5/14/99

PROJECT TYPICAL DETAILS

CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

PROJECT REFERENCE NO.	SHEET NO.
SS-4903BR	UC-3

DESIGNED BY: EMT
DRAWN BY: EMT
CHECKED BY:
APPROVED BY:
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
UTILITIES ENGINEERING SECTION
PHONE:(919)707-6690
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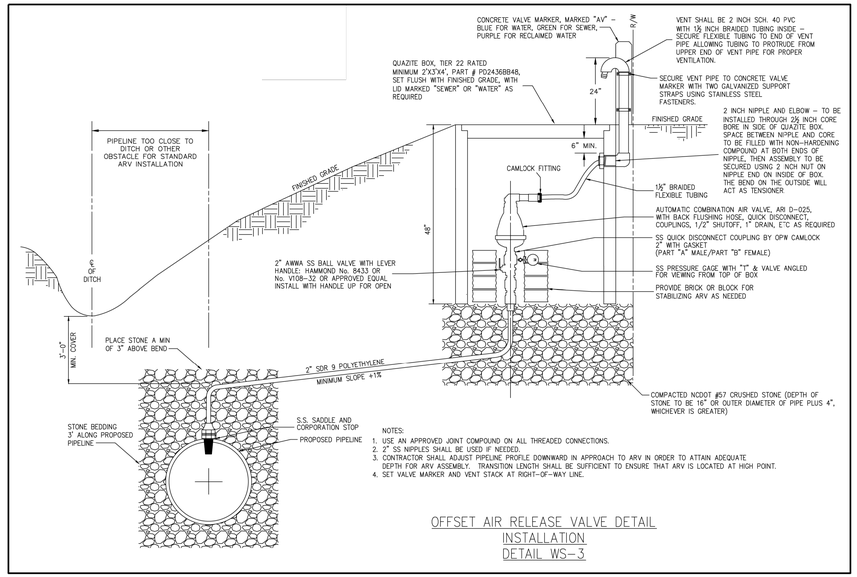
NORTH CAROLINA PROFESSIONAL SEAL 028912 ENGINEER ERIC M TWEED

DocuSigned by: Eric Tweed 4/26/2017
DOC20261810415

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

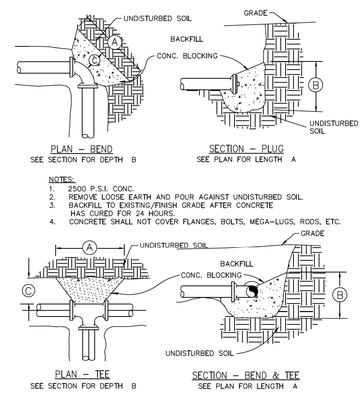
DOCUMENT NOT CONSIDERED FINAL UNTIL ALL SIGNATURES ARE COMPLETED



NOTES:
1. USE AN APPROVED JOINT COMPOUND ON ALL THREADED CONNECTIONS.
2. 2" SS NIPPLES SHALL BE USED IF NEEDED.
3. CONTRACTOR SHALL ADJUST PIPELINE PROFILE DOWNWARD IN APPROACH TO ARV IN ORDER TO ATTAIN ADEQUATE DEPTH FOR ARV ASSEMBLY. TRANSITION LENGTH SHALL BE SUFFICIENT TO ENSURE THAT ARV IS LOCATED AT HIGH POINT.
4. SET VALVE MARKER AND VENT STACK AT RIGHT-OF-WAY LINE.

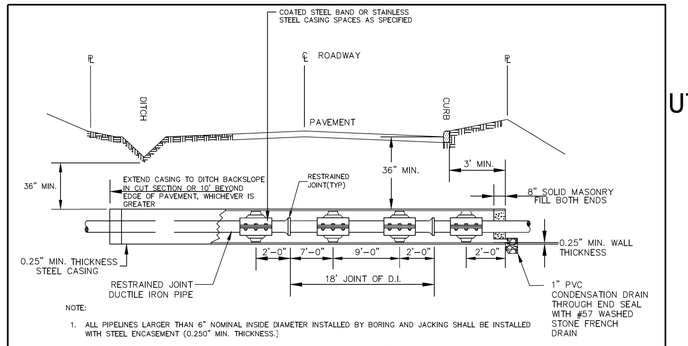
OFFSET AIR RELEASE VALVE DETAIL
INSTALLATION
DETAIL WS-3

BLOCKING DIMENSIONS			
PIPE SIZE	Ⓐ	Ⓑ	Ⓒ
UP TO 10"	4' – 0"	2' – 6"	1' – 6"
12" TO 16"	5' – 0"	4' – 0"	2' – 0"
18" TO 24"	8' – 0"	6' – 0"	3' – 0"



NOTES:
1. 2500 P.S.I. CONC.
2. REMOVE LOOSE EARTH AND POUR AGAINST UNDISTURBED SOIL.
3. BACKFILL TO EXISTING/FINISH GRADE AFTER CONCRETE HAS CURED FOR 24 HOURS.
4. CONCRETE SHALL NOT COVER FLANGES, BOLTS, MEGA-LUGS, RODS, ETC.

THRUST BLOCKS
DETAIL W-9

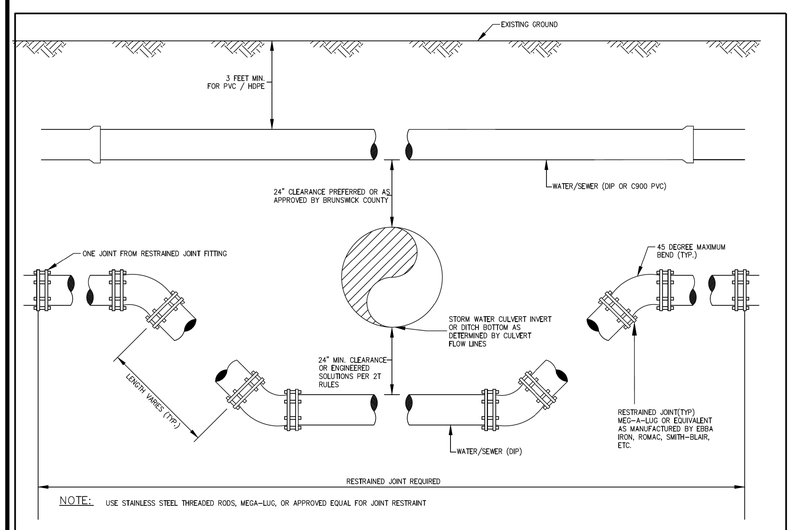


NOTE:
1. ALL PIPELINES LARGER THAN 6" NOMINAL INSIDE DIAMETER INSTALLED BY BORING AND JACKING SHALL BE INSTALLED WITH STEEL ENCASEMENT (0.250" MIN. THICKNESS.)
2. ENDS OF CASING SHALL BE SEALED USING A MODEL AC PULL-ON END SEAL GASKET, AS MANUFACTURED BY ADVANCE PRODUCT SYSTEMS, INC., OR APPROVED EQUAL IN LIEU OF MASONRY FILL.
3. STEEL CASING SHALL EXTEND A MINIMUM OF 3' BEYOND BACK OF CURB, SIDEWALK, OR PAVEMENT EDGE. FOR STREETS WITH A SHOULDER AND DITCH CROSS SECTION, CASING SHALL EXTEND TO BACK SLOPE OF DITCH IN CUT SECTIONS OR TO 10' BEYOND EDGE OF PAVEMENT, WHICHEVER IS GREATER.
4. WHEN CARRIER PIPE IS USED FOR CONVEYING LIQUID FLAMMABLE SUBSTANCES, VENT PIPES SHALL BE PROVIDED FROM ENDS OF CASING TO PROPERTY LINE.
5. CASING PIPE SECTION JOINTS SHALL BE WELDED COMPLETELY AROUND THE CIRCUMFERENCE OF EACH JOINT, NO GAPS IN WELDED BEAD ALLOWED.
6. PER NCDOT:

WELDING 1072-18: QUALIFICATIONS OF PERSONNEL:

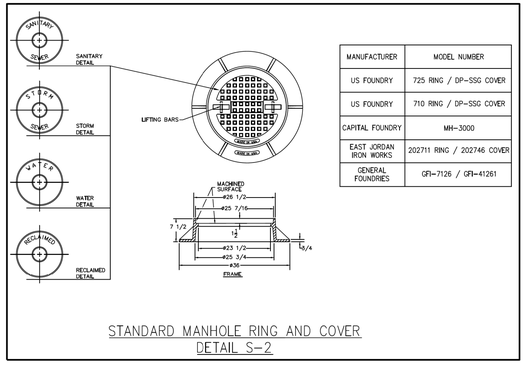
WELDERS MUST BE CERTIFIED TO MEET STATE REQUIREMENTS AS NOTED WITHIN THE NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES (2012). UPON REQUEST, EVIDENCE OF SUCH QUALIFICATIONS SHALL BE FURNISHED TO THE NCDOT DEPARTMENT ENGINEER OR HIS/HER REPRESENTATIVE.

JACK AND BORE FOR ROADWAYS
DETAIL WS-6



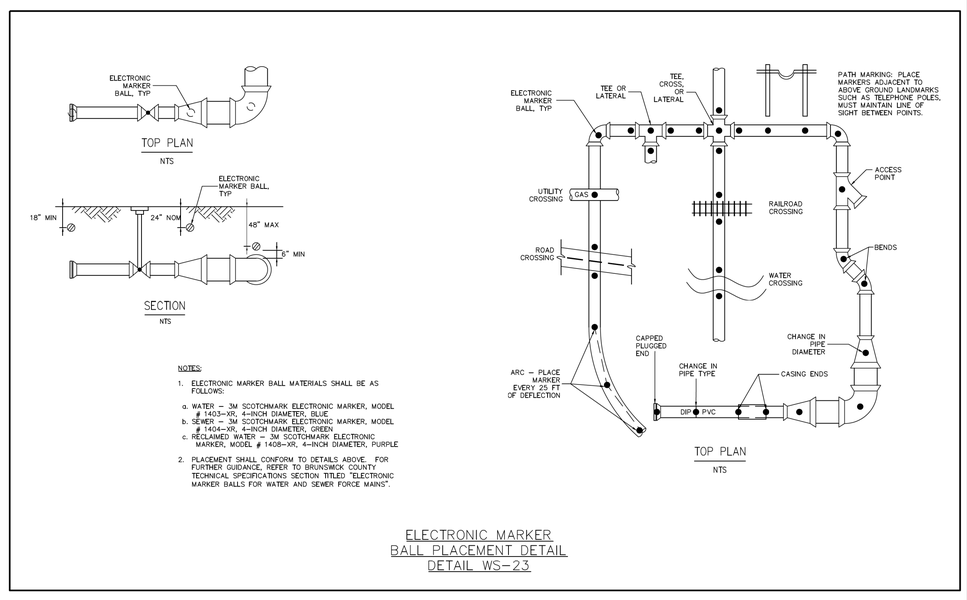
NOTE: USE STAINLESS STEEL THREADED RODS, MEGA-LUG, OR APPROVED EQUAL FOR JOINT RESTRAINT

DITCH AND/OR STORM DRAIN CROSSING
OFFSETS BETWEEN WATER/SEWER
PRESSURE MAIN AND STORM DRAIN
DETAIL WS-20



MANUFACTURER	MODEL NUMBER
US FOUNDRY	725 RING / DP-SSG COVER
US FOUNDRY	710 RING / DP-SSG COVER
CAPITAL FOUNDRY	MH-3000
EAST JORDAN IRON WORKS	202711 RING / 202746 COVER
GENERAL FOUNDRIES	GFI-7126 / GFI-41261

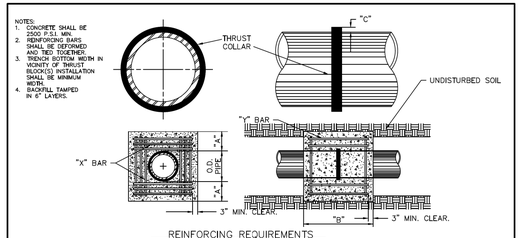
STANDARD MANHOLE RING AND COVER
DETAIL S-2



NOTES:
1. ELECTRONIC MARKER BALL MATERIALS SHALL BE AS FOLLOWS:
   a. WATER – 3M SCOTCHMARK ELECTRONIC MARKER, MODEL # 1403-XR, 4-INCH DIAMETER, BLUE
   b. SEWER – 3M SCOTCHMARK ELECTRONIC MARKER, MODEL # 1404-XR, 4-INCH DIAMETER, GREEN
   c. RECLAIMED WATER – 3M SCOTCHMARK ELECTRONIC MARKER, MODEL # 1408-XR, 4-INCH DIAMETER, PURPLE
2. PLACEMENT SHALL CONFORM TO DETAILS ABOVE. FOR FURTHER GUIDANCE, REFER TO BRUNSWICK COUNTY TECHNICAL SPECIFICATIONS SECTION TITLED "ELECTRONIC MARKER BALLS FOR WATER AND SEWER FORCE MAINS".

ELECTRONIC MARKER
BALL PLACEMENT DETAIL
DETAIL WS-23

NOTES:
1. CONCRETE SHALL BE 2500 P.S.I. MIN.
2. REINFORCING BARS SHALL BE DEFORMED AND TIED TOGETHER.
3. TRENCH BOTTOM WIDTH IN VICINITY OF THRUST BLOCK(S) INSTALLATION SHALL BE MINIMUM WIDTH.
4. BACKFILL TAMPED IN 6" LAYERS.



REINFORCING REQUIREMENTS

REINFORCING BAR SCHEDULE

I.D. PIPE	REBAR SIZE	"X" BAR LENGTH	"X" BAR WGHT.	"Y" BAR LENGTH	"Y" BAR WGHT.	NO. REQD.
6"–36"	#5	2'-2"*O.D. PIPE	1.043 LBS./FT	1'-1"	1.1 LBS. EA.	X=24,Y=12
48"	#6	3'-0"*O.D. PIPE	1.502 LBS./FT	1'-3"	1.9 LBS. EA.	X=24,Y=12

REINFORCING BAR SCHEDULE

I.D. PIPE	"A"	"B"	"C"
6"–36"	1'-4"	1'-7"	6", 16", 20"–24", 30"–36", 48" 2" 3" 4"
48"	1'-8"	1'-9"	6"

THRUST COLLAR FOR WATER MAINS
DETAIL W-12