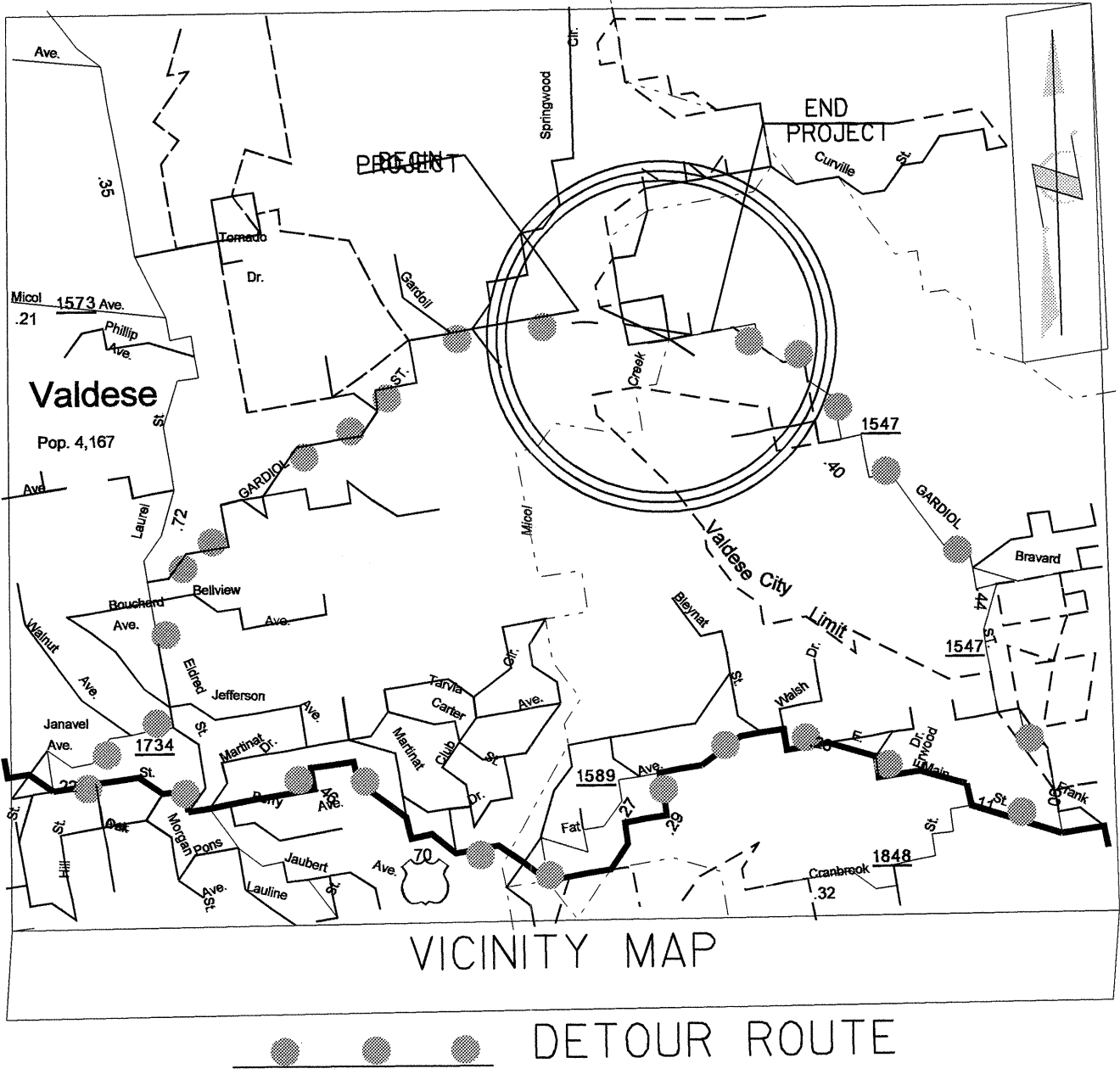


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

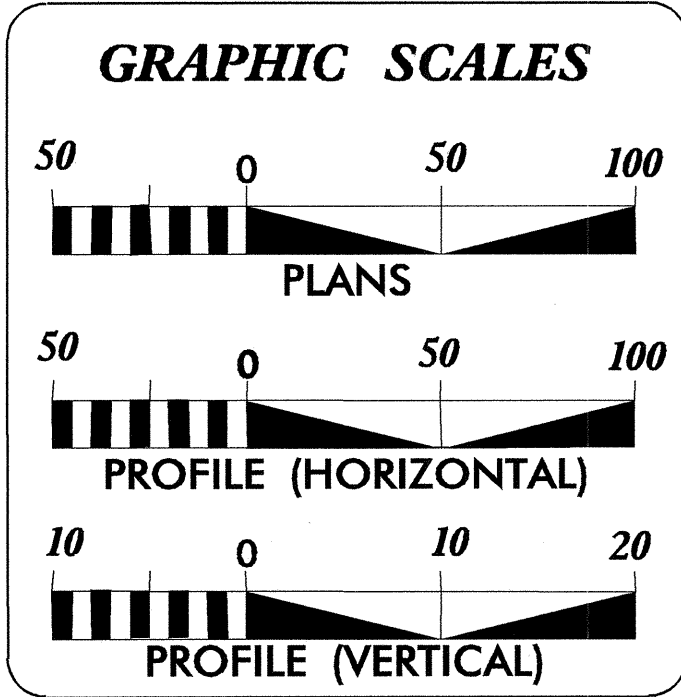
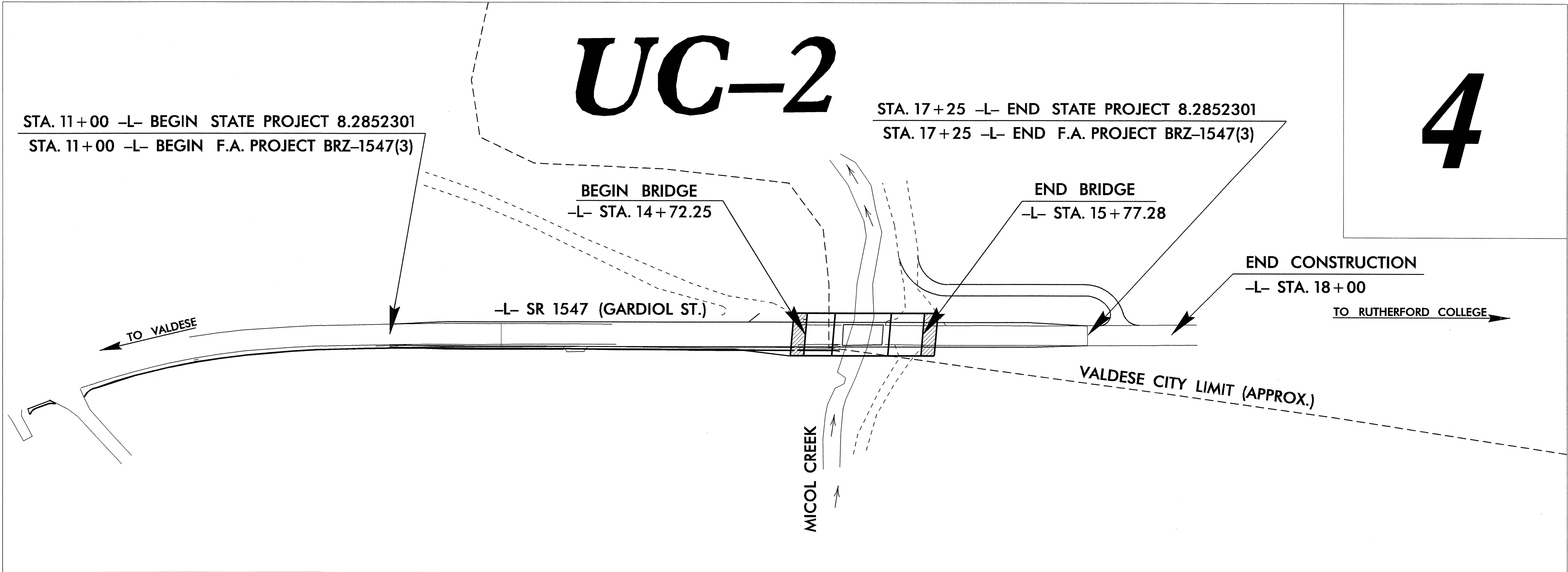
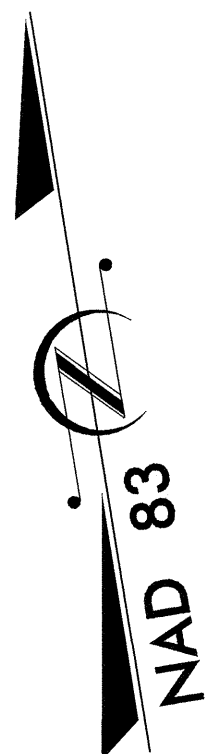
**UTILITY CONSTRUCTION PLANS
BURKE COUNTY**

**LOCATION: BRIDGE 148 OVER MICOL CREEK
ON SR 1547**

TYPE OF WORK: RELOCATION OF WATER LINES



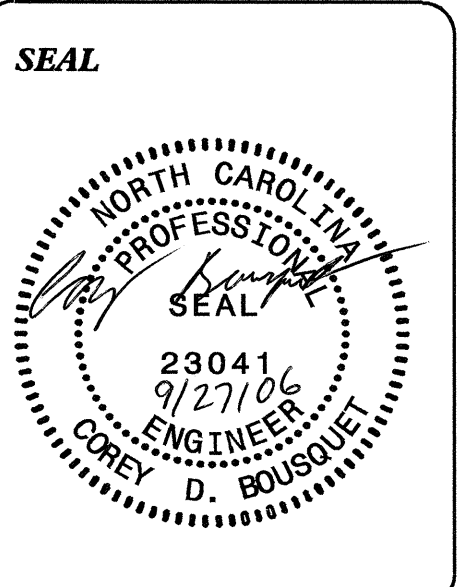
TIP: B-3621



SHEET NO.	DESCRIPTION
UC-1	TITLE SHEET
UC-2	UTILITY CONSTRUCTION PLAN SHEET
UC-3	PROFILE SHEET
UC-4, UC-5	DETAILS SHEET(S)

WATER AND SEWER OWNERS ON PROJECT

(1) WATER : TOWN OF VALDESE
(2) SEWER : TOWN OF VALDESE



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

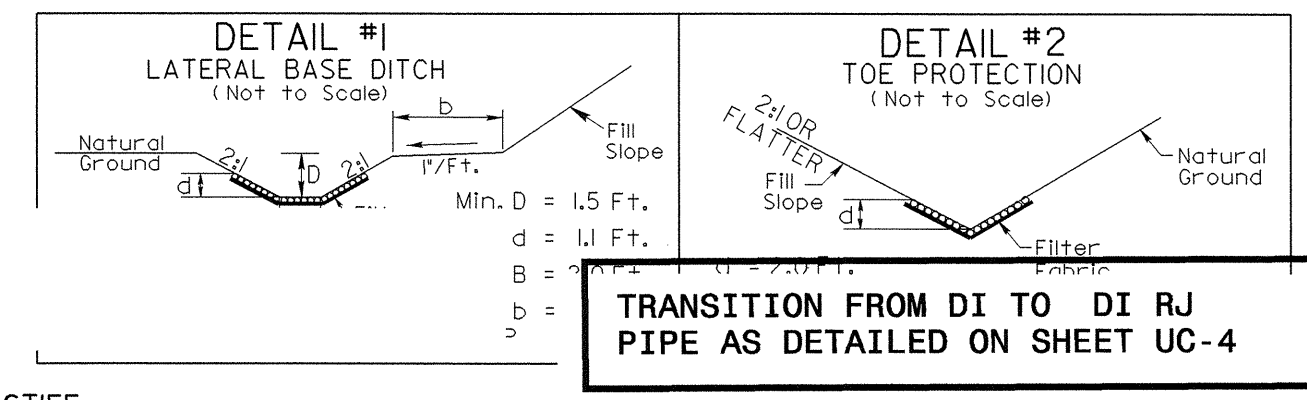
Roger Worthington, P.E. UTILITIES SECTION ENGINEER
Corey Bousquet, P.E. UTILITIES SQUAD LEADER PROJECT ENGINEER
Kifah Kamil UTILITIES PROJECT DESIGNER

UTILITY CONSTRUCTION

8/17/99

151' OF 16" TRENCHLESS INSTALLATION IN SOIL
152' OF 16" TRENCHLESS INSTALLATION NOT IN SOIL

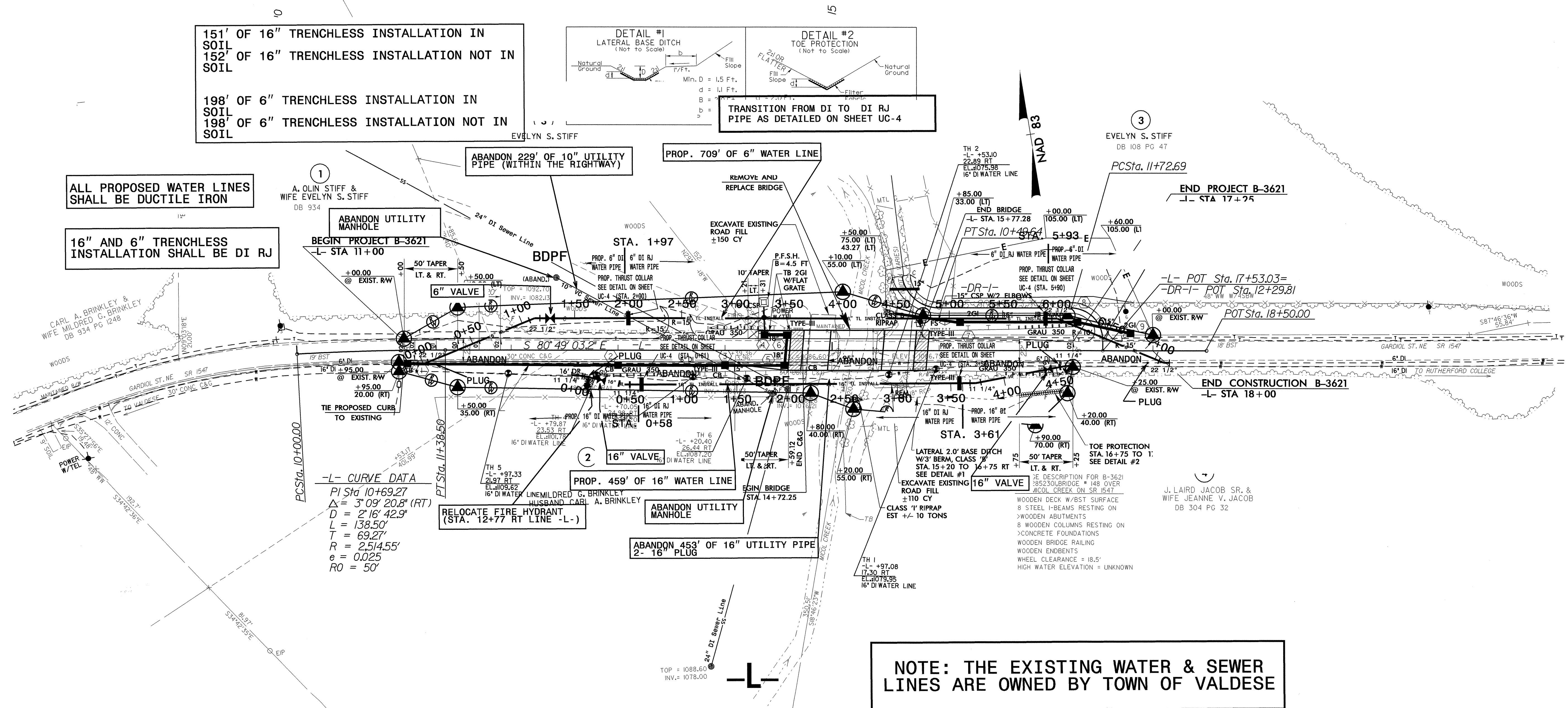
198' OF 6" TRENCHLESS INSTALLATION IN SOIL
198' OF 6" TRENCHLESS INSTALLATION NOT IN SOIL



TRANSITION FROM DI TO DI RJ PIPE AS DETAILED ON SHEET UC-4

ALL PROPOSED WATER LINES SHALL BE DUCTILE IRON

16" AND 6" TRENCHLESS INSTALLATION SHALL BE DI RJ



-L- CURVE DATA
PI Sta 10+69.27
 $\Delta = 3^{\circ}09'20.8"$ (RT)
 $D = 2^{\circ}16'42.9"$
 $L = 138.50'$
 $T = 69.27'$
 $R = 2514.55'$
 $e = 0.025'$
 $RO = 50'$

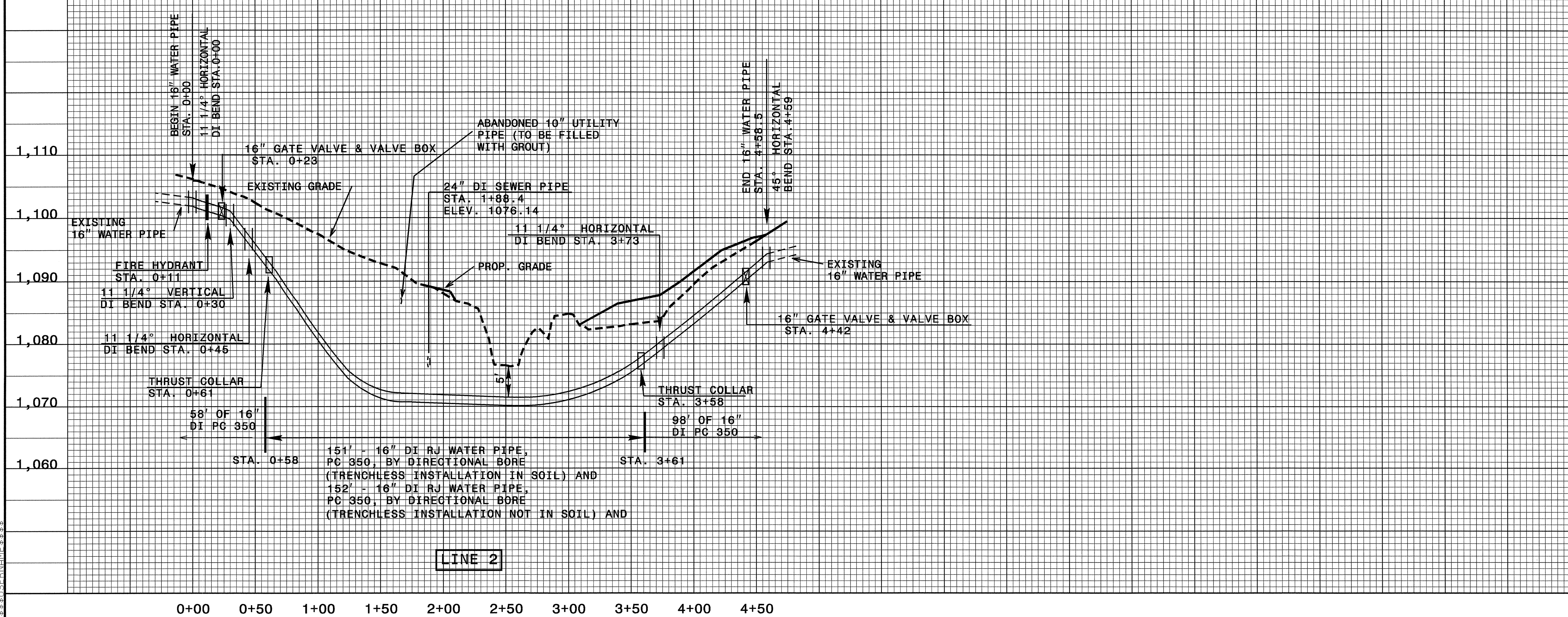
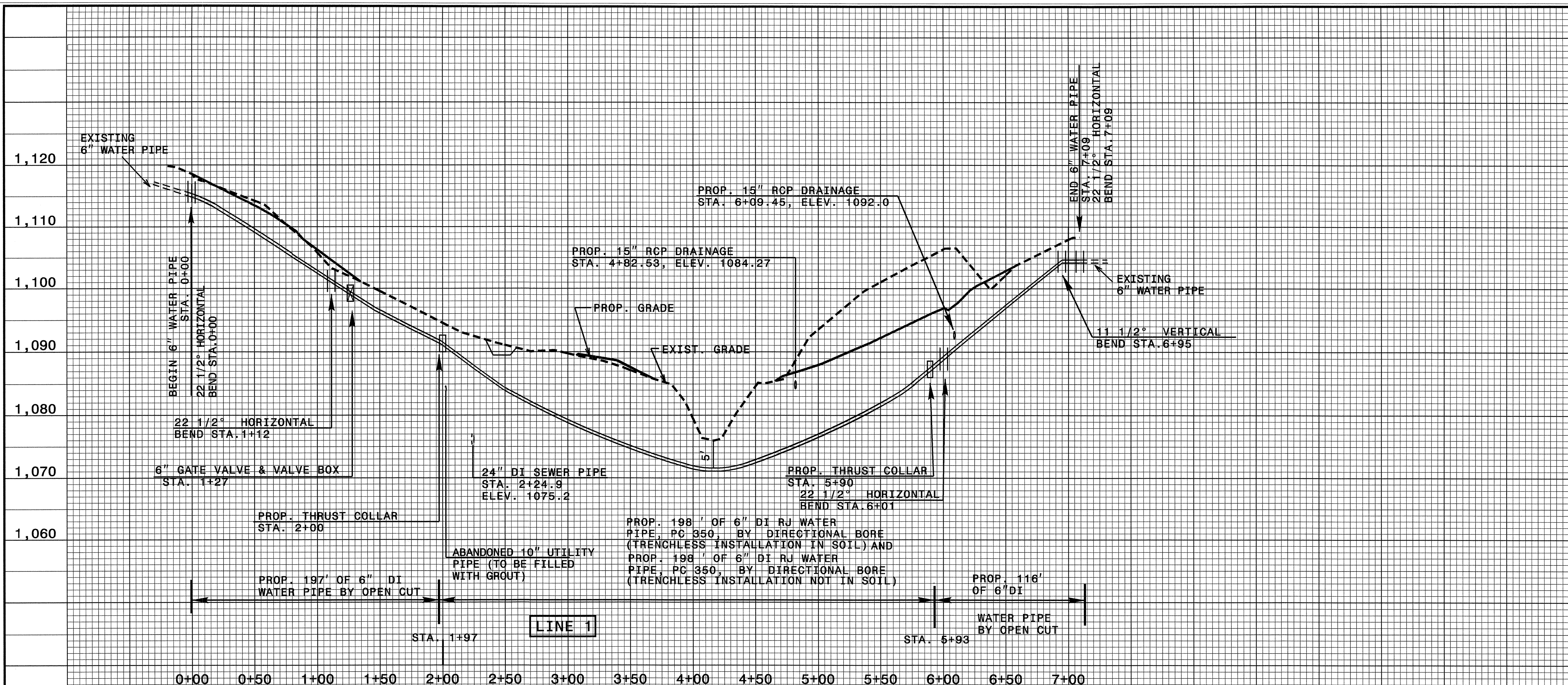
NOTE: THE EXISTING WATER & SEWER LINES ARE OWNED BY TOWN OF VALDESE

880.53'
NB12°35'W

5/14/99

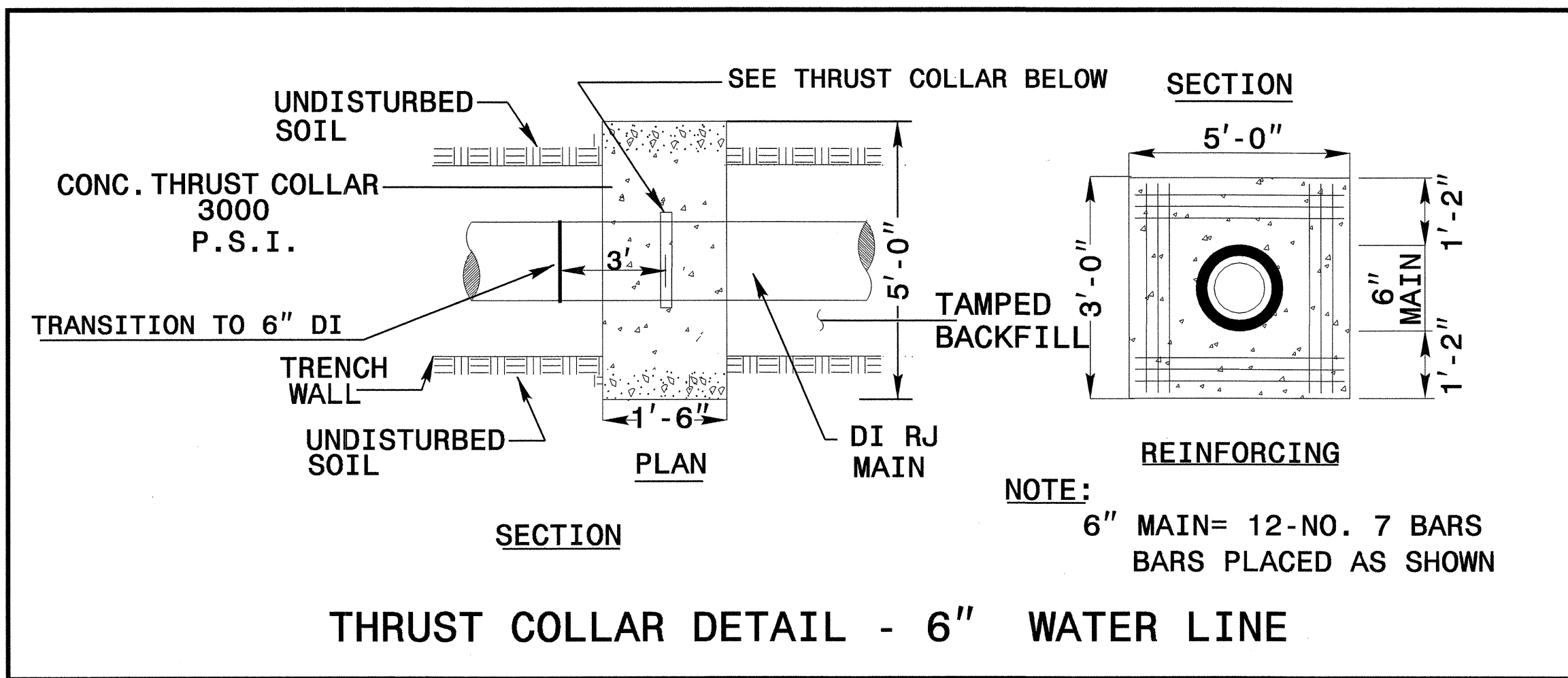
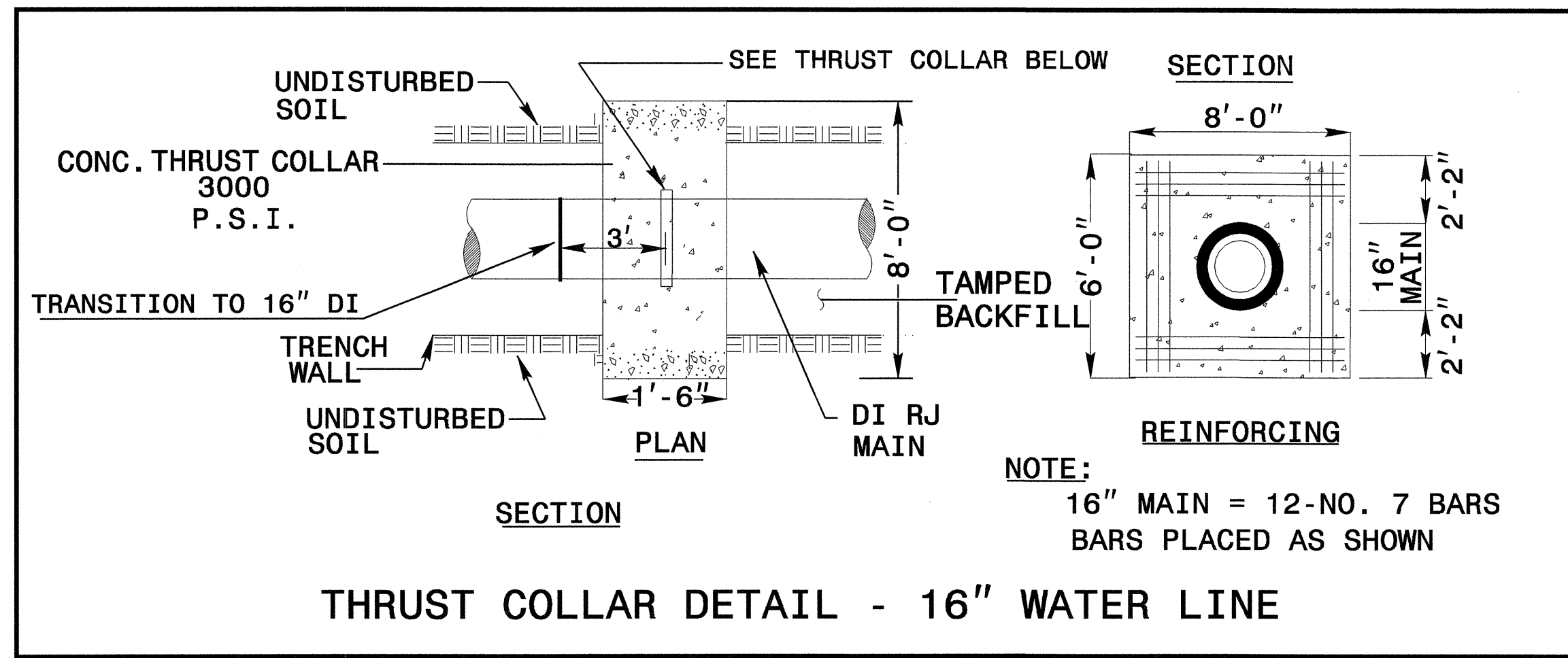
PROJECT REFERENCE NO.	SHEET NO.
B-3621	UC-3
DESIGNED BY: KAK	
DRAWN BY: KAK	
CHECKED BY: CDB	
APPROVED BY: CDB	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION PROJECT SERVICES UNIT PHONE: (919) 250-4128 FAX: (919) 250-4119	

UTILITY CONSTRUCTION

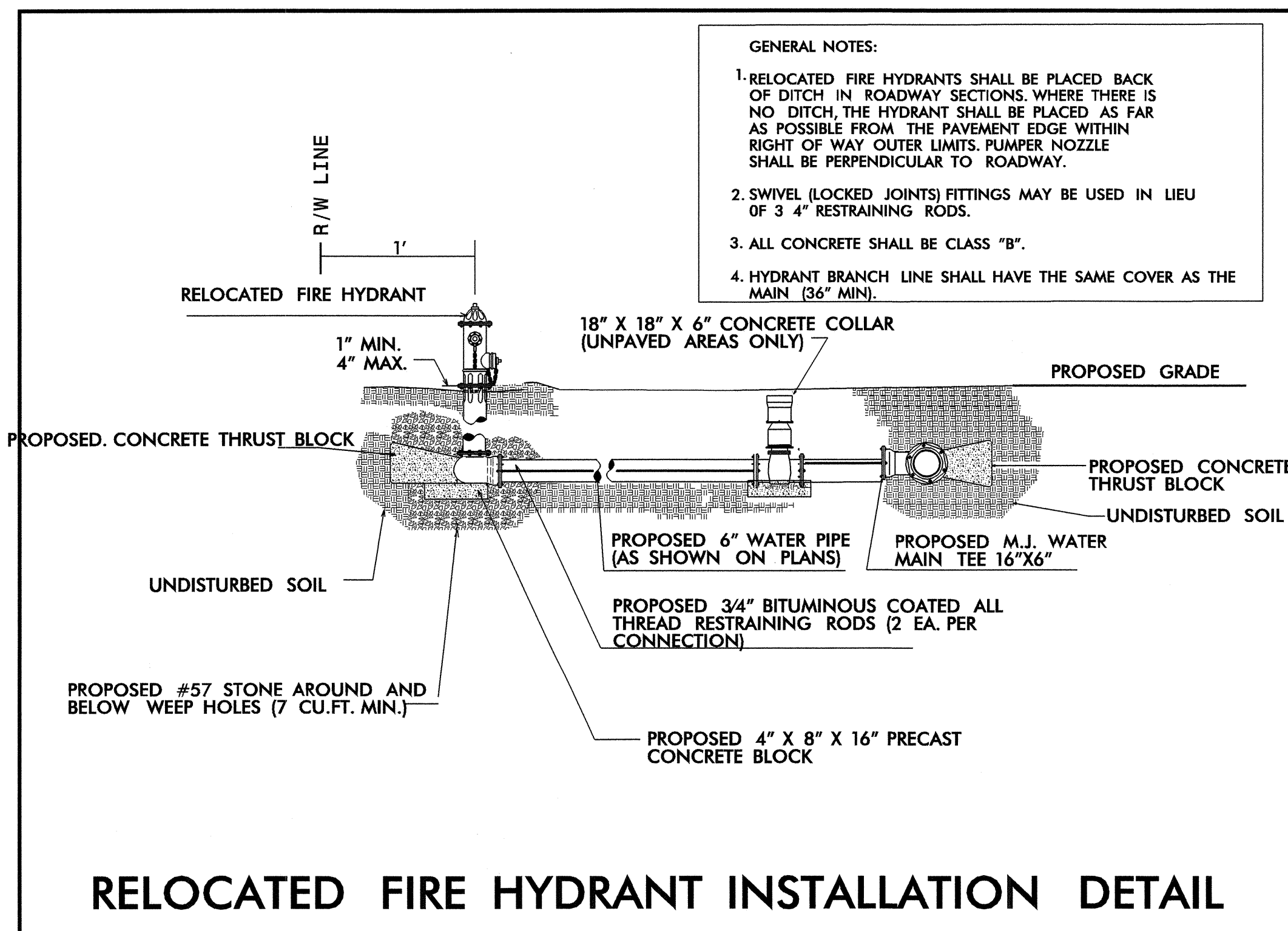


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\$\$\$\$\$USERNAME\$\$\$\$\$

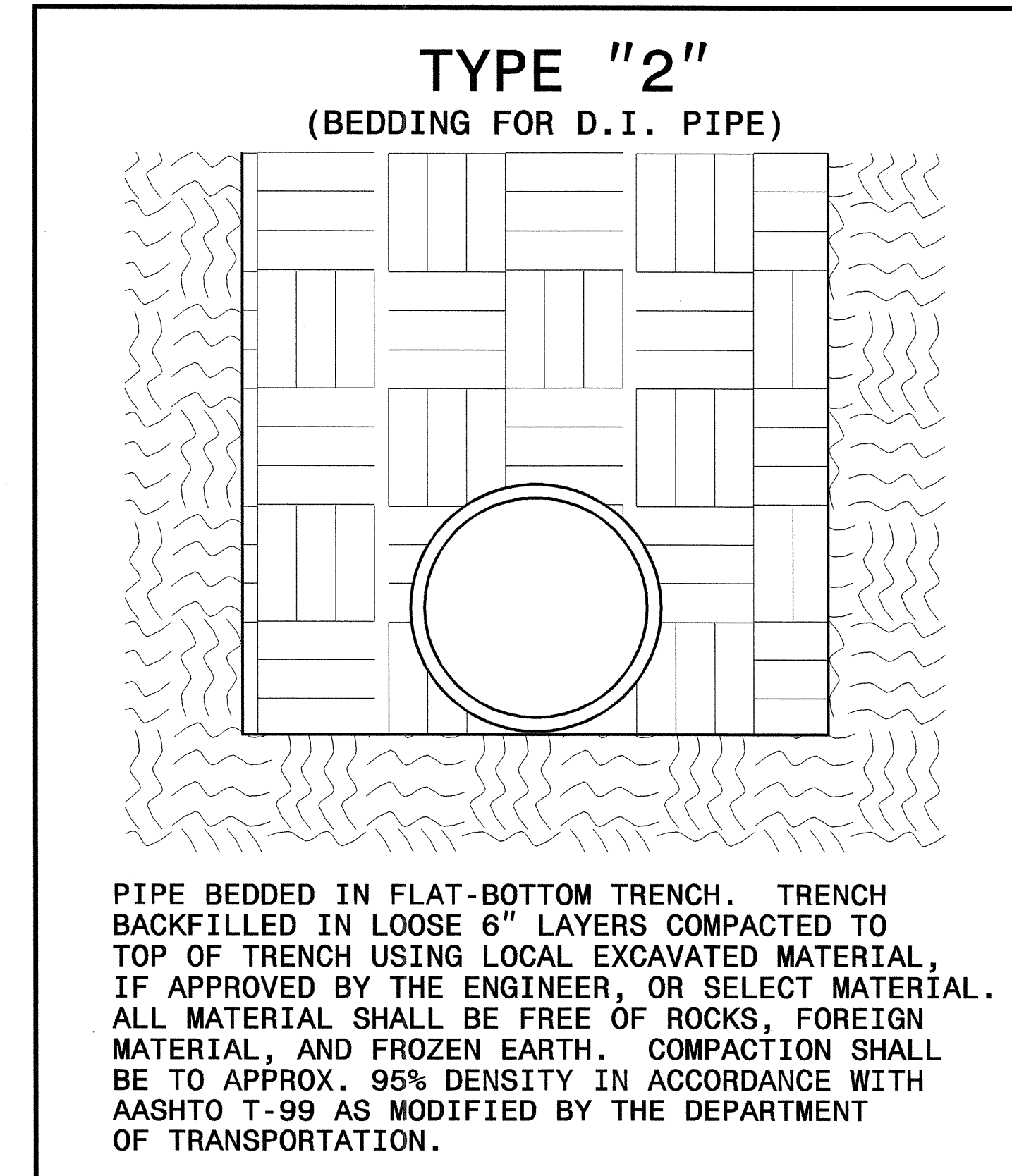
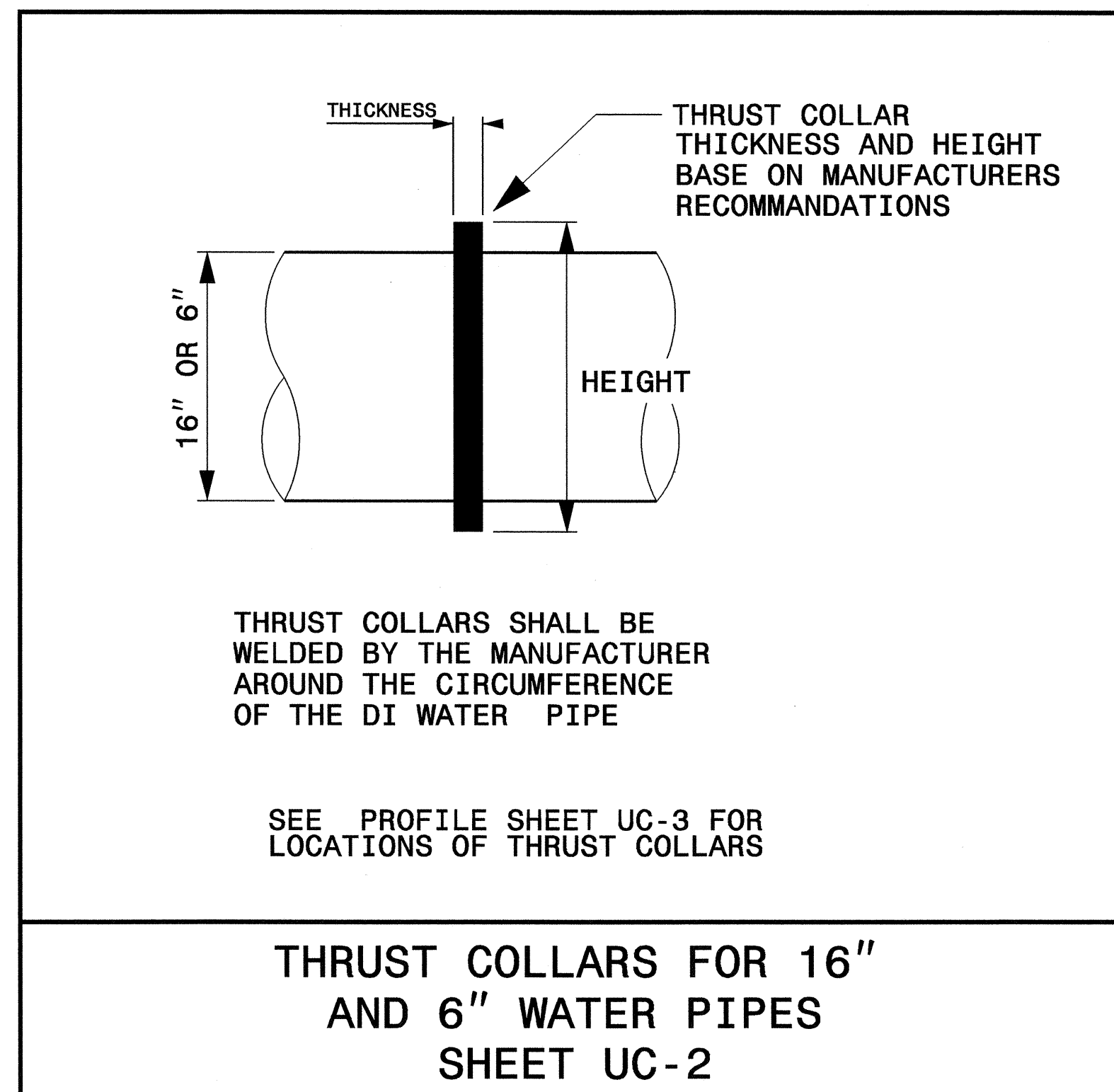
UTILITY CONSTRUCTION



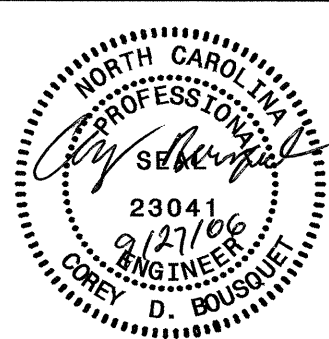
MAXIMUM TRENCH WIDTH AT TOP OF PIPE			
NOMINAL PIPE SIZE (INCHES)	TRENCH WIDTH (INCHES)	NOMINAL PIPE SIZE (INCHES)	TRENCH WIDTH (INCHES)
4	28	20	44
6	30	24	48
8	32	30	54
10	34	36	60
12	36	42	66
14	38	48	72
16	40	54	78
18	42		



- GENERAL NOTES:
- RELOCATED FIRE HYDRANTS SHALL BE PLACED BACK OF DITCH IN ROADWAY SECTIONS. WHERE THERE IS NO DITCH, THE HYDRANT SHALL BE PLACED AS FAR AS POSSIBLE FROM THE PAVEMENT EDGE WITHIN RIGHT OF WAY OUTER LIMITS. PUMPER NOZZLE SHALL BE PERPENDICULAR TO ROADWAY.
 - SWIVEL (LOCKED JOINTS) FITTINGS MAY BE USED IN LIEU OF 3 4" RESTRAINING RODS.
 - ALL CONCRETE SHALL BE CLASS "B".
 - HYDRANT BRANCH LINE SHALL HAVE THE SAME COVER AS THE MAIN (36" MIN).



8/17/99
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 kkam1_01_P521454

PROJECT REFERENCE NO. B-3621	SHEET NO. UC-5
DESIGNED BY: KAK	
DRAWN BY: KAK	
CHECKED BY: CDB	
APPROVED BY: CDB	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
DESIGN SERVICES UNIT PHONE: (919) 250-4128 FAX: (919) 250-4119	

UTILITY CONSTRUCTION PLANS ONLY

THRUST BLOCKS ARE DESIGNED FOR 200 P.S.I. EVEN THOUGH THE TEST PRESSURE IS 150 PSI

HORIZONTAL RESTRAINT (ALL AREAS GIVEN ARE IN SQUARE FEET)								VERTICAL RESTRAINT (ALL VOLUMES GIVEN ARE IN CUBIC YARDS)**									
PIPE SIZE	DEGREE OF BEND	LBS. STATIC THRUST *	ALLOWABLE SOIL BEARING (PSF)								PIPE SIZE	RESTRAINING RODS NO. REQ'D	DEGREE OF BEND	RESTRAINING RODS DIA.			
			1000	2000	3000	4000	5000	6000	7000	8000				11/4"	2 1/2"	4 1/2"	
4"	11/4"	616										4"	2	1/2"	0.25	0.50	0.75
	22 1/2"	1,226										6"	2	1/2"	0.50	1.0	1.75
	45°	2,405										8"	2	5/8"	0.75	1.50	3.0
	90°	4,444										10"	2	3/4"	1.25	2.25	4.50
6"	TEE/PLUG	5,142										12"	2	7/8"	1.75	3.25	6.50
	11/4"	1,382										14"	4	5/8"	2.25	4.50	8.75
	22 1/2"	2,758															
	45°	5,409															
90°	9,999																
8"	TEE/PLUG	7,068										16"	4	3/4"	3.0	6.0	11.50
	11/4"	2,424															
	22 1/2"	4,904															
	45°	9,619															
10"	90°	17,773									**INCLUDES 1.50 SAFETY FACTOR						
	TEE/PLUG	12,568															
	11/4"	3,846															
	22 1/2"	7,691															
12"	45°	15,028															
	90°	27,768															
	TEE/PLUG	19,635															
	11/4"	5,643															
14"	22 1/2"	11,032															
	45°	21,641															
	90°	39,987															
	TEE/PLUG	28,274															
16"	11/4"	7,544															
	22 1/2"	15,016															
	45°	29,455															
	90°	54,426															
TEE/PLUG		38,485															
		9,854															
		19,512															
16"	45°	36,711															
	90°	71,085															
	TEE/PLUG	50,265															

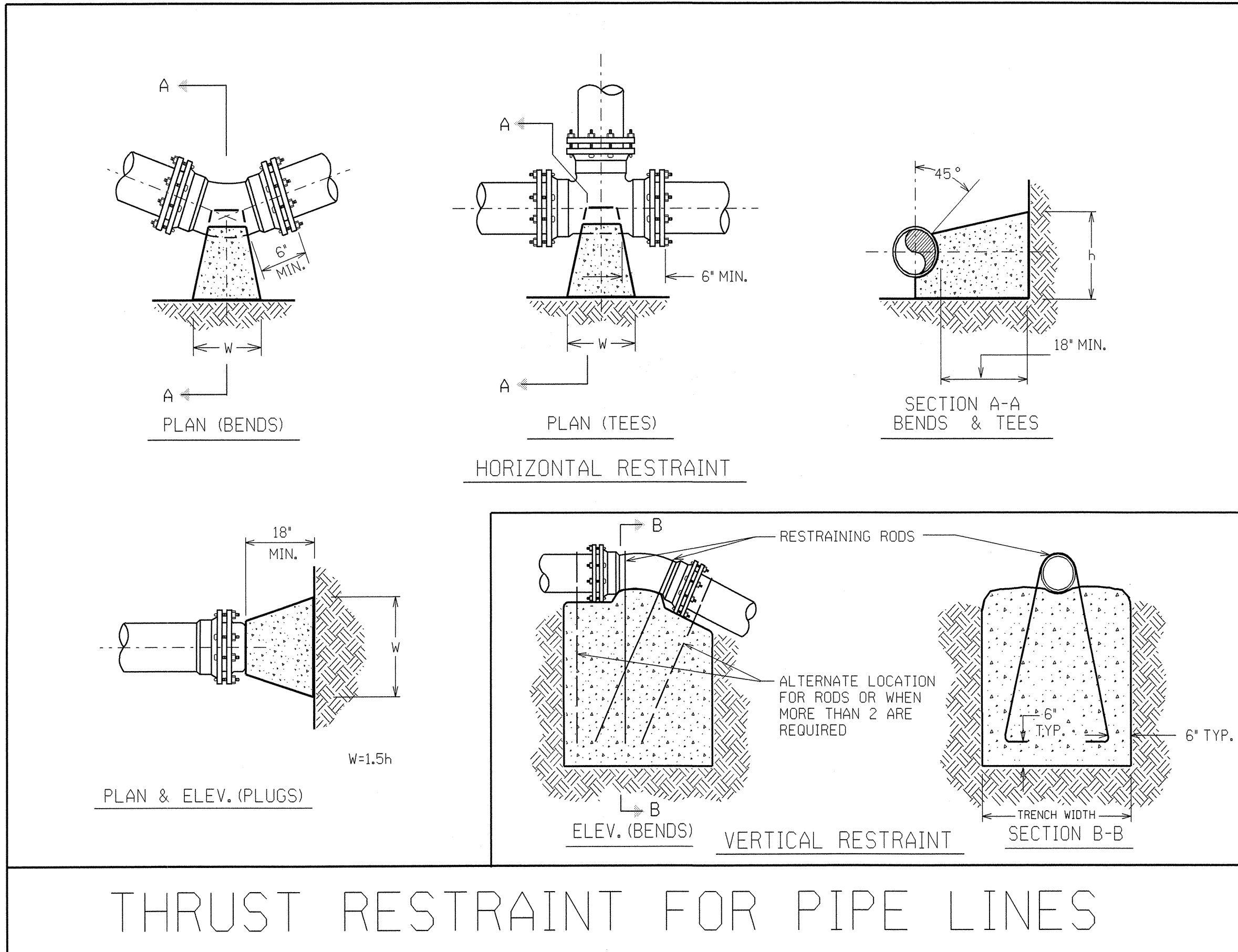
- * INCLUDES 1.25 SAFETY FACTOR
- GENERAL NOTES:
- CONCRETE SHALL BE CLASS "B".
 - CONCRETE SHALL NOT CONTACT BOLTS ENDS OF MECHANICAL JOINT FITTINGS.
 - CONSULT WITH ENGINEER FOR CONCRETE REQUIREMENTS ON MAINS LARGER THAN 16 INCHES. (FOR VERTICAL & HORIZONTAL BENDS)
 - ALLOWABLE SOIL BEARING SHALL BE DETERMINED BY THE ENGINEER.

NO.	DATE	DESCRIPTION

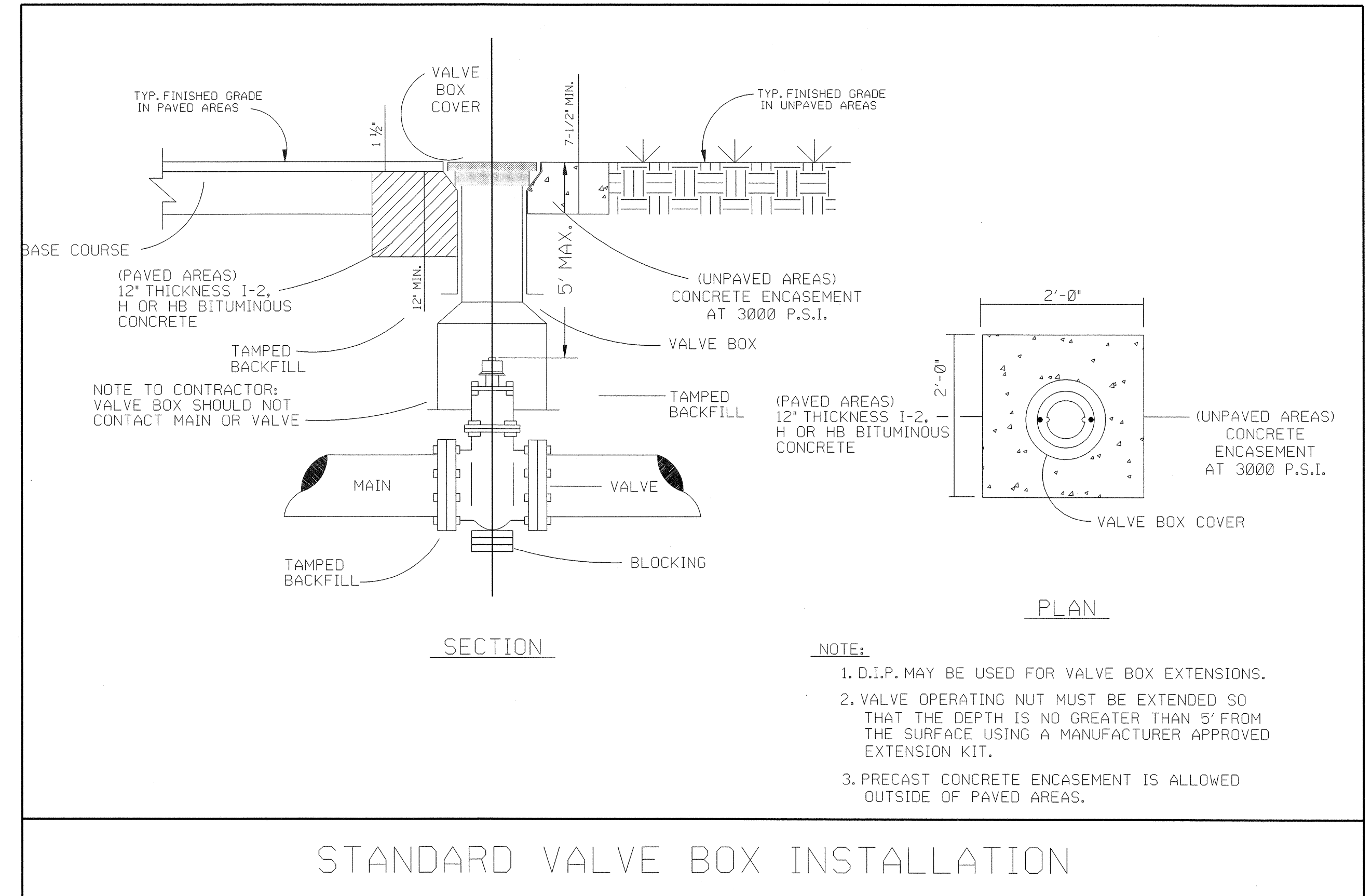
SHEET 2 OF 2

THRUST RESTRAINT FOR WATER MAINS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
RALEIGH, N.C.



THRUST RESTRAINT FOR PIPE LINES



STANDARD VALVE BOX INSTALLATION

8/17/99

11

11

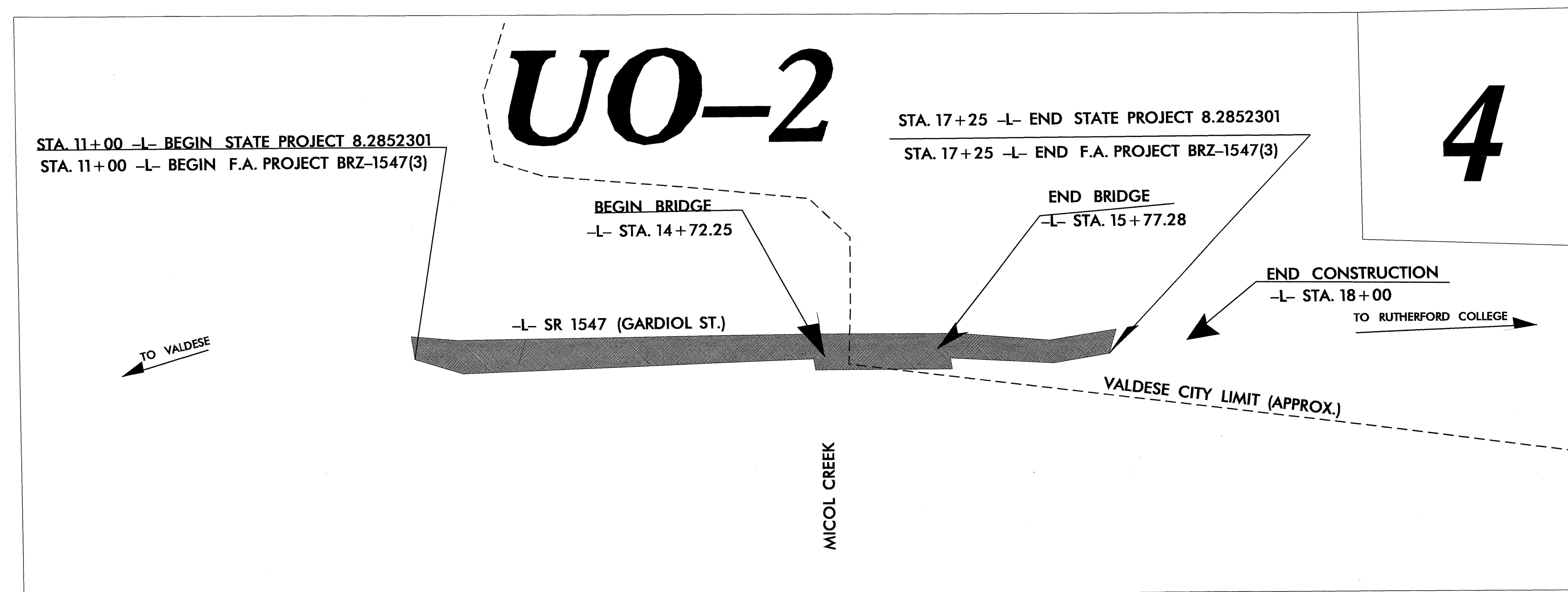
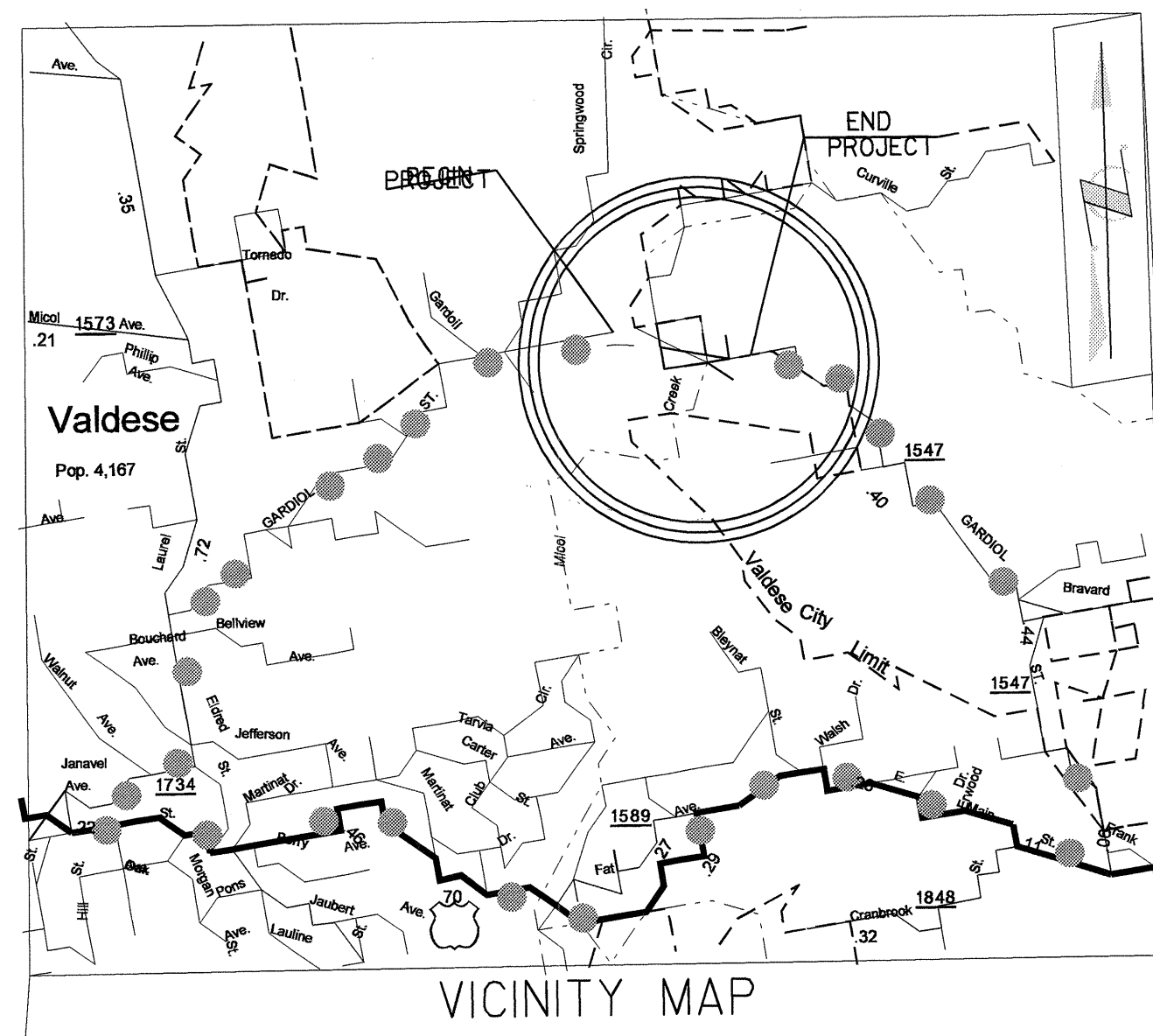
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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

**UTILITIES BY OTHERS PLANS
BURKE COUNTY**

**LOCATION: BRIDGE 148 OVER MICOL CREEK
ON SR 1547**

TYPE OF WORK: RELOCATION OF POWER AND TELEPHONE LINES



TIP: B-3621

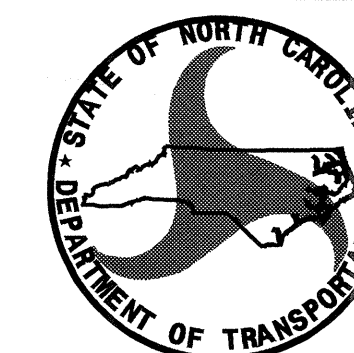
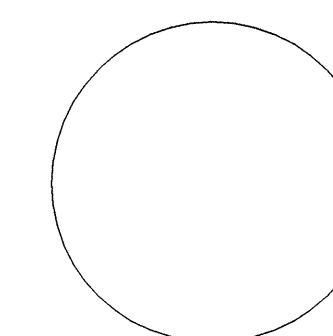
INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UO-1	TITLE SHEET
UO-2	UTILITIES BY OTHERS PLAN SHEETS

UTILITY OWNERS ON PROJECT

- (1) DUKE- POWER
- (2) SPRINT- TELEPHONE.

SEAL



PREPARED IN THE OFFICE OF:
**DIVISION OF HIGHWAYS
DESIGN SERVICES
UTILITY SECTION**

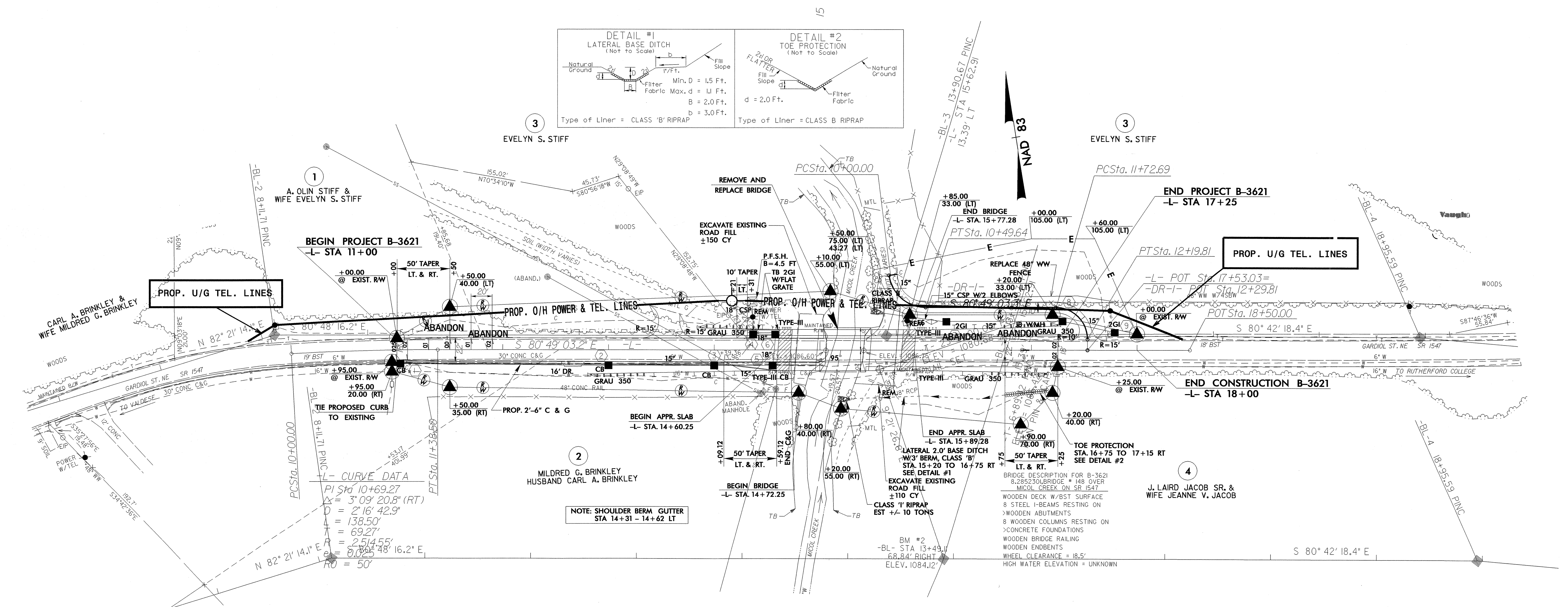
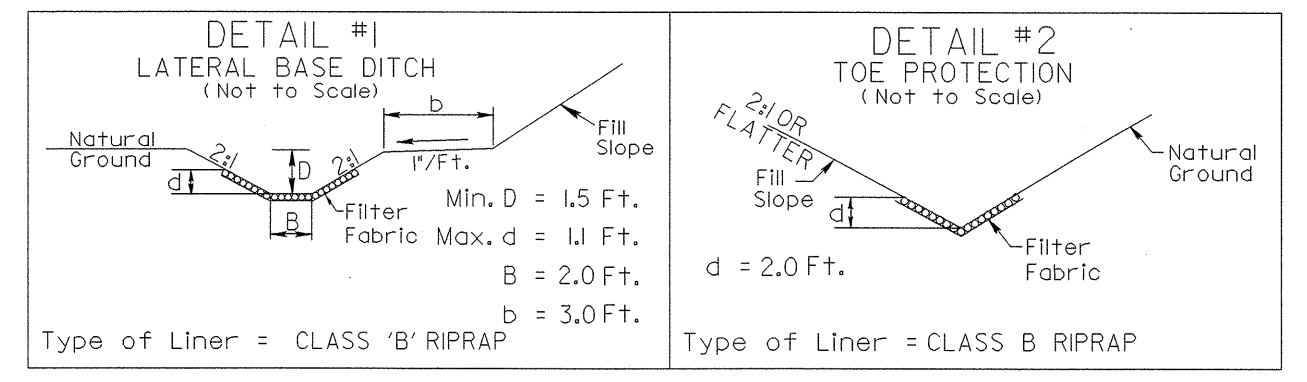
1591 MAIL SERVICES CENTER
RALEIGH NC 27699-1591
PHONE (919) 250-4128
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Roger Worthington, P.E. UTILITIES SECTION ENGINEER
Corey Bousquet, P.E. UTILITIES SQUAD LEADER PROJECT ENGINEER
Kifah Kamil UTILITIES PROJECT DESIGNER

UTILITIES BY OTHERS

NOTE: ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS

8/17/99



REVISIONS

28-AUG-2003 10:12:11 A.M. Pr-j \b3621_04-psht_UO2.dgn