

MASTER PLANS POPLAR CREEK VILLAGE PHASE IV

KNIGHTDALE, NC

JUNE 12, 2020

MASTER PLANS
FOR: POPLAR CREEK VILLAGE PH IV
WR PROJECT NO. 02190259

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	7436 SF
AVERAGE LOT AREA PROVIDED	8038 SF
RECREATIONAL OPEN SPACE	
ACTIVE	0.65 AC
PASSIVE	0.93 AC
SETBACKS	
FRONT	10
SIDE	20% LOT WIDTH
REAR	25

INFRASTRUCTURE DATA										
AREA [AC]	UNITS [TOTAL]	STREETS [LF]	30" CURB & GUTTER [LF]	SIDWALK [LF]	6" WATER MAIN [LF]	8" WATER MAIN [LF]	12" WATER MAIN [LF]	STORM DRAINAGE [LF]	6" SEWER MAIN [LF]	SEWER FLOW [GPD]
17.49	55	3,723	5,079	4,772	-	2,777	-	2,568	2,255	13,750



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Sheet #	Sheet Title
1.0	OVERALL EXISTING CONDITIONS
2.0	OVERALL SITE PLAN
2.1	SITE PLAN
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2.4	PAVEMENT MARKING & SIGNAGE PLAN
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2.6	LIGHTING PLAN
3.0	OVERALL UTILITY PLAN
3.1	UTILITY PLAN
3.2	UTILITY PLAN
4.0	OVERALL STORM DRAINAGE & GRADING PLAN
4.1	STORM DRAINAGE & GRADING PLAN
4.2	STORM DRAINAGE & GRADING PLAN
7.0	SCM PLAN AND DETAILS
9.1	ROADWAY DETAILS
9.2	STORM DRAINAGE DETAILS
9.3	WATER UTILITY DETAILS
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L1.0	OVERALL LANDSCAPE PLAN
L1.1	LANDSCAPE PLAN
L1.2	LANDSCAPE PLAN
L2.0	LANDSCAPE DETAILS

ATTENTION CONTRACTORS
The Construction Contractor responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for contacting the **Public Utilities Department** at (919) 996-4540 at least **twenty four hours** prior to beginning any of their construction.
Failure to notify both City Departments in advance of beginning construction, 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.
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.

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

Public Water Distribution / Extension System
The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.
City of Raleigh
Public Utilities Department Permit # _____
Authorization to Construct _____
Date _____

Public Sewer Collection / Extension System
The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.
City of Raleigh
Public Utilities Department Permit # _____
Authorization to Construct _____
Date _____

PERSON TO CONTACT REGARDING STAFF COMMENTS OR QUESTIONS:
BRENDE VEGA, PROJECT MANAGER
WITHERSRAVENEL, INC.
115 MACKENAN DRIVE, CARY, NC 27511
TELEPHONE: (919) 238-0212
bvega@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

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. COLLEEN DURYEA, 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
COLLEEN E. DURYEA

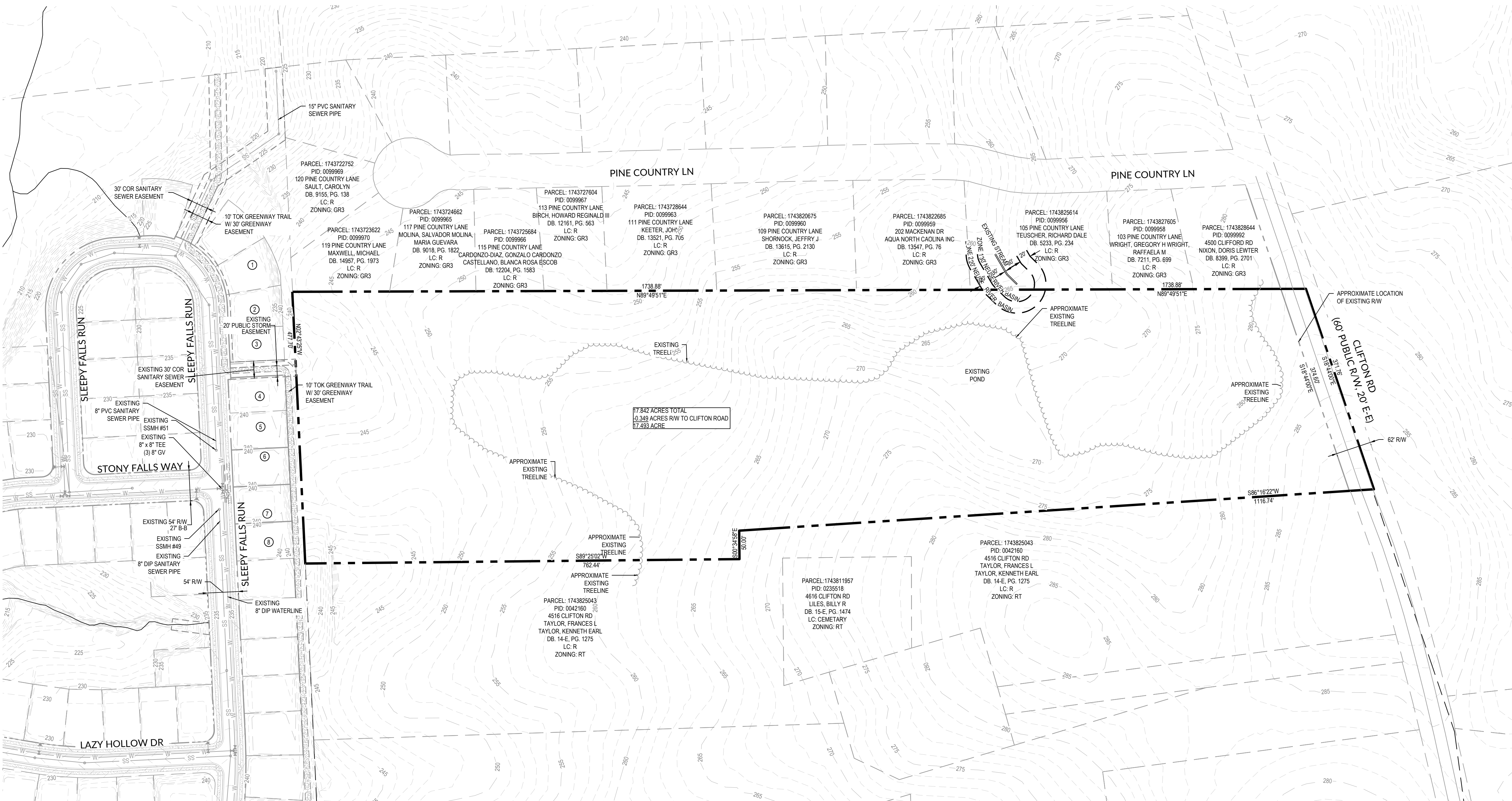
A:\191-0256\190259-clinton road_sudastation\CD\working_sch\site plan\03_0005.dwg - Friday, June 12, 2020 2:18:35 PM - YORU, STEPHEN

PARCEL DETAILS

NUMBER	PARCEL:	PID:	MAILING ADDRESS	OWNER INFO	DB	PG.	LC:
1	1743721538	0458321	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	R
2	1743721346	0458320	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	R
3	1743721445	0458319	4717 SLEEPY FALLS RUN	BROWN, WILLIAM R JR BROWN, GWENDOLYN JACKSON	017459	1988	R
4	1743721346	0458318	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	R
5	1743629392	0458398	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	R
6	1743721157	0458316	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	R
7	1743721157	0458315	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	R
8	1743721160	0458314	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	R

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 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 RRD #18-328 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-2019-01418.
- PROPERTY IS CURRENTLY NOT IN TOWN OF KNIGHTDALE ETJ.
- EXISTING TOPOGRAPHY SHOWN ON THIS PLAN IS BASED ON GIS LIDAR DATA.
- THIS PROPERTY DOES NOT LIE WITHIN THE FEMA FLOODPLAIN PER MAP NUMBER 3720174300J WITH AN EFFECTIVE DATE OF MAY 2, 2006.



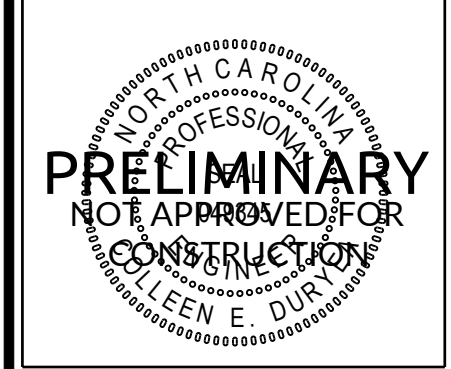
WithersRavenel
Engineers | Planners | Surveyors

**POPLAR CREEK VILLAGE
PHASE IV**

TOWN OF KNIGHTDALE, NORTH CAROLINA

**OVERALL EXISTING
CONDITIONS**

Job No.	02190259	Drawn By	WR
Date	10/21/19	Designer	WR



Revisions		
1	TOK Comments	12/12/19
2	SITE REVISIONS	05/08/20
3	SITE REVISIONS	5/28/20

Sheet No.	1.0
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CITY OF RALEIGH

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

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

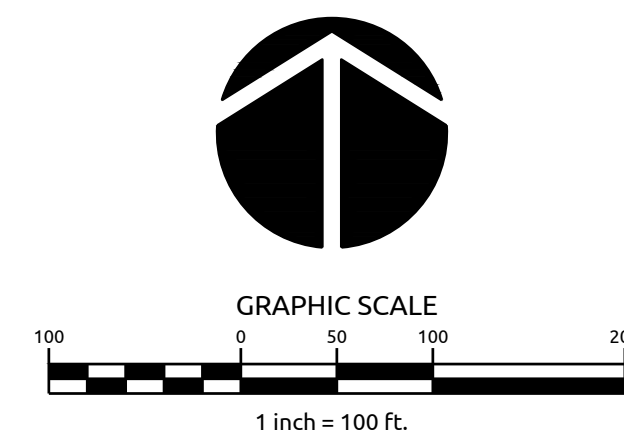
TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: _____ 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.



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EXISTING ADJOINER INFO

NUMBER	PARCEL	PID	MAILING ADDRESS	OWNER INFO	DB	PG	LC
1	1743721538	0458321	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	R
2	1743721346	0458320	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	R
3	1743721445	0458319	4717 SLEEPY FALLS RUN	BROWN, WILLIAM R JR BROWN, GWENDOLYN JACKSON	017459	1888	R
4	1743721346	0458318	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	R
5	1743629392	0458398	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	R
6	1743721157	0458316	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	R
7	1743721157	0458315	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	R
8	1743721160	0458314	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	R

PROJECT TIMELINE

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

PROPOSED ALTERNATIVE DESIGN STANDARDS

THIS PROJECT PROPOSES 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.

GENERAL NOTES

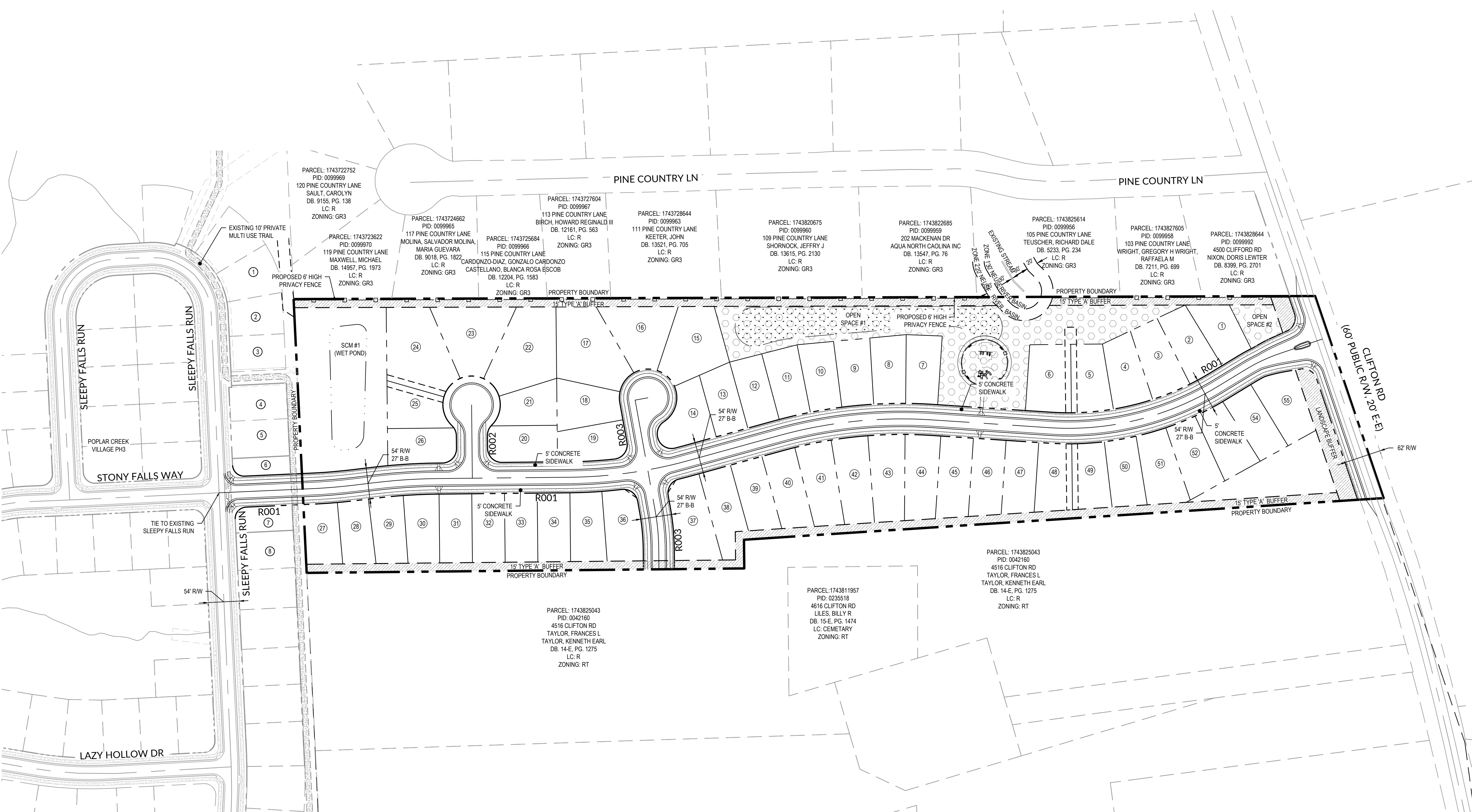
- SEE SHEET 1.0 FOR EXISTING ZONING AND PROPOSED ZONING.
- PROJECT BOUNDARY INFORMATION SHOWN IS BASED ON A RECORDED PLAT BY WALLACE G. CLARK, JR., REGISTERED LAND SURVEYOR TITLED, "SURVEY FOR MAME TODD LIES", DATED MARCH 26, 1997, AS RECORDED AT THE WAKE COUNTY REGISTER OF DEEDS, MAP BOOK 1997, PAGE 668.
- SURROUNDING AND ADJACENT PARCEL INFORMATION IS BASED ON WAKE COUNTY GIS DATA.
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- 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. 5' 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 372014300J 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.

ROAD	SPEED LIMIT	CLASSIFICATION
RO01	25 MPH	LOCAL STREET
RO02	25 MPH	LOCAL STREET
RO03	25 MPH	LOCAL STREET

CONNECTIVITY INDEX:		
LINKS	NODES	INDEX
6	6	1.0

SITE IMPERVIOUS

TOTAL TRACT AREA	17.49	AC
SUBDIVISION ROADWAYS, SIDEWALKS, & PARK	2.42	AC
LOT IMPERVIOUS AREA (65 LOTS @ 4000 SF)	5.05	AC
TOTAL IMPERVIOUS	7.47	AC
PROPOSED PERCENT IMPERVIOUS	42.71	%



**POPLAR CREEK VILLAGE
PHASE IV**

TOWN OF KNIGHTDALE, NORTH CAROLINA

OVERALL SITE PLAN

Job No.	02190259	Drawn By	WR
Date	10/21/19	Designer	WR



Revisions		
1	TOK Comments	12/12/19
2	SITE REVISIONS	05/08/20
3	SITE REVISIONS	5/28/20

Sheet No.
2.0

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

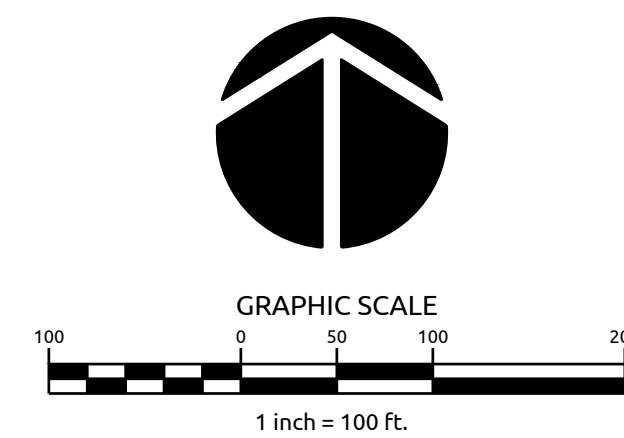
THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: _____ DATE: _____
ADMINISTRATOR

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

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

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

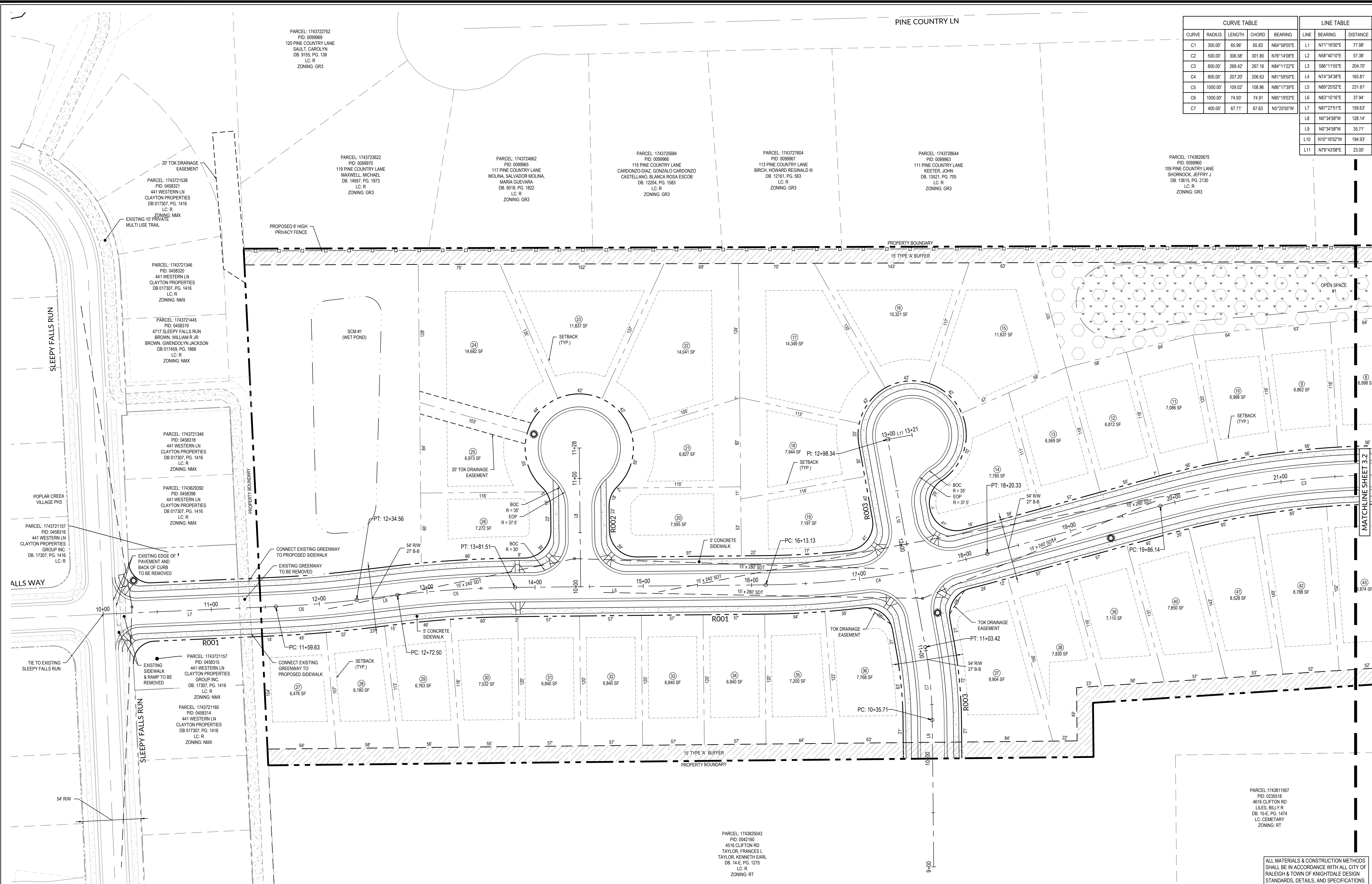


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Revisions	Comments	Date
1	TOK Comments	12/12/19
2	SITE REVISIONS	05/08/20
3	SITE REVISIONS	5/28/20

CURVE TABLE				LINE TABLE			
CURVE	RADIUS	LENGTH	CHORD	BEARING	LINE	BEARING	DISTANCE
C1	300.00'	65.96'	65.63'	N64°58'05"E	L1	N71°16'00"E	77.98'
C2	500.00'	306.58'	301.80'	N76°14'08"E	L2	N58°40'10"E	57.38'
C3	800.00'	268.42'	267.16'	N84°11'22"E	L3	S86°11'55"E	204.70'
C4	800.00'	207.20'	206.63'	N81°59'50"E	L4	N74°34'38"E	165.81'
C5	1000.00'	109.02'	108.96'	N86°17'39"E	L5	N89°25'02"E	231.61'
C6	1000.00'	74.93'	74.91'	N85°19'03"E	L6	N83°10'16"E	37.94'
C7	400.00'	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	35.71'
					L10	N10°16'52"W	194.93'
					L11	N79°43'08"E	23.00'



AASHTO SIGHT DISTANCE

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.)	Calculated		Proposed	
						Left Turn Sight Distance (ft)	Right Turn Sight Distance (ft)	Left Turn Sight Distance (ft)	Right Turn Sight Distance (ft)
CLIFTON ROAD	R001	25	2.08	7.50	6.50	276	239	280	240
SLEEPY FALLS RUN	R001	25	-4.14	7.50	6.50	276	239	280	240
	R002	25	-1.60	7.50	6.50	276	239	280	240
	R003	25	1.60	7.50	6.50	276	239	280	240
	R003	25	-4.50	7.50	6.50	276	239	280	240

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.

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ADMINISTRATOR

CITY OF RALEIGH

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

TRANSPORTATION SERVICES: N/A

PUBLIC UTILITIES: _____

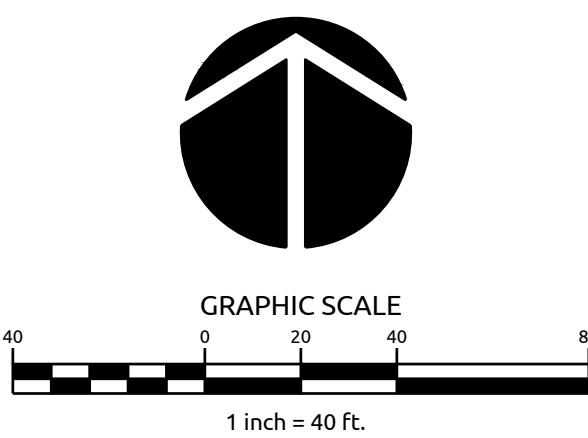
STORMWATER: N/A

PLANNING: N/A

FIRE: N/A

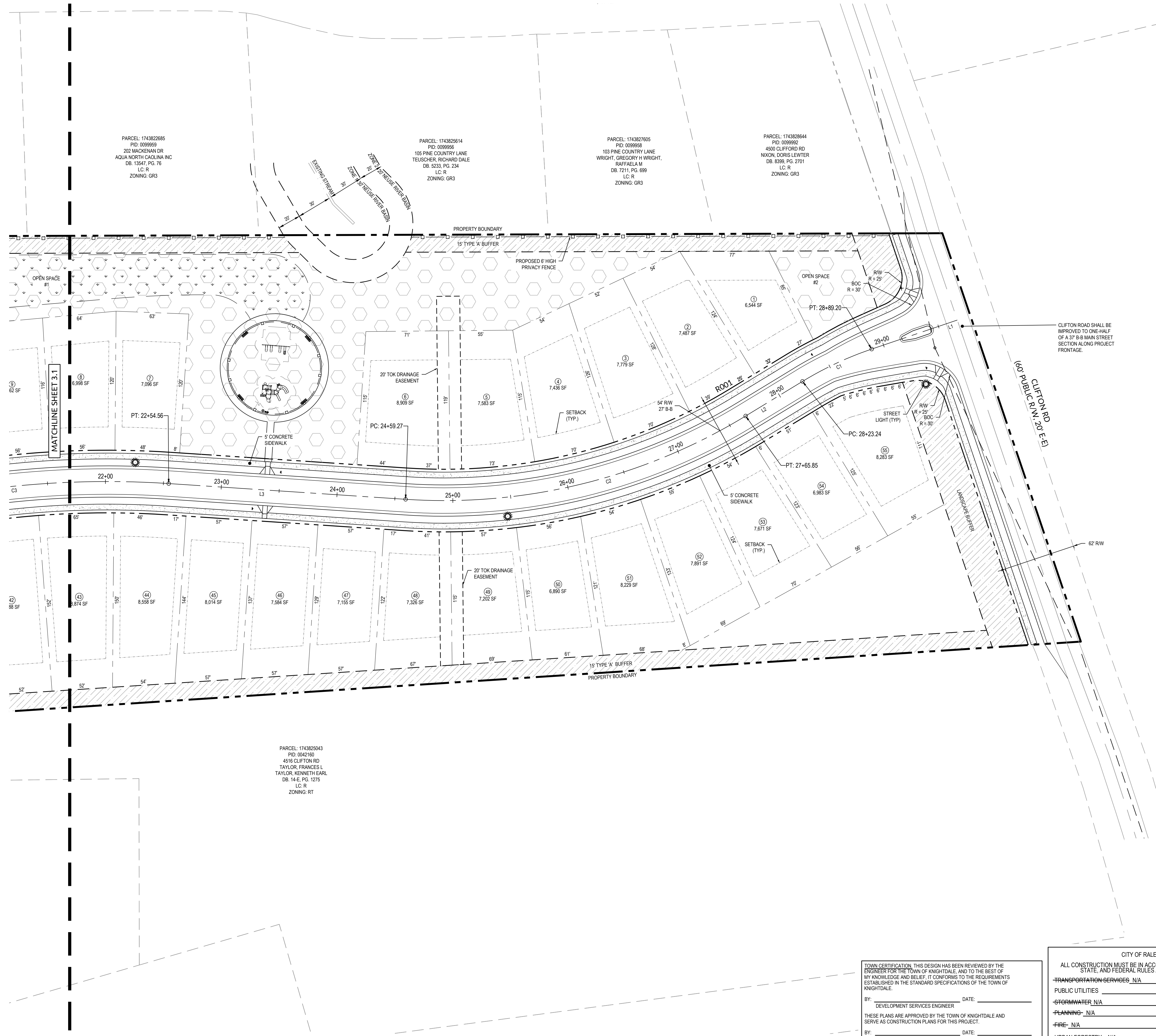
URBAN FORESTRY: N/A

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



K:\19\190259\0259.dwg - from road address\0259.dwg - 10/21/19 10:46 AM - 10/21/19 10:46 AM - 10/21/19 10:46 AM - 10/21/19 10:46 AM - 10/21/19 10:46 AM

CURVE TABLE					LINE TABLE	
CURVE	RADIUS	LENGTH	CHORD	BEARING	LINE	DISTANCE
C1	300.00'	65.98'	65.63	N64°58'09"E	L1	N71°16'00"E 77.98'
C2	500.00'	306.68'	301.80	N78°14'08"E	L2	N58°40'10"E 57.38'
C3	800.00'	268.42'	267.16	N84°11'22"E	L3	S86°11'55"E 204.70'
C4	800.00'	207.20'	206.63	N81°59'50"E	L4	N74°34'38"E 165.81'
C5	1000.00'	109.02'	108.96	N86°17'39"E	L5	N89°25'02"E 231.61'
C6	1000.00'	74.93'	74.91	N85°19'03"E	L6	N83°10'16"E 37.94'
C7	400.00'	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 35.71'
					L10	N10°16'52"W 194.93'
					L11	N79°43'08"E 23.00'



PARCEL: 174382685
PID: 0099569
202 MACKENAN DR
AQUA NORTH CAROLINA INC
DB: 13547, PG. 76
LC: R
ZONING: GR3

PARCEL: 174382614
PID: 0099566
105 PINE COUNTRY LANE
TEUSCHER, RICHARD DALE
DB: 9333, PG. 234
LC: R
ZONING: GR3

PARCEL: 1743827605
PID: 0099558
103 PINE COUNTRY LANE
WRIGHT, GREGORY H WRIGHT,
RAFFAELA M
DB: 7211, PG. 699
LC: R
ZONING: GR3

PARCEL: 174382644
PID: 0099562
4500 CLIFTON RD
NIXON, DORIS LEWTER
DB: 8399, PG. 2701
LC: R
ZONING: GR3

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

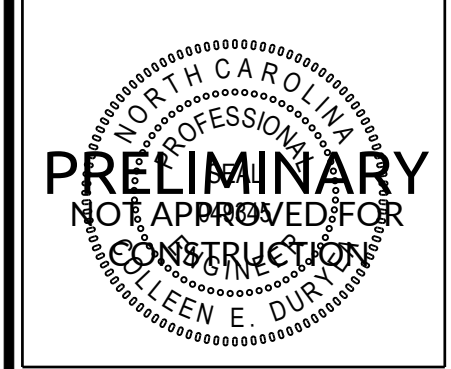
CLIFTON ROAD SHALL BE IMPROVED TO ONE-HALF OF A 37' B-B MAN STREET SECTION ALONG PROJECT FRONTAGE.

WithersRavenel
Engineers | Planners | Surveyors

**POPLAR CREEK VILLAGE
PHASE IV**
TOWN OF KNIGHTDALE, NORTH CAROLINA

SITE PLAN

Job No.	02190259	Drawn By	WR
Date	10/21/19	Designer	WR



Revisions		
1	TOK Comments	12/12/19
2	SITE REVISIONS	05/08/20
3	SITE REVISIONS	5/28/20

Sheet No.
2.2

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.

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ADMINISTRATOR

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TRANSPORTATION SERVICES: N/A

PUBLIC UTILITIES: _____

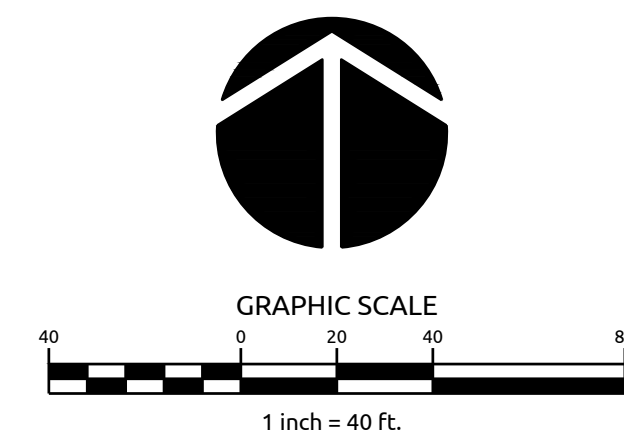
STORMWATER: N/A

PLANNING: N/A

FIRE: N/A

URBAN FORESTRY: N/A

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



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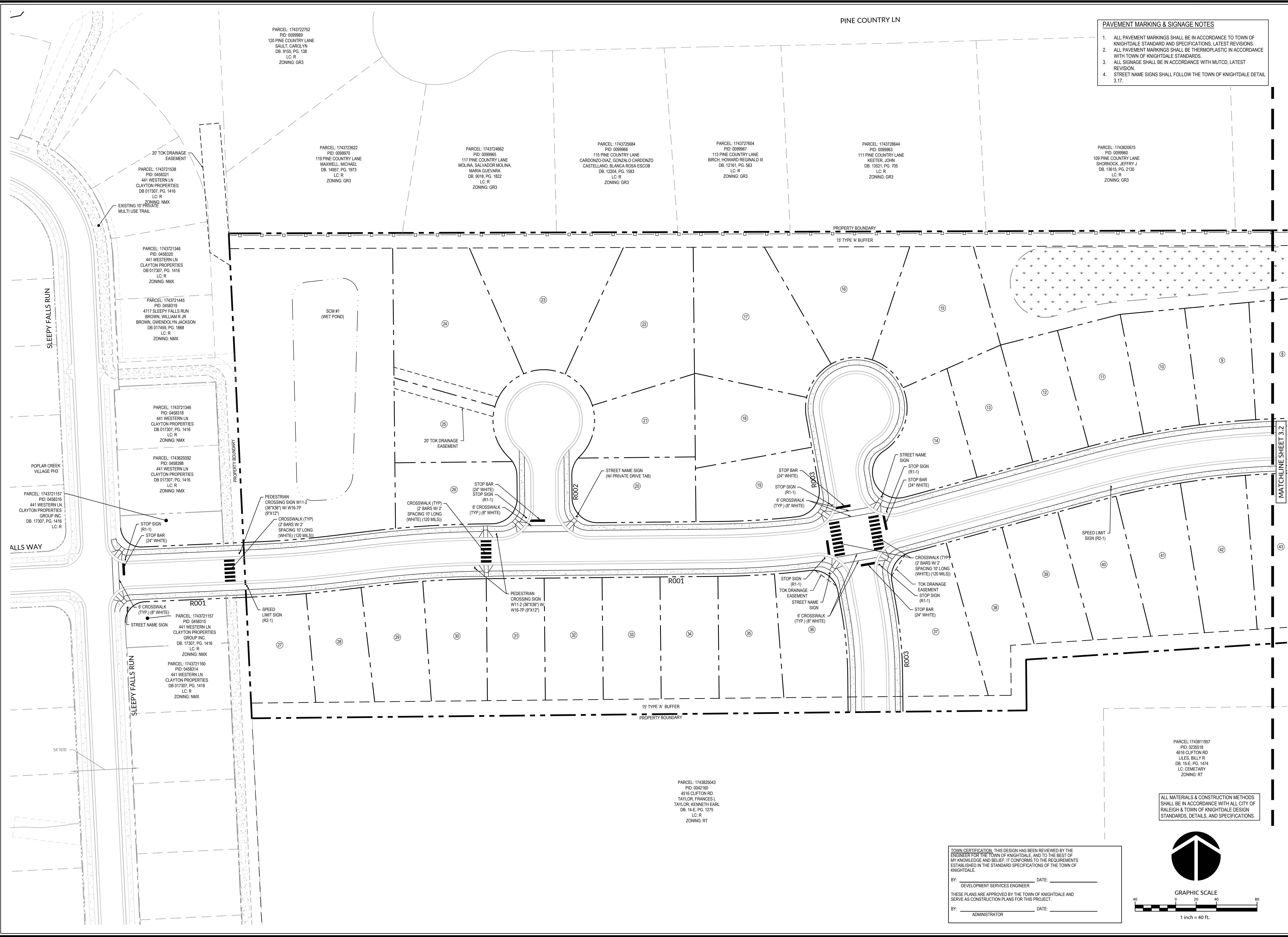
Job No.	02190259	Drawn By	WR
Date	10/21/19	Designer	WR



Revisions		
1	TOK Comments	12/12/19
2	SITE REVISIONS	05/08/20
3	SITE REVISIONS	5/28/20

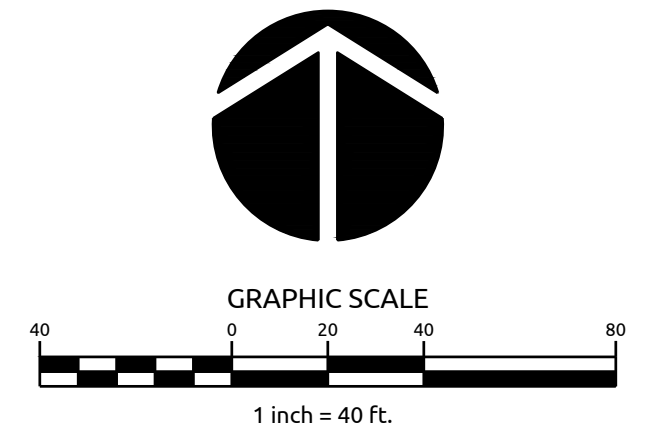
Sheet No.	2.3
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- PAVEMENT MARKING & SIGNAGE NOTES**
1. ALL PAVEMENT MARKINGS SHALL BE IN ACCORDANCE TO TOWN OF KNIGHTDALE STANDARD AND SPECIFICATIONS, LATEST REVISIONS.
 2. ALL PAVEMENT MARKINGS SHALL BE THERMOPLASTIC IN ACCORDANCE WITH TOWN OF KNIGHTDALE 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.



PARCEL: 1743811957
PID: 0235518
4616 CLIFTON RD
LILES, BILLY R.
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

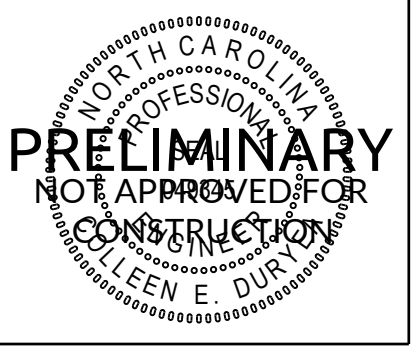
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**POPLAR CREEK VILLAGE
PHASE IV**

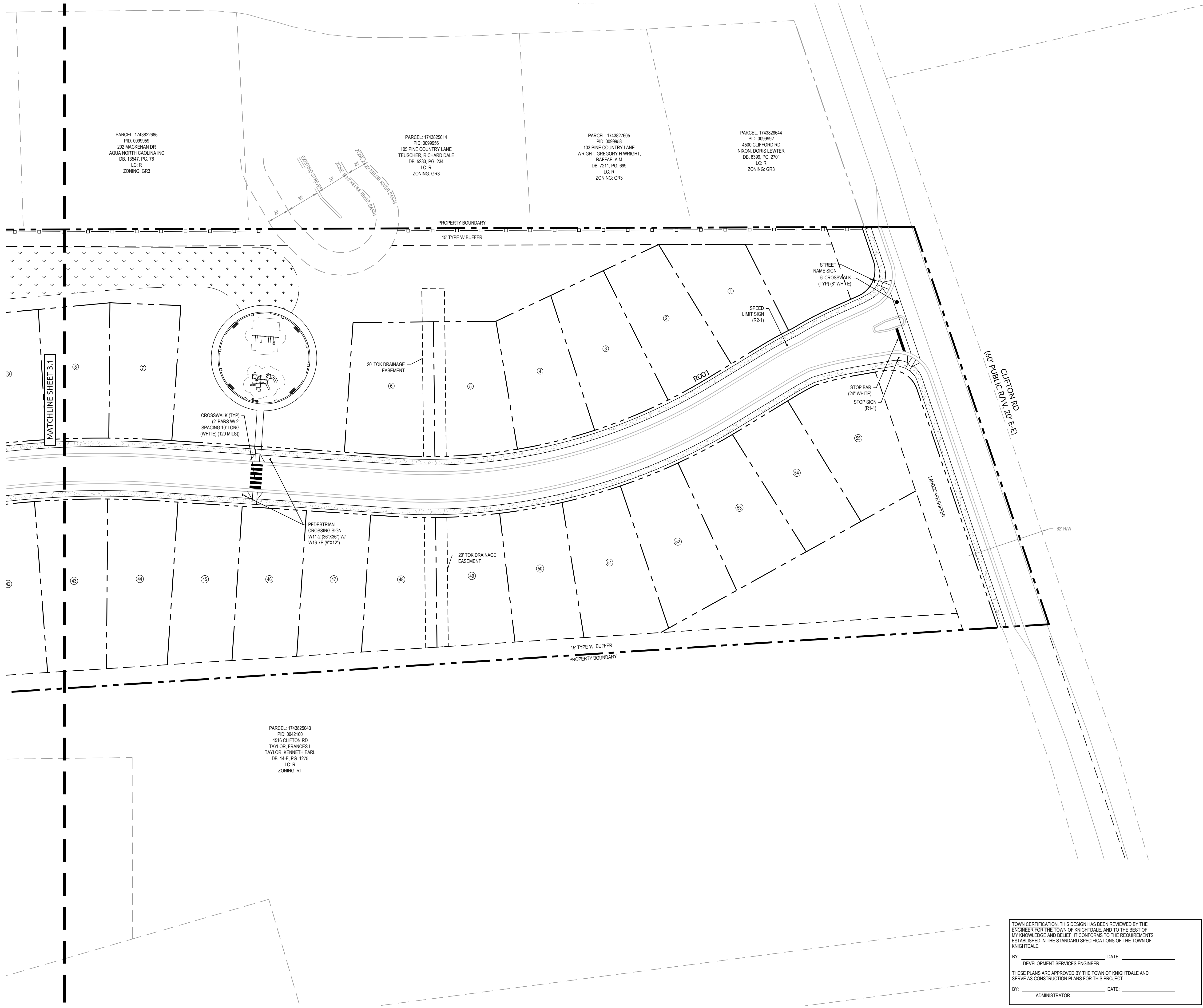
TOWN OF KNIGHTDALE, NORTH CAROLINA

**PAVEMENT MARKING &
SIGNAGE PLAN**

Job No.	02190259	Drawn By	WR
Date	10/21/19	Designer	WR



Revisions		
1	TOK Comments	12/12/19
2	SITE REVISIONS	05/08/20
3	SITE REVISIONS	5/28/20



PARCEL: 174382685
PID: 0099569
202 MACKENAM DR
AQUA NORTH CAROLINA INC
DB: 13547, PG. 76
LC: R
ZONING: GR3

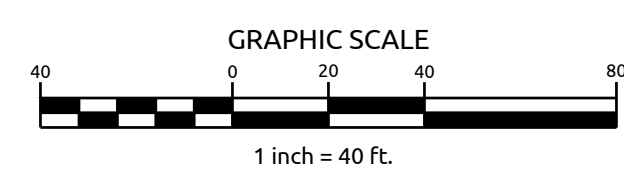
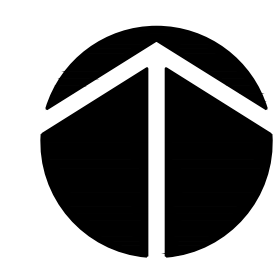
PARCEL: 174382614
PID: 0099566
105 PINE COUNTRY LANE
TEUSCHER, RICHARD DALE
DB: 9333, PG. 234
LC: R
ZONING: GR3

PARCEL: 174382705
PID: 0099558
103 PINE COUNTRY LANE
WRIGHT, GREGORY H WRIGHT,
RAFFAELA M
DB: 7211, PG. 699
LC: R
ZONING: GR3

PARCEL: 174382644
PID: 0099562
4500 CLIFTON RD
NIXON, DORIS LEWTER
DB: 8399, PG. 2701
LC: R
ZONING: GR3

PARCEL: 174382543
PID: 0042160
4516 CLIFTON RD
TAYLOR, FRANCES L
TAYLOR, KENNETH EARL
DB: 14-E, PG. 1275
LC: R
ZONING: RT

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



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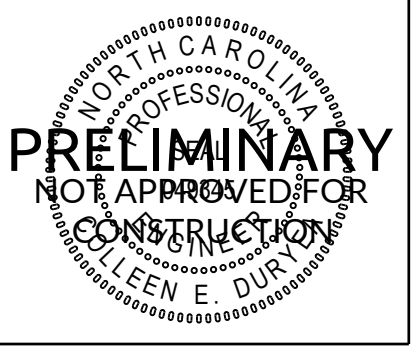
BY: _____ DATE: _____
DEVELOPMENT SERVICES ENGINEER

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

BY: _____ DATE: _____
ADMINISTRATOR

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Job No.	02190259	Drawn By	WR
Date	10/21/19	Designer	WR



Revisions		
1	TOK Comments	12/12/19
2	SITE REVISIONS	05/08/20
3	SITE REVISIONS	5/28/20

Sheet No.	2.5
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REQUIRED OPEN SPACE CALCULATIONS			
TOTAL AREA	17.49	AC	
LOT COUNT	55.00		
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) (390 SF/BR)	18286	SF	
TOTAL RECREATIONAL OPEN SPACE	56145	SF	
	1.29	AC	

OPEN SPACE CALCULATIONS			
REQUIRED OPEN SPACE	1.29	AC	
O.S. #1	0.65	AC	ACTIVE
O.S. #1	0.83	AC	PASSIVE
O.S. #2	0.10	AC	PASSIVE
TOTAL OPEN SPACE	1.58	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)	1.75	AC	
NRB	0.07	AC	
LANDSCAPE BUFFERS PROVIDED	1.40	AC	
TREE CANOPY PROVIDED	1.47	AC	
ADDITIONAL SPACE REQUIRED	0.28	AC	
ADDITIONAL SPACE - MATURE FOREST	0.00	AC	
ADDITIONAL SPACE - REPLANTED NEEDED	0.34	AC	
ADDITIONAL SPACE - REPLANTED PROVIDED	0.33	AC	
TOTAL CANOPY AREA PROVIDED	1.81	AC	

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



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

TRANSPORTATION SERVICES: N/A

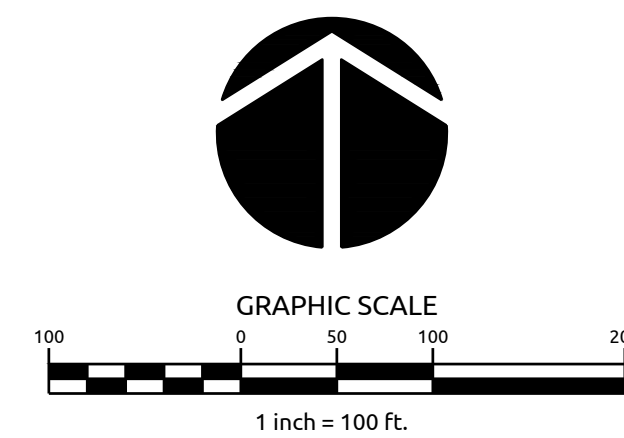
PUBLIC UTILITIES: _____

STORMWATER: N/A

PLANNING: N/A

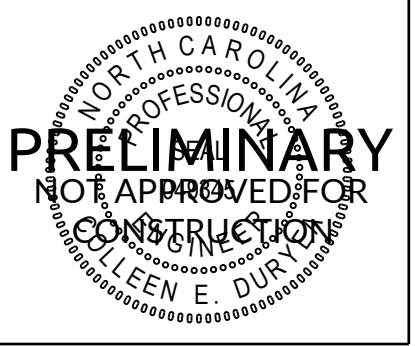
FIRE: N/A

URBAN FORESTRY: N/A



LIGHTING PLAN

Job No. 02190259 Drawn By WR
Date 10/21/19 Designer WR



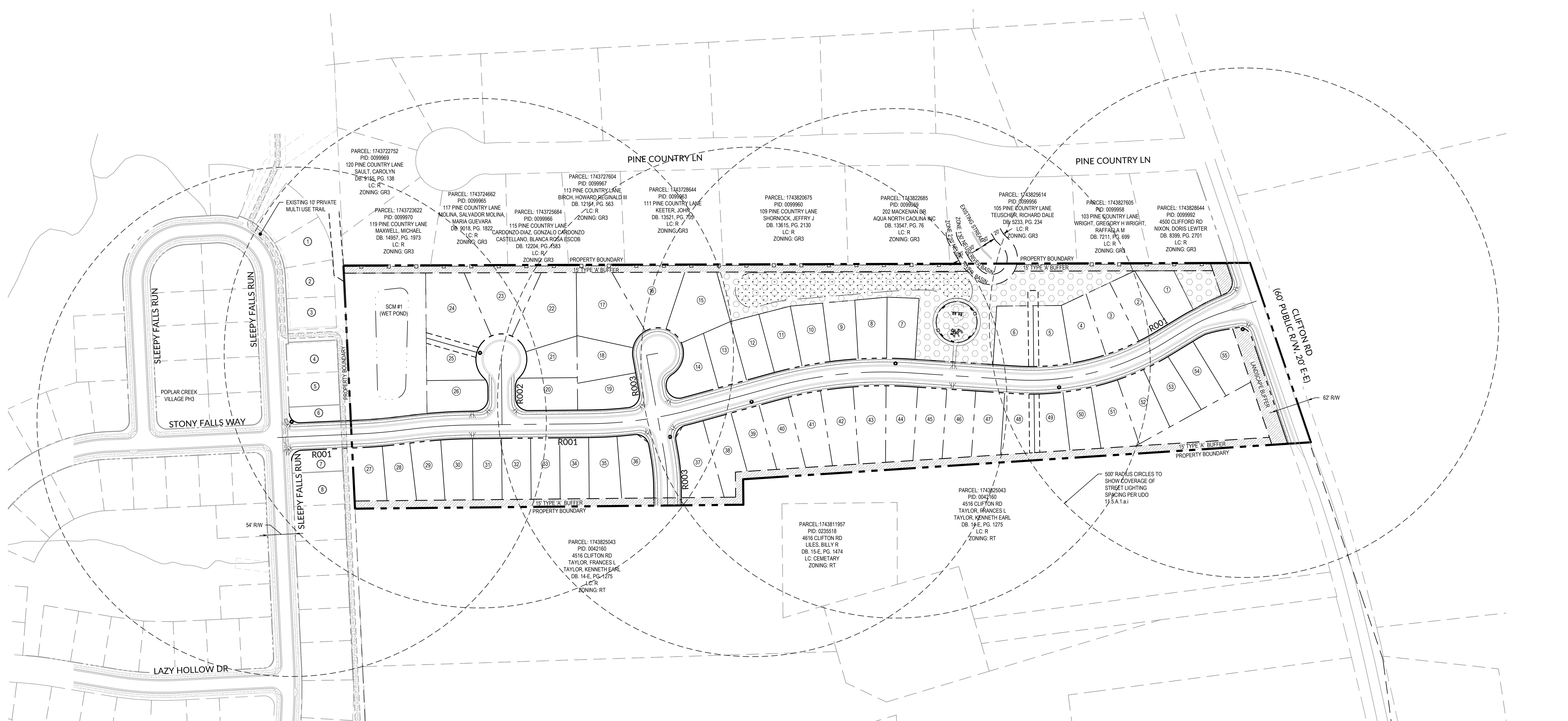
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1	TOK Comments	12/12/19
2	SITE REVISIONS	05/08/20
3	SITE REVISIONS	5/28/20

Sheet No.
2.6

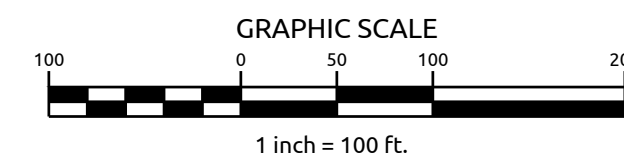
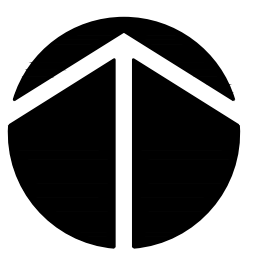
GENERAL NOTES

- 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, RFD #19-328 DATED AUGUST 5TH, 2019.
- LIMITS OF JURISDICTIONAL STREAM AND WETLANDS ARE BASED ON FIELD DELINEATION BY WITHERSRAVENEL, INC. AND USAGE CONFIRMATION OF JURISDICTIONAL DETERMINATION BASED ON SITE VISIT ON 07/26/19. REFEREND 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 WITH IN A SIGHT TRIANGLE.

ROAD	SPEED LIMIT	CLASSIFICATION
R001	25 MPH	LOCAL STREET
R002	25 MPH	LOCAL STREET
R003	25 MPH	LOCAL STREET



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CITY OF RALEIGH

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

TRANSPORTATION SERVICES: N/A

PUBLIC UTILITIES: _____

STORMWATER: N/A

PLANNING: N/A

FIRE: N/A

URBAN FORESTRY: N/A

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

BY: _____ DATE: _____
DEVELOPMENT SERVICES ENGINEER

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BY: _____ DATE: _____
ADMINISTRATOR

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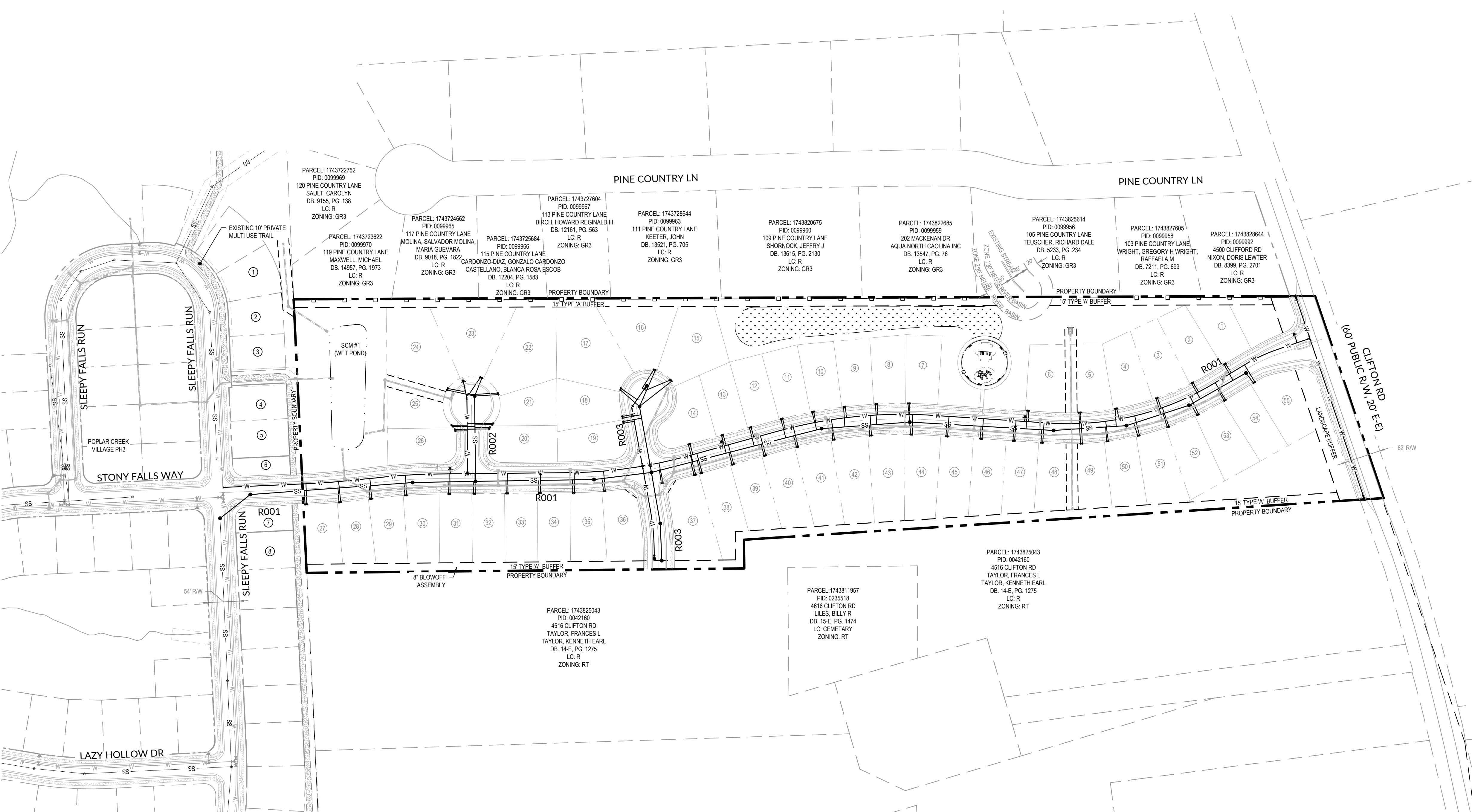
EXISTING ADJOINER INFO

NUMBER	PARCEL	PID	MAILING ADDRESS	OWNER INFO	DB	PG.	LC
1	1743721538	0458321	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	R
2	1743721346	0458320	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	R
3	1743721445	0458319	4717 SLEEPY FALLS RUN	BROWN, WILLIAM R JR BROWN, GWENDOLYN JACKSON	017459	1868	R
4	1743721346	0458318	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	R
5	1743629392	0458396	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	R
6	1743721157	0458316	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	R
7	1743721157	0458315	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	R
8	1743721160	0458314	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	R

UTILITY NOTES

1. ALL MATERIALS & CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH CITY OF RALEIGH DESIGN STANDARDS, DETAILS & SPECIFICATIONS (REFERENCE CORPUD HANDBOOK, CURRENT EDITION)
2. UTILITY SEPARATION REQUIREMENTS:
 - A) A DISTANCE OF 100' SHALL BE MAINTAINED BETWEEN SANITARY SEWER & ANY PRIVATE OR PUBLIC WATER SUPPLY SOURCE SUCH AS AN IMPOUNDED RESERVOIR USED AS A SOURCE OF DRINKING WATER. IF ADEQUATE LATERAL SEPARATION CANNOT BE ACHIEVED, FERROUS SANITARY SEWER PIPE SHALL BE SPECIFIED & INSTALLED TO WATERLINE SPECIFICATIONS. HOWEVER, THE MINIMUM SEPARATION SHALL NOT BE LESS THAN 2' FROM A PRIVATE WELL OR 5' FROM A PUBLIC WELL.
 - B) WHEN INSTALLING WATER & RCP SEWER MAINS, THE HORIZONTAL SEPARATION BETWEEN UTILITIES SHALL BE 10'; IF THIS SEPARATION CANNOT BE MAINTAINED DUE TO EXISTING CONDITIONS, THE VARIATION ALLOWED IN THE WATER MAIN 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.
 - C) WHERE IT IS IMPOSSIBLE TO OBTAIN PROPER SEPARATION, OR ANYTIME A SANITARY SEWER PASSES OVER A WATERMAIN, DIP MATERIALS OR STEEL ENCASEMENT EXTENDED 10' ON EACH SIDE OF CROSSING MUST BE SPECIFIED & INSTALLED TO WATERLINE SPECIFICATIONS.
 - D) 5.0' MINIMUM HORIZONTAL SEPARATION IS REQUIRED BETWEEN ALL SANITARY SEWER & STORM SEWER FACILITIES, UNLESS DIP MATERIAL IS SPECIFIED FOR SANITARY SEWER.
 - E) MAINTAIN 18" MIN. VERTICAL SEPARATION AT ALL WATERMAIN & RCP STORM DRAIN CROSSINGS, MAINTAIN 24" MIN. VERTICAL SEPARATION AT ALL SANITARY SEWER & RCP STORM DRAIN CROSSINGS, WHERE ADEQUATE SEPARATIONS CANNOT BE ACHIEVED, SPECIFY DIP MATERIALS & A CONCRETE CRADLE HAVING 6" MIN. CLEARANCE (PER CORPUD DETAILS W-41 & S-49).
 - F) ALL OTHER UNDERGROUND UTILITIES SHALL CROSS WATER & SEWER FACILITIES WITH 18" MIN. VERTICAL SEPARATION REQUIRED.
3. 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.
4. 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.
5. 3.0' MINIMUM COVER IS REQUIRED ON ALL WATER MAINS & SEWER FORCE MAINS. 4.0' MINIMUM COVER IS REQUIRED ON ALL REUSE MAINS.
6. 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 CORPUD HANDBOOK PROCEDURE.
7. INSTALL 3/4" COPPER WATER SERVICES WITH METERS LOCATED AT ROW OR WITHIN A 2X2' WATERLINE EASEMENT IMMEDIATELY ADJACENT. NOTE: IT IS THE APPLICANT'S RESPONSIBILITY TO PROPERLY SIZE THE WATER SERVICE FOR EACH CONNECTION TO PROVIDE ADEQUATE FLOW & PRESSURE.
8. INSTALL 4" PVC SEWER SERVICES @ 1.0% MINIMUM GRADE WITH CLEANOUTS LOCATED AT ROW OR EASEMENT LINE & SPACED EVERY 75 LINEAR FEET MAXIMUM.
9. 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.
10. 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.
11. NCDOT / RAILROAD ENCRICHMENT AGREEMENTS ARE REQUIRED FOR ANY UTILITY WORK (INCLUDING MAIN EXTENSIONS & SERVICE TAPS) WITHIN STATE OR RAILROAD ROW PRIOR TO CONSTRUCTION.
12. GREASE INTERCEPTOR, OIL WATER SEPARATOR SIZING CALCULATIONS & INSTALLATION SPECIFICATIONS SHALL BE APPROVED BY THE CORPUD FOG PROGRAM COORDINATOR PRIOR TO ISSUANCE OF A BUILDING PERMIT. CONTACT TIM BEASLEY AT (919) 996-2334 OR TIMOTHY.BEASLEY@RALEIGHNC.GOV FOR MORE INFORMATION.
13. CROSS-CONNECTION CONTROL: PROTECTION DEVICES ARE REQUIRED BASED ON DEGREE OF HEALTH HAZARD INVOLVED AS LISTED IN APPENDIX B OF THE RULES GOVERNING PUBLIC WATER SYSTEMS IN NORTH CAROLINA. THESE GUIDELINES ARE THE MINIMUM REQUIREMENTS. THE DEVICES SHALL MEET AMERICAN SOCIETY OF SANITARY ENGINEERING (ASSE) STANDARDS OR BE ON THE UNIVERSITY OF SOUTHERN CALIFORNIA APPROVAL LIST. THE DEVICES SHALL BE INSTALLED AND TESTED (BOTH INITIAL AND PERIODIC TESTING THEREAFTER) IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS OR THE LOCAL CROSS-CONNECTION CONTROL PROGRAM, WHICHEVER IS MORE STRINGENT. CONTACT JOANIE HARTLEY AT (919) 996-5923 OR JOANIE.HARTLEY@RALEIGHNC.GOV FOR MORE INFORMATION.

WATER METER NOTE:
CLEANOUTS CAN BE ON THE PROPERTY LINE BUT WATER METERS MUST BE FULLY IN THE RIGHT OF WAY OR IN A 2X2' 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.

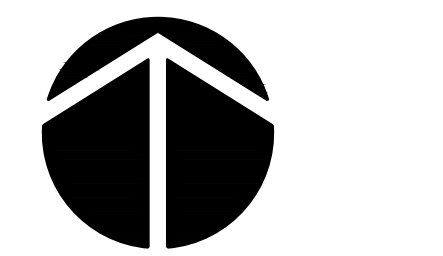
BY: _____ DATE: _____
ADMINISTRATOR

Public Sewer Collection / Extension System
The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # _____
Authorization to Construct _____
Date _____

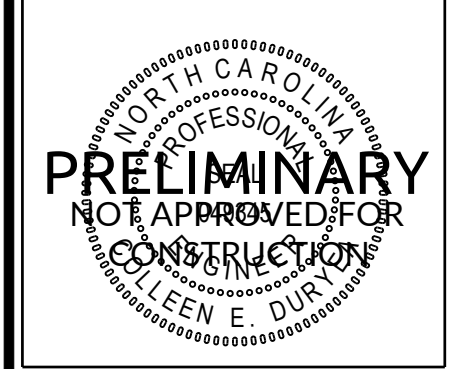
Public Water Distribution / Extension System
The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # _____
Authorization to Construct _____
Date _____



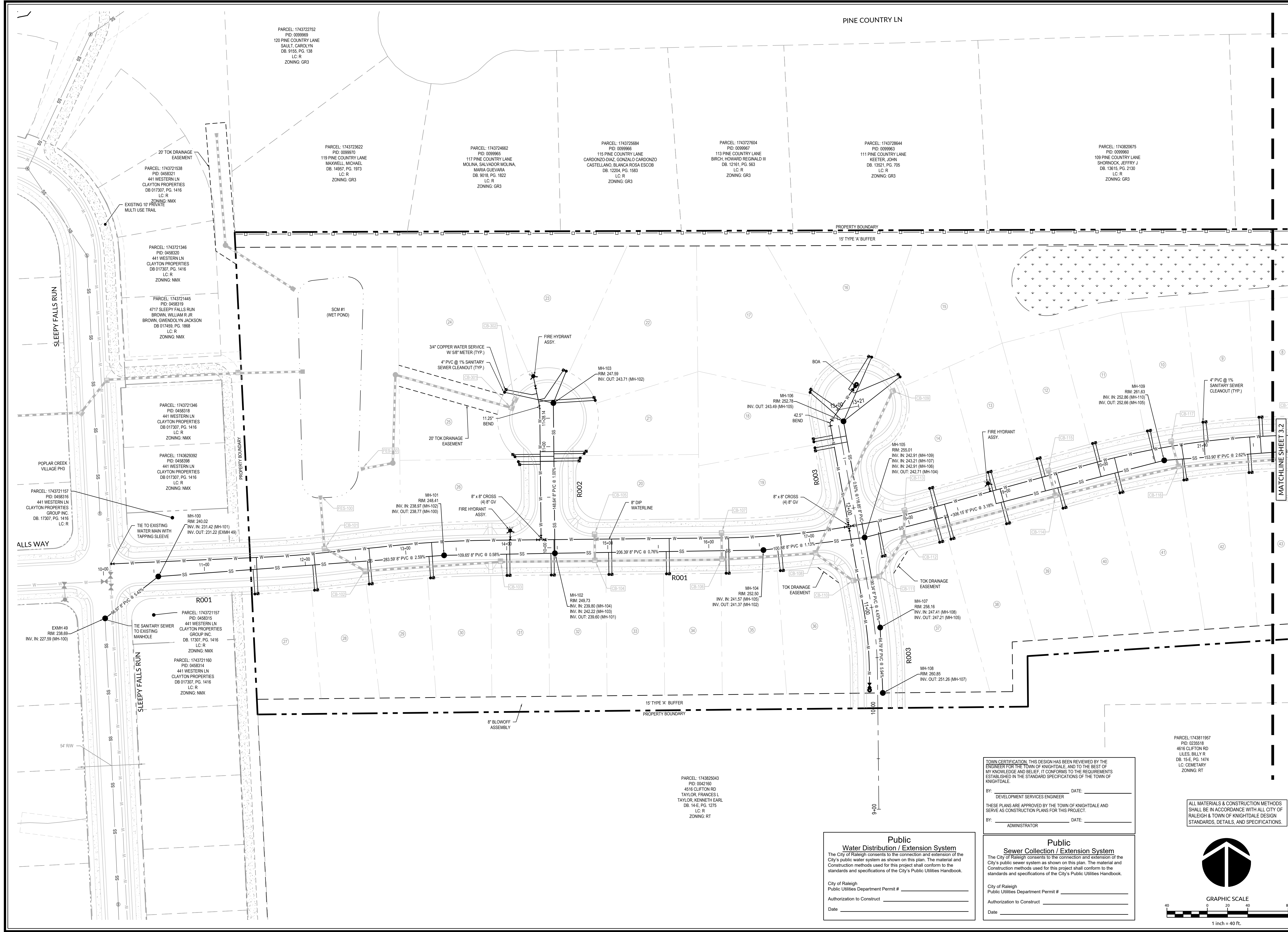
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Job No.	02190259	Drawn By	WR
Date	10/21/19	Designer	WR



Revisions		
1	TOK Comments	12/12/19
2	SITE REVISIONS	05/08/20
3	SITE REVISIONS	5/28/20

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PARCEL: 174322752
PID: 0099969
120 PINE COUNTRY LANE
SAULT, CAROLYN
DB: 9155, PG. 138
LC: R
ZONING: GR3

PARCEL: 174323622
PID: 0099970
119 PINE COUNTRY LANE
MAXWELL, MICHAEL
DB: 14557, PG. 1973
LC: R
ZONING: GR3

PARCEL: 174325684
PID: 0099965
115 PINE COUNTRY LANE
CARDONZO, BLANCA ROSA CARDONZO
CASTELLANO, BLANCA ROSA ESCOBAR
DB: 12204, PG. 1553
LC: R
ZONING: GR3

PARCEL: 174327604
PID: 0099967
113 PINE COUNTRY LANE
BIRCH, HOWARD REGINALD III
DB: 12161, PG. 563
LC: R
ZONING: GR3

PARCEL: 174328644
PID: 0099963
111 PINE COUNTRY LANE
KEETER, JOHN
DB: 13521, PG. 705
LC: R
ZONING: GR3

PARCEL: 174320675
PID: 0099960
109 PINE COUNTRY LANE
SHORNOCK, JEFFREY J
DB: 13615, PG. 2130
LC: R
ZONING: GR3

PARCEL: 174321538
PID: 0458321
441 WESTERN LN
CLAYTON PROPERTIES
DB: 017307, PG. 1416
LC: R
ZONING: NMX

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PID: 0458320
441 WESTERN LN
CLAYTON PROPERTIES
DB: 017307, PG. 1416
LC: R
ZONING: NMX

PARCEL: 174321445
PID: 0458319
4717 SLEEPY FALLS RUN
BROWN, WILLIAM JR
BROWN, GWENDOLYN JACKSON
DB: 017459, PG. 1888
LC: R
ZONING: NMX

PARCEL: 174321346
PID: 0458318
441 WESTERN LN
CLAYTON PROPERTIES
DB: 017307, PG. 1416
LC: R
ZONING: NMX

PARCEL: 174329392
PID: 0458338
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CLAYTON PROPERTIES
DB: 017307, PG. 1416
LC: R
ZONING: NMX

PARCEL: 174321157
PID: 0458316
441 WESTERN LN
CLAYTON PROPERTIES
GROUP INC.
DB: 17307, PG. 1416
LC: R

PARCEL: 174321157
PID: 0458315
441 WESTERN LN
CLAYTON PROPERTIES
GROUP INC.
DB: 17307, PG. 1416
LC: R
ZONING: NMX

PARCEL: 174321160
PID: 0458314
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DB: 017307, PG. 1416
LC: R
ZONING: NMX

PARCEL: 174325043
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4516 CLIFTON RD
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TAYLOR, KENNETH EARL
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LC: R
ZONING: RT

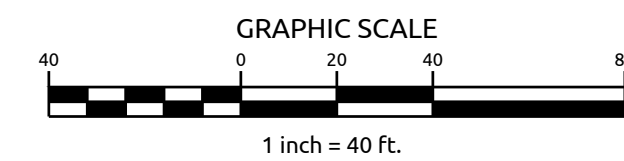
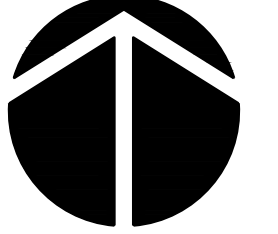
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4616 CLIFTON RD
LILES, BILLY R
DB: 15-E, PG. 1474
LC: CEMETARY
ZONING: RT

Public Water Distribution / Extension System
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City of Raleigh
Public Utilities Department Permit # _____
Authorization to Construct _____
Date _____

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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

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Job No.	02190259	Drawn By	WR
Date	10/21/19	Designer	WR



Revisions

1	TOK Comments	12/12/19
2	SITE REVISIONS	05/08/20
3	SITE REVISIONS	5/28/20

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**POPLAR CREEK VILLAGE
PHASE IV**

TOWN OF KNIGHTDALE, NORTH CAROLINA

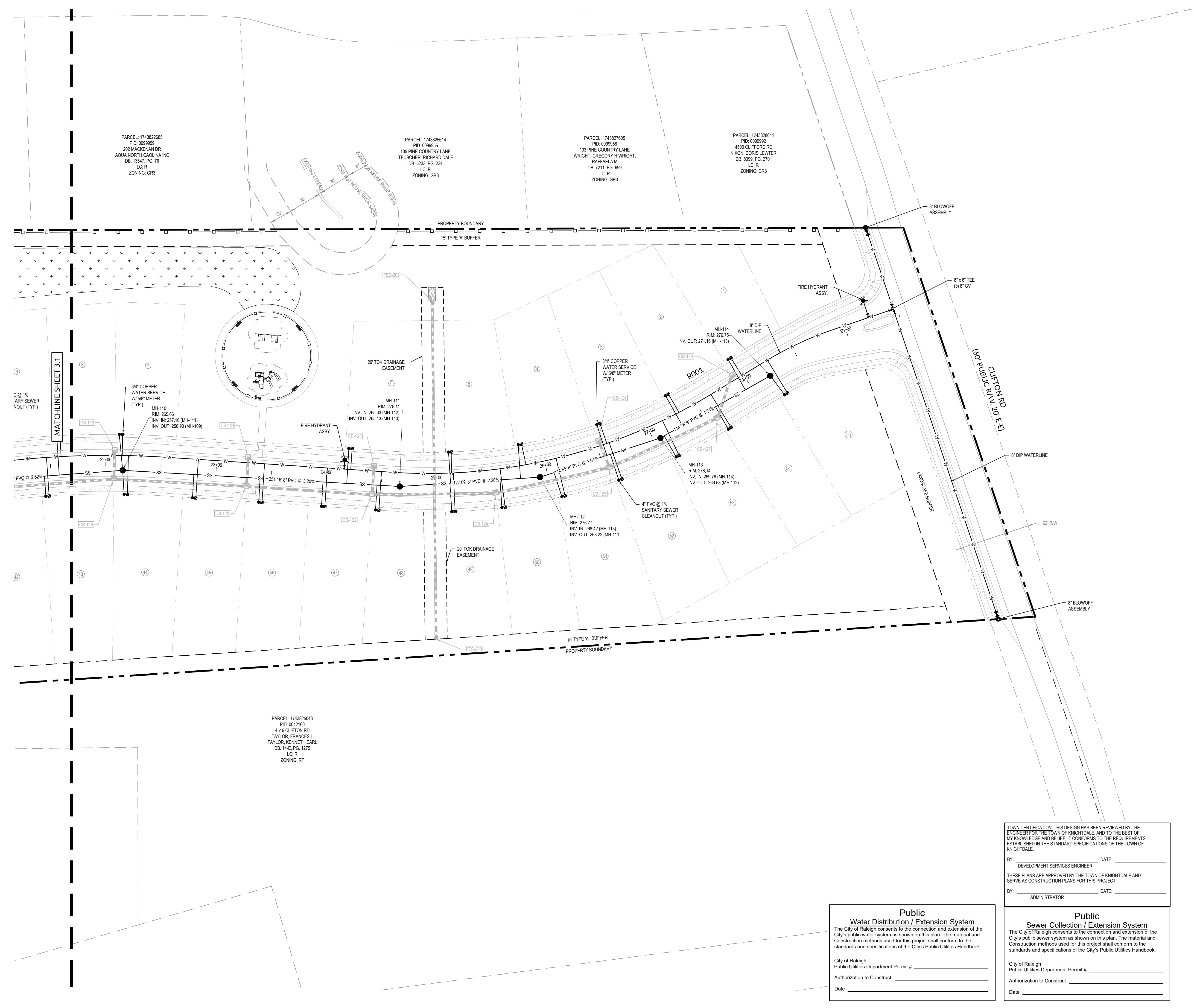
UTILITY PLAN

Job No.	02190259	Drawn By	WR
Date	10/21/19	Designer	WR



Revisions		
1	TOK Comments	12/12/19
2	SITE REVISIONS	05/08/20
3	SITE REVISIONS	5/28/20

Sheet No.
3.2



PARCEL: 174382685
PID: 0099569
202 MACKENAN DR
AQUA NORTH CAROLINA INC
DB: 13547, PG. 76
LC: R
ZONING: GR3

PARCEL: 174382614
PID: 0099566
105 PINE COUNTRY LANE
TEUSCHER, RICHARD DALE
DB: 9333, PG. 734
LC: R
ZONING: GR3

PARCEL: 1743827605
PID: 0099558
103 PINE COUNTRY LANE
WRIGHT, GREGORY H WRIGHT,
RAFFAELA M
DB: 7211, PG. 699
LC: R
ZONING: GR3

PARCEL: 174382644
PID: 0099562
4500 CLIFTON RD
NIXON, DORIS LEWTER
DB: 8399, PG. 2701
LC: R
ZONING: GR3

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

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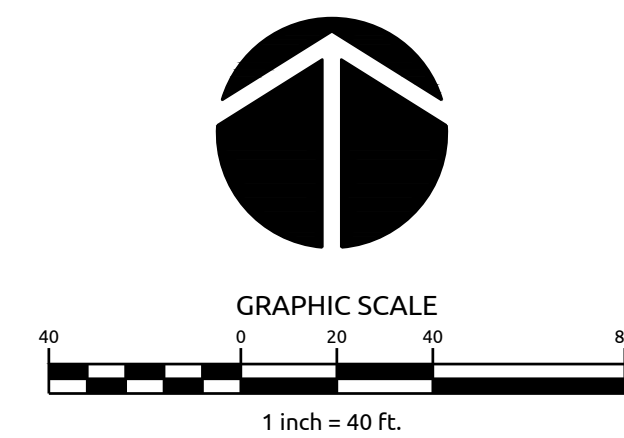
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EXISTING ADJOINER INFO

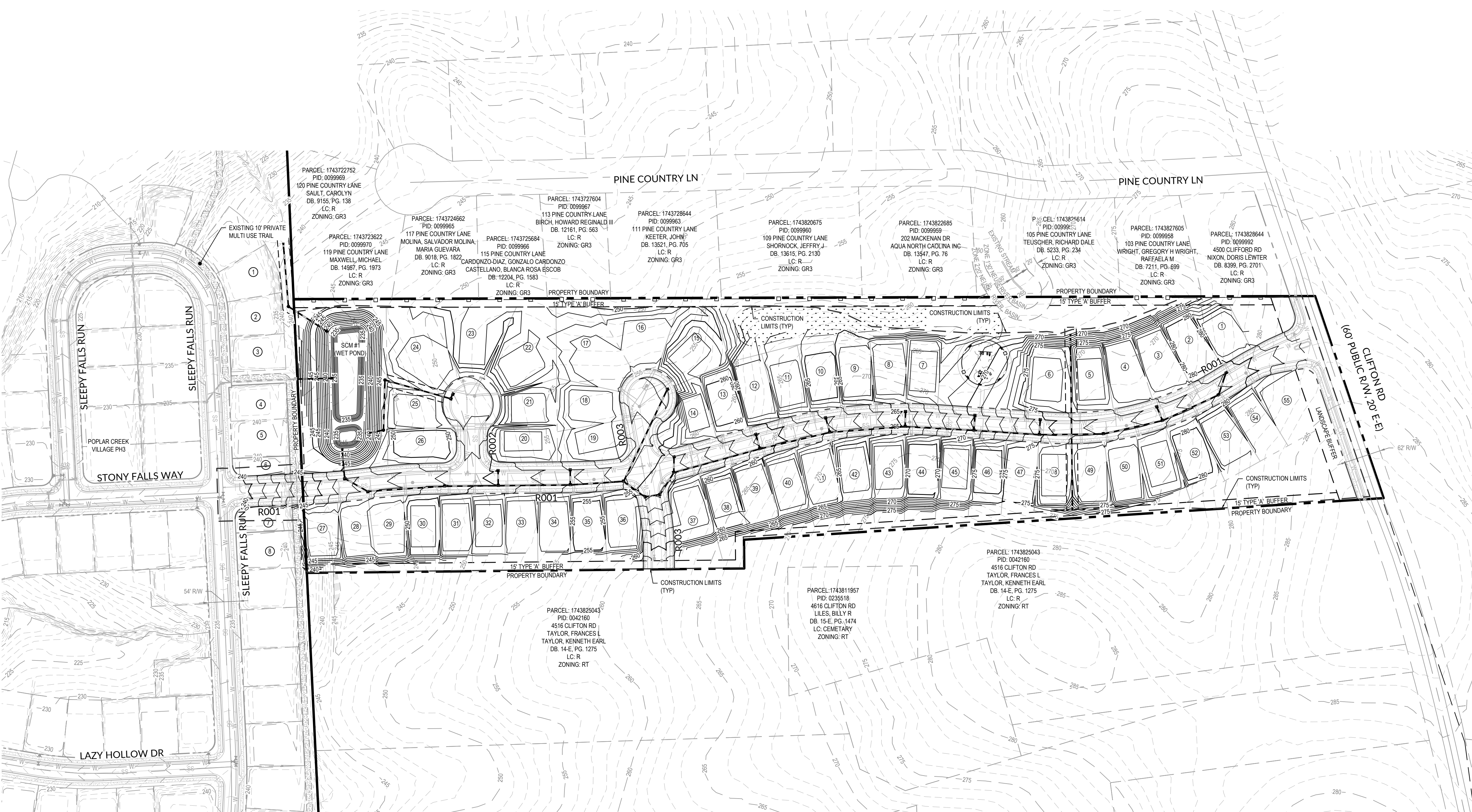
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2	174321346	0458320	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	R
3	174321445	0458319	4717 SLEEPY FALLS RUN	BROWN, WILLIAM R JR BROWN, GWENDOLYN JACKSON	017459	1968	R
4	174321346	0458318	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	R
5	174320392	0458398	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	R
6	174321157	0458316	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	R
7	174321157	0458315	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	R
8	174321160	0458314	441 WESTERN LN	CLAYTON PROPERTIES	017307	1416	R

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 NAME TOOD 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 NC025-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 DISSIPATION PAD AND THE NATURAL GROUND.
- STORM PIPE TRENCH EXCAVATION AND BACKFILLING SHALL BE PERFORMED IN ACCORDANCE WITH TOWN OF KNIGHTDALE STANDARD SPECIFICATIONS AND DETAILS. PLEASE CONTACT THE TOWN OF KNIGHTDALE DEVELOPMENT SERVICES ENGINEER PRIOR TO THE INSTALLATION OF ALL STORM DRAIN PIPE. STORMWATER CALCULATIONS ARE BASED ON A MAXIMUM 3,500 SF OF IMPERVIOUS AREA PER LOT.
- ALL STORM DRAINAGE PIPE SHALL BE CLASS III REINFORCED CONCRETE PIPE (RCP) UNLESS NOTED OTHERWISE.
- DISCHARGE BASED ON 10-YR STORM EVENT UNLESS NOTED OTHERWISE.
- OB-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 LUDO 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.



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BY: _____ DATE: _____
DEVELOPMENT SERVICES ENGINEER

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BY: _____ DATE: _____
ADMINISTRATOR

Public Sewer Collection / Extension System

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City of Raleigh
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Authorization to Construct _____
Date _____

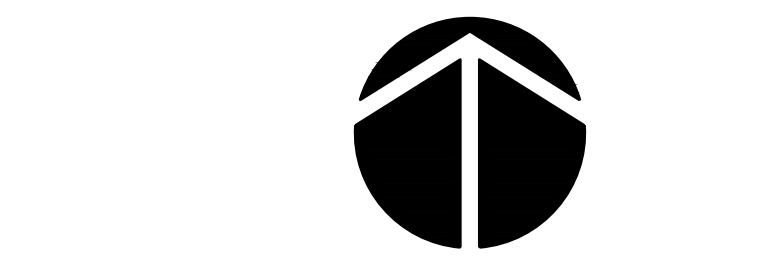
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Revisions

NO.	REVISIONS	DATE
1	TOK Comments	12/12/19
2	SITE REVISIONS	05/08/20
3	SITE REVISIONS	5/28/20



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WithersRavenel
Engineers | Planners | Surveyors

115 MacKinnon 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 & GRADING PLAN

Job No.	02190259	Drawn By	WR
Date	10/21/19	Designer	WR

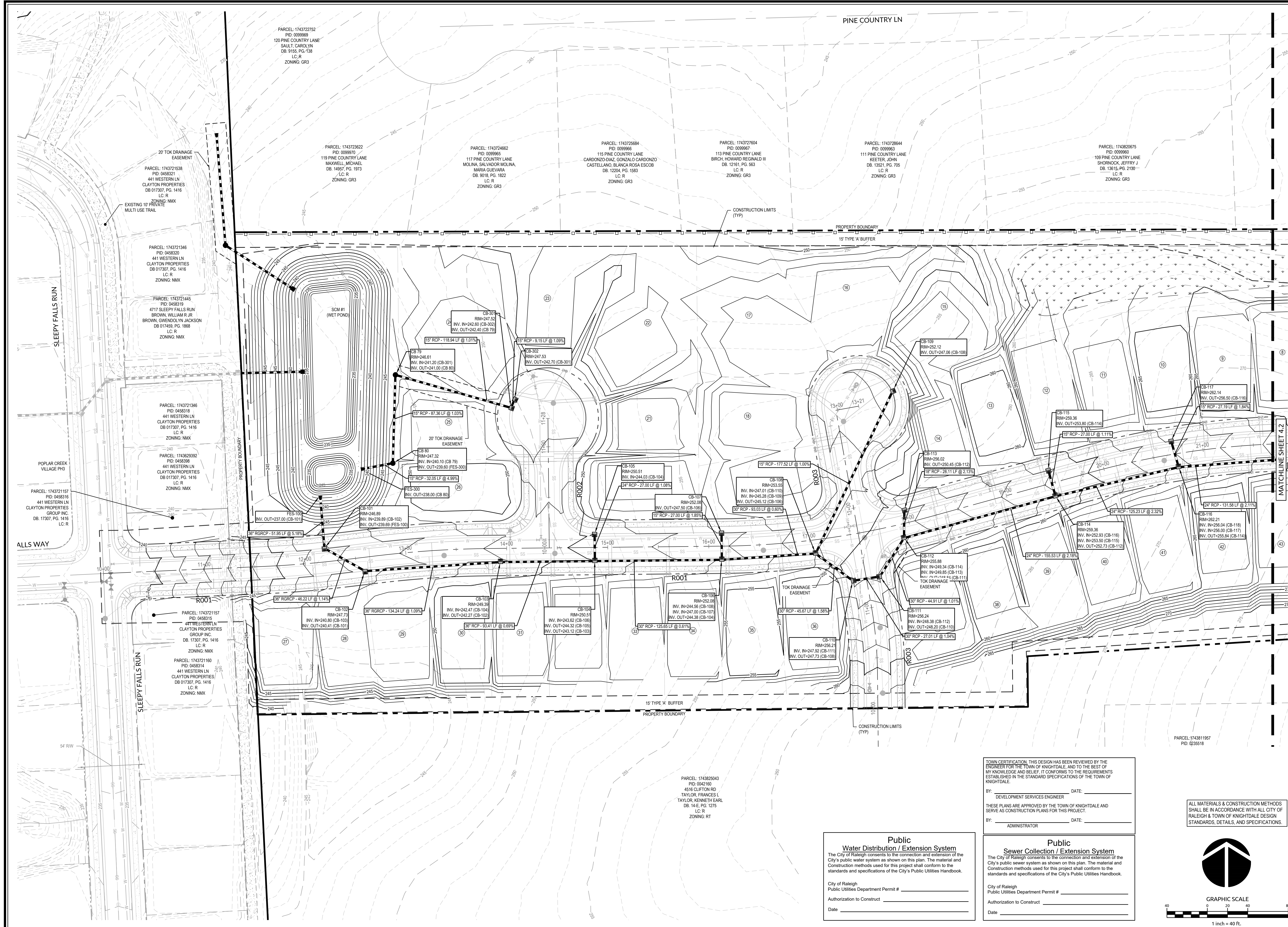


Revisions

NO.	REVISIONS	DATE
1	TOK Comments	12/12/19
2	SITE REVISIONS	05/08/20
3	SITE REVISIONS	5/28/20

Sheet No.
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WithersRavenel
 Engineers | Planners | Surveyors

**POPLAR CREEK VILLAGE
 PHASE IV**
 TOWN OF KNIGHTDALE, NORTH CAROLINA

**STORM DRAINAGE &
 GRADING PLAN**

Job No.	02190259	Drawn By	WR
Date	10/21/19	Designer	WR



Revisions	1	2	3
1	TOK Comments	12/12/19	
2	SITE REVISIONS	05/08/20	
3	SITE REVISIONS	5/28/20	

Sheet No.
4.1

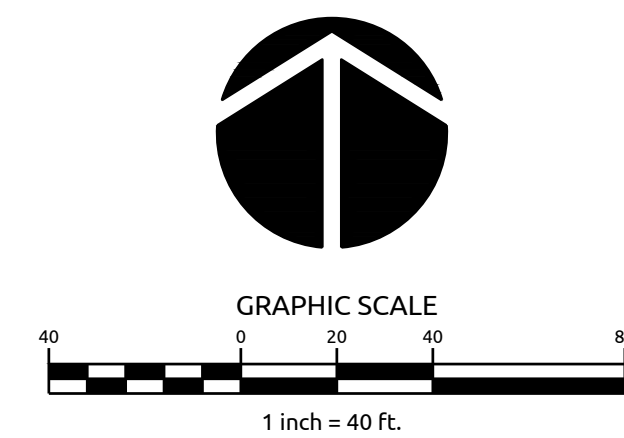
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**POPLAR CREEK VILLAGE
PHASE IV**

TOWN OF KNIGHTDALE, NORTH CAROLINA

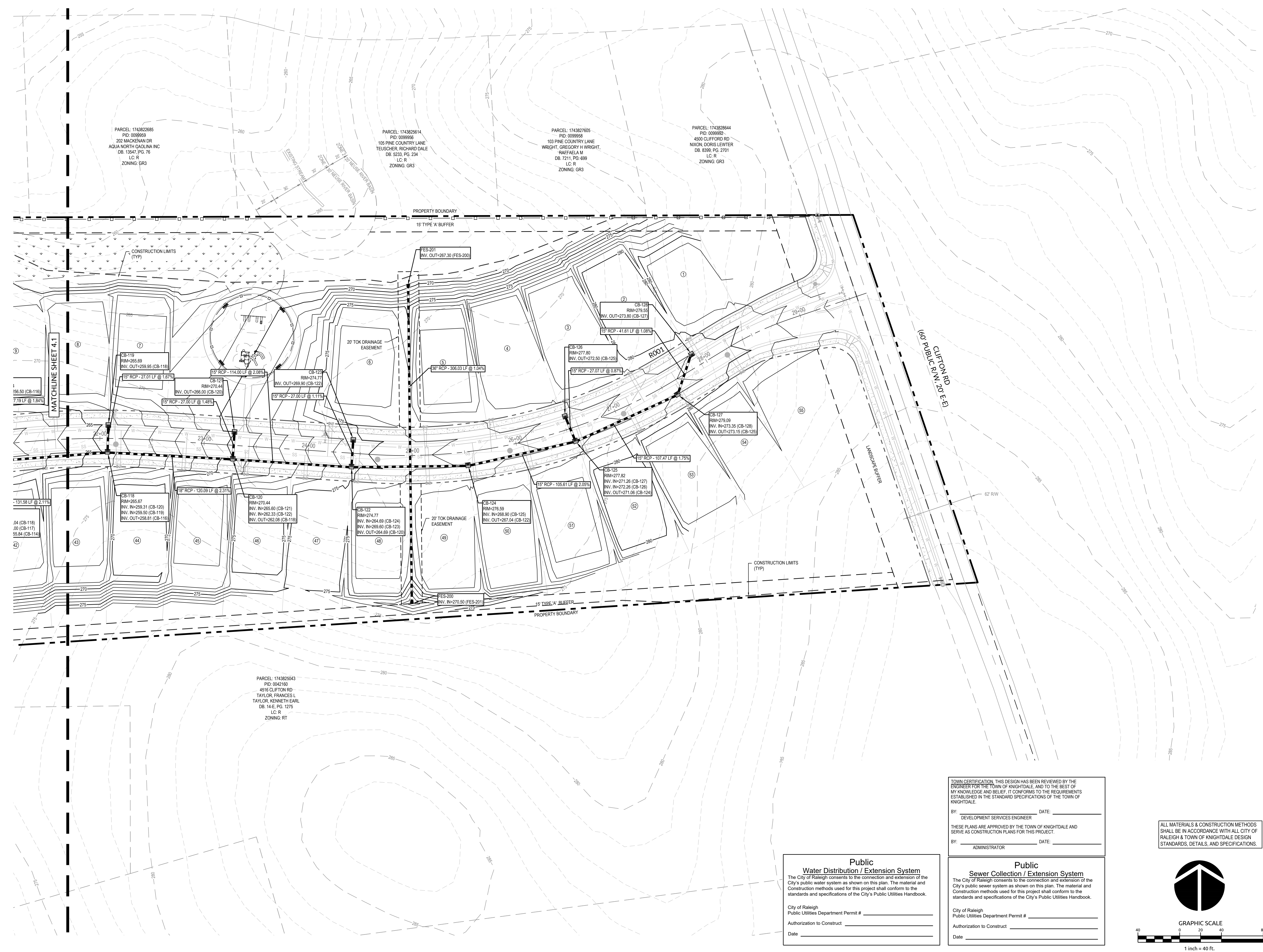
**STORM DRAINAGE &
GRADING PLAN**

Job No. 02190259 Drawn By WR
Date 10/21/19 Designer WR



Revisions	Date
1 TOK Comments	12/12/19
2 SITE REVISIONS	05/08/20
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Sheet No.
4.2



PARCEL: 174382685
PID: 0099569
302 MACKENAN DR
AQUA NORTH CAROLINA INC
DB: 13547, PG: 76
LC: R
ZONING: GR3

PARCEL: 174382614
PID: 0099566
105 PINE COUNTRY LANE
TEUSCHER, RICHARD DALE
DB: 9333, PG: 234
LC: R
ZONING: GR3

PARCEL: 174382705
PID: 0099558
103 PINE COUNTRY LANE
WRIGHT, GREGORY H WRIGHT,
RAEFAELA M
DB: 7211, PG: 699
LC: R
ZONING: GR3

PARCEL: 174382644
PID: 0099592
4500 CLIFTON RD
NIXON, DORIS LEWTER
DB: 8399, PG: 2701
LC: R
ZONING: GR3

PARCEL: 174382543
PID: 0042160
4516 CLIFTON RD
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TAYLOR, KENNETH EARL
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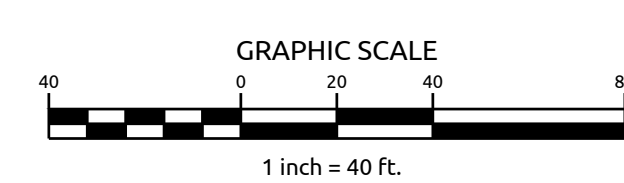
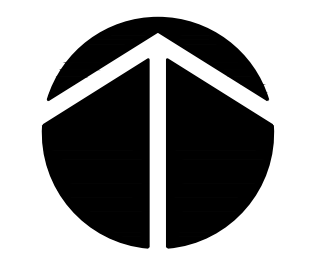
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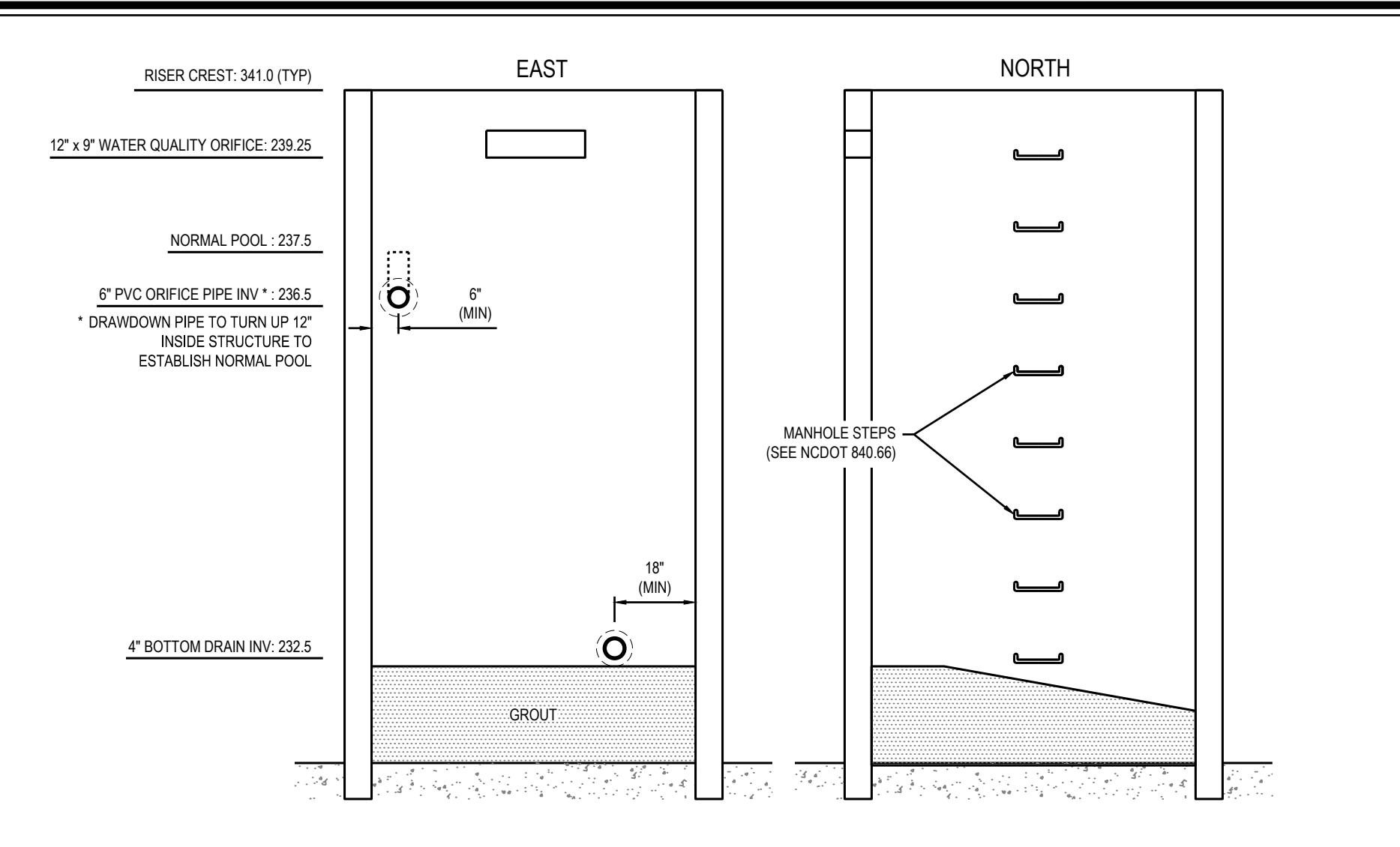
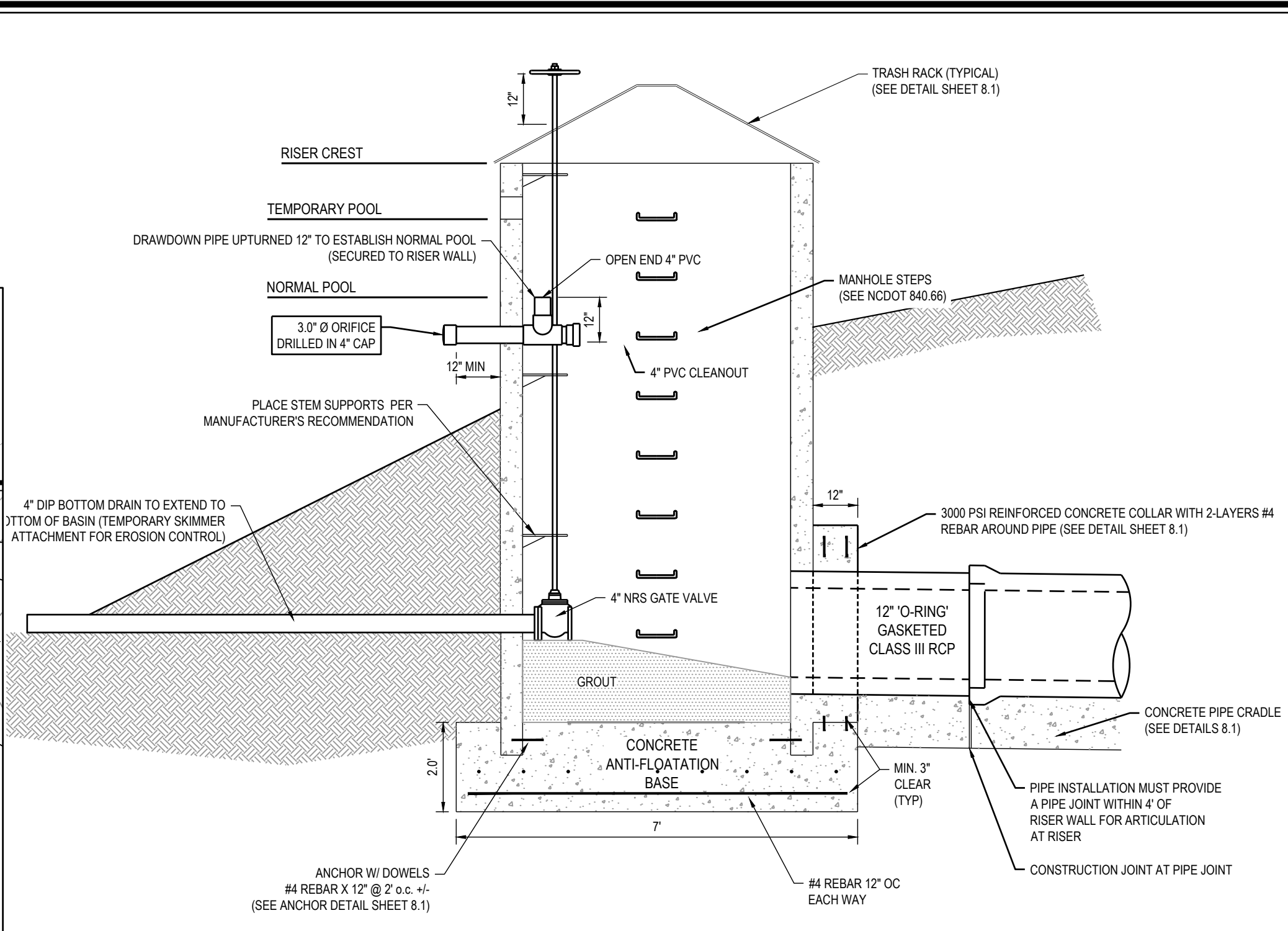
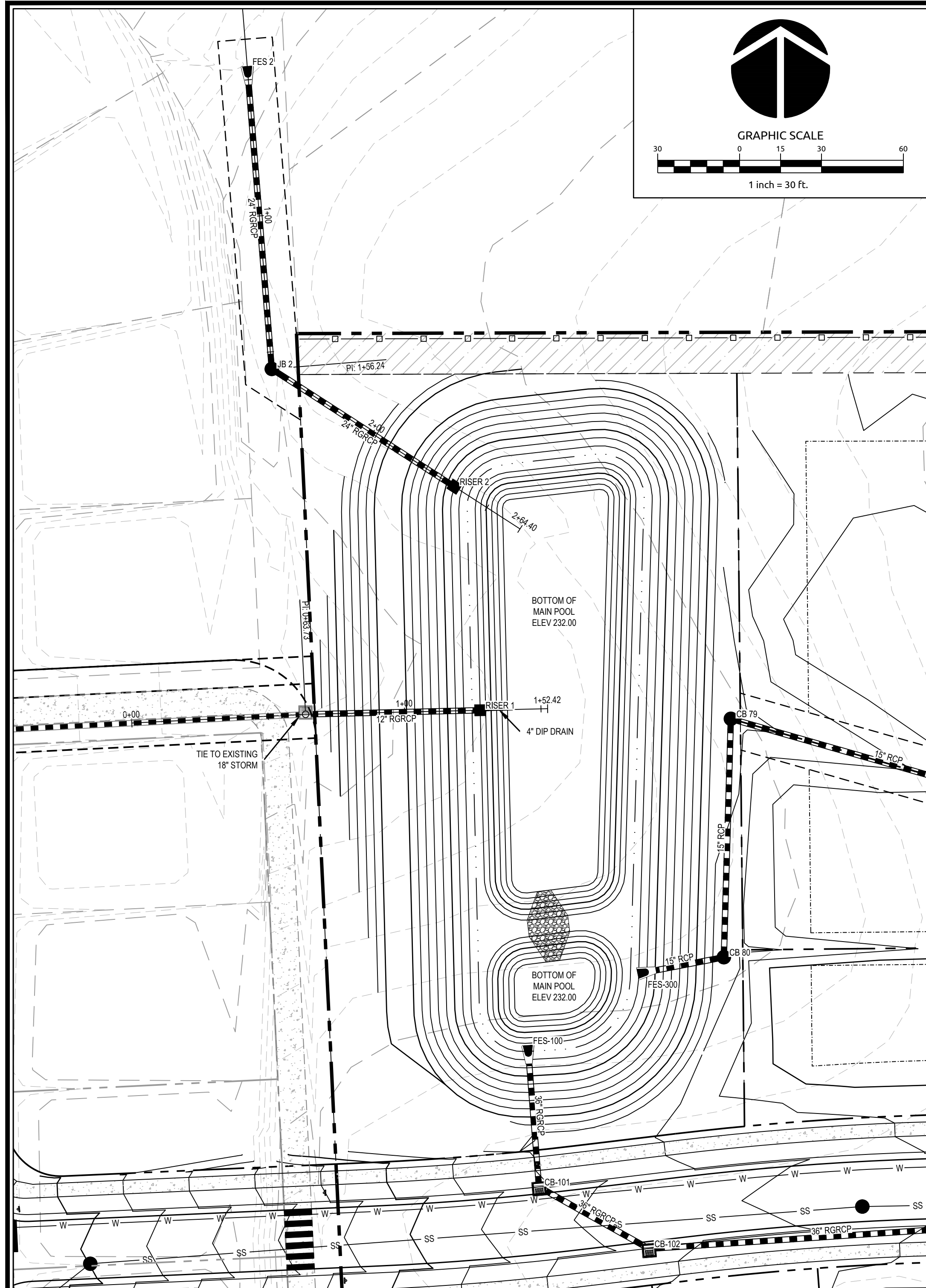
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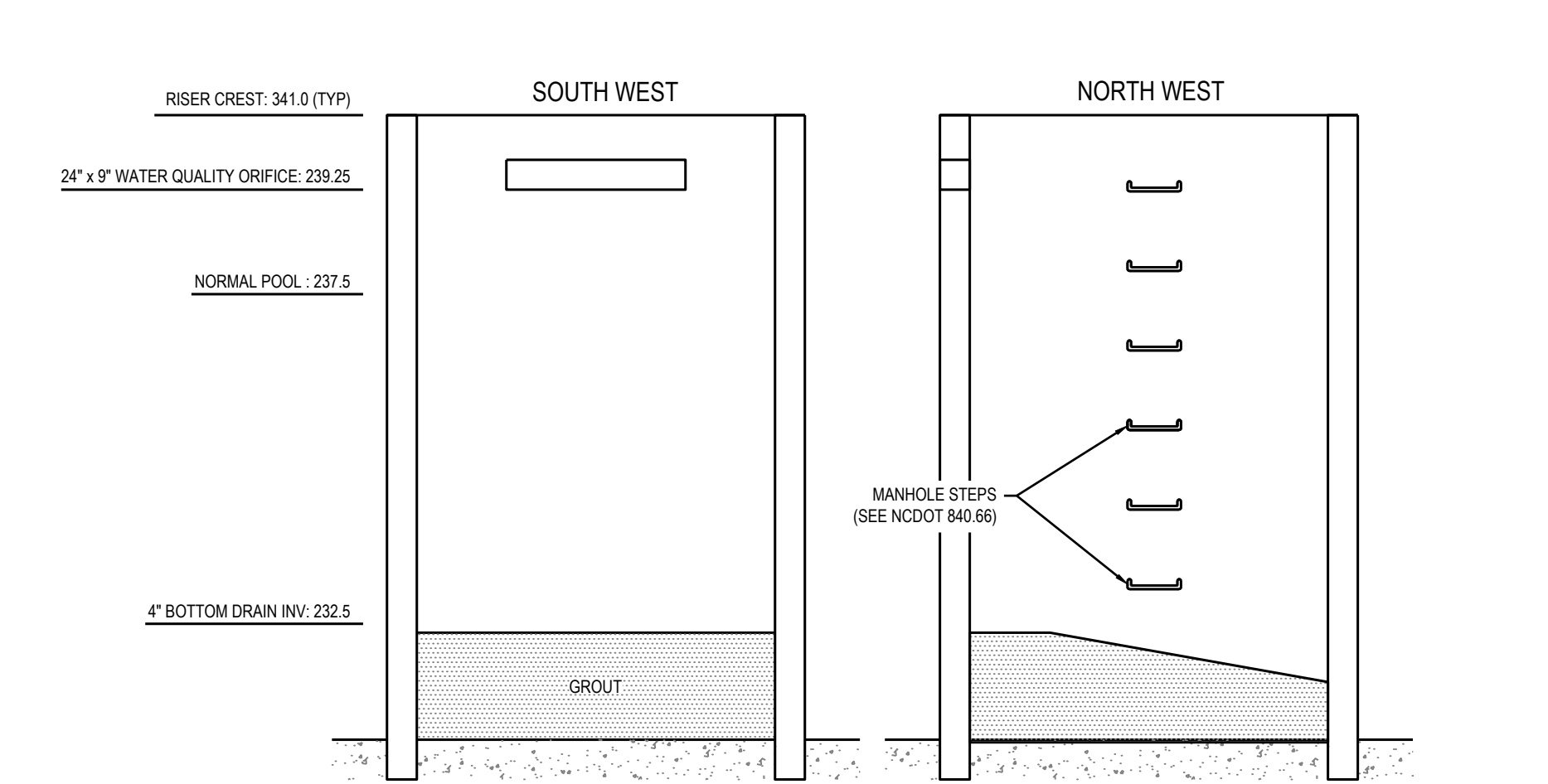
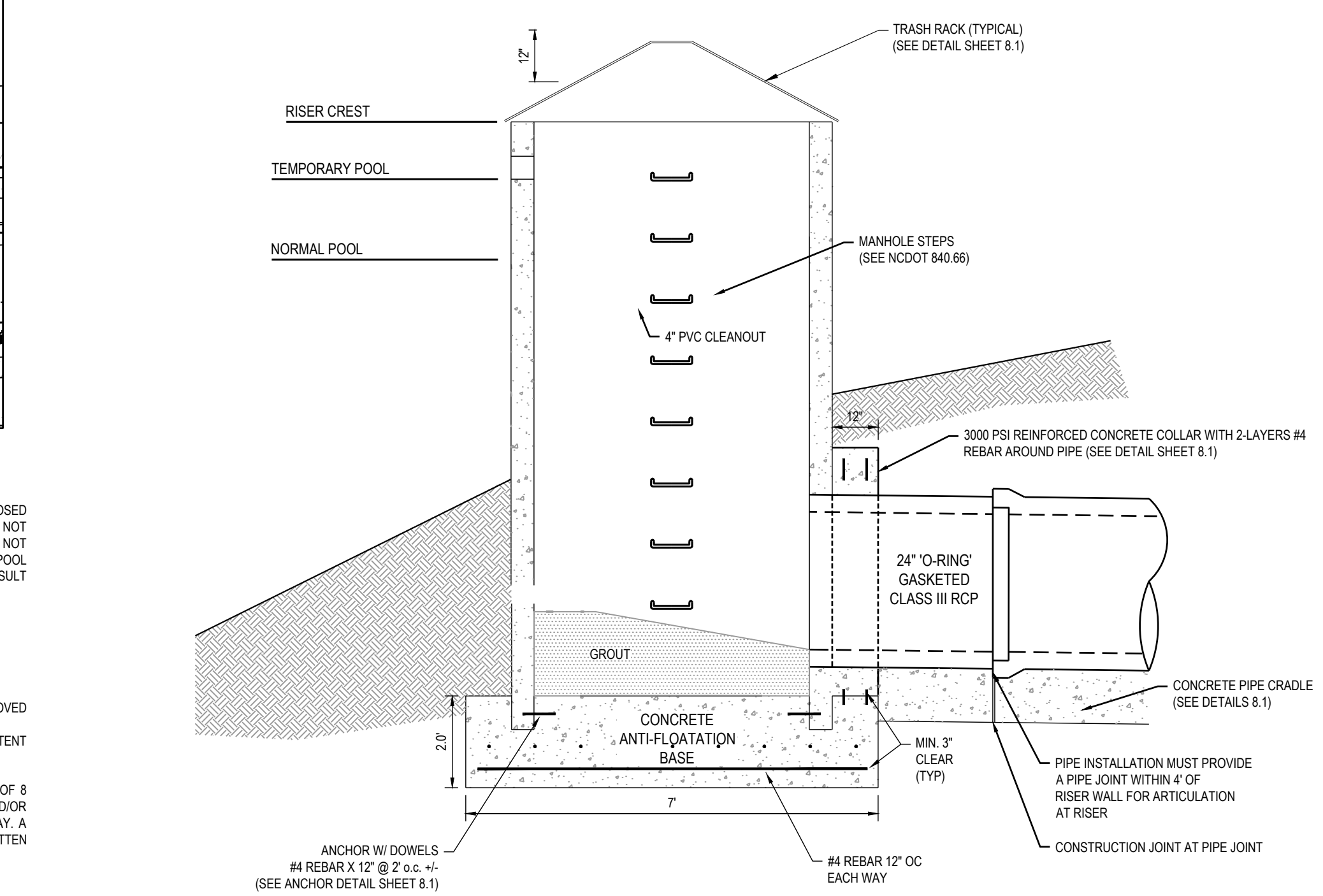
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RISER 1 WALL ELEVATIONS
NTS



RISER 2 WALL ELEVATIONS
NTS

STORMWATER CONTROL 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 BE 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 3 FT 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. IF THE SEASONAL HIGH WATER TABLE IS IDENTIFIED OUTSIDE OF THE ABOVE LIMITS OR NOT ENCOUNTERED, IT IS RECOMMENDED THAT A CLAY LINER BE INSTALLED TO MAINTAIN NORMAL POOL ELEVATION, SUITABLE HABITAT FOR LITTORAL SHELF VEGETATION, AND DESIGN AESTHETICS. CONSULT ENGINEER AND OWNER REGARDING THE INSTALLATION OF A CLAY LINER PRIOR TO SCM CONVERSION.

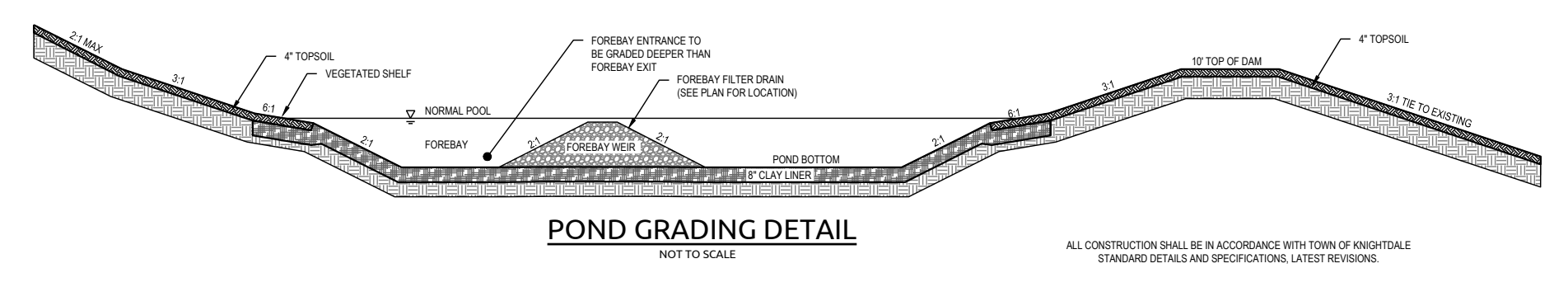
THE CLAY LINER FOR THE WET POND SHALL BE AT LEAST 2" THICK AND MEET THE FOLLOWING SPECIFICATIONS:

- 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 98% PER ASTM D698, AND WITHIN 3% OF THE OPTIMUM MOISTURE CONTENT (1% COMPACTION DENSITY TEST PER 500 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 PUNCTURE OR DAMAGE THE CLAY. A CLAYSOIL, NO ORGANICS, MIXTURE MAY BE USED IF THE ABOVE SPECIFICATIONS ARE SATISFIED AND WITH WRITTEN APPROVAL BY THE ENGINEER.

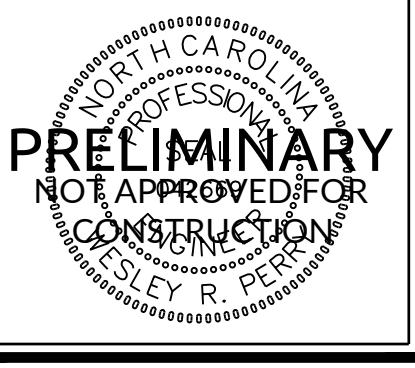
PRECAST CONCRETE MATERIALS NOTES:

- ALL PRECAST CONCRETE STRUCTURES SHALL CONFORM TO ASTM C813 (RECTANGULAR) OR C478 (ROUND).
- ALL REINFORCED CONCRETE PIPE SHALL CONFORM TO ASTM C78, CLASS III (UNLESS OTHERWISE NOTED).
 - O-RING JOINTS SHALL CONFORM TO ASTM C443 & ASTM C361.
 - NON O-RING JOINTS SHALL CONFORM TO ASTM C390



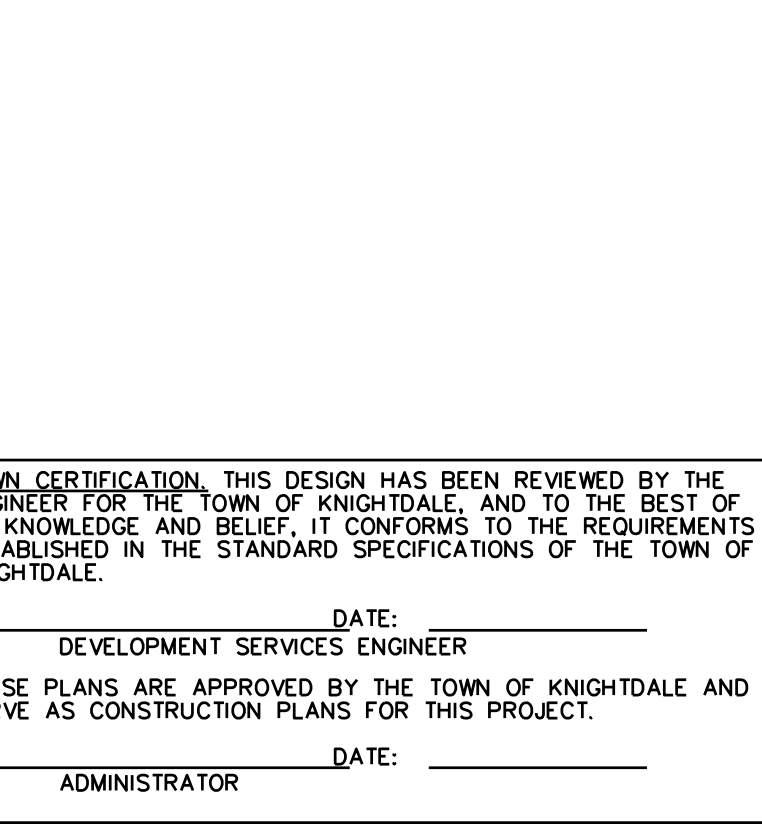
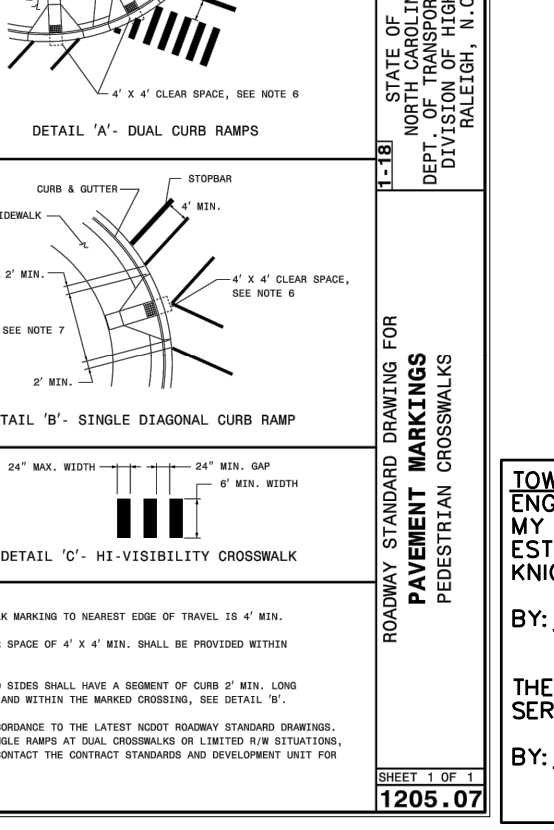
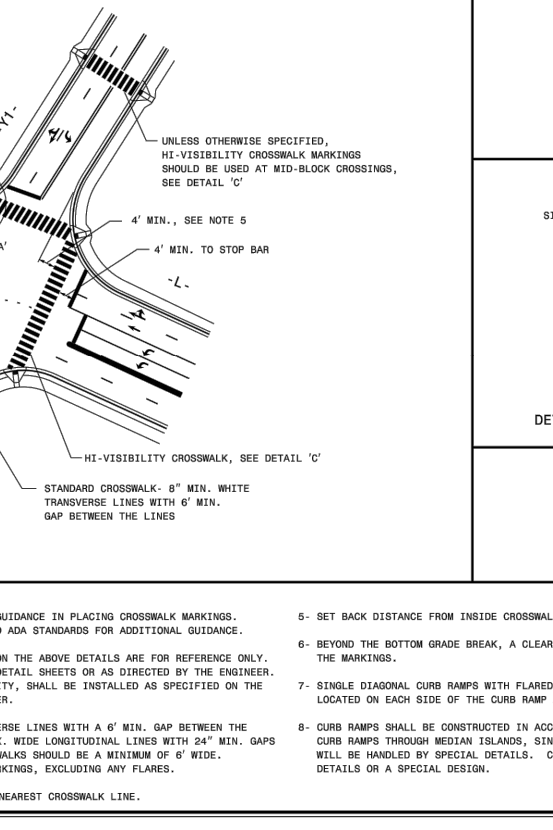
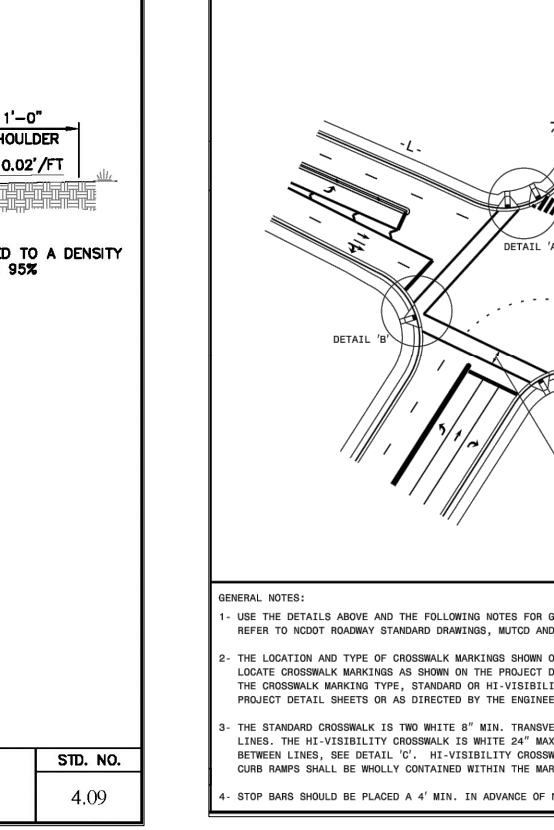
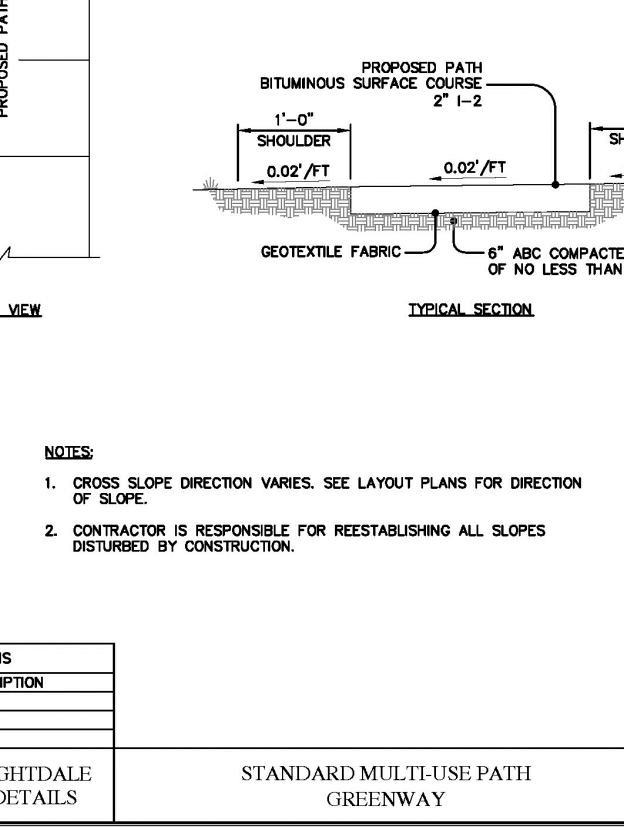
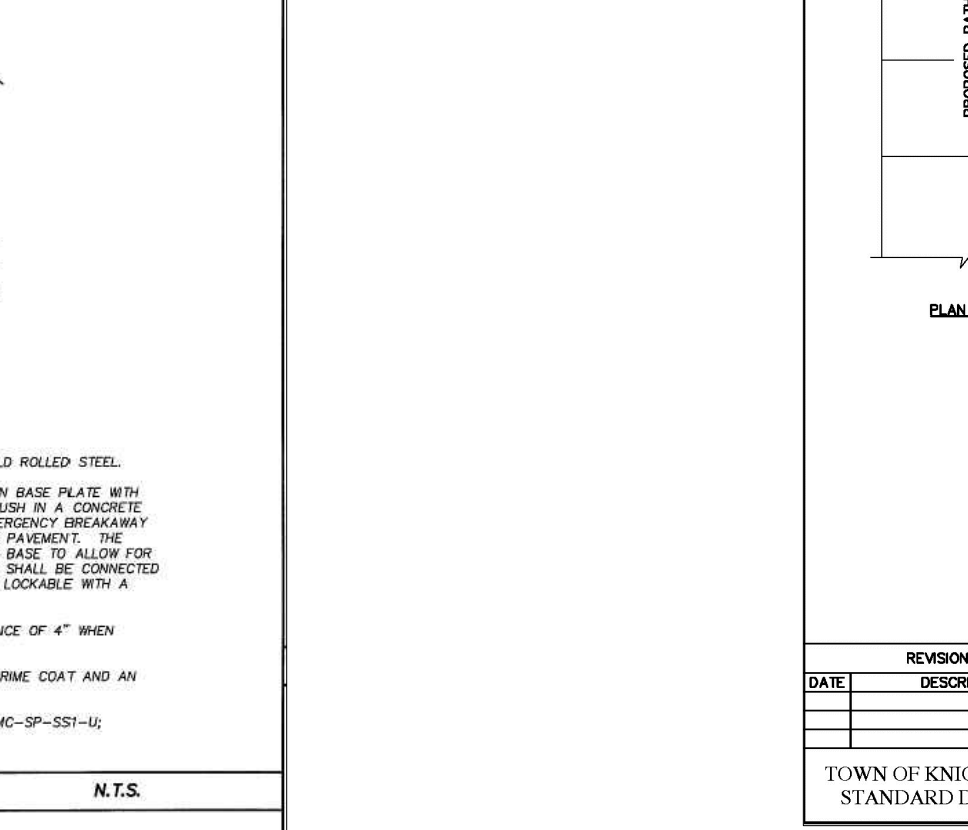
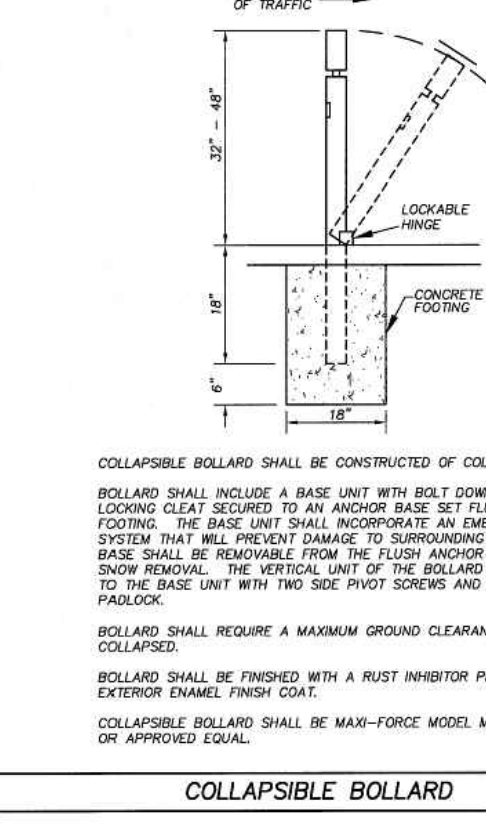
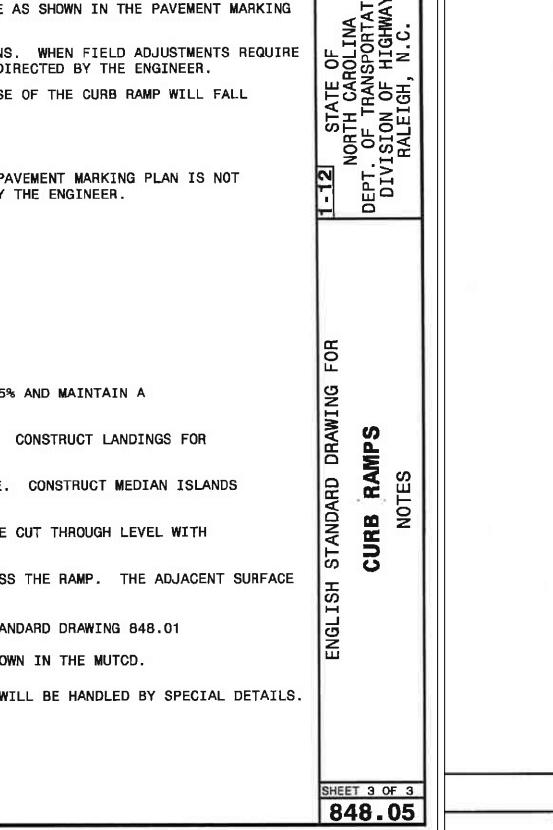
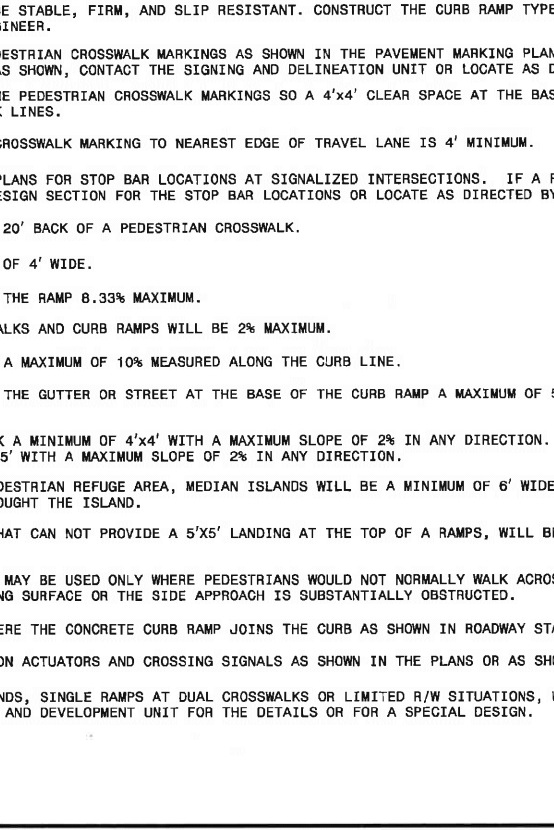
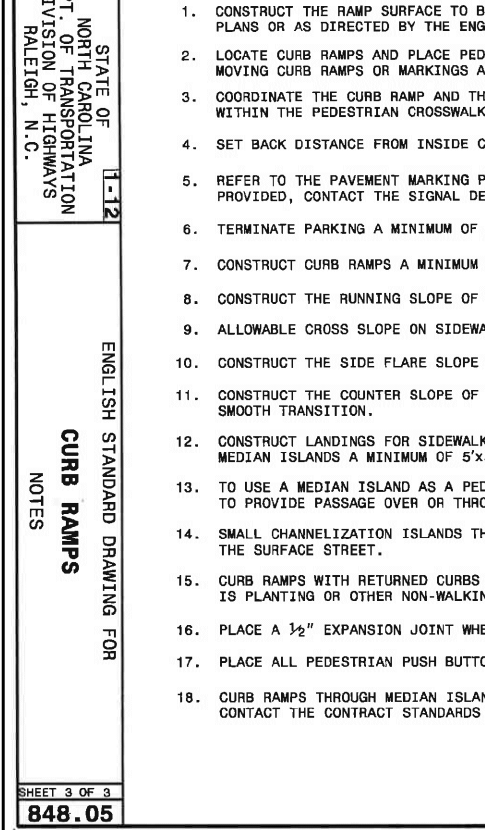
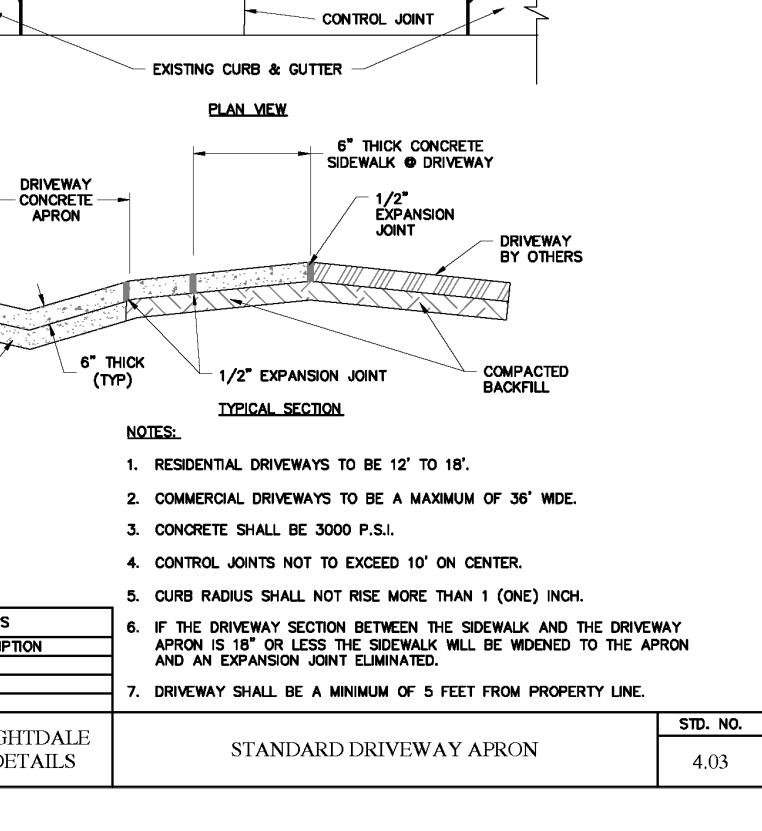
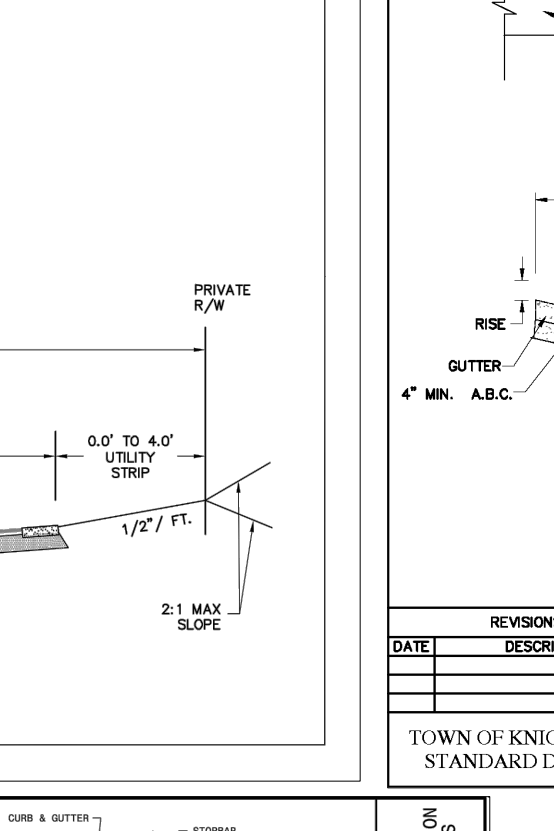
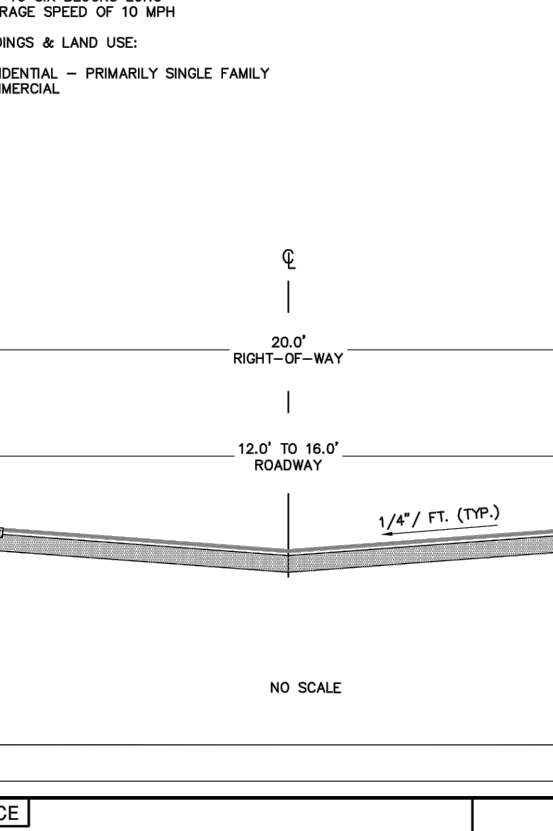
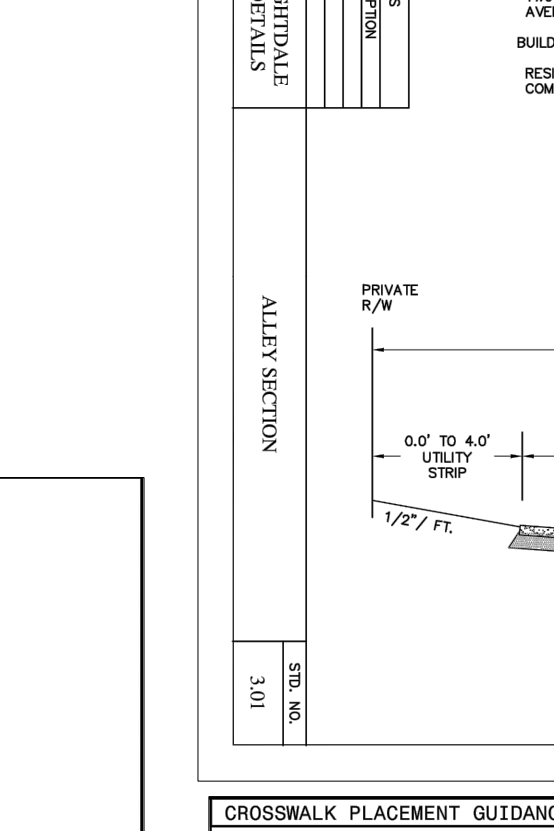
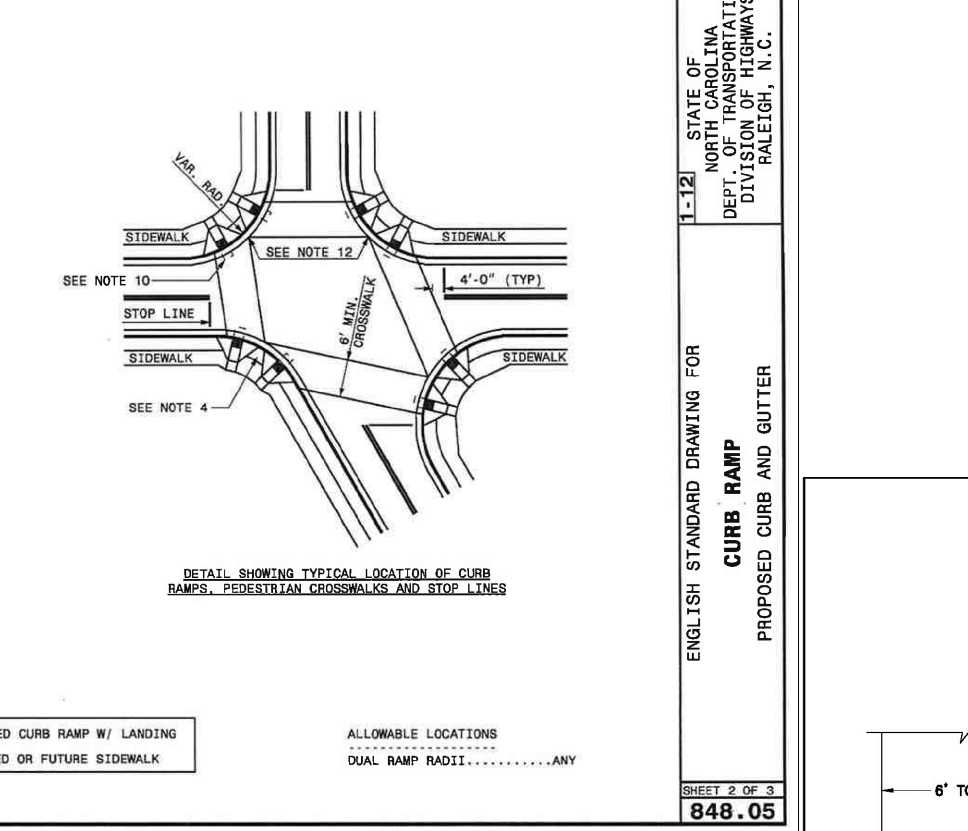
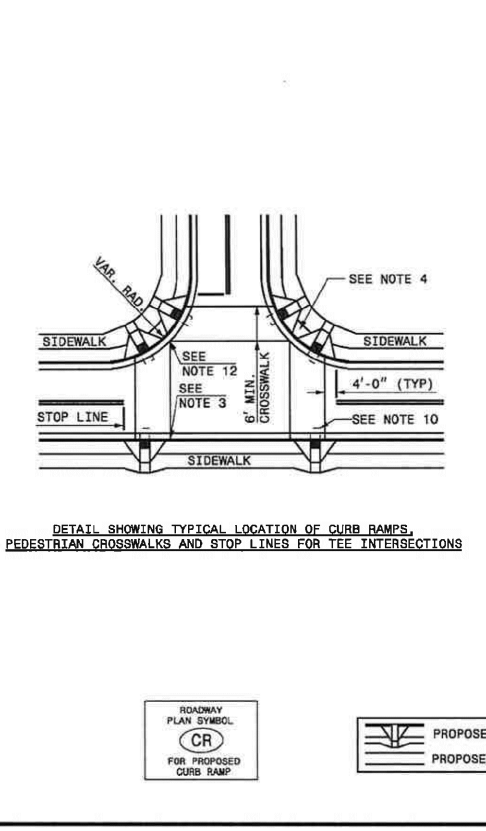
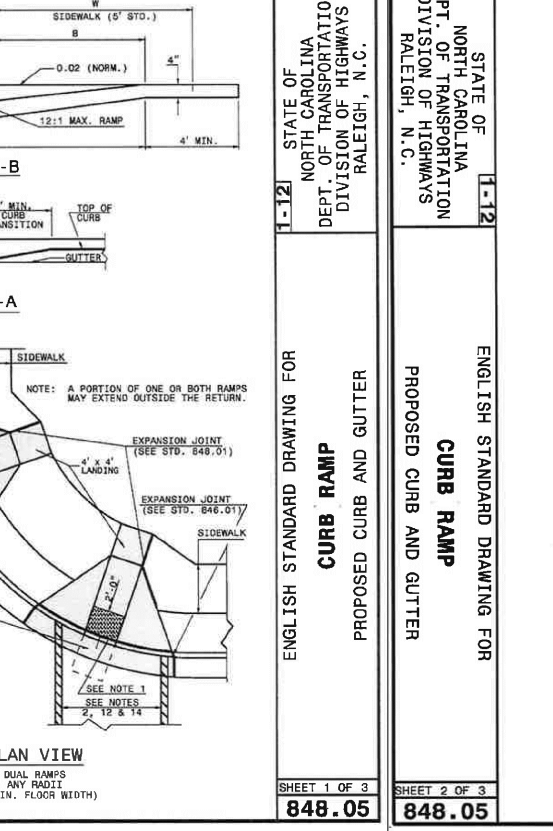
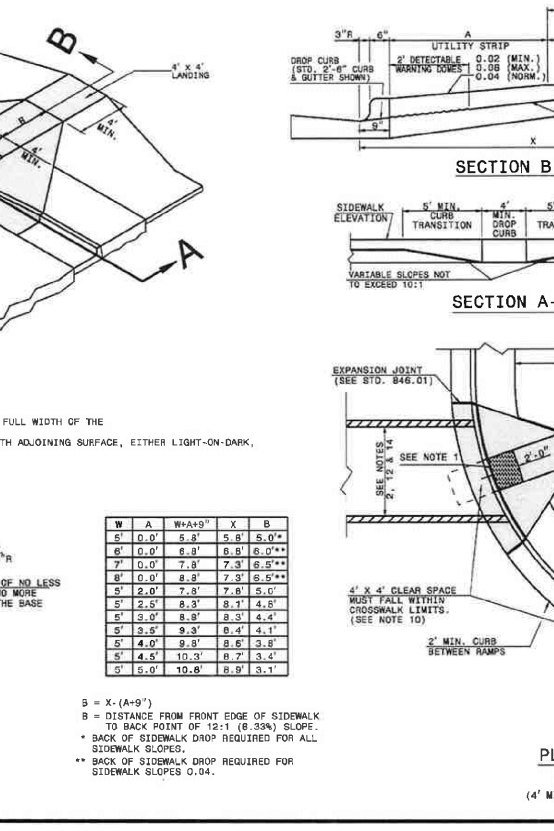
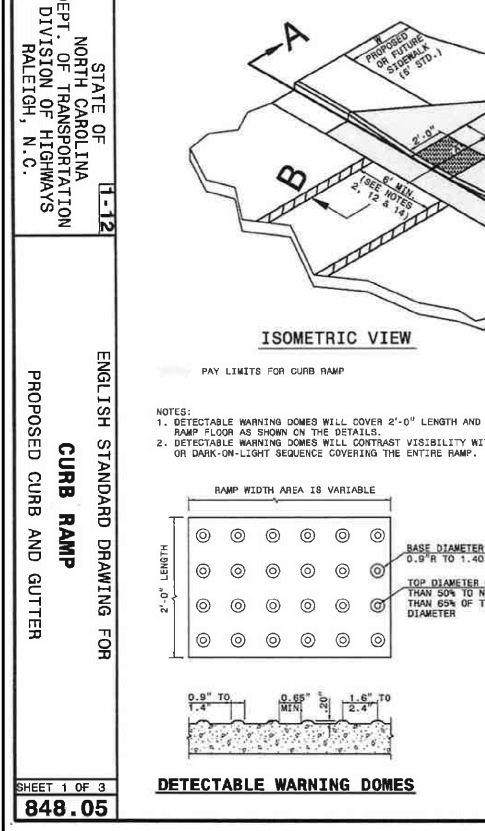
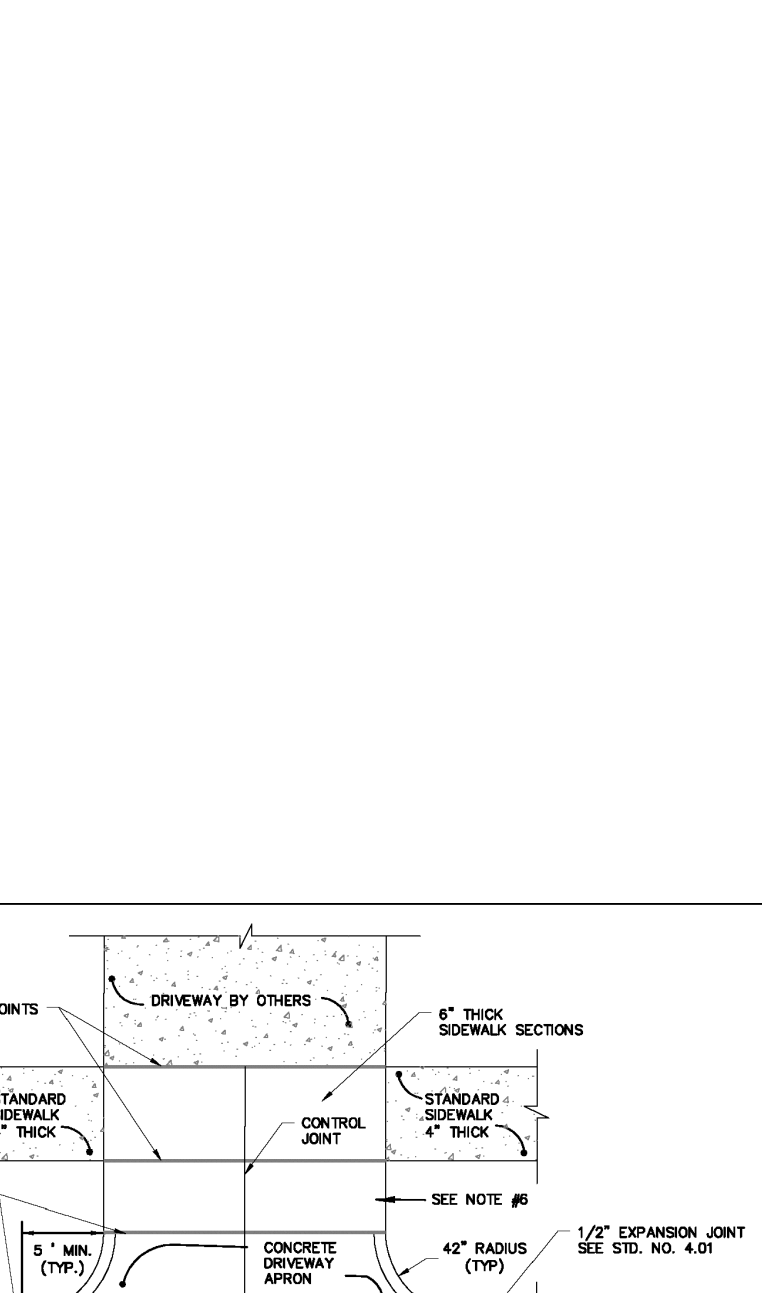
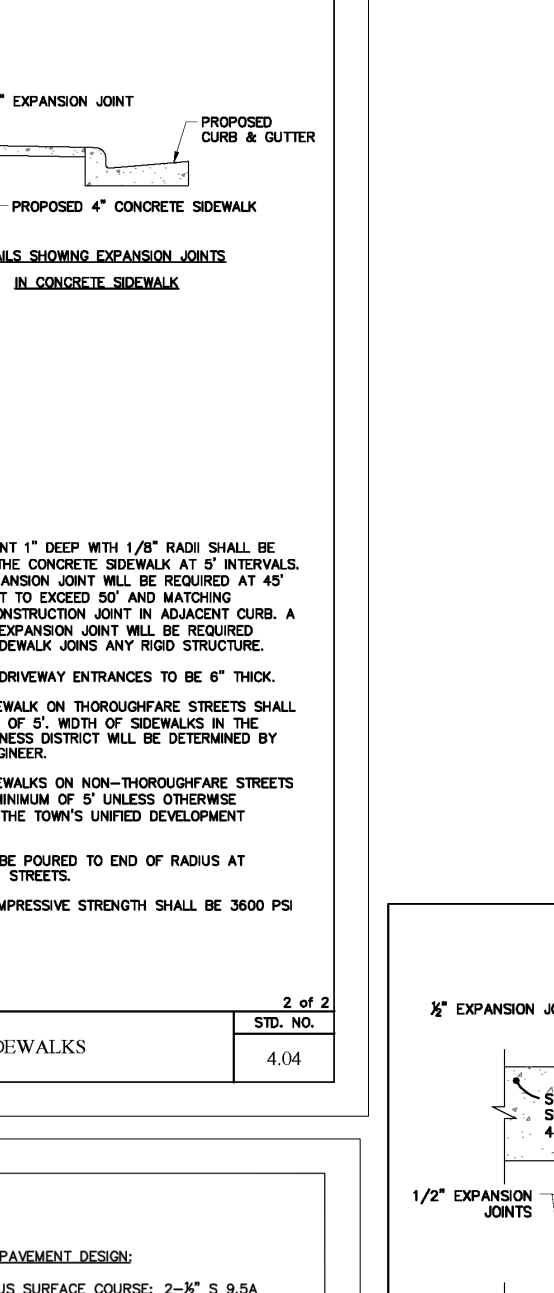
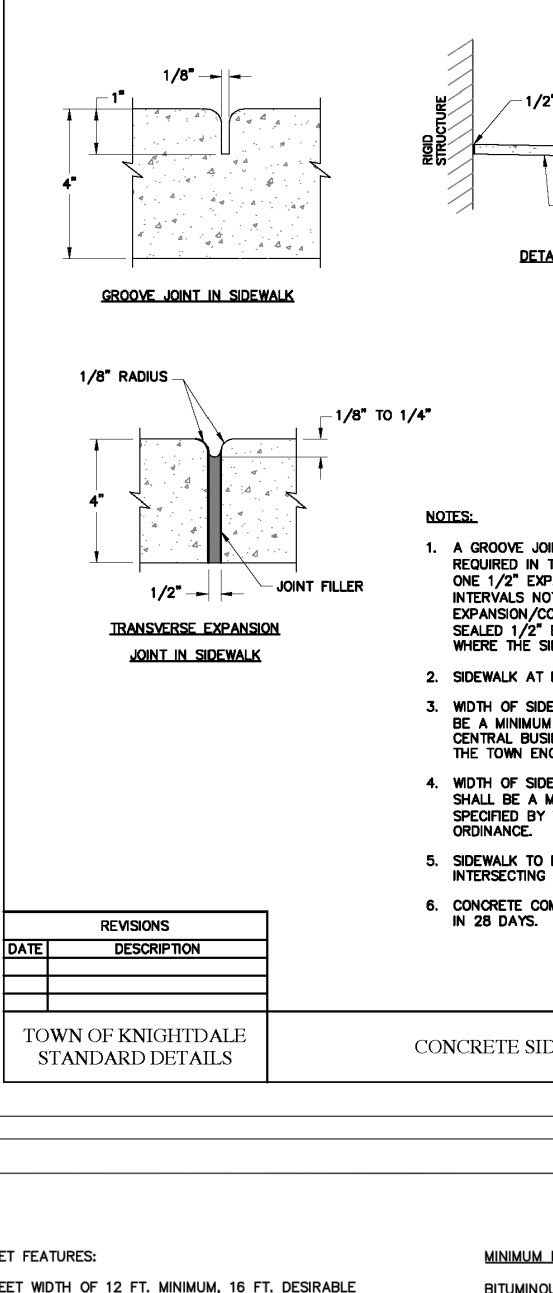
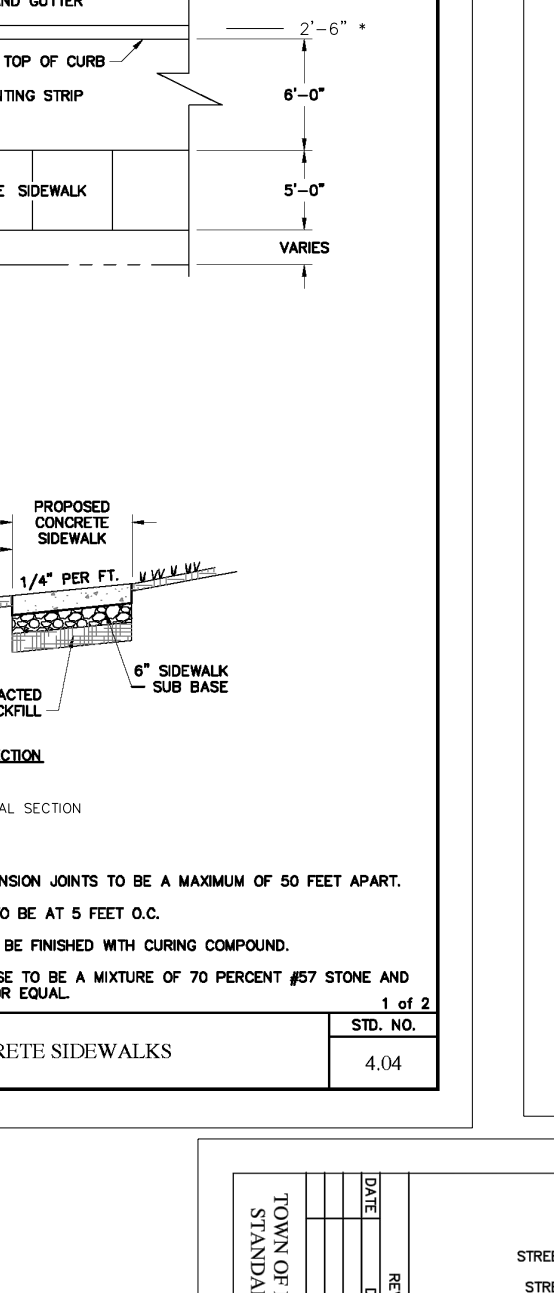
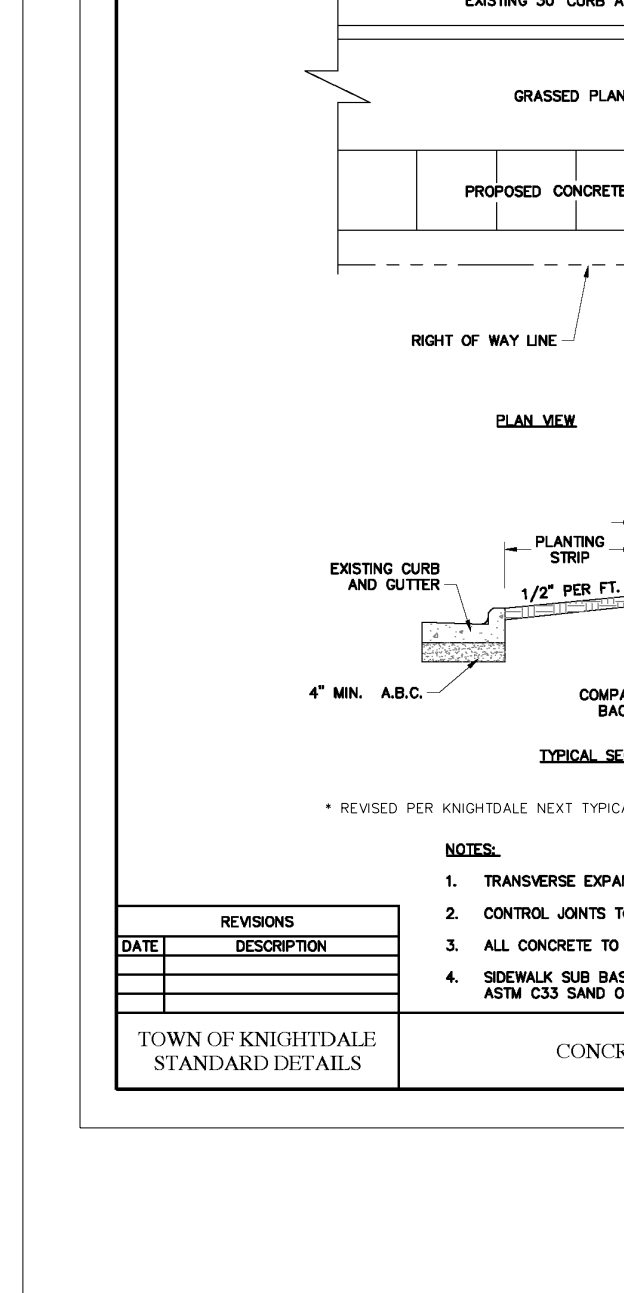
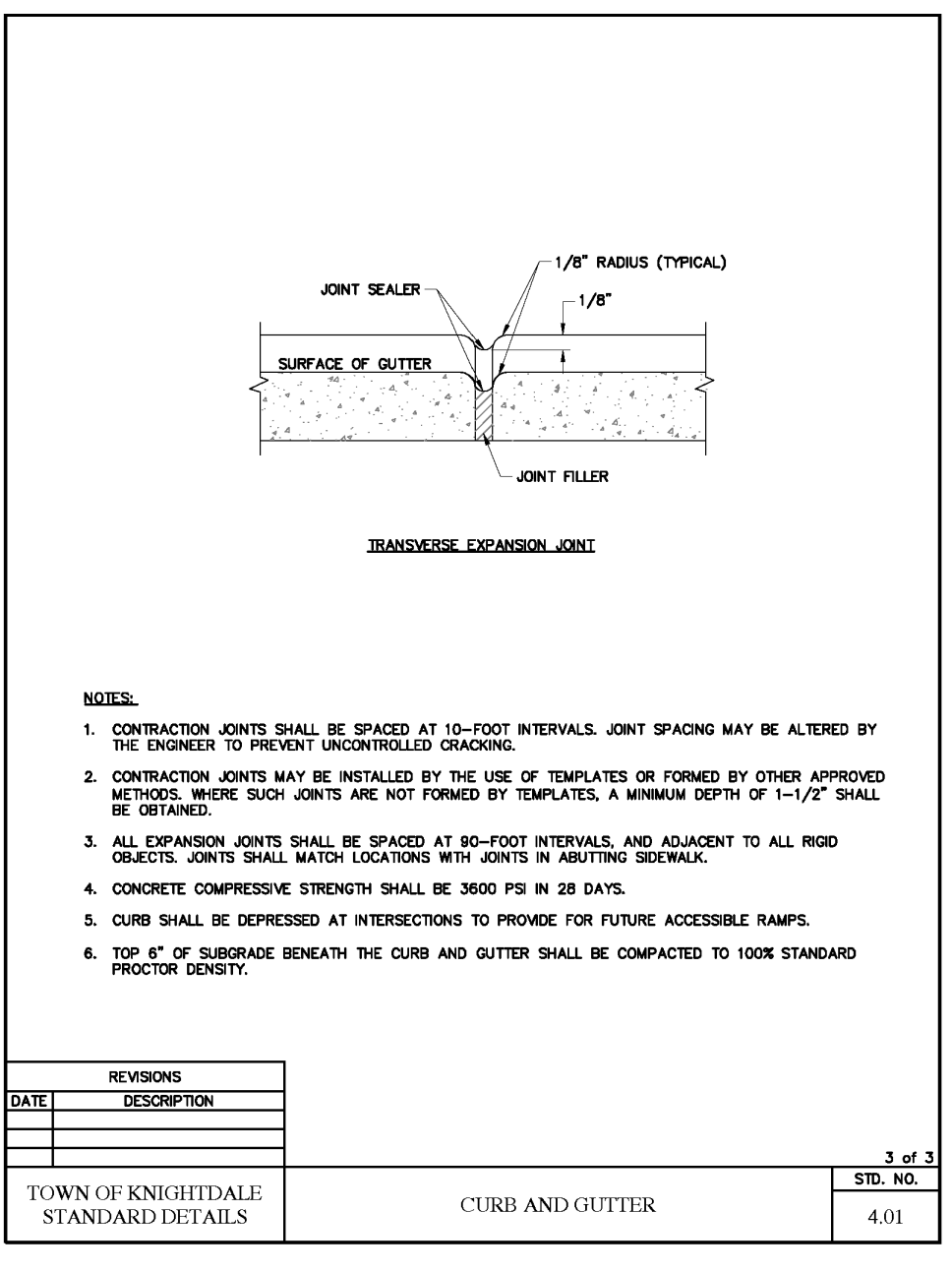
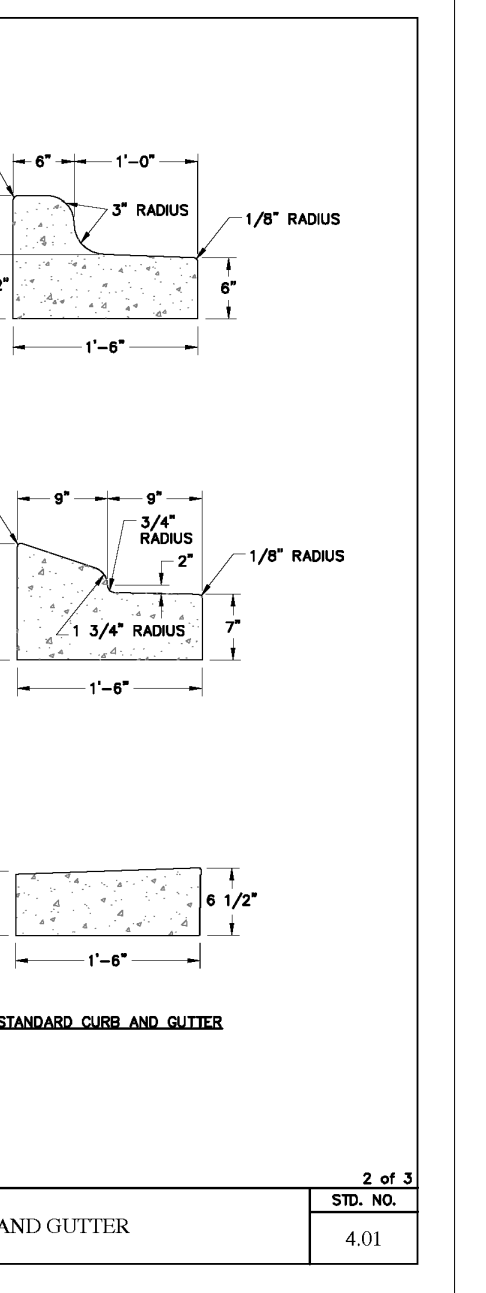
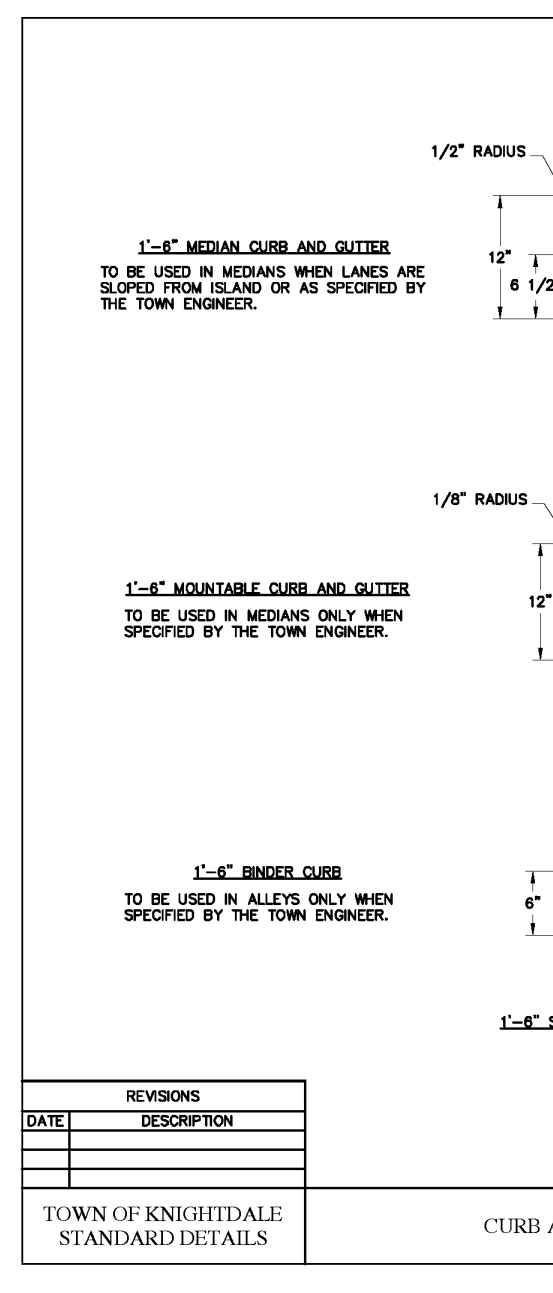
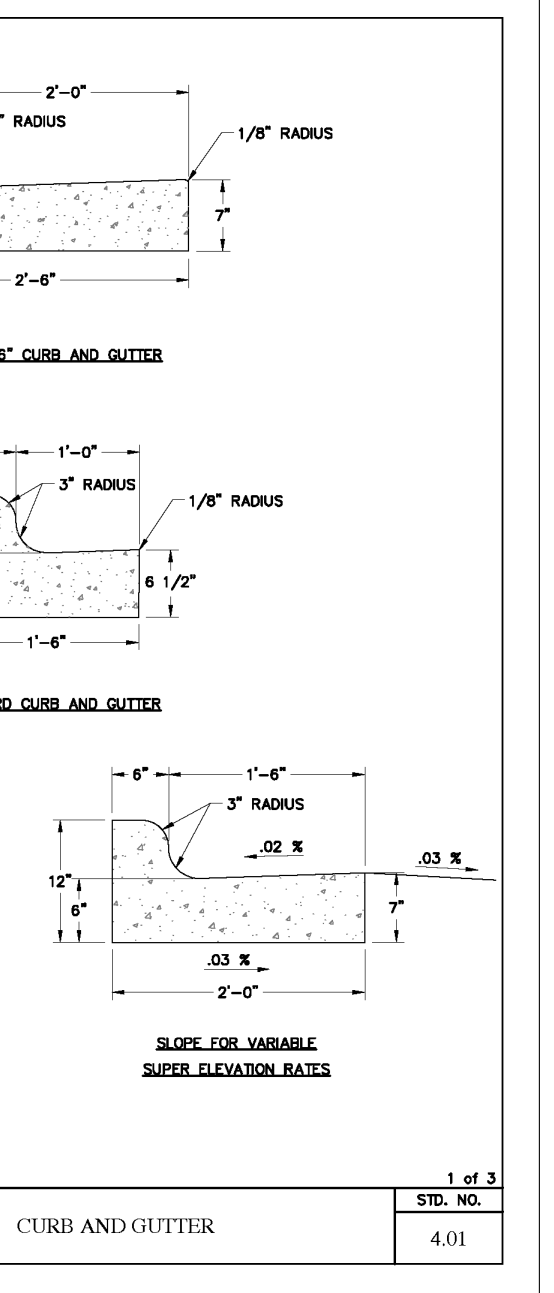
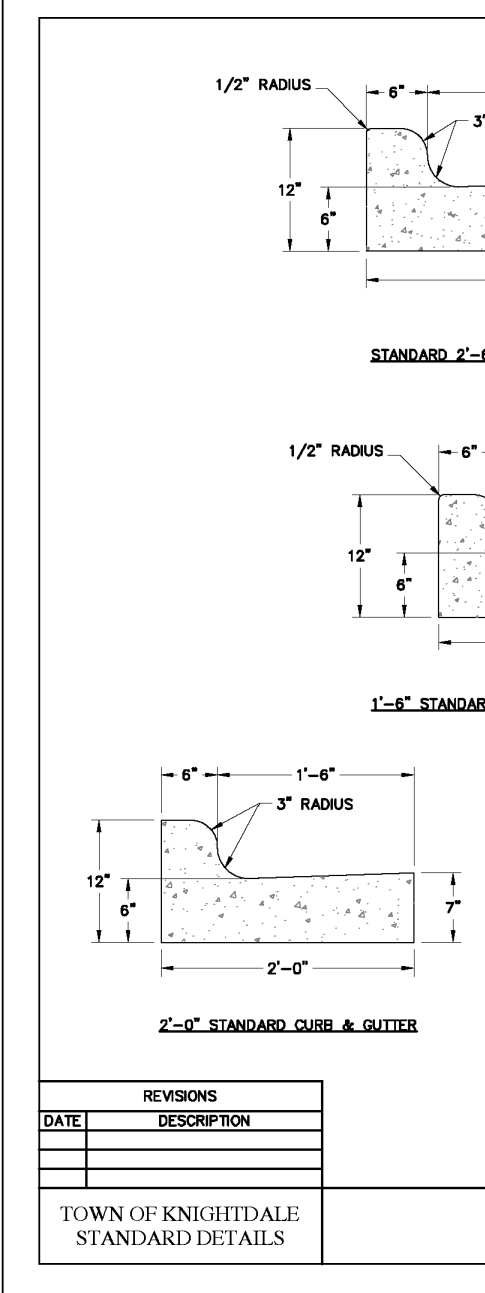
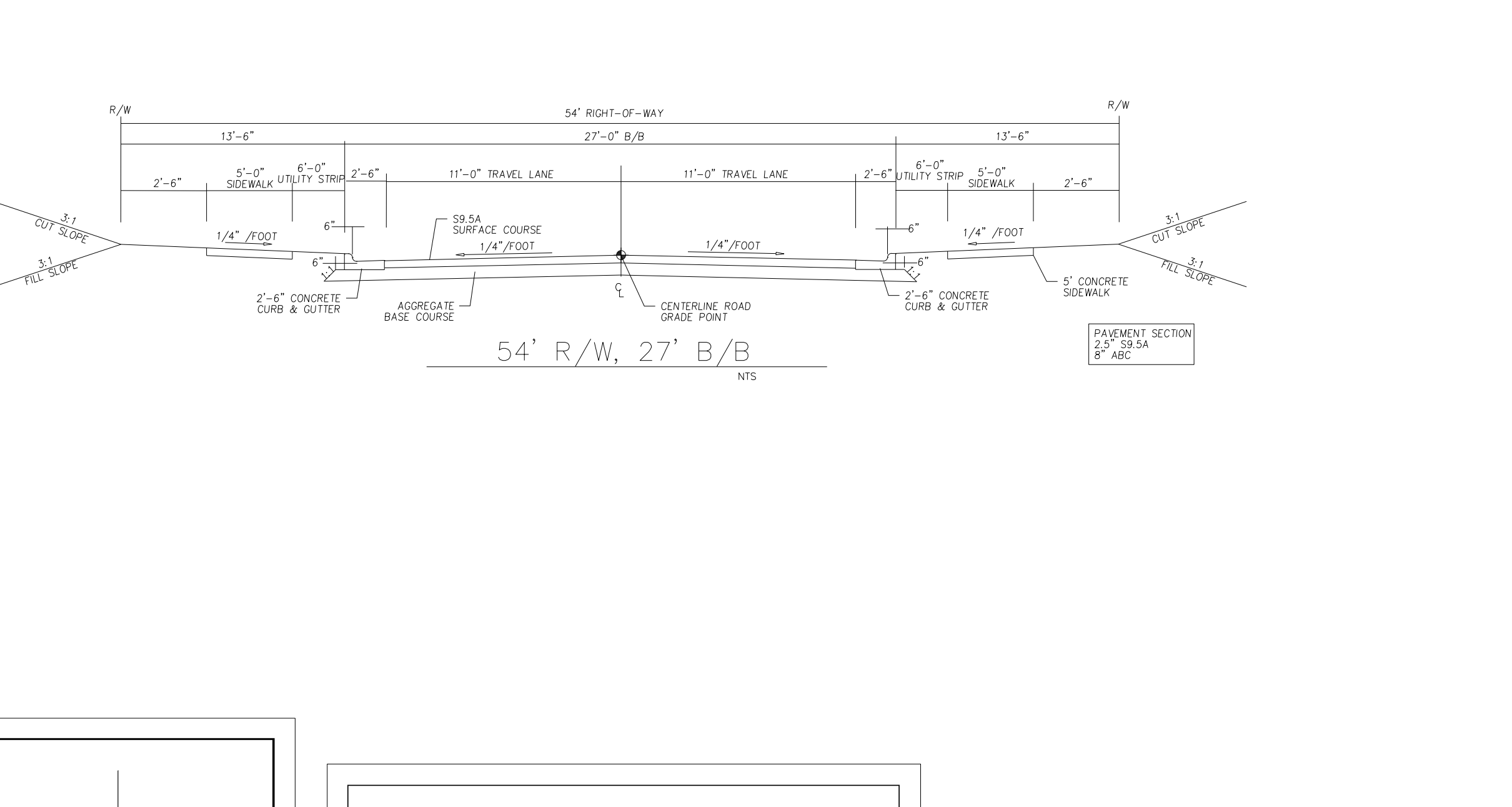
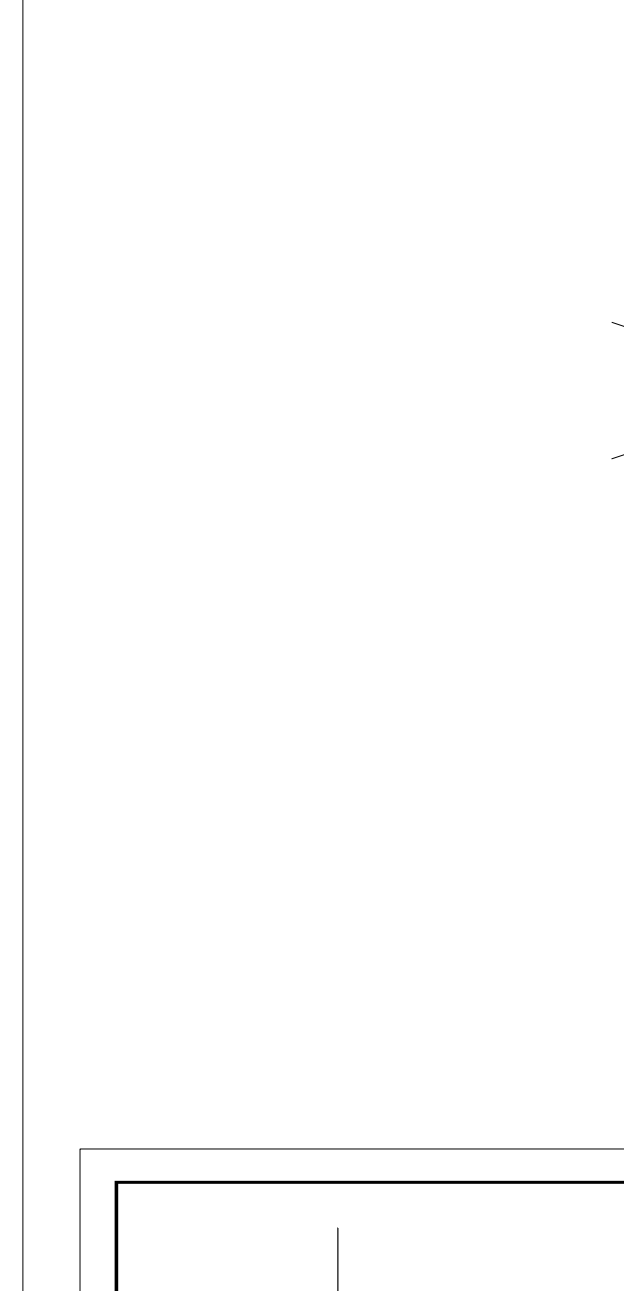
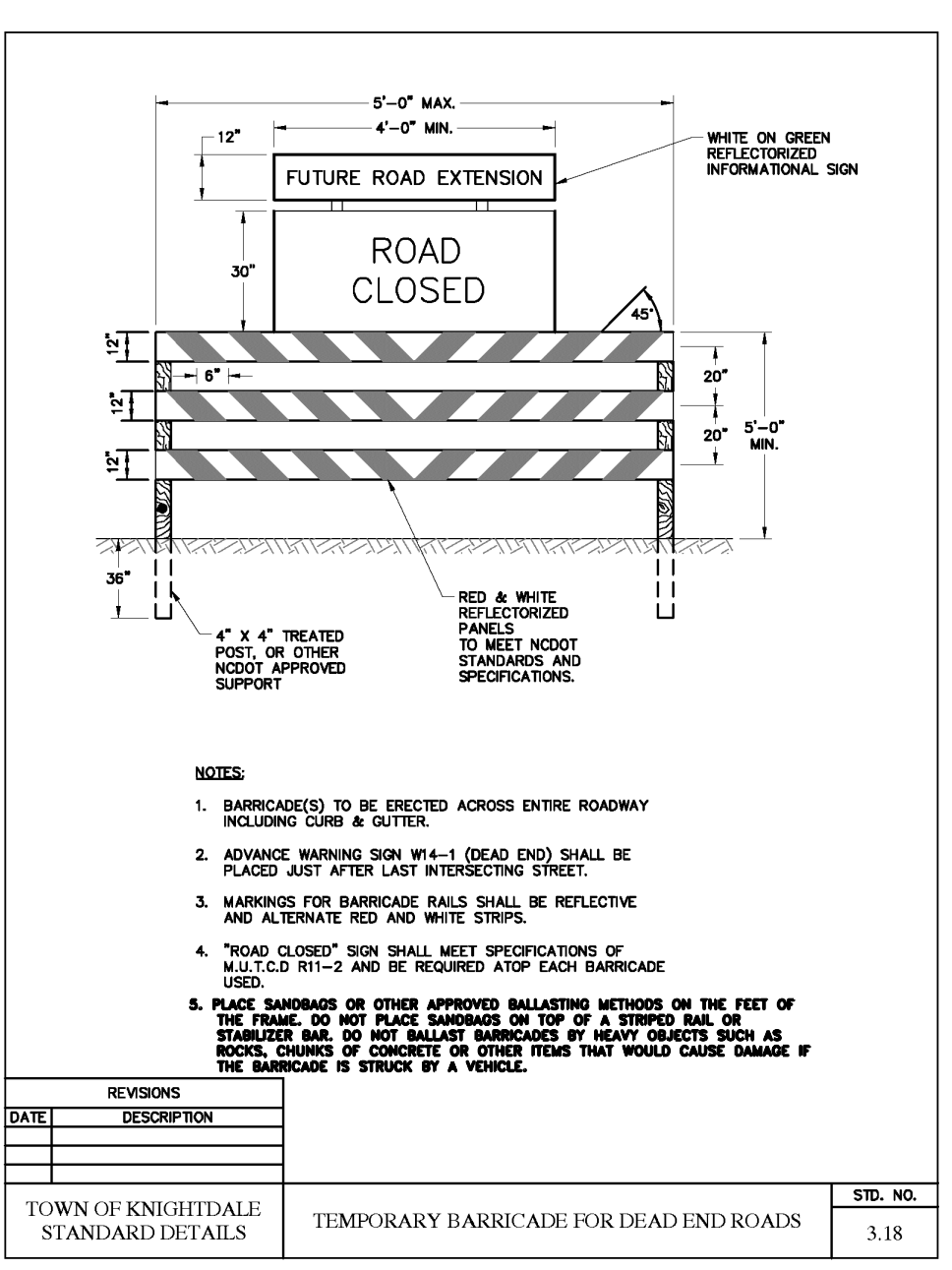
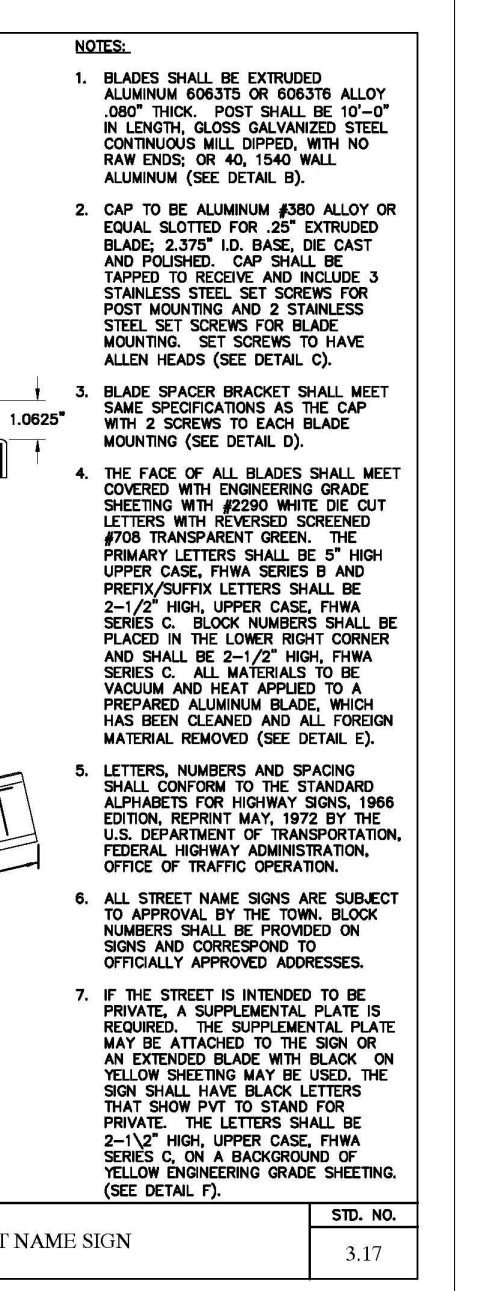
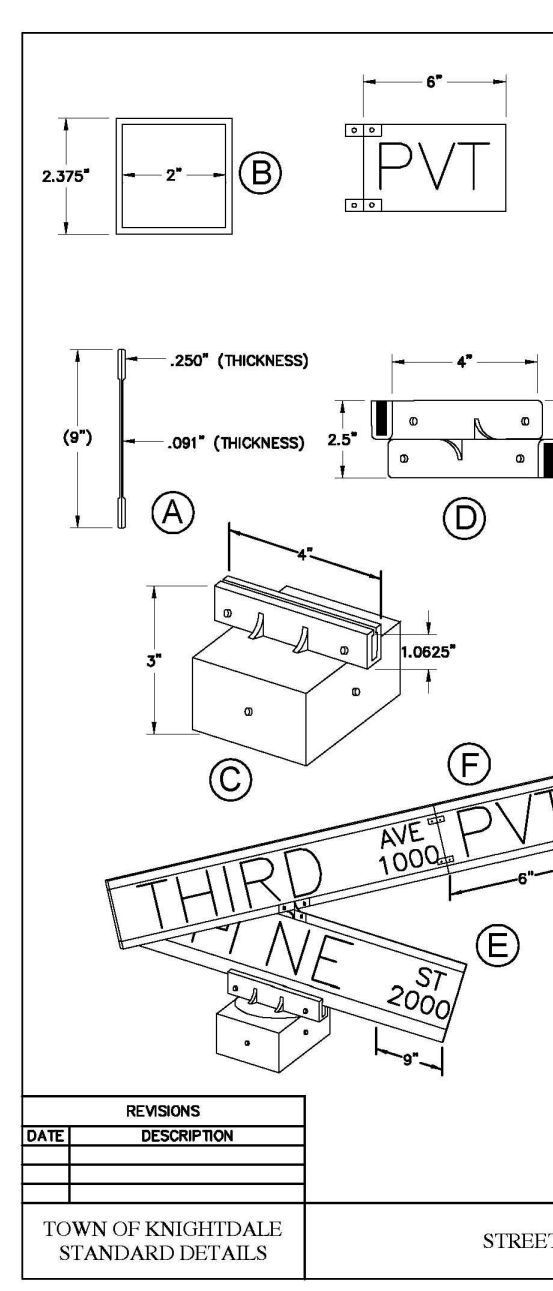
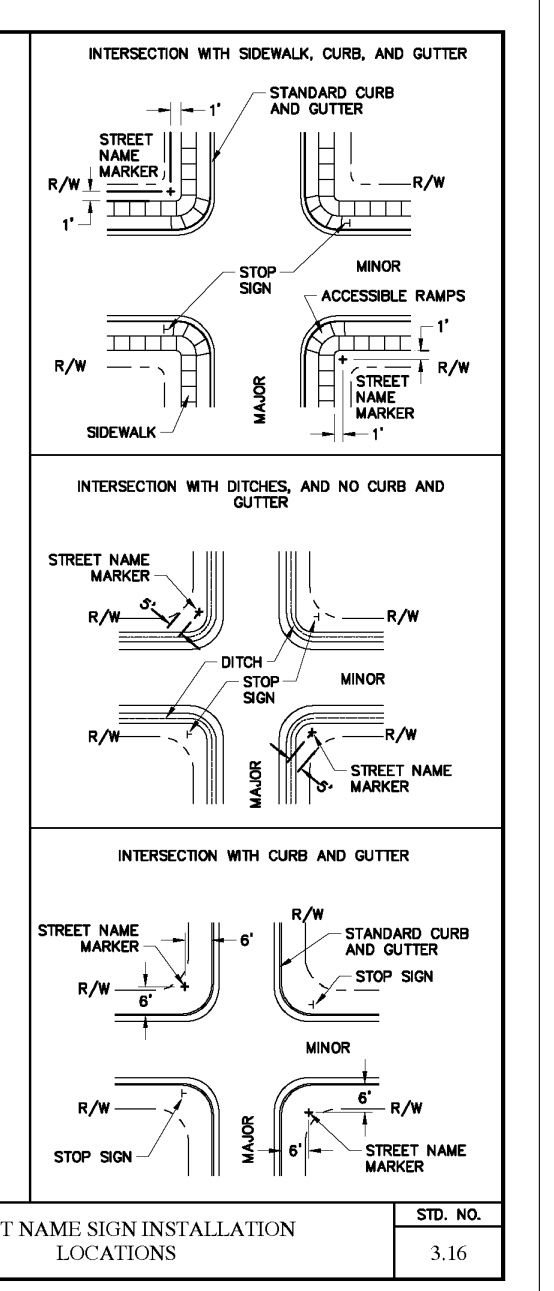
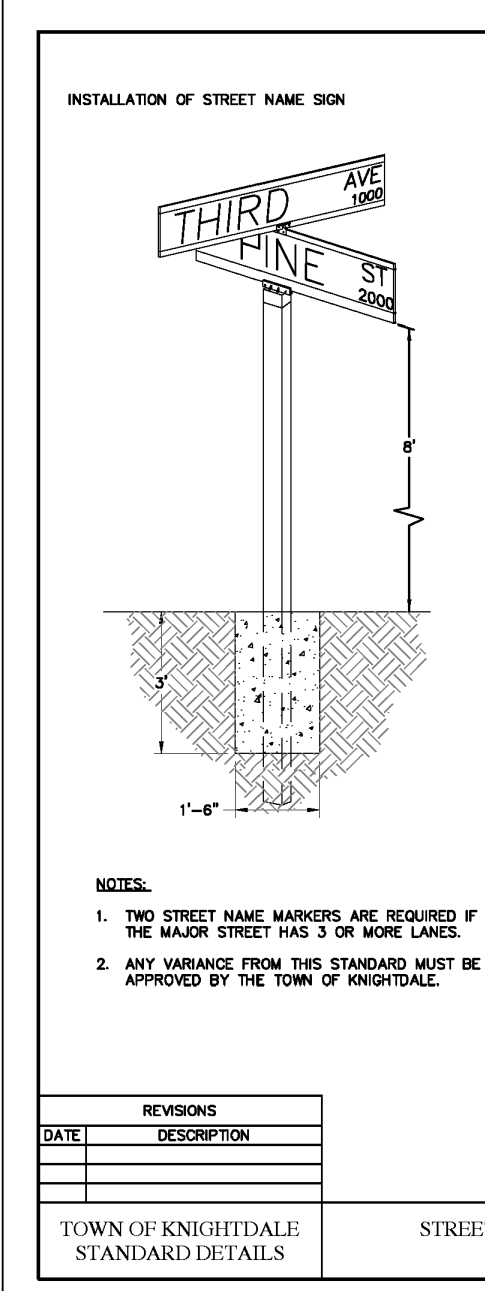
POND GRADING DETAIL
NOT TO SCALE

Job No.	02190259	Drawn By	WR
Date	10/21/19	Designer	WR



Revisions

1	TOK Comments	12/12/19
2	SITE REVISIONS	05/08/20
3	SITE REVISIONS	5/28/20



NOTES:

- A MINIMUM OF 2" FROM OUTSIDE DIAMETER OF PIPE TO SIDE OF TRENCH MUST BE ALLOWED FOR COMPACTION OF FILL MATERIAL. BACKFILL OF TRENCHES SHALL BE ACCOMPLISHED IMMEDIATELY AFTER THE PIPE IS Laid. THE FILL AROUND THE PIPE SHALL BE PLACED IN LAYERS NOT TO EXCEED 8" UNDER NO CIRCUMSTANCES SHALL WATER BE PERMITTED TO BE IN UNBACKFILLED TRENCHES AFTER THE PIPE HAS BEEN PLACED. COMPACTION REQUIREMENTS SHALL BE ATTAINED BY THE USE OF MECHANICAL TAMPS ONLY. EACH AND EVERY LAYER OF BACKFILL SHALL BE PLACED LOOSE AND THOROUGHLY COMPACTED AND PLACE.
- ALL BACKFILL MATERIAL SHALL HAVE AN IN PLACE COMPACTED DENSITY OF AT LEAST 90% OF THE STANDARD PROCTOR MAXIMUM DENSITY.
- THE FINAL 2" OF BACKFILL MATERIAL SHALL BE COMPACTED TO 100% OF THE STANDARD PROCTOR MAXIMUM DENSITY.
- ALL TRENCHING OPERATIONS SHALL MEET OSHA STANDARDS.
- BACKFILL MATERIAL BENEATH ROADWAY SHALL BE SELECT BACKFILL MATERIAL.

DATE: _____ REVISIONS: _____
 TOWN OF KNIGHTDALE STANDARD DETAILS TRENCH FOR STORM DRAIN PIPES STD. NO. 5.02

DATE: _____ REVISIONS: _____
 TOWN OF KNIGHTDALE STANDARD DETAILS STANDARD YARD INLET WITH CONCRETE SLAB STD. NO. 5.03

DATE: _____ REVISIONS: _____
 TOWN OF KNIGHTDALE STANDARD DETAILS STANDARD DROP INLET WITH GRATE AND FRAME STD. NO. 5.04

DATE: _____ REVISIONS: _____
 TOWN OF KNIGHTDALE STANDARD DETAILS STANDARD CURB INLET STD. NO. 5.05

DATE: _____ REVISIONS: _____
 TOWN OF KNIGHTDALE STANDARD DETAILS STANDARD CURB INLET STD. NO. 5.05

DATE: _____ REVISIONS: _____
 TOWN OF KNIGHTDALE STANDARD DETAILS STANDARD REINFORCED CONCRETE HEADWALL WITH WINGWALLS STD. NO. 5.06

DATE: _____ REVISIONS: _____
 TOWN OF KNIGHTDALE STANDARD DETAILS STANDARD REINFORCED CONCRETE HEADWALL WITH WINGWALLS STD. NO. 5.06

DATE: _____ REVISIONS: _____
 TOWN OF KNIGHTDALE STANDARD DETAILS DIMENSIONS FOR HEADWALL WITH WINGWALLS STD. NO. 5.09

DATE: _____ REVISIONS: _____
 TOWN OF KNIGHTDALE STANDARD DETAILS DIMENSIONS FOR HEADWALL WITH WINGWALLS STD. NO. 5.09

DATE: _____ REVISIONS: _____
 TOWN OF KNIGHTDALE STANDARD DETAILS STANDARD REINFORCED CONCRETE HEADWALL WITH WINGWALLS STD. NO. 5.06

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

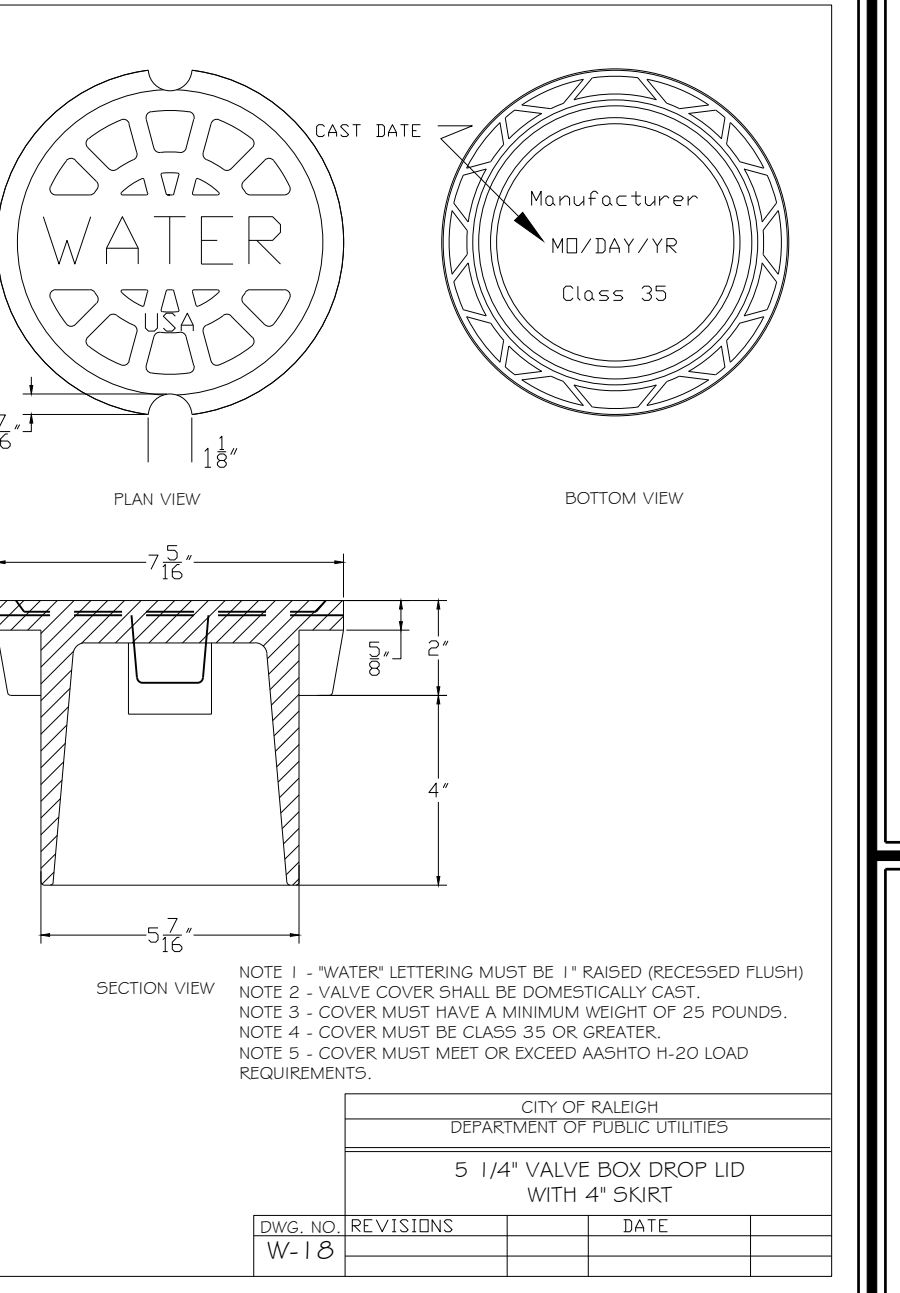
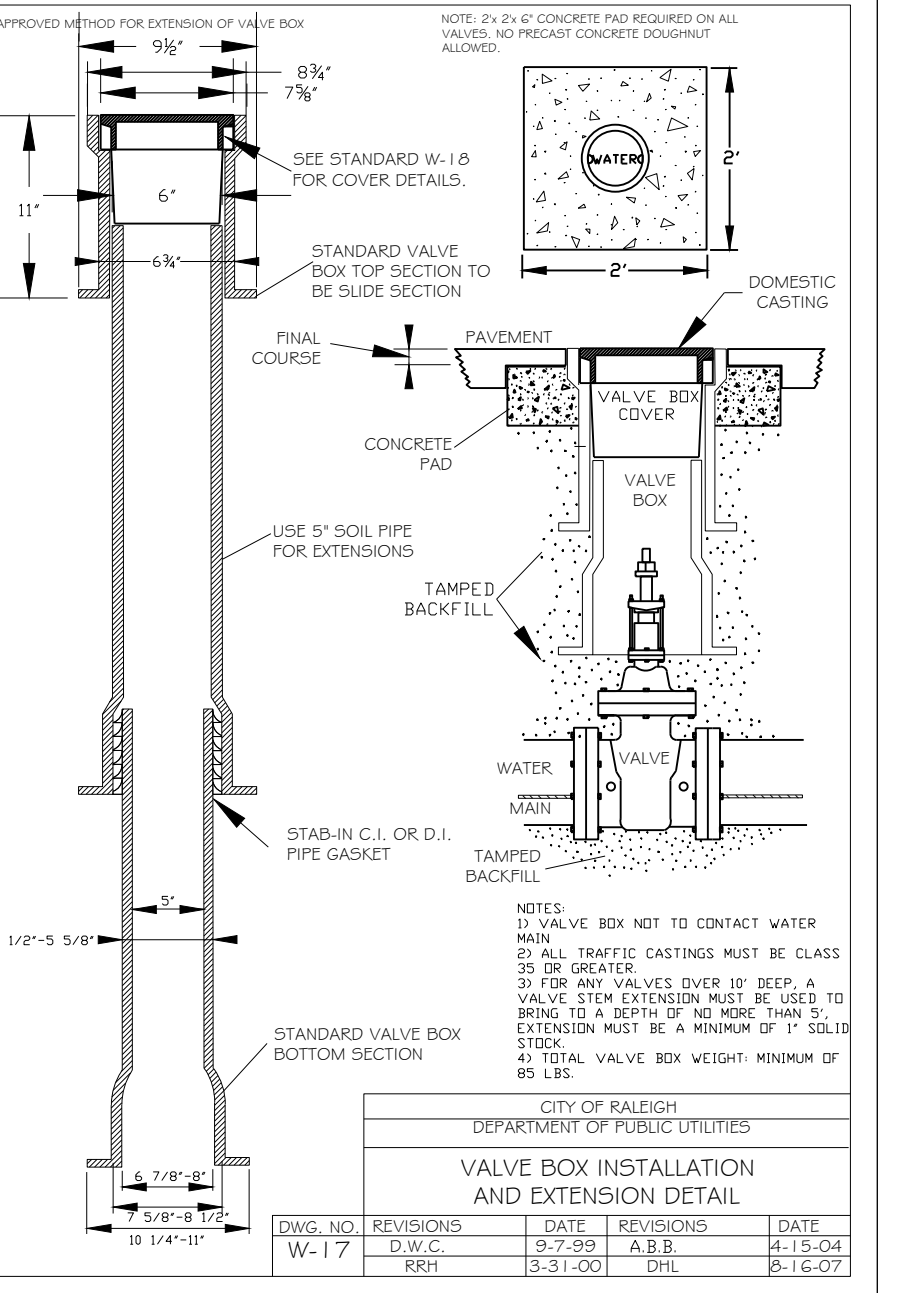
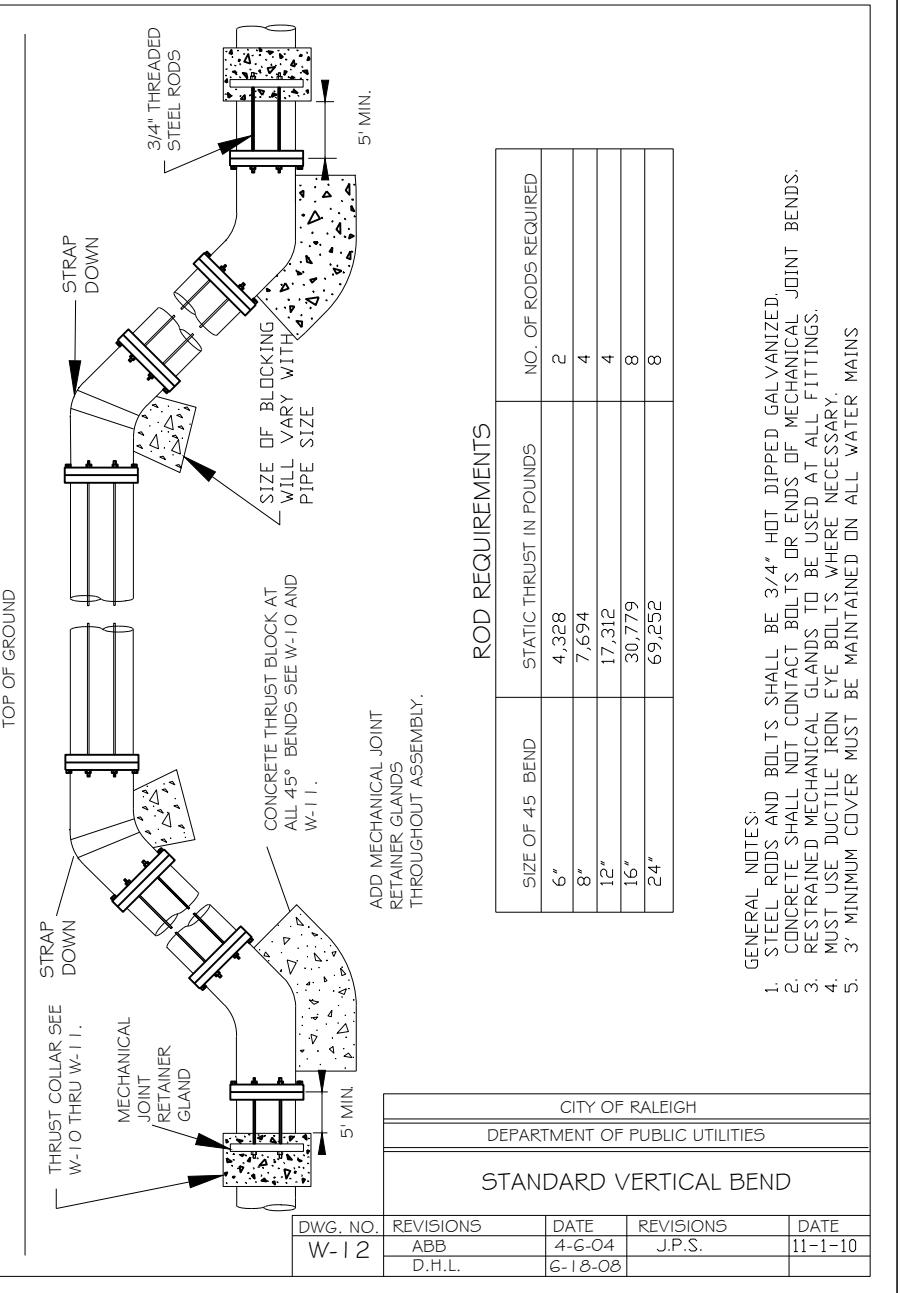
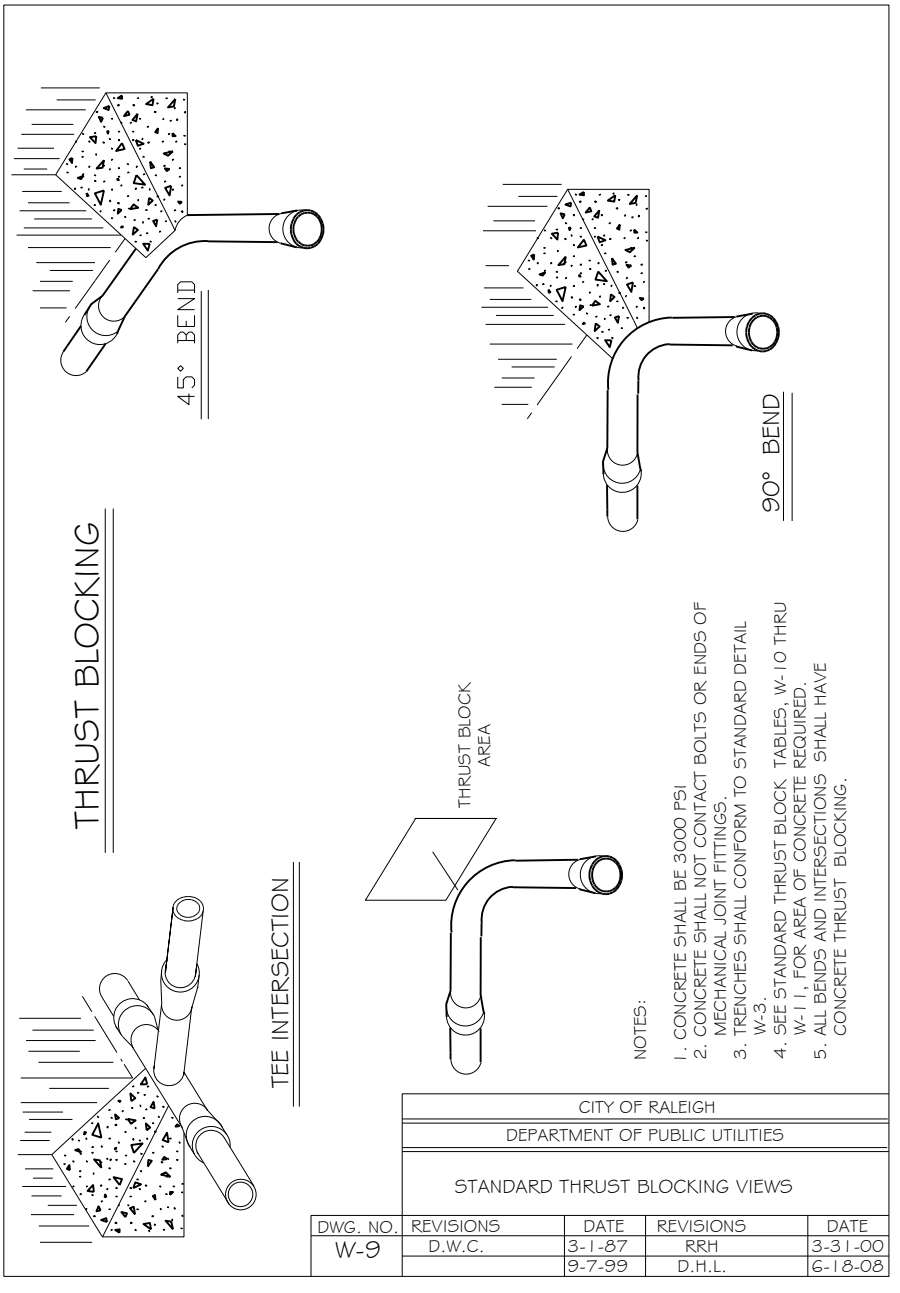
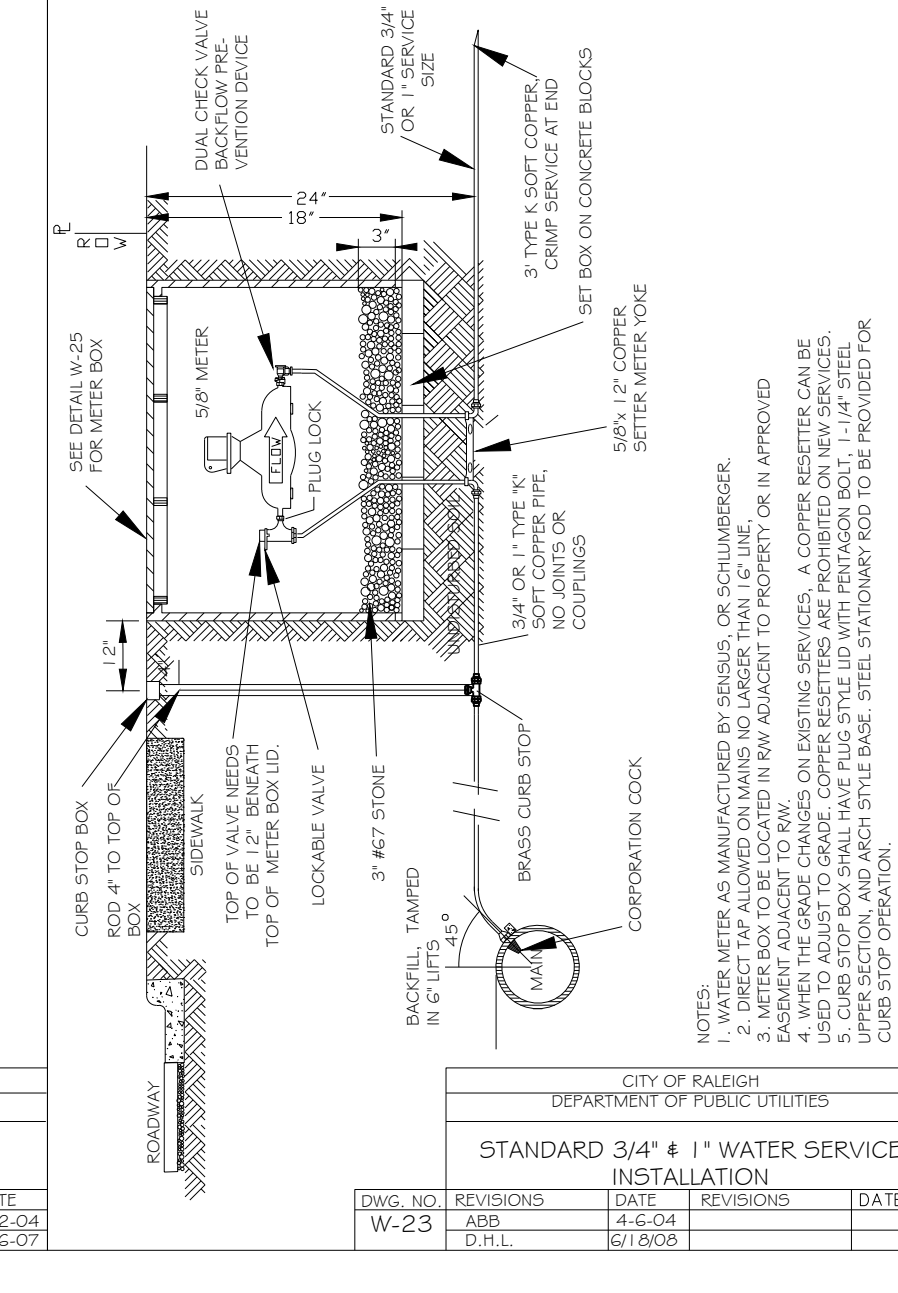
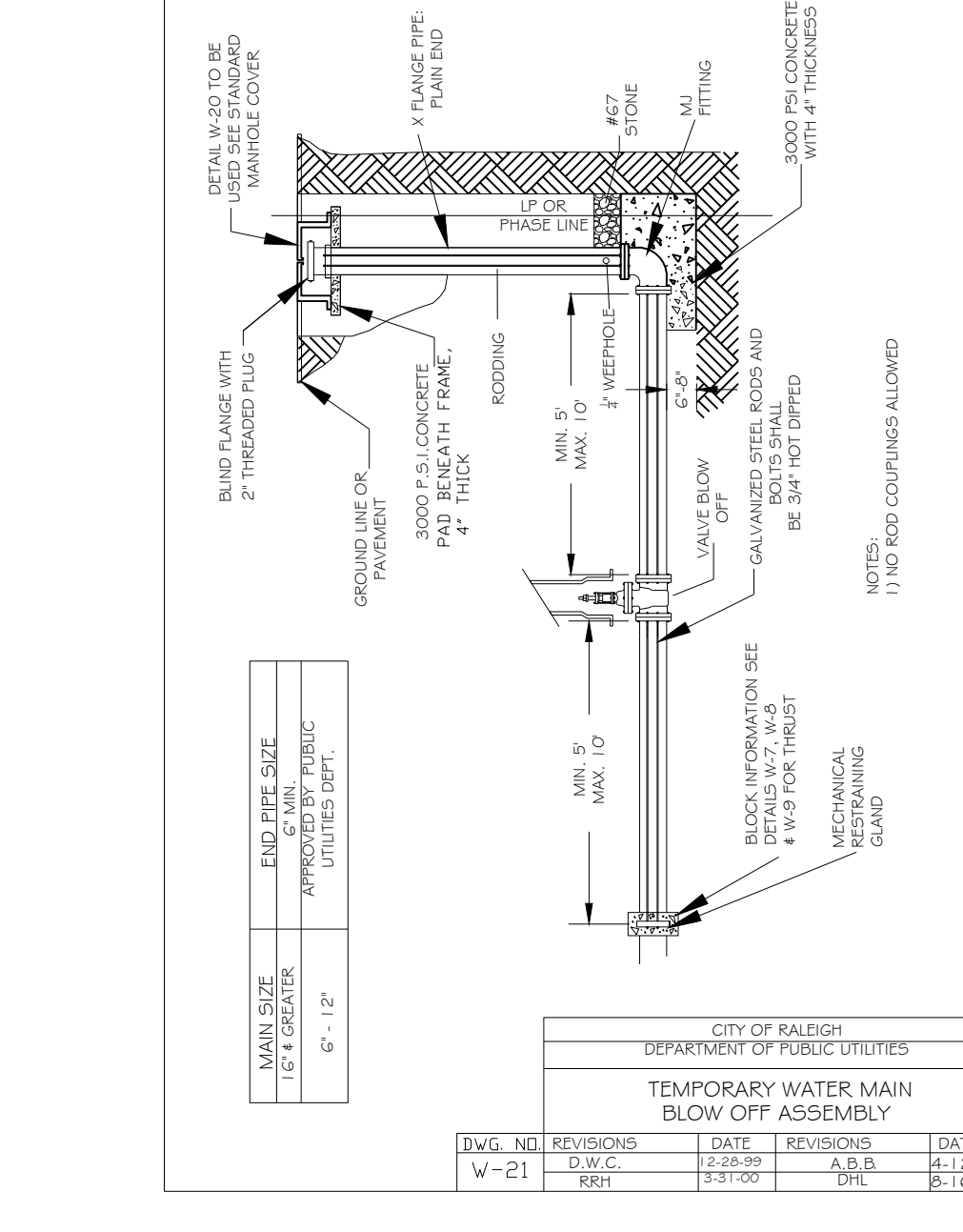
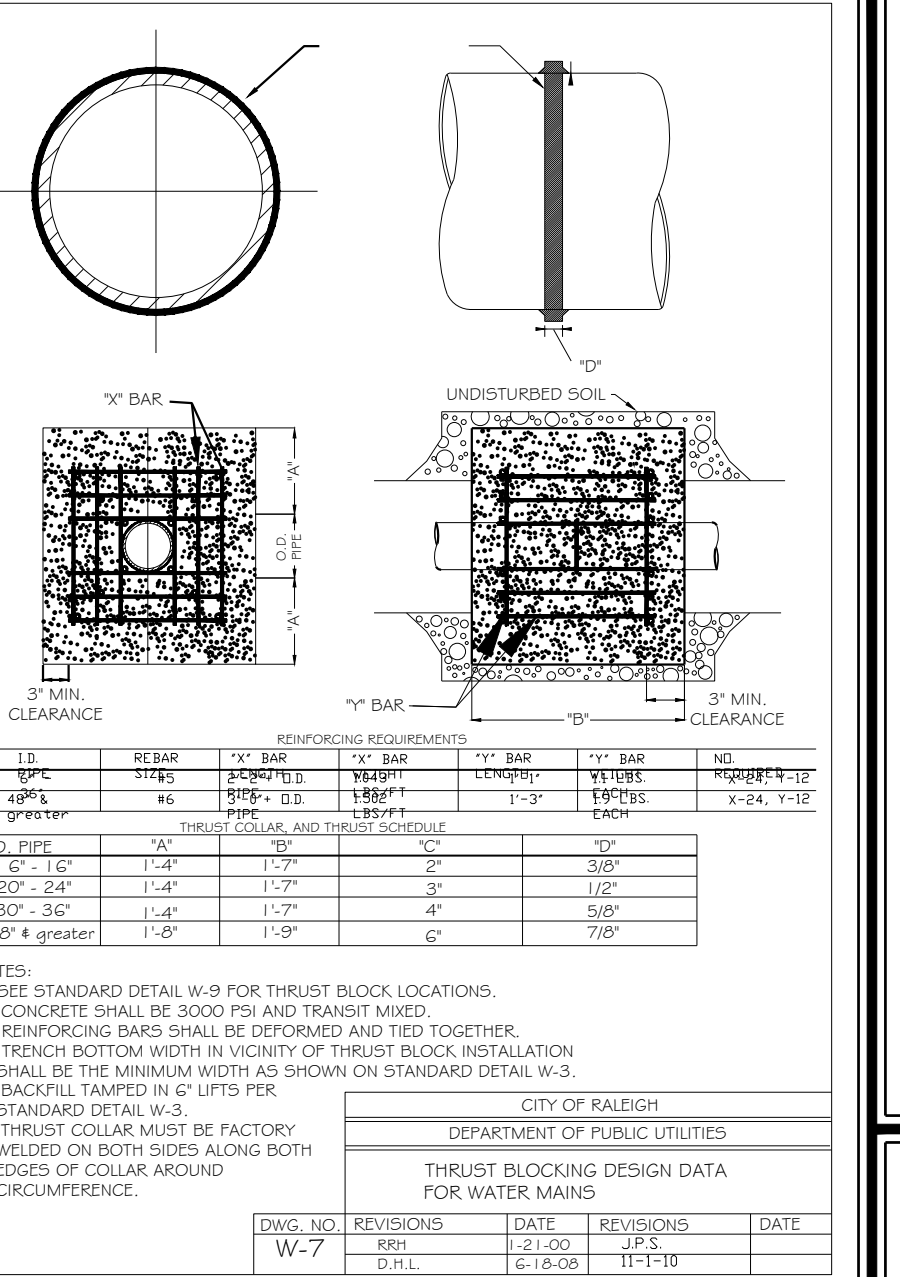
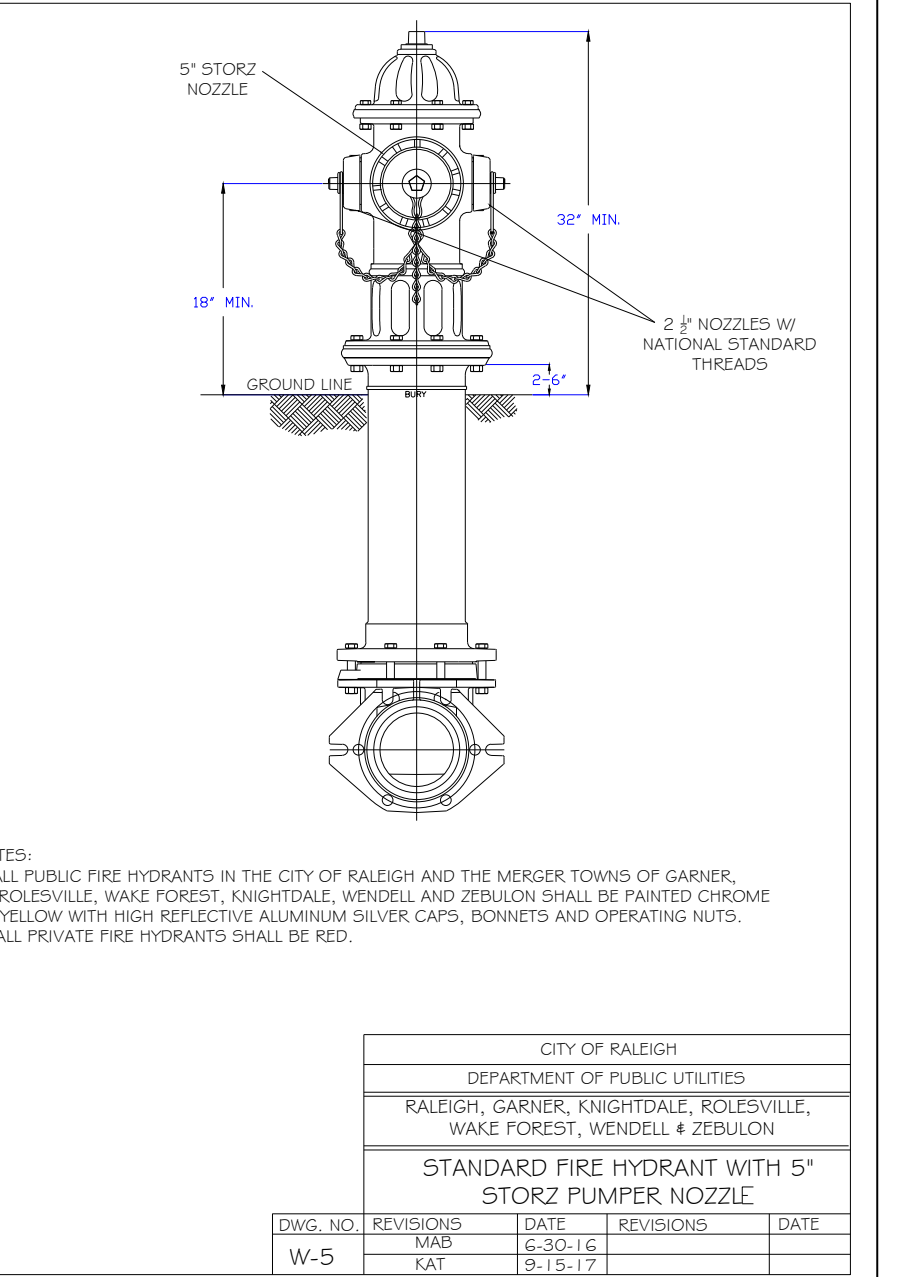
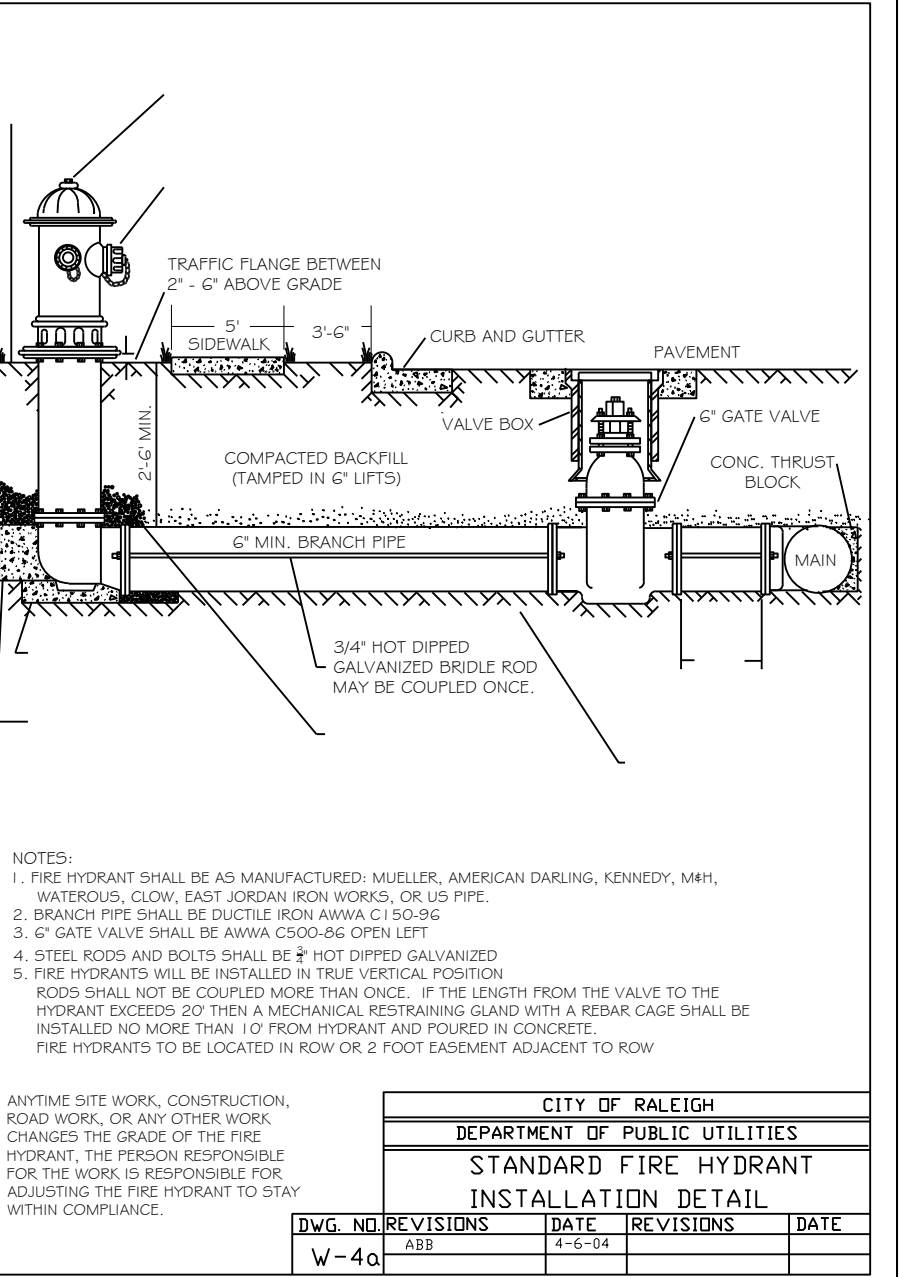
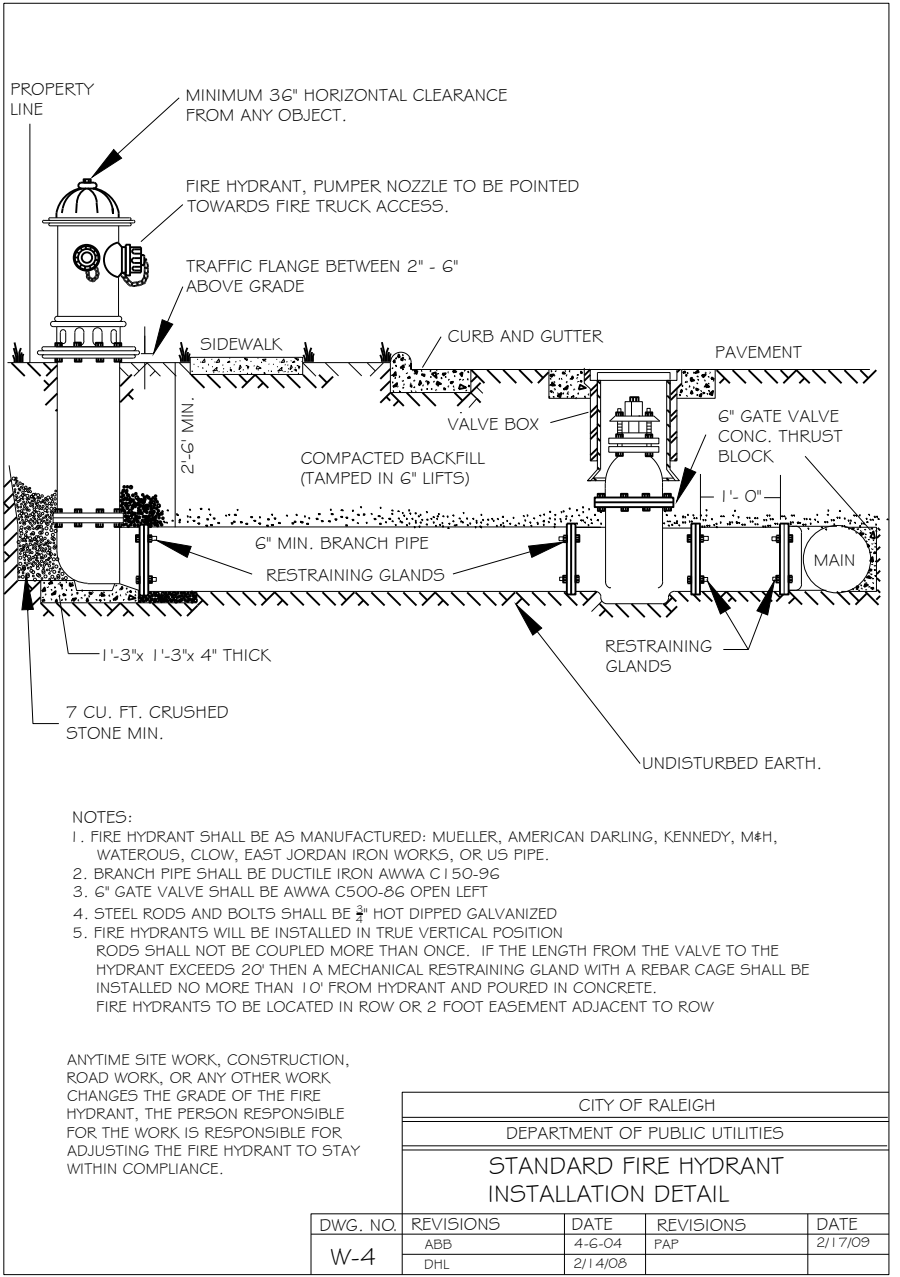
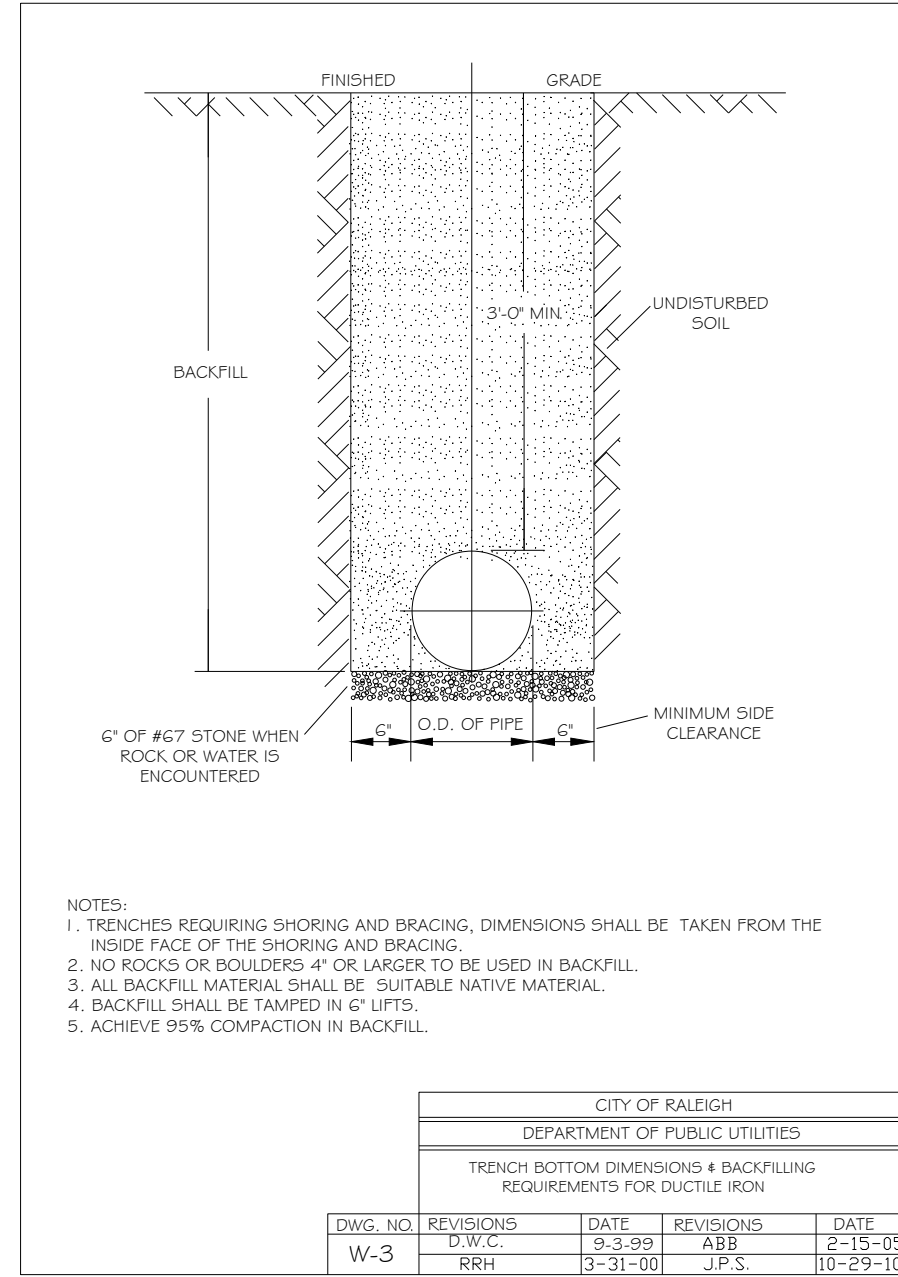
ALL AREAS GIVEN IN SQUARE FEET

PIPE SIZE	90° BEND	45° BEND	30° BEND	15° BEND	10° BEND	5° BEND	2 1/2° BEND
6"	1.108	1.1	1.1	1.1	1.1	1.1	1.1
8"	1.970	1.9	1.9	1.9	1.9	1.9	1.9
10"	3.940	3.9	3.9	3.9	3.9	3.9	3.9
12"	5.910	5.9	5.9	5.9	5.9	5.9	5.9
14"	7.880	7.9	7.9	7.9	7.9	7.9	7.9
16"	9.850	9.9	9.9	9.9	9.9	9.9	9.9
18"	11.820	11.9	11.9	11.9	11.9	11.9	11.9
20"	13.790	13.9	13.9	13.9	13.9	13.9	13.9
22"	15.760	15.9	15.9	15.9	15.9	15.9	15.9
24"	17.730	17.9	17.9	17.9	17.9	17.9	17.9
26"	19.700	19.9	19.9	19.9	19.9	19.9	19.9
28"	21.670	21.9	21.9	21.9	21.9	21.9	21.9
30"	23.640	23.9	23.9	23.9	23.9	23.9	23.9
32"	25.610	25.9	25.9	25.9	25.9	25.9	25.9
34"	27.580	27.9	27.9	27.9	27.9	27.9	27.9
36"	29.550	29.9	29.9	29.9	29.9	29.9	29.9
38"	31.520	31.9	31.9	31.9	31.9	31.9	31.9
40"	33.490	33.9	33.9	33.9	33.9	33.9	33.9
42"	35.460	35.9	35.9	35.9	35.9	35.9	35.9
44"	37.430	37.9	37.9	37.9	37.9	37.9	37.9
46"	39.400	39.9	39.9	39.9	39.9	39.9	39.9
48"	41.370	41.9	41.9	41.9	41.9	41.9	41.9
50"	43.340	43.9	43.9	43.9	43.9	43.9	43.9
52"	45.310	45.9	45.9	45.9	45.9	45.9	45.9
54"	47.280	47.9	47.9	47.9	47.9	47.9	47.9
56"	49.250	49.9	49.9	49.9	49.9	49.9	49.9
58"	51.220	51.9	51.9	51.9	51.9	51.9	51.9
60"	53.190	53.9	53.9	53.9	53.9	53.9	53.9

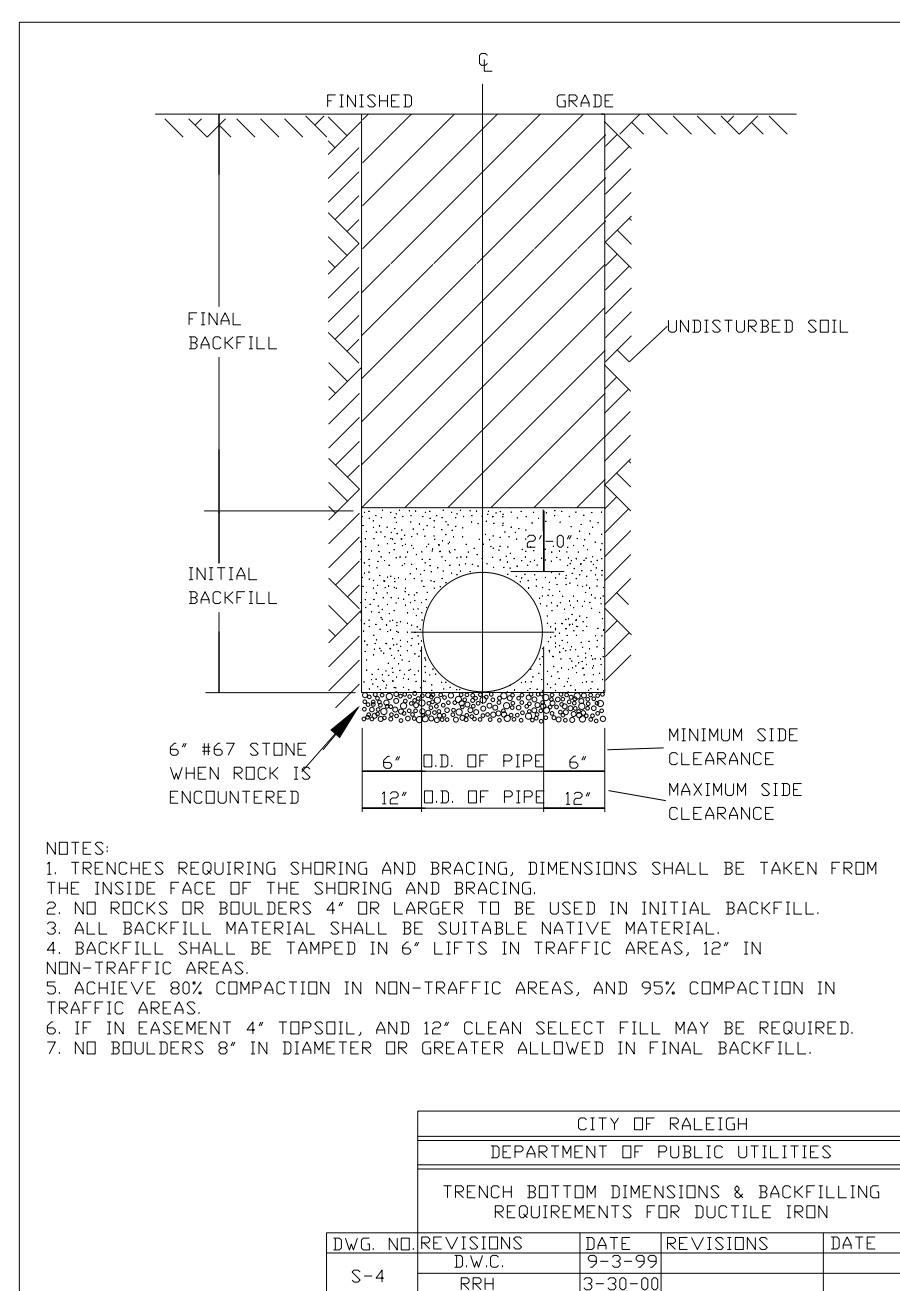
REACTION BEARING AREAS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH SIDE AT AN ANGLE OF 90° TO THE THRUST VECTOR.

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

REV. NO.	REVISIONS	DATE	BY	DATE
W-10	D.W.C.	2-23-99	A.B.B.	4-12-04

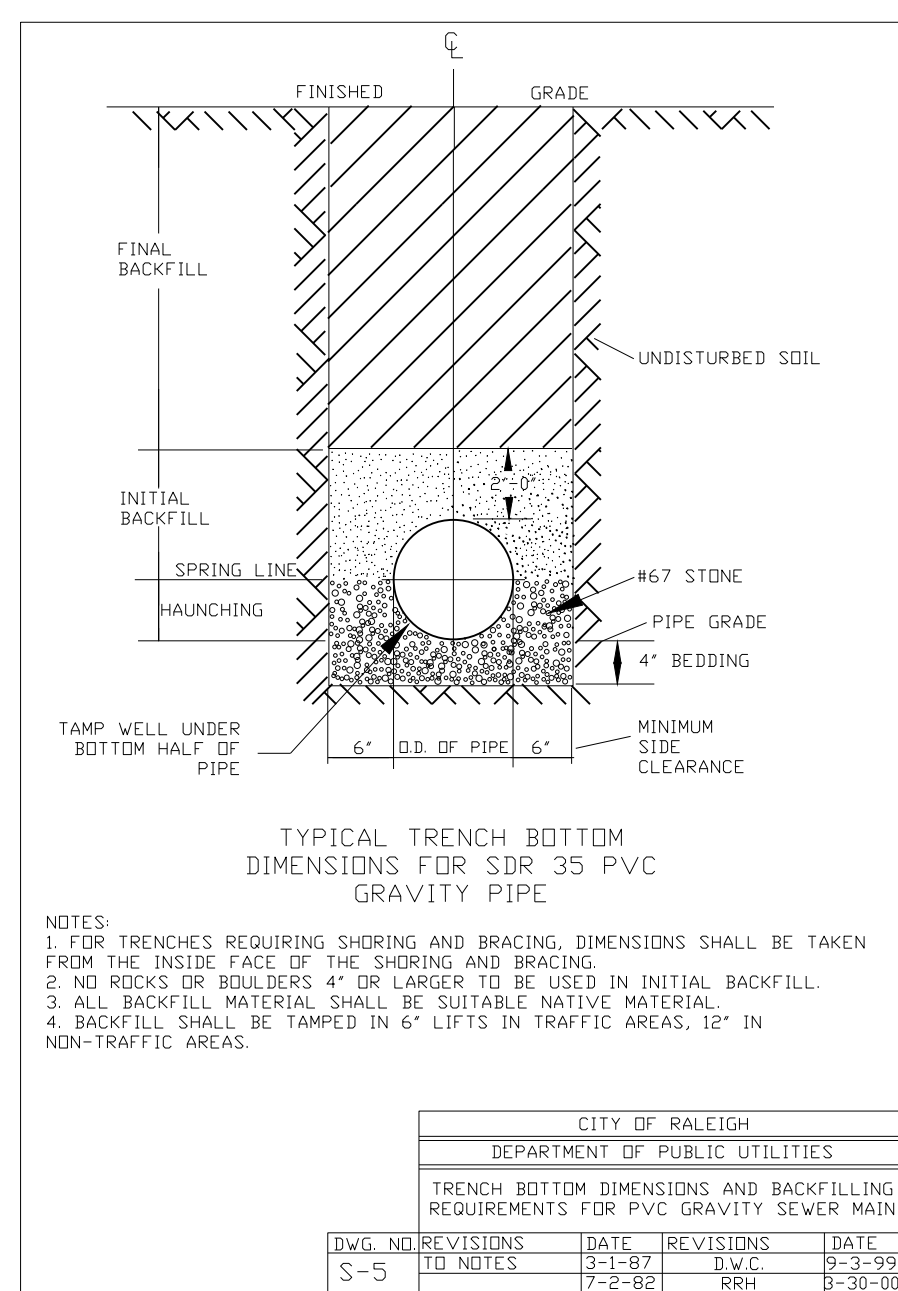


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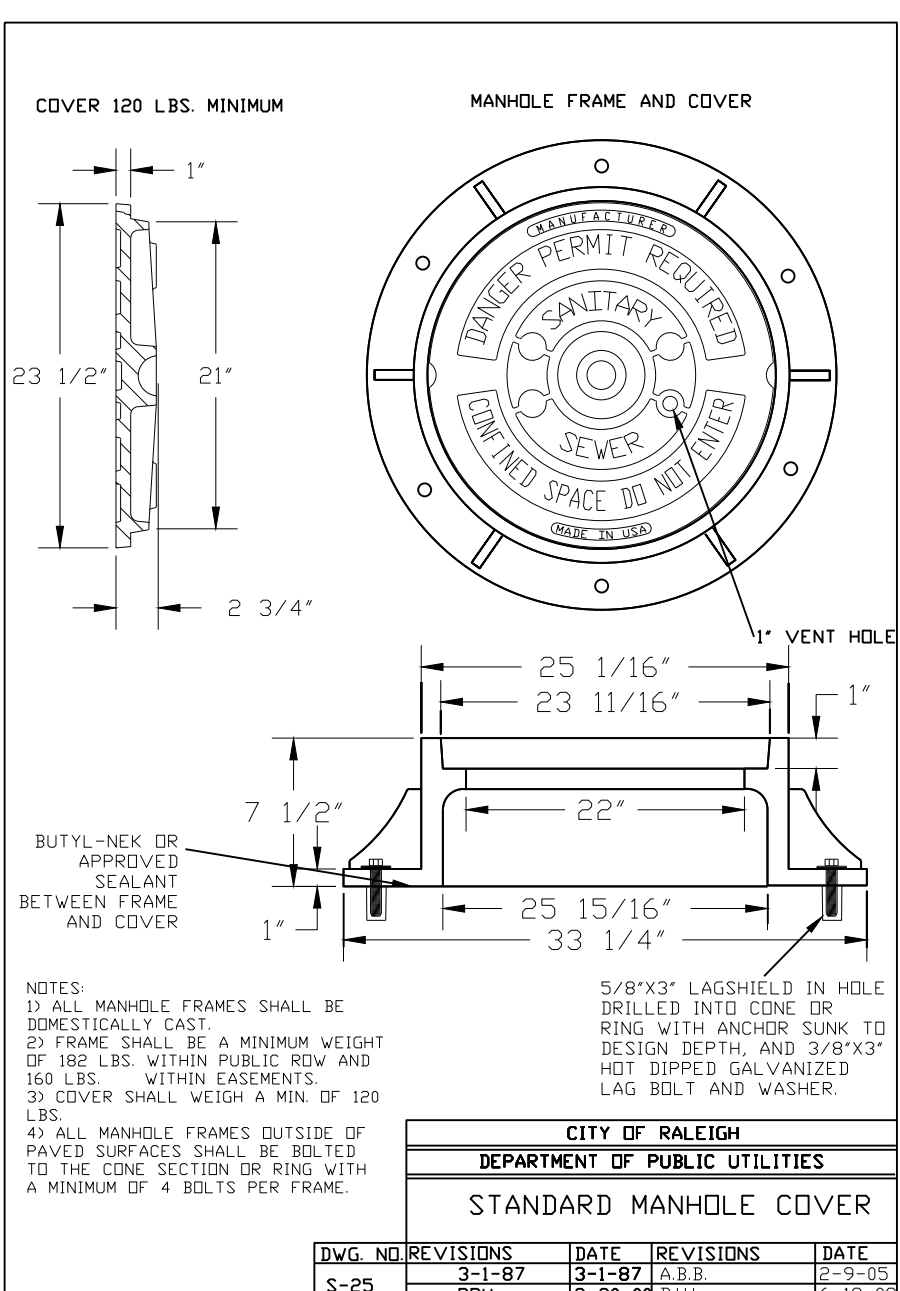
NOTES:
 1. TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
 2. NO ROCKS OR BOULDERS 4\"/>

CITY OF RALEIGH			
DEPARTMENT OF PUBLIC UTILITIES			
TRENCH BOTTOM DIMENSIONS & BACKFILLING REQUIREMENTS FOR DUCTILE IRON			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-4	1	12-1-99	1
	2	12-1-99	2
	3	12-1-99	3



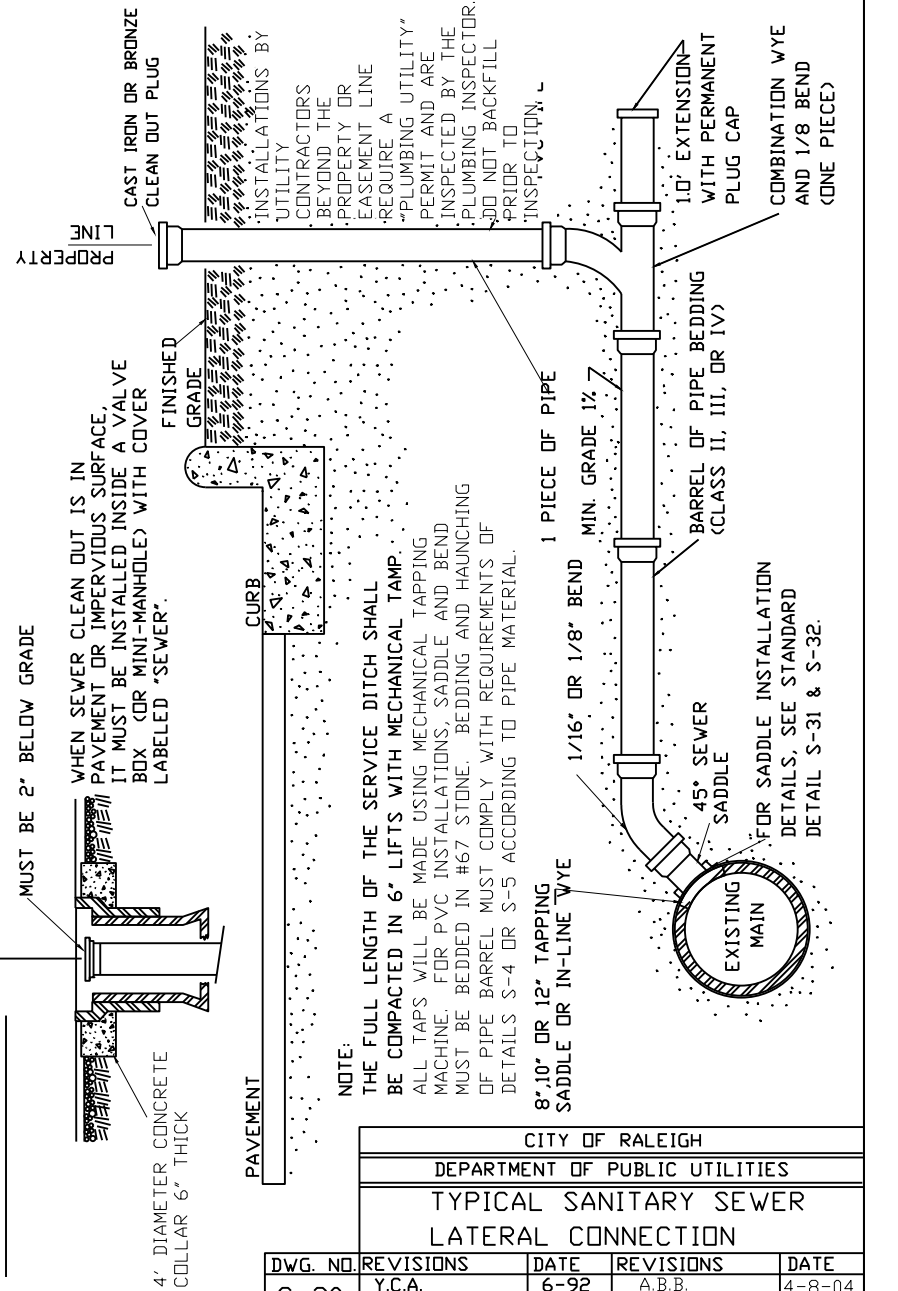
NOTES:
 1. FOR TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
 2. NO ROCKS OR BOULDERS 4\"/>

CITY OF RALEIGH			
DEPARTMENT OF PUBLIC UTILITIES			
TRENCH BOTTOM DIMENSIONS & BACKFILLING REQUIREMENTS FOR PVC GRAVITY SEWER MAIN			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-5	1	12-1-99	1
	2	12-1-99	2
	3	12-1-99	3



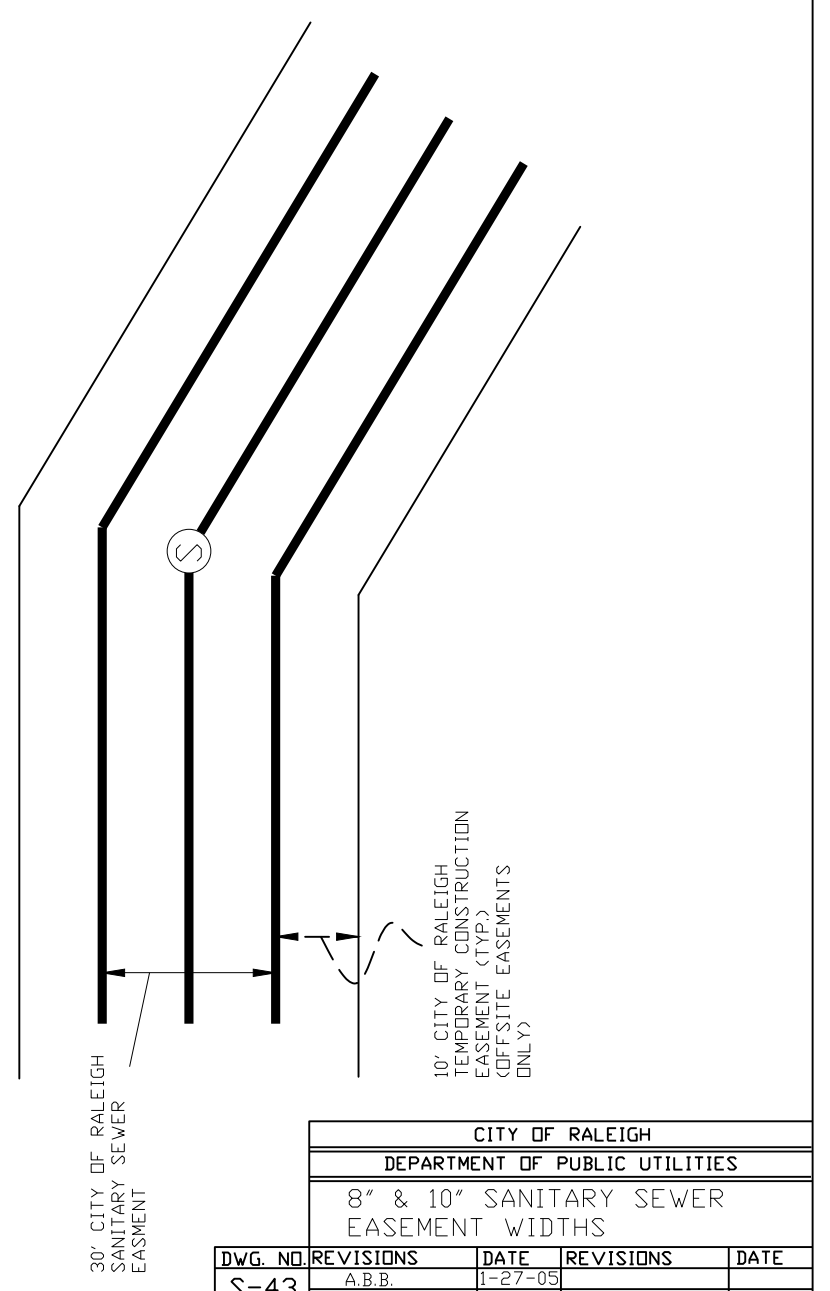
NOTES:
 1. ALL MANHOLE FRAMES SHALL BE DOMESTICALLY CAST.
 2. THE COVER SHALL HAVE A MINIMUM WEIGHT OF 120 LBS. WITHIN PUBLIC ROW AND 180 LBS. WITHIN PRIVATE ROW.
 3. COVER SHALL WEIGH A MIN. OF 120 LBS.
 4. ALL MANHOLE FRAMES OUTSIDE OF PAVED SURFACES SHALL BE BUILT TO THE ONE SECTION OR RING WITH A MINIMUM OF 4 BOLTS PER FRAME.

CITY OF RALEIGH			
DEPARTMENT OF PUBLIC UTILITIES			
STANDARD MANHOLE COVER			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-25	1	12-1-99	1
	2	12-1-99	2
	3	12-1-99	3



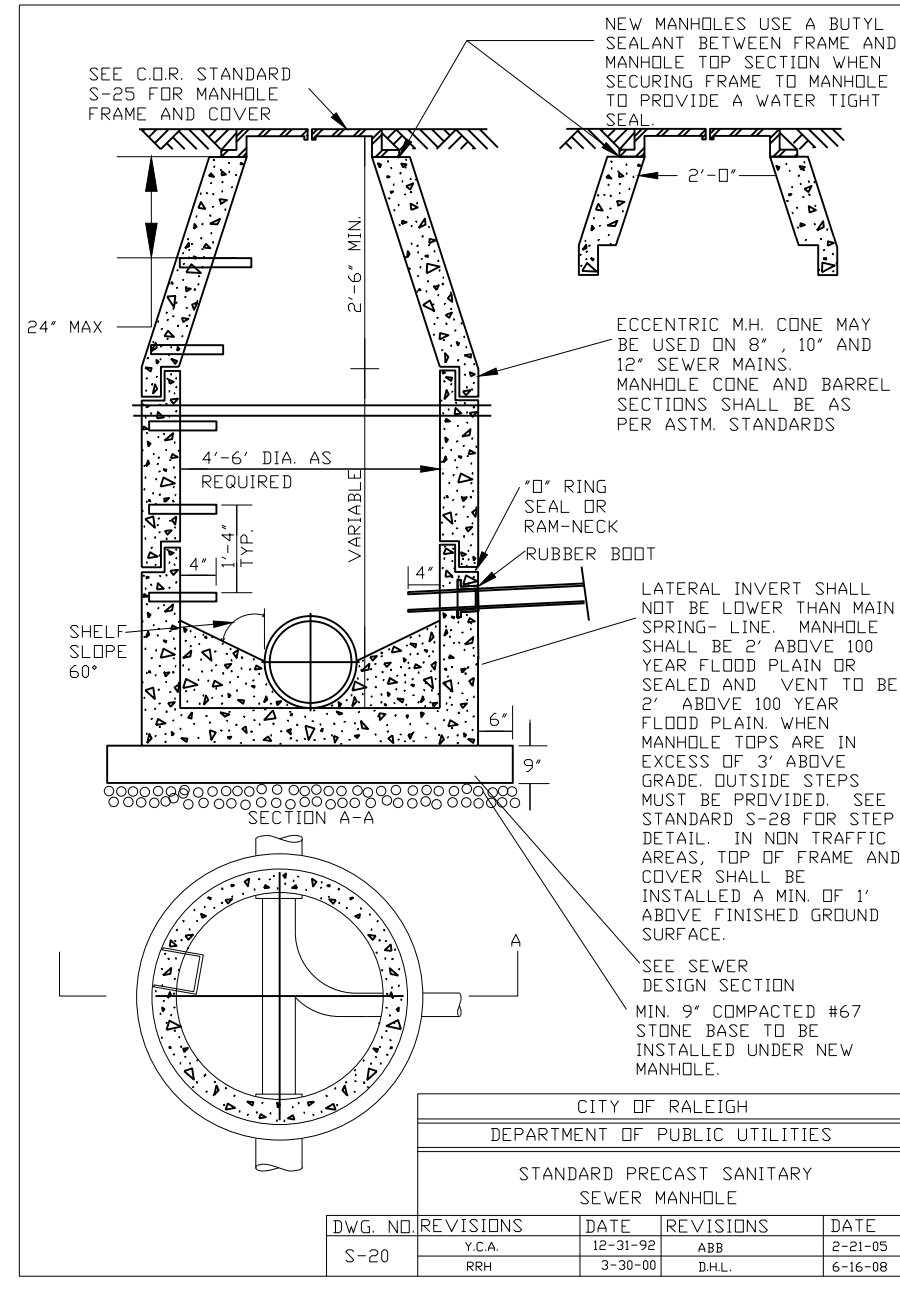
NOTE:
 THE FULL LENGTH OF THE SERVICE DITCH SHALL BE DOMESTICALLY CAST.
 ALL TAPS WILL BE MADE USING MECHANICAL TAPPING WITH PERMANENT PLUG CAP.
 THE SERVICE DITCH SHALL BE BUILT TO THE ONE SECTION OR RING WITH A MINIMUM OF 4 BOLTS PER FRAME.
 THE SERVICE DITCH SHALL BE BUILT TO THE ONE SECTION OR RING WITH A MINIMUM OF 4 BOLTS PER FRAME.

CITY OF RALEIGH			
DEPARTMENT OF PUBLIC UTILITIES			
TYPICAL SANITARY SEWER LATERAL CONNECTION			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-30	1	12-1-99	1
	2	12-1-99	2
	3	12-1-99	3



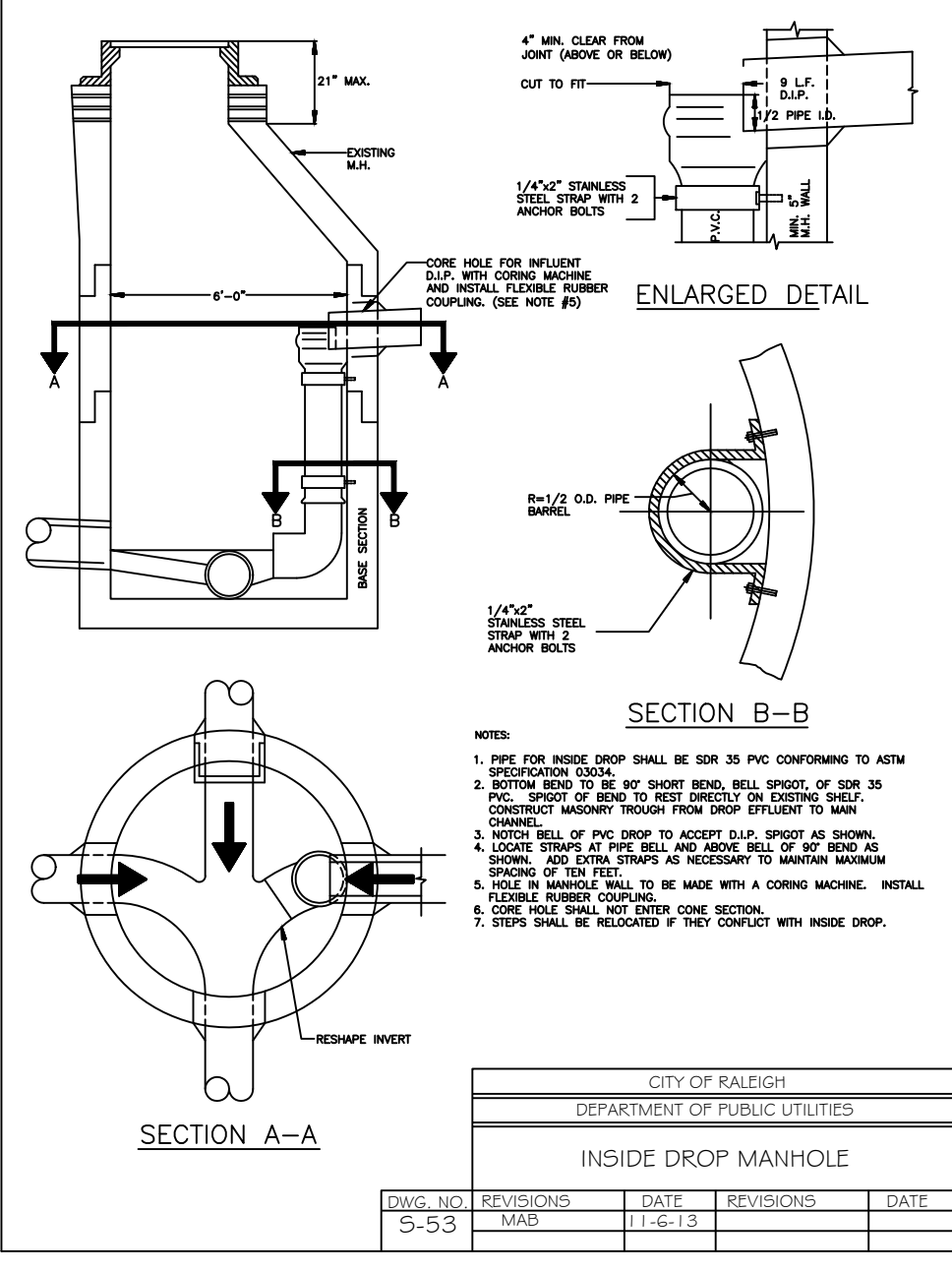
NOTE:
 THE FULL LENGTH OF THE SERVICE DITCH SHALL BE DOMESTICALLY CAST.
 ALL TAPS WILL BE MADE USING MECHANICAL TAPPING WITH PERMANENT PLUG CAP.
 THE SERVICE DITCH SHALL BE BUILT TO THE ONE SECTION OR RING WITH A MINIMUM OF 4 BOLTS PER FRAME.

CITY OF RALEIGH			
DEPARTMENT OF PUBLIC UTILITIES			
8\"/>			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-43	1	12-1-99	1
	2	12-1-99	2
	3	12-1-99	3



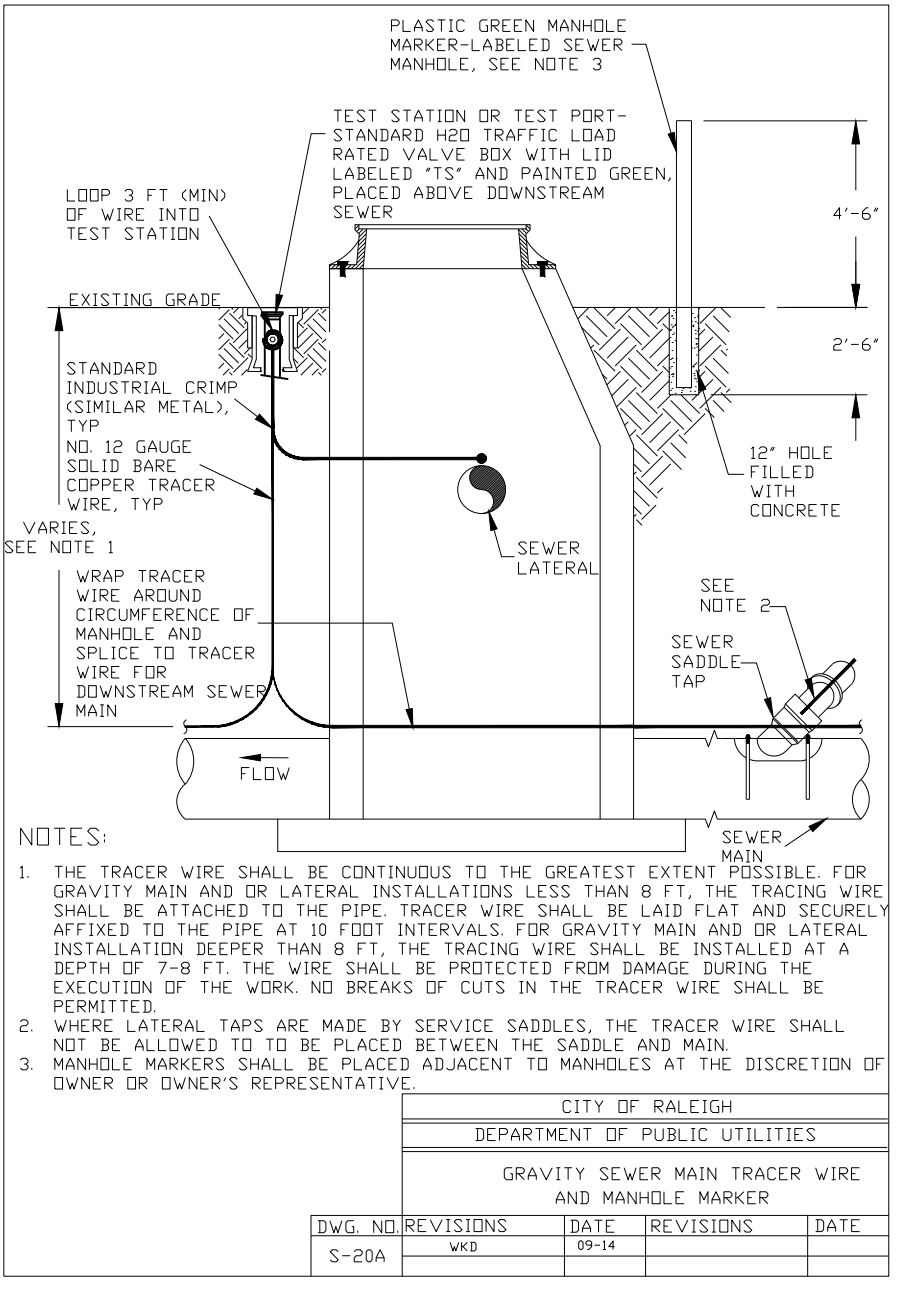
NOTES:
 1. NEW MANHOLES USE A BUTYL SEALANT BETWEEN FRAME AND MANHOLE TOP SECTION WHEN SECURING FRAME TO MANHOLE TO PROVIDE A WATER TIGHT SEAL.
 2. ECCENTRIC MH. COUPLER MAY BE USED ON 8\"/>

CITY OF RALEIGH			
DEPARTMENT OF PUBLIC UTILITIES			
STANDARD PRECAST SANITARY SEWER MANHOLE			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-20	1	12-1-99	1
	2	12-1-99	2
	3	12-1-99	3



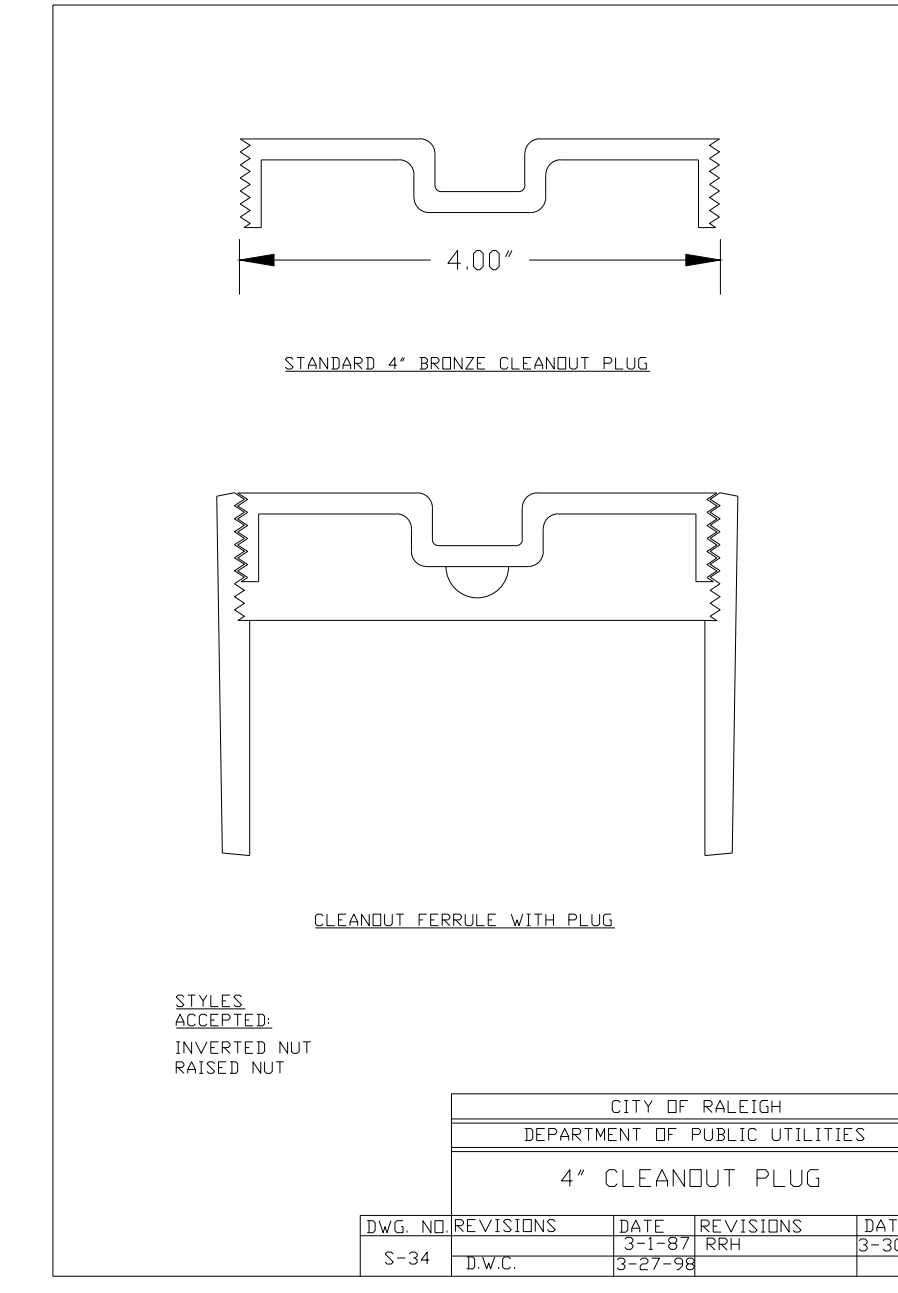
NOTES:
 1. PIPE FOR INSIDE DROP SHALL BE SDR 35 PVC CONFORMING TO ASTM D 3034.
 2. INSIDE DROP SHALL BE 1\"/>

CITY OF RALEIGH			
DEPARTMENT OF PUBLIC UTILITIES			
INSIDE DROP MANHOLE			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-53	1	12-1-99	1
	2	12-1-99	2
	3	12-1-99	3



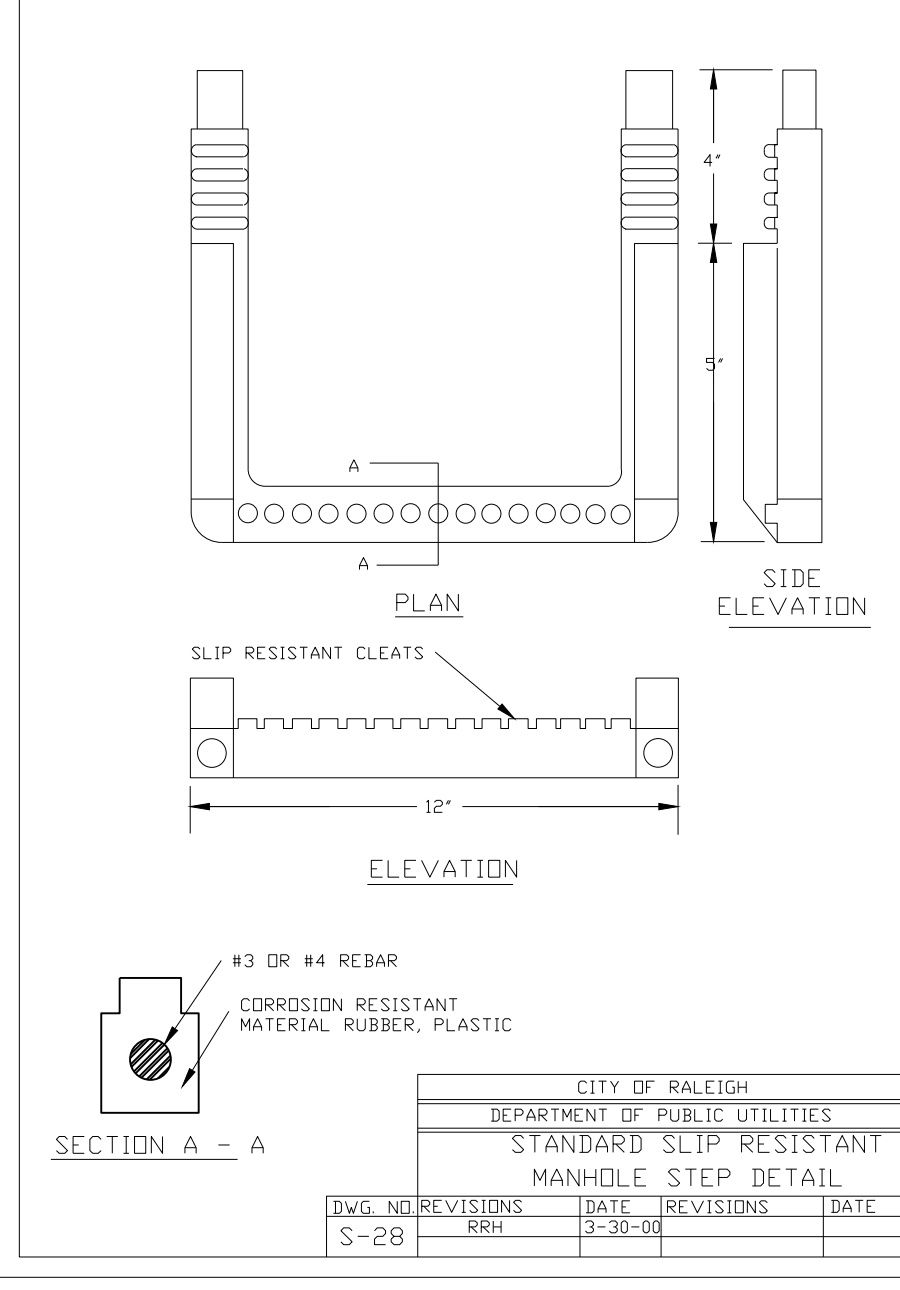
NOTES:
 1. THE TRACER WIRE SHALL BE CONTINUOUS TO THE GREATEST EXTENT POSSIBLE FOR GRAVITY MAIN AND/OR LATERAL INSTALLATIONS LESS THAN 8 FT. THE TRACING WIRE SHALL BE ATTACHED TO THE PIPE TRACER WIRE SHALL BE LAID FLAT AND SECURELY ATTACHED TO THE PIPE AT 10 FOOT INTERVALS FOR GRAVITY MAIN AND/OR LATERAL INSTALLATION DEEPER THAN 8 FT. THE TRACING WIRE SHALL BE INSTALLED AT A DEPTH OF 18\"/>

CITY OF RALEIGH			
DEPARTMENT OF PUBLIC UTILITIES			
GRAVITY SEWER MAIN TRACER WIRE AND MANHOLE MARKER			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-20A	1	12-1-99	1
	2	12-1-99	2
	3	12-1-99	3



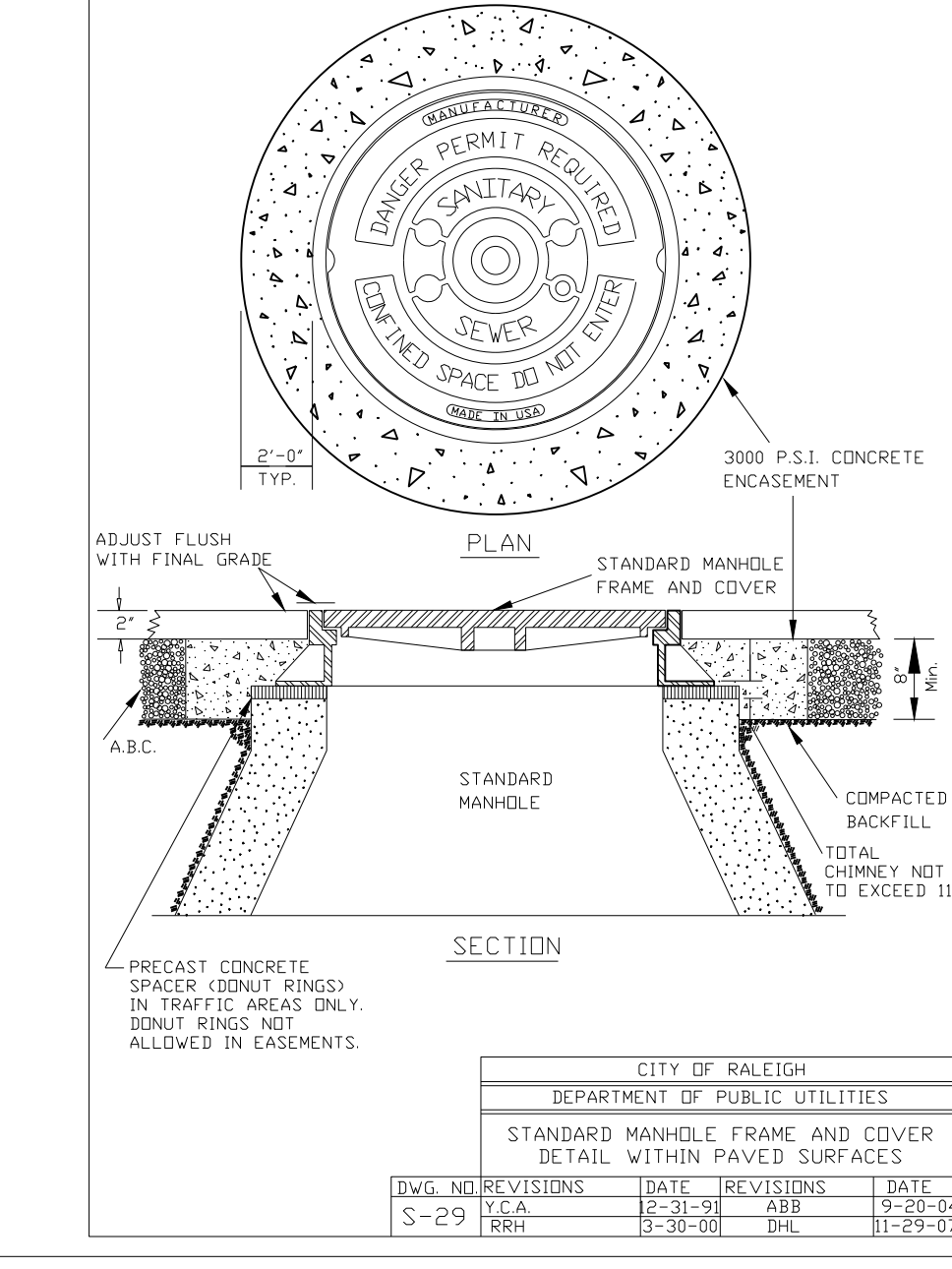
NOTES:
 1. THE TRACER WIRE SHALL BE CONTINUOUS TO THE GREATEST EXTENT POSSIBLE FOR GRAVITY MAIN AND/OR LATERAL INSTALLATIONS LESS THAN 8 FT. THE TRACING WIRE SHALL BE ATTACHED TO THE PIPE TRACER WIRE SHALL BE LAID FLAT AND SECURELY ATTACHED TO THE PIPE AT 10 FOOT INTERVALS FOR GRAVITY MAIN AND/OR LATERAL INSTALLATION DEEPER THAN 8 FT. THE TRACING WIRE SHALL BE INSTALLED AT A DEPTH OF 18\"/>

CITY OF RALEIGH			
DEPARTMENT OF PUBLIC UTILITIES			
4\"/>			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-34	1	12-1-99	1
	2	12-1-99	2
	3	12-1-99	3



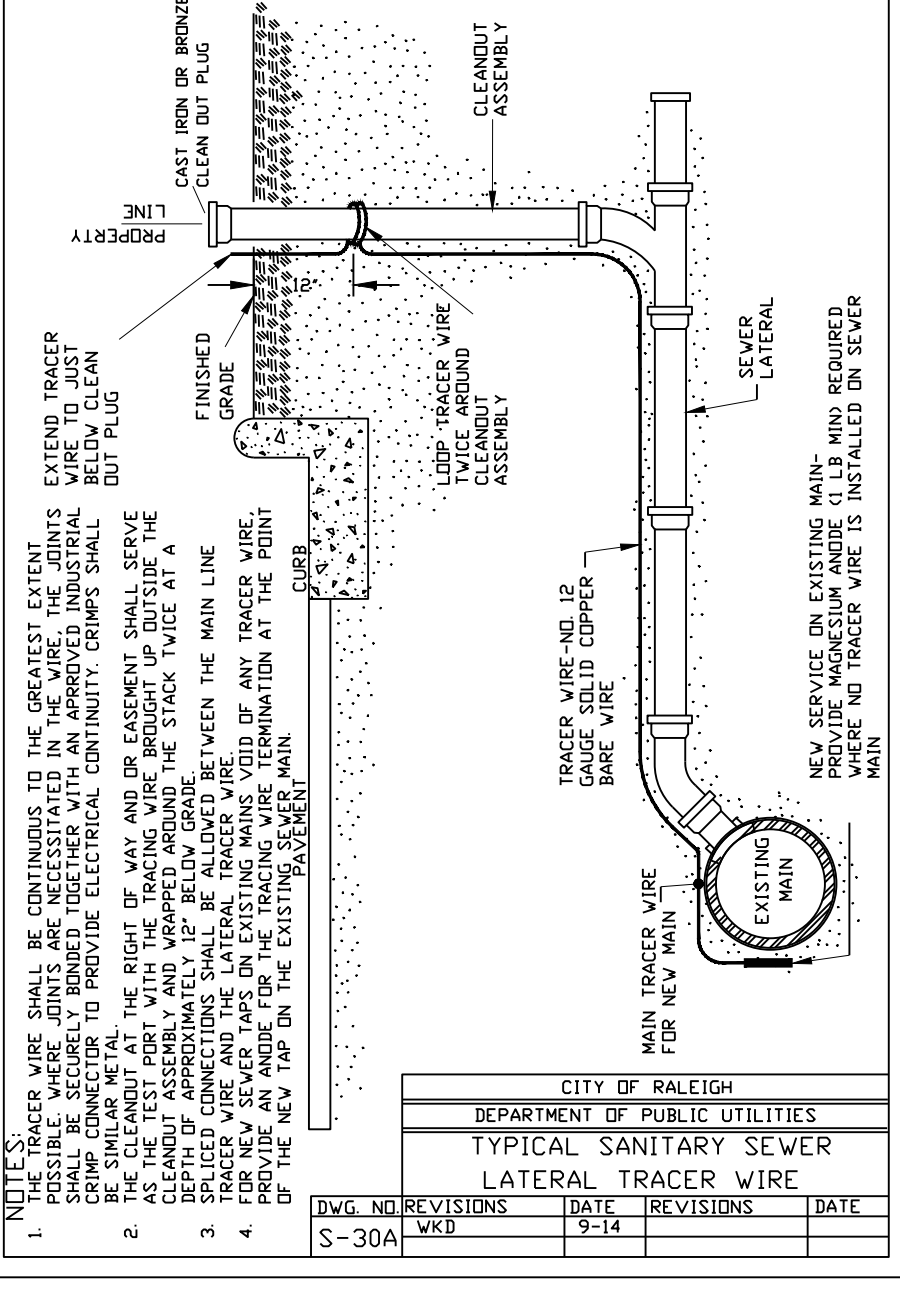
NOTES:
 1. THE TRACER WIRE SHALL BE CONTINUOUS TO THE GREATEST EXTENT POSSIBLE FOR GRAVITY MAIN AND/OR LATERAL INSTALLATIONS LESS THAN 8 FT. THE TRACING WIRE SHALL BE ATTACHED TO THE PIPE TRACER WIRE SHALL BE LAID FLAT AND SECURELY ATTACHED TO THE PIPE AT 10 FOOT INTERVALS FOR GRAVITY MAIN AND/OR LATERAL INSTALLATION DEEPER THAN 8 FT. THE TRACING WIRE SHALL BE INSTALLED AT A DEPTH OF 18\"/>

CITY OF RALEIGH			
DEPARTMENT OF PUBLIC UTILITIES			
STANDARD SLIP RESISTANT MANHOLE STEP DETAIL			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-28	1	12-1-99	1
	2	12-1-99	2
	3	12-1-99	3



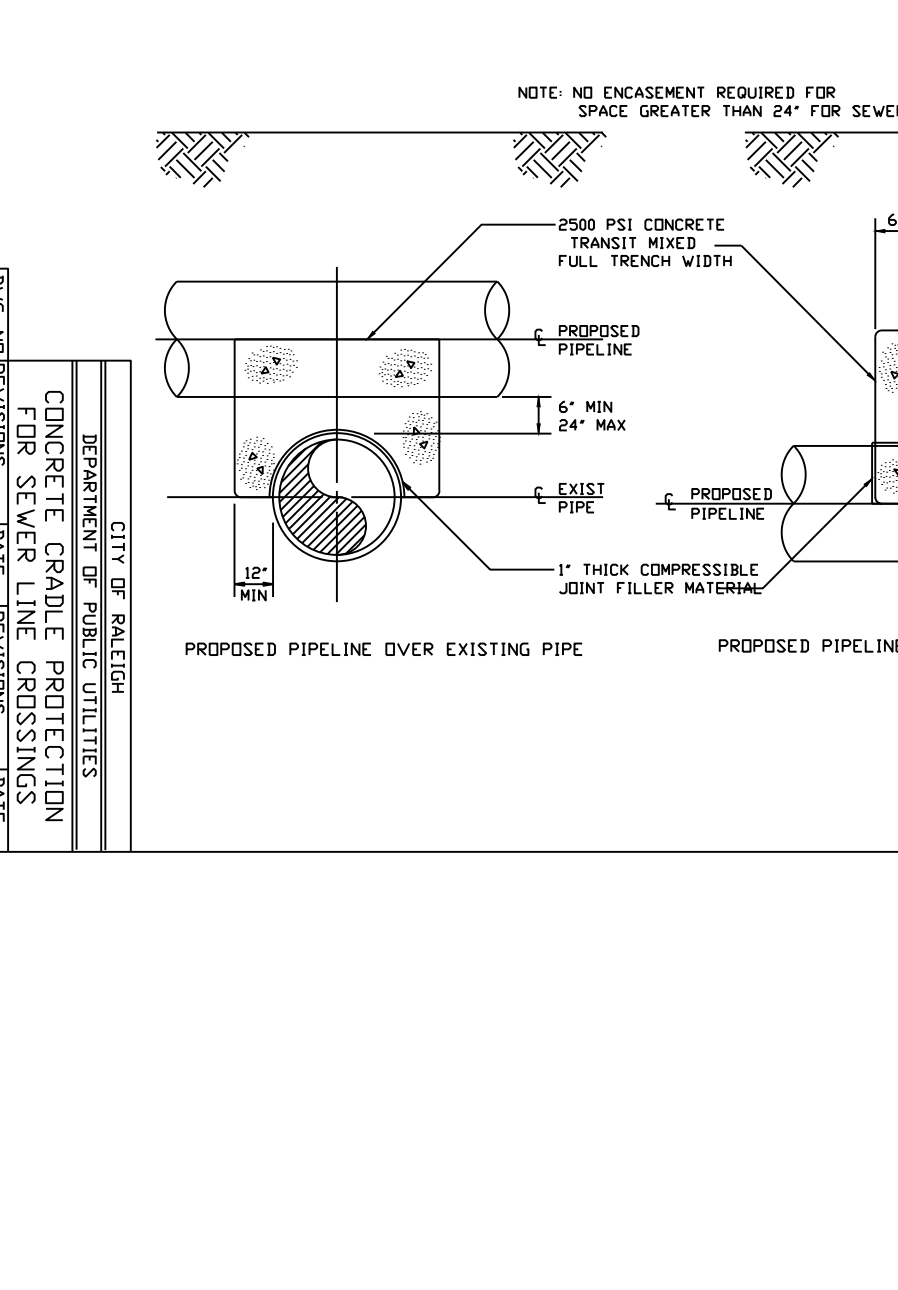
NOTES:
 1. THE TRACER WIRE SHALL BE CONTINUOUS TO THE GREATEST EXTENT POSSIBLE FOR GRAVITY MAIN AND/OR LATERAL INSTALLATIONS LESS THAN 8 FT. THE TRACING WIRE SHALL BE ATTACHED TO THE PIPE TRACER WIRE SHALL BE LAID FLAT AND SECURELY ATTACHED TO THE PIPE AT 10 FOOT INTERVALS FOR GRAVITY MAIN AND/OR LATERAL INSTALLATION DEEPER THAN 8 FT. THE TRACING WIRE SHALL BE INSTALLED AT A DEPTH OF 18\"/>

CITY OF RALEIGH			
DEPARTMENT OF PUBLIC UTILITIES			
STANDARD MANHOLE FRAME AND COVER DETAIL WITH PAVED SURFACES			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-29	1	12-1-99	1
	2	12-1-99	2
	3	12-1-99	3



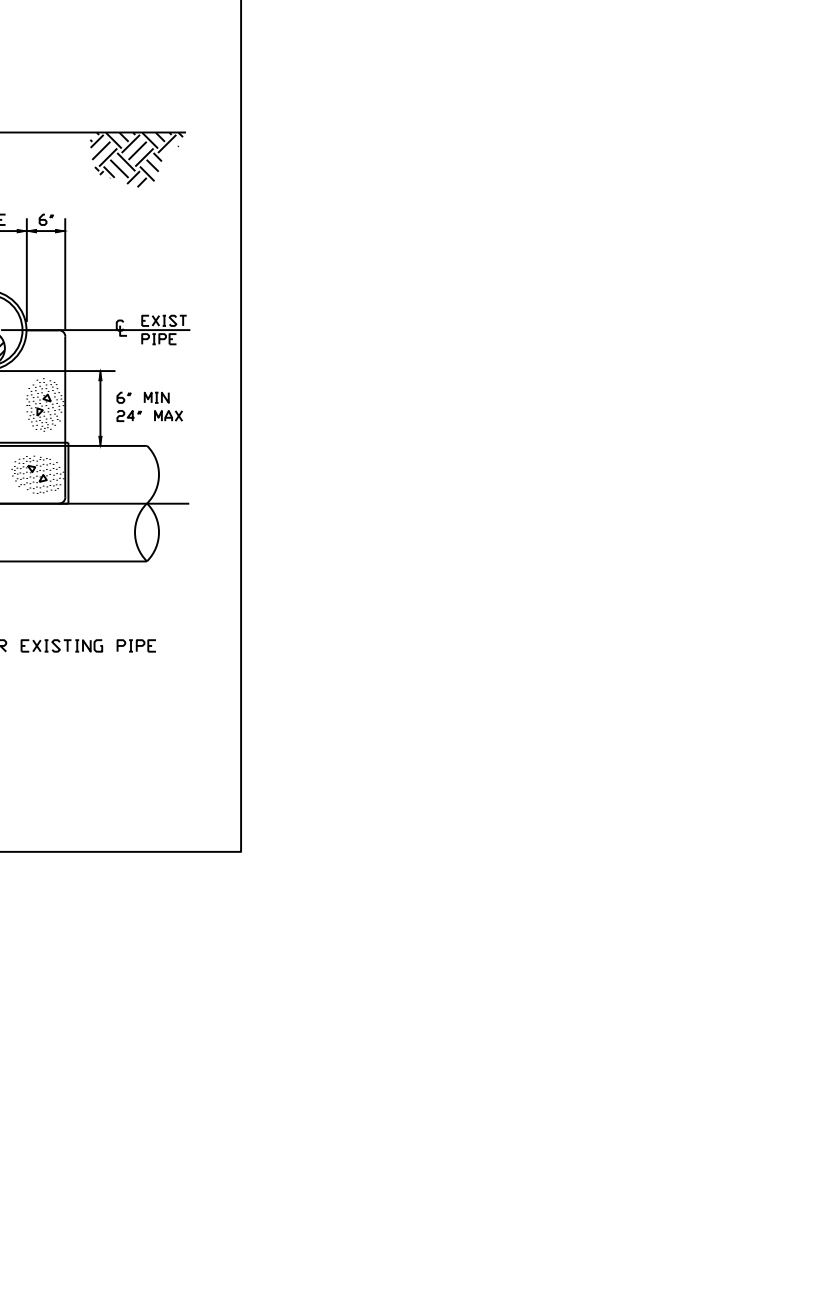
NOTES:
 1. THE TRACER WIRE SHALL BE CONTINUOUS TO THE GREATEST EXTENT POSSIBLE FOR GRAVITY MAIN AND/OR LATERAL INSTALLATIONS LESS THAN 8 FT. THE TRACING WIRE SHALL BE ATTACHED TO THE PIPE TRACER WIRE SHALL BE LAID FLAT AND SECURELY ATTACHED TO THE PIPE AT 10 FOOT INTERVALS FOR GRAVITY MAIN AND/OR LATERAL INSTALLATION DEEPER THAN 8 FT. THE TRACING WIRE SHALL BE INSTALLED AT A DEPTH OF 18\"/>

CITY OF RALEIGH			
DEPARTMENT OF PUBLIC UTILITIES			
TYPICAL SANITARY SEWER LATERAL TRACER WIRE			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-30A	1	12-1-99	1
	2	12-1-99	2
	3	12-1-99	3



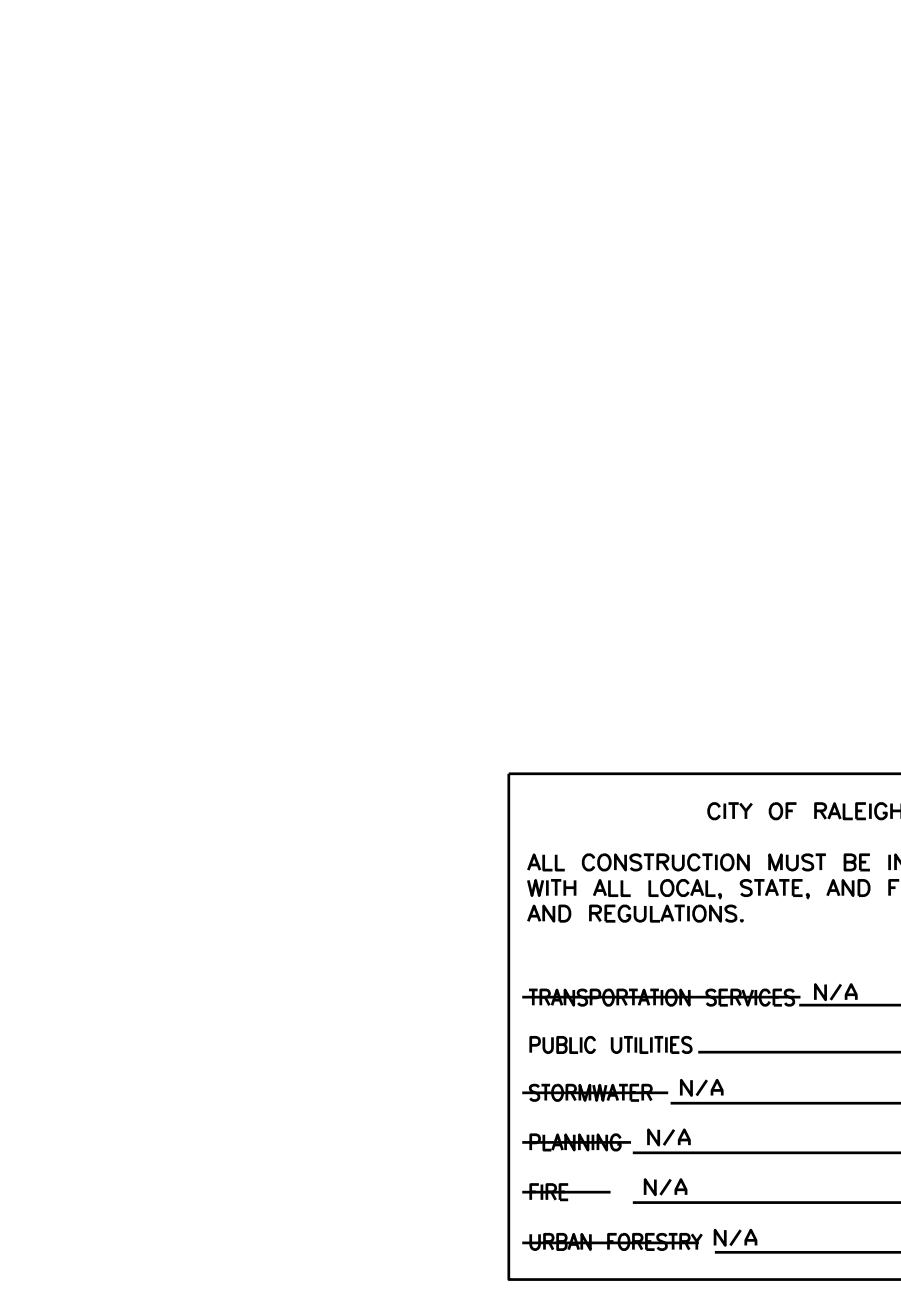
NOTES:
 1. THE TRACER WIRE SHALL BE CONTINUOUS TO THE GREATEST EXTENT POSSIBLE FOR GRAVITY MAIN AND/OR LATERAL INSTALLATIONS LESS THAN 8 FT. THE TRACING WIRE SHALL BE ATTACHED TO THE PIPE TRACER WIRE SHALL BE LAID FLAT AND SECURELY ATTACHED TO THE PIPE AT 10 FOOT INTERVALS FOR GRAVITY MAIN AND/OR LATERAL INSTALLATION DEEPER THAN 8 FT. THE TRACING WIRE SHALL BE INSTALLED AT A DEPTH OF 18\"/>

CITY OF RALEIGH			
DEPARTMENT OF PUBLIC UTILITIES			
CONCRETE GRADE PROTECTION			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-31	1	12-1-99	1
	2	12-1-99	2
	3	12-1-99	3



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 ATTACHED TO THE PIPE AT 10 FOOT INTERVALS FOR GRAVITY MAIN AND/OR LATERAL INSTALLATION DEEPER THAN 8 FT. THE TRACING WIRE SHALL BE INSTALLED AT A DEPTH OF 18\"/>

CITY OF RALEIGH			
DEPARTMENT OF PUBLIC UTILITIES			
PROPOSED PIPELINE OVER EXISTING PIPE			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-32	1	12-1-99	1
	2	12-1-99	2
	3	12-1-99	3



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 ATTACHED TO THE PIPE AT 10 FOOT INTERVALS FOR GRAVITY MAIN AND/OR LATERAL INSTALLATION DEEPER THAN 8 FT. THE TRACING WIRE SHALL BE INSTALLED AT A DEPTH OF 18\"/>

CITY OF RALEIGH			
DEPARTMENT OF PUBLIC UTILITIES			
PROPOSED PIPELINE UNDER EXISTING PIPE			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-33	1	12-1-99	1
	2	12-1-99	2
	3	12-1-99	3

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

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

TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.
 BY: _____ 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 Mack Centre Drive, Cary, NC 27511 | 919-469-3900 | License # C-6832 | www.withersravenel.com

POPLAR CREEK VILLAGE PHASE IV
 TOWN OF KNIGHTDALE, NORTH CAROLINA

SEWER UTILITY DETAIL

Job No.	02190259	Drawn By	WR
Date	10/21/19	Designer	WR

PRELIMINARY NOT APPROVED FOR CONSTRUCTION

Revisions	
1	TOK Comments 12/12/19
2	SITE REVISIONS 05/08/20
3	SITE REVISIONS 5/28/20

Sheet No.
9.4

**POPLAR CREEK VILLAGE
PHASE IV**
TOWN OF KNIGHTDALE, NORTH CAROLINA

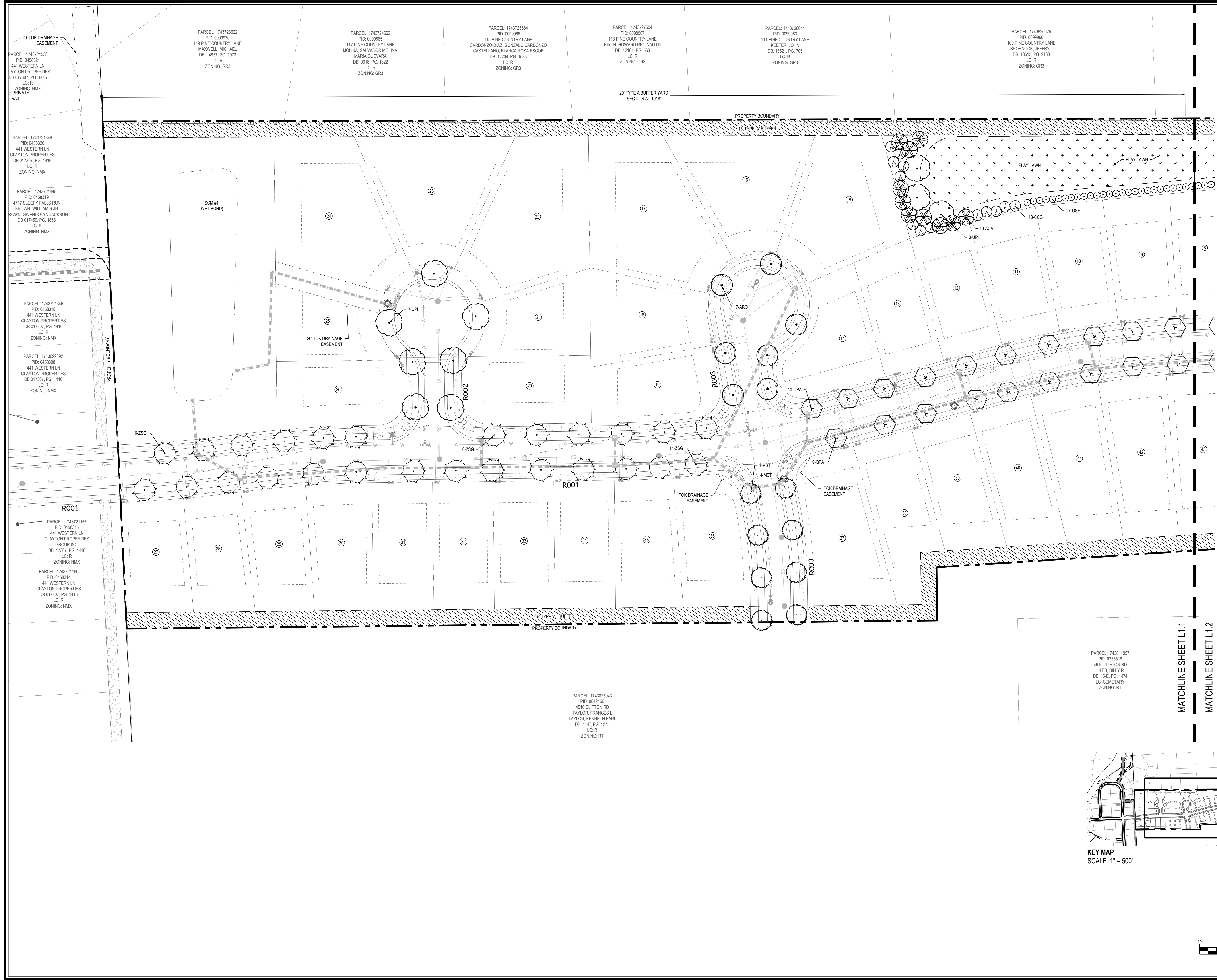
LANDSCAPE PLAN

Job No.	02190259	Drawn By	WR
Date	10/21/19	Designer	WR



Revisions		
1	TOK Comments	12/12/19
2	SITE REVISIONS	05/08/20
3	SITE REVISIONS	5/28/20

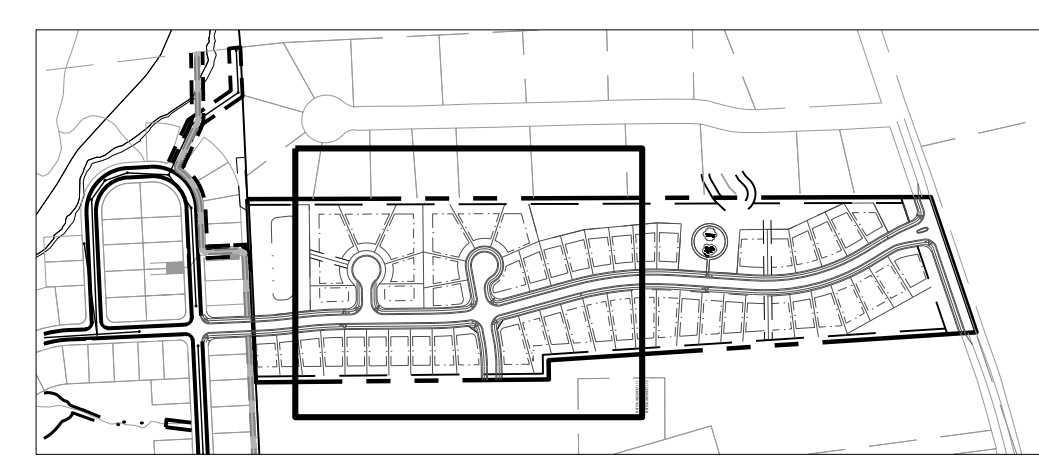
Sheet No.
L1.1



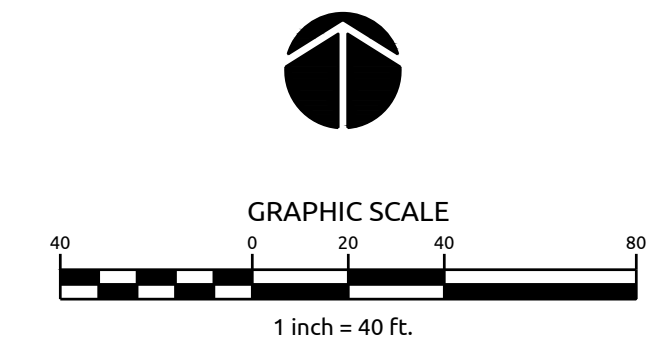
PLANT KEY

	GPA
	ZSG
	ARO
	PTH
	MST
	UPI
	ACA
	CCG
	POP
	OSF
	CHA
	JPR
	LIGHT POLE, LTP

PARCEL: 1743811957
PID: 023518
4616 CLIFTON RD
LILES, BILLY R.
DB: 15-E, PG. 1474
LC: GEOMETRIC
ZONING: RT



KEY MAP
SCALE: 1" = 500'



K:\19\2020\02190259\Drawings\04\04 Landscape Plan.dwg - Friday, June 12, 2020 2:20:07 PM - C:\DK\STEPHEN

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 OF GRADES TO THE ADJACENT PROPERTY AND TO FACILITATE LANDSCAPING AND MAINTENANCE.
- PERMANENT OFF-SITE LANDSCAPE EASEMENTS MAY BE USED TO MEET REQUIRED BUFFER YARDS PROVIDED 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 COMPLEMENT EXISTING VEGETATION NATIVE 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 PERVIOUS 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 GUIDED 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, REMOVE THEM WHEN NECESSARY, AND KEEP THE AREAS AROUND THEM FREE OF REFUSE AND DEBRIS IN A MANNER THAT PREVENTS REFUSE FROM WASHING ONTO PUBLIC RIGHTS-OF-WAY.
- THE USE OF IRRIGATION IS PERMITTED IN ALL REQUIRED LANDSCAPING AREAS AS REQUIRED BY THE LANDSCAPING 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 MATURE SIZE.
- TREE TOPPING (THE REMOVAL OF MORE THAN 25% OF A TREE'S CANOPY) IS CONSIDERED TO BE DAMAGE AND MIS-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 8' 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 WARRANTY 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.

LANDSCAPE CALCULATIONS:

- RESIDENTIAL LANDSCAPING**
- 1 CANOPY TREE / 2,000 SF OF LOT AREA (OR A FRACTION THEREOF UP TO 20,000 SF)
 - UTILITY EASEMENTS SHALL NOT BE INCLUDED IN LOT AREA
 - EXISTING LARGE TREES MEASURING MORE THAN 6" 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 FOR IN PREVIOUS NOTES/DETAILS.

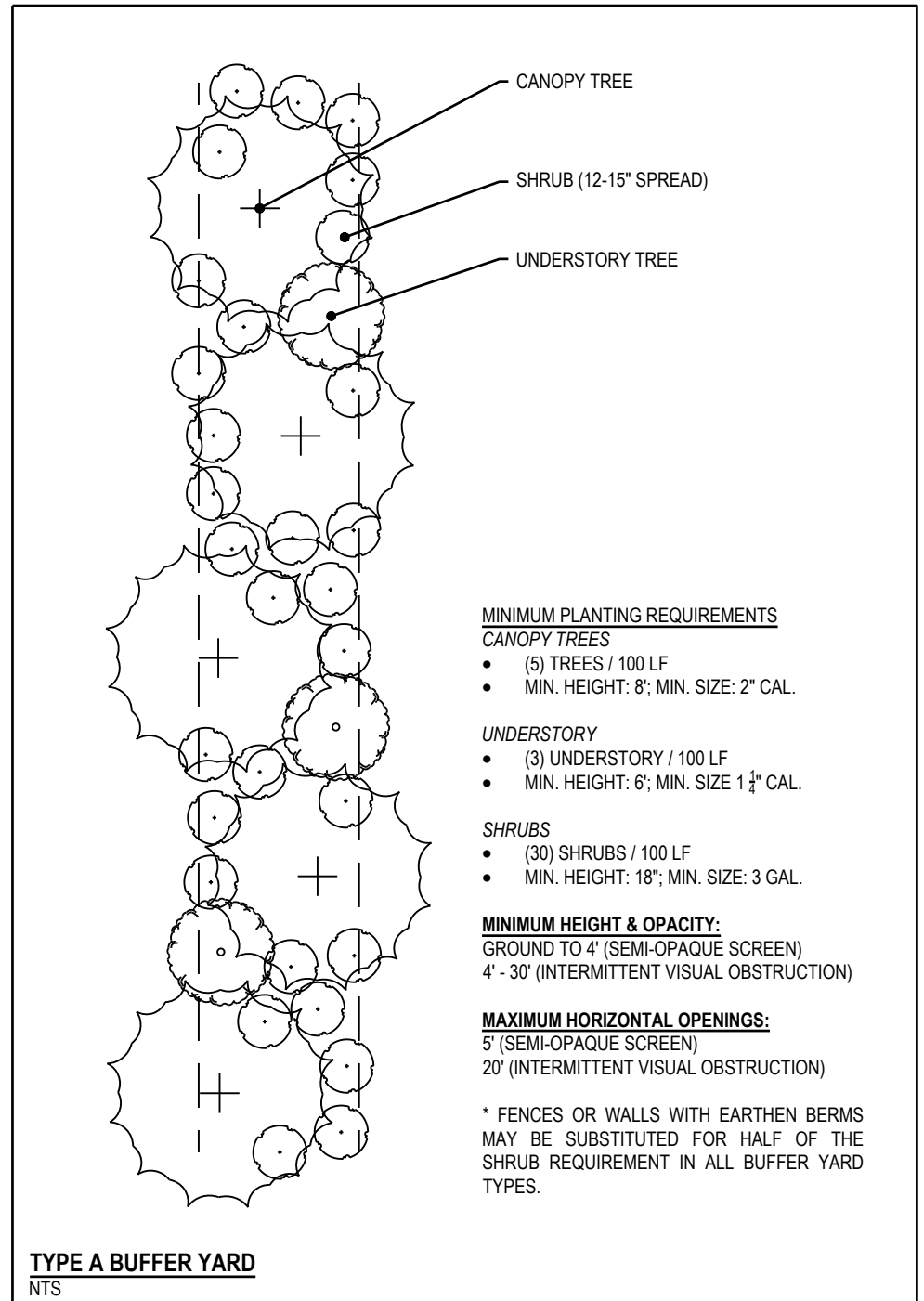
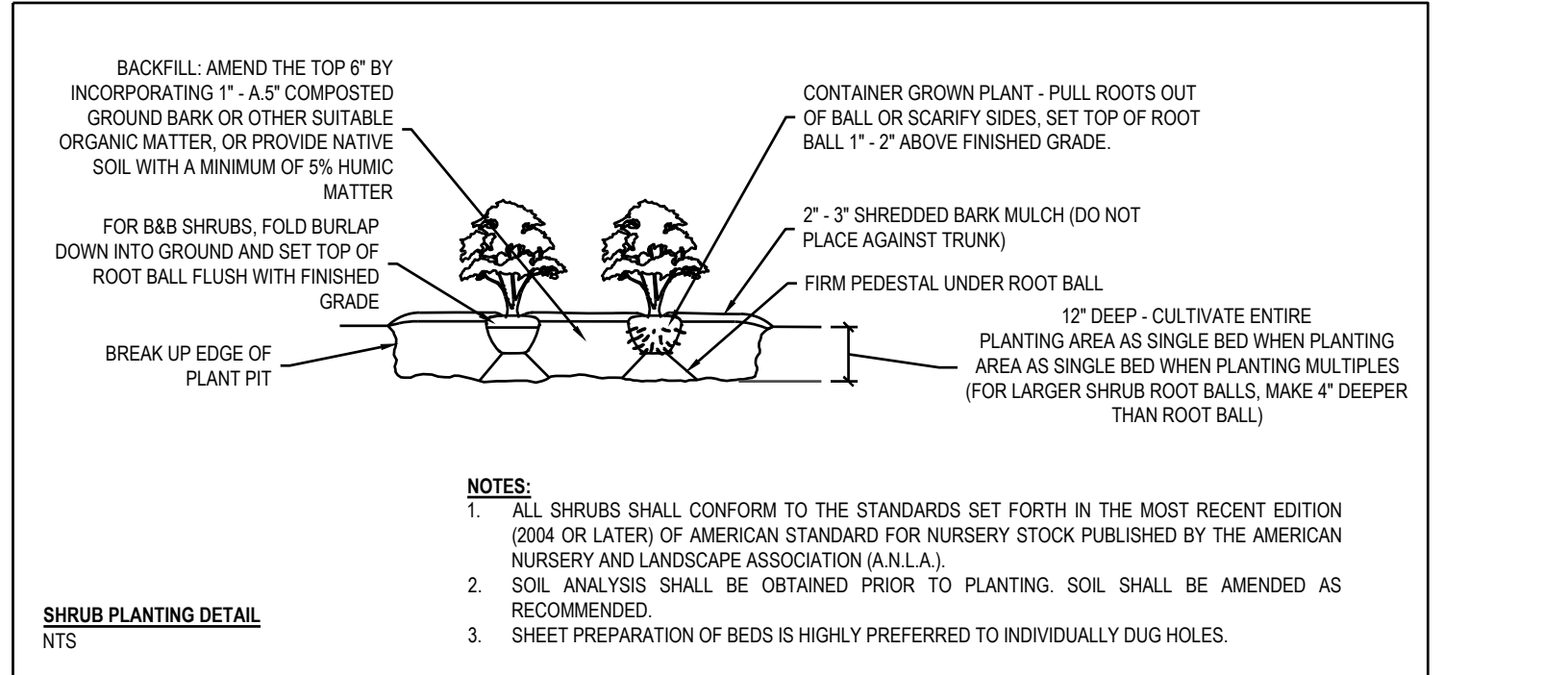
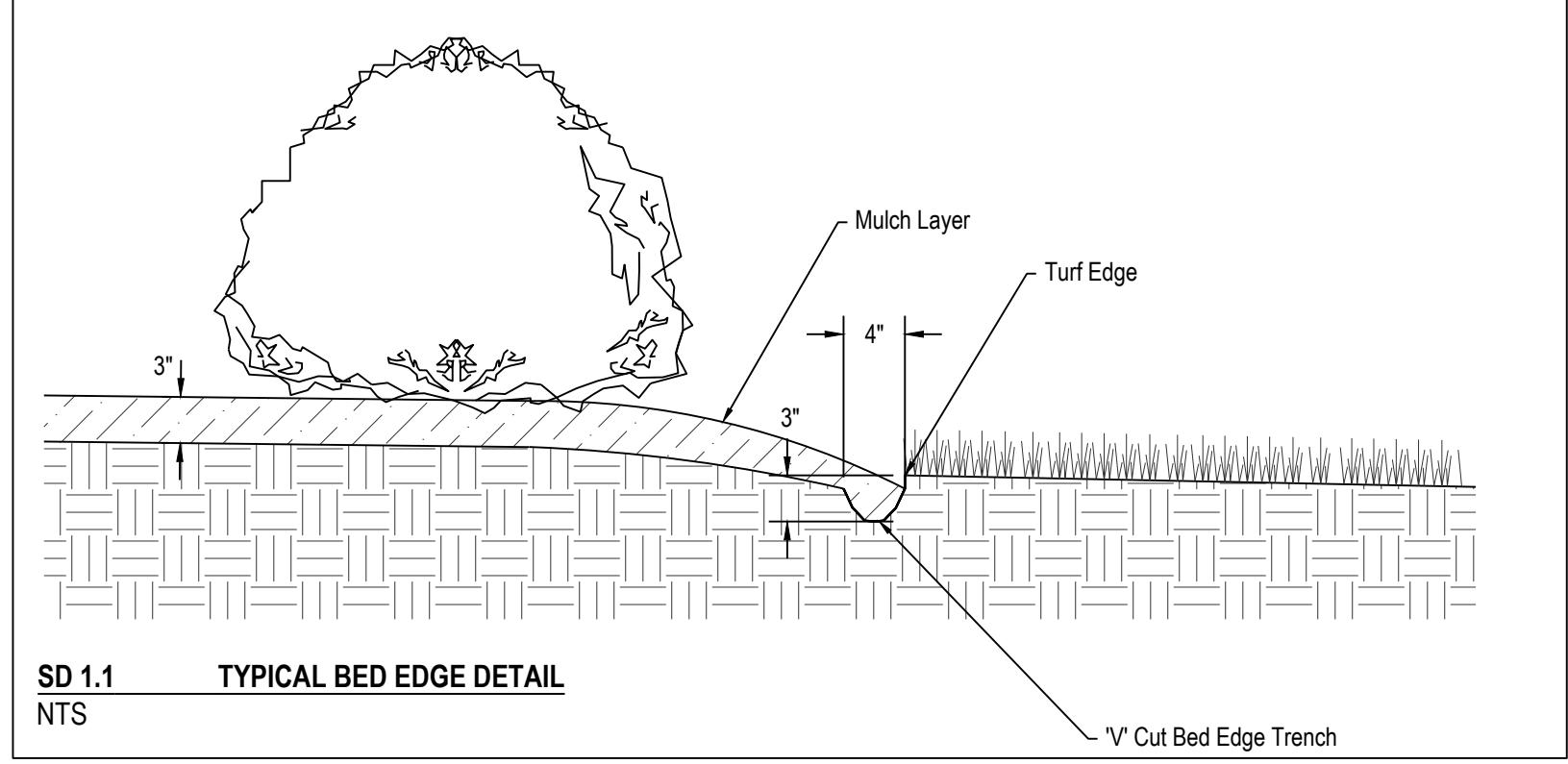
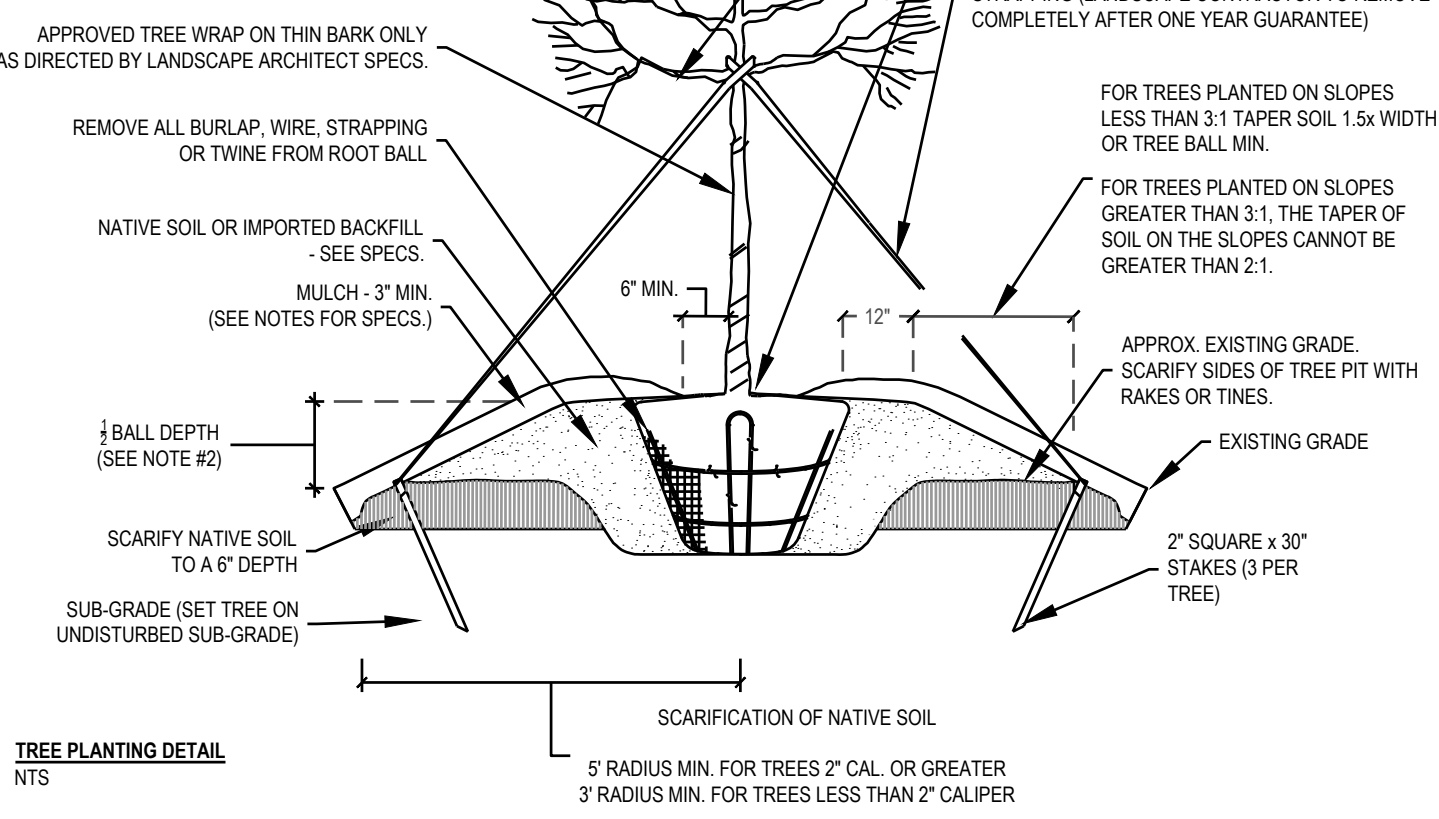
NUMBER OF PLANTS PER 100 SF.

SPACING "D"	ROW "A"	PLANT(S) F.
6" o.c.	5.2'	4.61
8" o.c.	6.93'	2.60
10" o.c.	8.66'	1.66
12" o.c.	10.4'	1.15
15" o.c.	13.0'	0.73
18" o.c.	15.6'	0.51
24" o.c.	20.8'	0.29
30" o.c.	26.0'	0.18
36" o.c.	31.30'	0.12
4" o.c.	3.46'	7.25
5" o.c.	4.32'	4.61
6" o.c.	5.2'	3.20
8" o.c.	6.93'	1.80
10" o.c.	8.66'	1.16

PLANT SPACING CHART
NTS

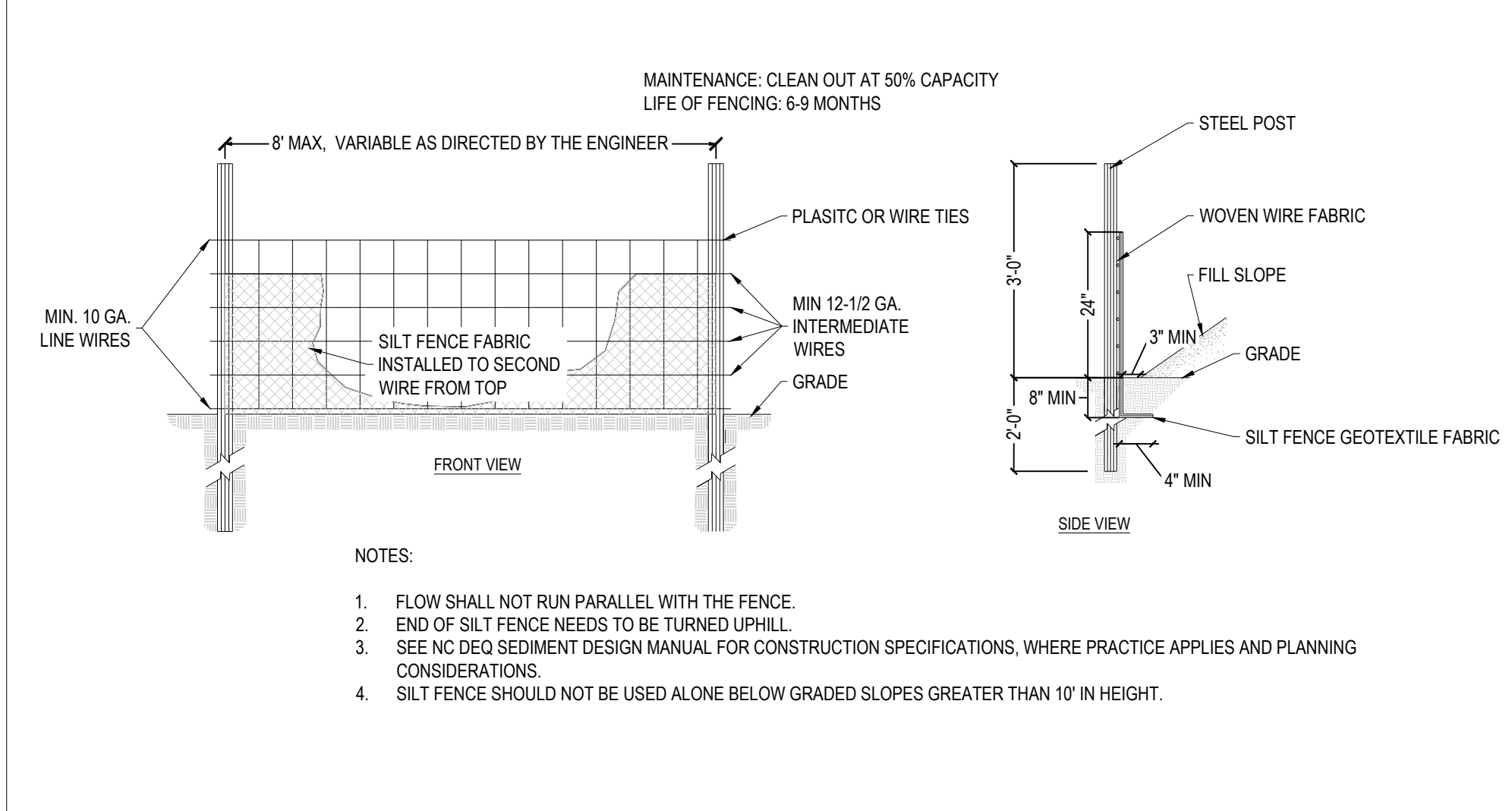
TREE PLANTING NOTES:

- IF TREES SETTLE OR ARE BLOWN OUT OF PLUMB POSITION, THEY SHOULD BE STRAIGHTENED BY MAKING ADJUSTMENTS TO THE POSITION OF THE ROOT BALL - NOT BY PUSHING ON THE TRUNK AND/OR TIGHTENING THE GUY WIRE. TREES SHALL BE STRAIGHTENED DURING THE LIFE OF THE PROJECT AS THEY GET OUT OF PLUMB, NOT JUST AT THE END OF THE PROJECT.
- BALL DEPTHS ON SOME TREES IN A SINGLE GROUP MAY VARY, IN GENERAL, 1/2 THE BALL SHOULD BE ABOVE GRADE. IF DEPTHS VARY, ALL TREES IN A GROUP SHOULD BE SET SO THAT THE BASE OF THE TRUNK WILL APPEAR TO BE AT THE SAME RELATIVE ELEVATION ABOVE GRADE.
- NO DECIDUOUS OR EVERGREEN TREES WILL BE ACCEPTED IF THERE IS MORE THAN ONE LEADER, UNLESS THE TREE IS SPECIFIED AS MULTI-TRUNK.
- CONTRACTOR TO VERIFY THAT ADEQUATE DRAINAGE EXISTS PRIOR TO PLANTING.
- STAKE AND GUY TREES 3" CALIPER AND LARGER.



STREET TREE CALCULATIONS

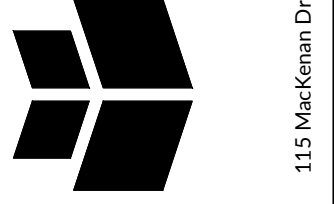
Street Name	Length (LF)	REQUIRED TREES 1 per 40 LF	PROVIDED TREES
R001	1624	82	82
R002	85	5	7
R003	232	12	13



TREE PROTECTION FENCE DETAIL

PLANT SCHEDULE

QTY	KEY	BOTANICAL NAME	COMMON NAME	ROOT	SIZE	HEIGHT	NOTES
CANOPY TREES							
7	ARO	Acer rubrum 'October Glory'	October Glory Red Maple	CONT.	2" CAL. MIN.	6' MIN.	MATCHED
13	MST	Magnolia grandiflora 'Bracken's Brown'	Southern Magnolia	B&B	2" CAL. MIN.	6' MIN.	SUBS MUST HAVE LA APPROVAL
10	PTH	Pinus taeda	Loblolly Pine	B&B	2" CAL. MIN.	6' MIN.	SUBS MUST HAVE LA APPROVAL
57	QPA	Quercus phellos 'Ascendor'	Ascendor Willow Oak	B&B	2" CAL. MIN.	8' MIN.	SUBS MUST HAVE LA APPROVAL
16	UPI	Ulmus americana 'Princeton'	Princeton Elm	B&B	2" CAL. MIN.	8' MIN.	SUBS MUST HAVE LA APPROVAL
26	ZSG	Zelkova serrata 'Village Green'	Japanese Zelkova	B&B	2" CAL. MIN.	8' MIN.	SUBS MUST HAVE LA APPROVAL
UNDERSTORY TREES							
10	ACA	Ametanther canadensis	Servisberry	B&B	1.5" CAL. MIN.	6' MIN.	REFORESTATION
20	CCG	Cercis canadensis 'Forest Paney'	Eastern Redbud	B&B	1.5" CAL. MIN.	6' MIN.	SUBS MUST HAVE LA APPROVAL
SHRUBS							
12	JPR	Juniperus procumbens 'Nana'	Japanese Garden Juniper	CONT.	5 GAL. MIN.		SUBS MUST HAVE LA APPROVAL
76	OSF	Osmanthus fragrans	Tea Olive	B&B	7 GAL. MIN.		SUBS MUST HAVE LA APPROVAL
12	POP	Phycosaurus opulifolius	Ninebark	B&B	7 GAL. MIN.		BURGUNDY COLOR



Job No.	02190259	Drawn By	WR
Date	10/21/19	Designer	WR



Revisions

1	TOK Comments	12/12/19
2	SITE REVISIONS	05/08/20
3	SITE REVISIONS	5/28/20

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