



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

June 8, 2018

ADDENDUM # 1

To: Plan Holders



From: Wes Jamison, P.E.
Division 14 Project Manger

RE: **Revisions to Utility Construction Project Special Provisions
and Plan Sheets UC-3B and UC-3C**

Contract ID: DN00565
County: Henderson
Letting Date: June 26, 2018

The above contract has experienced the following revisions:

1. **Utility Construction Project Special Provisions** – replace the existing Utility Construction Project Special Provisions with the revised version, attached.
2. **Plan Sheets UC-3B and UC-3C** – replace the existing Plan Sheets UC-3B and UC-3C with the revised version, attached.

These revisions do not change bid items or the associated quantities.

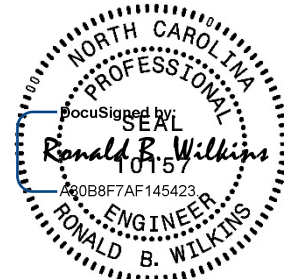
Please access ebs addenda files on Bid Express®.

Thank you for your attention to this matter.

PROJECT SPECIAL PROVISIONS
Utility Construction



License No. C-2639
401 Harrison Oaks Blvd., Suite 145
Cary, NC 27513
(919) 653-0001



6/7/2018 9:13:51 AM EDT

(Seal)

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Revise the 2018 Standard Specifications as follows:

Page 15-1, Sub-article 1500-2 COOPERATION WITH UTILITY OWNERS, paragraph 2: add the following sentences:

The utility owner is the City of Hendersonville. The contact person for the City of Hendersonville is Mr. Brent Detwiler, PE, City Engineer. Mr. Detwiler can be reached by phone at (828) 697-3060.

All water and sewer lines are to remain active during construction of the project. To accomplish this the Contractor may elect to utilize bypass pumping, line stops, inserting valves, temporary water or other methods to complete the work. These methods and means of construction must be approved by the engineer prior to commencement of the work and all such work shall be considered incidental to various other utility pay items included in the contract. All proposed water line and sewer line relocation work shall be performed at a time to be coordinated with the utility owner. Water lines or sewer lines shall not be taken out of service without prior approval of the utility owner and service interruptions shall not exceed four hours.

Page 15-2, Sub-article 1500-7 SUBMITTALS AND RECORDS, paragraph 3: add the following sentences:

As-built plans shall be provided to the City of Hendersonville showing the size and type of material installed and the coordinates of all utility horizontal and vertical locations of all installed piping and appurtenances. As-built plans and associated documentation shall be provided to the Engineer prior to acceptance of the work.

Page 15-6, Sub-article 1510-3(B) Testing and Sterilization: add the following:

After the pipeline has been satisfactorily constructed compete with the required fire hydrants, services, and all other appurtenances, and the trench backfilled satisfactorily, and after line flushing and approval by the Engineer, the newly constructed pipeline and valved sections shall be subjected to a hydrostatic pressure leakage test. The Contractor shall notify the Engineer when the work is ready for testing with all testing done in the presence of the Engineer. All labor, equipment, water and materials, including meters and gauges shall be furnished by the Contractor at his own expense.

Ductile iron pipe will be tested in accordance with AWWA C600.

Each completed section of the pipeline shall be plugged at both ends and slowly filled with water. As the main is being filed with water in preparation of the tests, all air shall be expelled from the pipe. The main shall be subjected to hydrostatic pressure of 200 pounds per square inch for a period of two (2) hours unless otherwise specified. Pressure shall be applied to the main by means of a hand pump for small lines or by use of a gasoline pump or fire engine for larger lines.

The rate of leakage shall be determined at fifteen (15) minute intervals by means of volumetric measurement of the water added during the test until the rate has stabilized at the constant value for three (3) consecutive fifteen (15) minute periods.

Leakage is defined as the quantity of water to be supplied into the newly laid pipe, or any valved section, necessary to maintain the specified leakage test pressure after the pipe has been filled with water and the air expelled. No piping installation will be accepted until the leakage is less than ten (10) gallons per inch of pipe diameter per mile of pipe per twenty-four (24) hours.

Cracked or defective pipe, joints, fittings, valves, or hydrants discovered in consequence of this test shall be removed and replaced with sound materials, and the test shall be repeated until the test results are satisfactory. Precautions shall be taken to remove or otherwise protect equipment in, or attached to, pipe to prevent damage or injury.

Pipe interiors, fittings, and valves shall be protected from contamination. Pipe delivered for construction shall be strung so as to minimize entrance of foreign matter. When pipe laying is not in progress for more than one hour, all openings in the pipeline shall be closed by watertight plugs. Joint of all pipe in the trench shall be completed before work is stopped. If water accumulates in the trench, the plug shall remain in place until the trench is dry.

If dirt enters the pipe that, in the opinion of the Engineer, will not be removed by flushing operations, the interior of the pipe shall be cleaned and swabbed as necessary, with a 5% hypochlorite disinfecting solution.

The Contractor shall provide sampling taps, Generally, sampling taps shall be provided on the water main every 1,000' and at the end of each main and at the end of each branch, in order to afford representative water testing and sample collection.

Sampling taps may be used as blow-offs. The number and locations of the taps/blow-offs must be approved by the Engineer. Hydrants may not be used for bacterial sampling.

The Contractor shall construct taps so that bacteriological samples can be easily collected without danger to personnel or likelihood of sample contamination. The Contractor shall legibly mark each sample tap with identifying letters or numbers for sample reference purposes. The Contractor shall not designate hydrants as taps for bacteriological sampling purposes. If the service or corporation taps are installed before the laboratory tests are completed, each tap will be tested for coliform bacterial.

Before being placed in service, all new mains and existing piping disturbed in any manner by the work shall be disinfected. Draining the water from existing piping or even lowering the water pressure more than one-half will constitute disturbance of the piping.

The disinfecting of water mains, valves and other appurtenances incorporated into the main construction shall be done by means of a chlorinating measuring apparatus, with proper devices for regulating the flow and providing an effective diffusion into the water within the main being disinfected by an application of chlorine-bearing compound bearing a high-test calcium hypochlorite (65-70% available chlorine). In the preparation of the solution, the powder shall first be made into a paste and then gradually thinned with water to approximately 1% chlorine solution (10,000 parts per pound of powder). This will require about 7.50 gallons of water to each one pound of powder. Solution shall be applied to the main through a rubber hose by gravity, siphonage, injection or by suitable pump feeder.

The point of chlorine application shall be at the beginning of the water main construction and/or any valve section thereof, through corporation cock installed close to and on the downstream side of the regulating gate valve controlling the flow of such proportion to the rate of water flow entering the main that the chlorine applied shall produce fifty (50) parts per million (420 pounds per million gallons) chlorine concentration in the water within the main.

During the disinfecting operation, valves, hydrants, and other mechanical devices controlling the flow of water shall be operated to permit full effectiveness of the chlorine. Valves shall be manipulated so that the strong solution within the main being sterilized will not flow back into the supply line nor flow into mains already in service. A chlorine concentration test shall be made, in turn, at each of the hydrants and/or taps provided for that purpose.

The tablet method of disinfection may be utilized for disinfection provided the total length of potable water main to be laid is less than 2,000 linear feet of pipe less than 12" in diameter. This method will be suitable only, if in the opinion of the Engineer, the pipeline has been maintained suitable free from foreign matter and any other contaminants during construction.

Page 15-8, Sub-article 1515-3(B) Meters: add the following sentences:

All relocated water meters shall be installed with new service water line back to the main. No connections or splices to existing water service lines will be permitted.

Page 15-10, Sub-article 1520-3(A) Gravity Sanitary Sewer: add the following sentences:

Air-testing will be conducted as the project is being installed. This includes all mainline between manholes, future mainline stubs and laterals out of manholes. The air testing shall be in accordance with ASTM F 1417.

Deflection testing of all new PVC sewer pipe shall be conducted 30 days after installation and backfilling of the pipe or as otherwise directed by the Engineer.

The contractor shall furnish all necessary equipment including an approvable mandrel or other approved device and conduct the deflection tests at the direction of the Engineer.

The maximum allowable limits for deflection of installed pipe under this specification shall be 7.5%. Base inside diameters and 7.5% deflection mandrel dimensions shall be per ASTM F-679 (latest edition). Deflection shall be measured with a rigid mandrel (Go/No Go) device cylindrical in shape and constructed with a minimum of nine evenly spaced arms or prongs. Drawings of the mandrel with complete dimensions shall be submitted to the Engineer for each diameter of pipe to be tested. The mandrel shall be hand pulled through all sewer lines.

Any section of sewer not passing the mandrel shall be uncovered and the bedding and backfill replaced to prevent excessive deflection. Repaired pipe shall be retested to ensure that acceptable deflection limits are not exceeded.

The Contractor shall furnish and install during backfill operation for all gravity mainline sewers and laterals printed polyethylene green (SEWER) tape above the bedding material, three (3) feet above the crown of the pipe.

All testing of pipe and associated sewer manholes and appurtenances shall be considered incidental to the applicable pay items for gravity sanitary sewer pipe.

Page 15-14, Sub-article 1525-3(B) Installation of Precast Units: add the following sentences:

No doghouse manholes will be allowed on this project.

Air Testing of all new manholes is required and shall meet the requirements of ASTM C1244. Manholes shall be sealed with plate-style sealing equipment on top of the casting so that the adjustment rings can also be tested. Bladder-style sealers are not acceptable. If a lateral is extended out of a manhole to a property the lateral shall be air tested with the manhole test, i.e. the lateral shall not be sealed off during the test.

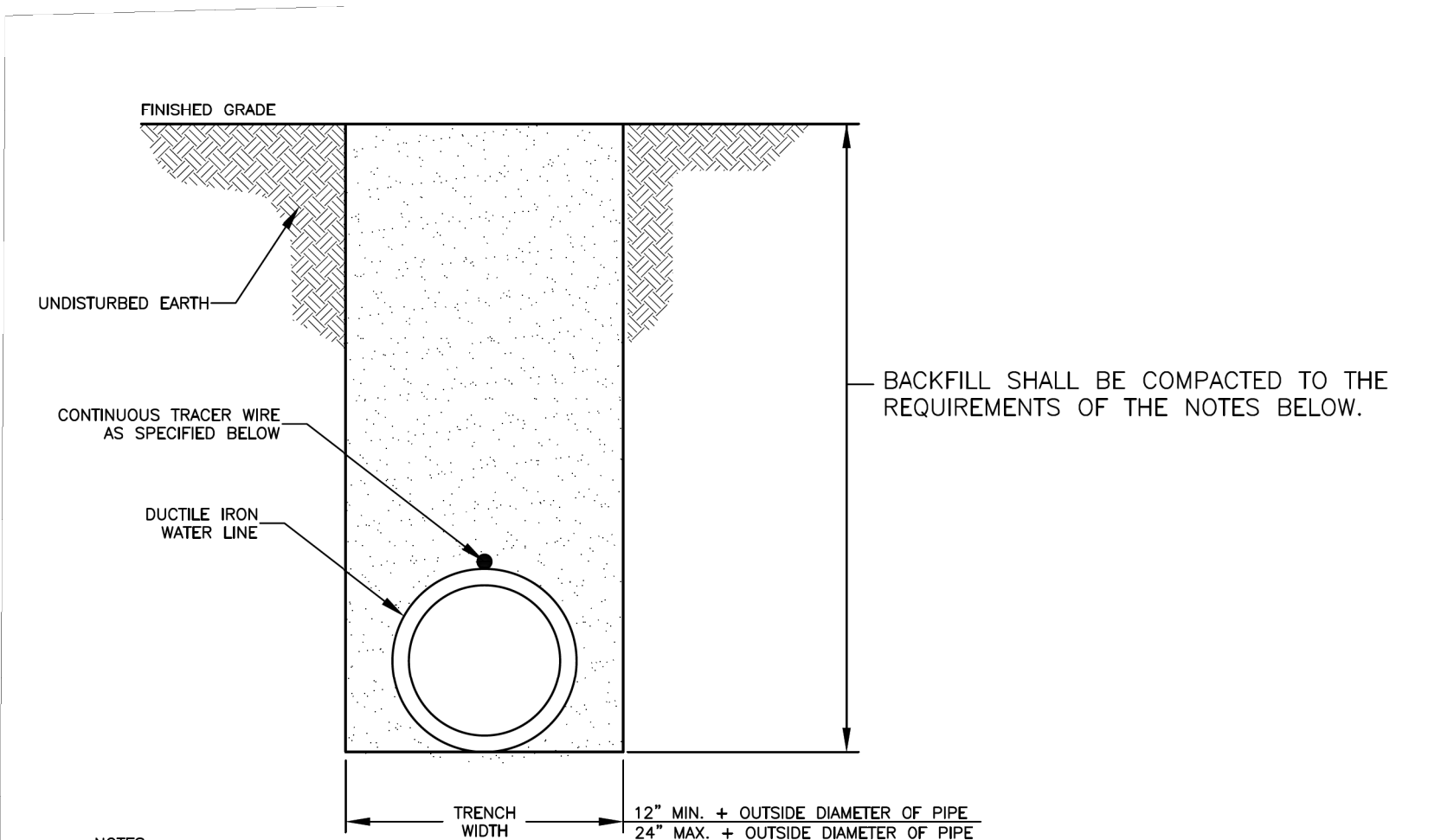
All testing of manholes and appurtenances shall be considered incidental to the applicable pay items for utility manholes.

END OF SECTION

UTILITY CONSTRUCTION

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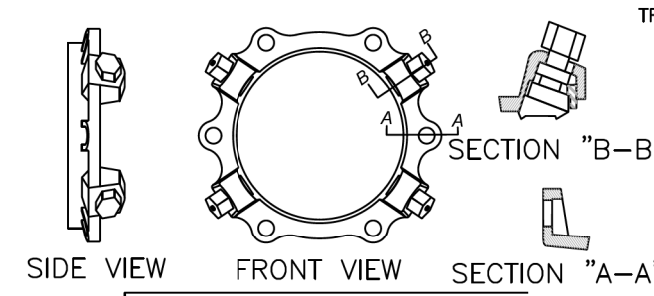


- NOTES:**
- TRENCHES EXCAVATED OUTSIDE EXISTING ROAD AND RAILWAY RIGHTS-OF-WAY SHALL BE BACKFILLED WITH COMMON BACKFILL MATERIAL CONSISTING OF EXCAVATED MATERIALS EXCEPT HIGHLY ORGANIC SILTS AND CLAYS AND TAMPED THOROUGHLY. FILL SHALL BE DEPOSITED IN SUCCESSIVE, UNIFORM, APPROXIMATELY HORIZONTAL LAYERS. MATERIAL SHALL BE FREE OF ROOTS, STONES, AND DEBRIS. ALL MATERIAL SHALL HAVE AN IN-PLACE DENSITY OF AT LEAST 85% OF MAXIMUM DRY DENSITY (STANDARD PROCTOR) OR AS APPROVED BY THE ENGINEER. COMMON BACKFILL SHALL NOT CONTAIN STONE BLOCKS, BROKEN CONCRETE, MASONRY RUBBLE, OR OTHER SIMILAR MATERIALS. IT SHALL HAVE PHYSICAL PROPERTIES SUCH THAT IT CAN BE READILY SPREAD AND COMPACTED DURING FILLING. SNOW, ICE, AND FROZEN SOIL WILL NOT BE PERMITTED.
- WHERE EXCAVATED MATERIAL, AFTER REMOVAL OF ROCKS, STUMPS, PLANT MATERIAL, AND OTHER EXTRANEUS MATERIAL AND PROPER DEMATERING, DRYING, PROTECTION, AND STORAGE OF THE EXCAVATION BY THE CONTRACTOR, CANNOT BE PREPARED TO MEET THE REQUIREMENTS FOR COMMON BACKFILL, DUE TO THE NATURE OF THE MATERIAL (E.G., EXCESSIVE ROCK, MUCK, ORGANICS, CLAY, SILT, OR OTHER MATERIAL), AND AS DETERMINED BY THE ENGINEER, THE UNACCEPTABLE EXCAVATION SHALL BE REMOVED FROM THE SITE AND DISPOSED OF BY THE CONTRACTOR AND REPLACED BY IMPORTED BACKFILL MEETING THE REQUIREMENTS OF STRUCTURAL BACKFILL. IMPORTED STRUCTURAL BACKFILL SHALL BE FREE OF ORGANICS, ROOTS OR OTHER DELETERIOUS MATERIALS AND SHALL NOT CONTAIN MORE THAN FIVE PERCENT (BY WEIGHT) ORGANIC MATERIAL, HAVE A PLASTICITY INDEX (PI) GREATER THAN 25, OR HAVE A MAXIMUM DRY DENSITY LESS THAN 90 POUNDS PER CUBIC FOOT. IMPORTED STRUCTURAL FILL SHOULD CONSIST OF MATERIAL CLASSIFIED AS ML, CL, SC, OR SM, OR BETTER PER ASTM D-2487 AND BE CAPABLE OF BEING COMPACTED TO 85% STANDARD PROCTOR.
 - THE WATER LINE SHALL HAVE A MINIMUM OF 3' OF COVER AT FINISHED GRADE.
 - TRACER WIRE WILL BE A 19 GAUGE, TIN COATED, COPPER CONDUCTOR WITH POLYETHYLENE INSULATION, CORE MATERIAL COMPRISED OF HIGH-TENACITY, WOVEN POLYESTER WITH WATER BLOCKING YARNS ENCAPSULATED IN 30 MIL. BLUE HDPE JACKET PROVIDING CORROSION RESISTANCE, FLEXIBILITY, IMPACT STRENGTH AND 1800 LBS. TENSILE STRENGTH. TRACER WIRE WILL NOT CONDUCT AN ELECTRICAL CURRENT WHEN STRUCK BY LIGHTNING AND IS DESIGNED FOR DIRECT BURY AND DIRECTIONAL BORING APPLICATIONS. WHEN SPLICES AND LATERAL CONNECTIONS ARE MADE, ONLY GEL FILLED CONNECTORS DESIGNED FOR WIRE WITH WOVEN POLYESTER FIBER CORE ARE TO BE USED. TRACER WIRE AND CONNECTORS SHALL BE TRACE-SAFE® WATER BLOCKING TRACER WIRE AND RELATED CONNECTORS, MANUFACTURED BY NEPTCO, INC. AND PRODUCED IN THE UNITED STATES OF AMERICA.

TRACER WIRE SHALL BE EXTENDED ALONG ALL WATER LINES, FITTINGS, VALVES, SERVICES, AND HYDRANTS. LOCATING CLIPS SHALL BE PROVIDED AT ALL VALVES, HYDRANT VALVES AND METER BOXES. THE CONTRACTOR SHALL DUCT TAPE TRACER WIRE ON CROWN OF WATER LINE EVERY FIVE FEET.

WATER TRENCH CONSTRUCTION OUTSIDE PAVEMENT

NOT TO SCALE

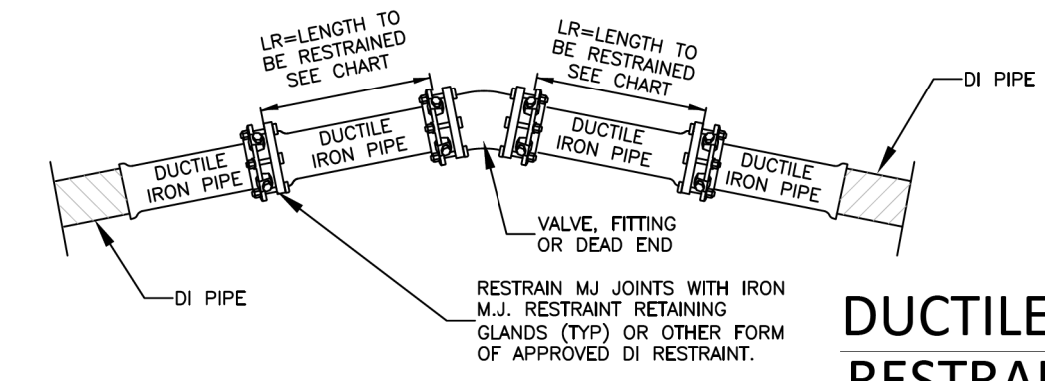


| IRON PIPE SIZE | IRON RETAINING GLAND M.J. RESTRAINT QUANTITY | WEDGES QUANTITY | BOLTS QUANTITY | THRUST RESTRAINT RATING |
|----------------|--|-----------------|----------------|-------------------------|
| 6" | 3 | 6 | 350 | |
| 8" | 4 | 6 | 350 | |
| 12" | 8 | 6 | 350 | |

8" SIZE SHOWN 6" & 12" SIMILAR
IRON RETAINING GLAND M.J. RESTRAINT

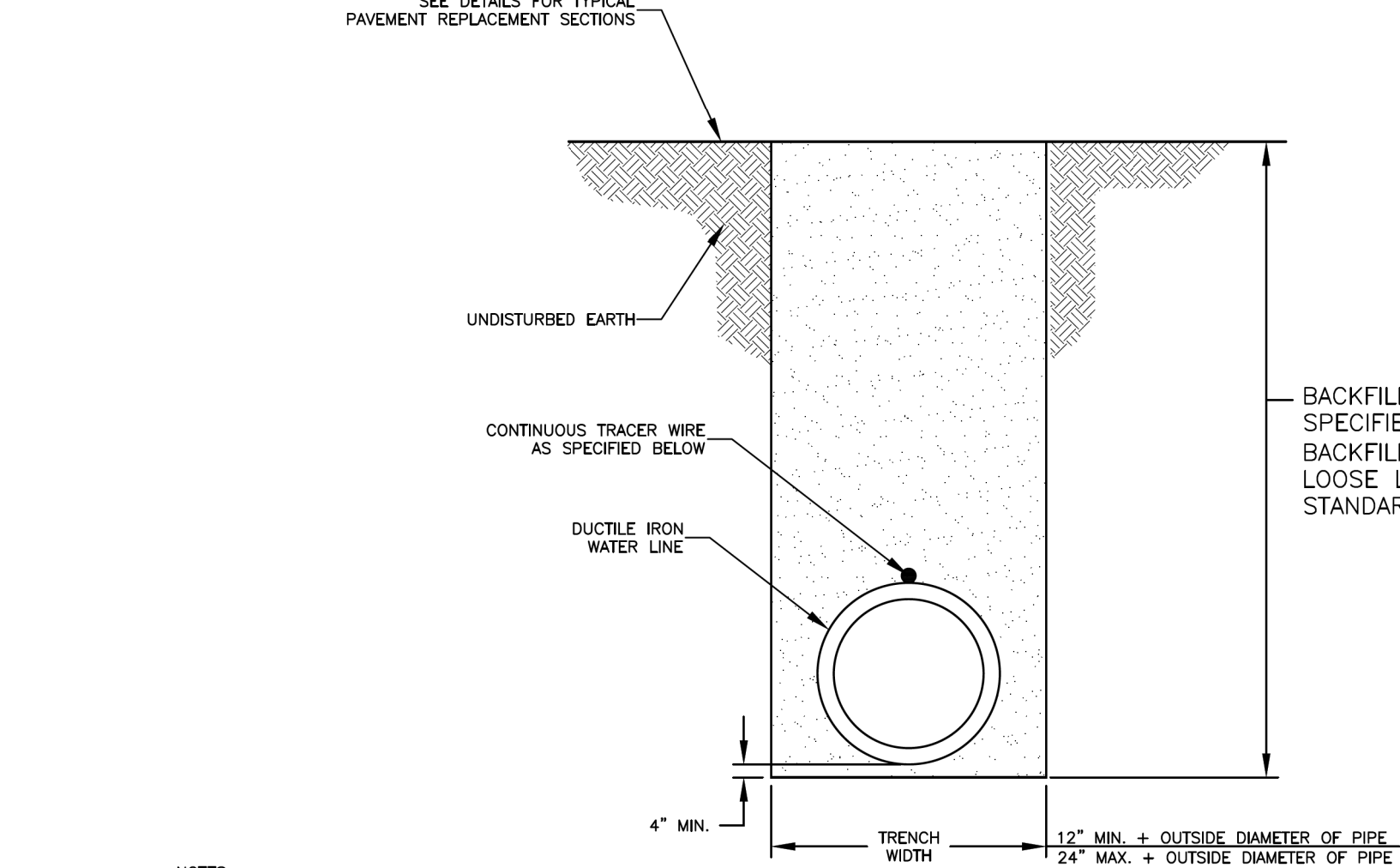
| PIPE SIZE | VALVES DEAD ENDS TEES | 90° ELBOWS | 45° ELBOW & CROSSES | 22-1/2" ELBOWS | REDUCER |
|-----------|-----------------------|------------|---------------------|----------------|------------|
| 6" | 55' | 31' | 13' | 7' | 8"x2" 67' |
| 8" | 72' | 40' | 17' | 8' | 8"x6" 30' |
| 12" | 102' | 57' | 24' | 12' | 12"x8" 54' |

LR (MIN. LENGTH OF RESTRAINT EACH DIRECTION OF THRUST IN LINEAR FEET).
Based on 200 psig pressure, Safety Factor of 2.0:1, SARE DI PIPE AND ML SOIL, 3.5' COVER
chart does not apply to pipes wrapped in polyethylene wrap



DUCTILE IRON PIPE RESTRAINT DETAIL

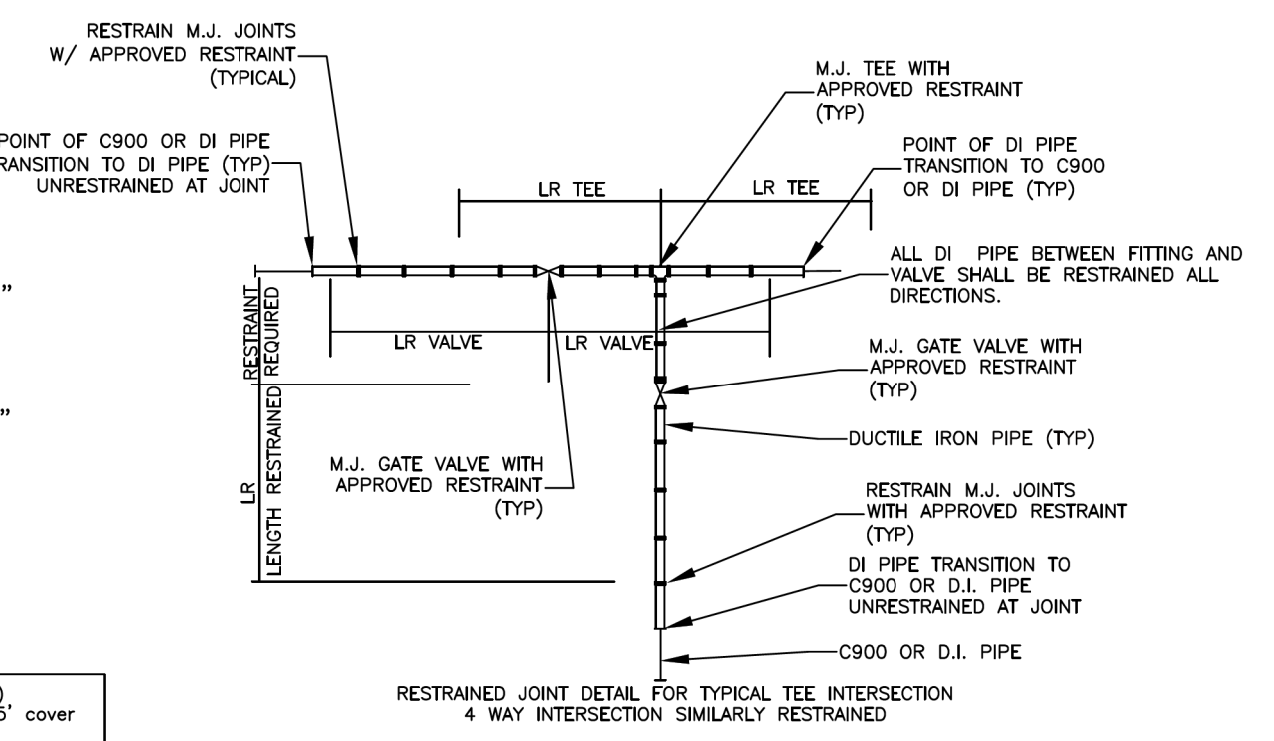
NOT TO SCALE



- NOTES:**
- THIS TRENCH BACKFILL DETAIL APPLIES TO AREAS UNDER PAVEMENT AND AREAS WHERE THE TRENCH IS WITHIN FIVE (5) FEET OF THE EDGE OF PAVEMENT.
 - COMPACTION OF THE BACKFILL SHALL BE ACHIEVED THROUGH THE USE OF AN APPROVED VIBRATORY PLATE TAMPER OR ROLLER.
 - COMPACTION TESTING OF THE BACKFILL SHALL BE PROVIDED, DIRECTED AND COORDINATED BY THE OWNER. INTERVALS OF TESTING SHALL BE AT THE TOTAL DISCRETION OF THE OWNER AND MAY BE CHANGED AT ANY TIME. IF A TEST DOES NOT PASS, THE CONTRACTOR SHALL REMOVE THE DEFECTIVE BACKFILL, REDO THE WORK AND THE AREA WILL BE RETESTED. THE CONTRACTOR SHALL BE AWARE OF THE LEVEL OF COMPACTION REQUIRED. IF THE WORK IS SUSPECT TO BE DEFECTIVE BY THE OWNER, THE WORK SHALL BE RETESTED.
 - THE WATER CONTENT OF THE BACKFILL MATERIAL SHALL ALSO BE TESTED AND RECORDED FOR EACH TEST COMPLETED. THE CONTRACTOR WILL BE ALLOWED TO ADD WATER TO THE BACKFILL MATERIAL IN ORDER TO OBTAIN THE OPTIMUM WATER CONTENT. HOWEVER, THE CONTRACTOR WILL NOT BE ALLOWED TO UTILIZE THE ADDITION OF WATER AS A MEANS OF COMPACTION. FURTHERMORE, SHOULD THE BACKFILL MATERIAL BE FOUND TO HAVE WATER CONTENT RATIOS WHICH IN THE OPINION OF THE ENGINEER OR THE OWNER PREVENTS THE APPROPRIATE COMPACTION OF THE TRENCH, THE CONTRACTOR SHALL REMOVE ALL DEFECTIVE MATERIAL AND UNDERTAKE THE NECESSARY CORRECTIVE WORK.
 - THE WATER LINE SHALL HAVE A MINIMUM OF 3' OF COVER AT FINISHED GRADE.
 - TRACER WIRE WILL BE A 19 GAUGE, TIN COATED, COPPER CONDUCTOR WITH POLYETHYLENE INSULATION, CORE MATERIAL COMPRISED OF HIGH-TENACITY, WOVEN POLYESTER WITH WATER BLOCKING YARNS ENCAPSULATED IN 30 MIL. BLUE HDPE JACKET PROVIDING CORROSION RESISTANCE, FLEXIBILITY, IMPACT STRENGTH AND 1800 LBS. TENSILE STRENGTH. TRACER WIRE WILL NOT CONDUCT AN ELECTRICAL CURRENT WHEN STRUCK BY LIGHTNING AND IS DESIGNED FOR DIRECT BURY AND DIRECTIONAL BORING APPLICATIONS. WHEN SPLICES AND LATERAL CONNECTIONS ARE MADE, ONLY GEL FILLED CONNECTORS DESIGNED FOR WIRE WITH WOVEN POLYESTER FIBER CORE ARE TO BE USED. TRACER WIRE AND CONNECTORS SHALL BE TRACE-SAFE® WATER BLOCKING TRACER WIRE AND RELATED CONNECTORS, MANUFACTURED BY NEPTCO, INC. AND PRODUCED IN THE UNITED STATES OF AMERICA.
- TRACER WIRE SHALL BE EXTENDED ALONG ALL WATER LINES, FITTINGS, VALVES, SERVICES, AND HYDRANTS. LOCATING CLIPS SHALL BE PROVIDED AT ALL VALVES, HYDRANT VALVES AND METER BOXES. THE CONTRACTOR SHALL DUCT TAPE TRACER WIRE ON CROWN OF WATER LINE EVERY FIVE FEET.

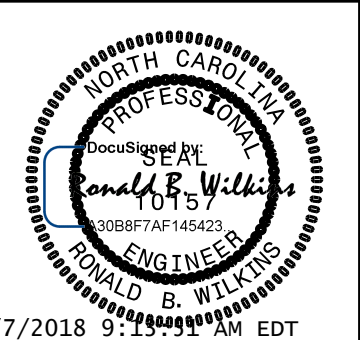
WATER TRENCH CONSTRUCTION UNDER PAVEMENT

NOT TO SCALE

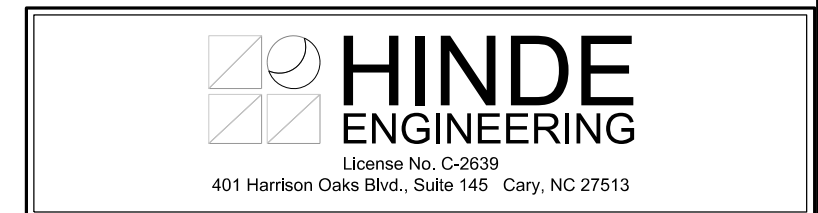


- NOTES:**
- THRUST RESTRAINT SHALL BE INSTALLED ON DUCTILE IRON WATER DISTRIBUTION LINES 6" THRU 12" DIAMETER IN THE MANNER SHOWN.
 - IRON RETAINING GLAND M.J. RESTRAINT OR OTHER FORMS OF IRON RESTRAINT SHALL NOT BE USED ON PVC PIPE.
 - PIPE GREATER THAN 12 INCH DIAMETER SHALL REQUIRE RESTRAINED JOINT PIPE FOR THE PROPER LENGTH.
 - COMPACT FITTINGS ARE ACCEPTABLE FOR USE WITH IRON RETAINING GLAND M.J. RESTRAINT AND OTHER FORMS OF DI RESTRAINT.
 - THE MINIMUM LENGTH OF RESTRAINT INDICATED SHALL REQUIRE ALL JOINTS WITHIN THE LR DISTANCE TO BE RESTRAINED.
 - RESTRAINT SYSTEM SHALL BE INSPECTED AND APPROVED PRIOR TO BACKFILLING.
 - RESTRAINT SYSTEMS MAY VARY BASED UPON THE ENGINEER'S DESIGN AS SHOWN ON THE PLAN AND PROFILE SHEETS.
 - GRIPPER RING AND FIELD LOK GASKETS ARE AN ACCEPTABLE METHOD OF RESTRAINT ON DUCTILE IRON PIPE ONLY.
 - TRACER WIRE NOT SHOWN FOR CLARITY. WIRE SHALL BE INSTALLED PER OTHER DETAILS.

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DWG. NO. 14B

MANHOLE COVER

LOCK LUG ASSEMBLY

| REVISION | DATE | BY |
|----------|------|----|
| | | |

CITY OF HENDERSONVILLE ENGINEERING DEPARTMENT
 DETAIL DWG. NO. 14B
 ITEM NO. _____
WATERTIGHT, LOCKING
MANHOLE CASTING & COVER

DWG. NO. 10

SECTION

PLAN

| REVISION | DATE | BY |
|----------|------|----|
| | | |

CITY OF HENDERSONVILLE ENGINEERING DEPARTMENT
 DETAIL DWG. NO. 10
 ITEM NO. _____
PRECAST MANHOLE
SEWERS 8\"/>

DWG. NO. 11

SECTION

PLAN

| REVISION | DATE | BY |
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| | | |

CITY OF HENDERSONVILLE ENGINEERING DEPARTMENT
 DETAIL DWG. NO. 11
 ITEM NO. _____
PRECAST MANHOLE
SEWERS 24\"/>

DWG. NO. 12

SECTION

PLAN

| REVISION | DATE | BY |
|----------|------|----|
| | | |

CITY OF HENDERSONVILLE ENGINEERING DEPARTMENT
 DETAIL DWG. NO. 12
 ITEM NO. _____
SHALLOW PRECAST MANHOLE

DWG. NO. 13

SECTION

| REVISION | DATE | BY |
|----------|------|----|
| | | |

CITY OF HENDERSONVILLE ENGINEERING DEPARTMENT
 DETAIL DWG. NO. 13
 ITEM NO. _____
MANHOLE GRADE
ADJUSTMENT DETAIL

TYPICAL 4\"/>

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