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09.08/99

TIP PROJECT: B-5345

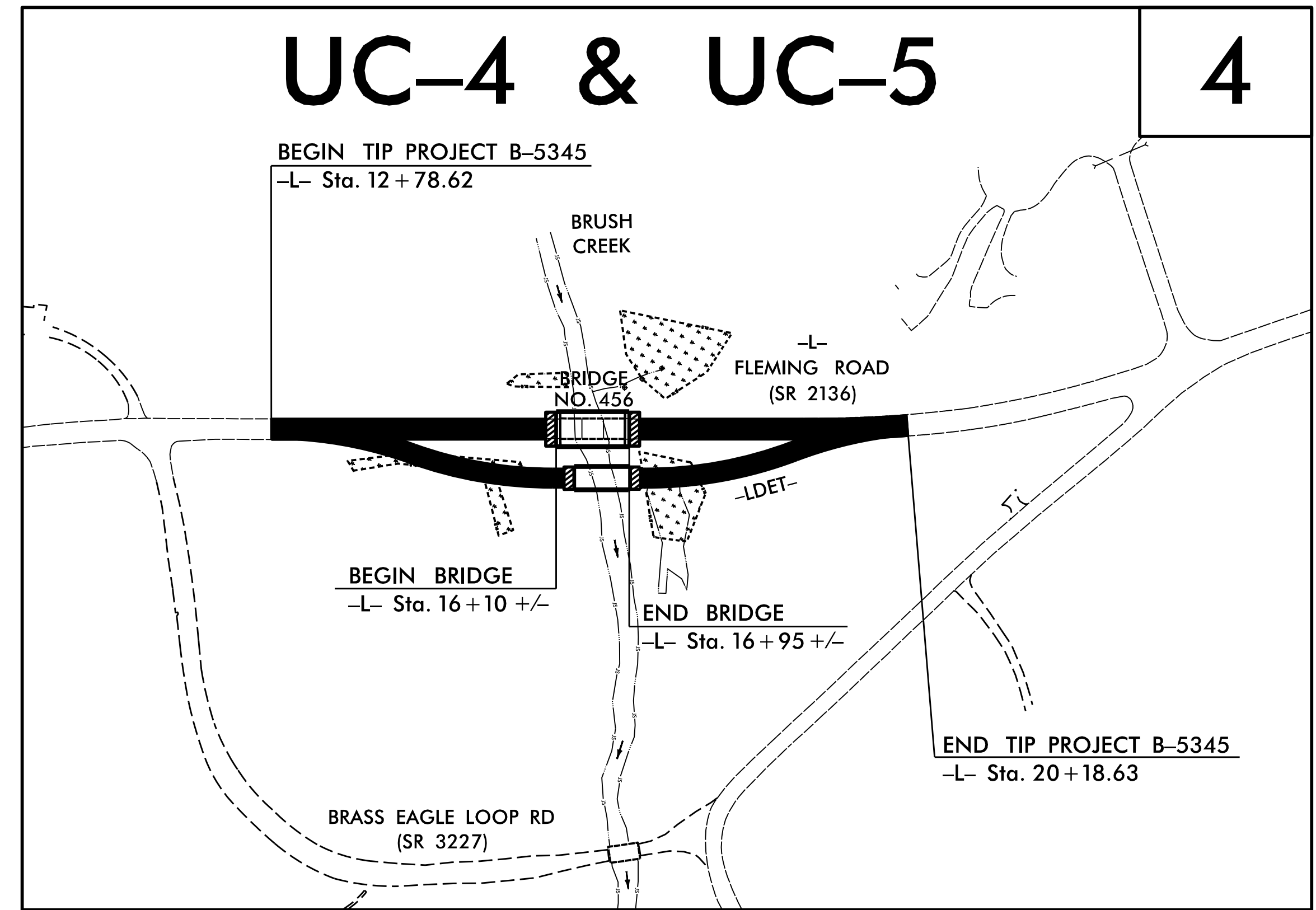
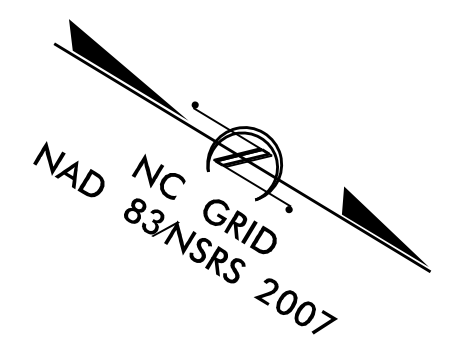
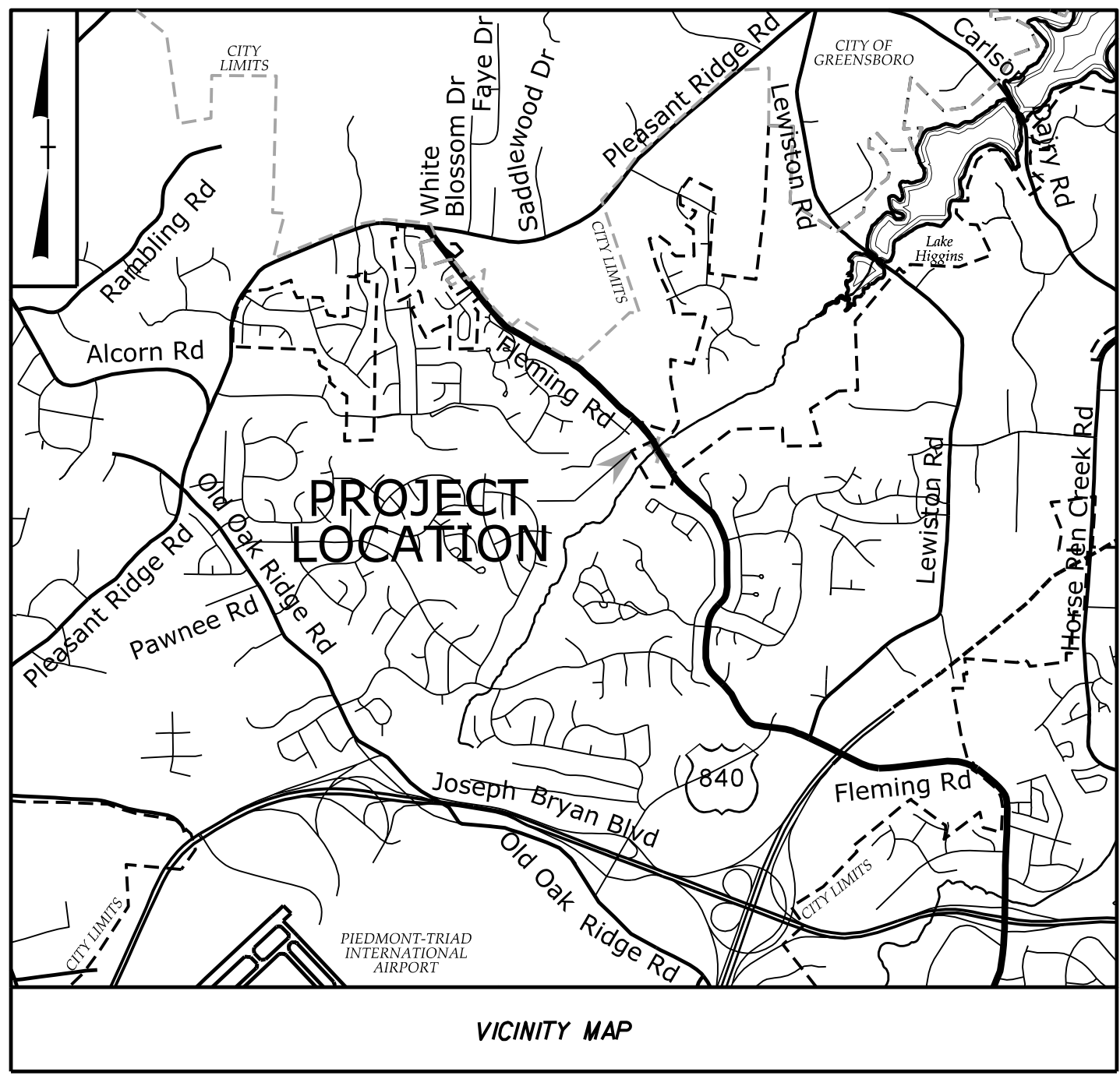
T.I.P. NO.	SHEET NO.
B-5345	UC-1

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

UTILITY CONSTRUCTION PLANS  
GUILFORD COUNTY

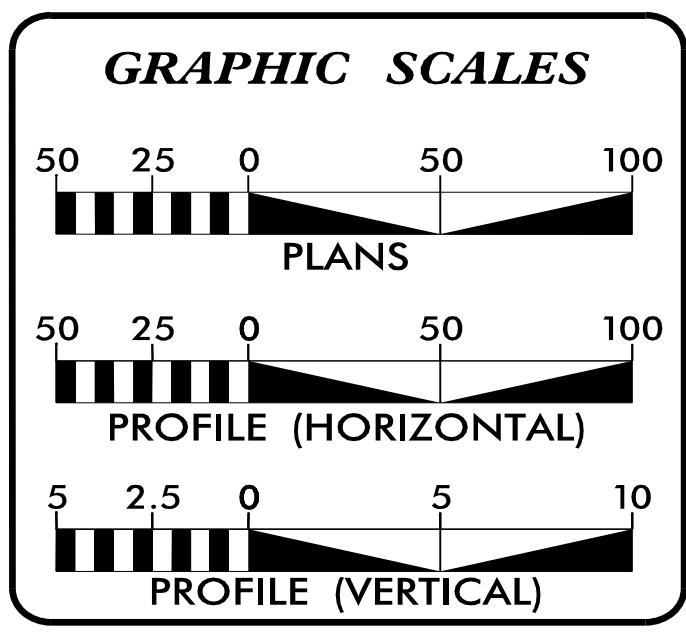
LOCATION: BRIDGE NO. 456 OVER BRUSH CREEK  
ON SR 2136 (FLEMING ROAD)

TYPE OF WORK: UTILITY CONSTRUCTION



NOTE:  
THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF GREENSBORO

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



SHEET NO.:	DESCRIPTION:
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLOGY
UC-3	NOTES
UC-3A	DETAILS
UC-4 THRU UC-5	UTILITY CONSTRUCTION SHEETS
UC-6	PROFILE SHEET

WATER AND SEWER OWNERS ON PROJECT

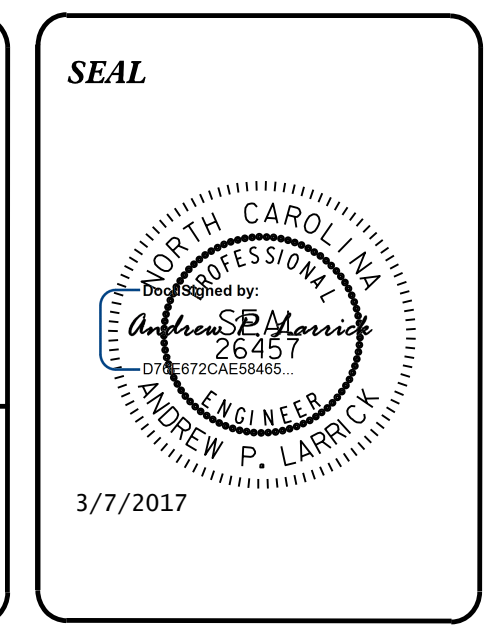
(A) WATER - CITY OF GREENSBORO  
(B) SANITARY SEWER - CITY OF GREENSBORO

PREPARED IN THE OFFICE OF

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

6415 OLD PLANK RD., HIGH POINT, NC 27285  
PHONE: (336)886-4821 FAX: (336)886-4458  
WWW.DMP-INC.COM LICENSE: F-0245

Andrew P. Larrick, P.E. CONSULTANT CONTACT #1  
Ralph Lowe CONSULTANT CONTACT #2  
N/A CONSULTANT CONTACT #3



**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  
J.T. Yoon, P.E. UTILITIES ENGINEER  
Ed Reams UTILITIES AREA COORDINATOR  
Kyle Pleasant UTILITIES COORDINATOR

\$\$\$\$\$ SYSTEM TIME\$\$\$\$\$  
\$\$\$\$\$ DDMMYY\$\$\$\$\$  
\$\$\$\$\$ USER NAME\$\$\$\$\$

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	

## EXISTING UTILITIES SYMBOLS

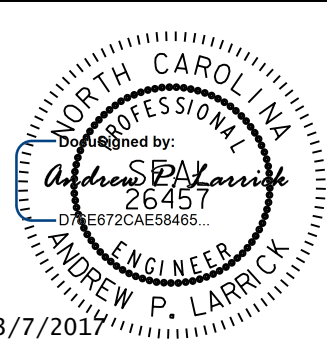
Power Pole		*Underground Power Line	
Telephone Pole		*Underground Telephone Cable	
Joint Use Pole		*Underground Telephone Conduit	
Utility Pole		*Underground Fiber Optics Telephone Cable	
Utility Pole with Base		*Underground TV Cable	
H-Frame Pole		*Underground Fiber Optics TV Cable	
Power Transmission 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  
C:\T\...  
REV: 2/1/2012

5/14/99

# UTILITY CONSTRUCTION

PROJECT REFERENCE NO. <b>B-5345</b>	SHEET NO. <b>UC-3</b>
DESIGNED BY: <b>DMP</b>	
DRAWN BY: <b>DMP</b>	
CHECKED BY: <b>DMP</b>	
APPROVED BY: <b>DMP</b>	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
3/7/2014 ANDREW P. LARRICK UTILITY CONSTRUCTION PLANS ONLY	

## 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 2012.
2. THE EXISTING WATER AND SEWER 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 ENVIRONMENTAL 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 AND FITTINGS FOR PROPOSED WATER MAINS 4" AND LARGER SHALL BE DUCTILE IRON, PC 350.
2. PROPOSED WATER LINES SHALL BE D.I.R.J. (DUCTILE IRON RESTRAINED JOINT) PIPE.
3. PROPOSED GATE VALVES SHALL BE RESILIENT-SEAT TYPE GATE VALVES, MEETING REQUIREMENTS OF ANSI/AWWA C509.
4. 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.

## 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

## UTILITY CONSTRUCTION

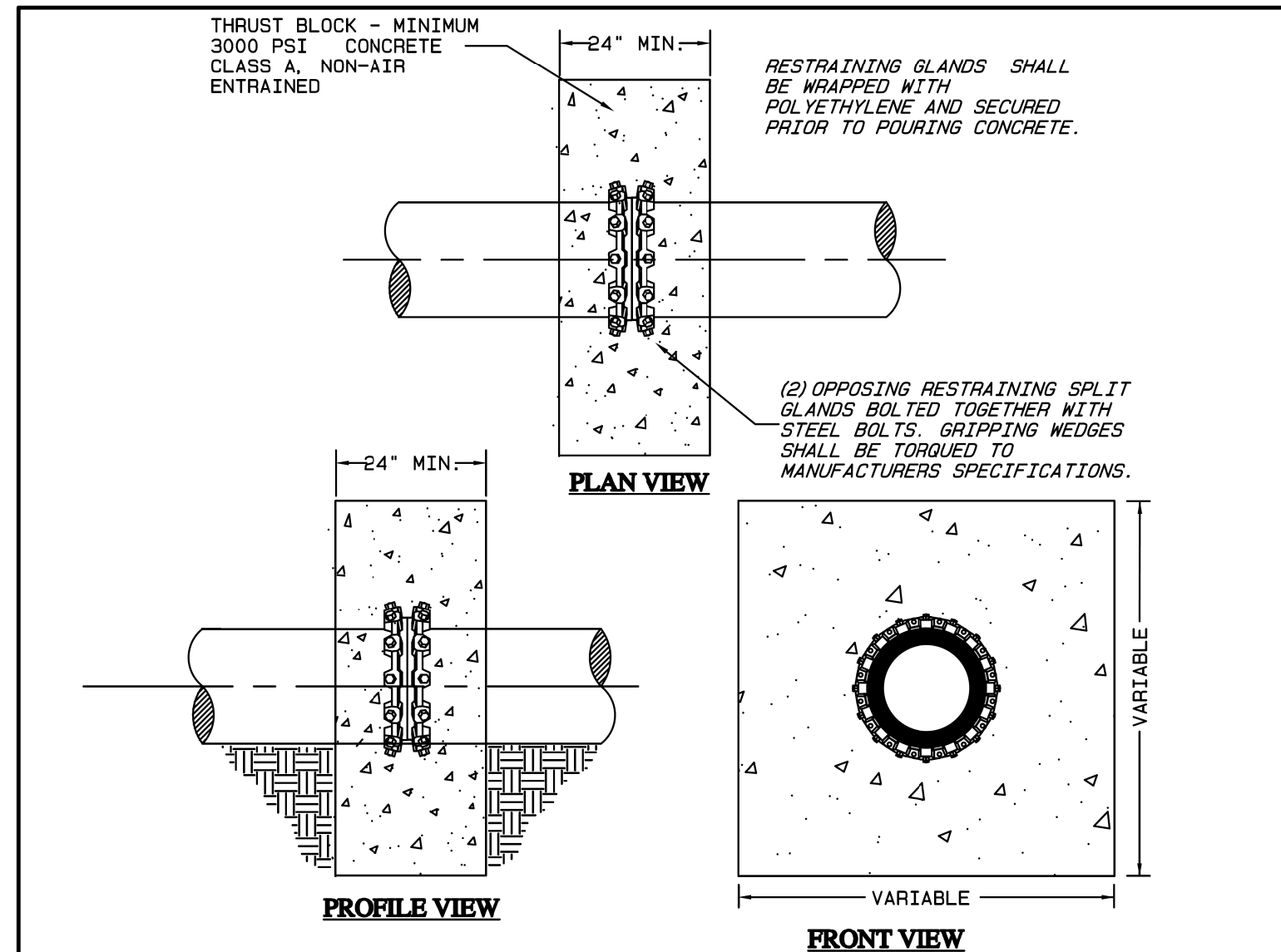
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

# PROJECT TYPICAL DETAILS

PROJECT REFERENCE NO.	SHEET NO.
B-5345	UC-3A
DESIGNED BY: DMP	
DRAWN BY: DMP	
CHECKED BY: DMP	
APPROVED BY: DMP	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	3/7/2014 UTILITY CONSTRUCTION PLANS ONLY

## UTILITY CONSTRUCTION

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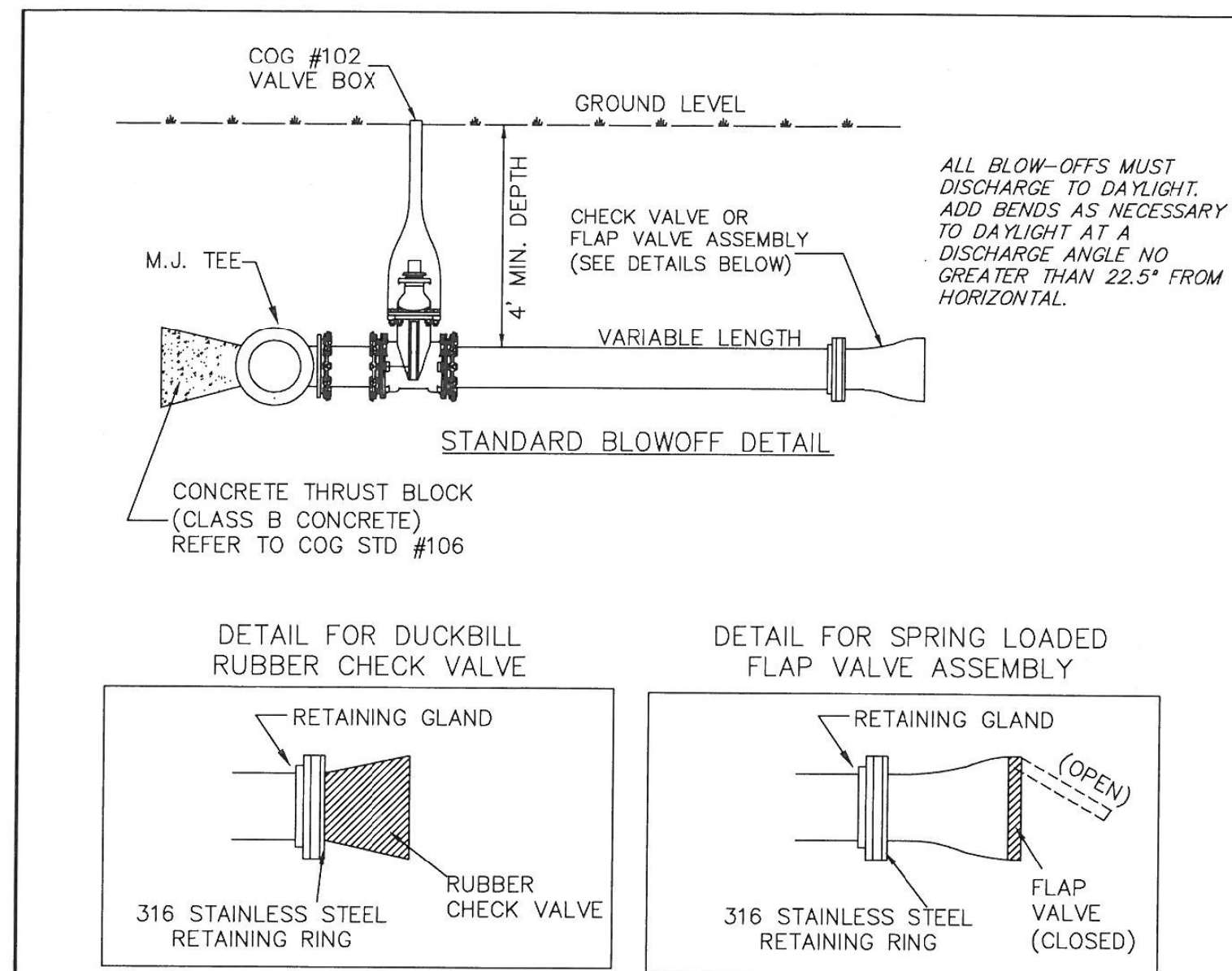
**NOTES:**

- 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 4" 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		
	150 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



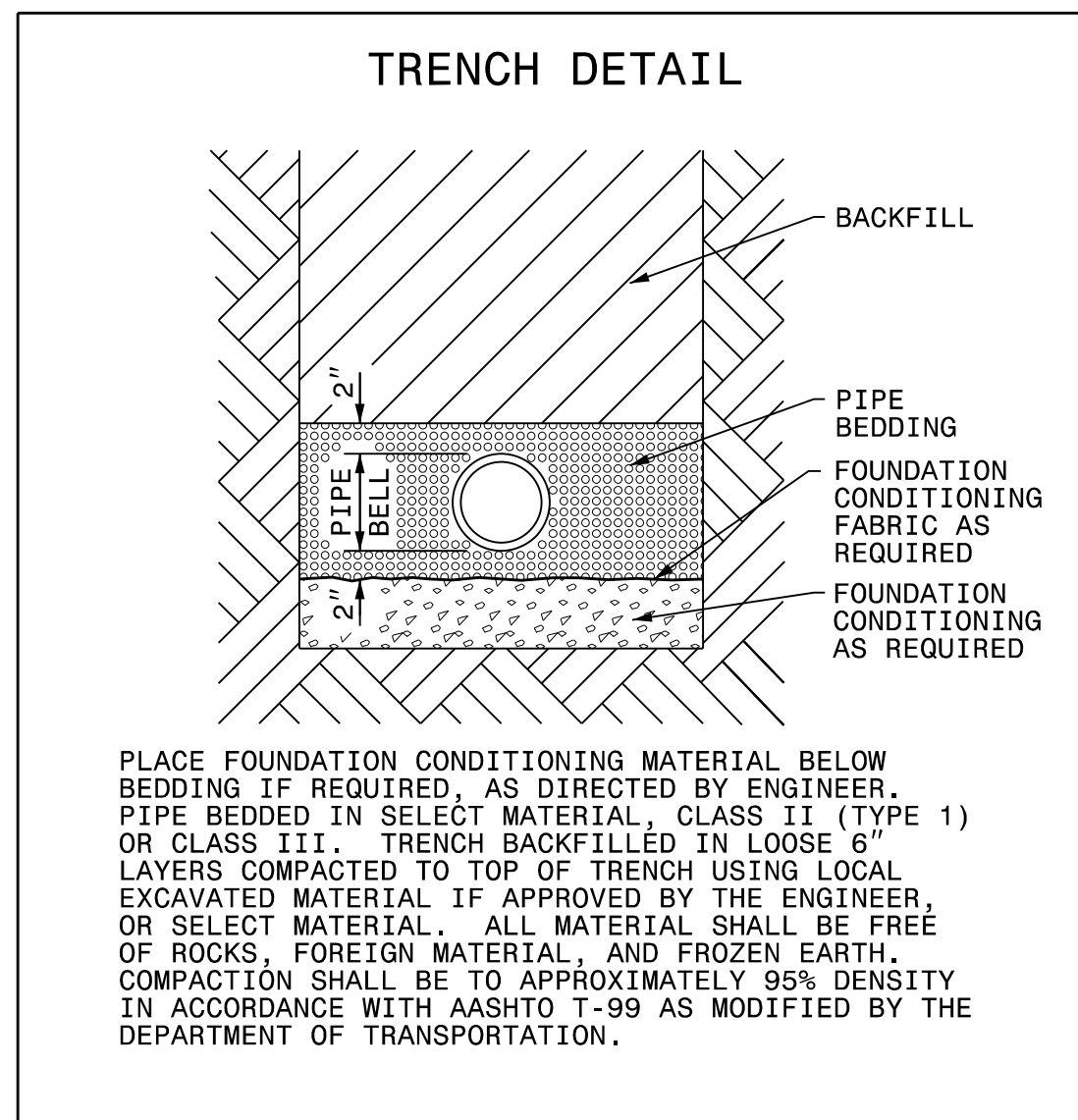
**GENERAL NOTES:**

- ALL MECHANICAL JOINTS SHALL BE RESTRAINING 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 RIP-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.

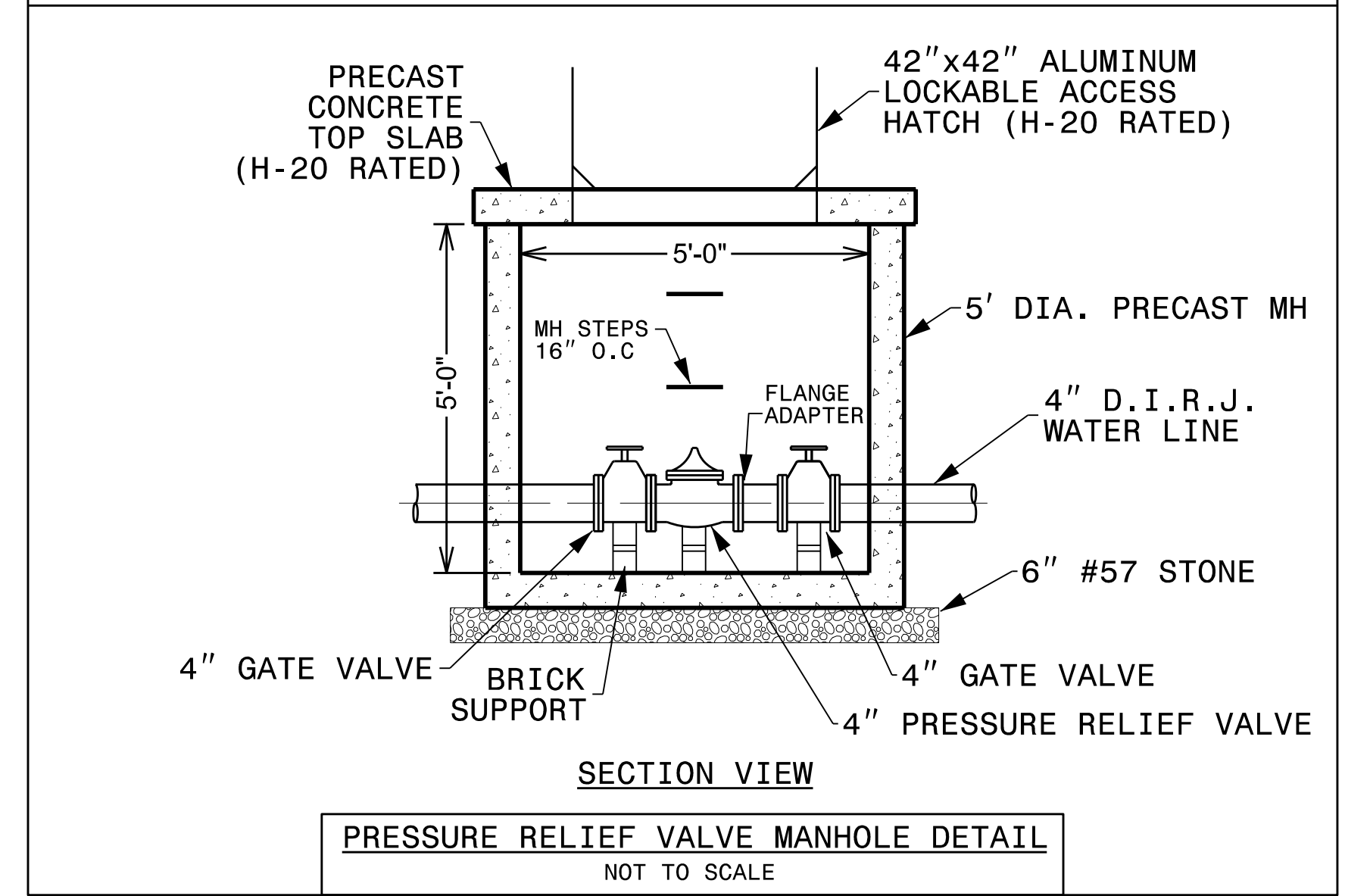
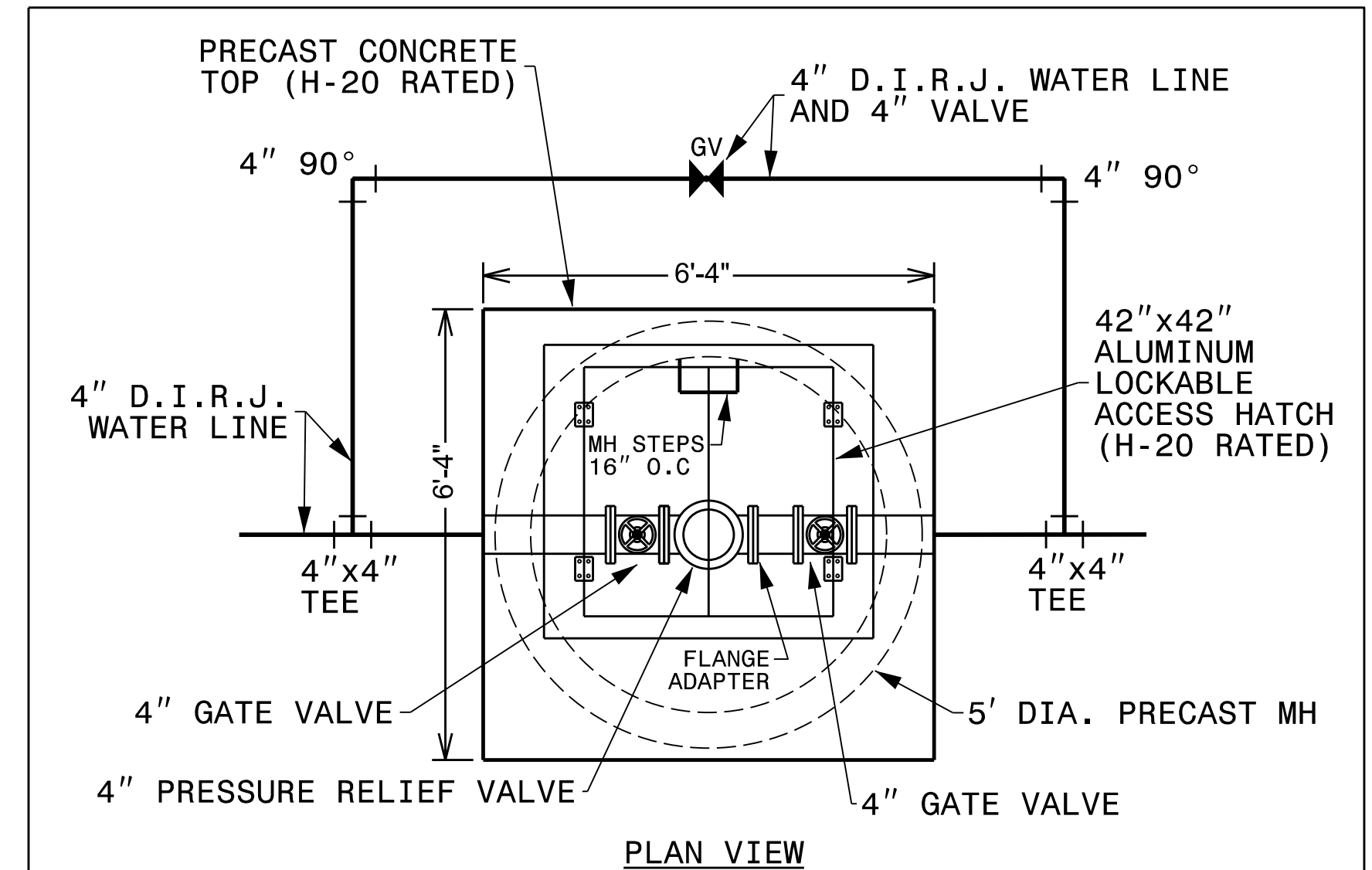
PAGE 1 OF 2

### CITY OF GREENSBORO

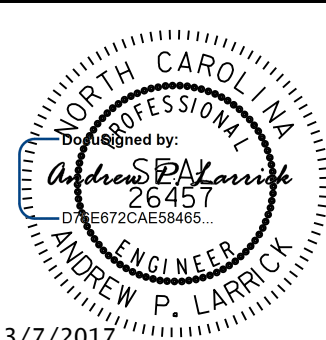
BLOW-OFF DETAIL (4", 6" & 8")	STD. NO.	REV.
	119	06/13



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		



PROJECT REFERENCE NO.	SHEET NO.
B-5345	UC-4
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	3/7/2017
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY



**UTILITY CONSTRUCTION**

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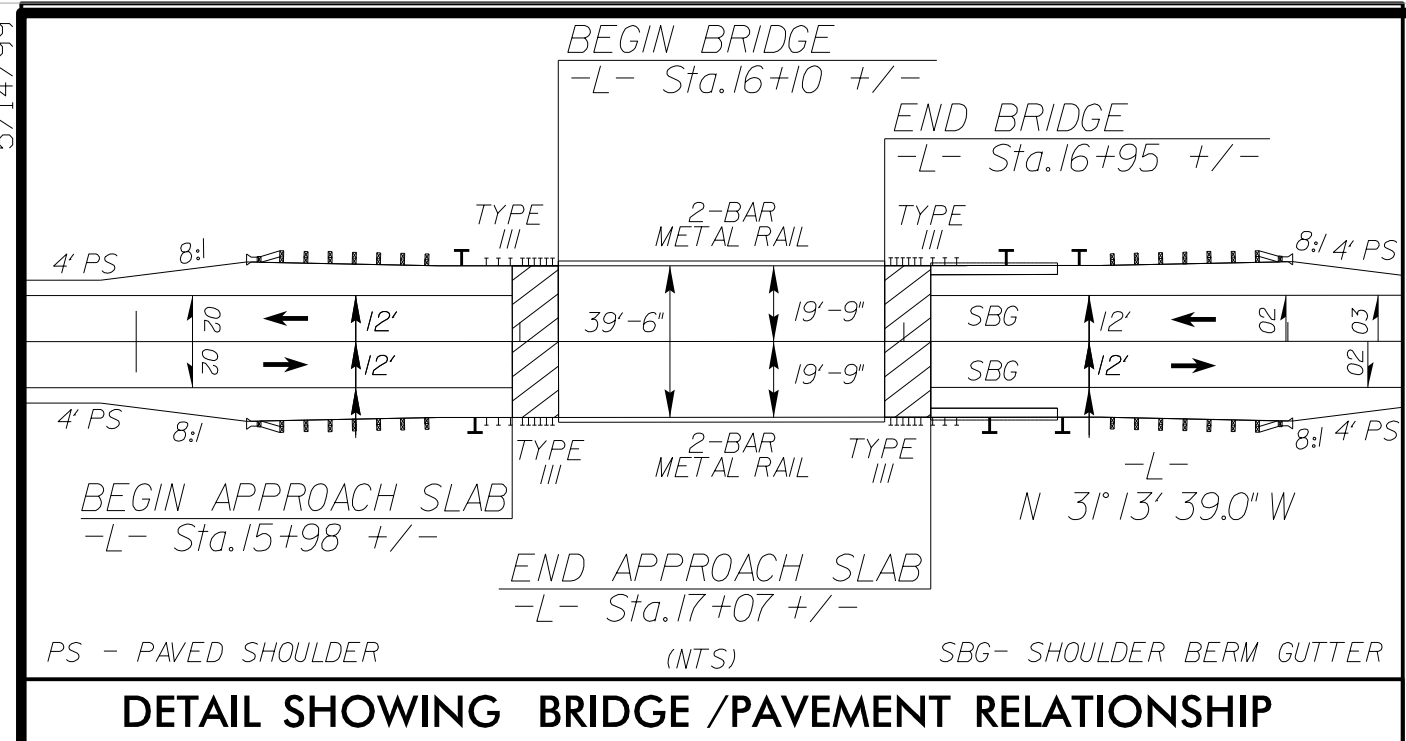
DOUGLAS C. WEISS  
DB 6665 PG 143  
-L- POT Sta. 25+00.00

GP 400104-1  
-L- Sta. 24+49.04  
OFF 23.39' LT

STATION 24+88.20  
38.88' RIGHT  
ELEV=820.00'

JAMES A NELSON  
ELISABETH S. NELSON  
DB 6424 PG 1844

RALPH W. GUFFEY  
PATRICIA A. GUFFEY  
(GUFFEY PROPERTY MANAGEMENT - TAX LISTING)  
DB 4328 PG 1078



**DETAIL SHOWING BRIDGE /PAVEMENT RELATIONSHIP**

PROP. - 260 L.F. OF 12" WATER LINE  
130 L.F. - TRENCHLESS INSTALLATION OF 12" IN SOIL  
130 L.F. - TRENCHLESS INSTALLATION OF 12" NOT IN SOIL

PROP. CONC. THRUST BLOCK (EXPOSED FACE 6" FROM END OF 4" BLOWOFF LINE), WITH DUCKBILL RUBBER CHECK VALVE INSTALLED AT END OF 4" BLOWOFF PER COG STD. NO. 119. THE COST OF THE CONC. THRUST BLOCK AND DUCKBILL RUBBER CHECK VALVE SHALL BE INCIDENTAL TO THE CONTRACT.

PROP. - 112 L.F. 4" WATER LINE

PROP. - 134 L.F. OF 12" WATER LINE

PROP. 8" LAYER OF ABC STONE FOR DRIVEWAY AND TURN-AROUND (COST SHALL BE INCIDENTAL TO THE PRESSURE RELIEF VALVE MH)

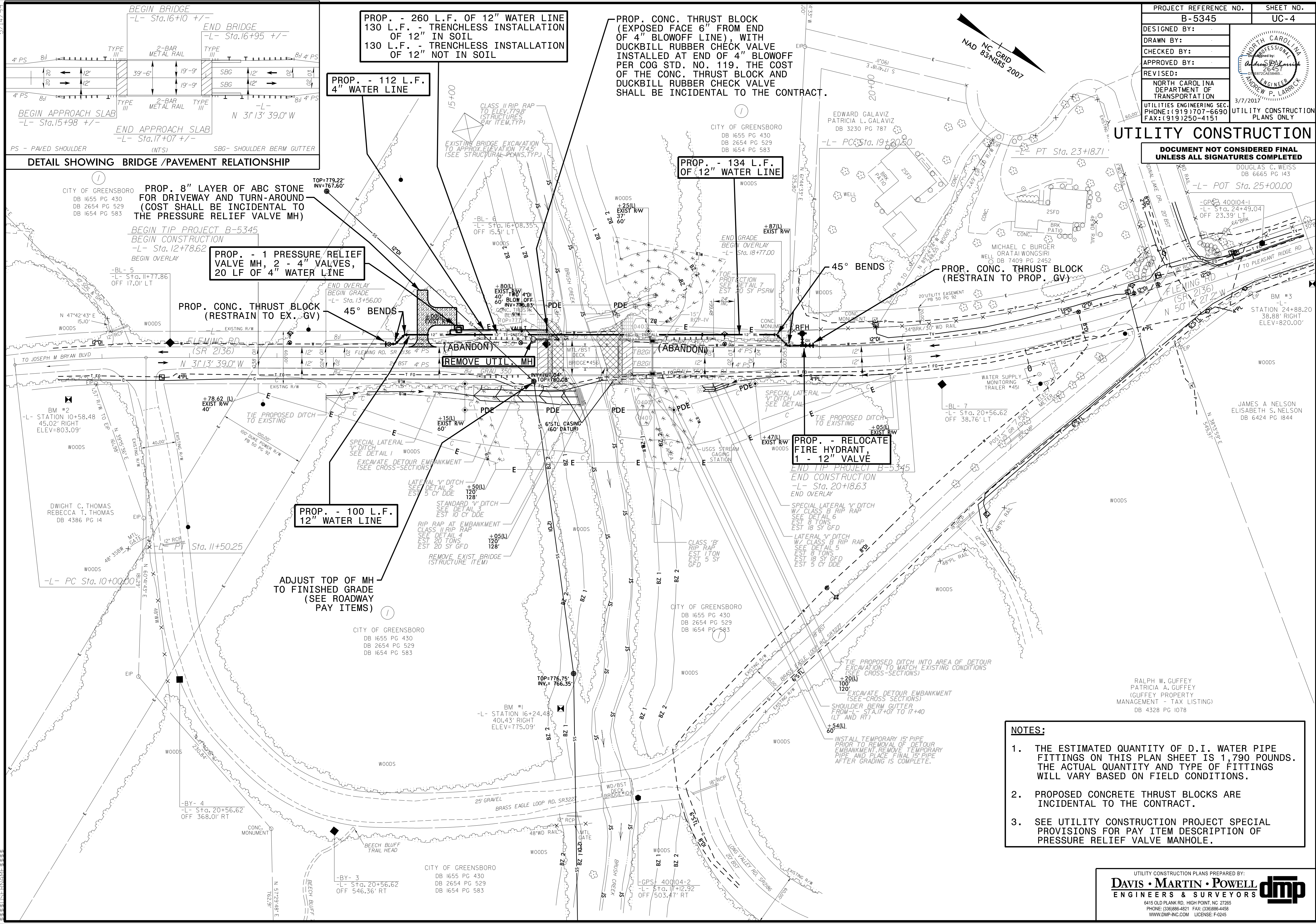
PROP. - 1 PRESSURE RELIEF VALVE MH, 2 - 4" VALVES, 20 LF OF 4" WATER LINE

PROP. CONC. THRUST BLOCK (RESTRAIN TO EX. GV)

PROP. - RELOCATE FIRE HYDRANT, 1 - 12" VALVE

PROP. - 100 L.F. 12" WATER LINE

ADJUST TOP OF MH TO FINISHED GRADE (SEE ROADWAY PAY ITEMS)



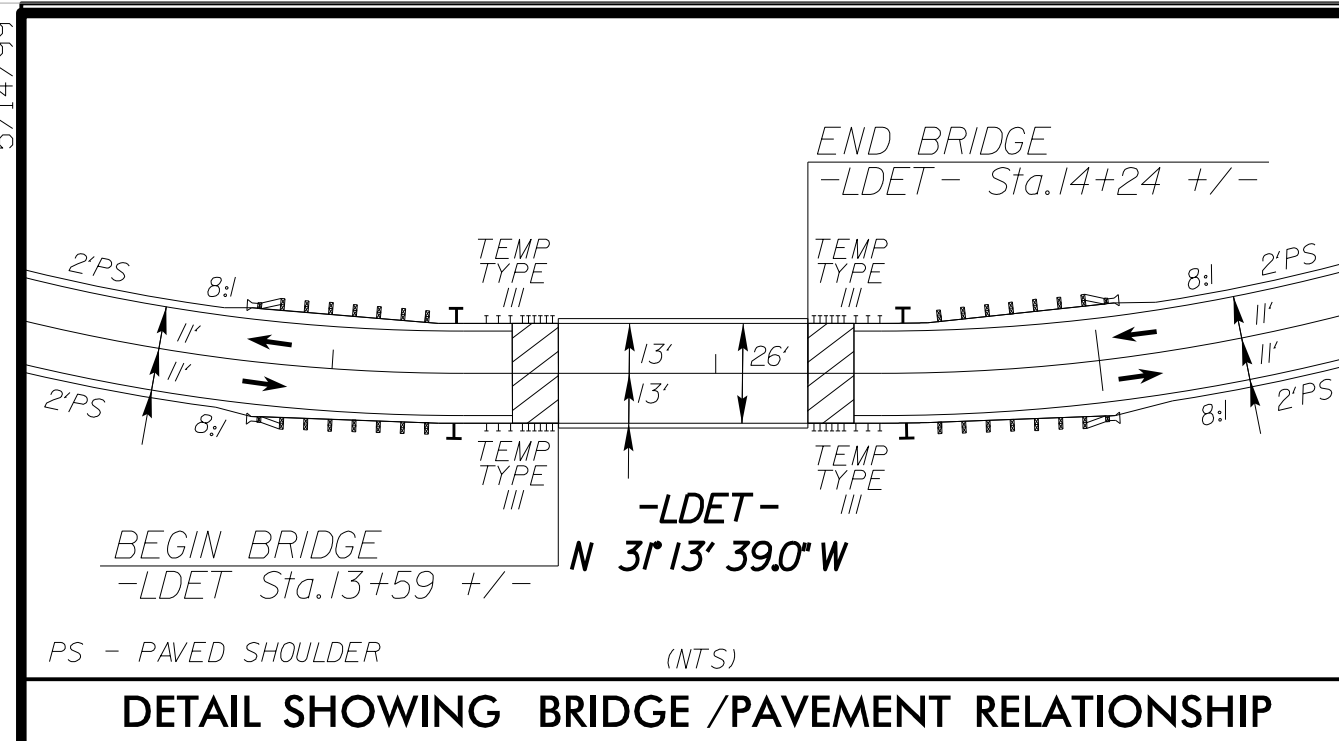
- NOTES:**
1. THE ESTIMATED QUANTITY OF D.I. WATER PIPE FITTINGS ON THIS PLAN SHEET IS 1,790 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.
  2. PROPOSED CONCRETE THRUST BLOCKS ARE INCIDENTAL TO THE CONTRACT.
  3. SEE UTILITY CONSTRUCTION PROJECT SPECIAL PROVISIONS FOR PAY ITEM DESCRIPTION OF PRESSURE RELIEF VALVE MANHOLE.

5/14/99

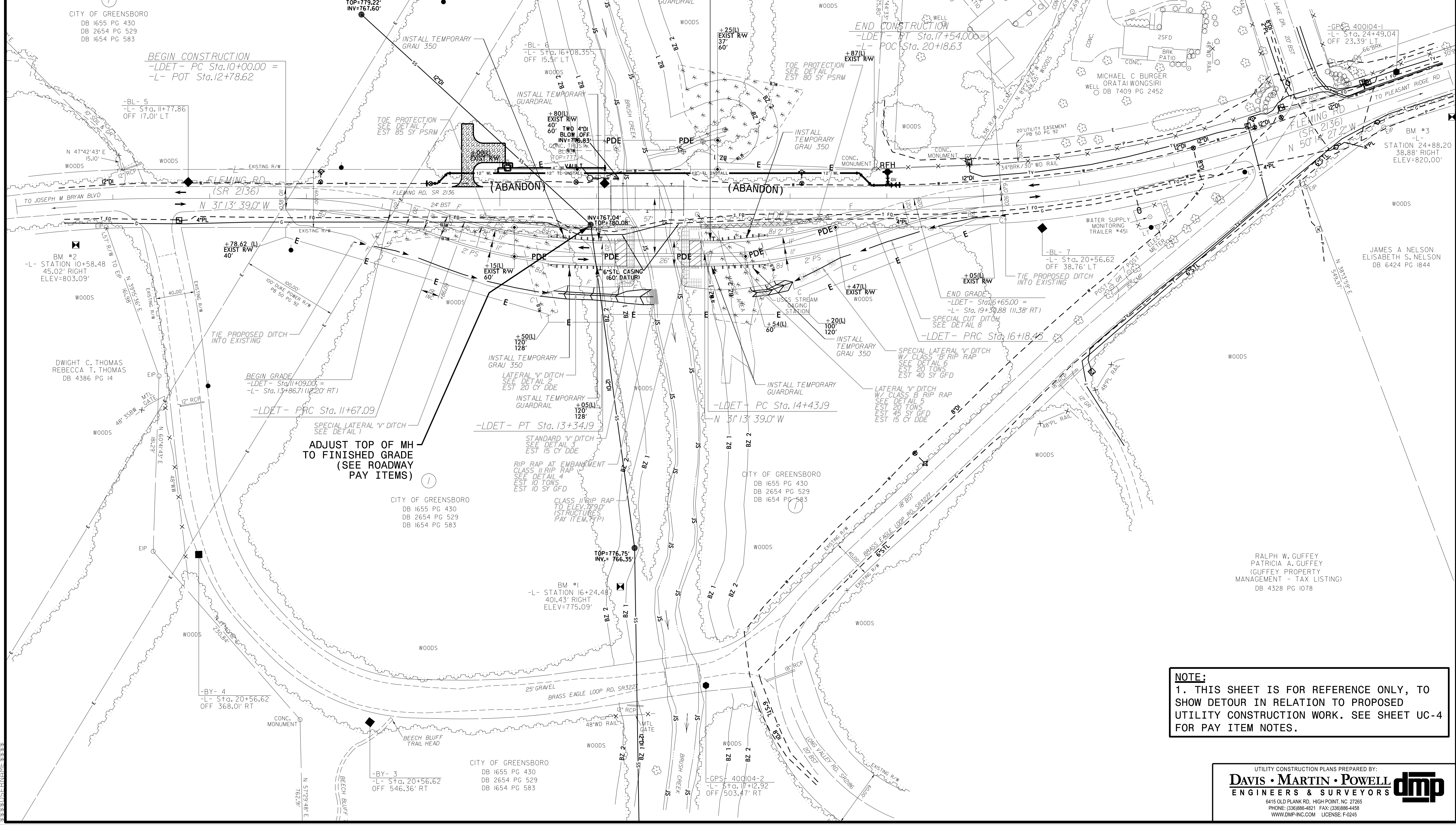
PROJECT REFERENCE NO.	SHEET NO.
B-5345	UC-5
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
REVISED:	3/7/2017
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	UTILITY CONSTRUCTION PLANS ONLY
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	

### UTILITY CONSTRUCTION

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DETAIL SHOWING BRIDGE /PAVEMENT RELATIONSHIP



**NOTE:**  
 1. THIS SHEET IS FOR REFERENCE ONLY, TO SHOW DETOUR IN RELATION TO PROPOSED UTILITY CONSTRUCTION WORK. SEE SHEET UC-4 FOR PAY ITEM NOTES.

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-NC.COM LICENSE: F-0245

