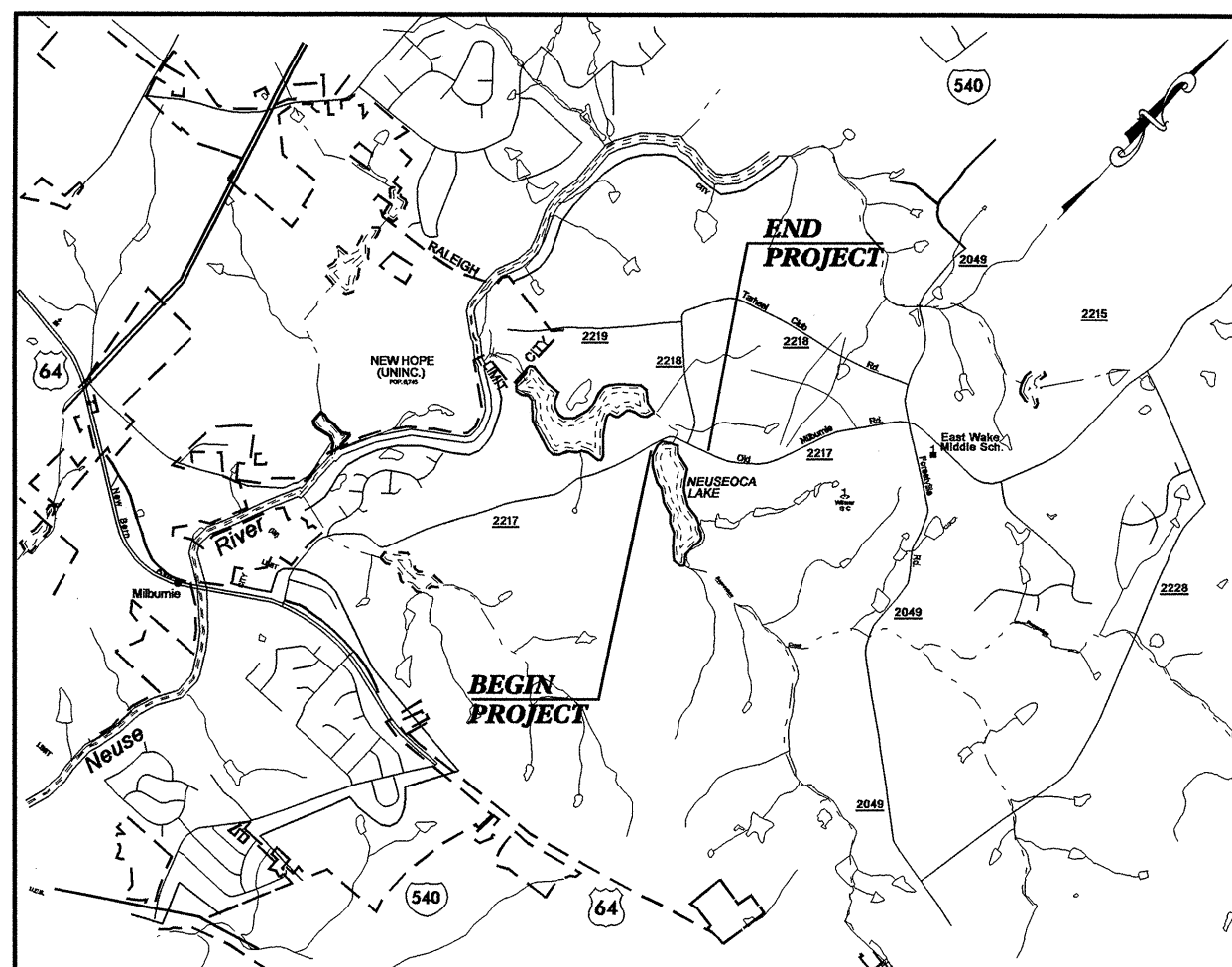


09/08/99

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols

T.I.P. NO.	SHEET NO.
B-4304	UC-1

TIP PROJECT: B-4304



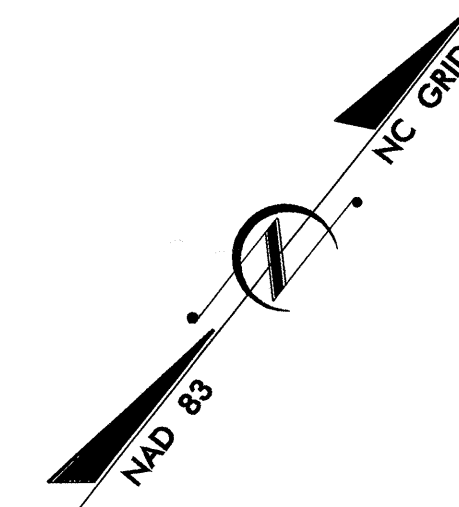
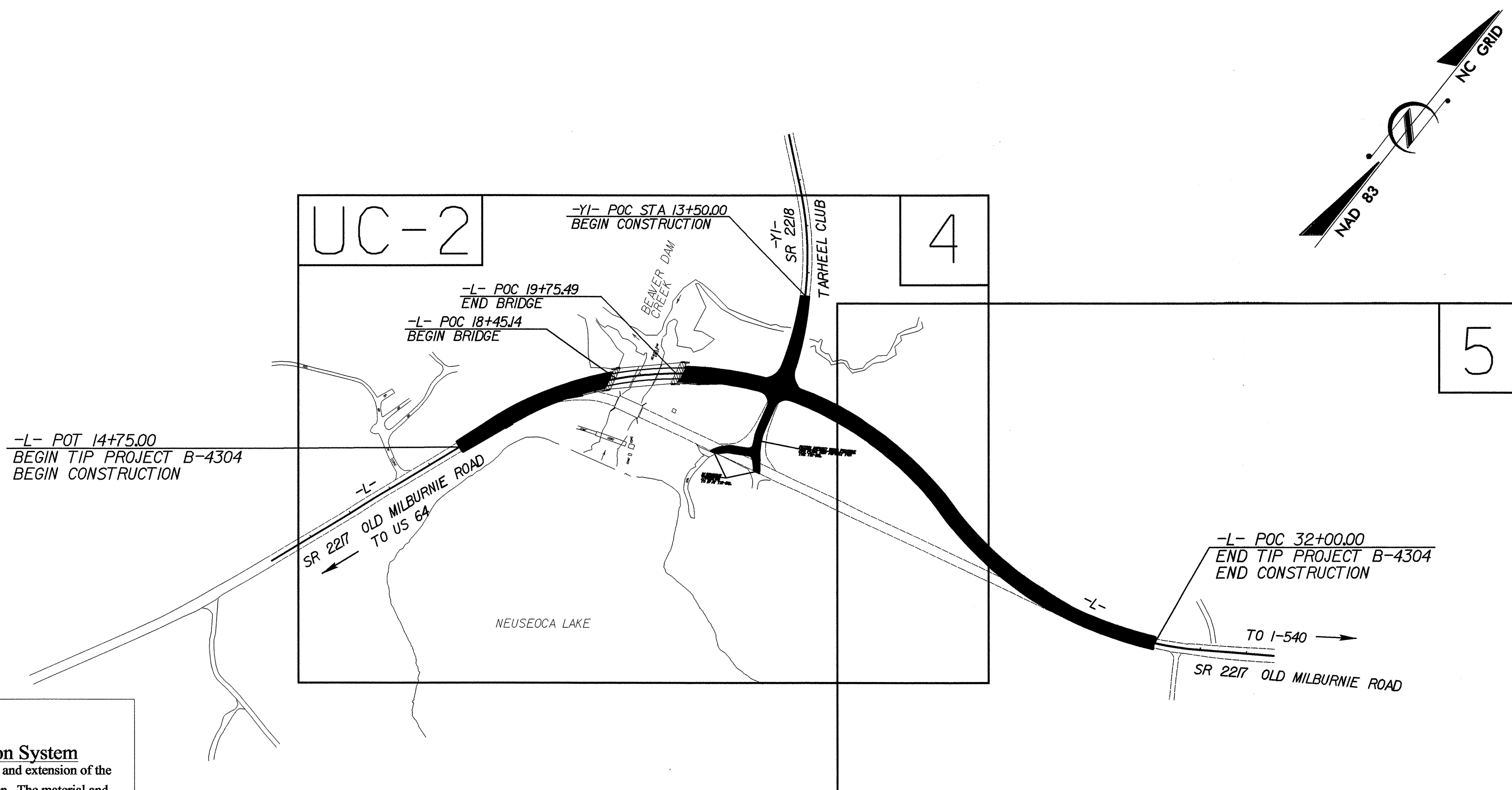
VICINITY MAP
(NOT TO SCALE)

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

UTILITY CONSTRUCTION PLANS WAKE COUNTY

**LOCATION: BRIDGE NO. 143 OVER BEAVER DAM CREEK
ON SR 2217 (OLD MILBURNIE ROAD)**

TYPE OF WORK: GRADE, DRAINAGE, PAVING AND STRUCTURE



ATTENTION CONTRACTORS

The **Construction Contractor** responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for **contacting the Public Works Department at (919) 831-6810**, and the **Public Utilities Department at (919) 857-4540** at least **twenty four hours** prior to beginning any of their construction.

Failure to notify both **City Departments** in advance of beginning construction, will result in the issuance of **monetary fines**, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for **Inspection, Install a Downstream Plug**, have **Permitted Plans** on the **Jobsite**, or any other **Violation of City of Raleigh Standards** will result in a **Fine and Possible Exclusion** from future work in the **City of Raleigh**.

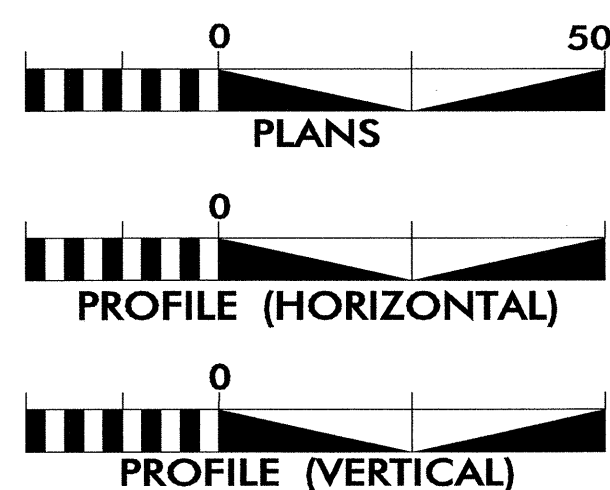
Public

Water Collection / Extension System

The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # W-2800
Authorization to Construct BRW 9/9/09
Date

GRAPHIC SCALES



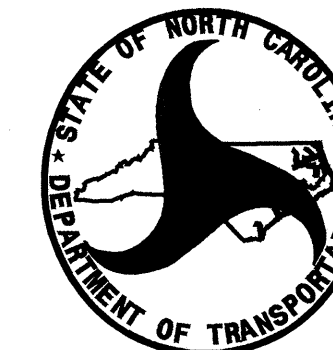
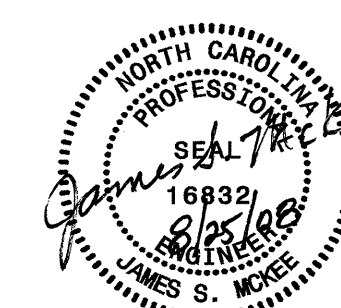
INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UC-1	TITLE SHEET
UC-2	UTILITY CONSTRUCTION PLAN SHEET
UC-3	UTILITY CONSTRUCTION DETAIL SHEET

WATER AND SEWER OWNERS ON PROJECT

(1) WATER City of Raleigh

SEAL



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

1591 MAIL SERVICES CENTER
RALEIGH, NC 27699-1591
PHONE (919) 256-4128
FAX (919) 256-4119

Roger Worthington, P.E. UTILITIES SECTION ENGINEER
Steve McKee, P.E. UTILITIES SQUAD LEADER PROJECT ENGINEER
Jamshid Hafshejani UTILITIES PROJECT DESIGNER

25-AUG-2008 12:25 R:\Utilities\rdy\1\Proj\B4304\UCL\rdy_tsh.dgn \$\$\$USERNAME\$\$\$

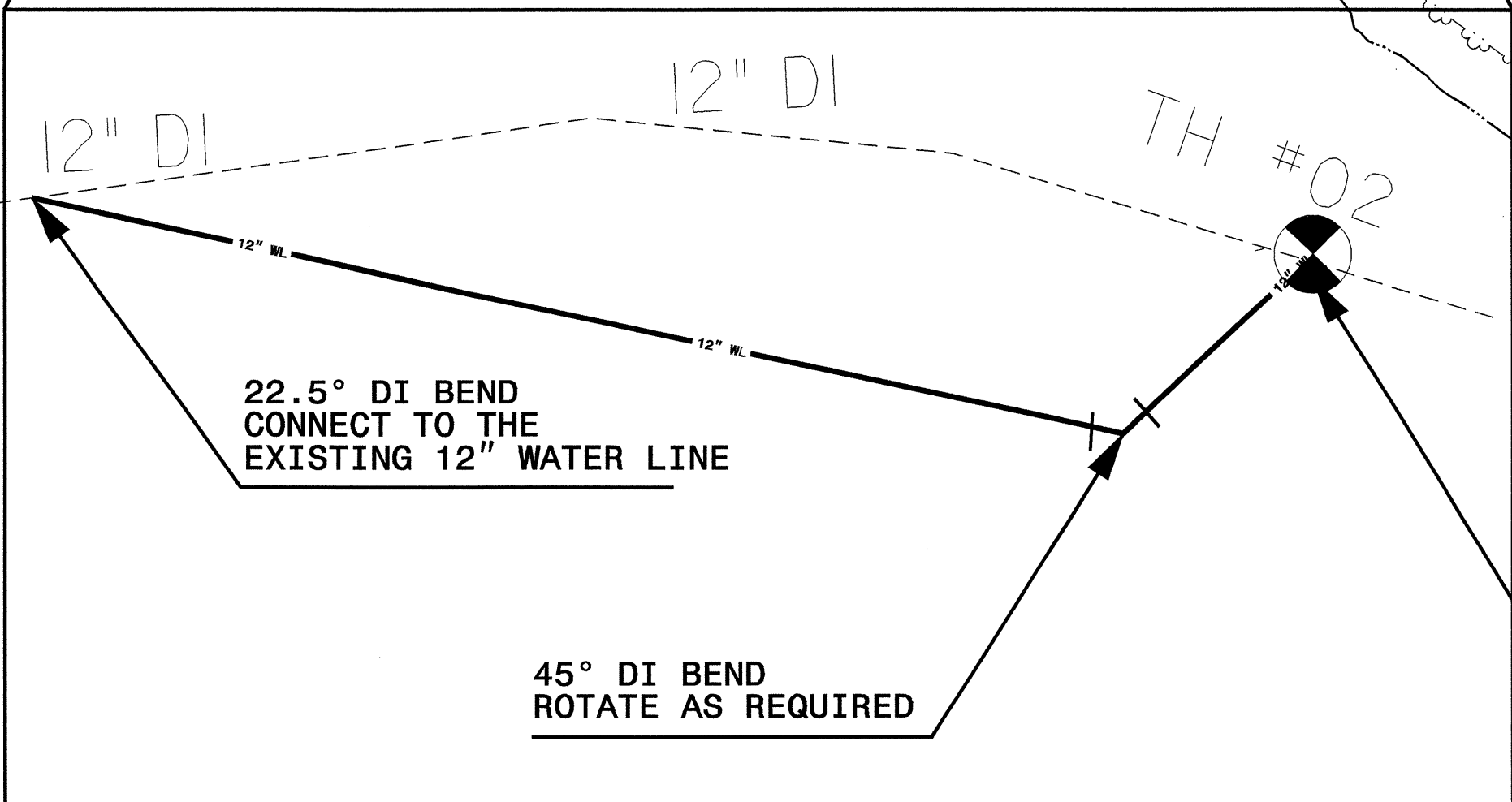
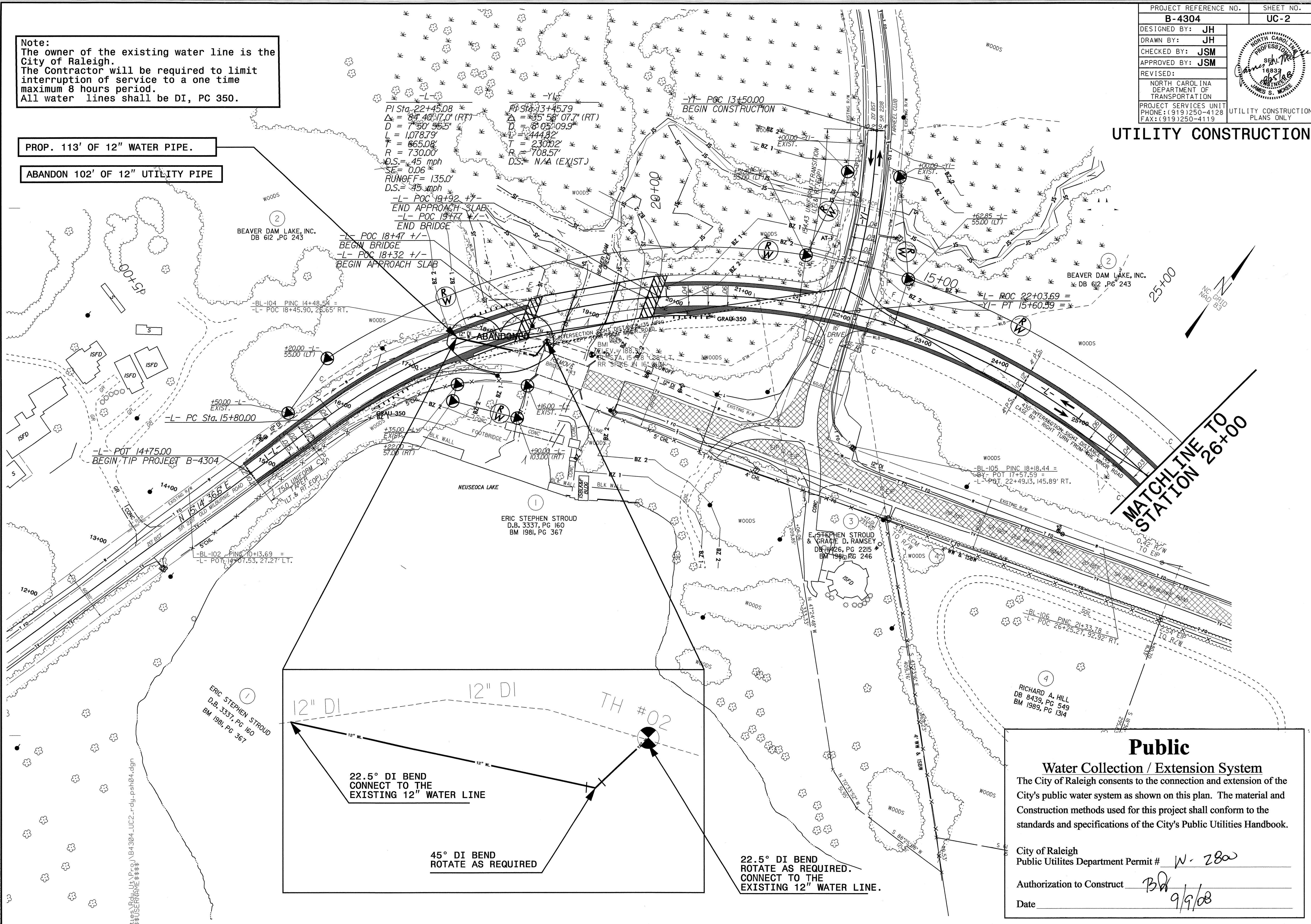
PROJECT REFERENCE NO.	SHEET NO.
B-4304	UC-2
DESIGNED BY: JH	
DRAWN BY: JH	
CHECKED BY: JSM	
APPROVED BY: JSM	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
PROJECT SERVICES UNIT PHONE: (919) 250-4128 FAX: (919) 250-4119	
UTILITY CONSTRUCTION PLANS ONLY	

Note:
 The owner of the existing water line is the City of Raleigh.
 The Contractor will be required to limit interruption of service to a one time maximum 8 hours period.
 All water lines shall be DI, PC 350.

PROP. 113' OF 12" WATER PIPE.

ABANDON 102' OF 12" UTILITY PIPE

UTILITY CONSTRUCTION

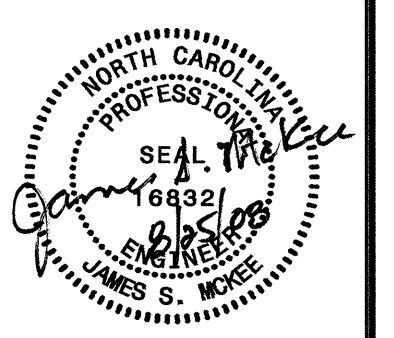


Public
Water Collection / Extension System
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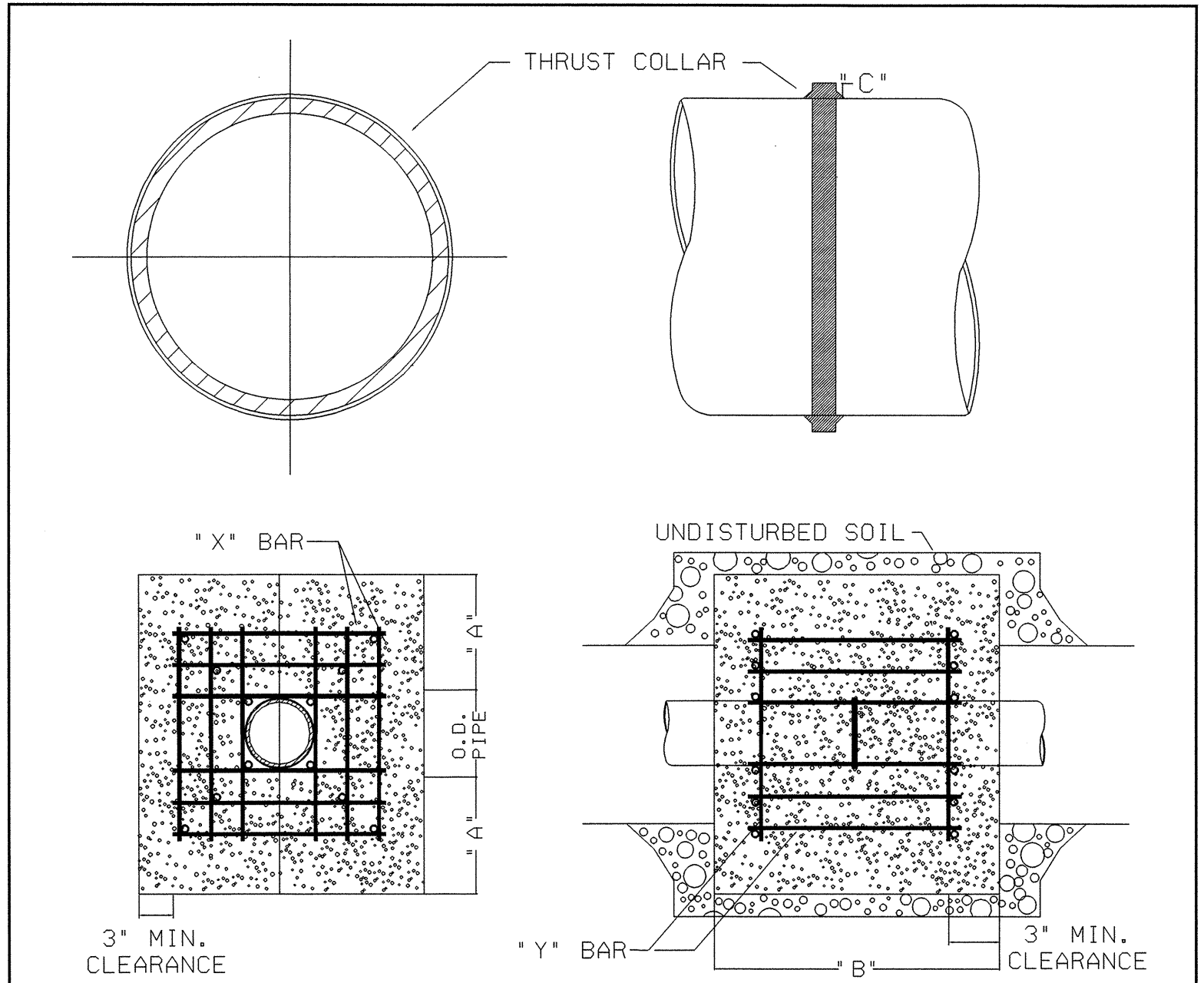
City of Raleigh
 Public Utilities Department Permit # W-280

Authorization to Construct BA
 Date 9/9/08

5/14/99
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UTILITY CONSTRUCTION



REINFORCING REQUIREMENTS

I.D. PIPE	REBAR SIZE	*X* BAR LENGTH	*X* BAR WEIGHT	**Y* BAR LENGTH	**Y* BAR WEIGHT	NO. REQUIRED
6" - 36"	#5	2'-2" O.D. PIPE	1.043 LBS/FT	1'-1"	1.1 LBS. EACH	X-24, Y-12
48" & GREATER	#6	3'-0" O.D. PIPE	1.582 LBS/FT	1'-3"	1.9 LBS. EACH	X-24, Y-12

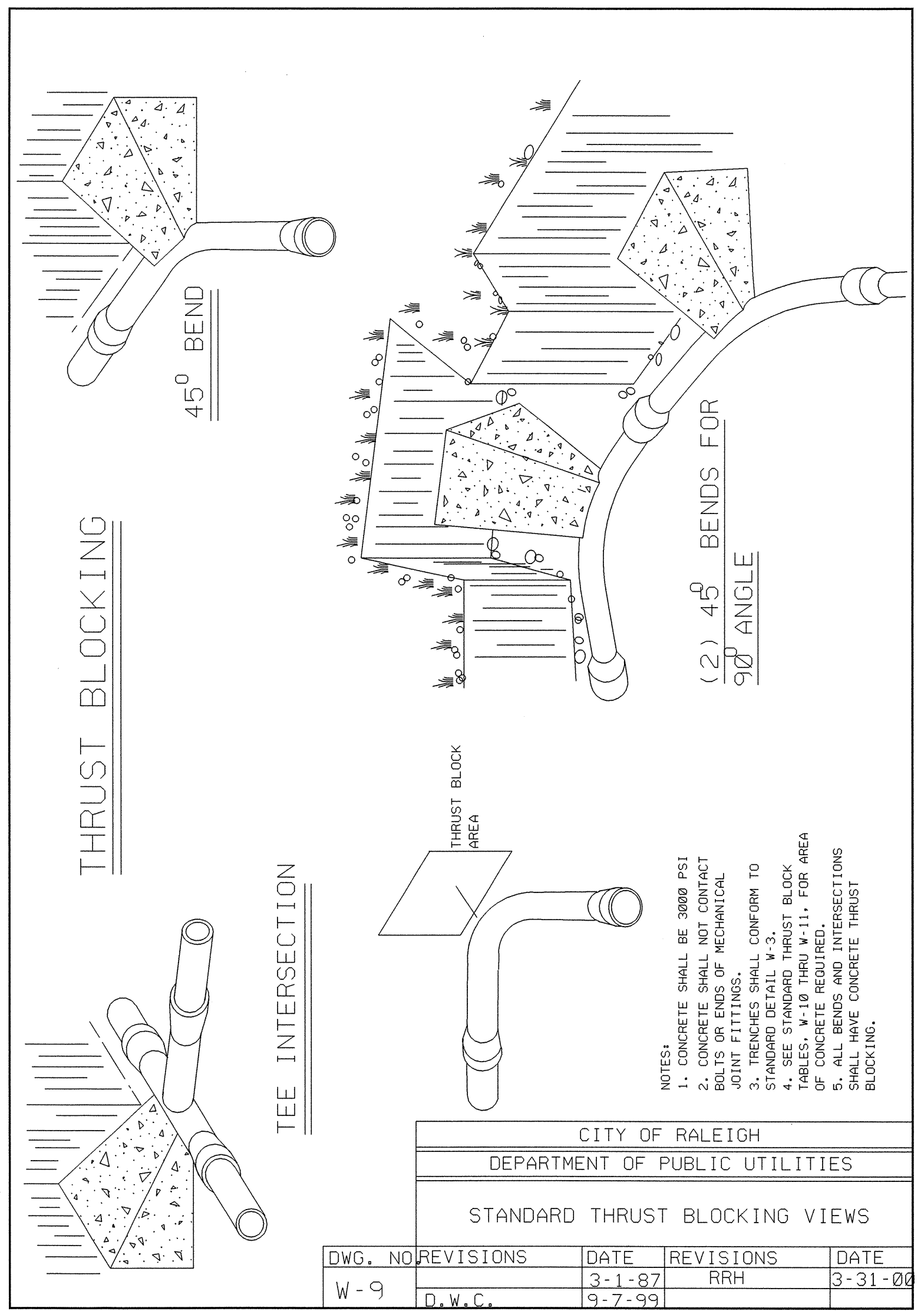
THRUST COLLAR AND THRUST SCHEDULE

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

- NOTES:**
- SEE STANDARD DETAIL W-9 FOR THRUST BLOCK LOCATIONS.
 - CONCRETE SHALL BE 3000 PSI AND TRANSIT MIXED.
 - REINFORCING BARS SHALL BE DEFORMED AND TIED TOGETHER.
 - TRENCH BOTTOM WIDTH IN VICINITY OF THRUST BLOCK INSTALLATION SHALL BE THE MINIMUM WIDTH AS SHOWN ON STANDARD DETAIL W-3.
 - BACKFILL TAMPED IN 6" LIFTS PER STANDARD DETAIL W-3.
 - THRUST COLLAR MUST BE FACTORY WELDED ON BOTH SIDES ALONG BOTH EDGES OF COLLAR AROUND CIRCUMFERENCE.

CITY OF RALEIGH
 DEPARTMENT OF PUBLIC UTILITIES
THRUST BLOCKING DESIGN DATA FOR WATER MAINS

DWG. NO	REVISIONS	DATE	REVISIONS	DATE
W-7	RRH	1-21-00		



CITY OF RALEIGH
 DEPARTMENT OF PUBLIC UTILITIES
STANDARD THRUST BLOCKING VIEWS

DWG. NO	REVISIONS	DATE	REVISIONS	DATE
W-9	D.W.C.	3-1-87	RRH	3-31-00
		9-7-99		

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 ³	SOFT CLAY 2000 LBS/FT ³	GRAVEL / COARSE SAND 1500 LBS/FT ³	DRY CLAY - ALWAYS DRY 8000 LBS/FT ³	SAND, COMPACT FIRM 8000 LBS/FT ³	SAND - CLEAN DRY 4000 LBS/FT ³	QUICKSAND - VERY POOR SOIL 1000 LBS/FT ³	ROCK - POOR 10,000 LBS/FT ³
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	2	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	3	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	6	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	10	41	5

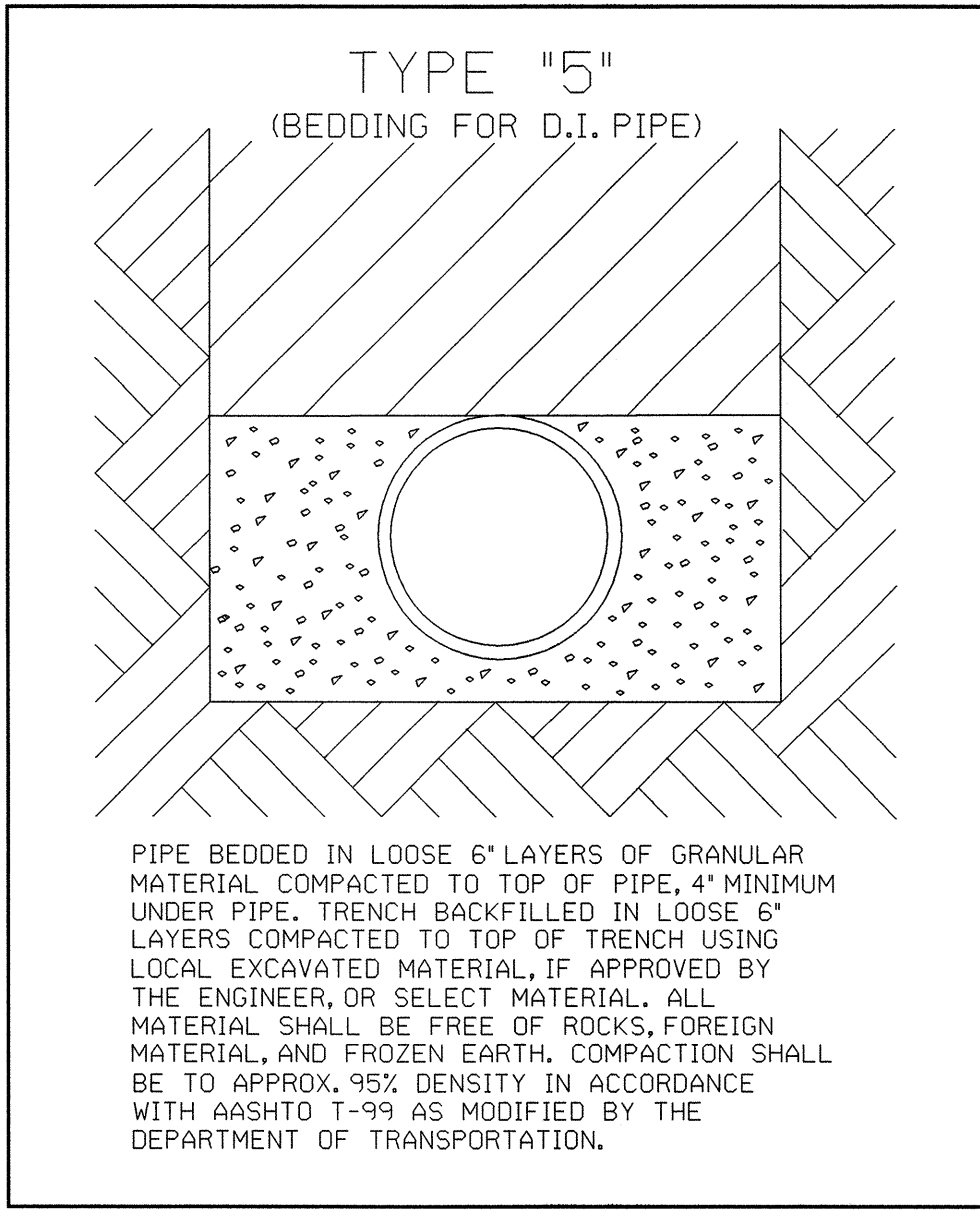
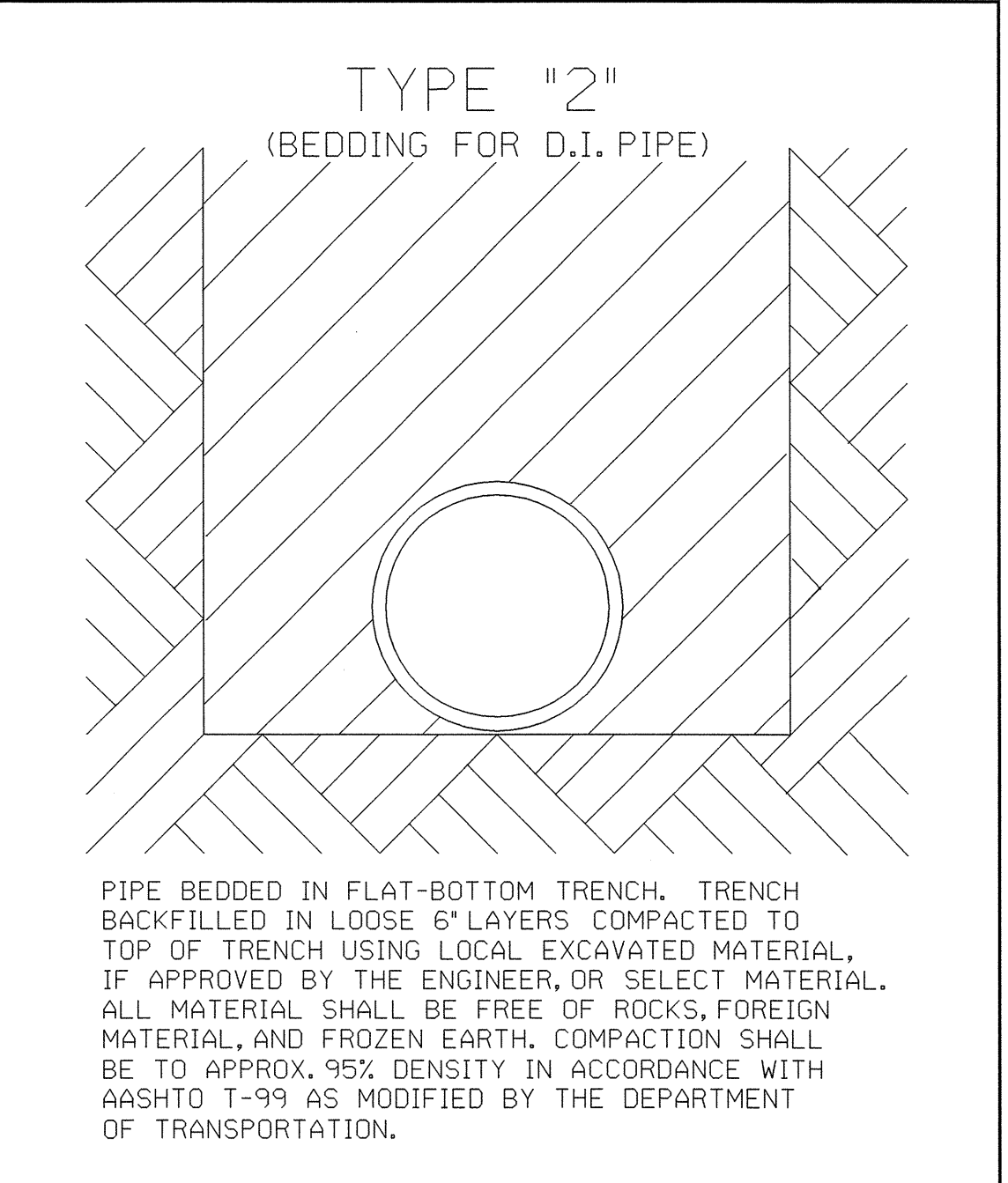
REACTION BEARING AREAS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH SIDE AT AN ANGLE OF 90° TO THE THRUST VECTOR.
 USE 6" - 90° BEND VALUE FOR HYDRANTS FOR ADDITIONAL SAFETY FACTOR.

CITY OF RALEIGH
 DEPARTMENT OF PUBLIC UTILITIES
THRUST BLOCKING DESIGN QUANTITY TABLE

DWG. NO	REVISIONS	DATE	REVISIONS	DATE
W-10	D.W.C.	5-23-99		

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		



Public
Water Collection / Extension System
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 City of Raleigh
 Public Utilities Department Permit # _____
 Authorization to Construct _____
 Date _____

09/08/99

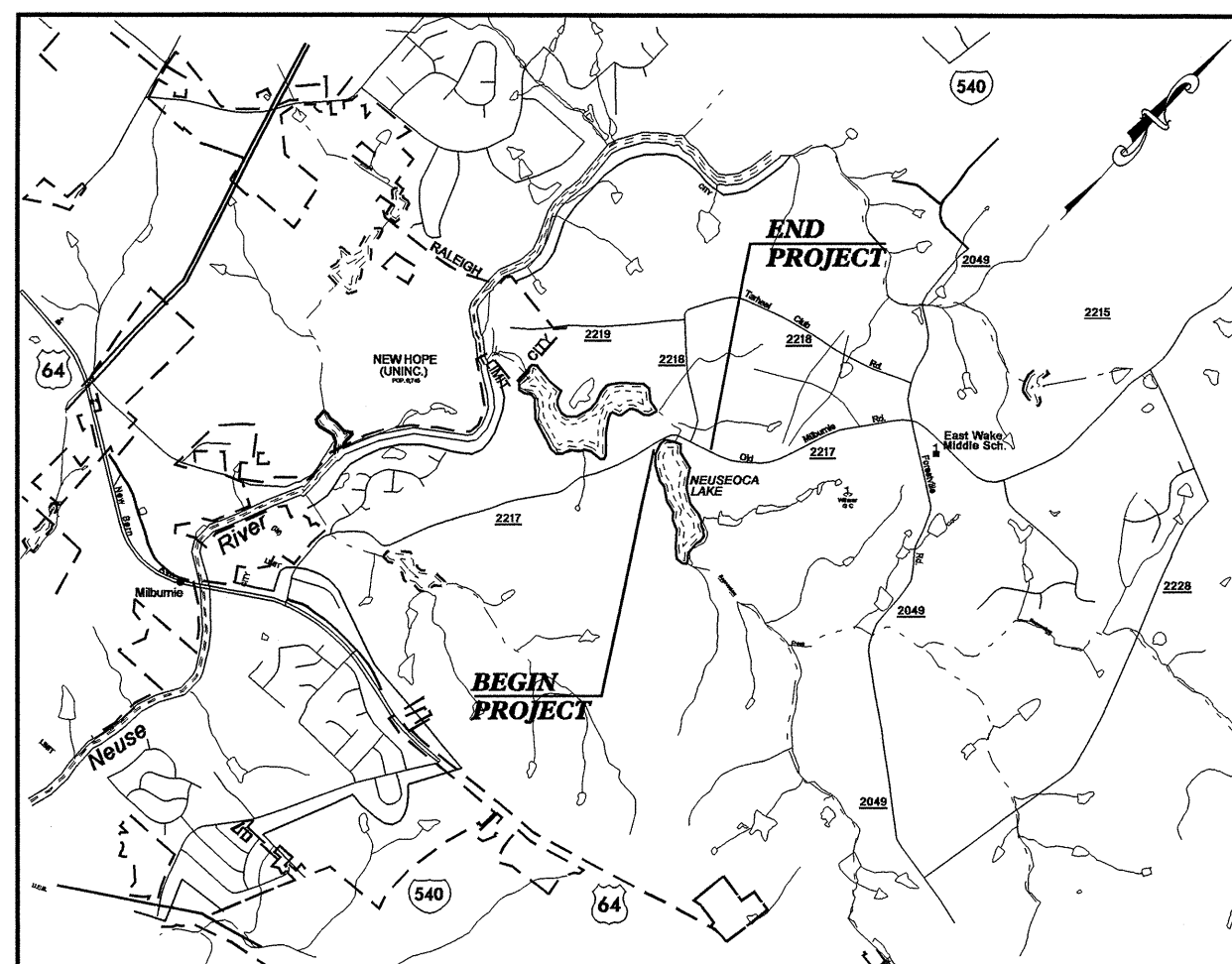
See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols

T.I.P. NO.	SHEET NO.
B-4304	UO-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

**UTILITIES BY OTHERS PLANS
WAKE COUNTY**

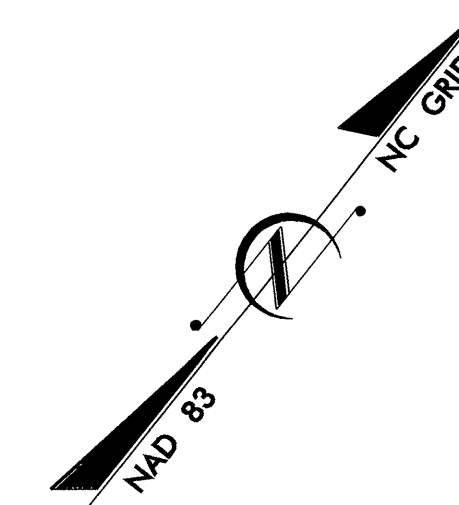
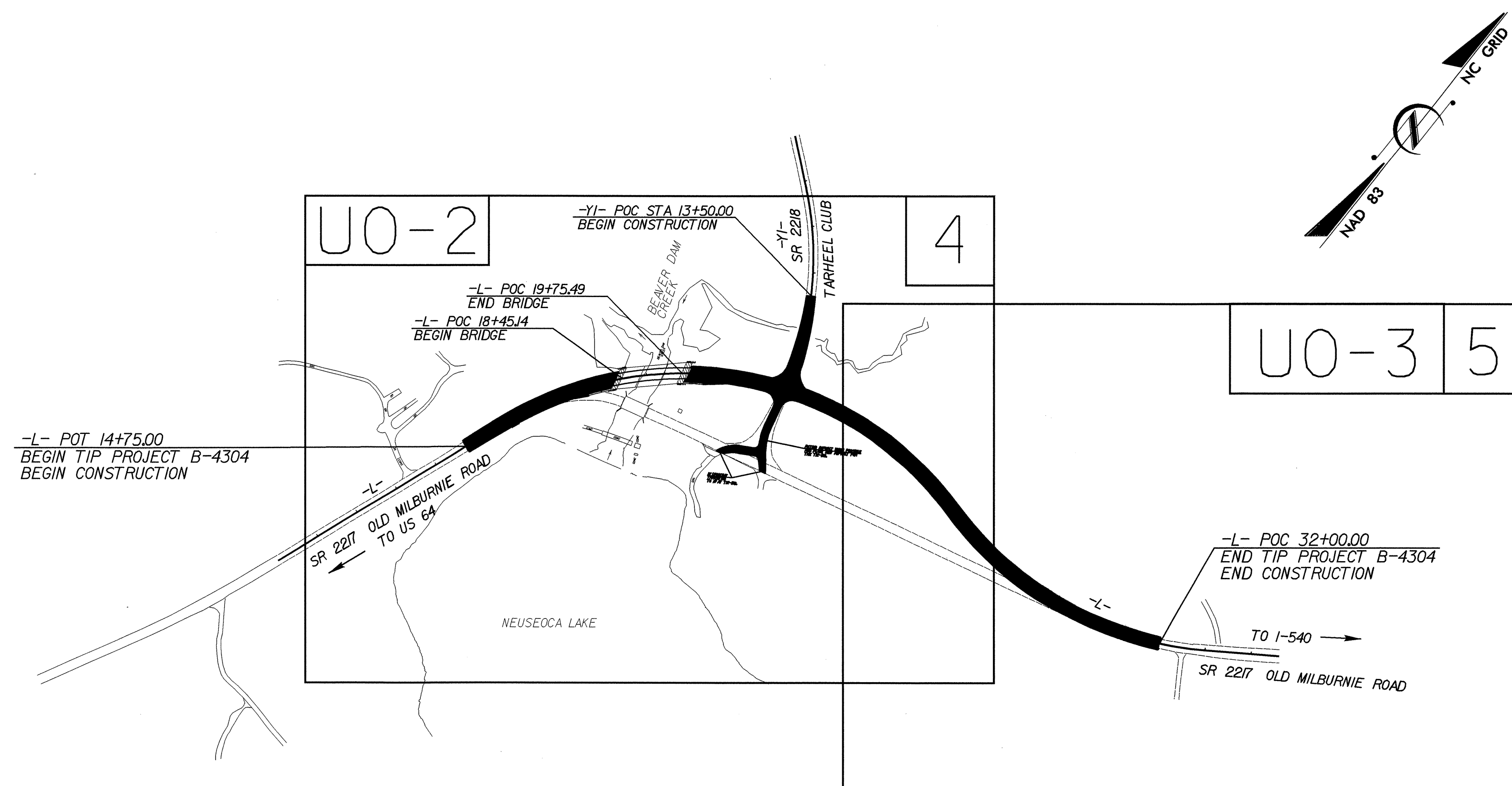
TIP PROJECT: B-4304



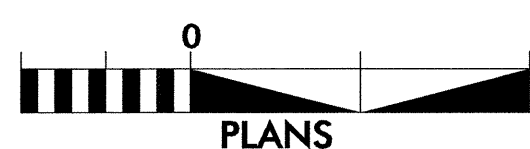
VICINITY MAP
(NOT TO SCALE)

**LOCATION: BRIDGE NO. 143 OVER BEAVER DAM CREEK
ON SR 2217 (OLD MILBURNIE ROAD)**

TYPE OF WORK: GRADE, DRAINAGE, PAVING AND STRUCTURE



GRAPHIC SCALES

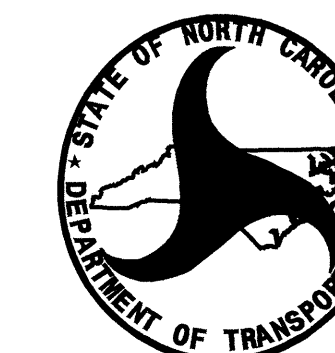


INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UO-1	TITLE SHEET
UO-2 THRU UO-3	UTILITIES BY OTHERS PLAN SHEETS

UTILITY OWNERS ON PROJECT

- (1) AT&T Telephone
- (2) Progress Energy (Power)
- (3) Time Warner Co. TV Cable



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
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Jamshid Hafshejani UTILITIES PROJECT DESIGNER

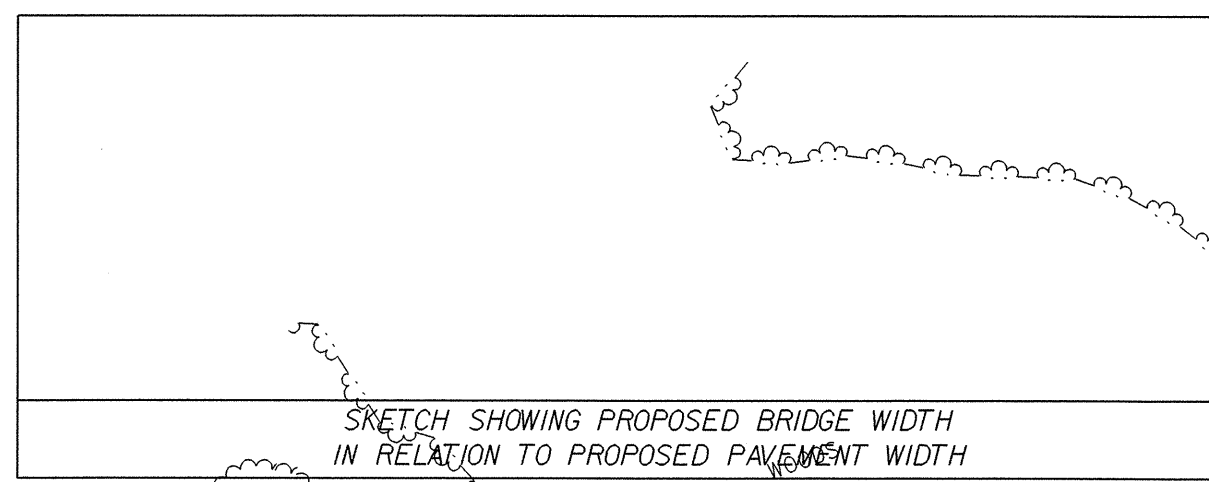
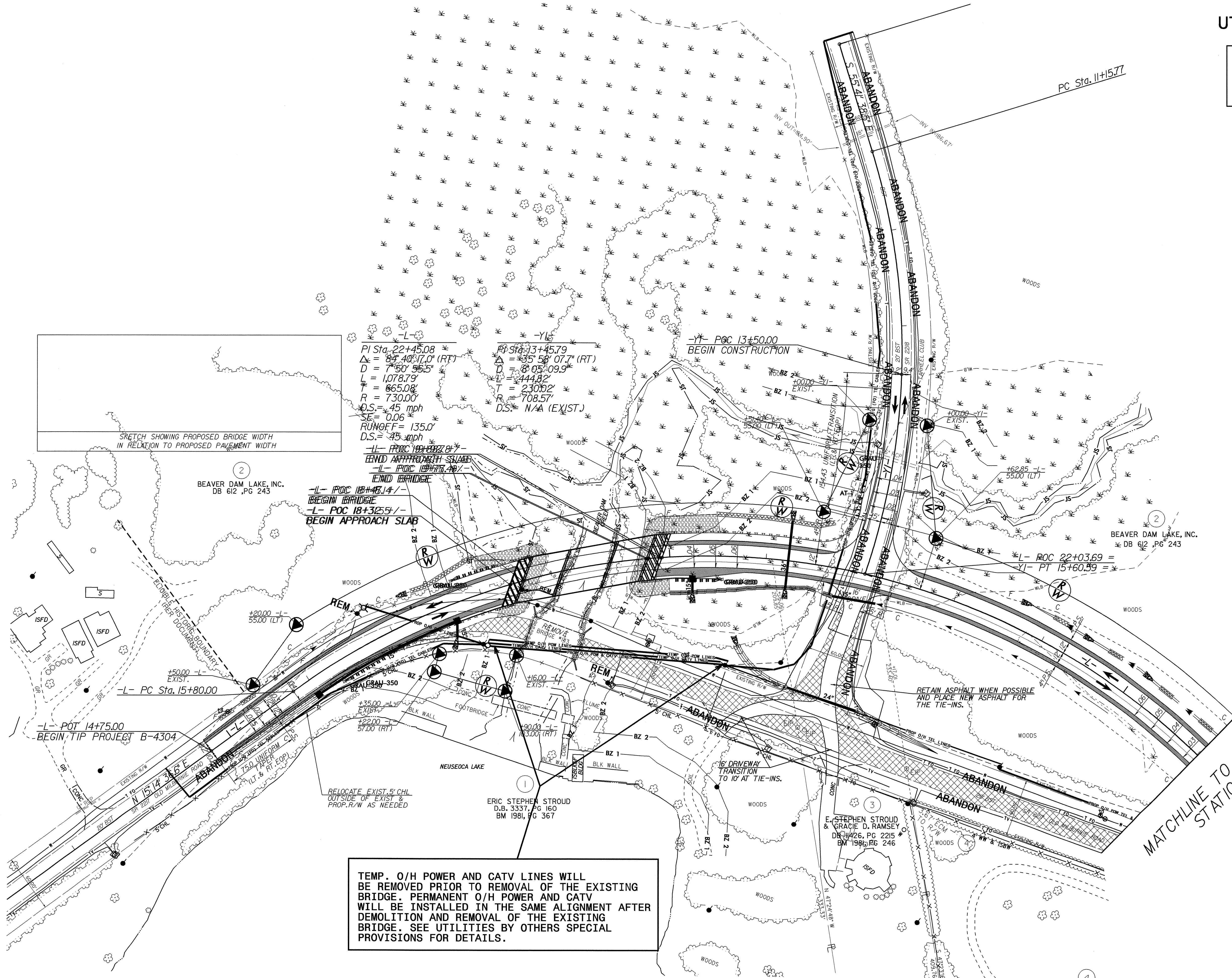
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UTILITIES BY OTHERS

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

5/14/98

24-FEB-2009 10:19 AM
R:\U0\1\24-FEB-2009 10:19 AM\B4304_U02_rdu_psh04.dgn



PI Sta. 22+45.08
 $\Delta = 84.40^\circ 17.0' (RT)$
 $D = 7.50^\circ 55.5'$
 $L = 1,078.79'$
 $R = 865.08'$
 $D.S. = 45 \text{ mph}$
 $SE = 0.06$
 $RUNOFF = 135.0'$
 $D.S. = 45 \text{ mph}$

PI Sta. 13+45.79
 $\Delta = 35.58^\circ 07.7' (RT)$
 $D = 8.05^\circ 09.9'$
 $L = 244.82'$
 $R = 230.02'$
 $D.S. = N/A (EXIST.)$

-L- POC 18+46.14 / -
 BEGIN BRIDGE
 -L- POC 18+325.5 / -
 BEGIN APPROACH SLAB

-L- POT 14+75.00
 BEGIN TIP PROJECT B-4304

TEMP. O/H POWER AND CATV LINES WILL BE REMOVED PRIOR TO REMOVAL OF THE EXISTING BRIDGE. PERMANENT O/H POWER AND CATV WILL BE INSTALLED IN THE SAME ALIGNMENT AFTER DEMOLITION AND REMOVAL OF THE EXISTING BRIDGE. SEE UTILITIES BY OTHERS SPECIAL PROVISIONS FOR DETAILS.

MATCHLINE TO SHEET U0-3
 STATION 26+00

