- 3. CONTRACTOR shall replace all existing water service lines damaged or cut during construction of the PROJECT from the existing water line to the existing meter stop with new 200 psi service line with no joints or splices.
- C. CONTRACTOR shall protect above ground items within the PROJECT area. Existing above ground items within the PROJECT area include but are not limited to: right-of-way monuments, adjacent property monuments, roadway signs, guardrails, improvements, mail boxes, shrubbery, small ornamental trees, fences, headwalls, paved and unpaved driveways, pavements, curbing, gutters, roads, paths, walkways, drives to mail boxes, etc.
 - 1. Prior to beginning construction, CONTRACTOR shall identify all right-of-way monuments or adjacent property corner monuments to be disturbed by the WORK. Any monuments to be disturbed by the WORK shall be referenced by a Registered Land Surveyor prior to the WORK and reset after construction by a Registered Land Surveyor.
- 2. Existing roadway signs disturbed, damaged, or removed shall be replaced, restored, and reinstalled by the CONTRACTOR as soon as possible. Existing roadway signs disturbed, damaged, or removed shall be replaced, restored, and reinstalled by the CONTRACTOR the same day disturbed, damaged, or removed. Temporary signing shall be utilized until existing permanent signs are replaced, restored, and reinstalled.
- 3. Existing undamaged guardrail removed by CONTRACTOR shall be reinstalled. Existing guardrail damaged by CONTRACTOR shall be replaced with new guardrail. Existing damaged guardrail shall be replaced with new guardrail if CONTRACTOR disturbs the existing damaged guardrail. Provide and maintain temporary barricades until the guard rail is replaced.
- 4. Existing mail boxes disturbed, damaged, or removed shall be replaced, restored, and reinstalled by the CONTRACTOR the same day disturbed, damaged, or removed.
- 5. Other improvements disturbed, damaged, or removed shall be replaced, restored, and reinstalled by the CONTRACTOR.
- 6. Shrubbery and small ornamental trees [three (3) inches diameter and smaller] disturbed, damaged, or removed shall be replaced and/or reinstalled by the CONTRACTOR within thirty (30) calendar days from the day disturbed, damaged, or removed. Shrubbery and small ornamental trees to be reused may be replanted in a temporary protected area provided by the CONTRACTOR. All shrubbery and ornamental trees that do not survive during the construction period and within the one (1) year guarantee period shall be replaced by the CONTRACTOR within thirty (30) calendar days after notification by the ENGINEER. Trees shall be permanently replanted a minimum of fifteen (15) feet from the water line.
- 7. Fences disturbed, damaged, or removed shall be replaced, restored, and reinstalled by the CONTRACTOR the same day disturbed, damaged, or removed.
- 8. Headwalls disturbed, damaged, or removed shall be replaced by the CONTRACTOR within thirty (30) calendar days from the day disturbed, damaged, or removed.
- 9. All paved (concrete and/or asphalt) driveways disturbed, damaged, or removed during construction shall have the pavement replaced within thirty (30) calendar days of disturbance.
- 10. CONTRACTOR shall provide a minimum six (6) inches of INCIDENTAL STONE BASE to temporarily and satisfactorily restore all paved and unpaved driveways, roads, paths, walkways, and drives to mail boxes within two (2) hours of disturbance. INCIDENTAL STONE BASE shall be provided and installed in all areas where pavements are removed. INCIDENTAL STONE BASE shall be provided and installed for the full width of the unpaved driveway or walkway from the edge of the NC DOT pavement to fifteen (15) feet past the opposite side of the water line trench or any other areas of driveways, roads, paths, or walkways disturbed by the CONSTRUCTION. CONTRACTOR shall maintain all driveways, roads, paths, walkways and drives to mail boxes until said driveways, roads, paths, walkways, and drives to mailboxes are accepted by the OWNER and the ENGINEER as being as good as or better than their original condition.
- 28. CONTRACTOR shall bore under all concrete or asphalt driveways and under all concrete or asphalt private roads. No casing required. Bore hole diameter shall not be greater than one (1) inch larger than pipe outside diameter. PLANS do not show all driveways and private roads. The CONTRACTOR shall make his own prebid field determination of the quantity of bores under concrete or asphalt driveways and under all concrete or asphalt private roads and shall include the associated cost within the UNIT PRICE of the pipe unless shown otherwise in the BID SCHEDULE.
- 29. In cases where the existing conditions make it difficult or impossible to bore concrete or asphalt driveways and concrete or asphalt private roads, the CONTRACTOR with the permission of the ENGINEER shall be permitted to open cut by sawing, breaking, removing, disposing and replacing of all concrete or asphalt driveways and concrete or asphalt private roads. PLANS do not show all driveways and private roads. Associated cost for BREAK, REMOVE, AND REPLACE EXISTING PAVEMENTS shall be included within the UNIT PRICE of the pipe.
- CONTRACTOR shall immediately restore all driveways, private roads and drives to mail boxes to as good as or better than original condition. CONTRACTOR shall maintain all driveways, private roads and mail box drives until said drives are accepted by the ENGINEER as being as good as or better than their original condition. Associated cost (including CABC required by D.O.T.) to be included in UNIT PRICE of pipe.
- All secondary roads and major highways shall be crossed by cased drybore as shown on the PLANS. Drybore shall extend a minimum of five (5) feet beyond the edge of the asphalt. Drybore quantities for which payment shall be made will be based upon termination of the casing no more than five (5) feet beyond the asphalt regardless of the quantity shown on the PLANS or the actual quantity installed.

- 32. All other roads or aprons shall be open cut unless PLANS specifically require a drybore. All associated cost for sawing, breaking, removing, disposing and replacing pavement shall be included in the UNIT PRICE of the pipe. PLANS do not show all aprons or roads requiring open cut. The CONTRACTOR shall make his own prebid field determination of the quantity of BREAK, REMOVE, AND REPLACE EXISTING PAVEMENTS and shall include the associated cost within the UNIT PRICE of pipe.
- 33. Blocking of Force Mains
 - A. Twelve (12) Inches and Smaller Sizes
 - 1. Provide concrete thrust blocking, rodding, gripping ring systems, restrained joints, pipe joint restraining systems, or other means approved by the ENGINEER to prevent movement of pipe, fittings, and valves, due to internal pressures resulting from hydrostatic testing and system operation.
 - 2. Blocking, rodding, gripping ring system, restrained joints, and pipe joint restraining system requirements described in the following paragraphs represent minimum requirements. Adequate blocking and joint restraint necessary to successfully accomplish hydrostatic testing shall be provided in all cases. No additional payment shall be made for blocking, rodding, gripping ring systems, and joint restraint provided over and above that required in this section.
 - 3. Provide concrete thrust blocking as follows:
 - a. At all fittings except vertical down fittings.
 - 4. Provide thrust rodding in addition to concrete thrust blocking as follows:
 - a. At the ends of steel casings, between the steel casing and the first fitting on the pipe line exiting the casing if the fitting is within ten (10) feet of the end of the casing.
 - b. At the ends of steel casings, where a valve is located between the end of the casing and a fitting within ten (10) feet of the end of the casing, thrust rodding shall be carried through the valve.
 - c. Where specifically shown on the PLANS.
 - 5. Provide gripping rings in addition to concrete thrust blocking as follows:
 - a. At all vertical up fittings.
 - b. Where specifically shown on the PLANS.
 - 6. Provide either thrust rodding or gripping rings in addition to concrete thrust blocking as follows:
 - a. Where bends are within ten (10) feet of tees, crosses, or tapping sleeves and valves.
 - b. Where specifically shown on the PLANS.
 - 7. Provide thrust rodding and gripping rings in addition to concrete thrust blocking where specifically shown on the PLANS.
 - 8. Provide gripping rings as follows:
 - a. At all vertical down fittings.
 - b. Where specifically shown on the PLANS.
 - 9. Provide restrained joints for ductile iron pipe as follows:
 - a. Where specifically shown on the PLANS and/or called for in the BID
 - b. Wedge action retainer glands, set screw retainer glands, or equals are not acceptable to be used in restrained joint pipe.
 - c. If repair of newly installed restrained joint pipe is necessary, the CONTRACTOR shall remove the restrained joint pipe and re-lay from the location to be repaired to the end of the restrained joint segment. Use of repair couplings is not acceptable in restrained joint segments of pipe.
 - 10. Provide thrust rodding, gripping rings, and/or restrained joints as follows:
 - a. Where space limitations, poor soil, or disturbed soil will not permit concrete thrust blocking.
 - b. Where required to ensure accessibility for repairs
 - c. Where specifically shown on the PLANS.
- CONTRACTOR shall provide No. 57 stone bedding beneath all valves and fittings. Sufficient stone bedding shall be on site prior to installation of valves and fittings or tie-ins to existing force main. Stone bedding shall have a minimum thickness of six (6) inches and shall extend as follows:
 - A. For 8" and smaller valves and fittings.
 - 1. Stone bedding shall extend a minimum of two (2) feet along the pipe line in each direction away from the valve or fitting joints.
 - 2. Stone bedding shall extend a minimum of one (1) foot beyond the valve or fitting in the lateral direction.
 - B. For 10" and larger valves and fittings.
 - 1. Stone bedding shall extend a minimum of three (3) feet along the pipe line in each direction away from the valve or fitting joints.
 - 2. Stone bedding shall extend a minimum of one (1) foot beyond the valve or fitting in the lateral direction.

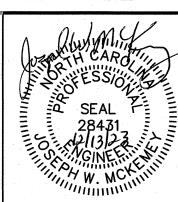
- 35. CONTRACTOR shall install marking tape above the pipe approximately one (1) foot below the ground surface for the entire length of all force mains installed except for force mains installed by horizontal directional drilling. The marking tape shall be made of three (3) inch wide, electromagnetic detectable, metallic material. The tape shall include a printed message reading "CAUTION: BURIED FORCE MAIN
- 36. CONTRACTOR shall install and attach two (2) each continuous stranded stainless steel tracer wires on top of the pipe for the entire length of all force mains installed by horizontal directional drilling. Wire shall be Type 304 stainless steel aircraft cable having a minimum diameter of 0.25 inches and 7x19 stranded construction. Wire shall be secured to the pipe at intervals not greater than five (5) feet such that the wire shall remain secured in place throughout the pulling process. Wire shall be continuous from valve box to valve box for each segment of force mains installed by horizontal directional drilling. Wire shall be looped through valve boxes to facilitate attachment of a signal generator to the wire. CONTRACTOR shall provide equipment to test and demonstrate continuous conductivity of the wire in the presence of the OWNER and the ENGINEER.
- 37. CONTRACTOR shall obtain permission from respective property owners prior to encroaching on private properties for construction purposes including, but not limited to, bore pits for drybores.
- 38. With respect to sewer main installation under existing facilities i.e., storm drainage, gas mains, etc., sewer main joints shall not be installed within four (4) feet of the existing facility. Sewer main shall be centered on existing facility.
- 39. Final Backfill and Compaction
 - A. Final Backfill Zone Materials
 - 1. Zone A Under roadway, driveway, and parking area pavements
 - a. Native soil, borrow, or select backfill material consisting of soil classified as Type GW, GP, SW, SP, GM, GC, SM, or SC in accordance with ASTM D2487. Borrow and/or select backfill shall be used if native soil cannot be compacted to the required density.
 - b. No. 67 or No. 78M stone in compliance with the NCDOT Standard Specifications for Roads and Structures.
 - 2. Zone B Between the edge of pavement and bottom of side ditch (or 10 feet from edge of pavement when there is no side ditch) below the theoretical 1:1 slope from the edge of pavement to the bottom of the nearest excavation wall
 - a. Native soil, borrow, or select backfill material consisting of soil classified as Type GW, GP, SW, SP, GM, GC, SM, or SC in accordance with ASTM D2487.
 - b. No. 67 or No. 78M stone in compliance with the NCDOT Standard Specifications for Roads and Structures.
 - 3. Zone C Between the edge of pavement and bottom of side ditch (or 10 feet from edge of pavement when there is no side ditch) above the theoretical 1:1 slope from the edge of pavement to the bottom of the nearest excavation wall
 - a. Native soil free of lumps, clods, stones, rocks, boulders, highly plastic clay, frozen lumps, or other objectionable material. Provide and add suitable soil materials as required to meet compaction requirements. Suitable soil materials shall be soil classified as Type GW, GP, SW, SP, GM, GC, SM, or SC in accordance with ASTM D2487.
 - b. Borrow or select backfill material consisting of soil classified as Type GW, GP, SW, SP, GM, GC, SM, or SC in accordance with ASTM D2487.
 - 4. Zone D Beyond the Centerline of side ditch (or 10 feet from edge of pavement when there is no side ditch)
 - a. Native soil free of lumps, clods, stones, rocks, boulders, highly plastic clay, frozen lumps, or other objectionable material. Provide and add suitable soil materials as required to meet compaction requirements. Suitable soil materials shall be soil classified as Type GW, GP, SW, SP, GM, GC, SM, or SC in accordance with ASTM D2487.
 - B. Final Backfill Compaction Requirements Not Within Public Rights-of-way
 - 1. All Traffic Ways 98% Standard Proctor Density (ASTM D698)
 - 2. Non-Traffic Ways 95% Standard Proctor Density (ASTM D698)
 - C. Final Backfill Compaction Requirements Within Public Rights-of-way
 - 1. Zone A Under roadway pavements
 - a. From the top of initial backfill to eight (8) inches below the finished subgrade – 98% Standard Proctor Density (ASTM D698)
 - b. From eight (8) inches below the finished subgrade to the finished subgrade – 100% Standard Proctor Density (ASTM D698)
 - 2. Zone A Under driveway and parking areas (paved and unpaved)
 - a. From the top of initial backfill to the finished subgrade 98% Standard Proctor Density (ASTM D698)
 - 3. Zone B Between the edge of pavement and bottom of side ditch (or 10 feet from edge of pavement when there is no side ditch) below the theoretical 1:1 slope from the edge of pavement to the bottom of the nearest excavation wall
 - a. From the top of initial backfill to the finished grade 98% Standard Proctor Density (ASTM D698)

PROJECT REFERENCE NO. SHEET NO. B-4926 UC-3A NORTH CAROLINA DESIGNED BY: DEPARTMENT OF DRAWN BY: TRANSPORTATION CHECKED BY: UTILITIES ENGINEERING SEC. APPROVED BY: JWM PHONE: (919)707-6690 FAX: (919)250-4151 REVISED:

UTILITY CONSTRUCTION

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UTILITY CONSTRUCTION PLANS ONLY

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