

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

T.I.P. NO.	SHEET NO.
B-3705	UC-1

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

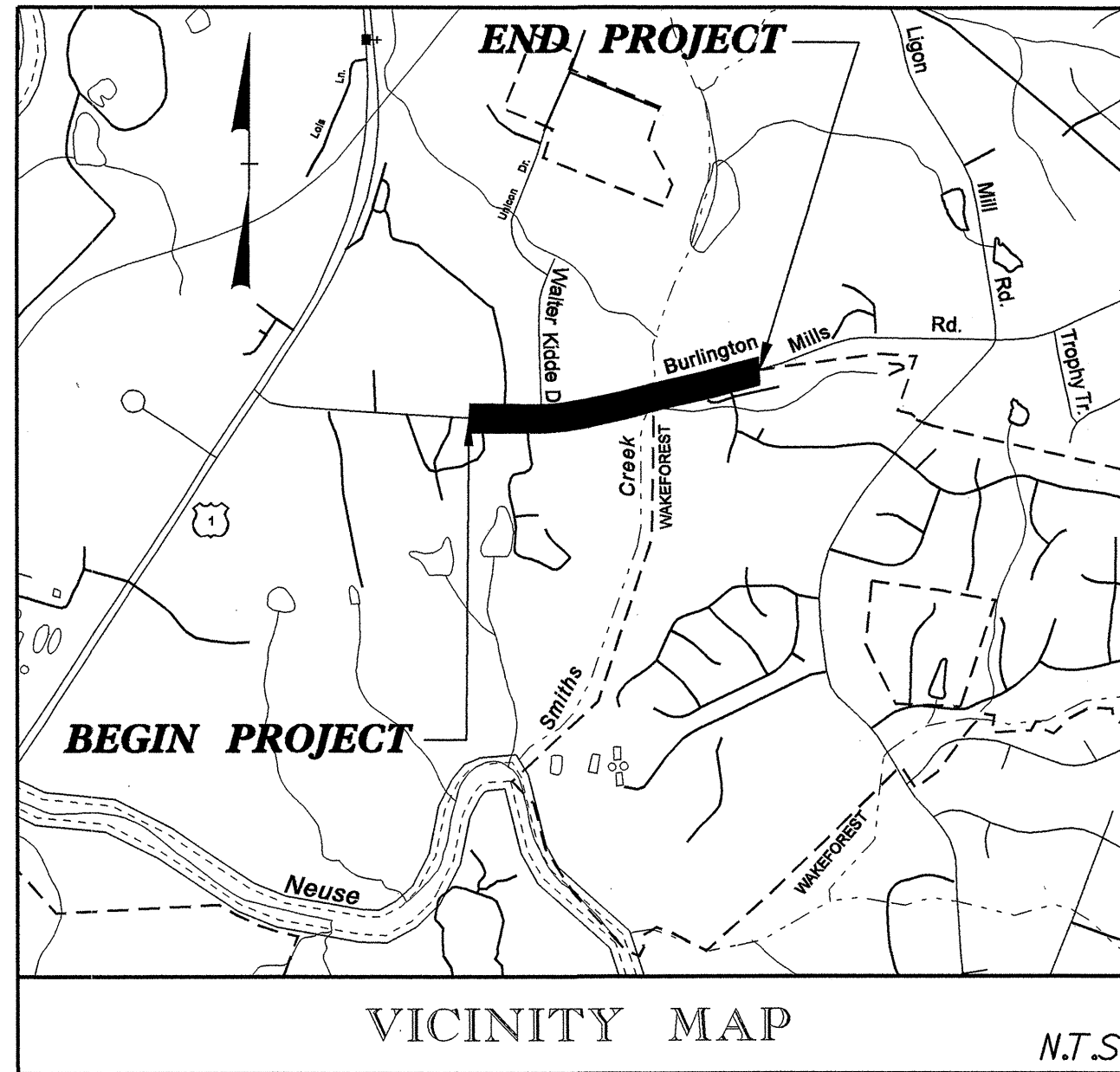
UTILITY CONSTRUCTION PLANS WAKE COUNTY

THESE PLANS HAVE BEEN APPROVED FOR CONSTRUCTION BY THE TOWN OF WAKE FOREST AND THE CITY OF RALEIGH.

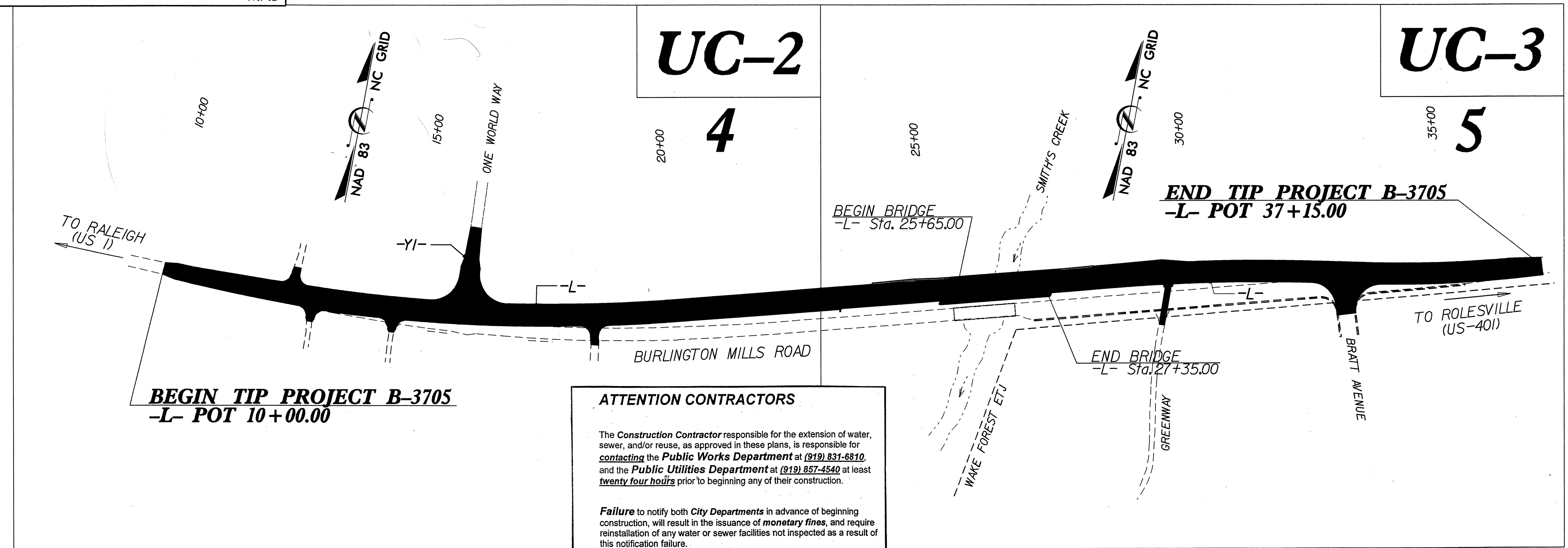
Engineering Department	<i>[Signature]</i>	2/21/08	Date
Erosion & Sediment Control	NA	2-20-08	Date
Fire Prevention	<i>[Signature]</i>	2/19/08	Date
Subdivision Administration	B-8	2/14/08	Date
City of Raleigh Public Utilities Department			Date

**LOCATION: BRIDGE NO. 125 OVER SMITH'S CREEK ON
SR 2045 (BURLINGTON MILLS RD.)**

TYPE OF WORK: UTILITIES



TIP B-3705



Public Sewer Collection / Extension System
The City of Raleigh consents to the connection and extension of the City's public sewer 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 # 5-3300
Authorization to Construct *[Signature]*
Date 2/14/08

INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
UC-1	TITLE SHEET
UC-2 THRU UC-3	UTILITY CONSTRUCTION PLAN SHEETS
UC-4	PROFILE SHEET
UC-5 THRU UC-6	DETAILS SHEET

WATER AND SEWER OWNERS ON PROJECT

(1) 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) 250-4128
FAX (919) 250-4119

Roger Worthington, P.E. UTILITIES SECTION ENGINEER
Steve Mckee, P.E. UTILITIES SQUAD LEADER PROJECT ENGINEER
Alonza Yancey UTILITIES PROJECT DESIGNER

09/08/08

30-JAN-2008 08:44
C:\Users\jrb3705\ut_title_uc1.psh.dgn
\$\$\$USERNAME\$\$\$

PROJECT REFERENCE NO.	B-3705	SHEET NO.	UC-2
DESIGNED BY:	ABY		
DRAWN BY:	ABY		
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

NOTES:

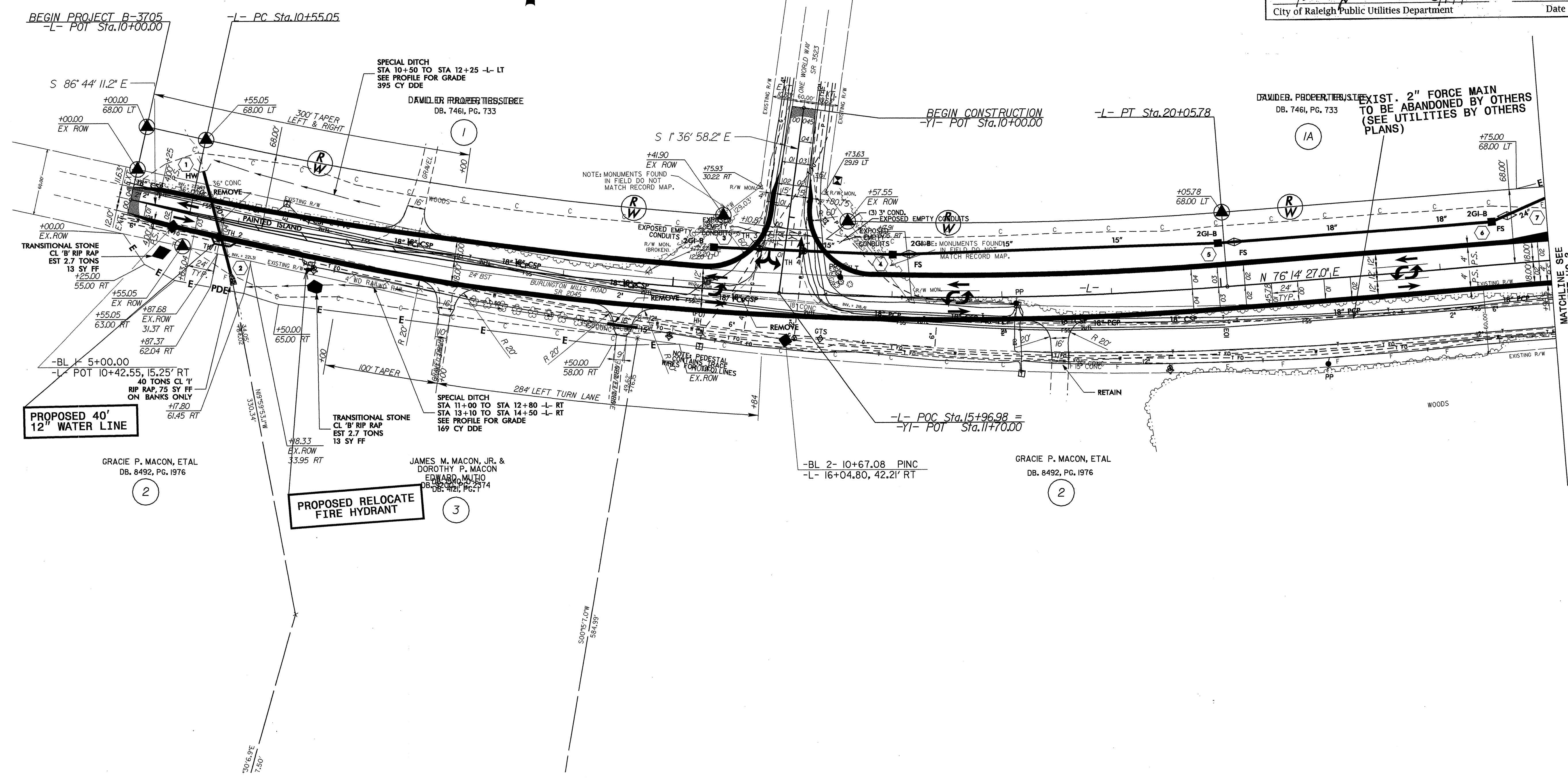
1. ALL WATER AND SEWER LINES ON THIS PROJECT ARE OWNED BY THE CITY OF RALEIGH.
2. ALL 24-INCH AND SMALLER DIAMETER PIPE SHALL BE DUCTILE IRON PRESSURE CLASS 350, UNLESS OTHERWISE NOTED ON UTILITY CONSTRUCTION PLANS.

-L-
 $P/I = 15+33.94$
 $\Delta = 17^{\circ} 01' 21.8" (LT)$
 $D = 1^{\circ} 47' 25.8"$
 $L = 950.73'$
 $T = 478.89'$
 $R = 3,200.00'$
 $DS = 50 MPH$
 $SE = 0.04$
 $RUNOFF = 96'$

UTILITY CONSTRUCTION

THESE PLANS HAVE BEEN APPROVED FOR CONSTRUCTION BY THE TOWN OF WAKE FOREST AND THE CITY OF RALEIGH.

Engineering Department	<i>[Signature]</i>	2/22/08	Date
Erosion & Sediment Control			Date
Fire Prevention			Date
Subdivision Administration	<i>Ann M. Cawo</i>	2/19/08	Date
City of Raleigh Public Utilities Department	<i>B. G.</i>	2/14/08	Date



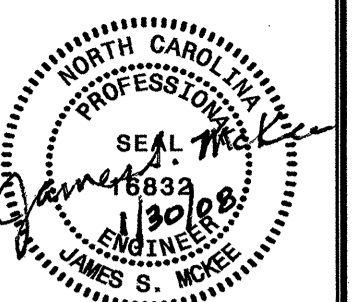
PROPOSED 40' 12" WATER LINE

PROPOSED RELOCATE FIRE HYDRANT

EXIST. 2" FORCE MAIN TO BE ABANDONED BY OTHERS (SEE UTILITIES BY OTHERS PLANS)

MATCHLINE SEE SHEET UC-3

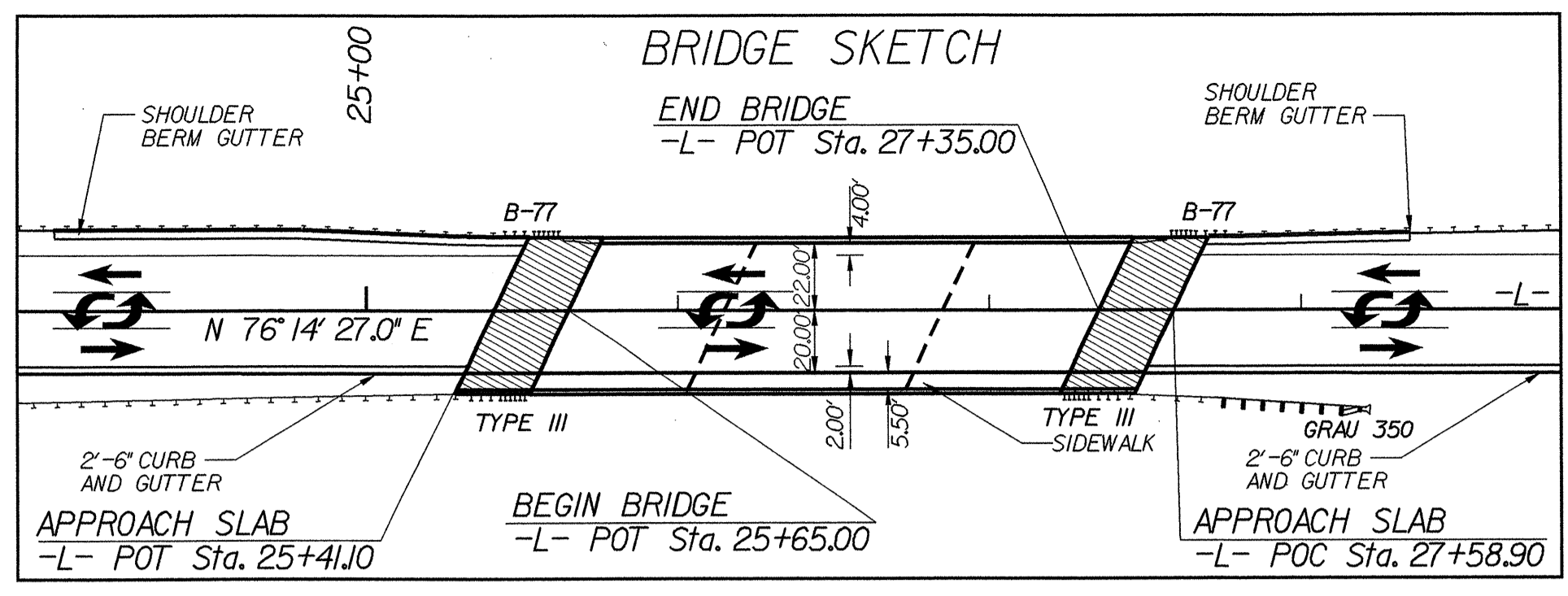
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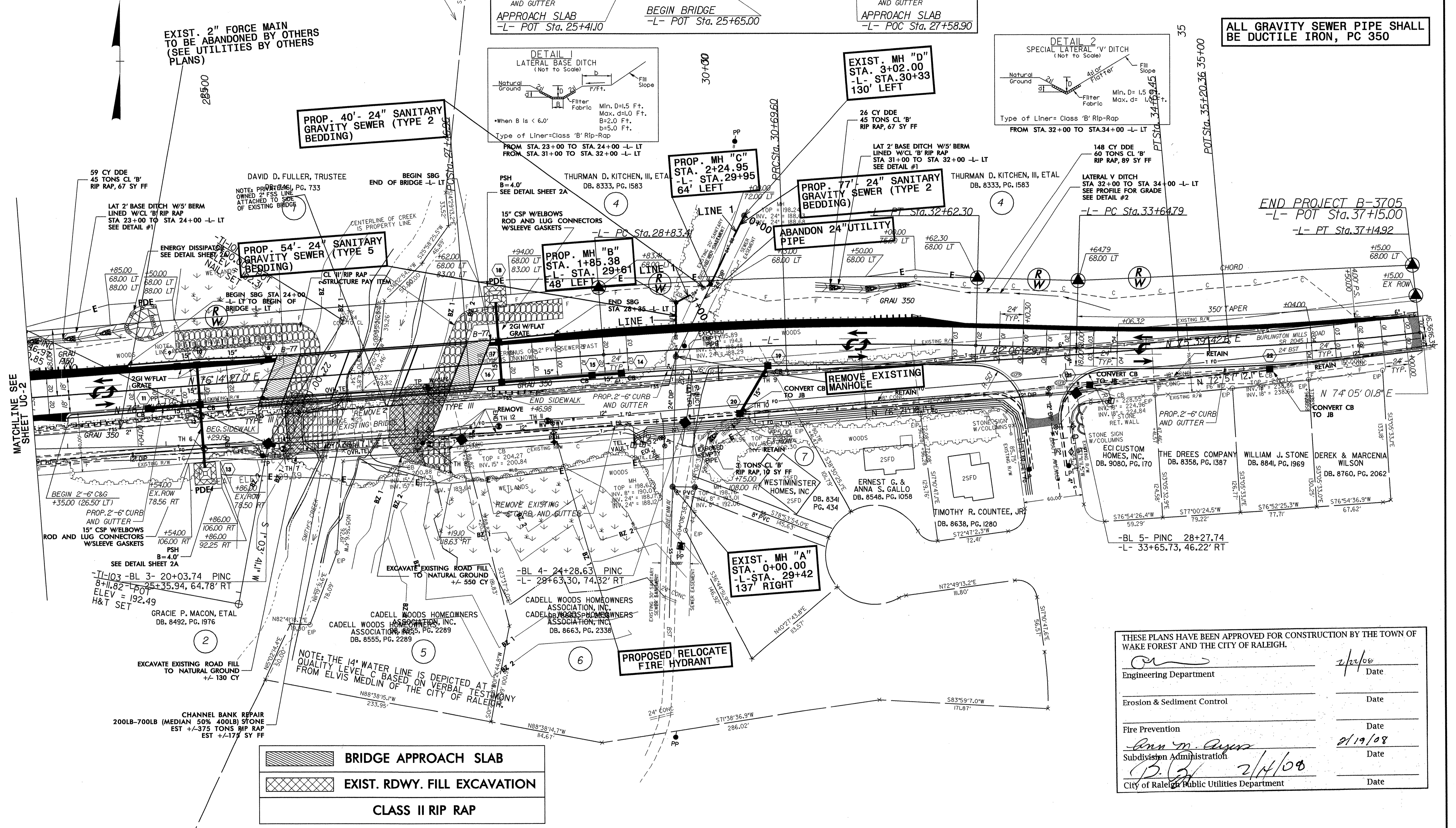
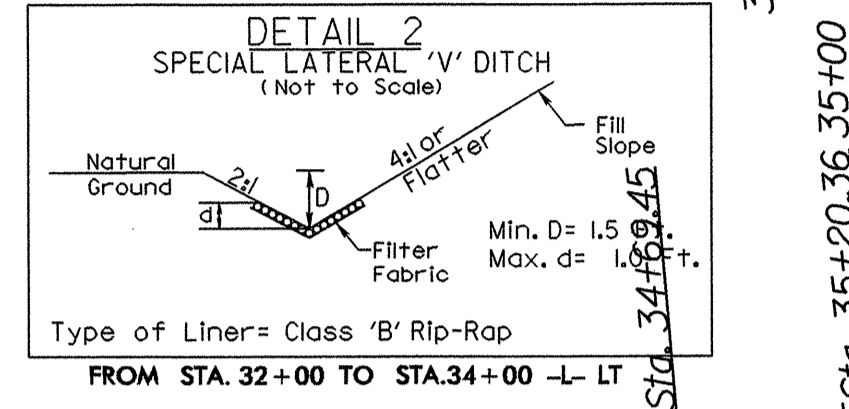
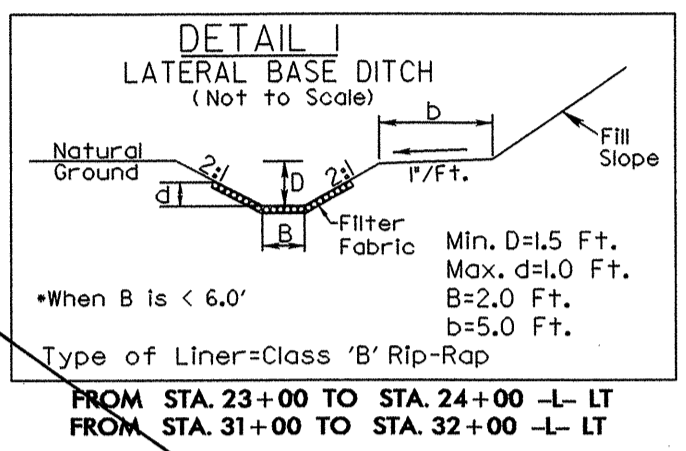
UTILITY CONSTRUCTION

ALL GRAVITY SEWER PIPE SHALL BE DUCTILE IRON, PC 350

NOTE: THE EXISTING 12" DIP WATER LINE LOCATED RIGHT OF LINE -L- BETWEEN APPROXIMATE STATIONS 24+75 AND 27+20 IS ABANDONED ACCORDING TO THE CITY OF RALEIGH. IT WAS REPLACED BETWEEN THESE STATIONS WITH A 14" HDPE WATER LINE AT AN APPROXIMATE DEPTH OF 10' BELOW SMITH'S CREEK. THE CONTRACTOR SHALL USE CAUTION WHEN EXCAVATING OVER THE WATER LINE.



-L-
 PI = 30+73.02 Δ = 5° 52' 02" (RT)
 D = 1' 32' 54.7" L = 378.89'
 T = 189.61' R = 3,700.00'
 DS = 50 MPH SE = 0.03
 RUNOFF = 72'
 PI = 35+40.14 Δ = 8° 01' 27.3" (LT)
 D = 2' 17' 30.6" L = 350.12'
 T = 175.35' R = 2,500.00'
 DS = 50 MPH SE = 0.04
 RUNOFF = 96'



THESE PLANS HAVE BEEN APPROVED FOR CONSTRUCTION BY THE TOWN OF WAKE FOREST AND THE CITY OF RALEIGH.

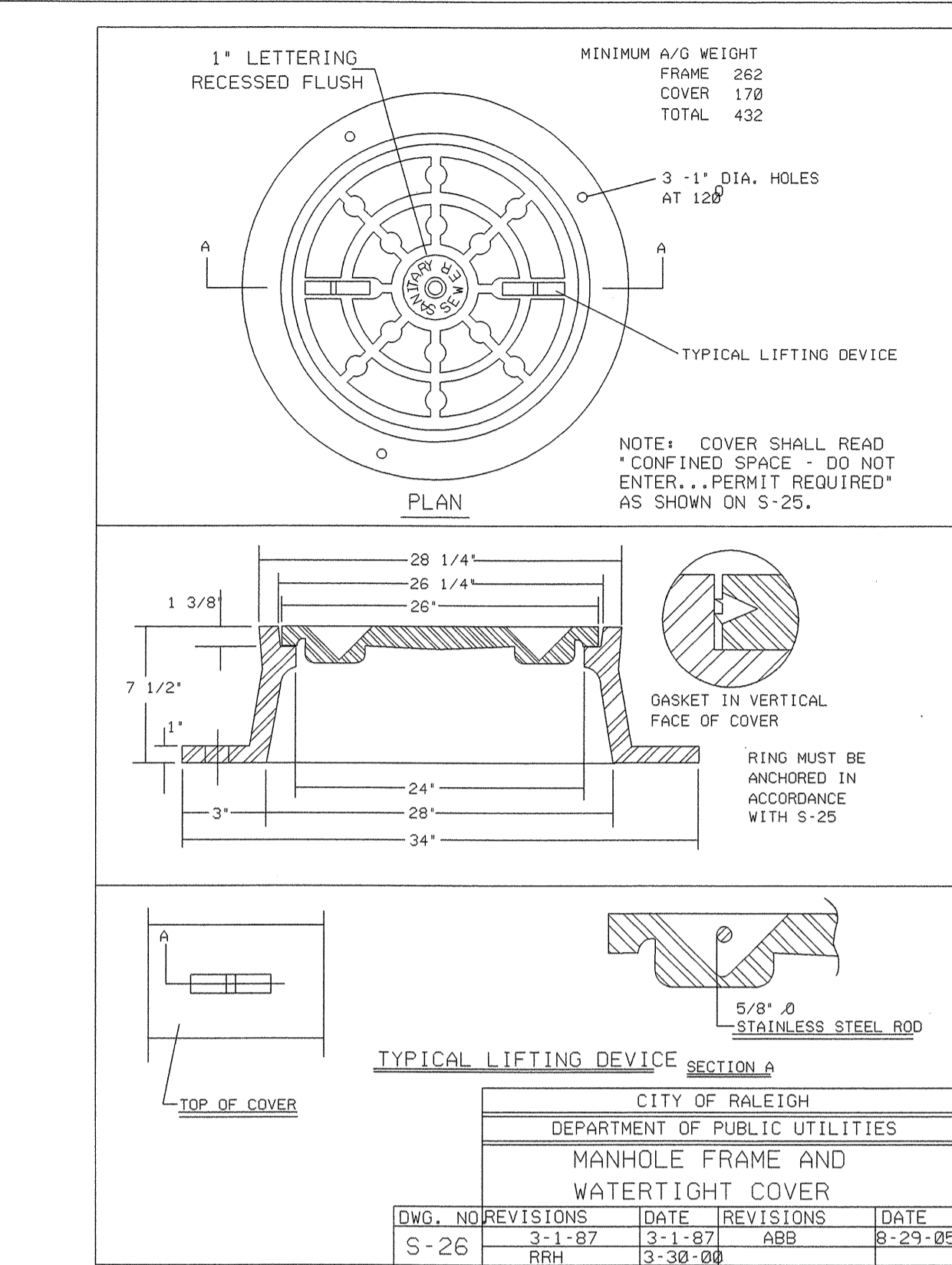
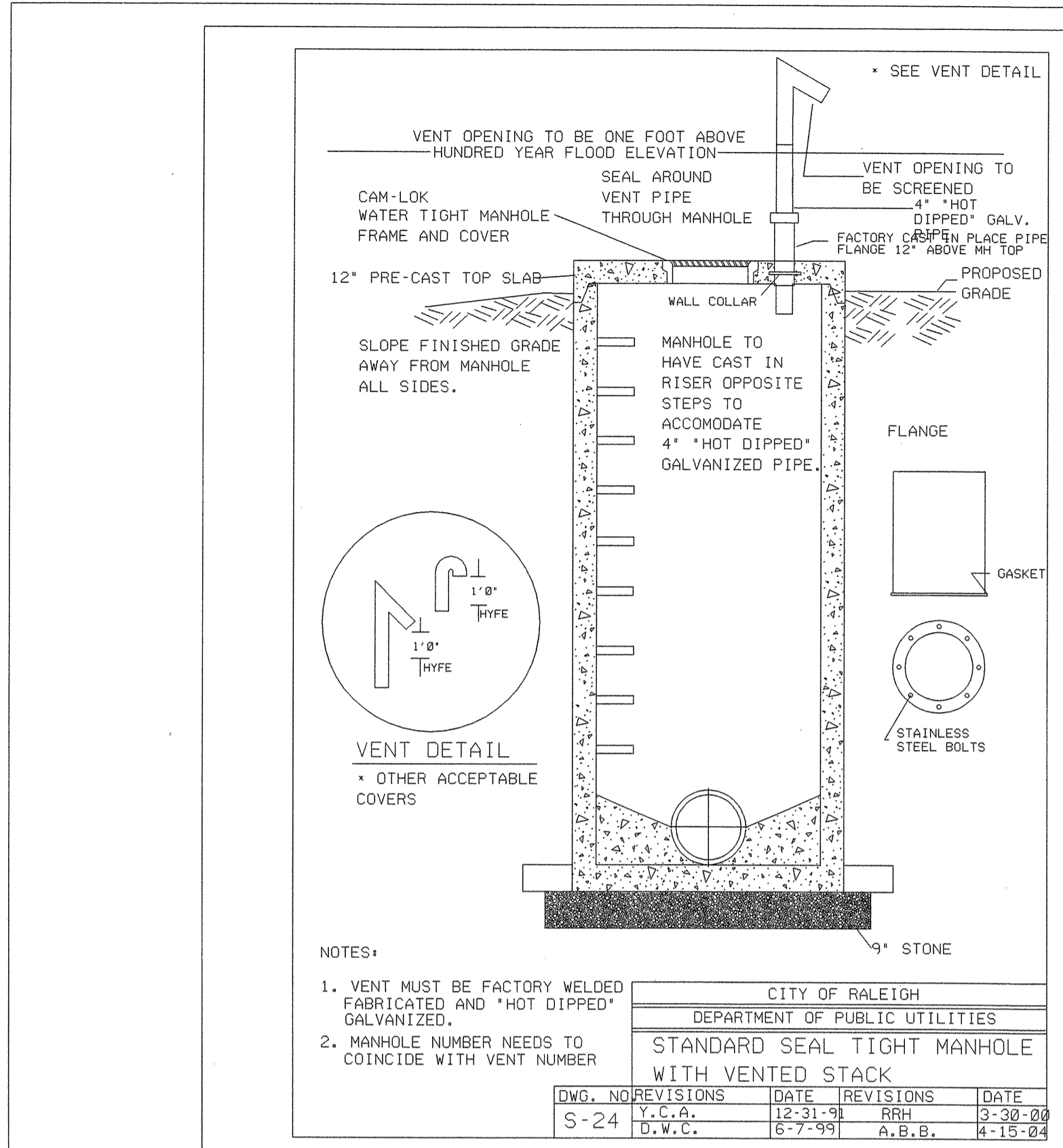
Engineering Department *[Signature]* 2/2/08 Date
 Erosion & Sediment Control _____ Date
 Fire Prevention _____ Date
 Subdivision Administration *[Signature]* 2/19/08 Date
 City of Raleigh Public Utilities Department *[Signature]* 2/14/08 Date

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8/17/99

PROJECT REFERENCE NO. B-3705	SHEET NO. UC-4
DESIGNED BY: ABY	
DRAWN BY: ABY	
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	

UTILITY CONSTRUCTION



THESE PLANS HAVE BEEN APPROVED FOR CONSTRUCTION BY THE TOWN OF WAKE FOREST AND THE CITY OF RALEIGH.

Engineering Department 2/2/08 Date

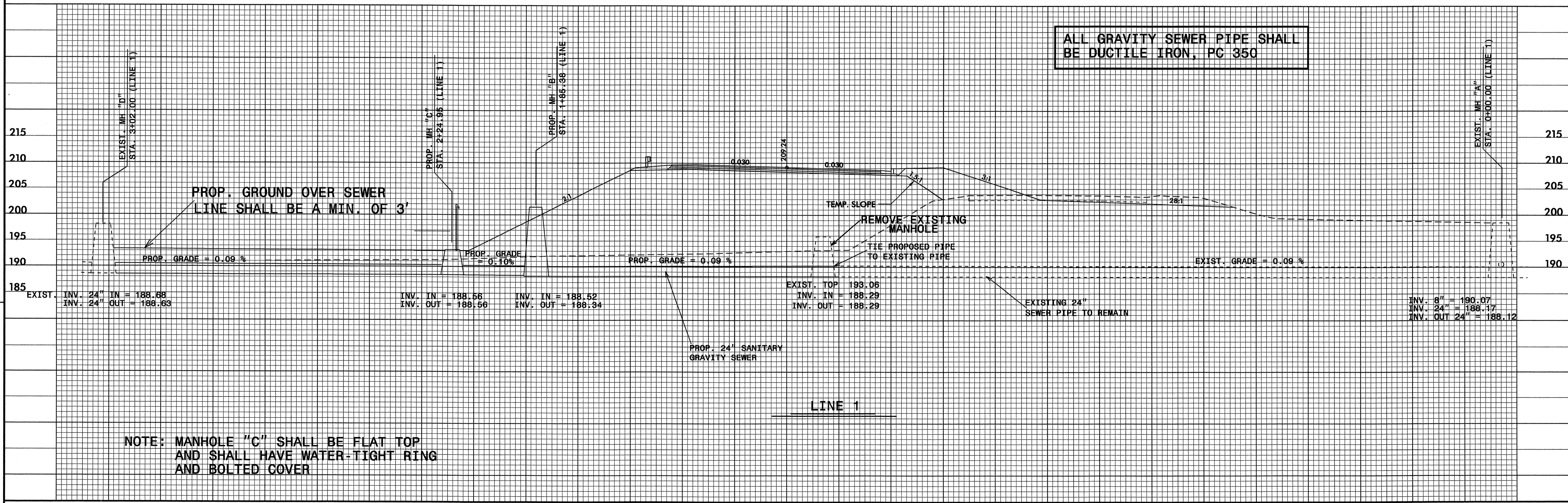
Erosion & Sediment Control _____ Date

Fire Prevention _____ Date

Subdivision Administration 2/19/08 Date

City of Raleigh Public Utilities Department 2/14/09 Date

REVISIONS



5/14/99

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PROJECT REFERENCE NO.	SHEET NO.
B-3705	UC-5
DESIGNED BY: ABY	
DRAWN BY: ABY	
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	

UTILITY CONSTRUCTION

THESE PLANS HAVE BEEN APPROVED FOR CONSTRUCTION BY THE TOWN OF WAKE FOREST AND THE CITY OF RALEIGH.

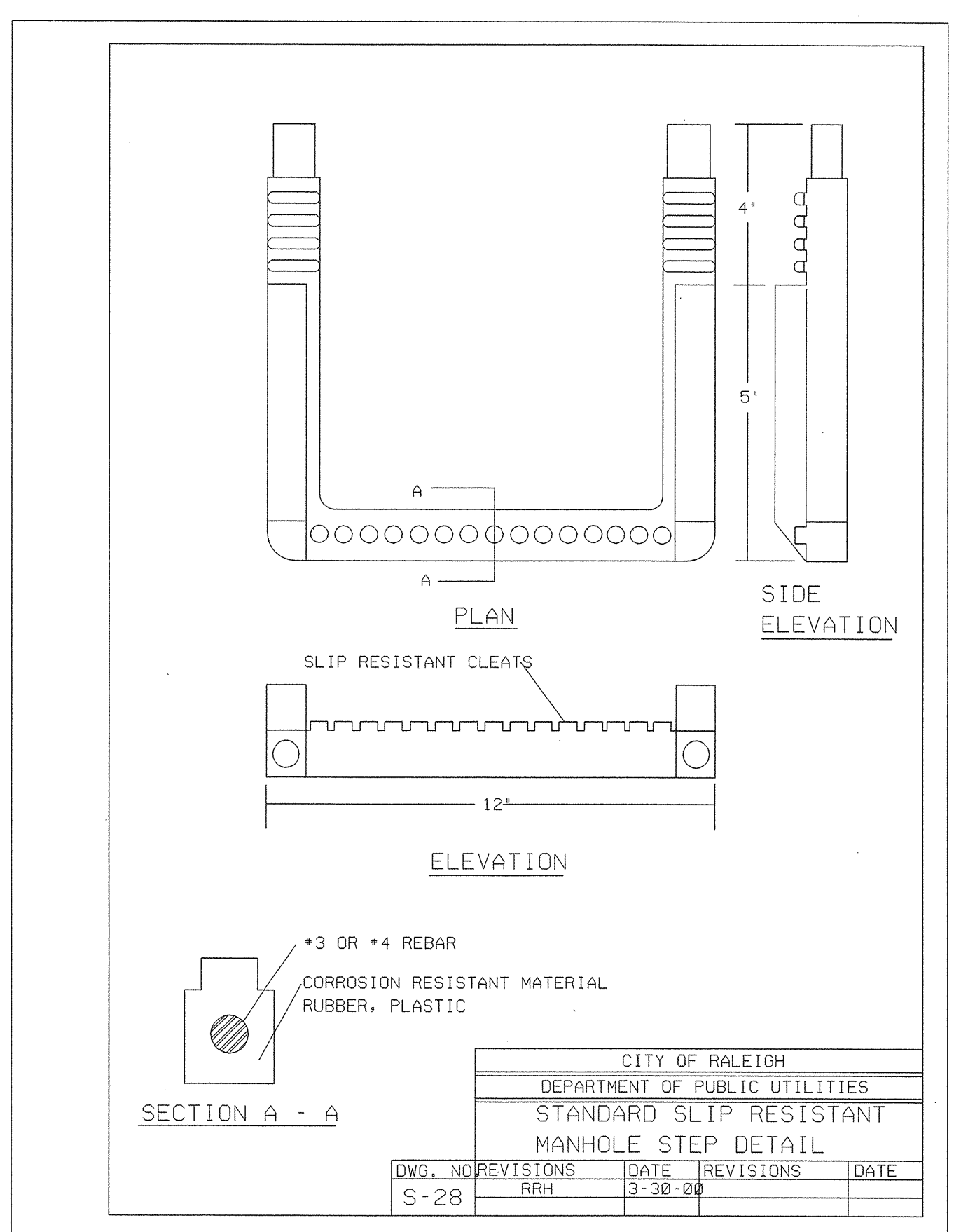
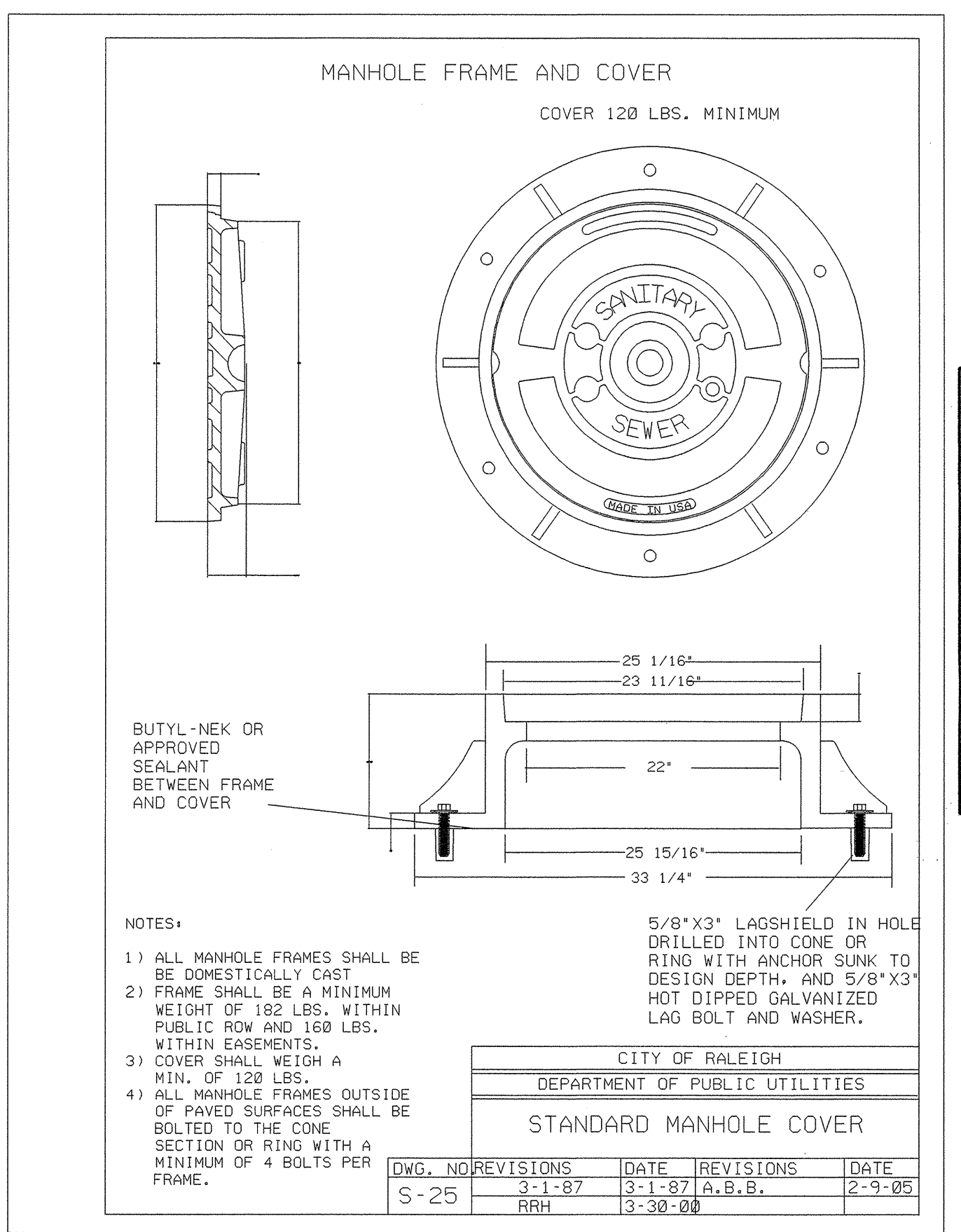
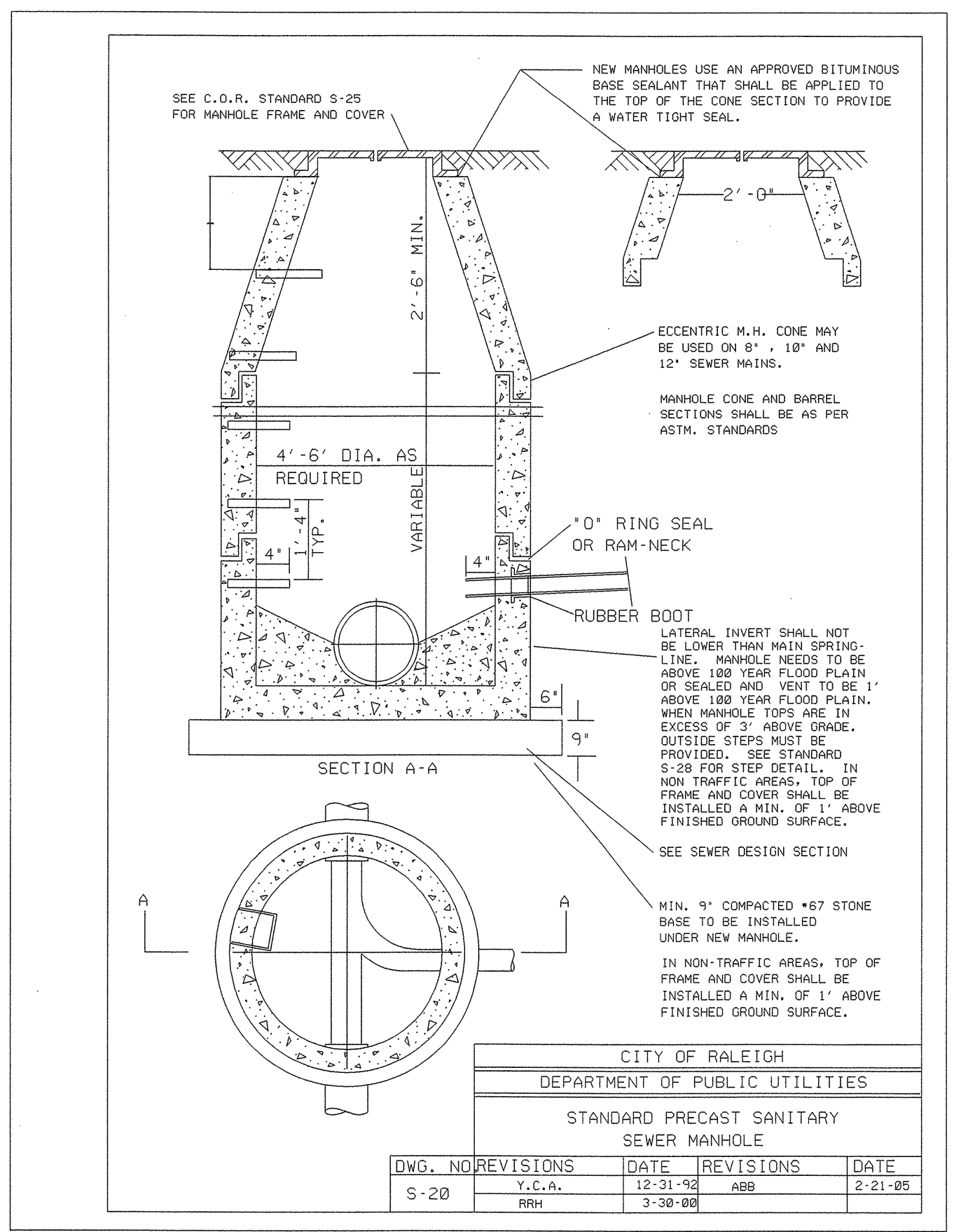
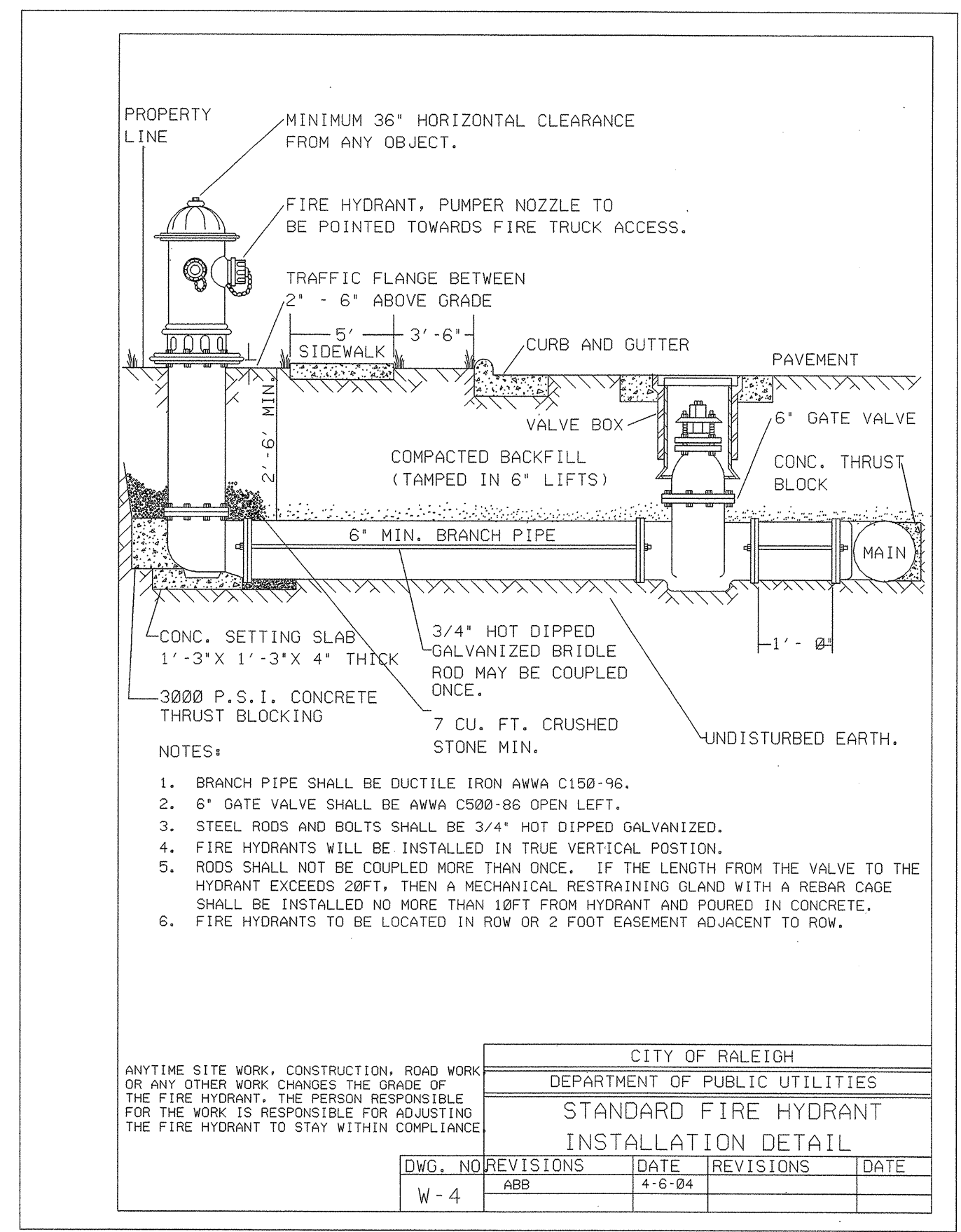
[Signature] 2/22/08
 Engineering Department Date

Erosion & Sediment Control Date

Fire Prevention Date

[Signature] 2/19/08
 Subdivision Administration Date

[Signature] 2/14/08
 City of Raleigh Public Utilities Department Date



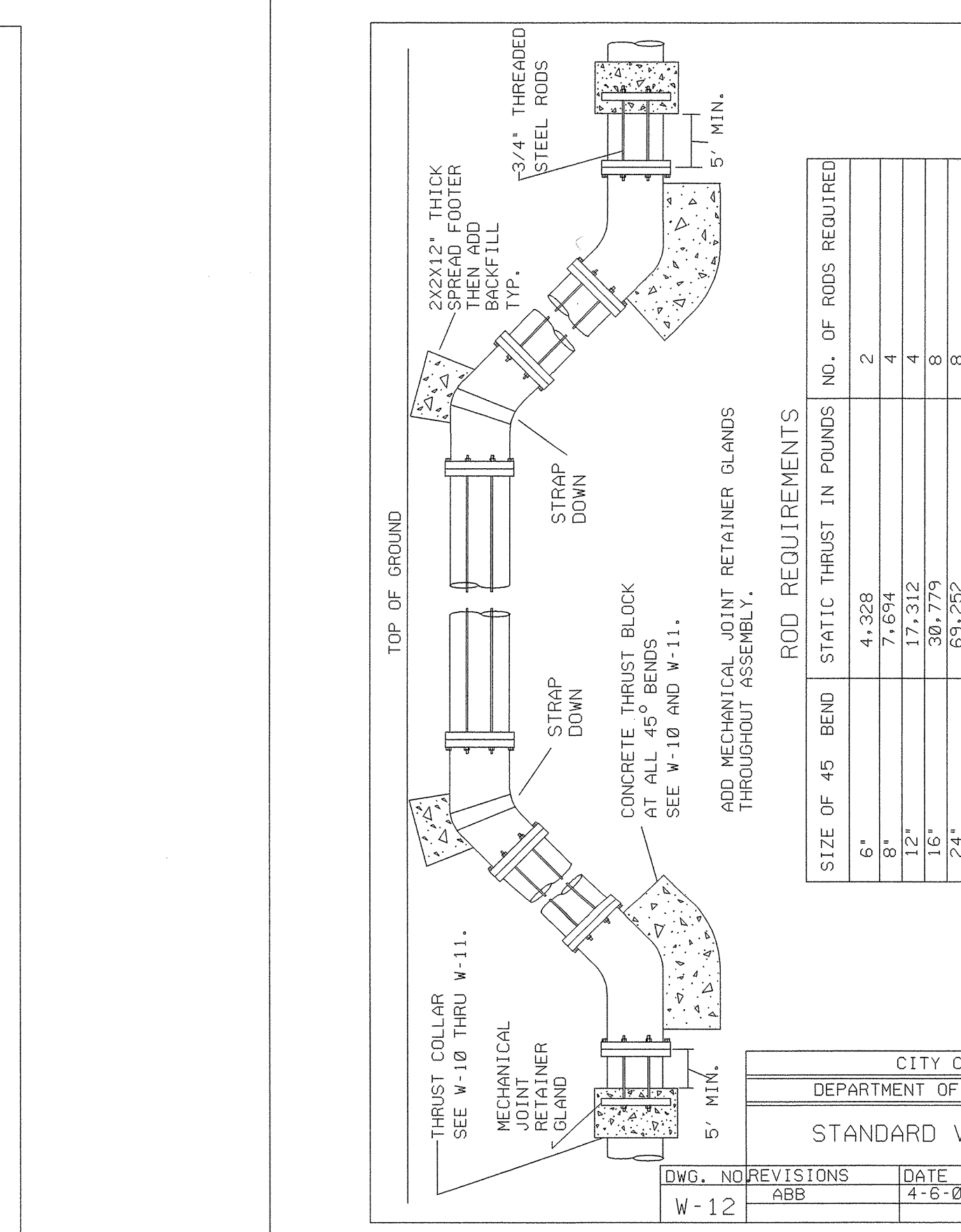
REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS
 BASED ON TEST PRESSURE OF 200 P.S.I.
 ALL AREAS GIVEN IN SQUARE FEET.

SIZE AND DEGREE OF BEND	STATIC THRUST IN POUNDS	INDUSTRIALLY DRY CLAY 1000 LBS/FT	SOFT CLAY 2000 LBS/FT	GRUEL COARSE SAND 1000 LBS/FT	DRY CLAY - ALWAYS DRY 2000 LBS/FT	SAND COMPACT FIRM 2000 LBS/FT	SAND CLEAN DRY 1000 LBS/FT	DUCKSAND - VERY POOR SOIL 1000 LBS/FT	ROCK - POOR 10,000 LBS/FT
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.

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

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



GENERAL NOTES:

- STEEL RODS AND BOLTS SHALL BE 3/4" HOT DIPPED GALVANIZED.
- CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT BENDS.
- RESTRAINED MECHANICAL GLANDS TO BE USED AT ALL FITTINGS.
- MUST USE DUCTILE IRON EYE BOLTS WHERE NECESSARY.

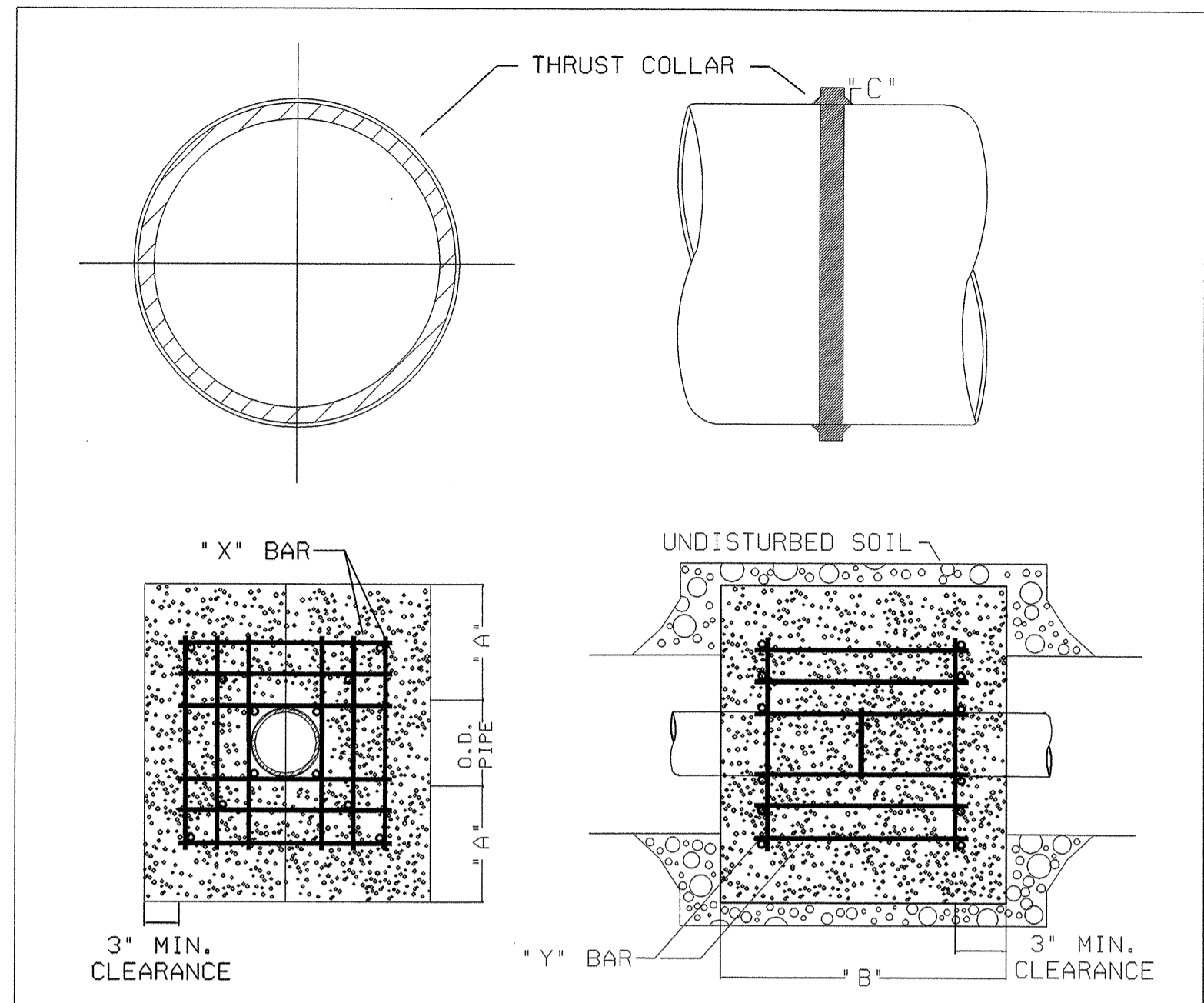
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-3705	UC-6
DESIGNED BY: ABY	
DRAWN BY: ABY	
CHECKED BY: JSM	
APPROVED BY: JSM	
REVISOR:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION PROJECT SERVICES UNIT PHONE: (919)250-4128 FAX: (919)250-4119	
UTILITY CONSTRUCTION PLANS ONLY	

UTILITY CONSTRUCTION

THESE PLANS HAVE BEEN APPROVED FOR CONSTRUCTION BY THE TOWN OF WAKE FOREST AND THE CITY OF RALEIGH.

Engineering Department	<i>[Signature]</i> 2/22/00 Date
Erosion & Sediment Control	Date
Fire Prevention	Date
Subdivision Administration	<i>[Signature]</i> 2/19/08 Date
City of Raleigh Public Utilities Department	Date



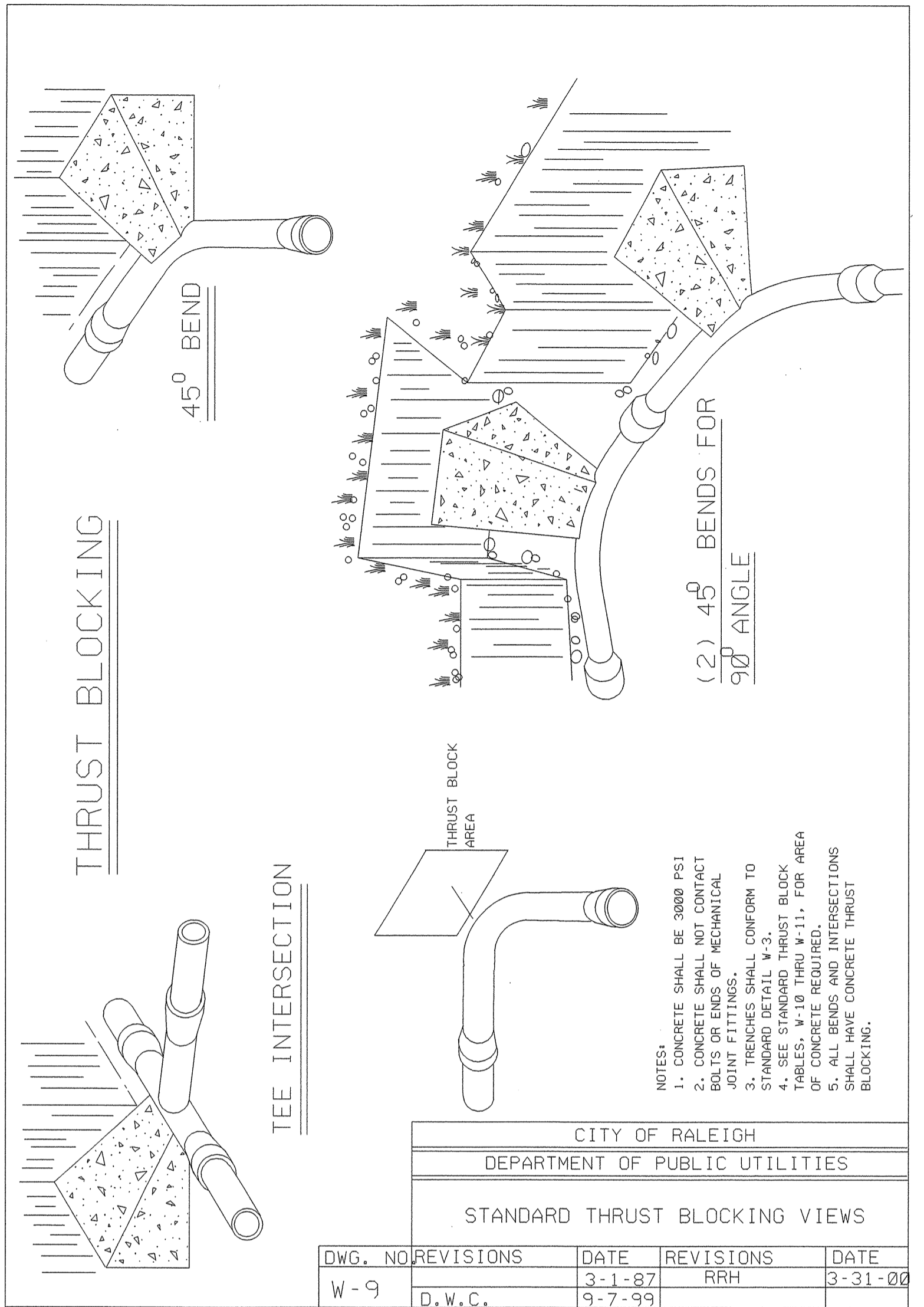
I.D. PIPE	REBAR SIZE	"X" BAR LENGTH	"X" BAR WEIGHT	"Y" BAR LENGTH	"Y" BAR WEIGHT	NO. REQUIRED
6" - 36"	#5	2'-2" O.D. PIPE	1.843 LBS/FT	1'-1"	1.1 LBS. EACH	X-24, Y-12
48" & GREATER	#6	3'-0" O.D. PIPE	1.582 LBS/FT	1'-3"	1.9 LBS. EACH	X-24, Y-12

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

- 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.

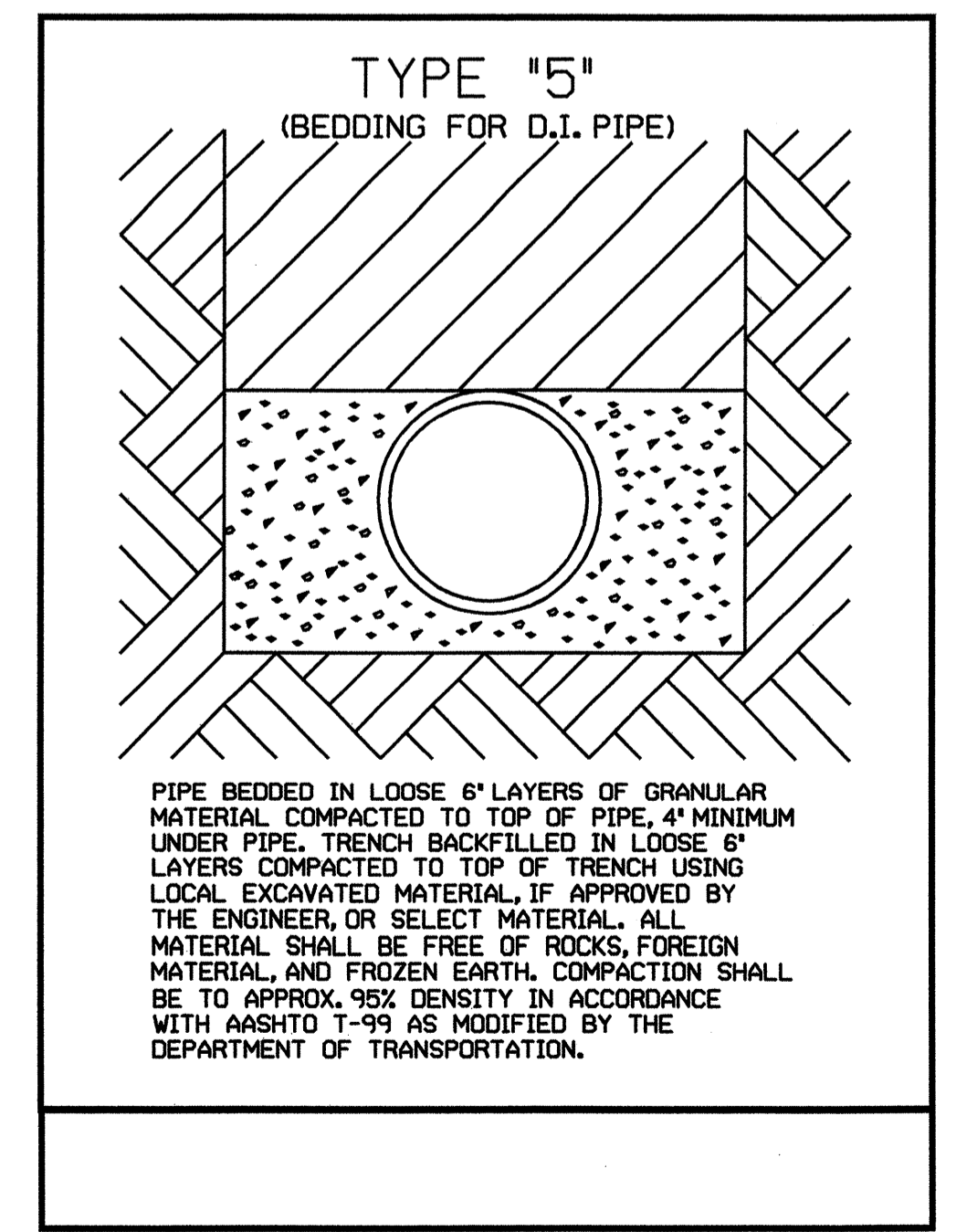
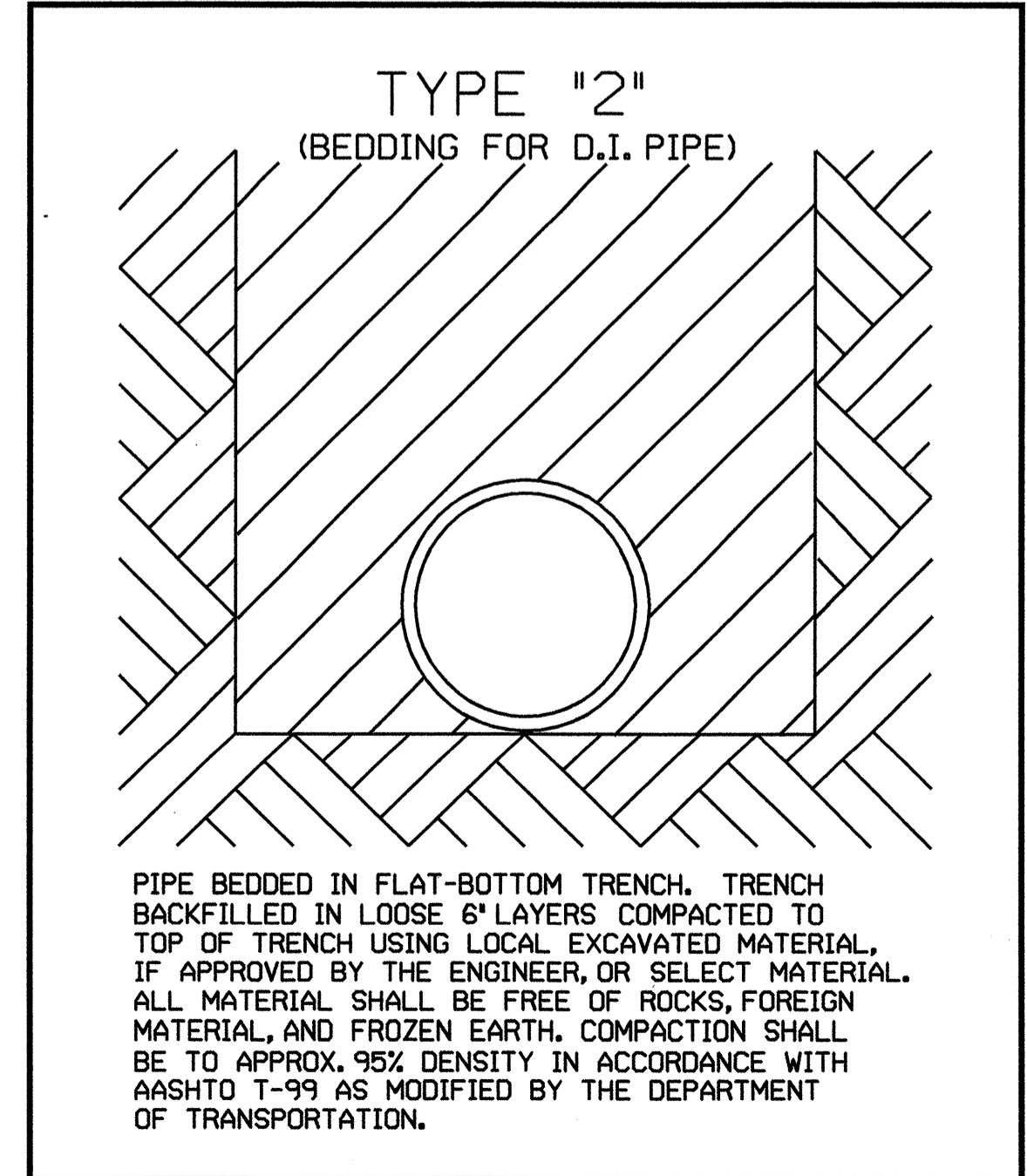
CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
THRUST BLOCKING DESIGN DATA
FOR WATER MAINS

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



- NOTES:
- CONCRETE SHALL BE 3000 PSI
 - CONCRETE SHALL BE CONTACT BOLTS OR BARS OF MECHANICAL JOINT FITTINGS.
 - TRENCHES SHALL CONFORM TO STANDARD DETAIL W-3.
 - SEE STANDARD THRUST BLOCK DETAIL W-3 FOR AREA OF CONCRETE REQUIRED.
 - ALL BENDS AND INTERSECTIONS SHALL HAVE CONCRETE THRUST BLOCKING.

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		



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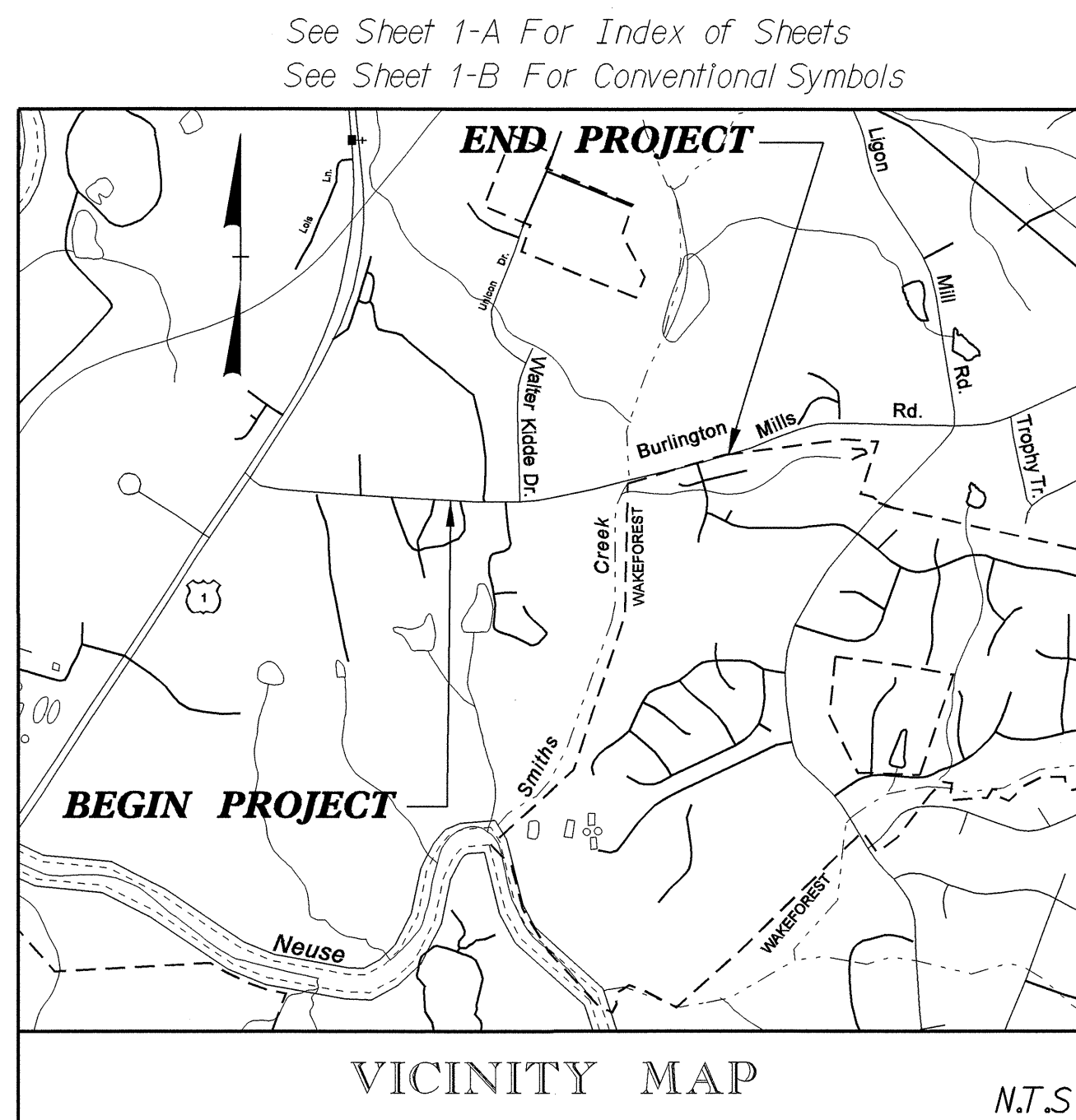
T.I.P. NO.	SHEET NO.
B-3705	UO-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

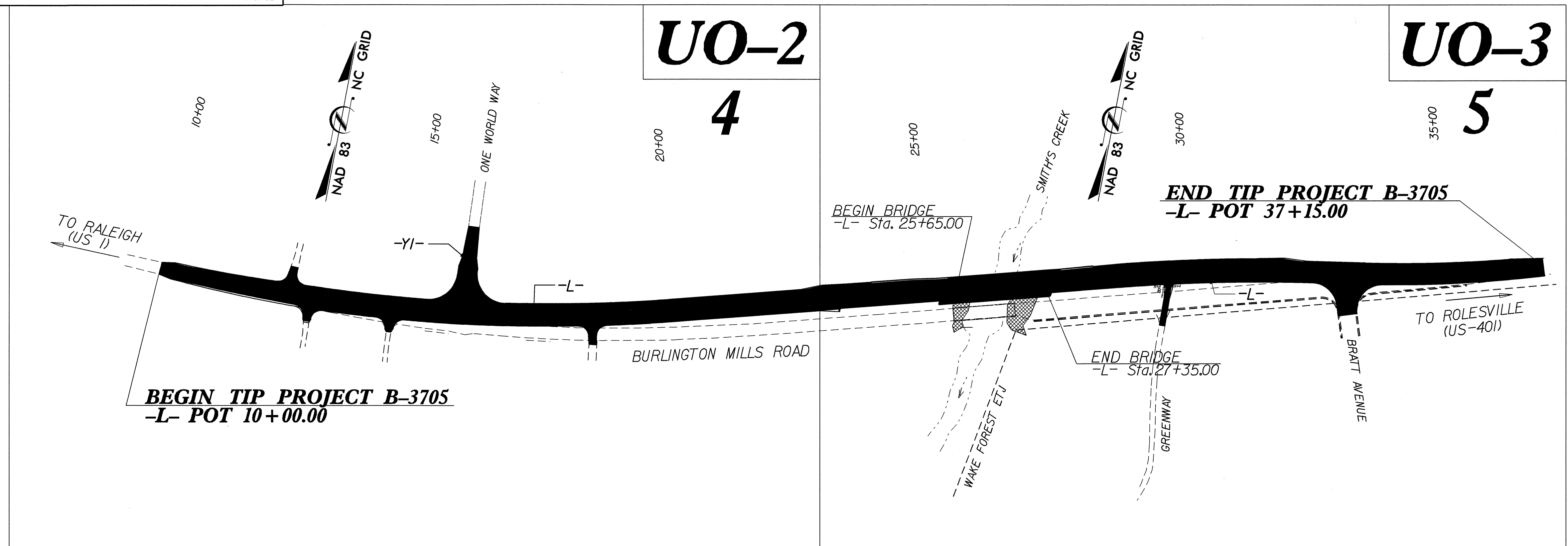
**UTILITIES BY OTHERS PLANS
WAKE COUNTY**

**LOCATION: BRIDGE NO. 125 OVER SMITH CREEK ON
SR 2045 (BURLINGTON MILLS ROAD)**

TYPE OF WORK: UTILITIES

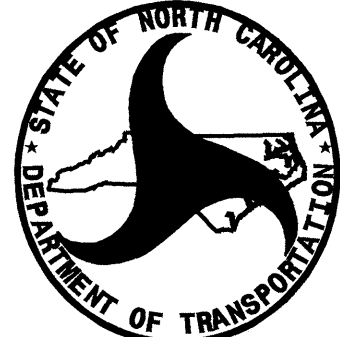


TIP B-3705



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) EMBARQ
(2) GIBSON & GIBSON LLC
(3) PSNC ENERGY



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

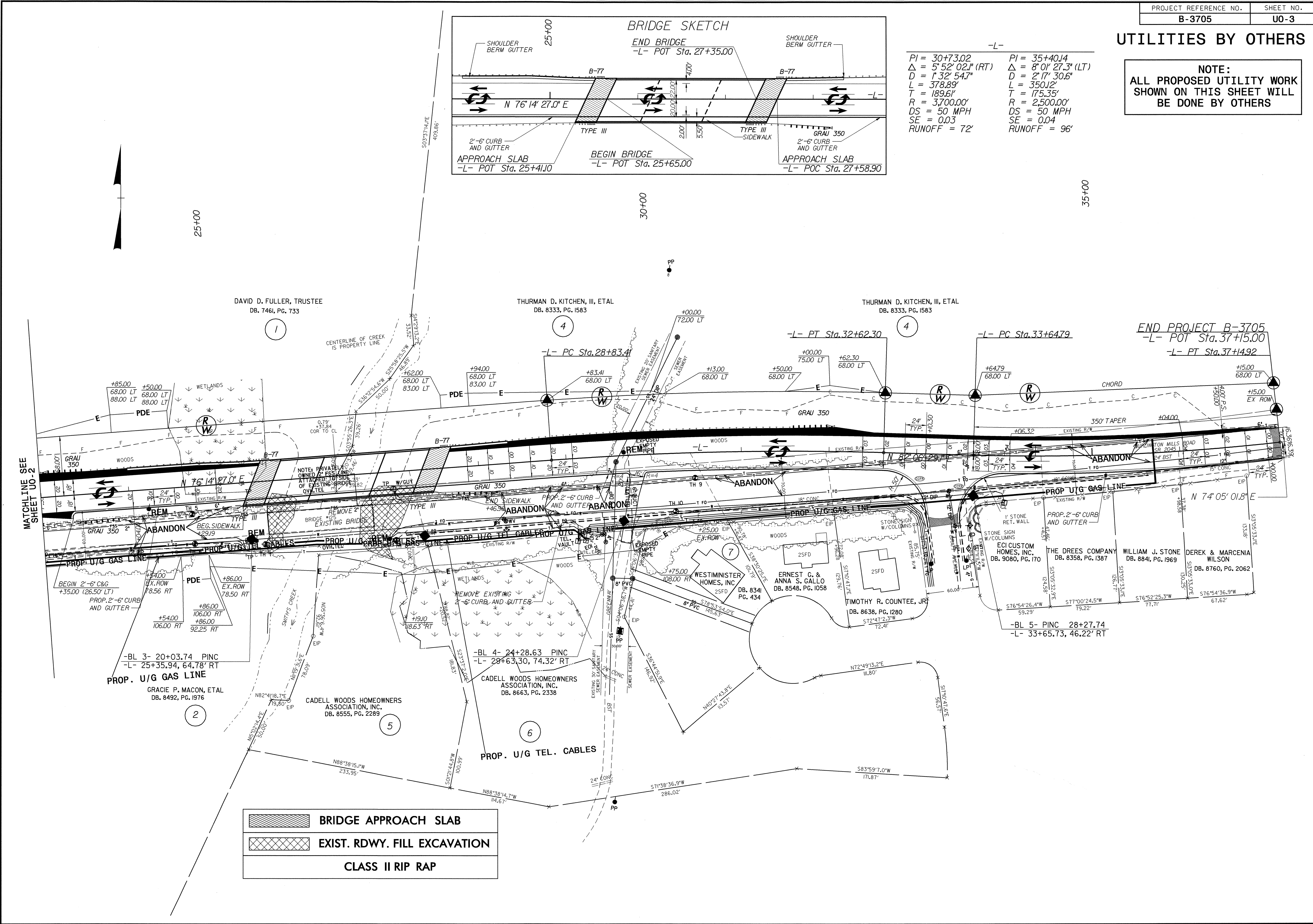
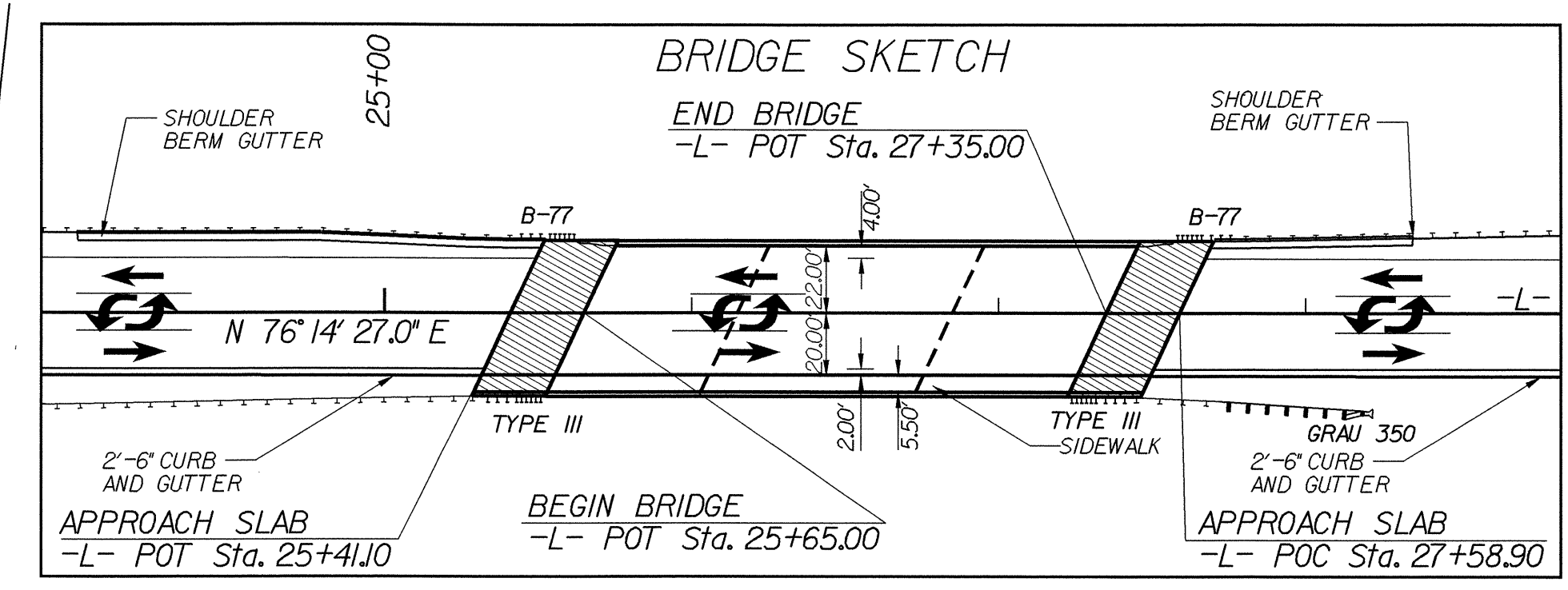
1591 MAIL SERVICES CENTER
RALEIGH NC 27699-1591
PHONE (919) 250-4128
FAX (919) 250-4119

<u>Roger Worthington, P.E.</u>	UTILITIES SECTION ENGINEER
<u>Steve Mckee, P.E.</u>	UTILITIES SQUAD LEADER PROJECT ENGINEER
<u>Alonza Yancey</u>	UTILITIES PROJECT DESIGNER

UTILITIES BY OTHERS

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

-L-
 PI = 30+73.02 PI = 35+40.14
 Δ = 5°52'02" (RT) Δ = 8°01'27.3" (LT)
 D = 1°32'54.7" D = 2°17'30.6"
 L = 378.89' L = 350.12'
 T = 189.61' T = 175.35'
 R = 3,700.00' R = 2,500.00'
 DS = 50 MPH DS = 50 MPH
 SE = 0.03 SE = 0.04
 RUNOFF = 72' RUNOFF = 96'



	BRIDGE APPROACH SLAB
	EXIST. RDWY. FILL EXCAVATION
	CLASS II RIP RAP

20-DEC-2007 07:43
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 5/14/99