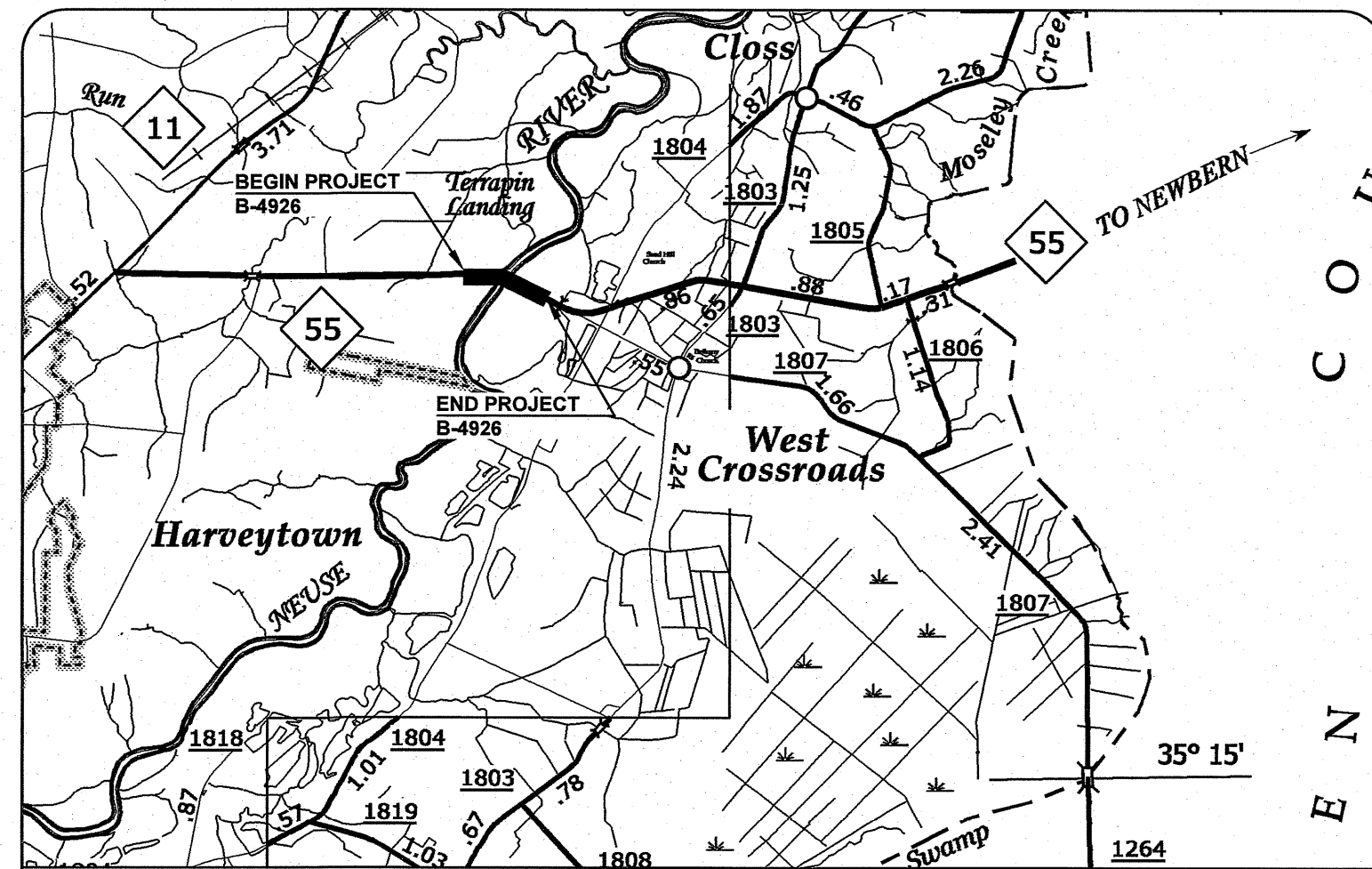


TIP PROJECT: B-4926



VICINITY MAP N.T.S.

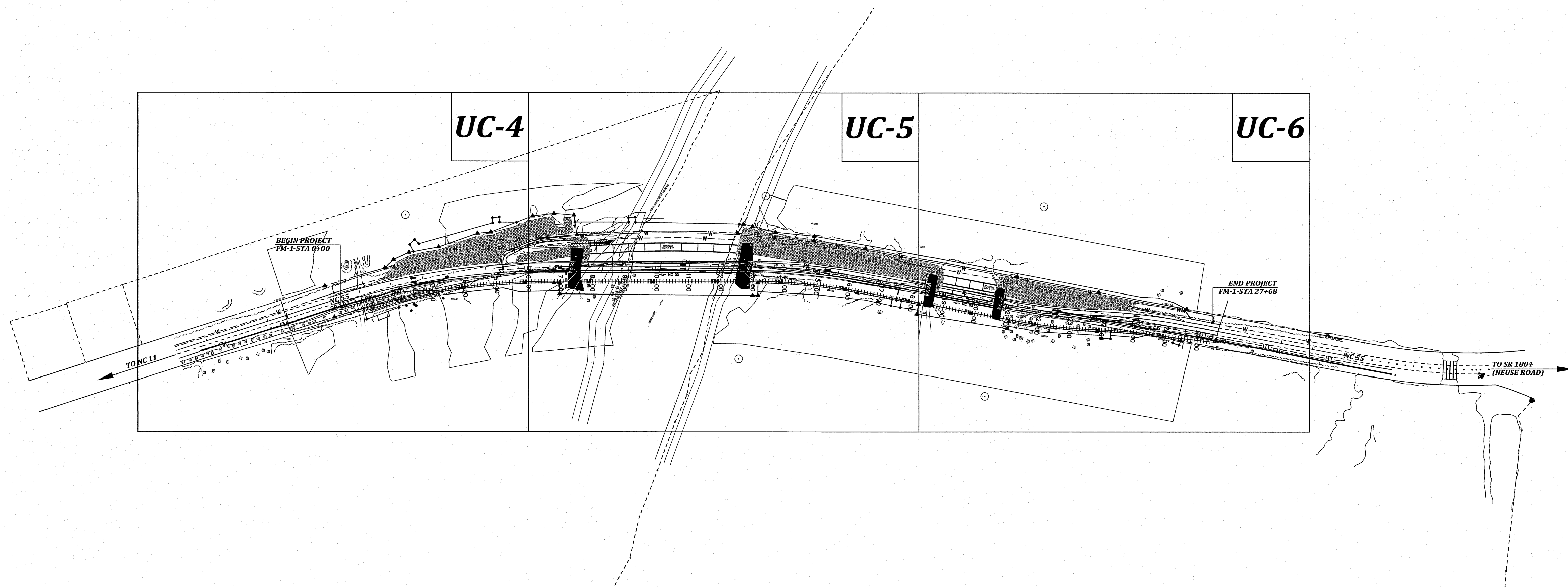
UC PLANS

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

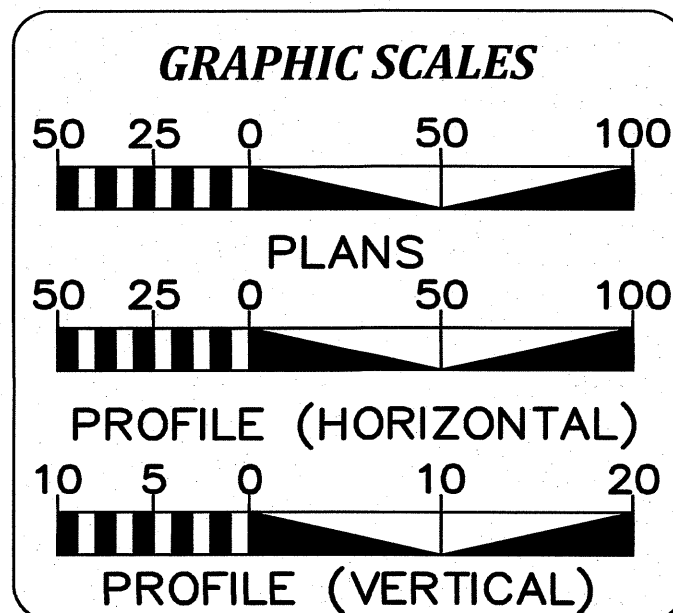
UTILITY CONSTRUCTION PLANS LENOIR COUNTY

**LOCATION: BRIDGE NO. 20 AND BRIDGE NO. 34 ON NC 55
OVER THE NEUSE RIVER**

TYPE OF WORK: FORCE MAIN RELOCATION



**DOCUMENT NOT CONSIDERED FINAL
UNTIL ALL SIGNATURES ARE COMPLETED**



INDEX OF SHEETS

SHEET NO.:	DESCRIPTION:
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLGY
UC-3 THRU UC-3B	UTILITY NOTES
UC-3C THRU UC-3F	UTILITY DETAILS
UC-4 THRU UC-6	UTILITY CONSTRUCTION SHEETS

WATER AND SEWER OWNERS ON PROJECT

(A) SANITARY SEWER - TOWN OF DOVER
(B) WATER (TRANSMISSION) - NLWC

PREPARED IN THE OFFICE OF

McDAVID ASSOCIATES, INC.
Corporate License No. C-131

CORPORATE OFFICE Engineers • Planners • Land Surveyors 3714 North Main Street P. O. Drawer 49 Farmville, NC 27828 Telephone: (252) 755-2159 Facsimile: (252) 755-7228	BRANCH OFFICE Engineers • Planners 109 East Walnut Street P. O. Box 1776 Goldston, NC 27533 Telephone: (919) 736-7630 Facsimile: (919) 736-7631
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JOSEPH W. MCKEMEY, P.E. UTILITIES ENGINEER

SEAL

McDAVID ASSOCIATES, INC.
CORPORATE
SEAL
1972

McDAVID ASSOCIATES, INC.
PROFESSIONAL
SEAL
28421
2/13/23
ENGINEER
JOSEPH W. MCKEMEY

UTILITY CONSTRUCTION PLANS ONLY

MAI REVIEW OFFICER APPROVAL

DATE _____ MAI REVIEW OFFICER _____

1-19-0309-3401

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

**DIVISION OF HIGHWAYS
UTILITIES UNIT**
1555 MAIL SERVICES CENTER
RALEIGH NC 27699-1555
PHONE (919) 707-5690
FAX (919) 250-4151

DAVID KRAMER UTILITIES ENGINEER
CHAD MILLS UTILITIES COORDINATOR

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

Water Line (Sized as Shown)	_____
11? Degree Bend	_____
22? Degree Bend	_____
45 Degree Bend	_____
90 Degree Bend	_____
Plug	_____
Tee	_____
Cross	_____
Reducer	_____
Gate Valve	_____
Butterfly Valve	_____
Tapping Valve	_____
Line Stop	_____
Line Stop with Bypass	_____
Blow Off	_____
Fire Hydrant	_____
Relocate Fire Hydrant	_____
Remove Fire Hydrant	_____
Water Meter	_____
Relocate Water Meter	_____
Remove Water Meter	_____
Water Pump Station	_____
RPZ Backflow Preventer	_____
DCV Backflow Preventer	_____
Relocate RPZ Backflow Preventer	_____
Relocate DCV Backflow Preventer	_____

PROPOSED SEWER SYMBOLS

Gravity Sewer Line (Sized as Shown)	_____
Force Main Sewer Line (Sized as Shown)	_____
Manhole (Sized per Note)	_____
Sewer Pump Station	_____

PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

Power Pole	_____
Telephone Pole	_____
Joint Use Pole	_____
Telephone Pedestal	_____
Utility Line by Others (Type as Shown)	_____
Trenchless Installation	_____
Encasement by Open Cut	_____
Encasement	_____

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.

EXISTING UTILITIES SYMBOLS

Thrust Block	_____
Air Release Valve	_____
Utility Vault	_____
Concrete Pier	_____
Steel Pier	_____
Plan Note	_____
Pay Item Note	_____
*Underground Power Line	_____
*Underground Telephone Cable	_____
*Underground Telephone Conduit	_____
*Underground Fiber Optics Telephone Cable	_____
*Underground TV Cable	_____
*Underground Fiber Optics TV Cable	_____
*Underground Gas Pipeline	_____
Aboveground Gas Pipeline	A/G Gas
*Underground Water Line	_____
Aboveground Water Line	A/G Water
*Underground Gravity Sanitary Sewer Line	_____
Aboveground Gravity Sanitary Sewer Line	A/G Sanitary Sewer
*Underground SS Forced Main Line	_____
Underground Unknown Utility Line	_____
SUE Test Hole	_____
Water Meter	_____
Water Valve	_____
Fire Hydrant	_____
Sanitary Sewer Cleanout	_____

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

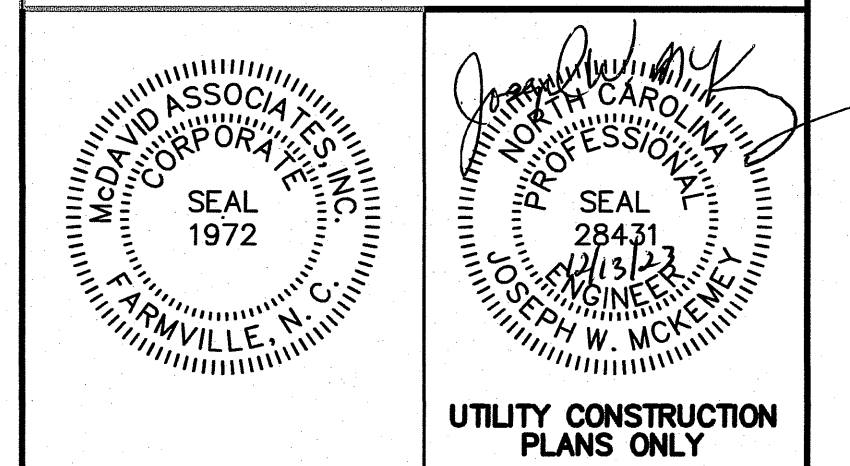
PROJECT REFERENCE NO. B-4926	SHEET NO. UC-2	
DESIGNED BY: JWM	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
DRAWN BY: MW	UTILITIES ENGINEERING SEC. PHONE: (919)707-6690 FAX: (919)250-4151	
CHECKED BY: DEG		
APPROVED BY: JWM		
REVISED:		
UTILITY CONSTRUCTION		
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CORPORATE OFFICE Engineers & Planners • Land Surveyors 3714 North Main Street P. O. Box 49 Farmville, NC 27828 Telephone: (252) 753-2139 Facsimile: (252) 753-7220	BRANCH OFFICE Engineers & Planners 199 East Walnut Street P. O. Box 1776 Goldfordsville, NC 27333 Telephone: (919) 736-7630 Facsimile: (919) 736-7651	
REVISIONS		
NO.	DATE	DESCRIPTION
MAI REVIEW OFFICER APPROVAL		
DATE	MAI REVIEW OFFICER	1-19-0309-3401

REVISIONS

SANITARY SEWER FORCE MAIN GENERAL CONSTRUCTION NOTES

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

UTILITY CONSTRUCTION
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REVISIONS		
NO.	DATE	DESCRIPTION
1	1/26/2024	Revised Note 22 Per NCDOT Comments

MAI REVIEW OFFICER APPROVAL

DATE _____ MAI REVIEW OFFICER _____ 1-19-0308-3401

- CONTRACTOR shall assign a full-time competent resident superintendent or supervisor employed by the CONTRACTOR. The superintendent/supervisor shall have authority to act, direct the WORK, supervise all subcontractors, etc. on behalf of the respective CONTRACTOR. CONTRACTOR shall not replace resident superintendent without written acknowledgment to ENGINEER and approval from OWNER.
- CONTRACTOR shall be responsible for coordination of the following:
 - Field Superintendent/Project Manager shall contact ENGINEER daily between 6:30am and 7:00am beginning three (3) days in advance of starting construction throughout the duration of the PROJECT.
 - Construction and operation efforts between PROJECT related CONTRACTORS.
 - All subcontractors for each respective CONTRACTOR.
 - Tie-ins, site construction, etc. by all PROJECT related CONTRACTORS.
 - Notification to ENGINEER of field conflicts, delays, changes, coordination issues, etc.
- CONTRACTOR shall submit shop drawings and/or catalogue cuts on selected materials for approval prior to ordering materials.
- Legend of abbreviations used in plans:
 - WDC = Water Distribution CONTRACTOR.
 - STC = Street CONTRACTOR.
 - FM with Solid Line = Proposed Force Main.
 - FM with Dashed Line = Existing Force Main.
 - W with Solid Line = Proposed Water Line.
 - W with Dashed Line = Existing Water Line.
 - V = Valve.
 - ST with Solid Line = Proposed Storm Sewer.
 - ST with Dashed Line = Existing Storm Sewer.
- The CONTRACTOR shall include all clearing in the UNIT PRICE of the pipe or applicable construction item.
- All stone bedding shall be included in the UNIT PRICE of the pipe or applicable construction item.
- Backfill material shall be as follows:
 - Under proposed pavement and curb and gutter.
 - Suitable soil material excavated from the site shall be used for backfill unless directed otherwise by the ENGINEER. Payment for backfilling shall be included within the UNIT PRICE of the pipe.
 - Borrow shall be used at the direction of the ENGINEER if existing on-site material is not suitable. Payment for BORROW shall included within the UNIT PRICE of the pipe.
 - Not under proposed pavement and curb and gutter.
 - Suitable soil material excavated from the site shall be used for backfill unless directed otherwise by the ENGINEER. Payment for backfilling shall be included within the UNIT PRICE of the pipe.
- All construction is on a UNIT PRICE basis.
- The CONTRACTOR is responsible for all subsurface conditions and construction methods necessary to install the facility.
- Backfill compaction for all force main construction shall be in accordance with SECTION 02226, EXCAVATION, BACKFILL, AND COMPACTION FOR FORCE MAINS. This section shall supersede any less stringent compaction requirements found elsewhere in the PLANS and/or SPECIFICATIONS.
- CONTRACTOR shall contact all utility companies prior to beginning work and shall fully coordinate and have all utilities flagged within the area of construction. Known utilities within the project area and their respective contacts are as follows:
 - Electrical
Duke Energy Progress (800) 452-2777
 - Gas
Piedmont Natural Gas (800) 752-7504
 - Cable TV
Optimum (252) 955-8088
 - Telephone

- Sewer Force Main
Brightspeed (252) 751-5751
Town of Dover (252) 523 9610
Chuck Cauley (252) 560-1789
 - Water Lines
North Lenoir Water Corporation
Melvin Albritton - Office: (252) 527-8352
Mobile: (252) 560-1490
- CONTRACTOR shall contact the North Carolina Department of Transportation (NC DOT) as follows:
 - CONTRACTOR shall contact the NC DOT District Engineer or the NC DOT District Engineer's representative at the following times:
 - Five (5) days prior to any WORK within NC DOT rights-of-way
 - Upon completion of all WORK within NC DOT rights-of-way
 - Prior to any lane closures within NC DOT rights-of-way
 - The NC DOT District Engineer's contact information for this PROJECT is:
N. C. Department of Transportation
Division of Highways
1629 Highway 258 South
Kinston, NC 28504
Telephone: 252-775-6530
Facsimile: 252-527-7920
 - Prior to force main construction within any area where road construction is in progress by a D.O.T. contractor, the force main contractor shall coordinate the installation of the proposed force main with the D.O.T. contractor and the D.O.T. inspector to insure that the force main is installed in a manner to avoid conflicts with the D.O.T. construction and to provide all specified bury depths and clearances.
 - All material and workmanship shall conform to the NC Department of Transportation "Standard Specifications for Roads and Structures", "Roadway Standard Drawings", and "Policies and Procedures for Accommodating Utilities on Highway Rights of Way", latest edition.
 - Construction zones and approaches to construction zones shall be signed and marked to maximize public safety in accordance with the following:
 - "Manual on Uniform Traffic Control Devices for Streets and Highways", latest revision, by U.S. Department of Transportation, Federal Highway Administration
 - "North Carolina Construction and Maintenance Operations Supplement to the Manual on Uniform Traffic Control Devices for Streets and Highways", latest revision, by Division of Highways, NC Department of Transportation
 - "North Carolina Highway Marking Manual and Supplement to the Manual on Uniform Traffic Control Devices for Streets and Highways", latest revision, by Division of Highways, NC Department of Transportation
 - NC DOT "Roadway Standard Drawings", latest revision, by NC Department of Transportation
 - NC DOT "Standard Specifications for Roads and Structures", latest revision, by NC Department of Transportation
 - Any roadway signs removed during construction shall be reinstalled immediately.
 - The CONTRACTOR shall adhere to all NC DOT safety standards, rules and regulations. A "Work Zone Traffic Control Supervisor" is a trained and qualified individual who is employed by the CONTRACTOR and is capable of identifying unsafe work zone conditions and improper traffic control. NC DOT qualified "Work Zone Flaggers" shall be used for all flagging operations.
 - The CONTRACTOR shall not perform any construction or cleanup activities unless appropriate traffic control devices and/or flagmen are in place and functional. Traffic control devices and/or flagmen shall remain in place and be maintained by the CONTRACTOR as long as necessary to prevent any unsafe condition.
 - Any work requiring equipment or personnel within five (5) feet of the edge of any travel lane of an undivided highway and within ten (10) feet of the edge of any travel lane of a divided highway shall require a lane closure with appropriate traffic control devices.
 - Work shall not be performed on both sides of the road simultaneously within the same area with the exception of a drybore or road crossing.
 - Excavation material shall not be placed on pavements. If for any reason, excavation material must be placed on pavement, written permission shall be obtained from NC DOT and presented to the ENGINEER prior to placement of the excavation material on the pavement. Excavation material shall not be placed in a manner that blocks drainage structures or creates a roadway hazard after removal. CONTRACTOR shall place screening material between the pavement and the excavation material as necessary to prevent excavation material from adhering to the pavement. The cost of screening material and the placement and removal thereof shall be included within the UNIT PRICE of the pipe.

- All locations of existing utilities, storm drainage and other facilities are approximate and shall be field verified by the CONTRACTOR prior to installation of new construction. PLANS do not show all existing utilities, storm drainage and other facilities. The CONTRACTOR shall make his own prebid field determination of all existing utilities, storm drainage and other facilities.
- CONTRACTOR shall install all force mains and appurtenances in the locations shown on the PLANS.
- When minimum cover in all directions is less than thirty-six (36) inches, the pipe shall be ductile iron pipe.
- All excavations inside the theoretical 1:1 slope from the existing edge of pavement to the bottom of the nearest excavation wall shall be made in accordance with the following:
 - Active excavation shoring, such as sheet piling, shall be installed. The design of the shoring shall include the effects of traffic loads. The shoring system shall be designed and sealed by a professional engineer licensed in North Carolina. Shoring plans and design calculations shall be submitted to the NC DOT Division Engineer for review and approval prior to construction. Trench boxes are not acceptable as shoring.
 - All trench excavation inside the limits of the theoretical 1:1 slope, shall be completely backfilled and compacted at the end of each construction day. No portion of the trench shall be left open overnight.
 - An appropriate performance bond shall be posted by the CONTRACTOR with NC DOT for a period of two (2) to five (5) years to cover any long term pavement repairs which may be required as a result of the installation.
- Trenches, bore pits and/or other excavations shall not be left open or unsafe overnight.
- CONTRACTOR shall be responsible and liable for any damages to existing items caused by the CONTRACTOR or resulting from the CONTRACTOR'S work associated with accomplishing the PROJECT. PLANS do not show all items that exist in the PROJECT area. For those items shown on the PLANS, locations are approximate. The existence of these items will significantly impact the CONTRACTOR'S ability to install the proposed piping and accomplish the WORK required by the CONTRACT DOCUMENTS. The CONTRACTOR shall make his own pre-bid field determination and investigation regarding the existence and the exact location of all items within the PROJECT area. The CONTRACTOR shall be responsible for judging and determining how and to what extent existing items will impact the CONTRACTOR'S ability to accomplish the WORK. The CONTRACTOR shall contact the owner of the respective utilities within the PROJECT area and coordinate the protection of the existing utility. Any and all fees charged by the owner of the existing utility related to the protection, holding, or relocation of the existing utility shall be paid by the CONTRACTOR. The CONTRACTOR shall repair, provide new, or replace items damaged or destroyed during construction whether said items are shown on the PLANS or not. Damage repair, new, or replacement of those items shall be included within the UNIT PRICE of the pipe. NC DOT owned or maintained items damaged or removed shall be replaced or reinstalled in conformance with NC DOT "Roadway Standard Drawings", latest revision, by NC Department of Transportation and NC DOT "Standard Specifications for Road and Structures", latest revision, by NC Department of Transportation. The costs associated with accomplishing the proposed WORK in the immediate vicinity of existing items and the protection of these existing items shall be included within the UNIT PRICE of the pipe. There shall be no additional payment to the CONTRACTOR for costs associated with temporary or permanent locating and/or relocating existing items necessary to accomplish proposed construction activities; holding existing items out of the way of construction activities; measures required for the protection of existing items; or, temporary repair, removal, providing new, and/or replacement of existing items damaged by the CONTRACTOR.
- CONTRACTOR shall protect existing storm drainage pipe before, during, and after removal and replacement. Existing undamaged storm drainage piping may be reused. Existing drainage piping damaged by the CONTRACTOR shall be replaced with new piping. Existing damaged drainage piping shall be replaced with new piping if CONTRACTOR disturbs the existing damaged piping. A storm drain pipe collar shall be installed around the joint of any pipe segment disturbed, installed, or reinstalled during construction. Drainage structures shall not be blocked with excavation materials.
- CONTRACTOR shall protect existing underground and above ground utilities within the PROJECT area. Existing underground and above ground utilities within the PROJECT area include but are not limited to: water lines, sewer lines, natural gas lines, telephone cables (including fiber optic cables), cable TV cables, and electric cables.
 - Existing utilities are numerous and alignments are irregular. Accurate depiction of the utilities on the PLANS is not possible or practical and therefore the PLANS do not typically attempt to illustrate all utilities and locations of all utilities.
 - If necessary, CONTRACTOR shall coordinate with the owner of existing overhead utilities to have utility line, pole, or guy wire, etc. held or temporarily relocated to accomplish installation of the proposed WORK.

REVISIONS

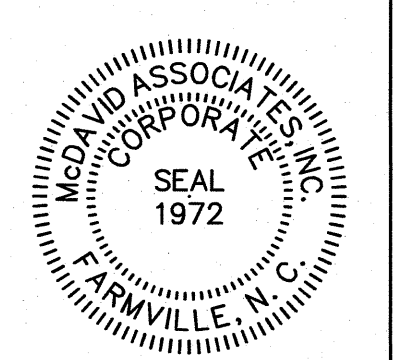
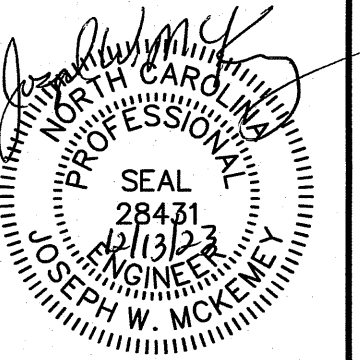

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SANITARY SEWER FORCE MAIN GENERAL CONSTRUCTION NOTES

- 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. Shrubby 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. Shrubby and small ornamental trees to be reused may be replanted in a temporary protected area provided by the CONTRACTOR. All shrubby 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.
- 30. 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 CABG required by D.O.T.) to be included in UNIT PRICE of pipe.
- 31. 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 SCHEDULE.
 - 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.
34. 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 BELOW."
- 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. B-4926		SHEET NO. UC-3A	
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UTILITY CONSTRUCTION			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
			
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REVISIONS			
NO.	DATE	DESCRIPTION	
MAI REVIEW OFFICER APPROVAL			
	DATE	MAI REVIEW OFFICER	1-19-0309-3401

SANITARY SEWER FORCE MAIN GENERAL CONSTRUCTION NOTES

- 4. 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. All Traffic Ways - 98% Standard Proctor Density (ASTM D698)
b. Non-Traffic Ways - 95% Standard Proctor Density (ASTM D698)
5. Zone D - Between the centerline of side ditch (or 10 feet from edge of pavement when there is no side ditch)
a. All Traffic Ways - 98% Standard Proctor Density (ASTM D698)
b. Non-Traffic Ways - 95% Standard Proctor Density (ASTM D698)
D. Compaction Requirements Adjacent to Buildings, Structures, and Utilities
1. 98% Standard Proctor Density (ASTM D698)
E. Moisture Control
1. Moisten and/or dry backfill materials as necessary to adjust moisture content to within two (2) percent of optimum moisture content and achieve the required density and structural stability.
F. Disposal of Excess And/or Unsuitable Materials
1. Dispose of excess and/or unsuitable excavated materials not required for fill or backfill at an approved off-site disposal site provided by the CONTRACTOR.
40. Relation of sewer force main lines to water mains.
A. Lateral separation of sewer force main lines and water mains.
1. Sewer force main lines shall be laid at least ten (10) feet laterally from existing water mains, unless local conditions or barriers prevent a ten (10) foot lateral separation.
a. If a sewer force main line cannot be laid with a ten (10) foot lateral separation with respect to water mains, the sewer force main line shall be laid within a separate trench with the elevation of the top of the sewer force main line at least eighteen (18) inches below the bottom of the water main.
B. Crossing a sewer force main line under a water main.
1. Whenever it is necessary for a sewer force main line to cross under a water main, the sewer force main line shall be laid at such an elevation that the top of the sewer force main line is at least eighteen (18) inches below the bottom of the water main, unless local conditions or barriers prevent an eighteen (18) inch vertical separation. If an eighteen (18) inch separation can not be achieved, both the water main and sewer force main shall be constructed of ferrous materials and with joints that are equivalent to water main standards for a distance of ten (10) feet on each side of the point of crossing.
C. Crossing of a sewer force main line over a water main.
1. Whenever it is necessary for a sewer force main line to cross over a water main, both the sewer force main and the water main shall be constructed of ferrous materials and with joints equivalent to water main standards for a distance of ten (10) feet on each side of the point of crossing. A section of sewer force main line shall be centered at the point of crossing.
41. Deactivation and detachment of existing force mains.
A. The detachment from OWNER'S sewer system of all existing lines being replaced by new lines, the break, removal and replacement of pavement caused by the detachment, and any fittings necessary to sever, plug, and/or stop any sewerage leakage of the existing system shall be included in the UNIT PRICE of the pipe.
B. Force mains to be severed and plugged are shown on PLANS. These lines are shown based upon the best known evidence with respect to their size, location, and type of material. CONTRACTOR shall predetermine and field verify the exact size, type, and location of the existing sewer force main line as applicable to insure minimum interruption of service.
42. Existing force main lines shall remain active until replaced by a new force main line. Temporary measures, at CONTRACTOR'S expense, may be used to insure service remains active.
43. Interruption of service.
A. Detachments or tie-ins.
1. CONTRACTOR shall notify OWNER, all affected users, and the ENGINEER prior to interruption of service.
2. If interruption of service will last greater than two (2) hours, the CONTRACTOR shall preschedule the work with OWNER at a mutually agreeable time that would impose a minimum inconvenience on the affected users.

- 44. Daily Cleanup and Maintenance of Ingress and Egress
A. All excavation, pipelaying, and backfilling activities shall be completed not later than 5:00 p.m. each work day. Incidental stone, grading, provisions for temporary drainage, and cleanup after each day's construction activities shall be completed immediately following completion of excavation, pipelaying, and backfilling operations each day. The CONTRACTOR shall not leave or abandon the work site until all daily cleanup, provisions for temporary drainage, and provisions for convenient ingress and egress have been completed.
B. Maintenance of all disturbed areas shall be provided on a daily basis as required to provide drainage and convenient ingress and egress to all properties, minimize threats for injuries associated with vehicular and/or pedestrian traffic, and maintain all unpaved areas in a manner acceptable for normal lawn care activities by adjoining residents and/or property owners.
C. The CONTRACTOR shall initiate and continuously pursue until completion all specific cleanup, cleanup maintenance, and/or repair activities requested by the ENGINEER within four (4) hours of the ENGINEER's request. The ENGINEER may request such activities based upon his observations, citizen complaints, directions from regulatory agencies, and items brought to the ENGINEER's attention by others.
D. The cost for providing temporary drainage, satisfactory ingress and egress, cleanup, and maintenance of disturbed areas shall be included within the price for the WORK. No additional payment shall be provided for these activities.
E. Failure by the CONTRACTOR to adequately provide and maintain satisfactory conditions for drainage and/or ingress and egress, correct specific cleanup, cleanup maintenance, and/or repair activities requested by the ENGINEER may result in the employment by the OWNER of an outside party to accomplish these activities. The OWNER may employ an outside party at any time the CONTRACTOR is not on the project site and unsatisfactory conditions exist regarding drainage, ingress, egress, safety, or cleanup.
F. Payment for all costs incurred by the OWNER relating to the employment of an outside party shall be reimbursed to the OWNER on a monthly basis by the CONTRACTOR. Failure to reimburse the OWNER shall result in the OWNER deducting payment for these costs from payments to the CONTRACTOR.
G. The CONTRACTOR should expect these provisions relative to daily cleanup and maintenance of ingress and egress to be strictly and rigorously enforced throughout the CONTRACT period.
45. CONTRACTOR shall, at its own expense, strictly adhere to all pertinent safety standards, rules, and OSHA regulations required or recommended by governmental or quasi-governmental authorities having jurisdiction. By submitting a BID for this CONTRACT, CONTRACTOR acknowledges that it has its own OSHA compliant safety program for all WORK covered by or performed under this CONTRACT. The CONTRACTOR by submitting a BID for this CONTRACT further acknowledges that OSHA Safety Regulations require the CONTRACTOR to keep a trained "competent person" on the job. A "competent person" is a trained individual who is employed by the CONTRACTOR and is capable of identifying existing and predictable hazards or working conditions that are hazardous, unsanitary, or dangerous to employees and has the authority to take prompt corrective measures to eliminate or control any hazard or unsafe conditions. The CONTRACTOR agrees to keep as many "competent persons" on site as necessary to maintain safe working conditions at all times. In addition to keeping as many "competent persons" on site at all times workers are in trenches and other types of excavation, the CONTRACTOR also agrees to conduct its own frequent and regular inspections of all WORK covered by or performed under this CONTRACT at the PROJECT site to verify compliance with the CONTRACTOR'S safety program and all applicable safety standards, rules, and OSHA regulations. The CONTRACTOR and the OWNER acknowledge and agree that neither the OWNER nor the ENGINEER has any control, responsibility, or authority over the CONTRACTOR or the CONTRACTOR'S employees or SUBCONTRACTOR'S with regard to the safety and health conditions relating to or arising out of the CONTRACTOR'S work or the performance of any work covered by this CONTRACT. The PROJECT OBSERVER is an employee of the ENGINEER and is not a trained "competent person". The CONTRACTOR has the sole responsibility and authority for ensuring that any and all hazardous conditions relating to or arising out of the CONTRACTOR'S work are identified and corrected. With regard to the CONTRACTOR'S work or any WORK covered by or performed under this CONTRACT, the OWNER is not the controlling employer or controlling entity for the purpose of detecting hazardous conditions or ensuring that hazardous conditions are corrected.
46. Record Drawing Access
A. The CONTRACTOR shall install vertical PVC pipe at locations as specified herein to be used for access to the installed force mains for collection of record drawing information. Collection of record drawing information shall be by the ENGINEER. Compensation for the vertical PVC pipe and the installation thereof shall be included within the UNIT PRICE of the pipe.
B. The CONTRACTOR shall place a minimum four (4) inch diameter PVC pipe vertically at all locations where transitions in materials occur (ends of casings, transitions from DI to PVC, transitions from Push-On Joint to Restrained Joint, fittings, etc.). The vertical PVC pipe shall rest on top of the center of the pipe and shall extend a minimum of eighteen (18) inches above the land surface. The vertical PVC pipe shall be installed plumb to the ground. The lower end of the vertical PVC pipe shall be capped. The lower one foot portion of the vertical PVC pipe shall contain a minimum of five (5) each 1/4" diameter holes. The CONTRACTOR shall record on the exposed portion of the vertical PVC pipe the distance in hundredths of a foot from the top of the force main to the invert of the force main. The vertical PVC pipe shall be kept open and clean of debris. Immediately after installation, the vertical PVC pipe shall be capped with duct tape to prevent debris entering the vertical PVC pipe. A sufficient number of vertical PVC pipes shall be installed so that the spacing between vertical PVC pipe shall not exceed two hundred (200) feet.

- C. Record drawing information for horizontal directional drilling shall be obtained by the CONTRACTOR as follows:
1. CONTRACTOR shall track the depth, pitch, and position of the drill head as it is advanced while drilling the pilot hole. CONTRACTOR shall mark the tracked path and depth below ground surface as tracking proceeds.
2. At ten (10) feet intervals, CONTRACTOR shall place flags, wooden stakes, or provide other means approved by the ENGINEER to permit field location of the path and recordation of the alignment and depth upon completion of drilling operations. Accurately record entry and exit locations.
3. CONTRACTOR shall provide the datum location for the bore log and provide station and offset measurements from the roadway centerline if practical. Record the measurements and provide one (1) copy of the record drawing to the ENGINEER. Provide one (1) copy of the bore log to the ENGINEER.
D. Record drawing information shall be collected by the ENGINEER at force main intervals not to exceed five thousand (5000) feet.
E. Record drawing information will be used to verify:
1. Installation compliance with CONTRACT requirements, and
2. Final pay quantities.
F. After record drawing information has been obtained, the CONTRACTOR, upon authorization by the ENGINEER, shall remove the vertical PVC pipe. CONTRACTOR shall backfill hole and compact.
47. Contractor Certified Record Drawings
A. The CONTRACTOR shall provide Contractor Certified Record Drawings to the ENGINEER of all force main construction WORK. Record Drawings shall be developed based upon field measurements of "as-built" conditions. All deviations (horizontal and vertical) from PLAN requirements shall be clearly illustrated by a single line "strike through" of the original criteria and the as-built condition written above or beside the "strike through."
B. CONTRACTOR'S submission and ENGINEER'S approval of Record Drawings are required before the CONTRACTOR will be considered substantially complete.
C. Record Drawings shall contain the following certification by the CONTRACTOR:
Contractor's Record Drawing Certification
I, _____, being duly authorized by the Board of Directors (Individual)
of _____, the prime contractor for the PROJECT (Contractor)
as shown on these PLANS, do hereby certify that these Record Drawings are made from field measurements of "as-built" facilities and are true and accurate to the best of my knowledge and belief.
Attest: _____ Seal
Corporation Secretary
Engineer's Disclosure
These "Record Drawings" were prepared from marked up drawings supplied by the CONTRACTOR and have not been field verified by the ENGINEER.

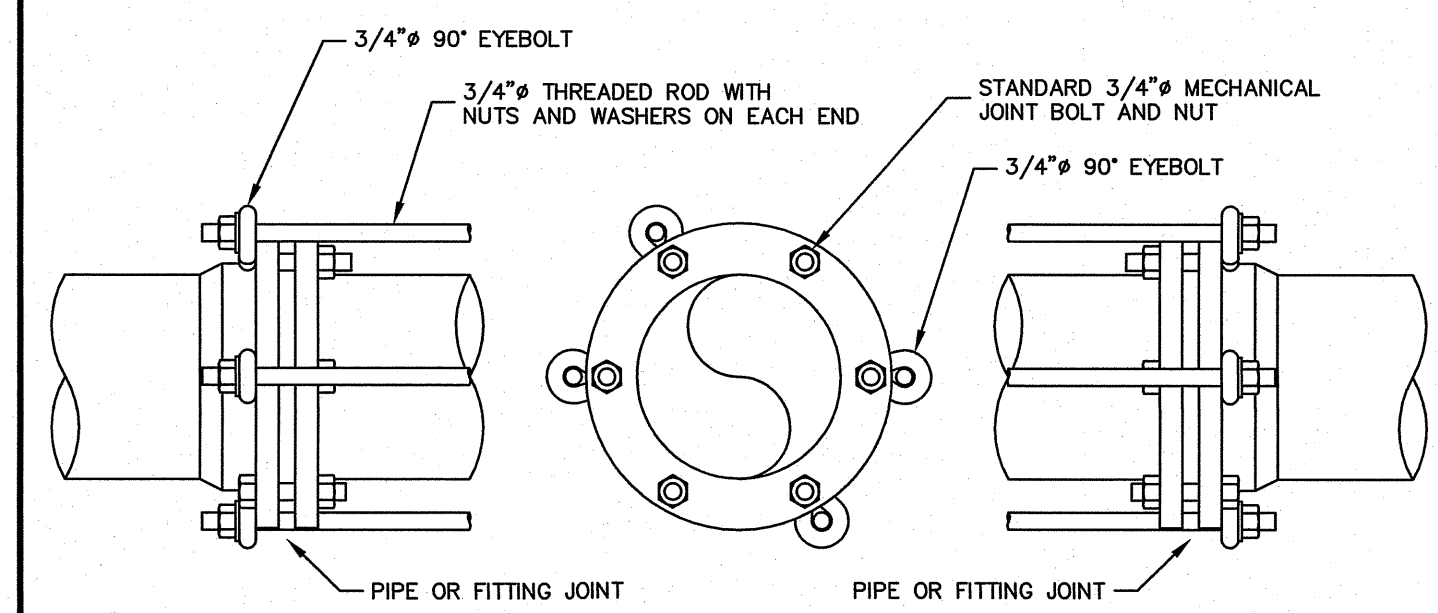
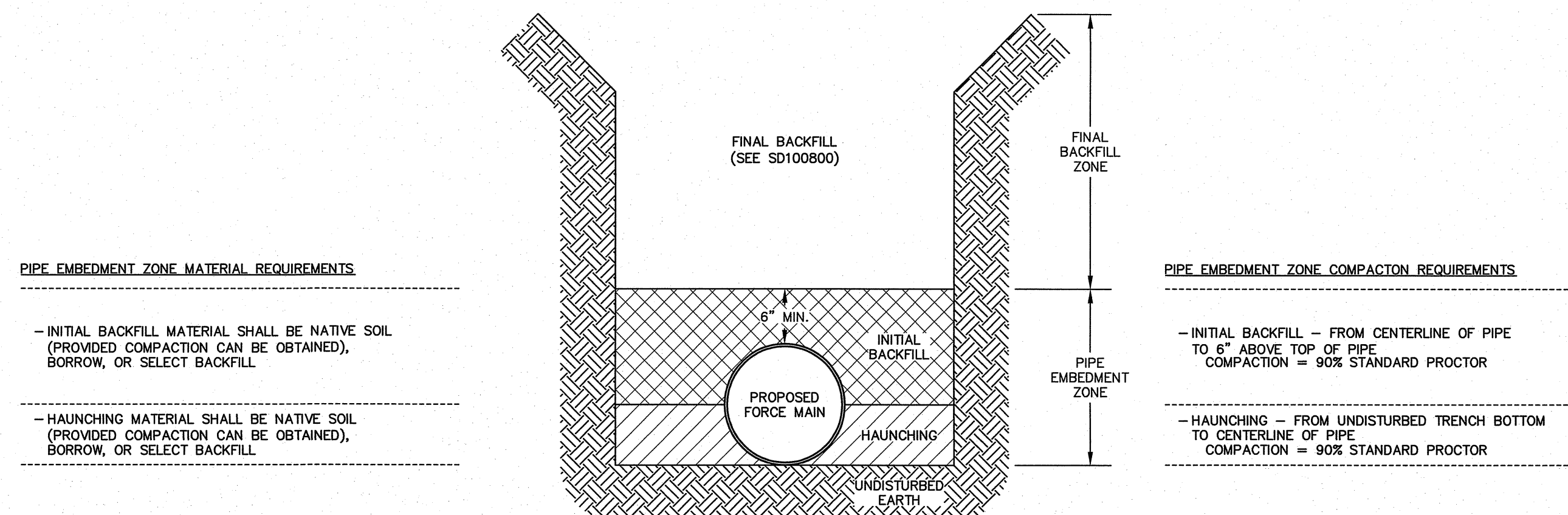
Engineer's Name, P.E.
Seal

PROJECT REFERENCE NO. B-4926 SHEET NO. UC-3B
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Corporate License No. C-131
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REVISIONS table with columns NO., DATE, DESCRIPTION
MAI REVIEW OFFICER APPROVAL
DATE MAI REVIEW OFFICER 1-19-0309-3401

REVISIONS

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PROJECT REFERENCE NO. B-4926		SHEET NO. UC-3C	
DESIGNED BY: JWM	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		
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REVISIONS			
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		DATE	MAI REVIEW OFFICER



NOMINAL PIPE SIZE (inches)	NUMBER OF THRUST RODS REQUIRED
4	2
6	2
8	2
10	4
12	4

- PROVIDE THRUST RODDING IN ACCORDANCE WITH SECTION 02669 OF THE SPECIFICATIONS.
- PROVIDE THRUST RODDING WITH 90° EYEBOLTS, RODDING LUGS, AND THREADED RODS IN ACCORDANCE WITH THE TABLE TO THE LEFT.
- EVENLY SPACE THE REQUIRED NUMBER OF THRUST RODS AROUND THE PIPE JOINT
- INSTALL EYEBOLTS IN LIEU OF STANDARD MECHANICAL JOINT BOLTS IN ROUND HOLES. INSTALL RODDING LUGS USING STANDARD MECHANICAL JOINT BOLTS IN SLOTTED HOLES. DO NOT USE EYEBOLTS IN SLOTTED HOLES.
- COMPLETELY TIGHTEN ALL MECHANICAL JOINT BOLTS BEFORE INSTALLING THREADED RODS.
- WHERE THRUST RODDING IS REQUIRED AT THE ENDS OF STEEL CASING, WELD EYEBOLTS TO THE OUTSIDE OF THE CASING WITH 1/4" BY 3" LONG WELDS ON EACH SIDE OF EYEBOLTS. SPACE EYEBOLTS AROUND CASING AT ANGULAR LOCATIONS CORRESPONDING TO THE ANGULAR LOCATIONS OF EYEBOLTS AND/OR RODDING LUGS ON THE FITTING OR VALVE.
- INSTALL THREADED RODS THROUGH EYEBOLTS AND RODDING LUGS. INSTALL NUT AND WASHER ON EACH END OF THREADED ROD AND TIGHTEN SNUG. DO NOT OVERTIGHTEN.

BEDDING AND COMPACTION REQUIREMENTS FOR SEWER FORCE MAINS

TABLE 1 - MINIMUM THRUST BLOCK AREAS AND DIMENSIONS

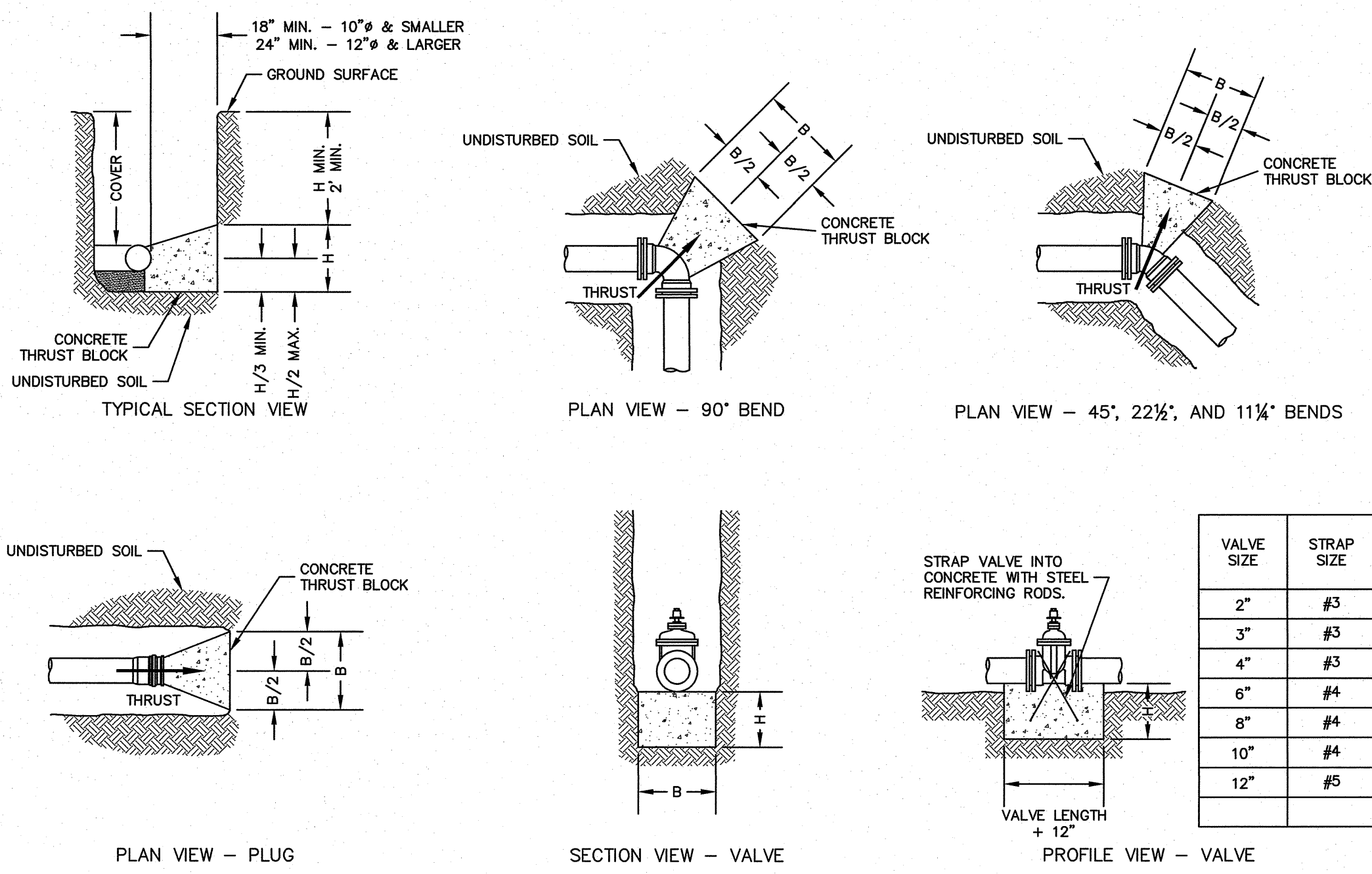
NOMINAL PIPE SIZE	90° BEND			45° BEND			22½° BEND			11¼° BEND			TEES, PLUGS AND VALVES		
	AREA (sf)	B (in)	H (in)	AREA (sf)	B (in)	H (in)	AREA (sf)	B (in)	H (in)	AREA (sf)	B (in)	H (in)	AREA (sf)	B (in)	H (in)
2"	0.4	10	6	0.2	8	4	0.1	6	3	0.1	6	3	0.3	8	6
3"	0.8	13	9	0.4	10	6	0.2	6	5	0.1	6	4	0.6	11	8
4"	1.5	18	12	0.8	13	9	0.4	10	6	0.2	6	6	1.0	15	10
6"	3.0	24	18	1.6	20	12	0.8	13	9	0.4	8	8	2.1	21	15
8"	5.2	32	24	2.8	24	17	1.4	17	12	0.7	11	11	3.6	26	20
10"	7.7	40	28	4.2	30	20	2.1	22	14	1.1	13	13	5.5	33	24
12"	10.9	50	32	5.9	36	24	3.0	24	18	1.5	15	15	7.7	40	28

BEARING AREAS IN TABLE 1 ABOVE ARE BASED ON BEARING AGAINST SAND. FOR OTHER SOIL CONDITIONS, THE AREAS AND DIMENSIONS IN TABLE 1 ABOVE SHALL BE MULTIPLIED BY THE APPROPRIATE MULTIPLIER FROM TABLE 2 BELOW.

TABLE 2 - SOIL MULTIPLIERS

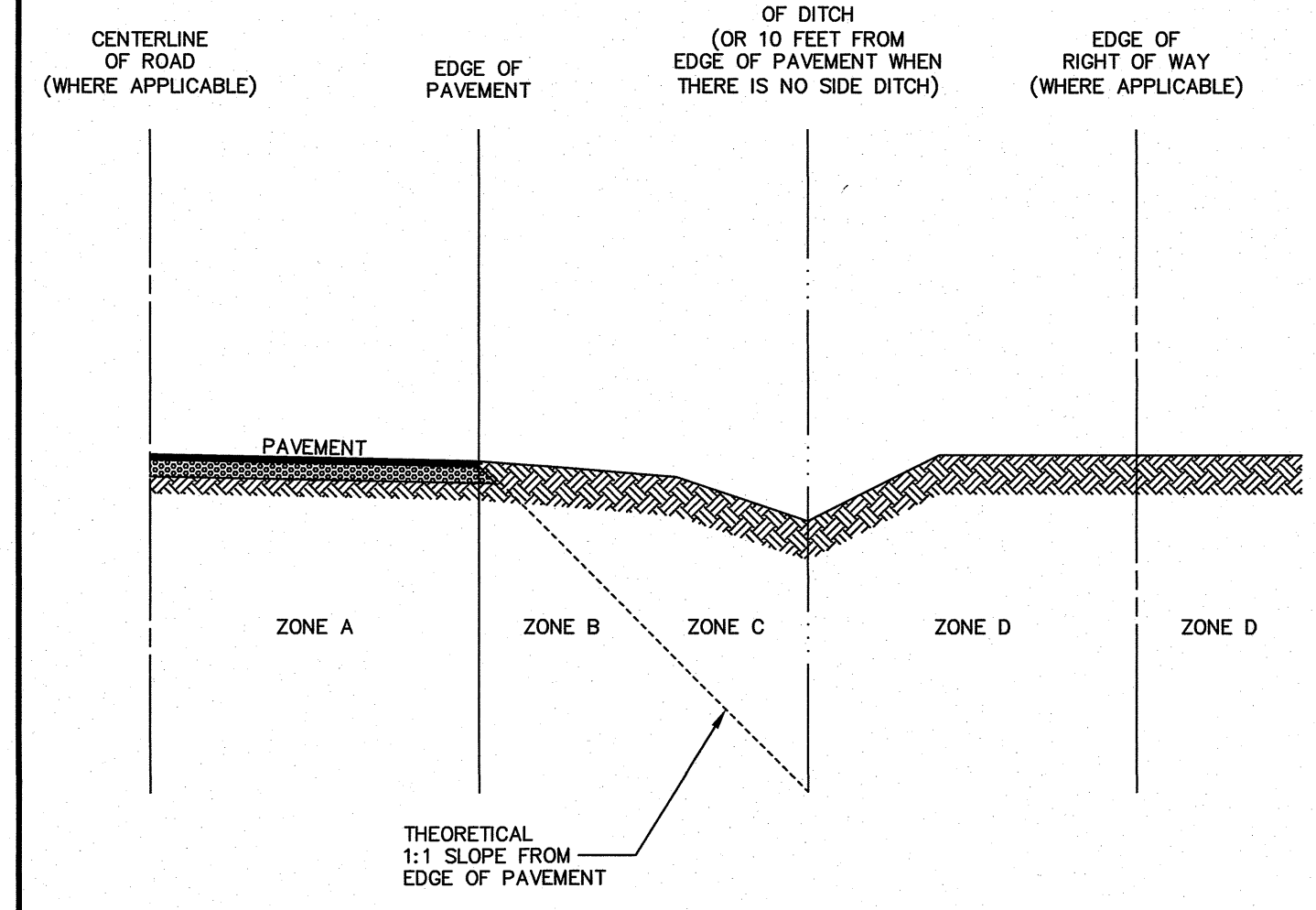
SOIL TYPE	SOIL BEARING STRENGTH (psf)	AREA MULTIPLIER	DIMENSION MULTIPLIER
SOFT CLAY	1,000	4.00	2.00
SILT	1,500	2.67	1.64
SANDY SILT	3,000	1.33	1.16
SAND	4,000	1.00	1.00
SANDY CLAY	5,000	0.80	0.90
HARD CLAY	9,000	0.45	0.67

- CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2500 PSI AT 28 DAYS.
- MINIMUM THRUST BLOCK BEARING AREAS SHALL BE AS SHOWN IN TABLE 1. THRUST BLOCK DIMENSIONS SHALL BE CHOSEN SUCH THAT THE WIDTH (B) IS BETWEEN ONE AND TWO TIMES THE BLOCK HEIGHT (H). DIMENSIONS SHOWN IN TABLE 1 ARE PREFERRED BUT MAY BE VARIED TO MEET SITE CONDITIONS.
- THRUST BLOCKS SHALL BEAR AGAINST THE ITEM BEING BLOCKED FOR A MINIMUM OF 60" ABOVE AND BELOW THE HORIZONTAL CENTERLINE OF THE ITEM.
- SURFACES OF ITEM BEING BLOCKED SHALL BE COVERED WITH POLYETHYLENE ENCASUREMENT PRIOR TO PLACING CONCRETE TO PREVENT DIRECT CONTACT AND BONDING WITH CONCRETE.
- ALL JOINTS SHALL BE ACCESSIBLE FOR REPAIR AND/OR FUTURE CONNECTIONS. CONCRETE SHALL NOT COVER BOLTS, NUTS, OR GLANDS.
- FOR 12" AND SMALLER DIAMETER FITTINGS (BOTH RESTRAINED JOINT AND NON RESTRAINED JOINT) CONCRETE THRUST BLOCKING IS REQUIRED.



CONCRETE THRUST BLOCKING FOR FORCE MAINS

MECHANICAL JOINT THRUST RODDING

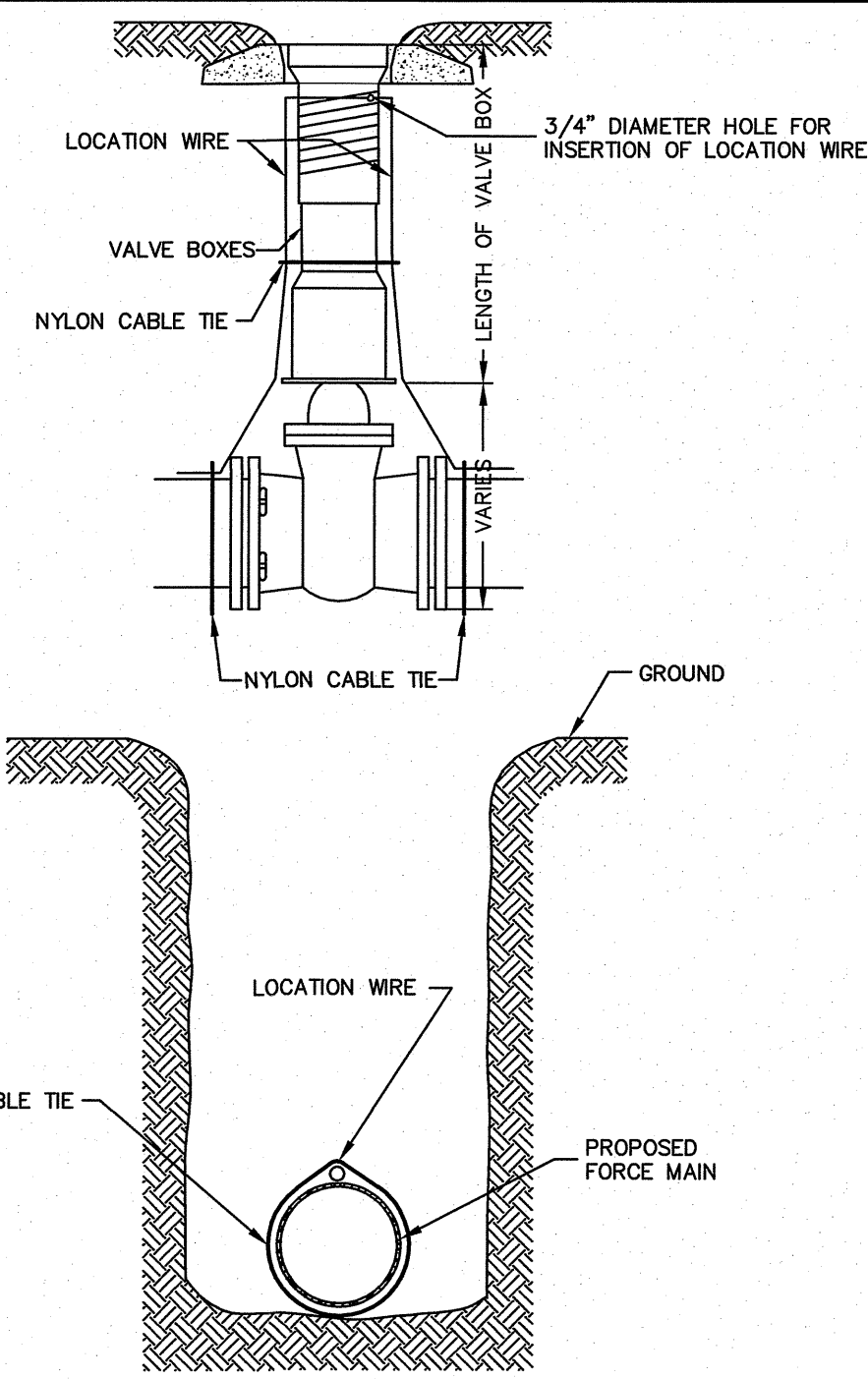


I. FINAL BACKFILL ZONE MATERIAL REQUIREMENTS

- ZONE A - UNDER ROADWAY, DRIVEWAY, AND PARKING AREAS**
 - 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.
 - NO. 67 OR NO. 78M STONE IN COMPLIANCE WITH THE NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.
- 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**
 - 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.
 - NO. 67 OR NO. 78M STONE IN COMPLIANCE WITH THE NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.

- 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**
 - 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.
 - 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.
 - ZONE D - BEYOND THE CENTERLINE OF SIDE DITCH (OR 10 FEET FROM EDGE OF PAVEMENT WHEN THERE IS NO SIDE DITCH)**
 - 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.
- FINAL BACKFILL ZONE COMPACTION REQUIREMENTS NOT WITHIN PUBLIC RIGHTS-OF-WAY
 - ALL TRAFFIC WAYS - 98% STANDARD PROCTOR DENSITY (ASTM D698)
 - ALL NON-TRAFFIC WAYS - 95% STANDARD PROCTOR DENSITY (ASTM D698)
 - FINAL BACKFILL ZONE COMPACTION REQUIREMENTS WITHIN PUBLIC RIGHTS-OF-WAY
 - ZONE A - UNDER ROADWAY PAVEMENTS**
 - FROM THE TOP OF INITIAL BACKFILL TO 8" BELOW FINISHED SUBGRADE - 98% STANDARD PROCTOR DENSITY (ASTM D698)
 - FROM 8" BELOW FINISHED SUBGRADE TO THE FINISHED SUBGRADE - 100% STANDARD PROCTOR DENSITY (ASTM D698)
 - ZONE A - UNDER DRIVEWAY AND PARKING AREAS (PAVED AND UNPAVED)**
 - FROM THE TOP OF INITIAL BACKFILL TO THE FINISHED SUBGRADE - 98% STANDARD PROCTOR DENSITY (ASTM D698)
 - 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**
 - FROM THE TOP OF INITIAL BACKFILL TO THE FINISHED SUBGRADE - 98% STANDARD PROCTOR DENSITY (ASTM D698)
 - 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**
 - ALL TRAFFIC WAYS - 98% STANDARD PROCTOR DENSITY (ASTM D698)
 - ALL NON-TRAFFIC WAYS - 95% STANDARD PROCTOR DENSITY (ASTM D698)
 - ZONE D - BEYOND THE CENTERLINE OF SIDE DITCH (OR 10 FEET FROM EDGE OF PAVEMENT WHEN THERE IS NO SIDE DITCH)**
 - ALL TRAFFIC WAYS - 98% STANDARD PROCTOR DENSITY (ASTM D698)
 - ALL NON-TRAFFIC WAYS - 95% STANDARD PROCTOR DENSITY (ASTM D698)
 - COMPACTION REQUIREMENTS ADJACENT TO BUILDINGS, STRUCTURES, AND UTILITIES
 - 98% STANDARD PROCTOR DENSITY (ASTM D698)
 - MOISTEN AND/OR DRY BACKFILL MATERIALS AS NECESSARY TO ADJUST MOISTURE CONTENT TO WITHIN 2% OF OPTIMUM MOISTURE CONTENT AND ACHIEVE THE REQUIRED DENSITY AND STRUCTURAL STABILITY.
 - DISPOSE OF EXCESS AND/OR UNSUITABLE EXCAVATED MATERIALS NOT REQUIRED FOR FILL OR BACKFILL AT AN APPROVED OFF-SITE DISPOSAL SITE PROVIDED BY THE CONTRACTOR.

FINAL BACKFILL AND COMPACTION REQUIREMENTS FOR FORCE MAIN

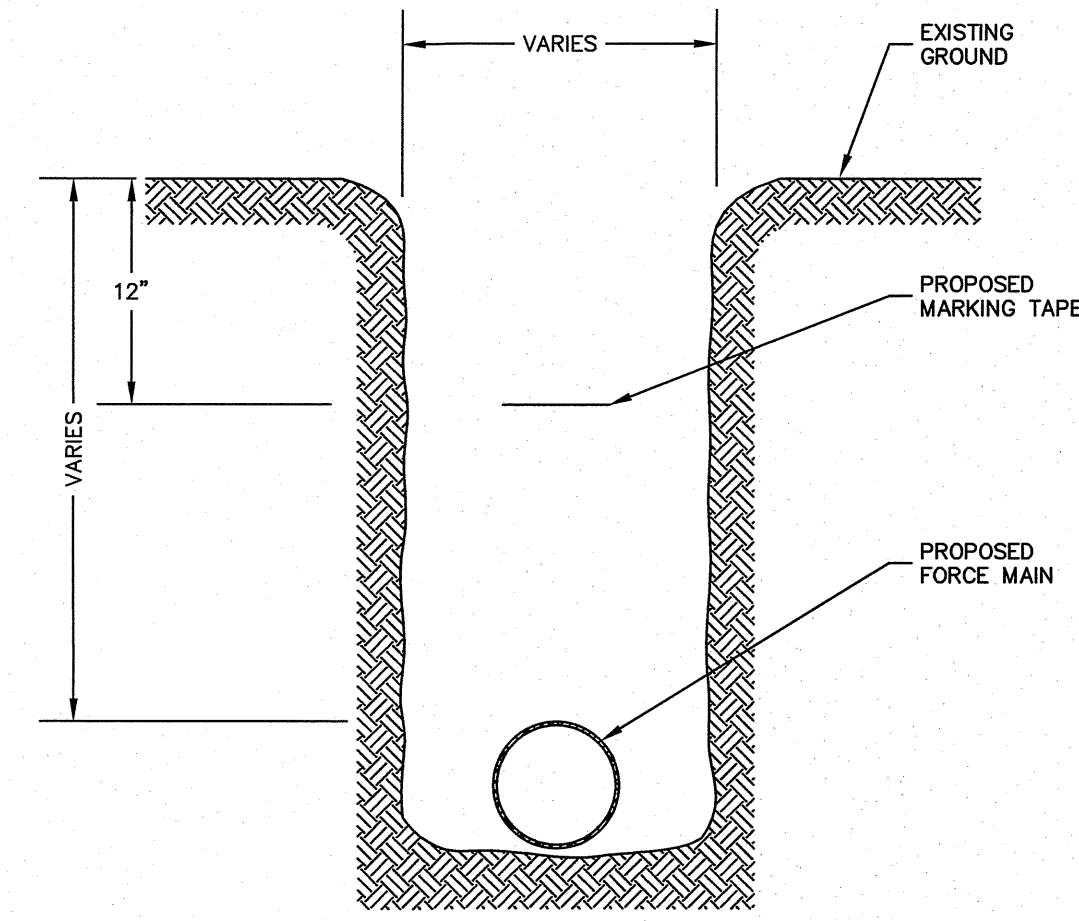


NOTES

1. LOCATION WIRE SHALL BE #12 AWG SOLID COPPER WIRE WITH GREEN MOISTURE RESISTANT THWN PLASTIC INSULATION WITH EXCEPTION TO HORIZONTAL DIRECTIONAL DRILL INSTALLATIONS (SEE SPECIFICATIONS).
2. LOCATION WIRE SHALL BE STRAPPED TO PIPE WITH NYLON CABLE TIES. NYLON CABLE TIE SPACING SHALL NOT EXCEED:
 - A. SIX (6) FEET FOR ALL PIPE INSTALLED BY OPEN CUT.
 - B. FOUR (4) FEET FOR ALL PIPE INSTALLED IN CASING.
 - C. FOUR (4) FEET FOR ALL PIPE INSTALLED BY DIRECTIONAL DRILLING
3. LOCATION WIRE SHALL BE CONTINUOUS THROUGHOUT THE ENTIRE PIPE LINE. WHERE SPLICES ARE NECESSARY, SPLICES SHALL BE SUITABLE FOR UNDERGROUND USE.
4. DRILL 3/4\"/>

LOCATION WIRE FOR FORCE MAIN

A



NOTES

1. MARKING TAPE SHALL BE INSTALLED ONE (1) FOOT BELOW FINAL GRADE.

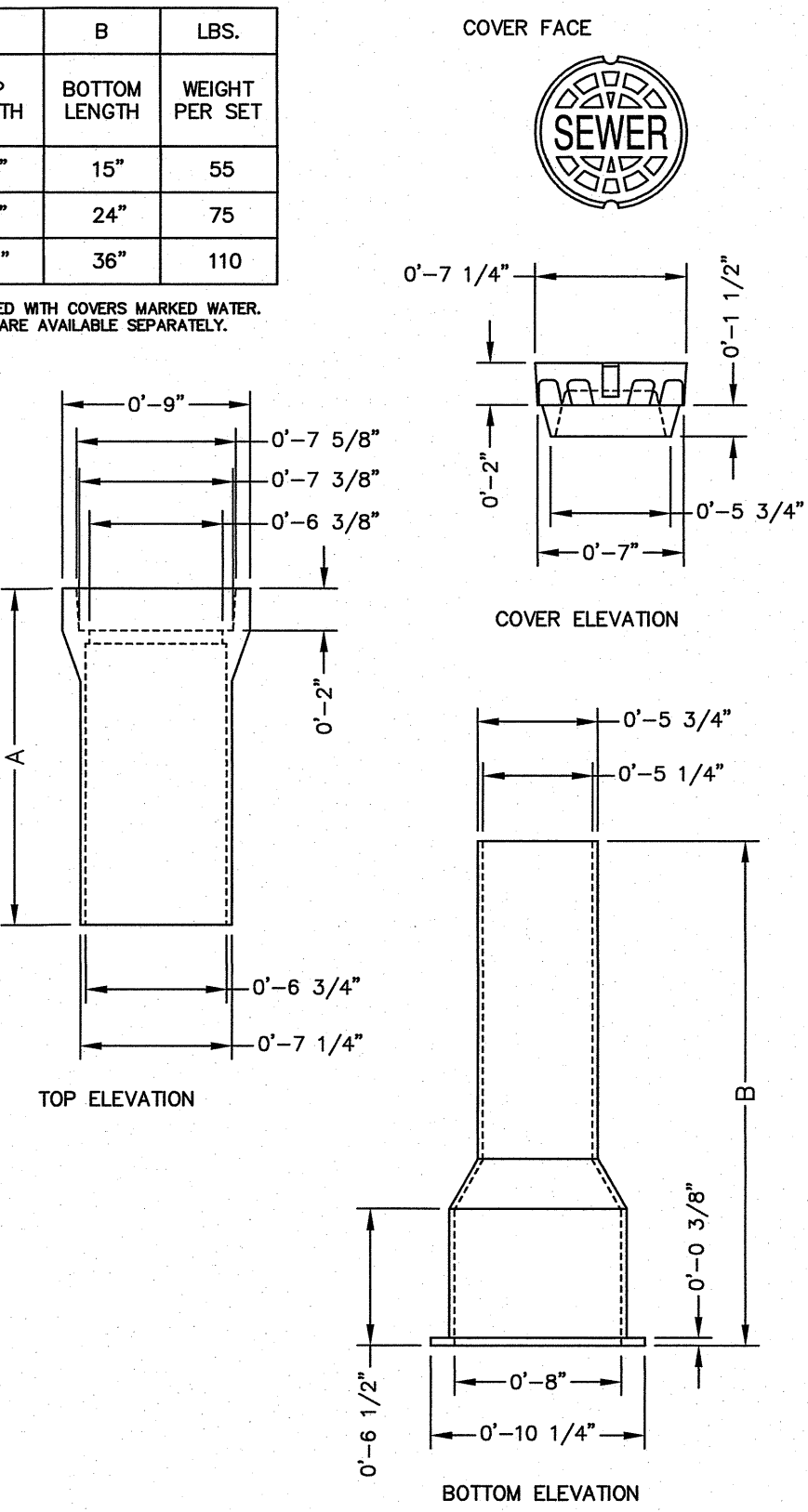
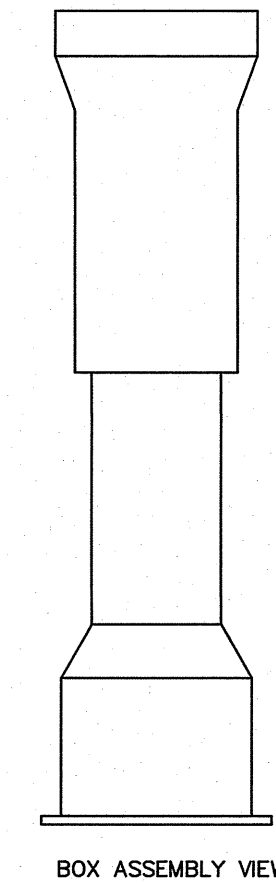
MARKING TAPE FOR FORCE MAIN

B

PART NUMBER	INCHES		A	B	LBS.
	MIN. TO MAX. ADJUSTMENT	TOP LENGTH			
V-8461	18\"/>				

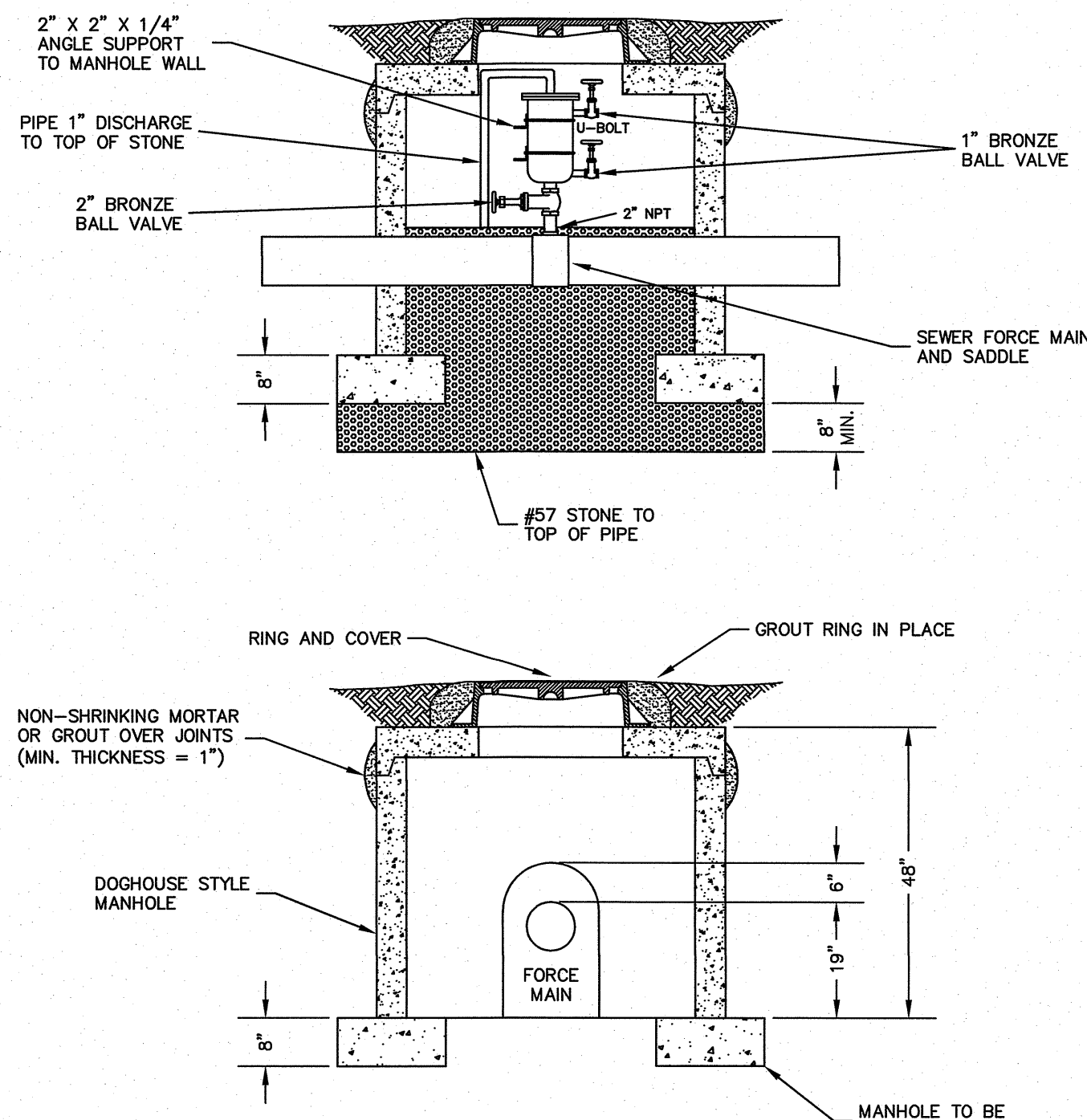
NOTE: 3 PC. SETS ARE PACKAGED WITH COVERS MARKED WATER. COVERS MARKED GAS OR SEWER ARE AVAILABLE SEPARATELY.

VALVE BOX SHALL BE VULCAN V-8460 SCREW-TYPE SERIES.



VALVE BOX

C



PROVIDE 2\"/>

MINIMUM MANHOLE INSIDE DIAMETER TO BE FOUR (4) FEET.

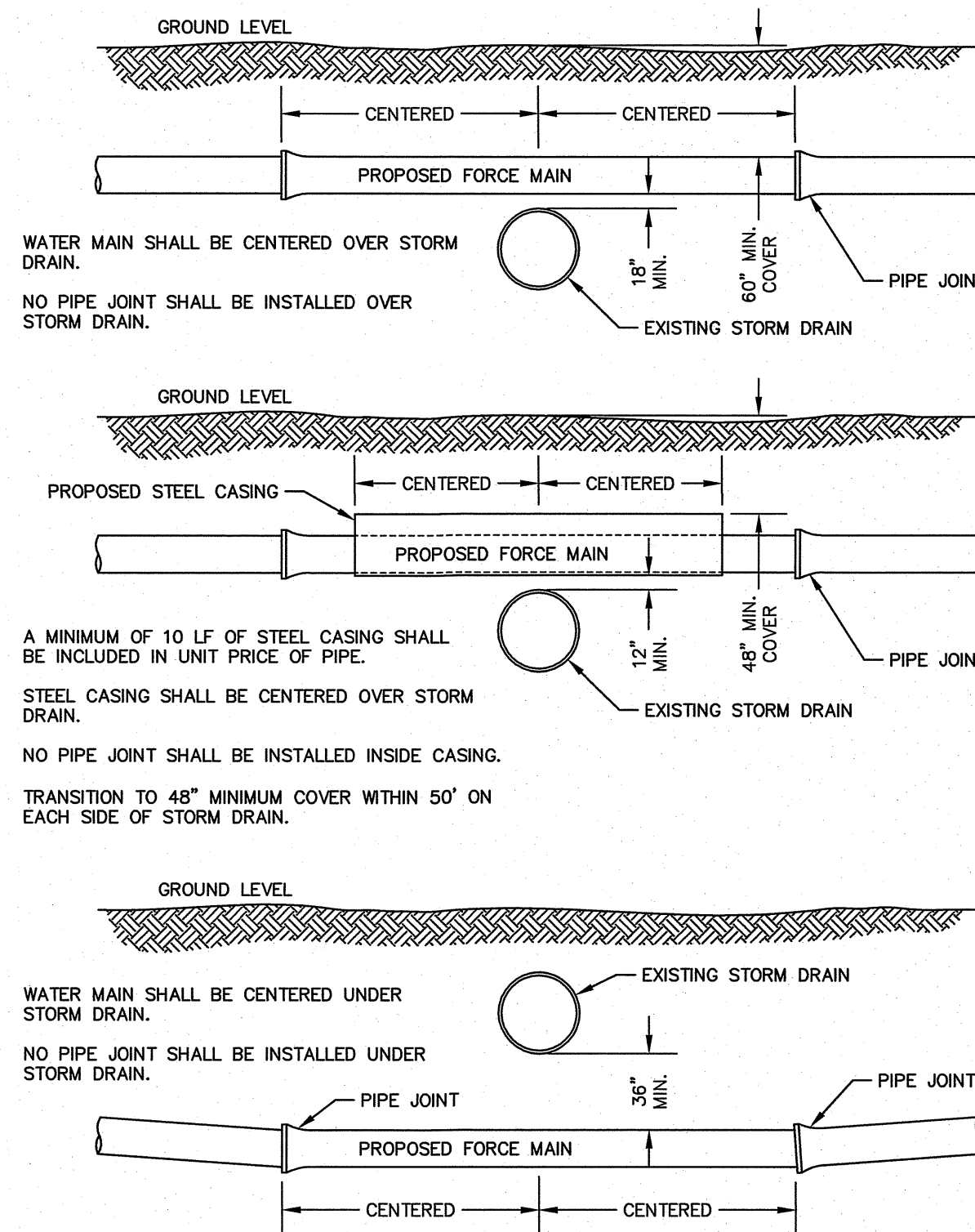
MINIMUM MANHOLE DEPTH TO BE FIVE (5) FEET.

PRECAST CONCRETE MANHOLE IN ACCORDANCE WITH ASTM C478.

MANHOLE SHALL BE DESIGNED FOR H-20 HIGHWAY LOADING.

COMBINATION AIR/VACUUM RELEASE VALVE ASSEMBLY MANHOLE

D



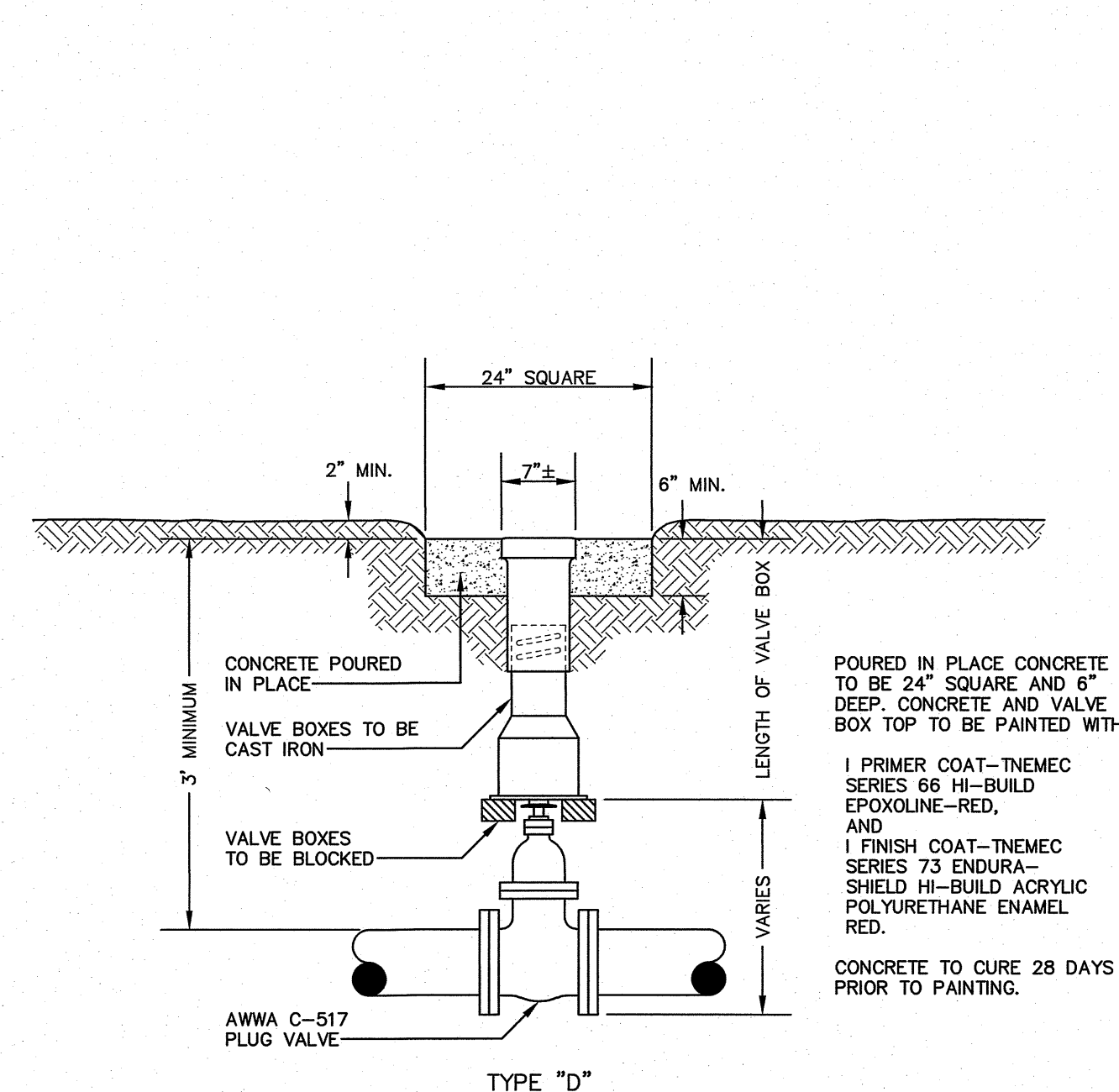
WHERE UNCASED BORES ARE NOT POSSIBLE OR WHERE DURING INSTALLATION THE BEDDING BENEATH THE EXISTING STORM DRAIN IS DISTURBED, THE FOLLOWING ACTION SHALL BE REQUIRED:

- A. THE EXISTING STORM DRAIN SHALL BE REMOVED AND #57 STONE BEDDING SHALL BE USED BETWEEN THE WATERLINE AND THE CENTERLINE OF THE STORM DRAIN, OR
- B. THE EXISTING STORM DRAIN SHALL BE SUPPORTED IN PLACE AND FLOWABLE FILL (CEMENT GROUT) SHALL BE USED AS BEDDING BETWEEN THE WATER LINE AND THE CENTERLINE OF THE STORM DRAIN.

THE COST OF BEDDING, #57 STONE, FLOWABLE FILL, ETC. SHALL BE INCLUDED IN THE UNIT PRICE OF THE PROPOSED MAIN.

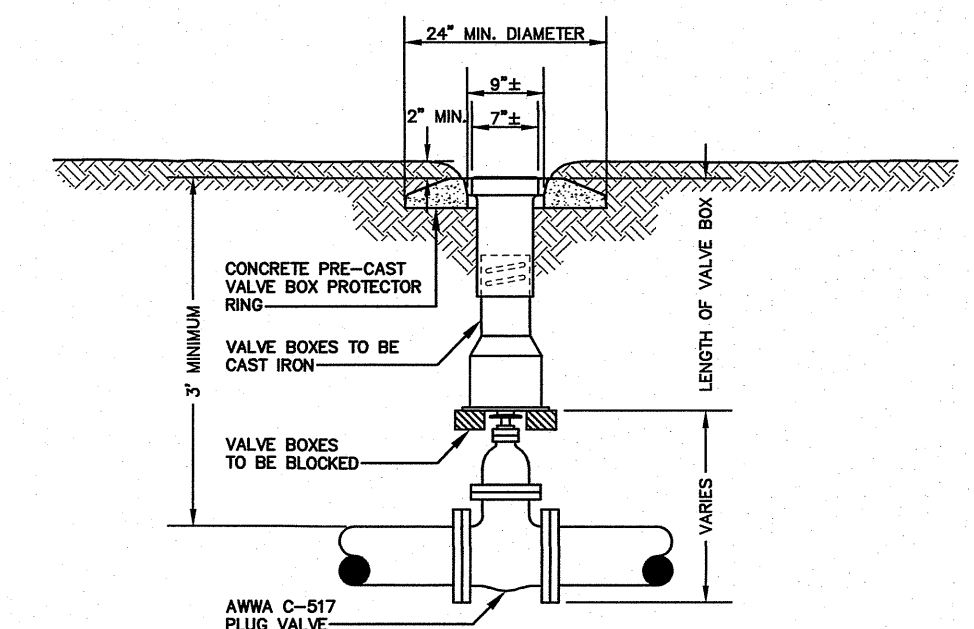
FORCE MAIN CROSSING STORM SEWER

E



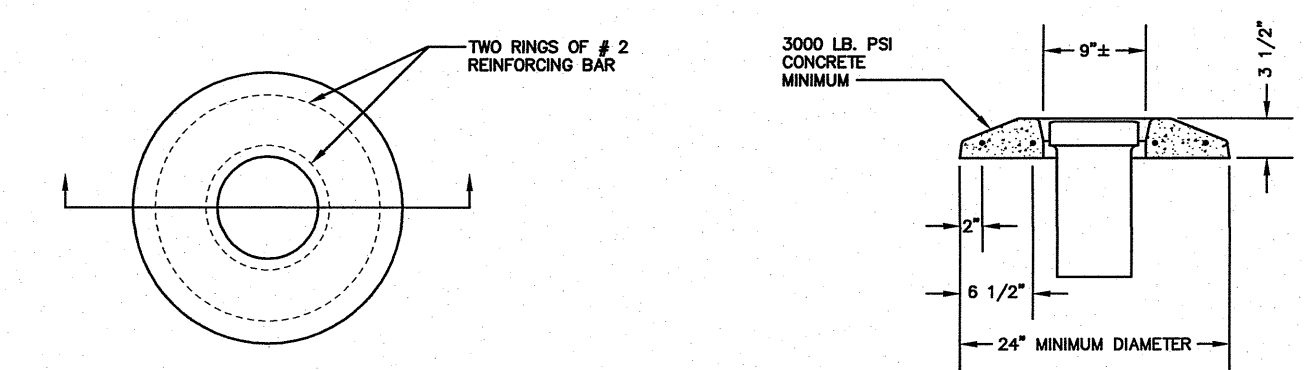
PLUG VALVE AND BOX TYPE D

F



PLUG VALVE AND BOX TYPE B

G



PRECAST CONCRETE VALVE BOX PROTECTOR RING

H

PROJECT REFERENCE NO. B-4926 **SHEET NO.** UC-3D

DESIGNED BY: JWM **NORTH CAROLINA DEPARTMENT OF TRANSPORTATION**

DRAWN BY: MW

CHECKED BY: DEG **UTILITIES ENGINEERING SEC.**

APPROVED BY: JWM **PHONE: (919)707-6690**

REVISED: **FAX: (919)250-4151**

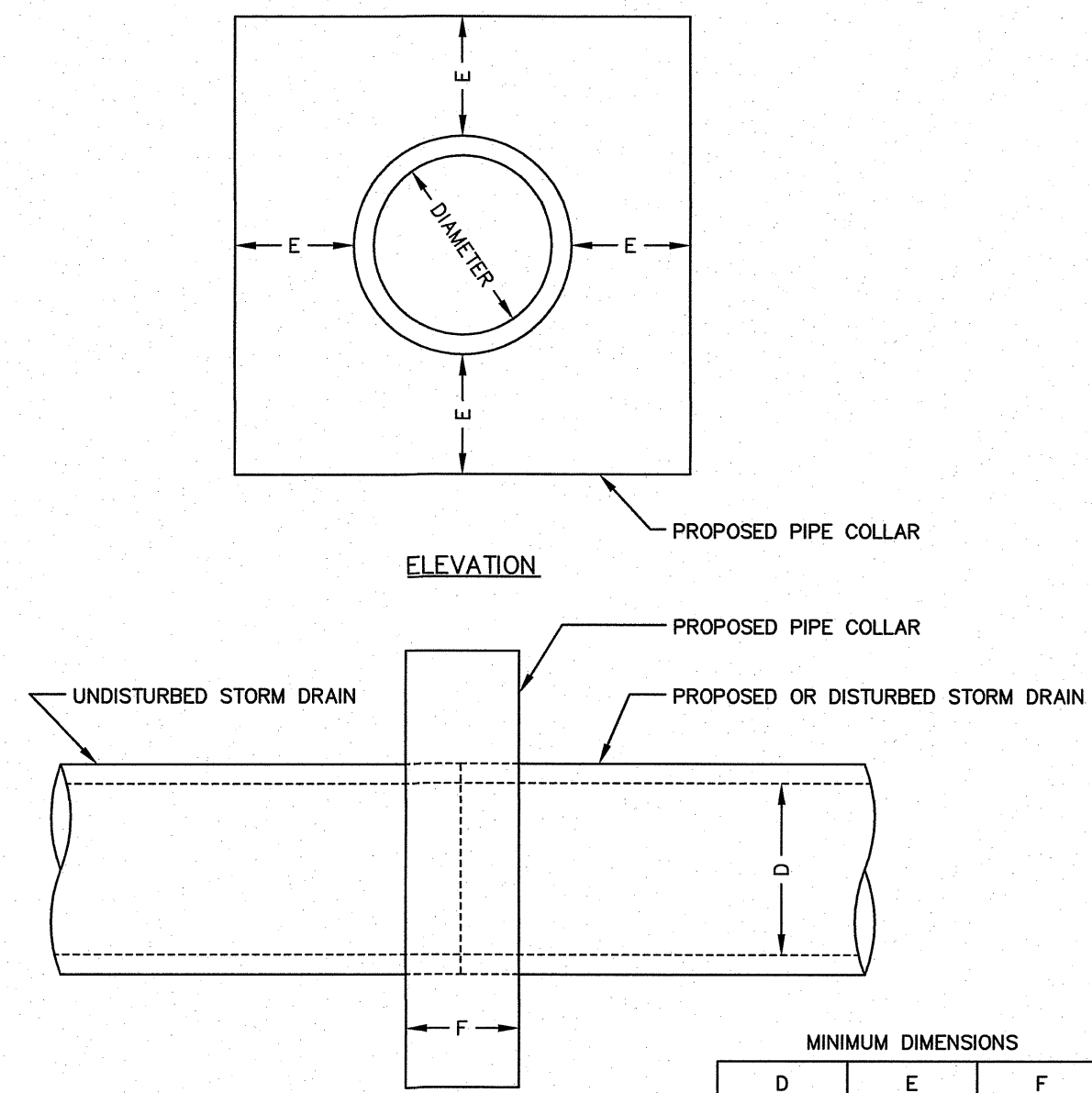
UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MAI REVIEW OFFICER APPROVAL

DATE _____ MAI REVIEW OFFICER _____

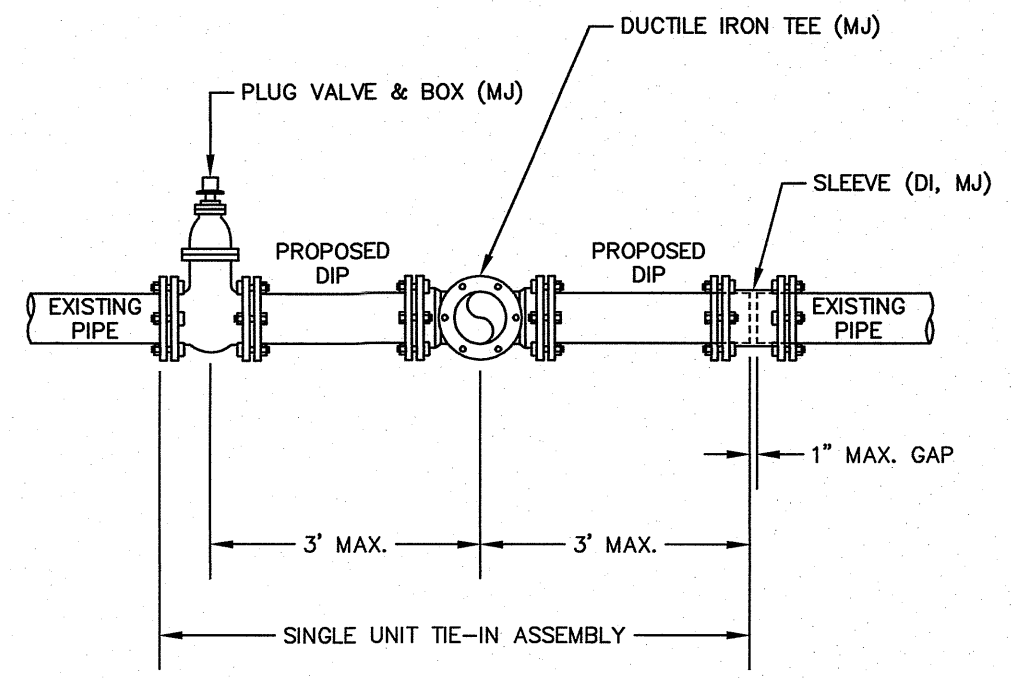
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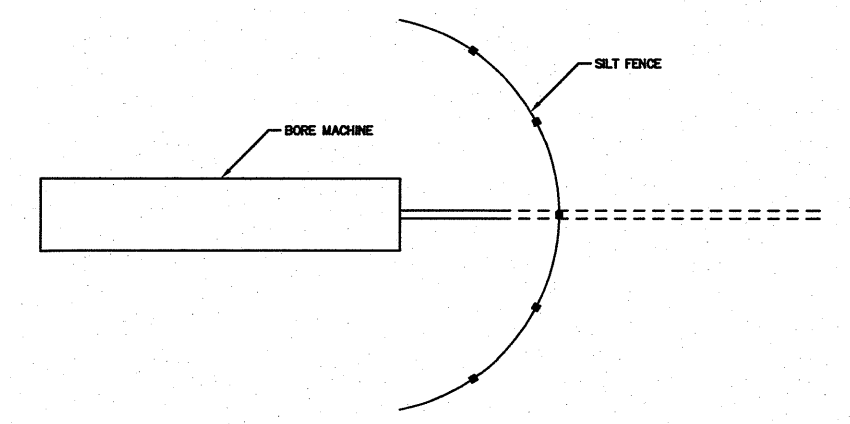
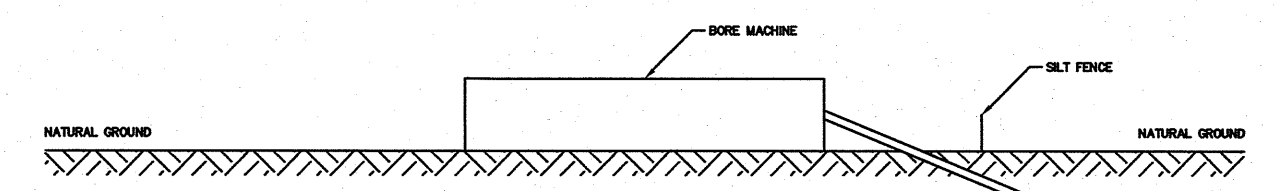
MINIMUM DIMENSIONS

D	E	F
12"	12"	12"
15"	12"	12"
18"	12"	12"
24"	12"	12"
30"	12"	12"
36"	12"	12"
42"	12"	12"
48"	12"	12"
54"	18"	18"
60"	18"	18"
66"	18"	18"
72"	18"	18"

- WHEN A PIPE IS INSTALLED ABOVE OR BELOW AN EXISTING STORM DRAIN, INSTALL A PIPE COLLAR ON ALL STORM DRAIN JOINTS DISTURBED.
- CONSTRUCT THE PIPE COLLAR WITH NCDOT CLASS "B" OR BETTER CONCRETE.
- USE 12 INCH DIAMETER VALUES FOR PIPE DIAMETERS LESS THAN 12 INCH.



- NOTES:
- PRE-ASSEMBLE THE SINGLE UNIT TIE-IN ASSEMBLY, TO INCLUDE TEE, VALVE, AND SLEEVE INTO A SINGLE UNIT PRIOR TO CUTTING INTO THE EXISTING LINE. FITTINGS AND VALVES SHALL BE MECHANICAL JOINT WITH GRIPPING RINGS.
 - AFTER THE SINGLE UNIT TIE-IN ASSEMBLY HAS BEEN FULLY ASSEMBLED AND IS READY FOR INSTALLATION, CUT A SEGMENT OF PIPE FROM THE EXISTING LINE. THE LENGTH OF THE SEGMENT REMOVED SHALL ALLOW INSTALLATION OF THE SINGLE UNIT TIE-IN ASSEMBLY WITH ONE SLEEVE. THE GAP BETWEEN THE EXISTING PIPE AND THE SINGLE UNIT TIE-IN ASSEMBLY SHALL NOT EXCEED ONE (1) INCH.
 - THE SINGLE UNIT TIE-IN ASSEMBLY SHALL BE INSTALLED WITH A SLEEVE.
 - INSTALL THE SINGLE UNIT TIE-IN ASSEMBLY BY INSERTING THE END OF THE EXISTING PIPE FULLY INTO THE VALVE ON THE END OF THE SINGLE UNIT TIE-IN ASSEMBLY. INSTALL THE OPPOSITE END OF THE SINGLE UNIT TIE-IN ASSEMBLY BY ALIGNING THE ASSEMBLY WITH THE EXISTING PIPE AND SLIDING THE SLEEVE OVER THE GAP BETWEEN THE ASSEMBLY AND THE END OF THE EXISTING PIPE. CENTER THE SLEEVE OVER THE GAP.
 - MINIMIZE TIME THAT THE EXISTING FORCE MAIN IS OUT OF SERVICE.



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

UTILITY CONSTRUCTION

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SEAL 1972

SEAL 28431

UTILITY CONSTRUCTION PLANS ONLY

McDAVID ASSOCIATES, INC.
Corporate License No. C-131

CORPORATE OFFICE Engineers • Planners • Land Surveyors 3714 North Main Street P. O. Drawer 49 Farmville, NC 27828 Telephone: (252) 753-2139 Facsimile: (252) 753-7225	BRANCH OFFICE Engineers • Planners 109 East Walnut Street P. O. Box 1776 Goldston, NC 27533 Telephone: (919) 736-7630 Facsimile: (919) 735-7351
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REVISIONS

NO.	DATE	DESCRIPTION

MAI REVIEW OFFICER APPROVAL

DATE _____ MAI REVIEW OFFICER _____

STORM DRAIN PIPE COLLAR

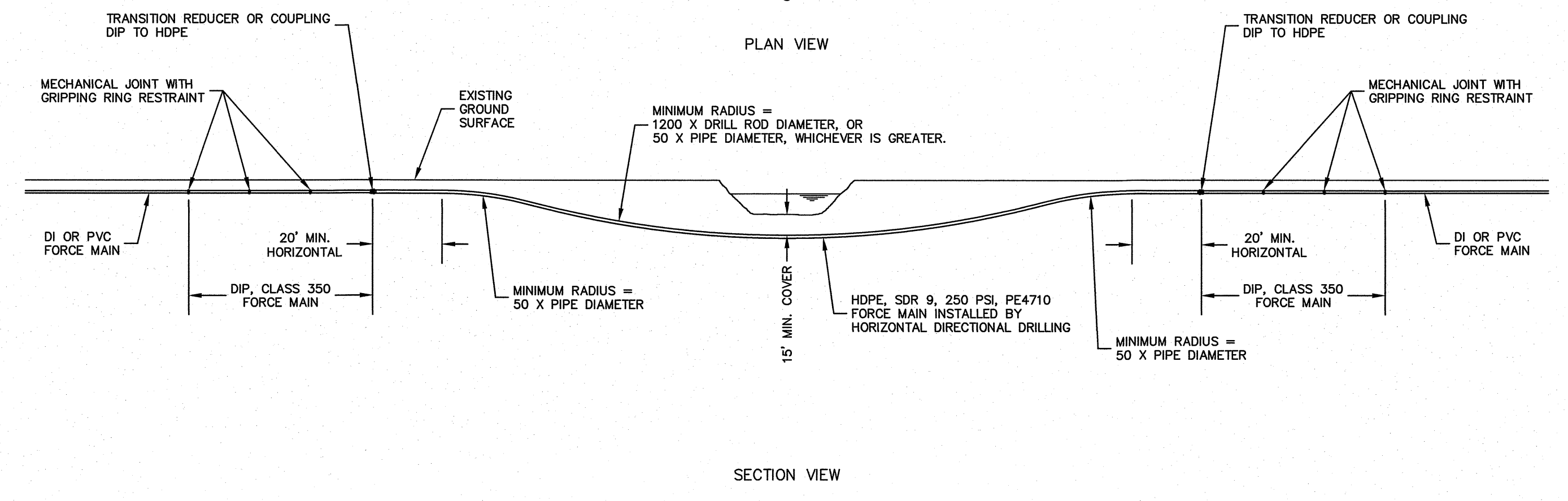
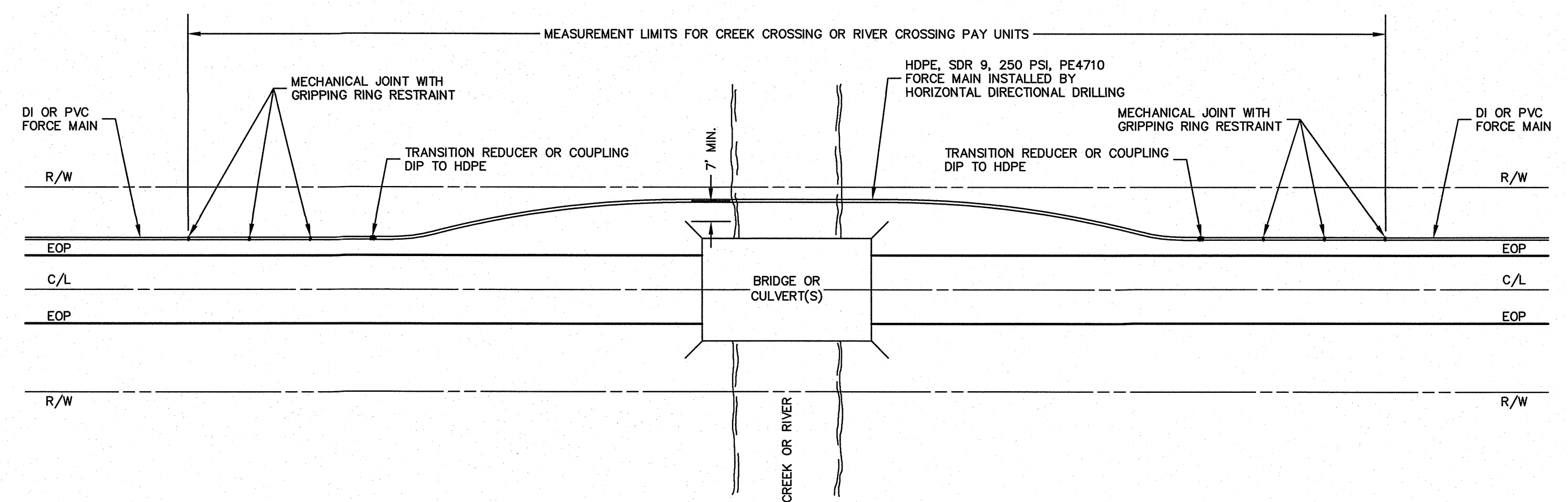
A

SINGLE UNIT TIE-IN ASSEMBLY

B

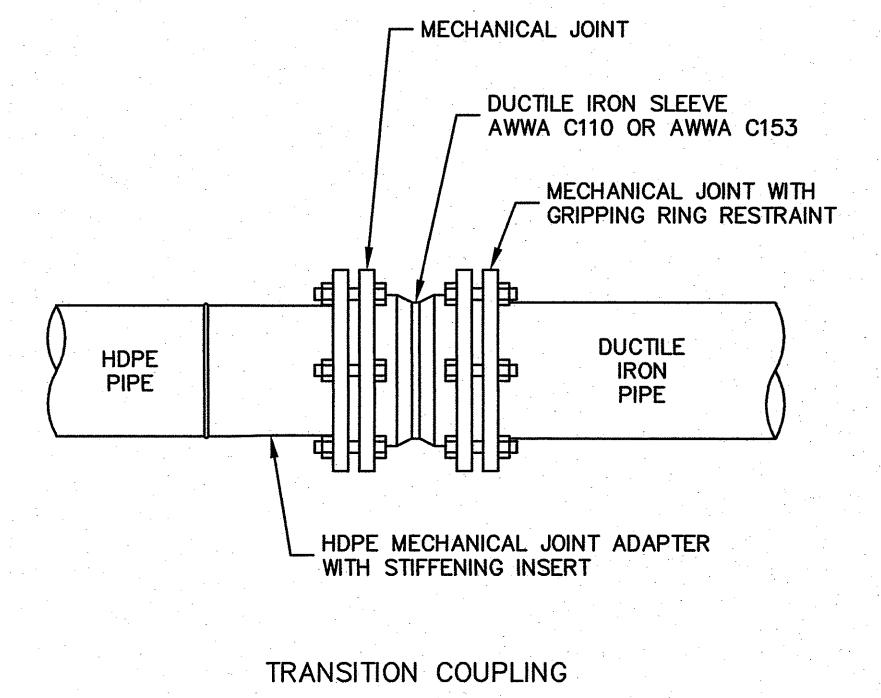
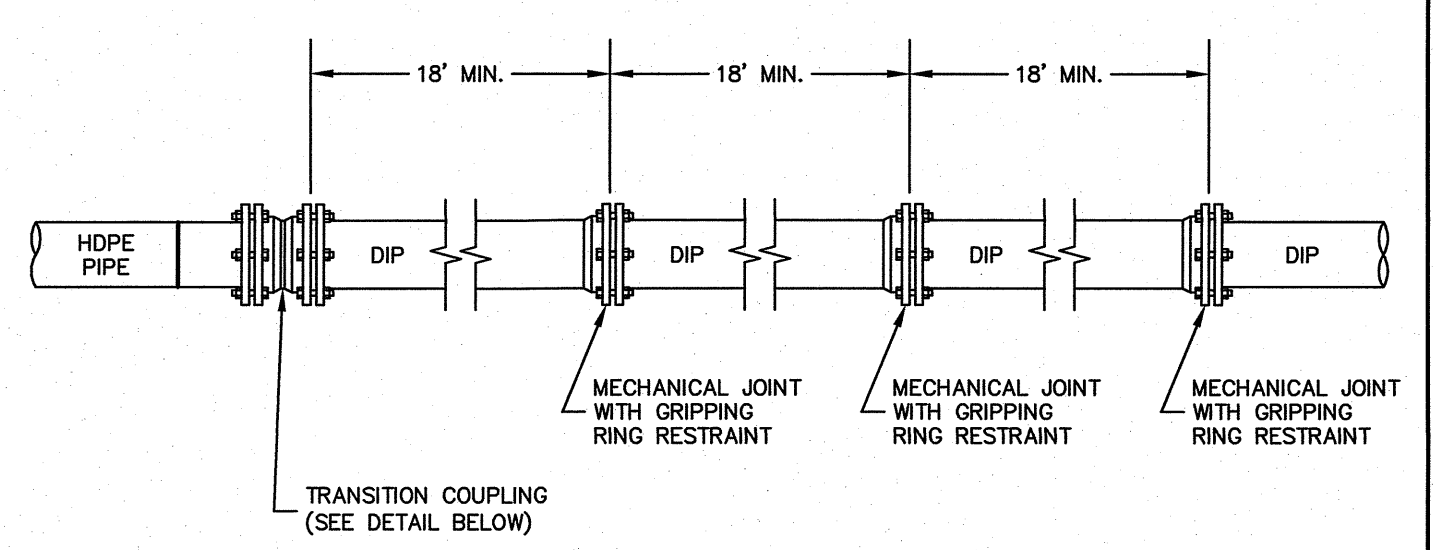
DIRECTIONAL DRILL PIT

C



FORCE MAIN CREEK OR RIVER CROSSING WITH HDPE INSTALLED BY HORIZONTAL DIRECTIONAL DRILLING

D



TRANSITION COUPLING AND JOINT RESTRAINT FOR FORCE MAIN CREEK OR RIVER CROSSING WITH HDPE PIPE

E

F

REVISIONS

1. PRODUCTS

- A. Topsoil shall be capable of sustaining vigorous plant growth, not in frozen or muddy condition, containing not less than six (6) percent organic matter, and corrected to a pH of 5.9 to 7.0.
B. Lime shall be dolomitic agricultural-ground limestone containing not less than ten (10) percent magnesium oxide.
C. Fertilizer shall be commercial type 10-20-20 with fifty (50) percent of the elements derived from organic sources.
D. Seed.
1. Seed shall be certified seed or equivalent based on North Carolina Seed Improvement Association requirements for certification.
2. One (1) percent maximum weed seed content permitted.
3. Seasonal mixtures for NC DOT right-of-ways:
a. From September 1 to April 1:
Seventy-five (75) pounds per acre of Kentucky 31 Fescue, fifty (50) pounds per acre of Pensacola Bahiagrass, and five (5) pounds per acre of Centipede.
b. From April 1 to September 1:
Seventy-five (75) pounds per acre of Pensacola Bahiagrass, fifty (50) pounds per acre of Kentucky 31 Fescue, and five (5) pounds per acre of Centipede.
4. Alternative seasonal mixtures outside NC DOT right-of-ways:
a. From November 15 to March 1:
Twenty-five (25) pounds per acre of Rye Grain, seventy-five (75) pounds per acre of Tall Fescue, Kentucky 31 or Alta Tall Fescue and fifty (50) pounds per acre of Pensacola Bahiagrass.
b. From March 1 to May 15:
Seventy-five (75) pounds per acre of Tall Fescue, Kentucky 31 or Alta Tall Fescue and fifty (50) pounds per acre of Pensacola Bahiagrass.
c. From May 15 to September 15:
Sixty (60) pounds per acre of Pensacola Bahiagrass and forty (40) pounds per acre of Annual Laspedeza (Kobe or Korean).
d. From September 15 to November 15:
Seventy-five (75) pounds per acre of Tall Fescue, Kentucky 31 or Alta Tall Fescue and fifty (50) pounds per acre of Pensacola Bahiagrass.
E. Mulching material shall be oat or wheat straw, in dry condition, reasonably free from weeds and foreign matter detrimental to plant life.

3. SEEDBED PREPARATION

- A. Protect existing underground improvements from damage.
B. Clear the ground surface of stumps, stones, roots, cables, wire, grade stakes, and other materials that might hinder proper grading, tillage, seeding or subsequent maintenance operations.
C. Remove contaminated subsoil.
D. Grade to eliminate rough spots and low area where ponding may occur. Maintain smooth, uniform grade.
E. Assure positive drainage away from buildings.
F. Finish ground level firm and sufficient to prevent sinkage pockets when irrigation is applied.
G. Grades on the area to be seeded shall be maintained to a true and even condition. Maintenance shall include any necessary repairs to previously graded areas.
H. Uniformly apply lime at a rate of 4000 pounds per acre prior to preparation of seedbed.
I. Thoroughly till all graded areas to a depth of at least five (5) inches by plowing, disking, harrowing, or other approved methods until the condition of the soil is acceptable.
J. Remove from site foreign materials collected during tilling.
K. Uniformly apply fertilizer at a rate of 500 pounds per acre of 10-20-20 analysis.
L. Incorporate the fertilizer into the upper three (3) or four (4) inches of prepared seedbed just prior to the last tillage operation.
M. The seedbed should be firm and compact.
4. SEEDING
A. Do not sow seed immediately following rain, when ground is too dry, or during windy periods.
B. Apply seed at specified seasonal rate.
C. Rake seed in lightly.
D. Roll seeded area with roller not exceeding 112 pounds (50 kg).
E. Apply water with fine spray immediately after each area has been sown.
5. MULCHING PRACTICES
A. Apply one (1) to two (2) tons of mulching material per acre to seeded areas.

B. Anchor mulching material.

- 1. In areas with gentle slopes, crimp mulching material into soil.
2. On steeper slopes such as the sides of swales, anchor mulch with netting or asphalt tack.
3. On road shoulders, anchor mulch with asphalt tack if crimping is unsuccessful.
4. Use asphalt tack in lieu of crimping when required by regulatory agencies or if directed by the ENGINEER.
5. On slopes steeper than 2:1, jute, excelsior, or synthetic matting may be required to protect the slope from erosion.
6. WATERING
A. Lightly water to aid breakdown of fertilizer and to provide moist soil for seed.
7. MAINTENANCE PERIOD
A. Maintenance Period: until final acceptance.
8. MAINTENANCE
A. Maintain surfaces and supply additional topsoil where necessary.
B. Water to ensure uniform seed germination and to keep surface of soil damp.
C. Apply water slowly so that surface of soil will not puddle and crust.
D. Except for rye grain, cut grass first time when it reaches height of two and one-half (2 1/2) inches (60 mm) and maintain to minimum of two (2) inches (50 mm).
E. If rye grain is planted mow to maintain grass height between three (3) and six (6) inches until Fescue matures enough to provide ground cover.
F. After first mowing water grass sufficient to moisten soil from three (3) inches to five (5) inches (76 to 127 mm) deep.
G. Apply weed killer when weeds start developing.
H. Replant damaged grass areas showing root growth failure.
9. RESTORATION
A. Restore grassed areas until accepted.
10. ACCEPTANCE
A. Seeded areas will be accepted at end of maintenance period when seeded areas are properly established and otherwise acceptable.

2. GENERAL CONDITIONS

- A. When conditions are such by reason of drought, high winds, excessive moisture or other factors where satisfactory results will not be obtained, the WORK shall be stopped, and resumed only when conditions are favorable.

PROJECT REFERENCE NO. B-4926 SHEET NO. UC-3F
DESIGNED BY: JWM NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DRAWN BY: MW
CHECKED BY: DEG UTILITIES ENGINEERING SEC.
APPROVED BY: JWM PHONE: (919)707-6690
REVISED: FAX: (919)250-4151
UTILITY CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Seal 1972 Seal 28431
McDAVID ASSOCIATES, INC. Corporate License No. C-131
CORPORATE OFFICE BRANCH OFFICE
3714 North Main Street 109 East Walnut Street
P. O. Drawer 48 P. O. Box 1778
Farmville, NC 27828 Goldsboro, NC 27533
Telephone: (252) 755-2139 Telephone: (919) 736-7630
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REVISIONS
NO. DATE DESCRIPTION
MAI REVIEW OFFICER APPROVAL
DATE MAI REVIEW OFFICER 1-19-0309-3401

SEEDING CONSTRUCTION NOTES

A

B

SELF-INSPECTION, RECORDKEEPING AND REPORTING
PART III
SECTION A: SELF-INSPECTION
Self-inspections are required during normal business hours in accordance with the table below.
Table with 3 columns: Inspect, Frequency, Inspection records must include.
(1) Rain gauge maintained in good working order
(2) E8SC Measures
(3) Stormwater discharge
(4) Perimeter of site
(5) Streams or wetlands onsite or offsite
(6) Ground stabilization measures

SELF-INSPECTION, RECORDKEEPING AND REPORTING
PART III
SECTION B: RECORDKEEPING
1. E8SC Plan Documentation
The approved E8SC plan as well as up-to-date throughout the coverage under this permit.
2. Additional Documentation to be Kept on Site
3. Documentation to be Retained For Three Years

SELF-INSPECTION, RECORDKEEPING AND REPORTING
PART III
SECTION C: REPORTING
1. Occurrences that Must be Reported
2. Reporting Times and Other Requirements

GROUND STABILIZATION AND MATERIALS HANDLING PRACTICES FOR COMPLIANCE WITH THE NCG01 CONSTRUCTION GENERAL PERMIT
SECTION E: GROUND STABILIZATION
Table with 3 columns: Site Area Description, Stabilize within this many calendar days after ceasing land disturbance, Timeframe variations.
(a) Perimeter dikes, swales, ditches, and perimeter slopes
(b) High Quality Water (HQW) Zones
(c) Slopes steeper than 3:1
(d) Slopes 3:1 to 4:1
(e) Areas with slopes flatter than 4:1

EQUIPMENT AND VEHICLE MAINTENANCE
LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE
PAINT AND OTHER LIQUID WASTE
PORTABLE TOILETS
EARTHEN STOCKPILE MANAGEMENT

CONCRETE WASHOUTS
HERBICIDES, PESTICIDES AND RODENTICIDES
HAZARDOUS AND TOXIC WASTE

PART II, SECTION 6, ITEM (4)
DRAW DOWN OF SEDIMENT BASINS FOR MAINTENANCE OR CLOSE OUT
Sediment basins and traps that receive runoff from drainage areas of one acre or more shall use outlet structures that withdraw water from the surface when these devices need to be drawn down for maintenance or close out unless this is infeasible.

PART II, SECTION 6, ITEM (4)
DRAW DOWN OF SEDIMENT BASINS FOR MAINTENANCE OR CLOSE OUT
Sediment basins and traps that receive runoff from drainage areas of one acre or more shall use outlet structures that withdraw water from the surface when these devices need to be drawn down for maintenance or close out unless this is infeasible.

PART III
SECTION C: REPORTING
1. Occurrences that Must be Reported
2. Reporting Times and Other Requirements

POLYACRYLAMIDES (PAMS) AND FLOCCULANTS
1. Select flocculants that are appropriate for the soils being exposed during construction, selecting from the NC DWR List of Approved PAMS/Flocculants.
2. Apply flocculants at or before the inlets to Erosion and Sediment Control Measures.
3. Apply flocculants at the concentrations specified in the NC DWR List of Approved PAMS/Flocculants and in accordance with the manufacturer's instructions.
4. Provide ponding area for containment of treated Stormwater before discharging offsite.
5. Store flocculants in leak-proof containers that are kept under storm-erect containment or surrounded by secondary containment structures.

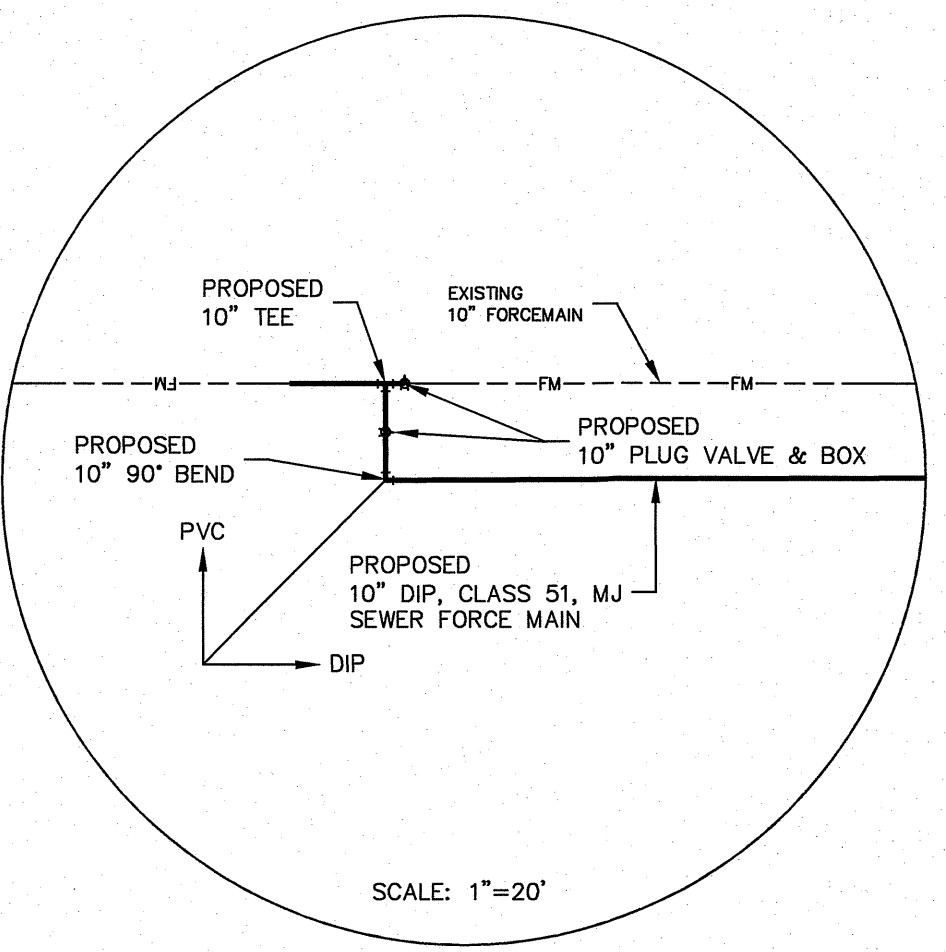
EQUIPMENT AND VEHICLE MAINTENANCE
LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE
PAINT AND OTHER LIQUID WASTE
PORTABLE TOILETS
EARTHEN STOCKPILE MANAGEMENT

CONCRETE WASHOUTS
HERBICIDES, PESTICIDES AND RODENTICIDES
HAZARDOUS AND TOXIC WASTE

C

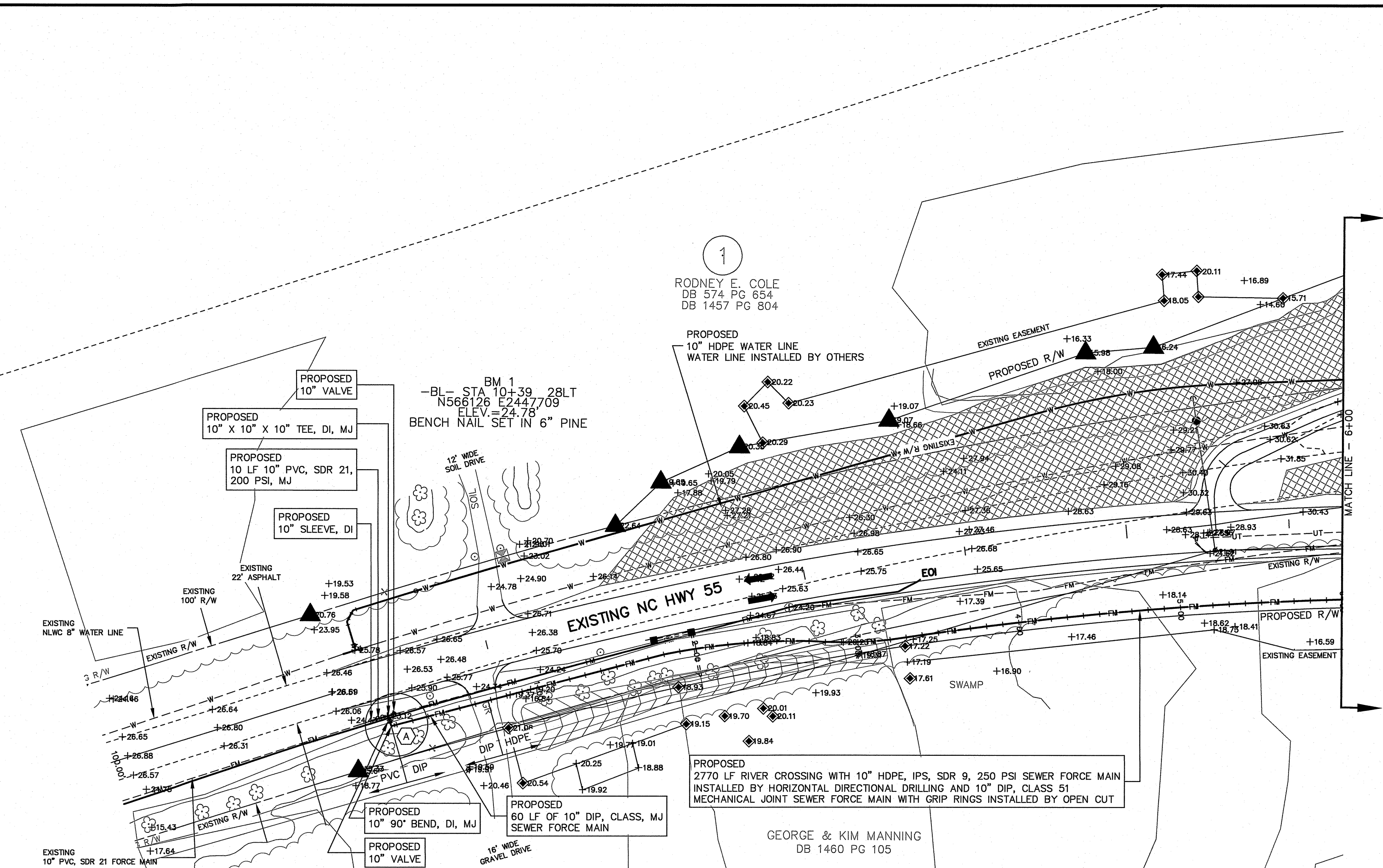
8/17/99

PROJECT REFERENCE NO. B-4926	SHEET NO. UC-4
DESIGNED BY: JWM	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DRAWN BY: MW	UTILITIES ENGINEERING SEC. PHONE: (919)707-6690 FAX: (919)250-4151
CHECKED BY: DEG	
APPROVED BY: JWM	
REVISED:	



- (A) PROPOSED
- 1 EA 10" X 10" SINGLE UNIT TIE-IN ASSEMBLY, TO INCLUDE BUT NOT LIMITED TO:
 - 1 EA 10"x10" TEE, DI, MJ WITH GRIP RINGS
 - 1 EA 10" PLUG VALVE & BOX, MJ WITH GRIP RINGS, TYPE B
 - 1 EA 10" PLUG VALVE & BOX, MJ WITH GRIP RINGS, TYPE D
 - 1 EA 10" SLEEVE, DI, MJ WITH GRIP RINGS
 - 10" DUCTILE IRON PIPE, CLASS 51
 - 1 EA 10" PLUG, DI, MJ WITH GRIP RINGS
 - 1 EA 10" 90° BEND, DI, MJ WITH GRIP RINGS

PROPOSED
2760 LF ABANDONMENT OF EXISTING 10" FORCE MAIN WITH FLOWABLE FILL



UTILITY CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

Professional seals for McDavid Associates, Inc. and North Carolina Professional Engineer Joseph W. McReilly. Includes seal numbers and dates.

McDAVID ASSOCIATES, INC. Corporate License No. C-131. Corporate Office and Branch Office contact information.

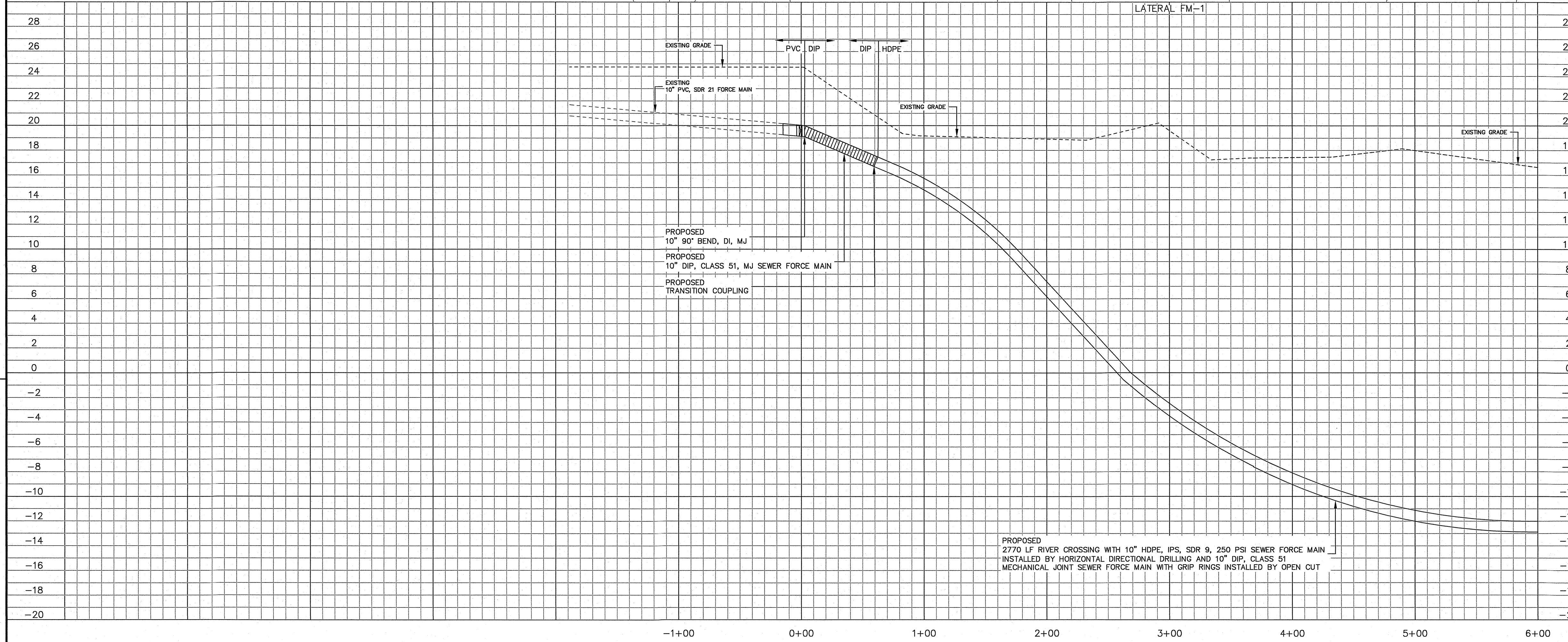
REVISIONS		
NO.	DATE	DESCRIPTION

MAI REVIEW OFFICER APPROVAL
DATE: _____ MAI REVIEW OFFICER: _____
SCALE IN FEET: 1" = 50'
0 50 100

NOTE:
CONTRACTOR SHALL FIELD LOCATE ALL EXISTING UTILITIES PRIOR TO THE INSTALLATION OF THE PROPOSED SEWER FORCE MAIN. PAYMENT FOR LOCATING THE EXISTING UTILITIES SHALL BE INCLUDED IN THE PRICE OF THE WORK.
ABANDONMENT OF THE EXISTING FORCE MAIN SHALL BE PERFORMED IN SECTIONS, TO ALLOW THE PIPE TO BE COMPLETELY FILLED.
CONTRACTOR SHALL COORDINATE THE TIE-INS TO THE FORCE MAIN WITH THE TOWN OF DOVER. TIE-INS SHALL BE PERFORMED AFTER 11:00 PM AND BEFORE 5:00 AM. CONTRACTOR, WITH ASSISTANCE FROM THE TOWN SHALL LOCATE THE PLUG VALVES LOCATED UPSTREAM AND DOWNSTREAM FROM THE PROJECT AREA. CONTRACTOR SHALL BE PREPARED TO CONTAIN AND PUMP AND HAUL WASTEWATER WHEN MAKING THE TIE-INS TO THE EXISTING FORCE MAIN. PAYMENT FOR LOCATING PLUG VALVES, CONTAINING AND PUMPING AND HAULING WASTEWATER SHALL BE INCLUDED IN THE PRICE OF THE WORK.
THE EXISTING PLUG VALVES ARE LOCATED AT OR IN CLOSE PROXIMITY TO:
• 500 FT FROM INTERSECTION OF SETH WEST ROAD ON SOUTH SIDE
• 800 FT WEST FROM THE CENTER OF THE NEUSE RIVER
• 300 FT EAST FROM TOWER HILL ROAD

ALL VALVES AND FITTINGS SHALL BE INSTALLED WITH GRIP RINGS.
NOTE:
THE ESTIMATED QUANTITY OF DUCTILE IRON SEWER PIPE FITTINGS ON THIS PLAN SHEET IS 415 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

REVISIONS



8/17/99

PROJECT REFERENCE NO. B-4926	SHEET NO. UC-5
DESIGNED BY: JWM	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DRAWN BY: MW	UTILITIES ENGINEERING SEC.
CHECKED BY: DEG	PHONE: (919)707-8690
APPROVED BY: JWM	FAX: (919)250-4151
REVISED:	

UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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UTILITY CONSTRUCTION
PLANS ONLY

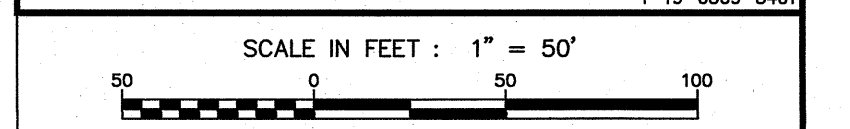
McDAVID ASSOCIATES, INC.
Corporate License No. C-131

CORPORATE OFFICE Engineers • Planners • Land Surveyors 3714 North Main Street P. O. Box 1778 Farmville, NC 27833 Telephone: (252) 755-2139 Facsimile: (252) 755-7220	BRANCH OFFICE Engineers • Planners 109 East Walnut Street P. O. Box 1778 Goldfields, NC 27833 Telephone: (919) 736-7630 Facsimile: (919) 735-7251
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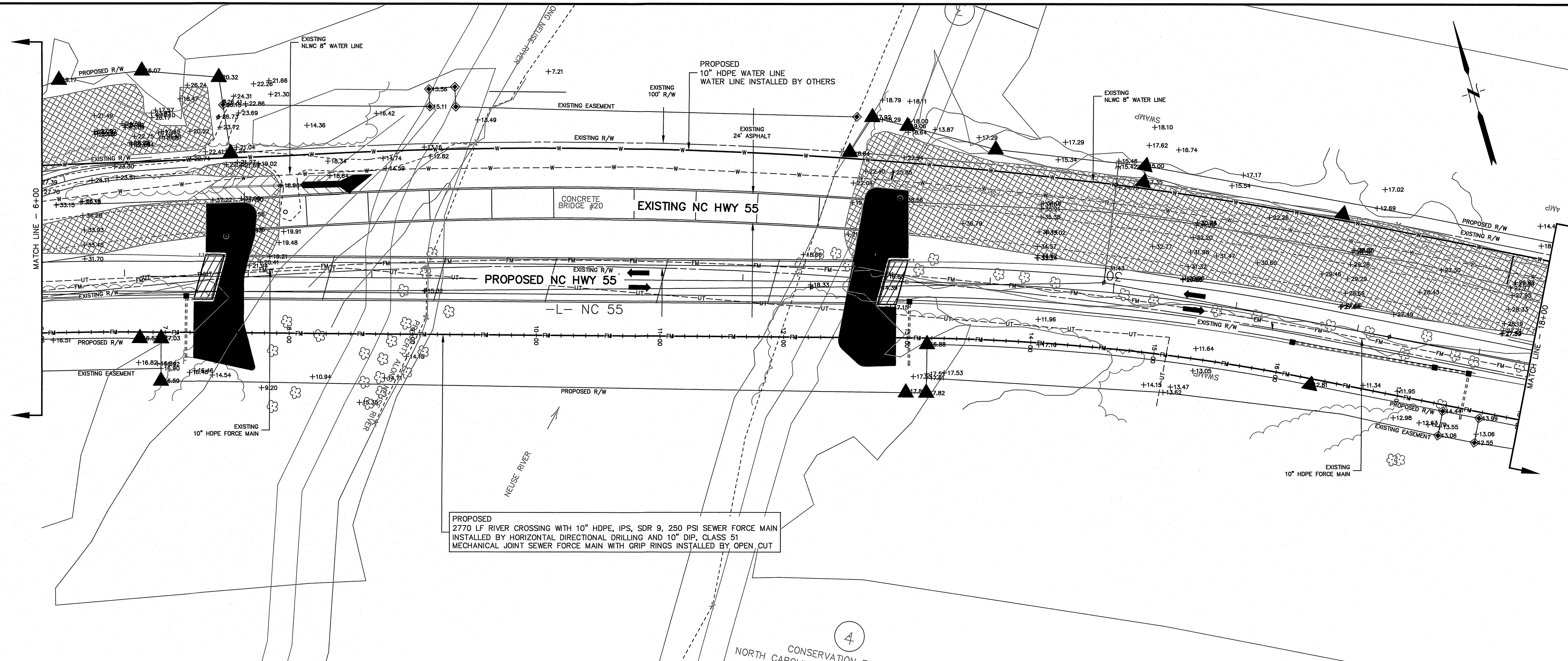
REVISIONS		
NO.	DATE	DESCRIPTION

MAI REVIEW OFFICER APPROVAL

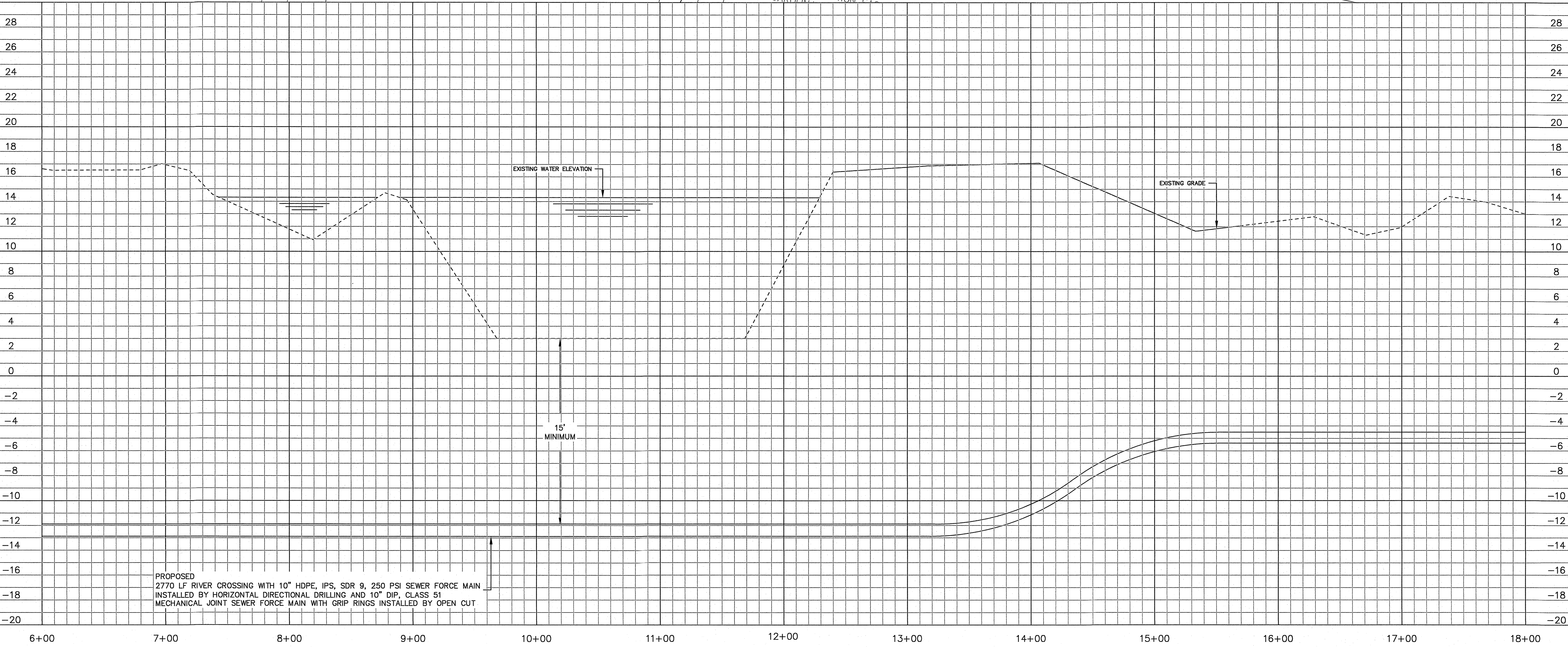
DATE _____ MAI REVIEW OFFICER _____



NOTE:
THE ESTIMATED QUANTITY OF DUCTILE IRON SEWER PIPE FITTINGS ON THIS PLAN SHEET IS 0 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.



PROPOSED
2770 LF RIVER CROSSING WITH 10" HDPE, IPS, SDR 9, 250 PSI SEWER FORCE MAIN
INSTALLED BY HORIZONTAL DIRECTIONAL DRILLING AND 10" DIP, CLASS 51
MECHANICAL JOINT SEWER FORCE MAIN WITH GRIP RINGS INSTALLED BY OPEN CUT



PROPOSED
2770 LF RIVER CROSSING WITH 10" HDPE, IPS, SDR 9, 250 PSI SEWER FORCE MAIN
INSTALLED BY HORIZONTAL DIRECTIONAL DRILLING AND 10" DIP, CLASS 51
MECHANICAL JOINT SEWER FORCE MAIN WITH GRIP RINGS INSTALLED BY OPEN CUT

REVISIONS

8/17/99

3
WOODY MAE FARMS, LLC
DB 1153 PG 132
DB 1816 PG 689
PB 6 PG 276

PROJECT REFERENCE NO. B-4926		SHEET NO. UC-6	
DESIGNED BY: JWM	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		
DRAWN BY: MW	UTILITIES ENGINEERING SEC. PHONE: (919)707-8690 FAX: (919)250-4151		
CHECKED BY: DEG			
APPROVED BY: JWM			
REVISED:			

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12/31/2000
JOSEPH W. MCCREARY
ENGINEER
ARVILLE, N.C.

UTILITY CONSTRUCTION
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McDAVID ASSOCIATES, INC.
Corporate License No. C-131

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BRANCH OFFICE
Engineers - Planners
109 East Walnut Street
P. O. Box 4778
Goldboro, NC 27533
Telephone: (919) 756-7630
Facsimile: (919) 756-7351

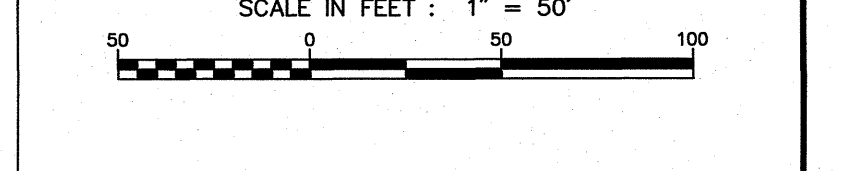
REVISIONS

NO.	DATE	DESCRIPTION

MAI REVIEW OFFICER APPROVAL

DATE _____ MAI REVIEW OFFICER _____

1-19-0309-3401



NOTE:
CONTRACTOR SHALL FIELD LOCATE ALL EXISTING UTILITIES PRIOR TO THE INSTALLATION OF THE PROPOSED SEWER FORCE MAIN. PAYMENT FOR LOCATING THE EXISTING UTILITIES SHALL BE INCLUDED IN THE PRICE OF THE WORK.

ABANDONMENT OF THE EXISTING FORCE MAIN SHALL BE PERFORMED IN SECTIONS, TO ALLOW THE PIPE TO BE COMPLETELY FILLED.

CONTRACTOR SHALL COORDINATE THE TIE-IN TO THE FORCE MAIN WITH THE TOWN OF DOVER. TIE-INS SHALL BE PERFORMED AFTER 11:00 PM AND BEFORE 5:00 AM. CONTRACTOR, WITH ASSISTANCE FROM THE TOWN SHALL LOCATE THE PLUG VALVES LOCATED UPSTREAM AND DOWNSTREAM FROM THE PROJECT AREA. CONTRACTOR SHALL BE PREPARED TO CONTAIN AND PUMP AND HAUL WASTEWATER WHEN MAKING THE TIE-INS TO THE EXISTING FORCE MAIN. PAYMENT FOR LOCATING PLUG VALVES, CONTAINING AND PUMPING AND HAULING WASTEWATER SHALL BE INCLUDED IN THE PRICE OF THE WORK.

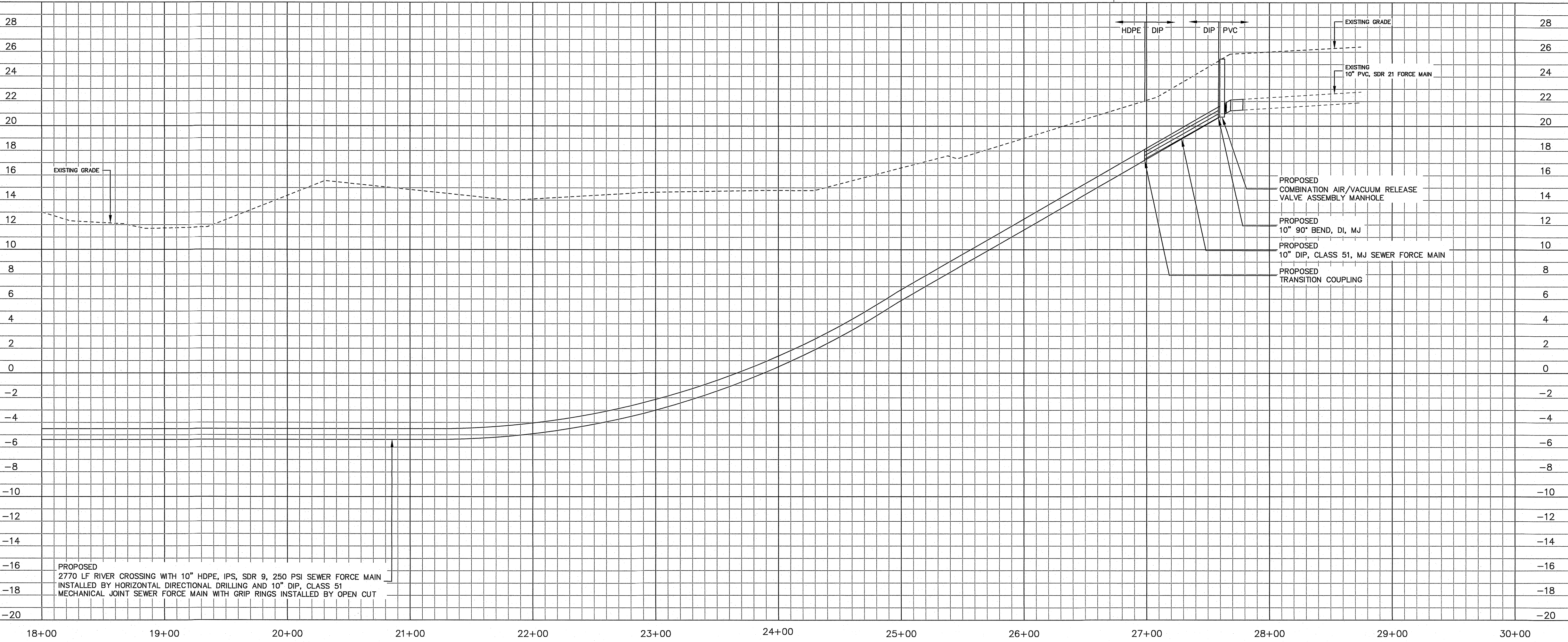
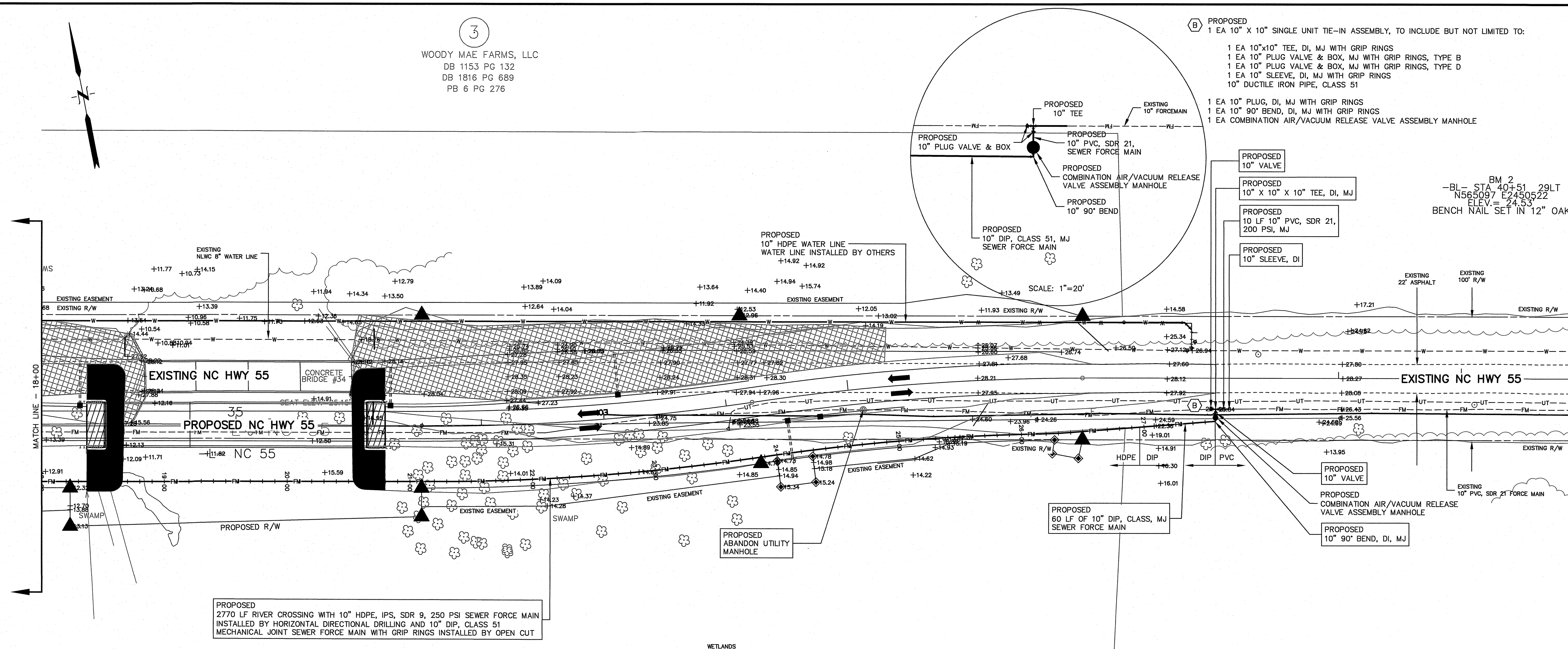
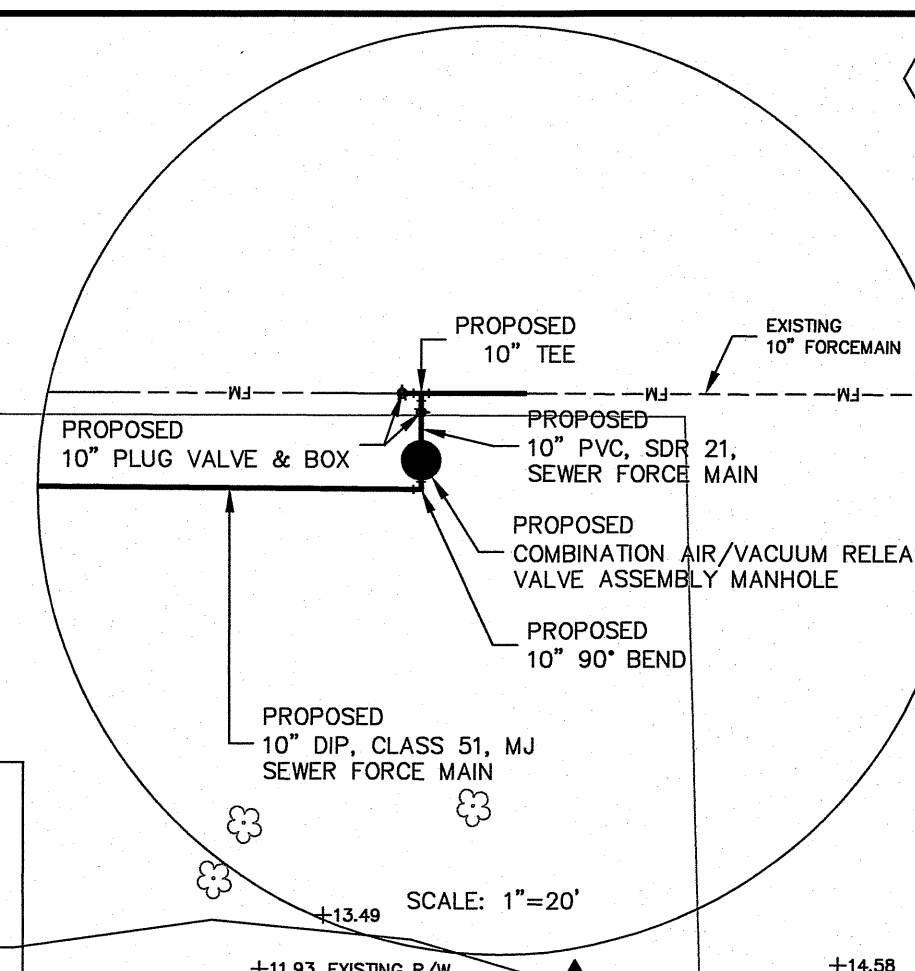
THE EXISTING PLUG VALVES ARE LOCATED AT OR IN CLOSE PROXIMITY TO:

- * 500 FT FROM INTERSECTION OF SETH WEST ROAD ON SOUTH SIDE
- * 800 FT WEST FROM THE CENTER OF THE NEUSE RIVER
- * 300 FT EAST FROM TOWER HILL ROAD

ALL VALVES AND FITTINGS SHALL BE INSTALLED WITH GRIP RINGS.

NOTE:
THE ESTIMATED QUANTITY OF DUCTILE IRON SEWER PIPE FITTINGS ON THIS PLAN SHEET IS 415 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

- PROPOSED
1 EA 10" X 10" SINGLE UNIT TIE-IN ASSEMBLY, TO INCLUDE BUT NOT LIMITED TO:
- 1 EA 10"x10" TEE, DI, MJ WITH GRIP RINGS
 - 1 EA 10" PLUG VALVE & BOX, MJ WITH GRIP RINGS, TYPE B
 - 1 EA 10" PLUG VALVE & BOX, MJ WITH GRIP RINGS, TYPE D
 - 1 EA 10" SLEEVE, DI, MJ WITH GRIP RINGS
 - 10" DUCTILE IRON PIPE, CLASS 51
 - 1 EA 10" PLUG, DI, MJ WITH GRIP RINGS
 - 1 EA 10" 90° BEND, DI, MJ WITH GRIP RINGS
 - 1 EA COMBINATION AIR/VACUUM RELEASE VALVE ASSEMBLY MANHOLE



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2770 LF RIVER CROSSING WITH 10" HDPE, IPS, SDR 9, 250 PSI SEWER FORCE MAIN
INSTALLED BY HORIZONTAL DIRECTIONAL DRILLING AND 10" DIP, CLASS 51
MECHANICAL JOINT SEWER FORCE MAIN WITH GRIP RINGS INSTALLED BY OPEN CUT

REVISIONS