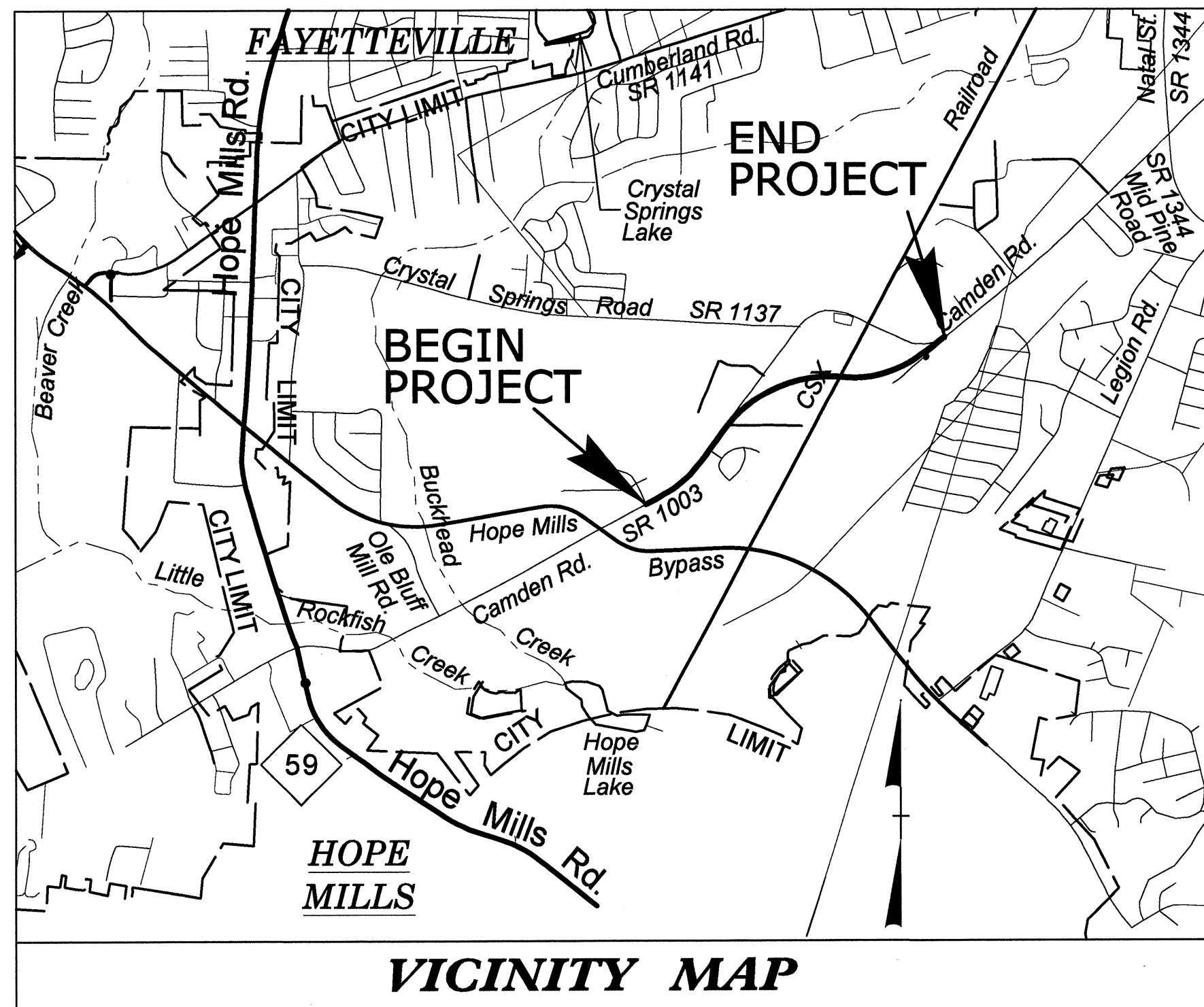


09/08/09

TIP PROJECT: U-2810B

CONTRACT: C202243

See Sheet 1-A For Index of Sheets



VICINITY MAP

CAMDEN ROAD

WATER SYSTEM IMPROVEMENTS

MUNICIPAL AGREEMENT PLANS

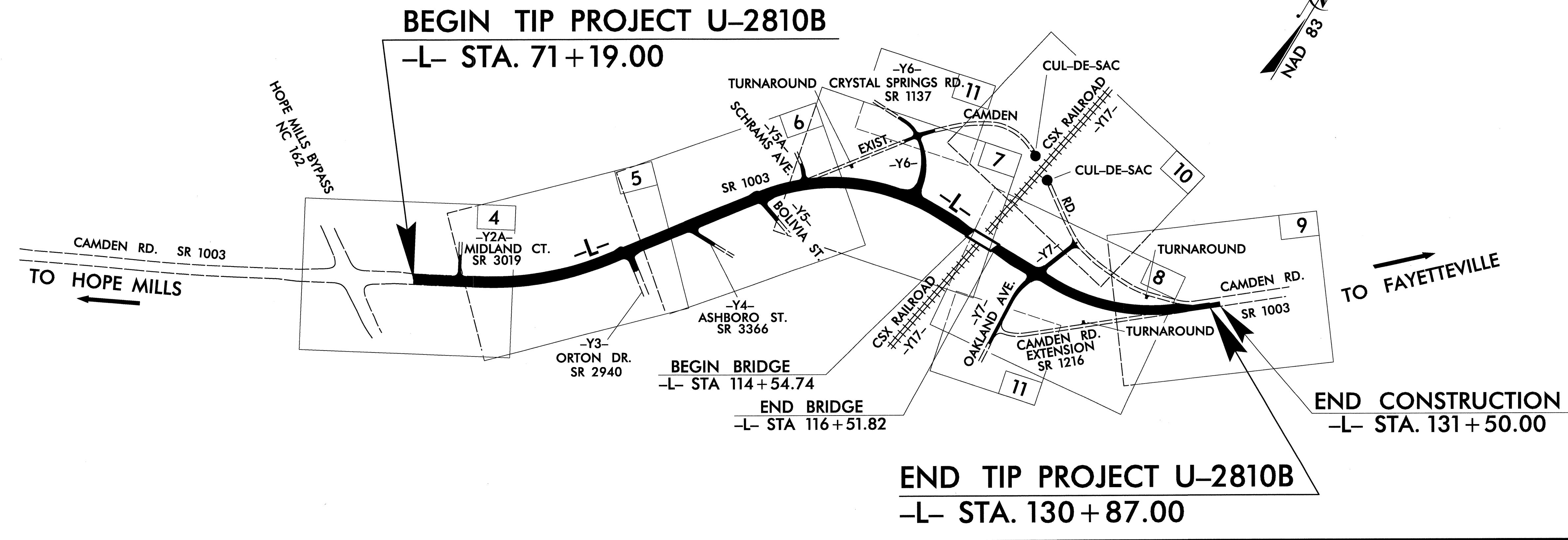
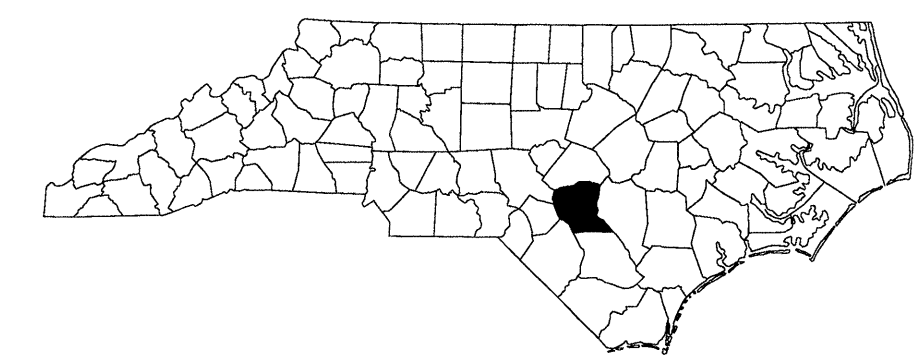
October 2012

FOR:

FAYETTEVILLE PWC

955 Old Wilmington Road
Fayetteville, North Carolina 28301

T.I.P. NO.	SHEET NO.
U-2810 B	UC-1

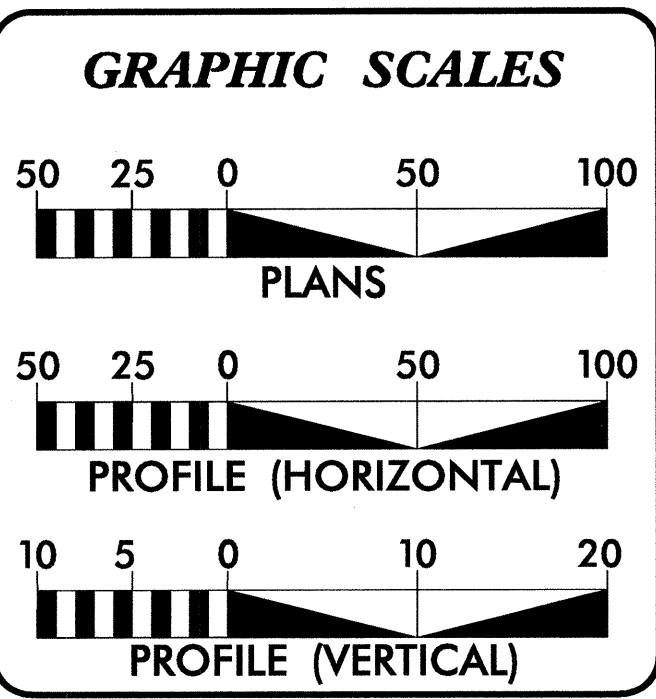


BEGIN TIP PROJECT U-2810B

-L- STA. 71+19.00

END TIP PROJECT U-2810B

-L- STA. 130+87.00



INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
UC-1	TITLE SHEET
UC-2	LEGEND OF SYMBOLS
UC-3	GENERAL NOTES
UC-4 THRU UC-12	UTILITY CONSTRUCTION PLAN & PROFILE SHEETS
UC-13 THRU UC-17	CONSTRUCTION DETAILS

UTILITY OWNERS ON PROJECT	
(1) WATER	- FAYETTEVILLE PWC, AQUA NC, INC.
(2) SEWER	- FAYETTEVILLE PWC

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)

PREPARED FOR:

**DIVISION OF HIGHWAYS
UTILITIES AND ENCROACHMENTS
ENGINEERING UNIT**

1555 MAIL SERVICE CENTER
RALEIGH NC 27699-1555
PHONE (919) 707-6690
FAX (919) 250-4151

Roger Worthington, P.E. UTILITIES SECTION ENGINEER
R. B. Wilkins, P.E. UTILITIES SQUAD LEADER
AECOM Tech. Services UTILITY CONSTRUCTION PROJECT DESIGNER

DATE: 10/08/09
DRAWN: [Signature]

3/15/06

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

Table listing symbols for State Line, County Line, Township Line, City Line, Reservation Line, Property Line, Existing Iron Pin, Property Corner, Property Monument, Parcel/Sequence Number, Existing Fence Line, Proposed Woven Wire Fence, Proposed Chain Link Fence, Proposed Barbed Wire Fence, Existing Wetland Boundary, Proposed Wetland Boundary, Existing Endangered Animal Boundary, Existing Endangered Plant Boundary.

BUILDINGS AND OTHER CULTURE:

Table listing symbols for Gas Pump Vent or U/G Tank Cap, Sign, Well, Small Mine, Foundation, Area Outline, Cemetery, Building, School, Church, Dam.

HYDROLOGY:

Table listing symbols for Stream or Body of Water, Hydro, Pool or Reservoir, Jurisdictional Stream, Buffer Zone 1, Buffer Zone 2, Flow Arrow, Disappearing Stream, Spring, Swamp Marsh, Proposed Lateral, Tail, Head Ditch, False Sump.

RAILROADS:

Table listing symbols for Standard Gauge, RR Signal Milepost, Switch, RR Abandoned, RR Dismantled.

RIGHT OF WAY:

Table listing symbols for Baseline Control Point, Existing Right of Way Marker, Existing Right of Way Line, Proposed Right of Way Line, Proposed Right of Way Line with Iron Pin and Cap Marker, Proposed Right of Way Line with Concrete or Granite Marker, Existing Control of Access, Proposed Control of Access, Existing Easement Line, Proposed Temporary Construction Easement, Proposed Temporary Drainage Easement, Proposed Permanent Drainage Easement, Proposed Permanent Utility Easement, Proposed Permanent Aerial Utility Easement.

ROADS AND RELATED FEATURES:

Table listing symbols for Existing Edge of Pavement, Existing Curb, Proposed Slope Stakes Cut, Proposed Slope Stakes Fill, Proposed Wheel Chair Ramp, Proposed Wheel Chair Ramp Curb Cut, Curb Cut for Future Wheel Chair Ramp, Existing Metal Guardrail, Proposed Guardrail, Existing Cable Guiderail, Proposed Cable Guiderail, Equality Symbol, Pavement Removal.

VEGETATION:

Table listing symbols for Single Tree, Single Shrub, Hedge, Woods Line, Orchard, Vineyard.

EXISTING STRUCTURES:

Table listing symbols for MAJOR: Bridge, Tunnel or Box Culvert, Bridge Wing Wall, Head Wall and End Wall; MINOR: Head and End Wall, Pipe Culvert, Footbridge, Drainage Box: Catch Basin, DI or JB, Paved Ditch Gutter, Storm Sewer Manhole, Storm Sewer.

UTILITIES:

Table listing symbols for POWER: Existing Power Pole, Proposed Power Pole, Existing Joint Use Pole, Proposed Joint Use Pole, Power Manhole, Power Line Tower, Power Transformer, U/G Power Cable Hand Hole, H-Frame Pole, Recorded U/G Power Line, Designated U/G Power Line (S.U.E.*).

TELEPHONE:

Table listing symbols for Existing Telephone Pole, Proposed Telephone Pole, Telephone Manhole, Telephone Booth, Telephone Pedestal, Telephone Cell Tower, U/G Telephone Cable Hand Hole, Recorded U/G Telephone Cable, Designated U/G Telephone Cable (S.U.E.*), Recorded U/G Telephone Conduit, Designated U/G Telephone Conduit (S.U.E.*), Recorded U/G Fiber Optics Cable, Designated U/G Fiber Optics Cable (S.U.E.*).

WATER:

Table listing symbols for Water Manhole, Water Meter, Water Valve, Water Hydrant, Recorded U/G Water Line, Designated U/G Water Line (S.U.E.*), Above Ground Water Line.

TV:

Table listing symbols for TV Satellite Dish, TV Pedestal, TV Tower, U/G TV Cable Hand Hole, Recorded U/G TV Cable, Designated U/G TV Cable (S.U.E.*), Recorded U/G Fiber Optic Cable, Designated U/G Fiber Optic Cable (S.U.E.*).

GAS:

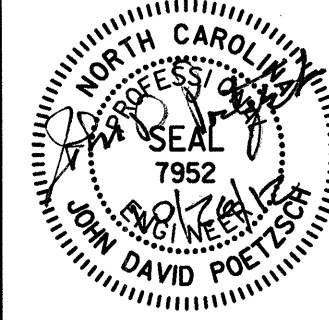
Table listing symbols for Gas Valve, Gas Meter, Recorded U/G Gas Line, Designated U/G Gas Line (S.U.E.*), Above Ground Gas Line.

SANITARY SEWER:

Table listing symbols for Sanitary Sewer Manhole, Sanitary Sewer Cleanout, U/G Sanitary Sewer Line, Above Ground Sanitary Sewer, Recorded SS Forced Main Line, Designated SS Forced Main Line (S.U.E.*).

MISCELLANEOUS:

Table listing symbols for Utility Pole, Utility Pole with Base, Utility Located Object, Utility Traffic Signal Box, Utility Unknown U/G Line, U/G Tank; Water, Gas, Oil, A/G Tank; Water, Gas, Oil, U/G Test Hole (S.U.E.*), Abandoned According to Utility Records, Determined According to Utility Records, End of Information.

PROJECT REFERENCE NO. U-2810 B	SHEET NO. UC-3
	

UTILITY CONSTRUCTION

UTILITY CONSTRUCTION NOTES

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 AND AQUA NC, INC.

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 SHALL BE RESTRAINED BY MANUFACTURED RESTRAINED SYSTEMS AS INDICATED IN DETAIL W.18. CONCRETE BLOCKING SHALL NOT BE USED EXCEPT AT FIRE HYDRANT TEES AS INDICATED ON DETAIL W.13.

15. PIPE WITHIN CASINGS SHALL HAVE A RESTRAINED JOINT SYSTEM DESIGNED AND MANUFACTURED BY THE PIPE SUPPLIER AS INDICATED IN DETAIL M.5 SUITABLE FOR INSTALLATION WITHIN THE CASING.

DATE: 10/26/2012
DRAWN: u2810bc_uc_uc3.dgn

Prepared by:

AECOM

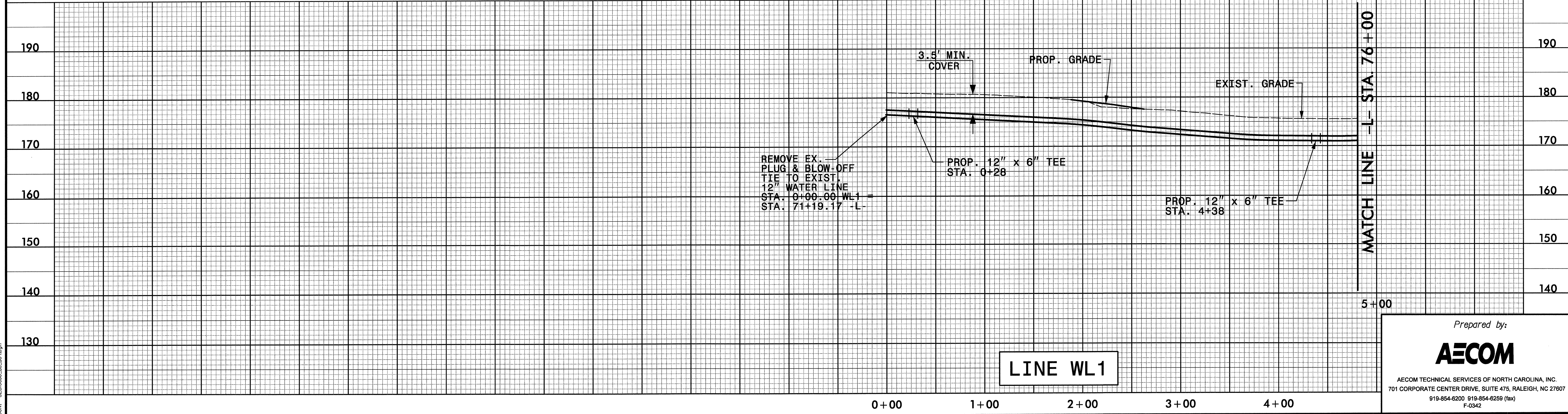
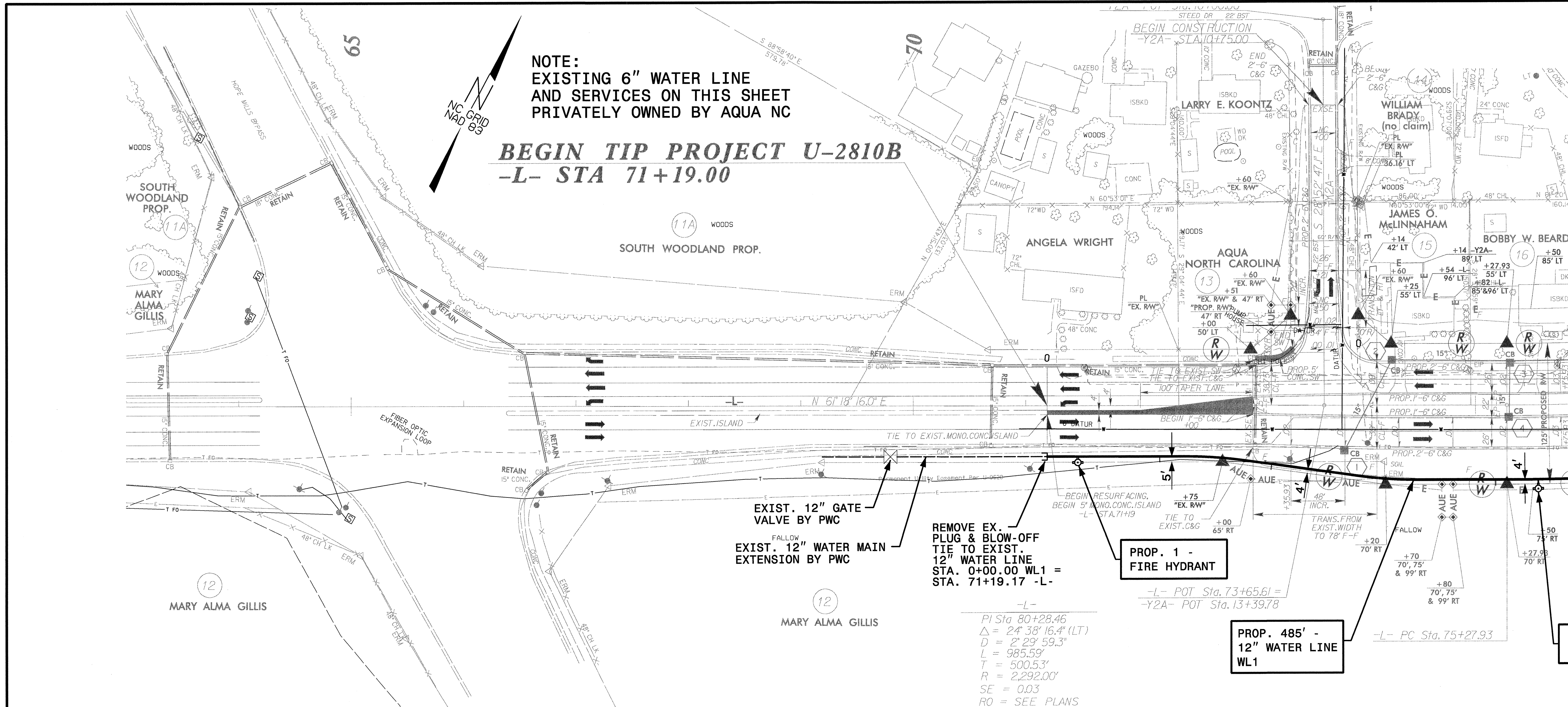
AECOM TECHNICAL SERVICES OF NORTH CAROLINA, INC.
701 CORPORATE CENTER DRIVE, SUITE 475, RALEIGH, NC 27607
919-854-6200 919-854-6259 (fax)
F-0342

NOTE:
 EXISTING 6" WATER LINE
 AND SERVICES ON THIS SHEET
 PRIVATELY OWNED BY AQUA NC

BEGIN TIP PROJECT U-2810B
-L- STA 71+19.00

UTILITY CONSTRUCTION

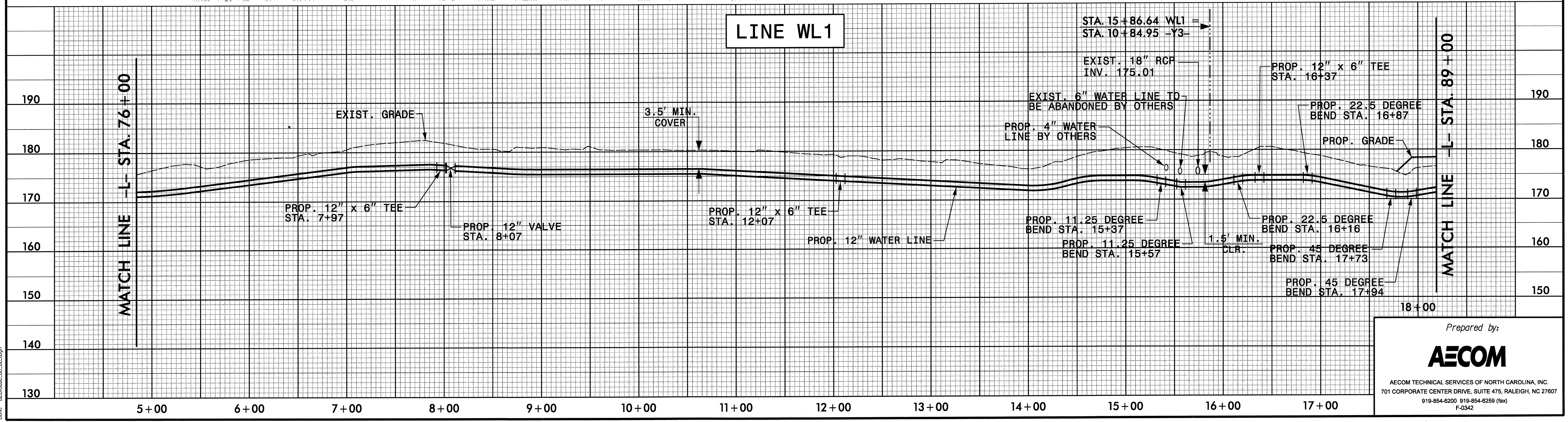
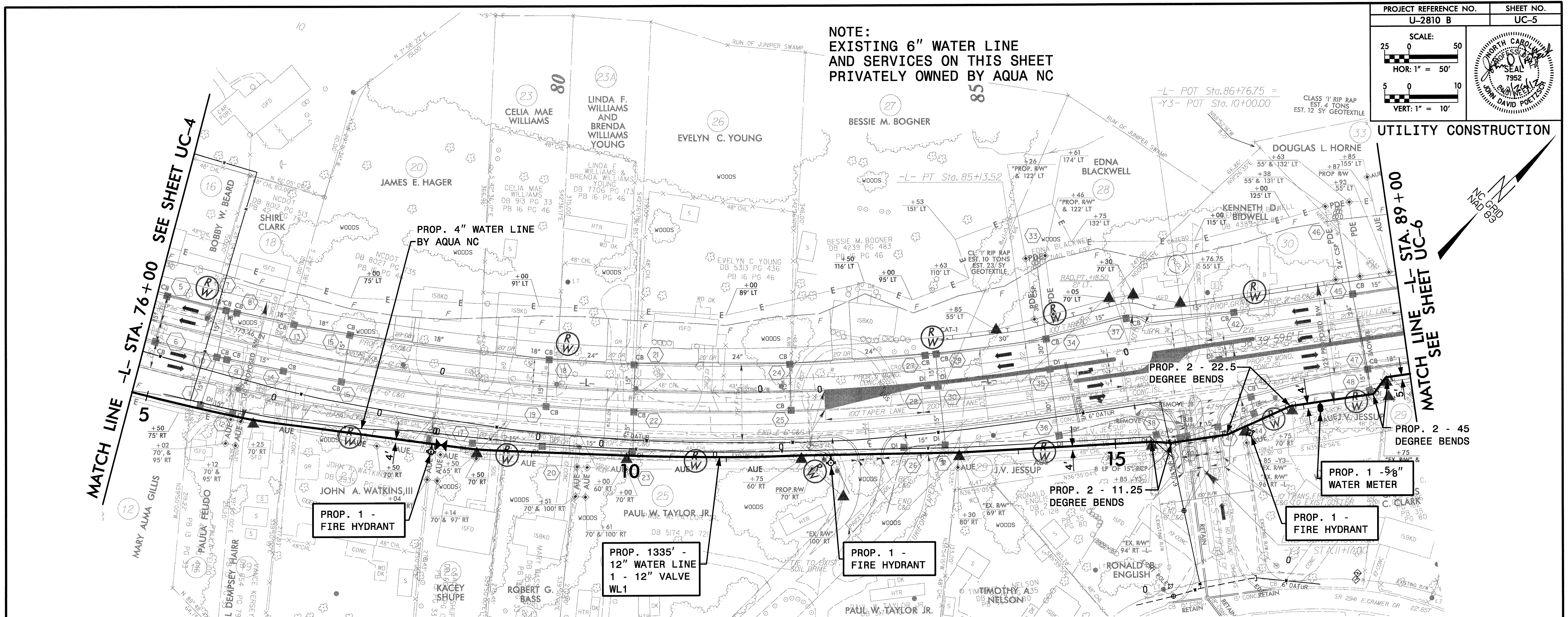
MATCH LINE -L- STA. 76+00 SEE SHEET UC-5



DATE: 10/25/2012
 DWN: U2810Bc.nc.usp.dgn

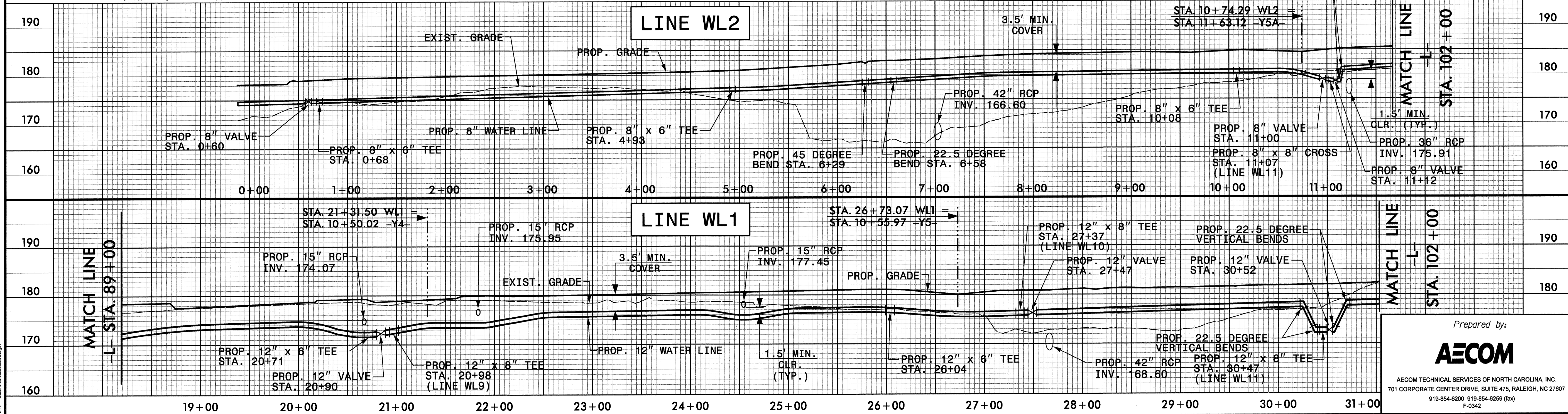
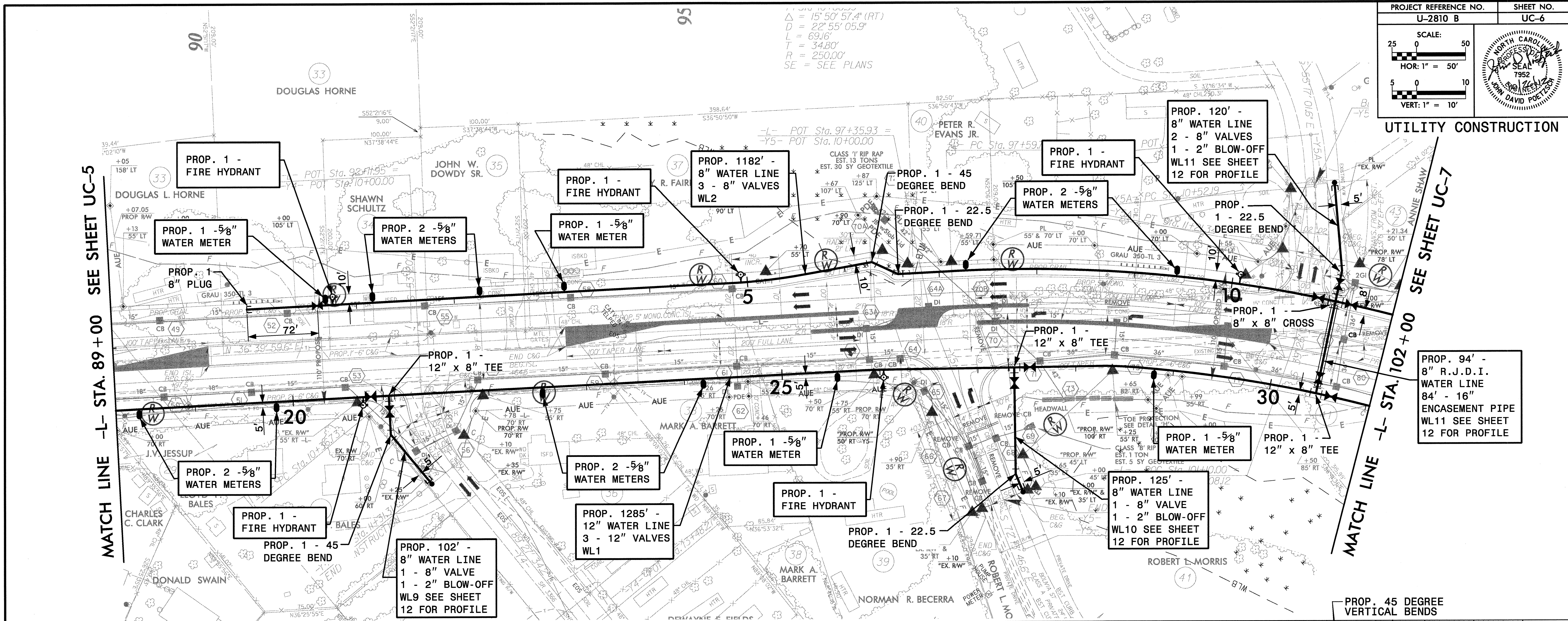
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 EXISTING 6" WATER LINE
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 PRIVATELY OWNED BY AQUA NC

UTILITY CONSTRUCTION



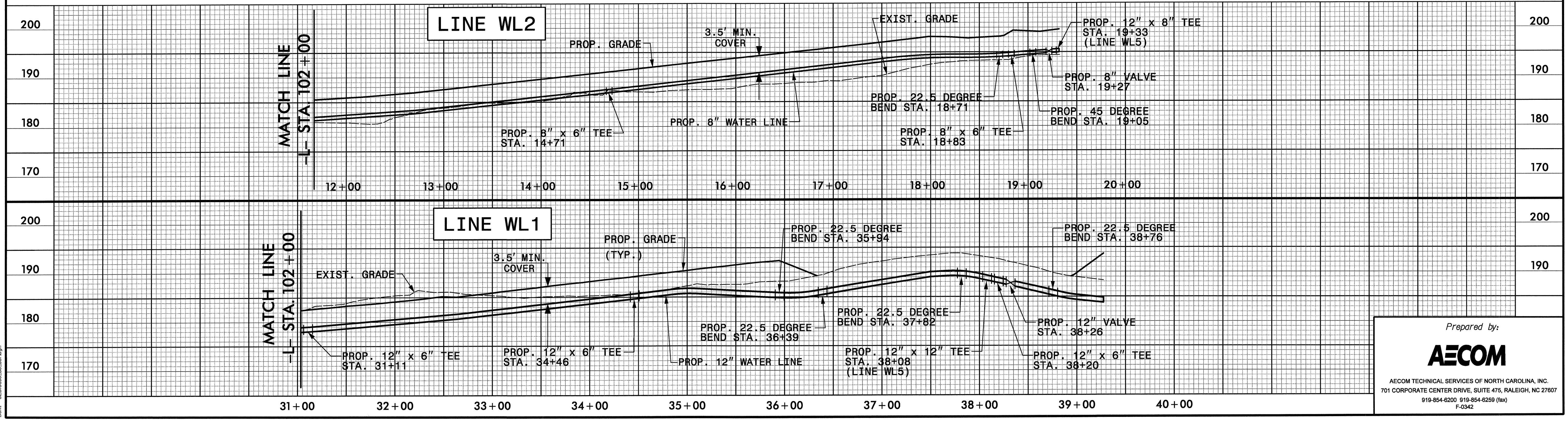
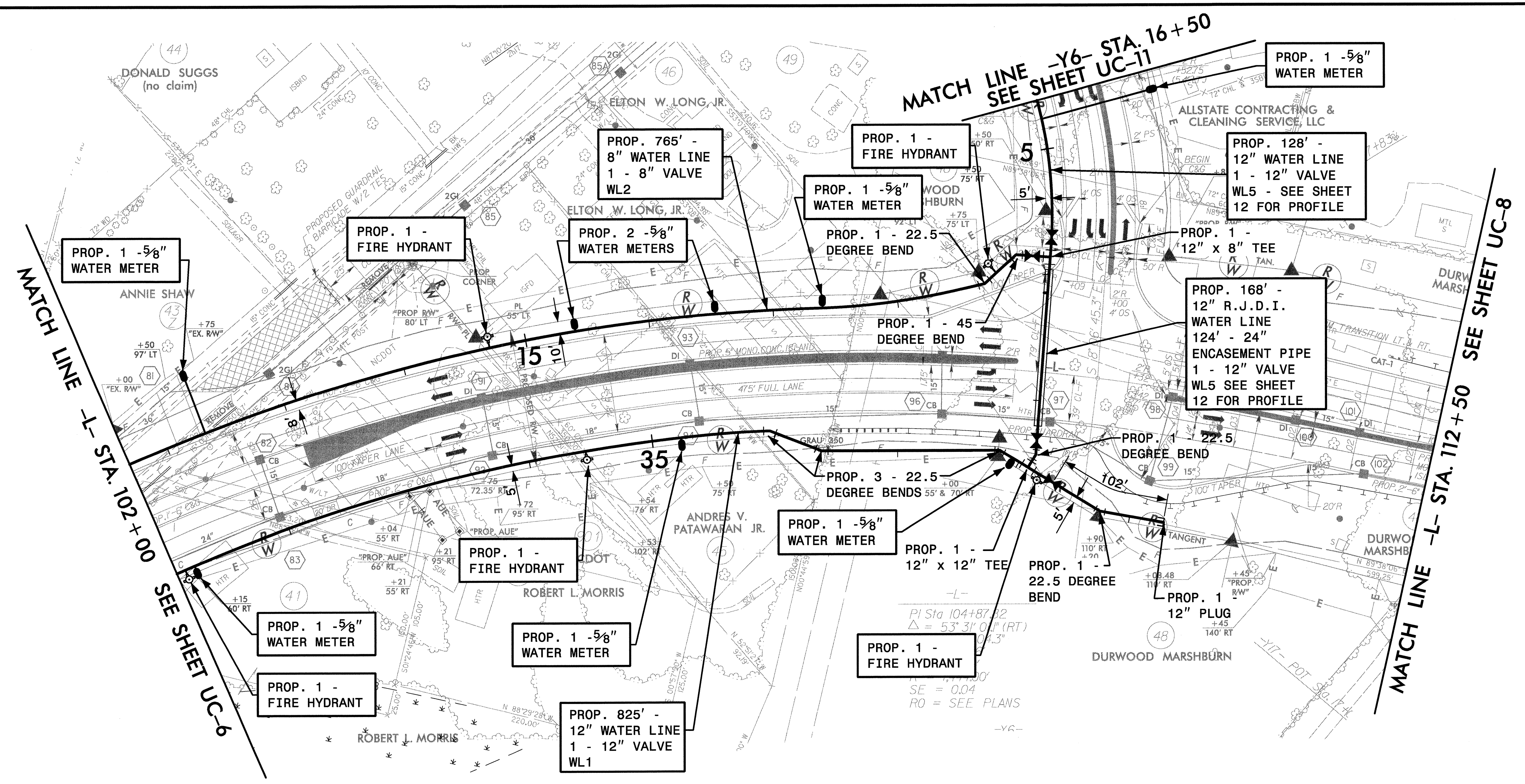
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UTILITY CONSTRUCTION



DATE: 10/26/2012
 DRAWN: uc6060 uc uc6060

UTILITY CONSTRUCTION

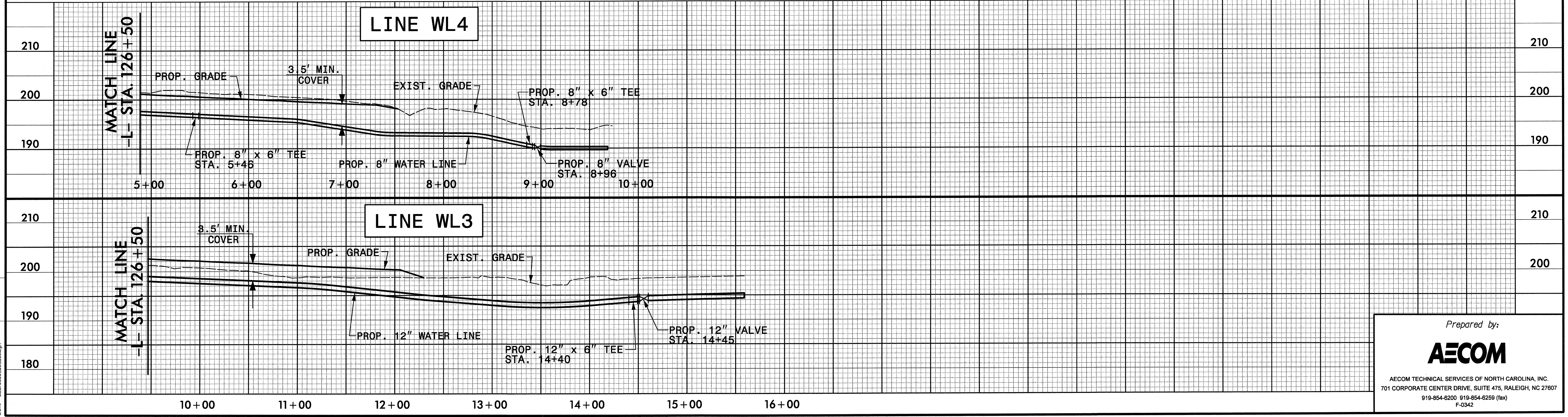
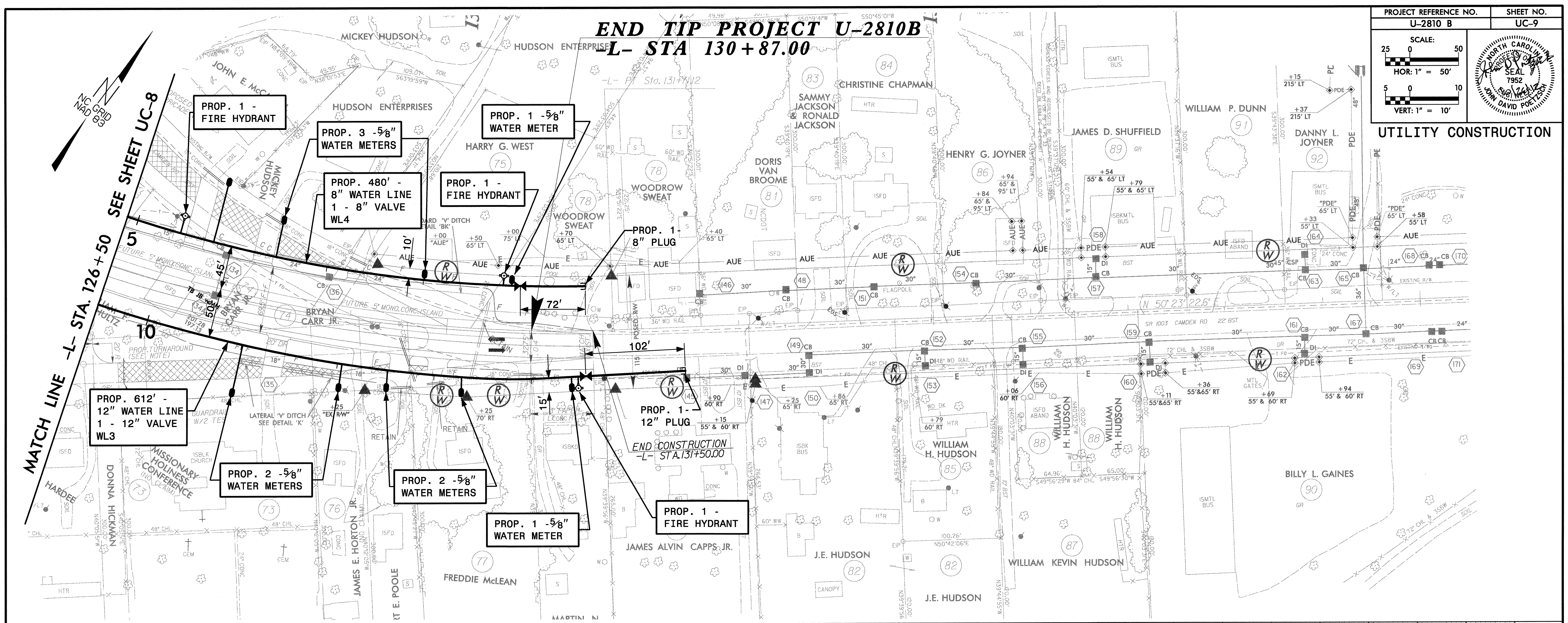


DATE: 10/26/2010
 DSN: U2810Doc.uc-7.dgn

END TIP PROJECT U-2810B

-L- STA 130+87.00

PROJECT REFERENCE NO. U-2810 B	SHEET NO. UC-9
SCALE: HOR: 1" = 50' VERT: 1" = 10'	
UTILITY CONSTRUCTION	



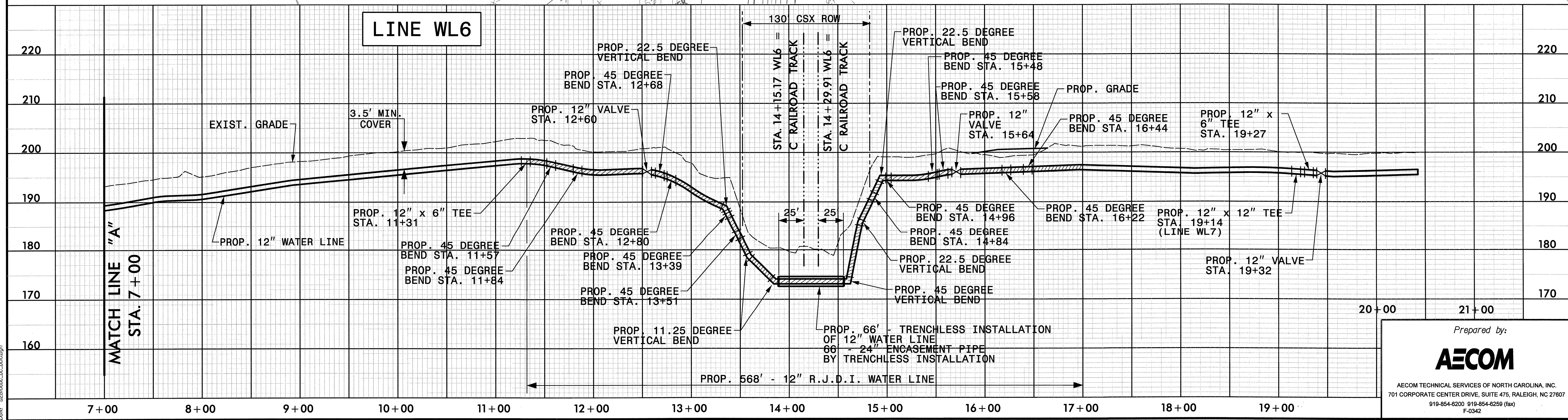
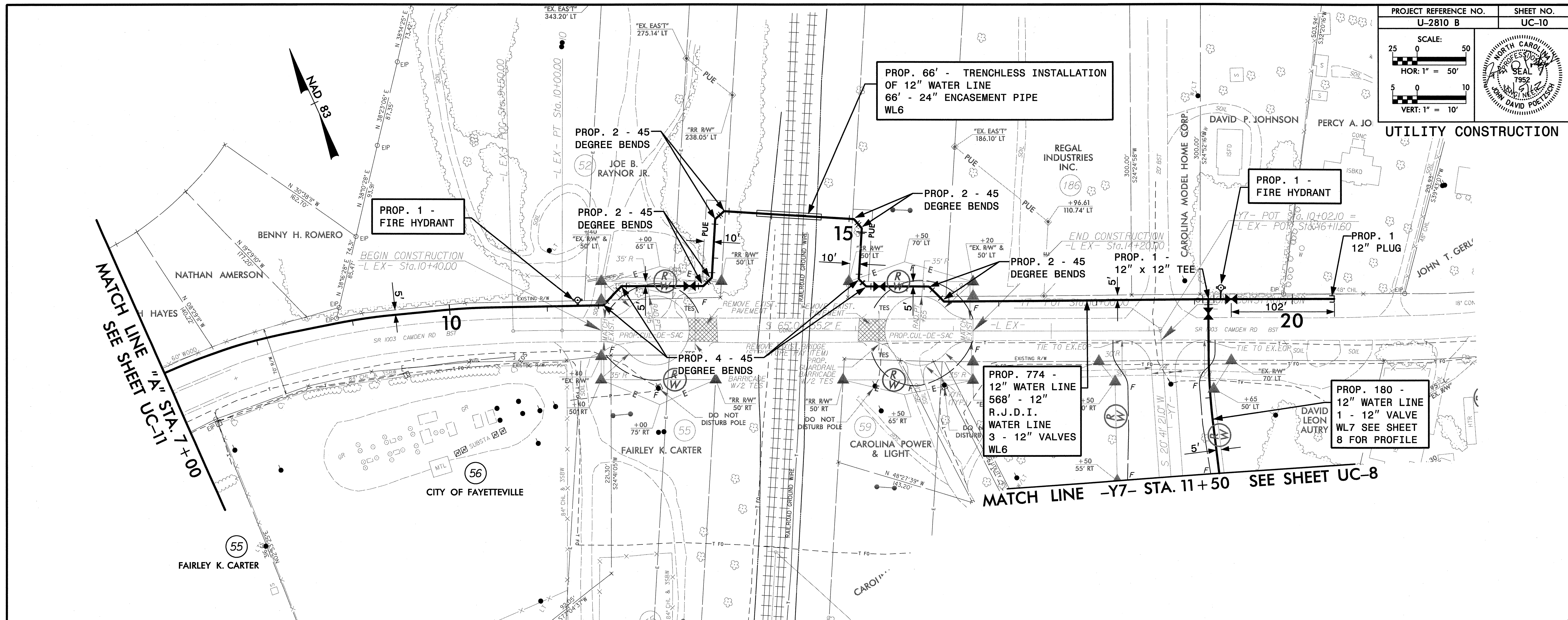
Prepared by:

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

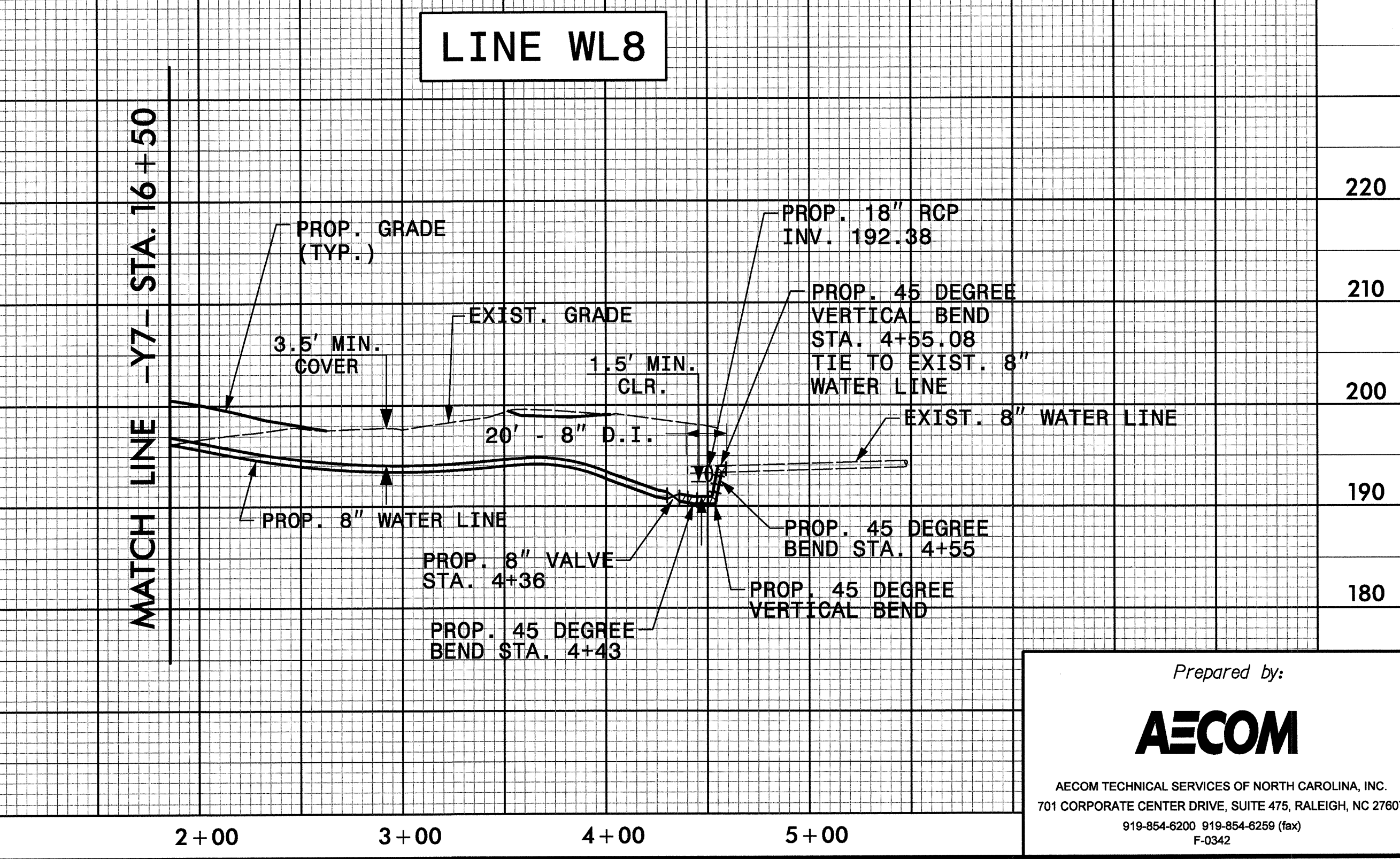
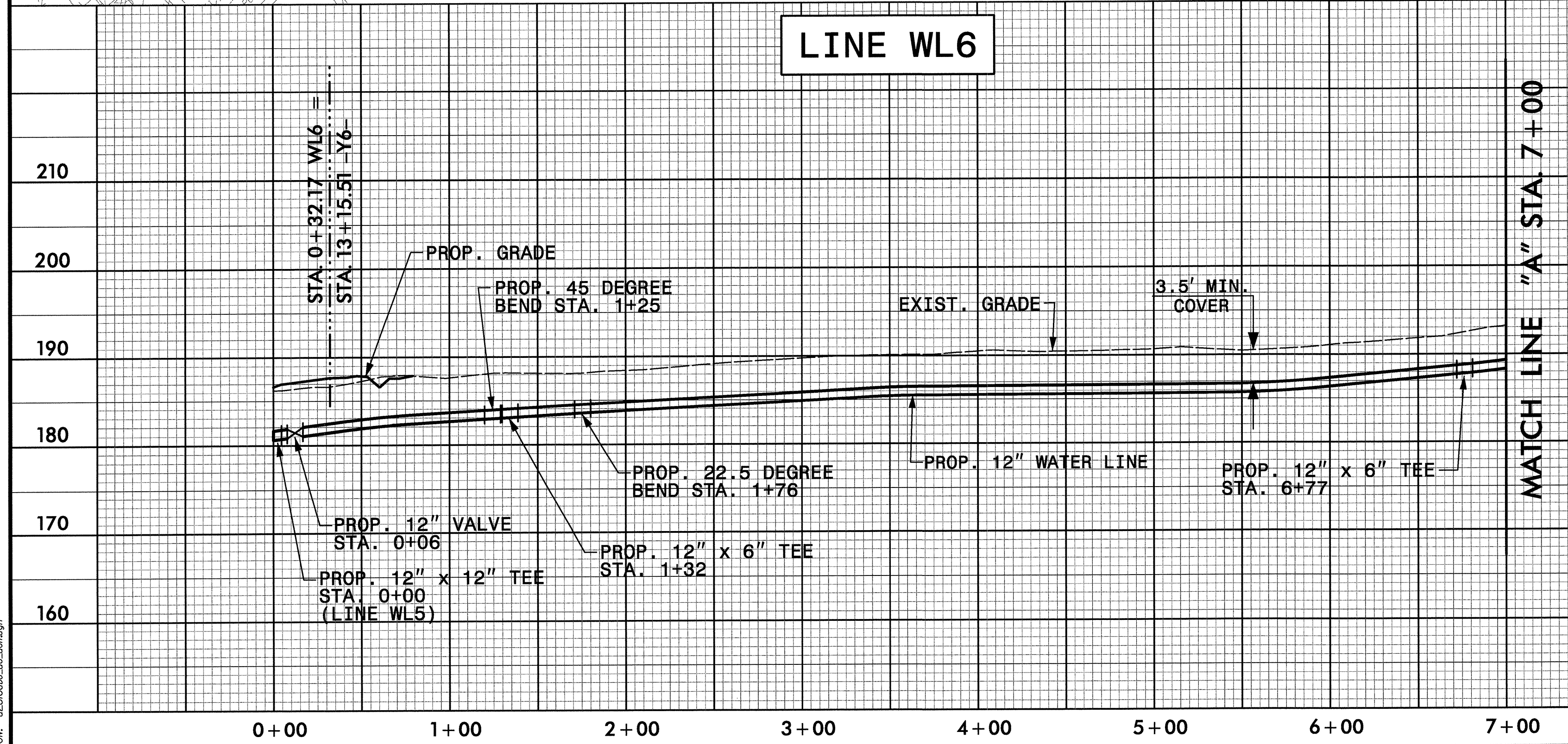
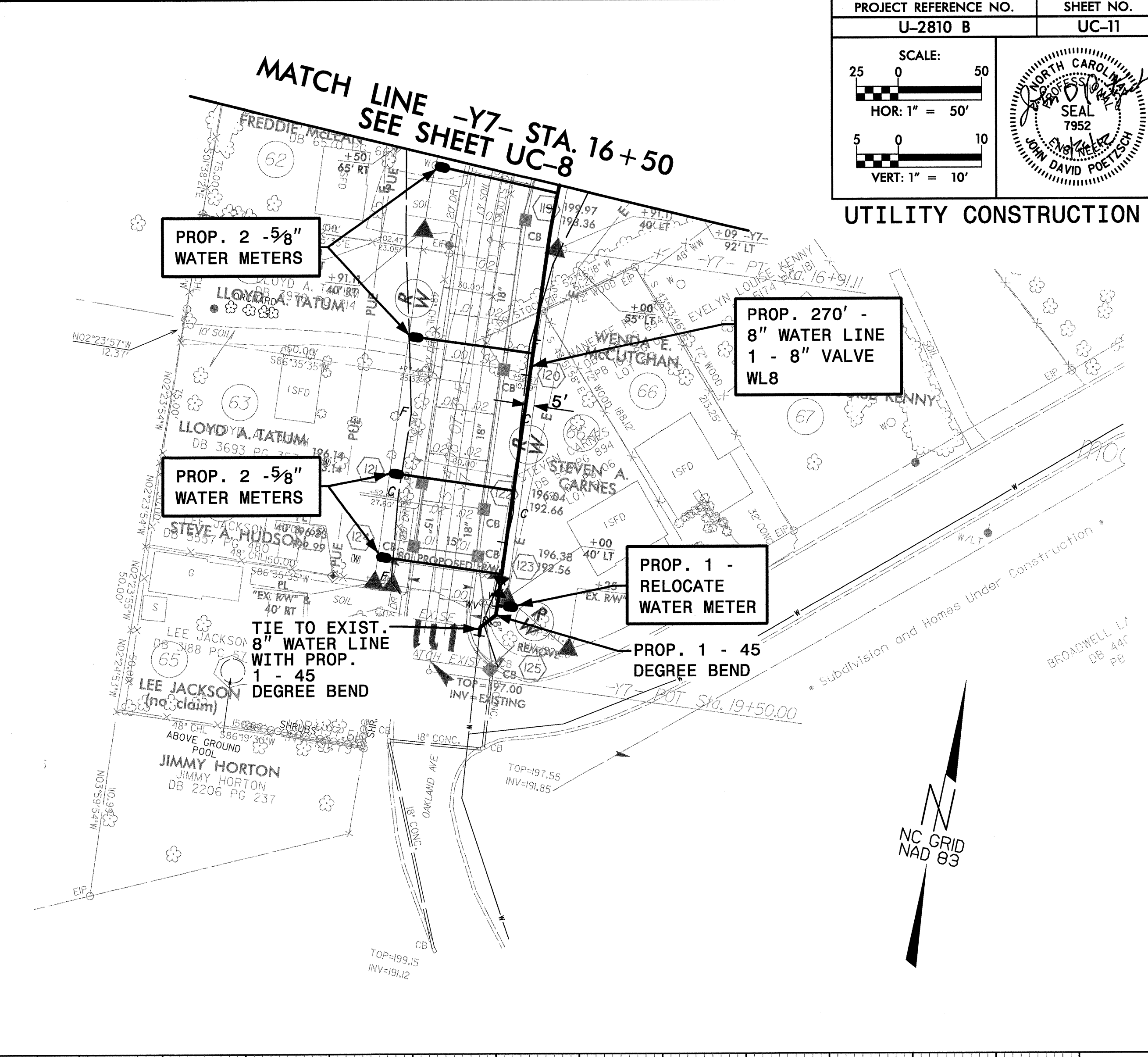
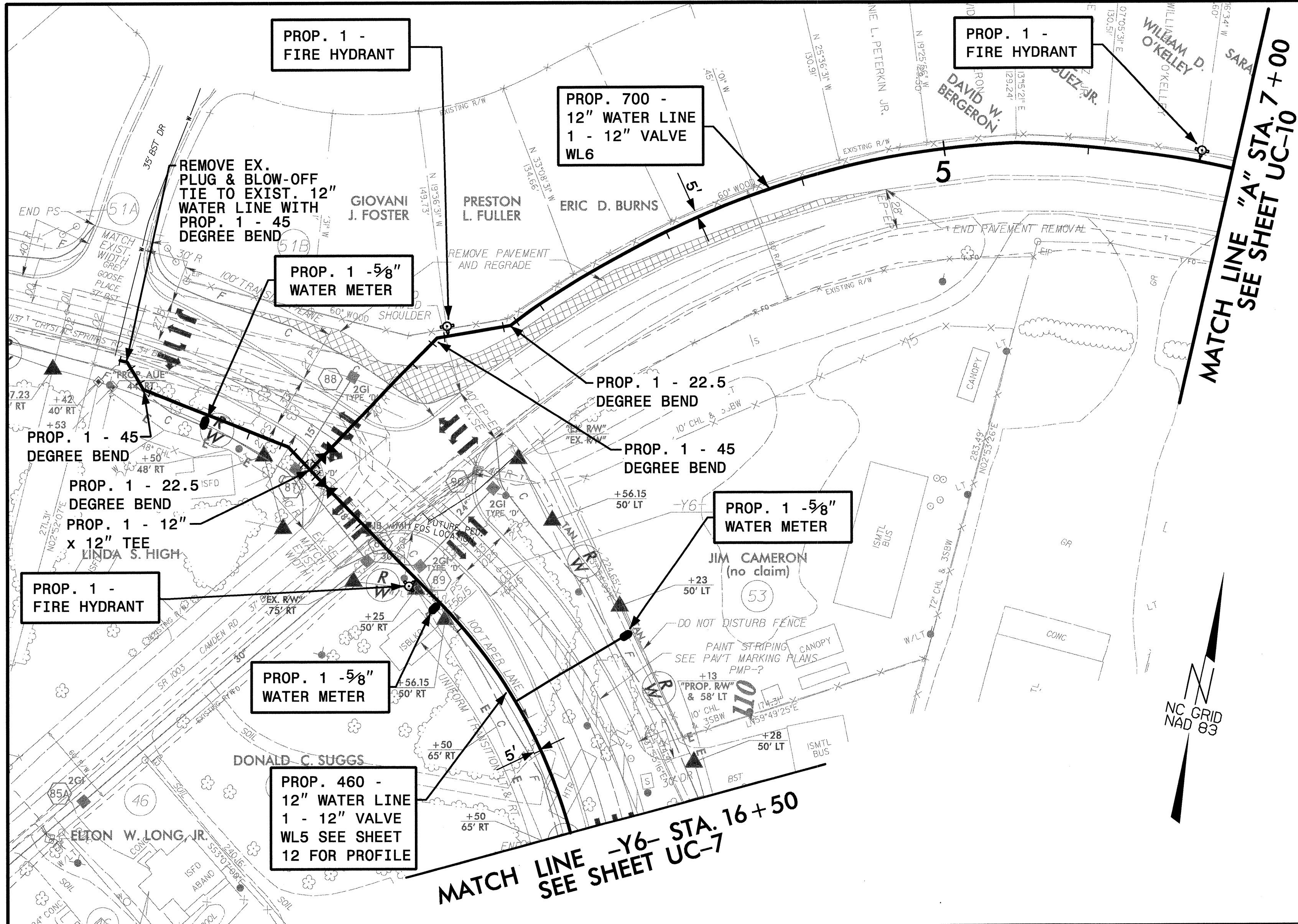
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DRAWN: uc9.dwg

UTILITY CONSTRUCTION

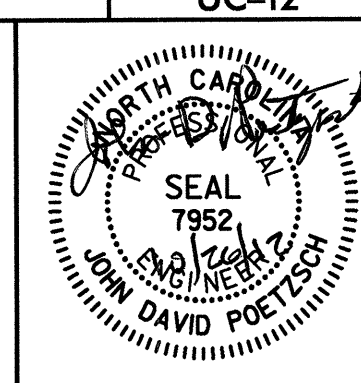
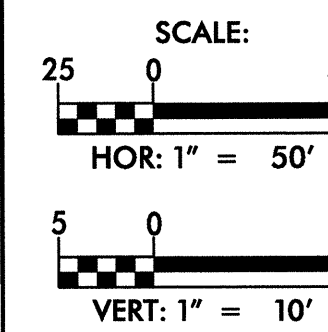


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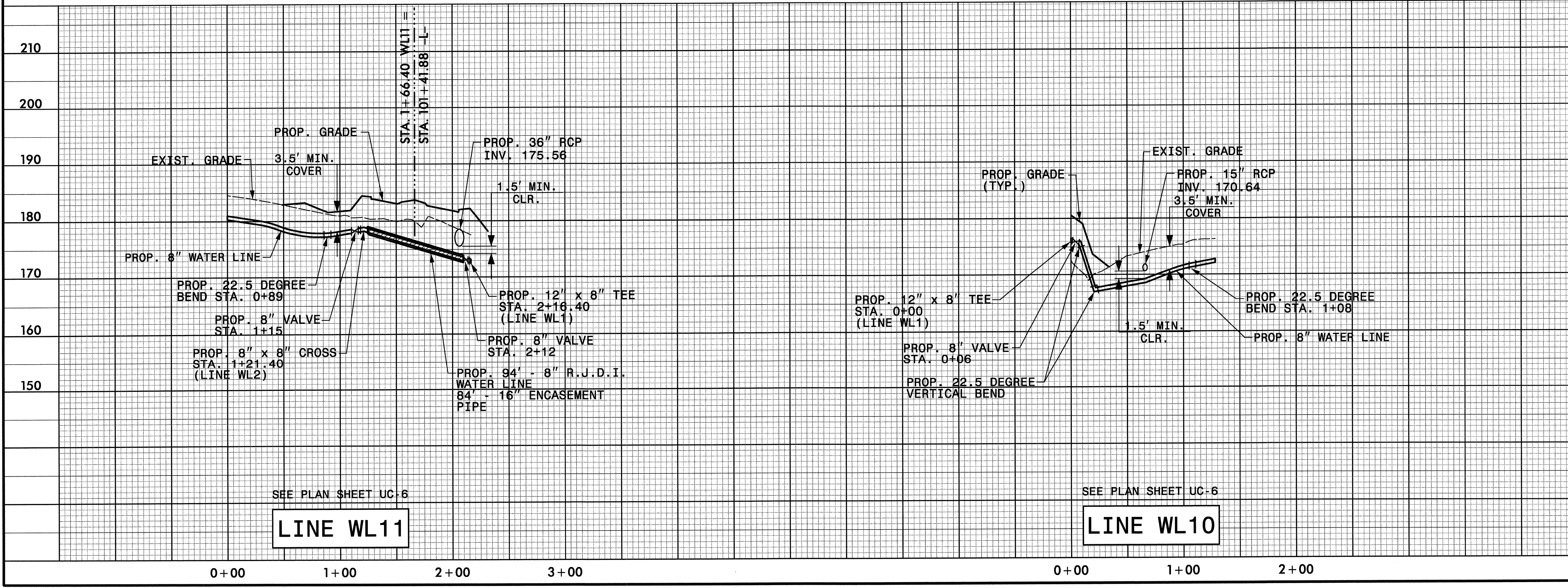
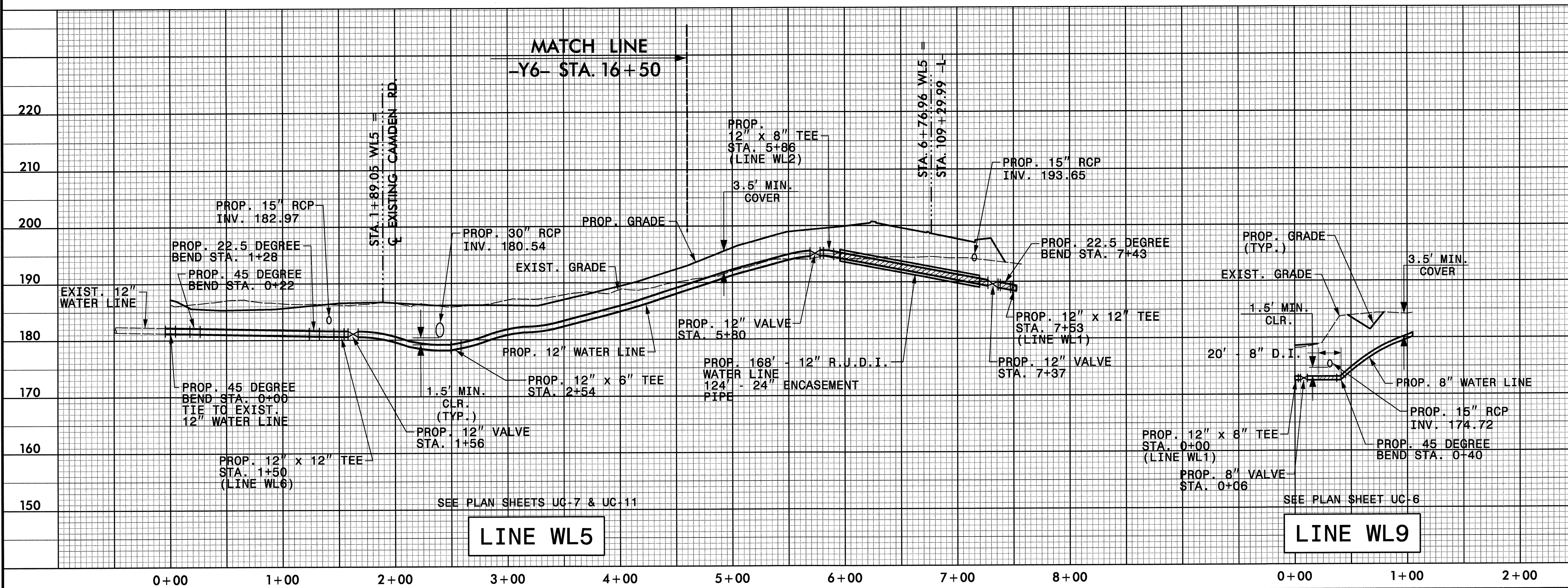
UTILITY CONSTRUCTION



DATE: 10/25/2012
DRAWN: uc-wal/cgm



UTILITY CONSTRUCTION



SEE PLAN SHEET UC-6
LINE WL11


SEE PLAN SHEET UC-6
LINE WL10

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

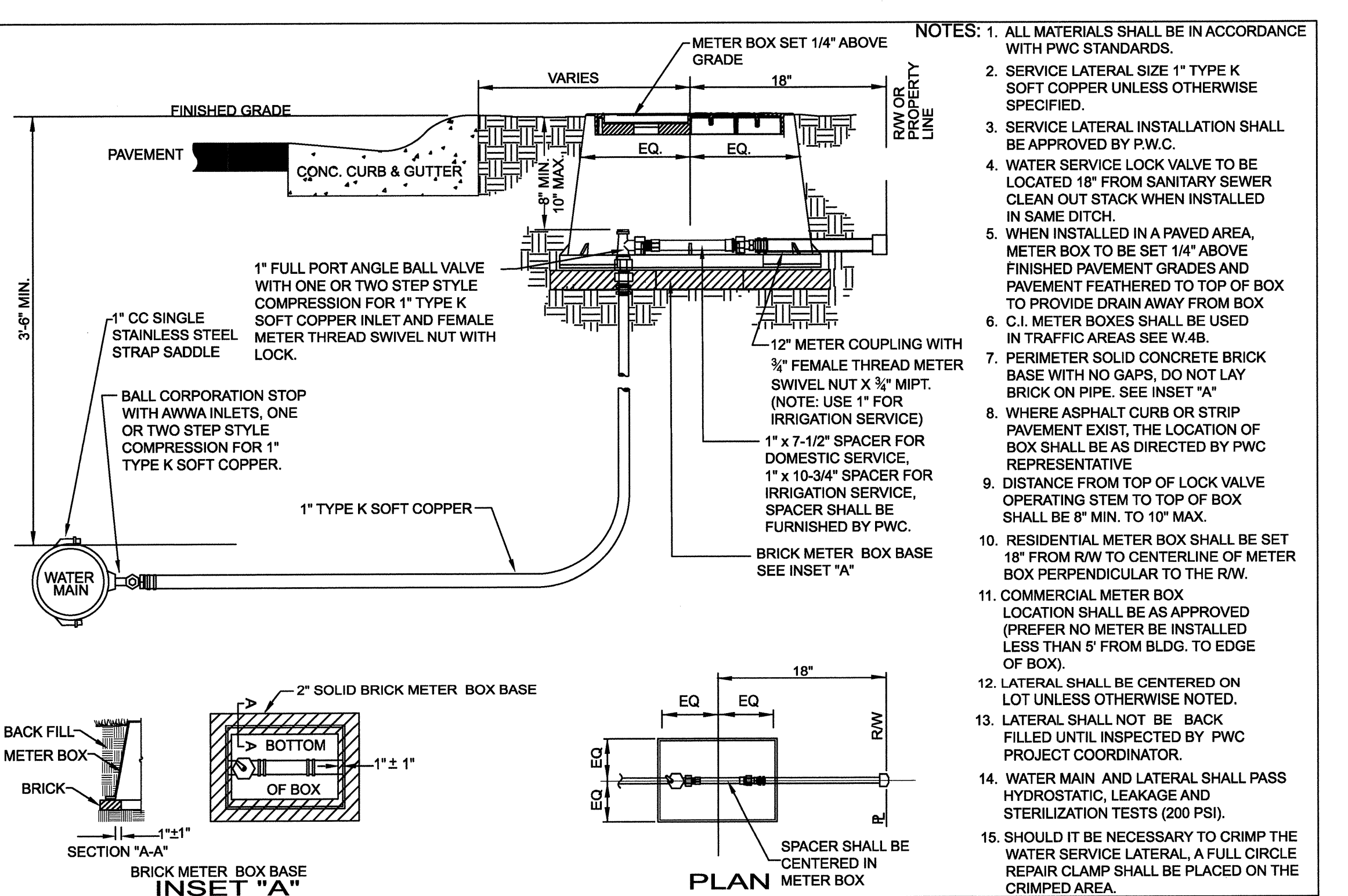
DATE: 10/22/2012
DWN: uc81000b-uc-12.dgn


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 PWC PROJECT COORDINATOR. THE CONTRACTOR SHALL INITIATE IMMEDIATE REPAIRS IN ACCORDANCE WITH PWC STANDARDS. CONTRACTOR SHALL NOT OPERATE PWC WATER MAIN VALVES WITHOUT PWC APPROVAL AND SHALL COORDINATE ALL VALVE CLOSINGS WITH PWC.
- 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 RESIDENT'S METERS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGES RESULTING FROM ALLOWING "DIRTY" WATER TO ENTER RESIDENT'S PLUMBING SYSTEM, SUCH AS WATER HEATERS, STAINED CLOTHING, CLOGGED SCREENS, ETC.
- WATER MAINS AND LATERALS SHALL BE INSTALLED UTILIZING A PWC 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 PWC.
 - TRANSFER EXISTING METER TO NEW METER BOX AND TIE 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 PWC 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.

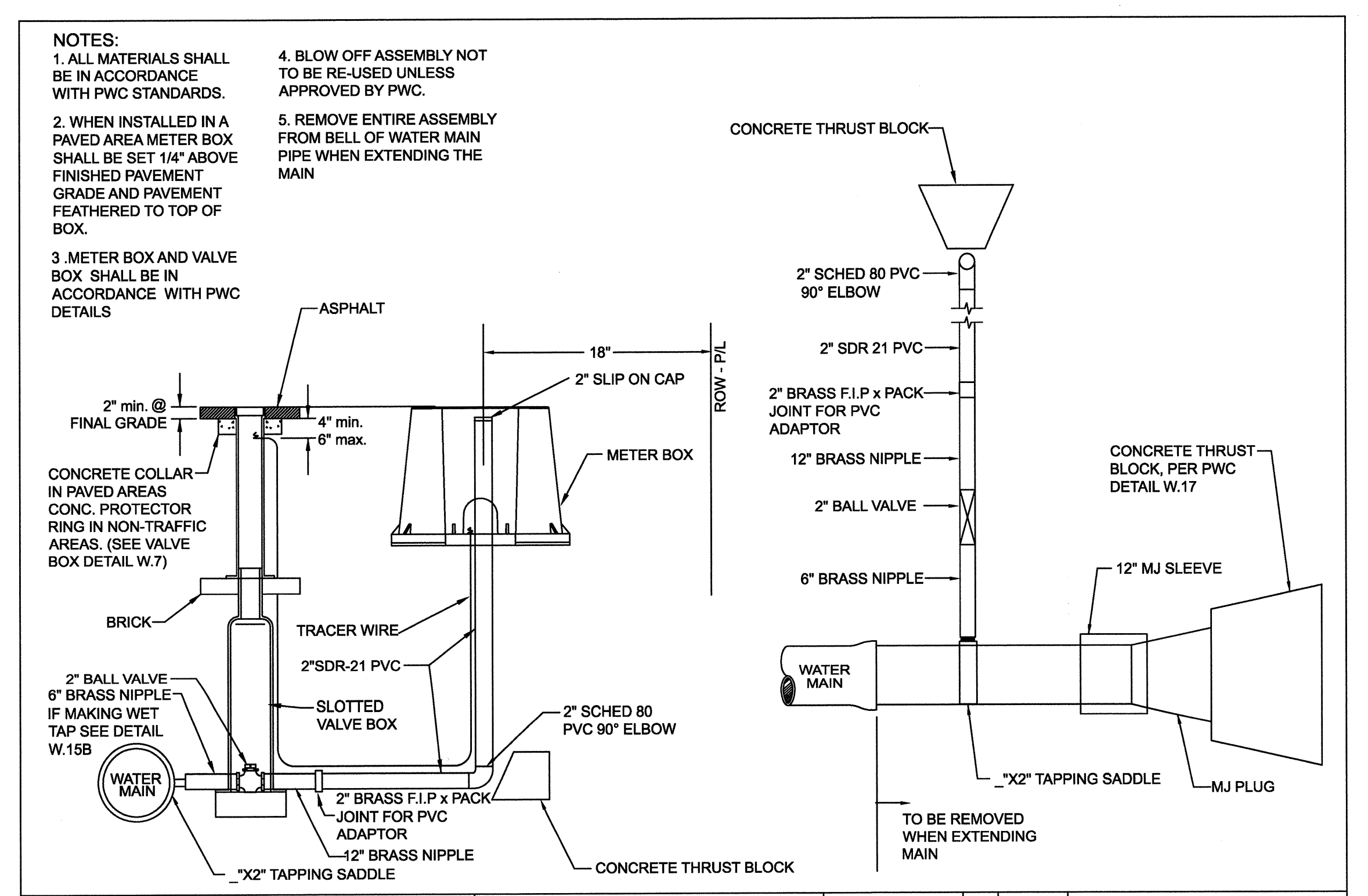
WATER UTILITY NOTES		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.		NO.	DATE	REVISION
SHEET NO. 1 OF 2	DWG. NO. W.1	DWG. BY: PWC		1	JAN 05	REVISED NOTE 5A
DATE: JULY 01, 2012	APPROVED BY: J.E.G.	WATER RESOURCES ENGINEERING DEPARTMENT		2	JUL 11	REVISED NOTES & ADDED NOTE 6


2012-W1 WATER UTILITY NOTES.dwg



1" COPPER WATER SERVICE LATERAL		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.		NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. W.24	DWG. BY: PWC		1	MAY 05	VALVE CHANGE
DATE: JULY 01, 2012	APPROVED BY: J.E.G.	WATER RESOURCES ENGINEERING DEPARTMENT		2	SEPT 05	VALVE CHANGE, ADD NOTE 16.
				3	JULY 06	RESIZED METER COUPLING

2012-W24 COPPER SERVICE LATERAL.dwg

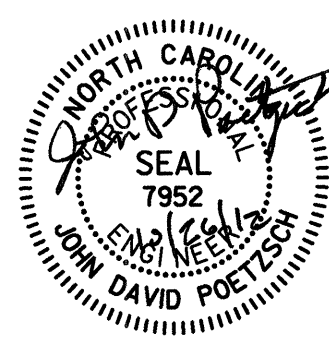


2" BLOW OFF (N.T.S.)		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.		NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. W.15	DWG. BY: PWC		1	8/06	CHANGED FITTINGS TO SCHED 80
DATE: JULY 01, 2012	APPROVED BY: J.E.G.	WATER RESOURCES ENGINEERING DEPARTMENT		2	11/06	REVISED CONFIGURATION

2012-W15 2 BLOWOFF.dwg

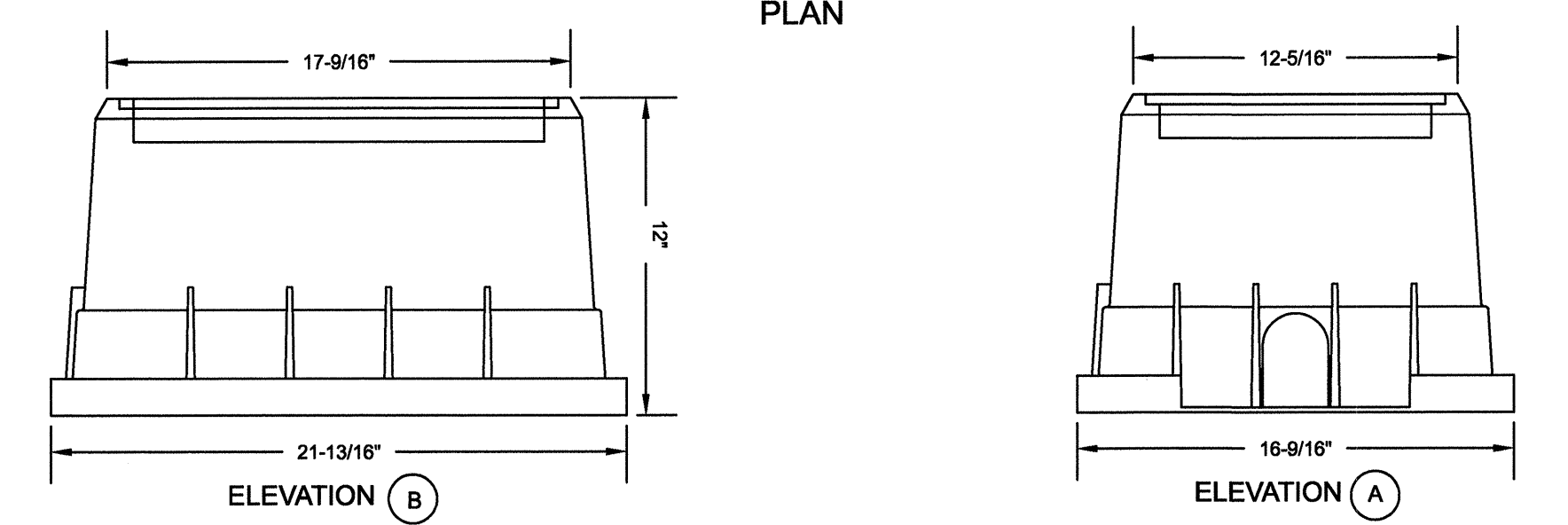
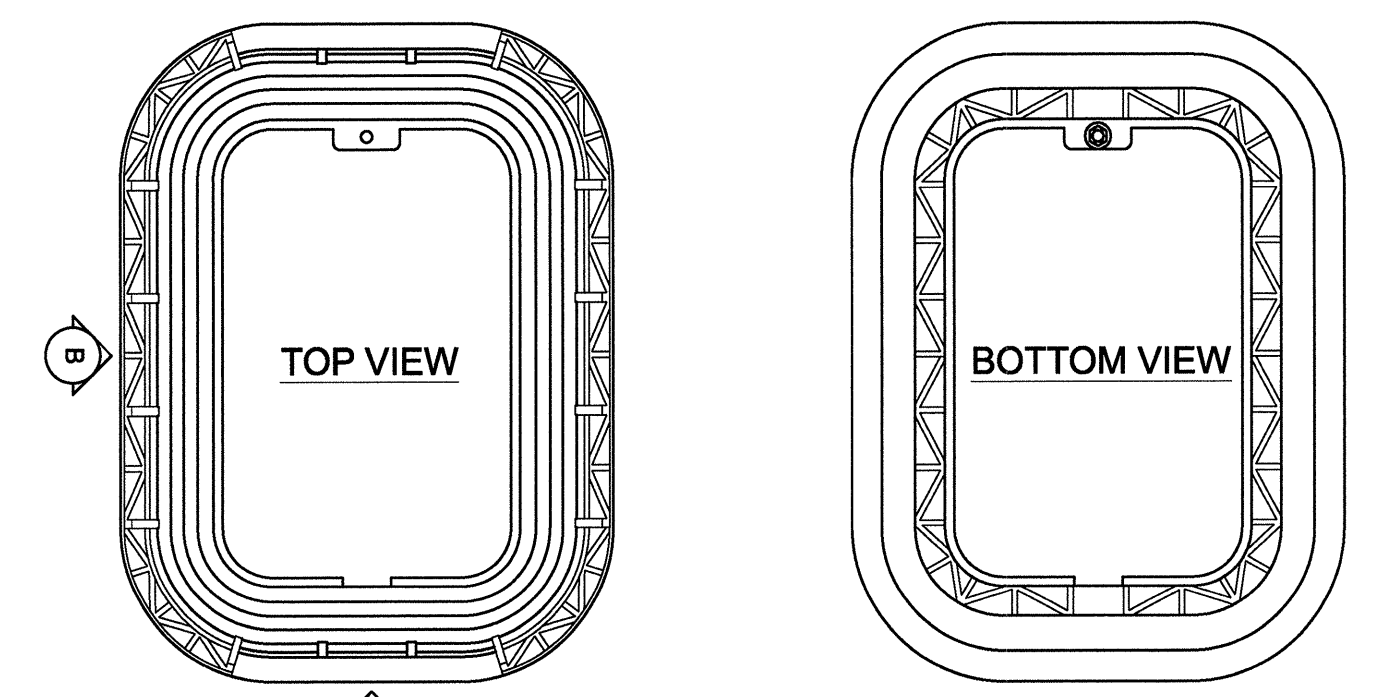
DATE: 10/25/2012
DGN: us81000a.jac.jed.dgn

SCALE: NONE



UTILITY CONSTRUCTION

- NOTES:
 1. ALL MATERIALS SHALL BE APPROVED BY PWC. SEE DWG. W.4 SHT 2 OF 2 FOR METER BOX LID DETAIL.
 2. METER BOX SHALL NOT BE LOCATED WHERE H-20 LOADINGS CAN IMPACT BOX OR COVER.
 3. FOR 1" WATER LATERAL INSTALLATION SEE PWC DETAIL W.2
 4. DIMS ± 1/16 U.N.O.



1-INCH METER BOX DETAILS N.T.S.

PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.

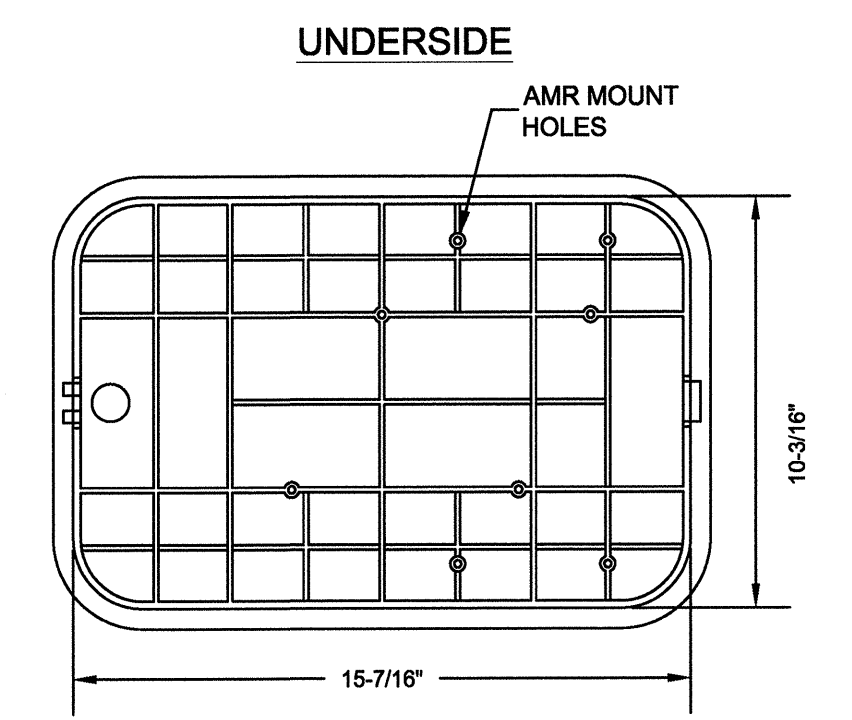
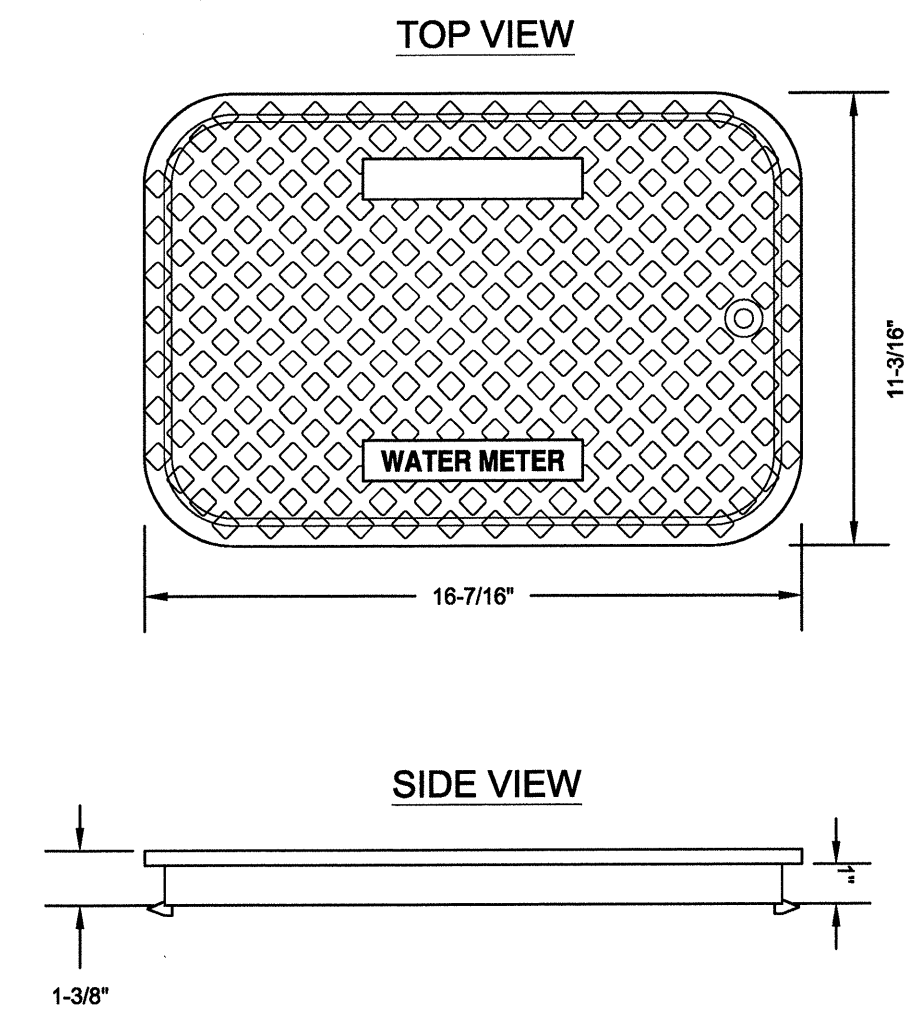
NO.	DATE	REVISION
1	3/10	CHANGED BOX DIMENSIONS

SHEET NO. 1 OF 2	DWG. NO. W.4	DWG. BY: PWC
	DATE: JULY 01, 2012	APPROVED BY: J.E.G.

WATER RESOURCES ENGINEERING DEPARTMENT



2012-W4 1IN METERBOX.dwg



SOLID LID

1-INCH METER BOX LID N.T.S.

PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.

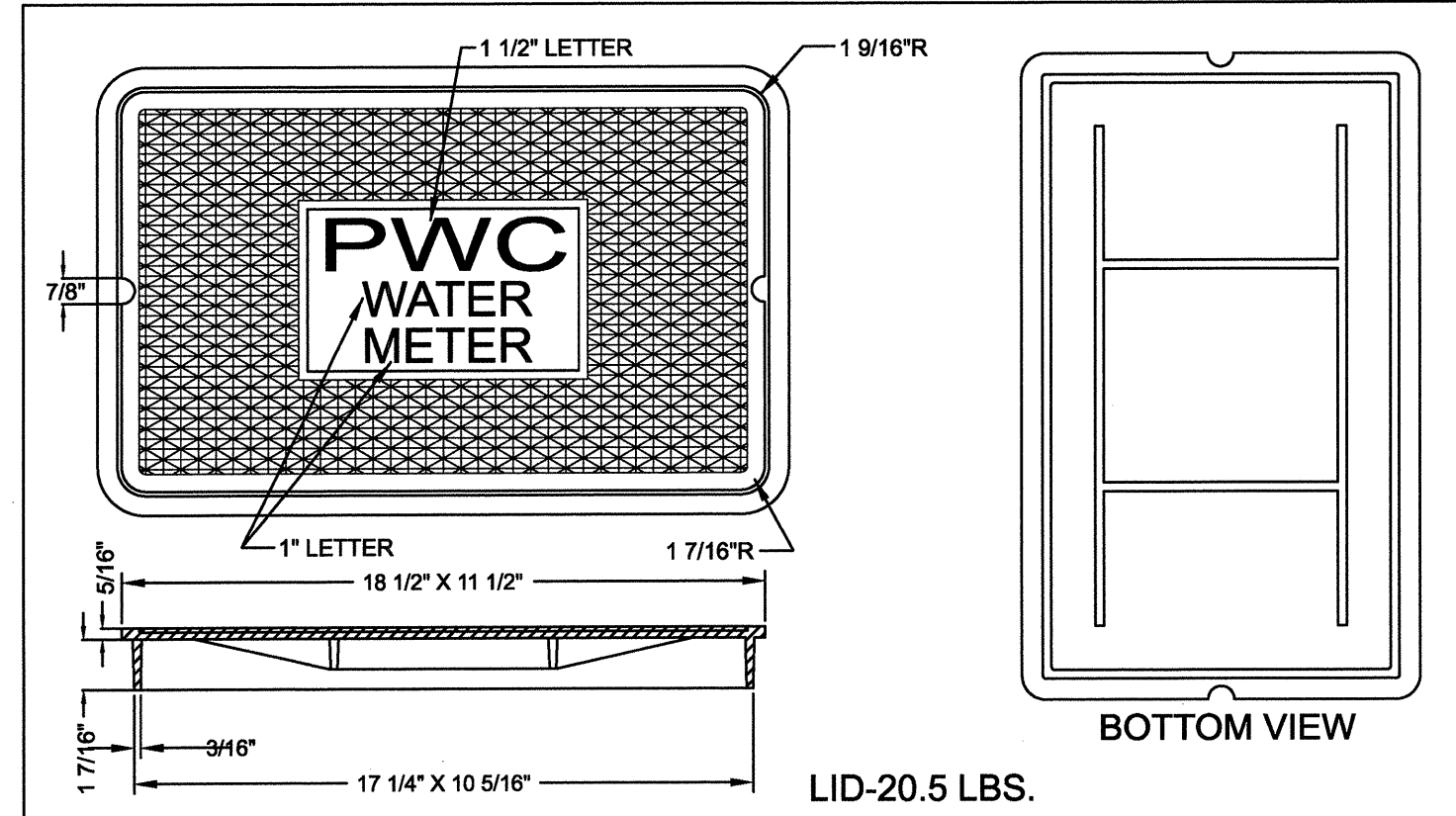
NO.	DATE	REVISION
1	7/07	REVISED LID
1	3/10	CHANGED BOX & LID DIMENSIONS

SHEET NO. 2 OF 2	DWG. NO. W.4	DWG. BY: PWC
	DATE: JULY 01, 2012	APPROVED BY: J.E.G.

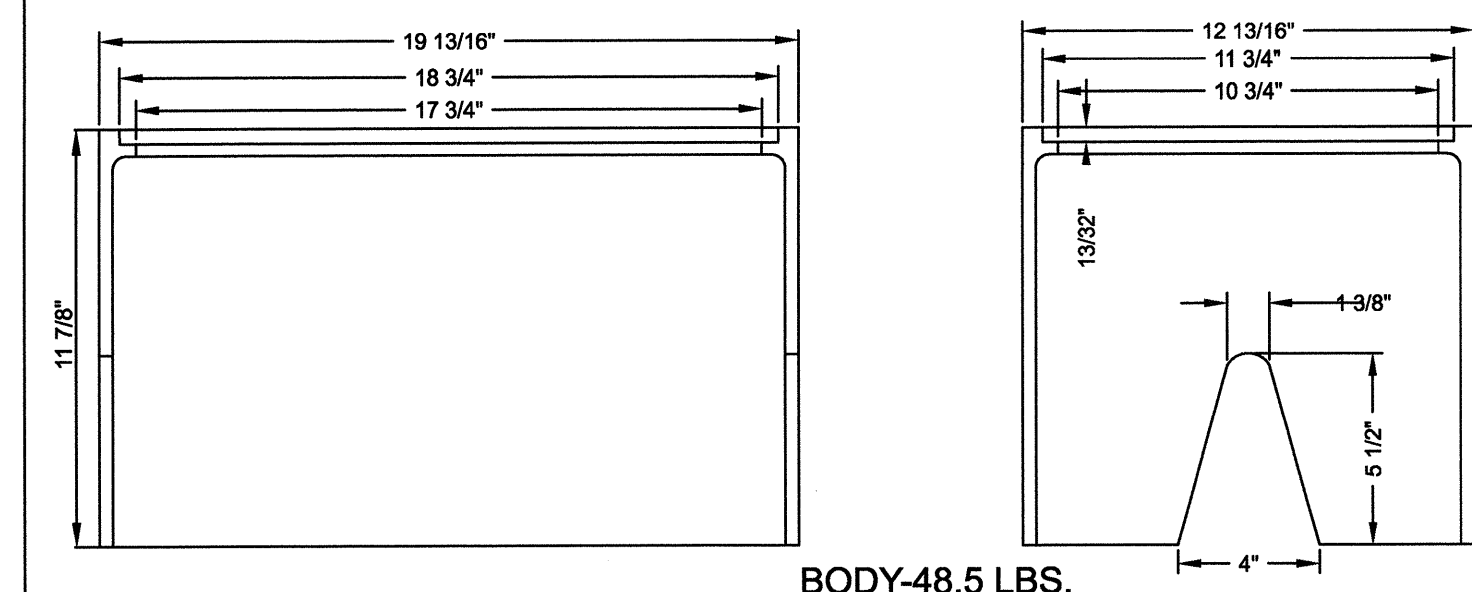
WATER RESOURCES ENGINEERING DEPARTMENT



2012-W4 1IN METERBOX.dwg



- NOTES:
 1. ALL MATERIALS SHALL BE APPROVED BY PWC.
 2. FOR 1" WATER LATERAL INSTALLATION SEE PWC DETAIL W.2
 3. CAST IRON METER BOX TO BE USED IN TRAFFIC AREAS.



1-INCH CAST IRON METER BOX & COVER N.T.S.

PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.

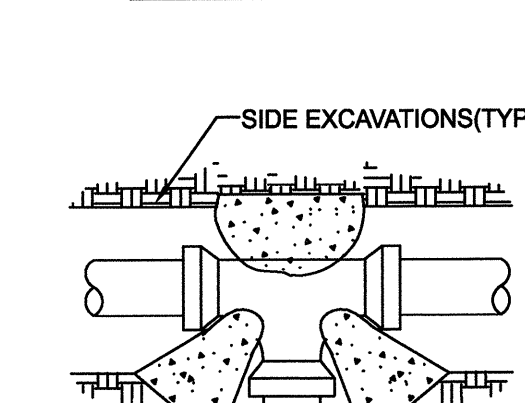
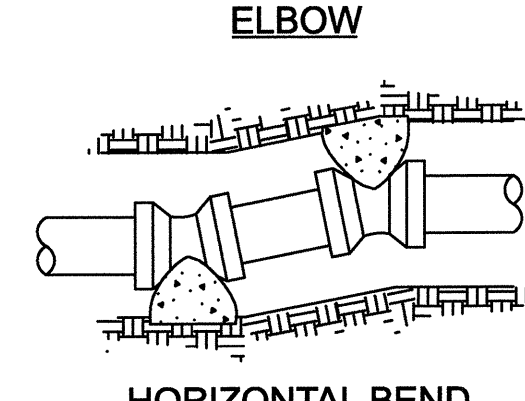
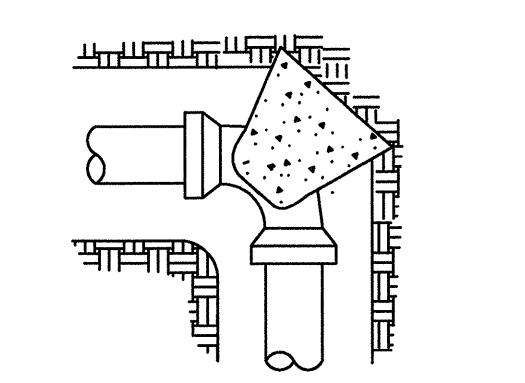
NO.	DATE	REVISION
1	3/10	CHANGED BOX & LID DIMENSIONS

SHEET NO. 1 OF 1	DWG. NO. W.4B	DWG. BY: PWC
	DATE: JULY 01, 2012	APPROVED BY: J.E.G.

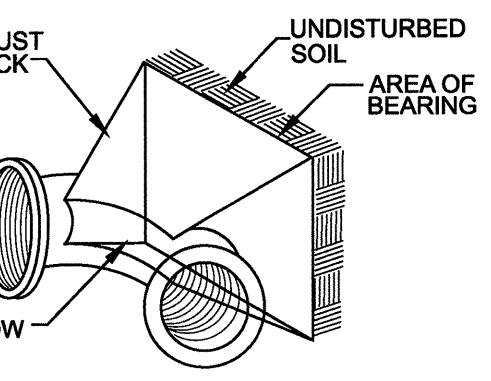
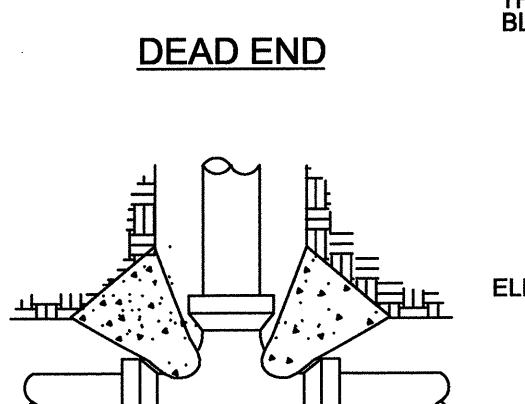
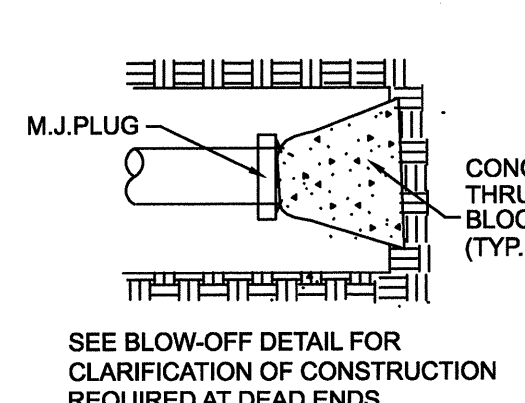
WATER RESOURCES ENGINEERING DEPARTMENT



2012-W4B METERBOX&LID.dwg



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:
 1.) THRUST BLOCKS SHALL BE INSTALLED ON PVC WATER DISTRIBUTION LINES 6" THRU 12" DIA. IN THE MANNER SHOWN. SEE PWC STANDARD ALT. RESTRAINING DETAIL W.18 FOR ACCEPTABLE ALTERNATE RESTRAINING SYSTEMS.
 2.) PIPE GREATER THAN 12 INCH DIAMETER SHALL REQUIRE RESTRAINT JOINT PIPE FOR THE PROPER LENGTH.
 3.) COMPACT FITTINGS ARE NOT ACCEPTABLE. STANDARD FITTINGS SHALL BE USED WITH CONCRETE THRUST BLOCKING.
 4.) THRUST BLOCKS SHALL BE INSTALLED ON SEWER FORCE MAIN IN THE MANNER SHOWN.
 5.) IF SAC-CRETE IS USED, MIXING MUST BE ON SITE UTILIZING A MECHANICAL MIXER.
 6.) NO CONCRETE SHALL BE PLACED ON BOLTS. WRAP JOINT FITTINGS WITH PLASTIC.
 7.) CONCRETE SHALL BE A MINIMUM 3,000 PSI.
 8.) ALL BEARING SURFACES SHALL BE AGAINST UNDISTURBED SOIL AND SHALL BE APPROVED BY PWC PROJ. COORDINATOR PRIOR TO PLACEMENT OF CONCRETE.
 9.) USE OF RESTRAINED JOINT DUCTILE IRON WILL BE REQUIRED IF SOIL CONDITIONS DO NOT ALLOW THE USE OF THRUST BLOCKS
 10.) 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
1	JAN 05	REVISED TABLE, NOTE 1
2	SEPT 05	REVISED TABLE
3	FEB 07	ADDED NOTES 9&10

SHEET NO. 1 OF 1	DWG. NO. W.17	DWG. BY: PWC
	DATE: JULY 01, 2012	APPROVED BY: J.E.G.

WATER RESOURCES ENGINEERING DEPARTMENT



2012-W17 THRUSTBLOCK.dwg

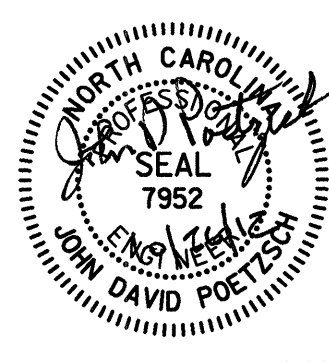
Prepared by:



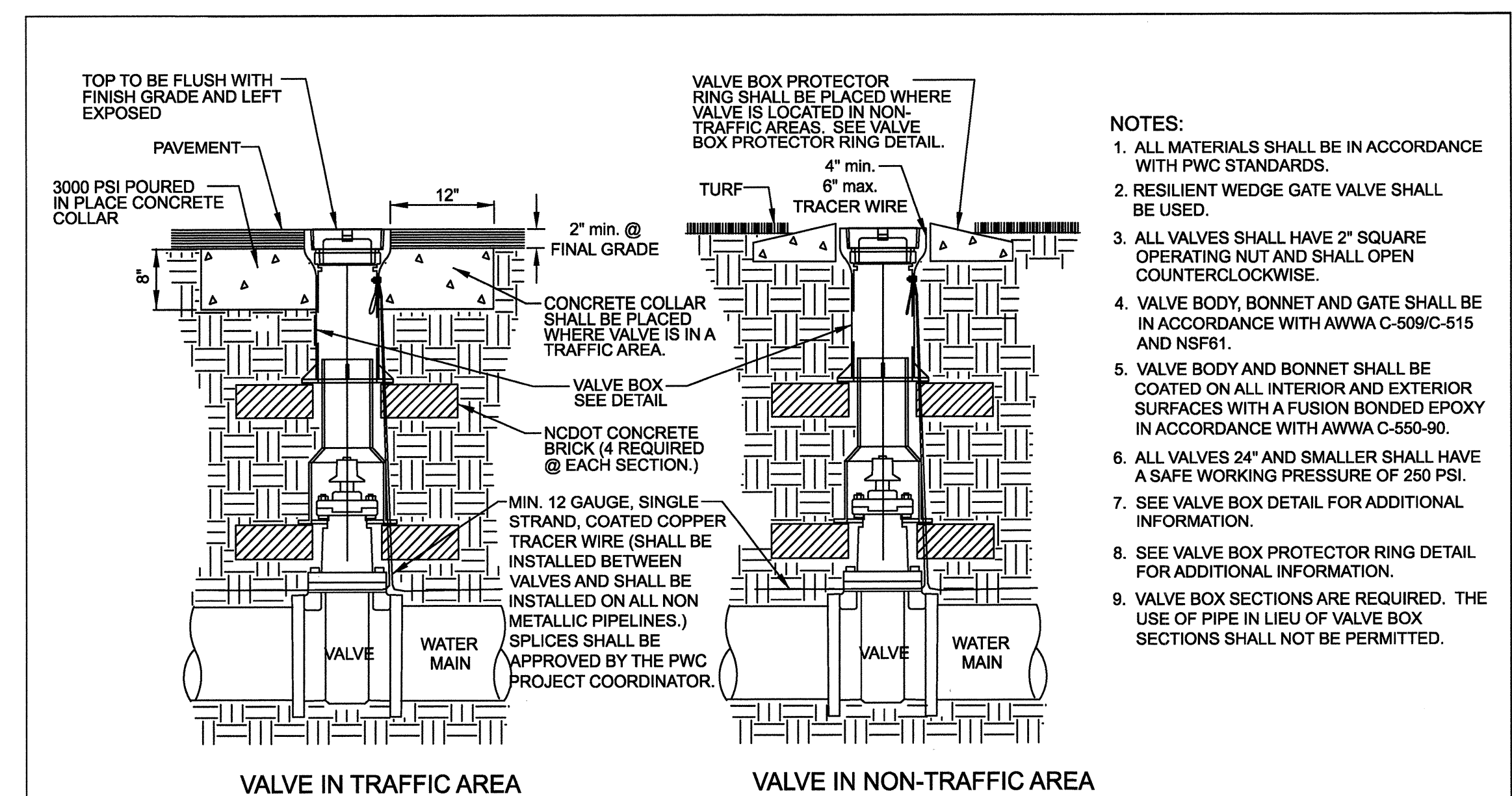
AECOM TECHNICAL SERVICES OF NORTH CAROLINA, INC.
 701 CORPORATE CENTER DRIVE, SUITE 475, RALEIGH, NC 27607
 919-854-6200 919-854-6259 (fax)
 F-0342

DATE: 07/25/2012 09h: 02B000c-uc-uc4.dwg

SCALE: NONE



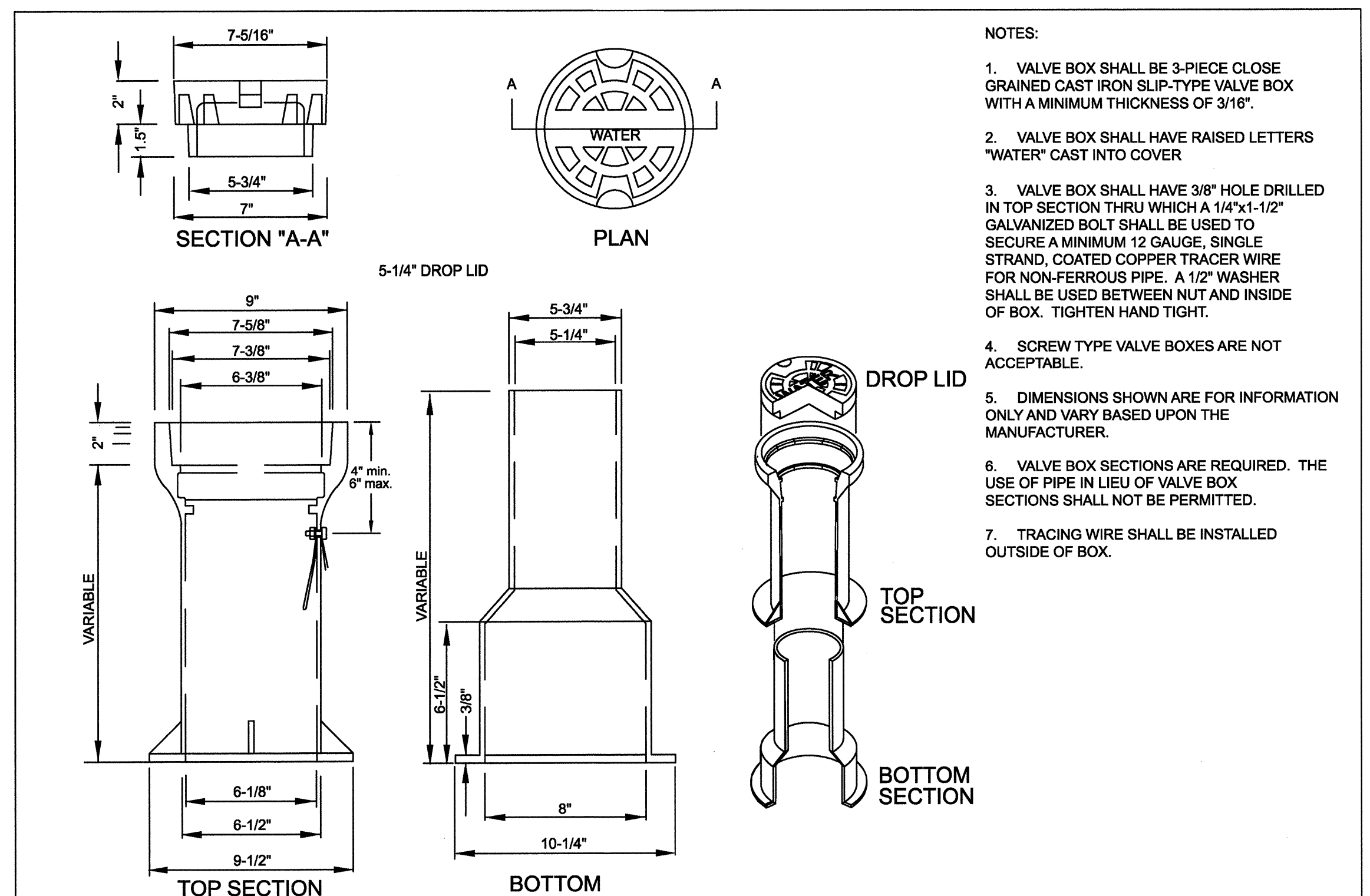
UTILITY CONSTRUCTION



- NOTES:
1. ALL MATERIALS SHALL BE IN ACCORDANCE WITH PWC STANDARDS.
 2. RESILIENT WEDGE GATE VALVE SHALL BE USED.
 3. ALL VALVES SHALL HAVE 2" SQUARE OPERATING NUT AND SHALL OPEN COUNTERCLOCKWISE.
 4. VALVE BODY, BONNET AND GATE SHALL BE IN ACCORDANCE WITH AWWA C-509/C-515 AND NSF61.
 5. 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.
 6. ALL VALVES 24" AND SMALLER SHALL HAVE A SAFE WORKING PRESSURE OF 250 PSI.
 7. SEE VALVE BOX DETAIL FOR ADDITIONAL INFORMATION.
 8. SEE VALVE BOX PROTECTOR RING DETAIL FOR ADDITIONAL INFORMATION.
 9. VALVE BOX SECTIONS ARE REQUIRED. THE USE OF PIPE IN LIEU OF VALVE BOX SECTIONS SHALL NOT BE PERMITTED.

GATE VALVE (N.T.S.)		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.		PWC	NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. W.6	DWG. BY: PWC	DATE: JULY 01, 2012		APPROVED BY: J.E.G.	1	6/06
WATER RESOURCES ENGINEERING DEPARTMENT		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.		PWC	2	7/09	CLARIFIED NOTES

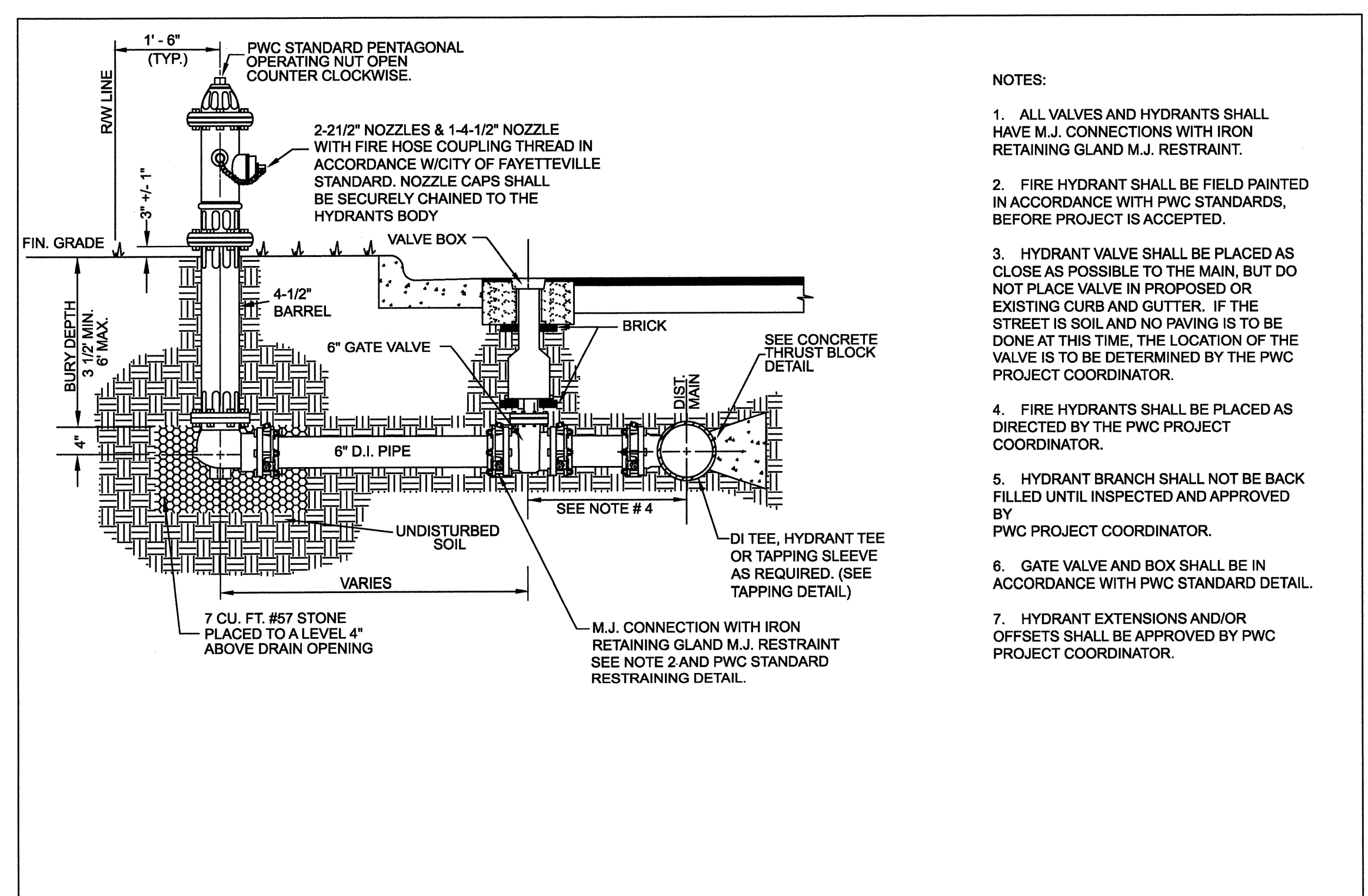
2012-W6 GATEVALVE.dwg



- NOTES:
1. VALVE BOX SHALL BE 3-PIECE CLOSE GRAINED CAST IRON SLIP-TYPE VALVE BOX WITH A MINIMUM THICKNESS OF 3/16".
 2. VALVE BOX SHALL HAVE RAISED LETTERS "WATER" CAST INTO COVER.
 3. VALVE BOX SHALL HAVE 3/8" HOLE DRILLED IN TOP SECTION THRU WHICH A 1/4"x1-1/2" GALVANIZED BOLT SHALL BE USED TO SECURE A MINIMUM 12 GAUGE, SINGLE STRAND, COATED COPPER TRACER WIRE FOR NON-FERROUS PIPE. A 1/2" WASHER SHALL BE USED BETWEEN NUT AND INSIDE OF BOX. TIGHTEN HAND TIGHT.
 4. SCREW TYPE VALVE BOXES ARE NOT ACCEPTABLE.
 5. DIMENSIONS SHOWN ARE FOR INFORMATION ONLY AND VARY BASED UPON THE MANUFACTURER.
 6. VALVE BOX SECTIONS ARE REQUIRED. THE USE OF PIPE IN LIEU OF VALVE BOX SECTIONS SHALL NOT BE PERMITTED.
 7. TRACING WIRE SHALL BE INSTALLED OUTSIDE OF BOX.

VALVE BOX (N.T.S.)		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.		PWC	NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. W.7	DWG. BY: PWC	DATE: JULY 01, 2012		APPROVED BY: J.E.G.	1	7/09
WATER RESOURCES ENGINEERING DEPARTMENT		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.		PWC			

2012-W7 VALVEBOX.dwg



- NOTES:
1. ALL VALVES AND HYDRANTS SHALL HAVE M.J. CONNECTIONS WITH IRON RETAINING GLAND M.J. RESTRAINT.
 2. FIRE HYDRANT SHALL BE FIELD PAINTED IN ACCORDANCE WITH PWC STANDARDS, BEFORE PROJECT IS ACCEPTED.
 3. 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 PWC PROJECT COORDINATOR.
 4. FIRE HYDRANTS SHALL BE PLACED AS DIRECTED BY THE PWC PROJECT COORDINATOR.
 5. HYDRANT BRANCH SHALL NOT BE BACK FILLED UNTIL INSPECTED AND APPROVED BY PWC PROJECT COORDINATOR.
 6. GATE VALVE AND BOX SHALL BE IN ACCORDANCE WITH PWC STANDARD DETAIL.
 7. HYDRANT EXTENSIONS AND/OR OFFSETS SHALL BE APPROVED BY PWC PROJECT COORDINATOR.

FIRE HYDRANT AND VALVE INSTALLATION (N.T.S.)		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.		PWC	NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. W.13	DWG. BY: PWC	DATE: JULY 01, 2012		APPROVED BY: J.E.G.	1	10/23/03
WATER RESOURCES ENGINEERING DEPARTMENT		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.		PWC	2	7/1/09	REVISED NOTE #2, REMOVED NOTE #3 & ALTERED RESTRAINT DETAIL

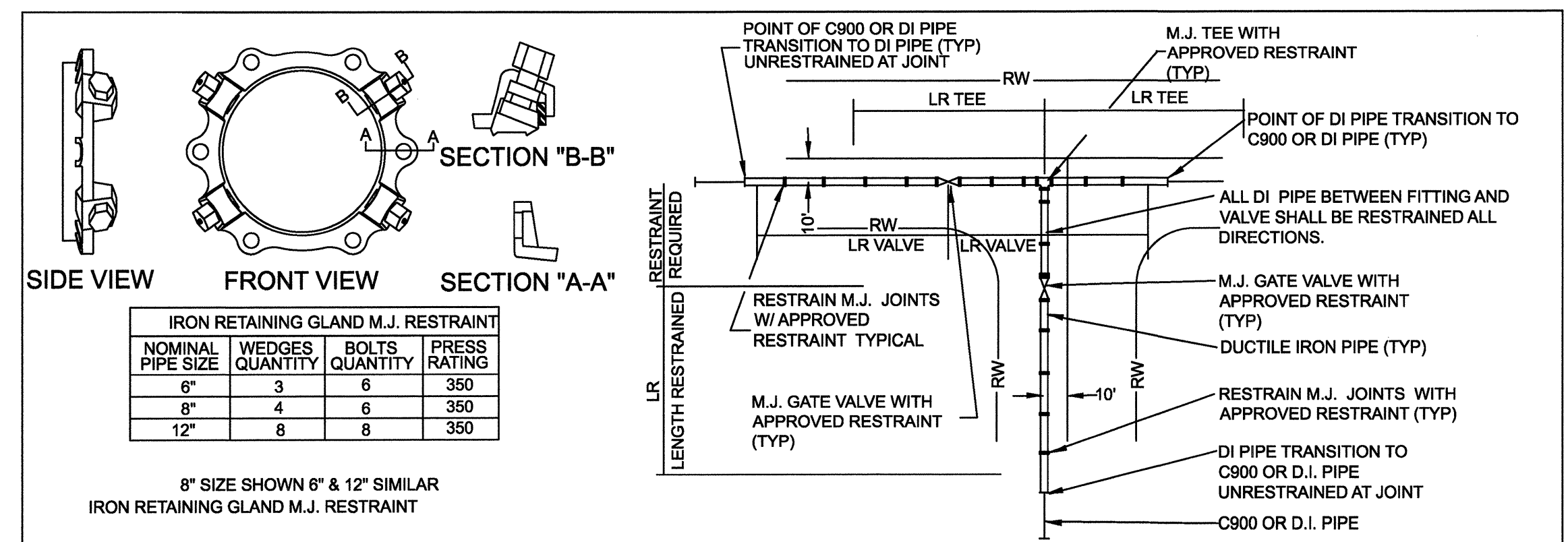
2012-W13 FHCC.dwg

Prepared by:

AECOM TECHNICAL SERVICES OF NORTH CAROLINA, INC.
701 CORPORATE CENTER DRIVE, SUITE 475, RALEIGH, NC 27607
919-854-6200 919-854-6269 (fax)
F-0342

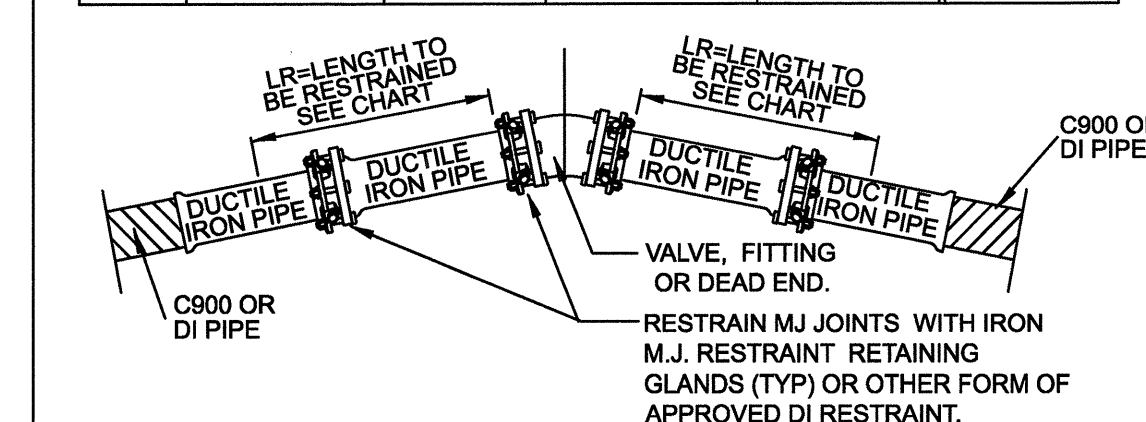
DATE: 10/25/2012
DWG: uc2810uc.uc.uc15.dwg


UTILITY CONSTRUCTION

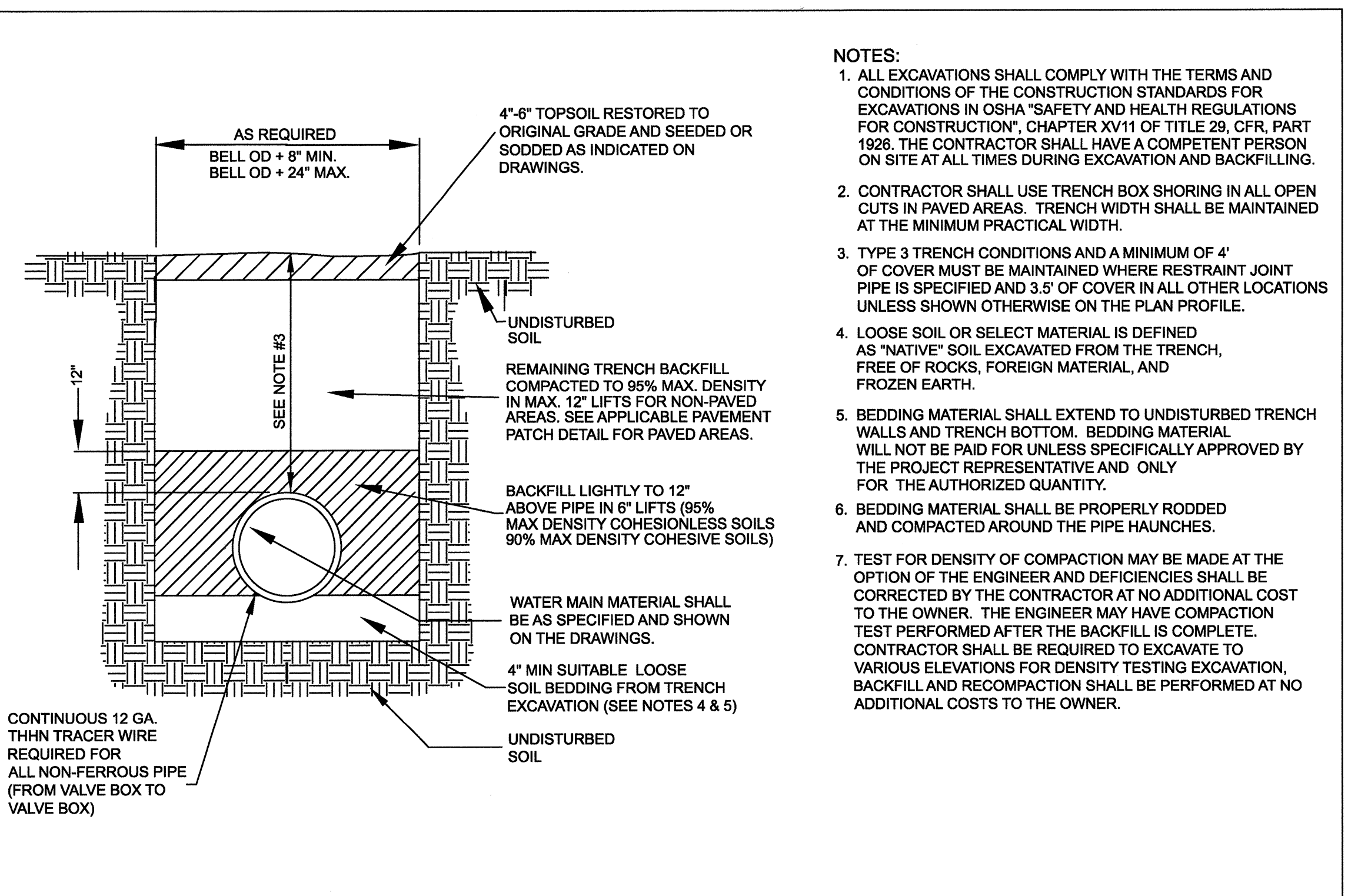



LR (MIN. LENGTH OF RESTRAINT EACH DIRECTION OF THRUST IN LINEAR FEET)
 Based on 200 psig pressure, Safety Factor of 2.0:1, BARE DI PIPE AND ML Soil, 3.5' cover
 Chart does not apply to pipes wrapped in polyethylene wrap

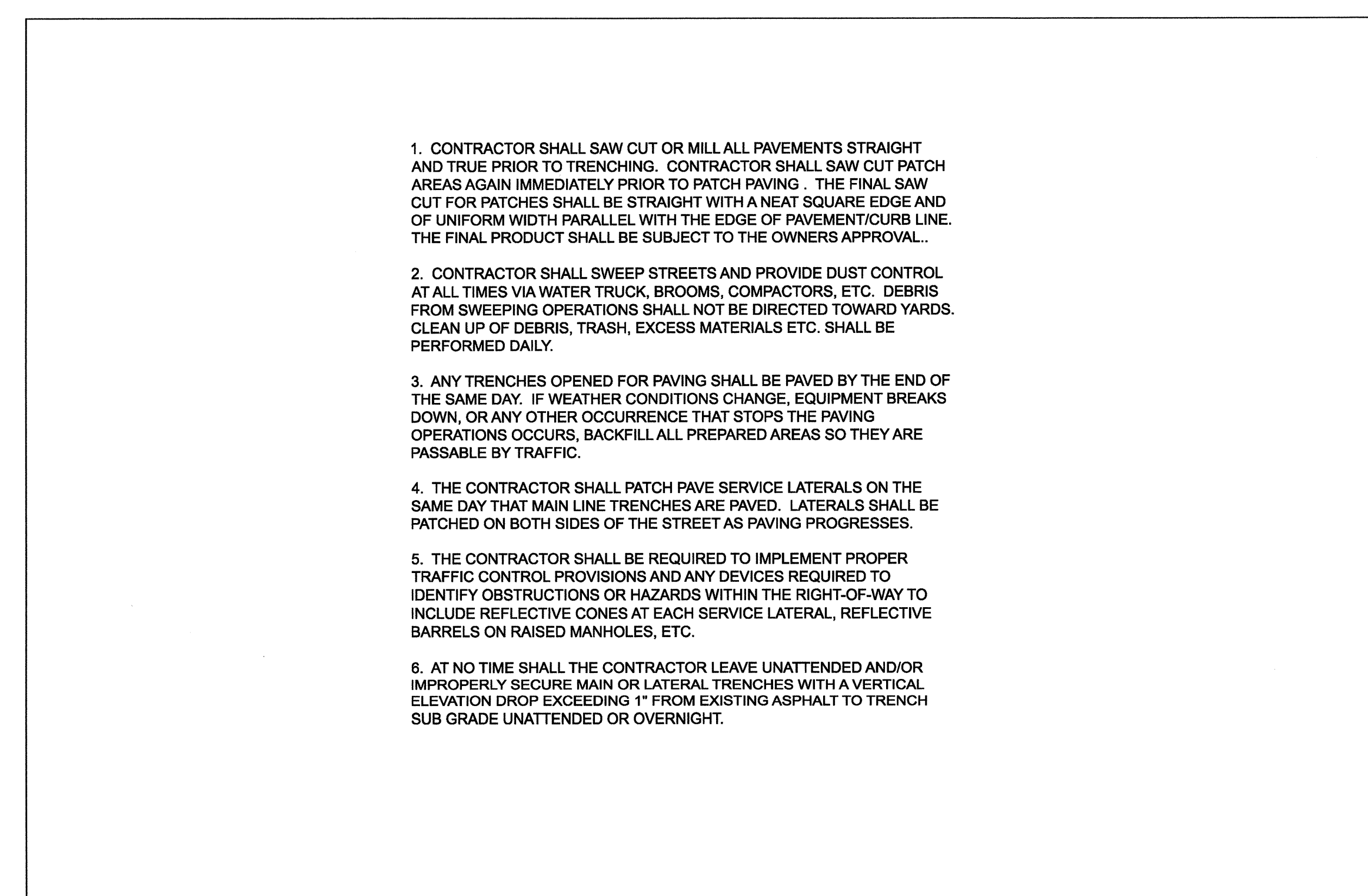
PIPE SIZE	VALVES DEAD ENDS TEES	90° ELBOWS	45° ELBOW & CROSSES	22-1/2° ELBOWS	REDUCER
6"	55'	31'	13'	7'	8"x2" 87'
8"	72'	40'	17'	8'	8"x6" 30'
12"	102'	57'	24'	12'	12"x8" 54'




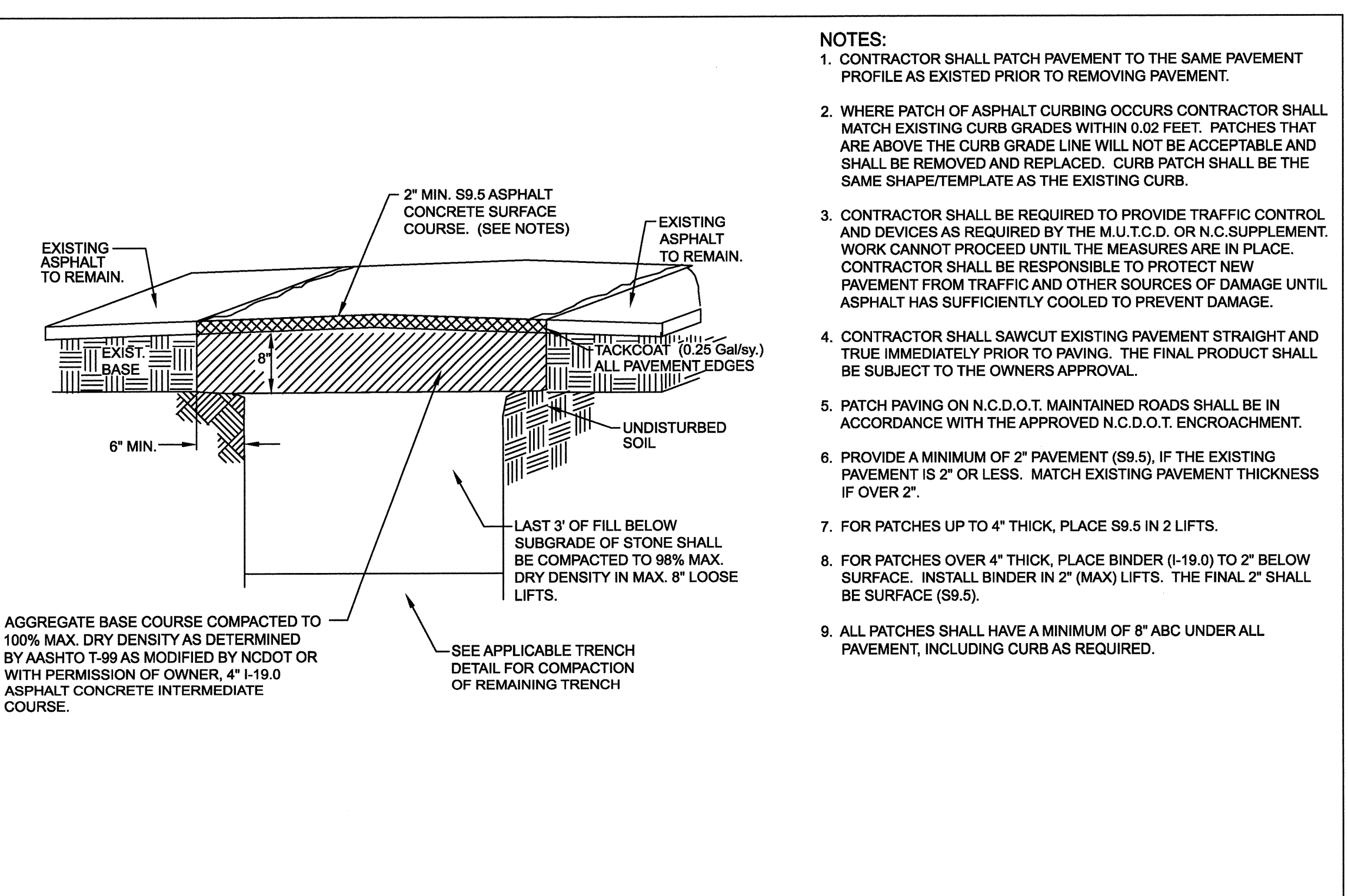
ALTERNATE RESTRAINT DETAIL (DUCTILE IRON PIPE ONLY) N.T.S.		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.		NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. W.18 DATE: JULY 01, 2012	DWG. BY: PWC APPROVED BY: J.E.G.		1	11/18/2007	REVISED TABLE, ADDED NOTE 8
WATER RESOURCES ENGINEERING DEPARTMENT		2012-W18 RESTRAINT DETAIL.dwg				




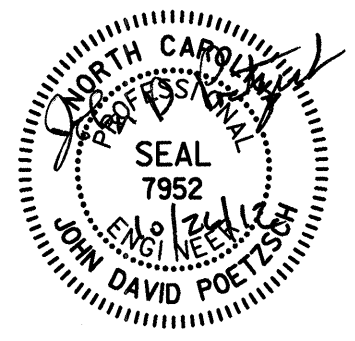
TYPE 3 TRENCH WATER MAIN BEDDING DETAIL N.T.S.		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.		NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. W.19 DATE: JULY 01, 2012	DWG. BY: PWC APPROVED BY: J.E.G.				
WATER RESOURCES ENGINEERING DEPARTMENT		2012-W19 WATER BEDDING.dwg				



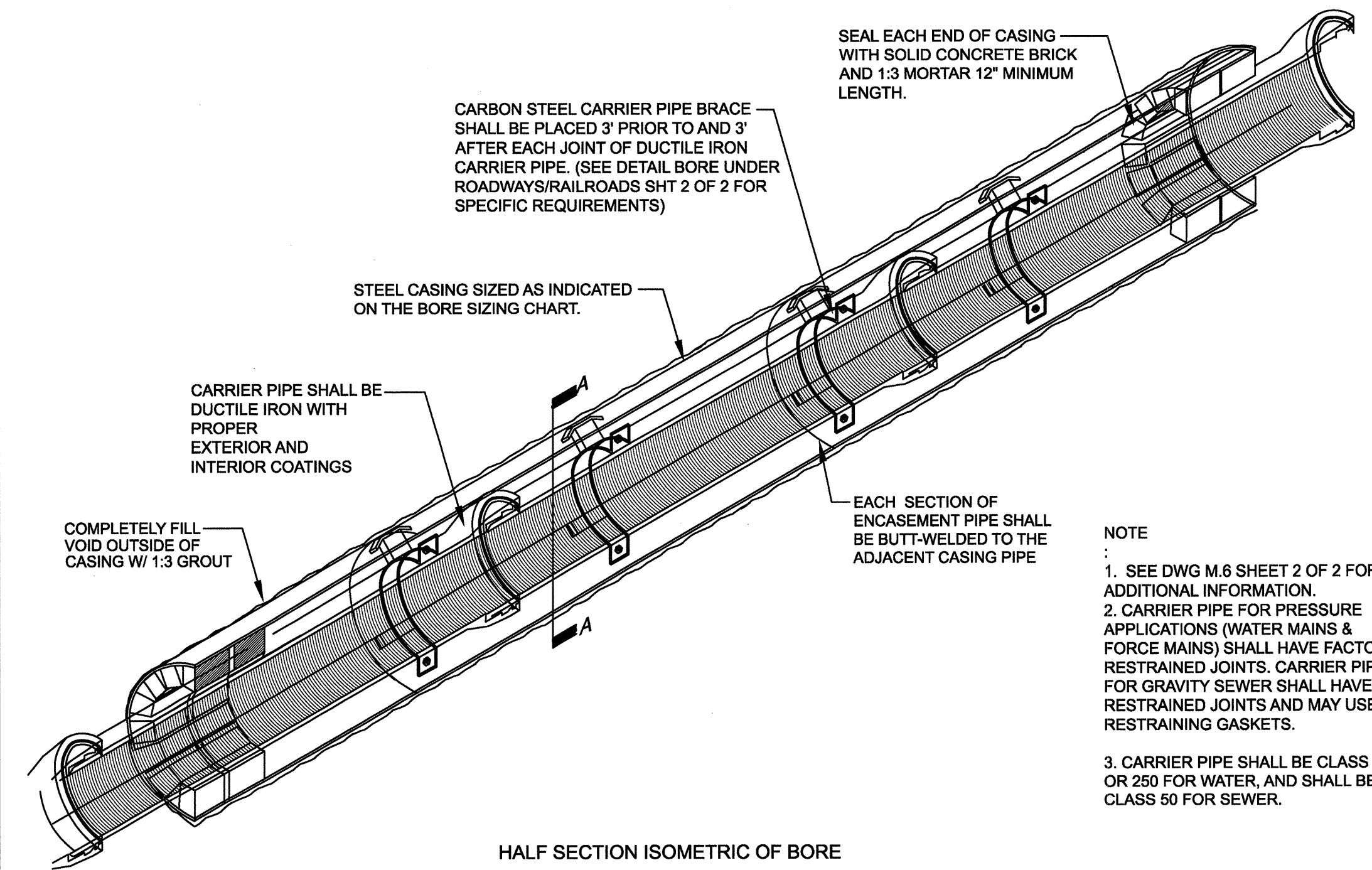
PAVEMENT REPAIR NOTES		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.		NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. M.1 DATE: JULY 01, 2012	DWG. BY: PWC APPROVED BY: J.E.G.		1	07/2010	REVISED, DELETED NOTES
WATER RESOURCES ENGINEERING DEPARTMENT		2012-M1 PAVEMENT_REPAIR_NOTES.dwg				



PERMANENT PAVEMENT PATCH N.T.S.		PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.		NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. M.2 DATE: JULY 01, 2012	DWG. BY: PWC APPROVED BY: J.E.G.		1	01/2007	CHANGED ASPHALT MIX
WATER RESOURCES ENGINEERING DEPARTMENT		2012-M2 PER_PATCH REV.dwg		2	08/2010	REVISED, DELETED NOTES



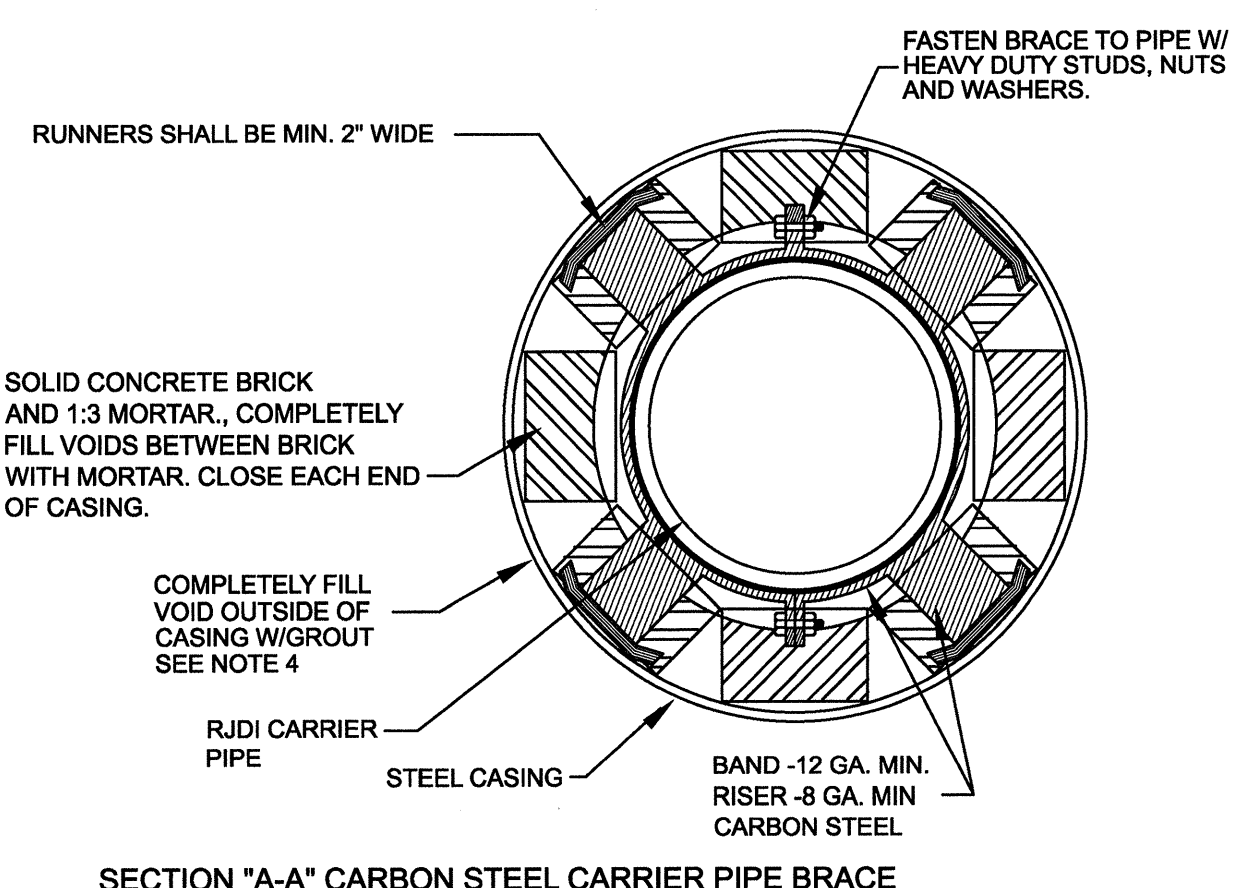
UTILITY CONSTRUCTION



BORE SIZING CHART *

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.



- 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 PWC 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.

BORE UNDER ROADWAYS/RAILROADS N.T.S.

PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.

WATER RESOURCES ENGINEERING DEPARTMENT

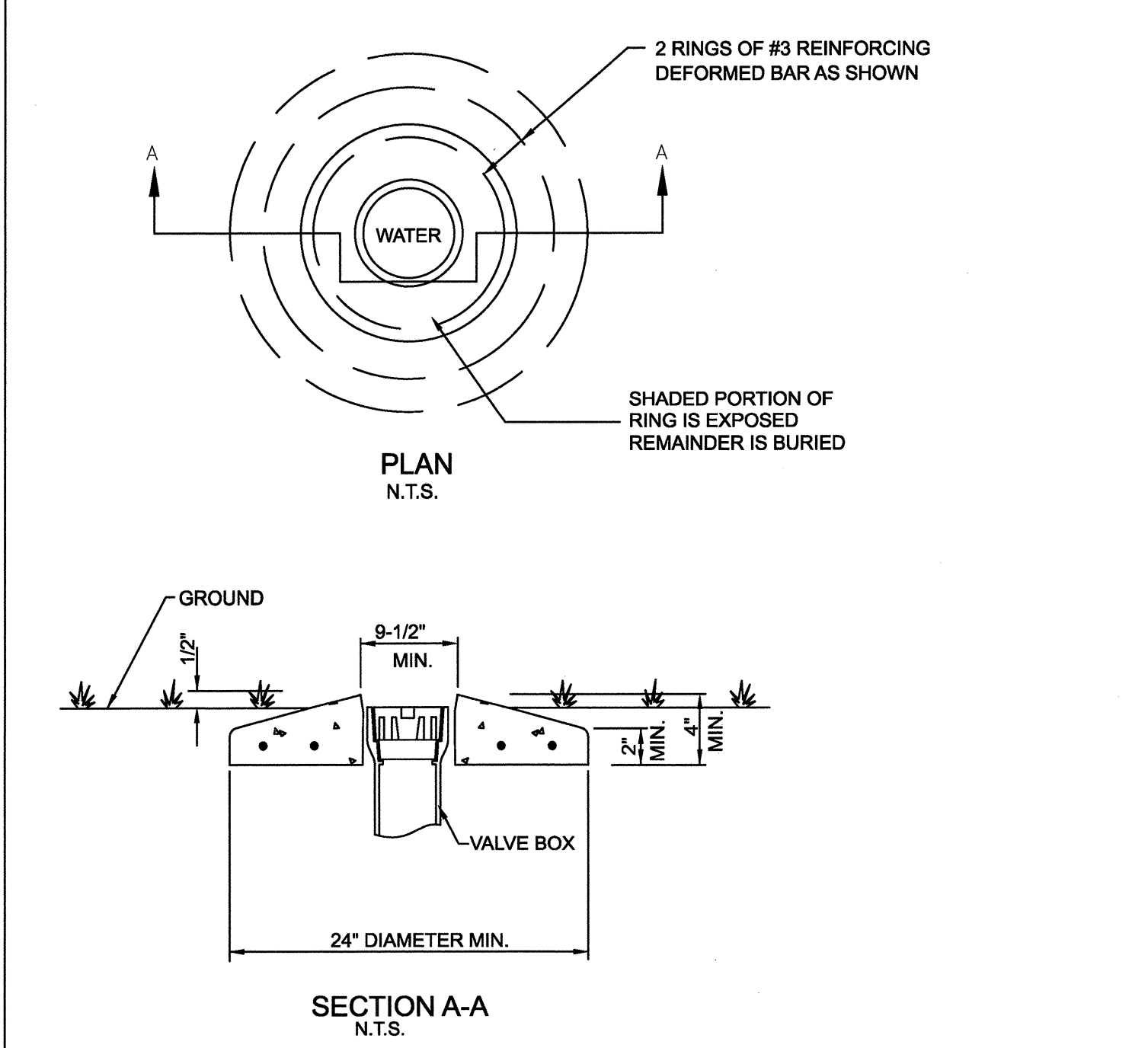
NO.	DATE	REVISION
1.	JAN 05	ADDED NOTES 2 & 3
2.	OCT 09	Clarified restraint requirements.

BORE UNDER ROADWAYS/RAILROADS N.T.S.

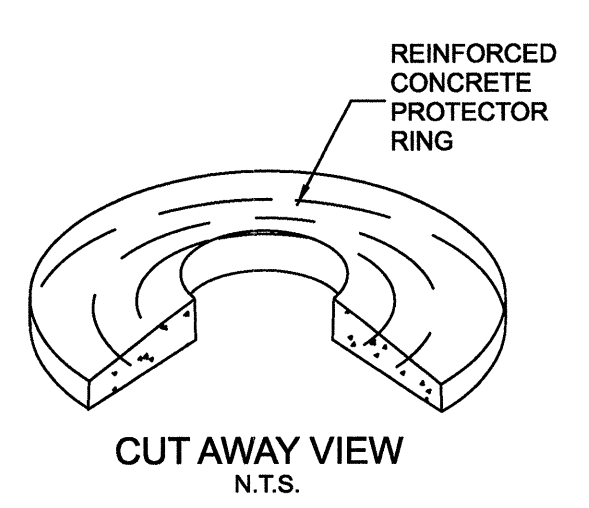
PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.

WATER RESOURCES ENGINEERING DEPARTMENT

NO.	DATE	REVISION
1.	2/11/04	ADDED 6" CARRIER PIPE TO BORE SIZING CHART
2.	JULY 10	REVISED NOTES, SIZING CHART



- NOTES:
- CONCRETE PROTECTOR RING SHALL BE 2500 P.S.I. PRECAST REINFORCED CONCRETE
 - VALVE BOX SHALL BE AT GRADE W/PROTECTOR RING EXTENDING 1/2" ABOVE GRADE
 - SEE GATE VALVE AND BOX DETAIL
 - VALVE BOX PROTECTOR RINGS SHALL BE INSTALLED AROUND VALVE BOX IN UNPAVED NON-TRAFFIC AREAS, AND SHALL NOT CREATE A HINDERANCE TO MOWING OPERATIONS.



VALVE BOX PROTECTOR RING

PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.

WATER RESOURCES ENGINEERING DEPARTMENT

NO.	DATE	REVISION

Prepared by:

AECOM

AECOM TECHNICAL SERVICES OF NORTH CAROLINA, INC.
701 CORPORATE CENTER DRIVE, SUITE 475, RALEIGH, NC 27607
919-854-8200 919-854-8259 (fax)
F-0342

DATE: 01/25/2012
DWT: u2810boc.uc.wat.dgn

01-OCT-2012 15:13 R:\Utilities\RDY-Ut\Proj\U2810b_ut-f1file_uo1.psh.dgn \$\$\$USERNAME\$\$\$

TIP PROJECT: U-2810B

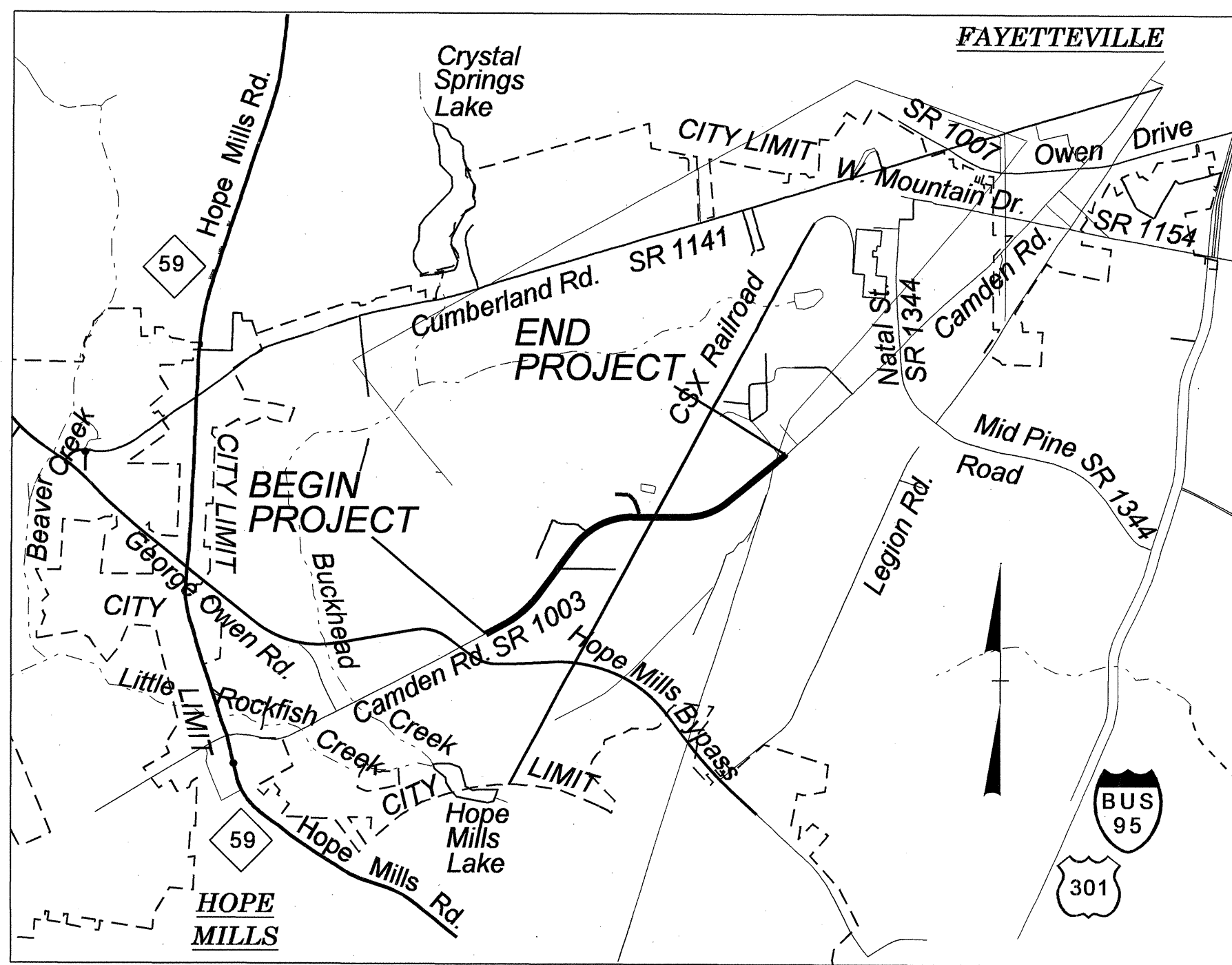
T.I.P. NO.	SHEET NO.
U-2810B	UO-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

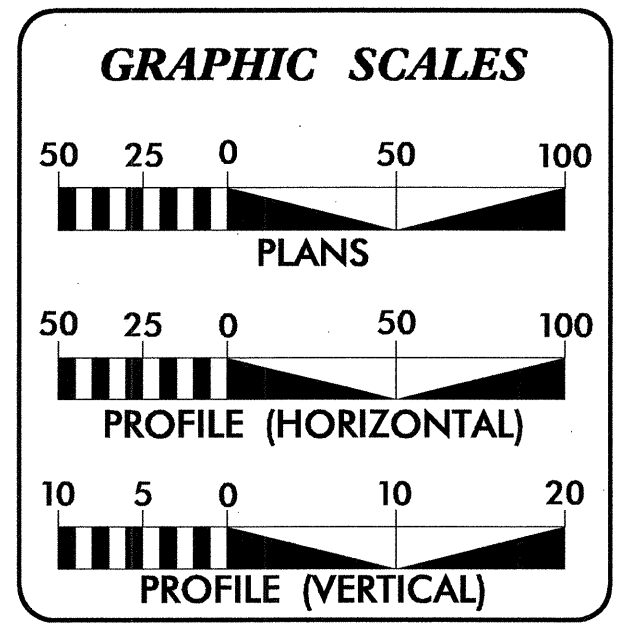
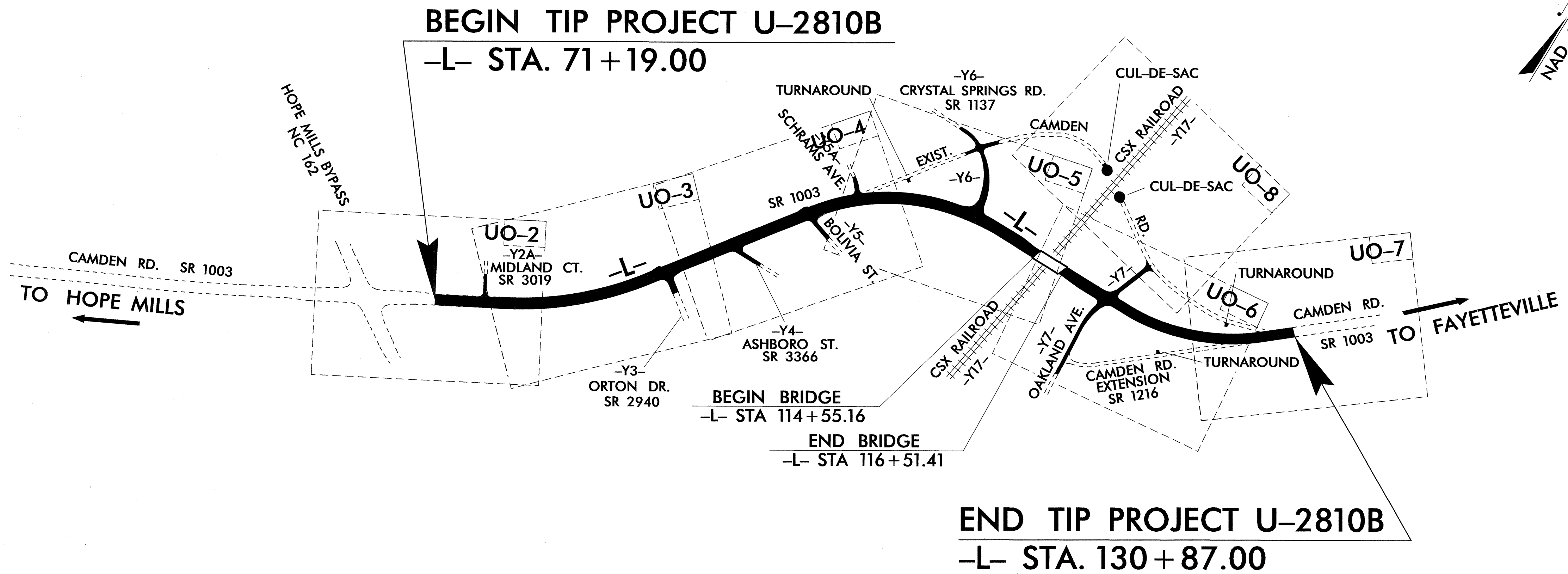
**UTILITIES BY OTHERS PLANS
CUMBERLAND COUNTY**

**LOCATION: SR 1003 (CAMDEN ROAD) FROM HOPE MILLS
BYPASS TO EAST OF OAKLAND AVENUE**

**TYPE OF WORK: TELEPHONE, ELECTRIC POWER, CABLE TV
GAS, WATER**



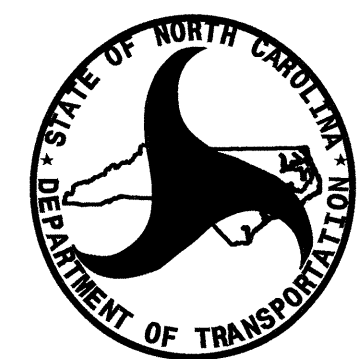
VICINITY MAP



INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UO-1	TITLE SHEET
UO-2 THRU UO-8	UTILITY BY OTHERS PLAN SHEETS

- UTILITY OWNERS ON PROJECT**
- (1) POWER ; PWC OF OF FAYETTEVILLE
 - (2) POWER TRANSMISSION ; PROGRESS ENERGY
 - (3) POWER DISTRIBUTION ; PROGRESS ENERGY
 - (4) TELEPHONE ; CENTURY LINK
 - (5) TELEPHONE ; AT&T(FIBER OPTIC CABLE)
 - (6) CABLE ; TIME WARNER CABLE
 - (7) GAS ; PIEDMONT NATURAL GAS
 - (8) WATER ; AQUA NORTH CAROLINA
 - (9) TELEPHONE ; MCI(FIBER OPTIC CABLE)



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

1591 MAIL SERVICES CENTER
RALEIGH NC 27699-1591
PHONE (919) 250-4128
FAX (919) 250-4119

Roger Worthington, P.E. UTILITIES SECTION ENGINEER
R. B. WILKINS, P.E. UTILITIES SQUAD LEADER PROJECT ENGINEER
Jong-Tae Yoon UTILITIES PROJECT DESIGNER

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK
SHOWN ON THIS SHEET WILL
BE DONE BY OTHERS

**EXISTING 6" WATER LINE
OWNED BY AQUA NC**

NC GRID
NAD 83

ABANDON

NOTE :
FIELD ADJUST LOCATION OF
PROPOSED 90 DEGREE BEND AND
BLOW-OFF ASSEMBLY TO MAINTAIN
EXISTING SERVICE TO DAY CARE
CENTER

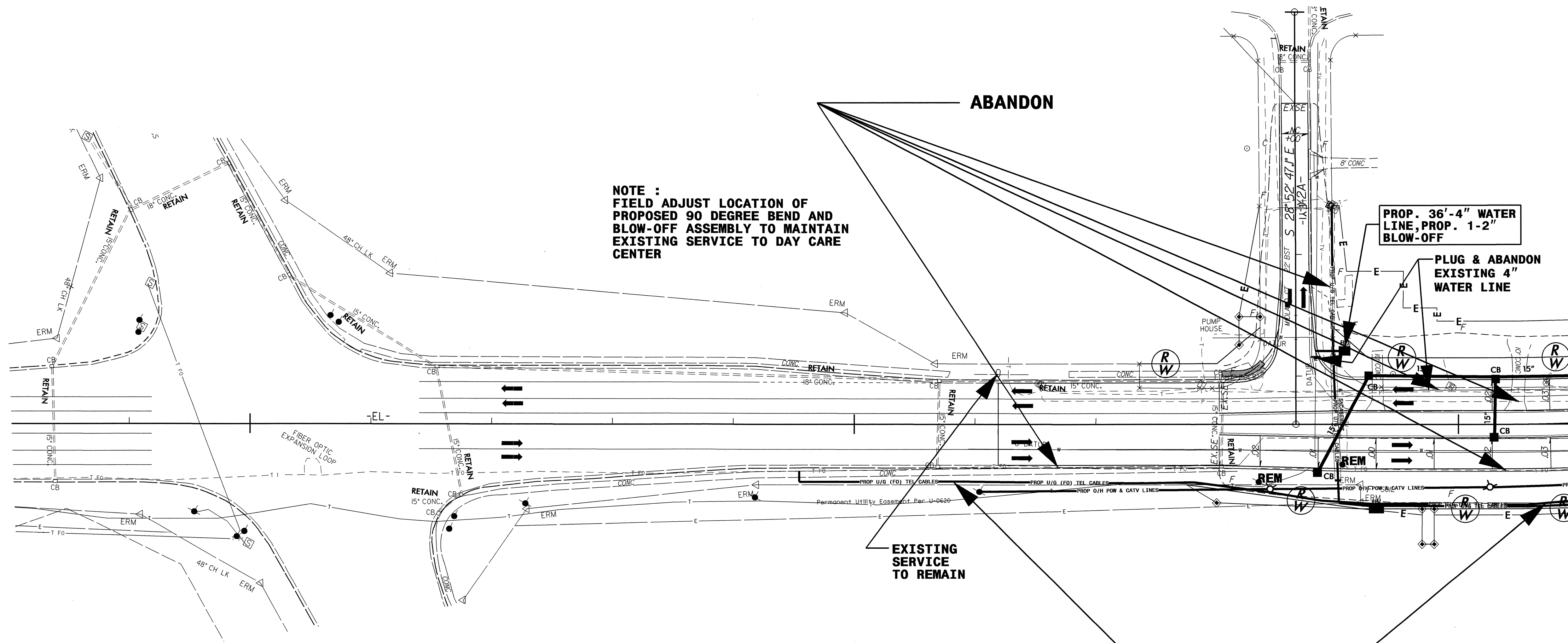
**PROP. 36'-4" WATER
LINE, PROP. 1-2"
BLOW-OFF**

**PLUG & ABANDON
EXISTING 4"
WATER LINE**

**EXISTING
SERVICE
TO REMAIN**

**PROP. DIRECTIONAL BORE
APPROX. 10-15 FT. DEEP**

MATCH LINE 76+00 -L- SEE SHEET UO-3

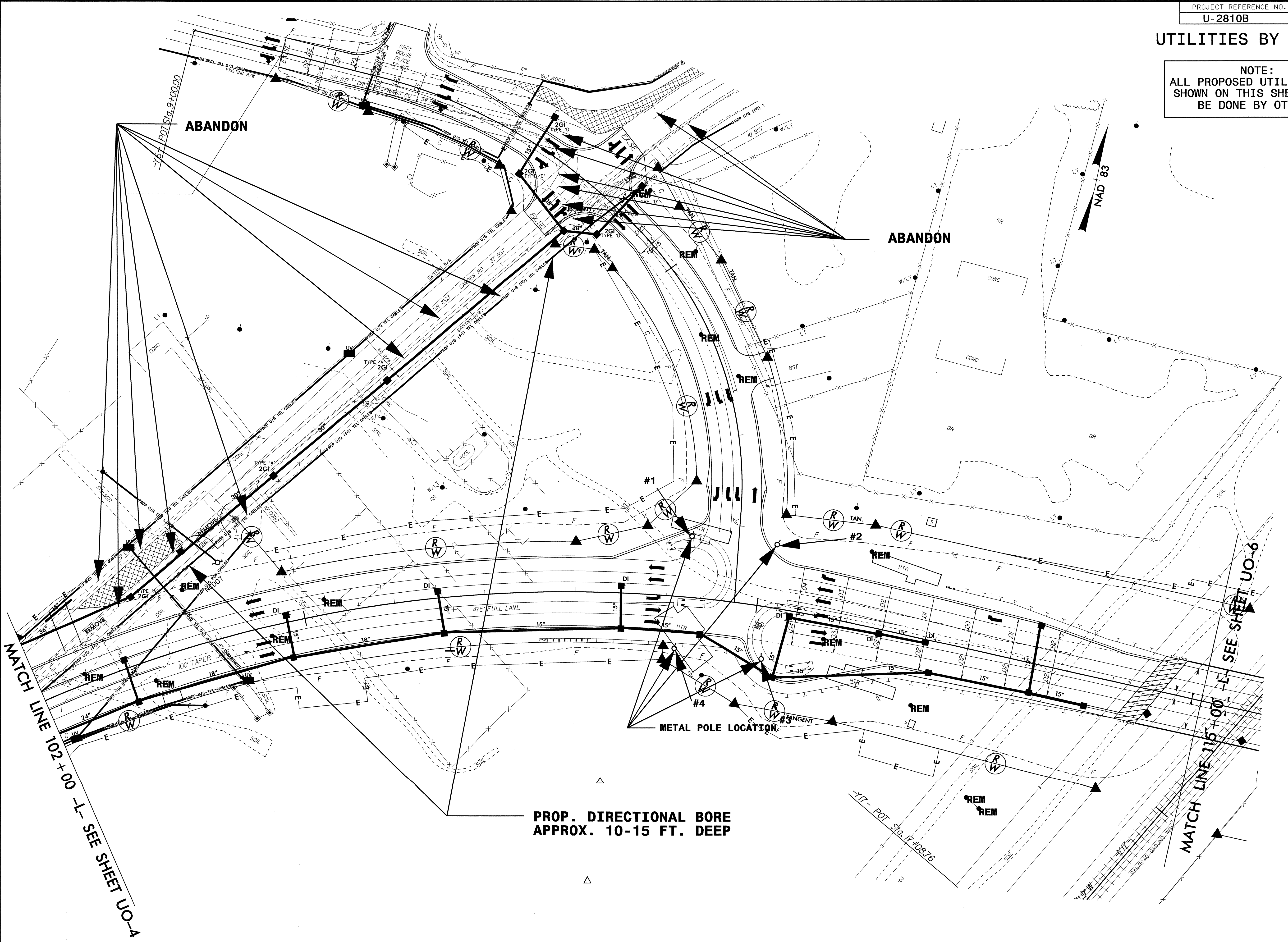


UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK
SHOWN ON THIS SHEET WILL
BE DONE BY OTHERS

5/14/99

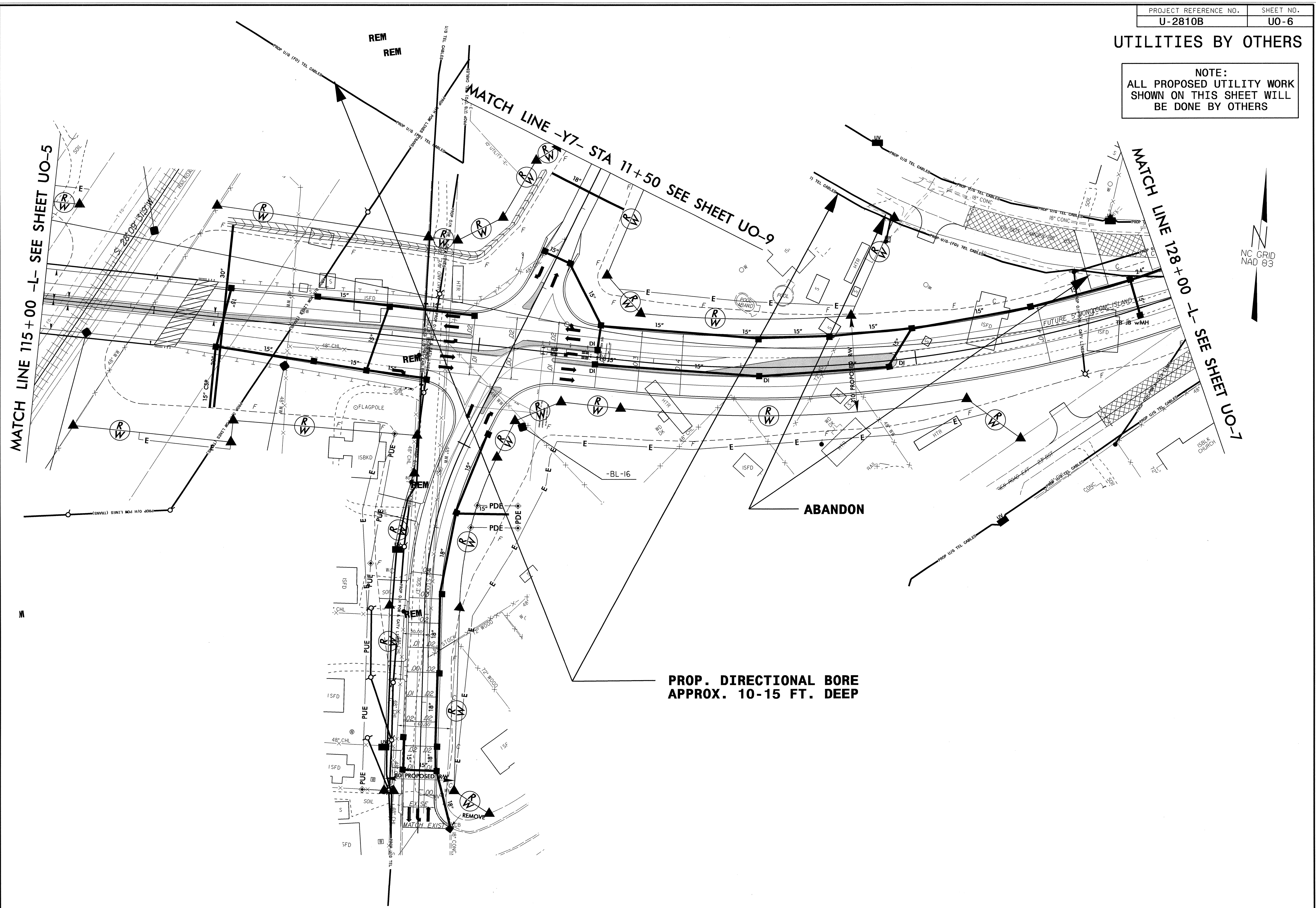
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**PROP. DIRECTIONAL BORE
APPROX. 10-15 FT. DEEP**

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK
SHOWN ON THIS SHEET WILL
BE DONE BY OTHERS



5/14/99

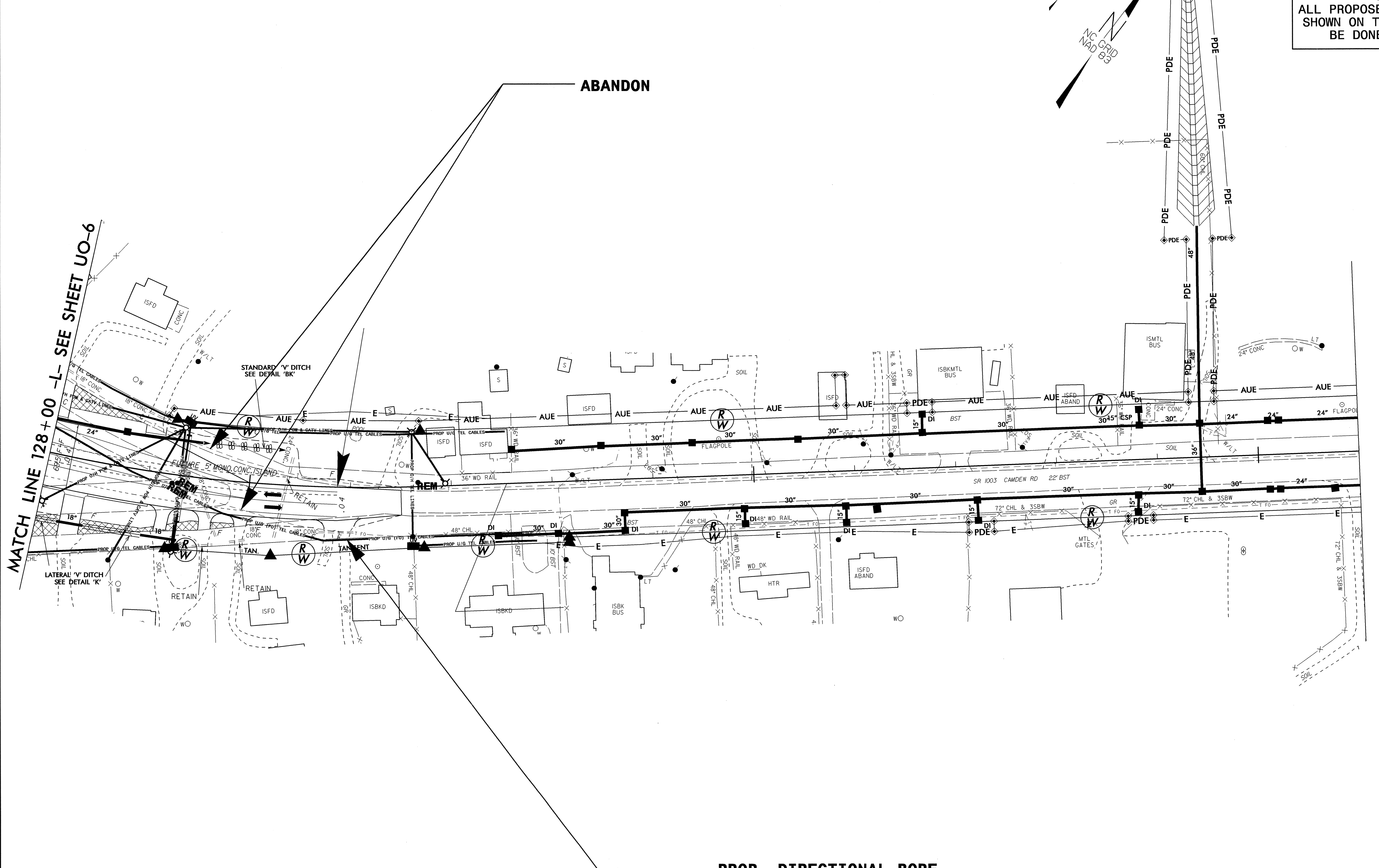
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UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK
SHOWN ON THIS SHEET WILL
BE DONE BY OTHERS

5/14/99

01-OCT-2012 12:31
\\s:\projects\2012\UO\2810B\ut_9_uo7_psh.dgn
DWG: UO-7



ABANDON

NC GRID
NAD 83

MATCH LINE 128+00 -L- SEE SHEET UO-6

PROP. DIRECTIONAL BORE
APPROX. 10-15 FT. DEEP

