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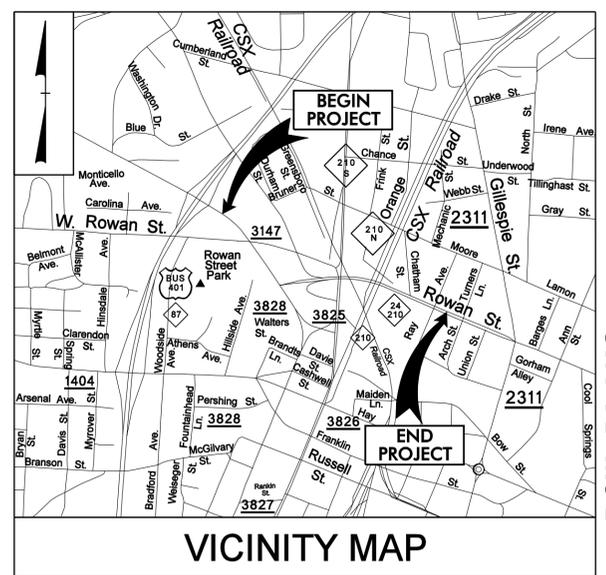
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

**UTILITY CONSTRUCTION PLANS
CUMBERLAND COUNTY**

**LOCATION: BRIDGE NO. 116 OVER CSX RR, NORFOLK SOUTHERN RR,
AND HILLSBORO STREET ON NC 24 /210**

TYPE OF WORK: UTILITY CONSTRUCTION

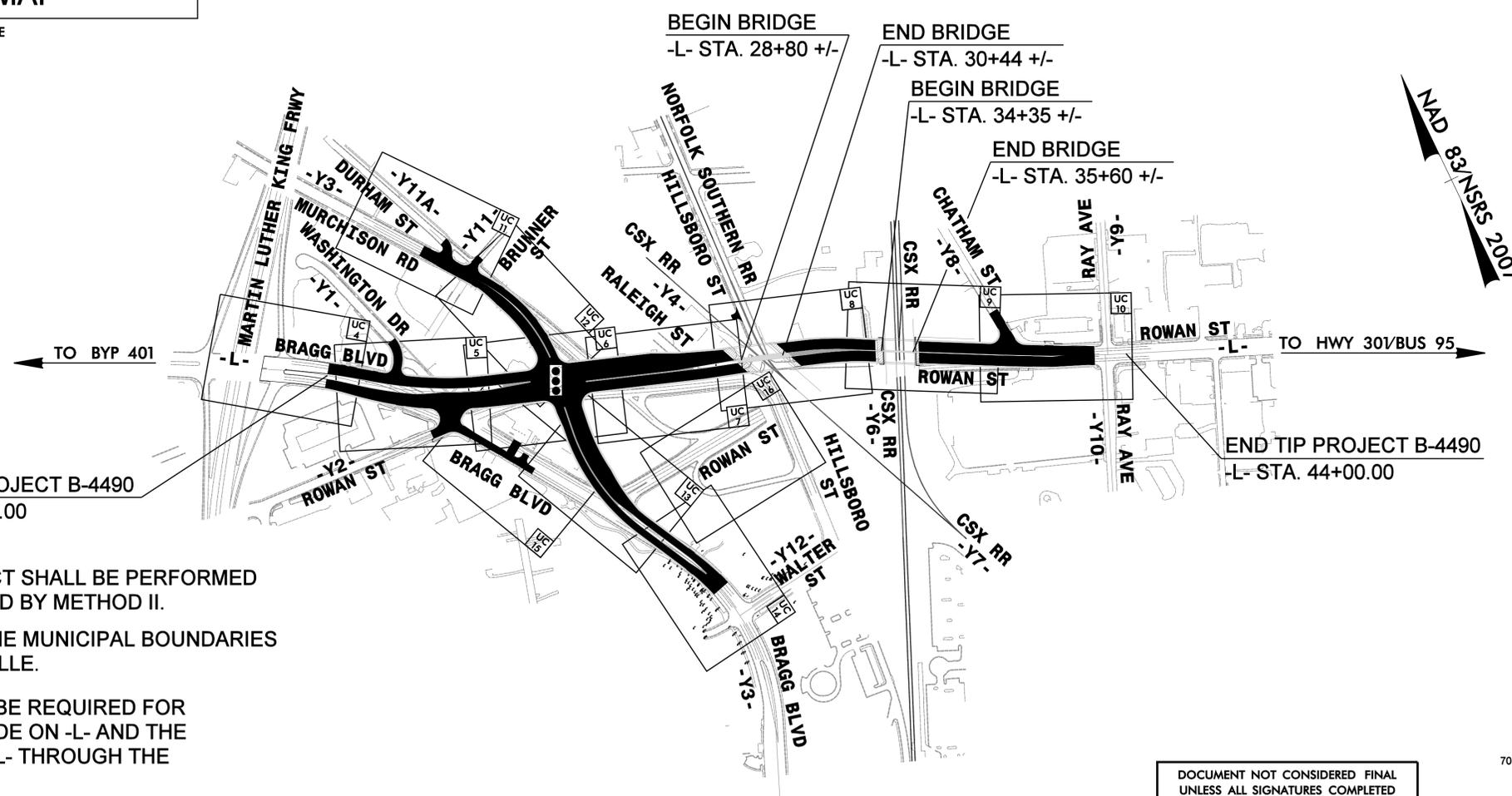
TIP PROJECT: B-4490



VICINITY MAP

NOT TO SCALE

ROW PLANS



CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF FAYETTEVILLE.

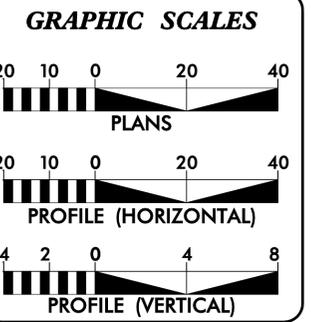
DESIGN EXCEPTIONS WILL BE REQUIRED FOR EXCEEDING MAXIMUM GRADE ON -L- AND THE SUPERELEVATION ALONG -L- THROUGH THE INTERSECTION WITH -Y3-

Prepared in the Office of:



AECOM TECHNICAL SERVICES OF NORTH CAROLINA, INC.
701 CORPORATE CENTER DRIVE, SUITE 475, RALEIGH, NC 27607
919-854-6200 919-854-6259 (fax)
F-0342

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INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLOGY
UC-3	NOTES
UC-3A thru UC-3L	DETAILS
UC-4 thru UC-16	UTILITY CONSTRUCTION SHEETS
UC-17 thru UC-21	PROFILE SHEETS

WATER AND SEWER OWNERS ON PROJECT

(1) WATER - Fayetteville PWC
(2) SANITARY SEWER - Fayetteville PWC

SEAL

John David Pachtzsch, P.E.
2/1/2016

PREPARED IN THE OFFICE OF:
**DIVISION OF HIGHWAYS
UTILITIES UNIT
UTILITIES ENGINEERING**

1555 MAIL SERVICES CENTER
RALEIGH NC 27699-1555
PHONE (919) 707-6690
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Roger Worthington, P.E. UTILITIES SECTION ENGINEER
Bo Hemphill, P.E. UTILITIES SQUAD LEADER PROJECT ENGINEER
Nabil Hamdan UTILITIES PROJECT DESIGNER

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

Water Line (Sized as Shown)	..... 12" WL
11¼ Degree Bend	.....
22½ Degree Bend	.....
45 Degree Bend	.....
90 Degree Bend	.....
Plug	.....
Tee	.....
Cross	.....
Reducer	.....
Gate Valve	..... GV
Butterfly Valve	..... BV
Tapping Valve	..... TGV
Line Stop	..... LS
Line Stop with Bypass	..... LS/BP
Blow Off	..... BO
Fire Hydrant	..... PFH
Relocate Fire Hydrant	..... RFH
Remove Fire Hydrant	..... REM FH
Water Meter	..... PWM
Relocate Water Meter	..... RWM
Remove Water Meter	..... REM WM
Water Pump Station	..... PST(W)
RPZ Backflow Preventer	..... PRPZ
DCV Backflow Preventer	..... PBFEP
Relocate RPZ Backflow Preventer	..... RRPZ
Relocate DCV Backflow Preventer	..... RBFEP

PROPOSED SEWER SYMBOLS

Gravity Sewer Line (Sized as Shown)	..... 12" SS
Force Main Sewer Line (Sized as Shown)	..... 12" FSS
Manhole (Sized per Note)	.....
Sewer Pump Station	..... PS(SS)

PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

Power Pole	.....
Telephone Pole	.....
Joint Use Pole	.....
Telephone Pedestal	..... TEL PED
Utility Line by Others (Type as Shown)	..... PROP O/H POW LINES
Trenchless Installation	..... 12" TL INSTALL
Encasement by Open Cut	..... 24" ENCAS BY OC
Encasement	..... 24" ENCASEMENT

Thrust Block	.....
Air Release Valve	..... AR
Utility Vault	..... UV
Concrete Pier	..... CP
Steel Pier	..... SP
Plan Note	..... NOTE
Pay Item Note	..... PAY ITEM

EXISTING UTILITIES SYMBOLS

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

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

5/14/99

UTILITY CONSTRUCTION NOTES

Prepared by:

AECOM

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PROJECT REFERENCE NO. B-4490	SHEET NO. UC-3
DESIGNED BY: .	
DRAWN BY: .	
CHECKED BY: .	
APPROVED BY: .	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
2/1/2016	

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 2012.

2. THE EXISTING WATER AND SEWER UTILITIES ARE OWNED BY THE FAYETTEVILLE PUBLIC WORKS COMMISSION.

3. ALL WATER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL AND NATURAL RESOURCES, DIVISION OF ENVIRONMENTAL HEALTH. ALL SEWER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES, DIVISION OF WATER QUALITY. 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 OPPROTUNITY 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.

10. ALL WATER MAIN PIPE 6" AND LARGER SHALL BE DUCTILE IRON.

11. ALL 2" WATER MAIN PIPE SHALL BE SDR 21 PVC.

12. ALL 2" WATER MAIN VALVES SHALL BE BALL VALVES AND SHALL BE INSTALLED VERTICAL.

13. ALL WATER MAIN VALVES 6" AND LARGER SHALL BE GATE VALVES AND SHALL BE INSTALLED VERTICAL.

14. ALL VALVES AND FITTINGS 4" TO 12" SHALL BE RESTRAINED BY MANUFACTURED RESTRAINED SYSTEMS AS INDICATED IN DETAIL W.18 SHEET UC-16. CONCRETE BLOCKING SHALL NOT BE USED EXCEPT AT FIRE HYDRANT TEES AS INDICATED ON DETAIL W.13 SHEET UC-15.

15. PIPE WITHIN CASINGS SHALL HAVE A RESTRAINED JOINT SYSTEM DESIGNED AND MANUFACTURED BY THE PIPE SUPPLIER (FACTORY RESTRAINED JOINT PIPE) AS INDICATED IN DETAIL M.6 SHEET UC-17 SUITABLE FOR INSTALLATION WITHIN THE CASING.

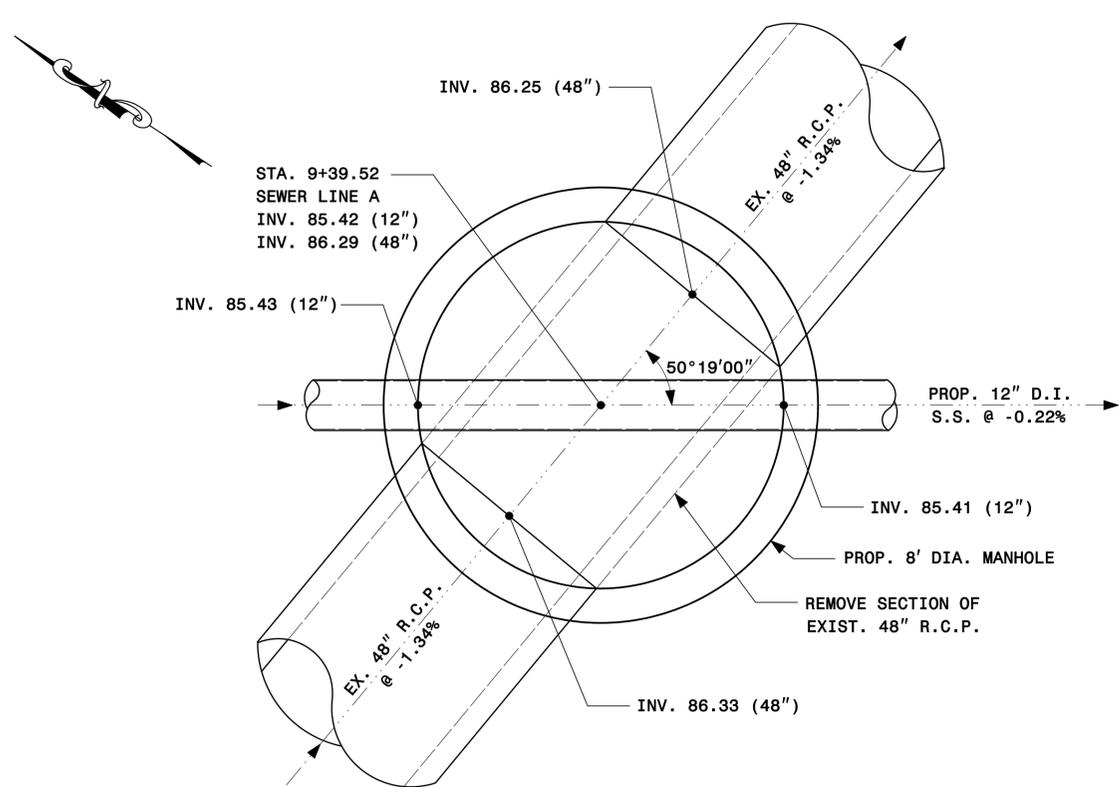
16. ALL PIPE 16" AND LARGER WILL REQUIRE FACTORY RESTRAINED JOINTS.

17. ALL PROPOSED SANITARY SEWER MANHOLES SHALL HAVE WATERTIGHT MANHOLE INSERT IN ACCORDANCE WITH DETAIL S-9 ON SHEET NO. UC-31.

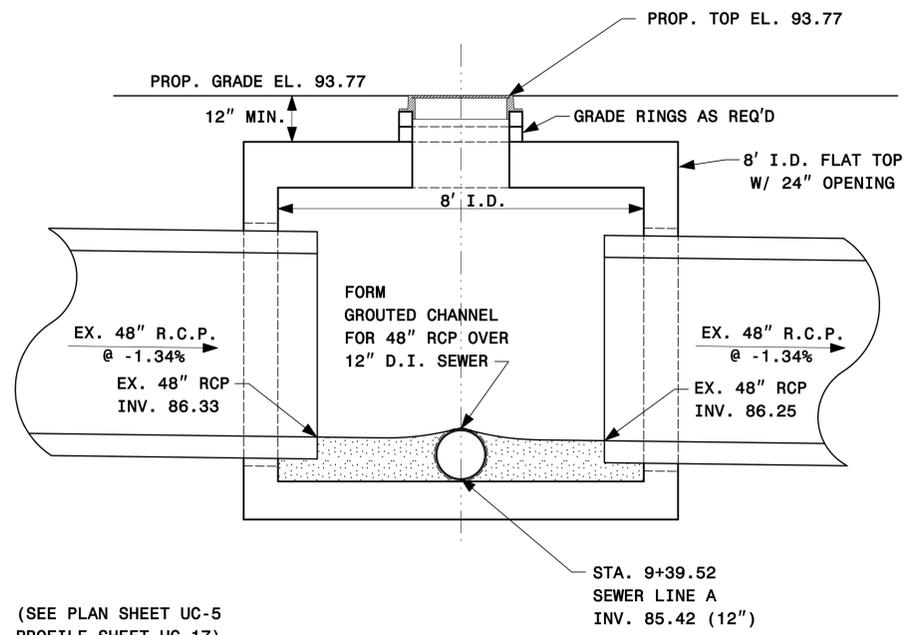
SCALE: 1" = 2'
0' 2' 4'

PROJECT REFERENCE NO. B-4490	SHEET NO. UC-3A
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	

UTILITY CONSTRUCTION
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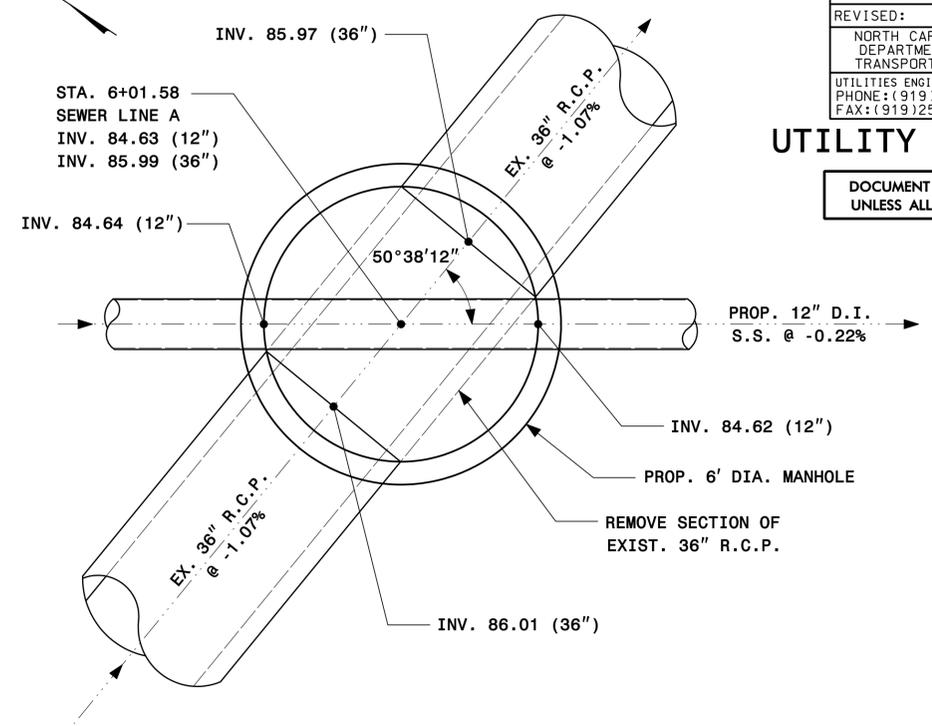
PLAN VIEW



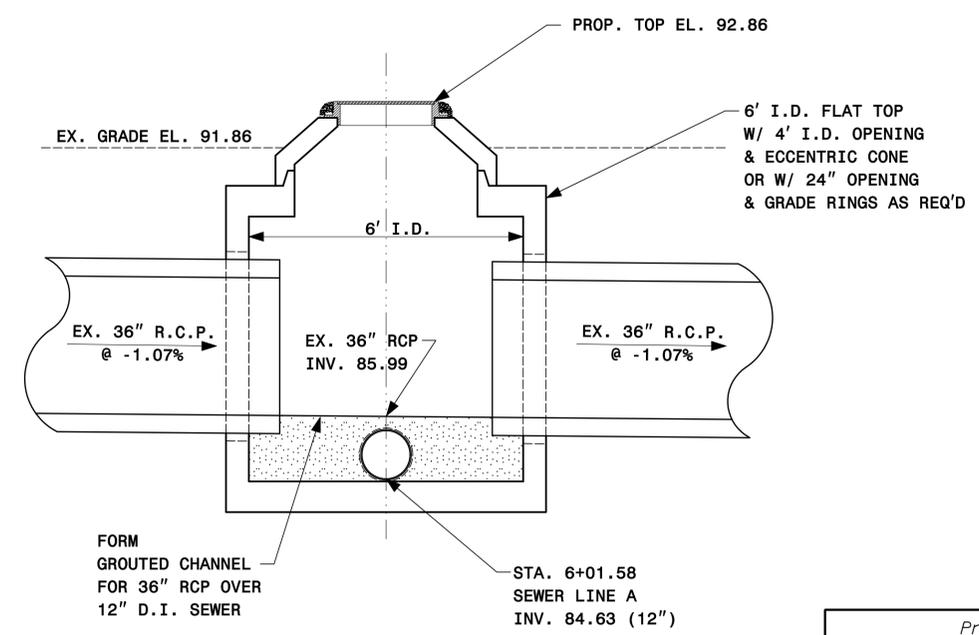
ELEVATION VIEW

PROPOSED CONFLICT BOX #2

(SEE PLAN SHEET UC-5
PROFILE SHEET UC-17)



PLAN VIEW



ELEVATION VIEW

PROPOSED CONFLICT BOX #1

(SEE PLAN SHEET UC-13
PROFILE SHEET UC-17)

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DATE: 2/22/2016
 TIME: 7:31:27 AM
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PROJECT REFERENCE NO. **B-4490** SHEET NO. **UC-3B**

DESIGNED BY: .
DRAWN BY: **NONE**
CHECKED BY: .
APPROVED BY: .
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NORTH CAROLINA
DEPARTMENT OF
TRANSPORTATION
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UTILITY CONSTRUCTION

- CONTRACTOR SHALL REPAIR ALL WATER LATERALS AND MAINS DAMAGED DURING CONSTRUCTION. THE CONTRACTOR SHALL REPORT IMMEDIATELY ALL WATER MAIN AND LATERAL BREAKS TO THE FAYPWC PROJECT COORDINATOR. THE CONTRACTOR SHALL INITIATE IMMEDIATE REPAIRS IN ACCORDANCE WITH FAYPWC STANDARDS. CONTRACTOR SHALL NOT OPERATE FAYPWC WATER MAIN VALVES WITHOUT FAYPWC APPROVAL AND SHALL COORDINATE ALL VALVE CLOSINGS WITH FAYPWC.
- THE CONTRACTOR SHALL NOT USE HOUSE HOSE BIBBS OR ANY OTHER METHOD OF BLOW OFF WHICH ALLOWS DOMESTIC WATER CONTAINING SEDIMENTS OR HIGH LEVELS OF CHLORINE TO PASS THRU RESIDENTS METERS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGES RESULTING FROM ALLOWING "DIRTY" WATER TO ENTER RESIDENTS' PLUMBING SYSTEM, SUCH AS WATER HEATERS, STAINED CLOTHING, CLOGGED SCREENS, ETC.
- WATER MAINS AND LATERALS SHALL BE INSTALLED UTILIZING A FAYPWC APPROVED CUT-SHEET INDICATING INSTALLATION DEPTH.
- TRANSFER OF WATER SERVICES SHALL BE ACCOMPLISHED AS FOLLOWS:
 - INSTALL TEST AND STERILIZE NEW MAIN AND LATERALS. LATERALS SHALL BE INSTALLED 18" INSIDE R/W UNLESS OTHERWISE DIRECTED BY FAYPWC.
 - TRANSFER EXISTING METER TO NEW METER BOX AND THE NEW WATER LATERAL TO EXISTING DOMESTIC SERVICE UTILIZING BRASS FITTINGS. SAME METER NUMBER SHALL BE INSTALLED ON SAME ADDRESS AND/OR CUSTOMER. BLOW OFF SERVICE AT HOSE BIBB ON HOUSE ONLY AFTER METER HAS BEEN TRANSFERRED.
 - AFTER ALL SERVICES ARE TRANSFERRED TO THE NEW SYSTEM, SHUT OFF VALVE ON EXISTING SYSTEM AND ABANDON EXISTING MAINS IN ACCORDANCE WITH FAYPWC DETAILS.
 - CONTRACTOR SHALL SUPPLY NEW METER BOXES AND DISPOSE OF EXISTING METER BOXES.
- WHEN MAIN IS NOT TO BE ABANDONED, CONTRACTOR SHALL UNCOVER OLD CORPORATION AT MAIN, CLOSE AND PLUG CORPORATION TO ABANDON OLD SERVICE.
- SEPARATION REQUIREMENTS:
 - LATERAL SEPARATION OF SEWERS AND WATER MAINS:** WATER MAINS SHALL BE LAID AT LEAST 10 FEET Laterally FROM EXISTING OR PROPOSED SEWER MAIN/LATERAL, UNLESS LOCAL CONDITIONS OR BARRIERS PREVENT A 10-FOOT LATERAL SEPARATION - IN WHICH CASE:
 - THE WATER MAIN IS LAID IN A SEPARATE TRENCH, WITH THE ELEVATION OF THE BOTTOM OF THE WATER MAIN AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER MAIN/LATERAL; OR
 - THE WATER MAIN IS LAID IN THE SAME TRENCH AS THE SEWER MAIN/LATERAL WITH THE WATER MAIN LOCATED AT ONE SIDE ON A BENCH OF UNDISTURBED EARTH AND WITH THE ELEVATION OF THE BOTTOM OF THE WATER MAIN AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER MAIN/LATERAL.

- WATER OUTAGES:** THE CONTRACTOR SHALL SCHEDULE A COORDINATION MEETING WITH THE FAYPWC PROJECT COORDINATOR AND PROJECT ENGINEER A MINIMUM OF THREE (3) WORKING DAYS PRIOR TO ANY PLANNED WATER OUTAGE. THE COORDINATION MEETING SHALL BE CONDUCTED PRIOR TO ANY NOTICES BEING ISSUED. ADDITIONALLY, THE CONTRACTOR SHALL LOCATE (VERTICALLY AND HORIZONTALLY) ANY UTILITIES WITHIN THE WORK AREA, IN ACCORDANCE WITH THESE CONTRACT DOCUMENTS. THE LOCATIONS OF ALL UTILITIES WITHIN THE WORK AREA SHALL BE DETERMINED PRIOR TO THE COORDINATION MEETING. ANY CONFLICTS WITH THE PENDING WORK AND THE EXISTING UTILITIES SHALL BE IDENTIFIED, AND A PLAN FOR RESOLVING ANY CONFLICTS SHALL BE PRESENTED. THE PURPOSE OF THIS COORDINATION MEETING IS TO ENSURE THAT THE CONTRACTOR HAS A GOOD UNDERSTANDING OF THE REQUIREMENTS RELATED TO THE PENDING OUTAGE. VERIFY THAT THERE ARE NO UTILITY CONFLICTS THAT WILL PREVENT THE WORK FROM BEING COMPLETED. ALL EQUIPMENT IS IN GOOD WORKING ORDER, ALL EQUIPMENT IS FUNCTIONAL, ALL MATERIALS ARE ON SITE, ALL NECESSARY TOOLS ARE ON SITE, DISCUSS ANY NECESSARY CONTINGENCY PLANS, AND ANY OTHER ITEMS NECESSARY TO ENSURE THAT THE FAYETTEVILLE PUBLIC WORKS COMMISSION HAS CONFIDENCE THAT THE WORK CAN BE ACCOMPLISHED WITHIN THE GIVEN TIME PERIOD. SHOULD, FOR ANY REASON, THE FAYETTEVILLE PUBLIC WORKS COMMISSION DEEM THAT THE CONTRACTOR IS NOT PREPARED FOR THE PROPOSED OUTAGE, THE OUTAGE NOTIFICATIONS WILL NOT BE DISTRIBUTED AND THE OUTAGE SHALL BE POSTPONED A MINIMUM OF TWO (2) WEEKS. THE FAYETTEVILLE PUBLIC WORKS COMMISSION WILL PROVIDE WRITTEN NOTIFICATION TO THE CONTRACTOR OF THIS DECISION. NO ADDITIONAL CONTRACT TIME WILL BE GRANTED FOR THIS DELAY. SHOULD THE CONTRACT TIME EXPIRE WITHIN THAT TWO (2) WEEK PERIOD, THE FAYETTEVILLE PUBLIC WORKS COMMISSION RESERVES THE RIGHT TO ASSESS LIQUIDATED DAMAGES, AS OUTLINED IN THESE CONTRACT DOCUMENTS.

THE CONTRACTOR SHALL COMPLETE THE REQUIRED WORK AND RESTORE WATER SERVICE WITHIN THE GIVEN TIME PERIOD FOR THE OUTAGE. SHOULD THE CONTRACTOR FAIL TO COMPLETE THE WORK WITHIN THE ALLOTTED TIME, THE FAYETTEVILLE PUBLIC WORKS COMMISSION SHALL ASSESS A PENALTY OF \$500 PER 15-MINUTE INTERVAL OR ANY PORTION THEREOF UNTIL WATER SERVICE IS RESTORED. THIS PENALTY WILL BE DEDUCTED FROM THE CONTRACTOR'S PAY APPLICATION OR BE BILLED DIRECTLY TO THE CONTRACTOR. THE PENALTY MAY BE WAIVED FOR CIRCUMSTANCES BEYOND THE CONTRACTOR'S CONTROL, AS DEEMED BY THE FAYETTEVILLE PUBLIC WORKS COMMISSION. THE FAYPWC PROJECT COORDINATOR AND/OR PROJECT ENGINEER RESERVE THE RIGHT TO CANCEL OR POSTPONE THE OUTAGE AT ANY GIVEN TIME, IF DEEMED NECESSARY.

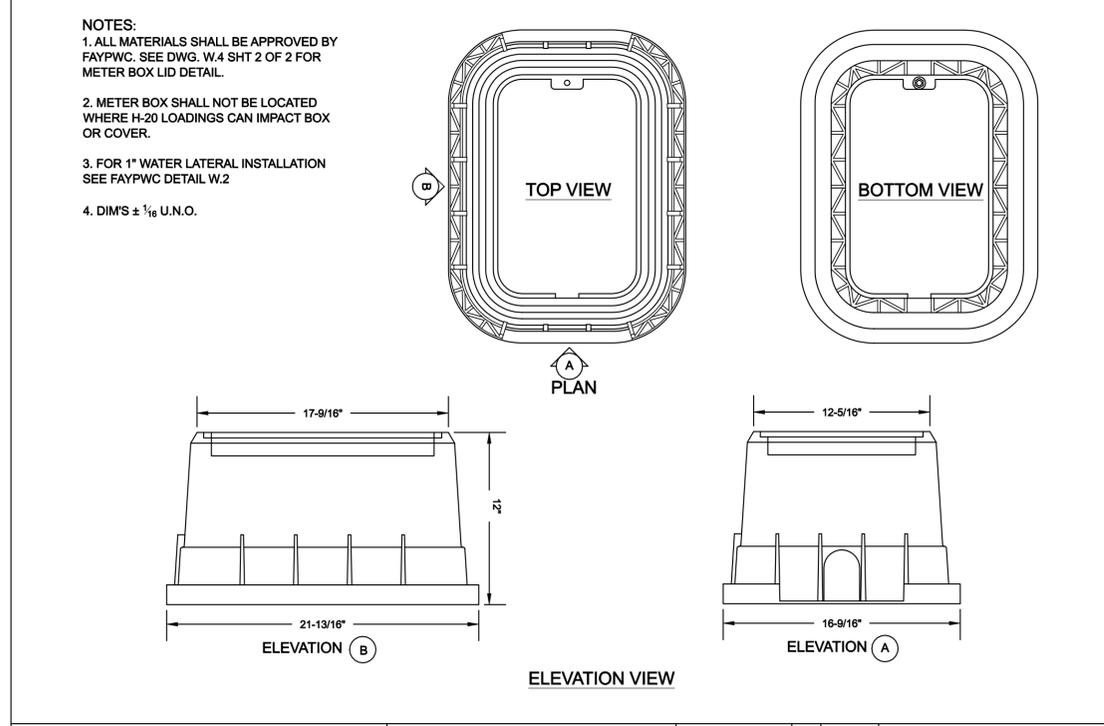
ONCE THE WATER OUTAGE NOTIFICATIONS HAVE BEEN ISSUED, A FOLLOW-UP COORDINATION MEETING WITH THE FAYPWC PROJECT COORDINATOR AND PROJECT ENGINEER SHALL BE HELD A MINIMUM OF 24 HOURS PRIOR TO THE SCHEDULED OUTAGE. THE PURPOSE OF THIS MEETING IS TO VERIFY THAT THE CONTRACTOR IS PREPARED TO PROCEED WITH THE OUTAGE, AND THAT ALL EQUIPMENT, MATERIALS, TOOLS, AND ALL OTHER INCIDENTALS ARE ON THE PROJECT SITE AND FUNCTIONING. IF FOR ANY REASON THE FAYETTEVILLE PUBLIC WORKS COMMISSION DEEMS THAT THE CONTRACTOR IS NOT PREPARED, THE OUTAGE SHALL BE POSTPONED AND ALL CUSTOMERS IMMEDIATELY NOTIFIED OF THE CANCELLATION. THE OUTAGE SHALL BE POSTPONED A MINIMUM OF TWO (2) WEEKS. NO ADDITIONAL CONTRACT TIME WILL BE GRANTED FOR THIS DELAY. SHOULD THE CONTRACT TIME EXPIRE WITHIN THAT TWO (2) WEEK PERIOD, THE FAYETTEVILLE PUBLIC WORKS COMMISSION RESERVES THE RIGHT TO ASSESS LIQUIDATED DAMAGES, AS OUTLINED IN THESE CONTRACT DOCUMENTS.

WATER UTILITY NOTES			PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.											
SHEET NO. 1 OF 2	DWG. NO.	W.1	DWG. BY:	FAYPWC										
	DATE:	JULY 01, 2015	APPROVED BY:	J.E.G.										
			<table border="1"> <thead> <tr> <th>NO.</th> <th>DATE</th> <th>REVISION</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>JAN 05</td> <td>REVISED NOTE 5A</td> </tr> <tr> <td>2</td> <td>JUL 11</td> <td>REVISED NOTES & ADDED NOTE 6</td> </tr> </tbody> </table>			NO.	DATE	REVISION	1	JAN 05	REVISED NOTE 5A	2	JUL 11	REVISED NOTES & ADDED NOTE 6
NO.	DATE	REVISION												
1	JAN 05	REVISED NOTE 5A												
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2015-W1 WATER UTILITY NOTES.dwg

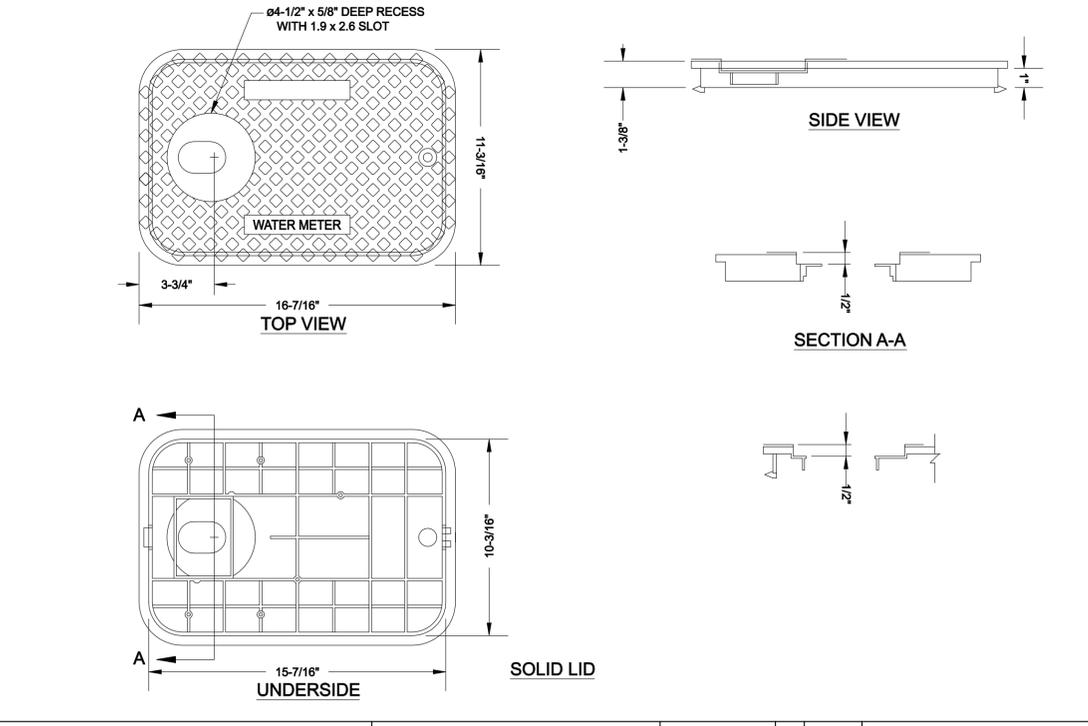
WATER UTILITY NOTES			PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.											
SHEET NO. 2 OF 2	DWG. NO.	W.1	DWG. BY:	FAYPWC										
	DATE:	JULY 01, 2015	APPROVED BY:	J.E.G.										
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2015-W1 WATER UTILITY NOTES.dwg



1-INCH METER BOX DETAILS N.T.S.			PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.								
SHEET NO. 1 OF 2	DWG. NO.	W.4	DWG. BY:	FAYPWC							
	DATE:	JULY 01, 2015	APPROVED BY:	J.E.G.							
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NO.	DATE	REVISION									
1	3/10	CHANGED BOX DIMENSIONS									

2015-W4 1IN METERBOX.dwg



1-INCH METER BOX LID N.T.S.			PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.														
SHEET NO. 2 OF 2	DWG. NO.	W.4	DWG. BY:	FAYPWC													
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2	01/15	REVISED LID															

2015-W4 1IN METERBOX.dwg

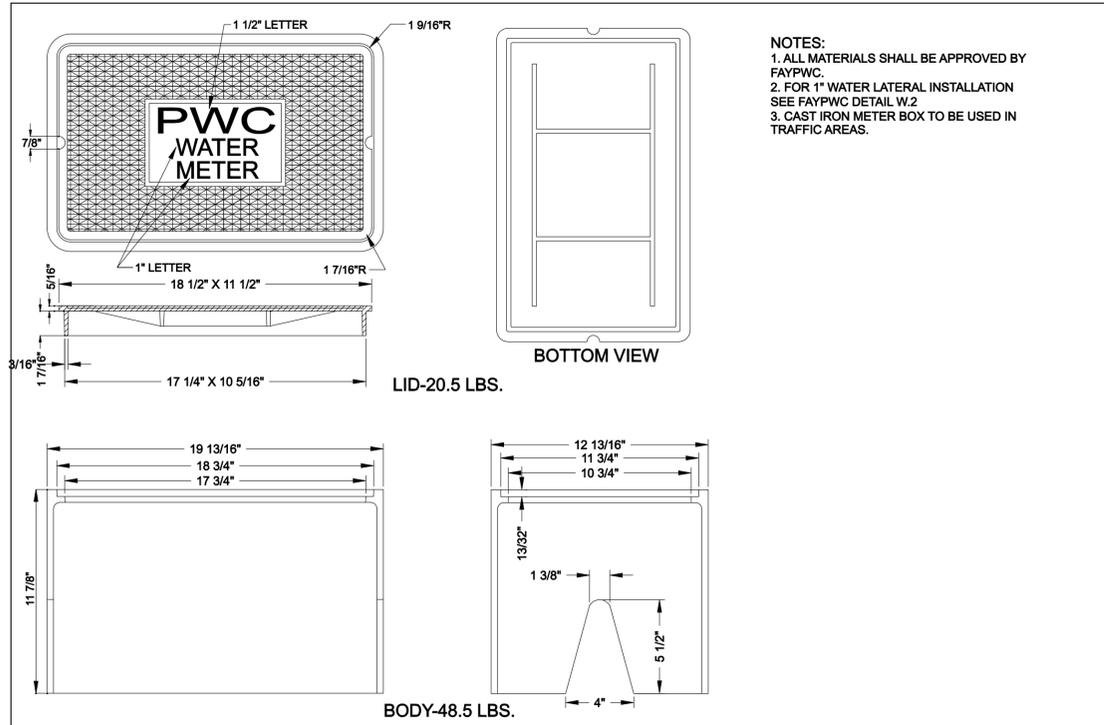
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AECOM TECHNICAL SERVICES OF NORTH CAROLINA, INC.
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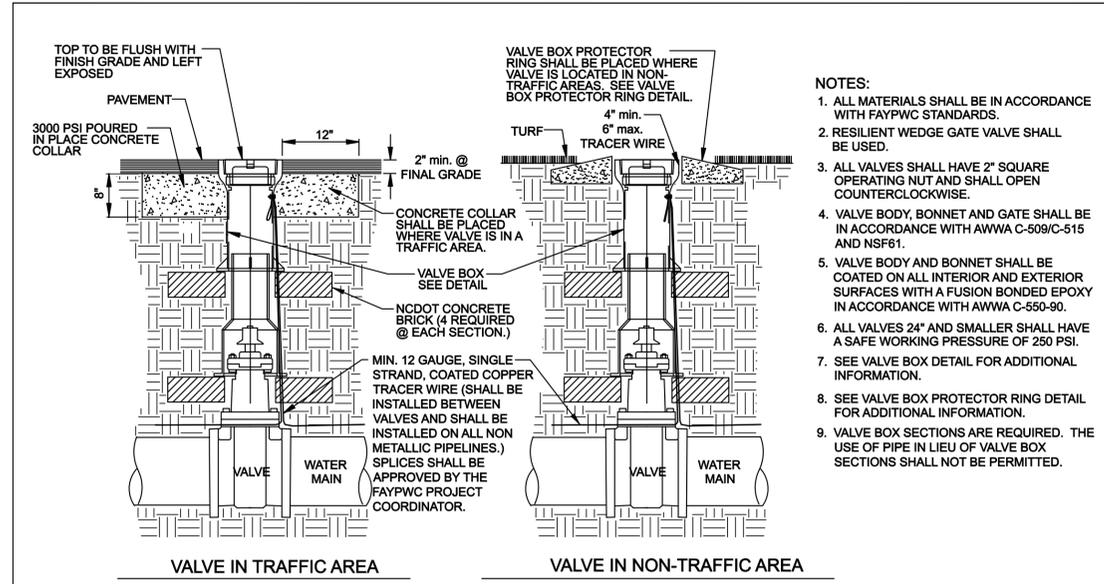
PROJECT REFERENCE NO. B-4490	SHEET NO. UC-3C
DESIGNED BY:	
DRAWN BY: NONE	
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REVISED:	
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DAVID POETSCH
Professional Engineer
License No. 7727
State of North Carolina



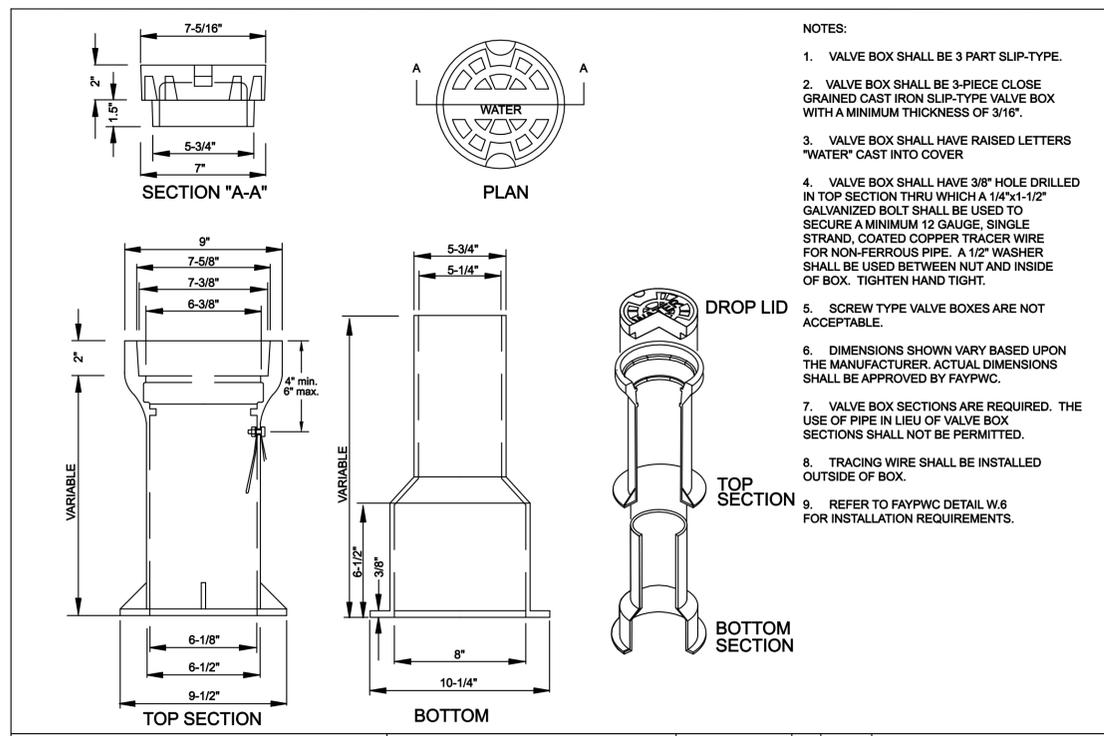
1-INCH CAST IRON METER BOX & COVER N.T.S.		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. W.4B DATE: JULY 01, 2015	DWG. BY: FAYPWC APPROVED BY: J.E.G.	WATER RESOURCES DEPARTMENT		1	3/10	CHANGED BOX & LID DIMENSIONS

2015-W4B METERBOX&LID.dwg



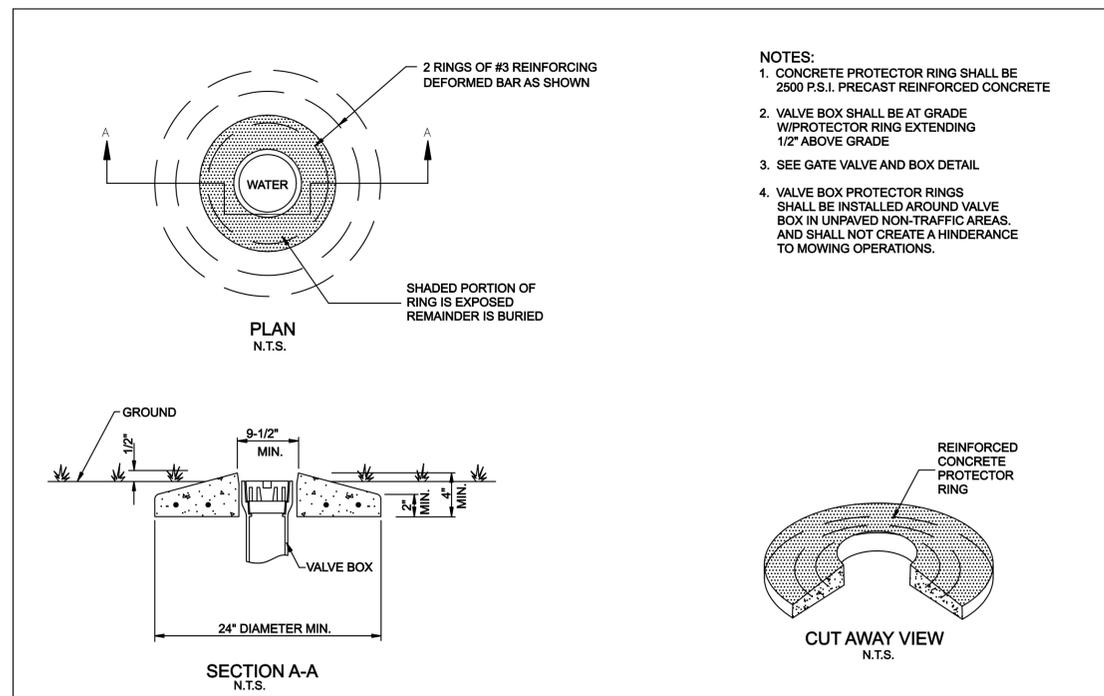
GATE VALVE N.T.S.		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. W.6 DATE: JULY 01, 2015	DWG. BY: FAYPWC APPROVED BY: J.E.G.	WATER RESOURCES ENGINEERING DEPARTMENT		1	6/06	ADDED NOTE #9
					2	7/09	CLARIFIED NOTES

2015-W6 GATEVALVE.dwg



VALVE BOX N.T.S.		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. W.7 DATE: JULY 01, 2015	DWG. BY: FAYPWC APPROVED BY: J.E.G.	WATER RESOURCES ENGINEERING DEPARTMENT		1	7/09	ADDED NOTES 7, 8 & CLARIFIED NOTES
					2	1/14	REVISED NOTES 1, 4, 6

2015-W7 VALVEBOX.dwg



VALVE BOX PROTECTOR RING N.T.S.		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. W.8 DATE: JULY 01, 2015	DWG. BY: FAYPWC APPROVED BY: J.E.G.	WATER RESOURCES ENGINEERING DEPARTMENT				

2015-W8 CONC PROTECTOR RING.dwg

UTILITY CONSTRUCTION

DATE: 6/22/2016
TIME: 7:33:02 AM
DRN: B4490_UF_peri_D3C.dgn

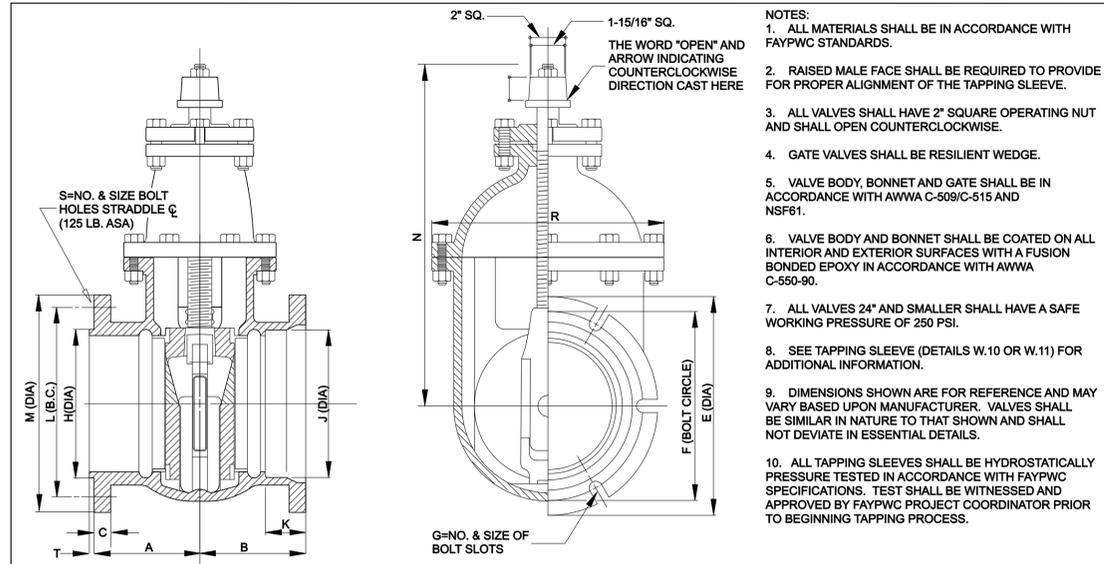
Prepared by:

AECOM TECHNICAL SERVICES OF NORTH CAROLINA, INC.
701 CORPORATE CENTER DRIVE, SUITE 475, RALEIGH, NC 27607
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PROJECT REFERENCE NO. B-4490	SHEET NO. UC-3D
DESIGNED BY:	
DRAWN BY: NONE	
CHECKED BY:	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	

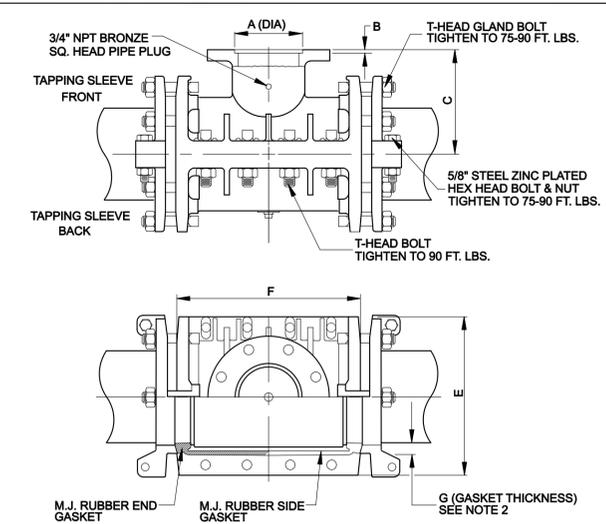
UTILITY CONSTRUCTION



- NOTES:
1. ALL MATERIALS SHALL BE IN ACCORDANCE WITH FAYPWC STANDARDS.
 2. RAISED MALE FACE SHALL BE REQUIRED TO PROVIDE FOR PROPER ALIGNMENT OF THE TAPPING SLEEVE.
 3. ALL VALVES SHALL HAVE 2" SQUARE OPERATING NUT AND SHALL OPEN COUNTERCLOCKWISE.
 4. GATE VALVES SHALL BE RESILIENT WEDGE.
 5. VALVE BODY, BONNET AND GATE SHALL BE IN ACCORDANCE WITH AWWA C-509/C-515 AND NSF61.
 6. VALVE BODY AND BONNET SHALL BE COATED ON ALL INTERIOR AND EXTERIOR SURFACES WITH A FUSION BONDED EPOXY IN ACCORDANCE WITH AWWA C-550-90.
 7. ALL VALVES 24" AND SMALLER SHALL HAVE A SAFE WORKING PRESSURE OF 250 PSI.
 8. SEE TAPPING SLEEVE (DETAILS W.10 OR W.11) FOR ADDITIONAL INFORMATION.
 9. DIMENSIONS SHOWN ARE FOR REFERENCE AND MAY VARY BASED UPON MANUFACTURER. VALVES SHALL BE SIMILAR IN NATURE TO THAT SHOWN AND SHALL NOT DEVIATE IN ESSENTIAL DETAILS.
 10. ALL TAPPING SLEEVES SHALL BE HYDROSTATICALLY PRESSURE TESTED IN ACCORDANCE WITH FAYPWC SPECIFICATIONS. TEST SHALL BE WITNESSED AND APPROVED BY FAYPWC PROJECT COORDINATOR PRIOR TO BEGINNING TAPPING PROCESS.

VALVE SIZE	A	B	C	D	E	F	G	H	J	K	L	M	N	R	S	T	URNS TO OPEN	WEIGHT W/ACC
4	4-3/8	5-7/8	15/16	1-1/2	9	7-1/2	4-7/8	4-63/64	4-29/32	2-1/2	7-1/2	9	14-1/8	9	8-3/4	1/4	14	118
6	6-7/8	6-1/4	1	1-5/8	11	9-1/2	6-7/8	6-63/64	7	2-1/2	9-1/2	11	17-5/8	11-3/4	8-7/8	1/4	21	175
8	6-1/2	7-1/4	1-1/8	1-3/4	13-1/4	11-3/4	6-7/8	6-63/64	9-5/32	2-1/2	11-3/4	13-1/2	21	14-1/4	8-7/8	1/4	28	274
12	7	8-1/4	1-1/4	1-3/4	17-7/8	16-1/4	8-7/8	12-63/64	13-5/16	2-1/2	17	19	28-1/4	19-1/8	12-1	1/4	39	570
16	8-1/2	9-1/8	1-7/16	2-1/16	23	21	12-7/8	16-15/16	17-35/64	3-1/2	21-1/4	23-1/2	38-5/8	26-1/8	16-1 1/8	1/4	55	1140
24	10-1/2	14-1/4	1-7/8	2-1/2	31-3/4	30	16-7/8	24-15/16	25-15/16	3-1/2	29-1/2	32	54-5/8	37-5/8	20-1 3/8	5/16	79	3225

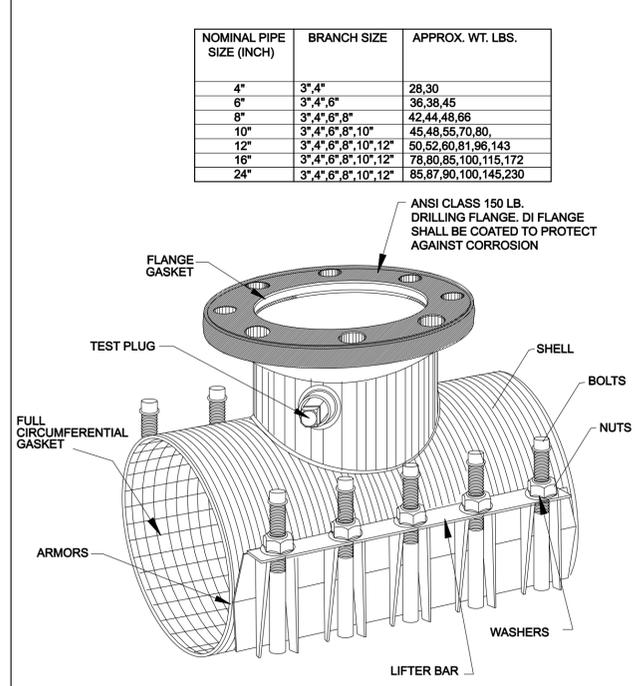
TAPPING VALVE (N.T.S.)		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.		NO. DATE REVISION	
SHEET NO. 1 OF 1		DWG. NO. W.9 DATE: JULY 01, 2015		1 7/09 ADDED NOTE 10, REVISED 4 & 5	
DWG. BY: FAYPWC		APPROVED BY: J.E.G.		2 7/13 REVISED NOTES 4, 8, 10	
WATER RESOURCES ENGINEERING DEPARTMENT		FAYPWC		2015-W9 M.J. TAPPING VALVE.dwg	



- NOTES:
1. ALL MATERIALS SHALL BE IN ACCORDANCE WITH FAYPWC STANDARDS. SLEEVE BODY SHALL BE DUCTILE IRON ASTM A536.
 2. MECHANICAL JOINT TAPPING SLEEVES SHALL BE FURNISHED WITH SPLIT GLANDS, SPLIT END GASKET, BOLTS, ETC. THE OUTLET FLANGE SHALL BE CL 125 PER ANSI B16.1 COMPATIBLE WITH APPROVED TAPPING VALVES.
 3. DIMENSIONS SHOWN ARE FOR REFERENCE AND MAY VARY BASED UPON MANUFACTURER. SLEEVES SHALL BE SIMILAR IN NATURE TO THAT SHOWN AND SHALL NOT DEVIATE IN ESSENTIAL DETAILS.
 4. PIPE SURFACES SHALL BE CLEANED THOROUGHLY TO PERMIT FOR A GOOD SEAL PRIOR TO INSTALLATION.
 5. EXTERIOR OF TAPPING SLEEVE SHALL BE COATED w/2 COATS ASPHALTIC VARNISH MIL-C450.
 6. ALL TAPPING SLEEVES SHALL BE HYDROSTATICALLY PRESSURE TESTED IN ACCORDANCE WITH FAYPWC SPECIFICATIONS. TEST SHALL BE WITNESSED AND APPROVED BY FAYPWC PROJECT COORDINATOR PRIOR TO BEGINNING TAPPING PROCESS.
 7. SEE DETAILS W.9 AND W.17 FOR ADDITIONAL REQUIREMENTS.

SLEEVE SIZE PIPE X BRANCH	6X6	8X6	8X8	12X6	12X8	12X12	16X6	16X8	16X12	24X6	24X8	24X12	24X16	24X24	30X6	30X8	30X12	30X16	30X24
A DIA	7.016	7.016	9.016	7.016	9.016	13.016	7.016	9.016	13.016	11.00	13.5	19.0	23.5	32.0	11.00	13.5	19.0	23.5	32.0
B	.31	.31	.31	.31	.31	.31	.31	.31	.31	.31	.31	.31	.31	.31	.31	.31	.31	.31	.31
C	7-7/8	9-1/16	9	11-5/8	11-7/8	12-7/8	14-1/8	14-1/2	14-7/8	19.5	19.5	20.5	20.5	23.25	23.25	23.25	23.75	23.75	23.75
E	11-3/4	13-7/8	13-7/8	18-1/2	18-1/2	18-1/2	23-1/2	23-1/2	23-1/2	35.5	35.5	35.5	35.5	35.5	43.37	43.37	43.37	43.37	43.37
F	13-1/2	15	15	19-1/2	19-1/2	19-1/2	22-1/2	22-1/2	22-1/2	18.0	18.0	24.0	30.0	36.0	24.0	24.0	24.0	36.0	36.0

DUCTILE IRON TAPPING SLEEVE		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.		NO. DATE REVISION	
SHEET NO. 1 OF 1		DWG. NO. W.10 DATE: JULY 01, 2015		1 7/09 REVISED NOTE 6/REMOVED NOTE 8.	
DWG. BY: FAYPWC		APPROVED BY: J.E.G.		2 7/13 REVISED NOTES 6, 7.	
WATER RESOURCES ENGINEERING DEPARTMENT		FAYPWC		2015-W10 TAPPING SLEEVE.dwg	



- NOTES:
1. ALL MATERIALS SHALL BE IN ACCORDANCE WITH FAYPWC STANDARDS.
 2. TAPPING SLEEVES MANUFACTURER SHALL BE AS APPROVED BY FAYPWC.
 3. STAINLESS STEEL TAPPING SLEEVE MAY BE UTILIZED FOR ALL TAPPING OF MAINS UP TO AND INCLUDING 24" DIAMETER WITH 12" OR LESS BRANCH. BRANCH GREATER THAN 12" SHALL REQUIRE FULL BODY D.I. M.J. TAPPING SLEEVE (SEE DETAIL W.10).
 4. SHELL AND LUGS SHALL BE STAINLESS STEEL PER ASTM A 240, TYPE 304 AND 304L.
 5. BOLTS SHALL BE 5/8" UNC ROLLED THREAD, STAINLESS STEEL PER ASTM A 193 TYPE 304 4" NOM. PIPE SIZE SHALL HAVE MIN. 1/2" BOLTS.
 6. NUTS SHALL BE HEAVY HEX STAINLESS STEEL PER ASTM A-194, TYPE 304.
 7. WASHERS SHALL BE STEEL AND PLASTIC LUBRICATING WASHER.
 8. GASKETS SHALL BE VIRGIN SBR PER ASTM D 2000 MAA 610, COMPOUNDED FOR WATER AND SEWER SERVICE.
 9. FLANGE SHALL BE DUCTILE IRON PER ASTM 536, GRADE 65-45-12, OR STAINLESS STEEL PER ASTM A-240, TYPE 304.
 10. DIMENSIONS SHOWN ARE FOR REFERENCE AND MAY VARY BASED UPON MANUFACTURER. SLEEVES SHALL BE SIMILAR IN NATURE TO THAT SHOWN AND SHALL NOT DEVIATE IN ESSENTIAL DETAILS.
 11. PIPE SURFACES SHALL BE CLEANED THOROUGHLY TO PERMIT A GOOD SEAL PRIOR TO INSTALLATION.
 12. ALL TAPPING SLEEVES SHALL BE HYDROSTATICALLY PRESSURE TESTED IN ACCORDANCE WITH FAYPWC SPECIFICATIONS. TEST SHALL BE WITNESSED AND APPROVED BY FAYPWC PROJECT COORDINATOR PRIOR TO BEGINNING TAPPING PROCESS.
 13. THE NUMBER OF BOLTS, NUTS AND WASHERS SHOWN ARE FOR ILLUSTRATION ONLY; ACTUAL QUANTITY SHALL BE AS RECOMMENDED BY THE SLEEVE MANUFACTURER FOR THE REQUIRED SERVICE.
 14. SEE DETAILS W.9 AND W.17 FOR ADDITIONAL REQUIREMENTS.

STAINLESS STEEL TAPPING SLEEVE (N.T.S.)		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.		NO. DATE REVISION	
SHEET NO. 1 OF 1		DWG. NO. W.11 DATE: JULY 01, 2015		1 7/09 ADDED NOTES 2, 12 & CLARIFIED NOTES	
DWG. BY: FAYPWC		APPROVED BY: J.E.G.		2 7/13 REVISED NOTES 3, 12, 14	
WATER RESOURCES ENGINEERING DEPARTMENT		FAYPWC		2015-W11 SSTAPPING SLEEVE.dwg	

- (TYPICAL - NEW FIRE HYDRANTS CONNECTED TO EXISTING WATER MAINS)
1. PROPOSED FIRE HYDRANTS SHALL BE INSTALLED IN ADVANCE OF SEWER MAIN CONSTRUCTION. THE CONTRACTOR SHALL SEQUENCE THE HYDRANT INSTALLATION TO PROVIDE AND/OR SUPPLEMENT WATER MAIN FLUSHING IF BREAKS OCCUR.
 2. FIRE HYDRANT CONNECTIONS TO EXISTING WATER MAINS SHALL BE MADE USING A TAPPING SLEEVE AND VALVE BY WET TAP CONNECTION. THE TAPPING SLEEVE AND VALVE SHALL BE HYDROSTATICALLY TESTED PRIOR TO THE COMPLETION OF THE TAP IN THE PRESENCE OF THE OWNER.
 3. THE CONTRACTOR SHALL HAVE THE EXISTING UTILITIES LOCATED IN THE VICINITY OF THE PROPOSED FIRE HYDRANT PRIOR TO REQUESTING CONSTRUCTION STAKES. THE PROPOSED LOCATION MAY BE SHIFTED OR RELOCATED BY THE OWNER IF CONFLICTS EXIST (I.E. GAS SERVICES, UGE, TELEPHONE, ETC.).
 4. THE CONTRACTOR SHALL VERIFY (BY DIGGING), IN ADVANCE OF INSTALLATION AND MATERIAL PROCUREMENT, THE EXISTING WATER MAIN MATERIAL, SIZE, CLASS, DEPTH AND LOCATION FOR EACH INDIVIDUAL FIRE HYDRANT LOCATION IN ORDER TO SUPPLY PROPER SLEEVE TYPES, BARREL LENGTHS AND OTHER REQUIRED MATERIALS TO ACCOMMODATE EXISTING MATERIALS ENCOUNTERED AND SITE CONDITIONS.
 5. THE INFORMATION CONTAINED IN THE "FIRE HYDRANT DATA CHART" WAS PRODUCED USING EXISTING FAYPWC RECORDS AND AVAILABLE FIELD INFORMATION. THE INFORMATION IS INTENDED TO ASSIST THE CONTRACTOR, BUT IS NOT GUARANTEED. THE CONTRACTOR IS ENCOURAGED TO VERIFY ALL THE PROVIDED INFORMATION. THIS INFORMATION IS APPROXIMATE AND MAY NOT BE ACCURATE.
 6. THE CONTRACTOR WILL BE REQUIRED TO SUPPLY VARIOUS LENGTHS OF BARRELS AND HYDRANT EXTENSIONS (NO MORE THAN ONE HYDRANT EXTENSION MAY BE USED PER HYDRANT) TO ADJUST FOR WATER MAIN DEPTHS IN RELATION TO TOP OF EXISTING CURB GRADE, TOP OF PAVEMENT, EXISTING DITCH GRADE AND/OR RIGHT-OF-WAY GROUND ELEVATIONS AS NECESSARY. ADDITIONAL FITTINGS AND/OR HYDRANT EXTENSIONS OR OFFSET CONNECTORS MAY BE REQUIRED TO MAINTAIN PROPER COVER AS APPROVED BY THE FAYPWC PROJECT COORDINATOR. (NO SEPARATE PAYMENT).
 7. EXISTING VALVE DEPTHS ARE MEASURED FROM EXISTING ASPHALT AND/OR VALVE COVER TO THE TOP OF THE OPERATING NUT. THE BARREL INFORMATION SHOWN IS CALCULATED USING AN INTERPOLATION BETWEEN THE TWO NEAREST VALVES. THE GROUND ELEVATION AND/OR CURB FOR THE PROPOSED FIRE HYDRANT IS INTERPOLATED FROM CROSS SECTIONS AND THE FLANGE ELEVATION SHOWN IS APPROXIMATE. FIRE HYDRANT SHALL BE INSTALLED IN ACCORDANCE WITH THE FIRE HYDRANT AND VALVE INSTALLATION DETAIL.
 8. THE CONTRACTOR SHALL SUBSTITUTE VARIOUS BARREL DEPTHS WITHIN THE PROJECT (I.E. FIRE HYDRANT NO. 1 INDICATES A 5'-0" DEPTH OF BURY, ACTUAL CONDITIONS CALL FOR A 6'-0" DEPTH OF BURY, FIRE HYDRANT NO. 2 INDICATES A 6'-0" DEPTH OF BURY, ACTUAL CONDITIONS REQUIRE A 5'-0" DEPTH OF BURY, THEN A SUBSTITUTION WILL BE REQUIRED). ALL EXTENSIONS SHALL BE APPROVED BY THE FAYPWC PROJECT COORDINATOR PRIOR TO INSTALLATION AND ONLY AFTER ALL EFFORTS OF SUBSTITUTION ARE EXHAUSTED.
 9. WHERE INDICATED TO TIE EXISTING FIRE HYDRANT TO NEW MAIN, CONTRACTOR SHALL PROVIDE ALL LABOR, TOOLS, EQUIPMENT, MATERIALS, ETC. NECESSARY TO PROVIDE A COMPLETE INSTALLATION. FIRE HYDRANT SHALL BE TRANSFERRED TO NEW MAIN BRANCH LINE AFTER MAIN IS ACCEPTED. HYDRANTS SHALL NOT BE OUT OF SERVICE FOR GREATER THAN 24 HOURS. CONTRACTOR SHALL NOTIFY THE APPROPRIATE FIRE DEPARTMENT OF OUT OF SERVICE FIRE HYDRANTS PRIOR TO CONSTRUCTION.
 10. SOD SHALL BE REPLACED WHERE APPLICABLE. DAMAGE TO PROPERTY OWNERS LANDSCAPING, FENCES, ETC. SHALL BE REPAIRED OR REPLACED TO THE PROPERTY OWNER'S SATISFACTION, TO INCLUDE WITHIN RIGHT-OF-WAY. (NO SEPARATE PAYMENT).

FIRE HYDRANT ADDITIONAL GENERAL NOTES		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.		NO. DATE REVISION	
SHEET NO. 1 OF 1		DWG. NO. W.12 DATE: JULY 01, 2015		1 7/09 REVISED NOTES 2, 3, 6, & 9. REMOVED NOTE 11.	
DWG. BY: FAYPWC		APPROVED BY: J.E.G.			
WATER RESOURCES ENGINEERING DEPARTMENT		FAYPWC		2015-W12 FH NOTES.dwg	

Prepared by:

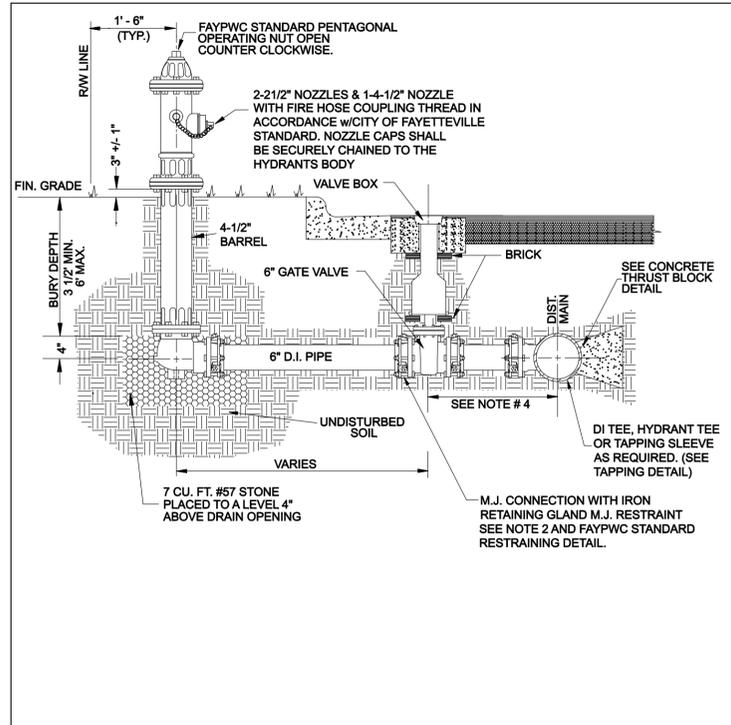
AECOM TECHNICAL SERVICES OF NORTH CAROLINA, INC.
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919-854-6200 919-854-6259 (fax)
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PROJECT REFERENCE NO. B-4490	SHEET NO. UC-3E
DESIGNED BY:	
DRAWN BY: NONE	
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APPROVED BY:	
REVISED:	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151 2/2/2016

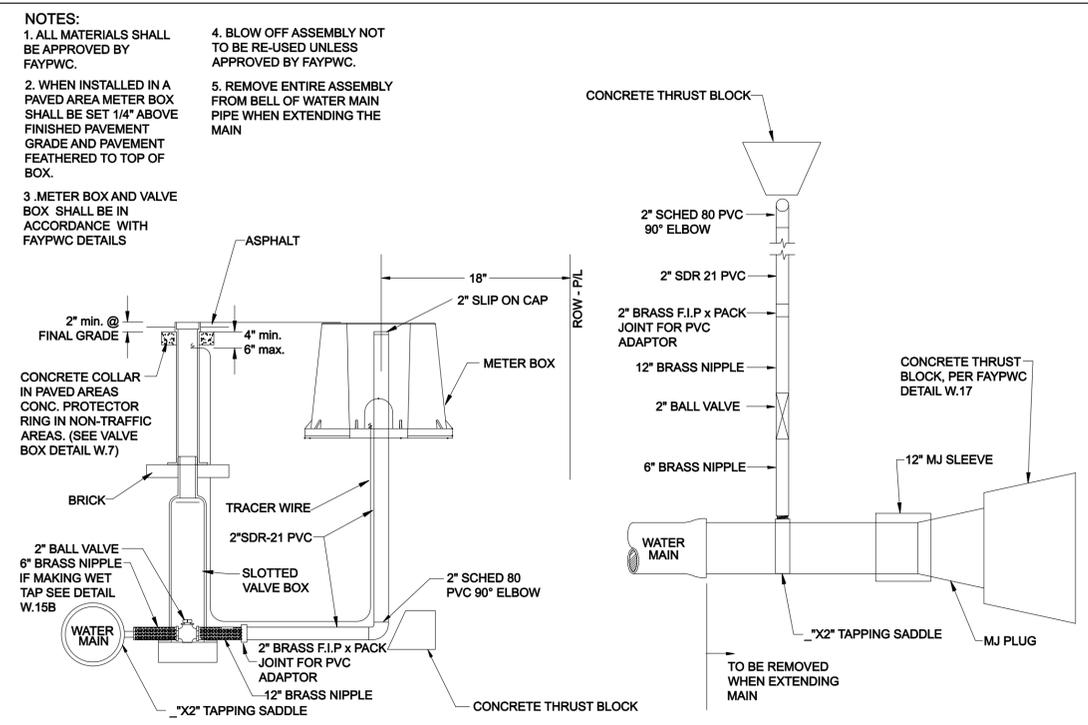
UTILITY CONSTRUCTION



- NOTES:**
- FIRE HYDRANT SHALL BE MODELS MANUFACTURED BY MUELLER CO. (CENTURIAN), AMERICAN VALVE AND HYDRANT CO. (MODEL MARK 73), CLOW MEDALLION OR APPROVED EQUAL.
 - ALL VALVES AND HYDRANTS SHALL HAVE M.J. CONNECTIONS WITH IRON RETAINING GLAND M.J. RESTRAINT.
 - FIRE HYDRANT SHALL BE FIELD PAINTED IN ACCORDANCE WITH FAYPWC STANDARDS, BEFORE PROJECT IS ACCEPTED.
 - HYDRANT VALVE SHALL BE PLACED AS CLOSE AS POSSIBLE TO THE MAIN, BUT DO NOT PLACE VALVE IN PROPOSED OR EXISTING CURB AND GUTTER. IF THE STREET IS SOIL AND NO PAVING IS TO BE DONE AT THIS TIME, THE LOCATION OF THE VALVE IS TO BE DETERMINED BY THE FAYPWC PROJECT COORDINATOR.
 - FIRE HYDRANTS SHALL BE PLACED AS DIRECTED BY THE FAYPWC PROJECT COORDINATOR.
 - HYDRANT BRANCH SHALL NOT BE BACK FILLED UNTIL INSPECTED AND APPROVED BY FAYPWC PROJECT COORDINATOR.
 - GATE VALVE AND BOX SHALL BE IN ACCORDANCE WITH FAYPWC STANDARD DETAIL.
 - HYDRANT EXTENSIONS AND/OR OFFSETS SHALL BE APPROVED BY FAYPWC PROJECT COORDINATOR.

FIRE HYDRANT AND VALVE INSTALLATION N.T.S.		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. W.13	DWG. BY: FAYPWC	WATER RESOURCES ENGINEERING DEPARTMENT		1	10/23/03	REVISED NOTE #4
DATE: JULY 01, 2015	APPROVED BY: J.E.G.			2	7/1/09	REVISED NOTE #2, REMOVED NOTE #3 & ALTERED RESTRAINT DETAIL.	

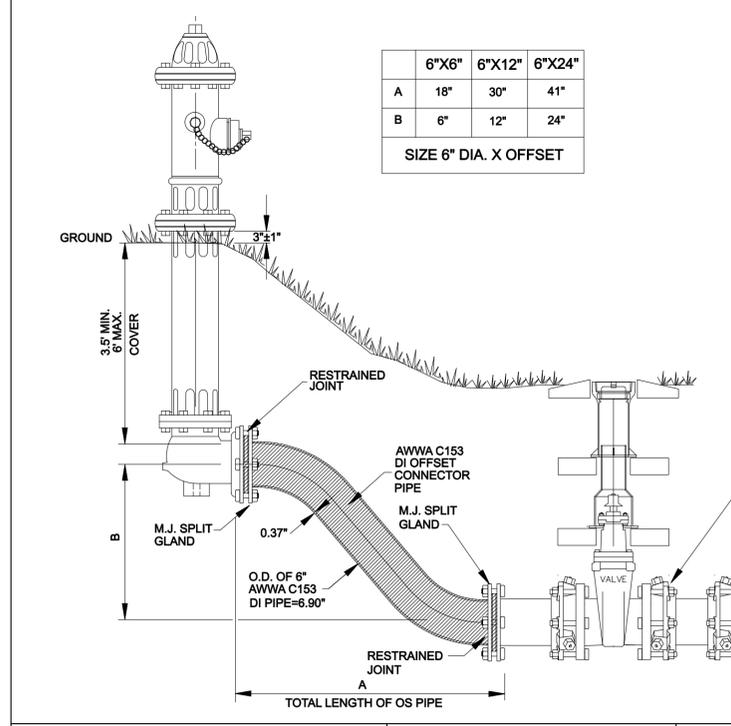
2015-W13 FHCC.dwg



- NOTES:**
- ALL MATERIALS SHALL BE APPROVED BY FAYPWC.
 - WHEN INSTALLED IN A PAVED AREA METER BOX SHALL BE SET 1/4" ABOVE FINISHED PAVEMENT GRADE AND PAVEMENT FEATHERED TO TOP OF BOX.
 - METER BOX AND VALVE BOX SHALL BE IN ACCORDANCE WITH FAYPWC DETAILS
 - BLOW OFF ASSEMBLY NOT TO BE RE-USED UNLESS APPROVED BY FAYPWC.
 - REMOVE ENTIRE ASSEMBLY FROM BELL OF WATER MAIN PIPE WHEN EXTENDING THE MAIN

2" BLOW OFF N.T.S.		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. W.15	DWG. BY: FAYPWC	WATER RESOURCES ENGINEERING DEPARTMENT		1	8/06	CHANGED FITTINGS TO SCHED 80
DATE: JULY 01, 2015	APPROVED BY: J.E.G.			2	11/06	REVISED CONFIGURATION	

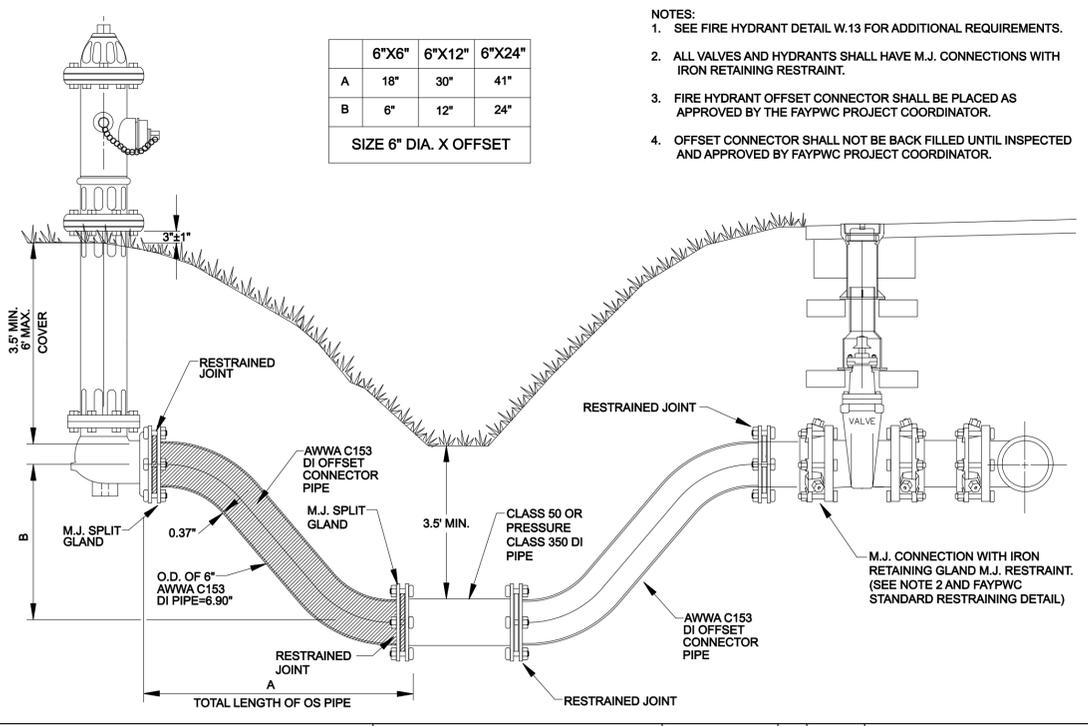
2015-W15 2 BLOWOFF.dwg



- NOTES:**
- SEE FIRE HYDRANT DETAIL W.13 FOR ADDITIONAL REQUIREMENTS.
 - ALL VALVES AND HYDRANTS SHALL HAVE M.J. CONNECTIONS WITH IRON RETAINING GLAND M.J. RESTRAINT.
 - FIRE HYDRANT OFFSET CONNECTOR SHALL BE PLACED AS APPROVED BY THE FAYPWC PROJECT COORDINATOR.
 - OFFSET CONNECTOR SHALL NOT BE BACK FILLED UNTIL INSPECTED AND APPROVED BY FAYPWC PROJECT COORDINATOR.

RESTRAINED JOINT FIRE HYDRANT OFFSET CONNECTOR (STEEP BANK) N.T.S.4		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 1 OF 2	DWG. NO. W.14	DWG. BY: FAYPWC	WATER RESOURCES ENGINEERING DEPARTMENT		1	7/09	REVISED NOTES 1, 2 & 3
DATE: JULY 01, 2015	APPROVED BY: J.E.G.						

2015-W14 FHOFFSET.dwg



- NOTES:**
- SEE FIRE HYDRANT DETAIL W.13 FOR ADDITIONAL REQUIREMENTS.
 - ALL VALVES AND HYDRANTS SHALL HAVE M.J. CONNECTIONS WITH IRON RETAINING RESTRAINT.
 - FIRE HYDRANT OFFSET CONNECTOR SHALL BE PLACED AS APPROVED BY THE FAYPWC PROJECT COORDINATOR.
 - OFFSET CONNECTOR SHALL NOT BE BACK FILLED UNTIL INSPECTED AND APPROVED BY FAYPWC PROJECT COORDINATOR.

RESTRAINED JOINT FIRE HYDRANT OFFSET CONNECTOR @ DITCH (N.T.S.)		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 2 OF 2	DWG. NO. W.14	DWG. BY: FAYPWC	WATER RESOURCES ENGINEERING DEPARTMENT		1	JAN 05	ADDED NOTES
DATE: JULY 01, 2015	APPROVED BY: J.E.G.			2	JULY 09	REVISED NOTES 1, 2 & 3	

2015-W14 FHOFFSET.dwg

Prepared by:
AECOM
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PROJECT REFERENCE NO. B-4490	SHEET NO. UC-3F
DESIGNED BY:	
DRAWN BY: NONE	
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APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	

UTILITY CONSTRUCTION

MIN. BEARING AREA EACH DIRECTION OF THRUST IN SQUARE FEET (based on soil supporting value of 2000 psf @ 200 psig test pressure)

PIPE SIZE	TEES & DEADENDS	90° ELBOWS	45° ELBOW & CROSSES	22-1/2" ELBOWS
6"	4	6	3	2
8"	7	10	5	3
12"	15	21	11	6

NOTES:

- THRUST BLOCKS SHALL BE INSTALLED ON PVC WATER DISTRIBUTION LINES 6" THRU 12" DIA. IN THE MANNER SHOWN. SEE FAYPWC STANDARD ALT. RESTRAINING DETAIL W.18 FOR ACCEPTABLE ALTERNATE RESTRAINING SYSTEMS.
- PIPE GREATER THAN 12 INCH DIAMETER SHALL REQUIRE RESTRAINT JOINT PIPE FOR THE PROPER LENGTH.
- COMPACT FITTINGS ARE NOT ACCEPTABLE. STANDARD FITTINGS SHALL BE USED WITH CONCRETE THRUST BLOCKING.
- THRUST BLOCKS SHALL BE INSTALLED ON SEWER FORCE MAIN IN THE MANNER SHOWN.
- IF SAC-CRETE IS USED, MIXING MUST BE ON SITE UTILIZING A MECHANICAL MIXER.
- NO CONCRETE SHALL BE PLACED ON BOLTS. WRAP JOINT FITTINGS WITH PLASTIC.
- CONCRETE SHALL BE A MINIMUM 3,000 PSI.
- ALL BEARING SURFACES SHALL BE AGAINST UNDISTURBED SOIL AND SHALL BE APPROVED BY FAYPWC PROJECT COORDINATOR PRIOR TO PLACEMENT OF CONCRETE.
- USE OF RESTRAINED JOINT DUCTILE IRON WILL BE REQUIRED IF SOIL CONDITIONS DO NOT ALLOW THE USE OF THRUST BLOCKS.
- ALL VERTICAL BENDS SHALL BE RESTRAINED USING RESTRAINED JOINT DUCTILE IRON PIPE.

CONCRETE THRUST BLOCK DETAIL N.T.S.		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.		NO. DATE REVISION	
SHEET NO. 1 OF 1		DWG. NO. W.17		1 SEPT 05 REVISED TABLE	
DATE: JULY 01, 2015		DWG. BY: FAYPWC		2 FEB 07 ADDED NOTES 9&10	
APPROVED BY: J.E.G.		WATER RESOURCES ENGINEERING DEPARTMENT		3 JULY 13 ADDED TAPPING SLEEVE AND VALVE DETAIL	

2015-W17 THRUSTBLOCK.dwg

IRON RETAINING GLAND M.J. RESTRAINT

NOMINAL PIPE SIZE	WEDGES QUANTITY	BOLTS QUANTITY	PRESS RATING
6"	3	6	350
8"	4	6	350
12"	8	8	350

LR (MIN. LENGTH OF RESTRAINT EACH DIRECTION OF THRUST IN LINEAR FEET)
Based on 200 psig pressure, Safety Factor of 2.0:1, BARE DI PIPE AND ML Soil, 3.5' cover
Chart does not apply to pipes wrapped in polyethylene wrap

PIPE SIZE	VALVES DEAD ENDS	ELBOWS	45° ELBOW & CROSSES	22-1/2" ELBOWS	REDUCER
6"	55'	31'	13'	7'	8"X2" 67'
8"	72'	40'	17'	8'	8"X8" 30'
12"	102'	57'	24'	12'	12"X8" 54'

NOTES:

- THRUST RESTRAINT SHALL BE INSTALLED ON DUCTILE IRON WATER DISTRIBUTION LINES 6" THRU 12" DIAMETER IN THE MANNER SHOWN. SEE FAYPWC STANDARD THRUST BLOCK DETAIL W.17 FOR PVC RESTRAINT.
- IRON RETAINING GLAND M.J. RESTRAINT OR OTHER FORMS OF IRON RESTRAINT SHALL NOT BE USED ON PVC PIPE.
- PIPE GREATER THAN 12 INCH DIAMETER SHALL REQUIRE RESTRAINED JOINT PIPE FOR THE PROPER LENGTH.
- COMPACT FITTINGS ARE ACCEPTABLE FOR USE WITH IRON RETAINING GLAND M.J. RESTRAINT AND OTHER FORMS OF DI RESTRAINT.
- THE MINIMUM LENGTH OF RESTRAINT INDICATED SHALL REQUIRE ALL JOINTS WITHIN THE LR DISTANCE TO BE RESTRAINED.
- RESTRAINT SYSTEM SHALL BE INSPECTED AND APPROVED FAYPWC PRIOR TO BACKFILLING.
- RESTRAINT SYSTEMS MAY VARY BASED UPON THE ENGINEERS' DESIGN AS SHOWN ON THE PLAN AND PROFILE SHEETS.
- GRIPPER RING AND FIELD LOK GASKETS ARE AN ACCEPTABLE METHOD OF RESTRAINT ON DUCTILE IRON PIPE ONLY.

ALTERNATE RESTRAINT DETAIL (DUCTILE IRON PIPE ONLY) N.T.S.		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.		NO. DATE REVISION	
SHEET NO. 1 OF 1		DWG. NO. W.18		1 11/16/2007 REVISED TABLE, ADDED NOTE 8	
DATE: JULY 01, 2015		DWG. BY: FAYPWC			
APPROVED BY: J.E.G.		WATER RESOURCES ENGINEERING DEPARTMENT			

2015-W18 RESTRAINT DETAIL.dwg

NOTES:

- ALL EXCAVATIONS SHALL COMPLY WITH THE TERMS AND CONDITIONS OF THE CONSTRUCTION STANDARDS FOR EXCAVATIONS IN OSHA "SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION", CHAPTER XV11 OF TITLE 29, CFR, PART 1926. THE CONTRACTOR SHALL HAVE A COMPETENT PERSON ON SITE AT ALL TIMES DURING EXCAVATION AND BACKFILLING.
- CONTRACTOR SHALL USE TRENCH BOX SHORING IN ALL OPEN CUTS IN PAVED AREAS. TRENCH WIDTH SHALL BE MAINTAINED AT THE MINIMUM PRACTICAL WIDTH.
- TYPE 3 TRENCH CONDITIONS AND A MINIMUM OF 4' OF COVER MUST BE MAINTAINED WHERE RESTRAINT JOINT PIPE IS SPECIFIED AND 3.5' OF COVER IN ALL OTHER LOCATIONS UNLESS SHOWN OTHERWISE ON THE PLAN PROFILE.
- LOOSE SOIL OR SELECT MATERIAL IS DEFINED AS "NATIVE" SOIL EXCAVATED FROM THE TRENCH, FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH.
- BEDDING MATERIAL SHALL EXTEND TO UNDISTURBED TRENCH WALLS AND TRENCH BOTTOM. BEDDING MATERIAL WILL NOT BE PAID FOR UNLESS SPECIFICALLY APPROVED BY THE PROJECT REPRESENTATIVE AND ONLY FOR THE AUTHORIZED QUANTITY.
- BEDDING MATERIAL SHALL BE PROPERLY RODDED AND COMPACTED AROUND THE PIPE HAUNCHES.
- TEST FOR DENSITY OF COMPACTION MAY BE MADE AT THE OPTION OF THE ENGINEER AND DEFICIENCIES SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER. THE ENGINEER MAY HAVE COMPACTION TEST PERFORMED AFTER THE BACKFILL IS COMPLETE. CONTRACTOR SHALL BE REQUIRED TO EXCAVATE TO VARIOUS ELEVATIONS FOR DENSITY TESTING EXCAVATION, BACKFILL AND RECOMPACTION SHALL BE PERFORMED AT NO ADDITIONAL COSTS TO THE OWNER.

TYPE 3 TRENCH WATER MAIN BEDDING DETAIL N.T.S.		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.		NO. DATE REVISION	
SHEET NO. 1 OF 1		DWG. NO. W.19		1 7/1/13 REVISED NOTE RE: TRACER WIRE	
DATE: JULY 01, 2015		DWG. BY: FAYPWC			
APPROVED BY: J.E.G.		WATER RESOURCES ENGINEERING DEPARTMENT			

2015-W19 WATER BEDDING.dwg

NOTES:

- KILL OUT SHALL BE DONE A MIN. OF 5 FT. FROM ANY FITTING ON THE EXISTING WATER MAIN THAT IS TO REMAIN IN SERVICE.
- IRON PIPE SHALL BE 4" DIAMETER FOR MAINS 12" OR LESS. UTILIZE 8" PIPE OR LARGER AS DIRECTED BY THE FAYPWC COORDINATOR FOR ALL MAINS LARGER THAN 12".
- ALLOW CONCRETE TO SET-UP PRIOR TO PLACING BACKFILL.
- VOLUME OF CONCRETE FOR THRUST BLOCK SHALL BE IN ACCORDANCE WITH FAYPWC STANDARD DETAIL W.17.
- ALL OUTGAGES SHALL BE COORDINATED WITH THE FAYPWC PROJECT COORDINATOR.
- PIPE SHALL BE GROUT OR REMOVED IN ACCORDANCE WITH NCDOT SPECIFICATIONS WHEN LOCATED IN THE STATE RIGHT OF WAY. ALL OTHER INSTANCES SHALL BE IN ACCORDANCE WITH FAYPWC SPECIFICATIONS.

WATER MAIN KILL-OUT N.T.S.		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.		NO. DATE REVISION	
SHEET NO. 1 OF 1		DWG. NO. W.22			
DATE: JULY 01, 2015		DWG. BY: FAYPWC			
APPROVED BY: J.E.G.		WATER RESOURCES ENGINEERING DEPARTMENT			

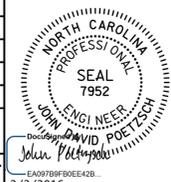
2015-W22 WATERMAIN KILLOUT.dwg

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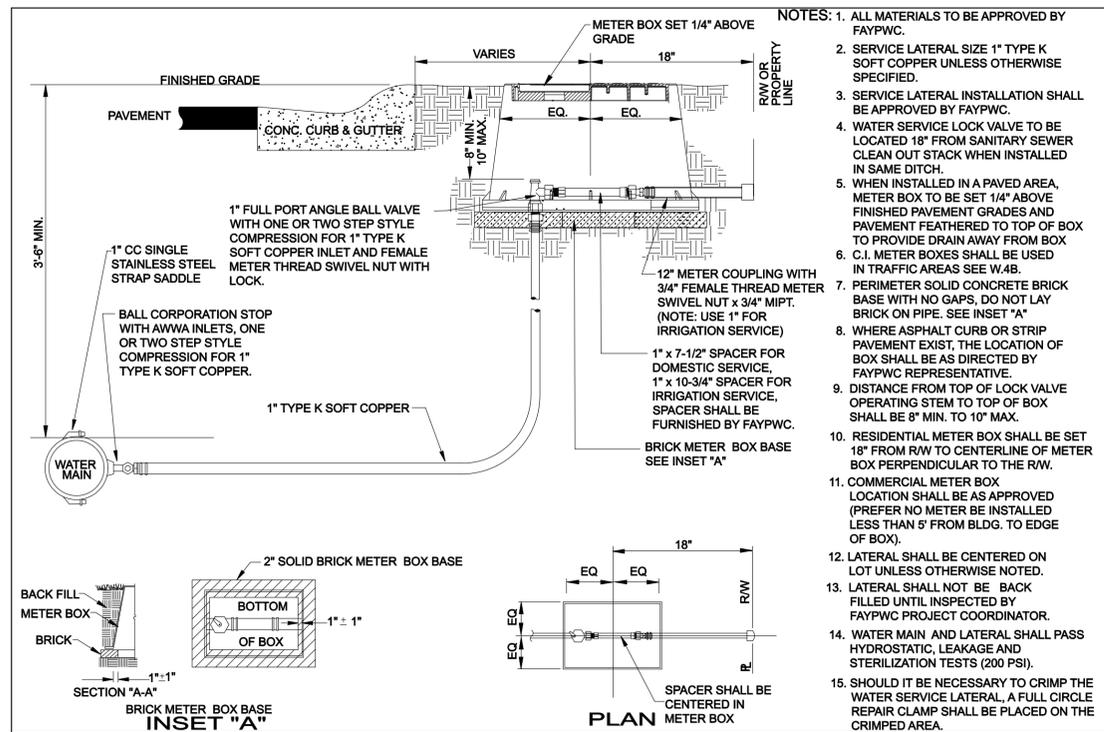
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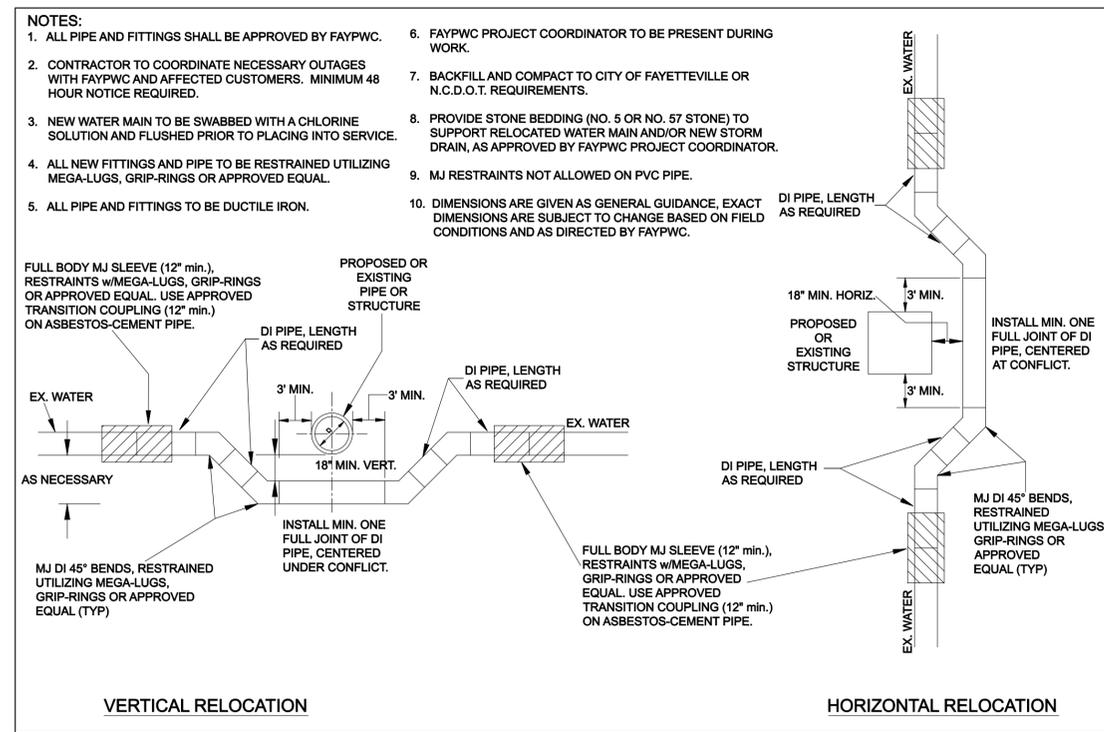
PROJECT REFERENCE NO. B-4490	SHEET NO. UC-3G
DESIGNED BY:	
DRAWN BY: NONE	
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REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	

UTILITY CONSTRUCTION



- NOTES:**
- ALL MATERIALS TO BE APPROVED BY FAYPWC.
 - SERVICE LATERAL SIZE 1" TYPE K SOFT COPPER UNLESS OTHERWISE SPECIFIED.
 - SERVICE LATERAL INSTALLATION SHALL BE APPROVED BY FAYPWC.
 - WATER SERVICE LOCK VALVE TO BE LOCATED 18" FROM SANITARY SEWER CLEAN OUT STACK WHEN INSTALLED IN SAME DITCH.
 - WHEN INSTALLED IN A PAVED AREA, METER BOX TO BE SET 1/4" ABOVE FINISHED PAVEMENT GRADES AND PAVEMENT FEATHERED TO TOP OF BOX TO PROVIDE DRAIN AWAY FROM BOX.
 - C.I. METER BOXES SHALL BE USED IN TRAFFIC AREAS SEE W.4B.
 - PERIMETER SOLID CONCRETE BRICK BASE WITH NO GAPS, DO NOT LAY BRICK ON PIPE. SEE INSET "A".
 - WHERE ASPHALT CURB OR STRIP PAVEMENT EXIST, THE LOCATION OF BOX SHALL BE AS DIRECTED BY FAYPWC REPRESENTATIVE.
 - DISTANCE FROM TOP OF LOCK VALVE OPERATING STEM TO TOP OF BOX SHALL BE 8" MIN. TO 10" MAX.
 - RESIDENTIAL METER BOX SHALL BE SET 18" FROM R/W TO CENTERLINE OF METER BOX PERPENDICULAR TO THE R/W.
 - COMMERCIAL METER BOX LOCATION SHALL BE AS APPROVED (PREFER NO METER BE INSTALLED LESS THAN 5' FROM BLDG. TO EDGE OF BOX).
 - LATERAL SHALL BE CENTERED ON LOT UNLESS OTHERWISE NOTED.
 - LATERAL SHALL NOT BE BACK FILLED UNTIL INSPECTED BY FAYPWC PROJECT COORDINATOR.
 - WATER MAIN AND LATERAL SHALL PASS HYDROSTATIC, LEAKAGE AND STERILIZATION TESTS (200 PSI).
 - SHOULD IT BE NECESSARY TO CRIMP THE WATER SERVICE LATERAL, A FULL CIRCLE REPAIR CLAMP SHALL BE PLACED ON THE CRIMPED AREA.

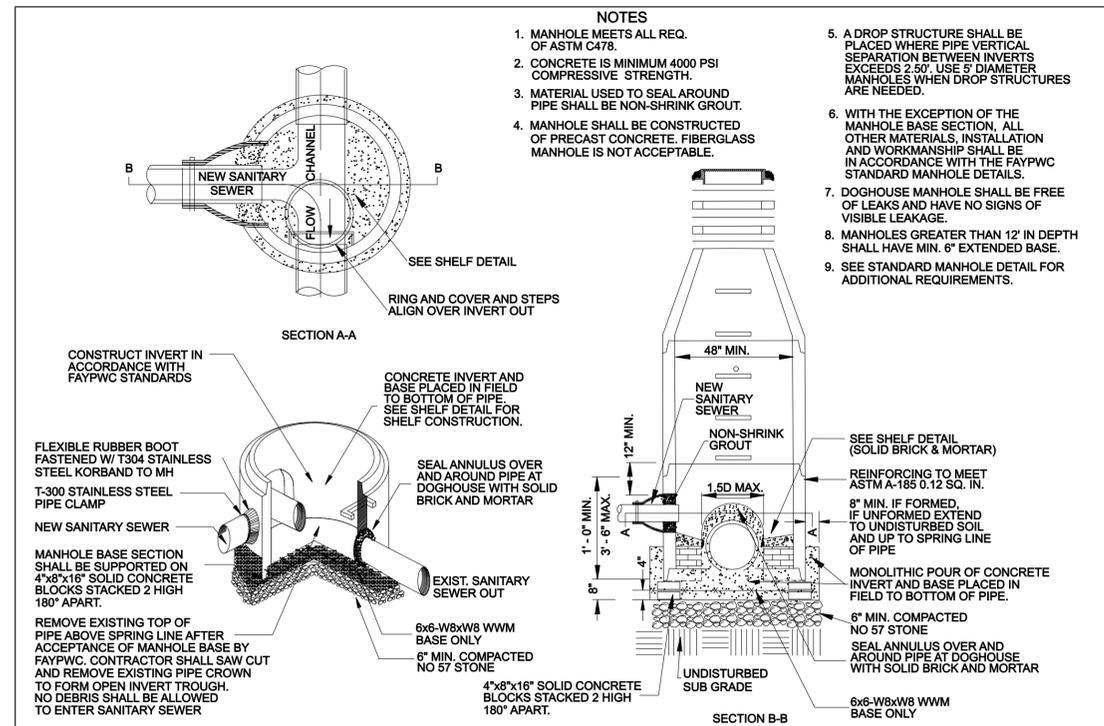
1" COPPER WATER SERVICE LATERAL N.T.S.		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. W.24 DATE: JULY 01, 2015	DWG. BY: FAYPWC APPROVED BY: J.E.G.	WATER RESOURCES ENGINEERING DEPARTMENT		1	MAY 05	VALVE CHANGE
2015-W24 COPPER SERVICE LATERAL.dwg							



PIPE RELOCATION DETAIL N.T.S.		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. W.26 DATE: JULY 01, 2015	DWG. BY: FAYPWC APPROVED BY: J.E.G.	WATER RESOURCES ENGINEERING DEPARTMENT		1	01/12	REVISED NOTES, ADDED HORIZ. RELOCATION
2015-W26 PIPE RELOCATION DETAIL.dwg							

- CONTRACTOR SHALL REPAIR ALL SEWER LATERALS AND MAINS DAMAGED DURING CONSTRUCTION. THE CONTRACTOR SHALL IMMEDIATELY REPORT ALL SEWER MAIN AND LATERAL BREAKS TO THE FAYPWC PROJECT COORDINATOR. THE CONTRACTOR SHALL INITIATE IMMEDIATE REPAIRS IN ACCORDANCE WITH FAYPWC STANDARDS.
- SEWER MAINS, LATERALS, AND MANHOLES SHALL BE INSTALLED UTILIZING A FAYPWC APPROVED CUT-SHEET, INDICATING INSTALLATION DEPTH.
- TRANSFER OF SEWER SERVICES SHALL BE ACCOMPLISHED AS FOLLOWS:
 - INSTALL AND TEST NEW MAINS, MANHOLES, AND LATERALS. CLEANOUTS SHALL BE INSTALLED 18" INSIDE R/W UNLESS OTHERWISE DIRECTED BY FAYPWC.
 - CONNECT EXISTING PLUMBING TO NEW LATERAL UTILIZING THE NECESSARY FITTINGS AS DIRECTED BY FAYPWC.
 - AFTER ALL SERVICES HAVE BEEN TRANSFERRED TO THE NEW MAIN, THE EXISTING SEWER SYSTEM SHALL BE ABANDONED IN ACCORDANCE WITH FAYPWC REQUIREMENTS.
- WHEN THE EXISTING MAIN IS NOT TO BE ABANDONED, THE CONTRACTOR SHALL UNCOVER THE EXISTING LATERAL AT THE MAIN, CUT AND PLUG BOTH ENDS, REMOVE THE EXISTING CLEANOUT AND COMBINATION, AND PLUG THE LATERAL TO ABANDON THE OLD SEWER.
- SEWER PLUGS SHALL BE INSTALLED TO ELIMINATE ANY DEBRIS OR OTHER MATERIAL FROM ENTERING THE ACTIVE SEWER SYSTEM. UPON ACCEPTANCE OF THE NEW SEWER SYSTEM, THE CONTRACTOR SHALL CLEAN THE NEW MAINS, REMOVE ALL DEBRIS, AND THEN REMOVE THE PLUG.
- SEPARATION REQUIREMENTS:
 - LATERAL SEPARATION OF SEWERS AND WATER MAINS:** WATER MAINS SHALL BE LAID AT LEAST 10 FEET LATERALLY FROM EXISTING OR PROPOSED SEWER MAIN/LATERAL, UNLESS LOCAL CONDITIONS OR BARRIERS PREVENT A 10-FOOT LATERAL SEPARATION - IN WHICH CASE:
 - THE WATER MAIN IS LAID IN A SEPARATE TRENCH, WITH THE ELEVATION OF THE BOTTOM OF THE WATER MAIN AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER MAIN/LATERAL; OR
 - THE WATER MAIN IS LAID IN THE SAME TRENCH AS THE SEWER MAIN/LATERAL WITH THE WATER MAIN LOCATED AT ONE SIDE ON A BENCH OF UNDISTURBED EARTH AND WITH THE ELEVATION OF THE BOTTOM OF THE WATER MAIN AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER MAIN/LATERAL.
 - CROSSING A WATER MAIN OVER A SEWER:** WHENEVER IT IS NECESSARY FOR A WATER MAIN TO CROSS OVER A SEWER MAIN/LATERAL, THE WATER MAIN SHALL BE LAID AT SUCH AN ELEVATION THAT THE BOTTOM OF THE WATER MAIN IS AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER MAIN/LATERAL, UNLESS LOCAL CONDITIONS OR BARRIERS PREVENT AN 18 INCH VERTICAL SEPARATION - IN WHICH CASE BOTH THE WATER MAIN AND SEWER MAIN/LATERAL SHALL BE CONSTRUCTED OF FERROUS MATERIAL AND WITH JOINTS THAT ARE EQUIVALENT TO WATER MAIN STANDARDS FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE POINT OF CROSSING.
 - CROSSING WATER MAIN UNDER A SEWER:** WHENEVER IT IS NECESSARY FOR A WATER MAIN TO CROSS UNDER A SEWER MAIN/LATERAL, BOTH THE WATER MAIN AND THE SEWER MAIN/LATERAL SHALL BE CONSTRUCTED OF DUCTILE IRON MATERIAL AND WITH JOINTS EQUIVALENT TO WATER MAIN STANDARDS FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE POINT OF CROSSING. A SECTION OF WATER MAIN PIPE SHALL BE CENTERED AT THE POINT OF CROSSING.
 - CROSSING STORM DRAINAGE LINES:** A MINIMUM OF 24-INCHES OF VERTICAL CLEARANCE SHALL BE MAINTAINED BETWEEN A SEWER MAIN/LATERAL CROSSING UNDER A STORM DRAINAGE LINE UNLESS DUCTILE IRON PIPE IS USED. IF DUCTILE IRON PIPE IS USED, A MINIMUM OF SIX(6) INCHES OF SEPARATION SHALL BE MAINTAINED, UNLESS OTHERWISE APPROVED BY FAYPWC.

GENERAL NOTES SANITARY SEWER UTILITY		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. S.1 DATE: JULY 01, 2015	DWG. BY: FAYPWC APPROVED BY: J.E.G.	WATER RESOURCES ENGINEERING DEPARTMENT		1	11/25/08	MADE CHANGES TO NOTES
2015-S1 SEWER NOTES.dwg							



DOGHOUSE MANHOLE N.T.S.		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. S.3 DATE: JULY 01, 2015	DWG. BY: FAYPWC APPROVED BY: J.E.G.	WATER RESOURCES ENGINEERING DEPARTMENT		1	11/25/08	MADE CHANGES TO NOTES
2015-S3 DOGHOUSE MH (REV_1-09).dwg							

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Prepared by:

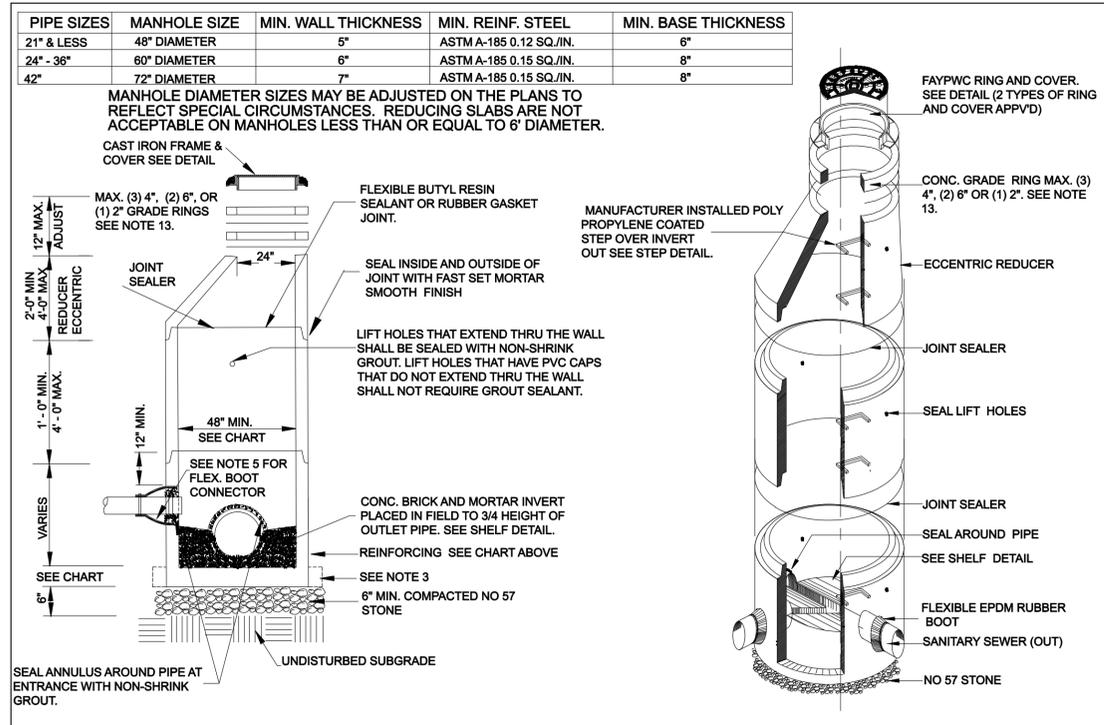


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UTILITY CONSTRUCTION



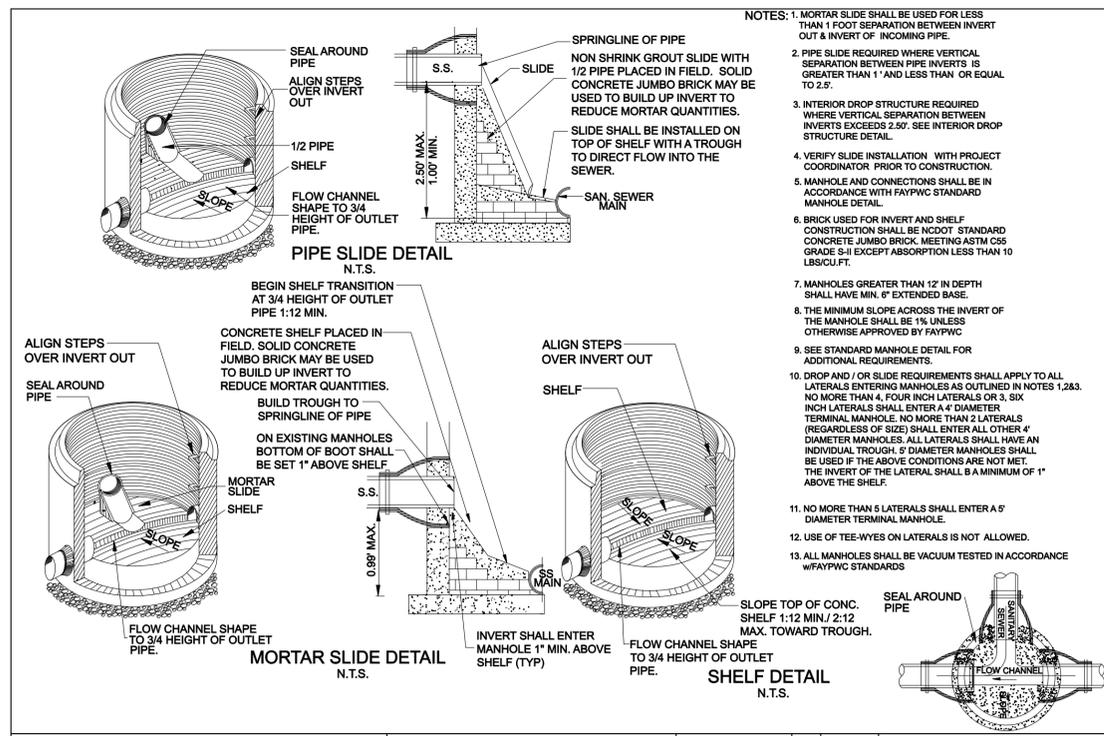
STANDARD MANHOLE N.T.S.		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 1 OF 2	DWG. NO. S.2 DATE: JULY 01, 2015	DWG. BY: FAYPWC APPROVED BY: J.E.G.	WATER RESOURCES ENGINEERING DEPARTMENT		1	FEB 07	CREATED S.2 ADDED NOTES 13-17
					2	JULY 13	ADDED SHEET 2 OF 2

2015-S2 STANDARD MANHOLE.dwg

- NOTES:**
- PRECAST REINFORCED CONCRETE MANHOLES SHALL BE IN ACCORDANCE WITH ASTM C-478.
 - MINIMUM CONCRETE COMPRESSIVE STRENGTH SHALL BE 4000 PSI.
 - MANHOLES GREATER THAN 12' DEPTH SHALL HAVE MINIMUM 6" EXTENDED BASE.
 - FLEXIBLE BUTYL RESIN JOINT SEALANT SHALL BE IN ACCORDANCE WITH ASTM C900. RUBBER GASKET JOINTS SHALL BE IN ACCORDANCE WITH ASTM C-443.
 - FLEXIBLE EPDM RUBBER BOOT CONNECTORS SHALL BE IN ACCORDANCE WITH ASTM C923, INSTALLED BY MANUFACTURER WITH STAINLESS STEEL COMPRESSION RING AND TAKE-UP CLAMP. CONNECTION TO MAIN SHALL BE BY CONTRACTOR WITH STAINLESS STEEL PIPE CLAMP.
 - CONNECTIONS TO EXISTING MANHOLES SHALL BE BY CORING MANHOLE AND FIELD INSTALLING A FLEX BOOT CONNECTOR. DO NOT ALLOW DEBRIS TO ENTER SYSTEM.
 - MORTAR SHALL BE QUICK SETTING, NON-SHRINK GROUT MIXED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
 - MANHOLE STEPS SHALL BE IN ACCORDANCE WITH ASTM C478 AND OSHA REGULATIONS. ALIGN STEPS WITH INVERT OUT.
 - PRECAST INVERTS ARE NOT ALLOWED. STANDING WATER IN INVERT OF MANHOLE IS NOT ACCEPTABLE.
 - VERTICAL DROPS BETWEEN THE INFLOW PIPES AND OUTFLOW PIPES SHALL REQUIRE THE FOLLOWING:
 - A. GREATER THAN 2.5' SEE DROP STRUCTURE DETAIL (MIN. 5" DIAMETER MH REQUIRED).
 - B. 1' TO 2.5' SEE PIPE SLIDE DETAIL.
 - C. LESS THAN 1' SEE MORTAR SLIDE DETAIL.
 - AN ECCENTRIC CONE SHALL BE UTILIZED ON ALL MANHOLES, UNLESS OTHERWISE APPROVED BY FAYPWC.
 - INVERT ON PLANS IS TO MANHOLE CENTERLINE.
 - CONCRETE GRADE RINGS SHALL NOT BE USED FOR ABOVE GRADE ADJUSTMENTS (i.e., OUTFALL AREAS). USE OF GRADE RINGS ARE ALLOWABLE IN YARD AREAS AND PAVEMENT, WHERE THE RING AND COVER ARE AT GROUND LEVEL.
 - THE MINIMUM SLOPE ACROSS THE INVERT OF THE MANHOLE SHALL BE 1%, UNLESS OTHERWISE APPROVED BY FAYPWC.
 - THE EXTERIOR MANHOLE RISER JOINTS, INCLUDING THE JOINT AT THE CONE, SHALL BE SEALED ON THE OUTSIDE BY AN APPROVED JOINT WRAP. THE WRAP SHALL BE IN ACCORDANCE WITH FAYPWC SPECIFICATIONS.
 - MANHOLE BOOT FOR 4-INCH LATERALS. SHOULD IT BE NECESSARY TO INSTALL A 4-INCH LATERAL INTO A MANHOLE, THE RUBBER BOOT THAT THE LATERAL IS INSERTED INTO SHALL BE SECURELY FASTENED TO THE CORE HOLE BY UTILIZING A STAINLESS STEEL BAND THAT IS TIGHTENED USING A JACK OR A TORQUE WRENCH (DIRECT DRIVE). BOTH STANDARD SIZE AND STEP DOWN BOOTS ARE ALLOWED. THE TORQUE WRENCH SHALL BE SUPPLIED BY THE MANUFACTURER. NO OTHER TYPE BANDS OR METHOD OF SECURING THE BOOT TO THE MANHOLE SHALL BE ACCEPTED.
 - FOR FOUR (4) INCH SDR 26 LATERALS, THE PIPE OUTSIDE DIAMETER RANGE OF THE BOOT SHALL BE 3.5 INCHES TO 4.25 INCHES.
 - FOR FOUR (4) INCH DUCTILE IRON LATERALS, THE PIPE OUTSIDE DIAMETER RANGE OF THE BOOT SHALL EITHER BE AS FOR VC OR 4.25 INCHES TO 4.81 INCHES.
 - IN ALL CASES, THE BOOT SHALL BE TIGHTENED ON THE LATERAL BY MEANS OF A SINGLE STAINLESS STEEL STRAP.
 - THE LATERAL INVERT SHALL BE AT THE TOP OF THE SHELF.
 - NO MORE THAN 4, FOUR INCH LATERALS OR 3, SIX INCH LATERALS SHALL ENTER A 4' DIAMETER TERMINAL MANHOLE. NO MORE THAN 2 LATERALS (REGARDLESS OF SIZE) SHALL ENTER ALL OTHER 4' DIAMETER MANHOLES. ALL LATERALS SHALL HAVE AN INDIVIDUAL TROUGH. 5' DIAMETER MANHOLES SHALL BE USED IF THE ABOVE CONDITIONS ARE NOT MET.
 - NO MORE THAN 5 LATERALS SHALL ENTER A 5' DIAMETER
 - USE OF TEE-WYES ON LATERALS IS NOT ALLOWED.
 - ALL MANHOLES SHALL BE VACUUM TESTED IN ACCORDANCE WITH FAYPWC STANDARDS.

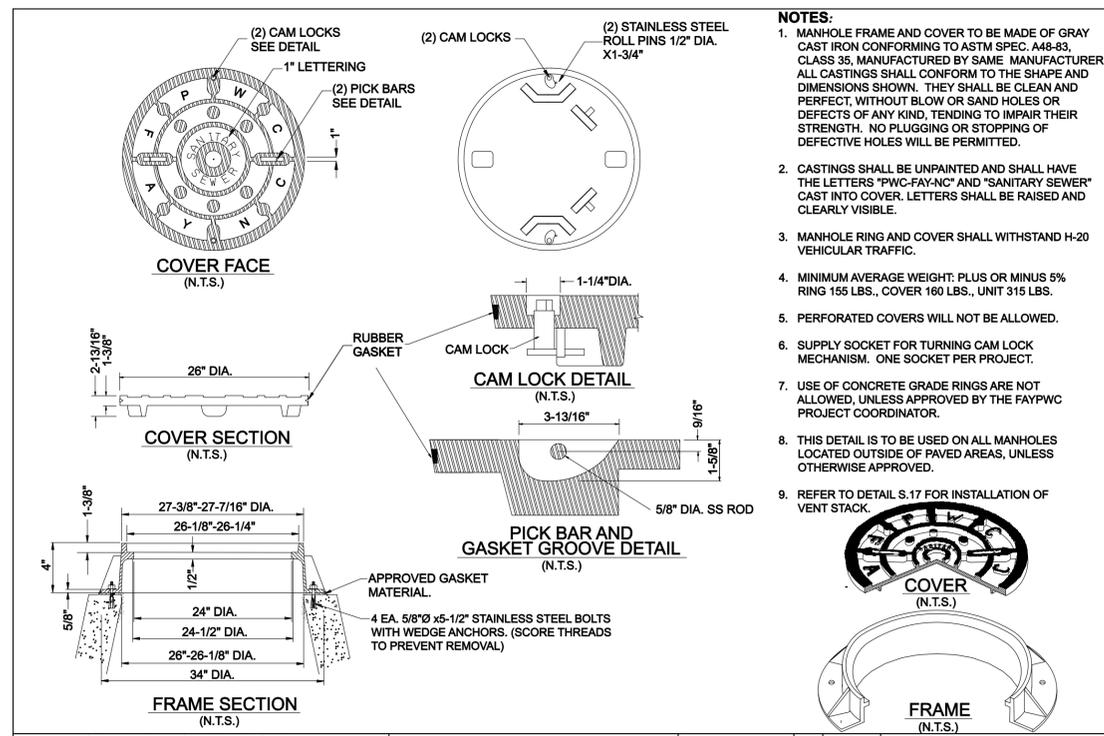
STANDARD MANHOLE		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 2 OF 2	DWG. NO. S.2 DATE: JULY 01, 2015	DWG. BY: FAYPWC APPROVED BY: J.E.G.	WATER RESOURCES ENGINEERING DEPARTMENT		1	1/08	CREATED DETAIL, ADDED NOTES 14-20
					2	7/13	REVISED NOTES 9, 10, 11, 15. CONVERTED TO S.2 SHEET 2 OF 2

2015-S2 STANDARD MANHOLE.dwg



PIPE SLIDE, MORTAR SLIDE AND SHELF DETAILS N.T.S.		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. S.4 DATE: JAN. 01, 2015	DWG. BY: FAYPWC APPROVED BY: J.E.G.	WATER RESOURCES ENGINEERING DEPARTMENT		1	JAN. 05	ADDED NOTE 8.
					2	FEB 07	REVISED NOTE 8, SLIDE DETAIL. ADDED NOTES 10, 11, 12

2015-S4 PSLIDE.dwg



STANDARD NON-TRAFFIC AREA MANHOLE RING AND COVER WITH WIPER GASKET & CAM LOCK N.T.S.		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. S.6 DATE: JULY 01, 2015	DWG. BY: FAYPWC APPROVED BY: J.E.G.	WATER RESOURCES ENGINEERING DEPARTMENT		1	JUL 08	REVISED NOTE ON FRAME SECTION ADDED NOTE 7, 8
					2	DEC 08	REVISED DIMENSIONS ON FRAME SECTION
					3	JUL 09	REVISED NOTES ON FRAME SECTION/REVISED NOTE 3

2015-S6 RING COVER.dwg

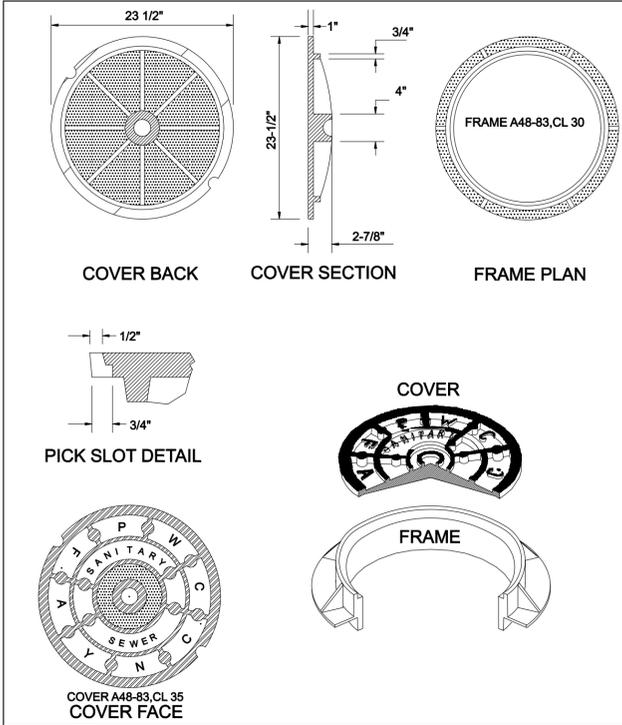
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UTILITY CONSTRUCTION



NOTES:

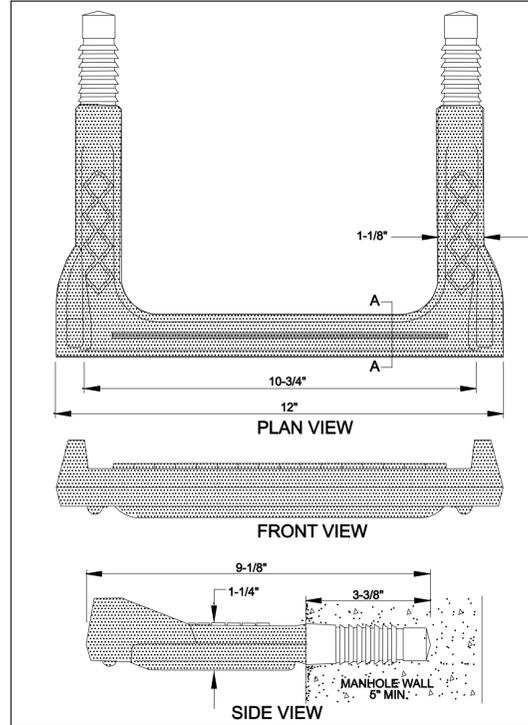
- DETAIL TO BE USED IN PAVED AREAS ONLY. ALL OTHER MANHOLES SHALL BE IN ACCORDANCE WITH DETAIL S.6, UNLESS OTHERWISE APPROVED.
- MANHOLE FRAME AND COVER SHALL BE MADE OF GRAY CAST IRON CONFORMING TO ASTM SPEC. A48-83 CL.30/35 RESPECTIVELY, MANUFACTURED BY SAME MANUFACTURER. ALL CASTINGS SHALL CONFORM TO THE SHAPE AND DIMENSIONS SHOWN. THEY SHALL BE CLEAN AND PERFECT, WITHOUT BLOW OR SAND HOLES OR DEFECTS OF ANY KIND, TENDING TO IMPAIR THEIR STRENGTH. NO PLUGGING OR STOPPING OF DEFECTIVE HOLES WILL BE PERMITTED.
- CASTINGS SHALL BE UNPAINTED AND SHALL HAVE THE LETTERS "PWC-FAY-NC" AND "SANITARY SEWER" CAST INTO COVER. LETTERS SHALL BE RAISED AND CLEARLY VISIBLE.
- MANHOLE RING AND COVER SHALL WITHSTAND H-20 VEHICULAR TRAFFIC. ROCKING COVERS SHALL NOT BE ACCEPTABLE.
- MINIMUM AVERAGE WEIGHT: PLUS OR MINUS 5% RING 175 LBS., COVER 135 LBS., UNIT 310 LBS.
- PERFORATED COVERS WILL NOT BE ALLOWED.

8" MIN THICKNESS 3000 PSI CLASS "A" CONCRETE COLLAR 3-5% AIR ENTRAINMENT ALL AROUND FRAME. (WHEN UTILIZING CONCRETE GRADE RINGS THE CONCRETE COLLAR SHALL EXTEND TO 2" MIN BELOW THE TOP OF CONE.)

STANDARD TRAFFIC AREA MANHOLE RING AND COVER N.T.S.		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.	
SHEET NO. 1 OF 1	DWG. NO. S.7 DATE: JULY 01, 2015	DWG. BY: FAYPWC APPROVED BY: JEG	WATER RESOURCES ENGINEERING DEPARTMENT

	NO.	DATE	REVISION
	1	JAN 05	CHANGED NON TRAFFIC DETAIL
	2	JULY 06	ADDED NOTE ON CONC. COLLAR
	3	FEB 07	REMOVED NON TRAFFIC AREA REVISED NOTES
4	JULY 08	REVISED ASPHALT THICKNESS	

2015-S7 RING COVER.dwg



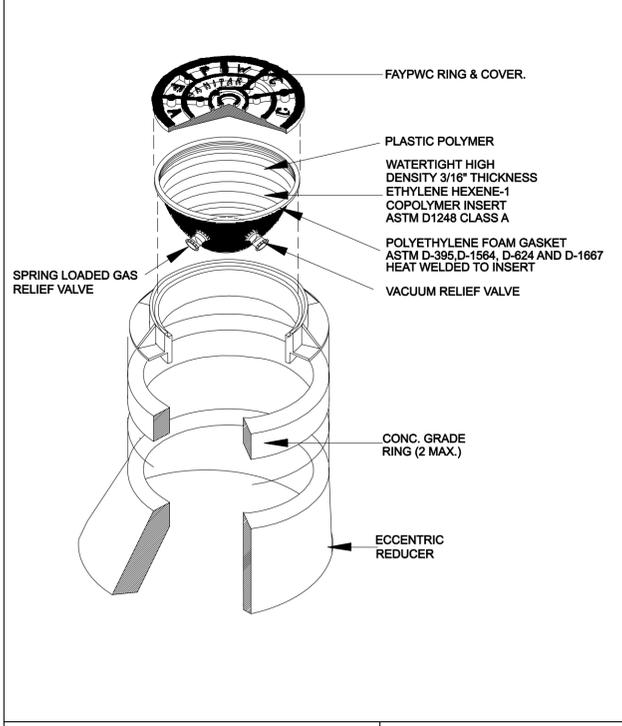
NOTES:

- COPOLYMER POLYPROPYLENE PLASTIC STEP SHALL BE PLACED 16" O.C. IN ALL STRUCTURES 5' DEPTH OR GREATER.
- STEPS SHALL BE INSTALLED BY MANUFACTURER AND SHALL BE ALIGNED OVER STRUCTURE INVERT OUT.
- DIMENSIONS SHOWN ARE TO CONVEY THE DESIRED SIZE OF THE STEP. STEPS OF SIMILAR SIZE AND CONSTRUCTION MAY BE ACCEPTABLE PROVIDED MATERIAL SUBMITTAL IS APPROVED BY FAYPWC.
- MATERIALS OF CONSTRUCTION AND METHOD OF INSTALLATION SHALL BE IN ACCORDANCE WITH OSHA STANDARDS AND ASTM C-478.

STRUCTURE STEP N.T.S.		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.	
SHEET NO. 1 OF 1	DWG. NO. S.8 DATE: JULY 01, 2015	DWG. BY: FAYPWC APPROVED BY: J.E.G.	WATER RESOURCES ENGINEERING DEPARTMENT

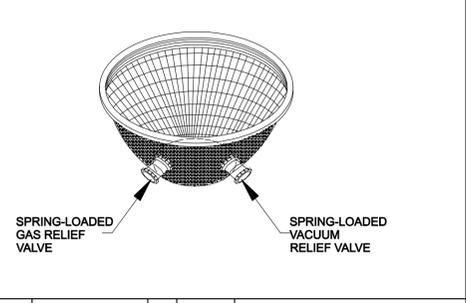
	NO.	DATE	REVISION

2015-S8 STEP.dwg



NOTES:

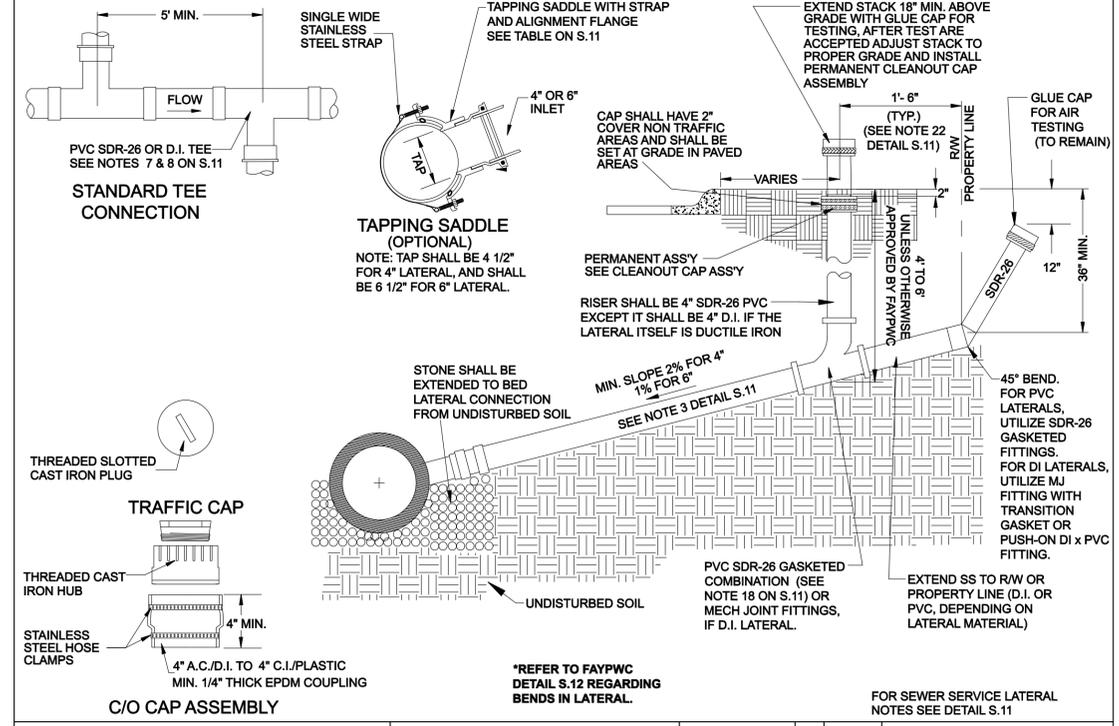
- THE SPRING-LOADED GAS RELIEF VALVE SHALL RELIEVE THE GAS PRESSURE BUILD-UP. THE VALVE IS AUTOMATICALLY ACTIVATED WHEN THE GAS PRESSURE DIFFERENTIAL IN THE MANHOLE REACHES APPROXIMATELY 1/2 psi.
- THE SPRING-LOADED VACUUM RELIEF VALVE RELIEVES VACUUM PRESSURE BUILD-UP. THIS VALVE IS ACTIVATED WHEN THE VACUUM PRESSURE DIFFERENTIAL REACHES APPROXIMATELY 2.25 psi.
- THE BOWL SHAPE SHALL BE DESIGNED TO PROTECT THE INSERT VALVES WHEN THE MANHOLE COVER IS REMOVED.
- THE INSERT SHALL NOT BE SUSCEPTIBLE TO CORROSION OR BE DAMAGED BY SEWER GASES OR ROAD OILS.
- A POLYETHYLENE GASKET, HEAT-WELDED UNDER THE LIP, CONFORMS TO IRREGULARITIES IN THE FRAME, AND FORMS A TIGHT, VIRTUALLY LEAK PROOF SEAL.
- BOTH VALVES SHALL BE SELF-CLEANING, AND MADE OF NON-CORRODIBLE MATERIAL.
- INSERT SHALL NOT BE INSTALLED UNTIL MANHOLE AND SEWER LINES ARE INSPECTED AND ACCEPTED BY OWNER.



WATERTIGHT MANHOLE INSERT N.T.S.		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.	
SHEET NO. 1 OF 1	DWG. NO. S.9 DATE: JULY 01, 2015	DWG. BY: FAYPWC APPROVED BY: J.E.G.	WATER RESOURCES ENGINEERING DEPARTMENT

	NO.	DATE	REVISION

2015-S9 INSERT.dwg



SEWER SERVICE LATERAL (4-INCH AND 6-INCH)		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.	
SHEET NO. 1 OF 1	DWG. NO. S.10 DATE: JULY 01, 2015	DWG. BY: FAYPWC APPROVED BY: JEG	WATER RESOURCES ENGINEERING DEPARTMENT

	NO.	DATE	REVISION
	1	JAN. 13	REVISED NOTES
	2	JAN. 14	ADDED TAILPIECE, NOTES
	3	JAN. 15	REVISED NOTES RE: TAILPIECE

2015-S10 resslat.dwg

Prepared by:

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PROJECT REFERENCE NO. B-4490	SHEET NO. UC-3J
DESIGNED BY:	
DRAWN BY: NONE	
CHECKED BY:	
APPROVED BY:	
REVISED:	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151 2/2/2015

UTILITY CONSTRUCTION

SEWER SERVICE LATERAL NOTES

- HOLE IN SANITARY SEWER MAIN MUST BE CUT WITH SHELL CUTTER NO HAMMER TAPS ALLOWED.
- LATERAL SHALL CONFORM TO ASTM SPECS. D-3034 SDR-26 UNLESS OTHERWISE INDICATED AS D.I.
- ALL PIPE & FITTINGS SHALL BE 4" OR 6" UNLESS OTHERWISE SPECIFIED.
- ALL D.I. PIPE SHALL HAVE AN INTERIOR LINING OF CERAMIC EPOXY (PROTECTO 401). THE ENTIRE D.I. LATERAL SHALL BE COMPRISED OF D.I. PIPE & MECHANICAL JOINT FITTINGS.
- ALL CONNECTIONS SHALL HAVE RUBBER GASKET SEALS INSTALLED.
- SANITARY SEWER SERVICE C/O STACK SHALL BE LOCATED 18" FROM WATER SERVICE LOCK VALVE WHEN IN THE SAME DITCH.
- INSTALLATION OTHER THAN AS SHOWN MUST BE APPROVED BY THE FAYPWC.
- CONNECTIONS TO THE TOP OF MAIN SHALL NOT BE ALLOWED, UNLESS OTHERWISE APPROVED BY THE FAYPWC PROJECT COORDINATOR.
- SLOPE AND DEPTH OF THE SERVICE LATERAL SHALL BE DETERMINED BY THE TOPOGRAPHY OF THE LOT AS APPROVED BY THE FAYPWC ENGINEER OR AS INDICATED ON THE DRAWINGS.
- LATERAL SHALL CONFORM TO THE 2% MINIMUM SLOPE FOR THE 4" OR THE 1% MINIMUM SLOPE FOR THE 6" MAXIMUM CLEAN OUT SPACING FOR 4" PIPE 75', 6" PIPE 100'.
- SEE INTERIOR DROP STRUCTURE OR SLIDE, MORTAR SLIDE & SHELF DETAIL FOR VERTICAL DROPS OF MAINS AND LATERALS.
- LATERALS LESS THAN 3' IN DEPTH OR GREATER THAN 20' DEPTH SHALL UTILIZE DUCTILE IRON PIPE AND FITTINGS WITH CERAMIC EPOXY (PROTECTO 401), OR WHEN SEPARATION REQUIREMENTS CANNOT BE MET.
- ENTIRE SEWER LATERAL ASSEMBLY SHALL BE AIR TESTED CONCURRENTLY WITH SEWER MAIN.
- INDIVIDUAL LATERALS SHALL BE CLEANED AND FLUSHED PRIOR TO FLUSHING SANITARY SEWER MAINS.
- LATERAL SHALL NOT BE BACK-FILLED UNTIL INSPECTED BY THE FAYPWC PROJECT COORDINATOR.
- WYE CONNECTIONS SHALL NOT BE USED TO TIE LATERALS INTO A MANHOLE.
- IF BENDS ARE APPROVED BY THE PROJECT COORDINATOR, STONE BEDDING IS REQUIRED TO BE INSTALLED FROM UNDISTURBED (SEE DETAIL S.12) SOIL TO BOTTOM OF BEND.
- PVC COMBINATION SHALL BE A MOLDED WYE AND BEND, GASKETED, SDR-26, AS MANUFACTURED BY HARCO, GPK OR APPROVED EQUAL.
- NO MORE THAN 4, FOUR INCH LATERALS OR 3, SIX INCH LATERALS SHALL ENTER A 4' DIAMETER TERNAL MANHOLE. NO MORE THAN 2 LATERALS (REGARDLESS OF SIZE) SHALL ENTER ALL OTHER 4' DIAMETER MANHOLES. ALL LATERALS SHALL HAVE AN INDIVIDUAL TROUGH. 5' DIAMETER MANHOLES SHALL BE USED IF THE ABOVE CONDITIONS ARE NOT MET.
- ALL LATERALS (4" AND 6") SHALL UTILIZE A 4" RISER (STACK).
- REFER TO DETAIL S.12 FOR SEPARATION REQUIREMENTS.
- FOR SINGLE FAMILY RESIDENTIAL LOTS, CLEAN-OUT SHALL BE LOCATED 18" FROM RW OR EASEMENT. FOR ALL NON-SINGLE FAMILY LOTS, CLEAN-OUT SHALL BE NO CLOSER THAN 10' TO FRONT OF BUILDING, UNLESS OTHERWISE APPROVED BY FAYPWC.

THE FOLLOWING TABLE SUMMARIZES THE MATERIALS TO BE UTILIZED FOR SEWER MAIN TO LATERAL CONNECTIONS:

	PVC Main	DI Main
DI Lateral	DI fitting or approved saddle	MJ fitting or approved saddle
PVC Lateral	PVC fitting or approved saddle	MJ fitting with transition gasket or approved saddle

NOTE: REFER TO FAYPWC TECHNICAL SPECIFICATIONS FOR ADDITIONAL INFORMATION.

SEWER SERVICE LATERAL NOTES (4-INCH AND 6-INCH)		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.		NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. S.11	DWG. BY: FAYPWC		2	OCT 11	REVISED NOTES
DATE: JULY 01, 2015	APPROVED BY: JEG	WATER RESOURCES ENGINEERING DEPARTMENT		3	JAN. 13	REVISED NOTES AND ADDED TABLE
				4	JAN. 15	REVISED NOTE 22, TABLE

2015-S11 RESSLAT notes.dwg

SEWER SERVICE LATERAL UTILITY CONFLICT SEPARATION REQUIREMENTS N.T.S.

- ALL VERTICAL AND HORIZONTAL SEPARATION SHALL BE IN ACCORDANCE WITH STATE REGULATIONS.
- THE SKETCHES SHOWN ARE FOR INFORMATIONAL PURPOSES ONLY.
- THE CONTRACTOR SHALL BE REQUIRED TO VERIFY ALL EXISTING UTILITIES BOTH HORIZONTALLY AND VERTICALLY AT EACH CROSSING PRIOR TO CONSTRUCTION OF LATERAL TO INSURE PROPER CLEARANCES ARE MAINTAINED.
- ALL PIPE BEND LOCATIONS AND MAX. NUMBER OF BENDS INSTALLED ON LATERALS SHALL BE APPROVED BY THE PROJECT COORDINATOR PRIOR TO INSTALLATION OF BEND OR EXTENDING THE LATERAL FROM THE MAIN.
- ALL REQUIREMENTS FOR SEWER LATERAL NOTES AND DETAILS SHALL BE APPLICABLE.
- REFER TO UNDERGROUND ELECTRICAL DETAILS FOR ADDITIONAL INFORMATION WHEN CROSSING UNDERGROUND ELECTRICAL FACILITIES.

SEWER SERVICE LATERAL UTILITY CONFLICT SEPARATION REQUIREMENTS N.T.S.		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.		NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. S.12	DWG. BY: FAYPWC		1	JAN 05	REVISED NOTES 1 AND 6
DATE: JULY 01, 2015	APPROVED BY:	WATER RESOURCES ENGINEERING DEPARTMENT		2	NOV 06	ADDED NOTE ON DI LATERALS
				3	MAR 10	ADDED LATERAL & WM SEPARATION

2015-S12 UTIL CONFLICT.dwg

SEWER BEDDING N.T.S.

SEE PAVT PATCH DETAIL FOR LAST 3' OF FILL IN PAVED AREAS

COMPACTED TO 95% MAX. DENSITY AS DETERMINED BY ASTM D698

UNDISTURBED SOIL

BACKFILL SHALL BE PLACED IN 6" LAYERS AND COMPACTED TO 90% MAXIMUM DENSITY AS DETERMINED BY ASTM D698 TO 12" ABOVE TOP OF PIPE

SELECT BEDDING MATERIAL NO OVERAGE ALLOWED SEE NOTE 4

SUBBASE SHALL BE UNDISTURBED SOIL. WHERE SOIL IS DEEMED UNSUITABLE BY THE FAYPWC PROJECT REP. AUTHORIZED AREA SHALL BE UNDERCUT AND BACKFILLED WITH SELECT BEDDING MATERIAL. AREAS NOT AUTHORIZED AS UNDERCUT SHALL BE BACKFILLED AT CONTRACTORS EXPENSE WITH SELECT BEDDING MATERIAL.

SEE NOTES 1 & 2.

SEE NOTE #2

(MIN 4") MAX (DIA/2)

PIPE DIA

SEE NOTES 1 & 2.

NOTES:

- ALL EXCAVATIONS SHALL COMPLY WITH THE TERMS AND CONDITIONS OF THE CONSTRUCTION STANDARDS FOR EXCAVATIONS IN OSHA "SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION", CHAPTER XV11 OF TITLE 29, CFR, PART 1926. THE CONTRACTOR SHALL HAVE A COMPETENT PERSON ON THE JOB AT ALL TIMES AND SHALL EMPLOY A PROFESSIONAL ENGINEER TO ACT UPON ALL PERTINENT MATTERS OF THE WORK.
- BEDDING MATERIAL QUANTITIES ARE CALCULATED BASED ON THE FOLLOWING TRENCH WIDTHS. BEDDING MATERIAL SHALL BE INSTALLED REGARDLESS OF PIPE MATERIAL.
 - FOR 48" RCP/DI B=6', D=6'
 - FOR 42" RCP/DI B=6'-6", D=6'-6"
 - FOR 30" RCP/DI B=4'-6", D=4'-6"
 - FOR 24" RCP/DI B=4', D=4'-0"
 - FOR 18" PVC/DI B=3', D=3'
 - FOR 15" PVC/DI B=3', D=3'
 - FOR 12" PVC/DI B=2', D=3'-0"
 - FOR 8" PVC/DI B=2', D=3'-0"
- THE BEDDING MATERIAL SHALL BE GRANULAR, CLEAN, COARSE PEA GRAVEL, OR WELL GRADED CRUSHED ROCK PLACED IN LAYERS NOT TO EXCEED 6" LOOSE LIFTS FOR THE FULL WIDTH OF THE TRENCH.
- BEDDING MATERIAL SHALL BE INSTALLED AND PAID FOR IN ACCORDANCE WITH THE FOLLOWING CHART TO PRODUCE CLASS B BEDDING.
 - FOR 8" PIPE .067yd3/ft. OF PIPE
 - FOR 12" PIPE .09yd3/ft. OF PIPE
 - FOR 15" PIPE .11yd3/ft. OF PIPE
 - FOR 18" PIPE .13yd3/ft. OF PIPE
 - FOR 24" PIPE .15yd3/ft. OF PIPE
 - FOR 30" PIPE .19yd3/ft. OF PIPE
 - FOR 36" PIPE .25yd3/ft. OF PIPE
 - FOR 42" PIPE .32yd3/ft. OF PIPE
 - FOR 48" PIPE .39yd3/ft. OF PIPE
- BEDDING MATERIAL SHALL EXTEND TO UNDISTURBED TRENCH WALLS AND TRENCH BOTTOM. OVERAGE OF BEDDING MATERIAL WILL NOT BE PAID FOR UNLESS SPECIFICALLY APPROVED BY THE PROJECT REPRESENTATIVE AND SHALL ONLY BE PAID FOR IN THE AMOUNT OF THE AUTHORIZED QUANTITY.
- BEDDING MATERIAL SHALL BE PROPERLY RODDED AROUND THE PIPE HAUNCHES.
- CONTRACTOR SHALL USE TRENCH BOX SHORING IN ALL OPEN CUTS IN PAVED AREAS. TRENCH WIDTH SHALL BE MAINTAINED AT THE MINIMUM PRACTICAL WIDTH.

SEWER BEDDING N.T.S.		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.		NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. S.13	DWG. BY: FAYPWC		1	JAN 05	REVISED NOTES
DATE: JULY 01, 2015	APPROVED BY: J.E.G.	WATER RESOURCES ENGINEERING DEPARTMENT				

2015-S13 SEWER BEDDING.dwg

MANHOLE VENT N.T.S.

3" SCHEDULE 40 ALUMINUM PIPE THREADED INTO MANHOLE LID. VENT SHALL EXTEND TO 2 FEET ABOVE THE 100 YEAR FLOOD ELEVATION.

100 YEAR FLOOD PER FEMA FIRM MAPS

HEIGHT 4' MIN.

PLACE STAINLESS STEEL SCREEN OVER THE END OF THE VENT.

FAYPWC CAM-LOCK MANHOLE RING AND COVER (SEE DETAIL S.6)

18" OR AS INDICATED ON PLANS

DRILL AND TAP 3" DIA. PIPE THREAD THRU

(2) CAM LOCKS SEE DETAIL S.6

1" LETTERING

(2) PICK BARS SEE DETAIL S.6

COVER FACE

COVER SECTION

COVER

FRAME

NOTES:

- REFER TO DETAIL S.6 FOR MANHOLE RING AND COVER REQUIREMENTS.
- VENTS SHALL BE PLACED EVERY 1,000 FT OR AS DIRECTED BY FAYPWC.

MANHOLE VENT N.T.S.		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.		NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. S.17	DWG. BY: FAYPWC				
DATE: JULY 01, 2015	APPROVED BY: J.E.G.	WATER RESOURCES ENGINEERING DEPARTMENT				

2015-S17 MH VENT (NEW).dwg

Prepared by:

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919-854-6200 919-854-6259 (fax)
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DATE: 2/2/2016 TIME: 7:40:33 AM DRN: B4490_UF_per_03.dwg

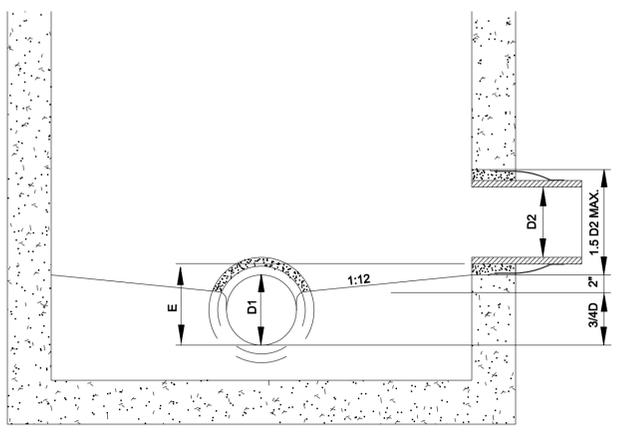
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PROJECT REFERENCE NO. B-4490	SHEET NO. UC-3K
DESIGNED BY:	
DRAWN BY: NONE	
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APPROVED BY:	
REVISED:	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151 John David Poetsch, P.E. 7/2/2015

TO FIND "E" ENTER CHART AT LEFT WITH EFFLUENT PIPE SIZE AND ENTER PIPE AT TOP WITH INFLUENT PIPE SIZE. "E" DISTANCE IS POINT OF CONVERGENCE OF COLUMN AND ROW.

	D2						
D1	4"	6"	8"	12"	15"	18"	24"
8	9.00	9.50	10.00	-	-	-	-
12	11.00	11.50	12.00	13.00	-	-	-
15	14.25	14.75	15.25	16.25	17.00	-	-
18	16.50	17.00	17.50	18.50	19.25	20.00	-
24	21.00	21.50	22.00	23.00	23.75	24.50	26.00

WHERE 5' MH IS REQUIRED ADD 1/2" TO "E" DISTANCE TO ACCOUNT FOR THE ADDITIONAL 6" OF SHELF SLOPE.



MAIN OR LATERAL MIN SLOPE
4" @ 2.00% MIN.
6" @ 0.67% MIN./MAIN
6" @ 2.00% MIN./LATERAL
8" @ 0.40% MIN.
12" @ 0.22% MIN.
15" @ 0.15% MIN.
18" @ 0.12% MIN.

- NOTES:
- SEE FAYPWC STANDARD MANHOLE AND PIPE SLIDE, MORTAR SLIDE AND SHELF DETAILS FOR ADDITIONAL INFORMATION.
 - THE "E" DISTANCES INDICATED ARE FOR CONNECTION TO AN EXISTING OUTFALL AND ARE THE MINIMUM DISTANCE ALLOWABLE.
 - WHERE SANITARY SEWER OUTFALLS AND MAINS ARE BEING CONSTRUCTED THE TOP OF THE EFFLUENT PIPE AND THE TOP OF THE INFLUENT PIPE SHALL BE AT THE SAME ELEVATION UNLESS CONDITIONS ARE PROHIBITIVE TO THIS PRACTICE.

MH CONNECTION DESIGN GUIDE N.T.S.		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. S.18 DATE: JULY 01, 2015	DWG. BY: FAYPWC APPROVED BY: J.E.G.	WATER RESOURCES ENGINEERING DEPARTMENT				

2015-S18 PENETRATION DETAIL.dwg

UTILITY CONSTRUCTION

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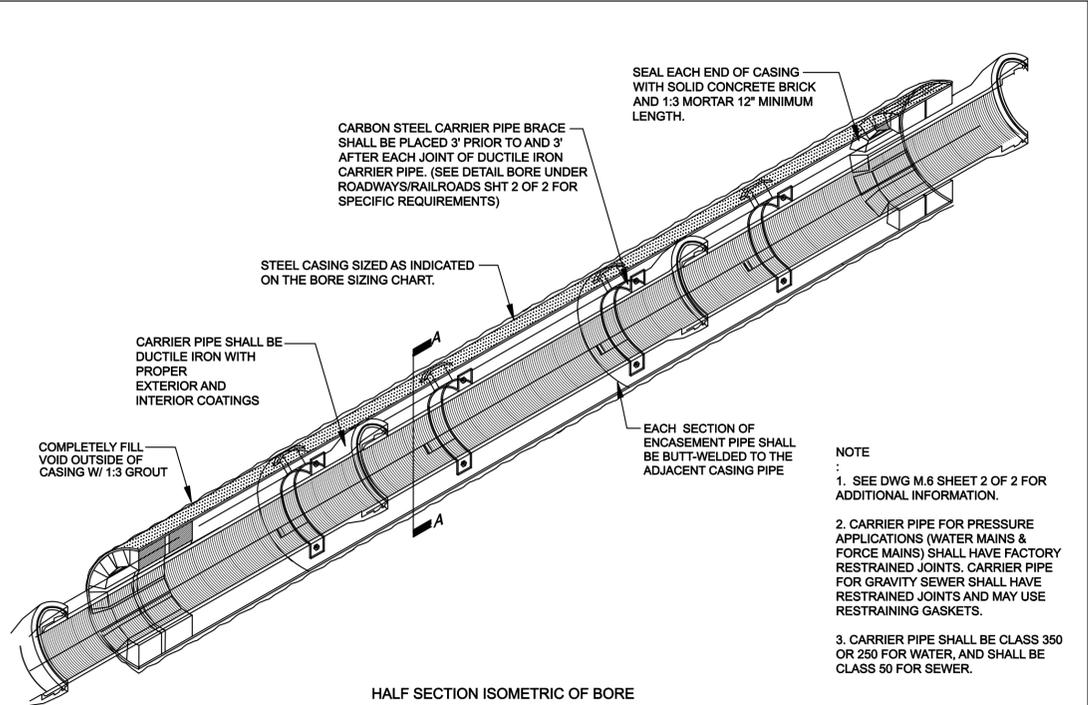
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DESIGNED BY:	
DRAWN BY: NONE	
CHECKED BY:	
APPROVED BY:	
REVISED:	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151 2/2/2016

UTILITY CONSTRUCTION

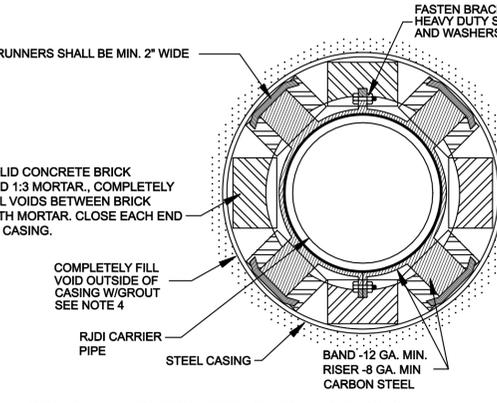


BORE UNDER ROADWAYS/RAILROADS N.T.S.		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 1 OF 2	DWG. NO. M.6	DWG. BY: FAYPWC	DATE: JULY 01, 2015		APPROVED BY: J.E.G.	1.	JAN 05	ADDED NOTES 2 & 3
WATER RESOURCES ENGINEERING DEPARTMENT					2.	OCT 09	Clarified restraint requirements.

2015-M6 BORE_ROAD_RAIL.dwg

CARRIER PIPE SIZE	MIN. CASING SIZE	ROADWAYS MIN. WALL THICKNESS	RAILROADS MIN. WALL THICKNESS
4"	10"	0.188"	0.188"
6"	12"	0.25"	0.281"
8"	16"	0.25"	0.281"
12"	24"	0.25"	0.375"
16"	30"	0.312"	0.469"
18"	30"	0.312"	0.469"
24"	36"	0.375"	0.532"
30"	42"	0.500"	0.625"
36"	48"	0.500"	0.688"

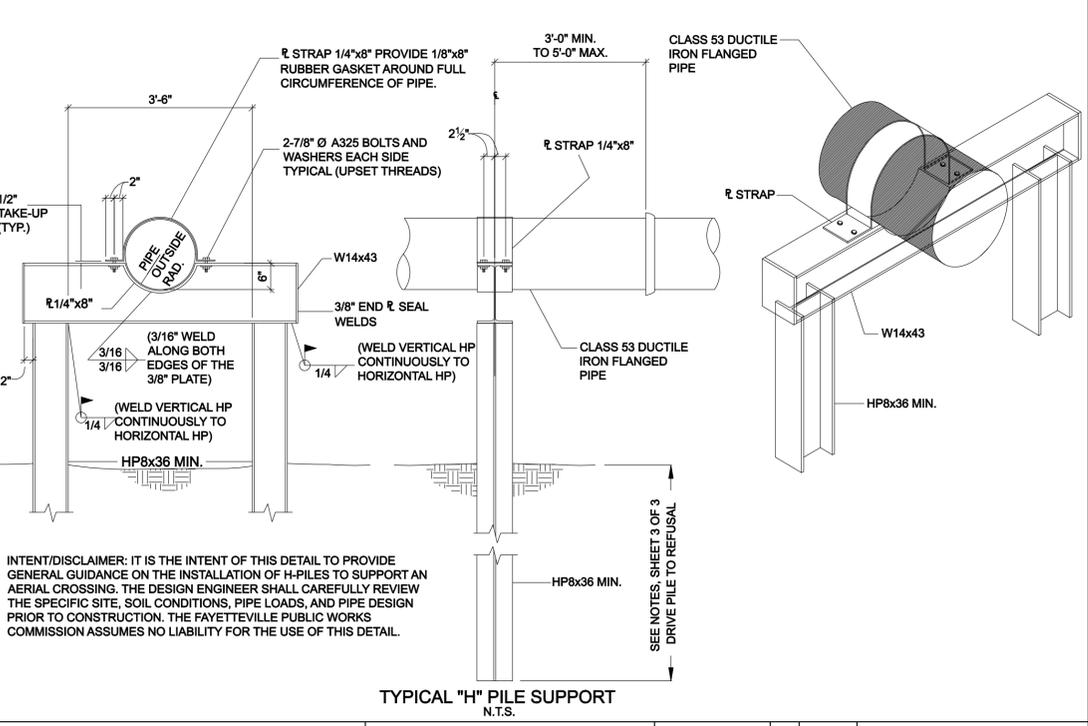
*CONTRACTOR MAY SUBSTITUTE A LARGER SIZE CASING PIPE HAVING THE MIN. WALL THICKNESS SHOWN FOR SEWER MAINS. ALL ADDITIONAL COSTS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR BORING AND JACKING.



BORE UNDER ROADWAYS/RAILROADS N.T.S.		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 2 OF 2	DWG. NO. M.6	DWG. BY: FAYPWC	DATE: JULY 01, 2015		APPROVED BY: J.E.G.	1.	2/11/04	ADDED 6" CARRIER PIPE TO BORE SIZING CHART
WATER RESOURCES ENGINEERING DEPARTMENT					2.	JULY 10	REVISED NOTES, SIZING CHART

2015-M6 BORE_ROAD_RAIL.dwg

- NOTES:
- INSTALLATION SHALL BE DRY BORE AND JACKING OF SMOOTH WALL STEEL PIPE. JETTING OR WET BORING WITH WATER SHALL NOT BE ALLOWED.
 - SEE BORE SIZING CHART FOR CARRIER PIPE SIZE AND STEEL CASING SIZE, MIN. DIA. AND WALL THICKNESS.
 - CASING PIPE SHALL BE IN ACCORDANCE WITH ASTM A-53, GRADE B WITH A MINIMUM YIELD STRENGTH OF 35,000 PSI
 - EACH END OF ENCASEMENT TO BE PLUGGED WITH BRICK. ALL VOIDS OUTSIDE THE CASING PIPE SHALL BE COMPLETELY FILLED WITH 1:3 PORTLAND CEMENT GROUT AT SUFFICIENT PRESSURE TO INSURE NO SETTLEMENT OF ROADWAY/RAILROAD. METHOD OF GROUTING SHALL BE AS APPROVED BY THE PERMITTING AGENCY.
 - IT IS RECOMMENDED THAT THE BORE BE ACCOMPLISHED BEFORE PIPE CONSTRUCTION BEGINS.
 - THE BORING SHALL BE PERFORMED FROM "UPSTREAM" TO "DOWNSTREAM" DIRECTION MAINTAINING THE CRITICAL DOWNSTREAM INVERT ELEVATION. SHOULD THE BORE NOT BE ON GRADE, A REVISED PLAN SHALL BE SUBMITTED TO FAYPWC FOR APPROVAL.
 - THE BORING OPERATION SHALL BE CONDUCTED IN A MANNER THAT THE FLOW OF TRAFFIC IS NOT IMPEDED OR IN SUCH A MANNER SO AS NOT TO CREATE A HAZARD.
 - IF AN OBSTRUCTION IS ENCOUNTERED DURING THE BORING OPERATION, THE AUGER SHALL BE WITHDRAWN THE EXCESS CASING PIPE CUT-OFF, CAPPED AND THE INTERIOR AND EXTERIOR VOIDS SHALL BE COMPLETELY FILLED W/1:3 PORTLAND CEMENT GROUT UNDER PRESSURE. NO SEPARATE PAYMENT FOR UNSUCCESSFUL BORES.
 - CONTRACTOR SHALL FIELD ADJUST AND INSTALL PROPER PIPE BRACES TO ACCOMPLISH GRADE AND INVERTS AS SHOWN ON THE DRAWINGS.
 - A MANUAL CONTROL STEERING HEAD OR OTHER GUIDANCE SYSTEM IS RECOMMENDED FOR BORES 30" DIAM. AND/OR LARGER AND FOR BORES EXCEEDING 100' IN LENGTH OR AS SPECIFIED.
 - SUBCONTRACTORS SHALL ADHERE TO ALL PERMIT REQUIREMENTS AND SHALL PROVIDE APPROVED INSURANCE CERTIFICATES AS REQUIRED.
 - CONTRACTOR SHALL EXECUTE AND PERFORM ALL REQUIREMENTS AND CONDITIONS STIPULATED BY THE PERMITTING AGENCY.
 - SEE DWG. M.6 SHEET 1 OF 2 FOR ADDITIONAL INFORMATION.
 - CARRIER PIPE FOR PRESSURE APPLICATIONS (WATER MAINS & FORCE MAINS) SHALL HAVE FACTORY RESTRAINED JOINTS. CARRIER PIPE FOR GRAVITY SEWER SHALL HAVE RESTRAINED JOINTS AND MAY USE RESTRAINING GASKETS.



H-PILE DETAIL 16" THRU 24" PIPE FOR AERIAL CROSSINGS N.T.S.		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 2 OF 3	DWG. NO. M.13	DWG. BY: FAYPWC	DATE: JULY 01, 2015		APPROVED BY: J.E.G.	1.	7/09	UPDATED DETAIL
WATER RESOURCES ENGINEERING DEPARTMENT					2.	09/2010	REVISED NOTES

2015-M13 H-PILE AERIAL CROSSING.dwg

- NOTES:
- STEEL H-PILES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A992 GRADE 50.
 - A SUBSURFACE GEO-TECHNICAL REPORT IS REQUIRED TO DETERMINE PILE EMBEDMENT LENGTH.
 - THIS DETAIL IS FOR GUIDANCE/INFORMATION ONLY. THE DESIGN ENGINEER SHALL BE RESPONSIBLE FOR PROVIDING A PROJECT SPECIFIC DESIGN.
 - FOR ALL AERIAL CROSSINGS, A PROJECT SPECIFIC DESIGN SHALL BE SUBMITTED TO FAYPWC FOR REVIEW AND APPROVAL.
 - A SUBSURFACE GEO-TECHNICAL EVALUATION IS REQUIRED IN ORDER TO DESIGN THE PILE LENGTH, EMBEDMENT, AND SPACING FOR THE SPECIFIC PROJECT LOCATION. THE DESIGN ENGINEER SHALL PROVIDE A COPY OF THE REPORT AND THE DESIGN TO FAYPWC.
 - THE DESIGN ENGINEER SHALL FURNISH A STRUCTURAL DESIGN BASED UPON ACTUAL FIELD CONDITIONS AND THE INTENDED USE OF THE STRUCTURE. LATERAL LOADS MAY REQUIRE THE ADDITION OF A BATTERED PILE. THE DESIGN ENGINEER SHALL CONSIDER SUCH LOADS AS ICE/SNOW, FLOODING, ETC.
 - FOR AERIAL SUPPORT OF PRESSURE MAINS, THE ENGINEER SHALL ENSURE THAT THE PIPE JOINTS CAN PROVIDE THE NECESSARY THRUST RESTRAINT. CALCULATIONS SHALL BE SUBMITTED TO FAYPWC FOR REVIEW, PRIOR TO CONSTRUCTION.
 - LOCATION AND SPACING OF PILES SHALL BE BASED UPON ACTUAL FIELD CONDITIONS AND AS SPECIFIED BY THE DESIGN ENGINEER. EACH PIPE JOINT SHALL BE SUPPORTED BY A PILE, UNLESS OTHERWISE APPROVED BY FAYPWC.
 - ANY CHANGES TO THIS DETAIL SHALL BE REVIEWED AND APPROVED BY FAYPWC PRIOR TO CONSTRUCTION.
 - ANY REVISIONS TO THIS DETAIL SHALL BE SIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER AND SUBMITTED TO FAYPWC FOR REVIEW.
 - PILES SHOULD NOT BE PLACED IN THE CENTERLINE OF THE STREAM.
 - PILES SHALL BE DRIVEN UTILIZING A VIBRATORY HAMMER OR PILE HAMMER.
 - ALL PILES SHALL BE DRIVEN TO REFUSAL. THE DESIGN ENGINEER SHALL PROVIDE FAYPWC WITH CALCULATIONS AND/OR A REPORT THAT CLEARLY DEFINES WHAT CONSTITUTES REFUSAL. SHOULD THE CONTRACTOR UTILIZE A DIFFERENT DRIVING METHOD THAN SPECIFIED, THEN REVISED CALCULATIONS SHALL BE PROVIDED TO FAYPWC.
 - PILES SHALL BE CUT OFF SQUARE AT THE REQUIRED ELEVATIONS WITH METHOD OF CUT APPROVED BY THE DESIGN ENGINEER.
 - EXPANSION JOINTS SHALL BE PROVIDED AS REQUIRED. THE EXPANSION JOINTS SHALL BE SUPPORTED BY PLACEMENT OF PIERS WITHIN 3 FEET ON BOTH SIDES OF THE JOINT OR AS SPECIFIED IN THE DESIGN.
 - ALL PILE LOCATIONS SHALL BE STAKED IN THE FIELD.
 - ALL WELDS SHALL BE BY A CERTIFIED WELDER.
 - ALL STEEL MEMBERS AND STRAPS WILL BE POWER TOOL CLEANED TO A MIN. OF SSPC-SP3 AND HOT-DIP GALVANIZED PER ASTM A123. BOLTS AND WASHERS WILL BE HOT-DIP GALVANIZED PER ASTM A153. ALL WELDS WILL BE GRINDED AND COATED WITH 2 COATS OF A COLD APPLIED GALVANIZING PAINT.
 - ALL DI PIPE IN SANITARY SEWER SERVICE SHALL BE PROTECTO 401 LINED.

H-PILE DETAIL NOTES		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 3 OF 3	DWG. NO. M.13	DWG. BY: FAYPWC	DATE: JULY 01, 2015		APPROVED BY: J.E.G.	1.	7/09	UPDATED DETAIL
WATER RESOURCES ENGINEERING DEPARTMENT					2.	09/2010	REVISED NOTES

2015-M13 H-PILE AERIAL CROSSING.dwg

Prepared by:

AECOM

AECOM TECHNICAL SERVICES OF NORTH CAROLINA, INC.
701 CORPORATE CENTER DRIVE, SUITE 475, RALEIGH, NC 27607
919-854-6200 919-854-6259 (fax)
F - 0342

DATE: 6/22/2016
TIME: 7:45:30 AM
DRN: B4490_UF_per_03L.dgn

Prepared by:

AECOM

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919-854-8200 919-854-8259 (fax)
F - 0342

PROJECT REFERENCE NO. **B-4490** SHEET NO. **UC-4**

DESIGNED BY: _____
DRAWN BY: _____
CHECKED BY: _____
APPROVED BY: _____

REVIS: _____

NORTH CAROLINA
DEPARTMENT OF
TRANSPORTATION

UTILITIES ENGINEERING SEC.
PHONE: (919) 707-6690
FAX: (919) 250-4151

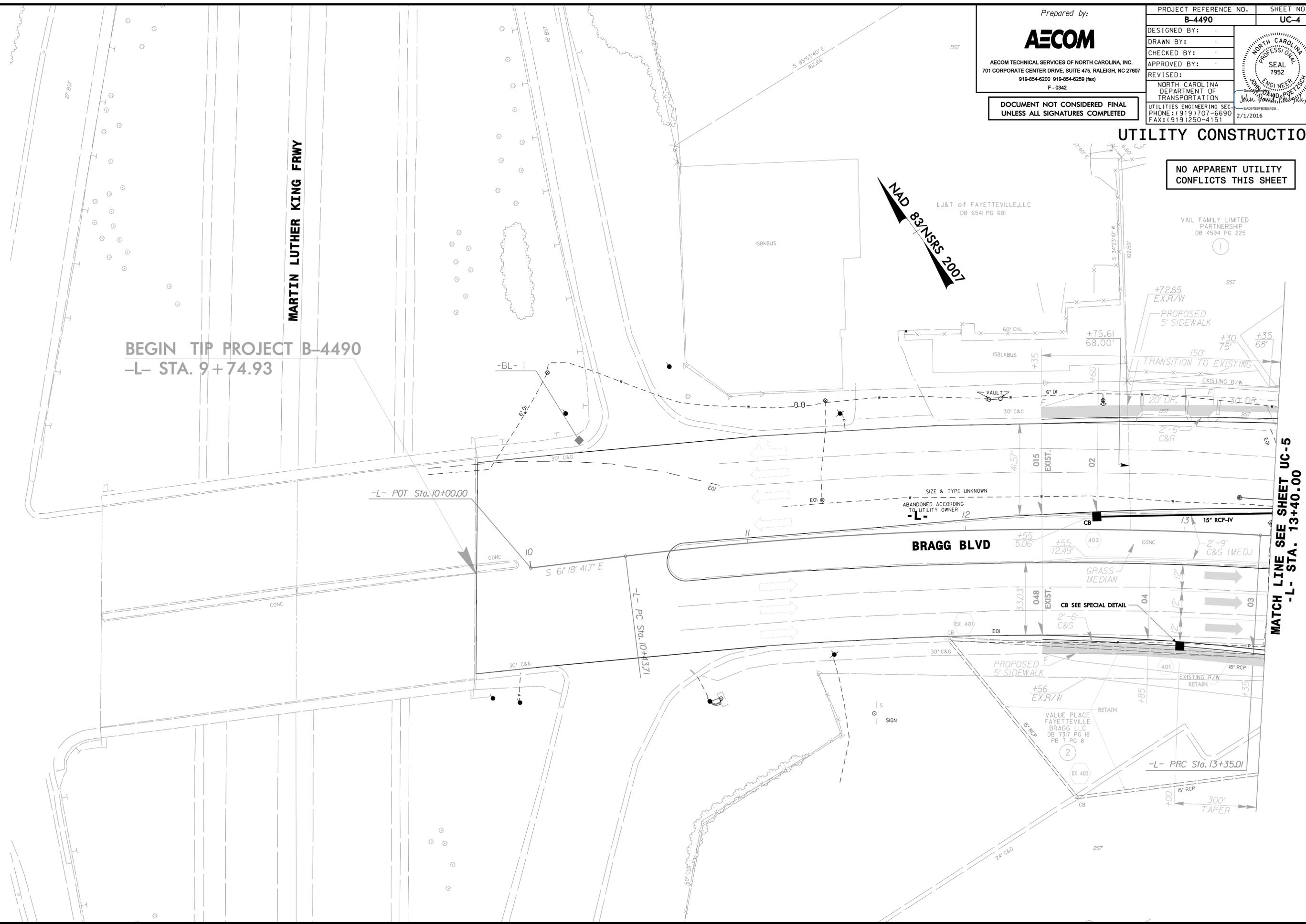
2/1/2016

SEAL
7952
NORTH CAROLINA
PROFESSIONAL
ENGINEER
JOHN VAN DER POET, P.E.
EA00789806E428

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

UTILITY CONSTRUCTION

**NO APPARENT UTILITY
CONFLICTS THIS SHEET**



**BEGIN TIP PROJECT B-4490
-L- STA. 9+74.93**

-L- POT Sta. 10+00.00

-L- PC Sta. 10+43.71

-L- PRC Sta. 13+35.01

**MATCH LINE SEE SHEET UC-5
-L- STA. 13+40.00**

Prepared by:

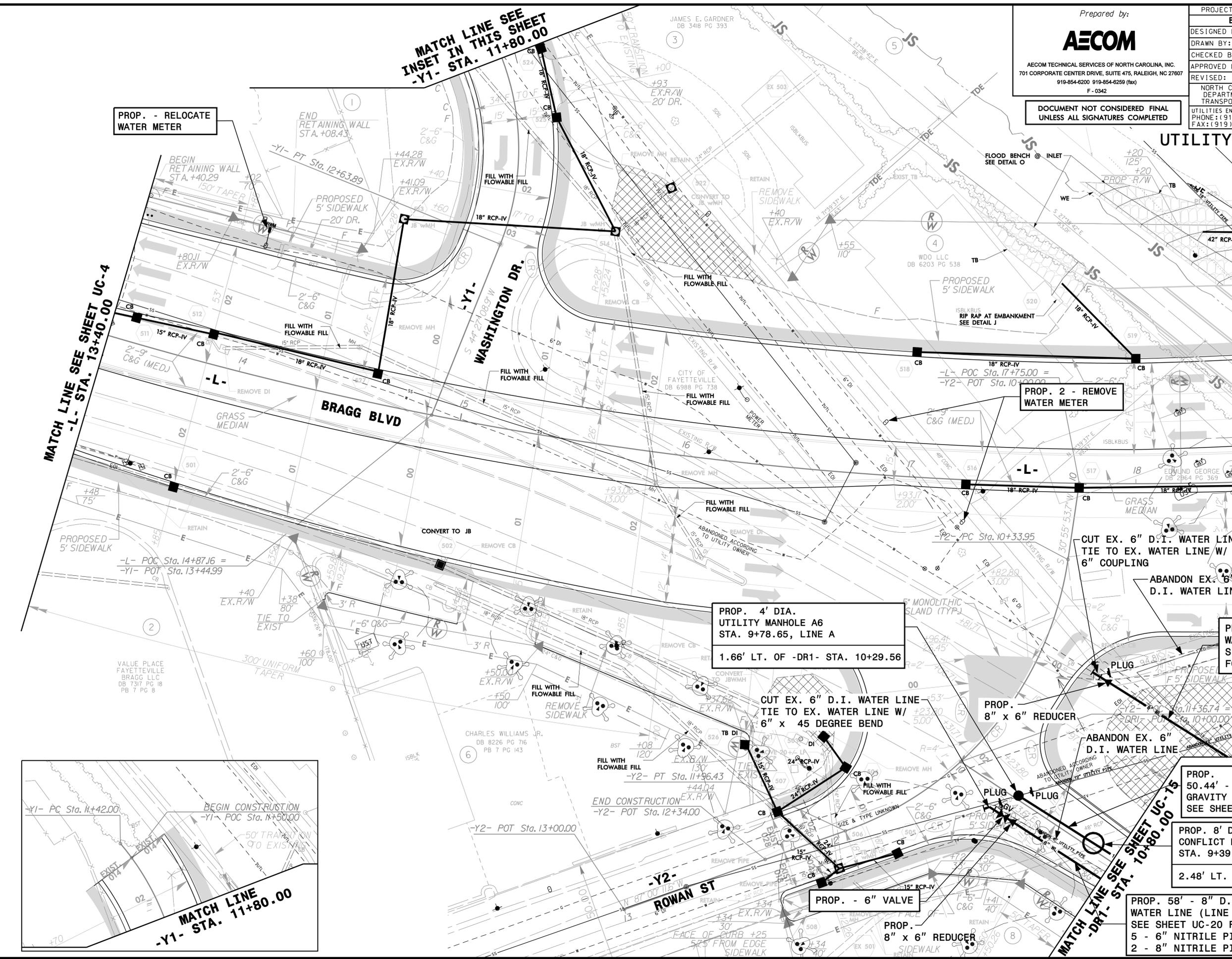
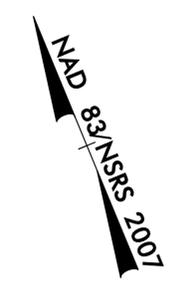


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PROJECT REFERENCE NO.	SHEET NO.
B-4490	UC-5
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
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2/1/2016	

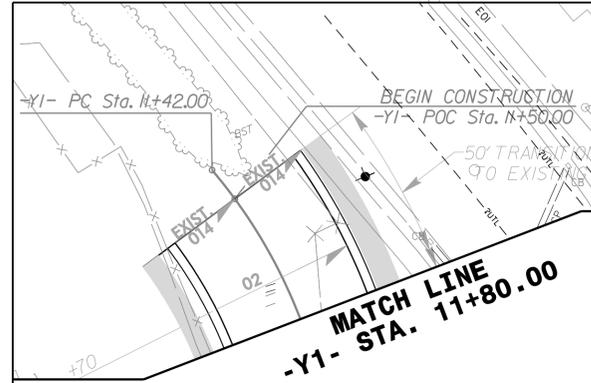
UTILITY CONSTRUCTION



MATCH LINE SEE SHEET UC-4
-L- STA. 13+40.00

MATCH LINE SEE
INSET IN THIS SHEET
-Y1- STA. 11+80.00

MATCH LINE SEE SHEET UC-6
-L- STA. 18+50.00



PROP. - RELOCATE
WATER METER

PROP. 2 - REMOVE
WATER METER

PROP. 4\"/>

PROP. 68\"/>

PROP. 110'
UTILITY PIPE
(VCP SEWER)

PROP.
50.44' - 12\"/>

PROP. 8\"/>

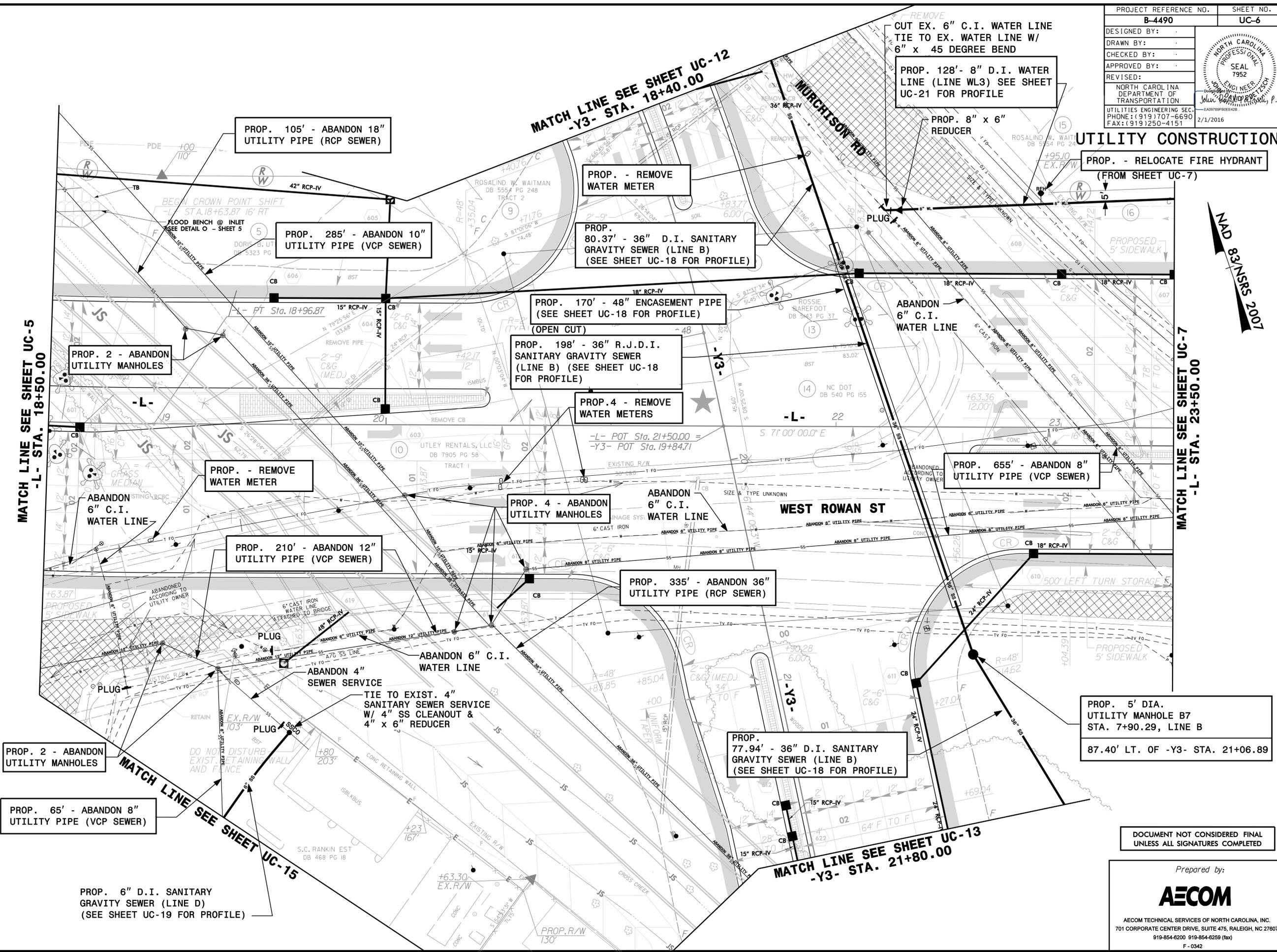
PROP. 58\"/>

MATCH LINE SEE SHEET UC-15
-DRT- STA. 10+80.00

DATE: 2/1/2016
TIME: 10:30:00 AM
DRAWN: B4490_UJ.dwg

PROJECT REFERENCE NO.	SHEET NO.
B-4490	UC-6
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
REVISED:	
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UTILITY CONSTRUCTION



MATCH LINE SEE SHEET UC-5
-L- STA. 18+50.00

MATCH LINE SEE SHEET UC-7
-L- STA. 23+50.00

PROP. 2 - ABANDON UTILITY MANHOLES

PROP. 65' - ABANDON 8" UTILITY PIPE (VCP SEWER)

PROP. 6" D.I. SANITARY GRAVITY SEWER (LINE D)
(SEE SHEET UC-19 FOR PROFILE)

PROP. 105' - ABANDON 18" UTILITY PIPE (RCP SEWER)

PROP. 285' - ABANDON 10" UTILITY PIPE (VCP SEWER)

PROP. - REMOVE WATER METER

PROP. 210' - ABANDON 12" UTILITY PIPE (VCP SEWER)

PROP. 4 - ABANDON UTILITY MANHOLES

PROP. 335' - ABANDON 36" UTILITY PIPE (RCP SEWER)

PROP. 77.94' - 36" D.I. SANITARY GRAVITY SEWER (LINE B)
(SEE SHEET UC-18 FOR PROFILE)

PROP. - REMOVE WATER METER

PROP. 80.37' - 36" D.I. SANITARY GRAVITY SEWER (LINE B)
(SEE SHEET UC-18 FOR PROFILE)

PROP. 170' - 48" ENCASEMENT PIPE
(SEE SHEET UC-18 FOR PROFILE)
(OPEN CUT)

PROP. 198' - 36" R.J.D.I. SANITARY GRAVITY SEWER (LINE B)
(SEE SHEET UC-18 FOR PROFILE)

PROP. 4 - REMOVE WATER METERS

PROP. 128' - 8" D.I. WATER LINE (LINE WL3) SEE SHEET UC-21 FOR PROFILE

PROP. 8" x 6" REDUCER

PROP. - RELOCATE FIRE HYDRANT
(FROM SHEET UC-7)

PROP. 655' - ABANDON 8" UTILITY PIPE (VCP SEWER)

PROP. 5' DIA. UTILITY MANHOLE B7
STA. 7+90.29, LINE B
87.40' LT. OF -Y3- STA. 21+06.89

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DATE: 2/1/2016
TIME: 10:36:56 AM
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Prepared by:

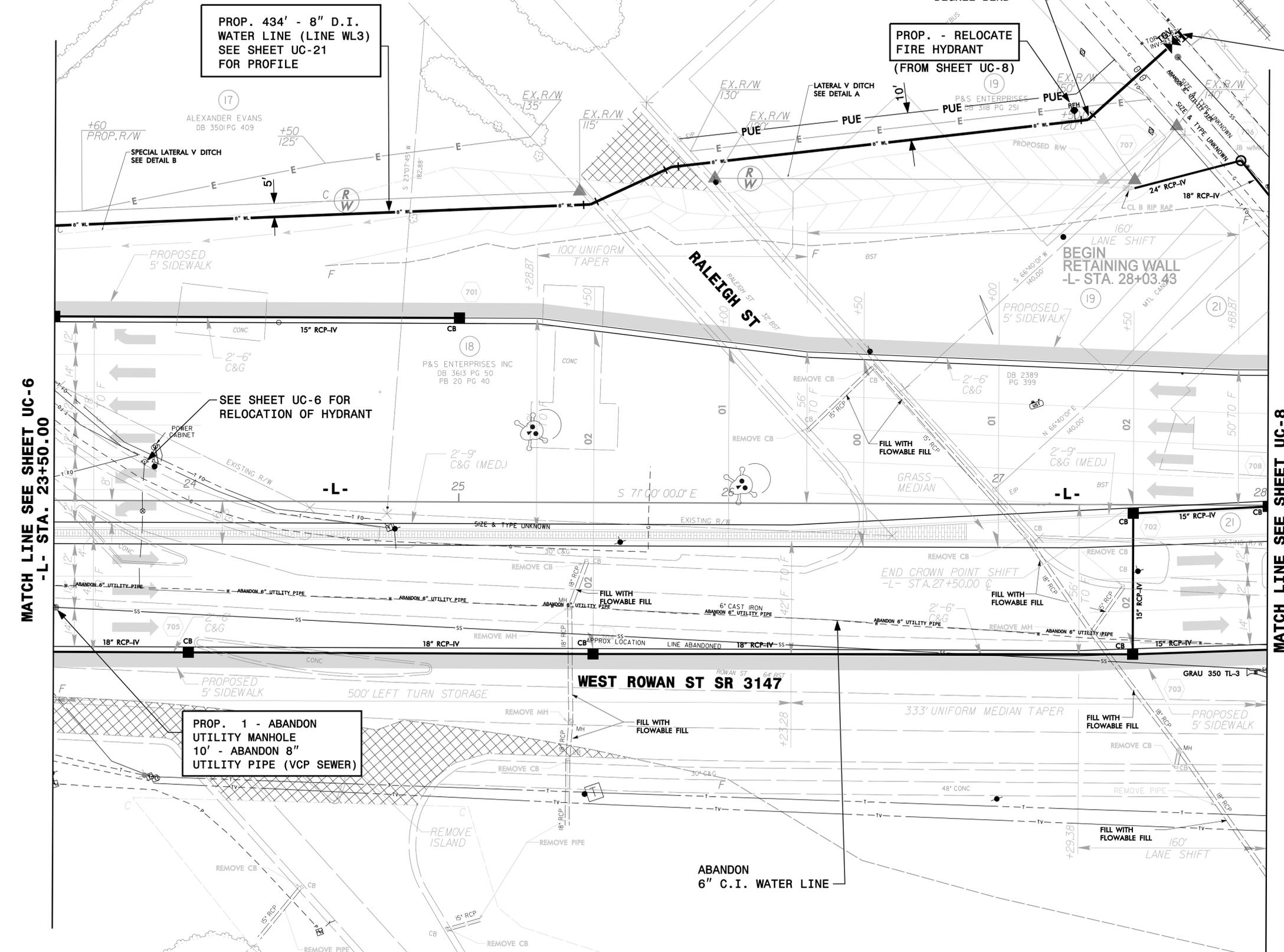


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PROJECT REFERENCE NO.	SHEET NO.
B-4490	UC-7
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	

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UTILITY CONSTRUCTION



PROP. 434' - 8" D.I. WATER LINE (LINE WL3) SEE SHEET UC-21 FOR PROFILE

PROP. - RELOCATE FIRE HYDRANT (FROM SHEET UC-8)

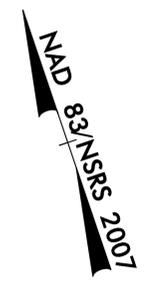
PROP. 16" x 8" TAPPING VALVE

SEE SHEET UC-6 FOR RELOCATION OF HYDRANT

PROP. 1 - ABANDON UTILITY MANHOLE
10' - ABANDON 8" UTILITY PIPE (VCP SEWER)

MATCH LINE SEE SHEET UC-6
-L- STA. 23+50.00

MATCH LINE SEE SHEET UC-8
-L- STA. 28+00.00



-L-
 PI Sta 32+53.30
 $\Delta = 8' 38' 25.1''$ (RT)
 $D = 4' 05' 33.2''$
 $L = 211.2'$
 $T = 105.76'$
 $R = 1,400.00'$
 $DS = 40$ MPH
 $SE = 2.0\%$
 $RO = 100'$

-Y7-
 PI Sta 18+02.27
 $\Delta = 46' 34' 26.5''$ (LT)
 $D = 9' 14' 28.5''$
 $L = 503.98'$
 $T = 266.85'$
 $R = 620.00'$

* REQUIRES DESIGN EXCEPTION

Prepared by:
AECOM
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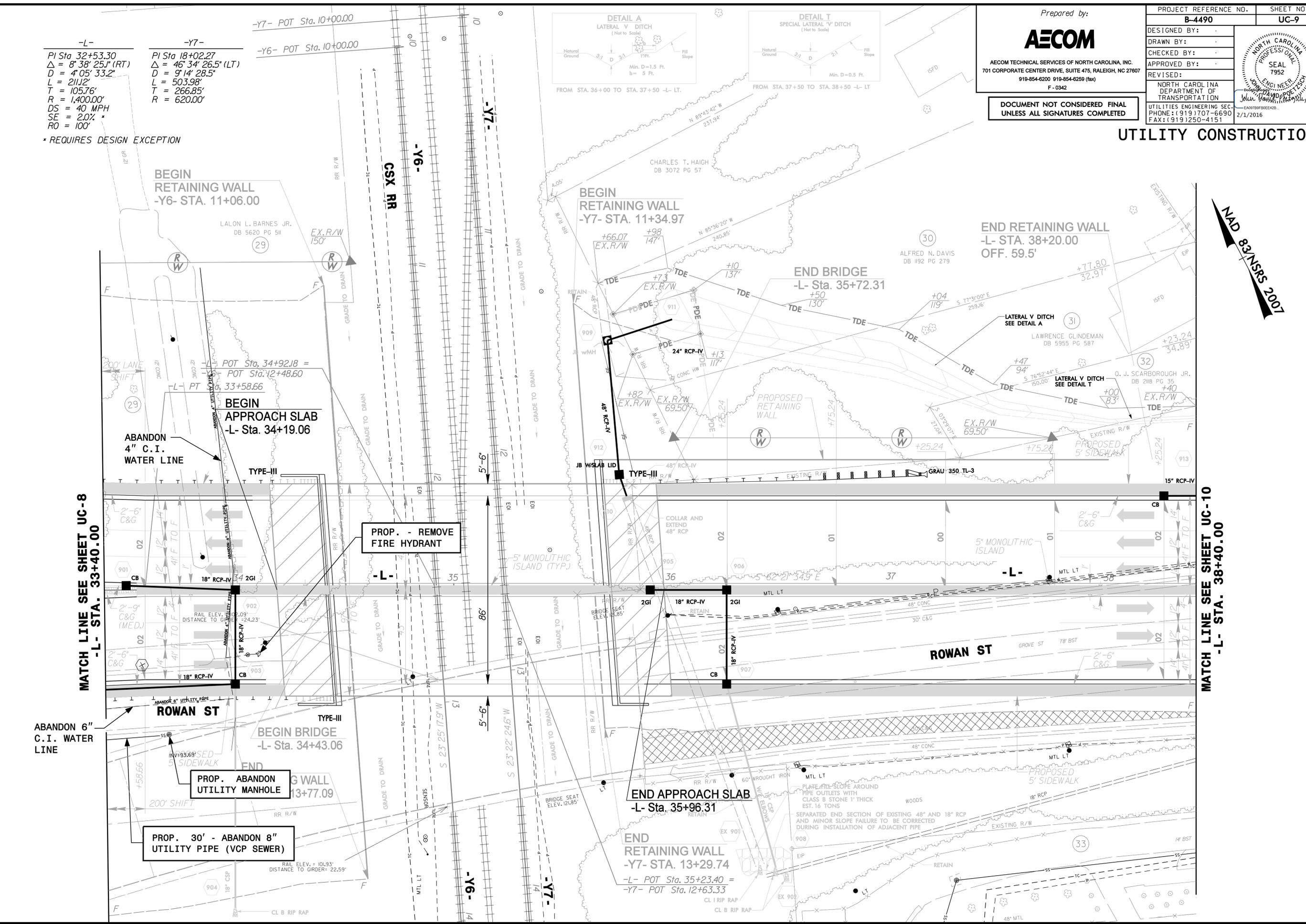
PROJECT REFERENCE NO. **B-4490** SHEET NO. **UC-9**

DESIGNED BY:
 DRAWN BY:
 CHECKED BY:
 APPROVED BY:
 REVISED:

NORTH CAROLINA PROFESSIONAL SEAL 7952
 JOHN VAN DYKE, P.E.
 2/1/2016

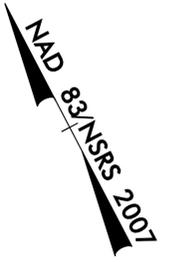
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UTILITY CONSTRUCTION



MATCH LINE SEE SHEET UC-8
 -L- STA. 33+40.00

MATCH LINE SEE SHEET UC-10
 -L- STA. 38+40.00



DATE: 2/1/2016
 TIME: 10:35:55 AM
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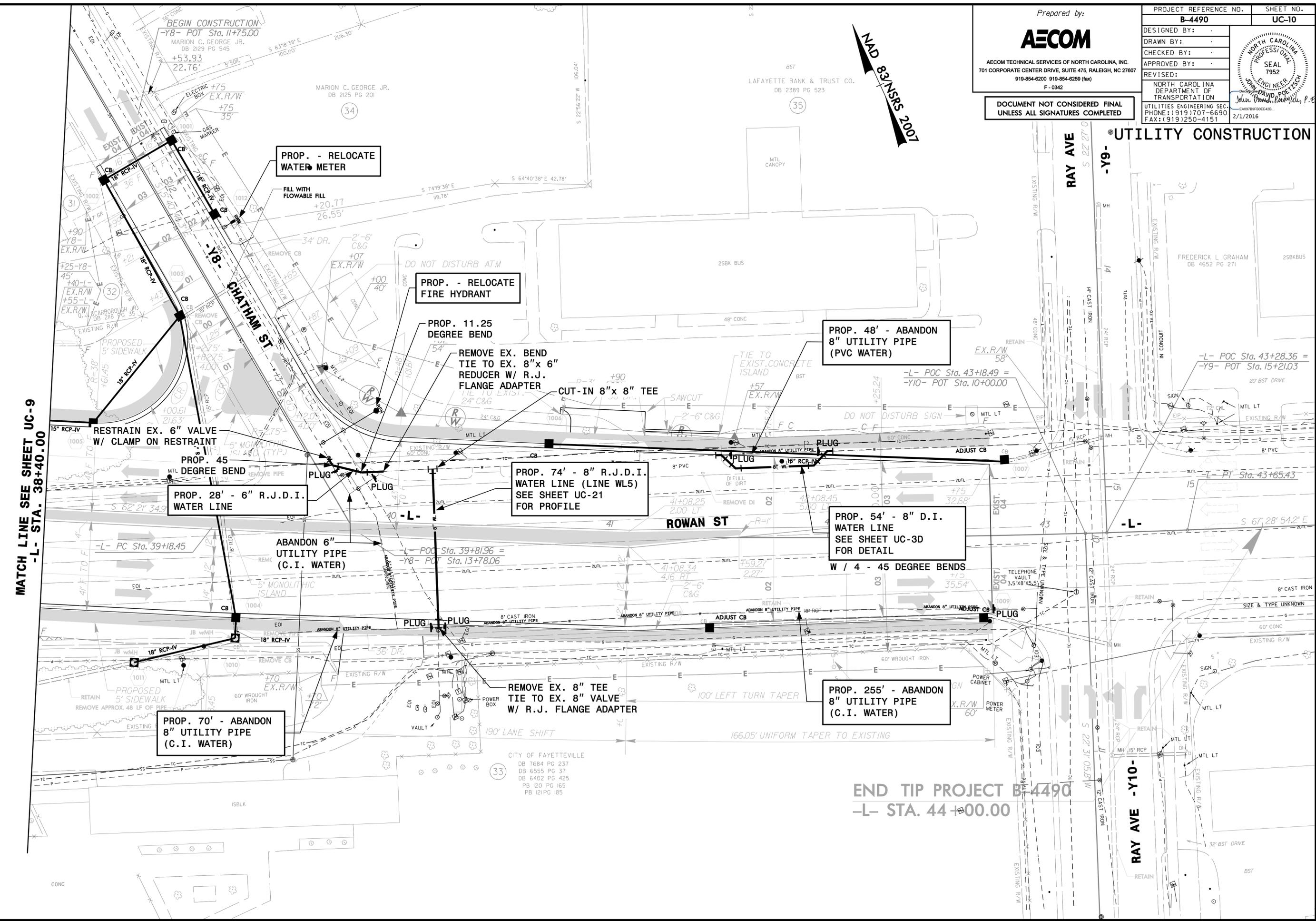
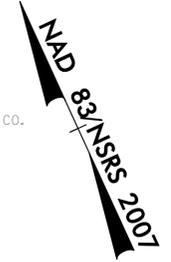
Prepared by:



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PROJECT REFERENCE NO.	SHEET NO.
B-4490	UC-10
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
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2/1/2016	

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MATCH LINE SEE SHEET UC-9
-L- STA. 38+40.00

END TIP PROJECT B-4490
-L- STA. 44+00.00

DATE: 2/1/2016
TIME: 03:29:59 AM
DGN: B4490_U10.dgn

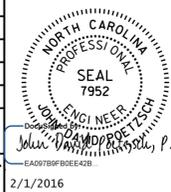
CITY OF FAYETTEVILLE
DB 7684 PG 237
DB 6555 PG 37
DB 6402 PG 425
PB 120 PG 165
PB 121 PG 185

Prepared by:



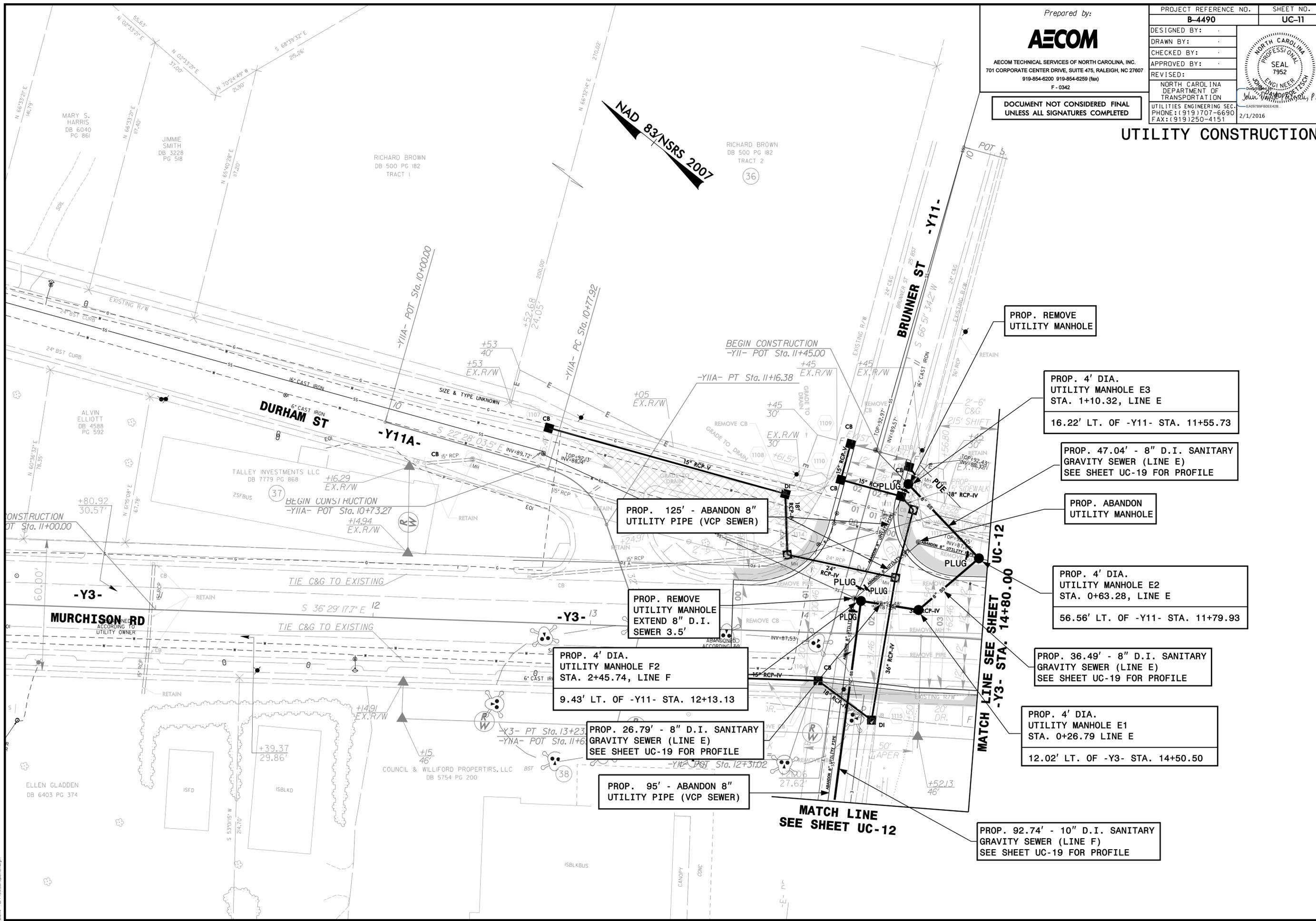
AECOM TECHNICAL SERVICES OF NORTH CAROLINA, INC.
701 CORPORATE CENTER DRIVE, SUITE 475, RALEIGH, NC 27607
919-854-6200 919-854-6250 (fax)
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PROJECT REFERENCE NO.	SHEET NO.
B-4490	UC-11
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
REVISED:	
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UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
2/1/2016	



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UTILITY CONSTRUCTION



PROP. 125' - ABANDON 8" UTILITY PIPE (VCP SEWER)

PROP. REMOVE UTILITY MANHOLE EXTEND 8" D.I. SEWER 3.5'

PROP. 4' DIA. UTILITY MANHOLE F2 STA. 2+45.74, LINE F
9.43' LT. OF -Y11- STA. 12+13.13

PROP. 26.79' - 8" D.I. SANITARY GRAVITY SEWER (LINE E)
SEE SHEET UC-19 FOR PROFILE

PROP. 95' - ABANDON 8" UTILITY PIPE (VCP SEWER)

MATCH LINE SEE SHEET UC-12

PROP. REMOVE UTILITY MANHOLE

PROP. 4' DIA. UTILITY MANHOLE E3 STA. 1+10.32, LINE E
16.22' LT. OF -Y11- STA. 11+55.73

PROP. 47.04' - 8" D.I. SANITARY GRAVITY SEWER (LINE E)
SEE SHEET UC-19 FOR PROFILE

PROP. ABANDON UTILITY MANHOLE

PROP. 4' DIA. UTILITY MANHOLE E2 STA. 0+63.28, LINE E
56.56' LT. OF -Y11- STA. 11+79.93

PROP. 36.49' - 8" D.I. SANITARY GRAVITY SEWER (LINE E)
SEE SHEET UC-19 FOR PROFILE

PROP. 4' DIA. UTILITY MANHOLE E1 STA. 0+26.79 LINE E
12.02' LT. OF -Y3- STA. 14+50.50

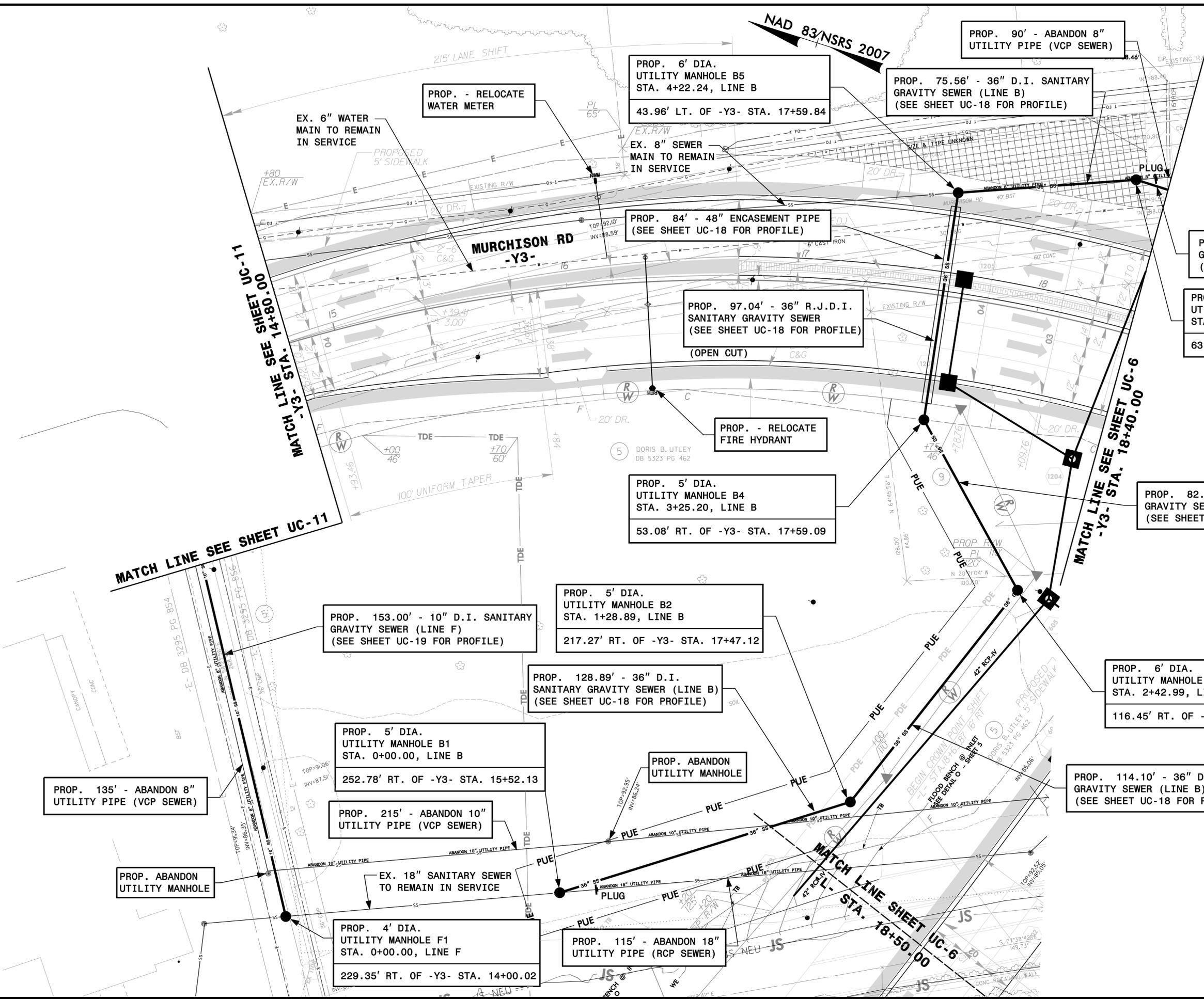
PROP. 92.74' - 10" D.I. SANITARY GRAVITY SEWER (LINE F)
SEE SHEET UC-19 FOR PROFILE

DATE: 2/1/2016
TIME: 10:38:41 AM
DRAWN BY: B4490.JF.psk/ldp

PROJECT REFERENCE NO. B-4490	SHEET NO. UC-12
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
REVISED:	
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UTILITY CONSTRUCTION

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 DGN: B4490_U12.dgn

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 701 CORPORATE CENTER DRIVE, SUITE 475, RALEIGH, NC 27607
 919-854-6200 919-854-6259 (fax)
 F-0342

Prepared by:



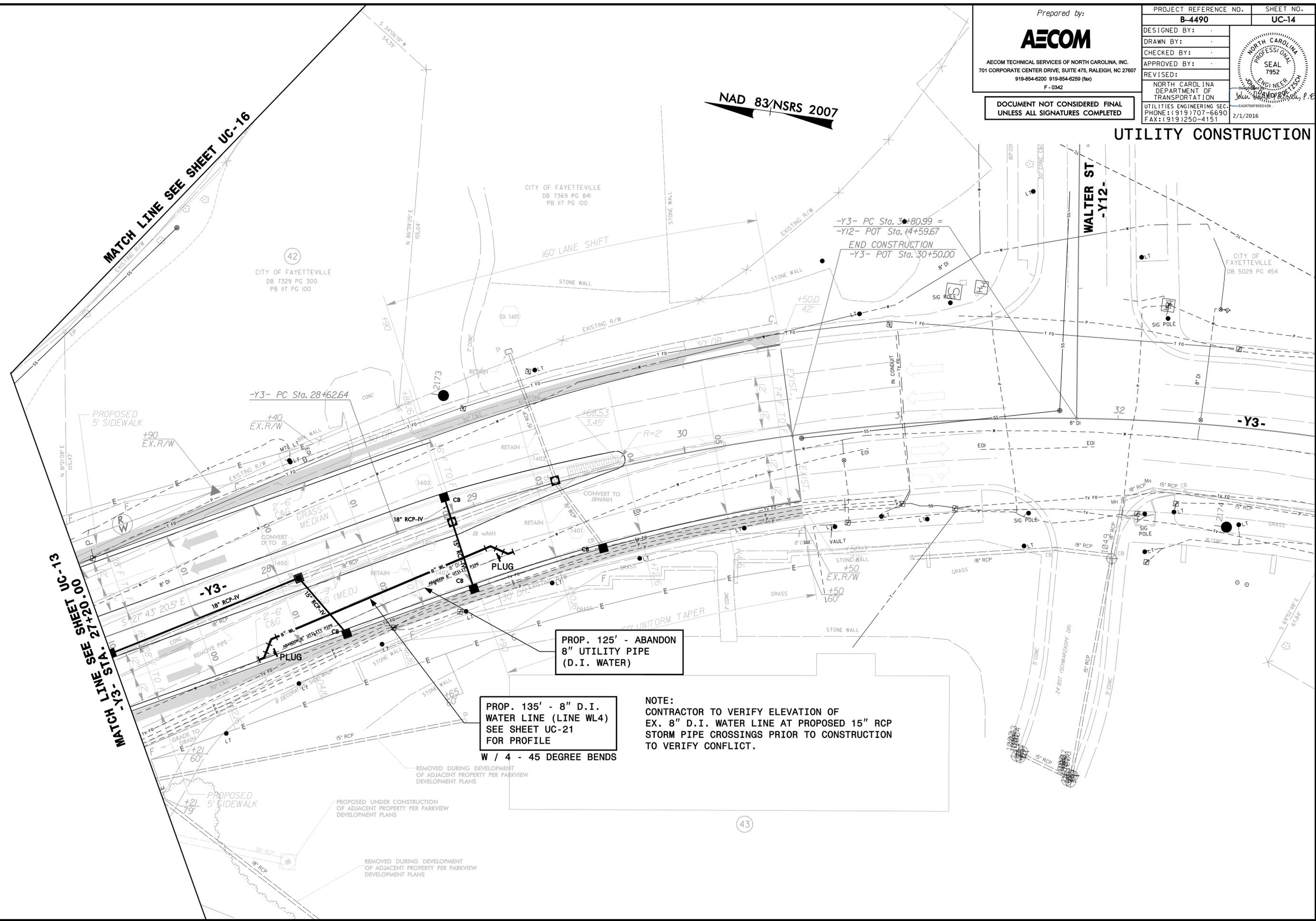
AECOM TECHNICAL SERVICES OF NORTH CAROLINA, INC.
701 CORPORATE CENTER DRIVE, SUITE 475, RALEIGH, NC 27607
919-854-8200 919-854-8259 (fax)
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PROJECT REFERENCE NO.	SHEET NO.
B-4490	UC-14
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
REVISED:	
NORTH CAROLINA PROFESSIONAL SEAL SEAL 7952 2/1/2016	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	

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UTILITY CONSTRUCTION

NAD 83/NSRS 2007



MATCH LINE SEE SHEET UC-16

MATCH LINE SEE SHEET UC-13
-Y3- STA. 27+20.00

PROP. 125' - ABANDON
8" UTILITY PIPE
(D.I. WATER)

PROP. 135' - 8" D.I.
WATER LINE (LINE WL4)
SEE SHEET UC-21
FOR PROFILE
W / 4 - 45 DEGREE BENDS

NOTE:
CONTRACTOR TO VERIFY ELEVATION OF
EX. 8" D.I. WATER LINE AT PROPOSED 15" RCP
STORM PIPE CROSSINGS PRIOR TO CONSTRUCTION
TO VERIFY CONFLICT.

-Y3- PC Sta. 28+62.64

-Y3- PC Sta. 30+80.99 =
-Y12- POT Sta. 14+59.67
END CONSTRUCTION
-Y3- POT Sta. 30+50.00

NAD 83/NSRS 2007

Prepared by:

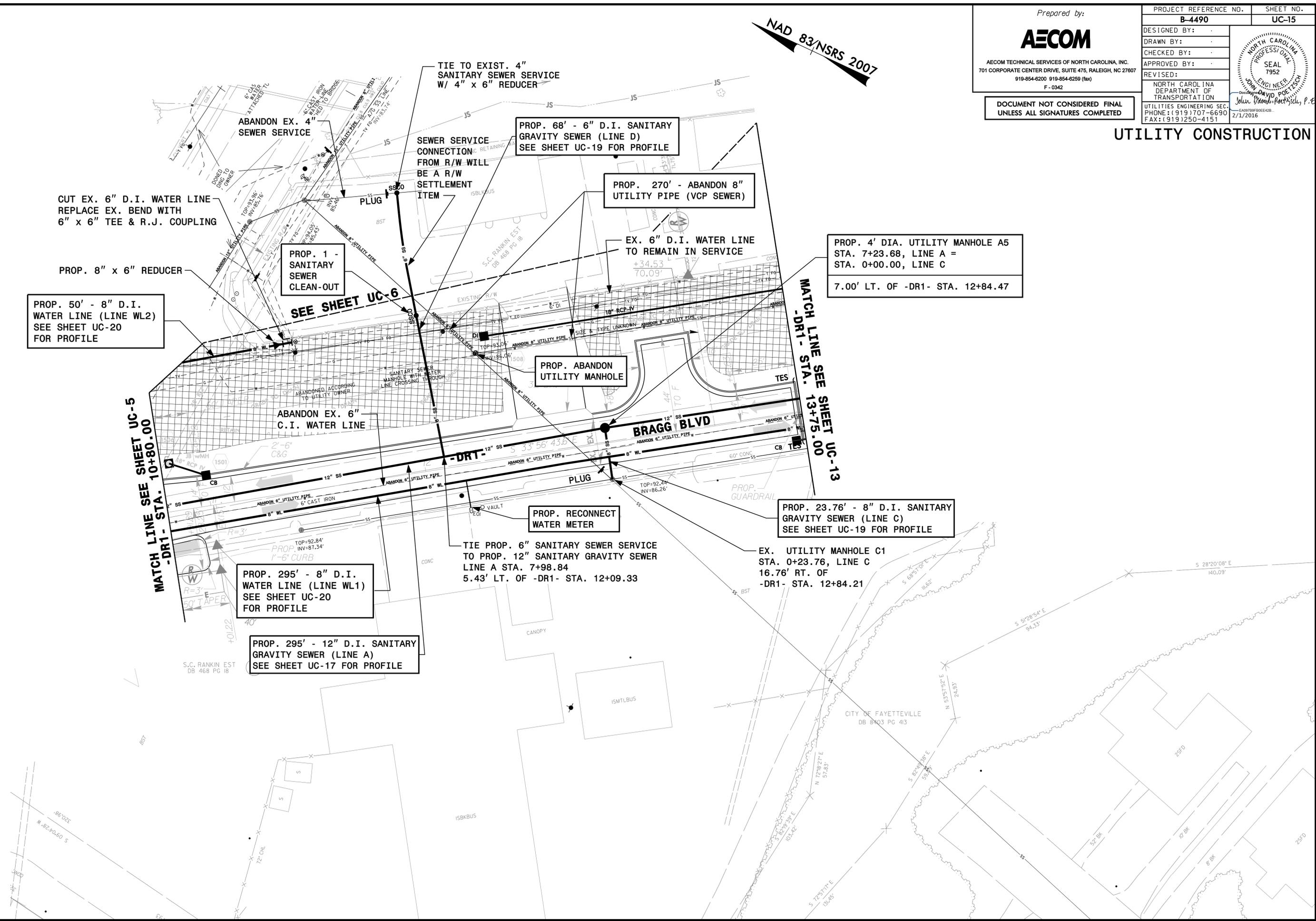


AECOM TECHNICAL SERVICES OF NORTH CAROLINA, INC.
701 CORPORATE CENTER DRIVE, SUITE 475, RALEIGH, NC 27607
919-854-6200 919-854-6250 (fax)
F - 0342

PROJECT REFERENCE NO.	SHEET NO.
B-4490	UC-15
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
REVISED:	
NORTH CAROLINA PROFESSIONAL SEAL 7952	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
2/1/2016	

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UNLESS ALL SIGNATURES COMPLETED

UTILITY CONSTRUCTION



CUT EX. 6" D.I. WATER LINE
REPLACE EX. BEND WITH
6" x 6" TEE & R.J. COUPLING

PROP. 8" x 6" REDUCER

PROP. 50' - 8" D.I.
WATER LINE (LINE WL2)
SEE SHEET UC-20
FOR PROFILE

PROP. 1 -
SANITARY
SEWER
CLEAN-OUT

SEE SHEET UC-6

PROP. 68' - 6" D.I. SANITARY
GRAVITY SEWER (LINE D)
SEE SHEET UC-19 FOR PROFILE

PROP. 270' - ABANDON 8"
UTILITY PIPE (VCP SEWER)

EX. 6" D.I. WATER LINE
TO REMAIN IN SERVICE

PROP. 4' DIA. UTILITY MANHOLE A5
STA. 7+23.68, LINE A =
STA. 0+00.00, LINE C

7.00' LT. OF -DR1- STA. 12+84.47

PROP. ABANDON
UTILITY MANHOLE

MATCH LINE SEE SHEET UC-13
-DR1- STA. 13+75.00

MATCH LINE SEE SHEET UC-5
-DR1- STA. 10+80.00

ABANDON EX. 6"
C.I. WATER LINE

BRAGG BLVD

PROP. RECONNECT
WATER METER

TIE PROP. 6" SANITARY SEWER SERVICE
TO PROP. 12" SANITARY GRAVITY SEWER
LINE A STA. 7+98.84
5.43' LT. OF -DR1- STA. 12+09.33

PROP. 23.76' - 8" D.I. SANITARY
GRAVITY SEWER (LINE C)
SEE SHEET UC-19 FOR PROFILE

EX. UTILITY MANHOLE C1
STA. 0+23.76, LINE C
16.76' RT. OF
-DR1- STA. 12+84.21

PROP. 295' - 8" D.I.
WATER LINE (LINE WL1)
SEE SHEET UC-20
FOR PROFILE

PROP. 295' - 12" D.I. SANITARY
GRAVITY SEWER (LINE A)
SEE SHEET UC-17 FOR PROFILE

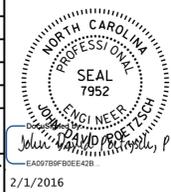
DATE: 2/1/2016
TIME: 10:43:35 AM
DGN: B4490_Ur_util_15.dgn

Prepared by:



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701 CORPORATE CENTER DRIVE, SUITE 475, RALEIGH, NC 27607
919-854-8200 919-854-8259 (fax)
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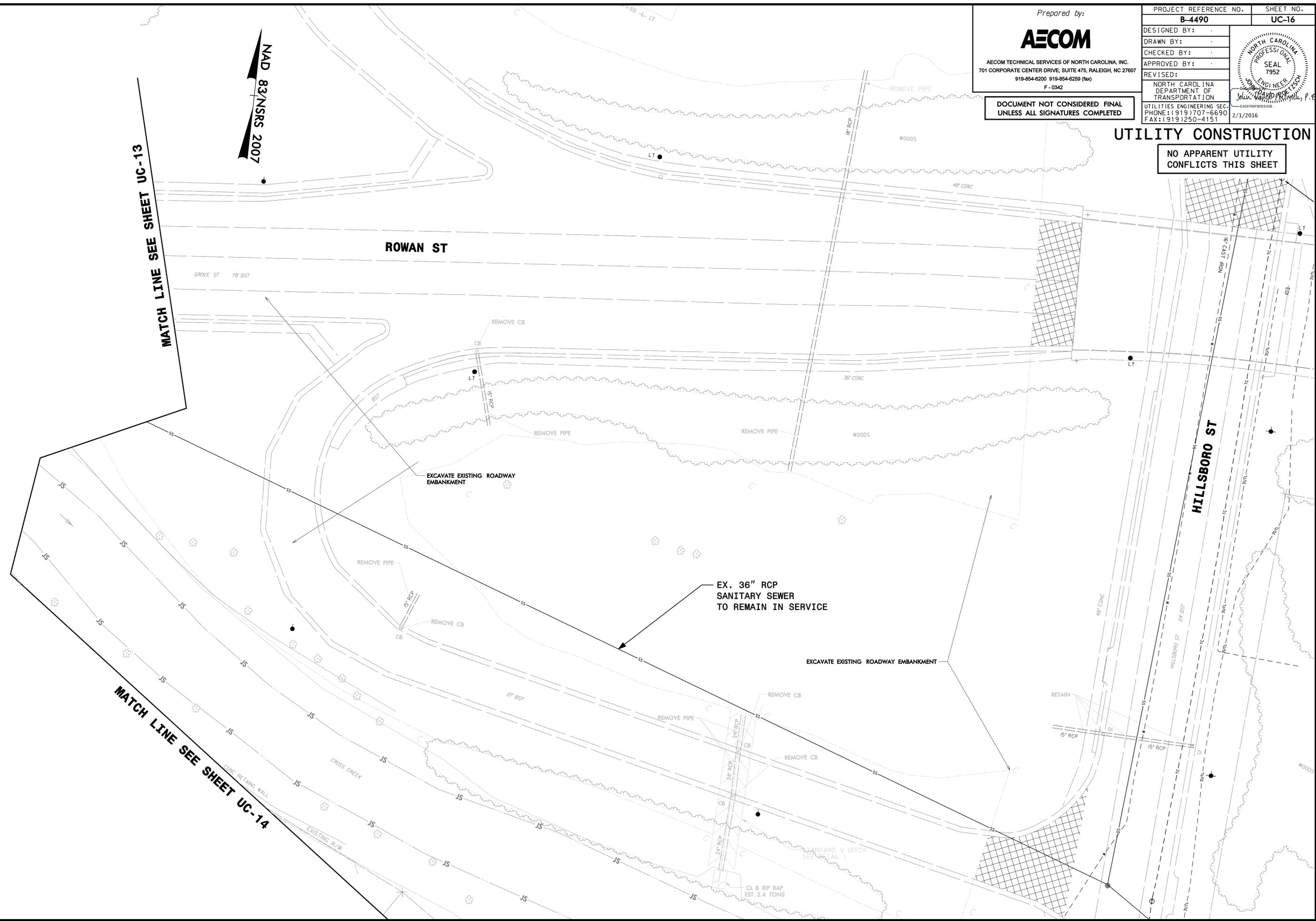
PROJECT REFERENCE NO.	SHEET NO.
B-4490	UC-16
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
2/1/2016	



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UTILITY CONSTRUCTION

NO APPARENT UTILITY
CONFLICTS THIS SHEET



MATCH LINE SEE SHEET UC-13

MATCH LINE SEE SHEET UC-14

NAD 83/NSRS 2007

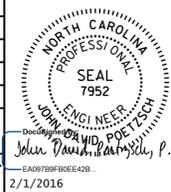
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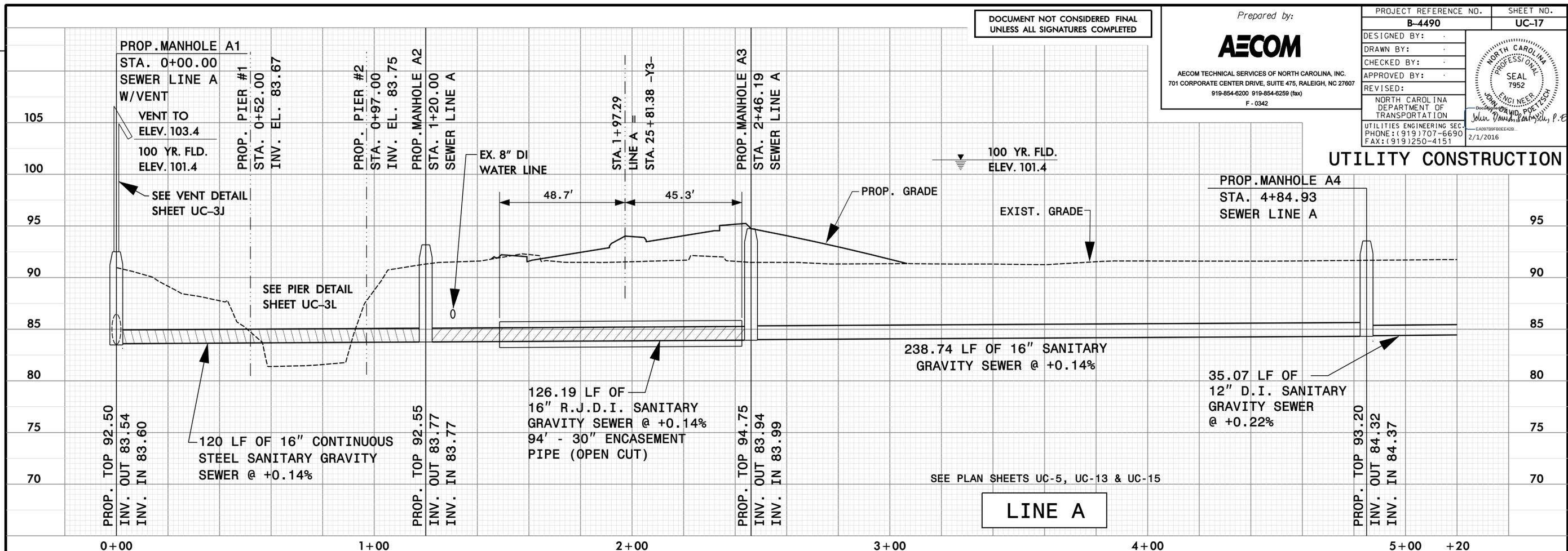


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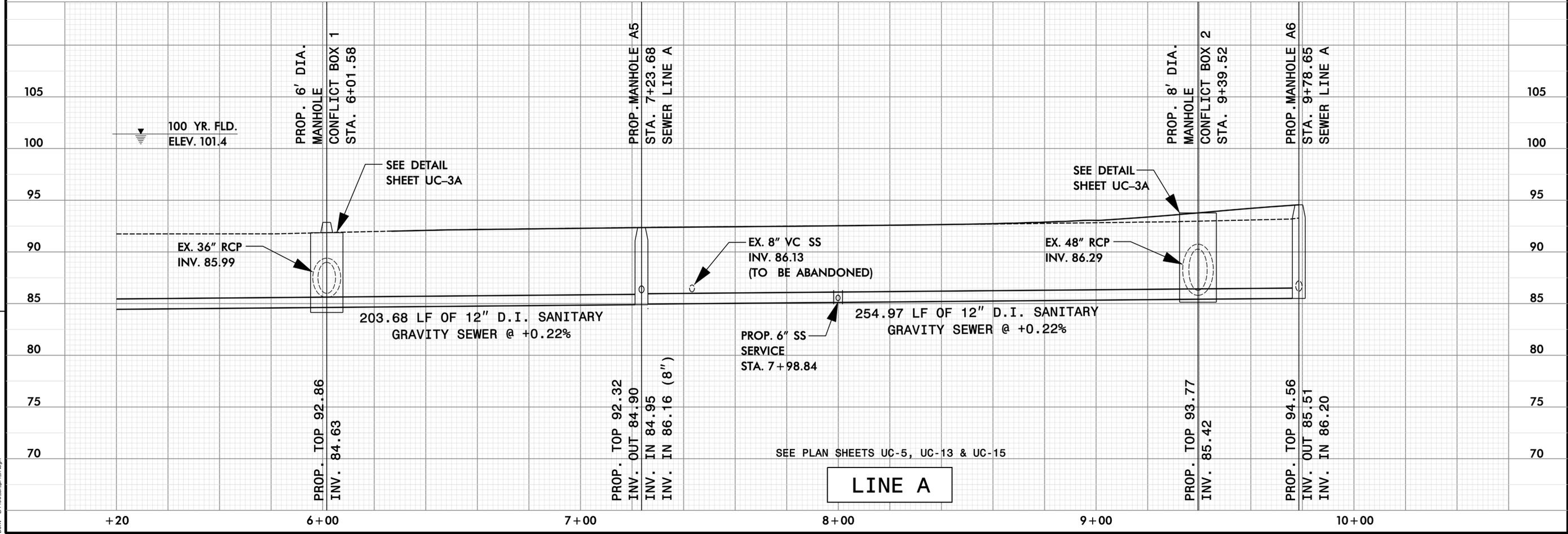
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LINE A



LINE A

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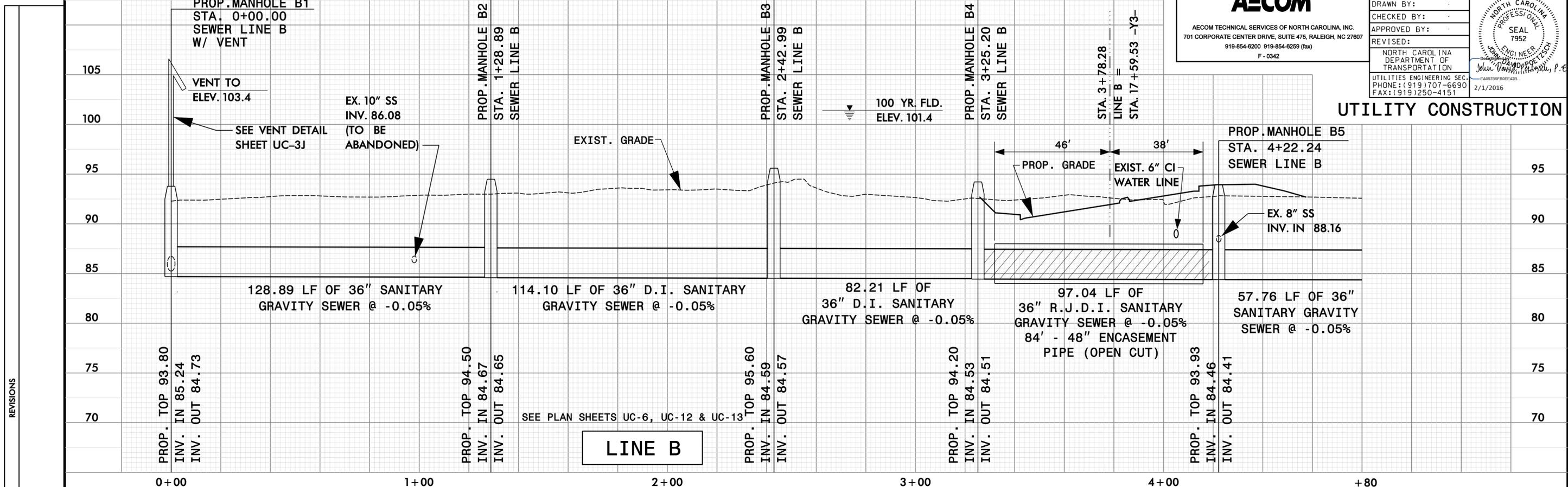
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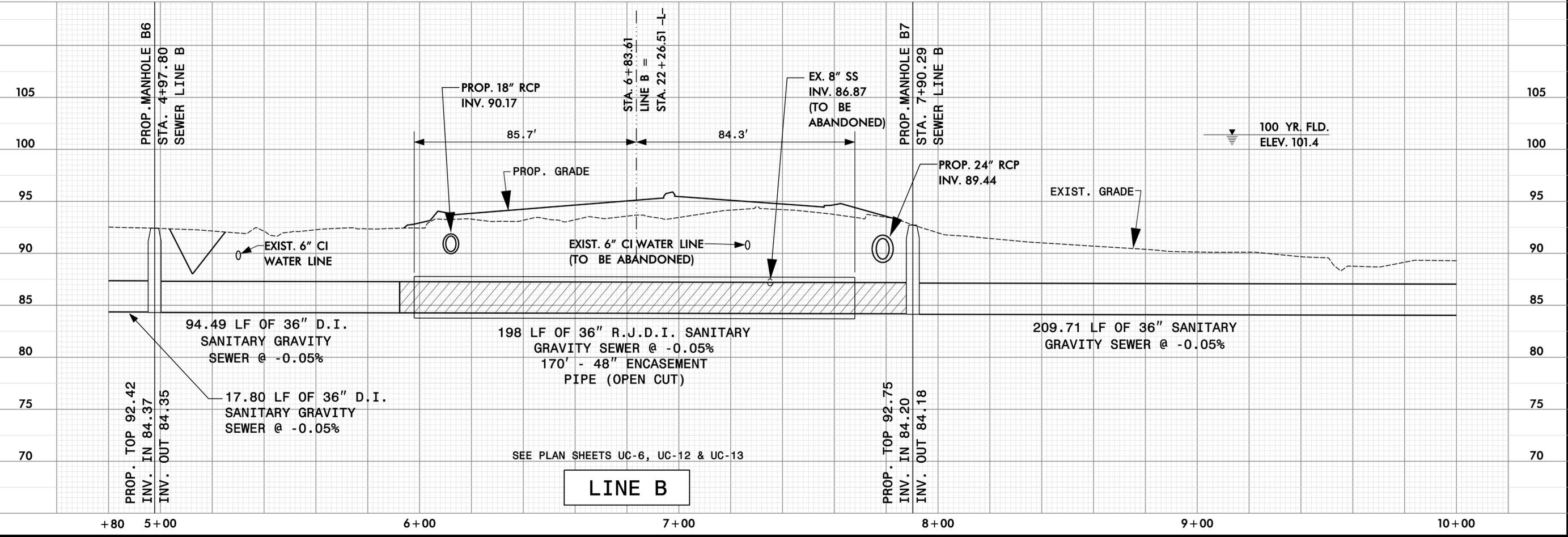
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PROJECT REFERENCE NO. B-4490	SHEET NO. UC-18
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UTILITY CONSTRUCTION



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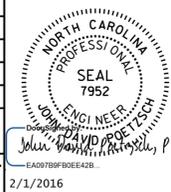
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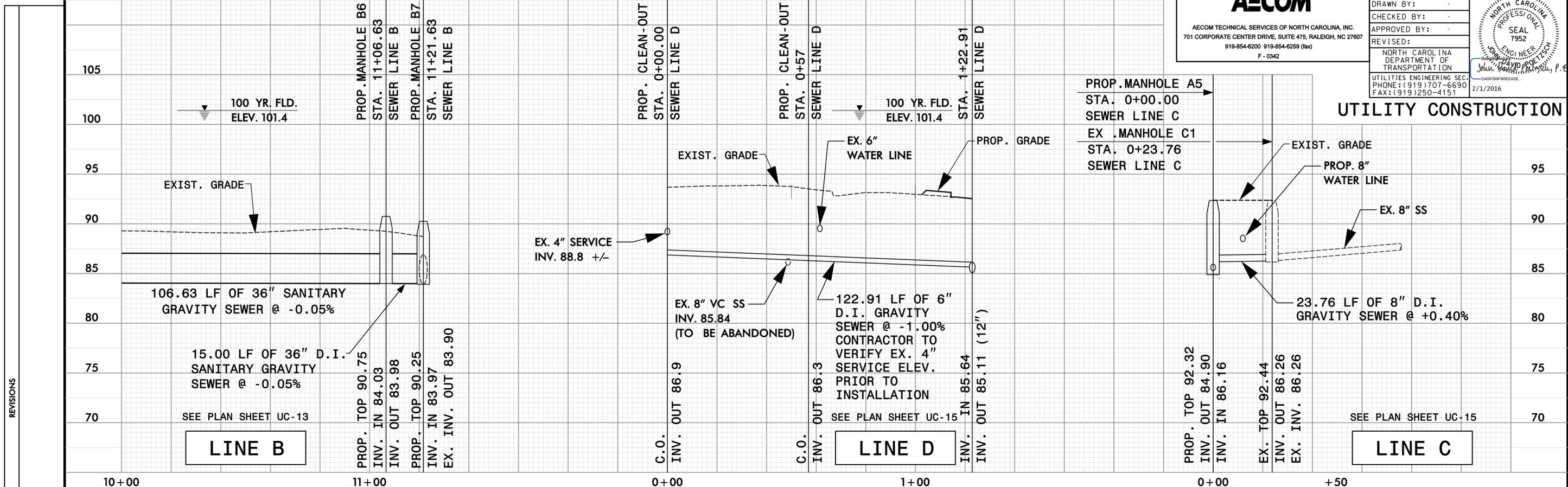
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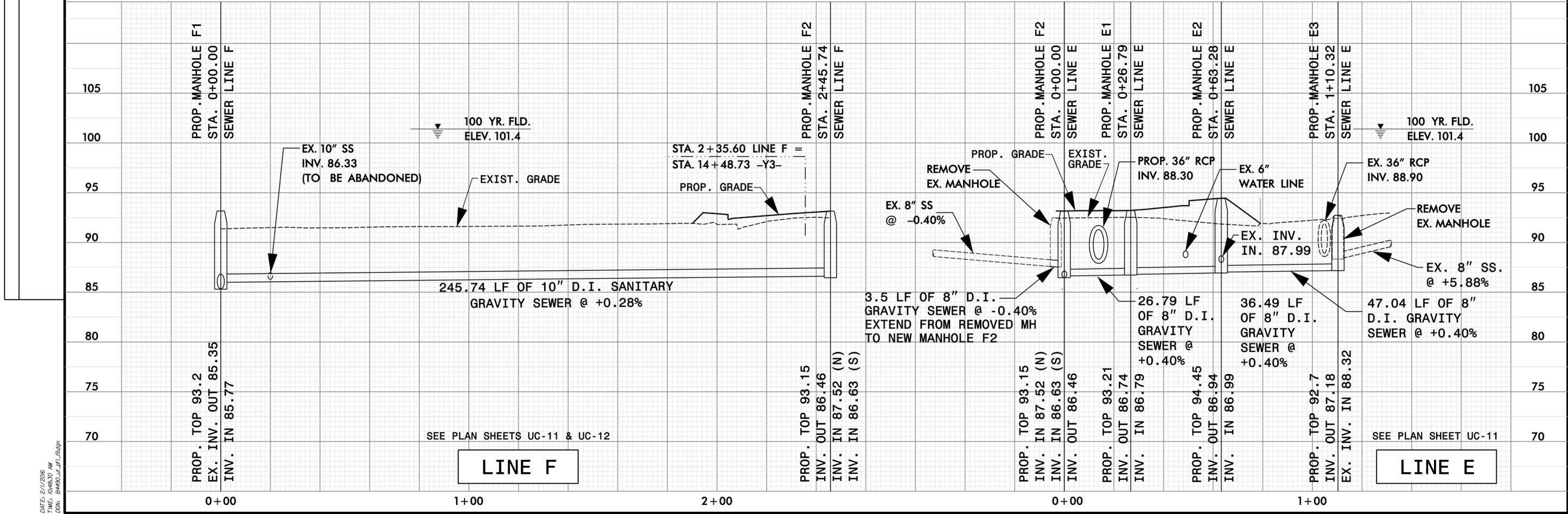
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PROJECT REFERENCE NO. B-4490	SHEET NO. UC-19
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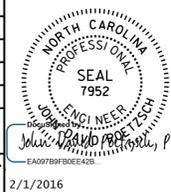
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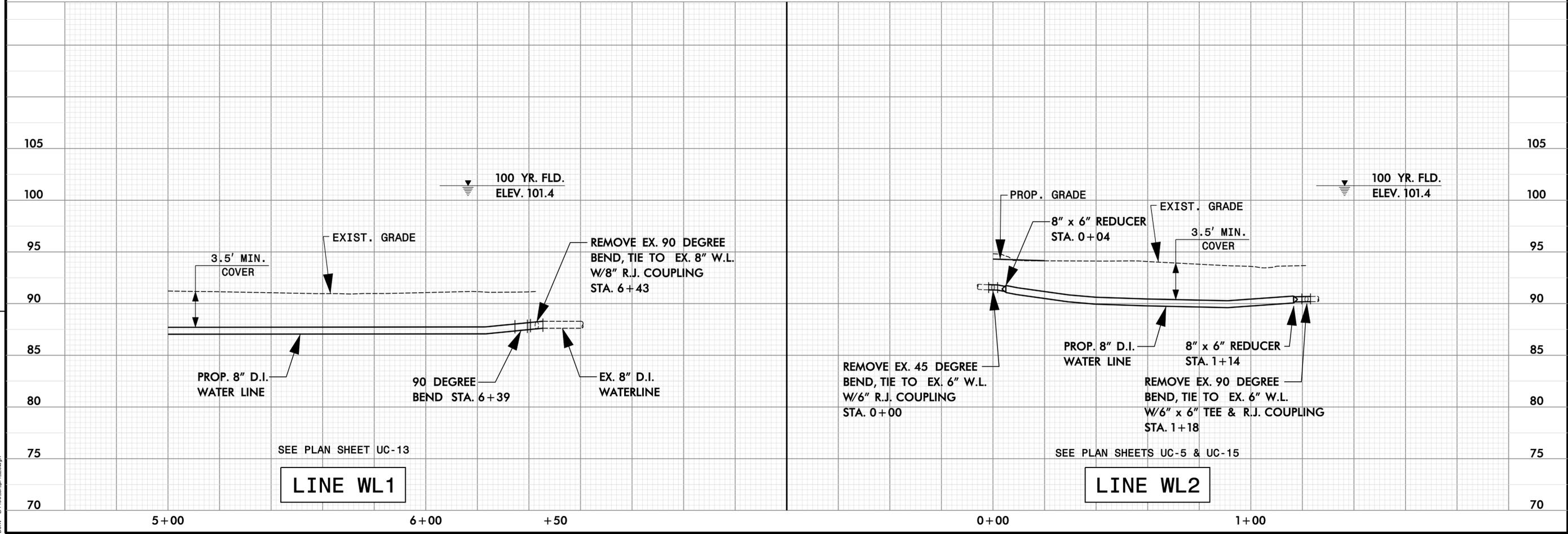
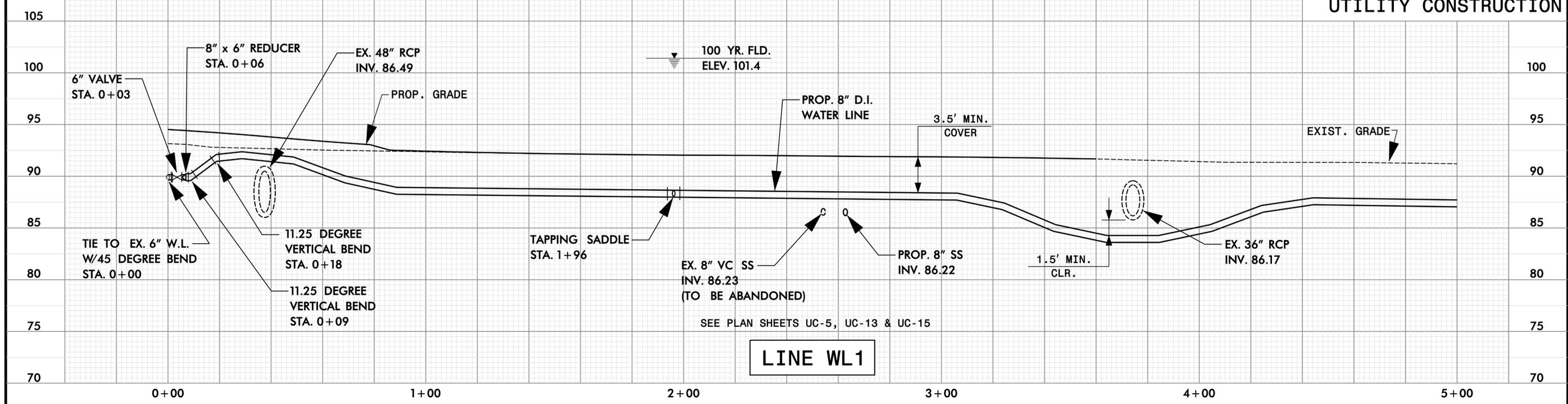


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PROJECT REFERENCE NO. B-4490	SHEET NO. UC-20
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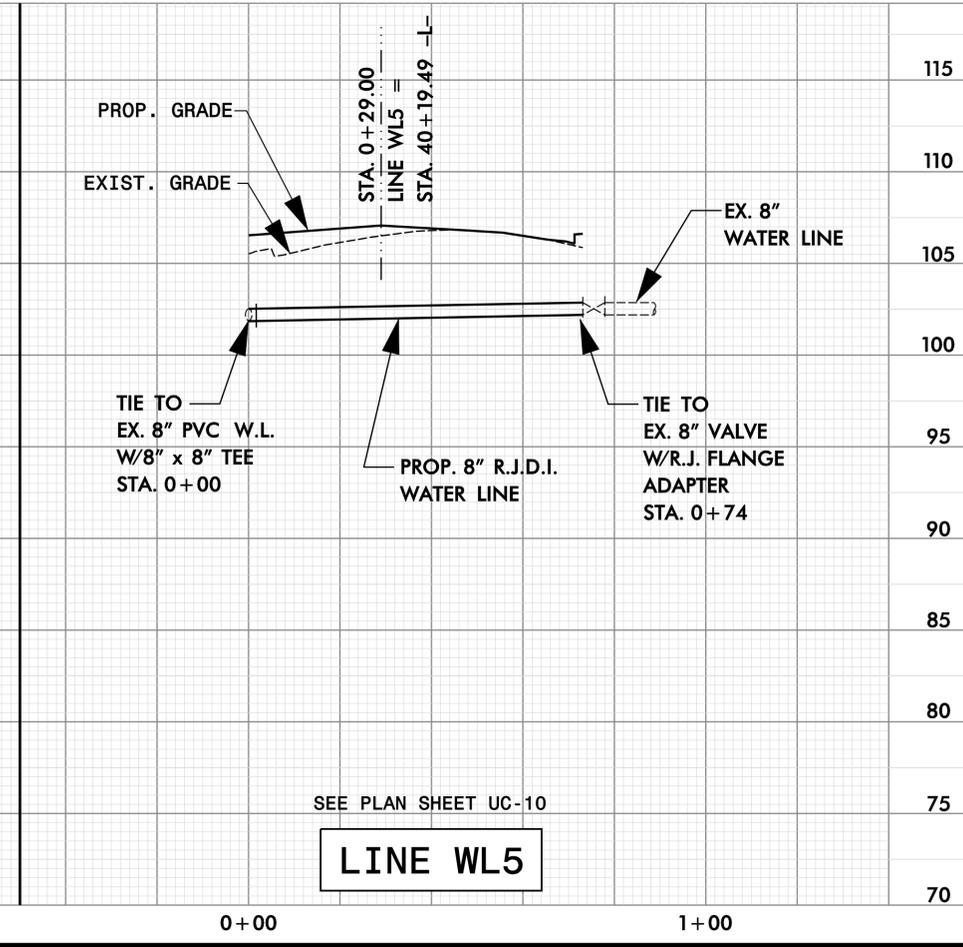
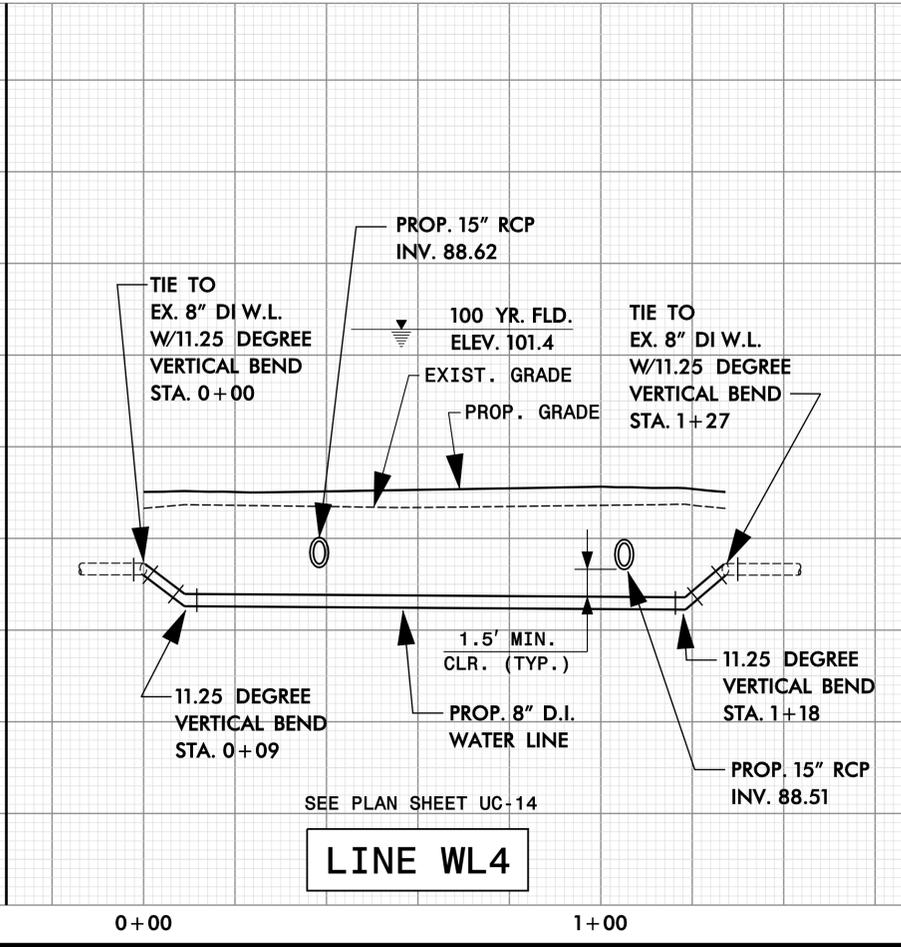
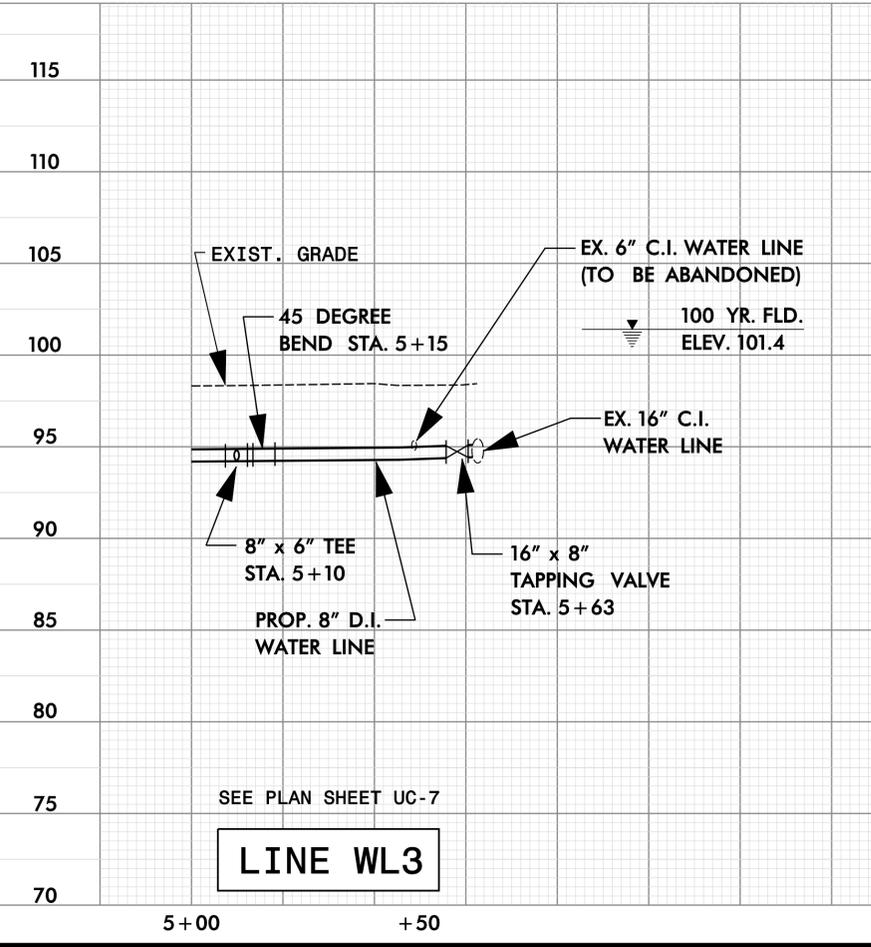
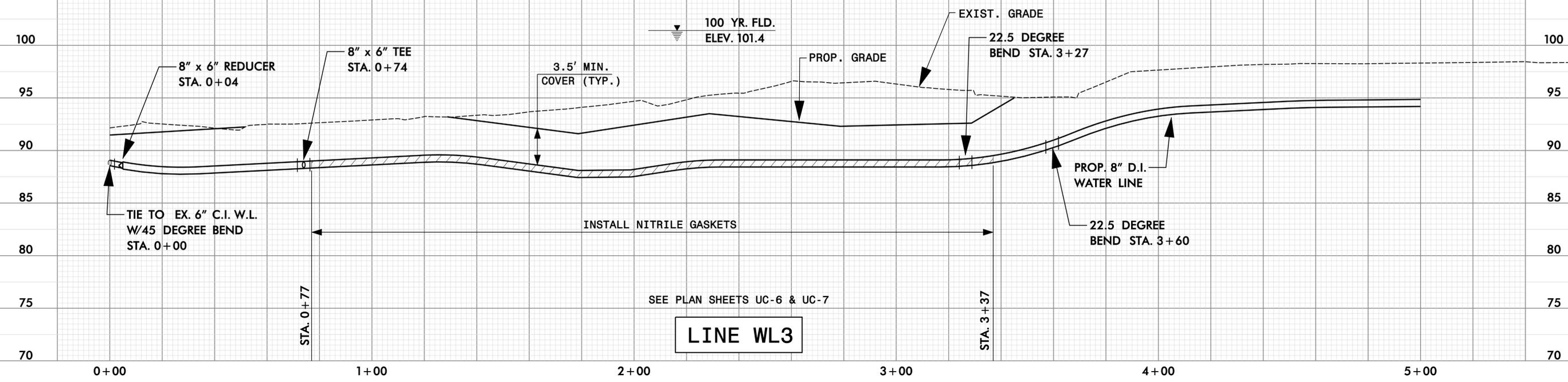


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PROJECT REFERENCE NO. B-4490	SHEET NO. UC-21
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