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8/20/19

V:\Asheville\transportation\31732-09 I-26 Rest Area WS\Utilities\Drawings\14400\_UTL\_UC-1.dgn

**TIP PROJECT: I-4400C**

**CONTRACT:**

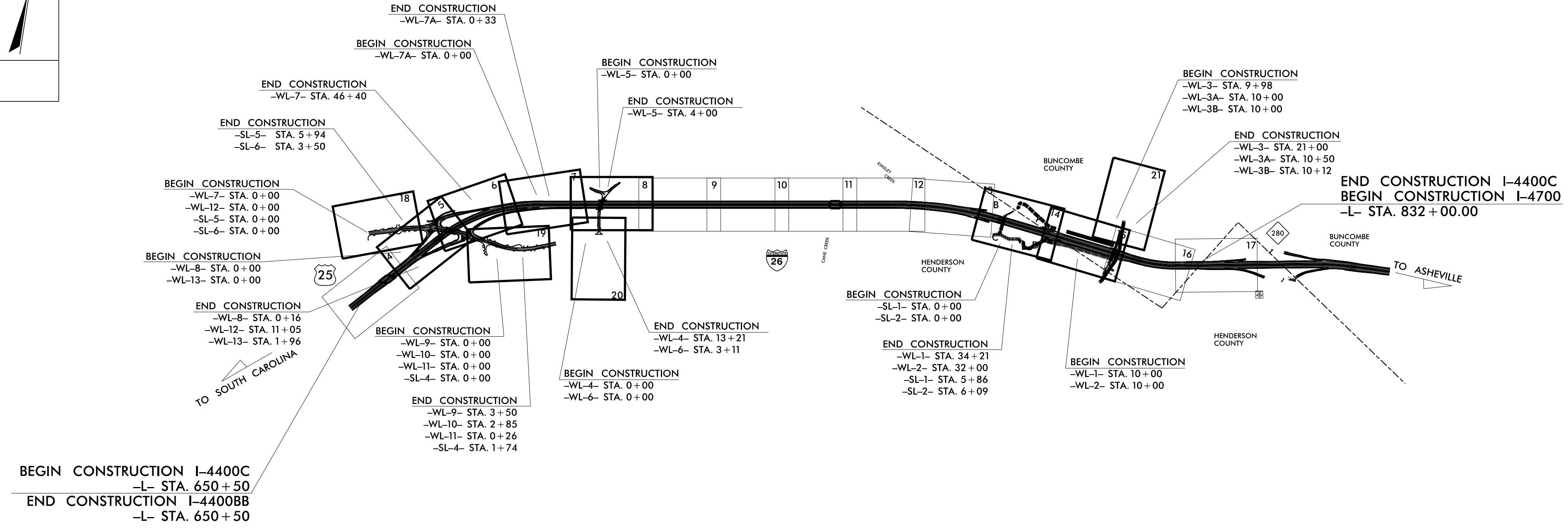
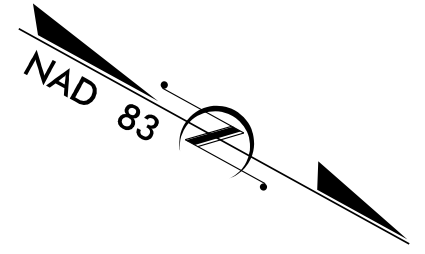
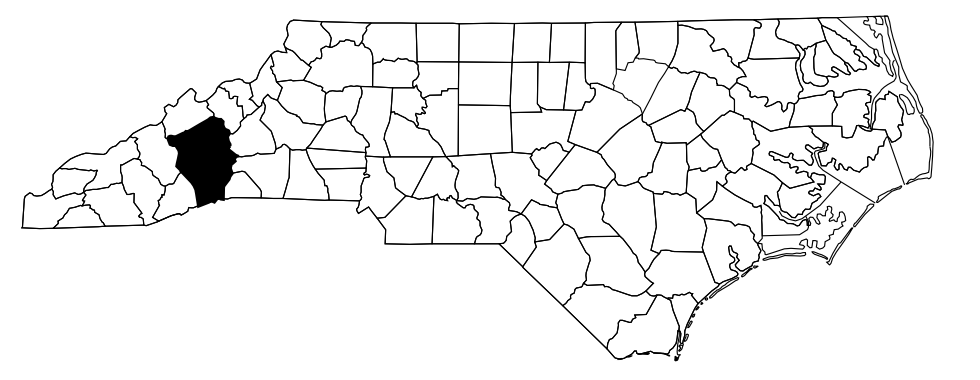
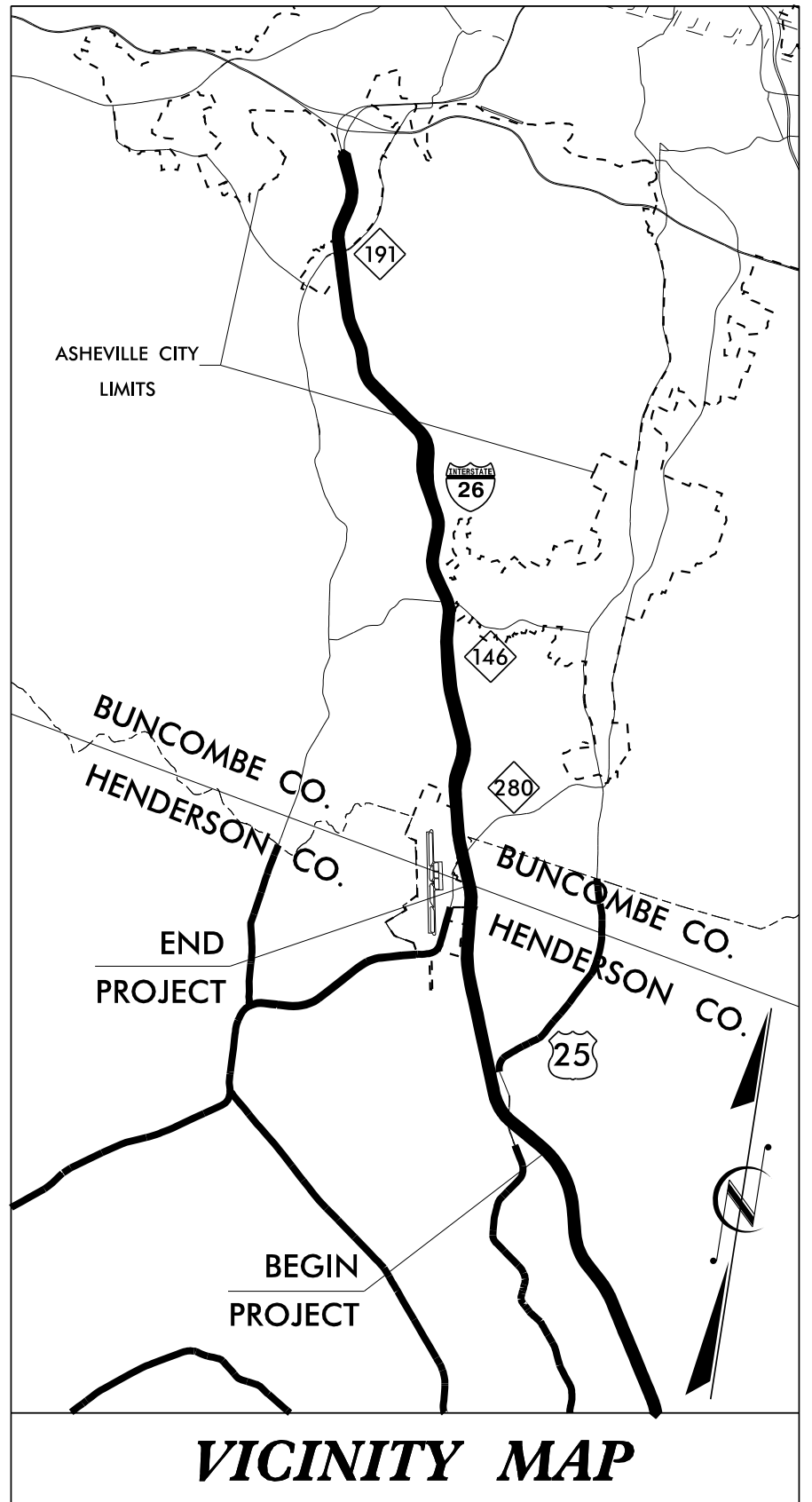
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

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

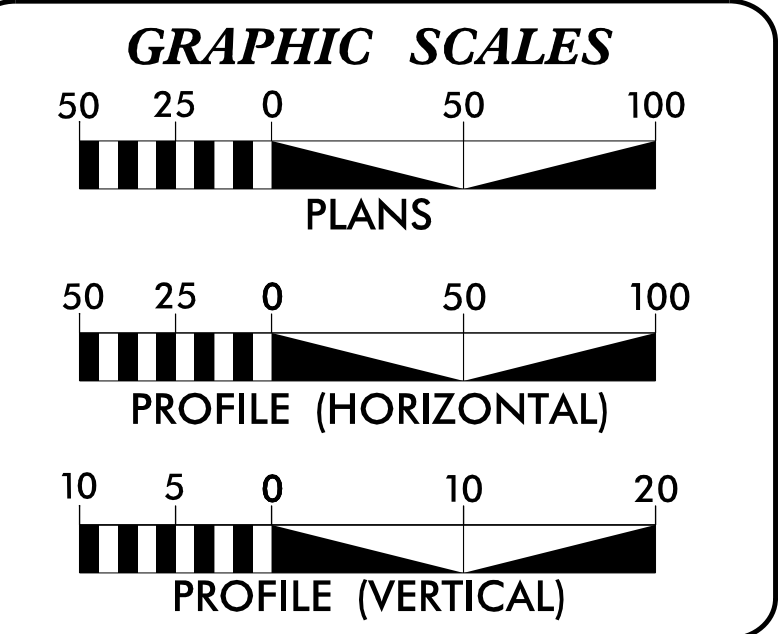
# UTILITY CONSTRUCTION PLANS BUNCOMBE & HENDERSON COUNTIES

**LOCATION: I-26 REST AREA ASSOCIATED WITH I-26 FROM  
0.5MI SOUTH OF US 25 (ASHEVILLE HIGHWAY)  
TO 0.3MI SOUTH OF NC 280 (AIRPORT ROAD)**

**TYPE OF WORK: SEWER & WATER LINE CONSTRUCTION**



DOCUMENT NOT CONSIDERED FINAL  
UNTIL ALL SIGNATURES ARE COMPLETED



**SEE SHEET UC-1A  
FOR  
INDEX OF SHEETS**

- PUBLIC UTILITY OWNERS  
ON PROJECT**
- (1) WATER - CITY OF HENDERSONVILLE
  - (2) SEWER - CITY OF HENDERSONVILLE
  - (3) WATER - CITY OF ASHEVILLE
  - (4) SEWER - CANE CREEK SEWER DISTRICT

PREPARED IN THE OFFICE OF:

**V&M**  
Vaughn & Melton  
Consulting Engineers  
1318-F Patton Avenue  
Asheville, NC 28806  
(828) 253-2796

SEAL: [Professional Engineer Seal]

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**Lynn Mann, P.G.** PROJECT UTILITY COORDINATOR  
**David Dawson** PROJECT UTILITY DESIGNER

**HIGHWAY DIVISION 14**

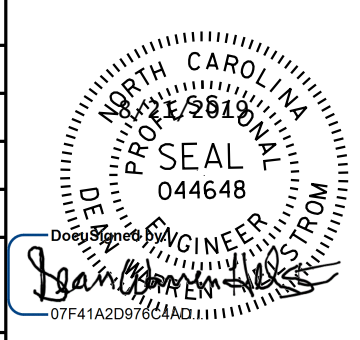
253 WEBSTER ROAD  
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**Byron Sanders, P.E.** UTILITIES REGIONAL ENGINEER  
**Bob Golding** DIVISION UTILITIES ENGINEER  
**Bill Green** DIVISION UTILITIES COORDINATOR

8/20/19

V:\Asheville\transportation\31722-09 1-26 Rest Area MS\Utilities\Drawings\14400-UTL-UC-01A.dgn


**BUNCOMBE COUNTY  
HENDERSON COUNTY**

PROJECT REFERENCE NO. <b>I4400C</b>	SHEET NO. <b>UC-1A</b>
DESIGNED BY: DRF	
DRAWN BY: DRF	
CHECKED BY: DWH	
APPROVED BY: DWH	
REVISED: <b>8-20-19</b>	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY
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**UTILITY CONSTRUCTION**

INDEX OF SHEETS

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UC-1A	INDEX OF SHEETS
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UC-3	NOTES
UC-3A THRU UC-3J	NOTES AND DETAILS
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UC-5A	UTILITY PLAN AND PROFILE SHEET - WATER (COH) -WL-8- & -WL-12-
UC-5B	UTILITY PLAN AND PROFILE SHEET - SEWER (COH) -SL-3-
UC-6	UTILITY PLAN AND PROFILE SHEET - WATER (COH) -WL-7-
UC-7	UTILITY PLAN AND PROFILE SHEET - WATER (COH) -WL-7- & -WL-7A-
UC-8	UTILITY PLAN SHEET - WATER (COH) -WL-4-, -WL-5- & -WL-7-; SEWER (CCSD) -FSS-2-
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UC-19	UTILITY PLAN AND PROFILE SHEET - WATER (COH) -WL-9-, -WL-10- & -WL-11-
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Tri-Cities, TN  
 423-461-8400  
 Knoxville, TN  
 865-546-5800  
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 864-574-4175  
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 606-248-6600  
 Asheville, NC  
 828-253-2706  
 Boone, NC  
 828-355-9933  
 Atlanta, GA  
 770-627-3509

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STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

Water Line (Sized as Shown)	
11 1/4 Degree Bend	
22 1/2 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	AATUR	Sanitary Sewer Cleanout	
End of Information	E.O.I.		

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



**BUNCOMBE COUNTY  
HENDERSON COUNTY**

PROJECT REFERENCE NO. <b>I-4400C</b>	SHEET NO. <b>UC-3</b>
DESIGNED BY: <b>DRF</b>	
DRAWN BY: <b>DRF</b>	
CHECKED BY: <b>LAM</b>	
APPROVED BY: <b>DWH</b>	
REVISED: <b>8-20-19</b>	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
<b>UTILITY CONSTRUCTION PLANS ONLY</b> <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 ASHEVILLE DESIGN STANDARDS AND SPECIFICATIONS.

2. THE EXISTING UTILITIES BELONG TO THE CITY OF ASHEVILLE, CITY OF HENDERSONVILLE AND CANE CREEK WATER & SEWER DISTRICT.

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 ASHEVILLE, THE CITY OF HENDERSONVILLE AND CANE CREEK WATER & SEWER DISTRICT 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 ASHEVILLE, CITY OF HENDERSONVILLE AND CANE CREEK WATER & SEWER DISTRICT SHALL BE NOTIFIED A MINIMUM OF 48 HOURS PRIOR TO THE BEGINNING OF WATER AND SEWER WORK.

5. THE CITY OF ASHEVILLE, CITY OF HENDERSONVILLE AND CANE CREEK WATER & SEWER DISTRICT 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. INSTALLATION OF FLOW METERS, BYPASS PIPING, APPURTENANCES, 6" PVC FLOOR DRAINS AND VAULTS SHALL BE INCLUDED AS PART OF THE FLOW METER VAULT INSTALLATION.

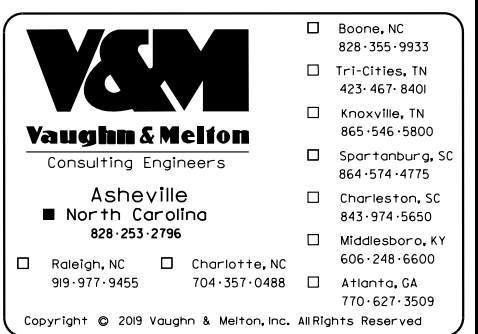
12. THE BELOW GROUND BACKFLOW/ ENCLOSURE INSTALLATION SHALL INCLUDE ALL PIPING AND APPURTENANCES INSIDE THE ENCLOSURE.

13. CONTRACTOR WILL NEED TO INSTALL STEEL CASING UNDER I-26 AND FUTURE NOISE WALLS PRIOR TO PLACING EMBANKMENT MATERIAL FOR NEW BRIDGE FOR FANNING BRIDGE ROAD. CONTRACTOR SHALL KEEP EXISTING WATER LINE ON FANNING BRIDGE ROAD ACTIVE UNTIL ALL NEW WATER LINES HAVE BEEN INSTALLED, TESTED AND ACCEPTED BY CITY OF ASHEVILLE, NCDOT AND ENGINEER.

14. CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF EXISTING WATER SERVICES. CONTRACTOR SHALL RECONNECT WATER SERVICE WITH A NEW WATER LINE FROM MAIN TO WATER METER. IF WATER LINE CROSSES EXISTING ROADWAY, THE INSTALLATION SHALL BE VIA TRENCHLESS CONSTRUCTION METHOD.

15. CONTRACTOR SHALL FIELD VERIFY ANY EXISTING FIRE HYDRANT THAT IS TO BE RELOCATED OR RECONNECTED. IF HYDRANT DOES NOT HAVE NATIONAL STANDARD THREADS (NST) OR IS OLDER THAN 1990 OR IS A US PIPE HYDRANT, THE HYDRANT SHALL BE REPLACED. COA OR COH WILL PROVIDE NEW FIRE HYDRANT IF NEEDED.

16. CONTRACTOR SHALL INSTALL RESTRAINED JOINT PIPE AS INDICATED ON THE PLANS AND THIS WORK IS CONSIDERED INCIDENTAL TO THE CONSTRUCTION OF THE WATER LINE.





# UTILITY CONSTRUCTION

**BUNCOMBE COUNTY  
HENDERSON COUNTY**

PROJECT REFERENCE NO. <b>I-4400C</b>	SHEET NO. <b>UC-3A</b>
DESIGNED BY: <b>DRF</b>	
DRAWN BY: <b>DRF</b>	
CHECKED BY: <b>LAM</b>	
APPROVED BY: <b>DWH</b>	
REVISED: <b>8-20-19</b>	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	

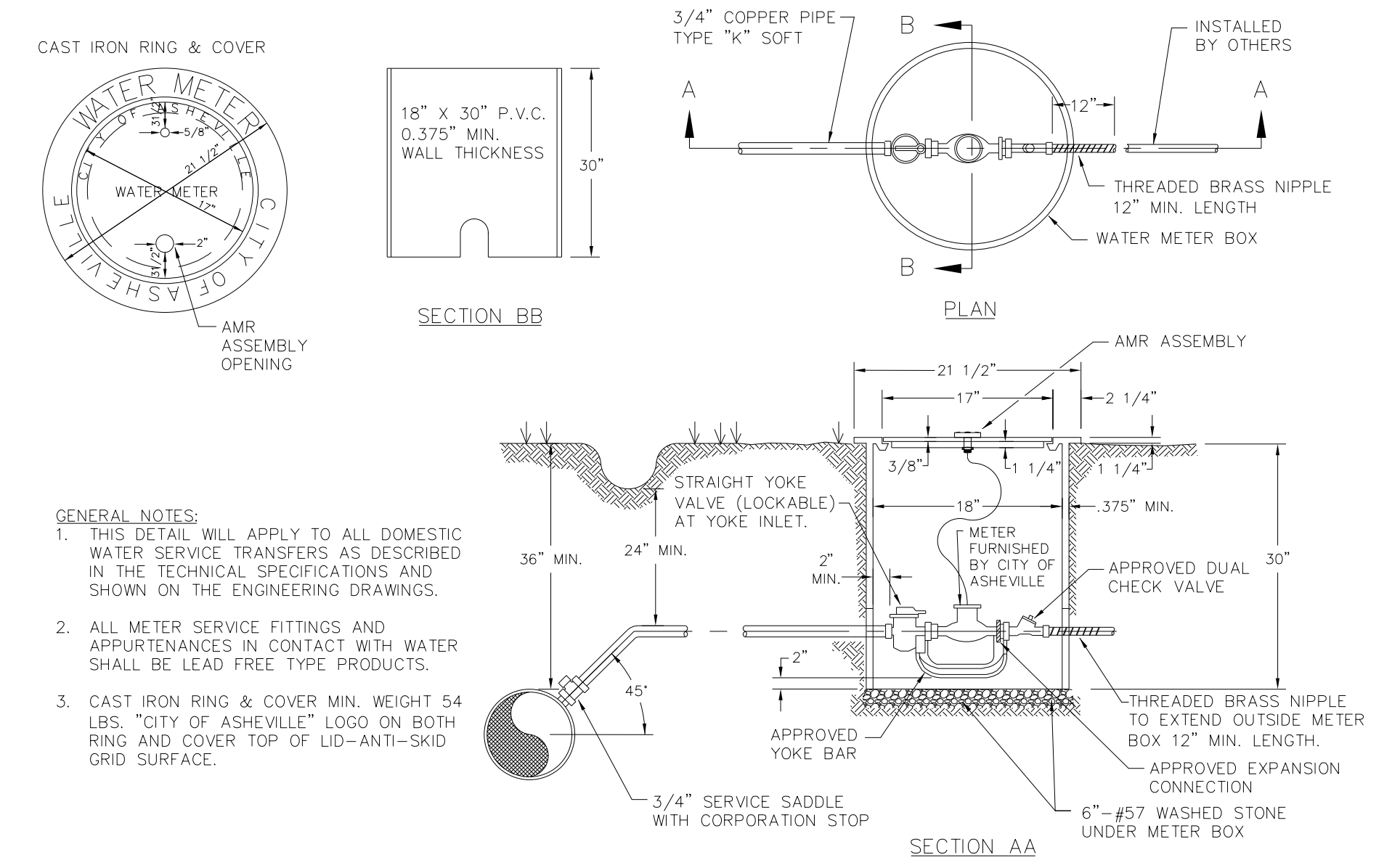
**UTILITY CONSTRUCTION PLANS ONLY**  
**UTILITY CONSTRUCTION**  
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## CITY OF ASHEVILLE WATER LINE CONSTRUCTION NOTES:

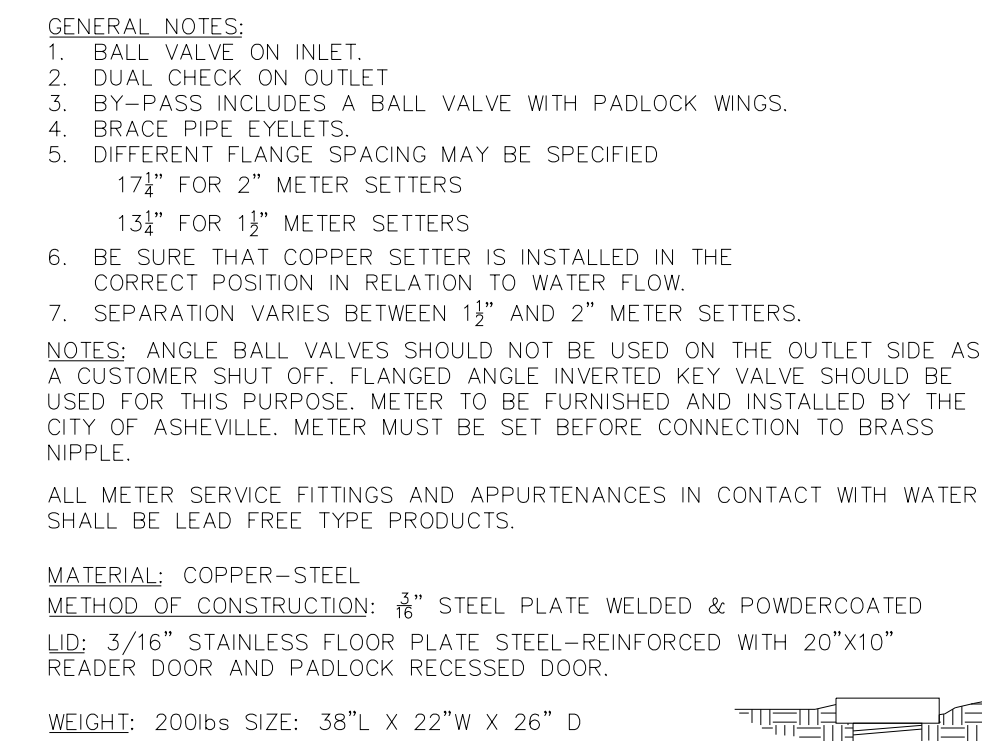
1. THE WATER LINE EXTENSION WORK SHALL BE PERFORMED BY A LICENSED NORTH CAROLINA UTILITY CONTRACTOR.
2. CONTRACTOR SHALL PROTECT ALL UTILITIES AND OTHER IMPROVEMENTS SHOWN OR NOT SHOWN ON THESE PLANS. CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY FOR REPAIRS OF UTILITIES AND IMPROVEMENTS DAMAGED DURING CONSTRUCTION AND SHALL MAINTAIN SUFFICIENT PROTECTION TO ALL UTILITIES REQUIRED TO PROTECT THEM FROM DAMAGE AND TO PROTECT THE PUBLIC DURING CONSTRUCTION. THE LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY ALL UNDERGROUND UTILITIES WITH NORTH CAROLINA ONE CALL PRIOR TO CONSTRUCTION. 811 OR 1-800-632-4949.
3. UTILITIES ARE TO BE LOCATED FAR ENOUGH IN ADVANCE TO ALLOW REDESIGN BY ENGINEER IF NECESSARY.
4. CONTRACTOR SHALL TAKE NECESSARY STEPS TO KEEP THE UTILITY IN SERVICE AT ALL TIMES DURING CONSTRUCTION.
5. THE WATER LINE COVER IS TO BE 3 FEET DEEP (MINIMUM) EXCEPT AT UTILITY CROSSINGS WHERE THERE ARE CONFLICTS. IN THIS CASE WATERLINE COVER IS NOT TO EXCEED 5 FEET (MAXIMUM) AND AS APPROVED BY THE CITY WATER INSPECTOR.
6. CONTRACTOR SHALL VERIFY EXISTING WATER LINE LOCATION FOR CONNECTION.
7. THE CONTRACTOR SHALL COMPLY WITH THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY EROSION AND SEDIMENTATION CONTROL MEASURES.
8. INSTALLATIONS OF THE WATER LINE AND SUPPORTING APPURTENANCES SHALL BE IN ACCORDANCE WITH TITLE 15A SUBCHAPTER 18C OF THE NORTH CAROLINA ADMINISTRATIVE CODE AND WITH THE TECHNICAL SPECIFICATIONS FOR THIS PROJECT. APPROVAL BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY - PUBLIC WATER SUPPLY SECTION OR THE CITY OF ASHEVILLE MUST BE OBTAINED PRIOR TO CONSTRUCTION.
9. CITY OWNERSHIP AND MAINTENANCE OF THE WATER LINES WILL BE WITHIN DESIGNATED WATER EASEMENT AREAS.
10. ALL WATER LINES, HYDRANTS, VALVES, FDC & APPURTENANCES ARE TO BE PER CITY OF ASHEVILLE SPECIFICATIONS, STANDARDS AND DETAILS. MATERIALS TO BE APPROVED BY OWNER AND ENGINEER. ALL BRASS FITTINGS ARE TO BE LEAD FREE.
11. ALL WATER LINE JOINTS AND FITTINGS USE CITY OF ASHEVILLE RESTRAINT DEVICES PER STANDARDS, SPECIFICATIONS AND DETAILS. ALL FITTINGS TO BE RESTRAINED. RESTRAINED JOINTS BY AN APPROVED PIPE MANUFACTURER ARE TO BE USED FOR ALL PUBLIC WATER LINES WHERE THRUST RESTRAINING IS REQUIRED; HOWEVER, THRUST BLOCKS ARE PERMITTED WHERE CONNECTIONS ARE MADE TO EXISTING WATER LINES OR WHERE THE USE OF MECHANICAL RESTRAINT IS NOT FEASIBLE.
12. PER SECTION .0300, SUBCHAPTER 18C, CHAPTER 18 OF THE NCAC, AN "AUTHORIZATION TO CONSTRUCT" MUST BE OBTAINED PRIOR TO ANY CONSTRUCTION. THIS AUTHORIZATION WILL BE GRANTED UPON FINAL PLAN APPROVAL AND ISSUED AT THE REQUIRED PRE-CONSTRUCTION MEETING FOR THIS PROJECT.
13. WATER MAINS SHALL HAVE A MINIMUM VERTICAL SEPARATION OF 12" WITH ALL STORM DRAINAGE WHEN CROSSING.

14. RELATION OF WATER MAINS TO OTHER UTILITIES:  
 WATER MAINS SHOULD ONLY CROSS SANITARY SEWER MAINS AT AN APPROXIMATE 90-DEGREE ANGLE.  
  
 STORM SEWER: WATER MAINS AND STORM SEWER MAINS SHALL HAVE A MINIMUM VERTICAL SEPARATION OF 12-INCHES WHEN HORIZONTAL SEPARATION IS LESS THAN 3-FEET UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.  
  
 NATURAL GAS MAINS, CABLES AND OTHER UTILITIES: OTHER UTILITIES SHALL HAVE A MINIMUM HORIZONTAL CLEARANCE OF 3-FEET AND VERTICAL CLEARANCE OF 12-INCHES, TO PERMIT PROPER MAINTENANCE OF THE WATER MAIN.
15. WATER METERS MUST BE PLACED IN FRONT OF THE BUILDING WHICH THEY SERVE AND MUST BE LOCATED IN RELATIVELY FLAT AREAS, NOT IN STEEP BANKS OR SLOPES. ALSO THE WATER METER BOXES SHALL BE CLEARLY LABELED TO DESCRIBE THE ADDRESS OF THE UNIT OR BUILDING SERVED.
16. ALL SERVICE CONNECTIONS SHALL BE MADE PERPENDICULAR FROM THE MAIN LINE AND SHALL RUN STRAIGHT TO THE METER WITH NO UNIONS OR FITTINGS.
17. ALL NEW WATER METER BOXES SHALL BE LOCATED OUTSIDE THE STREET, SIDEWALK OR PARKING AREAS IN RESIDENTIAL AREAS. ANY METERS AT OR NEAR A PROPERTY CORNER THAT REQUIRES RELOCATION SHALL HAVE PROPERTY CORNERS/LINES STAKED TO ASSURE PROPER PLACEMENT OF THE WATER METER.
18. SERVICE TAPS ON EXISTING ACTIVE WATER LINES SHALL BE MADE BY THE CITY OF ASHEVILLE WATER RESOURCES DEPARTMENT. SERVICE TAPS TO NEW WATER LINES SHALL BE MADE BY THE CONTRACTOR WHEN REQUIRED BY THESE STANDARDS.
19. TESTING, INSPECTION AND DISINFECTION OF WATER MAINS ARE TO COMPLY WITH CITY OF ASHEVILLE MANUAL SECTION W2.
20. LOCATION OF FIRE HYDRANTS, AIR RELEASE VALVES, WATER METERS, PRV STATION VALVES, ROAD CROSSINGS AND OTHER APPURTENANCES ARE APPROXIMATE. LOCATION IS TO BE FIELD VERIFIED BY CITY AND ENGINEER.
21. ALL WATER VALVES TO BE INSTALLED WITHIN TWO (2) FEET OF AN INTERSECTION OR FIRE HYDRANT TEE.
22. ALL WATER LINES ARE TO BE INSTALLED IN ACCORDANCE WITH THE CITY OF ASHEVILLE WATER RESOURCES DESIGN & CONSTRUCTION MANUAL.
23. ALL FIRE HYDRANTS, VAULTS, BACKFLOWS AND WATER METERS ARE TO BE LOCATED IN RELATIVELY FLAT AREAS AND OUTSIDE PAVEMENT OR DRIVEWAYS.
24. GAS, CABLE AND OTHER UTILITIES ARE TO BE INSTALLED SUCH THAT CLEARANCES FROM THE WATERLINE ARE MAINTAINED OR BE LOCATED ON THE OPPOSITE SIDE OF THE ROAD.
25. STAKING OF THE R/W LIMITS, ROADWAYS, CURBLINES, THE WATER ALIGNMENTS, PROPOSED STRUCTURES, LANDSCAPE TREES, UTILITY CROSSINGS, PROPERTY CORNERS AND ANY OTHER APPURTENANCES WILL BE REQUIRED PRIOR TO INSTALLATION OF THE WATER LINE.
26. ALL RPZ BACKFLOW PREVENTER ENCLOSURES SHALL MEET ASSE 1060 STANDARD REQUIREMENTS.
27. TREES ARE TO BE 10 FEET MINIMUM FROM PROPOSED WATER LINES.

## CITY OF ASHEVILLE PROJECT SPECIFIC DETAILS



**5/8" - 3/4" WATER METER BOX**  
NOT TO SCALE  
(CITY OF ASHEVILLE - STD. NO. W.01 REVISED 6/2015)



**POSITIVE DISPLACEMENT  
1 1/2" - 2" METER & METER VAULT**  
NOT TO SCALE  
(CITY OF ASHEVILLE - STD. NO. W.03 REVISED 6/2015)

**Vaughan & Melton**  
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828-253-2796

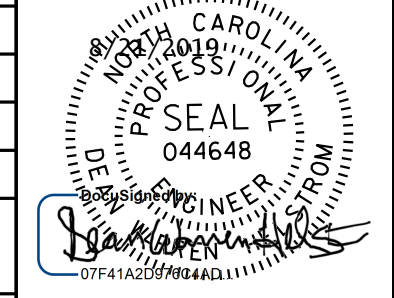
Boone, NC 828-265-9333  
Fayetteville, NC 828-461-8401  
Knoxville, TN 865-546-5800  
Spartanburg, SC 864-574-6775  
Charleston, SC 843-514-6550  
Millsboro, DE 304-348-6400  
Raleigh, NC 919-317-9555  
Chapel Hill, NC 919-357-0989  
Arlington, VA 703-627-3939

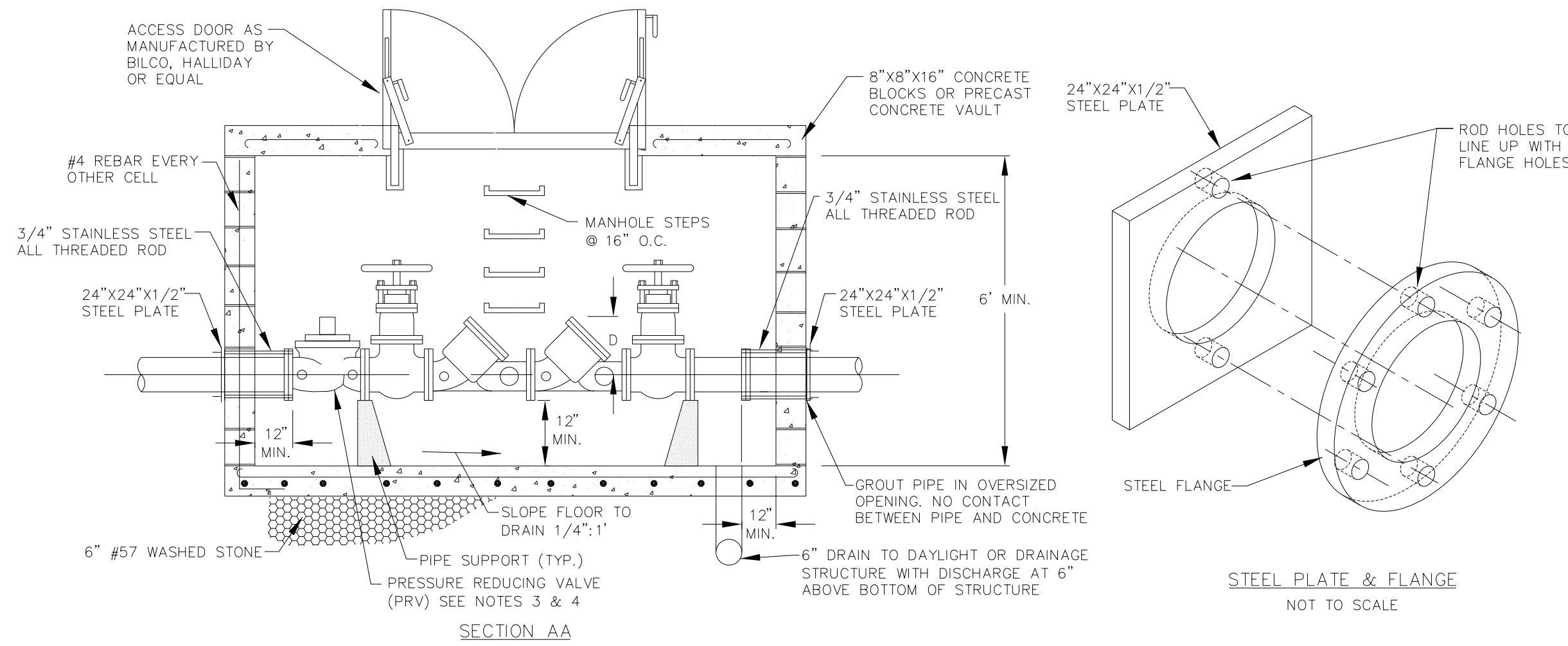
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# CITY OF ASHEVILLE PROJECT SPECIFIC DETAILS

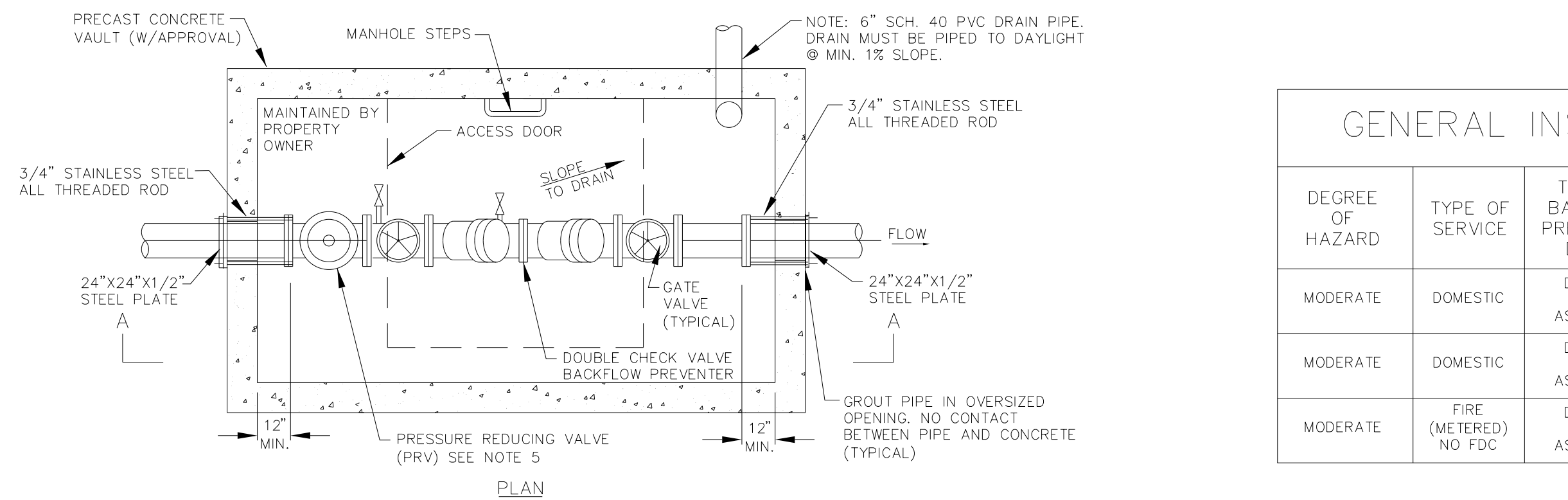
**BUNCOMBE COUNTY  
HENDERSON COUNTY**

PROJECT REFERENCE NO. <b>I-4400C</b>	SHEET NO. <b>UC-3B</b>
DESIGNED BY: <b>DRF</b>	
DRAWN BY: <b>DRF</b>	
CHECKED BY: <b>LAM</b>	
APPROVED BY: <b>DWH</b>	
REVISED: <b>8-20-19</b>	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	
<b>UTILITY CONSTRUCTION</b> <b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

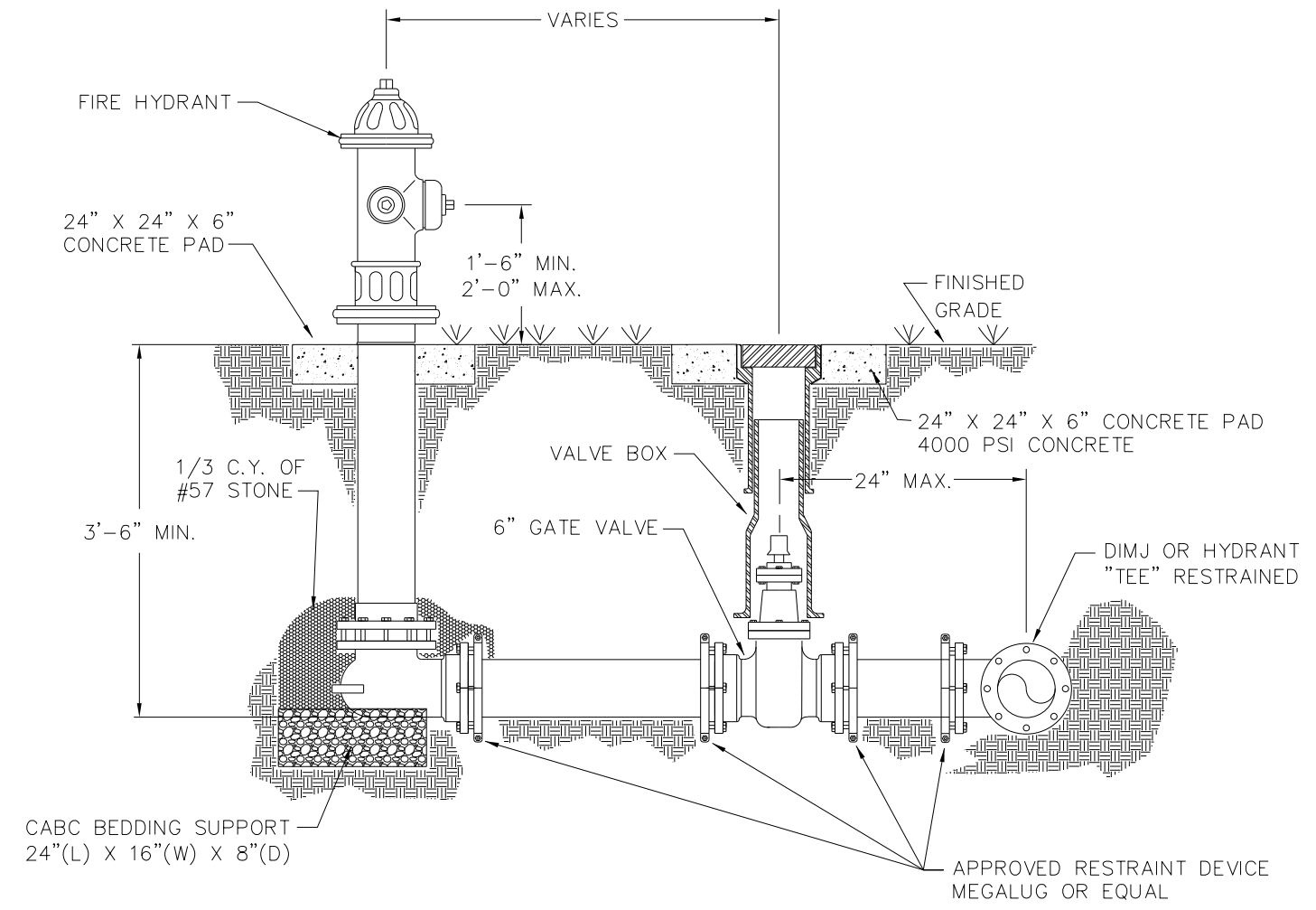


- GENERAL NOTES:**
- WHERE SPRINKLER SYSTEMS ARE USED, A FIRE DEPARTMENT CONNECTION SHALL BE PROVIDED AS APPROVED BY FIRE OFFICIAL. CONNECTION LOCATION(S) MUST BE APPROVED BY FIRE OFFICIAL.
  - AMR ASSEMBLIES ARE REQUIRED FOR THE METER.
  - A PRESSURE REDUCING VALVE (PRV) MUST BE INSTALLED BEFORE THE BACKFLOW PREVENTER. IF THE AVERAGE SYSTEM PRESSURE EXCEEDS 175 PSI PRV SIZE SHALL MATCH LINE SIZE.
  - IN BUILDING INSTALLATION WILL "ONLY" BE ALLOWED WHERE EXISTING SITE CONDITIONS MAKE IT UNFEASIBLE TO COMPLY WITH CHART BELOW. APPROVAL WILL BE GRANTED ON A CASE BY CASE BASIS AND WILL REQUIRE THE EXECUTION OF AN ESTOPPEL CERTIFICATE BY THE OWNER/DEVELOPER.
  - ALL NON-METERED FIRE SERVICE MAINS SHALL HAVE A DETECTOR METER WITH A REMOTE READING DEVICE INSTALLED.
  - THERE SHALL BE A MINIMUM OF 12" SEPARATION OR FREE CLEARANCE BETWEEN THE SIDES AND BOTTOM OF THE ENCLOSURE/VAULT AND BACKFLOW ASSEMBLY.

FIRE LINE SIZE	INSIDE PIT DIMENSIONS			ACCESS DOOR SIZE
	LENGTH	WIDTH	DEPTH	
6 INCH	VARIES			DOUBLE LEAF 4'-0" X 4'-0"
8 INCH	SIZE VAULT SO THAT TOP IS A MINIMUM 6"-6" FROM THE BOTTOM AND ALSO TO PROVIDE A MINIMUM 12" OF CLEARANCE FROM BOTTOM AND SIDES			DOUBLE LEAF 4'-0" X 4'-0"
10 INCH				DOUBLE LEAF 4'-0" X 6'-0"



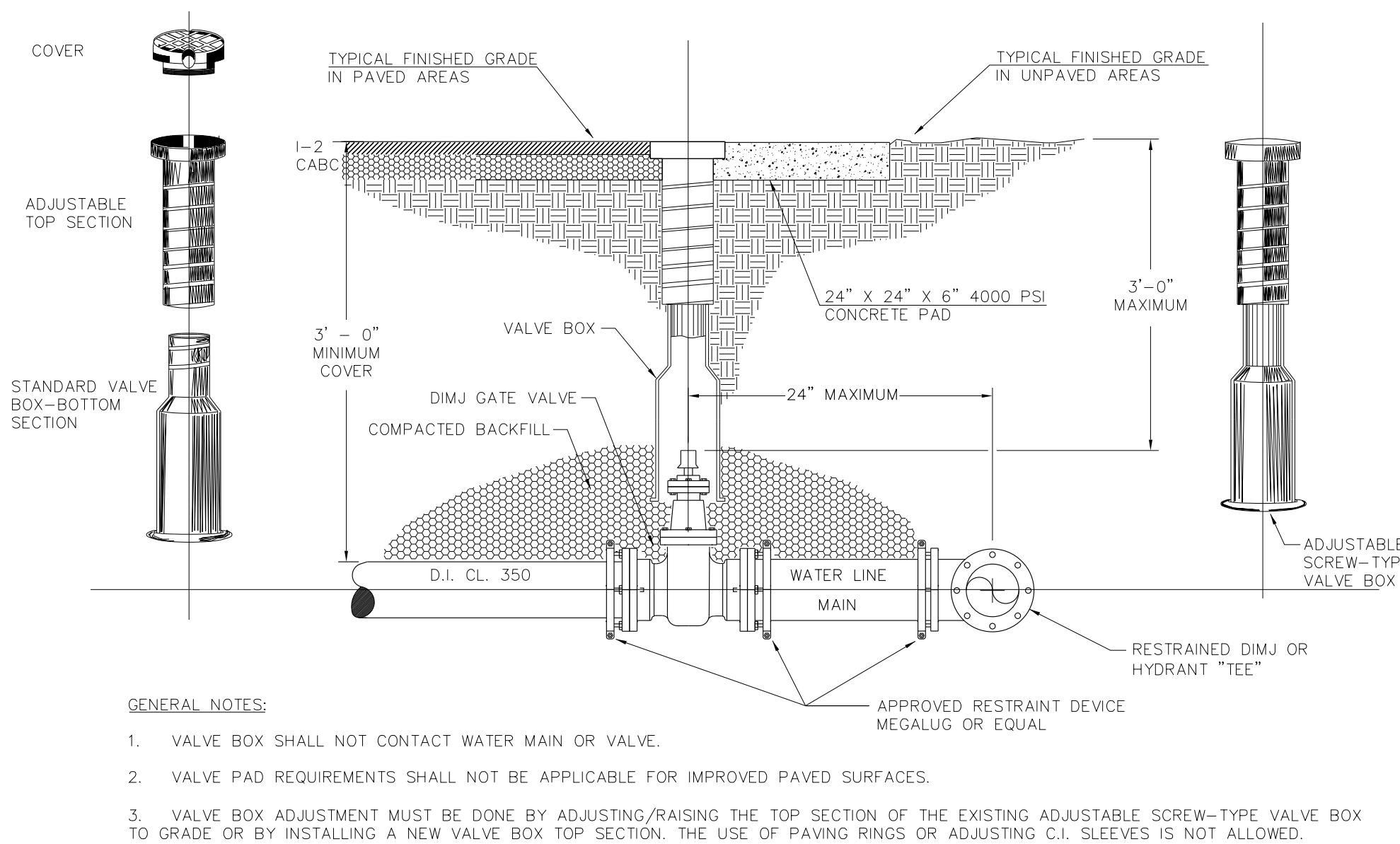
GENERAL INSTALLATION REQUIREMENTS					
DEGREE OF HAZARD	TYPE OF SERVICE	TYPE OF BACKFLOW PREVENTION DEVICE	SIZE OF DEVICE	LOCATION REQUIREMENTS	INSTALLATION REQUIREMENTS
MODERATE	DOMESTIC	DOUBLE CHECK ASSEMBLY	5/8" TO 2"	WITHIN 15 FEET OF THE WATER METER	BELOW GROUND IN A LARGE METER BOX
MODERATE	DOMESTIC	DOUBLE CHECK ASSEMBLY	2 1/2" & ABOVE	WITHIN 15 FEET OF THE WATER METER	BELOW GROUND IN A PRECAST DRAINABLE PIT
MODERATE	FIRE (METERED) NO FDC	DOUBLE CHECK ASSEMBLY	2" & ABOVE	WITHIN 15 FEET OF THE WATER METER	BELOW GROUND IN A PRECAST DRAINABLE PIT



**FIRE HYDRANT INSTALLATION**  
NOT TO SCALE  
(CITY OF ASHEVILLE - STD. NO. W.16 REVISED 6/2015)

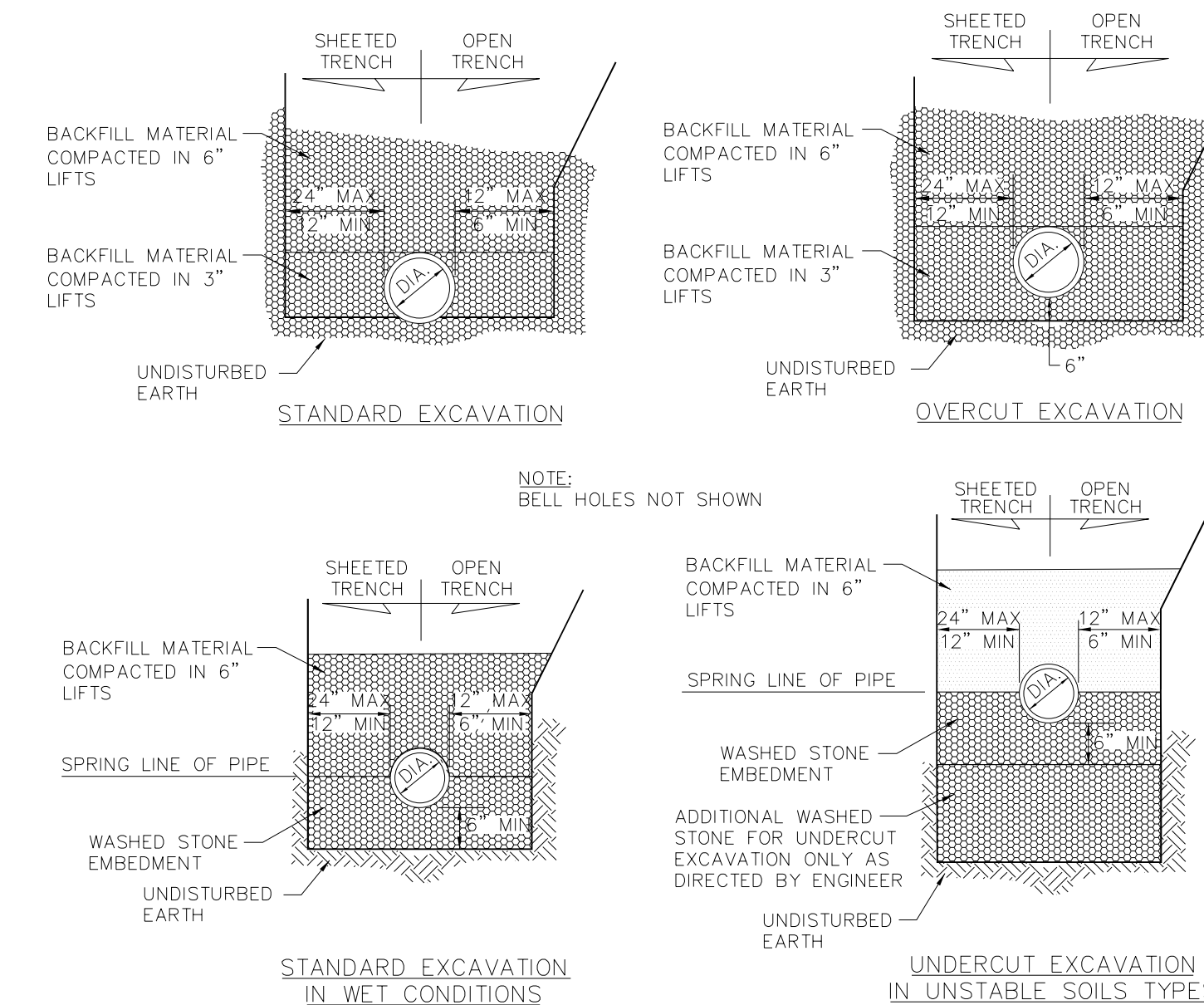
NOTE: CROSS-CONNECTION CONTROL PROTECTION DEVICES ARE REQUIRED BASED ON DEGREE OF HEALTH HAZARD AS LISTED IN APENDIX-B OF THE RULES GOVERNING PUBLIC WATER SYSTEMS IN NORTH CAROLINA. THESE GUIDELINES ARE THE MINIMUM REQUIREMENTS. THEY SHALL BE INSTALLED AND TESTED (BOTH INITIAL AND PERIODIC TESTING THEREAFTER) IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS OR THE LOCAL CROSS-CONNECTION CONTROL PROGRAM, WHICHEVER IS MORE STRINGENT.

**BELOW GROUND BACKFLOW/ENCLOSURE**  
NOT TO SCALE  
(CITY OF ASHEVILLE - STD. NO. W.09 REVISED 6/2015)



- GENERAL NOTES:**
- VALVE BOX SHALL NOT CONTACT WATER MAIN OR VALVE.
  - VALVE PAD REQUIREMENTS SHALL NOT BE APPLICABLE FOR IMPROVED PAVED SURFACES.
  - VALVE BOX ADJUSTMENT MUST BE DONE BY ADJUSTING/RAISING THE TOP SECTION OF THE EXISTING ADJUSTABLE SCREW-TYPE VALVE BOX TO GRADE OR BY INSTALLING A NEW VALVE BOX TOP SECTION. THE USE OF PAVING RINGS OR ADJUSTING C.I. SLEEVES IS NOT ALLOWED.

**TYPICAL VALVE & VALVE BOX INSTALLATION/ADJUSTMENT**  
NOT TO SCALE  
(CITY OF ASHEVILLE - STD. NO. W.18 REVISED 6/2015)



- GENERAL NOTES:**
- CONSTRUCTION OF TRENCHES SHALL BE IN ACCORDANCE WITH THE LATEST OSHA REGULATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH ALL APPLICABLE REGULATIONS.
  - NO BOULDERS OR STONES IN EXCESS OF 4" IN SIZE SHALL BE USED AS PART OF THE INITIAL BACKFILL.
  - PIPE BEDDING MATERIAL SHALL BE # 57 WASHED STONE.
  - SELECT BACKFILL MATERIAL SHALL BE CLASS I OR II AS PER NCDOT STANDARD SPECIFICATIONS.

**TYPICAL TRENCH DETAIL**  
NOT TO SCALE  
(CITY OF ASHEVILLE - STD. NO. W.21 REVISED 6/2015)

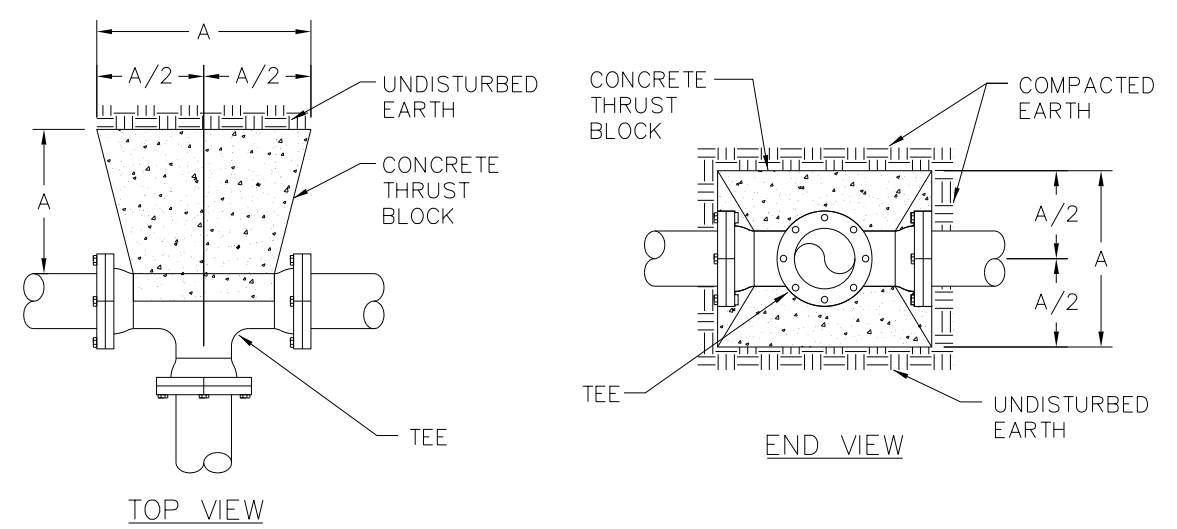


B.226/19

# CITY OF ASHEVILLE PROJECT SPECIFIC DETAILS

**BUNCOMBE COUNTY  
HENDERSON COUNTY**

PROJECT REFERENCE NO.	SHEET NO.
I-4400C	UC-3C
DESIGNED BY: DRF	
DRAWN BY: DRF	
CHECKED BY: LAM	
APPROVED BY: DWH	
REVISED: 8-20-19	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	UTILITY CONSTRUCTION PLANS ONLY
<b>UTILITY CONSTRUCTION</b> DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



RECOMMENDED MINIMUM RESTRAINED LENGTH REQUIRED EITHER SIDE OF FITTING (FEET)

FITTING TYPE	SIZE	WORKING PRESSURE (PSI)			
		125	150	175	200
HORIZ. 11 1/4 DEG.	6"	4	4	5	6
	8"	5	6	7	8
	10"	6	7	8	9
HORIZ. 22 1/2 DEG.	6"	7	9	10	12
	8"	10	12	14	16
	10"	12	14	17	20
REDUCER	8"x6"	14	17	20	23
	10"x8"	14	17	20	23
	12"x10"	14	17	20	23
HORIZ. 45 DEG.	6"	16	20	24	28
	8"	20	24	28	32
	10"	24	28	32	36
DEAD END	6"	26	31	36	40
	8"	33	39	45	51
	10"	40	47	54	61
TEE	6"	26	31	36	40
	8"	33	39	45	51
	10"	40	47	54	61

GENERAL NOTES:

- RESTRAINED JOINTS BY AN APPROVED PIPE MANUFACTURER ARE TO BE USED FOR ALL PUBLIC WATERLINES. THRUST BLOCKS ARE PERMITTED WHERE THE USE OF MECHANICAL RESTRAINT IS NOT FEASIBLE.
- DIMENSION TABLE GIVEN IS A GUIDE ONLY. THE ENGINEER SHALL BE RESPONSIBLE TO CALCULATE THRUST BLOCK DIMENSIONS AND/OR BASED ON RESTRAINED LENGTH ACTUAL SOIL AND OPERATING PRESSURE CONDITIONS.
- FITTING JOINTS SHALL BE KEPT FREE OF CONCRETE. A LAYER OF POLYETHYLENE PLASTIC SHALL BE PLACED BETWEEN THE FITTING AND THE CONCRETE.
- PRE-CAST THRUST BLOCKS ARE NOT ACCEPTABLE.
- CONCRETE SHALL HAVE 4000 P.S.I. COMPRESSIVE STRENGTH.

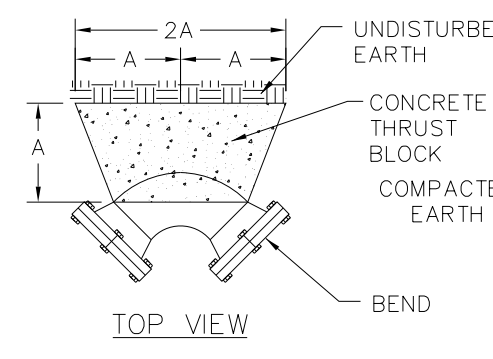


TABLE OF "A" DIMENSIONS (IN FEET)

BEND	PIPE SIZE (NOMINAL DIAMETER IN INCHES)				
	6"	8"	10"	12"	14"
90°	1.4	1.1	1.0	1.0	1.2
45°	1.9	1.5	1.5	1.5	1.6
22 1/2°	2.4	1.8	1.8	1.8	2.0
11 1/4°	2.8	2.1	2.0	2.0	2.4
TEE	3.8	2.8	2.5	2.5	2.0
	5.6	4.2	3.0	3.0	2.0

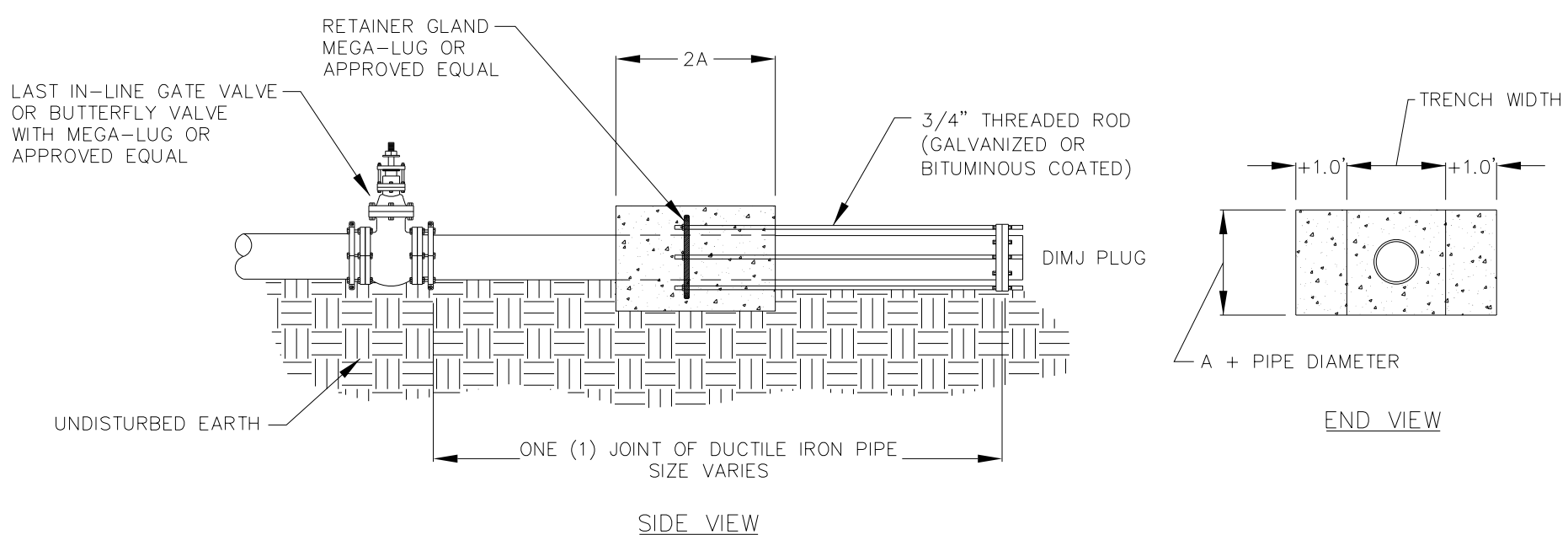
## THRUST BLOCK FOR FITTINGS & RESTRAINING REQUIREMENTS

NOT TO SCALE  
(CITY OF ASHEVILLE - STD. NO. W.22 REVISED 6/2015)

GENERAL NOTES:

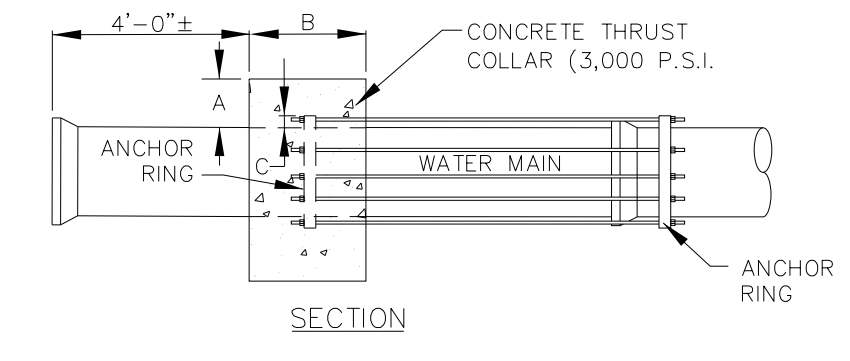
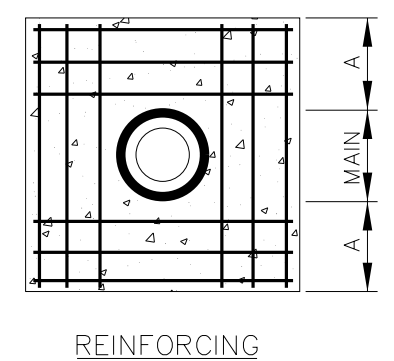
- ALL FITTINGS MUST BE RESTRAINED AS SPECIFIED IN THE STANDARD SPECIFICATIONS AND DETAILS MANUAL.
- DIMENSION TABLE GIVEN IS A GUIDE ONLY. ENGINEER SHALL BE RESPONSIBLE TO CALCULATE THRUST BLOCK DIMENSIONS BASED ON ACTUAL SOIL AND OPERATING.
- FITTING JOINTS SHALL BE KEPT FREE OF CONCRETE. A LAYER OF POLYETHYLENE PLASTIC SHALL BE PLACED BETWEEN THE FITTING AND THE CONCRETE.
- CONTRACTOR HAS THE OPTION TO RESTRAIN PIPE JOINTS IN LIEU OF CONCRETE DEADMAN & RODDING.

"A" DIMEN. IN FEET	PIPE SIZE (NOMINAL DIAMETER IN INCHES)				
	6"	8"	10"	12"	16"
1.2	1.6	2.0	2.4	2.8	4.5

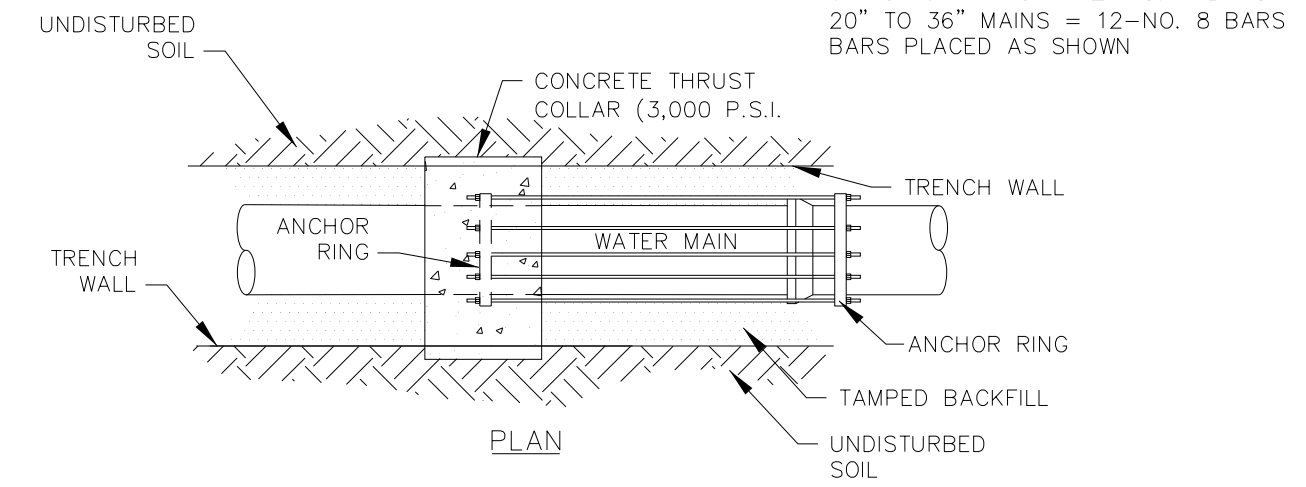


## DEADMAN/END OF LINE PLUG

NOT TO SCALE  
(CITY OF ASHEVILLE - STD. NO. W.23 REVISED 6/2015)



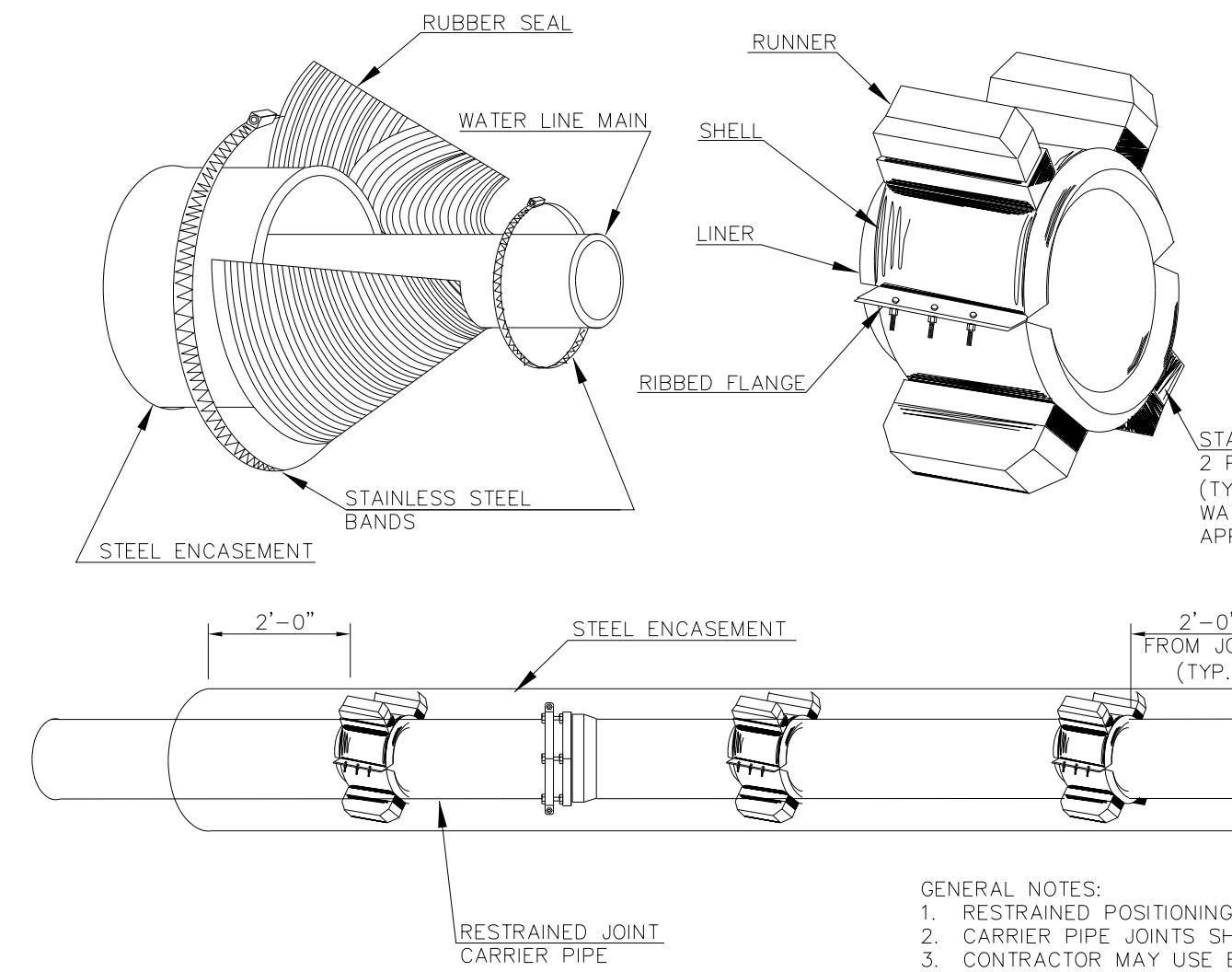
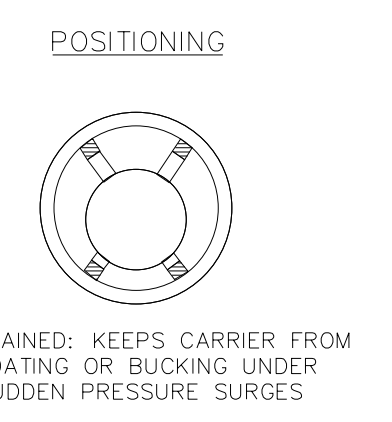
NOTE:  
6" TO 16" MAINS = 12-NO. 7 BARS  
20" TO 36" MAINS = 12-NO. 8 BARS  
BARS PLACED AS SHOWN



PIPE DIAMETER	SCHEDULE			RINGS REQUIRED
	CONCRETE THRUST COLLAR	ANCHOR COLLAR	ANCHOR RINGS	
6", 8", 12"	1'-0"	1'-0"	2"	ONE
16"	1'-4"	1'-0"	2"	ONE
20"	1'-4"	1'-0"	3"	ONE
24"	1'-4"	1'-0"	3"	TWO
30"	1'-4"	1'-2"	4"	TWO
36"	1'-4"	1'-4"	4"	TWO

## THRUST COLLAR INSTALLATION

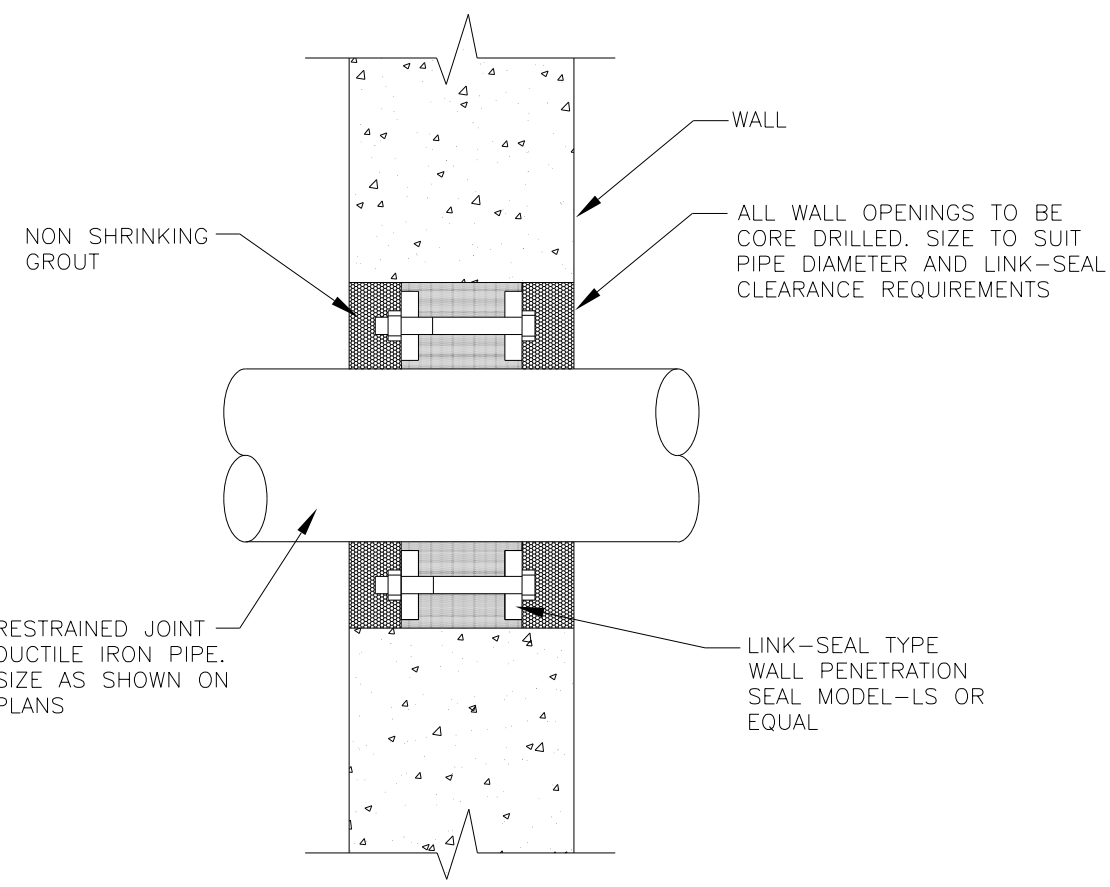
NOT TO SCALE



- GENERAL NOTES:
- RESTRAINED POSITIONING TO BE USED AT ALL TIMES.
  - CARRIER PIPE JOINTS SHALL BE RESTRAINED.
  - CONTRACTOR MAY USE BRICK MASONRY AND NON-SHRINK GROUT TO SEAL ENCASEMENT ENDS IN LIEU OF RUBBER SEAL. A 3/4" WEEP-HOLE MUST BE PROVIDED AT LOW POINT OF CASING.

## CARRIER PIPE IN STEEL ENCASEMENT

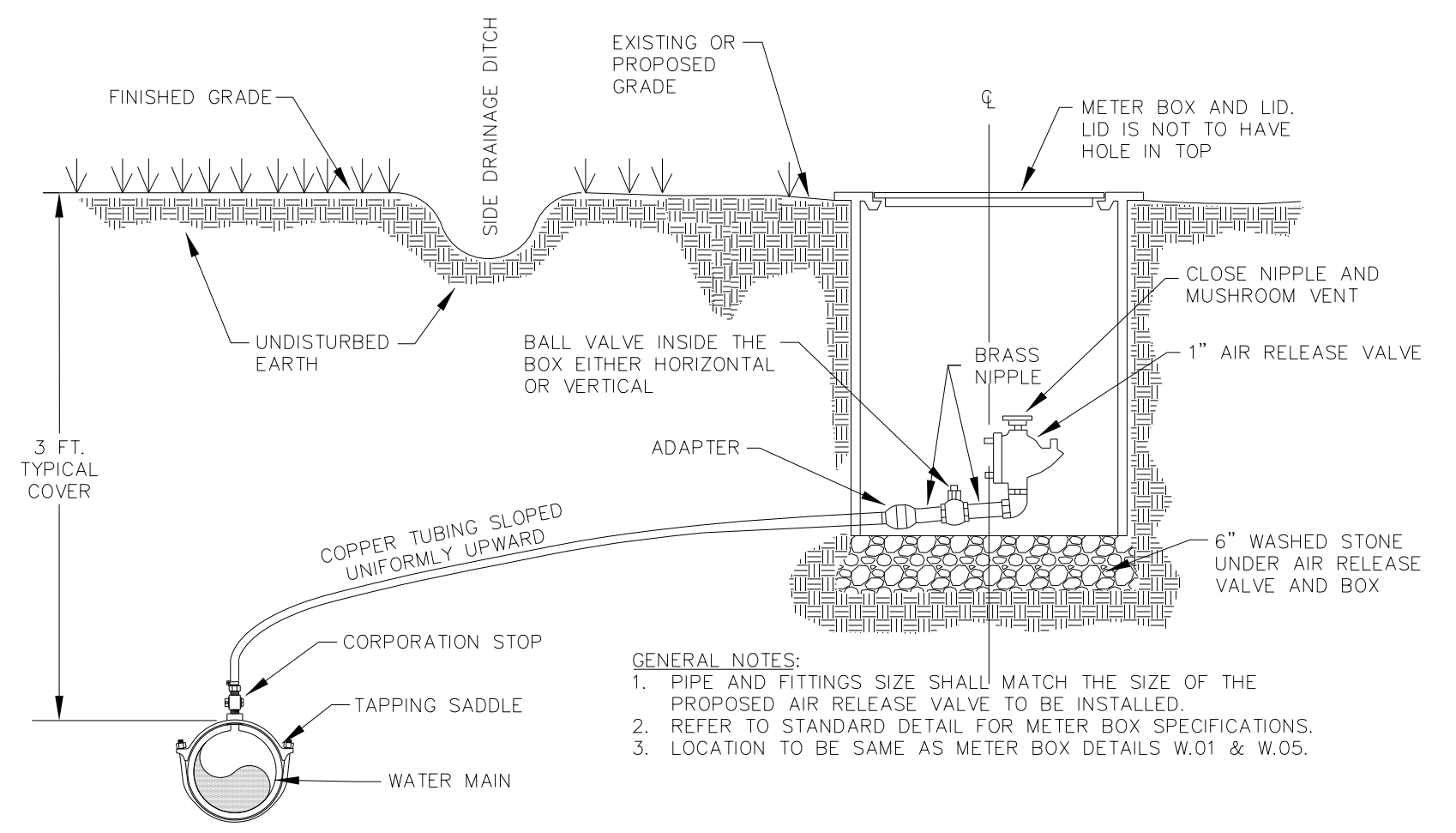
NOT TO SCALE  
(CITY OF ASHEVILLE - STD. NO. W.26 REVISED 6/2015)



NOTE:  
USE TWO LINK SEALS PER PENETRATION FOR PIPES LARGER THAN 12" DIA.

## INSTALLATION OF PIPES IN EXISTING WALLS

NOT TO SCALE



- GENERAL NOTES:
- PIPE AND FITTINGS SIZE SHALL MATCH THE SIZE OF THE PROPOSED AIR RELEASE VALVE TO BE INSTALLED.
  - REFER TO STANDARD DETAIL FOR METER BOX SPECIFICATIONS.
  - LOCATION TO BE SAME AS METER BOX DETAILS W.01 & W.05.

## STANDARD AIR RELEASE VALVE INSTALLATION

NOT TO SCALE  
(CITY OF ASHEVILLE - STD. NO. W.24 REVISED 6/2015)

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Boone, NC 828-355-9933  
 Tri-Cities, TN 423-467-8400  
 Knoxville, TN 865-546-5800  
 Spartanburg, SC 864-534-0755  
 Asheville, NC 828-253-2766  
 Charlotte, NC 704-397-0488  
 Raleigh, NC 919-977-9455  
 Winston-Salem, NC 770-627-3509  
 Chesapeake, VA 804-974-6600  
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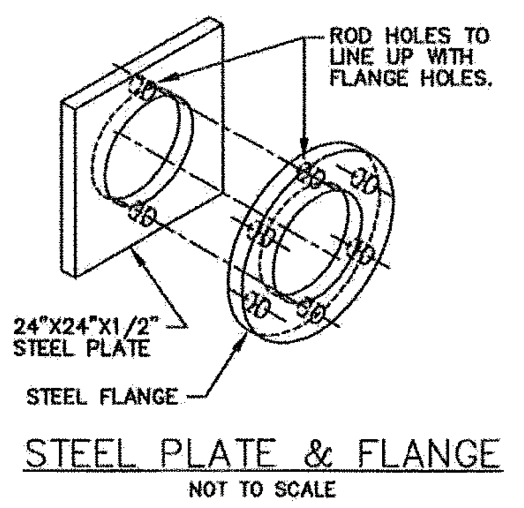
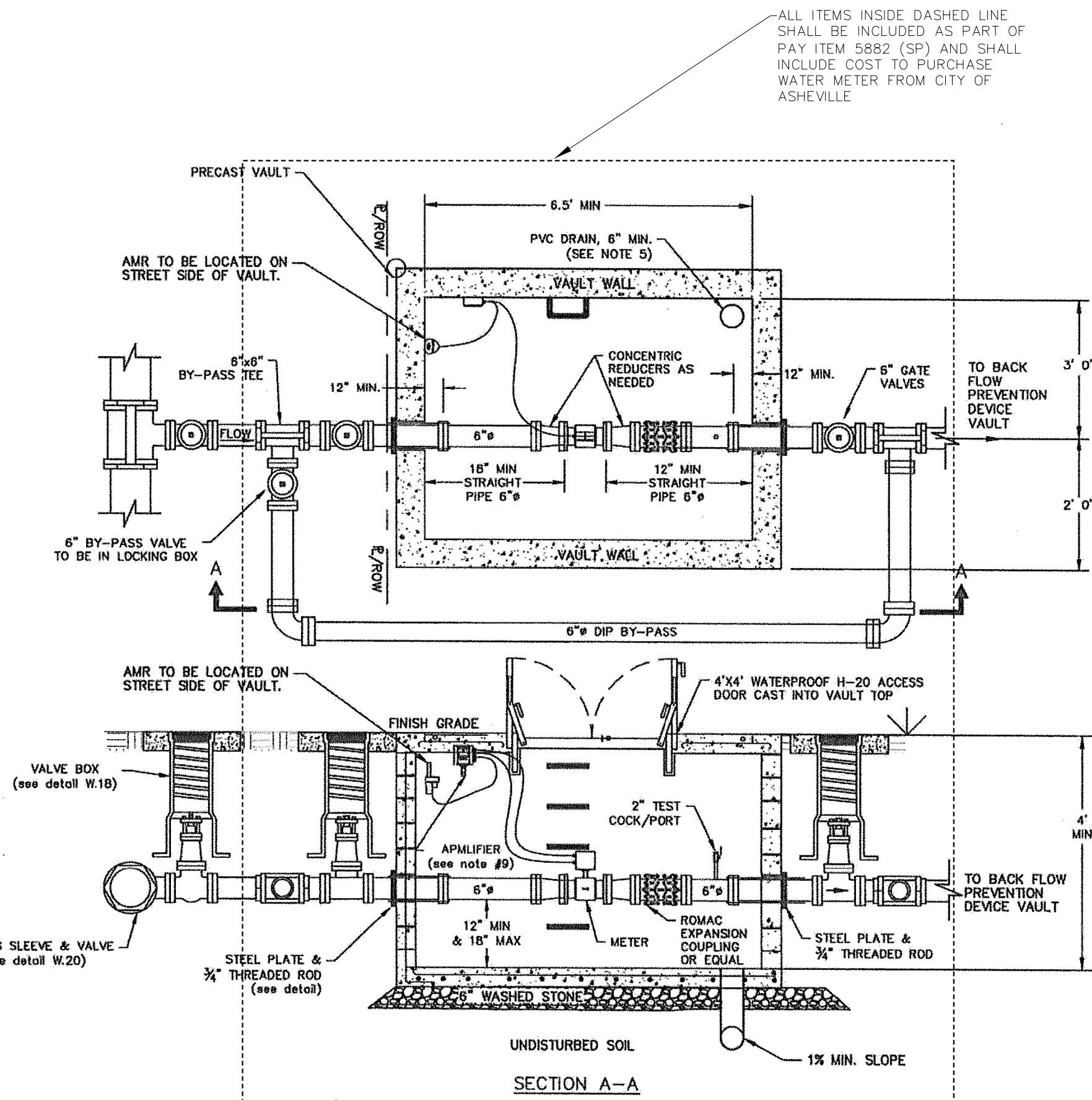


# CITY OF ASHEVILLE PROJECT SPECIFIC DETAILS

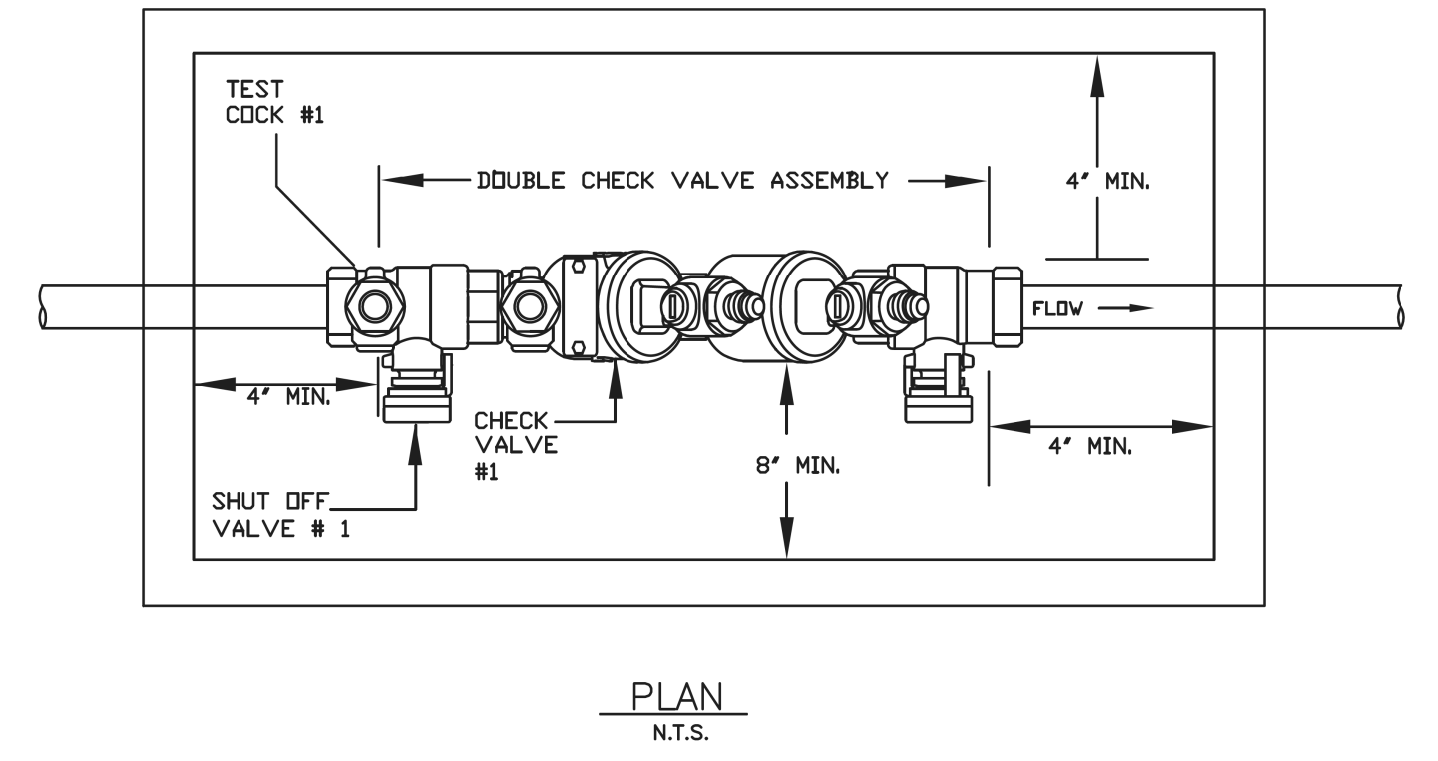
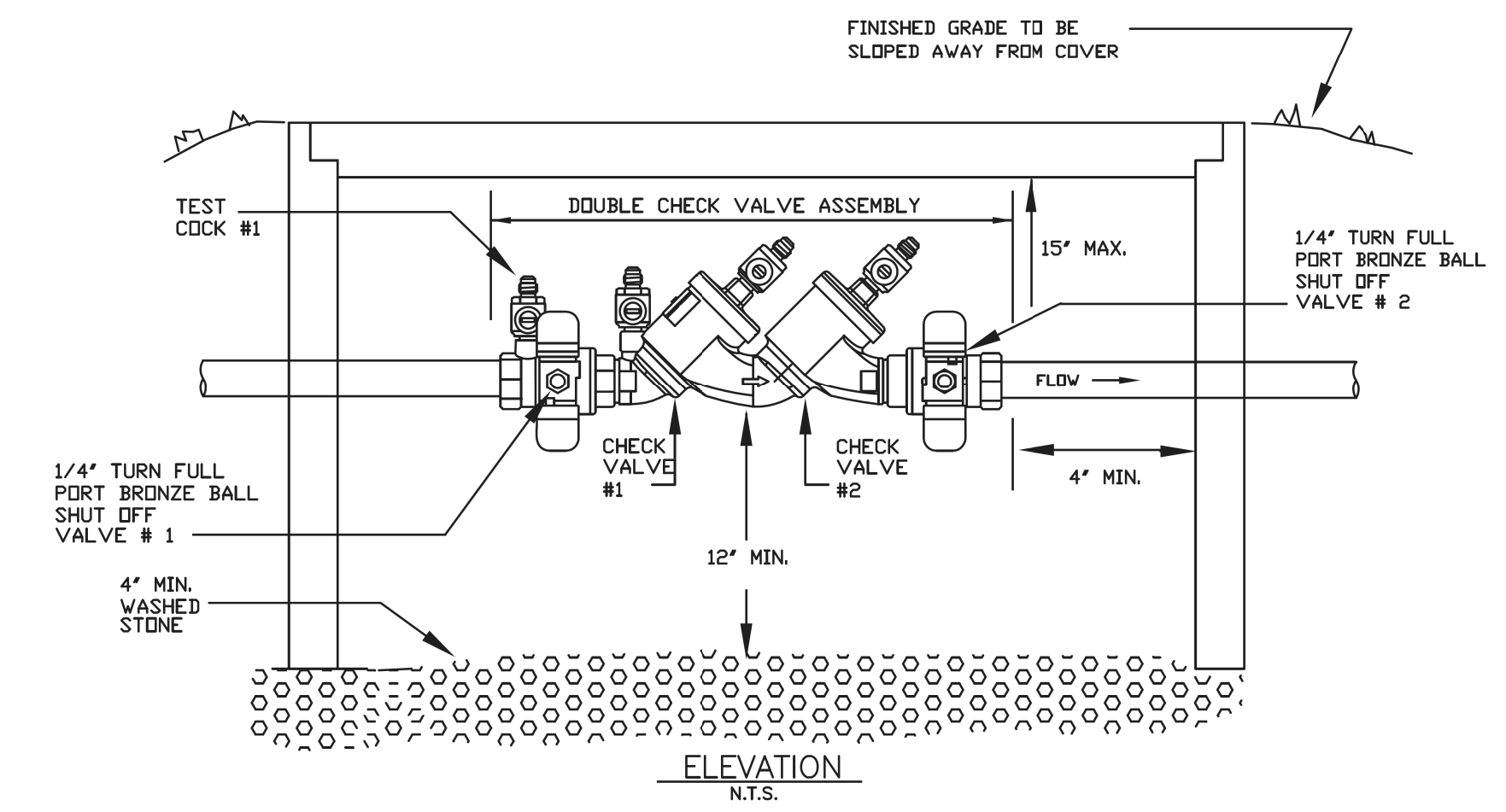
**BUNCOMBE COUNTY  
HENDERSON COUNTY**

PROJECT REFERENCE NO. <b>I-4400C</b>	SHEET NO. <b>UC-3D</b>
DESIGNED BY: <b>DRF</b>	
DRAWN BY: <b>DRF</b>	
CHECKED BY: <b>LAM</b>	
APPROVED BY: <b>DWH</b>	
REVISED: <b>8-20-19</b>	
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>	

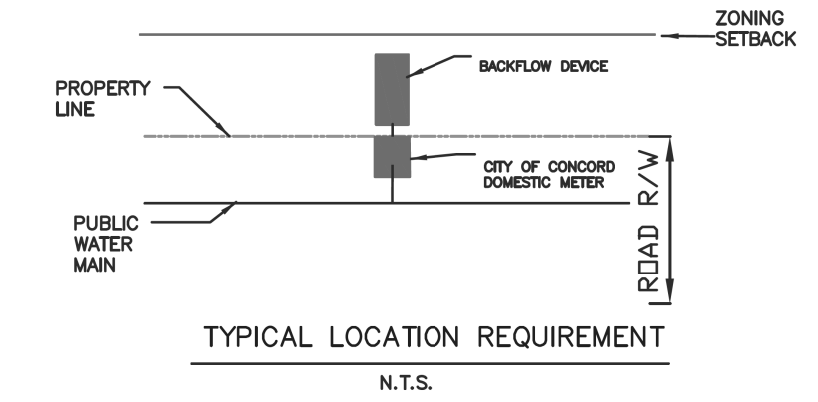
- GENERAL NOTES:**
- METER ASSEMBLY TO BE ELECTROMAGNETIC FLOW METER WITH DUCTILE IRON FLANGED PIPE
  - METER DEVICE SHALL BE PURCHASED THRU THE CITY OF ASHEVILLE
  - CONCRETE VAULTS SHALL BE PRECAST WITH A MIN. 4000 PSI CONCRETE
  - ACCESS DOOR SHALL BE A WATERPROOF 48" X 48" STEEL/ALUMINUM DOUBLE LEAF DOOR REINFORCED FOR AASHTO H-20 LOADING IN AREAS SUBJECT TO VEHICULAR TRAFFIC
  - DRAIN TO DAYLIGHT OR DRAINAGE STRUCTURE WITH FLAPPER VALVE AT 1% MINIMUM SLOPE. PROVIDE 6" MINIMUM ABOVE BOTTOM OF STRUCTURE TO DISCHARGE INVERT.
  - TO ENSURE POSITIVE DRAINAGE, THE VAULT SHOULD BE TIED INTO THE EXISTING STORM DRAINAGE SYSTEM WHEN POSSIBLE OR DRAINED TO DAYLIGHT.
  - ALL FITTINGS AND APPURTENANCES OUTSIDE THE VAULT SHALL BE PROPERLY RESTRAINED.
  - ALL PIPING INSIDE THE VAULT SHALL BE 6" FLANGED DUCTILE IRON PIPE
  - M-5000 AMPLIFIER THAT IS SUPPLIED IN A (NEMA 4) BOX TO BE INSTALLED WITHIN A (NEMA 6P) ENCLOSURE PER MANUFACTURERS SPECIFICATION FOR MOISTURE PROTECTION.



**STANDARD 4" ELECTROMAGNETIC  
FLOW METER INSTALLATION AND VAULT**  
NOT TO SCALE  
(CITY OF ASHEVILLE - STD. NO. W.04 REVISED 2/2015)



- NOTES:**
- DOUBLE CHECK VALVE ASSEMBLY MUST CONFORM TO CITY OF CONCORD SPECIFICATIONS AND BE AN APPROVED MODEL.
  - CITY OF CONCORD APPROVED DCVA INCLUDES SHUT OFF VALVES #1 AND #2 AS PART OF THE UNIT. NO SUBSTITUTIONS SHALL BE PERMITTED. 4" OF CLEARANCE SHALL BE PROVIDED WITH VALVE OPEN.
  - DCVA SHALL BE SUPPORTED WITH ADEQUATE SUPPORT PEDESTAL(S) AS NEEDED.
  - VAULT, DOORS OR COVERS AND SUPPORT ASSEMBLY SHALL BE DESIGNED BY OWNER AS REQUIRED. VAULT DOORS MUST FLUSH MOUNT AND ACCOMMODATE BACKFLOW ASSEMBLY REMOVAL AND VALVE ACCESS.
  - TEST COCK #1 SHALL BE UPSTREAM OF SHUT OFF VALVE #1 AND IS PART OF THE ASSEMBLY. ALL TEST COCKS INSTALLED UPRIGHT AND IN THE HORIZONTAL POSITION.



**STANDARD DETAIL BACKFLOW PREVENTION  
BELOW GROUND 1" DCV ASSEMBLY**  
NOT TO SCALE

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

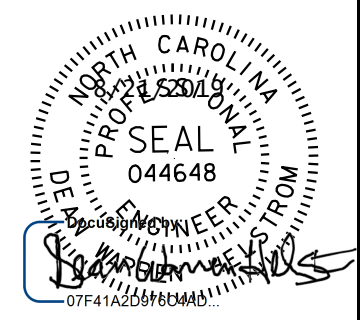
Asheville  
North Carolina  
828-253-2796

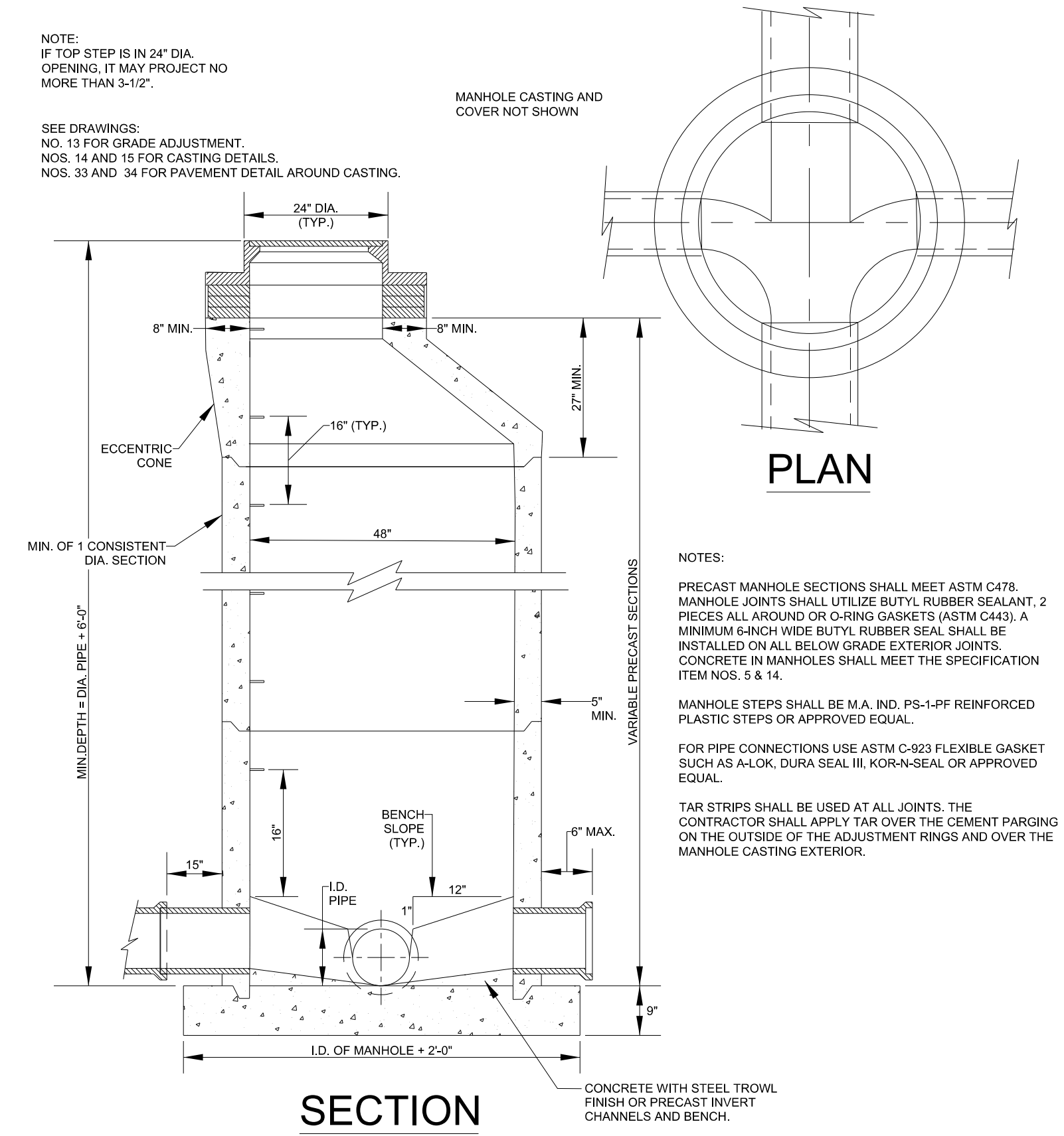
Boone, NC 828-355-9333  
Tri-Cities, TN 423-467-8400  
Knoxville, TN 865-546-5800  
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Charleston, SC 843-574-6650  
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Chapel Hill, NC 704-357-0488  
Raleigh, NC 919-771-9455  
Fayetteville, GA 770-627-3509

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# PROJECT SPECIFIC DETAILS

**BUNCOMBE COUNTY  
HENDERSON COUNTY**

PROJECT REFERENCE NO. <b>I-4400C</b>	SHEET NO. <b>UC-3E</b>
DESIGNED BY: <b>DRF</b>	
DRAWN BY: <b>DRF</b>	
CHECKED BY: <b>LAM</b>	
APPROVED BY: <b>DWH</b>	
REVISED: <b>8-20-19</b>	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY
<b>UTILITY CONSTRUCTION</b>	
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NOTE:  
IF TOP STEP IS IN 24" DIA. OPENING, IT MAY PROJECT NO MORE THAN 3-1/2".

SEE DRAWINGS:  
NO. 13 FOR GRADE ADJUSTMENT,  
NOS. 14 AND 15 FOR CASTING DETAILS,  
NOS. 33 AND 34 FOR PAVEMENT DETAIL AROUND CASTING.

NOTES:

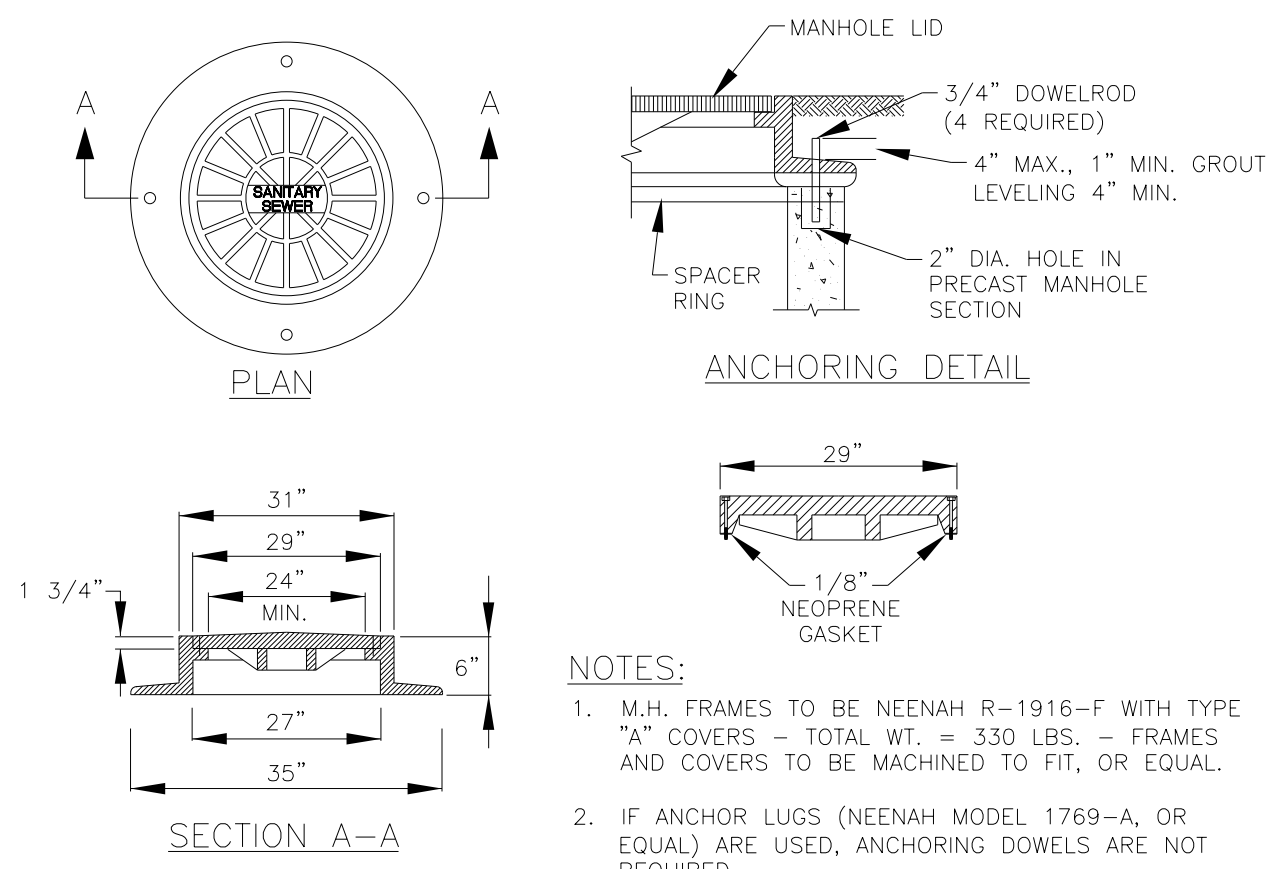
PRECAST MANHOLE SECTIONS SHALL MEET ASTM C478. MANHOLE JOINTS SHALL UTILIZE BUTYL RUBBER SEALANT, 2 PIECES ALL AROUND OR O-RING GASKETS (ASTM C443). A MINIMUM 6-INCH WIDE BUTYL RUBBER SEAL SHALL BE INSTALLED ON ALL BELOW GRADE EXTERIOR JOINTS. CONCRETE IN MANHOLES SHALL MEET THE SPECIFICATION ITEM NOS. 5 & 14.

MANHOLE STEPS SHALL BE M.A. IND. PS-1-PP REINFORCED PLASTIC STEPS OR APPROVED EQUAL.

FOR PIPE CONNECTIONS USE ASTM C-923 FLEXIBLE GASKET SUCH AS A-LOK, DURA SEAL III, KOR-N-SEAL OR APPROVED EQUAL.

TAR STRIPS SHALL BE USED AT ALL JOINTS. THE CONTRACTOR SHALL APPLY TAR OVER THE CEMENT PARING ON THE OUTSIDE OF THE ADJUSTMENT RINGS AND OVER THE MANHOLE CASTING EXTERIOR.

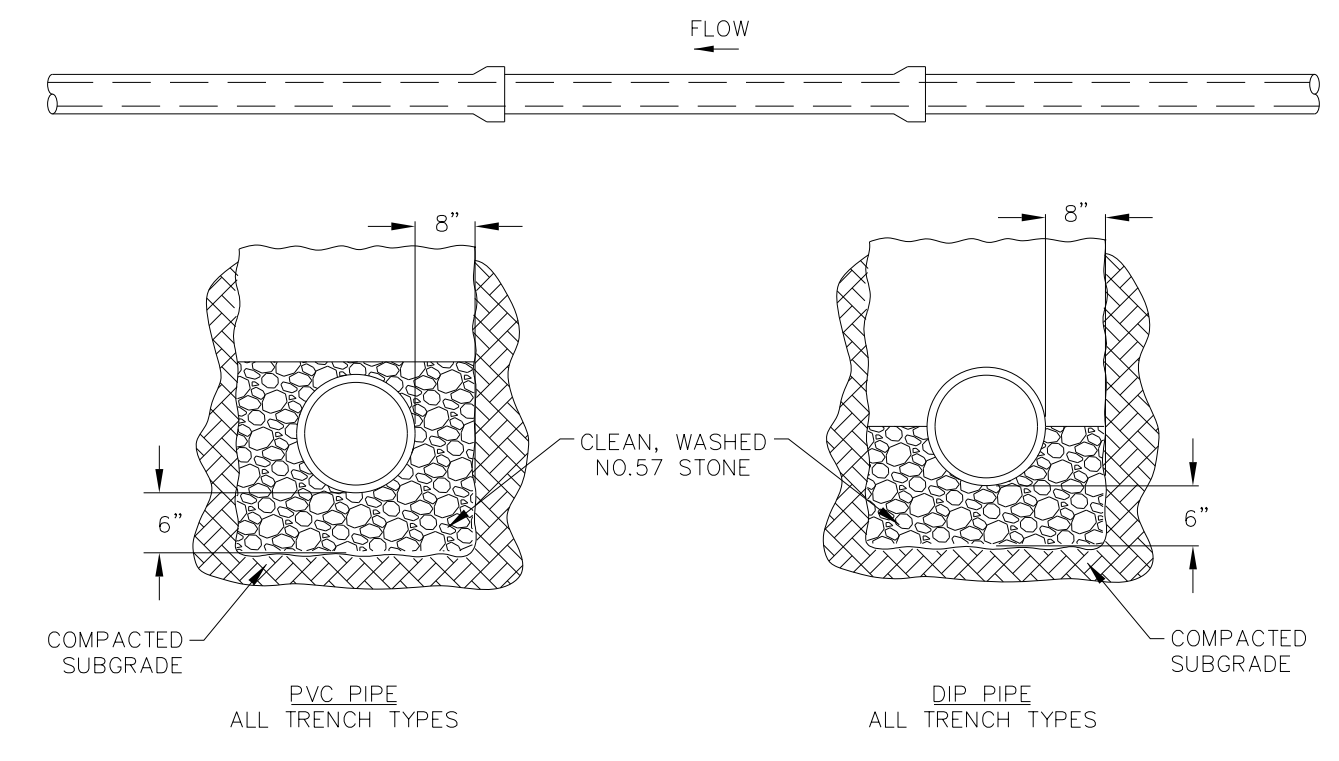
**PRECAST MANHOLE SEWER 8" - 21"**  
NOT TO SCALE



NOTES:

- M.H. FRAMES TO BE NEENAH R-1916-F WITH TYPE "A" COVERS - TOTAL WT. = 330 LBS. - FRAMES AND COVERS TO BE MACHINED TO FIT, OR EQUAL.
- IF ANCHOR LUGS (NEENAH MODEL 1769-A, OR EQUAL) ARE USED, ANCHORING DOWELS ARE NOT REQUIRED.

**TYPICAL WATERTIGHT MANHOLE FRAME AND LID**  
NOT TO SCALE



**GRAVITY SEWER EMBEDMENT DETAIL**  
NOT TO SCALE



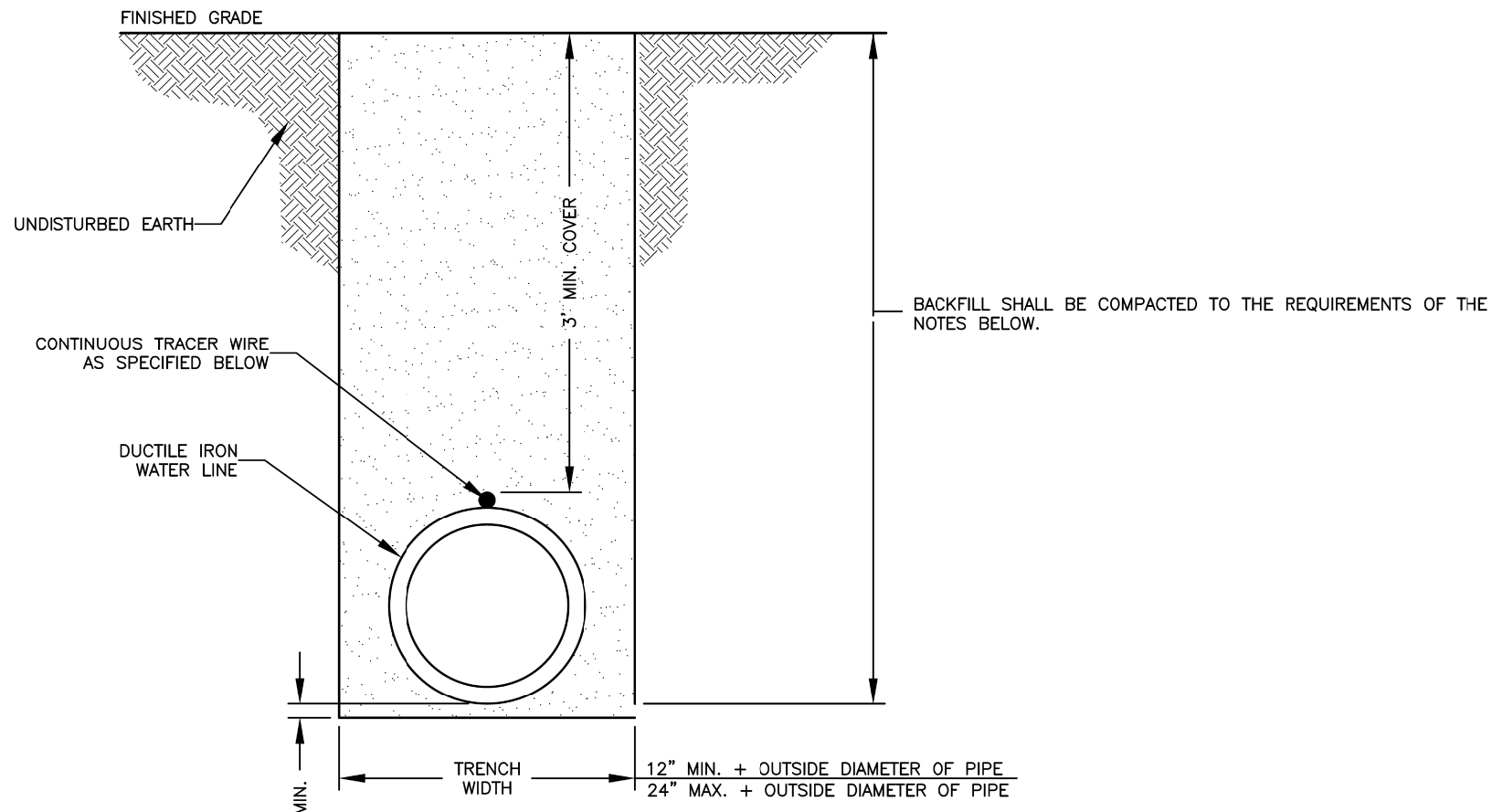
3/28/19

# CITY OF HENDERSONVILLE PROJECT SPECIFIC DETAILS

**BUNCOMBE COUNTY  
HENDERSON COUNTY**

PROJECT REFERENCE NO. <b>I-4400C</b>	SHEET NO. <b>UC-3F</b>
DESIGNED BY: <b>DRF</b>	
DRAWN BY: <b>DRF</b>	
CHECKED BY: <b>LAM</b>	
APPROVED BY: <b>DWH</b>	
REVISED: <b>8-20-19</b>	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SECTION PHONE: (919) 707-6690 FAX: (919) 250-4151	
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NOTES:

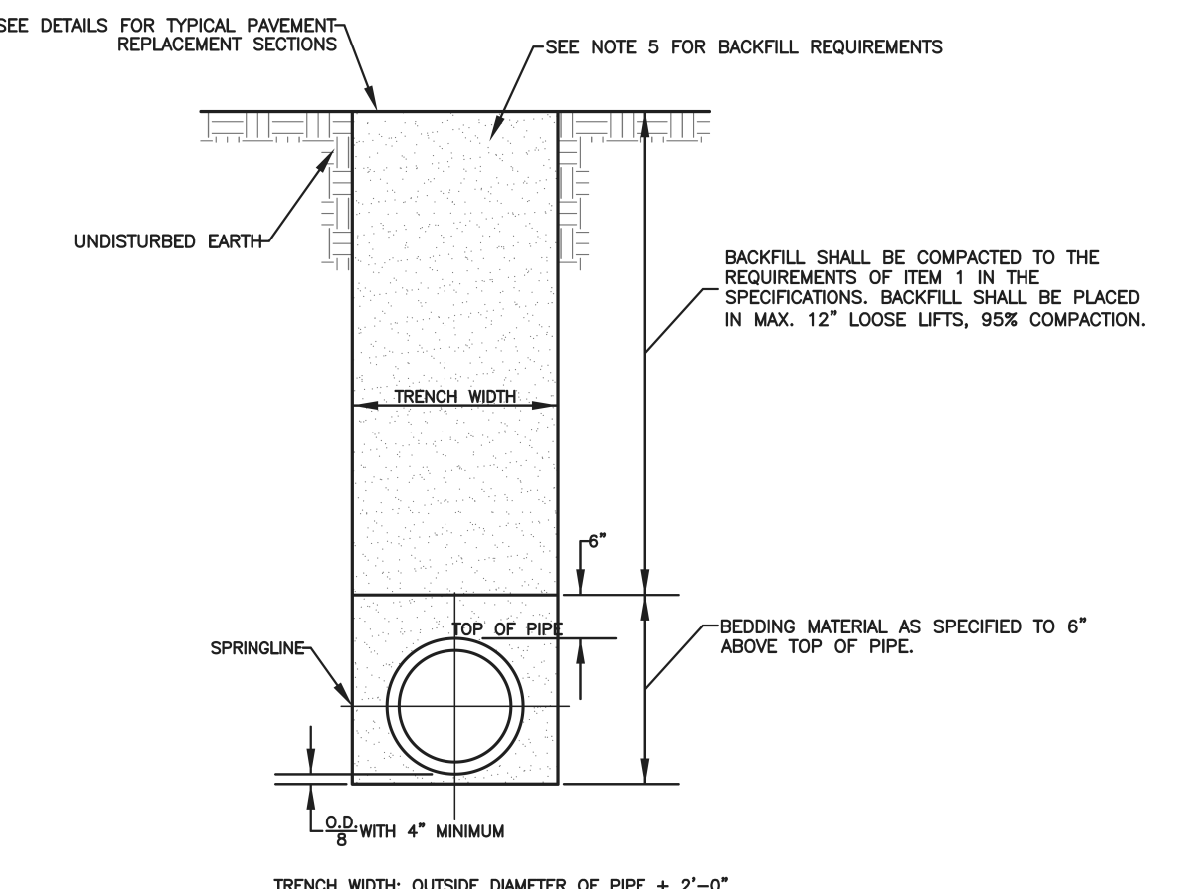
- TRENCHES EXCAVATED OUTSIDE EXISTING ROAD AND RAILWAY RIGHTS-OF-WAY SHALL BE BACKFILLED WITH COMMON BACKFILL MATERIAL CONSISTING OF EXCAVATED MATERIALS EXCEPT HIGHLY ORGANIC SILTS AND CLAYS AND TAPPED THOROUGHLY. FILL SHALL BE DEPOSITED IN SUCCESSIVE, UNIFORM, APPROXIMATELY HORIZONTAL LAYERS. MATERIAL 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 EXTRANEOUS MATERIAL AND PROPER DEWATERING, 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 18 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 HOPE 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 EQUIVALENT APPROVED BY ENGINEER, 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 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



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.
  - BEDDING CLASSIFICATION SHALL MEET OR EXCEED ASTM D2321 CLASS 1 BEDDING FOR FLEXIBLE PIPING, AND ASTM C12, CLASS B BEDDING FOR RIGID PIPING.
  - FORCE MAIN BEDDING SHALL BE SELECT NATURAL SAND WELL COMPACTED IN 6" LIFTS.
  - COMMON BACKFILL MATERIAL SHALL CONSIST OF EXCAVATED MATERIALS EXCEPT HIGHLY ORGANIC SILTS AND CLAYS. FILL SHALL BE DEPOSITED IN SUCCESSIVE, UNIFORM, APPROXIMATELY HORIZONTAL LAYERS NOT EXCEEDING TWELVE (12) INCHES IN THICKNESS FOR THE FILL WIDTH. MATERIAL SHALL BE FREE OF ROOTS, STONES, AND DEBRIS AND CAPABLE OF BEING COMPACTED TO 90% STANDARD PROCTOR. 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 EXTRANEOUS MATERIAL AND PROPER DEWATERING, 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 90% STANDARD PROCTOR.

## 2 WATER TRENCH CONSTRUCTION UNDER PAVEMENT

WD-1 NOT TO SCALE 04/04/18

### GENERAL NOTES:

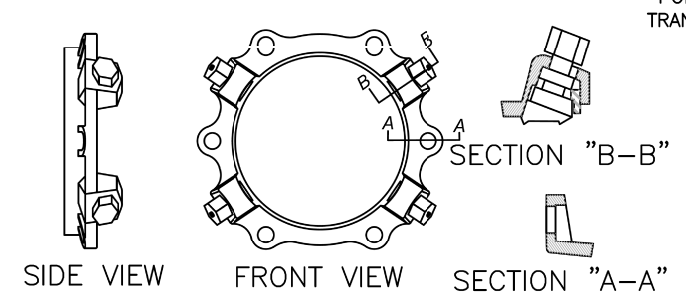
- WATER CONSTRUCTION ON THIS SITE IS AUTHORIZED BY PERMITS ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY (NCEQE) AND THE CITY OF HENDERSONVILLE. THE WORK IS SUBJECT TO INSPECTIONS AT ALL TIMES BY REPRESENTATIVES OF NCEQE, THE CITY OF HENDERSONVILLE, THE OWNER OR THE ENGINEER. THE PERMITS REQUIRE CERTIFICATION OF COMPLETION OF THE WATER SYSTEMS BY THE ENGINEER PRIOR TO ISSUANCE OF FINAL OPERATION APPROVAL.
- CONTRACTOR SHALL NOTIFY NC811 & APPROPRIATE UTILITIES AGENCIES PRIOR TO PERFORMING ANY WORK.
- 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.
- CONTRACTOR SHALL PROTECT EXISTING UTILITIES DURING CONSTRUCTION. REPAIRS SHALL BE MADE IN ACCORDANCE WITH APPLICABLE STANDARDS OF APPROPRIATE AGENCIES AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL CO-OPERATE AT ALL TIMES WITH THE UTILITY 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.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE TEMPORARY OR PERMANENT RELOCATION OF STRUCTURES AND UTILITIES INCLUDING BUT NOT LIMITED TO POLES, SIONS, FENCES, HYDRANTS, VALVES PIPING, CONDUITS AND DRAINS THAT INTERFERE WITH THE POSITIONING OF THE WORK AS SHOWN ON THE DRAWINGS.
- AT A MINIMUM, ALL PIPES & FITTINGS 12 INCHES OR LESS SHALL BE RATED CLASS 350PSI AND PIPE FITTINGS LARGER THAN 12 INCHES RATED CLASS 250 PSI.
- 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 UNIONS.
- PROVIDE ROCK CHECK DAMS IN ALL DITCH LINES WHERE DISTURBANCE OCCURS.
- 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.
- WHEN ABANDONING EXISTING METERS AND HYDRANTS, RESTORE AREAS TO SURROUNDING CONDITIONS.
- WHEN ABANDONING VALVES, REMOVE BOX, BACK FILL WITH DIRT, STONE OR FLOWABLE FILL COVER TO MATCH SURROUNDING CONDITIONS.
- INSTALL FERROUS PIPING FOR BOTH WATER AND SEWER WITHIN 10 FT. OF A CROSSING IF:
  - SEWER LINE CROSSES OVER WATER, OR
  - VERTICAL CLEARANCE BETWEEN WATER AND SEWER IS LESS THAN 18 INCHES.
- MAINTAIN 10 FEET HORIZONTAL SEPARATION BETWEEN SEWER AND WATER MAINS UNLESS LAID 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.
- MAINTAIN 12 INCHES VERTICAL SEPARATION BETWEEN STORM DRAIN AND WATER, OR INSTALL FERROUS MATERIAL WATER LINE WITHIN 10 FEET EACH SIDE OF CROSSING.
- 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 IN ADVANCE.
- EXACT LOCATIONS OF VALVES, METERS, BACKFLOW PREVENTION DEVICES AND SERVICE LINES, MUST BE APPROVED BY THE CITY OF HENDERSONVILLE.
- ALL WATER METERS WILL BE SET BY CITY OF HENDERSONVILLE STAFF UNLESS THE CONTRACTOR/ENGINEER IS GRANTED WRITTEN PERMISSION BY THE COH CITY MANAGER.
- THE CONTRACTOR WILL PROVIDE THE CITY NOTICE OF 10 WORKING DAYS PRIOR TO THE DATE OF METER INSTALLATION.
- THE CONTRACTOR WILL PROVIDE A LICENSED PLUMBER DURING THE METER INSTALLATION TO VERIFY LINE SERVICES IN ALL MULTI-METER BOXES.
- MATERIALS AND INSTALLATION FOR WATER LINES SHALL CONFORM TO THE CITY OF HENDERSONVILLE STANDARD AND REQUIREMENTS.

### 4 WATER DETAILS GENERAL NOTES

WD-1 NOT TO SCALE 04/04/18

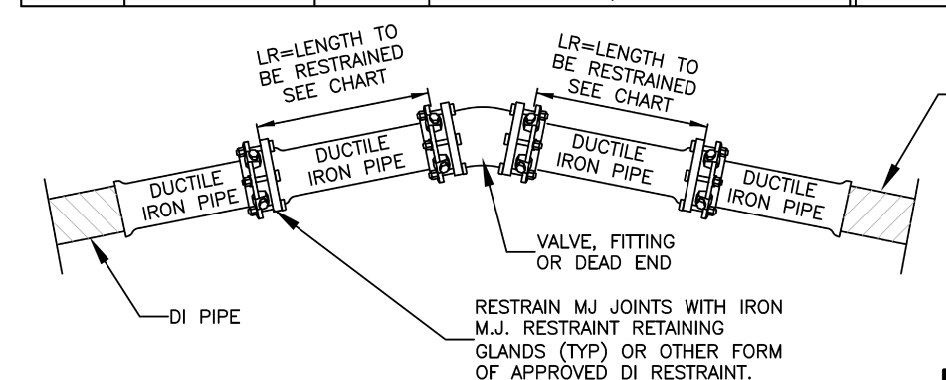
#### DISCLAIMER:

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 (ERC) OF EACH 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.



PIPE SIZE	QUANTITY	RATING
6"	3	350
8"	4	350
12"	8	350

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'

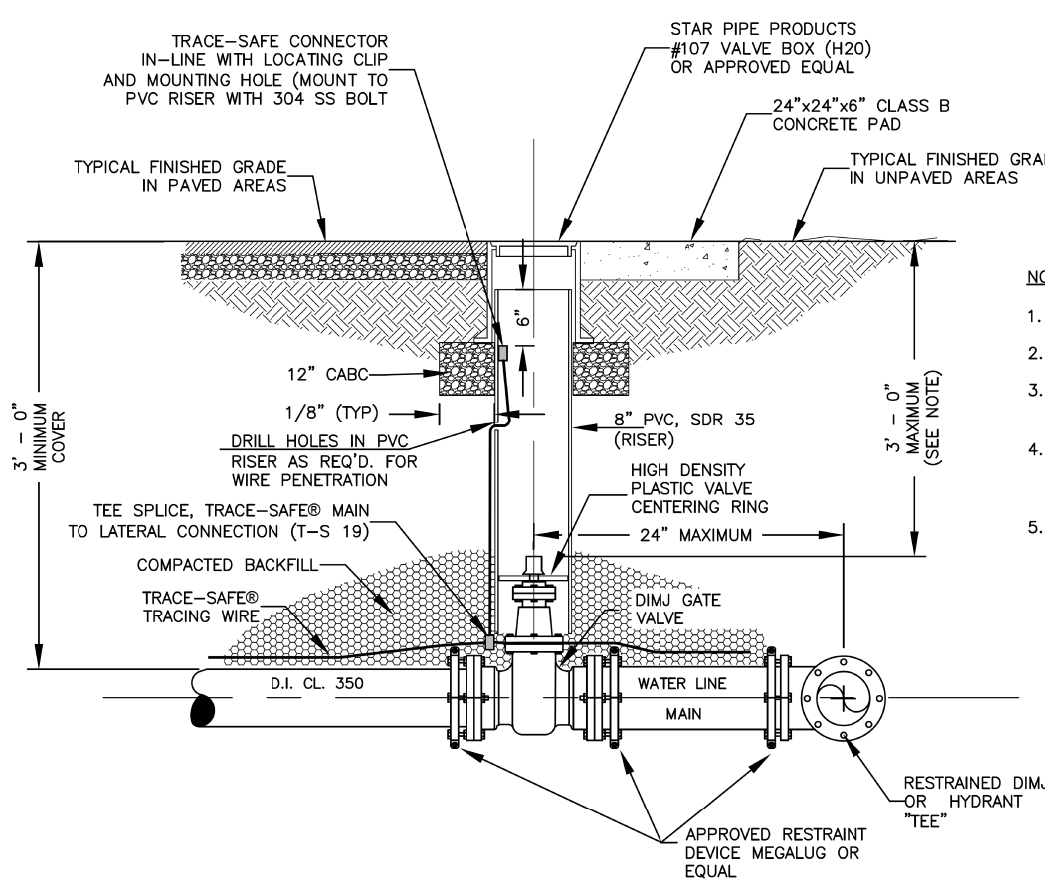


## 4 DUCTILE IRON PIPE RESTRAINT DETAIL

WD-1 NOT TO SCALE 04/04/18

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 BE USED ON PVC PIPE.
- PIPE NOT GREATER THAN 12 INCH DIAMETER SHALL REQUIRE JOINT PIPE FOR THE RESTRAINT PROPER LE.
- COMPACT FITTINGS ARE ACCEPTABLE FOR USE WITH IRON RETAINING GLAND RESTRAINTS 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 ENGINEERS' 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.
- M.J. SHALL BE PRODUCED IN USA.

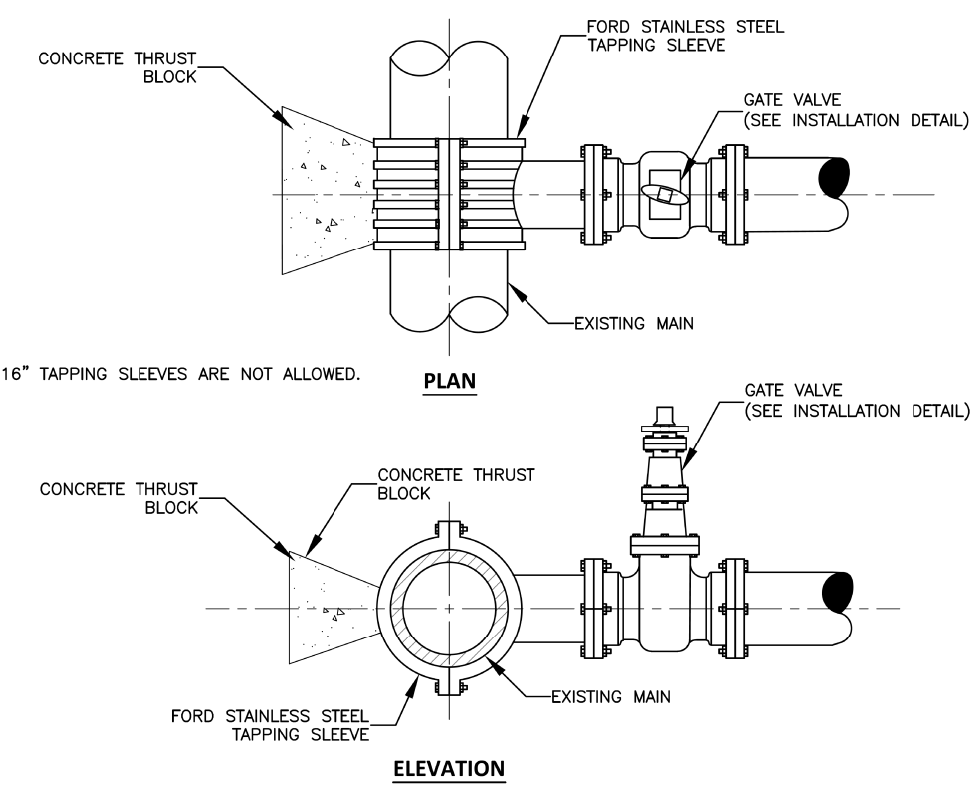


NOTES:

- TOP OF COVER SHALL BE STAMPED "WATER"
- VALVE PAD REQUIREMENTS SHALL NOT BE APPLICABLE FOR PAVED SURFACES.
- PAVEMENT REPAIR SHALL MATCH EXISTING ROAD PAVING SECTION. SEE NCDOT ASPHALT REPAIR DETAIL # 654.01.
- 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.
- 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 HOPE 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.

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

V:\Asheville\transportation\31732-09 1-26 Rest Area WS\UtilitiesDrawings\14400\_UTL\_UC\_UC-3F.dgn

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

Asheville  
North Carolina  
828-253-2796

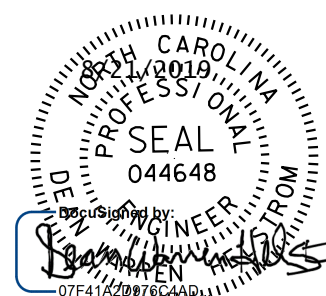
Boone, NC 828-555-5533  
Ft. Collins, NC 433-467-8400  
Hillsboro, NC 865-546-5800  
Spartanburg, SC 864-574-0775  
Charlotte, NC 843-974-9500  
Mooresville, NC 704-281-0488  
Chapel Hill, NC 919-286-6600  
Raleigh, NC 919-977-9495

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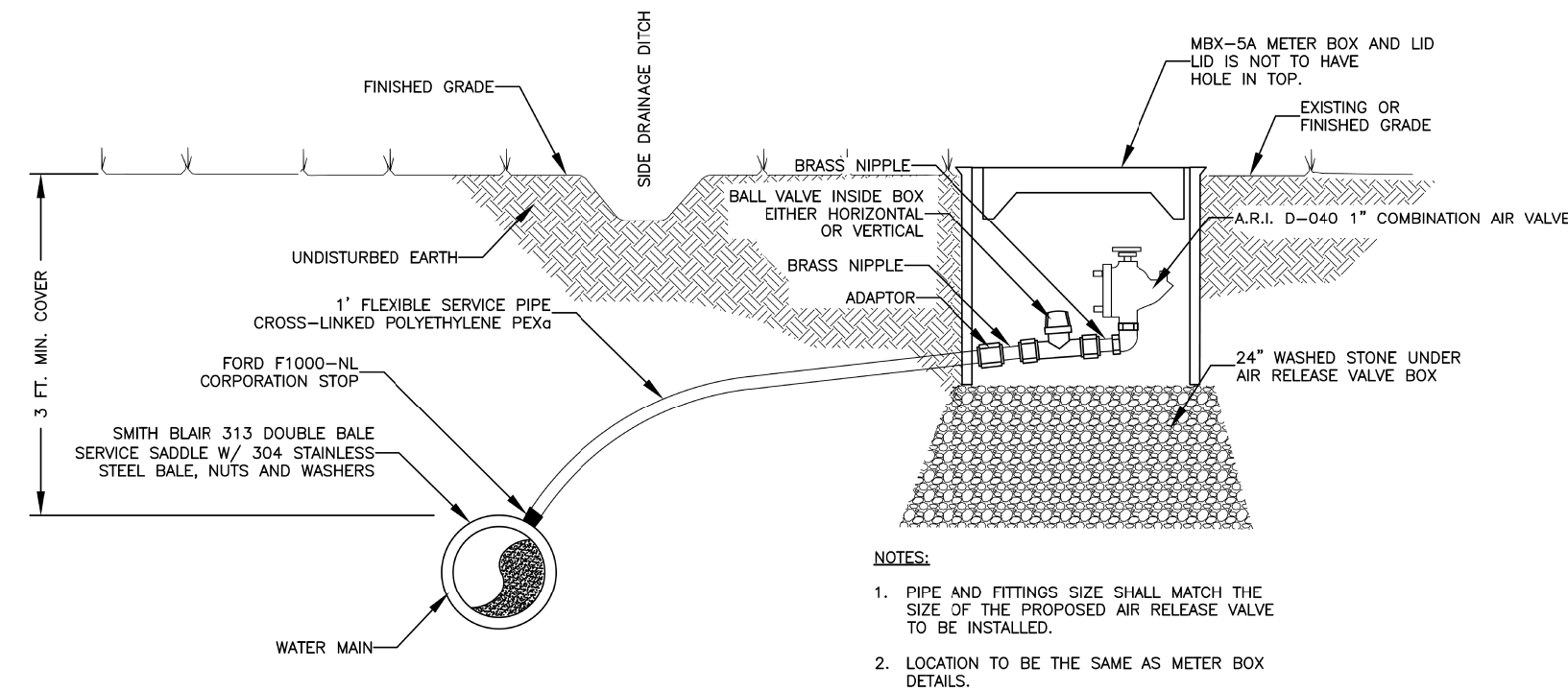
# CITY OF HENDERSONVILLE PROJECT SPECIFIC DETAILS

**BUNCOMBE COUNTY  
HENDERSON COUNTY**

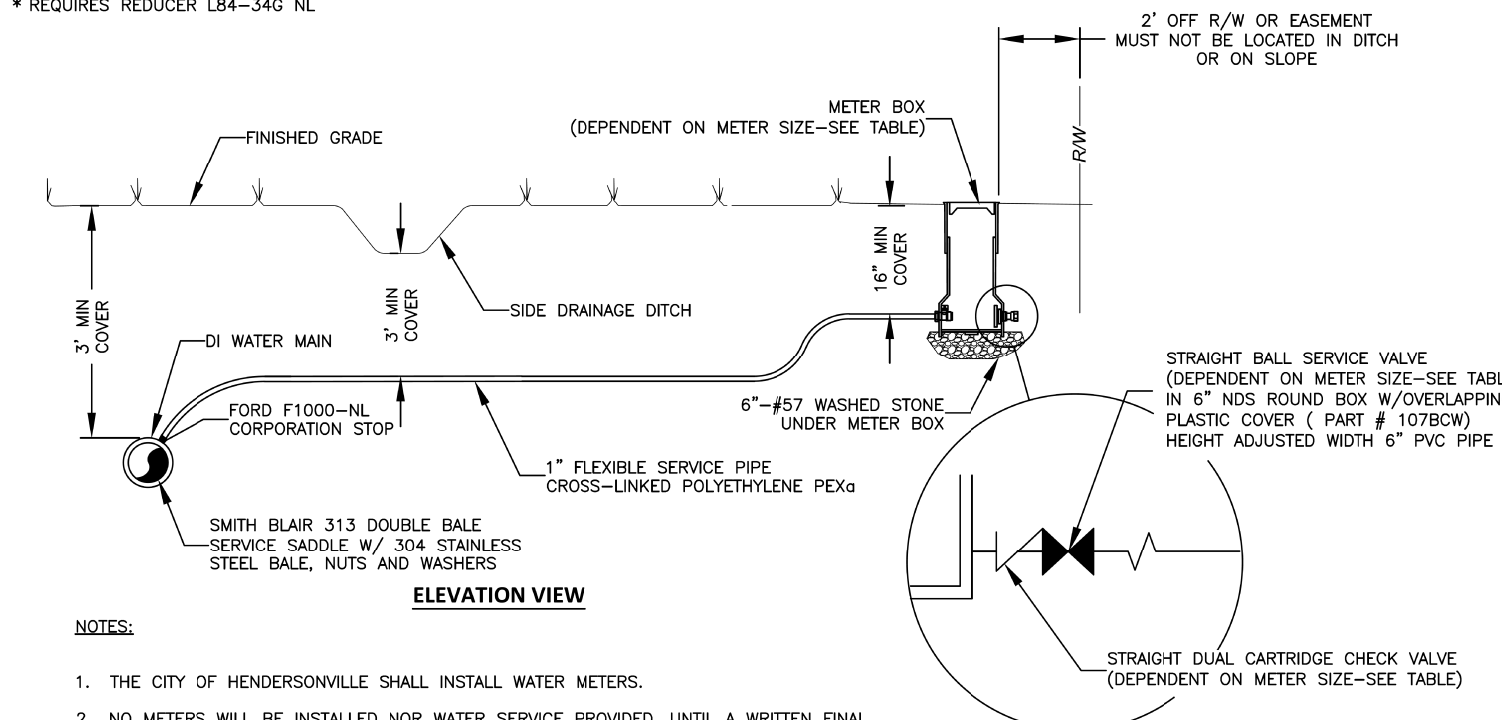
PROJECT REFERENCE NO. <b>I-4400C</b>	SHEET NO. <b>UC-3G</b>
DESIGNED BY: <b>DRF</b>	
DRAWN BY: <b>DRF</b>	
CHECKED BY: <b>LAM</b>	
APPROVED BY: <b>DWH</b>	
REVISED: <b>8-20-19</b>	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	
<b>UTILITY CONSTRUCTION</b> DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

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	HHCB1-333-NL
1"	1"	FORD CB111-444-L-T-NL	FORD B81-344W-NL	HHCB1-444-NL

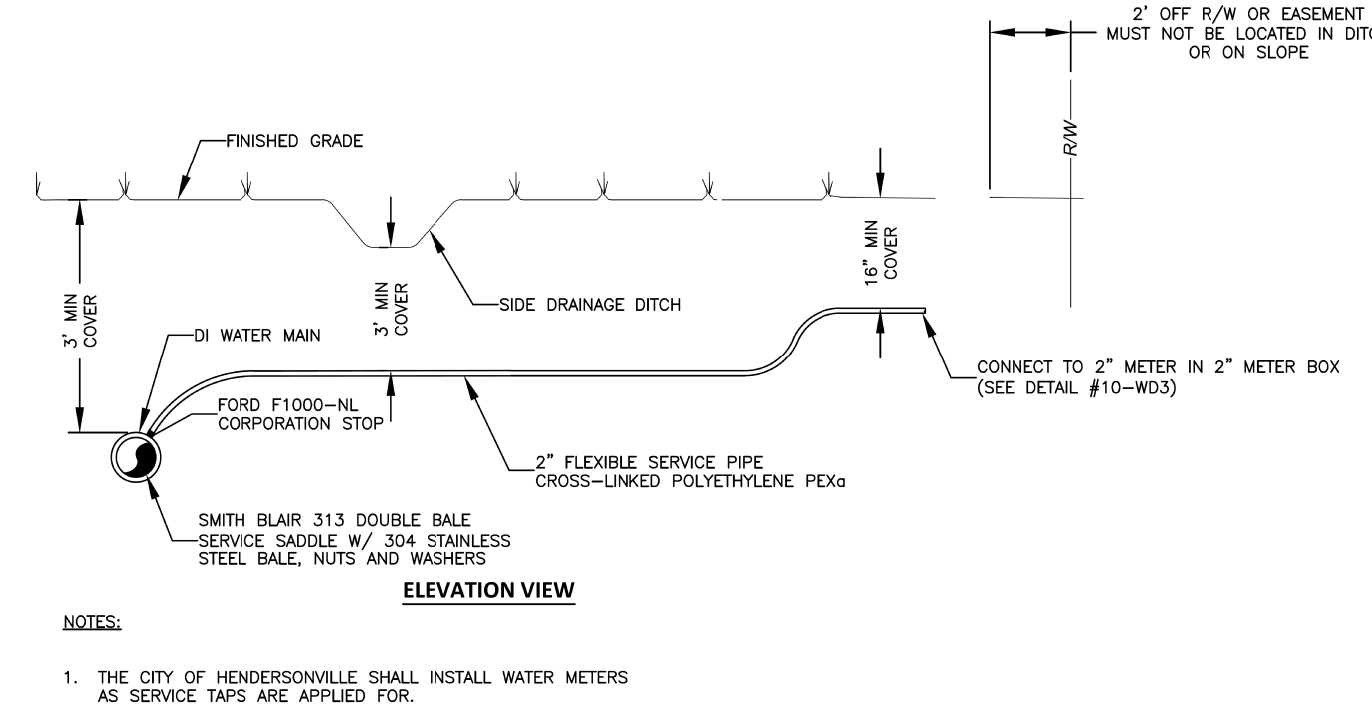
\* REQUIRES REDUCER LB4-34G NL



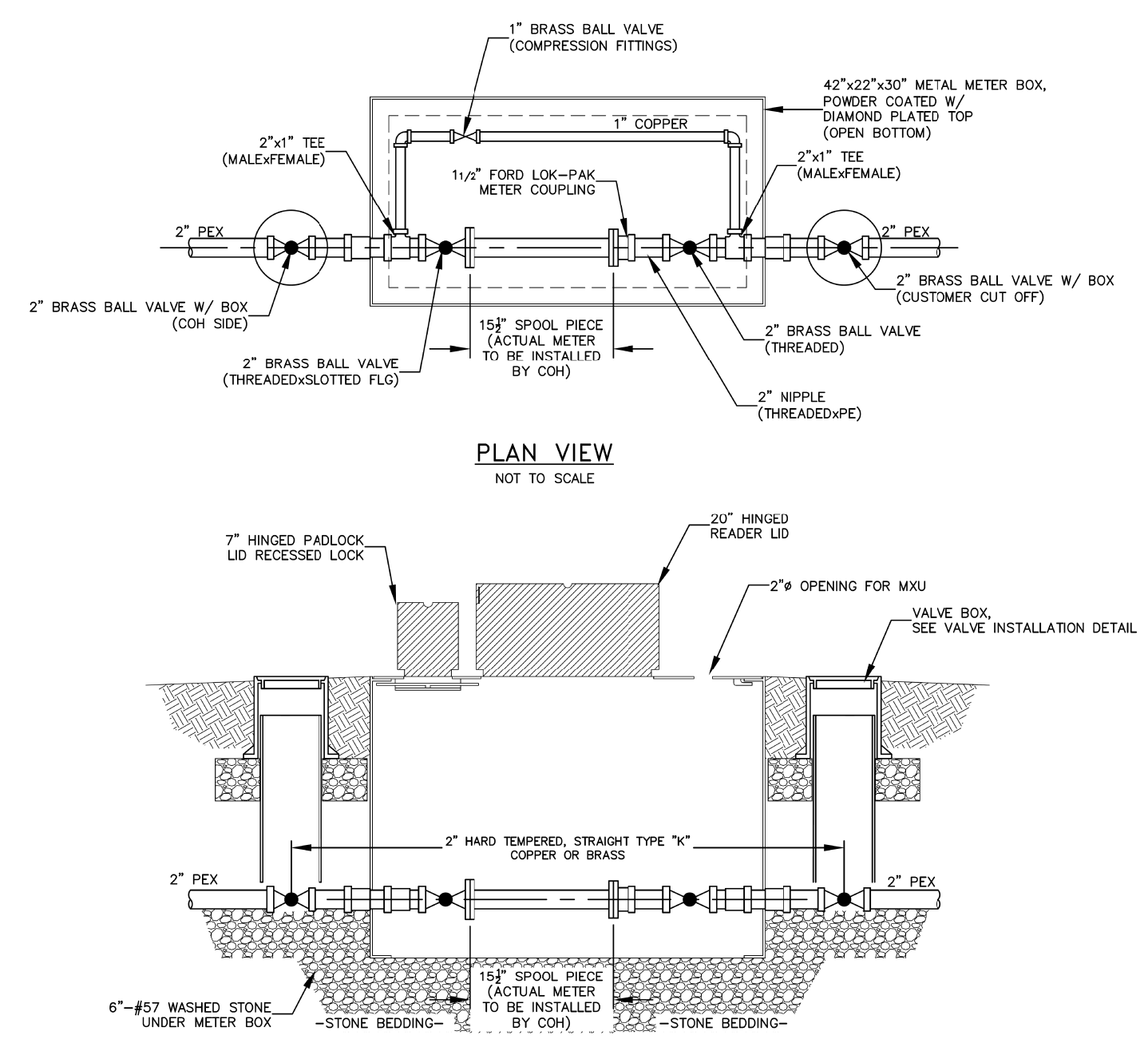
**7 STANDARD AIR RELEASE VALVE INSTALLATION**  
WD-2 NOT TO SCALE 04/04/18



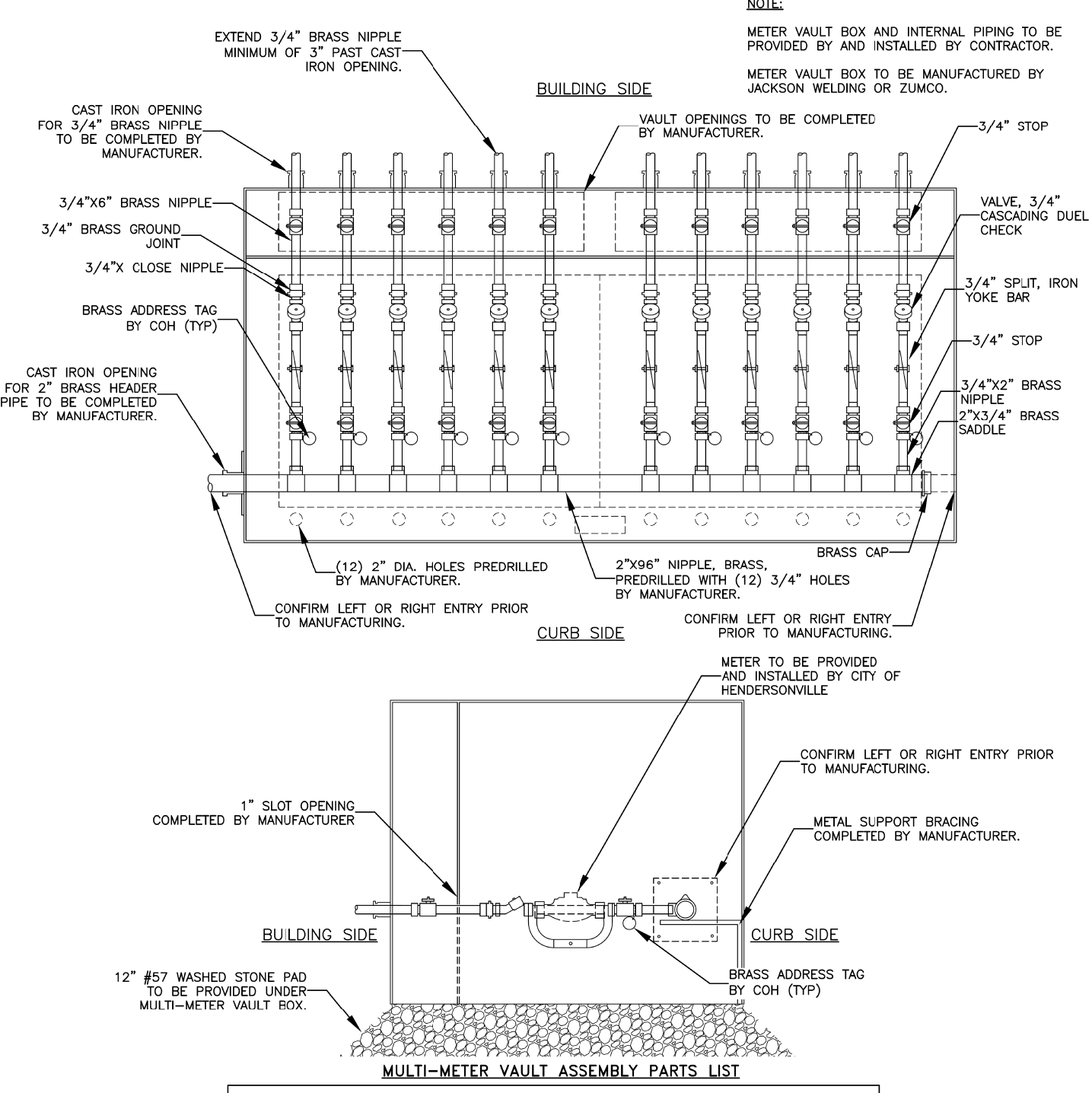
**8 MINIMUM SERVICE LINE: 1" SERVICE LATERAL INSTALLATION**  
WD-2 NOT TO SCALE 02/16/18



**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



QUANTITY	DESCRIPTION	CITY PART NUMBER
1 EA.	2"x96" NIPPLE, BRASS	N-3685-12
12 EA.	2"x3/4" NPT SADDLE, BRASS NL	N-3710-13
12 EA.	3/4"x2" NIPPLE, BRASS NL	N-3710-17
12 EA.	3/4"x2" NIPPLE, BRASS NL	N-3710-23
12 EA.	3/4"x1/2" NIPPLE, BRASS NL	Y-0504-02
12 EA.	STOP, 3/4" STRAIGHT BALL VALVE FOR YOK	Y-9494-33
12 EA.	VALVE, 3/4" CASCAING DUEL CHECK, NL	U-5435-00
12 EA.	UNION, 3/4" BRASS GROUND JOINT, NL	S-7915-00
1 EA.	STOP, 3/4" CURB VALVE, MALE, NL	C-0862-08
1 EA.	CAP, 2" PIPE, BRASS NL	

- 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



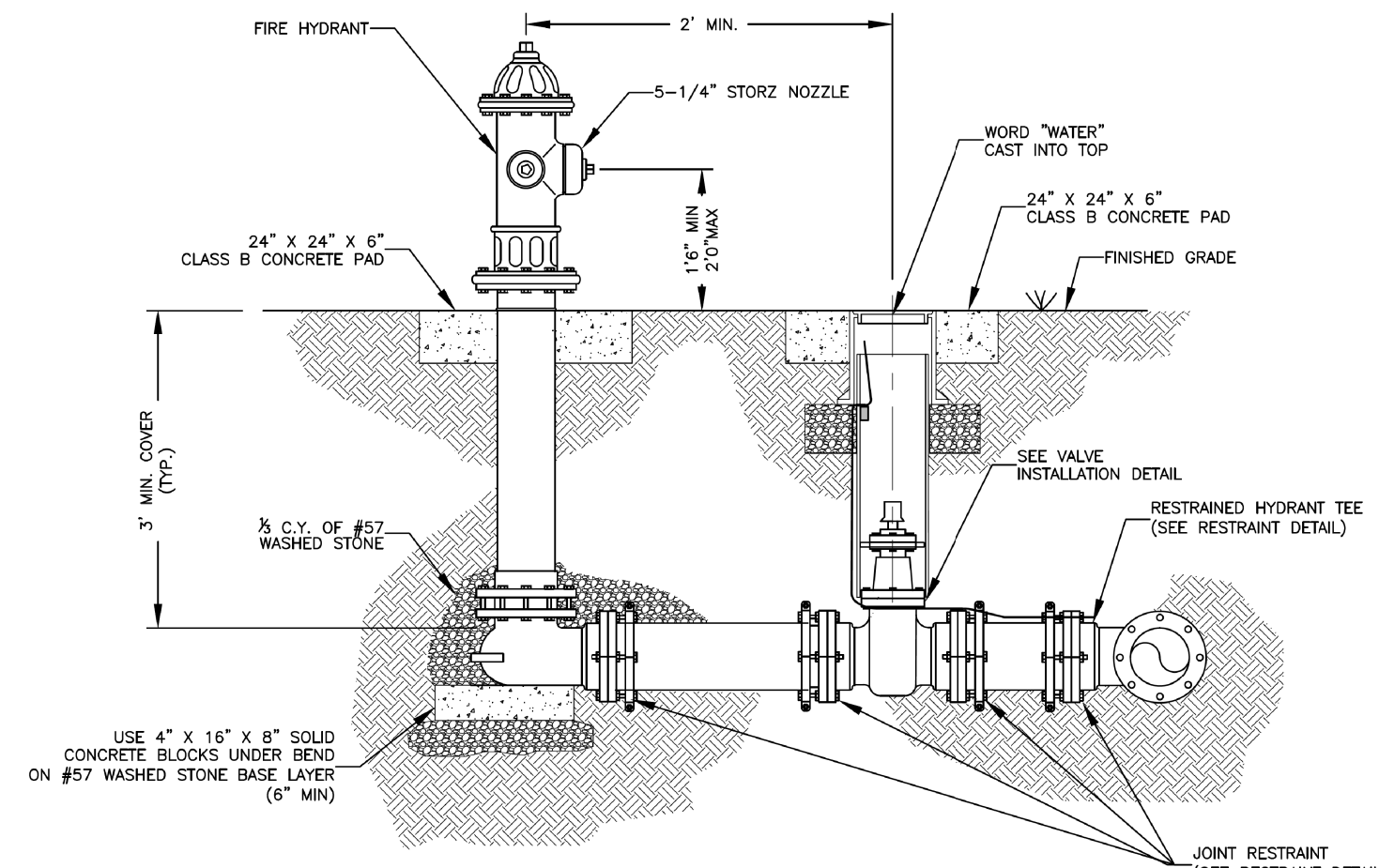
# CITY OF HENDERSONVILLE PROJECT SPECIFIC DETAILS

**BUNCOMBE COUNTY  
HENDERSON COUNTY**

PROJECT REFERENCE NO.	SHEET NO.
I-4400C	UC-3H
DESIGNED BY: DRF	
DRAWN BY: DRF	
CHECKED BY: LAM	
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	

**UTILITY CONSTRUCTION**

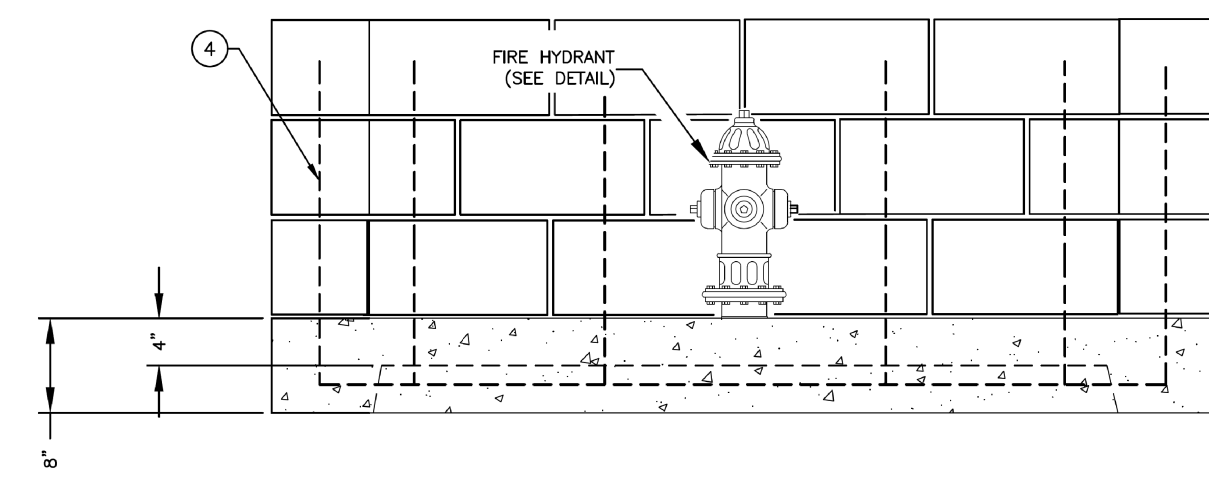
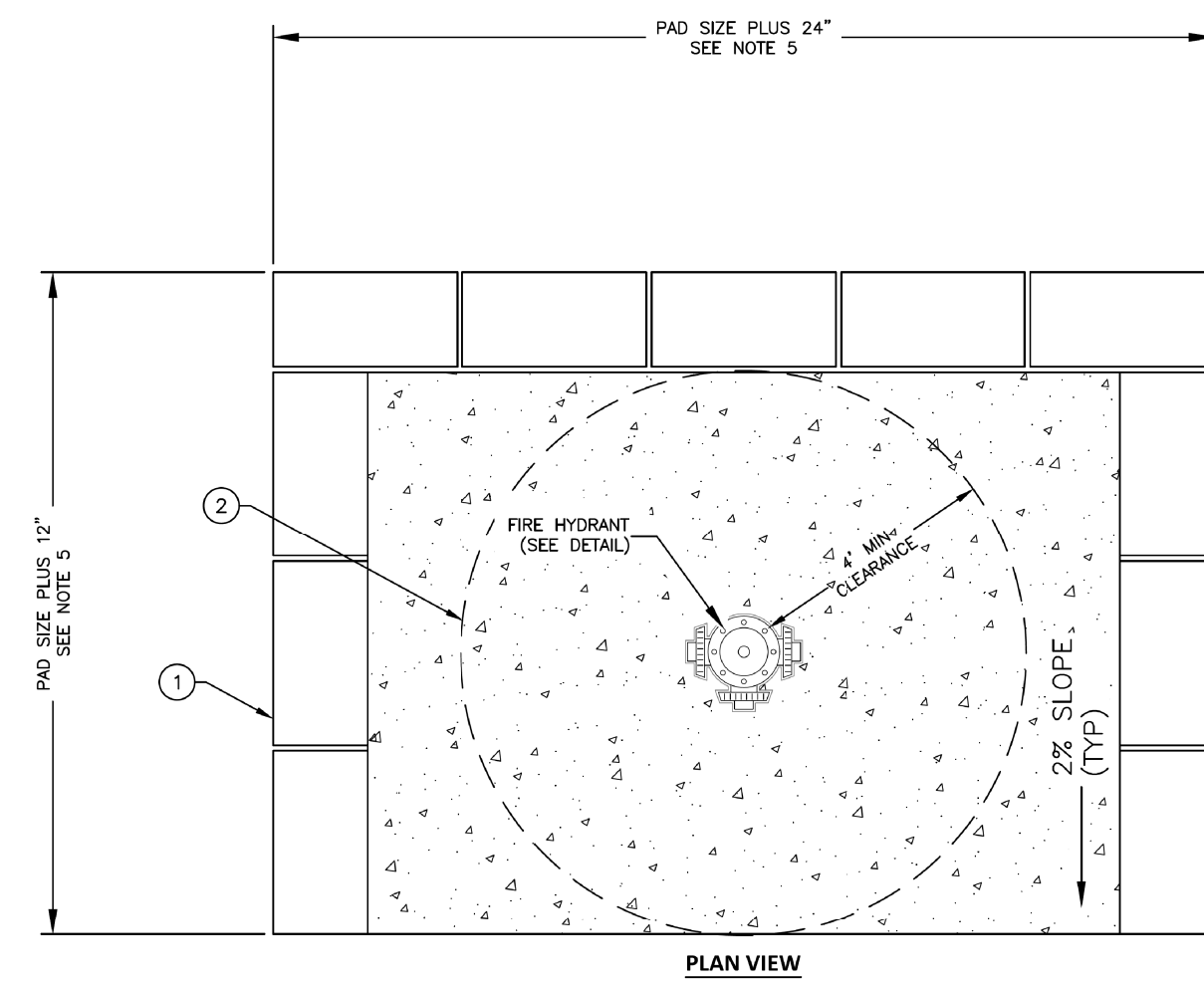
**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**



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

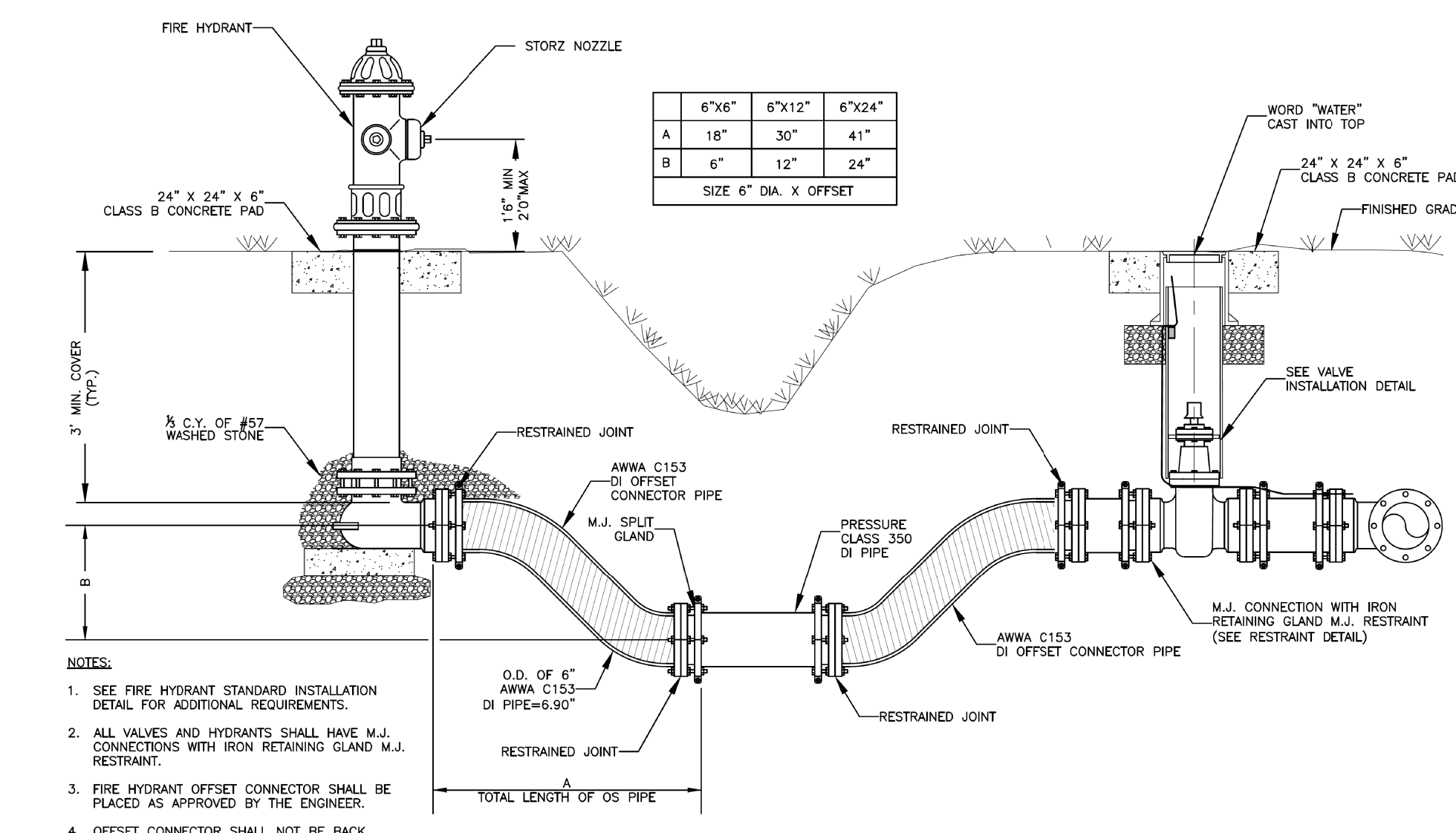
- NOTES:**
1. FIRE HYDRANT SHALL BE MUELLER CENTURION OR APPROVED EQUAL TESTED BY AWWA STANDARDS TO 350 PSI WORKING PRESSURE WITH 5-1/4 STORZ NOZZLE.
  2. ALL VALVES AND HYDRANTS SHALL HAVE M. J. CONNECTIONS WITH IRON RETAINING GLAND M.J. RESTRAINT.
  3. FIRE HYDRANT SHALL BE FACTORY PAINTED YELLOW, 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.



- ITEM NO. SIZE AND DESCRIPTION**
1. 200MM X 200MM X 400MM (8\"/>
  2. COLD JOINT STRIP
  3. CLASS B CONCRETE PAD OVER 6\"/>
  4. #4 REBAR TYPICAL. SEE NOTE 3
  5. 8\"/>
  6. CONCRETE CAP BLOCK.

**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.

**DISCLAIMER:**  
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Boone, NC  
828-255-9533

Tri-Cities, TN  
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Waco, TX  
865-546-5800

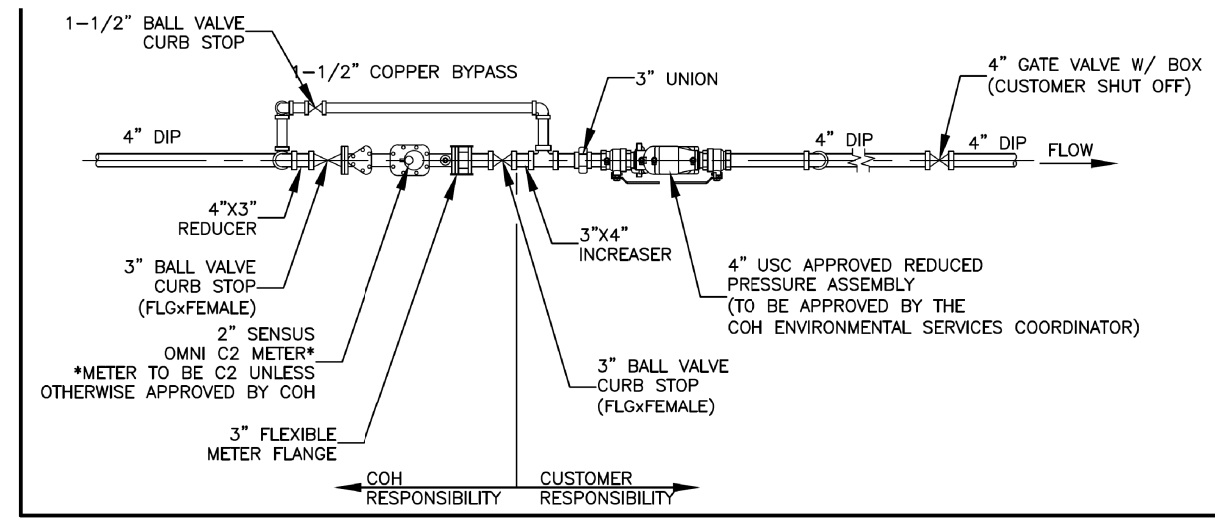
Spartanburg, SC  
864-514-6775

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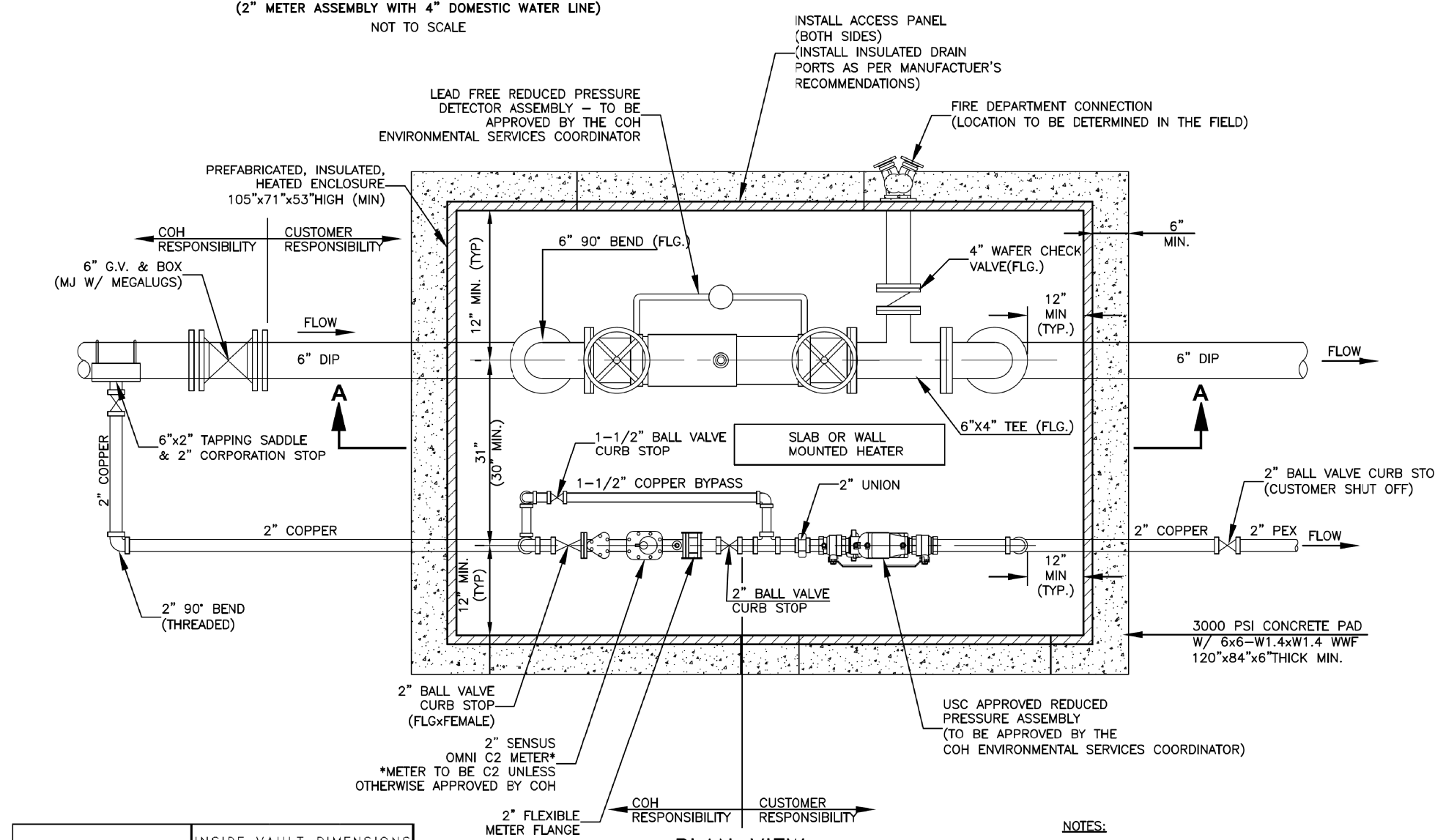


# CITY OF HENDERSONVILLE PROJECT SPECIFIC DETAILS

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



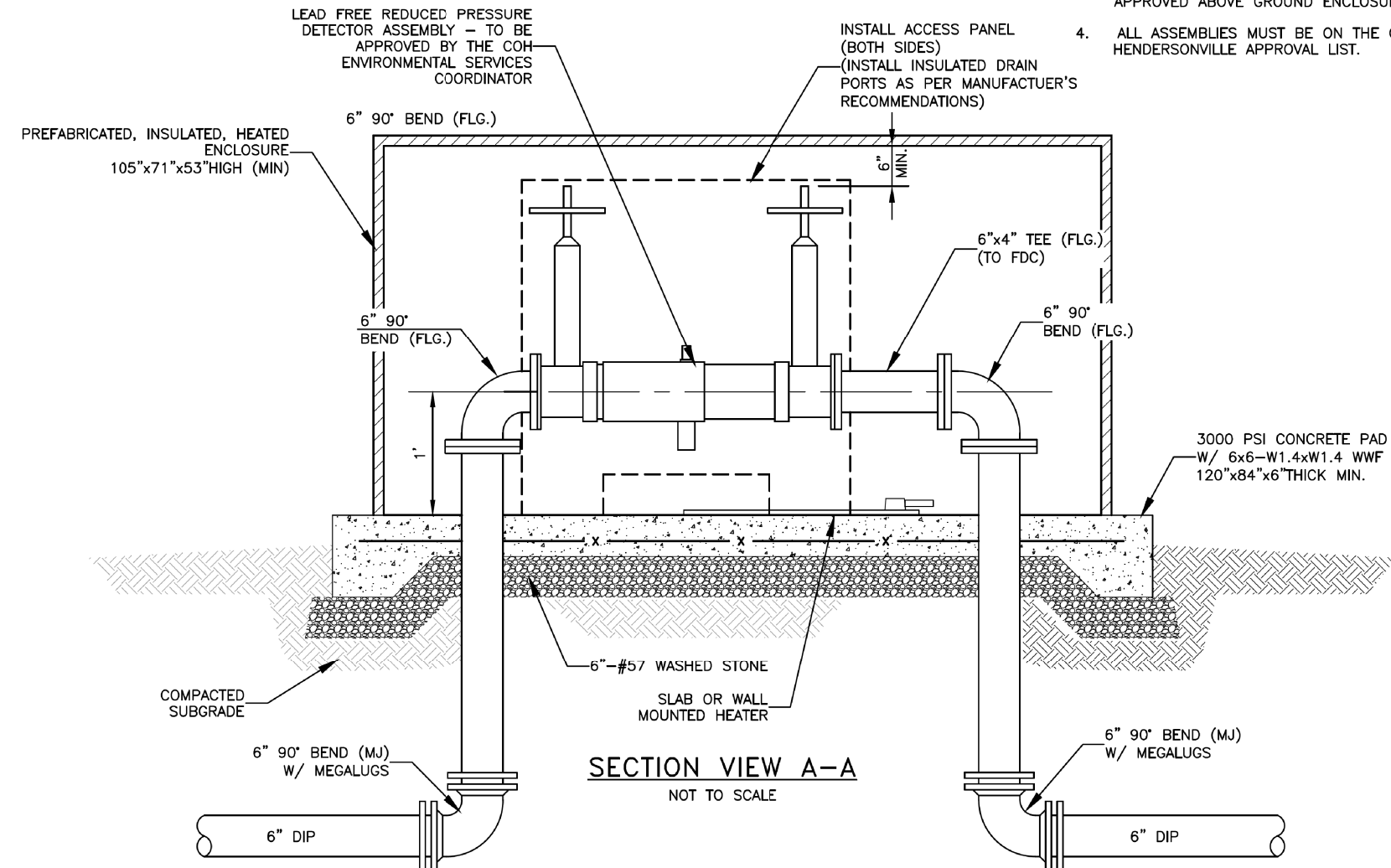
**PLAN VIEW**  
(2" METER ASSEMBLY WITH 4" DOMESTIC WATER LINE)  
NOT TO SCALE



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

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

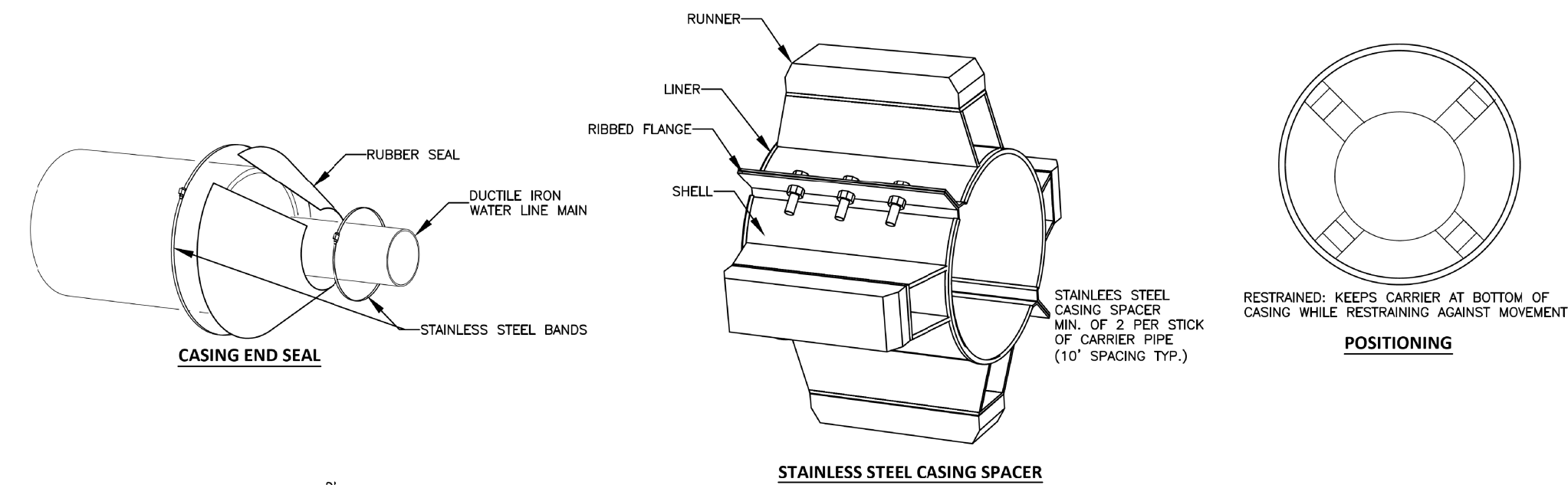
- NOTES:**
- ALL ABOVE GROUND ENCLOSURES MUST HAVE ADEQUATE DRAINAGE (TWICE THE DIAMETER OF THE SUPPLY PIPE) TO DAYLIGHT ABOVE GRADE.
  - REDUCED PRESSURE BACKFLOW ASSEMBLIES MAY BE LOCATED IN A BUILDING PROVIDED THERE ARE NO OTHER UNPROTECTED TAPS BETWEEN THE MAIN AND THE BUILDING. DRAINAGE OUTLET IN THE BUILDING MUST BE TWICE THE DIAMETER OF THE SUPPLY PIPE.
  - ABOVE GROUND INSULATED VAULTS MUST BE ASSE 1060 APPROVED ABOVE GROUND ENCLOSURES.
  - ALL ASSEMBLIES MUST BE ON THE CURRENT CITY OF HENDERSONVILLE APPROVAL LIST.



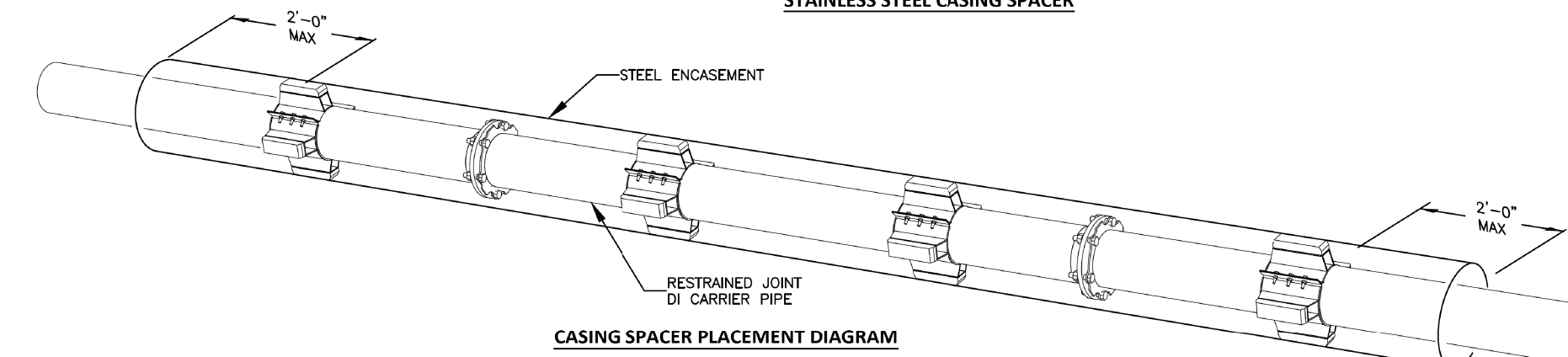
**SECTION VIEW A-A**  
NOT TO SCALE

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

## COMMERCIAL WATER SERVICE W/ FIRE LINE



**STAINLESS STEEL CASING SPACER**

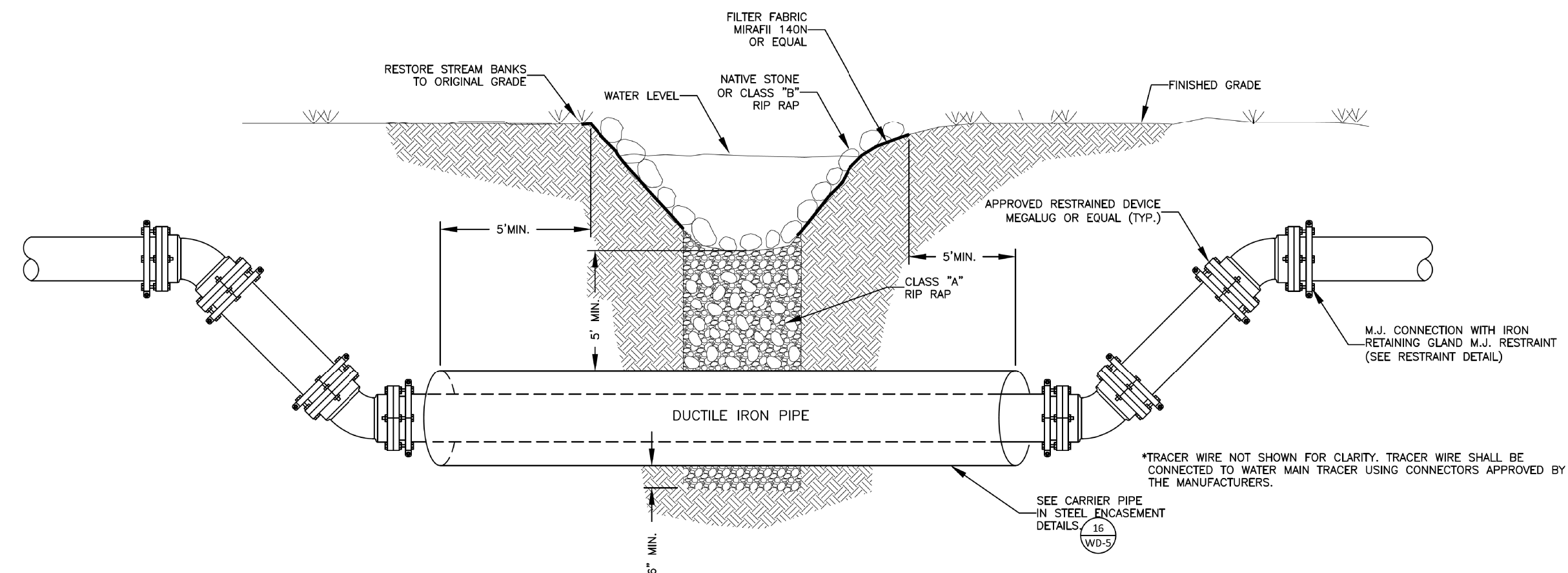


**CASING SPACER PLACEMENT DIAGRAM**

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

**16**  
WD-5 NOT TO SCALE 04/04/18

## CARRIER PIPE IN STEEL ENCASUREMENT



**17**  
WD-5 NOT TO SCALE 04/04/18

## OPEN CUT BELOW CREEK BOTTOM

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# CANE CREEK WATER AND SEWER DISTRICT PROJECT SPECIFIC DETAILS

**BUNCOMBE COUNTY  
HENDERSON COUNTY**

PROJECT REFERENCE NO.	SHEET NO.
I-4400C	UC-3J
DESIGNED BY: DRF	
DRAWN BY: DRF	
CHECKED BY: LAM	
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**

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