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09/20/2018/95

TIP PROJECT: U-2412A

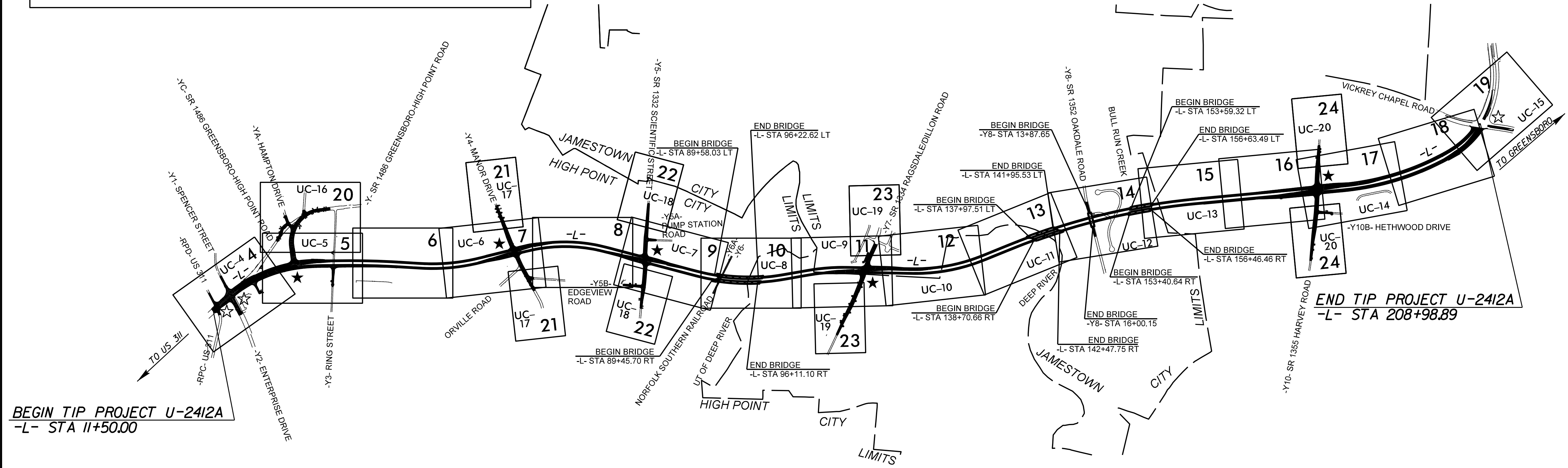
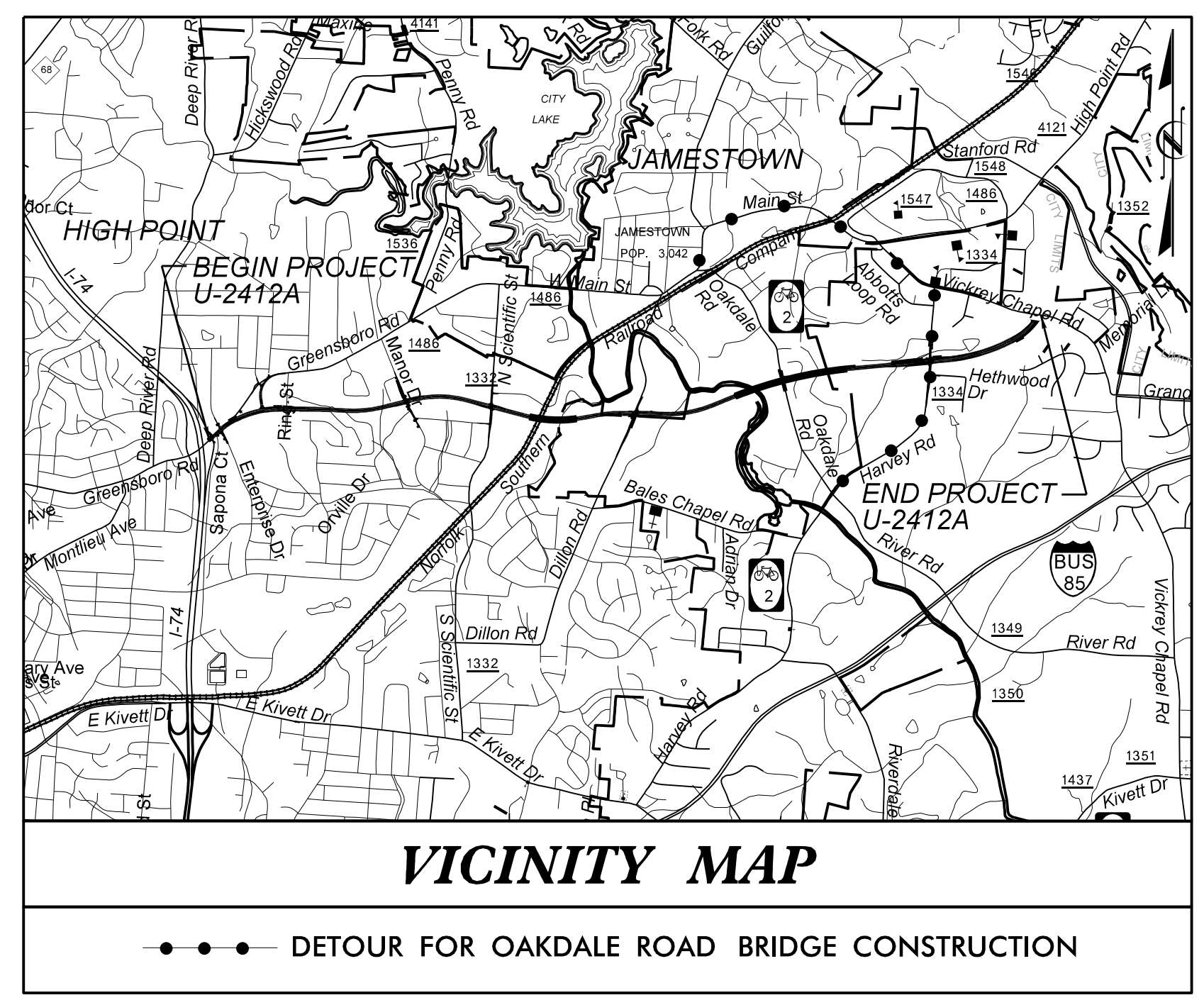
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

T.I.P. NO.	SHEET NO.
U-2412A	UC-1

UTILITY CONSTRUCTION PLANS GUILFORD COUNTY

LOCATION: SR-1486 /SR-4121 (GREENSBORO/HIGH POINT ROAD) FROM PROPOSED US 311 BYPASS TO WEST OF SR 1480 (VICKREY CHAPEL ROAD)

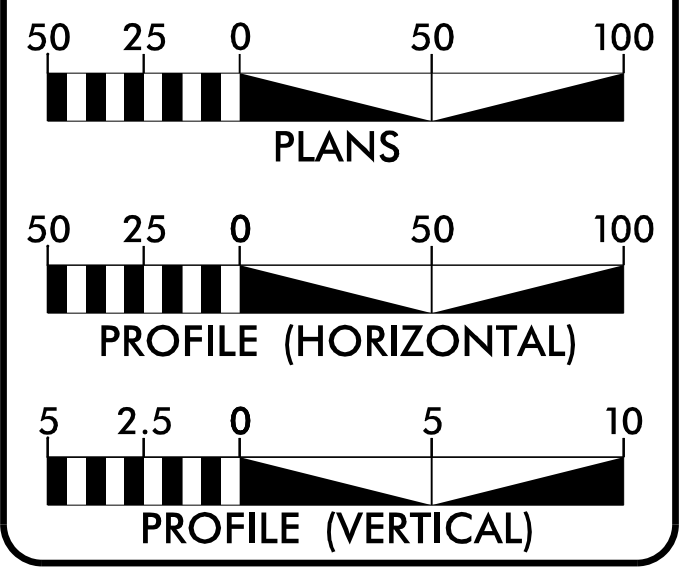
TYPE OF WORK: UTILITY CONSTRUCTION



NOTE:
THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF HIGH POINT AND JAMESTOWN.

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



INDEX OF SHEETS

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UC-3	DETAILS
UC-3A THRU UC-3E	UTILITY CONSTRUCTION SHEETS
UC-4 THRU UC-20	UTILITY CONSTRUCTION SHEETS
UC-21 THRU UC-24	PROFILE SHEETS

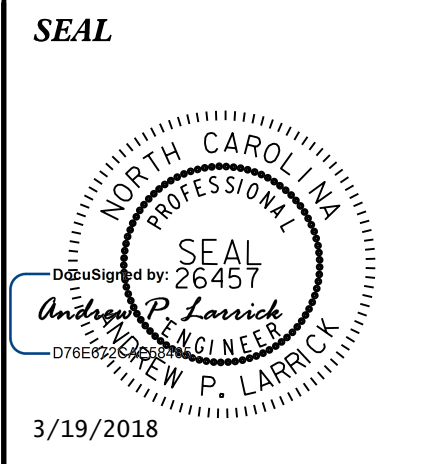
WATER AND SEWER OWNERS ON PROJECT

- A) WATER - CITY OF HIGH POINT
- B) SEWER - CITY OF HIGH POINT
- C) WATER - TOWN OF JAMESTOWN
- D) SEWER - TOWN OF JAMESTOWN

PREPARED IN THE OFFICE OF:
DAVIS • MARTIN • POWELL
ENGINEERS & SURVEYORS **dmp**

6415 OLD PLANK RD, HIGH POINT, NC 27285
PHONE: (336)896-4821 FAX: (336)896-4458
WWW.DMP-INC.COM LICENSE: F-0245

- Andy Larrick, P.E. CONSULTANT CONTACT #1
- Randy McNeill, P.E. CONSULTANT CONTACT #2
- Steve McKee, P.E. CONSULTANT CONTACT #3
- Jamshid Hafshejani CONSULTANT CONTACT #4



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

- Donna Jackson, P.E. UTILITIES REGIONAL ENGINEER
- Ali Kouchecki, P.E. UTILITIES ENGINEER
- Kyle Pleasant UTILITIES AREA COORDINATOR

\$\$\$\$\$ SYSTEM\$\$\$\$\$ DDN\$\$\$\$\$ USER\$\$\$\$\$

5/14/99

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 HIGH POINT AND THE TOWN OF JAMESTOWN.
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, PIPE FOR PROPOSED WATER MAINS IN NOMINAL DIAMETERS 3" THROUGH 12" SHALL BE DUCTILE IRON, PC 350.
2. UNLESS OTHERWISE NOTED, PIPE FOR PROPOSED WATER MAINS IN NOMINAL DIAMETERS 16" AND LARGER SHALL BE DUCTILE IRON, PC 250.
3. WATER LINE VALVES SHALL BE RESILIENT-SEAT GATE VALVES CONFORMING TO ANSI/AWWA C509, RATED FOR 200 PSI MINIMUM WORKING PRESSURE.
4. UNLESS OTHERWISE NOTED, PIPE FOR PROPOSED SEWER MAINS 8" AND LARGER SHALL BE DUCTILE IRON, CLASS 51.
5. UNLESS OTHERWISE NOTED, PIPE FOR PROPOSED SEWER SERVICE LINES SHALL BE DUCTILE IRON, PC 350.
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.

LIST OF STANDARD DRAWINGS

- 1515.01 WATER METER
- 1515.02 FIRE HYDRANT
- 1520.01 SEWER CLEAN OUT
- 1525.02 PRECAST CONCRETE SANITARY SEWER MANHOLE - OUTSIDE DROP
- 1525.06 PRECAST CONCRETE SANITARY SEWER MANHOLE WITH CAST-IN-PLACE BOTTOM

PROJECT REFERENCE NO. U-2412A	SHEET NO. UC-3
DESIGNED BY: DMP	
DRAWN BY: DMP	
CHECKED BY: DMP	
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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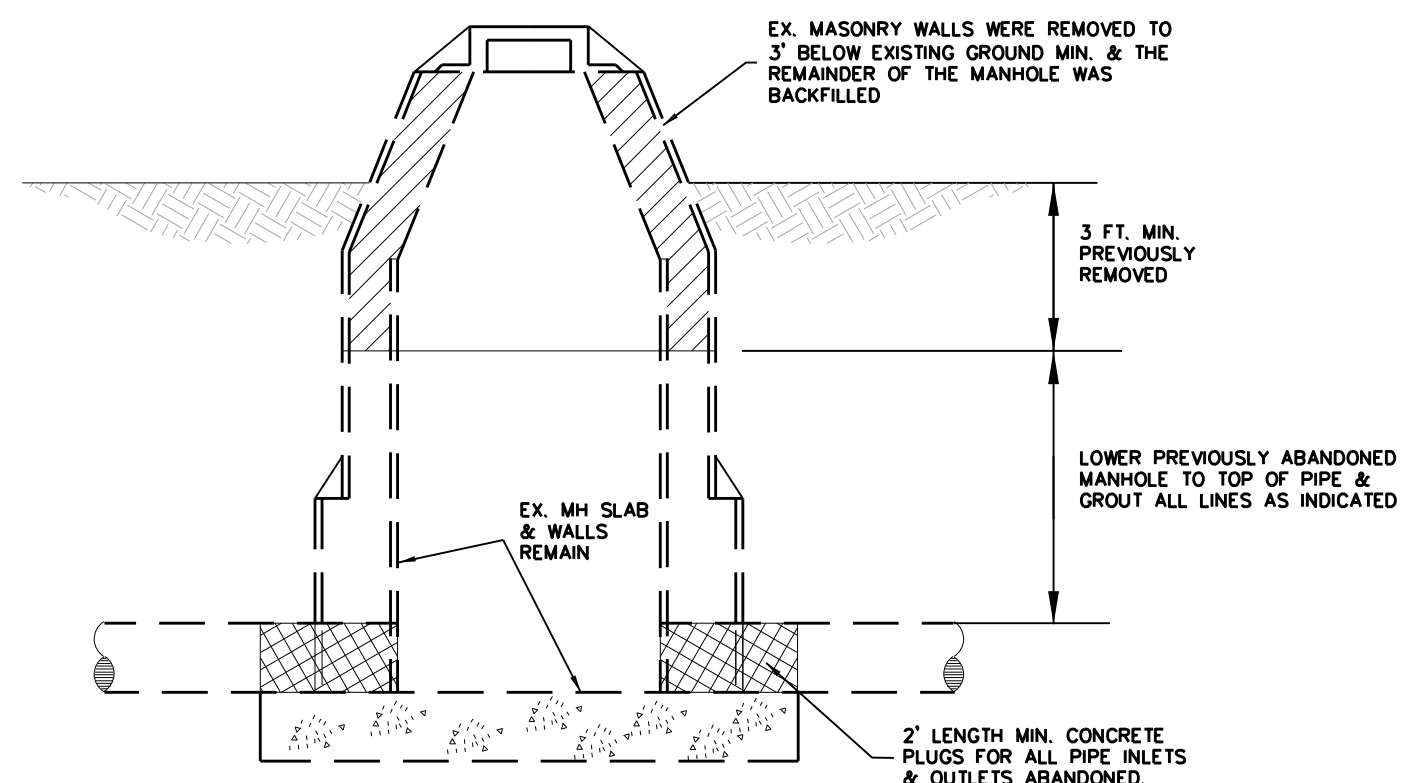
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-2412A	UC-3A
DESIGNED BY: DMP	
DRAWN BY: DMP	
CHECKED BY: DMP	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	UTILITY CONSTRUCTION PLANS ONLY
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	

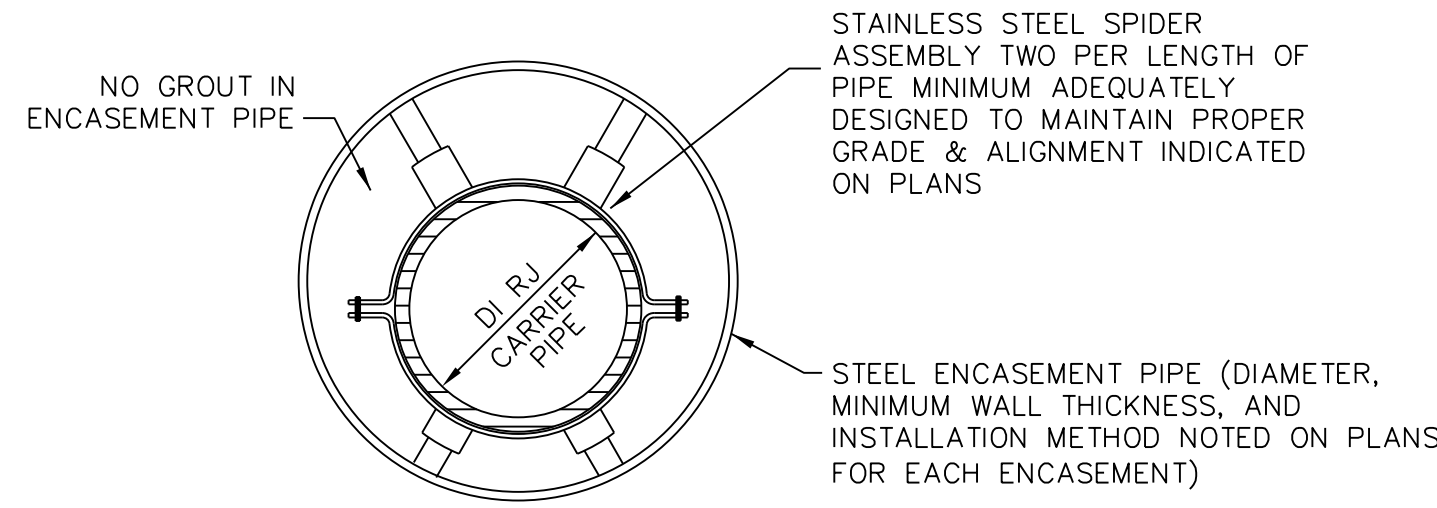
PROJECT TYPICAL DETAILS

UTILITY CONSTRUCTION

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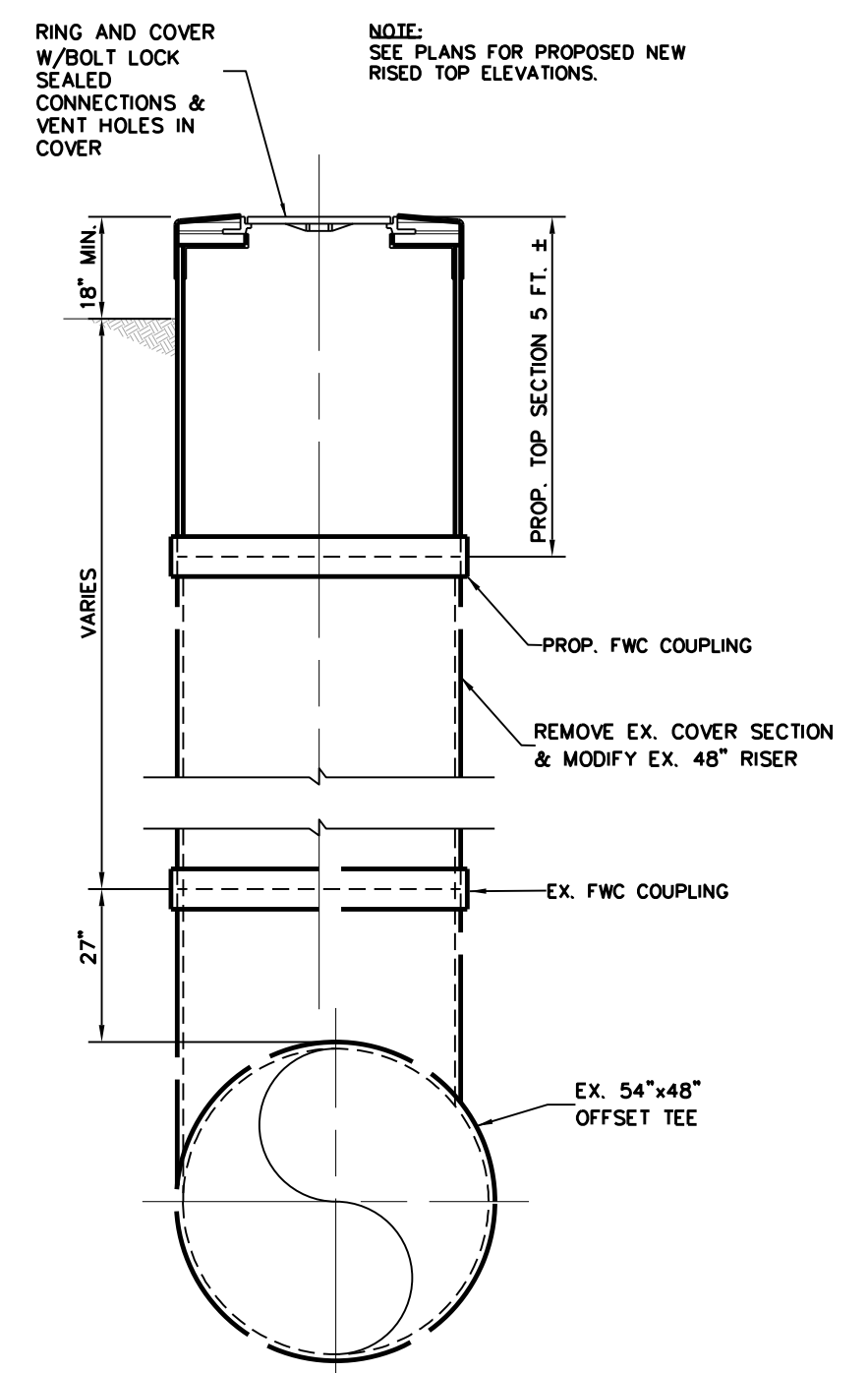
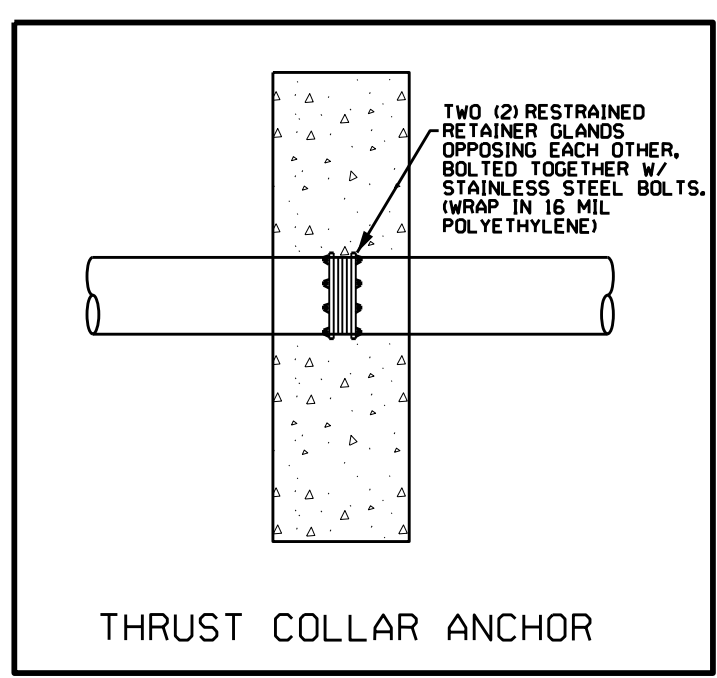


PRIOR 36" RCP OUTFALL
EX. MANHOLE PLUGGING & LOWERING
NOT TO SCALE

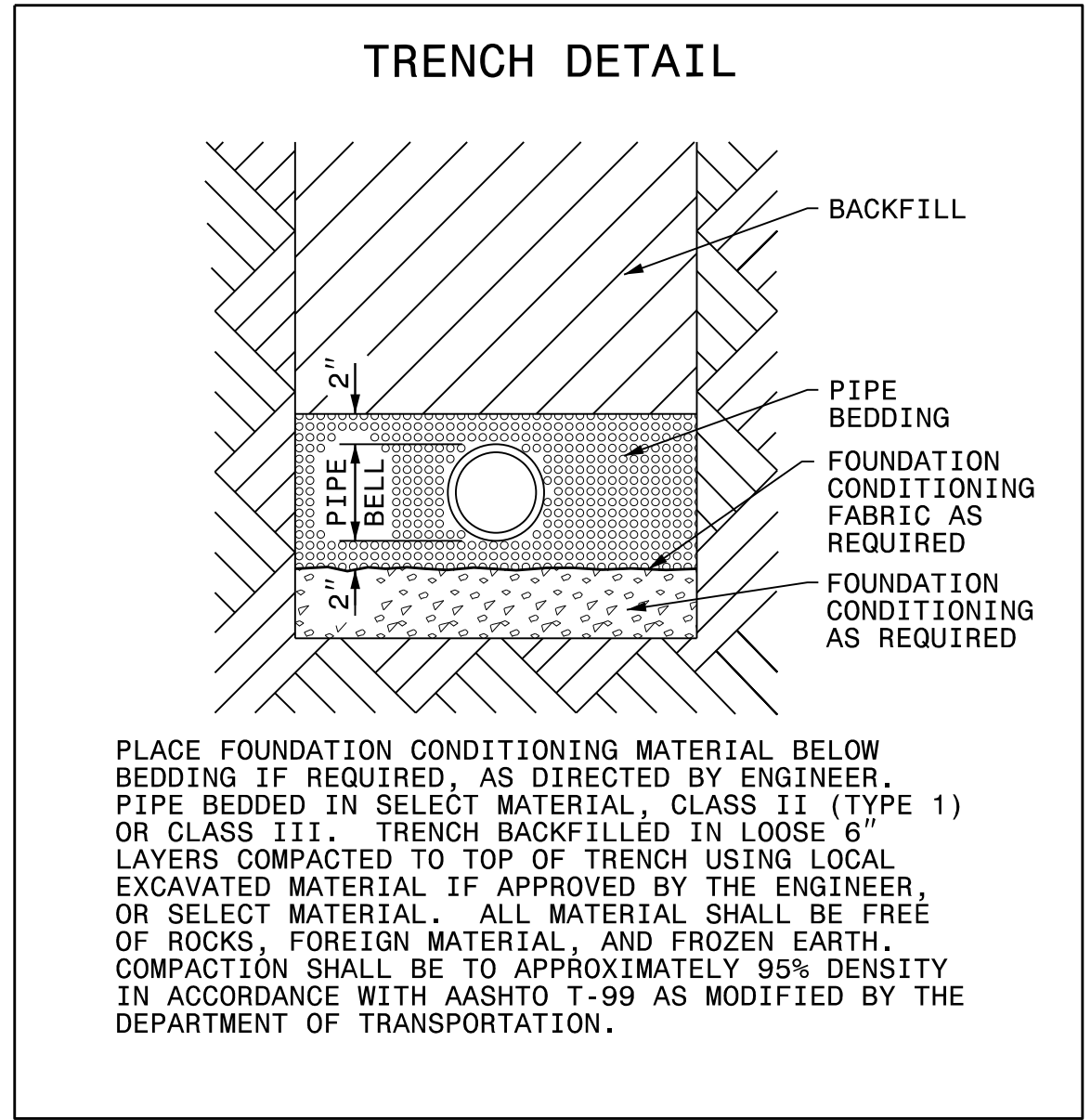


NOTES:
1. ENCLOSE ENDS WITH BRICK MASONRY.
2. PROVIDE 1" WEEP HOLE AT LOW END OF ENCASEMENT.

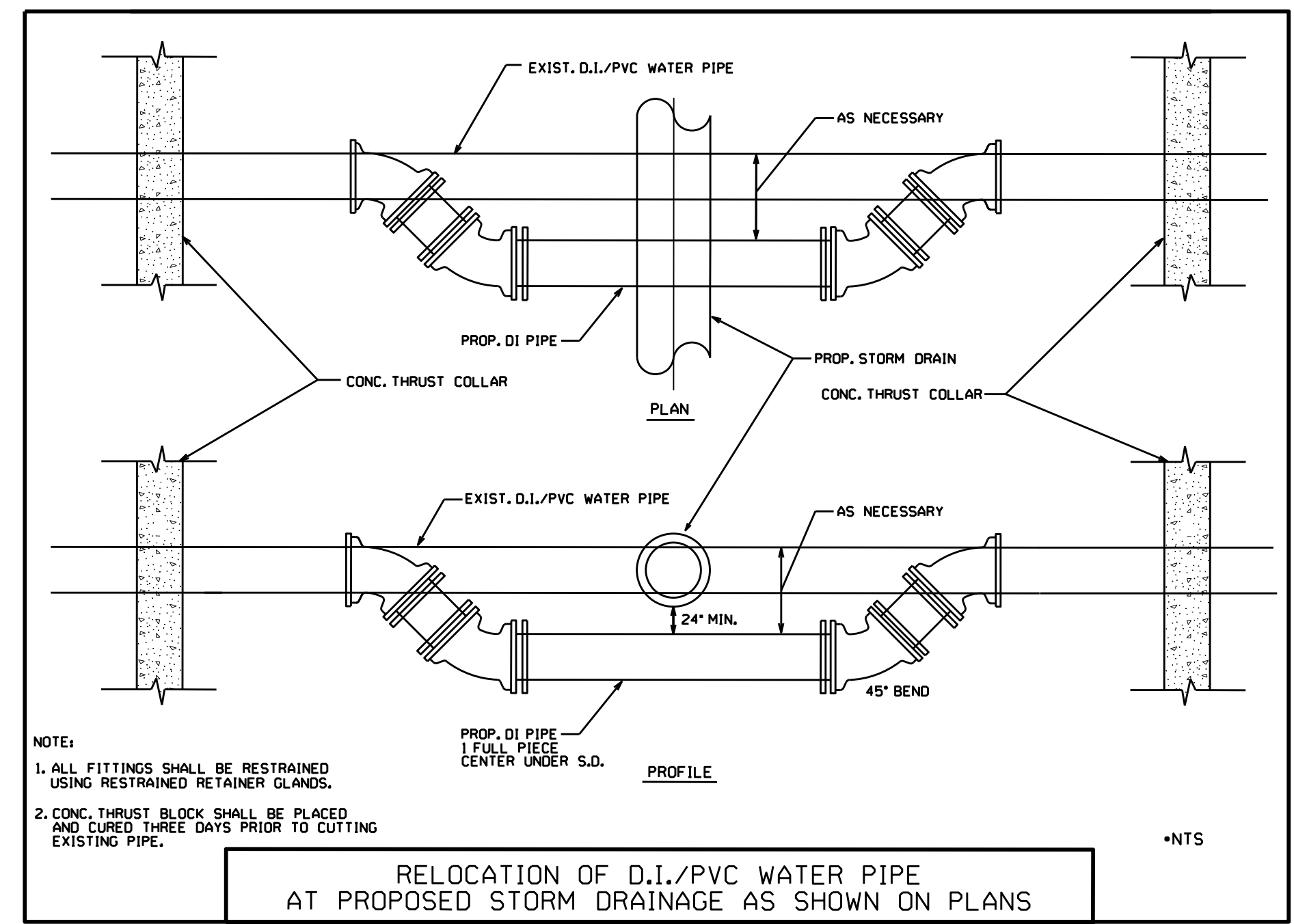
TYPICAL ENCASEMENT PIPE SECTION
N.T.S.



EX. FRP MANHOLE RISER MODIFICATION
1/2"=1'-0"



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		



NOTE:
1. ALL FITTINGS SHALL BE RESTRAINED USING RESTRAINED RETAINER GLANDS.
2. CONC. THRUST BLOCK SHALL BE PLACED AND CURED THREE DAYS PRIOR TO CUTTING EXISTING PIPE.

RELOCATION OF D.I./PVC WATER PIPE AT PROPOSED STORM DRAINAGE AS SHOWN ON PLANS

5/14/99

PROJECT TYPICAL DETAILS

PROJECT REFERENCE NO.	SHEET NO.
U-2412A	UC-3B
DESIGNED BY: DMP	
DRAWN BY: DMP	
CHECKED BY: DMP	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SECTION PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

UTILITY CONSTRUCTION

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NOTE: THIS CHP STANDARD DETAIL HAS BEEN MODIFIED BY DAVIS-MARTIN-POWELL FOR NCDOT PROJECT U-2412A.

SECTION

HALF PLAN VIEWS

NOTES:

- THE BASE SHALL BE CENTERED OVER THE VALVE. TWO (2) BRICKS ARE TO BE PLACED AS SHOWN UNDER THE BASE AT 180°.
- VALVE BOX SHALL CONFORM TO ASTM A48, CLASS 30B.
- EXTENSIONS:
 - VALVE BOX EXTENSIONS SHALL BE 5" DIAMETER SOIL PIPE.
 - WHEN OPERATING NUT DEPTH EXCEEDS 5'-0" BELOW FINISHED GRADE, PROVIDE EXTENSION STEM WITH 2" SQUARE OPERATING NUT. THE EXTENSION STEM SHALL BE PART OF A MANUFACTURER APPROVED EXTENSION KIT.
 - APPROVED MANUFACTURERS/MODELS INCLUDE: (DELETED FOR NCDOT PROJECT)

CITY OF HIGH POINT NORTH CAROLINA ENGINEERING SERVICES DEPARTMENT	ISSUED 5-3-07 REVISIONS	MLVBOX.DWG
APPROVED: MAY 3, 2007		237.00
DIRECTOR		SHEET 1 OF 1

NOTE: THIS CHP STANDARD DETAIL HAS BEEN MODIFIED BY DAVIS-MARTIN-POWELL FOR NCDOT PROJECT U-2412A.

ENLARGED VIEW OF JOINTS

SECTION

NOTES:

- ALL PRECAST SEWER MANHOLE SECTIONS SHALL MEET THE REQUIREMENTS OF ASTM C-478 AND AASHTO M199. THE PRECAST CONCRETE COMPRESSIVE STRENGTH SHALL BE A MINIMUM OF 4000 PSI.
- ALL MANHOLE STEPS SHALL CONFORM TO CITY STD. NO. 303, OR AN APPROVED EQUAL. STEPS SHALL BE INSTALLED IN LINE WITH THE EFFLUENT OPENING UNLESS OTHERWISE SPECIFIED.
- THE MANHOLE JOINTS SHALL BE SEALED BY A PROFILE GASKET, O-RING GASKET, OR BUTYL RUBBER SEALANT. THE PROFILE GASKET OR THE O-RING GASKET SHALL MEET ASTM C-361. THE BUTYL RUBBER SEALANT SHALL BE 1" SQUARE AND SHALL CONFORM TO ASTM C-990 AND AASHTO M-198.
- THE LIFT INSERT AND HOLES SHALL BE ACCORDING TO CITY STD. NO. 305. ALL LIFT HOLES SHALL BE COMPLETELY FILLED WITH NON-SHRINK GROUT AFTER MH INSTALLATION.
- ALL PIPE ENTRANCES SHALL CONFORM TO CITY STD. NO. 306. MANHOLE FLEXIBLE PIPE CONNECTORS, IF NEW CONSTRUCTION INVOLVES AN EXISTING PRECAST MANHOLE AND/OR A NEW LINE ENTRANCE, THE HOLE MUST BE CORED AND A WATERTIGHT PIPE CONNECTOR INSTALLED.
- THE MAXIMUM NUMBER OF SEWER SERVICES ALLOWED IN A MANHOLE SHALL BE THREE (3).
- A REINFORCED CONCRETE FOOTING IS REQUIRED WHEN THE MANHOLE IS OVER 12' OR ON A POOR SOIL BASE. THE REINFORCED CONCRETE FOOTING MAY BE POURED OR PRECAST ACCORDING TO CURRENT NCDOT STD. NO. 1525-01 SHEET 2 OF 2. THE CONTRACTOR HAS THE OPTION OF PROVIDING AN EXPANDED MANHOLE BASE SECTION AND SETTING THE BASE SECTION ON 12" MIN. #57 STONE WITH NO EXTRA COST TO THE CITY.
- ALL JOINTS ON OUTSIDE OF MANHOLE AND OUTSIDE JOINT AT TOP OF CONE SHALL BE WRAPPED WITH 6" MIN. WIDTH BUTYL ADHESIVE TAPE.

CITY OF HIGH POINT NORTH CAROLINA ENGINEERING SERVICES DEPARTMENT	ISSUED 5-3-07 REVISIONS	MH_4RDIA.DWG
APPROVED: MAY 3, 2007		300.00
DIRECTOR		SHEET 1 OF 1

NOTE: THIS CHP STANDARD DETAIL HAS BEEN MODIFIED BY DAVIS-MARTIN-POWELL FOR NCDOT PROJECT U-2412A.

ENLARGED VIEW OF JOINTS

SECTION

NOTES:

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- THE LIFT INSERT AND HOLES SHALL BE ACCORDING TO CITY STD. NO. 305. ALL LIFT HOLES SHALL BE COMPLETELY FILLED WITH NON-SHRINK GROUT AFTER MH INSTALLATION.
- ALL PIPE ENTRANCES SHALL CONFORM TO CITY STD. NO. 306. MANHOLE FLEXIBLE PIPE CONNECTORS, IF NEW CONSTRUCTION INVOLVES AN EXISTING PRECAST MANHOLE AND/OR A NEW LINE ENTRANCE, THE HOLE MUST BE CORED AND A WATERTIGHT PIPE CONNECTOR INSTALLED.
- THE MAXIMUM NUMBER OF SEWER SERVICES ALLOWED IN A MANHOLE SHALL BE THREE (3).
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- ALL JOINTS ON OUTSIDE OF MANHOLE AND OUTSIDE JOINT AT TOP OF CONE SHALL BE WRAPPED WITH 6" MIN. WIDTH BUTYL ADHESIVE TAPE.

CITY OF HIGH POINT NORTH CAROLINA ENGINEERING SERVICES DEPARTMENT	ISSUED 5-3-07 REVISIONS	MH_5RDIA.DWG
APPROVED: MAY 3, 2007		301.00
DIRECTOR		SHEET 1 OF 1

NOTE: THIS CHP STANDARD DETAIL HAS BEEN MODIFIED BY DAVIS-MARTIN-POWELL FOR NCDOT PROJECT U-2412A.

STEP TOP VIEW DETAIL

STEP SIDE VIEW DETAIL

STEP END VIEW DETAIL

SECTION A-A

STEP INSTALLATION DETAIL

NOTES:

- STEP DESIGN, INSTALLATION, AND MATERIAL SHALL MEET THE REQUIREMENTS OF ASTM C478 AND NCDOT SECTION 1074-8.
- PLASTIC MATERIAL CONSISTS OF SUPER HIGH IMPACT RESISTANT COPOLYMER POLYPROPYLENE AND SHALL CONFORM TO SPECIFIC REQUIREMENTS DETAILED IN ASTM D4010.
- REINFORCING STEEL SHALL BE 1/2" REBAR, GRADE 60 AND MEET THE REQUIREMENTS OF ASTM A615.
- STEP WIDTH AND SPACING SHALL BE CONSISTENT WITH THE LATEST REQUIREMENTS OF OSHA.
- THE UPPER SURFACE OF EACH STEP SHALL HAVE A TRACTION TREAD AND GUIDE LUGS ON EACH EDGE TO PREVENT THE FOOT FROM SLIPPING OFF.
- (DELETED FOR NCDOT PROJECT)

CITY OF HIGH POINT NORTH CAROLINA ENGINEERING SERVICES DEPARTMENT	ISSUED 5-3-07 REVISIONS	MH_STEP.DWG
APPROVED: MAY 3, 2007		303.00
DIRECTOR		SHEET 1 OF 1

NOTE: THIS CHP STANDARD DETAIL HAS BEEN MODIFIED BY DAVIS-MARTIN-POWELL FOR NCDOT PROJECT U-2412A.

TOP VIEW

SECTION A-A

NOTES:

- OUTFALL SEWER MANHOLES INVERT SHALL BE A MINIMUM OF 75% OF THE PIPE DIAMETER AND A MAXIMUM OF 100% OF THE PIPE DIAMETER.
- THE TYPICAL SLOPE OF THE BENCH SHALL BE 1" PER FOOT MINIMUM TO 2" PER FOOT MAXIMUM.
- THE MATERIAL USED FOR THE BENCH SHALL BE 3000 PSI CONCRETE OR BRICK AND MORTAR MIX. PRECAST INVERTS ARE ENCOURAGED.
- THE MAXIMUM NUMBER OF SEWER SERVICES ALLOWED IN A MANHOLE SHALL BE THREE (3).
- THE INVERT FOR A SERVICE MUST BE A MINIMUM OF 1/2" ABOVE THE BENCH AREA.
- A DROP MANHOLE IS REQUIRED WHEN THE DISTANCE BETWEEN THE MANHOLE INVERT AND PIPE INVERT EXCEEDS 2.5 FEET.
- BOOTS SHALL BE REQUIRED FOR ALL SEWER SERVICES AND MAINS ENTERING THE MANHOLE. MOOR-BASE INVERTS ARE NOT ALLOWED.

CITY OF HIGH POINT NORTH CAROLINA ENGINEERING SERVICES DEPARTMENT	ISSUED 5-3-07 REVISIONS	MH_INV.DWG
APPROVED: MAY 3, 2007		304.00
DIRECTOR		SHEET 1 OF 1

NOTE: THIS CHP STANDARD DETAIL HAS BEEN MODIFIED BY DAVIS-MARTIN-POWELL FOR NCDOT PROJECT U-2412A.

LIFT ASSEMBLY

LIFT EYE

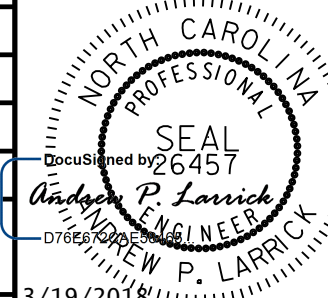
NOTES:

- ALL STANDARD SEWER MANHOLE SECTIONS SHALL MEET OR EXCEED THE REQUIREMENTS OF ASTM C478.
- ALL LIFT ASSEMBLY CASTINGS SHALL BE MADE OF CAST OR FORGED STEEL AND RATED TO LIFT THE SECTION.
- THE INSERT SHALL BE MADE OF BONDED IMPACT STYRENE ABS PLASTIC OR APPROVED ALTERNATIVE.
- THE LIFT BAR AND ALL ACCOMPANYING EQUIPMENT SHALL MEET OR EXCEED ALL ASTM AND OSHA REQUIREMENTS FOR SAFETY AND PERFORMANCE.
- LIFT INSERTS AND HOLES SHALL BE SIZED FOR A PRECISION FIT WITH THE LIFT DEVICES, AND SHALL COMPLY WITH OSHA 1926.704, AND SHALL NOT PENETRATE THROUGH THE MANHOLE WALL.
- LIFT INSERTS AND HOLES SHALL BE SEALED WITH NON-SHRINK GROUT PRIOR TO BACKFILLING.
- (DELETED FOR NCDOT PROJECT)

CITY OF HIGH POINT NORTH CAROLINA ENGINEERING SERVICES DEPARTMENT	ISSUED 5-3-07 REVISIONS	MH_LIFT.DWG
APPROVED: MAY 3, 2007		305.00
DIRECTOR		SHEET 1 OF 1

5/14/09

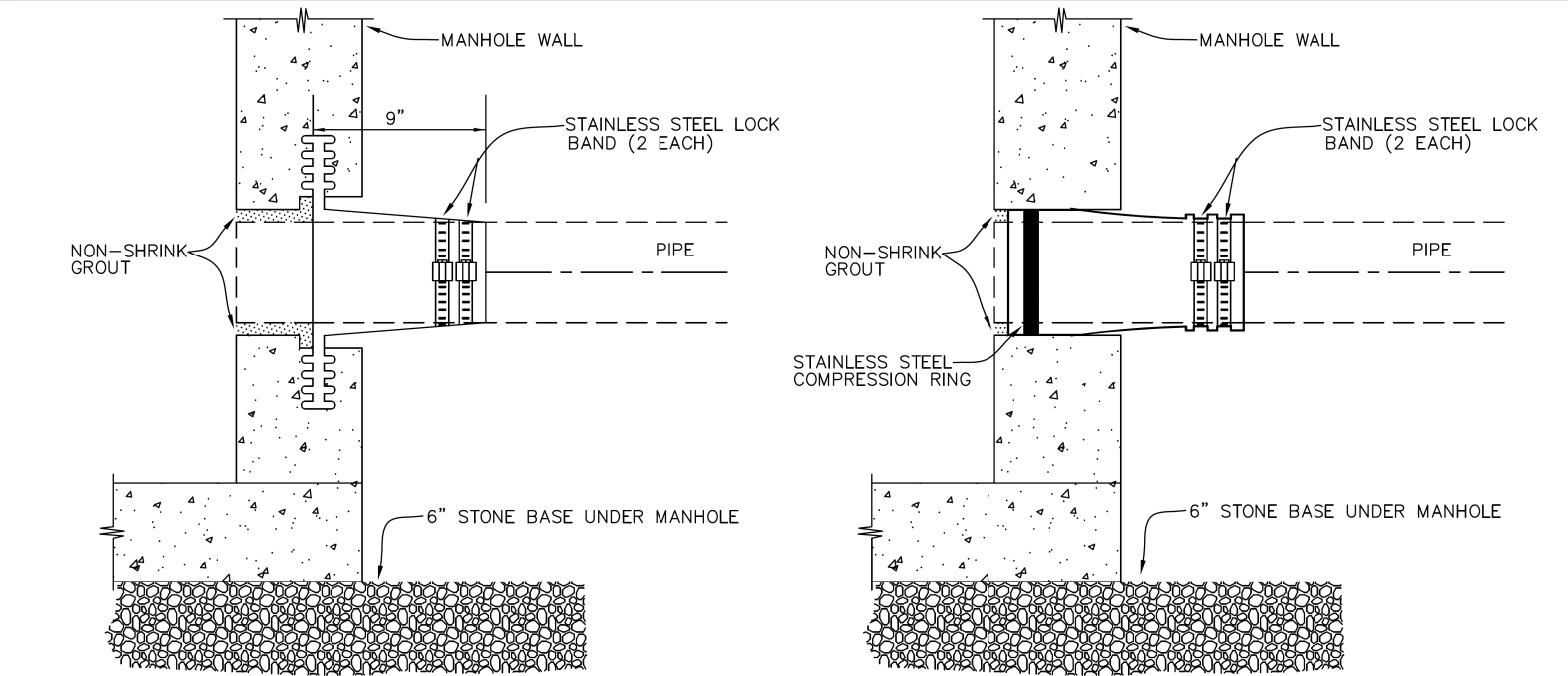
PROJECT TYPICAL DETAILS

PROJECT REFERENCE NO.	SHEET NO.
U-2412A	UC-3C
DESIGNED BY: DMP	
DRAWN BY: DMP	
CHECKED BY: DMP	
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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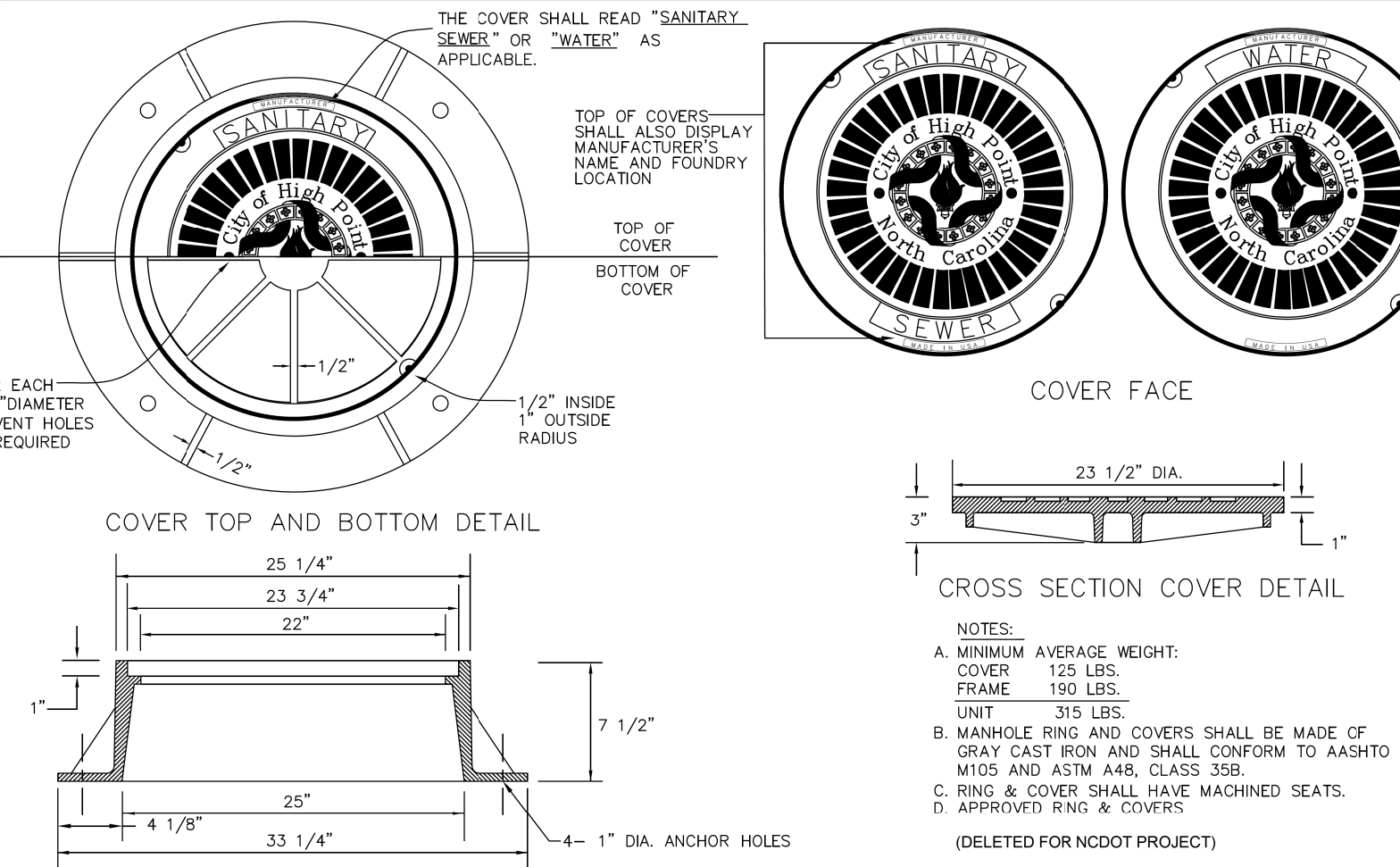


NOTES:

- ALL PIPE ENTRANCES SHALL BE FACTORY FORMED AND A FLEXIBLE WATERTIGHT CONNECTOR SHALL BE USED FOR AN EXISTING PRECAST MANHOLE OR A NEW LINE ENTRANCE. ALL HOLES MUST BE CURED AND A WATERTIGHT PIPE CONNECTOR INSTALLED.
- IF THE CONTRACTOR CUTS OR BREAKS INTO THE MANHOLE AND THE MANHOLE IS DAMAGED, THE CONTRACTOR SHALL REPLACE THE MANHOLE AT NO COST TO THE CITY.
- FLEXIBLE WATERTIGHT CONNECTOR SLEEVES SHALL MEET THE REQUIREMENTS OF ASTM C-923 (DELETED FOR NCDOT PROJECT)
- FLEXIBLE WATERTIGHT CONNECTOR SHALL BE CORRECTLY SIZED TO ACCOMMODATE THE PIPE O.D. (DELETED FOR NCDOT PROJECT)

CITY OF HIGH POINT NORTH CAROLINA ENGINEERING SERVICES DEPARTMENT APPROVED: MAY 3, 2007 DIRECTOR	ISSUED 5-3-07 REVISIONS	STANDARD DRAWING FOR FLEXIBLE WATERTIGHT CONNECTOR FOR FOR SANITARY SEWER MANHOLES	MH_BOOT.DWG 306.00 SHEET 1 OF 1
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NOTE: THIS CHP STANDARD DETAIL HAS BEEN MODIFIED BY DAVIS-MARTIN-POWELL FOR NCDOT PROJECT U-2412A.

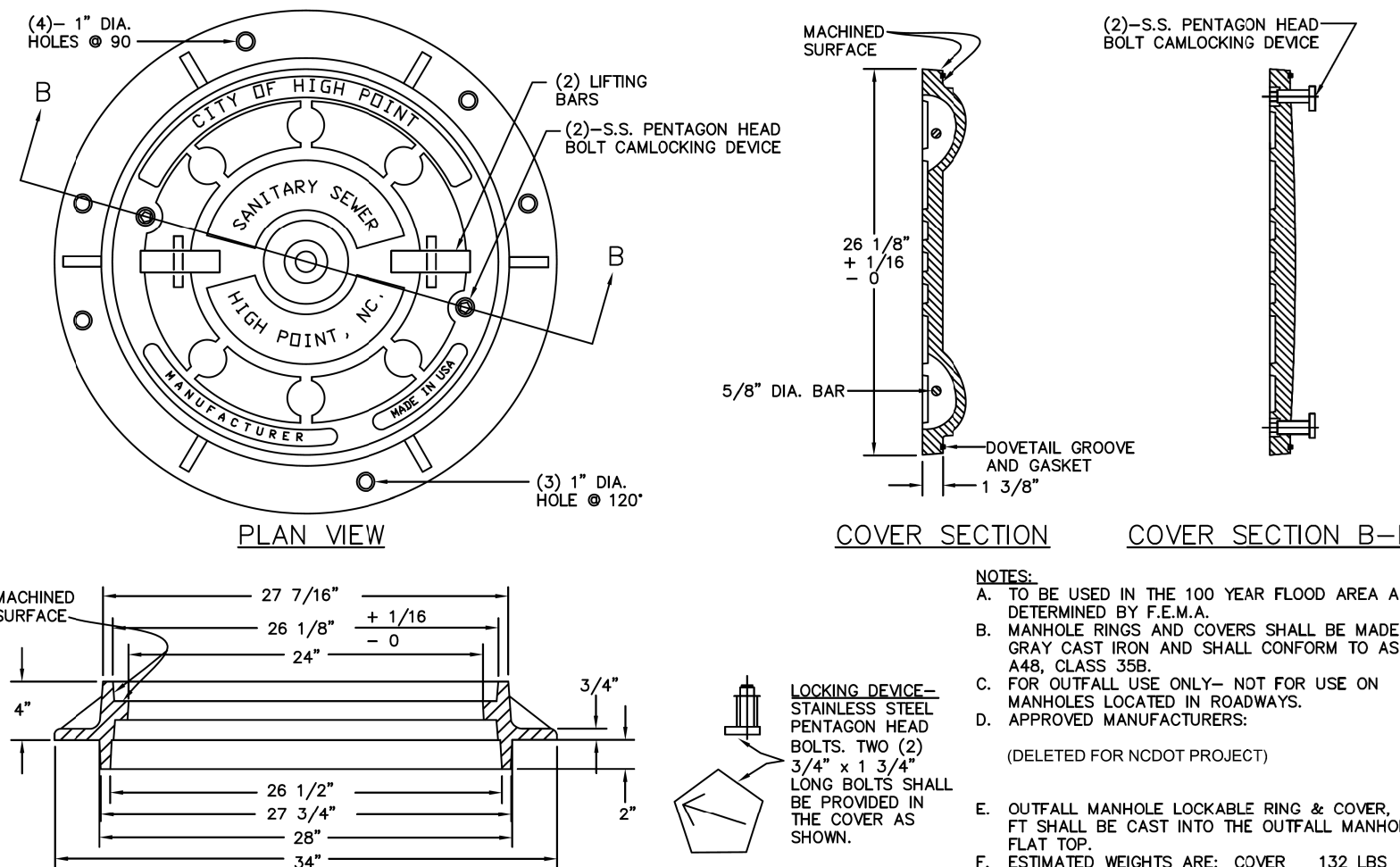


NOTES:

- MINIMUM AVERAGE WEIGHT:
COVER 125 LBS.
RING 315 LBS.
- MANHOLE RING AND COVERS SHALL BE MADE OF GRAY CAST IRON AND SHALL CONFORM TO AASHTO M105 AND ASTM A48, CLASS 35B.
- RING & COVER SHALL HAVE MACHINED SEATS.
- APPROVED RING & COVERS (DELETED FOR NCDOT PROJECT)

CITY OF HIGH POINT NORTH CAROLINA ENGINEERING SERVICES DEPARTMENT APPROVED: MAY 3, 2007 CITY ENGINEER	ISSUED 5-3-07 REVISIONS	STANDARD DRAWING FOR UTILITY MANHOLE RING AND COVER FOR ROADWAY APPLICATIONS	RC_SEAL.DWG 307.00 SHEET 1 OF 1
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NOTE: THIS CHP STANDARD DETAIL HAS BEEN MODIFIED BY DAVIS-MARTIN-POWELL FOR NCDOT PROJECT U-2412A.

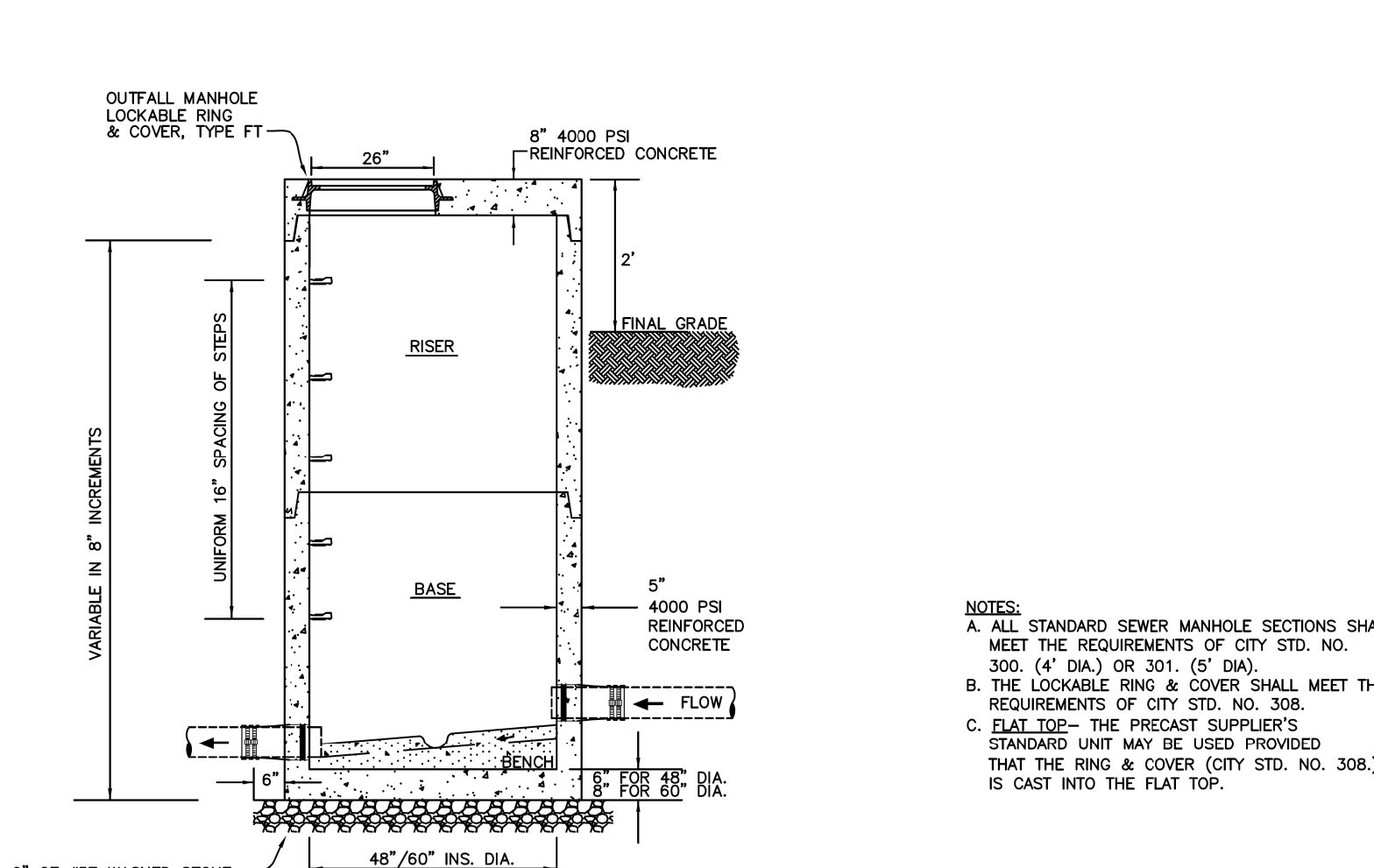


NOTES:

- TO BE USED IN THE 100 YEAR FLOOD AREA AS DETERMINED BY F.E.M.A.
- MANHOLE RINGS AND COVERS SHALL BE MADE OF GRAY CAST IRON AND SHALL CONFORM TO ASTM A48, CLASS 35B.
- FOR OUTFALL USE ONLY - NOT FOR USE ON MANHOLES LOCATED IN ROADWAYS.
- APPROVED MANUFACTURERS: (DELETED FOR NCDOT PROJECT)
- OUTFALL MANHOLE LOCKABLE RING & COVER TYPE FT SHALL BE CAST INTO THE OUTFALL MANHOLE FLAT TOP.
- ESTIMATED WEIGHTS ARE: COVER 132 LBS, FRAME 155 LBS, UNIT 327 LBS.

CITY OF HIGH POINT NORTH CAROLINA ENGINEERING SERVICES DEPARTMENT APPROVED: JULY 3, 2007 DIRECTOR	ISSUED 7-3-07 REVISIONS	STANDARD DRAWING FOR OUTFALL MANHOLE LOCKABLE RING AND COVER, TYPE FT FOR USE IN WATERTIGHT OUTFALL MANHOLES	RC_OF_FT.DWG 308.00 SHEET 1 OF 1
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NOTE: THIS STANDARD DETAIL DERIVED FROM CITY OF WINSTON-SALEM STD. NO. VII-11

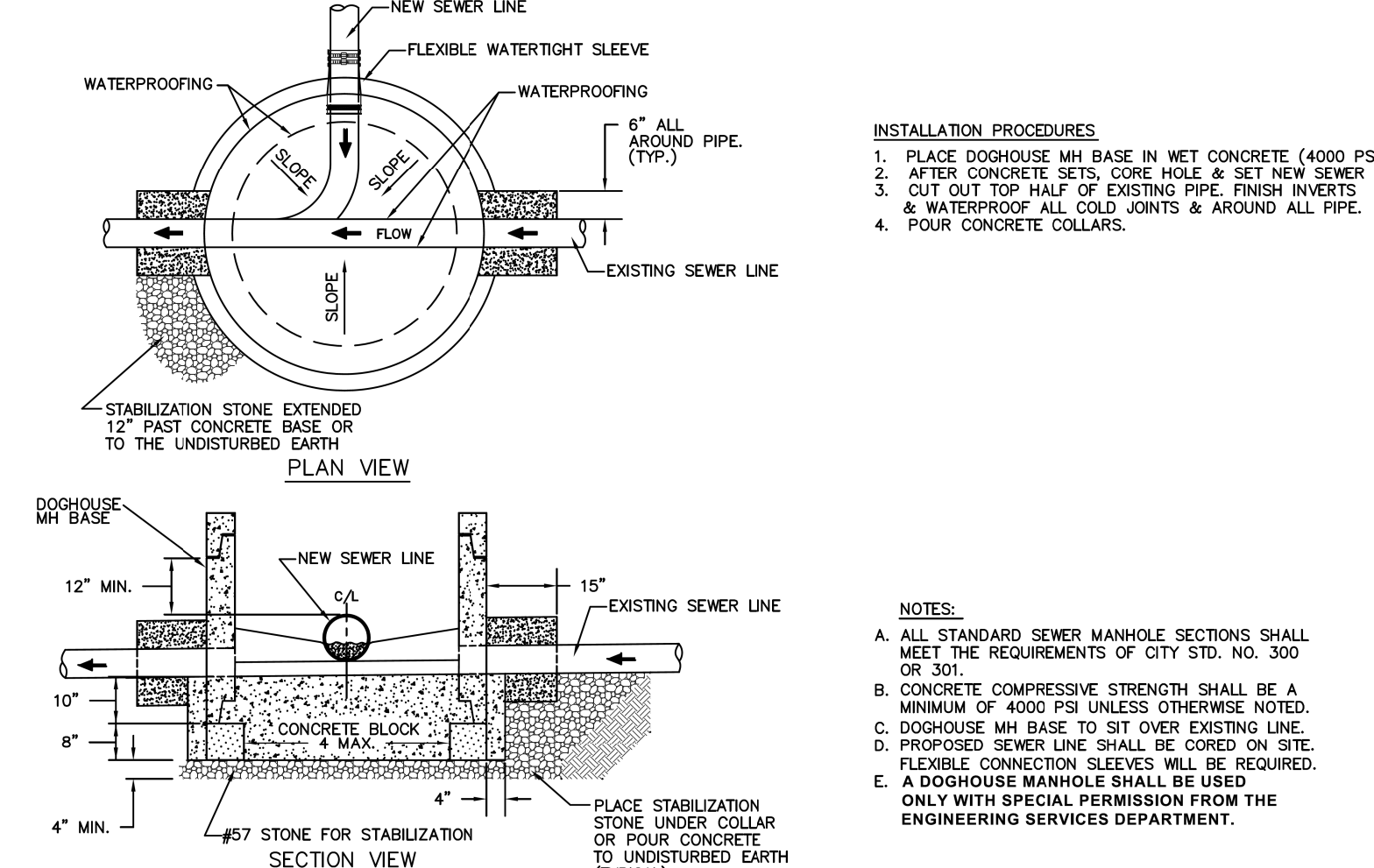


NOTES:

- ALL STANDARD SEWER MANHOLE SECTIONS SHALL MEET THE REQUIREMENTS OF CITY STD. NO. 300. (4" DIA.) OR 301. (5" DIA.)
- THE LOCKABLE RING & COVER SHALL MEET THE REQUIREMENTS OF CITY STD. NO. 308.
- FLAT TOP - THE PRECAST SUPPLIER'S STANDARD UNIT MAY BE USED PROVIDED THAT THE RING & COVER (CITY STD. NO. 308.) IS CAST INTO THE FLAT TOP.

CITY OF HIGH POINT NORTH CAROLINA ENGINEERING SERVICES DEPARTMENT APPROVED: MAY 3, 2007 DIRECTOR	ISSUED 7-3-07 REVISIONS	STANDARD DRAWING FOR NON-VENTED OUTFALL MANHOLE FOR 4" OR 5" SANITARY SEWER MANHOLES	MH_OF_1.DWG 311.00 SHEET 1 OF 2
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NOTE: THIS STANDARD DETAIL DERIVED FROM CITY OF WINSTON-SALEM STD. NO. VII-11

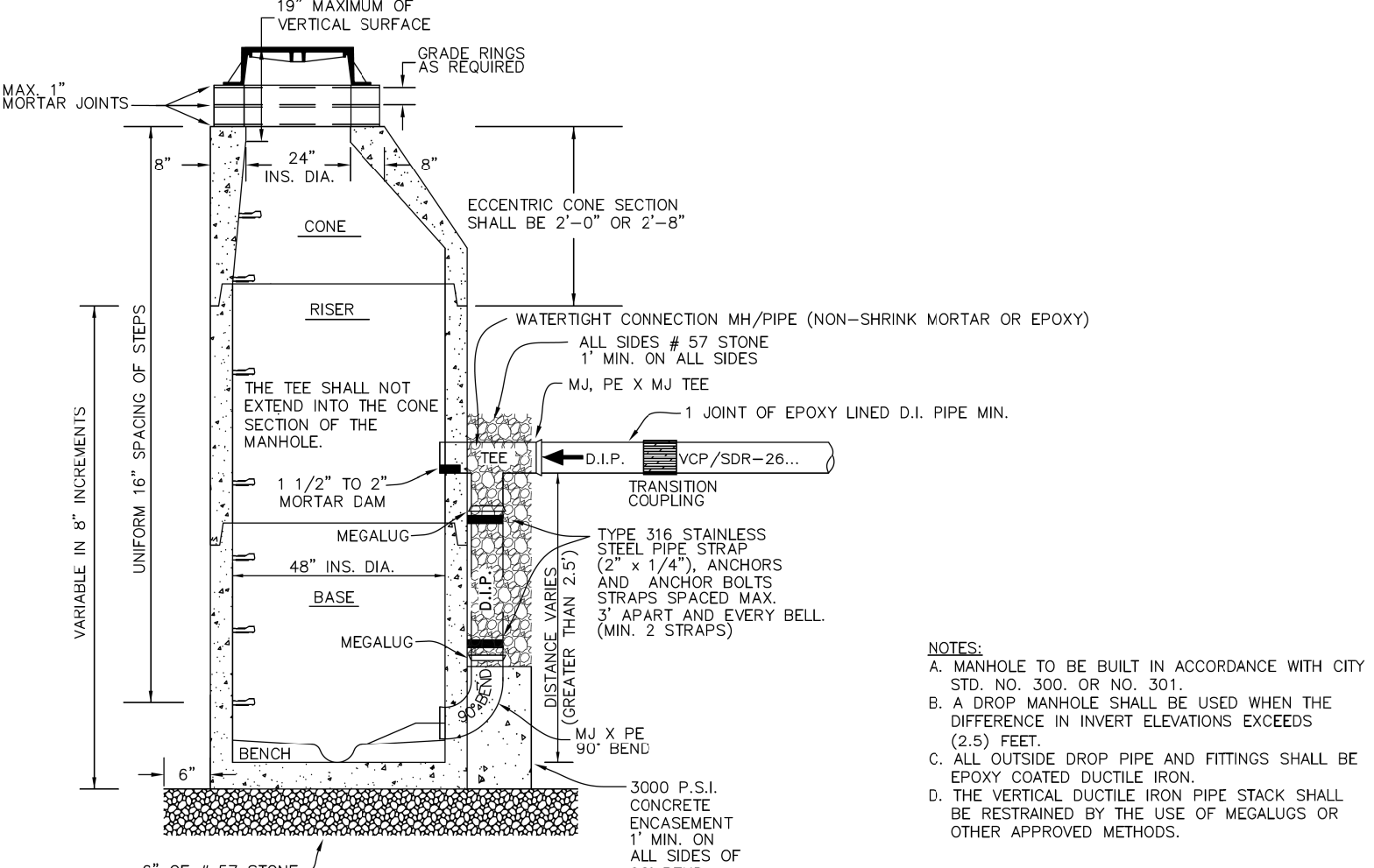


NOTES:

- ALL STANDARD SEWER MANHOLE SECTIONS SHALL MEET THE REQUIREMENTS OF CITY STD. NO. 300 OR 301.
- CONCRETE COMPRESSIVE STRENGTH SHALL BE A MINIMUM OF 4000 PSI UNLESS OTHERWISE NOTED.
- DOGHOUSE MH BASE TO SIT OVER EXISTING LINE.
- PROPOSED SEWER LINE SHALL BE CURED ON SITE. FLEXIBLE CONNECTION SLEEVES WILL BE REQUIRED.
- A DOGHOUSE MANHOLE SHALL BE USED ONLY WITH SPECIAL PERMISSION FROM THE ENGINEERING SERVICES DEPARTMENT.

CITY OF HIGH POINT NORTH CAROLINA ENGINEERING SERVICES DEPARTMENT APPROVED: MAY 3, 2007 DIRECTOR	ISSUED 5-3-07 REVISIONS	STANDARD DRAWING FOR "DOGHOUSE" MANHOLE FOR PROPOSED MANHOLES BUILT OVER EXISTING LINES	MH_HORSE.DWG 312.00 SHEET 1 OF 1
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NOTE: THIS STANDARD DETAIL DERIVED FROM CITY OF WINSTON-SALEM STD. NO. VII-11



NOTES:

- MANHOLE TO BE BUILT IN ACCORDANCE WITH CITY STD. NO. 300, OR NO. 301.
- A DROP MANHOLE SHALL BE USED WHEN THE DIFFERENCE IN INVERT ELEVATIONS EXCEEDS (2.5) FEET.
- ALL OUTSIDE DROP PIPE AND FITTINGS SHALL BE EPOXY COATED DUCTILE IRON.
- THE VERTICAL DUCTILE IRON PIPE STACK SHALL BE RESTRAINED BY THE USE OF MEGALUGS OR OTHER APPROVED METHODS.

CITY OF HIGH POINT NORTH CAROLINA ENGINEERING SERVICES DEPARTMENT APPROVED: MAY 3, 2007 DIRECTOR	ISSUED 5-3-07 REVISIONS	STANDARD DRAWING FOR OUTSIDE DROP MANHOLE FOR SANITARY SEWER	MH_OUT_DR.DWG 314.00 SHEET 1 OF 1
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5/14/09

PROJECT TYPICAL DETAILS

PROJECT REFERENCE NO.	SHEET NO.
U-2412A	UC-3D
DESIGNED BY: DMP	
DRAWN BY: DMP	
CHECKED BY: DMP	
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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTE: THIS TOJ STANDARD DETAIL HAS BEEN MODIFIED BY DAVIS-MARTIN-POWELL FOR NCDOT PROJECT U-2412A.

NOTES:

- THE BASE SHALL BE CENTERED OVER THE VALVE. TWO (2) BRICKS ARE TO BE PLACED AS SHOWN UNDER THE BASE AT 180°.
- VALVE BOX SHALL CONFORM TO ASTM A48, CLASS 30B.
- EXTENSIONS:
 - VALVE BOX EXTENSIONS SHALL BE 5" DIAMETER SOIL PIPE.
 - WHEN OPERATING NUT DEPTH EXCEEDS 5'-0" BELOW FINISHED GRADE, PROVIDE EXTENSION STEM WITH 2" SQUARE OPERATING NUT. THE EXTENSION STEM SHALL BE PART OF A MANUFACTURER APPROVED EXTENSION KIT.
 - APPROVED MANUFACTURERS/MODELS INCLUDE: (DELETED FOR NCDOT PROJECT)

REVISIONS	STANDARD DRAWING FOR WATER VALVE BOX FOR ROADWAY AND UNPAVED AREAS	237.00
APPROVED: MAY 19, 2009		

NOTE: THIS TOJ STANDARD DETAIL HAS BEEN MODIFIED BY DAVIS-MARTIN-POWELL FOR NCDOT PROJECT U-2412A.

NOTES:

- ALL PRECAST SEWER MANHOLE SECTIONS SHALL MEET THE REQUIREMENTS OF ASTM C-478 AND AASHTO M199. THE PRECAST CONCRETE COMPRESSIVE STRENGTH SHALL BE A MINIMUM OF 4000 PSI.
- ALL MANHOLE STEPS SHALL CONFORM TO CITY STD. NO. 303, OR AN APPROVED EQUAL. STEPS SHALL BE INSTALLED IN LINE WITH THE EFFLUENT OPENING UNLESS OTHERWISE SPECIFIED.
- THE MANHOLE JOINTS SHALL BE SEALED BY A PROFILE GASKET, O-RING GASKET, OR BUTYL RUBBER SEALANT. THE PROFILE GASKET OR THE O-RING GASKET SHALL MEET ASTM C-361. THE BUTYL RUBBER SEALANT SHALL BE 1" SQUARE AND SHALL CONFORM TO ASTM C-990 AND AASHTO M-198.
- THE LIFT INSERT AND HOLES SHALL BE ACCORDING TO STANDARD 305. ALL LIFT HOLES SHALL BE COMPLETELY FILLED WITH NON-SHRINK GROUT AFTER MH INSTALLATION.
- THE MAXIMUM NUMBER OF SEWER SERVICES ALLOWED IN A MANHOLE SHALL BE THREE (3).
- A REINFORCED CONCRETE FOOTING IS REQUIRED WHEN THE MANHOLE IS OVER 12' OR ON A POOR SOIL BASE. THE REINFORCED CONCRETE FOOTING MAY BE POURED OR PRECAST ACCORDING TO CURRENT NCDOT STD. NO. 1523.01 SHEET 2 OF 2. THE CONTRACTOR HAS THE OPTION OF PROVIDING AN EXPANDED MANHOLE BASE SECTION AND SETTING THE BASE SECTION ON 12" MIN. #57 STONE WITH NO EXTRA COST TO THE CITY.
- ALL JOINTS ON OUTSIDE OF MANHOLE AND OUTSIDE JOINT AT TOP OF CONE SHALL BE WRAPPED WITH 6" MIN. WIDTH BUTYL ADHESIVE TAPE.

REVISIONS	STANDARD DRAWING FOR 4' DIAMETER SANITARY MANHOLE FOR SANITARY SEWER MAINS LESS THAN 21"	301.00
APPROVED: MAY 19, 2009		

NOTE: THIS TOJ STANDARD DETAIL HAS BEEN MODIFIED BY DAVIS-MARTIN-POWELL FOR NCDOT PROJECT U-2412A.

NOTES:

- ALL PRECAST SEWER MANHOLE SECTIONS SHALL MEET THE REQUIREMENTS OF ASTM C-478 AND AASHTO M199. THE PRECAST CONCRETE COMPRESSIVE STRENGTH SHALL BE A MINIMUM OF 4000 PSI.
- ALL MANHOLE STEPS SHALL CONFORM TO CITY STD. NO. 303, OR AN APPROVED EQUAL. STEPS SHALL BE INSTALLED IN LINE WITH THE EFFLUENT OPENING UNLESS OTHERWISE SPECIFIED.
- THE MANHOLE JOINTS SHALL BE SEALED BY A PROFILE GASKET, O-RING GASKET, OR BUTYL RUBBER SEALANT. THE PROFILE GASKET OR THE O-RING GASKET SHALL MEET ASTM C-361. THE BUTYL RUBBER SEALANT SHALL BE 1-1/4" SQUARE AND SHALL CONFORM TO ASTM C-990 AND AASHTO M-198.
- THE LIFT INSERT AND HOLES SHALL BE ACCORDING TO CITY STD. NO. 305. ALL LIFT HOLES SHALL BE COMPLETELY FILLED WITH NON-SHRINK GROUT AFTER MH INSTALLATION.
- THE MAXIMUM NUMBER OF SEWER SERVICES ALLOWED IN A MANHOLE SHALL BE THREE (3).
- A REINFORCED CONCRETE FOOTING IS REQUIRED WHEN THE MANHOLE IS OVER 12' OR ON A POOR SOIL BASE. THE REINFORCED CONCRETE FOOTING MAY BE POURED OR PRECAST ACCORDING TO CURRENT NCDOT STD. NO. 1523.01 SHEET 2 OF 2. THE CONTRACTOR HAS THE OPTION OF PROVIDING AN EXPANDED MANHOLE BASE SECTION AND SETTING THE BASE SECTION ON 12" MIN. #57 STONE WITH NO EXTRA COST TO THE CITY.
- ALL JOINTS ON OUTSIDE OF MANHOLE AND OUTSIDE JOINT AT TOP OF CONE SHALL BE WRAPPED WITH 6" MIN. WIDTH BUTYL ADHESIVE TAPE.

REVISIONS	STANDARD DRAWING FOR 5' DIAMETER SANITARY MANHOLE FOR SEWER MAINS GREATER THAN OR EQUAL TO 21"	302.00
APPROVED: MAY 19, 2009		

NOTE: THIS TOJ STANDARD DETAIL HAS BEEN MODIFIED BY DAVIS-MARTIN-POWELL FOR NCDOT PROJECT U-2412A.

NOTES:

- STEP DESIGN, INSTALLATION, AND MATERIAL SHALL MEET THE REQUIREMENTS OF ASTM C478 AND NCDOT SECTION 1074-B.
- STEP MATERIAL CONSISTS OF SUPER HIGH IMPACT RESISTANT COPOLYMER POLYPROPYLENE AND SHALL CONFORM TO SPECIFIC REQUIREMENTS DETAILED IN ASTM D4010.
- REINFORCING STEEL SHALL BE 1/2" REBAR, GRADE 60 AND MEET THE REQUIREMENTS OF ASTM A615.
- STEP WIDTH AND SPACING SHALL BE CONSISTENT WITH THE LATEST REQUIREMENTS OF OSHA.
- THE UPPER SURFACE OF EACH STEP SHALL HAVE A TRACTION TREAD AND GUIDE LOSS ON EACH EDGE TO PREVENT THE FOOT FROM SLIPPING OFF.
- (DELETED FOR NCDOT PROJECT)

REVISIONS	STANDARD DRAWING FOR MANHOLE STEPS FOR UTILITY AND STORM SEWER STRUCTURES	303.00
APPROVED: MAY 19, 2009		

NOTE: THIS TOJ STANDARD DETAIL HAS BEEN MODIFIED BY DAVIS-MARTIN-POWELL FOR NCDOT PROJECT U-2412A.

NOTES:

- QUITRALL SEWER MANHOLES: THE DEPTH OF THE INVERT SHALL BE A MINIMUM OF 75% OF THE PIPE DIAMETER AND A MAXIMUM OF 100% OF THE PIPE DIAMETER.
- THE TYPICAL SLOPE OF THE BENCH SHALL BE 2" PER FOOT.
- THE MATERIAL USED FOR THE BENCH SHALL BE 3000 PSI CONCRETE OR BRICK AND MORTAR MIX. PRECAST INVERTS ARE ENCOURAGED.
- THE MAXIMUM NUMBER OF SEWER SERVICES ALLOWED IN A MANHOLE SHALL BE THREE (3).
- THE INVERT FOR A SERVICE MUST BE A MINIMUM OF (1/2") ABOVE THE BENCH AREA.
- A GRIP MANHOLE IS REQUIRED WHEN THE DISTANCE BETWEEN THE MANHOLE INVERT AND PIPE INVERT EXCEEDS 2.5 FEET.
- ROOTS SHALL BE REMOVED FOR ALL SEWER SERVICES AND MAINS ENTERING THE MANHOLE.
- MOOR-BASE INVERTS ARE NOT ALLOWED.

REVISIONS	STANDARD DRAWING FOR TYPICAL SANITARY MANHOLE INVERT FOR SANITARY SEWER MANHOLES	304.00
APPROVED: MAY 19, 2009		

NOTE: THIS TOJ STANDARD DETAIL HAS BEEN MODIFIED BY DAVIS-MARTIN-POWELL FOR NCDOT PROJECT U-2412A.

NOTES:

- ALL STANDARD SEWER MANHOLE SECTIONS SHALL MEET OR EXCEED THE REQUIREMENTS OF ASTM C478.
- ALL LIFT ASSEMBLY CASTINGS SHALL BE MADE OF CAST OR FORGED STEEL AND RATED TO LIFT THE SECTION.
- THE INSERT SHALL BE MADE OF BONDED IMPACT STYRENE, ABS PLASTIC, OR APPROVED ALTERNATIVE.
- THE LIFT BAR AND ALL ACCOMPANYING EQUIPMENT SHALL MEET OR EXCEED ALL ASTM AND OSHA REQUIREMENTS FOR SAFETY AND PERFORMANCE.
- LIFT INSERTS AND HOLES SHALL BE SIZED FOR A PRECISION FIT WITH THE LIFT DEVICES, AND SHALL COMPLY WITH OSHA 1926.704 AND SHALL NOT PENETRATE THROUGH THE MANHOLE WALL.
- LIFT INSERTS AND HOLES SHALL BE SEALED WITH NON-SHRINK GROUT PRIOR TO BACKFILLING.
- (DELETED FOR NCDOT PROJECT)

REVISIONS	STANDARD DRAWING FOR MANHOLE LIFT SECTION FOR PRECAST CONCRETE MANHOLES	305.00
APPROVED: MAY 19, 2009		

5/14/09

PROJECT TYPICAL DETAILS

PROJECT REFERENCE NO.	SHEET NO.
U-2412A	UC-3E
DESIGNED BY: DMP	
DRAWN BY: DMP	
CHECKED BY: DMP	
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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTE: THIS TOJ STANDARD DETAIL HAS BEEN MODIFIED BY DAVIS-MARTIN-POWELL FOR NCDOT PROJECT U-2412A.

COVER AND RING TOP DETAIL

CROSS SECTION COVER DETAIL

CROSS SECTION RING DETAIL

NOTES:
 A. MINIMUM AVERAGE WEIGHT: COVER 125 LBS. FRAME 190 LBS. UNIT 315 LBS.
 B. MANHOLE RING AND COVERS SHALL BE MADE OF GRAY CAST IRON AND SHALL CONFORM TO AASHTO M103 AND ASTM A48, CLASS 35B.
 C. RING & COVER SHALL HAVE MACHINED SEATS.
 D. TWO 1" VENT HOLES WILL BE PROVIDED AS DETERMINED BY TOWN STAFF. SPECIFY TWO VENT HOLES WHEN ORDERING COVERS. (DELETED FOR NCDOT PROJECT)
 E. (DELETED FOR NCDOT PROJECT)

STANDARD DRAWING FOR UTILITY MANHOLE RING AND COVER FOR ROADWAY APPLICATIONS

307.00

SHEET 1 OF 1

NOTE: THIS TOJ STANDARD DETAIL HAS BEEN MODIFIED BY DAVIS-MARTIN-POWELL FOR NCDOT PROJECT U-2412A.

PLAN VIEW

SECTION B-B (COVER)

"O" RING SEAL SECTION DETAIL

"O" RING SEAL GROOVE DETAIL

NOTES:
 A. TO BE USED IN THE 100 YEAR FLOOD AREA AS DETERMINED BY F.E.M.A.
 B. MANHOLE RINGS AND COVERS SHALL BE MADE OF GRAY CAST IRON AND SHALL CONFORM TO ASTM A48, CLASS 35B.
 C. FOR OUTFALL USE ONLY - NOT FOR USE ON MANHOLES LOCATED IN ROADWAYS.
 D. (DELETED FOR NCDOT PROJECT)
 E. OUTFALL MANHOLE LOCKABLE RING & COVER, TYPE FT SHALL BE CAST INTO THE OUTFALL MANHOLE FLAT TOP. INSTALL LOCK COVER ONLY AS DIRECTED BY PS DIRECTOR.
 F. ESTIMATED WEIGHTS ARE: COVER 132 LBS. FRAME 195 LBS. UNIT 327 LBS.

STANDARD DRAWING FOR OUTFALL MANHOLE LOCKABLE RING AND COVER, TYPE FT FOR USE IN WATERTIGHT OUTFALL MANHOLES

308.00

SHEET 1 OF 1

OUTFALL MANHOLE LOCKABLE RING & COVER, TYPE FT

NON-VENTED OUTFALL MANHOLE

NOTES:
 A. ALL STANDARD SEWER MANHOLE SECTIONS SHALL MEET THE REQUIREMENTS OF STANDARDS 300 (4" DIA.) OR 301 (5" DIA.)
 B. THE LOCKABLE RING & COVER SHALL MEET THE REQUIREMENTS OF STANDARD 308
 C. FLAT TOP - THE PRECAST SUPPLIER'S STANDARD UNIT MAY BE USED PROVIDED THAT THE RING & COVER (STANDARD 308) IS CAST INTO THE FLAT TOP.

STANDARD DRAWING FOR NON-VENTED OUTFALL MANHOLE FOR 4' OR 5' SANITARY SEWER MANHOLES

311.00

SHEET 1 OF 2

INSTALLATION PROCEDURES

1. PLACE HORSESHOE MH BASE IN WET CONCRETE (4000 PSI).
2. AFTER CONCRETE SETS, CORE HOLE & SET NEW SEWER LINE.
3. CUT OUT TOP HALF OF EXISTING PIPE. FINISH INVERTS & WATERPROOF ALL JOINTS & AROUND ALL PIPE.
4. POUR CONCRETE COLLARS.

NOTES:
 A. ALL STANDARD SEWER MANHOLE SECTIONS SHALL MEET THE REQUIREMENTS OF STANDARDS NO. 300 OR 301.
 B. CONCRETE COMPRESSIVE STRENGTH SHALL BE A MINIMUM OF 4000 PSI UNLESS OTHERWISE NOTED.
 C. HORSESHOE MH BASE TO SIT OVER EXISTING LINE.
 D. PROPOSED SEWER LINE SHALL BE CORED ON SITE. FLEXIBLE CONNECTION SLEEVES WILL BE REQUIRED.
 E. A HORSESHOE MANHOLE SHALL BE USED ONLY WITH SPECIAL PERMISSION FROM THE TOWN OF JAMESTOWN.

STANDARD DRAWING FOR "DOGHOUSE" MANHOLE FOR PROPOSED MANHOLES BUILT OVER EXISTING LINES

312.00

SHEET 1 OF 1

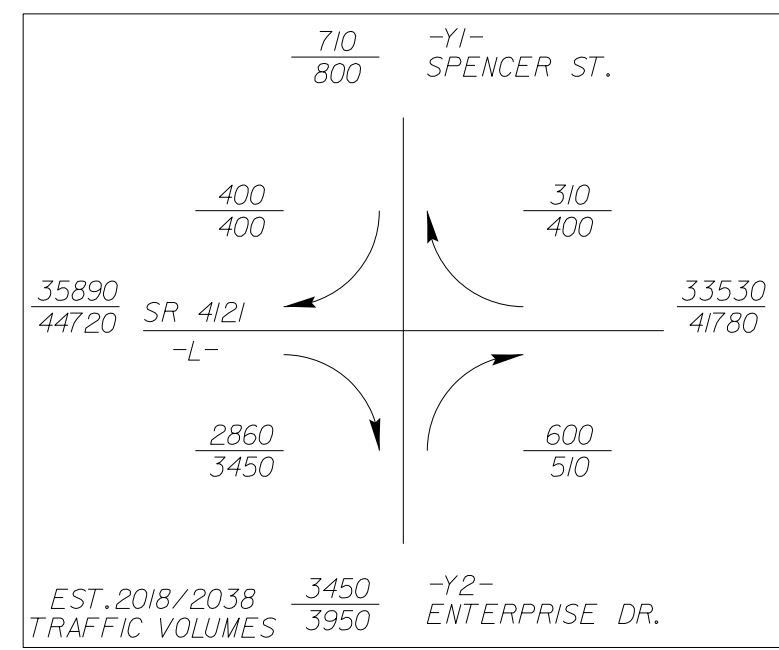
STANDARD DRAWING FOR OUTSIDE DROP MANHOLE FOR SANITARY SEWER

NOTES:
 A. MANHOLE TO BE BUILT IN ACCORDANCE WITH STANDARD NOS. 300, OR 301.
 B. A DROP MANHOLE SHALL BE USED WHEN THE DIFFERENCE IN INVERT ELEVATIONS EXCEEDS (2-5) FEET.
 C. ALL OUTSIDE DROP PIPE AND FITTINGS SHALL BE EPOXY COATED DUCTILE IRON.
 D. THE VERTICAL DUCTILE IRON PIPE STACK SHALL BE RESTRAINED BY THE USE OF MEGALUGS OR OTHER APPROVED METHODS.

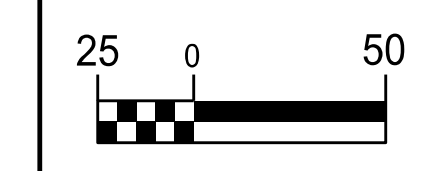
STANDARD DRAWING FOR OUTSIDE DROP MANHOLE FOR SANITARY SEWER

314.00

SHEET 1 OF 1



THE WATER AND SEWER SYSTEM ON THIS SHEET IS OWNED BY THE CITY OF HIGH POINT.

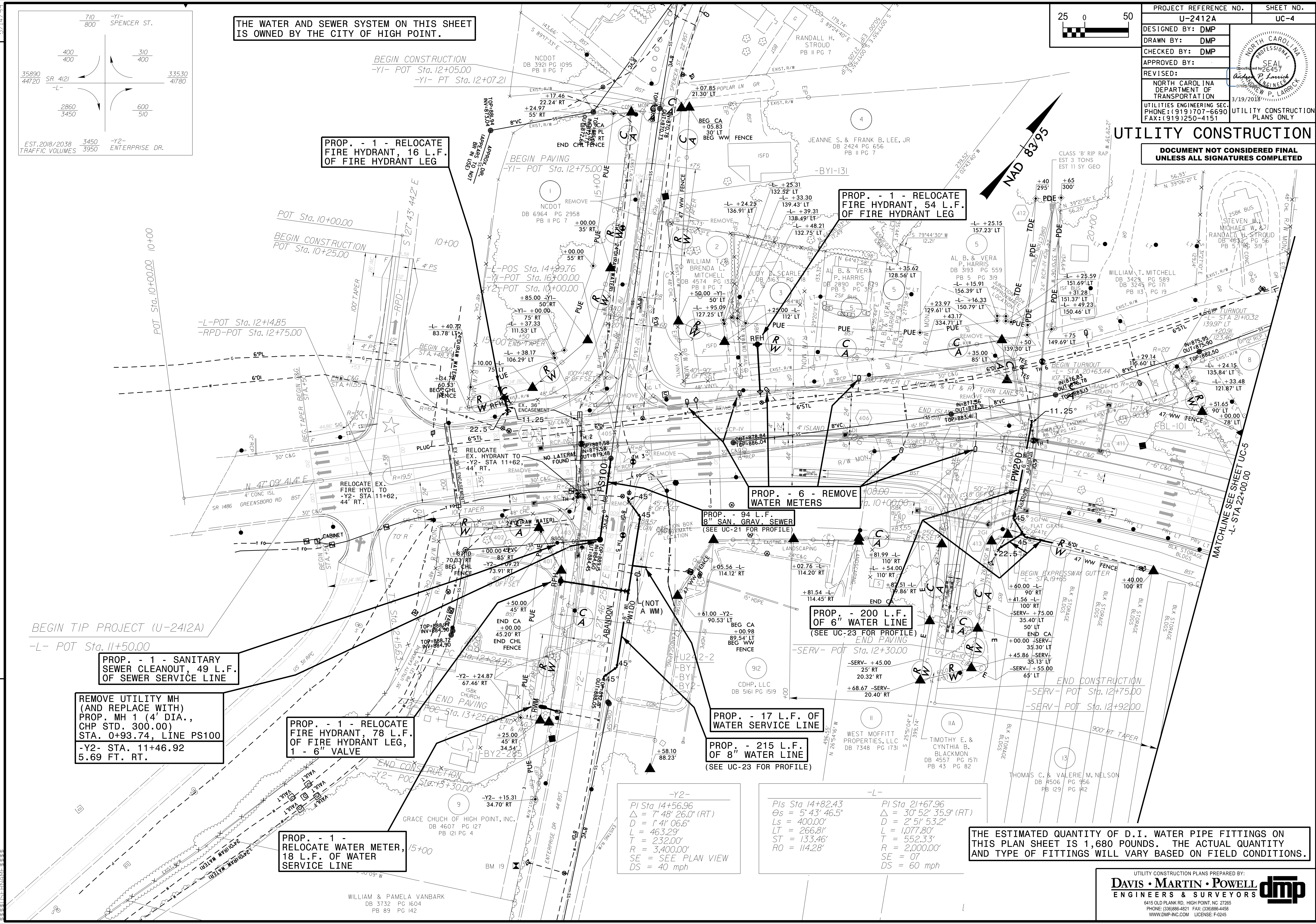


PROJECT REFERENCE NO. U-2412A	SHEET NO. UC-4
DESIGNED BY: DMP	
DRAWN BY: DMP	
CHECKED BY: DMP	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SECTION PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

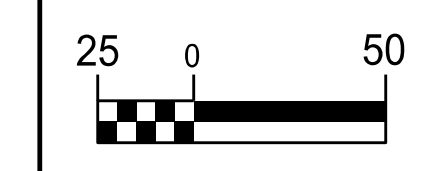


MATCHLINE SEE SHEET UC-5
-L- STA 22+00.00

-Y2- PI Sta 14+56.96 $\Delta = 7' 48" 26.0" (RT)$ $D = 1' 41" 06.6"$ $L = 463.29'$ $T = 232.00'$ $R = 3,400.00'$ $SE = \text{SEE PLAN VIEW}$ $DS = 40 \text{ mph}$	-L- PIs Sta 14+82.43 $\Delta = 5' 43' 46.5"$ $Ls = 400.00'$ $LT = 266.81'$ $ST = 133.46'$ $R = 114.28'$	-L- PI Sta 21+67.96 $\Delta = 30' 52' 35.9" (RT)$ $D = 2' 51' 53.2"$ $L = 1,077.80'$ $T = 552.33'$ $R = 2,000.00'$ $SE = 07'$ $DS = 60 \text{ mph}$
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THE ESTIMATED QUANTITY OF D.I. WATER PIPE FITTINGS ON THIS PLAN SHEET IS 1,680 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

5/14/2018



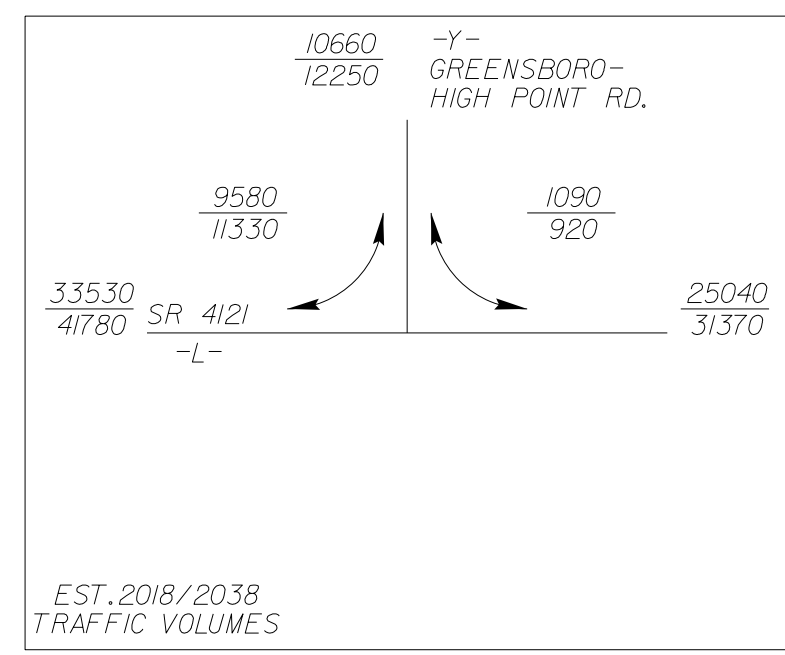
PROJECT REFERENCE NO.	SHEET NO.
U-2412A	UC-5
DESIGNED BY: DMP	
DRAWN BY: DMP	
CHECKED BY: DMP	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151 UTILITY CONSTRUCTION PLANS ONLY	

THE WATER AND SEWER SYSTEM ON THIS SHEET IS OWNED BY THE CITY OF HIGH POINT.

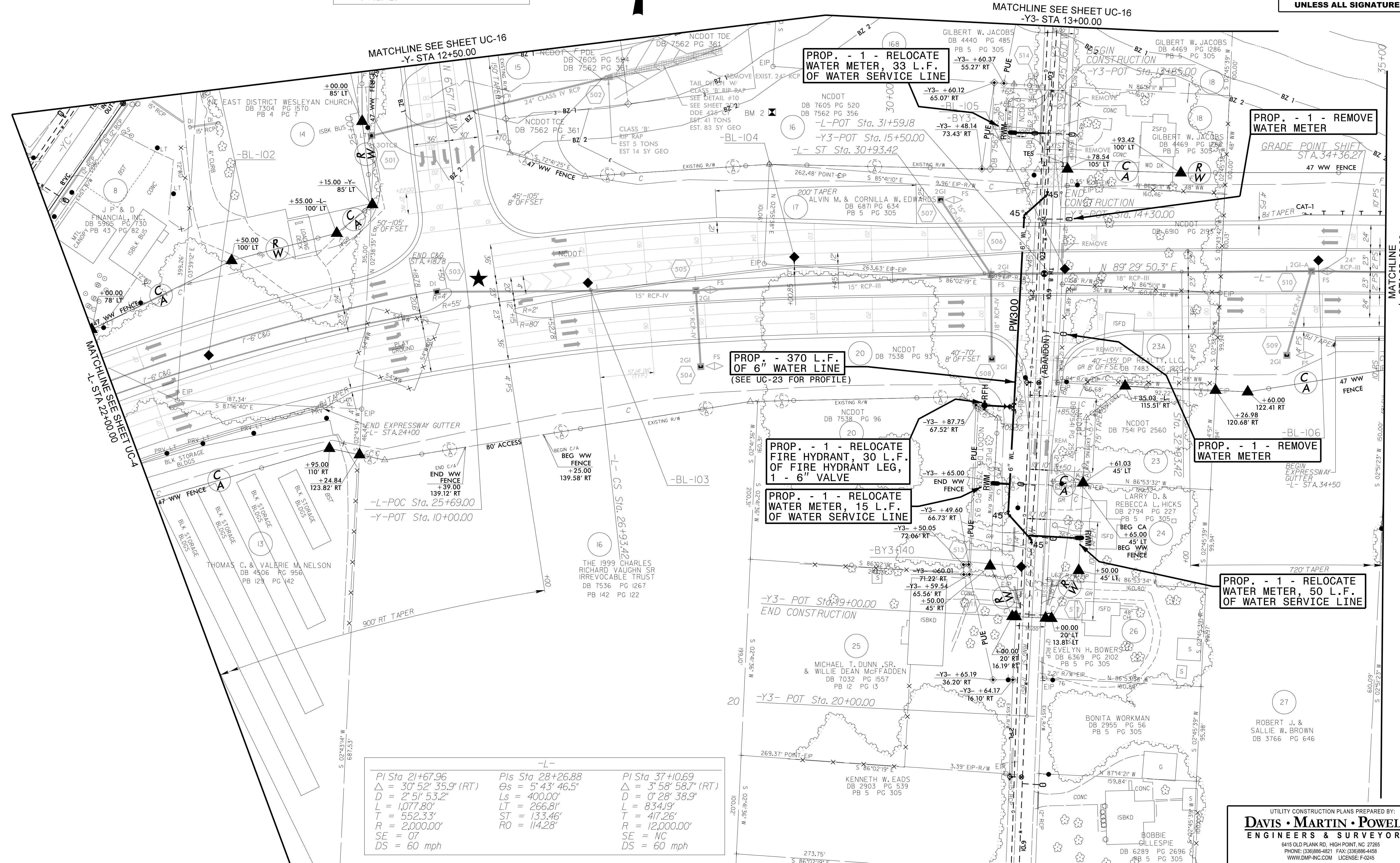
THE ESTIMATED QUANTITY OF D.I. WATER PIPE FITTINGS ON THIS PLAN SHEET IS 555 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



NAD 83/95



PROP. - 1 - RELOCATE WATER METER, 33 L.F. OF WATER SERVICE LINE

PROP. - 1 - REMOVE WATER METER

PROP. - 370 L.F. OF 6" WATER LINE (SEE UC-23 FOR PROFILE)

PROP. - 1 - RELOCATE FIRE HYDRANT, 30 L.F. OF FIRE HYDRANT LEG, 1 - 6" VALVE

PROP. - 1 - RELOCATE WATER METER, 15 L.F. OF WATER SERVICE LINE

PROP. - 1 - REMOVE WATER METER

PROP. - 1 - RELOCATE WATER METER, 50 L.F. OF WATER SERVICE LINE

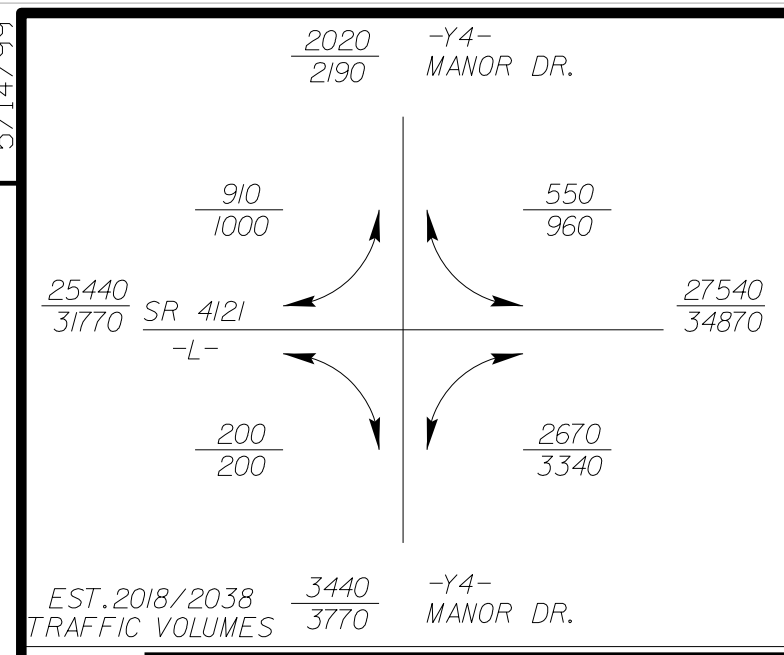
PI Sta 21+67.96	PIs Sta 28+26.88	PI Sta 37+10.69
$\Delta = 30^{\circ} 52' 35.9" (RT)$	$\Delta s = 5^{\circ} 43' 46.5"$	$\Delta = 3^{\circ} 58' 58.7" (RT)$
$D = 2^{\circ} 51' 53.2"$	$Ls = 400.00'$	$D = 0^{\circ} 28' 38.9"$
$L = 1,077.80'$	$LT = 266.81'$	$L = 834.19'$
$T = 552.33'$	$ST = 133.46'$	$T = 417.26'$
$R = 2,000.00'$	$RO = 114.28'$	$R = 12,000.00'$
$SE = 07$		$SE = NC$
$DS = 60 \text{ mph}$		$DS = 60 \text{ mph}$

UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

THE WATER AND SEWER SYSTEM ON THIS SHEET IS OWNED BY THE CITY OF HIGH POINT.

THE ESTIMATED QUANTITY OF D.I. WATER PIPE FITTINGS ON THIS PLAN SHEET IS 4,025 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.



PROP. MH 5 (4' DIA. DOGHOUSE MH, CHP STD. 311.00 & 312.00) STA. 0+32.49, LINE PS300 -L- STA. 52+45.00 94.00 FT. LT.

PROP. MH 3 (4' DIA., CHP STD. 311.00) STA. 2+14.14, LINE PS200 STA. 0+00.00, LINE PS300 -L- STA. 52+75.00 97.00 FT. LT.

PROP. MH 4 (4' DIA. DOGHOUSE MH, CHP STD. 311.00 & 312.00) STA. 3+06.52, LINE PS200 -L- STA. 53+75.00 109.00 FT. LT.

PROP. - 92 L.F. 8" SAN. GRAV. SEWER (SEE UC-21 FOR PROFILE)

PROP. - 32 L.F. 8" SAN. GRAV. SEWER (SEE UC-21 FOR PROFILE)

PROP. - 2 - RELOCATE WM'S, 61 L.F. WATER SERVICE LINE

PROP. MH 7 (4' DIA. DOGHOUSE MH, CHP STD. 300.00 & 312.00) STA. 3+97.67, LINE PS400 -Y4- STA. 16+08.50 0.00 FT. LT.

PROP. - 33 L.F. 12" WATER LINE (SEE DETAIL ON SHEET UC-3A)

REMOVE 4 WM'S

ABANDON UTIL. MH

REMOVE 2 WM'S

REMOVE 2 WM'S

PROP. - 398 L.F. 8" SAN. GRAV. SEWER (SEE UC-21 FOR PROFILE)

PROP. - 214 L.F. 8" SAN. GRAV. SEWER 200 LF OF 18" ENCASEMENT (STEEL, MIN. W.T.=0.375", BY OPEN-CUT METHOD)

ABANDON - 3 UTIL. MH'S, ABANDON - 361 L.F. OF 8" UTIL. PIPE

PROP. - 1 RELOCATE WM, 24 L.F. WATER SERVICE LINE

ABANDON 447 L.F. 8" UTILITY PIPE

ABANDON - 2 UTIL. MH'S

PROP. - 33 L.F. 12" WATER LINE (SEE DETAIL ON SHEET UC-3A)

PROP. MH 6 (4' DIA. DOGHOUSE MH, CHP STD. 300.00 & 312.00) STA. 0+00, LINE PS400 STA. 0+00, LINE PS500 -Y4- STA. 20+02 45.00 FT. RT.

PROP. MH 8 (4' DIA. DOGHOUSE MH, CHP STD. 300.00 & 312.00) STA. 0+38.48, LINE PS500 -Y4- STA. 20+23.00 10.50 FT. RT.

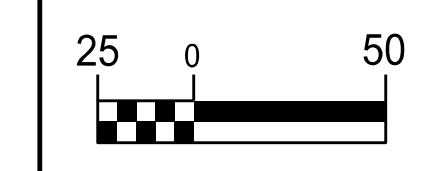
PROP. 1 - REL. FIRE HYD. (1' INSIDE NEW R/W) 13 L.F. FH LEG

PROP. - 38 L.F. 8" SAN. GRAV. SEWER (SEE UC-21 FOR PROFILE)

PROP. - 2 - RELOCATE WM'S, 41 L.F. WATER SERVICE LINE

PROP. MH 2 (4' DIA. DOGHOUSE MH, CHP STD. 311.00 & 312.00) STA. 0+00.00, LINE PS200 -L- STA. 55+75.00, 118.00 FT. RT.

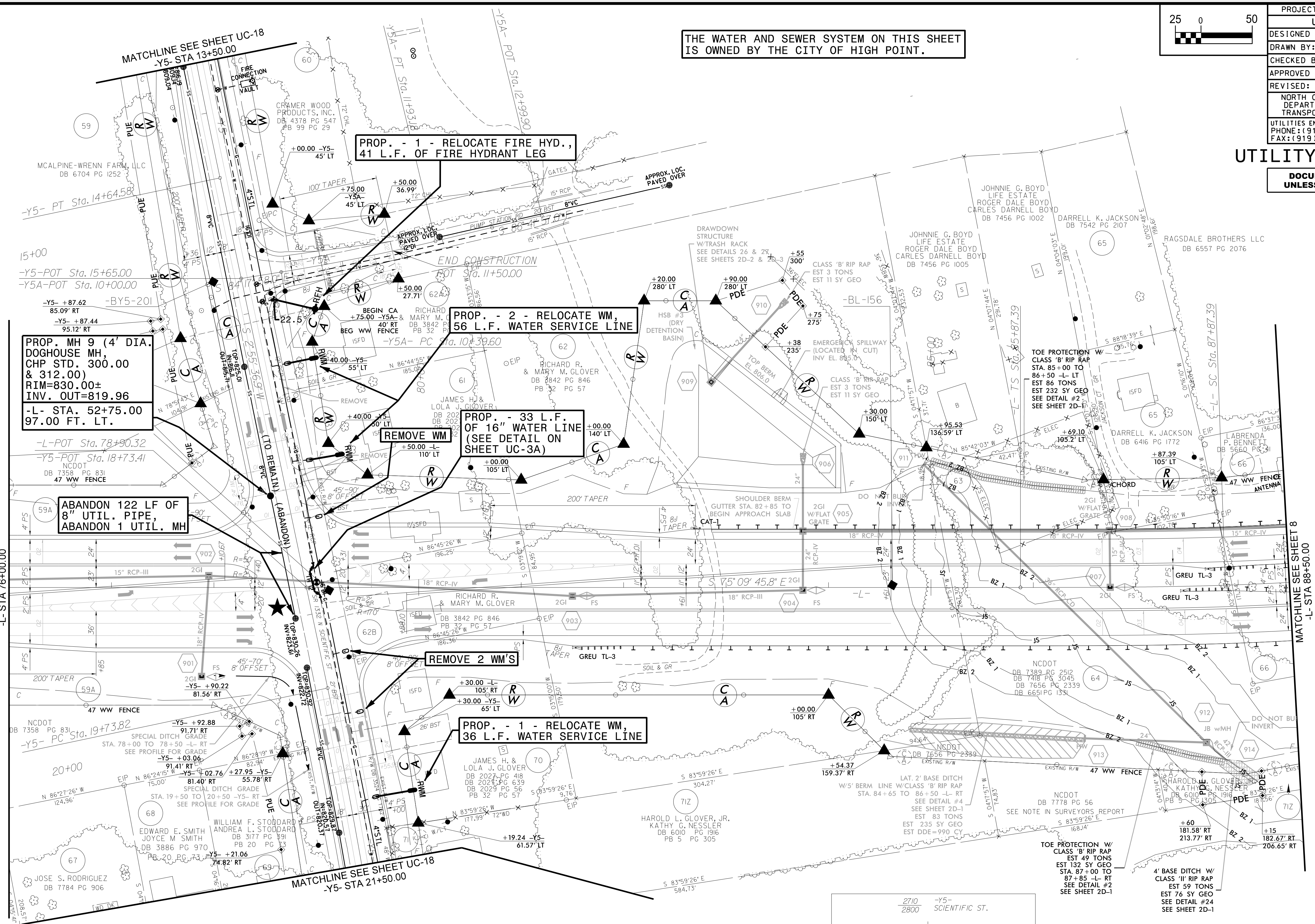
<p>-Y4- PI Sta 19+39.39 Δ = 7° 07' 47.5" (LT) D = 4' 35" 01.2" L = 155.55' T = 77.88' R = 1,250.00' SE = 04 DS = 40 mph</p>	<p>PI Sta 49+09.57 Δ = 12° 57' 07.6" (LT) D = 1' 58" 32.6" L = 655.56' T = 329.19' R = 2,900.00' SE = 055 DS = 60 mph</p>	<p>PIs Sta 53+10.96 Δs = 2° 13' 21.7" Ls = 225.00' LT = 150.01' ST = 75.01' RO = 81.82'</p>	<p>PIs Sta 61+15.83 Δs = 2° 59' 03.0" Ls = 250.00' LT = 166.69' ST = 83.35' RO = 81.82'</p>	<p>PI Sta 66+82.76 Δ = 22° 47' 10.2" (RT) D = 2' 23" 14.4" L = 954.46' T = 483.62' R = 2,400.00' SE = 06 DS = 60 mph</p>
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PROJECT REFERENCE NO.	SHEET NO.
U-2412A	UC-7
DESIGNED BY: DMP	
DRAWN BY: DMP	
CHECKED BY: DMP	
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
 DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

THE WATER AND SEWER SYSTEM ON THIS SHEET IS OWNED BY THE CITY OF HIGH POINT.



PROP. MH 9 (4' DIA. DOGHOUSE MH, CHP STD. 300.00 & 312.00) RIM=830.00± INV. OUT=819.96
 -L- STA. 52+75.00
 97.00 FT. LT.

PROP. - 2 - RELOCATE WM, 56 L.F. WATER SERVICE LINE
 -Y5A- PC Sta. 10+39.60

REMOVE WM
 -Y5- STA. 105+10

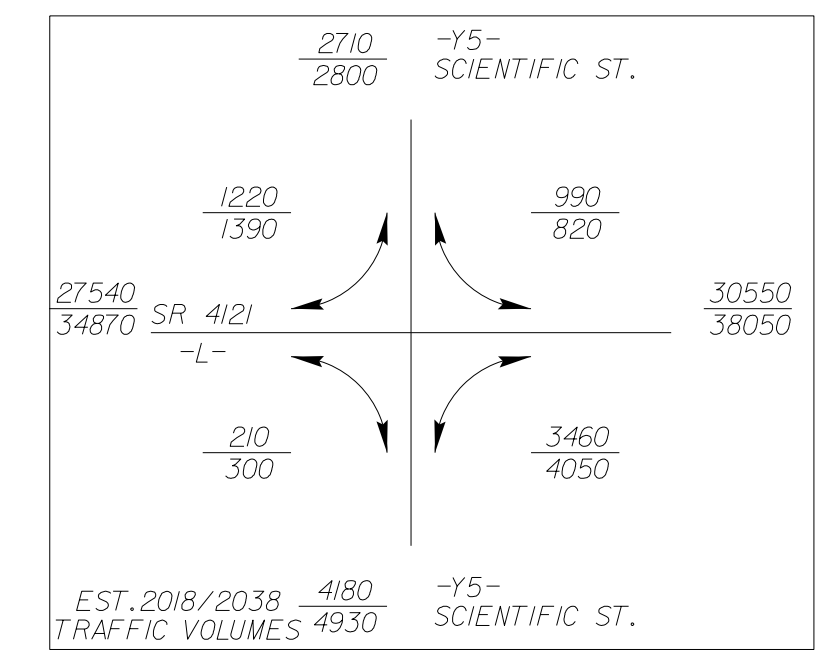
PROP. - 1 - RELOCATE WM, 36 L.F. WATER SERVICE LINE
 -Y5- STA. 19+73.82

ABANDON 122 LF OF 8" UTIL. PIPE, ABANDON 1 UTIL. MH

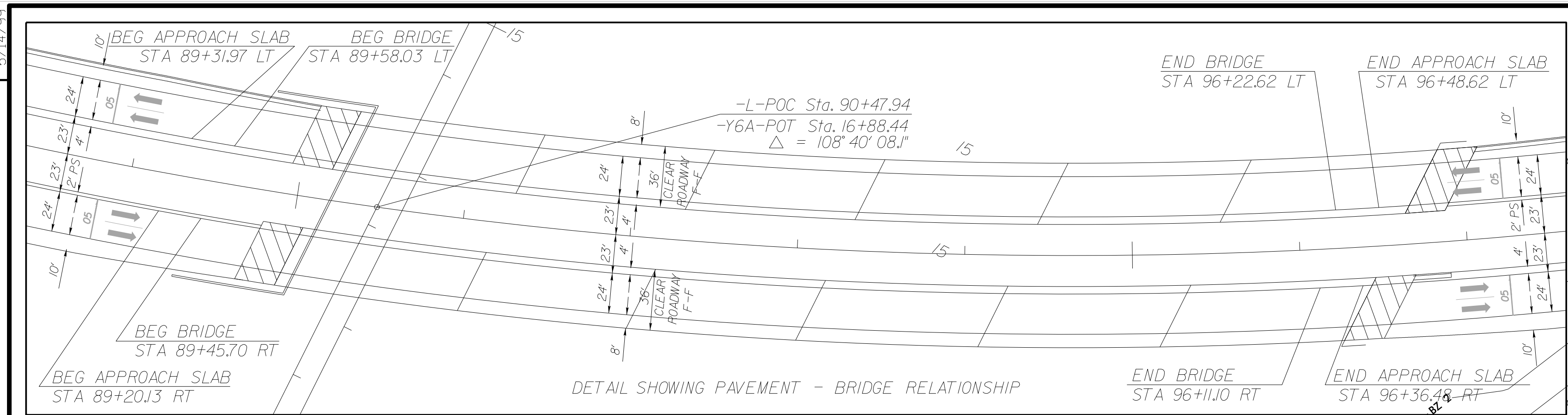
-Y5-	-Y5A-
PI Sta 13+54.60 $\Delta = 1' 15" 37.1" (LT)$ $D = 0' 34" 22.6"$ $L = 219.97'$ $T = 109.99'$ $R = 10,000.00'$ $SE = NC$ $DS = 50 \text{ mph}$	PI Sta 21+18.69 $\Delta = 3' 19" 09.3" (RT)$ $D = 1' 08" 45.3"$ $L = 289.66'$ $T = 144.87'$ $R = 5,000.00'$ $SE = \text{SEE PLAN VIEW}$ $DS = 50 \text{ mph}$

-Y5A-	-L-
PI Sta 11+16.43 $\Delta = 4' 23" 59.0" (LT)$ $D = 2' 51" 53.2"$ $L = 153.58'$ $T = 76.83'$ $R = 2,000.00'$ $SE = \text{SEE PLAN VIEW}$ $DS = 30 \text{ mph}$	PI Sta 87+20.73 $\Theta_s = 1' 54" 35.5"$ $L_s = 200.00'$ $LT = 133.34'$ $ST = 66.67'$

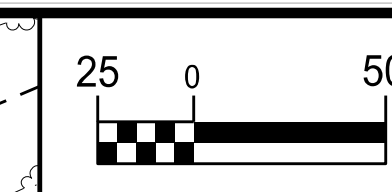
-L-	-Y5-
PI Sta 93+42.25 $\Delta = 20' 57" 26.2" (LT)$ $D = 1' 54" 35.5"$ $L = 1,097.32'$ $T = 554.86'$ $R = 3,000.00'$ $SE = 05$ $DS = 60 \text{ mph}$	EST. 2018/2038 TRAFFIC VOLUMES 4180 4930



THE ESTIMATED QUANTITY OF D.I. WATER PIPE FITTINGS ON THIS PLAN SHEET IS 1,905 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.



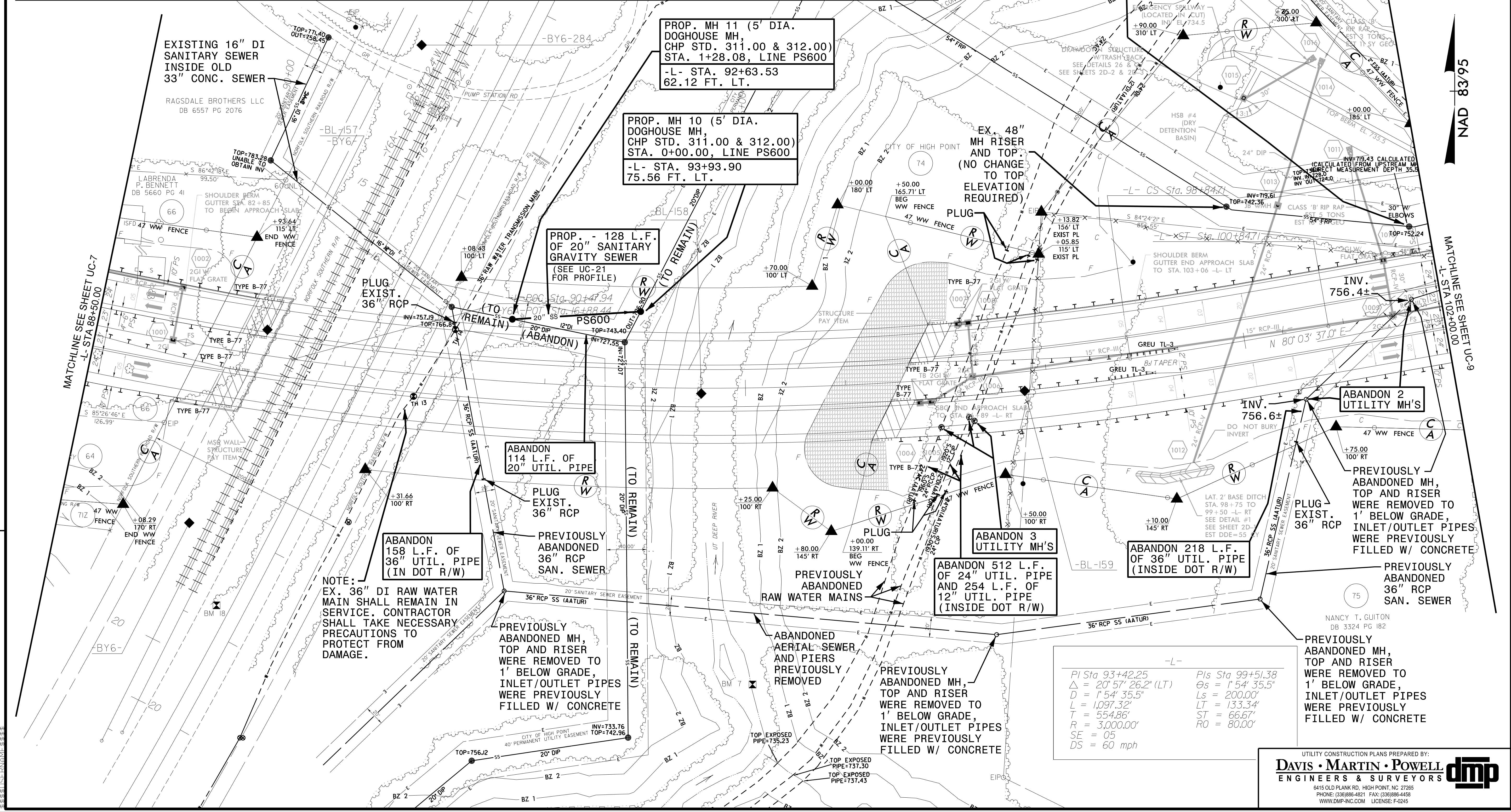
THE WATER AND SEWER SYSTEM ON THIS SHEET IS OWNED BY THE CITY OF HIGH POINT.



PROJECT REFERENCE NO.	SHEET NO.
U-2412A	UC-8
DESIGNED BY: DMP	
DRAWN BY: DMP	
CHECKED BY: DMP	
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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REVISIONS



EXISTING 16" DI SANITARY SEWER INSIDE OLD 33" CONC. SEWER

RAGSDALE BROTHERS LLC
DB 6557 PG 2076

PROP. MH 11 (5' DIA. DOGHOUSE MH, CHP STD. 311.00 & 312.00) STA. 1+28.08, LINE PS600
-L- STA. 92+63.53
62.12 FT. LT.

PROP. MH 10 (5' DIA. DOGHOUSE MH, CHP STD. 311.00 & 312.00) STA. 0+00.00, LINE PS600
-L- STA. 93+93.90
75.56 FT. LT.

PROP. - 128 L.F. OF 20" SANITARY GRAVITY SEWER (SEE UC-21 FOR PROFILE)

ABANDON 114 L.F. OF 20" UTIL. PIPE

ABANDON 158 L.F. OF 36" UTIL. PIPE (IN DOT R/W)

NOTE: EX. 36" DI RAW WATER MAIN SHALL REMAIN IN SERVICE. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO PROTECT FROM DAMAGE.

PREVIOUSLY ABANDONED MH, TOP AND RISER WERE REMOVED TO 1' BELOW GRADE, INLET/OUTLET PIPES WERE PREVIOUSLY FILLED W/ CONCRETE

ABANDONED AERIAL SEWER AND PIERS PREVIOUSLY REMOVED

PREVIOUSLY ABANDONED MH, TOP AND RISER WERE REMOVED TO 1' BELOW GRADE, INLET/OUTLET PIPES WERE PREVIOUSLY FILLED W/ CONCRETE

ABANDON 3 UTILITY MH'S

ABANDON 218 L.F. OF 36" UTIL. PIPE (INSIDE DOT R/W)

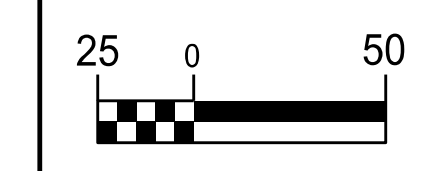
ABANDON 2 UTILITY MH'S

PREVIOUSLY ABANDONED MH, TOP AND RISER WERE REMOVED TO 1' BELOW GRADE, INLET/OUTLET PIPES WERE PREVIOUSLY FILLED W/ CONCRETE

PREVIOUSLY ABANDONED 36" RCP SAN. SEWER

PREVIOUSLY ABANDONED MH, TOP AND RISER WERE REMOVED TO 1' BELOW GRADE, INLET/OUTLET PIPES WERE PREVIOUSLY FILLED W/ CONCRETE

Pi Sta 93+42.25 $\Delta = 20^\circ 57' 26.2" (LT)$ $D = 1' 54' 35.5"$ $L = 1097.32'$ $T = 554.86'$ $R = 3,000.00'$ $SE = 05$ $DS = 60$ mph	Pis Sta 99+51.38 $\Delta = 1' 54' 35.5"$ $Ls = 200.00'$ $LT = 133.34'$ $ST = 66.67'$ $RO = 80.00'$
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PROJECT REFERENCE NO.	SHEET NO.
U-2412A	UC-9
DESIGNED BY: DMP	
DRAWN BY: DMP	
CHECKED BY: DMP	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	3/20/2018
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

THE WATER AND SEWER SYSTEM ON THIS SHEET NORTH OF THE NEW R/W FOR -L- LINE IN THE RIVERWALK TOWN HOME COMMUNITY IS OWNED BY THE TOWN OF JAMESTOWN.

THE 54" SEWER OUTFALL ON THIS SHEET IS OWNED BY THE CITY OF HIGH POINT.

-L-
Pls Sta 104+18.05
 $\Delta s = 1' 54" 35.5"$
 $Ls = 200.00'$
 $LT = 133.34'$
 $ST = 66.67'$
 $RO = 80.00'$

Pl Sta 106+78.30
 $\Delta = 7' 23" 04.1" (RT)$
 $D = 1' 54" 35.5"$
 $L = 386.65'$
 $T = 193.59'$
 $R = 3,000.00'$
 $SE = 05$
 $DS = 60 \text{ mph}$

Pls Sta 109+38.03
 $\Delta s = 1' 54" 35.5"$
 $Ls = 200.00'$
 $LT = 133.34'$
 $ST = 66.67'$
 $RO = 80.00'$

WHEN INSTALLING PROP. 42" RCP, CAREFULLY UNCOVER THE TOP OF THE EXISTING 54" FRP, AND PLACE A 7'x7' BED OF #57 STONE BETWEEN THE TOP OF THE 54" FRP AND THE BOTTOM OF THE 42" RCP. THE ESTIMATED DEPTH OF THE STONE PAD IS 4 FEET. THE ESTIMATED QUANTITY OF FOUNDATION CONDITIONING MATERIAL HAS BEEN ADDED TO THE CONTRACT TO FACILITATE THIS PROCEDURE.

ADJUST 48" FRP MH RISER 4.88 LF (RAISE TOP FROM EL. 747.62' TO EL. 752.5'+/-)

PREVIOUSLY ABANDONED MH, TOP AND RISER WERE REMOVED TO 1' BELOW GRADE, INLET/OUTLET PIPES WERE PREVIOUSLY FILLED W/ CONCRETE

PROP. MASONRY DRAINAGE STRUCTURE - 7.2 LF (RAISE TOP FROM EL. 755.33' TO EL. 764.5'+/- USING PRECAST RISER)

ABANDON 231 L.F. OF 36" UTIL. PIPE (INSIDE DOT R/W)

PLUG EXIST. 36" RCP

ABANDON 2 UTIL. MH'S

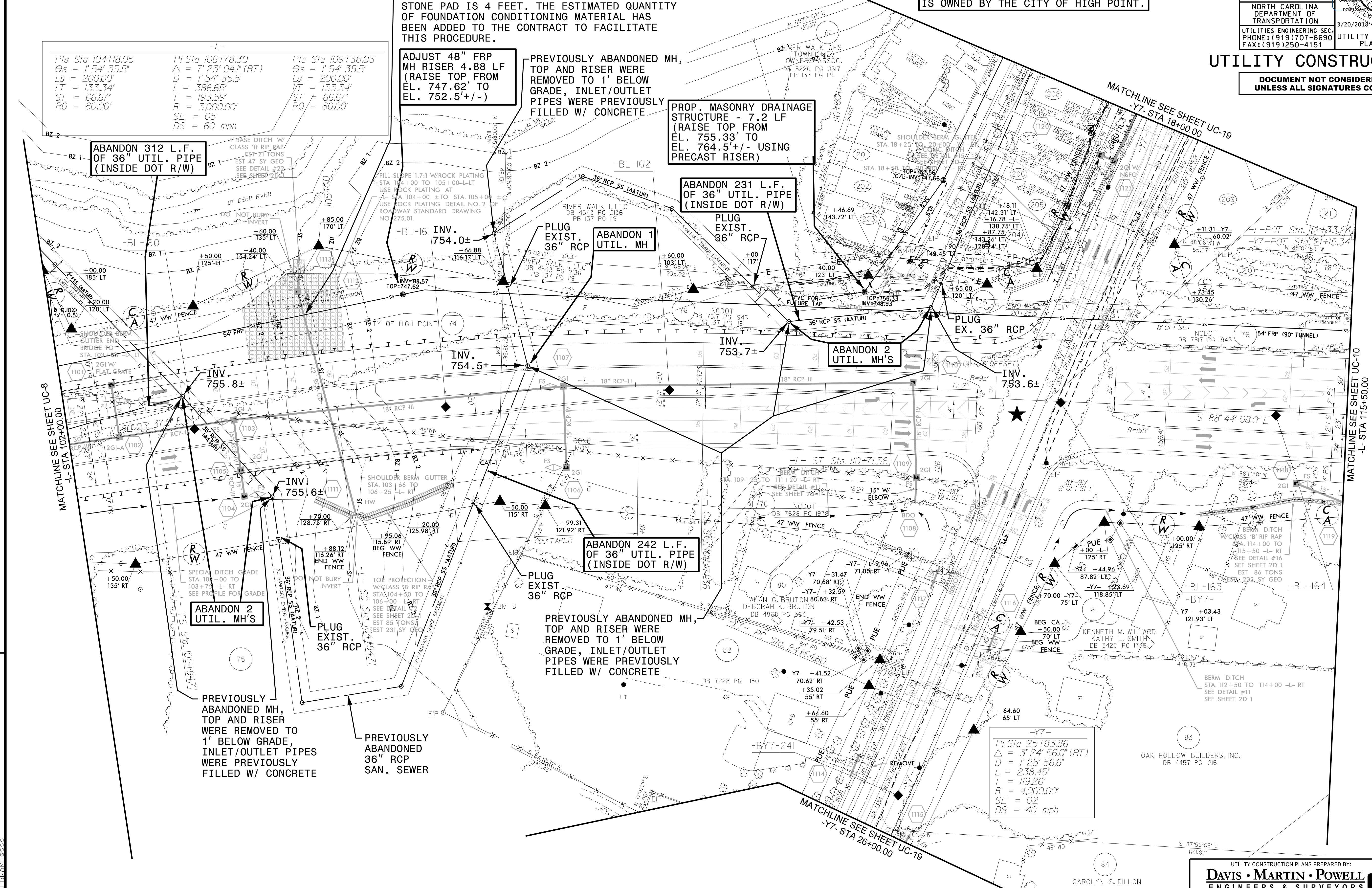
ABANDON 242 L.F. OF 36" UTIL. PIPE (INSIDE DOT R/W)

PREVIOUSLY ABANDONED MH, TOP AND RISER WERE REMOVED TO 1' BELOW GRADE, INLET/OUTLET PIPES WERE PREVIOUSLY FILLED W/ CONCRETE

PREVIOUSLY ABANDONED 36" RCP SAN. SEWER

PREVIOUSLY ABANDONED MH, TOP AND RISER WERE REMOVED TO 1' BELOW GRADE, INLET/OUTLET PIPES WERE PREVIOUSLY FILLED W/ CONCRETE

ABANDON 312 L.F. OF 36" UTIL. PIPE (INSIDE DOT R/W)



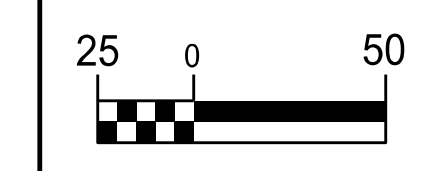
REVISIONS

NAD 83/95

MATCHLINE SEE SHEET UC-8
-L- STA 102+00.00

MATCHLINE SEE SHEET UC-10
-L- STA 115+50.00

MATCHLINE SEE SHEET UC-19
-Y7- STA 26+00.00



PROJECT REFERENCE NO.	SHEET NO.
U-2412A	UC-10
DESIGNED BY: DMP	
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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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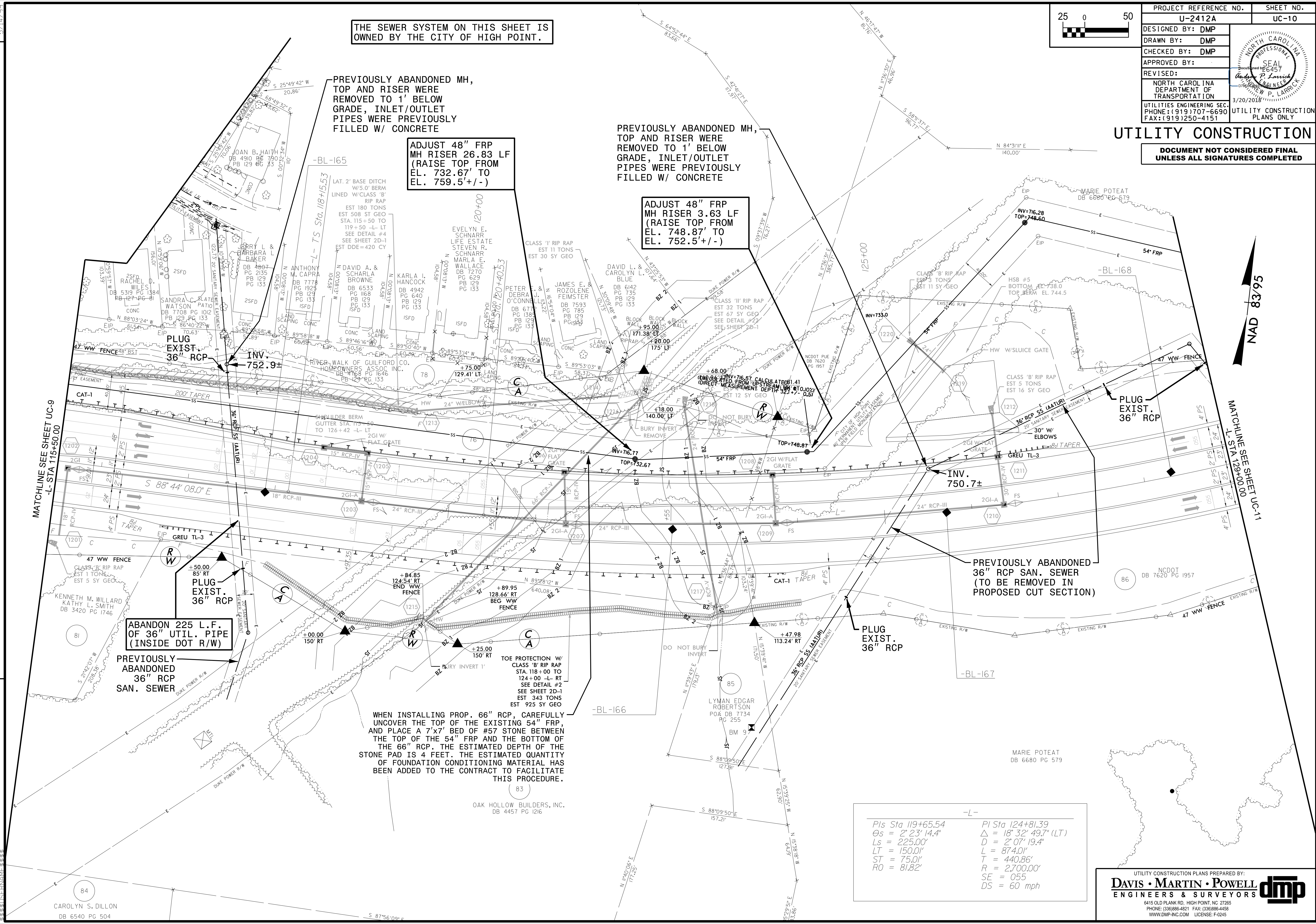
THE SEWER SYSTEM ON THIS SHEET IS OWNED BY THE CITY OF HIGH POINT.

PREVIOUSLY ABANDONED MH, TOP AND RISER WERE REMOVED TO 1' BELOW GRADE, INLET/OUTLET PIPES WERE PREVIOUSLY FILLED W/ CONCRETE

ADJUST 48" FRP MH RISER 26.83 LF (RAISE TOP FROM EL. 732.67' TO EL. 759.5'+/-)

PREVIOUSLY ABANDONED MH, TOP AND RISER WERE REMOVED TO 1' BELOW GRADE, INLET/OUTLET PIPES WERE PREVIOUSLY FILLED W/ CONCRETE

ADJUST 48" FRP MH RISER 3.63 LF (RAISE TOP FROM EL. 748.87' TO EL. 752.5'+/-)



ABANDON 225 L.F. OF 36" UTIL. PIPE (INSIDE DOT R/W)

PREVIOUSLY ABANDONED 36" RCP SAN. SEWER

PREVIOUSLY ABANDONED 36" RCP SAN. SEWER (TO BE REMOVED IN PROPOSED CUT SECTION)

WHEN INSTALLING PROP. 66" RCP, CAREFULLY UNCOVER THE TOP OF THE EXISTING 54" FRP, AND PLACE A 7'x7' BED OF #57 STONE BETWEEN THE TOP OF THE 54" FRP AND THE BOTTOM OF THE 66" RCP. THE ESTIMATED DEPTH OF THE STONE PAD IS 4 FEET. THE ESTIMATED QUANTITY OF FOUNDATION CONDITIONING MATERIAL HAS BEEN ADDED TO THE CONTRACT TO FACILITATE THIS PROCEDURE.

-L-

Pls Sta 119+65.54	PI Sta 124+81.39
Os = 2' 23" 14.4"	Δ = 18' 32" 49.7" (LT)
Ls = 225.00'	D = 2' 07" 19.4"
LT = 150.00'	L = 87.40'
ST = 75.00'	T = 440.86'
RO = 81.82'	R = 2,700.00'
	SE = 055
	DS = 60 mph

THE SEWER SYSTEM ON THIS SHEET TO THE SOUTH AND WEST OF DEEP RIVER IS OWNED BY THE CITY OF HIGH POINT.

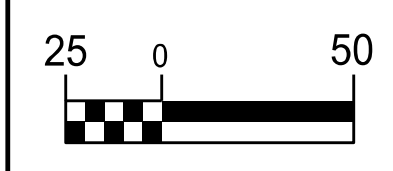
THE WATER AND SEWER SYSTEM ON THIS SHEET TO THE NORTH AND EAST OF DEEP RIVER IS OWNED BY THE TOWN OF JAMESTOWN.

$PI\ Sta\ 124+81.39$
 $\Delta = 18^{\circ} 32' 49.7" (LT)$
 $D = 2^{\circ} 07' 19.4"$
 $L = 874.0'$
 $T = 440.86'$
 $R = 2,700.00'$
 $SE = 055$
 $DS = 60\ mph$

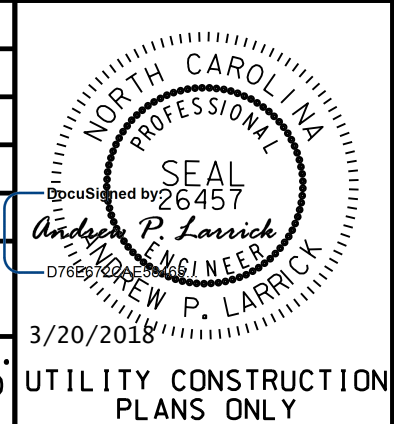
$PIs\ Sta\ 129+89.55$
 $\Delta s = 2^{\circ} 23' 14.4"$
 $Ls = 225.00'$
 $LT = 150.0'$
 $ST = 75.0'$
 $RO = 81.82'$

$PIs\ Sta\ 135+27.83$
 $\Delta s = 0^{\circ} 35' 04.7"$
 $Ls = 200.00'$
 $LT = 133.33'$
 $ST = 66.67'$

$PI\ Sta\ 149+31.07$
 $\Delta = 15^{\circ} 31' 57.9" (RT)$
 $D = 0^{\circ} 35' 04.7"$
 $L = 2,656.76'$
 $T = 1,336.57'$
 $R = 9,800.00'$
 $SE = 02$
 $DS = 60\ mph$

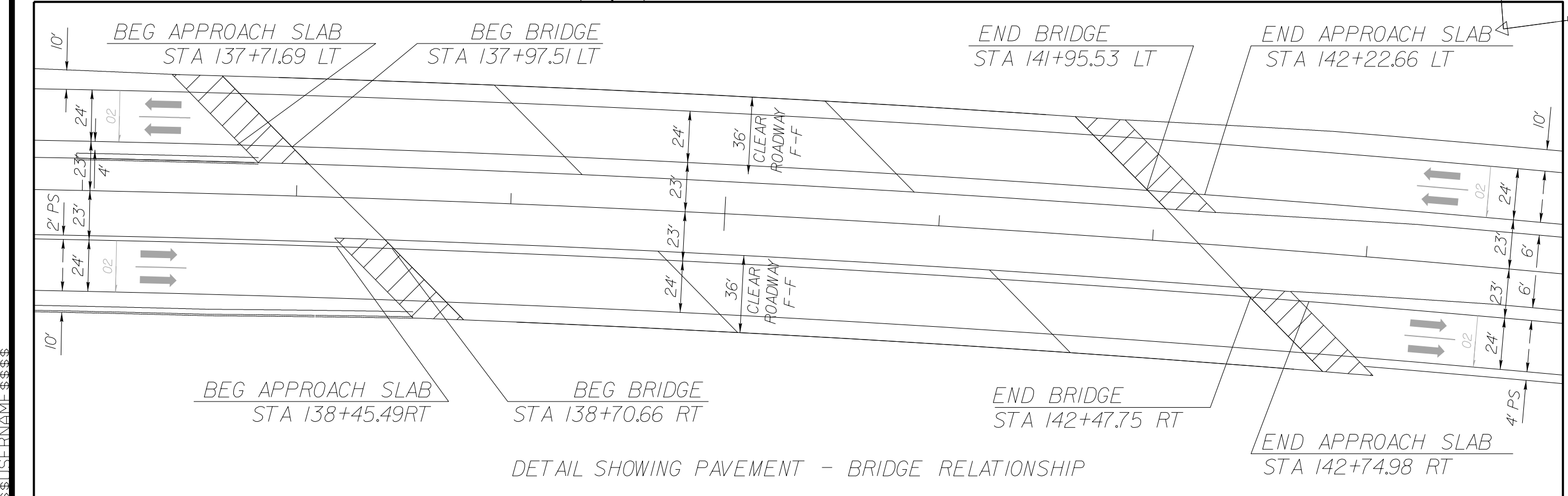
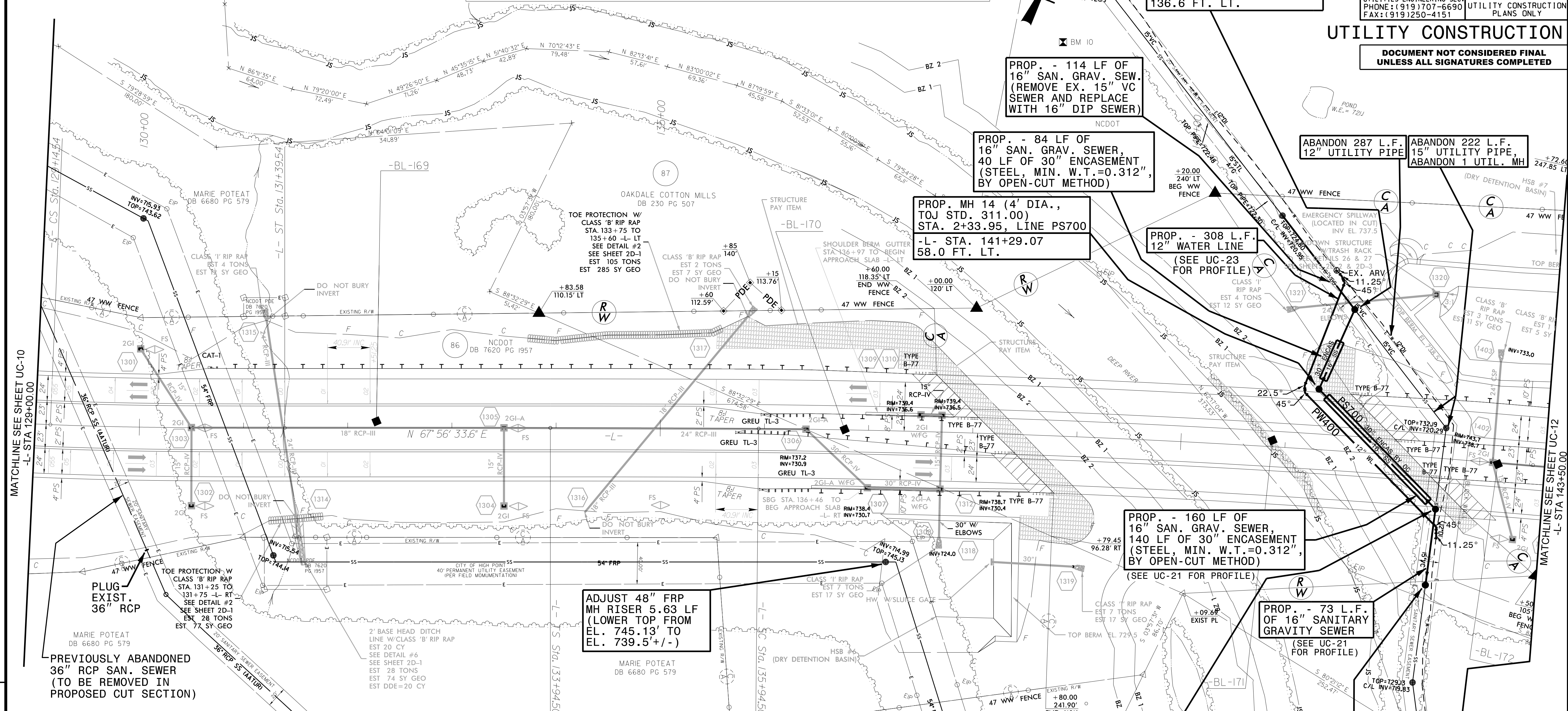


PROJECT REFERENCE NO.	SHEET NO.
U-2412A	UC-11
DESIGNED BY: DMP	
DRAWN BY: DMP	
CHECKED BY: DMP	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	UTILITY CONSTRUCTION PLANS ONLY
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	3/20/2018



UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



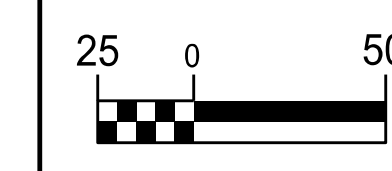
THE ESTIMATED QUANTITY OF D.I. WATER PIPE FITTINGS ON THIS PLAN SHEET IS 1,595 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

THE WATER AND SEWER SYSTEM ON THIS SHEET IS OWNED BY THE TOWN OF JAMESTOWN.

REMOVE 34 WATER METERS

PROP. - 1 - RELOCATE FIRE HYDRANT, 15 L.F. OF FIRE HYDRANT LEG, 1 - 6" VALVE

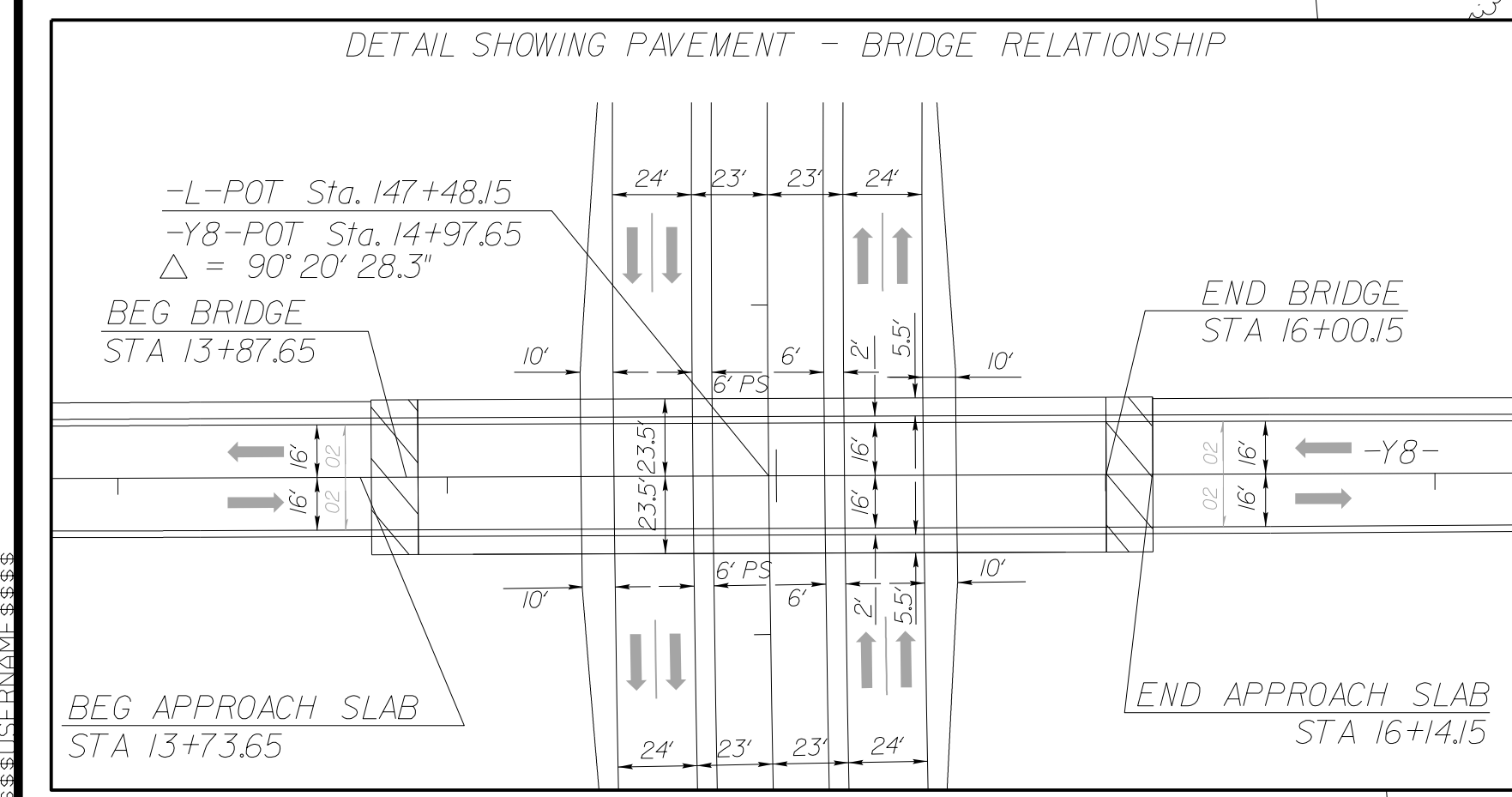
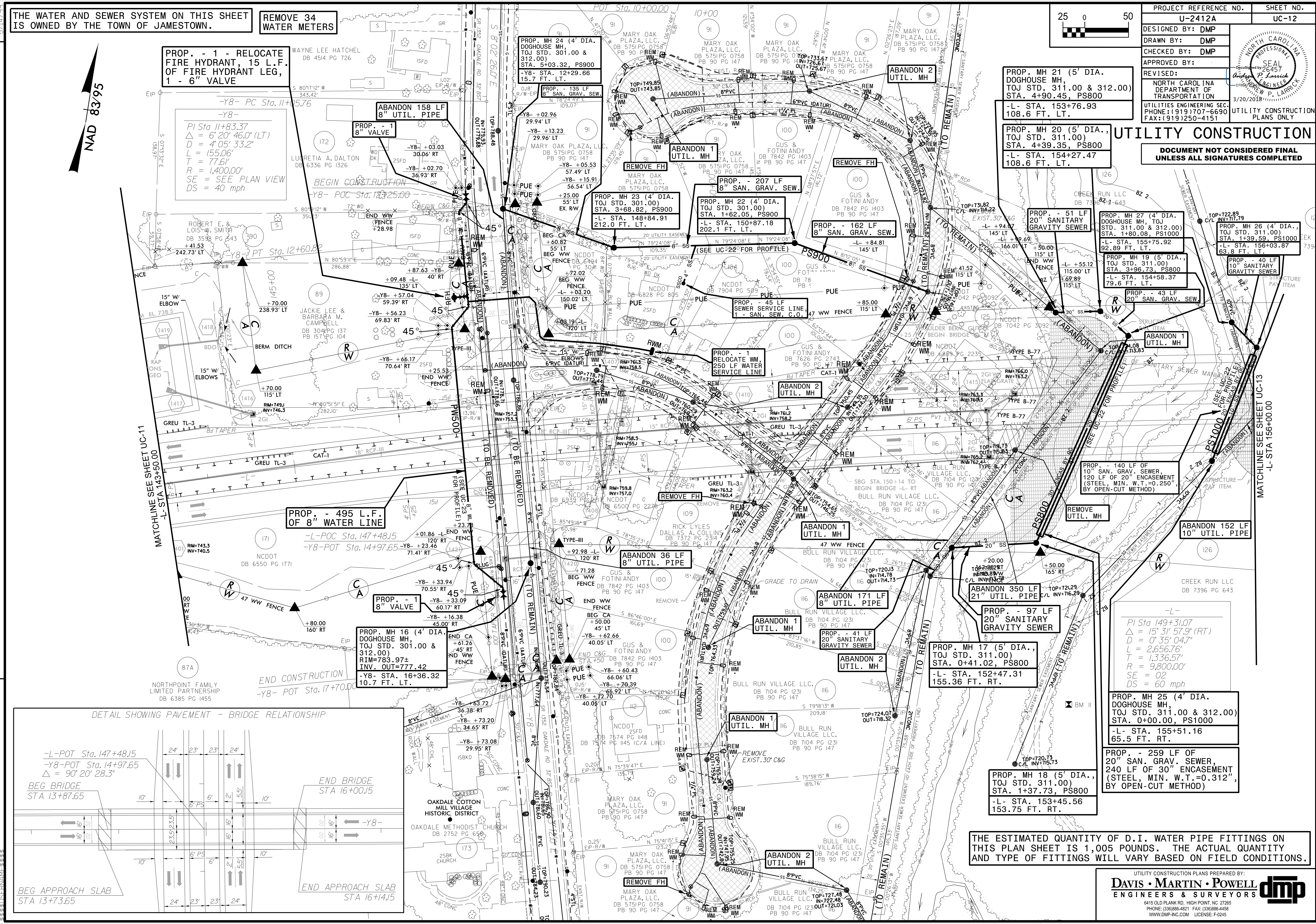
PI Sta 11+83.37
Δ = 6' 20" 46.0" (LT)
D = 4' 05" 33.2"
L = 155.06'
T = 77.6'
R = 1,400.00'
SE = SEE PLAN VIEW
DS = 40 mph



PROJECT REFERENCE NO.	U-2412A	SHEET NO.	UC-12
DESIGNED BY:	DMP		
DRAWN BY:	DMP		
CHECKED BY:	DMP		
APPROVED BY:			
REVISED:			
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		UTILITY CONSTRUCTION PLANS ONLY	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151			

UTILITY CONSTRUCTION

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THE ESTIMATED QUANTITY OF D.I. WATER PIPE FITTINGS ON THIS PLAN SHEET IS 1,005 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

REVISIONS

5/14/2018
C:\Users\james\OneDrive\Documents\Projects\2018\U-2412A\UC-12.dwg