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09.028/99

TIP PROJECT: U-2525C

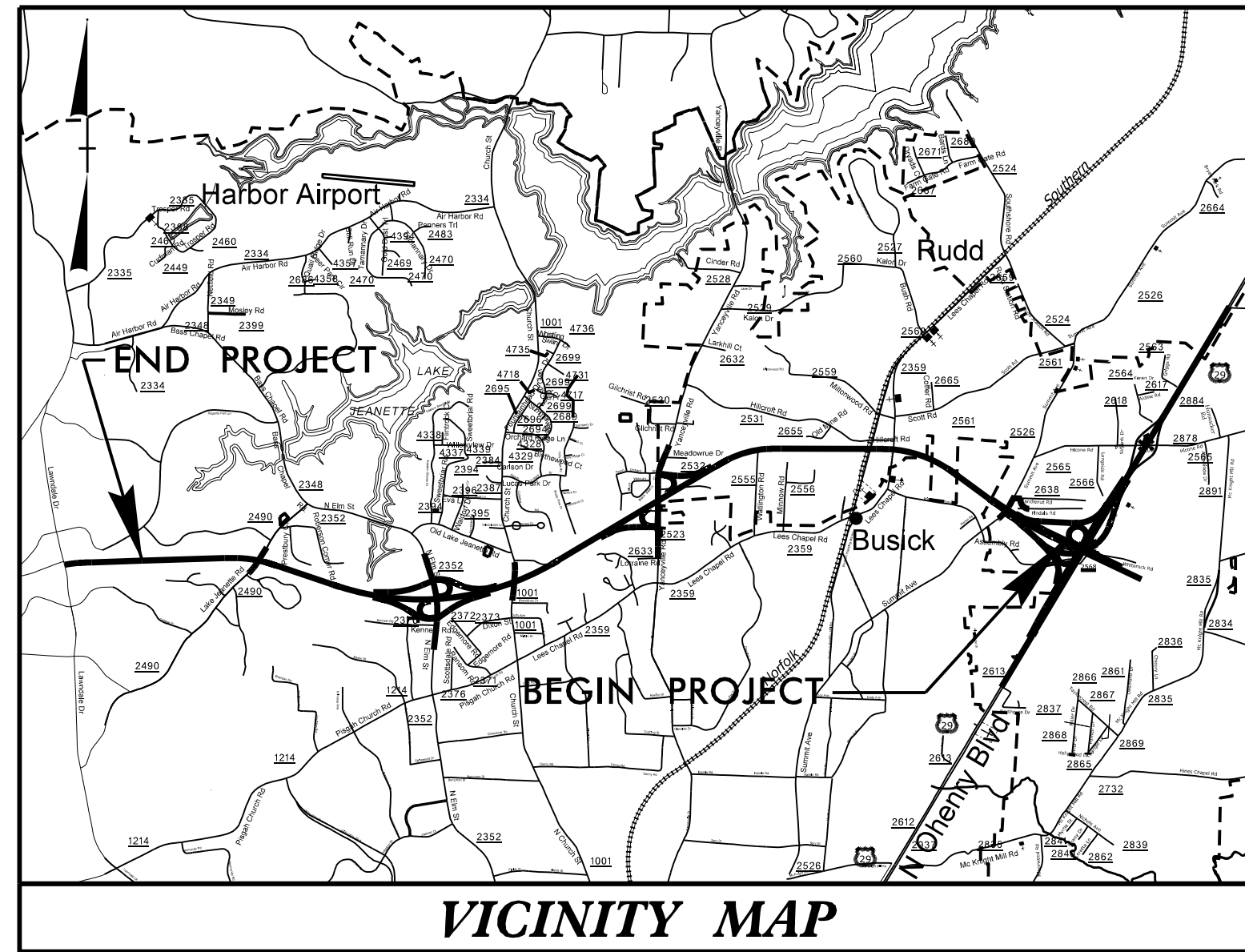
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

T.I.P. NO.	SHEET NO.
U-2525C	UC-1

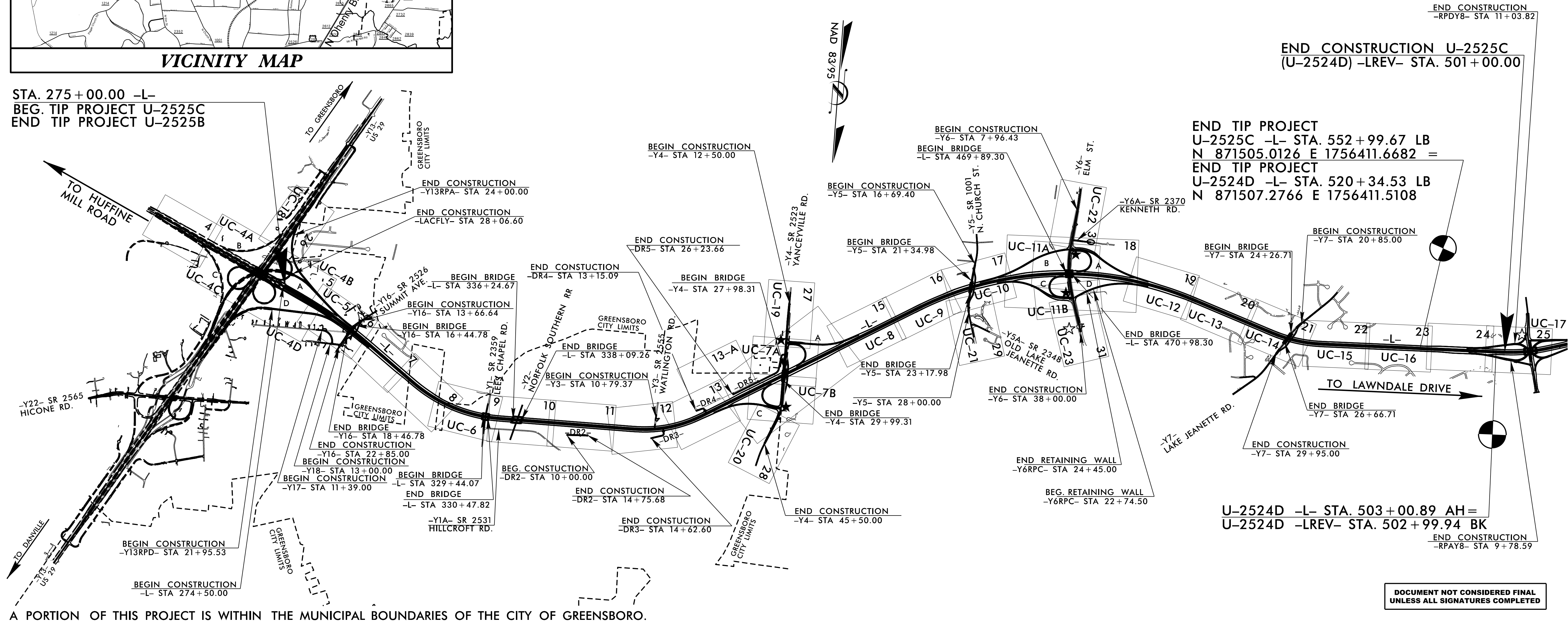
GUILFORD COUNTY

LOCATION: GREENSBORO LOOP FROM US 29 NORTH OF
GREENSBORO TO EAST OF LAWNDALE DRIVE

TYPE OF WORK: UTILITIES CONSTRUCTION

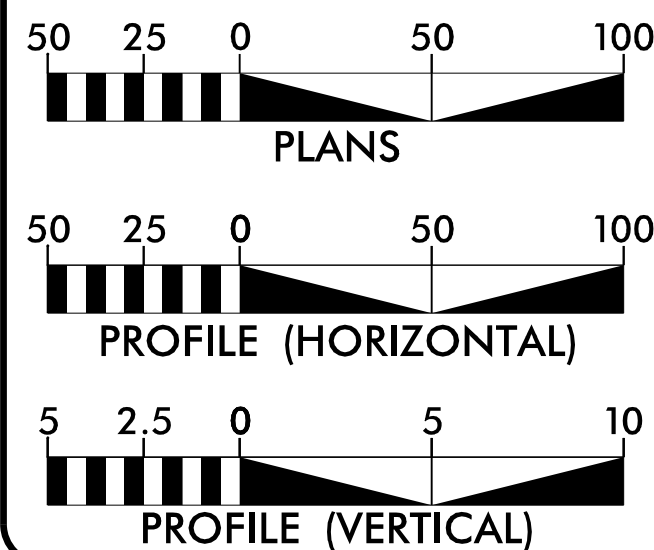


STA. 275 + 00.00 -L-
BEG. TIP PROJECT U-2525C
END TIP PROJECT U-2525B



A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF GREENSBORO.

GRAPHIC SCALES



INDEX OF SHEETS

SHEET NO.:	DESCRIPTION:
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLOGY
UC-3	NOTES
UC-3A THRU UC-3C	DETAILS
UC-4A THRU UC-23	UTILITY CONSTRUCTION SHEETS
UC-24 THRU UC-35	PROFILE SHEETS

WATER AND SEWER OWNERS ON PROJECT

WATER - CITY OF GREENSBORO
SANITARY SEWER - CITY OF GREENSBORO

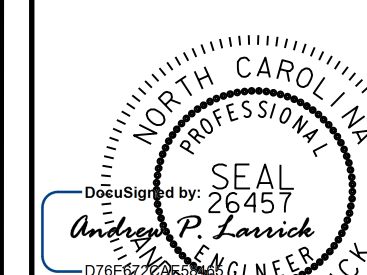
PREPARED IN THE OFFICE OF:

DAVIS • MARTIN • POWELL
ENGINEERS & SURVEYORS **dmp**

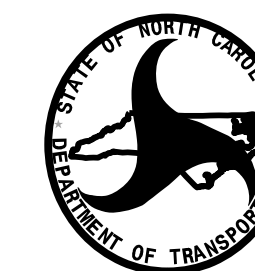
6415 OLD PLANK RD., HIGH POINT, NC 27265
PHONE: (336)886-4821 FAX: (336)886-4458
WWW.DMP-INC.COM LICENSE: F-0245

Andy Larrick, P.E. CONSULTANT CONTACT #1
Steve McKee, P.E. CONSULTANT CONTACT #2
Randy McNeill, P.E. CONSULTANT CONTACT #3

SEAL



11/15/2017



**DIVISION OF HIGHWAYS
UTILITIES UNIT**
1555 MAIL SERVICES CENTER
RALEIGH, NC 27699-1555
PHONE (919) 707-6690
FAX (919) 250-4151

Ali Kouchechi, P.E. UTILITIES REGIONAL ENGINEER
Bernie Bumgarner UTILITIES ENGINEER
Amy Dupree UTILITIES AREA COORDINATOR
Greg Sealy UTILITIES COORDINATOR

\$DATE\$
\$USER\$
\$FILE\$

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

Water Line (Sized as Shown)	
11 1/4 Degree Bend	
22 1/2 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	
Water Meter	
Relocate Water Meter	
Remove Water Meter	
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	

NOTE
PAY ITEM

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		Sanitary Sewer Cleanout	
End of Information			

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

5/14/99
REV: 2/1/2012

5/14/99

REVISIONS

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 CITY OF GREENSBORO.
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 SUPPLY SECTION. ALL SEWER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT QUALITY, DIVISION OF WATER RESOURCES, WATER QUALITY SECTION. 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. UNLESS OTHERWISE NOTED, FOR PROPOSED WATER MAINS AND SEWER MAINS 4" THRU 12" DIAMETER, PIPE SHALL BE DUCTILE IRON, PC 350. FOR PROPOSED WATER MAINS AND SEWER MAINS 16" THRU 36" DIAMETER, PIPE SHALL BE DUCTILE IRON, PC 250.
2. WATER LINE VALVES SHALL BE RESILIENT-SEAT GATE VALVES CONFORMING TO ANSI/AWWA C509, RATED FOR 200 PSI MINIMUM WORKING PRESSURE.
3. 30" AND LARGER GATE VALVES SHALL BE INSTALLED SUCH THAT THE GATE MOVES HORIZONTALLY (SIDE TO SIDE) WHEN OPENING AND CLOSING, AND SHALL HAVE BEVEL-GEARING.
4. A BOLLARD SHALL BE PLACED AT EACH END OF INSTALLED ENCASEMENT PIPES, PER THE DETAIL SHOWN ON SHEET UC-3A. THE COST FOR FURNISHING AND INSTALLING THE BOLLARDS SHALL BE INCIDENTAL TO THE CONTRACT.
5. CONTRACTOR'S ATTENTION IS DIRECTED TO SECTIONS 102, 107, AND 1550 OF THE STANDARD SPECIFICATIONS CONCERNING TRENCHLESS INSTALLATION. IT IS CONTRACTOR'S RESPONSIBILITY TO HAVE BORE DESIGNED AND SEALED BY A LICENSED NORTH CAROLINA PROFESSIONAL ENGINEER. NO DAMAGE IS ALLOWED TO RIVER, WETLANDS, OR BUFFER ZONES.
6. THE CONTRACTOR SHALL REPLACE ANY DAMAGED SEWER LATERALS AND/OR CLEANOUTS AS DIRECTED BY THE ENGINEER. THE NECESSARY QUANTITIES HAVE BEEN ADDED TO THE CONTRACT TO FACILITATE THIS PROCEDURE.
7. THE CONTRACTOR SHALL REPLACE ANY DAMAGED SEWER LATERALS AND/OR CLEANOUTS AS DIRECTED BY THE ENGINEER. THE NECESSARY QUANTITIES HAVE BEEN ADDED TO THE CONTRACT TO FACILITATE THIS PROCEDURE.
8. CONTRACTOR SHALL COORDINATE WITH THE CITY OF GREENSBORO WATER RESOURCES DEPARTMENT CONCERNING THE TIMING AND SCHEDULE OF REQUIRED SHUT-DOWNS OF ANY EXISTING WATER OR SEWER MAINS. THE CONTRACTOR MAY HAVE TO PROVIDE TEMPORARY WATER SERVICE TO CUSTOMERS WHEN EXISTING WATER MAINS HAVE TO BE SHUT DOWN FOR AN EXTENDED PERIOD OF TIME.

PROJECT REFERENCE NO. U-2525C	SHEET NO. UC-3
DESIGNED BY: APL	
DRAWN BY: RDL	
CHECKED BY: APL	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	UTILTY CONSTRUCTION PLANS ONLY
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	

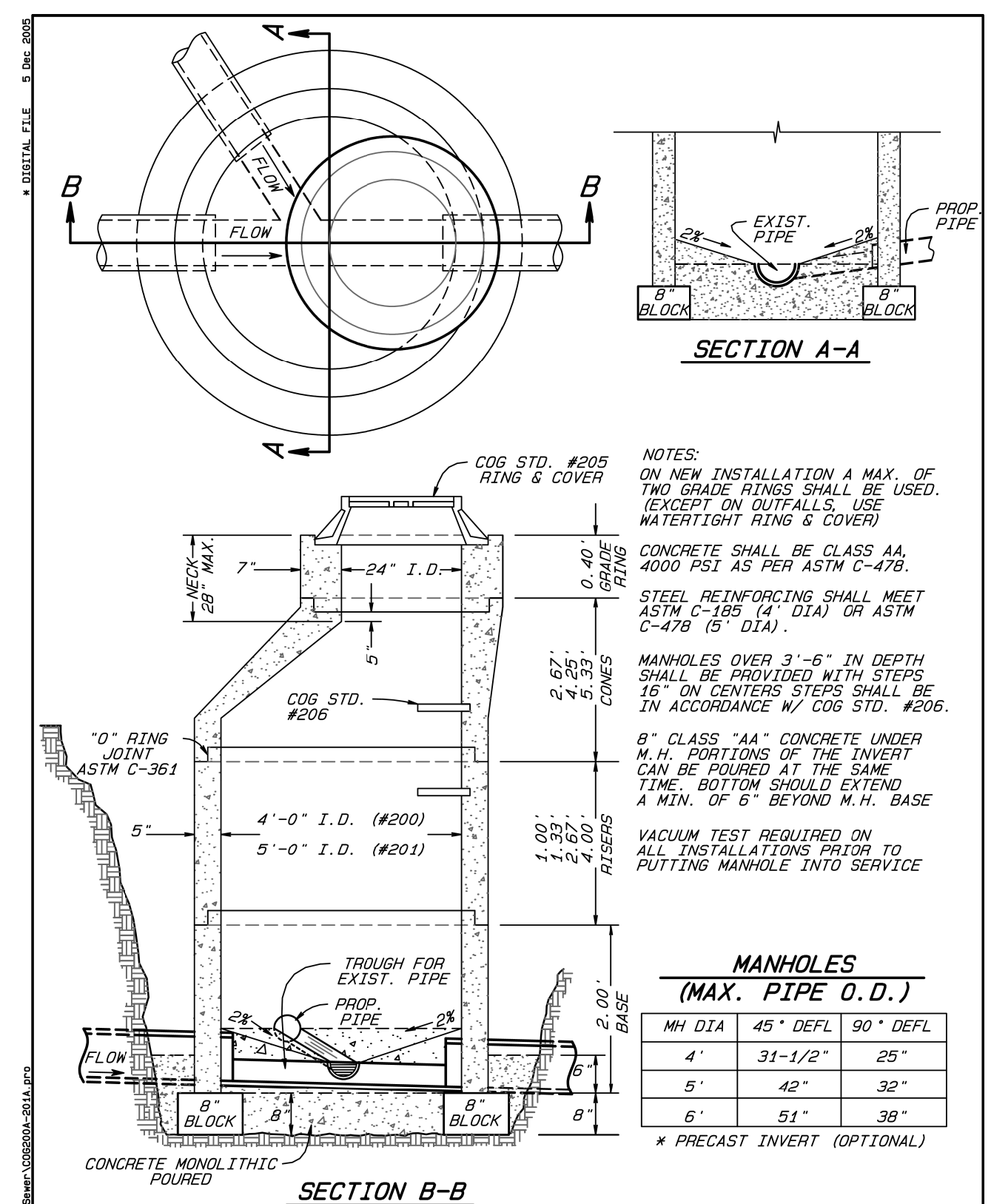
UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

LIST OF STANDARD DRAWINGS

- 1515.01 WATER METER
- 1515.02 FIRE HYDRANT
- 1520.01 SEWER CLEAN OUT
- 1525.06 PRECAST CONCRETE SANITARY SEWER MANHOLE WITH CAST-IN-PLACE BOTTOM

5/14/99

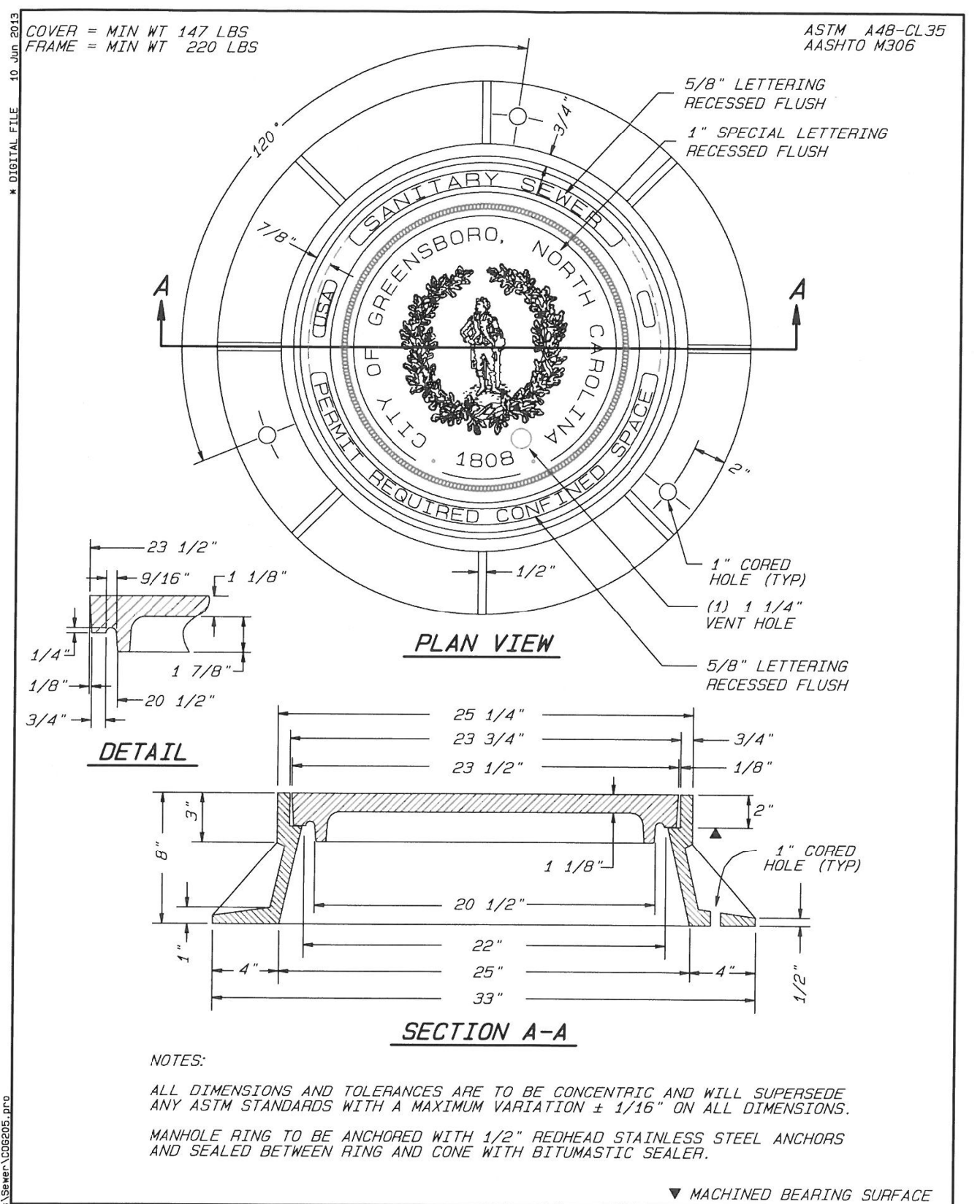


**MANHOLES
(MAX. PIPE O.D.)**

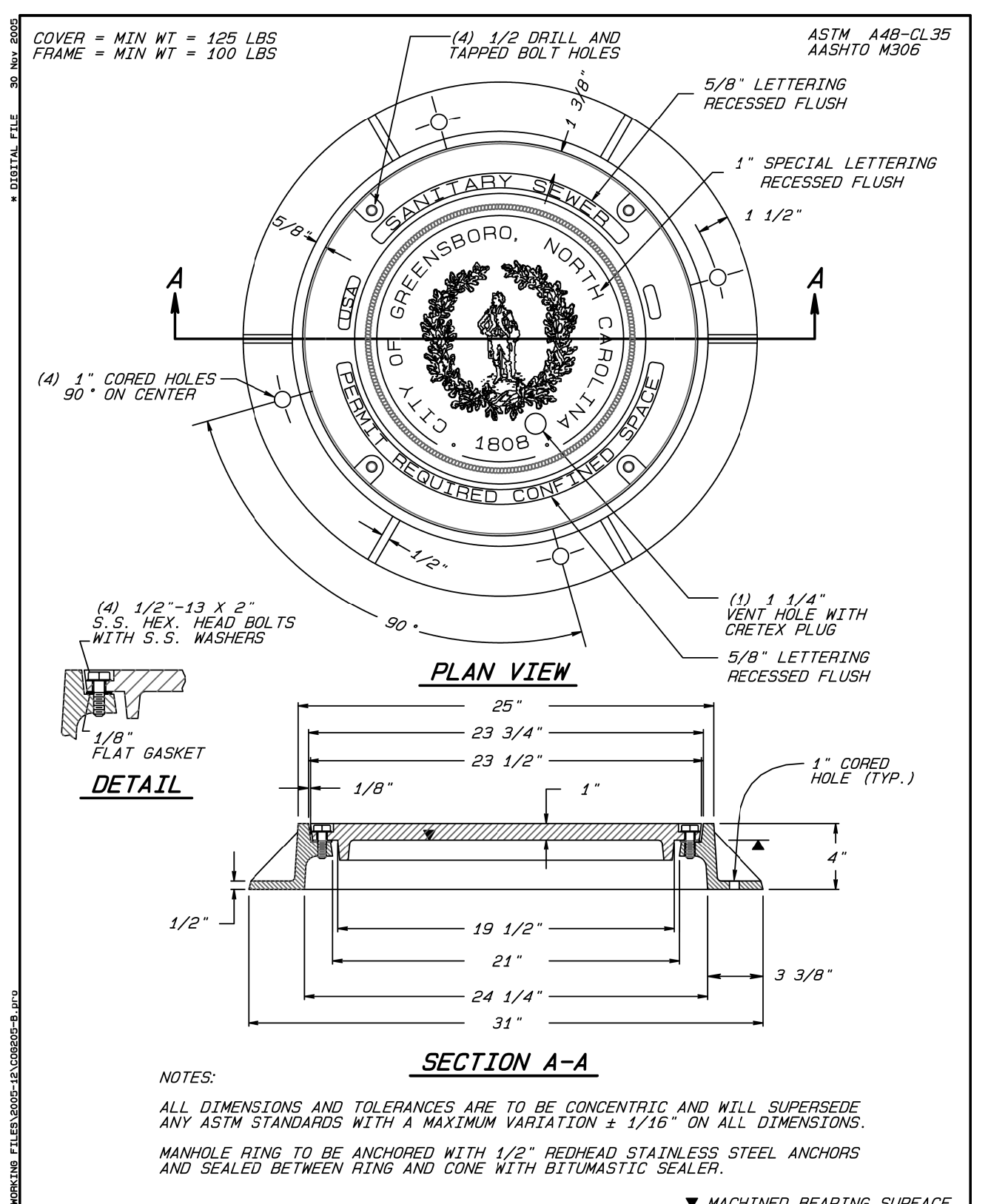
MH DIA	45\"/>	
4'	31-1/2"	25"
5'	42"	32"
6'	51"	38"

* PRECAST INVERT (OPTIONAL)

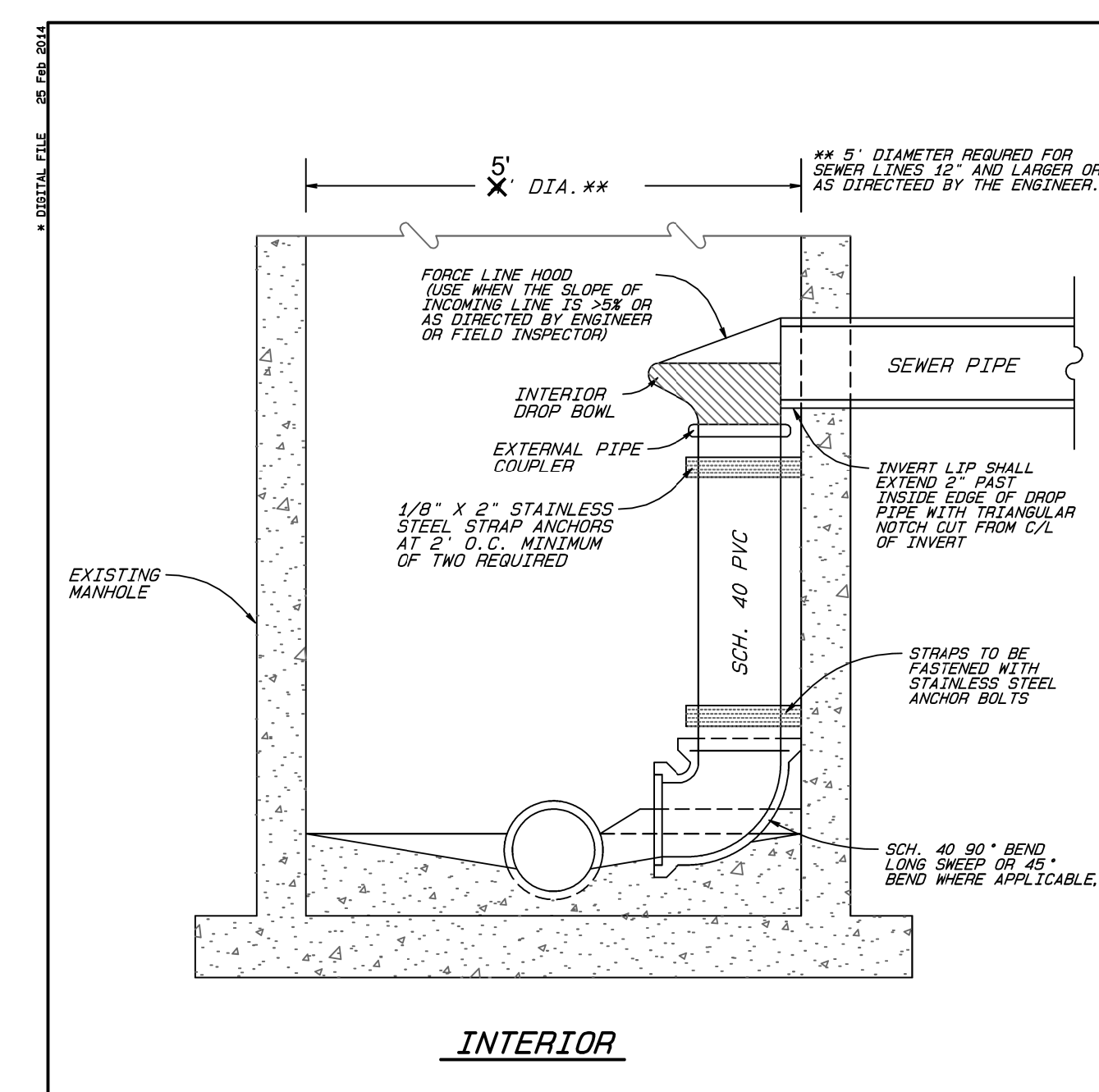
CITY OF GREENSBORO
 STANDARD 4' I.D. & 5' I.D.
 ECCENTRIC PRECAST BOTTOMLESS MANHOLE OVER
 EXISTING SANITARY SEWER (DOGHOUSE MANHOLE)
 STD. NO. 200A
 REV. DEC-05
 201A



CITY OF GREENSBORO
 STANDARD MANHOLE RING AND COVER
 STD. NO. 205
 REV. 06-05
 06-13

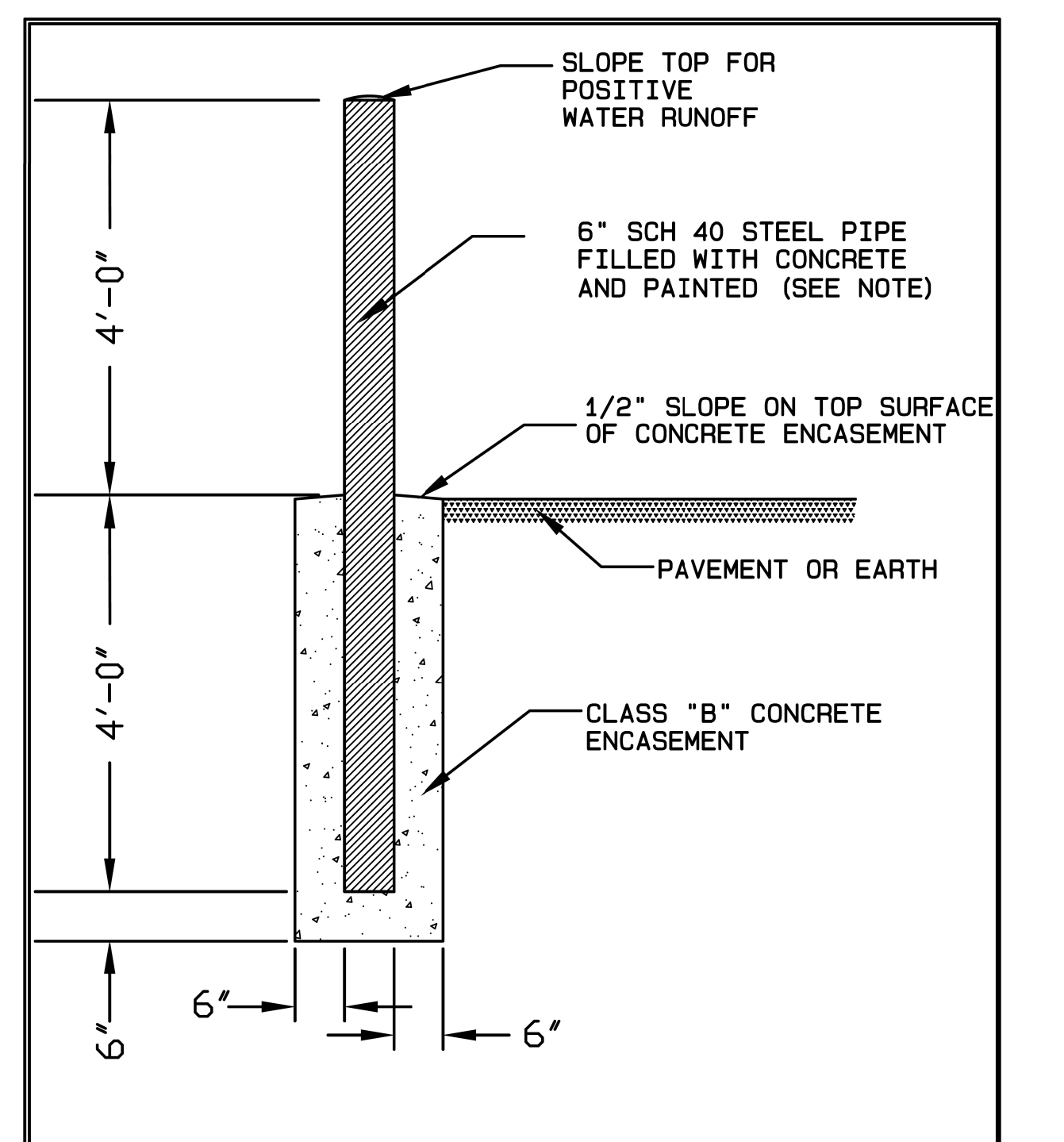


CITY OF GREENSBORO
 STANDARD WATERTIGHT MANHOLE
 RING AND COVER
 STD. NO. 205-B
 REV. MAR-97
 DEC-05
 MAR-99
 MAR-97



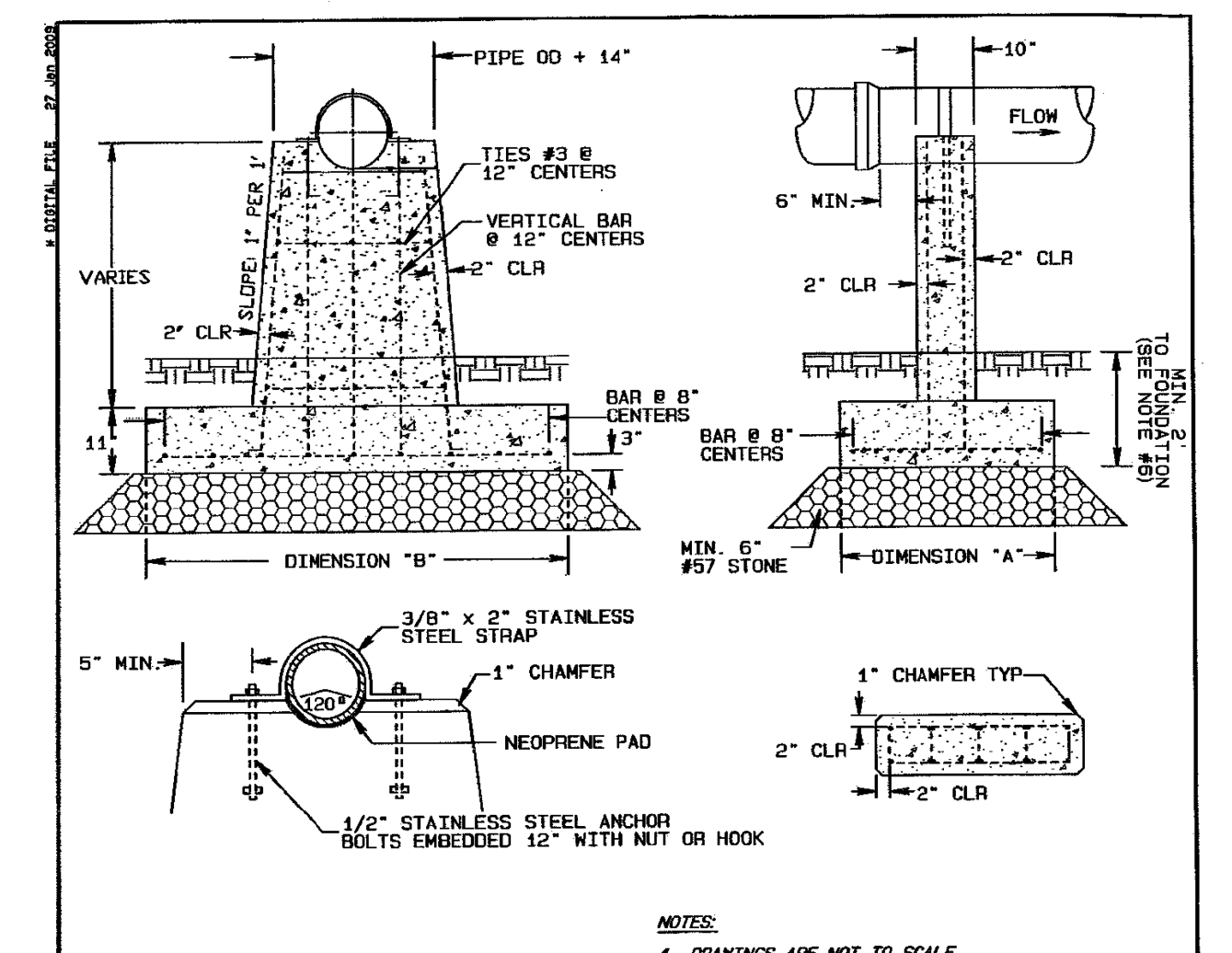
- NOTES:**
- THIS DETAIL SHALL BE USED ONLY WHERE APPROVED BY WATER RESOURCES DEPARTMENT.
 - DROP PIPE AND NECESSARY FITTINGS SHALL BE SCH. 40 PVC.
 - EXTERNAL COUPLER SHALL BE SCH. 40 PVC OR FLEXIBLE COUPLER.
 - PROPOSED CONNECTION TO BE USED WHEN INCOMING SEWER LINE INVERT IS GREATER THAN 1'-0" ABOVE THE INVERT OUT.
 - STAINLESS STEEL STRAPS AND ANCHOR BOLTS SHALL BE TYPE 316 STAINLESS STEEL.
 - USE THE DROP PIPE SIZE (OFTEN SMALLER THAN THE INCOMING PIPE SIZE) THAT IS SPECIFIED BY THE INTERIOR DROP BOWL'S MANUFACTURER FOR THE SIZE OF THE INCOMING LINE.
 - INSTALL DROP PIPE ASSEMBLY PER MANUFACTURER'S SPECIFICATIONS. THE MANUFACTURER'S DESIGN FOR THE DROP BOWL AND PIPE ASSEMBLY MUST BE PRE-APPROVED BY ENGINEER.

CITY OF GREENSBORO
 DROP CONNECTION (INTERIOR) FOR
 EXISTING SANITARY SEWER MANHOLE
 STD. NO. 203
 REV. 06-03
 03-14



NOTE:
 FINISH WITH ONE COAT OF EPOXY PRIMER AND 2 COATS OF ALL WEATHER ENAMEL, COLOR SAFETY YELLOW.

CITY OF GREENSBORO
 BOLLARD (STATIONARY)
 STD. NO. 121
 REV. 06/15



FOOTING DIMENSIONS

PIPE SIZE (IN)	PIER HEIGHT (FT)				DIMENSION
	0-3	3-10	10-15	15-20	
4-6	2'-4"	3'-0"	4'-0"	5'-0"	A
8-10	2'-4"	3'-0"	4'-0"	5'-0"	A
12-18	2'-4"	3'-0"	4'-0"	5'-0"	B
	6'-0"	6'-6"	7'-0"	7'-6"	B

PIER HEIGHT (FT)

PIER HEIGHT (FT)	0-10	10-15	15-20
PIER HEIGHT (FT)	4	5	6

- NOTES:**
- DRAWINGS ARE NOT TO SCALE.
 - PIER BARS NOT TO BE HEAT BY HEAT.
 - ALL CONCRETE TO BE AIR ENTRAINED CLASS 'A'.
 - 1/8" TO 1/4" NEOPRENE PAD BETWEEN PIPE AND CONCRETE.
 - ALL HARDWARE TO BE STAINLESS STEEL.
 - FOUNDATION SOIL SHALL HAVE A MINIMUM SOIL BEARING PRESSURE OF 2000 PSF.
 - PIERS SHALL BE ANCHORED TO EXIST. PIN FOOTING TO ROCK BY DRILLING & EPOXYING CONCRETE INTO THE ROCK.
 - ALL PIPE THAT IS TO BE SUPPORTED ON A PIER SHALL BE RESTRAINED AGAINST PIPE WALKING-LIKE GRIPPEN PIPE - NECH-LOK OR PRE-APPROVED EQUIVALENT.
 - ALL PIERS SHALL BE DESIGNED AND SUBMITTED ALONG WITH DOCUMENTATION SHOWING DESIGN PARAMETERS, ASSUMPTIONS, AND SAFETY FACTORS USED TO RESIST THE FORCES ACTING ON THE PIER/PIPE SYSTEM TO WATER RESOURCES DEPARTMENT AS PART OF THE PLAN REVIEW PROCESS. ALL PIERS DESIGNS MUST BE SIGNED AND SEALED BY A REGISTERED NORTH CAROLINA PROFESSIONAL ENGINEER.
 - LOCATION OF PIERS TO BE DETERMINED BY THE PIER SYSTEM PROVIDER. ALL DETAIL OF THE ENTIRE PIER SYSTEM PROVIDED TO BE INCLUDED IN THE DESIGN SUBMITTAL AS PART OF THE PLAN REVIEW PROCESS.

CITY OF GREENSBORO
 PIER DETAIL (TYPICAL)
 STD. NO. 220
 REV. 03/09
 06/09
 12/09

PROJECT REFERENCE NO. U-2525C SHEET NO. UC-3A

DESIGNED BY: APL
 DRAWN BY: RDL
 CHECKED BY: APL
 APPROVED BY:
 REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151

UTILITY CONSTRUCTION PLANS ONLY

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

UTILITY CONSTRUCTION PLANS PREPARED BY:
DAVIS • MARTIN • POWELL
 ENGINEERS & SURVEYORS

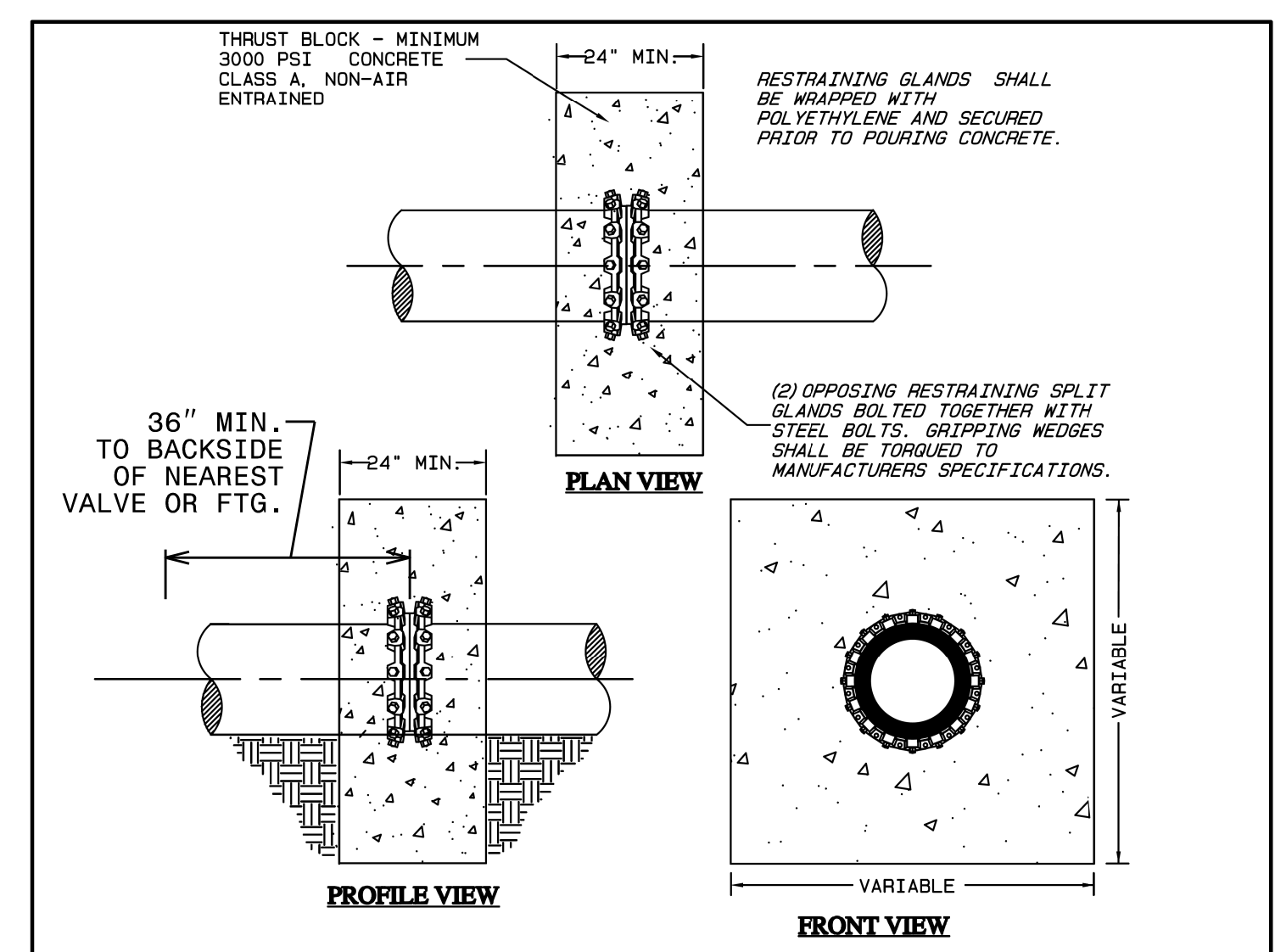
6415 OLD PLANK RD., HIGH POINT, NC 27265
 PHONE: (336) 886-4821 FAX: (336) 886-4458
 WWW.DMP-INC.COM LICENSE: F-0245

5/14/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2525C	UC-3B
DESIGNED BY: APL	
DRAWN BY: RDL	
CHECKED BY: APL	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151 UTILITY CONSTRUCTION PLANS ONLY	

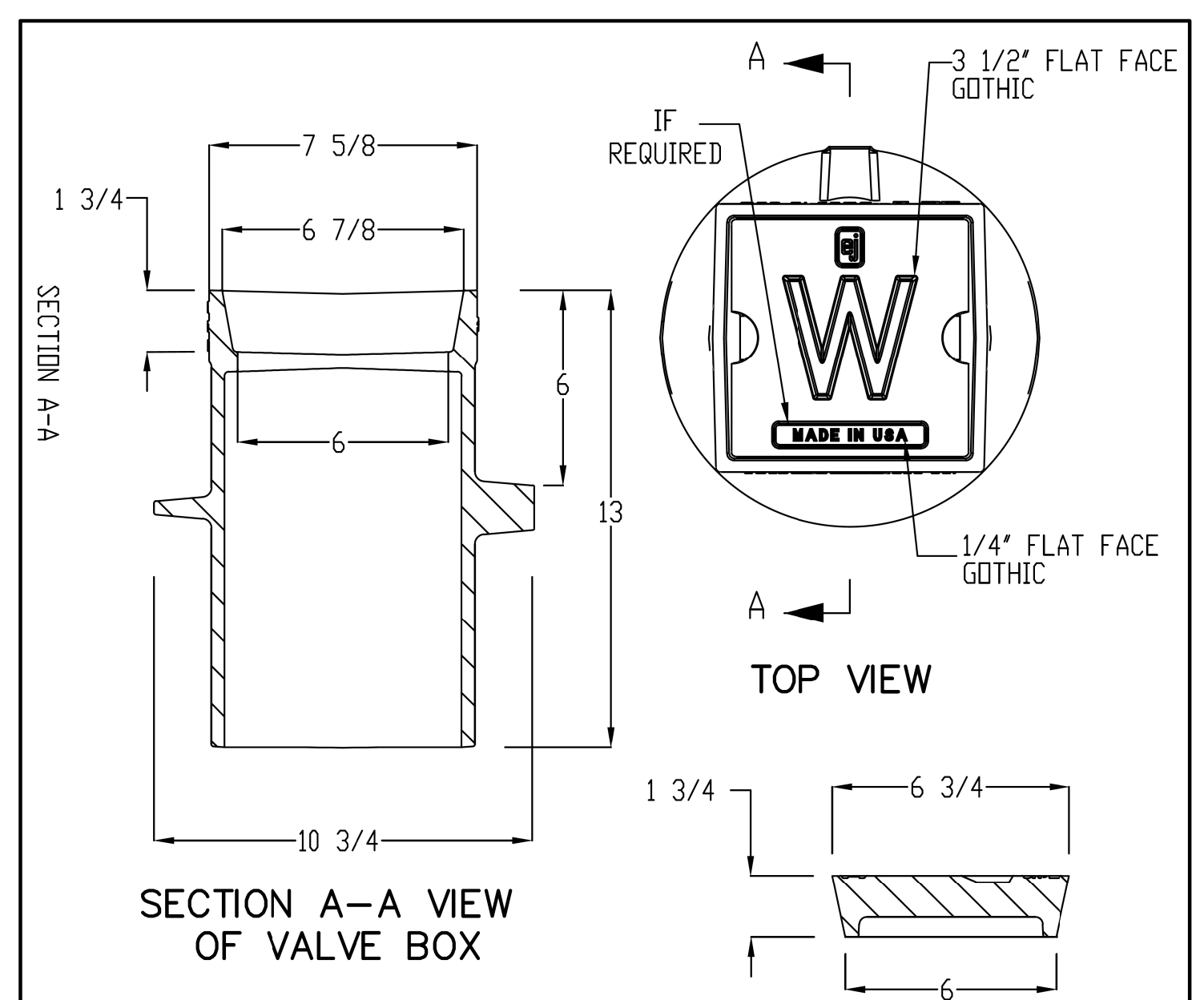
UTILITY CONSTRUCTION
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- NOTES:**
- SEE CITY OF GREENSBORO - WATER LINE AND SEWER LINE STANDARD CONSTRUCTION SPECIFICATIONS, SUB-ARTICLE 3.02 & 3.03 FOR (TRENCH AND BACKFILL) AND (TRENCH STABILIZATION) REQUIREMENTS.
 - THRUST BLOCK SHALL BE ORIENTED APPROXIMATELY CENTER OF PIPE JOINT.
 - OPTIONAL* A WELDED COLLAR (INSTALLED BY PIPE MANUFACTURER) MAY BE USED IN LIEU OF RESTRAINING GLANDS. ALL OTHER DESIGN REQUIREMENTS SHALL APPLY AS SHOWN.
 - FOR PIPES LARGER THAN 16" DIAMETER, THE DEADMAN THRUST RESTRAINT WITH BLOCKING MUST BE DESIGNED AND SEALED BY A N.C. PROFESSIONAL ENGINEER.
 - ANY PROPOSED MODIFICATIONS TO THIS STANDARD BASED ON THE FIELD CONDITIONS MUST BE PRE-APPROVED BY THE CITY OF GREENSBORO FIELD INSPECTOR AND/OR THE ENGINEER OF RECORD.
 - QUANTITIES SHOWN BELOW ARE TO THE NEAREST QUARTER YARD AND ARE BASED ON MINIMUM MASS WEIGHT REQUIREMENTS OF THE TEST PRESSURES SHOWN.

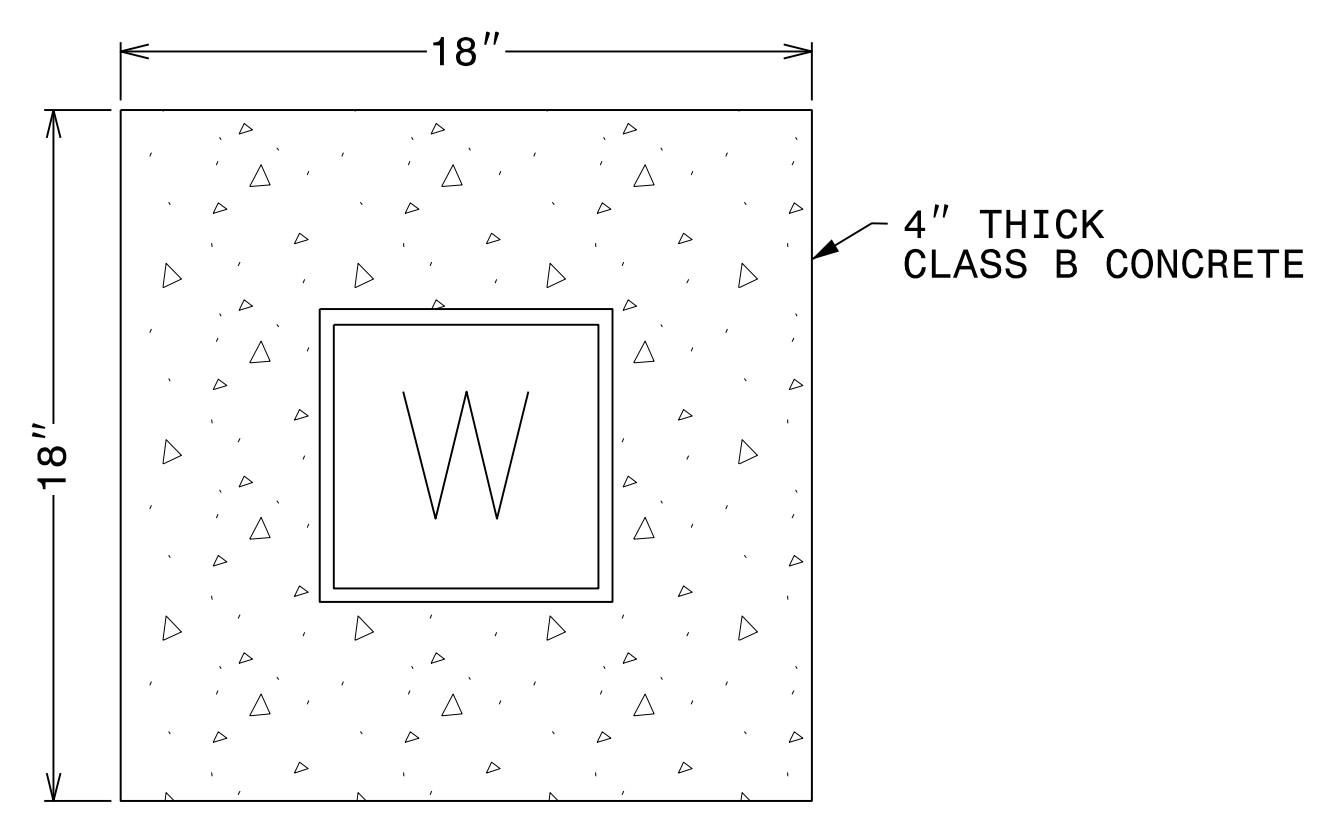
PIPE DIAMETER	MINIMUM CUBIC YARDS OF CONCRETE REQUIRED		
	100 PSI TEST PRES.	200 PSI TEST PRES.	250 PSI TEST PRES.
6"	0.75	1.0	1.25
8"	1.5	2.0	2.25
10"	2.0	3.0	3.5
12"	3.0	4.0	5.0
16"	5.5	7.25	9.0

CITY OF GREENSBORO		
DEADMAN THRUST RESTRAINT WITH MASS WEIGHT BLOCKING	STD. NO.	REV.
	118	06-13 06-15



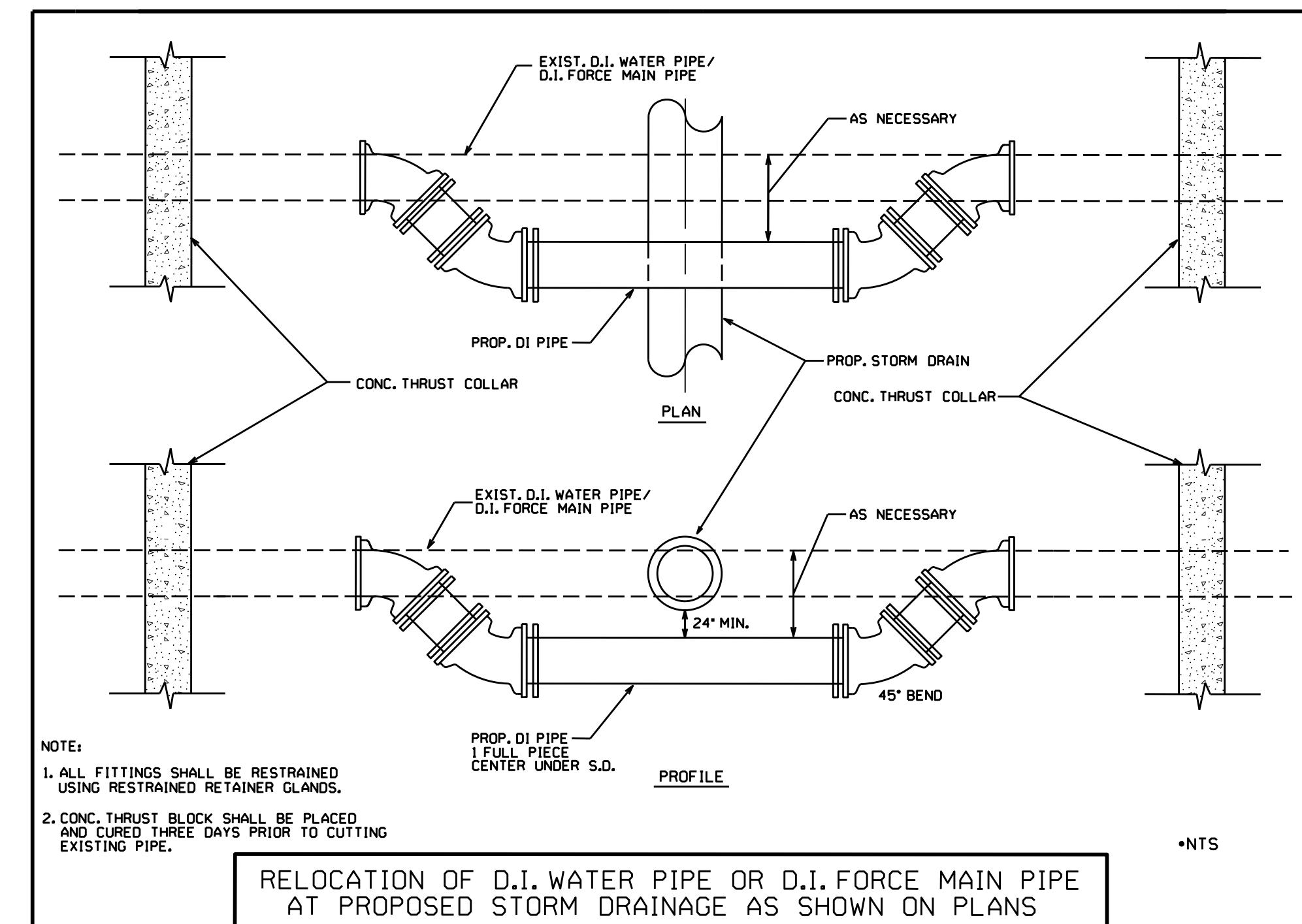
- NOTES:**
- VALVE BOX EXTENSION SHALL BE EITHER 6" DIA. SOIL PIPE OR SCH. 40 PVC PIPE.
 - EXTENSION TO BE ONE SOLID PIECE OF PIPE UNLESS BURIAL DEPTH IS GREATER THAN STANDARD LENGTH OF PIPE. A BELL OR COUPLING SHALL BE UTILIZED AT THE TOP OF VALVE CONNECTION (SEE COG STD #101)
 - LETTER HEIGHT 3-1/2"
 - COUNTERSINK LETTER 3/16"
 - TO BE USED IN PAVED OR NON-PAVED AREAS.
 - ALL CASTINGS SHALL MEET THE REQUIREMENTS OF AASHTO M306.
 - DUE TO VARIATIONS IN CASTINGS OF DIFFERENT MANUFACTURERS, DIMENSIONS SHALL BE WITHIN REASONABLE TOLERANCES AS PRE-APPROVED BY GREENSBORO WATER RESOURCES DEPARTMENT AND/OR FIELD INSPECTOR PRIOR TO INSTALLATION.
 - VALVE BOX MAY BE REQUIRED TO BE "MADE IN U.S.A." IF FEDERAL FUNDS ARE INVOLVED

CITY OF GREENSBORO		
WATER VALVE BOX AND EXTENSION	STD. NO.	REV.
	102	03-93 03-12 08-02 12-12 09-10 03-15

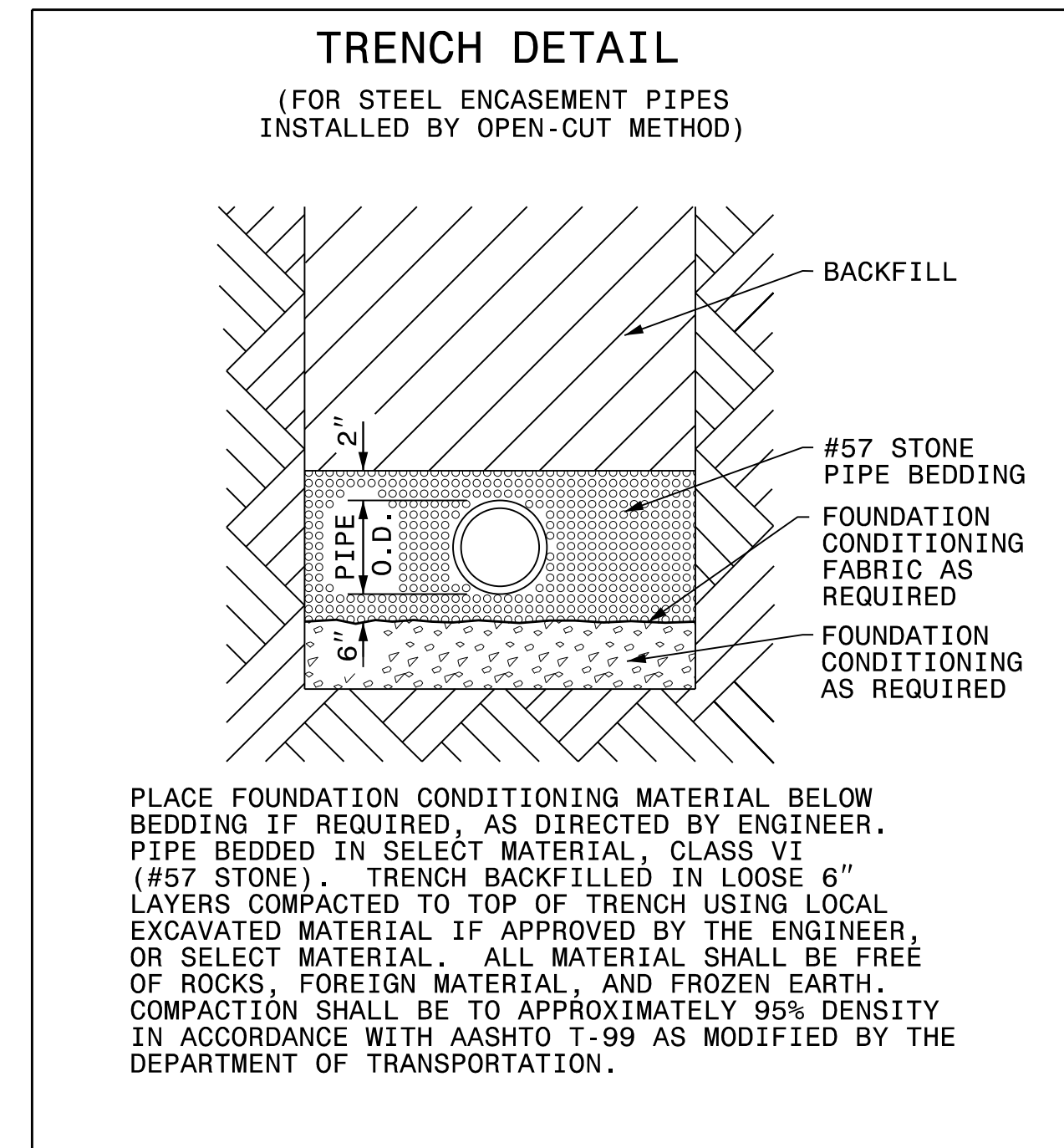


CONCRETE COLLAR FOR VALVE BOX
 (PROVIDE FOR ALL VALVE BOXES NOT IN PAVED AREAS)

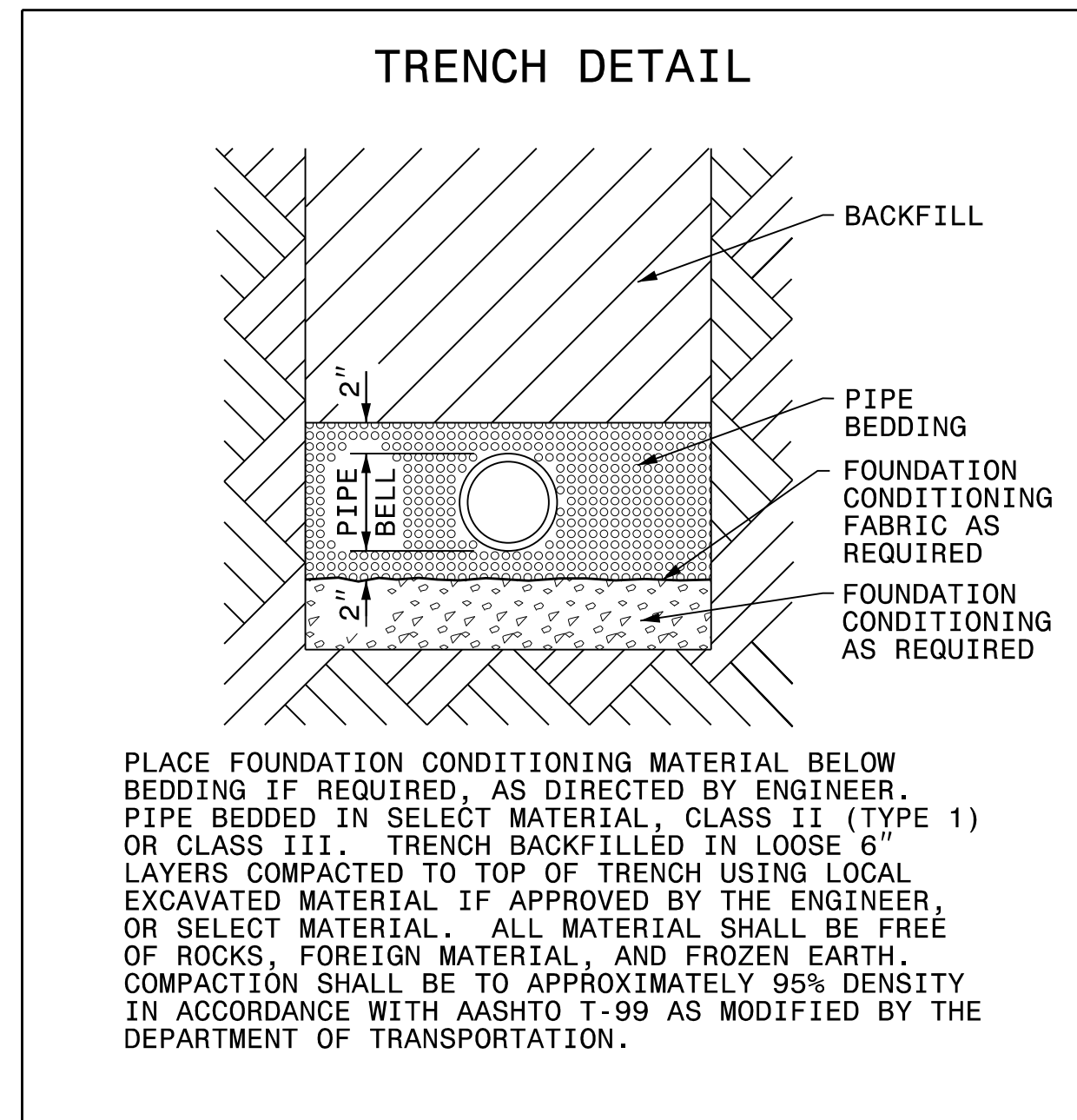
MAXIMUM TRENCH WIDTH AT TOP OF PIPE			
NOMINAL PIPE SIZE (INCHES)	TRENCH WIDTH (INCHES)	NOMINAL PIPE SIZE (INCHES)	TRENCH WIDTH (INCHES)
4	28	20	44
6	30	24	48
8	32	30	54
10	34	36	60
12	36	42	66
14	38	48	72
16	40	54	78
18	42		



RELOCATION OF D.I. WATER PIPE OR D.I. FORCE MAIN PIPE AT PROPOSED STORM DRAINAGE AS SHOWN ON PLANS



PLACE FOUNDATION CONDITIONING MATERIAL BELOW BEDDING IF REQUIRED, AS DIRECTED BY ENGINEER. PIPE BEDDED IN SELECT MATERIAL, CLASS VI (#57 STONE). TRENCH BACKFILLED IN LOOSE 6" LAYERS COMPACTED TO TOP OF TRENCH USING LOCAL EXCAVATED MATERIAL IF APPROVED BY THE ENGINEER, OR SELECT MATERIAL. ALL MATERIAL SHALL BE FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH. COMPACTION SHALL BE TO APPROXIMATELY 95% DENSITY IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY THE DEPARTMENT OF TRANSPORTATION.



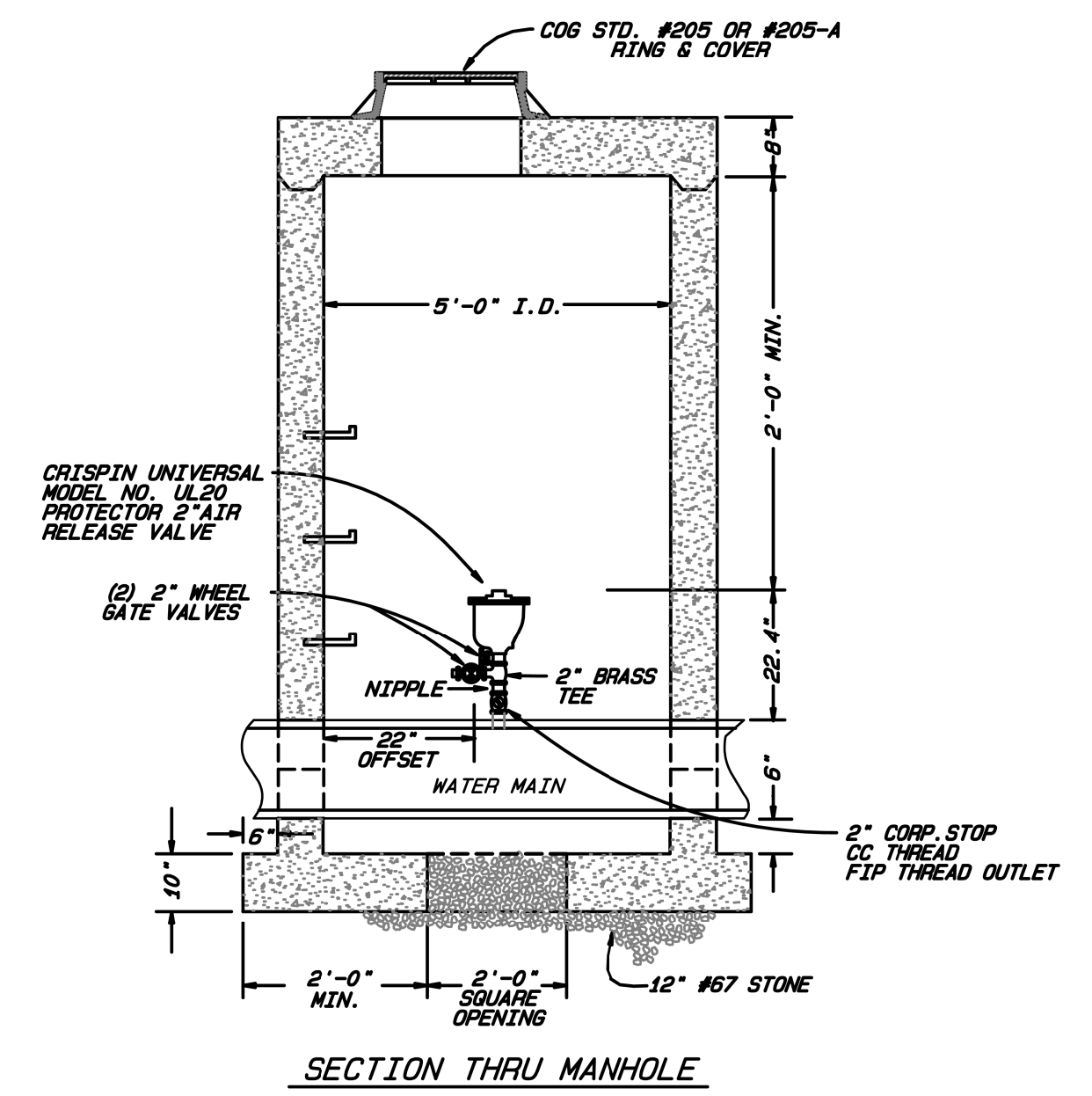
PLACE FOUNDATION CONDITIONING MATERIAL BELOW BEDDING IF REQUIRED, AS DIRECTED BY ENGINEER. PIPE BEDDED IN SELECT MATERIAL, CLASS II (TYPE 1) OR CLASS III. TRENCH BACKFILLED IN LOOSE 6" LAYERS COMPACTED TO TOP OF TRENCH USING LOCAL EXCAVATED MATERIAL IF APPROVED BY THE ENGINEER, OR SELECT MATERIAL. ALL MATERIAL SHALL BE FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH. COMPACTION SHALL BE TO APPROXIMATELY 95% DENSITY IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY THE DEPARTMENT OF TRANSPORTATION.

DESIGNED BY: APL
 DRAWN BY: RDL
 CHECKED BY: APL
 APPROVED BY:
 REVISED:
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151
 SEAL
 26457
 Andrew P. Larrick
 PROFESSIONAL ENGINEER
 11/15/2017
 UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTES:
 CONCRETE SHALL BE CLASS AA, 4000 PSI AS PER ASTM C-478.
 STEEL REINFORCING SHALL MEET ASTM C-185 (4" DIA) OR ASTM C-478 (5" DIA).
 MANHOLES OVER 3'-6" IN DEPTH SHALL BE PROVIDED WITH STEPS 16" ON CENTERS. STEPS SHALL BE IN ACCORDANCE WITH COG STD. #206.
 ON NEW INSTALLATION A MAXIMUM OF (2) GRADE RINGS CAN BE USED.
 ALL PIPE TO BE MINIMUM 2" BRASS AND NIPPLES TO BE 2" BRASS.

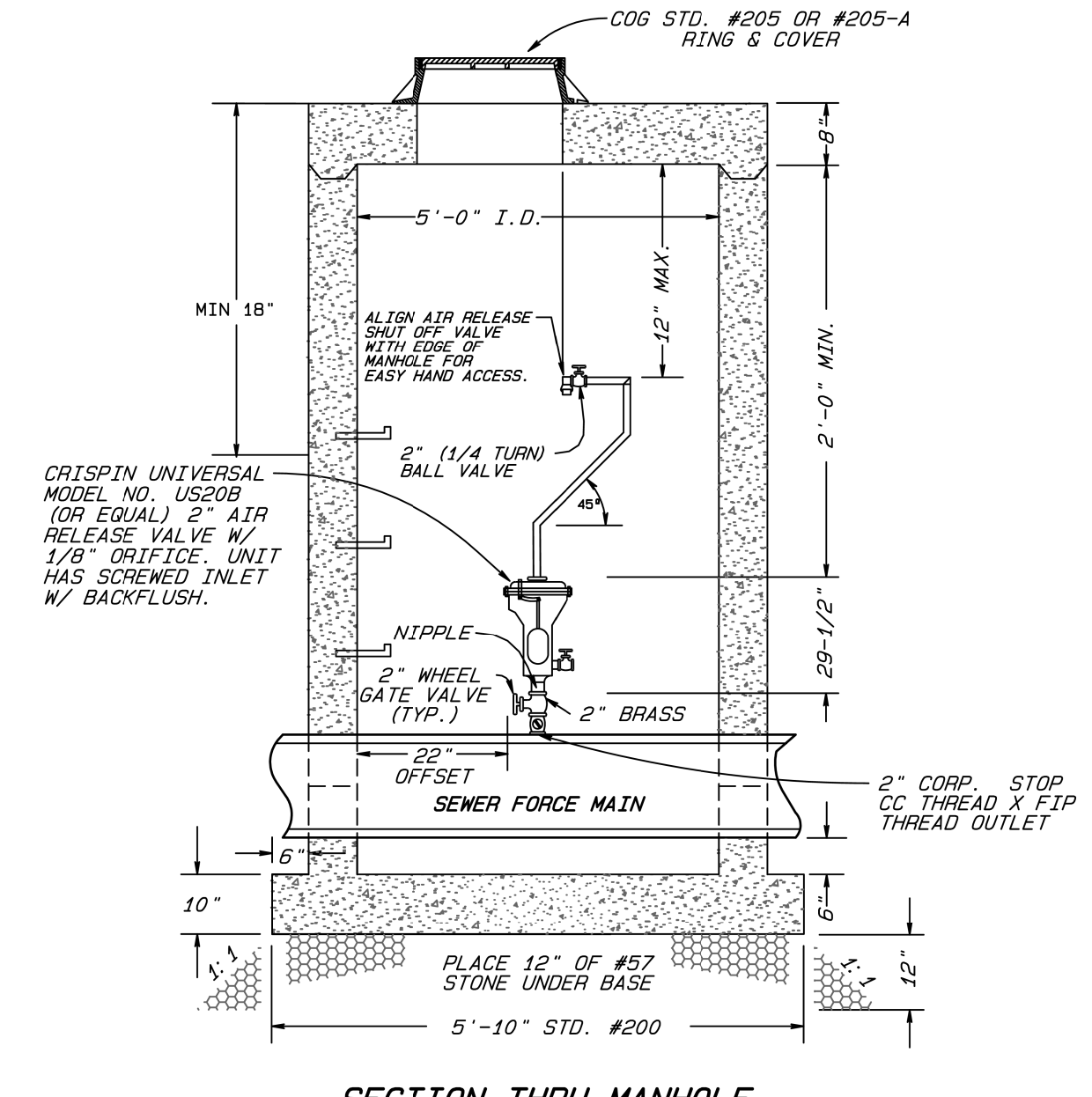


CITY OF GREENSBORO

STANDARD AIR RELIEF VALVE WITH ASSEMBLY AND MANHOLE FOR WATER LINES

STD. NO.	REV.
116	06-99 08-05 11-01 06-09 09-02

NOTES:
 CONCRETE SHALL BE CLASS AA, 4000 PSI AS PER ASTM C-478.
 STEEL REINFORCING SHALL MEET ASTM C-185 (4" DIA) OR ASTM C-478 (5" DIA).
 MANHOLES OVER 3'-6" IN DEPTH SHALL BE PROVIDED WITH STEPS 16" ON CENTERS. STEPS SHALL BE IN ACCORDANCE WITH COG STD. #206.
 ON NEW INSTALLATION A MAXIMUM OF (2) GRADE RINGS CAN BE USED.
 FOR FORCE MAINS LESS THAN 8" IN DIAMETER USE ROCKWELL SERVICE SADDLE 323, FORD, MUELLER, OR EQUAL.
 ALL PIPE TO BE MINIMUM 2" BRASS AND NIPPLES TO BE 2" BRASS.



CITY OF GREENSBORO

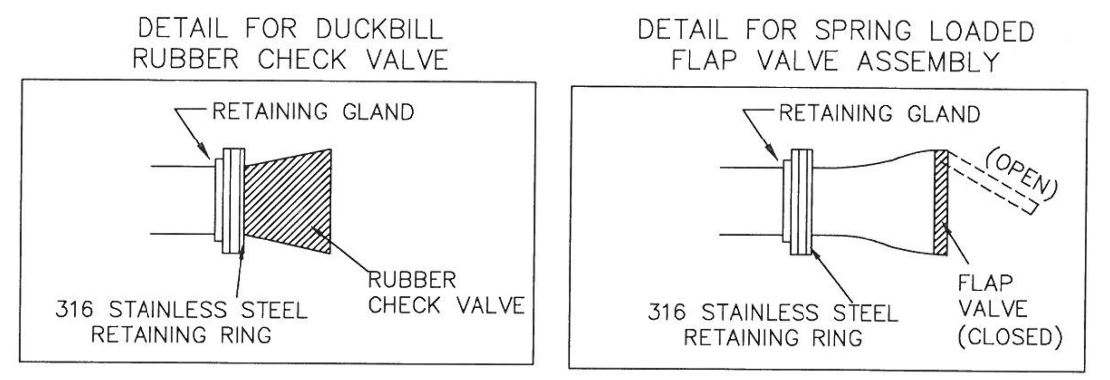
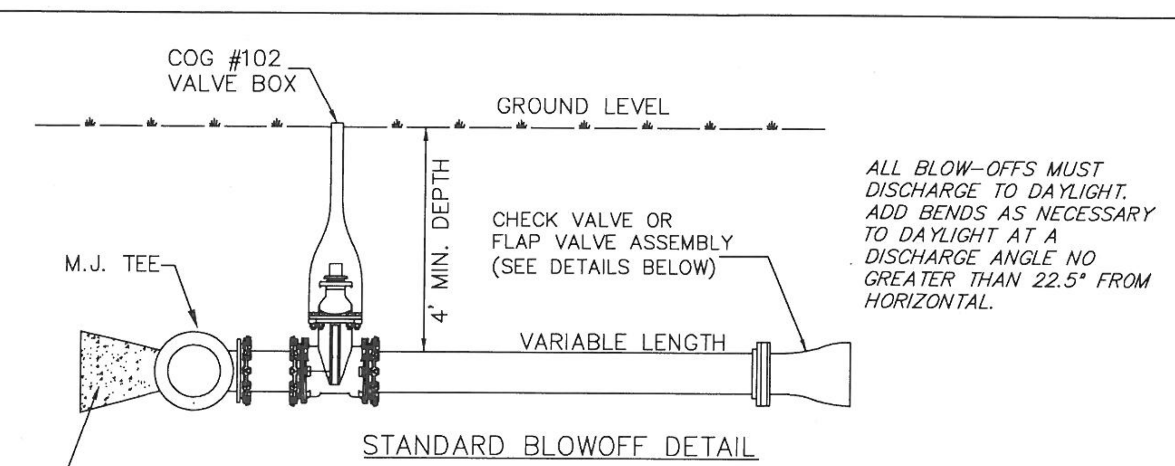
STANDARD AIR RELIEF VALVE WITH ASSEMBLY AND MANHOLE FOR SANITARY SEWER LINES

STD. NO.	REV.
211	06-99 03-03 08-02 06-07 09-02 03-08

NOTE:
 FOR WATER AND SEWER ARV'S, INSTEAD OF TAPPING THE MAIN, CONTRACTOR SHALL INSTALL A MAIN-LINE TEE TURNED UPRIGHT, WITH A BLIND FLANGE BOLTED TO THE TOP SIDE OF THE TEE. THE BLIND FLANGE SHALL BE TAPPED TO ACCOMMODATE THE 2" CORP. STOP. COST FOR THE TEE AND TAPPED BLIND FLANGE SHALL BE INCIDENTAL TO THE COST OF THE 2" ARV.

SIZES FOR THE TEES SHALL BE BASED ON THE WATER OR SEWER MAIN SIZE AS INDICATED IN THE TABLE BELOW:

MAIN SIZE	TEE SIZE
6"	6"x4"
8"	8"x4"
12"	12"x6"
16"	16"x8"
18"	18"x12"
20"	20"x12"
24"	24"x12"
30"	30"x16"
36"	36"x18"

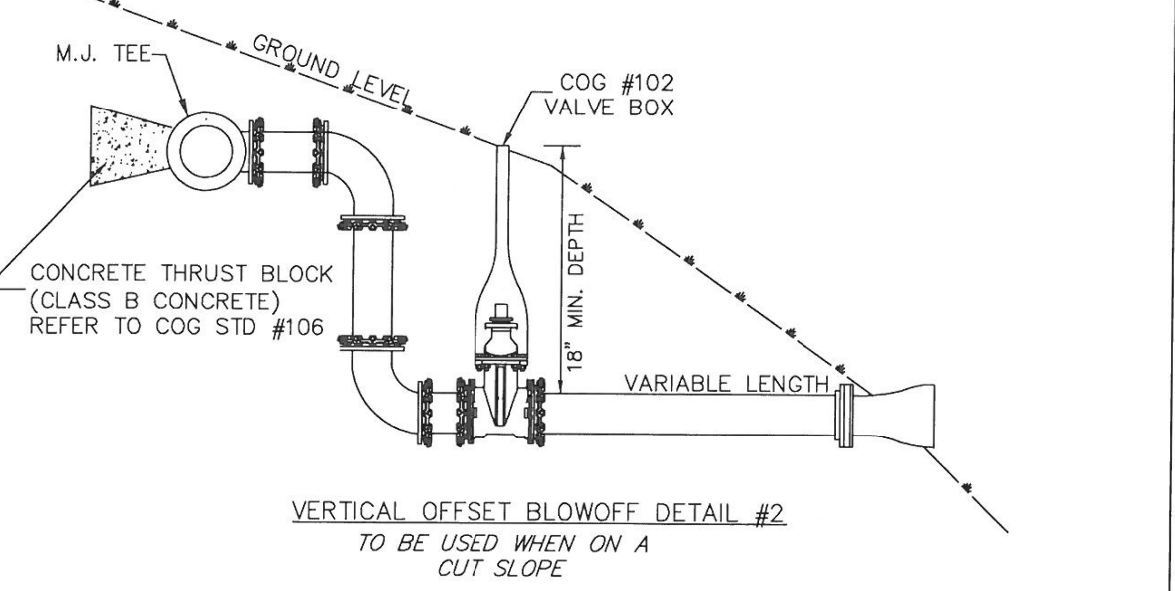
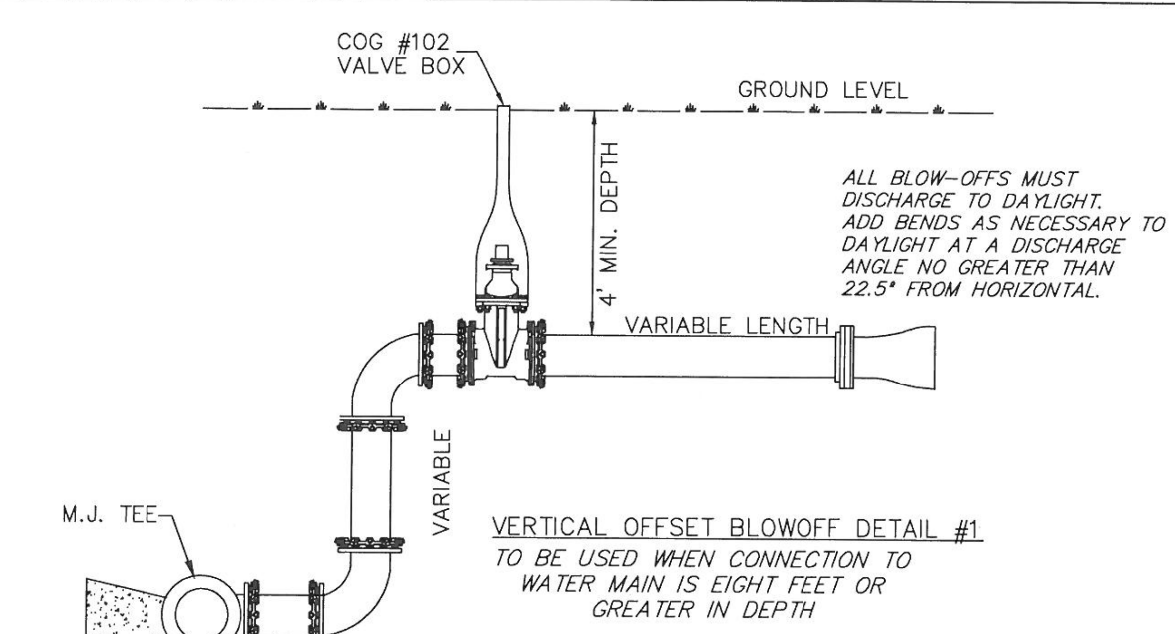


- GENERAL NOTES
- ALL MECHANICAL JOINTS SHALL BE RESTRAINED GLANDS, TORQUED AS PER MANUFACTURERS SPECIFICATIONS.
 - ADDITIONAL BENDS MAY BE REQUIRED TO CONFORM TO EXISTING TERRAIN, OR AS DIRECTED BY THE FIELD ENGINEER.
 - BLOW-OFF DISCHARGE SHALL CONFORM TO THE LATEST EDITION OF THE STORM DRAINAGE DESIGN MANUAL FOR RISE-RAP ENERGY DISSIPATOR DESIGN AND AS DIRECTED BY THE FIELD ENGINEER.
 - ALL MATERIALS SHALL CONFORM TO THE LATEST EDITION OF THE CITY OF GREENSBORO WATER LINE AND SEWER LINE STANDARD CONSTRUCTION SPECIFICATIONS.
 - ANY PROPOSED MODIFICATIONS TO THIS STANDARD BASED ON THE FIELD CONDITIONS MUST BE PRE-APPROVED BY THE CITY OF GREENSBORO FIELD INSPECTOR AND/OR THE ENGINEER OF RECORD.
 - ALL BLOW-OFFS MUST DISCHARGE TO DAYLIGHT. ADD BENDS AS NECESSARY TO DAYLIGHT AT A DISCHARGE ANGLE NO GREATER THAN 22.5° FROM HORIZONTAL.
 - REFER TO SECTION 3.09 OF THE "STANDARD SPECIFICATIONS FOR WATER AND SEWER UTILITY CONSTRUCTION" PUBLISHED BY THE CITY'S WATER RESOURCES DEPARTMENT IN ORDER TO DETERMINE THE CORRECT BLOW-OFF SIZE TO USE.

CITY OF GREENSBORO

BLOW-OFF DETAIL (4", 6" & 8")

STD. NO.	REV.
119	06/13



CITY OF GREENSBORO

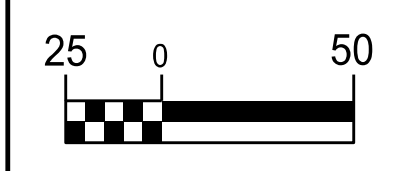
BLOW-OFF DETAIL (4", 6" & 8")

STD. NO.	REV.
119	06/13

UTILITY CONSTRUCTION PLANS PREPARED BY:
DAVIS • MARTIN • POWELL
 ENGINEERS & SURVEYORS **dmp**
 6415 OLD PLANK RD., HIGH POINT, NC 27265
 PHONE: (336) 886-4821 FAX: (336) 886-4458
 WWW.DMP-INC.COM LICENSE: F-0245

6/2/99

5/14/99

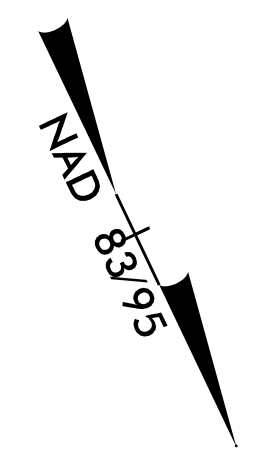


PROJECT REFERENCE NO. U-2525C	SHEET NO. UC-4A
DESIGNED BY: APL	
DRAWN BY: RDL	
CHECKED BY: APL	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY

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UTILITY CONSTRUCTION
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REVISIONS



APPROXIMATE LOCATION OF 30" DIP WATER MAIN, INSTALLED AS PART OF NCDOT PROJECT U-2525B

EX. 12" DIP WATER MAIN ABANDONED AS PART OF NCDOT PROJECT U-2525B

EX. 30" DIP WATER MAIN ABANDONED AS PART OF NCDOT PROJECT U-2525B

EX. 8" DIP WATER MAIN ABANDONED AS PART OF NCDOT PROJECT U-2525B

B

-L- POT Sta. 268+22.89=
-Y13- POT Sta. 50+35.75
-LACFLY- POC Sta. 35+59.70
 $\Delta = 84^{\circ} 32' 21.9"$

APPROXIMATE LOCATION OF 30" DIP WATER MAIN, INSTALLED AS PART OF NCDOT PROJECT U-2525B

APPROXIMATE LOCATION OF 60" STEEL ENCASMENT, INSTALLED AS PART OF NCDOT PROJECT U-2525B

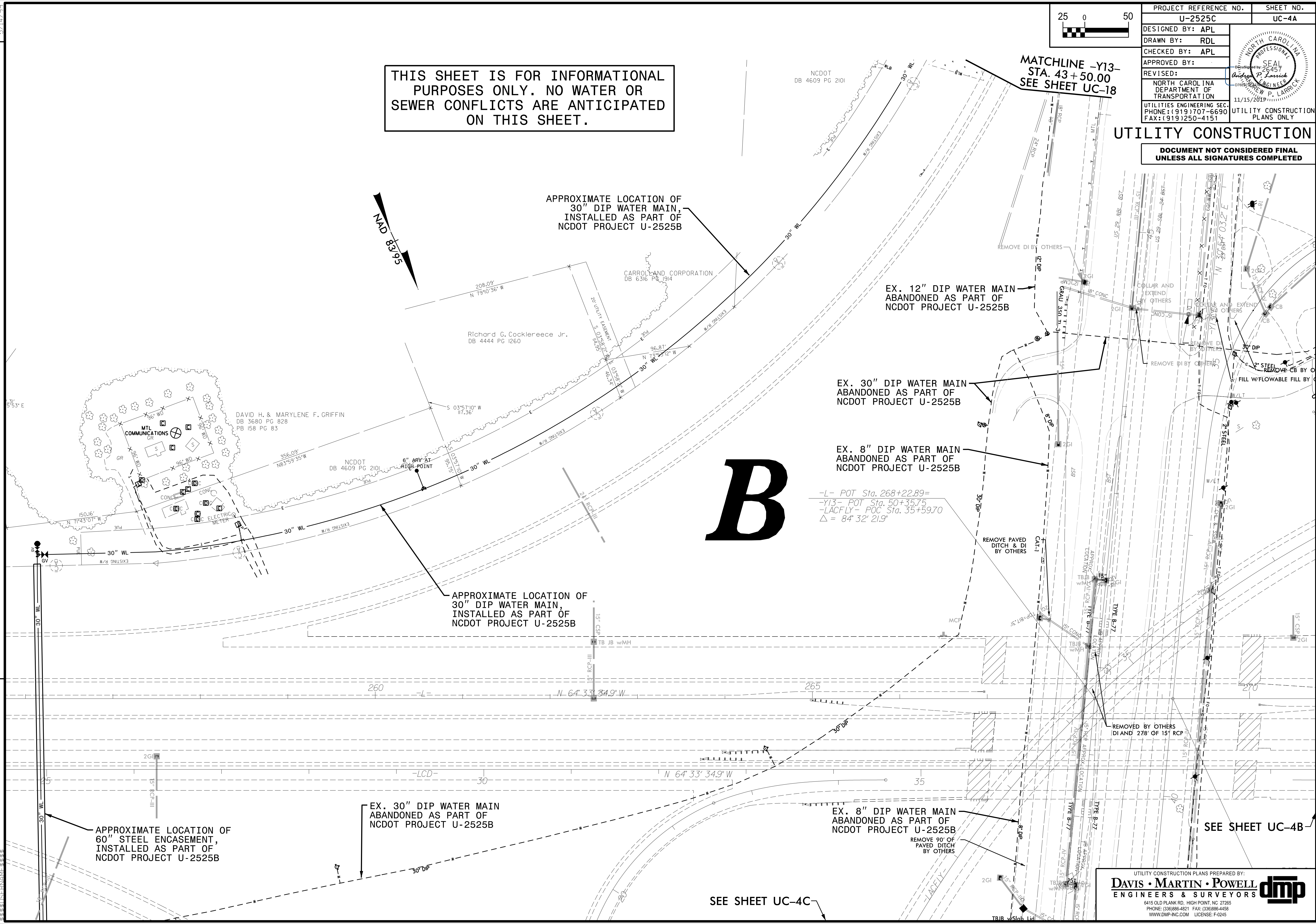
EX. 30" DIP WATER MAIN ABANDONED AS PART OF NCDOT PROJECT U-2525B

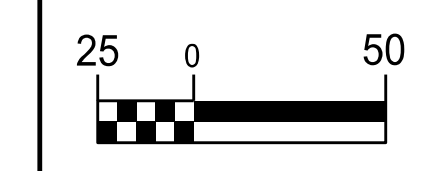
EX. 8" DIP WATER MAIN ABANDONED AS PART OF NCDOT PROJECT U-2525B

SEE SHEET UC-4C

SEE SHEET UC-4B

UTILITY CONSTRUCTION PLANS PREPARED BY:
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ENGINEERS & SURVEYORS
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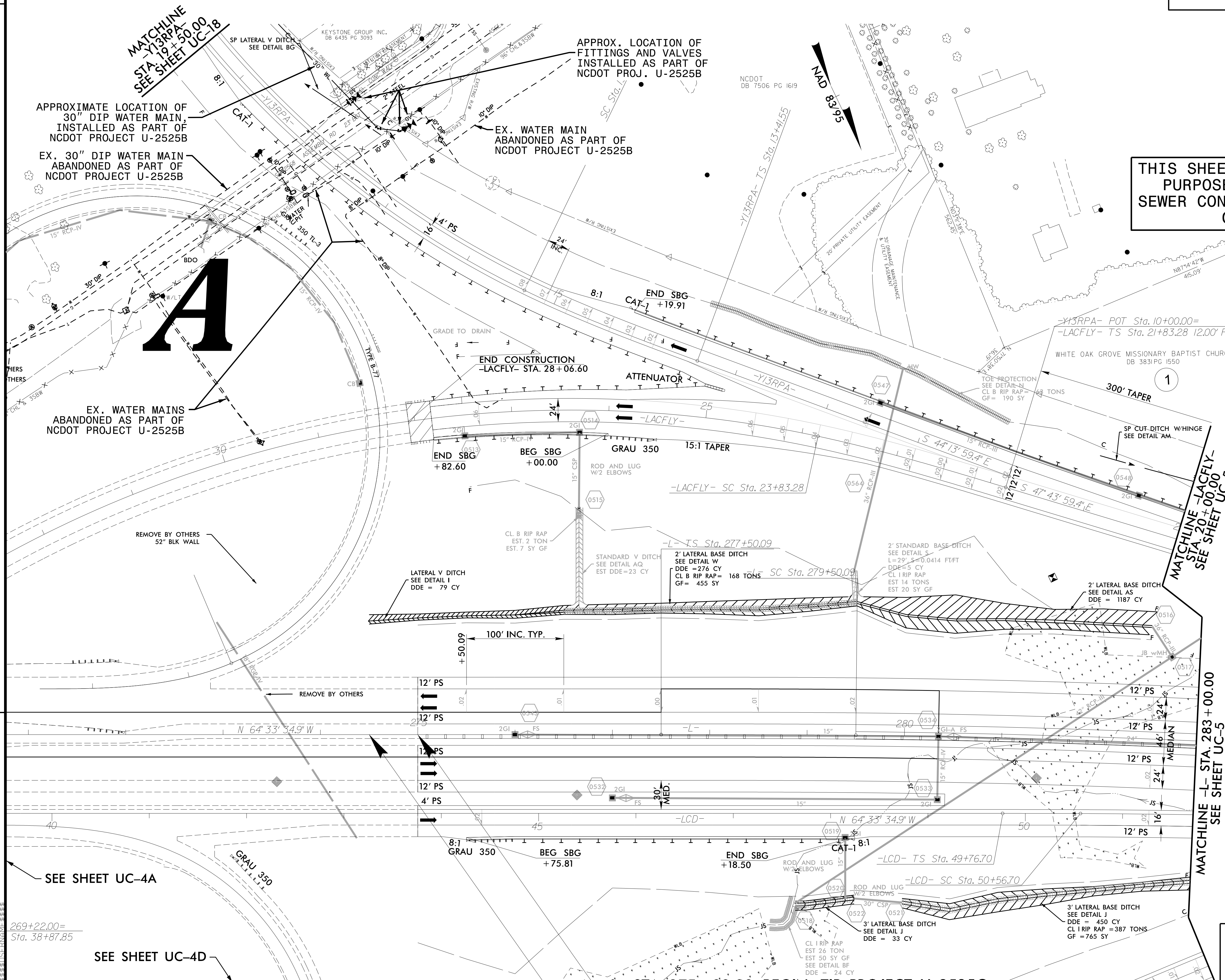


PROJECT REFERENCE NO.	SHEET NO.
U-2525C	UC-4B
DESIGNED BY: APL	
DRAWN BY: RDL	
CHECKED BY: APL	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	11/15/2017
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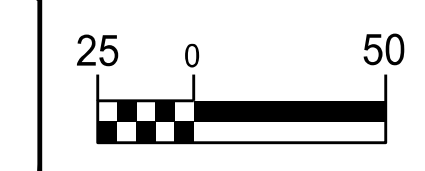


269+22.00 = Sta. 38+87.85

SEE SHEET UC-4D

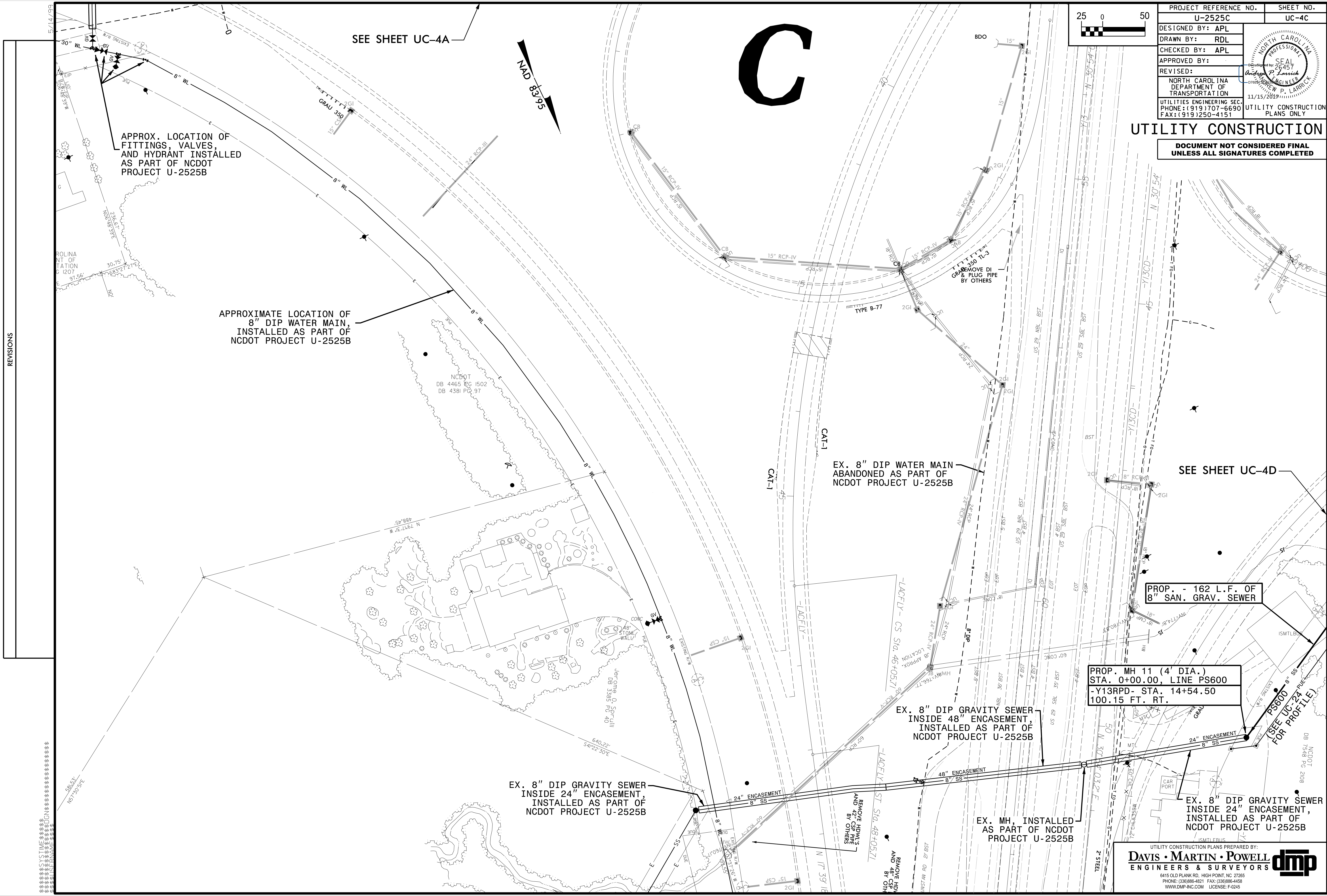
UTILITY CONSTRUCTION PLANS PREPARED BY:
DAVIS • MARTIN • POWELL
 ENGINEERS & SURVEYORS

6415 OLD PLANK RD., HIGH POINT, NC 27265
 PHONE: (336) 886-4821 FAX: (336) 886-4458
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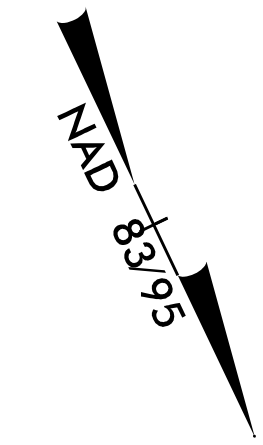


PROJECT REFERENCE NO. U-2525C	SHEET NO. UC-4C
DESIGNED BY: APL	
DRAWN BY: RDL	
CHECKED BY: APL	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	11/15/2019 ANDREW P. LARRICK
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY

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SEE SHEET UC-4A



APPROX. LOCATION OF FITTINGS, VALVES, AND HYDRANT INSTALLED AS PART OF NCDOT PROJECT U-2525B

APPROXIMATE LOCATION OF 8" DIP WATER MAIN, INSTALLED AS PART OF NCDOT PROJECT U-2525B

EX. 8" DIP WATER MAIN ABANDONED AS PART OF NCDOT PROJECT U-2525B

PROP. - 162 L.F. OF 8" SAN. GRAV. SEWER

PROP. MH 11 (4' DIA.) STA. 0+00.00, LINE PS600 -Y13RPD- STA. 14+54.50 100.15 FT. RT.

EX. 8" DIP GRAVITY SEWER INSIDE 48" ENCASUREMENT, INSTALLED AS PART OF NCDOT PROJECT U-2525B

EX. 8" DIP GRAVITY SEWER INSIDE 24" ENCASUREMENT, INSTALLED AS PART OF NCDOT PROJECT U-2525B

EX. MH, INSTALLED AS PART OF NCDOT PROJECT U-2525B

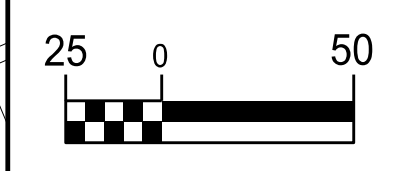
EX. 8" DIP GRAVITY SEWER INSIDE 24" ENCASUREMENT, INSTALLED AS PART OF NCDOT PROJECT U-2525B

REVISIONS

D

-L- STA. 275+00.00 BEGIN TIP PROJECT U-2525C
 -L- STA. 275+00.00 END TIP PROJECT U-2525B
 -L- STA. 274+50.00
BEGIN CONSTRUCTION

MATCHLINE -Y13RPD-
 STA. 31+40.00
 SEE SHEET UC-5

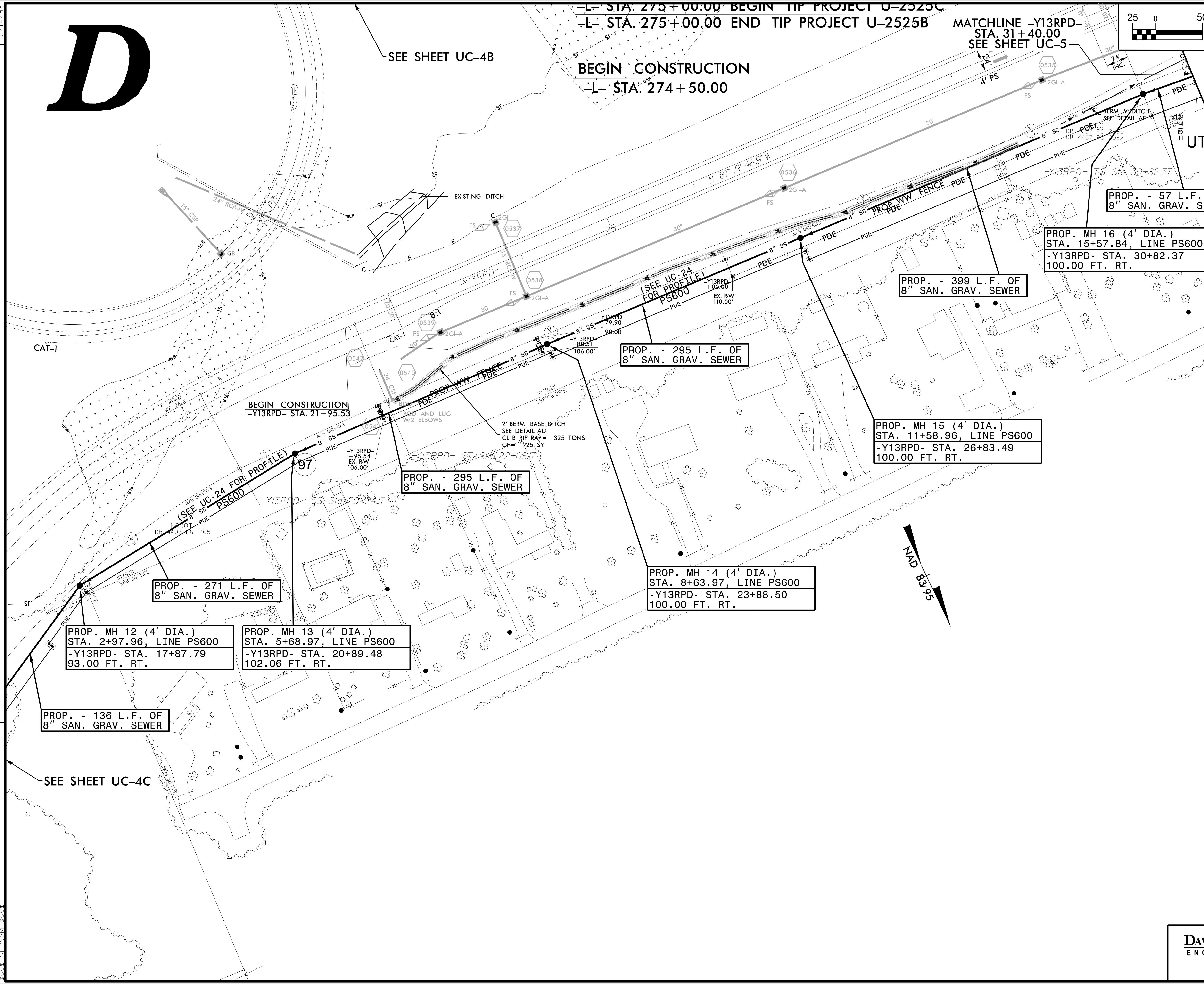


PROJECT REFERENCE NO. U-2525C	SHEET NO. UC-4D
DESIGNED BY: APL	
DRAWN BY: RDL	
CHECKED BY: APL	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	11/15/2017
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION
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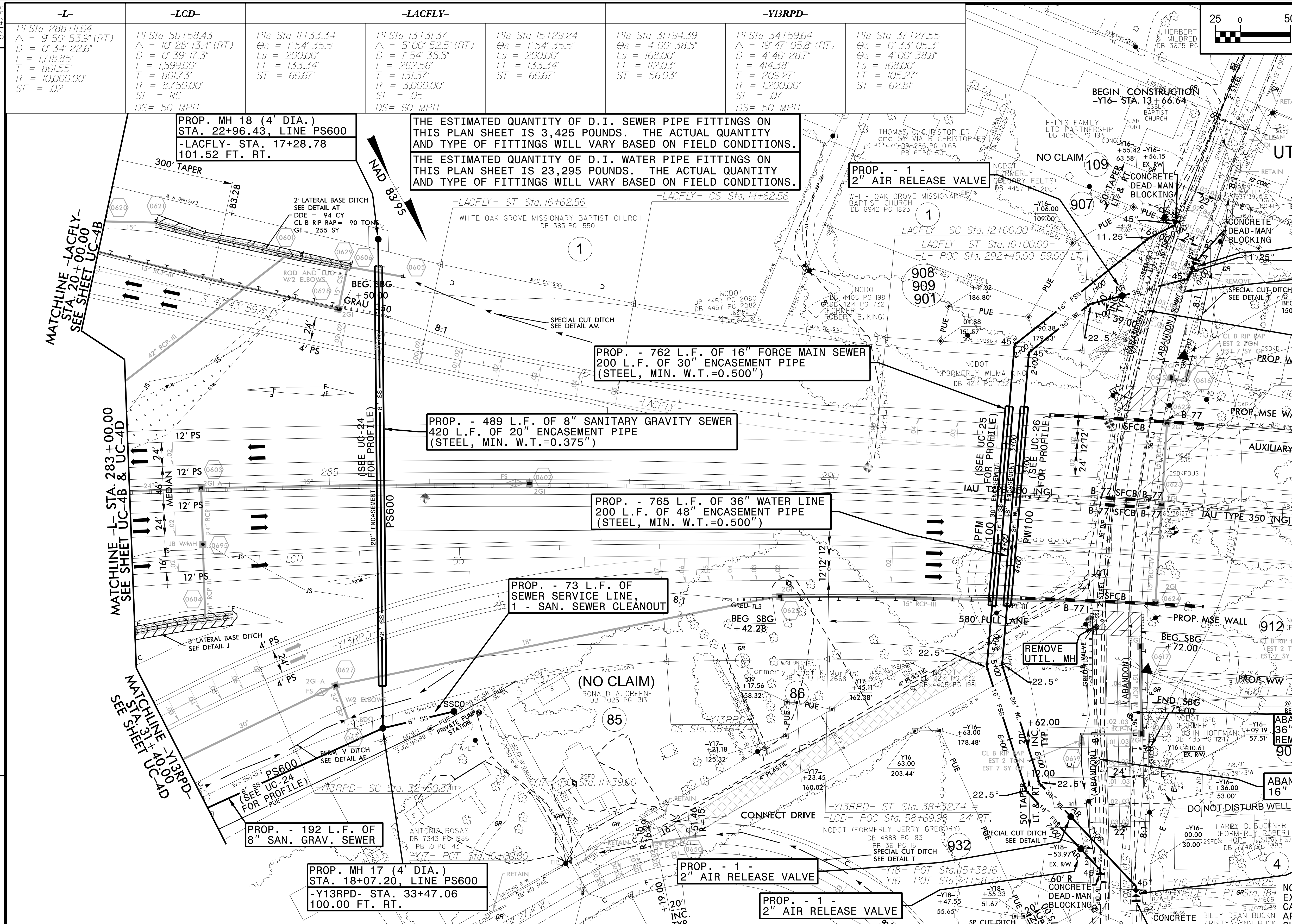
REVISIONS

5/14/99
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SEE SHEET UC-4C

SEE SHEET UC-4B



PROJECT REFERENCE NO. U-2525C	SHEET NO. UC-5
DESIGNED BY: APL	
DRAWN BY: RDL	
CHECKED BY: APL	
APPROVED BY:	
REVISIONS:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151 UTILITY CONSTRUCTION PLANS ONLY	

UTILITY CONSTRUCTION
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PROP. MH 18 (4' DIA.) STA. 22+96.43, LINE PS600 - LACFLY- STA. 17+28.78 101.52 FT. RT.

THE ESTIMATED QUANTITY OF D.I. SEWER PIPE FITTINGS ON THIS PLAN SHEET IS 3,425 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.
THE ESTIMATED QUANTITY OF D.I. WATER PIPE FITTINGS ON THIS PLAN SHEET IS 23,295 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

PROP. - 762 L.F. OF 16" FORCE MAIN SEWER 200 L.F. OF 30" ENCASEMENT PIPE (STEEL, MIN. W.T.=0.500")

PROP. - 489 L.F. OF 8" SANITARY GRAVITY SEWER 420 L.F. OF 20" ENCASEMENT PIPE (STEEL, MIN. W.T.=0.375")

PROP. - 765 L.F. OF 36" WATER LINE 200 L.F. OF 48" ENCASEMENT PIPE (STEEL, MIN. W.T.=0.500")

PROP. - 73 L.F. OF SEWER SERVICE LINE 1 - SAN. SEWER CLEANOUT

PROP. - 192 L.F. OF 8" SAN. GRAV. SEWER

PROP. MH 17 (4' DIA.) STA. 18+07.20, LINE PS600 -Y13RPD- STA. 33+47.06 100.00 FT. RT.

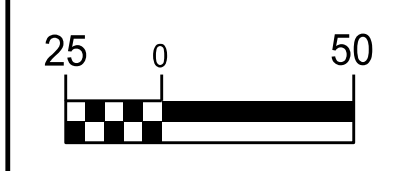
PROP. - 1 - 2" AIR RELEASE VALVE

PROP. - 1 - 2" AIR RELEASE VALVE

NOTE: EX. 36" WATER LINE ALONG -Y16- CANNOT BE TAKEN OUT OF SERVICE FROM APRIL THRU OCTOBER. CONTRACTOR SHALL COORDINATE WITH THE CITY OF GREENSBORO CONCERNING WHEN THE EX. 36" WATER LINE CAN BE TAKEN OUT OF SERVICE FOR TIE-INS. DIP-PCCP TRANSITION COUPLINGS WILL BE REQUIRED FOR TIE-INS, WHICH SHALL BE INCIDENTAL TO THE CONTRACT.

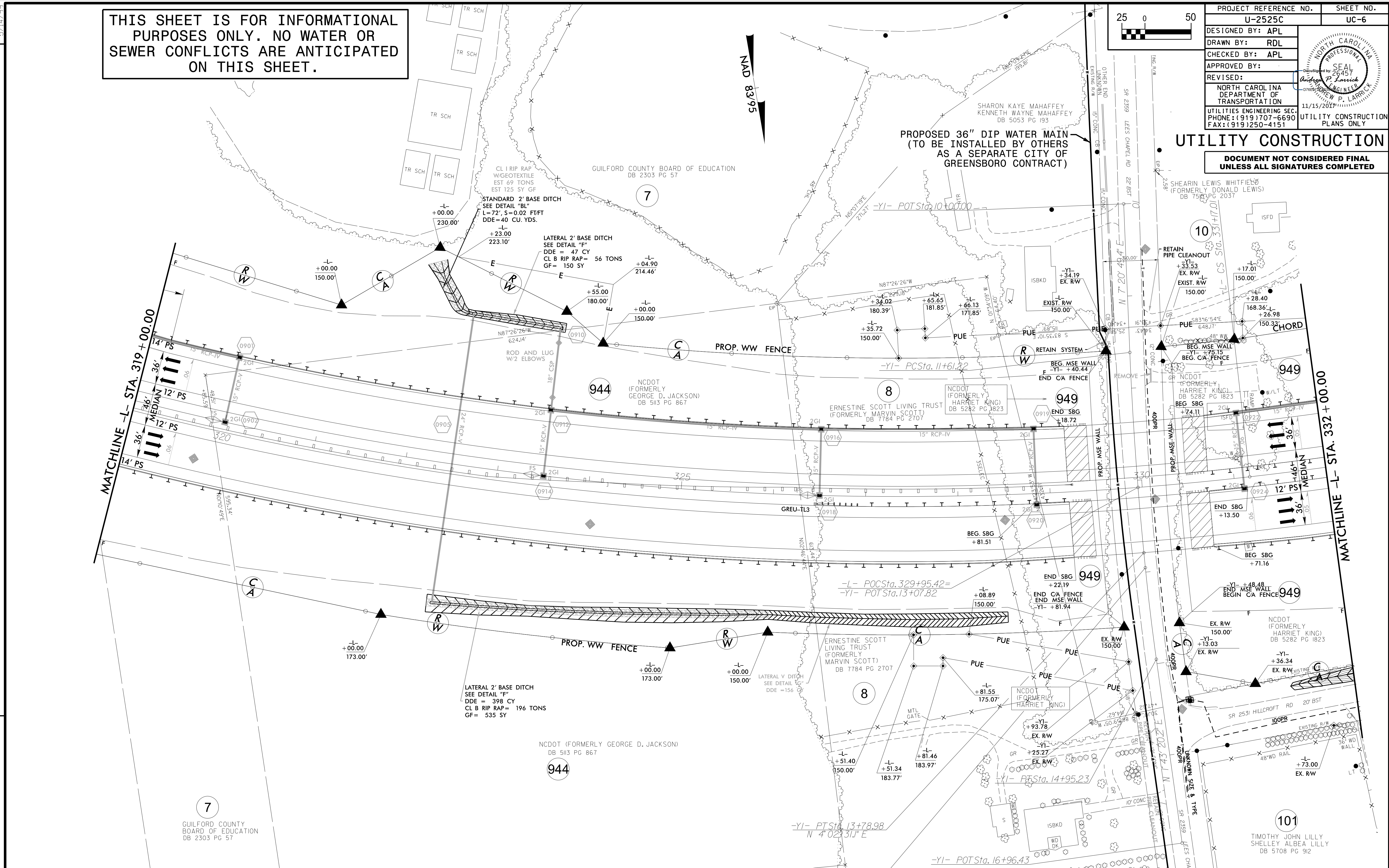
-Y16-	-Y17-
PI Sta 16+65.48 Δ = 23° 02' 41.3" (LT) D = 4' 58" 56.1" L = 462.54' T = 234.44' R = 1,150.00' SE = .04 RO = SEE PLANS DS = 40 MPH	PI Sta 13+97.04 Δ = 91° 48' 47.7" (RT) D = 22' 55" 05.9" L = 400.61' T = 258.04' R = 250.00' SE = .03 DS = 20 MPH

THIS SHEET IS FOR INFORMATIONAL PURPOSES ONLY. NO WATER OR SEWER CONFLICTS ARE ANTICIPATED ON THIS SHEET.



PROJECT REFERENCE NO.	SHEET NO.
U-2525C	UC-6
DESIGNED BY: APL	
DRAWN BY: RDL	
CHECKED BY: APL	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151 UTILITY CONSTRUCTION PLANS ONLY	

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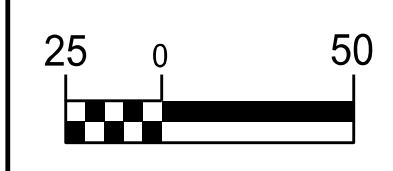
-L-	-YI-
$PI\ Sta\ 322+54.68$ $\Delta = 30^{\circ}07'23.3" (LT)$ $D = 1^{\circ}42'18.8"$ $L = 1,766.5'$ $T = 904.18'$ $R = 3,360.00'$ $SE = .06$	$PI\ Sta\ 332+37.04$ $\Delta = 3^{\circ}04'09.9"$ $D = 360.00'$ $LT = 240.04'$ $ST = 120.03'$
$PI\ Sta\ 12+70.13$ $\Delta = 3^{\circ}18'18.2" (LT)$ $D = 1^{\circ}31'04.0"$ $L = 217.76'$ $T = 108.91'$ $R = 3,775.00'$	$PI\ Sta\ 14+45.24$ $\Delta = 2^{\circ}19'10.9" (LT)$ $D = 2^{\circ}19'10.8"$ $L = 100.00'$ $T = 50.01'$ $R = 2,470.00'$

PROPOSED 36" DIP WATER MAIN (TO BE INSTALLED BY OTHERS AS A SEPARATE CITY OF GREENSBORO CONTRACT)

-BASIN 6_7-

PI Sta 10+85.37 Δ = 82° 26' 50.3" (LT) D = 114' 35" 29.6" L = 71.95' T = 43.81' R = 50.00' SE = .02	PI Sta 14+75.67 Δ = 51° 45' 12.2" (RT) D = 38' 11" 49.9" L = 135.49' T = 132.76' R = 150.00' SE = .02
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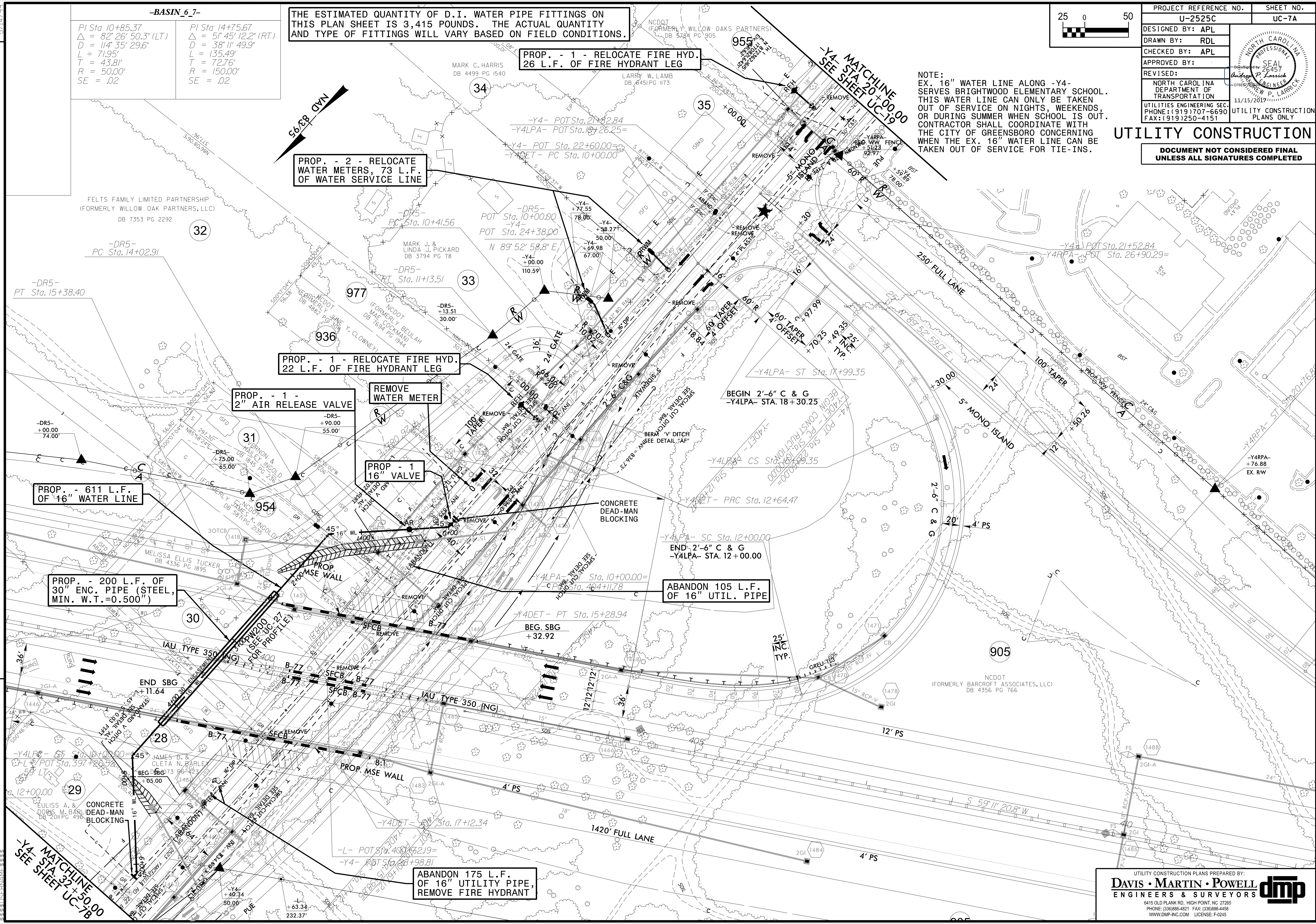
THE ESTIMATED QUANTITY OF D.I. WATER PIPE FITTINGS ON THIS PLAN SHEET IS 3,415 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.



PROJECT REFERENCE NO. U-2525C	SHEET NO. UC-7A
DESIGNED BY: APL	
DRAWN BY: RDL	
CHECKED BY: APL	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY 11/15/2017 PREPARED BY: LARRY P. LARRICK	

NOTE:
EX. 16" WATER LINE ALONG -Y4- SERVES BRIGHTWOOD ELEMENTARY SCHOOL. THIS WATER LINE CAN ONLY BE TAKEN OUT OF SERVICE ON NIGHTS, WEEKENDS, OR DURING SUMMER WHEN SCHOOL IS OUT. CONTRACTOR SHALL COORDINATE WITH THE CITY OF GREENSBORO CONCERNING WHEN THE EX. 16" WATER LINE CAN BE TAKEN OUT OF SERVICE FOR TIE-INS.

UTILITY CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

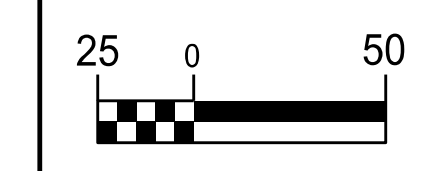


REVISIONS

MATCHLINE -Y4- STA. 20+50.00 SEE SHEET UC-19

MATCHLINE -Y4- STA. 32+50.00 SEE SHEET UC-7B

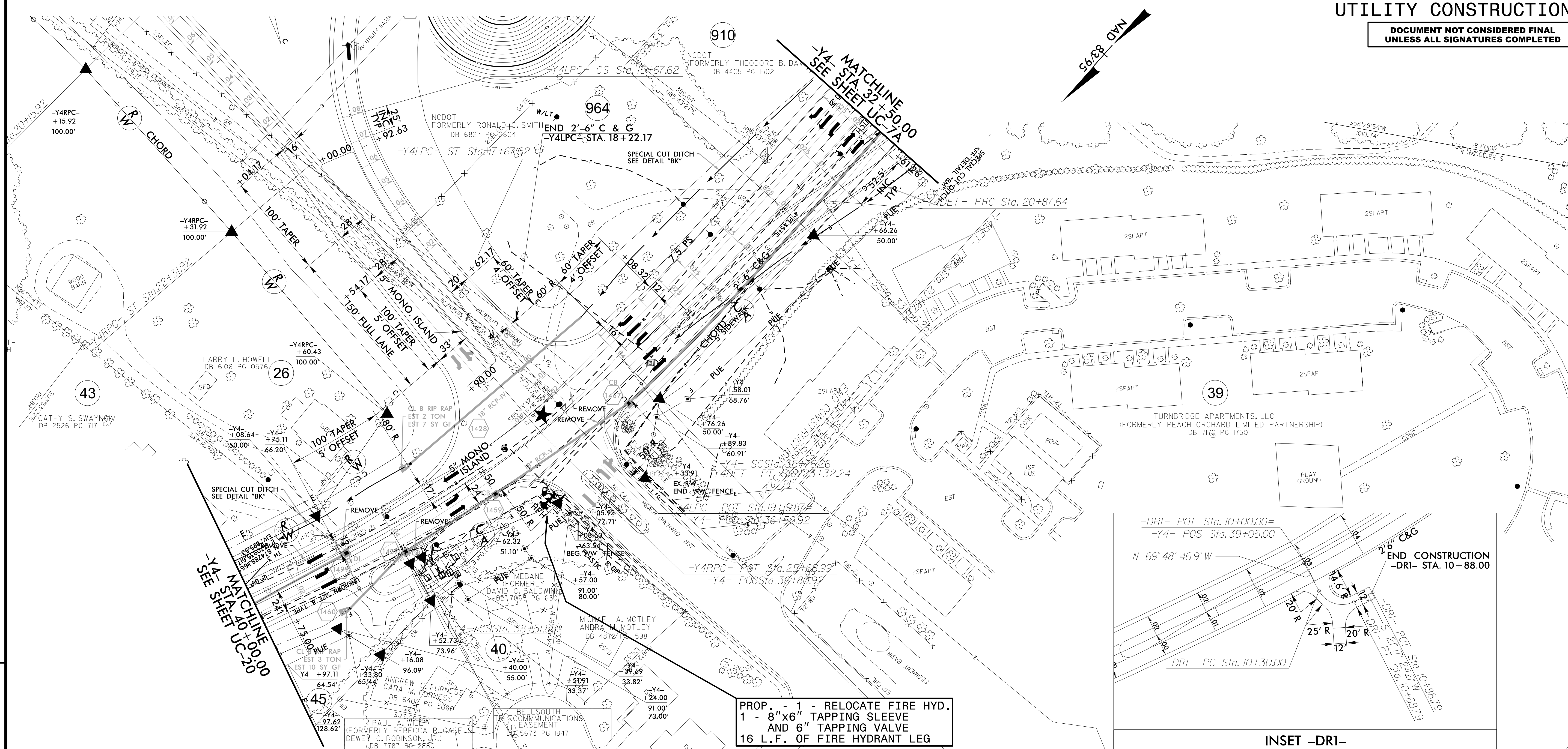
UTILITY CONSTRUCTION PLANS PREPARED BY:
DAVIS • MARTIN • POWELL
ENGINEERS & SURVEYORS
6415 OLD PLANK RD., HIGH POINT, NC 27265
PHONE: (336) 886-4821 FAX: (336) 886-4458
WWW.DMP-INC.COM LICENSE: F-0245



PROJECT REFERENCE NO.	SHEET NO.
U-2525C	UC-7B
DESIGNED BY: APL	
DRAWN BY: RDL	
CHECKED BY: APL	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	11/15/2019
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REVISIONS



PROP. - 1 - RELOCATE FIRE HYD.
1 - 8"x6" TAPPING SLEEVE
AND 6" TAPPING VALVE
16 L.F. OF FIRE HYDRANT LEG

