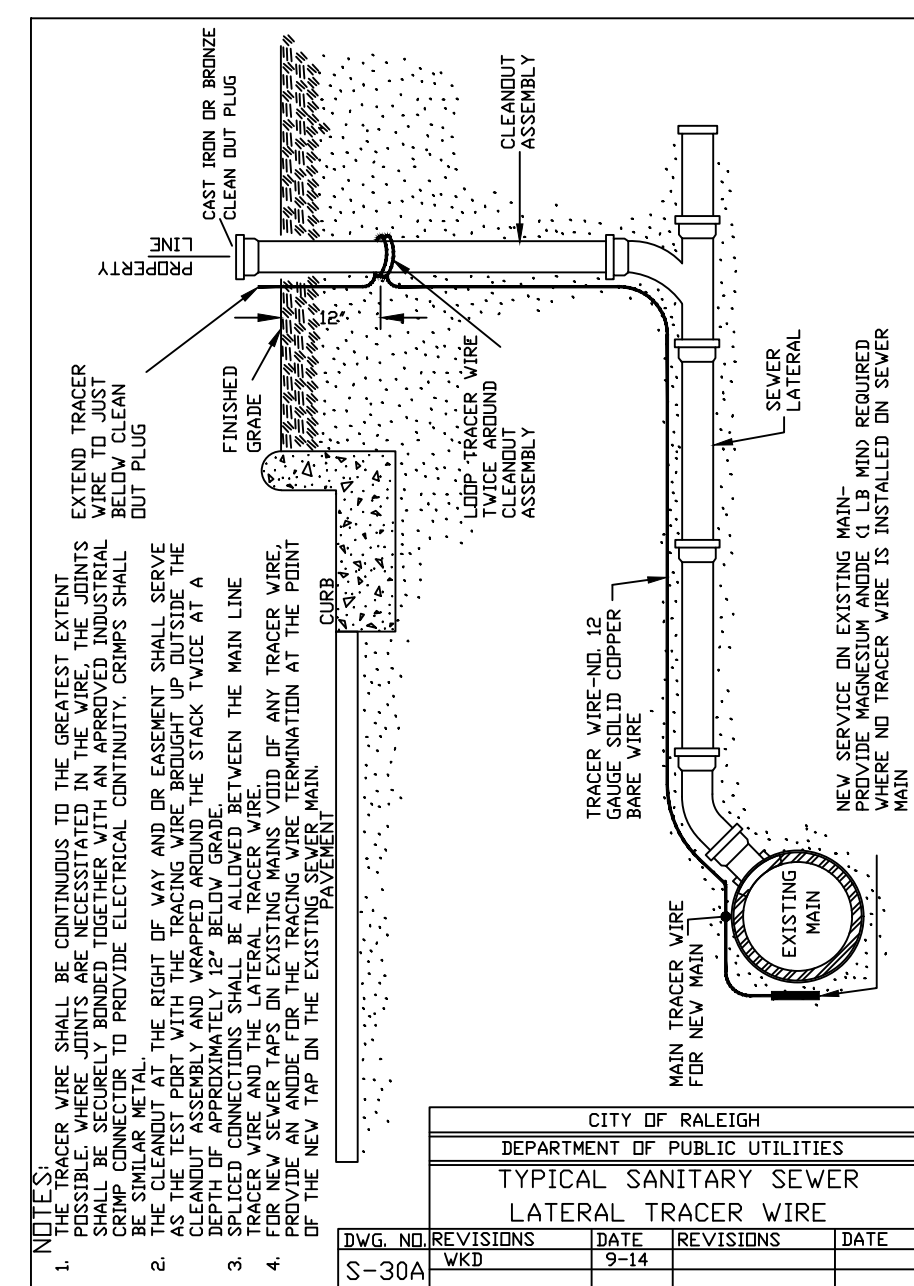
- NOTES:
1. CORROSION RESISTANT MATERIAL RUBBER, PLASTIC.

CITY OF RALEIGH			
DEPARTMENT OF PUBLIC UTILITIES			
STANDARD SLIP RESISTANT MANHOLE STEP DETAIL			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-28	RRH	12-20-04	RRH



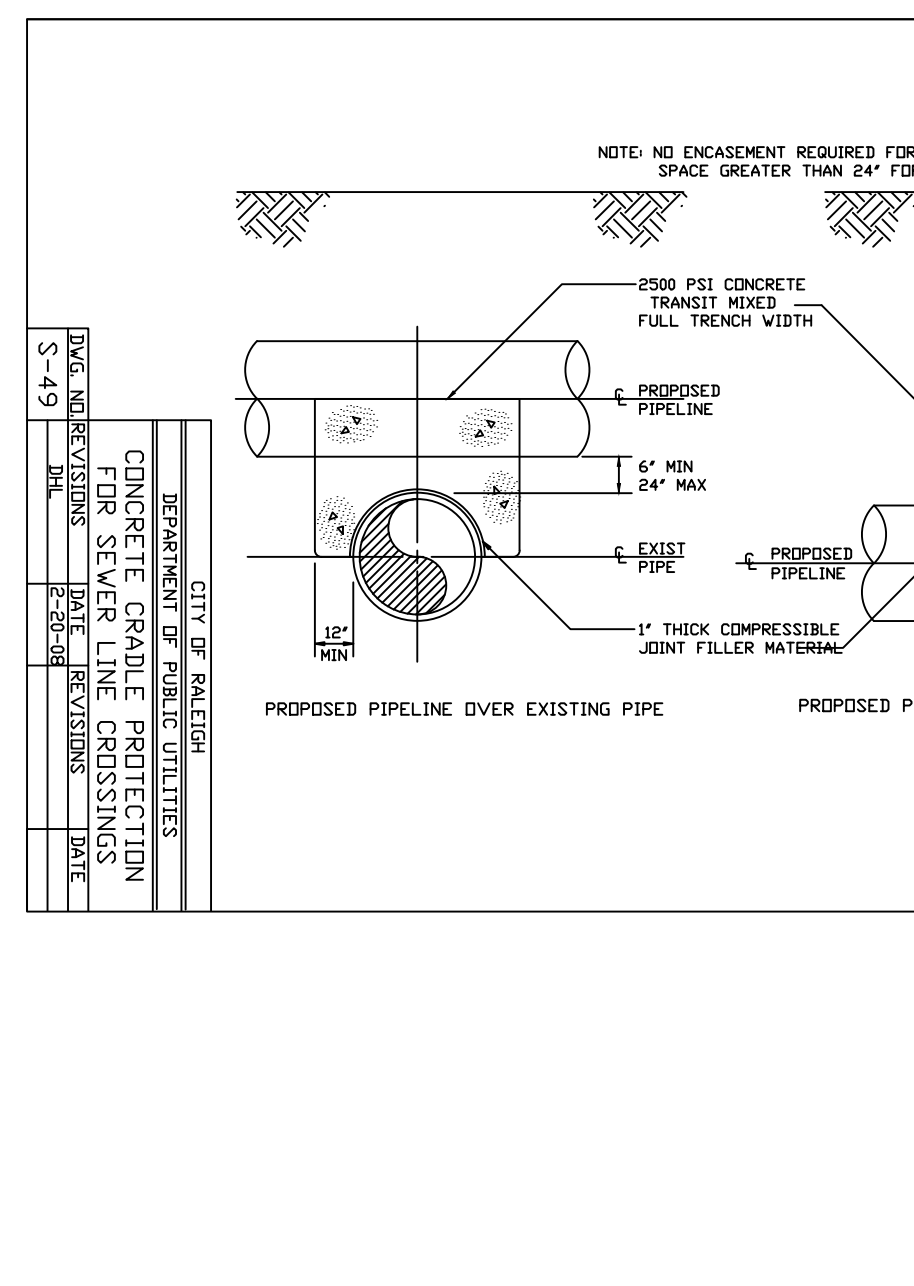
- NOTES:
1. PRECAST CONCRETE SPACER (CONDUIT RINGS) IN TRAFFIC AREAS ONLY. DONUT RINGS NOT ALLOWED IN EASEMENTS.

CITY OF RALEIGH			
DEPARTMENT OF PUBLIC UTILITIES			
STANDARD MANHOLE FRAME AND COVER DETAIL WITHIN PAVED SURFACES			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-29	RRH	12-20-04	RRH



- NOTES:
1. THE TRACER WIRE SHALL BE CONTINUOUS TO THE GREATEST EXTENT POSSIBLE FOR GRAVITY MAIN AND OR LATERAL INSTALLATIONS LESS THAN 8 FT. THE TRACING WIRE SHALL BE ATTACHED TO THE PIPE. TRACER WIRE SHALL BE LAID FLAT AND SECURELY AFFIXED TO THE PIPE AT 10 FOOT INTERVALS. FOR GRAVITY MAIN AND OR LATERAL INSTALLATION DEEPER THAN 8 FT. THE TRACER WIRE SHALL BE INSTALLED AT A DEPTH OF 7-8 FT. THE WIRE SHALL BE PROTECTED FROM DAMAGE DURING THE EXECUTION OF THE WORK. NO BREAKS OF CUTS IN THE TRACER WIRE SHALL BE PERMITTED.
 2. WHERE LATERAL TAPS ARE MADE BY SERVICE SADDLES, THE TRACER WIRE SHALL NOT BE ALLOWED TO BE PLACED BETWEEN THE SADDLE AND MAIN.
 3. MANHOLE MARKERS SHALL BE PLACED ADJACENT TO MANHOLES AT THE DISCRETION OF OWNER OR OWNER'S REPRESENTATIVE.

CITY OF RALEIGH			
DEPARTMENT OF PUBLIC UTILITIES			
TYPICAL SANITARY SEWER LATERAL TRACER WIRE			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-30A	RRH	9-2-99	RRH



- NOTES:
1. NO ENCASEMENT REQUIRED FOR SPACE GREATER THAN 24" FOR SEWER LINES.

CITY OF RALEIGH			
DEPARTMENT OF PUBLIC UTILITIES			
CONCRETE GRADE PROTECTION			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-64	RRH	9-2-99	RRH

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

Electronic Approval: This approval is being issued electronically. This approval is valid upon the signature of a City of Raleigh Review Officer below. The City will retain a copy of the approved plans. Any work authorized by this approval must proceed in accordance with the plans kept on file with the City. This electronic approval may not be edited once issued. Any modification to the approval once issued will invalidate this approval.

City of Raleigh Development Approval _____
Raleigh Water Review Officer

SITE PERMITTING APPROVAL

Water and Sewer Permits (If applicable)

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-4722

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-3725

The City of Raleigh consents to the connection to its public sewer system and extension of the private sewer collection 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 # _____

WithersRavenel
Engineers | Planners | Surveyors

115 McKinnon Drive, Cary, NC 27511 | 919-465-3900 | License # C-6832 | www.withersravenel.com

**POPLAR CREEK VILLAGE
PHASE IV**

TOWN OF KNIGHTDALE, NORTH CAROLINA

SEWER UTILITY DETAIL

Job No. 02190259
Date 08/14/20
Drawn By WR
Designer WR

**PRELIMINARY
NOT APPROVED FOR
CONSTRUCTION**

W. GILLEN E. DIVINE

Revisions

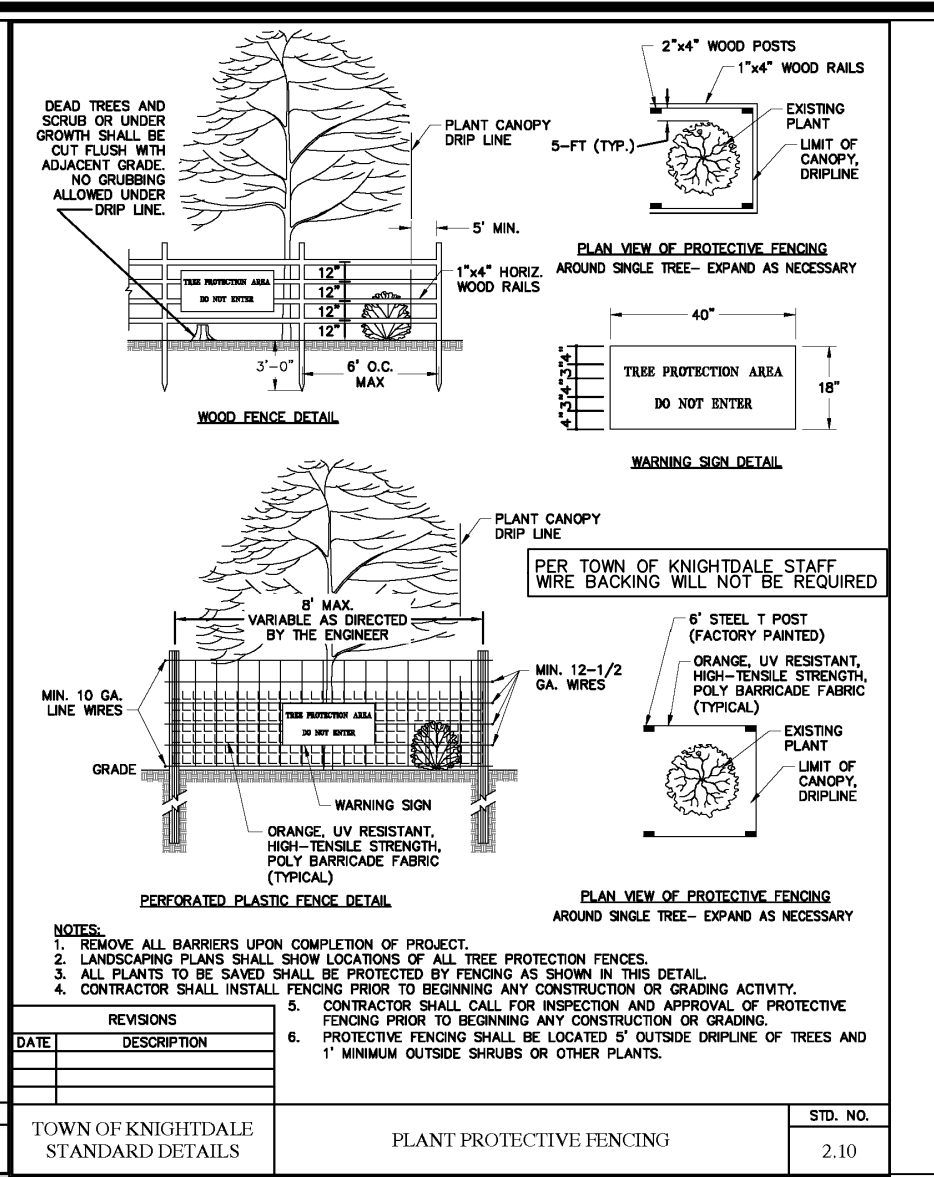
1	PER TOK COMMENTS	10/02/20
---	------------------	----------

Sheet No.
10.3

SEEDING SCHEDULE		
SEEDING PERIOD	SEEDING TYPE	APPLICATION RATE (LBS/ACRE)
AUGUST 15 - NOVEMBER 01	TALL FESCUE	300
NOVEMBER 01 - MARCH 01	TALL FESCUE AND ARIZONA RYE	300
MARCH 01 - APRIL 15	TALL FESCUE	25
APRIL 15 - JUNE 30	HALLOW COMB BERMUDAGRASS	25
JULY 01 - AUGUST 15	TALL FESCUE AND BROWNS TOP MILLET OR HORNUM-SUDAN HYBRIDS	30
SLOPES 2:1 TO 3:1		
MARCH 01 - JUNE 01	PERNIXA LEUCOPHYLLA (SCARIFIED) AND TALL FESCUE OR	120
MARCH 01 - APRIL 15	TALL FESCUE OR	90
MARCH 01 - JUNE 30	PERNIXA LEUCOPHYLLA (SCARIFIED) AND TALL FESCUE OR	120
JUNE 01 - SEPTEMBER 01	PERNIXA LEUCOPHYLLA (SCARIFIED) AND TALL FESCUE OR	120
SEPTEMBER 01 - MARCH 01	TALL FESCUE OR	120
NOVEMBER 01 - MARCH 01	ARIZONA RYE	75

TEMPORARY - RESEED ACCORDING TO OPTIMUM SEASON FOR DESIRED PERMANENT SEED. DO NOT ALLOW TEMPORARY COVER TO GROW OVER 6" IN HEIGHT BEFORE MOWING. OTHERWISE FESCUE MAY BE SHAVED OUT. CONSULT OBSERVATION ENGINEER OR SEEDING SERVICE FOR MORE INFORMATION CONCERNING OTHER ALTERNATIVES FOR VEGETATION OF DISTURBED AREAS. THE ABOVE VEGETATION RATES ARE THOSE WHICH DO WELL UNDER LOCAL CONDITIONS. OTHER SEEDING RATE COMBINATIONS ARE PERMITTED IF APPROVED BY THE ENGINEER.

GROUND COVER - WHEREVER LAND DISTURBANCE ACTIVITY IS UNDERTAKEN ON A TRACT COMPRISED MORE THAN ONE (1) ACRE, A GROUND COVER SUFFICIENT TO RESTRAIN EROSION MUST BE PLANTED OR PROVIDED WITHIN 14 WORKING DAYS OR 30 CALENDAR DAYS. GRADED SLOPES AND FILLS - WITHIN 14 WORKING DAYS OR 30 CALENDAR DAYS OR COMPLETION OF ANY PHASE OF GRADING, REPAIR OR CONSTRUCTION, SLOPES SHALL BE PLANTED OR OTHERWISE PROVIDED WITH GROUND COVER, DEVICES, OR STRUCTURES SUFFICIENT TO RESTRAIN EROSION.



Environmental Services

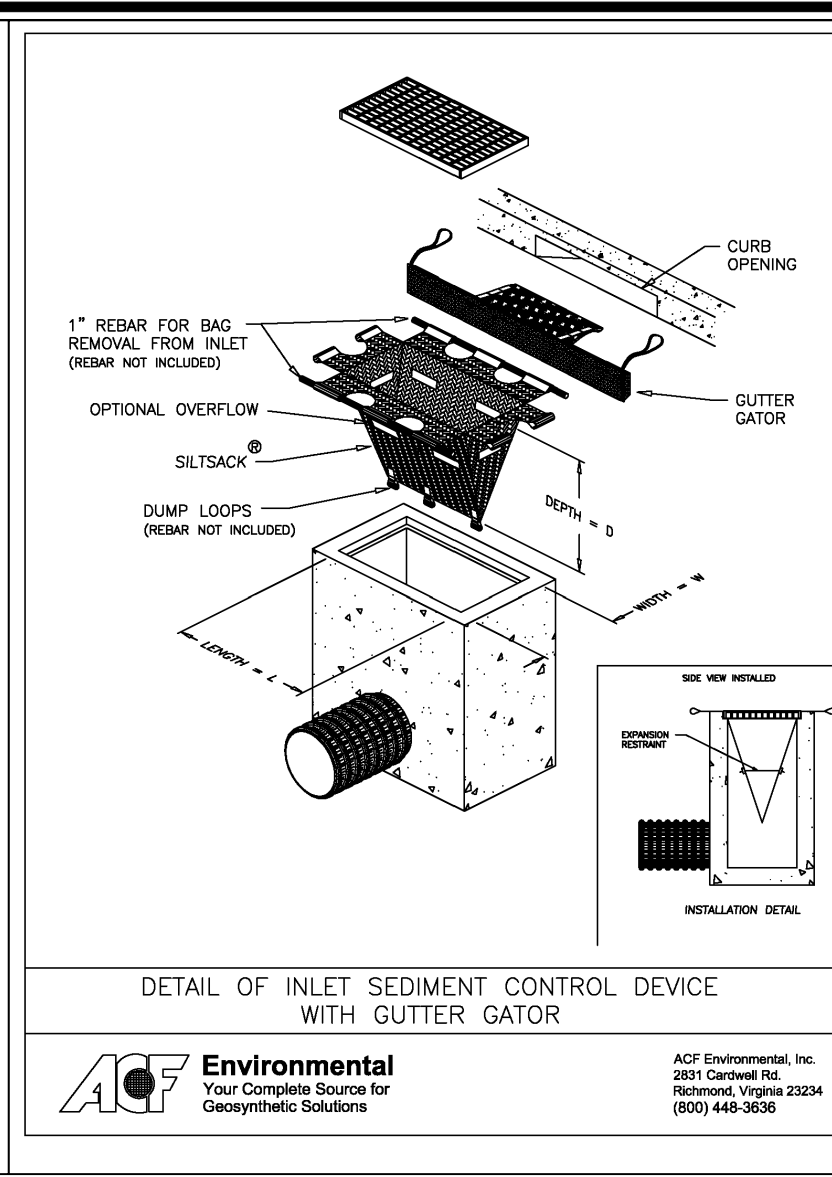
Effective September 1, 2008

Soil stockpiles shall be located on the approved plan and shall adhere to the following requirements:

- 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 15 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.
- 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 11(D) 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 FEMA Floodways and Non-mechanized Areas are prohibited except as otherwise provided by subsection 14.419-2 of the Wake County Unified Development Ordinance (certifications and permits required).

Maintenance Requirements to be Noted on the Plan

- Seeding or covering stockpiles with tarp or mulch is required and will reduce erosion problems. Tarp should be laid in at the top of the slope to keep water from running underneath the plastic.
- If a stockpile is to remain for longer than when the project is complete (bulldozers, etc.), the financial responsible party must notify Wake County of a new responsible party for that stockpile.
- The approved plan shall provide for the use of staked seeding and mulching on a continual basis while the stockpile is in use.
- Establish and maintain a vegetative buffer at the toe of the slope (where practical).



SILT SACKS

REGULAR FLOW SILT SACK

FOR AREAS OF LOW TO MODERATE PRECIPITATION AND RUN-OFF

GRAVEL TEMPLE STRENGTH	GRAVEL TEMPLE ELONGATION	GRAVEL TEMPLE PERCENTAGE	GRAVEL TEMPLE PERCENTAGE	GRAVEL TEMPLE PERCENTAGE	GRAVEL TEMPLE PERCENTAGE	GRAVEL TEMPLE PERCENTAGE	GRAVEL TEMPLE PERCENTAGE	GRAVEL TEMPLE PERCENTAGE	GRAVEL TEMPLE PERCENTAGE
ATIN 5-4032	ATIN 5-4032	ATIN 5-4032	ATIN 5-4032	ATIN 5-4032	ATIN 5-4032	ATIN 5-4032	ATIN 5-4032	ATIN 5-4032	ATIN 5-4032

HI-FLOW SILT SACK

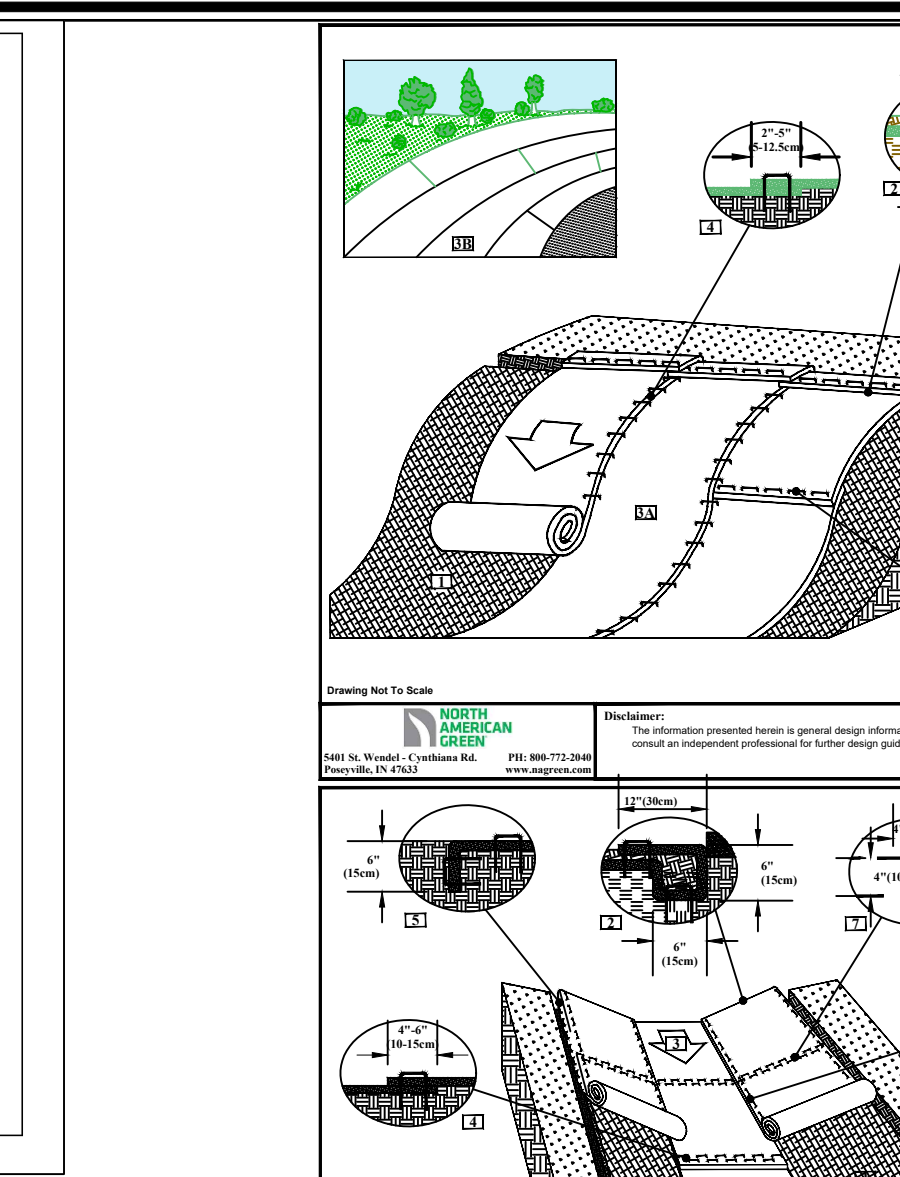
FOR AREAS OF MODERATE TO HEAVY PRECIPITATION AND RUN-OFF

GRAVEL TEMPLE STRENGTH	GRAVEL TEMPLE ELONGATION	GRAVEL TEMPLE PERCENTAGE	GRAVEL TEMPLE PERCENTAGE	GRAVEL TEMPLE PERCENTAGE	GRAVEL TEMPLE PERCENTAGE	GRAVEL TEMPLE PERCENTAGE	GRAVEL TEMPLE PERCENTAGE	GRAVEL TEMPLE PERCENTAGE	GRAVEL TEMPLE PERCENTAGE
ATIN 5-4032	ATIN 5-4032	ATIN 5-4032	ATIN 5-4032	ATIN 5-4032	ATIN 5-4032	ATIN 5-4032	ATIN 5-4032	ATIN 5-4032	ATIN 5-4032

DIL-ASSISTANT SILT SACK

FOR AREAS WHERE THERE IS A CONCERN FOR OIL RUN-OFF OR SPILL

FOR YOUR PARTICULAR APPLICATION, THE SILT SACK CAN BE MADE FROM EITHER ONE OF THE ABOVE FABRICS WITH AN OIL-RESISTANT POLYMER COATING OR POLYMER COATING WITH AN OIL-RESISTANT SILT SACK WITH A WOOD FILLER INSIDE.



1. Prepare soil before installing rolled erosion control products (RECPs), including any necessary application of lime, fertilizer, and seed.

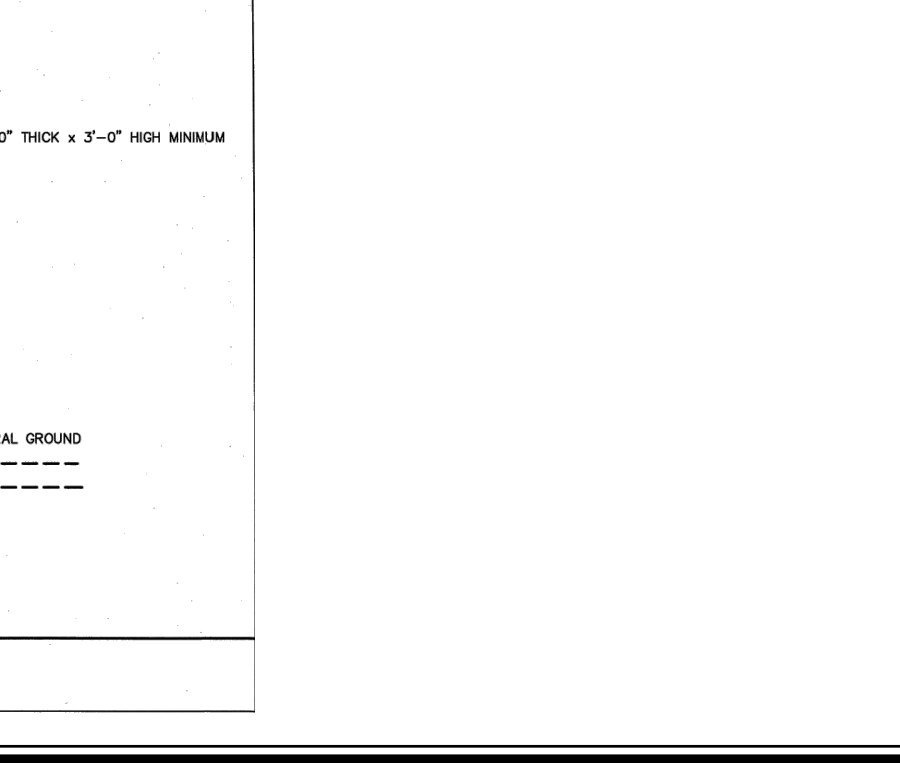
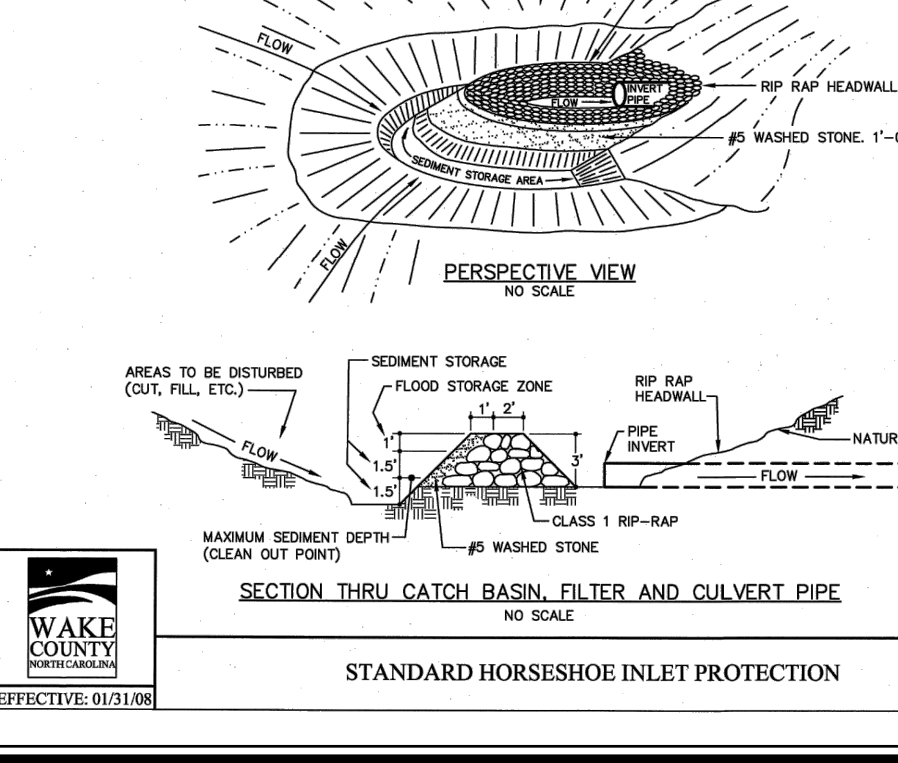
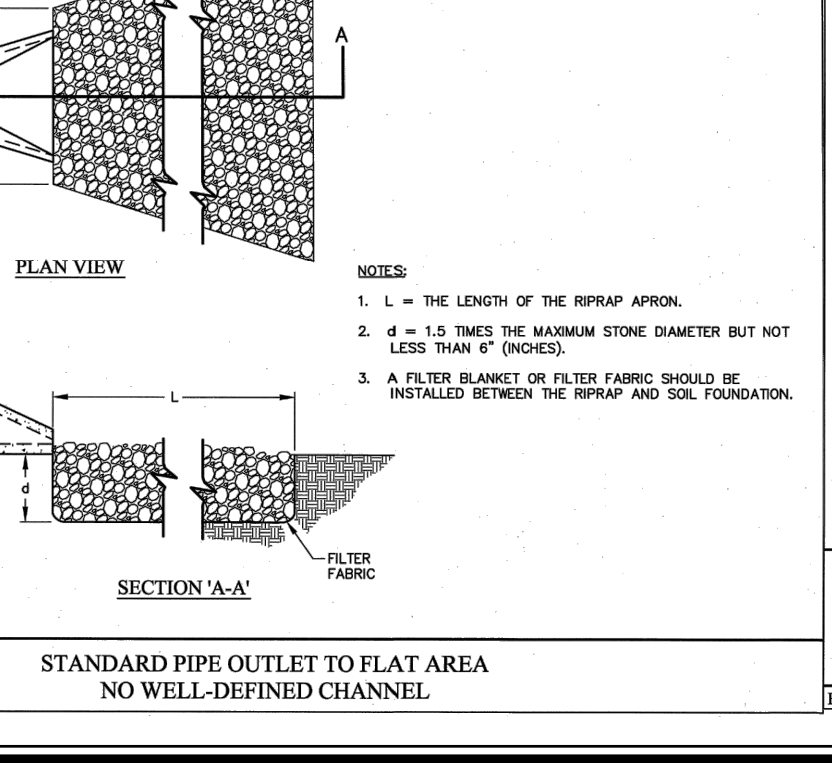
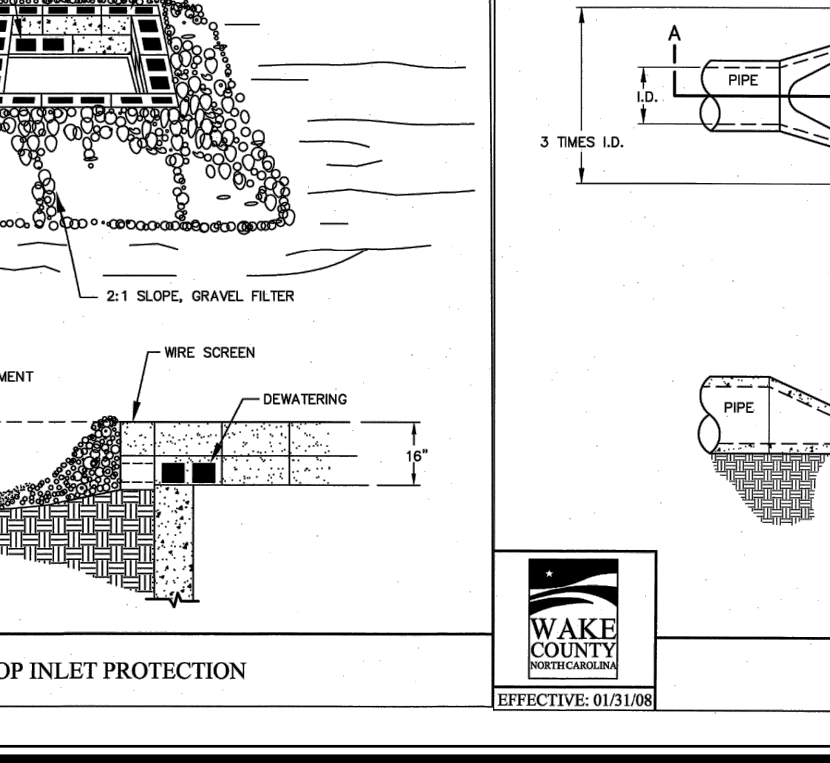
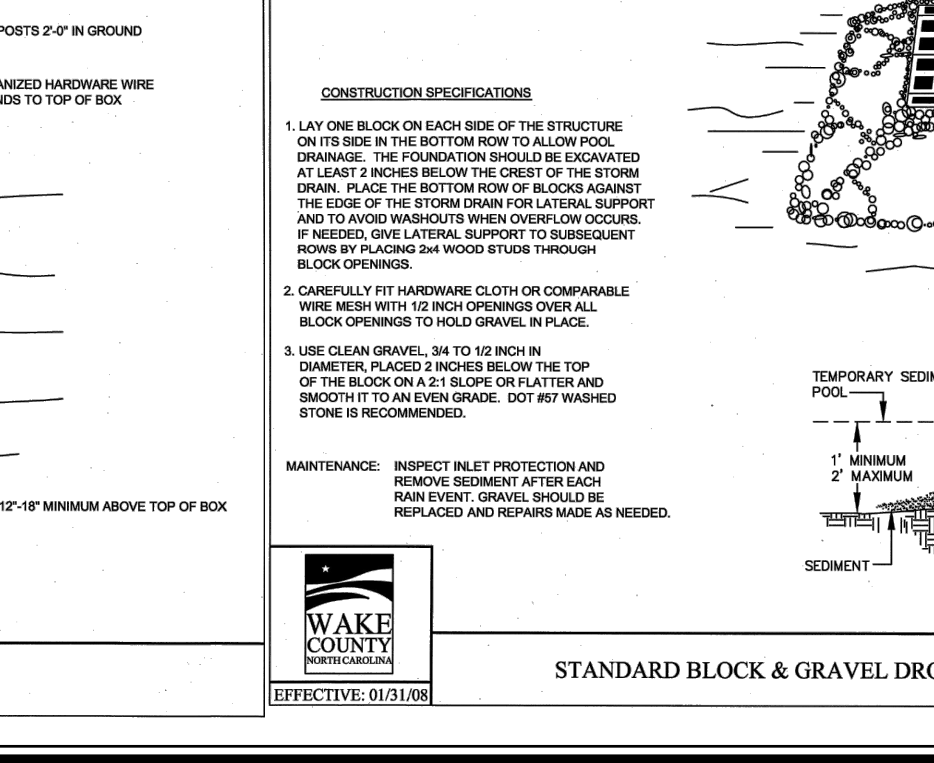
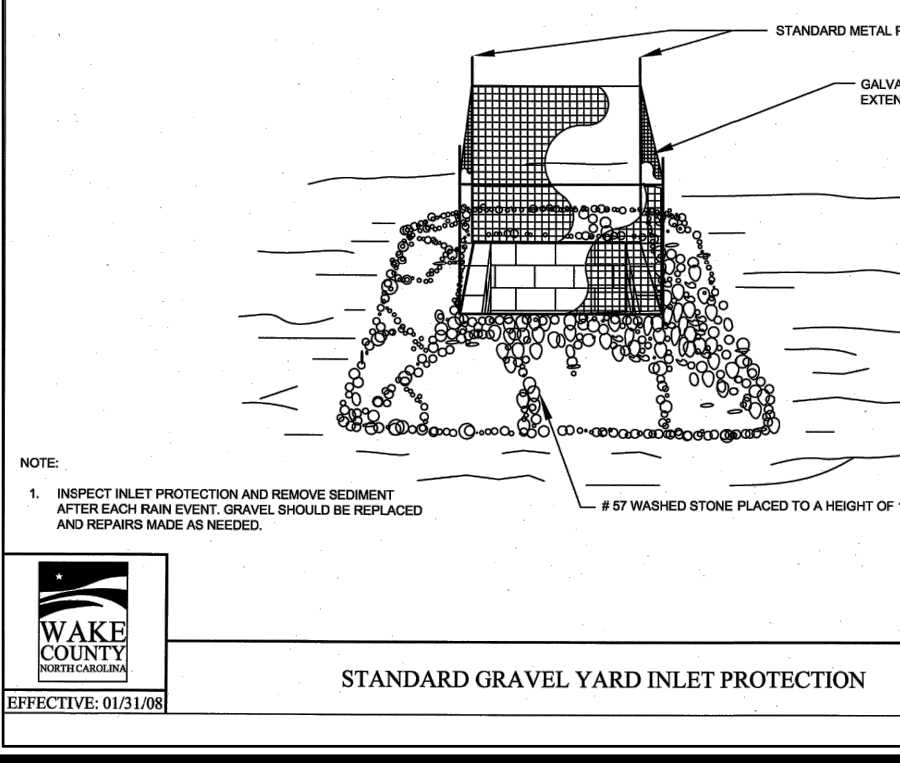
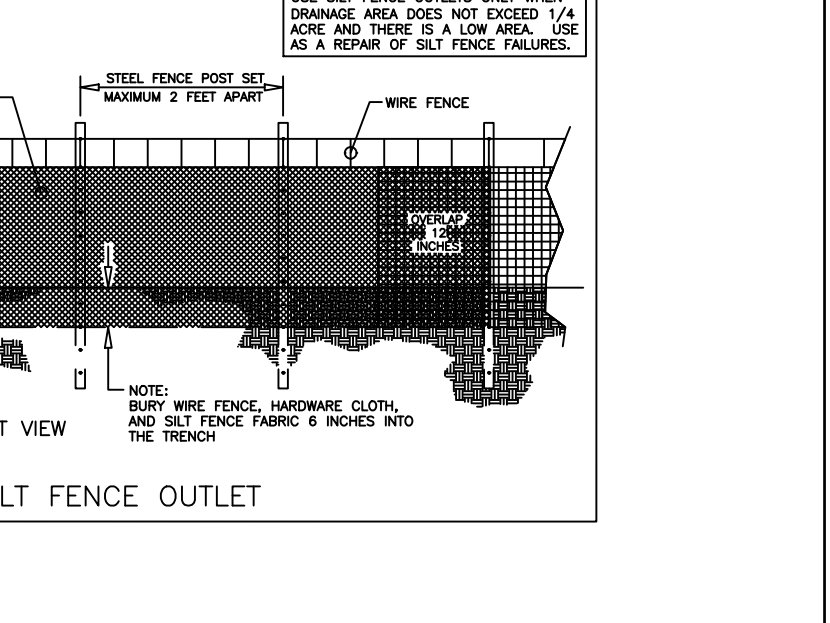
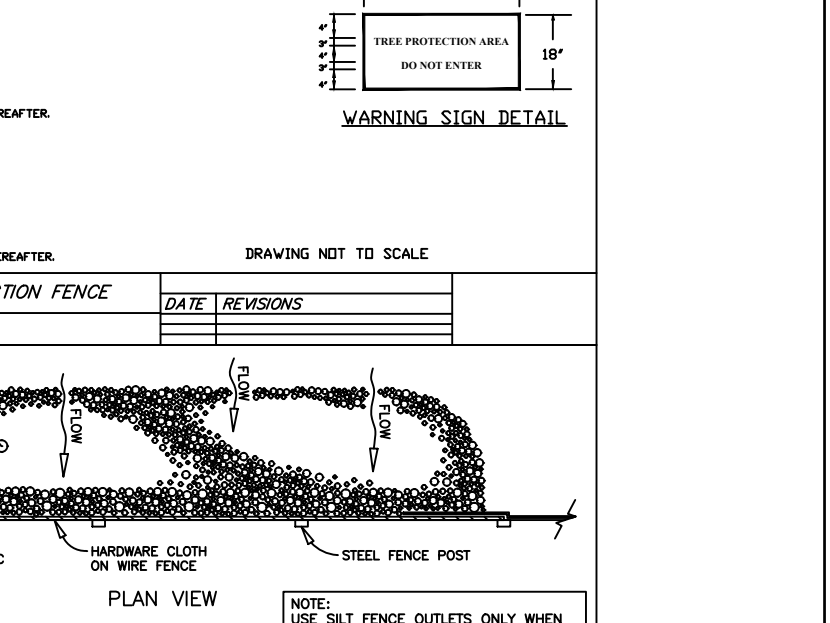
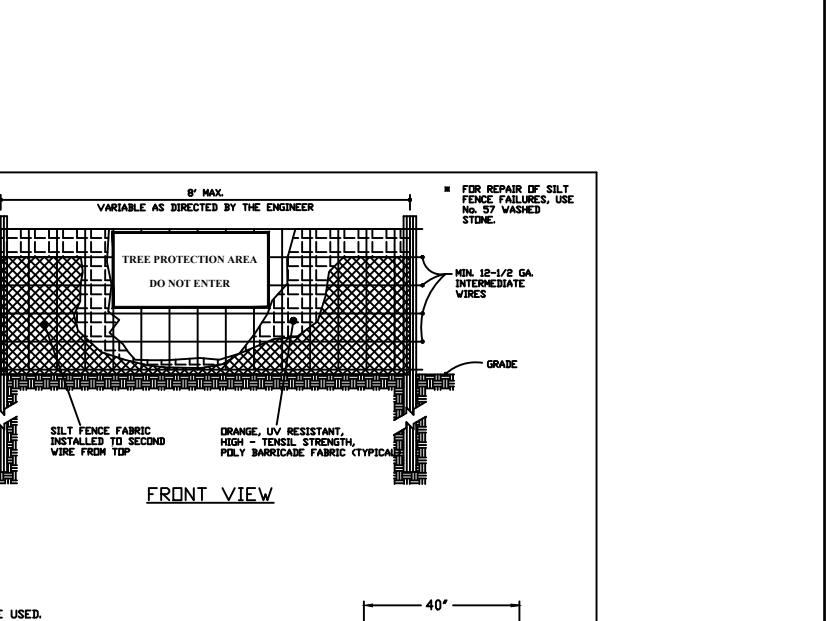
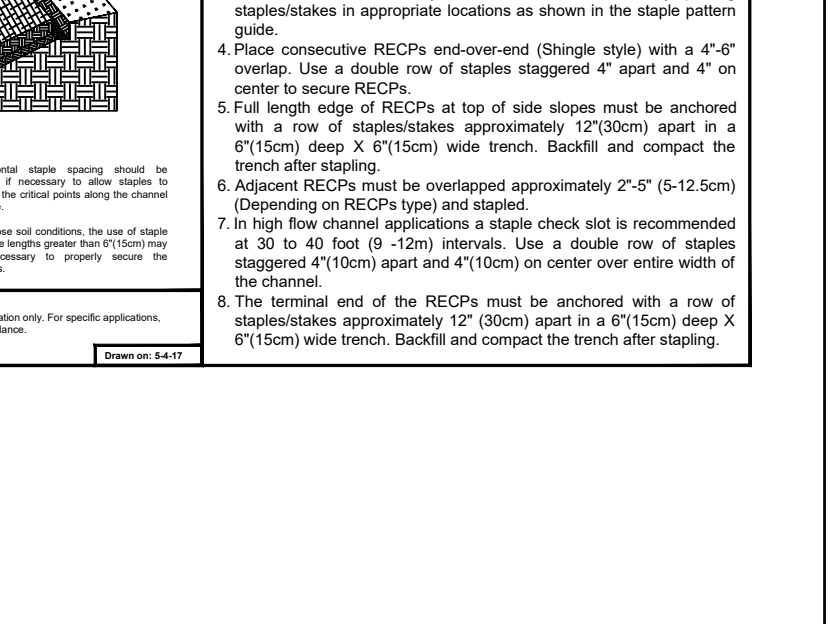
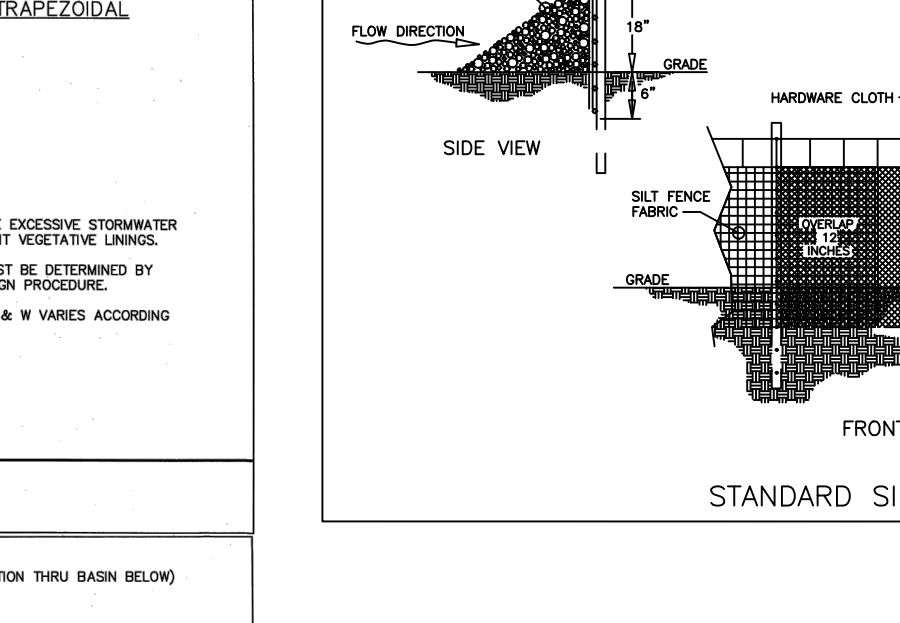
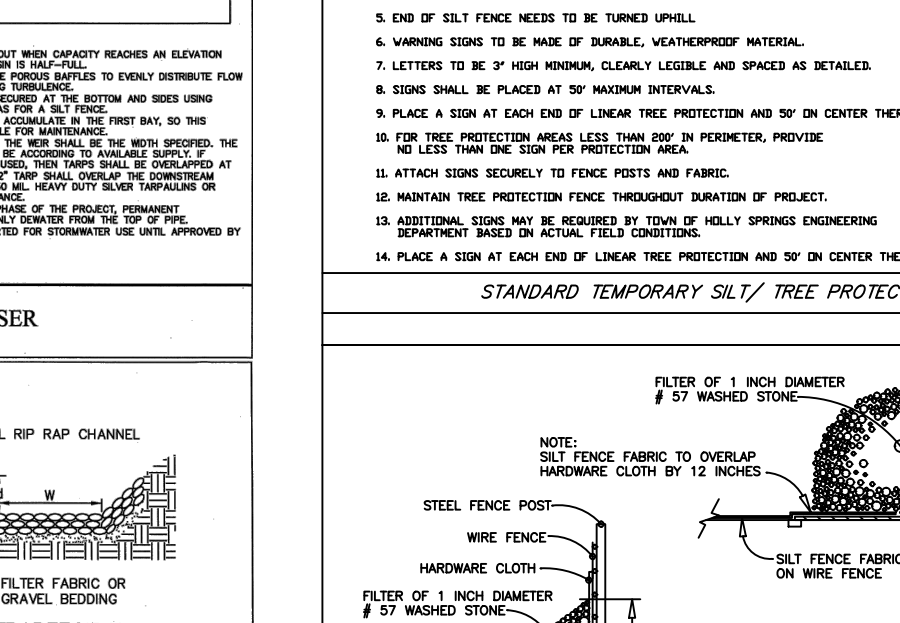
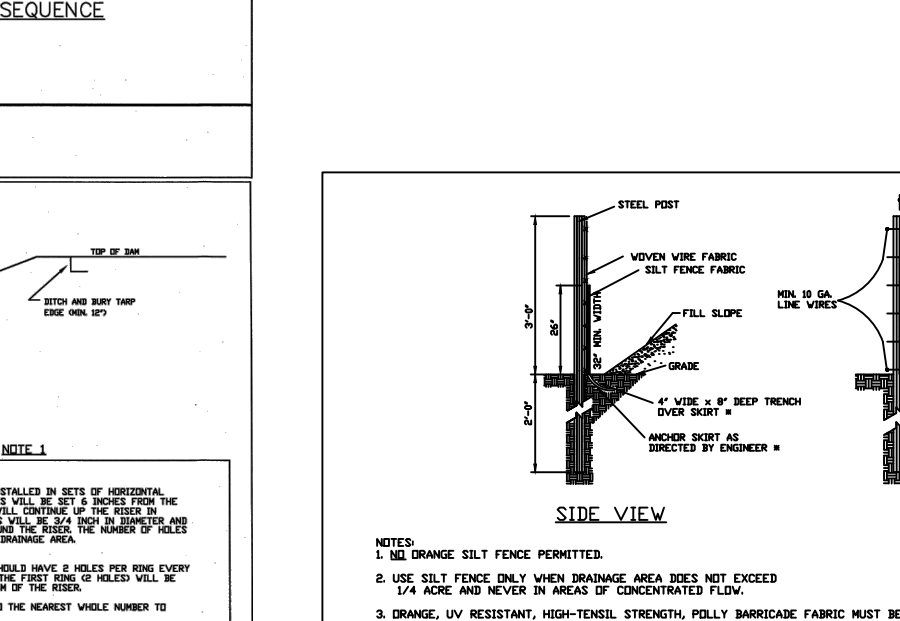
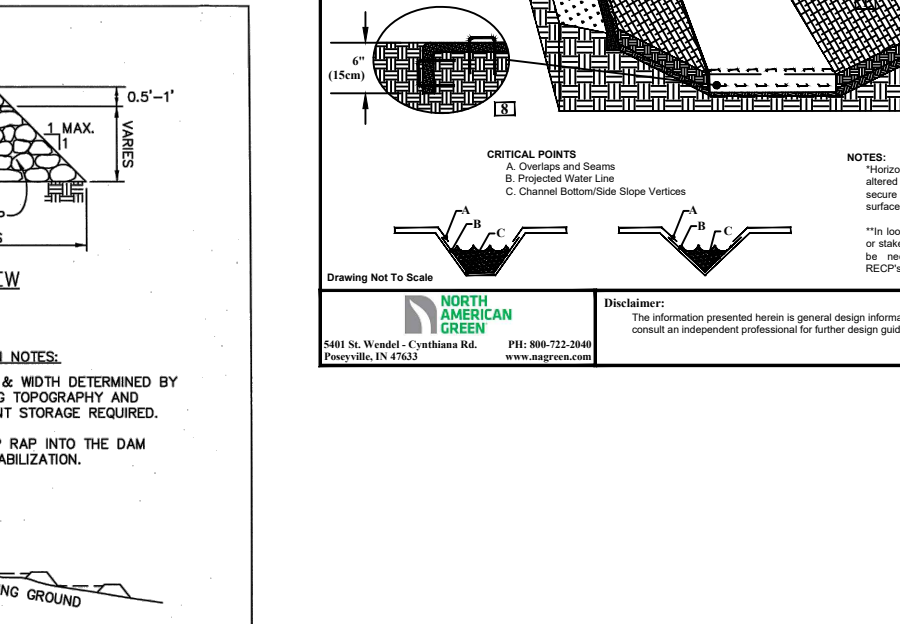
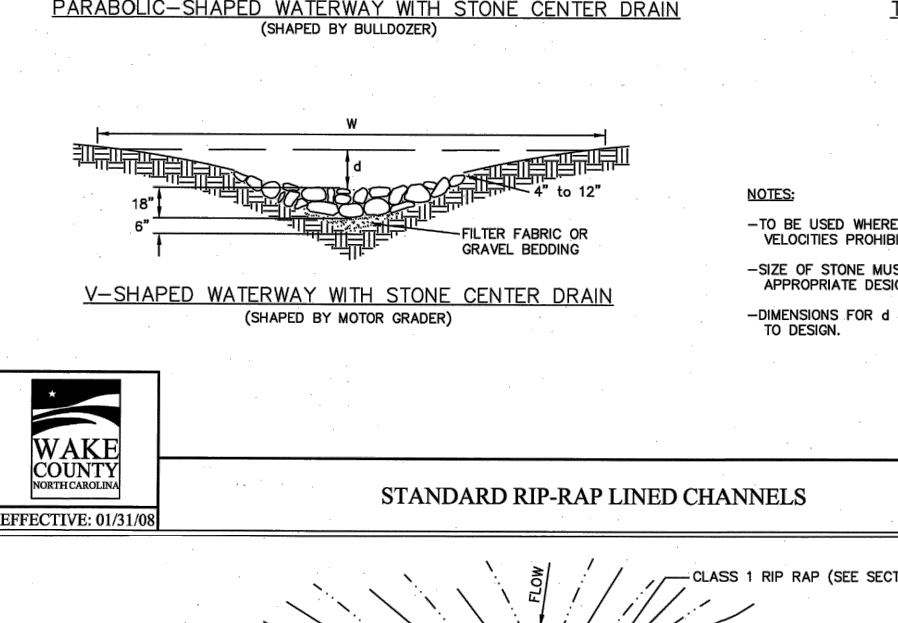
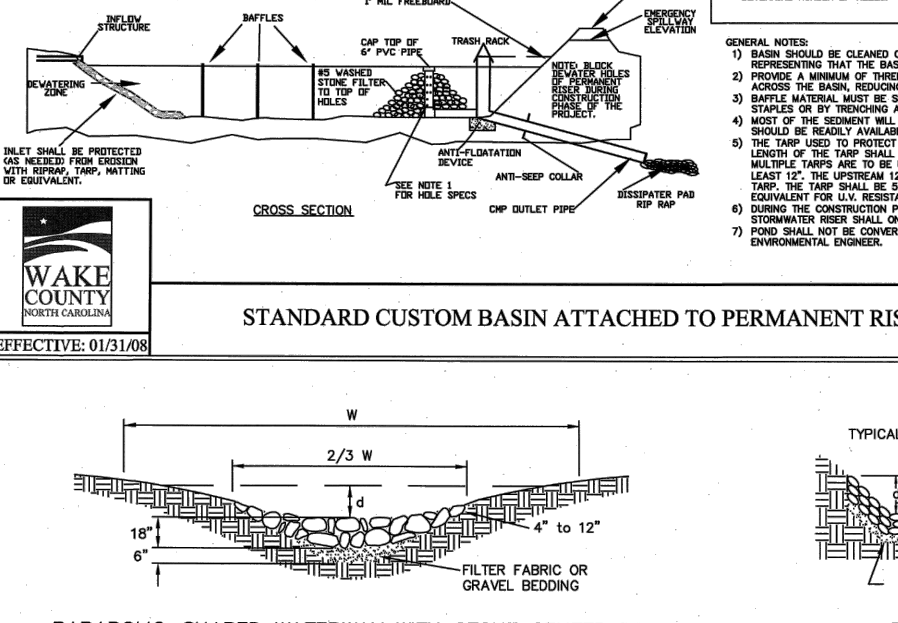
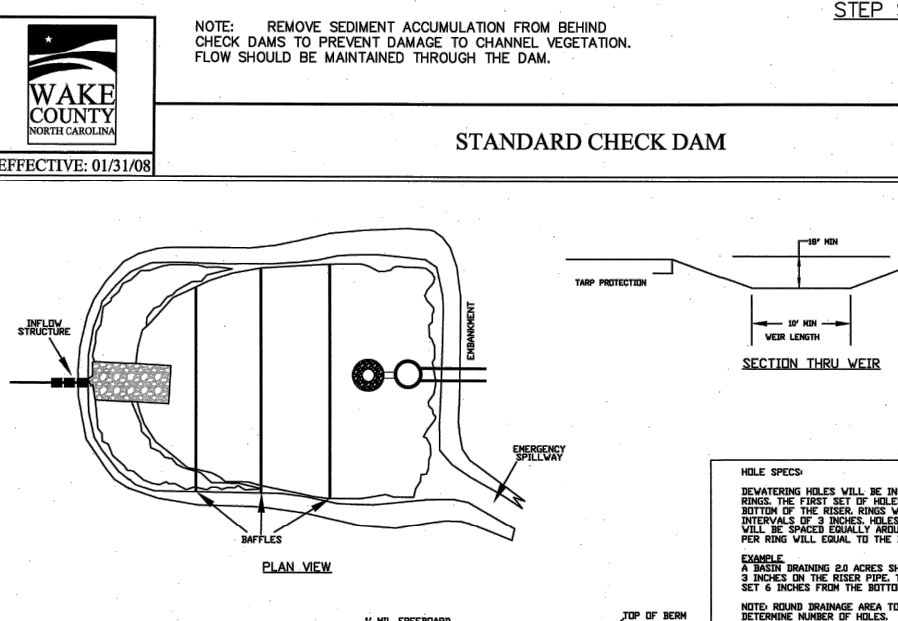
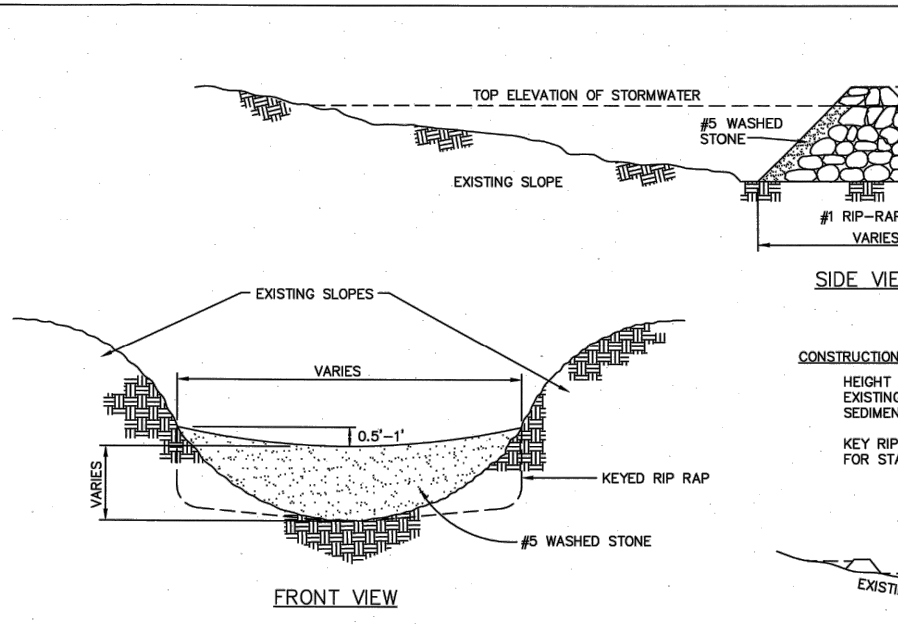
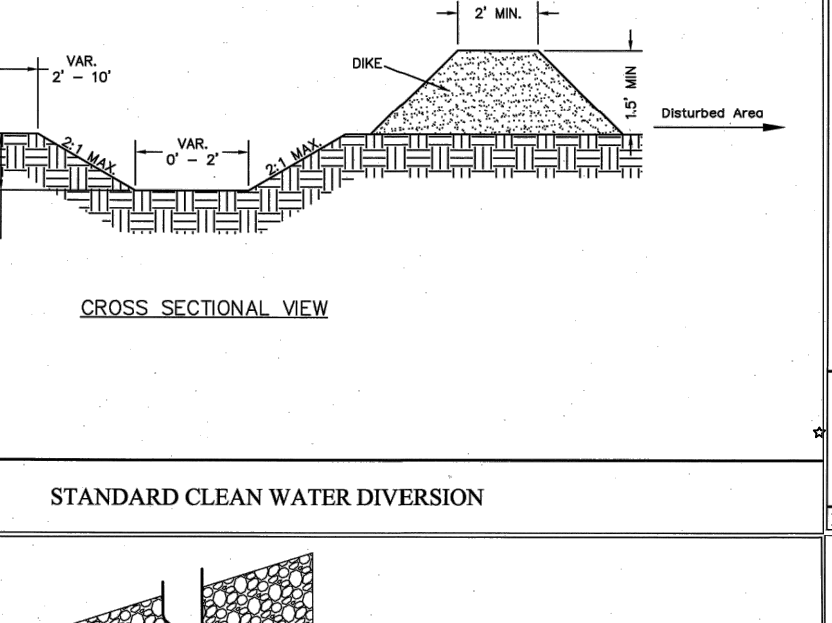
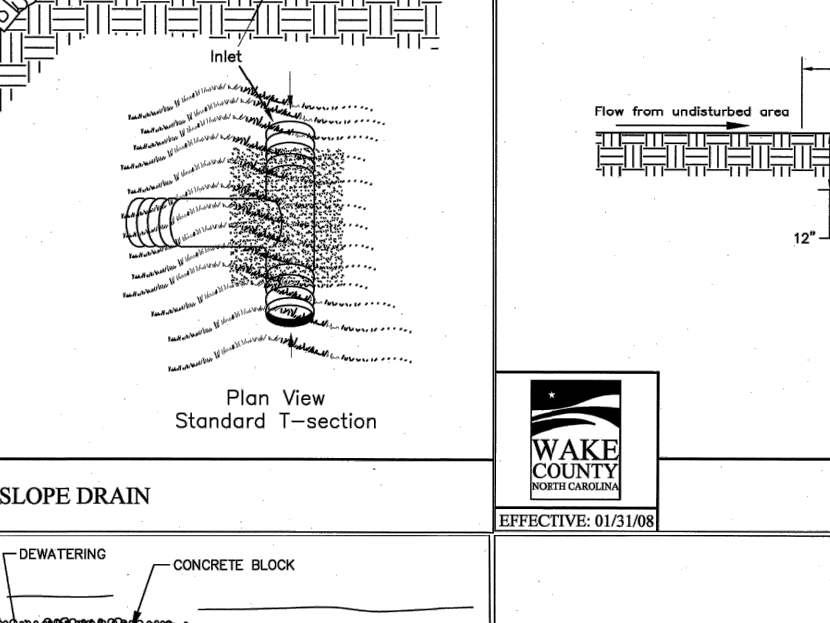
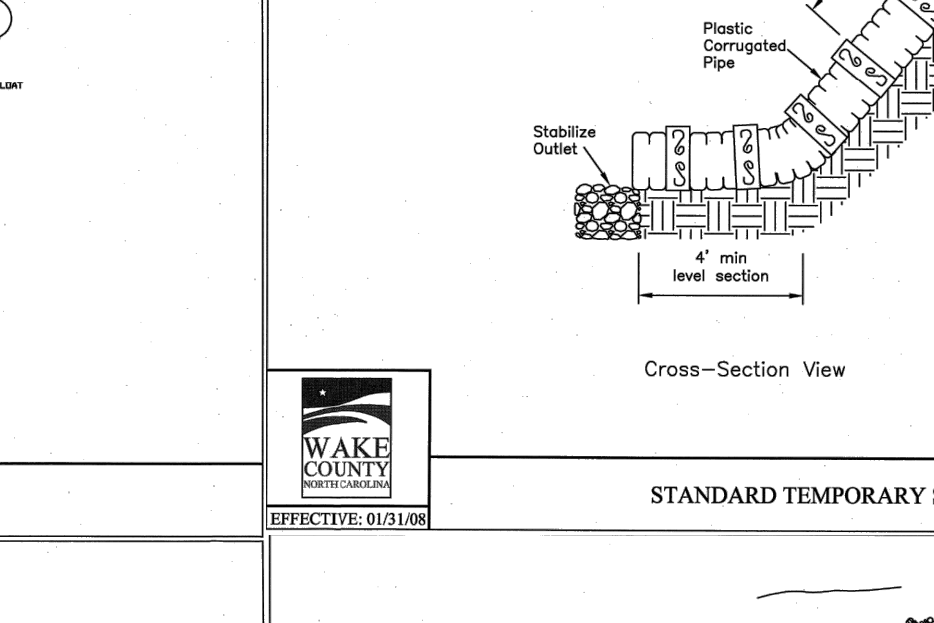
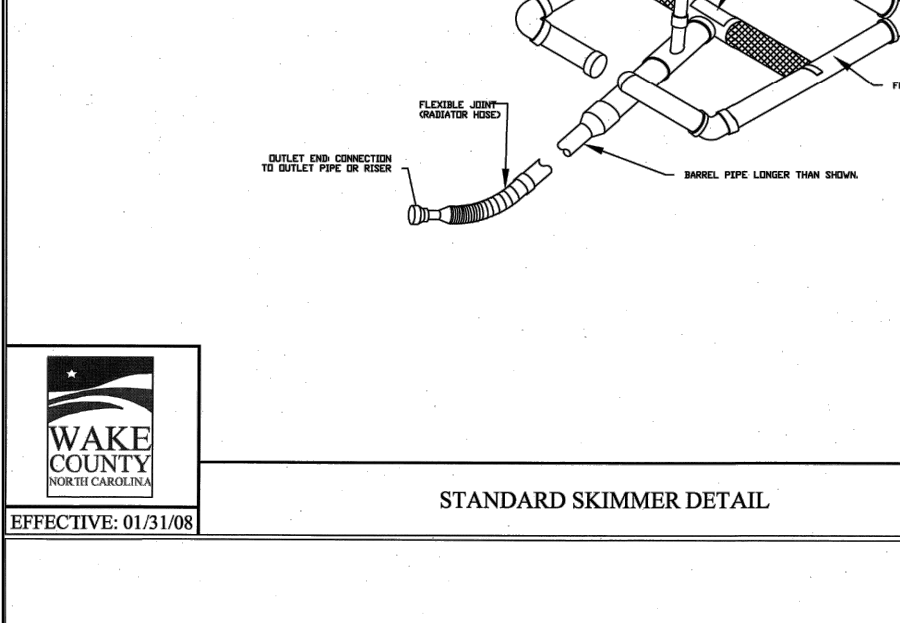
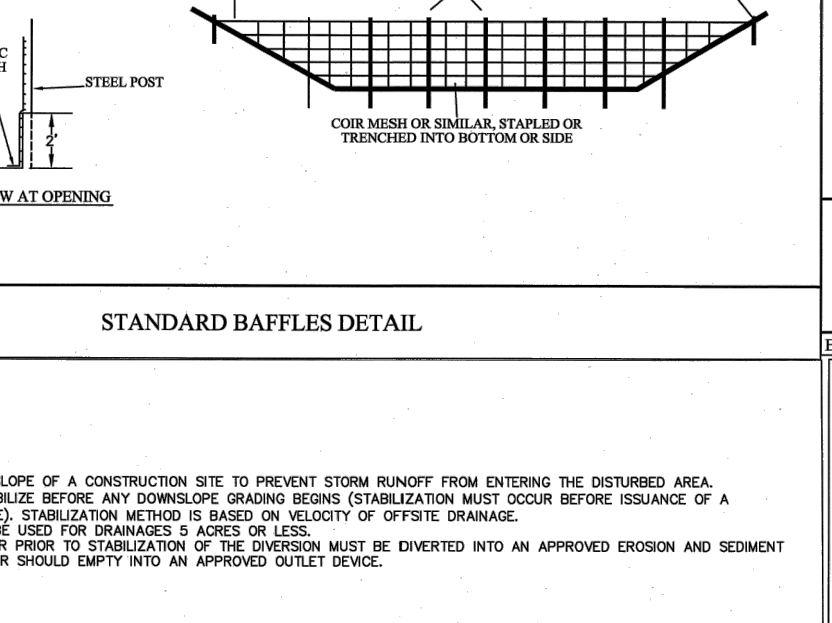
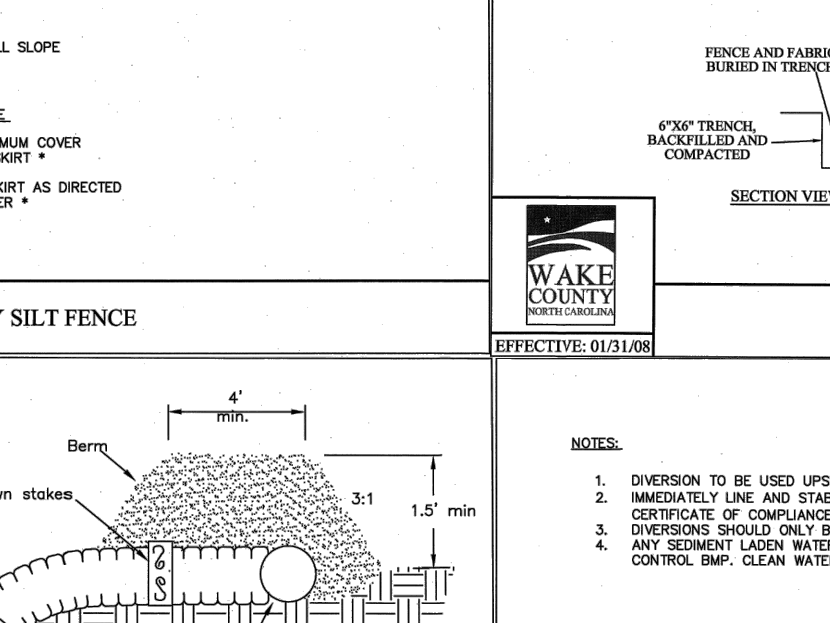
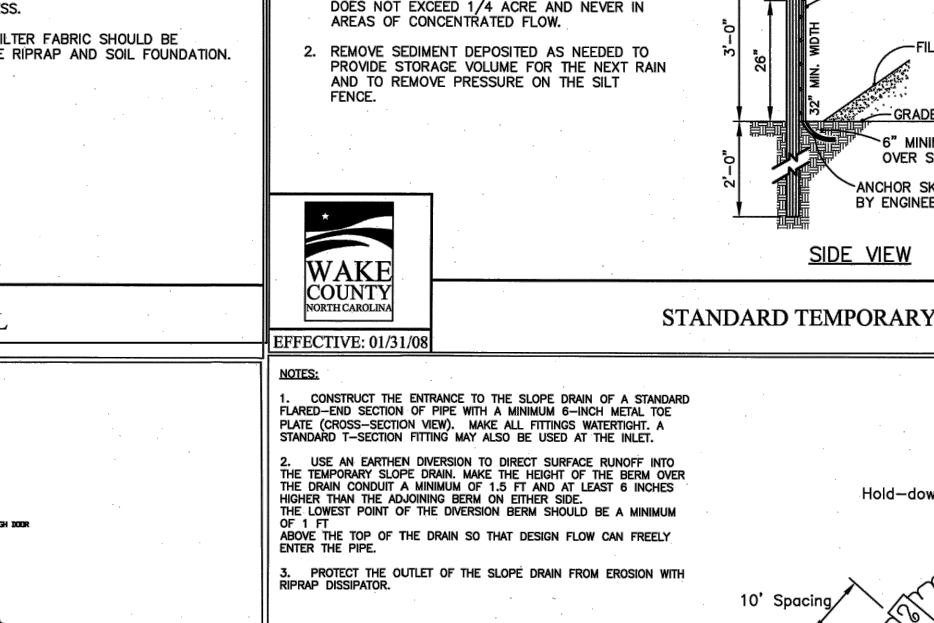
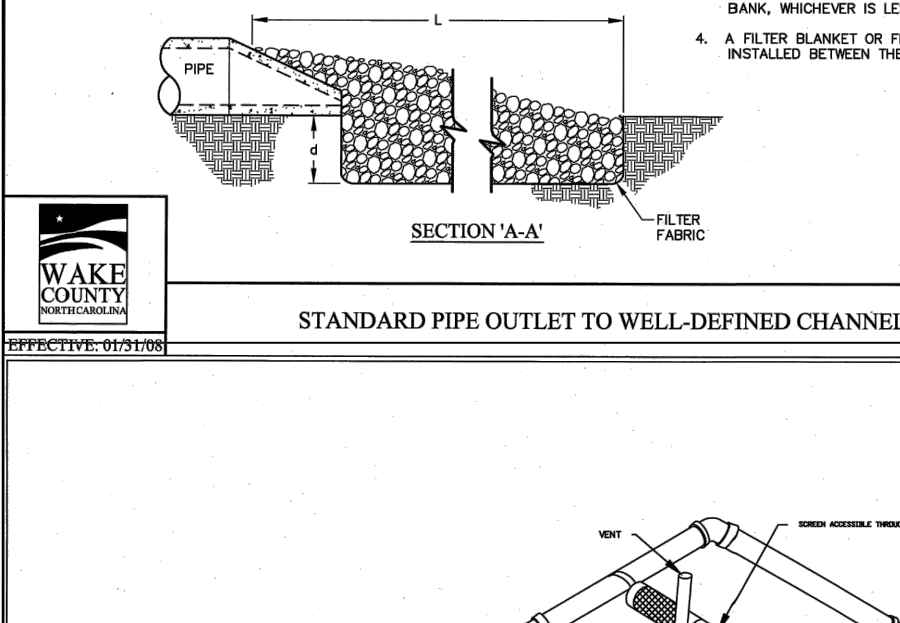
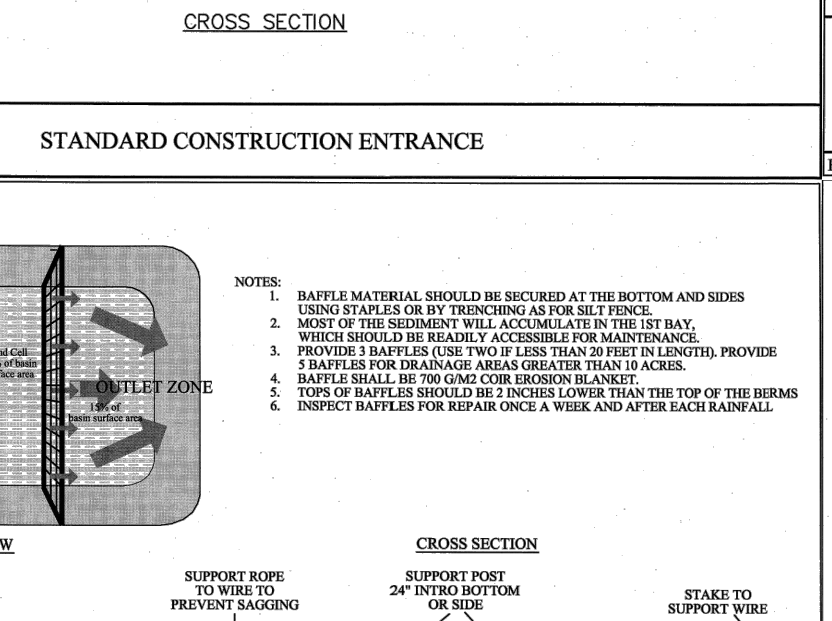
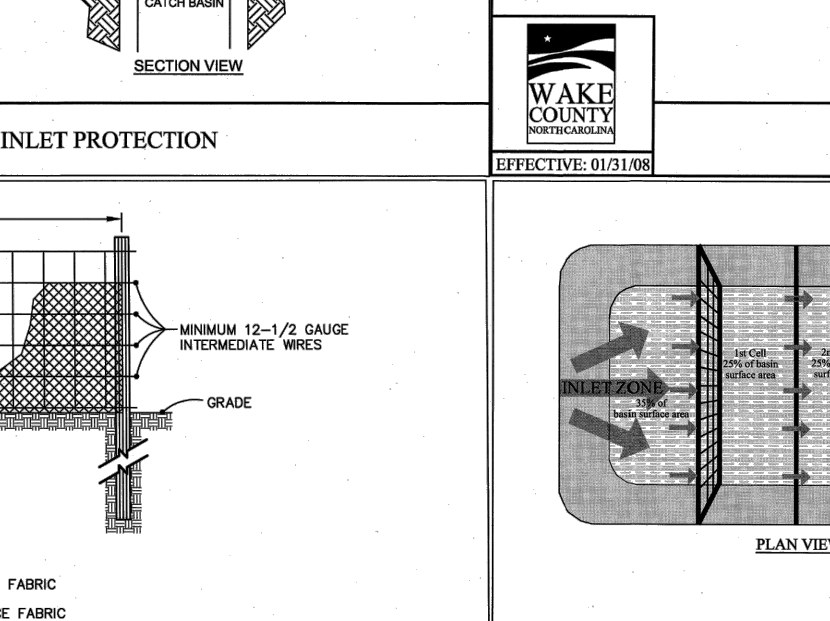
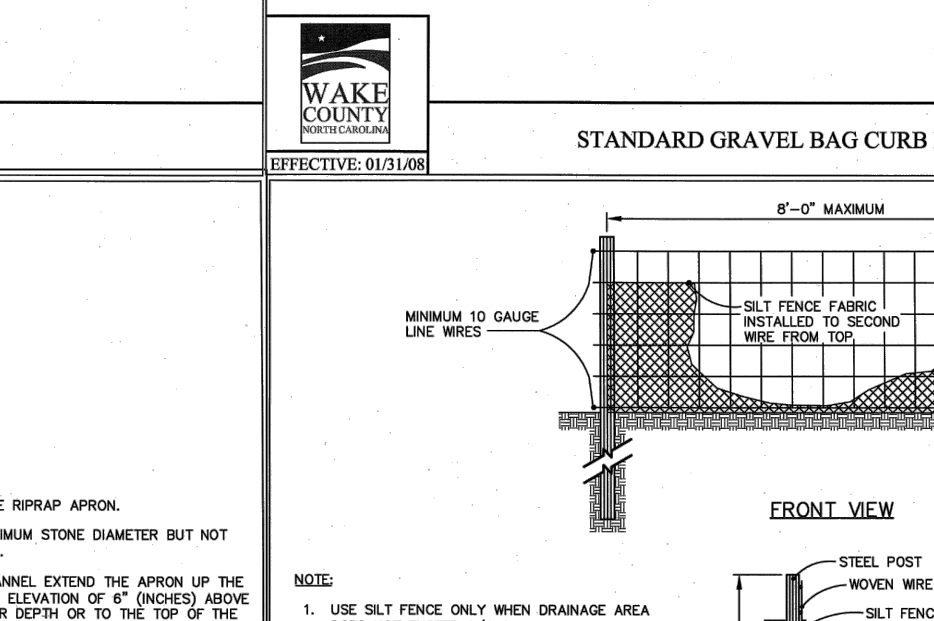
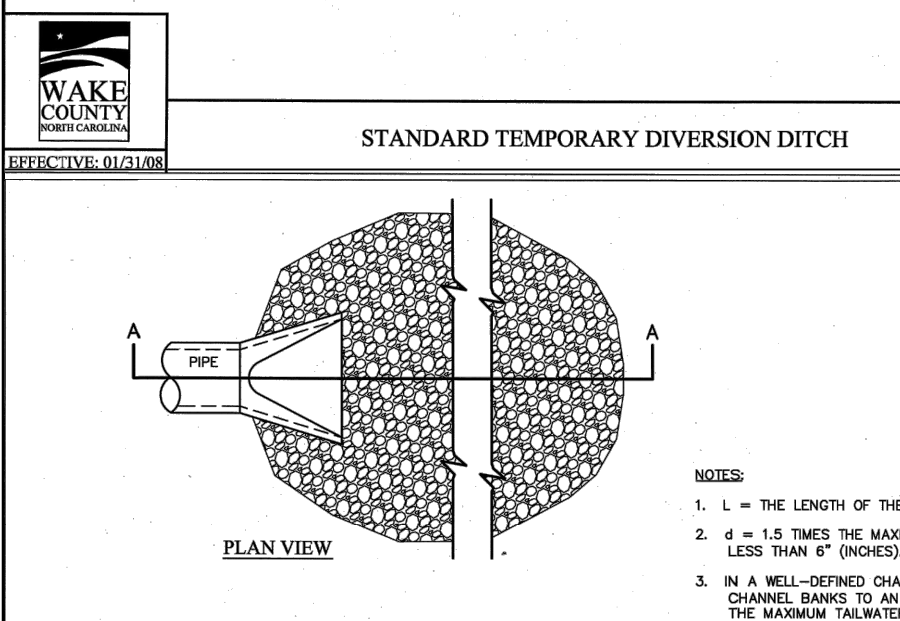
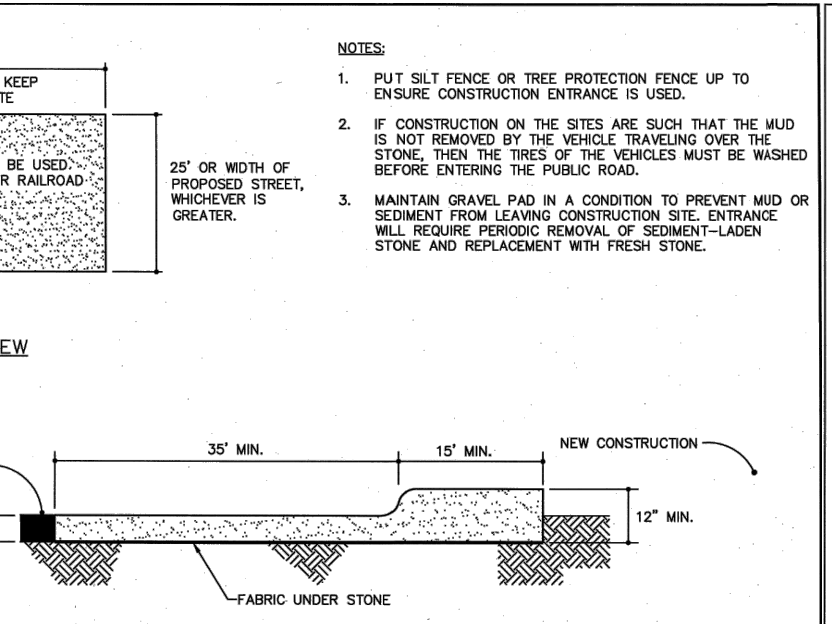
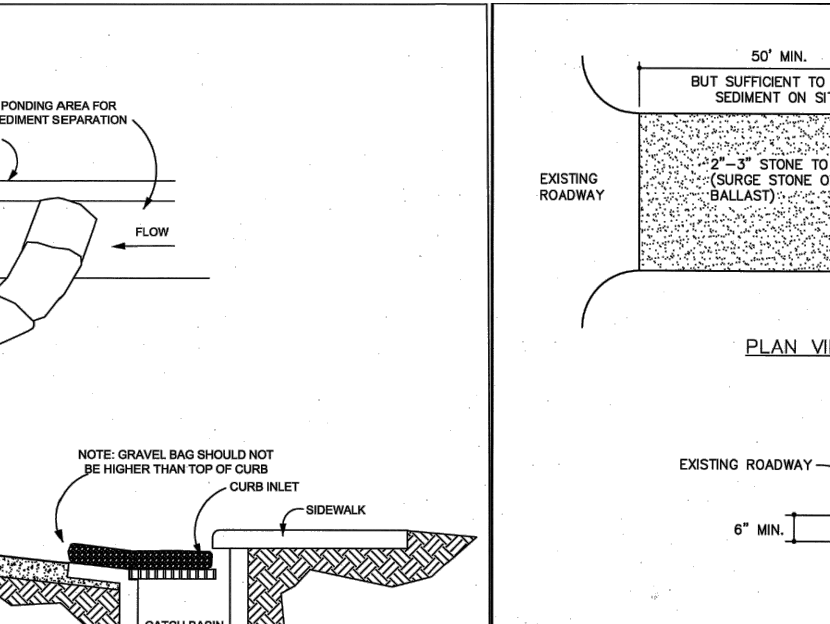
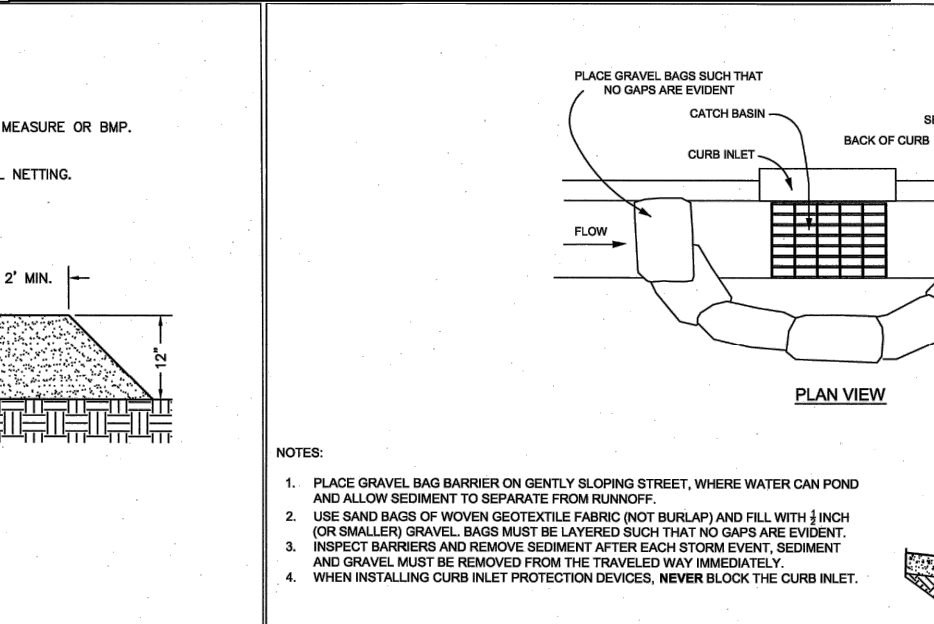
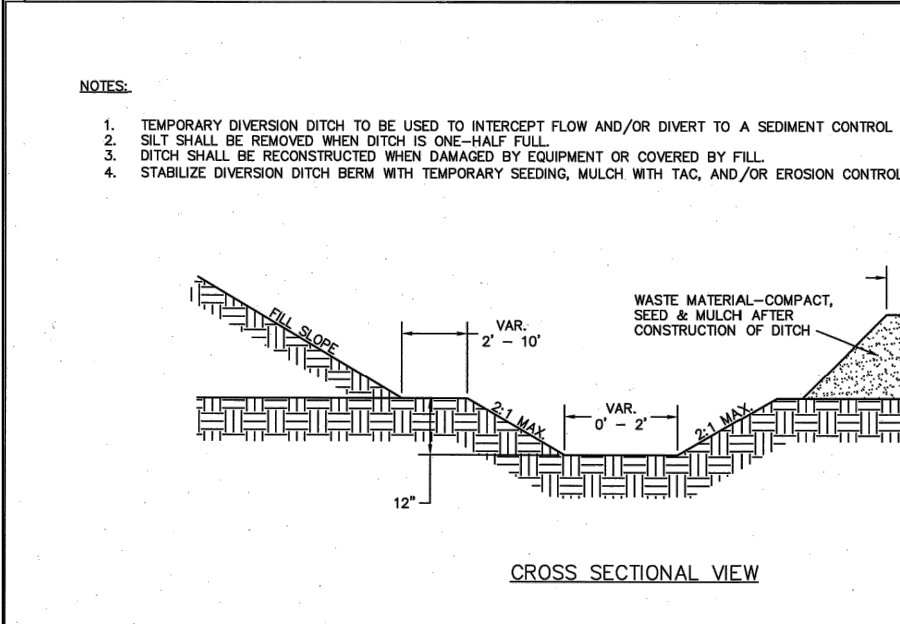
2. Begin at the top of the slope by anchoring the RECPs in a 6"(15cm) deep X 6"(15cm) wide trench with approximately 12"(30cm) of RECPs extending beyond the up-slope portion of the slope. Anchor the RECPs with a row of staples/stakes approximately 12"(30cm) apart in the bottom of the trench. Backfill and compact the trench after stapling. Apply seed to the compacted soil and fill the remaining 12"(30cm) portion of RECPs back over the seed and compacted soil. Secure RECPs over compacted soil with a row of staples/stakes spaced approximately 12"(30cm) apart across the width of the RECPs.

3. Roll the RECPs (A) down or (B) horizontally across the slope. RECPs will unroll with appropriate slope against the soil surface. All RECPs must be securely fastened to soil surface by placing staples/stakes in appropriate locations as shown in the staple pattern guide.

4. The edges of parallel RECPs must be stapled with approximately 2" x 7" (5-12.5cm) overlap depending on the RECPs type.

5. Consecutive RECPs spaced down the slope must be end over end (single style) with an approximate 3"(7.5cm) overlap. Staple through overlapped area, approximately 12"(30cm) apart across entire RECPs width.

NOTE: In loose soil conditions, the use of staple or stake lengths greater than 6"(15cm) may be necessary to properly secure the RECPs.



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: _____ DATE: _____
DEVELOPMENT SERVICES ENGINEER

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

BY: _____ DATE: _____
ADMINISTRATOR

WithersRavenel
Engineers | Planners | Surveyors

POPLAR CREEK VILLAGE PHASE IV

EROSION CONTROL DETAILS

Job No. 02190259 Drawn By WR
Date 08/14/20 Designer WR

PRELIMINARY NOT APPROVED FOR CONSTRUCTION

Revisions
1 PER TOK COMMENTS 10/02/20

Sheet No. 10.5

TOWN OF KNIGHTDALE, NORTH CAROLINA

K:\17\2020\10259\afternoon\addition\CAD\dwg\approved\11.01\TYPICAL BUILDING ELEVATIONS.dwg, Plotter: 2, 2020 10:34:17 AM, -1036, 010PEN

ARCHITECTURAL APPROVED GUIDELINES:

THE ATTACHED ELEVATIONS (APPENDIX A) ARE A CONDITION OF THE REZONING AND SHALL BE PERMITTED WITH THE FOLLOWING ADDITIONAL ARCHITECTURAL CONDITIONS AS GUIDANCE. ANY VARIATIONS OF THE APPROVED ELEVATIONS SHALL BE REVIEWED BY THE DEVELOPMENT SERVICES DIRECTOR TO ENSURE COMPLIANCE WITH HE REQUIREMENTS OF THE APPROVED PLANNED UNIT DEVELOPMENT.

1. THE FRONT ELEVATIONS OF ALL RESIDENTIAL DWELLINGS SHALL HAVE AT LEAST ONE (1) OF THE FOLLOWING FEATURES: BOARD AND BATTEN, SHAKE SIDING, OR SECOND STORY PORCH AND AT LEAST (1) OF THE FOLLOWING FEATURES: GABLE WINDOW, DORMER(S), DECORATIVE WINDOW CAP/ PEDIMENT, FRONT DOOR TRANSOM OR SIDELIGHT WINDOW. HAVING TWO (2) ITEMS FROM THE FIRST LIST IN LIEU OF ONE FROM EACH LIST WILL MEET THIS ARCHITECTURAL REQUIREMENT.
2. VINYL SIDING IS PERMITTED AND SHALL BE A MINIMUM OF .045 IN IN THICKNESS.
3. SIDE AND REAR ELEVATIONS ARE NOT REQUIRED TO HAVE ADDITIONAL MATERIALS, AND CAN BE 100% VINYL MATERIALS.
4. ALL PITCHED ROOFS SHALL BE PROFILED BE EAVES PROJECTING A MINIMUM OF 10 INCHES FROM THE BUILDING FACE WHICH MAY INCLUDE GUTTERS.
5. FRONT-LOADED GARAGE DOORS SHALL UTILIZE A CARRIAGE STYLE OR SIMILAR STYLISTIC GARAGE DOOR THAT IS ARCHITECTURALLY COMPATIBLE WITH THE HOUSING STYLE (PANELED GARAGE DOORS ARE NOT PERMITTED).
6. THE CRAWLSPACE OF BUILDINGS SHALL BE ENCLOSED WITH BRICK, STONE, OR STUCCO. SLABS SHALL BE COVERED ON ALL SIDES WITH BRICK, STONE OR STUCCO NO LESS THAN THE HEIGHT EQUIVALENT OF THREE (3) COURSES OF BRICK (EIGHT [8] INCHES) VISIBLE ABOVE GRADE. AREAS UNDER PORCHES MAY BE ENCLOSED WITH LATTICE. AREAS UNDER MANUFACTURED HOMES IN MOBIL HOME PARKS EXISTING AT THE TIME OF ADOPTION OF THIS ORDINANCE MAY BE ENCLOSED WITH SKIRTING THAT MATCHES THE EXISTING STRUCTURE.
7. PORCHES AND STOOPS SHOULD BE USED AS A PRIMARY ARCHITECTURAL ELEMENT OF THE BUILDING DESIGN AND BE LOCATED ON THE PRIMARY FACADE OR THE OTHER ELEVATION FRONTING A PUBLIC RIGHT-OF-WAY. FRONT PORCHES SHALL BE A MINIMUM OF 6' IN DEPTH ON AT LEAST 50% OF THE ELEVATIONS, BUT IN NO CASE SHALL THE FRONT PORCH BE LESS THAN A 5' AVERAGE WITH THE NARROWEST PORTION BEING 4'.
8. THE MAXIMUM HEIGHT FOR ANY ELEVATION SHALL NOT EXCEED 45' AS MEASURED BY THE KNIGHTDALE UDO.

NOTE:

APPROVED ELEVATIONS ARE INCLUDED IN THE SIGNED ORDINANCE #20-06-17-004.

THE FOLLOWING ELEVATIONS WERE APPROVED;

PLAN	ELEVATIONS	
JAMISON	A*, B, C	*WITH BRICK OR STONE
LANGFORD	C	
PALMER	A, B, C	
RICHARDSON	B, C	
ROLAND	A, C	
VICTOR	A, B, C	
WARWICK	B, C, D, E, F	WITH ENCLOSED 3 RD BAY GARAGE
WEBSTER	C, F	
WORTHING	A, B, C	
YATES	A, B, C	

Job No.	02190259	Drawn By	WR
Date	08/14/20	Designer	WR



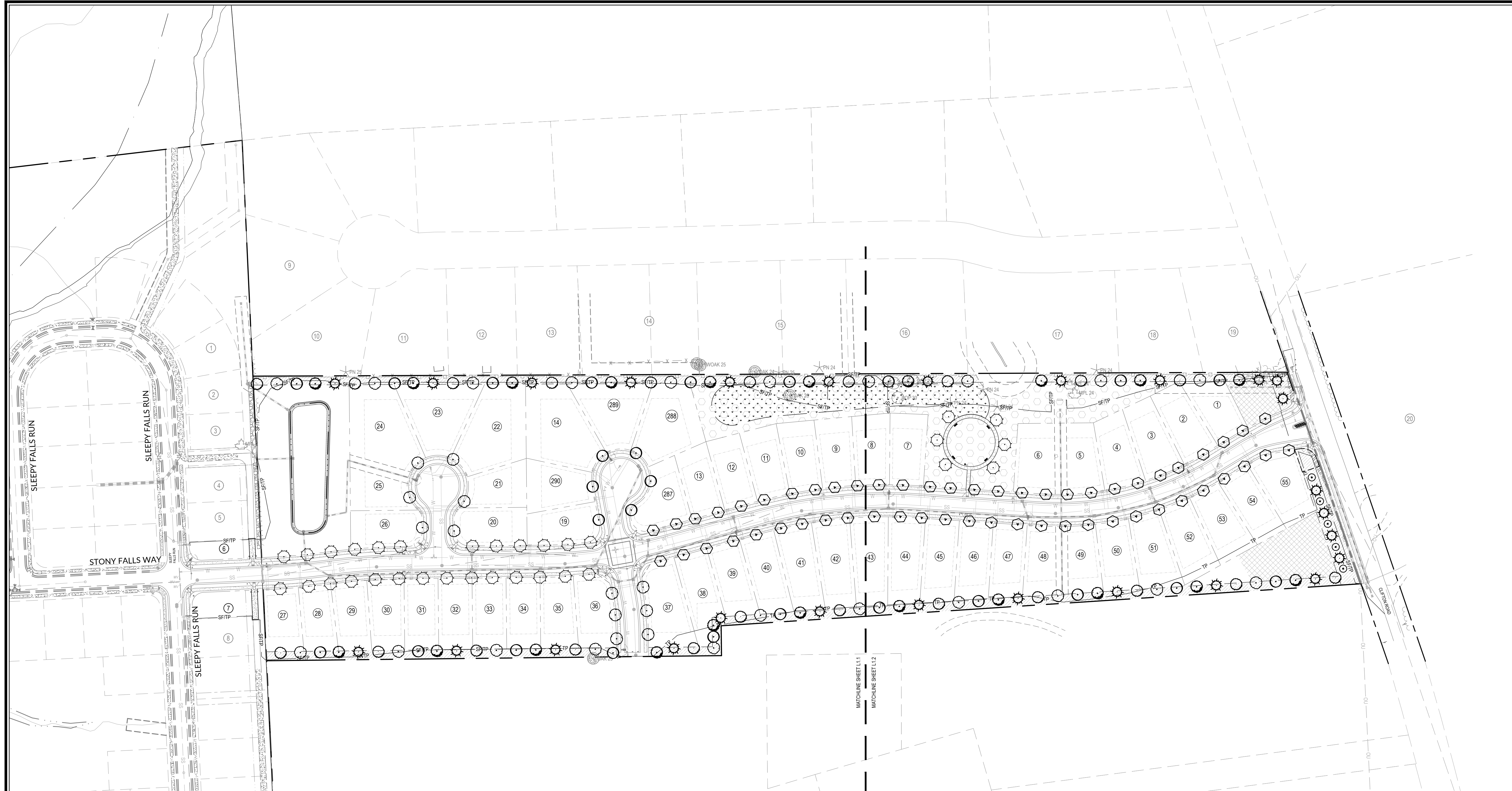
Revisions		
1	PER TOK COMMENTS	10/02/20

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: _____ DATE: _____
 DEVELOPMENT SERVICES ENGINEER

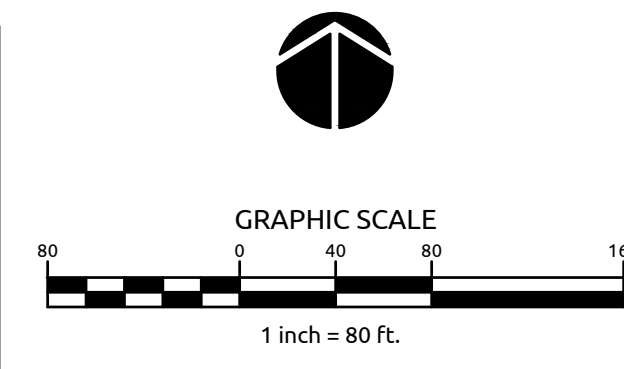
THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: _____ DATE: _____
 ADMINISTRATOR



HATCH LEGEND

	BUFFER
	OPEN SPACE
	TREE CANOPY: REPLANTED AREA
	SEEDED LAWN
	SCM: SHALLOW LAND
	SCM: SHALLOW WATER



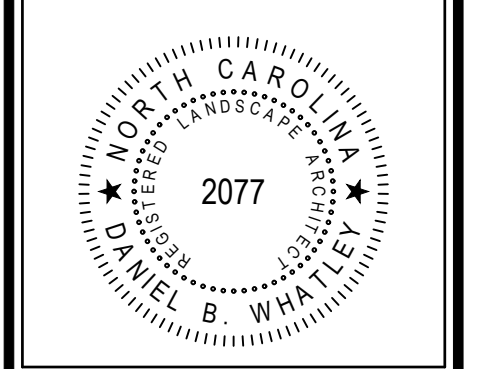
TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: _____ DATE: _____
DEVELOPMENT SERVICES ENGINEER

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

BY: _____ DATE: _____
ADMINISTRATOR

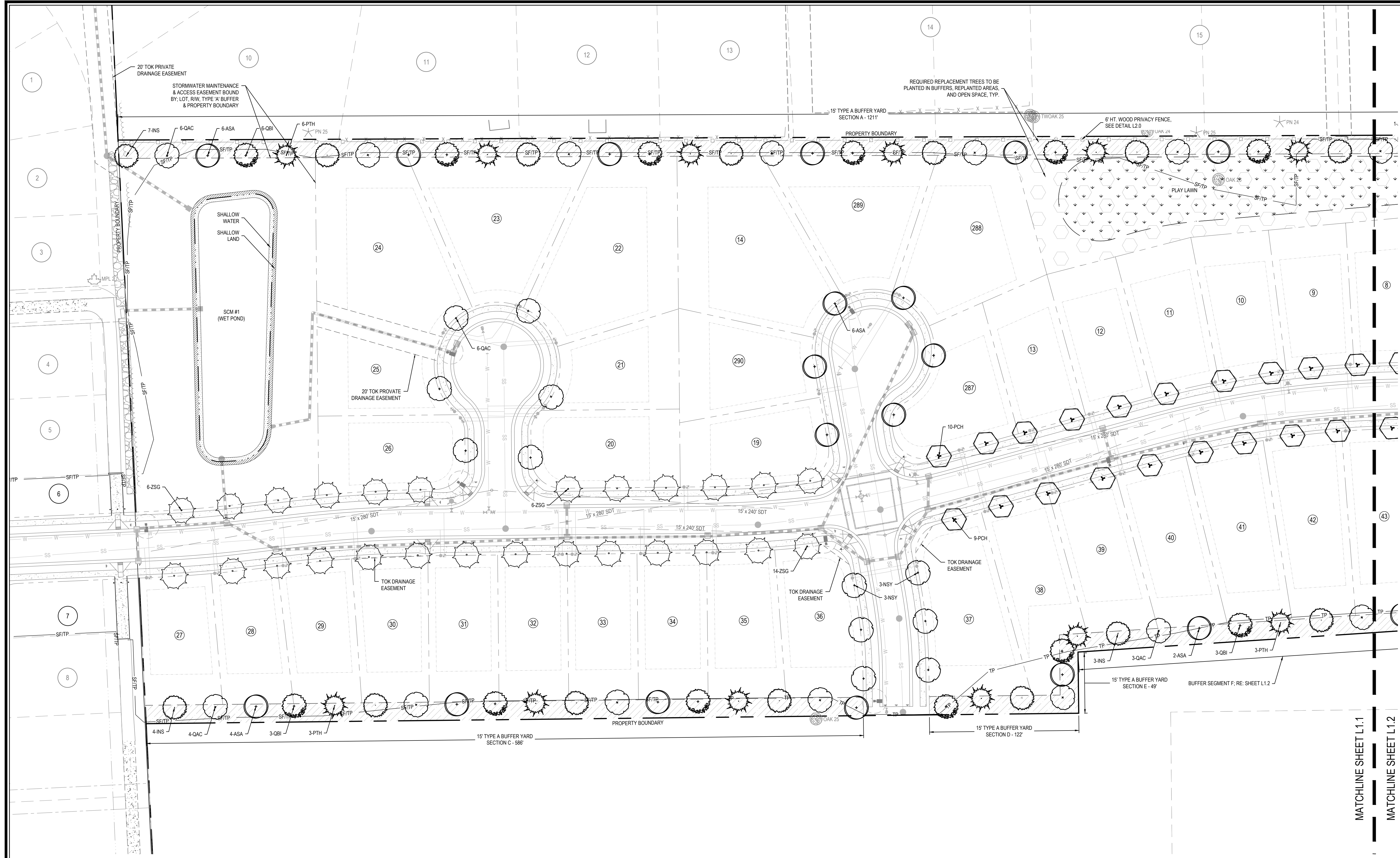
Job No.	02190259	Drawn By	WR
Date	08/14/20	Designer	WR



Revisions

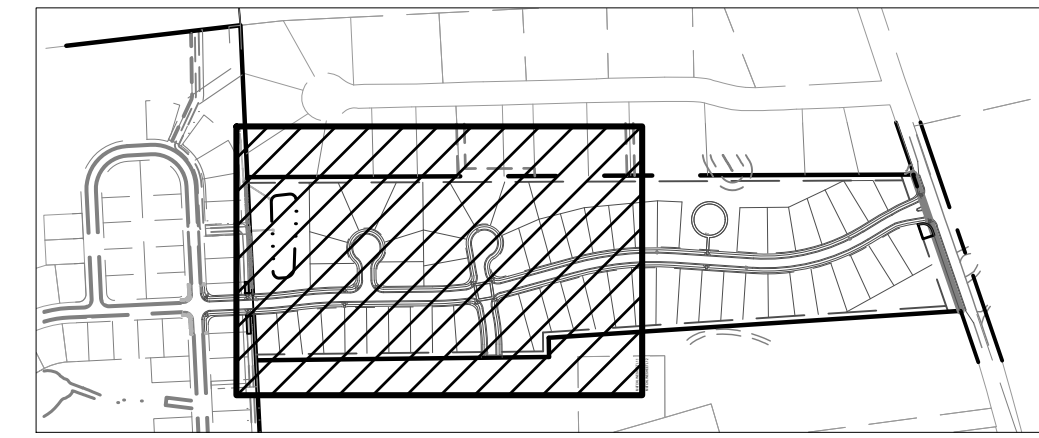
1	PER TOK COMMENTS	10/02/20

K:\19\190259\190259.dwg - 08/14/20 11:38:05 AM - YDRK - CDR/ENR



- PLANT SYMBOL KEY:**
- PCH - PISTACHIA CHINENSIS
 - ASA - ACER SACCHARUM 'LEGACY'
 - OBI - QUERCUS BICOLOR
 - ZSG - ZELKOVA SERRATA
 - INS - ILEX X NELLIE R. STEVENS'
 - PTH - PINUS TAEDA
 - QAC - QUERCUS ACCUTISSIMA
 - NSY - NYSSA SYLVATICA
 - CAC - CERDIS CANADENSIS

- HATCH LEGEND**
- BUFFER
 - OPEN SPACE
 - TREE CANOPY: REPLANTED AREA
 - SEEDED LAWN
 - SCM: SHALLOW LAND
 - SCM: SHALLOW WATER

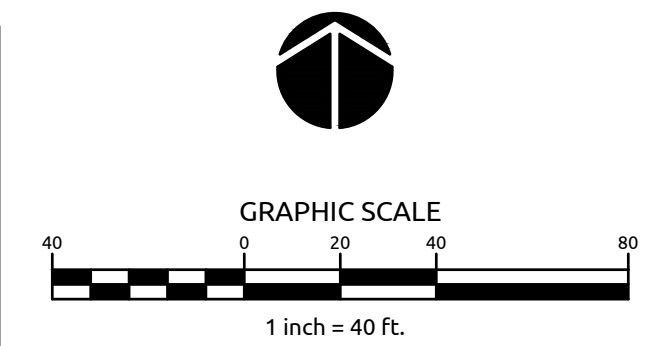


TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: _____ DATE: _____
DEVELOPMENT SERVICES ENGINEER

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

BY: _____ DATE: _____
ADMINISTRATOR




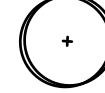


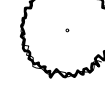




Job No.	02190259	Drawn By	WR
Date	08/14/20	Designer	WR



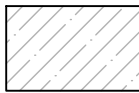

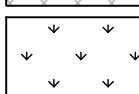

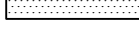

Revisions	1	PER TOK COMMENTS	10/02/20

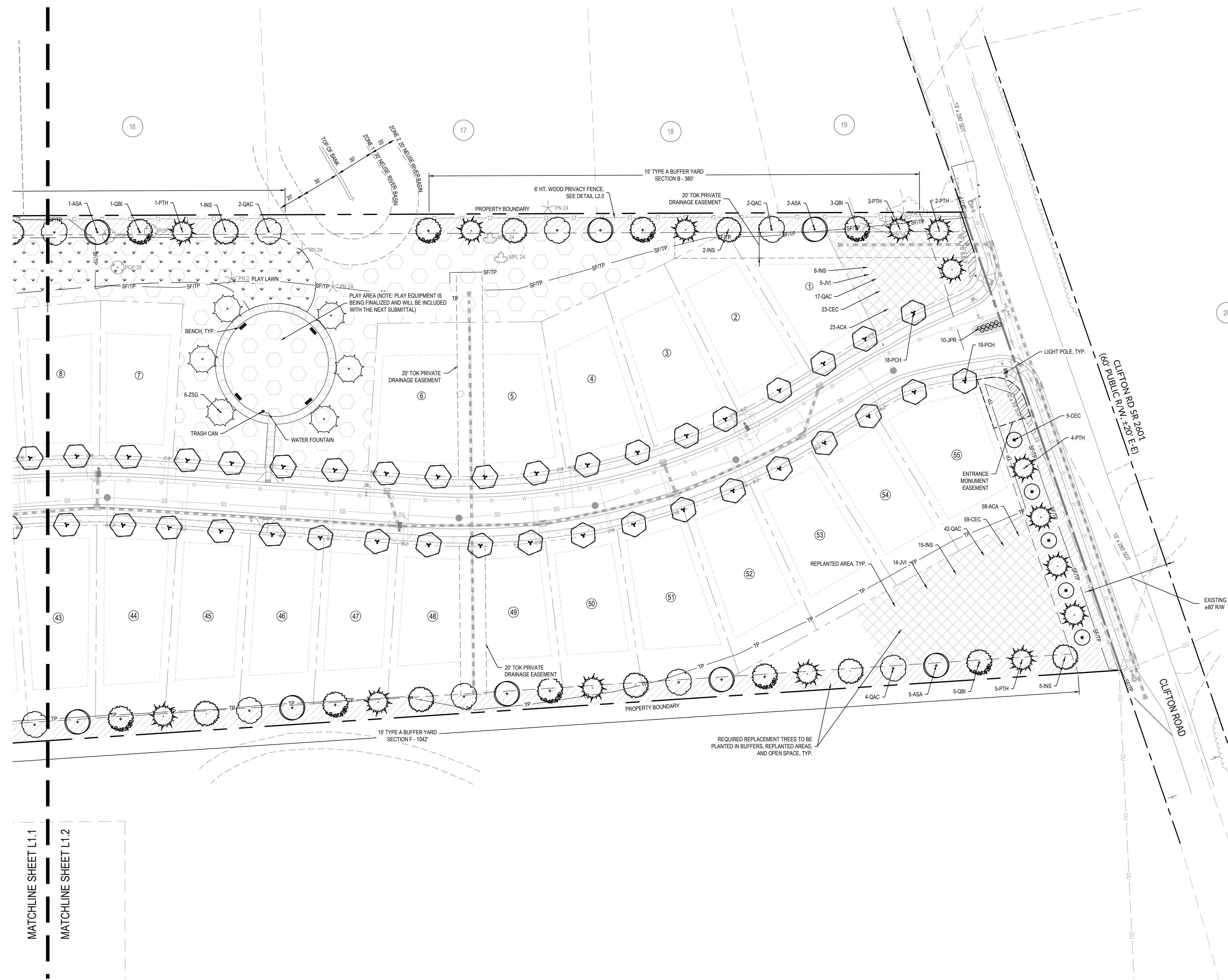
K:\19\2020\0259\0259.dwg - 08/14/20 11:38:52 AM - 10/02/20 11:38:52 AM - 10/02/20 11:38:52 AM

PLANT SYMBOL KEY:

-  PCH - PISTACHIA CHINENSIS
-  ASA - ACER SACCHARUM 'LEGACY'
-  QBI - QUERCUS BICOLOR
-  ZSG - ZELKOVA SERRATA
-  INS - ILEX X 'NELLIE R. STEVENS'
-  PTH - PINUS TAEDA
-  QAC - QUERCUS ACCUTISSIMA
-  NSY - NYSSA SYLVATICA
-  CAC - CERDIS CANADENSIS

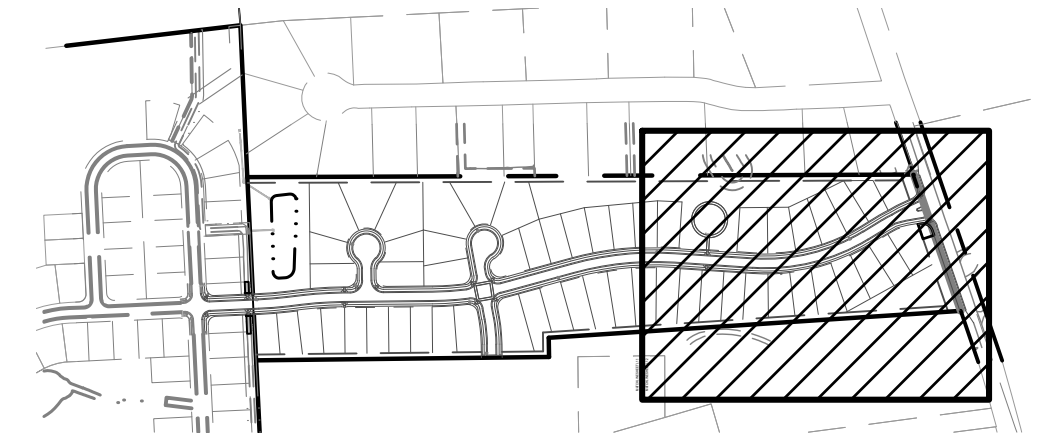
HATCH LEGEND

-  BUFFER
-  OPEN SPACE
-  TREE CANOPY: REPLANTED AREA
-  SEEDED LAWN
-  SCM: SHALLOW LAND
-  SCM: SHALLOW WATER



MATCHLINE SHEET L1.1
MATCHLINE SHEET L1.2

REQUIRED REPLACEMENT TREES TO BE PLANTED IN BUFFERS, REPLANTED AREAS, AND OPEN SPACE, TYP.

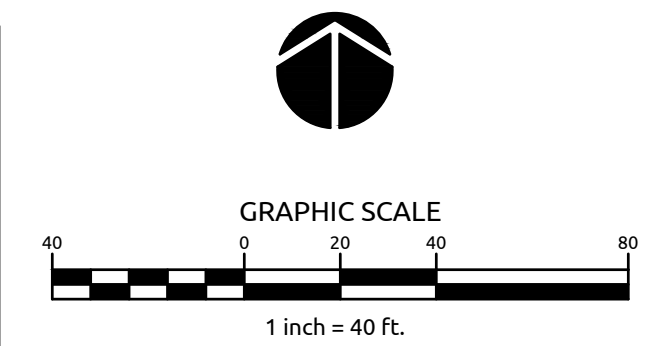


TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

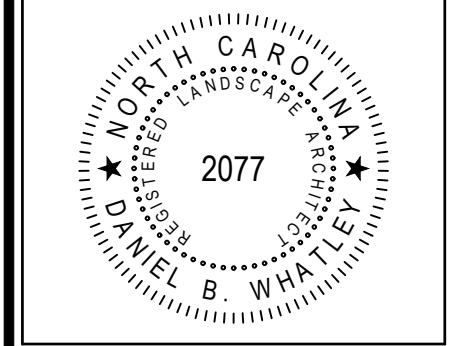
BY: _____ DATE: _____
DEVELOPMENT SERVICES ENGINEER

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

BY: _____ DATE: _____
ADMINISTRATOR

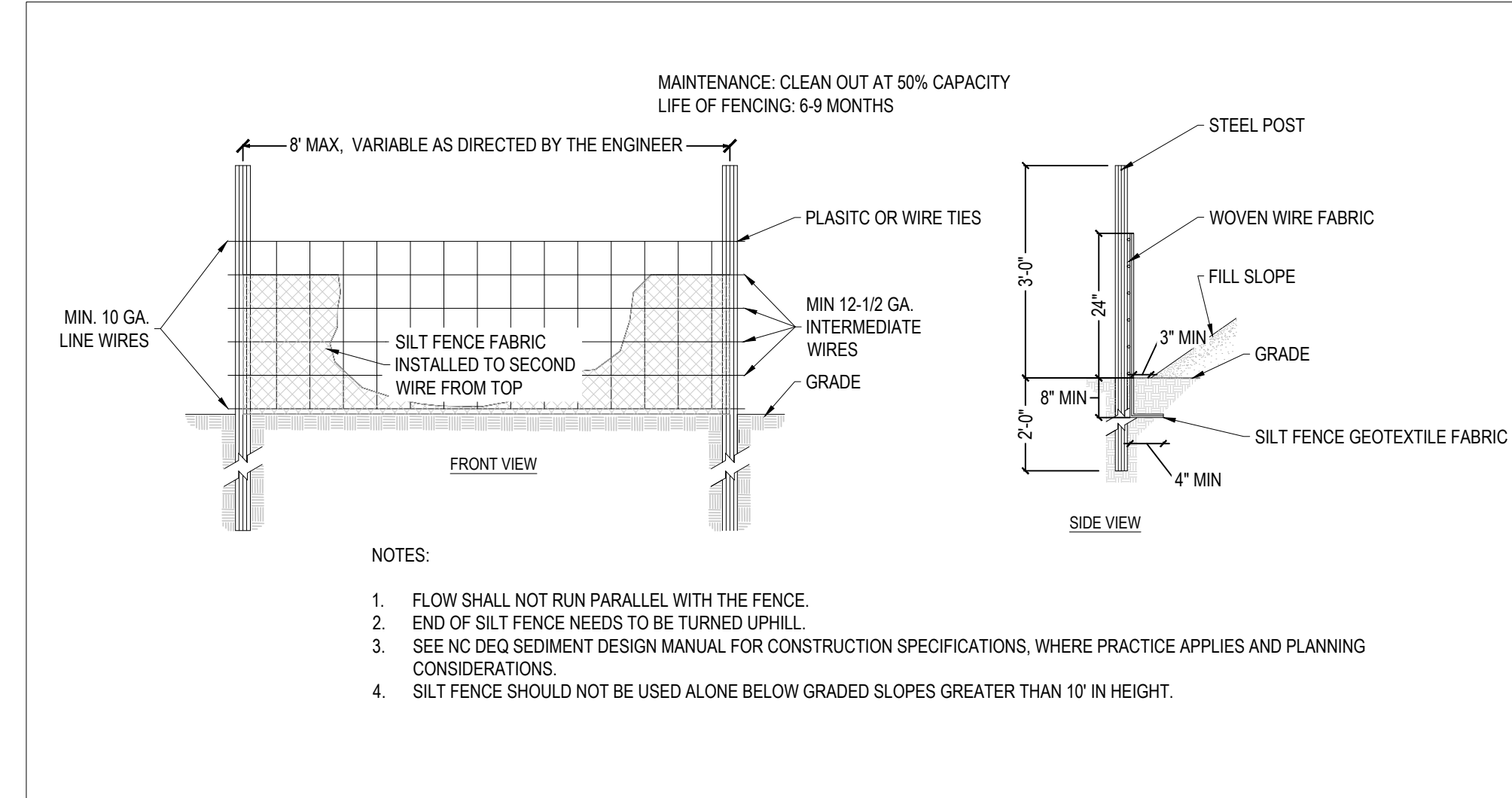


Job No.	02190259	Drawn By	WR
Date	08/14/20	Designer	WR

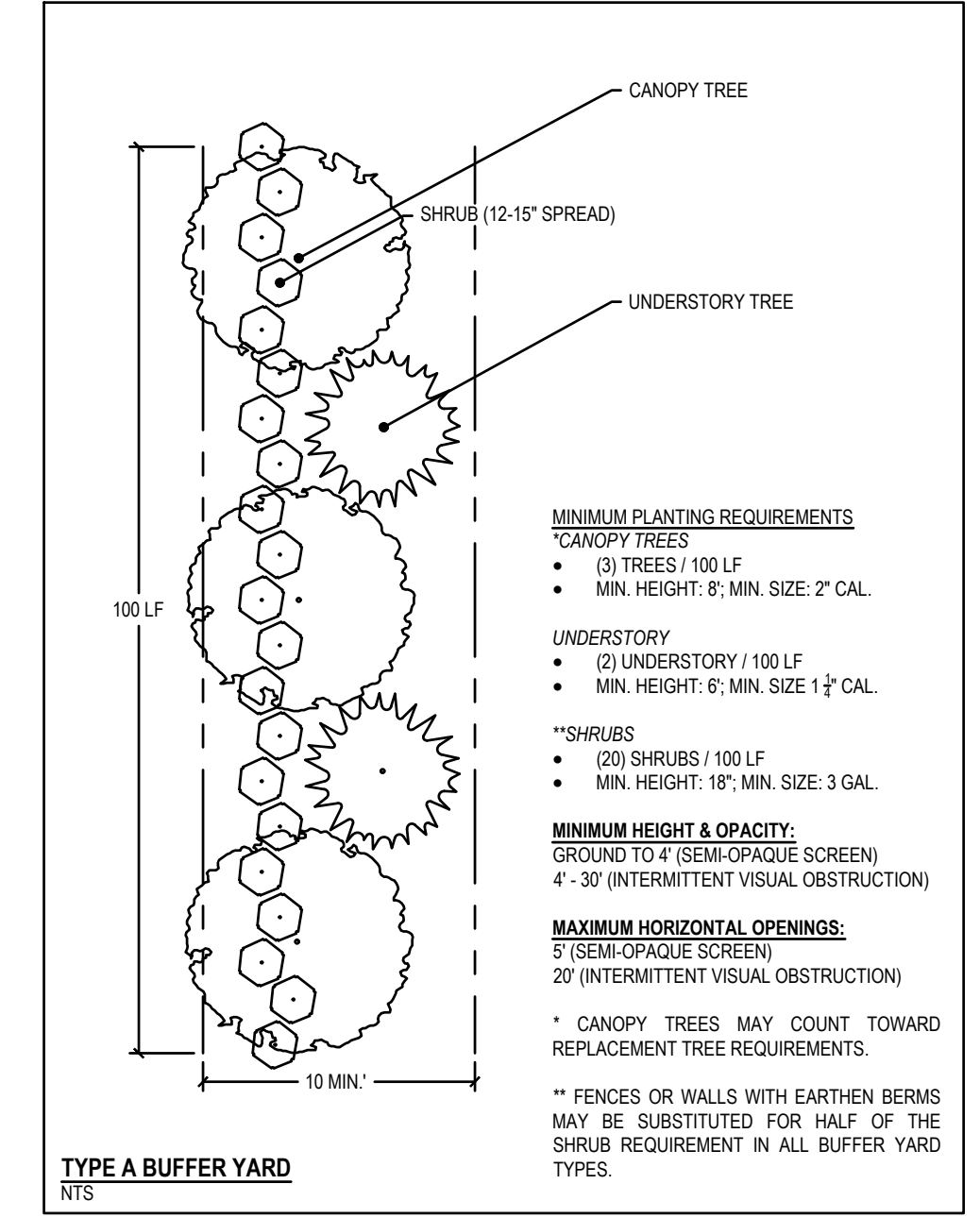


Revisions	Comments	Date
1	PER TOK COMMENTS	10/02/20

K:\19\190259\190259.dwg - 10/14/2020 11:38:15 AM - YORIK, CTD/ERN



TREE PROTECTION FENCE DETAIL
 NOTES:
 1. FLOW SHALL NOT RUN PARALLEL WITH THE FENCE.
 2. END OF SILT FENCE NEEDS TO BE TURNED UPHILL.
 3. SEE NC DEQ SEDIMENT DESIGN MANUAL FOR CONSTRUCTION SPECIFICATIONS, WHERE PRACTICE APPLIES AND PLANNING CONSIDERATIONS.
 4. SILT FENCE SHOULD NOT BE USED ALONE BELOW GRADED SLOPES GREATER THAN 10' IN HEIGHT.



LANDSCAPE CALCULATIONS:
RESIDENTIAL LANDSCAPING:
 • 1 CANOPY TREE / 2000 SF OF LOT AREA (OR A FRACTION THEREOF UP TO 20,000 SF)
 • NO EXISTING LARGE TREES MEASURING MORE THAN 8" DBH MAY BE COUNTED TOWARDS REQUIREMENT.
 • FOUNDATION PLANTINGS CONSISTING OF EVERGREEN SHRUBS SHALL BE INSTALLED ALONG THE ENTIRE FOUNDATION WALL OF THE BUILDING (MIN. 2' HEIGHT AND 4" O.C.)
STREET TREE PLANTINGS:
 • CANOPY TREES TO BE INSTALLED AT A MINIMUM AVERAGE DISTANCE OF 40' O.C. IN A PLANTING STRIP (MIN. WIDTH OF 5').
 • WHERE OVERHEAD UTILITIES EXIST PRIOR TO DEVELOPMENT, UNDERSTORY TREES MAY BE SUBSTITUTED.
 • STREET TREES SHALL BE PLACED AT LEAST 10' FROM LIGHT POLES AND 12' FROM ELECTRICAL TRANSFORMERS IN ORDER TO ALLOW THESE UTILITIES TO BE SAFELY SERVICED (UNDERSTORY TREES MAY BE PLACED WITHIN 5' OF SUCH DEVICES).
 • STREET TREES SHALL BE DECIDUOUS HARDWOODS AND SHALL MEET THE CRITERIA SET FORTH IN PREVIOUS NOTES/DETAILS.

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.

TREE REPLACEMENT QUANTITY CALCULATIONS

TOTAL TREE REPLACEMENT REQUIRED	= 142
40% EVERGREEN PROVIDED	= 57
60% DECIDUOUS PROVIDED	= 85

TREE REPLANTING AREA CALCULATIONS

3 CANOPY TREES / 500 SF = 28 REQUIRED	
5 UNDERSTORY TREES / 500 SF = 46 REQUIRED	
11,724 SF	
3 CANOPY TREES / 500 SF = 71 REQUIRED	
5 UNDERSTORY TREES / 500 SF = 117 REQUIRED	

15' TYPE A BUFFER SECTIONS

SECTION A - W/6' PRIVACY FENCE = 1211 LF
 CANOPY TREES (3 PER 100 LF)
 TOTAL TREES PROVIDED = 37
 UNDERSTORY TREES (5 PER 100 LF)
 TOTAL UNDERSTORY TREES PROVIDED = 61
 *SHRUBS (20 PER 100 LF)
 TOTAL SHRUBS PROVIDED = 122

SECTION B - W/6' PRIVACY FENCE = 380 LF
 CANOPY TREES (3 PER 100 LF)
 TOTAL TREES PROVIDED = 12
 UNDERSTORY TREES (5 PER 100 LF)
 TOTAL UNDERSTORY TREES PROVIDED = 19
 *SHRUBS (20 PER 100 LF)
 TOTAL SHRUBS PROVIDED = 38

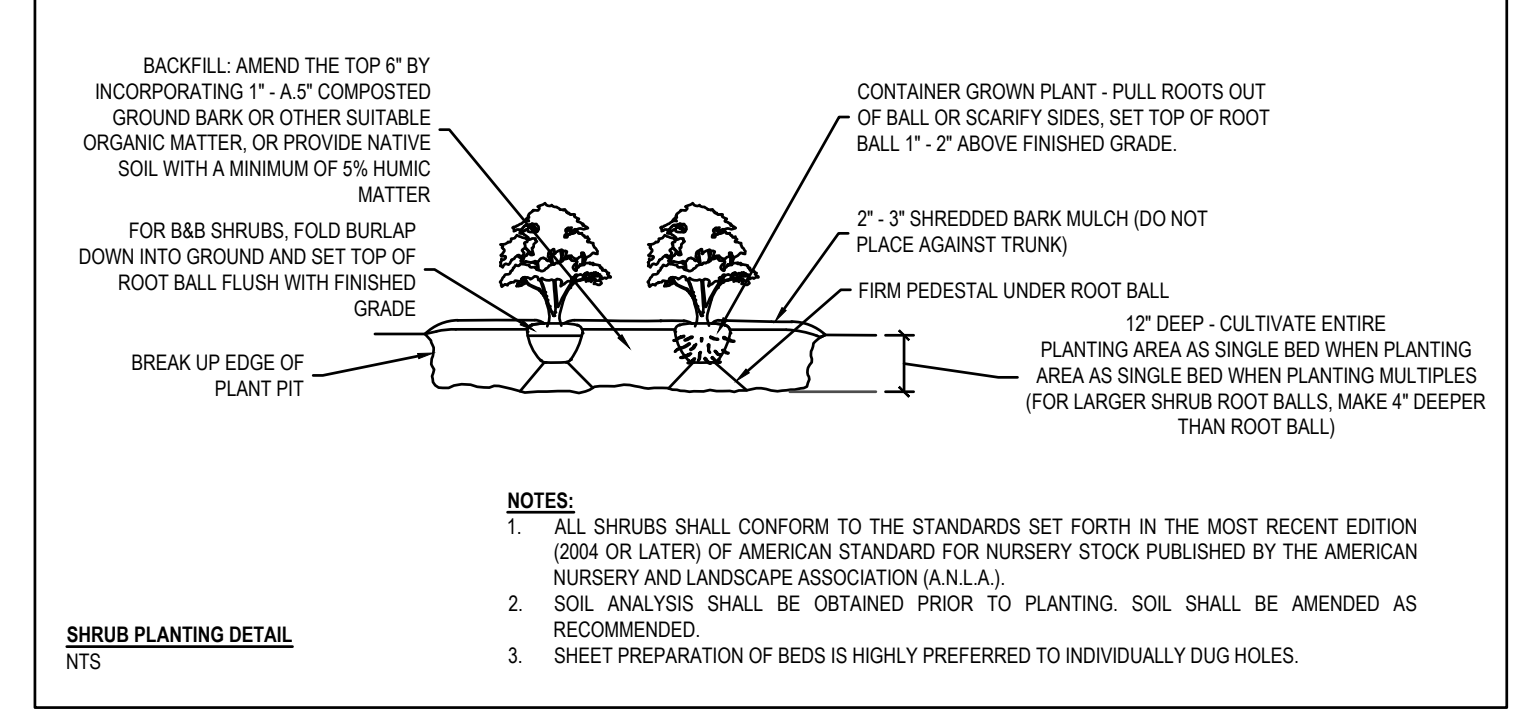
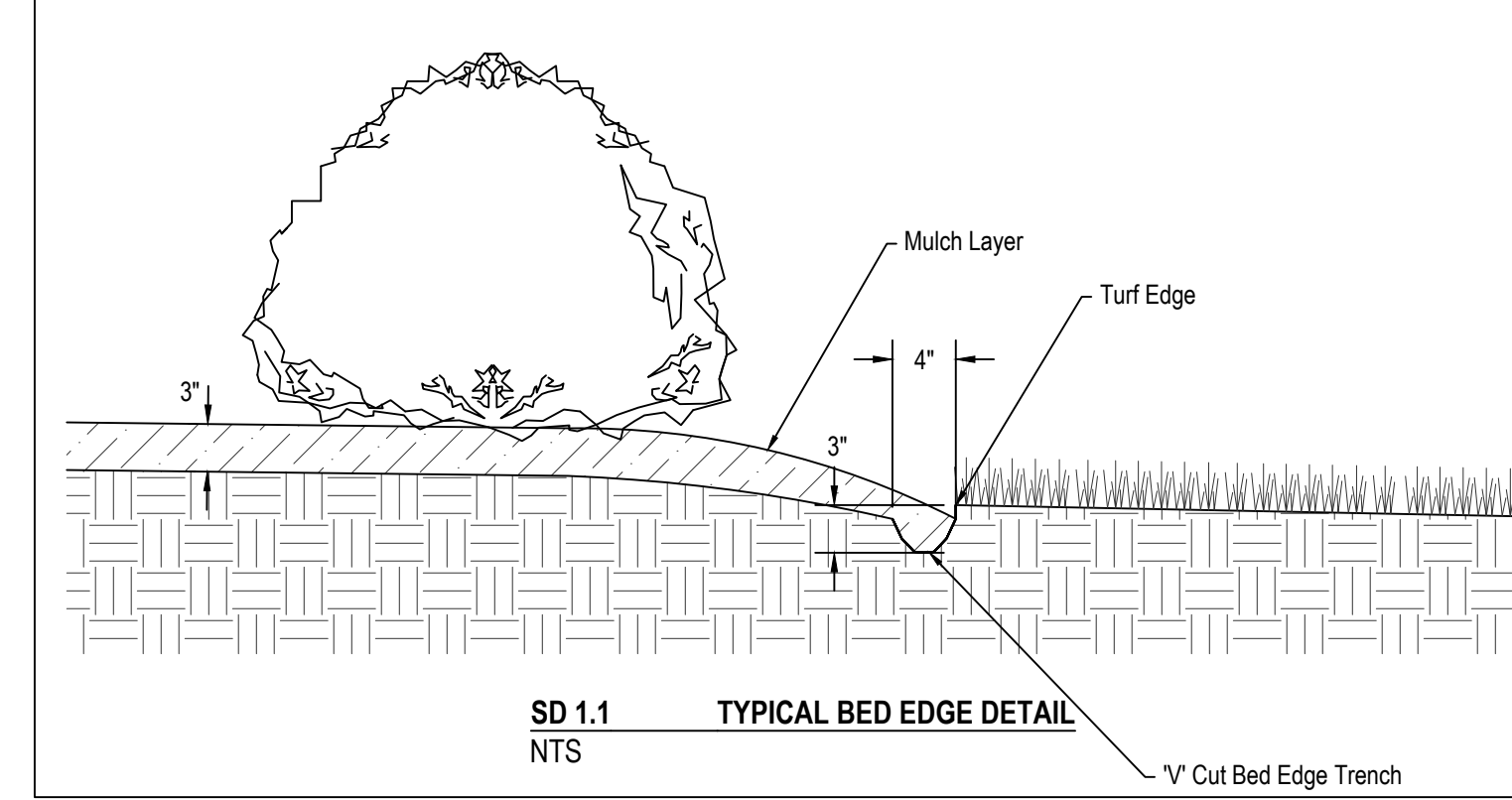
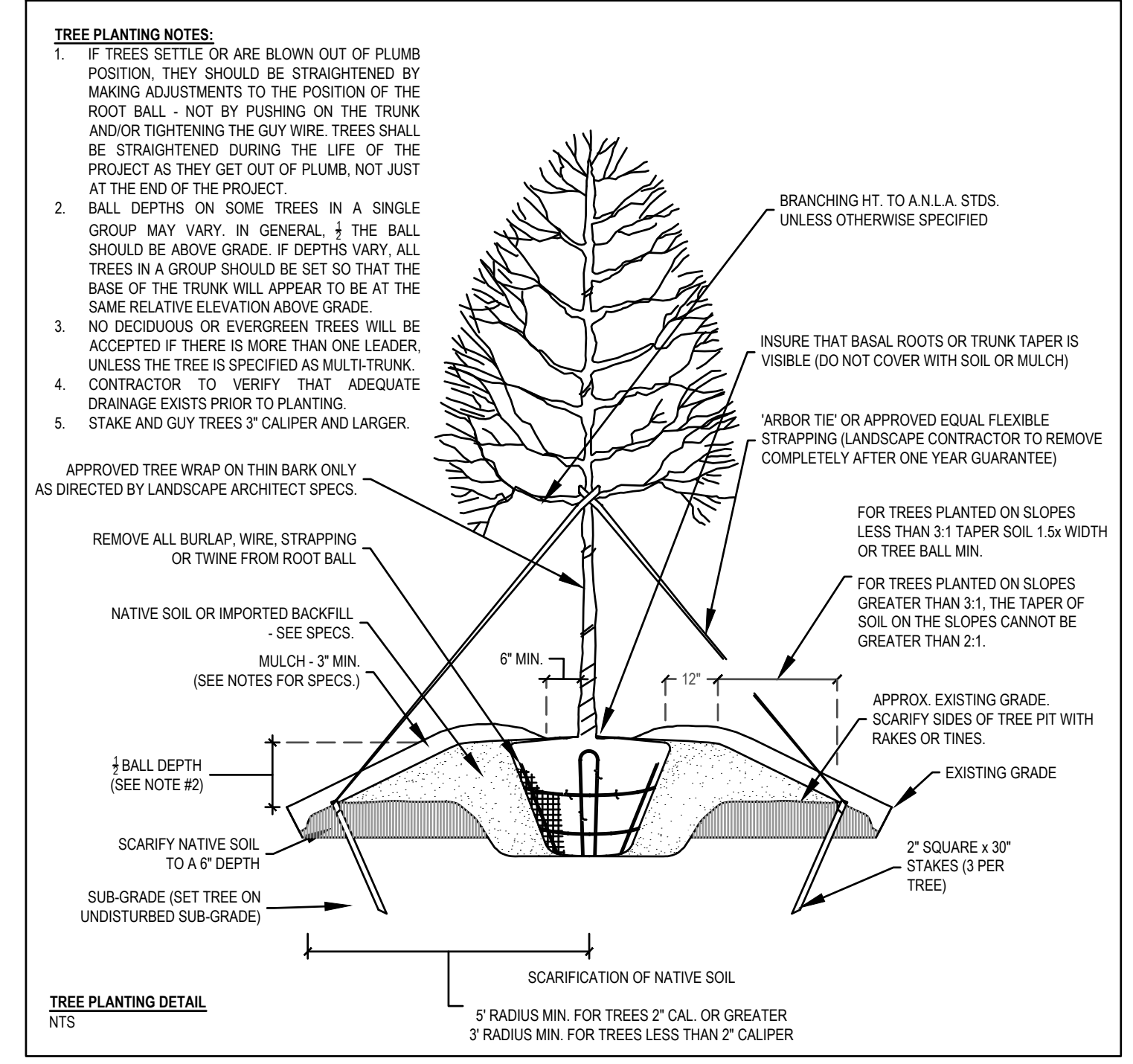
SECTION C = 586 LF
 CANOPY TREES (3 PER 100 LF)
 TOTAL TREES PROVIDED = 118
 UNDERSTORY TREES (5 PER 100 LF)
 TOTAL UNDERSTORY TREES PROVIDED = 30
 *SHRUBS (20 PER 100 LF)
 TOTAL SHRUBS PROVIDED = 118

SECTION D = 112 LF
 CANOPY TREES (3 PER 100 LF)
 TOTAL TREES PROVIDED = 4
 UNDERSTORY TREES (5 PER 100 LF)
 TOTAL UNDERSTORY TREES PROVIDED = 7
 *SHRUBS (20 PER 100 LF)
 TOTAL SHRUBS PROVIDED = 25

SECTION E = 49 LF
 CANOPY TREES (3 PER 100 LF)
 TOTAL TREES PROVIDED = 2
 UNDERSTORY TREES (5 PER 100 LF)
 TOTAL UNDERSTORY TREES PROVIDED = 3
 *SHRUBS (20 PER 100 LF)
 TOTAL SHRUBS PROVIDED = 25

SECTION F = 1042 LF
 CANOPY TREES (3 PER 100 LF)
 TOTAL TREES PROVIDED = 32
 UNDERSTORY TREES (5 PER 100 LF)
 TOTAL UNDERSTORY TREES PROVIDED = 53
 *SHRUBS (20 PER 100 LF)
 TOTAL SHRUBS PROVIDED = 209

* 80% OF ALL NEW SHRUBS SHALL BE EVERGREEN
 MATURE HEIGHT = 6' HT.
 INSTALLED SIZE = 18" HT.
CANOPY TREE SUMMARY
 CANOPY TREES REQUIRED FOR STREET TREES = 99
 CANOPY TREES REQUIRED FOR REPLANTING AREA = 99
 CANOPY TREES REQUIRED FOR TYPE A BUFFER = 105
 TOTAL CANOPY TREES REQUIRED = 303
 TOTAL CANOPY TREES PROVIDED = 316
 2.5" CALIPER REPLANTED TREES REQUIRED = 142
 2" CALIPER TREES REQUIRED = 174



TREE PROTECTION CALCULATIONS

TIER	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	21	23	4	0	0	0	25
TIER 2	80	76	14	0	0	0	102
TIER 3	7	0	6	1	0	0	15

* PER TOK UDO SECTION 8.5, REPLACEMENT TREES SHALL BE PLANTED AT A RATE OF 1 TREE PER 12' DBH
 NOTE: 142 REPLACEMENT TREES WILL BE PLANTED IN PROPOSED BUFFER YARD LOCATIONS OR OPEN SPACE. SEE LANDSCAPE PLAN FOR BUFFER YARD PLANTING DETAIL.

STREET TREE CALCULATIONS

Street Name	Length (LF)	REQUIRED TREES 1 per 40 LF	PROVIDED TREES
STONE FALLS WAY	1624	82	82
ROCK TRAIL COURT	85	5	6
FOGGY POINT TRAIL	232	12	12

PLANT SCHEDULE

QTY	KEY	BOTANICAL NAME	COMMON NAME	ROOT SIZE	HEIGHT	NOTES
26	ASA	<i>Acer saccharum 'Legacy'</i>	Legacy Sugar Maple	88B	2" CAL. MIN.	8' HT. MIN. STREET, BUFFER
6	NSY	<i>Wycoss sylvatica</i>	Black Gum	88B	2" CAL. MIN.	8' HT. MIN. STREET
56	PCH	<i>Pistacia chinensis</i>	Chinese Pistache	88B	2" CAL. MIN.	8' HT. MIN. STREET
12	GAC	<i>Quercus acutifolia</i>	Sawtooth Oak	88B	2" CAL. MIN.	8' HT. MIN. STREET, REPLANTED AREA
26	ZSG	<i>Zelkova serrata</i>	Japanese Zelkova	88B	2" CAL. MIN.	8' HT. MIN. STREET
27	PTH	<i>Pinus taeda</i>	Loblolly Pine	88B	2" CAL. MIN.	8' HT. MIN. BUFFER, EVERGREEN
21	QB	<i>Quercus bicolor</i>	Swamp White Oak	88B	2" CAL. MIN.	8' HT. MIN. BUFFER
UNDERSTORY TREES						
81	ACA	<i>Ammannlicher canadensis</i>	Servicberry	CONT.	1.25" CAL. MIN.	8' HT. MIN. REPLANTED AREA
82	CEC	<i>Cercis canadensis</i>	Eastern Redbud	CONT.	1.25" CAL. MIN.	8' HT. MIN. REPLANTED AREA
SHRUBS						
10	JPR	<i>Juniperus procumbens 'Nana'</i>	Dwarf Japanese Garden Juniper	CONT.	3 GAL. MIN.	18" WIDE MIN. MATCHED

REPLACEMENT TREES

QTY	KEY	BOTANICAL NAME	COMMON NAME	ROOT SIZE	HEIGHT	NOTES
CANOPY TREES						
43	NIS	<i>Ilex 'Nellie R. Stevens'</i>	Nellie R. Stevens Holly	88B	2.5" CAL. MIN.	8' HT. MIN. REPLANTED AREA, BUFFERS, EVERGREEN
19	JVI	<i>Juniperus virginiana</i>	Eastern Red Cedar	88B	2.5" CAL. MIN.	8' HT. MIN. REPLANTED AREA, EVERGREEN
74	GAC	<i>Quercus acutifolia</i>	Sawtooth Oak	88B	2.5" CAL. MIN.	8' HT. MIN. REPLANTED AREA, BUFFERS
6	ZSG	<i>Zelkova serrata</i>	Japanese Zelkova	88B	2.5" CAL. MIN.	8' HT. MIN. OPEN SPACE

BUFFER PLANTS

QTY	KEY	BOTANICAL NAME	COMMON NAME	ROOT SIZE	HEIGHT	NOTES
UNDERSTORY TREES						
58	CEC	<i>Cercis canadensis</i>	Eastern Redbud	88B	1.25" CAL. MIN.	8' HT. MIN. MATCHED
56	MST	<i>Magnolia stellata</i>	Star Magnolia	88B	1.25" CAL. MIN.	8' HT. MIN. MATCHED
57	PCA	<i>Prunus caroliniana</i>	Carolina Cherry Laurel	88B	1.25" CAL. MIN.	8' HT. MIN. MATCHED, EVERGREEN
SHRUBS						
140	MCE	<i>Myrica cerifera</i>	Wax Myrtle Or Bayberry	CONT.	3 GAL. MIN.	18" HT. MIN. MATCHED, EVERGREEN
139	LOC	<i>Loropetalum chinense f. rubrum 'Burgundy'</i>	Redleaf Loropetalum	CONT.	3 GAL. MIN.	18" HT. MIN. MATCHED, EVERGREEN
139	ILC	<i>Ilex crenata 'Rotundifolia'</i>	Japanese Holly	CONT.	3 GAL. MIN.	18" HT. MIN. MATCHED, EVERGREEN
52	FIN	<i>Forsythia x intermedia</i>	Forsythia	CONT.	3 GAL. MIN.	18" HT. MIN. MATCHED
52	CAM	<i>Calliopsis americana</i>	Beautyberry	CONT.	3 GAL. MIN.	18" HT. MIN. MATCHED

WET POND - SCM #1

KEY	QTY	BOTANICAL NAME	COMMON NAME	ROOT SIZE	HEIGHT	NOTES
SHALLOW LAND = 1594 SF W/ 50 HERB. PLANTS/200 SF = 400						
AAM	100	<i>Acorus americanus</i>	Sweetflag	CONT.	2.25" PLUG (32S)	MIN. 24" O.C. 25% SHARED COVERAGE
AIN	100	<i>Asclepias incarnata</i>	Butterfly Milkweed	CONT.	2.25" PLUG (32S)	MIN. 24" O.C. 25% SHARED COVERAGE
JNE	100	<i>Juncus effusus</i>	Soft Rush	CONT.	2.25" PLUG (32S)	MIN. 24" O.C. 25% SHARED COVERAGE
EDU	100	<i>Eupatorium dubium</i>	Dwarf Joe Pye Weed	CONT.	2.25" PLUG (32S)	MIN. 24" O.C. 25% SHARED COVERAGE
SHALLOW WATER = 1537 SF W/ 50 HERB. PLANTS/200 SF = 388						
SGL	97	<i>Sagittaria latifolia</i>	Broadleaf Arrowhead	CONT.	2.25" PLUG (32S)	MIN. 24" O.C. 25% SHARED COVERAGE
PVC	97	<i>Pontederia cordata</i>	Pickersleeve	CONT.	2.25" PLUG (32S)	MIN. 24" O.C. 25% SHARED COVERAGE
SAC	97	<i>Saururus cernuus</i>	Lizard's Tail	CONT.	2.25" PLUG (32S)	MIN. 24" O.C. 25% SHARED COVERAGE
JNB	97	<i>Juncus effusus</i>	Soft Rush	CONT.	2.25" PLUG (32S)	MIN. 24" O.C. 25% SHARED COVERAGE

Note: Shared coverage means that the species will be evenly interspersed on their designated shelf across a single 24" OC square grid.

GENERAL LANDSCAPE NOTES

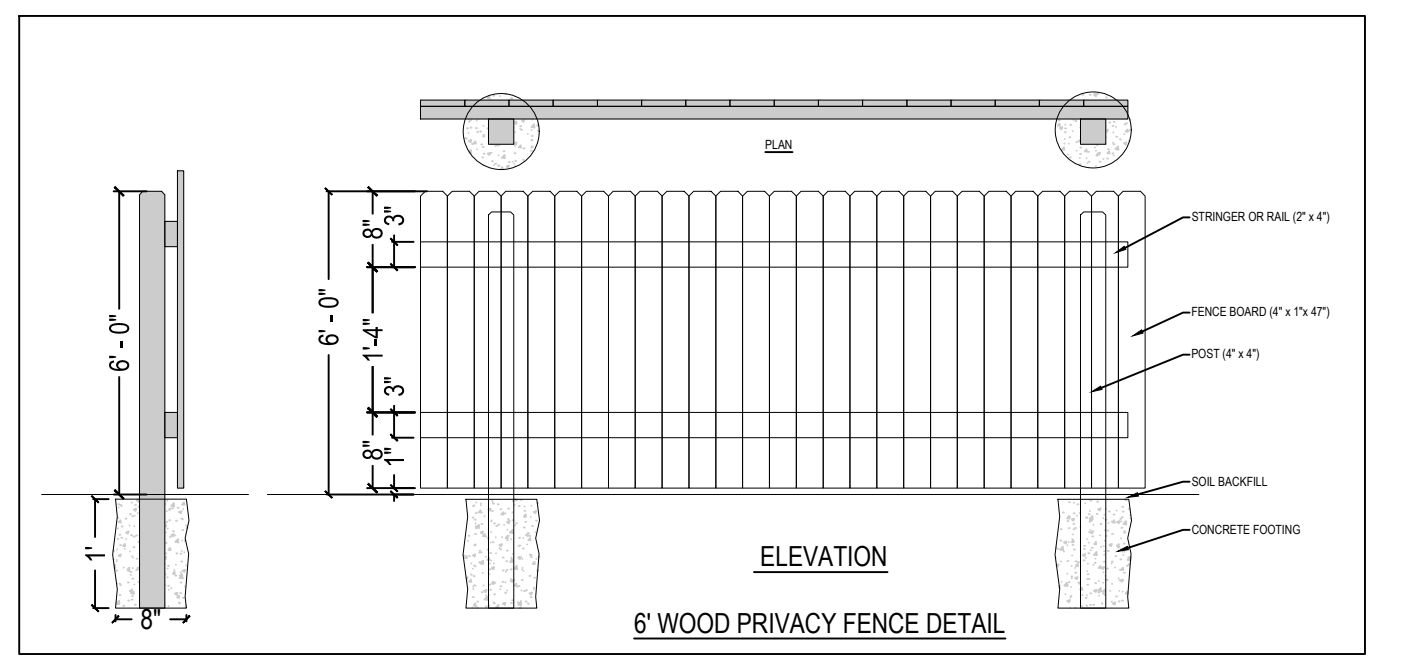
- LANDSCAPED AREAS SHALL NOT CONTAIN ANY DEVELOPMENT, IMPERVIOUS SURFACES OR SITE FEATURES THAT DO NOT FUNCTION TO MEET THE APPLICABLE STANDARDS FOR THAT AREA OR THAT REQUIRE REMOVAL OF EXISTING SIGNIFICANT VEGETATION.
- NO GRADING, DEVELOPMENT OR LAND-DISTURBING ACTIVITIES SHALL OCCUR WITHIN AREA BUFFER YARDS IF FOREST CANOPY, SPECIMEN TREES OR SIGNIFICANT VEGETATION EXISTS WITHIN THESE AREAS, UNLESS APPROVED BY THE ADMINISTRATOR. IF GRADING WITHIN A BUFFER YARD IS PROPOSED, SLOPES 3:1 OR LESS ARE ENCOURAGED TO ENSURE PROPER TRANSITION TO ADJACENT PROPERTY AND TO FACILITATE LANDSCAPING AND MAINTENANCE.
- PERMANENT OFF-SITE LANDSCAPE EASEMENTS MAY BE USED TO MEET REQUIRED BUFFER YARD REQUIREMENTS THAT THE SIZE OR SHAPE OF THE PARCEL SIGNIFICANTLY RESTRICTS THE ABILITY TO REASONABLY USE THE PROPERTY AND MEET THE BUFFER YARD REQUIREMENTS. THESE EASEMENTS MUST BE RECORDED PRIOR TO OR IN CONJUNCTION WITH THE APPROVAL OF THE SITE OR SUBDIVISION PLAN.
- NEW PLANT MATERIAL SHOULD COMPLY WITH EXISTING VEGETATION TO THE SITE, THE USE OF DROUGHT TOLERANT, INDIGENOUS, NATIVE AND/OR REGIONALLY GROWN SPECIES OF TREES, SHRUBS AND GROUNDCOVERS ARE ENCOURAGED IN ORDER TO MAKE PLANTED AREAS COMPATIBLE WITH EXISTING NATIVE HABITATS AND TO REDUCE DEPENDENCY ON IRRIGATION.
- ALL INSTALLATIONS SHALL BE IN ACCORDANCE WITH TOWN OF KNIGHTDALE STANDARD SPECIFICATIONS & DETAIL MANUAL. LANDSCAPING SHOULD BE OF SUFFICIENT SIZE SO THAT MATURE APPEARANCE WILL BE ACHIEVED WITHIN (3) YEARS OF INSTALLATION FOR SHRUBS AND WITHIN (5) YEARS OF INSTALLATION FOR TREES, WHERE THE MINIMUM SIZE REQUIREMENTS OVERLAP, THE HIGHER STANDARD SHALL PREVAIL.
- EACH CANOPY TREE SHALL BE PROVIDED WITH A MINIMUM PEROUS GROUND AREA OF 300 SF FOR ROOT GROWTH (EXCEPTION: STREET TREES) AND SHOULD BE PLANTED ON SLOPES NOT TO EXCEED 1:4 VERTICAL TO HORIZONTAL DISTANCE. GROUND COVER MUST BE PLANTED WITH ON-CENTER SPACING EQUIVALENT TO THE AVERAGE MATURE SPREAD FOR EACH PARTICULAR SPECIES.
- ALL NEW PLANT MATERIAL SHALL BE OF GOOD QUALITY, FREE FROM DISEASE, INSTALLED IN SOUND MANNER, MULCHED (3-4" LAYER) AND MEET STANDARDS SET FORTH IN THE AMERICAN STANDARD FOR NURSERY STOCK BY AMERICAN NURSERY & LANDSCAPE ASSOCIATION (ANLA). THE SELECTION OF PLANTS, PLANTING METHODS, MINIMUM HEIGHT, ROOT BALL AND CONTAINER SIZE, NUMBER OF BRANCHES AND WIDTH, SHALL CONFORM TO THE AMERICAN STANDARD FOR NURSERY STOCK PUBLISHED BY THE ANLA FOR THAT TYPE OF TREE OR SHRUB AT THE TIME OF INSTALLATION.
- ALL NEW TREES SHALL ALSO BE PROPERLY GUDED AND STAKED AT THE TIME OF PLANTING.
- ADEQUATE DRAINAGE AND MULCHING SHALL BE PROVIDED IN ALL CASES, PARTICULARLY FOR MEDIANS AND ISLANDS.
- INSTALLATION PRACTICES SHALL BE UTILIZED WHICH PRESERVE AND REPLACE EXISTING TOPSOIL OR AMEND THE SOIL TO REDUCE COMPACTION.
- ALL PORTIONS OF A LANDSCAPED AREA NOT PLANTED WITH SHRUBS AND TREES OR COVERED BY A WALL OR OTHER SCREENING DEVICE SHALL BE PLANTED WITH GROUND COVER AND/OR GRASS, OR COVERED WITH NATURAL MULCH WITH A MINIMUM DEPTH OF 2".
- WHERE A CANOPY TREE IS REQUIRED AND OVERHEAD UTILITY LINES EXIST, (2) UNDERSTORY TREES SHALL BE SUBSTITUTED WITH THE APPROVAL OF THE ADMINISTRATOR.
- NOTHING SHALL BE PLANTED OR INSTALLED WITHIN AN UNDERGROUND OR OVERHEAD UTILITY EASEMENT OR DRAINAGE EASEMENT WITHOUT THE CONSENT OF THE TOWN AND THE EASEMENT HOLDER AT THE TIME OF MASTER PLAN APPROVAL.
- CONTRACTOR SHALL WARRANT ALL NEW PLANT MATERIAL FOR (1) YEAR FROM TIME OF INSTALLATION.
- ALL LANDSCAPING, MULCHING AND SEEDING SHALL BE INSTALLED IN ACCORDANCE WITH THE APPROVED SITE PLAN AND THE STANDARDS OF THIS CHAPTER PRIOR TO ISSUANCE OF A CERTIFICATE OF OCCUPANCY. REQUESTS FOR A DELAY IN COMPLYING WITH THIS REQUIREMENT WILL BE CONSIDERED FOLLOWING A WRITTEN REQUEST DIRECTED TO THE ADMINISTRATOR. SUCH REQUEST FOR A DELAY SHALL NOTE THE TIMEFRAME DURING WHICH THE PLANTING SHALL BE COMPLETED. CERTIFICATES OF OCCUPANCY WILL BE ISSUED WITH THE APPROVAL OF A REQUEST FOR PLANTING DELAY, IF DEEMED REASONABLE.
- THE TOWN MAY ISSUE A TEMPORARY CERTIFICATE OF OCCUPANCY FOR A PERIOD OF 30-180 DAYS, RELATIVE TO THE NEXT PLANTING SEASON, WHILE THE TOWN OF KNIGHTDALE MAY ALSO ISSUE A TEMPORARY CERTIFICATE OF OCCUPANCY FOR A PERIOD NOT TO EXCEED 30 DAYS.
- WHERE SIGHT TRIANGLES FOR DRIVES OR STREETS OVERLAP SCREENING, GROUND COVER VEGETATION SHALL BE USED EXCLUSIVELY (EXCEPTION SINGLE-FAMILY DWELLINGS & DUPLEXES).
- ALL SIDES OF PARKING LOTS SHALL BE SCREENED WITH A TYPE 'A' BUFFER YARD. SIDES ADJACENT TO AN ARTERIAL SHALL BE SCREENED WITH A TYPE 'B' BUFFER YARD. OTHER VEHICLE ACCOMMODATION AREAS SHALL BE SCREENED FROM OFF-SITE VIEW WITH A TYPE 'B' BUFFER YARD.
- ABOVE GROUND UTILITIES AND ENCLOSED CONTAINMENT AREAS FOR TRASH AND RECYCLABLES SHALL BE SCREENED BY ELEMENTS OF A TYPE 'B' BUFFER YARD THAT PERTAIN TO SEMI-OPAQUE SCREENS UP TO 6' IN HEIGHT OR THE HEIGHT OF THE UTILITY OR ENCLOSURE, WHICHEVER IS LESS.

BERMS WITH A FENCE OR WALL:

- ALL BERMS SHALL NOT EXCEED A SLOPE WITH MAXIMUM RISE OF 1" TO A RUN OF 2", A MAXIMUM HEIGHT OF 4" AND A MAXIMUM WIDTH OF 40% OF THE REQUIRED BUFFER WIDTH.
- BERMS SHALL BE STABILIZED WITH A GROUND COVER OR OTHER SUITABLE VEGETATION OR PERMANENT SLOPE RETENTION DEVICE. BERMS TALLER THAN 4" SHALL BE APPROVED BY THE ADMINISTRATOR ON A CASE BY CASE BASIS, BUT SHALL CONFORM TO THE SLOPE AND WIDTH RESTRICTIONS AS PREVIOUSLY DETAILED.

MAINTENANCE:

- THE OWNER(S) OF THE PROPERTY SHALL BE RESPONSIBLE FOR ALL NATURAL AND PHYSICAL FEATURES REQUIRED BY THE LANDSCAPE SECTION OF THE UDO AND SHALL PRESERVE AND MAINTAIN THESE FEATURES IN HEALTHY GROWING CONDITIONS, REPLACE THEM WHEN NECESSARY, AND KEEP THE AREAS AROUND THEM FREE OF REFUSE AND DEBRIS IN A MANNER THAT PREVENTS CUMULATIVE DEBRIS FROM WASHING ONTO ADJACENT RIGHT-OF-WAY.
- THE USE OF IRRIGATION IS PERMITTED IN ALL REQUIRED LANDSCAPING AREAS AS REQUIRED BY THE LANDSCAPE SECTION OF THE UDO AND MAY CONNECT TO THE PUBLIC WATER SYSTEM SUBJECT TO THE REQUIREMENTS OF THE TOWN'S STANDARDS SPECIFICATIONS AND DETAILS MANUAL AND OTHER APPLICABLE TOWN ORDINANCES OR POLICIES. THE USE OF MOISTURE METERING DEVICES AND AUTOMATIC TIMERS WITH ANY IRRIGATION SYSTEM IS REQUIRED. THE USE OF XERISCAPE PRACTICES AND DRIP IRRIGATION IS ALSO ENCOURAGED, UNLESS OTHERWISE REQUIRED.
- ALL VEGETATION SHOULD BE ALLOWED TO REACH AND BE MAINTAINED AT ITS NATURE SIZE.
- TREE TOPPING: THE REMOVAL OF MORE THAN 25% OF A TREE'S CANOPY IS CONSIDERED TO BE DAMAGE AND MS CONFIGUREMENT AND SHALL BE PROHIBITED ON ALL TREES ON PUBLIC PROPERTY, PUBLIC RIGHT-OF-WAY, REQUIRED TREE SAVE AREAS AND PARKING LOT LANDSCAPING AREAS UNLESS OTHERWISE APPROVED BY THE LAND USE REVIEW BOARD (LURB). TREES LOCATED WHERE PROPER PRUNING PRACTICES ARE IMPRACTICAL MAY BE EXEMPTED FROM THIS ARTICLE AT THE DETERMINATION OF THE ADMINISTRATOR.
- THE OWNER OF ANY TREE OR SHRUB ON PRIVATE PROPERTY THAT OVERHANGS ANY PUBLIC RIGHT-OF-WAY WITHIN THE TOWN SHALL PRUNE THE BRANCHES SO THAT SUCH BRANCHES SHALL NOT OBSTRUCT THE LIGHT FROM ANY STREET LAMP OR OBSTRUCT THE VIEW OF ANY STREET INTERSECTION AND SO THAT THERE SHALL BE A CLEAR SPACE OF 6' ABOVE THE SURFACE OF THE STREET OR SIDEWALK.
- THE TOWN OF KNIGHTDALE PUBLIC WORKS DIRECTOR IS AUTHORIZED TO PRUNE TREES AND SHRUBS FROM PUBLIC PROPERTIES AND PUBLIC RIGHTS-OF-WAY.
- THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (NCDOT) IS AUTHORIZED TO PRUNE TREES AND SHRUBS IN THE PUBLIC RIGHTS-OF-WAY OWNED BY THE STATE OF NORTH CAROLINA.
- THE REMOVAL BY ANY ENTITY OF A TREE OR SHRUB THAT IS DEAD, INFECTED BY DISEASE, OR DETERMINED TO BE A HAZARD TO PUBLIC SAFETY AND WELFARE AND SUBSEQUENT REPLACEMENT MAY BE APPROVED BY THE ADMINISTRATOR. TREES REMOVED MUST BE REPLACED IN ACCORDANCE WITH THE REPLACEMENT PROVISIONS OF THE UDO.
- OWNERS SHALL REMOVE ALL DEAD, DISEASED OR HAZARDOUS TREES AND SHRUBS AS WELL AS ANY BROKEN OR DECAYED LIMBS WHICH CONSTITUTE A MENACE TO THE SAFETY OF THE PUBLIC. THE TOWN SHALL HAVE THE RIGHT TO CAUSE THE REMOVAL OF ANY DEAD OR DISEASED TREES AND SHRUBS ON PRIVATE PROPERTY WHEN SUCH TREE OR SHRUB CONSTITUTES A HAZARD TO LIFE AND PROPERTY, OR HARBOR INSECTS OR DISEASE WHICH CONSTITUTES A POTENTIAL THREAT TO OTHER VEGETATION IN THE TOWN. THE ADMINISTRATOR WILL NOTIFY PROPERTY OWNER(S) OF THE REQUIREMENT TO REMOVE SUCH TREES, SHRUBS OR LIMBS. REMOVAL SHALL BE DONE AT THE OWNER(S) EXPENSE WITHIN 60 DAYS AFTER THE DATE OF SERVICE OF THE WRITTEN NOTICE. FAILURE TO COMPLY WITH SUCH PROVISIONS SHALL CONSTITUTE A VIOLATION OF THE TOWN OF KNIGHTDALE ORDINANCE AND SHALL BE SUBJECT TO THE APPLICABLE PROCEDURES AND PENALTIES.
- WHEN REMOVING TREES AND SHRUBS, STUMPS SHALL BE REMOVED OR GROUND TO A MINIMUM DEPTH OF 4".
- IN THE EVENT THAT ANY REQUIRED VEGETATION IS SEVERELY DAMAGED DUE TO AN UNUSUAL WEATHER OCCURRENCE OR NATURAL DISASTER, THE OWNER SHALL HAVE (1) GROWING SEASON TO REPLACE OR REPLANT FOLLOWING THE EVENT OR FOLLOWING THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY FOR ANY EVENT-RELATED SITE RECONSTRUCTION, WHICHEVER IS LATER.
- VEGETATION WITHIN A REQUIRED TREE PROTECTION OR LANDSCAPED AREA THAT DIES WITHIN (1) YEAR OF CONSTRUCTION COMPLETION SHALL BE REMOVED AND REPLACED WITH NEW VEGETATION OF EQUAL OR GREATER SIZE BY THE CONTRACTOR PROVIDING THE WARRANT. SHOULD ANY VEGETATION REQUIRED IN A TREE PROTECTION OR LANDSCAPED AREA DIE AFTER THE EXPIRATION OF THE WARRANTY, THE PROPERTY OWNER SHALL REPLACE IT WITHIN 180 DAYS WITH VEGETATION OF EQUAL OR GREATER SIZE.
- A PLAN DENOTING THE PROPOSED LOCATION AND SPECIES OF REPLACEMENTS SHALL BE SUBMITTED TO THE TOWN OF KNIGHTDALE FOR APPROVAL. THE ADMINISTRATOR MAY ELECT TO PRESENT THE PLAN TO THE LURB FOR FINAL APPROVAL.
- ALL VEGETATION SHALL BE REPLACED IN A MANNER THAT SATISFIES THE APPLICABLE TYPE, AMOUNT AND PERFORMANCE CRITERIA REQUIRED BY THE TOWN OF KNIGHTDALE UDO.
- THE ADMINISTRATOR MAY INSPECT THE SITE ONCE A YEAR AFTER THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY IN ORDER TO ENSURE COMPLIANCE WITH THE APPROVED SITE PLAN AND TO ENSURE THAT THE VEGETATION AND LANDSCAPING IS PROPERLY MAINTAINED. THE ADMINISTRATOR MAY ISSUE A NOTICE OF VIOLATION TO COMPLY WITH THE PROVISIONS OF THE KNIGHTDALE ORDINANCE IF WARRANTED UPON AN INSPECTION.



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: DEVELOPMENT SERVICES ENGINEER DATE: _____
 THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
 BY: ADMINISTRATOR DATE: _____

K:\17\2020\190259\Drawings\withersravenel.com\construction\151 LANDSCAPE DETAIL.dwg Friday, October 2, 2020 11:38:27 AM V:\DK_318141N



Outdoor Lighting Roadway LED



The Roadway LED is a green solution and great fit for streets, roads, long, narrow areas and parking lots. This energy-efficient luminaire delivers the light where it is needed while increasing visibility and reducing spill light to adjoining properties. Choose low to medium light output on wood or fiberglass poles (or mount on an existing pole). Available with one to four fixtures per pole, depending on the fixture/pole combination selected.

LED (Light Emitting Diode)	50 75 105 150 215 280 watts
Mounting heights	25', 30', 35'
Color	Gray, Black
Poles	Fiberglass Metal (special conditions) Wood

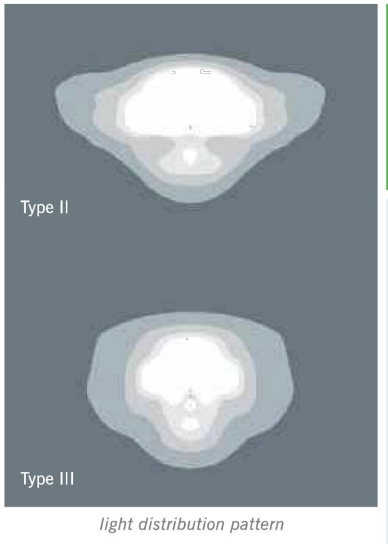
For additional information, visit us at duke-energy.com/OutdoorLighting or call us toll free at 866.769.6417.



Outdoor Lighting Roadway LED

Light source: LED (white)
Lumens: 4,807 - 25,050 (fixture dependent)

Wattage	Light Pattern	IESNA Backlight-Uplight - Glare (BUG) Rating
LED 50	IESNA Type III (medium oval)	B1-U0-G1
LED 75	IESNA Type II (long oval)	B1-U0-G2
LED 105	IESNA Type II (long oval)	B2-U0-G3
LED 150	IESNA Type III (medium oval)	B2-U0-G2
LED 215	IESNA Type III (medium oval)	B3-U0-G3
LED 280	IESNA Type III (medium oval)	B3-U0-G4



Color temperature: 4,000K
Warm-up and restrike time: Instant on (no warm-up or restrike time)

Poles available:

Name	Mounting height	Color
Fiberglass	25', 30', 35'	Gray
Fiberglass	25', 30', 35'	Black (additional cost)
Wood	25', 30', 35'	Standard
Metal (special conditions)*	25', 30', 35'	Gray

Features

Little or no installation cost	Frees up capital for other projects
Design services by lighting professionals included	Meets industry standards and lighting ordinances
Maintenance included	Eliminates high and unexpected repair bills
Electricity included	Less expensive than metered service
Warranty included	Worry-free
One low monthly cost on your electric bill	Convenience and savings for you
Turnkey operation	Provides hassle-free installation and service
Backed by over 40 years of experience	A name you can trust today ... and tomorrow

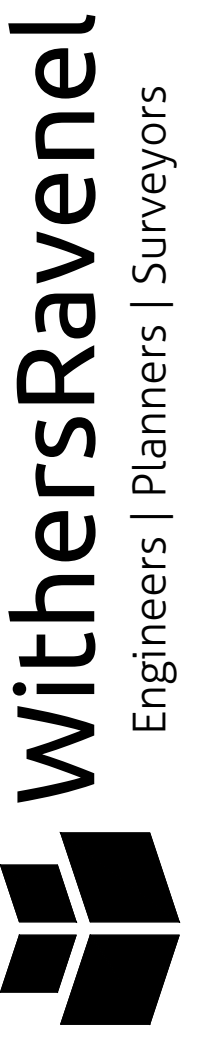
*2" raised foundation available when required.

©2015 Duke Energy Corporation 151307 715



GENERAL NOTES

- SEE SHEET 1.0 FOR EXISTING ZONING AND PROPOSED ZONING.
- PROJECT BOUNDARY INFORMATION SHOWN IS BASED ON A RECORDED PLAT BY WALLACE G. CLARK, JR., REGISTERED LAND SURVEYOR TITLED, "SURVEY FOR MAMIE TODD LIES", DATED MARCH 26, 1997, AS RECORDED AT THE WAKE COUNTY REGISTER OF DEEDS, MAP BOOK 1997, PAGE 668.
- SURROUNDING AND ADJACENT PARCEL INFORMATION IS BASED ON WAKE COUNTY GIS DATA.
- LIMITS OF NEUSE RIPARIAN BUFFERS ARE BASED ON NCEOE-DWR BUFFER DETERMINATION LETTER, RPO 819-328 DATED AUGUST 5TH, 2019.
- LIMITS OF JURISDICTIONAL STREAM AND WETLANDS ARE BASED ON FIELD DELINEATION BY WITHERSRAVENEL, INC. AND USACE CONFIRMATION OF JURISDICTIONAL DETERMINATION BASED ON SITE VISIT ON 07/26/19. REFERENCE USAGE ACTION ID #SAW-2019-01416.
- PROPERTY IS CURRENTLY NOT IN TOWN OF KNIGHTDALE ETJ.
- STREET LIGHTS SHALL BE PROVIDED FOR POPLAR CREEK PH IV PER UDO SECTION 11.5 - STREET LIGHTING POLICY. IF UPGRADES FROM THE TOWN'S STANDARD LIGHT SPECIFICATION ARE REQUESTED, THE DEVELOPER WILL BE REQUIRED TO PAY THE TOWN 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 3720174300J WITH AN EFFECTIVE DATE OF MAY 2, 2006.
- THE TURNOUT RADIUS AT ALL INTERSECTIONS SHALL BE A MINIMUM OF 30 FEET MEASURED AT THE BACK OF CURB UNLESS OTHERWISE NOTED. THE TURNOUT RADIUS AT ALL INTERSECTIONS WITH ALLEYS SHALL BE A MINIMUM OF 17.5 FEET MEASURED AT THE BACK OF CURB.
- 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 IN NO CURB EXISTS SHALL BE PLACED WITHIN A SIGHT TRIANGLE.



115 MacKinnon Drive, Cary, NC 27511 | t: 919.469.3940 | license # C-6832 | www.withersravenel.com

POPLAR CREEK VILLAGE PHASE IV

TOWN OF KNIGHTDALE, NORTH CAROLINA

LIGHTING PLAN

Job No.	02190259	Drawn By	WR
Date	08/14/20	Designer	WR



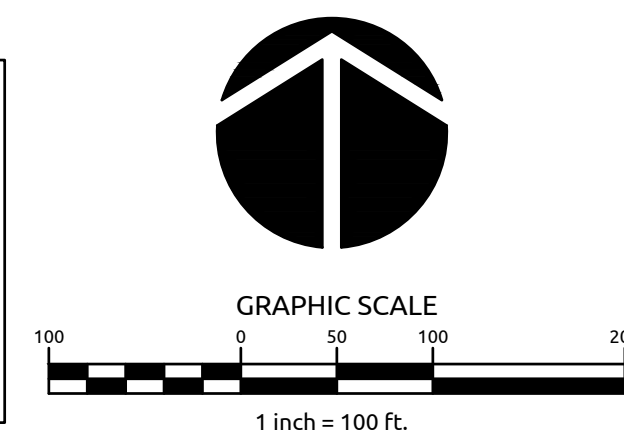
Revisions		
1	PER TOK COMMENTS	10/02/20

Lighting Plan Certification: I hereby certify I am the applicant and that a Lighting Plan shall be submitted by the utility provider to the Knightdale Planning Department 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 16.6B 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.

Date: _____ Applicant: _____
I (officer authorized to take acknowledgments) do hereby certify that personally appeared before me this day and acknowledged the due execution of this certificate. Witness my hand and (where an official seal is required by law) official seal this ____ day of _____ A.D., ____ (year).
Official Seal: Notary
Commission Expires: _____

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: _____ DATE: _____
DEVELOPMENT SERVICES ENGINEER
THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
BY: _____ DATE: _____
ADMINISTRATOR

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



Sheet No.
SL1.0

K:\19\190259\190259.dwg - from road address\190259\190259.dwg - UDR\190259.dwg - Friday, October 2, 2020 11:38:24 AM - 109K - DTPRINT