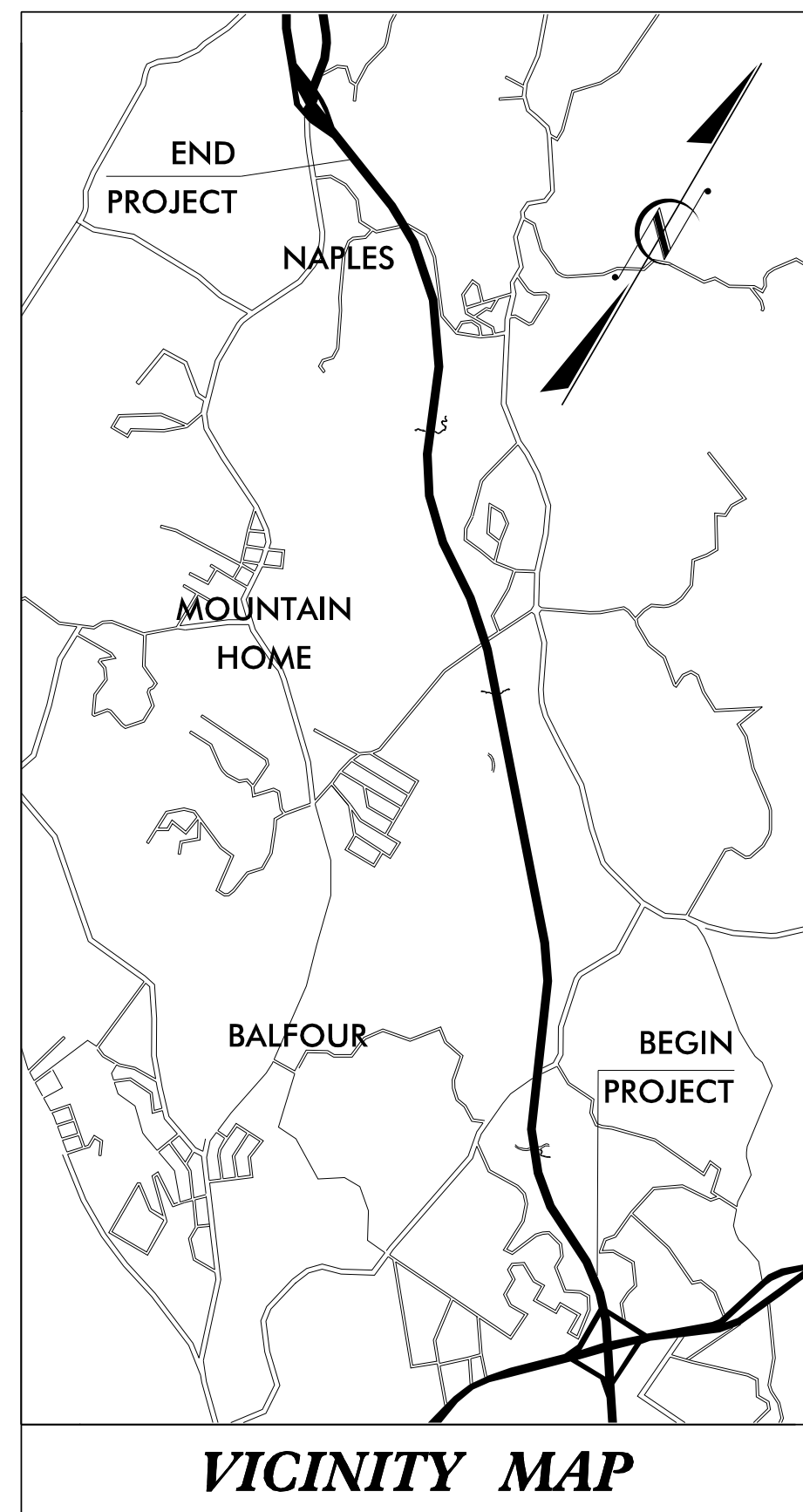


**This electronic collection of documents is provided  
for the convenience of the user  
and is Not a Certified Document –**

**The documents contained herein were originally issued  
and sealed by the individuals whose names and license  
numbers appear on each page, on the dates appearing  
with their signature on that page.**

**This file or an individual page  
shall not be considered a certified document.**

**TIP PROJECT: I-4400BB**



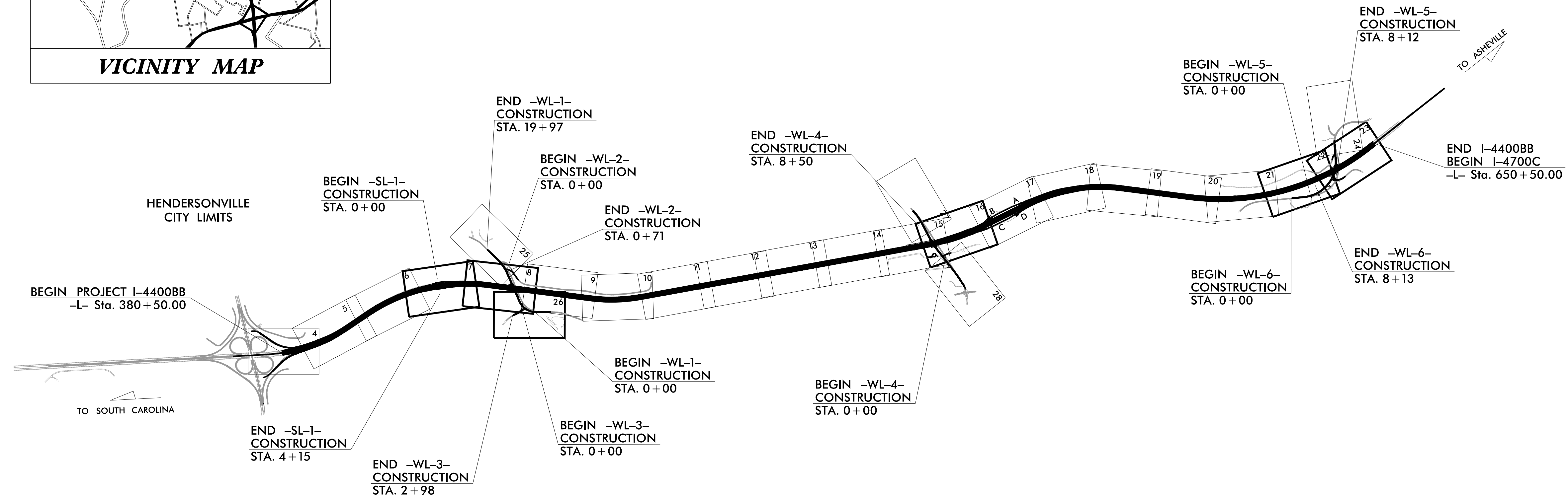
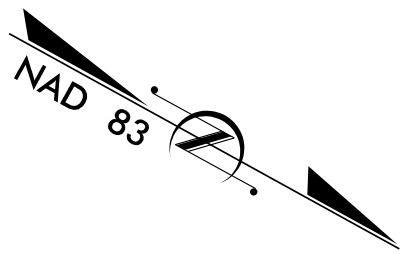
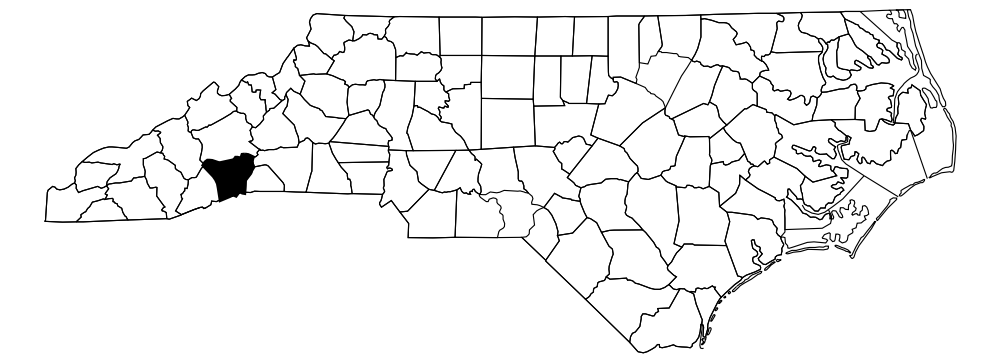
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**UTILITY CONSTRUCTION PLANS  
HENDERSON COUNTY**

LOCATION: I-26 FROM 0.05MI NORTH OF US 64  
TO 0.5MI SOUTH OF US 25 (ASHEVILLE HIGHWAY)

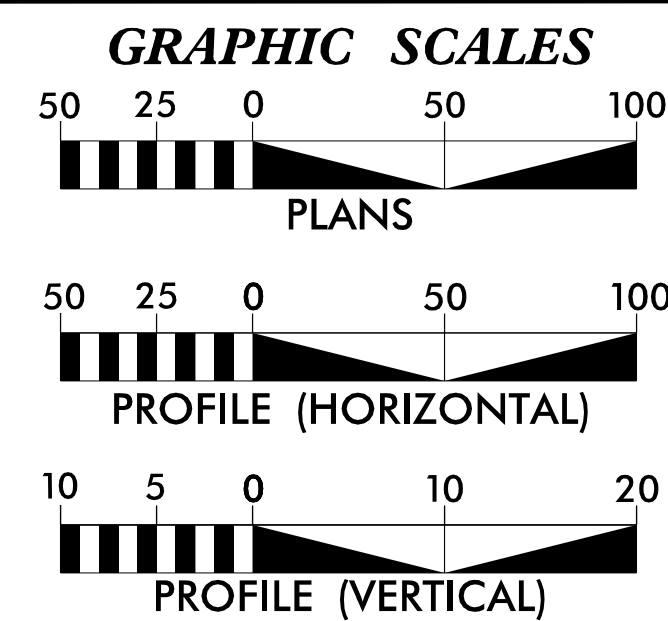
TYPE OF WORK: SEWER & WATER LINE CONSTRUCTION

T.I.P. NO.	SHEET NO.
I-4400BB	UC-1



DOCUMENT NOT CONSIDERED FINAL  
UNTIL ALL SIGNATURES ARE COMPLETED

**CONTRACT:**



SEE SHEET UC-1A  
FOR  
INDEX OF SHEETS

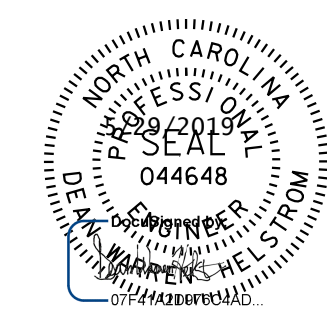
**PUBLIC UTILITY OWNERS  
ON PROJECT**

- (1) WATER - CITY OF HENDERSONVILLE
- (2) SEWER - CITY OF HENDERSONVILLE

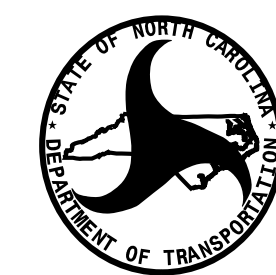
PREPARED IN THE OFFICE OF:



SEAL:



Dean Helstrom, P.E. UTILITY PROJECT MANAGER  
Lynn Mann, P.G. PROJECT UTILITY COORDINATOR  
David Dawson PROJECT UTILITY DESIGNER



HIGHWAY DIVISION 14

253 WEBSTER ROAD  
SYLVA, NC 28779  
PHONE (828) 542-1964  
FAX (828) 586-4043

Byron Sanders, P.E. UTILITIES REGIONAL ENGINEER  
Bob Golding DIVISION UTILITIES ENGINEER  
Bill Green DIVISION UTILITIES COORDINATOR

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	UC-1A
DESIGNED BY: CCC	
DRAWN BY: CCC	
CHECKED BY: SSD	
APPROVED BY: DWH	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY

**UTILITY CONSTRUCTION**

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

INDEX OF SHEETS

SHEET NUMBER	SHEET
UC-1	TITLE SHEET
UC-1A	INDEX OF SHEETS
UC-2	UTILITY SYMBOLOGY
UC-3	NOTES
UC-3A THRU UC-3F	DETAILS
UC-7	UTILITY PLAN AND PROFILE SHEET - SEWER -SL-1-
UC-8	UTILITY PLAN SHEET - WATER -WL-1- & -WL-2-
UC-8A	UTILITY PROFILE SHEET - WATER -WL-1-, -WL-2- & -WL-3-
UC-16	UTILITY PLAN AND PROFILE SHEET - WATER -WL-4-
UC-22	UTILITY PLAN SHEET - WATER -WL-5-
UC-22A	UTILITY PROFILE SHEET - WATER -WL-5-
UC-23	UTILITY PLAN SHEET - WATER -WL-5-
UC-26	UTILITY PLAN SHEET - WATER -WL-1- & -WL-3-

**Vaughn & Melton**  
Consulting Engineers

Asheville  
North Carolina  
828-253-9796

- Boone, NC 828-265-9333
- Frisco, TX 425-467-8400
- Knoxville, TN 865-546-5800
- Spartanburg, SC 864-574-6775
- Charleston, SC 803-574-5500
- Marietta, GA 770-427-3509
- Raleigh, NC 919-977-9455
- Charlotte, NC 704-397-0488
- Columbia, SC 803-248-6600
- Atlanta, GA 404-877-5509

Copyright © 2019 Vaughn & Melton, Inc. All Rights Reserved

# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

## UTILITIES PLAN SHEET SYMBOLS

### PROPOSED WATER SYMBOLS

Water Line (Sized as Shown)	
11¼ Degree Bend	
22½ 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	

Thrust Block	
Air Release Valve	
Utility Vault	
Concrete Pier	
Steel Pier	
Plan Note	
Pay Item Note	

### 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 Line	
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		Fire Hydrant	
Abandoned According to Utility Records		Sanitary Sewer Cleanout	
End of Information			

\*For Existing Utilities  
 Utility Line Drawn from Record (Type as Shown) ..... W .....  
 Designated Utility Line (Type as Shown) ..... W .....

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	UC-3
DESIGNED BY: CCC	
DRAWN BY: CCC	
CHECKED BY: SSD	
APPROVED BY: DWH	
REVISED: 8-20-19	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY <b>UTILITY CONSTRUCTION</b> <i>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</i>	

# 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 OR LATEST EDITION AND CITY OF HENDERSONVILLE DESIGN STANDARDS AND SPECIFICATIONS.
2. THE EXISTING UTILITIES BELONG TO THE CITY OF HENDERSONVILLE.
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 ENVIRONMENTAL QUALITY, DIVISION OF WATER RESOURCES, WATER QUALITY 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, OR ON HOLIDAYS IF NECESSARY.
9. ALL UTILITY MATERIALS SHALL BE APPROVED PRIOR TO DELIVERY TO THE PROJECT SITE. SEE 1500-7, "SUBMITTALS AND RECORDS" IN SECTION 1500 OF THE NCDOT STANDARD SPECIFICATIONS.

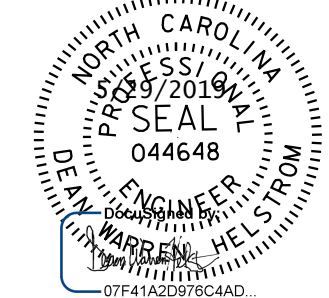
## PROJECT SPECIFIC NOTES:

1. WATER AND SEWER LINE CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY OF HENDERSONVILLE STANDARD DETAILS AND THE PROJECT SPECIAL PROVISIONS.
2. CONTRACTOR'S ATTENTION IS DIRECTED TO SECTIONS 102, 107, AND 1550 OF THE STANDARD SPECIFICATIONS CONCERNING TRENCHLESS INSTALLATION. IT IS THE 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.
3. THE LOCATION OF EXISTING UTILITIES SHOWN ON THE PLANS IS FOR THE USE OF THE CONTRACTOR IN PROVIDING PROTECTION FOR THE UTILITIES DURING CONSTRUCTION OPERATIONS. NCDOT, DESIGN CONSULTANT AND/OR AGENT SHALL NOT BE HELD RESPONSIBLE FOR THE ACCURACY OF LOCATION, SIZE, DEPTH, OR COMPLETENESS OF THE INFORMATION. THE CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION.
4. THE CITY OF HENDERSONVILLE SHALL BE NOTIFIED A MINIMUM OF 48 HOURS PRIOR TO THE BEGINNING OF WATER AND SEWER WORK.
5. THE CITY OF HENDERSONVILLE MAY HAVE A REPRESENTATIVE ON SITE DURING ALL WATER AND SEWER LINE CONSTRUCTION ACTIVITIES.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONFORMING WITH ALL NCDEQ REQUIREMENTS.
7. SERVICE INTERRUPTION SHALL NOT EXCEED 8 HOURS.
8. ALL NCDEQ AND LOCAL TESTING MUST BE COMPLETED AND APPROVED PRIOR TO CONNECTING THE NEW CONSTRUCTION TO THE EXISTING WATER LINES.
9. CONTRACTOR RESPONSIBLE FOR REMOVING ALL ABANDONED WATER METERS, WATER VALVES AND VALVE BOXES. OLD WATER LINES TO BE PLUGGED AND ABANDONED AFTER VALVE REMOVAL.

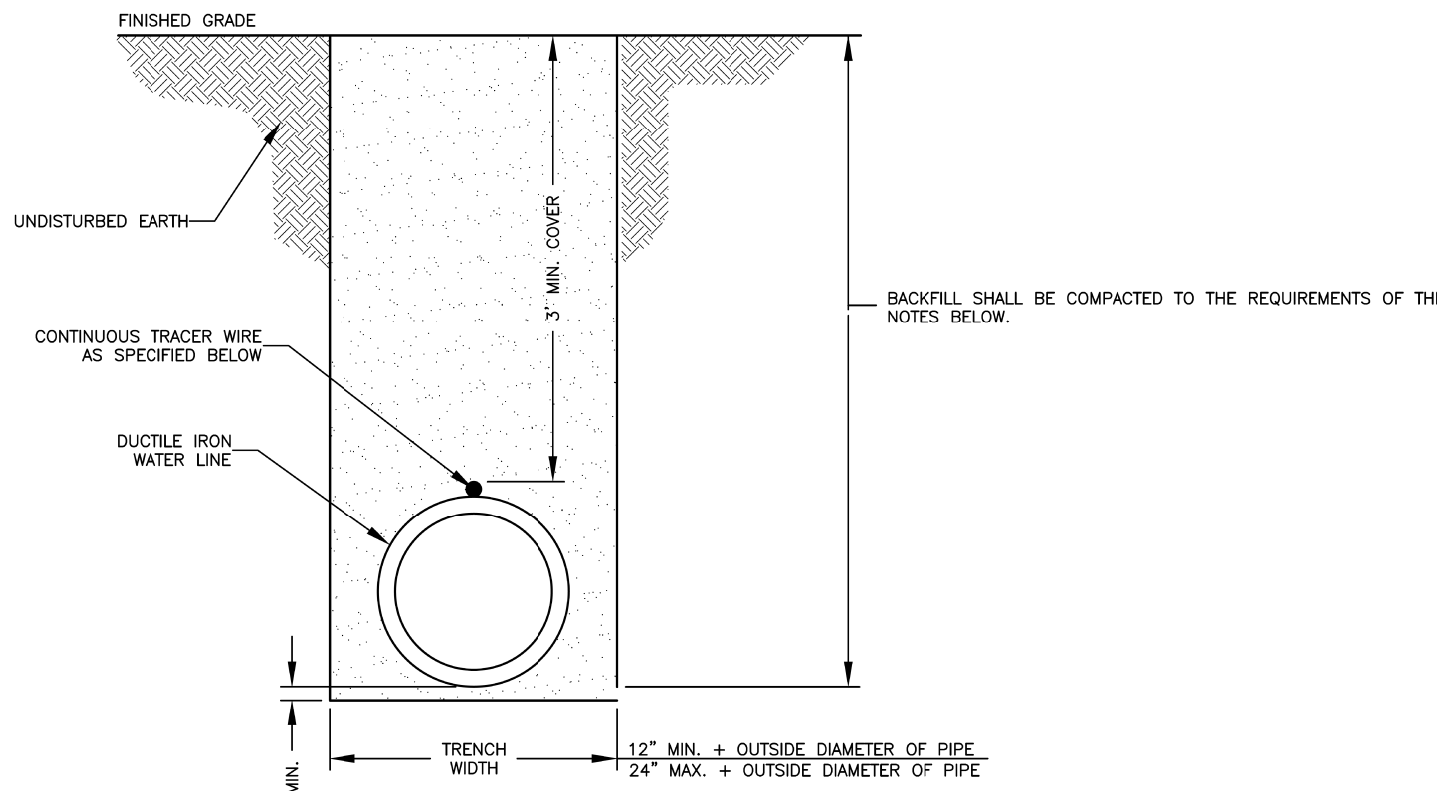
10. REMOVE OLD SANITARY SEWER MANHOLES AND BACKFILL AND COMPACT WITH SUITABLE FILL. CAP AND ABANDON OLD SEWER LINES IN PLACE.
11. CONTRACTOR SHALL INSTALL RESTRAINED JOINT PIPE AS INDICATED ON THE PLANS AND THIS WORK IS CONSIDERED INCIDENTAL TO THE CONSTRUCTION OF THE WATER LINE.

PROJECT SPECIFIC DETAILS
CITY OF HENDERSONVILLE

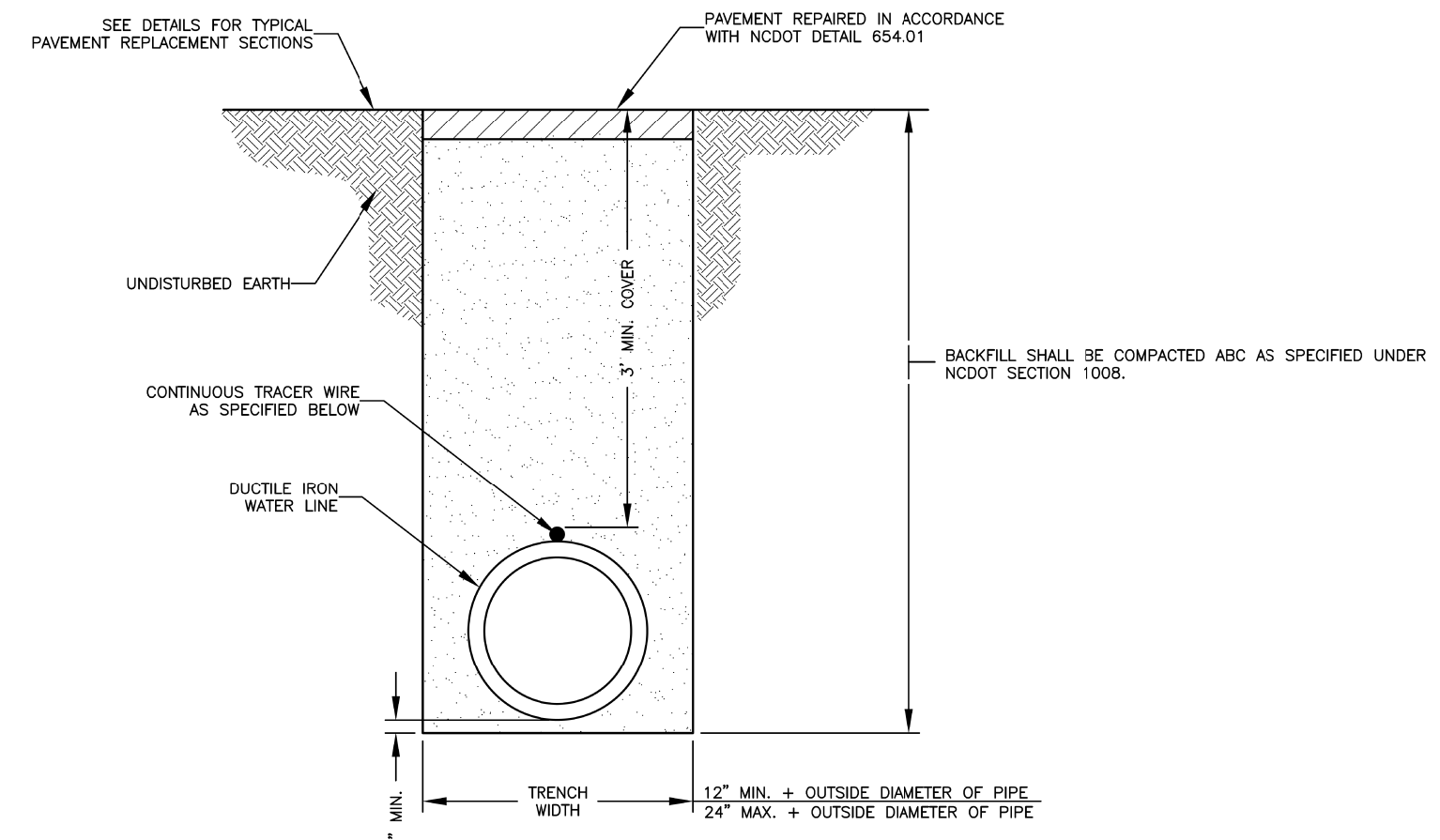
PROJECT REFERENCE NO. I-4400BB SHEET NO. UC-3A
DESIGNED BY: CCC
DRAWN BY: CCC
CHECKED BY: SSD
APPROVED BY: DWH
REVISED:
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
UTILITIES ENGINEERING SECTION
PHONE: (919) 707-6690
FAX: (919) 250-4151



UTILITY CONSTRUCTION PLANS ONLY
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



- NOTES:
1. TRENCHES EXCAVATED OUTSIDE EXISTING ROAD AND RAILWAY RIGHTS-OF-WAY SHALL BE BACKFILLED WITH COMMON BACKFILL MATERIAL...
WHERE EXCAVATED MATERIAL, AFTER REMOVAL OF ROCKS, STUMPS, PLANT MATERIAL AND OTHER EXTRANEOUS MATERIAL...
2. THE WATER LINE SHALL HAVE A MINIMUM OF 3' OF COVER AT FINISHED GRADE.



- 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...
4. THE WATER LINE SHALL HAVE A MINIMUM OF 3' OF COVER AT FINISHED GRADE.
5. TRACER WIRE WILL BE A 19 GAUGE, TIN COATED, COPPER CONDUCTOR WITH POLYETHYLENE INSULATION...

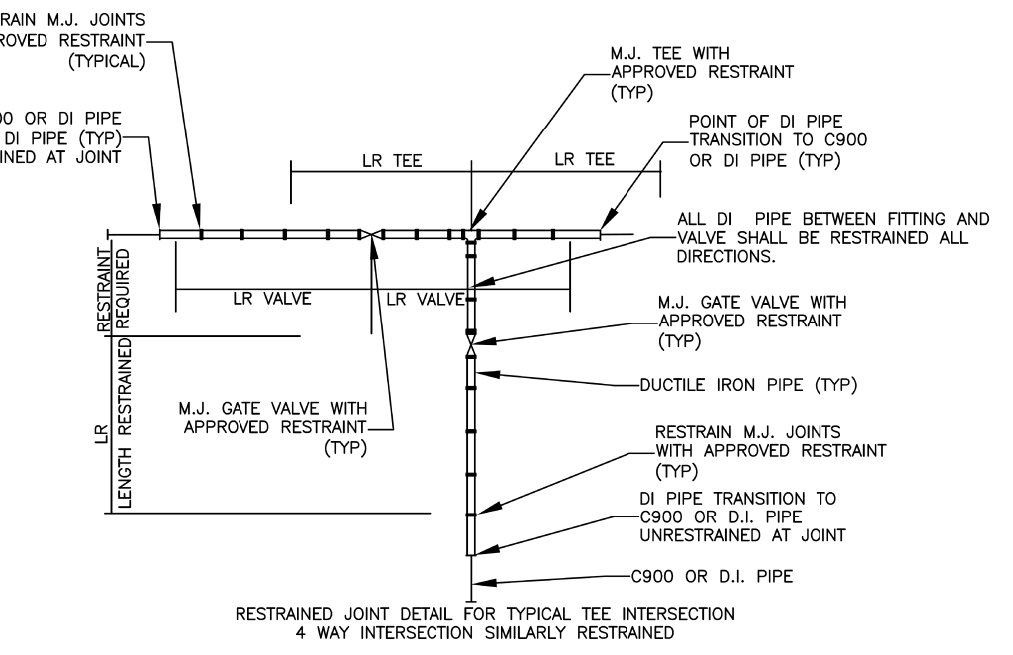
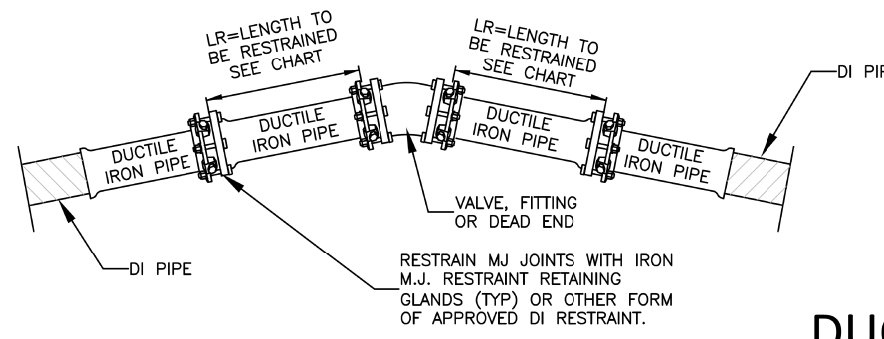
1 WATER TRENCH CONSTRUCTION OUTSIDE PAVEMENT
WD-1 NOT TO SCALE 04/04/18

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 (NCEM) AND THE CITY OF HENDERSONVILLE...
2. CONTRACTOR SHALL NOTIFY NC811 AND APPROPRIATE UTILITIES AGENCIES PRIOR TO PERFORMING ANY WORK.
3. CONTRACTOR SHALL VERIFY THE EXACT LOCATION AND THE DEPTH FOR ALL UTILITIES, DRAINAGE AND OTHER UNDERGROUND FACILITIES...
4. CONTRACTOR SHALL PROTECT EXISTING UTILITIES DURING CONSTRUCTION...
5. THE CONTRACTOR SHALL CO-OPERATE AT ALL TIMES WITH THE UTILITY OWNERS TO MAINTAIN THE OPERATION OF EXISTING UTILITIES...
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE TEMPORARY OR PERMANENT RELOCATION OF STRUCTURES AND UTILITIES...
7. AT A MINIMUM, ALL PIPES & FITTINGS 12 INCHES OR LESS SHALL BE RATED CLASS 300PSI AND PIPE FITTINGS LARGER THAN 12 INCHES 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 OTION 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...
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 INCHES, PROVIDED THAT THE CITY BE GIVEN NOTICE 72 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 GRANTED WRITTEN PERMISSION BY THE COH CITY MANAGER.
17.1. THE CONTRACTOR WILL PROVIDE THE CITY OF NOTICE 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-METER BOXES.
18. MATERIALS AND INSTALLATION FOR WATER LINES SHALL CONFORM TO THE CITY OF HENDERSONVILLE STANDARD AND REQUIREMENTS.

- 19. ALL CONSTRUCTION SHALL BE INSTALLED BY A NORTH CAROLINA LICENSED UTILITY CONTRACTOR.
20. ALL WATER APPURTENANCES ARE TO BE MADE USING LEAD FREE MATERIALS...
21. ALL WATER MAINS SHALL HAVE 3 FEET MINIMUM COVER.
22. RESTRAINED JOINTS BY AN APPROVED PIPE MANUFACTURER ARE TO BE USED FOR ALL PUBLIC WATER LINES WHERE THRUST RESTRAINING IS REQUIRED...
23. ALL FIRE HYDRANTS, VALVES, BACKFLOW PREVENTERS, HOT BOXES AND WATER METERS ARE TO BE INSTALLED ON RELATIVELY FLAT AREAS OUTSIDE OF PAVEMENT.
24. ALL PLANS SHALL INCLUDE NOTES AND DETAILS, REVIEWED AND APPROVED BY THE CITY FOR PROPOSED WATER SOURCING DURING CONSTRUCTION.
25. TAMPERING WITH THE PUBLIC WATER SUPPLY WILL RESULT IN LOCKING OUT OF THE WATER SERVICES, INCLUDING DOMESTIC AND COMMERCIAL UNITS, FINAL APPROVAL BY THE CITY OF HENDERSONVILLE.
TESTING & INSPECTION:
1. NOTIFY THE CITY OF HENDERSONVILLE AND ENGINEER AT LEAST 72 HOURS BEFORE STARTING CONSTRUCTION OF WATER FACILITIES...
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 PERMITTING AUTHORITY...
4. ALL BACKFLOW PREVENTION ASSEMBLIES SHALL BE USE APPROVED AND REVIEWED BY THE CITY OF HENDERSONVILLE'S ENVIRONMENTAL SERVICES COORDINATOR...

Table with 4 columns: PIPE SIZE, VALVES DEAD ENDS, 90° ELBOWS & CROSSES, 22-1/2" ELBOWS, REDUCER. Rows for 6", 8", 12" pipe sizes.



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

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

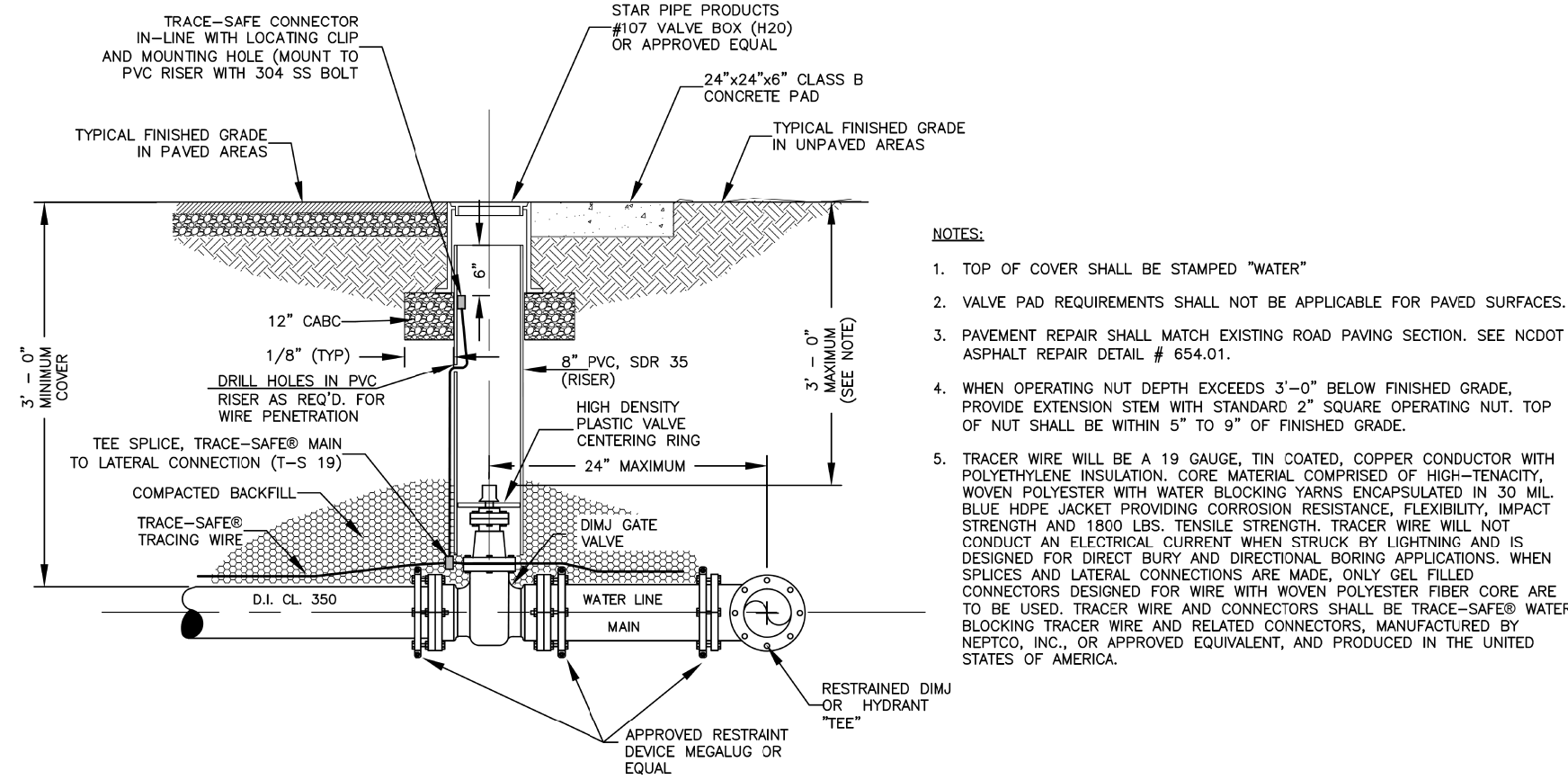
4 DUCTILE IRON PIPE RESTRAINT DETAIL
WD-1 NOT TO SCALE 04/04/18

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...

V&M Vaughn & Melton Consulting Engineers logo and contact information for Asheville, Raleigh, and other locations.

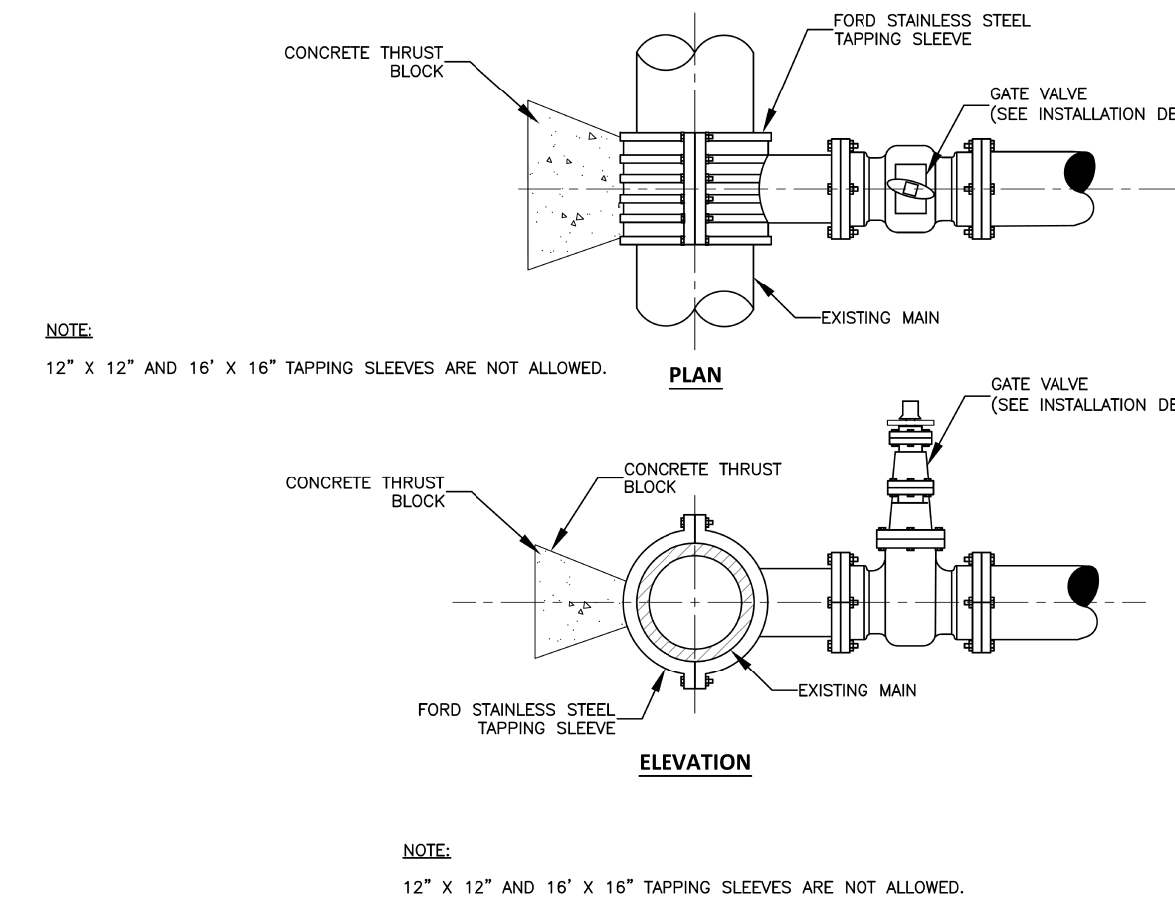
# PROJECT SPECIFIC DETAILS CITY OF HENDERSONVILLE

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	UC-3B
DESIGNED BY: CCC	
DRAWN BY: CCC	
CHECKED BY: SSD	
APPROVED BY: DWH	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY
<b>UTILITY CONSTRUCTION</b>	
<i>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</i>	



- NOTES:**
1. TOP OF COVER SHALL BE STAMPED "WATER"
  2. VALVE PAD REQUIREMENTS SHALL NOT BE APPLICABLE FOR PAVED SURFACES.
  3. PAVEMENT REPAIR SHALL MATCH EXISTING ROAD PAVING SECTION. SEE NCDOT ASPHALT REPAIR DETAIL # 654.01.
  4. WHEN OPERATING NUT DEPTH EXCEEDS 3"-0" BELOW FINISHED GRADE, PROVIDE EXTENSION STEM WITH STANDARD 2" SQUARE OPERATING NUT. TOP OF NUT SHALL BE WITHIN 5" TO 9" OF FINISHED GRADE.
  5. TRACER WIRE WILL BE A 19 GAUGE, TIN COATED, COPPER CONDUCTOR WITH POLYETHYLENE INSULATION, CORE MATERIAL COMPRISED OF HIGH-TENSILITY, 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., OR APPROVED EQUIVALENT, AND PRODUCED IN THE UNITED STATES OF AMERICA.

**5 VALVE INSTALLATION DETAIL**  
WD-2 NOT TO SCALE 04/04/18

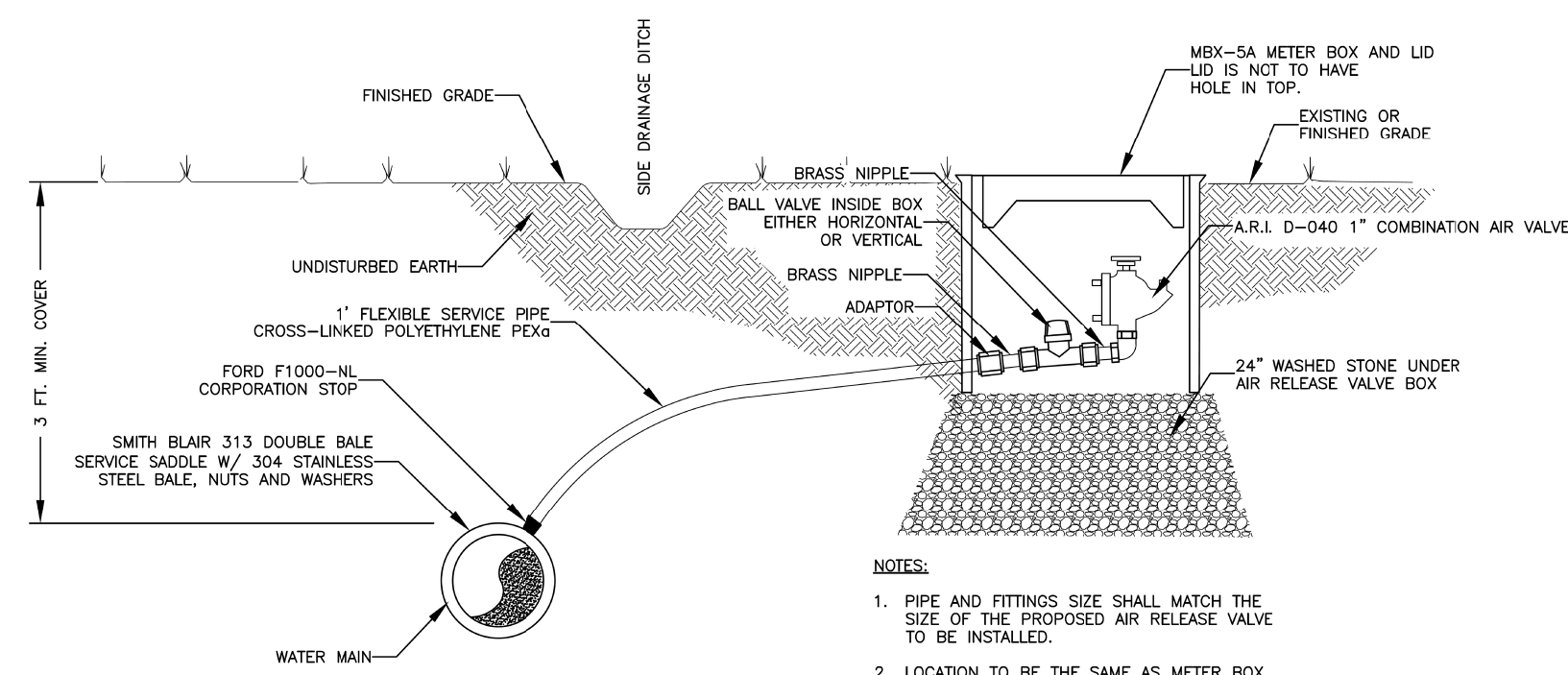


- NOTE:**  
12" X 12" AND 16" X 16" TAPPING SLEEVES ARE NOT ALLOWED.

**6 STANDARD TAPPING SLEEVE AND VALVE ASSEMBLY**  
WD-2 NOT TO SCALE 04/04/18

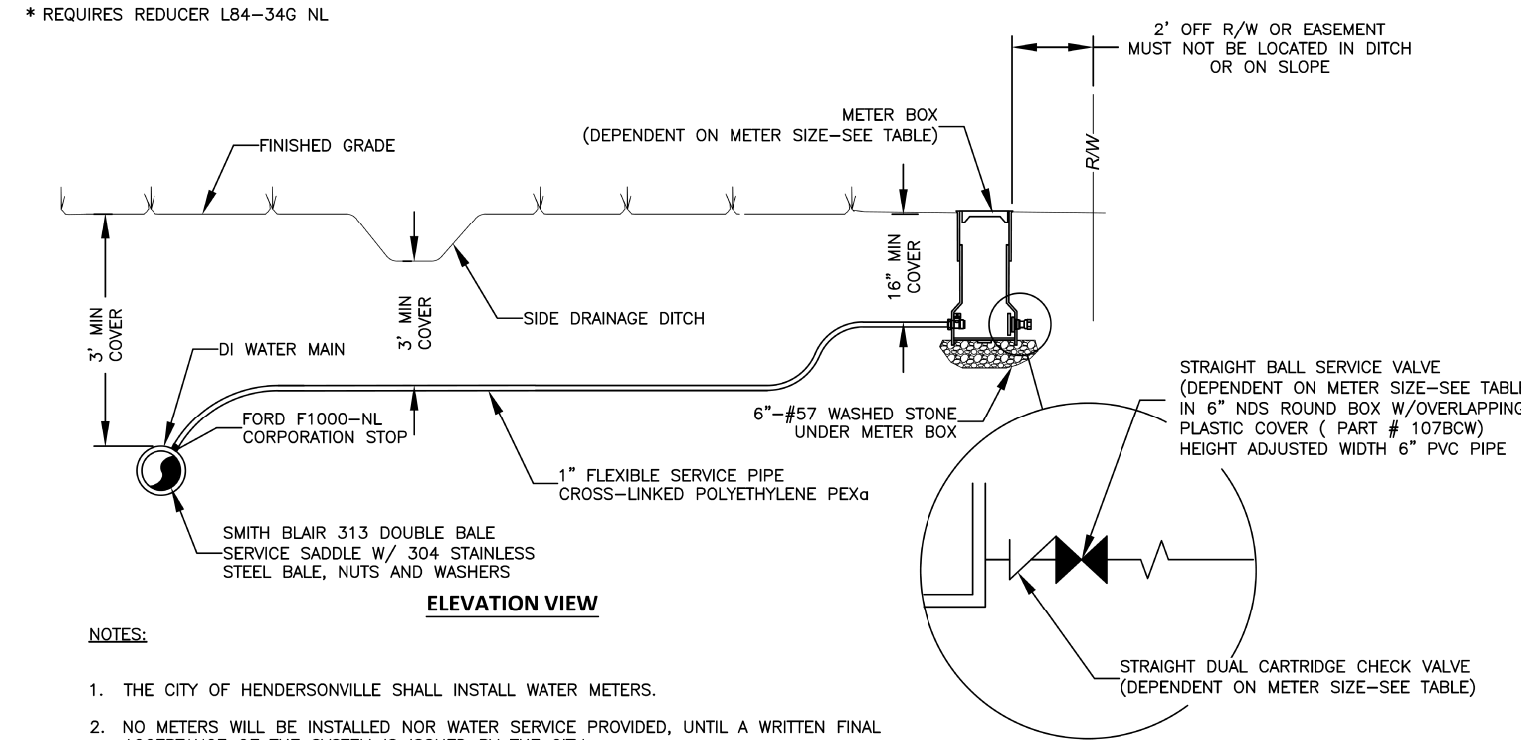
METER SIZE	METER BOX SIZE	METER BOX	STRAIGHT BALL SERVICE VALVE	STRAIGHT DUAL CARTRIDGE CHECK VALVE
3/4" *	3/4"	FORD CB111-233-NL	FORD B81-233W-NL	HHCR1-333-NL
1"	1"	FORD CB111-444-L-1-NL	FORD B81-544W-NL	HHCR1-444-NL

\* REQUIRES REDUCER L84-34G NL



- NOTES:**
1. PIPE AND FITTINGS SIZE SHALL MATCH THE SIZE OF THE PROPOSED AIR RELEASE VALVE TO BE INSTALLED.
  2. LOCATION TO BE THE SAME AS METER BOX DETAILS.
  3. TRACER WIRE NOT SHOWN FOR CLARITY. TRACER WIRE SHALL BE CONNECTED TO WATER MAIN TRACER USING CONNECTORS APPROVED BY THE MANUFACTURER. (SEE VALVE BOX INSTALLATION)

**7 STANDARD AIR RELEASE VALVE INSTALLATION**  
WD-2 NOT TO SCALE 04/04/18



- NOTES:**
1. THE CITY OF HENDERSONVILLE SHALL INSTALL WATER METERS.
  2. NO METERS WILL BE INSTALLED NOR WATER SERVICE PROVIDED, UNTIL A WRITTEN FINAL ACCEPTANCE OF THE SYSTEM IS ISSUED BY THE CITY.
  3. EXTEND TRACER WIRE FROM MAIN TO METER BOX. WIRE NOT SHOWN FOR CLARITY. TRACER WIRE WILL BE A 19 GAUGE, TIN COATED, COPPER CONDUCTOR WITH POLYETHYLENE INSULATION, CORE MATERIAL COMPRISED OF HIGH-TENSILITY, 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 SHALL BE TERMINATED IN METER BOX AT MOUNTED TRACE-SAFE® LOCATING CLIP, MOUNTED A MAXIMUM OF 3" FROM TOP OF BOX WITH 304 SS BOLT. TRACER WIRE AND CONNECTORS SHALL BE TRACE-SAFE® WATER BLOCKING TRACER WIRE AND RELATED CONNECTORS, MANUFACTURED BY NEPTCO, INC., OR EQUIVALENT APPROVED BY ENGINEER, AND PRODUCED IN THE UNITED STATES OF AMERICA.

**8 MINIMUM SERVICE LINE: 1" SERVICE LATERAL INSTALLATION**  
WD-2 NOT TO SCALE 02/16/18

**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 (ERIC) OF EACH APPLICATION TO DETERMINE, DESIGN TO, AND CERTIFY TO THE DESIGN PARAMETERS FOR EACH INSTALLATION. THE ERIC 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.

**Vaughn & Melton**  
Consulting Engineers

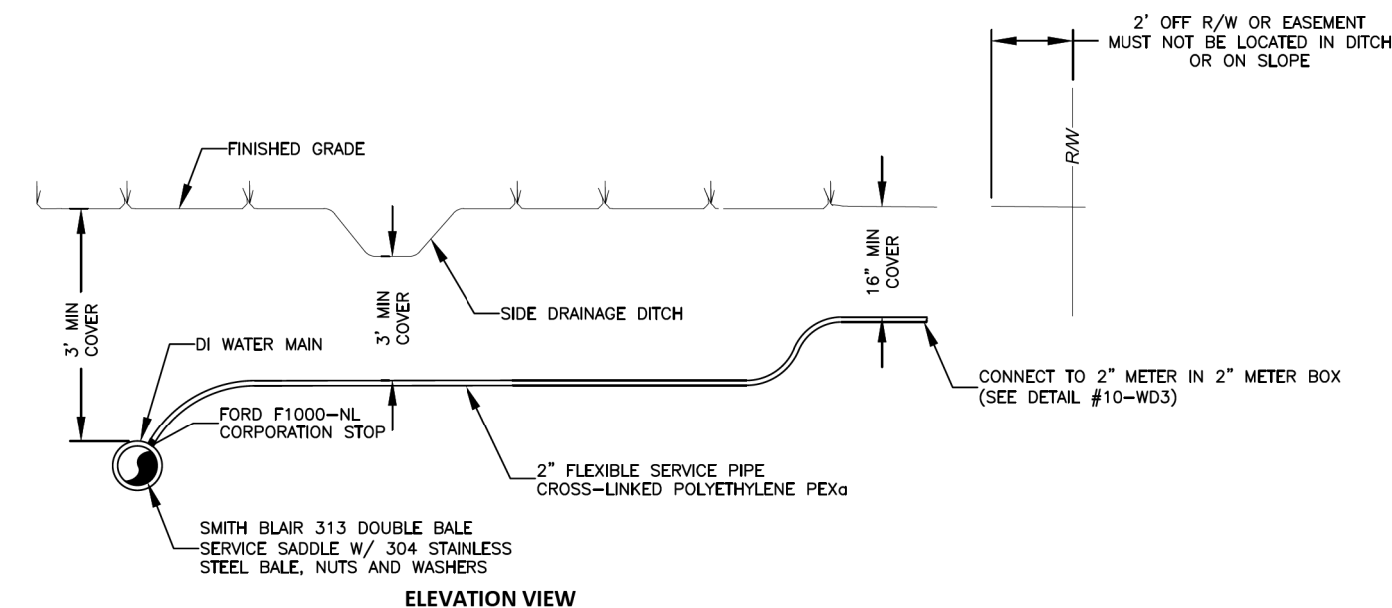
Asheville  
North Carolina  
828-253-2796

Roanoke, NC	828-953-9933
Tri-Cities, TN	423-467-8400
Knoxville, TN	865-546-5800
Spartanburg, SC	864-574-0775
Cherokee, NC	843-974-9650
Mississippi, MS	606-248-6600
Raleigh, NC	919-977-9455
Charlotte, NC	704-357-0488
Atlanta, GA	770-627-3509

Copyright © 2019 Vaughn & Melton, Inc. All Rights Reserved.

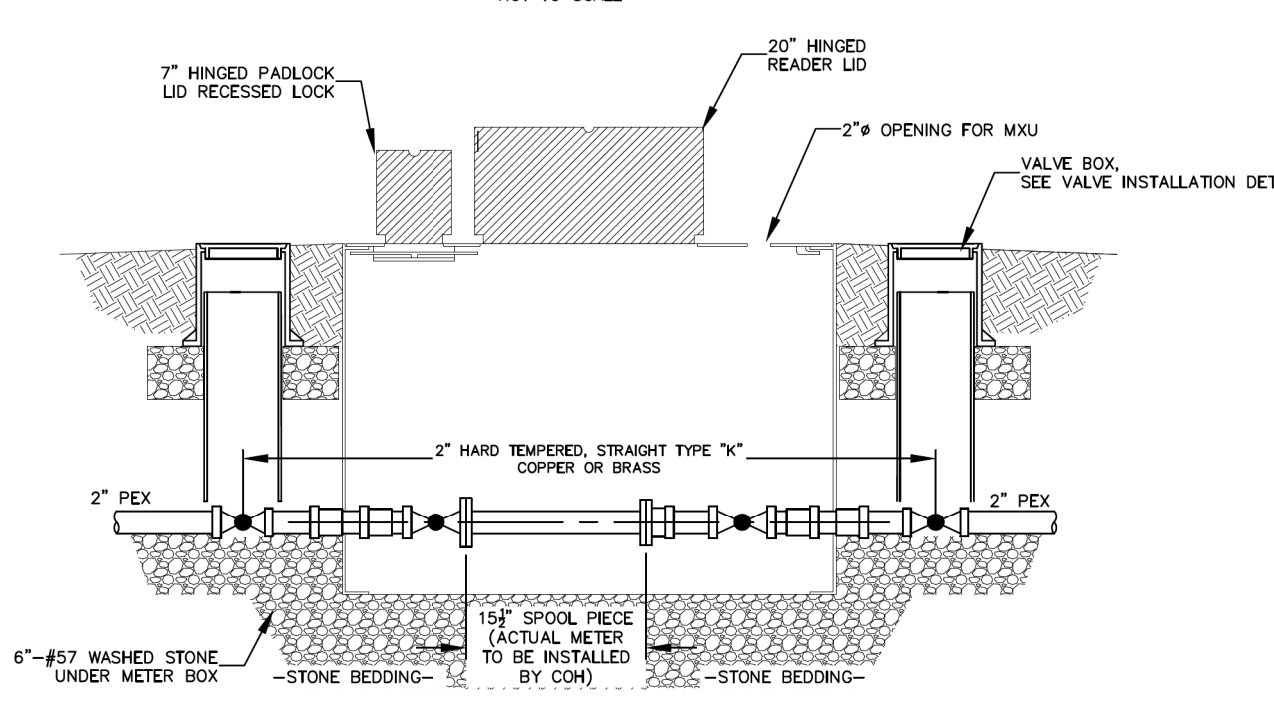
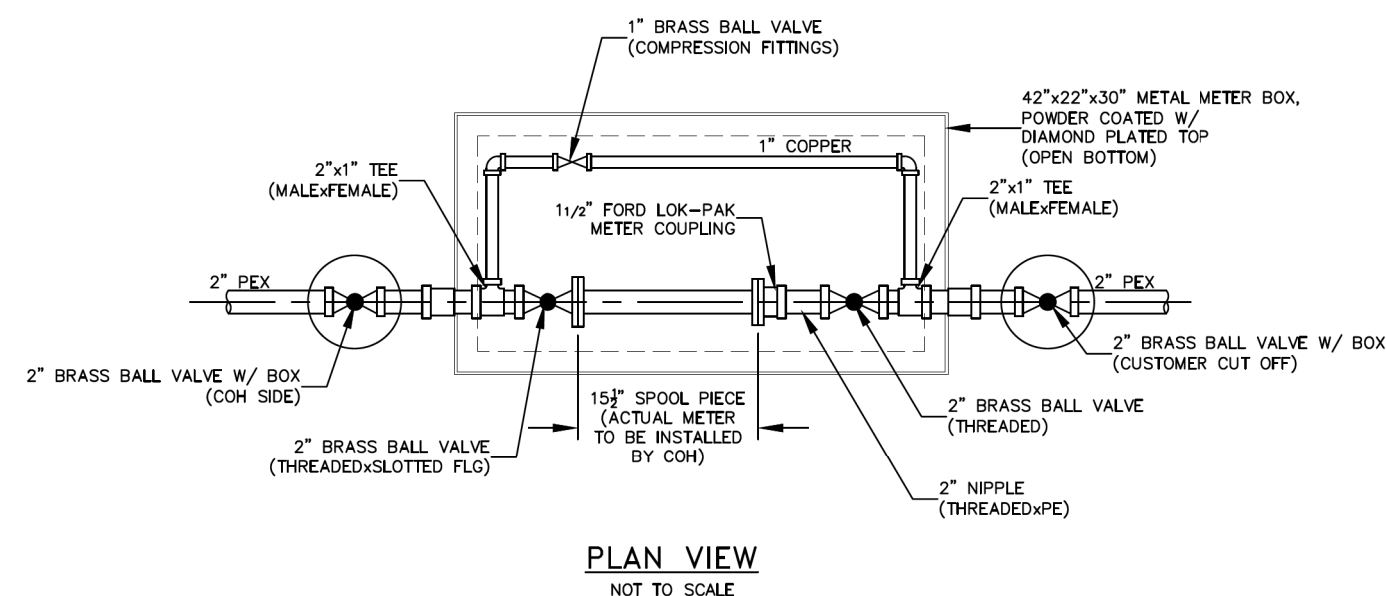
# PROJECT SPECIFIC DETAILS CITY OF HENDERSONVILLE

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	UC-3C
DESIGNED BY: CCC	
DRAWN BY: CCC	
CHECKED BY: SSD	
APPROVED BY: DWH	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY
<b>UTILITY CONSTRUCTION</b>	
<i>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</i>	

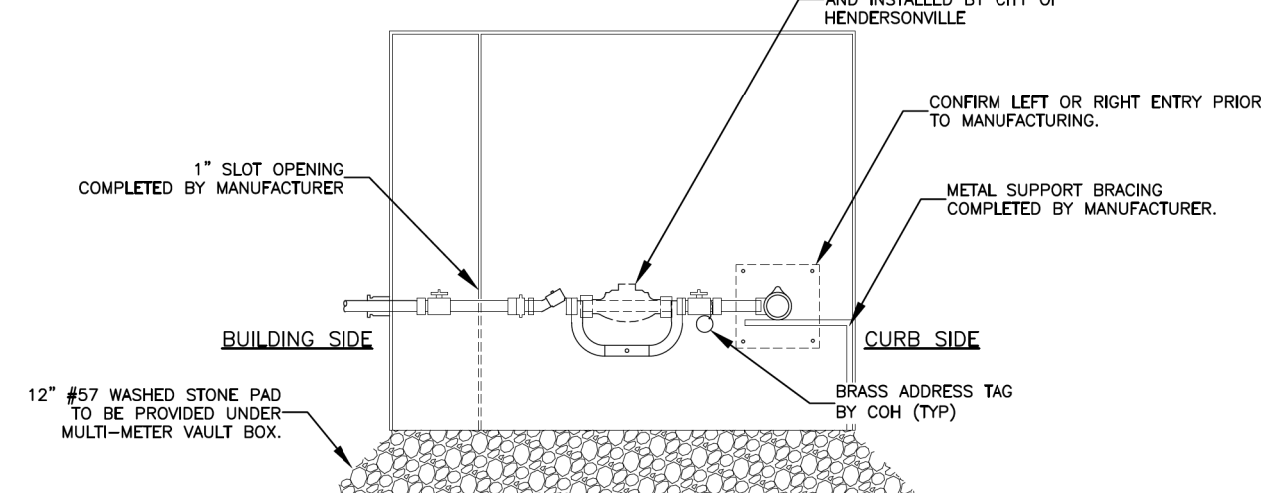
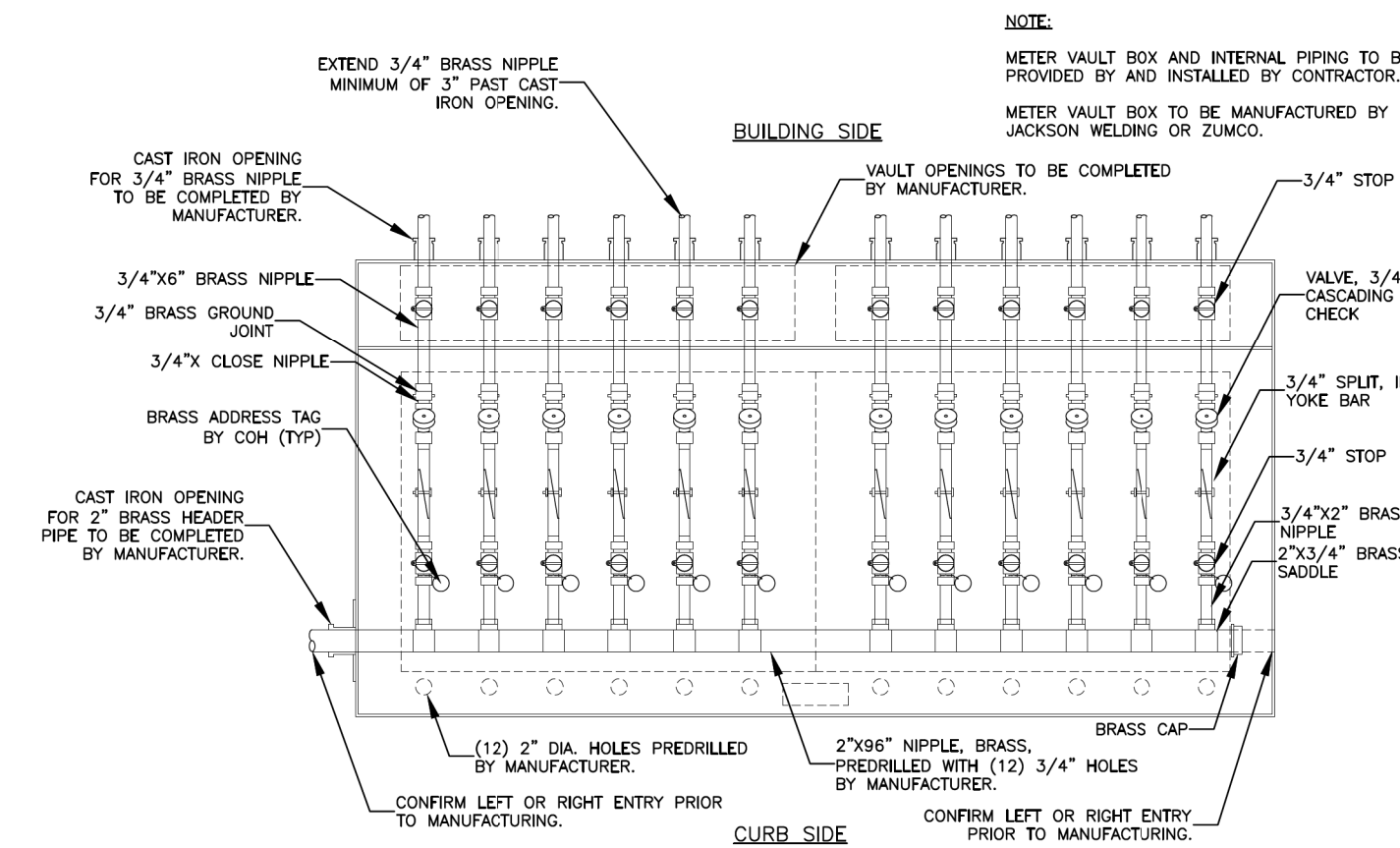


- NOTES:**
- THE CITY OF HENDERSONVILLE SHALL INSTALL WATER METERS AS SERVICE TAPS ARE APPLIED FOR.
  - EXTEND TRACER WIRE FROM MAIN TO METER BOX. WIRE NOT SHOWN FOR CLARITY. TRACER WIRE WILL BE A 18 GAUGE, TIN COATED, COPPER CONDUCTOR WITH POLYETHYLENE INSULATION. CORE MATERIAL COMPRISED OF HIGH-TENSACITY, WOVEN POLYESTER WITH WATER BLOCKING YARNS ENCAPSULATED IN 30 MIL BLUE HOPE JACKET, PROVIDING CORROSION RESISTANCE, FLEXIBILITY, IMPACT STRENGTH AND 1500 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 SPICES AND LATERAL CONNECTIONS ARE MADE, ONLY GEL FILLED CONNECTORS DESIGNED FOR WIRE WITH WOVEN POLYESTER FIBER CORE ARE TO BE USED. TRACER WIRE SHALL BE TERMINATED IN METER BOX AT MOUNTED TRACE-SAFER LOCATING CLIP, MOUNTED A MAXIMUM OF 3" FROM TOP OF BOX WITH 304 SS BOLT. TRACER WIRE AND CONNECTORS SHALL BE TRACE-SAFER WATER BLOCKING TRACER WIRE AND RELATED CONNECTORS, MANUFACTURED BY NETTICO, INC., OR EQUIVALENT APPROVED BY ENGINEER, AND PRODUCED IN THE UNITED STATES OF AMERICA.

**9 2" SERVICE LATERAL INSTALLATION**  
WD-3 NOT TO SCALE 04/04/18



**10 2" METER BOX**  
WD-3 NOT TO SCALE 04/04/18



**MULTI-METER VAULT ASSEMBLY PARTS LIST**

QUANTITY	DESCRIPTION	CITY PART NUMBER
1 EA.	2"x96" NIPPLE, BRASS	
12 EA.	2"x3/4" NPT SADDLE, BRASS NL	N-3685-12
12 EA.	3/4"x6" CLOSE NIPPLE, BRASS NL	N-3710-13
12 EA.	3/4"x2" NIPPLE, BRASS NL	N-3710-17
12 EA.	3/4"x8" NIPPLE, BRASS NL	N-3710-23
12 EA.	3/4"x12" NIPPLE, BRASS NL	N-3710-23
12 EA.	3/4" YOKER BRON YOKER BAR, SPLIT, 2-PIECE Y503	Y-0504-02
12 EA.	STOP, 3/4" STRAIGHT BALL VALVE FOR YOKER NL	S-7915-33
12 EA.	VALVE, 3/4" CASCADING DUEL CHECK, NL	V-0484-33
12 EA.	UNION, 3/4" BRASS, GROUND JOINT, NL	U-5435-00
12 EA.	STOP, 3/4" CURB VALVE, MALE, NL	S-7915-00
1 EA.	CAP, 2" PIPE, BRASS NL	C-0682-08

- NOTES:**
- COH WILL PROVIDE STAMPED ADDRESS TAGS.
  - THE CONTRACTOR WILL PROVIDE A LICENSED PLUMBER TO VERIFY LINE SERVICES IN ALL MULTI-METER BOXES.

**11 MULTI-METER VAULT ASSEMBLY DETAIL**  
WD-3 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 (ERIC) OF EACH APPLICATION TO DETERMINE DESIGN TO, AND CERTIFY TO THE DESIGN PARAMETERS FOR EACH INSTALLATION. THE ERIC 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.

V:\Asheville\transportation\31733-02\_1-4400BB\Utilities\Design\14400\_UTL\_UC-3C.dgn

**Vaughan & Melton**  
Consulting Engineers

Boone, NC 828-265-9933	Charlotte, NC 843-914-6650
Fayetteville, NC 910-437-8400	Charlotte, NC 808-748-6600
Greenville, NC 864-546-5800	Chapel Hill, NC 919-971-9455
Wilmington, NC 910-341-4715	Chapel Hill, NC 919-971-9455
Asheville, NC 828-253-2796	Chapel Hill, NC 919-971-9455
Raleigh, NC 919-971-9455	Chapel Hill, NC 919-971-9455

Copyright © 2019 Vaughan & Melton, Inc. All Rights Reserved.

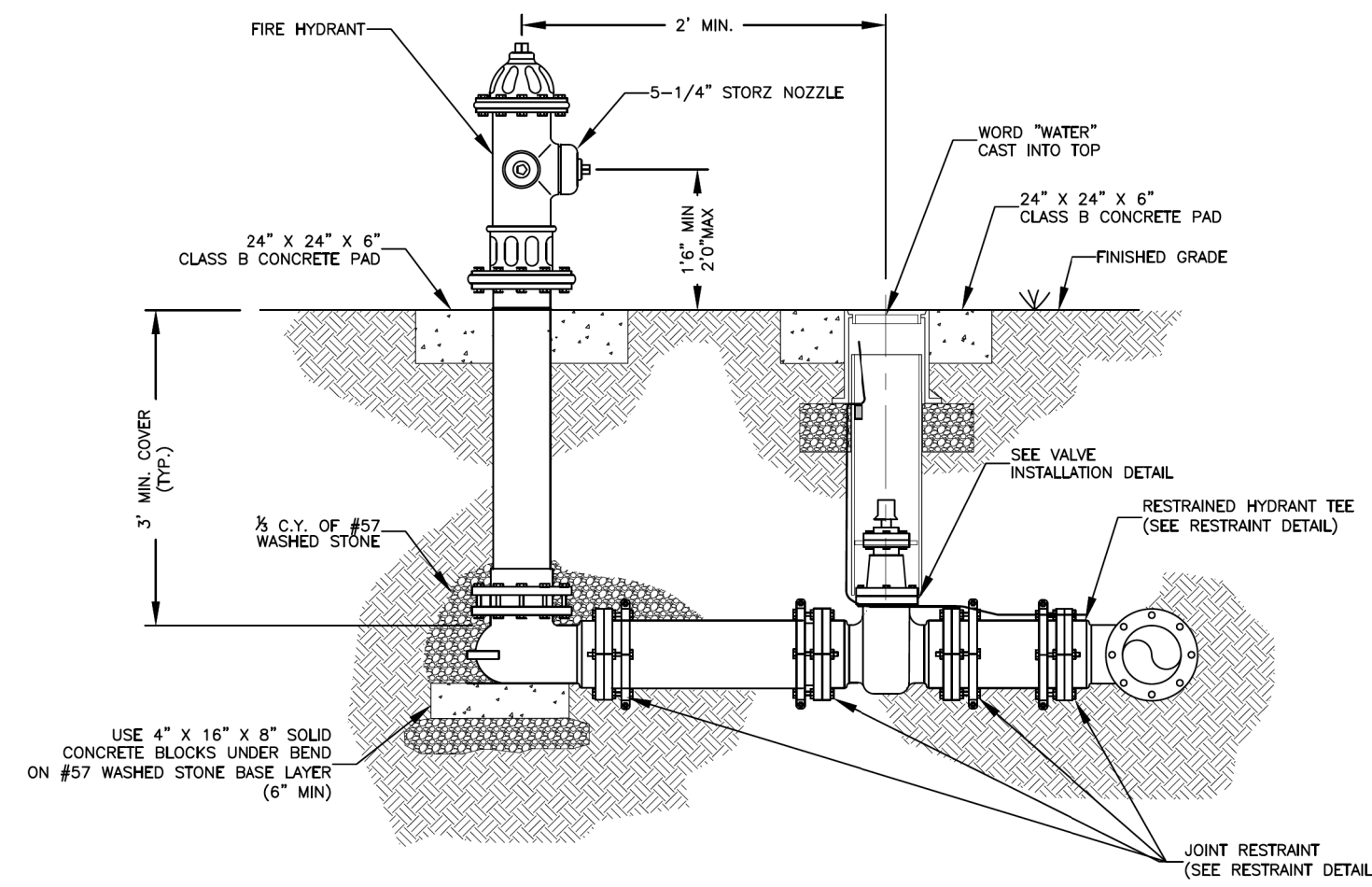


PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	UC-3D
DESIGNED BY: CCC	
DRAWN BY: CCC	
CHECKED BY: SSD	
APPROVED BY: DWH	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

# PROJECT SPECIFIC DETAILS CITY OF HENDERSONVILLE

## UTILITY CONSTRUCTION

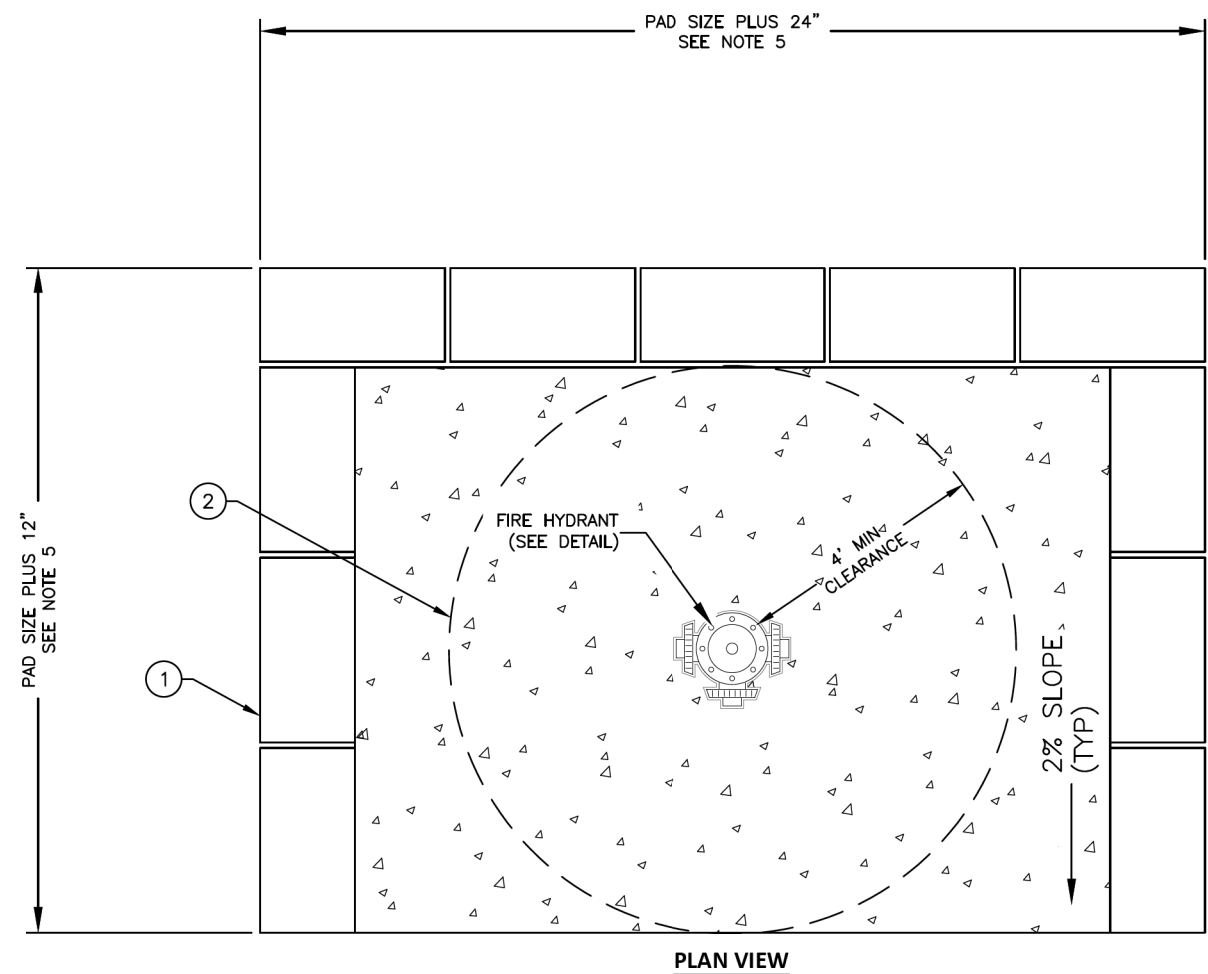
DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



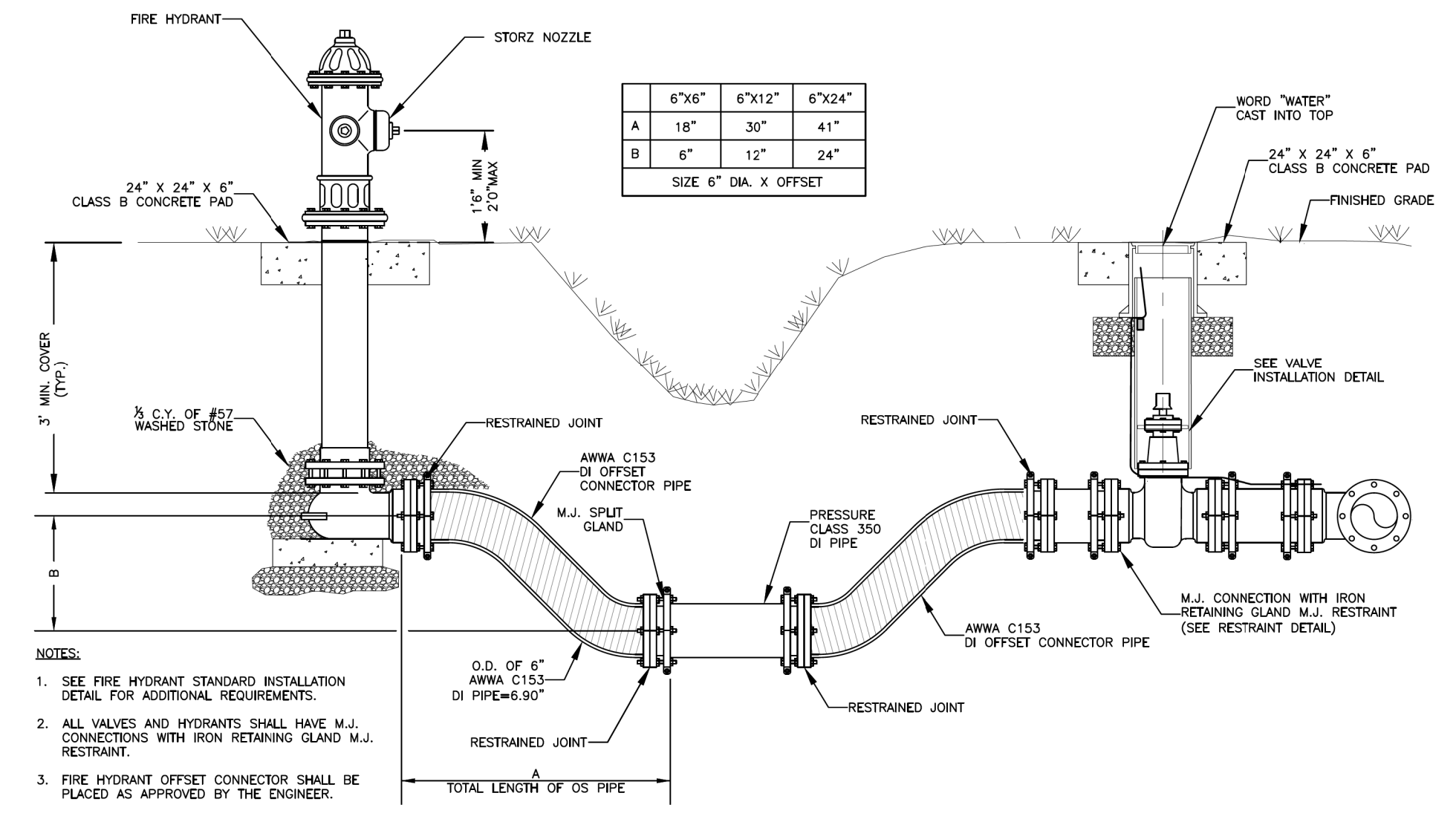
12 FIRE HYDRANT STANDARD INSTALLATION  
WD-4 NOT TO SCALE 04/04/18

- NOTES:
1. FIRE HYDRANT SHALL BE MUELLER CENTURION OR APPROVED EQUAL TESTED BY AWWA STANDARDS TO 350 PSI WORKING PRESSURE WITH 5-1/4 STORZ NOZZLE.
  2. ALL VALVES AND HYDRANTS SHALL HAVE M. J. CONNECTIONS WITH IRON RETAINING GLAND M.J. RESTRAINT.
  3. FIRE HYDRANT SHALL BE FACTORY PAINTED YELLOW, WITH FIELD PAINTED TOUCH-UP, BEFORE PROJECT IS ACCEPTED.
  4. HYDRANT VALVE SHALL BE PLACED AS CLOSE AS POSSIBLE TO THE MAIN, BUT DO NOT PLACE VALVE IN PROPOSED OR EXISTING CURB AND GUTTER. IF THE STREET IS SOIL AND NO PAVING IS TO BE DONE AT THIS TIME, THE LOCATION OF THE VALVE IS TO BE DETERMINED BY THE ENGINEER.
  5. FIRE HYDRANTS SHALL BE PLACED AS DIRECTED BY THE ENGINEER.
  6. HYDRANT BRANCH SHALL NOT BE BACK FILLED UNTIL INSPECTED AND APPROVED BY THE ENGINEER.
  7. GATE VALVE AND BOX SHALL BE IN ACCORDANCE WITH STANDARD DETAIL.
  8. HYDRANT EXTENSIONS AND/OR OFFSETS SHALL BE APPROVED BY THE ENGINEER.

- NOTES:
1. RETAINING WALLS FOR USE IN CONJUNCTION WITH THE INSTALLATION OF FIRE HYDRANTS SHALL BE INSTALLED WHERE SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
  2. FIGURES SHOWN REPRESENT MINIMUMS ONLY. ALL RETAINING WALLS ABOVE 4' SHALL BE DESIGNED BY THE ENGINEER OF WORK AND PERMITTED BY THE AGENCY OF JURISDICTION.
  3. VERTICAL BARS TO BE INSTALLED AT 16" ON CENTER, INSTALL MINIMUM 1-BAR IN THE CENTER OF THE FOOTING FOR WALL.
  4. PAD SIZE TO MATCH SIZE OF PAD REQUIRED FOR FIRE HYDRANT TO BE INSTALLED.
  5. GRAVITY WALL MAY BE INSTALLED ONLY WITH PRIOR APPROVAL OF SUBMITTAL FOR INSTALLATION.
  6. AN EASEMENT MAY BE REQUIRED DEPENDING ON THE LOCATION OF THE WALL.



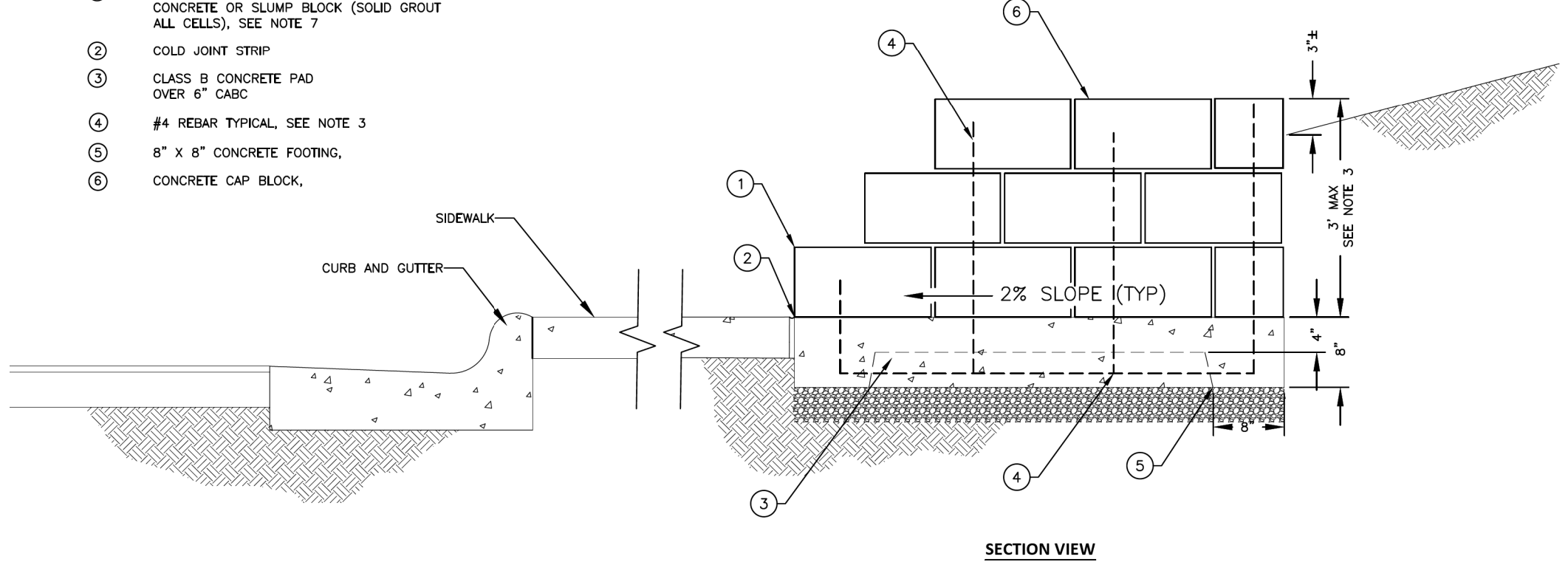
14 FIRE HYDRANT SLOPE INSTALLATION  
WD-4 NOT TO SCALE 04/04/18



13 FIRE HYDRANT DITCH INSTALLATION  
WD-4 NOT TO SCALE 04/04/18

- NOTES:
1. SEE FIRE HYDRANT STANDARD INSTALLATION DETAIL FOR ADDITIONAL REQUIREMENTS.
  2. ALL VALVES AND HYDRANTS SHALL HAVE M.J. CONNECTIONS WITH IRON RETAINING GLAND M.J. RESTRAINT.
  3. FIRE HYDRANT OFFSET CONNECTOR SHALL BE PLACED AS APPROVED BY THE ENGINEER.
  4. OFFSET CONNECTOR SHALL NOT BE BACK FILLED UNTIL INSPECTED AND APPROVED BY ENGINEER.

- ITEM NO. SIZE AND DESCRIPTION
1. 200MM X 200MM X 400MM (8\"/>



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 (ERC) OF EACH APPLICATION TO DETERMINE, DESIGN TO, AND CARRY TO THE DESIGN PARAMETERS FOR EACH INSTALLATION. THE ERC 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.

**V&M**  
Vaughan & Melton  
Consulting Engineers

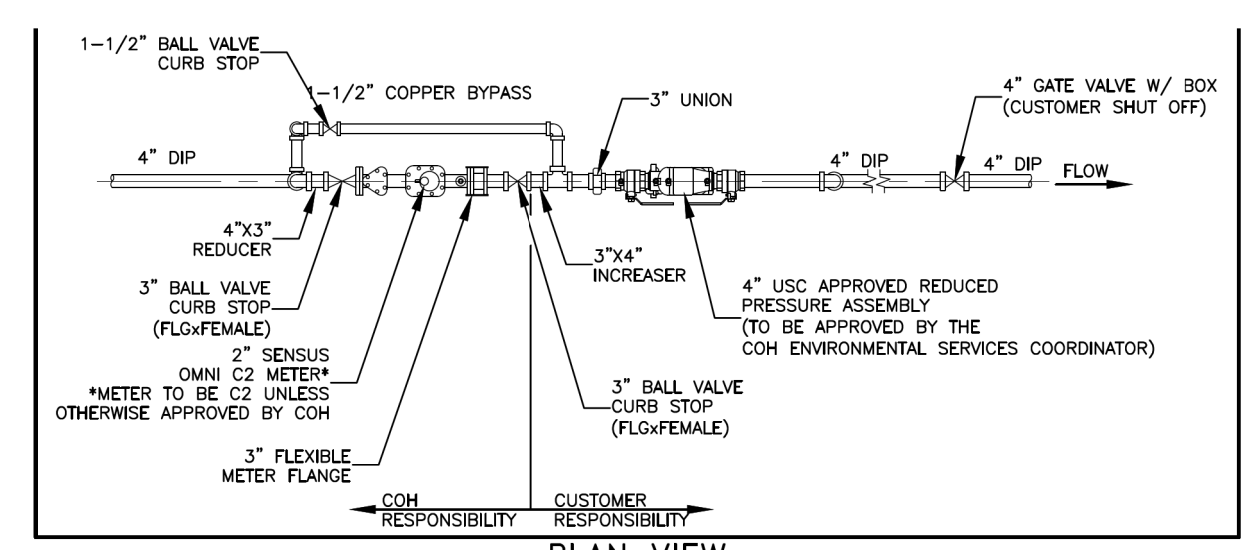
Asheville  
North Carolina  
828-253-2796  
919-277-9455

Boone, NC 828-255-9333  
Tri-Cities, TN 423-467-8400  
Knoxville, TN 865-546-5800  
Spartanburg, SC 864-574-6715  
Charleston, SC 843-514-6650  
Midwestboro, VT 806-748-6600  
Cherokee, NC 704-391-0468  
Kinston, NC 817-627-1509

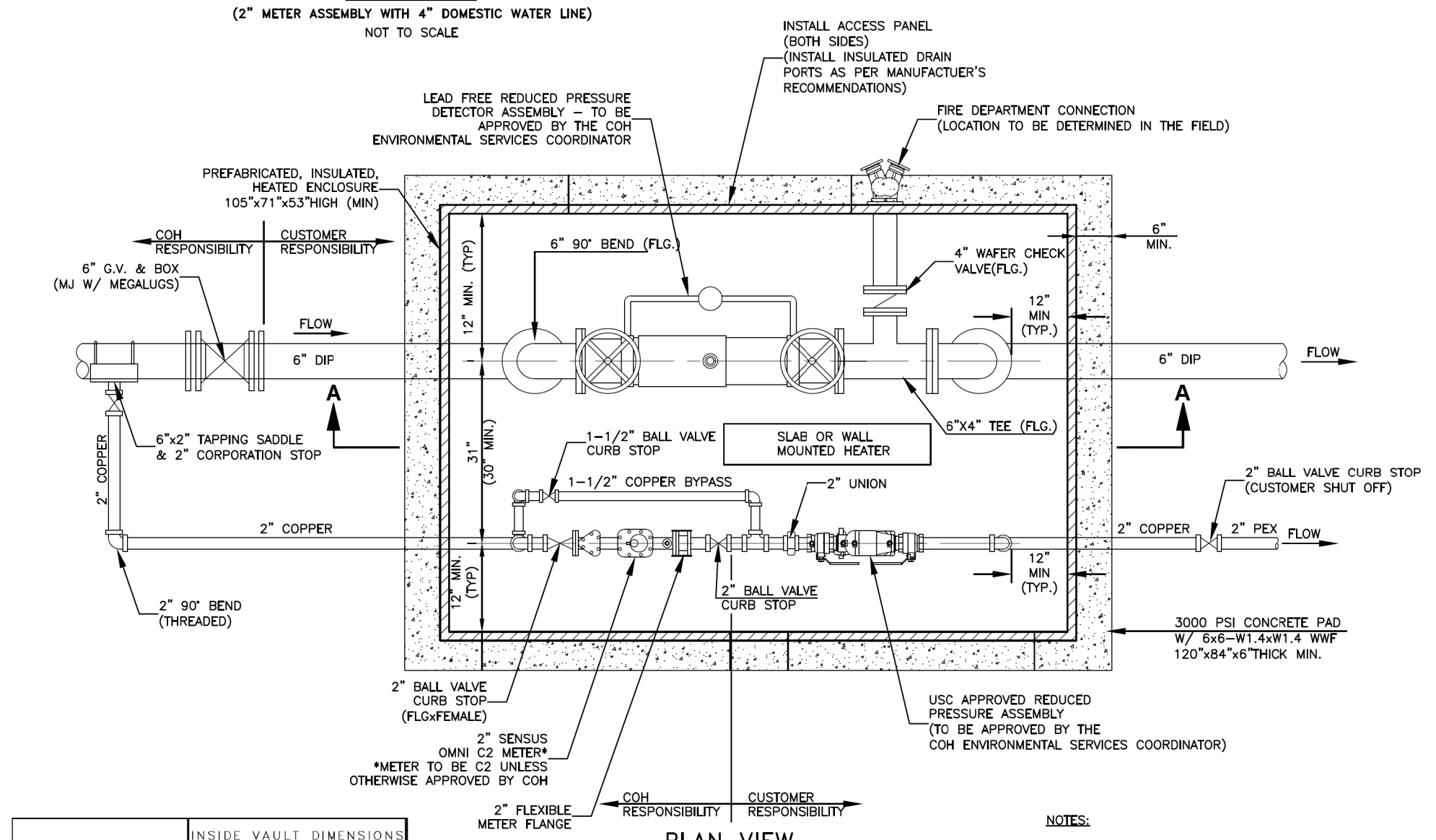
Copyright © 2019 Vaughan & Melton, Inc. All Rights Reserved.

# PROJECT SPECIFIC DETAILS CITY OF HENDERSONVILLE

PROJECT REFERENCE NO.	SHEET NO.
I-4400BB	UC-3E
DESIGNED BY: CCC	
DRAWN BY: CCC	
CHECKED BY: SSD	
APPROVED BY: DWH	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY
<b>UTILITY CONSTRUCTION</b>	
<i>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</i>	

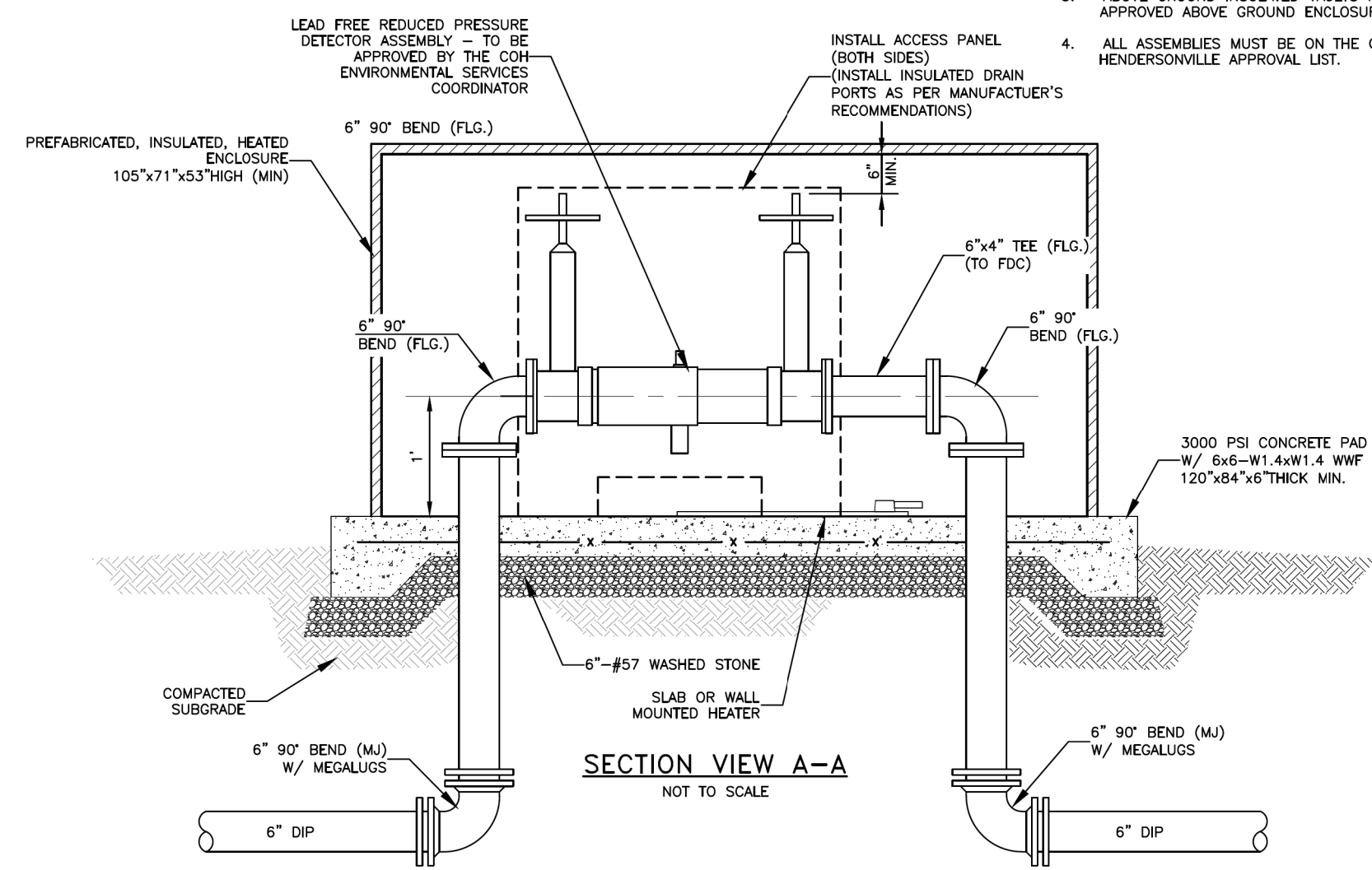


PLAN VIEW  
(2" METER ASSEMBLY WITH 4" DOMESTIC WATER LINE)  
NOT TO SCALE



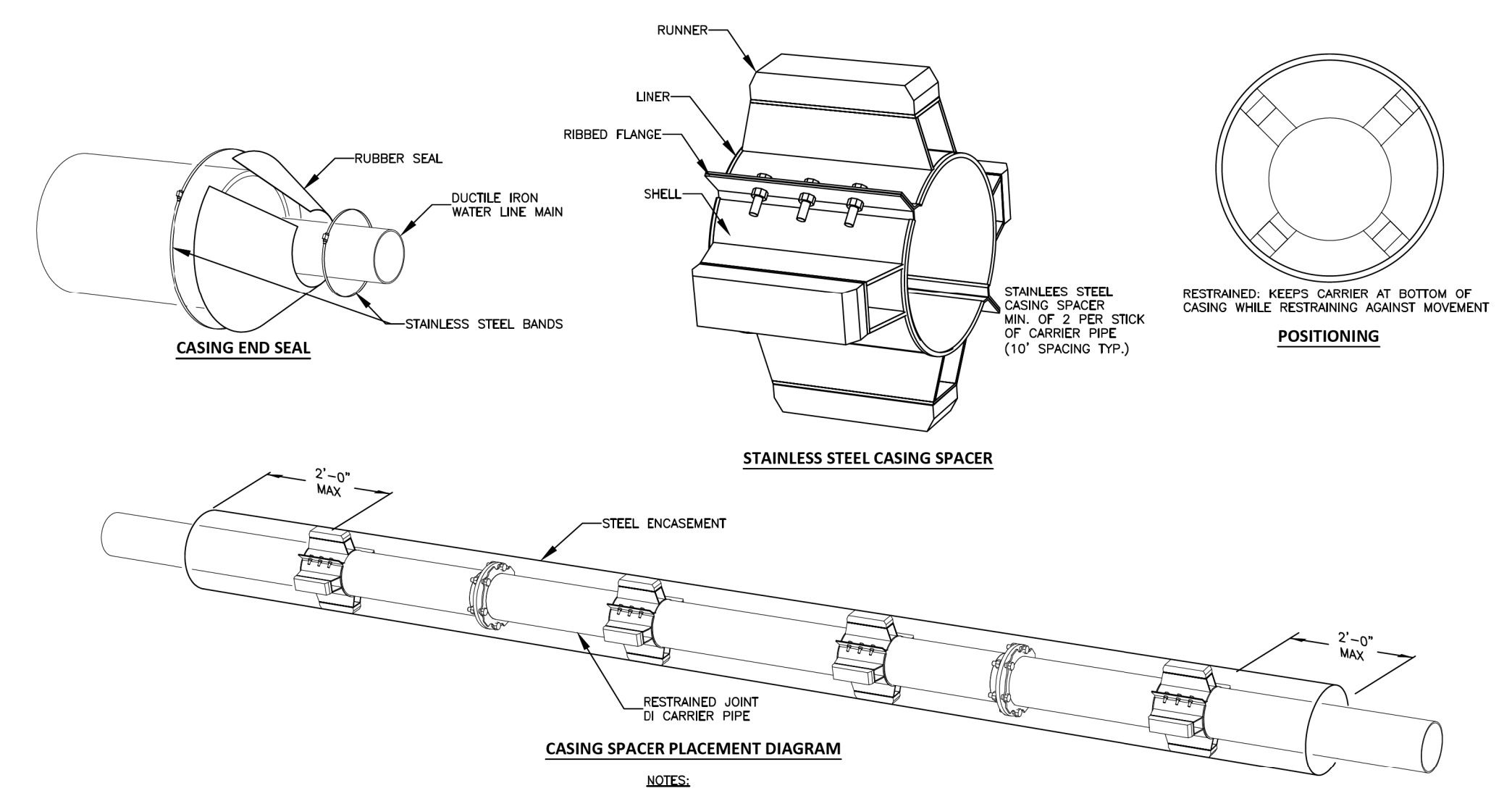
PLAN VIEW  
(2" METER ASSEMBLY WITH 2" DOMESTIC WATER LINE)  
NOT TO SCALE

FIRE LINE SIZE (IN)	LENGTH	WIDTH	DEPTH
6"	6'-0"	6'-0"	6'-6"
8"	8'-0"	6'-0"	7'-0"
10"	8'-0"	6'-0"	7'-0"



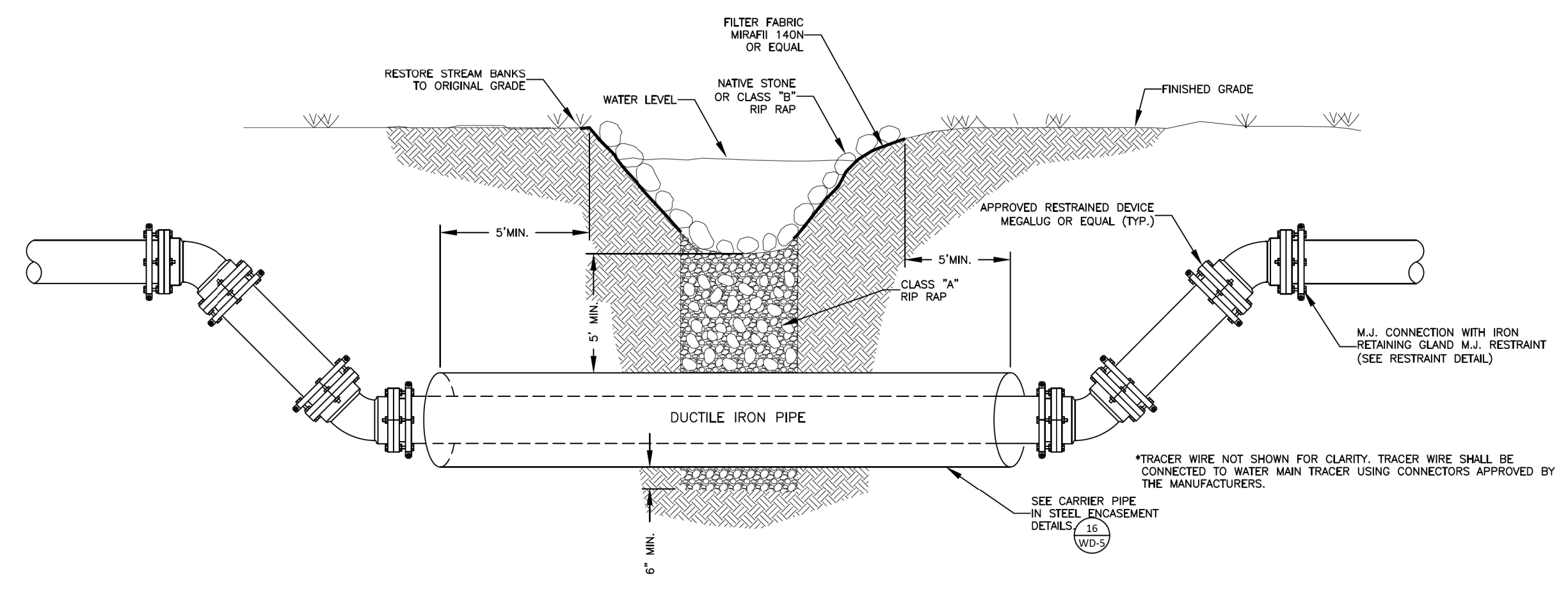
SECTION VIEW A-A  
NOT TO SCALE

15  
WD-5  
NOT TO SCALE  
04/04/18



16 CARRIER PIPE IN STEEL ENCASUREMENT  
WD-5 NOT TO SCALE  
04/04/18

- NOTES:
1. RESTRAINED POSITIONING TO BE USED AT ALL TIMES.
  2. CARRIER PIPE JOINTS SHALL BE MECHANICALLY RESTRAINED.
  3. STAINLESS STEEL CASING SPACERS SHALL BE STYLE CCS AS MANUFACTURED BY CASCADE WATERWORKS MFG. CO. OF YORKVILLE, IL OR ENGINEER APPROVED EQUIVALENT.
  4. CASING END SEAL SHALL BE STYLE CCES AS MANUFACTURED BY CASCADE WATERWORKS MFG. CO. OF YORKVILLE, IL OR ENGINEER APPROVED EQUIVALENT.



17 OPEN CUT BELOW CREEK BOTTOM  
WD-5 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 APPLIANCES. IT REMAINS THE SOLE RESPONSIBILITY OF THE ENGINEER IN RESPONSIBLE CHARGE (ERC) OF APPLICATION TO DETERMINE, DESIGN TO, AND CERTIFY TO THE DESIGN PARAMETERS FOR EACH INSTALLATION. THE ERC 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.

V:\Asheville\transportation\31733-02\_1-4400BB\Utilities\Design\14400\_UTL\_UC-3E.dgn

**V&M**  
Vaughn & Melton  
Consulting Engineers

Asheville  
1001 Th. Corning  
828-253-2796  
919-977-9455

Boone, NC 828-265-9333  
Ft. Collins, TN 423-467-8400  
Knoxville, TN 865-546-5800  
Spartanburg, SC 864-574-6775  
Charleston, SC 803-914-6600  
Midvale, KY 606-748-6600  
Cherokee, NC 704-357-0488  
Kinston, NC 919-627-3509

Copyright © 2019 Vaughn & Melton, Inc. All Rights Reserved.