

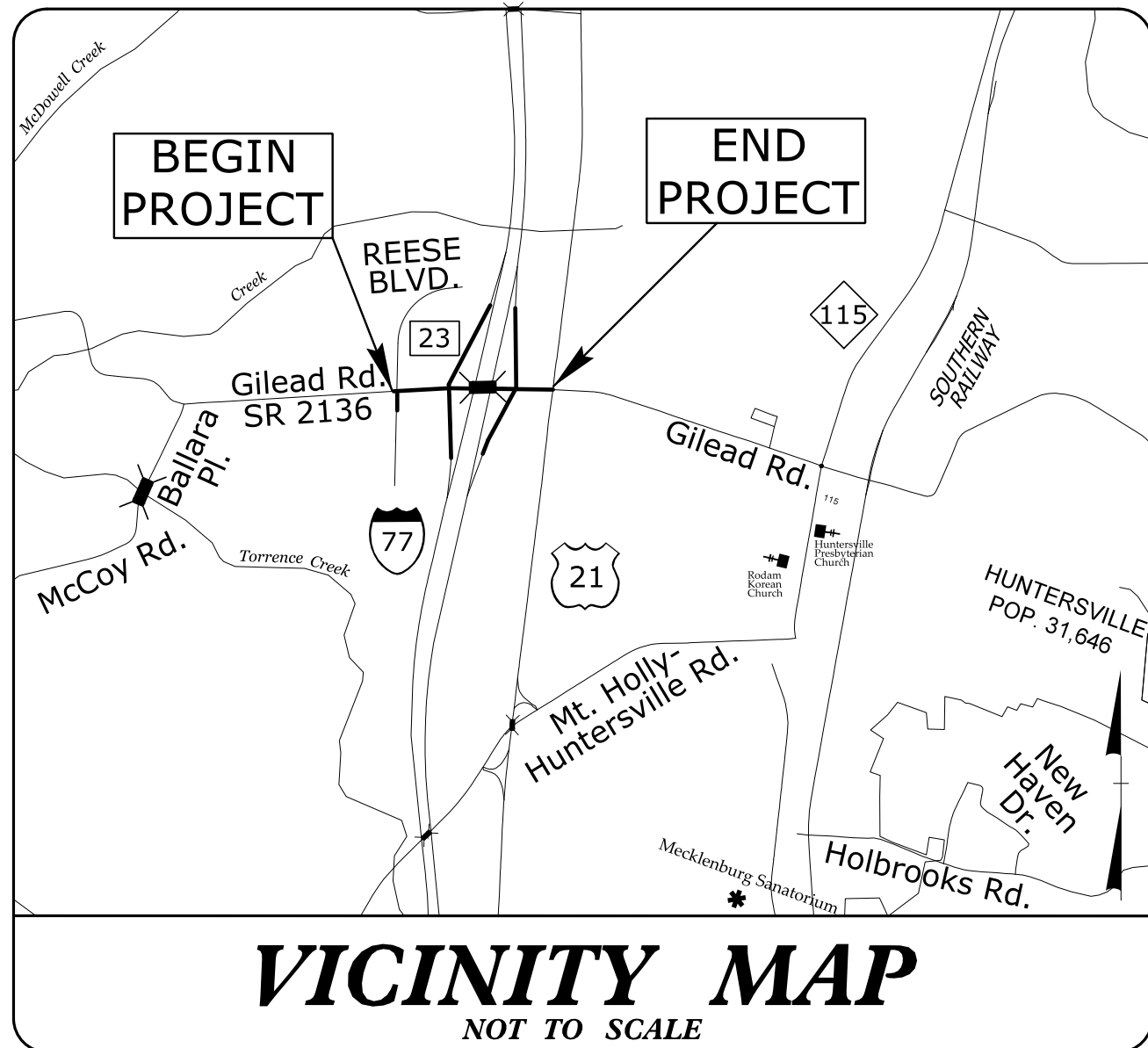
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TIP PROJECT: I-5714

T.I.P. NO.	SHEET NO.
I-5714	UC-1

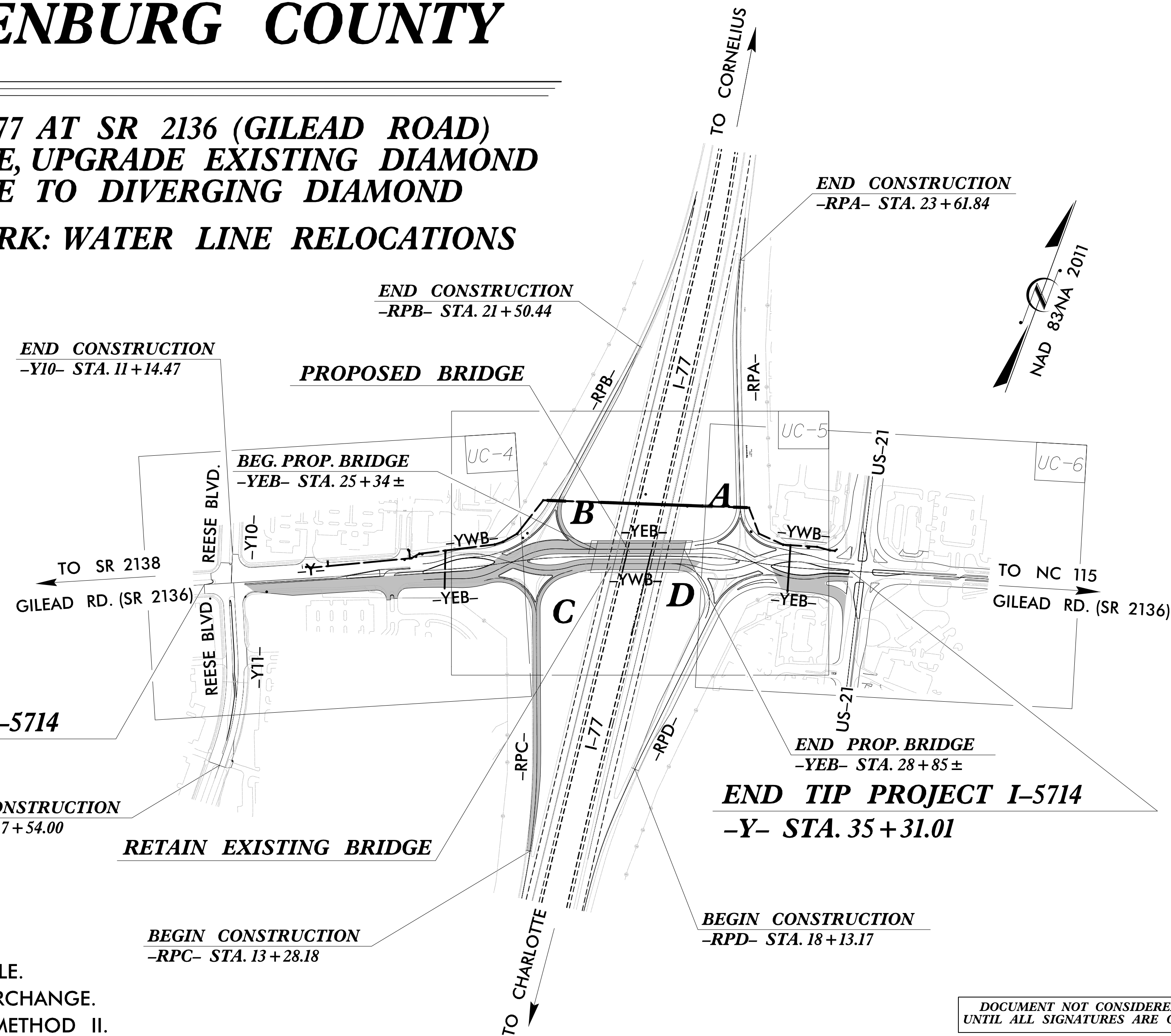


FINAL PLANS

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

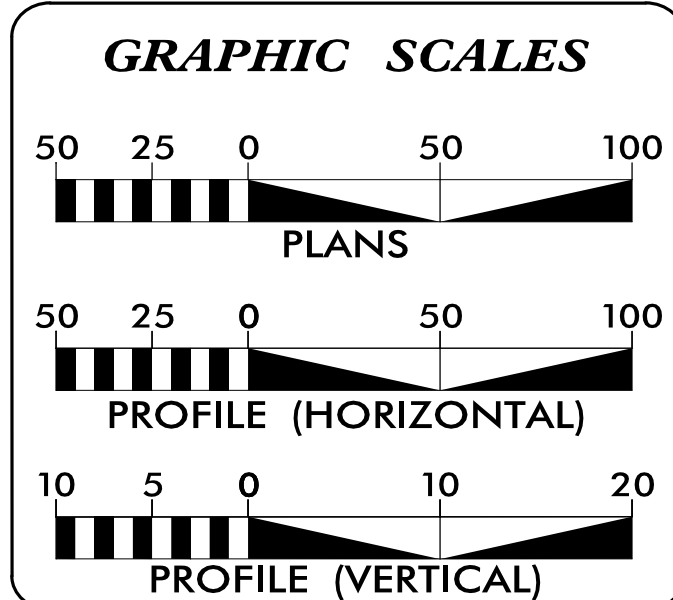
UTILITY CONSTRUCTION PLANS MECKLENBURG COUNTY

LOCATION: I-77 AT SR 2136 (GILEAD ROAD) INTERCHANGE, UPGRADE EXISTING DIAMOND INTERCHANGE TO DIVERGING DIAMOND TYPE OF WORK: WATER LINE RELOCATIONS



THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE TOWN OF HUNTERSVILLE. THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO THE INTERCHANGE. CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

DOCUMENT NOT CONSIDERED FINAL UNTIL ALL SIGNATURES ARE COMPLETED



SHEET NO.:	DESCRIPTION:
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLOGY
UC-3	NOTES
UC-3A	PERMIT APPLICATION
UC-3B THRU UC-3E	DETAILS
UC-4 THRU UC-6	UTILITY CONSTRUCTION SHEETS
UC-7	PROFILE SHEET

WATER AND SEWER OWNERS ON PROJECT

- (A) WATER - CHARLOTTE WATER
- (B) SANITARY SEWER - CHARLOTTE WATER

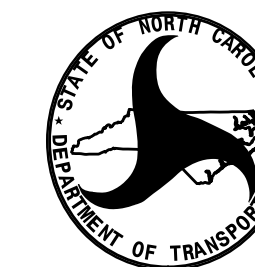
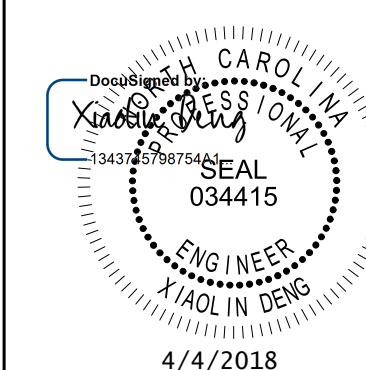
PREPARED IN THE OFFICE OF



STV Engineers, Inc. 800 West Trade St., Suite 715 Charlotte, NC 28202 NC License Number F-0991 (704) 372-1885 FAX: (704) 372-3393

MARTIN DENG, PE	CONSULTANT CONTACT #1
-	CONSULTANT CONTACT #2
-	CONSULTANT CONTACT #3


SEAL



DIVISION OF HIGHWAYS UTILITIES UNIT 1555 MAIL SERVICES CENTER RALEIGH, NC 27699-1555 PHONE (919) 707-6690 FAX (919) 250-4151

MICHAEL BRIGHT	UTILITIES REGIONAL ENGINEER
MICHAEL BRIGHT	UTILITIES ENGINEER
AMY DUPREE	UTILITIES AREA COORDINATOR
GREG SEALY	UTILITIES COORDINATOR

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. I-5714	SHEET NO. UC-2
 STV Engineers, Inc. 900 West Trade St., Suite 715 Charlotte, NC 28202 NC License Number F-0991	

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

Water Line (Sized as Shown)	_____
11¼ Degree Bend	++
22½ Degree Bend	+X
45 Degree Bend	+X
90 Degree Bend	+†
Plug	⊥
Tee	⊕
Cross	⊕
Reducer	▶
Gate Valve	GV
Butterfly Valve	BV
Tapping Valve	TGV
Line Stop	LS
Line Stop with Bypass	LS/BP
Blow Off	BO
Fire Hydrant	PFH
Relocate Fire Hydrant	RFH
Remove Fire Hydrant	REM FH
Water Meter	PWM
Relocate Water Meter	RWM
Remove Water Meter	REM WM
Water Pump Station	PST(W)
RPZ Backflow Preventer	PRPZ
DCV Backflow Preventer	PBFP
Relocate RPZ Backflow Preventer	RRPZ
Relocate DCV Backflow Preventer	RBFP

PROPOSED SEWER SYMBOLS

Gravity Sewer Line (Sized as Shown)	_____
Force Main Sewer Line (Sized as Shown)	_____
Manhole (Sized per Note)	•
Sewer Pump Station	PST(SS)

PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

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

Thrust Block	⊥
Air Release Valve	AR
Utility Vault	UV
Concrete Pier	CP
Steel Pier	SP
Plan Note	NOTE
Pay Item Note	PAY ITEM

EXISTING UTILITIES SYMBOLS

Power Pole	•	*Underground Power Line	_____
Telephone Pole	•-	*Underground Telephone Cable	_____
Joint Use Pole	•-	*Underground Telephone Conduit	_____
Utility Pole	•	*Underground Fiber Optics Telephone Cable	_____
Utility Pole with Base	□	*Underground TV Cable	_____
H-Frame Pole	•—•	*Underground Fiber Optics TV Cable	_____
Power Transmission Line Tower	⊠	*Underground Gas Pipeline	_____
Water Manhole	⊙	Aboveground Gas Pipeline	_____ A/G Gas
Power Manhole	⊙	*Underground Water Line	_____
Telephone Manhole	⊙	Aboveground Water Line	_____ A/G Water
Sanitary Sewer Manhole	⊙	*Underground Gravity Sanitary Sewer Line	_____
Hand Hole for Cable	⊠	Aboveground Gravity Sanitary Sewer Line	_____ A/G Sanitary Sewer
Power Transformer	⊠	*Underground SS Forced Main Line	_____
Telephone Pedestal	⊠	Underground Unknown Utility Line	_____
CATV Pedestal	⊠	SUE Test Hole	⊙
Gas Valve	◇	Water Meter	⊙
Gas Meter	◇	Water Valve	⊙
Located Miscellaneous Utility Object	⊙	Fire Hydrant	◇
Abandoned According to Utility Records	AATUR	Sanitary Sewer Cleanout	⊙
End of Information	E.O.I.		

*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 NC DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2018.

2. THE EXISTING UTILITIES BELONG TO CHARLOTTE 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. THE UTILITY OWNER OWNS THE EXISTING UTILITY FACILITIES AND WILL OWN THE NEW UTILITY FACILITIES AFTER ACCEPTANCE BY THE DEPARTMENT. THE DEPARTMENT OWNS THE CONSTRUCTION CONTRACT AND HAS ADMINISTRATIVE AUTHORITY. COMMUNICATIONS AND DECISIONS BETWEEN THE CONTRACTOR AND UTILITY OWNER ARE NOT BINDING UPON THE DEPARTMENT OR THIS CONTRACT UNLESS AUTHORIZED BY THE ENGINEER. AGREEMENTS BETWEEN THE UTILITY OWNER AND CONTRACTOR FOR THE WORK THAT IS NOT PART OF THIS CONTRACT OR IS SECONDARY TO THIS CONTRACT ARE ALLOWED, BUT ARE NOT BINDING UPON THE DEPARTMENT.

5. 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.

6. 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.

7. 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.

8. 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.

9. 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. ALL PROPOSED 16" WATER LINE TO BE DUCTILE IRON PIPE PC250 RESTRAINED JOINT. ALL OTHER PROPOSED WATER LINE TO BE DUCTILE IRON PIPE PC350 RESTRAINED JOINT UNLESS OTHERWISE INDICATED.

2. CONTRACTOR'S ATTENTION IS DIRECTED TO SECTIONS 102, 107, AND 1550 OF THE STANDARD SPECIFICATIONS CONCERNING TRENCHLESS INSTALLATION. IT IS CONTRACTOR'S RESPONSIBILITY TO HAVE BORE DESIGNED AND SEALED BY A LICENSED NORTH CAROLINA PROFESSIONAL ENGINEER.

3. WELL IN ADVANCE OF BEGINNING UTILITY WORK, SOFT DIGS SHALL BE PERFORMED BY CONTRACTOR TO VERIFY ACTUAL WATER LINE DEPTH AND MATERIAL AT PROPOSED TIE-IN LOCATIONS.

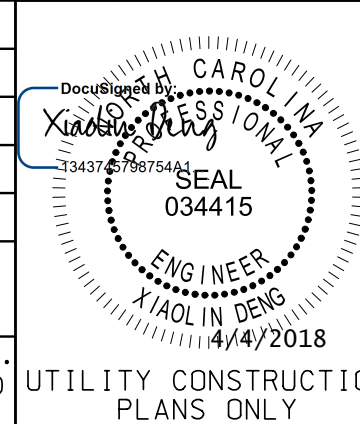

4. LAY PIPE STRAIGHT IN ALIGNMENT AND GRADIENT OR FOLLOW TRUE CURVES AS NEARLY AS POSSIBLE. DO NOT DEFLECT ANY JOINT MORE THAN THE MAXIMUM DEFLECTION RECOMMENDED BY THE MANUFACTURER.

5. CONTRACTOR SHALL ADHERE TO SECTION 1530 "ABANDON OR REMOVE UTILITIES" FOR ABANDONMENT OF EXISTING 12" WATER LINE.

6. PRIOR TO THE START OF PROJECT, CONTRACTOR MUST CONTACT BILL DEAL OF CHARLOTTE WATER AT 980-722-0786. CHARLOTTE WATER MAY INSPECT THE WORK AT ANY TIME.

7. NO INTERRUPTION OF EXISTING WATER SERVICE SHALL BE MADE DURING CONSTRUCTION UNTIL AUTHORIZED BY CHARLOTTE WATER. CHARLOTTE WATER WILL BE COPIED ON BOTH THE WATER MAIN PRESSURE TEST REPORT AND THE WATER MAIN CHLORINATION TEST REPORT.

8. CONTRACTOR SHALL COORDINATE SHUTDOWN OF 12" WATER LINE MINIMUM OF 72 HOURS IN ADVANCE WITH CHARLOTTE WATER (BILL DEAL, 980-722-0786). CONTRACTOR SHALL COMPLETE TIE-INS WITHIN 8-HOUR WORKDAY.

PROJECT REFERENCE NO. I-5714	SHEET NO. UC-3
DESIGNED BY: XMD	
DRAWN BY: LNS	
CHECKED BY: ASV	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	
 STV Engineers, Inc. 900 West Trade St., Suite 715 Charlotte, NC 28202 NC License Number F-0991	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

PERMIT APPLICATION

APPLICATION FOR PERMIT FOR WATER MAIN EXTENSION

PROJECT NAME: NCDOT TIP PROJECT: I-5714
I-77 AT SR 2136 (GILEAD ROAD) INTERCHANGE

CLTWater PROJECT NO.: 7030600038-18-027

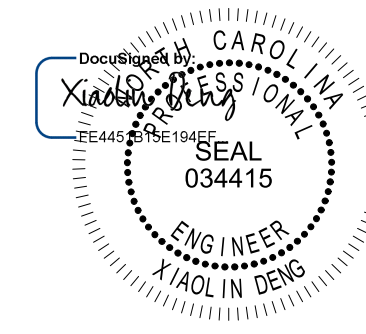
PROJECT DESCRIPTION: APPROX. 2281 LF 16" WATER LINE

DESIGNED BY: FIRM: STV ENGINEERS, INC.
ENGINEER: XIALOLIN DENG, PE
ADDRESS: 900 WEST TRADE STREET, SUITE 715
CHARLOTTE, NORTH CAROLINA 28202-1144
PHONE: (704)372-1885

THIS APPLICATION IS MADE UNDER AND IN FULL ACCORD WITH THE PROVISIONS OF CHAPTER 130A-317 OF THE NORTH CAROLINA GENERAL STATUTES, AND SUCH OTHER STATUTES AS RELATED TO PUBLIC WATER SYSTEMS. CLTWater HAS BEEN GRANTED AUTHORITY TO ISSUE PERMITS FOR EXTENSION OF WATER MAINS PURSUANT TO 15A NCAC 18C.1801. THE APPLICANT AGREES THAT NO SIGNIFICANT CHANGE OR DEVIATION FROM THE PLANS AND SPECIFICATIONS APPROVED BY CLTWater WILL BE MADE WITHOUT THE WRITTEN CONSENT AND APPROVAL OF CLTWater OR ITS AUTHORIZED REPRESENTATIVE. A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF NORTH CAROLINA SHALL SUBMIT A STATEMENT REFLECTING THAT ADEQUATE OBSERVATIONS DURING AND UPON COMPLETION OF CONSTRUCTION INDICATES THAT CONSTRUCTION WAS COMPLETED IN ACCORDANCE WITH APPROVED PLANS AND SPECIFICATIONS.

PERMIT NO. _____
APPROVED: _____ DATE _____

JOSEPH C WILSON, PE, CHIEF ENGINEER
CHARLOTTE WATER
5100 BROOKSHIRE BLVD.
CHARLOTTE, NORTH CAROLINA 28216

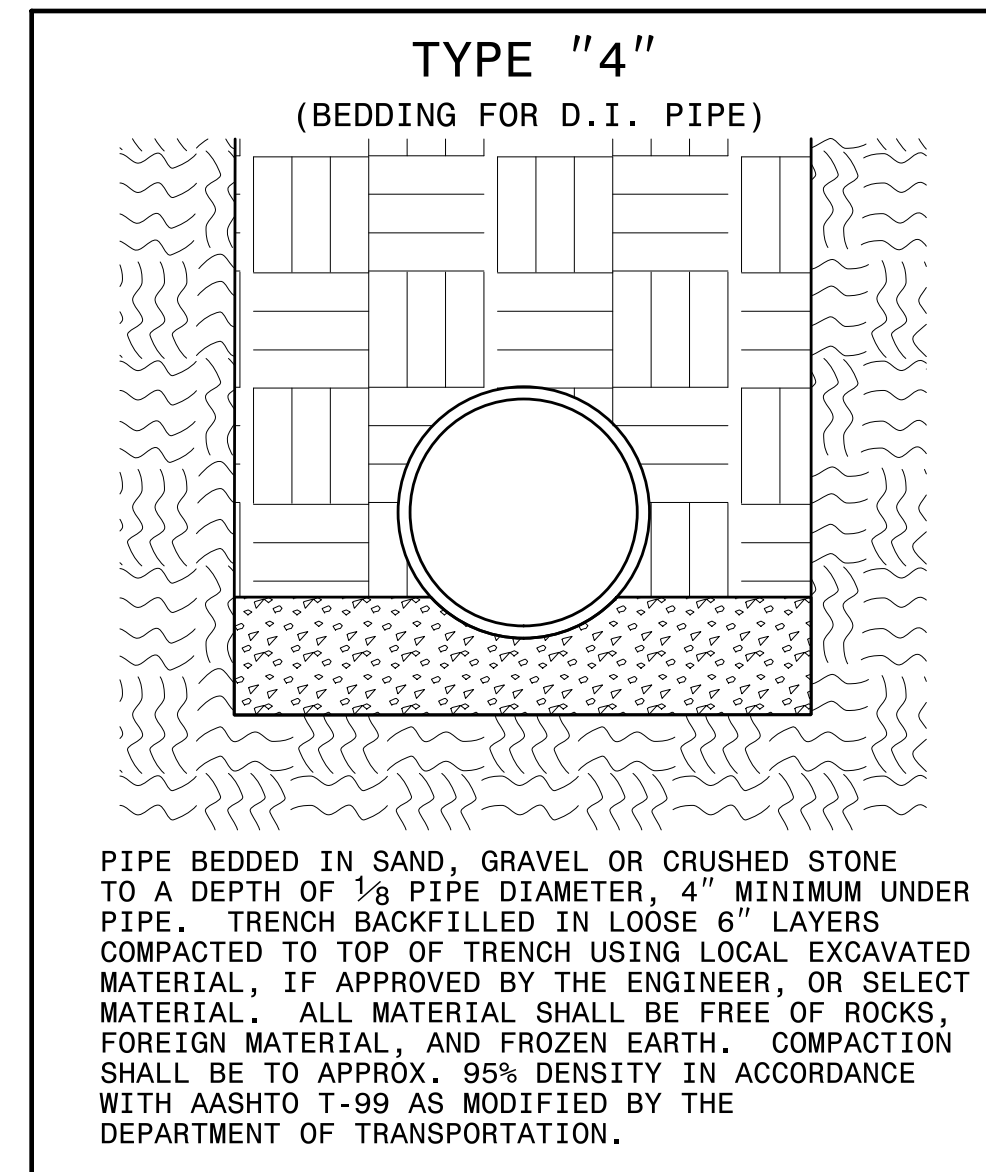


4/11/2018

PROJECT REFERENCE NO.	SHEET NO.
I-5714	UC-3A
DESIGNED BY: XMD	
DRAWN BY: LNS	
CHECKED BY: ASV	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	UTILITY CONSTRUCTION PLANS ONLY
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UTILITY CONSTRUCTION	
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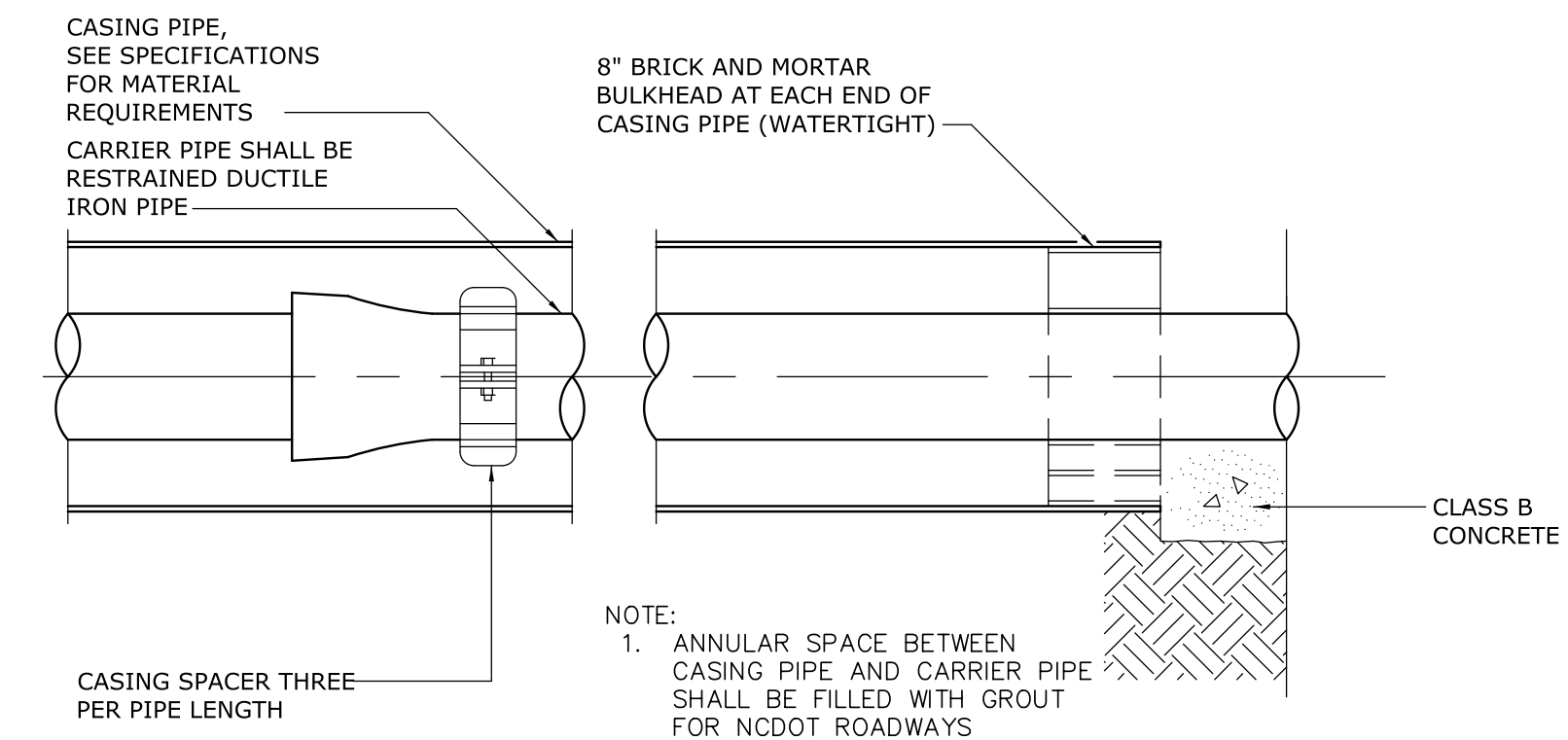
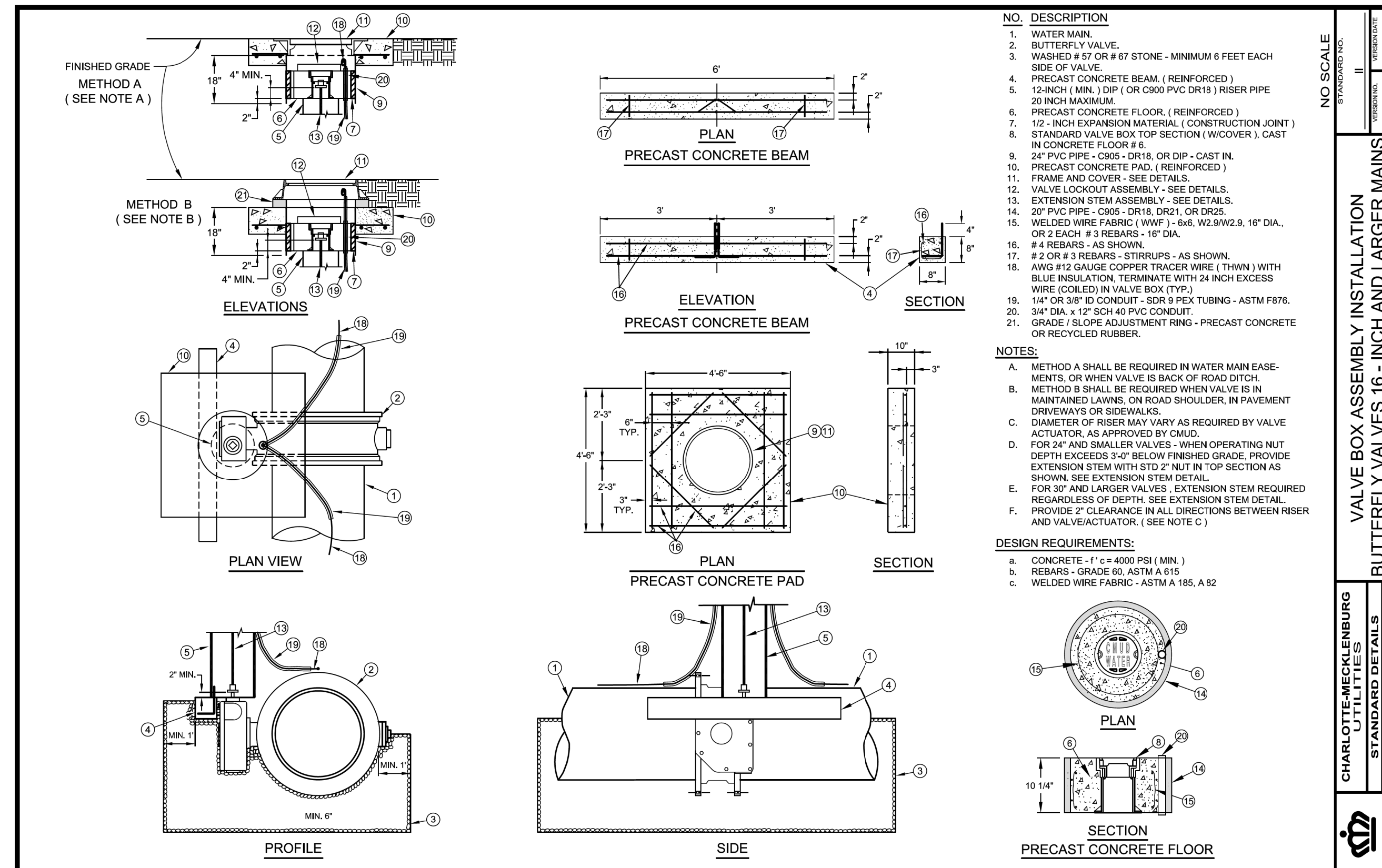
PROJECT REFERENCE NO.	SHEET NO.
I-5714	UC-3B
DESIGNED BY: XMD	
DRAWN BY: LNS	
CHECKED BY: ASV	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY
UTILITY CONSTRUCTION	
STV Engineers, Inc. 900 West Trade St., Suite 715 Charlotte, NC 28202 NC License Number F-0991	
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PROJECT TYPICAL DETAILS

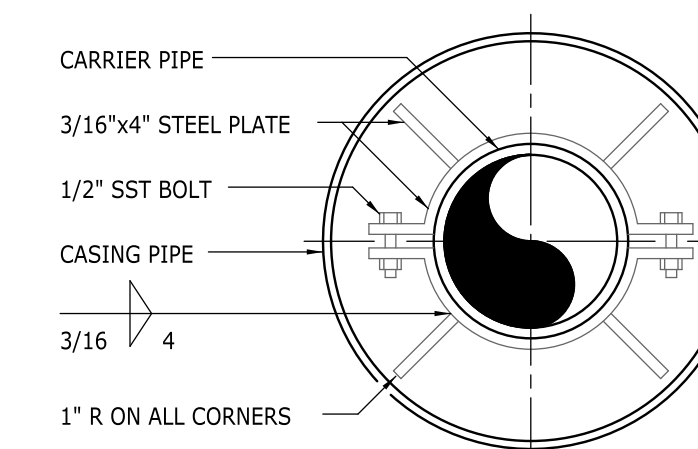


MAXIMUM TRENCH WIDTH AT TOP OF PIPE			
NOMINAL PIPE SIZE (INCHES)	TRENCH WIDTH (INCHES)	NOMINAL PIPE SIZE (INCHES)	TRENCH WIDTH (INCHES)
4	28	20	44
6	30	24	48
8	32	30	54
10	34	36	60
12	36	42	66
14	38	48	72
16	40	54	78
18	42		

CHARLOTTE WATER DETAILS



TYPICAL CASING FOR BORE/TUNNEL FOR NCDOT/CDOT ROADWAYS



CASING SPACER

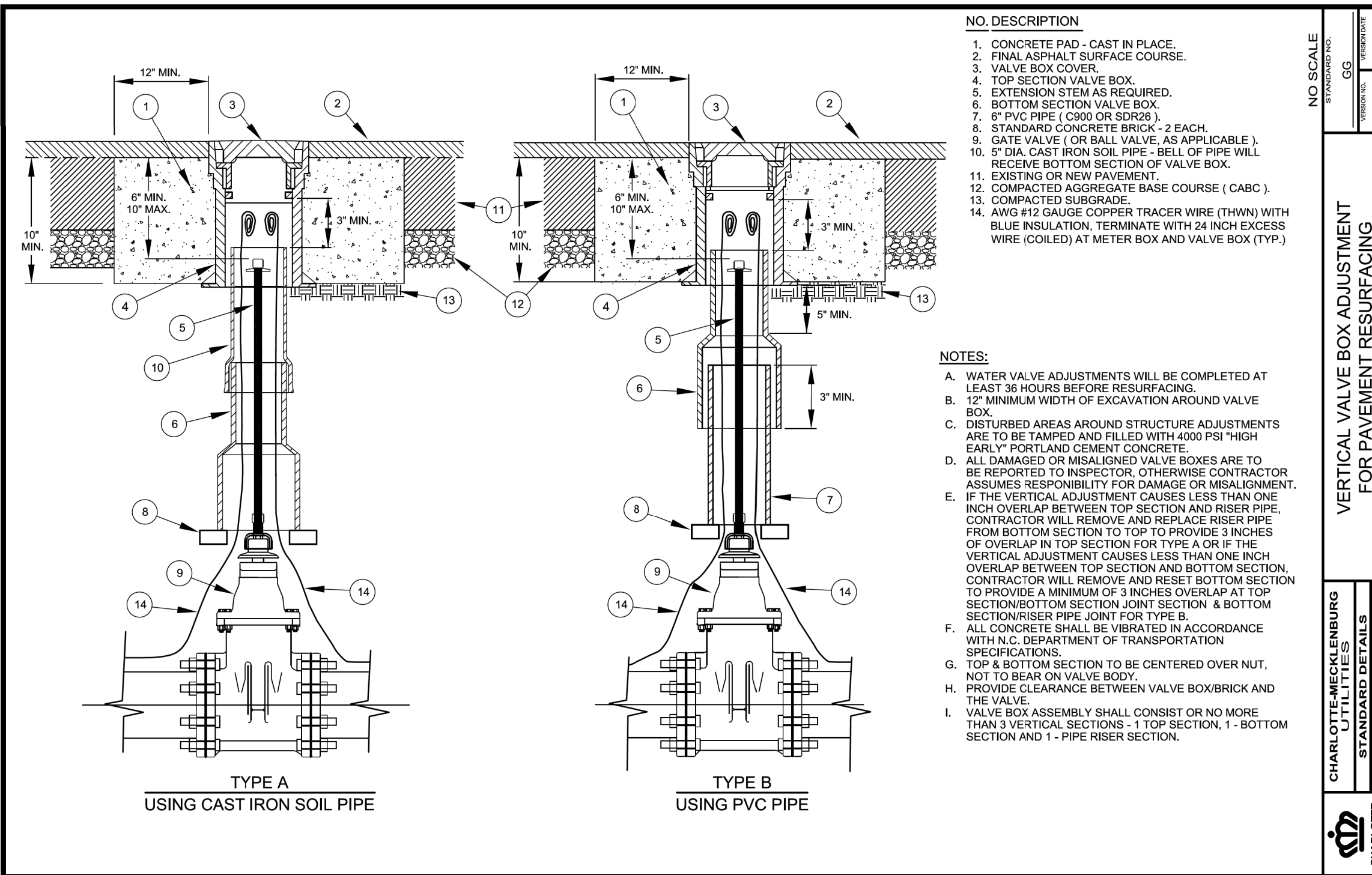
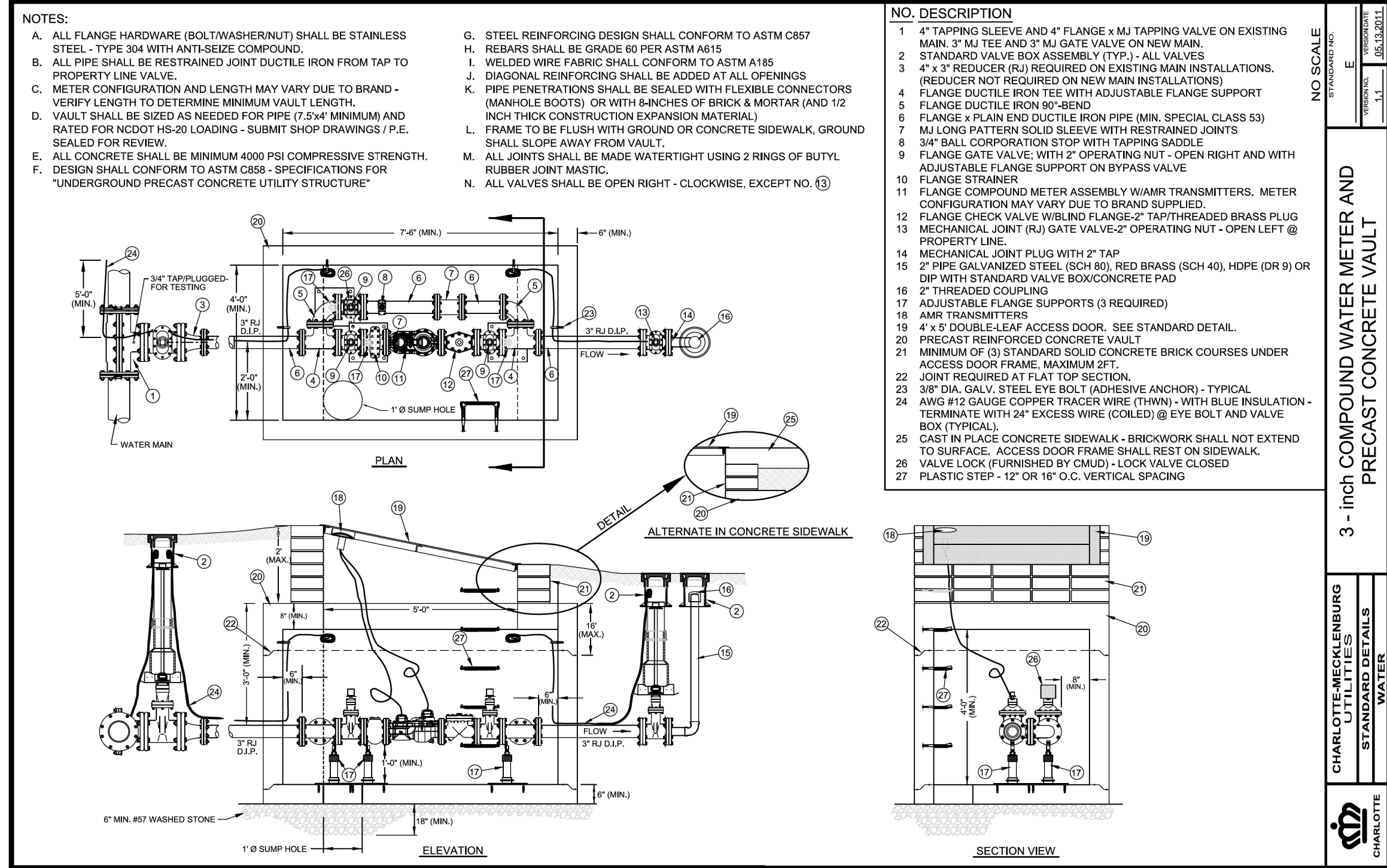
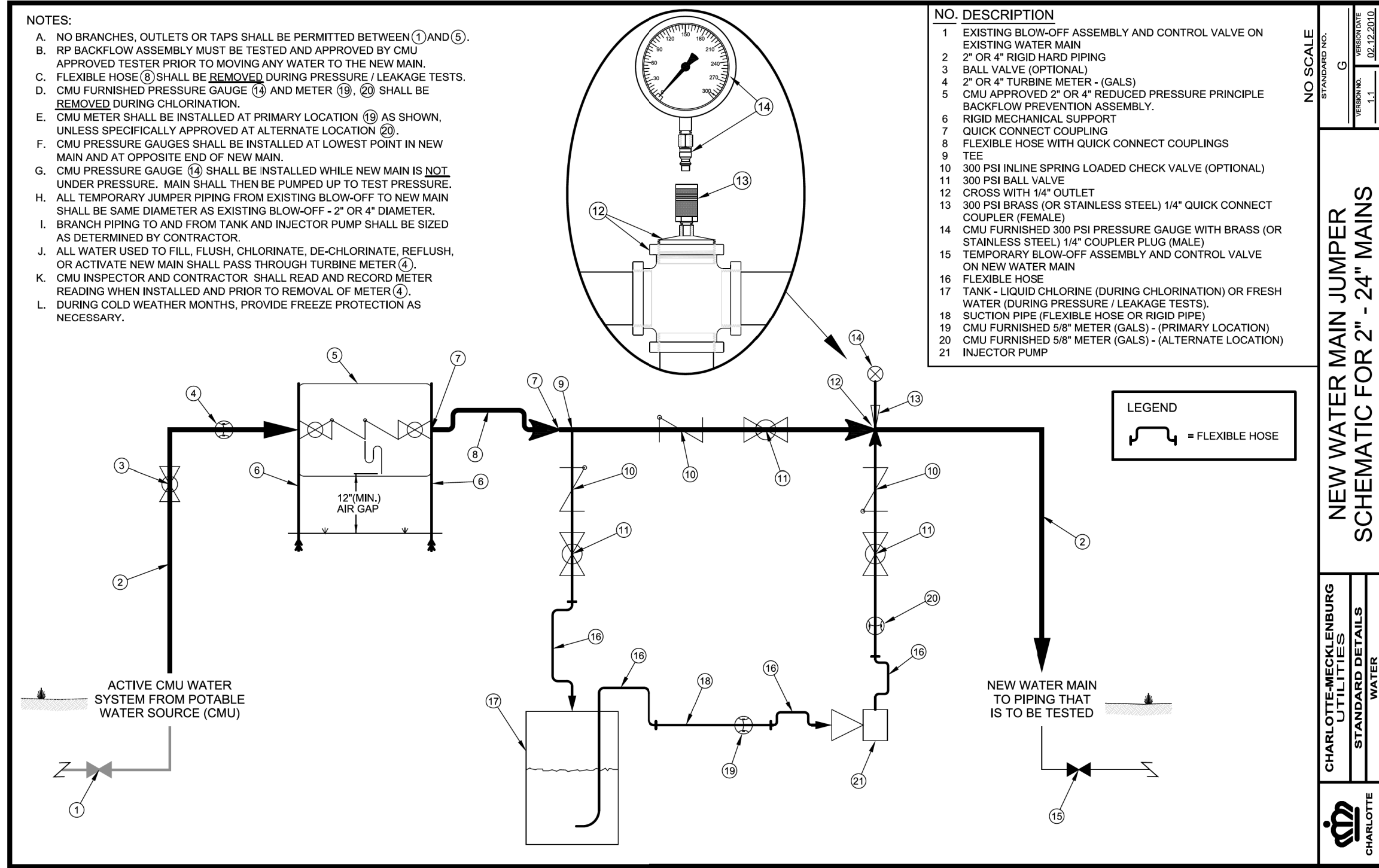
CHARLOTTE WATER DETAILS

PROJECT REFERENCE NO.	SHEET NO.
I-5714	UC-3C
DESIGNED BY: XMD	
DRAWN BY: LNS	
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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

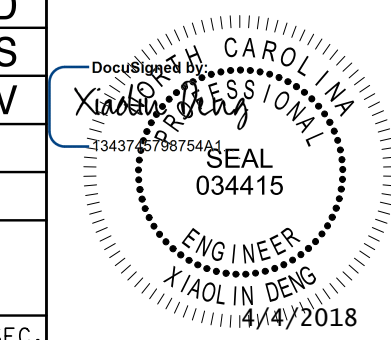
STV 100 Years
 STV Engineers, Inc.
 300 West Trade St., Suite 715
 Charlotte, NC 28202
 NC License Number F-0991

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CHARLOTTE WATER DETAILS

PROJECT REFERENCE NO.	SHEET NO.
I-5714	UC-3D
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UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	



UTILITY CONSTRUCTION

STV 100 Years STV Engineers, Inc.
300 West Trade St., Suite 715
Charlotte, NC 28202
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CMUD PUBLIC FIRE HYDRANTS

PRIVATE FIRE HYDRANTS

FIRE HYDRANT CLASSIFICATION	BARREL	SQUARE TOP (NO NUT)	STIRZ PUMPER NOZZLE	IRON PUMPER NOZZLE	IRON HOSE NOZZLE
1-FIRE PROTECTION	OSHA SAFETY YELLOW	OSHA SAFETY YELLOW	NOT PAINTED	OSHA SAFETY YELLOW	OSHA SAFETY YELLOW
2-IR RELEASE	OSHA SAFETY BLUE	OSHA SAFETY BLUE	NOT PAINTED	OSHA SAFETY BLUE	OSHA SAFETY BLUE
3-BLOW-OFF	OSHA SAFETY BLUE	OSHA SAFETY BLUE	NOT PAINTED	OSHA SAFETY BLUE	OSHA SAFETY BLUE
4-REUSE/RECLAIM	OSHA SAFETY PURPLE	OSHA SAFETY PURPLE	NOT PAINTED	OSHA SAFETY PURPLE	OSHA SAFETY PURPLE

CLASSIFICATION	BARREL	TOP BONNET	STIRZ PUMPER NOZZLE	IRON PUMPER NOZZLE	IRON HOSE NOZZLE
1-PRIVATE THROUGH WATER METER	OSHA SAFETY YELLOW	OSHA SAFETY YELLOW	NOT PAINTED	OSHA SAFETY GREEN	OSHA SAFETY GREEN
2-PRIVATE METER AND FIRE BOOSTER PUMP	OSHA SAFETY YELLOW	OSHA SAFETY YELLOW	NOT PAINTED	OSHA SAFETY WHITE	OSHA SAFETY WHITE
3-PRIVATE 8-INCH AND SMALLER (MIN OR LIMITED SUPPLY)	OSHA SAFETY YELLOW	OSHA SAFETY YELLOW	NOT PAINTED	OSHA SAFETY BLUE	OSHA SAFETY BLUE
4-PRIVATE (2.5-INCH OUTLET) (NO HYDRANT)	OSHA SAFETY RED	OSHA SAFETY RED	N/A	N/A	OSHA SAFETY RED

NO. DESCRIPTION

- TYPE I ADJUSTMENT RISER.
- VALVE BOX - TOP SECTION.
- 18 - 8 SS 3/8" x 16 x 3/8" HEX SET SCREW WITH PERMANENT THREAD LOCK (RED) - LOCOTITE # 271, PERMABOND HM128, OR APPROVED EQUAL.
- 1/2" DIA. x 1/16" - FIELD DRILL HOLE.

TH - TOTAL HEIGHT	AH - ADJUSTMENT HEIGHT	H	MINIMUM WEIGHT - LBS
< 4 1/2"	2 1/2"	NOT APPROVED	NOT APPROVED
4 1/2"	2 1/2"	0	16
5"	3"	1 1/2"	20
6"	4"	1 1/2"	22.5
7"	5"	2 1/2"	25
8"	6"	3 1/2"	27
10"	8"	5 1/2"	32

NO. DESCRIPTION

- 18" x 18" PRECAST (OR CAST IN PLACE) CONCRETE PAD OR 24" DIAMETER PRECAST PAD.
- NON-SHRINK GROUT - IN ANNULAR SPACE.
- VALVE BOX COVER.
- TOP SECTION VALVE BOX.
- EXTENSION STEM AS REQUIRED. SEE NOTES.
- BOTTOM SECTION VALVE BOX.
- 6" PVC PIPE (C900 OR SDR 26).
- PRECAST CONCRETE FOOTING - TYPE II - SEE DETAIL.
- GATE VALVE (OR BALL VALVE, AS APPLICABLE).
- 5" DIA. CAST IRON SOIL PIPE - BELL OF PIPE WILL RECEIVE BOTTOM SECTION OF VALVE BOX.
- AWG #12 GAUGE COPPER TRACER WIRE (THWN) WITH BLUE INSULATION. TERMINATE WITH 24 INCH EXCESS WIRE (COILED) AT METER BOX AND VALVE BOX (TYP.).
- 1/4" OR 3/8" ID CONDUIT - SDR 9 PEX TUBING - ASTM F 876.
- CONCRETE (ROADWAY, DRIVEWAY OR SIDEWALK) AND ASPHALT PAVEMENT.
- COMPACTED AGGREGATE BASE COURSE (CABC) OR ASPHALT BASE COURSE.
- COMPACTED SUBGRADE.
- NONWOVEN GEOTEXTILE FABRIC - 18" x 18" - 2 LAYERS - MIRAFIX 140N OR CARTHAGE MILLS # FX - 40HS.
- PRECAST CONCRETE FOOTING - TYPE I - SEE DETAIL.

NOTES:

- CONCRETE FOOTING TO BE CENTERED OVER VALVE NUT, AND SHALL NOT BEAR ON VALVE BODY.
- PROVIDE CLEARANCE BETWEEN VALVE FOOTING AND THE VALVE.
- WHEN OPERATING NUT DEPTH EXCEEDS 3'-0" BELOW FINISHED GRADE, PROVIDE EXTENSION STEM WITH STANDARD 2" SQUARE OPERATING NUT IN TOP SECTION OF VALVE BOX. SEE STANDARD DETAIL.
- VALVE BOX ASSEMBLY SHALL CONSIST OF NO MORE THAN 3 VERTICAL SECTIONS - 1 TOP SECTION, 1 BOTTOM SECTION, AND 1 PIPE RISER SECTION.
- CONCRETE PADS SHALL NOT BE USED IN PAVEMENT (CONCRETE OR ASPHALT), SIDEWALKS OR DRIVEWAYS.

NO. DESCRIPTION

- END OF LINE GATE VALVE (M x M)
- 2" (PE - PEX) - REMOVE BELL - LENGTH = 17 FT - 19 FT
- WEDGE ACTION THRUST RESTRAINT GLAND
- CONCRETE WALL BLOCK (FC = 3600 PSI MIN) 6 FT x 4 FT x WIDTH (W)
- REBAR - GRADE 60 PER ASTM A615 - USE REBAR SCHEDULES
- MU CAP WITH WEDGE ACTION RESTRAINT GLAND, TAP 2" THREADED OUTLET (FNPT)
- 2" RED BRASS NIPPLE SCH 40 (MNPT x MNPT) - LENGTH = 12 INCH
- 2" RED BRASS 90° BEND (FNPT x FNPT)
- 2" RED BRASS NIPPLE SCH 40 (MNPT x MNPT) - LENGTH AS REQUIRED
- 2" GALVANIZED MALLEABLE IRON COUPLING (FNPT x FNPT)
- STANDARD VALVE BOX ASSEMBLY - SEE DETAIL
- AWG #12 GAUGE COPPER TRACER WIRE - WITH BLUE INSULATION (SOIL HOLES) TERMINATE WITH 24 INCH EXCESS WIRE (COILED) IN VALVE BOX (TYP.)
- 1" SCH 40 PVC ELECTRICAL CONDUIT - LENGTH AS REQUIRED
- UNDISTURBED SOIL
- HIGH DENSITY CROSS LAMINATED POLYETHYLENE FILM TUBE (HDCLPE)
- AWWA C105 - 4 MILS EACH x 2 LAYER - 8 MILS TOTAL
- HDPE ADHESIVE TAPE OR HDPE ZIP LOCK TIES
- PLYWOOD FORM
- 5" CAST IRON SOIL PIPE (L = 15') OR VALVE BOX BOTTOM SECTION

NOTES:

- 12 - INCH MAINS REQUIRE THIS INSTALLATION.
- 6 - INCH THROUGH 10 - INCH MAINS REQUIRE THIS INSTALLATION WHEN SOFT SOILS ARE ENCOUNTERED, OR WHEN REQUIRED BY THE ENGINEER.
- WHEN DIRECTED BY THE ENGINEER, THE CONCRETE WALL BLOCK SIZE MAY BE ADJUSTED, BASED ON ACTUAL SOIL CLASSIFICATION AND PIPE DIAMETER.
- FULLY RESTRAINED JOINT PIPE MAY BE USED IN LIEU OF THIS DETAIL - SEE RESTRAINED JOINT PIPE DETAILS.
- ALTERNATE DETAIL "A" (USING A REVERSED BELL) MAY BE USED IN LIEU OF DETAIL "A".

NO. ALTERNATE DESCRIPTION

WHEN USING 3-INCH HDPE (IPS) BLOW-OFF PIPE WITH STAINLESS STEEL BRASS OR BRONZE MNPT END, USE THE FOLLOWING PRODUCTS:

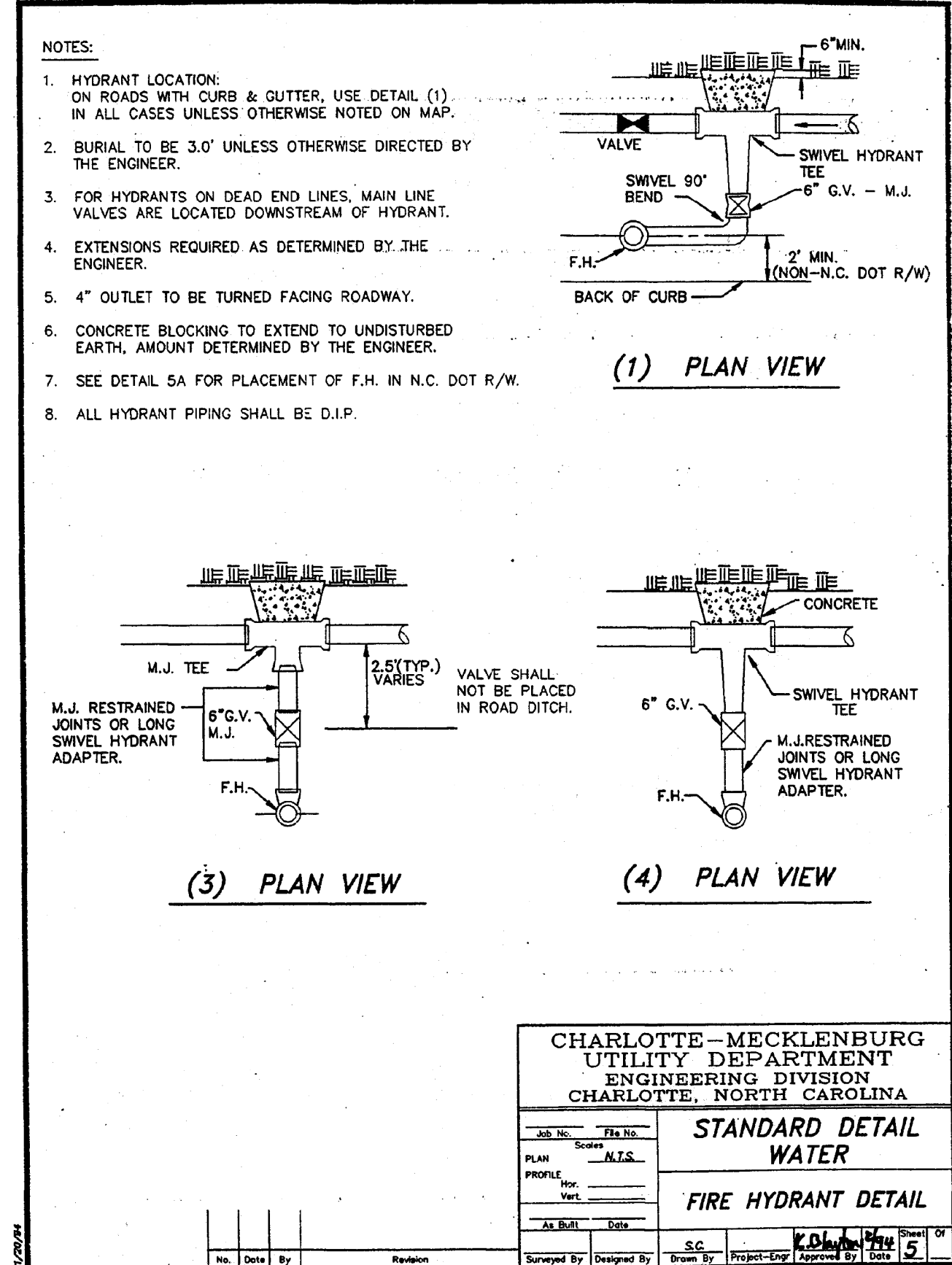
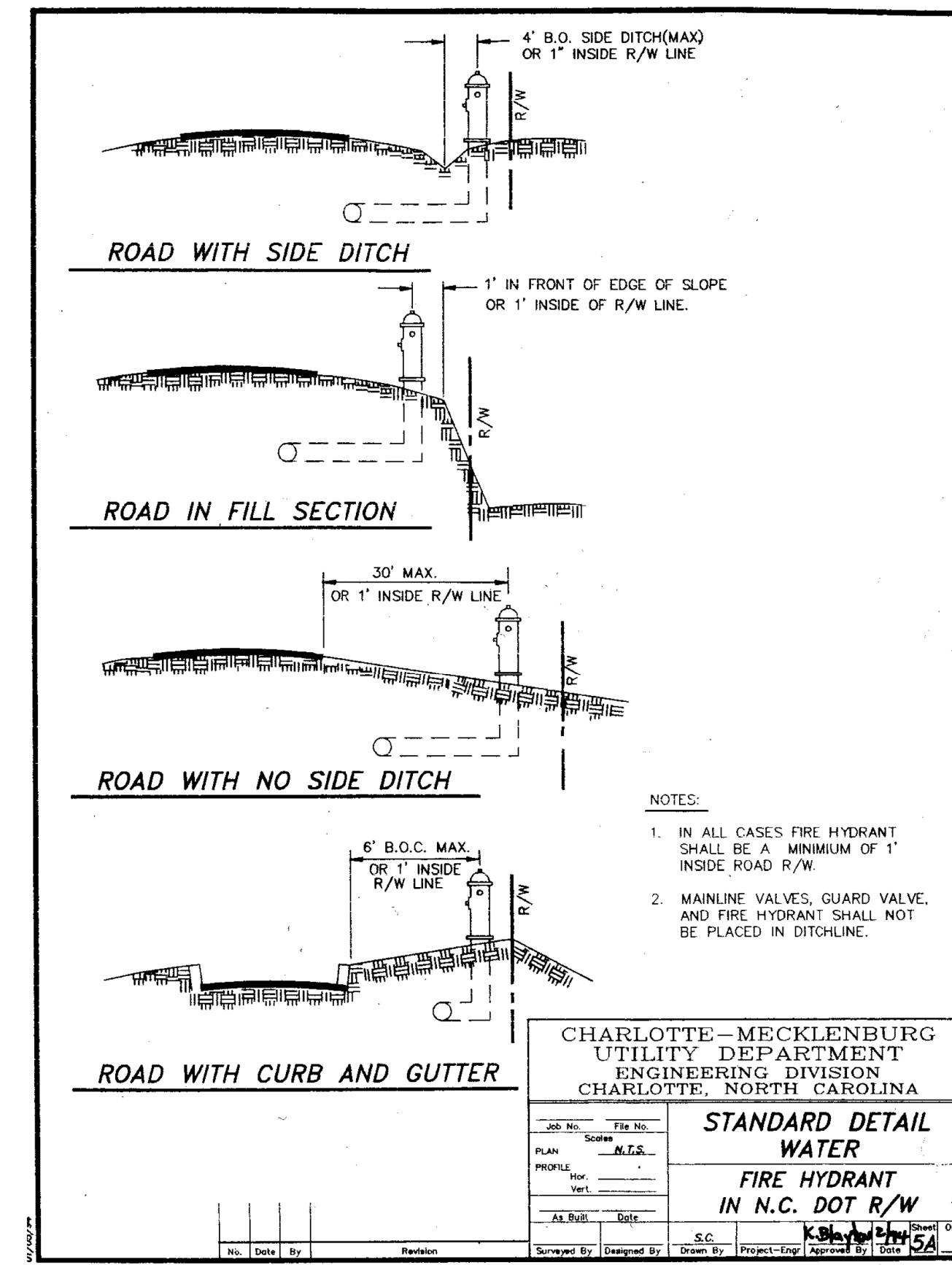
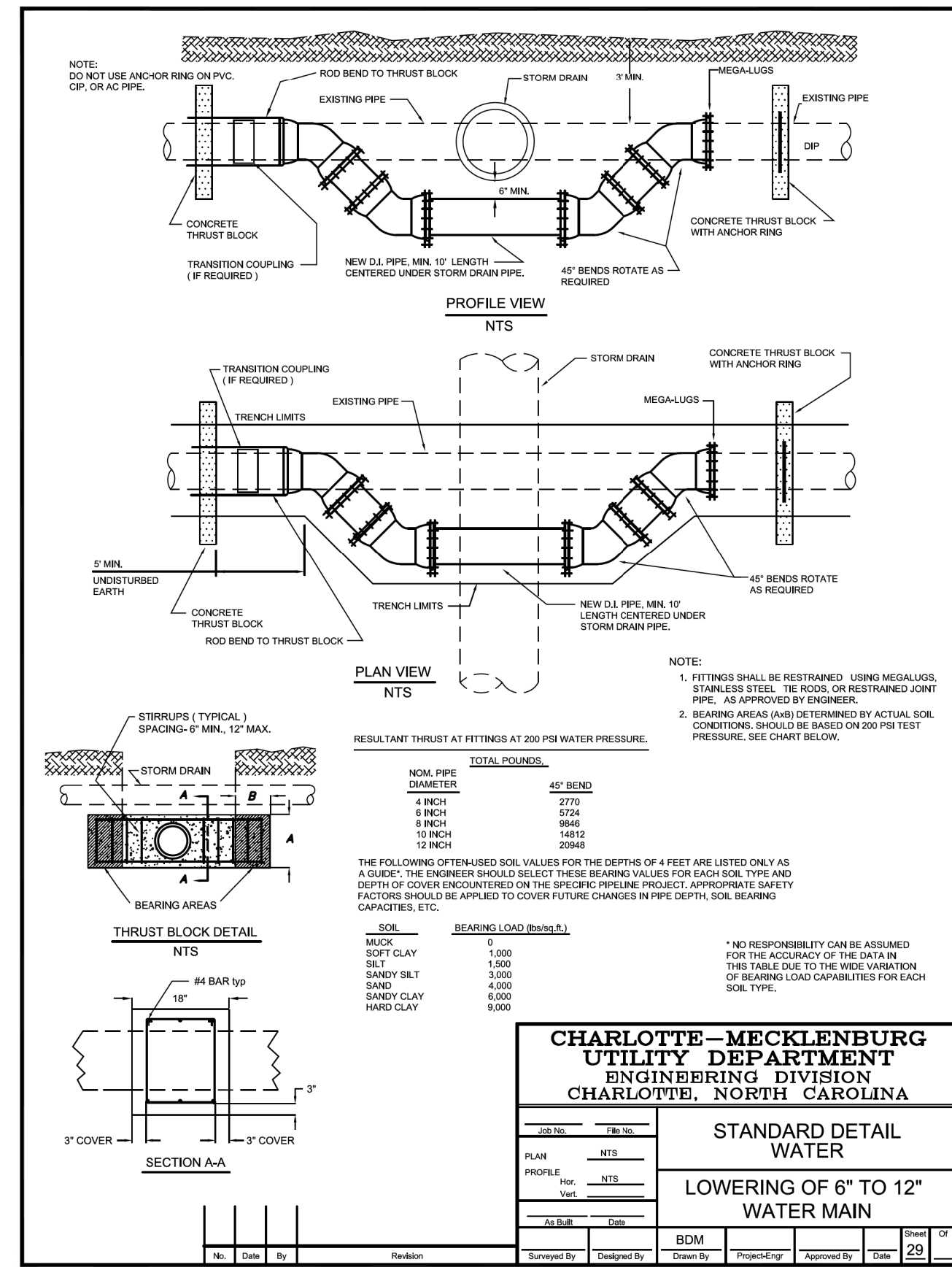
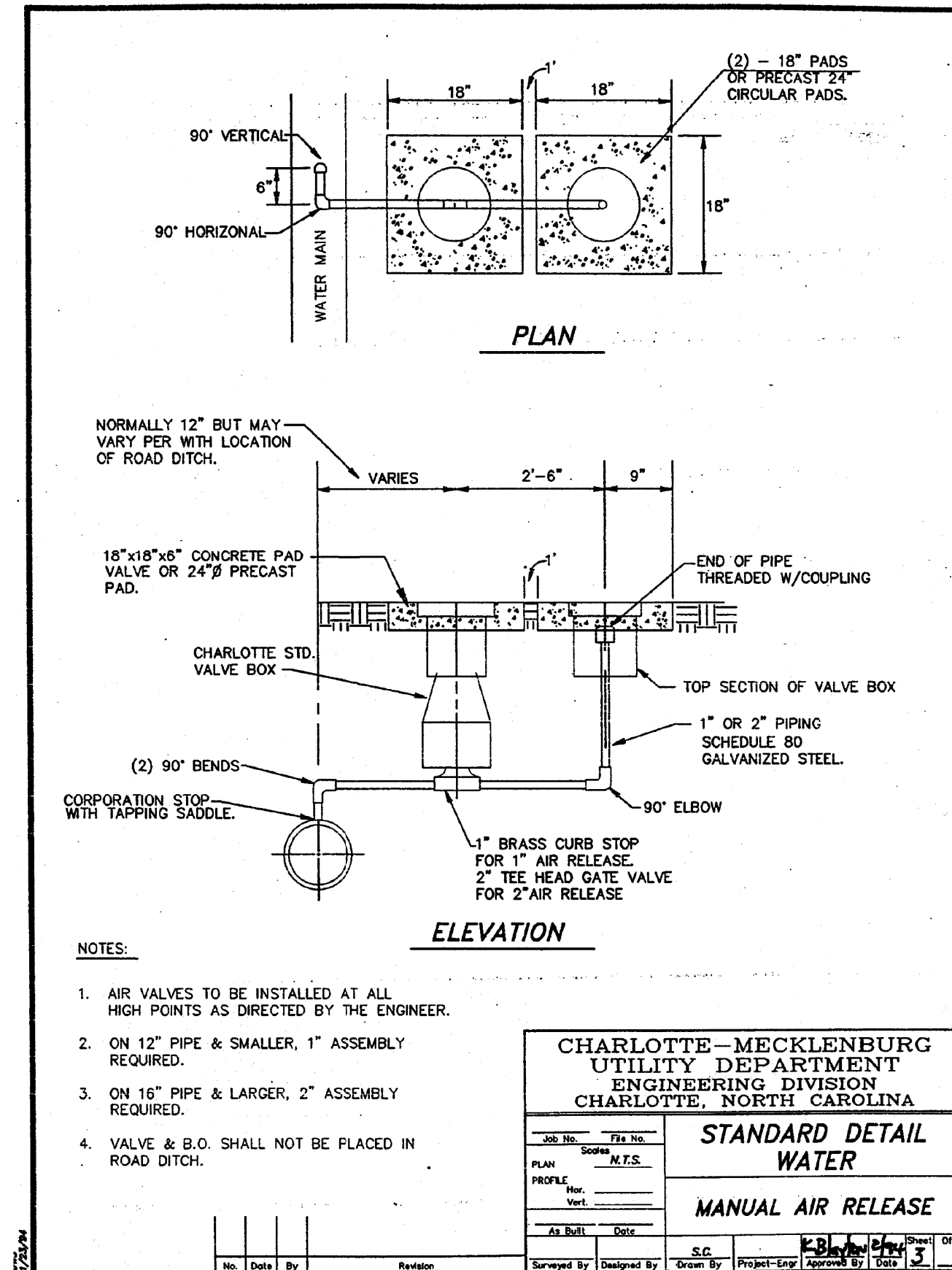
- 2" SDR 9 HDPE (POLY) - IPS PIPE (MNPT x MNPT) - LENGTH AS REQUIRED - 12 - INCH MINIMUM.
- 2" SDR 9 HDPE (POLY) - IPS PIPE (MNPT x MNPT) - LENGTH AS REQUIRED.

PIPE DIAMETER (INCHES)	TOTAL THRUST (POUNDS)	SQUARE FEET	UNDISTURBED SOIL BEARING AREA (SQ. FT.)	APPROX. SOIL PRESSURE (PSI)	W (WIDTH) (INCHES)	CONCRETE VOLUME (APPROXIMATE)
6	7,478	15	499	10	20	0.74
8	12,866	15	858	12	24	0.89
10	19,354	15	1,290	12	24	0.89
12	27,370	15	1,826	14	28	1.04

PIPE DIAMETER (INCHES)	BAR SIZE	TOTAL REBAR LENGTH (FT)	TOTAL REBAR WEIGHT (LB)
6	#4	64	18
8	#4	64	131
10	#4	64	171
12	#4	64	218

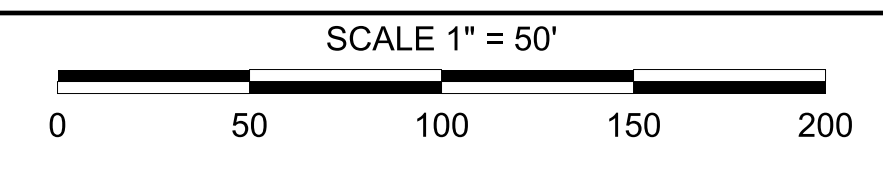
CHARLOTTE WATER DETAILS

PROJECT REFERENCE NO.	SHEET NO.
I-5714	UC-3E
DESIGNED BY: XMD	
DRAWN BY: LNS	
CHECKED BY: ASV	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
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STV Engineers, Inc. 900 West Trade St., Suite 715 Charlotte, NC 28202 NC License Number F-0991	
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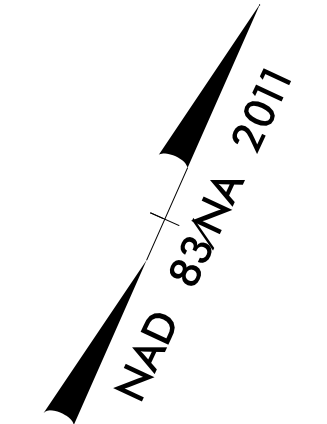


5/14/19

UTILITY CONSTRUCTION PLAN SHEET UC-4
CORRESPONDS TO ROADWAY PLAN SHEET NO. 4



PROJECT REFERENCE NO.	SHEET NO.
I-5714	UC-4
DESIGNED BY: XMD	
DRAWN BY: LNS	
CHECKED BY: ASV	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151 UTILITY CONSTRUCTION PLANS ONLY	
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ADJUSTMENT OF VALVE BOX, VALVE BOX IDENTIFIED DURING SITE VISIT, CONTRACTOR TO FIELD VERIFY

FIRE HYDRANT
6" VALVE
19 LF FIRE HYDRANT LEG
REMOVE FIRE HYDRANT
16"X16"X6" FH TEE
-WL1- STA. 10+88.88

-WL1- STA. 10+00.00
TIE-IN TO EXIST. 12" WATER LINE
W/ 12" LONG PATTERN SLEEVE
-Y- STA. 13+62.06 LT 44.94'
(SEE NOTE 1)

12" LINE STOP
W/ REINFORCED
CROSS BLOCKING
(CLT WATER STANDARD
DETAIL #DD)

2 - 45° BENDS
TIE-IN TO EXIST. 8" WATER LINE
W/ 8" LONG PATTERN SLEEVE &
CONCRETE THRUST BLOCK
(CLT WATER STANDARD DETAIL #DD)

8" VALVE

37 LF 8" WATER LINE
(DIP PC350)

16"X16"X8" TEE
-WL1- STA. 14+15.55

ABANDON 636 LF OF 12" UTILITY PIPE
(2164 LF TOTAL)

-WL1- 639 LF 16" WATER LINE
(DIP PC250, 2281 LF TOTAL)

ADJUSTMENT OF VALVE BOXES, VALVE BOXES IDENTIFIED DURING SITE VISIT, CONTRACTOR TO FIELD VERIFY

SEE NOTE 3

FIRE HYDRANT IDENTIFIED DURING SITE VISIT, CONTRACTOR TO FIELD VERIFY (SEE NOTE 2)

22.5° BEND
-WL1- STA. 10+23.20

22.5° BEND
-WL1- STA. 10+10.00

16"X12" REDUCER
-WL1- STA. 10+05.00

22.5° BEND
-WL1- STA. 14+21.55

22.5° BEND
-WL1- STA. 14+57.95

16"X16"X8" TEE
-WL1- STA. 15+61.30
11.25° BEND (8" WL)

ABANDON 217 LF OF 8" UTILITY PIPE

152 LF 8" WATER LINE
(DIP PC350)

16" VALVE
(BUTTERFLY)
STA. 15+99.33

TIE-IN TO EXIST. 8" FMCT SERVICE LINE W/ 8" LONG PATTERN SLEEVE & CONCRETE THRUST BLOCK (CLT WATER STANDARD DETAIL #DD) (SEE NOTE 2)

NOTES:

- PER CHARLOTTE WATER AS-BUILT 1173-001, MATERIAL TRANSITION FROM DIP TO CIP ON EXIST. 12" WATER LINE OCCURS AT 12" LONG PATTERN SLEEVE. CONTRACTOR TO FIELD LOCATE EXIST. LONG PATTERN SLEEVE AND ENSURE THAT PROP. 16" WATER LINE TIE-IN WITH EXIST. 12" DIP WATER LINE.
- CONTRACTOR TO ENSURE THAT HOSPITAL HAS WATER SERVICE AT ALL TIMES. CONTRACTOR TO PROVIDE TEMP. WATER SERVICE TO HOSPITAL USING HEITKEMP TEMP. BYPASS FROM HYDRANT AT CORNER OF REECE BLVD AND GILEAD RD PRIOR TO IMPACTING EXIST. 8" SERVICE LINE AT HOSPITAL.
- PER TEST HOLE #1 AND PROP. DRAINAGE DESIGN, THE PROP. 15" RCP DRAINAGE PIPE WILL HAVE 3" CLEARANCE BETWEEN THE EXIST. 12" WATER LINE. CONTRACTOR TO USE CAUTION WHEN INSTALLING 15" RCP PIPE AND PROTECT EXIST. 12" WATER LINE IF NEEDED. CONTRACTOR TO FIELD VERIFY THE CLEARANCE AND RELOCATE EXIST. 12" WATER LINE ACCORDING TO CHARLOTTE WATER STANDARD DETAIL #29 ON SHEET UC-3E IF CONFLICT EXISTS.
- ACCORDING TO SHEET UO-3, THE EXIST. 4" PNG STL HP GAS LINE WILL REMAIN IN PLACE UNTIL SUMMER 2019. ONCE PNG COMPLETES RE-ROUTE, THE EXIST. GAS LINE WILL BE ABANDONED IN PLACE. CONTRACTOR TO USE CAUTION WHEN INSTALLING THE PROP. 16" WATER LINE AND CONTACT CHARLOTTE WATER TO DETERMINE POTENTIAL NEED FOR CATHODIC PROTECTION.

MATCHLINE - SEE SHEET UC-5

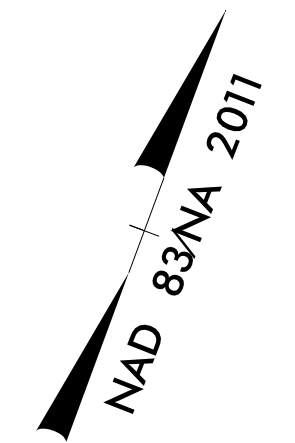
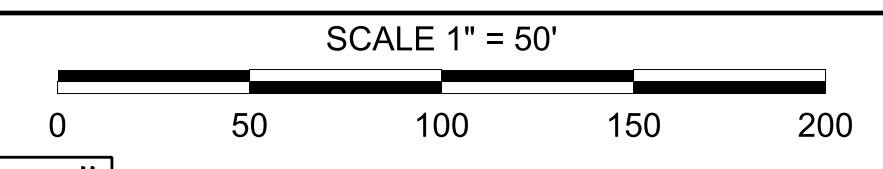
SEE SHEET UC-7 FOR -WL1- PROFILE

THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 5360 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

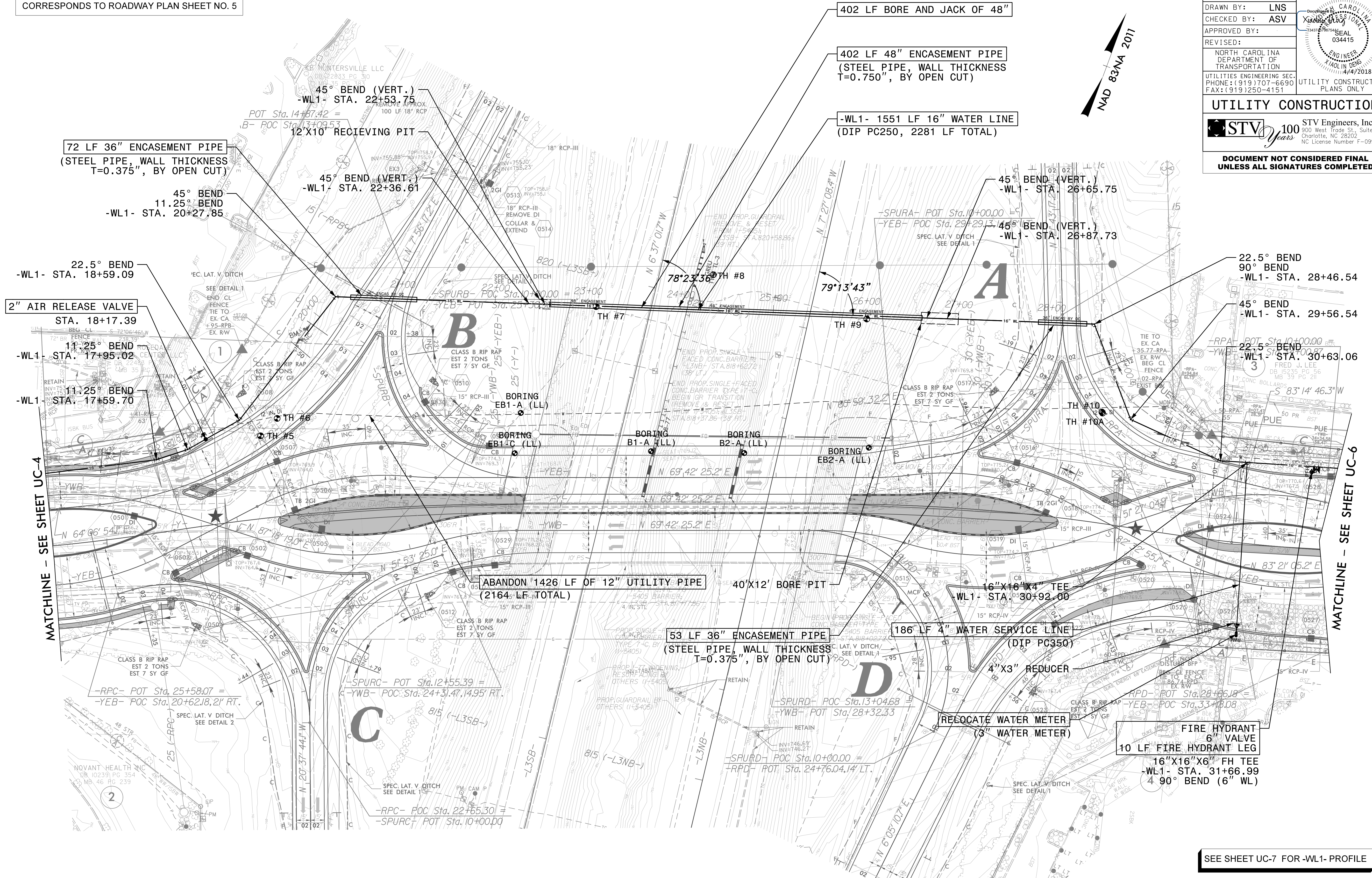
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UTILITY CONSTRUCTION PLAN SHEET UC-5
CORRESPONDS TO ROADWAY PLAN SHEET NO. 5



PROJECT REFERENCE NO.	SHEET NO.
I-5714	UC-5
DESIGNED BY: XMD	
DRAWN BY: LNS	
CHECKED BY: ASV	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
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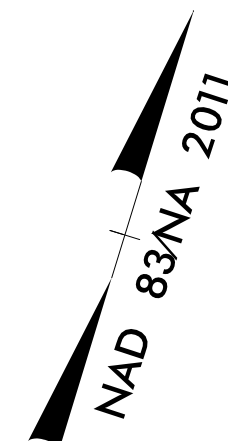
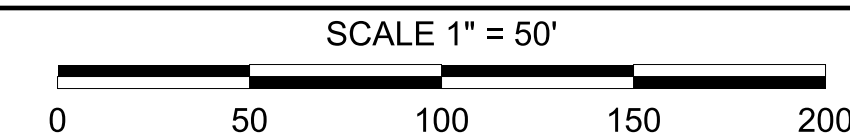
MATCHLINE - SEE SHEET UC-4

MATCHLINE - SEE SHEET UC-6

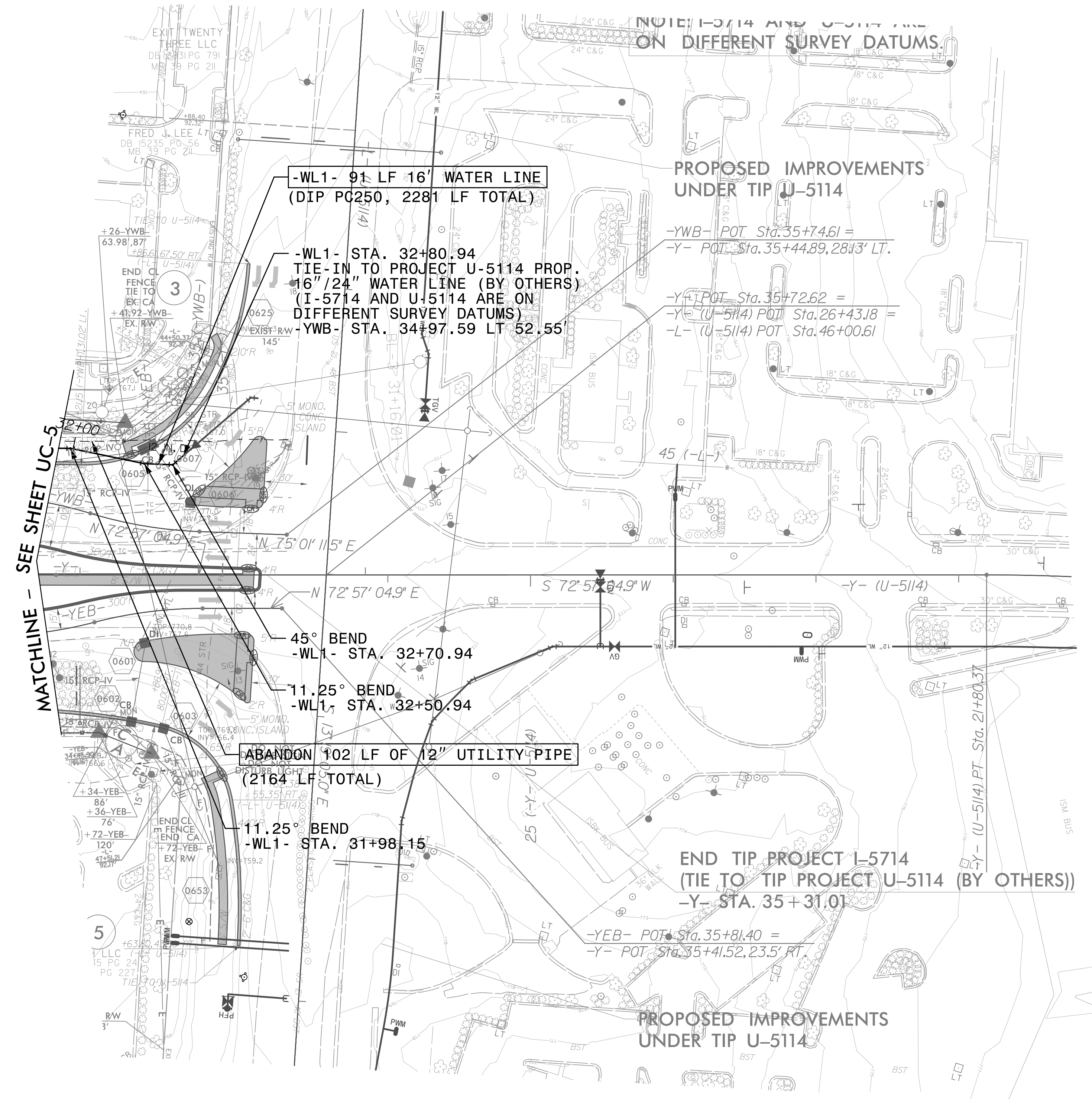
SEE SHEET UC-7 FOR -WL1- PROFILE

THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 6973 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

UTILITY CONSTRUCTION PLAN SHEET UC-6
CORRESPONDS TO ROADWAY PLAN SHEET NO. 6



PROJECT REFERENCE NO.	SHEET NO.
I-5714	UC-6
DESIGNED BY: XMD	
DRAWN BY: LNS	
CHECKED BY: ASV	
APPROVED BY:	
REVISED:	
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SEE SHEET UC-7 FOR -WL1- PROFILE

THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 1391 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

5/28/19

STV 100 Years
 STV Engineers, Inc.
 300 West Trade St., Suite 715
 Charlotte, NC 28202
 NC License Number F-0991

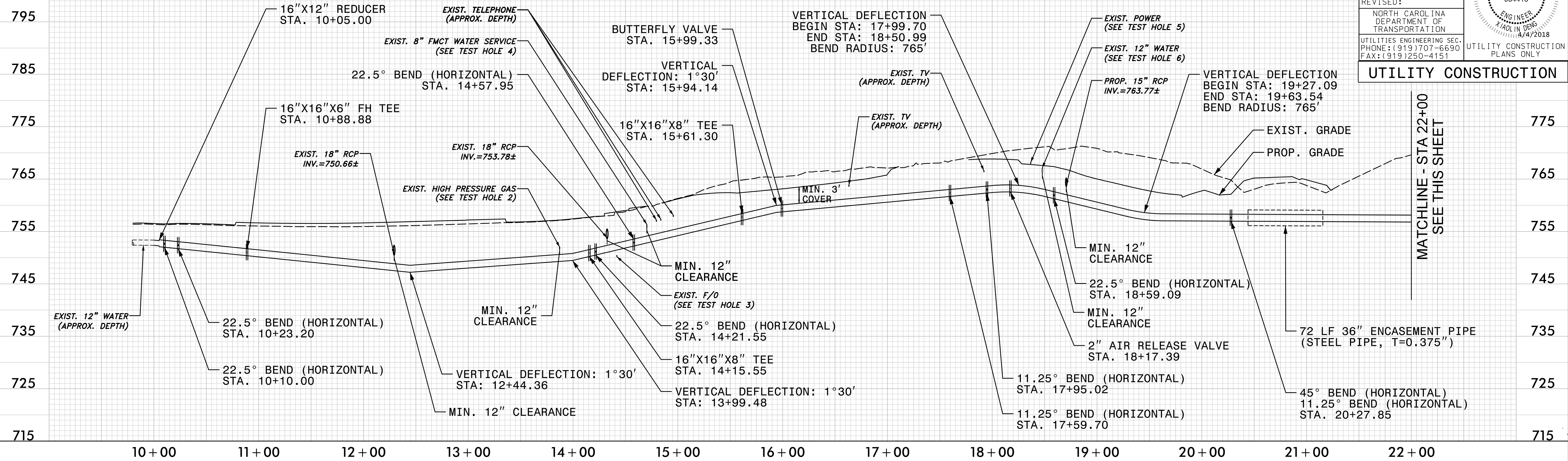
**DOCUMENT NOT CONSIDERED FINAL
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PROJECT REFERENCE NO. I-5714	SHEET NO. UC-7
DESIGNED BY: XMD	
DRAWN BY: LNS	
CHECKED BY: ASV	
APPROVED BY:	
REVISED:	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151
UTILITY CONSTRUCTION	

SEE SHEETS UC-4 AND UC-5 FOR WATER PLAN

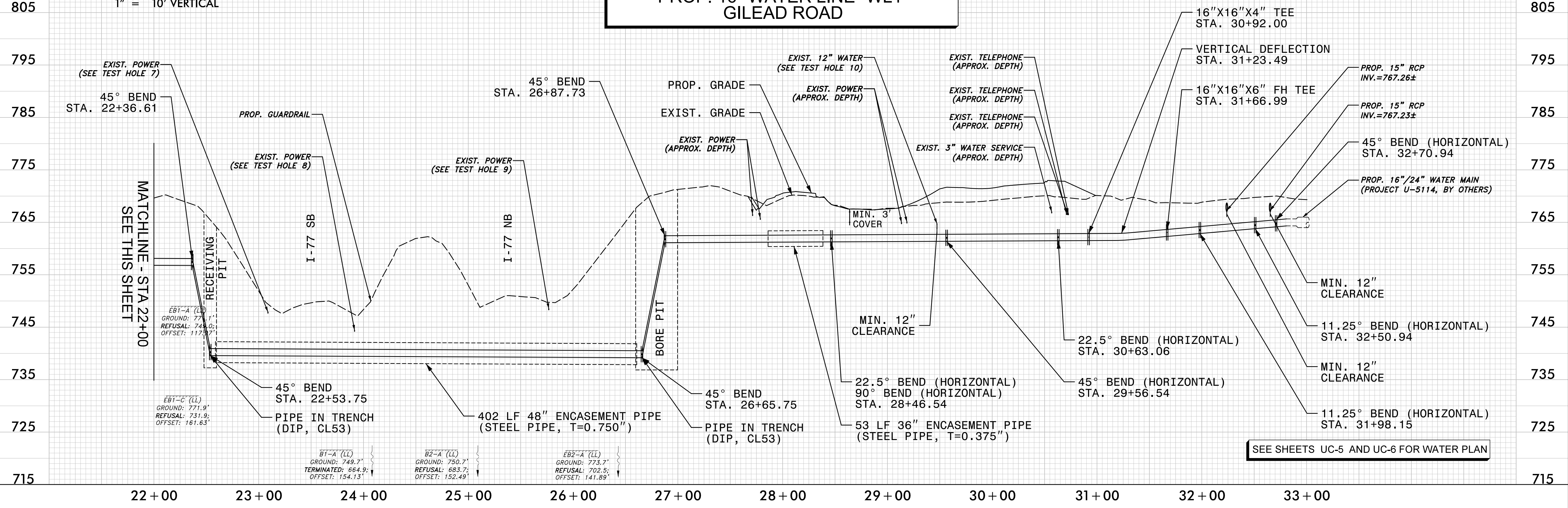
PROP. 16" WATER LINE -WL1- GILEAD ROAD

SCALE: 1" = 50' HORIZONTAL
1" = 10' VERTICAL



SCALE: 1" = 50' HORIZONTAL
1" = 10' VERTICAL

PROP. 16" WATER LINE -WL1- GILEAD ROAD



SEE SHEETS UC-5 AND UC-6 FOR WATER PLAN

4/14/2018
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Standard