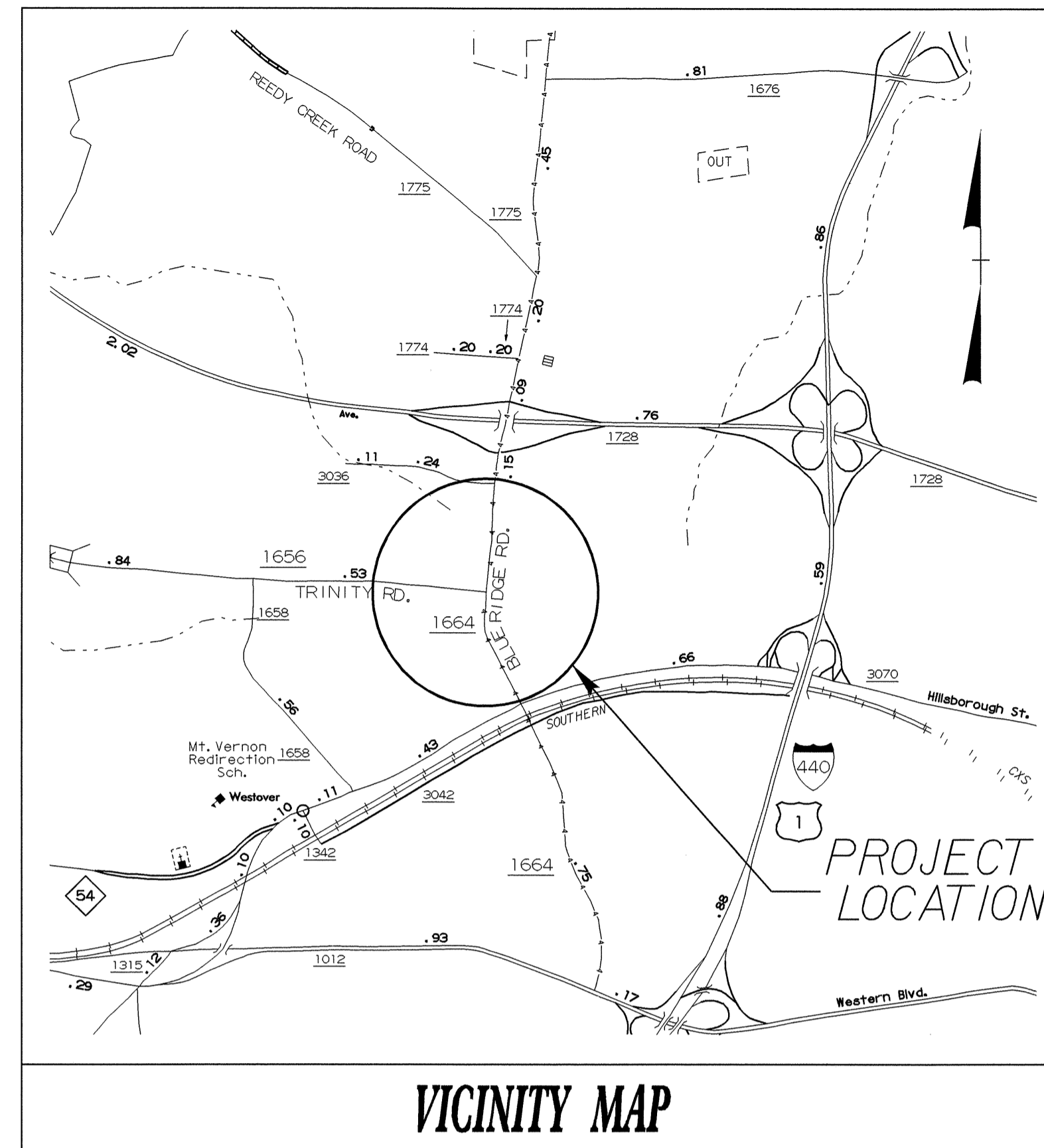


STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

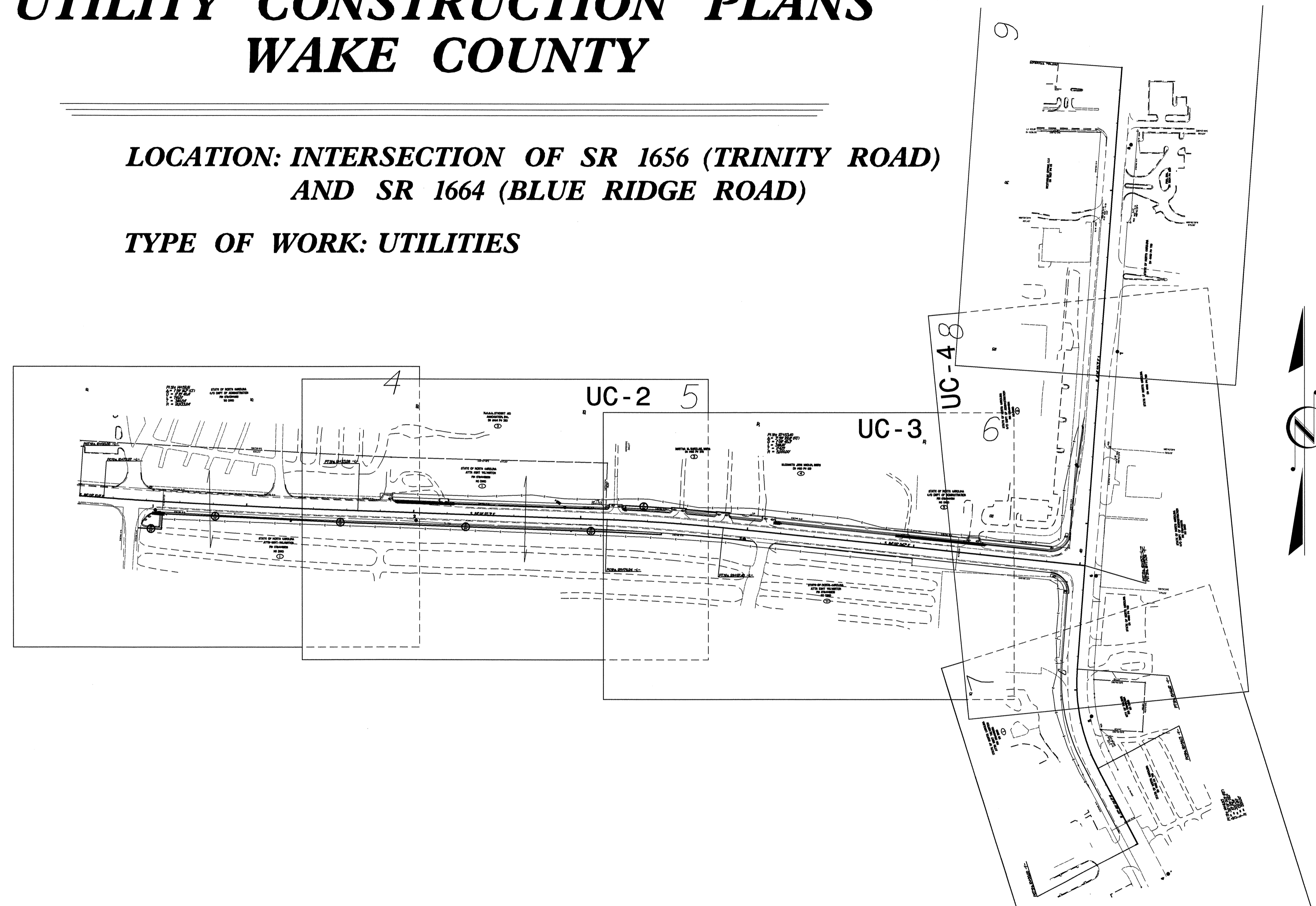
**UTILITY CONSTRUCTION PLANS  
WAKE COUNTY**

**LOCATION: INTERSECTION OF SR 1656 (TRINITY ROAD)  
AND SR 1664 (BLUE RIDGE ROAD)**

**TYPE OF WORK: UTILITIES**



VICINITY MAP



**CONTRACT: WBS Element 30619**

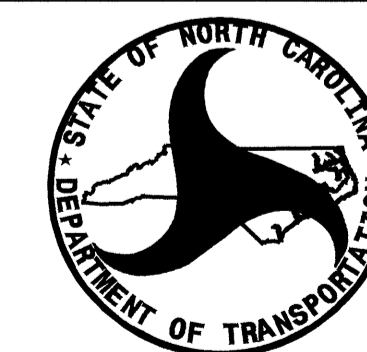
**INDEX OF SHEETS**

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
UC-1	TITLE SHEET
UC-2 THRU UC-4	UTILITY CONSTRUCTION PLAN SHEETS
UC-5 THRU UC-7	DETAILS SHEET(S)

**WATER AND SEWER OWNERS ON PROJECT**


(1) City of Raleigh (WATER)

SEAL



PREPARED IN THE OFFICE OF:  
**DIVISION OF HIGHWAYS  
DESIGN SERVICES  
UTILITY SECTION**  
1591 MAIL SERVICES CENTER  
RALEIGH NC 27699-1591  
PHONE (919) 250-4128  
FAX (919) 250-4119

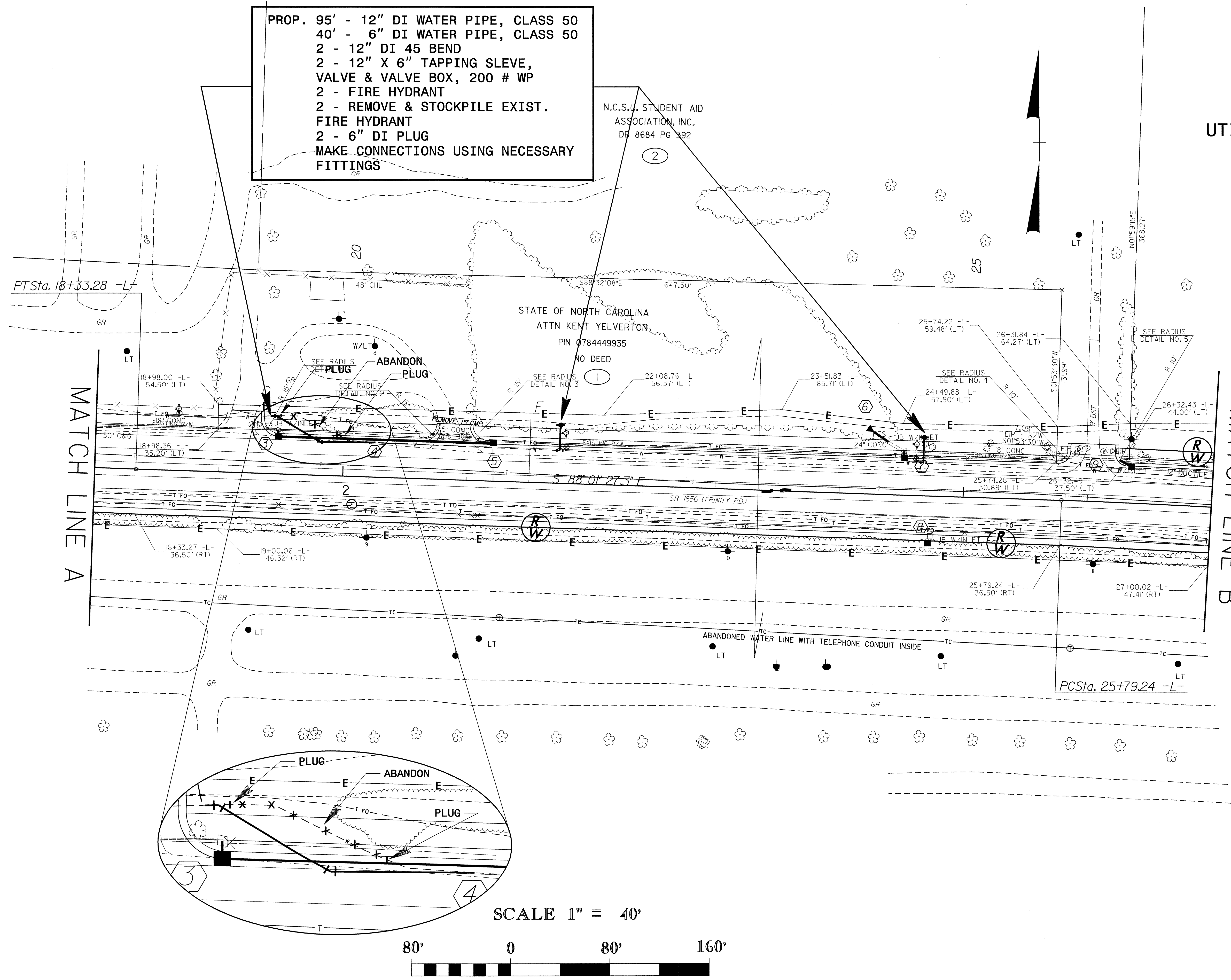
Roger Worthington, P.E. UTILITIES SECTION ENGINEER  
Steve McKee, P.E. UTILITIES SQUAD LEADER PROJECT ENGINEER  
Nabil Hamdan UTILITIES PROJECT DESIGNER

PROJECT REFERENCE NO.	SHEET NO.
WBS Element 30619	UC-2
DESIGNED BY: NSH	
DRAWN BY: NSH	
CHECKED BY: JSM	
APPROVED BY: JSM	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
DESIGN SERVICES UNIT PHONE: (919) 250-4128 FAX: (919) 250-4119	
UTILITY CONSTRUCTION PLANS ONLY	

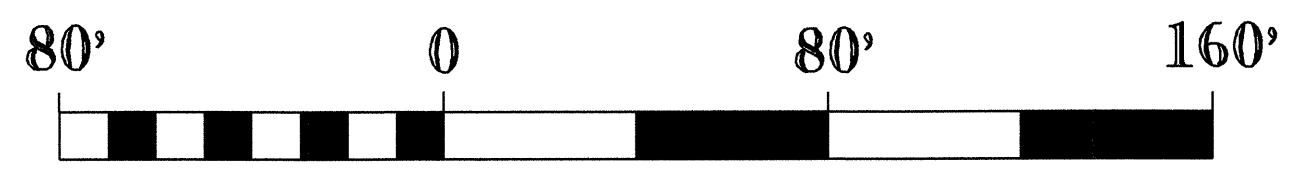
**UTILITY CONSTRUCTION**

- PROP. 95' - 12" DI WATER PIPE, CLASS 50  
 40' - 6" DI WATER PIPE, CLASS 50  
 2 - 12" DI 45 BEND  
 2 - 12" X 6" TAPPING SLEVE,  
 VALVE & VALVE BOX, 200 # WP  
 2 - FIRE HYDRANT  
 2 - REMOVE & STOCKPILE EXIST.  
 FIRE HYDRANT  
 2 - 6" DI PLUG  
 MAKE CONNECTIONS USING NECESSARY  
 FITTINGS

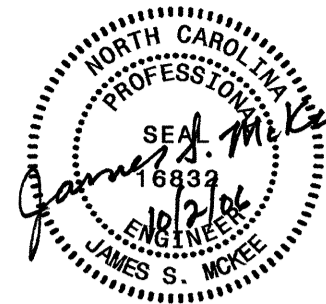
N.C.S.U. STUDENT AID  
 ASSOCIATION, INC.  
 DB 8684 PG 392

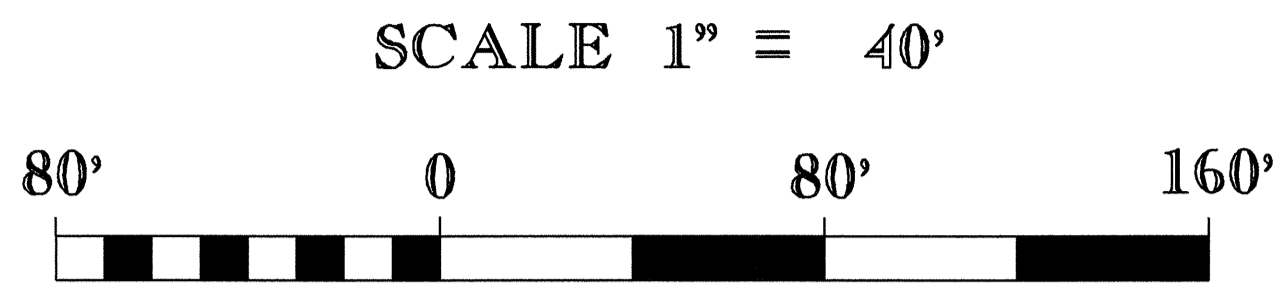


SCALE 1" = 40'



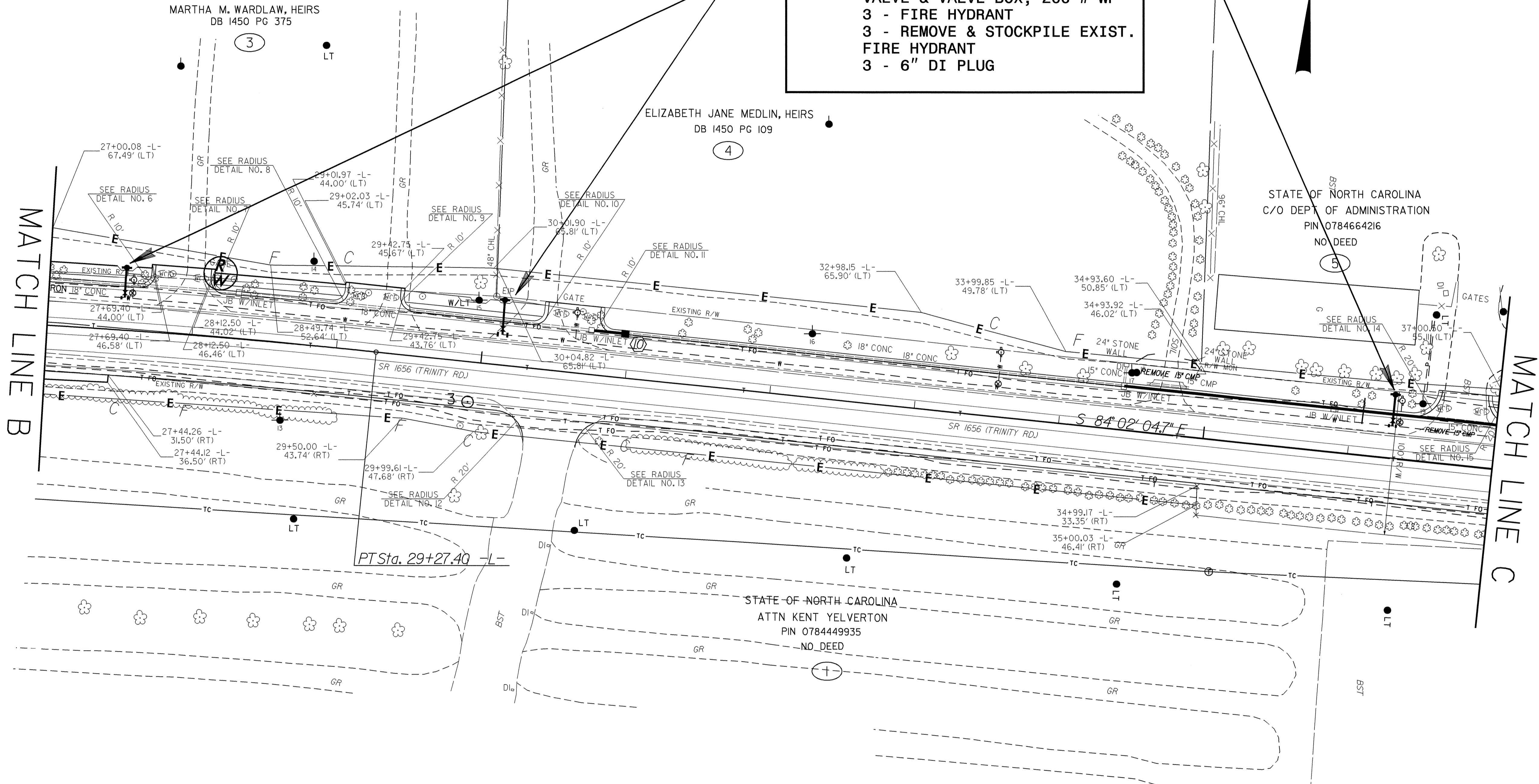
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 \$\$\$\$USERNAME\$\$\$\$

PROJECT REFERENCE NO.	SHEET NO.
WBS Element 30619	UC-3
DESIGNED BY: NSH	
DRAWN BY: NSH	
CHECKED BY: JSM	
APPROVED BY: JSM	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DESIGN SERVICES UNIT PHONE: (919) 250-4128 FAX: (919) 250-4119	
UTILITY CONSTRUCTION PLANS ONLY	



PROP. 66' - 6" DI WATER PIPE,  
 CLASS 50  
 3 - 12" x 6" TAPPING SLEVE,  
 VALVE & VALVE BOX, 200 # WP  
 3 - FIRE HYDRANT  
 3 - REMOVE & STOCKPILE EXIST.  
 FIRE HYDRANT  
 3 - 6" DI PLUG

PI Sta 27+53.40  
 $\Delta = 3^{\circ} 59' 22.6" (RT)$   
 $D = 1^{\circ} 08' 45.3"$   
 $L = 348.16'$   
 $T = 174.15'$   
 $R = 5,000.00'$



MATCH LINE B

MATCH LINE C

WIDEN FOR TURN LANES AT  
 SR 1656 (TRINITY ROAD) AND  
 SR 1664 (BLUE RIDGE ROAD)

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# UTILITY CONSTRUCTION

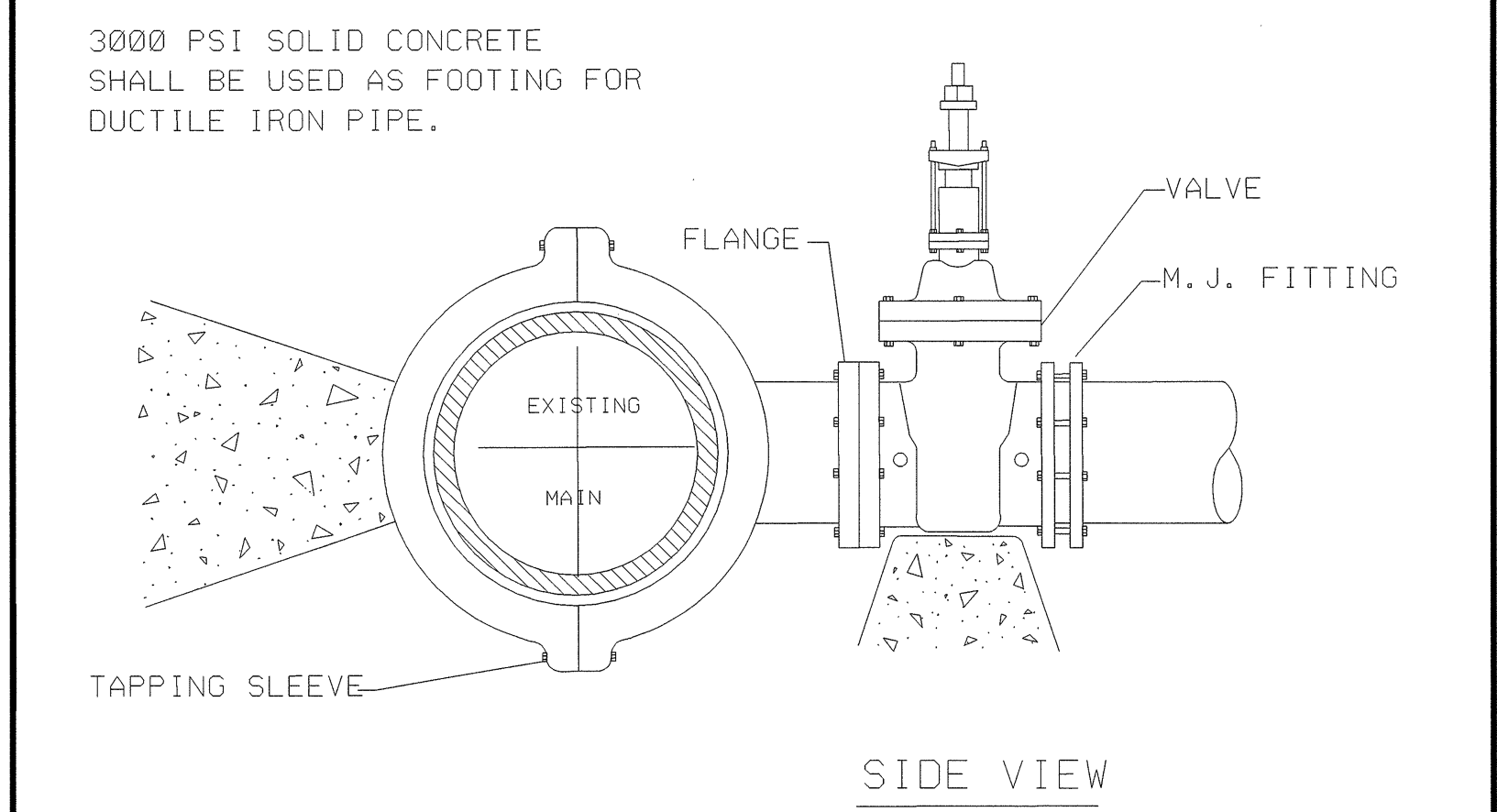
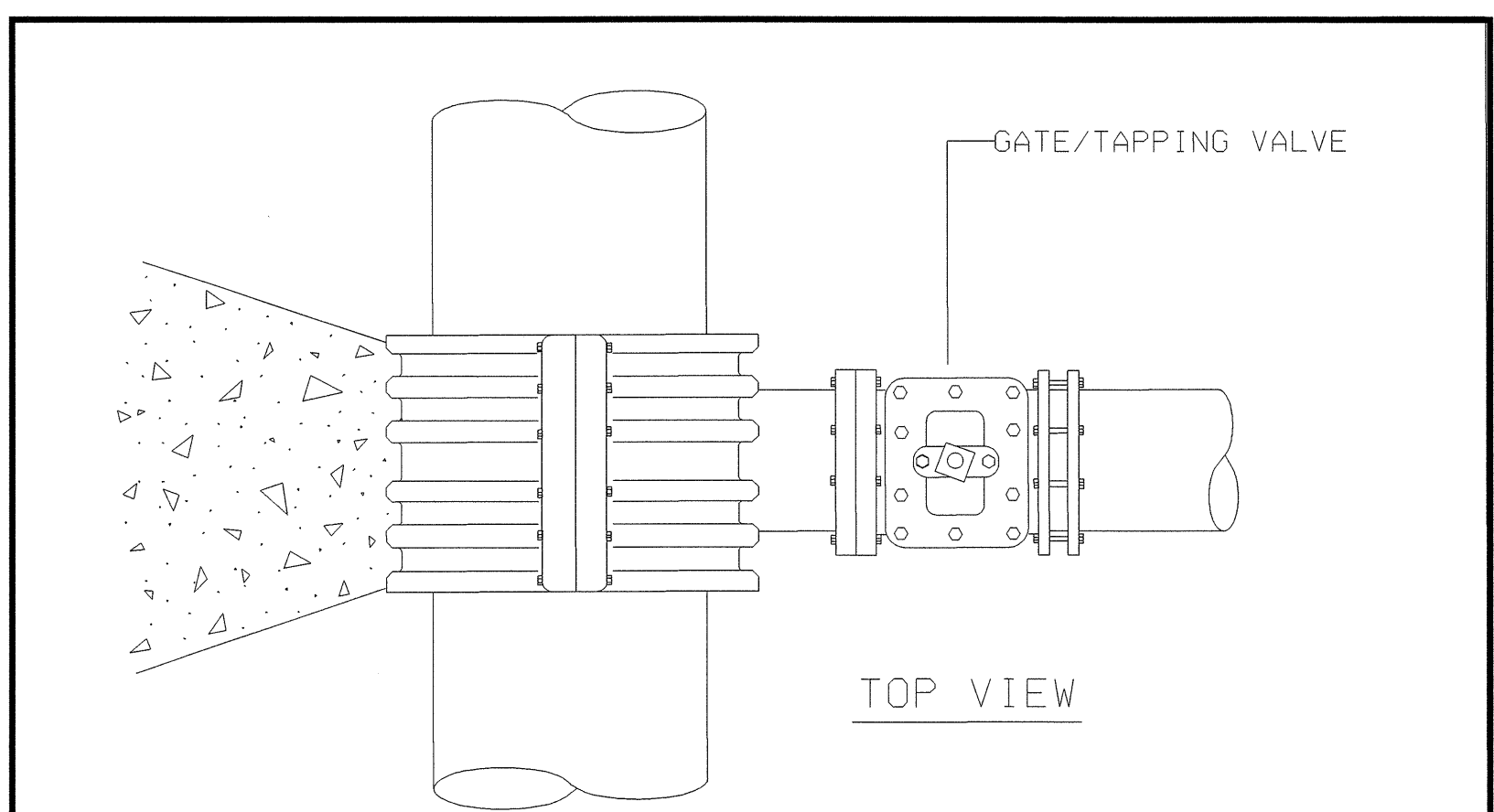
## REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS BASED ON TEST PRESSURE OF 200 P.S.I.

ALL AREAS GIVEN IN SQUARE FEET.

SIZE AND DEGREE OF BEND	STATIC THRUST IN POUNDS	MODERATELY DRY CLAY 4000 LBS./FT <sup>2</sup>	SOFT CLAY 2000 LBS./FT <sup>2</sup>	GRAVEL / COARSE SAND 1600 LBS./FT <sup>2</sup>	DRY CLAY - ALWAYS DRY 8000 LBS./FT <sup>2</sup>	SAND, COMPACT FIRM 8000 LBS./FT <sup>2</sup>	SAND - CLEAN DRY 4000 LBS./FT <sup>2</sup>	QUICKSAND SOIL 1000 LBS./FT <sup>2</sup>	ROCK - POOR 10,000 LBS./FT <sup>2</sup>
6"									
11 1/4°	1,108	1	1	1	1	1	2	1	
22 1/2°	2,207	1	2	2	1	1	3	1	
45°	4,328	2	3	3	1	1	5	1	
90°	7,996	2	4	5	1	1	8	1	
PLUG	5,655	2	3	4	1	1	6	1	
8"									
11 1/4°	1,970	1	1	2	1	1	2	1	
22 1/2°	3,922	1	2	3	1	1	4	1	
45°	7,694	2	4	5	1	1	8	1	
90°	14,215	4	8	9	2	2	15	2	
PLUG	10,053	3	5	6	2	2	10	1	
12"									
11 1/4°	4,433	2	3	3	1	1	5	1	
22 1/2°	8,826	3	5	6	2	2	9	1	
45°	17,312	5	9	11	3	3	18	2	
90°	31,983	8	16	19	4	4	32	4	
PLUG	22,619	6	12	14	3	3	23	3	
16"									
11 1/4°	7,881	2	4	5	1	1	8	1	
22 1/2°	15,691	4	8	10	2	2	16	2	
45°	30,779	8	16	19	4	4	31	4	
90°	56,861	15	29	35	8	8	57	6	
PLUG	40,213	10	21	25	5	5	41	5	

REACTION BEARING AREAS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH SIDE AT AN ANGLE OF 90° TO THE THRUST VECTOR.  
USE 6" - 90° BEND VALUE FOR HYDRANTS FOR ADDITIONAL SAFETY FACTOR.

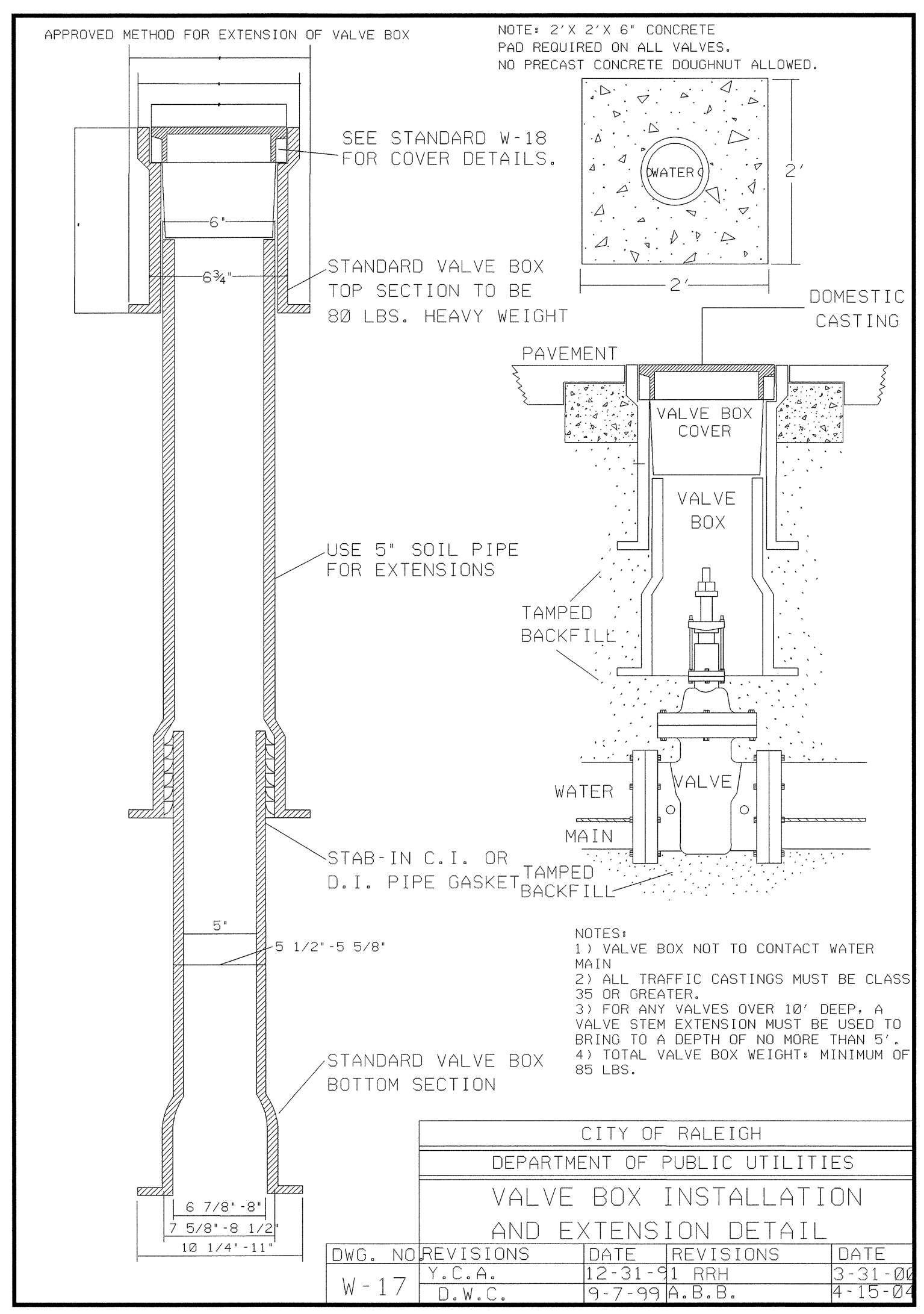
DWG. NO	REVISIONS	DATE	REVISIONS	DATE
W-10	D.W.C.	6-23-99		



3000 PSI SOLID CONCRETE SHALL BE USED AS FOOTING FOR DUCTILE IRON PIPE.

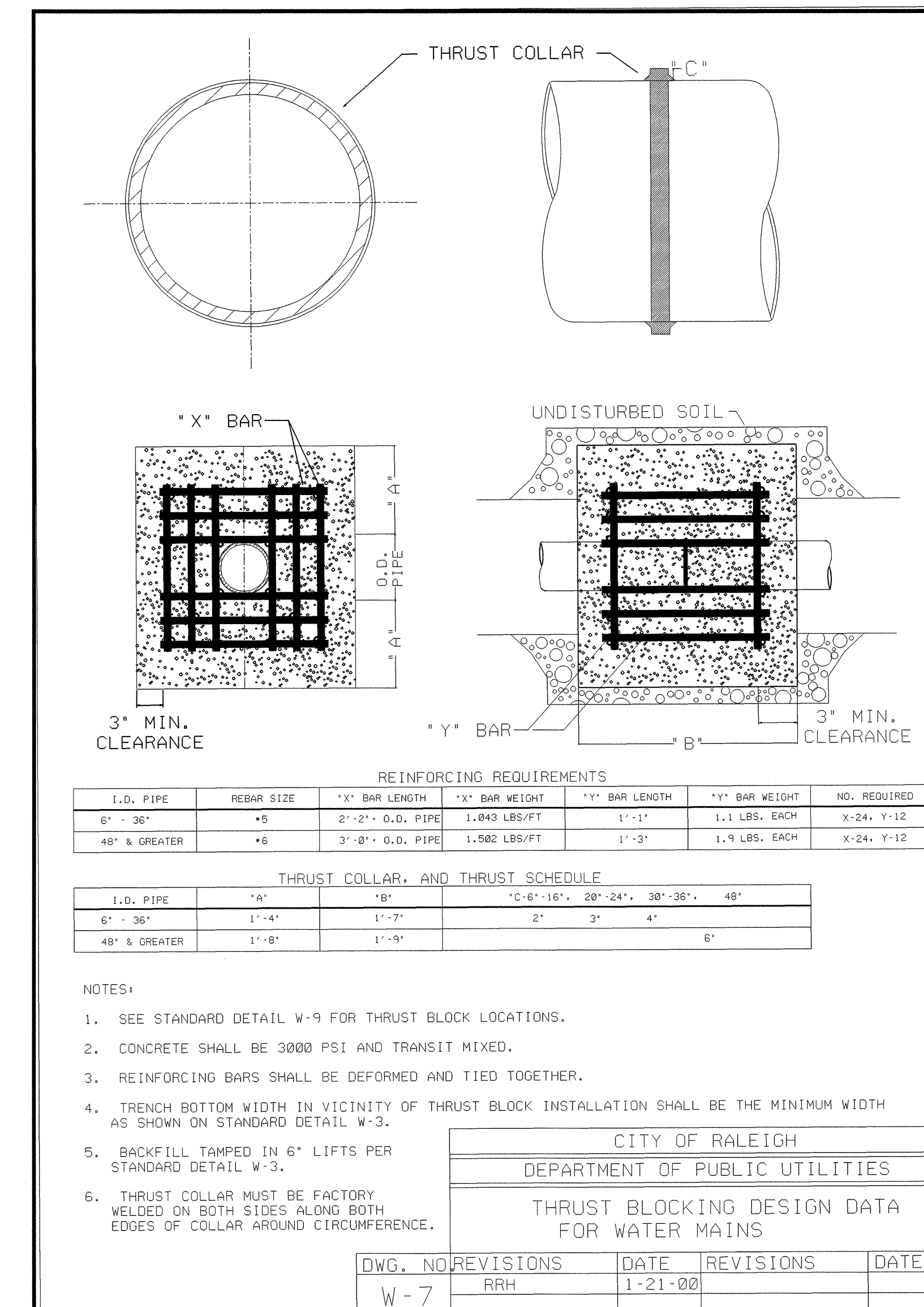
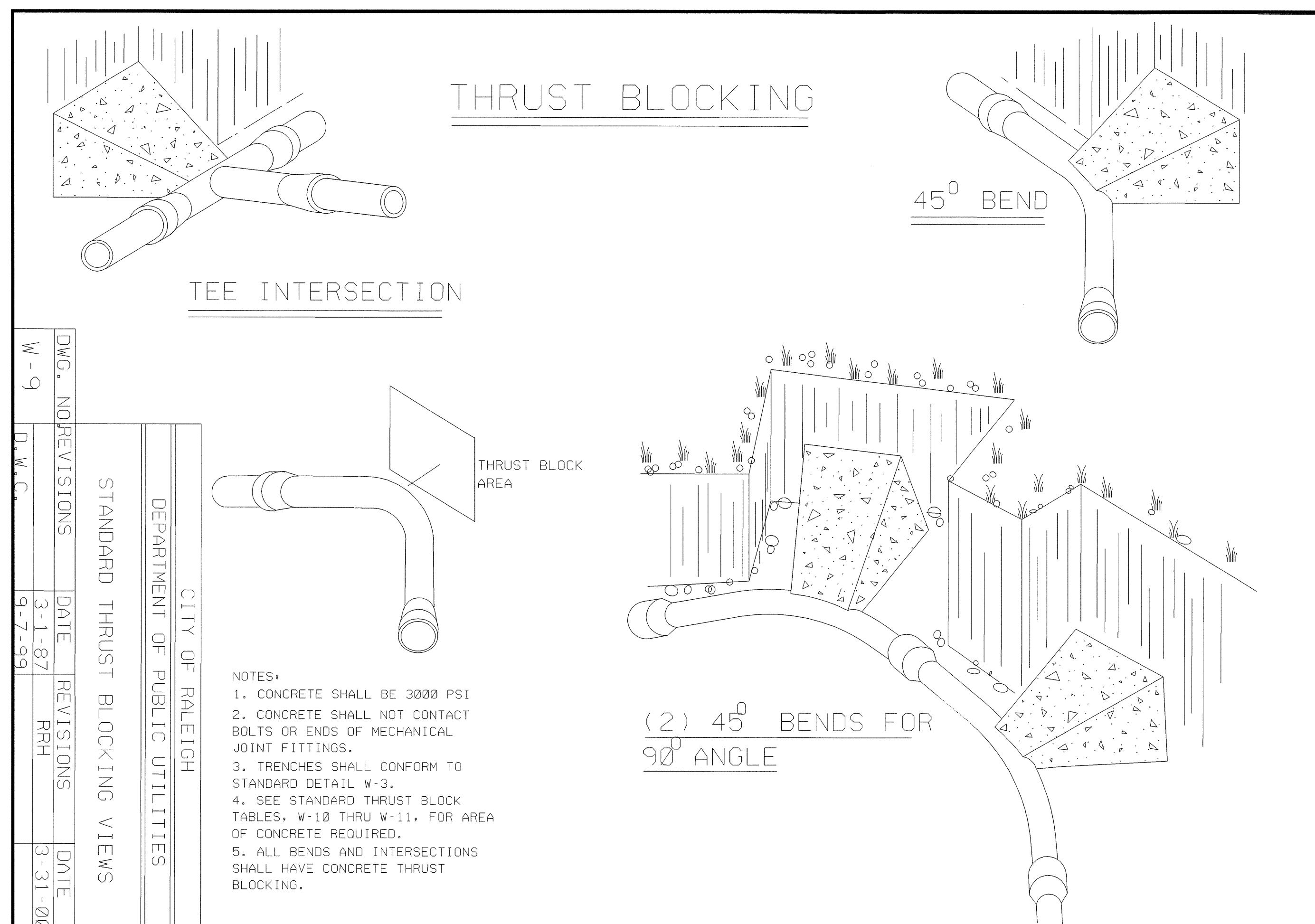
NOTES:  
1. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS.  
2. SEE STANDARD REACTION BLOCK TABLES, W-10 AND W-11 FOR AREA OF CONCRETE REQUIRED.

DWG. NO	REVISIONS	DATE	REVISIONS	DATE
W-14	Y.C.A.	3-1-87	RRH	9-7-99
		12-31-91		3-31-00



8/17/99  
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## UTILITY CONSTRUCTION



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