

8/17/99

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

PROJECT REFERENCE NO. W-5206AG	SHEET NO. UC-03
DETAILS	
UTILITY ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 028912 E. M. TWEED 300C8831499415 4/12/015	

REVISIONS

SUIT AND NUMBER OF BRIG.	STATIC THRUST IN POUNDS	CONCRETE BACKFILL TO 1 FT. ABOVE TOP OF PIPE	CONCRETE BACKFILL TO 1 FT. ABOVE TOP OF PIPE	CONCRETE BACKFILL TO 1 FT. ABOVE TOP OF PIPE	CONCRETE BACKFILL TO 1 FT. ABOVE TOP OF PIPE	CONCRETE BACKFILL TO 1 FT. ABOVE TOP OF PIPE	CONCRETE BACKFILL TO 1 FT. ABOVE TOP OF PIPE	CONCRETE BACKFILL TO 1 FT. ABOVE TOP OF PIPE	CONCRETE BACKFILL TO 1 FT. ABOVE TOP OF PIPE
20" PIPE									
11 1/4"	12,315	3	7	8	2	2	3	13	2
22 1/2"	24,517	7	13	15	4	4	7	25	3
45"	48,991	12	24	29	6	6	12	48	5
90"	98,944	23	45	53	12	12	23	89	9
PLUG OR TEE	62,832	16	32	38	8	8	16	63	7

GENERAL NOTES:  
 1. ALL MEASUREMENTS ARE IN SQUARE FEET.  
 2. BACKFILL BEHIND BARS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH.  
 3. USE 4" SAND ABOVE THIS TRENCH FOR ADDITIONAL SAFETY FACTORS.

HORIZONTAL THRUST BLOCKING SCHEDULE	SCALE: NTS
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SIZED FOR LINE STOP (DEAD END)  
 COLLAR THRUST FORCE  $T = P \times A$   
 $T = 75 \times 344.4 = 25,830 \text{ LBS}$   
 25,830 LBS / 150 LBS/CF = 172 CF

FOR REFERENCE: 45° BEND ROD LESS WEIGHT  
 COLLAR THRUST FORCE  $T = P \times A \times (1 - \cos(45^\circ))$   
 $T = 200 \times 344.4 \times (1 - 0.707) = 20,175 \text{ LBS}$

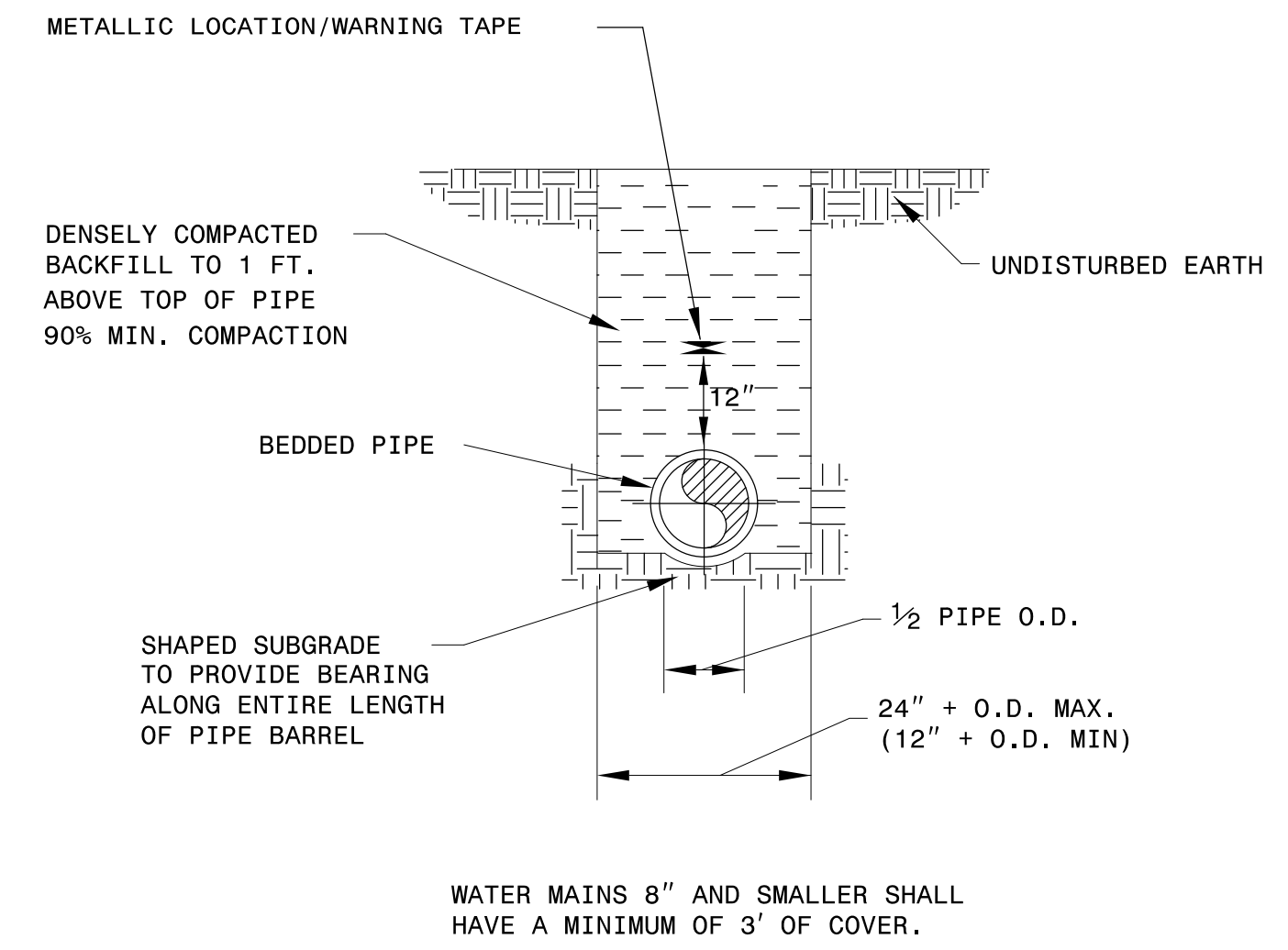
SECTION  
 ELEVATION

CALCULATED BEARING SURFACE = 38 SF  
 WEIGHT = 34,200 LBS

WELDED ON THRUST COLLAR	THRUST COLLAR REINFORCING	
I.D. PIPE	"A"	"Y" BAR
6"-16"	2"	BAR LENGTH 42" + O.D. PIPE 42"
20"-24"	3"	REBAR SIZE #6
30"-36"	4"	NUMBER REO'D 24
		12

NOTES:  
 1. CONCRETE SHALL BE 3000 P.S.I.  
 2. REINFORCING BARS SHALL BE DEFORMED, AND TIED TOGETHER.  
 3. BACKFILL TAMPED IN 6" LAYERS.  
 4. TRENCH BOTTOM WIDTH IN VICINITY OF THRUST BLOCK(S) INSTALLATION SHALL BE THE MINIMUM WIDTH AS DESCRIBED BY THE ENGINEER.

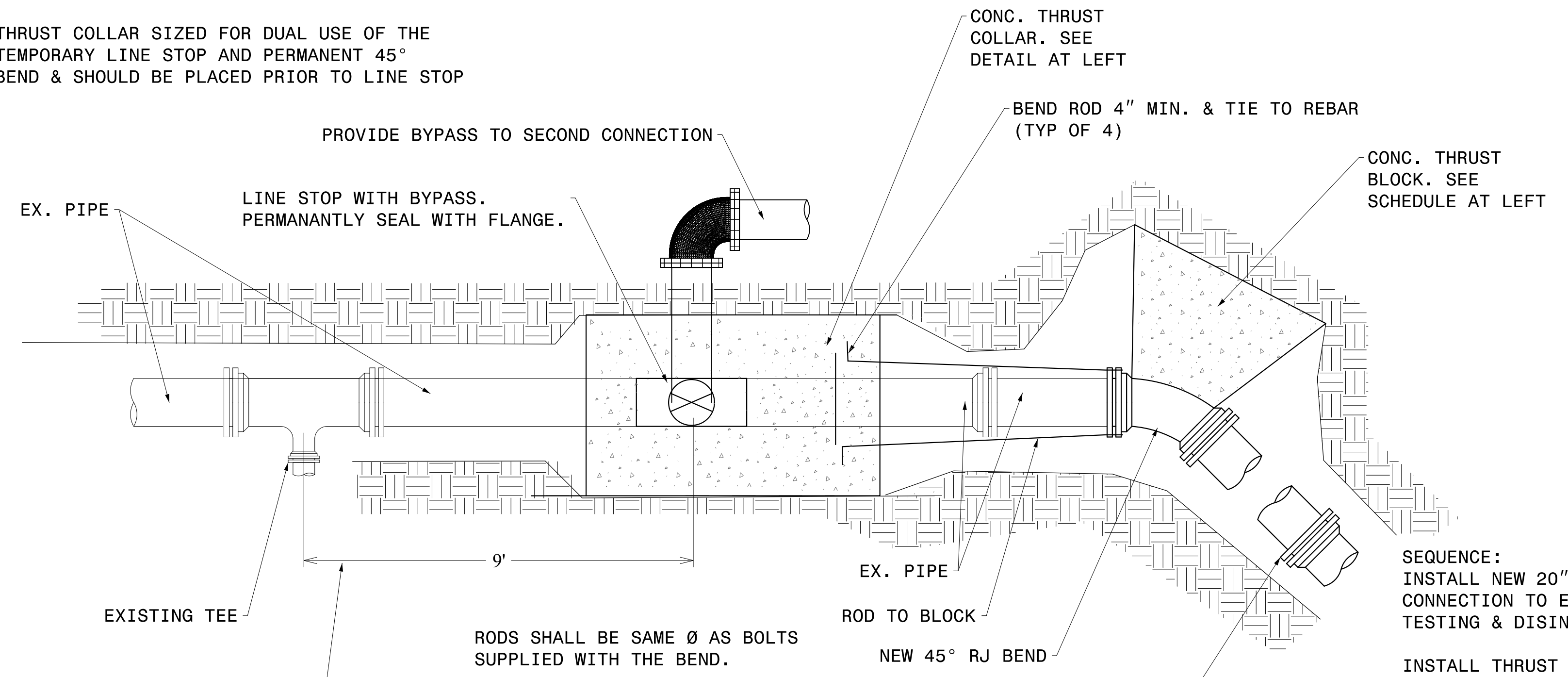
CONCRETE THRUST COLLAR
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## PIPE LAYING CONDITION

NOT TO SCALE

THRUST COLLAR SIZED FOR DUAL USE OF THE TEMPORARY LINE STOP AND PERMANENT 45° BEND & SHOULD BE PLACED PRIOR TO LINE STOP



DISTANCE MAY BE SHORTENED TO NO LESS THAN 4'-0" IF PIPE JOINT IS FOUND AT LOCATION OF THE PROPOSED LINE STOP

NEW-TO-OLD PIPE CONNECTION DETAIL  
 TYPICAL FOR EACH CONNECTION  
 NO SCALE

SEQUENCE:  
 INSTALL NEW 20" WL WITH EXCEPTION OF CONNECTION TO EXISTING MAIN AND PROVIDE TESTING & DISINFECTION.

INSTALL THRUST COLLAR ALLOWING CURE TIME THEN INSTALL HOT TAP BYPASS AND TEMPORARY BYPASS PIPING ABOVE GRADE.

PERFORM LINE STOP AND CONNECT NEW 45° BEND WITH BLOCKING. ALLOW CURE TIME.

REMOVE LINE STOP AND BYPASS LINE.

# 20" LINE CONNECTION WITH TEMPORARY BYPASS