

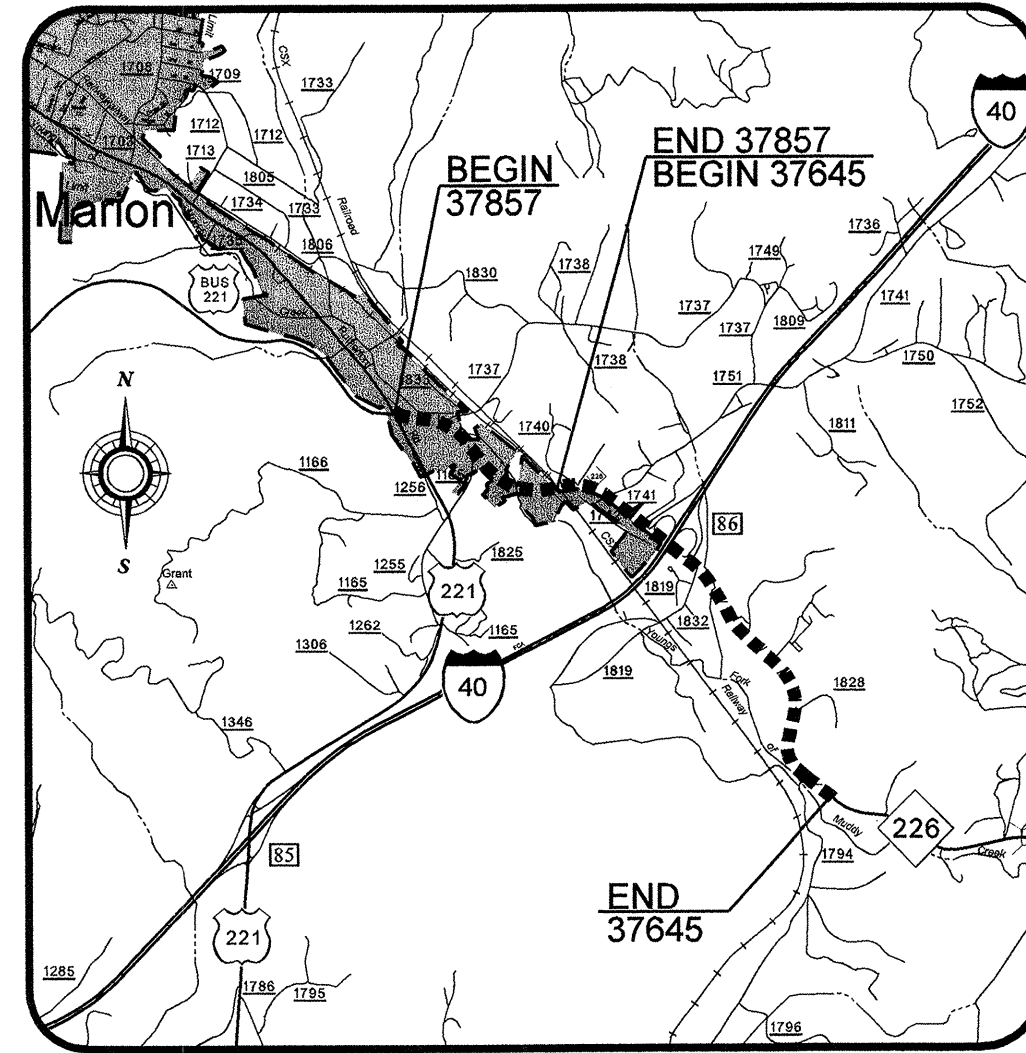
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE PROJECT REFERENCE NO.	SHEET NO.
37645 & 37857	UC-1

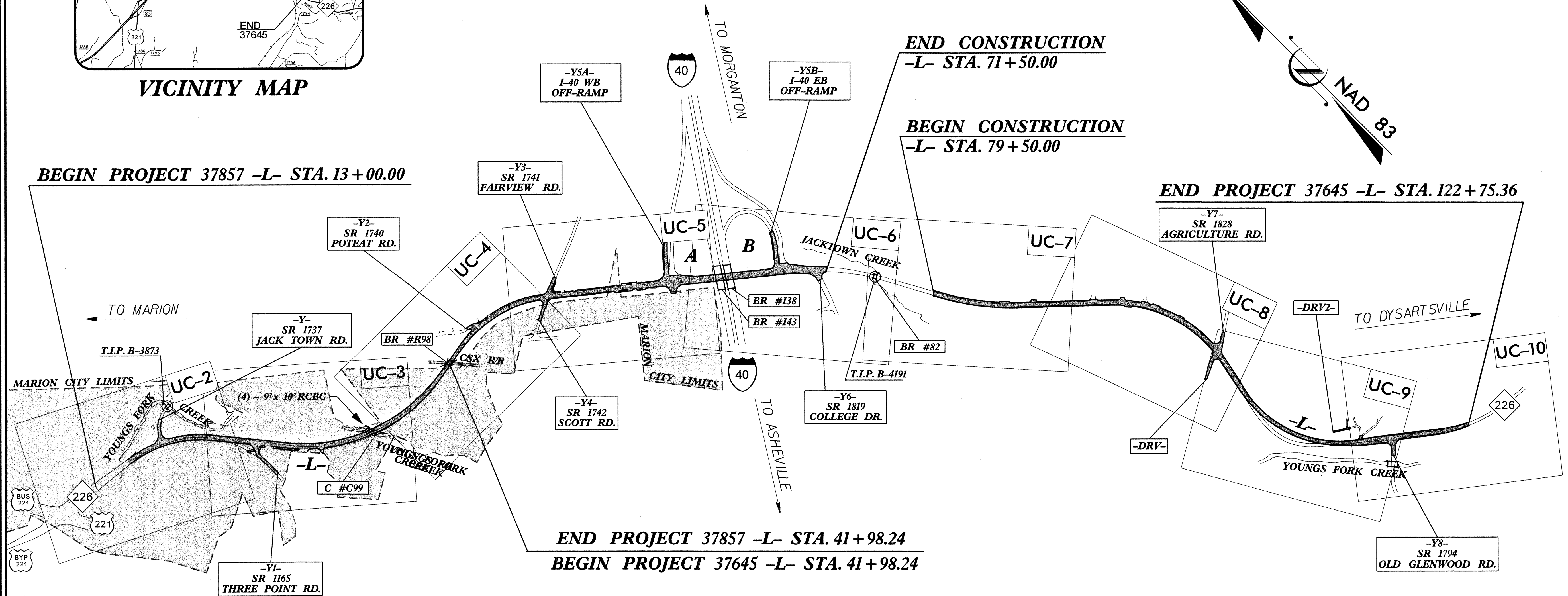
UTILITY CONSTRUCTION PLANS
McDOWELL COUNTY

LOCATION: 37857 - NC 226 FROM SOUTH OF US 221 TO CSX RAILROAD
37645 - NC 226 FROM CSX RAILROAD TO EAST OF SR 1794

TYPE OF WORK: WATER AND SANITARY SEWER RELOCATIONS



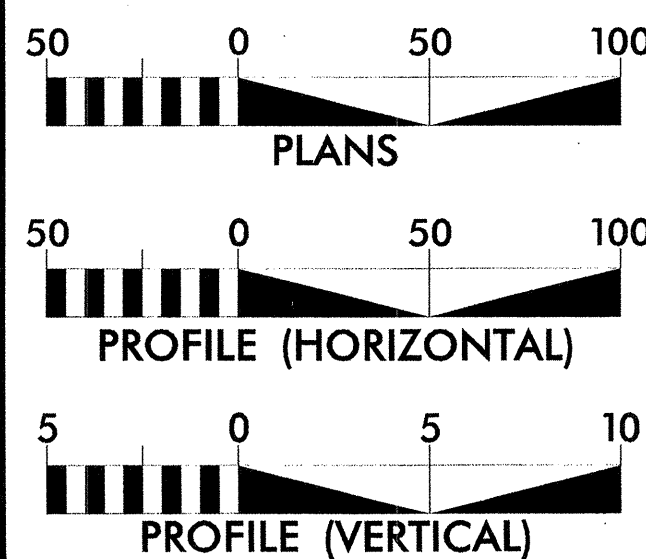
VICINITY MAP



WBS: 37645 & 37857

CONTRACT: C201781

GRAPHIC SCALES



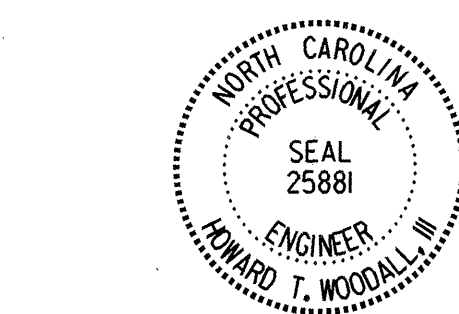
INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UC-1	TITLE SHEET
UC-2 THRU UC-10	UTILITY CONSTRUCTION PLAN SHEETS
UC-11 THRU UC-14	PROFILE SHEETS
UC-15 THRU UC-23	DETAILS SHEET(S)

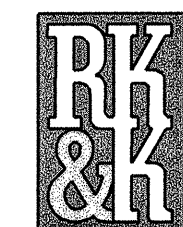
WATER AND SEWER OWNERS ON PROJECT

- (1) WATER - CITY OF MARION
- (2) SANITARY SEWER - CITY OF MARION

UTILITIES ENGINEER



Greg Shuler
P.E.
11/8/00



PLANS PREPARED BY :
RUMEL, KLEPPER & KAHL, LLP
consulting engineers
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609
FOR

DIVISION OF HIGHWAYS

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 25, 2005

LETTING DATE:

B. Keith Skinner, P.E.
PROJECT ENGINEER

Stephen E. Roberts, P.E.
PROJECT DESIGN ENGINEER

NCDOT CONTACT: Greg Shuler
Division Project Manager - Division 13

-Y-
 PI Sta 11+59.68 PI Sta 14+47.92
 $\Delta = 56' 02" 59.4" (RT)$ $\Delta = 4' 48" 26.8" (LT)$
 $D = 24' 00" 00.0"$ $D = 2' 30" 00.0"$
 $L = 233.54'$ $L = 192.30'$
 $T = 127.07'$ $T = 96.21'$
 $R = 238.73'$ $R = 2,291.83'$
 SE = SEE PLANS

PROP. 1 - BREAK DOWN & REBUILD EXIST. MH#4
STA. 13+28 -S1-
STA. 18+65 (35' LT) -L-

PROP. MH#3
STA. 12+60 -S1-
STA. 18+57 (32' RT) -L-
PROP. 68' - 8" DI SEWER PIPE, PC 350
PROP. 57' - 24" STEEL ENCASMENT PIPE, 0.25" THICK, BY BORING & JACKING

BEGIN PROJECT 37857 -L- STA. 13+00.00
(SEE PAVEMENT MARKING PLANS)

PROP. MH#2
STA. 11+17 -S1-
STA. 17+09 (26' RT) -L-
PROP. 143' - 8" PVC SEWER PIPE, SDR 26

ADJUST EXISTING MANHOLE

PROP. MH#1
STA. 10+00 -S1-
STA. 15+90 (48' RT) -L-
PROP. 117' - 8" PVC SEWER PIPE, SDR 26

REMOVE & RESET METER AS REQUIRED TO CONSTRUCT SANITARY SEWER.

PROP. 29' - 3/4" PE WATER TUBING, SDR 9, 200 # WP
29' - 1" PVC ENCASMENT PIPE, SCH 40
RECONNECT EXISTING WATER METER

SANITARY SEWER EASEMENT TO BE ACQUIRED BY THE CITY OF MARION.

PROP. 734' - FILL OR REMOVE ABANDONED 10" & 15" PIPES, TC SEWER
PROP. 4 - BREAKDOWN, PLUG & FILL ABANDONED UTILITY MANHOLE

REMOVE EXIST. FIRE HYDRANT AND VALVE AND CAP EXISTING TEE

TEMPORARY ROADWAY CONSTRUCTION EASEMENT

PROP. 1 - FIRE HYDRANT
48' - 6" DI RJ WATER PIPE, PC 350
1 - 12" x 6" RJ DI TEE
1 - 6" GATE VALVE & VALVE BOX, 200#WP
SEE SHEET UC-19 FOR DETAIL

PROP. 101' - 12" DI RJ WATER PIPE, PC 350
4 - 12" 45° DI RJ BENDS
SEE SHEET UC-17 FOR DETAIL

-L-
 PI Sta 19+41.78
 $\Delta = 42' 23" 09.0" (RT)$
 $D = 6' 45" 00.0"$
 $L = 627.94'$
 $T = 329.12'$
 $R = 848.83'$
 $SE = 0.06 \text{ ft/ft}$
 $RO = 180 \text{ ft}$

PLUG & FILL OR REMOVE ABANDONED PIPE

NOTE: ALL DRIVEWAY OPENINGS ARE 20' WIDE UNLESS OTHERWISE SHOWN.

NOTES:
 1. ALL WATER AND SEWER CONSTRUCTION SHALL BE IN ACCORDANCE WITH CITY OF MARION AND/OR NCDOT STANDARDS AND SPECIFICATIONS.
 2. CONTRACTOR TO VERIFY LOCATION OF ALL UTILITIES PRIOR TO BEGINNING WORK.
 3. LOCATE EXISTING SERVICE PRIOR TO SETTING ELEVATION OF NEW C.O. CONNECT TO EXISTING SERVICE LATERAL AS REQUIRED TO MAINTAIN SERVICE.

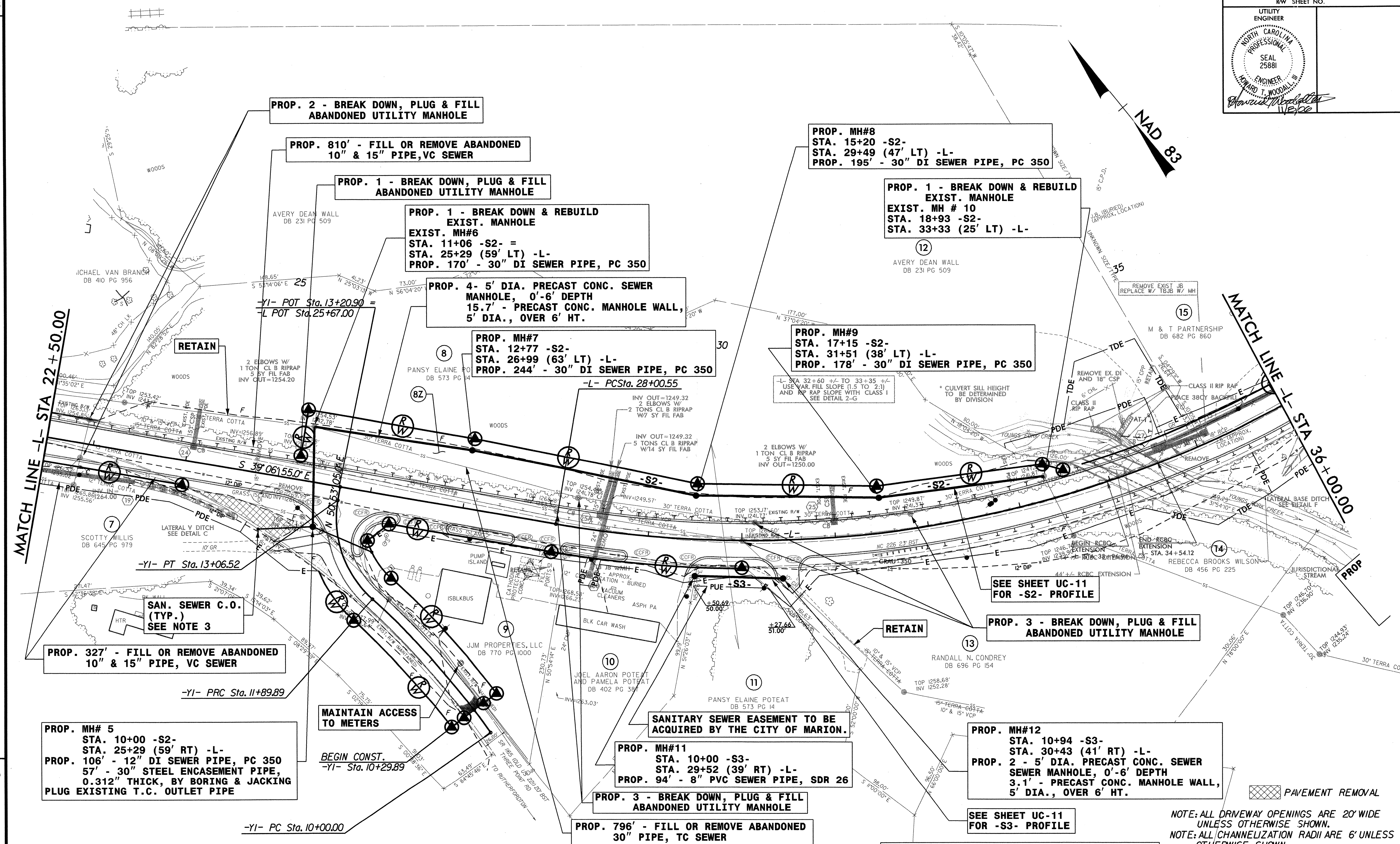
PLANS PREPARED BY :
RUMMEL KLEPPER & KAHL, LLP
consulting engineers
 900 RIDGEFIELD DRIVE SUITE 350
 RALEIGH, NORTH CAROLINA 27609-3960
 (919) 878-9560
FOR
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

REVISIONS

NAD 83

MATCH LINE -L- STA 22+50.00

11/8/2006 P:\utilities\rdg\un\m\37645\37857\UC-2.dwg



PROP. 2 - BREAK DOWN, PLUG & FILL
ABANDONED UTILITY MANHOLE

PROP. 810' - FILL OR REMOVE ABANDONED
10" & 15" PIPE, VC SEWER

PROP. 1 - BREAK DOWN, PLUG & FILL
ABANDONED UTILITY MANHOLE

PROP. 1 - BREAK DOWN & REBUILD
EXIST. MANHOLE
EXIST. MH#6
STA. 11+06 -S2- =
STA. 25+29 (59' LT) -L-
PROP. 170' - 30" DI SEWER PIPE, PC 350

PROP. 4- 5' DIA. PRECAST CONC. SEWER
MANHOLE, 0'-6" DEPTH
15.7' - PRECAST CONC. MANHOLE WALL,
5' DIA., OVER 6' HT.

PROP. MH#7
STA. 12+77 -S2-
STA. 26+99 (63' LT) -L-
PROP. 244' - 30" DI SEWER PIPE, PC 350

PROP. MH#8
STA. 15+20 -S2-
STA. 29+49 (47' LT) -L-
PROP. 195' - 30" DI SEWER PIPE, PC 350

PROP. 1 - BREAK DOWN & REBUILD
EXIST. MANHOLE
EXIST. MH # 10
STA. 18+93 -S2-
STA. 33+33 (25' LT) -L-

PROP. MH#9
STA. 17+15 -S2-
STA. 31+51 (38' LT) -L-
PROP. 178' - 30" DI SEWER PIPE, PC 350

PROP. 327' - FILL OR REMOVE ABANDONED
10" & 15" PIPE, VC SEWER

PROP. MH# 5
STA. 10+00 -S2-
STA. 25+29 (59' RT) -L-
PROP. 106' - 12" DI SEWER PIPE, PC 350
57' - 30" STEEL ENCASUREMENT PIPE,
0.312" THICK, BY BORING & JACKING
PLUG EXISTING T.C. OUTLET PIPE

MAINTAIN ACCESS
TO METERS

PROP. MH#11
STA. 10+00 -S3-
STA. 29+52 (39' RT) -L-
PROP. 94' - 8" PVC SEWER PIPE, SDR 26

PROP. 3 - BREAK DOWN, PLUG & FILL
ABANDONED UTILITY MANHOLE

PROP. 796' - FILL OR REMOVE ABANDONED
30" PIPE, TC SEWER

PROP. 3 - BREAK DOWN, PLUG & FILL
ABANDONED UTILITY MANHOLE

PROP. MH#12
STA. 10+94 -S3-
STA. 30+43 (41' RT) -L-
PROP. 2 - 5' DIA. PRECAST CONC. SEWER
SEWER MANHOLE, 0'-6" DEPTH
3.1' - PRECAST CONC. MANHOLE WALL,
5' DIA., OVER 6' HT.

SEE SHEET UC-11
FOR -S3- PROFILE

-YI-

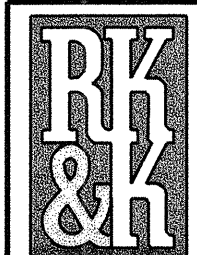
PI Sta 12+53.78	PI Sta 10+95.37
Δ = 58' 06" 38.8" (RT)	Δ = 13' 17" 31.6" (LT)
D = 49' 49" 20.7"	D = 7' 00" 00.0"
L = 116.64'	L = 189.89'
T = 63.89'	T = 95.37'
R = 115.00'	R = 818.51'
SE = SEE PLANS	SE = SEE PLANS

-L-

PI Sta 35+03.06
Δ = 60' 25" 59.0" (LT)
D = 4' 45" 00.0"
L = 1,272.27'
T = 702.51'
R = 1,206.23'
SE = 0.05 ft/ft
RO = 170 ft

NOTES:
1. ALL WATER AND SEWER CONSTRUCTION SHALL BE
IN ACCORDANCE WITH CITY OF MARION AND/OR NCDOT
STANDARDS AND SPECIFICATIONS.
2. CONTRACTOR TO VERIFY LOCATION OF ALL UTILITIES
PRIOR TO BEGINNING WORK.
3. LOCATE EXISTING SERVICE PRIOR TO SETTING
ELEVATION OF NEW C.O. CONNECT TO EXISTING SERVICE
LATERAL AS REQUIRED TO MAINTAIN SERVICE.

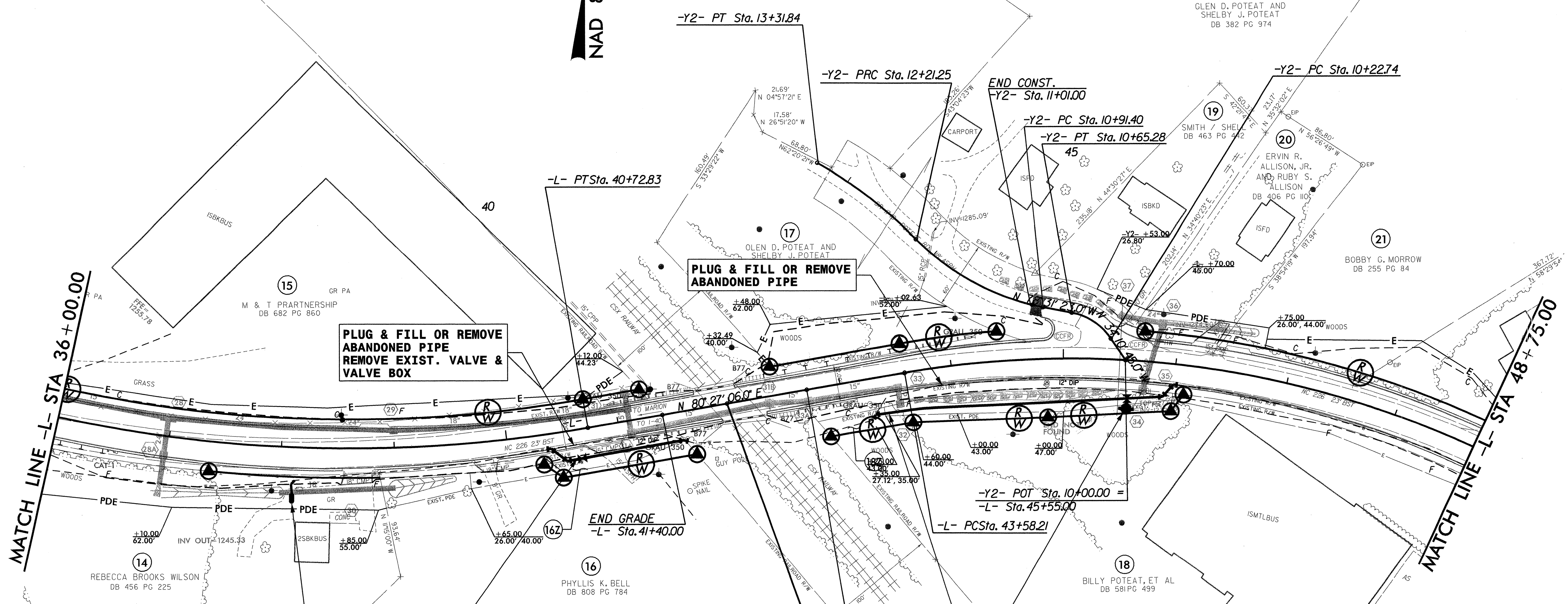
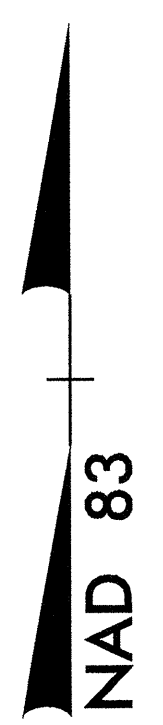
NOTE: ALL DRIVEWAY OPENINGS ARE 20' WIDE
UNLESS OTHERWISE SHOWN.
NOTE: ALL CHANNELIZATION RADII ARE 6' UNLESS
OTHERWISE SHOWN.

PLANS PREPARED BY :

RUMMEL KLEPPER & KAHL, LLP
consulting engineers
 900 RIDGEFIELD DRIVE SUITE 350
 RALEIGH, NORTH CAROLINA 27609-3960
 (919) 878-9560
 FOR
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

REVISIONS

11/7/2015 (est) rdy ut vms 10063-25-ut-1-uc05.dgn
 11/11/2015
 11/11/2015

-Y2-		
PI Sta 10+45.14	PI Sta 11+58.35	PI Sta 12+76.90
$\Delta = 44' 20' 38.0''$ (LT)	$\Delta = 34' 24' 32.6''$ (RT)	$\Delta = 15' 45' 34.6''$ (LT)
D = 104' 15' 00.0"	D = 26' 30' 00.0"	D = 14' 15' 00.0"
L = 42.54'	L = 129.85'	L = 110.59'
T = 22.40'	T = 66.95'	T = 55.65'
R = 54.96'	R = 216.21'	R = 402.08'
SE = SEE PLANS		



PROP. 130' 12" DI RJ WATER PIPE, PC 350
 2 - 12" 45° DI RJ BENDS
 1 - 12" 22 1/2° DI RJ BEND
 1 - 12" GATE VALVE & VALVE BOX,
 200 PSI WP
 SEE SHEET UC-17 FOR DETAIL

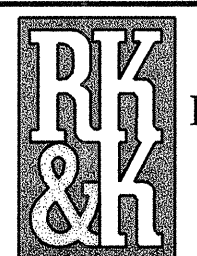
PROP. 274' 12" DI RJ WATER PIPE, PC 350
 3 - 12" 45° DI RJ BENDS
 1 - 12" 11 1/4° DI RJ BEND
 10' - 6" DI RJ WATER PIPE, PC 350
 1 - 12" x 6" DI RJ TEE
 1 - 6" GATE VALVE & VALVE BOX,
 200# WP
 LOCATE VALVE OUTSIDE RIP RAP AREA
 RELOCATE FIRE HYDRANT 1' INSIDE
 PROP. R/W
 REMOVE EXIST. 6" VALVE, VALVE
 BOX, & HYDRANT
 SEE SHEET UC-19 FOR DETAIL

NOTE: ALL DRIVEWAY OPENINGS ARE 20' WIDE UNLESS OTHERWISE SHOWN.

NOTES:
 1. ALL WATER AND SEWER CONSTRUCTION SHALL BE IN ACCORDANCE WITH CITY OF MARION AND/OR NCDOT STANDARDS AND SPECIFICATIONS.
 2. CONTRACTOR TO VERIFY LOCATION OF ALL UTILITIES PRIOR TO BEGINNING WORK.

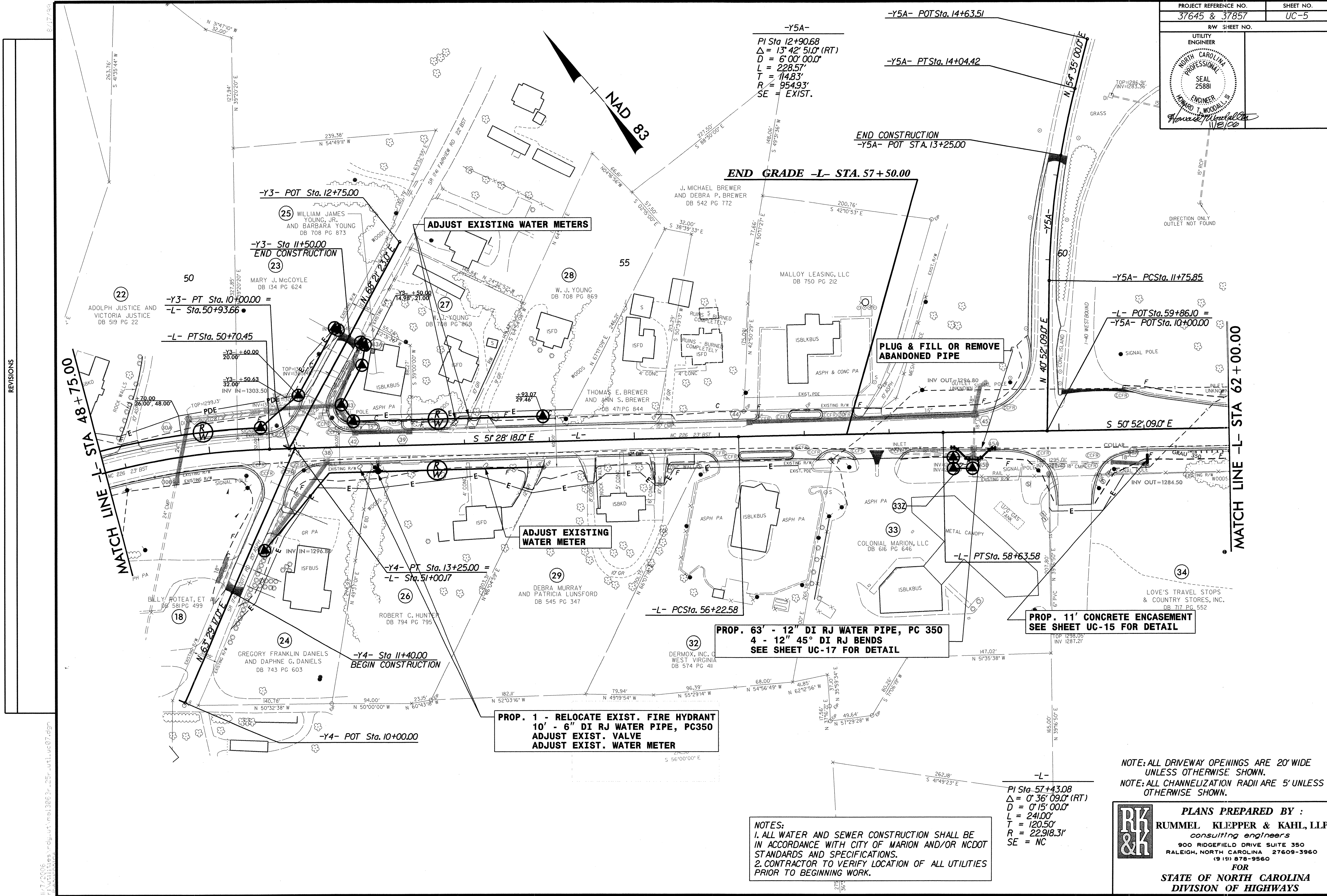
-L-	
PI Sta 35+03.06	
$\Delta = 60' 25' 59.0''$ (LT)	
D = 4' 45' 00.0"	
L = 1,272.27'	
T = 702.51'	
R = 1,206.23'	
SE = 0.05 ft/ft	
RO = 170 ft	

-L-	
PI Sta 47+36.81	
$\Delta = 48' 04' 36.0''$ (RT)	
D = 6' 45' 00.0"	
L = 712.25'	
T = 378.60'	
R = 848.83'	
SE = 0.06 ft/ft	
RO = 180 ft	

PLANS PREPARED BY :

RUMMEL KLEPPER & KAHL, LLP
consulting engineers
 900 RIDGEFIELD DRIVE SUITE 350
 RALEIGH, NORTH CAROLINA 27609-3960
 (919) 878-9560
FOR
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

REVISIONS

11/8/2006
 P:\Utilities\dlucut\m013063r_25r_utiluc06.dgn



REVISIONS

MATCH LINE -L- STA 62+00.00

MATCH LINE -L- STA 48+75.00

PROP. 1 - RELOCATE EXIST. FIRE HYDRANT
 10' - 6" DI RJ WATER PIPE, PC350
 ADJUST EXIST. VALVE
 ADJUST EXIST. WATER METER

PROP. 63' - 12" DI RJ WATER PIPE, PC 350
 4 - 12" 45° DI RJ BENDS
 SEE SHEET UC-17 FOR DETAIL

PROP. 11' CONCRETE ENCASUREMENT
 SEE SHEET UC-15 FOR DETAIL

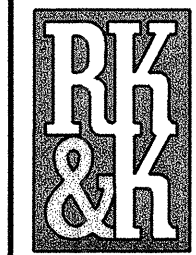
PLUG & FILL OR REMOVE
 ABANDONED PIPE

ADJUST EXISTING WATER METERS

ADJUST EXISTING
 WATER METER

NOTES:
 1. ALL WATER AND SEWER CONSTRUCTION SHALL BE IN ACCORDANCE WITH CITY OF MARION AND/OR NCDOT STANDARDS AND SPECIFICATIONS.
 2. CONTRACTOR TO VERIFY LOCATION OF ALL UTILITIES PRIOR TO BEGINNING WORK.

NOTE: ALL DRIVEWAY OPENINGS ARE 20' WIDE UNLESS OTHERWISE SHOWN.
 NOTE: ALL CHANNELIZATION RADII ARE 5' UNLESS OTHERWISE SHOWN.

PLANS PREPARED BY :

RUMMEL KLEPPER & KAHL, LLP
consulting engineers
 900 RIDGEFIELD DRIVE SUITE 350
 RALEIGH, NORTH CAROLINA 27609-3960
 (919) 878-9560
 FOR
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

-L-
 PI Sta 57+43.08
 $\Delta = 0'36''09.0''$ (RT)
 $D = 0'15''00.0''$
 $L = 241.00'$
 $T = 120.50'$
 $R = 22,918.31'$
 SE = NC

-Y5A-
 PI Sta 12+90.68
 $\Delta = 13'42''51.0''$ (RT)
 $D = 6'00''00.0''$
 $L = 228.57'$
 $T = 114.83'$
 $R = 954.93'$
 SE = EXIST.

-Y5A- POT Sta. 14+63.51

-Y5A- PT Sta. 14+04.42

END CONSTRUCTION
 -Y5A- POT STA. 13+25.00

END GRADE -L- STA. 57+50.00

-Y3- POT Sta. 12+75.00

-Y3- Sta 11+50.00
 END CONSTRUCTION

-Y3- PT Sta. 10+00.00 =
 -L- Sta. 50+93.66

-L- PT Sta. 50+70.45

-Y4- PT Sta. 13+25.00 =
 -L- Sta. 51+00.17

-Y4- Sta 11+40.00
 BEGIN CONSTRUCTION

-Y4- POT Sta. 10+00.00

-Y5A- PCSta. 11+75.85

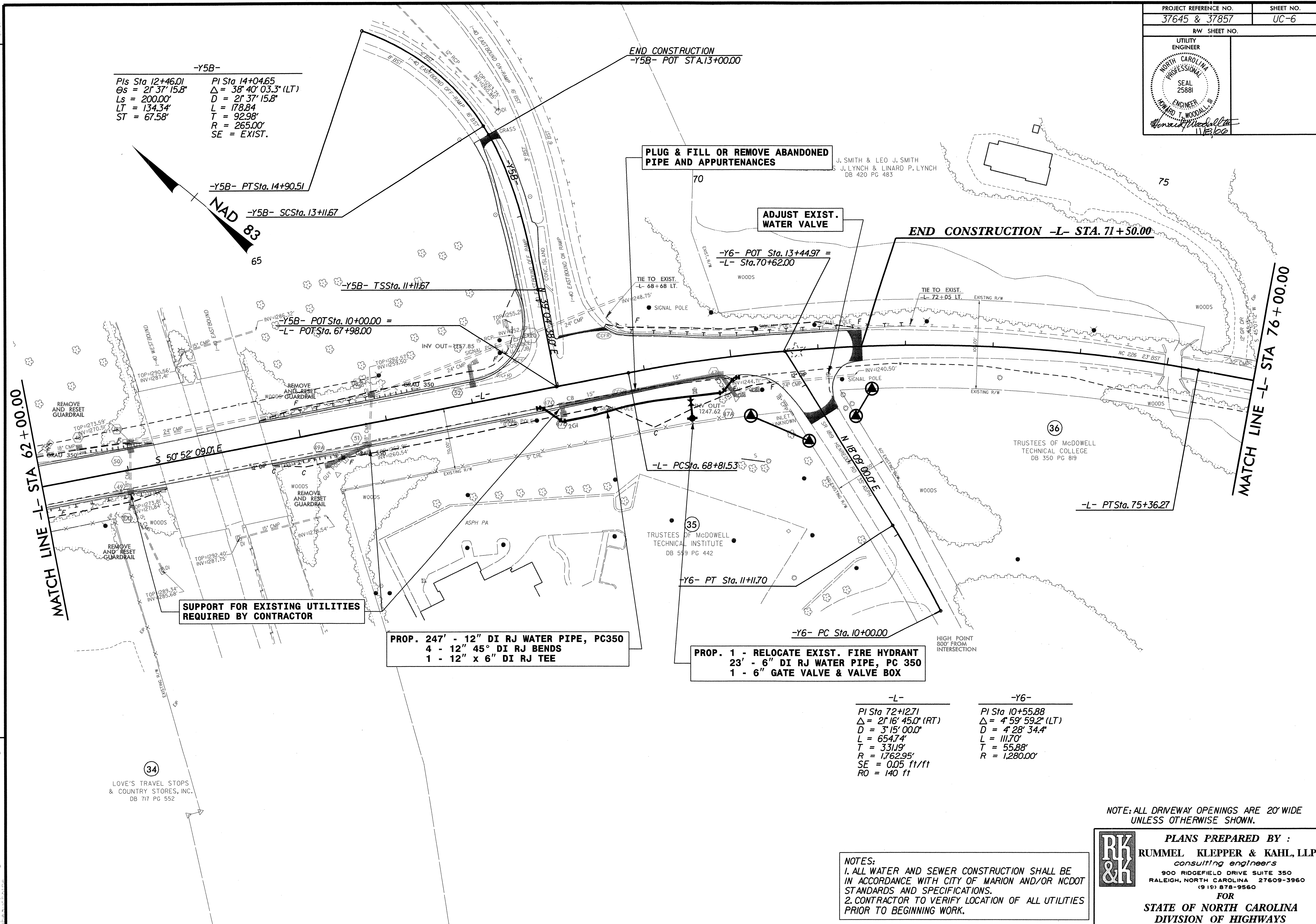
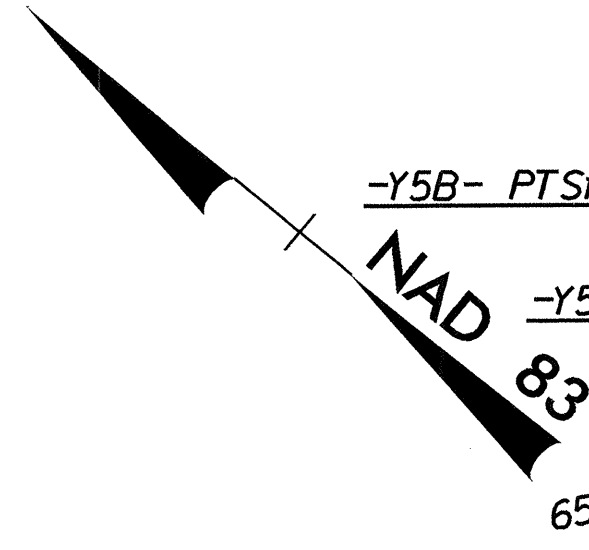
-L- POT Sta. 59+86.10 =
 -Y5A- POT Sta. 10+00.00

-L- PT Sta. 58+63.58

-L- PCSta. 56+22.58

11/7/2006
 P:\Utilities\vdg\ut1.mbl3063r\25r_ut1.uc07.dgn

-Y5B-
 PIs Sta 12+46.01 PI Sta 14+04.65
 $\Delta = 21^{\circ} 37' 15.8''$ $\Delta = 38^{\circ} 40' 03.3''$ (LT)
 $L_s = 200.00'$ $D = 21^{\circ} 37' 15.8''$
 $LT = 134.34'$ $L = 178.84'$
 $ST = 67.58'$ $T = 92.98'$
 $R = 265.00'$
 $SE = EXIST.$



REVISIONS

MATCH LINE -L- STA 62+00.00

MATCH LINE -L- STA 76+00.00

**SUPPORT FOR EXISTING UTILITIES
REQUIRED BY CONTRACTOR**

**PROP. 247' - 12" DI RJ WATER PIPE, PC350
 4 - 12" 45° DI RJ BENDS
 1 - 12" x 6" DI RJ TEE**

**PROP. 1 - RELOCATE EXIST. FIRE HYDRANT
 23' - 6" DI RJ WATER PIPE, PC 350
 1 - 6" GATE VALVE & VALVE BOX**

-L-
 PI Sta 72+12.71
 $\Delta = 21^{\circ} 16' 45.0''$ (RT)
 $D = 3^{\circ} 15' 00.0''$
 $L = 654.74'$
 $T = 331.19'$
 $R = 1,762.95'$
 $SE = 0.05$ ft/ft
 $RO = 140$ ft

-Y6-
 PI Sta 10+55.88
 $\Delta = 4^{\circ} 59' 59.2''$ (LT)
 $D = 4^{\circ} 28' 34.4''$
 $L = 111.70'$
 $T = 55.88'$
 $R = 1,280.00'$

(34)
 LOVE'S TRAVEL STOPS
 & COUNTRY STORES, INC.
 DB 717 PG 552

(35)
 TRUSTEES OF McDOWELL
 TECHNICAL INSTITUTE
 DB 559 PG 442

(36)
 TRUSTEES OF McDOWELL
 TECHNICAL COLLEGE
 DB 350 PG 819

NOTE: ALL DRIVEWAY OPENINGS ARE 20' WIDE UNLESS OTHERWISE SHOWN.

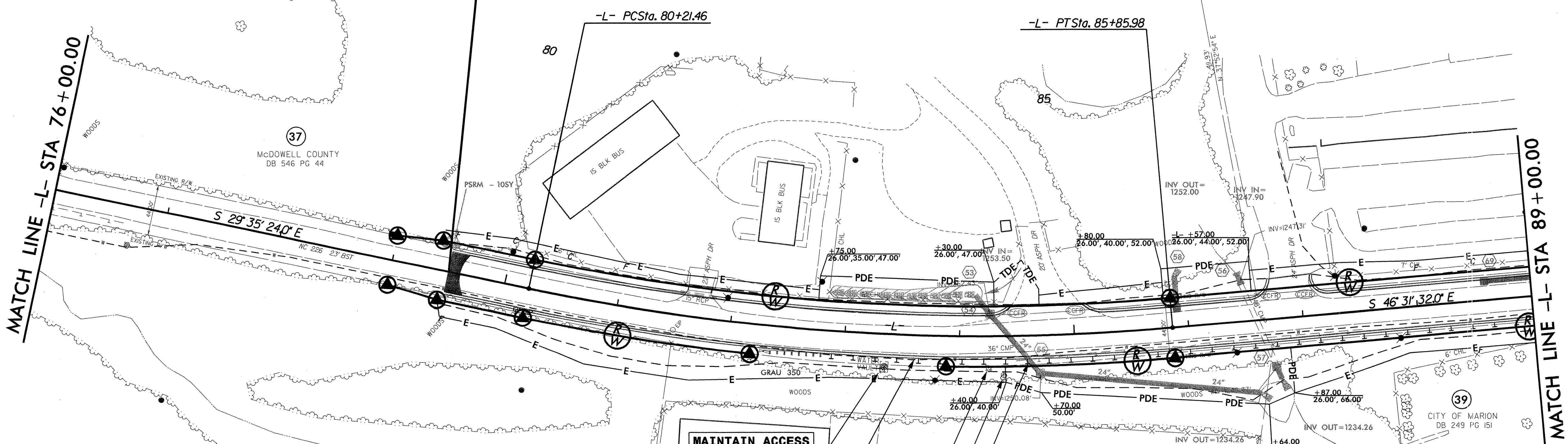
NOTES:
 1. ALL WATER AND SEWER CONSTRUCTION SHALL BE IN ACCORDANCE WITH CITY OF MARION AND/OR NCDOT STANDARDS AND SPECIFICATIONS.
 2. CONTRACTOR TO VERIFY LOCATION OF ALL UTILITIES PRIOR TO BEGINNING WORK.

PLANS PREPARED BY :
RUMMEL KLEPPER & KAHL, LLP
consulting engineers
 900 RIDGEFIELD DRIVE SUITE 350
 RALEIGH, NORTH CAROLINA 27609-3960
 (919) 878-9560
FOR
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

I:\7\3106\ee\yrdy\ut\msl\3063r-25r-ut1.uc08.dgn

BEGIN CONSTRUCTION -L- STA. 79+50.00

40
NORTH CAROLINA DEPT. OF
TRANSPORTATION AND PUBLIC WORKS
NO DEED



MATCH LINE -L- STA 76+00.00

MATCH LINE -L- STA 89+00.00

MAINTAIN ACCESS TO WATER VAULT

VERIFY DEPTH OF EXIST. 12" DIP WATERLINE PRIOR TO GUARDRAIL POST INSTALLATIONS. SEE ROADWAY PLAN.

ADJUST FIRE HYDRANT AND VALVE BOX (NOT LOCATED).

MAINTAIN ACCESS TO WATER METER

VERIFY LOCATION OF 12" DIP WATERLINE PRIOR TO STORM DRAIN INSTALLATION. WATERLINE ASSUMED TO BE BELOW EXIST. 36" CMP. SEE ROADWAY PLAN.

NOTES:
1. ALL WATER AND SEWER CONSTRUCTION SHALL BE IN ACCORDANCE WITH CITY OF MARION AND/OR NCDOT STANDARDS AND SPECIFICATIONS.
2. CONTRACTOR TO VERIFY LOCATION OF ALL UTILITIES PRIOR TO BEGINNING WORK.

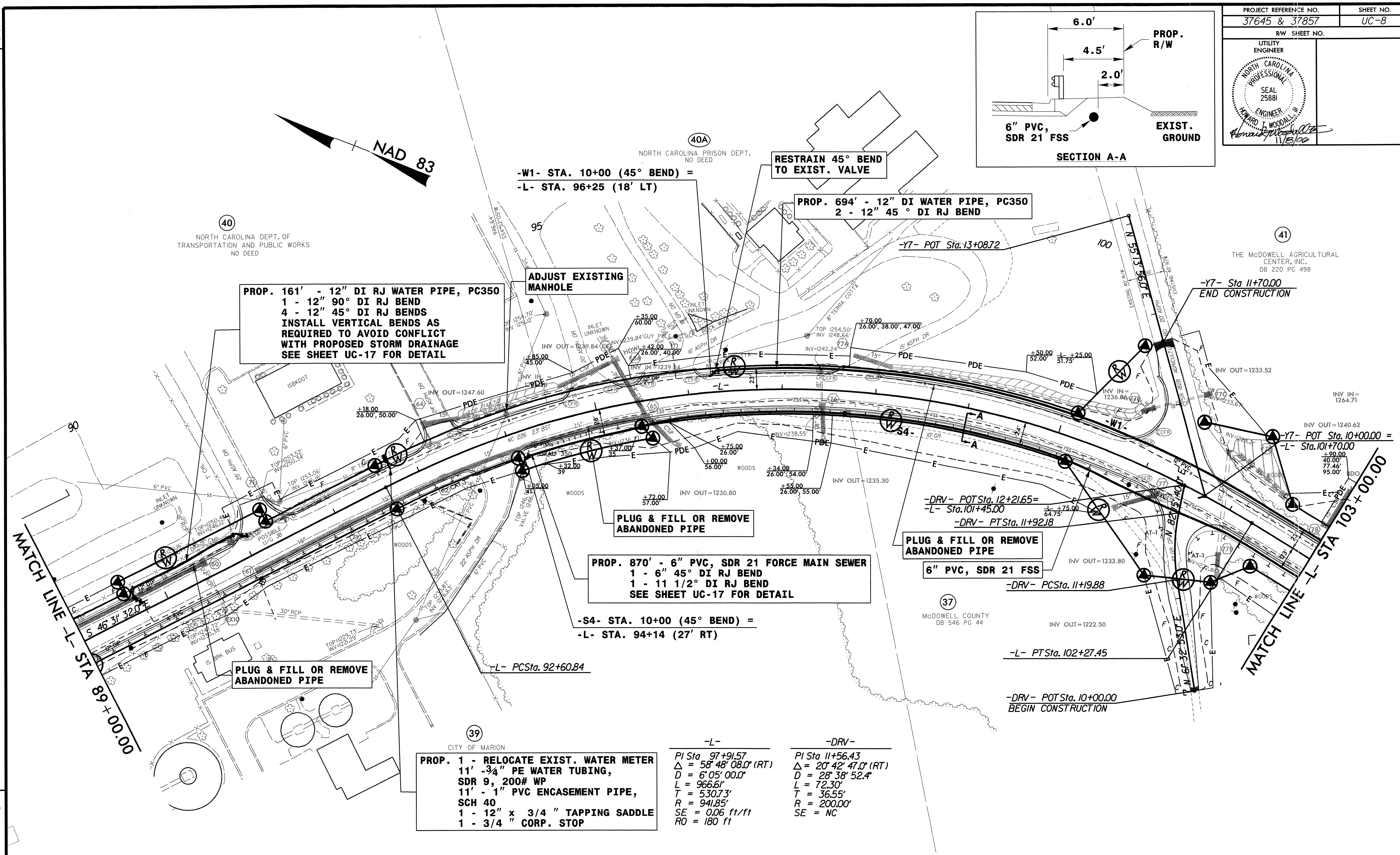
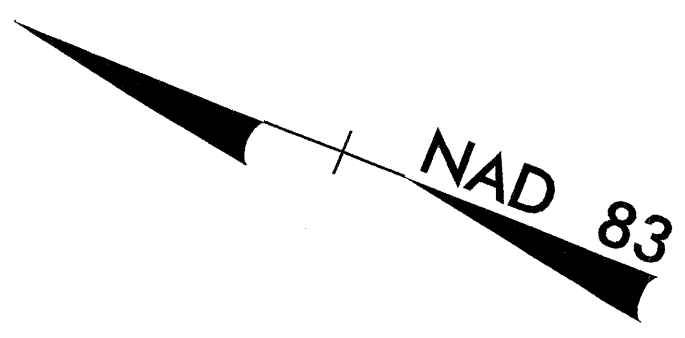
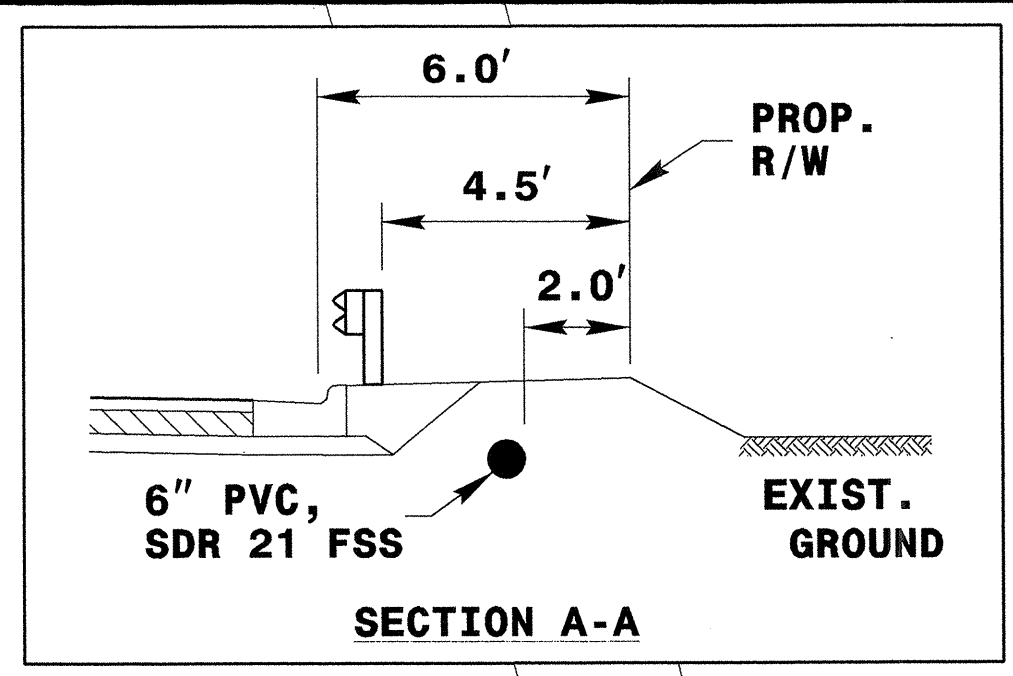
NOTE: ALL DRIVEWAY OPENINGS ARE 20' WIDE UNLESS OTHERWISE SHOWN.

PLANS PREPARED BY :
RUMMEL KLEPPER & KAHL, LLP
consulting engineers
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
(919) 878-9560
FOR
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

-L-
PI Sta 83+05.79
 $\Delta = 16' 56" 08.0" (LT)$
 $D = 3' 00" 00.0"$
 $L = 564.52'$
 $T = 284.33'$
 $R = 1,909.86'$
 $SE = 0.04 \text{ ft/ft}$
 $RO = 130 \text{ ft}$

REVISIONS

11/7/2006
C:\Users\rdj\Documents\130637-251-uc-7.dgn



PROP. 161' - 12" DI RJ WATER PIPE, PC350
 1 - 12" 90° DI RJ BEND
 4 - 12" 45° DI RJ BENDS
 INSTALL VERTICAL BENDS AS REQUIRED TO AVOID CONFLICT WITH PROPOSED STORM DRAINAGE
 SEE SHEET UC-17 FOR DETAIL

ADJUST EXISTING MANHOLE

RESTRAIN 45° BEND TO EXIST. VALVE

PROP. 694' - 12" DI WATER PIPE, PC350
 2 - 12" 45° DI RJ BEND

PLUG & FILL OR REMOVE ABANDONED PIPE

PROP. 870' - 6" PVC, SDR 21 FORCE MAIN SEWER
 1 - 6" 45° DI RJ BEND
 1 - 11 1/2° DI RJ BEND
 SEE SHEET UC-17 FOR DETAIL

PLUG & FILL OR REMOVE ABANDONED PIPE

6" PVC, SDR 21 FSS

PLUG & FILL OR REMOVE ABANDONED PIPE

39 CITY OF MARION
 PROP. 1 - RELOCATE EXIST. WATER METER
 11' - 3/4" PE WATER TUBING,
 SDR 9, 200# WP
 11' - 1" PVC ENCASUREMENT PIPE,
 SCH 40
 1 - 12" x 3/4" TAPPING SADDLE
 1 - 3/4" CORP. STOP

-L-	-DRV-
PI Sta 97+91.57	PI Sta 11+56.43
Δ = 58° 48' 08.0" (RT)	Δ = 20° 42' 47.0" (RT)
D = 6' 05' 00.0"	D = 28' 38' 52.4"
L = 966.61'	L = 72.30'
T = 530.73'	T = 36.55'
R = 941.85'	R = 200.00'
SE = 0.06 ft/ft	SE = NC
RO = 180 ft	

REVISIONS

NOTE: ALL DRIVEWAY OPENINGS ARE 20' WIDE UNLESS OTHERWISE SHOWN.

NOTES:
 1. ALL WATER AND SEWER CONSTRUCTION SHALL BE IN ACCORDANCE WITH CITY OF MARION AND/OR NCDOT STANDARDS AND SPECIFICATIONS.
 2. CONTRACTOR TO VERIFY LOCATION OF ALL UTILITIES PRIOR TO BEGINNING WORK.

PLANS PREPARED BY:
RUMMEL KLEPPER & KAHL, LLP
consulting engineers
 900 RIDGEFIELD DRIVE SUITE 350
 RALEIGH, NORTH CAROLINA 27609-3960
 (919) 878-9560
 FOR
 STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

11/7/2006
 H:\Projects\37645 & 37857\UC-8.dwg
 11/15/2006
 H:\Projects\37645 & 37857\UC-8.dwg
 11/15/2006
 H:\Projects\37645 & 37857\UC-8.dwg

PROP. 1 - RELOCATE EXIST. FIRE HYDRANT
 1' INSIDE PROP. R/W
 14' - 6" DI RJ WATER PIPE, PC 350
 1 - 6" GATE VALVE & VALVE BOX, 200# WP
 1 - RELOCATE EXIST. WATER METER
 10' - 3/4" PE TUBING, SDR 9
 200 PSI WP
 10' - 1" PVC ENCASUREMENT PIPE, SCH 40
 1 - 3/4" CORP. STOP
 1 - 12" x 3/4" TAPPING SADDLE

-L-
 PI Sta 110+11.63
 $\Delta = 64' 15" 52.0" (LT)$
 $D = 6' 50' 00.0"$
 $L = 940.46'$
 $T = 526.63'$
 $R = 838.47'$
 $SE = 0.06 \text{ ft/ft}$
 $RO = 180 \text{ ft}$

-DRV2-
 PI Sta 11+12.21
 $\Delta = 100' 34" 26.3" (LT)$
 $D = 260' 26' 07.3"$
 $L = 38.62'$
 $T = 26.49'$
 $R = 22.00'$
 $SE = RC$

PROP. 1180' - 12" DI RJ WATER PIPE, PC 350
 1 - 12" GATE VALVE & VALVE BOX,
 200 PSI WP
 1 - RELOCATE EXIST. WATER METER
 10' - 3/4" PE TUBING, SDR 9,
 200 PSI WP
 10' - 1" PVC ENCASUREMENT PIPE, SCH 40
 1 - 3/4" CORP. STOP
 1 - 12" x 3/4" TAPPING SADDLE
 SEE SHEET UC-17 FOR DETAIL

-DRV2- PCSta. 10+85.1
 -DRV2- POTSta. 10+00.00 =
 -L- POTSta. 114+75.94
 -DRV2- PTSta. 11+24.34
 -DRV2- POTSta. 11+70.00
 BEGIN CONSTRUCTION

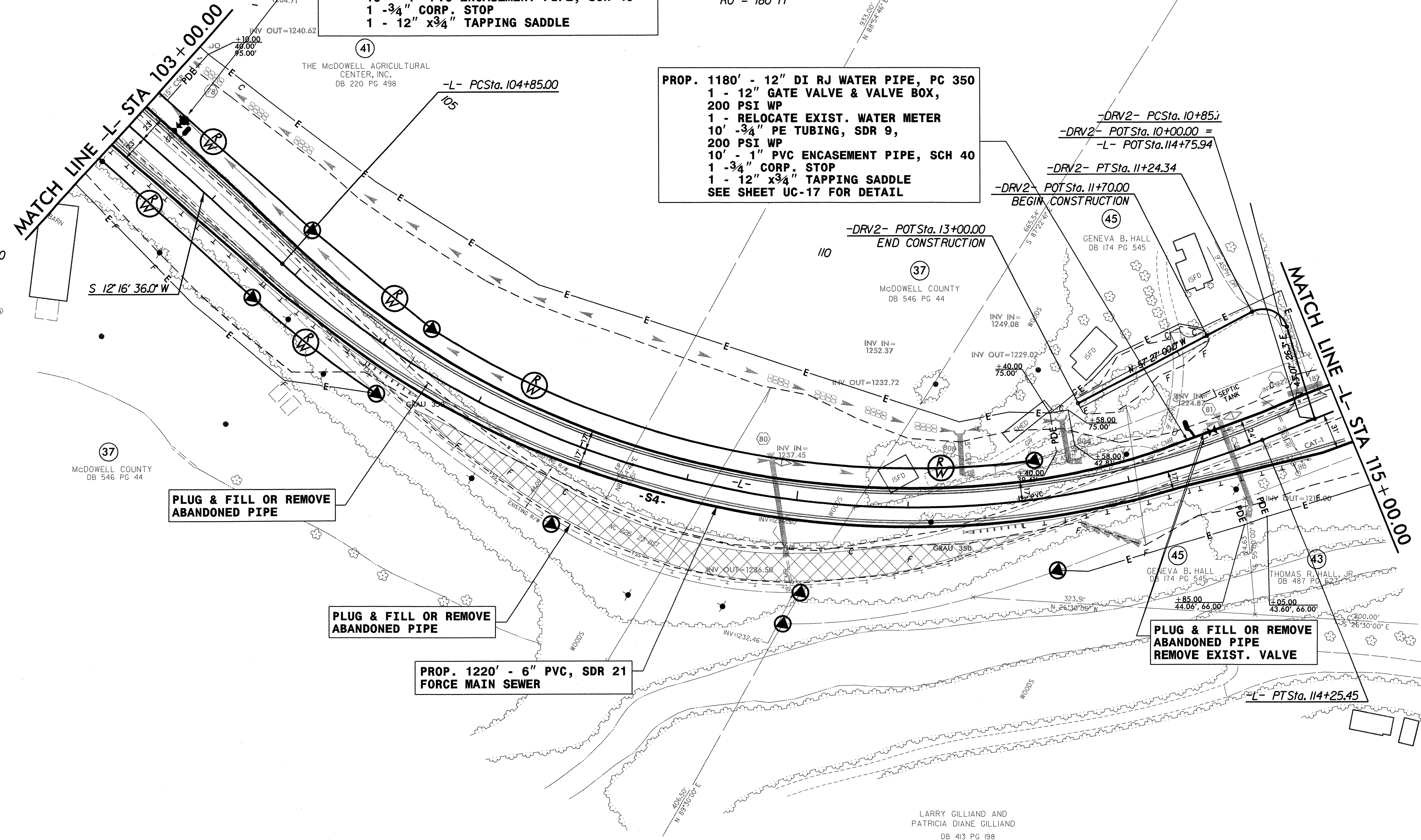
-DRV2- POTSta. 13+00.00
 END CONSTRUCTION

PLUG & FILL OR REMOVE
 ABANDONED PIPE

PLUG & FILL OR REMOVE
 ABANDONED PIPE

PROP. 1220' - 6" PVC, SDR 21
 FORCE MAIN SEWER

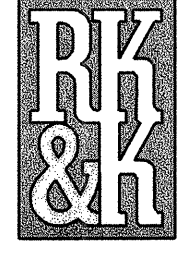
PLUG & FILL OR REMOVE
 ABANDONED PIPE
 REMOVE EXIST. VALVE



REVISIONS

NOTE: ALL DRIVEWAY OPENINGS ARE 20' WIDE UNLESS OTHERWISE SHOWN.

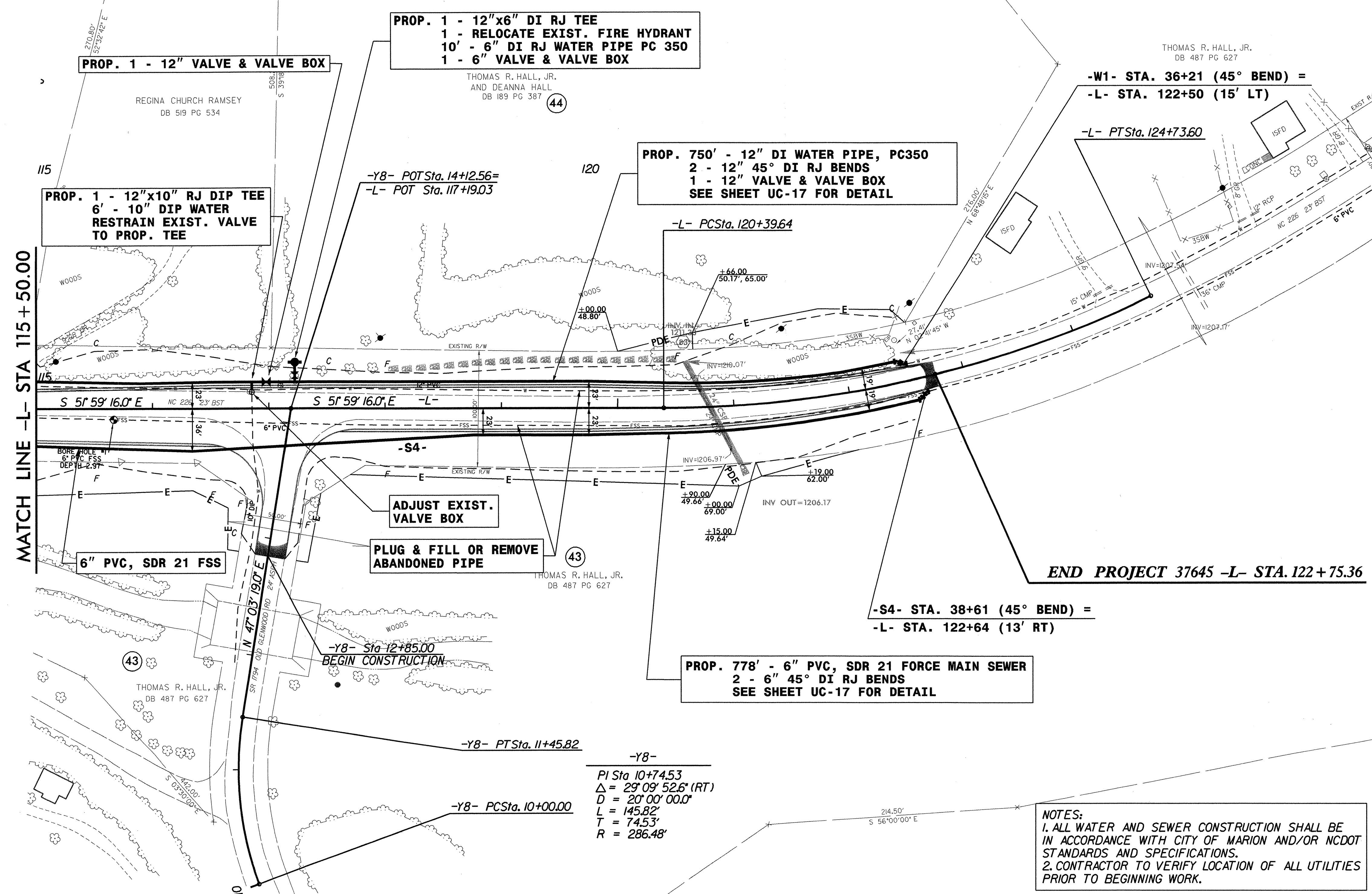
NOTES:
 1. ALL WATER AND SEWER CONSTRUCTION SHALL BE IN ACCORDANCE WITH CITY OF MARION AND/OR NCDOT STANDARDS AND SPECIFICATIONS.
 2. CONTRACTOR TO VERIFY LOCATION OF ALL UTILITIES PRIOR TO BEGINNING WORK.



PLANS PREPARED BY:
RUMMEL KLEPPER & KAHL, LLP
consulting engineers
 900 RIDGEFIELD DRIVE SUITE 350
 RALEIGH, NORTH CAROLINA 27609-3960
 (919) 878-9560
 FOR
 STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

11/8/2006
 P:\Projects\37645 & 37857\110635.dwg
 83812

-L-
 PI Sta 122+60.43
 $\Delta = 26^{\circ}02'16.8"$ (LT)
 $D = 6^{\circ}00'00.0"$
 $L = 433.97'$
 $T = 220.80'$
 $R = 954.93'$
 $SE = 0.06$ ft/ft
 $RO = 180$ ft



MATCH LINE -L- STA 115 + 50.00

END PROJECT 37645 -L- STA. 122 + 75.36

-Y8-
 PI Sta 10+74.53
 $\Delta = 29^{\circ}09'52.6"$ (RT)
 $D = 20^{\circ}00'00.0"$
 $L = 145.82'$
 $T = 74.53'$
 $R = 286.48'$

NOTES:
 1. ALL WATER AND SEWER CONSTRUCTION SHALL BE IN ACCORDANCE WITH CITY OF MARION AND/OR NCDOT STANDARDS AND SPECIFICATIONS.
 2. CONTRACTOR TO VERIFY LOCATION OF ALL UTILITIES PRIOR TO BEGINNING WORK.

NOTE: ALL DRIVEWAY OPENINGS ARE 20' WIDE UNLESS OTHERWISE SHOWN.

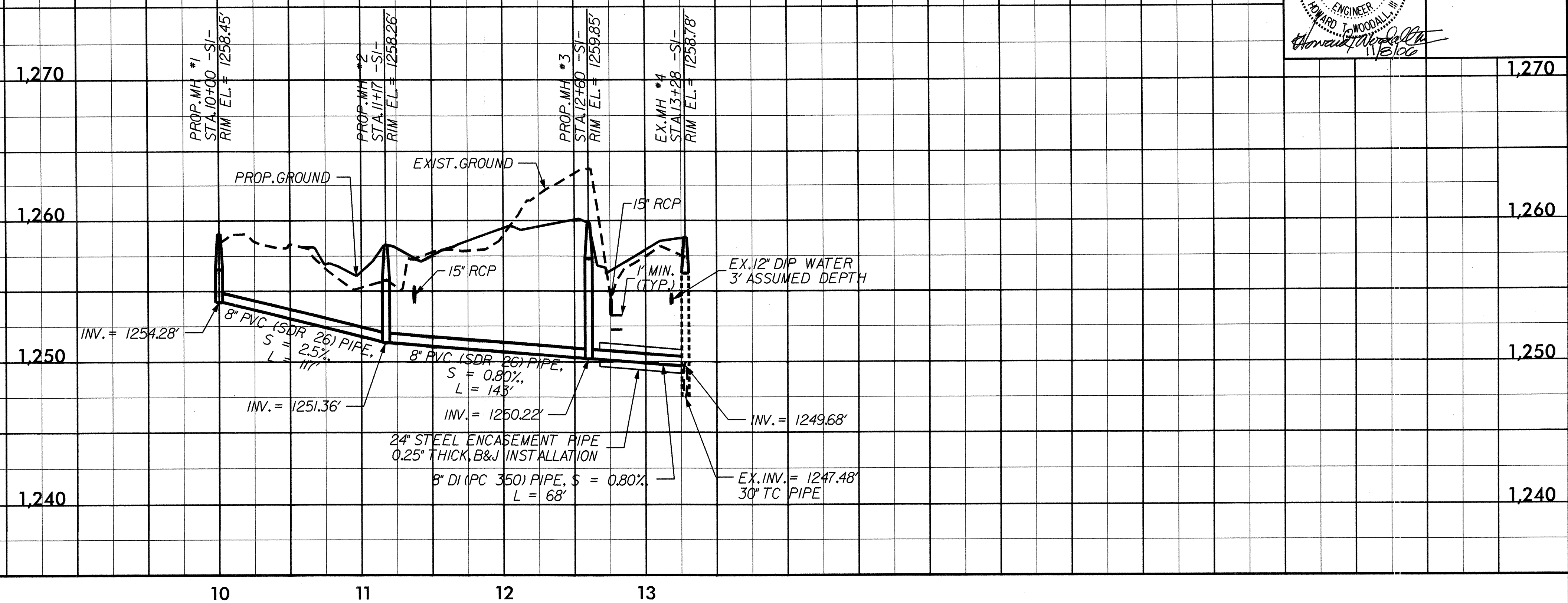
PLANS PREPARED BY :
RUMMEL KLEPPER & KAHL, LLP
consulting engineers
 900 RIDGEFIELD DRIVE SUITE 350
 RALEIGH, NORTH CAROLINA 27609-3960
 (919) 878-9560

FOR
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

REVISIONS

11/7/2006
 P:\Projects\37645\37645.dwg
 P:\Projects\37645\37645.dwg

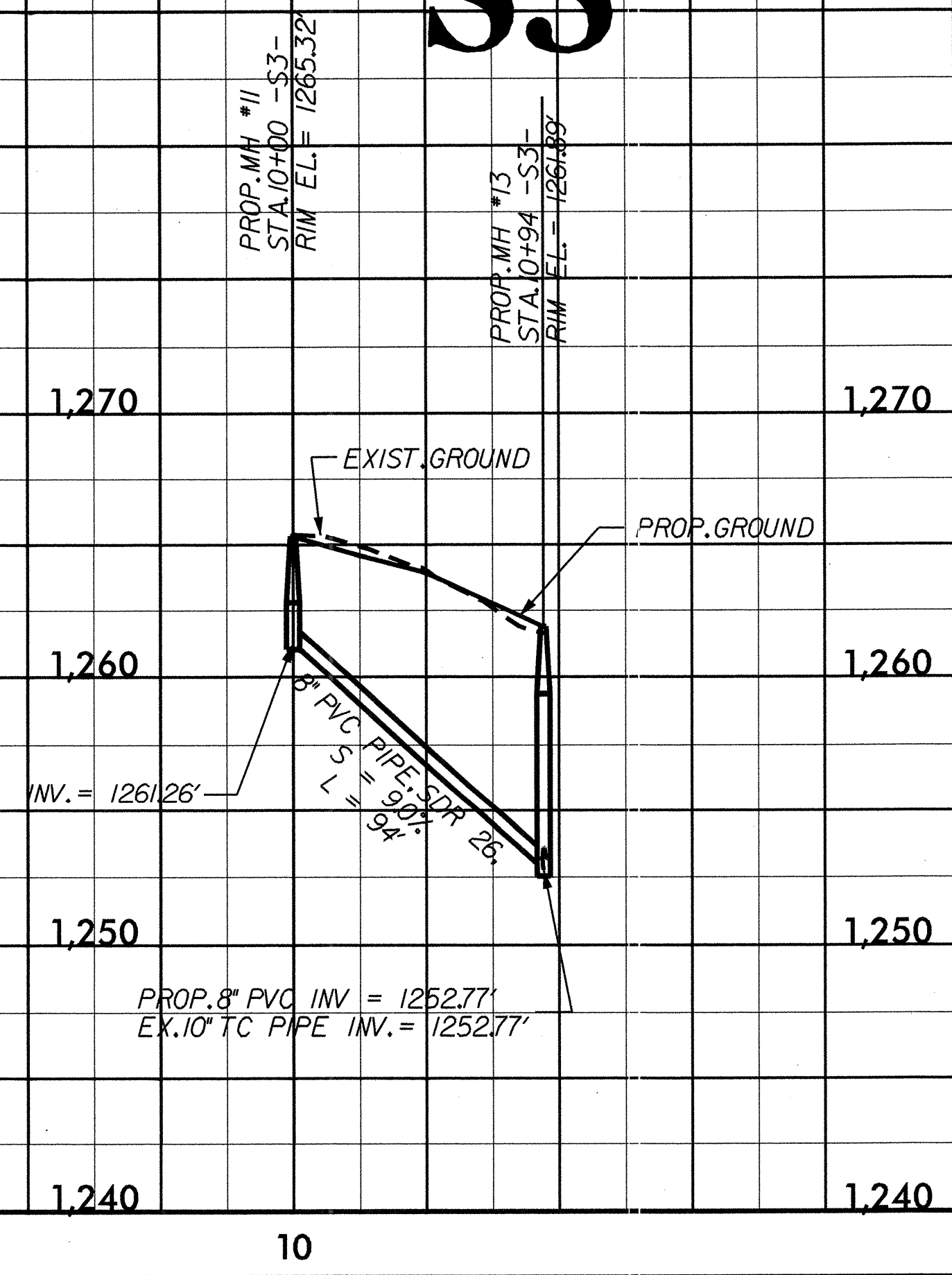
S1



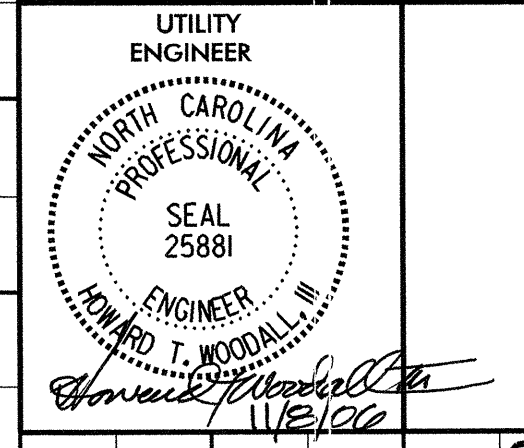
S2



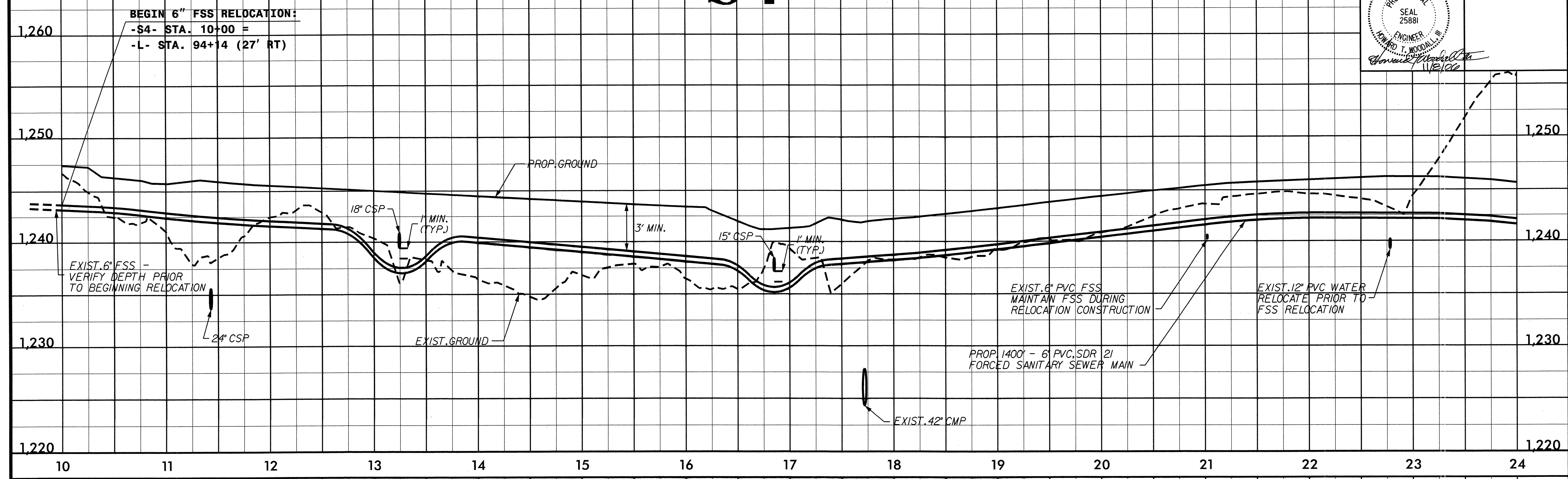
S3



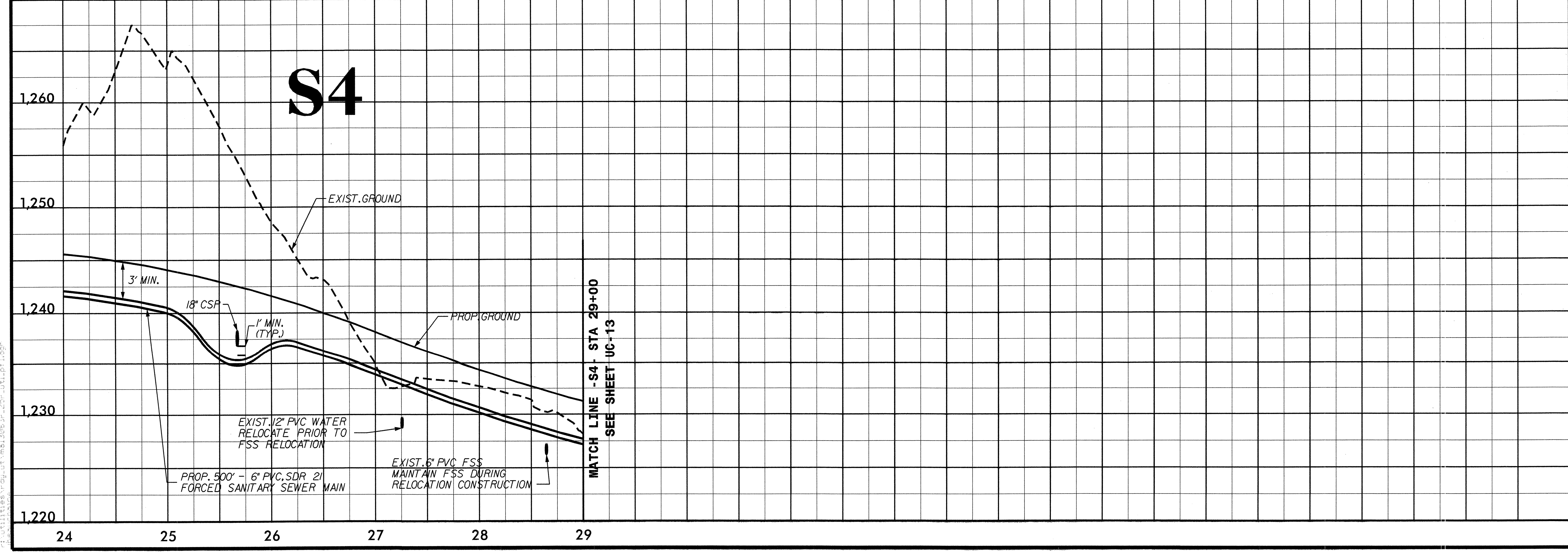
11/7/00/06
 P:\Utilities\rd\ut_msl3063r_25r_util.dwg



S4

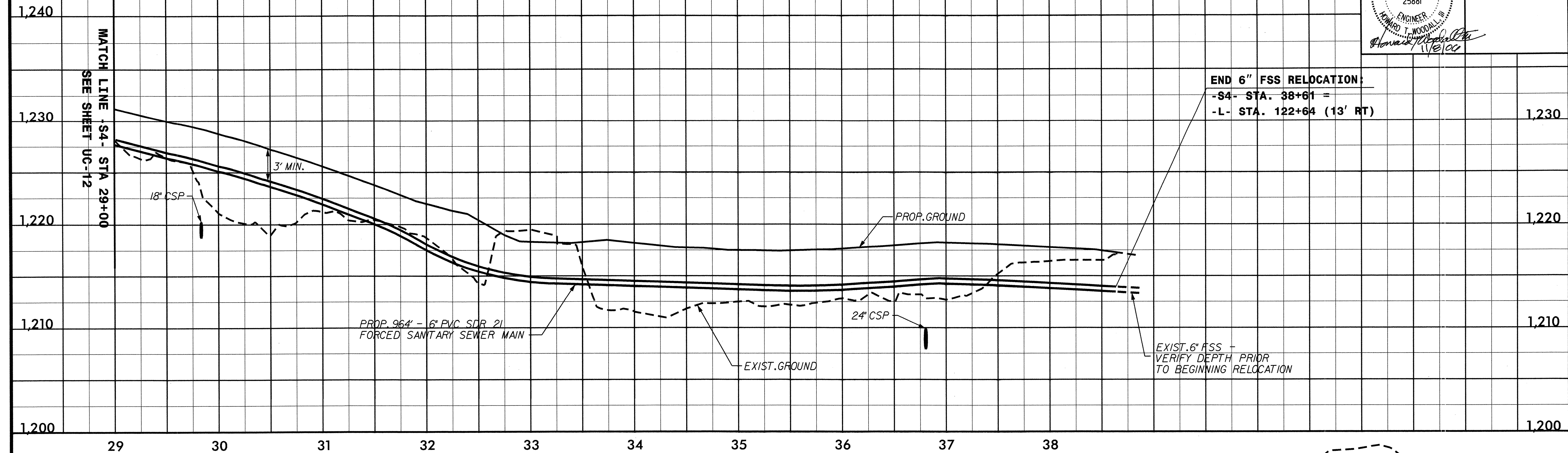


S4

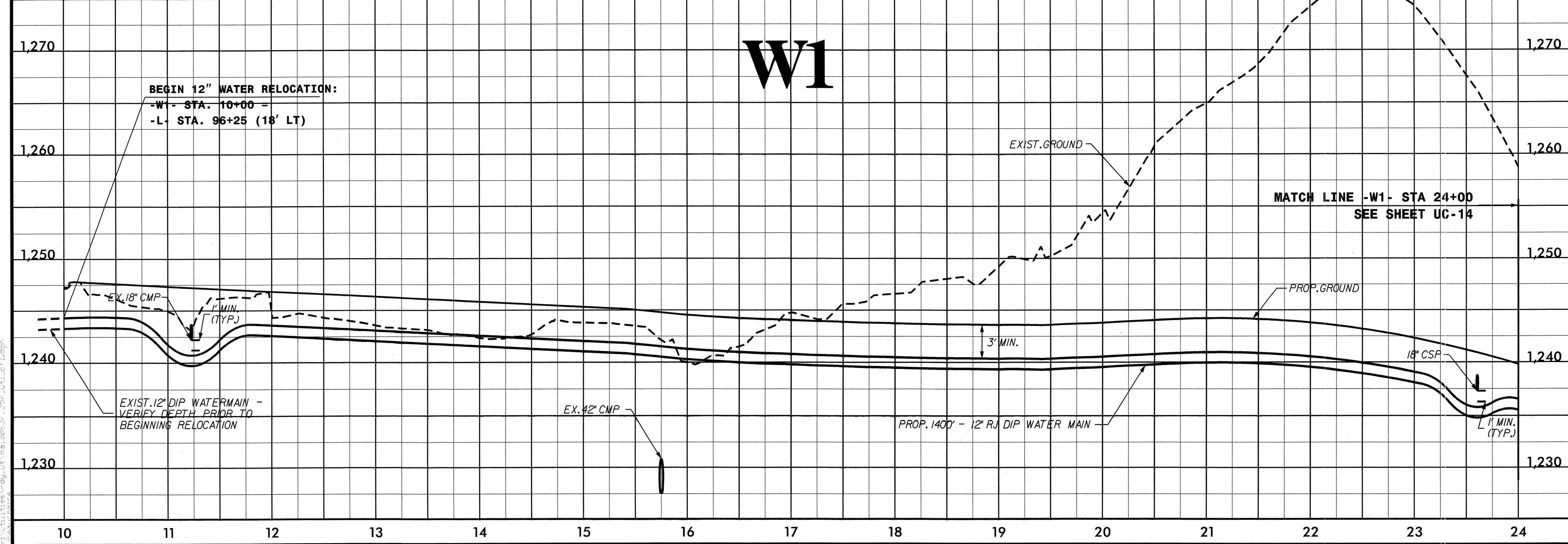


11/7/2006
 C:\Utilities\vdg\ut\mai\3063r-25r-ut\p\1.dwg

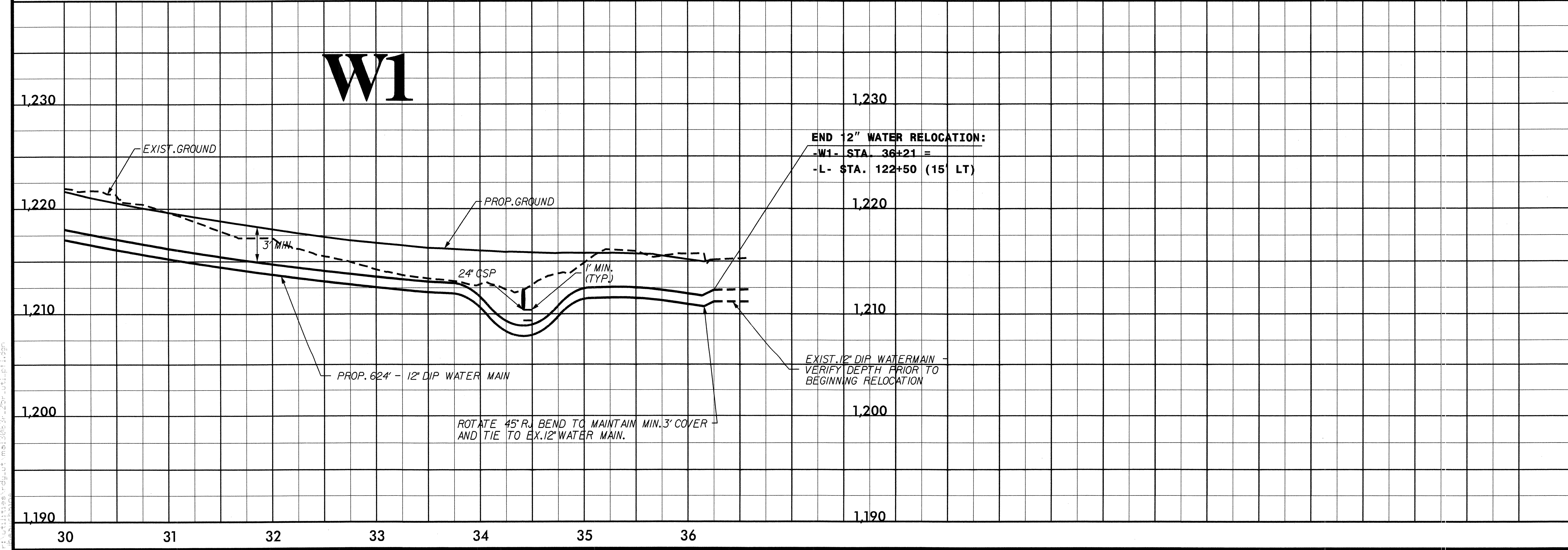
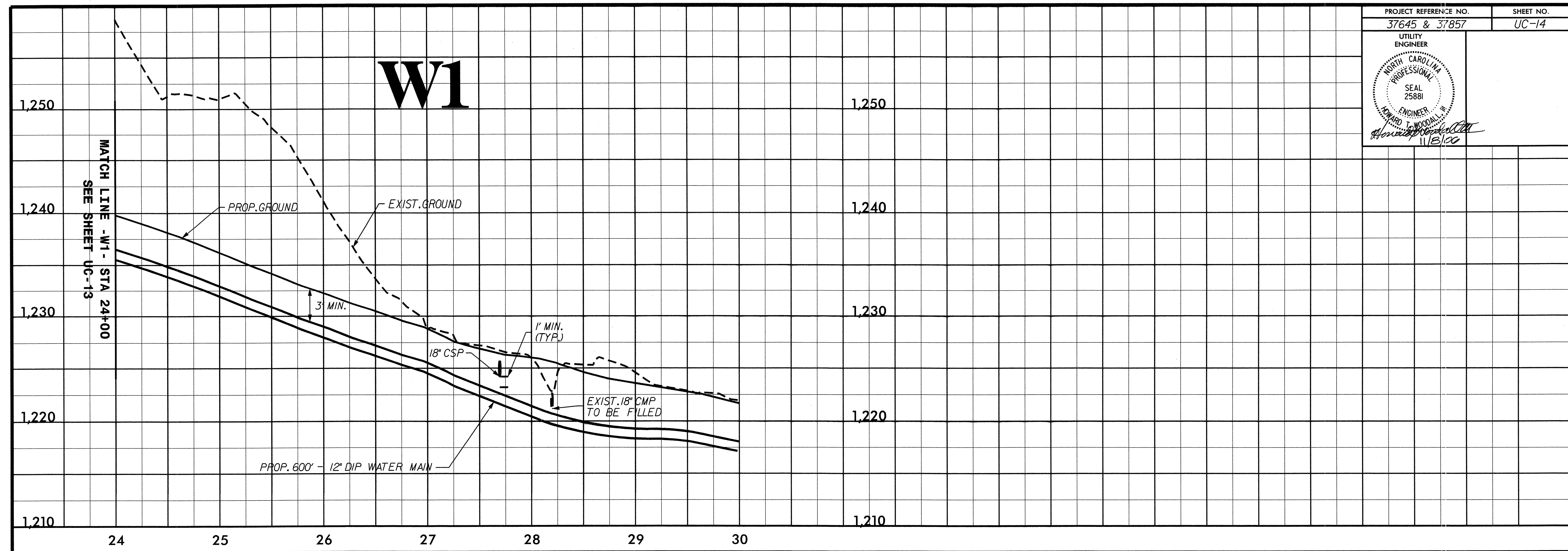
S4



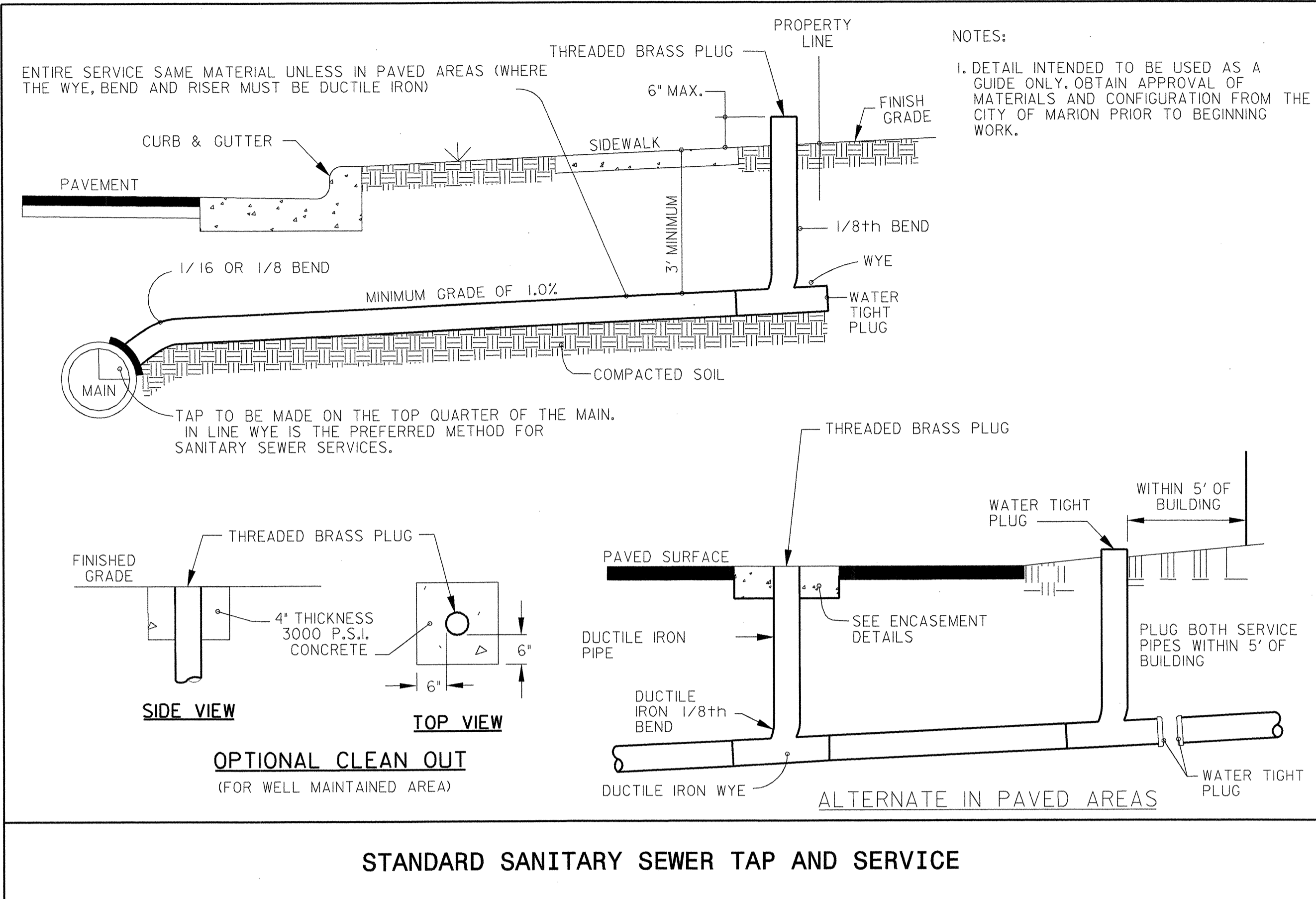
W1



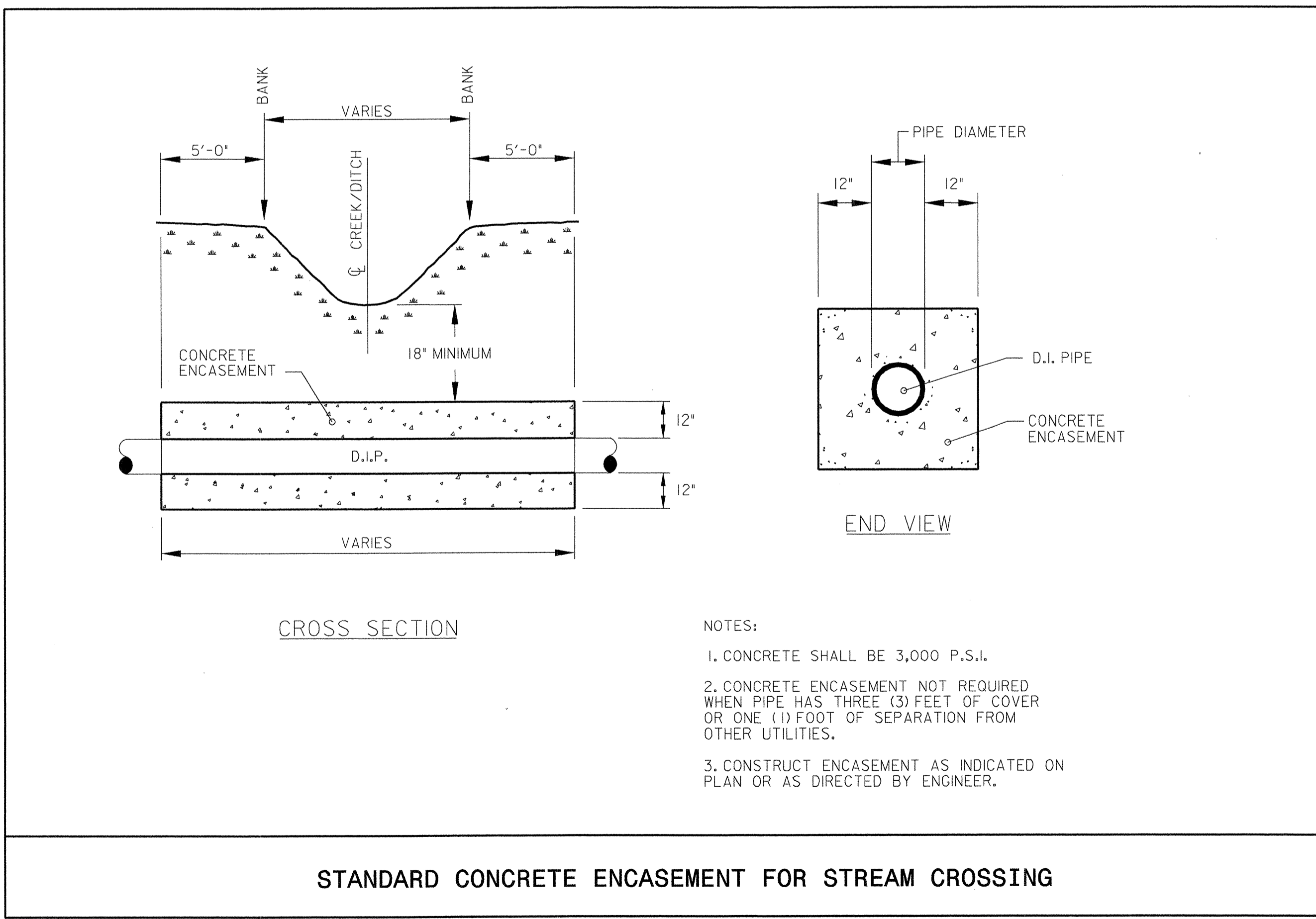
1/17/2006
 H:\Utilities\w-d\ut\mai3063r_25r-uti\ut1.dgn



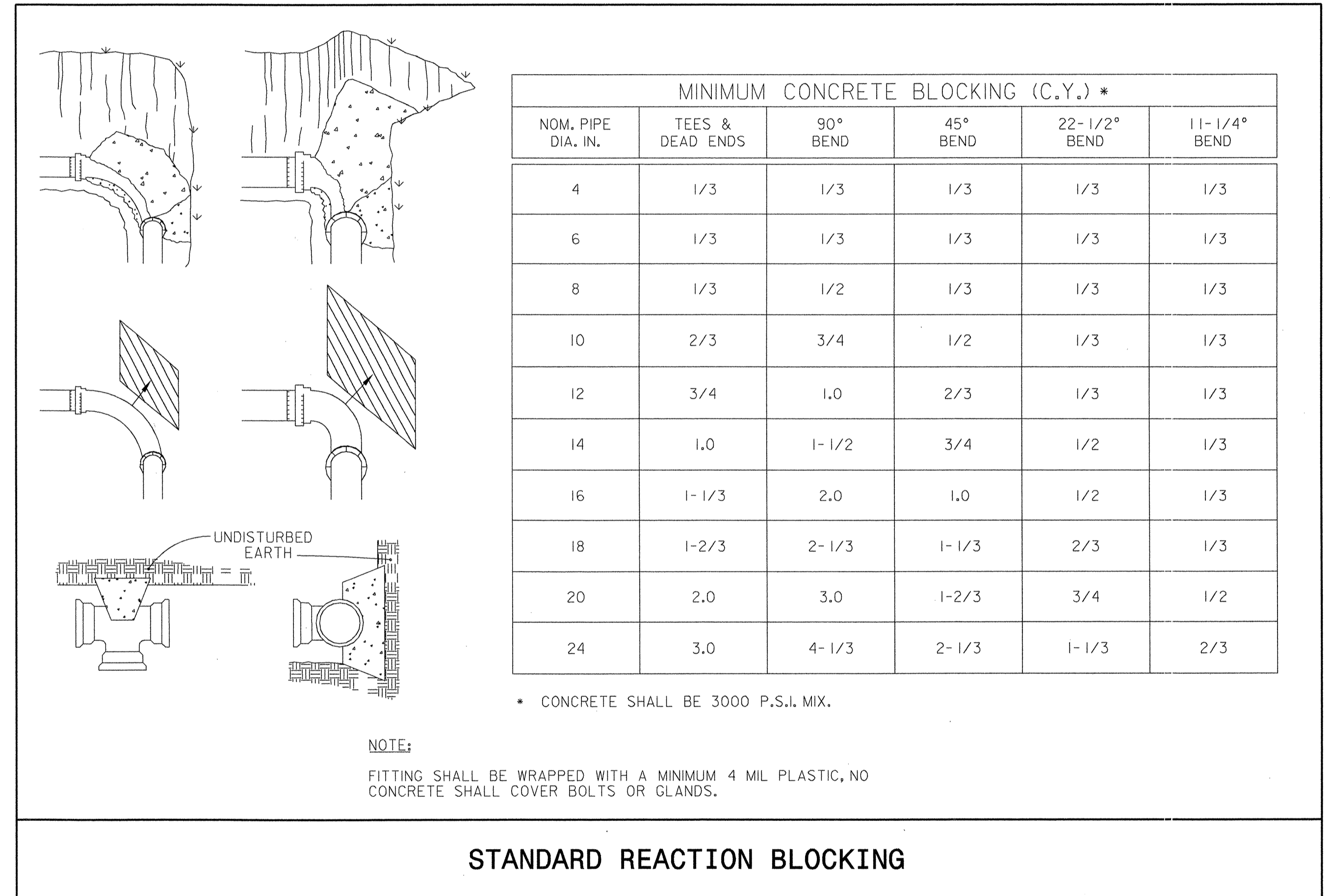
11/7/2009
P:\Utilities\rd\ut\mal\3063\25r-uti.plt\den



STANDARD SANITARY SEWER TAP AND SERVICE



STANDARD CONCRETE ENCASEMENT FOR STREAM CROSSING

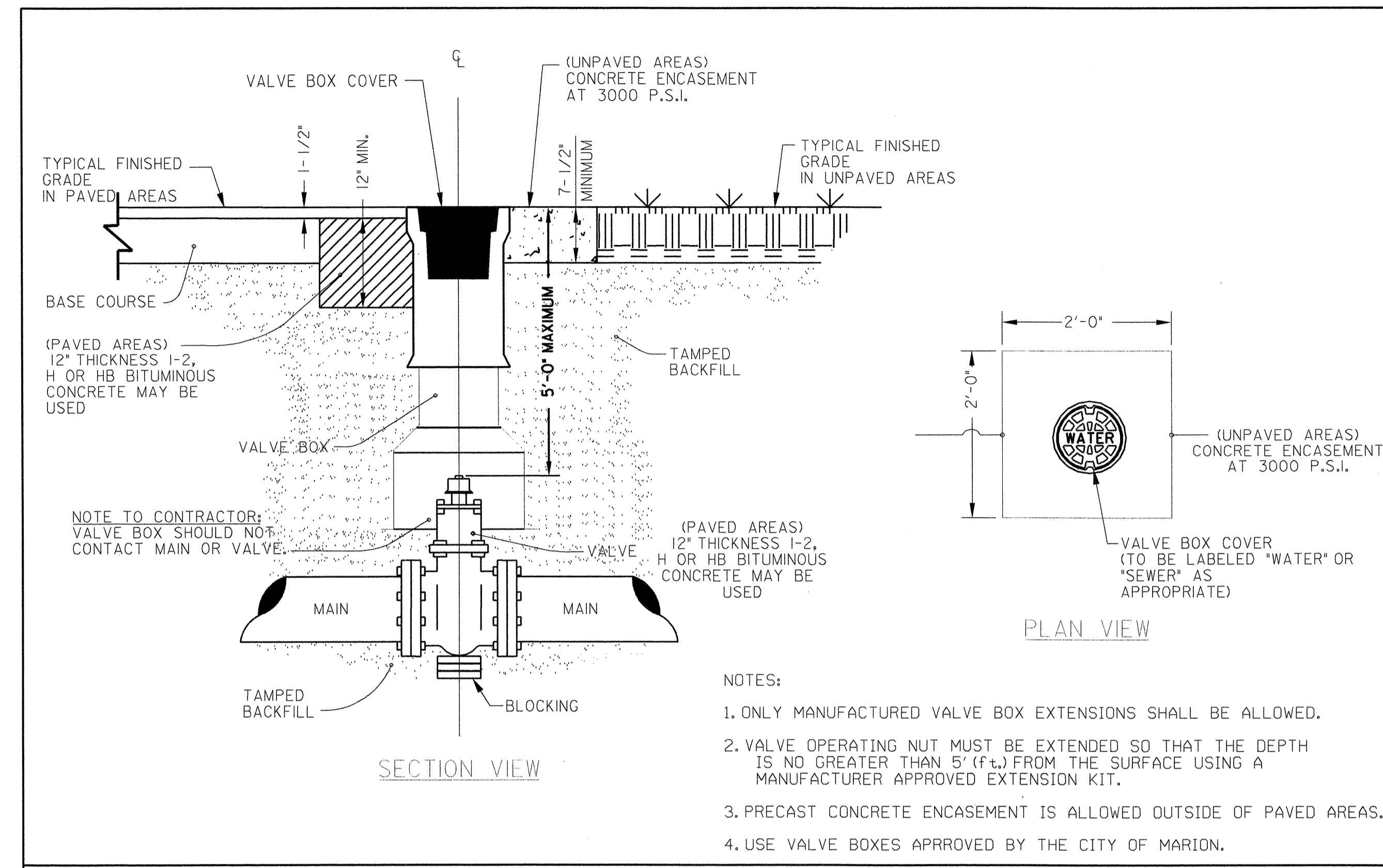


STANDARD REACTION BLOCKING

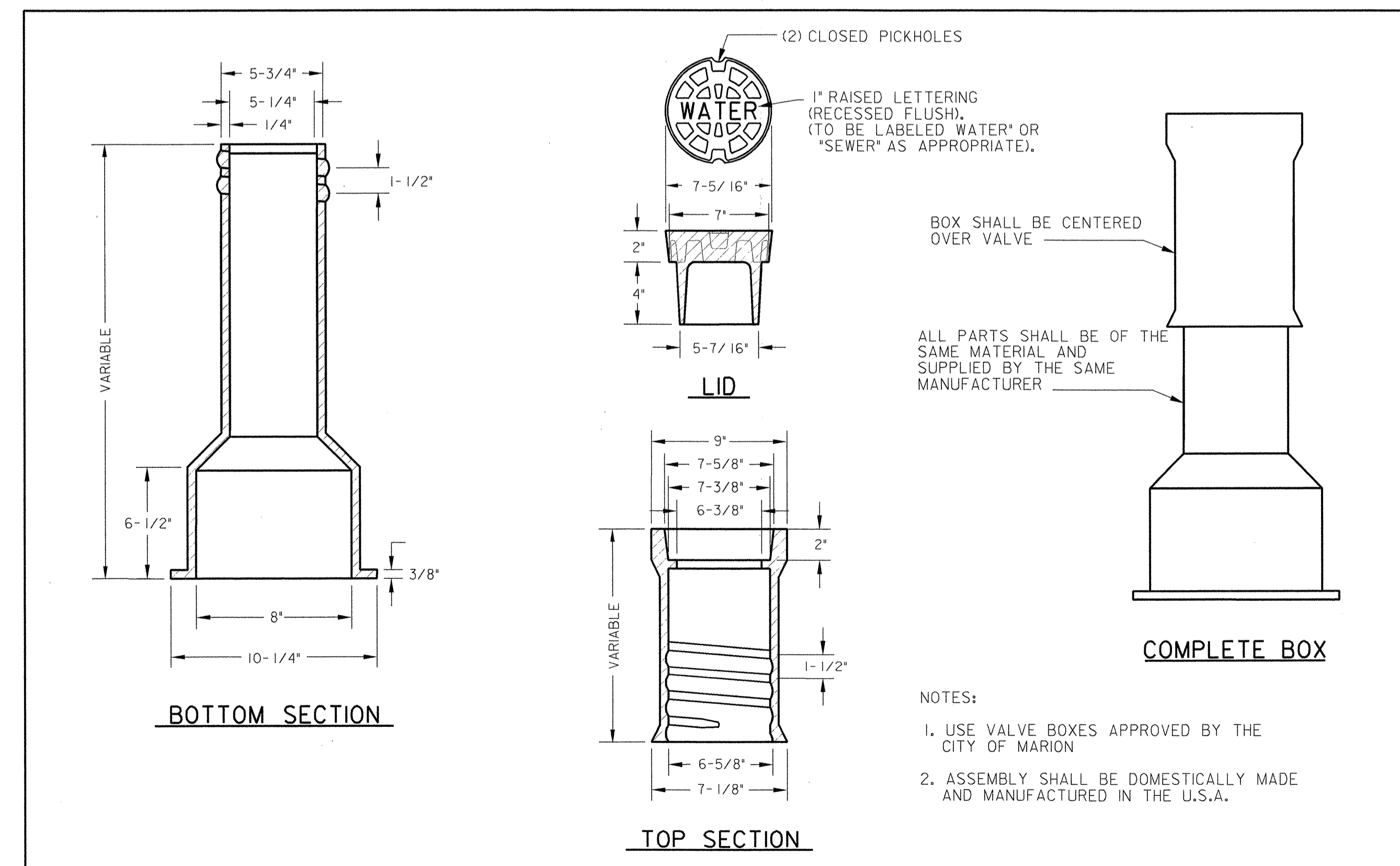
RK & K

PLANS PREPARED BY :
RUMMEL KLEPPER & KAHL, LLP
consulting engineers
 900 RIDGEFIELD DRIVE SUITE 350
 RALEIGH, NORTH CAROLINA 27609-3960
 (919) 878-9560

FOR
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS



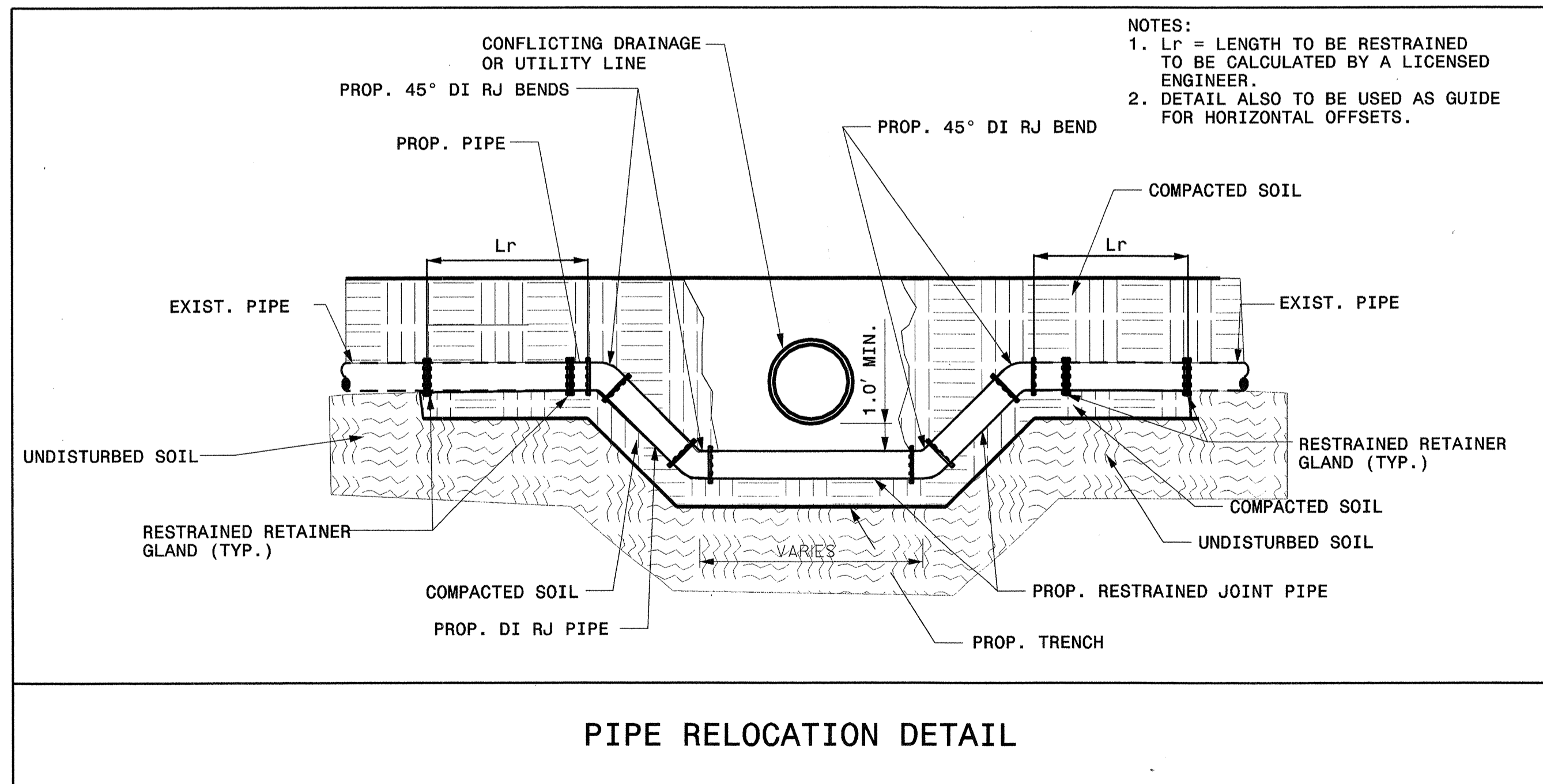
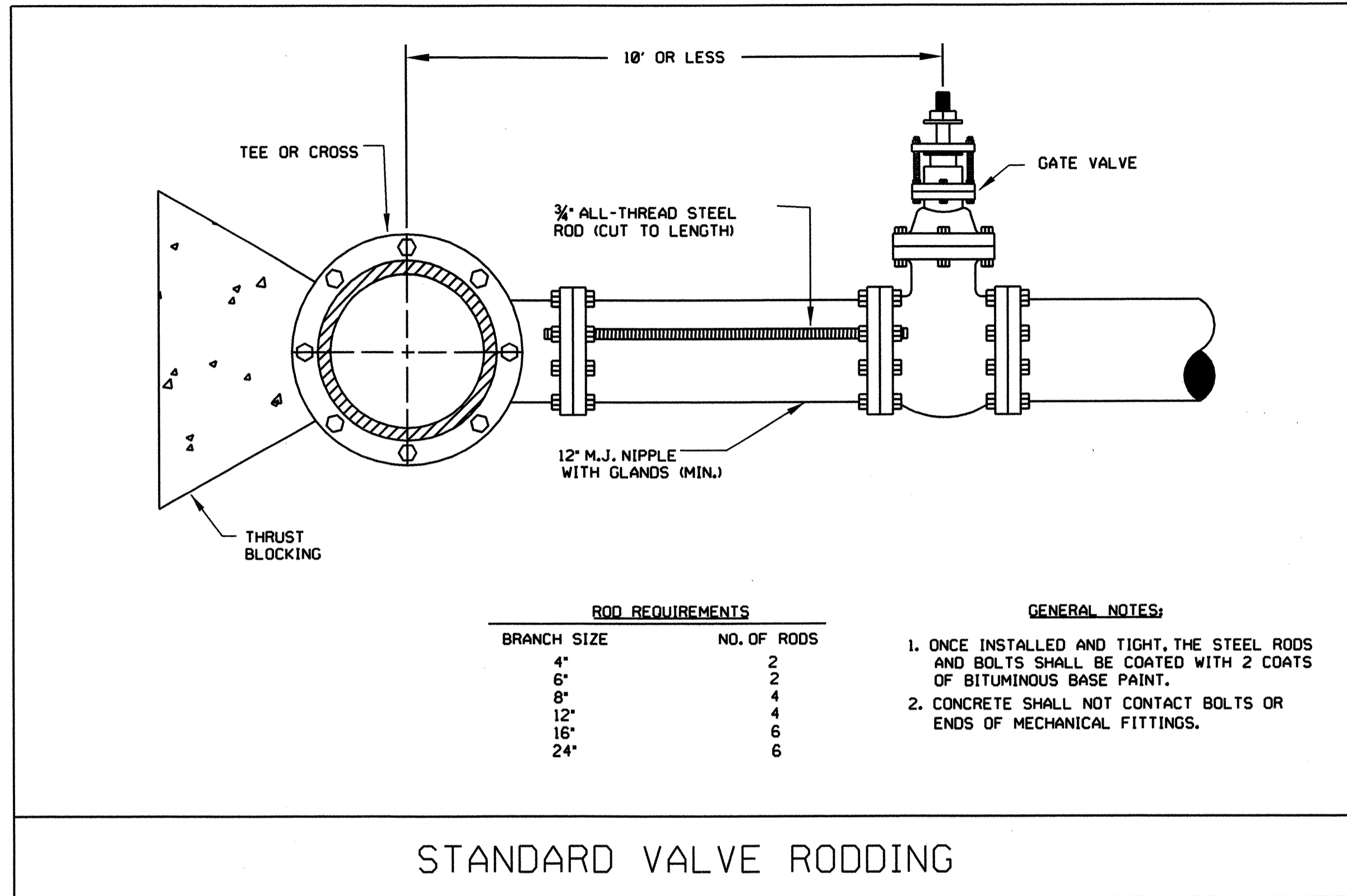
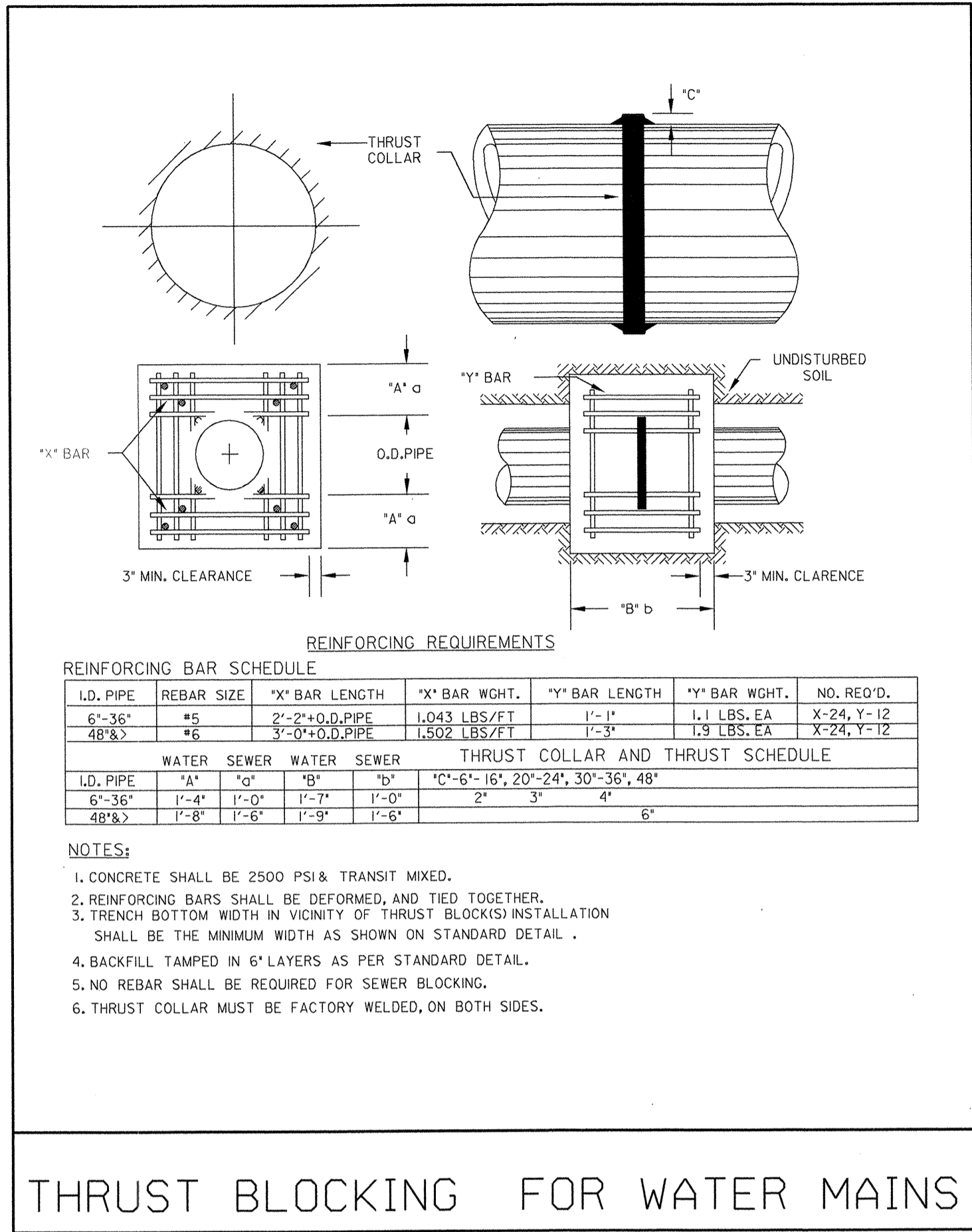
STANDARD VALVE BOX INSTALLATION (DETAIL 1 of 2)



STANDARD VALVE BOX INSTALLATION (DETAIL 2 of 2)

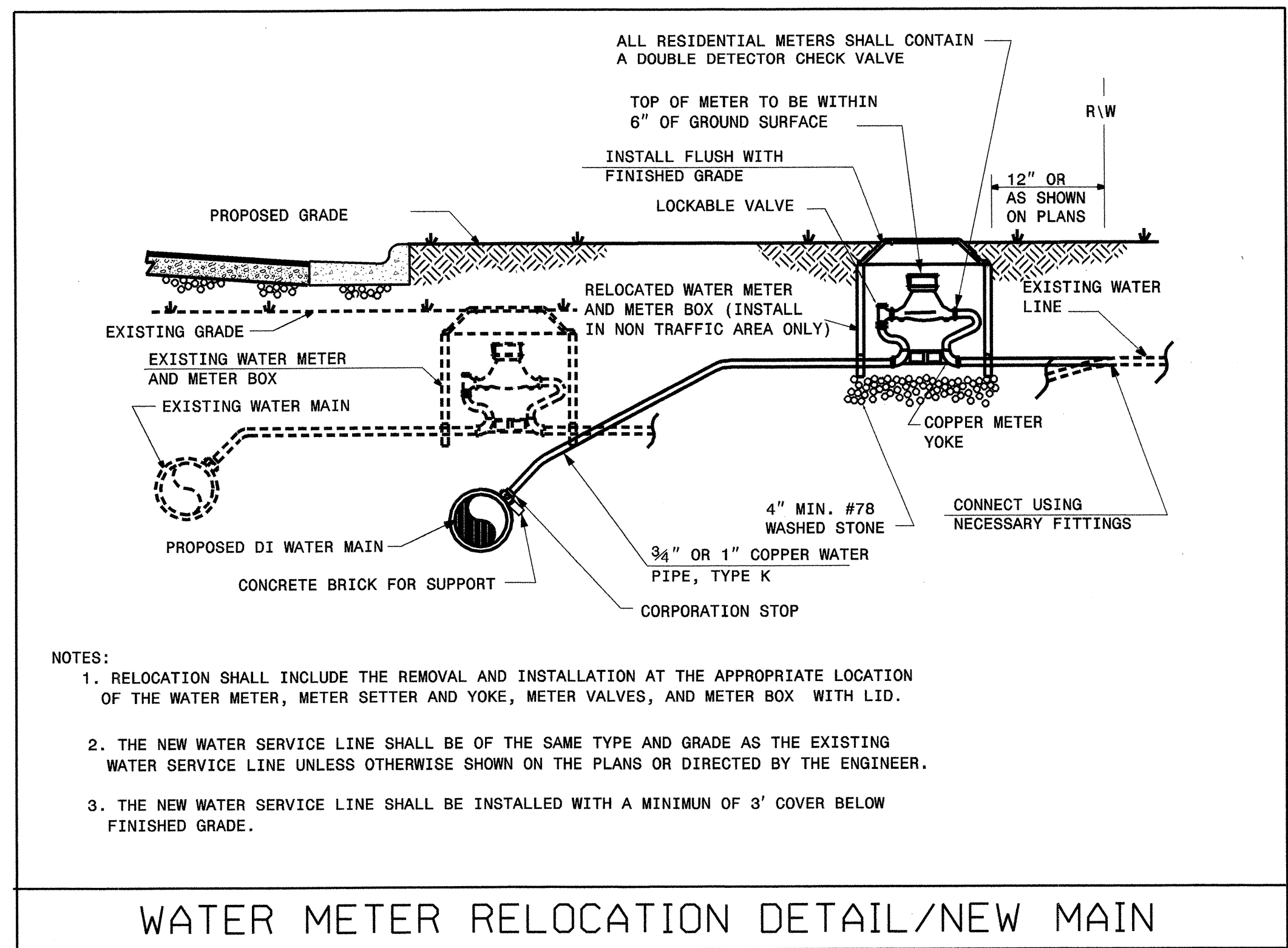
REVISIONS

11/7/2006
 P:\utilities\edu\ut.ms\13063r-25r-uv1.deta1s.dwg

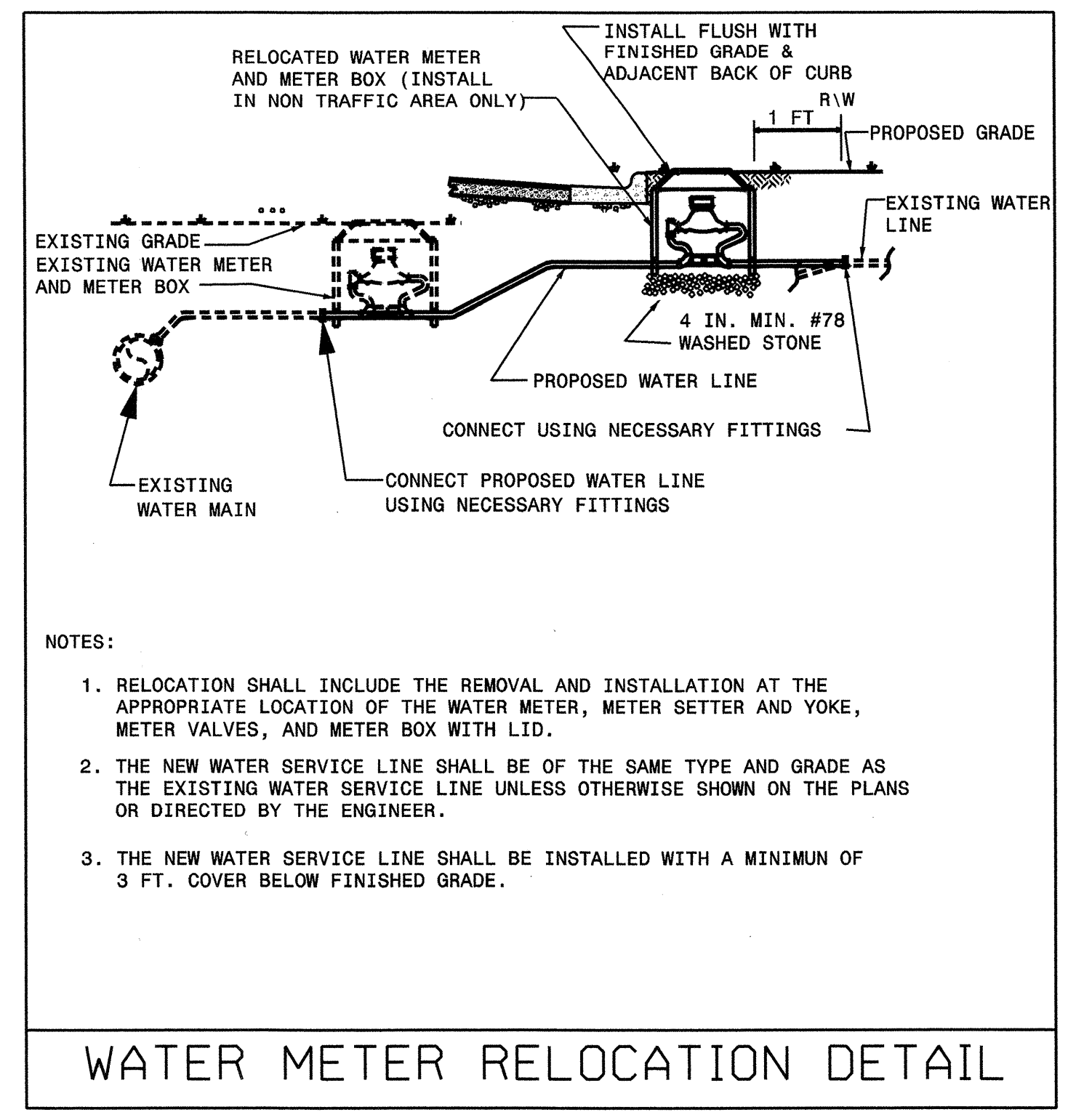


REVISIONS

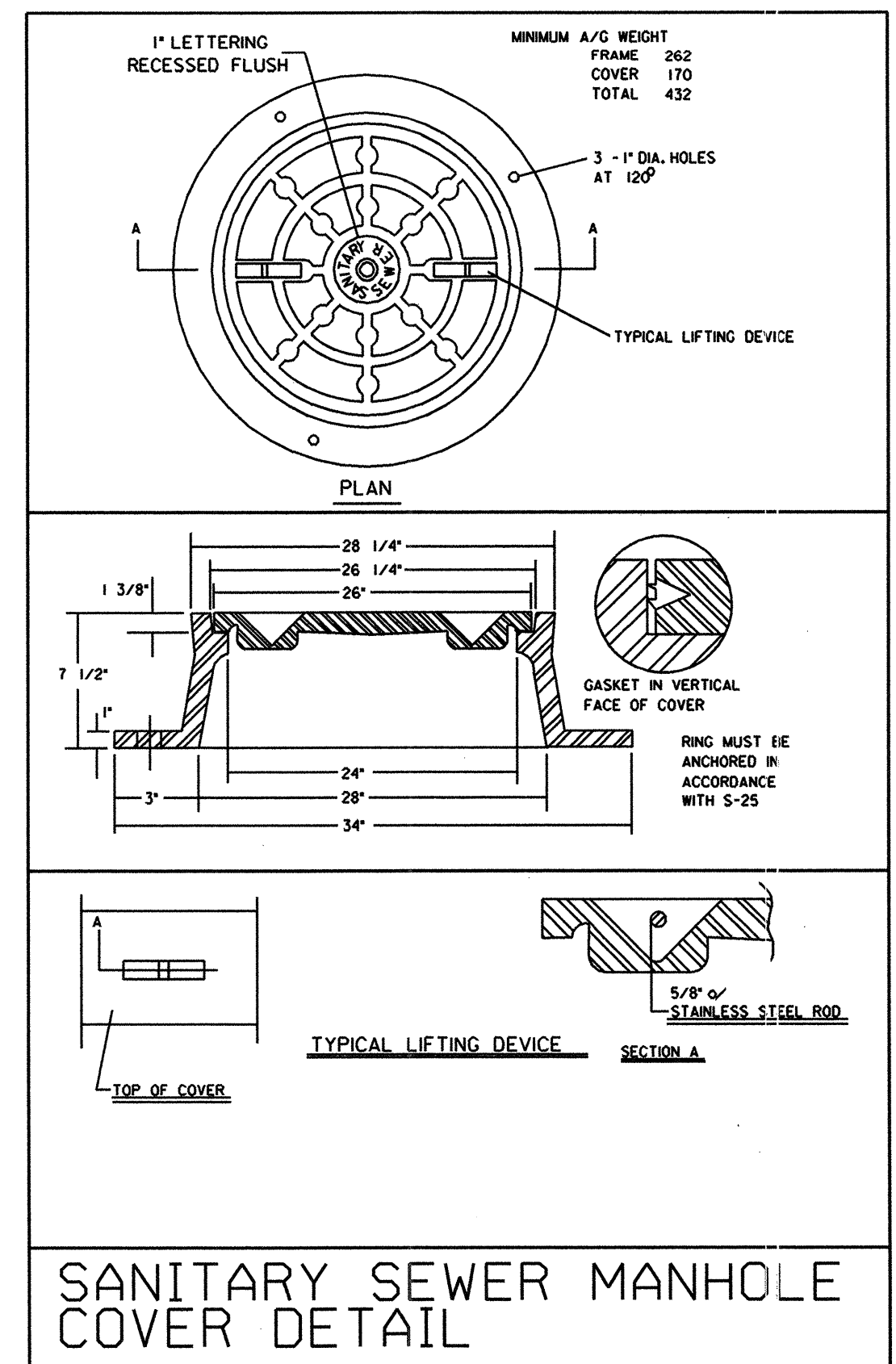
11/7/2006
 H:\Utilities\edg\ut_msl\2063r_25r_utl_details.dwg
 H:\Utilities



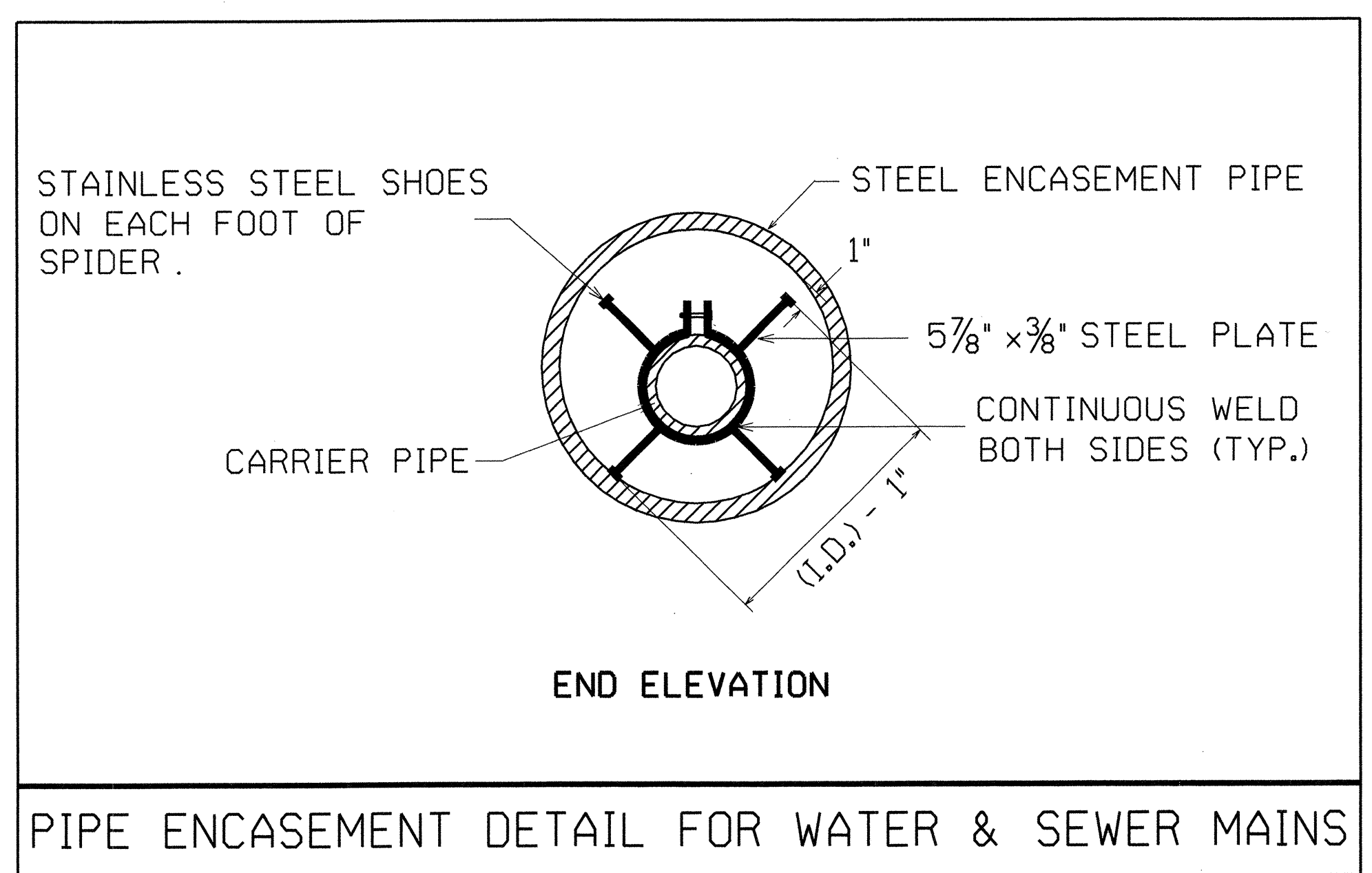
WATER METER RELOCATION DETAIL/NEW MAIN



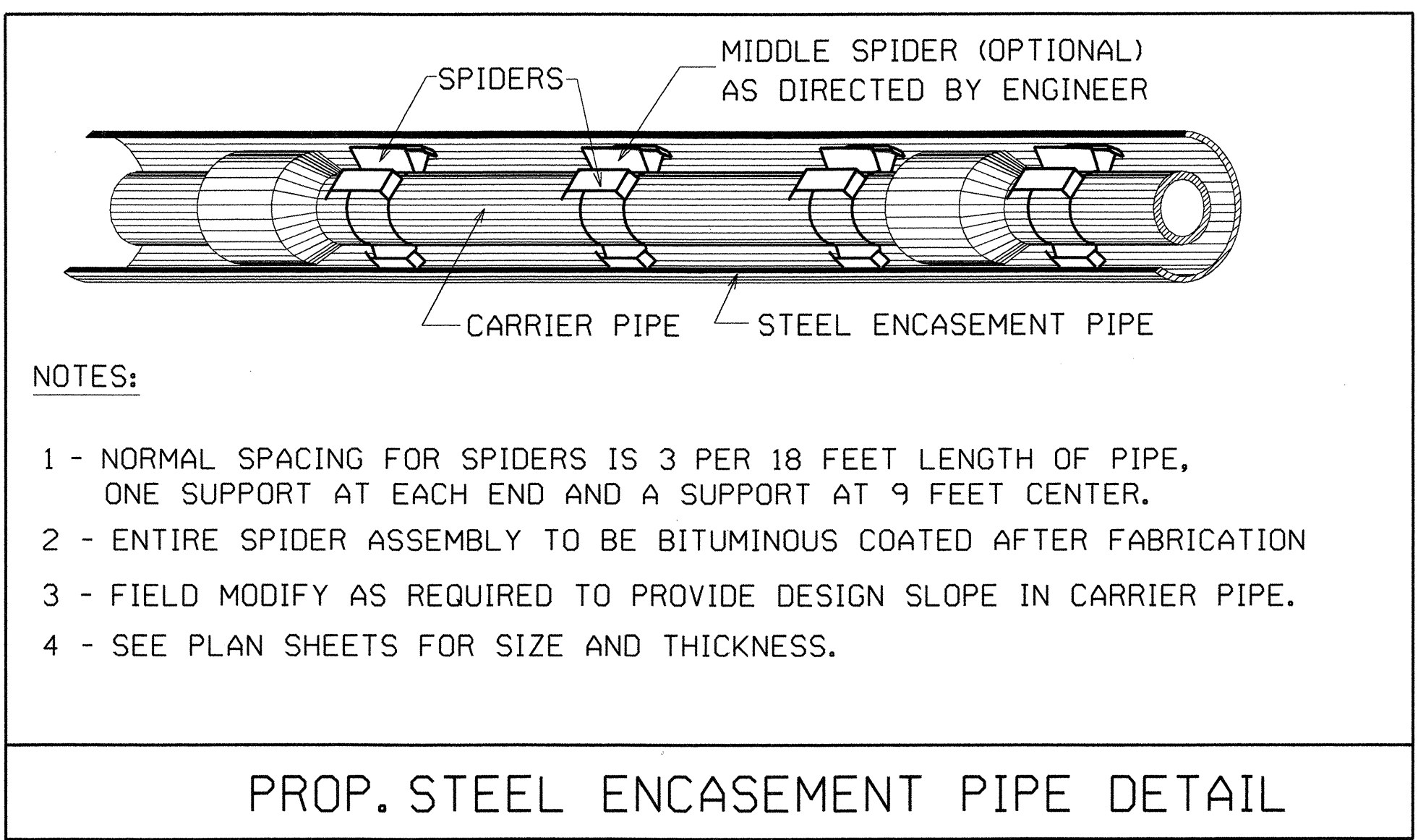
WATER METER RELOCATION DETAIL



SANITARY SEWER MANHOLE COVER DETAIL



PIPE ENCASEMENT DETAIL FOR WATER & SEWER MAINS



PROP. STEEL ENCASEMENT PIPE DETAIL

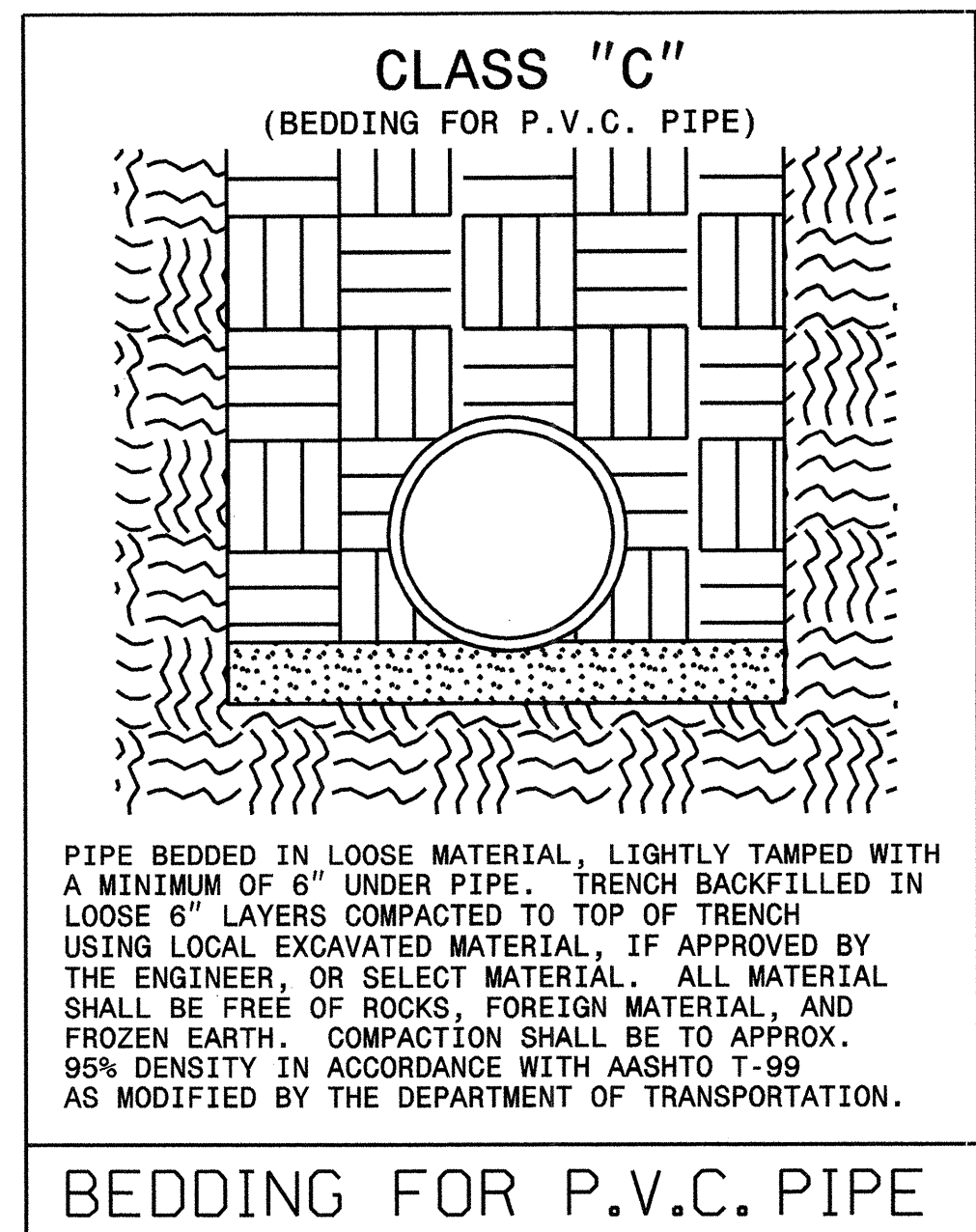
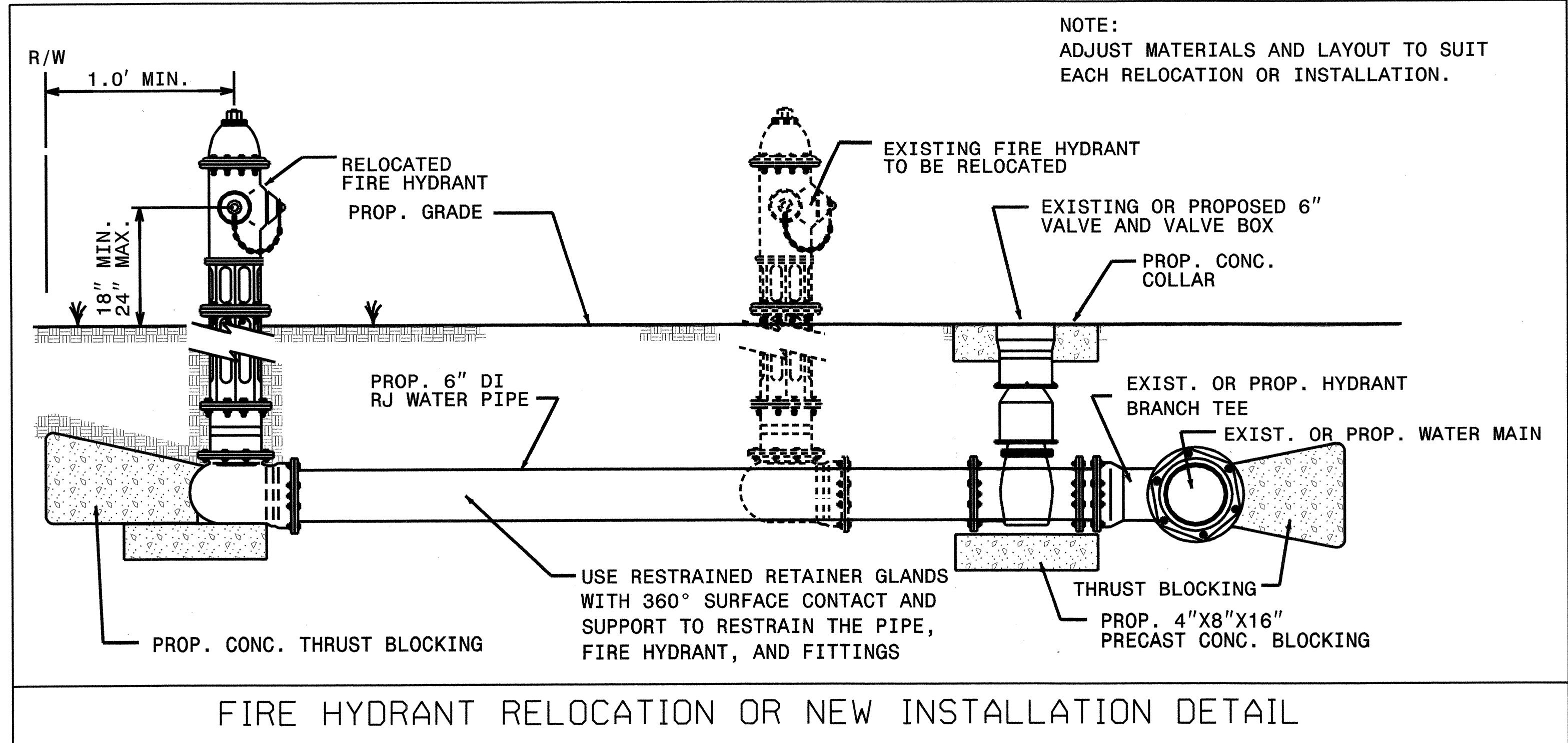
NOTE:

1. OBTAIN APPROVAL OF ALL MATERIALS AND LAYOUTS FROM THE CITY OF MARION BEFORE PROCEEDING WITH CONSTRUCTION.
2. DETAILS SHOWN HEREON ARE TO BE USED AS A GUIDE ONLY.

PLANS PREPARED BY :
RUMMEL KLEPPER & KAHL, LLP
consulting engineers
 900 RIDGEFIELD DRIVE SUITE 350
 RALEIGH, NORTH CAROLINA 27609-3960
 (919) 878-9560
FOR
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

REVISIONS

8/17/00
 11/7/2006
 r:\utilities\vdj\ut\sm1306 3r-25r-uti_details.dgn

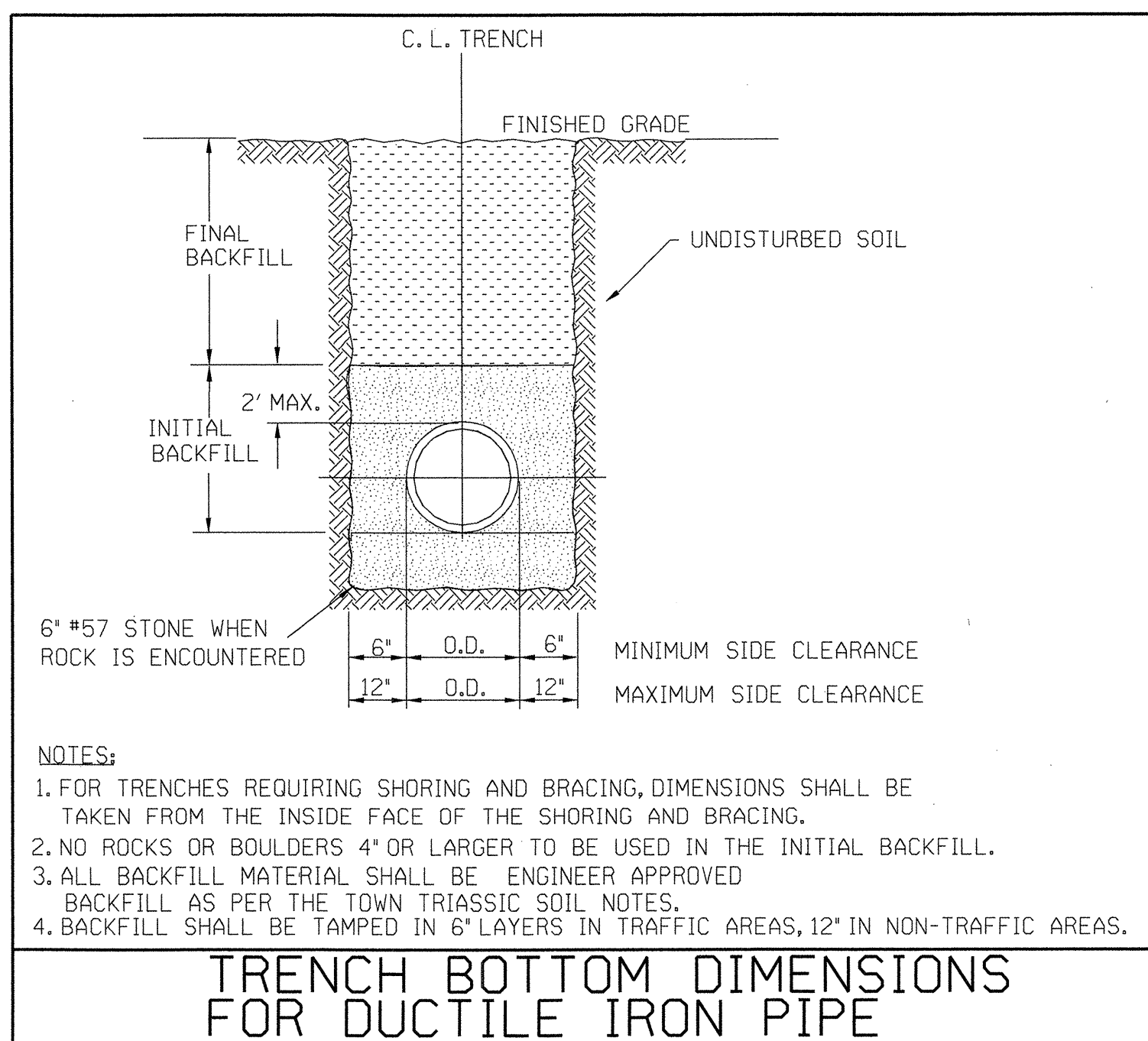


REVISIONS

TABLE FOR PRESSURE CLASS 350 DUCTILE IRON PIPE		PIPE SIZE							
		8"	10"	12"	14"	16"	18"	20"	24"
3'		TYPE 1 TRENCH	TYPE 1 TRENCH	TYPE 1 TRENCH	TYPE 1 TRENCH	TYPE 1 TRENCH	TYPE 1 TRENCH	TYPE 1 TRENCH	TYPE 1 TRENCH
5'		TYPE 1 TRENCH	TYPE 1 TRENCH	TYPE 1 TRENCH	TYPE 1 TRENCH	TYPE 1 TRENCH	TYPE 1 TRENCH	TYPE 1 TRENCH	TYPE 1 TRENCH
10'		TYPE 2 TRENCH	TYPE 2 TRENCH	TYPE 2 TRENCH	TYPE 2 TRENCH	TYPE 2 TRENCH	TYPE 2 TRENCH	TYPE 2 TRENCH	TYPE 2 TRENCH
15'		TYPE 2 TRENCH	TYPE 2 TRENCH	TYPE 2 TRENCH	TYPE 2 TRENCH	TYPE 2 TRENCH	TYPE 2 TRENCH	TYPE 2 TRENCH	TYPE 2 TRENCH
20'		TYPE 3 TRENCH	TYPE 3 TRENCH	TYPE 3 TRENCH	TYPE 3 TRENCH	TYPE 3 TRENCH	TYPE 3 TRENCH	TYPE 3 TRENCH	TYPE 3 TRENCH
25'		TYPE 3 TRENCH	TYPE 3 TRENCH	TYPE 3 TRENCH	TYPE 3 TRENCH	TYPE 3 TRENCH	TYPE 3 TRENCH	TYPE 3 TRENCH	TYPE 3 TRENCH
30'		TYPE 4 TRENCH	TYPE 4 TRENCH	TYPE 4 TRENCH	TYPE 4 TRENCH	TYPE 4 TRENCH	TYPE 4 TRENCH	TYPE 4 TRENCH	TYPE 4 TRENCH
35'		TYPE 4 TRENCH	TYPE 4 TRENCH	TYPE 4 TRENCH	TYPE 4 TRENCH	TYPE 4 TRENCH	TYPE 4 TRENCH	TYPE 4 TRENCH	TYPE 4 TRENCH
40'		TYPE 4 TRENCH	TYPE 4 TRENCH	TYPE 4 TRENCH	TYPE 4 TRENCH	TYPE 4 TRENCH	TYPE 4 TRENCH	TYPE 4 TRENCH	TYPE 4 TRENCH

NOTES:
SEE DETAIL FOR TRENCH BOTTOM DIMENSIONS.
OTHER PRESSURE CLASS PIPES AND BEDDING MUST BE APPROVED BY THE TOWN ENGINEER.

BEDDING FOR DUCTILE IRON PIPES



NOTE:
1. OBTAIN APPROVAL OF ALL MATERIALS AND LAYOUTS FROM THE CITY OF MARION BEFORE PROCEEDING WITH CONSTRUCTION.
2. DETAILS SHOWN HEREON ARE TO BE USED AS A GUIDE ONLY.

RK & K

PLANS PREPARED BY :
RUMMEL KLEPPER & KAHL, LLP
consulting engineers
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
(919) 878-9560

FOR
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

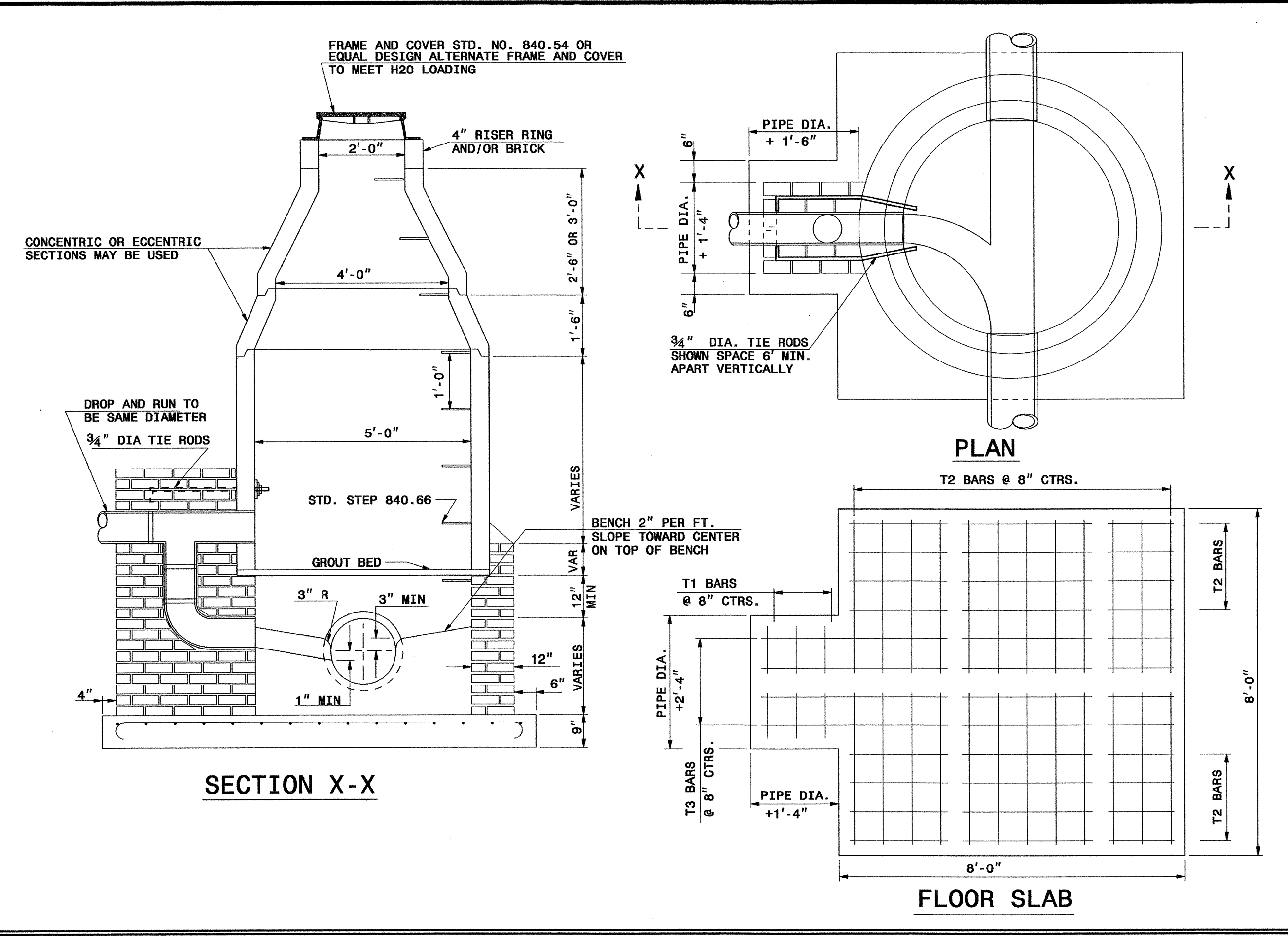
11/7/2006
P:\projects\37645 & 37857\UC-19\util_details.dwg

PROJECT REFERENCE NO.	SHEET NO.
37645 & 37857	UC-20
RW SHEET NO.	
UTILITY ENGINEER	

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. 7-06

ENGLISH STANDARD DRAWING FOR PRECAST SANITARY SEWER DROP MANHOLE 5' DIAMETER OUTSIDE DROP

SHEET 1 OF 2
1525.03



STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. 7-06

ENGLISH STANDARD DRAWING FOR PRECAST SANITARY SEWER DROP MANHOLE 5' DIAMETER OUTSIDE DROP

SHEET 1 OF 2
1525.03

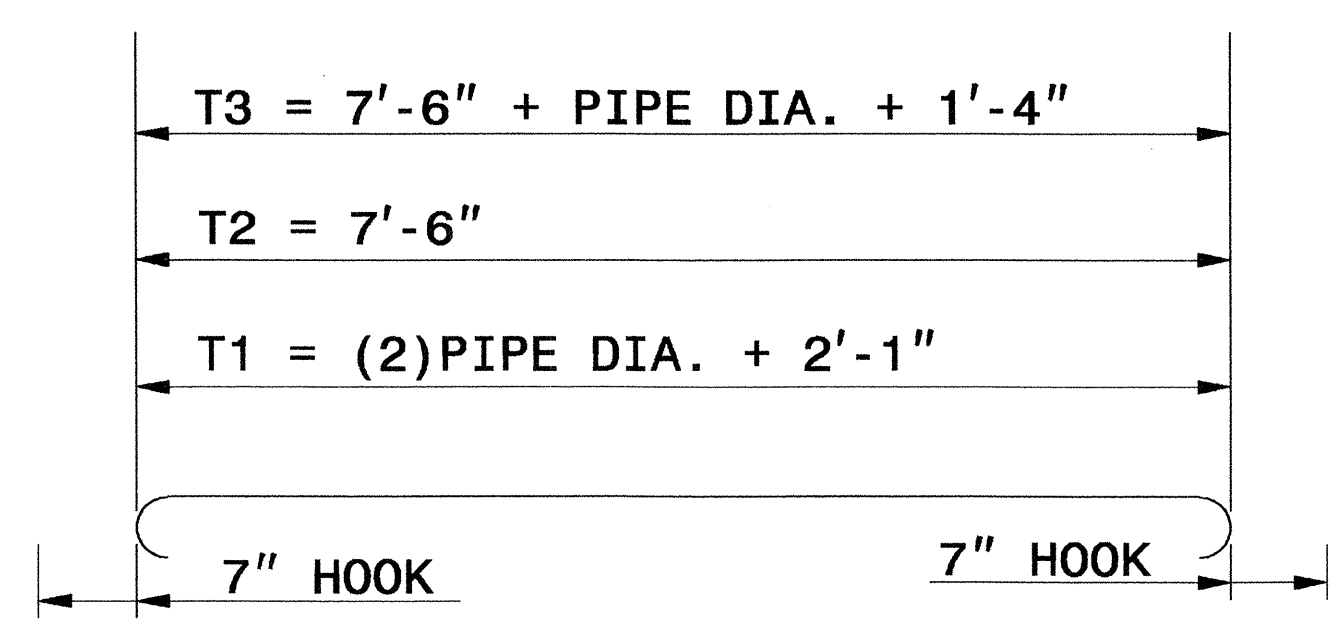
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. 7-06

ENGLISH STANDARD DRAWING FOR PRECAST SANITARY SEWER DROP MANHOLE 5' DIAMETER OUTSIDE DROP

SHEET 2 OF 2
1525.03

GENERAL NOTES:

- ALL MORTAR JOINTS $\frac{1}{2}'' \pm \frac{1}{8}''$.
- USE CLASS "A" CONCRETE FOR BASE.
- USE FORMS TO CONSTRUCT THE BASE.
- CONCRETE BRICK OR JUMBO BRICK WILL BE PERMITTED IN LIEU OF CLAY BRICK.
- PROVIDE PRECAST MANHOLE COMPONENTS WHICH COMPLY WITH AASHTO M199.
- ASSEMBLE RISERS AND GRADE RINGS SO STEPS HAVE A SPACING OF 12" FROM THE TOP TO THE BOTTOM OF THE MANHOLE.
- WHERE THE MANHOLE IS EXPOSED TO ROADWAY TRAFFIC, PLACE THE TOP OF THE MANHOLE FLUSH WITH THE GROUND; AND AT OTHER LOACTIONS PLACE THE TOP A MINIMUM OF 9" ABOVE THE GROUND.



STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. 7-06

ENGLISH STANDARD DRAWING FOR PRECAST SANITARY SEWER DROP MANHOLE 5' DIAMETER OUTSIDE DROP

SHEET 2 OF 2
1525.03

PLANS PREPARED BY :
RUMMEL KLEPPER & KAHL, LLP
consulting engineers
 900 RIDGEFIELD DRIVE SUITE 350
 RALEIGH, NORTH CAROLINA 27609-3960
 (919) 878-9560
FOR
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

REVISIONS

H:\7\2006\ees\y-dj\ut\me\3063r-25-ut1-de-to-1s.dwg
 7/20/06 10:51:13 AM
 8/4/06

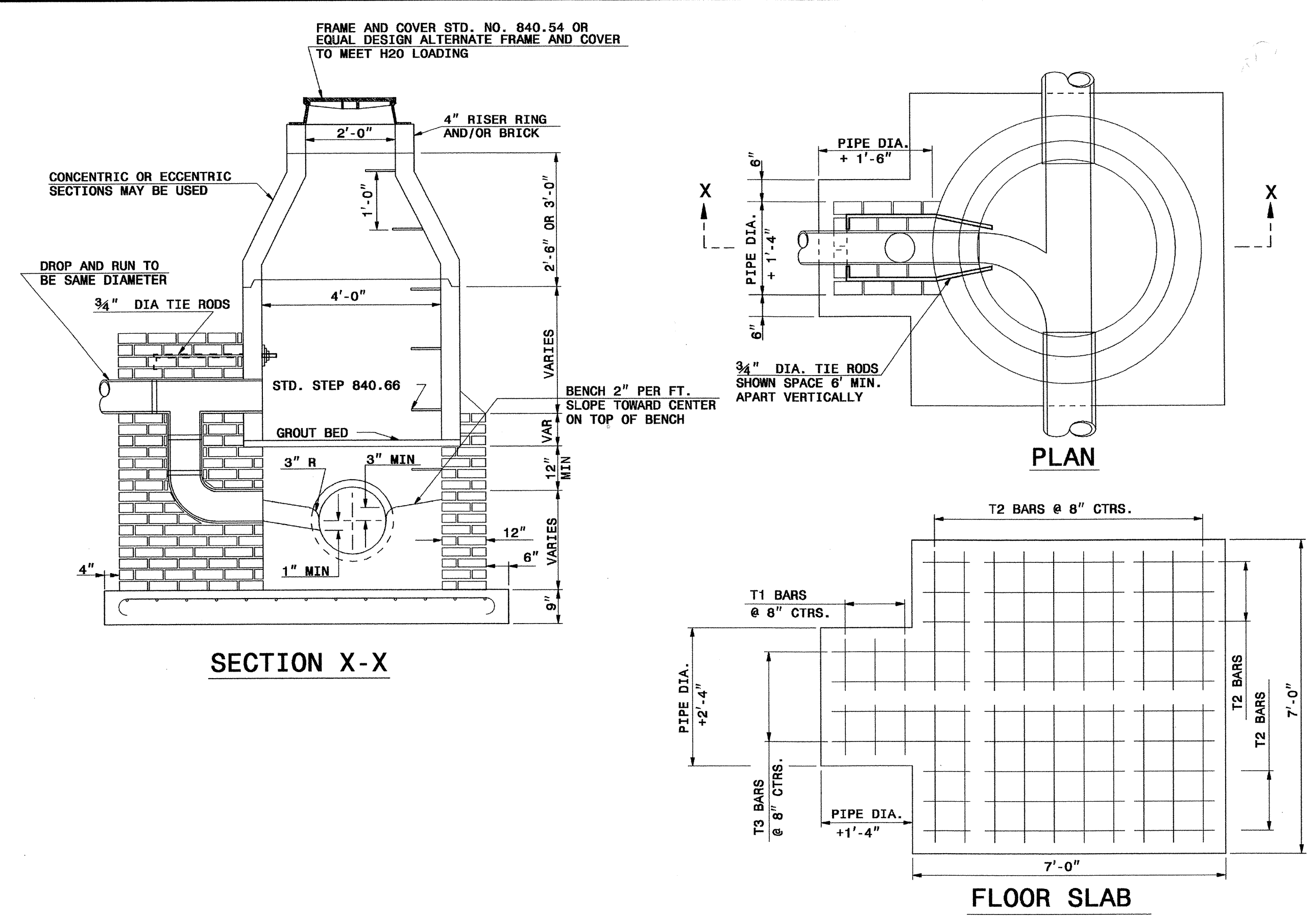
PROJECT REFERENCE NO. 37645 & 37857	SHEET NO. UC-21
RW SHEET NO.	
UTILITY ENGINEER	

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

7-06

ENGLISH STANDARD DRAWING FOR
PRECAST SANITARY SEWER DROP MANHOLE
4' DIAMETER OUTSIDE DROP

SHEET 1 OF 2
1525.02



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

7-06

ENGLISH STANDARD DRAWING FOR
PRECAST SANITARY SEWER DROP MANHOLE
4' DIAMETER OUTSIDE DROP

SHEET 1 OF 2
1525.02

REVISIONS

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

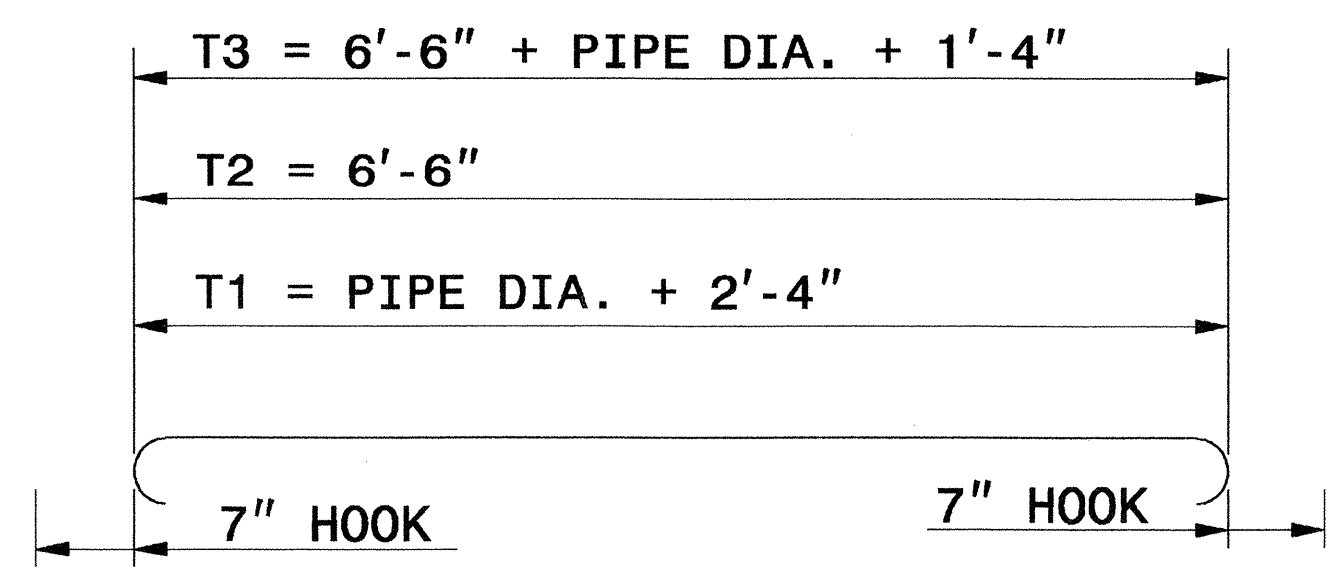
7-06

ENGLISH STANDARD DRAWING FOR
PRECAST SANITARY SEWER DROP MANHOLE
4' DIAMETER OUTSIDE DROP

SHEET 2 OF 2
1525.02

GENERAL NOTES:

- ALL MORTAR JOINTS $\frac{1}{2}'' \pm \frac{1}{8}''$.
- USE CLASS "A" CONCRETE FOR BASE.
- USE FORMS TO CONSTRUCT THE BASE.
- CONCRETE BRICK OR JUMBO BRICK WILL BE PERMITTED IN LIEU OF CLAY BRICK.
- PROVIDE PRECAST MANHOLE COMPONENTS WHICH COMPLY WITH AASHTO M199.
- ASSEMBLE RISERS AND GRADE RINGS SO STEPS HAVE A SPACING OF 12" FROM THE TOP TO THE BOTTOM OF THE MANHOLE.
- WHERE THE MANHOLE IS EXPOSED TO ROADWAY TRAFFIC, PLACE THE TOP OF THE MANHOLE FLUSH WITH THE GROUND; AND AT OTHER LOACTIONS PLACE THE TOP A MINIMUM OF 9" ABOVE THE GROUND.

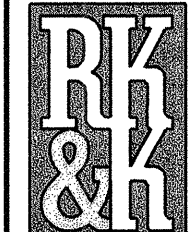


STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

7-06

ENGLISH STANDARD DRAWING FOR
PRECAST SANITARY SEWER DROP MANHOLE
4' DIAMETER OUTSIDE DROP

SHEET 2 OF 2
1525.02

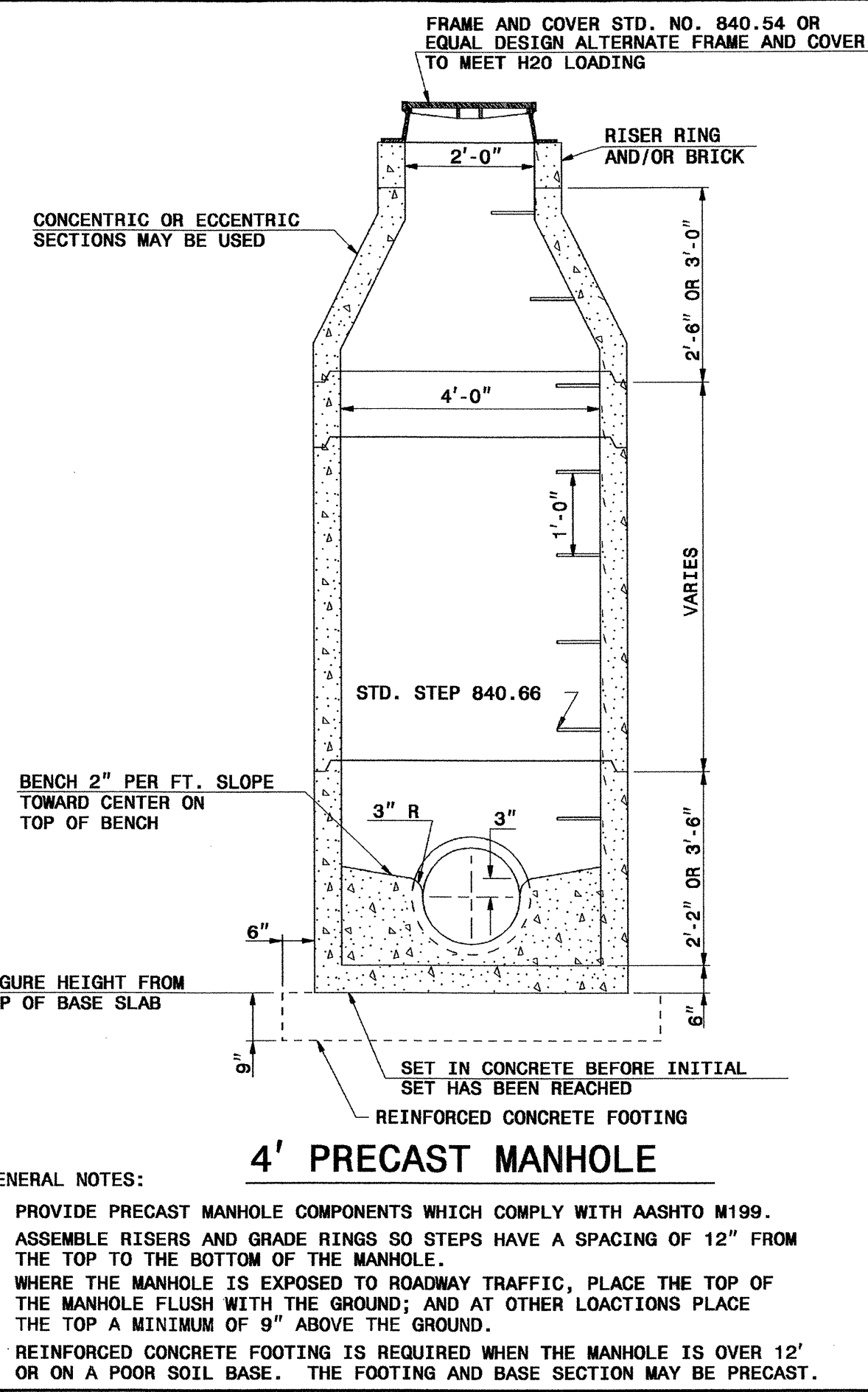
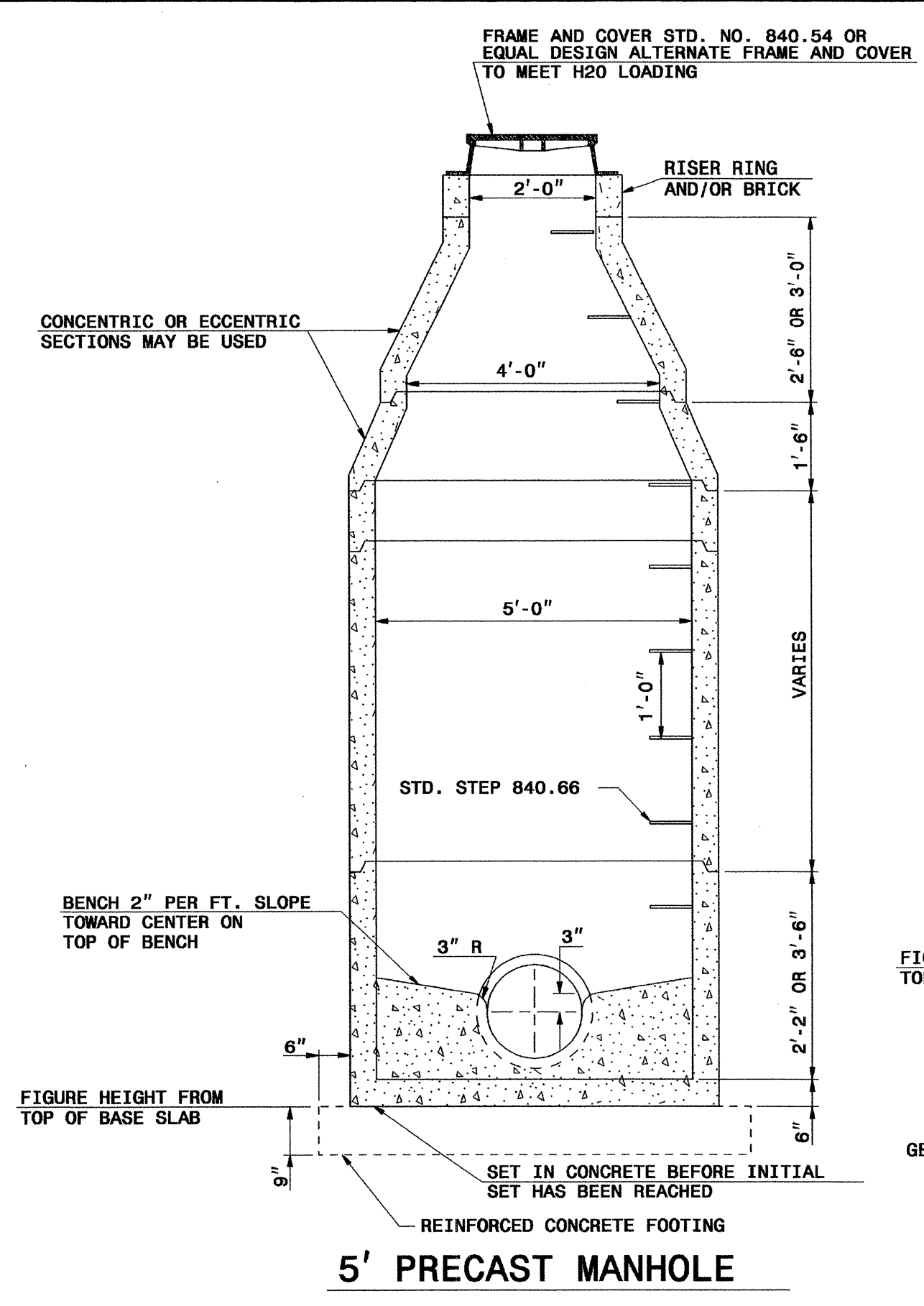
PLANS PREPARED BY :

RUMMEL KLEPPER & KAHL, LLP
consulting engineers
 900 RIDGEFIELD DRIVE SUITE 350
 RALEIGH, NORTH CAROLINA 27609-3960
 (919) 878-9560
 FOR
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

7-06

ENGLISH STANDARD DRAWING FOR
PRECAST SANITARY SEWER MANHOLE
4' AND 5' DIAMETER

SHEET 1 OF 2
1525.01



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

7-06

ENGLISH STANDARD DRAWING FOR
PRECAST SANITARY SEWER MANHOLE
4' AND 5' DIAMETER

SHEET 1 OF 2
1525.01

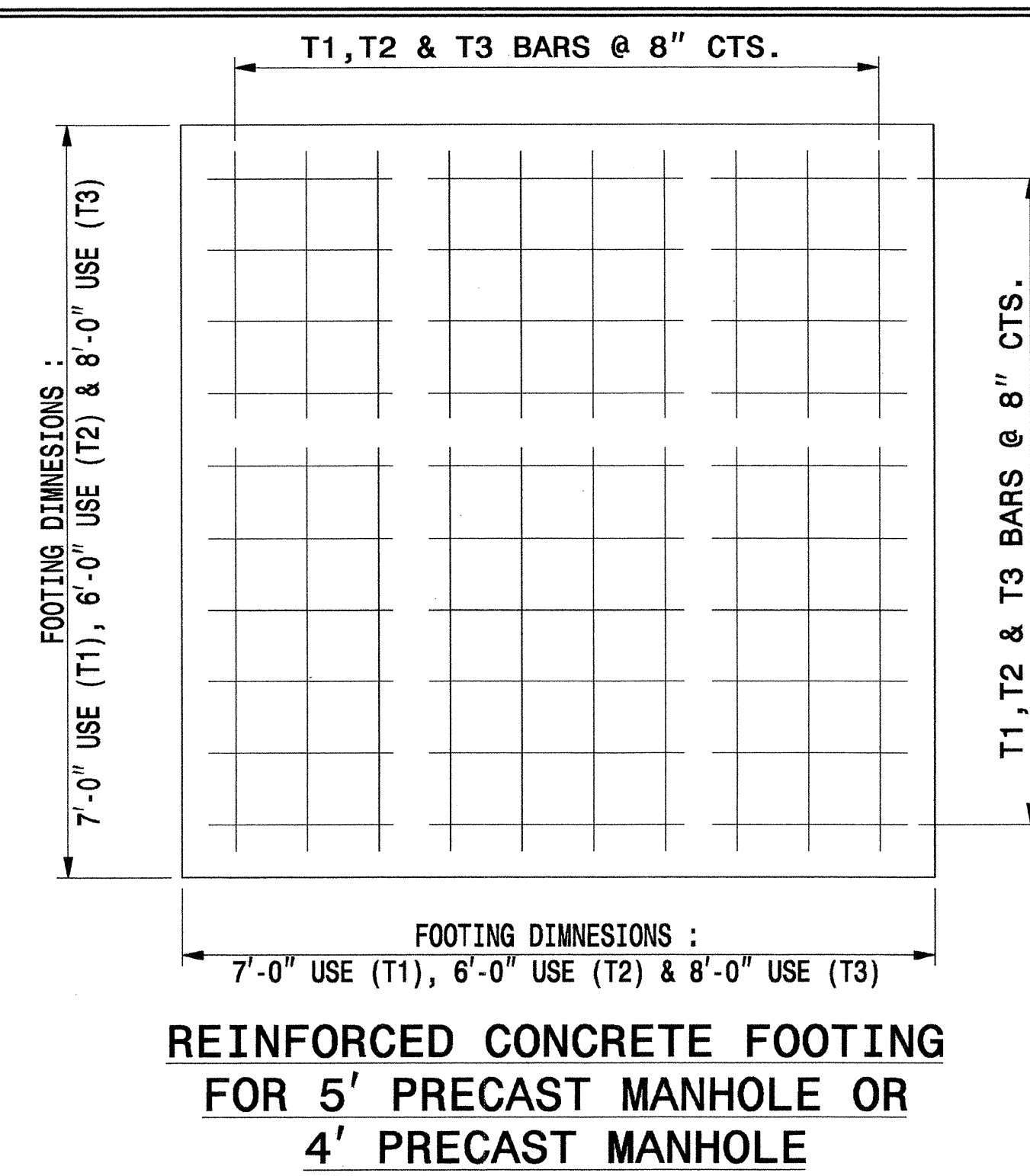
REVISIONS

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

7-06

ENGLISH STANDARD DRAWING FOR
PRECAST SANITARY SEWER MANHOLE
4' AND 5' DIAMETER

SHEET 2 OF 2
1525.01

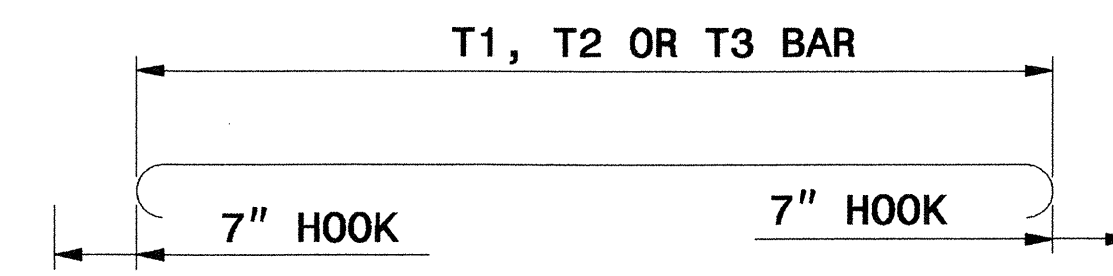


BILL OF MATERIAL FOR 7'-0" FOOTING				
BAR	SIZE	LENGTH	NO.	WT. lbs.
T1	#5	6'-6"	20	136
CLASS "A" CONC. YD ³ 9" THICK				1.361
CLASS "A" CONC. YD ³ 12" THICK				1.815

BILL OF MATERIAL FOR 6'-0" FOOTING				
BAR	SIZE	LENGTH	NO.	WT. lbs.
T2	#5	5'-6"	18	103
CLASS "A" CONC. YD ³ 9" THICK				1.000

BILL OF MATERIAL FOR 8'-0" FOOTING				
BAR	SIZE	LENGTH	NO.	WT. lbs.
T3	#5	7'-6"	24	188
CLASS "A" CONC. YD ³ 12" THICK				2.370

PLACE REINFORCING STEEL SO THAT STEEL IS PLACED A MIN. OF 2" AND A MAX. OF 4" FROM THE TOP OF THE SLAB.

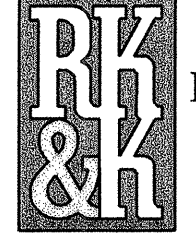


STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

7-06

ENGLISH STANDARD DRAWING FOR
PRECAST SANITARY SEWER MANHOLE
4' AND 5' DIAMETER

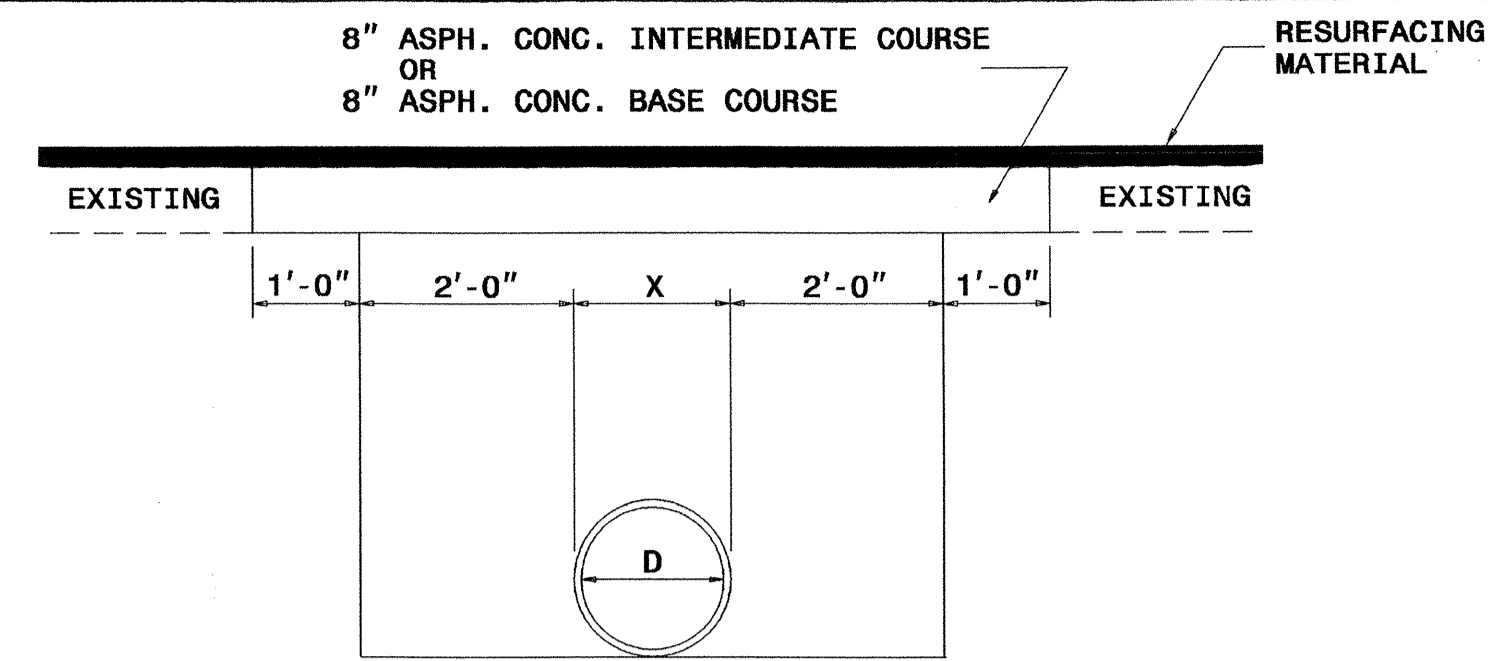
SHEET 2 OF 2
1525.01

PLANS PREPARED BY :

RUMMEL KLEPPER & KAHL, LLP
consulting engineers
 900 RIDGEFIELD DRIVE SUITE 350
 RALEIGH, NORTH CAROLINA 27609-3960
 (919) 878-9560
 FOR
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

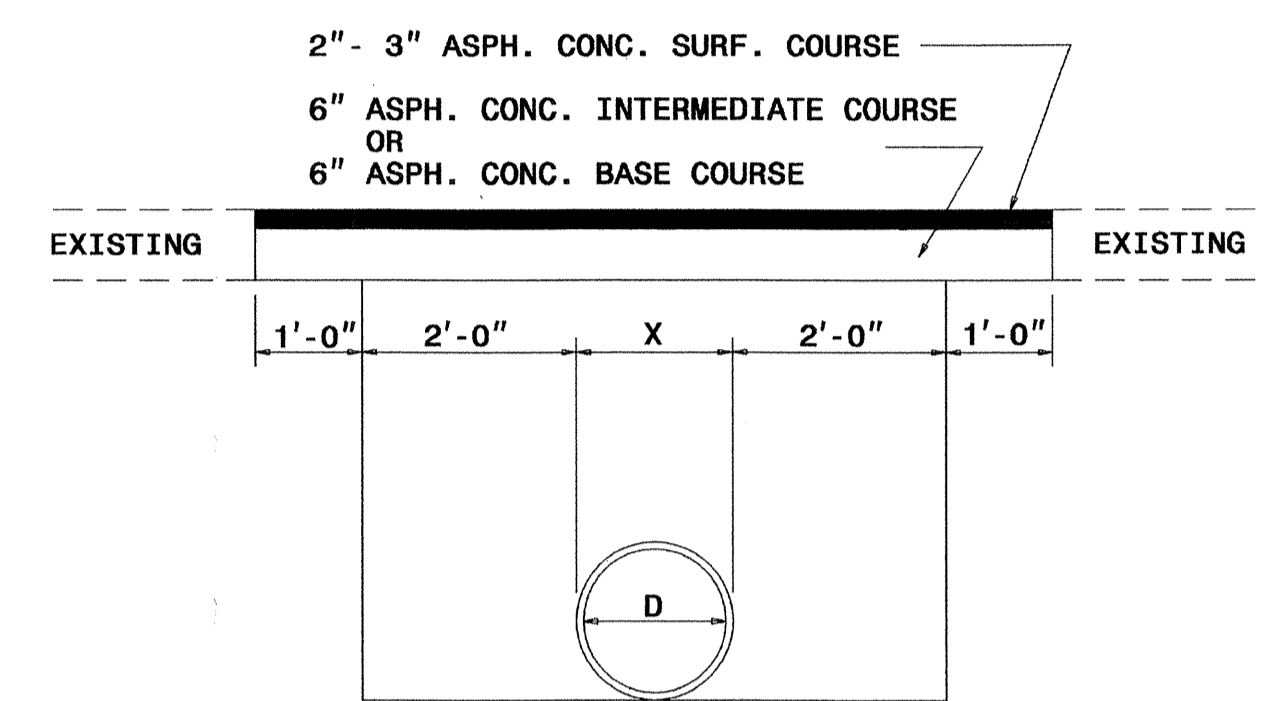
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

7-06
ENGLISH STANDARD DRAWING FOR
PAVEMENT REPAIRS
FOR SUPERPAVE MIX TYPES
SHEET 1 OF 1
654.01

D	X	W
12"	1'-4"	7'-4"
15"	1'-7"	7'-7"
18"	1'-10"	7'-10"
24"	2'-6"	8'-6"
30"	3'-1"	9'-1"
36"	3'-8"	9'-8"
42"	4'-5"	10'-5"
48"	5'-0"	11'-0"



**PAVEMENT REPAIRS ON ROADS TO BE RESURFACED
(PIPE IS PLACED UNDER EXISTING PAVEMENT)**



**PAVEMENT REPAIRS ON ROADS NOT TO BE RESURFACED
(PIPE IS TO BE PLACED UNDER EXISTING PAVEMENT)**

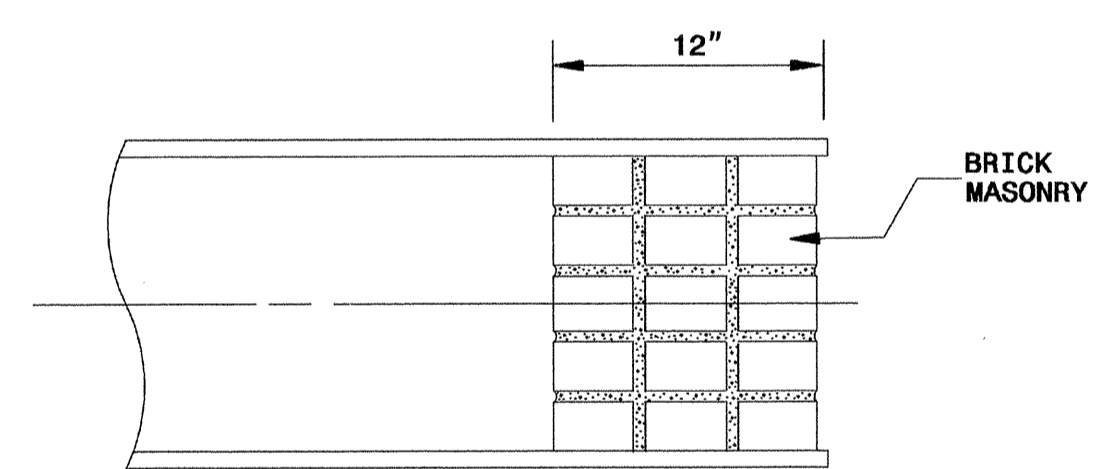
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

7-06
ENGLISH STANDARD DRAWING FOR
PAVEMENT REPAIRS
FOR SUPERPAVE MIX TYPES
SHEET 1 OF 1
654.01

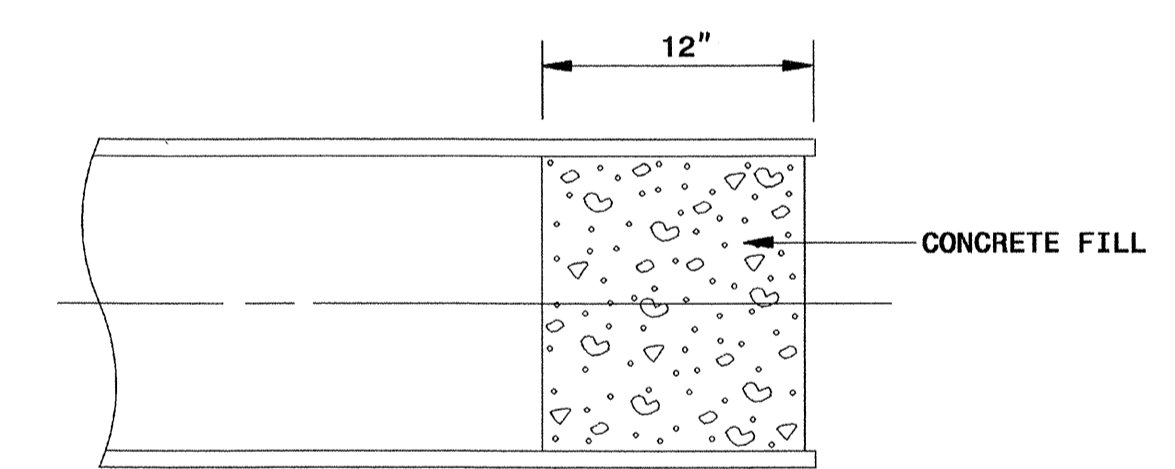
REVISIONS

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

7-06
ENGLISH STANDARD DRAWING FOR
CONCRETE AND BRICK PIPE PLUG
SHEET 1 OF 1
840.71



**SECTION OF MASONRY
PIPE PLUG**



**SECTION OF CONCRETE
PIPE PLUG**

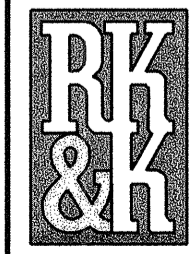
QUANTITIES	
PIPE SIZE	CUBIC YARDS
12"	0.029
15"	0.045
18"	0.065
24"	0.116
30"	0.182
36"	0.262
42"	0.356
48"	0.465
54"	0.589
60"	0.727
66"	0.880

NOTE:
EITHER BRICK MASONRY OR CONCRETE MAY BE USED.
CONCRETE BRICK MAY BE USED IN LIEU OF CLAY BRICK. JUMBO BRICK WILL BE PERMITTED.

NOTE:
USE PAY LIMITS (C.Y.) FOR PIPE PLUGS 12" IN THICKNESS ONLY.

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

7-06
ENGLISH STANDARD DRAWING FOR
CONCRETE AND BRICK PIPE PLUG
SHEET 1 OF 1
840.71

PLANS PREPARED BY :

RUMMEL KLEPPER & KAHL, LLP
consulting engineers
 900 RIDGEFIELD DRIVE SUITE 350
 RALEIGH, NORTH CAROLINA 27609-3960
 (919) 878-9560
FOR
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS