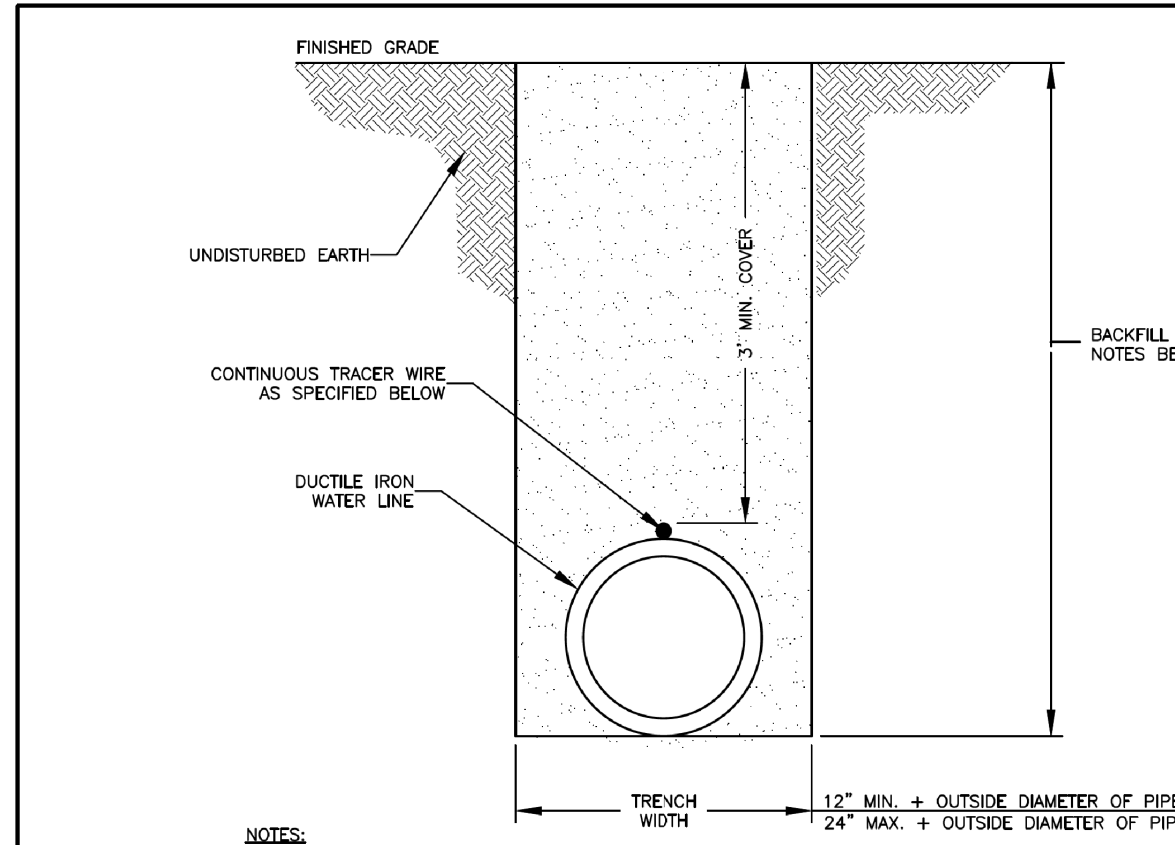
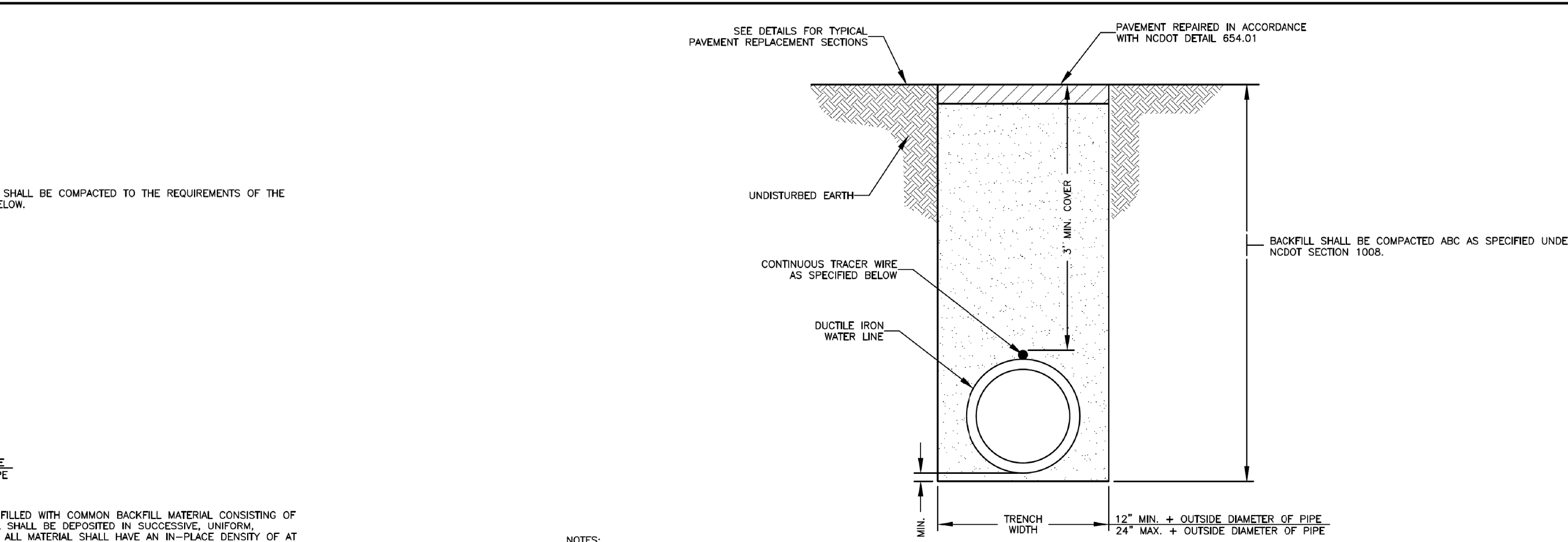


OWNER TYPICAL DETAILS



NOTES:
1. TRENCHES EXCAVATED OUTSIDE EXISTING ROAD AND RAILWAY RIGHTS-OF-WAY SHALL BE BACKFILLED WITH COMMON BACKFILL MATERIAL...



- NOTES:
1. THIS TRENCH BACKFILL DETAIL APPLIES TO AREAS UNDER PAVEMENT AND AREAS WHERE THE TRENCH IS WITHIN FIVE (5) FEET OF THE EDGE OF PAVEMENT.
2. COMPACTION OF THE BACKFILL SHALL BE ACHIEVED THROUGH THE USE OF AN APPROVED VIBRATORY PLATE TAMPER OR ROLLER.
3. 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.
4. THE WATER LINE SHALL HAVE A MINIMUM OF 3" OF COVER AT FINISHED GRADE.
5. 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.

1 WATER TRENCH CONSTRUCTION OUTSIDE PAVEMENT
WD-1 NOT TO SCALE 04/04/18

2 WATER TRENCH CONSTRUCTION UNDER PAVEMENT
WD-1 NOT TO SCALE 04/04/18

GENERAL NOTES:

- 1. WATER CONSTRUCTION ON THIS SITE IS AUTHORIZED BY PERMITS ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY (NCDEQ) AND THE CITY OF HENDERSONVILLE. THE WORK IS SUBJECT TO INSPECTIONS AT ALL TIMES BY REPRESENTATIVES OF NCDEQ, THE CITY OF HENDERSONVILLE, THE OWNER OR THE ENGINEER. THE PERMITS REQUIRE CERTIFICATION OF COMPLETION OF THE WATER SYSTEMS BY THE ENGINEER PRIOR TO ISSUANCE OF FINAL OPERATION APPROVAL.
2. CONTRACTOR SHALL NOTIFY NC811 & APPROPRIATE UTILITIES AGENCIES PRIOR TO PERFORMING ANY WORK.
3. CONTRACTOR SHALL VERIFY THE EXACT LOCATION AND THE ELEVATION FOR ALL UTILITIES, DRAINAGE AND OTHER UNDERGROUND FACILITIES BOTH EXISTING AND PROPOSED, AND SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES OR CONFLICTS PRIOR TO CONSTRUCTION.
4. CONTRACTOR SHALL PROTECT EXISTING UTILITIES DURING CONSTRUCTION. REPAIRS SHALL BE MADE IN ACCORDANCE WITH APPLICABLE STANDARDS OF APPROPRIATE AGENCIES AT THE CONTRACTOR'S EXPENSE.
5. THE CONTRACTOR SHALL CO-OPERATE AT ALL TIMES WITH THE UTILITIES OWNERS TO MAINTAIN THE OPERATION OF EXISTING UTILITIES WITH THE LEAST AMOUNT OF INTERFERENCE AND INTERRUPTION POSSIBLE. CONTINUOUS SERVICE, PUBLIC HEALTH AND SAFETY CONSIDERATIONS SHALL EXCEED ALL OTHERS AND CONTRACTOR'S SCHEDULE. PLANS AND WORK SHALL AT ALL TIMES BE SUBJECT TO ALTERATION AND REVISION IF NECESSARY FOR THESE CONSIDERATIONS.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE TEMPORARY OR PERMANENT RELOCATION OF STRUCTURES AND UTILITIES, INCLUDING BUT NOT LIMITED TO POLES, SIGNS, FENCES, HYDRANTS, VALVES PIPING, CONDUITS AND DRAINS AND WORK SHALL AT ALL TIMES BE SUBJECT TO ALTERATION AND REVISION IF NECESSARY FOR THESE CONSIDERATIONS.
7. AT A MINIMUM, ALL PIPES & FITTINGS 12 INCHES OR LESS SHALL BE RATED CLASS 250 PSI.
8. COPPER SERVICE LINES SHALL BE TYPE K SOFT COPPER TUBING PER ASTM B88. THE LONGEST AVAILABLE LENGTH OF SERVICE LINE SHOULD BE USED WITH NO JOINTS.
9. PROVIDE ROCK CHECK DAMS IN ALL DITCH LINES WHERE DISTURBANCE OCCURS.

- 10. IN DIRT, GRASS AND LANDSCAPED AREAS FILL MATERIAL MUST BE REPLACED IN TRENCH TO GRADE AS SOON AS WATERLINE CONSTRUCTION ALLOWS ADEQUATE SEEDING AND STRAW OR MULCH SHALL THEN BE APPLIED TO THE DISTURBED TRENCH AREA.
11. WHEN ABANDONING EXISTING METERS AND HYDRANTS, RESTORE AREAS TO SURROUNDING CONDITIONS.
12. WHEN ABANDONING VALVES, REMOVE BOX, BACK FILL WITH DIRT, STONE OR FLOWABLE FILL. COVER TO MATCH SURROUNDING CONDITIONS.
13. INSTALL FERROUS PIPING FOR BOTH WATER AND SEWER WITHIN 10 FT. OF A CROSSING IF:
13.1. SEWER LINE CROSSES OVER WATER, OR
13.2. VERTICAL CLEARANCE BETWEEN WATER AND SEWER IS LESS THAN 18 INCHES.
13.3. MAINTAIN 10 FEET HORIZONTAL SEPARATION BETWEEN SEWER AND WATER MAINS UNLESS LAD IN SEPARATE TRENCHES WITH THE BOTTOM OF THE WATER LINE AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER LINE OR USE FERROUS MATERIAL FOR BOTH WATER AND SEWER.
14. MAINTAIN 12 INCHES VERTICAL SEPARATION BETWEEN STORM DRAIN AND WATER, OR INSTALL FERROUS MATERIAL WATER LINE WITHIN 10 FEET EACH SIDE OF CROSSING.
15. THE CITY OF HENDERSONVILLE MUST BE NOTIFIED AT LEAST 72 HOURS PRIOR TO TAPPING OF CITY WATER LINES. THE CITY WILL PERFORM ALL TAPS EQUAL TO OR GREATER THAN 6 INCHES. IN ADDITION, THE CONTRACTOR OR DEVELOPER, MAY REQUEST THAT THE CITY PERFORM TAPS LESS THAN 6 HOURS IN ADVANCE.
16. EXACT LOCATIONS OF VALVES, METERS, BACKFLOW PREVENTION DEVICES AND SERVICE LINES, MUST BE APPROVED BY THE CITY OF HENDERSONVILLE.
17. ALL WATER METERS WILL BE SET BY CITY OF HENDERSONVILLE STAFF UNLESS THE CONTRACTOR/ENGINEER IS SHOWN WITHIN PERMISSION BY THE COH CITY MANAGER.
17.1. THE CONTRACTOR WILL PROVIDE THE CITY NOTICE OF 10 WORKING DAYS PRIOR TO THE DATE OF METER INSTALLATION.
17.2. THE CONTRACTOR WILL PROVIDE A LICENSED PLUMBER DURING THE METER INSTALLATION TO VERIFY LINE SERVICES IN ALL MULTI-WATER BOXES.
18. MATERIALS AND INSTALLATION FOR WATER LINES SHALL CONFORM TO THE CITY OF HENDERSONVILLE STANDARD AND REQUIREMENTS.

TESTING & INSPECTION:

- 1. NOTIFY THE CITY OF HENDERSONVILLE AND ENGINEER AT LEAST 72 HOURS BEFORE STARTING CONSTRUCTION OF WATER FACILITIES. THE ENGINEER SHALL PERIODICALLY INSPECT THE PROGRESS OF INSTALLATION AND SHALL COMPLETE A FINAL WATER AND SEWER INSPECTION. THE CONTRACTOR SHALL FURNISH SECURE AND PROTECT ALL NECESSARY TESTING MATERIALS, EQUIPMENT, PROCEDURES AND CERTIFIED LABORATORY TEST RESULTS FOR USE WITH ENGINEER'S FINAL CERTIFICATION OF COMPLETION.
2. PRESSURE TEST WATER MAINS TO 200 PSI MIN. AND 250 MAX AS PER CITY OF HENDERSONVILLE REQUIREMENTS.
3. FIRE SYSTEMS SHALL BE REVIEWED BY THE APPROPRIATE LOCAL PERMITTING AUTHORITY: CITY OF HENDERSONVILLE FIRE MARSHALL'S OFFICE OR HENDERSON COUNTY FIRE MARSHALL'S OFFICE, IN ACCORDANCE WITH APPROPRIATE LOCAL, STATE, AND FEDERAL REGULATIONS.
4. ALL BACKFLOW PREVENTION ASSEMBLIES SHALL BE USE APPROVED AND REVIEWED BY THE CITY OF HENDERSONVILLE'S ENVIRONMENTAL SERVICES COORDINATOR. PROTECTION OF THE PUBLIC WATER DISTRIBUTION SYSTEM SHALL BE ASSURED BY INSPECTION OF THE INSTALLATION AND TESTING OF BACKFLOW PREVENTION DEVICES IN ACCORDANCE WITH APPROPRIATE LOCAL, STATE, AND FEDERAL REGULATIONS.

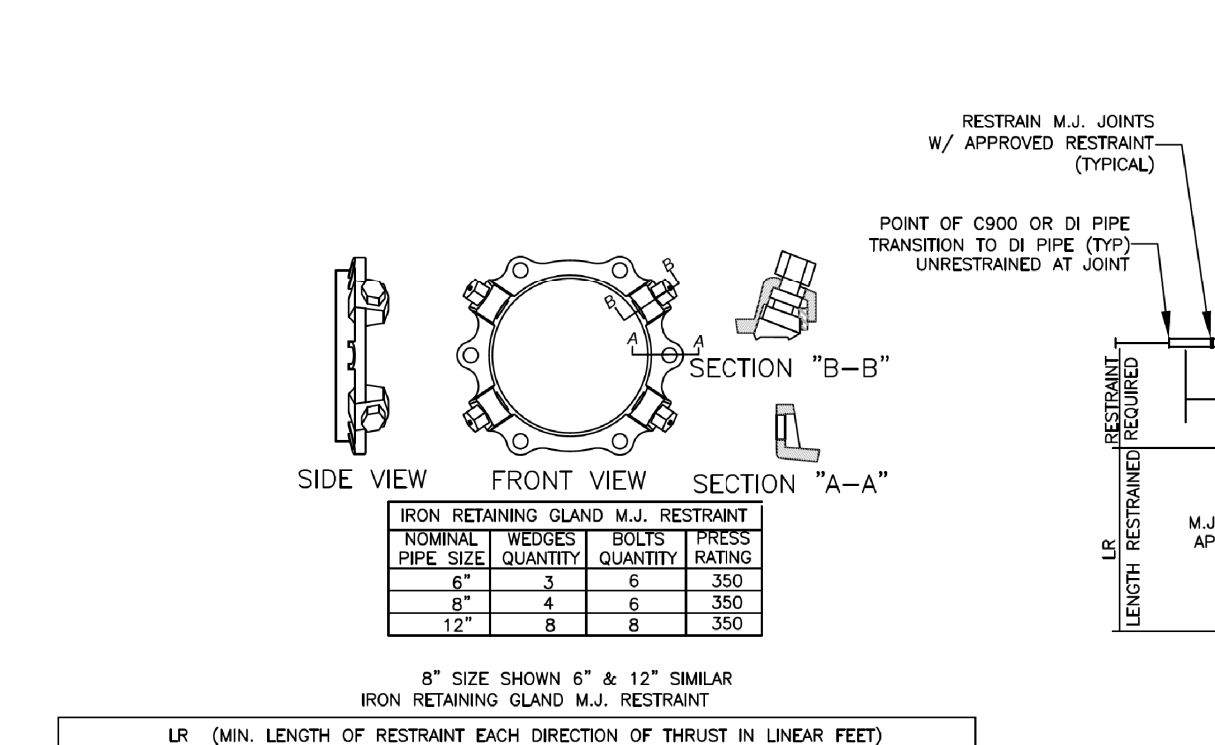
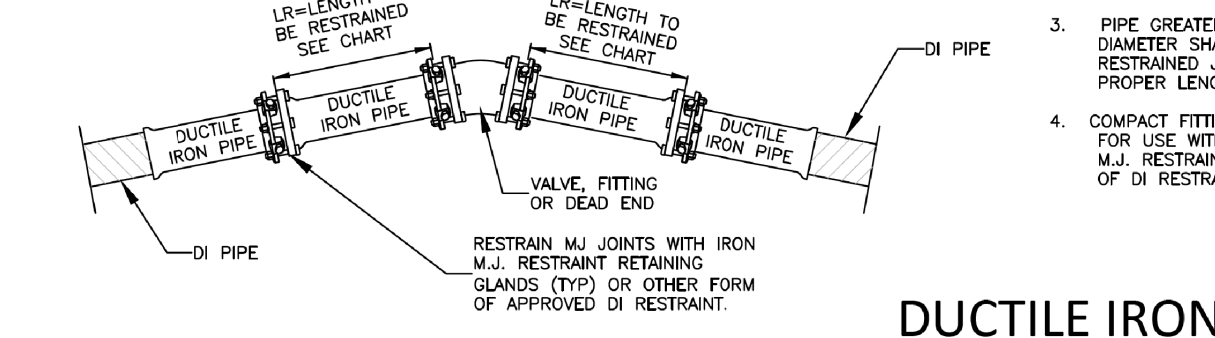


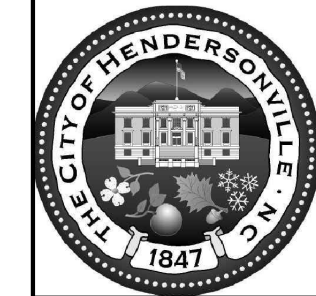
Table with 5 columns: PIPE SIZE, VALVES DEAD ENDS, 90° ELBOWS, 45° ELBOW & CROSSES, 22-1/2" ELBOWS, REDUCER. Rows for 6", 8", 12" pipe sizes.



4 DUCTILE IRON PIPE RESTRAINT DETAIL
WD-1 NOT TO SCALE 04/04/18

3 WATER DETAILS GENERAL NOTES
WD-1 NOT TO SCALE 04/04/18

DISCLAIMER:
THE STANDARD WATER DETAILS ARE FOR THE SOLE USE OF PROJECTS DIRECTLY FOR, OR THOSE PROJECTS IN WHICH OWNERSHIP WILL BE TRANSFERRED TO THE CITY OF HENDERSONVILLE. THESE TYPICALS ARE INTENDED TO SHOW THE CITY OF HENDERSONVILLE'S EXPECTATIONS FOR THE GENERAL LAYOUT, ARRANGEMENT, AND THE QUALITY OF EQUIPMENT AND MATERIALS FOR WATER DISTRIBUTION SYSTEM ITEMS AND THEIR RELATED APPURTENANCES. IT REMAINS THE SOLE RESPONSIBILITY OF THE ENGINEER IN RESPONSIBLE CHARGE (E/C) OF EACH APPLICATION TO DETERMINE, DESIGN TO, AND CERTIFY TO THE DESIGN PARAMETERS FOR EACH INSTALLATION. THE E/C MUST ALSO ENSURE THE DESIGN COMPLIES WITH THE MINIMUM DESIGN CRITERIA OF NC DIVISION OF ENVIRONMENTAL QUALITY AND ALL LOCAL AND STATE LAWS AND REGULATIONS.



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CITY OF HENDERSONVILLE
CITY OF HENDERSONVILLE STANDARD WATER DETAILS
HENDERSON COUNTY, NORTH CAROLINA

Table with 3 columns: NO., DATE, DESCRIPTION.

DATE: MARCH 23, 2018
DRAWN BY: MMP
PROJECT NO.:

WD-1