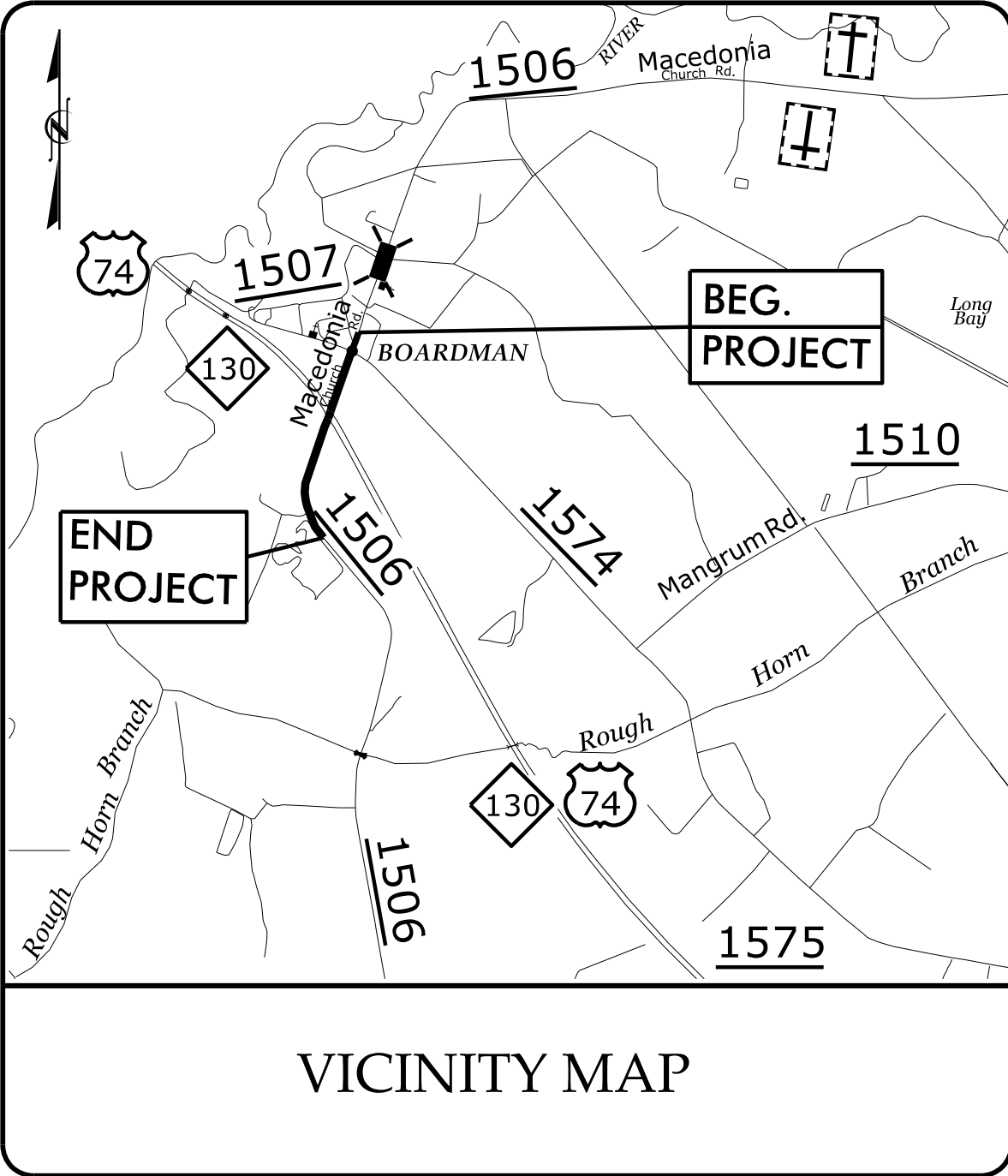


STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

T.I.P. NO.	SHEET NO.
R-5797	UC-1

FINAL DESIGN  
RELEASE  
FOR CONSTRUCTION

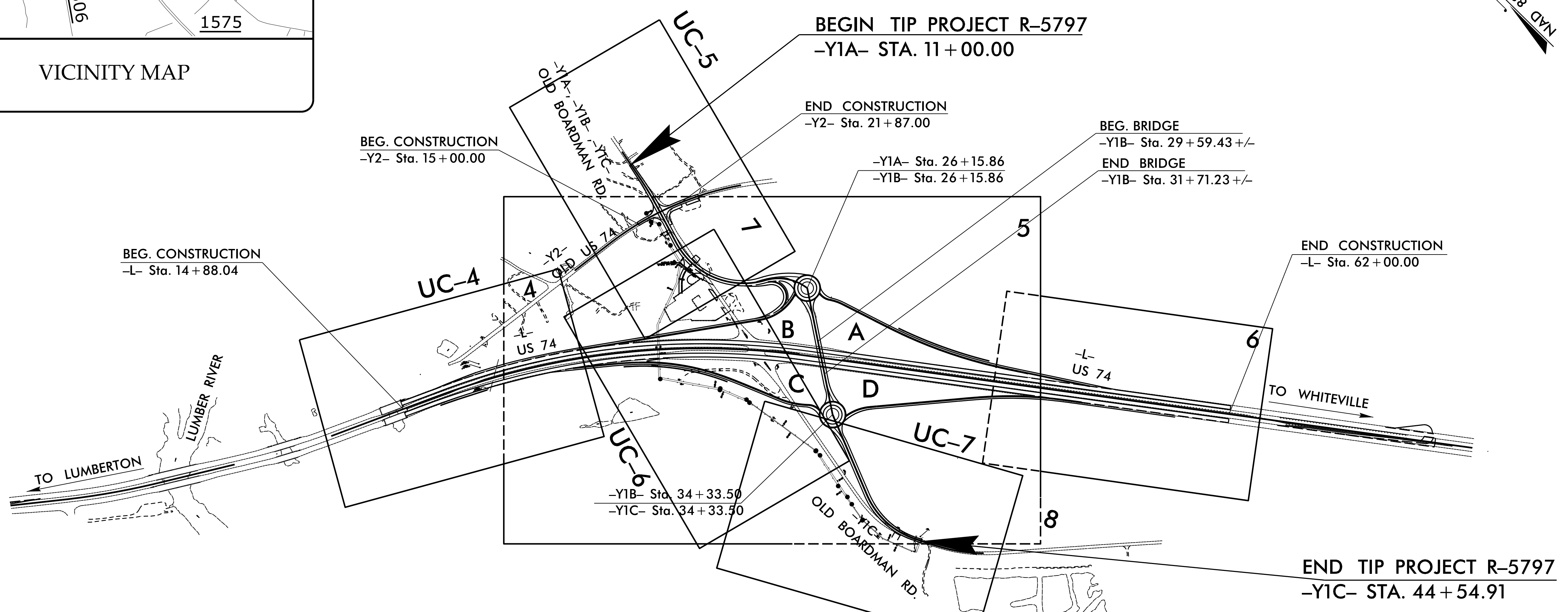
TIP PROJECT: R-5797



# UTILITY CONSTRUCTION PLANS COLUMBUS COUNTY

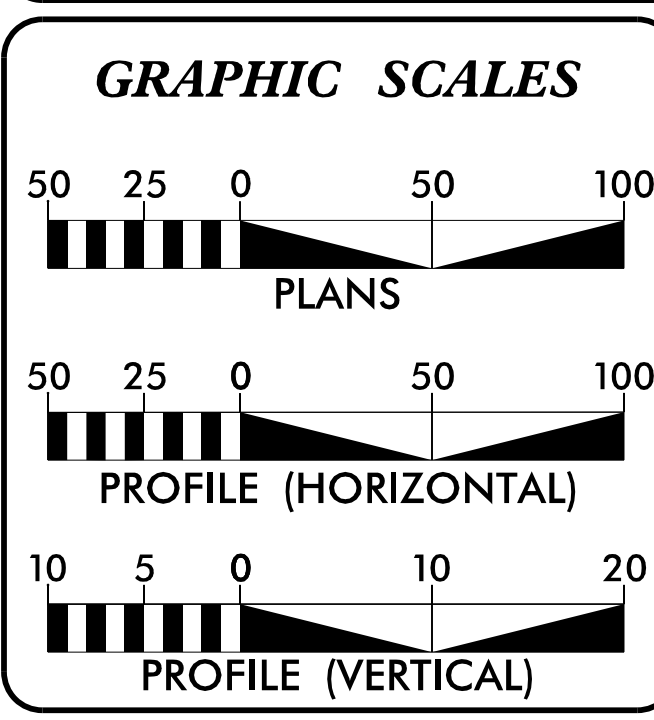
LOCATION: US 74 AT SR 1506 (OLD BOARDMAN RD/  
MACEDONIA CHURCH RD.)

TYPE OF WORK: RELOCATION OF WATER LINE, GRAVITY AND FORCE MAIN SEWER



DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

CONTRACT:



SHEET NO.	DESCRIPTION
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLOGY
UC-3 THRU UC-3A	NOTES
UC-3B THRU UC-3C	DETAILS
UC-4 THRU UC-10	PLAN & PROFILE SHEETS

**WATER AND SEWER OWNERS ON PROJECT**

(1) WATER - TOWN OF BOARDMAN

(2) SEWER - TOWN OF BOARDMAN

Prepared in the Office of:

1223 Jones Franklin Rd. Raleigh, N.C. 27606  
License No. F-0377  
Bus: 919.851.8077 Fax: 919.851.8107

ALAN M. MANESS, PE UTILITY ENGINEER  
SCOTT L. KENNEDY UTILITY DESIGN ENGINEER  
JOHN D. SCHRINER, PLS PROJECT UTILITY COORDINATOR

SEAL

UTILITY CONSTRUCTION PLANS ONLY

DIVISION OF HIGHWAYS  
DIVISION 6

549 Transportation Drive  
Fayetteville NC, 28301

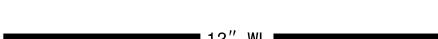























RICK HANDLIN DIVISION UTILITIES ENGINEER  
RANDY ROGERS DIVISION UTILITIES COORDINATOR

2/16/2021  
\\sfr-5797\_ut\_rdy\UC01.tsh.dgn  
USER:skennedy

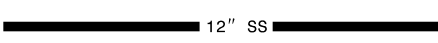
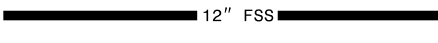


# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

## UTILITIES PLAN SHEET SYMBOLS





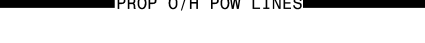



### PROPOSED WATER SYMBOLS

Water Line (Sized as Shown)	
11¼ Degree Bend	
22½ Degree Bend	
45 Degree Bend	
90 Degree Bend	
Plug	
Tee	
Cross	
Reducer	
Gate Valve	
Butterfly Valve	
Tapping Valve	
Line Stop	
Line Stop with Bypass	
Blow Off	
Fire Hydrant	
Relocate Fire Hydrant	
Remove Fire Hydrant	REM FH
Water Meter	
Relocate Water Meter	
Remove Water Meter	REM WM
Water Pump Station	
RPZ Backflow Preventer	
DCV Backflow Preventer	
Relocate RPZ Backflow Preventer	
Relocate DCV Backflow Preventer	

### PROPOSED SEWER SYMBOLS





Gravity Sewer Line (Sized as Shown)	
Force Main Sewer Line (Sized as Shown)	
Manhole (Sized per Note)	
Sewer Pump Station	

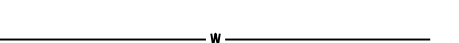
### PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

Power Pole	
Telephone Pole	
Joint Use Pole	
Telephone Pedestal	
Utility Line by Others (Type as Shown)	
Trenchless Installation	
Encasement by Open Cut	
Encasement	

Thrust Block	
Air Release Valve	
Utility Vault	
Concrete Pier	
Steel Pier	
Plan Note	
Pay Item Note	

### EXISTING UTILITIES SYMBOLS

Power Pole		*Underground Power Line	
Telephone Pole		*Underground Telephone Cable	
Joint Use Pole		*Underground Telephone Conduit	
Utility Pole		*Underground Fiber Optics Telephone Cable	
Utility Pole with Base		*Underground TV Cable	
H-Frame Pole		*Underground Fiber Optics TV Cable	
Power Transmission Line Tower		*Underground Gas Pipeline	
Water Manhole		Aboveground Gas Pipeline	
Power Manhole		*Underground Water Line	
Telephone Manhole		Aboveground Water Line	
Sanitary Sewer Manhole		*Underground Gravity Sanitary Sewer Line	
Hand Hole for Cable		Aboveground Gravity Sanitary Sewer Line	
Power Transformer		*Underground SS Forced Main Line	
Telephone Pedestal		Underground Unknown Utility Line	
CATV Pedestal		SUE Test Hole	
Gas Valve		Water Meter	
Gas Meter		Water Valve	
Located Miscellaneous Utility Object		Fire Hydrant	
Abandoned According to Utility Records	AATUR	Sanitary Sewer Cleanout	
End of Information	E.O.I.		

\*For Existing Utilities  
 Utility Line Drawn from Record (Type as Shown)   
 Designated Utility Line (Type as Shown) 

5/14/99  
1/23/2012  
USFA/STANDARD  
REV: 2/1/2012

5/14/19

# UTILITY CONSTRUCTION

## GENERAL NOTES:

1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF THE NC DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2018.
2. THE EXISTING UTILITIES BELONG TO THE TOWN OF NEWTON GROVE. CONTACT GLENN HOLLAND, PUBLIC WORKS DIRECTOR AT 919-252-9025.
3. ALL WATER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER RESOURCES, PUBLIC WATER SECTION. ALL SANITARY SEWER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER RESOURCES, WQ PERMITTING SECTION, PERCS UNIT. PERFORM ALL WORK IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODES.
4. THE UTILITY OWNER OWNS THE EXISTING UTILITY FACILITIES AND WILL OWN THE NEW UTILITY FACILITIES AFTER ACCEPTANCE BY THE DEPARTMENT. THE DEPARTMENT OWNS THE CONSTRUCTION CONTRACT AND HAS ADMINISTRATIVE AUTHORITY. COMMUNICATIONS AND DECISIONS BETWEEN THE CONTRACTOR AND UTILITY OWNER ARE NOT BINDING UPON THE DEPARTMENT OR THIS CONTRACT UNLESS AUTHORIZED BY THE ENGINEER. AGREEMENTS BETWEEN THE UTILITY OWNER AND CONTRACTOR FOR THE WORK THAT IS NOT PART OF THIS CONTRACT OR IS SECONDARY TO THIS CONTRACT ARE ALLOWED, BUT ARE NOT BINDING UPON THE DEPARTMENT.
5. PROVIDE ACCESS FOR THE DEPARTMENT PERSONNEL AND THE OWNER'S REPRESENTATIVES TO ALL PHASES OF CONSTRUCTION. NOTIFY DEPARTMENT PERSONNEL AND THE UTILITY OWNER TWO WEEKS PRIOR TO COMMENCEMENT OF ANY WORK AND ONE WEEK PRIOR TO SERVICE INTERRUPTION. KEEP UTILITY OWNERS' REPRESENTATIVES INFORMED OF WORK PROGRESS AND PROVIDE OPPORTUNITY FOR INSPECTION OF CONSTRUCTION AND TESTING.

6. THE PLANS DEPICT THE BEST AVAILABLE INFORMATION FOR THE LOCATION, SIZE, AND TYPE OF MATERIAL FOR ALL EXISTING UTILITIES. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE, AND TYPE MATERIAL OF THE EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING DAMAGE TO EXISTING FACILITIES. REPAIR ANY DAMAGE INCURRED TO EXISTING FACILITIES TO THE ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE DEPARTMENT.
7. MAKE FINAL CONNECTIONS OF THE NEW WORK TO THE EXISTING SYSTEM WHERE INDICATED ON THE PLANS, AS REQUIRED TO FIT THE ACTUAL CONDITIONS, OR AS DIRECTED.
8. MAKE CONNECTIONS BETWEEN EXISTING AND PROPOSED UTILITIES AT TIMES MOST CONVENIENT TO THE PUBLIC, WITHOUT ENDANGERING THE UTILITY SERVICE, AND IN ACCORDANCE WITH THE UTILITY OWNER'S REQUIREMENTS. MAKE CONNECTIONS ON WEEKENDS, AT NIGHT, AND ON HOLIDAYS IF NECESSARY.
9. ALL UTILITY MATERIALS SHALL BE APPROVED PRIOR TO DELIVERY TO THE PROJECT. SEE 1500-7, " SUBMITTALS AND RECORDS" IN SECTION 1500 OF THE STANDARD SPECIFICATIONS.

## PROJECT SPECIFIC NOTES:

1. PROPOSED WATER LINE FROM -WL- LINE STATION 10+00 +/- TO 10+37.5 +/- SHALL BE 8" R.J. DIP, INSTALLED BY OPEN CUT METHOD, AND FROM -WL- LINE STATION 10+37.5 +/- TO 11+60 +/- SHALL BE 8" DR9 (DIPS) HDPE, INSTALLED BY DIRECTIONAL DRILL METHOD, AND FROM -WL- LINE STATION 11+60 +/- TO 15+86 +/- SHALL BE 6" C900 DR 18 PC 235 PVC, INSTALLED BY OPEN CUT METHOD.
2. PROPOSED SEWER LINE FROM -SL1- LINE STATION 10+00 +/- TO 13+20 +/- SHALL BE 15" SDR 35 PVC, INSTALLED BY OPEN CUT METHOD, AND FROM -SL1- LINE STATION 13+20 +/- TO 17+82 +/- SHALL BE 10" C900 DR 18 PC 235 PVC, INSTALLED BY OPEN CUT METHOD, AND FROM -SL1- LINE STATION 17+82 +/- TO 20+26 +/- SHALL BE 10" R.J. DIP, INSTALLED BY OPEN CUT METHOD / BORE AND JACK ENCASEMENT, AND FROM -SL1- LINE STATION 20+26 +/- TO 41+86 +/- SHALL BE 10" C900 DR 18 PC 235 PVC, INSTALLED BY OPEN CUT METHOD, AND FROM -SL1- LINE STATION 41+86 +/- TO 42+43 +/- SHALL BE 10" R.J. DIP, INSTALLED BY OPEN CUT METHOD / BORE AND JACK ENCASEMENT.
3. PROPOSED SEWER LINE FROM -SL2- LINE STATION 10+00 +/- TO 11+62 +/- SHALL BE 8" SDR 35 PVC, INSTALLED BY OPEN CUT METHOD.

PROJECT REFERENCE NO. R-5797	SHEET NO. UC-3
DESIGNED BY: SLK	
DRAWN BY: SLK	
CHECKED BY: DBC	
APPROVED BY: DBC	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	

UTILITY CONSTRUCTION

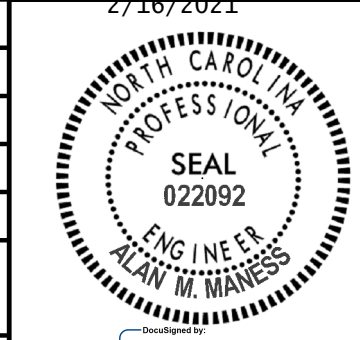
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

**FINAL DESIGN**  
RELEASE FOR CONSTRUCTION

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5/14/99

# UTILITY CONSTRUCTION

PROJECT REFERENCE NO. R-5797	SHEET NO. UC-3A
DESIGNED BY: SLK	
DRAWN BY: SLK	
CHECKED BY: DBC	
APPROVED BY: DBC	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	

UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

**FINAL DESIGN**  
RELEASE  
FOR CONSTRUCTION

### WATER INSTALLATION NOTES:

- 1) CONTRACTOR SHALL COORDINATE ALL PROPOSED WORK WITH TOWN OF BOARDMAN MR. RANDY WILLIAMSON, MAYOR AT 910-734-1305 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.
- 2) CONTRACTOR SHALL FULLY INSTALL, PRESSURE & LEAKAGE TEST, AND CHLORINATE NEW WATER MAIN PRIOR TO CONNECTION TO EXISTING SYSTEM.
- 3) CONTRACTOR SHALL PERFORM THE CONNECTION DURING OFF PEAK HOURS WITH A MAXIMUM SHUT DOWN TIME OF FIVE HOURS. (12 PM MIDNIGHT TO 5 AM)
- 4) ANY WORK OR TEST PERFORMED WITHOUT NOTIFICATION AND CONTACT WITH TOWN OF BOARDMAN FIELD INSPECTORS SHALL BE PERFORMED AT THE CONTRACTOR'S RISK. TESTING SHALL BE PERFORMED IN THE PRESENCE OF TOWN OF BOARDMAN PERSONNEL. CONTACT MR. RANDY WILLIAMSON, MAYOR.
- 5) OPERATION OF EXISTING GATE VALVES SHALL BE DONE BY TOWN OF BOARDMAN OPERATIONS STAFF. CONTACT MR. RANDY WILLIAMSON, MAYOR AT 910-734-1305.
- 6) TIE NEW WATER MAIN INTO EXISTING. INSTALL THRUST BLOCKS AND RODDING AS REQUIRED.
- 7) NEW WATER MAIN SHALL NOT BE CONNECTED TO EXISTING MAIN WITHOUT PRIOR APPROVAL AND COORDINATION WITH TOWN OF BOARDMAN.

### SEWER INSTALLATION NOTES:

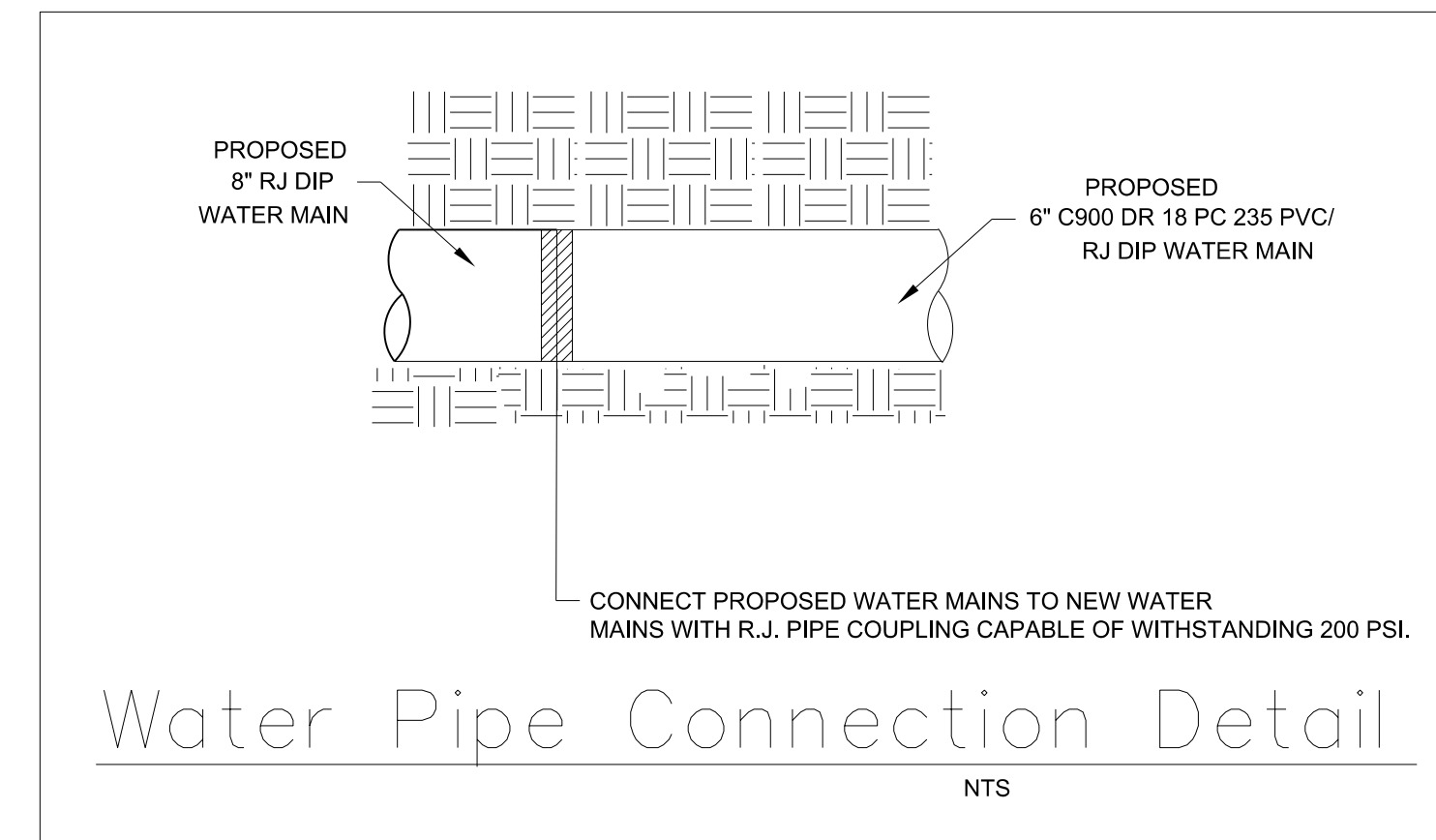
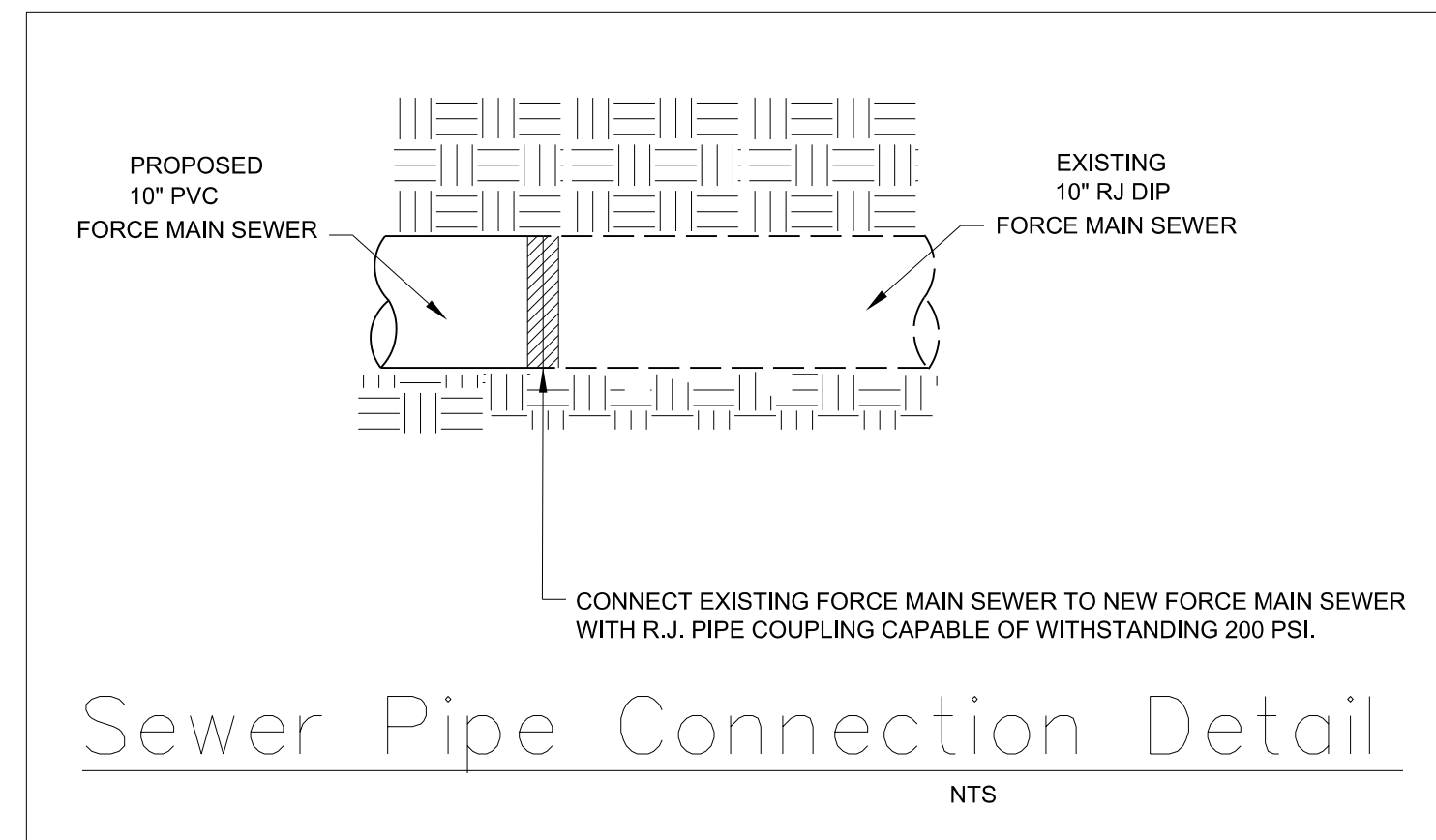
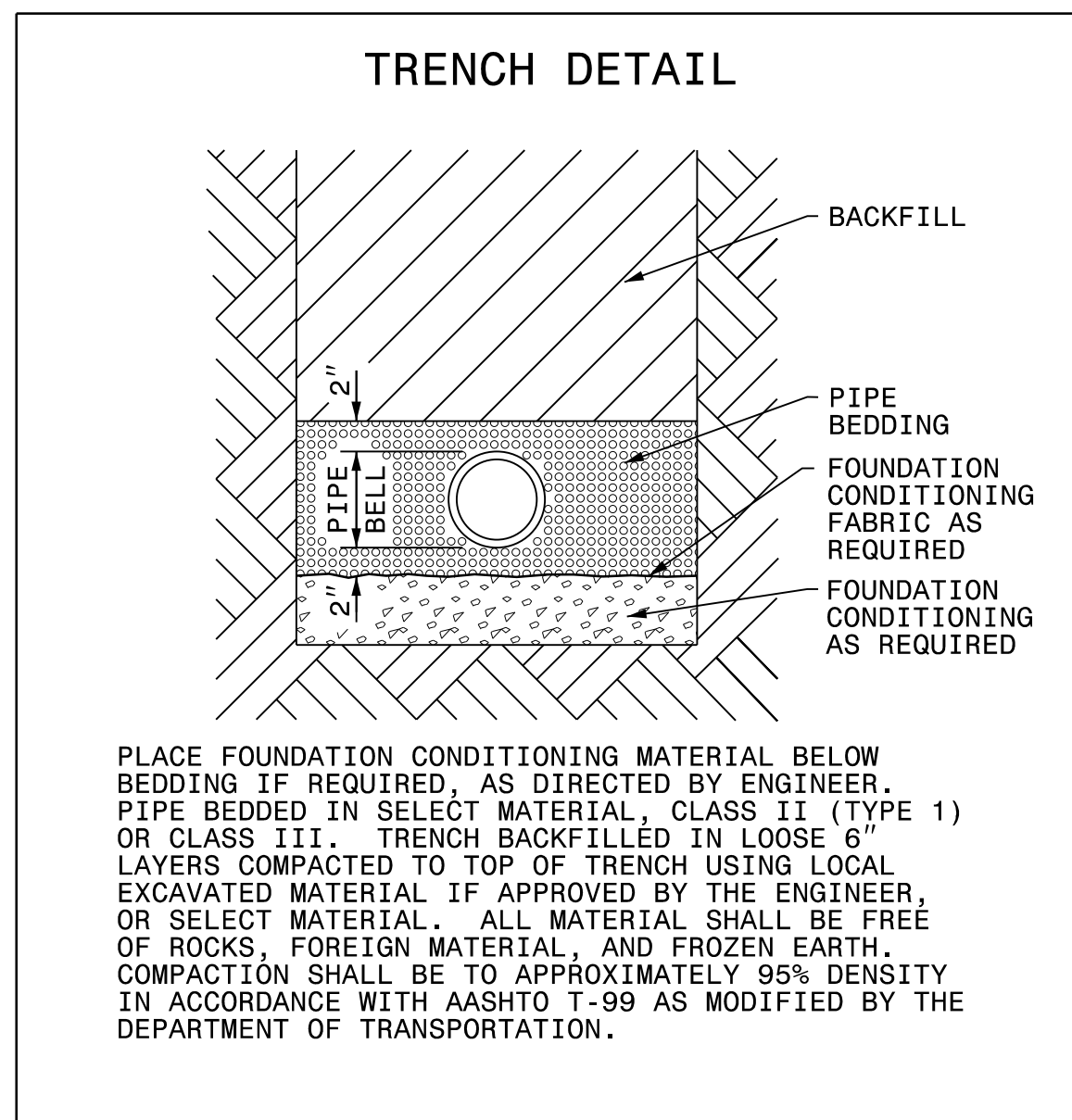
- 1) CONTRACTOR SHALL COORDINATE ALL PROPOSED WORK WITH TOWN OF BOARDMAN MR. KEVIN TAYLOR, WASTEWATER SUPERINTENDENT AT 910-272-0833 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.
- 2) CONTRACTOR SHALL FULLY INSTALL, PRESSURE & LEAKAGE TEST NEW SEWER MAIN PRIOR TO CONNECTION TO EXISTING SYSTEM.
- 3) CONTRACTOR SHALL PERFORM THE CONNECTION DURING OFF PEAK HOURS WITH A MAXIMUM SHUT DOWN TIME OF FIVE HOURS. (12 PM MIDNIGHT TO 5 AM)
- 4) ANY WORK OR TEST PERFORMED WITHOUT NOTIFICATION TO TOWN SHALL BE PERFORMED AT THE CONTRACTOR'S RISK. TESTING SHALL BE PERFORMED IN THE PRESENCE OF TOWN OF BOARDMAN PERSONNEL. CONTACT MR. KEVIN TAYLOR, WASTEWATER SUPERINTENDENT.
- 5) OPERATION OF EXISTING ISOLATION VALVES SHALL BE DONE BY TOWN OF BOARDMAN OPERATIONS STAFF. CONTACT MR. KEVIN TAYLOR, WASTEWATER SUPERINTENDENT AT 910-272-0833.
- 6) NEW SEWER MAIN SHALL NOT BE CONNECTED TO EXISTING MAIN WITHOUT PRIOR APPROVAL AND COORDINATION WITH TOWN OF BOARDMAN.
- 7) R.J. DIP FORCEMAIN SHALL BE PROTECTO 401 CERAMIC LINED PIPE.

CONTRACTOR SHALL NOTE THAT WHEN THE PROPOSED WATERLINE AND SANITARY SEWER FORCE MAIN ARE LESS THAN 10' HORIZONTAL DISTANCE, THAT THE BOTTOM OF THE WATERLINE SHALL BE A MINIMUM OF 18" FROM THE TOP OF PROPOSED FORCE MAIN SEWER AS SHOWN ON SHEETS UC-10 AND UC-11.

9/15/2018 10:51:00 AM UC3A-psh.dgn

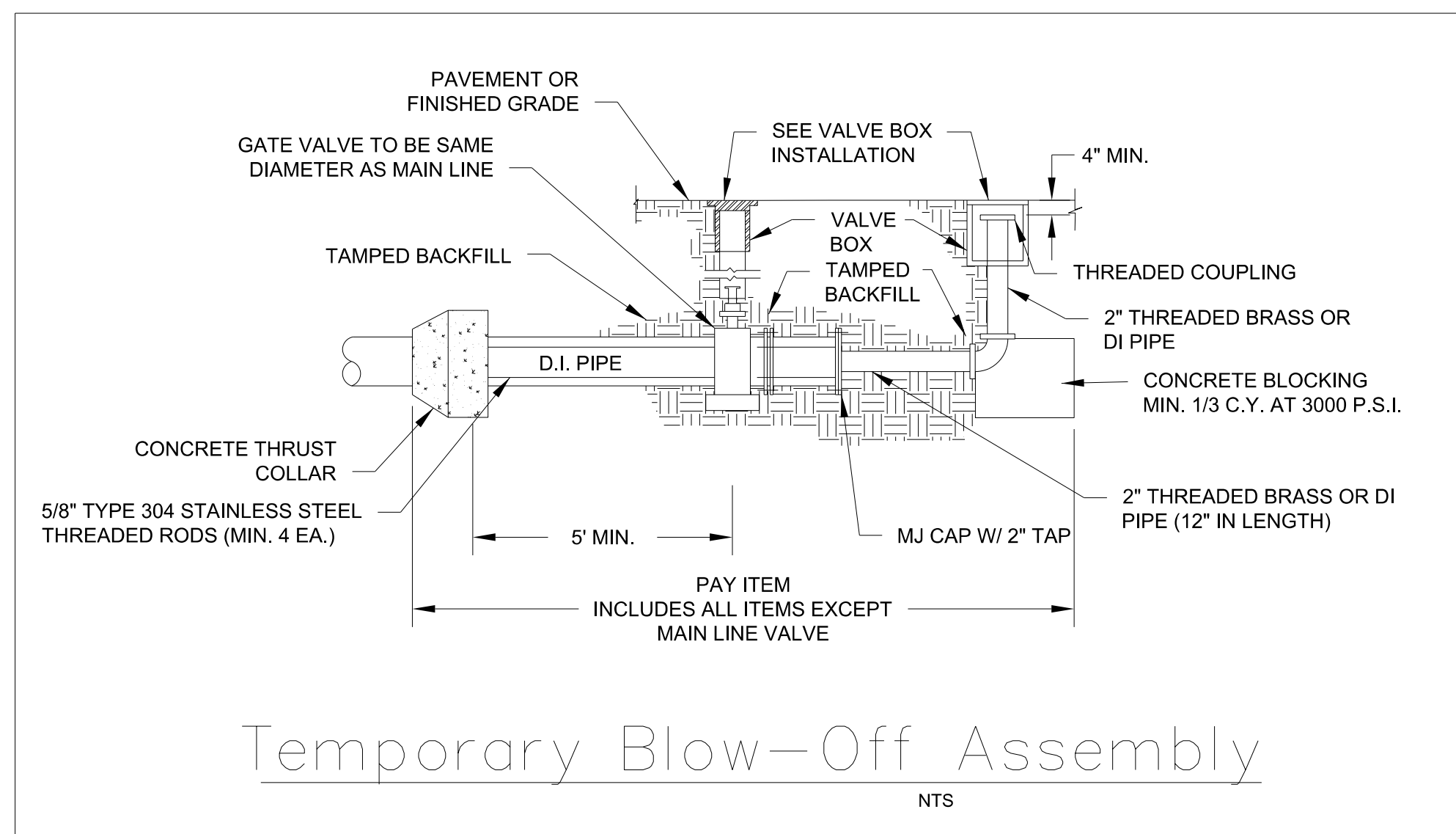
PROJECT REFERENCE NO.	SHEET NO.
R-5797	UC-3B
DESIGNED BY: SLK	
DRAWN BY: SLK	
CHECKED BY: DBC	
APPROVED BY: DBC	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	

# PROJECT TYPICAL DETAILS

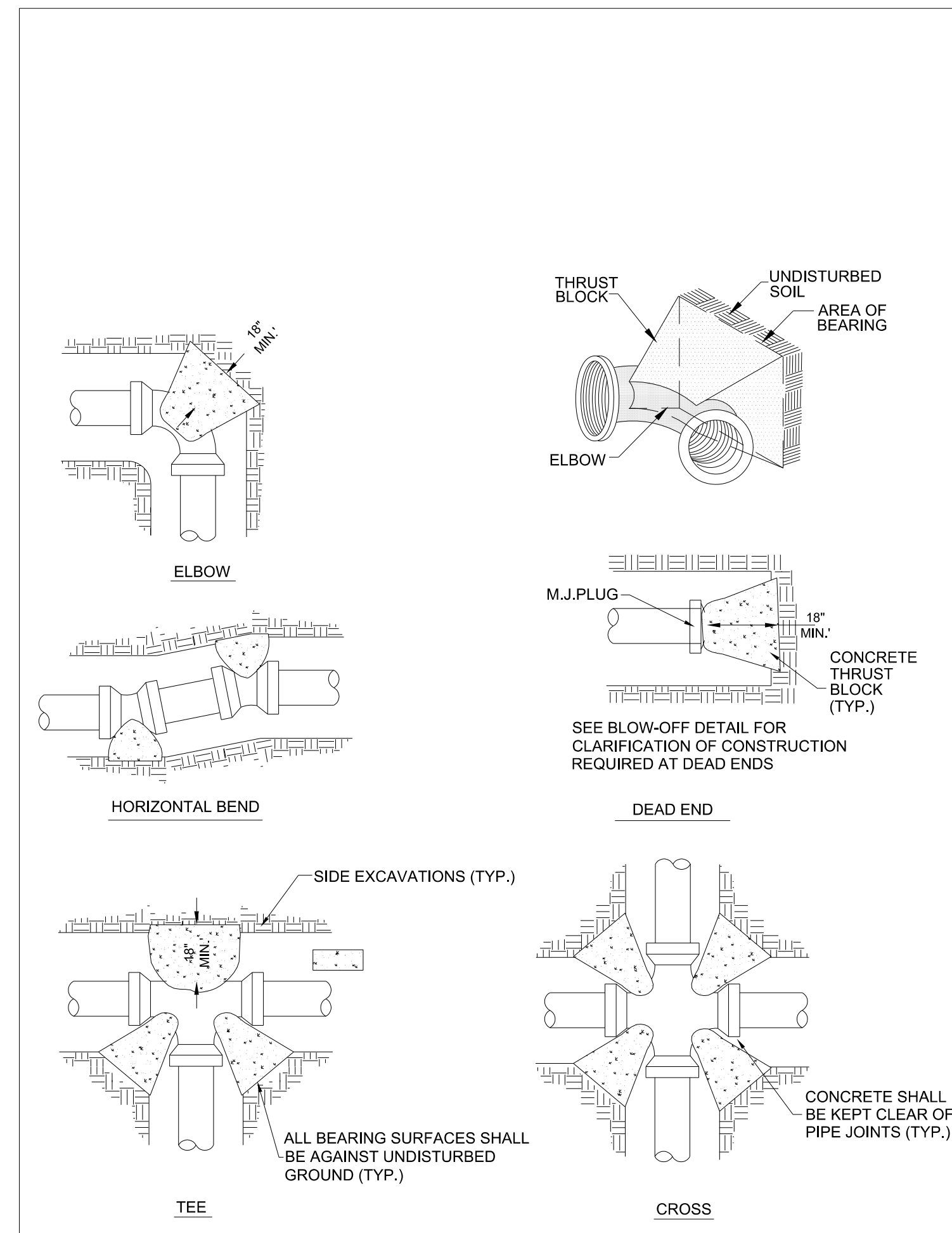
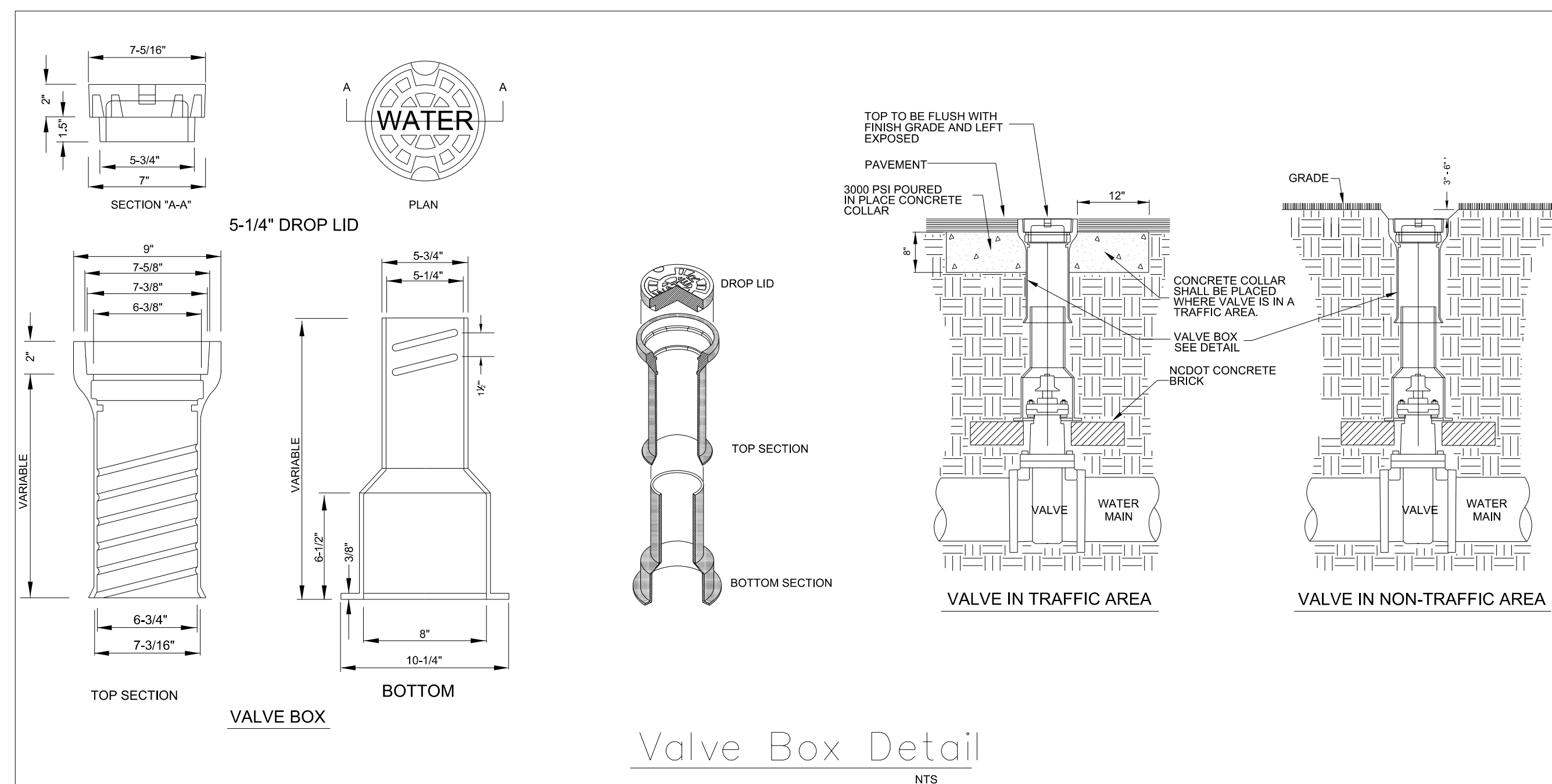


UTILITY CONSTRUCTION  
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

**FINAL DESIGN**  
RELEASE FOR CONSTRUCTION



- NOTES:
- THRUST BLOCKS SHALL BE INSTALLED ON PVC WATER DISTRIBUTION LINES 6" THRU 12" DIA. IN THE MANNER SHOWN.
  - PIPE GREATER THAN 12 INCH DIAMETER SHALL REQUIRE RESTRAINT JOINT PIPE FOR THE PROPER LENGTH.
  - SAC-CRETE SHALL NOT BE ALLOWED.
  - NO CONCRETE SHALL BE PLACED ON BOLTS. WRAP JOINT FITTINGS WITH PLASTIC.
  - CONCRETE SHALL BE A MINIMUM 3,000 psi.
  - ALL BEARING SURFACES SHALL BE AGAINST UNDISTURBED SOIL.

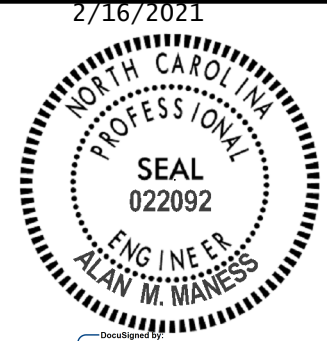


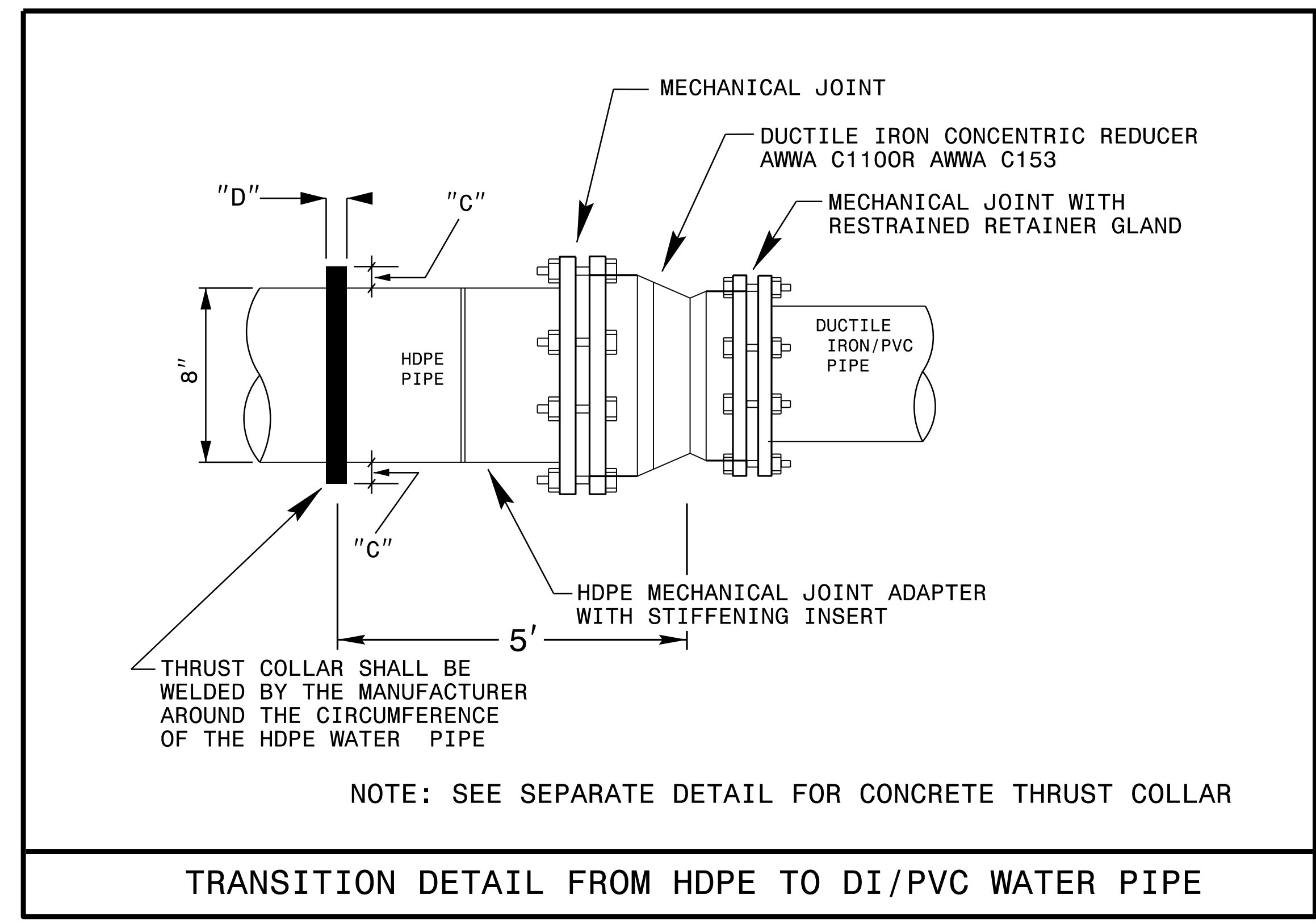
## CONCRETE THRUST BLOCK DETAIL

FITTING SIZE (IN.)	THRUST BLOCKING SCHEDULE					
	MINIMUM BLOCKING AREA AND VOLUME IN S.F. AND (C.Y.)					
	11 1/4"	22 1/2"	45"	90"	TEE	PLUG
2			0.23 (0.11)	0.38 (0.11)	0.30 (0.11)	0.30 (0.11)
4			0.83 (0.18)	1.35 (0.18)	0.98 (0.18)	0.98 (0.18)
6	0.40 (0.01)	0.80 (0.02)	1.73 (0.20)	3.00 (0.33)	2.17 (0.25)	2.17 (0.25)
8	0.80 (0.02)	1.50 (0.04)	3.08 (0.34)	5.40 (0.60)	3.83 (0.42)	3.83 (0.42)
10	1.20 (0.03)	2.30 (0.07)	4.72 (0.52)	8.40 (0.94)	5.92 (0.66)	5.92 (0.66)
12	1.70 (0.05)	3.30 (0.12)	6.82 (0.75)	12.00 (1.33)	8.48 (0.94)	8.48 (0.94)
16	3.00 (0.33)	5.90 (0.65)	11.60 (0.86)	21.30 (1.57)	15.00 (0.97)	15.00 (0.97)
20	4.60 (0.52)	9.20 (0.76)	18.00 (1.32)	33.30 (3.60)	23.30 (1.87)	23.30 (1.87)
24	6.70 (0.75)	13.20 (0.97)	26.00 (2.28)	48.00 (5.29)	33.60 (3.24)	33.60 (3.24)
30	10.40 (0.77)	20.70 (1.80)	40.60 (4.45)	75.00 (10.30)	52.50 (6.32)	52.50 (6.32)
36	15.00 (1.28)	29.80 (3.11)	58.40 (7.67)	108.0 (17.90)	75.60 (10.90)	75.60 (10.90)

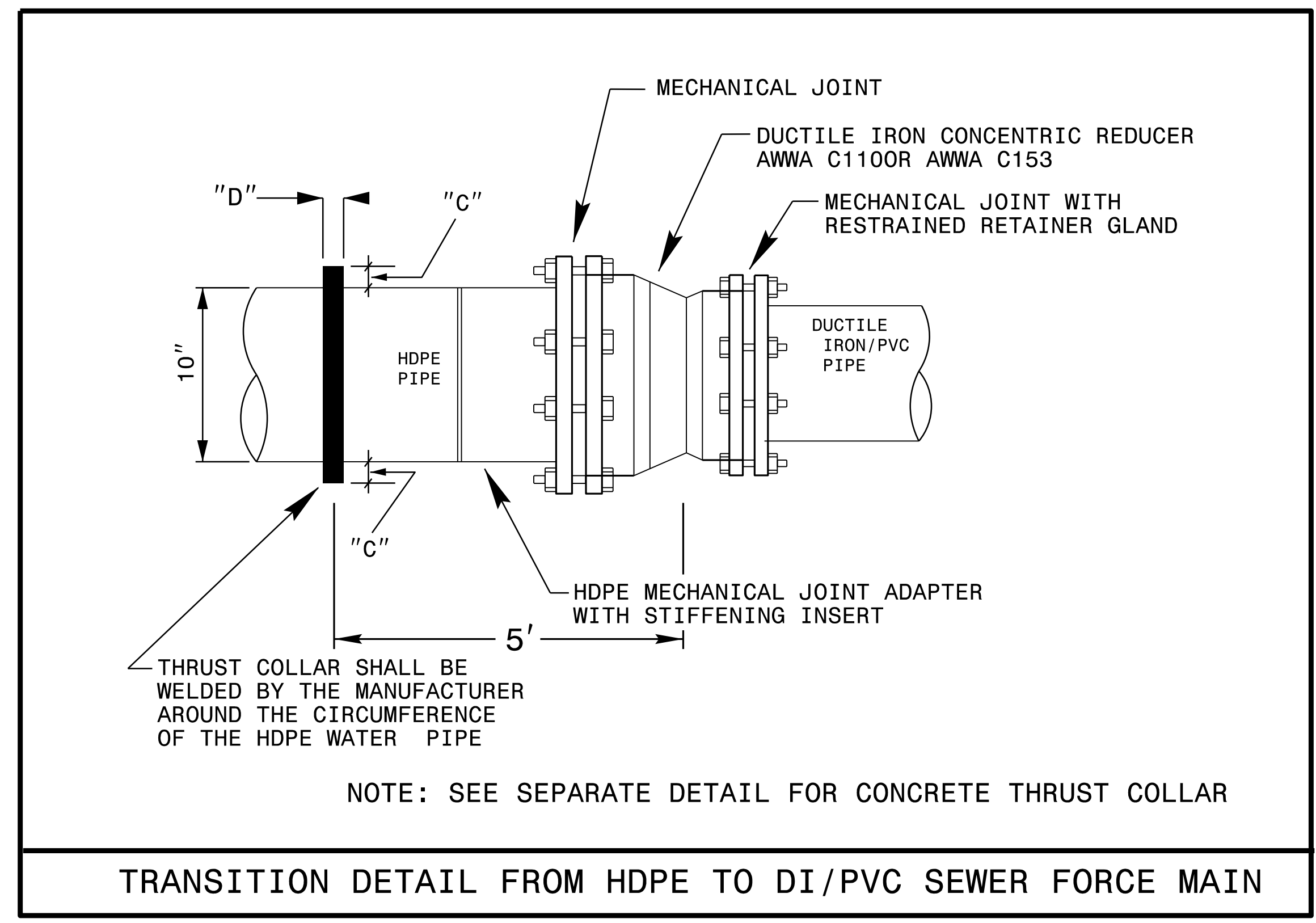
NOTE: Values given are based on 200 psi water pressure and 2000 lb/sf soil bearing capacity. Soils with less bearing capacity such as muck, peat or soft clay will require greater blocking areas and volumes.  
The thrust blocking shown above is based on the use of mechanical joint as shown on plans.

8/17/99

PROJECT REFERENCE NO. R-5797	SHEET NO. UC-3C
DESIGNED BY: SLK	
DRAWN BY: SLK	
CHECKED BY: DBC	
APPROVED BY: DBC	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	



TRANSITION DETAIL FROM HDPE TO DI/PVC WATER PIPE

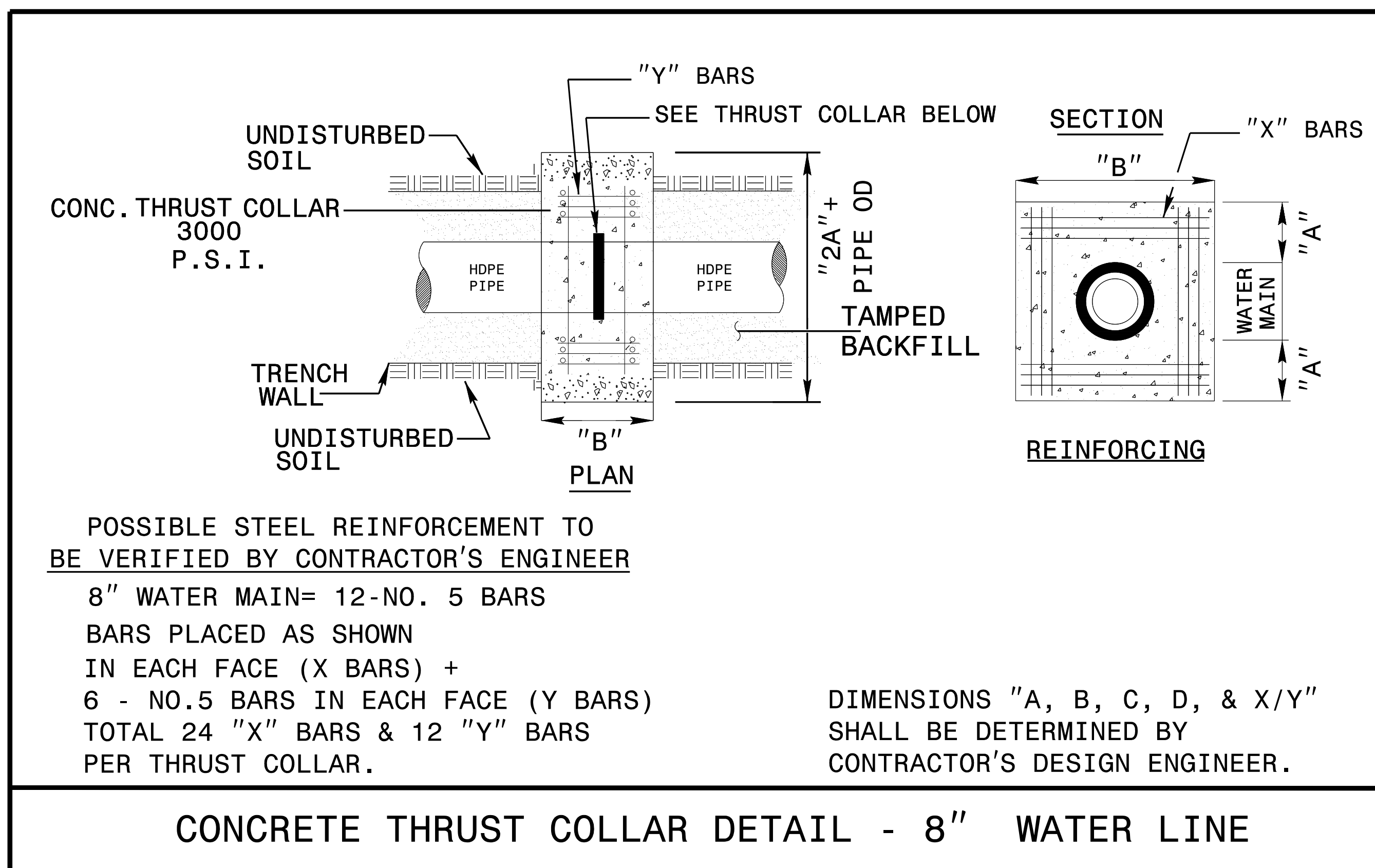


TRANSITION DETAIL FROM HDPE TO DI/PVC SEWER FORCE MAIN

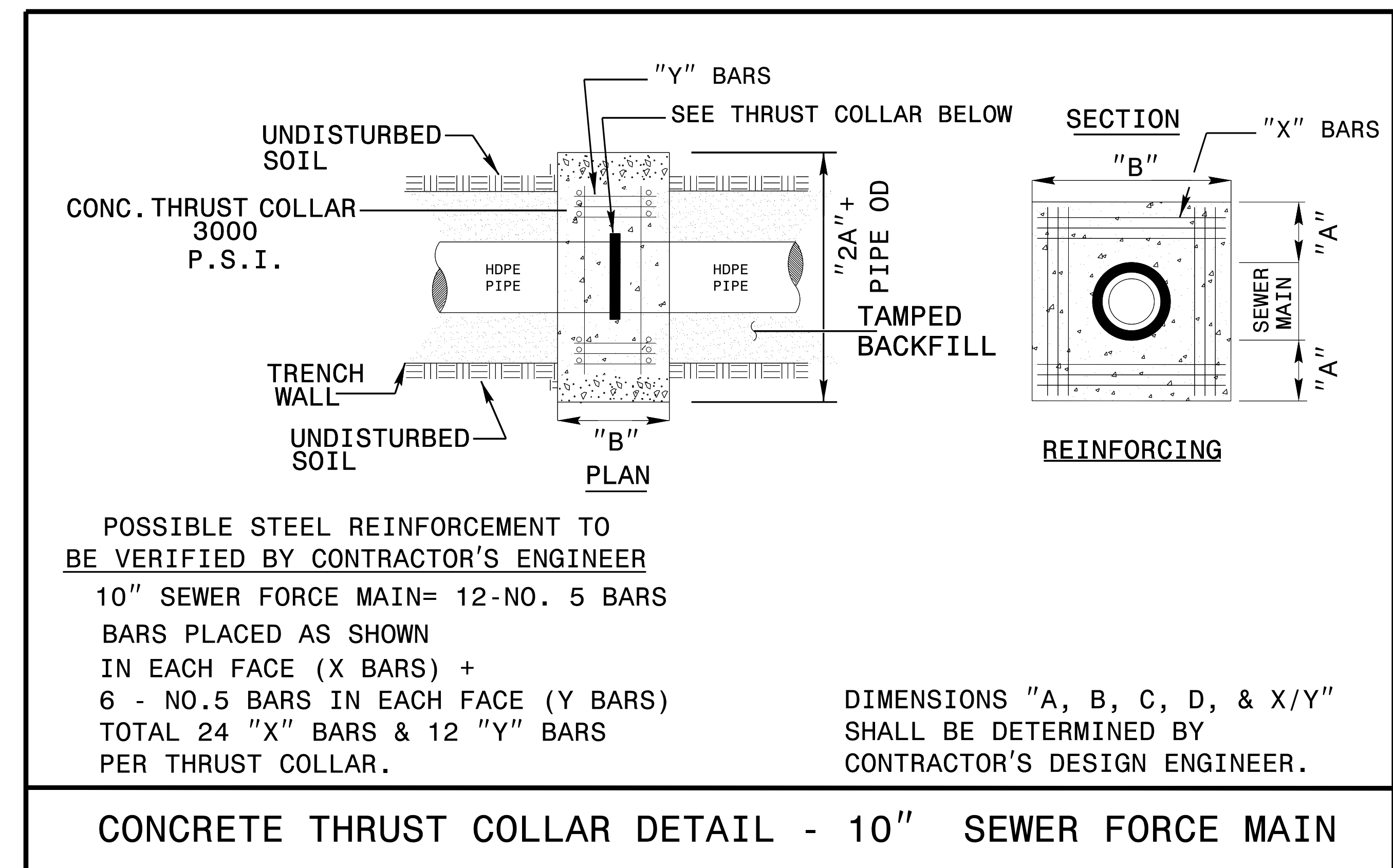
UTILITY CONSTRUCTION  
DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

**FINAL DESIGN**  
RELEASE  
FOR CONSTRUCTION

NOTE:  
CONTRACTOR TO PROVIDE  
P.E. SEALED DESIGNED SHOP  
DRAWINGS FOR THRUST  
COLLARS BASED UPON ACTUAL  
ON-SITE EXISTING SOILS IN  
ACCORDANCE WITH THE  
LATEST NCDOT STANDARDS  
AND SPECIFICATIONS.



CONCRETE THRUST COLLAR DETAIL - 8" WATER LINE



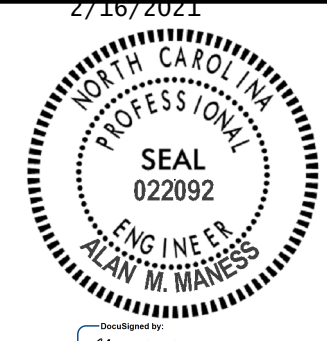
CONCRETE THRUST COLLAR DETAIL - 10" SEWER FORCE MAIN

2/15/2021  
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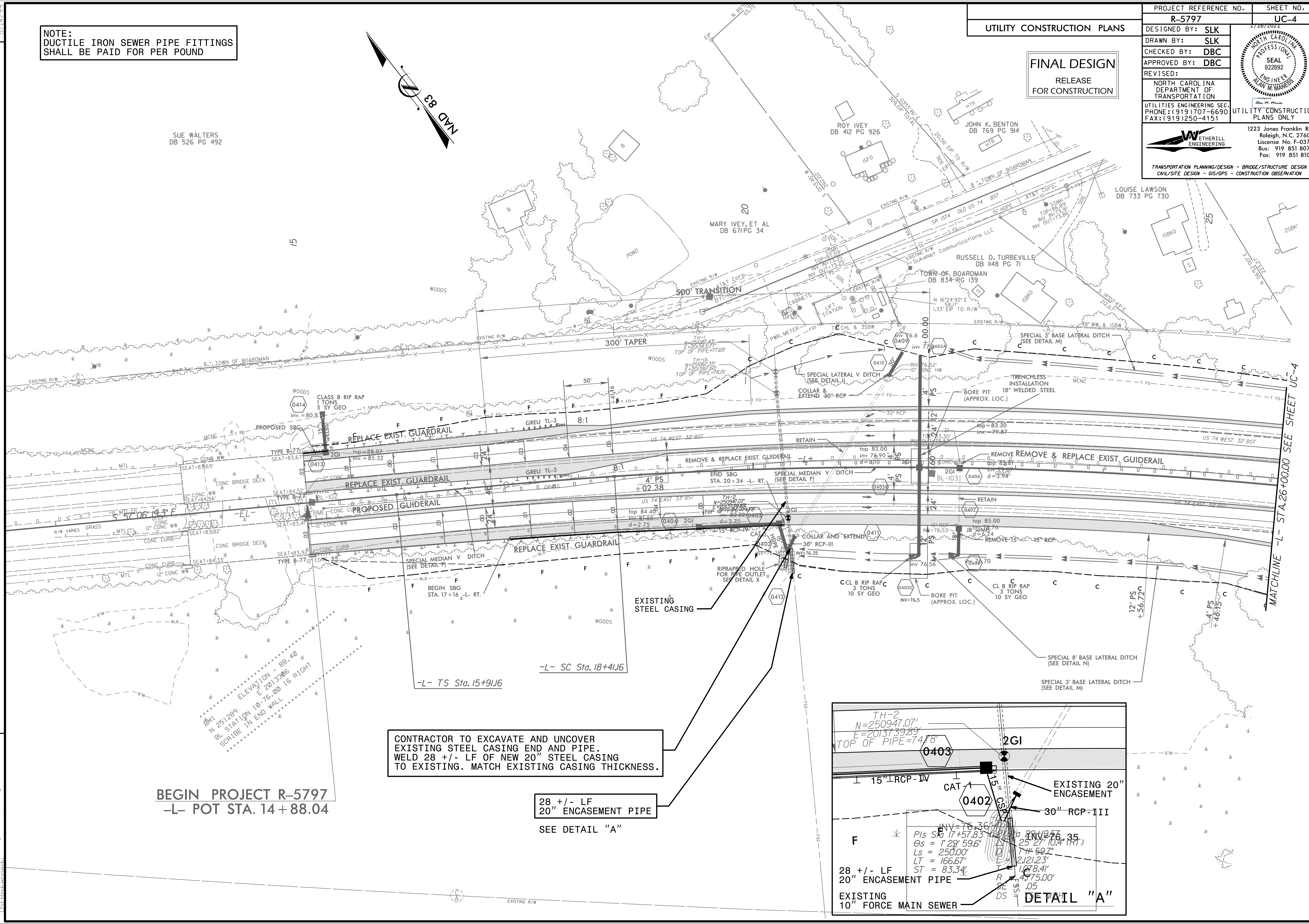
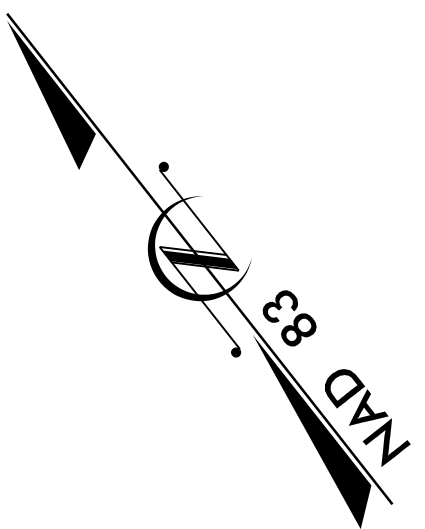
5/14/99

NOTE:  
DUCTILE IRON SEWER PIPE FITTINGS  
SHALL BE PAID FOR PER POUND

SUE WALTERS  
DB 526 PG 492

PROJECT REFERENCE NO.		SHEET NO.
R-5797		UC-4
DESIGNED BY:	SLK	
DRAWN BY:	SLK	
CHECKED BY:	DBC	
APPROVED BY:	DBC	
REVISED:		
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION		1223 Jones Franklin Rd. Raleigh, N.C. 27606 License No. F-0377 Bus: 919 851 8077 Fax: 919 851 8107

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RELEASE  
FOR CONSTRUCTION



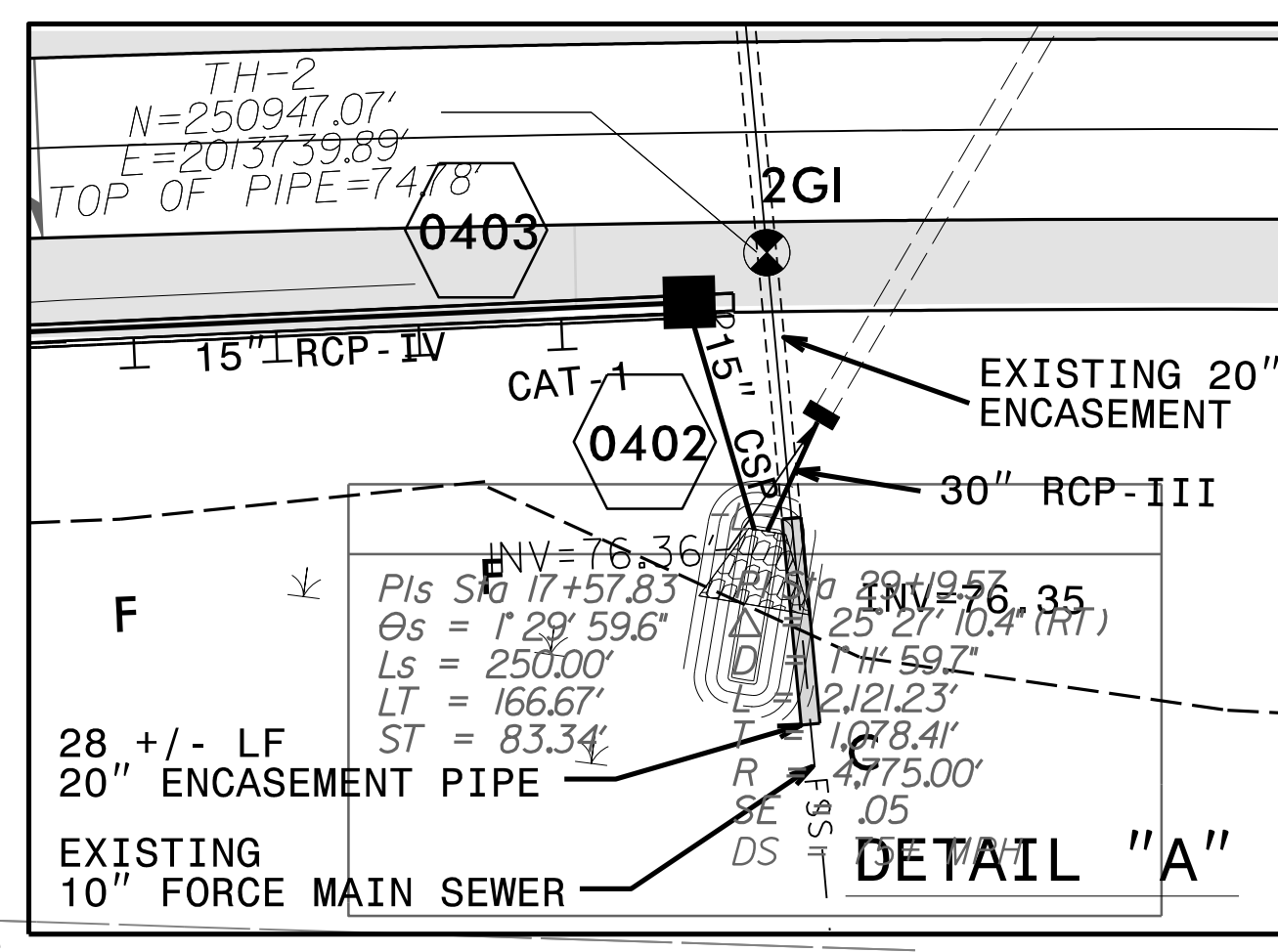
REVISIONS

MATCHLINE -L- STA. 26+00.00 SEE SHEET UC-4

CONTRACTOR TO EXCAVATE AND UNCOVER  
EXISTING STEEL CASING END AND PIPE.  
WELD 28 +/- LF OF NEW 20" STEEL CASING  
TO EXISTING. MATCH EXISTING CASING THICKNESS.

28 +/- LF  
20" ENCASUREMENT PIPE  
SEE DETAIL "A"

BEGIN PROJECT R-5797  
-L- POT STA. 14+88.04



2/15/02 ut\_rdy4\_UC4\_psh.dgn  
US:frankm

5/14/99

THRUST BLOCKING IS REQUIRED

PROPOSED 665 LBS. DUCTILE IRON WATER PIPE FITTINGS

PROPOSED 2580 LBS. DUCTILE IRON SEWER PIPE FITTINGS

TIE NEW 15" SDR 35 PVC GRAVITY SANITARY SEWER TO EXISTING MANHOLE #1

4' DIA EX UTILITY MANHOLE #1  
STA 10+00  
TOP=89.16'  
INV IN=75.66' (FROM EXIST)  
INV IN=75.72' (FROM EXIST)  
INV IN=77.50' (INV. IN FROM MH #2)  
INV OUT=75.63'  
(ALL INVERTS FROM SURVEY)

162 LF 8" SANITARY GRAVITY SEWER SDR 35 PVC GRAVITY

2,923 LF 10" FORCE MAIN SEWER C900 DR 18 PC 235 PVC, R.J. DIP

320 LF 15" SANITARY GRAVITY SEWER SDR 35 PVC GRAVITY

426 LF 6" WATER LINE C900 DR 18 PC 235 PVC

160 LF 8" WATER LINE R.J. DIP, DR9 (DIPS) HDPE

UTILITY CONSTRUCTION PLANS

FINAL DESIGN  
RELEASE FOR CONSTRUCTION

PROJECT REFERENCE NO.	R-5797	SHEET NO.	UC-5
DESIGNED BY:	SLK	DATE	7/16/2004
DRAWN BY:	SLK		
CHECKED BY:	DBC		
APPROVED BY:	DBC		
REVISED:			
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		SEAL ENGINEER ALAN W. MANESS 022092	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151		TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION	
1223 Jones Franklin Rd. Raleigh, N.C. 27606 License No. F-0377 Bus: 919 851 8077 Fax: 919 851 8107		UTILITIES CONSTRUCTION PLANS ONLY	

TIE TO EXISTING 8" WATER MAIN. INSTALL NEW 8" TAPPING SLEEVE/GATE VALVE. RESTRAIN NEW 8" RJ DIP TO NEW 8" GATE VALVE/TEE. USE STAINLESS STEEL "ALL THREAD" RODDING AS REQUIRED. COORDINATE WORK WITH TOWN OF BOARDMAN.

4' DIA. UTILITY MANHOLE

4' DIA UTILITY MANHOLE #2  
STA 10+25  
TOP=87.64' +/-  
INV IN=78.15'  
INV OUT=77.95'

652 LF ABANDON 2" UTILITY LINE

483 LF ABANDON 15" UTILITY LINE

4' DIA UTILITY MANHOLE #5  
STA 11+62  
TOP=88.47' +/-  
INV OUT=81.63'

4' DIA. UTILITY MANHOLE

CONTRACTOR TO TIE TO EXISTING WATER SERVICE AND REMOVE EXISTING METER AND BFP

BEGIN CONSTRUCTION -YIA- POT STA. 11+00.00

CONTRACTOR TO PROVIDE COUPLINGS TO CONNECT 8" RJ DIP TO 8" DR9 (DIPS) HDPE (TYP)

PROVIDE HORIZONTAL AND VERTICAL BENDS AS REQUIRED (TYP)

8" WATER LINE R.J. DIP

8" TAPPING SLEEVE & VALVE

10' X 20' BORE PIT

EXISTING 8" PVC WATER LINE (APPROXIMATE LOCATION)

EXISTING 12" HDPE GRAVITY SEWER (APPROXIMATE LOCATION)

8" WATER LINE DR 9 (DIPS) HDPE

123 LF OF DIRECTIONAL DRILLING OF 8"

15" SANITARY GRAVITY SEWER SDR-35 PVC

6" WATER LINE C900 DR 18 PC 235 PVC

4' DIA. UTILITY MANHOLE

4' DIA UTILITY MANHOLE #3  
STA 11+96  
TOP=88.10' +/-  
INV IN=79.36'  
INV OUT=79.16'

4' DIA. UTILITY MANHOLE

4' DIA UTILITY MANHOLE #4  
STA 13+20  
TOP=88.23' +/-  
INV IN=80.67' (8" GRAVITY)  
INV IN=80.51' (10" FSS)  
INV OUT=80.09'

CONTRACTOR TO PROVIDE COUPLINGS TO CONNECT 6" C900 DR18 PC235 PVC TO 8" DR9 (DIPS) HDPE (TYP)

MATCHLINE -SLI- STA 16+20.00 SEE SHEET UC-6

\* NOTE: PRIOR TO COMMENCING WORK ON ANY TRENCHLESS INSTALLATION, PROVIDE A DESIGN FOR THE TRENCHLESS INSTALLATION CERTIFIED BY AN ENGINEER LICENSED BY THE STATE OF NORTH CAROLINA. AS REQUIRED BY SUBARTICLE 1550-3(B) OF THE STANDARD SPECIFICATIONS.

\*\* SEE CONCRETE THRUST COLLAR AND TRANSITION DETAIL FROM HDPE TO DI/PVC PIPE DETAILS SHOWN ON SHEET 3-C.

FOR -WL- PROFILE, SEE SHEET UC-8

FOR -SLI- PROFILE, SEE SHEET UC-9

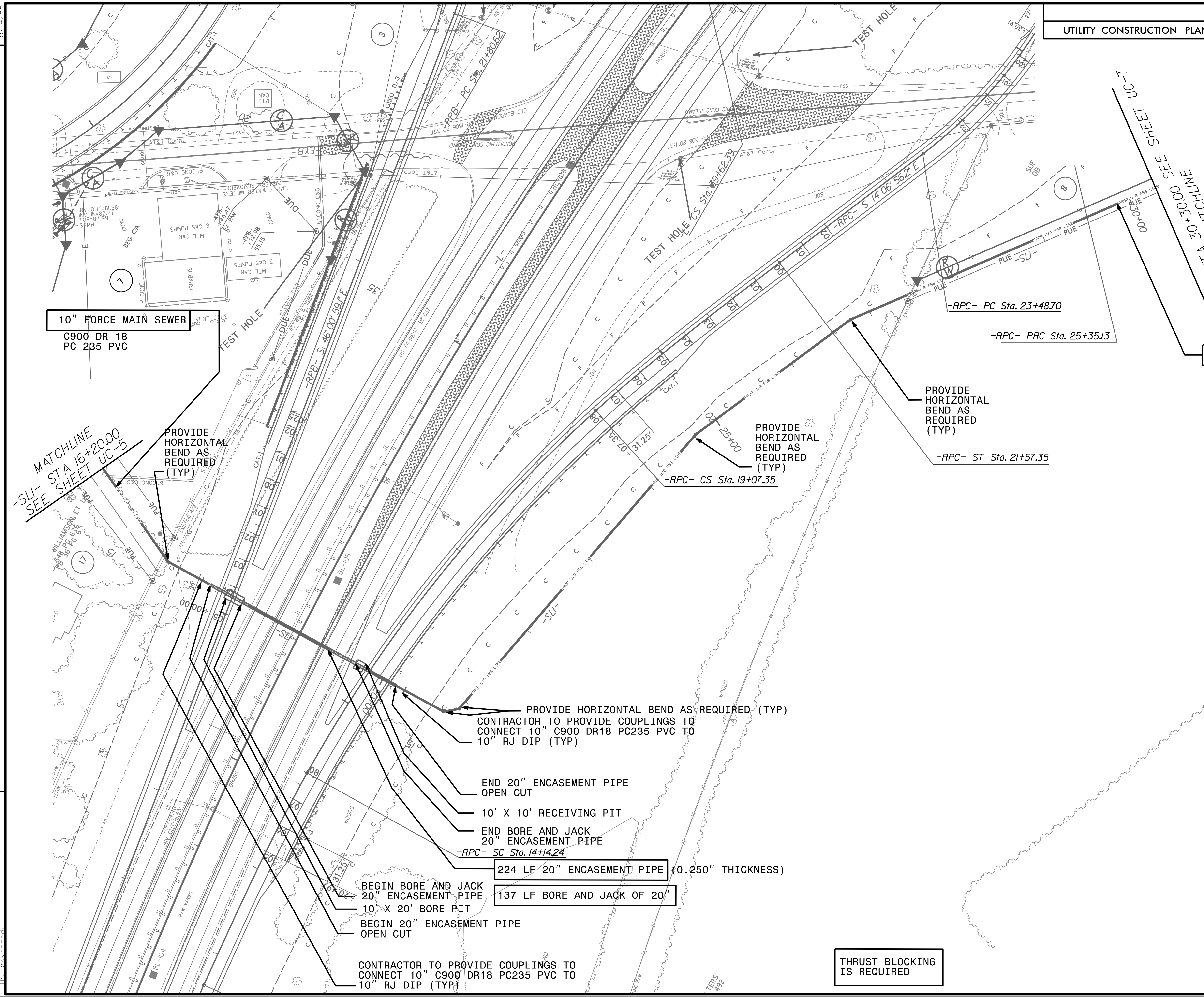
REVISIONS

2/15/04 ut\_rdy7\_UC5\_psh.dgn  
US:frankm



PROJECT REFERENCE NO.		SHEET NO.	
R-5797		UC-6	
DESIGNED BY: SLK			
DRAWN BY: SLK			
CHECKED BY: DBC			
APPROVED BY: DBC			
REVISED:			
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION			
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151			
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN		1223 Jones Franklin Rd. Raleigh, N.C. 27606 License No. F-0377 Bus: 919 851 8077 Fax: 919 851 8107	
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION		UTILITIES CONSTRUCTION PLANS ONLY	

**FINAL DESIGN**  
RELEASE FOR CONSTRUCTION



**10" FORCE MAIN SEWER**  
C900 DR 18  
PC 235 PVC

**10" FORCE MAIN SEWER**  
C900 DR 18  
PC 235 PVC

MATCHLINE  
-SLI- STA 16+20.00  
SEE SHEET UC-5

PROVIDE HORIZONTAL BEND AS REQUIRED (TYP)

PROVIDE HORIZONTAL BEND AS REQUIRED (TYP)

PROVIDE HORIZONTAL BEND AS REQUIRED (TYP)

PROVIDE HORIZONTAL BEND AS REQUIRED (TYP)  
CONTRACTOR TO PROVIDE COUPLINGS TO CONNECT 10" C900 DR18 PC235 PVC TO 10" RJ DIP (TYP)

END 20" ENCASEMENT PIPE OPEN CUT  
10' X 10' RECEIVING PIT  
END BORE AND JACK 20" ENCASEMENT PIPE  
-RPC- SC Sta. 14+14.24

**224 LF 20" ENCASEMENT PIPE (0.250" THICKNESS)**  
**137 LF BORE AND JACK OF 20"**  
BEGIN BORE AND JACK 20" ENCASEMENT PIPE  
10' X 20' BORE PIT  
BEGIN 20" ENCASEMENT PIPE OPEN CUT

CONTRACTOR TO PROVIDE COUPLINGS TO CONNECT 10" C900 DR18 PC235 PVC TO 10" RJ DIP (TYP)

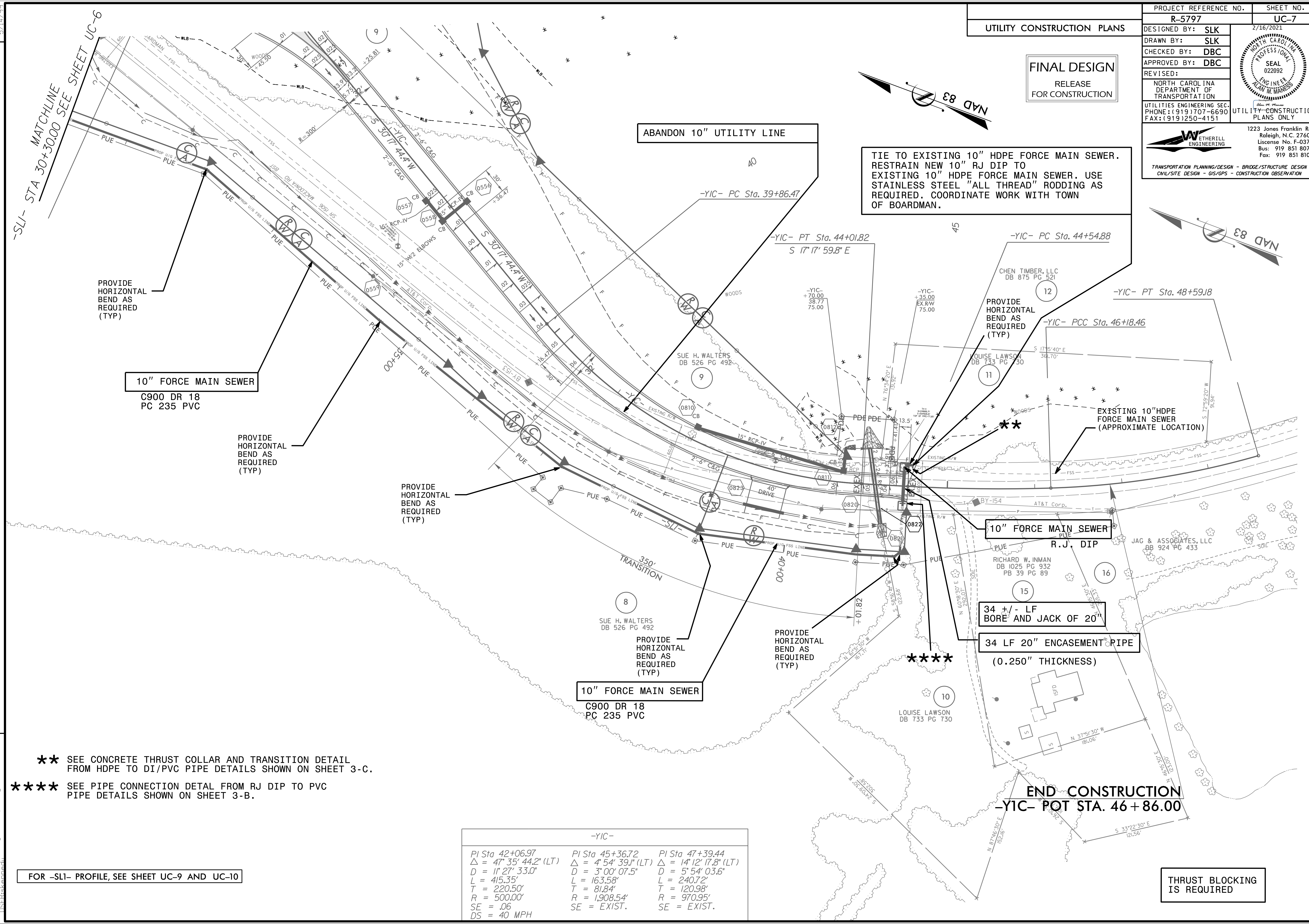
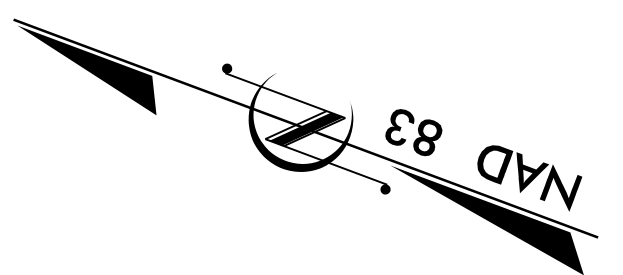
THRUST BLOCKING IS REQUIRED

FOR -SLI- PROFILE, SEE SHEET UC-9

5/7/14/99  
2/15/2007  
US:ffskenned  
ut\_rdy5\_UC6\_psh.dgn

UTILITY CONSTRUCTION PLANS		PROJECT REFERENCE NO. <b>R-5797</b>	SHEET NO. <b>UC-7</b>
DESIGNED BY: <b>SLK</b>		DATE: 2/16/2021	
DRAWN BY: <b>SLK</b>			
CHECKED BY: <b>DBC</b>			
APPROVED BY: <b>DBC</b>			
REVISED:			
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
		1223 Jones Franklin Rd. Raleigh, N.C. 27606 License No. F-0377 Bus: 919 851 8077 Fax: 919 851 8107	
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN		CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION	

**FINAL DESIGN**  
RELEASE FOR CONSTRUCTION



PROVIDE HORIZONTAL BEND AS REQUIRED (TYP)

**10" FORCE MAIN SEWER**  
C900 DR 18  
PC 235 PVC

PROVIDE HORIZONTAL BEND AS REQUIRED (TYP)

PROVIDE HORIZONTAL BEND AS REQUIRED (TYP)

**10" FORCE MAIN SEWER**  
C900 DR 18  
PC 235 PVC

**10" FORCE MAIN SEWER**  
R.J. DIP

**34 +/- LF BORE AND JACK OF 20"**  
**34 LF 20" ENCASUREMENT PIPE**  
(0.250" THICKNESS)

**END CONSTRUCTION**  
-YIC- POT STA. 46+86.00

**THRUST BLOCKING IS REQUIRED**

- \*\* SEE CONCRETE THRUST COLLAR AND TRANSITION DETAIL FROM HDPE TO DI/PVC PIPE DETAILS SHOWN ON SHEET 3-C.
- \*\*\* SEE PIPE CONNECTION DETAIL FROM RJ DIP TO PVC PIPE DETAILS SHOWN ON SHEET 3-B.

FOR -SLI- PROFILE, SEE SHEET UC-9 AND UC-10

-YIC-		
PI Sta 42+06.97	PI Sta 45+36.72	PI Sta 47+39.44
$\Delta = 47^{\circ} 35' 44.2" (LT)$	$\Delta = 4^{\circ} 54' 39.1" (LT)$	$\Delta = 14^{\circ} 12' 17.8" (LT)$
D = 11' 27" 33.0"	D = 3' 00" 07.5"	D = 5' 54" 03.6"
L = 415.35'	L = 163.58'	L = 240.72'
T = 220.50'	T = 81.84'	T = 120.98'
R = 500.00'	R = 1,908.54'	R = 970.95'
SE = .06	SE = EXIST.	SE = EXIST.
DS = 40 MPH		

REVISIONS

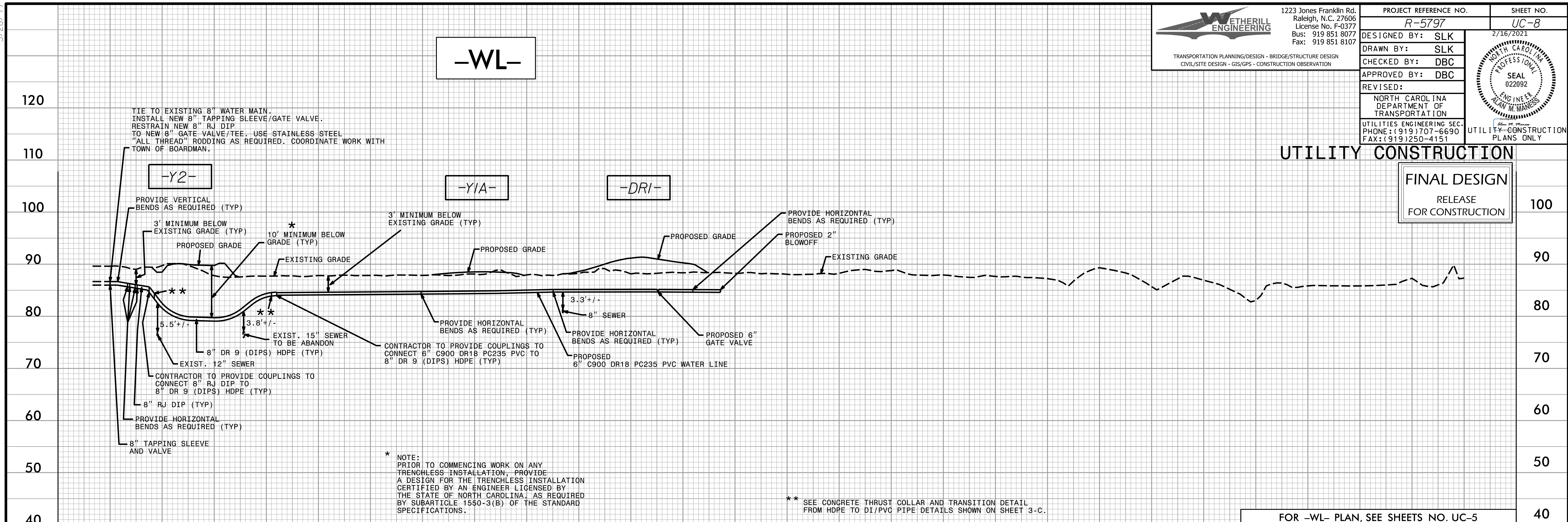
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US:fkakemad

5/28/2021

**WETHERILL ENGINEERING**  
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 Raleigh, N.C. 27606  
 License No. F-0377  
 Bus: 919 851 8077  
 Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO. <b>R-5797</b>	SHEET NO. <b>UC-8</b>
DESIGNED BY: <b>SLK</b>	2/16/2021
DRAWN BY: <b>SLK</b>	
CHECKED BY: <b>DBC</b>	
APPROVED BY: <b>DBC</b>	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	



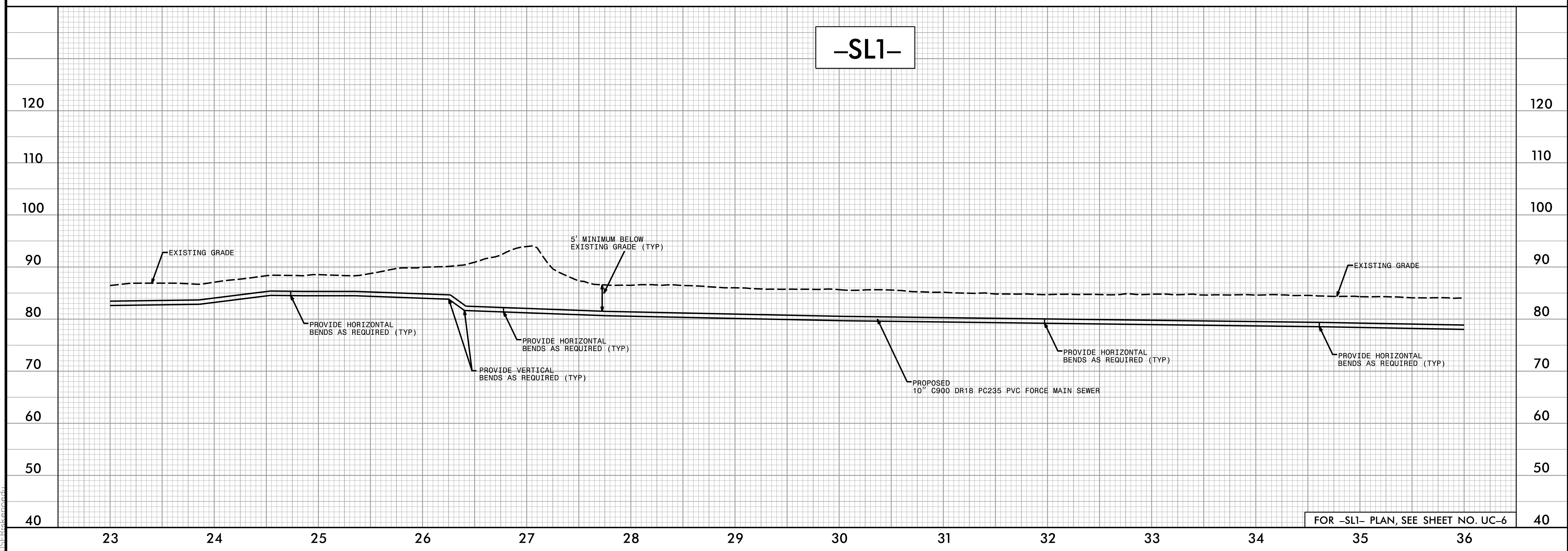
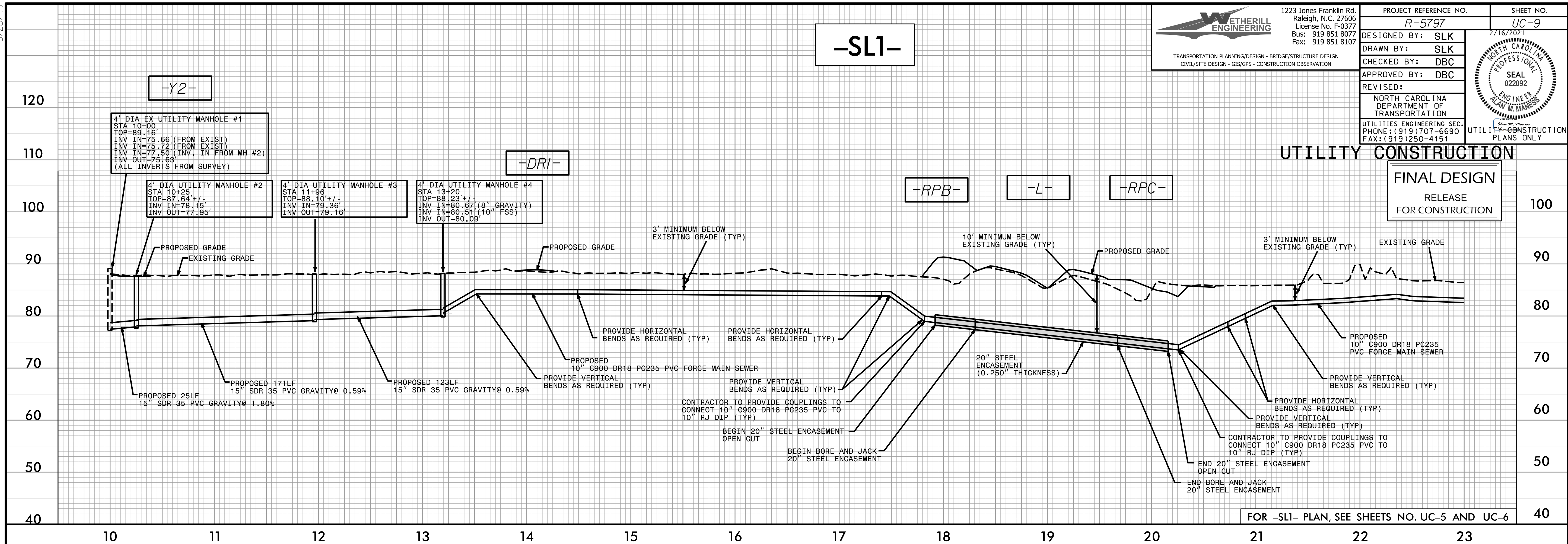
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5/28/19

**WETHERILL ENGINEERING**  
 1223 Jones Franklin Rd.  
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 License No. F-0377  
 Bus: 919 851 8077  
 Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO. <b>R-5797</b>	SHEET NO. <b>UC-9</b>
DESIGNED BY: <b>SLK</b>	2/16/2021
DRAWN BY: <b>SLK</b>	
CHECKED BY: <b>DBC</b>	
APPROVED BY: <b>DBC</b>	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	



2/16/2021 R-5797-ut-UC9sh\_9.plt.dgn

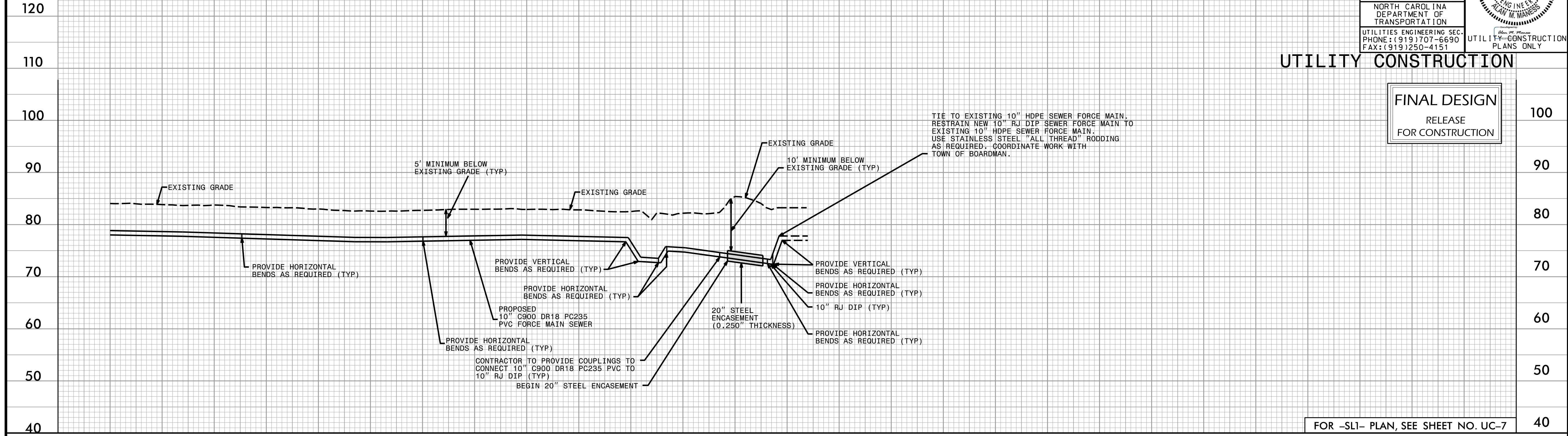
5/28/99

**WETHERILL ENGINEERING**  
 1223 Jones Franklin Rd.  
 Raleigh, N.C. 27606  
 License No. F-0377  
 Bus: 919 851 8077  
 Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO. <b>R-5797</b>	SHEET NO. <b>UC-10</b>
DESIGNED BY: <b>SLK</b>	
DRAWN BY: <b>SLK</b>	
CHECKED BY: <b>DBC</b>	
APPROVED BY: <b>DBC</b>	
REVISED:	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151

# -SL1-

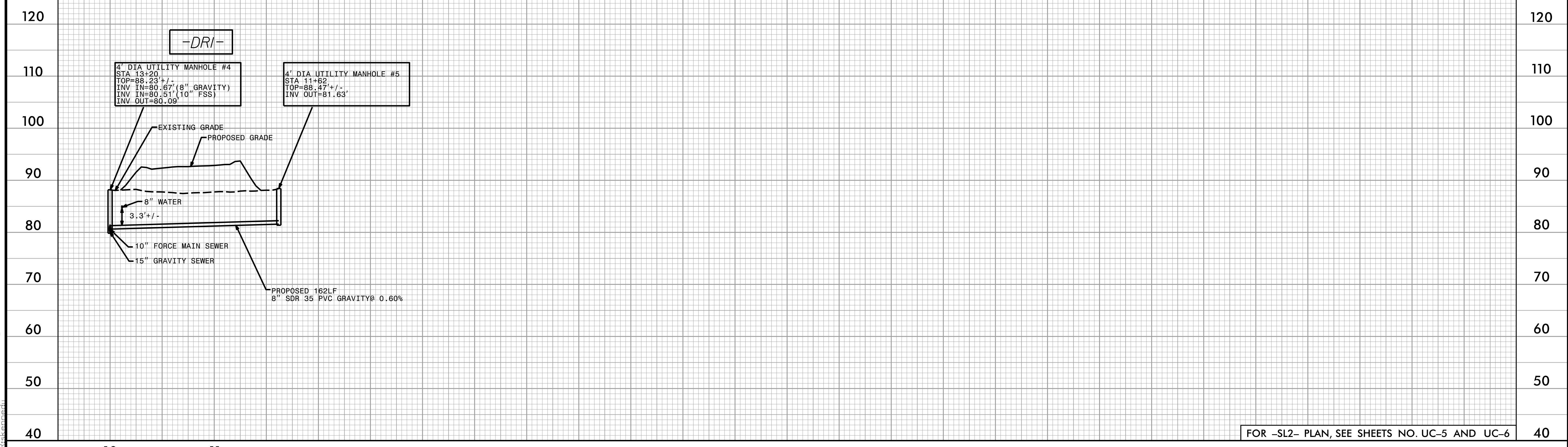


## UTILITY CONSTRUCTION

**FINAL DESIGN**  
 RELEASE  
 FOR CONSTRUCTION

FOR -SL1- PLAN, SEE SHEET NO. UC-7

# -SL2-



FOR -SL2- PLAN, SEE SHEETS NO. UC-5 AND UC-6

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