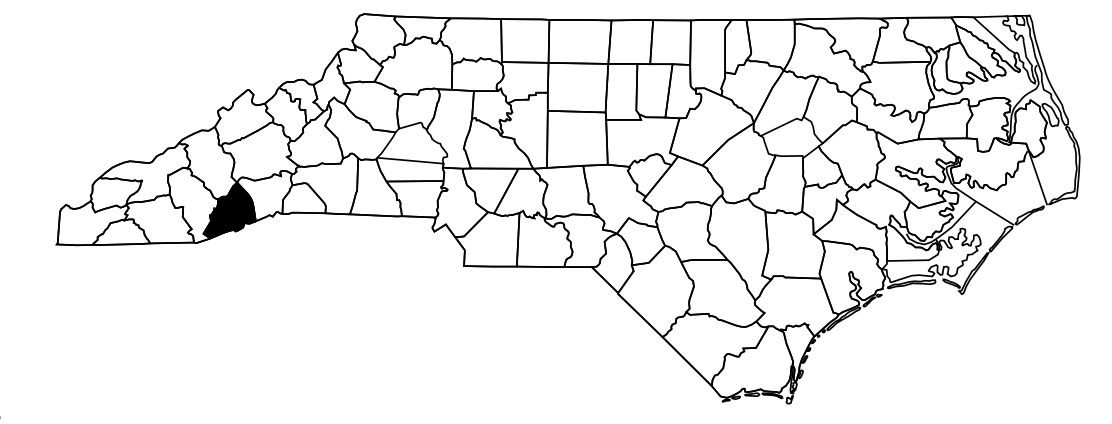


11/15/19

TIP PROJECT: R-5799

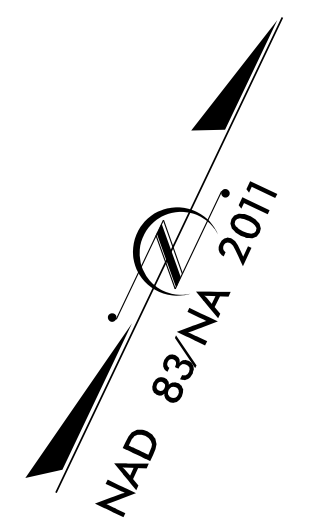
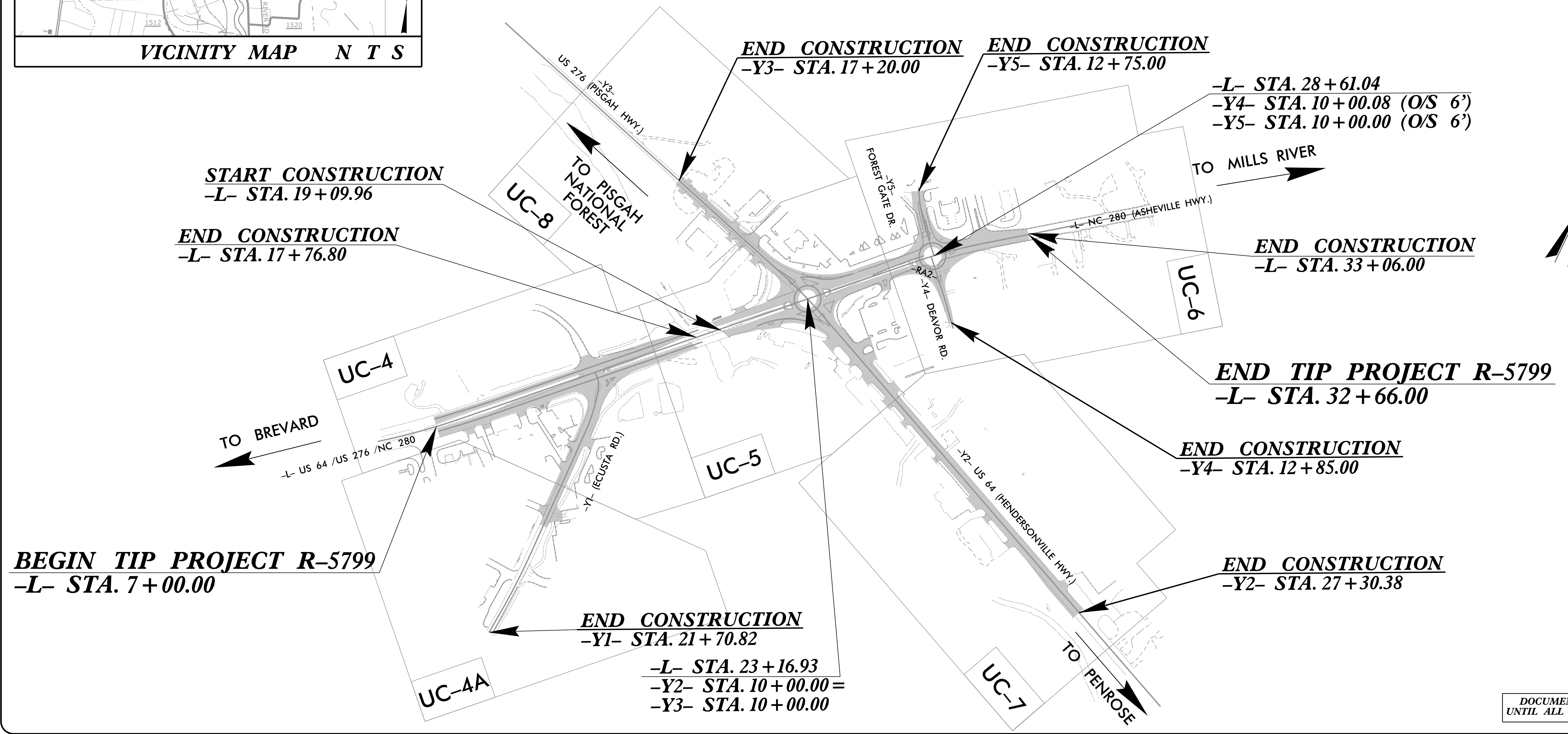
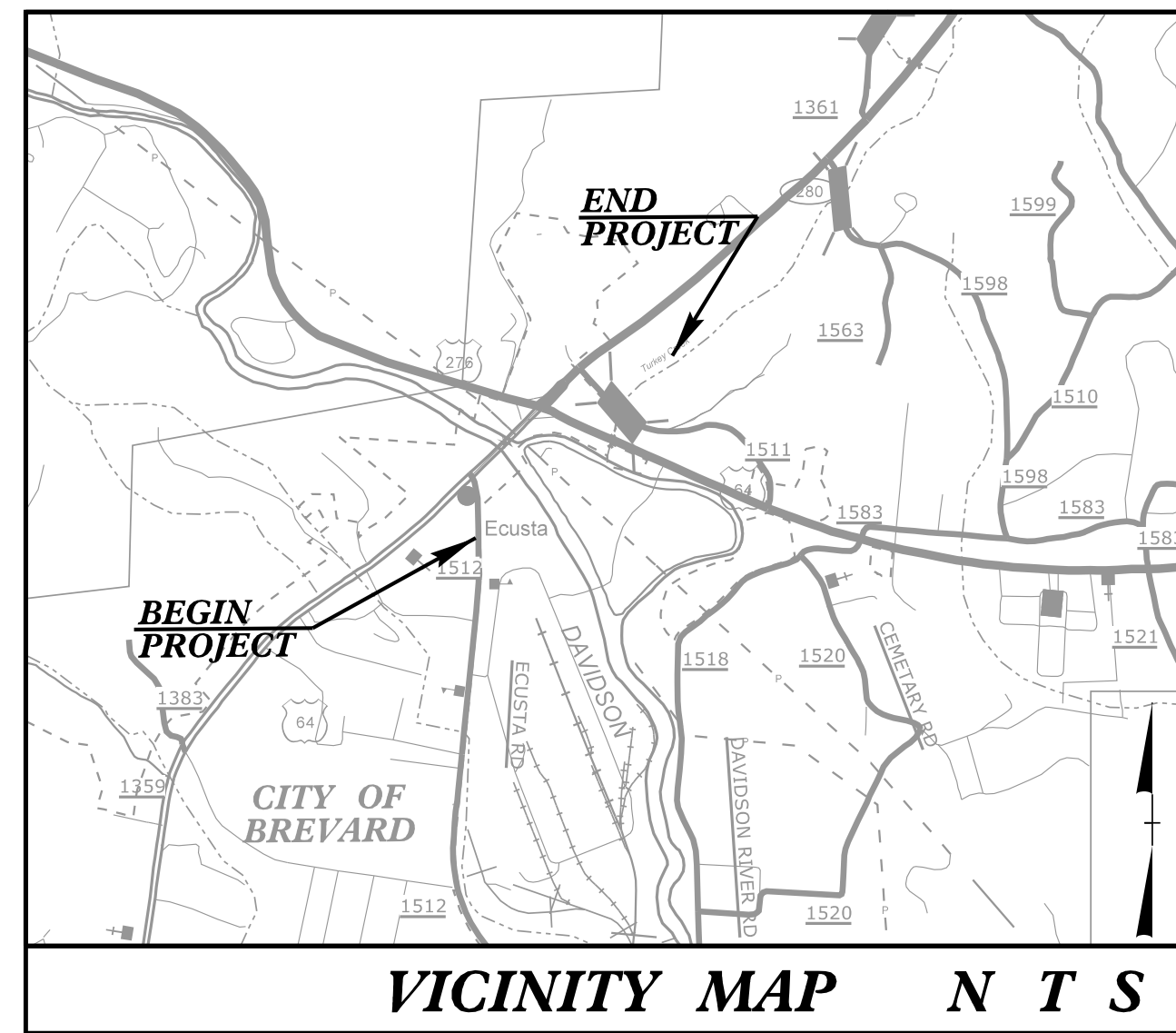
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

T.I.P. NO.	SHEET NO.
R-5799	UC-1

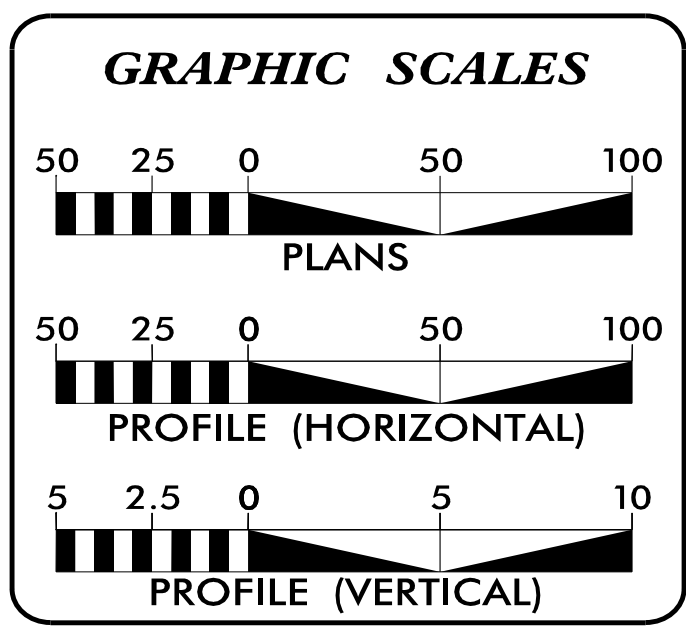


UTILITY CONSTRUCTION PLANS TRANSYLVANIA COUNTY

LOCATION: US 64 AT NC 280 /NC 64 INTERSECTION IMPROVEMENTS
TYPE OF WORK: WATER AND SEWER LINE CONSTRUCTION



DOCUMENT NOT CONSIDERED FINAL
UNTIL ALL SIGNATURES ARE COMPLETED



INDEX OF SHEETS

SHEET NO.:	DESCRIPTION:
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLOGY
UC-3	NOTES
UC-3A THRU UC-3D	DETAILS
UC-4 THRU UC-8A	UTILITY CONSTRUCTION SHEETS

WATER AND SEWER OWNERS ON PROJECT

(A) WATER - CITY OF BREVARD
(B) SANITARY SEWER - CITY OF BREVARD

PREPARED IN THE OFFICE OF

V&M
Vaughn & Melton
Consulting Engineers

1318-F PATTON AVE
ASHEVILLE, NC 28806
828.253.2796

7/13/2023 | 1:41:58 PM EDT

SEAL

7/13/2023 | 1:41:58 PM EDT

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

Michael Bright, P.E. UTILITIES REGIONAL ENGINEER
Bob Golding DIVISION UTILITY ENGINEER
Amy Dupree UTILITIES AREA COORDINATOR

5/10/2023 12:48:57 PM
\\R5799-U\TL-UC-1.dgn
User:mr-davis

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

Water Line (Sized as Shown)	
11 1/4 Degree Bend	
22 1/2 Degree Bend	
45 Degree Bend	
90 Degree Bend	
Plug	
Tee	
Cross	
Reducer	
Gate Valve	
Butterfly Valve	
Tapping Valve	
Line Stop	
Line Stop with Bypass	
Blow Off	
Fire Hydrant	
Relocate Fire Hydrant	
Remove Fire Hydrant	
Water Meter	
Relocate Water Meter	
Remove Water Meter	
Water Pump Station	
RPZ Backflow Preventer	
DCV Backflow Preventer	
Relocate RPZ Backflow Preventer	
Relocate DCV Backflow Preventer	

PROPOSED SEWER SYMBOLS

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

PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

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

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

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)

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 OR LATEST EDITION AND CITY OF BREVARD DESIGN STANDARDS AND SPECIFICATIONS.

2. THE EXISTING UTILITIES BELONG TO THE CITY OF BREVARD.
WESLEY SHOOK - 828-884-2171

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 SYSTEMS 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, OR ON HOLIDAYS IF NECESSARY.

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

PROJECT SPECIFIC NOTES

1. WATER CONSTRUCTION ON THIS SITE IS AUTHORIZED BY PERMITS ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY (NCDEQ) AND AUTHORIZED BY THE REPRESENTATIVES OF NCDEQ, THE CITY OF BREVARD, THE OWNER OR THE ENGINEER. THE PERMITS REQUIRE CERTIFICATION OF COMPLETION OF THE WATER SYSTEMS BY THE DEPARTMENT OF TRANSPORTATION AND THE APPLICANT PRIOR TO ISSUANCE OF FINAL OPERATION APPROVAL.

2. MATERIALS AND INSTALLATION FOR WATER CONSTRUCTION SHALL CONFORM TO THE LATEST VERSIONS OF CITY SPECIFICATION AND DETAILS AND AWWA STANDARDS AND REQUIREMENTS.

3. CONTRACTOR SHALL NOTIFY NC811 & APPROPRIATE UTILITIES AGENCIES PRIOR TO PERFORMING ANY WORK.

4. REGULAR WORKING HOURS SHALL BE FROM 7:00 A.M. TO 5:00 P.M. MONDAY THROUGH FRIDAY, EXCEPT IN CASES OF EMERGENCY OR OTHERWISE APPROVED IN WRITING BY THE CITY OR AUTHORIZED REPRESENTATIVES. THE CONTRACTOR SHALL ENSURE THE CONSTRUCTION SITE IS SAFE FOR ANY PERSONS WHO MAY BE ON SITE DURING NON-WORKING HOURS.

5. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING TRAFFIC CONTROL ON ALL ROADWAYS DURING THE PROJECT. THE CONTRACTOR SHALL NOTIFY LOCAL EMERGENCY, SCHOOL AND OTHER NECESSARY AUTHORITIES PRIOR TO ANY STREET CLOSING OR TRAFFIC CHANGE.

6. THE CONTRACTOR AT HIS OWN EXPENSE SHALL KEEP THE CONSTRUCTION SITE AND ADJACENT PUBLIC AND PRIVATE ROADWAYS CLEAN DURING THE PROJECT. THE CONTRACTOR IS ALSO RESPONSIBLE FOR CONTROLLING DUST WITHIN THE PROJECT AREA.

7. THE CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION IN ACCORDANCE WITH THE LINES, GRADES AND ELEVATIONS SHOWN ON THE PLANS OR AS GIVEN BY THE ENGINEER IN THE FIELD.

8. CONTRACTOR SHALL VERIFY THE EXACT LOCATION AND THE ELEVATION FOR ALL UTILITIES, DRAINAGE AND OTHER UNDERGROUND FACILITIES BOTH EXISTING AND PROPOSED, AND SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES OR CONFLICTS PRIOR TO CONSTRUCTION.

9. CONTRACTOR SHALL PROTECT EXISTING UTILITIES DURING CONSTRUCTION. REPAIRS SHALL BE MADE IN ACCORDANCE WITH APPLICABLE STANDARDS OF APPROPRIATE AGENCIES AT THE CONTRACTOR'S EXPENSE.

10. DURING CONSTRUCTION THE CONTRACTOR SHALL MAINTAIN THE OPERATION OF EXISTING UTILITIES WITH THE LEAST AMOUNT OF SERVICE INTERRUPTION POSSIBLE IN COORDINATION WITH THE CITY OF BREVARD. CONTINUOUS SERVICE, PUBLIC HEALTH AND SAFETY CONSIDERATIONS SHALL EXCEED ALL OTHERS. CONTRACTOR'S SCHEDULE, PLANS AND WORK SHALL AT ALL TIMES BE SUBJECT TO ALTERATION AND REVISION IF NECESSARY FOR THESE CONSIDERATIONS.

11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE TEMPORARY OR PERMANENT RELOCATION OF STRUCTURES AND UTILITIES, INCLUDING BUT NOT LIMITED TO SIGNS, FENCES, HYDRANTS, VALVES, PIPING, AND DRAINS THAT INTERFERE WITH THE POSITIONING OF THE WORK AS SHOWN ON THE DRAWINGS.

12. CONTRACTOR SHALL BE REQUIRED TO CONFORM AND COMPLY WITH ALL RESTRICTIONS AND EASEMENT CONDITIONS AND IS RESPONSIBLE FOR ALL RELATED INCIDENTAL COSTS INVOLVED.

13. CONTRACTOR SHALL BE REQUIRED TO USE NON-SLIP LIDS FOR ANY UTILITY STRUCTURE LID THAT IS PROPOSED TO BE LOCATED IN THE PROPOSED SIDEWALK. SEE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.

14. CONTRACTOR SHALL COORDINATE LOCATION OF ALL WATER METERS WITH THE UTILITY OWNER.


PROJECT REFERENCE NO. R-5799	SHEET NO. UC-3
DESIGNED BY: MRD	
DRAWN BY: SRW	
CHECKED BY: JDN	
APPROVED BY: JDN	
REVISED:	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151
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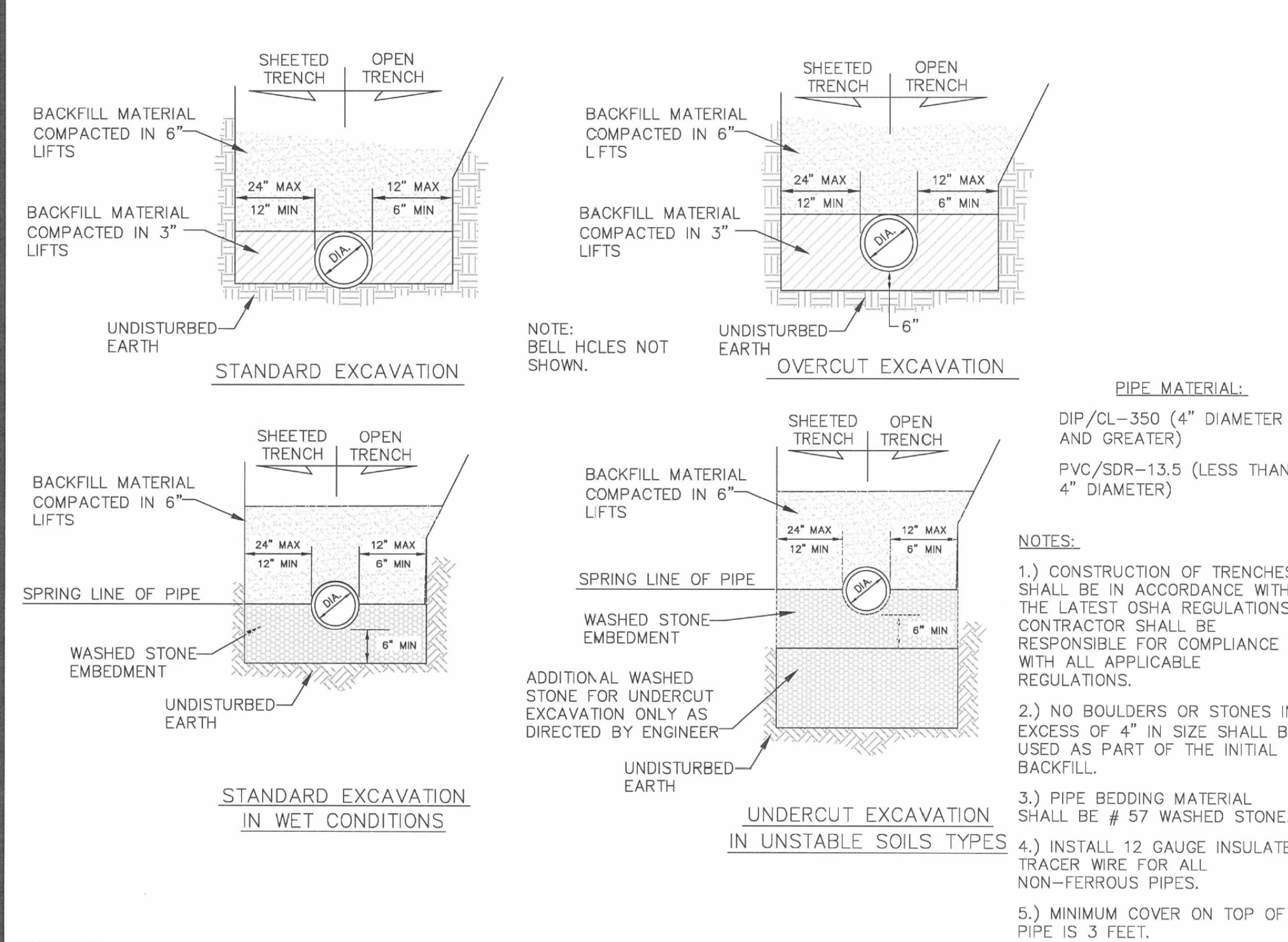
UTILITY CONSTRUCTION

Tri-Cities, TN 423-467-8401
 Knoxville, TN 865-546-1500
 Spartanburg, SC 864-574-4775
 Charleston, SC 843-974-5650
 Middleboro, KY 606-248-6600
 Charlotte, NC 704-357-0488
 Boone, NC 828-355-9933
 Kennesaw, GA 770-627-3590

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CITY OF BREVARD WATER CONSTRUCTION DETAILS

PROJECT REFERENCE NO. R-5799	SHEET NO. UC-3A
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STANDARD EXCAVATION
 BACKFILL MATERIAL COMPACTED IN 6" LIFTS
 BACKFILL MATERIAL COMPACTED IN 3" LIFTS
 UNDISTURBED EARTH

OVERCUT EXCAVATION
 BACKFILL MATERIAL COMPACTED IN 6" LIFTS
 BACKFILL MATERIAL COMPACTED IN 3" LIFTS
 UNDISTURBED EARTH

STANDARD EXCAVATION IN WET CONDITIONS
 BACKFILL MATERIAL COMPACTED IN 6" LIFTS
 SPRING LINE OF PIPE
 WASHED STONE EMBEDMENT
 UNDISTURBED EARTH

UNDERCUT EXCAVATION IN UNSTABLE SOILS TYPES
 BACKFILL MATERIAL COMPACTED IN 6" LIFTS
 SPRING LINE OF PIPE
 WASHED STONE EMBEDMENT
 ADDITIONAL WASHED STONE FOR UNDERCUT EXCAVATION ONLY AS DIRECTED BY ENGINEER
 UNDISTURBED EARTH

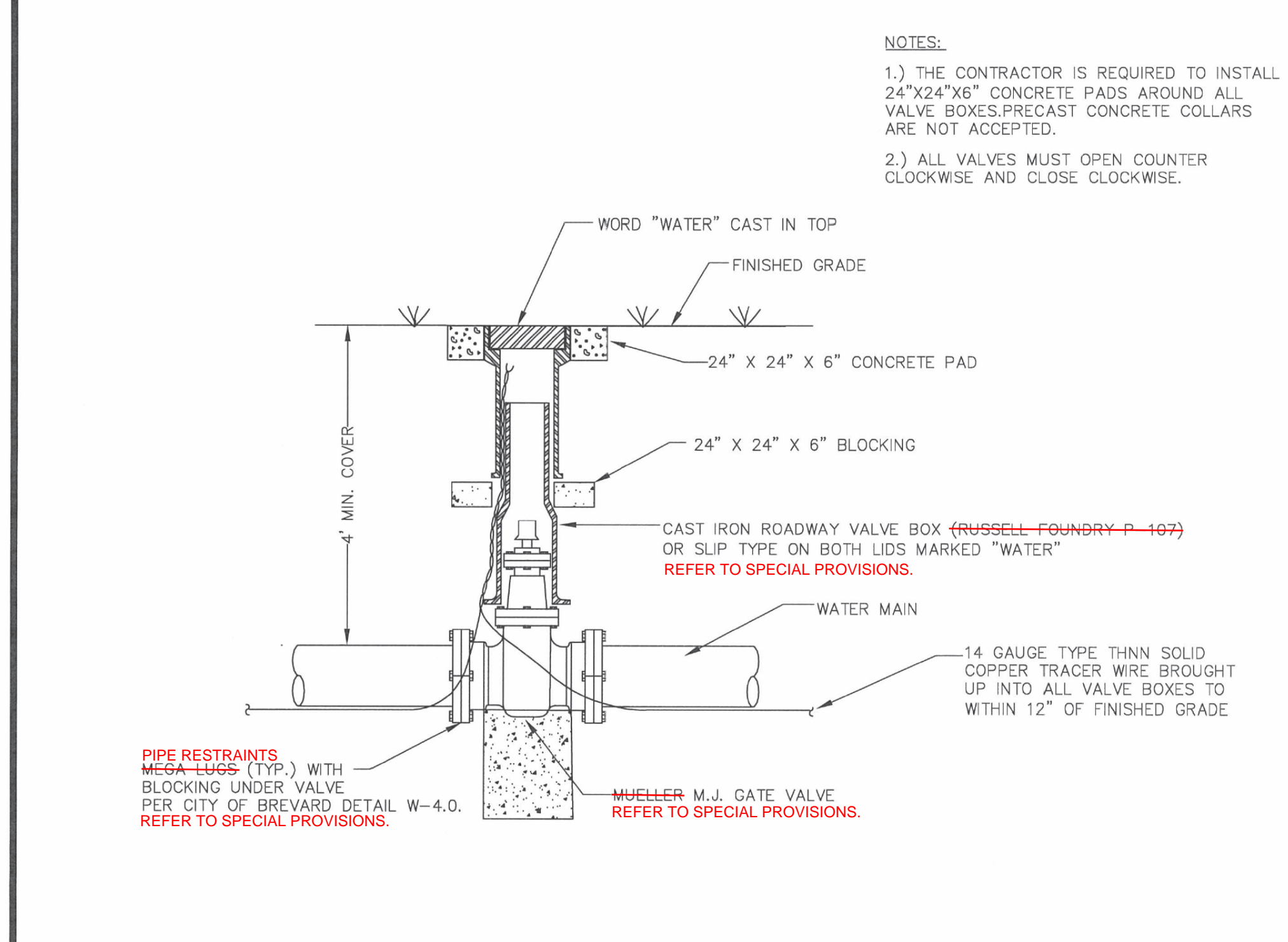
PIPE MATERIAL:
 DIP/CL-350 (4" DIAMETER AND GREATER)
 PVC/SDR-13.5 (LESS THAN 4" DIAMETER)

NOTES:
 1.) CONSTRUCTION OF TRENCHES SHALL BE IN ACCORDANCE WITH THE LATEST OSHA REGULATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH ALL APPLICABLE REGULATIONS.
 2.) NO BOULDERS OR STONES IN EXCESS OF 4" IN SIZE SHALL BE USED AS PART OF THE INITIAL BACKFILL.
 3.) PIPE BEDDING MATERIAL SHALL BE # 57 WASHED STONE.
 4.) INSTALL 12 GAUGE INSULATED TRACER WIRE FOR ALL NON-FERROUS PIPES.
 5.) MINIMUM COVER ON TOP OF PIPE IS 3 FEET.

REVISIONS

DATE	DESCRIPTION	ISSUED
12/01/10		

STANDARD DETAIL
W-1.0



2" AND LARGER GATE VALVE INSTALLATION

WORD "WATER" CAST IN TOP
 FINISHED GRADE
 24" X 24" X 6" CONCRETE PAD
 24" X 24" X 6" BLOCKING
 CAST IRON ROADWAY VALVE BOX (RUSSELL FOUNDRY P-107) OR SLIP TYPE ON BOTH LIDS MARKED "WATER"
 WATER MAIN
 14 GAUGE TYPE THIN SOLID COPPER TRACER WIRE BROUGHT UP INTO ALL VALVE BOXES TO WITHIN 12" OF FINISHED GRADE

PIPE RESTRAINTS
 MEGA LUGS (TYP.) WITH BLOCKING UNDER VALVE PER CITY OF BREVARD DETAIL W-4.0. REFER TO SPECIAL PROVISIONS.

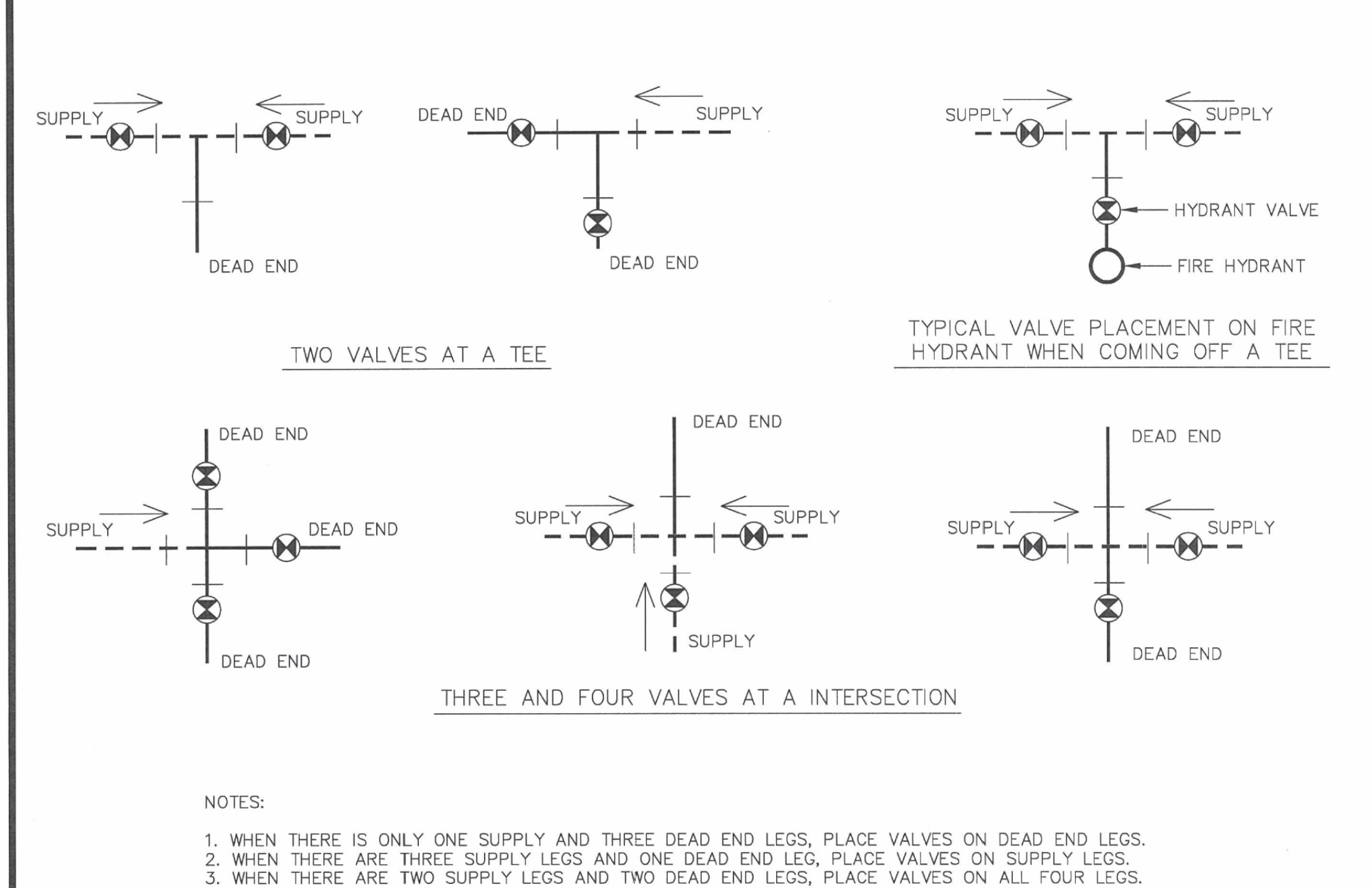
MUELLER M.J. GATE VALVE
 REFER TO SPECIAL PROVISIONS.

NOTES:
 1.) THE CONTRACTOR IS REQUIRED TO INSTALL 24"X24"X6" CONCRETE PADS AROUND ALL VALVE BOXES. PRECAST CONCRETE COLLARS ARE NOT ACCEPTED.
 2.) ALL VALVES MUST OPEN COUNTER CLOCKWISE AND CLOSE CLOCKWISE.

REVISIONS

DATE	DESCRIPTION	ISSUED
12/01/10		

STANDARD DETAIL
W-2.0



TWO VALVES AT A TEE

TYPICAL VALVE PLACEMENT ON FIRE HYDRANT WHEN COMING OFF A TEE

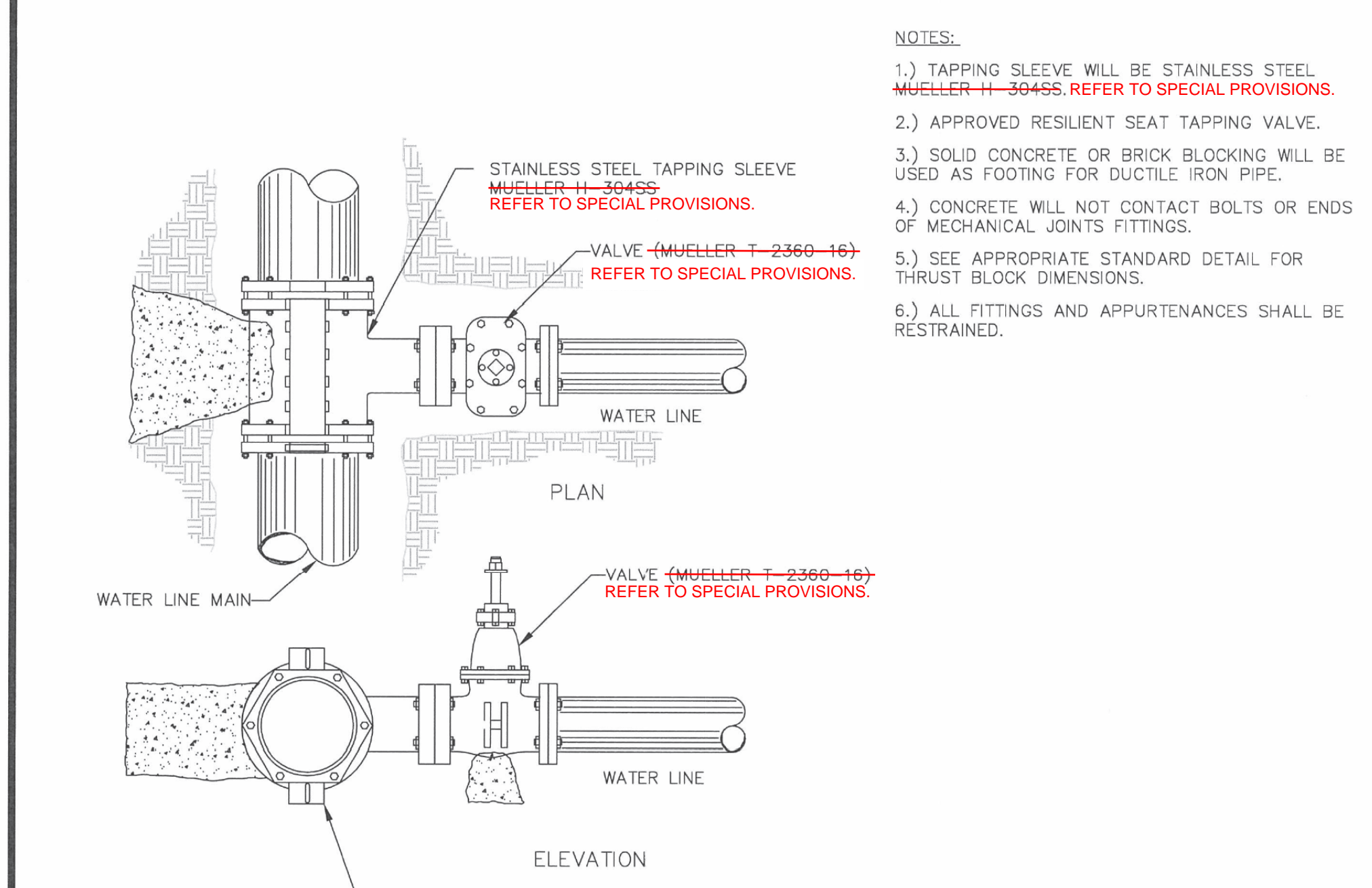
THREE AND FOUR VALVES AT AN INTERSECTION

NOTES:
 1. WHEN THERE IS ONLY ONE SUPPLY AND THREE DEAD END LEGS, PLACE VALVES ON DEAD END LEGS.
 2. WHEN THERE ARE THREE SUPPLY LEGS AND ONE DEAD END LEG, PLACE VALVES ON SUPPLY LEGS.
 3. WHEN THERE ARE TWO SUPPLY LEGS AND TWO DEAD END LEGS, PLACE VALVES ON ALL FOUR LEGS.
 4. CITY MAY REQUIRE VALVE PLACEMENT BASED ON CURRENT OR FUTURE NEEDS.
 5. WHEN ONE LEG AT AN INTERSECTION IS A HYDRANT LEG, VALVE MUST BE PLACED ON A HYDRANT LEG.
 6. A "SUPPLY LEG" IS ANY LEG CONNECTED TO THE TREATED WATER SOURCE BY PIPING EQUAL AND OR GREATER THAN ITS SIZE AND SEPARATE FROM THE TEE OR CROSS BEING CONSIDERED.

REVISIONS

DATE	DESCRIPTION	ISSUED
12/01/10		

STANDARD DETAIL
W-2.2



TAPPING SLEEVE AND VALVE ASSEMBLY

STAINLESS STEEL TAPPING SLEEVE
 MUELLER T-3045S
 REFER TO SPECIAL PROVISIONS.

VALVE (MUELLER T-2360-16)
 REFER TO SPECIAL PROVISIONS.

PLAN

ELEVATION

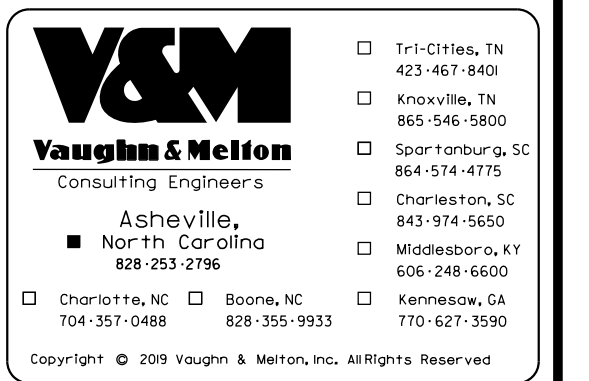
STAINLESS STEEL TAPPING SLEEVE
 MUELLER T-3045S
 REFER TO SPECIAL PROVISIONS.

NOTES:
 1.) TAPPING SLEEVE WILL BE STAINLESS STEEL. MUELLER T-3045S. REFER TO SPECIAL PROVISIONS.
 2.) APPROVED RESILIENT SEAT TAPPING VALVE.
 3.) SOLID CONCRETE OR BRICK BLOCKING WILL BE USED AS FOOTING FOR DUCTILE IRON PIPE.
 4.) CONCRETE WILL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINTS FITTINGS.
 5.) SEE APPROPRIATE STANDARD DETAIL FOR THRUST BLOCK DIMENSIONS.
 6.) ALL FITTINGS AND APPURTENANCES SHALL BE RESTRAINED.

REVISIONS

DATE	DESCRIPTION	ISSUED
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STANDARD DETAIL
W-2.3



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 Charlotte, NC 704-351-0488
 Boone, NC 828-355-9933
 Kennesaw, GA 770-621-3590

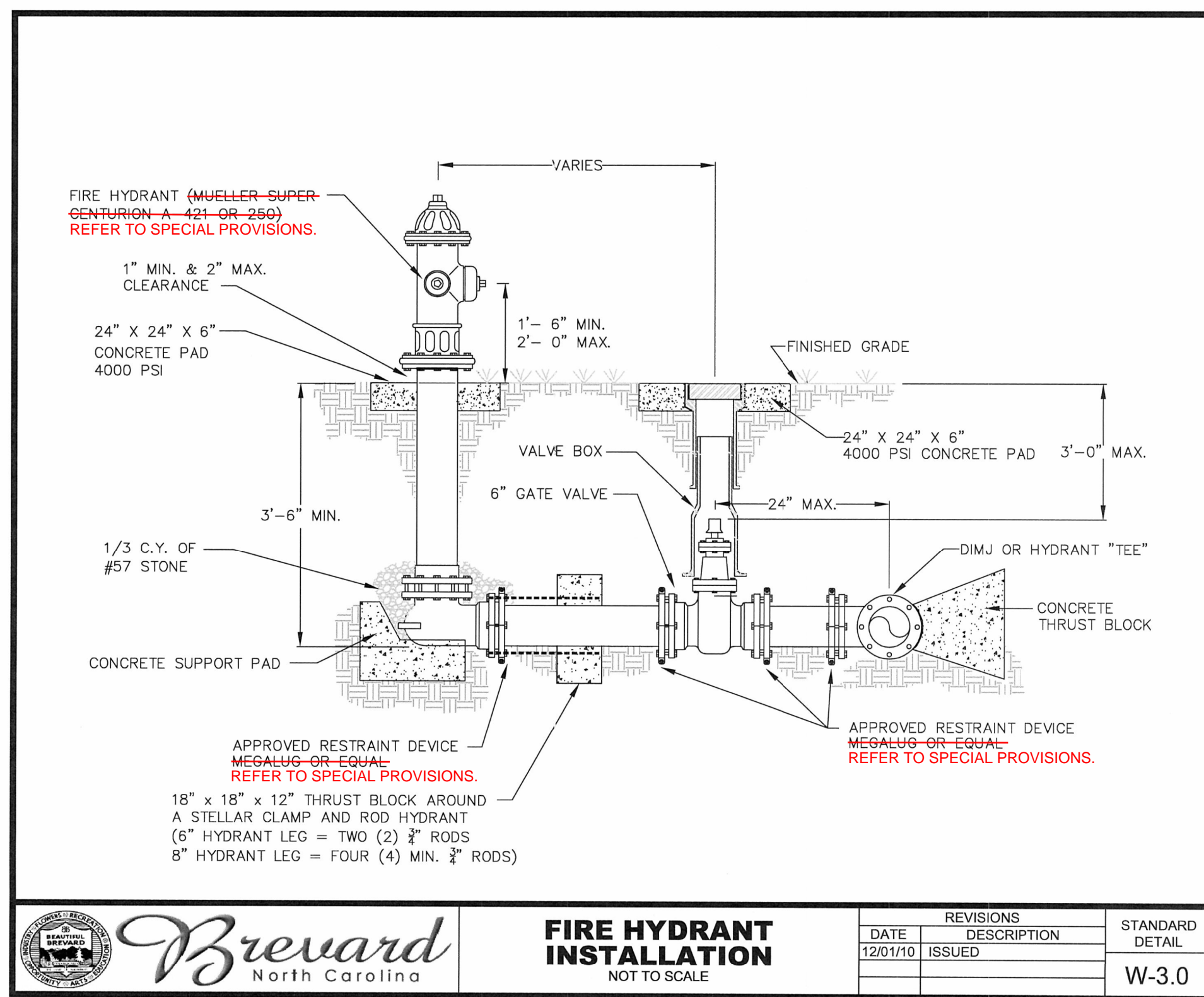
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CITY OF BREVARD WATER CONSTRUCTION DETAILS

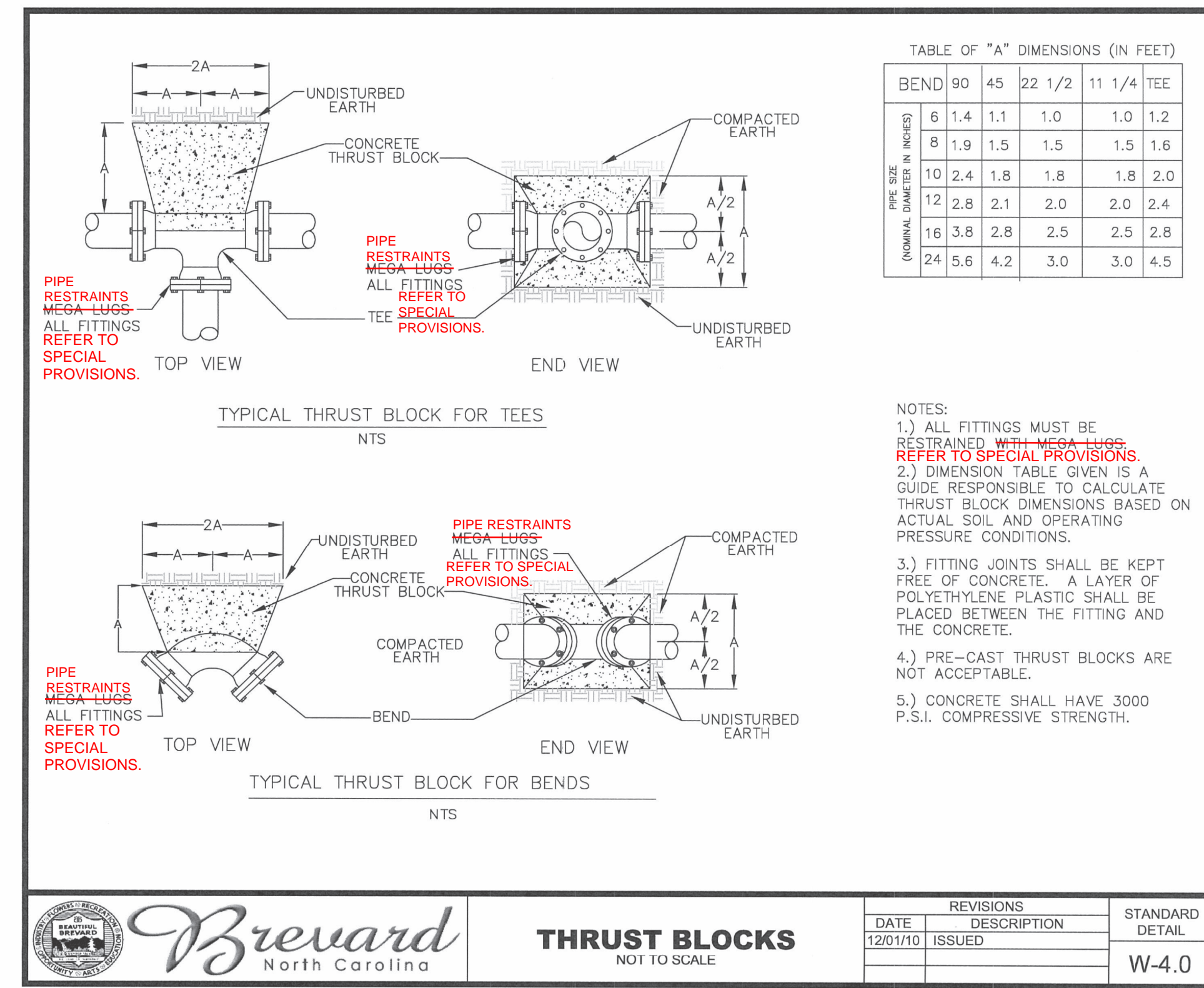
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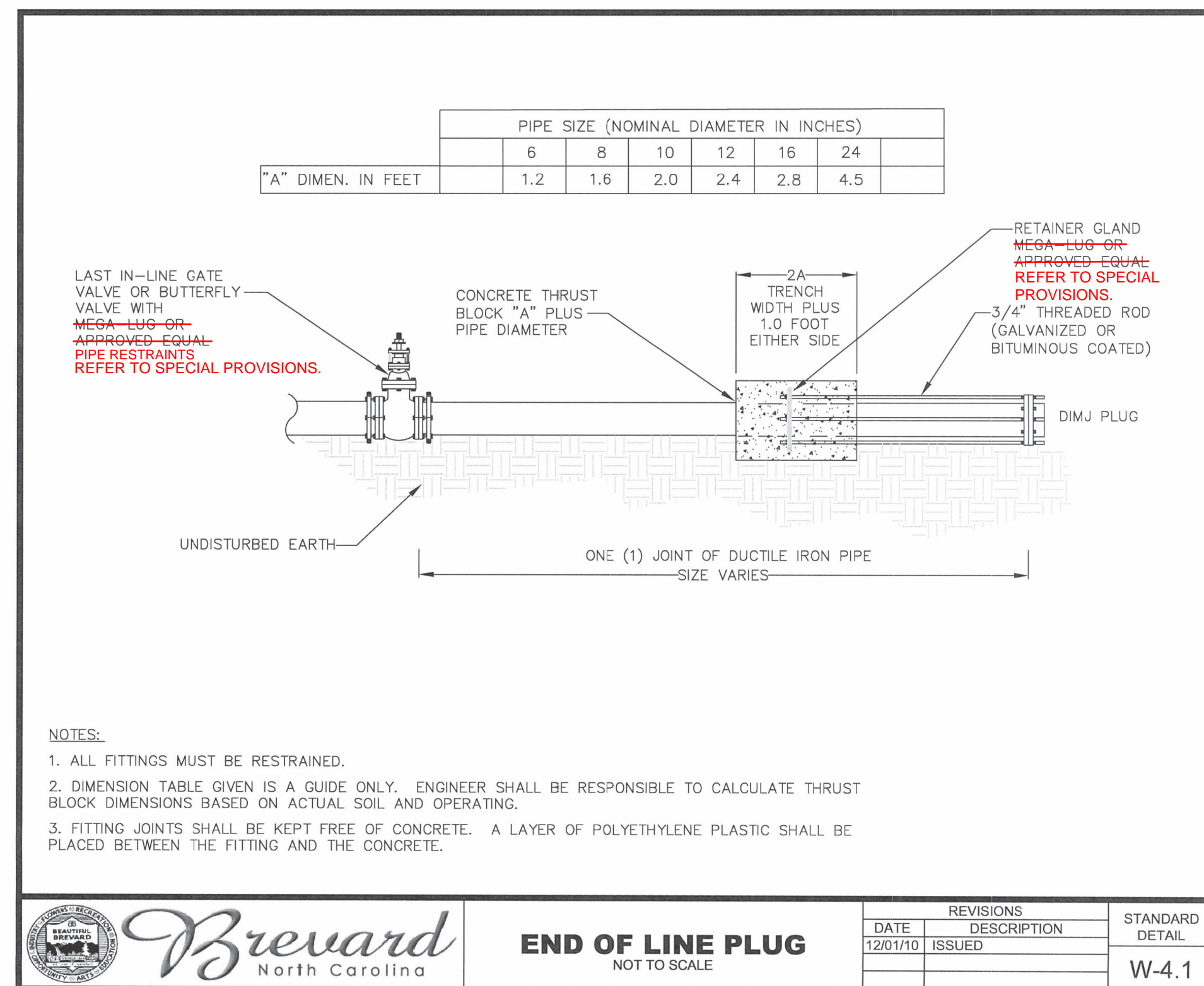
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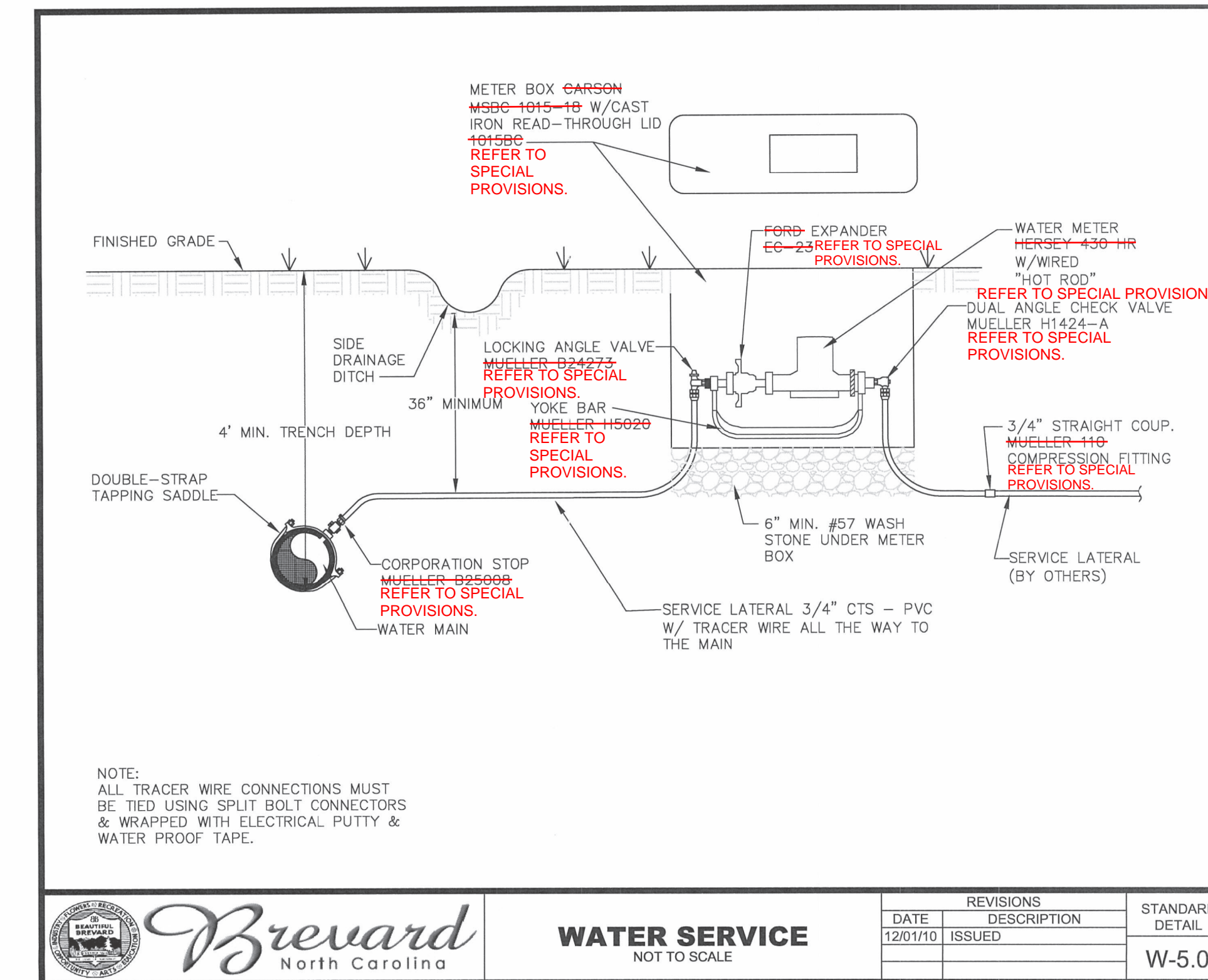
	FIRE HYDRANT INSTALLATION NOT TO SCALE	REVISIONS	STANDARD
		DATE DESCRIPTION 12/01/10 ISSUED	DETAIL W-3.0



	THRUST BLOCKS NOT TO SCALE	REVISIONS	STANDARD
		DATE DESCRIPTION 12/01/10 ISSUED	DETAIL W-4.0



	END OF LINE PLUG NOT TO SCALE	REVISIONS	STANDARD
		DATE DESCRIPTION 12/01/10 ISSUED	DETAIL W-4.1



	WATER SERVICE NOT TO SCALE	REVISIONS	STANDARD
		DATE DESCRIPTION 12/01/10 ISSUED	DETAIL W-5.0

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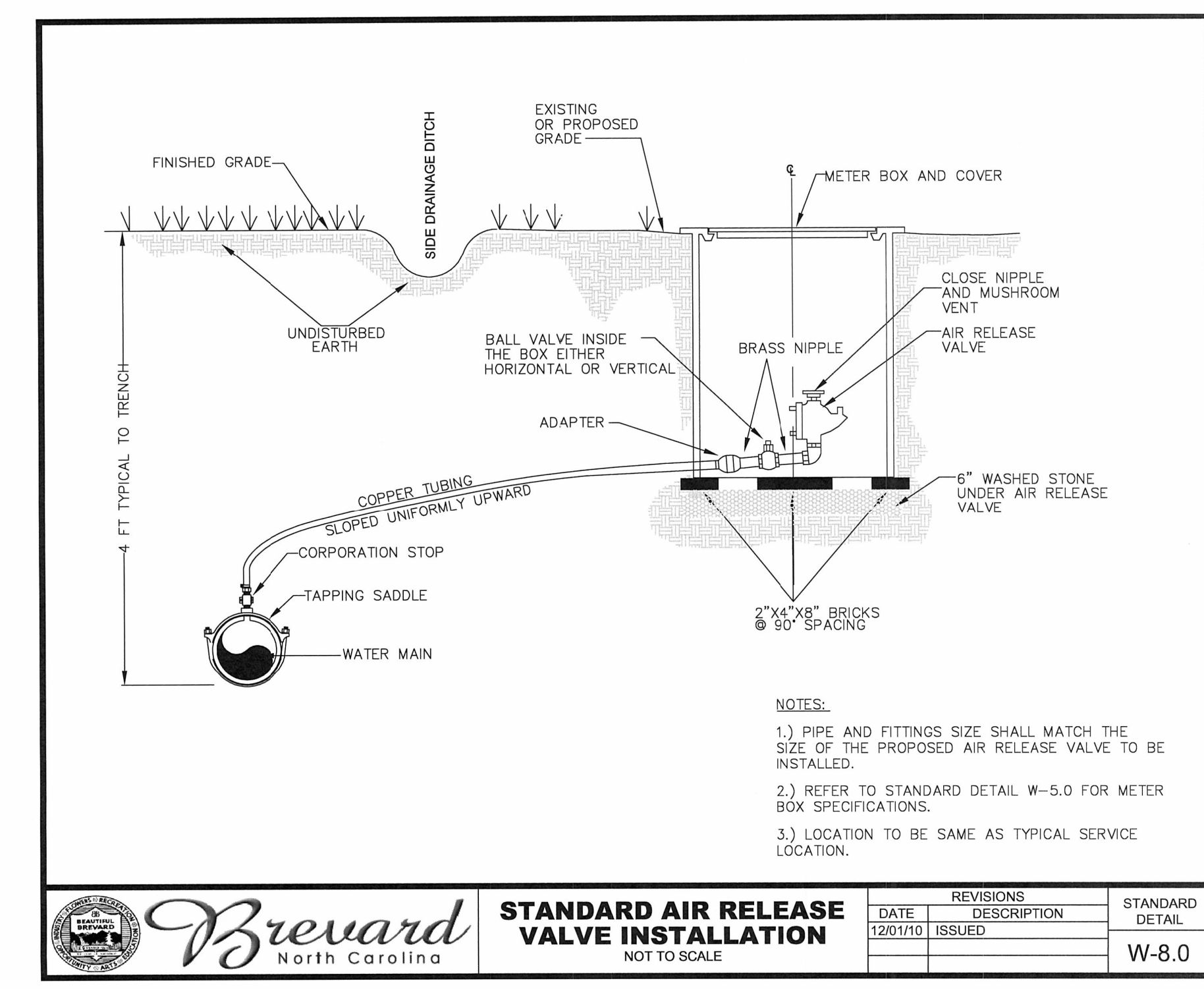
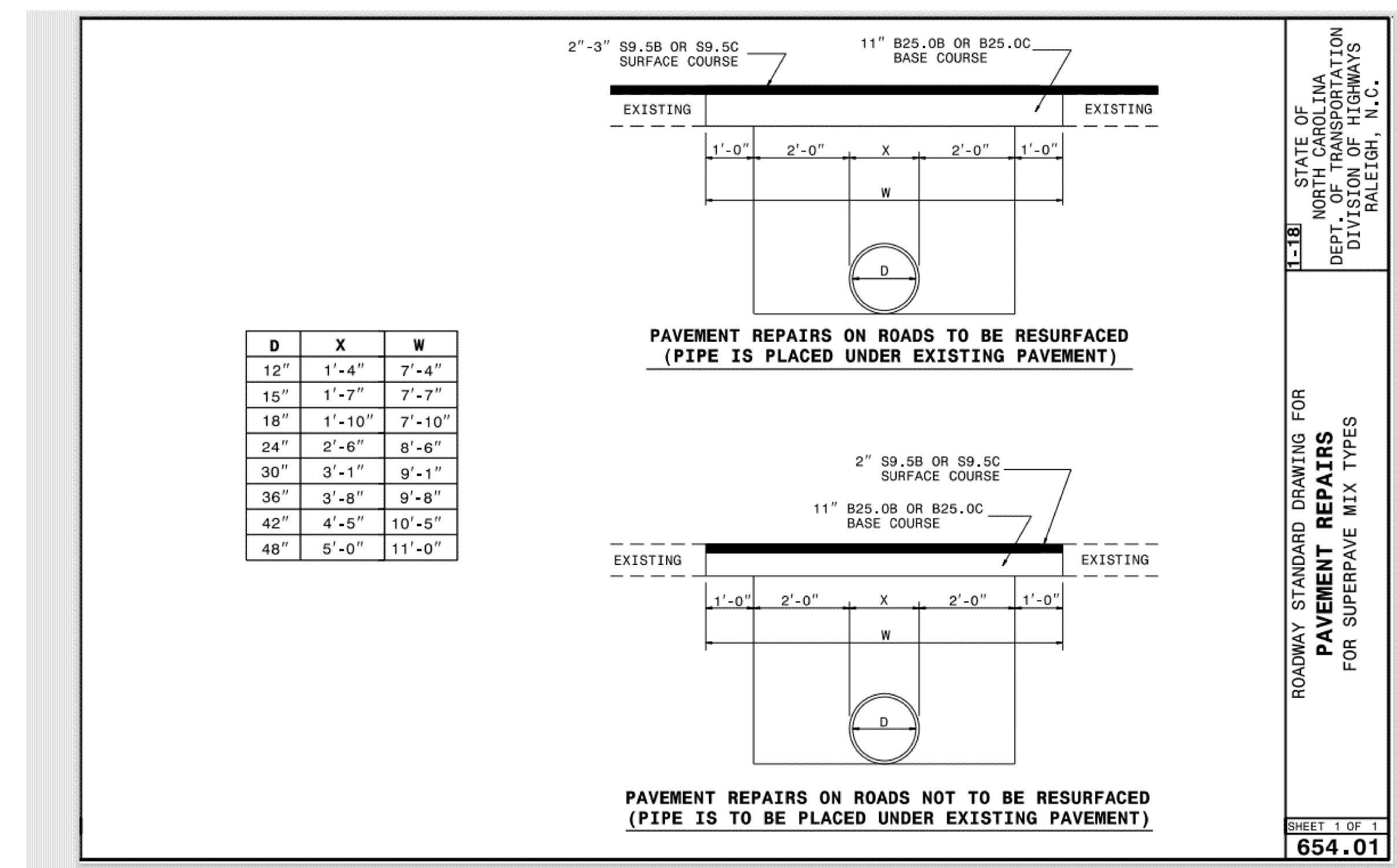
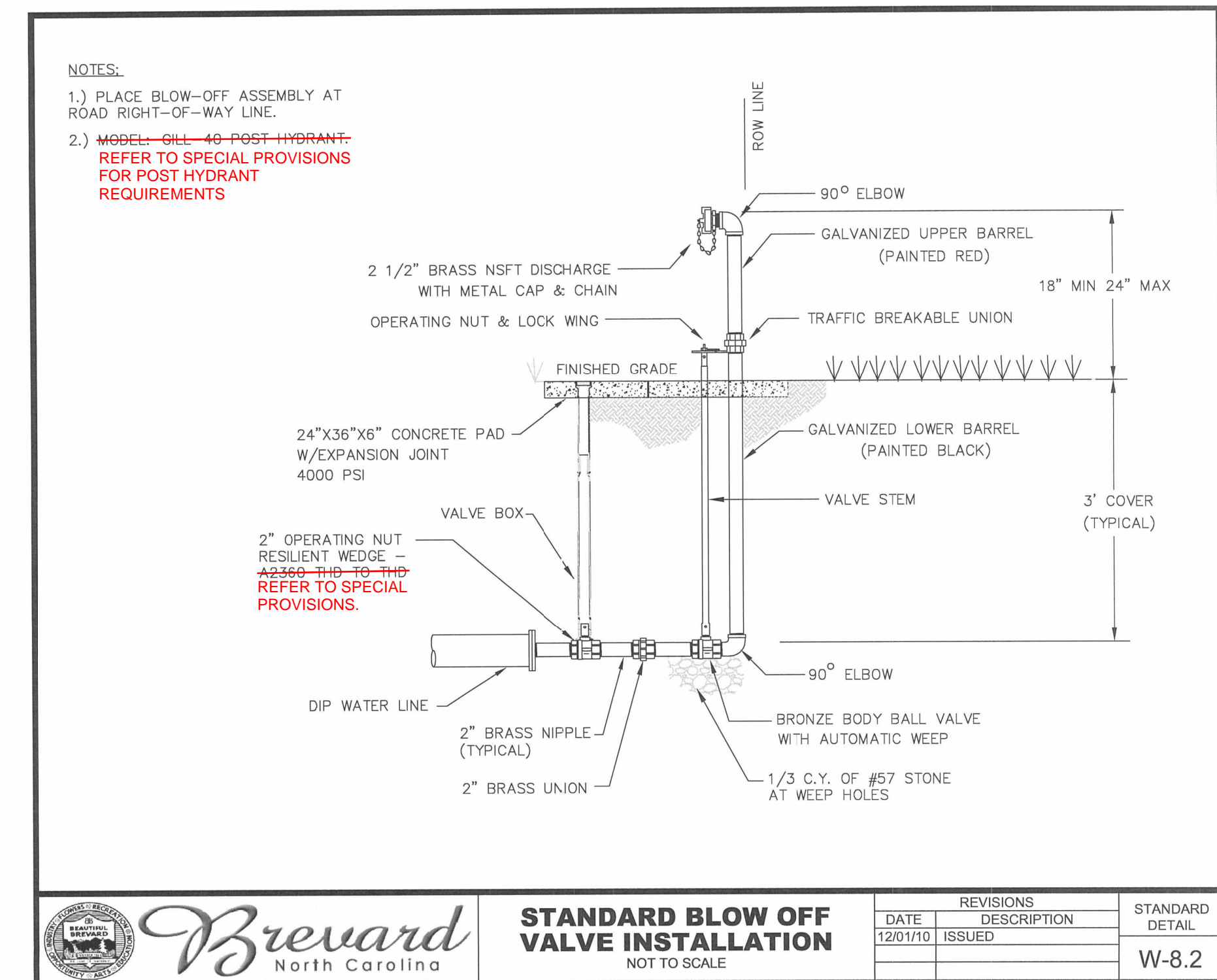
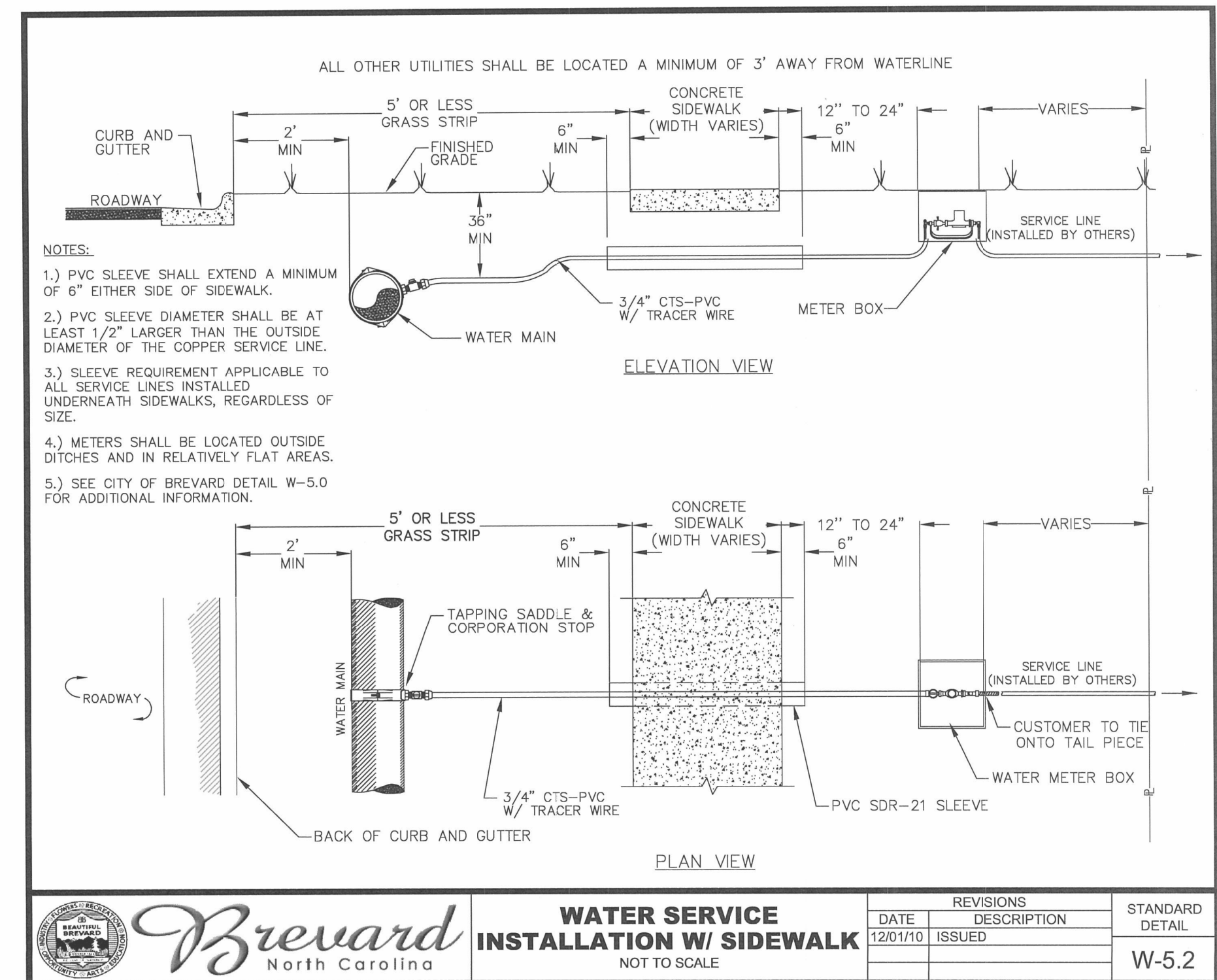
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CITY OF BREVARD WATER CONSTRUCTION DETAILS

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DESIGNED BY: MRD	
DRAWN BY: SRW	
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APPROVED BY: JDN	7/13/2023 11:41:58 PM EDT
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
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<input type="checkbox"/> Tri-Cities, TN 423-467-8400	<input type="checkbox"/> Knoxville, TN 865-546-5800	<input type="checkbox"/> Spartanburg, SC 864-574-4175	<input type="checkbox"/> Charleston, SC 843-974-5650
<input type="checkbox"/> Charlotte, NC 704-351-0488	<input type="checkbox"/> Boone, NC 828-355-9933	<input type="checkbox"/> Kennesaw, GA 770-621-3590	

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UTILITY CONSTRUCTION PLANS ONLY DOCUMENT NOT CONSIDERED FINAL UNTIL ALL SIGNATURES ARE COMPLETED UTILITY CONSTRUCTION	

CITY OF BREVARD SEWER CONSTRUCTION DETAILS

BACKFILL PER CITY OF BREVARD DETAIL S-1.0.

UNDISTURBED EARTH

PIPE SPRING LINE

PIPE EMBEDMENT MATERIAL

OD

INITIAL BACKFILL

NOTES:

- 1.) PVC PIPES REQUIRE #57 WASHED STONE PIPE EMBEDMENT MATERIALS.
- 2.) WHEN TRENCH IS SUBJECT TO INUNDATION, EMBEDMENT MATERIALS MUST EXTEND TO TOP OF PIPE.
- 3.) NO BOULDERS OR STONES WILL BE USED IN INITIAL BACKFILL.
- 4.) THIS DETAIL IS VALID FOR PVC SEWER PIPE INSTALLED AT DEPTHS OF UP TO 10 FEET.
- 5.) PVC PIPE NOT ALLOWED WITH LESS THAN 3'-0" COVER.
- 6.) WALL THICKNESS SHALL BE SDR 35.
- 7.) USE DIP FOR DEPTHS GREATER THAN 10'. RUN DIP FROM MANHOLE TO MANHOLE (NO TRANSITIONING OF PIPE MATERIALS WITHIN RUN)

	TRENCH FOR 15" & SMALLER PVC PIPE NOT TO SCALE	REVISIONS	STANDARD DETAIL
		DATE DESCRIPTION	S-1.1
12/01/10	ISSUED		

BACKFILL PER CITY OF BREVARD DETAIL S-1.0.

TYPE I

TYPE II

TYPE III

TYPE IV

TYPE V

NOTES:

- 1.) MINIMUM ALLOWABLE DEPTH OF COVER IS 3 FT. (SEE DETAIL S-1.3 FOR MAXIMUM ALLOWABLE DEPTHS)
- 2.) IN ROCK OR WET SOIL, PIPE MUST BE BEDDED IN AT LEAST 6" OF CRUSHED STONED EMBEDMENT MATERIAL BELOW THE INVERT OF THE PIPE.
- 3.) GRANULAR MATERIALS ARE DEFINED PER THE AASHTO SOIL CLASSIFICATION SYSTEM (ASTM D2487) OR THE UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D2487), WITH THE EXCEPTION THAT GRAVEL BEDDING / BACKFILL ADJACENT TO THE PIPE IS LIMITED TO 2" MAXIMUM PARTICLE SIZE PER ANSI/AWWA C650.
- 4.) THESE PIPES ARE ADEQUATE FOR DEPTHS OF COVER FROM 3 FT. UP TO THE MAXIMUM SHOWN INCLUDING AN ALLOWANCE FOR A SINGLE H-20 TRUCK WITH A 1.5 IMPACT FACTOR UNLESS OTHERWISE NOTED.
- 5.) RING DEFLECTION LIMITED TO 3%, MINIMUM SAFETY FACTOR OF 2. EARTH LOAD BASED ON SOIL WEIGHT OF 120 PCF.

	TRENCH FOR DIP PIPE NOT TO SCALE	REVISIONS	STANDARD DETAIL
		DATE DESCRIPTION	S-1.2
12/01/10	ISSUED		

PIPE SIZE	PRESSURE CLASS	LAYING CONDITION				
		TYPE I	TYPE II	TYPE III	TYPE IV	TYPE V
4	350	53	61	69	85	100
6	350	26	31	37	47	65
8	350	16	20	25	34	50
10	350	11	15	19	28	45
12	350	10	15	19	28	44
14	250	-	11	15	23	36
14	300	-	13	17	26	42
14	350	-	14	19	27	44
16	250	-	11	15	24	34
16	300	-	13	17	26	39
16	350	-	15	20	28	44
18	250	-	10	14	22	31
18	300	-	13	17	26	36
18	350	-	15	19	28	41
20	250	-	10	14	22	30
20	300	-	13	17	26	35
20	350	-	15	19	28	38
24	200	-	8	12	17	25
24	250	-	10	14	22	29
24	300	-	13	17	24	32
24	350	-	15	19	28	37
30	200	-	8	12	16	24
30	250	-	11	15	19	27
30	300	-	12	16	21	29
30	350	-	15	19	25	33
36	200	-	8	12	15	23
36	250	-	10	14	18	26
36	300	-	12	16	20	28
36	350	-	15	19	24	32

Source: Ductile Iron Pipe for Wastewater Applications, DIPRA 2008

	TRENCH CHART FOR DIP PIPE NOT TO SCALE	REVISIONS	STANDARD DETAIL
		DATE DESCRIPTION	S-1.3
12/01/10	ISSUED		

CAST IRON FRAME & COVER

12" MAX. BRICK ADJUSTMENT

MANHOLE STEPS

SEE DETAIL "A"

4" MINIMUM (SEE DETAIL "A")

4"-8" MAXIMUM FOR CONCENTRIC CONE TOP

PIPE EMBEDMENT MATERIAL

UNDISTURBED MATERIAL

SECTION A-A

SECTION C-C

DETAIL "A"

MANHOLE NOTES:

- 1.) MANHOLE STEPS TO BE VERTICALLY IN LINE WITH "INVERT OUT" FOR PIPE 18" AND LESS, OVER 18" TO BE LOCATED IN LINE WITH BENCH.
- 2.) FOR MANHOLES LARGER THAN 4 FT. DIA., MAINTAIN FULL MANHOLE DIA. TO 8 FT. ABOVE INVERT BENCH.
- 3.) FOR 5 FT. AND 6 FT. DIA. MANHOLES, USE A TRANSITION CONE TO REDUCE TO 4 FT. DIA.
- 4.) FOR 7 FT. TO 10 FT. DIA. MANHOLES, USE A TRANSITION TOP TO REDUCE TO 4 FT. DIA.
- 5.) INSTALL MASTIC ON MANHOLE LID WITHIN GROUT ON THE INSIDE AND OUTSIDE TO SEAL MANHOLES.

	STANDARD MANHOLE NOT TO SCALE	REVISIONS	STANDARD DETAIL
		DATE DESCRIPTION	S-2.0
12/01/10	ISSUED		

SECTIONAL PLAN

SECTION F-F

NOTES:

- 1.) SEE ALSO SANITARY SEWER SERVICE DETAIL.
- 2.) SEE STANDARD MANHOLE DETAILS FOR ADDITIONAL NOTES.

	FORCEMAIN CONNECTION TYPE I NOT TO SCALE	REVISIONS	STANDARD DETAIL
		DATE DESCRIPTION	S-5.0
12/01/10	ISSUED		

2'-0"

MATCH FRAME TO EXISTING GRADE FOR LANDSCAPED LOCATIONS

18" (MIN.) UNLESS UNDISBURBED

2"x1/4" BUTYL

CONCRETE ANCHOR BOLT FOUR (4) MIN.

STANDARD RING AND COVER

NOTE: ALL CASTINGS SHALL BE MANUFACTURED IN THE USA

5/8" LIFTING BAR (TYP.)

COVER

TRAFFIC RATED - USF 577 RING & BI COVER OR APPROVED EQUAL.

FRAME SET IN NON-ROADWAY LOCATION

MACHINED SURFACES

1" MAX.

GROUT

BRICK

12" (MAX.)

3 BRICKS (MAX.)

2"x1/4" BUTYL

PRECAST CONCRETE GRADE RING

PRECAST MANHOLE

5/8" LIFTING BAR (TYP.)

CONCRETE ANCHOR BOLTS (IF REQUIRED)

FRAME SET IN ROADWAY LOCATION

NOTE: WHERE M.H. IS IN ROAD SHOULDER AND ROAD DOES NOT HAVE CURB AND GUTTER, DO NOT USE ANCHOR BOLTS IN FRAME.

	STANDARD MANHOLE FRAME & COVER NOT TO SCALE	REVISIONS	STANDARD DETAIL
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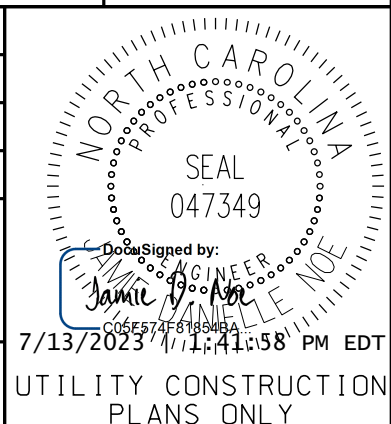
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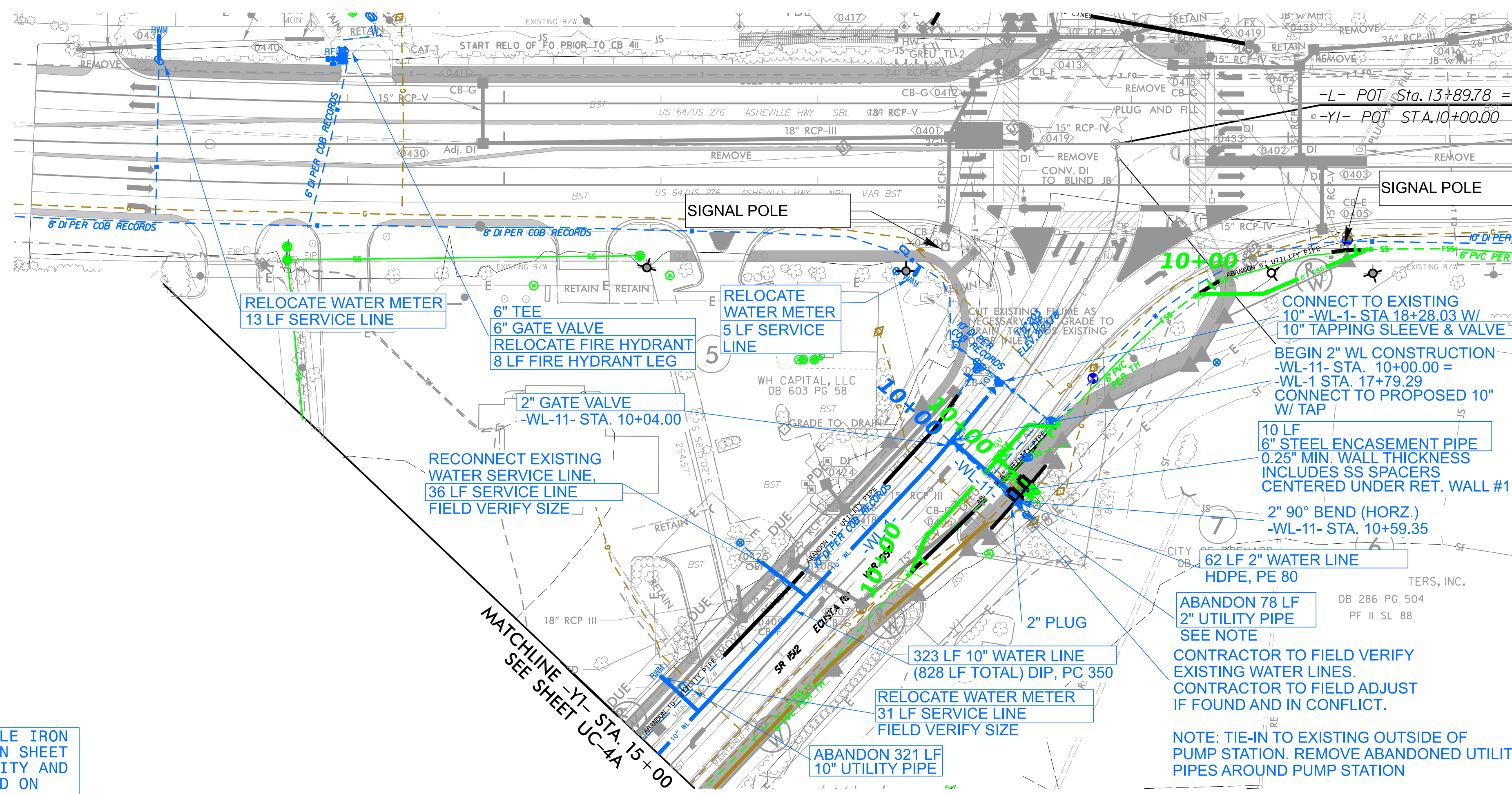
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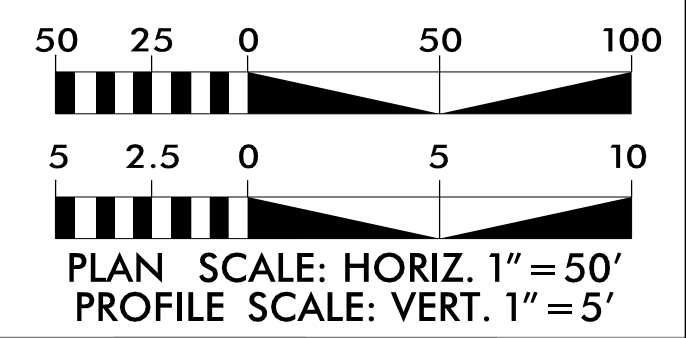
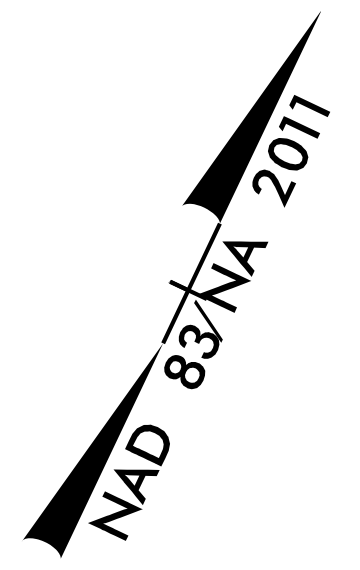


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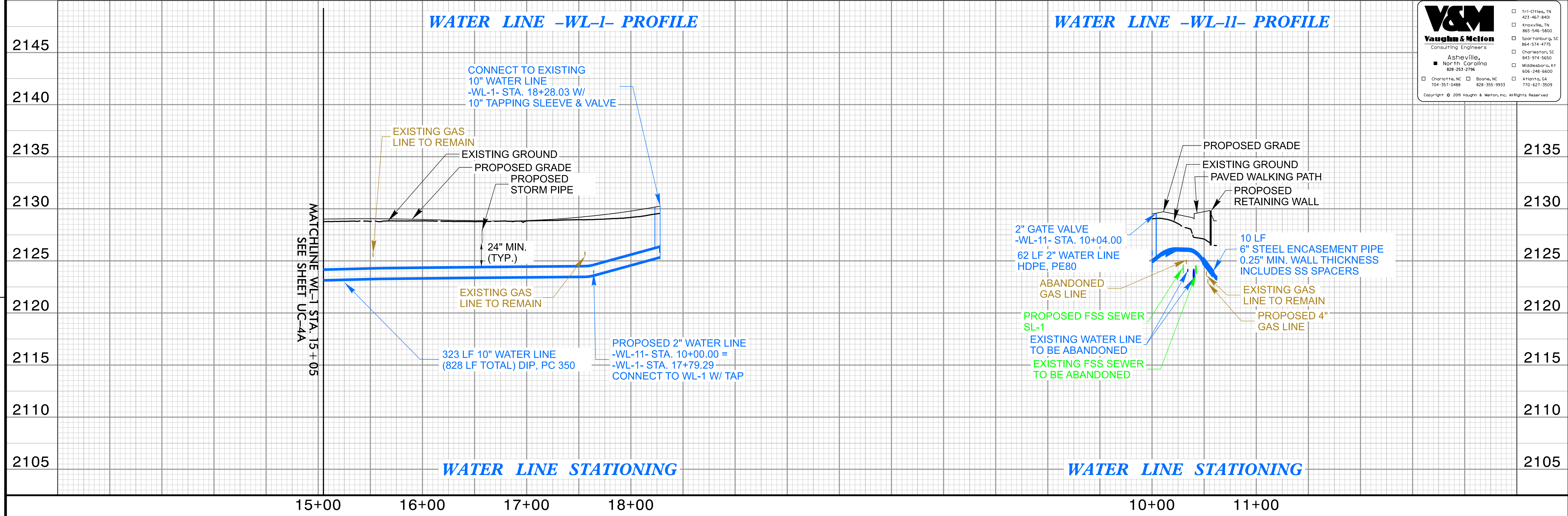
MATCHLINE -L- STA. 16 + 50 SEE SHEET UC-5



THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 195 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

WATER LINE -WL-I- PROFILE

WATER LINE -WL-II- PROFILE



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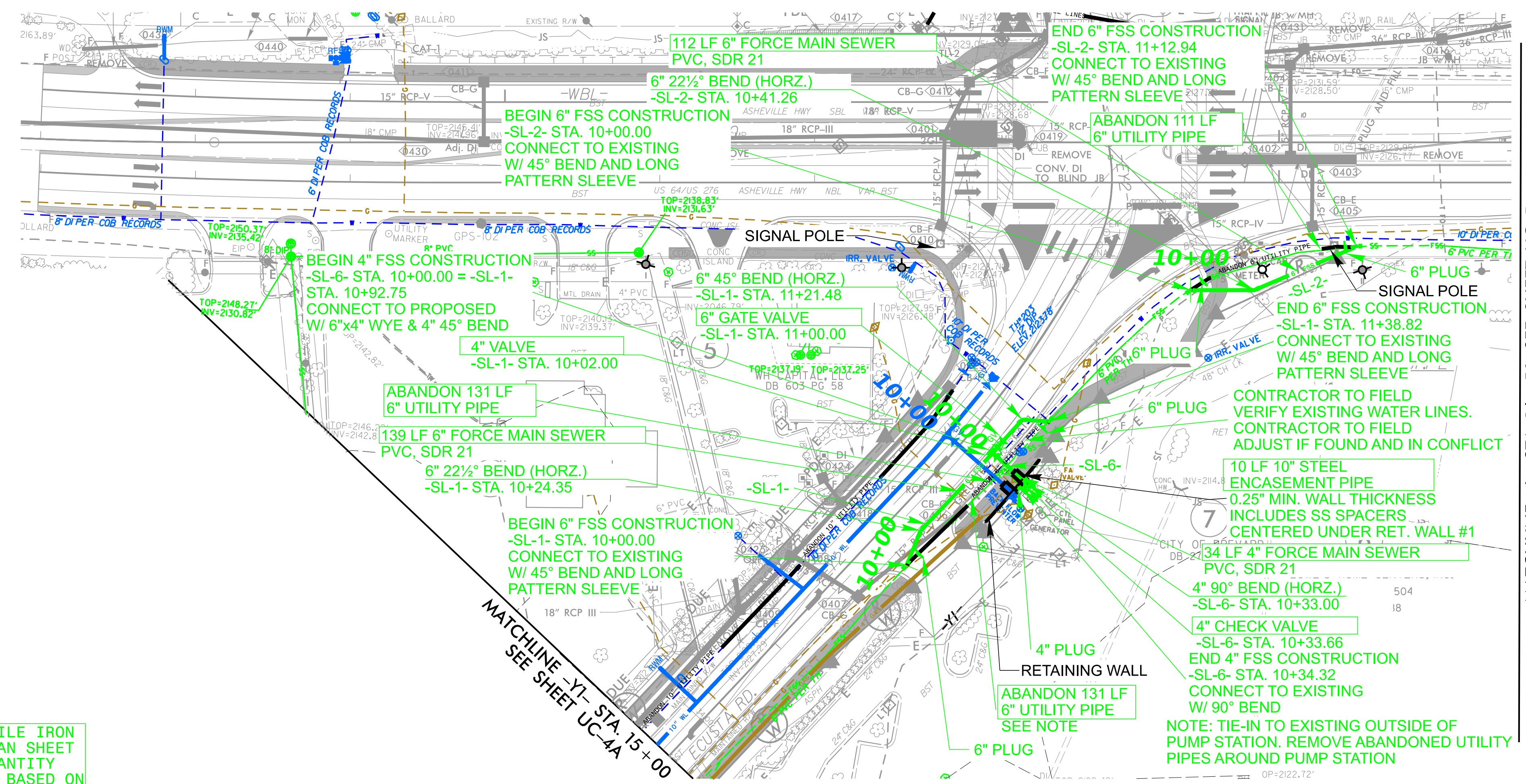
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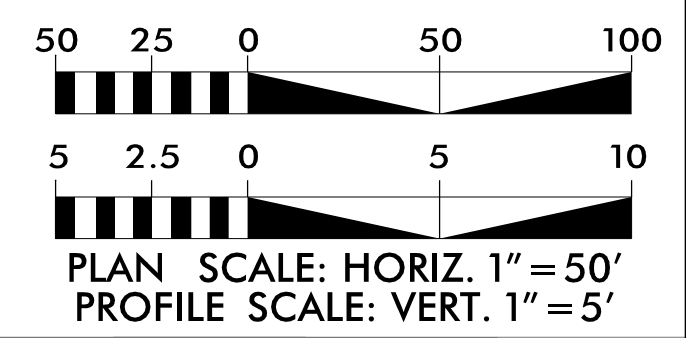
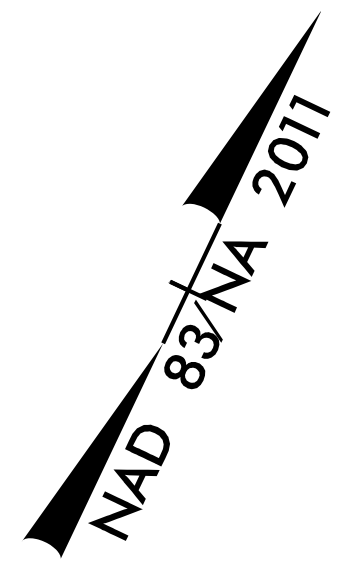
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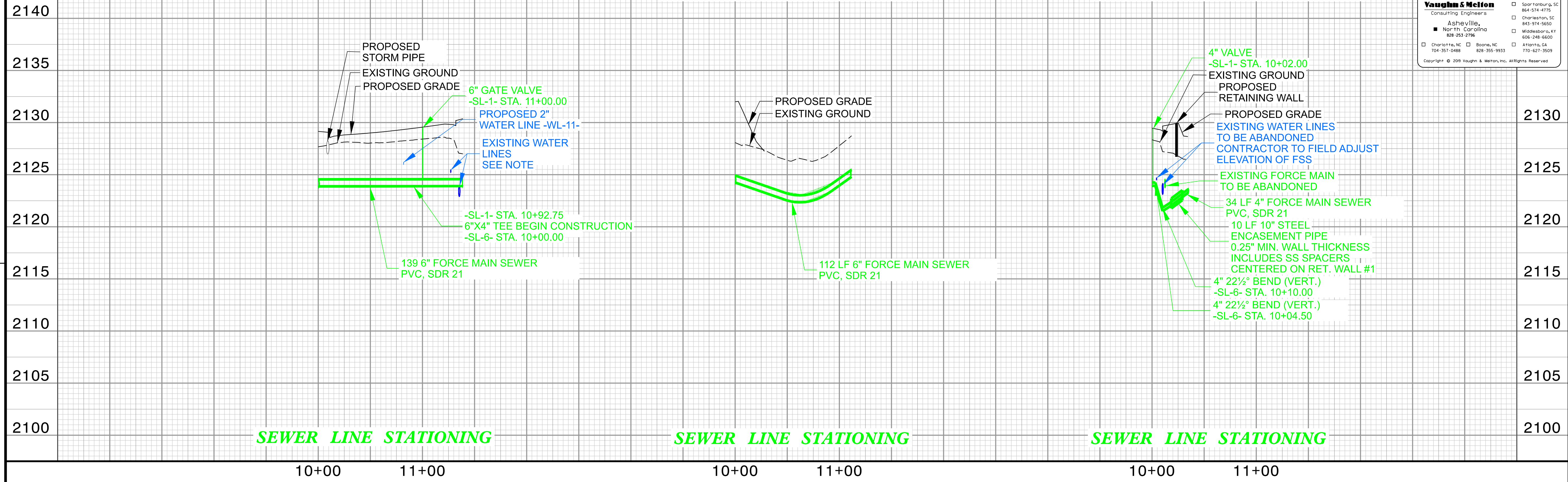


THE ESTIMATED QUANTITY OF DUCTILE IRON SEWER PIPE FITTINGS ON THIS PLAN SHEET IS 1,275 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

SEWER LINE -SL-1- PROFILE

SEWER LINE -SL-2- PROFILE

SEWER LINE -SL-6- PROFILE



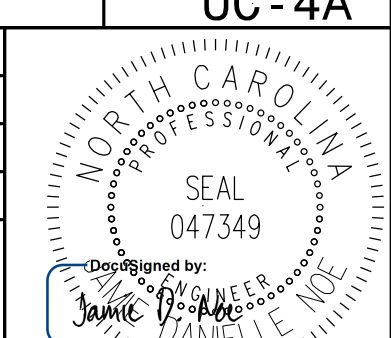
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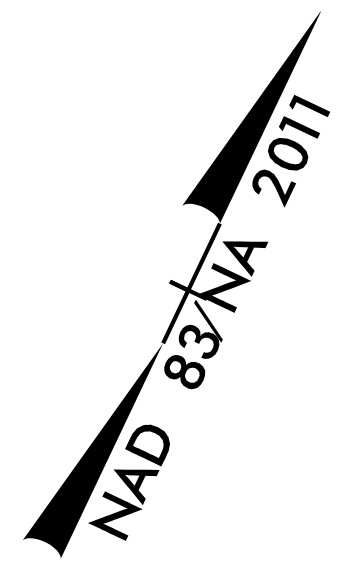
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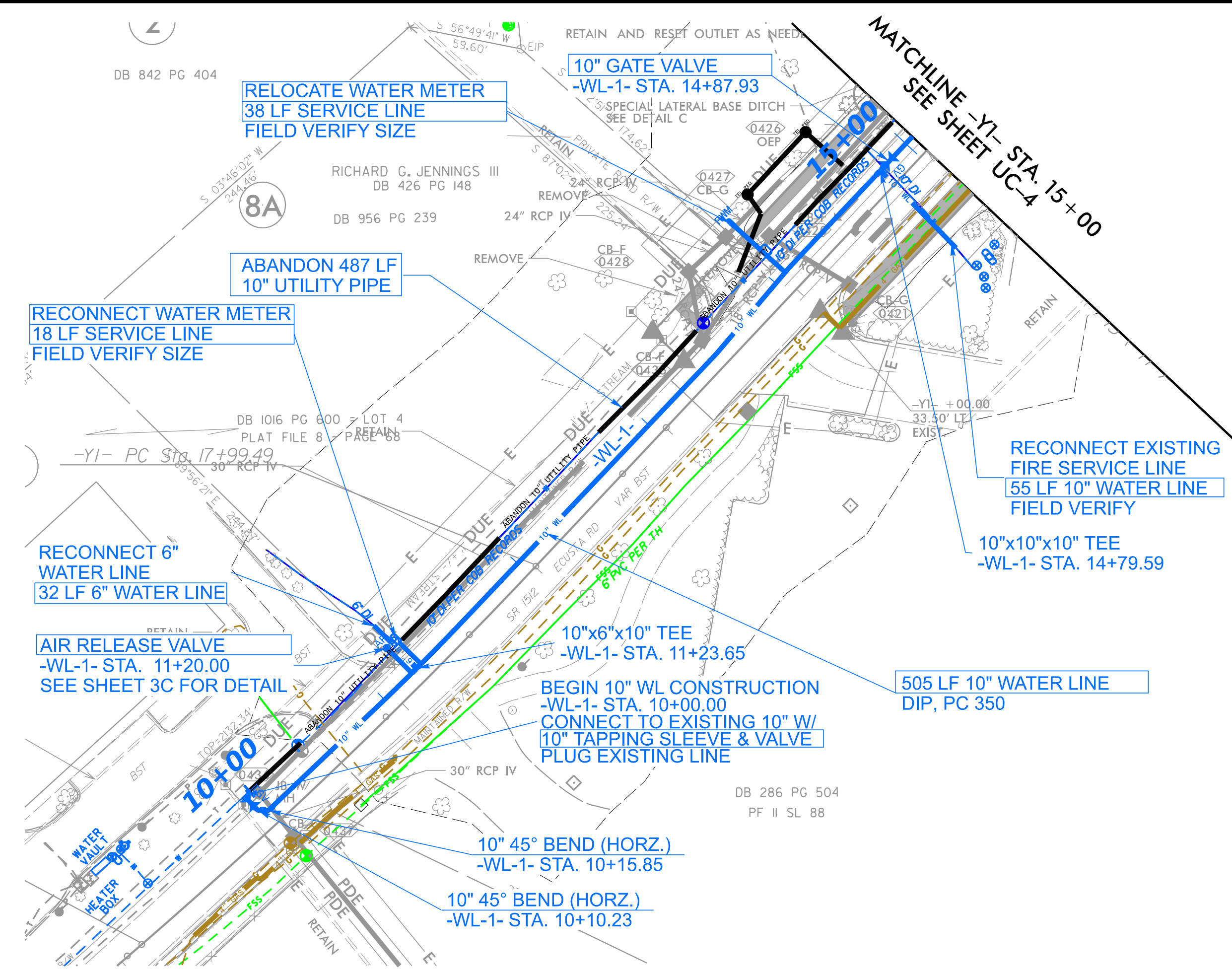
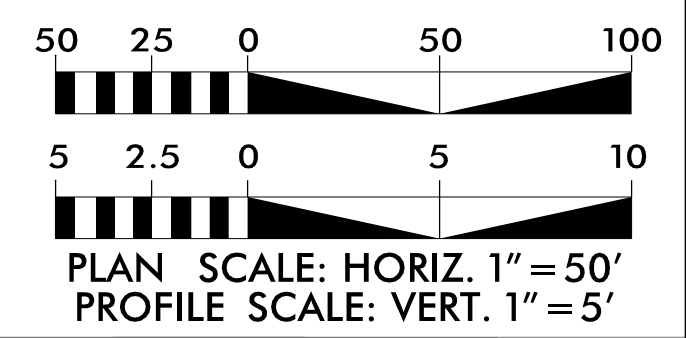
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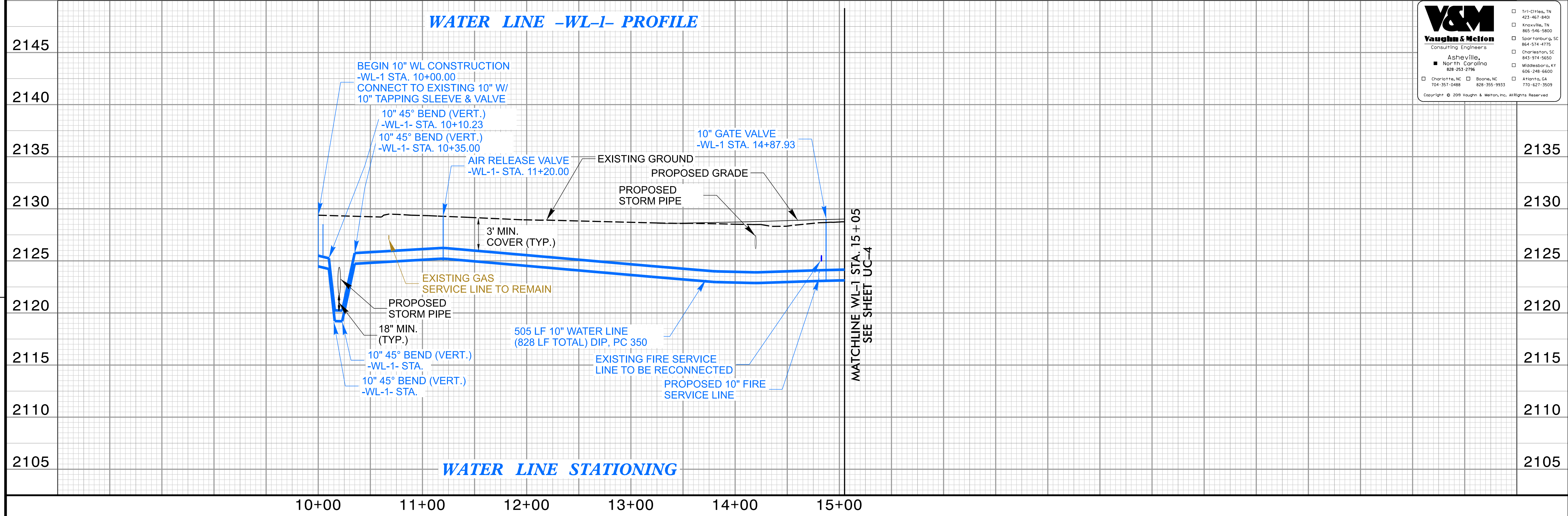
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THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 1,555 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.



WATER LINE -WL-1- PROFILE



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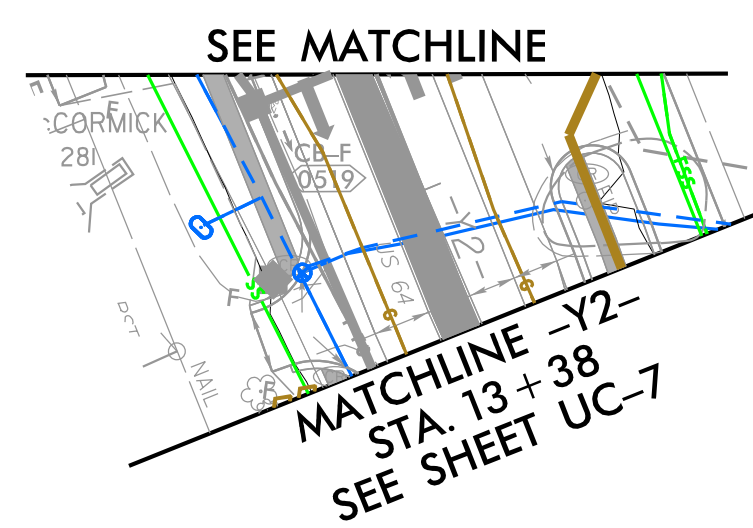
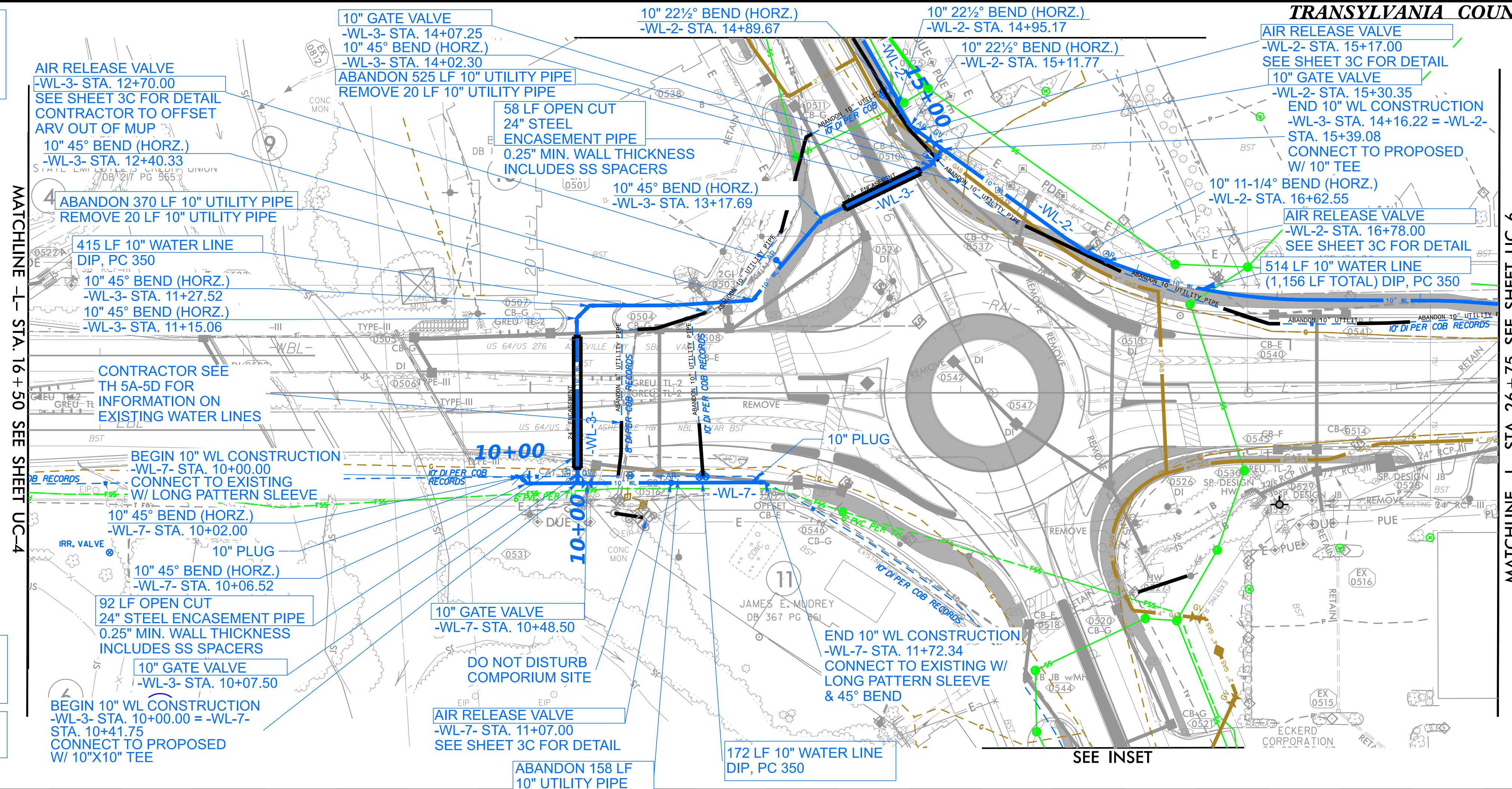
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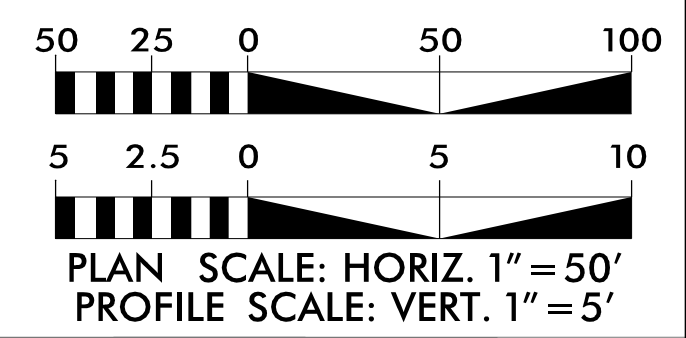
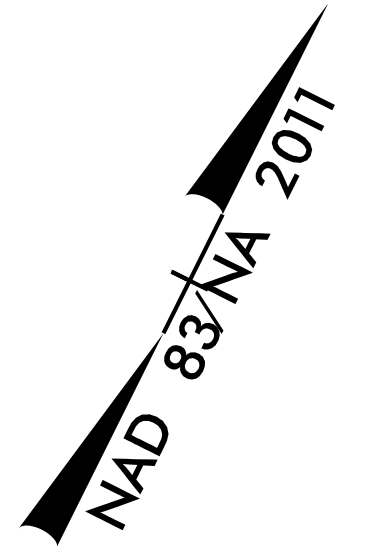
THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 3,180 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.



NOTE: WATER LINE SHALL BE PLACED IN STEEL ENCASMENT WHEN SEPARATION IS LESS THAN 5 FEET FROM MANHOLES. ALL LOCATIONS.

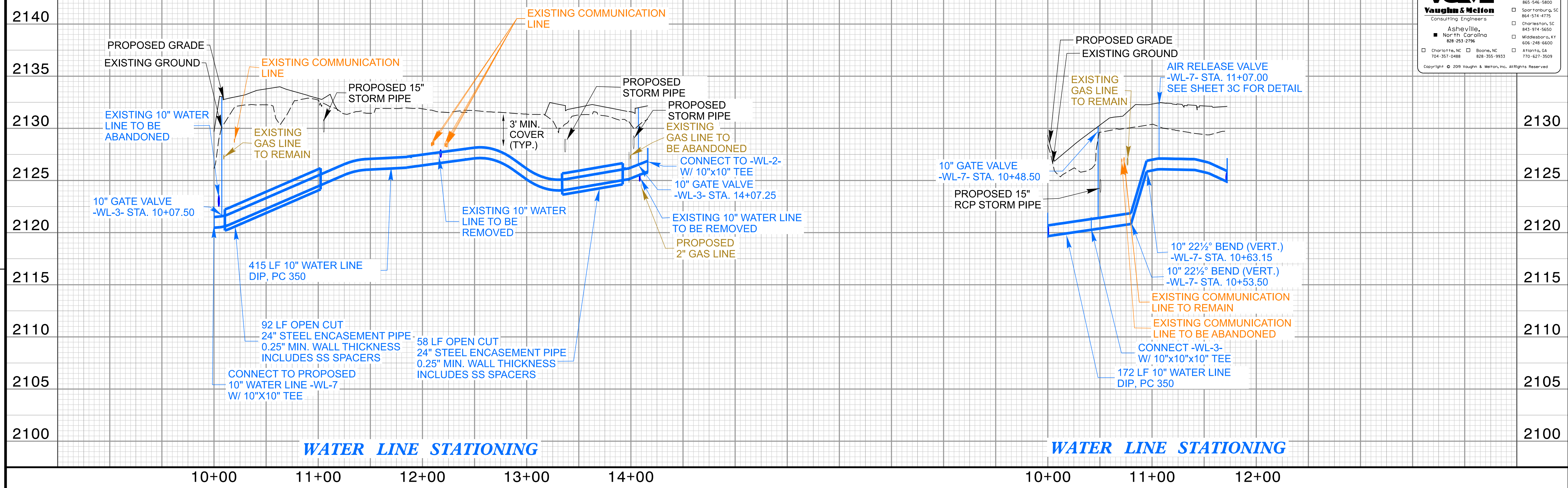
ALL GASKETS SHALL BE HYDROCARBON RESISTANT GASKETS

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WATER LINE -WL-3- PROFILE

WATER LINE -WL-7- PROFILE



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5/14/99

THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 0 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

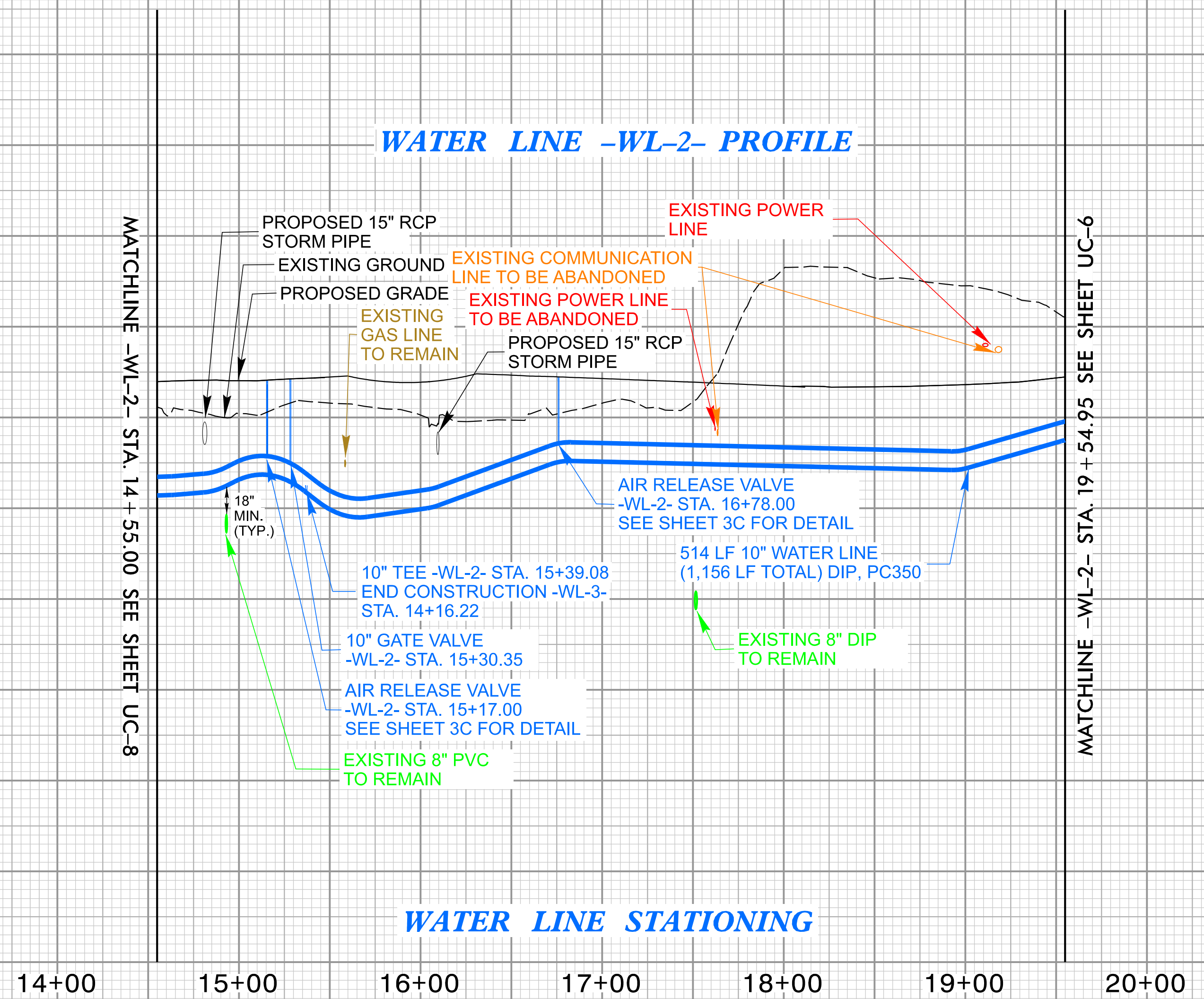
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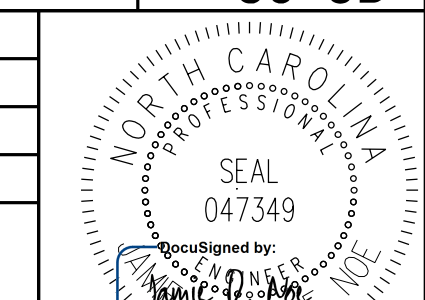
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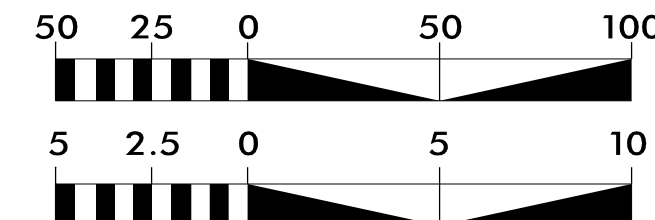
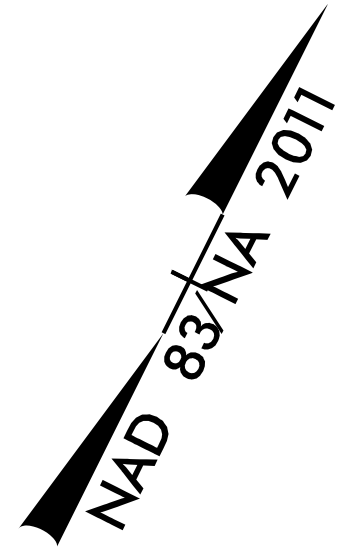
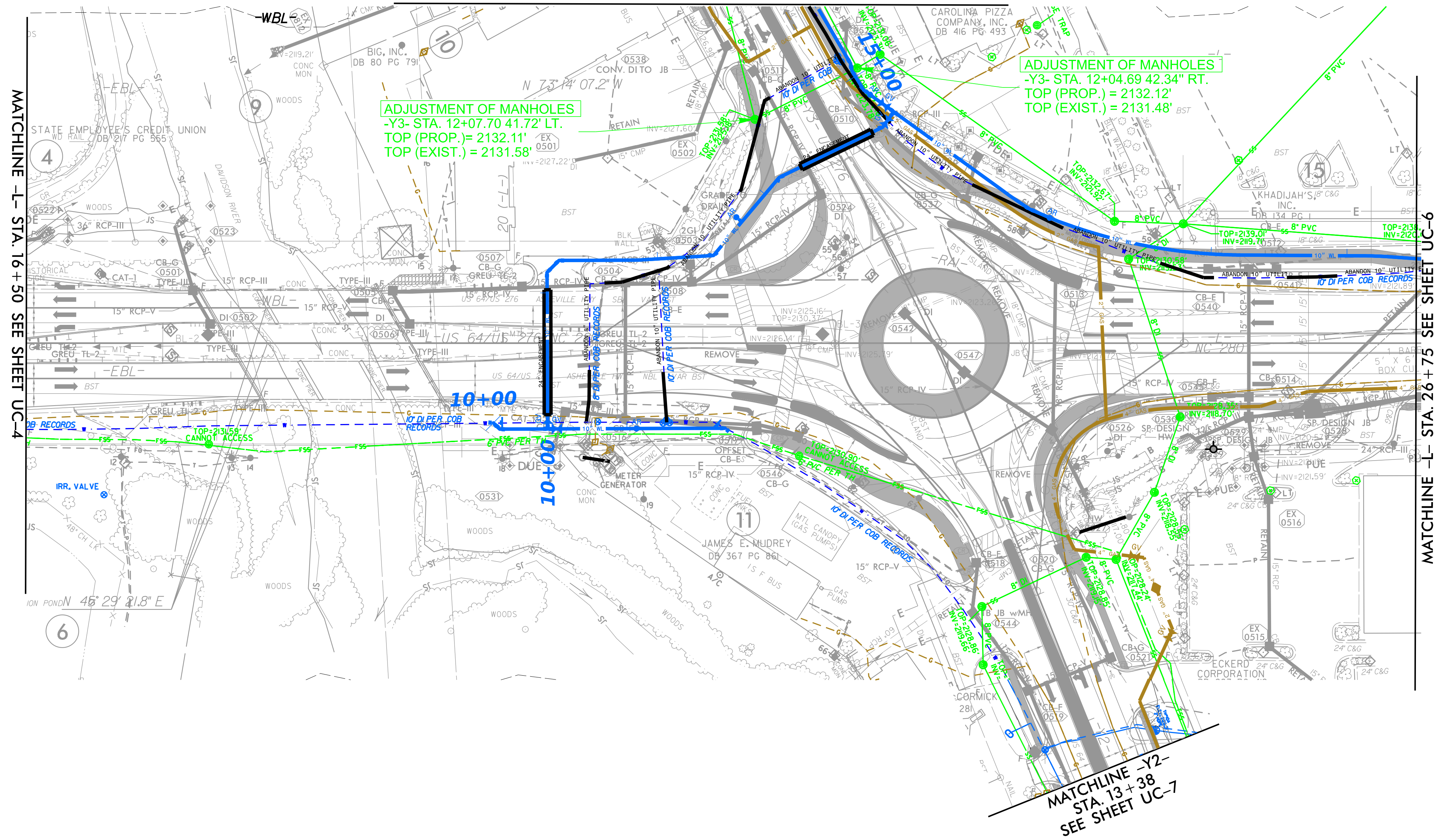
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MATCHLINE -L- STA. 12+46 SEE SHEET UC-8A



PLAN SCALE: HORIZ. 1" = 50'
PROFILE SCALE: VERT. 1" = 5'

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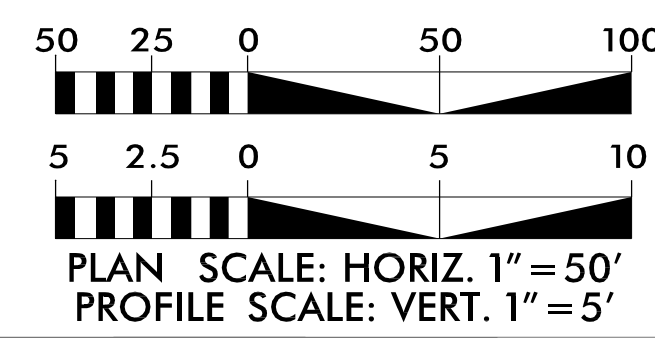
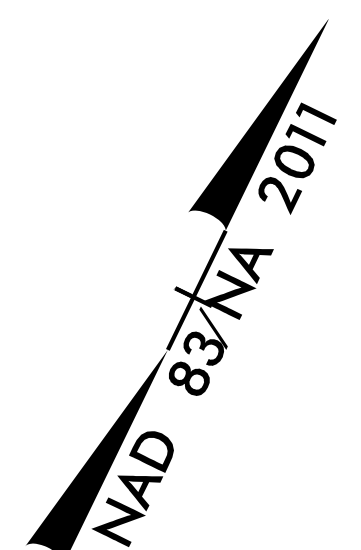
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UTILITY CONSTRUCTION

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PROPOSED TEMPORARY 10" BYPASS
 CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR THE PROPOSED TEMPORARY 10" WATERLINE
 547 LF 10" WATER LINE (1,156 LF TOTAL) DIP, PC 350

MATCHLINE
 -L- STA. 26+75
 SEE SHEET UC-5

10" GATE VALVE
 -WL-2- STA. 20+15.77
 88 LF OPEN CUT
 24" STEEL ENCASUREMENT PIPE
 0.25" MIN. WALL THICKNESS
 INCLUDES SS SPACERS
 10" 90° BEND (HORZ.)
 -WL-2- STA. 21+12.93
 10" 22½° BEND (HORZ.)
 -WL-2- STA. 21+20.02
 10" 22½° BEND (HORZ.)
 -WL-2- STA. 21+62.23
 24 LF WATER SERVICE
 RELOCATE 3 WATER METERS
 10"x6"x10" TEE
 6" GATE VALVE
 RELOCATE FIRE HYDRANT
 10 LF FIRE HYDRANT LEG
 -WL-2- STA. 21+85.29
 10" 45° BEND (HORZ.)
 -WL-2- STA. 21+96.73
 10" GATE VALVE
 -WL-2- STA. 22+02.85

10" 90° BEND (HORZ.)
 -WL-2- STA. 20+05.77

10" GATE VALVE
 -WL-2- STA. 21+25.56

ABANDON 375 LF
 10" UTILITY PIPE

AIR RELEASE VALVE
 -WL-2- STA. 21+42.73
 SEE SHEET 3C FOR DETAIL

ABANDON 280 LF
 6" UTILITY PIPE

10" LINE STOP

RELOCATE WATER METER
 26 LF WATER SERVICE

END 10" WL CONSTRUCTION
 -WL-2- STA. 25+14.46
 CONNECT TO EXISTING W/
 10" TAPPING SLEEVE & VALVE

73 LF OPEN CUT
 24" STEEL ENCASUREMENT PIPE
 0.25" MIN. WALL THICKNESS
 INCLUDES SS SPACERS
 10" 45° BEND (HORZ.)
 -WL-2- STA. 24+30.20

END TIP PROJECT R-5799
 -L- STA. 32+66.00

10" GATE VALVE
 -WL-2- STA. 24+21.91

10" 45° BEND (HORZ.)
 -WL-2- STA. 24+13.36

10" 22½° BEND (HORZ.)
 -WL-2- STA. 23+71.97

10" 11¼° BEND (HORZ.)
 -WL-2- STA. 23+42.40

10" GATE VALVE
 -WL-2- STA. 23+14.77

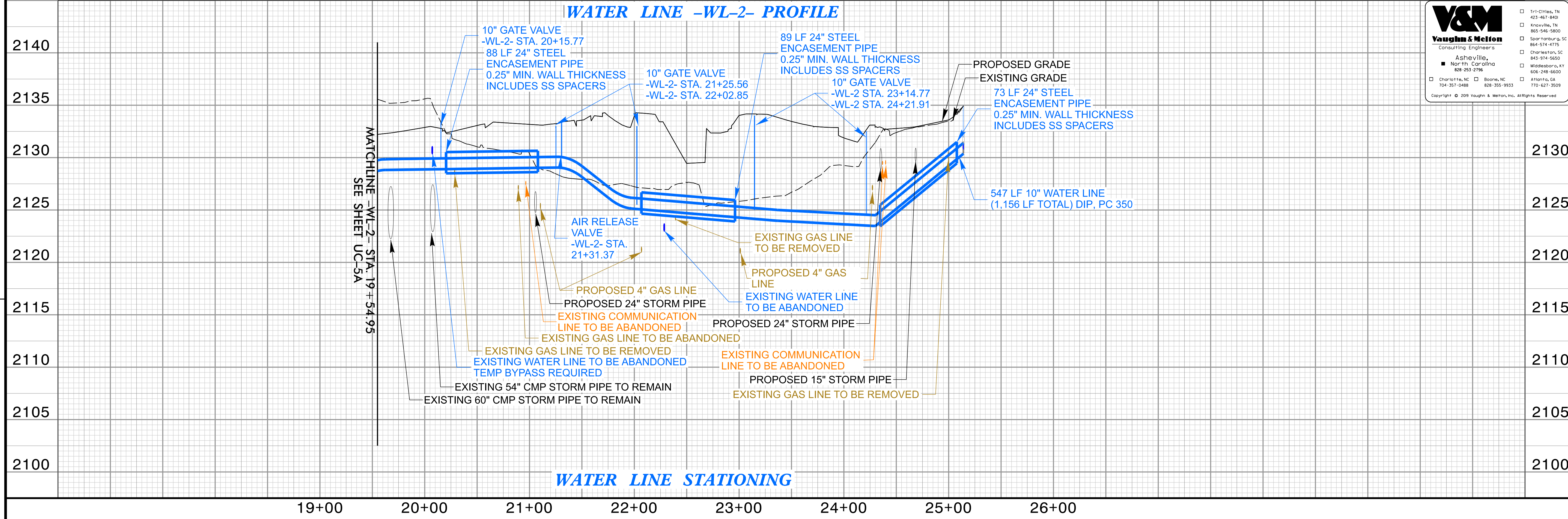
10" 22½° BEND (HORZ.)
 -WL-2- STA. 23+06.47

89 LF OPEN CUT
 24" STEEL ENCASUREMENT PIPE
 0.25" MIN. WALL THICKNESS
 INCLUDES SS SPACERS
 REMOVE WATER METER

152 LF WATER SERVICE
 CONNECT TO EXISTING SERVICE LINE

RETAINING WALL 3

WATER LINE -WL-2- PROFILE



WATER LINE STATIONING

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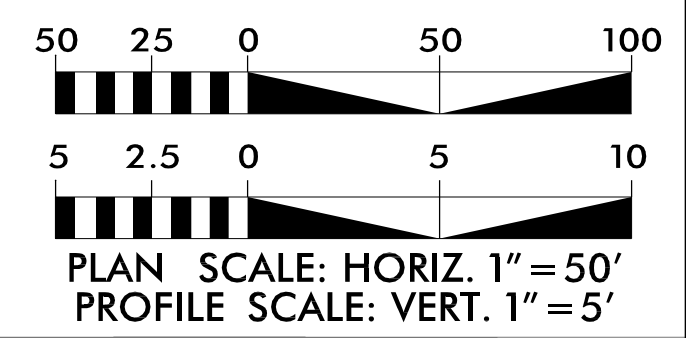
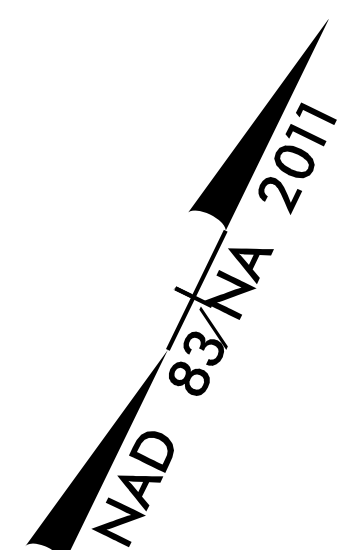
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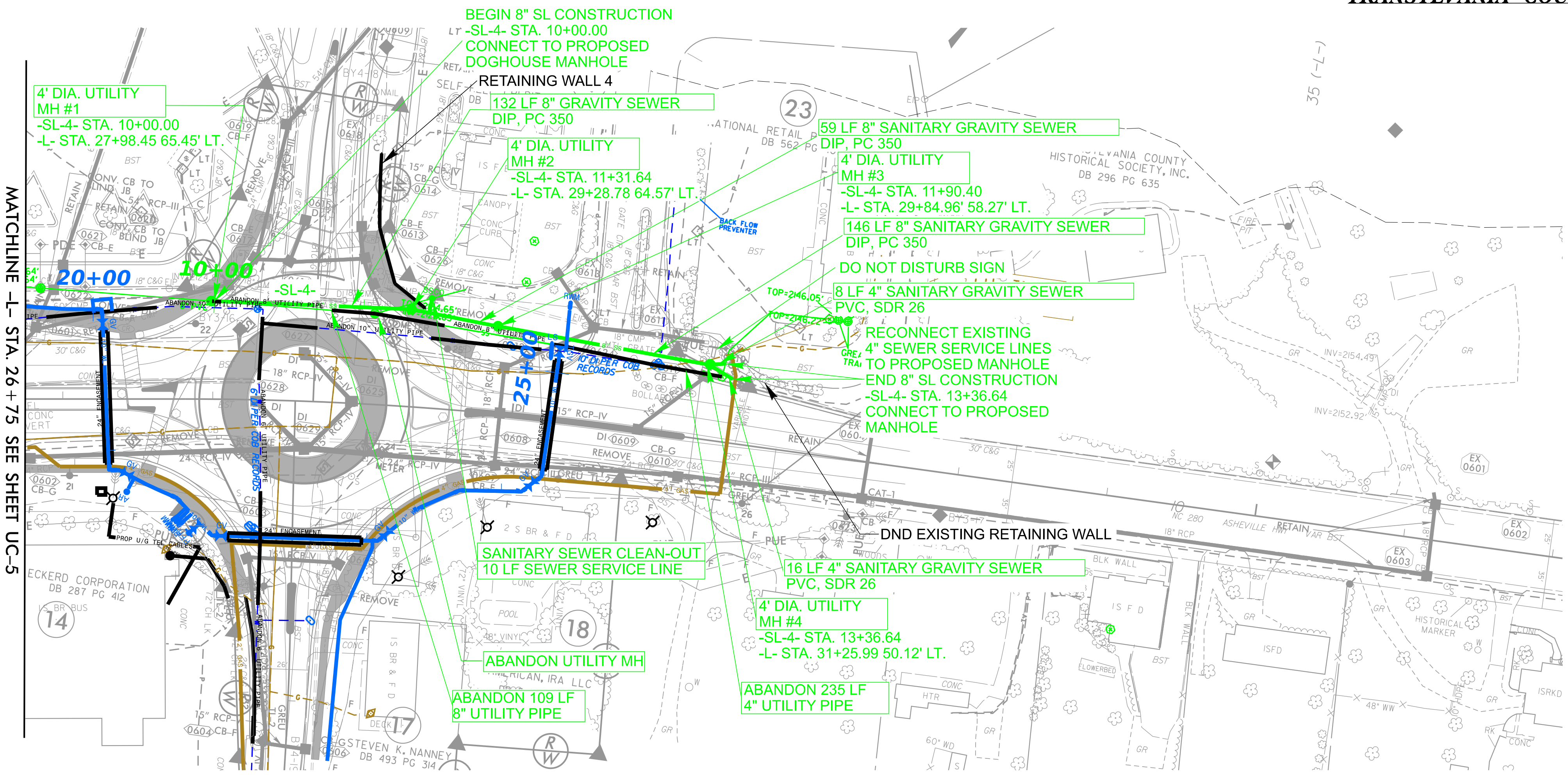
PROJECT REFERENCE NO.	SHEET NO.
R-5799	UC-6A
DESIGNED BY: MRD	
DRAWN BY: SRW	
CHECKED BY: JDN	
APPROVED BY: JDN	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION 7/13/2023 11:41:58 PM EDT UTILITY CONSTRUCTION PLANS ONLY
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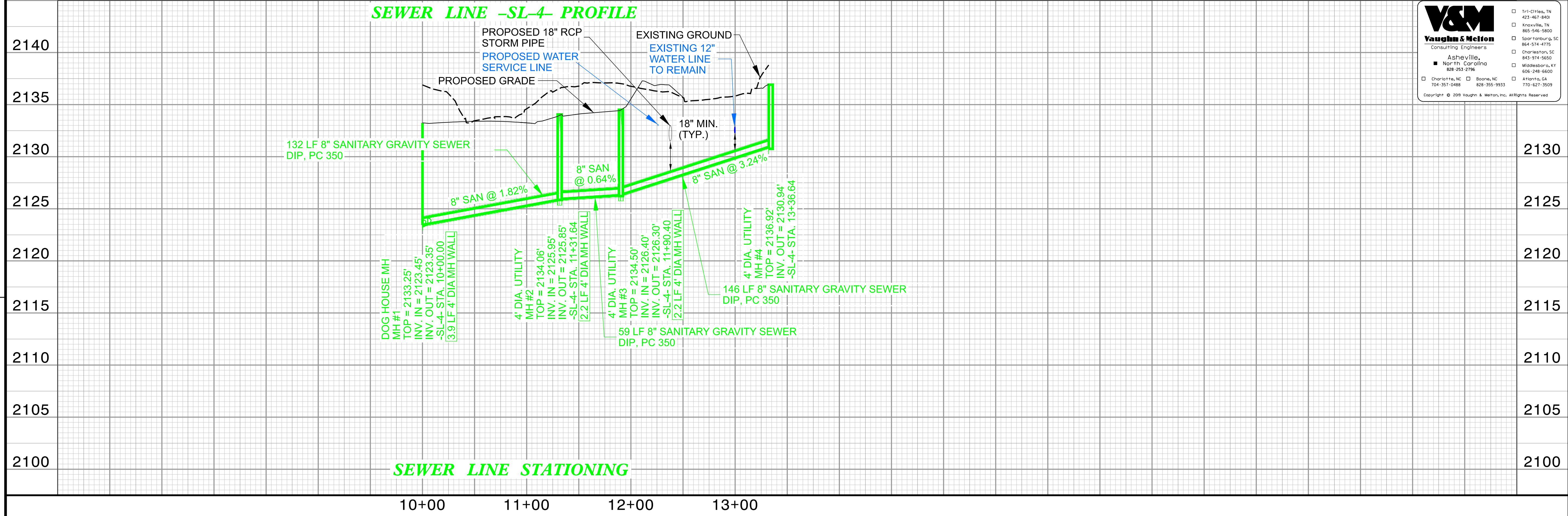


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MATCHLINE -L- STA. 26 + 75 SEE SHEET UC-5

SEWER LINE -SL-4- PROFILE



SEWER LINE STATIONING

REVISIONS

4/28/20

DESIGNED BY: MRD

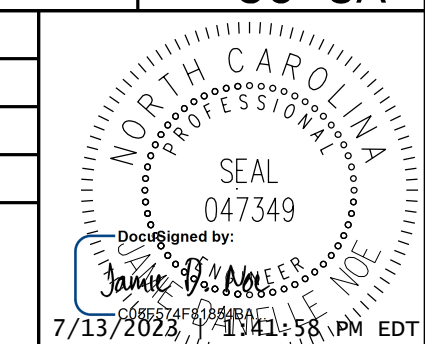
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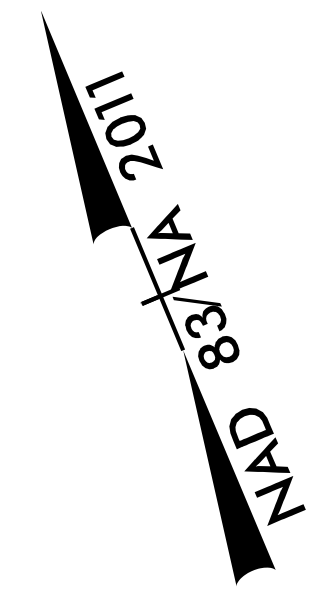
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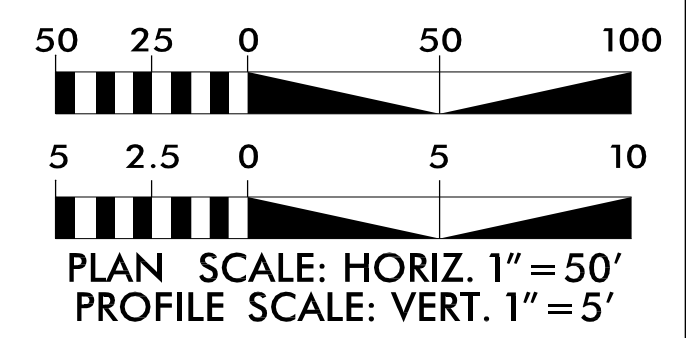
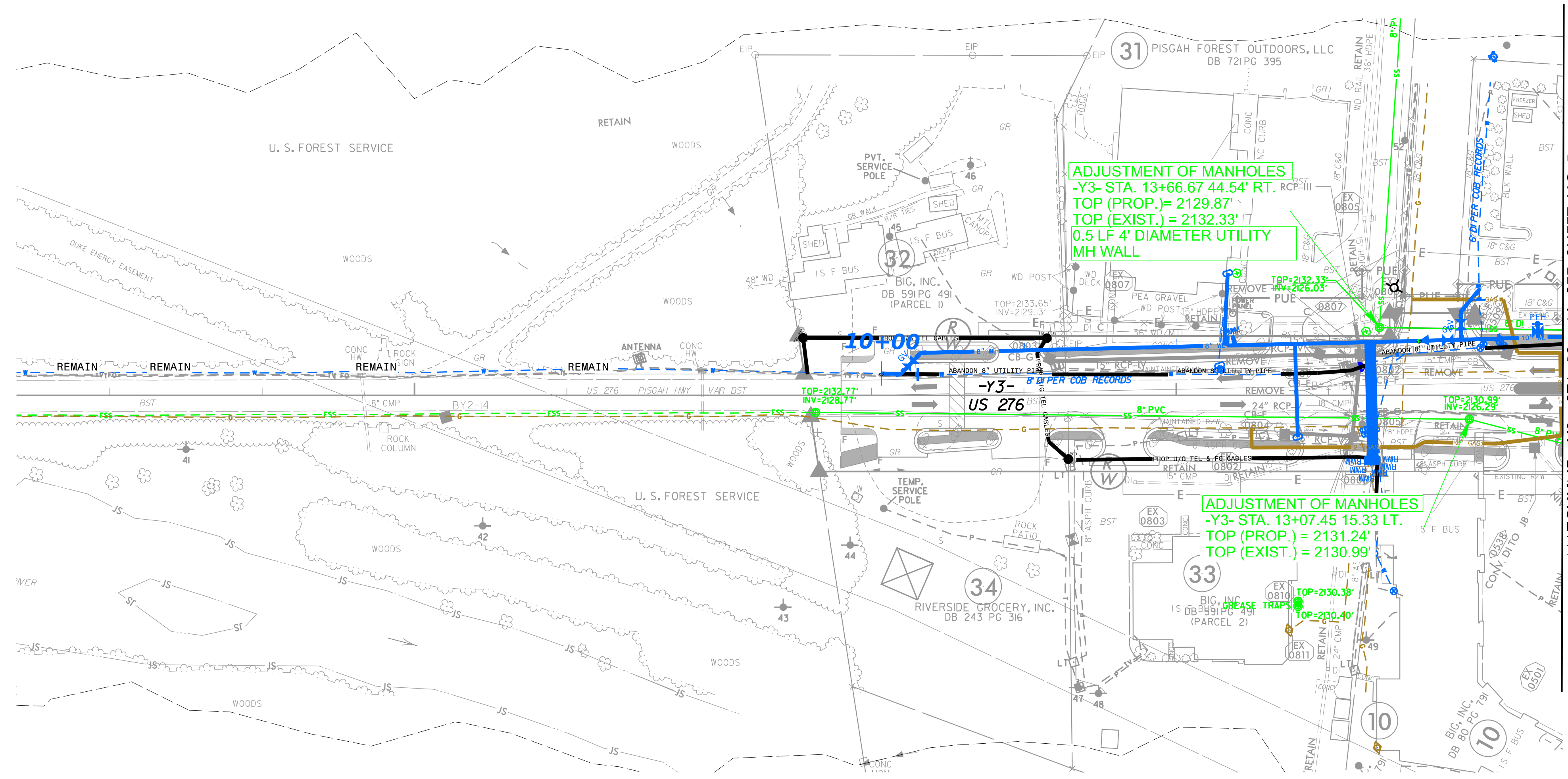
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