

TIP PROJECT: HL-0025

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

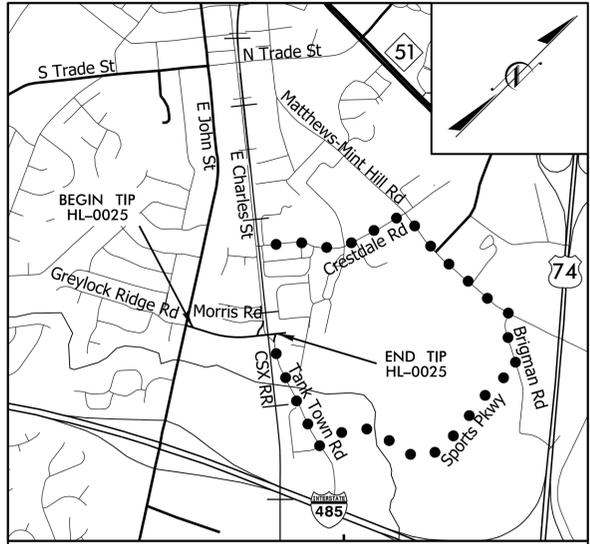
T.I.P. NO.	SHEET NO.
HL-0025	UC-1

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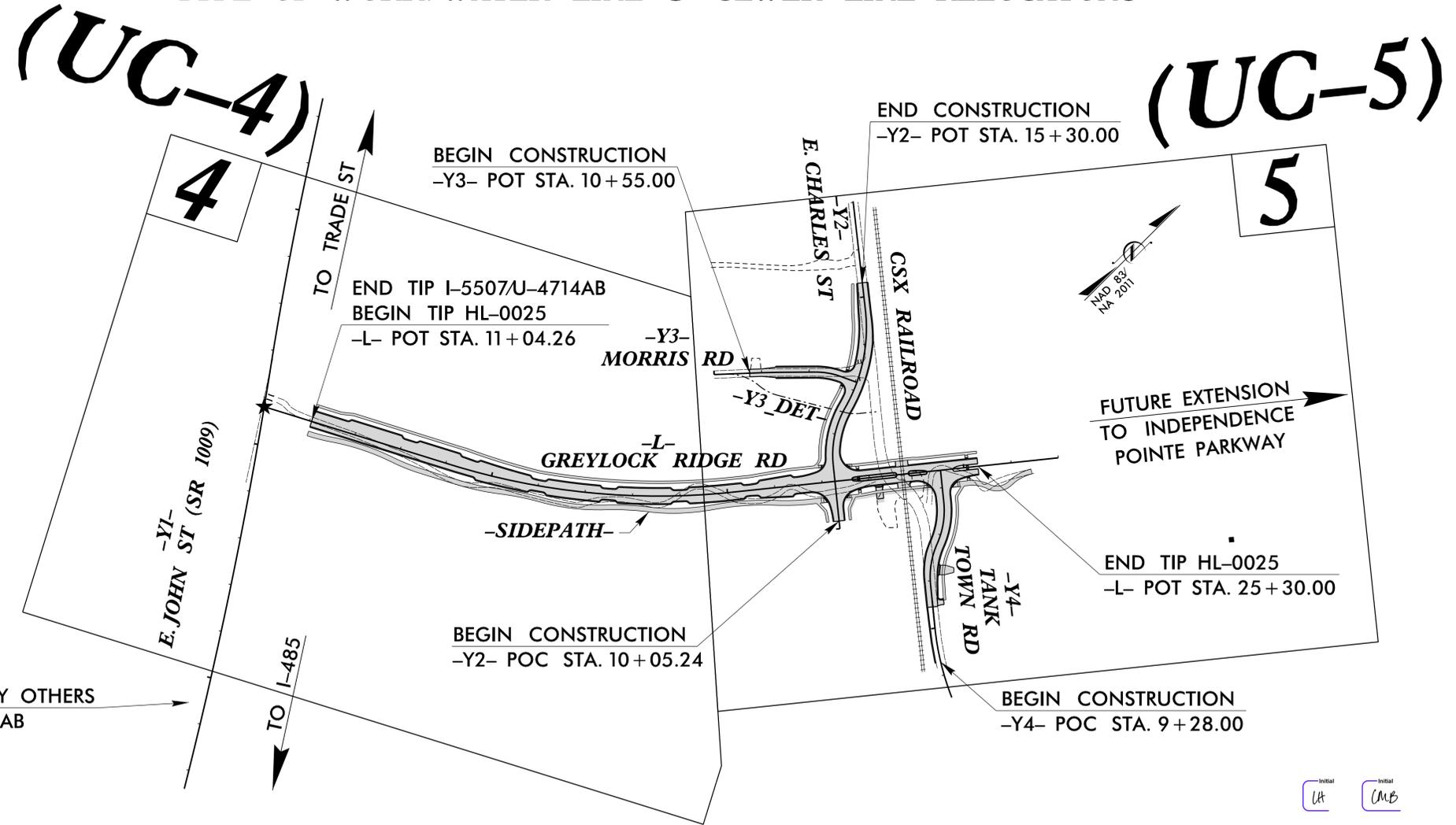
**UTILITY CONSTRUCTION PLANS
MECKLENBURG COUNTY**

**LOCATION: GREYLOCK RIDGE ROAD EXTENSION
FROM E. JOHN ST. TO TANK TOWN RD.
IN MATTHEWS, NC**

TYPE OF WORK: WATER LINE & SEWER LINE RELOCATONS



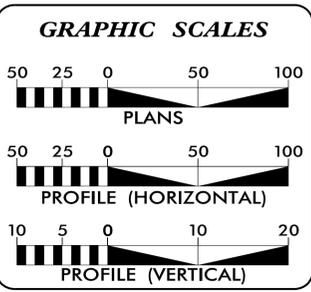
VICINITY MAP
..... DETOUR ROUTE
N.T.S.



CONSTRUCTION BY OTHERS
TIP I-5507 /U-4714AB

Initials: LA, CMB

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WATER AND SEWER OWNER ON PROJECT

(A) CHARLOTTE WATER (WATER)
(B) CHARLOTTE WATER (SEWER)

PREPARED IN THE OFFICE OF:

HINDE ENGINEERING
License No. C-2639
401 Harrison Oaks Blvd., Suite 220 Cary, NC 27513
Ph. (919) 653-0001

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

SEAL

**DIVISION OF HIGHWAYS
DIVISION 10**
716 W. Main St.
Albemarle, NC 28001
PHONE (704) 983-4400
FAX (704) 982-3146

Brett D. Canipe, P.E. DIVISION ENGINEER
Eric "Nat" Hunter, P.E. DIVISION CONSTRUCTION ENGR
Lynn Basinger DIVISION UTILITY ENGINEER
Terry Burleson DM-STIP PROJECT ENGINEER

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS



UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

Water Line (Sized as Shown)	..... 12" WL
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	..... PS(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)	..... 12" SS
Force Main Sewer Line (Sized as Shown)	..... 12" FSS
Manhole (Sized per Note) •
Sewer Pump Station	..... PS(SS)

PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

Power Pole	..... 0
Telephone Pole	..... -0-
Joint Use Pole	..... -0-
Telephone Pedestal	..... TEL PED
Utility Line by Others (Type as Shown)	..... PROP O/H POW LINES
Trenchless Installation	..... 12" TL INSTALL
Encasement by Open Cut	..... 24" ENCAS BY OC
Encasement	..... 24" 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	..... P
Telephone Pole	..... •	*Underground Telephone Cable	..... T
Joint Use Pole	..... •	*Underground Telephone Conduit	..... TC
Utility Pole	..... •	*Underground Fiber Optics Telephone Cable	..... T FO
Utility Pole with Base	..... □	*Underground TV Cable	..... TV
H-Frame Pole	..... •—•	*Underground Fiber Optics TV Cable	..... TV FO
Power Transmission Line Tower	..... ☒	*Underground Gas Pipeline	..... G
Water Manhole	..... ⊗	Aboveground Gas Pipeline	..... A/G Gas
Power Manhole	..... ⊙	*Underground Water Line	..... W
Telephone Manhole	..... ⊖	Aboveground Water Line	..... A/G Water
Sanitary Sewer Manhole	..... ⊗	*Underground Gravity Sanitary Sewer Line	..... SS
Hand Hole for Cable	..... ☒	Aboveground Gravity Sanitary Sewer Line	..... A/G Sanitary Sewer
Power Transformer	..... ☒	*Underground SS Forced Main Line	..... FSS
Telephone Pedestal	..... ☒	Underground Unknown Utility Line	..... ?UL
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) W
 Designated Utility Line (Type as Shown) W

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PROJECT REFERENCE NO.	SHEET NO.
HL-0025	UC-2A
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

APPLICATION FOR PERMIT FOR WATER MAIN EXTENSION

PROJECT NAME: NC DOT TIP HL-0025

CLTWater PROJECT NO.: CPM-60-25-277

PROJECT DESCRIPTION: PROPOSED 2,196 L.F. OF 8" WATER MAIN WITH IT'S ASSOCIATED FITTINGS AND
PROPOSED 100 L.F. OF 2" WATER MAIN WITH IT'S ASSOCIATED FITTINGS
ALONG GREYLOCK RIDGE RD, E. CHARLES ST AND TANK TOWN RD IN MATTHEWS.

DESIGNED BY: FIRM: HINDE ENGINEERING, INC.

ENGINEER: CLINT L. STEVENS, PE

ADDRESS: 401 HARRISON OAKS BLVD., SUITE 220
CARY, NORTH CAROLINA 27513

PHONE: (919) 653-0001

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 9/3/2025

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

Initial CS Initial CMB

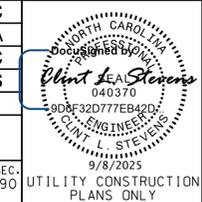
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UTILITY CONSTRUCTION



HINDE ENGINEERING
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 401 Harrison Oaks Blvd., Suite 220 Cary, NC 27513

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PROJECT REFERENCE NO.	SHEET NO.
HL-0025	UC-3
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	

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 ENVIRONMENTAL 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 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 VALVES ON WATER MAINS SHALL BE DIRECT BURY GATE VALVES, UNLESS OTHERWISE NOTED ON THE UTILITY CONSTRUCTION PLANS.
3. DUCTILE IRON RESTRAINED JOINT PIPE SHALL BE USED IN LIEU OF THRUST BLOCKING ON PROPOSED WATER LINE RELOCATIONS.
4. CONCRETE THRUST BLOCKING (WALL BLOCKING) SHALL BE USED ON EXISTING WATER LINES AT THE PROPOSED RELOCATION TIE-IN POINTS.
5. CONTRACTOR SHALL CONNECT ALL WATER LINES AND SERVICE CONNECTIONS USING NECESSARY FITTINGS.
6. ALL BACKFLOW PREVENTORS ARE THE RESPONSIBILITY OF THE PROPERTY OWNER.
7. FOR FIRE HYDRANTS TO BE REMOVED, THE CONTRACTOR SHALL CONTACT CHARLOTTE WATER (CLTWATER) TO DETERMINE A SUITABLE LOCATION TO STOCKPILE THE FIRE HYDRANT AND ASSOCIATED ITEMS.
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.

UTILITY CONSTRUCTION

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HINDE ENGINEERING
 License No. C-2639
 401 Harrison Oaks Blvd., Suite 220 Cary, NC 27513

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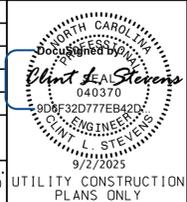
DESIGNED BY: **JKC**
 DRAWN BY: **JNA**
 CHECKED BY: **JKC**
 APPROVED BY: **CLS**

REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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

UTILITY CONSTRUCTION PLANS ONLY



PROJECT TYPICAL DETAILS

UTILITY CONSTRUCTION

CAST IRON VALVE BOX (12" AND SMALLER VALVES - ONLY)

NO. DESCRIPTION:

- 2 LUGS 3/8" X 1/4" (4) 1/4" RIBS.
- 3/4" LETTERING (TYP.).
- 2 PICK HOLES.
- 1 1/4" RECESSED FLUSH LETTERS (TYP.).
- RECESSED LETTERING.
- TYPE I ADJUSTMENT RISER.
- VALVE BOX - TOP SECTION.
- 1/2" DIAMETER X 1/4" FIELD DRILL HOLE.
- 18" x 8.5" 3/8" - 16 X 3/8" HEX SET SCREW WITH PERMANENT THREAD LOCK (RED) LOCATED AT 12 O'CLOCK POSITION OR APPROVED EQUAL.
- MACHINED SURFACE.
- 0.44" - 1/2" LETTERING (TYP.).

NOTES:

- LOAD RATING - HEAVY DUTY FERROUS CASTING MATERIAL - ASTM A48 - CLASS 35 GRAY IRON.
- COATING - UNPAINTED OR ASPHALT VARNISH.
- CASTINGS SHALL CONFORM TO DIMENSION AND WEIGHT REQUIREMENTS.
- TYPE I ADJUSTMENT RISERS MAY NOT BE STACKED.
- ADJUSTMENT RINGS ARE NOT APPROVED FOR USE IN NEW CONSTRUCTION.
- ADJUSTMENT RINGS MAY ONLY BE USED ON REPAIRING PROJECTS AND ARE LIMITED TO ONE RING PER VALVE BOX.

TYPE I - ADJUSTMENT RISER

TH - TOTAL HEIGHT	AH - ADJUSTMENT HEIGHT	H - HEIGHT	MINIMUM WEIGHT - LBS
< 4 1/2"	< 2 1/2"	0	18
4 1/2" - 6"	2 1/2" - 4"	1 1/2"	20
6" - 8"	4" - 6"	2 1/2"	22.5
8" - 10"	6" - 8"	3 1/2"	25
10" - 12"	8" - 10"	4 1/2"	27
> 12"	> 8"	5 1/2"	27

TYPE I - ADJUSTMENT RISER

TH - TOTAL HEIGHT	AH - ADJUSTMENT HEIGHT	H - HEIGHT	MIN. WEIGHT - LBS
< 4 1/2"	< 2 1/2"	0	18
4 1/2" - 6"	2 1/2" - 4"	1 1/2"	20
6" - 8"	4" - 6"	2 1/2"	22.5
8" - 10"	6" - 8"	3 1/2"	25
10" - 12"	8" - 10"	4 1/2"	27
> 12"	> 8"	5 1/2"	27

WEIGHT (POUNDS)

SECTION	MINIMUM
TOP SECTION	31
BOTTOM SECTION	18
COVER	18
TOTAL	66

CAST IRON VALVE BOX (12" AND SMALLER VALVES - ONLY)

NO. DESCRIPTION:

- 20" CLEAR OPENING FRAME AND COVER ASSEMBLY - SEE APPROPRIATE STANDARD DETAILS.
- TRACER WIRE TERMINATION WITH 24" NEATLY COILED WIRE.
- 1 1/4" DIAMETER STANDPIPE, MIN. 12" DIAMETER GATE VALVE WITH 90° BALL BEARING OPERATOR.
- TRACER WIRE - CONTINUOUS AWG #12 GAUGE SOLID COPPER TRACER WIRE WITH 30 MILS THICK BLUE HOPE INSULATION.
- CONCRETE BEARING BLOCK FOR 12" AND LARGER GATE VALVES. POLYETHYLENE WRAP BARBIER SHALL BE PRESENT BETWEEN BEARING BLOCK AND VALVE. WRAP SHALL BE MINIMUM 2" LAYERS OF 4 MILS THICK POLYETHYLENE WRAP BARBIER SHALL BE PRESENT BETWEEN BEARING BLOCK AND VALVE. WRAP SHALL BE MINIMUM 2" LAYERS OF 4 MILS THICK POLYETHYLENE WRAP BARBIER SHALL BE PRESENT BETWEEN BEARING BLOCK AND VALVE. WRAP SHALL BE MINIMUM 2" LAYERS OF 4 MILS THICK POLYETHYLENE WRAP BARBIER SHALL BE PRESENT BETWEEN BEARING BLOCK AND VALVE.
- EXTENSION STEM ASSEMBLY - SEE APPROPRIATE STANDARD DETAILS.
- MECHANICAL JOINT ENDS - APPROPRIATE STANDARD DETAILS.
- THRUST BLOCK - AS APPROPRIATE.
- REINFORCED CONCRETE SUPPORT BEAM.
- CENTERING COLLAR.
- 1/2" OR 3/4" CONDUIT - SD#4 PER TUBING - ASTM F85.
- RE REBAR: AS SHOWN.
- #2 OR #3 REBAR - STRIPS: AS SHOWN.
- 24" PVC PIPE - C905 - DR18, OR DIP - CAST IN PLACE.
- 12" MIN. DIP (OR C905 PVC) RISER PIPE 20" MAXIMUM.

NOTES:

- CLTW ALLOWS THE INSTALLATION OF DIFFERENT PIPE MATERIALS ON EITHER SIDE OF THE GATE VALVE. INSTALL TRANSITIONS PER STANDARD DETAIL.
- IF VALVE OPERATING NUT IS MORE THAN 2" BELOW FINISHED GRADE PROVIDE STANDARD 2" SQUARE OPERATING NUT IN TOP SECTION OF VALVE BOX. SEE STANDARD DETAIL.
- STANDPIPE SHALL NOT INDUCE LOADING ON THE VALVE.

STANDARD FIRE HYDRANT WITH 8" PIPE

HIGH VELOCITY FIRE HYDRANT WITH 8" PIPE

NO. DESCRIPTION:

- MAIN LINE VALVE.
- STANDARD FIRE HYDRANT ON 8" MAINS AND HIGH VELOCITY FIRE HYDRANT ON 12" AND LARGER MAINS.
- 8" SWIVEL JOINT.
- 8" RMJ GATE VALVE.
- 8" OUTLET SWIVEL HYDRANT TEE.
- 8" OUTLET RAIL TEE.
- 8" OUTLET WITH MU RESTRAINED JOINTS.
- 3600 PSI CONCRETE THRUST BLOCKING.
- PUMPER NOZZLE.

NOTES:

- HYDRANT LOCATION: ON ROADS WITH CURBS AND OUTLET USE DETAIL (1) THIS SHEET IN ALL CASES UNLESS OTHERWISE APPROVED BY ENGINEER.
- HYDRANT SHALL BE TO BE MINIMUM 2' 0" UNLESS OTHERWISE APPROVED BY THE ENGINEER.
- FOR HYDRANTS ON DEAD END LINES, MAIN LINE VALVES ARE LOCATED DOWNSTREAM OF HYDRANT.
- HYDRANT SHALL BE MORE THAN ONE HYDRANT PER SECTION UNLESS ALLOWED. IF EXTENSION IS USED, DO NOT CAST HYDRANT ON ISLAND.
- PUMPER NOZZLE TO FACE THE ROADWAY OR STANDARD HIGH VELOCITY FIRE HYDRANTS. PUMPER NOZZLES SHALL BE PARALLEL WITH ROAD ON HIGH VELOCITY FIRE HYDRANTS.
- CONCRETE BLOCKING TO EXTEND TO UNDISTURBED EARTH. AMOUNT APPROVED BY THE ENGINEER.
- SEE CLTW STANDARD DETAIL FOR PLACEMENT OF FIRE HYDRANT IN NCDOT RW.
- ALL HYDRANT PIPING SHALL BE RESTRAINED JOINT DRIP.
- FLOW DIRECTION SHALL BE THE PRIMARY WATER FLOW DIRECTION BASED ON HYDRANTS ON DEAD END PIPE AND CONTROLS THE VALVE LOCATION.
- HIGH VELOCITY MAINS ARE CLASSIFIED AS 12" MAINS OR LARGER.
- MAIN LINE VALVES ARE FOR MAINS 30" AND LARGER.

VALVE BOX ASSEMBLY INSTALLATION (12" AND SMALLER VALVES)

NO. DESCRIPTION:

- 24" X 24" PRECAST (OR CAST IN PLACE) CONCRETE PAD OR 24" DIAMETER PRECAST PAD.
- NON-SHRINK GROUT - FILL ANNUAL SPACE VALVE BOX ASSEMBLY.
- CAST IRON VALVE BOX.
- EXTENSION STEM AS REQUIRED. SEE NOTES.
- VALVE BOX BOTTOM SECTION.
- 6" DIP OR C905 PVC STANDPIPE.
- STANDARD CONCRETE BRICK - 2 EACH.
- GATE VALVE OR BALL VALVE (AS APPLICABLE) AWG #12 GAUGE COPPER TRACER WIRE WITH 30 MILS THICK BLUE HOPE INSULATION. TRACER WIRE SHALL BE PLACED IN 1/4" OR 3/8" CONDUIT (OR 1/2" CONDUIT - ASTM F85).
- CONCRETE (ROADWAY, DRIVEWAY OR SIDEWALK).
- ASPHALT PAVEMENT.
- CONTRACTED AGGREGATE BASE COURSE (ABC) OR ASPHALT BASE COURSE.
- PLASTIC VALVE CENTERING DISK (EX. PLASTIC POST-CAP VALVE) 1/4" LARGER DIAMETER TO KEEP VALVE BOX ALIGNED DURING BACK FILLING. ALUMINUM OR STEEL CENTERING DISK.

NOTES:

- STANDPIPE TO BE CENTERED OVER VALVE NUT AND SHALL NOT BEAR ON THE BODY.
- PROVIDE CLEARANCE BETWEEN BRICK AND THE BODY.
- WHEN OPERATING NUT DEPTH EXCEEDS 2" 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 2 VERTICAL SECTIONS - 1 VALVE BOX AND 1 STANDPIPE. STANDPIPE SHALL NOT BE CAST IN CONCRETE OR ASPHALT DRIVEWAYS.
- VALVE BOX ASSEMBLY SHALL BE INSTALLED SO IT DOES NOT APPLY IMPACT LOADING TO THE VALVE.

1.5" - 12" PIPE

16" AND LARGER PIPE (USE FRAME AND COVER)

NO. DESCRIPTION:

- WATER MARK.
- GATE VALVE (OR BALL VALVE AS APPLICABLE) FOR 1.5" - 2" WATER LINES.
- VALVE BOX ASSEMBLY - SEE CLTW STANDARD DETAIL.
- TRACER WIRE TERMINATION WITH 24" NEATLY COILED WIRE.
- AWG #12 GAUGE COPPER TRACER WIRE WITH 30 MILS THICK BLUE HOPE INSULATION.
- CONCRETE BEARING BLOCK FOR 16" AND LARGER GATE VALVES. POLYETHYLENE WRAP BARBIER SHALL BE PRESENT BETWEEN BEARING BLOCK AND VALVE. WRAP SHALL BE MINIMUM 2" LAYERS OF 4 MILS THICK POLYETHYLENE WRAP BARBIER SHALL BE PRESENT BETWEEN BEARING BLOCK AND VALVE. WRAP SHALL BE MINIMUM 2" LAYERS OF 4 MILS THICK POLYETHYLENE WRAP BARBIER SHALL BE PRESENT BETWEEN BEARING BLOCK AND VALVE.
- FRAME AND COVER REFER TO APPROPRIATE STANDARD DETAILS.
- EXTENSION STEM ASSEMBLY - SEE APPROPRIATE STANDARD DETAILS.
- CENTERING COLLAR.
- VALVE LOCK BOX - FURNISHED BY OLTWATER.
- 12" MIN. DIP (OR C905 PVC) RISER PIPE 20" MAXIMUM.

NOTES:

- MU ADAPTER KIT SHALL INCLUDE BOLTS AND NUTS, GRADE 3 OR HIGHER.
- CLTW ALLOWS THE INSTALLATION OF DIFFERENT PIPE MATERIALS ON EITHER SIDE OF THE GATE VALVE. INSTALL TRANSITIONS PER STANDARD DETAIL.
- IF VALVE OPERATING NUT IS MORE THAN 2" BELOW FINISHED GRADE PROVIDE STANDARD 2" SQUARE OPERATING NUT IN TOP SECTION OF VALVE BOX. SEE STANDARD DETAIL.

CLTW PUBLIC FIRE HYDRANTS

PRIVATE FIRE HYDRANTS (NOT FOR PUBLIC WATER TRUCK USE)

CLTW PUBLIC FIRE HYDRANTS COLOR SCHEME

COLOR	MARK
YELLOW	YELLOW
RED	RED
BLUE	BLUE
GREEN	GREEN
WHITE	WHITE

PRIVATE FIRE HYDRANTS COLOR SCHEME

COLOR	MARK
YELLOW/GREEN	YELLOW/GREEN
YELLOW/WHITE	YELLOW/WHITE
YELLOW/BLUE	YELLOW/BLUE
RED/RED	RED/RED

VALVE BOX - CONCRETE GRADE RINGS (12" AIR RELEASE AND BOLT OFF)

NO. DESCRIPTION:

- CONCRETE GRADE RING.
- PLASTIC VALVE CENTERING DISK (EX. PLASTIC POST-CAP VALVE) 1/4" LARGER DIAMETER TO KEEP VALVE BOX ALIGNED DURING BACK FILLING. ALUMINUM OR STEEL CENTERING DISK REQUIRED FOR ALL VALVES.
- REBAR - 1" DIAMETER.
- 4# REBAR - LENGTH 1' OR (ALTERNATE 3" DIAMETER).
- VALVE BOX BOTTOM SECTION.
- 6" DIAMETER C905 PVC PIPE.
- GATE VALVE - 12" OR SMALLER.
- TOP SECTION OF VALVE BOX - FILL ANNUAL SPACE WITH NON-SHRINK GROUT.
- CONCRETE SUPPORT BRICK - 2 EACH.

NOTES:

- FOR PRECAST GRADE RINGS - FILL VOID BETWEEN GRADE RING AND CAST IRON VALVE BOX TOP SECTION WITH NON-SHRINK GROUT.
- FOR CAST IN PLACE GRADE RINGS - TOP SECTION OF CAST IRON VALVE BOX SHALL BE CAST IN THE CONCRETE.
- TYPE A GRADE RINGS SHALL BE REQUIRED ON ROAD SHOULDERS WITHOUT CURB.
- FOR INSTALLATION DETAIL TWO - ONLY ONE VALVE BOX ASSEMBLY AND 5 OR NO. 8 SHALL BE REQUIRED. VALVE BOX ASSEMBLY SHALL NOT REST ON THE VALVE, AND SHALL BE CENTERED ON THE VALVE OPERATING NUT AS SHOWN.
- TOP SECTION SHALL BE FLUSH WITH GRADE RING TO AVOID TRIPPING HAZARD.
- FOR LOCATIONS WHERE A STANDARD PRECAST GRADE RING DOES NOT FIT, IT CANNOT BE CUT TO FIT AND A CAST IN PLACE CONCRETE PAD MUST BE POURED IN PLACE.

DESIGN REQUIREMENTS:

- CONCRETE - F_c = 4000 PSI (PRECAST), OR STEEL REINFORCEMENT - REBAR - #4 OR #5 (OR #6 PER 48" OR 48" STEEL WIRE FABRIC - ASTM A185).

16" AND SMALLER MAIN

24" - 30" MAIN

NO. DESCRIPTION:

- 90° HORIZONTAL BEND - BRASS OR S.S.
- 90° HORIZONTAL BEND - BRASS OR S.S.
- 24" X 24" X 6" CONCRETE PAD VALVE OR 24" DIAMETER PRECAST PAD VALVE OR 24" VALVE BOX ASSEMBLY. SEE STANDARD DETAIL.
- 2" BALL COUPLER W/ C/TAPER TREAD OPERATING NUT.
- 7" GATE VALVE FOR 2" AIR RELEASE.
- 2" PIPING - SCHEDULE 40 (RED BRASS OR STAINLESS STEEL).
- 2" DIAMETER IRON (FUSION BONDED EPOXY COATED) THREADED COUPLING (FNPT).

NOTES:

- VALVE TO BE PLACED A MIN. OF 18" OFFSET FROM THE WATER MAIN, AND SHALL BE LOC. IN PLANTING STRIP OR IN ROAD SHOULDER OR SIDEWALK, AND WITH VALVE BOX ASSEMBLY PARALLEL TO THE ROAD.
- AIR RELEASES TO BE INSTALLED AT ALL HIGH POINTS AS DIRECTED BY THE ENGINEER.
- AIR RELEASE SHALL NOT BE LOCATED IN ROADWAY PAVEMENT.
- 2" BALL COUPLER W/ C/TAPER TREAD OPERATING NUT.
- ON 24" AND SMALLER PIPE, 2" ASSEMBLY REQUIRED.
- ON 24" TO 30" PIPE, USE 2" AIR RELEASE HYDRANT. AT LEAST TWO VALVES REQUIRED - ONE AT THE AND ONE AT THE ASSEMBLY RIGHT.
- VALVE & B.O. SHALL NOT BE PLACED IN ROAD DITCH.
- TRACER WIRE INSTALLED PER CLTW TRACER WIRE DETAIL AS APPLICABLE.

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	50
10	34	36	60
12	36	42	64
14	38	48	72
16	40	54	78
18	42		

TRENCH DETAIL

PLACE FOUNDATION CONDITIONING MATERIAL BELOW BEDDING IF REQUIRED, AS DIRECTED BY ENGINEER. PIPE BEDDED IN SELECT MATERIAL, CLASS II (TYPE I) OR CLASS III TRENCH SANDPILLS IN LOOSE 6" LAYERS COMPACTED TO TOP OF TRENCH USING LOCAL EXCAVATED MATERIAL IF APPROVED BY THE ENGINEER. OR SELECT MATERIAL SHALL BE FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH. COMPACTION SHALL BE TO APPROXIMATELY 95% DENSITY IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY THE DEPARTMENT OF TRANSPORTATION.

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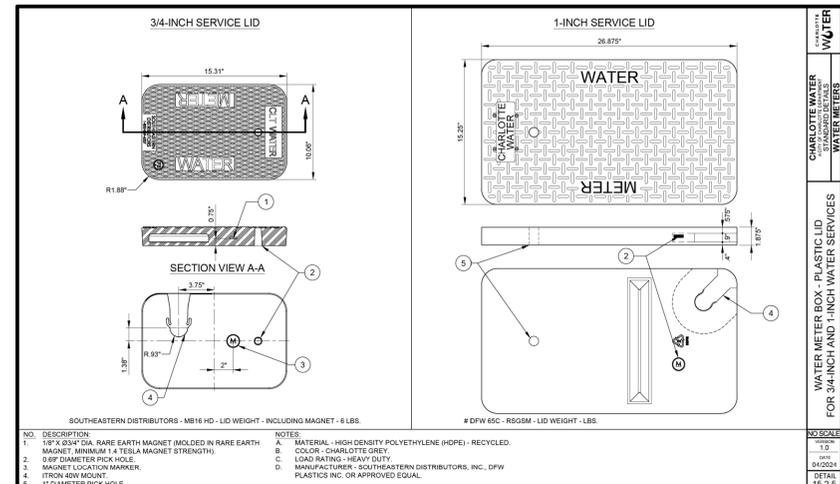
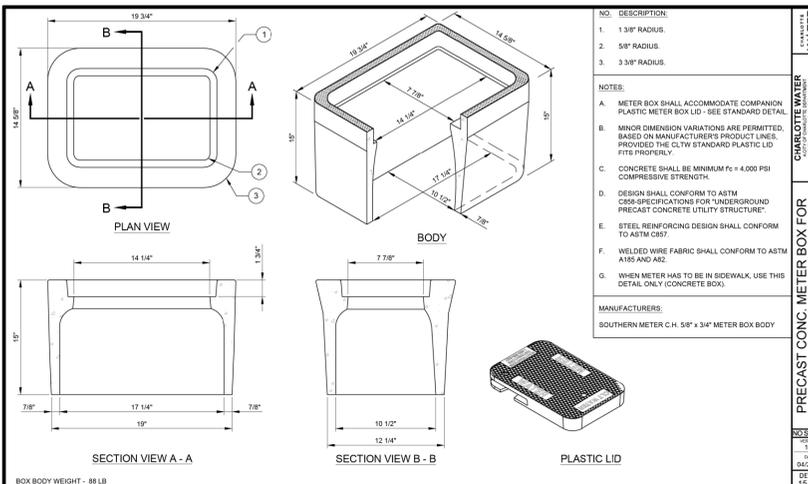
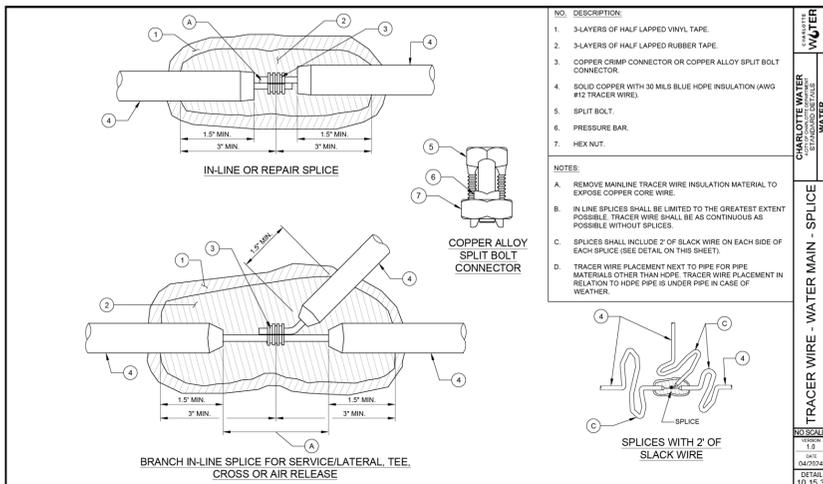
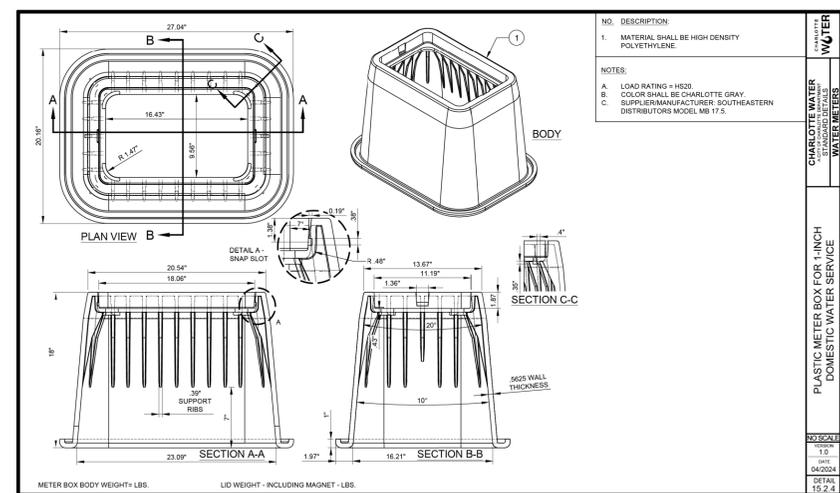
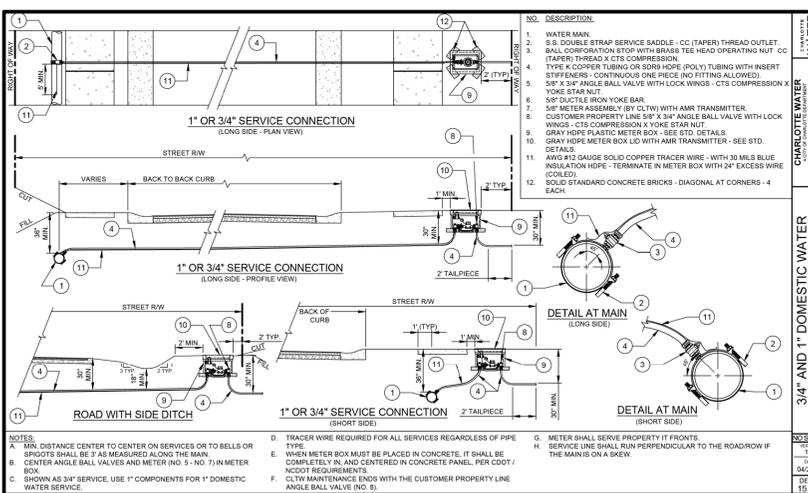
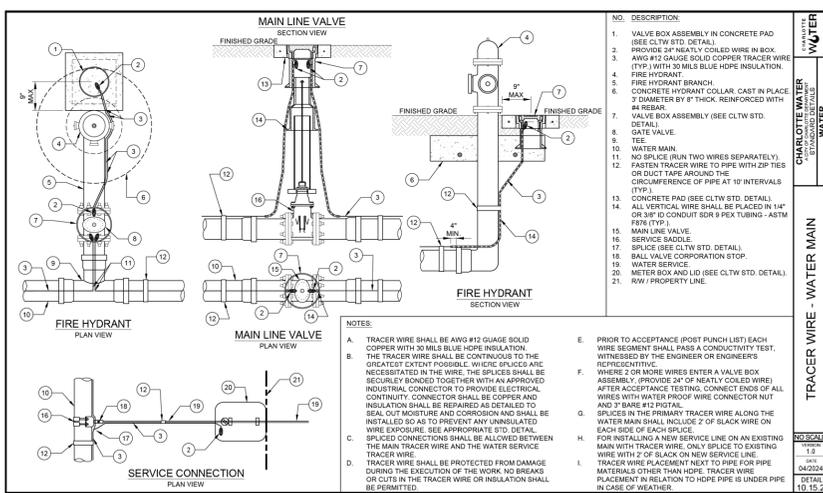
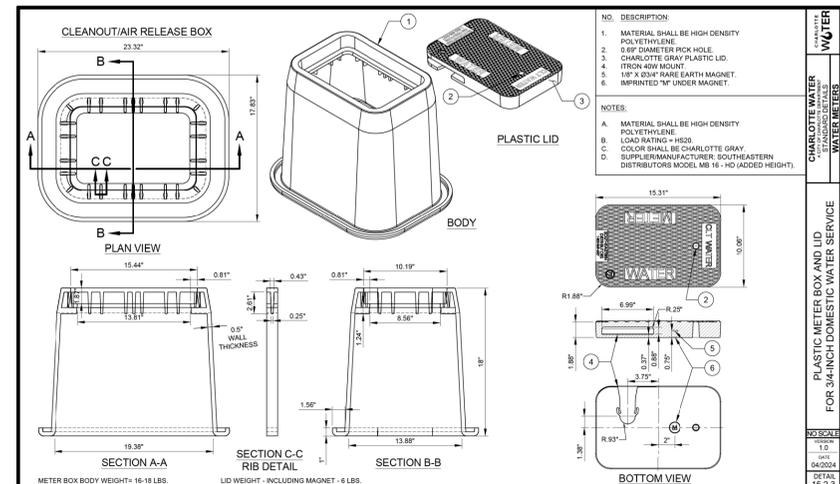
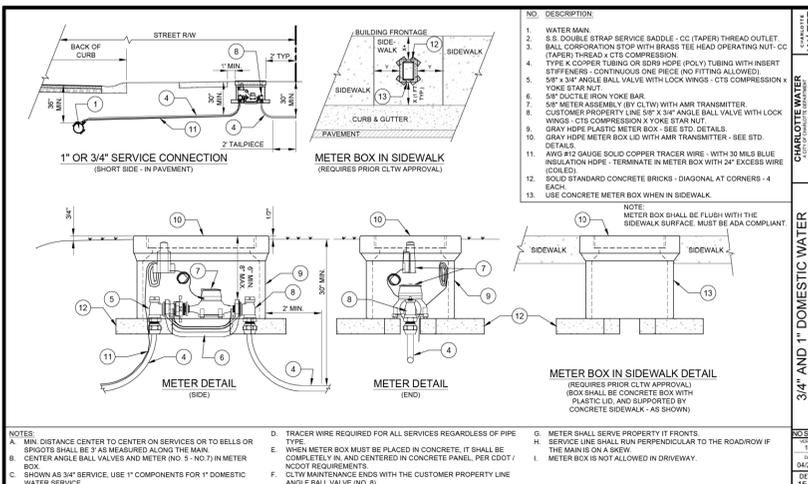
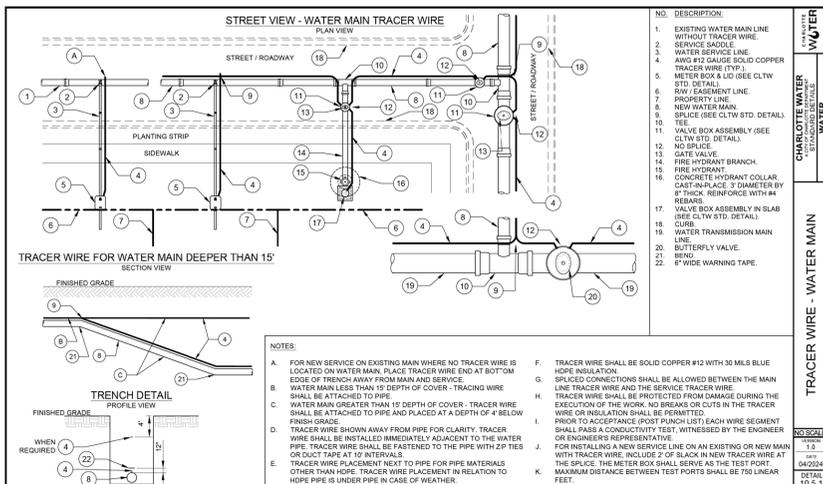
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DRAWN BY: JNA	
CHECKED BY: JKC	
APPROVED BY: CLS	
REVISED:	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151
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PROJECT TYPICAL DETAILS

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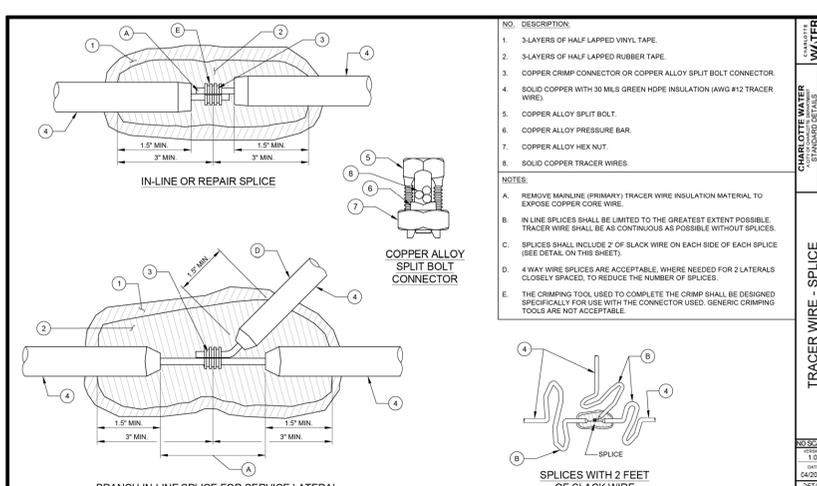
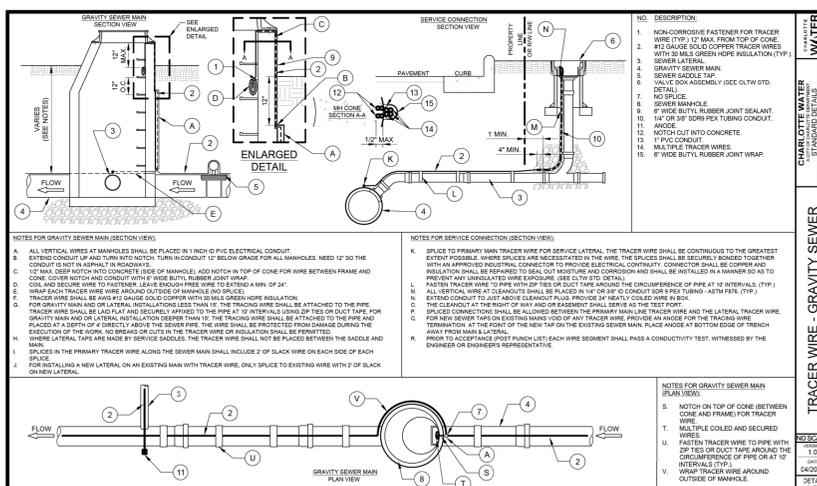
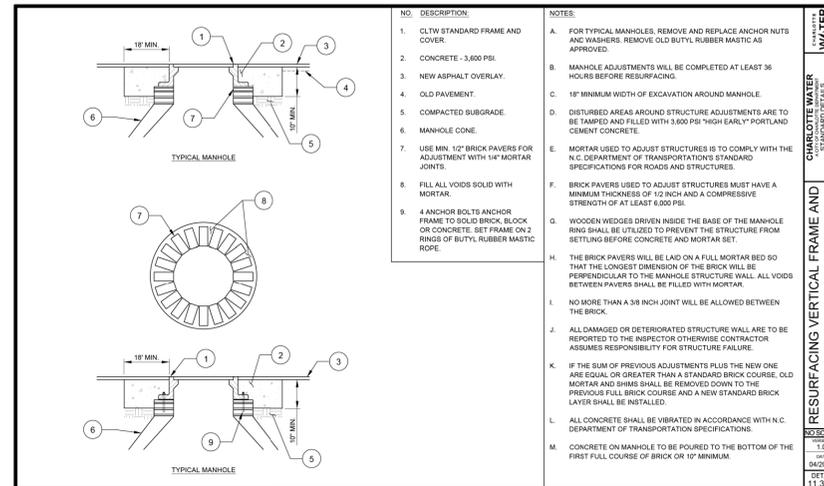
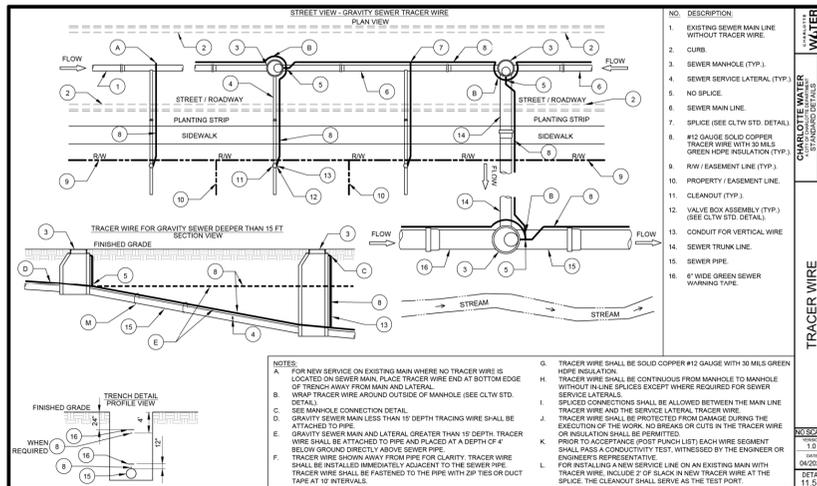
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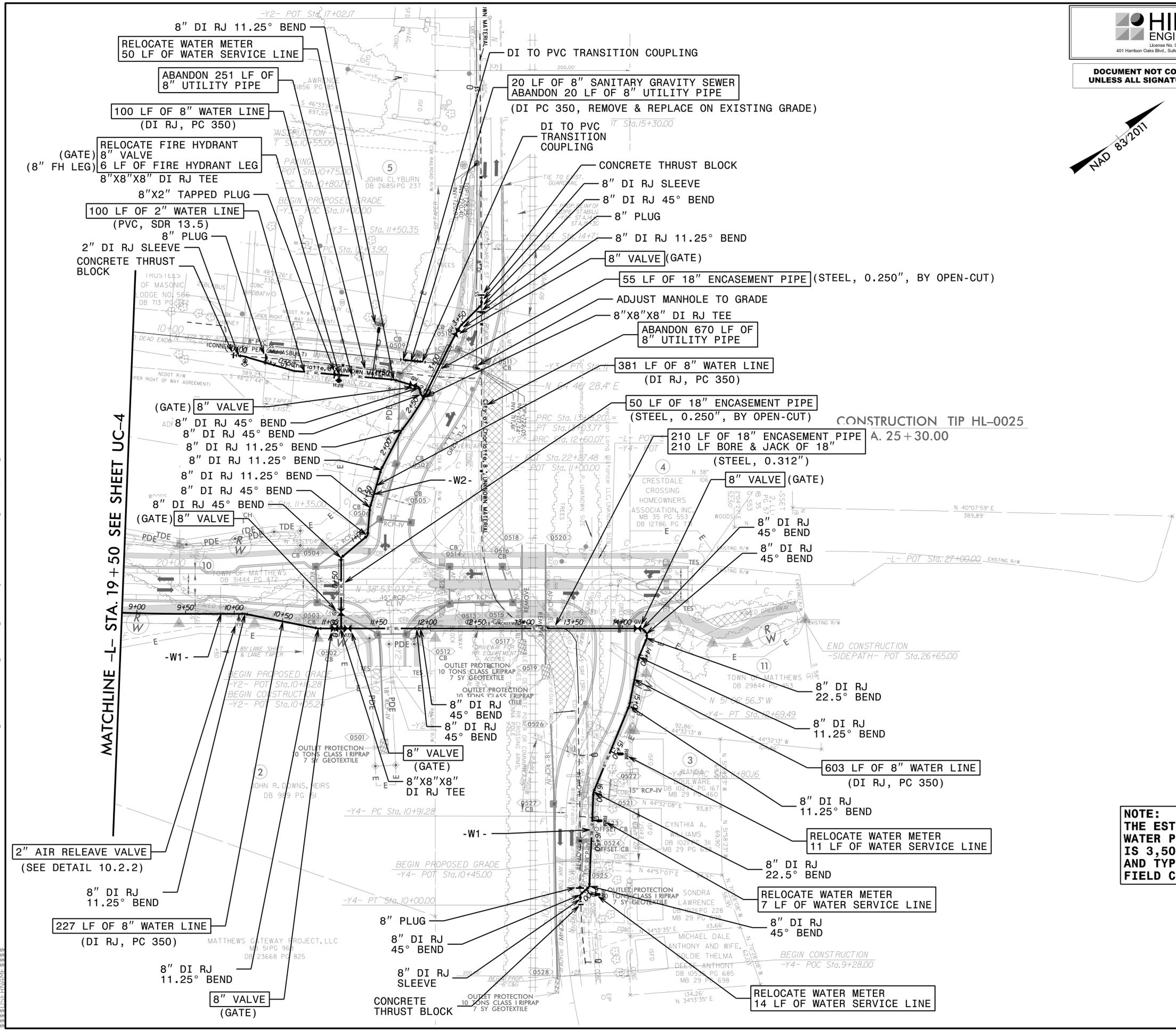
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MATCHLINE -L- STA. 19 + 50 SEE SHEET UC-4

CONSTRUCTION TIP HL-0025

NOTE:
 THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 3,500 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

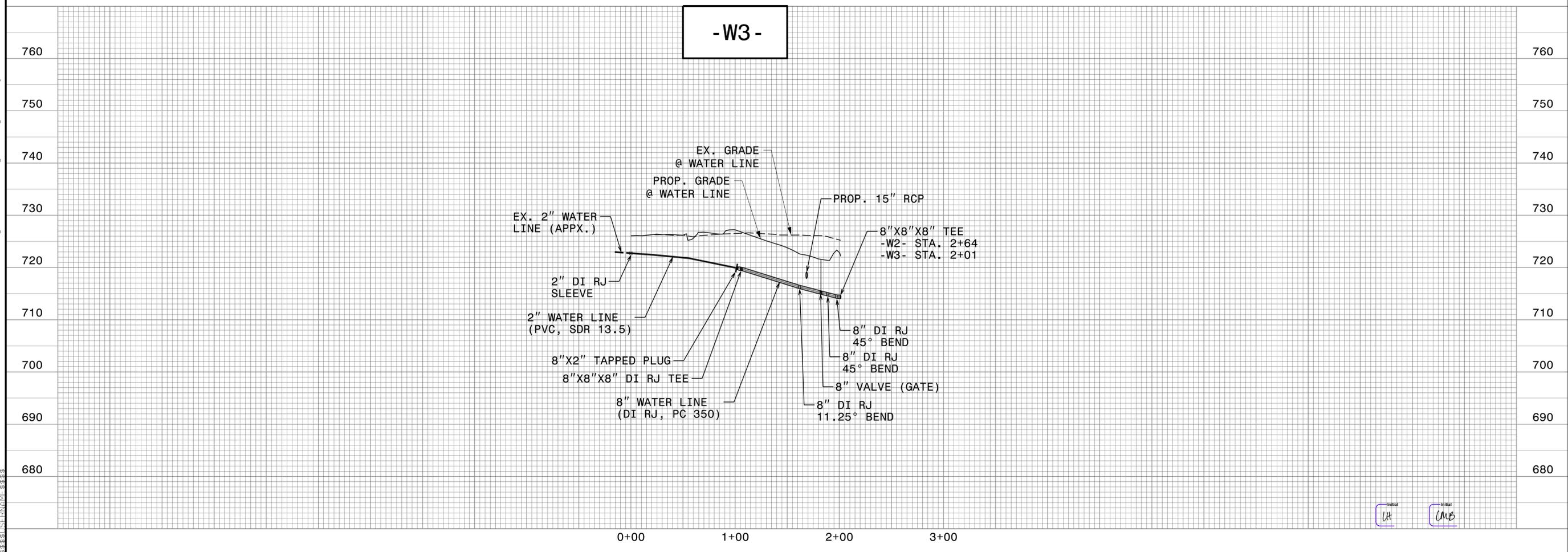
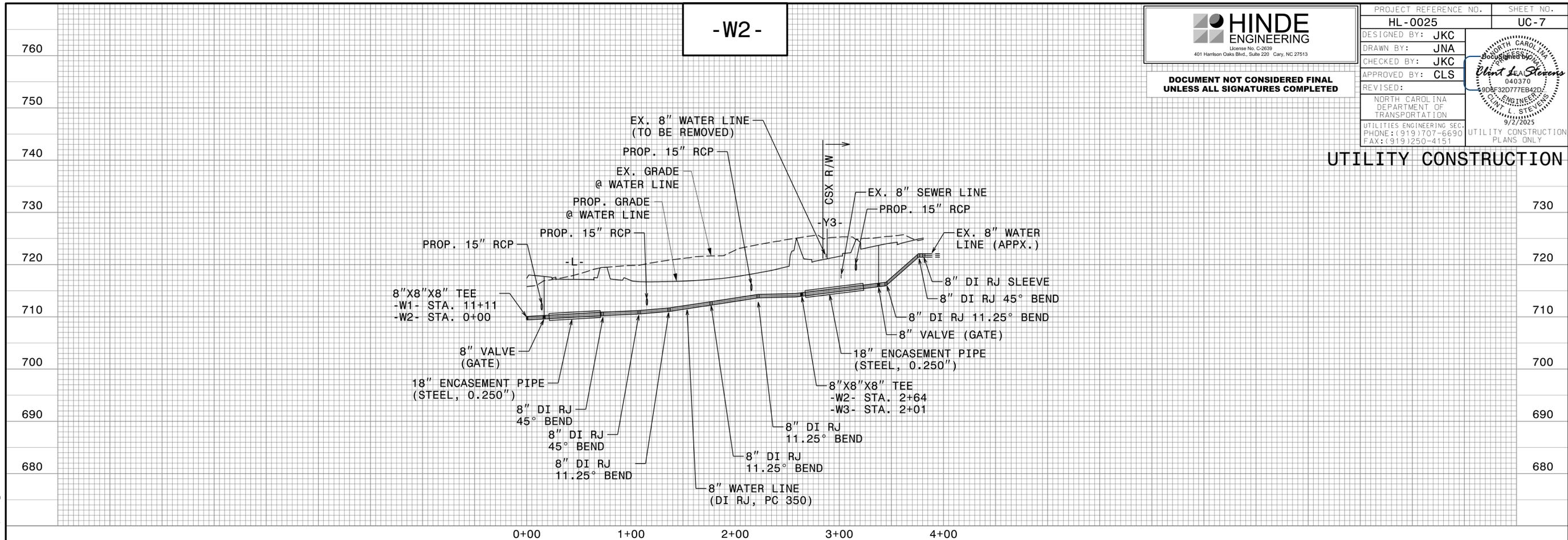
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APPROVED BY:	CLS		
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