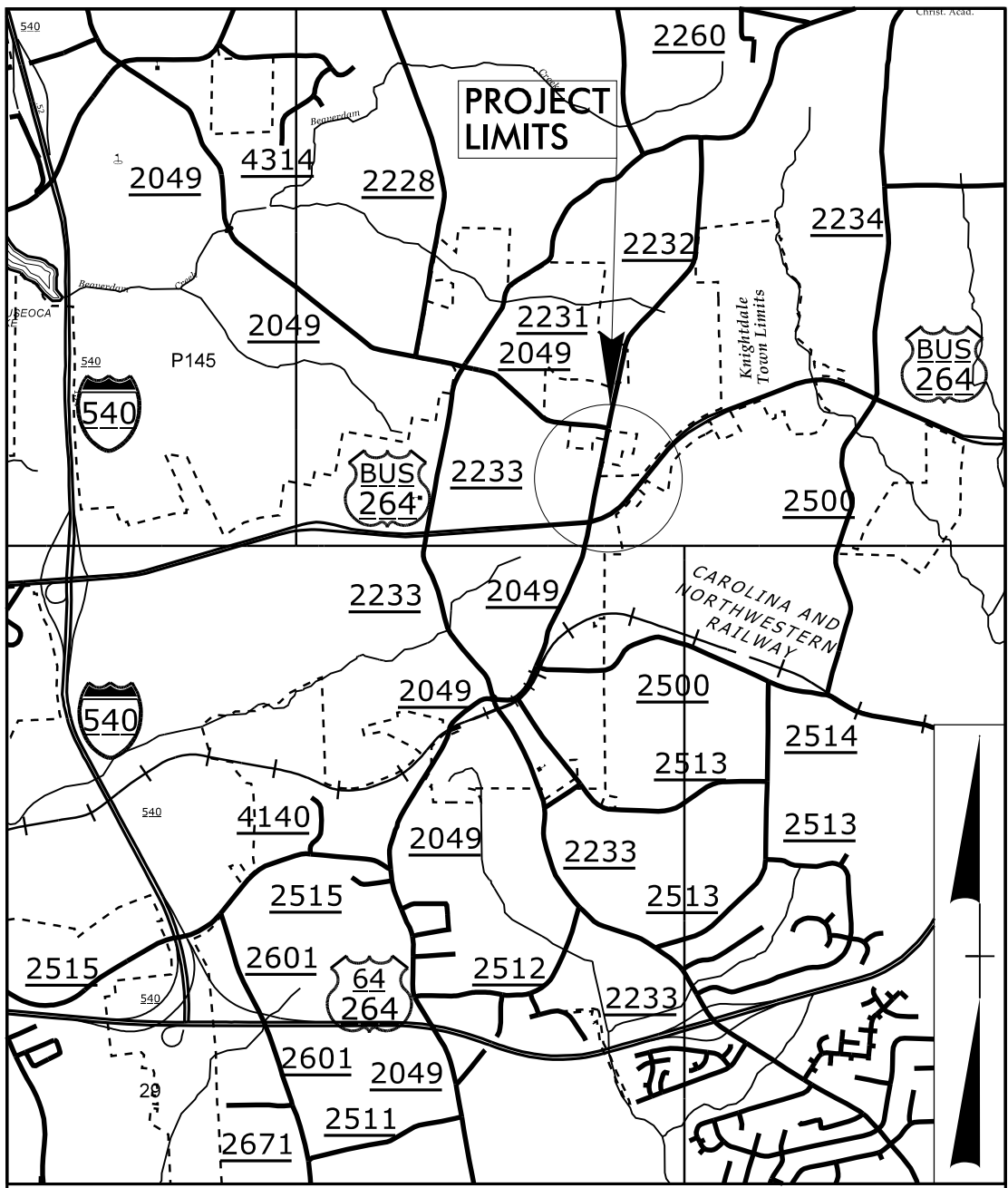


TIP PROJECT: TC002-BL



VICINITY MAP

Note: Not to Scale

ATTENTION CONTRACTORS

JAN2025M

The Contractor responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for contacting the Raleigh Water Inspector at 919-996-3245 or <https://cityworks.raleighnc.gov/pucontractors> and schedule a Pre-construction meeting prior to beginning any construction. Raleigh Water must be contacted at (919) 996-4540 at least twenty-four hours prior to beginning any work activity around critical water and sewer infrastructure.

Failure to notify City Departments in advance of beginning construction, will result in the issuance of monetary fines, and require re-installation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for inspection, install a downstream plug, have permitted plans on the jobsite, or any other violation of Raleigh Water Standards will result in a fine and possible exclusion from future work in the City of Raleigh.

INDEX OF SHEETS

SHEET NO.: DESCRIPTION:

UC-1 TITLE SHEET
UC-2 UTILITY SYMBOLOGY
UC-3 NOTES
UC-3A THRU UC-3E DETAILS
UC-4 THRU UC-5 UC PLAN SHEETS
UC-6 THRU UC-7 UC PROFILE SHEETS

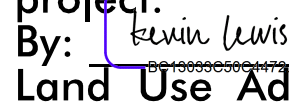
WATER & SEWER OWNERS

(A) WATER - RALEIGH WATER

(B) SANITARY SEWER - RALEIGH WATER

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.

By:  Date: 12/15/2025
Town Engineer

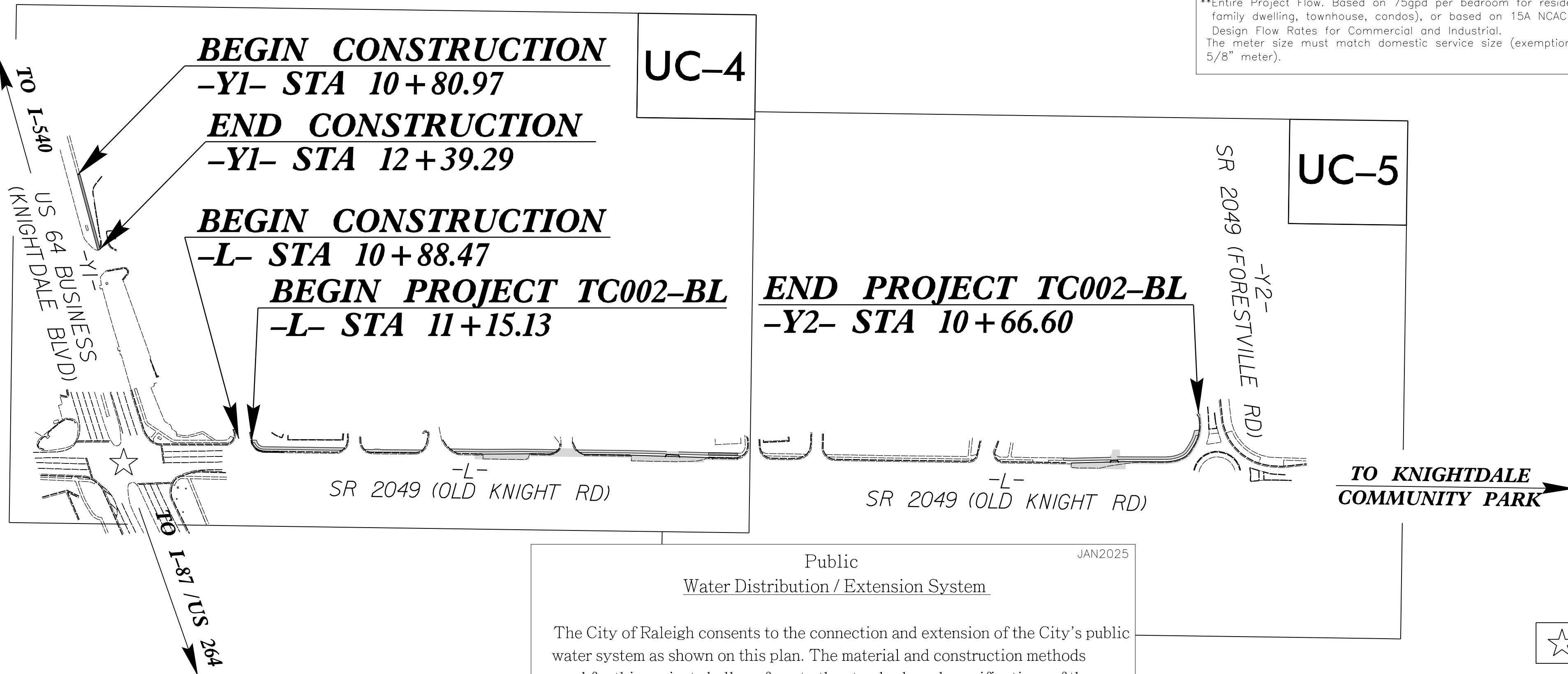
These plans are approved by the Town of Knightdale and serve as construction plans for this project.
By:  Date: 12/15/2025
Land Use Administrator

TOWN OF KNIGHTDALE

UTILITY CONSTRUCTION PLANS
WAKE COUNTY

LOCATION: WEST SIDE OF SR 2049 (OLD KNIGHT RD)
FROM US 64 TO SR 2049 (FORESTVILLE RD)

TYPE OF WORK: WATER AND SEWER RELOCATION
KNIGHTDALE PROJECT NUMBER: TC002-BL /ZCP-1-25



Public
Water Distribution / Extension System

JAN2025

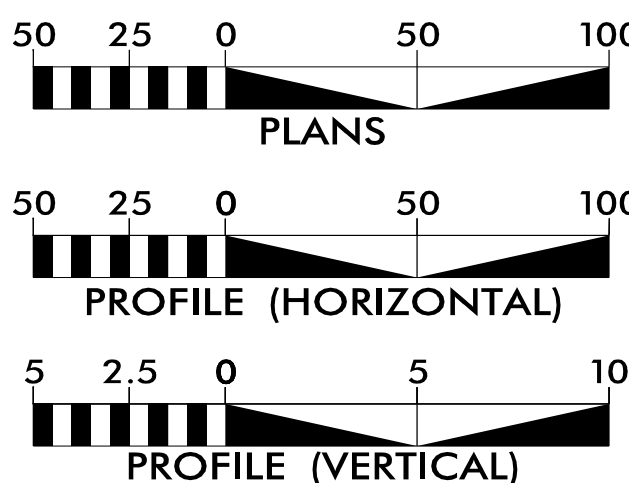
The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # W-4226

☆ EXISTING SIGNAL

DOCUMENT NOT CONSIDERED FINAL
UNTIL ALL SIGNATURES ARE COMPLETED

GRAPHIC SCALES



Prepared in the Offices of:

Mead&Hunt

111 E. Hargett Street, Suite 300
Raleigh, North Carolina 27601
919-714-8670 | meadhunt.com
NC License No. F-1235

UTILITY ENGINEER



DocuSigned by

68931F8318B24C1
SIGNATURE: 8/18/2025

P.E.

Prepared for:
TOWN OF KNIGHTDALE
950 STEEPLE SQUARE CT
919-217-2200

KEVIN BARNES, PE
UTILITY PROJECT MANAGER

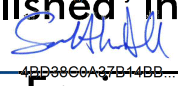
JENNIFER SMITH-MORTON, PE
UTILITY DESIGN ENGINEER

ANDREW BRAME, EI
UTILITY DESIGN ENGINEER

5/14/99

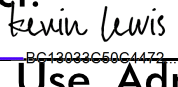
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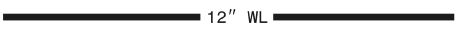
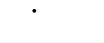
STATE OF NORTH CAROLINA

DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
TC002-BL	UC-2

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

Water Line (Sized as Shown)	
11¼ Degree Bend	
22½ Degree Bend	
45 Degree Bend	
90 Degree Bend	
Plug	
Tee	
Cross	
Reducer	
Gate Valve	
Butterfly Valve	
Tapping Valve	
Line Stop	
Line Stop with Bypass	
Blow Off	
Fire Hydrant	
Relocate Fire Hydrant	
Remove Fire Hydrant	
Water Meter	
Relocate Water Meter	
Remove Water Meter	
Water Pump Station	
RPZ Backflow Preventer	
DCV Backflow Preventer	
Relocate RPZ Backflow Preventer	
Relocate DCV Backflow Preventer	

PROPOSED SEWER SYMBOLS

Gravity Sewer Line (Sized as Shown)	
Force Main Sewer Line (Sized as Shown)	
Manhole (Sized per Note)	
Sewer Pump Station	

PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

Power Pole	
Telephone Pole	
Joint Use Pole	
Telephone Pedestal	
Utility Line by Others (Type as Shown)	
Trenchless Installation	
Encasement by Open Cut	
Encasement	

Thrust Block	
Air Release Valve	
Utility Vault	
Concrete Pier	
Steel Pier	
Plan Note	
Pay Item Note	

NOTE

PAY ITEM

EXISTING UTILITIES SYMBOLS

Power Pole	
Telephone Pole	
Joint Use Pole	
Utility Pole	
Utility Pole with Base	
H-Frame Pole	
Power Transmission Line Tower	
Water Manhole	
Power Manhole	
Telephone Manhole	
Sanitary Sewer Manhole	
Hand Hole for Cable	
Power Transformer	
Telephone Pedestal	
CATV Pedestal	
Gas Valve	
Gas Meter	
Located Miscellaneous Utility Object	
Abandoned According to Utility Records	
End of Information	

*Underground Power Line	
*Underground Telephone Cable	
*Underground Telephone Conduit	
*Underground Fiber Optics Telephone Cable	
*Underground TV Cable	
*Underground Fiber Optics TV Cable	
*Underground Gas Pipeline	
Aboveground Gas Pipeline	
*Underground Water Line	
Aboveground Water Line	
*Underground Gravity Sanitary Sewer Line	
Aboveground Gravity Sanitary Sewer Line	
*Underground SS Forced Main Line	
Underground Unknown Utility Line	
SUE Test Hole	
Water Meter	
Water Valve	
Fire Hydrant	
Sanitary Sewer Cleanout	

*For Existing Utilities

Utility Line Drawn from Record (Type as Shown)

Designated Utility Line (Type as Shown)

UTILITY CONSTRUCTION

GENERAL NOTES:

1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF THE RALEIGH WATER PUBLIC UTILITY DESIGN MANUAL, EFFECTIVE JANUARY 2025. BECAUSE THE UTILITY CONSTRUCTION WORK IS WITHIN THE NCDOT RIGHT-OF-WAY, THE PROPOSED UTILITY CONSTRUCTION SHALL ALSO MEET THE APPLICABLE REQUIREMENTS OF THE NC DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2024.

2. THE EXISTING UTILITIES BELONG TO RALEIGH WATER.

3. ALL WATER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER RESOURCES, PUBLIC WATER SUPPLY SECTION. ALL SEWER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT QUALITY, DIVISION OF WATER RESOURCES, WATER QUALITY SECTION. PERFORM ALL WORK IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODES.

4. PROVIDE ACCESS FOR THE DEPARTMENT PERSONNEL AND THE OWNER'S REPRESENTATIVES TO ALL PHASES OF CONSTRUCTION. NOTIFY DEPARTMENT PERSONNEL AND THE UTILITY OWNER TWO WEEKS PRIOR TO COMMENCEMENT OF ANY WORK AND ONE WEEK PRIOR TO SERVICE INTERRUPTION. KEEP UTILITY OWNERS' REPRESENTATIVES INFORMED OF WORK PROGRESS AND PROVIDE OPPORTUNITY FOR INSPECTION OF CONSTRUCTION AND TESTING.

5. THE PLANS DEPICT THE BEST AVAILABLE INFORMATION FOR THE LOCATION, SIZE, AND TYPE OF MATERIAL FOR ALL EXISTING UTILITIES. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE, AND TYPE MATERIAL OF THE EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING DAMAGE TO EXISTING FACILITIES. REPAIR ANY DAMAGE INCURRED TO EXISTING FACILITIES TO THE ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE DEPARTMENT.

6. MAKE FINAL CONNECTIONS OF THE NEW WORK TO THE EXISTING SYSTEM WHERE INDICATED ON THE PLANS, AS REQUIRED TO FIT THE ACTUAL CONDITIONS, OR AS DIRECTED.

7. MAKE CONNECTIONS BETWEEN EXISTING AND PROPOSED UTILITIES AT TIMES MOST CONVENIENT TO THE PUBLIC, WITHOUT ENDANGERING THE UTILITY SERVICE, AND IN ACCORDANCE WITH THE UTILITY OWNER'S REQUIREMENTS. MAKE CONNECTIONS ON WEEKENDS, AT NIGHT, AND ON HOLIDAYS IF NECESSARY.

8. ALL UTILITY MATERIALS SHALL BE APPROVED PRIOR TO DELIVERY TO THE PROJECT. SEE 1500-7, " SUBMITTALS AND RECORDS" IN SECTION 1500 OF THE STANDARD SPECIFICATIONS.

PROJECT SPECIFIC NOTES:

1. PROPOSED WATER LINE FROM -L- LINE STATION 15+70 TO -L- LINE STATION 20+74 SHALL BE D.I.R.J. (DUCTILE IRON RESTRAINED JOINT) PIPE.

2. ALL EXISTING WATER SERVICES TO BE REPLACED FROM THE MAIN LINE TO THE RIGHT-OF-WAY LINE. THE NEW WATER METER ASSEMBLY SHALL BE CONNECTED TO THE EXISTING SERVICE LINE ON THE CUSTOMER SIDE OF THE RIGHT-OF-WAY.

LIST OF STANDARD DRAWINGS FROM RALEIGH WATER

WATER

W-2	STANDARD ASPHALT PAVEMENT PATCH DETAIL
W-3	TRENCH BOTTOM DIMENSIONS & BACKFILLING REQUIREMENTS FOR DUCTILE IRON
W-4	STANDARD FIRE HYDRANT INSTALLATION DETAIL
W-5	STANDARD FIRE HYDRANT WITH 5" STORZ PUMPER NOZZLE
W-6	HYDRANT OPERATING NUT AND 2 1/2" OUTLET THREADS
W-7	THRUST BLOCKING DESIGN DATA FOR WATER MAINS
W-9	STANDARD THRUST BLOCKING VIEWS
W-10	THRUST BLOCKING DESIGN QUANTITY TABLE
W-11	THRUST BLOCKING DESIGN QUANTITY TABLE
W-12	STANDARD VERTICAL BEND
W-14	4"-24" STANDARD TAPPING SLEEVE AND VALVE ASSEMBLY
W-15	VALVE RESTRAINT AT TEES AND CROSSES FOR LINES (4"-24")
W-17	VALVE BOX INSTALLATION AND EXTENSION DETAIL
W-18	5 1/4" VALVE BOX DROP LID WITH 4" SKIRT
W-23	STANDARD 3/4" & 1" WATER SERVICE INSTALLATION
W-25	WATER METER BOX DETAIL
W-31	TYPICAL 1 1/2"-2" WATER METER BOX INSTALLATION

SEWER

S-3	STANDARD ASPHALT PAVEMENT PATCH DETAIL
S-4	TRENCH BOTTOM DIMENSIONS & BACKFILLING REQUIREMENTS FOR DUCTILE IRON
S-5	TRENCH BOTTOM DIMENSIONS & BACKFILLING REQUIREMENTS FOR PVC GRAVITY SEWER MAIN
S-20	STANDARD PRECAST SANITARY SEWER MANHOLE
S-20A	GRAVITY SEWER MAIN TRACER WIRE AND MANHOLE MARKER
S-21	EXTENDED BASE OR CAST IN PLACE REINFORCED CONCRETE BASE
S-22	STANDARD MANHOLE INSTALLATION OVER EXISTING SEWER MAIN
S-25	STANDARD MANHOLE COVER
S-28	STANDARD SLIP RESISTANT MANHOLE STEP DETAIL
S-29	STANDARD MANHOLE FRAME AND COVER DETAIL WITH PAVED SURFACES
S-49	CONCRETE CRADLE PROTECTION FOR SEWER LINE CROSSINGS

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.
By: [Signature] Date: 12/15/2025
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.
By: [Signature] Date: 12/15/2025
Land Use Administrator

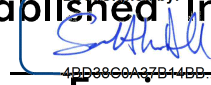
PROJECT REFERENCE NO.		SHEET NO.
TC002-BL		UC-3
DESIGNED BY:	KJB	
DRAWN BY:	ADB	
CHECKED BY:	KJB	
APPROVED BY:		
REVISED:		
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151		UTILITY CONSTRUCTION PLANS ONLY

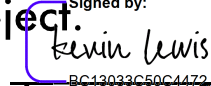
UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

5/14/99

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Land Use Administrator

Public
Water Distribution / Extension System

JAN2025

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City of Raleigh
Public Utilities Department Permit # W-4226

PROJECT REFERENCE NO.
TC002-BL

SHEET NO.
UC-3A

DESIGNED BY: **KJB**

DRAWN BY: **ADB**

CHECKED BY: **KJB**

APPROVED BY:

REVISED:

NORTH CAROLINA
DEPARTMENT OF
TRANSPORTATION

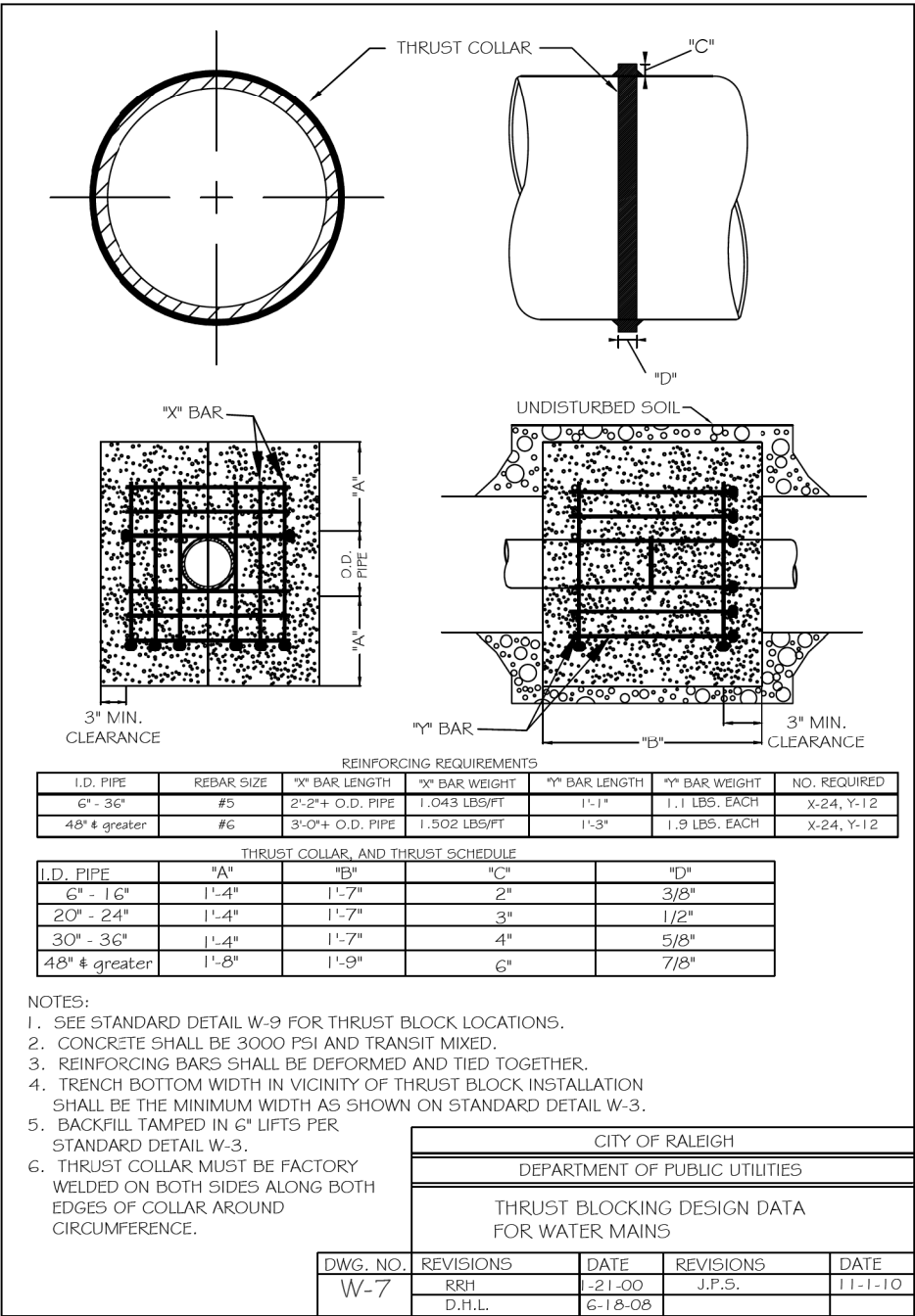
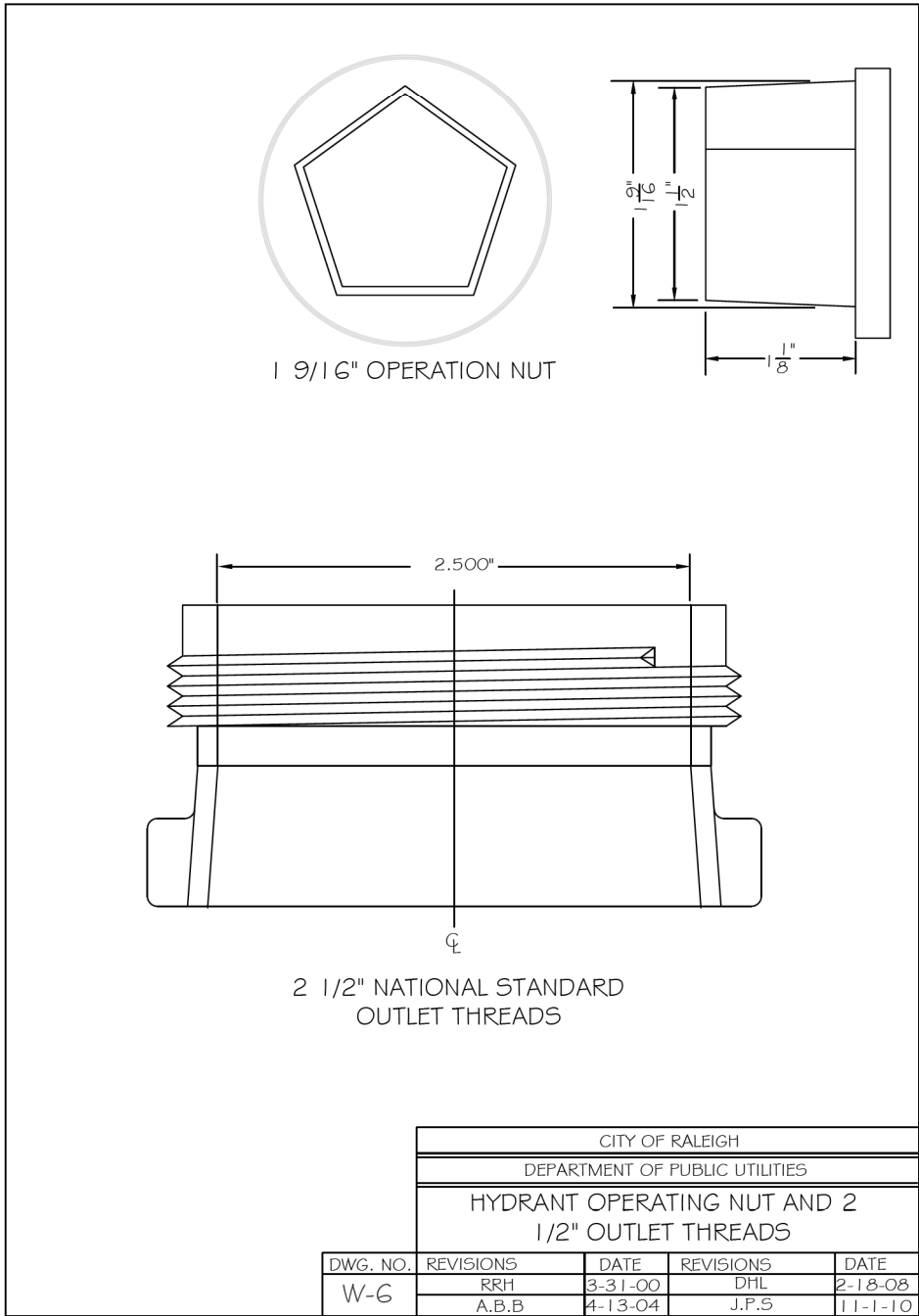
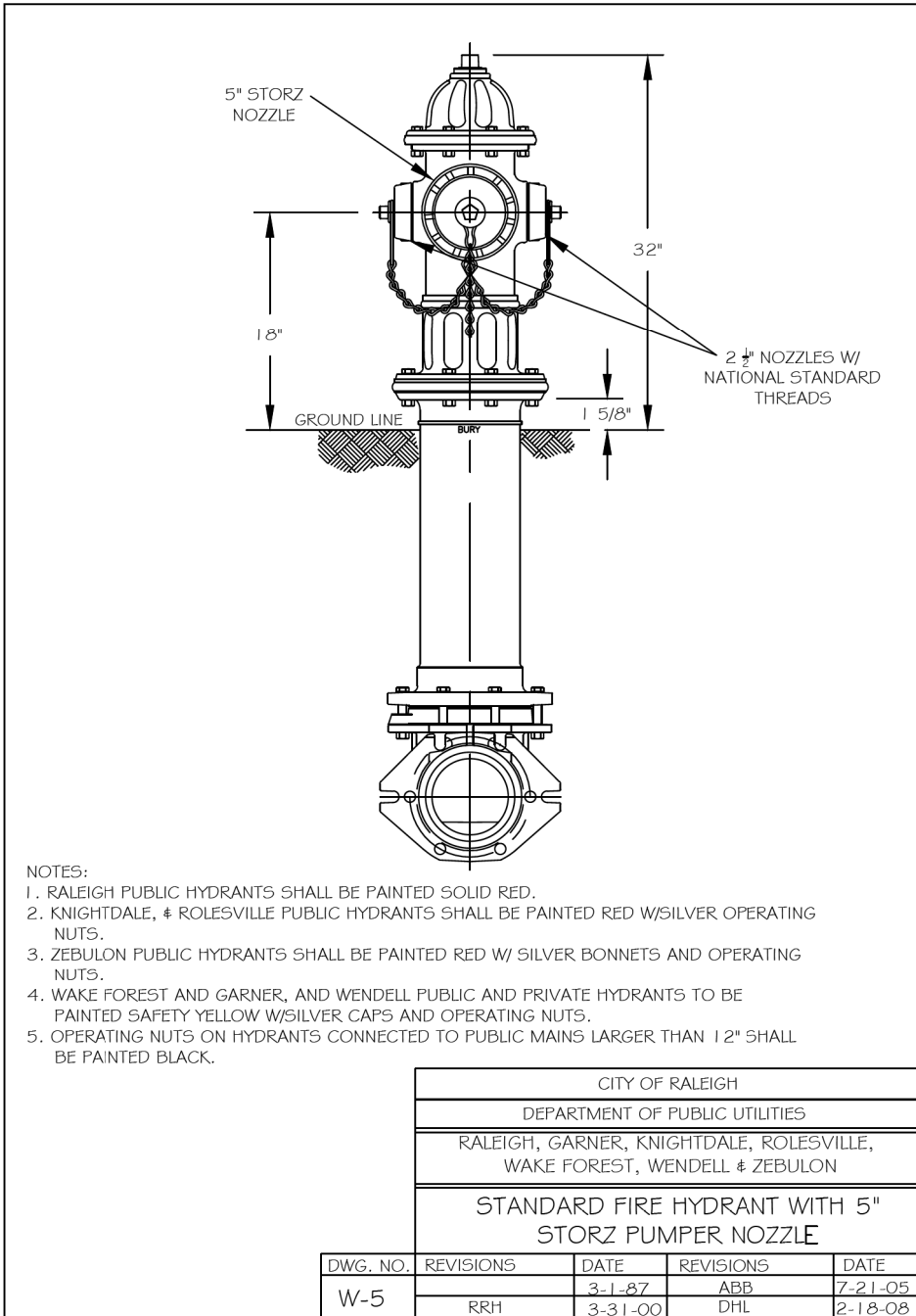
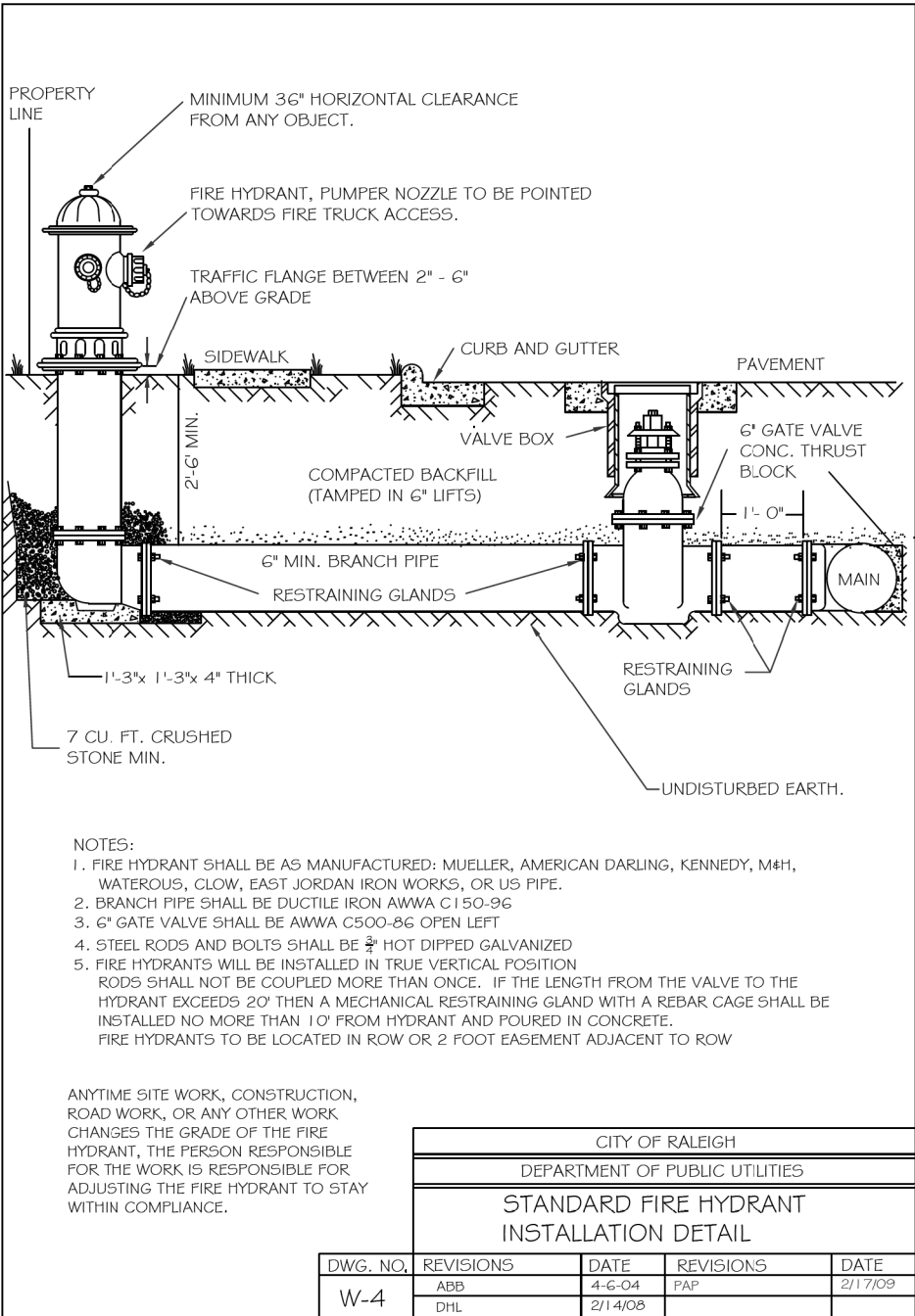
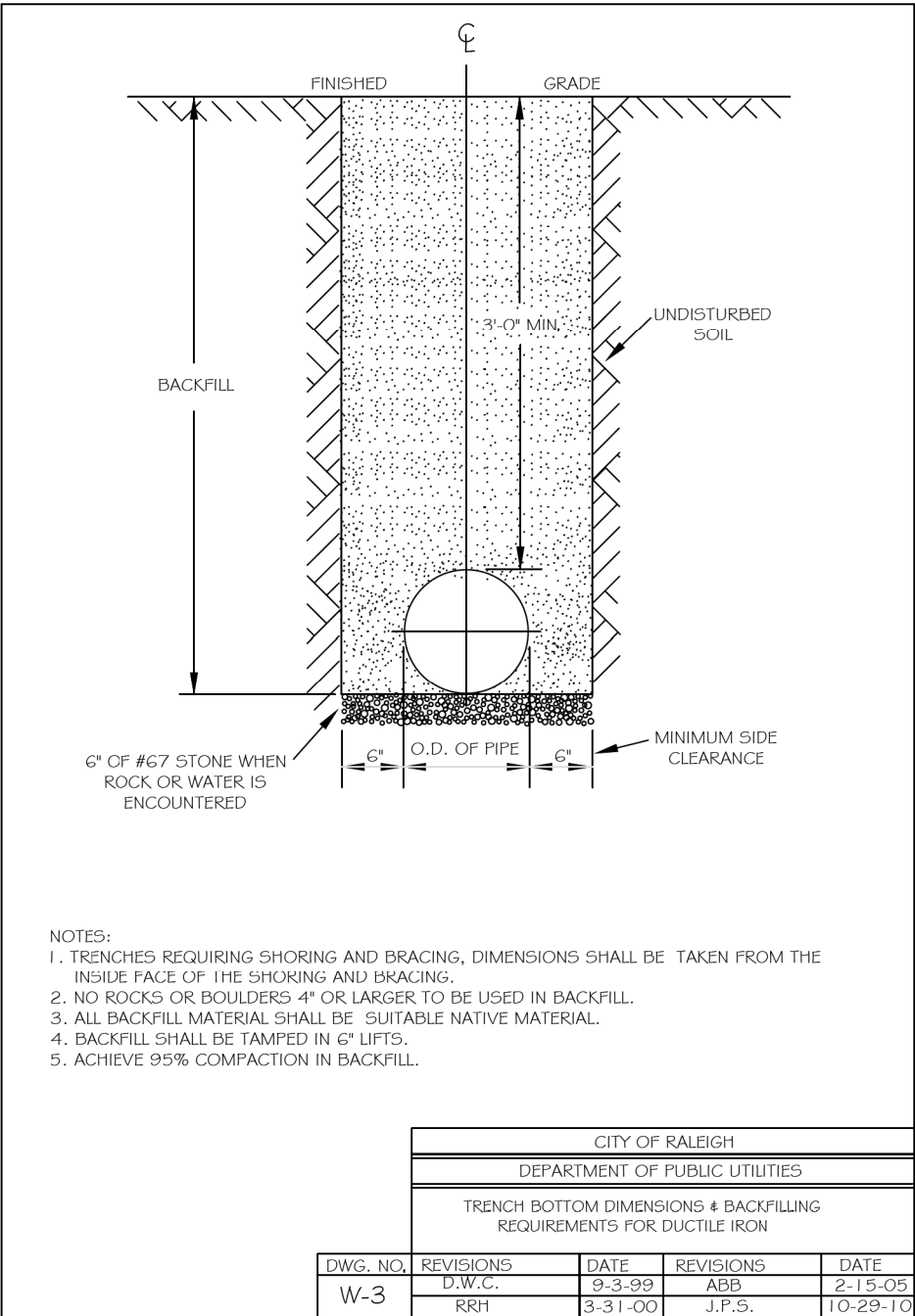
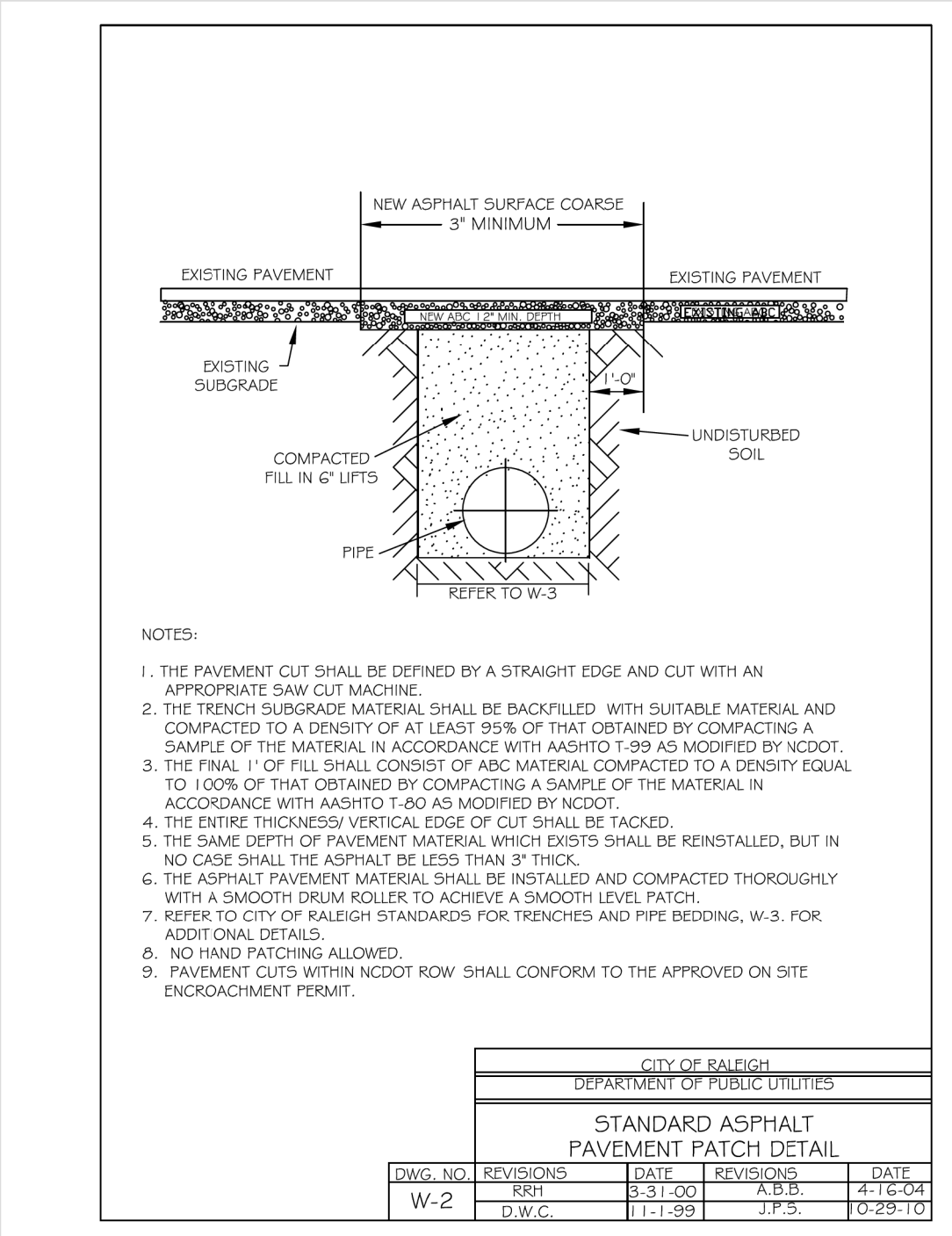
SEAL
033618
Notary Public
for the State of North Carolina
Commission Expires 12/31/2025

UTILITIES ENGINEERING SEC.
PHONE: (919) 707-6690
FAX: (919) 250-4151

UTILITY CONSTRUCTION
PLANS ONLY

UTILITY CONSTRUCTION

RALEIGH WATER - WATER - TYPICAL DETAILS



REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS BASED ON TEST PRESSURE OF 200 P.S.I.											
ALL AREAS GIVEN IN SQUARE FEET											
SIZE AND BEARING OF SAND	STATIC THRUST IN POUNDS	ACCRETIONARY SAND	SOFT CLAY	LEONARD SAND	GRAVEL	GRAVEL	GRAVEL	GRAVEL	GRAVEL	GRAVEL	GRAVEL
11 1/4"	1,108	1	1	1	1	1	1	1	2	1	
22 1/2"	2,207	1	2	2	1	1	1	1	3	1	
45"	4,326	2	3	3	1	1	2	5	1		
90"	7,996	2	4	5	1	1	2	8	1		
PLUG	5,655	2	3	4	1	1	2	6	1		
12"											
11 1/4"	1,970	1	1	2	1	1	1	2	1		
22 1/2"	3,922	1	2	3	1	1	1	4	1		
45"	7,694	2	4	5	1	1	2	8	1		
90"	14,215	4	8	9	2	2	4	15	2		
PLUG	10,053	3	5	6	2	2	3	10	1		
12"											
11 1/4"	4,433	2	3	3	1	1	2	5	1		
22 1/2"	8,866	3	5	6	2	2	3	9	1		
45"	17,512	5	9	11	3	3	5	18	2		
90"	31,953	8	16	19	4	4	8	32	4		
PLUG	22,619	6	12	14	3	3	6	23	3		
16"											
11 1/4"	7,851	2	4	5	1	1	2	8	1		
22 1/2"	15,691	4	8	10	2	2	4	16	2		
45"	30,779	8	16	19	4	4	8	31	4		
90"	56,661	15	29	35	8	8	15	57	6		
PLUG	40,213	10	21	25	5	5	10	41	5		
REACTION BEARING AREAS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH SIDE AT AN ANGLE OF 90° TO THE THRUST VECTOR.											
USE 6° - 90° BEND VALUE FOR HYDRANTS FOR ADDITIONAL SAFETY FACTOR.											
W-10											

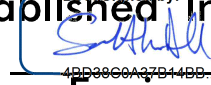
REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS BASED ON TEST PRESSURE OF 200 P.S.I.											
ALL AREAS GIVEN IN SQUARE FEET											
SIZE AND BEARING OF SAND	STATIC THRUST IN POUNDS	ACCRETIONARY SAND	SOFT CLAY	LEONARD SAND	GRAVEL	GRAVEL	GRAVEL	GRAVEL	GRAVEL	GRAVEL	GRAVEL
24"											
11 1/4"	17,734	5	9	11	3	3	5	18	2		
22 1/2"	35,305	9	18	22	5	5	9	36	4		
45"	69,252	18	35	42	9	9	18	70	7		
90"	127,936	32	64	77	16	16	32	128	13		
PLUG	90,478	23	46	55	12	12	23	91	10		
30"											
11 1/4"	27,709	7	14	17	4	4	7	2	3		
22 1/2"	55,163	14	28	34	7	7	14	56	6		
45"	108,206	28	55	65	14	14	28	109	11		
90"	199,903	50	100	120	25	25	50	200	20		
PLUG	141,572	36	71	85	18	18	36	142	15		
36"											
11 1/4"	39,901	10	20	24	5	5	10	40	4		
22 1/2"	79,439	20	40	48	10	10	20	80	8		
45"	155,816	39	78	94	20	20	39	156	16		
90"	287,803	72	144	172	36	36	72	288	29		
PLUG	203,575	51	102	122	26	26	51	204	21		
48"											
11 1/4"	70,335	18	36	43	9	9	18	71	8		
22 1/2"	141,218	36	71	85	18	18	36	142	15		
45"	277,007	70	139	166	35	35	70	277	28		
90"	511,742	128	256	320	64	64	128	512	52		
PLUG	361,911	91	181	217	46	46	91	362	37		
REACTION BEARING AREAS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH SIDE AT AN ANGLE OF 90° TO THE THRUST VECTOR.											
USE 6° - 90° BEND VALUE FOR HYDRANTS FOR ADDITIONAL SAFETY FACTOR.											
W-11											

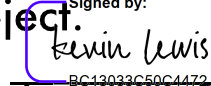
DOCUMENT NOT CONSIDERED FINAL
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5/14/99

18-AUG-2025 11:06
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By:  Date: 12/15/2025
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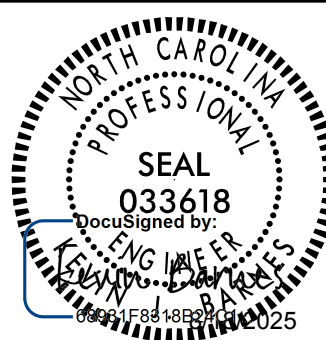
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Public
Water Distribution / Extension System

JAN2025

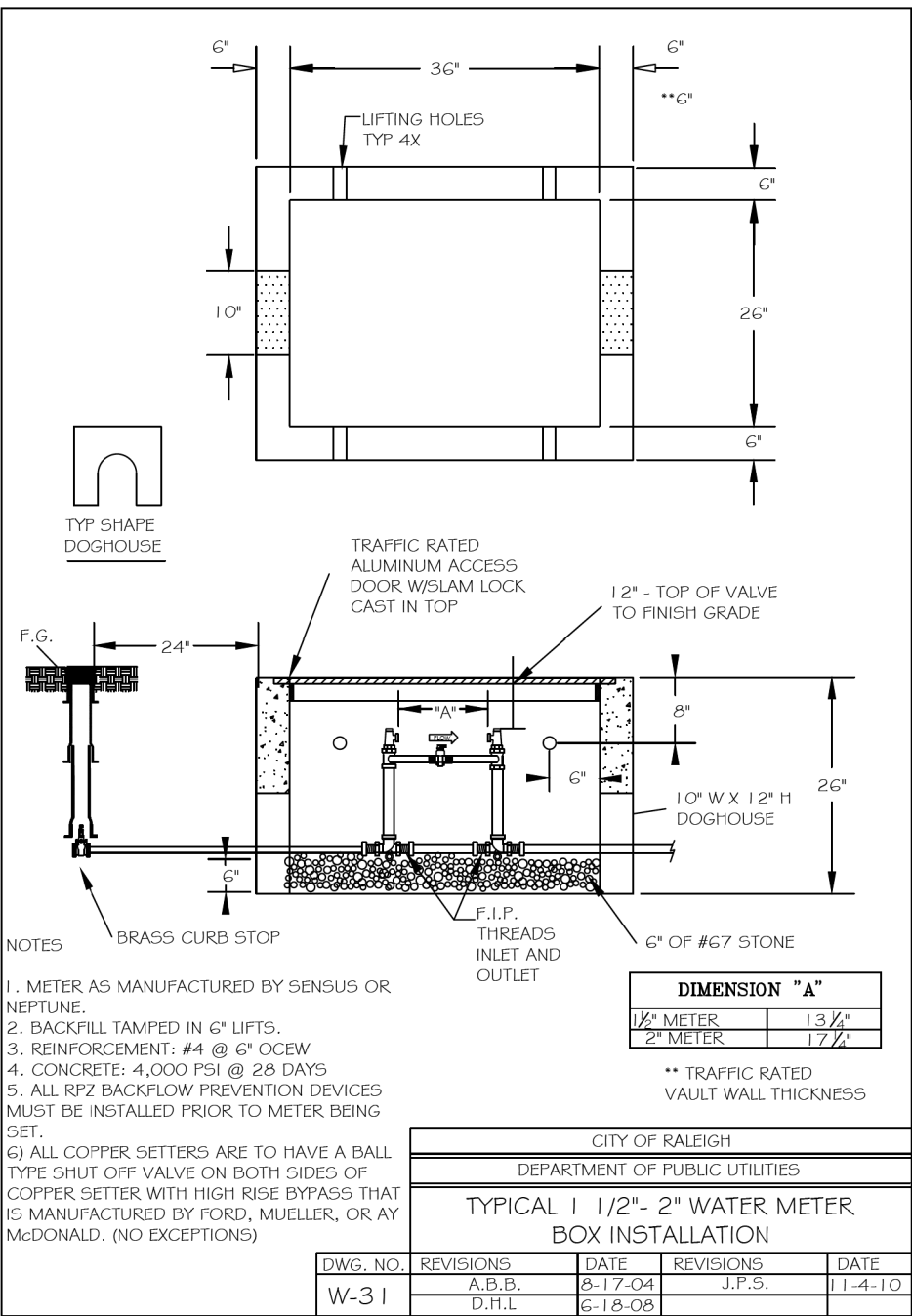
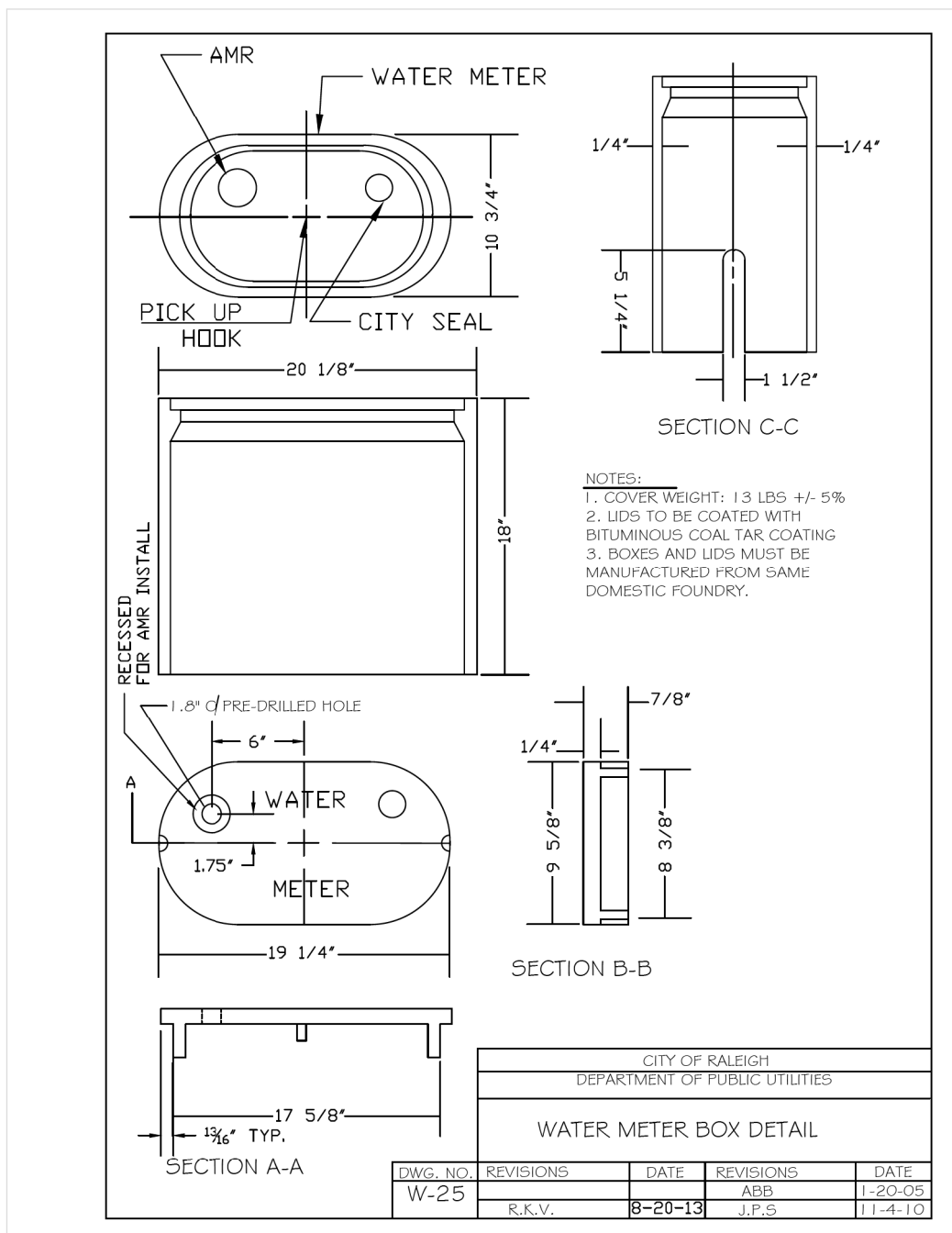
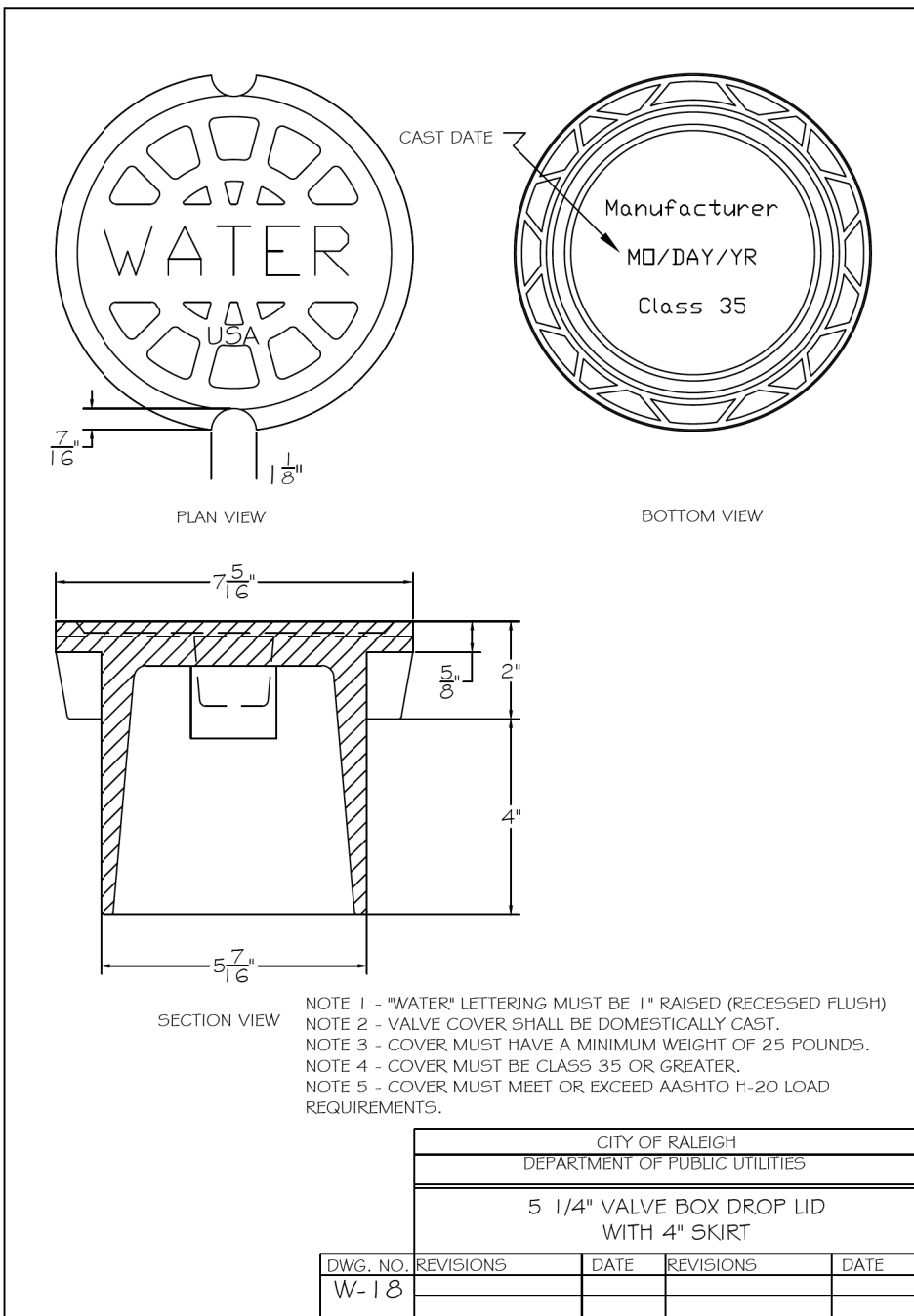
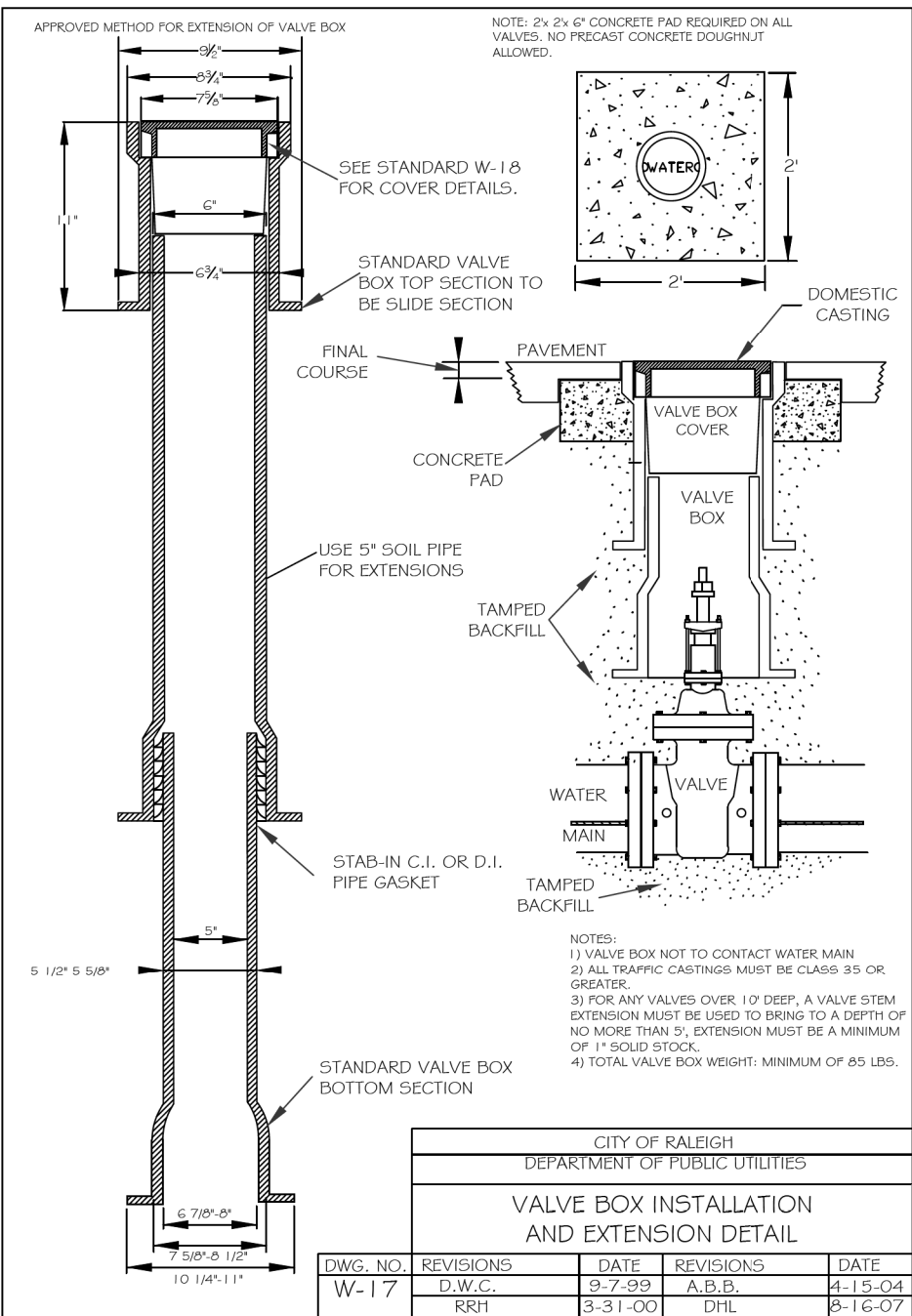
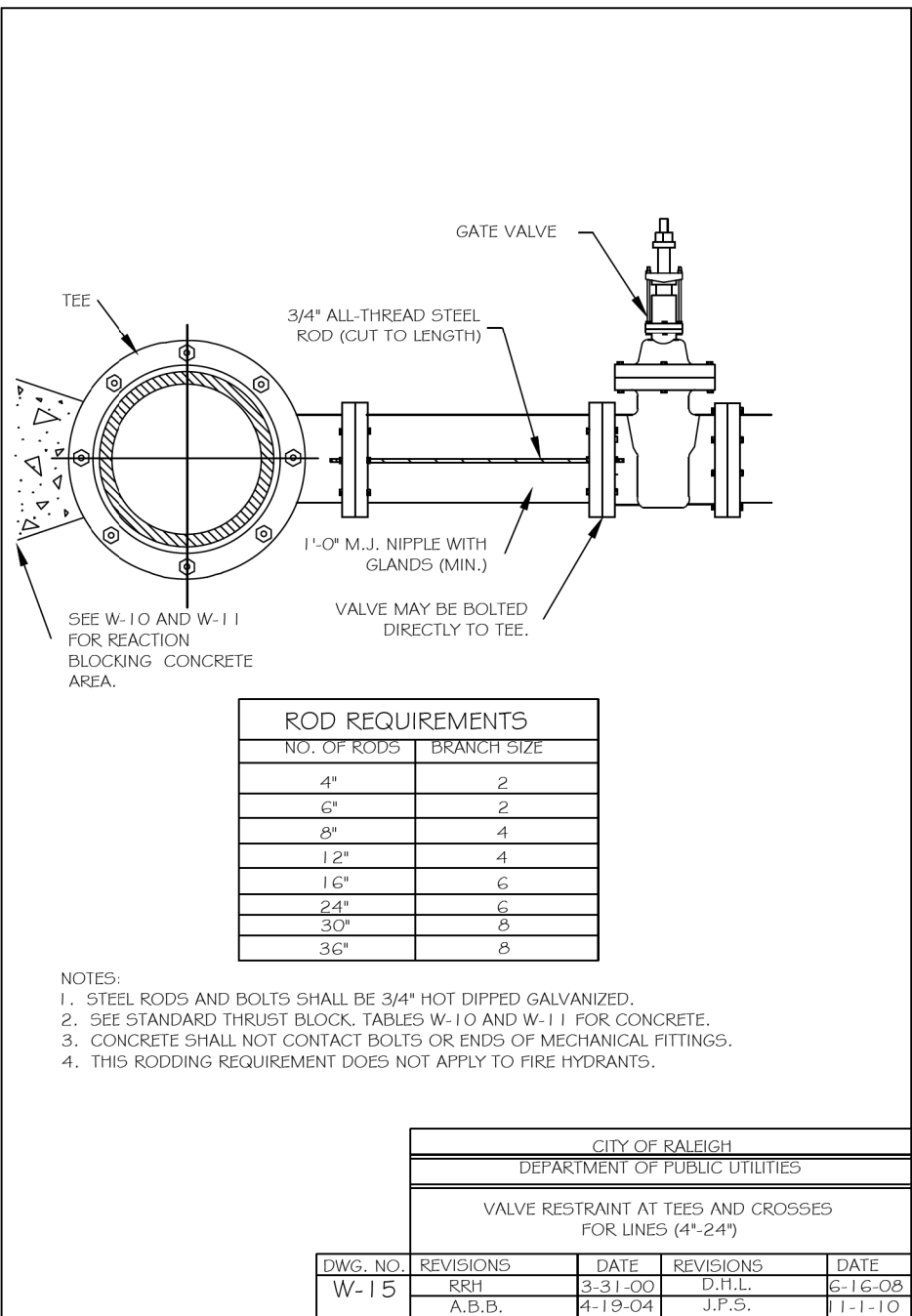
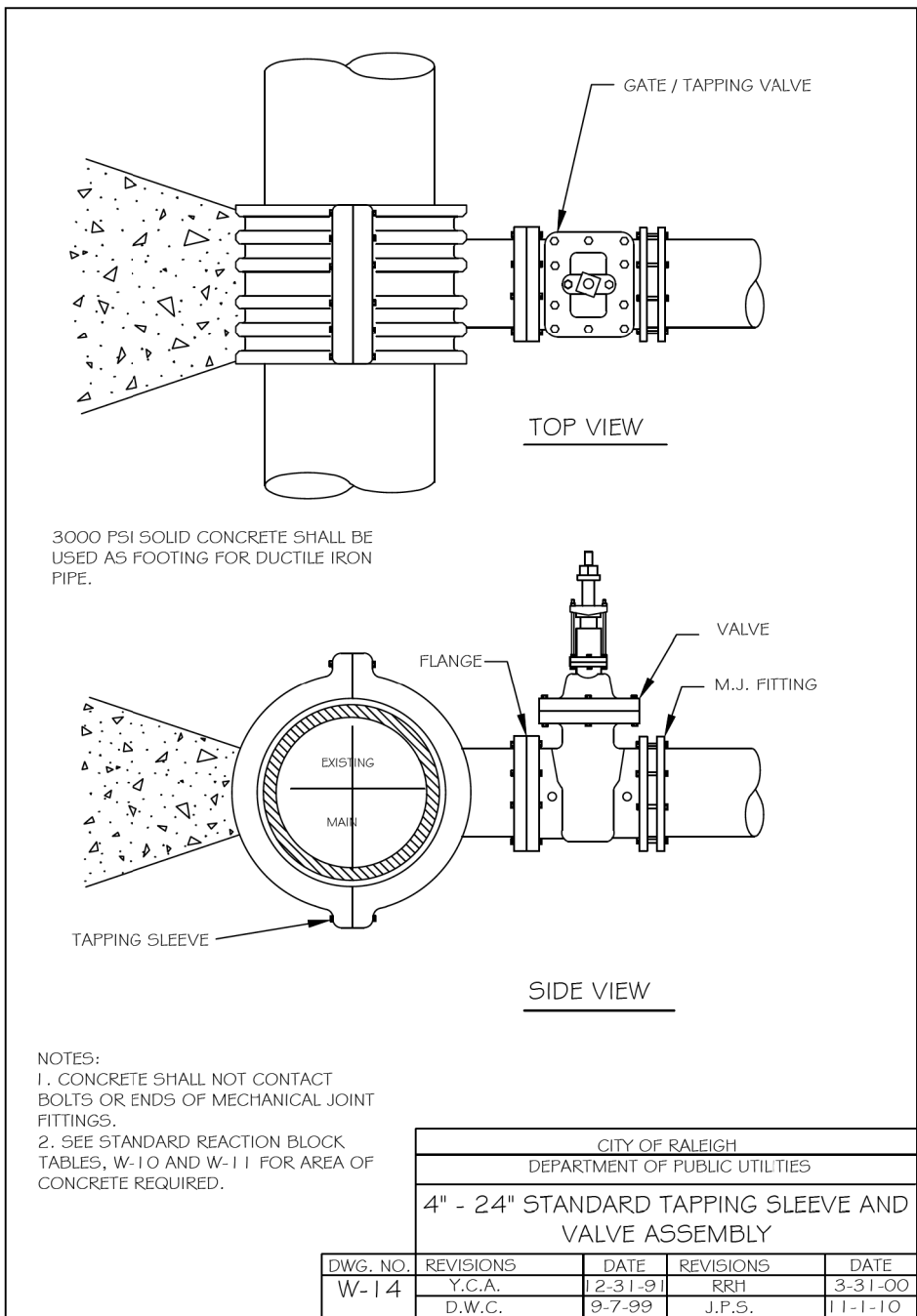
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City of Raleigh
Public Utilities Department Permit # W-4226

PROJECT REFERENCE NO.	SHEET NO.
TC002-BL	UC-3B
DESIGNED BY: KJB	
DRAWN BY: ADB	
CHECKED BY: KJB	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

UTILITY CONSTRUCTION

RALEIGH WATER - WATER - TYPICAL DETAILS



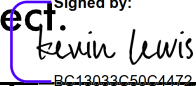
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UNLESS ALL SIGNATURES COMPLETED

5/14/99

18-AUG-2025 11:06
TECH\UHP\Construction\Knightdale_SW_Ut.dtl UC3C_psh.dgn

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: 12/15/2025
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.
By:  Date: 12/15/2025
Land Use Administrator

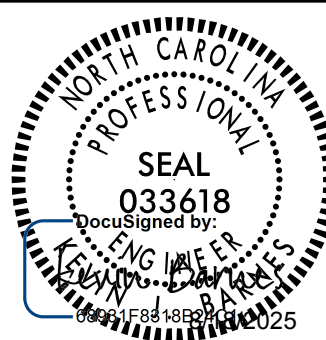
Public
Water Distribution / Extension System

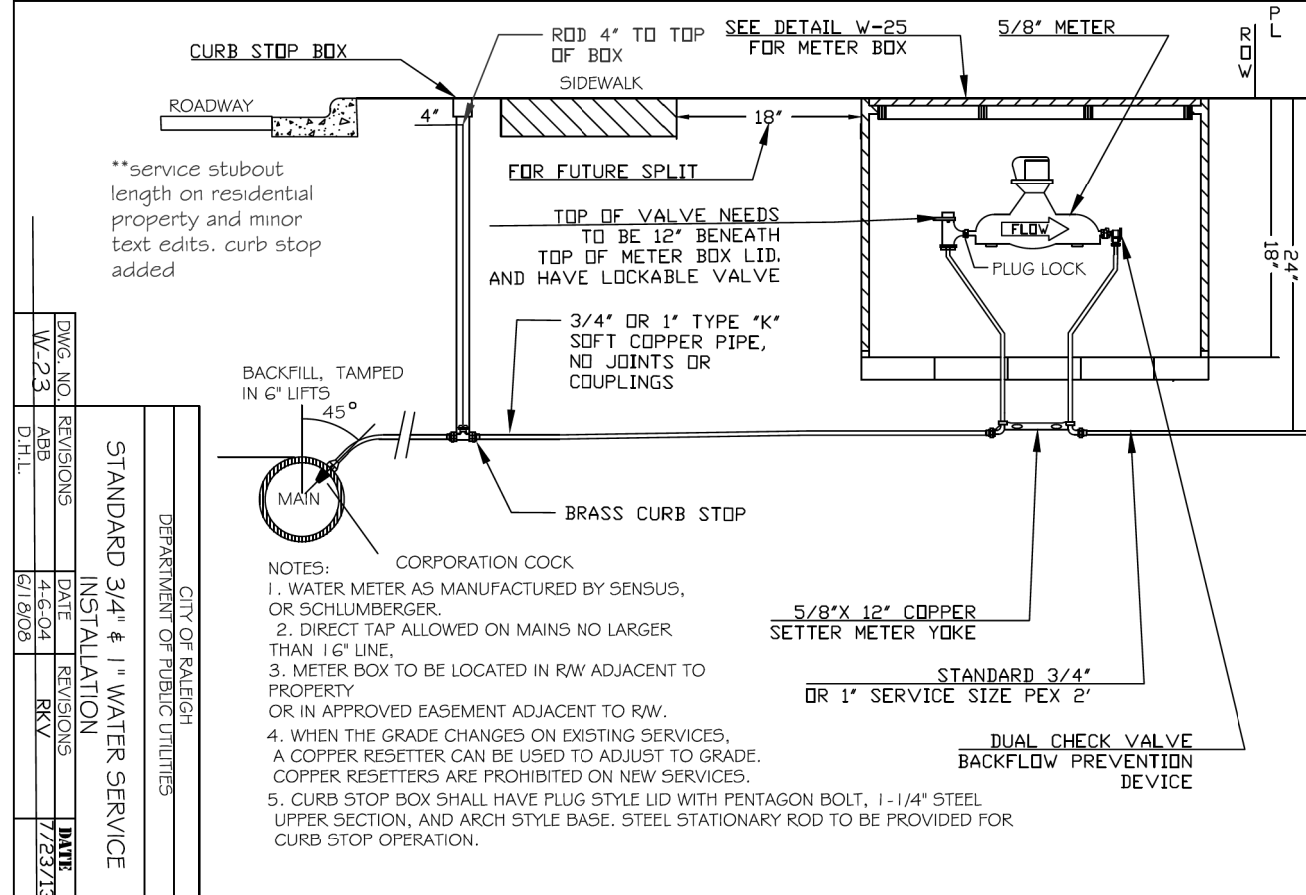
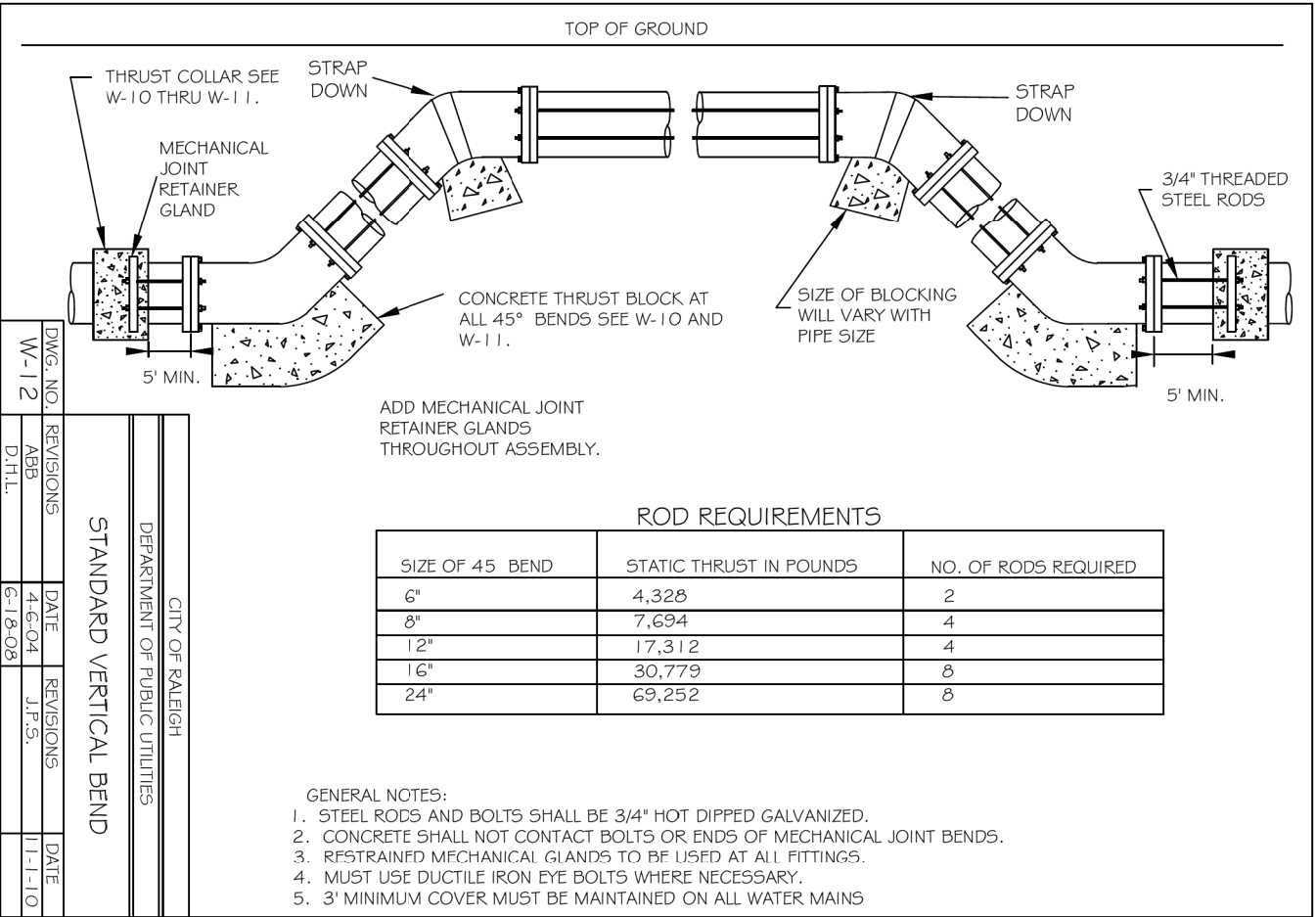
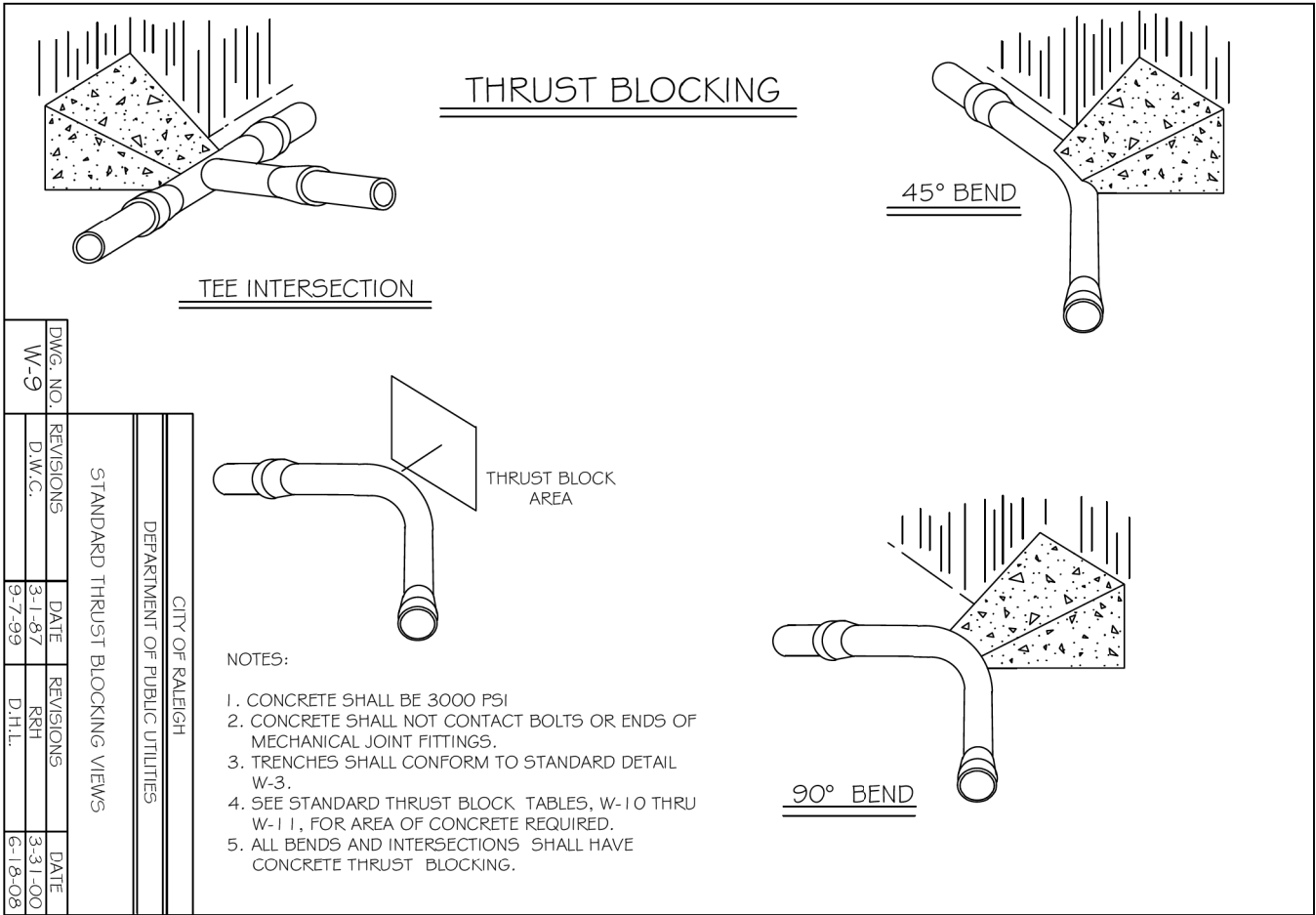
JAN2025

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

City of Raleigh
Public Utilities Department Permit # W-4226

UTILITY CONSTRUCTION

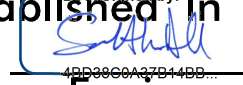
PROJECT REFERENCE NO.		SHEET NO.	
TC002-BL		UC-3C	
DESIGNED BY: KJB			
DRAWN BY: ADB			
CHECKED BY: KJB			
APPROVED BY:			
REVISED:			
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION			
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151			
UTILITY CONSTRUCTION PLANS ONLY			



DOCUMENT NOT CONSIDERED FINAL
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5/14/99

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By:  Date: 12/15/2025
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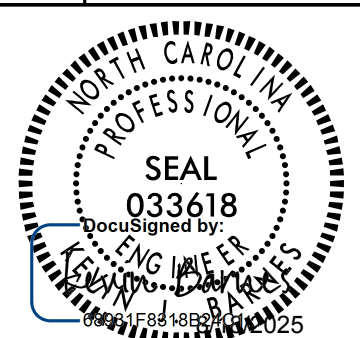
By:  Date: 12/15/2025
Land Use Administrator

Public
Water Distribution / Extension System

JAN2025

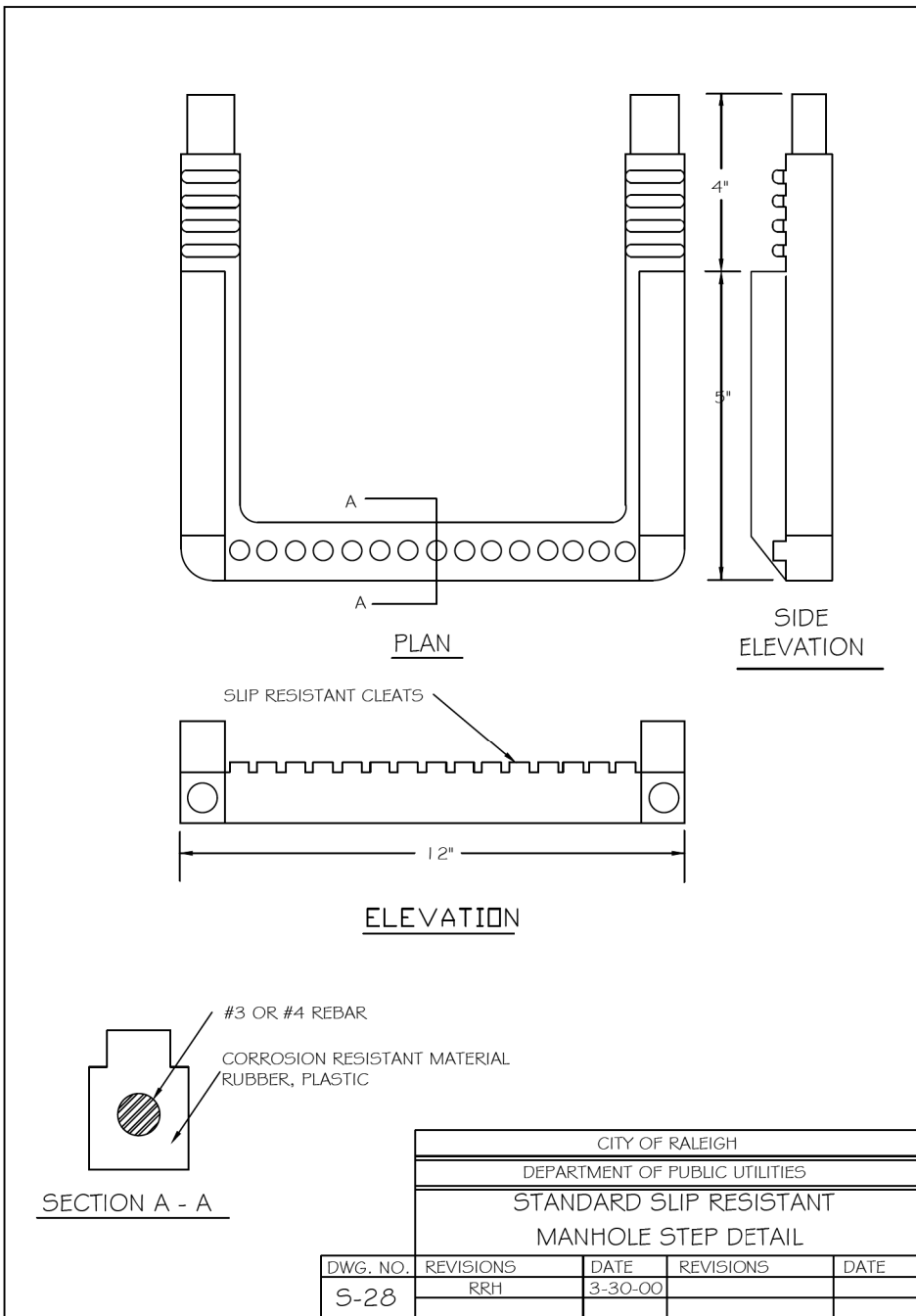
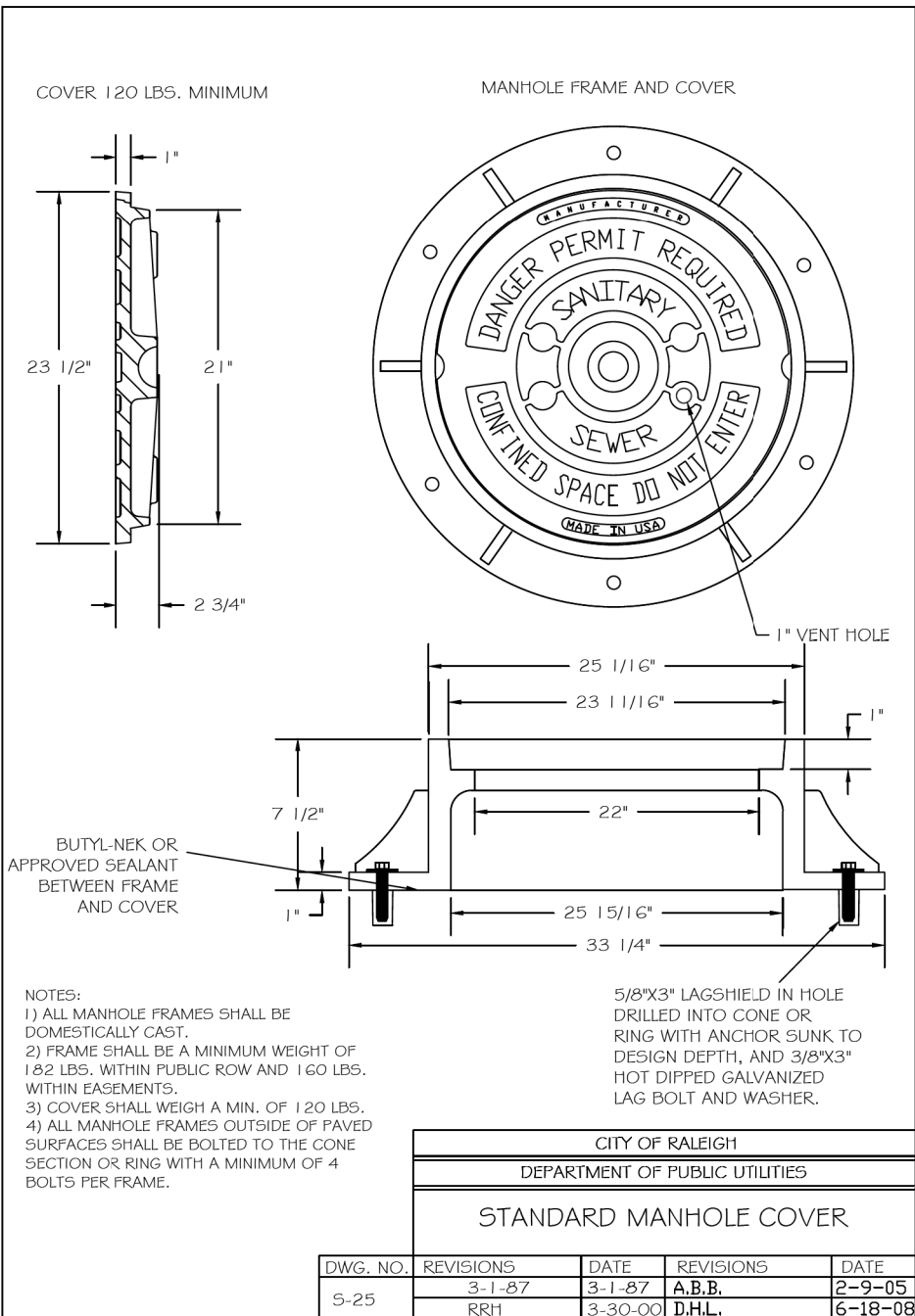
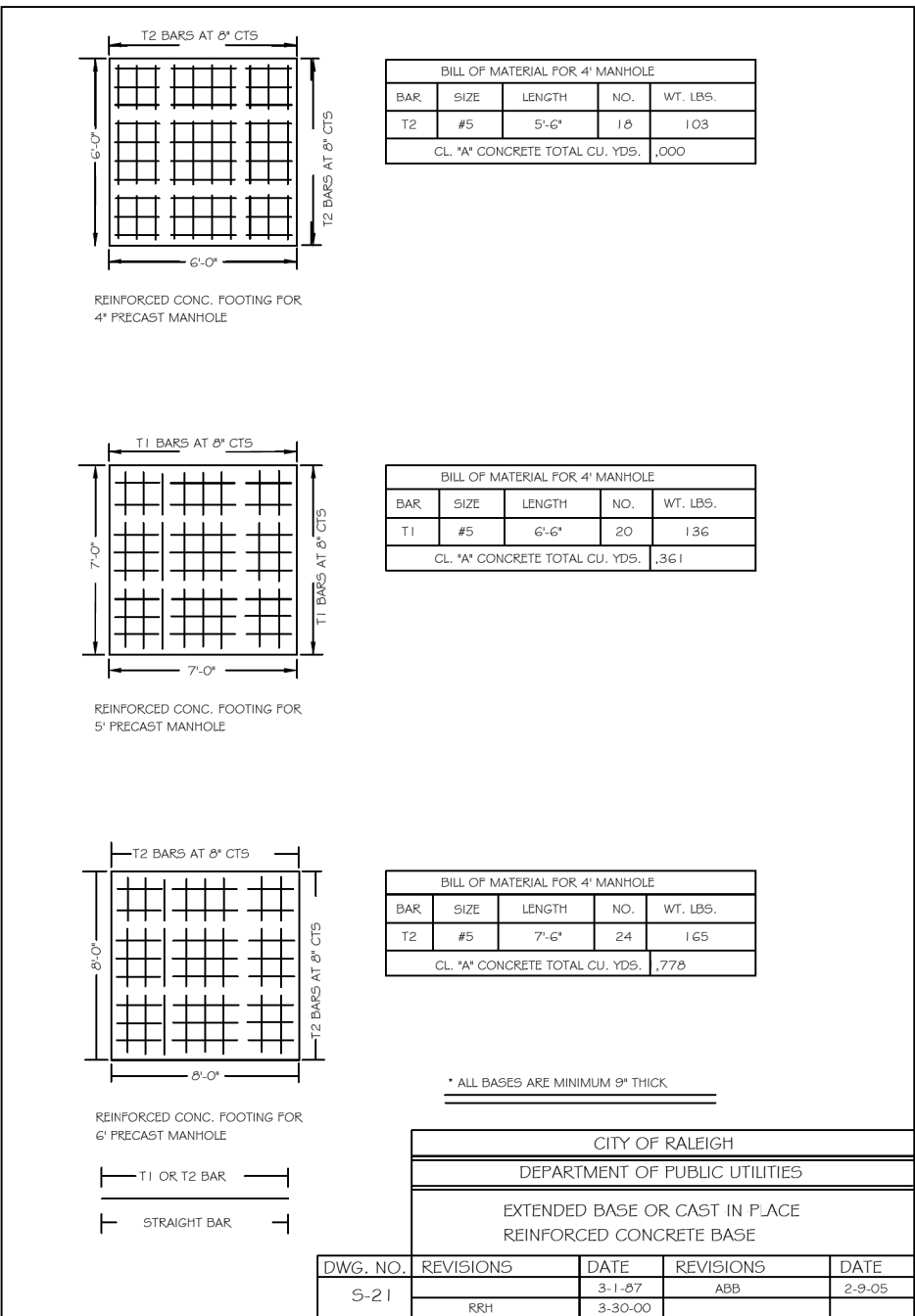
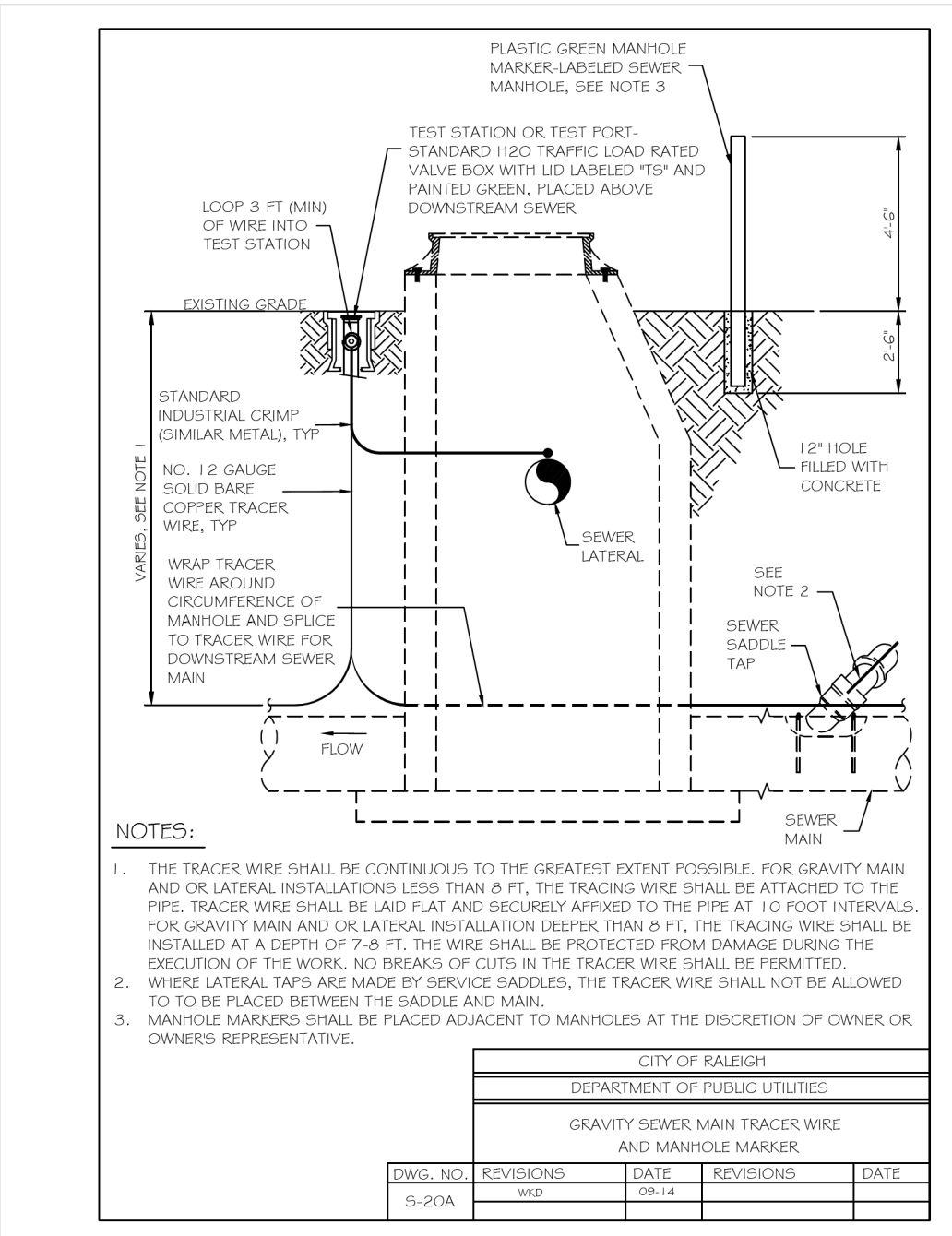
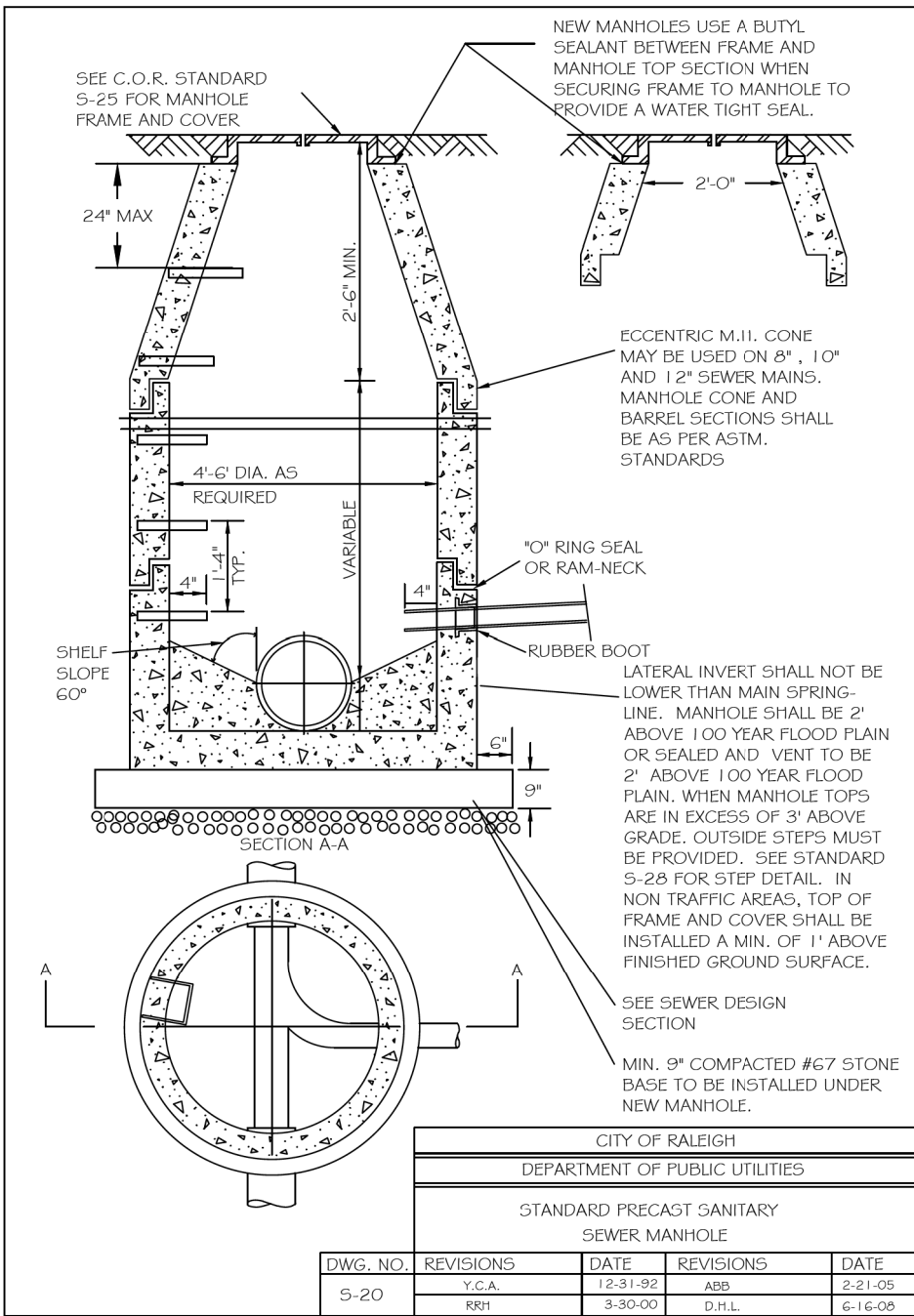
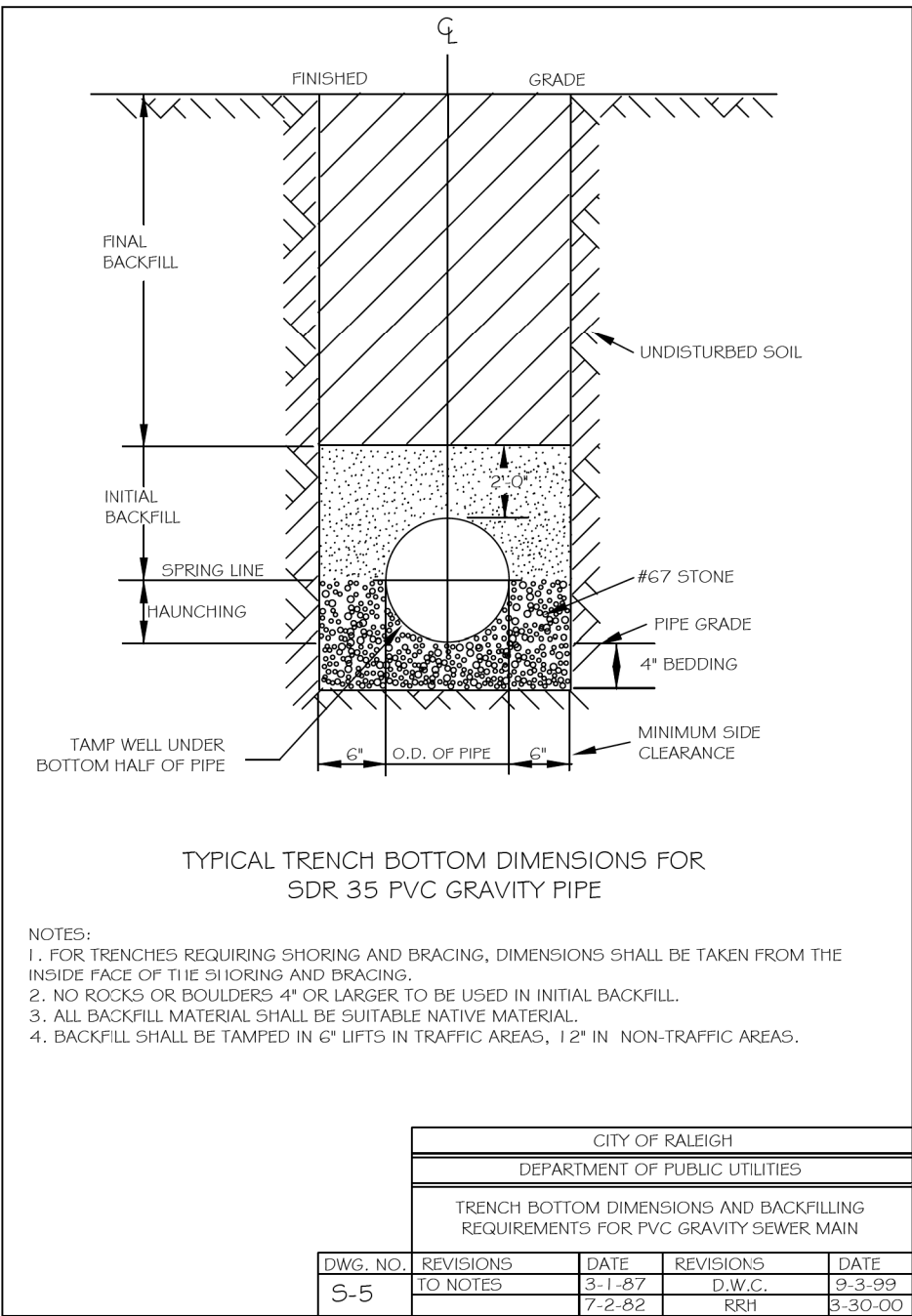
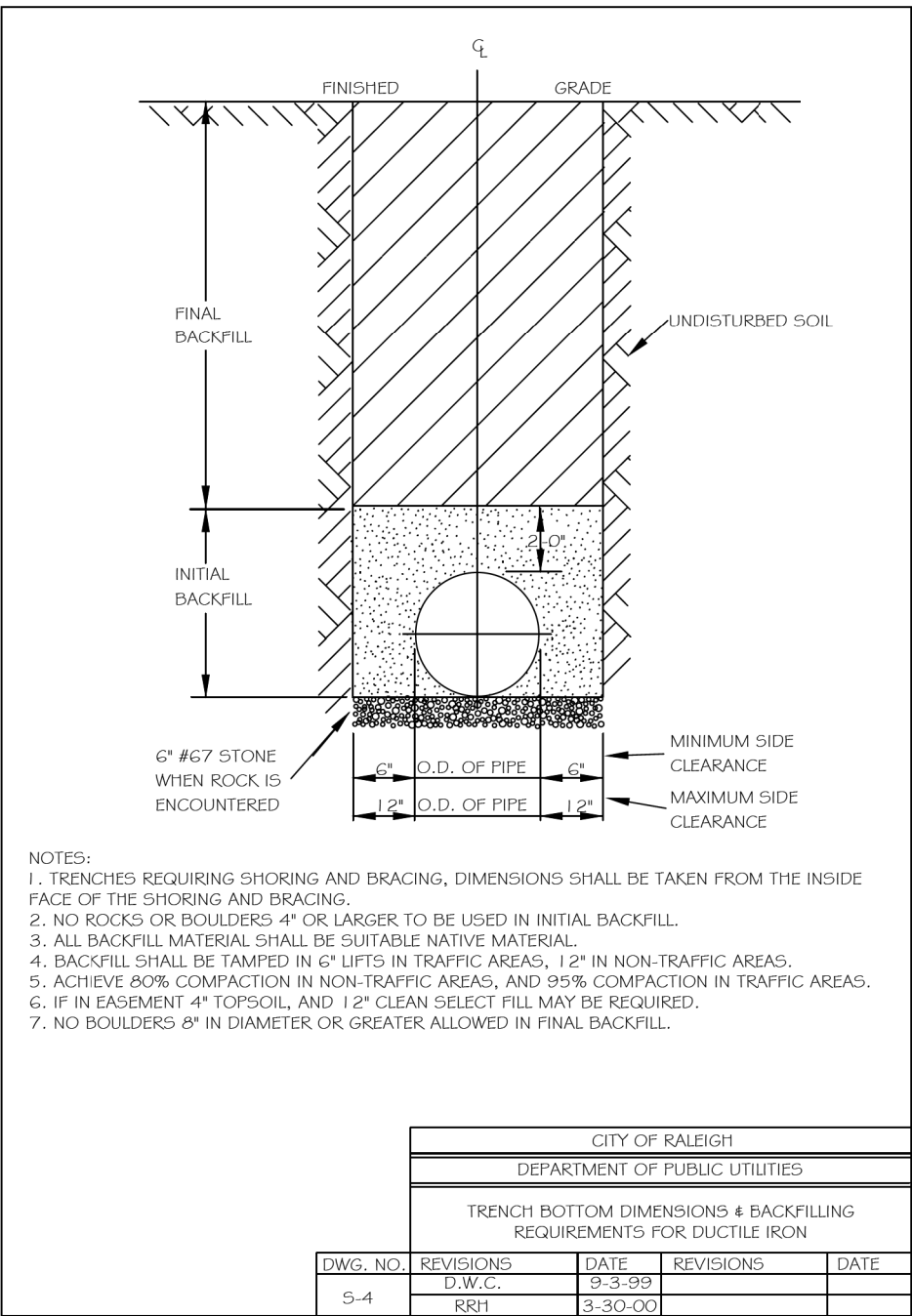
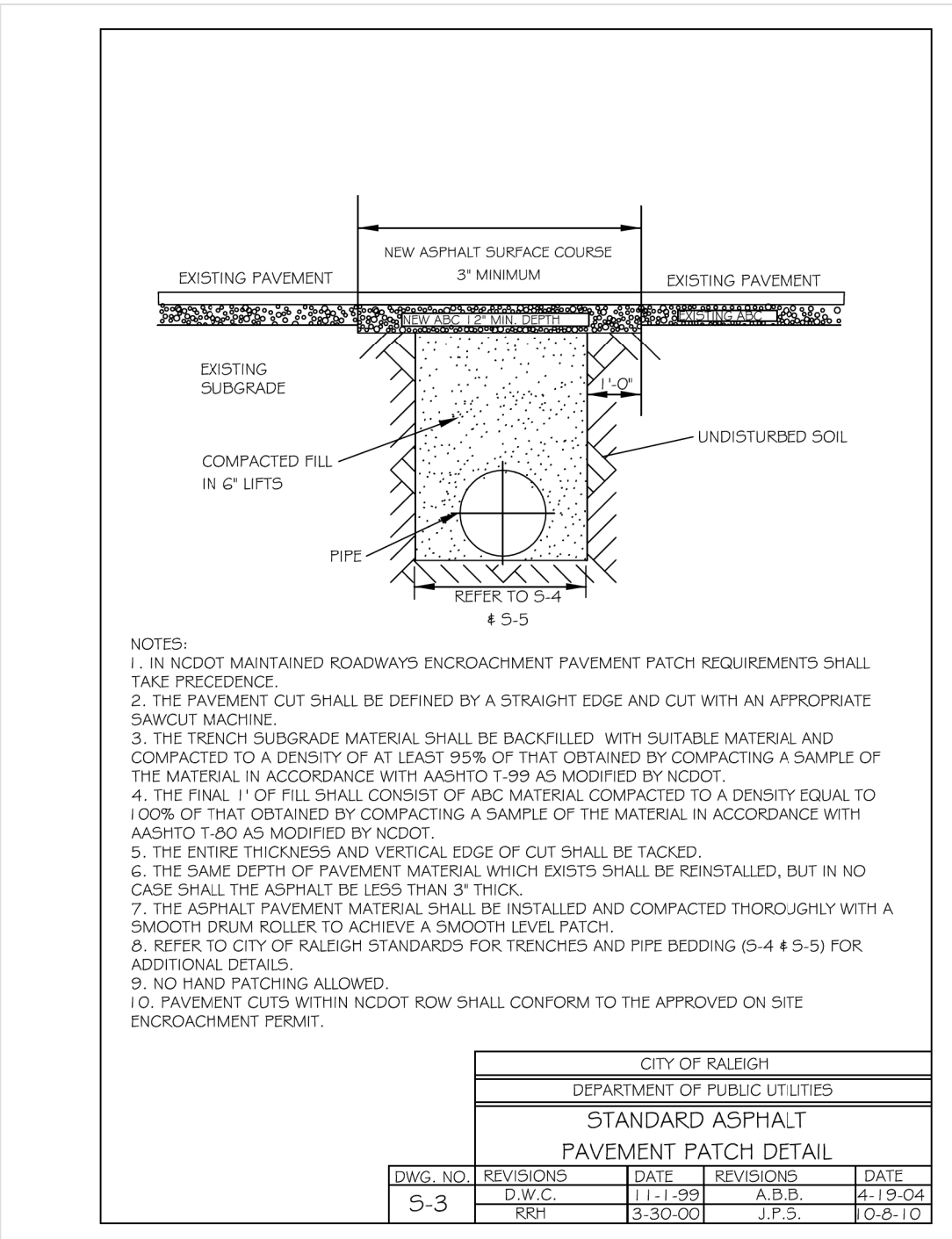
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City of Raleigh
Public Utilities Department Permit # W-4226

PROJECT REFERENCE NO.		SHEET NO.	
TC002-BL		UC-3D	
DESIGNED BY: KJB			
DRAWN BY: ADB			
CHECKED BY: KJB			
APPROVED BY:			
REVISED:			
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION			
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151		UTILITY CONSTRUCTION PLANS ONLY	

UTILITY CONSTRUCTION

RALEIGH WATER - SEWER - TYPICAL DETAILS



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

5/14/99

18-AUG-2025 11:06
C:\Users\pshdgn\OneDrive\Construction\Knightdale_SW_Ut.dtl UC3E_psh.dgn

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.

By: [Signature] Date: 12/15/2025
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: [Signature] Date: 12/15/2025
Land Use Administrator

Public
Water Distribution / Extension System

JAN2025

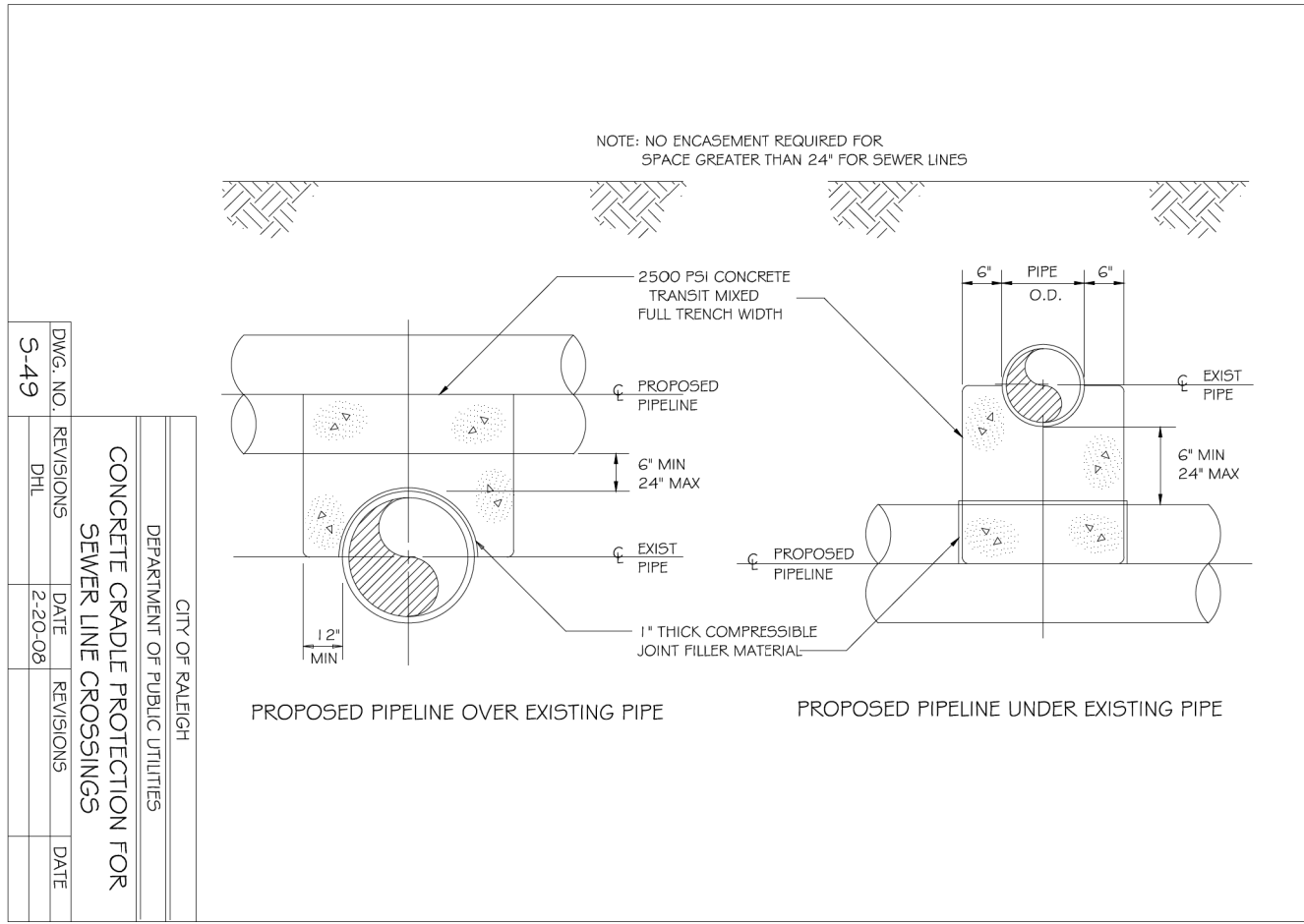
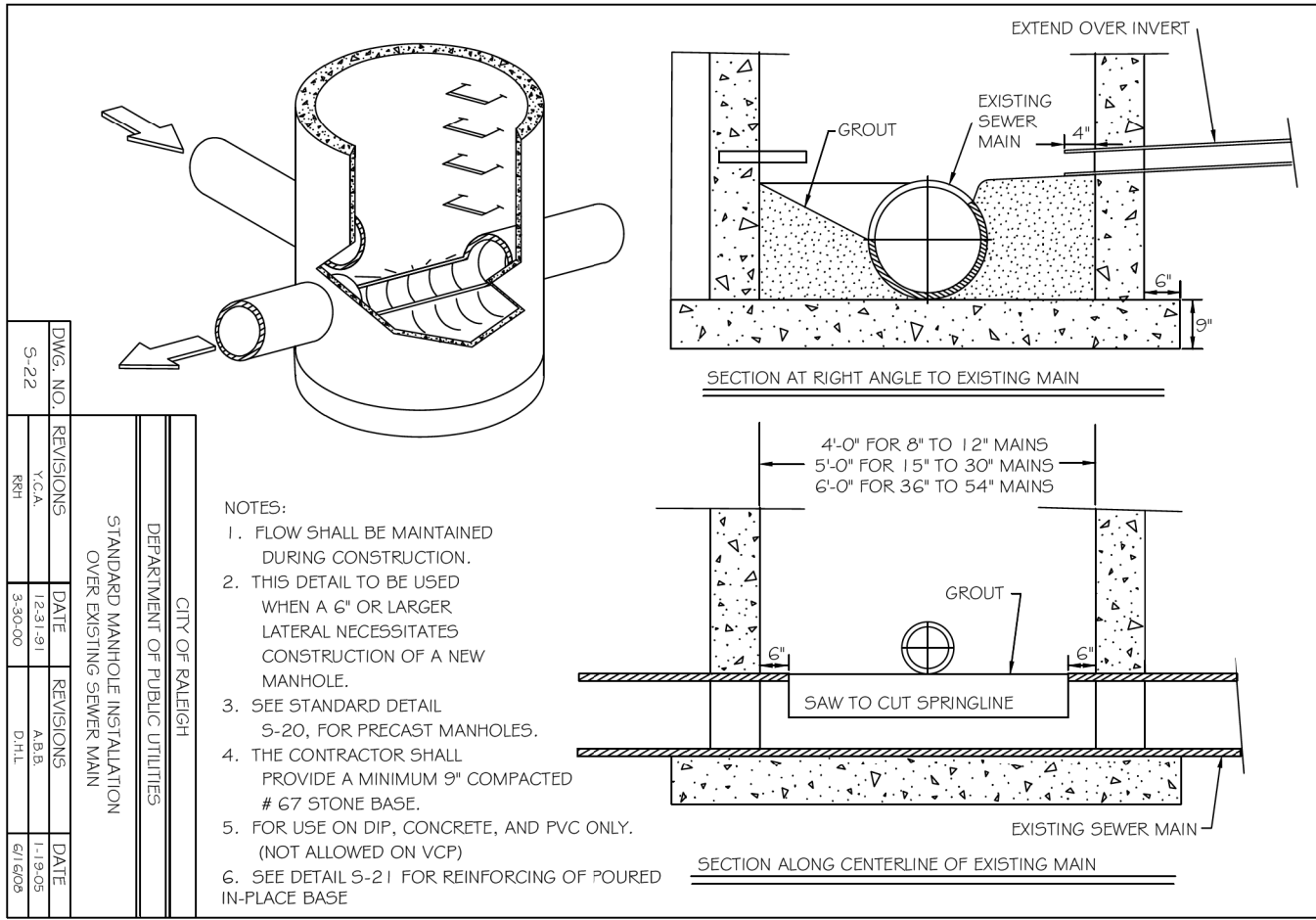
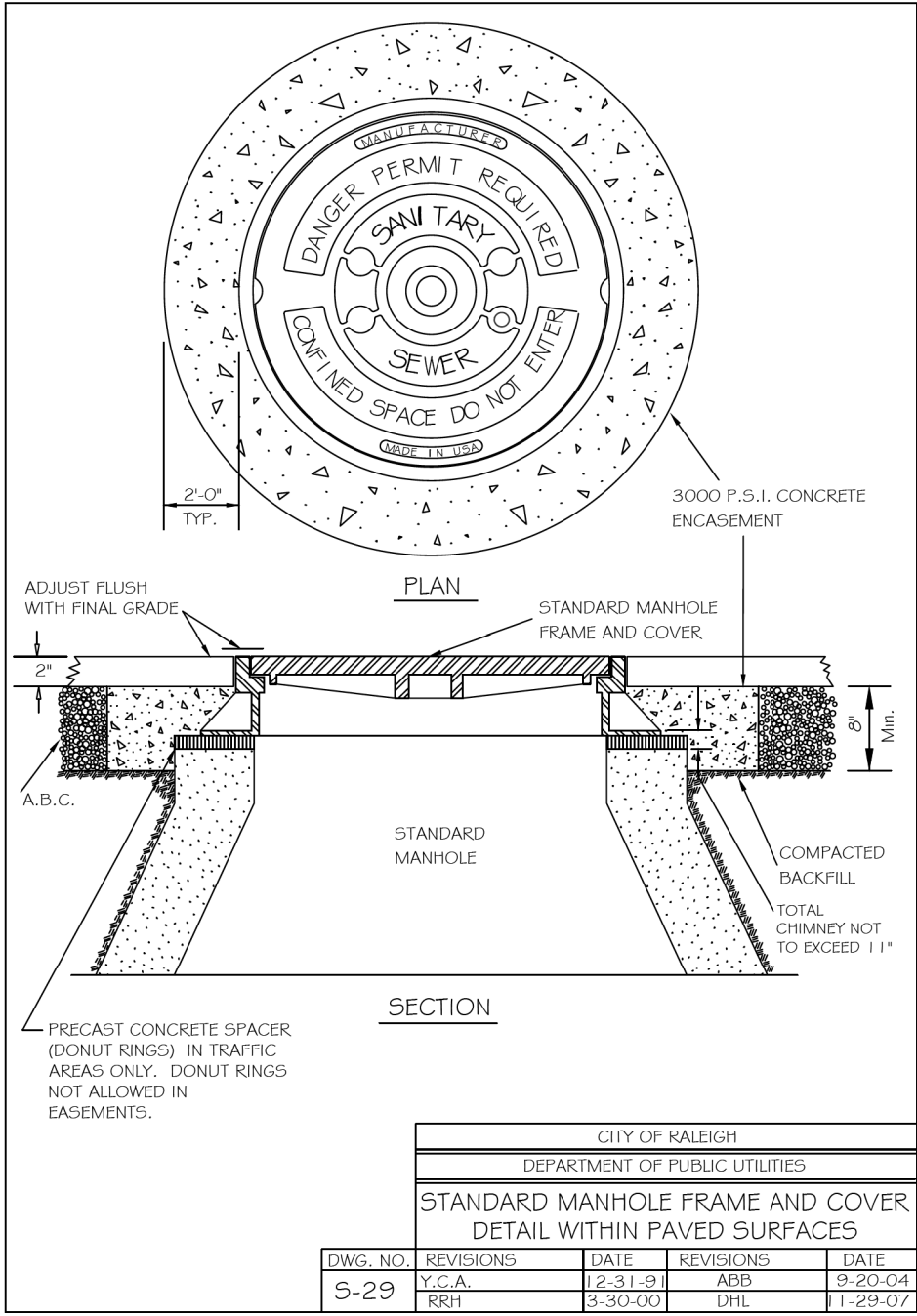
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City of Raleigh
Public Utilities Department Permit # W-4226

PROJECT REFERENCE NO.		SHEET NO.
TC002-BL		UC-3E
DESIGNED BY:	KJB	PROFESSIONAL SEAL 033618 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151
DRAWN BY:	ADB	
CHECKED BY:	KJB	
APPROVED BY:		
REVISED:		
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151		UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

RALEIGH WATER - SEWER - TYPICAL DETAILS



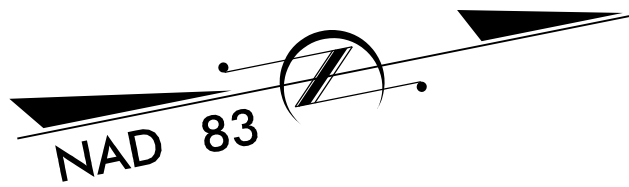
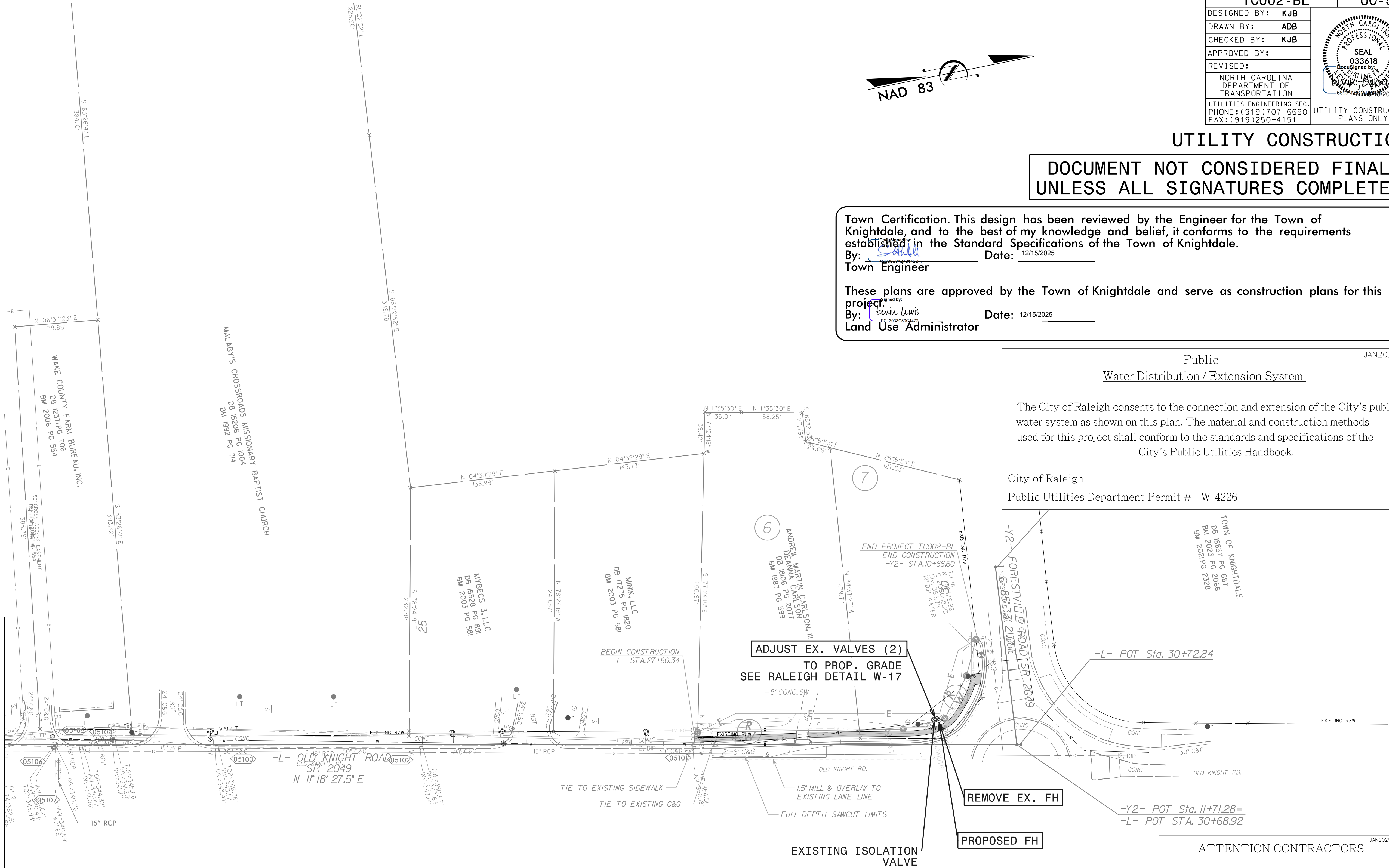
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UNLESS ALL SIGNATURES COMPLETED

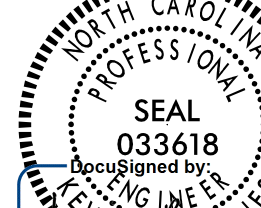


8/17/99

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\$\$\$\$\$SYTIME\$\$\$\$\$

MATCHLINE -L- STA. 21+00 SEE PSH-4, UC4



PROJECT REFERENCE NO.		SHEET NO.
TC002-BL		UC-5
DESIGNED BY: KJB		
DRAWN BY: ADB		
CHECKED BY: KJB		
APPROVED BY:		
REVISED:		
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		UTILITY CONSTRUCTION PLANS ONLY
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151		

UTILITY CONSTRUCTION

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By: [Signature] Date: 12/15/2025
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Land Use Administrator

Public
Water Distribution / Extension System

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City of Raleigh
Public Utilities Department Permit # W-4226

TOWN OF KNIGHTDALE
DB 8851 PG 687
BM 2023 PG 2066
BM 2021 PG 2328

ATTENTION CONTRACTORS

The Contractor responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for contacting the Raleigh Water Inspector at 919-996-3245 or <https://cityworks.raleighnc.gov/putractors> and schedule a Pre-construction meeting prior to beginning any construction. Raleigh Water must be contacted at (919) 996-4540 at least twenty-four hours prior to beginning any work activity around critical water and sewer infrastructure.

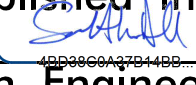
Failure to notify City Departments in advance of beginning construction, will result in the issuance of monetary fines, and require re-installation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for inspection, install a downstream plug, have permitted plans on the jobsite, or any other violation of Raleigh Water Standards will result in a fine and possible exclusion from future work in the City of Raleigh.

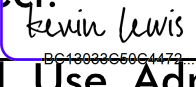
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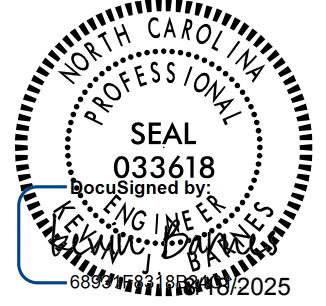
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\$\$\$\$\$USERNAME\$\$\$\$\$

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By:  Date: 12/15/2025
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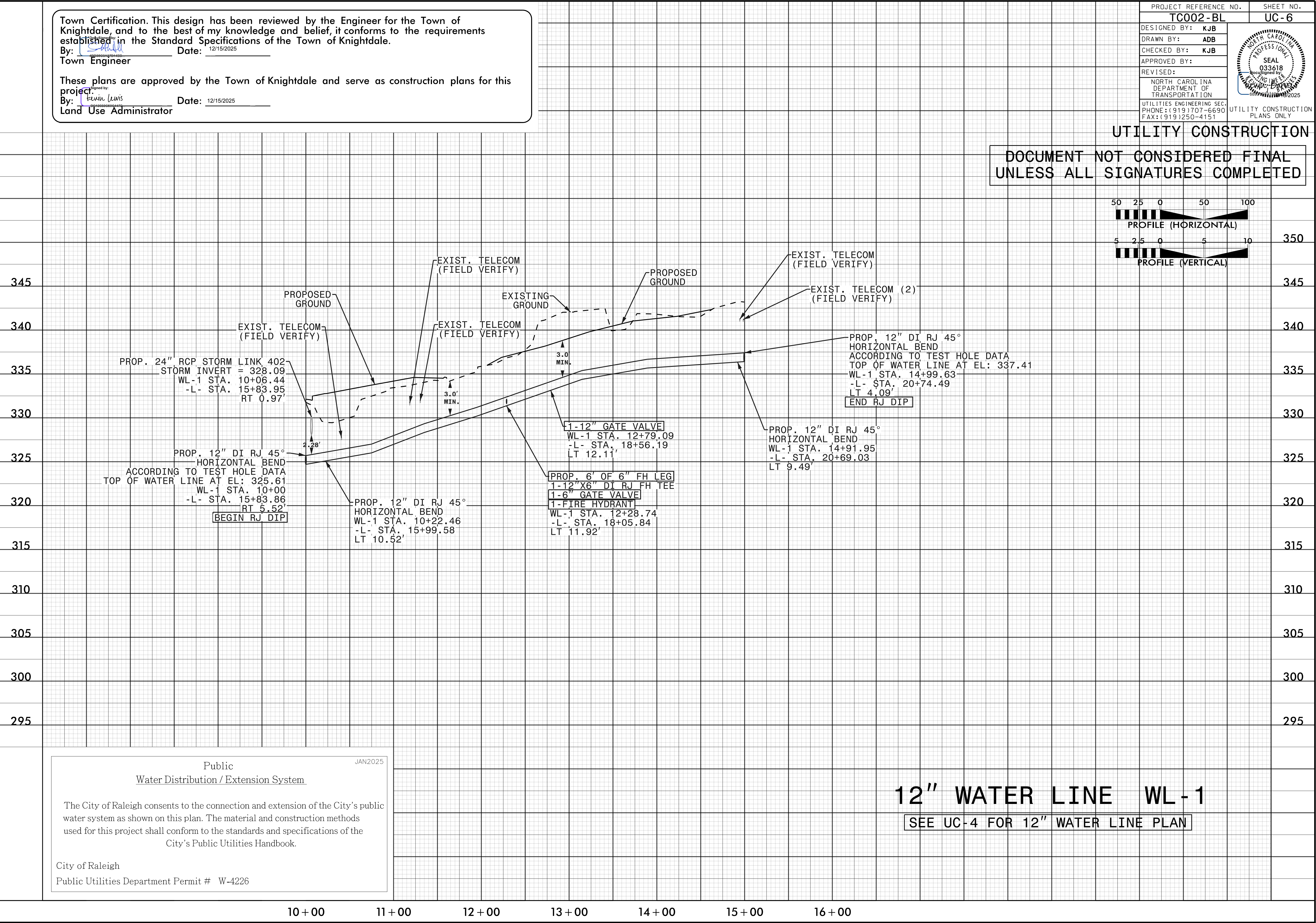
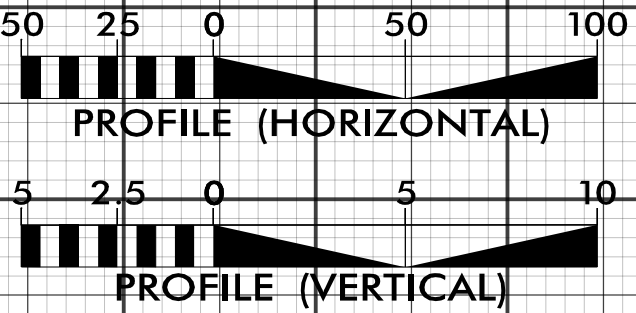
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By:  Date: 12/15/2025
Land Use Administrator

PROJECT REFERENCE NO.		SHEET NO.	
TC002-BL		UC - 6	
DESIGNED BY: KJB			
DRAWN BY: ADB			
CHECKED BY: KJB			
APPROVED BY:			
REVISED:			
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		UTILITY CONSTRUCTION PLANS ONLY	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151			

UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL
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Public

Water Distribution / Extension System

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City of Raleigh
Public Utilities Department Permit # W-4226

12" WATER LINE WL - 1

SEE UC-4 FOR 12" WATER LINE PLAN

5/14/99

18-AUG-2025 10:05
X:\657493\20061201\TECH\Utilities Construction\Knightdale_SW_Ut_UC7.pfl.psh.dgn
\$\$\$\$\$USERNAME\$\$\$\$\$

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By: [Signature] Date: 12/15/2025
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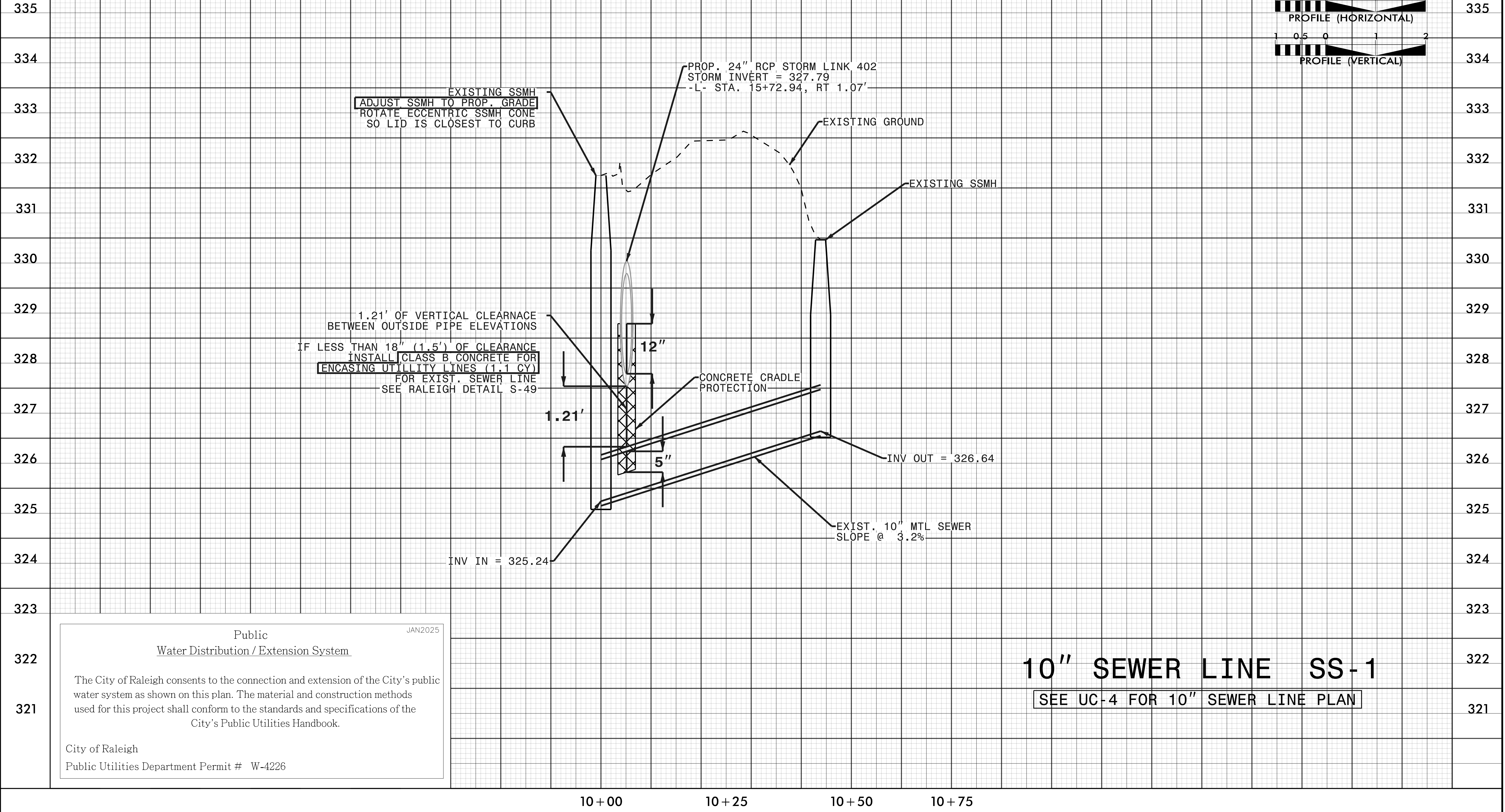
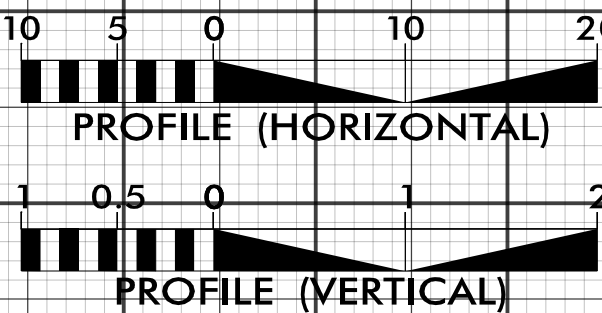
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By: [Signature] Date: 12/15/2025
Land Use Administrator

PROJECT REFERENCE NO.		SHEET NO.
TC002-BL		UC-7
DESIGNED BY:	KJB	PROFESSIONAL SEAL 033618 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151
DRAWN BY:	ADB	
CHECKED BY:	KJB	
APPROVED BY:		
REVISED:		
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL
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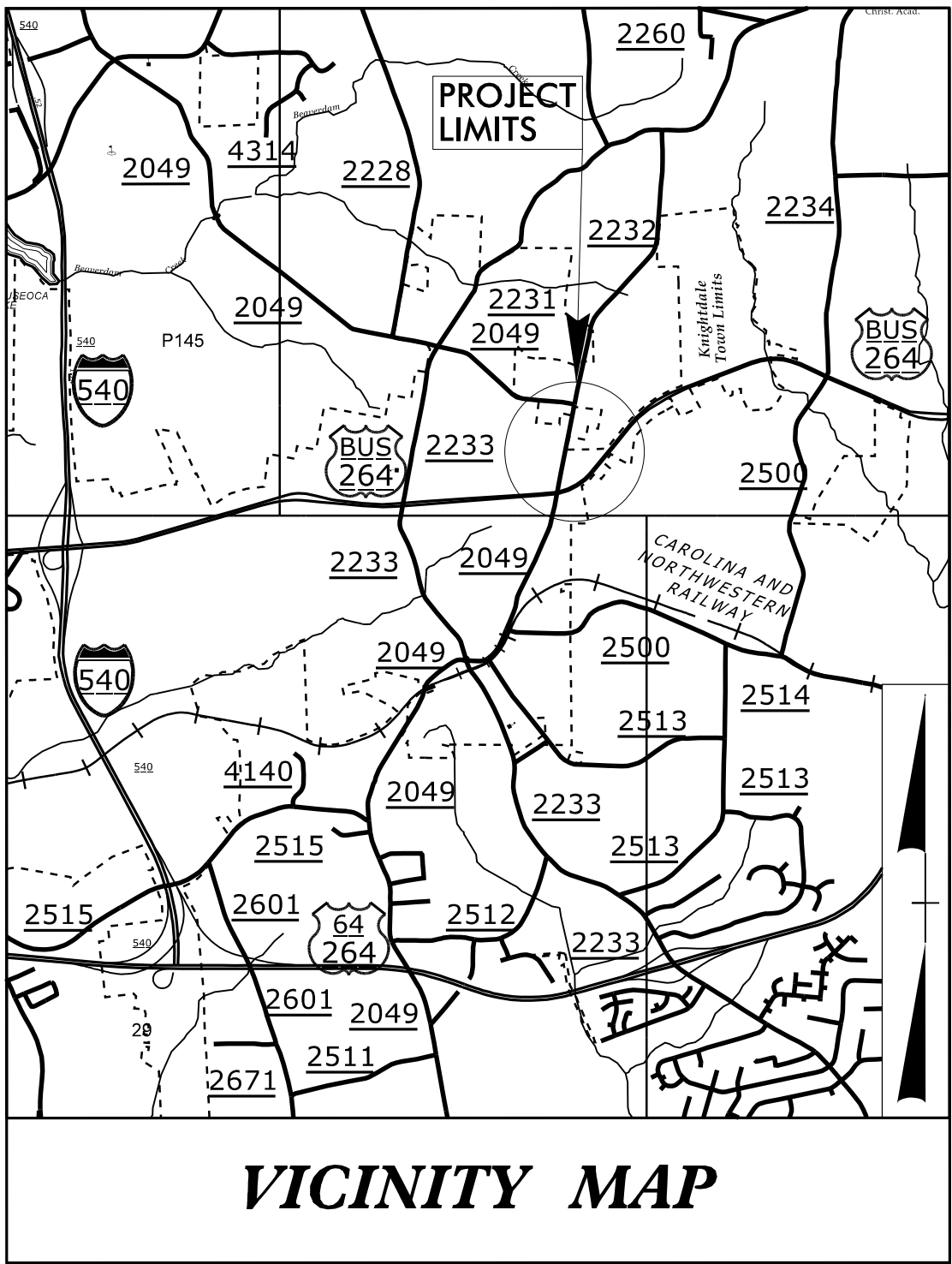
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Water Distribution / Extension System

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City of Raleigh
Public Utilities Department Permit # W-4226

10" SEWER LINE SS-1
SEE UC-4 FOR 10" SEWER LINE PLAN

TIP PROJECT: TC002-BL

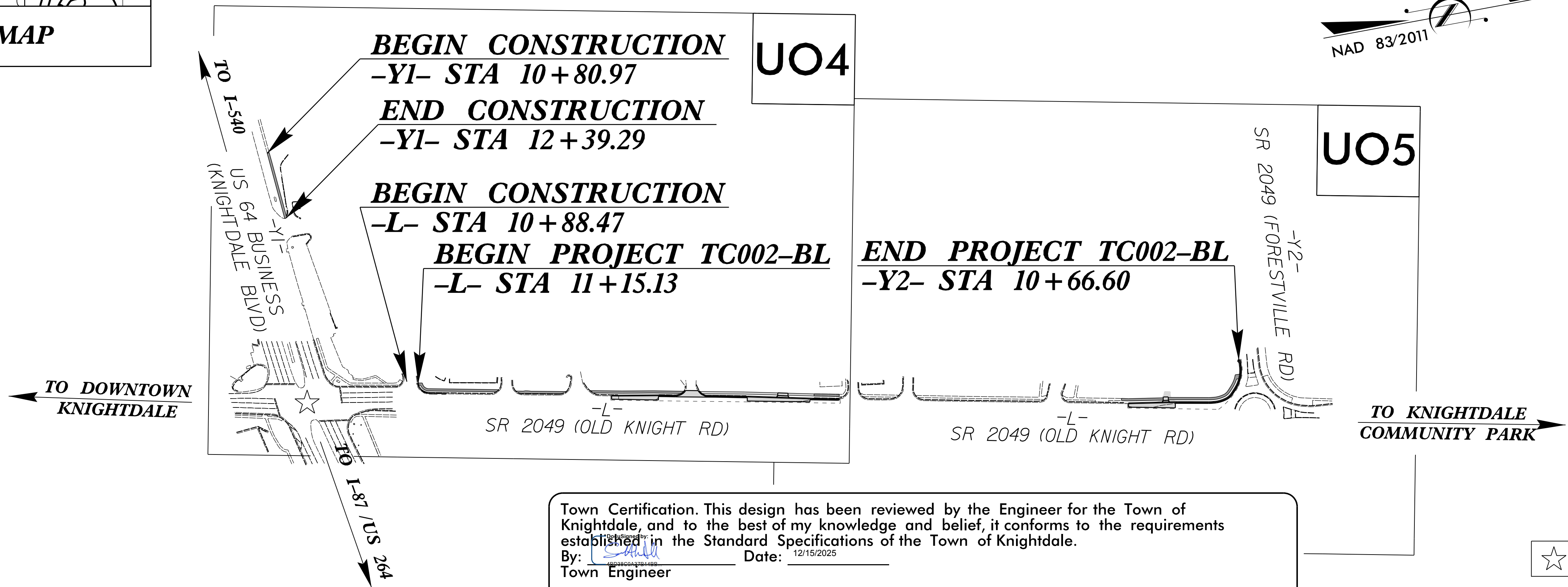


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES BY OTHERS PLANS WAKE COUNTY

LOCATION: WEST SIDE OF SR 2049 (OLD KNIGHT RD)
FROM US 64 TO SR 2049 (FORESTVILLE RD)

TYPE OF WORK: GRADING, PAVING, DRAINAGE, SIDEWALK



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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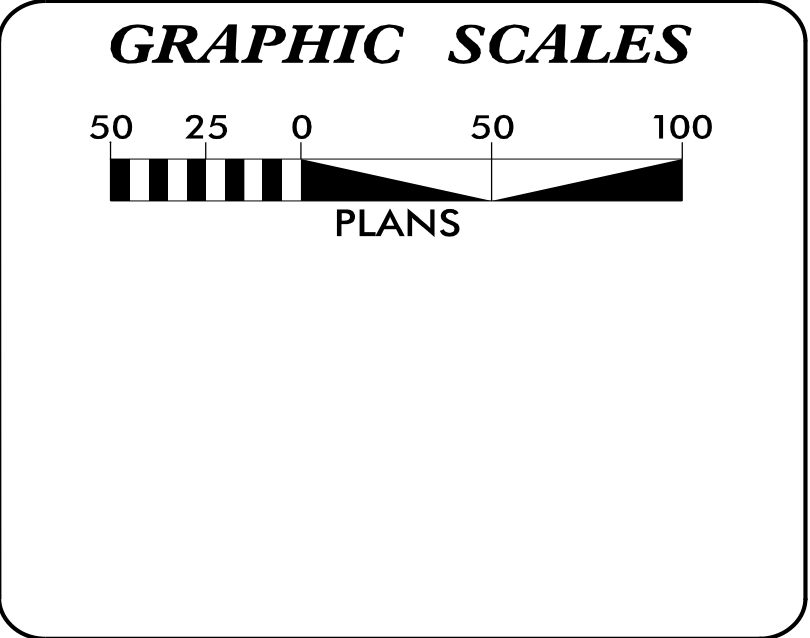
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By: [Signature] Date: 12/15/2025
Land Use Administrator

★ EXISTING SIGNAL

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE TOWN OF KNIGHTDALE



SHEET NO.:	DESCRIPTION:
UO1	TITLE SHEET
UO2	SYMBOLGY SHEET
UO4 THRU UO5	UBO PLAN SHEETS

UTILITY OWNERS WITH CONFLICTS
(A) TELECOM - AT&T

PREPARED IN THE OFFICE OF:

Mead&Hunt

111 E. Hargett Street, Suite 300
Raleigh, North Carolina 27601
919-714-8670 | meadhunt.com
NC License No. F-1235

JENNIFER SMITH-MORTON, PE	UTILITY PROJECT MANAGER
ANDREW BRAME, EI	PROJECT UTILITY COORDINATOR

Prepared for:

TOWN OF KNIGHTDALE

950 STEEPLE SQUARE CT
919-217-2200

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS
CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

BOUNDARIES AND PROPERTY:

State Line _____
County Line _____
Township Line _____
City Line _____
Reservation Line _____
Property Line _____
Existing Iron Pin (EIP) _____
Computed Property Corner _____
Existing Concrete Monument (ECM) _____
Parcel/Sequence Number _____
Existing Fence Line _____
Proposed Woven Wire Fence _____
Proposed Chain Link Fence _____
Proposed Barbed Wire Fence _____
Existing Wetland Boundary _____
Proposed Wetland Boundary _____
Existing Endangered Animal Boundary _____
Existing Endangered Plant Boundary _____
Existing Historic Property Boundary _____
Known Contamination Area: Soil _____
Potential Contamination Area: Soil _____
Known Contamination Area: Water _____
Potential Contamination Area: Water _____
Contaminated Site: Known or Potential _____
Gas Pump Vent or UG Tank Cap _____
Sign _____
Well _____
Small Mine _____
Foundation _____
Area Outline _____
Cemetery _____
Building _____
School _____
Church _____
Dam _____
Stream or Body of Water _____
Hydro, Pool or Reservoir _____
Jurisdictional Stream _____
Buffer Zone 1 _____
Buffer Zone 2 _____
Flow Arrow _____
Disappearing Stream _____
Spring _____
Wetland _____
Proposed Lateral, Tail, Head Ditch _____
False Sump _____

RAILROADS:

Standard Gauge _____
RR Signal Milepost _____
Switch _____
RR Abandoned _____
RR Dismantled _____

RIGHT OF WAY & PROJECT CONTROL:

Primary Horiz Control Point _____
Primary Horiz and Vert Control Point _____
Secondary Horiz and Vert Control Point _____
Vertical Benchmark _____
Existing Right of Way Monument _____
Proposed Right of Way Monument (Rebar and Cap) _____
Proposed Right of Way Monument (Concrete) _____
Existing Permanent Easement Monument _____
Proposed Permanent Easement Monument (Rebar and Cap) _____
Existing C/A Monument _____
Proposed C/A Monument (Rebar and Cap) _____
Proposed C/A Monument (Concrete) _____
Existing Right of Way Line _____
Proposed Right of Way Line _____
Existing Control of Access Line _____
Proposed Control of Access Line _____
Proposed ROW and CA Line _____
Existing Easement Line _____
Proposed Temporary Construction Easement _____
Proposed Temporary Drainage Easement _____
Proposed Permanent Drainage Easement _____
Proposed Permanent Drainage/Utility Easement _____
Proposed Permanent Utility Easement _____
Proposed Temporary Utility Easement _____
Proposed Aerial Utility Easement _____

EXISTING STRUCTURES:

MAJOR:

Bridge, Tunnel or Box Culvert _____
Bridge Wing Wall, Head Wall and End Wall _____
MINOR:
Head and End Wall _____
Pipe Culvert _____
Footbridge _____
Drainage Box: Catch Basin, DI or JB _____
Paved Ditch Gutter _____
Storm Sewer Manhole _____
Storm Sewer _____

UTILITIES:

* SUE – Subsurface Utility Engineering
LOS – Level of Service – A,B,C or D (Accuracy)

POWER:

Existing Power Pole _____
Proposed Power Pole _____
Existing Joint Use Pole _____
Proposed Joint Use Pole _____
Power Manhole _____
Power Line Tower _____
Power Transformer _____
UG Power Cable Hand Hole _____
H-Frame Pole _____
UG Power Line Test Hole (SUE – LOS A)* _____
UG Power Line (SUE – LOS B)* _____
UG Power Line (SUE – LOS C)* _____
UG Power Line (SUE – LOS D)* _____
TELEPHONE:
Existing Telephone Pole _____
Proposed Telephone Pole _____
Telephone Manhole _____
Telephone Pedestal _____
Telephone Cell Tower _____
UG Telephone Cable Hand Hole _____
UG Telephone Test Hole (SUE – LOS A)* _____
UG Telephone Cable (SUE – LOS B)* _____
UG Telephone Cable (SUE – LOS C)* _____
UG Telephone Cable (SUE – LOS D)* _____
UG Telephone Conduit (SUE – LOS B)* _____
UG Telephone Conduit (SUE – LOS C)* _____
UG Telephone Conduit (SUE – LOS D)* _____
UG Fiber Optics Cable (SUE – LOS B)* _____
UG Fiber Optics Cable (SUE – LOS C)* _____
UG Fiber Optics Cable (SUE – LOS D)* _____

WATER:

Water Manhole _____
Water Meter _____
Water Valve _____
Water Hydrant _____
UG Water Line Test Hole (SUE – LOS A)* _____
UG Water Line (SUE – LOS B)* _____
UG Water Line (SUE – LOS C)* _____
UG Water Line (SUE – LOS D)* _____
Above Ground Water Line _____

TV:

TV Pedestal _____
TV Tower _____
UG TV Cable Hand Hole _____
UG TV Test Hole (SUE – LOS A)* _____
UG TV Cable (SUE – LOS B)* _____
UG TV Cable (SUE – LOS C)* _____
UG TV Cable (SUE – LOS D)* _____
UG Fiber Optic Cable (SUE – LOS B)* _____
UG Fiber Optic Cable (SUE – LOS C)* _____
UG Fiber Optic Cable (SUE – LOS D)* _____

GAS:

Gas Valve _____
Gas Meter _____
UG Gas Line Test Hole (SUE – LOS A)* _____
UG Gas Line (SUE – LOS B)* _____
UG Gas Line (SUE – LOS C)* _____
UG Gas Line (SUE – LOS D)* _____
Above Ground Gas Line _____

SANITARY SEWER:

Sanitary Sewer Manhole _____
Sanitary Sewer Cleanout _____
UG Sanitary Sewer Line _____
Above Ground Sanitary Sewer _____

SS Force Main Line Test Hole (SUE – LOS A)* _____
SS Force Main Line (SUE – LOS B)* _____
SS Force Main Line (SUE – LOS C)* _____
SS Force Main Line (SUE – LOS D)* _____
MISCELLANEOUS:
Utility Pole _____
Utility Pole with Base _____
Utility Located Object _____
Utility Traffic Signal Box _____
Utility Unknown UG Line (SUE – LOS B)* _____
UG Tank: Water, Gas, Oil _____
Underground Storage Tank, Approx. Loc. _____
AG Tank: Water, Gas, Oil _____
Geoenvironmental Boring _____
Abandoned According to Utility Records _____
End of Information _____

Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.

By: [Signature] Date: 12/15/2025
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: [Signature] Date: 12/15/2025
Land Use Administrator

UTILITIES BY OTHERS

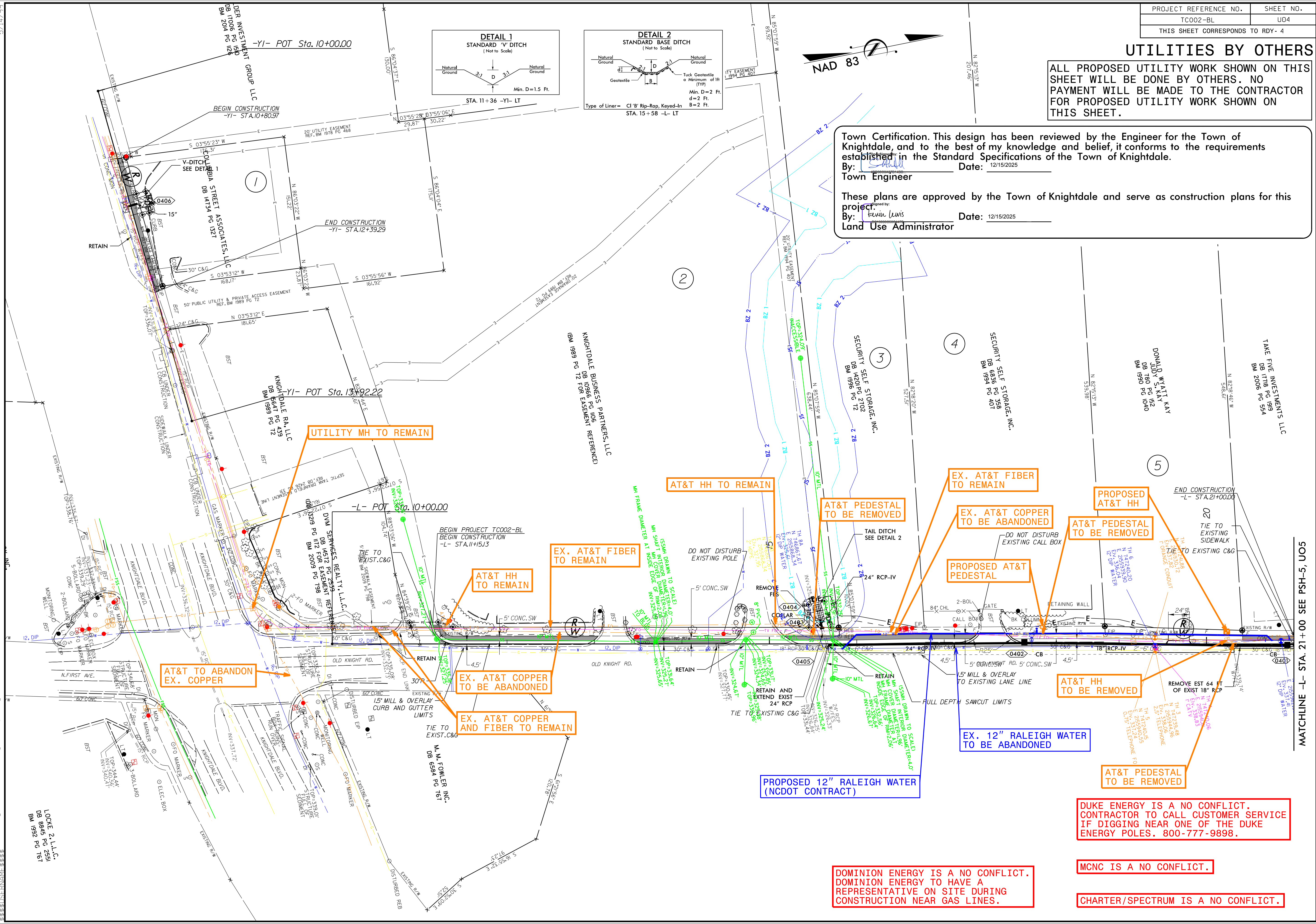
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR PROPOSED UTILITY WORK SHOWN ON THIS SHEET.

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: 12/15/2025
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By:  Date: 12/15/2025
Land Use Administrator



UTILITIES BY OTHERS

ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR PROPOSED UTILITY WORK SHOWN ON THIS SHEET.

By: [Signature] Date: 12/15/2025
Town Engineer

project: _____
By: Kevin Lewis Date: 12/15/2025
Land Use Administrator



CHARTER/SPECTRUM IS A NO CONFLICT.

DOMINION ENERGY IS A NO CONFLICT.
DOMINION ENERGY TO HAVE A
REPRESENTATIVE ON SITE DURING
CONSTRUCTION NEAR GAS LINES.

Certificate Of Completion

Envelope Id: 48C25C46-66B2-49DB-B208-0FE923D850F6

Status: Delivered

Subject: Complete with Docusign: TC002-BL_Knightdale Sidewalk Improvement Plan

Source Envelope:

Document Pages: 59

Signatures: 119

Envelope Originator:

Certificate Pages: 2

Initials: 0

Regina M. Muncey

AutoNav: Enabled

801 Jones Franklin Rd, Ste 300

Envelopeld Stamping: Enabled

Raleigh, NC 27606

Time Zone: (UTC-05:00) Eastern Time (US & Canada)

regina.muncey@stantec.com

IP Address: 12.2.6.58

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Status: Original

Holder: Regina M. Muncey

Location: DocuSign

12/2/2025 2:37:10 PM

regina.muncey@stantec.com

Signer Events

Travis V. Cook

travis.cook@stantec.com

Security Level: Email, Account Authentication
(None)

Signature

Signed by:


6ADB2E8BEC60449...

Signature Adoption: Pre-selected Style

Using IP Address: 173.42.0.66

Timestamp

Sent: 12/2/2025 3:46:37 PM

Resent: 12/11/2025 12:15:51 PM

Viewed: 12/15/2025 9:16:35 AM

Signed: 12/15/2025 9:17:07 AM

Electronic Record and Signature Disclosure:

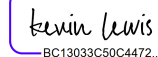
Not Offered via Docusign

Kevin Lewis

kevin.lewis@knightdalenc.gov

Security Level: Email, Account Authentication
(None)

Signed by:


BC13033C50C4472...

Signature Adoption: Pre-selected Style

Using IP Address: 108.169.150.162

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Signed: 12/15/2025 9:35:40 AM

Electronic Record and Signature Disclosure:

Not Offered via Docusign

Samuel A. MacDonald

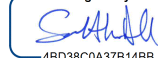
smacdonald@AMTEngineering.com

Project Manager

A Morton Thomas & Associates

Security Level: Email, Account Authentication
(None)

DocuSigned by:


4BD38C0A37B14BB...

Signature Adoption: Uploaded Signature Image

Using IP Address: 50.144.246.203

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Viewed: 12/15/2025 3:48:22 PM

Signed: 12/15/2025 3:51:15 PM

Electronic Record and Signature Disclosure:

Not Offered via Docusign

Cydney Terry

cydney.terry@raleighnc.gov

Security Level: Email, Account Authentication
(None)

Sent: 12/15/2025 3:51:33 PM

Viewed: 12/16/2025 12:11:02 PM

Electronic Record and Signature Disclosure:

Not Offered via Docusign

In Person Signer Events

Signature

Timestamp

Editor Delivery Events

Status

Timestamp

Agent Delivery Events

Status

Timestamp

Intermediary Delivery Events	Status	Timestamp
Certified Delivery Events	Status	Timestamp
Carbon Copy Events	Status	Timestamp
Betsy L. Watson betsy.watson@stantec.com Senior Principal Stantec Consulting Services Inc. Security Level: Email, Account Authentication (None) Electronic Record and Signature Disclosure: Not Offered via DocuSign	COPIED	Sent: 12/2/2025 3:46:38 PM Viewed: 12/2/2025 3:47:44 PM
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Notary Events	Signature	Timestamp
Envelope Summary Events	Status	Timestamps
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Envelope Updated	Security Checked	12/2/2025 4:32:48 PM
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