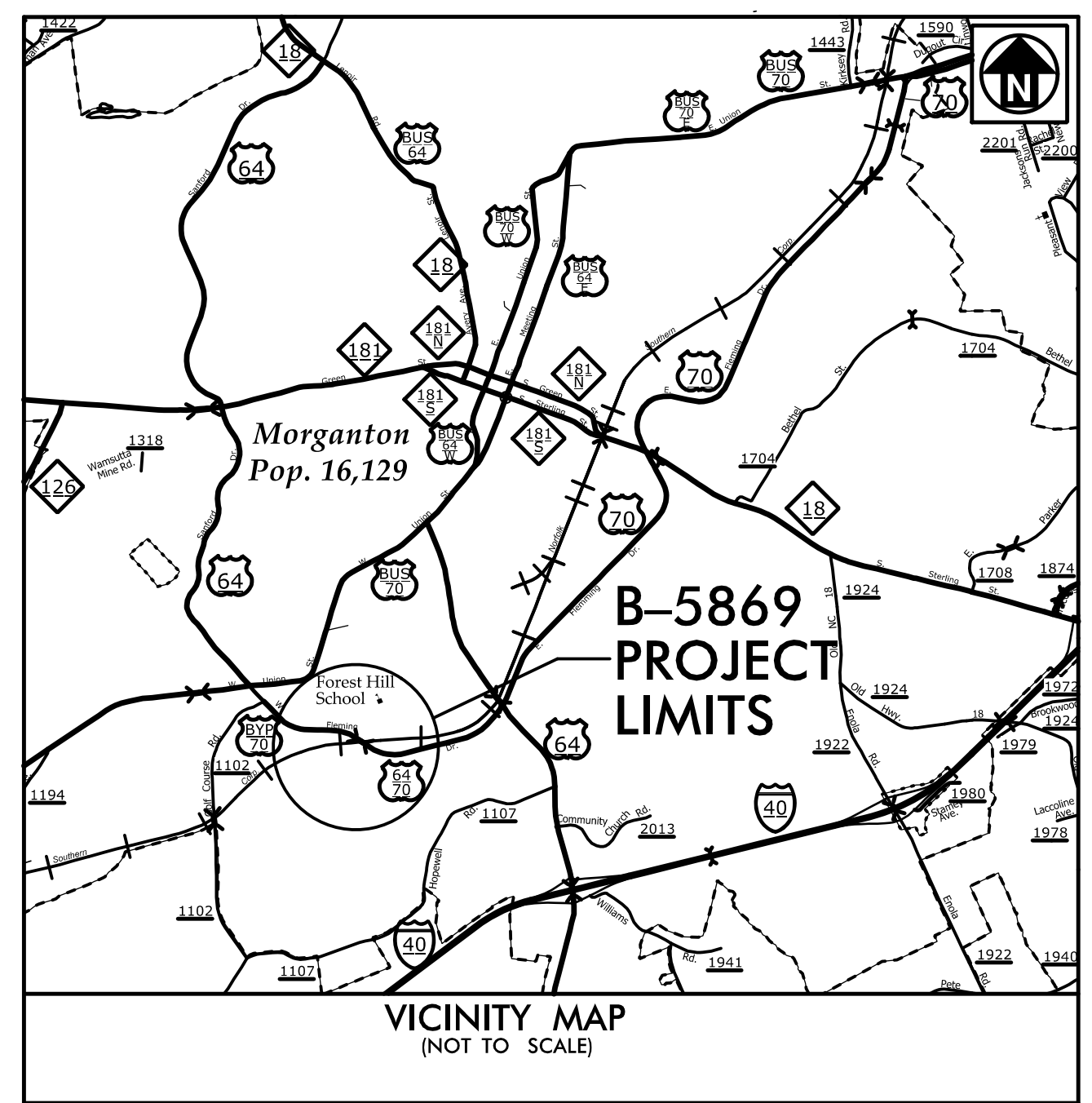


09/28/2022

TIP PROJECT: B-5869

T.I.P. NO.	SHEET NO.
B-5869	UC-1



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITY CONSTRUCTION PLANS BURKE COUNTY

LOCATION: BRIDGE NO. 99 ON US 64/US 70 (FLEMING DRIVE)
OVER SOUTHERN RAILROAD

TYPE OF WORK: WATER LINE CONSTRUCTION

BEGIN TIP PROJECT B-5869
-L- STA. 10+00.00

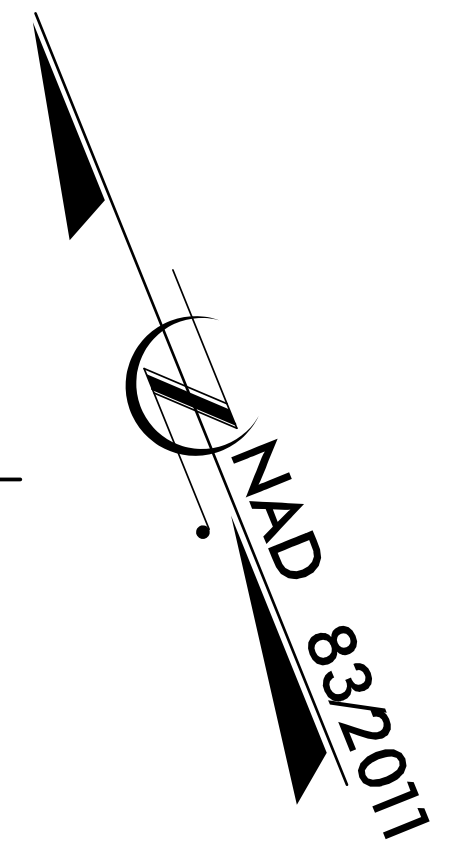
TO GLEN ALPINE

4 &
2B-1

BEGIN DETOUR B-5869
-DET- STA. 10+00.00

BEGIN BRIDGE
-DET- STA. 16+55.00 +/-

END TIP PROJECT B-5869
-L- STA. 36+20.00



UC-4

BEGIN BRIDGE
-L- STA. 20+47.70

END BRIDGE
-DET- STA. 18+72.00 +/-

5 &
2B-2

NORFOLK SOUTHERN RAILROAD
-EYI-

TO MORGANTON

END DETOUR B-5869
-DET- STA. 23+18.52

US 64 / US 70

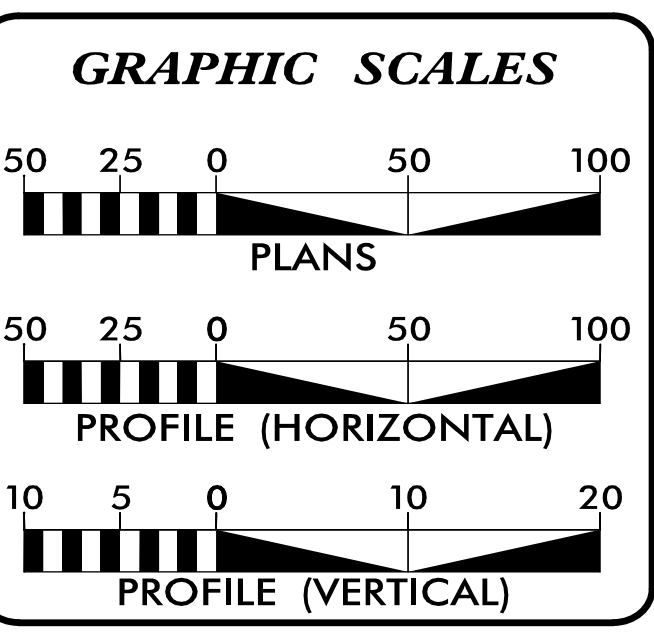
END BRIDGE
-L- STA. 23+14.20

UC-5

END DRIVEWAY B-5869
-DR- STA. 15+95.00

END DRIVEWAY B-5869
-DRI- STA. 13+00.00

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-3B	DETAILS
UC-4 THRU UC-5	UTILITY CONSTRUCTION SHEETS
UC-6	PROFILE SHEET

WATER AND SEWER OWNERS ON PROJECT

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

PREPARED IN THE OFFICE OF

TGS ENGINEERS
804-C N. LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

CHAD HOUSER PE, PLS UTILITY DESIGN ENGINEER

SEAL

8/3/2022

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

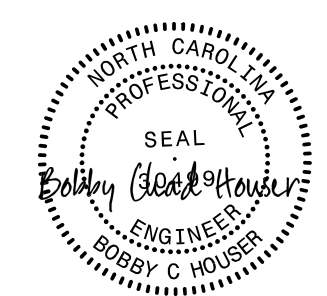
MICHAEL BRIGHT UTILITIES REGIONAL ENGINEER
DONALD HAMPTON SENIOR UTILITY ENGINEER
AMY DUPREE YORK REGIONAL UTILITY COORDINATOR

5/31/2022
X:\NCDOT\B-5869\Utilities\Engineering\UC\Proj\B5869_Ut-fsh_UC1_psh.dgn
3:00:38 PM

5/14/22

5/14/2022 3:00:44 PM Engineering\UC_Proj\B5869_Ut_notes_UC3.psh.dgn

UTILITY CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
B-5869	UC-3
DESIGNED BY: BCH	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	8/3/2022
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY

GENERAL NOTES:

1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF THE NC DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2018.
2. THE EXISTING UTILITIES BELONG TO THE CITY OF MORGANTON.
3. ALL WATER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER RESOURCES, PUBLIC WATER SUPPLY SECTION. ALL SEWER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT QUALITY, DIVISION OF WATER RESOURCES, WATER QUALITY SECTION. PERFORM ALL WORK IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODES.
4. THE UTILITY OWNER OWNS THE EXISTING UTILITY FACILITIES AND WILL OWN THE NEW UTILITY FACILITIES AFTER ACCEPTANCE BY THE DEPARTMENT. THE DEPARTMENT OWNS THE CONSTRUCTION CONTRACT AND HAS ADMINISTRATIVE AUTHORITY. COMMUNICATIONS AND DECISIONS BETWEEN THE CONTRACTOR AND UTILITY OWNER ARE NOT BINDING UPON THE DEPARTMENT OR THIS CONTRACT UNLESS AUTHORIZED BY THE ENGINEER. AGREEMENTS BETWEEN THE UTILITY OWNER AND CONTRACTOR FOR THE WORK THAT IS NOT PART OF THIS CONTRACT OR IS SECONDARY TO THIS CONTRACT ARE ALLOWED, BUT ARE NOT BINDING UPON THE DEPARTMENT.
5. PROVIDE ACCESS FOR THE DEPARTMENT PERSONNEL AND THE OWNER'S REPRESENTATIVES TO ALL PHASES OF CONSTRUCTION. NOTIFY DEPARTMENT PERSONNEL AND THE UTILITY OWNER TWO WEEKS PRIOR TO COMMENCEMENT OF ANY WORK AND ONE WEEK PRIOR TO SERVICE INTERRUPTION. KEEP UTILITY OWNERS' REPRESENTATIVES INFORMED OF WORK PROGRESS AND PROVIDE OPPORTUNITY FOR INSPECTION OF CONSTRUCTION AND TESTING.

6. THE PLANS DEPICT THE BEST AVAILABLE INFORMATION FOR THE LOCATION, SIZE, AND TYPE OF MATERIAL FOR ALL EXISTING UTILITIES. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE, AND TYPE MATERIAL OF THE EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING DAMAGE TO EXISTING FACILITIES. REPAIR ANY DAMAGE INCURRED TO EXISTING FACILITIES TO THE ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE DEPARTMENT.
7. MAKE FINAL CONNECTIONS OF THE NEW WORK TO THE EXISTING SYSTEM WHERE INDICATED ON THE PLANS, AS REQUIRED TO FIT THE ACTUAL CONDITIONS, OR AS DIRECTED.
8. MAKE CONNECTIONS BETWEEN EXISTING AND PROPOSED UTILITIES AT TIMES MOST CONVENIENT TO THE PUBLIC, WITHOUT ENDANGERING THE UTILITY SERVICE, AND IN ACCORDANCE WITH THE UTILITY OWNER'S REQUIREMENTS. MAKE CONNECTIONS ON WEEKENDS, AT NIGHT, AND ON HOLIDAYS IF NECESSARY.
9. ALL UTILITY MATERIALS SHALL BE APPROVED PRIOR TO DELIVERY TO THE PROJECT. SEE 1500-7, " SUBMITTALS AND RECORDS" IN SECTION 1500 OF THE STANDARD SPECIFICATIONS.

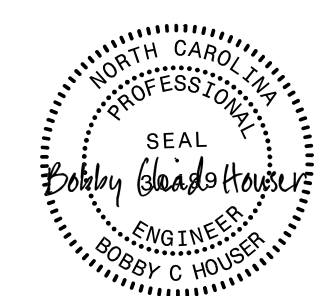
PROJECT SPECIFIC NOTES:

1. ALL PROPOSED WATER LINE 6 TO 12 INCHES IN DIAMETER, SHALL BE PRESSURE CLASS 350 DUCTILE IRON ZINC COATED PIPE AND UTILIZE FLEXIBLE PUSH-ON JOINTS.
2. ALL WATER LINE FITTINGS 6 TO 12 INCHES IN DIAMETER, SHALL BE MANUFACTURED IN THE U.S.A. AND TESTED ACCORDING TO AWWA STANDARDS. WATER LINE FITTINGS SHALL BE DUCTILE IRON MECHANICAL JOINT AND SHALL HAVE A MINIMUM WORKING PRESSURE OF 150 PSI AND MEET AWWA C-110 AND ANSI 21.11 FOR MECHANICAL JOINT PIPE. COMPACT DUCTILE IRON FITTINGS MAY BE USED IN LIEU OF STANDARD CAST IRON OR DUCTILE IRON FITTINGS. ALL COMPACT FITTINGS SHALL BE MECHANICAL JOINT AND HAVE A MINIMUM WORKING PRESSURE OF 350 PSI AND MEET AWWA C-153 AND ANSI A21-53 AND AWWA C-111 AND ANSI A21.11 FOR MECHANICAL JOINT PIPE.
3. WATER LINE UTILIZING RESTRAINED JOINT FITTINGS SHALL BE TYTON JOINT, HP LOK, AMERICAN "FAST GRIP", US PIPE "FIELD-LOK" OR APPROVED EQUAL.
4. ALL WATERLINE SHALL HAVE 12 AWG SOLID COPPER TRACER WIRE WITH 30 MIL BLUE HDPE INSULATION .
5. ALL VALVES- DUCTILE IRON RESILIENT WEDGE STYLE VERTICAL OR HORIZONTAL GATE VALVES SHALL BE USED FOR ALL MAIN LINE AND HYDRANT BRANCH VALVES IN SIZES FROM 2 INCHES THROUGH 24 INCHES. MANUFACTURERS ACCEPTED ARE AMERICAN, MUELLER, KENNEDY AND CLOW. ALL VALVES MUST MEET OR EXCEED REQUIREMENTS IN ACCORDANCE WITH AWWA C-509, C 515, OR THE APPROPRIATE AWWA STANDARD AS APPLICABLE SHALL BE USED. ALL RESILIENT WEDGE VALVES SHALL HAVE INTERNAL AND EXTERNAL EPOXY COATING, O-RING SEALS AT THE STUFFING BOX AND BONNET TO BODY AND DUAL O-RINGS AT THE STEM SEAL ABOVE THE THRUST COLLAR. GATE VALVES TWELVE INCHES IN DIAMETER AND SMALLER, SHALL BE MECHANICAL JOINT. THEY SHALL HAVE "O" RING SEALS, OPEN COUNTERCLOCKWISE, AND HAVE A NON-RISING STEM. THESE VALVES SHALL BE DESIGNED FOR A MINIMUM OF 175 PSI WORKING PRESSURE AND 300 PSI HYDROSTATIC TEST PRESSURE WITH A TWO (2) INCH OPERATING NUT. SEE CITY OF MORGANTON STANDARD DRAWING 105.
6. VALVE BOXES SHALL BE MANUFACTURED BY SIGMA, ACCUCAST OR APPROVED EQUAL. VALVE BOXES SHALL BE CLASS 30 CAST IRON AND MANUFACTURED IN ACCORDANCE WITH ASTM A48. VALVE BOXES SHALL BE ADJUSTABLE TWO-PIECE, CAST IRON, AND SCREW-TYPE CONSTRUCTION. LIDS SHALL HAVE THE WORD "WATER"CAST INTO THE LID. SEE CITY OF MORGANTON STANDARD DRAWING 105.
7. WATER SERVICE PIPE FOR ¾" TO 2 INCH CONNECTIONS SHALL BE TYPE "K" SOFT COPPER WITH NO JOINTS OR COUPLINGS TO THE WATER METER OR IN THE RIGHT-OF-WAY. ALL WATER SERVICES AND FITTINGS SHALL BE COMPRESSION (GRIP JOINT) TYPE FITTINGS. 1½ INCH AND 2 INCH TAPS MAY ONLY BE MADE WITH USE OF A DOUBLE STRAP SADDLES LISTED IN SECTION 7 ABOVE. SEE CITY OF MORGANTON STANDARD DRAWING 108
8. PROVIDE THRUST RESTRAINT ON THE EXISTING WATER LINE WHERE TIE-INS ARE MADE AS NECESSARY.
9. CONTRACTOR SHALL NOT OPERATE ANY VALVES ON THE EXISTING UTILITY SYSTEMS. CONTRACTOR SHALL CONTACT THE UTILITY OWNER TO CONDUCT STRATEGIC OPERATION OF VALVES FOR SERVICE INTERRUPTION IN ORDER TO PERFORM SPECIFIC WORK.
10. ANY BENDS OF PVC WATER PIPE NOT SPECIFICALLY CALLED OUT WITH A 90, 45, 22.5, OR 11.25 DEGREE BEND FITTING, SHALL BE CONSTRUCTED BY A RADIAL BEND OF THE PIPE AS NOTED ON THE PLANS OR IN ACCORDANCE WITH PIPE MANUFACTURER'S SPECIFICATIONS (WHICHEVER IS MORE STRINGENT) - OR A COMBINATION OF BEND FITTINGS AND A RADIAL BEND OF THE PIPE. DEFLECTION OF THE PIPE JOINTS ON PVC PIPE MATERIAL IS NOT AN ACCEPTABLE METHOD OF PIPE BENDING.
11. ALL MATERIALS, EQUIPMENT, LABOR, AND WORKSMANSHIP SHALL BE IN ACCORDANCE WITH CITY OF MORGANTON SPECIFICATIONS AND NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES. IN THE EVENT OF CONFLICT BETWEEN STANDARDS, THE MORE RESTRICTIVE REQUIREMENTS SHALL APPLY.
12. UTILITY OWNER MUST BE PRESENT FOR ANY TESTING OR CONNECTIONS TO THE EXISTING SYSTEM INCLUDING BUT NOT LIMITED TO ALL TAPS AND TEMPORARY CONSTRUCTION CONNECTIONS. A NOTICE OF 72 HOURS MUST BE PROVIDED.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

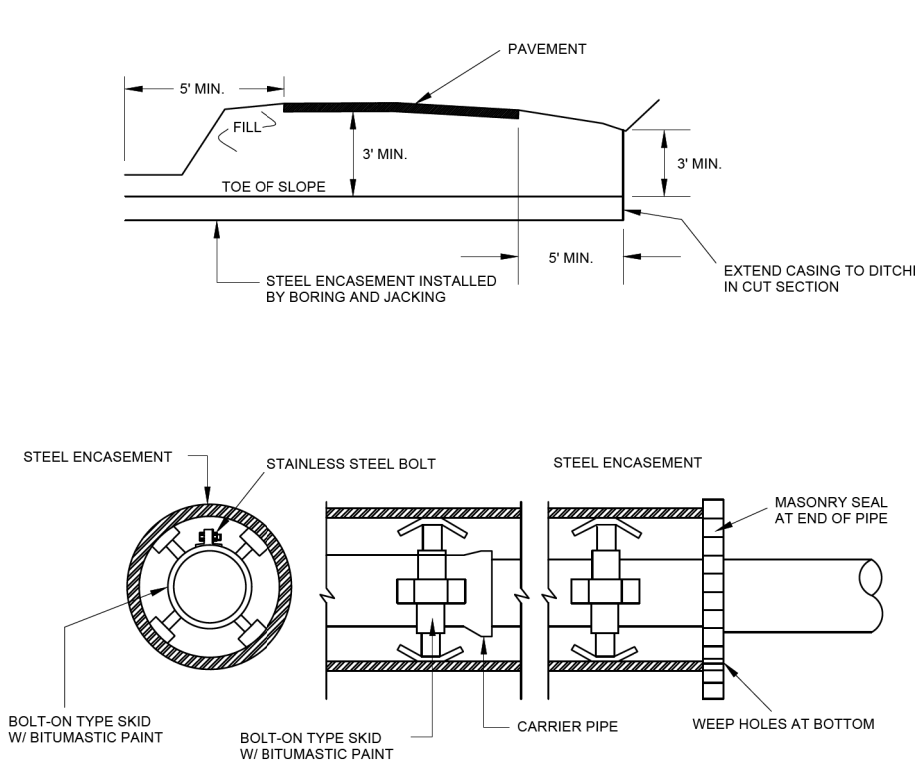
UTILITY CONSTRUCTION

PROJECT TYPICAL DETAILS

PROJECT REFERENCE NO.	SHEET NO.
B-5869	UC-3A
DESIGNED BY: BCH	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

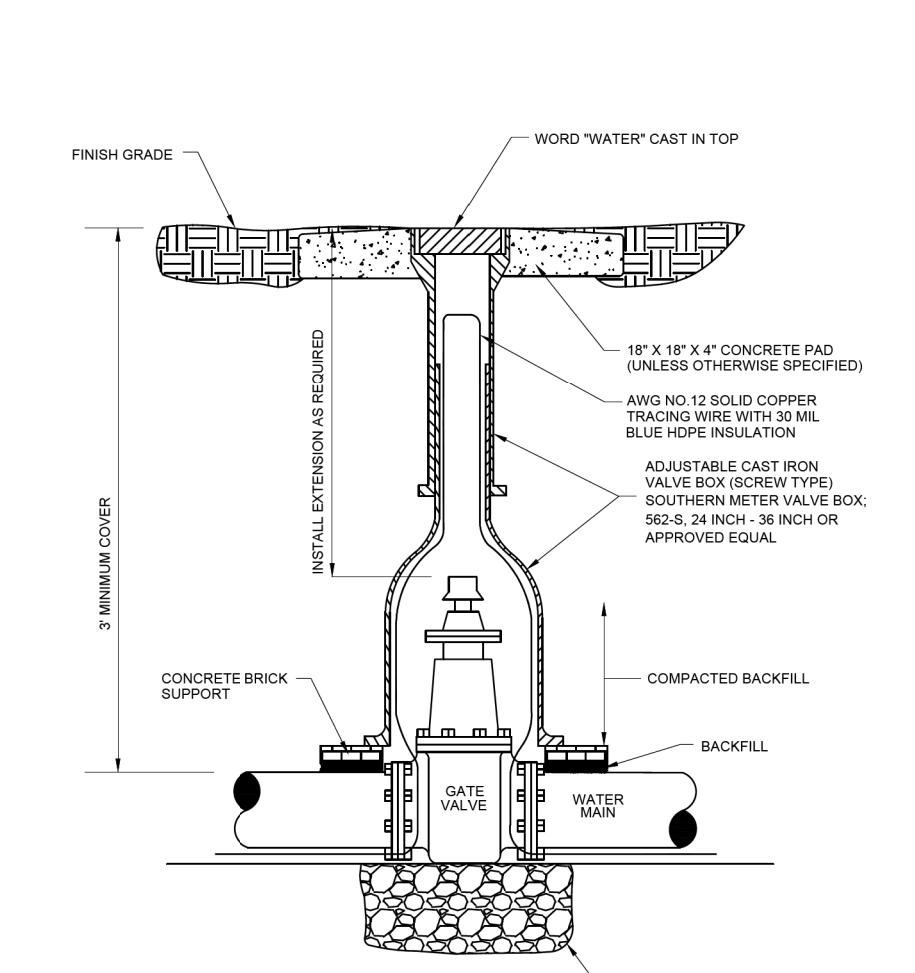


BORE ENCASEMENT DETAIL

NOT TO SCALE

REVISED	3-4-13
STD. NO.	DATE
109	3-7-11

CITY OF MORGANTON

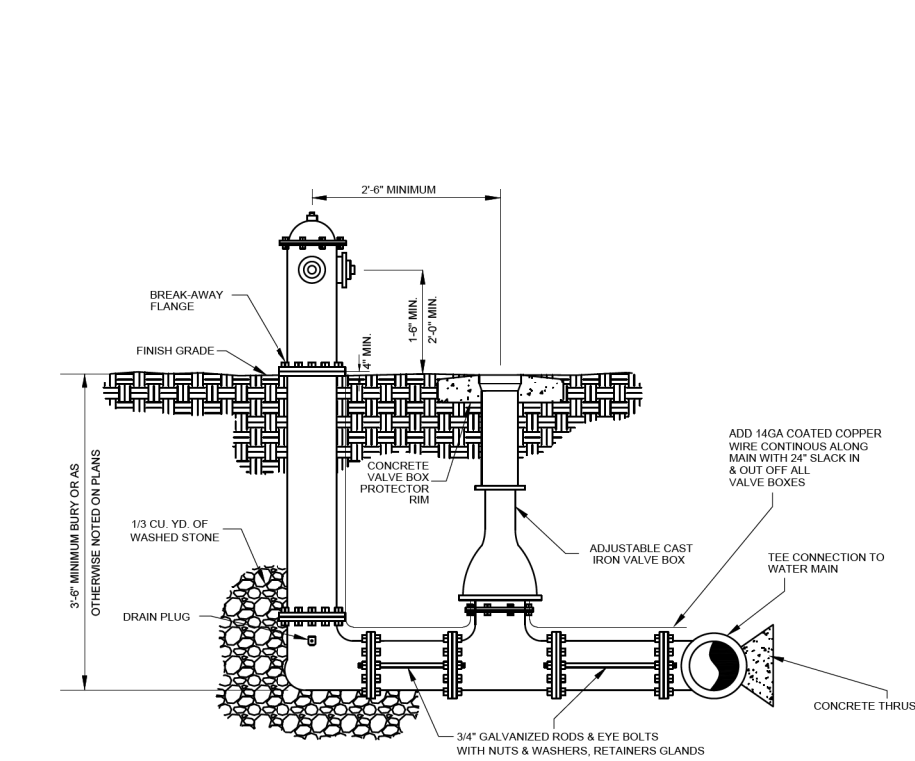


VERTICAL GATE VALVE ASSEMBLY

NOT TO SCALE

REVISED	3-4-13
STD. NO.	DATE
105	3-7-11

CITY OF MORGANTON



FIRE HYDRANT ROD TYPE INSTALLATION

NOT TO SCALE

STD. NO.	DATE
102	3-7-11

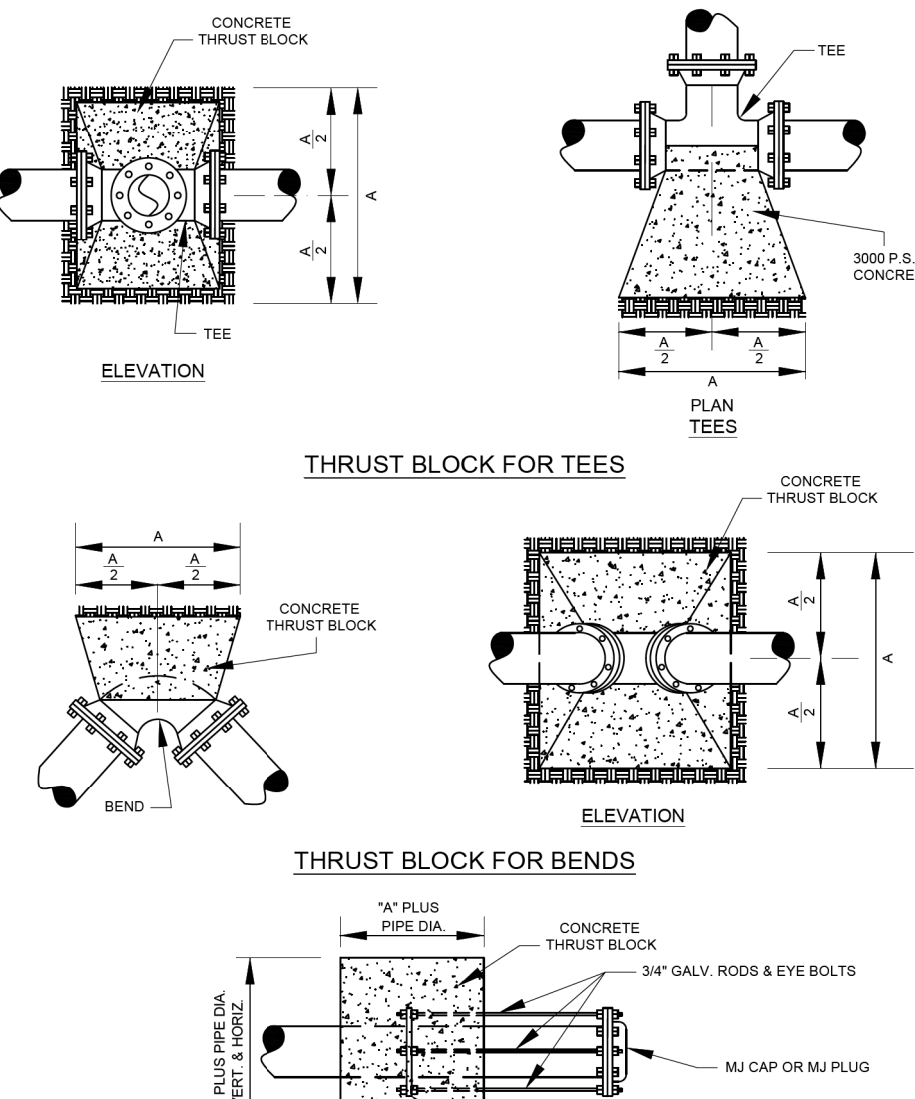
CITY OF MORGANTON

RESTRAINED JOINT DESIGN TABLE FOR DUCTILE IRON PIPE

FITTING	REQUIRED RESTRAINED LENGTH (FT) OF BARE D.I. PIPE BY DEPTH OF COVER									
	3 FT	4 FT	5 FT	6 FT	7 FT	8 FT	9 FT	10 FT	11 FT	12 FT
HORIZONTAL BENDS										
6 INCH DIA - 11.25 DEG	3	2	2	2	2	1	1	1	1	2
6 INCH DIA - 22.5 DEG	5	4	4	3	3	3	3	2	2	2
6 INCH DIA - 45 DEG	11	9	8	7	7	6	5	5	5	5
6 INCH DIA - 90 DEG	26	22	19	17	16	14	13	12	11	10
8 INCH DIA - 11.25 DEG	3	2	2	2	2	2	2	2	2	2
8 INCH DIA - 22.5 DEG	7	6	5	5	4	4	3	3	3	3
8 INCH DIA - 45 DEG	14	12	10	9	8	8	7	7	7	7
8 INCH DIA - 90 DEG	33	29	25	23	20	19	17	16	15	14
12 INCH DIA - 11.25 DEG	5	4	4	3	3	3	2	2	2	2
12 INCH DIA - 22.5 DEG	9	8	7	6	6	5	5	5	5	5
12 INCH DIA - 45 DEG	20	17	15	13	12	11	10	10	10	10
12 INCH DIA - 90 DEG	47	41	36	33	29	27	25	23	22	21
16 INCH DIA - 11.25 DEG	6	5	5	4	4	3	3	3	3	3
16 INCH DIA - 22.5 DEG	12	11	9	8	8	7	6	6	6	6
16 INCH DIA - 45 DEG	25	22	19	17	16	14	13	12	11	11
16 INCH DIA - 90 DEG	7	6	6	5	5	4	4	4	4	4
20 INCH DIA - 22.5 DEG	15	13	11	10	9	9	8	7	7	7
20 INCH DIA - 45 DEG	31	27	24	21	19	18	16	15	15	15
20 INCH DIA - 90 DEG	74	65	57	52	47	43	40	37	36	35
VERTICAL BENDS - DOWN										
6 INCH DIA - 11.25 DEG	7	6	6	5	4	4	4	4	4	4
6 INCH DIA - 22.5 DEG	15	13	11	10	9	8	8	7	7	7
6 INCH DIA - 45 DEG	31	27	23	21	19	17	16	15	15	15
6 INCH DIA - 90 DEG	10	8	7	6	6	5	5	5	5	5
8 INCH DIA - 11.25 DEG	19	17	15	13	12	11	10	9	9	9
8 INCH DIA - 22.5 DEG	40	35	30	27	25	22	21	19	19	19
8 INCH DIA - 45 DEG	14	12	10	9	8	8	7	7	7	7
8 INCH DIA - 90 DEG	28	24	21	19	17	16	14	13	13	13
12 INCH DIA - 11.25 DEG	57	50	44	39	35	32	30	28	28	28
12 INCH DIA - 22.5 DEG	18	15	14	12	11	10	9	9	9	9
12 INCH DIA - 45 DEG	36	31	27	25	22	20	19	17	17	17
12 INCH DIA - 90 DEG	74	65	57	51	46	42	39	36	36	36
16 INCH DIA - 11.25 DEG	22	19	17	15	14	12	11	11	11	11
16 INCH DIA - 22.5 DEG	44	38	34	30	27	25	23	21	21	21
16 INCH DIA - 45 DEG	91	79	70	63	57	52	48	44	44	44
VERTICAL BENDS - UP										
6 INCH DIA - 11.25 DEG	3	2	2	2	2	1	1	1	1	1
6 INCH DIA - 22.5 DEG	5	4	4	3	3	3	3	2	2	2
6 INCH DIA - 45 DEG	11	9	8	7	7	6	5	5	5	5
6 INCH DIA - 90 DEG	3	3	2	2	2	2	2	2	2	2
8 INCH DIA - 11.25 DEG	7	6	5	5	4	4	3	3	3	3
8 INCH DIA - 22.5 DEG	14	12	10	9	8	8	7	7	7	7
8 INCH DIA - 45 DEG	5	4	4	3	3	3	2	2	2	2
8 INCH DIA - 90 DEG	9	8	7	6	6	5	5	5	5	5
12 INCH DIA - 11.25 DEG	20	17	15	13	12	11	10	10	10	10
12 INCH DIA - 22.5 DEG	6	5	5	4	4	3	3	3	3	3
12 INCH DIA - 45 DEG	12	11	9	8	8	7	6	6	6	6
12 INCH DIA - 90 DEG	25	22	19	17	16	14	13	12	12	12
16 INCH DIA - 11.25 DEG	7	6	6	5	5	4	4	4	4	4
16 INCH DIA - 22.5 DEG	15	13	11	10	9	9	8	7	7	7
16 INCH DIA - 45 DEG	31	27	24	21	19	18	16	15	15	15
DEAD ENDS / VALVES										
6 INCH DIA	50	45	41	38	35	33	31	29	29	29
8 INCH DIA	65	59	54	50	46	43	40	38	38	38
10 INCH DIA	80	72	66	61	56	52	49	46	46	46
12 INCH DIA	94	85	78	72	66	62	58	54	54	54
16 INCH DIA	123	111	102	94	87	81	76	71	71	71
20 INCH DIA	151	137	125	115	107	100	93	88	88	88
REDUCERS										
3 FT	3 FT	4 FT	5 FT	6 FT	7 FT	8 FT	9 FT	10 FT	10 FT	10 FT
12 INCH X 8 INCH	50	45	41	38	35	33	31	29	29	29
TEES										
8" RUN X 8" BRANCH : RL = 1 FT	64	58	53	48	44	41	38	36	36	36
8" RUN X 8" BRANCH : RL = 5 FT	59	52	47	42	39	35	32	30	30	30
12" RUN X 12" BRANCH : RL = 1 FT	93	84	77	70	65	60	56	53	53	53
12" RUN X 12" BRANCH : RL = 5 FT	88	79	71	65	59	54	50	47	47	47

ASSUMPTIONS
LAYING CONDITION = TYPE 4
SOIL DESIGNATION = COHESIVE-GRANULAR
DESIGN PRESSURE = 200 PSI (TEST PRESSURE)
SAFETY FACTOR = 1.5

NOTES
1. RESTRAINED LENGTH IS MEASURED AS FOLLOWS:
A. HORIZONTAL/VERTICAL BENDS - ALONG EACH SIDE OF BEND.
B. HORIZONTAL/VERTICAL BENDS - OFFSET - ALONG THE OUTER SIDE OF EACH BEND.
ALL PIPE BETWEEN THE TWO BENDS SHALL BE RESTRAINED JOINT.
2. WHEN IT IS NOT POSSIBLE TO INSTALL THE RESTRAINED LENGTHS AS NOTED BY THIS TABLE, CONTRACTOR SHALL INSTALL THE APPROPRIATE CONCRETE THRUST RESTRAINTS AS PER THE DETAILS HEREIN.



THRUST BLOCK FOR TEES

THRUST BLOCK FOR BENDS

THRUST BLOCK FOR PIPE CAP

NOT TO SCALE

STD. NO.	DATE
104.1	3-7-11

CITY OF MORGANTON

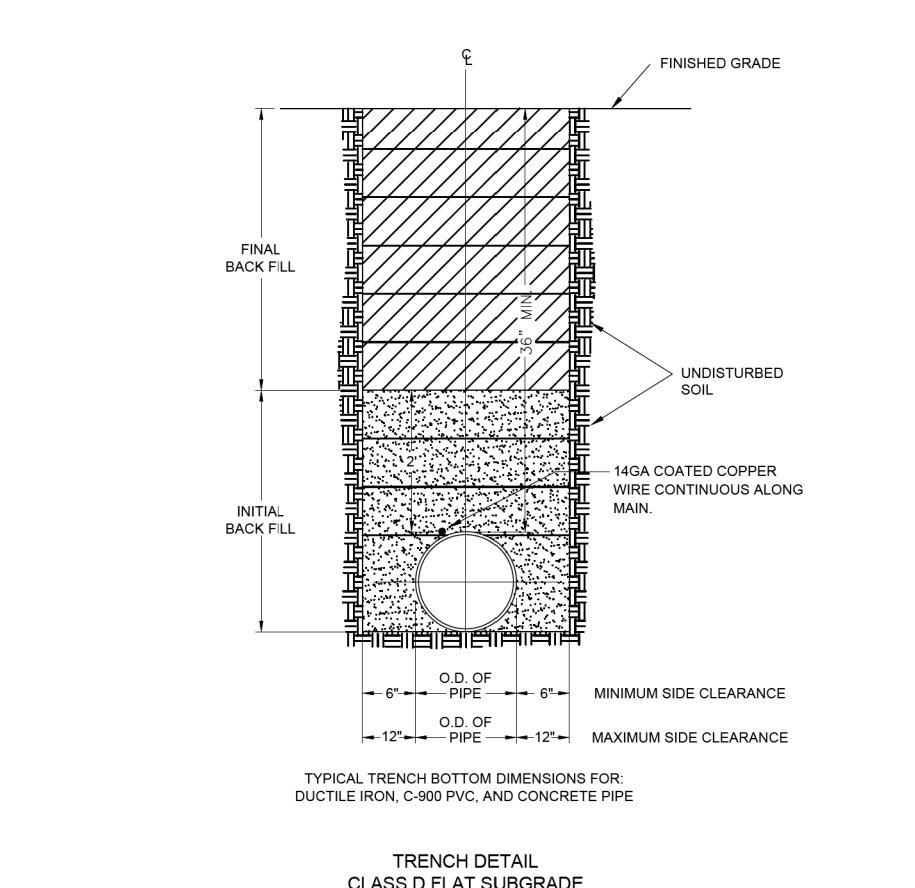
SIZE	11 1/4" BEND	22 1/2" BEND	45" BEND	90" BEND	TEE	CAP
6	12	12	12	16	16	14
8	12	12	16	22	22	18
10	12	14	20	28	28	22
12	12	18	24	32	32	25
14	14	20	28	38	38	32
16	16	22	32	42	42	36
18	18	26	36	48	48	40
20	20	28	40	52	52	44
24	24	34	48	64	64	54
30	30	42	58	78	78	66
36	36	50	70	84	84	80
42	40	58	80	108	108	90
48	48	66	90	124	124	104

THRUST BLOCK DIMENSION "A"
(DIMENSION "A" IN INCHES)
4,000 P.S.I. CONCRETE

NOT TO SCALE

STD. NO.	DATE
104.2	3-7-11

CITY OF MORGANTON



WATER LINE TRENCH BOTTOM AND BACKFILLING REQUIREMENTS

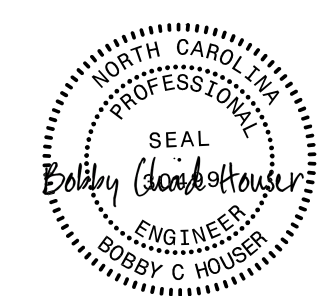
NOT TO SCALE

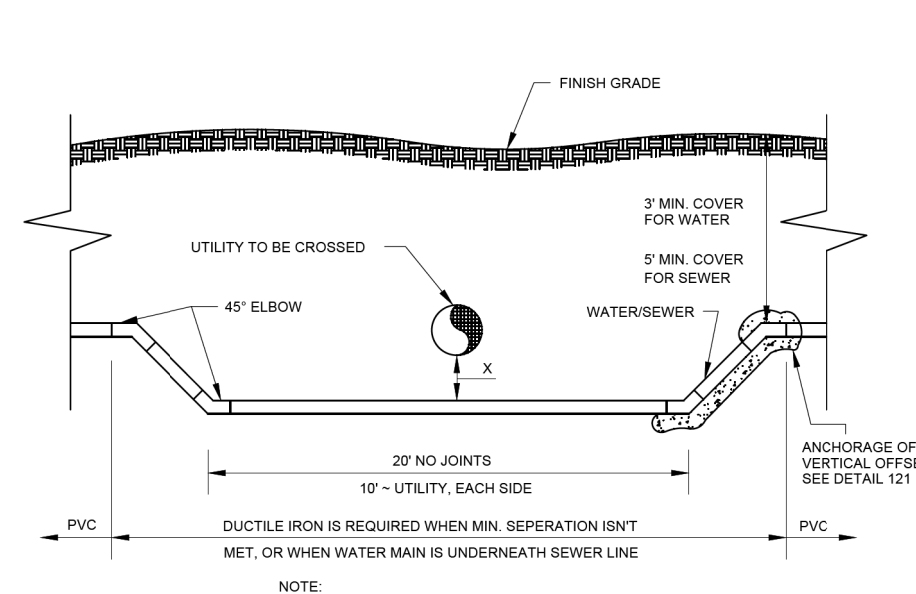
STD. NO.	DATE
111	3-7-11

CITY OF MORGANTON

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PROJECT TYPICAL DETAILS

PROJECT REFERENCE NO.	SHEET NO.
B-5869	UC-3B
DESIGNED BY: BCH	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	



FINISH GRADE
UTILITY TO BE CROSSED
45° ELBOW
WATERSEWER
7 MIN. COVER FOR WATER
9 MIN. COVER FOR SEWER
20' NO JOINTS
10' - UTILITY, EACH SIDE
ANCHORAGE OF VERTICAL OFFSET SEE DETAIL 121
PVC
DUCTILE IRON IS REQUIRED WHEN MIN. SEPARATION IS NOT MET, OR WHEN WATER MAIN IS UNDERNEATH SEWER LINE

NOTE:
TO BE USED WHEN COVER NEEDS TO BE INCREASED TO ACHIEVE MIN. SEPARATION.

X. VERTICAL SEPARATION NOTE
3/4" MIN. VERTICAL SEPARATION REQUIRED FOR WATER OR SEWER CROSSING STORM WATER
1/8" MIN. VERTICAL SEPARATION REQUIRED FOR WATER CROSSING SEWER

X. HORIZONTAL SEPARATION NOTE
5" MIN. HORIZONTAL SEPARATION REQUIRED FOR WATER OR SEWER CROSSING STORM WATER
10" MIN. HORIZONTAL SEPARATION REQUIRED FOR WATER CROSSING SEWER

WATER CROSSING NOTES:
1. CROSSING A WATER MAIN OVER A SEWER
WHENEVER IT IS NECESSARY FOR A WATER MAIN TO CROSS OVER A SEWER, THE WATER MAIN SHALL BE LAID AT SUCH AN ELEVATION THAT THE BOTTOM OF THE WATER MAIN IS AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER, UNLESS LOCAL CONDITIONS OR BARRIERS PREVENT AN 18 INCH VERTICAL SEPARATION, IN WHICH CASE BOTH THE WATER MAIN AND SEWER SHALL BE CONSTRUCTED OF FERROUS MATERIALS AND WITH JOINTS THAT ARE EQUIVALENT TO WATER MAIN STANDARDS FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE POINT OF CROSSING.

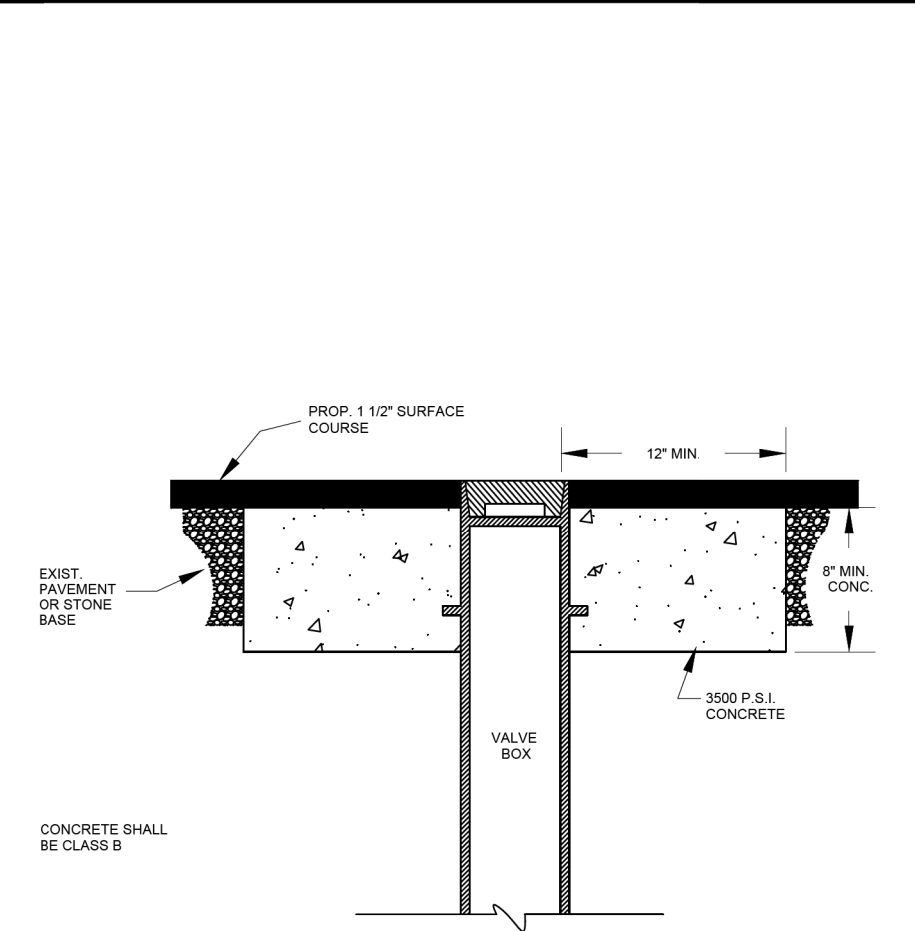
2. CROSSING A WATER MAIN UNDER A SEWER
WHENEVER IT IS NECESSARY FOR A WATER MAIN TO CROSS UNDER A SEWER, BOTH THE WATER MAIN AND THE SEWER SHALL BE CONSTRUCTED OF FERROUS MATERIALS AND WITH JOINTS EQUIVALENT TO WATER MAIN STANDARDS FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE POINT OF CROSSING. A SECTION OF THE WATER MAIN PIPE SHALL BE CENTERED AT THE POINT OF CROSSING.

3. IF LATERAL SEPARATION CANNOT BE MET, BOTH THE WATER MAIN AND THE SEWER / STORM SHALL BE CONSTRUCTED OF FERROUS MATERIALS AND WITH JOINTS EQUIVALENT TO WATER MAIN STANDARDS FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE POINT OF CROSSING. A SECTION OF THE WATER MAIN PIPE SHALL BE CENTERED AT THE POINT OF CROSSING.

NOT TO SCALE

STD. NO.	DATE
123	3-7-11
SHEET 1 OF 1	

CITY OF MORGANTON

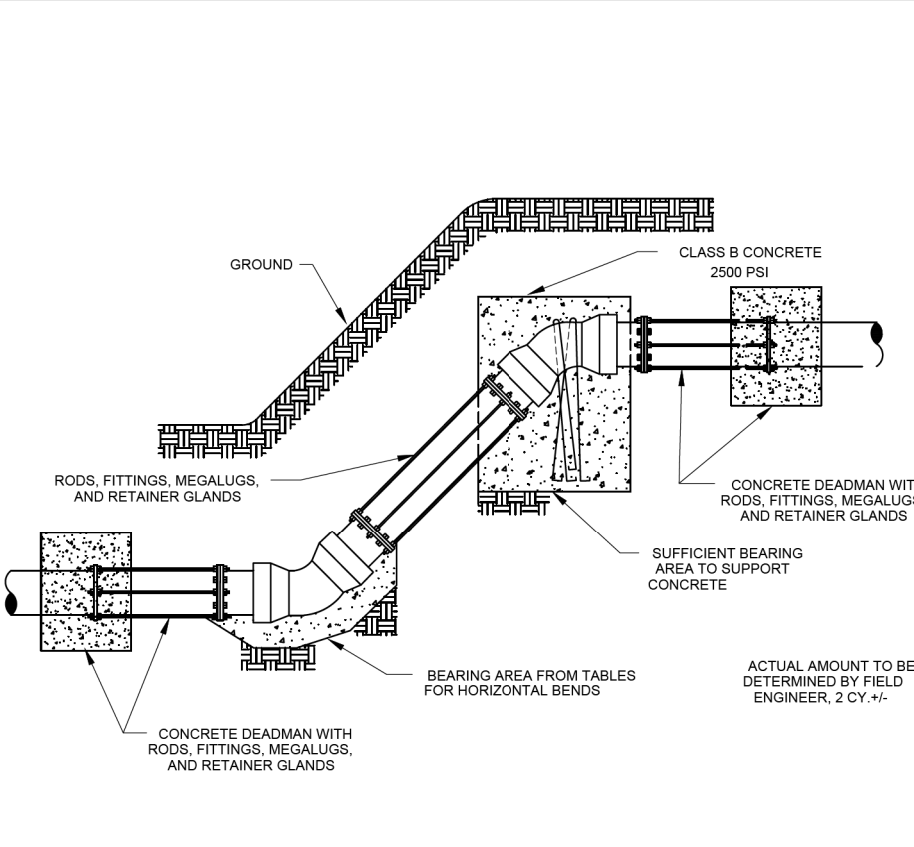


PROP. 1 1/2" SURFACE COURSE
12" MIN.
EXIST PAVEMENT OR STONE BASE
3500 P.S.I. CONCRETE
8" MIN. CONC.
VALVE BOX
CONCRETE SHALL BE CLASS B

NOT TO SCALE

STD. NO.	DATE
116	3-7-11
SHEET 1 OF 1	

CITY OF MORGANTON



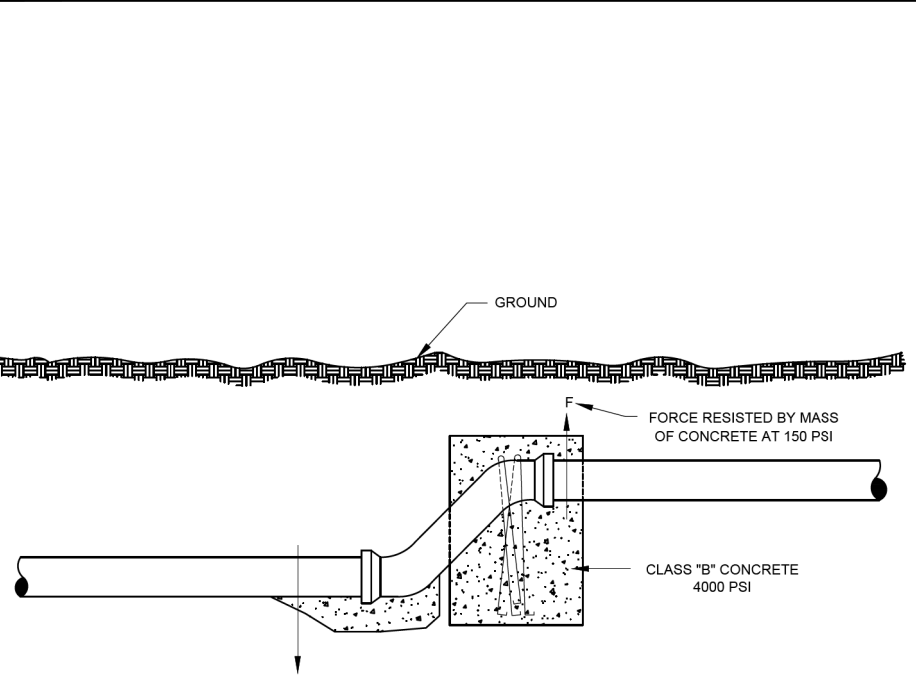
GROUND
CLASS B CONCRETE 2500 PSI
CONCRETE DEADMAN WITH RODS, FITTINGS, MEGALUGS, AND RETAINERS
SUFFICIENT BEARING AREA TO SUPPORT CONCRETE
BEARING AREA FROM TABLES FOR HORIZONTAL BENDS
ACTUAL AMOUNT TO BE DETERMINED BY FIELD ENGINEER, 2 CY. +/-
RODS, FITTINGS, MEGALUGS, AND RETAINERS GLANDS
CONCRETE DEADMAN WITH RODS, FITTINGS, MEGALUGS, AND RETAINERS GLANDS

PIPE DIA.	11-1/4" BEND	22-1/2" BEND	45" BEND
6"	812# 1/2 CY.	1653# 1/2 CY.	3247# 1.0 CY.
8"	1444# 1/2 CY.	2939# 3/4 CY.	5773# 1.5 CY.
12"	3248# 1.0 CY.	6612# 1-3/4 CY.	12988# 3.5 CY.
16"	5775# 1-1/2 CY.	11756# 3.0 CY.	23090# 6.0 CY.

NOT TO SCALE

STD. NO.	DATE
122	3-7-11
SHEET 1 OF 1	

CITY OF MORGANTON



GROUND
FORCE RESISTED BY MASS OF CONCRETE AT 150 PSI
CLASS "B" CONCRETE 4000 PSI

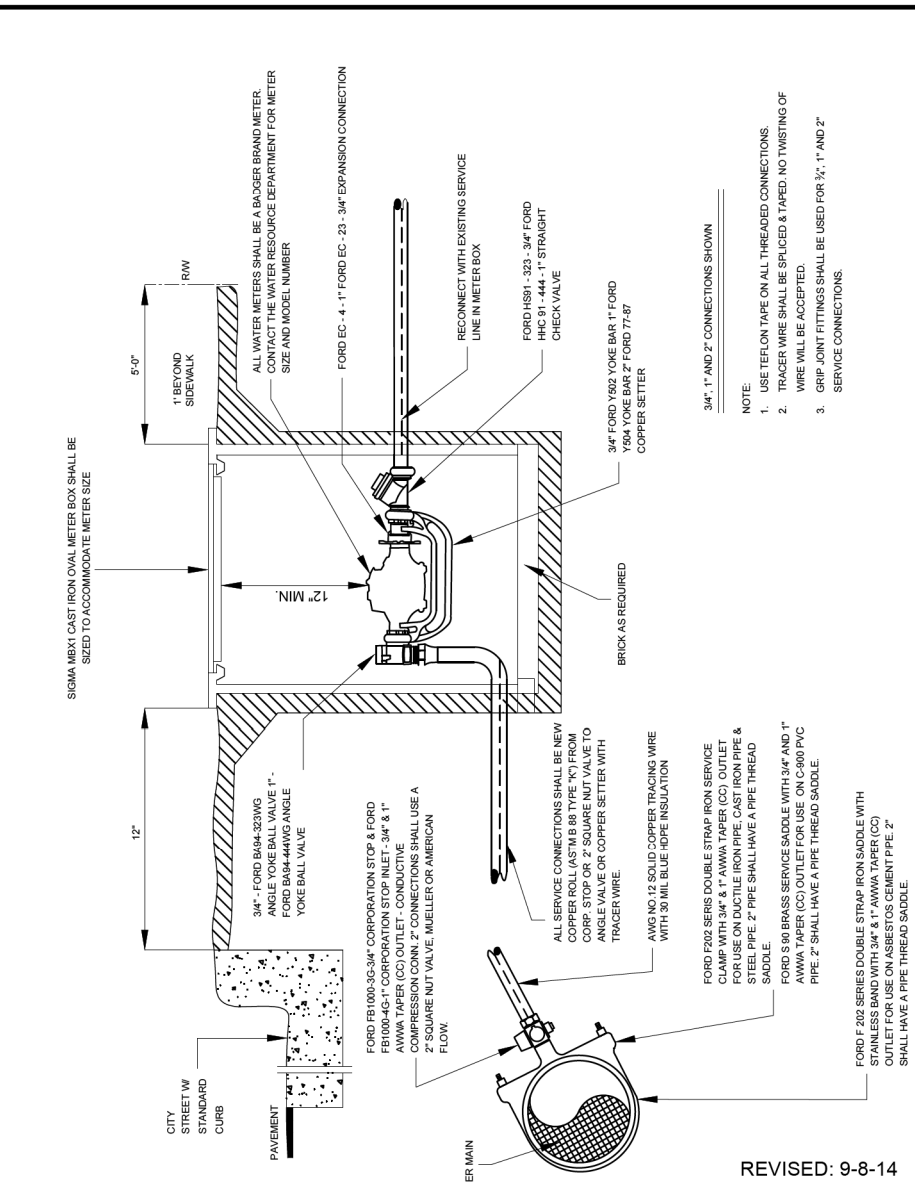
THE FOLLOWING TABLE SHOWS WEIGHT AND VOLUME OF CONCRETE NECESSARY TO HOLD DOWN OFFSET. WEIGHT OF OFFSET, HEIGHT OF PIPE, AND TRENCH LOADS ARE IGNORED IN CALCULATIONS.

DIA.	12" offset		24" offset		36" offset	
	FORCE	CONC.	FORCE	CONC.	FORCE	CONC.
6"	309#	1/4 CY.	1496#	1/2 CY.	2481#	3/4 CY.
8"	1546#	1/2 CY.	3206#	3/4 CY.	4236#	1-1/4 CY.
10"	3306#	3/4 CY.	5716#	1 CY.	8096#	1-1/2 CY.
12"	5282#	1-1/4 CY.	8526#	1-1/2 CY.	12126#	2-1/4 CY.
16"	13096#	3-1/4 CY.	22326#	4-1/4 CY.	33526#	6-1/4 CY.

NOT TO SCALE

STD. NO.	DATE
121	3-7-11
SHEET 1 OF 1	

CITY OF MORGANTON



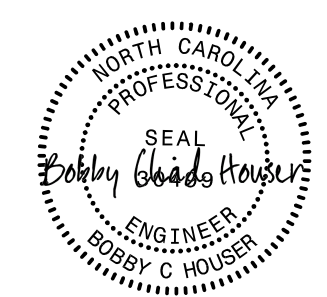
3/4" ANCHOR CONNECTION BROWN
NOTE:
1. ALL CONNECTIONS SHALL BE MADE IN ACCORDANCE WITH THE CITY OF MORGANTON WATER MAIN SPECIFICATIONS.
2. ALL CONNECTIONS SHALL BE MADE IN ACCORDANCE WITH THE CITY OF MORGANTON WATER MAIN SPECIFICATIONS.
3. ALL CONNECTIONS SHALL BE MADE IN ACCORDANCE WITH THE CITY OF MORGANTON WATER MAIN SPECIFICATIONS.

REVISIONS:
REVISED: 9-6-14
REVISED: 3-7-16
REVISED: 3-5-18
REVISED: 3-4-19
REVISED: 4-6-20

NOT TO SCALE

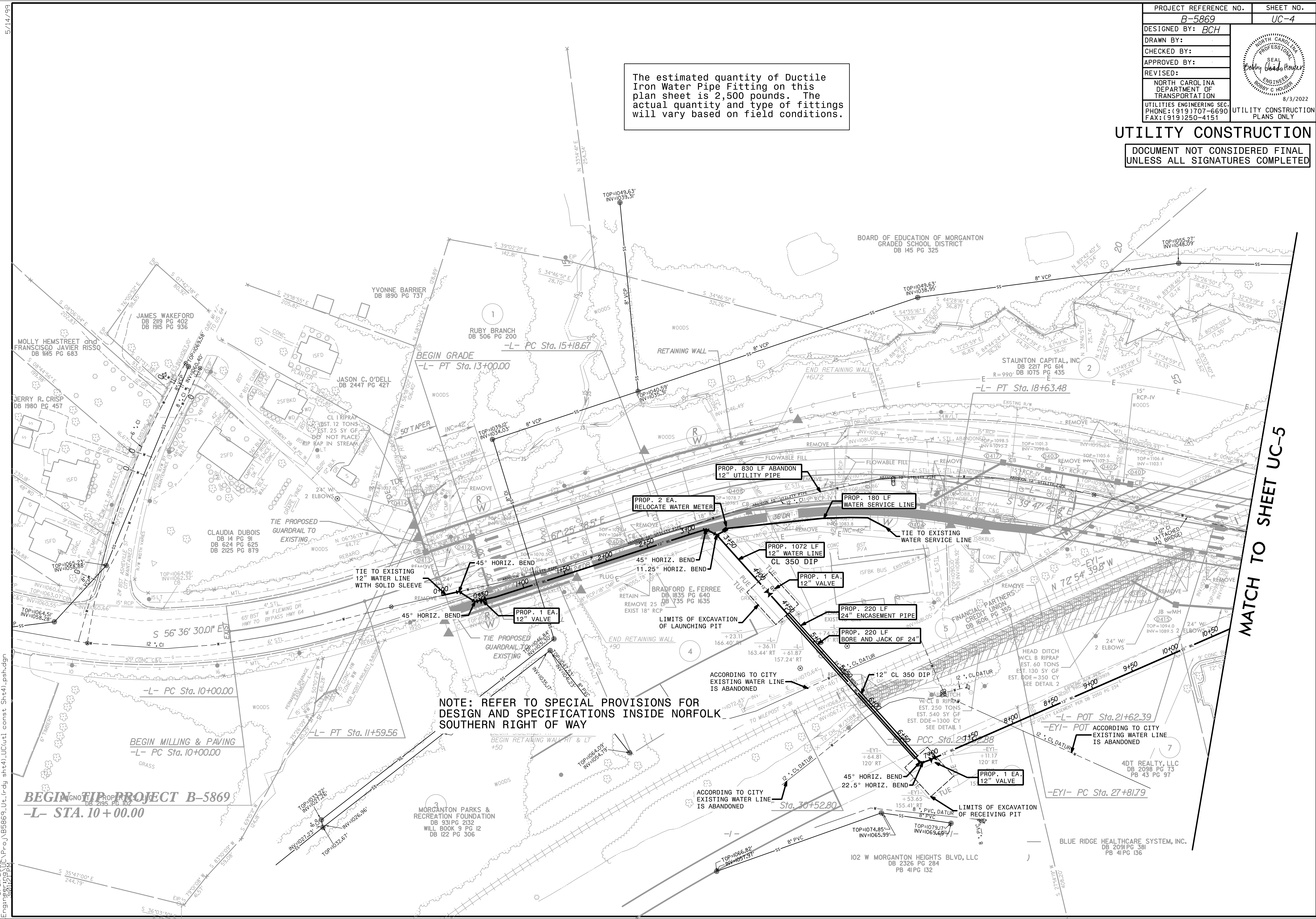
STD. NO.	DATE
108	3-7-11
SHEET 1 OF 1	

CITY OF MORGANTON

PROJECT REFERENCE NO.	SHEET NO.
B-5869	UC-4
DESIGNED BY: BCH	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	8/3/2022
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

The estimated quantity of Ductile Iron Water Pipe Fitting on this plan sheet is 2,500 pounds. The actual quantity and type of fittings will vary based on field conditions.



NOTE: REFER TO SPECIAL PROVISIONS FOR DESIGN AND SPECIFICATIONS INSIDE NORFOLK SOUTHERN RIGHT OF WAY

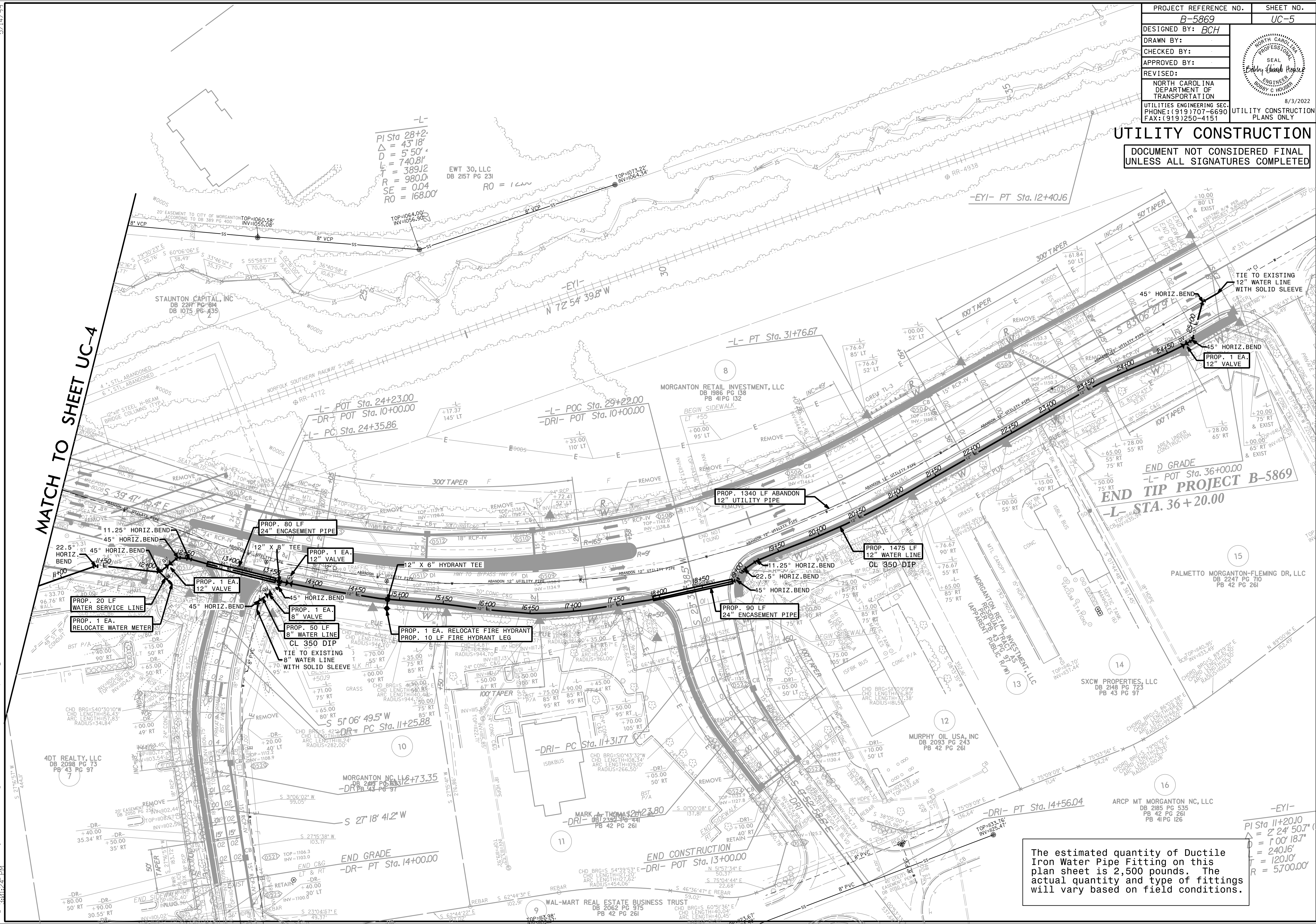
MATCH TO SHEET UC-5

5/14/2022 3:01:25 PM C:\Proje\B5869_Ut.(rddy.sht4).UC(ut).const.Sht41.psh.dgn

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-5869	UC-5
DESIGNED BY: BCH	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	UTILITY CONSTRUCTION PLANS ONLY
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	

UTILITY CONSTRUCTION
 DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

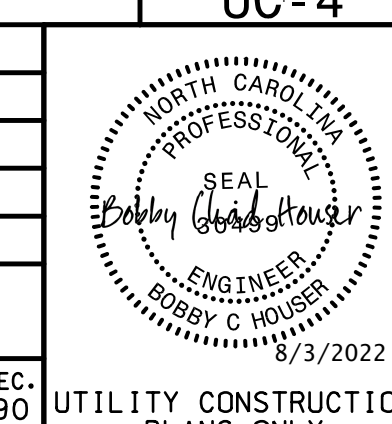


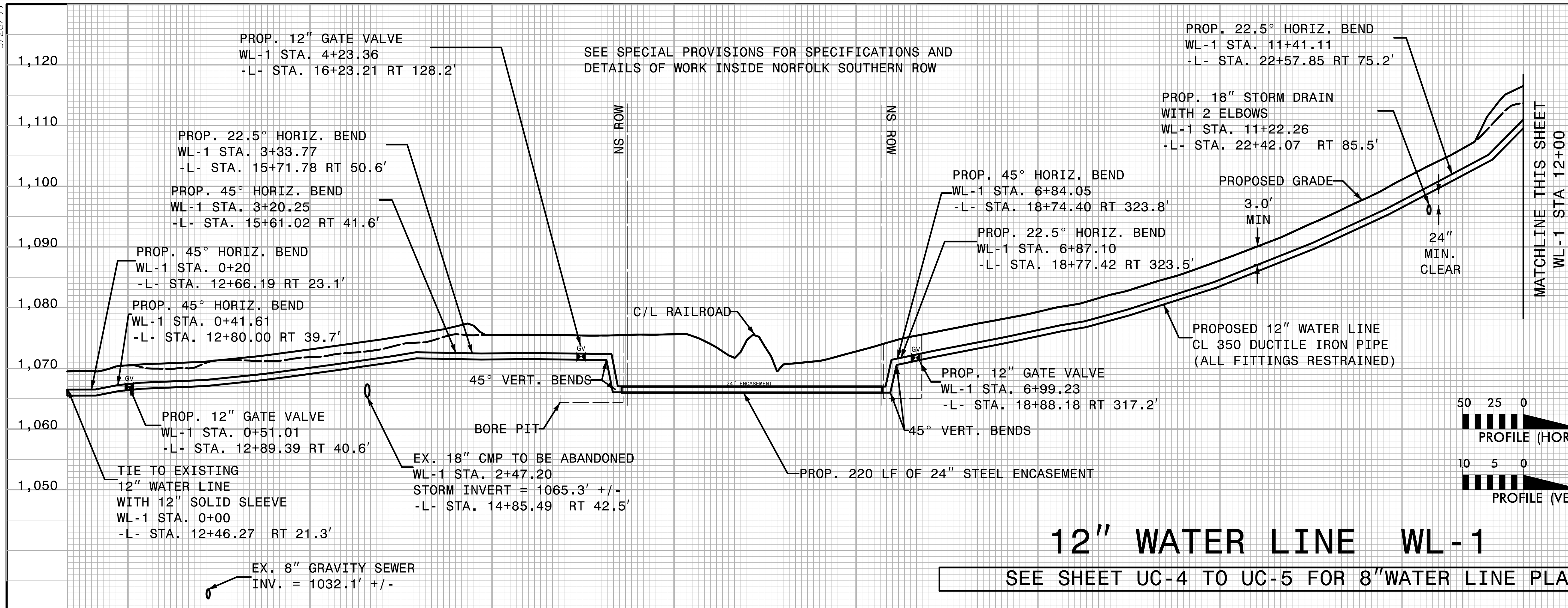
MATCH TO SHEET UC-4

The estimated quantity of Ductile Iron Water Pipe Fitting on this plan sheet is 2,500 pounds. The actual quantity and type of fittings will vary based on field conditions.

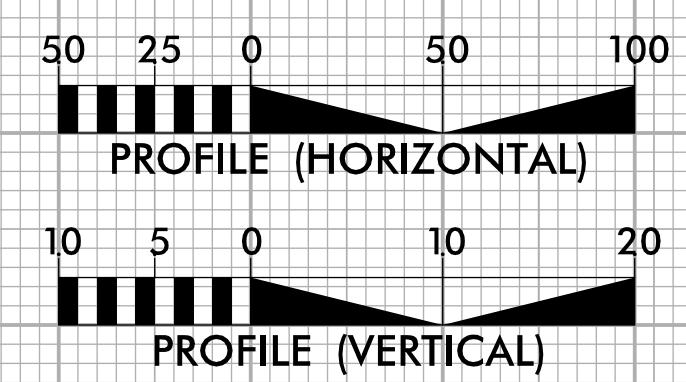
5/31/2022 (Pro) B5869.Ut (r.cdy.sht5).UC(ut).const.Sht5(1).psh.dgn

5/28/2022

PROJECT REFERENCE NO. B-5869	SHEET NO. UC-4
DESIGNED BY: BCH	
DRAWN BY: BCH	
CHECKED BY: JLT	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

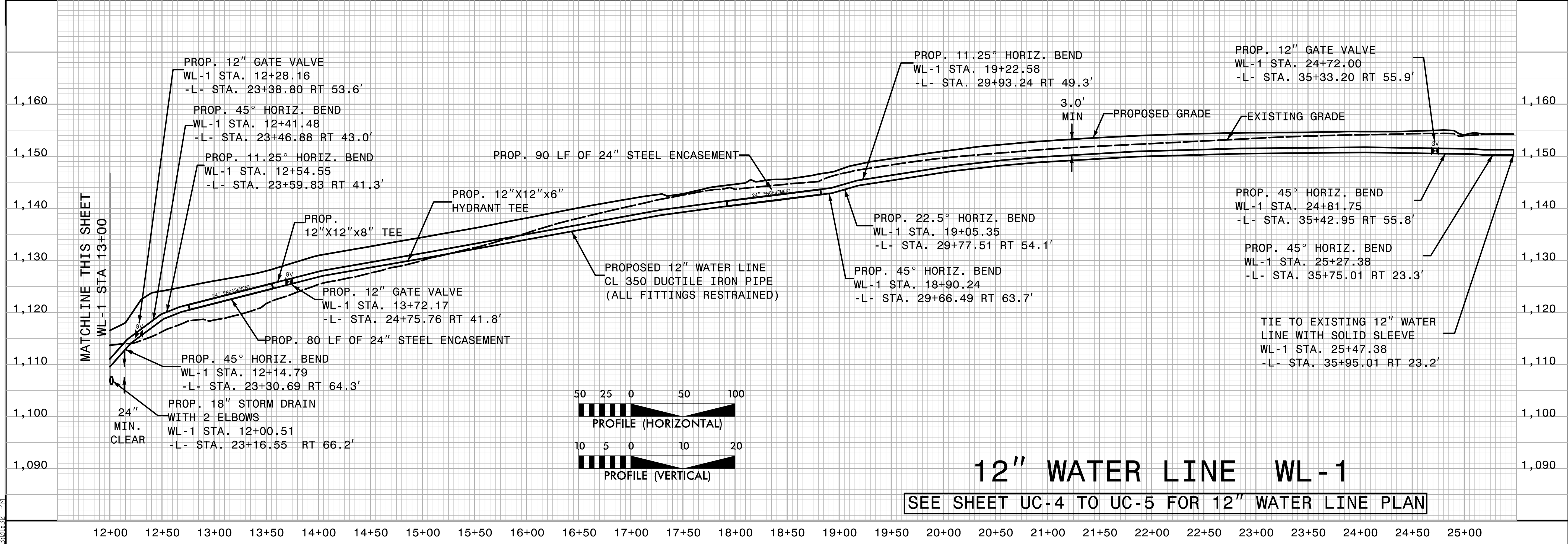


12" WATER LINE WL-1
 SEE SHEET UC-4 TO UC-5 FOR 8" WATER LINE PLAN

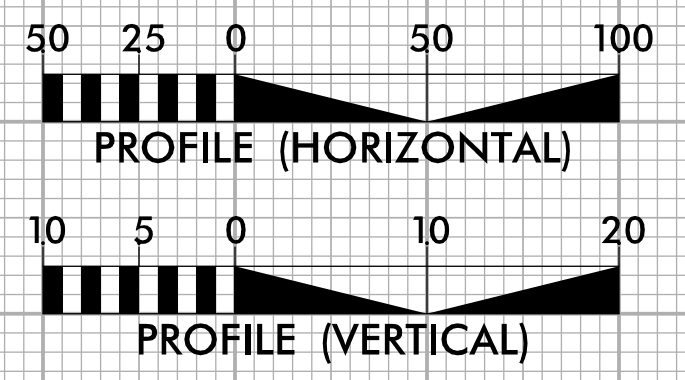


-+00 0+50 1+00 1+50 2+00 2+50 3+00 3+50 4+00 4+50 5+00 5+50 6+00 6+50 7+00 7+50 8+00 8+50 9+00 9+50 10+00 10+50 11+00 11+50 12+00 12+50

5/21/2022 B-5869 Utilities Engineering\UC\Proj\B5869_Ut_UC\ut_Conset_Sht66_pfl.psh.dgn



12" WATER LINE WL-1
 SEE SHEET UC-4 TO UC-5 FOR 12" WATER LINE PLAN



12+00 12+50 13+00 13+50 14+00 14+50 15+00 15+50 16+00 16+50 17+00 17+50 18+00 18+50 19+00 19+50 20+00 20+50 21+00 21+50 22+00 22+50 23+00 23+50 24+00 24+50 25+00