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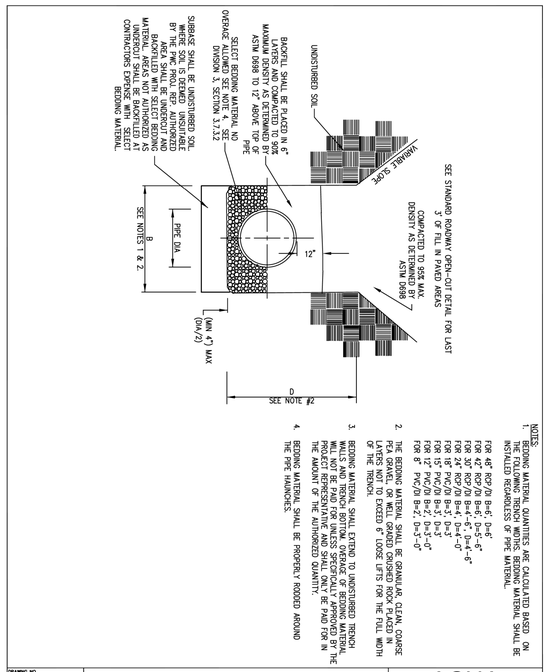
PROJECT TYPICAL DETAILS

Dewberry
8000 WYNDMOOR ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

PROJECT REFERENCE NO.	SHEET NO.
R-3825B	UC-3BQ
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	8/9/2018
UTILITIES ENGINEERING SEC. PHONE:(919)707-6690 FAX:(919)250-4151	UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL 046000 ENGINEER Timothy J. Ritacco TIMOTHY J. RITACCO

UTILITY CONSTRUCTION



NOTES:
1. 1/2" MAX FOR PIPE DIAMETER LESS THAN 24", & 24" MAX. FOR PIPE DIAMETER 24" AND GREATER.
2. "D" REFERS TO THE DIAMETER OF THE PIPE.
3. "T" REFERS TO THE THICKNESS OF THE PIPE.
4. USE OF CONCRETE ARCH HALF ENCASEMENT OR FULL ENCASEMENT TO BE DETERMINED IN THE FIELD AS DIRECTED BY THE ENGINEER.
5. REFER TO THE SPECS. FOR SHEETING AND CRADING EXCAVATIONS.
6. CONCRETE ENCASEMENT SHALL EXTEND 10' PAST THE CROSSING IN BOTH DIRECTIONS ALONG THE PIPE BEING CROSSED.

DRAWING NO. 6 | REVISION DATE 05/2012 | CONCRETE ARCH & ENCASEMENT DETAILS | AQUA Aqua North Carolina, Inc. | SEWER

NOTES:
1. WARNING TAPE SHALL BE PLACED ABOVE ALL UTILITIES. WARNING TAPE SHALL HAVE A "EARLY WARNING" PROTECTION TAPE INSTALLED CONTINUOUSLY ALONG THE ALIGNMENT. THE PROTECTION TAPE SHALL BE TERRA-TAPE OR EQUAL. TAPE SHALL BE INSTALLED APPROXIMATELY 24" BELOW FINISHED GRADE. THE TAPE SHALL BE OVER THE PIPE AND SHALL BE CONTINUOUSLY MARKED ON THE TOP OF PIPE (EXAMPLE: "CAUTION, WATER MAIN BURIED BELOW"). THE TAPE SHALL HAVE A METALLIC DETECTABLE STRIP INCLUDED AND COLOR CODED AS FOLLOWS:

GREEN - SANITARY FORCE MAIN

2. ALL DUCTILE IRON MAINS SHALL BE WRAPPED WITH GREEN BAGS.
3. DO NOT SPLICE TRACER WIRE UNDERGROUND.
4. TRACER WIRE SHALL BE INSTALLED OVER ALL PVC PIPE. PROVIDE 12 GUAGE SOLID COPPER WIRE WITH GREEN JACKET. TRACER WIRE SHALL BE 1230-HS BY COPPERHEAD OR EQUAL.
5. PROVIDE 12 GUAGE LOCKING CONNECTOR WHEN CONSECUTIVE SECTIONS OR WIRE CONNECTOR SHALL BE LOCKING SNAKEBITE BY COPPERHEAD OR EQUAL.
6. PROVIDE ACCESS BOXES WITH GREEN LID ELECTRICAL GRADE ACCESS BOXES WITH METAL BOXES SHALL BE LIGHT DUTY-XL BY COPPERHEAD OR EQUAL. DO NOT LOCATE BOXES IN DRIVEWAYS.

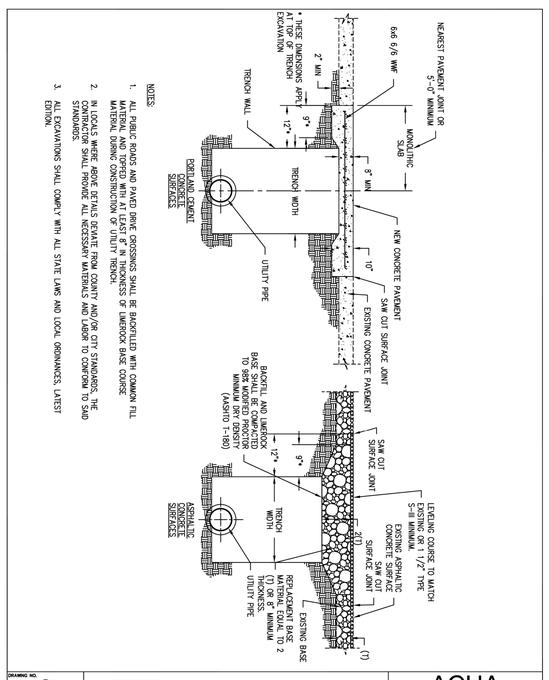
DRAWING NO. 5 | REVISION DATE 05/2012 | UTILITY PIPE LOCATION MATERIALS | AQUA Aqua North Carolina, Inc. | SEWER

NOTES:
1. BEDDING MATERIAL QUANTITIES ARE CALCULATED BASED ON THE FOLLOWING WIDTHS. BEDDING MATERIAL SHALL BE INSTALLED REGARDLESS OF PIPE MATERIAL

FOR 42" RCP/D: B=6'; D=4'
FOR 48" RCP/D: B=6'; D=5'-6"
FOR 30" RCP/D: B=4'-6"; D=4'-6"
FOR 36" RCP/D: B=5'; D=4'-6"
FOR 24" RCP/D: B=4'; D=4'-0"
FOR 18" RCP/D: B=3'; D=3'
FOR 15" PVC/D: B=3'; D=3'
FOR 12" PVC/D: B=2'; D=3'-0"
FOR 10" PVC/D: B=2'; D=3'
FOR 8" PVC/D: B=2'; D=3'-0"

2. THE BEDDING MATERIAL SHALL BE GRANULAR, CLEAN, COARSE MATERIAL WITH NO ROCKS OR CLODS OVER 2" PLACED IN 6" LAYERS NOT TO EXCEED 6" LOOSE LIFTS FOR THE FULL WIDTH OF THE TRENCH.
3. BEDDING MATERIAL SHALL EXTEND TO UNDISTURBED TRENCH WALLS AND TRENCH BOTTOM. OVERAGE OF BEDDING MATERIAL WILL BE PAID ONLY WHEN SPECIFICALLY ORDERED BY THE PROJECT REPRESENTATIVE AND SHALL ONLY BE PAID FOR IN THE AMOUNT OF THE AUTHORIZED QUANTITY.
4. BEDDING MATERIAL SHALL BE PROPERLY RODDED AROUND THE PIPE HAUNCHES.

DRAWING NO. 4 | REVISION DATE 05/2012 | TRENCH DETAIL | AQUA Aqua North Carolina, Inc. | SEWER



CARRIER PIPE AND CASING PIPE SIZES (MIN.)										
CARRIER PIPE NOM. DIA. (DI)	2	4	6	8	10	12	14	16	20	24
CASING PIPE NOM. DIA. (DI2)	6	14	16	18	22	24	30	30	36	48
WALL THICKNESS (IN.) NCDOT	0.250	0.250	0.250	0.250	0.250	0.250	0.312	0.312	0.375	0.500
WALL THICKNESS (IN.) RAILROAD	0.250	0.250	0.250	0.312	0.375	0.375	0.500	0.500	0.563	0.625

NOTES:
1. WHEN CONSTRUCTION IS WITHIN NCDOT JURISDICTION, ADDITIONAL REQUIREMENTS OF THE ENCROACHMENT AGREEMENT SHALL BE MET.
2. STAINLESS STEEL CASING SPACERS ARE REQUIRED AS SHOWN.
3. WHERE PRACTICAL, CASING SHALL EXTEND A MIN. OF 8' BEYOND EDGE OF PAVEMENT OR LONGER AS REQUIRED BY LOCAL PERMITTING AGENCIES.
4. A MINIMUM OF 3 CASING SPACERS PER 20 LINEAR FEET OF INSTALLED CARRIER PIPE SHALL BE PROVIDED.

DRAWING NO. 9 | REVISION DATE 05/2012 | BORE & JACK DETAIL CASING | AQUA Aqua North Carolina, Inc. | SEWER

NOTES:
1. ALL PUBLIC ROADS AND PAVED DRIVE CROSSINGS SHALL BE BACKFILLED WITH COMMON FILL MATERIAL AND TOPPED WITH AT LEAST 8" IN THICKNESS OF LIMEROCK BASE COURSE MATERIAL DURING CONSTRUCTION OF UTILITY TRENCH.
2. IN LOCALS WHERE ABOVE DETAILS DEVIATE FROM COUNTY AND/OR CITY STANDARDS, THE CONTRACTOR SHALL PROVIDE ALL NECESSARY MATERIALS AND LABOR TO CONFORM TO SAID STANDARDS.
3. ALL EXCAVATIONS SHALL COMPLY WITH ALL STATE LAWS AND LOCAL ORDINANCES, LATEST EDITION.

DRAWING NO. 7 | REVISION DATE 05/2012 | STANDARD ROADWAY OPEN-CUT DETAIL | AQUA Aqua North Carolina, Inc. | WATER & SEWER

9. NO WATER PIPE SHALL PASS THROUGH OR COME IN CONTACT WITH ANY PART OF A SANITARY SEWER MANHOLE OR STORM SEWER STRUCTURE.
10. A MINIMUM OF VERTICAL SEPARATION OF EIGHTEEN (18) INCHES OUTSIDE TO OUTSIDE SHALL BE MAINTAINED BETWEEN WATER MAIN, SANITARY GRAVITY SEWER, STORM SEWER OR RECLAIMED WATER LINES.
11. WHEN THERE IS LESS THAN TWENTY FOUR (24) INCHES OUTSIDE TO OUTSIDE VERTICAL SEPARATION BETWEEN WATER MAIN AND STORM SEWER, THE WATER MAIN SHALL BE UPGRADED TO DUCTILE IRON ONE FULL LENGTH OF PIPE SHALL BE CENTERED AT THE POINT OF CROSSING.
12. IF THE NON-CONFORMING IS A SANITARY GRAVITY SEWER WHERE IT IS CLOSER THAN EIGHTEEN (18) INCHES VERTICAL CLEARANCE FROM THE WATER MAIN, UPGRADE THE SANITARY GRAVITY SEWER TO DIP PVC AND HYDROSTATICALLY TEST TO WATER MAIN STANDARDS. PIPES SHALL BE LOCATED SO THAT JOINTS ARE AS FAR AS POSSIBLE FROM EACH OTHER.
13. IF THE OTHER LINE IS A RECLAIMED WATER LINE AND THE ABOVE MINIMUM SEPARATION IS NOT MET, UPGRADE THE RECLAIMED WATER LINE MATERIAL TO DUCTILE IRON.
14. SPECIAL STRUCTURAL SUPPORT OF CONCRETE SADDLES MAY BE NECESSARY AT THE CROSSING LOCATION.
15. IT IS PREFERABLE TO LAY THE WATER MAIN ABOVE THE CROSSING HAZARD.
16. DEVIATIONS AND OTHER ALTERNATIVES SHALL BE CONSIDERED ON CASE-BY-CASE BASIS AND MUST RECEIVE SPECIFIC APPROVAL BY NCDENR PRIOR TO IMPLEMENTATION.
17. THERE SHALL BE AN EQUATED (18) INCH VERTICAL SEPARATION BETWEEN WATER MAINS AND SANITARY SEWER FORCE MAINS AT CROSSINGS WITHOUT EXCEPTION. IN CASE THE ABOVE MINIMUM SEPARATION IS NOT POSSIBLE TO MAINTAIN THE REQUIRED VERTICAL SEPARATION, IT SHALL BE REPORTED TO AQUA NORTH CAROLINA, INC. AND NCDENR FOR IMPLEMENTATION. BE ACCEPTED BY NCDENR PRIOR TO IMPLEMENTATION.

DRAWING NO. 8 | REVISION DATE 05/2012 | UTILITY SEPARATION DETAILS | AQUA Aqua North Carolina, Inc. | WATER & SEWER

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