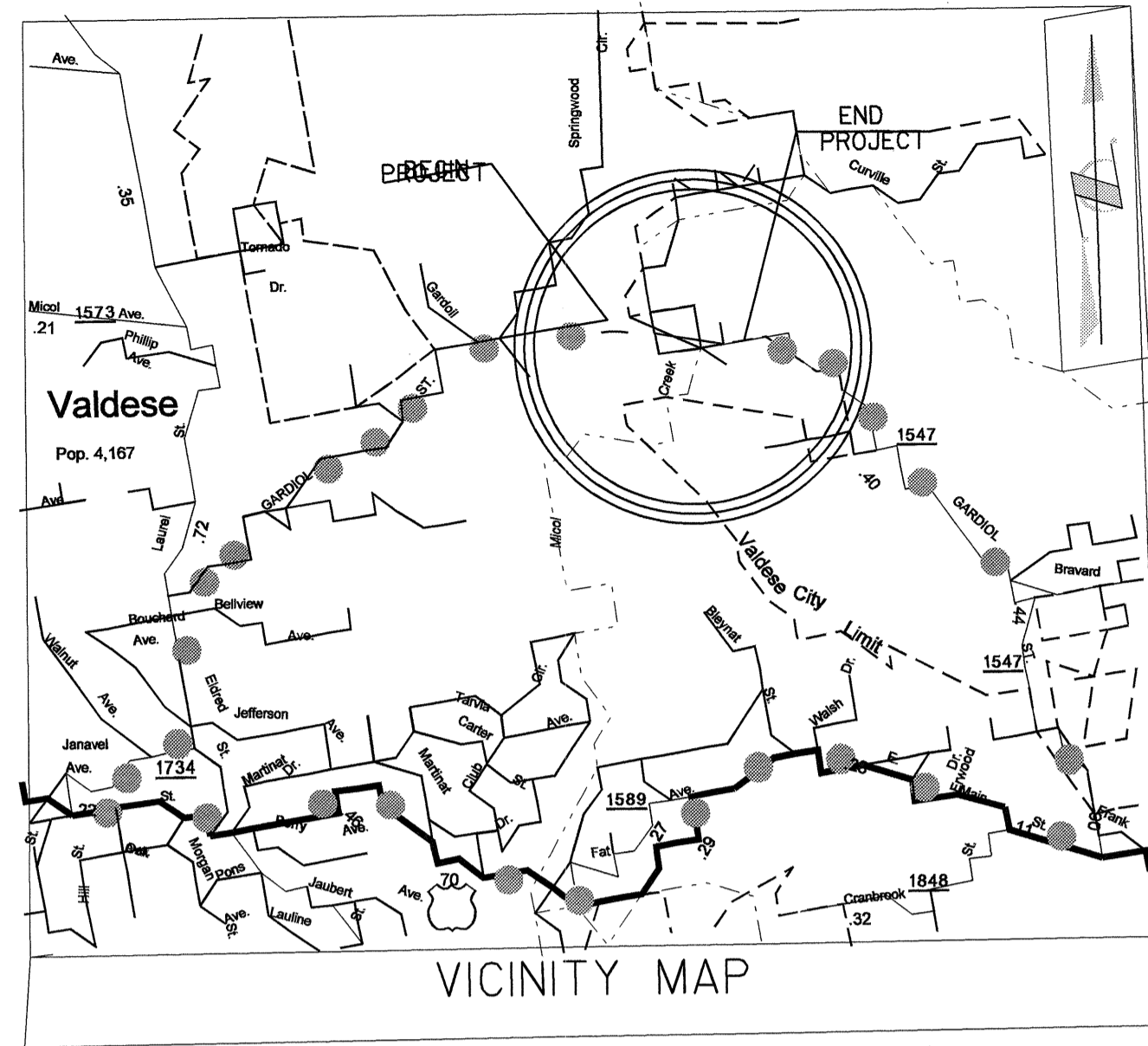


STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**UTILITY CONSTRUCTION PLANS  
BURKE COUNTY**

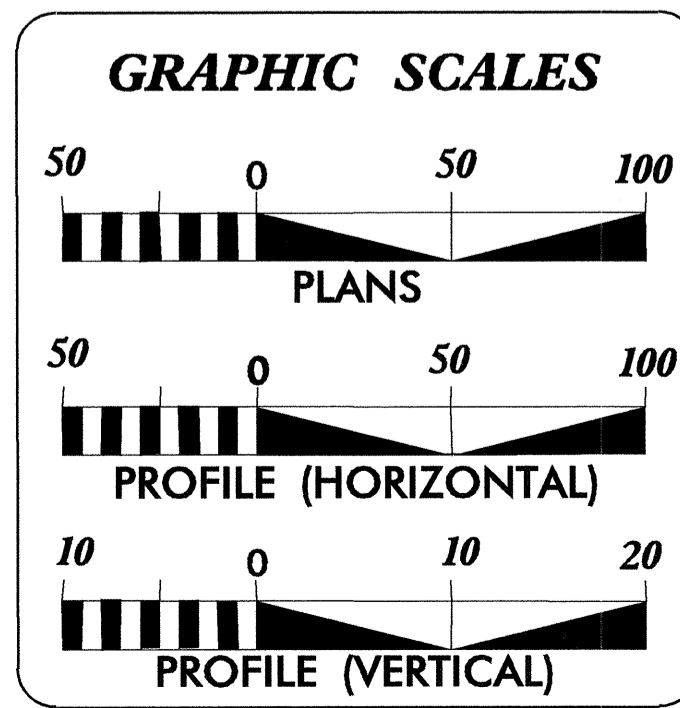
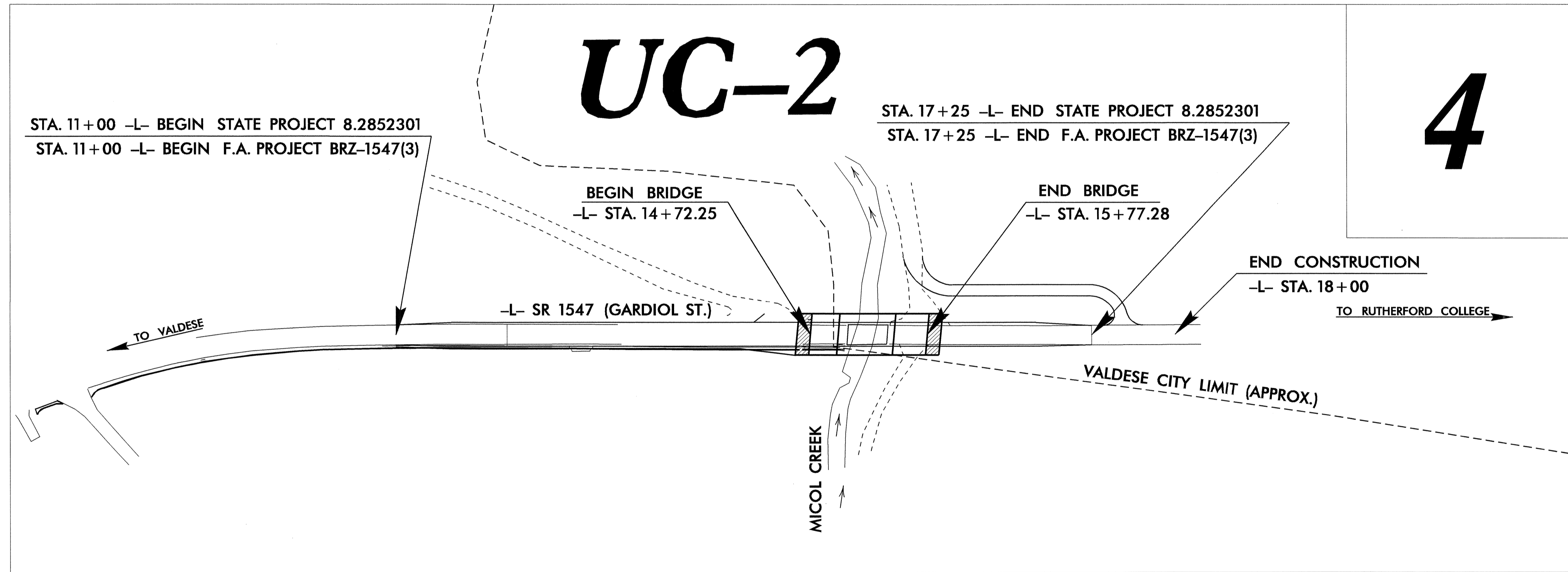
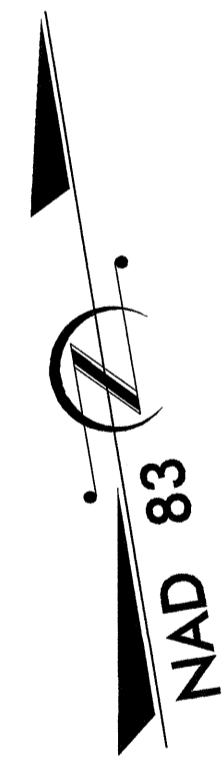
**LOCATION: BRIDGE 148 OVER MICOL CREEK  
ON SR 1547**

**TYPE OF WORK: RELOCATION OF WATER LINES**



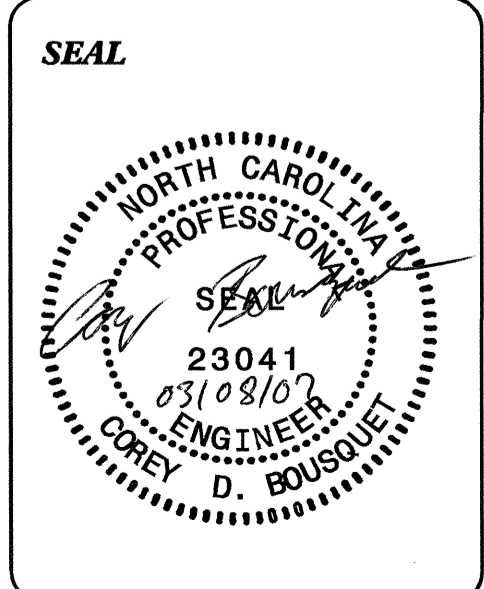
● ● ● DETOUR ROUTE

**TIP: B-3621**



<b>INDEX OF SHEETS</b>	
<u>SHEET NO.</u>	<u>DESCRIPTION</u>
UC-1	TITLE SHEET
UC-2	UTILITY CONSTRUCTION PLAN SHEET
UC-3	PROFILE SHEET
UC-4, UC-5	DETAILS SHEET(S)

<b>WATER AND SEWER OWNERS ON PROJECT</b>	
(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

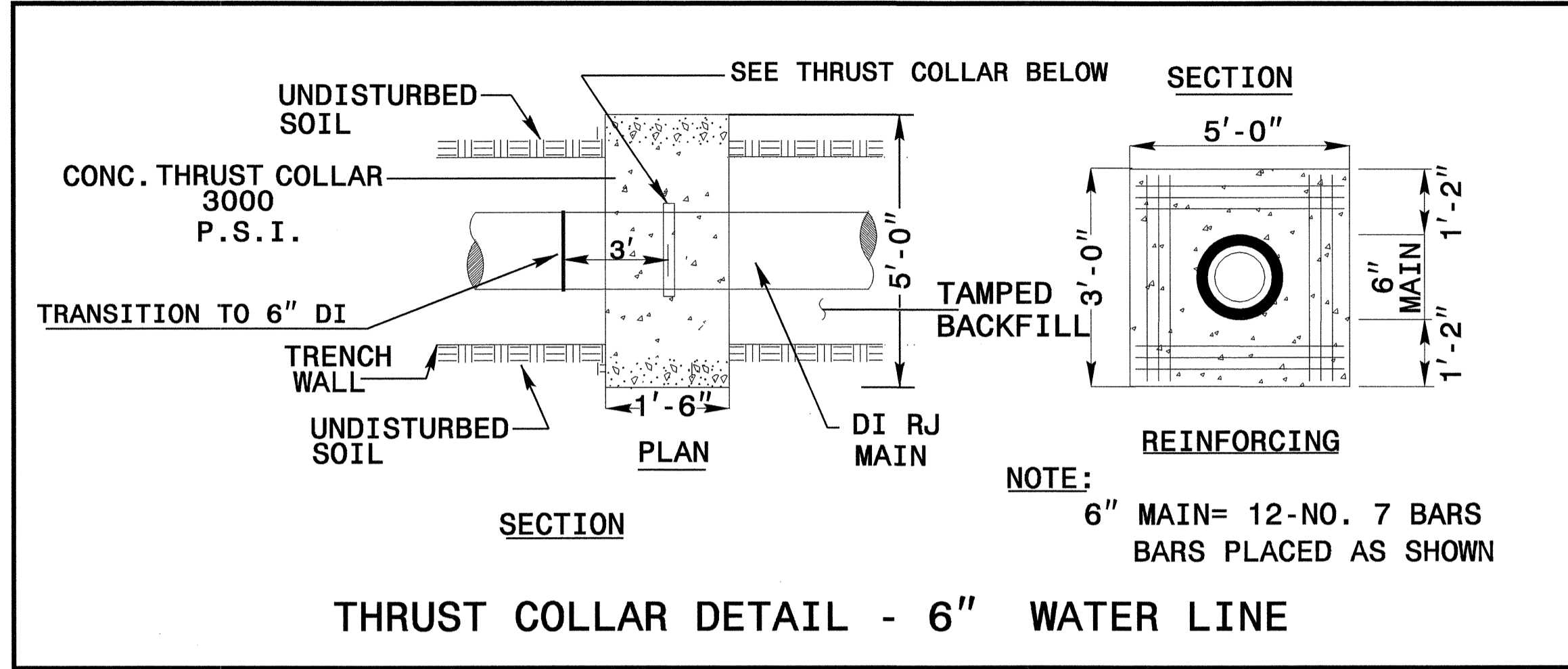
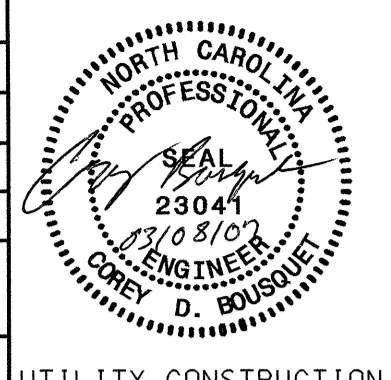
**Roger Worthington, P.E.** UTILITIES SECTION ENGINEER  
**Corey Bousquet, P.E.** UTILITIES SQUAD LEADER PROJECT ENGINEER  
**Kifah Kamil** UTILITIES PROJECT DESIGNER







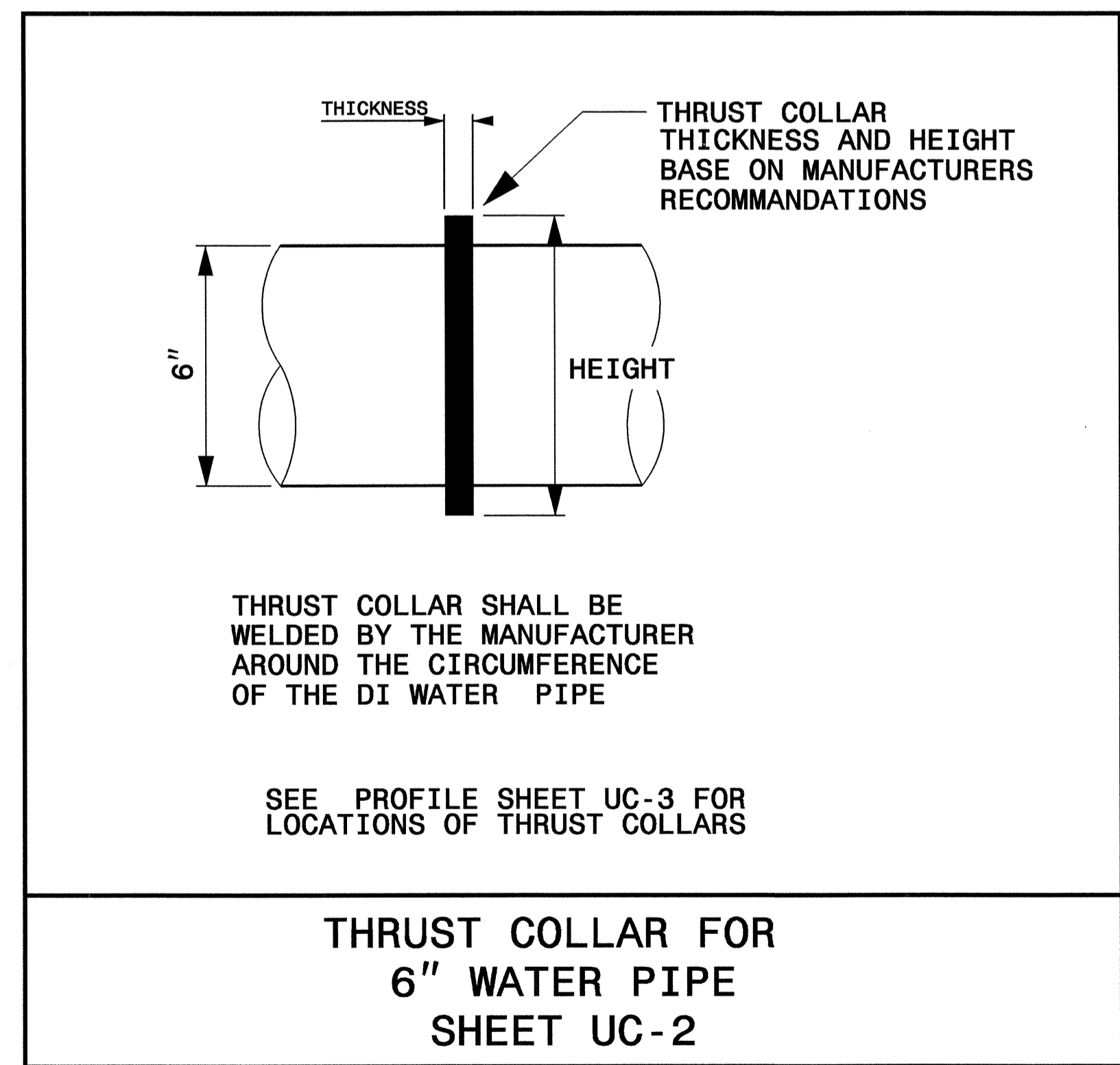




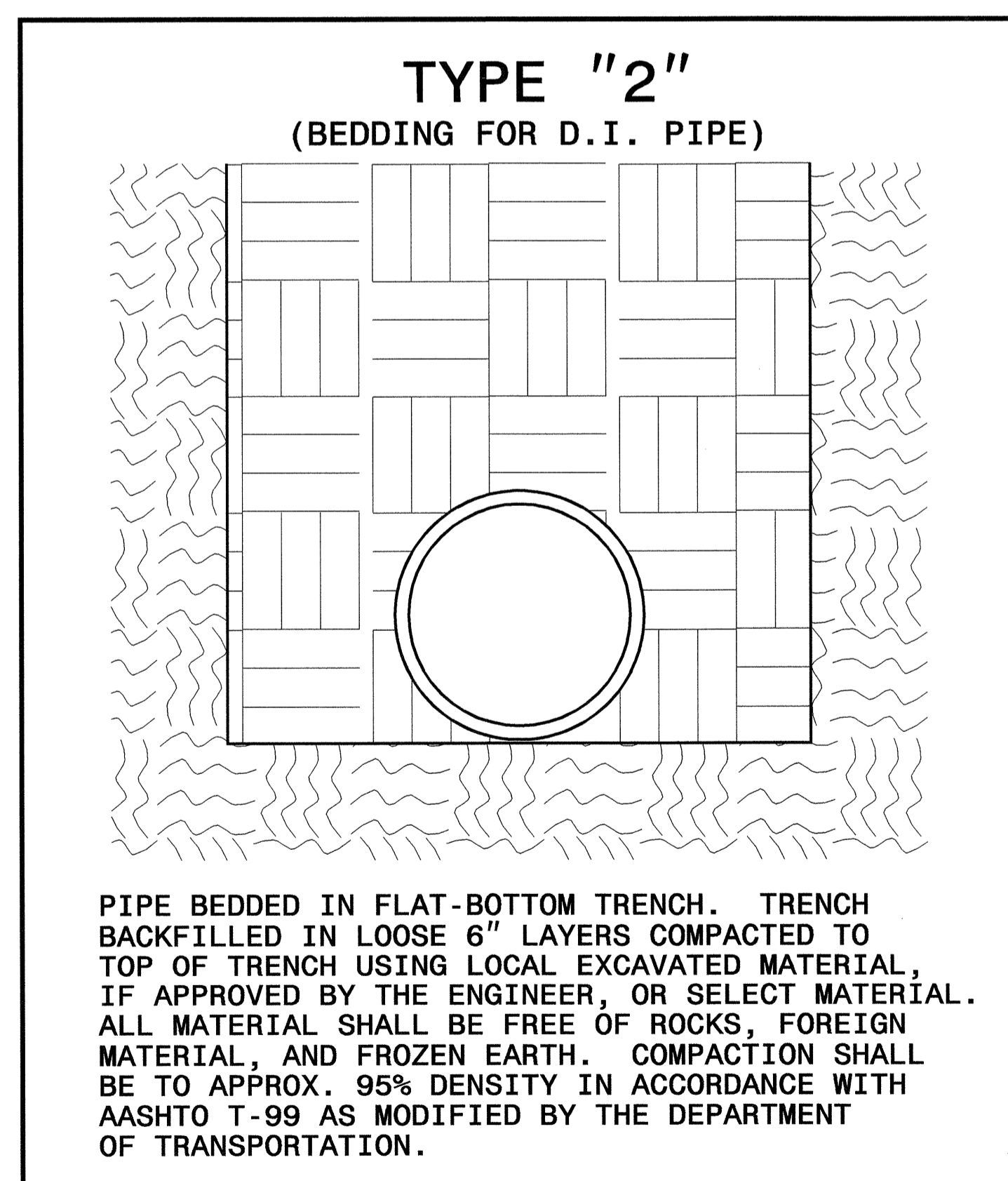
THRUST COLLAR DETAIL - 6" WATER LINE

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		

UTILITY CONSTRUCTION



THRUST COLLAR FOR  
6" WATER PIPE  
SHEET UC-2



**UTILITY CONSTRUCTION**

**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		DEGREE OF BEND		
			1000	2000	3000	4000	5000	6000	7000	8000		NO. REQ'D	DIA.	11/4°	22 1/2°	45°
4"	11/4°	616	1	1	1	1	1	1	1	1	1	2	1/2"	0.25	0.50	0.75
	22 1/2°	1,226	2	2	2	2	2	2	2	2	2	2	1/2"	0.50	1.0	1.75
	45°	2,405	4	4	4	4	4	4	4	4	4	4	5/8"	0.75	1.50	3.0
	90°	4,444	8	8	8	8	8	8	8	8	8	8	3/4"	1.25	2.25	4.50
	TEE/PLUG	3,143	3	3	3	3	3	3	3	3	3	3	2	7/8"	1.75	3.25
6"	11/4°	1,365	1	1	1	1	1	1	1	1	1	2	1/2"	0.25	0.50	0.75
	22 1/2°	2,758	2	2	2	2	2	2	2	2	2	2	1/2"	0.50	1.0	1.75
	45°	5,409	4	4	4	4	4	4	4	4	4	4	5/8"	0.75	1.50	3.0
	90°	9,899	8	8	8	8	8	8	8	8	8	8	3/4"	1.25	2.25	4.50
	TEE/PLUG	7,068	7	7	7	7	7	7	7	7	7	7	2	7/8"	1.75	3.25
8"	11/4°	2,424	1	1	1	1	1	1	1	1	1	2	1/2"	0.25	0.50	0.75
	22 1/2°	4,904	2	2	2	2	2	2	2	2	2	2	1/2"	0.50	1.0	1.75
	45°	9,619	4	4	4	4	4	4	4	4	4	4	5/8"	0.75	1.50	3.0
	90°	17,773	8	8	8	8	8	8	8	8	8	8	3/4"	1.25	2.25	4.50
	TEE/PLUG	12,568	13	13	13	13	13	13	13	13	13	13	2	7/8"	1.75	3.25
10"	11/4°	3,846	1	1	1	1	1	1	1	1	1	2	1/2"	0.25	0.50	0.75
	22 1/2°	7,661	2	2	2	2	2	2	2	2	2	2	1/2"	0.50	1.0	1.75
	45°	15,028	4	4	4	4	4	4	4	4	4	4	5/8"	0.75	1.50	3.0
	90°	27,768	8	8	8	8	8	8	8	8	8	8	3/4"	1.25	2.25	4.50
	TEE/PLUG	19,635	20	20	20	20	20	20	20	20	20	20	2	7/8"	1.75	3.25
12"	11/4°	5,543	1	1	1	1	1	1	1	1	1	2	1/2"	0.25	0.50	0.75
	22 1/2°	11,032	2	2	2	2	2	2	2	2	2	2	1/2"	0.50	1.0	1.75
	45°	21,641	4	4	4	4	4	4	4	4	4	4	5/8"	0.75	1.50	3.0
	90°	38,997	8	8	8	8	8	8	8	8	8	8	3/4"	1.25	2.25	4.50
	TEE/PLUG	28,274	28	28	28	28	28	28	28	28	28	28	2	7/8"	1.75	3.25
14"	11/4°	7,544	1	1	1	1	1	1	1	1	1	2	1/2"	0.25	0.50	0.75
	22 1/2°	15,016	2	2	2	2	2	2	2	2	2	2	1/2"	0.50	1.0	1.75
	45°	29,455	4	4	4	4	4	4	4	4	4	4	5/8"	0.75	1.50	3.0
	90°	54,426	8	8	8	8	8	8	8	8	8	8	3/4"	1.25	2.25	4.50
	TEE/PLUG	38,485	38	38	38	38	38	38	38	38	38	38	2	7/8"	1.75	3.25
16"	11/4°	9,854	1	1	1	1	1	1	1	1	1	2	1/2"	0.25	0.50	0.75
	22 1/2°	19,612	2	2	2	2	2	2	2	2	2	2	1/2"	0.50	1.0	1.75
	45°	38,471	4	4	4	4	4	4	4	4	4	4	5/8"	0.75	1.50	3.0
	90°	71,085	8	8	8	8	8	8	8	8	8	8	3/4"	1.25	2.25	4.50
	TEE/PLUG	50,285	50	50	50	50	50	50	50	50	50	50	2	7/8"	1.75	3.25

\*\*INCLUDES 1.50 SAFETY FACTOR

• INCLUDES 1.25 SAFETY FACTOR

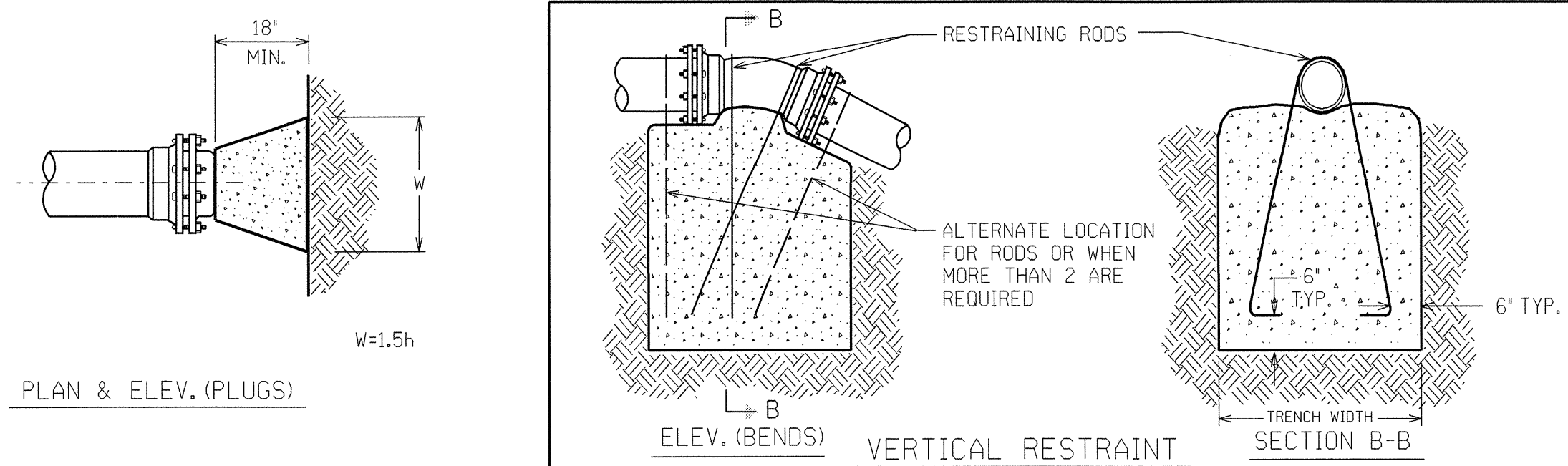
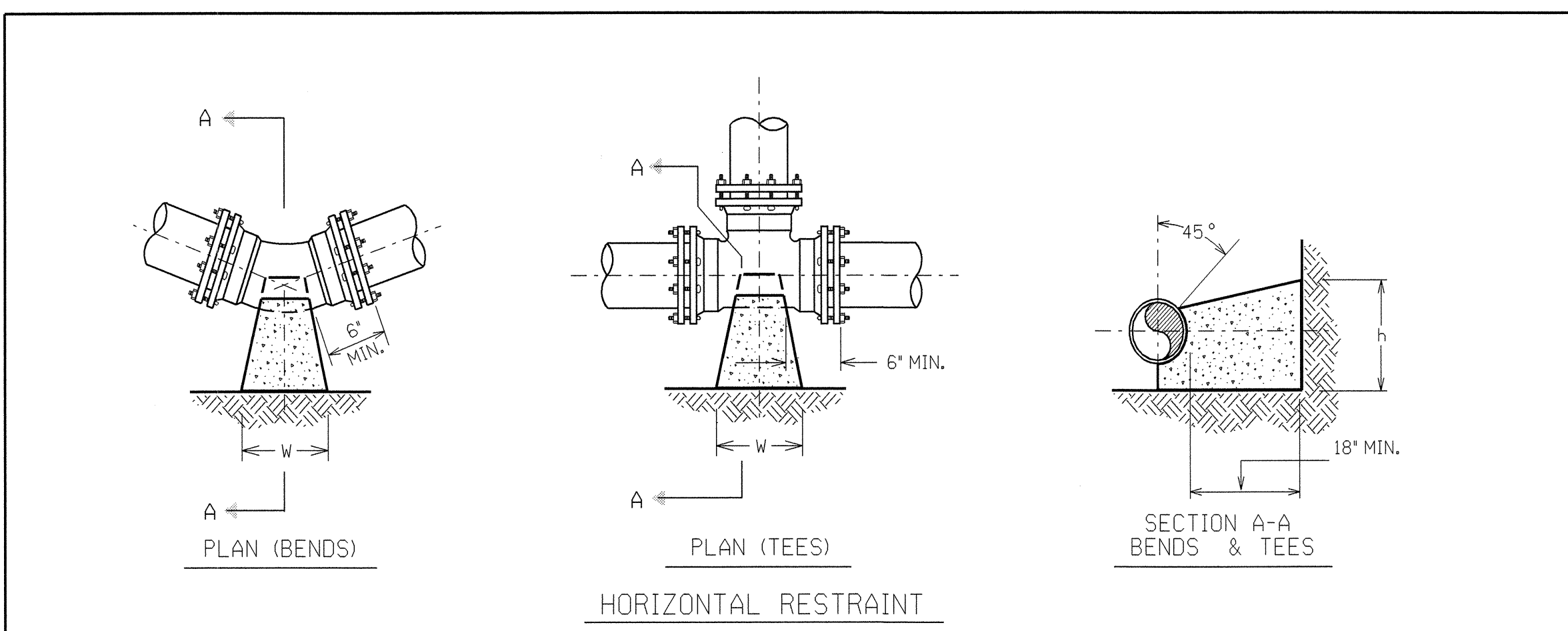
GENERAL NOTES:  
 1. CONCRETE SHALL BE CLASS "B".  
 2. CONCRETE SHALL NOT CONTACT BOLTS ENDS OF MECHANICAL JOINT FITTINGS.  
 3. CONSULT WITH ENGINEER FOR CONCRETE REQUIREMENTS ON MAINS LARGER THAN 16 INCHES. (FOR VERTICAL & HORIZONTAL BENDS)  
 4. ALLOWABLE SOIL BEARING SHALL BE DETERMINED BY THE ENGINEER.

NO.	DATE	DESCRIPTION

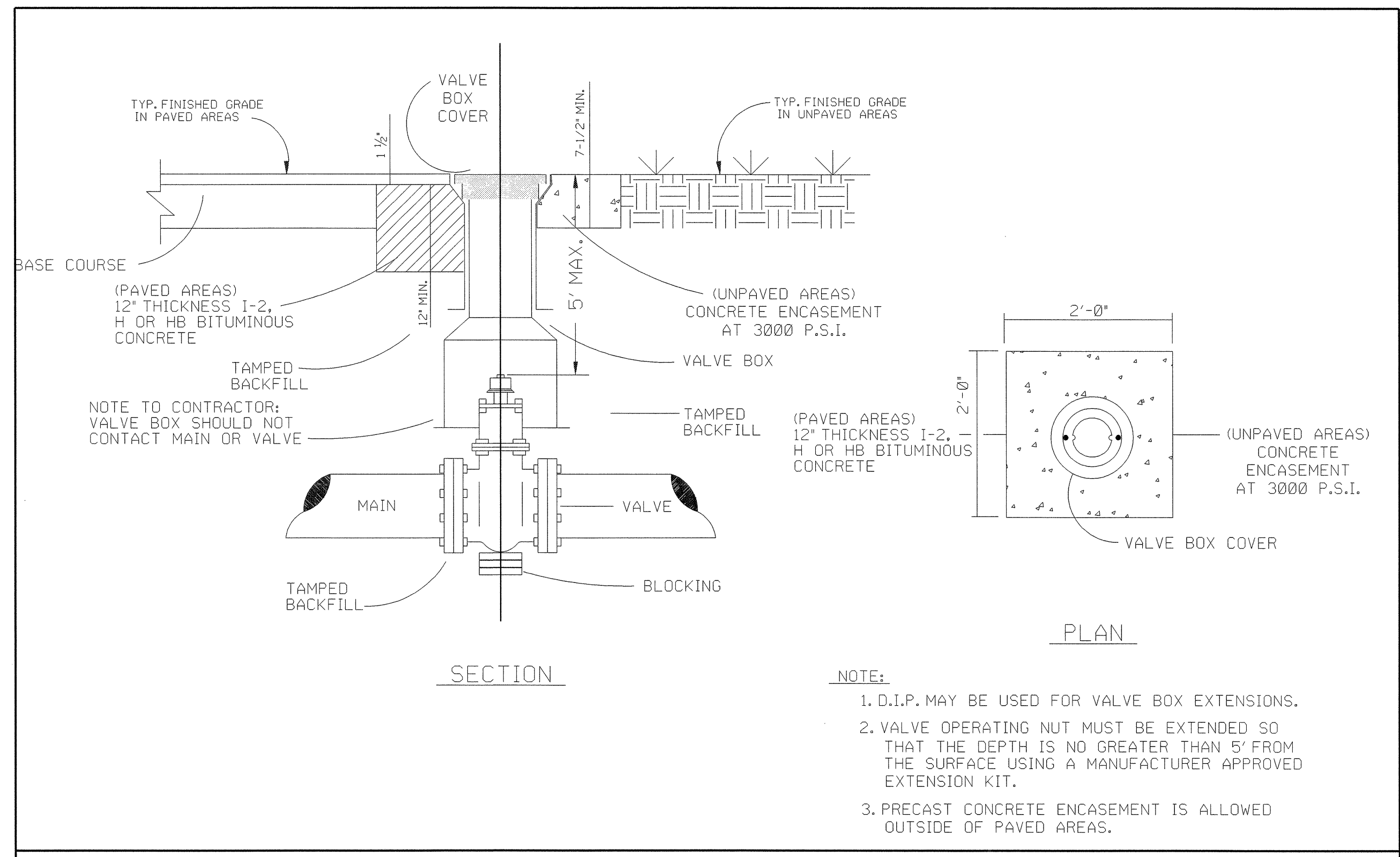
SHEET 2 OF 2

**THRUST RESTRAINT FOR WATER MAINS**

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



**THRUST RESTRAINT FOR PIPE LINES**



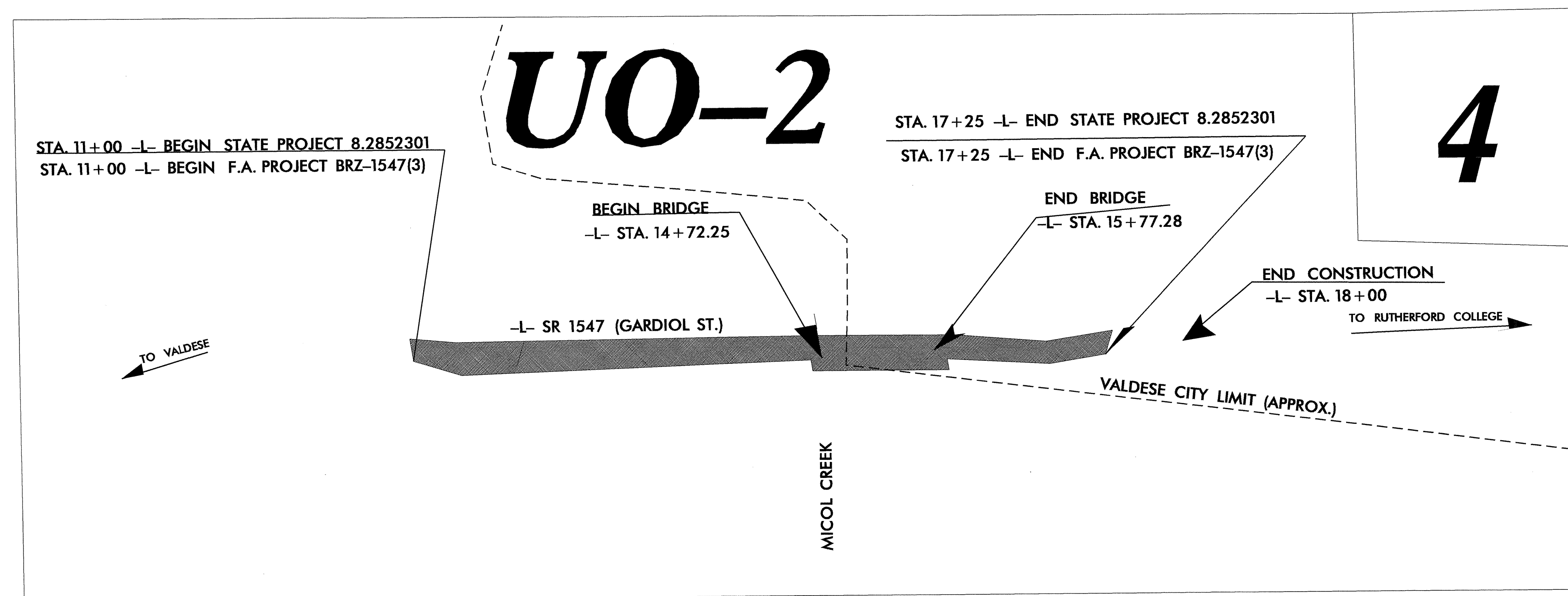
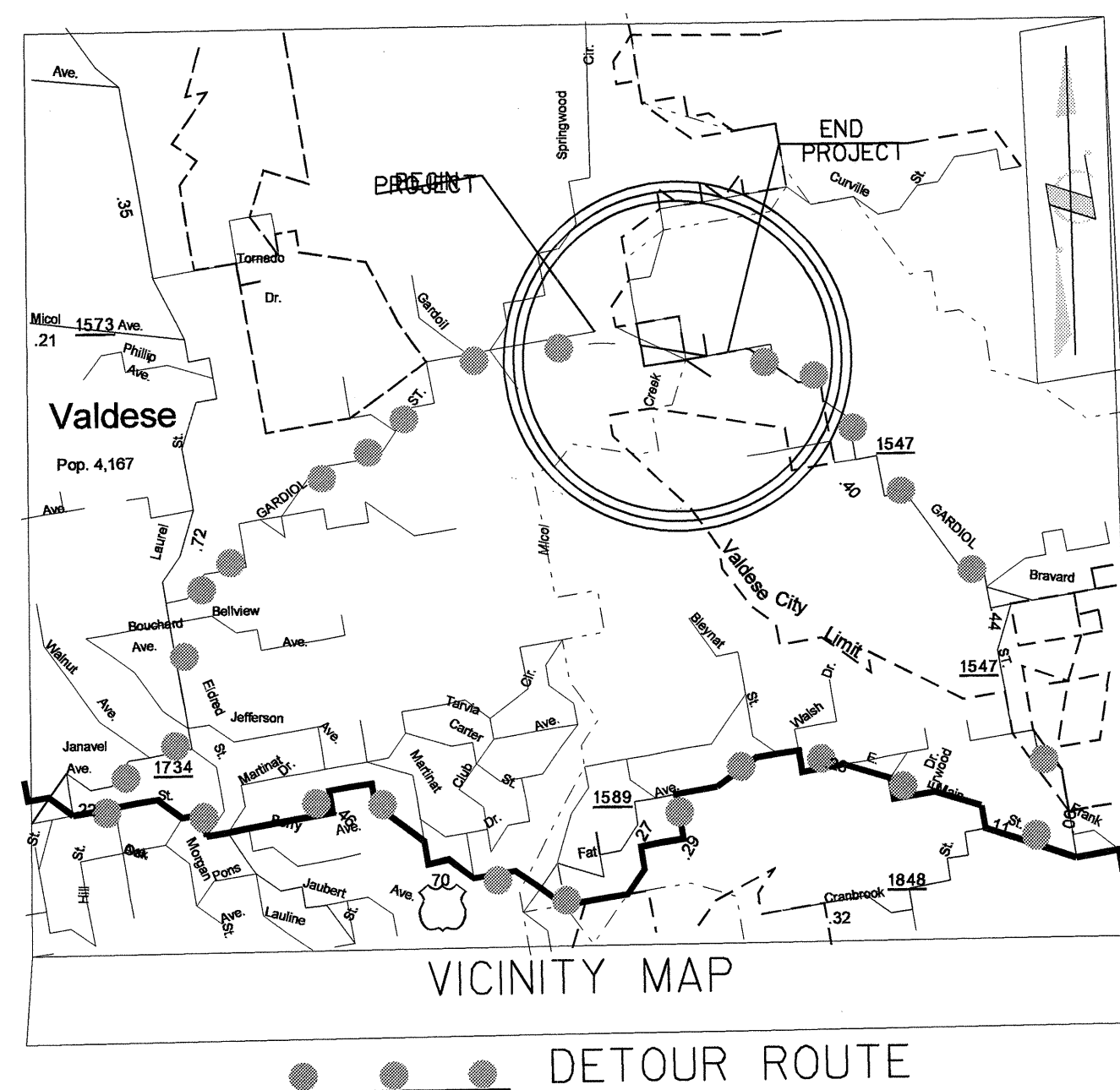
**STANDARD VALVE BOX INSTALLATION**

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**

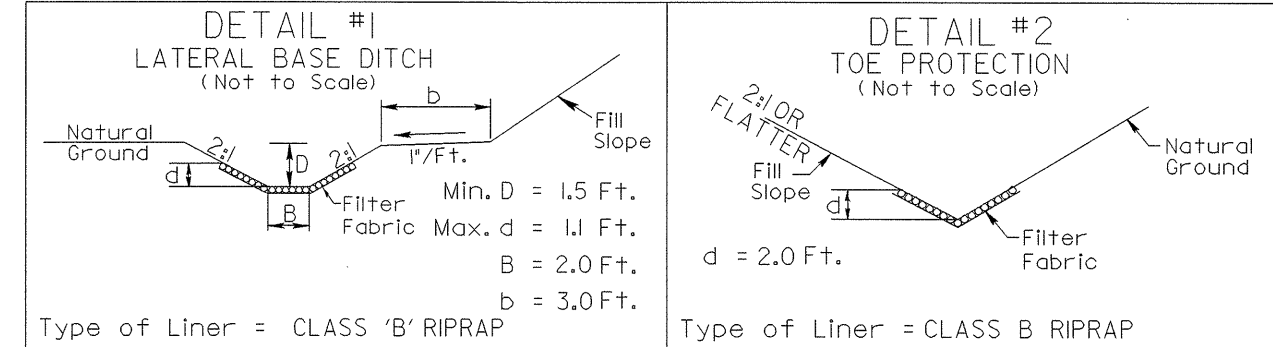
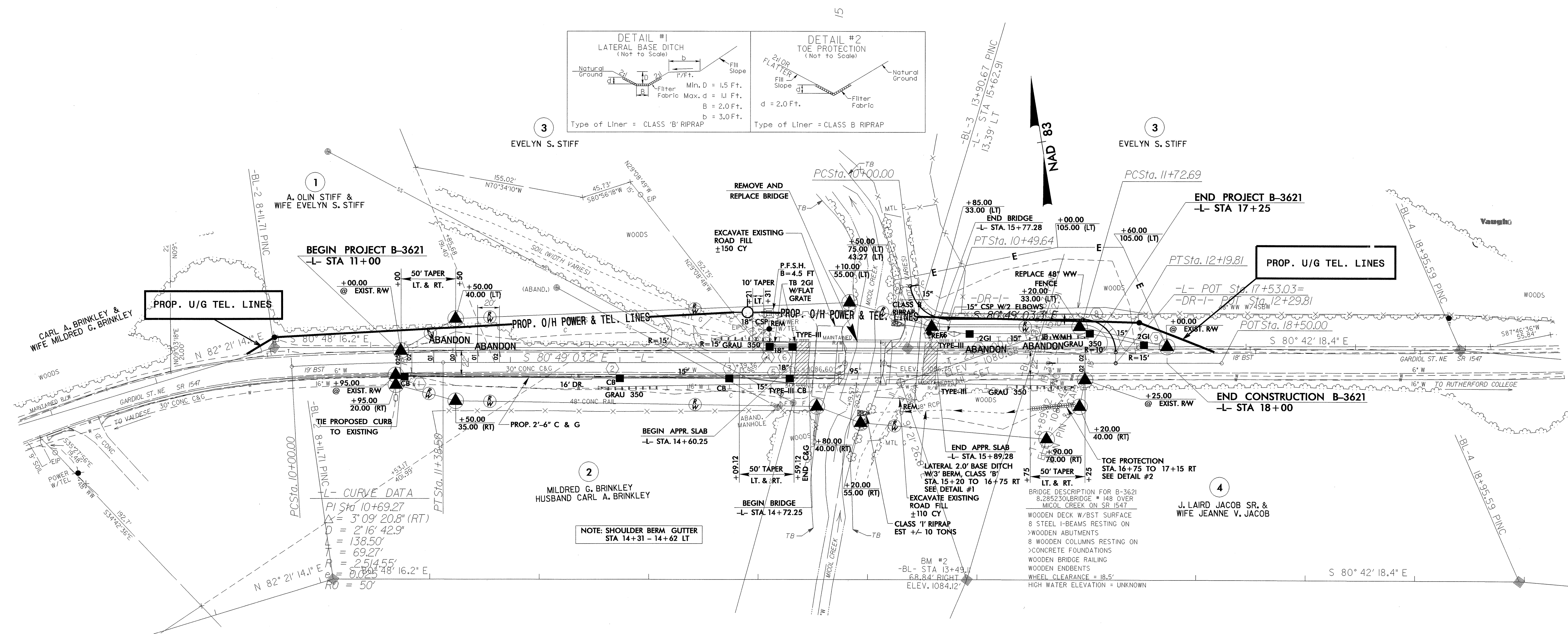
1591 MAIL SERVICES CENTER  
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**Roger Worthington, P.E.** UTILITIES SECTION ENGINEER  
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**Kifah Kamil** UTILITIES PROJECT DESIGNER



# UTILITIES BY OTHERS

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



PROP. U/G TEL. LINES

PROP. U/G TEL. LINES

NOTE: SHOULDER BERM GUTTER  
STA 14+31 - 14+62 LT

BRIDGE DESCRIPTION FOR B-3621  
8.285230 BRIDGE # 148 OVER  
MOON CREEK ON SR 1547  
WOODEN DECK W/BST SURFACE  
8 STEEL I-BEAMS RESTING ON  
WOODEN ABUTMENTS  
8 WOODEN COLUMNS RESTING ON  
CONCRETE FOUNDATIONS  
WOODEN BRIDGE RAILING  
WOODEN ENDBENTS  
WHEEL CLEARANCE = 18.5'  
HIGH WATER ELEVATION = UNKNOWN

8/17/99  
08-AUG-2003 10:12 11:53 p.c.\b3621\_04\psh\_U02.dgn  
11:53:11 AM 11/11/03

REVISIONS