VICINITY MAP

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

T.I.P. NO. BR-0035

SHEET NO

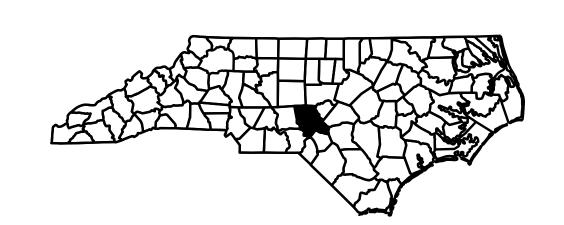
UC-1

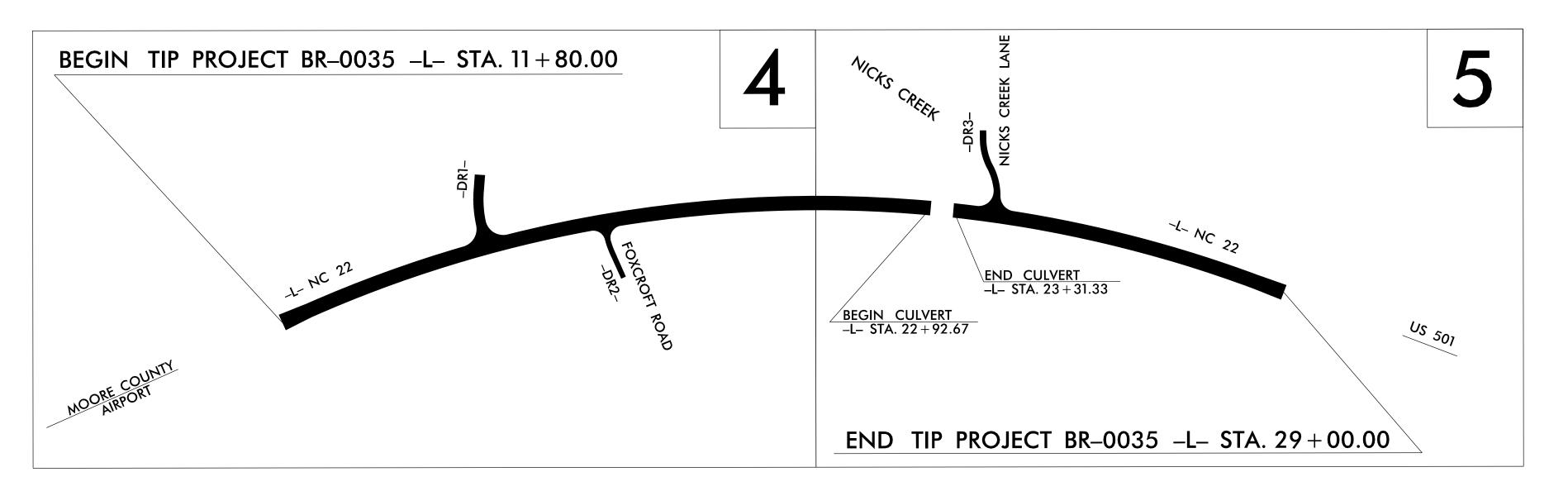
UTILITY CONSTRUCTION PLANS MOORE COUNTY

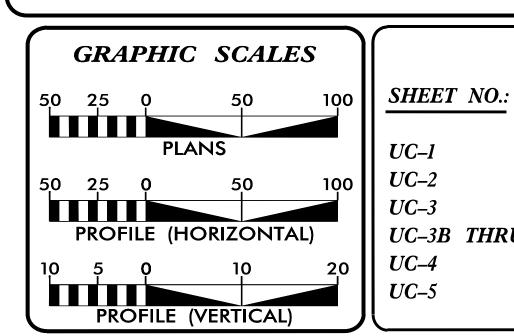
LOCATION: NC 22 BRIDGE OVER NICK'S CREEK

TYPE OF WORK: WATER LINE RELOCATION

RELOCATION







INDEX OF SHEETS

DESCRIPTION:

TITLE SHEET *UC-2* UTILITY SYMBOLOGY

NOTES UC-3B THRU UC-3C DETAILS

UC-4 PLAN SHEETS *UC-5* PROFILE SHEETS

WATER OWNERS ON PROJECT

WATER: TOWN OF SOUTHERN PINES Water Dept.: 910-692-1983

Emergency/After hours: 910-692-1627

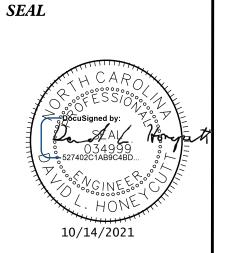
PREPARED IN THE OFFICE OF



CONSULTANT INFO McGILL ASSOCIATES, P.A. 5 REGIONAL CIRCLE, SUITE A

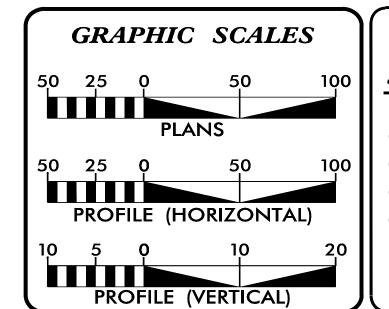
<u>DAVID HONEYCUTT</u> CONSULTANT CONTACT #1 MATTHEW JONES CONSULTANT CONTACT #2

PREPARED IN THE OFFICE OF



PRELIMINARY PLANS

DOCUMENT NOT CONSIDERED FINAL UNTIL ALL SIGNATURES ARE COMPLETED



INDEX OF SHEETS

SHEET NO.:

DESCRIPTION:

NOTES *UC–3A* UC-3D THRU UC-3G DETAILS

UC-6 THRU UC-7 PLAN SHEETS PROFILE SHEETS

WATER AND SEWER OWNERS ON PROJECT

WATER AND SEWER: TOWN OF CARTHAGE Water Dept.: 910-947-5041 Public Works: 910-947-5041 Emergency/After hours: 910-783-5723

CONSULTANT INFO



LKC ENGINEERING 140 AQUA SHED COURT ABERDEEN, NC 28315

MARK LACY CONSULTANT CONTACT #1 CONSULTANT CONTACT #2



SEAL



DIVISION OF HIGHWAYS UTILITIES UNIT 1555 MAIL SERVICES CENTER RALEIGH NC 27699–1555 PHONE (919) 707–6690 FAX (919) 250–4151

JON LOUGHRY

ALI KOUCHEKI, P.E. UTILITIES REGIONAL ENGINEER UTILITIES ENGINEER

DAYTON MARTIN, III UTILITIES AREA COORDINATOR

UTILITIES COORDINATOR

PROJECT REFERENCE NO. SHEET NO. UC-2

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

Water Line (Sized as Shown) 22½ Degree Bend 90 Degree Bend 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)

(Sized per Note)

Sewer Pump Station

PROPOSED MISCELLANOUS UTILITIES SYMBOLS

Power Pole	Thrust Block ·····
Telephone Pole ····································	Air Release Valve
Joint Use Pole ····································	Utility Vault
Telephone Pedestal ····································	Concrete Pier CP
Utility Line by Others	Steel Pier ······ 🗂
Trenchless Installation	Plan Note ·····
Encasement by Open Cut	Pay Item Note
Encasement	PAY ITEM

EXISTING UTILITIES SYMBOLS

Power Pole ····································	*Underground Power Line
Telephone Pole	*Underground Telephone Cable ····································
Joint Use Pole ····································	*Underground Telephone Conduit
Utility Pole ······	*Underground Fiber Optics Telephone Cable ————————————————————————————————————
Utility Pole with Base	*Underground TV Cable
H-Frame Pole ····································	*Underground Fiber Optics TV Cable
Power Transmission Line Tower ⊠	*Underground Gas Pipeline
Water Manhole 🔗	Aboveground Gas Pipeline
Power Manhole ······ ⊗	*Underground Water Line
Telephone Manhole ····································	Aboveground Water Line
Sanitary Sewer Manhole	*Underground Gravity Sanitary Sewer Liness
Hand Hole for Cable	Aboveground Gravity Sanitary Sewer Line
Power Transformer	*Underground SS Forced Main Line
Telephone Pedestal 🗉	Underground Unknown Utility Line
CATV Pedestal	SUE Test Hole
Gas Valve ····································	Water Meter ©
Gas Meter	Water Valve ⊕
Located Miscellaneous Utility Object o	Fire Hydrant ····································
Abandoned According to Utility Records ··· AATUR	Sanitary Sewer Cleanout ······ ⊕
End of Information E.O.I.	

*For Existing Utili	ties
Utility Line Drawn (Type as Shown)	from Record
Designated Utility (Type as Shown)	Line * *

UTILITY CONSTRUCTION



UTILITY CONSTRUCTION

GENERAL NOTES:

- 1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF THE NC DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2018.
- 2. THE EXISTING UTILITIES BELONG TO THE TOWN OF SOUTHERN PINES.
- 3. ALL WATER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER RESOURCES, PUBLIC WATER SUPPLY SECTION. PERFORM ALL WORK IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODES.

- 4. THE UTILITY OWNER OWNS THE EXISTING UTILITY FACILITIES AND WILL OWN THE NEW UTILITY FACILITIES AFTER ACCEPTANCE BY THE DEPARTMENT. THE DEPARTMENT OWNS THE CONSTRUCTION CONTRACT AND HAS ADMINISTRATIVE AUTHORITY. COMMUNICATIONS AND DECISIONS BETWEEN THE CONTRACTOR AND UTILITY OWNER ARE NOT BINDING UPON THE DEPARTMENT OR THIS CONTRACT UNLESS AUTHORIZED BY THE ENGINEER. AGREEMENTS BETWEEN THE UTILITY OWNER AND CONTRACTOR FOR THE WORK THAT IS NOT PART OF THIS CONTRACT OR IS SECONDARY TO THIS CONTRACT ARE ALLOWED, BUT ARE NOT BINDING UPON THE DEPARTMENT.
- 5. PROVIDE ACCESS FOR THE DEPARTMENT PERSONNEL AND THE OWNER'S REPRESENTATIVES TO ALL PHASES OF CONSTRUCTION. NOTIFY DEPARTMENT PERSONNEL AND THE UTILITY OWNER TWO WEEKS PRIOR TO COMMENCEMENT OF ANY WORK AND ONE WEEK PRIOR TO SERVICE INTERRUPTION. KEEP UTILITY OWNERS' REPRESENTATIVES INFORMED OF WORK PROGRESS AND PROVIDE OPPORTUNITY FOR INSPECTION OF CONSTRUCTION AND TESTING.

- 6. THE PLANS DEPICT THE BEST AVAILABLE INFORMATION FOR THE LOCATION, SIZE, AND TYPE OF MATERIAL FOR ALL EXISTING UTILITIES. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE, AND TYPE MATERIAL OF THE EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING DAMAGE TO EXISTING FACILITIES. REPAIR ANY DAMAGE INCURRED TO EXISTING FACILITIES TO THE ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE DEPARTMENT.
- 7. MAKE FINAL CONNECTIONS OF THE NEW WORK TO THE EXISTING SYSTEM WHERE INDICATED ON THE PLANS, AS REQUIRED TO FIT THE ACTUAL CONDITIONS, OR AS DIRECTED.
- 8. MAKE CONNECTIONS BETWEEN EXISTING AND PROPOSED UTILITIES AT TIMES MOST CONVENIENT TO THE PUBLIC, WITHOUT ENDANGERING THE UTILITY SERVICE, AND IN ACCORDANCE WITH THE UTILITY OWNER'S REQUIREMENTS. MAKE CONNECTIONS ON WEEKENDS, AT NIGHT, AND ON HOLIDAYS IF NECESSARY.
- 9. ALL UTILITY MATERIALS SHALL BE APPROVED PRIOR TO DELIVERY TO THE PROJECT. SEE 1500-7, "SUBMITTALS AND RECORDS" IN SECTION 1500 OF THE STANDARD SPECIFICATIONS.
- 10. THE CONTRACTOR SHALL PROVIDE ASBUILT DRAWINGS INDICATING THE ACTUAL ASBUILT CONDITION OF THE PROJECT AT COMPLETION. AS-BUILYS WILL BE FURNISHED AT OR PRIOR TO FINAL INSPECTION BY THE ENGINEER. AS-BUILTS WILL BE REVIEWED BY THE ENGINEERS REPRESENTATIVE PRIOR TO APPROVAL OF MONTHLY PROGRESS PAYMENTS. MARK-UP COPIES OF THE DRAWINGS INDICATING ALL DIMENSIONS AND ELEVATIONS ARE ACCEPTABLE AS AS-BUILT DRAWINGS.

PROJECT SPECIFIC NOTES:

- 1. PROPOSED WATER LINE WL-1 FROM STATION 10+00.00 TO STATION 13+39.29 SHALL BE D.I.R.J. (DUCTILE IRON RESTRAINED JOINT) PIPE.
- 2. NITRILE GASKETS SHALL BE USED IF PETROLEUM CONTAMINATED SOILS ARE ENCOUNTERED DURING CONSTRUCTION.
- 3. ALL WATER LINE FITTINGS SHALL BE PRESSURE CLASS 350 DUCTILE IRON RESTRAINED JOINT IN ACCORDANCE WITH ANSI A21.10 / AWWA C110 AND ANSI A21.4 / AWWA C104.
- 4. CONTRACTOR'S ATTENTION IS DIRECTED TO SECTIONS 102, 107, AND 1550 OF THE STANDARD SPECIFICATIONS CONCERNING TRENCHLESS INSTALLATION. IT IS CONTRACTOR'S RESPONSIBILITY TO HAVE BORE DESIGNED AND SEALED BY A LICENSED NORTH CAROLINA PROFESSIONAL ENGINEER. NO DAMAGE IS ALLOWED TO RIVER, WETLANDS, OR BUFFER ZONES.

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TOWN OF CARTHAGE UTILITY CONSTRUCTION NOTES



Engineering Landscape Architecture

LKC Engineering, pllc 140 Aqua Shed Court Aberdeen, NC 28315 O: 910.420.1437 F: 910.637.0096 Ikcengineering.com License No. P-1095

SHEET NO. PROJECT REFERENCE NO. UC-3A **BR-0035** DESIGNED BY: MAL DRAWN BY: **BCS** KESSION MAL CHECKED BY: APPROVED BY: -Mark A Lacy SCHOOL REVISED: NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC

UTILITY CONSTRUCTION |PHONE: (919) 707-6690 PLANS ONLY FAX: (919) 250-4151

DOCUMENT NOT CONSIDERED FINAL **UNLESS ALL SIGNATURES COMPLETED**

UTILITY CONSTRUCTION

CONSTRUCTION NOTES:

- 1. THE CONTRACTOR SHALL CONTACT THE POWER CO., GAS CO., AND TELEPHONE CO. FOR THE EXACT LOCATION OF ALL UNDERGROUND MAINS, CABLES, OR LINES BEFORE CONSTRUCTION BEGINS.
- 2. PIPE SEPARATION: THE FOLLOWING MINIMUM PIPE SEPARATION WILL BE MAINTAINED: 18 INCHES VERTICAL SEPARATION BETWEEN CROSSING OF SANITARY SEWER AND STORM SEWERS, 18 INCHES VERTICAL SEPARATION BETWEEN CROSSING OF SEWER (INCLUDING FORCE MAINS) AND WATER MAINS, OR 10 FEET HORIZONTAL SEPARATION BETWEEN SANITARY SEWER (INCLUDING FORCE MAINS) AND WATER MAINS. IF THESE SEPARATIONS CANNOT BE MAINTAINED, DUCTILE IRON PIPE WILL BE USED 10 FEET EITHER SIDE OF CROSSING AND ALONG ENTIRE LENGTH OF LINE LESS THAN 10 HORIZONTAL FEET FROM WATER MAINS. THE CONTRACTOR SHALL RECEIVE APPROVAL FROM THE ENGINEER IN THE FIELD BEFORE PAYMENT WILL BE MADE AT DUCTILE IRON PRICES.
- 3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING ALL EXISTING WATER SERVICE CONNECTIONS DURING CONSTRUCTION. ANY DAMAGE WHICH OCCURS AS A RESULT OF THE CONSTRUCTION SHALL BE REPAIRED AT NO ADDITIONAL COST TO THE OWNER. IN THE EVENT OF A TEMPORARY SERVICE INTERRUPTION, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER AND BEGIN REPAIRS.
- 4. ALL PIPING FOR PRESSURE MAINS SHALL BE PRESSURE TESTED, GRAVITY LINES SHALL BE AIR TESTED, AND MANHOLES SHALL BE VACUUM TESTED, ALL IN ACCORDANCE WITH THE DETAILED SPECIFICATIONS AND SPECIAL PROVISIONS. THE CONTRACTOR SHALL NOTIFY THE ENGINEER 24 HOURS IN ADVANCE OF ALL SCHEDULED TESTING.
- 5. ALL WORK PERFORMED WITHIN NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RIGHTS-OF-WAY SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE NCDOT CONSTRUCTION AND MAINTENANCE OPERATIONS SUPPLEMENT TO THE MANUAL OR UNIFORM TRAFFIC CONTROL DEVICES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PERFORMING THE WORK AND ADHERING TO THE RIGHT-OF-WAY ENCROACHMENT CONTRACT SPECIAL PROVISIONS.
- 6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE OWNER TO ACCURATELY DETERMINE THE LOCATION OF EXISTING WATER MAINS AND SEWER LINES WITHIN THE PROJECT AREA. THE CONTRACTOR SHALL TAKE ADDITIONAL CAUTION IN EXCAVATING AROUND THE SERVICE LINES AND MAINS WHILE WORKING WITHIN THIS PROJECT. ANY DAMAGE TO THE MAINS OR SERVICE LINES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- 7. THE CONTRACTOR SHALL REMOVE AND REPLACE EXISTING CULVERTS AND DRAINAGE STRUCTURES AS NECESSARY DURING THE CONSTRUCTION OF THE SEWER LINES. ANY DAMAGE TO THE CULVERTS SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER. SPECIAL CIRCUMSTANCES (I.E. UNREINFORCED CONCRETE PIPE) SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY IN ORDER TO RECEIVE ANY NECESSARY
- 8. THE CONTRACTOR IS INSTRUCTED TO CONTROL SEDIMENTATION RUNOFF BY METHODS APPROVED BY THE ENGINEERS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT. THE CONTRACTOR IS REMINDED THAT ALL WORK SHALL MEET ALL APPLICABLE REQUIREMENTS OF THE RULES AND REGULATIONS OF EROSION AND SEDIMENT CONTROL AS PUBLISHED BY THE DEPARTMENT OF NC ENVIRONMENTAL QUALITY.
- 9. THE CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS INDICATING THE ACTUAL AS-BUILT CONDITION OF THE PROJECT AT COMPLETION. AS-BUILTS WILL BE FURNISHED AT OR PRIOR TO FINAL INSPECTION BY THE ENGINEER. AS-BUILTS WILL BE REVIEWED BY THE ENGINEERS REPRESENTATIVE PRIOR TO APPROVAL OF MONTHLY PROGRESS PAYMENTS. MARK-UP COPIES OF THE DRAWINGS INDICATING ALL DIMENSIONS AND ELEVATIONS ARE ACCEPTABLE AS AS-BUILT DRAWINGS.

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- 2. THE EXISTING UTILITIES BELONG TO TOWN OF CARTHAGE.
- 3. ALL WATER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER RESOURCES, PUBLIC WATER SUPPLY SECTION. ALL SEWER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT QUALITY, DIVISION OF WATER RESOURCES. WATER QUALITY SECTION. PERFORM ALL WORK IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODES.
- 4. THE UTILITY OWNER OWNS EXISTING UTILITY FACILITIES AND WILL OWN THE NEW UTILITY FACILITIES AFTER ACCEPTANCE BY THE DEPARTMENT. THE DEPARTMENT OWNS THE CONSTRUCTION CONTRACT AND HAS ADMINISTRATIVE AUTHORITY. COMMUNICATIONS AND DECISIONS BETWEEN THE CONTRACTOR AND UTILITY OWNER ARE NOT BINDING UPON THE DEPARTMENT OR THIS CONTRACT UNLESS AUTHORIZED BY THE BY THE ENGINEER. AGREEMENTS BETWEEN THE UTILITY OWNER AND CONTRACTOR FOR THE WORK THAT IS NOT PART OF THIS CONTRACT ARE ALLOWED, BUT ARE NOT BINDING UPON THE DEPARTMENT.
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- 9. ALL UTILITY MATERIAL SUBMITTALS AND RECORDS IN SECTION 1500 OF THE STANDARD SPECIFICATIONS.

PROJECT SPECIFC NOTES:

- 1. ALL PROPOSED FORCE MAIN AND WATER LINE TO BE PVC C-900 DR18 UNLESS NOTED OTHERWISE ON PLANS. ALL DUCTILE IRON PIPE SHALL BE PC350. AND DUCTILE IRON FORCE MAIN SHALL HAVE AN EPOXY INTERIOR LINING.
- 2. WELL IN ADVANCE OF BEGINNING UTILITY WORK, SOFT DIGS SHALL BE PERFORMED BY CONTRACTOR TO VERIFY ACTUAL WATER LINE DEPTH AND MATERIAL AT PROPOSED TIE-IN LOCATIONS.
- 3. LAY PIPE STRAIGHT IN ALIGNMENT AND GRADIENT OR FOLLOW TRUE CURVES AS NEARLY AS POSSIBLE. DO NOT DEFLECT ANY JOINT MORE THAN THE MAXIMUM DEFLECTION RECOMMENDED BY THE MANUFACTURER.
- 4. LKC/ TOWN OF CARTHAGE AND NCDOT TO REVIEW/ APPROVE RELEVANT SUBMITTALS.
- 5. ANY SERVICE INTERRUPTIONS SHALL BE SCHEDULED FOR MINIMAL IMPACT TO CUSTOMERS AND APPROVED BY TOWN OF CARTHAGE.
- 6. THE CONTRACTOR SHALL NOTIFY LKC/ TOWN OF CARTHAGE IN ADVANCE OF THE FOLLOWING **ACTIVITIES:**
- A. START OF UTILITY CONSTRUCTION— 48 HOURS
- B. MAIN LINE SERVICE INTERRUPTIONS- 96 HOURS
- C. PRESSURE TESTING- 24 HOURS D. DISINFECTION- 24 HOURS
- 7. LKC/ TOWN OF CARTHAGE AND NCDOT HAVE RIGHT-OF-ENTRY TO THE PROJECT SITE.
- 8. THE PROPOSED PIPELINE SHALL BE INSTALLED AT THE DEPTHS SHOWN IN THE PROFILE TO AVOID HIGH POINTS THAT CAN TRAP AIR. ALL COST FOR INSTALLATION IN DEEPER CUTS SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT AND SHOULD BE INCLUDED IN THE PRICE FOR FORCE MAIN INSTALLATION.

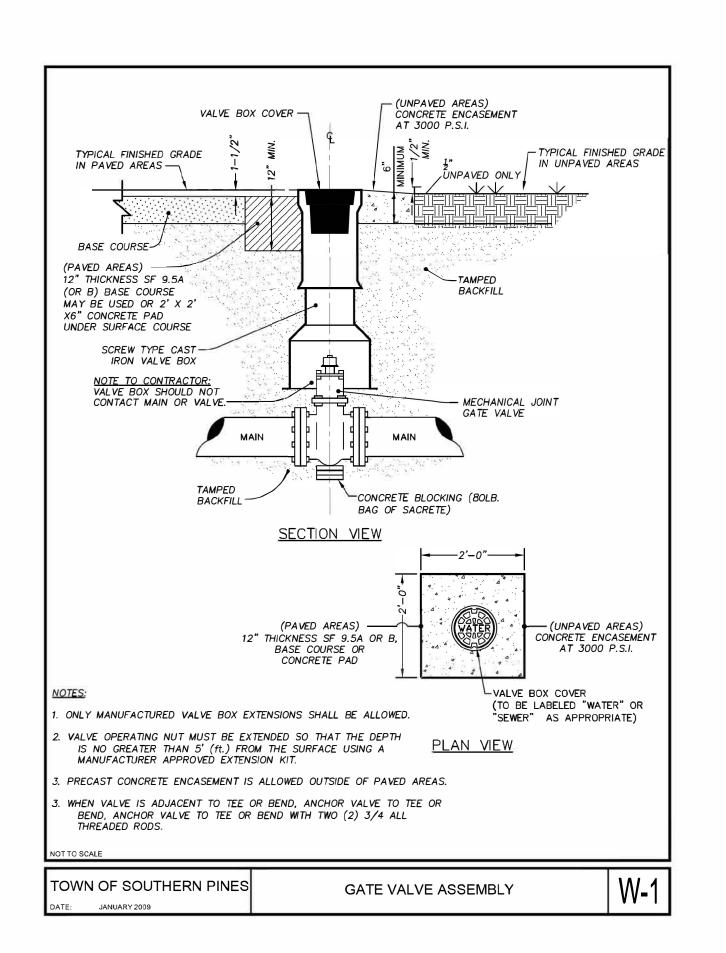
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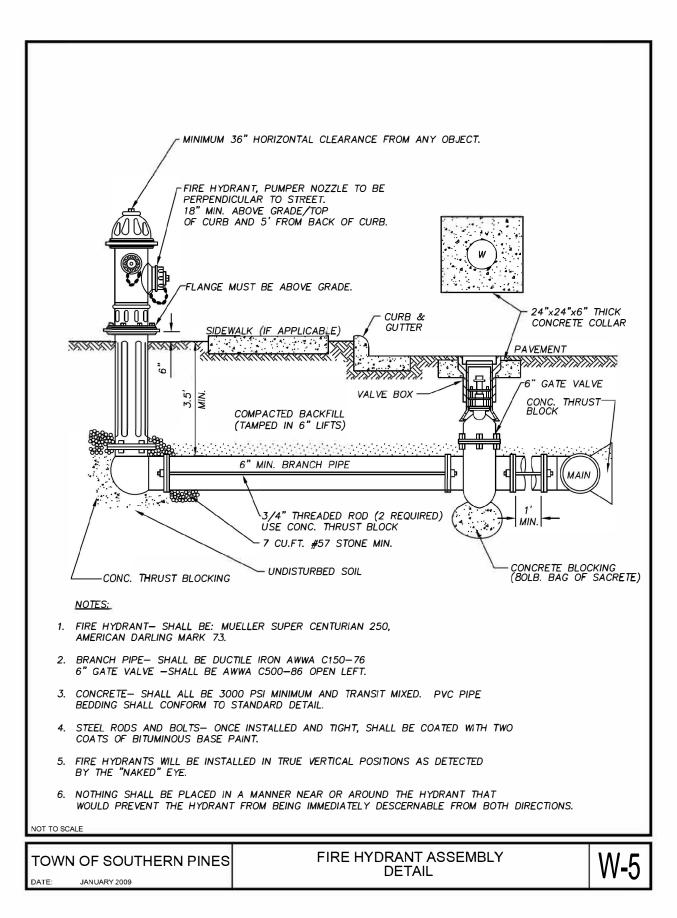
PROJECT TYPICAL DETAILS (SOUTHERN PINES)

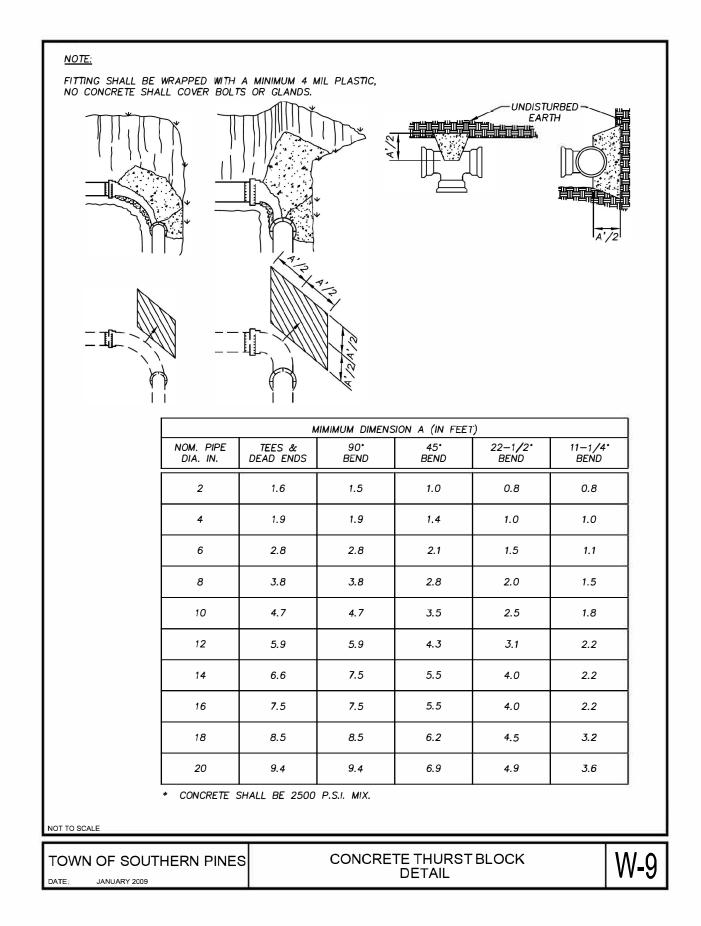


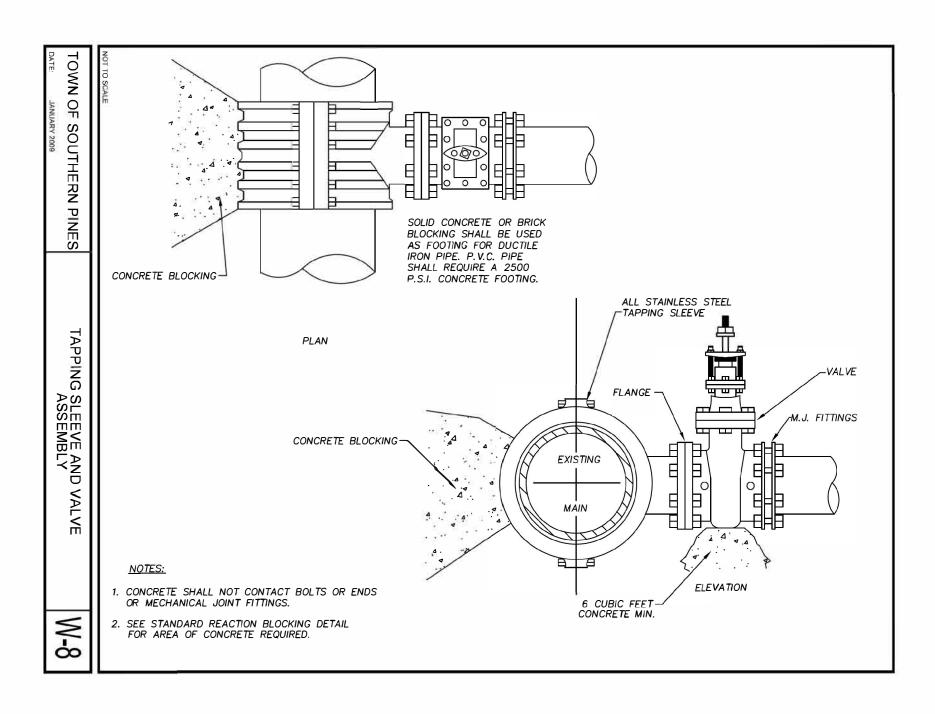
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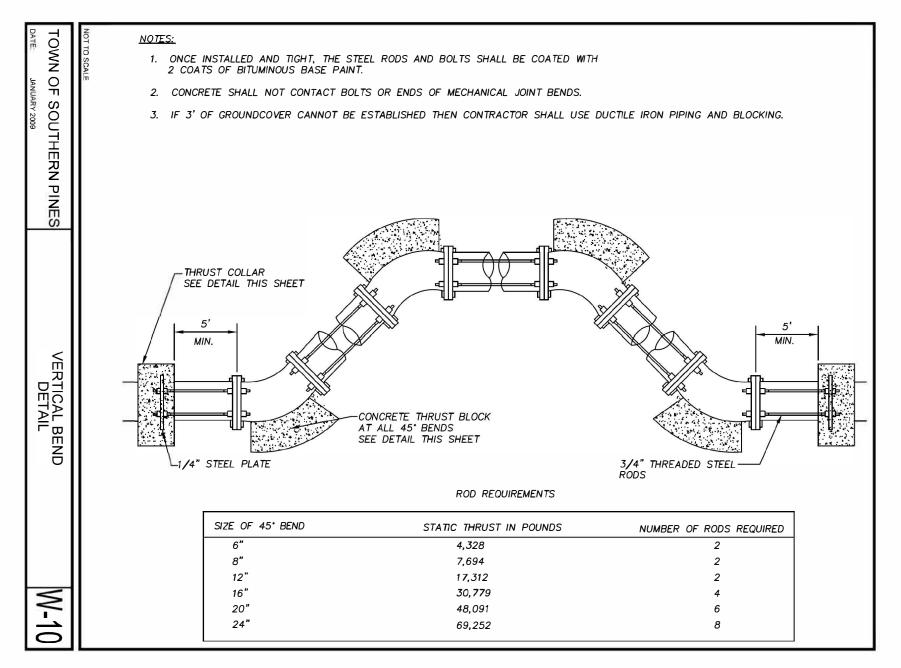
UTILITY CONSTRUCTION











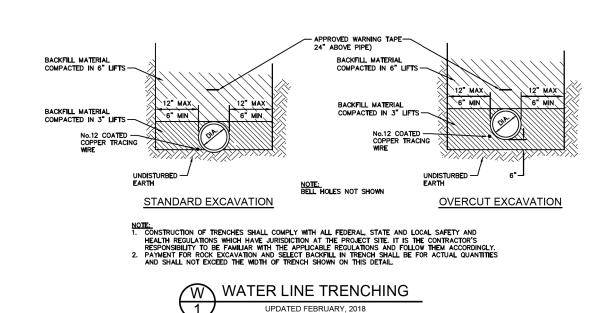
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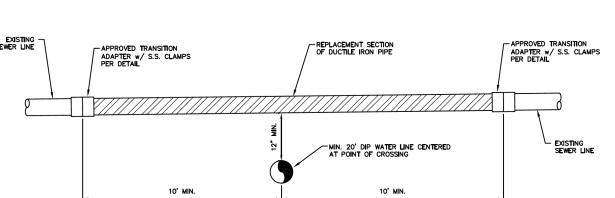
PROJECT TYPICAL DETAILS (SOUTHERN PINES)

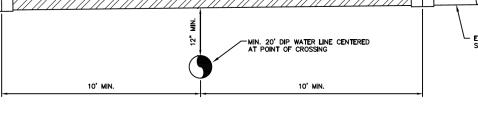


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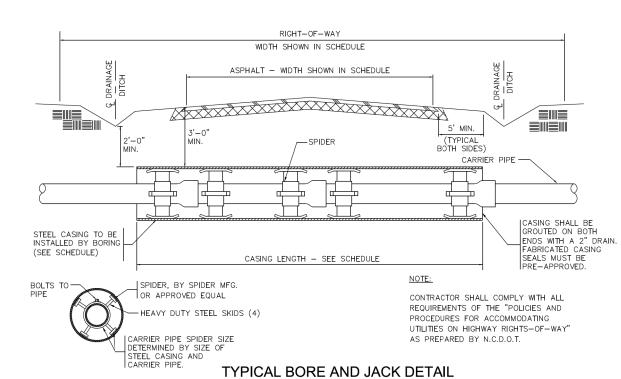


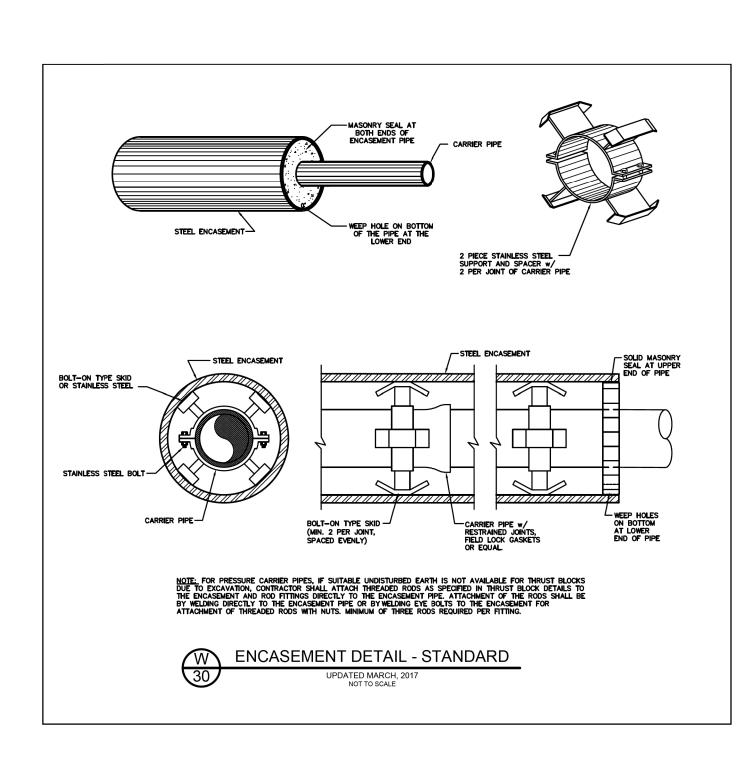




NOTE: THIS DETAIL SHALL ONLY BE USED IF WATER AND SEWER SEPARATIONS AS REQUIRED IN NOTE 8 OF THE GENERAL WATER NOTES CANNOT BE MET WATER AND SEWER CROSSING

UPDATED MARCH, 2017
NOT TO SCALE





SECTION 508 FIRE PROTECTION WATER SUPPLIES 508.1 Required water supply. An approved water supply capable of supplying the required fire flow for fire protection shall be provided to premises upon which facilities, buildings or portions of buildings are hereafter constructed or moved into or within the jurisdiction.
508.2 Type of water supply. A water supply shall consist of reservoirs, pressure tanks, elevated tanks, water mains or other fixed systems capable of providing the required fire flow.
508.2.1 Private fire service mains. Private fire service mains and appurtenances shall be installed in accordance with NFPA 24.
508.2.2Water tanks.Water tanks for private fire protection shall be installed in accordance with NFPA 22.
508.3 Fire flow. Fire flow requirements for buildings or portions of buildings and facilities shall be determined by an approved method.
508.4 Water supply test. The fire code official shall be notified prior to the water supply test. Water supply tests shall be witnessed by the fire code official or approved documentation of the test shall be provided to the fire code official prior to final approval of the water supply system.
508.5 Fire hydrant systems. Fire hydrant systems shall comply with Sections 508.5.1 through 508.5.6.
508.5.1 Where required. Where a portion of the facility or building hereafter constructed or moved into or within the jurisdiction is more than 400 feet (122 m) from a hydrant on a fire apparatus access road, as measured by an approved route around the exterior of the facility or building, on—site fire hydrants and mains shall be provided where required by the fire code official. Exceptions:
1. For Group R—3 and Group U occupancies, the distance requirement shall be 600 feet (183 m). 2. For buildings equipped throughout with an approved automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, the distance requirement shall be 600 feet (183 m).
508.5.2 Inspection, testing and maintenance. Fire hydrant systems shall be subject to periodic tests as required by the fire code official. Fire hydrant systems shall be maintained in an operative condition at all times and shall be repaired where defective. Additions, repairs, alterations and servicing shall comply with approved standards.
508.5.3 Private fire service mains and water tanks. Private fire service mains and water tanks shall be periodically inspected, tested and maintained in accordance with NFPA 25 at the following intervals: 1. Private fire hydrants (all types): Inspection annually and after each operation; flow test and maintenance annually. 2. Fire service main piping: Inspection of exposed, annually; flow test every 5 years. 3. Fire service main piping strainers: Inspection and maintenance after each use.
508.5.4 Obstruction. Posts, fences, vehicles, growth, trash, storage and other materials or objects shall not be placed or kept near fire hydrants, fire department inlet connections or fire protection system control valves in a manner thatwould prevent such equipment or fire hydrants from being immediately discernible. The fire department shall not be deterred for hindered from gaining immediate access to fire protection equipment or fire hydrants.
508.5.5 Clear space around hydrants. A 3—foot (914 mm) clear space shall be maintained around the circumference of fire hydrants except as otherwise required or approved.
508.5.6 Physical protection. Where fire hydrants are subject to impact by a motor vehicle, guard posts or other approved means shall comply with Section 312.
NOT TO SCALE

TOWN OF SOUTHERN PINES GENERAL NOTES - FIRE PROTECTION

STEEL CASING TO BE INSTALLED BY BORING (SEE SCHEDULE)

Engineering Landscape Architecture Surveying LKC Engineering, pllc 140 Aqua Shed Court Aberdeen, NC 28315 O: 910.420.1437 F: 910.637.0096 lkcengineering.com License No. P-1095

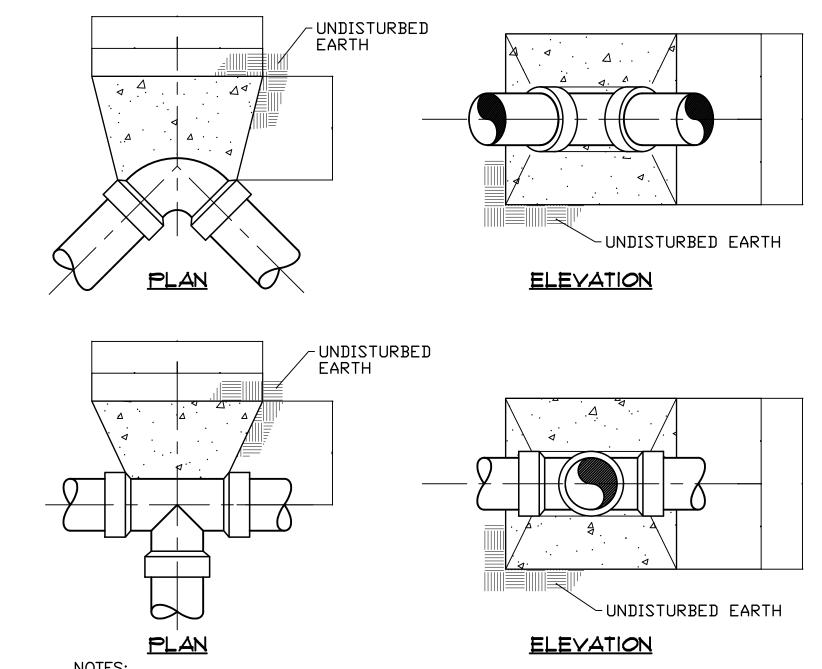
PROJECT REFERENCE NO. SHEET NO. UC-3D **BR-0035** DESIGNED BY: MAL DRAWN BY: BCS CHECKED BY: MAL APPROVED BY: SEAL 9036286 REVISED: NORTH CAROLINA DEPARTMENT OF TRANSPORTATION 10/12/2021 UTILITIES ENGINEERING SEC PHONE: (919) 707-6690 UTILITY CONSTRUCTION PLANS ONLY FAX: (919) 250-4151

UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT TYPICAL DETAILS

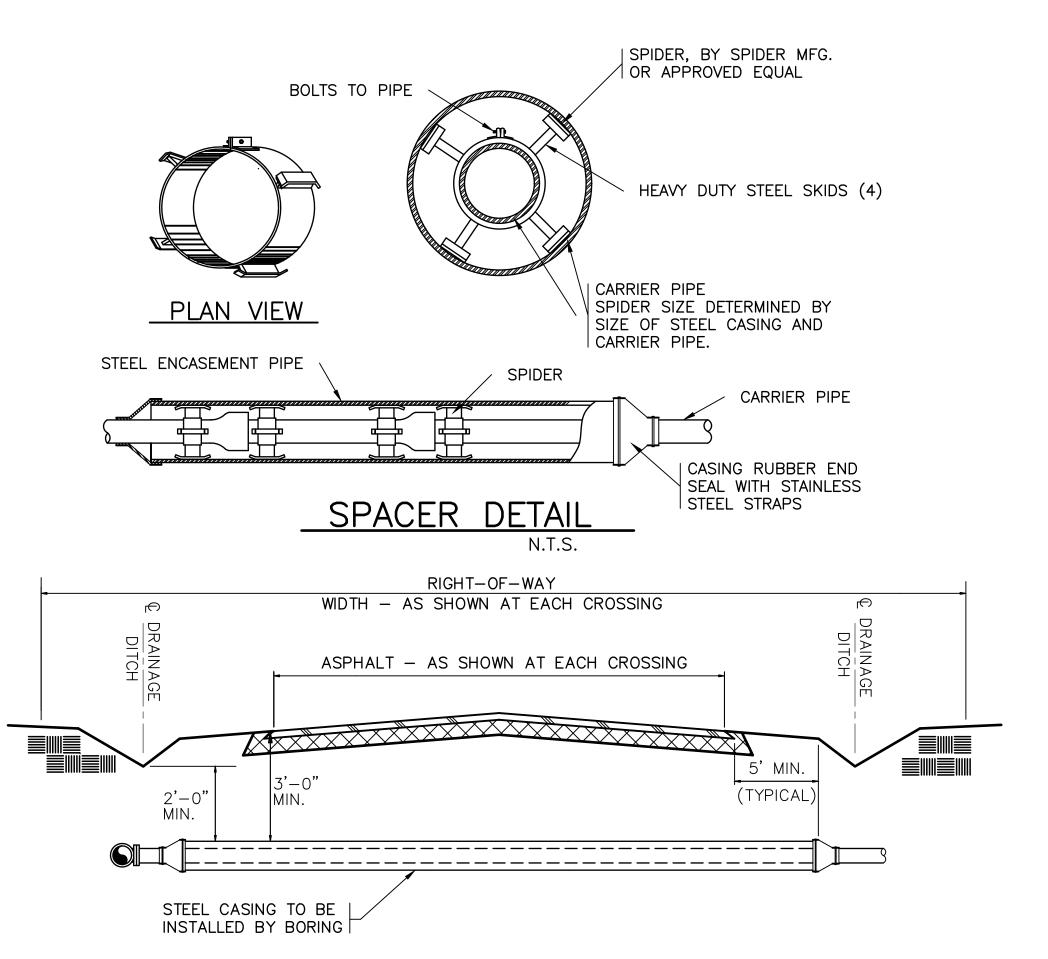
TOWN OF CARTHAGE



INC	/IES.											
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١.	1111/031	DLOCK	NO OFF	ALL DL '	CONSIN		Ol	2300	/ F.J.I. (JUNUNETE.		
2	INTOIN	TAD D	VDED	VDUIND	DENID	OP EI	TTINIC	· TO	DDE\/ENI		\cap E	CONCRETE.
۷.	INSTALL	IAL	ALEK	ALCOIND	DEIND	OK FI	THING	, 10	LUEACIAI	BUNDING	OΓ	CONCRETE.

	D	IMENS	ION A	(FEET	')				
BEND / FITTING	PIPE SIZE (NOM. DIA. IN INCHES)								
BEND / FITTING	4	6	8	10	12	16	18	20	24
90° BEND	1.4	2.0	2.7	3.4	4.0	5.4	6.0	6.7	8.0
45° BEND	1.0	1.5	2.0	2.5	3.0	4.0	4.5	5.0	5.9
22 1/2° BEND	0.8	1.1	1.5	1.8	2.2	2.9	3.2	3.6	4.3
11 1/4° BEND	0.5	0.8	1.0	1.3	1.5	2.0	2.3	2.5	3.0
TEE BRANCH/DEAD END	1.2	1.7	2.3	2.9	3.4	4.5	5.1	5.7	6.8

CONCRETE THRUST BLOCK DETAIL
FOR PRESSURE MAIN HORIZONTAL BENDS AND TEES
N.T.S.



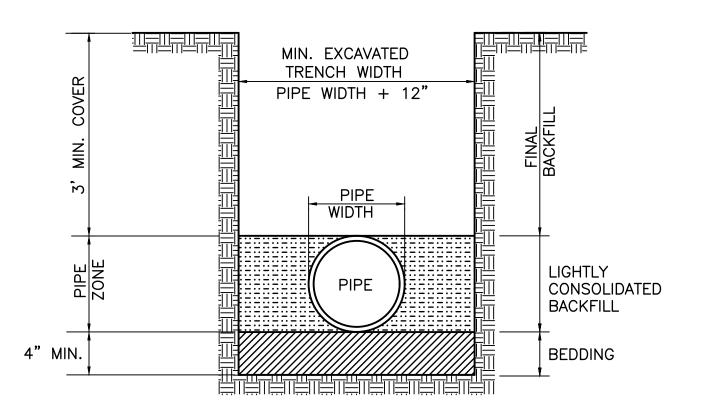
TYPICAL BORING DETAIL UNDER HIGHWAYS

N.T.S.

NOMINAL D.I.	STEEL CASING	MIN. WALL THICKNESS	MIN. WALL THICKNESS
CARRIER PIPE DIA.	MINIMUM O.D.	FOR HIGHWAYS	FOR RAILROADS
(INCHES)	(INCHES)	(INCHES)	(INCHES)
3 4 6 8 10 12 14 16 18 20 24	8.625 10.750 14.0 16.0 18.0 20.0 24.0 26.0 28.0 30.0 34.0	0.250 0.250 0.250 0.250 0.250 0.250 0.250 0.312 0.312 0.312	0.250 0.250 0.250 0.312 0.312 0.375 0.375 0.500 0.500 0.500 0.625

NOTE:

BEDDING SHALL BE 4" MINIMUM LOOSE SOIL, FREE FROM ROCKS, AND SHALL PROVIDE UNIFORM SUPPORT FOR THE FULL LENGTH OF PIPE.



TRENCH DETAIL

TYPE 3 LAYING CONDITIONS

N.⁻

PROJECT TYPICAL DETAILS

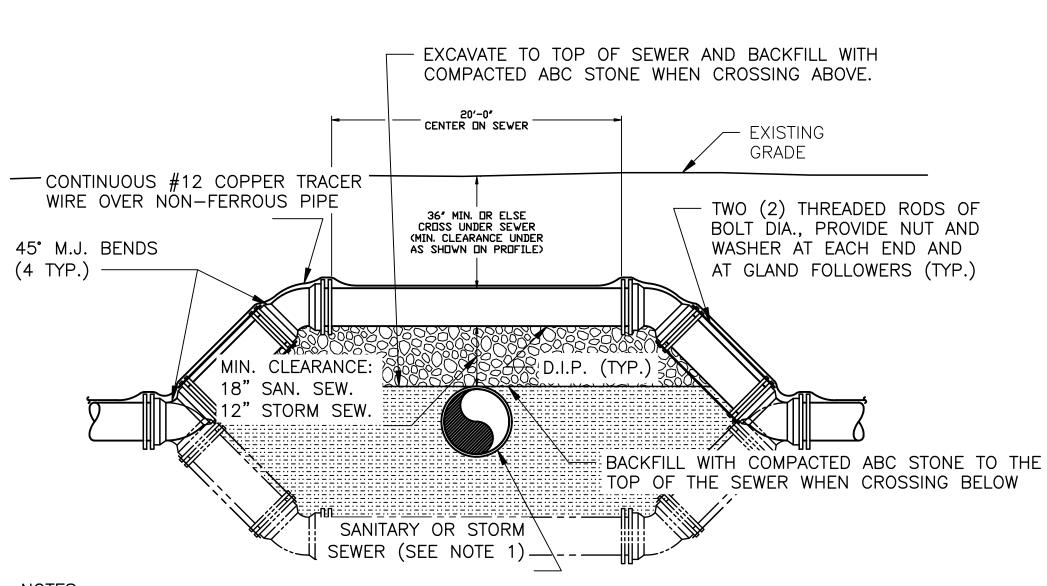
TOWN OF CARTHAGE



PROJECT REFERENCE NO. SHEET NO. **BR-0035** UC-3E DESIGNED BY: MAL DRAWN BY: **BCS** CHECKED BY: MAL APPROVED BY: REVISED: NORTH CAROLINA DEPARTMENT OF TRANSPORTATION 10/12/2021 UTILITIES ENGINEERING SEC UTILITY CONSTRUCTION PHONE: (919) 707-6690 PLANS ONLY FAX: (919) 250-4151

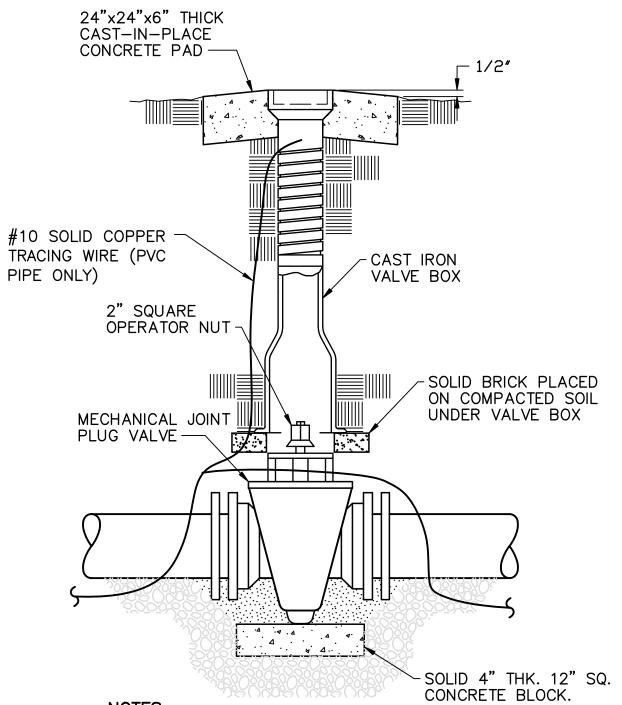
UTILITY CONSTRUCTION

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- 1. WHEN IT IS NECESSARY FOR A WATER MAIN TO CROSS UNDER A SEWER, BOTH THE WATER MAIN AND THE SEWER SHALL BE CONSTRUCTED OF FERROUS MATERIALS AND WITH JOINTS EQUIVALENT TO WATER MAIN STANDARDS FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE POINT OF CROSSING. A SECTION OF WATER MAIN PIPE SHALL BE CENTERED AT THE POINT OF CROSSING.
- 2. ALLOWABLE PIPE AND/OR JOINT DEFLECTIONS MAY BE USED IN LIEU OF BENDS TO ACHIEVE REQUIRED CLEARANCE OVER OR UNDER SEWER.

SANITARY AND STORM SEWER CROSSING DETAIL

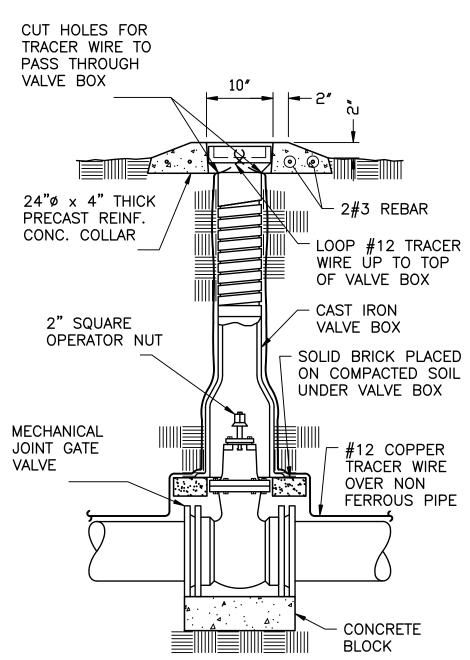


NOTES: 1. PLACE PLUG VALVES ON 4" CONCRETE BLOCK.

2. WHERE PVC PIPE IS BEING INSTALLED, 6 IN. OF COMPACTED #57 STONE MAY BE USED IN LIEU OF THE 4" CONCRETE BLOCK.

3. MAXIMUM SPACING FOR SEWER FORCE MAIN ISOLATION VALVES IS 1,000 LF.

PLUG VALVE ASSEMBLY

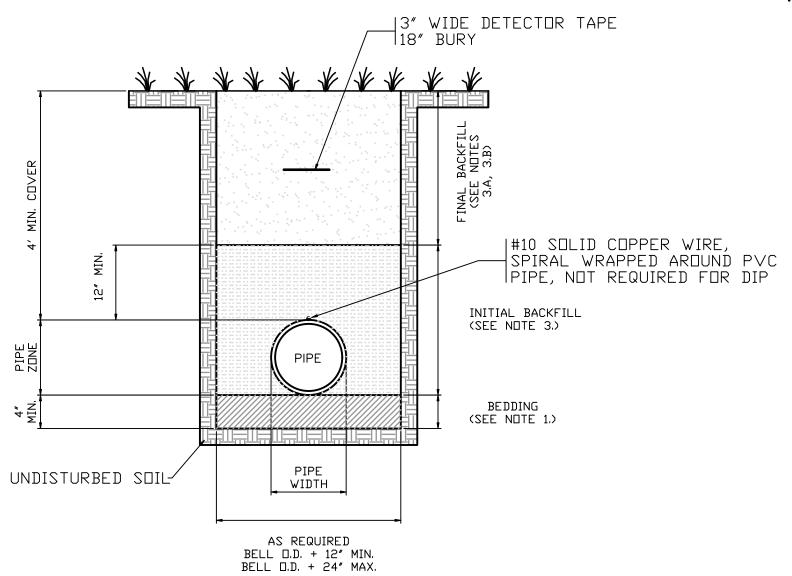


SEPARATION FROM ADJACENT FITTINGS SHOWN ON PLANS AND PROFILES IS FOR CLARITY. ACTUAL SEPARATION MAY BE ADJUSTED TO FIT LAYING CONDITIONS.

GATE VALVE ASSEMBLY

PROJECT TYPICAL DETAILS

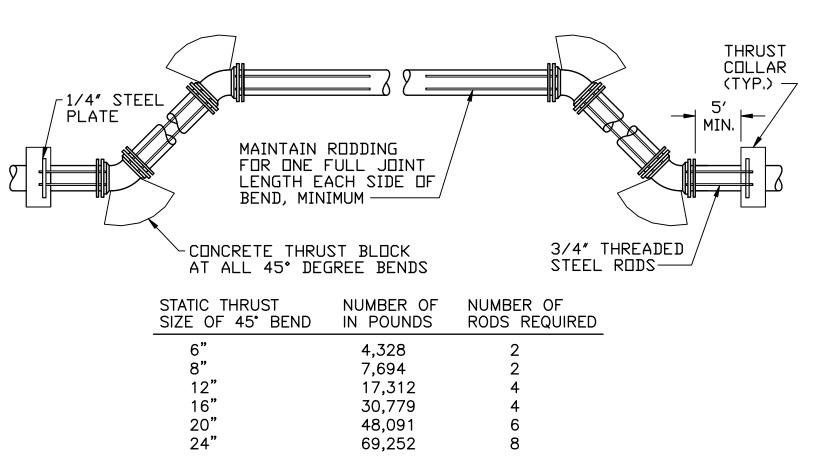
TOWN OF CARTHAGE



FORCE MAIN TRENCH DETAILS TYPE 3 LAYING CONDITIONS N.T.S.

NOTES:

- 1. LAYING CONDITIONS AS PER AWWA C600 AND C605 STANDARDS.
- 2. BEDDING MATERIAL SHALL BE 4" MINIMUM THICKNESS, LOOSE SOIL (DEFINED AS NATIVE SOIL EXCAVATED FROM THE TRENCH), FREE FROM ROCKS AND SHALL PROVIDE UNIFORM SUPPORT FOR THE FULL LENGTH OF PIPE. COMPACT TO 95% MAXIMUM DENSITY.
- 3. INITIAL BACKFILL SHALL BE LIGHTLY CONSOLIDATED IN MAXIMUM 6" LOOSE LIFTS, COMPACTED TO 95% OF MAXIMUM DENSITY.
- 3. UNDER AREAS TO BE SEEDED OR SODDED, COMPACT SUCCEEDING LAYERS OF FINAL BACKFILL IN 12" LOOSE LIFTS TO 85% MAXIMUM DENSITY.
- 3. UNDER STRUCTURES, PAVEMENTS AND ROAD SHOULDERS, COMPACT SUCCEEDING LAYERS OF FINAL BACKFILL IN 6" LOOSE LIFTS TO 95% MAXIMUM DENSITY EXCEPT COMPACT TOP 12" OF SUBGRADE TO
- 4. PROVIDE #10 SOLID COPPER WIRE IN SUFFICIENT LENGTH TO BE CONTINUOUS OVER EACH SEPARATE RUN OF ÄLL BURIED PVC PIPING. AT VALVE BOXES, BRING WIRE TO WITHIN 6 IN. OF TOP OF BOX AND INSERT INTO BOX THROUGH DRILLED HOLE. NOT REQUIRED FOR DUCTILE IRON PIPE.
- 5. INSTALL 3' WIDE DETECTOR TAPE AT 18" DEPTH. TAPE SHALL HAVE MIDDLE FOIL LAYER.



NDTES:

- 1. ONCE INSTALLED AND TIGHT, THE STEEL RODS AND BOLTS SHALL RECIEVE 2 COATS OF BITUMINOUS MATERIAL OR SHALL BE GALVANIZED.
- 2. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT BENDS.

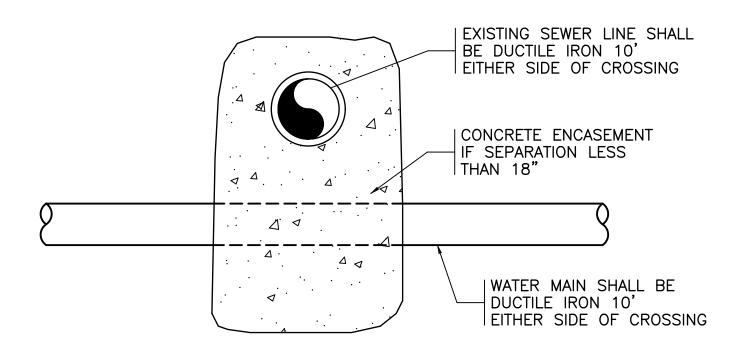
VERTICAL BENDS



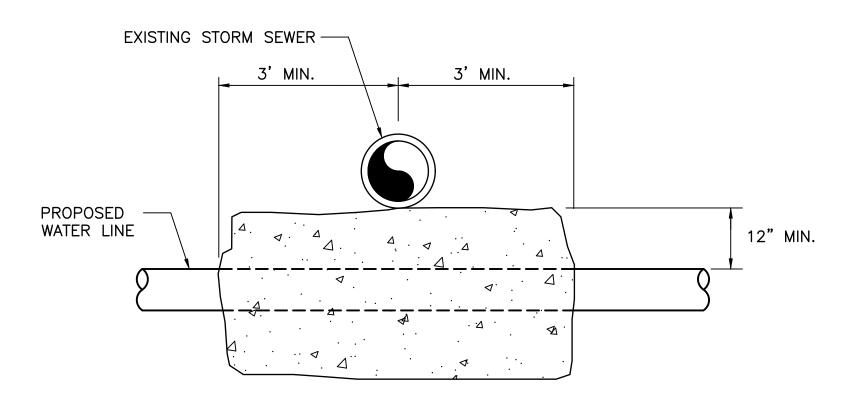
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EC. 10/12/2021 O UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

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SEWER AND WATER CROSSING



STORM SEWER CROSSING

12" CONC. ENCASEMENT ALL AROUND PROPOSED WATER LINE AND POURED TO THE BOTTOM OF THE EXISTING PIPE. HDPE PIPE TO BE INSTALLED WITH

A MIN. OF 10' HORIZONTAL RUN.

PIPE RESTRAINT CONNECTION

CREEK PROFILE

EXISTING

TO ALLOW FOR DIRECTIONAL BORE

PROJECT REFERENCE NO. SHEET NO. UC-3G **BR-0035** DESIGNED BY: MAL DRAWN BY: BCS CHECKED BY: MAL APPROVED BY: REVISED: NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC UTILITY CONSTRUCTION PHONE: (919) 707-6690 PLANS ONLY FAX: (919) 250-4151

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HDPE PIPE TO BE INSTALLED WITH A MIN. OF 10' HORIZONTAL RUN. TO ALLOW FOR DIRECTIONAL BORE PIPE RESTRAINT CONNECTION

SEE DIRECTIONAL BORE

PIPE RESTRAINT DETAIL

DIR. BORE MACHINE

BORE MACHINE

AND RODS

MEASUREMENT

MEASUREMENT

MEASUREMENT

MEASUREMENT

MEASUREMENT

MEASUREMENT

MEASUREMENT

MEASUREMENT

MEASUREMENT

3' (TYP.)

SEE DIRECTIONAL BORE ——
PIPE RESTRAINT DETAIL

TYPICAL DIRECTIONAL BORE

CABLES, WATER/

SEWER LINES (TYP.)

HDPE AS PER SPECIFICATIONS

DISTANCE TO BE

APPROVED BY THE ENGINEER

PRIOR TO START OF WORK

TYPICAL DIRECTIONAL BORE
FOR HIGH-DENSITY POLYETHYLENE (HDPE) PIPE

NOTE 1

-SEE NOTE 3-

10' MAX

SPACING

FOR DEPTH

5' MIN.

NOTE

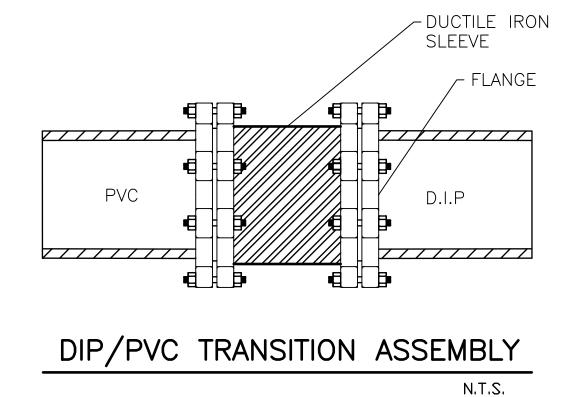
EXISTING |

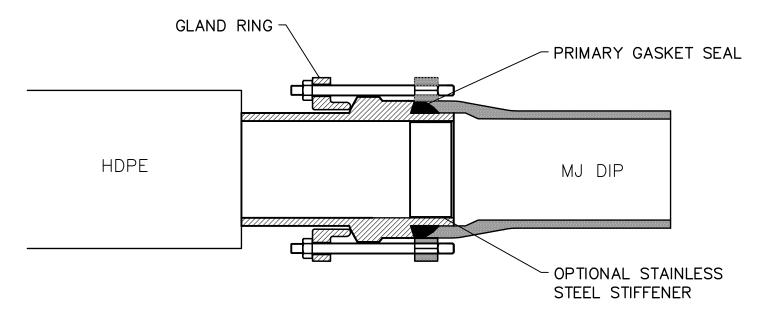
GRADE

DUCTILE IRON SLEEVE (SEE DETAIL THIS SHEET) PVC RJ D.I.P. RJ D.I.P. BELL RESTRAINT OR GRIP GASKET (FIELD LOCK GASKET) MJ DIP TO HDPE ADAPTER (SEE DETAIL THIS SHEET) BELL RESTRAINT OR GRIP GASKET OR GRIP GASKET (FIELD LOCK GASKET)

N.T.S.

DIRECTIONAL BORE PIPE RESTRAINT





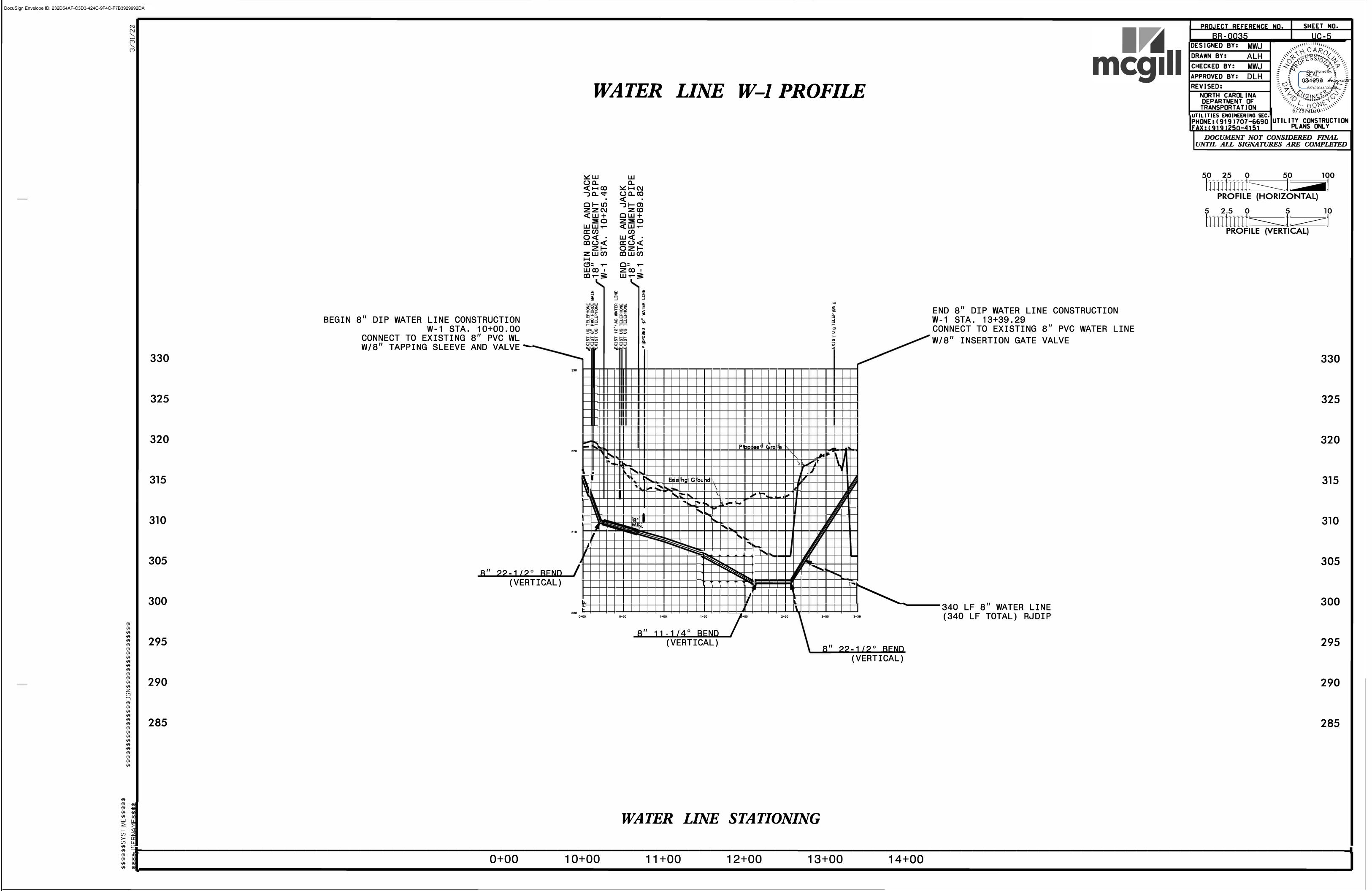
HDPE TO MECHANICAL JOINT ADAPTER

NOTES:

- 1. A PROFILE AND PLAN SHALL BE PROVIDED FROM ENTRY TO EXIT FOR EACH DIRECTIONAL BORE SECTION BY THE DIRECTIONAL BORE CONTRACTOR.
- 2. ALL BORE SECTIONS SHALL BE HYDROSTATICALLY TESTED PER SPECIFICATION STANDARDS UPON COMPLETION OF INSTALLATION AND PRIOR TO PLACING HDPE IN SERVICE.
- 3. LENGTH OF CROSSING, LOCATION OF INSPECTION/OBSERVATION EXCAVATION, NUMBER OF PIPE JOINTS, LOCATION OF BORE MACHINE, AUGER ENTRANCE LOCATION, AND TIE—IN POINTS ARE TO BE APPROVED BY THE ENGINEER PRIOR TO ANY START OF WORK.
- 4. THIS DETAIL IS ALSO APPLICABLE TO STREAMS, WETLANDS, LARGE STORM DRAINS, AND SIMILAR APPLICATIONS FOR DIRECTIONAL BORE WITH POLY—ETHYLENE PIPE.
- 5. THE BORE DEVELOPED FOR THE LEAD IN END OF THE PIPE SHALL BE KEPT AT A MINIMUM DIAMETER FOR THE PIPE INSTALLATION. THE LEAD IN END SHALL BE PULLED THROUGH WITHOUT THE M.J. FLANGE ATTACHED FOR LARGER THAN 6" PIPE INSTALLATIONS. THE M.J. FLANGE FOR SAID LEAD IN END SHALL BE INSTALLED AFTER THE PIPE INSTALLATION WITH THE USE OF A SPLIT M.J. FLANGE PER THE DETAIL ON THIS DRAWING.

PROPOSED 280 LF OF 8" WATER MAIN

PROPOSED 60 LF OF 8" CARRIER PIPE



SCALE IN FEET

WILL VARY BASED UPON FIELD CONDITIONS. EX.30' ACCESS EASEMENT PC 11 SD 293 STA 0+00 W-1 PROPOSED 93 LF CONNECT TO EXISTING 10" WATER LINE CLASS 350 R.J. D.I.P. REVATTE KEVIN A. PREVATTE AND WIFE, KATHLEEN T. PREVATTE STA 0+20 W-1 1- 10" 45° BEND 51 LF OF 20" ENCASEMENT PIPE WITH 51 LF 10" WATER LINE -L- +99.00**STA 13+04.68 FM-1**/ 145.98' T 1- 8" 90° BEND ENCASEMENT PIPE TO BE INSTALLED BY BORE AND JACK. CARRIER PIPE TO 150 LF OF 16" ENCASEMENT PIPE WITH 50 LF OF ()BE CLASS 350 R.J. D.I.P. . 뭐8" R.J. D.I.P. FORCE MAIN SEWER W/ EPOXY LINING /115.00' LT $^{
m E}$ encasement pipe to be installed by bore and Jack. ☐ ☐ 🕅 39 LF OF 20" ENCASEMENT PIPE WITH 4 (3) 39 LF 10" WATER LINE 24 LF OF 16" ENCASEMENT PIPE WITH 24 LF OF ENCASEMENT PIPE TO BE INSTALLED 8" R.J. D.I.P. FORCE MAIN SEWER W/ EPOXY LINING BY OPEN CUT. CARRIER PIPE TO BE ENCASEMENT PIPE TO BE INSTALLED BY OPEN CUT (EVIN A. PREVATTE AND CLASS 350 R.J. D.I.P. KATHLEEN T. PREVATTE DURING CONSTRUCTION OF PROPOSED DRIVEWAY. STA 1+83 W-1 ESTA 13+75.68 FM-1 1- 10" 90" BEND BEGIN 10" PVC WITH 1- 8" 22.5° BEND [≅]BELL RESTRAINTS⊅ STA 13+84 FM-1 \sim GREMOVE 90° BEND SPECIAL CUT DITCH PROPOSED 284 LF 8" R.J. END R.J. DI O TIE INSEE DETAIL B. D.I.P. FORCE MAIN SEWER BORE ABANDON 407 LF OF W/ EPOXY LINING B" UTILITY PIPE ()(1,284 TOTAL) PROPOSED 246 LF 10" |DIRECTIONAL BORE FORCE ABANDON 572 LF OF MAIN SEWER PLATYPUS CONSTRUCTION, LLC 110" UTILITY PIPE HDPE DR9 **E9+00** (615 TOTAL) STA 6+25 W-1 CONNECT TO EXISTING 10" WATER MAIN 1- 10" 11.5" BEND -L- +00.00 EXIST. R/W 4+00 STA 8+80 FM-1 -L-+75.00 50.00' RT 65.00' RT 5+00 GATE VALVE / BEGIN DIRECTIONAL BORE 1 - 8" R.J. D.I.P. TO 10" HDPE COUPLING EXISTING DITCH STABLE <u>-L-+38.00</u> 50.00' RT 6+00 6+25 GRADE TO DEAIN TOWN OF CARTHAGE 92 434 LF OF 16" ENCASEMENT PIPE WITH \\ \\ \ <u>−L− +60</u>,Ø0 50.00' RT 34 LF OF 8" R.J. D.I.P. FORCE MAIN 000 //ŚTÀ 11+25.67 FM-1 SEWER W/ EPOXY LINING 65.00' RT CLASS II RIP RAP 1 - 8" 90" BEND CL B RIP RAP ENCASEMENT PIPE TO BE INSTALLED BY 31.00 TED TED 5 TONS SEE CHANNEL DETAIL OPEN CUT. 14 SY GEOTEXTILE STA 11+79.91 FM-1 N N N STA 11+86.64 FM-1 1 - 8" 22.5° BEND 1 - 8" PLUG VALVE PROPOSED 442 LF 10" $\vdash\vdash\vdash$ CHRISTOPHER T. VAN DE RIET AND WIFE, AMANDA L. VAN DE RIET IPVC WATER LINE PVC C-900 WITH P P P EXISTING 10" **BELL RESTRAINTS** WATER LINE 50.00' RT $\vdash\vdash\vdash$. ШШШ ЩЩЩ LTOWN OF SOUTHERN PINES 유 사 사 WATER MAIN. SEE SHEET UC-4 FOR DESIGN. Z Z Z

THE ESTIMATE QUANTITY OF DUCTILE IRON SEWER MAIN FITTING ON THIS PLAN SHEET IS 1,050 POUNDS. THE ACTUAL QUANTITY

THE ESTIMATE QUANTITY OF DUCTILE IRON WATER MAIN FITTING ON THIS PLAN SHEET IS 1,000 POUNDS. THE ACTUAL QUANTITY WILL VARY BASED UPON FIELD CONDITIONS.



UC-7 **BR-0035** DESIGNED BY: MAL **BCS** DRAWN BY: CHECKED BY: MAL APPROVED BY: -,036286 REVISED: NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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PROJECT REFERENCE NO.

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SHEET NO.

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THE PROPOSED REALIGNMENT OF NICKS CREEK LN IS TO BE COMPLETED PRIOR TO THE INSTALLATION OF THE PROPOSED FORCEMAIN. UTILITY CONTRACTOR SHALL COORDINATE THE INSTALLATION OF 16-INCH STEEL CASING CROSSING THE PROPOSED DRIVE TO AVOID DISTURBANCE OF THE NEW DRIVE DURING INSTALLATION OF THE PROPOSED FORCEMAIN.

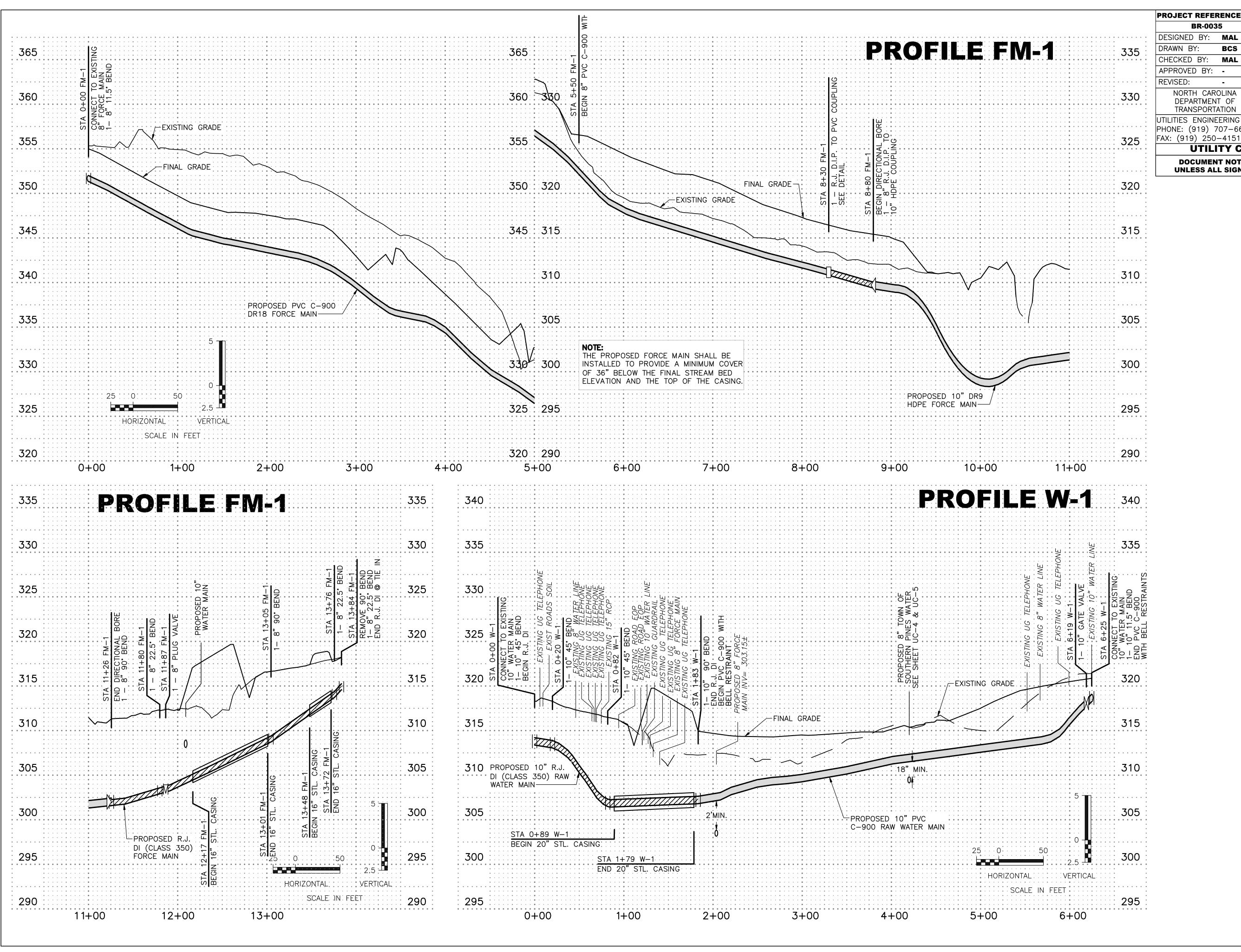
ALL PROPOSED UTILITIES SHALL BE TESTED AND ACCEPTED PRIOR TO MAKING CONNECTION TO EXISTING MAIN.

STREAM CROSSING NOTES:

THE PROPOSED FORCE MAIN SHALL BE INSTALLED TO PROVIDE A MINIMUM COVER OF 36" BELOW THE FINAL STREAM BED ELEVATION AND THE TOP OF THE CASING. INSTALLATION, BACKFILL AND CLEANUP SHALL BE COMPLETED IN ACCORDANCE WITH ALL PERMIT REQUIREMENTS.

ALL WORK FOR STREAM CROSSING SHALL BE COORDINATED WITH STREAM BYPASS FOR CULVERT INSTALLATION.





SHEET NO.