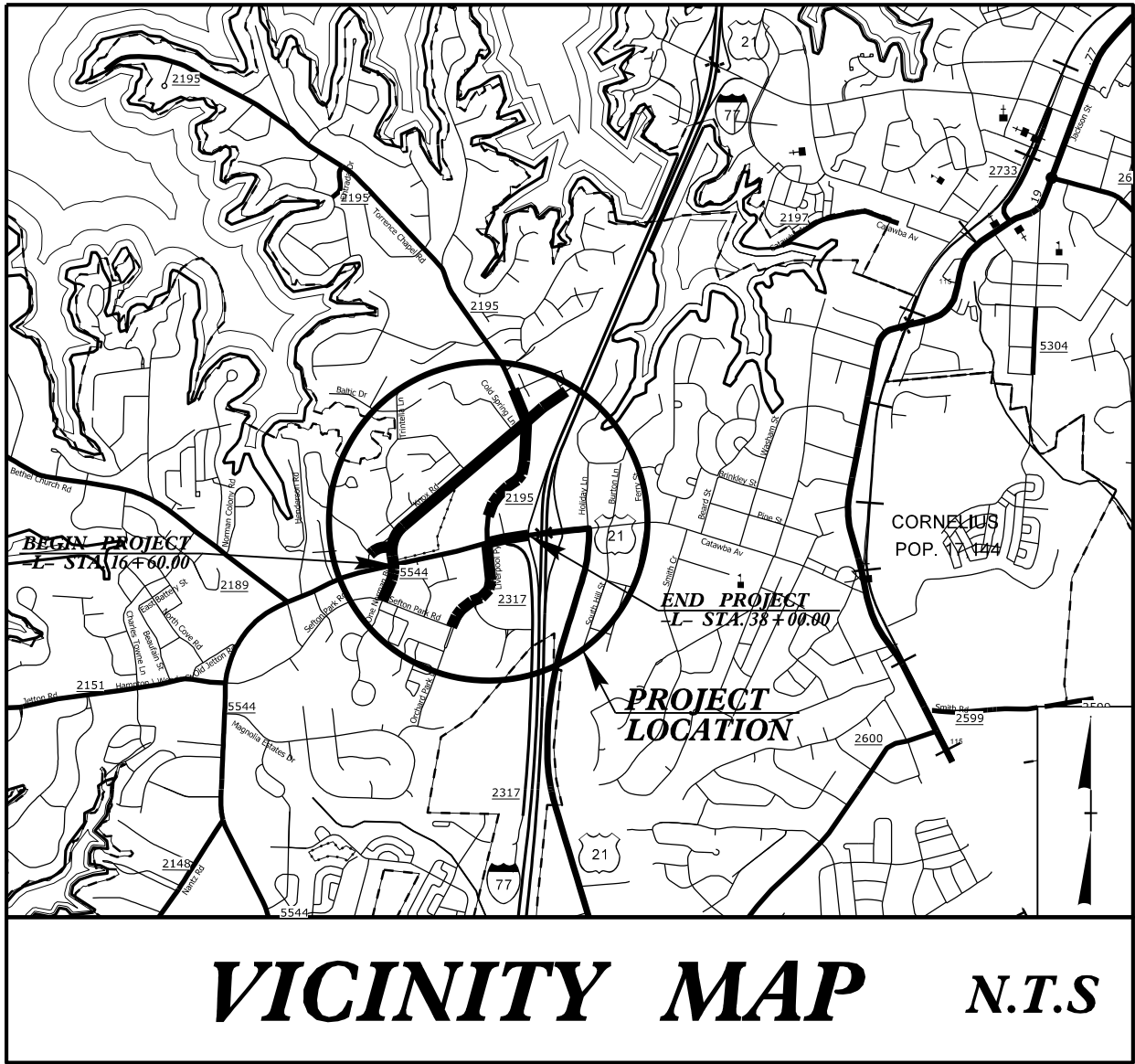


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\$\$\$\$\$USERNAME\$\$\$\$\$

TIP PROJECT: U-5906



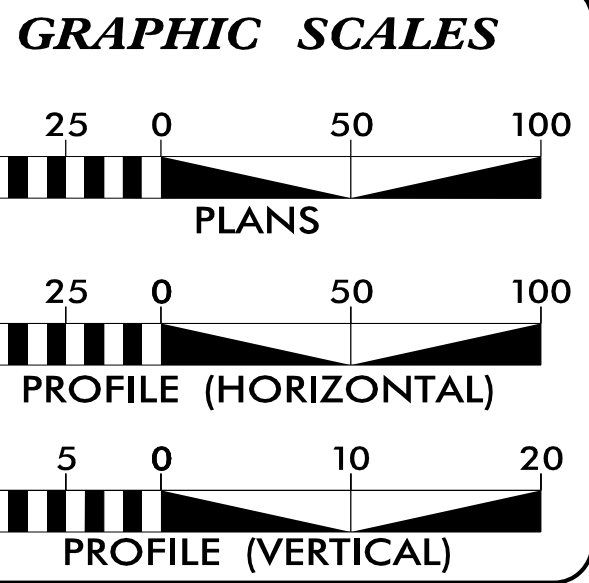
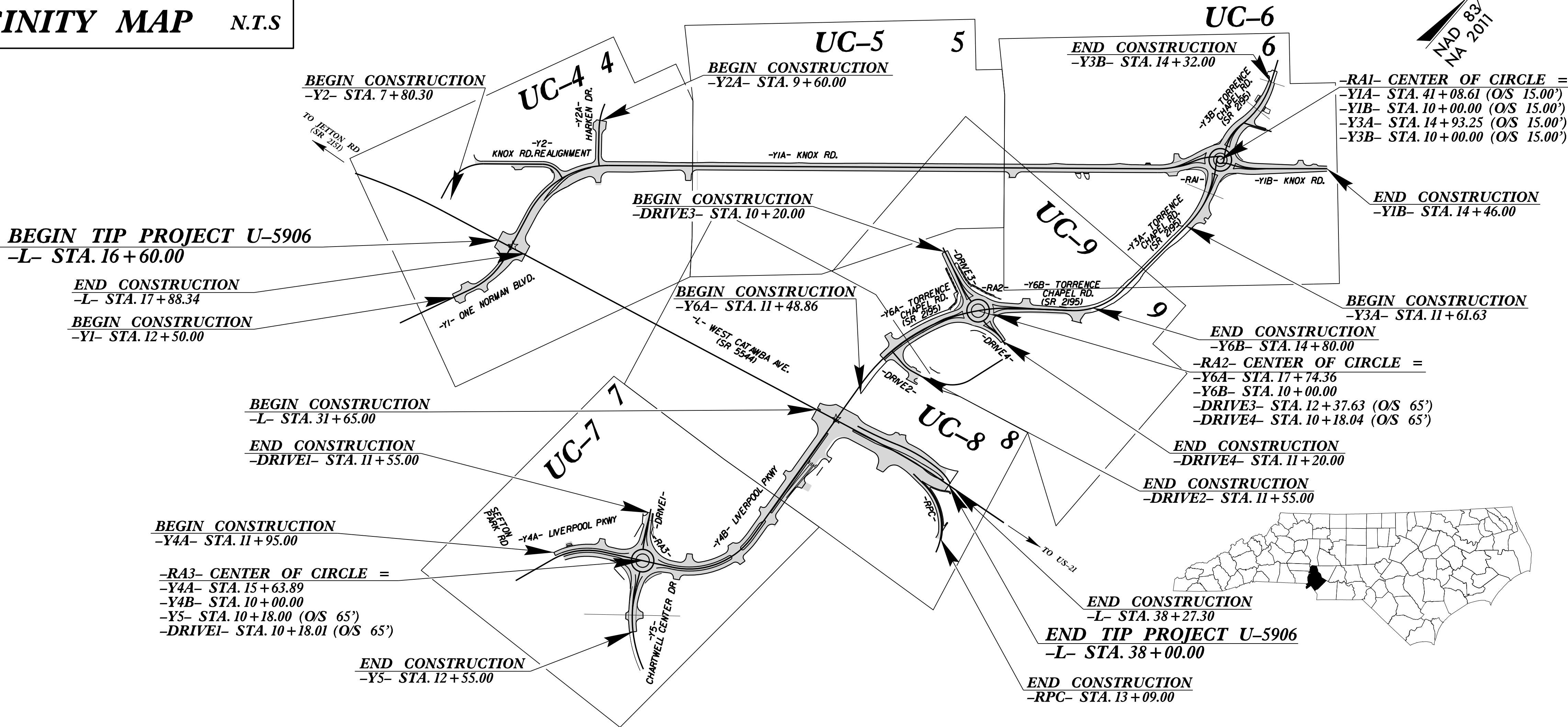
VICINITY MAP N.T.S

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITY CONSTRUCTION PLANS
MECKLENBURG COUNTY

LOCATION: TORRENCE CHAPEL RD (SR 2195)/WEST CATAWBA AVE (SR 5544)
INTERSECTION AND SURROUNDING AREA IMPROVEMENTS

TYPE OF WORK: WATER & SEWER RELOCATIONS



INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLOGY
UC-2A	PERMIT SHEET
UC-3	NOTES
UC-3A THRU UC-3D	DETAILS
UC-4 THRU UC-9	UTILITY CONSTRUCTION SHEETS
UC-10 THRU UC-14	PROFILE SHEETS

WATER AND SEWER OWNER ON PROJECT	
(A) WATER	- CHARLOTTE WATER
(B) SEWER	- CHARLOTTE WATER

PREPARED IN THE OFFICE OF:

HINDE ENGINEERING

License No. C-2639
10020 Monroe Road, Suite 280 Matthews, NC 28105
Ph. (704) 814-4407

Clint L. Stevens, P.E. UTILITIES PROJECT MANAGER
Jordan K. Chapman, E.I. UTILITIES PROJECT ENGINEER
James N. Arnold UTILITIES PROJECT DESIGNER

SEAL

CLINT L. STEVENS
P.E.
8/11/2025

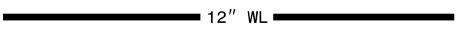
**DIVISION OF HIGHWAYS
UTILITIES UNIT**

1555 MAIL SERVICES CENTER
RALEIGH NC 27699-1555
PHONE (919) 707-6690
FAX (919) 250-4151

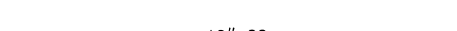
Randy Bowers, P.E. DM-STIP PROJECT MANAGER
Terry W. Burleson DM-STIP PROJECT ENGINEER
Adam J. Preslar SENIOR DIV. UTILITY COORD.
Lynn Basinger DIVISION UTILITY ENGINEER

UTILITIES PLAN SHEET SYMBOLS

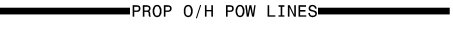
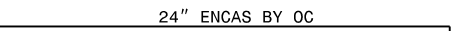
PROPOSED WATER SYMBOLS

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	REM FH
Water Meter	
Relocate Water Meter	
Remove Water Meter	REM WM
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	

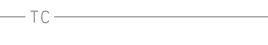
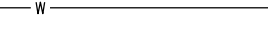
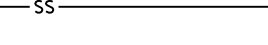
Thrust Block	
Air Release Valve	
Utility Vault	
Concrete Pier	
Steel Pier	
Plan Note	
Pay Item Note	

NOTE

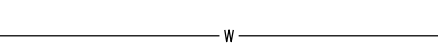
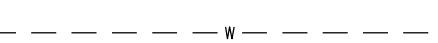
PAY ITEM

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	AATUR
End of Information	E.O.I.

*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)	

APPLICATION FOR NON-DISCHARGE PERMIT
GRAVITY SEWER MAIN EXTENSION
CHARLOTTE WATER

PROJECT NAME PROPOSED 8" SANITARY GRAVITY SEWER AND CREEK BASIN McDOWELL
TO SERVE NCDOT TIP U-5906

CLTWater PROJECT NO.: CPM-60-26-312

PROJECT TYPE: ☐ NEW CONSTRUCTION ☒ RELOCATION ☐ MODIFICATION OF PERMIT NO. OTHER

VOLUME OF WASTEWATER GENERATED BY THIS PROJECT: N/A GALLONS PER DAY BASED ON 190 GAL/DAY/SINGLE FAMILY HOUSEHOLD X N/A HOUSEHOLDS OR 135 GAL/DAY/MULTI-FAMILY UNIT X N/A UNITS OR IS BASED ON :

WASTEWATER TREATMENT PLANT RECEIVING WASTEWATER:
☐ McALPINE CR. (NC0024970) ☐ IRWIN CR. (NC0024945) ☒ McDOWELL CR. (NC0036277)
☐ SUGAR CR. (NC0024937) ☐ MALLARD CR. (NC0030210)

NATURE OF WASTEWATER 60 % DOMESTIC % INDUSTRIAL
40 % COMMERCIAL % OTHER

ORIGIN OF WASTEWATER ☒ SUBDIVISION ☒ COMMERCIAL
☐ SCHOOL ☐ INDUSTRIAL
☒ APARTMENTS/CONDO'S ☐ OTHER

LIST ANY PARAMETER AND ITS CONCENTRATION THAT WILL BE GREATER THAN NORMAL DOMESTIC LEVELS:
NONE

IF WASTEWATER IS NON-DOMESTIC, DESCRIBE LEVEL OF PRETREATMENT:
N/A

IF A PRETREATMENT PERMIT IS REQUIRED, HAS ONE BEEN ISSUED? ☐ YES ☐ NO

HAS ENGINEER DETERMINED THAT DOWNSTREAM SEWERS ARE CAPABLE TO HANDLE THIS FLOW? ☒ YES ☐ NO
PERMIT NO. FOR SEWERS IMMEDIATELY DOWNSTREAM
PIPE DIAMETER OF SEWERS IMMEDIATELY DOWNSTREAM 8-INCH

HAS ENGINEER DETERMINED THAT NC DEM AND CLTWater MINIMUM DESIGN STANDARDS ARE MET BY THIS PROJECT? ☒ YES ☐ NO

COMPLETE NAME AND ADDRESS OF ENGINEERING DESIGN FIRM:
HINDE ENGINEERING, INC.
10020 MONROE ROAD, SUITE 280
MATTHEWS, NORTH CAROLINA 28105

TELEPHONE 704 - 814 - 4407

PROFESSIONAL ENGINEER'S CERTIFICATION:
I, CLINT L. STEVENS, PE, ATTEST THAT THIS APPLICATION FOR 8-INCH SANITARY GRAVITY SEWER TO SERVE NCDOT TIP U-5906 HAS BEEN REVIEWED BY ME AND IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE. I FURTHER ATTEST THAT TO THE BEST OF MY KNOWLEDGE THE PROPOSED DESIGN HAS BEEN PREPARED IN ACCORDANCE WITH THE APPLICABLE REGULATIONS. ALTHOUGH CERTAIN PORTIONS OF THIS SUBMITTAL PACKAGE MAY HAVE BEEN DEVELOPED BY OTHER PROFESSIONALS, INCLUSION OF THESE MATERIALS UNDER MY SIGNATURE AND SEAL SIGNIFIES THAT I HAVE REVIEWED THIS MATERIAL AND HAVE JUDGED IT TO BE CONSISTENT WITH THE PROPOSED DESIGN.

NORTH CAROLINA PROFESSIONAL ENGINEER'S SEAL, SIGNATURE, AND DATE:

CLTWater PERMIT NO. ISSUED

PLANT FLOW ALLOCATION RECORDED BY:

PERMIT APPROVED BY: CHARLES M. BLISS, P.E., CHIEF ENGINEER



HINDE

ENGINEERING

License No. C-2639
10020 Monroe Road, Suite 280 Matthews, NC 28105

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.		SHEET NO.
U-5906		UC-2A
DESIGNED BY: JKC		UTILITY CONSTRUCTION PLANS ONLY
DRAWN BY: JNA		
CHECKED BY: JKC		
APPROVED BY: CLS		
REVISED:		
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151		

UTILITY CONSTRUCTION

APPLICATION FOR PERMIT FOR WATER MAIN EXTENSION

PROJECT NAME: NCDOT TIP U-5906

CLTWater PROJECT NO.: CPM-60-26-312

PROJECT DESCRIPTION: PROPOSED 20 L.F. OF 6" WATER MAIN WITH IT'S ASSOCIATED FITTINGS
PROPOSED 146 L.F. OF 8" WATER MAIN WITH IT'S ASSOCIATED FITTINGS
PROPOSED 3,794 L.F. OF 12" WATER MAIN WITH IT'S ASSOCIATED FITTINGS
PROPOSED 130 L.F. OF 16" WATER MAIN WITH IT'S ASSOCIATED FITTINGS
ALONG KNOX ROAD, TORRENCE CHAPEL ROAD AND LIVERPOOL PKWY IN TOWN OF CORNELIUS

DESIGNED BY: FIRM: HINDE ENGINEERING, INC.

ENGINEER: CLINT L. STEVENS, PE

ADDRESS: 10020 MONROE ROAD, SUITE 280
MATTHEWS, NORTH CAROLINA 28105

PHONE: (704) 814-4407

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

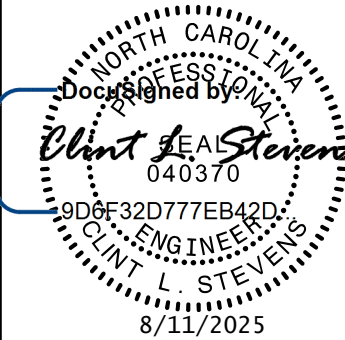
CHARLES M. BLISS, PE, CHIEF ENGINEER
CHARLOTTE WATER
5100 BROOKSHIRE BLVD.
CHARLOTTE, NORTH CAROLINA 28216

UTILITY CONSTRUCTION



**HINDE
ENGINEERING**
License No. C-2639
10020 Monroe Rd., Suite 280 Matthews, NC 28105

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PROJECT REFERENCE NO.		SHEET NO.
U-5906		UC-3
DESIGNED BY: JKC		
DRAWN BY: JNA		
CHECKED BY: JKC		
APPROVED BY: CLS		
REVISED:		
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		UTILITY CONSTRUCTION PLANS ONLY
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151		

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 2024.
2. THE EXISTING WATER AND SEWER FACILITIES 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 AND THE UTILITY OWNER. 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 12-INCH AND SMALLER DIAMETER PIPE SHALL BE DUCTILE IRON RESTRAINED JOINT PRESSURE CLASS 350, UNLESS OTHERWISE NOTED ON THE UTILITY CONSTRUCTION PLANS.
2. ALL 16-INCH AND LARGER DIAMETER PIPE SHALL BE DUCTILE IRON RESTRAINED JOINT PRESSURE CLASS 250, UNLESS OTHERWISE NOTED ON THE UTILITY CONSTRUCTION PLANS.
3. ALL VALVES ON WATER MAINS SHALL BE DIRECT BURY GATE VALVES, UNLESS OTHERWISE NOTED ON THE UTILITY CONSTRUCTION PLANS.
4. DUCTILE IRON RESTRAINED JOINT PIPE SHALL BE USED IN LIEU OF THRUST BLOCKING ON PROPOSED WATER LINE AND FORCE MAIN RELOCATIONS.
5. CONCRETE THRUST BLOCKING (WALL BLOCKING) SHALL BE USED ON EXISTING WATER LINES AND FORCE MAINS AT THE PROPOSED RELOCATION TIE-IN POINTS.
6. CONTRACTOR SHALL CONNECT ALL WATER LINES AND SERVICE CONNECTIONS USING NECESSARY FITTINGS.
7. ALL BACKFLOW PREVENTORS ARE THE RESPONSIBILITY OF THE PROPERTY OWNER.
8. CONTRACTOR IS REQUIRED TO CONTACT LOGAN HEDRICK, CLTWATER ENGINEERING PROJECT MANAGER, AT (980) 253-4390 AT LEAST 2 WEEKS PRIOR TO ANY WATER AND SEWER CONSTRUCTION.
9. ALL RECONNECT AND RELOCATE WATER METERS ON AN EXISTING WATER MAIN SHALL HAVE NEW SERVICE LINE INSTALLED TO THE EXISTING CORPORATION STOP. NO SPLICING OF SERVICES ALLOWED.

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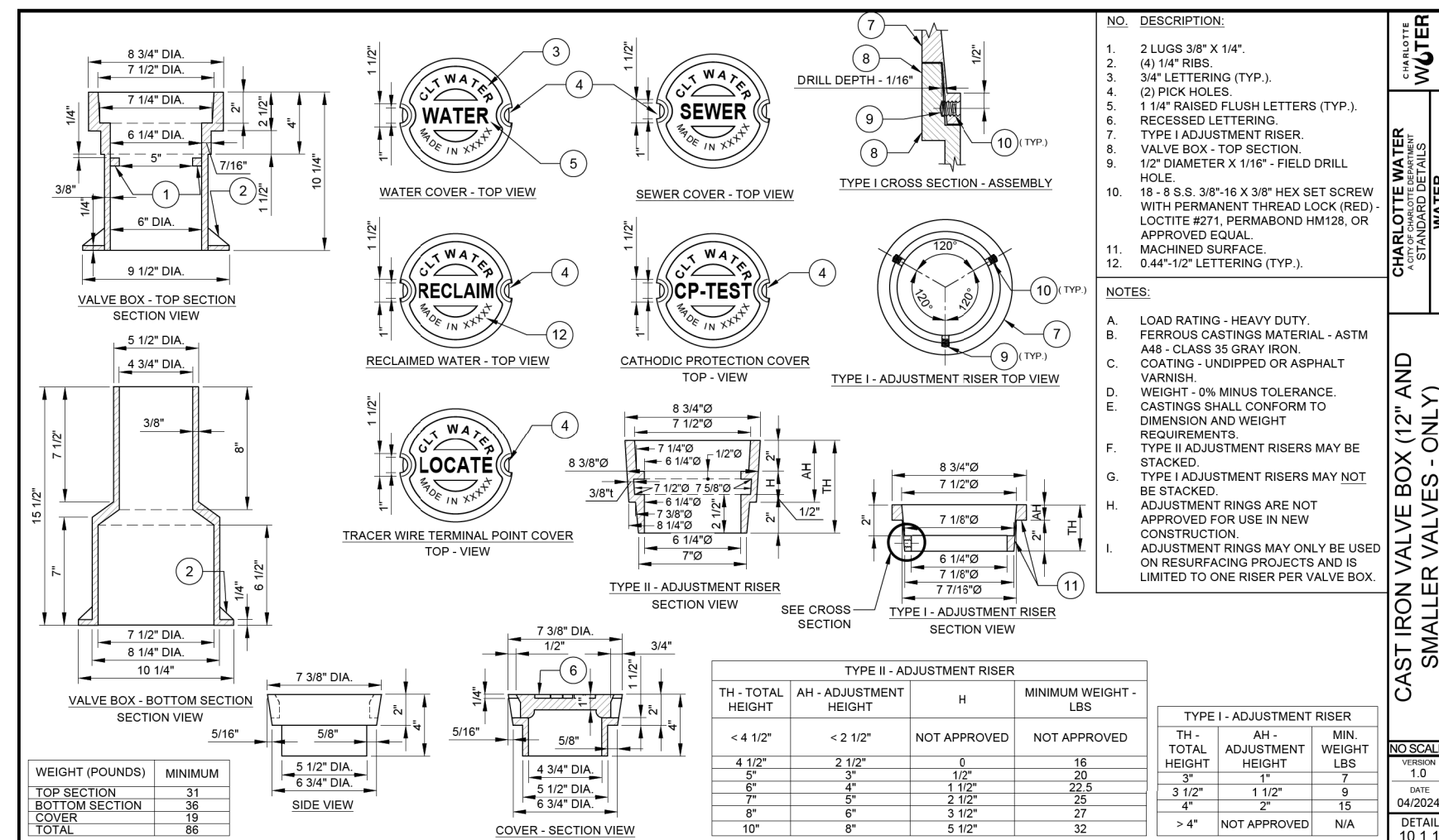


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PROJECT REFERENCE NO.		SHEET NO.
U-5906		UC-3A
DESIGNED BY: JKC		
DRAWN BY: JNA		
CHECKED BY: JKC		
APPROVED BY: CLS		
REVISED:	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151		UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

CLTW STANDARD DETAILS



CLTW STANDARD DETAILS



HINDE
ENGINEERING
License No. C-2639
10020 Monroe Rd., Suite 280 Matthews, NC 28105

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PROJECT REFERENCE NO.
U-5906

SHEET NO.
UC-3C

DESIGNED BY: **JKC**

DRAWN BY: **JNA**

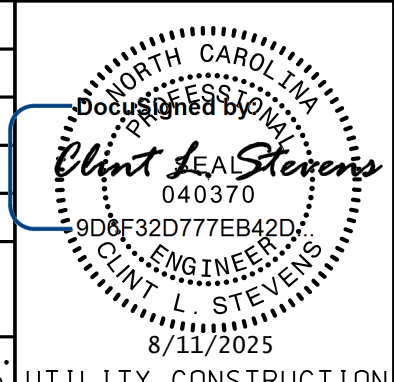
CHECKED BY: **JKC**

APPROVED BY: **CLS**

REVISED:

NORTH CAROLINA
DEPARTMENT OF
TRANSPORTATION

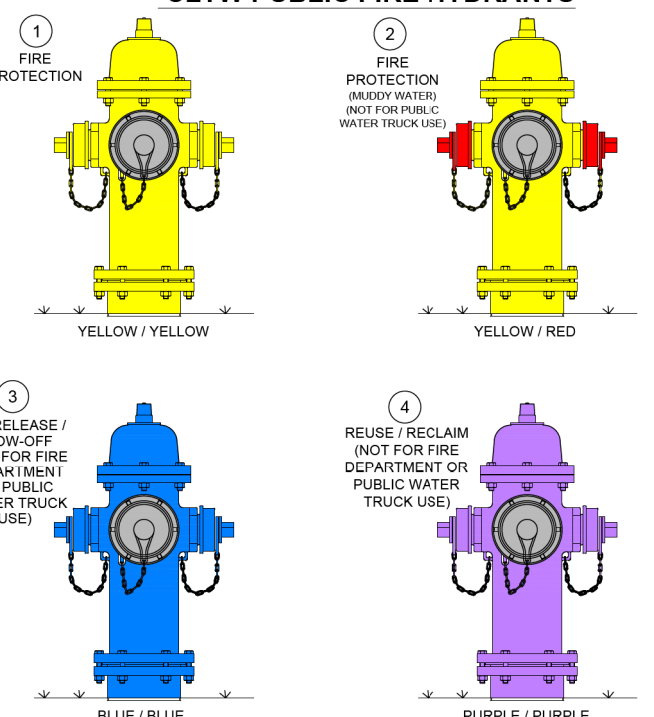
UTILITIES ENGINEERING SEC.
PHONE: (919) 707-6690
FAX: (919) 250-4151



UTILITY CONSTRUCTION
PLANS ONLY

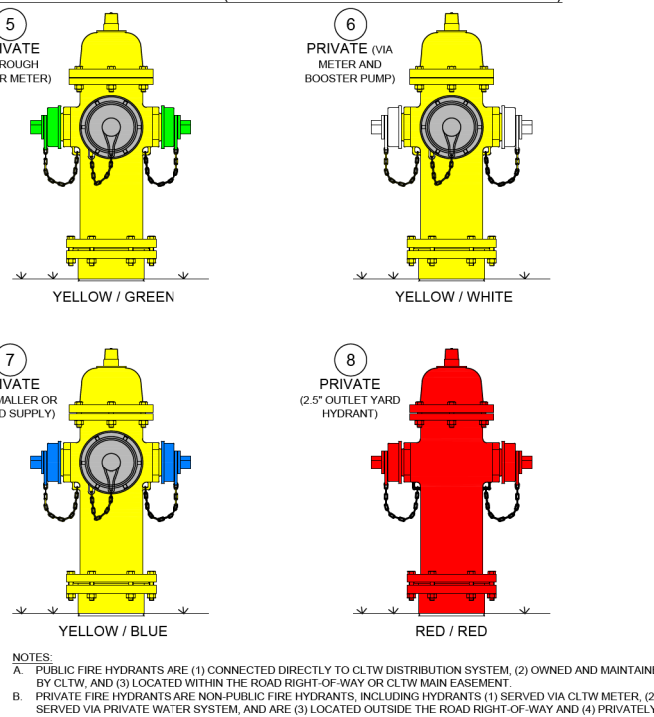
UTILITY CONSTRUCTION

CLTW PUBLIC FIRE HYDRANTS



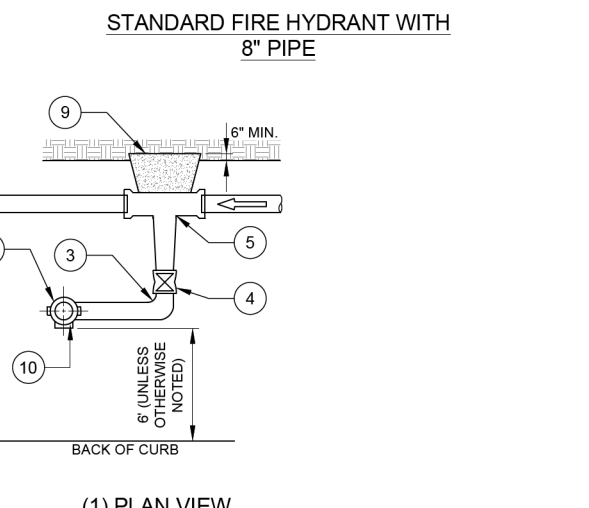
CLTW / CPO COLOR LEGEND
CLTW SAFETY YELLOW
CLTW SAFETY BLUE
CLTW SAFETY RED
CLTW SAFETY WHITE
CLTW SAFETY PURPLE
CLTW SAFETY GREEN
CLTW SAFETY ORANGE
CLTW SAFETY BROWN
CLTW SAFETY BLACK

PRIVATE FIRE HYDRANTS (NOT FOR PUBLIC WATER TRUCK USE)

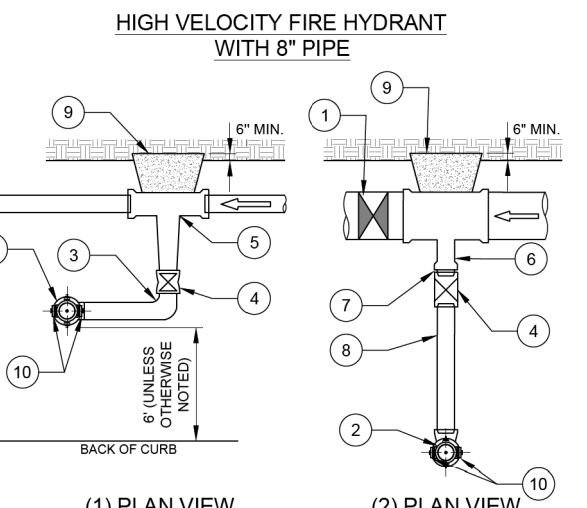


CHARLOTTE FIRE DEPARTMENT STANDARD COLOR CODE FOR PRIVATE FIRE HYDRANTS					
CLASSIFICATION	BARREL	TOP / BONNET	SPRING NOZZLE	IRON PUMPER NOZZLE	IRON PUMPER NOZZLE
1. PRIVATE	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW
2. PRIVATE	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW
3. PRIVATE	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW
4. PRIVATE	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW
5. PRIVATE	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW
6. PRIVATE	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW
7. PRIVATE	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW
8. PRIVATE	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW

STANDARD FIRE HYDRANT WITH 8" PIPE



HIGH VELOCITY FIRE HYDRANT WITH 8" PIPE



NO. DESCRIPTION:

1. MAIN LINE VALVE

2. STANDARD FIRE HYDRANT ON 8" MAIN

3. AND HIGH VELOCITY FIRE HYDRANT ON 12" AND LARGER MAINS

4. 90° SWIVEL 90° BEND

5. 8" RAIL GATE VALVE

6. 8" OUTLET SWIVEL HYDRANT TEE

7. 8" FOSTER ADAPTER WHICH BOLTS VALVE DIRECTLY TO TEE OR FH

8. 3,600 PSI CONCRETE THRUST BLOCKING

9. PLUMBER NOZZLE

NOTES:

A. HYDRANT LOCATION: ON ROADS WITH CURB AND GUTTER, USE DETAIL (1) (THIS SHEET IN ALL CASES UNLESS OTHERWISE APPROVED BY ENGINEER. HYDRANT BURN TO BE MINIMUM 4" UNLESS OTHERWISE APPROVED BY THE ENGINEER)

B. FOR HYDRANTS ON DEAD END LINES, MAIN LINE VALVES ARE LOCATED DOWNSTREAM OF HYDRANT

C. EXTENSION REQUIRED AS APPROVED BY THE ENGINEER. NO MORE THAN ONE HYDRANT EXTENSION IS ALLOWED. IF EXTENSION IS USED, DO NOT CAST HYDRANT COLLAR ON EXTENSION JOINT

D. PUMPER NOZZLE TO FACE THE ROADWAY ON STANDARD FIRE HYDRANTS. PUMPER NOZZLES SHALL BE PARALLEL WITH ROAD ON HIGH VELOCITY FIRE HYDRANTS

E. CONCRETE BLOCKING TO EXTEND TO UNDISTURBED EARTH. AMOUNT APPROVED BY THE ENGINEER

F. SEE CLTW STANDARD DETAIL FOR PLACEMENT OF FIRE HYDRANT IN ROADWAY

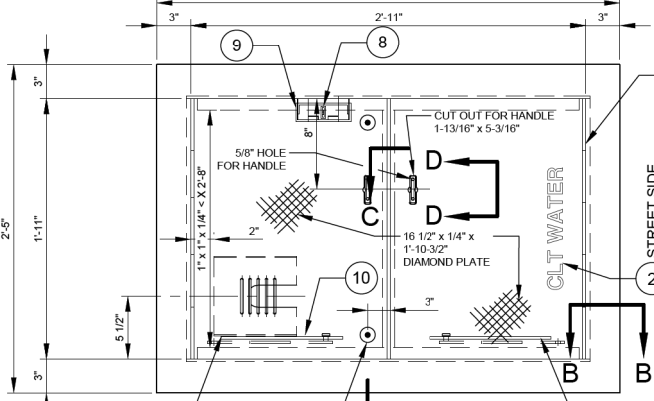
G. ALL HYDRANT SPRING SHALL BE RESTRUCTURED JOINT

H. FLOW DIRECTION ARROW IS THE PRIMARY WATER FLOW DIRECTION BASED ON HYDRAULICS OR DEAD END MAIN AND CONTROLS THE VALVE LOCATION

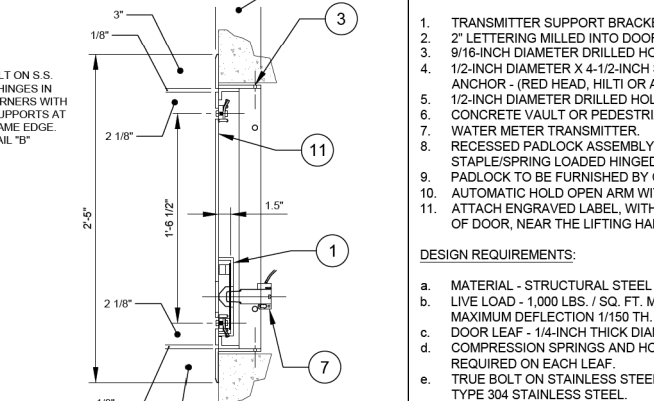
I. HIGH VELOCITY MAINS ARE CLASSIFIED AS 12" MAINS OR LARGER

J. MAIN LINE VALVES ARE FOR MAINS 30" AND LARGER

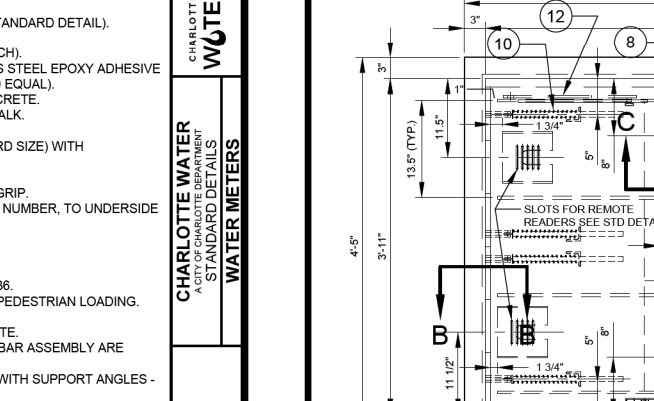
DETAIL A - LOCKING BOLT (2)



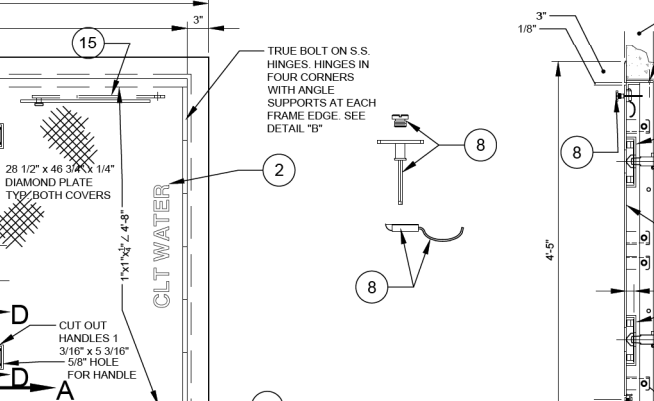
DETAIL B - HINGE



DETAIL C - HANDLE (2)



DETAIL D - HANDLE



NO. DESCRIPTION:

1. TRANSMITTER SUPPORT BRACKET (SEE STANDARD DETAIL)

2. 4" LETTERING MOUNTED INTO DOOR LEAF

3. 1/2" SPRING (SEE DETAIL 11)

4. 1/2" SPRING (SEE DETAIL 11)

5. 1/2" SPRING (SEE DETAIL 11)

6. 1/2" SPRING (SEE DETAIL 11)

7. 1/2" SPRING (SEE DETAIL 11)

8. 1/2" SPRING (SEE DETAIL 11)

9. 1/2" SPRING (SEE DETAIL 11)

10. 1/2" SPRING (SEE DETAIL 11)

11. 1/2" SPRING (SEE DETAIL 11)

DESIGN REQUIREMENTS:

A. MATERIAL: STRUCTURAL STEEL - ASTM A-36

B. LIVE LOAD: 1,000 LBS. / SQ. FT. MINIMUM - PEDESTRIAN LOADING

C. MAXIMUM DEFLECTION 1/16" IN. OF SPAN

D. DOOR LEAF - 1/4" THICK DIAMOND PLATE

E. COMPRESSION SPRINGS AND HOLD OPEN BAR ASSEMBLY ARE REQUIRED ON EACH LEAF

F. TRUE BOLT ON S.S. HINGES WITH SUPPORT ANGLES - TYPE 304 STAINLESS STEEL

NOTES:

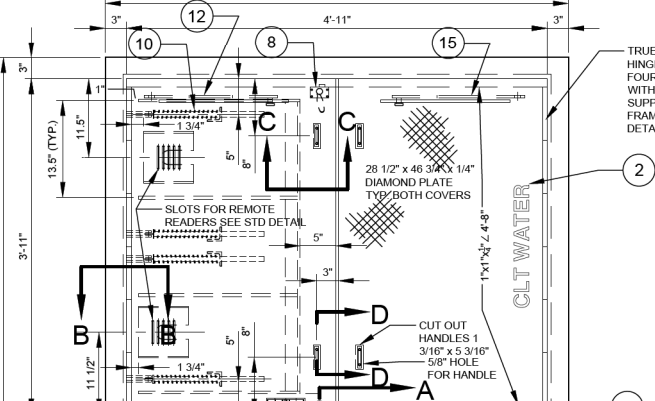
A. CONTRACTOR SHALL ANCHOR FRAME USING ANCHOR HOLE NO. 4 - AS APPROVED (ANCHOR DETAIL)

B. FRAME AND COVER TO BE NOT TOP GALVANIZED. ENTIRE ASSEMBLY SHALL BE GALVANIZED. GALVANIZED COATING SHALL BE A MINIMUM OF 3 MILS PER ASTM A123. GALVANIZED COATING SHALL BE SHOWN AT TOP OF VAULT

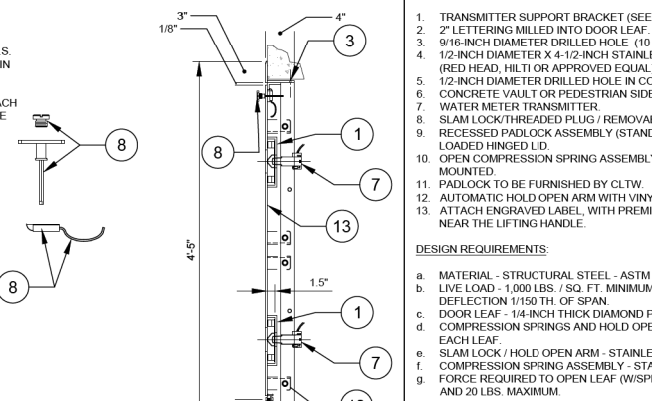
C. FRAME DIMENSIONS SHALL ALLOW FOR CLOSE FIT INSIDE VAULT

D. STAINLESS STEEL FOR ALL HARDWARE

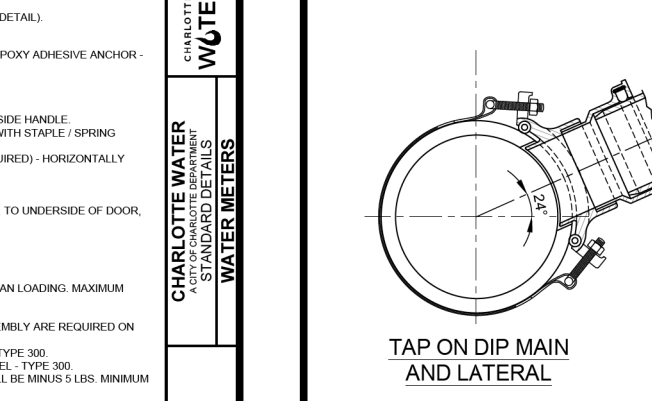
DETAIL A - LOCKING BOLT (1) LEAK



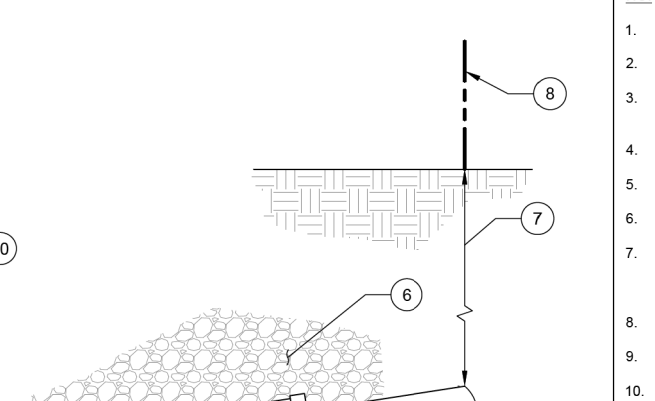
DETAIL B - HINGE



DETAIL C - HANDLE (4)



DETAIL D - HANDLE



NO. DESCRIPTION:

1. TRANSMITTER SUPPORT BRACKET (SEE STANDARD DETAIL)

2. 4" LETTERING MOUNTED INTO DOOR LEAF

3. 1/2" SPRING (SEE DETAIL 11)

4. 1/2" SPRING (SEE DETAIL 11)

5. 1/2" SPRING (SEE DETAIL 11)

6. 1/2" SPRING (SEE DETAIL 11)

7. 1/2" SPRING (SEE DETAIL 11)

8. 1/2" SPRING (SEE DETAIL 11)

9. 1/2" SPRING (SEE DETAIL 11)

10. 1/2" SPRING (SEE DETAIL 11)

11. 1/2" SPRING (SEE DETAIL 11)

DESIGN REQUIREMENTS:

A. MATERIAL: STRUCTURAL STEEL - ASTM A-36

B. LIVE LOAD: 1,000 LBS. / SQ. FT. MINIMUM - PEDESTRIAN LOADING. MAXIMUM DEFLECTION 1/16" IN. OF SPAN

C. DOOR LEAF - 1/4" THICK DIAMOND PLATE

D. COMPRESSION SPRINGS AND HOLD OPEN BAR ASSEMBLY ARE REQUIRED ON EACH LEAF

E. TRUE BOLT ON S.S. HINGES WITH SUPPORT ANGLES - TYPE 304 STAINLESS STEEL

NOTES:

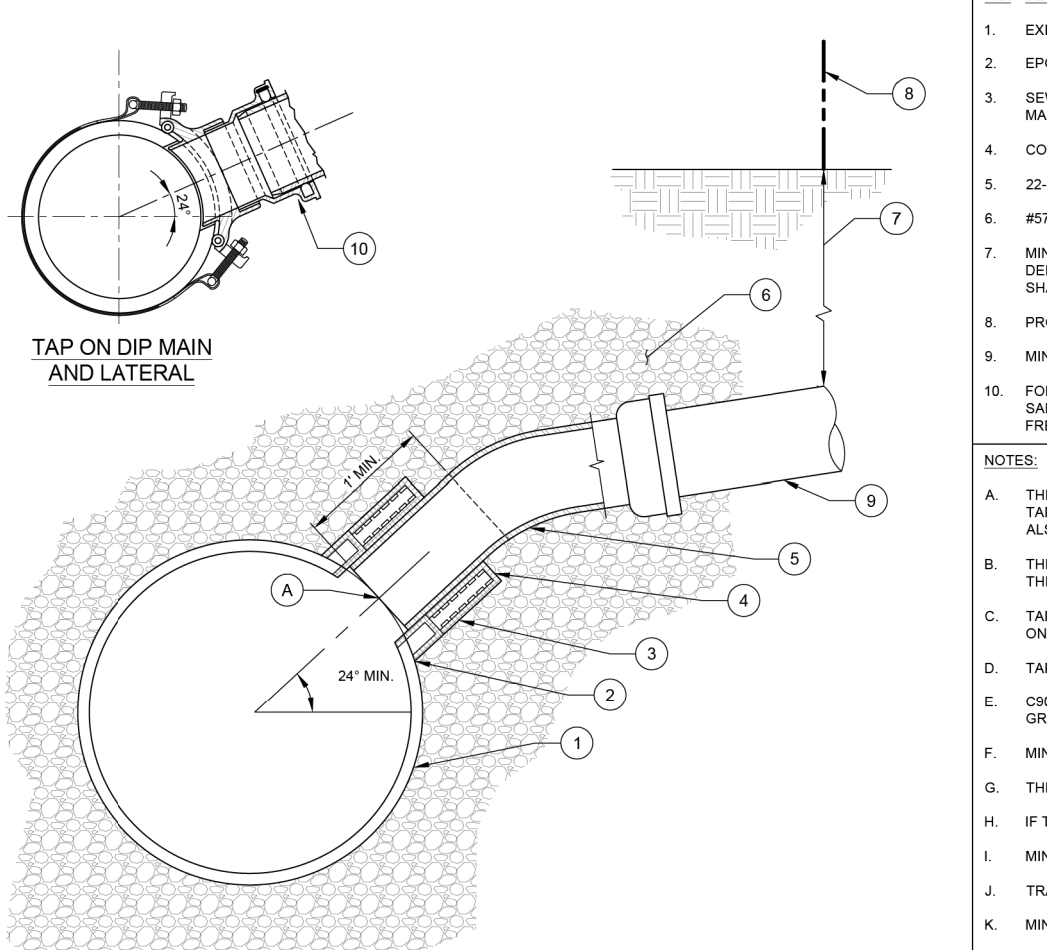
A. CONTRACTOR SHALL ANCHOR FRAME USING ANCHOR HOLE NO. 4 - AS APPROVED (ANCHOR DETAIL)

B. FRAME AND COVER TO BE NOT TOP GALVANIZED. ENTIRE ASSEMBLY SHALL BE GALVANIZED. GALVANIZED COATING SHALL BE A MINIMUM OF 3 MILS PER ASTM A123. GALVANIZED COATING SHALL BE SHOWN AT TOP OF VAULT

C. FRAME DIMENSIONS SHALL ALLOW FOR CLOSE FIT INSIDE VAULT

D. STAINLESS STEEL FOR ALL HARDWARE

4" AND 6" LATERAL SADDLE TAPS ON EXISTING SEWER MAIN



NO. DESCRIPTION:

1. EXISTING SEWER MAIN - VCP, PVC, DIP, FRP, OR CONCRETE, ETC.

2. EPOXY SEALANT AS RECOMMENDED BY TAP SADDLE MANUFACTURER

3. SEWER TAP SADDLE AS MANUFACTURED BY PRECO OR OTHER MANUFACTURERS AS LISTED IN SPECIFICATIONS

4. COMPRESSION JOINT SEALER

5. 22-1/2" BEND (SPIGOT X SLIP JOINT BELL) (300 DR 18 PVC)

6. #57 STONE BEDDING

7. MINIMUM DEPTH OF COVER AT PROPERTY LINE SHALL BE 4' - UNLESS GREATER DEPTH IS REQUIRED TO SERVE THE BUILDING. MINIMUM DEPTH AT SIDE DITCH SHALL BE 2.5'

8. PROPERTY LINE, ROAD R/W OR CLTW EASEMENT LINE

9. MIN. SLOPE SHALL BE 1.5% FOR 4" PIPE AND 1.25% FOR 6" PIPE

10. FOR 4" AND 6" CUTTING LATERAL, USE A SEALANTE TYPE F TEE SEWER SADDLE AS MANUFACTURED BY THE GENERAL ENGINEERING COMPANY, FREDERICK, MD TO FIT 6.25" TO 17.40" O.D. MAINS

NOTES:

A. THE OPENING IN PIPE SHALL BE CUT WITH A TAP MACHINE OR HOLE SAW. TAPPING BIT SHALL BE DESIGNED FOR THE PIPE MATERIAL BEING CUT AND ALSO INCLUDE PILOT BIT AND SHELL CUTTER

B. THE TAP SHALL BE MADE IN THE UPPER HALF OF THE PIPE AT 24" (MIN.) FROM THE HORIZONTAL

C. TAP SIZE SHALL MATCH LATERAL SIZE. MAXIMUM SIZE TAP SHALL BE 4" OR 6" ONLY. 4" TAPS SHALL BE USED ON 10" AND LARGER MAINS ONLY

D. TAPPING SADDLE & BEND TO BE FULLY ENCASED WITH #57 CRUSHED STONE

E. 300 DR 18 PVC LATERAL PIPE REQUIRE TYPE 3 GRANULAR BEDDING IF GROUNDWATER, ROCK, OR UNSTABLE SOIL IS PRESENT

F. MIN. CLEARANCE TO POPE JOINT ON MAIN SHALL BE 1"

G. THE LATERAL SHALL BE INSTALLED PERPENDICULAR TO THE MAIN

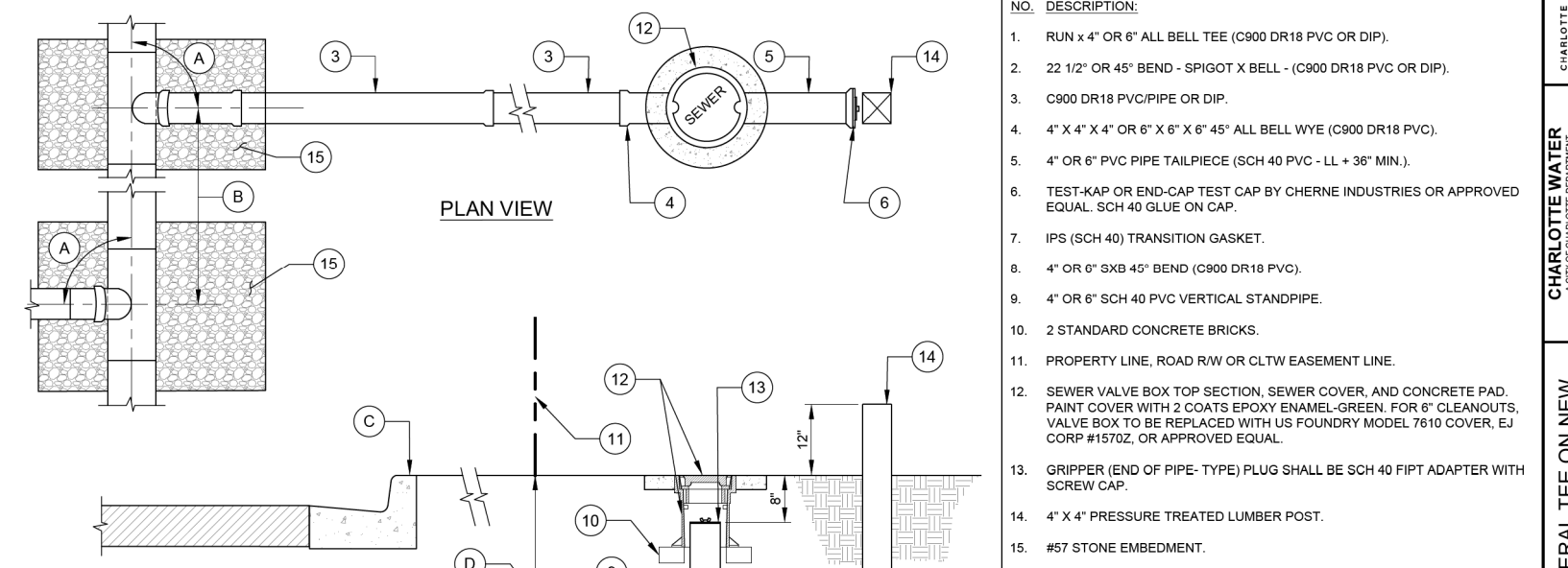
H. IF THE LATERAL HAS LESS THAN 2' OF COVER, THE LATERAL MUST BE DIP

I. MIN. DISTANCE BETWEEN SERVICE TAPS SHALL BE 7' CENTER TO CENTER

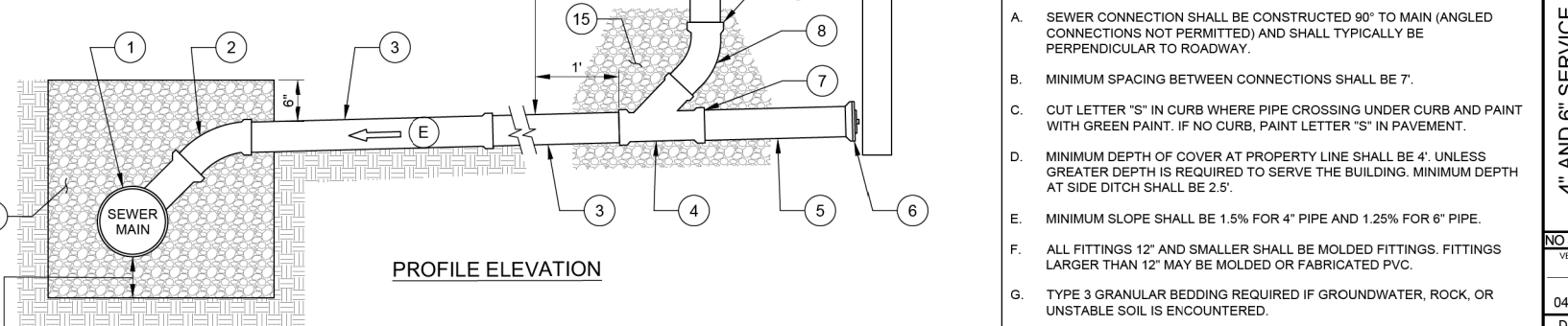
J. TRACER WIRE INSTALLED PER CLTW TRACER WIRE DETAIL AS APPLICABLE

K. MIN. DISTANCE FROM SERVICE TAP TO MANHOLE SHALL BE 7'

PLAN VIEW



PROFILE ELEVATION



NO. DESCRIPTION:

1. RUN 4" OR 6" ALL BELL TEE (300 DR 18 PVC OR DIP)

2. 22 1/2" OR 45° BEND - SPIGOT X BELL - (300 DR 18 PVC OR DIP)

3. 300 DR 18 PVC PIPE OR DIP

4. 4" X 4" X 4" OR 6" X 6" X 6" ALL BELL WYE (300 DR 18 PVC)

5. 4" OR 6" PVC PIPE TAILPIECE (SCH 40 PVC - LL + 38" MIN.)

6. TEST KAP OR END-CAP TEST CAP BY CHIERNE INDUSTRIES OR APPROVED EQUAL, SCH 40 BLUE ON CAP

7. IPS (SCH 40) TRANSITION GASKET

8. 4" OR 6" S&B 45° BEND (300 DR 18 PVC)

9. 4" OR 6" SCH 40 PVC VERTICAL STANDPIPE

10. 2 STANDARD CONCRETE BRICKS

11. PROPERTY LINE, ROAD R/W OR CLTW EASEMENT LINE

12. SEWER VALVE BOX TOP SECTION, SEWER COVER, AND CONCRETE PAD. PAINT COVER WITH 2 COATS FIRE ENAMEL GREEN. FOR 6" CLEANOUT, VALVE BOX TO BE REPLACED WITH US FOUNDRY MODEL 7610 COVER, E.J. CORP. MODEL, OR APPROVED EQUAL

13. GRIPPER END OF PIPE TYPE PLUS SHALL BE SCH 40 FPT ADAPTER WITH SCREW CAP

14. 4" X 4" PRESSURE TREATED LUMBER POST

15. #57 STONE EMBEDMENT

NOTES:

A. SEWER CONNECTION SHALL BE CONSTRUCTED 90° TO MAIN (ANGLED CONNECTIONS NOT PERMITTED) AND SHALL TYPICALLY BE PERPENDICULAR TO ROADWAY

B. MINIMUM SPACING BETWEEN CONNECTIONS SHALL BE 7'

C. CUT LETTER "S" IN CURB WHERE PIPE CROSSING UNDER CURB AND PAINT WITH GREEN PAINT. IF NO CURB, PAINT LETTER "S" IN PAVEMENT

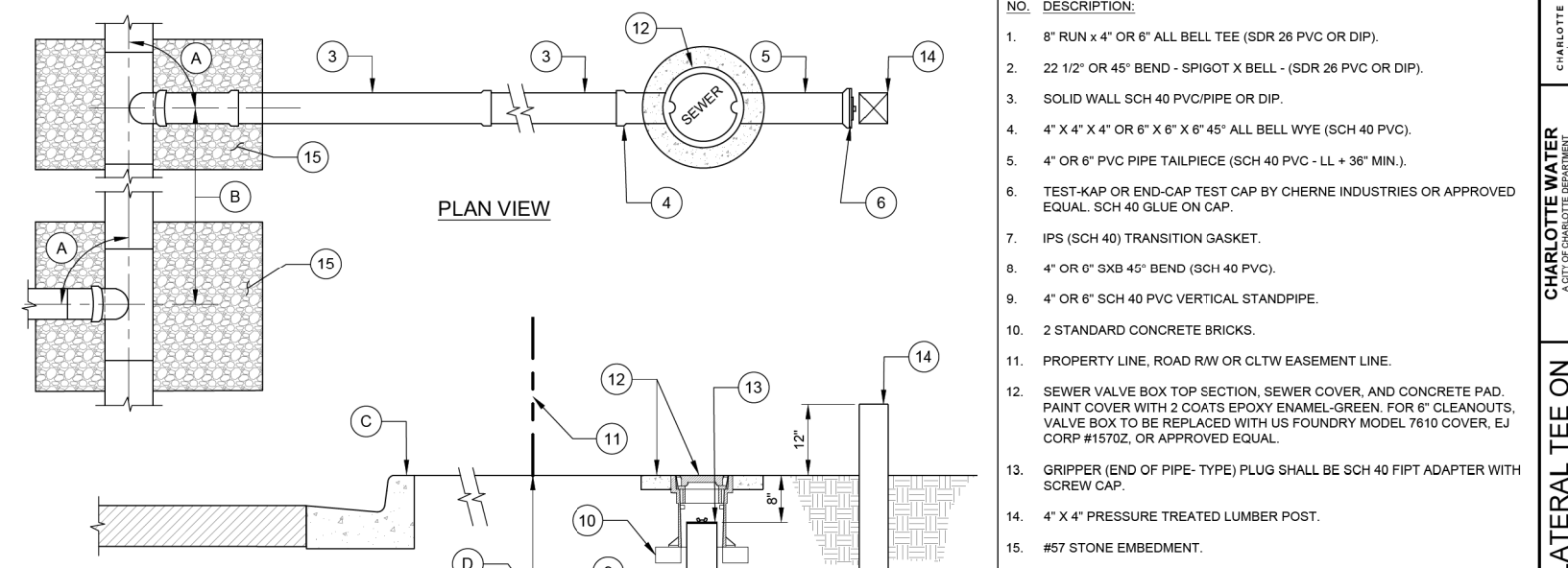
D. MINIMUM DEPTH OF COVER AT PROPERTY LINE SHALL BE 4' - UNLESS GREATER DEPTH IS REQUIRED TO SERVE THE BUILDING. MINIMUM DEPTH AT SIDE DITCH SHALL BE 2.5'

E. MINIMUM SLOPE SHALL BE 1.5% FOR 4" PIPE AND 1.25% FOR 6" PIPE

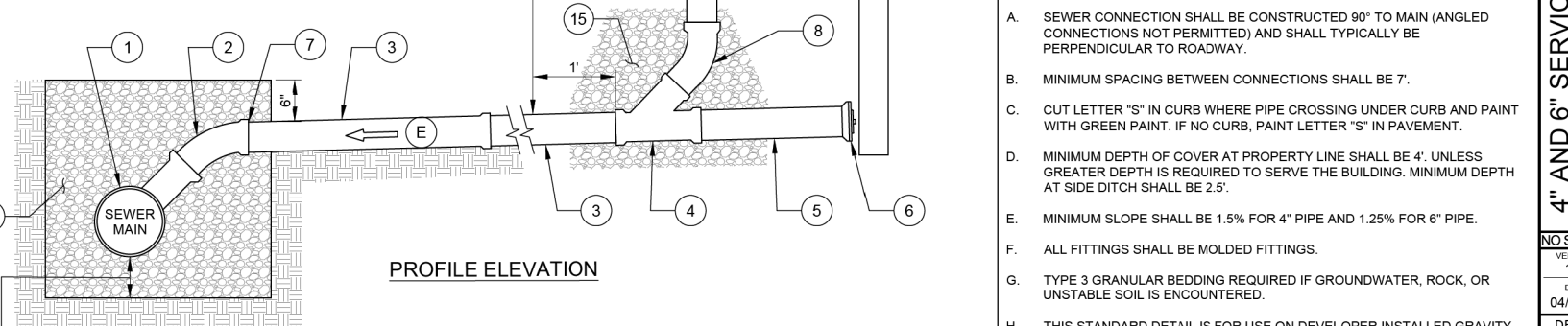
F. ALL FITTINGS 12" AND SMALLER SHALL BE MOLDED FITTINGS. FITTINGS LARGER THAN 12" MAY BE MOLDED OR FABRICATED PVC

G. TYPE 3 GRANULAR BEDDING REQUIRED IF GROUNDWATER, ROCK, OR UNSTABLE SOIL IS ENCOUNTERED

PLAN VIEW



PROFILE ELEVATION



NO. DESCRIPTION:

1. RUN 4" OR 6" ALL BELL TEE (SCH 20 PVC OR DIP)

2. 22 1/2" OR 45° BEND - SPIGOT X BELL - (SCH 20 PVC OR DIP)

3. SOLID WALL SCH 40 PVC PIPE OR DIP

4. 4" X 4" X 4" OR 6" X 6" X 6" ALL BELL WYE (SCH 40 PVC)

5. 4" OR 6" PVC PIPE TAILPIECE (SCH 40 PVC - LL + 38" MIN.)

6. TEST KAP OR END-CAP TEST CAP BY CHIERNE INDUSTRIES OR APPROVED EQUAL, SCH 40 BLUE ON CAP

7. IPS (SCH 40) TRANSITION GASKET

8. 4" OR 6" S&B 45° BEND (SCH 40 PVC)

9. 4" OR 6" SCH 40 PVC VERTICAL STANDPIPE

10. 2 STANDARD CONCRETE BRICKS

11. PROPERTY LINE, ROAD R/W OR CLTW EASEMENT LINE

12. SEWER VALVE BOX TOP SECTION, SEWER COVER, AND CONCRETE PAD. PAINT COVER WITH 2 COATS FIRE ENAMEL GREEN. FOR 6" CLEANOUT, VALVE BOX TO BE REPLACED WITH US FOUNDRY MODEL 7610 COVER, E.J. CORP. MODEL, OR APPROVED EQUAL

13. GRIPPER END OF PIPE TYPE PLUS SHALL BE SCH 40 FPT ADAPTER WITH SCREW CAP

14. 4" X 4" PRESSURE TREATED LUMBER POST

15. #57 STONE EMBEDMENT

NOTES:

A. SEWER CONNECTION SHALL BE CONSTRUCTED 90° TO MAIN (ANGLED CONNECTIONS NOT PERMITTED) AND SHALL TYPICALLY BE PERPENDICULAR TO ROADWAY

B. MINIMUM SPACING BETWEEN CONNECTIONS SHALL BE 7'

C. CUT LETTER "S" IN CURB WHERE PIPE CROSSING UNDER CURB AND PAINT WITH GREEN PAINT. IF NO CURB, PAINT LETTER "S" IN PAVEMENT

D. MINIMUM DEPTH OF COVER AT PROPERTY LINE SHALL BE 4' - UNLESS GREATER DEPTH IS REQUIRED TO SERVE THE BUILDING. MINIMUM DEPTH AT SIDE DITCH SHALL BE 2.5'

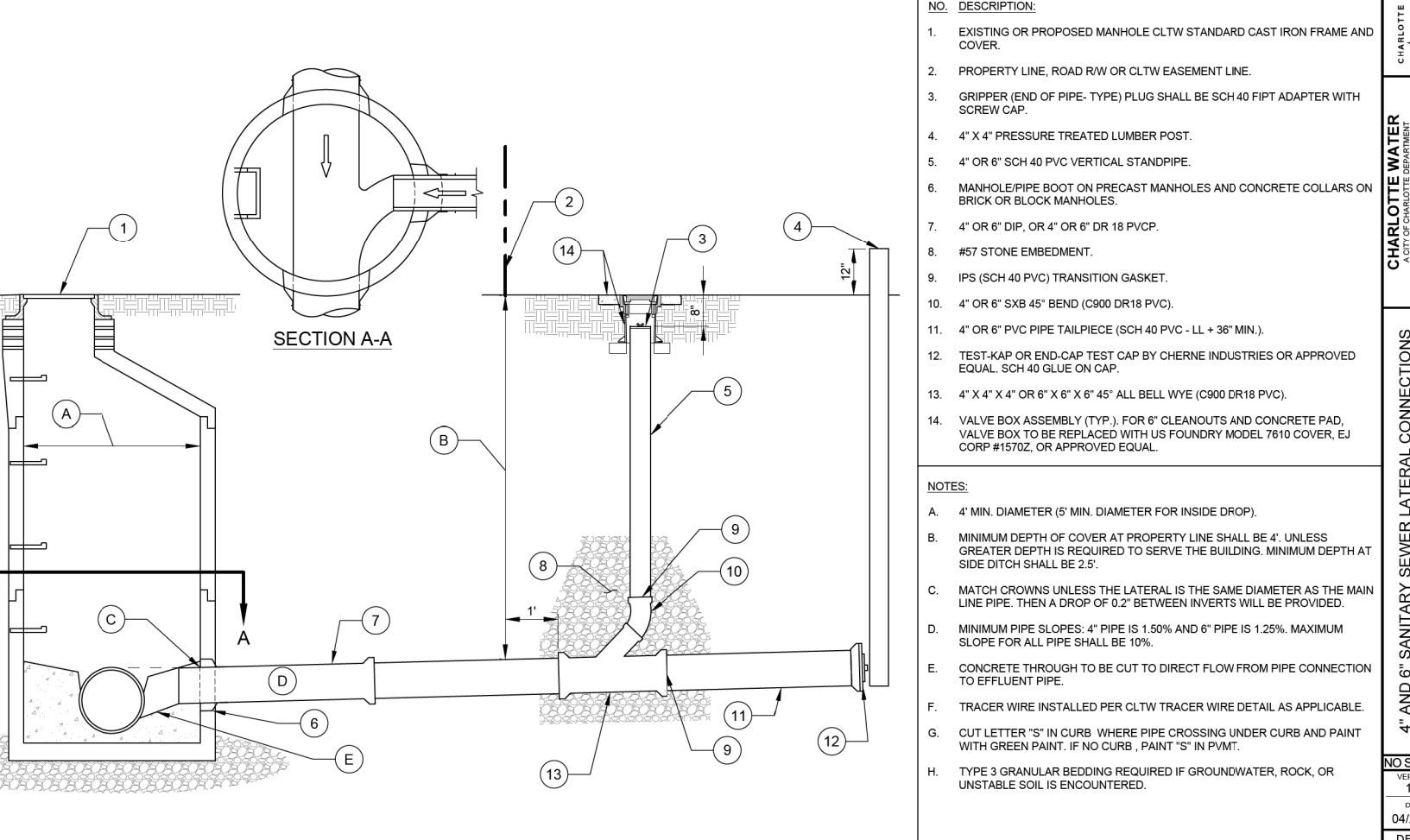
E. MINIMUM SLOPE SHALL BE 1.5% FOR 4" PIPE AND 1.25% FOR 6" PIPE

F. ALL FITTINGS SHALL BE MOLDED FITTINGS

G. TYPE 3 GRANULAR BEDDING REQUIRED IF GROUNDWATER, ROCK, OR UNSTABLE SOIL IS ENCOUNTERED

H. THIS STANDARD DETAIL IS FOR USE ON DEVELOPER INSTALLED GRAVITY SEWER PROJECTS ONLY

SECTION A-A



NO. DESCRIPTION:

1. EXISTING OR PROPOSED MANHOLE CLTW STANDARD CAST IRON FRAME AND COVER

2. PROPERTY LINE, ROAD R/W OR CLTW EASEMENT LINE

3. GRIPPER END OF PIPE TYPE PLUS SHALL BE SCH 40 FPT ADAPTER WITH SCREW CAP

4. 4" X 4" PRESSURE TREATED LUMBER POST

5. 4" OR 6" SCH 40 PVC VERTICAL STANDPIPE

6. MANHOLE BRICKS OR PRECAST MANHOLES AND CONCRETE COLLARS OR BRICK OR BLOCK MANHOLES

7. 4" OR 6" DIP, OR 4" OR 6" DR 18 PVC

8. #57 STONE EMBEDMENT

9. IPS (SCH 40) TRANSITION GASKET

10. 4" OR 6" S&B 45° BEND (300 DR 18 PVC)

11. 4" OR 6" PVC PIPE TAILPIECE (SCH 40 PVC - LL + 38" MIN.)

12. TEST KAP OR END-CAP TEST CAP BY CHIERNE INDUSTRIES OR APPROVED EQUAL, SCH 40 BLUE ON CAP

13. 4" X 4" X 4" OR 6" X 6" X 6" ALL BELL WYE (SCH 40 PVC)

14. VALVE BOX ASSEMBLY (TYPE 1) FOR 6" CLEANOUTS AND CONCRETE PAD. VALVE BOX TO BE REPLACED WITH US FOUNDRY MODEL 7610 COVER, E.J. CORP. MODEL, OR APPROVED EQUAL

NOTES:

A. 4" MIN. DIAMETER (5" MIN. DIAMETER FOR RIGID DIPS)

B. MINIMUM DEPTH OF COVER AT PROPERTY LINE SHALL BE 4' - UNLESS GREATER DEPTH IS REQUIRED TO SERVE THE BUILDING. MINIMUM DEPTH AT SIDE DITCH SHALL BE 2.5'

C. MATCH CROWN UNLESS THE LATERAL IS THE SAME DIAMETER AS THE MAIN LINE PIPE. THEN A DROPOFF OF 0.2' BETWEEN INVERTS WILL BE PROVIDED

D. MINIMUM PIPE SLOPE: 4" PIPE IS 1.50% AND 6" PIPE IS 1.25%. MAXIMUM SLOPE FOR ALL PIPE SHALL BE 7%

E. CONCRETE THROUGH TO BE CUT TO DIRECT FLOW FROM PIPE CONNECTION TO EFFLUENT PIPE

F. TRACER WIRE INSTALLED PER CLTW TRACER WIRE DETAIL AS APPLICABLE

G. CUT LETTER "S" IN CURB WHERE PIPE CROSSING UNDER CURB AND PAINT WITH GREEN PAINT. IF NO CURB, PAINT "S" IN PAINT

H. TYPE 3 GRANULAR BEDDING REQUIRED IF GROUNDWATER, ROCK, OR UNSTABLE SOIL IS ENCOUNTERED

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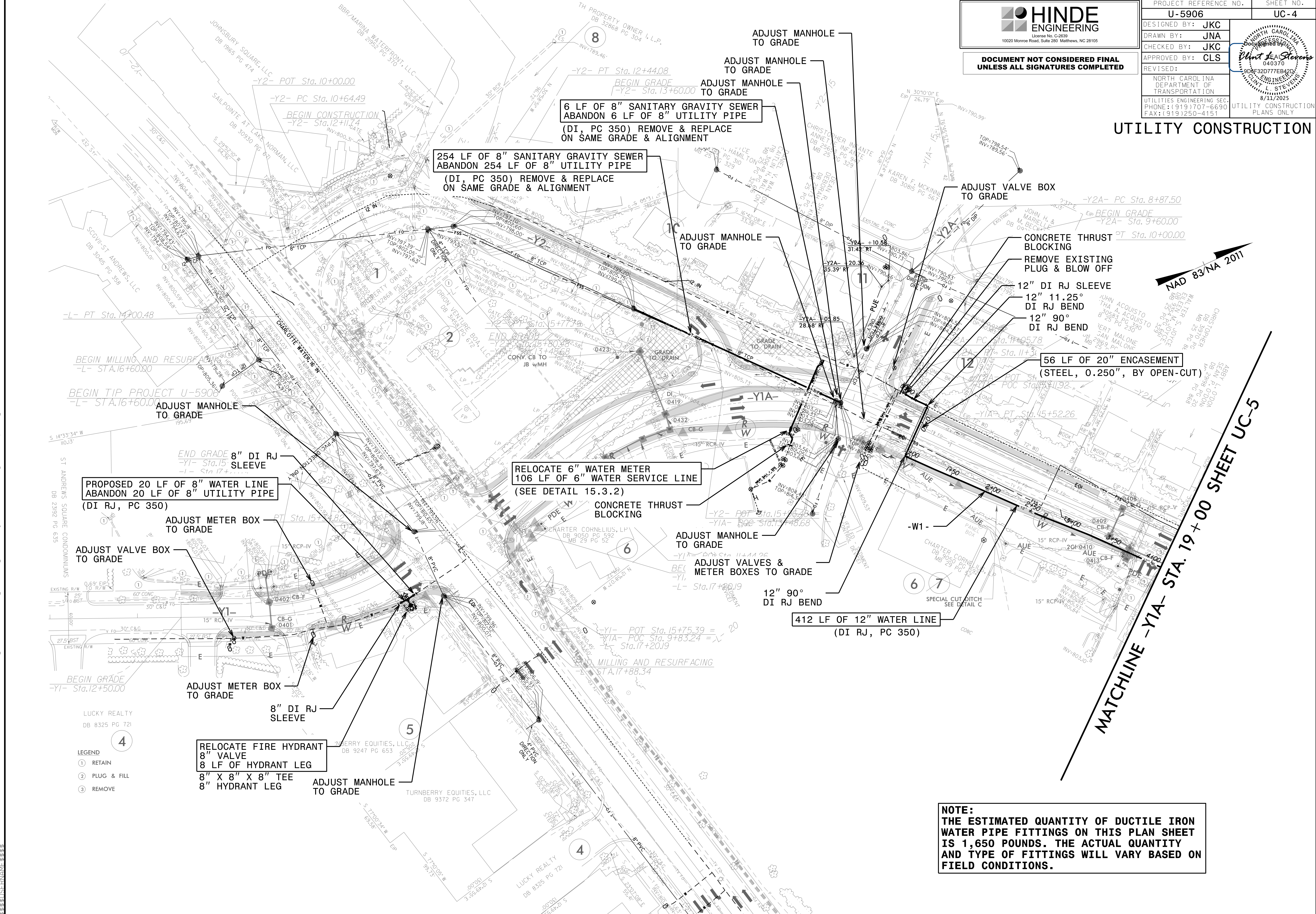


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10020 Monroe Road, Suite 280 Matthews, NC 28105

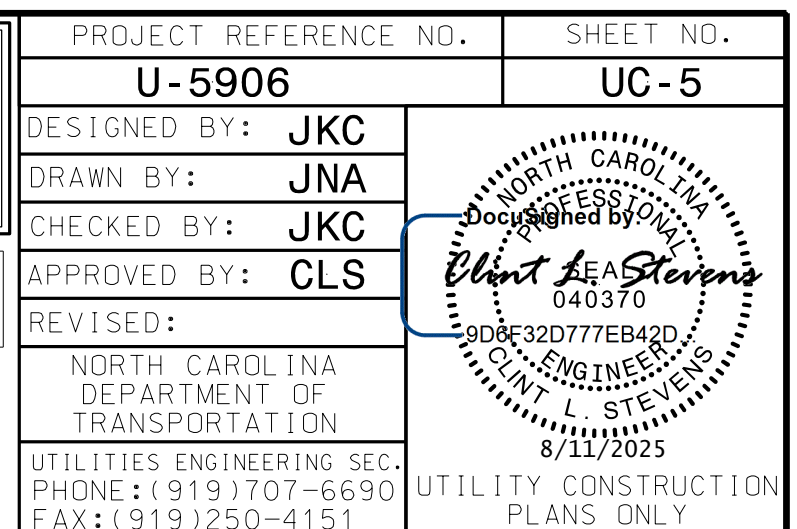
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

PROJECT REFERENCE NO.		SHEET NO.
U-5906		UC-4
DESIGNED BY: JKC		
DRAWN BY: JNA		
CHECKED BY: JKC		
APPROVED BY: CLS		
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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MATCHLINE -Y1A- STA. 19+00 SHEET UC-4

$$-Y/A - 20$$

- 1 RETAIN
- 2 PLUG & FILL
- 3 REMOVE

PER OWNER RECORDS,
THIS LINE DOES NOT EXIST

-Y/A- 25

ABANDON 270 LF OF 12" UTILITY PIPE

8" DI R
SLEEVE

12 LF OF 8" WATER LINE
(DI RJ, PC 350)

1,048 LF OF 12" WATER LINE
(DI RJ, PC 350)

(GATE) 12" VALVE

12"X12"X8"
DI RJ TEE
(GATE) 12" VAL

252 LF OF 12" WATER LINE
(DI RJ, PC 350)

MATCHLINE -Y1A- STA. 32+00 SHEET UC-6

NOTE:
THE ESTIMATED QUANTITY OF DUCTILE IRON
WATER PIPE FITTINGS ON THIS PLAN SHEET
IS 425 POUNDS. THE ACTUAL QUANTITY AND
TYPE OF FITTINGS WILL VARY BASED ON
FIELD CONDITIONS.

NOTE:
THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 4,385 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

NOTE:
THE ESTIMATED QUANTITY OF DUCTILE IRON SEWER PIPE FITTINGS ON THIS PLAN SHEET IS 555 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.



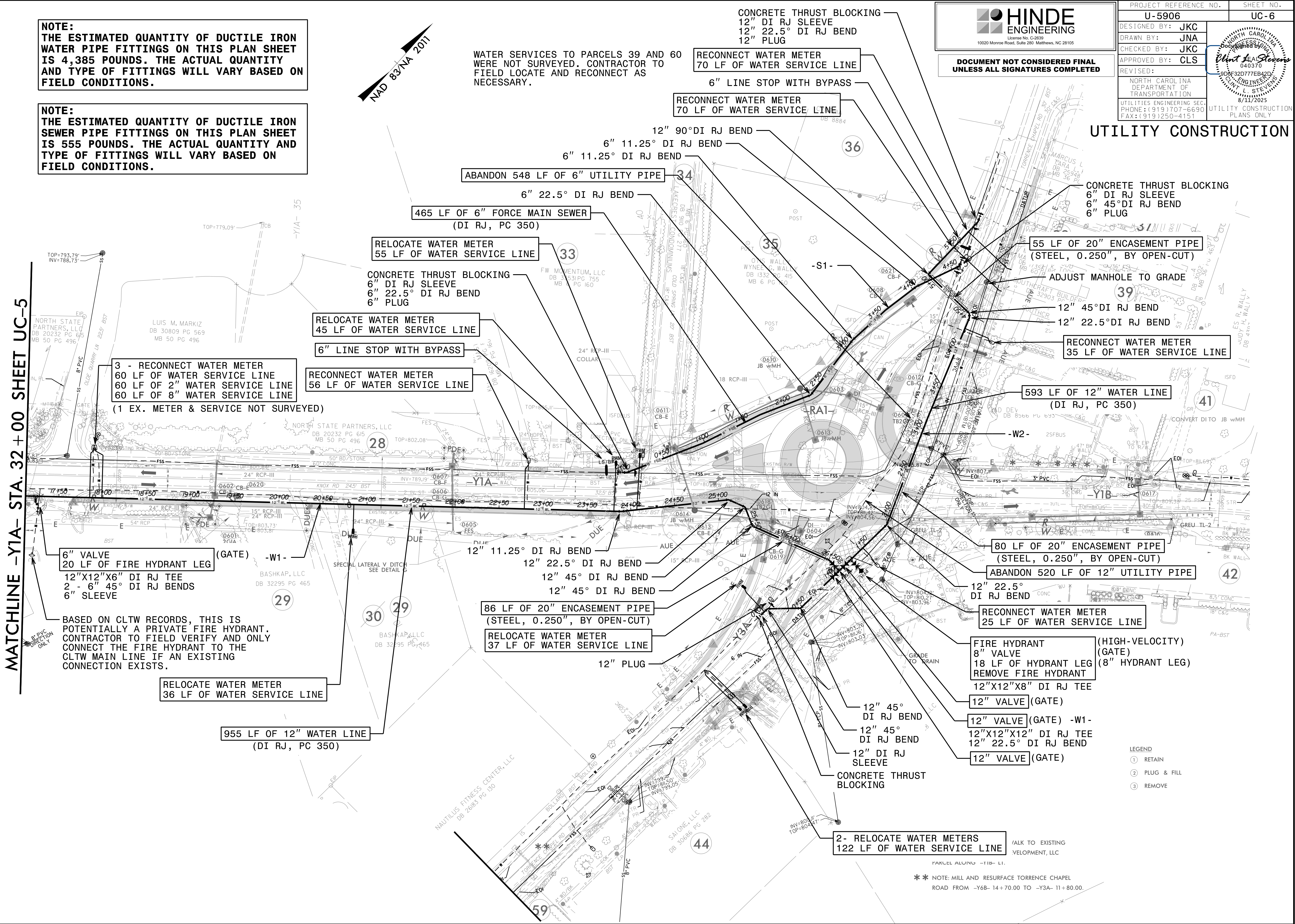
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PROJECT REFERENCE NO.		SHEET NO.
U-5906		UC-6
DESIGNED BY: JKC		
DRAWN BY: JNA		
CHECKED BY: JKC		
APPROVED BY: CLS		
REVISED:	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
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UTILITY CONSTRUCTION

MATCHLINE -Y1A- STA. 32+00 SHEET UC-5

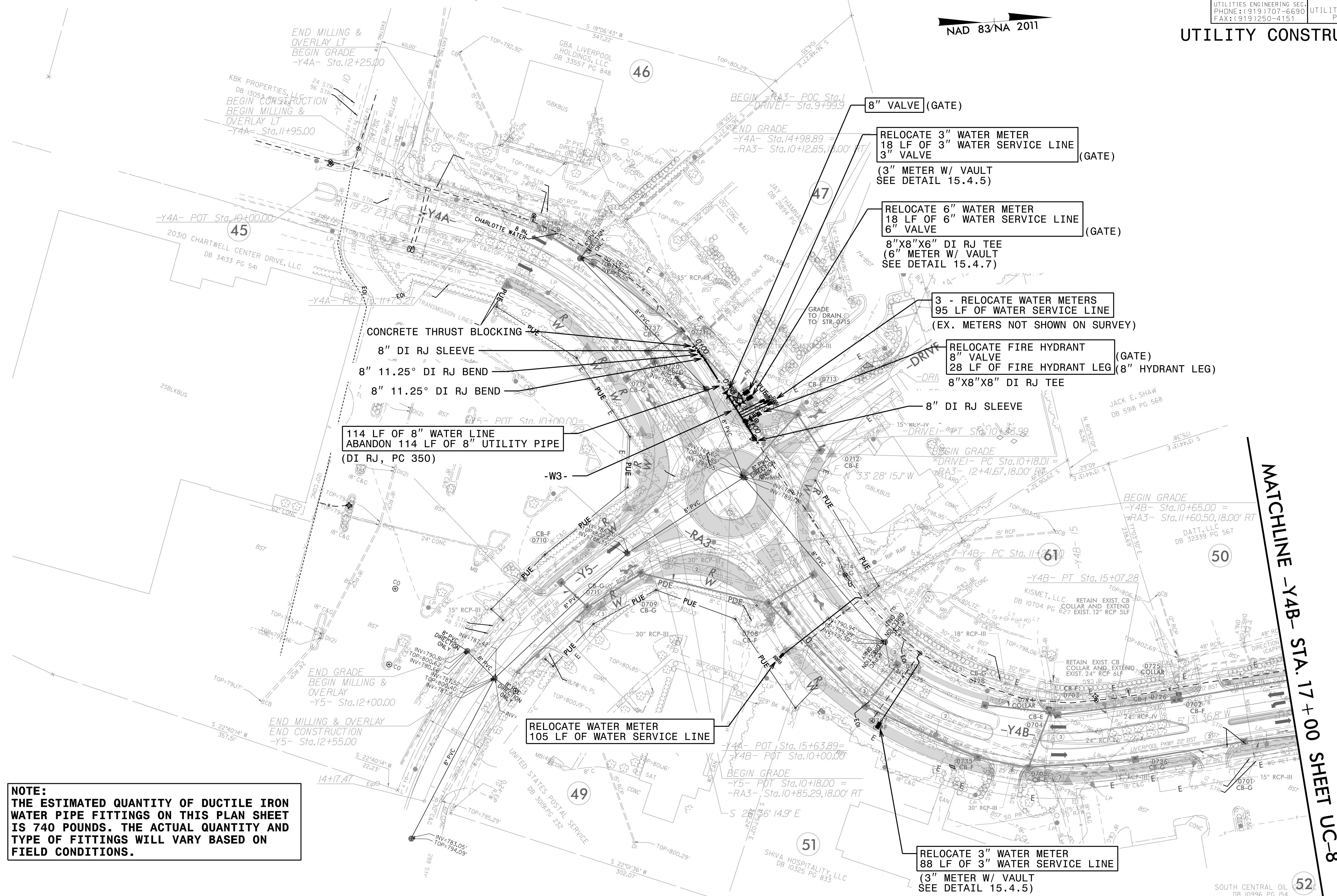


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PARCEL ALONG -Y1B- L1.
** NOTE: MILL AND RESURFACE TORRENCE CHAPEL ROAD FROM -Y6B- 14+70.00 TO -Y3A- 11+80.00.

PROJECT REFERENCE NO.		SHEET NO.	
U-5906		UC-7	
DESIGNED BY:	JKC		
DRAWN BY:	JNA		
CHECKED BY:	JKC		
APPROVED BY:	CLS		
REVISED:			
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UTILITY CONSTRUCTION

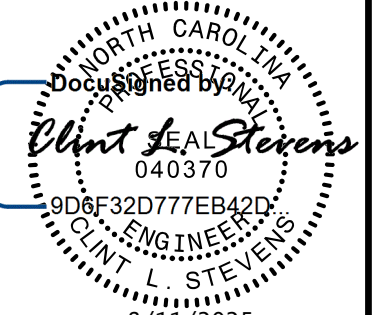


NOTE:
THE ESTIMATED QUANTITY OF DUCTILE IRON
WATER PIPE FITTINGS ON THIS PLAN SHEET
IS 740 POUNDS. THE ACTUAL QUANTITY AND
TYPE OF FITTINGS WILL VARY BASED ON
FIELD CONDITIONS.

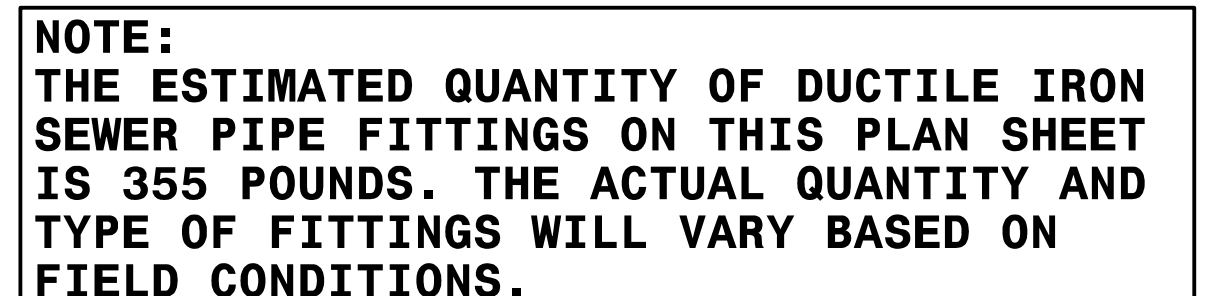
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Document signed by
Clint L. Stevens
040370
9D6F32D777EB42D
ENGINEER
CLINT L. STEVENS

MATCHLINE -Y4B- STA. 17+00 SHEET UC-7



NAD 83/NA 2011



PROJECT REFERENCE NO.		SHEET NO.	
U-5906		UC-10	
DRAWN BY: JKC			
DRAWN BY: JNA			
CHECKED BY: JKC			
APPROVED BY: CLS			
REVISED:			
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		8/11/2025 UTILITY CONSTRUCTION PLANS ONLY	

-W1-

UTILITY CONSTRUCTION

EX. TELECOM LINE (APPX.)

EX. FORCE MAIN (APPX.)

EX. TELECOM LINE (APPX.)

PROPOSED GRADE @ WATER LINE

PROP. 15\" RCP (APPX.)

EXISTING GRADE @ WATER LINE

EX. GAS LINE (APPX.)

EX. 12\" WATER LINE (APPX.)
REMOVE EX. PLUG & BLOW OFF

12\" DI RJ SLEEVE

12\" 11.25° DI RJ BEND

12\" 90° DI RJ BEND

12\" 90° DI RJ BEND

20\" ENCASEMENT PIPE (STEEL, 0.250\" THICK) (BY OPEN-CUT)

12\" WATER LINE (DI RJ, PC 350)

EX. 42\" RCP (APPX.)

MATCHLINE -W1- STA. 11+50
SEE BELOW

PROJECT REFERENCE NO. U-5906

SHEET NO. UC-10

DESIGNED BY: JKC

DRAWN BY: JNA

CHECKED BY: JKC

APPROVED BY: CLS

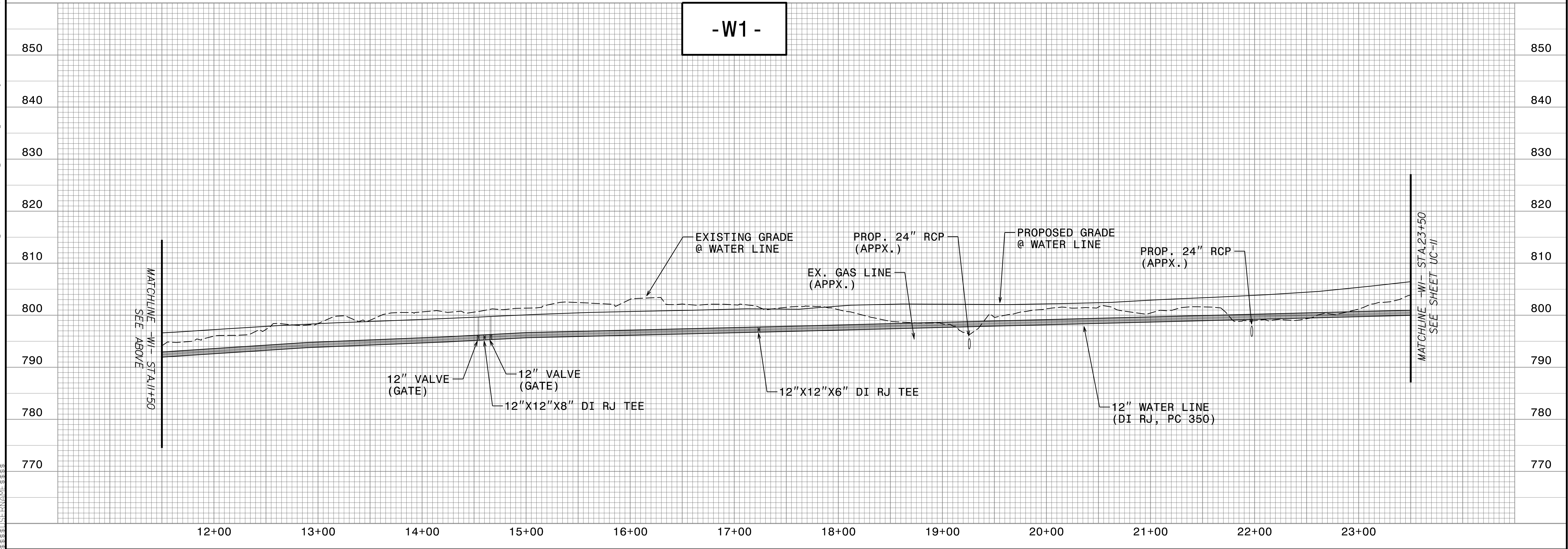
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

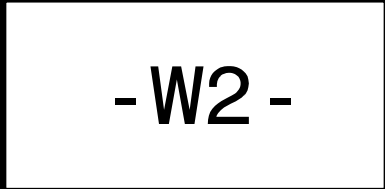
UTILITIES ENGINEERING SEC.
PHONE: (919) 707-6690
FAX: (919) 250-4151

8/11/2025

UTILITY CONSTRUCTION PLANS ONLY



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PROJECT REFERENCE NO.		SHEET NO.	
U-5906		UC-14	
DESIGNED BY: JKC			
DRAWN BY: JNA			
CHECKED BY: JKC			
APPROVED BY: CLS			
REVISED:			
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		CLINT E. STEVENS ENGINEER	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151		8/11/2025 UTILITY CONSTRUCTION PLANS ONLY	

UTILITY CONSTRUCTION