09/08/99

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5979	UC-1	8

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
46963.1.1	0074227	PE
46963.2.1	0074227	R/W
46963.2.2	0074227	UTIL
46963.3.1	0074227	CONST.

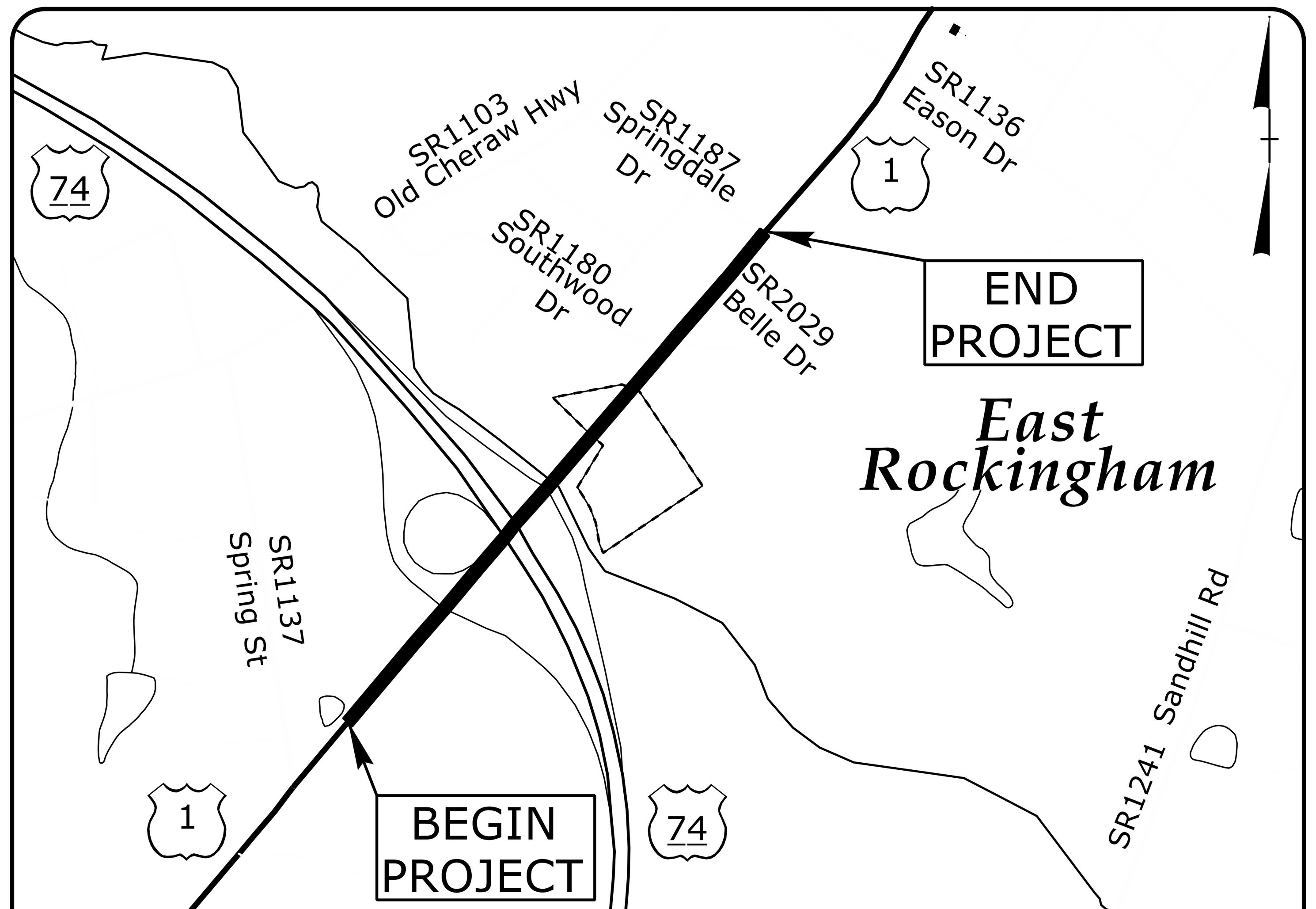
TIP PROJECT: I-5979

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

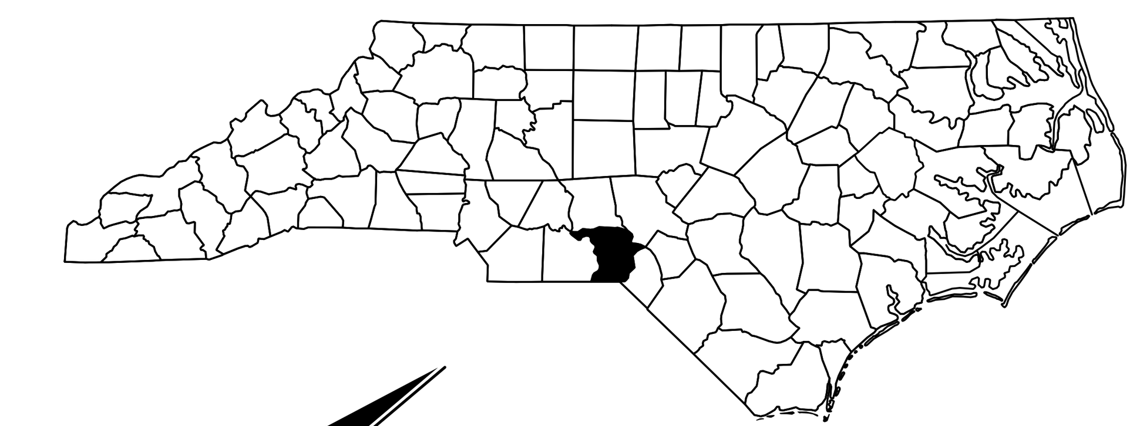
RICHMOND COUNTY

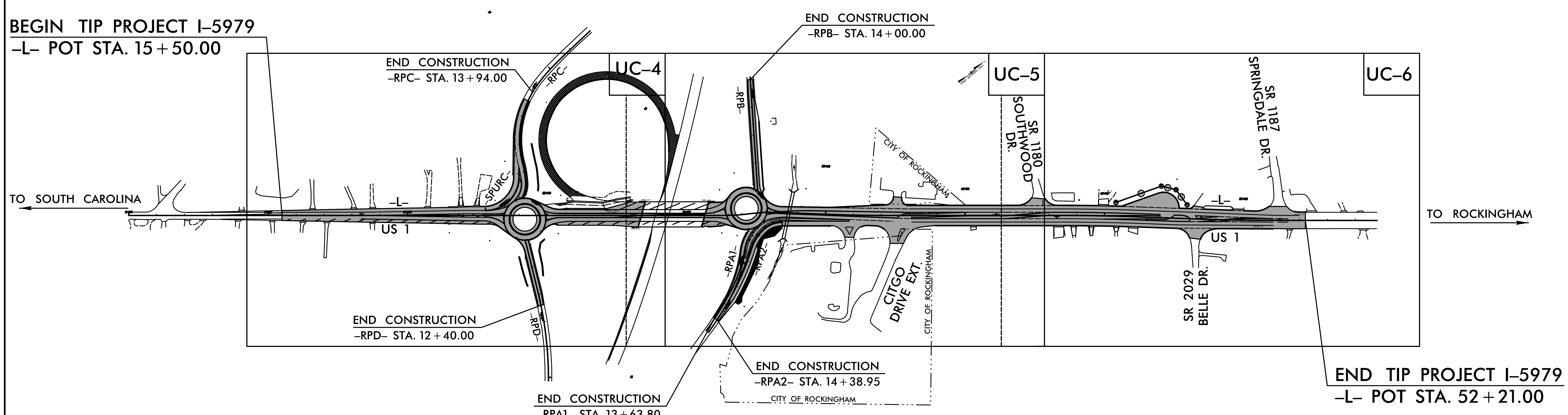
LOCATION: US 74 (FUTURE I-74) /US 1 (EXIT 311). INTERCHANGE IMPROVEMENTS AT US 1 FROM JUST WEST OF THE EASTBOUND US 74 RAMP TO SR 1187 (SPRINGDALE DR.)

TYPE OF WORK: WET UTILITIES



VICINITY MAP
NOT TO SCALE





A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF ROCKINGHAM.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CONTRACT:

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

INDEX OF SHEETS

UTILITY OWNERS ON PROJECT

(A) RICHMOND COUNTY WATER DEPT.
(B) CITY OF ROCKINGHAM

PROJECT LENGTHS

LENGTH 2" WATER MAIN	=	407 FT.	(B)
LENGTH 6" WATER MAIN	=	307 FT.	(A)
LENGTH 6" WATER MAIN	=	300 FT.	(B)
LENGTH 8" WATER MAIN	=	883 FT.	(B)
LENGTH 8" SEWER MAIN	=	288 FT.	(B)

Prepared for the North Carolina Department of Transportation In the Office of:

vhb

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: DECEMBER 30, 2021

LETTING DATE: FEBRUARY 18, 2025

BRANDON BARHAM, PE
PROJECT ENGINEER

JOHN M. KAMPRATH, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACT — GREG DAVIS, PE
DIVISION PROJECT ENGINEER

WET UTILITIES ENGINEER

12/2/2024

SEAL 41101

SIGNATURE: P.E.

DIVISION CONSTRUCTION ENGINEER – TRAVIS MORGAN

DIVISION UTILITY COORDINATOR– JAMIE YOW

11:30:37 AM
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mkamprath

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5979	UC-2
R/W SHEET NO.	

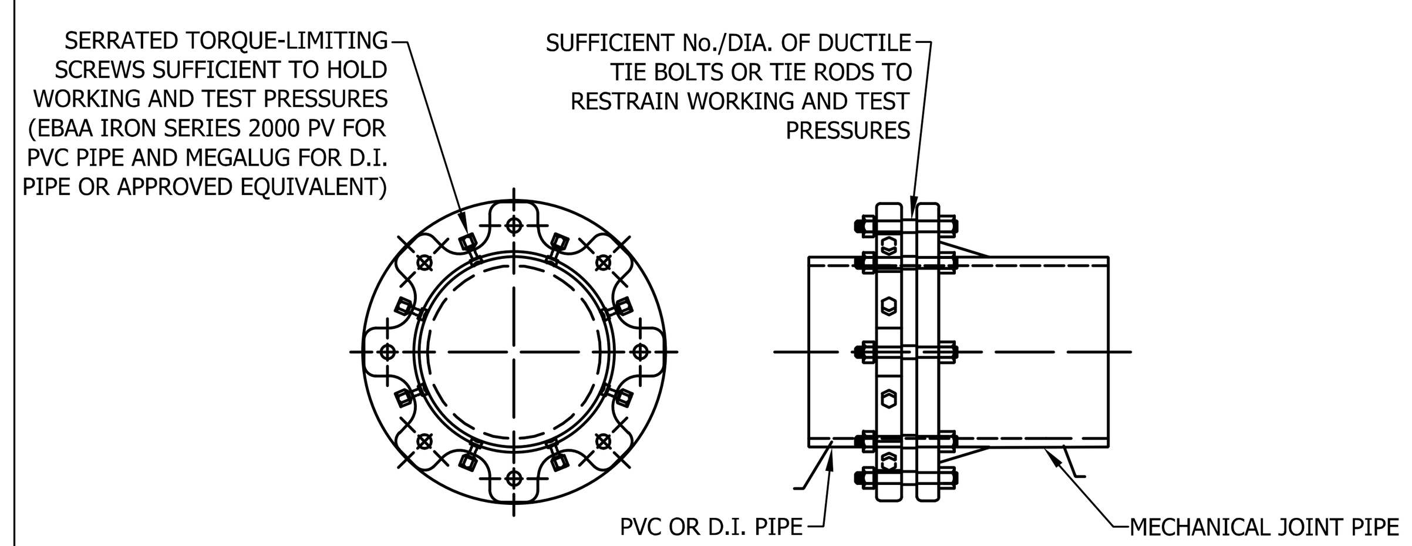
WET UTILITIES ENGINEER
2/27/2024

NORTH CAROLINA PROFESSIONAL SEAL 14101 ENGINEER JOHN M. KAMPRATH

DocuSigned by: John M. Kamprath
89925907D84D40D...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared by
VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606

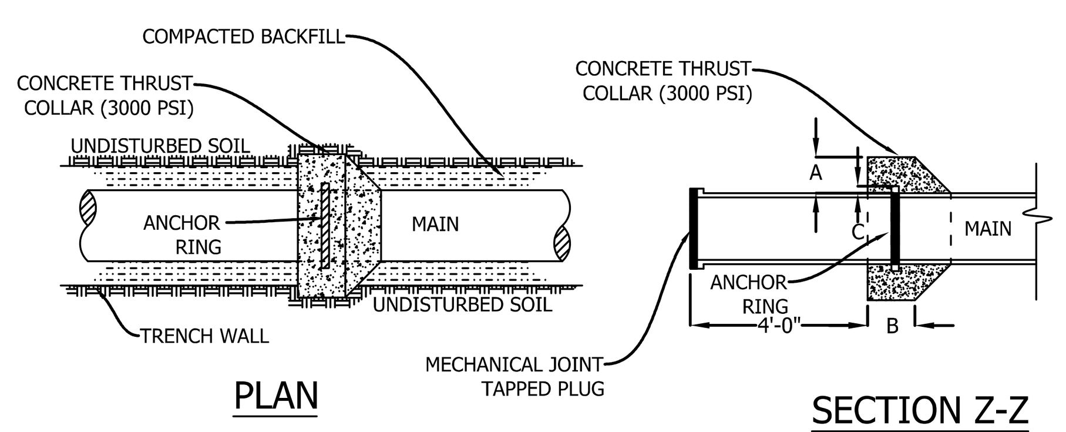


RESTRAINED JOINTS ON MECHANICAL JOINT PIPE & FITTINGS

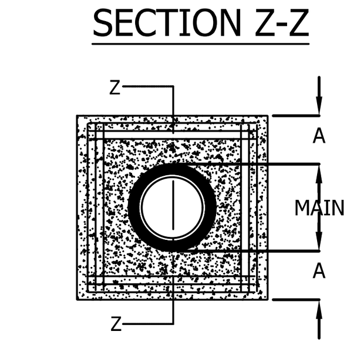
MINIMUM FOOTAGE OF RESTRAINED PIPE FOR VARIOUS DIAMETERS & DEGREES CAST & DUCTILE IRON ELBOWS

COVER / DIA. MAIN	DEGREE OF ELBOW 11.25°	22.5°	45°	90°	VERTICAL OFFSET 45° UPPER BEND (3')	LOWER BEND (3')	BRANCH OF TEE	REDUCER (LARGE SIDE ONLY)
	3'	3'	3'	3'			3'	3'
6"	2'	5'	10'	25'	15'	10'	15'	20'
8"	4'	6'	14'	33'	25'	15'	30'	40'
10"	5'	8'	18'	42'	27'	18'	40'	40'
12"	5'	10'	20'	50'	30'	20'	55'	45'
16"	7'	13'	28'	67'	45'	30'	80'	45'
20"	8'	17'	35'	84'	55'	35'	105'	45'

RESTRAINED JOINT DETAIL



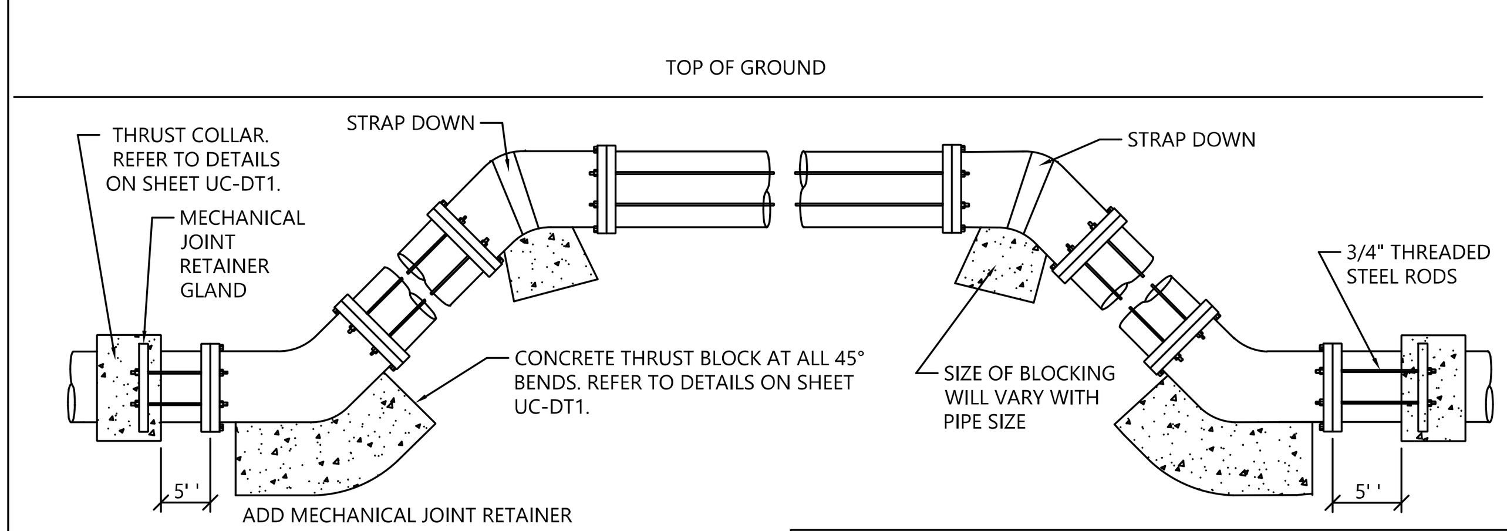
PIPE DIAMETER	CONCRETE THRUST COLLAR A	CONCRETE THRUST COLLAR B	ANCHOR RING C	RINGS REQUIRED
6" - 12"	1'-0"	1'-0"	2"	ONE
16"	1'-4"	1'-0"	2"	ONE
20"	1'-4"	1'-0"	3"	ONE
24"	1'-4"	1'-0"	3"	TWO
30"	1'-4"	1'-2"	4"	TWO
36"	1'-4"	1'-4"	4"	TWO



REINFORCING

NOTE:
6" TO 16" MAINS--12-NO. 7 BARS
20" TO 36" MAINS--12-NO. 8 BARS
* BARS PLACED AS SHOWN

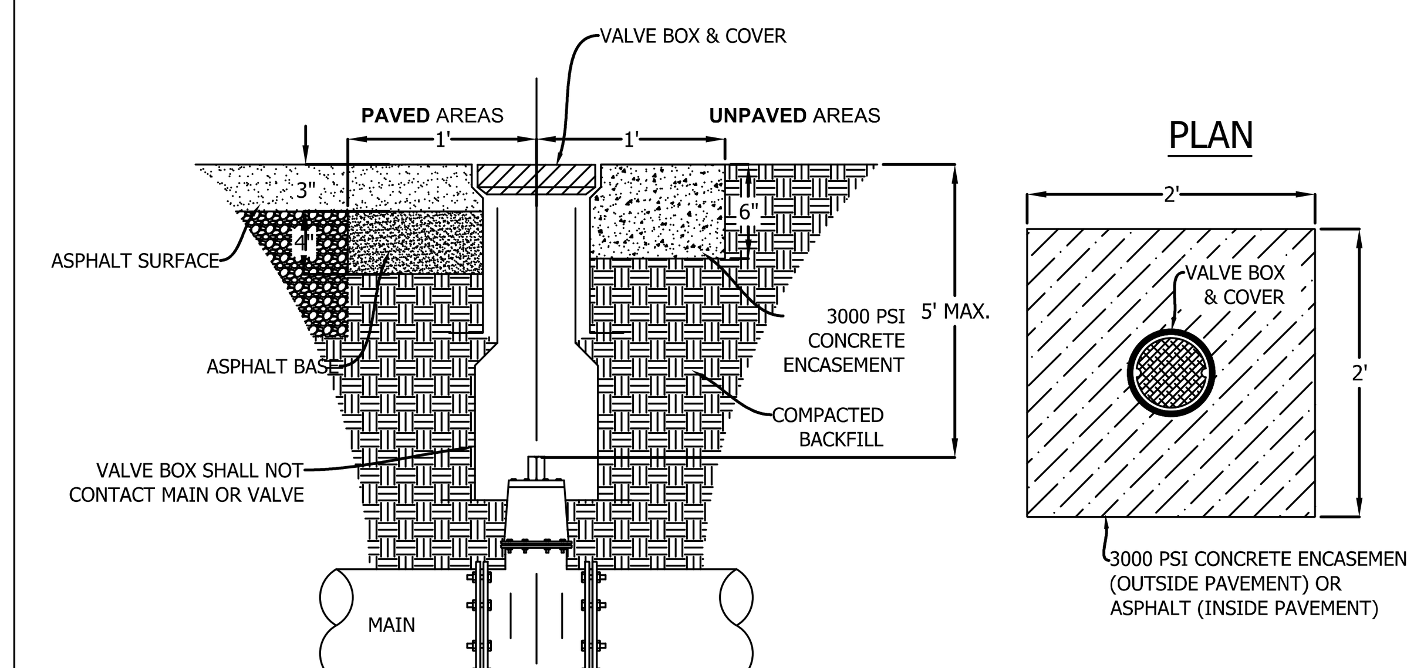
THRUST COLLAR INSTALLATION



ROD REQUIREMENTS		
SIZE OF 45 BEND	STATIC THRUST IN POUNDS	NO. OF RODS REQUIRED
6"	4,328	2
8"	7,694	4
12"	17,312	4
16"	30,779	8
24"	69,252	8

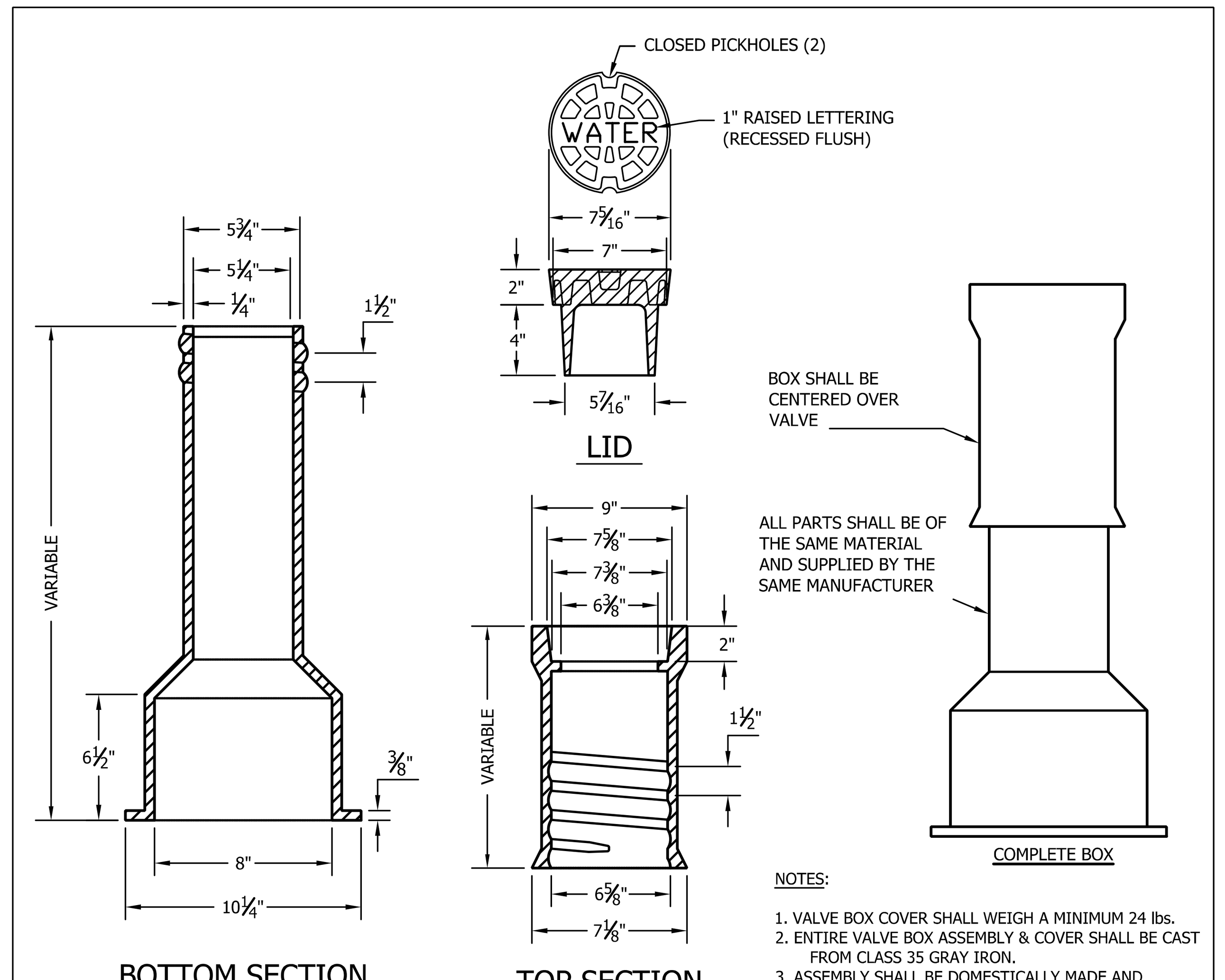
GENERAL NOTES:
1. STEEL RODS AND BOLTS SHALL BE 3/4" HOT DIPPED GALVANIZED.
2. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT BENDS.
3. RESTRAINED MECHANICAL GLANDS TO BE USED AT ALL FITTINGS.
4. MUST USE DUCTILE IRON EYE BOLTS WHERE NECESSARY.
5. 3' MINIMUM COVER MUST BE MAINTAINED ON ALL WATER MAINS

STANDARD VERTICAL BEND



NOTES:
1. ONLY MANUFACTURED VALVE BOX EXTENSIONS SHALL BE ALLOWED.
2. IF THE VALVE OPERATING NUT IT GREATER THAN 6 FEET FROM THE SURFACE AN EXTENSION KIT FROM THE VALVE MANUFACTURER MUST BE PROVIDED.
3. PRECAST CONCRETE ENCASEMENT IS ALSO ALLOWED OUTSIDE OF PAVED AREAS.

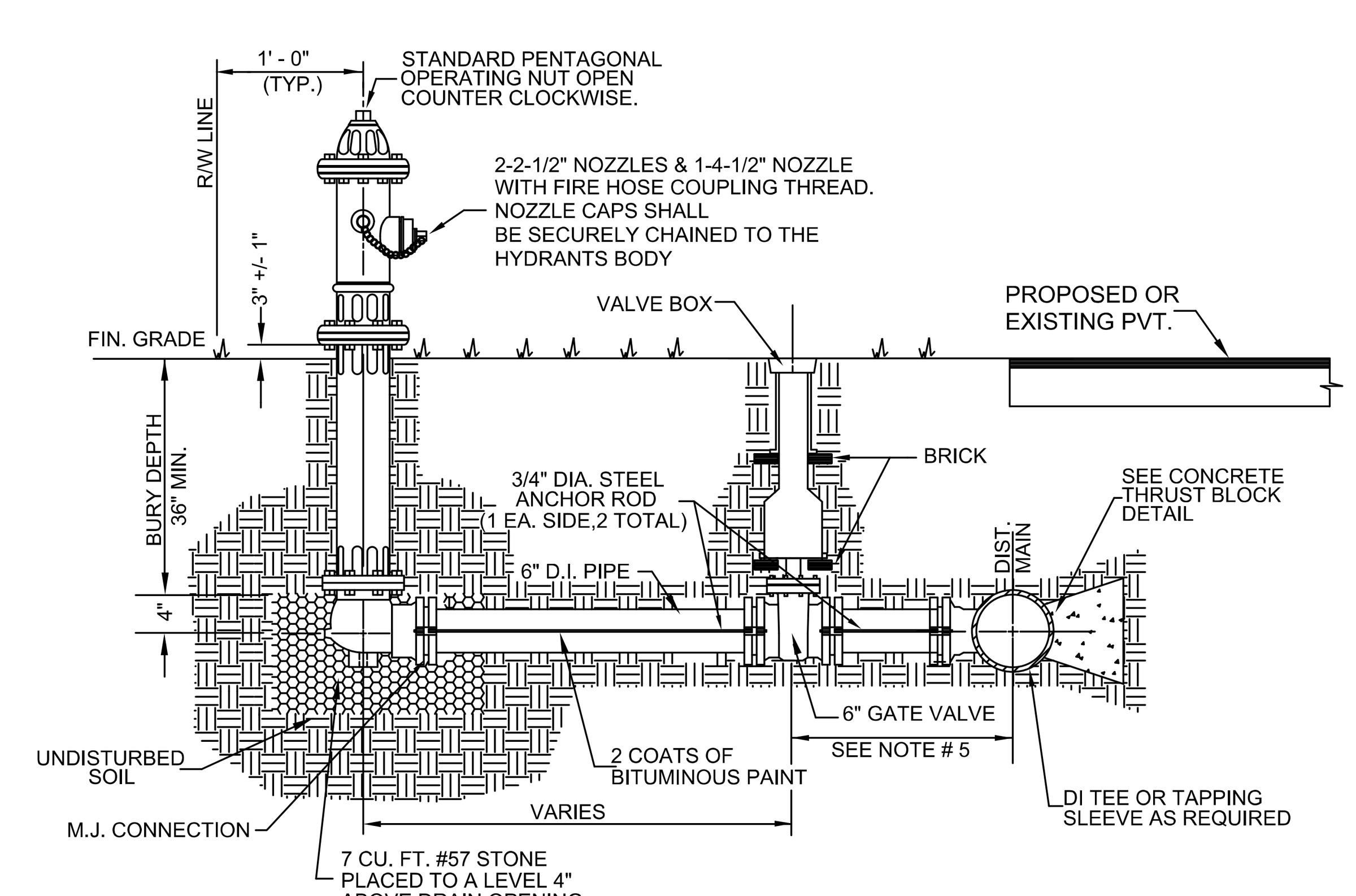
VALVE BOX INSTALLATION



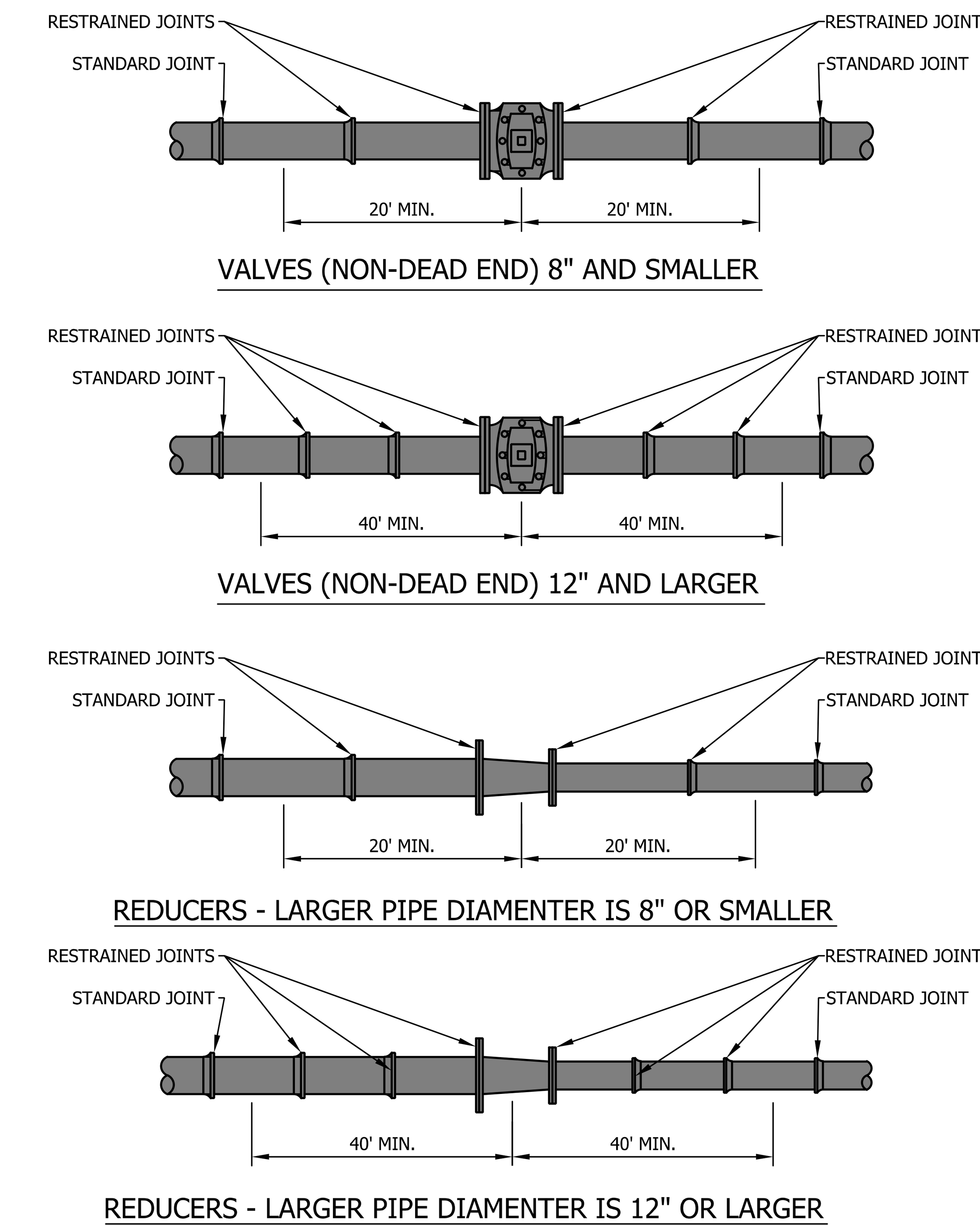
NOTES:
1. VALVE BOX COVER SHALL WEIGH A MINIMUM 24 lbs.
2. ENTIRE VALVE BOX ASSEMBLY & COVER SHALL BE CAST FROM CLASS 35 GRAY IRON.
3. ASSEMBLY SHALL BE DOMESTICALLY MADE AND MANUFACTURED IN THE U.S.A.

VALVE BOX INSTALLATION

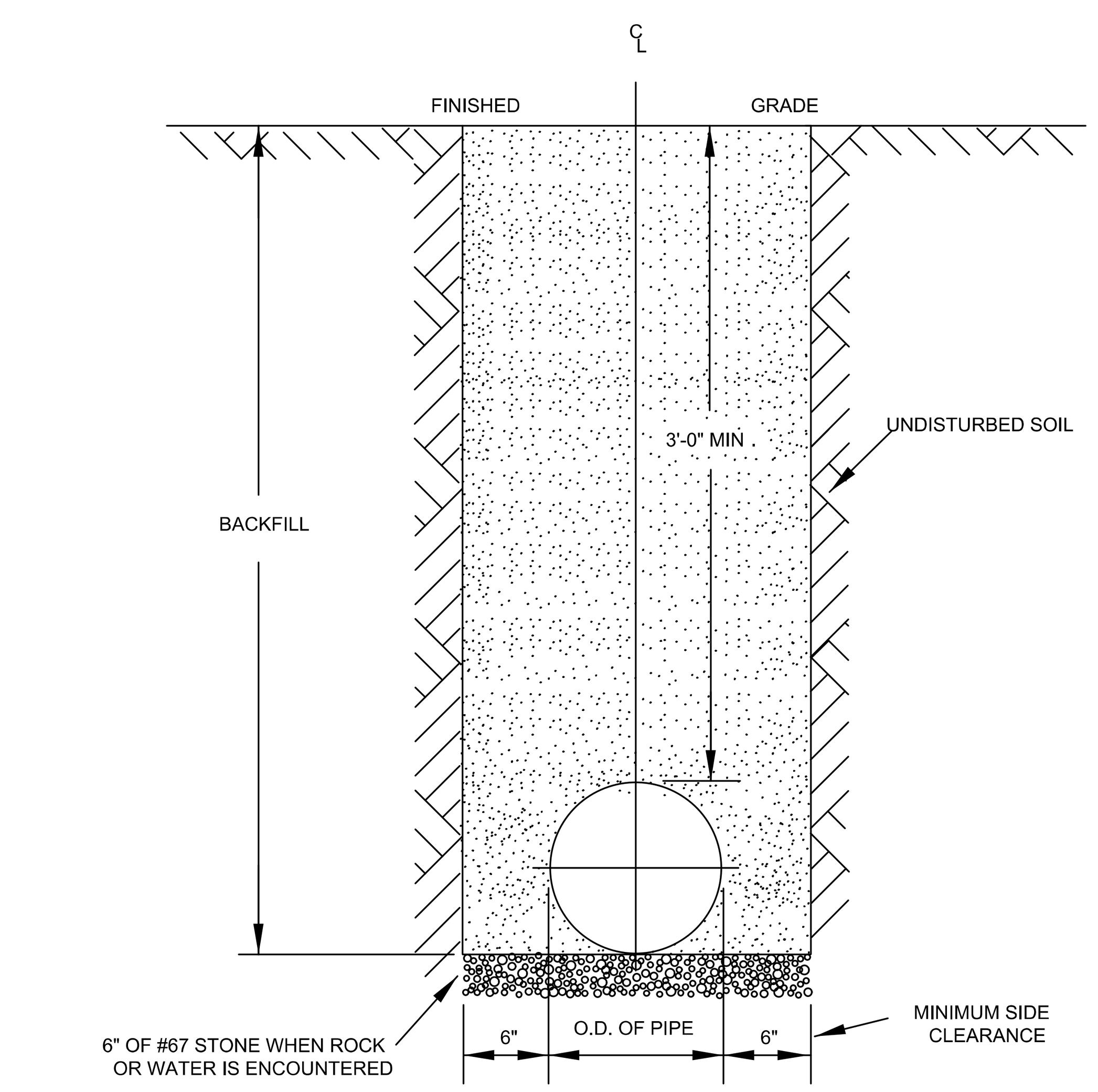
NOTES:
1. ALL VALVES AND HYDRANTS SHALL HAVE M.J. CONNECTIONS WITH IRON RETAINING GLAND M.J. RESTRAINT OR ANCHOR LUGS AND 3/4" DIA. STEEL ANCHOR RODS.
2. 3/4" DIA. STEEL RODS AND ALL BURIED SURFACES SHALL BE PAINTED WITH 2 COATS OF BITUMINOUS PAINT. MARRED OR SCRATCHED SURFACES SHALL BE REPAINTED. PAINT SHALL CURE PRIOR TO BACK FILLING TRENCH.
3. FIRE HYDRANTS SHALL BE PLACED AS DIRECTED BY THE ENGINEER.
4. HYDRANT BRANCH SHALL NOT BE BACK FILLED UNTIL INSPECTED AND APPROVED BY ENGINEER.
5. HYDRANT EXTENSIONS SHALL BE APPROVED BY ENGINEER.



HYDRANT DETAIL



TYP. RESTRAINING FOR VALVES AND REDUCERS



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

TRENCH BOTTOM & BACKFILLING REQUIREMENTS

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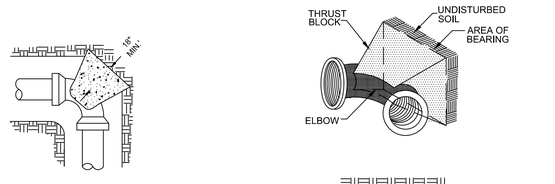


NOTES:

1.) THRUST BLOCKS SHALL BE INSTALLED ON PVC WATER DISTRIBUTION LINES 6" THRU 12" DIA. IN THE MANNER SHOWN.

2.) PIPE GREATER THAN 12 INCH DIAMETER SHALL REQUIRE RESTRAINT JOINT PIPE FOR THE PROPER LENGTH.

3.) SAC-CRETE SHALL NOT BE ALLOWED.

4.) NO CONCRETE SHALL BE PLACED ON BOLTS. WRAP JOINT FITTINGS WITH PLASTIC.

5.) CONCRETE SHALL BE A MINIMUM 3,000 psi.

6.) ALL BEARING SURFACES SHALL BE AGAINST UNDISTURBED SOIL.

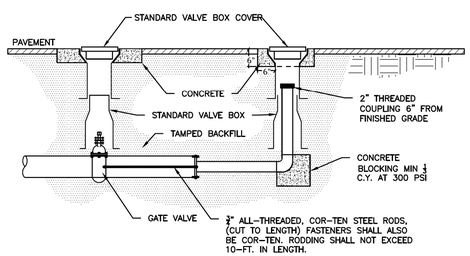
CONCRETE THRUST BLOCK DETAIL

N.T.S. Source: VHB

THRUST BLOCKING SCHEDULE						
FITTING SIZE (IN.)	MINIMUM BLOCKING AREA AND VOLUME IN S.F. AND (C.Y.)					
	11 1/4°	22 1/2°	45°	90°	TEE	PLUG
2			0.23 (0.11)	0.38 (0.11)	0.30 (0.11)	0.30 (0.11)
4			0.83 (0.18)	1.35 (0.18)	0.98 (0.18)	0.98 (0.18)
6	0.40 (0.01)	0.80 (0.02)	1.73 (0.20)	3.00 (0.33)	2.17 (0.25)	2.17 (0.25)
8	0.80 (0.02)	1.50 (0.04)	3.08 (0.34)	5.40 (0.60)	3.83 (0.42)	3.83 (0.42)
10	1.20 (0.03)	2.30 (0.07)	4.72 (0.52)	8.40 (0.94)	5.92 (0.66)	5.92 (0.66)
12	1.70 (0.05)	3.30 (0.12)	6.82 (0.75)	12.00 (1.33)	8.48 (0.94)	8.48 (0.94)
16	3.00 (0.33)	5.90 (0.65)	11.60 (0.86)	21.30 (1.57)	15.00 (0.97)	15.00 (0.97)
20	4.60 (0.52)	9.20 (0.76)	18.00 (1.32)	33.30 (3.60)	23.30 (1.87)	23.30 (1.87)
24	6.70 (0.75)	13.20 (0.97)	26.00 (2.28)	48.00 (5.29)	33.60 (3.24)	33.60 (3.24)
30	10.40 (0.77)	20.70 (1.80)	40.60 (4.45)	75.00 (10.30)	52.50 (6.32)	52.50 (6.32)
36	15.00 (1.28)	29.80 (3.11)	58.40 (7.67)	108.0 (17.90)	75.60 (10.90)	75.60 (10.90)

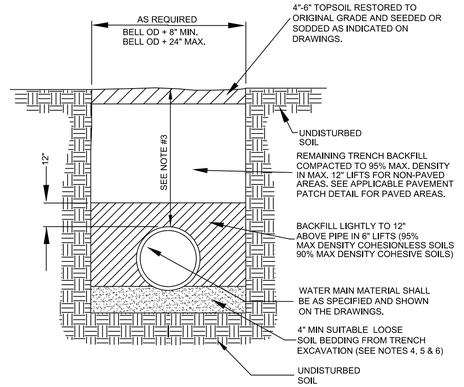
NOTE: Values given are based on 150 psi water pressure and 2000 lb/sf soil bearing capacity. Soils with less bearing capacity such as muck, peat or soft clay will require greater blocking areas and volumes.

The thrust blocking shown above is based on the use of mechanical joint as shown on plans.



2" BLOW-OFF ASSEMBLY DETAIL

N.T.S. Source: VHB

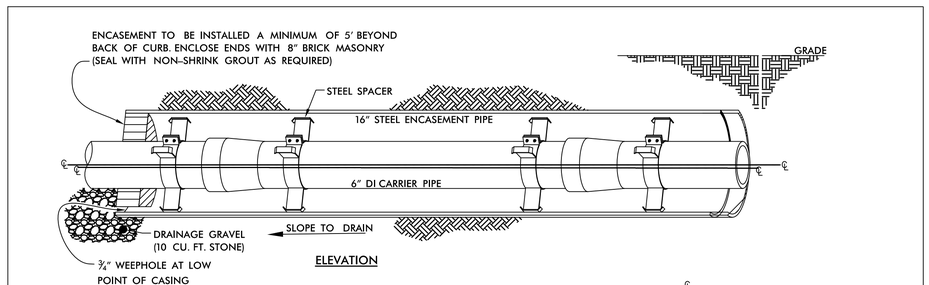


NOTES:

1. ALL EXCAVATIONS SHALL COMPLY WITH THE TERMS AND CONDITIONS OF THE CONSTRUCTION STANDARDS FOR EXCAVATIONS IN OSHA "SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION", CHAPTER XV11 OF TITLE 29, CFR, PART 1926. THE CONTRACTOR SHALL HAVE A COMPETENT PERSON ON SITE AT ALL TIMES DURING EXCAVATION AND BACKFILLING.
2. CONTRACTOR SHALL USE TRENCH BOX SHORING IN ALL OPEN CUTS IN PAVED AREAS. TRENCH WIDTH SHALL BE MAINTAINED AT THE MINIMUM PRACTICAL WIDTH.
3. SEE PLANS FOR MINIMUM COVER.
4. LOOSE SOIL OR SELECT MATERIAL IS DEFINED AS "NATIVE" SOIL EXCAVATED FROM THE TRENCH, FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH.
5. BEDDING MATERIAL SHALL EXTEND TO UNDISTURBED TRENCH WALLS AND TRENCH BOTTOM. BEDDING MATERIAL WILL NOT BE PAID FOR UNLESS SPECIFICALLY APPROVED BY THE PROJECT REPRESENTATIVE AND ONLY FOR THE AUTHORIZED QUANTITY.
6. WHERE NATIVE SOIL IS DETERMINED TO BE ADEQUATE BY THE ENGINEER, NO EXCAVATION BELOW THE BOTTOM OF PIPE IS REQUIRED.
7. BEDDING MATERIAL SHALL BE PROPERLY RODDED AND COMPACTED AROUND THE PIPE HAUNCHES.
8. TEST FOR DENSITY OF COMPACTION MAY BE MADE AT THE OPTION OF THE ENGINEER AND DEFICIENCIES SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER. THE ENGINEER MAY HAVE COMPACTION TEST PERFORMED AFTER THE BACKFILL IS COMPLETE. CONTRACTOR SHALL BE REQUIRED TO EXCAVATE TO VARIOUS ELEVATIONS FOR DENSITY TESTING EXCAVATION, BACKFILL AND RECOMPACTION SHALL BE PERFORMED AT NO ADDITIONAL COSTS TO THE OWNER.

WATER MAIN BEDDING DETAIL

N.T.S. Source: VHB



NOTES:

1. WORK TO BE COMPLETED AS PER RICHMOND COUNTY, CITY OF ROCKINGHAM, AND NCDOT SPECIFICATIONS (LATEST EDITION).
2. STEEL SPACERS SHALL BE USED FOR SUPPORT OF THE CARRIER PIPE WITHIN THE CASING PIPE.
3. A MINIMUM SPACING OF 2 SPACERS PER JOINT OF CARRIER PIPE SHALL BE REQUIRED.
4. THE SPACERS SHALL BE LOCATED EVENLY ALONG THE CARRIER PIPE SUCH THAT EACH SPACER SUPPORTS THE SAME UNIT WEIGHT OF THE CARRIER MAIN.
5. 16" ENCASEMENT PIPE SHALL BE UNCOATED SPIRAL WELDED STEEL MEETING ASTM A-139, GRADE B, WITH A MINIMUM YIELD STRENGTH OF 35,000 PSI. MINIMUM WALL THICKNESS OF 0.250 IN.

STEEL ENCASEMENT DETAIL

N.T.S. Source: VHB

PROJECT REFERENCE NO.	SHEET NO.
I-5979	UC-3
R/W SHEET NO.	

WET UTILITIES ENGINEER

DocuSigned by: JOHN M. KAMPRATH

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14101 JOHN M. KAMPRATH 7/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared by

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VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606

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mkamprath

8/17/99

REVISIONS

LEGEND

EXIST. WATER MAIN TO REMAIN

EXIST. WATER MAIN TO BE ABANDONED

PROPOSED WATER MAIN — 8" WL

EXIST. FORCE MAIN TO REMAIN — FSS

EXIST. SEWER MAIN TO REMAIN — SS

PROJECT REFERENCE NO.	SHEET NO.
I-5979	UC-4
R/W SHEET NO.	

WET UTILITIES ENGINEER
11/8/2024
NORTH CAROLINA PROFESSIONAL SEAL 14101 ENGINEER JOHN W. KANIPE, JR.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared by
vhb
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940 Main Campus Drive, Suite 500
Raleigh, NC 27606

UTILITY CONSTRUCTION PLANS

BEGIN TIP PROJECT I-5979
-L- POT STA. 15+50.00
BEGIN MILLING/RESURFACING

NAD 83/NSRS 2011

ADJUST METER BOXES - 2

307 LF OF 6" WATER LINE
DI PC 350

CONNECT TO EXISTING 6" WATER MAIN W/ 6" x 45 DEG. DI BEND -L- STA. 22+96.90, 44.0' RT. -W1- STA. 0+00.00

6" x 45 DEG. DI BEND -L- STA. 23+78.71, 124.4' RT. -W1- STA. 1+14.74

6" x 11.25 DEG. DI BEND -L- STA. 23+81.08, 124.3' RT. -W1- STA. 1+17.12

254 LF OF ABANDON 6" UTILITY PIPE

CONNECT TO EXISTING 6" WATER MAIN W/ 6" x 45 DEG. DI BEND -L- STA. 25+50.84, 49.0' RT. -W1- STA. 3+06.77

6" x 22.5 DEG. DI BEND -L- STA. 24+86.42, 98.3' RT. -W1- STA. 2+25.60

104 LF - BORE & JACK OF 16" STEEL CASING

THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 375 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

MATCHLINE -L- STA. 29+00.00 (SEE SHEET UC-5)

GENERAL NOTES:

1. EXISTING TOPOGRAPHIC SURVEY AND SUE BY OTHERS. CONTRACTOR TO VERIFY ALL UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR TO CONFIRM FINAL CONNECTION POINTS IN FIELD.
2. EXISTING WATER MAIN DEPTHS SHOWN ARE APPROXIMATE BASED ON BEST AVAILABLE INFORMATION. ACTUAL DEPTHS ARE TO BE CONFIRMED IN FIELD.
3. EXISTING WATER MAIN MATERIALS SHOWN ARE BASED ON THE BEST AVAILABLE INFORMATION. CONTRACTOR SHALL PROVIDE PROPER PIPE MATERIAL TRANSITION AT ALL CONNECTIONS IN ACCORDANCE WITH THE REQUIREMENTS OF RICHMOND COUNTY.
4. PRIOR TO COMMENCING ANY WORK ON ANY TRENCHLESS INSTALLATION ON THIS PROJECT, PROVIDE A DESIGN FOR THE TRENCHLESS INSTALLATION CERTIFIED BY AN ENGINEER LICENSED IN THE STATE OF NORTH CAROLINA, AS REQUIRED BY SUBARTICLE 1550-3(B) OF THE STANDARD SPECIFICATIONS.

FOR UTILITY PROFILES SEE SHEET UC-7

INSTALLATION NOTES:

1. ALL WORK ASSOCIATED WITH THE RELOCATION OF WATER MAINS SHALL BE COMPLETED IN ACCORDANCE WITH THE RICHMOND COUNTY WATER SYSTEM STANDARD SPECIFICATIONS AS WELL AS NCDOT'S STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES DATED JANUARY 2024.
2. WATER MAINS UP TO 8 INCHES IN DIAMETER SHALL BE INSTALLED WITH A MINIMUM OF 36 INCHES OF COVER. WATER MAINS 10 INCHES IN DIAMETER AND LARGER SHALL BE INSTALLED WITH A MINIMUM OF 42 INCHES OF COVER.
3. WATER MAINS SHALL BE INSTALLED WITH A MINIMUM OF 24 INCHES HORIZONTAL AND 18 INCHES VERTICAL SEPARATION FROM STORM SEWERS AND OTHER DRY UTILITIES.
4. VERIFY ALL ILLUSTRATED UTILITY CROSSINGS PRIOR TO CONSTRUCTION AND NOTIFY THE ENGINEER IF CONFLICTS ARE ENCOUNTERED.
5. CONTRACTOR SHALL COORDINATE UTILITY RELOCATION OR ABANDONMENT WITH LOCAL UTILITY COMPANIES AS REQUIRED.
6. ALL CONNECTIONS TO EXISTING WATER MAINS SHALL BE MADE WITH A THRUST COLLAR IN ACCORDANCE WITH THE DETAILS OF THESE PLANS.

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LEGEND

EXIST. WATER MAIN TO REMAIN — W —

EXIST. WATER MAIN TO BE ABANDONED — W — (hatched)

PROPOSED WATER MAIN — 6" WL —

EXIST. SEWER MAIN TO REMAIN — SS —

NAD 83/NSRS 2011

PROJECT REFERENCE NO.	SHEET NO.
I-5979	UC-5
R/W SHEET NO.	

WET UTILITIES ENGINEER

12/2/2024

NORTH CAROLINA PROFESSIONAL SEAL 14101 ENGINEER JOHN M. KAMPAKIS

Digitally signed by JOHN M. KAMPAKIS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared by

vhb

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940 Main Campus Drive, Suite 500
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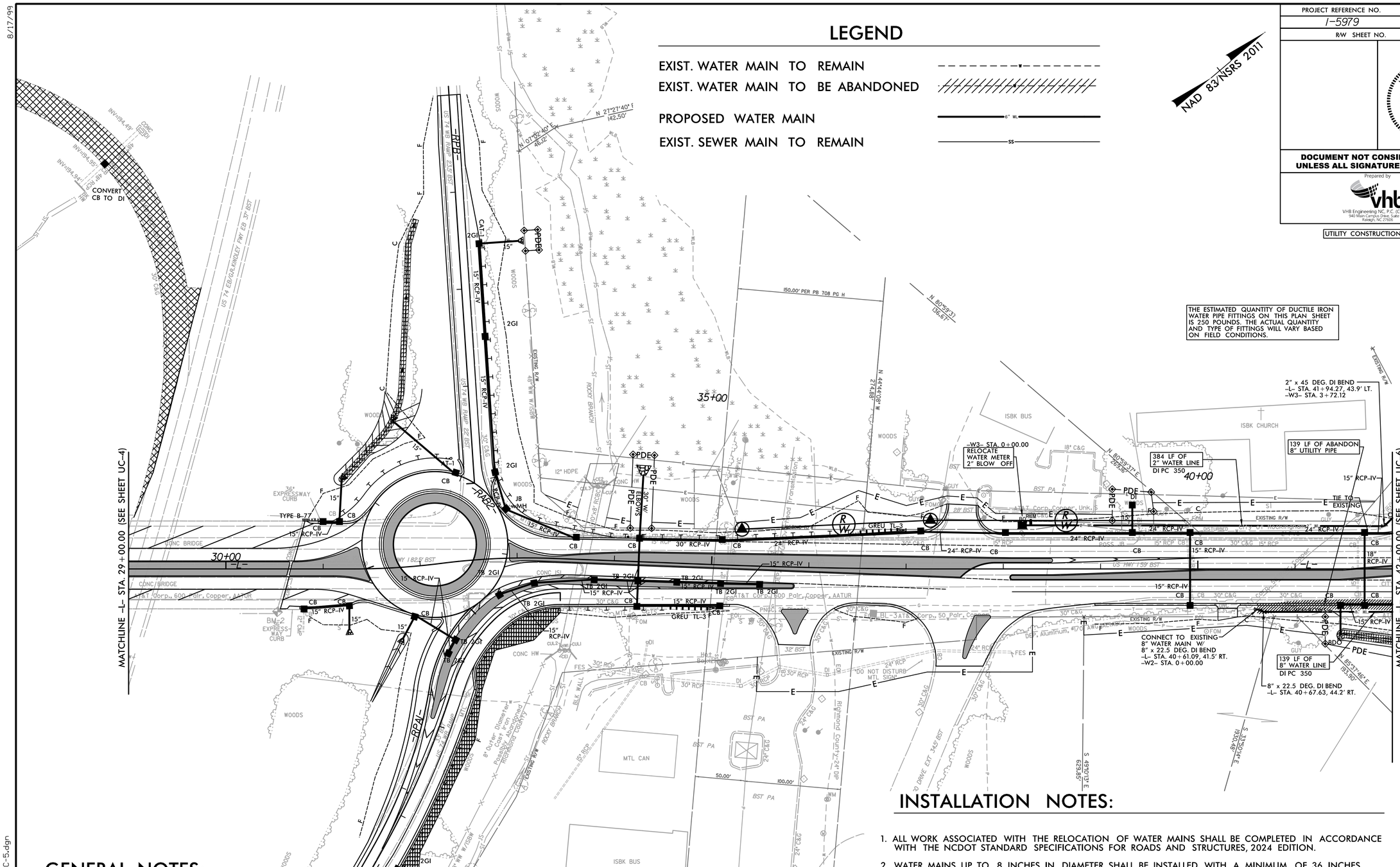
UTILITY CONSTRUCTION PLANS



GENERAL NOTES:

1. EXISTING TOPOGRAPHIC SURVEY AND SUE BY OTHERS. CONTRACTOR TO VERIFY ALL UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR TO CONFIRM FINAL CONNECTION POINTS IN FIELD.
2. EXISTING WATER MAIN DEPTHS SHOWN ARE APPROXIMATE BASED ON BEST AVAILABLE INFORMATION. ACTUAL DEPTHS ARE TO BE CONFIRMED IN FIELD.
3. EXISTING WATER MAIN MATERIALS SHOWN ARE BASED ON THE BEST AVAILABLE INFORMATION. CONTRACTOR SHALL PROVIDE PROPER PIPE MATERIAL TRANSITION AT ALL CONNECTIONS IN ACCORDANCE WITH THE REQUIREMENTS OF THE CITY OF ROCKINGHAM.
4. PRIOR TO COMMENCING ANY WORK ON ANY TRENCHLESS INSTALLATION ON THIS PROJECT, PROVIDE A DESIGN FOR THE TRENCHLESS INSTALLATION CERTIFIED BY AN ENGINEER LICENSED IN THE STATE OF NORTH CAROLINA, AS REQUIRED BY SUBARTICLE 1550-3(B) OF THE STANDARD SPECIFICATIONS.

INSTALLATION NOTES:

1. ALL WORK ASSOCIATED WITH THE RELOCATION OF WATER MAINS SHALL BE COMPLETED IN ACCORDANCE WITH THE NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES, 2024 EDITION.
2. WATER MAINS UP TO 8 INCHES IN DIAMETER SHALL BE INSTALLED WITH A MINIMUM OF 36 INCHES OF COVER. WATER MAINS 10 INCHES IN DIAMETER AND LARGER SHALL BE INSTALLED WITH A MINIMUM OF 42 INCHES OF COVER.
3. WATER MAINS SHALL BE INSTALLED WITH A MINIMUM OF 24 INCHES HORIZONTAL AND 18 INCHES VERTICAL SEPARATION FROM STORM SEWERS AND OTHER DRY UTILITIES.
4. VERIFY ALL ILLUSTRATED UTILITY CROSSINGS PRIOR TO CONSTRUCTION AND NOTIFY THE ENGINEER IF CONFLICTS ARE ENCOUNTERED.
5. CONTRACTOR SHALL COORDINATE UTILITY RELOCATION OR ABANDONMENT WITH LOCAL UTILITY COMPANIES AS REQUIRED.
6. ALL CONNECTIONS TO EXISTING WATER MAINS SHALL BE MADE WITH A THRUST COLLAR IN ACCORDANCE WITH THE DETAILS OF THESE PLANS.

FOR UTILITY PROFILES SEE SHEET UC-7

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mkanor.cib

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5979	UC-6
R/W SHEET NO.	

WET UTILITIES ENGINEER

12/2/2024

NORTH CAROLINA PROFESSIONAL SEAL 14101 ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared by vhb

VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606

UTILITY CONSTRUCTION PLANS

NAD 83/NSRS 2011

LEGEND

EXIST. WATER MAIN TO REMAIN

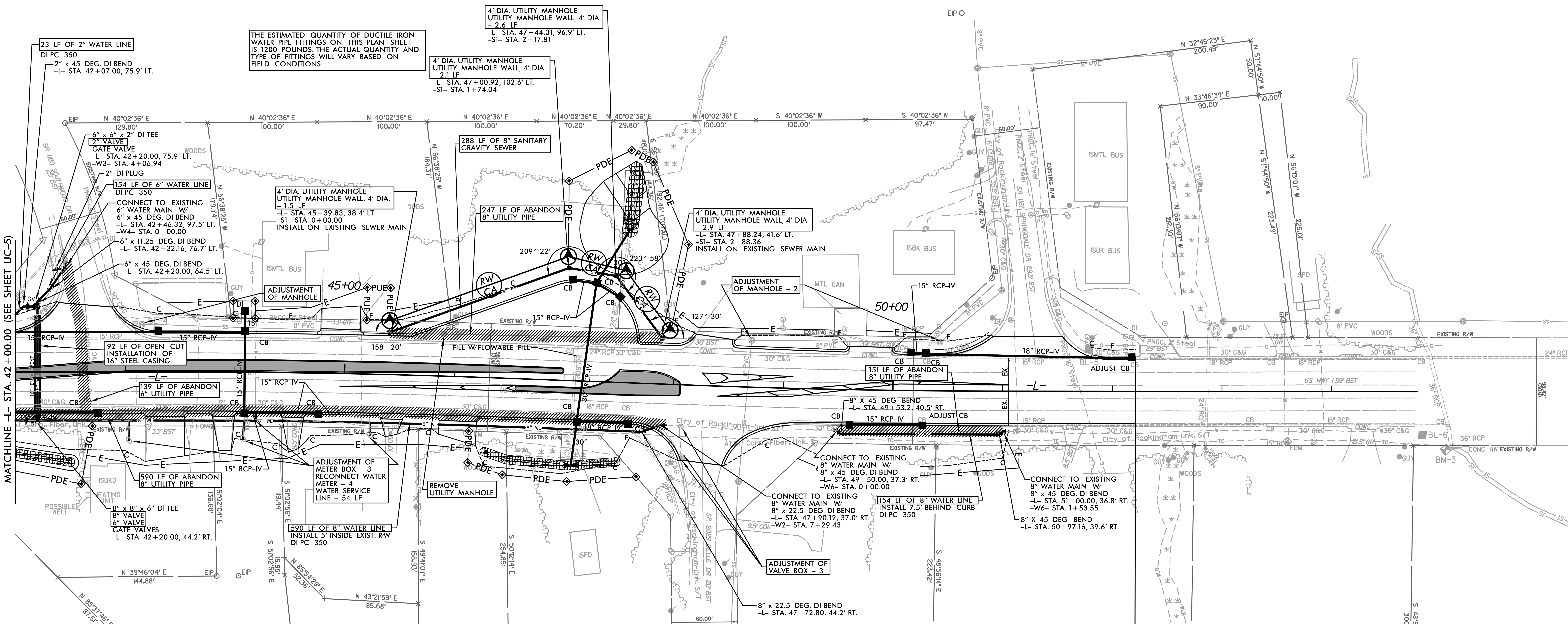
EXIST. WATER MAIN TO BE ABANDONED

PROPOSED WATER MAIN

EXIST. SEWER MAIN TO REMAIN

EXIST. SEWER MAIN TO BE ABANDONED

PROPOSED SEWER MAIN



END TIP PROJECT I-5979

-L- POT STA. 52+21.00

END MILLING/RESURFACING

INSTALLATION NOTES:

1. ALL WORK ASSOCIATED WITH THE RELOCATION OF WATER AND SEWER MAINS SHALL BE COMPLETED IN ACCORDANCE WITH THE NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES, 2024 EDITION.
2. WATER MAINS UP TO 8 INCHES IN DIAMETER SHALL BE INSTALLED WITH A MINIMUM OF 36 INCHES OF COVER. WATER MAINS 10 INCHES IN DIAMETER AND LARGER SHALL BE INSTALLED WITH A MINIMUM OF 42 INCHES OF COVER.
3. WATER MAINS SHALL BE INSTALLED WITH A MINIMUM OF 24 INCHES HORIZONTAL AND 18 INCHES VERTICAL SEPARATION FROM STORM SEWERS AND OTHER DRY UTILITIES.
4. VERIFY ALL ILLUSTRATED UTILITY CROSSINGS PRIOR TO CONSTRUCTION AND NOTIFY THE ENGINEER IF CONFLICTS ARE ENCOUNTERED.
5. CONTRACTOR SHALL COORDINATE UTILITY RELOCATION OR ABANDONMENT WITH LOCAL UTILITY COMPANIES AS REQUIRED.
6. ALL CONNECTIONS TO EXISTING WATER MAINS SHALL BE MADE WITH A THRUST COLLAR IN ACCORDANCE WITH THE DETAILS OF THESE PLANS.

FOR UTILITY PROFILES SEE SHEETS UC-7 & UC-8

GENERAL NOTES:

1. EXISTING TOPOGRAPHIC SURVEY AND SUE BY OTHERS. CONTRACTOR TO VERIFY ALL UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR TO CONFIRM FINAL CONNECTION POINTS IN FIELD.
2. EXISTING WATER MAIN DEPTHS SHOWN ARE APPROXIMATE BASED ON BEST AVAILABLE INFORMATION. ACTUAL DEPTHS ARE TO BE CONFIRMED IN FIELD.
3. EXISTING WATER MAIN MATERIALS SHOWN ARE BASED ON THE BEST AVAILABLE INFORMATION. CONTRACTOR SHALL PROVIDE PROPER PIPE MATERIAL TRANSITION AT ALL CONNECTIONS IN ACCORDANCE WITH THE REQUIREMENTS OF THE CITY OF ROCKINGHAM.
4. PRIOR TO COMMENCING ANY WORK ON ANY TRENCHLESS INSTALLATION ON THIS PROJECT, PROVIDE A DESIGN FOR THE TRENCHLESS INSTALLATION CERTIFIED BY AN ENGINEER LICENSED IN THE STATE OF NORTH CAROLINA, AS REQUIRED BY SUBARTICLE 1550-3(B) OF THE STANDARD SPECIFICATIONS.

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mkamprath

5/28/99

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UTILITY CONSTRUCTION PLANS

PROJECT REFERENCE NO.	SHEET NO.
I-5979	UC-7

WET UTILITIES ENGINEER
DocuSigned by:
JOHN M. KAMPRATH
NORTH CAROLINA PROFESSIONAL SEAL 14101 ENGINEER JOHN M. KAMPRATH
5/31/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-W1-

RPD= STA. 10+25.00
@ ELEV. = 244.2'

EXIST. 6" DI WATER MAIN
PROP. 15" RCP
1.5' MIN. SEPARATION
3' MIN. COVER TYP.
PROP. 15" RCP
18" ENCASEMENT
1.5' MIN. SEPARATION
PROPOSED 18" RCP
EXIST. 6" DI WATER MAIN
3' MIN. COVER (TYP.)
6" DI PC 350 WATER MAIN

STA. 0+00.00 -W1-
CONNECT TO EXIST. 6" DI WATER MAIN W/45 DEG. BEND
6" DI PC 350 WATER MAIN
EXIST. 42" RCP
STA. 1+14.74 -W1-
6" x 45 DEG. BEND
STA. 1+17.12 -W1-
BEGIN 16" STEEL ENCASEMENT
BORE AND JACK OF 103.4' +/- OF 16" STEEL ENCASEMENT PIPE 0.250-INCH WALL THICKNESS EXTEND 5' BEYOND TOES OF SLOPE
STA. 2+20.72 -W1-
END 16" STEEL ENCASEMENT
STA. 2+25.66 -W1-
6" x 22.5 DEG. BEND
STA. 3+06.77 -W1-
CONNECT TO EXIST. 6" DI WATER MAIN W/45 DEG. BEND

FOR PLAN VIEW SEE SHEET UC-4

-W2-

EXISTING GRADE
PROPOSED GRADE
EXIST. 8" PVC WATER MAIN
3' MIN. COVER (TYP.)
1.5' MIN. SEP.
PROPOSED 15" CMP
8" DI PC 350 WATER MAIN
PROP. 30" RCP
PROP. 8" RCP
EXIST. 8" PVC WATER MAIN
3' MIN. COVER (TYP.)
1.5' MIN. SEP.

STA. 0+07.08 -W2-
8" x 22.5 DEG. BEND
8" GATE VALVE
STA. 0+00.00 -W2-
CONNECT TO EXIST. 8" PVC WATER MAIN W/22.5 DEG. BEND
STA. 1+52.27 -W2-
STA. 1+59.47 -W2-
8" x 8" x 4" TEE
STA. 7+10.67 -W2-
8" x 22.5 DEG. BEND
STA. 7+29.43 -W2-
CONNECT TO EXIST. 8" PVC WATER MAIN W/22.5 DEG. BEND

FOR PLAN VIEW SEE SHEETS UC-5 & UC-6

-W3-

EXISTING GRADE
3' MIN. COVER (TYP.)
1.5' MIN. SEPARATION
15" RCP
2" DI PC 350 WATER MAIN
STA. 4+06.94 -W3-
2" GATE VALVE W/VALVE EXTENSION STEM
PROPOSED GRADE
EXISTING 15" RCP
1.5' MIN. SEPARATION
STA. 4+06.94 -W3-
6" x 6" x 2" TEE
STA. 3+72.12 -W3-
2" X 45 DEG. BEND
STA. 3+94.27 -W3-
2" X 45 DEG. BEND

STA. 0+00.00 -W3-
BEGIN WATER MAIN AT 2" BLOW OFF

FOR PLAN VIEW SEE SHEETS UC-5 & UC-6

-W4-

STA. 0+42.39 -W4-
6" x 45 DEG. BEND
EXISTING 6" GATE VALVE
3' MIN. COVER (TYP.)
PROP. GRADE
EXIST. GRADE
EXISTING 6" WATER MAIN
PROP. 15" RCP
1.5' MIN. SEP.
1.0' MIN. SEP.
PROP. 15" RCP
STA. 0+00.00 -W4-
CONNECT TO EXISTING 6" PVC WATER MAIN W/ 6" x 22.5 DEG. BEND
6" DI PC 350 WATER MAIN
STA. 1+47.92 -W4-
END 16" STEEL ENCASEMENT
STA. 1+53.80 -W4-
6" x 6" x 6" TEE
STA. 0+47.25 -W4-
6" x 6" x 2" TEE
STA. 0+64.16 -W4-
BEGIN 16FT STEEL ENCASEMENT WALL THICKNESS = 0.250"
INSTALL BY OPEN CUT OF 91.8' +/- 16" STEEL ENCASEMENT PIPE 0.250 INCH WALL THICKNESS EXTEND 3' BEYOND BACK OF CURB
STA. 1+51.10 -W4-
6" GATE VALVE

FOR PLAN VIEW SEE SHEET UC-6

BM#2
EXISTING NCGS MONUMENT ON NE CORNER OF BRIDGE IN HEADWALL
F.I.F.V.=233.83'
-L- STA 30+53, 44' RT

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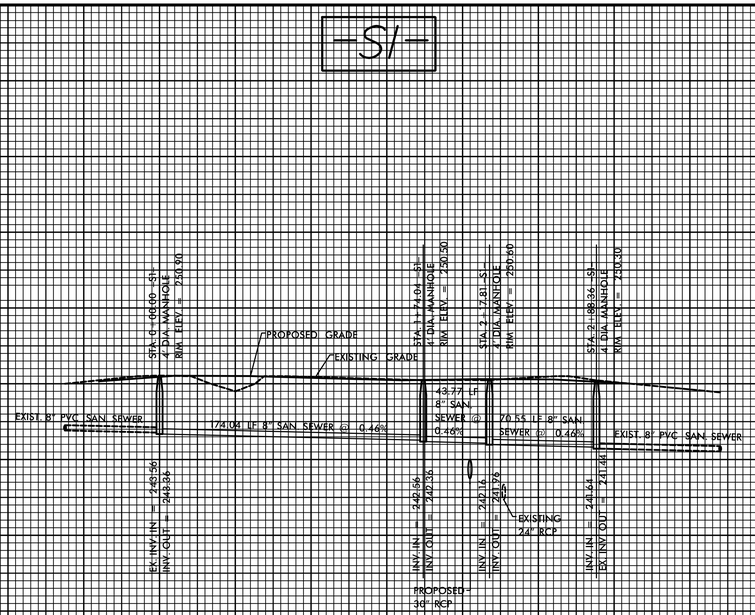
mkamprath

5/28/99



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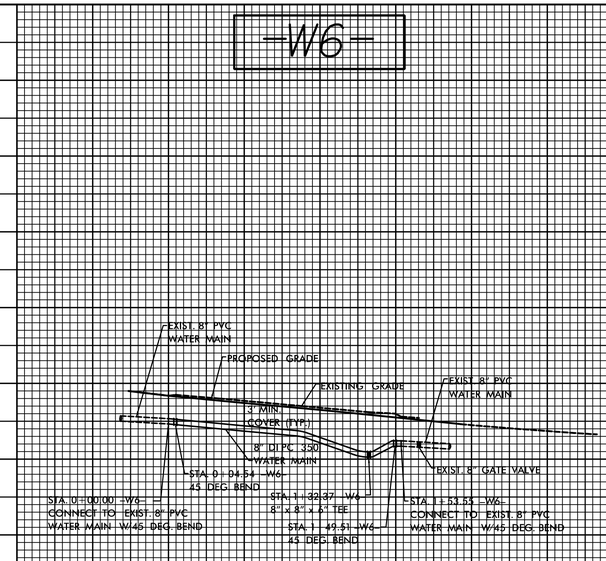

FOR -W6- PLAN SEE SHEET UC-6

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UTILITY CONSTRUCTION PLANS

PROJECT REFERENCE NO.	SHEET NO.
I-5979	UC-8

WET UTILITIES ENGINEER

3/27/2024

NORTH CAROLINA PROFESSIONAL SEAL 41401 ENGINEER JOHN M. KAMPMEIER

Electronically signed by JOHN M. KAMPMEIER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED