09/08/09

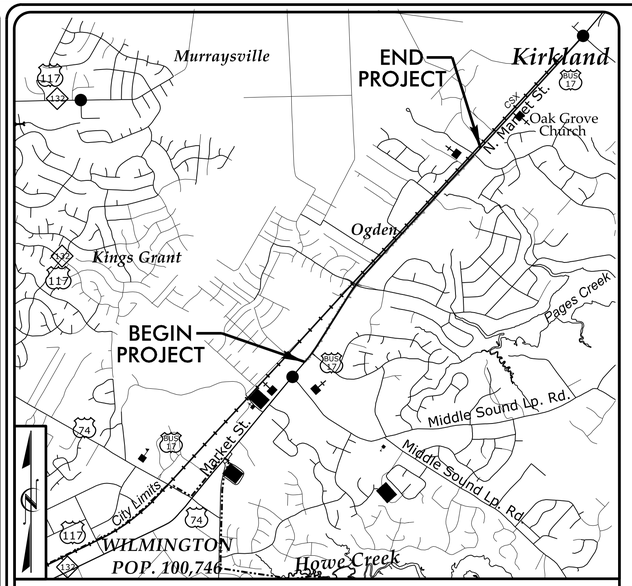
TIP PROJECT: U-4902D

CONTRACT: C202280

T.I.P. NO.	SHEET NO.
U-4902D	UC-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITY CONSTRUCTION PLANS
NEW HANOVER COUNTY

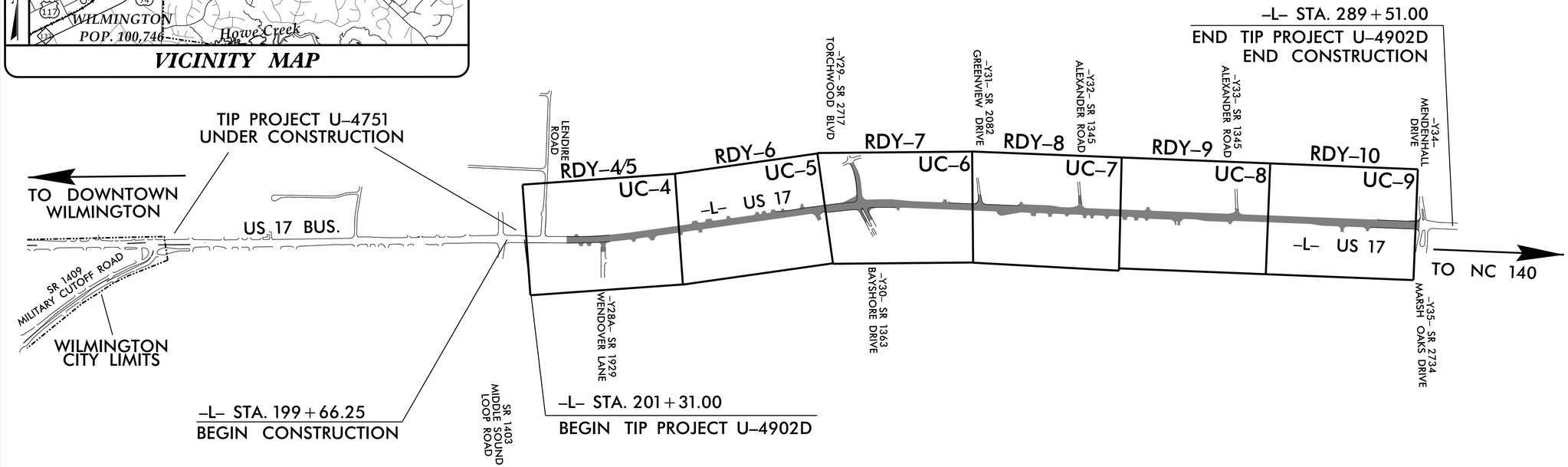


VICINITY MAP

LOCATION: US 17 BUS (MARKET STREET) FROM
SR 1403 (MIDDLE SOUND LOOP ROAD)
TO SR 2290 (MENDENHALL DRIVE)/
SR 2734 (MARSH OAKS DRIVE)

TYPE OF WORK: RELOCATION OF WATER AND SEWER FACILITIES

NAD 83/NSRS 2007



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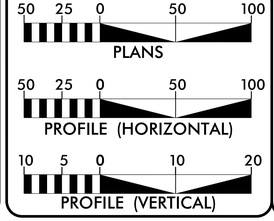
GRAPHIC SCALES



INDEX OF SHEETS

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UC–3 THRU UC–3A	UTILITY NOTES
UC–3B THRU UC–3D	DETAILS
UC–4 THRU UC–9	PLAN SHEETS
UC–10 THRU UC–15	PROFILE SHEETS

WATER AND SEWER OWNERS ON PROJECT

(1) WATER – CAPE FEAR PUBLIC UTILITY AUTHORITY (CFPUA)
(2) SANITARY SEWER (GRAVITY) – CFPUA
(3) SANITARY SEWER (FORCE MAIN) – CFPUA

PREPARED IN THE OFFICE OF

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SAM FORSTER	PROJECT DESIGN ENGINEER
WEBB WHITE	PROJECT UTILITY COORDINATOR

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 27640 ENGINEER KEVIN C. ZDEB

9/17/2018

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LONNY A. SLEEPER	DIVISION UTILITY ENGINEER
KRISTA H. KIMMEL	ENGINEER – ADVANCED
–	–

8/20/2018
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PROJECT REFERENCE NO.	SHEET NO.
U-4902D	UC-2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

Item	Symbol label
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	PS(W)
RPZ Backflow Preventer	PRPZ
DCV Backflow Preventer	PBFP
Relocate RPZ Backflow Preventer	RRPZ
Relocate DCV Backflow Preventer	RBFP

PROPOSED SEWER SYMBOLS

Item	Symbol label
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 MISCELLANOUS UTILITIES SYMBOLS

Item	Symbol label
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

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

*For Existing Utilities

Item	Symbol
Utility Line Drawn from Record (Type as Shown)	
Designated Utility Line (Type as Shown)	

REV: 2/1/2012

5/14/99

UTILITY CONSTRUCTION

GENERAL NOTES:

1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF THE NC DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2018 AND THE CAPE FEAR PUBLIC UTILITY AUTHORITY (CFPUA) STANDARD SPECIFICATIONS AND DETAILS, LATEST EDITION (MONTH YEAR).

2. THE EXISTING WATER AND SEWER UTILITIES BELONG TO CAPE FEAR PUBLIC UTILITY AUTHORITY (CFPUA).

CONTACT: DAVID DAILEY
PHONE: 910-332-6626

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.

4. THE UTILITY OWNER OWNS THE EXISTING UTILITY FACILITIES AND WILL OWN THE NEW UTILITY FACILITIES AFTER ACCEPTANCE BY THE DEPARTMENT. THE DEPARTMENT OWNS THE CONSTRUCTION CONTRACT AND HAS ADMINISTRATIVE AUTHORITY. COMMUNICATIONS AND DECISIONS BETWEEN THE CONTRACTOR AND UTILITY OWNER ARE NOT BINDING UPON THE DEPARTMENT OR THIS CONTRACT UNLESS AUTHORIZED BY THE ENGINEER. AGREEMENTS BETWEEN THE UTILITY OWNER AND CONTRACTOR FOR THE WORK THAT IS NOT PART OF THIS CONTRACT OR IS SECONDARY TO THIS CONTRACT ARE ALLOWED, BUT ARE NOT BINDING UPON THE DEPARTMENT.

5. PROVIDE ACCESS FOR THE DEPARTMENT PERSONNEL AND THE OWNER'S REPRESENTATIVES TO ALL PHASES OF CONSTRUCTION. NOTIFY DEPARTMENT PERSONNEL AND THE UTILITY OWNER TWO WEEKS PRIOR TO COMMENCEMENT OF ANY WORK AND ONE WEEK PRIOR TO SERVICE INTERRUPTION. KEEP UTILITY OWNERS' REPRESENTATIVES INFORMED OF WORK PROGRESS AND PROVIDE OPPORTUNITY FOR INSPECTION OF CONSTRUCTION AND TESTING.

6. THE PLANS DEPICT THE BEST AVAILABLE INFORMATION FOR THE LOCATION, SIZE, AND TYPE OF MATERIAL FOR ALL EXISTING UTILITIES. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE, AND TYPE MATERIAL OF THE EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING DAMAGE TO EXISTING FACILITIES. REPAIR ANY DAMAGE INCURRED TO EXISTING FACILITIES TO THE ORIGINAL OR BETTER CONDITION AT NO ADDITONAL 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. CONTRACTOR SHALL NOT OPERATE ANY VALVES ON THE EXISTING UTILITY SYSTEMS. CONTRACTOR SHALL CONTACT THE UTILITY OWNER TO CONDUCT STRATEGIC OPERATION OF VALVES FOR SERVICE INTERRUPTION IN ORDER TO PERFORM SPECIFIC WORK.

11. CONTRACTOR SHALL CONTACT THE UTILITY OWNER PRIOR TO PERFORMING SYSTEM FLUSHING OR BLOW-OFF OPERATIONS.

PROJECT SPECIFIC NOTES:

1. CONTRACTOR'S ATTENTION IS DIRECTED TO THE UTILITY CONSTRUCTION PROJECT SPECIAL PROVISIONS PROVIDED ALONG WITH THIS PLAN SET.

2. CONTRACTOR SHALL, UPON MOBILIZATION TO THE PROJECT SITE, CONSTRUCT THE GRAVITY SEWER (ON SHEET UC-7) LOCATED FROM L STA. 249+17 RT TO STA 253+46 RT WITHIN THE FIRST THREE (3) MONTHS OF CONSTRUCTION WORK.

3. PVC PIPE MANUFACTURED MORE THAN 12 MONTHS BEFORE INSTALLATION DATE WILL NOT BE ACCEPTED.

4. ALL WATER LINE, WATER SERVICES, SANITARY SEWER MAIN, AND SANITARY SEWER SERVICES SHALL BE INSTALLED WITH A CONTINUOUS TRACER WIRE FOR LOCATION PURPOSES BY MEANS OF AN ELECTRONIC TRACER.

5. WATER LINE PIPE SHALL BE EITHER PVC OR DUCTILE IRON. PVC PIPE SHALL BE DR-18 AWWA C900 OR AWWA C905 WITH D.I.P. EQUIVALENT OUTSIDE DIAMETERS AND CERTIFIED NSF61 FOR POTABLE WATER USE. DUCTILE IRON PIPE SHALL BE MANUFACTURED IN ACCORDANCE WITH AWWA C150 AND C151 AND SHALL BE A MINIMUM PRESSURE CLASS OF 350 AND THICKNESS CLASS 52.

6. DUCTILE IRON PIPE SHALL BE EITHER PUSH-ON, MECHANICAL JOINT, OR RESTRAINED JOINT CONSTRUCTION.

7. ALL WATER LINE FITTINGS SHALL BE DUCTILE IRON, MECHANICAL JOINT OR RESTRAINED JOINT COMPACT FITTINGS AND SHALL CONFORM WITH ANSI/AWWA C153/A21.53 UNLESS OTHERWISE DIRECTED. FITTINGS 4-INCH THROUGH 24-INCH DIAMETER SHALL HAVE A MINIMUM PRESSURE RATING OF 350 PSI.

8. ALL PROPOSED FITTINGS (BENDS, TEES, CROSSES, REDUCERS, PLUGS, ETC.) SHALL BE ADEQUATELY RESTRAINED BY THE USE OF RESTRAINED JOINT CONSTRUCTION AND/OR CAST IN PLACE CONCRETE THRUST RESTRAINS AS DETAILED ON THESE DRAWINGS, OR AS DIRECTED BY THE RESIDENT ENGINEER.

9. TRENCHLESS INSTALLATION OF WATER LINE, 4" THROUGH 24", SHALL UTILIZE PVC C900 OR C905 DR-18 PIPE WITH FUSIBLE JOINTS AND D.I.P. EQUIVALENT OUTSIDE DIAMETERS.

10. CONTRACTOR'S ATTENTION IS DIRECTED TO SECTIONS 102, 107, AND 1550 OF THE STANDARD SPECIFICATIONS CONCERNING TRENCHLESS INSTALLATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE BORE DESIGNED AND SEALED BY A LICENSED NORTH CAROLINA PROFESSIONAL ENGINEER. NO DAMAGE IS ALLOWED TO RIVER, WETLANDS, OR BUFFER ZONES.

11. EXISTING WATER METERS TO REMAIN SHALL BE RECONNECTED TO THE EXISTING / PROPOSED WATER MAIN WITH NEW WATER SERVICE LINES.

12. EXISTING WATER METERS TO BE RELOCATED SHALL BE CONNECTED TO THE EXISTING OR PROPOSED WATER LINE WITH NEW WATER SERVICE LINES. ANY EXTENSIONS OR MODIFICATIONS TO THE EXISTING SERVICE LINES ON THE CUSTOMER SIDE OF THE WATER METER SHALL BE SHALL BE INCIDENTAL TO THE RELOCATION OF THE WATER METER. ALL WORK SHALL BE CONDUCTED WITH LIKE PIPE MATERIALS AS THE EXISTING PIPES, UNLESS THE EXISTING MATERIALS ARE FOUND TO BE UNSUITABLE (I.E. GALVANIZED OR LEAD), THEN CONTRACTOR SHALL USE COPPER WATER PIPE AND TUBING CONFORMING TO ASTM B88 SOFT ANNEALED TYPE K. USE FLARED OR COMPRESSION TYPE FITTINGS CONFORMING TO ANSI/AWWA C800.

13. ALL NEW OR RELOCATED WATER METERS SHALL BE INSTALLED WITH THE BACK (CUSTOMER SIDE) OF THE METER BOX AT THE RIGHT-OF-WAY LINE, UNLESS OTHERWISE DIRECTED BY THE RESIDENT ENGINEER.

14. EXISTING WATER SERVICE LINES BETWEEN THE EXISTING WATER LINE AND THE REMOVED WATER METER SHALL BE ABANDONED IN PLACE OR REMOVED AS NEEDED AS PER SECTION 1530 OF THE NCDOT SPECIFICATIONS OR AS DIRECTED BY THE RESIDENT ENGINEER.

PROJECT REFERENCE NO.	SHEET NO.
U-4902D	UC-3
DESIGNED BY: SHF	
DRAWN BY: SHF	
CHECKED BY: KCZ	
APPROVED BY: KCZ	
REVISED:	

NORTH CAROLINA PROFESSIONAL SEAL 022661 ENGINEER KEVIN C. ZOBS 9/17/2018

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UTILITY CONSTRUCTION

5/14/99

UTILITY CONSTRUCTION

PROJECT SPECIFIC NOTES (CONTINUED):

15. HYDRANTS AND WATER METERS LABELLED TO BE REMOVED SHALL NOT BE USED AS NEW MATERIALS IN THE PROPOSED CONSTRUCTION UNLESS OTHERWISE DIRECTED BY THE UTILITY OWNER'S REPRESENTATIVE.

16. EXISTING HYDRANTS AND WATER METERS TO BE REMOVED AND/OR RELOCATED SHALL BE RETURNED TO THE UTILITY OWNER FOR INSPECTION. CONTRACTOR SHALL DELIVER THESE UTILITY ITEMS TO A MUTUALLY AGREED UPON LOCATION. ALL OTHER PARTS, PIPING, AND METER BOXES REMOVED FROM THE SYSTEM SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AND BE PROPERLY DISPOSED OF IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS.

17. ALL HYDRANTS, PROPOSED OR RELOCATED, SHALL BE INSTALLED 2 FEET BEHIND THE SIDEWALK, OR WITHIN ONE FOOT OF THE R/W LINE, OR AS DIRECTED BY THE RESIDENT ENGINEER.

18. WATER METER BOXES SHALL NOT BE INSTALLED WITHIN PAVED OR SIDEWALK AREA UNLESS APPROVED BY UTILITY OWNER.

19. SANITARY FORCE MAIN PIPE SHALL BE EITHER PVC OR DUCTILE IRON PIPE.

20. ALL SANITARY FORCE MAIN PIPE SHALL BE INSTALLED WITH A MINIMUM COVER OF FOUR (4) FEET. WHERE COVER IS LESS THAN FOUR (4) FEET, CONTRACTOR SHALL USE DUCTILE IRON PIPE, UNLESS OTHERWISE DIRECTED BY THE UTILITY OWNER AND/OR THE RESIDENT ENGINEER.

21. ALL WATER AND SEWER SERVICES SHALL BE INSTALLED PERPENDICULAR TO THE MAIN AND TERMINATE AT THE RIGHT-OF-WAY LINE.

22. ALL STAINLESS STEEL FASTENERS SHALL BE OF GRADE 316.

23. SANITARY SEWER CLEANOUTS SHALL BE LOCATED A MINIMUM OF 12 FEET FROM ALL PROPERTY CORNERS.

24. WATER METER BOXES SHALL BE LOCATED A MINIMUM OF 5 FEET FROM ALL PROPERTY CORNERS.

PROJECT REFERENCE NO.	SHEET NO.
U-4902D	UC-3A
DESIGNED BY: SHF	
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UTILITY CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
U-4902D	UC-3B

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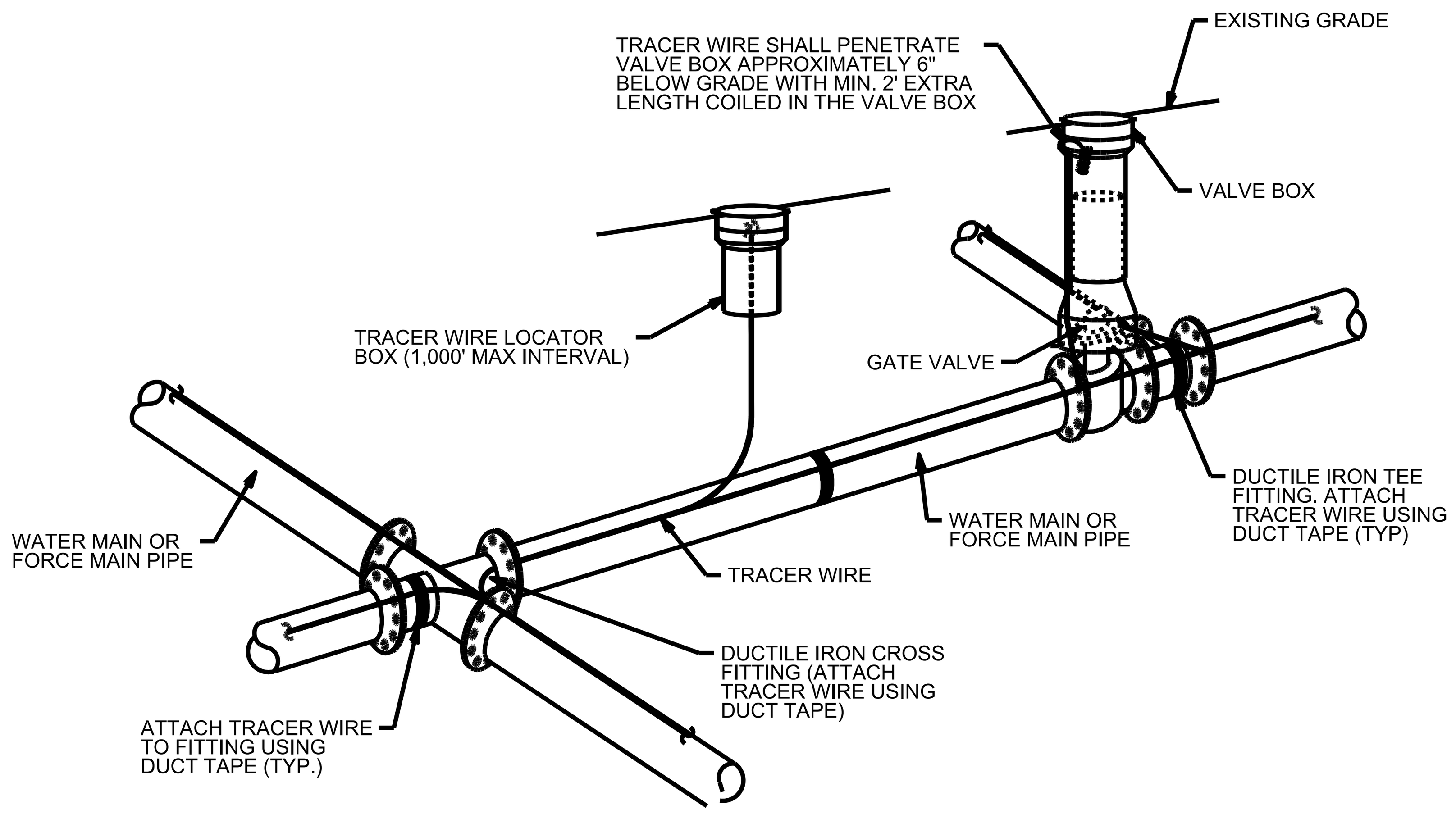
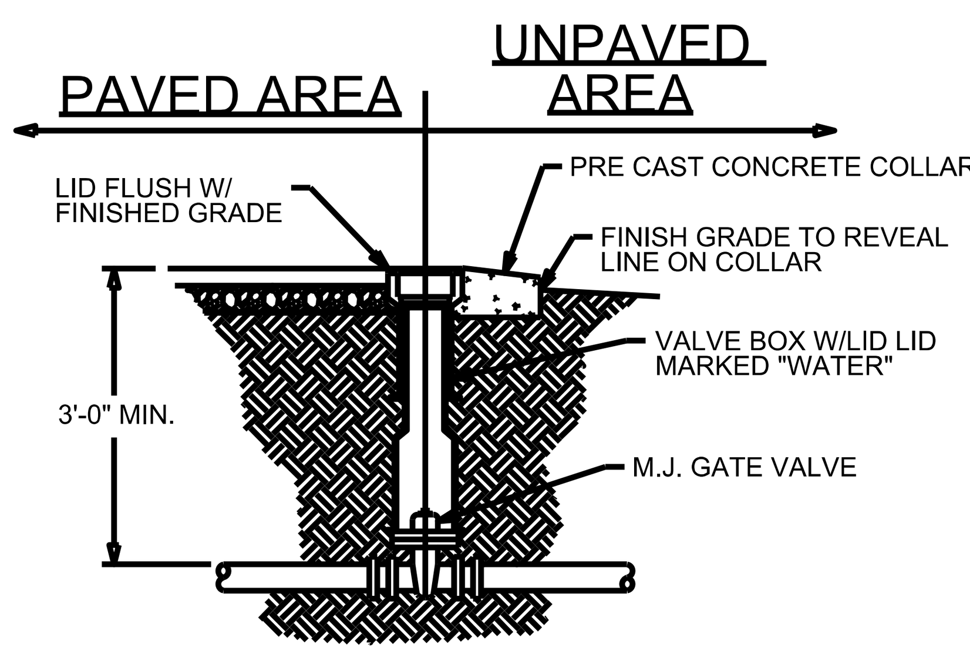


NOTES:
1. TRACER WIRE SHALL BE #10 COPPER SOLID CORE WIRE WITH GAS AND OIL RESISTANT INSULATION.
2. WIRE SHALL BE STRAPPED TO ALL PVC WATER AND FORCE MAIN PIPING WITH DUCT TAPE AT 12 FOOR INTERVALS ALONG THE PIPE.
3. SECURE WIRE TO ALL TEE AND CROSS FITTINGS WITH DUCT TAPE.
4. ALL SPLICES IN THE WIRE SHALL BE MADE WITH 3M DBR DIRECT BURT SPLICE KIT AN UNDERGROUND RATED, WATERTIGHT AND APPROVED SPLICE CONNECTOR OR APPROVED EQUAL.

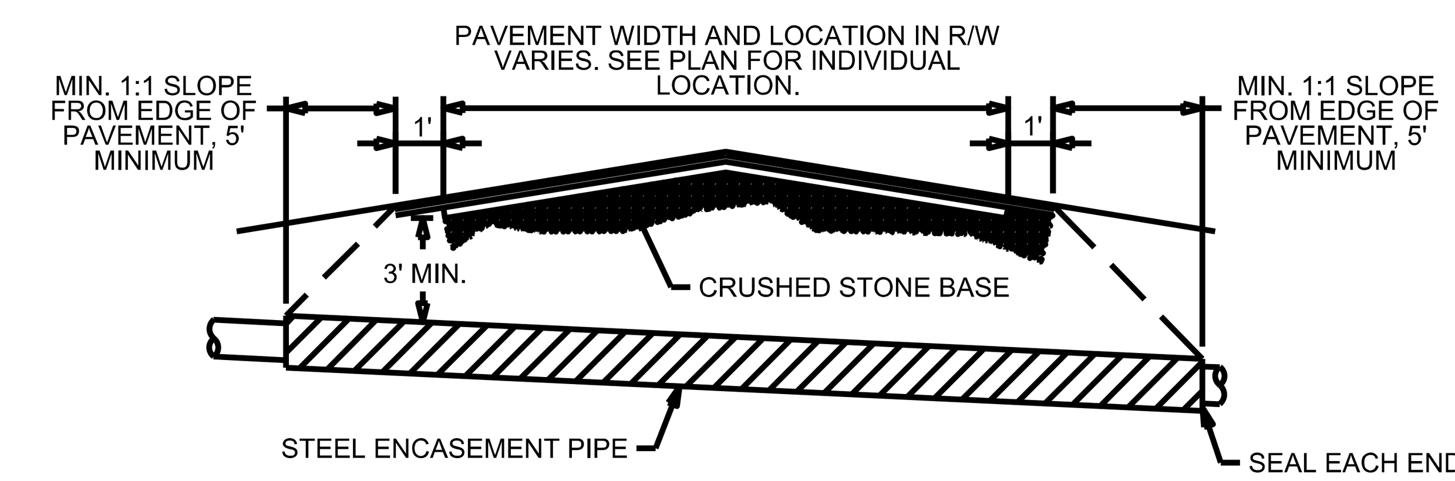
TRACER WIRE DETAIL

NOT TO SCALE



VALVE DETAIL

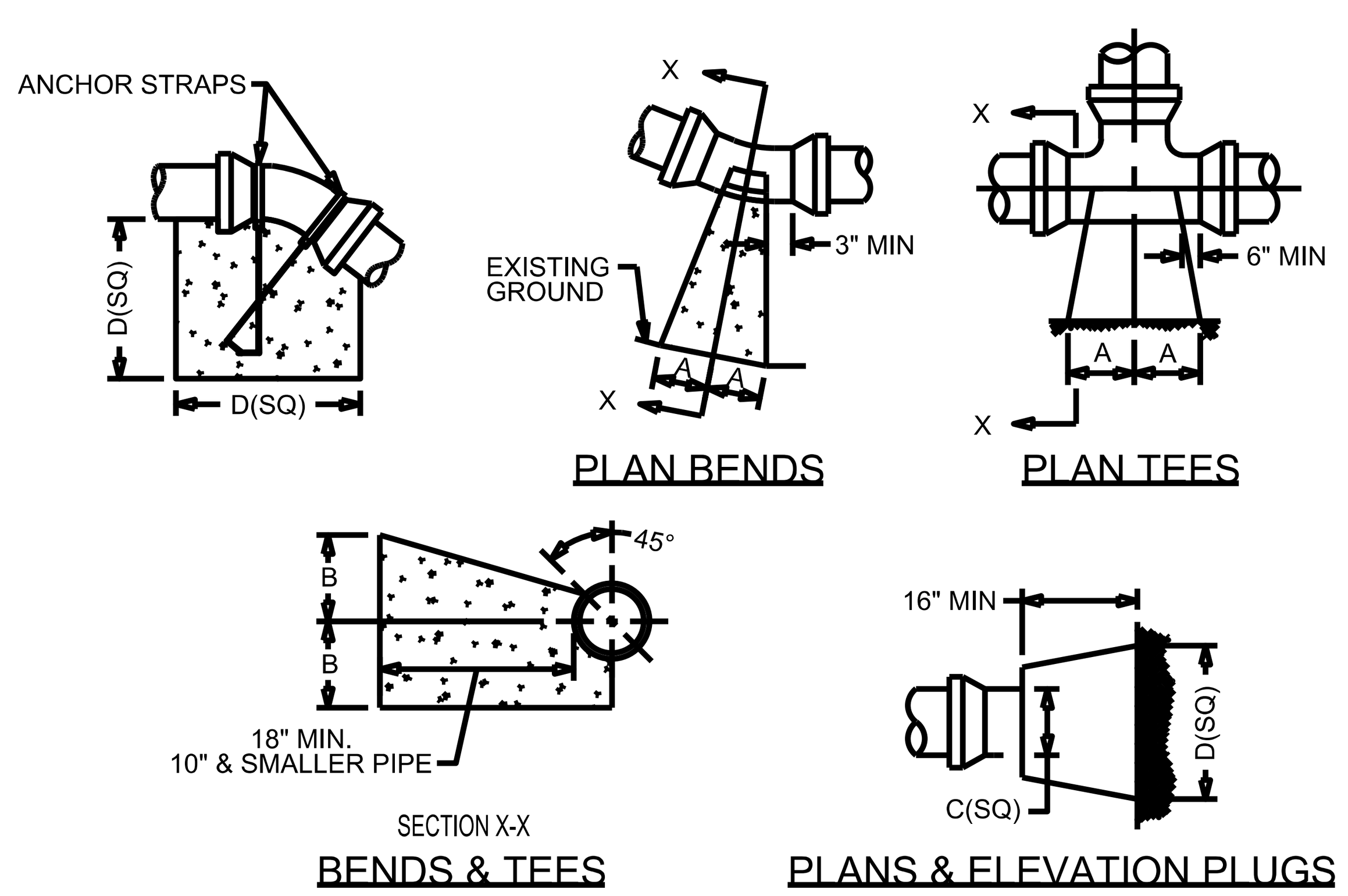
NOT TO SCALE



NOTES:
1. CASING WILL BE INSTALLED AT LINE AND GRADE SHOWN ON INDIVIDUAL PROFILE FOR EACH CROSSING. BORING/JACKING TO LINE AND GRADE IS REQUIRED.
2. TRACER WIRE SHALL BE CONTINUED THROUGH CASING

TYPICAL BORING/JACKING DETAIL

NOT TO SCALE

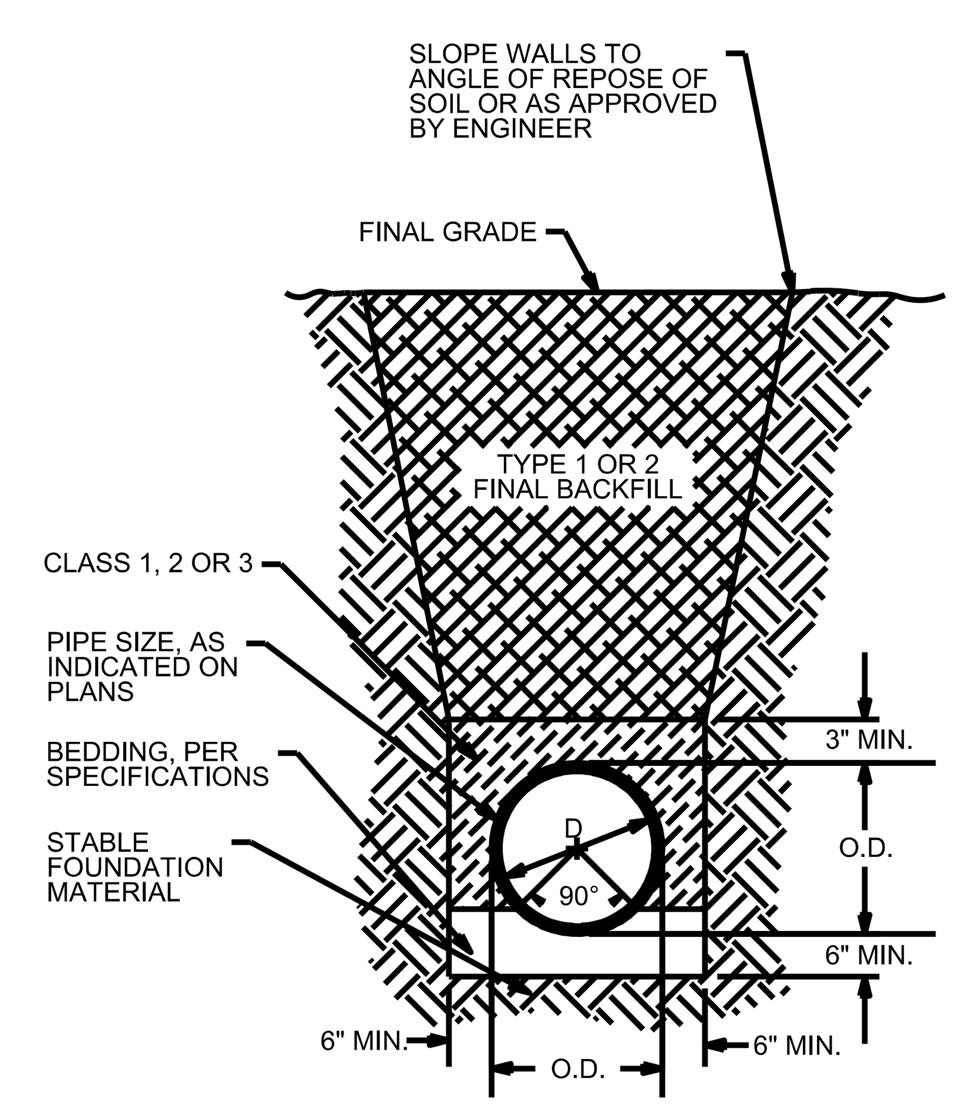


SIZE	90 BENDS A	90 BENDS B	45 BENDS A	45 BENDS B	22-½ BENDS A	22-½ BENDS B	TEES/PLUGS A	TEES/PLUGS B	45 VERT BENDS
3"	8"	6"	5"	6"	3"	7"	6"	8"	27"
4"	8"	9"	5"	8"	3"	11"	6"	9"	28"
6"	14"	11"	9"	9"	8"	8"	12"	9"	36"
8"	16"	16"	12"	12"	10"	13"	14"	13"	42"
10"	18"	22"	15"	14"	14"	16"	18"	15"	50"
12"	20"	28"	18"	17"	16"	16"	22"	18"	62"
14"	26"	29"	21"	19"	18"	18"	26"	20"	72"
16"	33"	29"	25"	21"	20"	21"	32"	21"	83"
18"	40"	30"	28"	24"	22"	23"	36"	24"	88"

NOTES:
1. BASED ON 160 PSI TEST PRESSURE AND 2000 PSF SOIL BEARING CAPACITY.
2. ALL BEARING SURFACES TO BE CARRIED TO UNDISTURBED GROUND.
3. USE MEG-A-LUG (PREFERRED) IN LIEU OF BLOCKING AND RODDING.

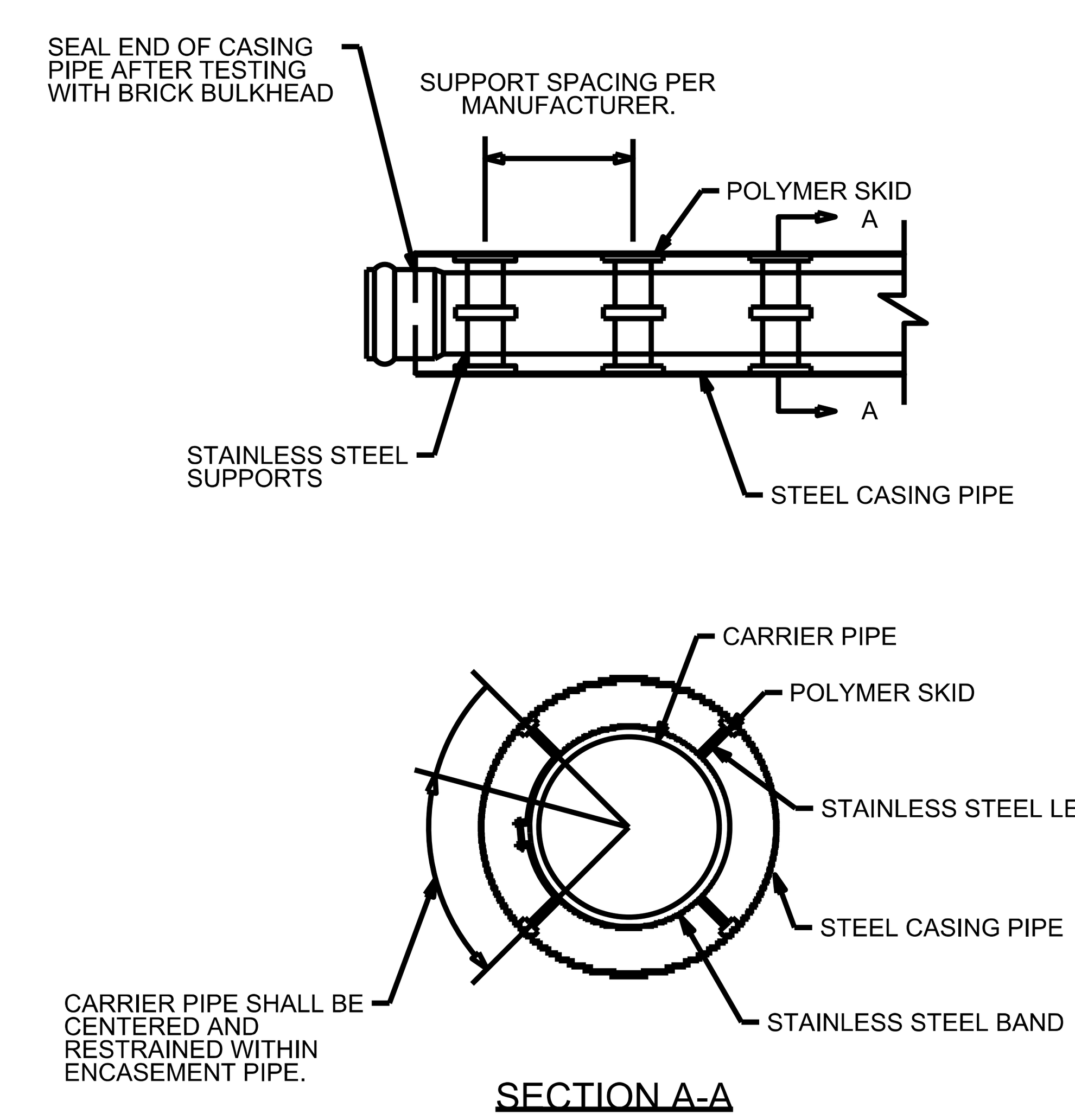
THRUST BLOCK DETAIL

NOT TO SCALE



TYPICAL TRENCH DETAIL

NOT TO SCALE



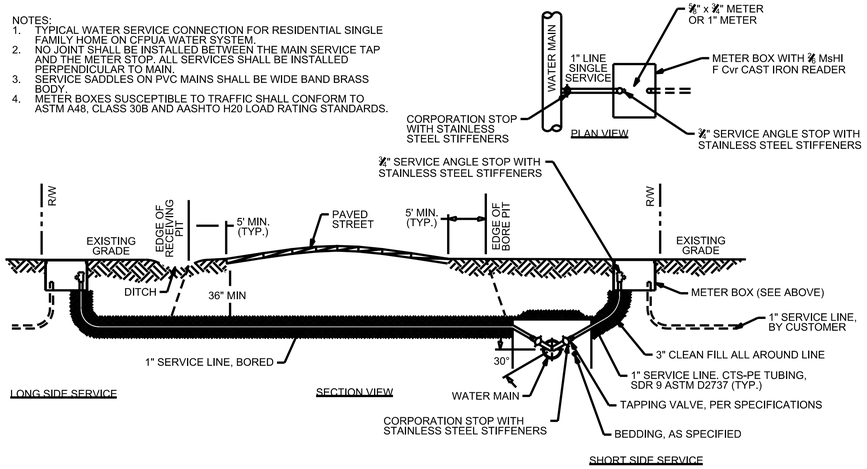
NOTES:
1. PIPE SUPPORT TO BE PLACED TO PROVIDE PROPER SUPPORT, ALIGNMENT, AND GRADE AS SPECIFIED. CONTINUOUS SUPPORTS MAY BE USED AS ALTERNATIVE. OIL, GREASE OR PETROLEUM PRODUCT MAY NOT BE USED AS LUBRICANT.
2. ALL STAINLESS STEEL PARTS TO BE 316 SST.

PIPE CASING SUPPORT

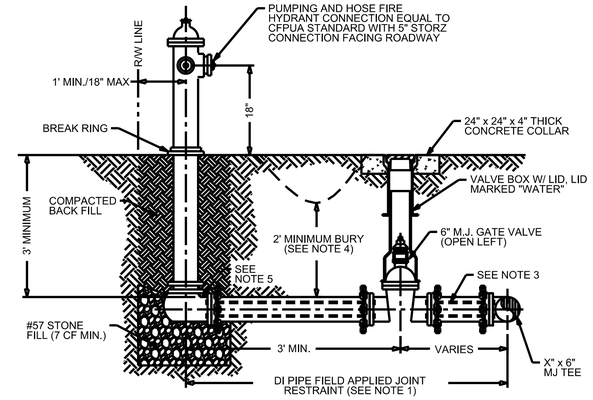
NOT TO SCALE

5/14/99

NOTES:
1. TYPICAL WATER SERVICE CONNECTION FOR RESIDENTIAL SINGLE FAMILY HOME ON CFPUA WATER SYSTEM.
2. NO JOINT SHALL BE INSTALLED BETWEEN THE MAIN SERVICE TAP AND THE METER STOP. ALL SERVICES SHALL BE INSTALLED PERPENDICULAR TO MAIN.
3. SERVICE SADDLES ON PVC MAINS SHALL BE WIDE BAND BRASS BODY.
4. METER BOXES SUSCEPTIBLE TO TRAFFIC SHALL CONFORM TO ASTM A48, CLASS 30B AND AASHTO H20 LOAD RATING STANDARDS.



SINGLE SERVICE CONNECTION
NOT TO SCALE



NOTES:
1. JOINT RESTRAINT SYSTEMS SHALL BE WEDGE ACTION STYLE FOR DI PIPE AS MANUFACTURED BY EBBA IRON, SIGMA, STAR PIPE PRODUCTS OR APPROVED EQUAL.
2. WHEN HYDRANT LEGS REQUIRE FULL LENGTH PIPE SECTIONS, OVER BELL RESTRAINT SYSTEM SHALL HAVE 316 STAINLESS STEEL HARNESS AND FASTNERS.
3. CONTINUOUS 316 STAINLESS STEEL RODS (TEE TO VALVE AND VALVE TO HYDRANT) MAY BE USED WITH COR-BLUE MJ T-BOLT AND GASKETS KITS, AS AN ALTERNATIVE.
4. HYDRANT AND VALVE SHALL BE PLACED OUTSIDE DITCH LIMITS.
5. WEEP HOLES OPEN AND UNBLOCKED TO DRAIN.

FIRE HYDRANT ASSEMBLY DETAIL
NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
U-4902D	UC-3C
DESIGNED BY: SHF	
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APPROVED BY: KCZ	
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Digitally signed by SEAL
Kevin C. Zuel
Date: 2019.09.17
9/17/2019

UTILITY CONSTRUCTION PLANS ONLY

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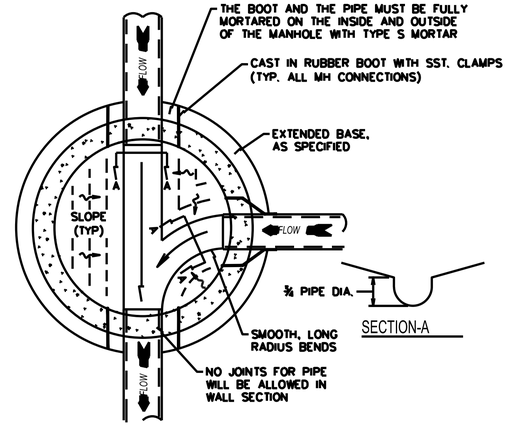
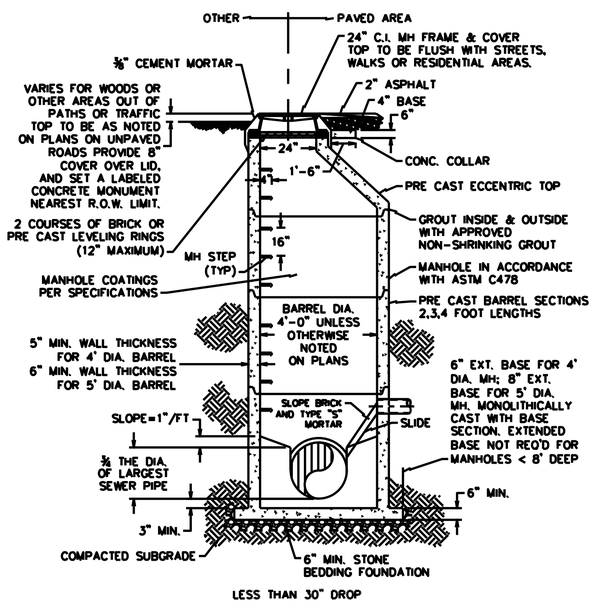
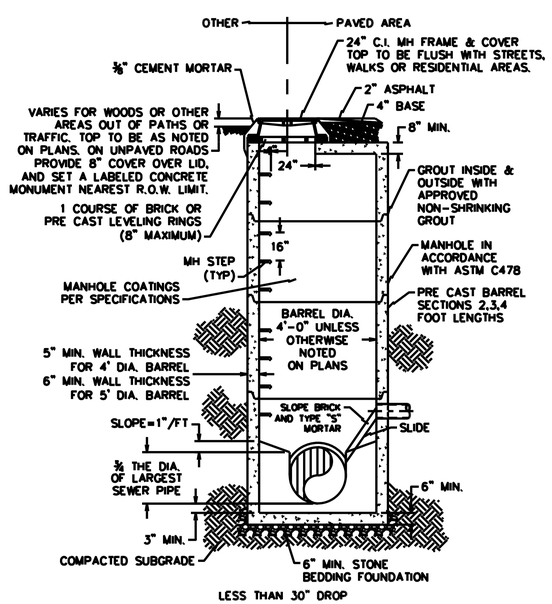


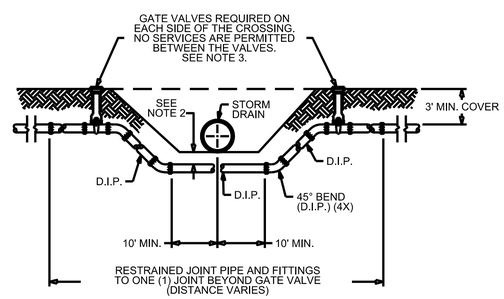
MANHOLE FLOOR PLAN
NOT TO SCALE



PRECAST CONCRETE OFFSET MANHOLE
NOT TO SCALE



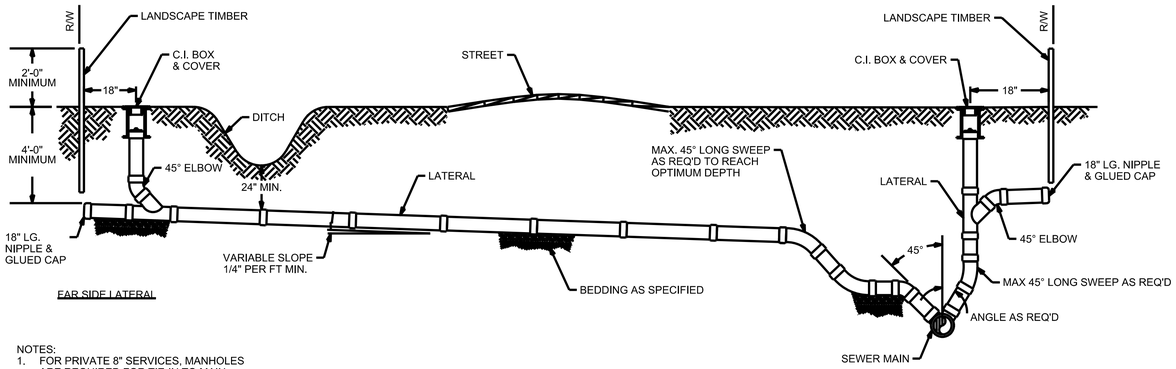
PRECAST CONCRETE FLAT TOP MANHOLE
NOT TO SCALE



NOTES:
1. USE PRESSURE CLASS 350 D.I.P., UNLESS SPECIFIED OTHERWISE.
2. MINIMUM DEPTH OF COVER REQUIRED UNLESS SPECIFIED OTHERWISE:
   A. IN DOT R/W, 36" MIN. TYPICAL, OR 24" MIN. WHEN CROSSING A DITCH LINE.
   B. ALL OTHER LOCATIONS, 30" MIN.
   C. WHEN STORM DRAIN INVERT IS BURIED AT OR BELOW ABOVE DEPTHS, 18" MIN. CLEARANCE BETWEEN PIPES IS REQUIRED.
3. VALVE PLACEMENT AS SHOWN ON PLANS, OR AS DIRECTED BY RESIDENT ENGINEER AND APPROVAL OF UTILITY OWNER.

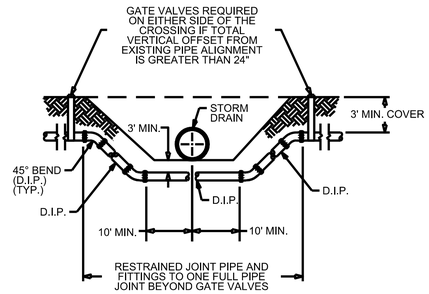
WATER MAIN DITCH AND STORM DRAIN CROSSING
NOT TO SCALE

5/14/99



NOTES:
1. FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR TIE-IN TO MAIN

STANDARD SERVICE CONNECTION
NOT TO SCALE



NOTE:
1. USE D.I.P. (CL52, PRESSURE CLASS 350, OR BETTER)
2. DISTANCE BETWEEN UPPER 45° BENDS VARIES DEPENDING ON DEPTH OF OFFSET RELOCATION.
3. GATE VALVES, WHEN NEEDED, SHALL BE INSTALLED 5 FEET FROM THE 45° BEND.

FORCE MAIN DITCH AND STORM DRAIN CROSSING
NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
U-4902D	UC-3D
DESIGNED BY: SHF	
DRAWN BY: SHF	
CHECKED BY: KCZ	
APPROVED BY: KCZ	
REVISED:	

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

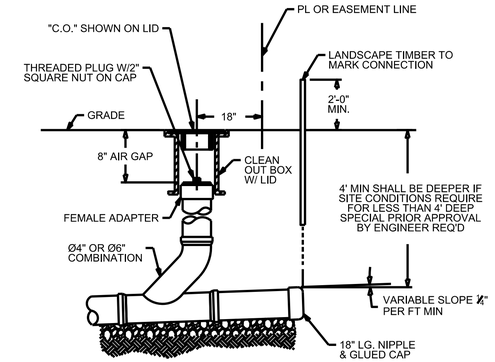
NORTH CAROLINA PROFESSIONAL SEAL 21611 ENGINEER KEVIN C. ZOLL — Documents Signed by SEAL — Kevin C. Zoll — 9/17/2018

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

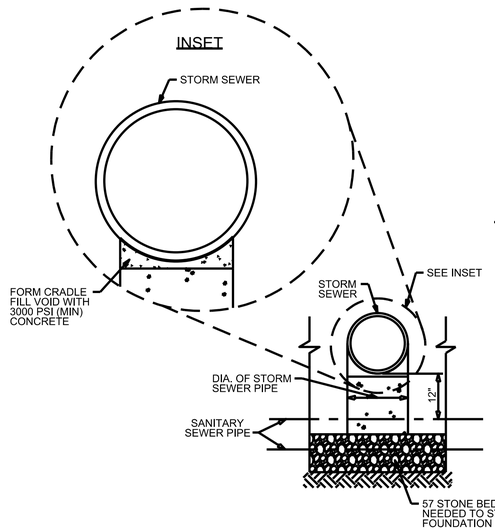
M A Engineering Consultants, Inc.
598 East Chatham Street - Suite 137
Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221
NC License: F-0160

DOCUMENT NOT CONSIDERED FINAL UNTIL ALL SIGNATURES ARE COMPLETED

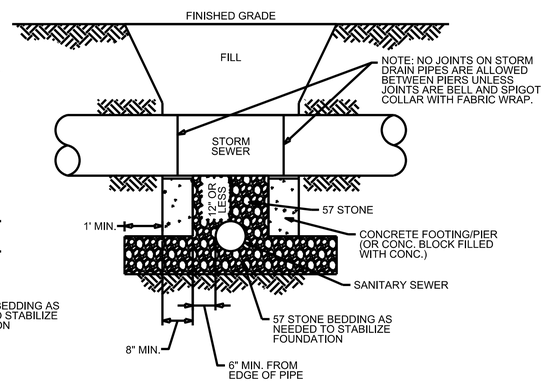


NOTES:
1. PIPE MATERIAL" SCH. 40, SOLVENT WELD PVC 1120 ASTM D-1785
2. FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR CONNECTION TO SYSTEM AND AT THE PROPERTY LINE, WITH REQUIRED EASEMENT.

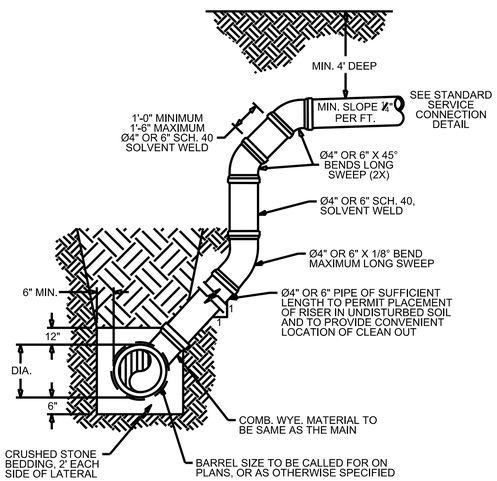
SERVICE CONNECTION AND CLEAN OUT
NOT TO SCALE



THE FOLLOWING MUST BE FOLLOWED IN THE CASES OF GRAVITY SEWER UNDER STORM DRAIN:
1. A SEPARATION OF LESS THAN 12" BETWEEN STORM DRAIN AND GRAVITY SEWER, STORM DRAIN MUST BE BRIDGED.
2. A SEPARATION OF 12" TO LESS THAN 24" BETWEEN STORM DRAIN AND GRAVITY SEWER, GRAVITY SEWER CAN BE DIP OR STORM DRAIN CAN BE BRIDGED. (PER DWR REGULATIONS).
3. A SEPARATION OF 24" OR GREATER BETWEEN STORM DRAIN AND GRAVITY SEWER REQUIRES NO BRIDGING OR DIP.

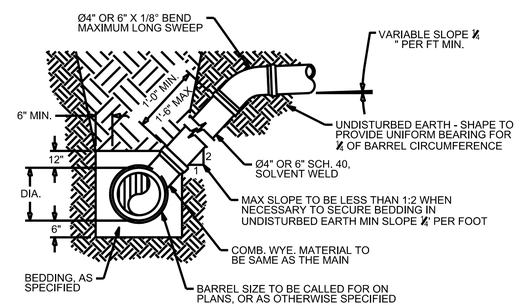


STRUCTURAL BRIDGING DETAIL FOR STORMWATER OVER GRAVITY SEWER INSTALLATIONS WITH LESS THAN 12" SEPARATION
NOT TO SCALE



NOTES:
1. FOR MAINS GREATER THAN 8 FT.
2. SPECIAL CARE SHALL BE TAKEN DURING BACKFILL OPERATIONS. THE RISER SHALL BE PLUMB AND TRUE AT ALL TIMES, AND REST ON FIRM, STABLE FOUNDATION.
3. FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR CONNECTION TO SYSTEM AND AT THE PROPERTY LINE, WITH REQUIRED EASEMENT.

DEEP SERVICE LATERAL
NOT TO SCALE



NOTES:
1. FOR MAINS LESS THAN 8 FT.
2. FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR CONNECTION TO SYSTEM AND AT THE PROPERTY LINE, WITH REQUIRED EASEMENT.

STANDARD SERVICE LATERAL
NOT TO SCALE

9/17/2018
C:\Projects\0659\090\10400\U4902D\Utilities\Engineering\UC\Proj\U4902D_ut_UC-03D_dtl.dgn

5/14/99

NOTES:
1. PROPOSED DOWN AND UNDER RELOCATION OF WATER LINE. REFER TO DETAIL ON SHEET UC-3C.
2. VALVE SHALL BE INSTALLED A MINIMUM OF 3 FEET OUTSIDE OF THE CURB AND GUTTER.
3. ENCASEMENT PIPE IS FOR FUTURE IRRIGATION SERVICE FOR GRASSED MEDIAN.
4. REMOVE EXISTING BEND FITTING AND TIE-IN WL RELOCATION.

REFER TO SHEET UC-10 FOR -FSS1- PROFILE.
REFER TO SHEET UC-13 FOR -W1- PROFILE.
REFER TO SHEET UC-15 FOR -C1- PROFILE.

NAD 83/NSRS 2007

UTILITY OWNERS ON THIS PROJECT:
CFPUA
UTILITY: 12" FORCEMAIN SS
8" WATER LINE
CONTACT: DAVID DAILEY
PHONE: 910-332-6626

PROJECT REFERENCE NO.	SHEET NO.
U-4902D	UC-4
DESIGNED BY: SHF	
DRAWN BY: SHF	
CHECKED BY: KCZ	
APPROVED BY: KCZ	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE:(919)707-6690 FAX:(919)250-4151	UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL 22671 ENGINEER KEVIN C. ZOLP
9/17/2018

UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TRENCHLESS INSTALLATION NOTE:
PRIOR TO COMMENCING ANY WORK ON ANY TRENCHLESS INSTALLATION ON THIS PROJECT, THE CONTRACTOR SHALL PROVIDE A DESIGN FOR THE TRENCHLESS INSTALLATION THAT IS CERTIFIED BY A PROFESSIONAL ENGINEER LICENSED BY THE STATE OF NORTH CAROLINA, AS REQUIRED BY SUBARTICLE 1550-3(B) OF THE "NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2018.

RELOCATE WATER METER - 1 EA.
WATER SERVICE LINE - 98 LF

8" WATER LINE RELOCATED BY OTHERS
PER T.I.P. PROJECT U-4751

205

210

DELORIS RYALS
DB 9905 PG 2197
DB 2026 PG 604
DB 1865 PG 728
MB 34 PG 316

S & JC HOLDINGS, LLC
DB 5561 PG 756
MB 39 PG 58

MARY J. SHANNON, HEIRS
DB 856 PG 600
DB 1240 PG 1612

MARY L. WALLACE
DB 97GS PG 1442
DB 1397 PG 656
DB 1389 PG 1122
DB 941 PG 876

JAY PATTERSON
DB 5141 PG 1119
DB 5707 PG 1734

-L- POC Sta. 208+75.01=
-Y28A- POT Sta. 10+00.00

CASING 1 -C1-
4" ENCASEMENT PIPE - 38 LF
BORE AND JACK OF
4" PIPE - 38 LF
SEE NOTE 3.

-L- PT Sta. 214+98.60

12" FORCE MAIN
SEWER 1-FSS1-

12" FORCE MAIN
SEWER - 401 LF

ABANDON 12" UTILITY
PIPE - 400 LF

MATCH LINE -L- STA 216+00.00
SEE SHEET UC-5

-SEE NOTE 4

RELOCATE WATER
METER - 1 EA.
WATER SERVICE
LINE - 24 LF

ABANDON 8"
UTILITY PIPE - 290 LF

ABANDON 8"
UTILITY PIPE - 62 LF

RELOCATE WATER
METER - 1 EA.
WATER SERVICE
LINE - 10 LF

RELOCATE WATER
METER - 1 EA.
WATER SERVICE
LINE - 4 LF

ABANDON 8"
UTILITY PIPE - 42 LF

-L- PC Sta. 205+64.96

S 51° 41' 54.8" E

END CONSTRUCTION
-Y28A- POT Sta. 11+25.00

-Y28A- POT Sta. 11+30.00

JAMES R. RYAN
DB 5324 PG 2131
MB 2 PG 78

BERTHA R. MARTIN
DB 5749 PG 2918
MB 2 PG 78

J.W. COVIL, ET UX
DB 1713 PG 905
DB 2419 PG 412

FLAMINGO PROPERTIES, LLC

EVENTIDE PROPERTIES, LLC

CARL E. SHEPARD & MARTHA S. SHEPARD

BOCALISI REALTY TRUST

CAROLYN B. PARRISH
DB 3177 PG 364
MB 21 PG 61
MB 21 PG 38

8" WATER LINE - 62 LF.
8" VALVE - 1 EA.
SEE NOTE 3

WATER LINE 1 -W1-
8" WATER LINE - 285 LF.
8" GATE VALVE - 1 EA.
SEE NOTE 2.

8" WATER LINE - 52 LF.
8" GATE VALVE - 2 EA.
SEE NOTES 1 AND 2.

THE ESTIMATED QUANTITY OF DUCTILE IRON SEWER PIPE FITTINGS ON THIS PLAN SHEET IS 440 LBS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 1,100 LBS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

2 WATER METERS RELOCATED BY OTHERS
PER T.I.P. PROJECT U-4751

8/17/2018
8:47:16 AM
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M A Engineering Consultants, Inc. NC License: F-0160
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221

PROJECT REFERENCE NO.	SHEET NO.
U-4902D	UC-5

DESIGNED BY: SHF
DRAWN BY: SHF
CHECKED BY: KCZ
APPROVED BY: KCZ
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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

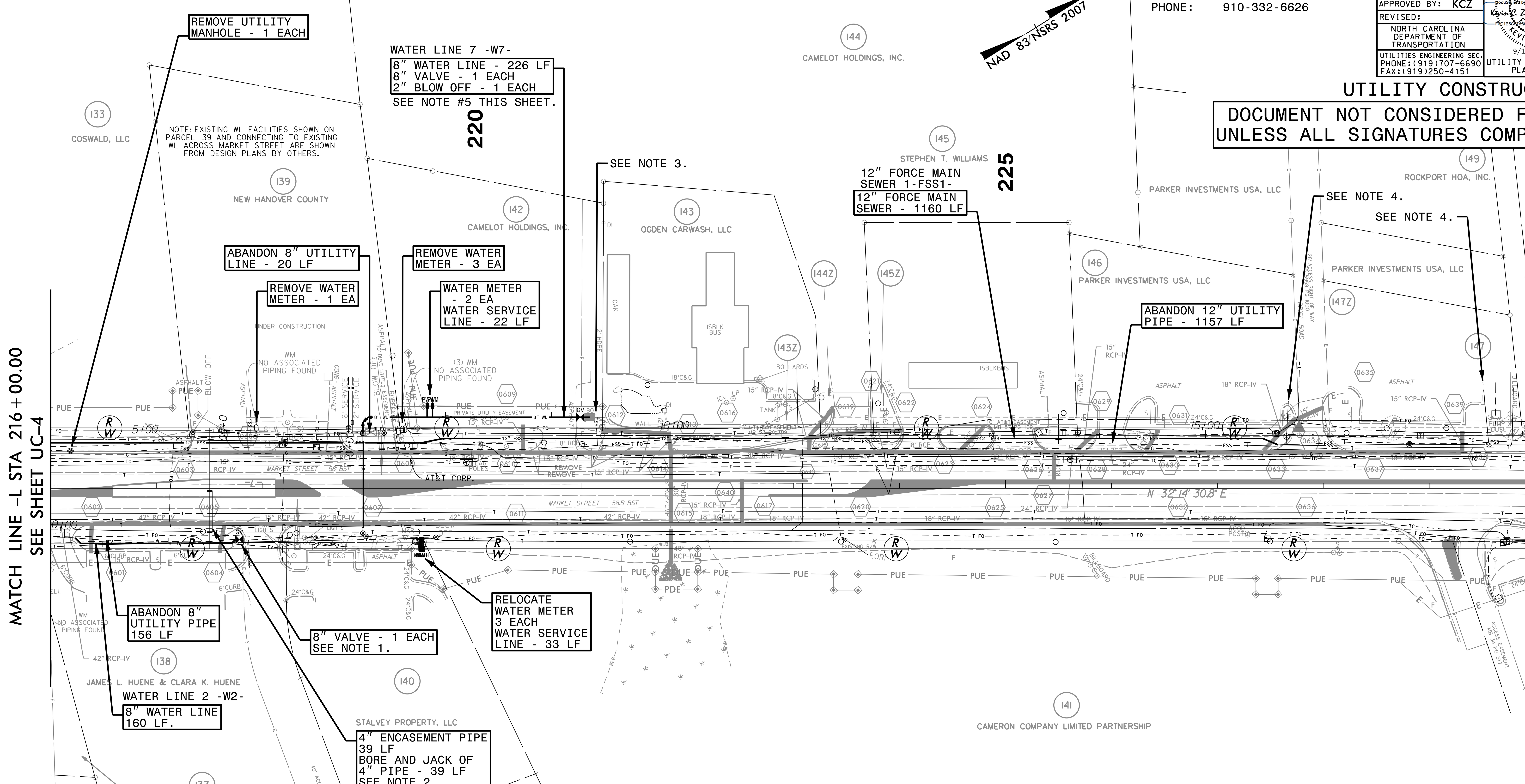
UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL 027611 ENGINEER KEVIN C. ZDEB 9/18/2018

UTILITY OWNERS ON THIS PROJECT:
CFPUA
UTILITY: 12" FORCEMAIN SS
8" WATER LINE
CONTACT: DAVID DAILEY
PHONE: 910-332-6626

UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED


NAD 83/NSRS 2007
REMOVE UTILITY MANHOLE - 1 EACH
WATER LINE 7 -W7-
8" WATER LINE - 226 LF
8" VALVE - 1 EACH
2" BLOW OFF - 1 EACH
SEE NOTE #5 THIS SHEET.
220
225
NOTE: EXISTING WL FACILITIES SHOWN ON PARCEL 139 AND CONNECTING TO EXISTING WL ACROSS MARKET STREET ARE SHOWN FROM DESIGN PLANS BY OTHERS.
SEE NOTE 3.
12" FORCE MAIN SEWER 1-FSS1-
12" FORCE MAIN SEWER - 1160 LF
SEE NOTE 4.
SEE NOTE 4.
ABANDON 8" UTILITY LINE - 20 LF
REMOVE WATER METER - 3 EA
REMOVE WATER METER - 1 EA
WATER METER - 2 EA
WATER SERVICE LINE - 22 LF
ABANDON 12" UTILITY PIPE - 1157 LF
MATCH LINE -L STA 216+00.00 SEE SHEET UC-4
MATCH LINE -L- STA 230+00.00 SEE SHEET UC-6
MARKET STREET
N 32°14' 30.8" E
AT&T CORP.
ABANDON 8" UTILITY PIPE 156 LF
8" VALVE - 1 EACH SEE NOTE 1.
RELOCATE WATER METER 3 EACH WATER SERVICE LINE - 33 LF
WATER LINE 2 -W2-
8" WATER LINE 160 LF.
4" ENCASEMENT PIPE 39 LF
BORE AND JACK OF 4" PIPE - 39 LF
SEE NOTE 2.
CASING 2 -C2-
133 COSWALD, LLC
139 NEW HANOVER COUNTY
142 CAMELOT HOLDINGS, INC.
143 OGDEN CARWASH, LLC
144 CAMELOT HOLDINGS, INC.
145 STEPHEN T. WILLIAMS
146 PARKER INVESTMENTS USA, LLC
PARKER INVESTMENTS USA, LLC
PARKER INVESTMENTS USA, LLC
149 ROCKPORT HOA, INC.
138 JAMES L. HUENE & CLARA K. HUENE
140 STALVEY PROPERTY, LLC
137 CARL E. SHEPARD & MARTHA S. SHEPARD
141 CAMERON COMPANY LIMITED PARTNERSHIP

NOTES:
1. VALVE SHALL BE INSTALLED A MINIMUM OF 3 FEET OUTSIDE OF THE CURB AND GUTTER.
2. ENCASEMENT PIPE IS FOR FUTURE IRRIGATION SERVICE FOR GRASSED MEDIAN.
3. RECONNECT EXISTING SEWER SERVICE LINE TO RELOCATED FORCE MAIN.
4. EXISTING SEWER SERVICE LINE TO REMAIN.
5. CONTRACTOR SHALL REMOVE THE EXISTING TEE, ROTATE IT 90 DEGREES, AND REINSTALL THE FITTING TO CONSTRUCT THE WATER LINE EXTENSION.

REFER TO SHEET UC-10 FOR -FSS1- PROFILE.
REFER TO SHEET UC-14 FOR -W2- PROFILE.
REFER TO SHEET UC-14 FOR -W7- PROFILE.
REFER TO SHEET UC-15 FOR -C2- PROFILE.

TRENCHLESS INSTALLATION NOTE:
PRIOR TO COMMENCING ANY WORK ON ANY TRENCHLESS INSTALLATION ON THIS PROJECT, THE CONTRACTOR SHALL PROVIDE A DESIGN FOR THE TRENCHLESS INSTALLATION THAT IS CERTIFIED BY A PROFESSIONAL ENGINEER LICENSED BY THE STATE OF NORTH CAROLINA, AS REQUIRED BY SUBARTICLE 1550-3(B) OF THE "NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2018.

THE ESTIMATED QUANTITY OF DUCTILE IRON SEWER PIPE FITTINGS ON THIS PLAN SHEET IS 1,530 LBS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 1,320 LBS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

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598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221

5/14/99

4" WATER LINE - 35 LF
SEE NOTE 1.

ABANDON 4" UTILITY PIPE
31 LF

RELOCATE FIRE HYDRANT
1 EACH
FIRE HYDRANT LEG
28 LF

WATER LINE 3 -W3-
8" WATER LINE - 199 LF

ABANDON 8"
UTILITY PIPE
172 LF

6"/12" FORCE MAIN
SEWER 3 -FSS3-

12" FORCE MAIN SEWER - 10 LF
6" FORCE MAIN SEWER - 198 LF
6" VALVE - 1 EACH

ABANDON 6" UTILITY
PIPE - 254 LF

RELOCATE WATER METER - 3 EACH
WATER SERVICE LINE - 92 LF

TIE-IN TO EXIST 12"
FORCE MAIN WITH
12" X 12" TEE

RETAIN 101 LF
OF 12"
FORCE MAIN

12" FORCE MAIN
SEWER 4-FSS4-

ABANDON 12" UTILITY
PIPE - 62 LF
12" FORCE MAIN SEWER - 65 LF
12" VALVE - 1 EACH

FORCE MAIN SANITARY
SEWER 4 -FSS4-

ABANDON 12" UTILITY PIPE - 80 LF
12" FORCE MAIN SEWER - 120 LF
20" ENCASEMENT PIPE - 66 LF
BORE AND JACK OF 20" - 66 LF

8" FORCE MAIN
SEWER 2 -FSS2-

ABANDON 8" UTILITY PIPE - 345 LF
8" FORCE MAIN SEWER - 295 LF
8" VALVE - 1 EACH
16" ENCASEMENT PIPE - 92 LF
BORE AND JACK OF 16" - 92 LF

ABANDON 16" UTILITY
PIPE - 30 LF
16" WATER LINE - 35 LF
16" VALVE - 2 EA
SEE NOTE 1.

16" WATER LINE - 74 LF.
ABANDON 16" UTILITY
PIPE - 70 LF

WATER LINE 5 -W5-

ABANDON 8" UTILITY PIPE - 158 LF
8" WATER LINE - 163 LF
8" VALVE - 1 EACH
16" ENCASEMENT PIPE - 103 LF
BORE AND JACK 16" PIPE - 103 LF

WATER LINE 4 -W4-

ABANDON 8" UTILITY PIPE - 30 LF
8" FORCE MAIN SEWER - 35 LF
8" VALVE - 2 EACH
SEE NOTE 2

ABANDON 8" UTILITY PIPE - 136 LF
8" FORCE MAIN SEWER - 220 LF
8" VALVE - 1 EACH
16" ENCASEMENT PIPE - 104 LF
BORE AND JACK OF 16" - 104 LF

-L- PC Sta. 230+13.66

8" FORCE MAIN
SEWER 5-FSS5-

MATCH LINE -L- 230+00.00
SEE SHEET UC-5

MATCH LINE -L- STA 244+00.00
SEE SHEET UC-7

TRENCHLESS INSTALLATION NOTE:
PRIOR TO COMMENCING ANY WORK ON ANY TRENCHLESS INSTALLATION ON THIS PROJECT, THE CONTRACTOR SHALL PROVIDE A DESIGN FOR THE TRENCHLESS INSTALLATION THAT IS CERTIFIED BY A PROFESSIONAL ENGINEER LICENSED BY THE STATE OF NORTH CAROLINA, AS REQUIRED BY SUBARTICLE 1550-3(B) OF THE "NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2018.

UTILITY OWNERS ON THIS PROJECT:
CFPUA
UTILITY: 6", 8", 10" FORCEMAIN SS
6", 8", 10", 16" WATER LINE
CONTACT: DAVID DAILEY
PHONE: 910-332-6626

PROJECT REFERENCE NO.	SHEET NO.
U-4902D	UC-6
DESIGNED BY: SHF	
DRAWN BY: SHF	
CHECKED BY: KCZ	
APPROVED BY: KCZ	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE:(919)707-6690 FAX:(919)250-4151	UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL 042671 ENGINEER KEVIN C. ZOLL
Kevin C. Zoll
9/13/2018

UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 3,130 LBS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

THE ESTIMATED QUANTITY OF DUCTILE IRON SEWER PIPE FITTINGS ON THIS PLAN SHEET IS 4,440 LBS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

NOTES:
1. PROPOSED DOWN AND UNDER RELOCATION OF WATER LINE. REFER TO DETAIL ON SHEET UC-3C.
2. PROPOSED DOWN AND UNDER RELOCATION OF SEWER FORCE MAIN. REFER TO DETAIL ON SHEET UC-3D.

REFER TO SHEET UC-12 FOR -FSS2- PROFILE.
REFER TO SHEET UC-10 FOR -FSS3- PROFILE.
REFER TO SHEET UC-12 FOR -FSS4- PROFILE.
REFER TO SHEET UC-10 FOR -FSS5- PROFILE.
REFER TO SHEET UC-13 FOR -W3- PROFILE.
REFER TO SHEET UC-14 FOR -W4- PROFILE.
REFER TO SHEET UC-13 FOR -W5- PROFILE.

M A Engineering Consultants, Inc. NC License: F-0160
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-4902D	UC-7
DESIGNED BY: SHF	
DRAWN BY: SHF	
CHECKED BY: KCZ	
APPROVED BY: KCZ	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE:(919)707-6690 FAX:(919)250-4151	UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22611 KEVIN C. ZOLP — Digitally Signed by SEAL 22611 KEVIN C. ZOLP 9/17/2018

TRENCHLESS INSTALLATION NOTE:
PRIOR TO COMMENCING ANY WORK ON ANY TRENCHLESS INSTALLATION ON THIS PROJECT, THE CONTRACTOR SHALL PROVIDE A DESIGN FOR THE TRENCHLESS INSTALLATION THAT IS CERTIFIED BY A PROFESSIONAL ENGINEER LICENSED BY THE STATE OF NORTH CAROLINA, AS REQUIRED BY SUBARTICLE 1550-3(B) OF THE "NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2018.

UTILITY OWNERS ON THIS PROJECT:
CFPUA
UTILITY: 8" FORCEMAIN SS
8", 16" WATER LINE
CONTACT: DAVID DAILEY
PHONE: 910-332-6626

NAD 83/NSRS 2007

UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

8" WATER LINE - 22 LF
8 VALVE - 1 EA
ABANDON 8" UTILITY PIPE - 39 LF

8" WATER LINE - 79 LF
8" VALVE - 2 EA
ABANDON 8" UTILITY PIPE - 103 LF
WATER METER - 1 EACH
WATER SERVICE LINE - 6 LF
SEE NOTE 3.

FIRE HYDRANT - 1 EACH
FIRE HYDRANT LEG - 9 LF
REMOVE FIRE HYDRANT - 1 EACH

8" VALVE - 1 EACH
ABANDON 8" UTILITY PIPE - 37 LF
8" WATER LINE - 84 LF

WATER LINE 5 -W5-
16" WATER LINE - 1350 LF
16" VALVE - 5 EA
ABANDON 16" UTILITY PIPE - 1340 LF
RECONNECT WATER METER - 3 EACH
WATER SERVICE LINE - 278 LF

4" ENCASEMENT PIPE - 38 LF
BORE AND JACK OF 4" PIPE - 38 LF
SEE NOTE 1.
CASING 3 -C3-

24" ENCASEMENT PIPE - 62 LF
BORE AND JACK OF 24" PIPE - 62 LF
SEE NOTE 2.

24" ENCASEMENT PIPE - 125 LF
BORE AND JACK OF 24" PIPE - 125 LF

FIRE HYDRANT - 1 EA
FIRE HYDRANT LEG - 6 LF
16" VALVE - 1 EACH

-Y31- POT Sta. 10+00.00
-Y32- POT STA 11+50.00
-L- POT STA 244+79.10 = -Y31- POT STA 12+50.09
-L- POT STA 254+25.70 = -Y32- POT STA 13+02.10
BEGIN CONSTRUCTION -Y32- POT STA 11+50.00

MATCH LINE -L- 244+00.00
SEE SHEET UC-6

MATCH LINE -L- 258+00.00
SEE SHEET UC-8

8" GRAVITY SEWER 1 -GS1-
8" SANITARY GRAVITY SEWER (PVC) - 430 LF
4' DIA. UTILITY MANHOLE - 2
UTILITY MANHOLE WALL 4' DIA. - 10.7 LF
SANITARY SEWER CLEAN-OUT - 2 EACH
SEWER SERVICE LINE - 14 LF

SEE GRAVITY SEWER NOTES ON THIS SHEET.

REMOVE FIRE HYDRANT - 1 EA

8" FORCE MAIN SEWER 6 -FSS6-
ABANDON 8" UTILITY PIPE - 113 LF
8" FORCE MAIN SEWER - 111 LF
8" VALVE - 1 EA
16" ENCASEMENT PIPE - 58 LF
JACK AND BORE OF 16" PIPE - 58 LF
SEE NOTE 2.

THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 12,245 LBS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

THE ESTIMATED QUANTITY OF DUCTILE IRON SEWER PIPE FITTINGS ON THIS PLAN SHEET IS 880 LBS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

GRAVITY SEWER NOTES:
1. SEWER GUARDS ARE REQUIRED AT ALL MANHOLES. STAINLESS STEEL SEWER GUARDS ARE REQUIRED AT MANHOLES LOCATED IN TRAFFIC AREAS.
2. ALL SEWER SERVICES TYING INTO DUCTILE IRON MAINS SHALL BE CONSTRUCTED OF CLASS 50 D.I.P. WITH PROTECTO 401 CERAMIC EPOXY LINING.
3. NO FLEXIBLE COUPLINGS SHALL BE USED.
4. CONTRACTOR SHALL COORDINATE WITH CFPUA REPRESENTTATIVE TO DETERMINE THE BEST LOCATIONS FOR THE PROPOSED SANITARY SEWER CLEAN-OUTS TO SERVE PARCELS 166 AND 167.
5. SEWER SERVICE LINES FOR PARCELS 166 AND 167 (FROM THE BUILDINGS TO THE RIGHT-OF-WAY LINE) SHALL BE CONSTRUCTED BY OTHERS, UNLESS OTHERWISE DIRECTED BY THE RESIDENT ENGINEER.

NOTES:
1. ENCASEMENT PIPE IS FOR FUTURE IRRIGATION SERVICE FOR GRASSED MEDIAN.
2. CONTRACTOR SHALL REFER TO CULVERT PLANS PRIOR TO INSTALLING ENCASEMENT PIPES TO VERIFY DEPTH OF COVER UNDER CULVERT IS ADEQUATE.
3. RECONNECT EXISTING CUSTOMER WATER SERVICE LINE TO NEW WATER METER.
4. CONTRACTOR SHALL COORDINATE WITH CFPUA REPRESENTTATIVE TO DETERMINE THE BEST LOCATIONS FOR THE PROPOSED SANITARY SERVICE CLEANOUTS TO SERVE PARCELS 166 AND 167.

REFER TO SHEET UC-11 FOR -FSS6- PROFILE.
REFER TO SHEET UC-12 FOR -GS1- PROFILE.
REFER TO SHEET UC-13 FOR -W5- PROFILE.
REFER TO SHEET UC-15 FOR -C3- PROFILE.

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8/17/2018
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8:50:44 PM

PROJECT REFERENCE NO.	SHEET NO.
U-4902D	UC-8

DESIGNED BY: SHF
DRAWN BY: SHF
CHECKED BY: KCZ
APPROVED BY: KCZ
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
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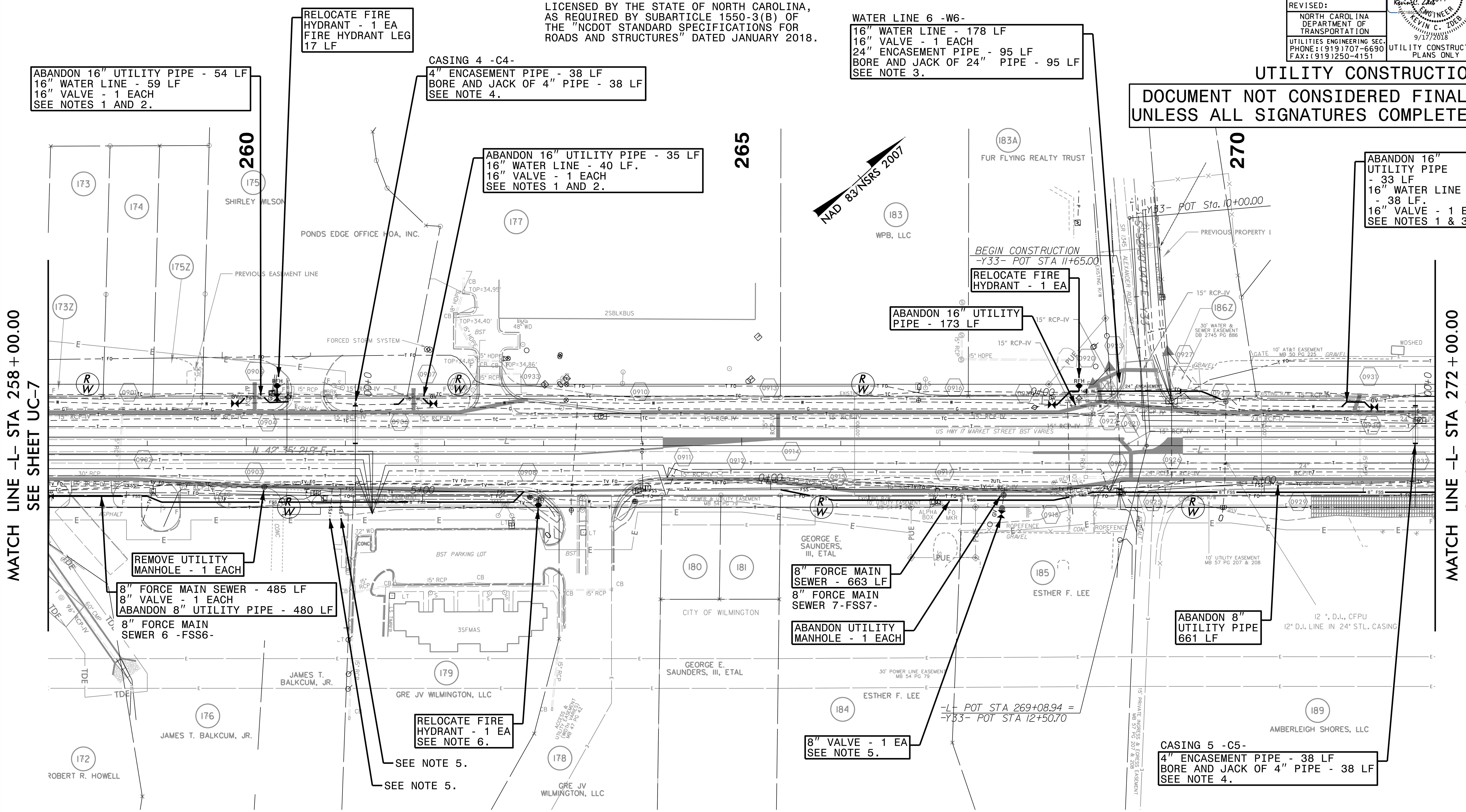
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 27611 KEVIN C. ZOEB 9/17/2018
UTILITY CONSTRUCTION PLANS ONLY

TRENCHLESS INSTALLATION NOTE:
PRIOR TO COMMENCING ANY WORK ON ANY TRENCHLESS INSTALLATION ON THIS PROJECT, THE CONTRACTOR SHALL PROVIDE A DESIGN FOR THE TRENCHLESS INSTALLATION THAT IS CERTIFIED BY A PROFESSIONAL ENGINEER LICENSED BY THE STATE OF NORTH CAROLINA, AS REQUIRED BY SUBARTICLE 1550-3(B) OF THE "NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2018.

UTILITY OWNERS ON THIS PROJECT:
CFPUA
UTILITY: 8" FORCEMAIN SS
16" WATER LINE
CONTACT: DAVID DAILEY
PHONE: 910-332-6626

UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



NOTES:
1. PROPOSED DOWN AND UNDER RELOCATION OF WATER LINE. REFER TO DETAILS ON SHEET UC-3C.
2. PERFORM BOTH THESE 16" WL RELOCATIONS AT THE SAME TIME FOR L STA 259+88.4 TO 261+88.8.
3. PERFORM BOTH THESE 16" WL RELOCATIONS AT THE SAME TIME FOR L STA 268+13.0 TO 271+38.6.
4. ENCASEMENT PIPE IS FOR FUTURE IRRIGATION SERVICE FOR GRASSED MEDIAN.
5. RECONNECT EXISTING SEWER SERVICE LINE TO RELOCATED FORCE MAIN.
6. FIRE HYDRANT SHALL BE RELOCATED VERTICALLY AS NEEDED.

THE ESTIMATED QUANTITY OF DUCTILE IRON SEWER PIPE FITTINGS ON THIS PLAN SHEET IS 1,320 LBS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 6,520 LBS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

REFER TO SHEET UC-11 FOR -FSS6- PROFILE.
REFER TO SHEET UC-11 FOR -FSS7- PROFILE.
REFER TO SHEET UC-13 FOR -W6- PROFILE.
REFER TO SHEET UC-15 FOR -C4- PROFILE.
REFER TO SHEET UC-15 FOR -C5- PROFILE.

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9/17/2018

TRENCHLESS INSTALLATION NOTE:
PRIOR TO COMMENCING ANY WORK ON ANY TRENCHLESS INSTALLATION ON THIS PROJECT, THE CONTRACTOR SHALL PROVIDE A DESIGN FOR THE TRENCHLESS INSTALLATION THAT IS CERTIFIED BY A PROFESSIONAL ENGINEER LICENSED BY THE STATE OF NORTH CAROLINA, AS REQUIRED BY SUBARTICLE 1550-3(B) OF THE "NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2018.

UTILITY OWNERS ON THIS PROJECT:
CFPUA
UTILITY: 2", 8" FORCEMAIN SS
16" WATER LINE
CONTACT: DAVID DAILEY
PHONE: 910-332-6626

PROJECT REFERENCE NO.	SHEET NO.
U-4902D	UC-9

DESIGNED BY: SHF
DRAWN BY: SHF
CHECKED BY: KCZ
APPROVED BY: KCZ
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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 27611 KEVIN C. ZOEB 9/17/2018
UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

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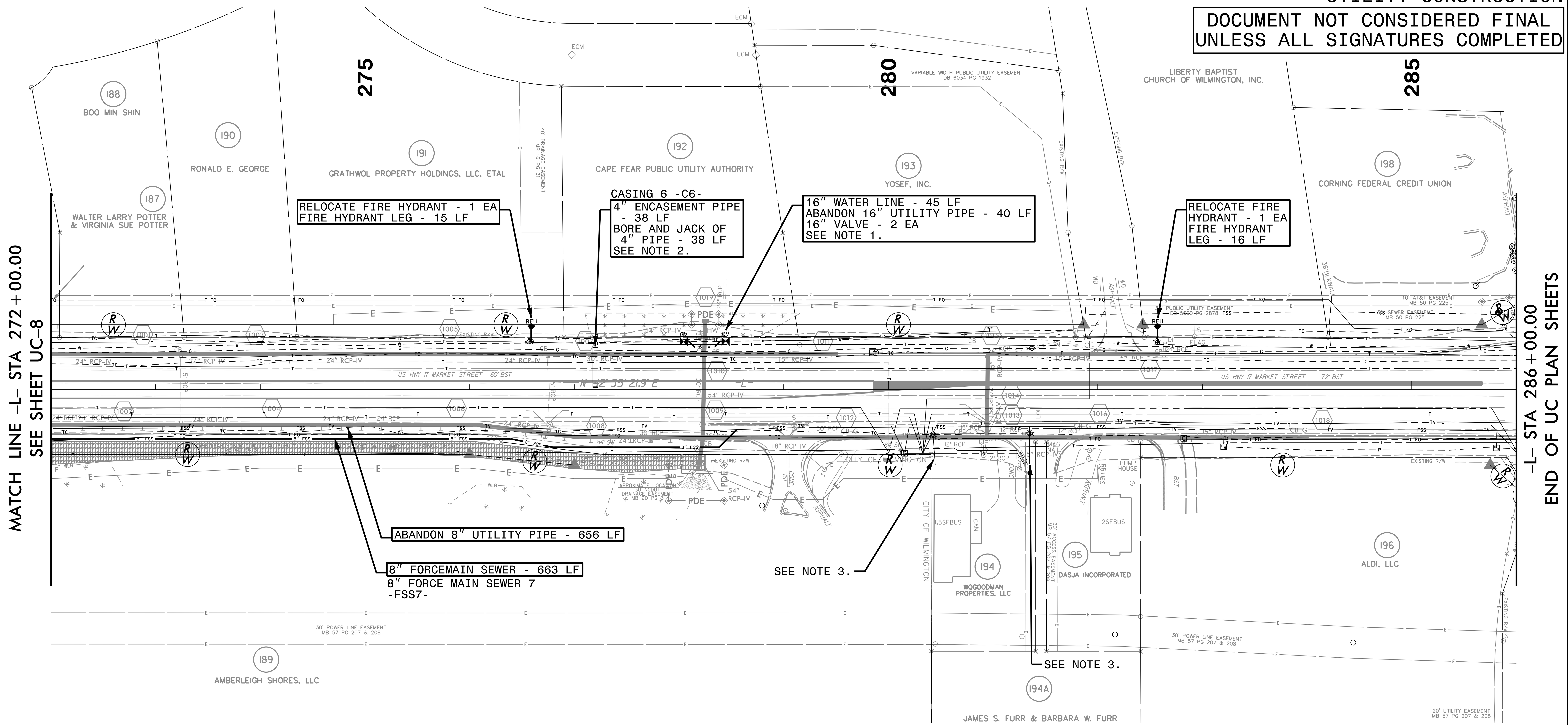

NAD 83/NSRS 2007
275
280
285
188
BOO MIN SHIN
190
RONALD E. GEORGE
191
GRATHWOL PROPERTY HOLDINGS, LLC, ETAL
192
CAPE FEAR PUBLIC UTILITY AUTHORITY
193
YOSEF, INC.
LIBERTY BAPTIST CHURCH OF WILMINGTON, INC.
198
CORNING FEDERAL CREDIT UNION
187
WALTER LARRY POTTER & VIRGINIA SUE POTTER
RELOCATE FIRE HYDRANT - 1 EA
FIRE HYDRANT LEG - 15 LF
CASING 6 -C6-
4" ENCASEMENT PIPE - 38 LF
BORE AND JACK OF 4" PIPE - 38 LF
SEE NOTE 2.
16" WATER LINE - 45 LF
ABANDON 16" UTILITY PIPE - 40 LF
16" VALVE - 2 EA
SEE NOTE 1.
RELOCATE FIRE HYDRANT - 1 EA
FIRE HYDRANT LEG - 16 LF
MATCH LINE -L- STA 272+00.00
SEE SHEET UC-8
-L- STA 286+00.00
END OF UC PLAN SHEETS
US HWY 17 MARKET STREET 60' BST
US HWY 17 MARKET STREET 72' BST
N 42°35'21.9" E
ABANDON 8" UTILITY PIPE - 656 LF
8" FORCEMAIN SEWER - 663 LF
8" FORCE MAIN SEWER 7
-FSS7-
SEE NOTE 3.
SEE NOTE 3.
CITY OF WILMINGTON
194
WOGOODMAN PROPERTIES, LLC
195
DASJA INCORPORATED
196
ALDI, LLC
189
AMBERLEIGH SHORES, LLC
194A
JAMES S. FURR & BARBARA W. FURR
30' POWER LINE EASEMENT MB 57 PG 207 & 208
20' UTILITY EASEMENT MB 57 PG 207 & 208
VARIABLE WIDTH PUBLIC UTILITY EASEMENT DB 6034 PG 1932
10' AT&T EASEMENT MB 50 PG 225

NOTES:
1. PROPOSED DOWN AND UNDER RELOCATION OF WATER LINE. REFER TO DETAIL ON SHEET UC-3C.
2. ENCASEMENT PIPE IS FOR FUTURE IRRIGATION SERVICE FOR GRASSED MEDIAN.
3. EXISTING SEWER SERVICE LINE AND MANHOLE TO REMAIN.

REFER TO SHEET UC-11 FOR -FSS7- PROFILE.
REFER TO SHEET UC-15 FOR -C6- PROFILE.

THE ESTIMATED QUANTITY OF DUCTILE IRON SEWER PIPE FITTINGS ON THIS PLAN SHEET IS 660 LBS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 1,380 LBS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

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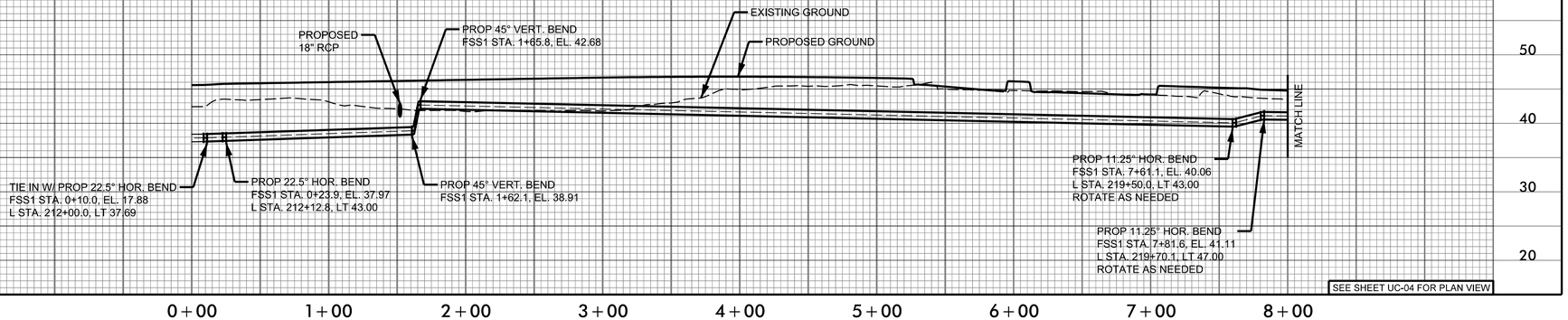
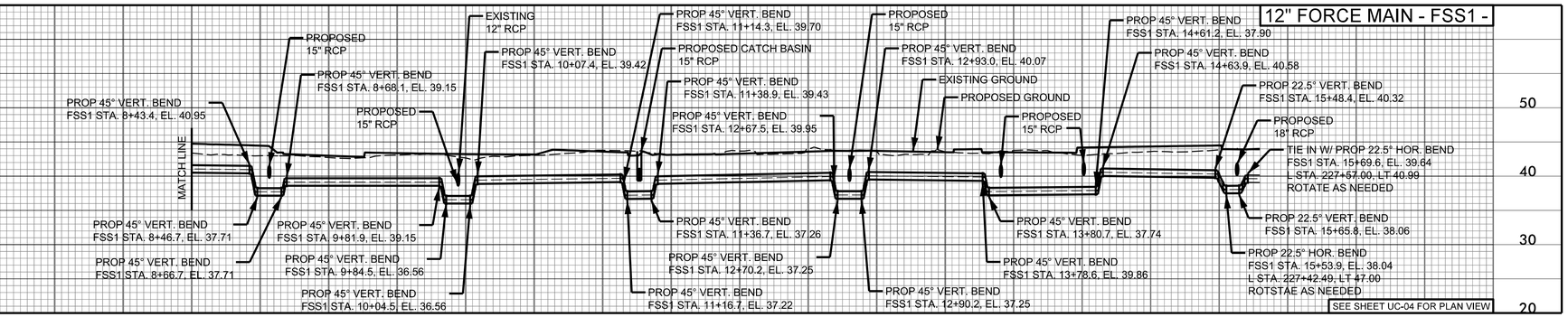
5/28/99

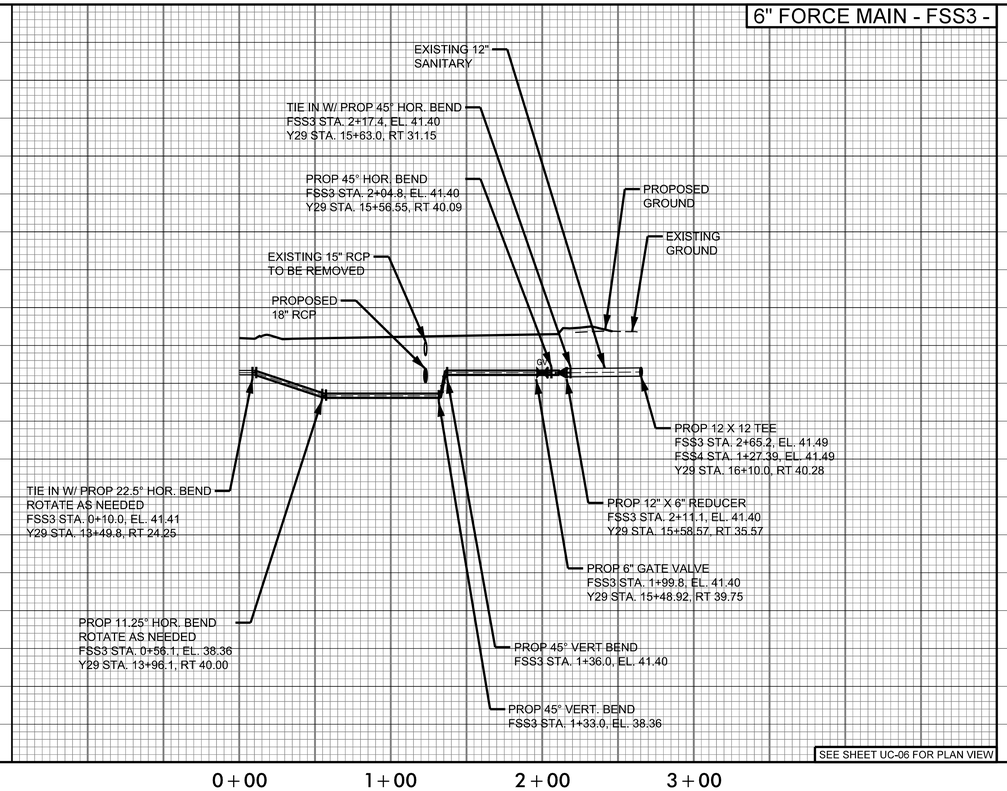
12" FORCE MAIN - FSS1 -



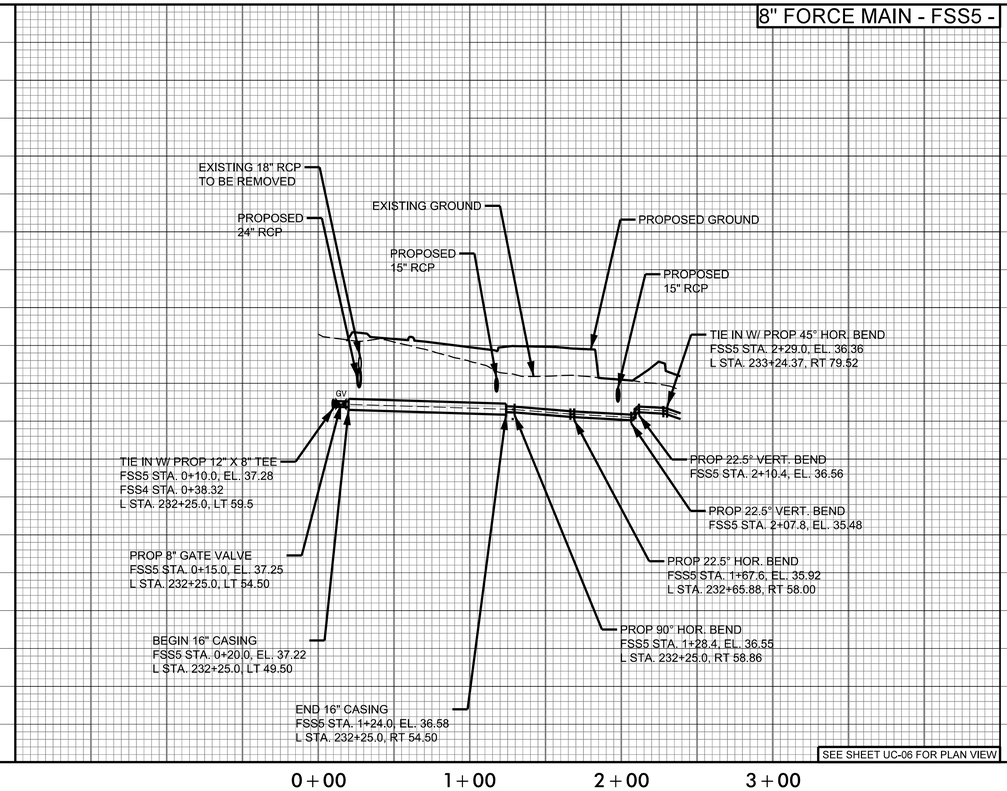
12" FORCE MAIN - FSS1 -



6" FORCE MAIN - FSS3 -



8" FORCE MAIN - FSS5 -



PROJECT REFERENCE NO.	SHEET NO.
U-4902D	UC-10
DESIGNED BY: SHF	
DRAWN BY: SHF	
CHECKED BY: KCZ	
APPROVED BY: KCZ	
REVISED:	

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NORTH CAROLINA PROFESSIONAL ENGINEER KEVIN C. ZAK 28611 — Digitally signed by SEAL — Kevin C. Zak — 9/17/2018

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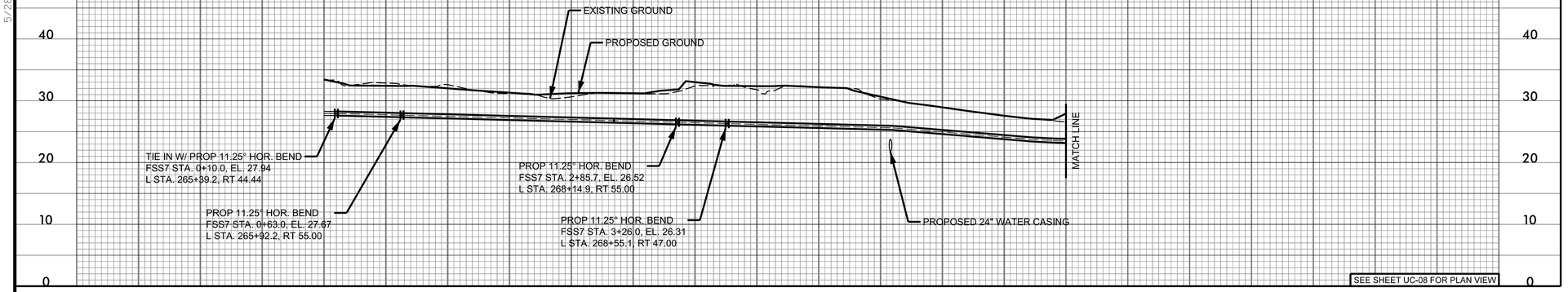
GENERAL NOTES:
(APPLIES TO ALL PROFILES)
1. EXISTING PIPE AT TIE-IN LOCATIONS ARE ESTIMATED BASED ON TEST HOLE INFORMATION PROVIDED BY OTHERS. CONTRACTOR SHALL VERIFY PIPE LOCATION BEFORE STARTING WORK.
2. ALL PROPOSED PIPE ELEVATIONS ARE TO CL OF PIPE.

50 25 0 50 100
PROFILE (HORIZONTAL)

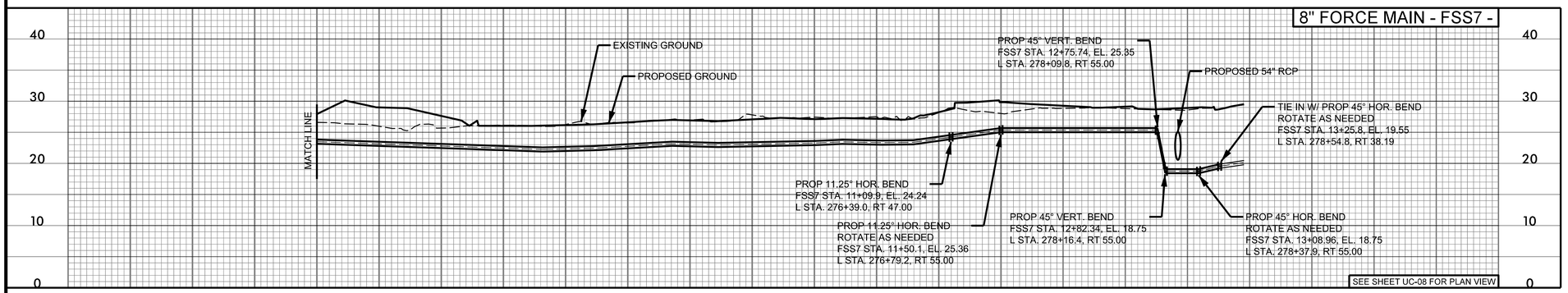
10 5 0 10 20
PROFILE (VERTICAL)

5/28/99

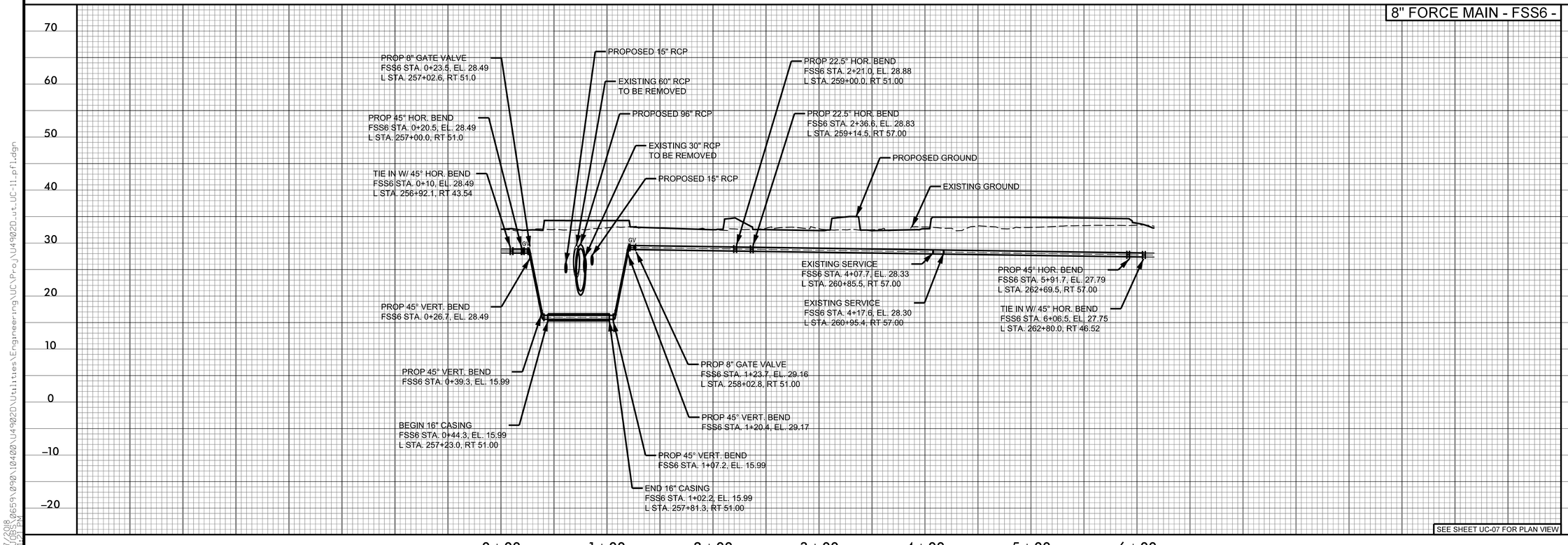
8" FORCE MAIN - FSS7 -



8" FORCE MAIN - FSS7 -



8" FORCE MAIN - FSS6 -



PROJECT REFERENCE NO.	SHEET NO.
U-4902D	UC-11
DESIGNED BY: SHF	
DRAWN BY: SHF	
CHECKED BY: KCZ	
APPROVED BY: KCZ	
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NORTH CAROLINA PROFESSIONAL SEAL 27611 ENGINEER KEVIN C. ZAK
Document not considered sealed unless digitally signed
9/17/2018

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GENERAL NOTES:
(APPLIES TO ALL PROFILES)
1. EXISTING PIPE AT TIE-IN LOCATIONS ARE ESTIMATED BASED ON TEST HOLE INFORMATION PROVIDED BY OTHERS. CONTRACTOR SHALL VERIFY PIPE LOCATION BEFORE STARTING WORK.
2. ALL PROPOSED PIPE ELEVATIONS ARE TO CL OF PIPE.

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

PROJECT REFERENCE NO.	SHEET NO.
U-4902D	UC-12

DESIGNED BY: SHF
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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 27611 KEVIN C. ZOEB 9/17/2018

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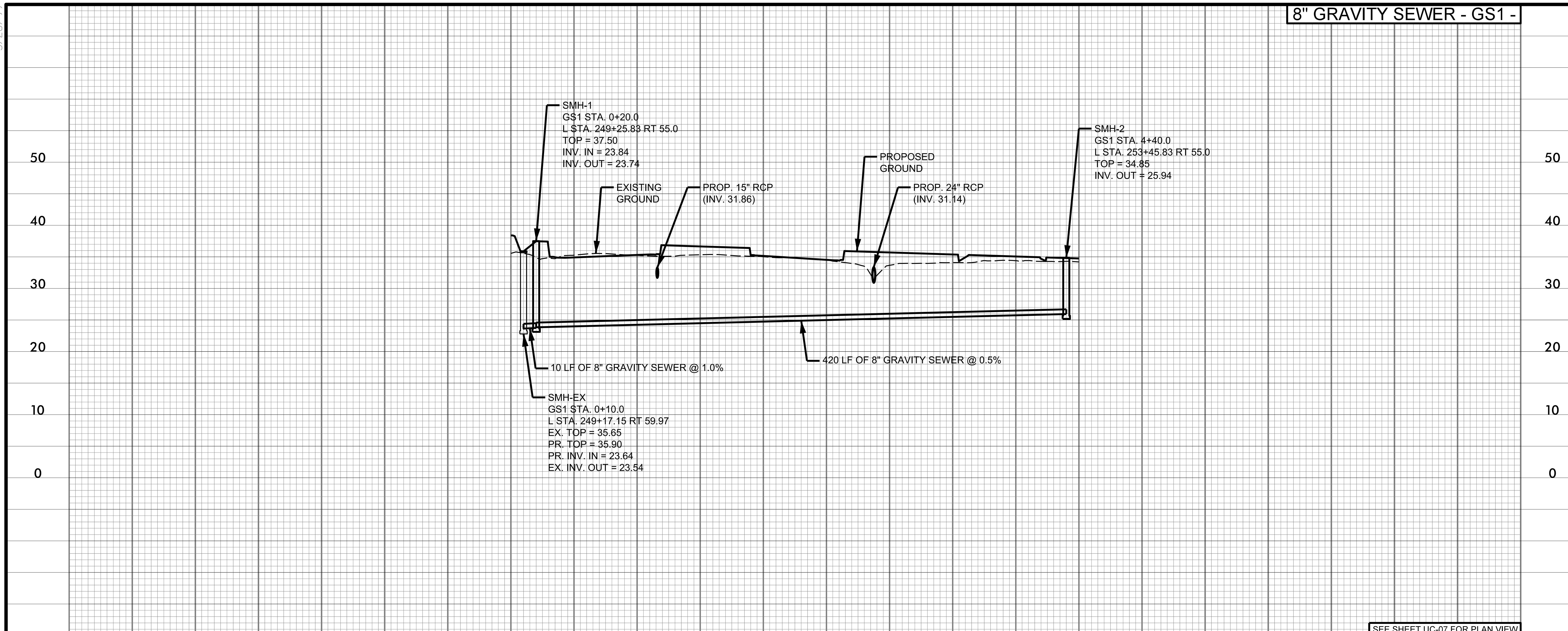
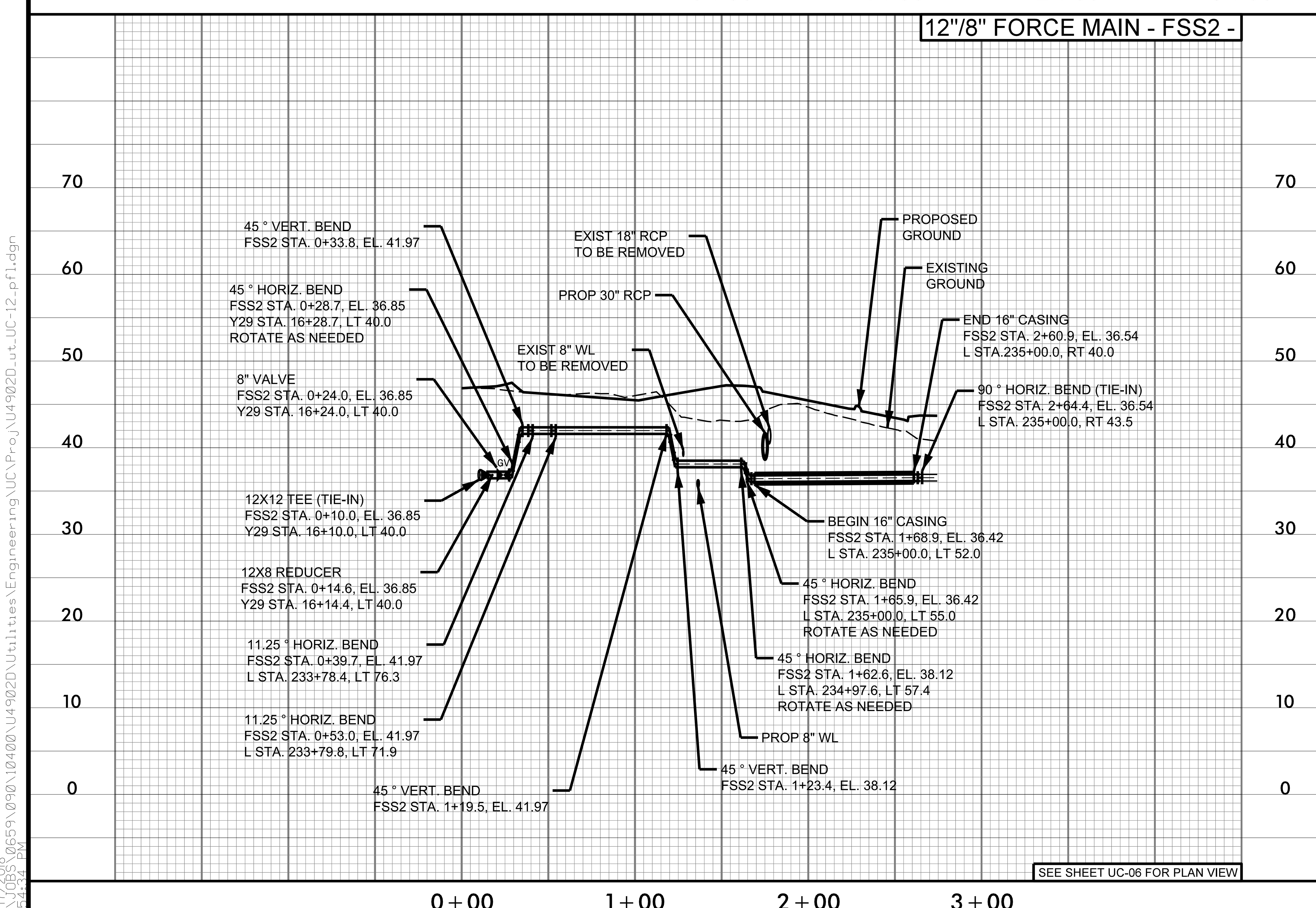
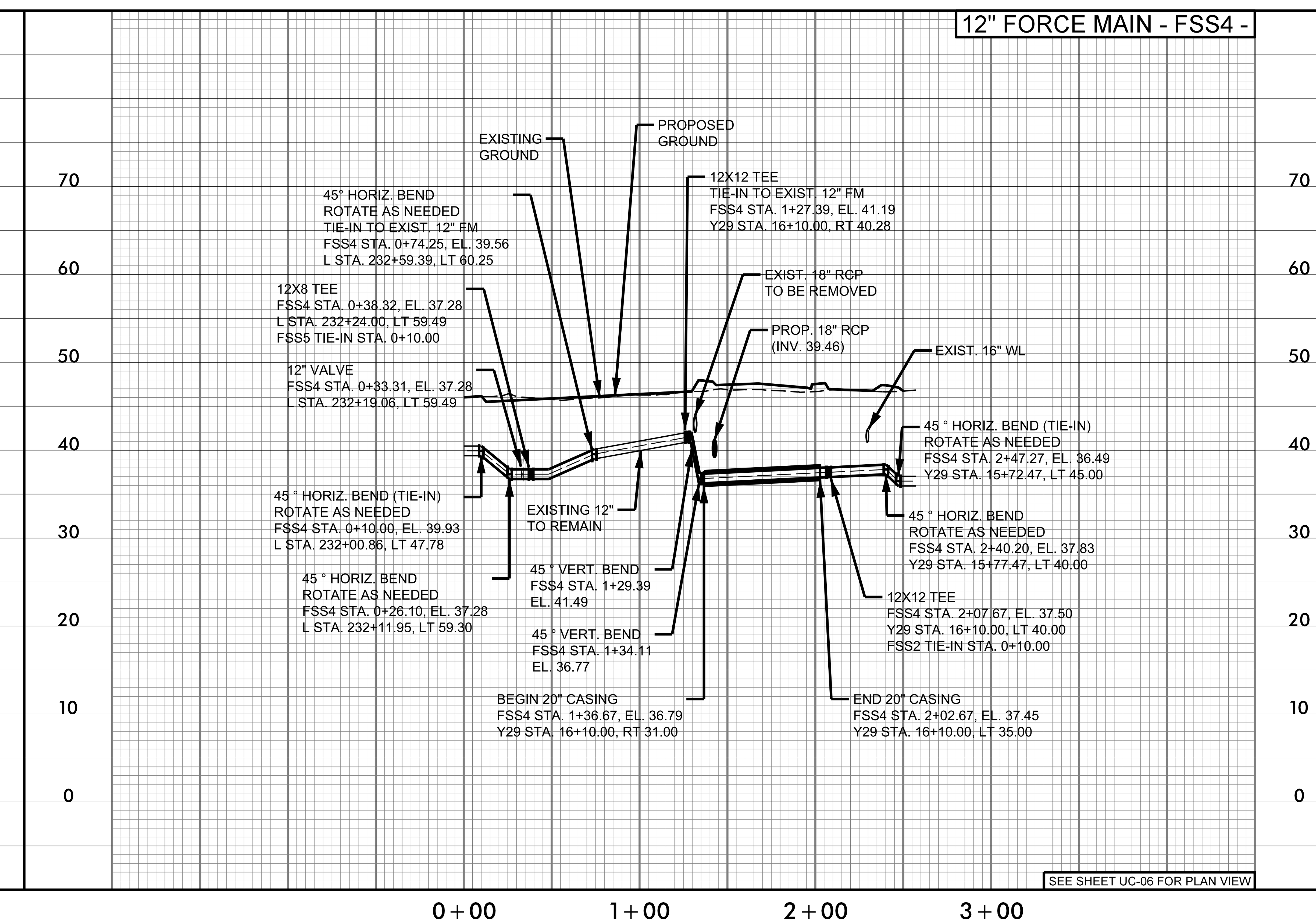
GENERAL NOTES:
(APPLIES TO ALL PROFILES)
1. EXISTING PIPE AT TIE-IN LOCATIONS ARE ESTIMATED BASED ON TEST HOLE INFORMATION PROVIDED BY OTHERS. CONTRACTOR SHALL VERIFY PIPE LOCATION BEFORE STARTING WORK.
2. ALL PROPOSED FORCE MAIN PIPE ELEVATIONS ARE TO CL OF PIPE.
3. ALL PROPOSED GRAVITY SEWER PIPE ELEVATIONS ARE TO INVERT OF PIPE.

PROFILE (HORIZONTAL): 50 25 0 50 100
PROFILE (VERTICAL): 10 5 0 10 20

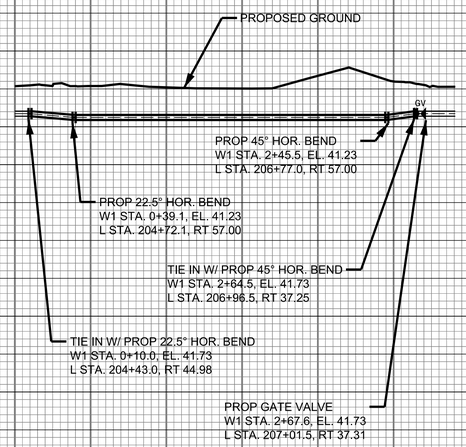






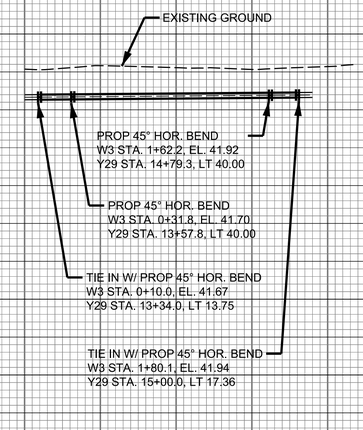
5/28/99

8" WATER MAIN - W1 -



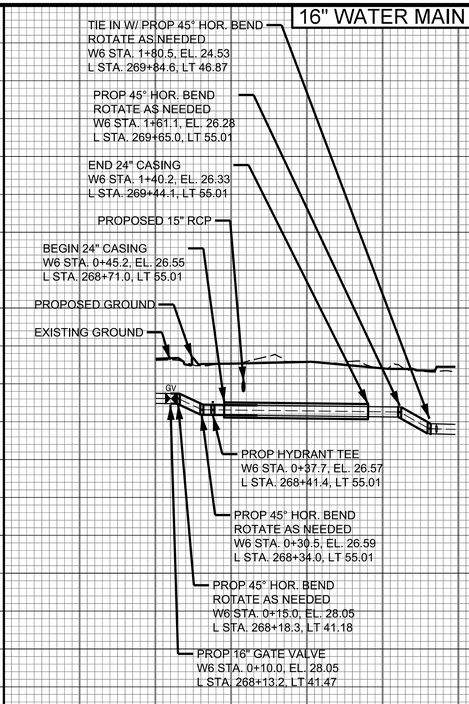
SEE SHEET UC-04 FOR PLAN VIEW

8" WATER MAIN - W3 -



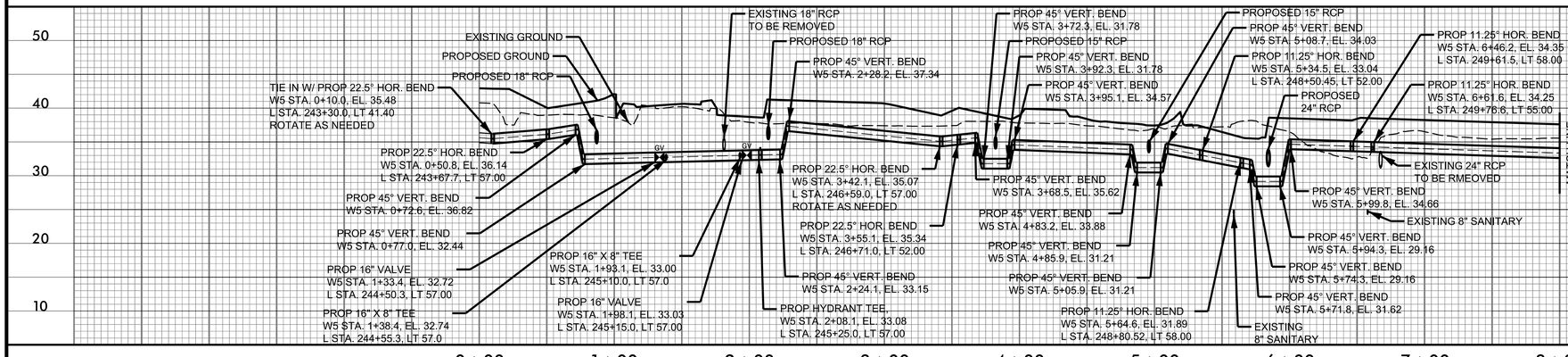
SEE SHEET UC-06 FOR PLAN VIEW

16" WATER MAIN - W6 -



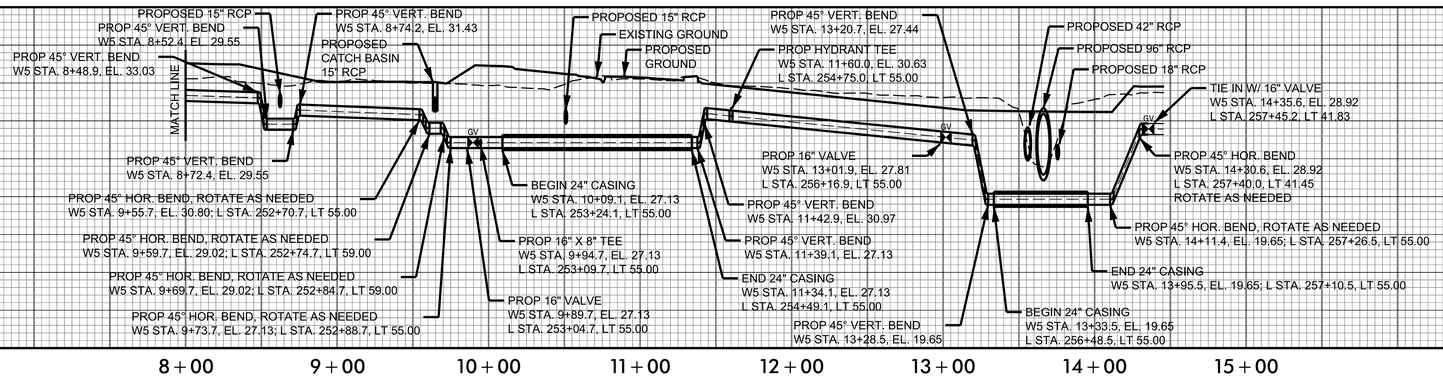
SEE SHEET UC-08 FOR PLAN VIEW

16" WATER MAIN - W5 -



SEE SHEET UC-06 FOR PLAN VIEW

16" WATER MAIN - W5 -



SEE SHEET UC-06 FOR PLAN VIEW

PROJECT REFERENCE NO.	SHEET NO.
U-4902D	UC-13

DESIGNED BY: SHF
DRAWN BY: SHF
CHECKED BY: KCZ
APPROVED BY: KCZ
REVISED:

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NORTH CAROLINA PROFESSIONAL SEAL 21611 ENGINEER KEVIN C. ZOBB
Document not considered sealed by: SEAL
Kevin C. Zobb
9/17/2018

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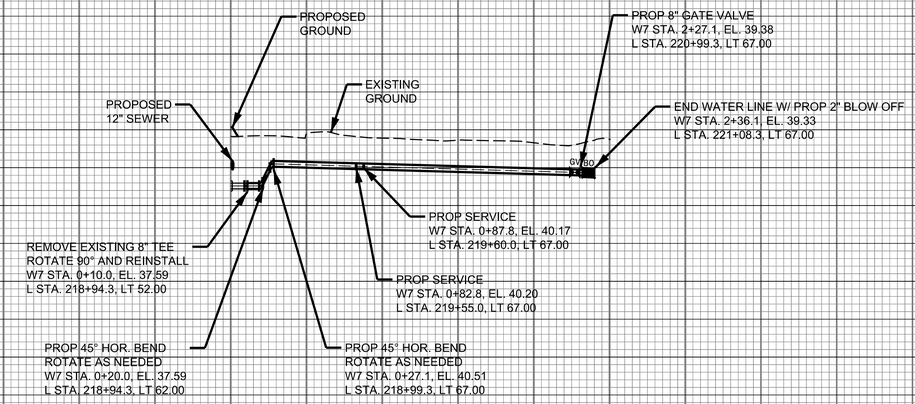
GENERAL NOTES:
(APPLIES TO ALL PROFILES)
1. EXISTING PIPE AT TIE-IN LOCATIONS ARE ESTIMATED BASED ON TEST HOLE INFORMATION PROVIDED BY OTHERS. CONTRACTOR SHALL VERIFY PIPE LOCATION BEFORE STARTING WORK.
2. ALL PROPOSED PIPE ELEVATIONS ARE TO CL OF PIPE.

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

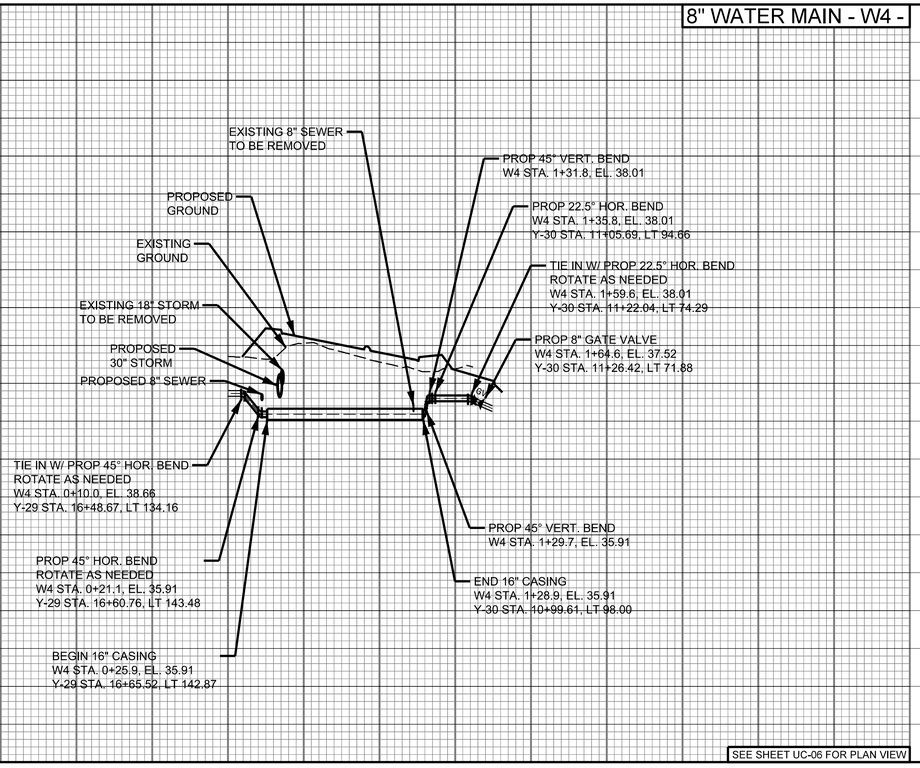
5/28/99

8" WATER MAIN - W7 -



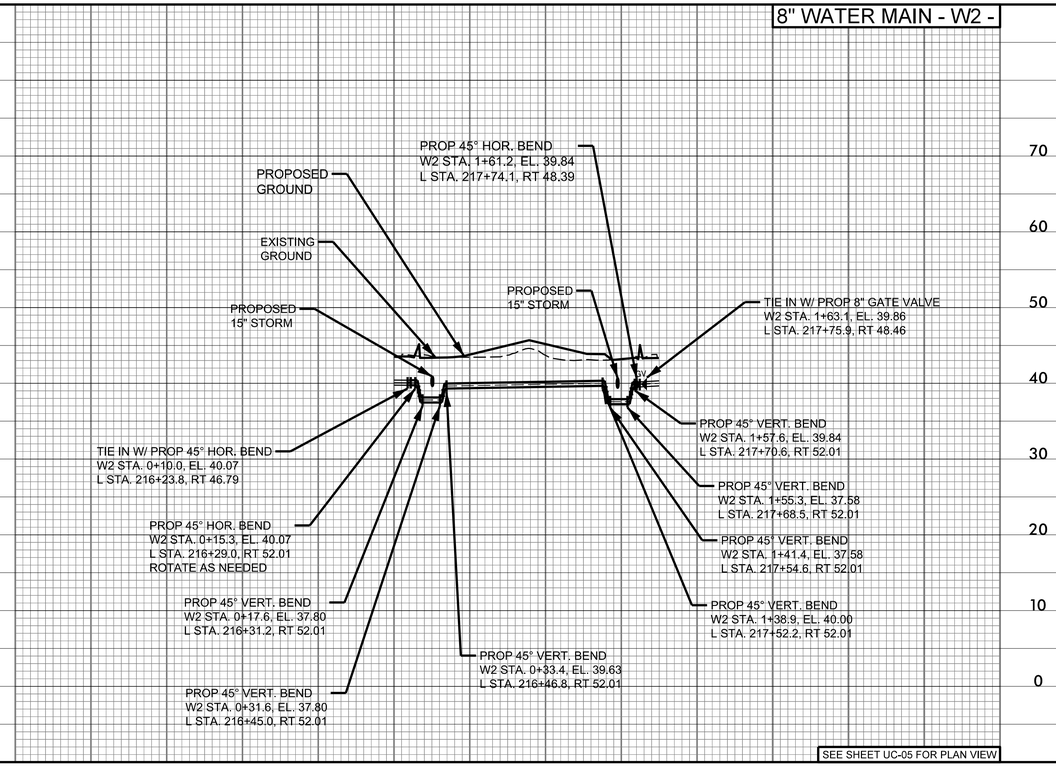
SEE SHEET UC-05 FOR PLAN VIEW

8" WATER MAIN - W4 -



SEE SHEET UC-06 FOR PLAN VIEW

8" WATER MAIN - W2 -



SEE SHEET UC-05 FOR PLAN VIEW

PROJECT REFERENCE NO.	SHEET NO.
U-4902D	UC-14
DESIGNED BY: SHF	
DRAWN BY: SHF	
CHECKED BY: KCZ	
APPROVED BY: KCZ	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE:(919)707-6690 FAX:(919)250-4151	UTILITY CONSTRUCTION PLANS ONLY

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GENERAL NOTES:
(APPLIES TO ALL PROFILES)
1. EXISTING PIPE AT TIE-IN LOCATIONS ARE ESTIMATED BASED ON TEST HOLE INFORMATION PROVIDED BY OTHERS. CONTRACTOR SHALL VERIFY PIPE LOCATION BEFORE STARTING WORK.
2. ALL PROPOSED PIPE ELEVATIONS ARE TO CL OF PIPE.
3. CONTRACTOR SHALL VERIFY ELEVATION OF WATER MAIN W7 EXISTING TEE.

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

PROJECT REFERENCE NO.	SHEET NO.
U-4902D	UC-15

DESIGNED BY: SHF
DRAWN BY: SHF
CHECKED BY: KCZ
APPROVED BY: KCZ
REVISED:

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 27611 KEVIN C. ZOEB 9/17/2018

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GENERAL NOTES:
(APPLIES TO ALL PROFILES)
1. EXISTING PIPE AT TIE-IN LOCATIONS ARE ESTIMATED BASED ON TEST HOLE INFORMATION PROVIDED BY OTHERS. CONTRACTOR SHALL VERIFY PIPE LOCATION BEFORE STARTING WORK.
2. ALL PROPOSED PIPE ELEVATIONS ARE TO CL OF PIPE.

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)