



Town of Berryville
Streets & Utilities Committee
Regular Meeting 23 January 2024 Agenda
101 Chalmers Court Berryville, VA 22611
3:00 p.m., AB Meeting Room

1. Call to Order
2. Approval of Agenda
3. Unfinished Business
 - a. Truck Route
 - b. Construction Standards & Specifications
 - c. Streets and Street lighting
4. New Business
5. Other
6. Closed Session
7. Adjourn

Streets and Utilities Report
23 January 2024

Item Title: Truck Route

Prepared By: Jean Petti

Activity to date:

Following October Streets and Utilities meeting, staff inquired of VDOT as to the feasibility of establishing a truck route rather than truck length restrictions. As of 11 January 2024, VDOT has indicated acceptance of request.

Attachments:

Copy of email 4 December 2023

Copy of proposed route

Copy of email 11 January 2024

Revised request concerning S. Church Street truck traffic

Deputy Town Manager <deputytownmanager@berryvilleva.gov>

Mon 12/4/2023 4:16 PM

To: Carter, Edwin (VDOT) <edwin.carter@vdot.virginia.gov>

Cc: Keith Dalton <townmanager@berryvilleva.gov>; Diane Harrison <dharrison@berryvilleva.gov>; Ryan Tibbens <rtibbens@berryvilleva.gov>; Neal White <chiefofpolice@berryvilleva.gov>

📎 2 attachments (6 MB)

Streets and Utilities Agenda Packet 10.24.23.pdf; Screenshot (9).png;

Dear Ed,

We would like to follow up on the recommendation included in an email from Mike True to Darin Simpson on September 7, 2023 (see page 17 of October S&U report) and establish a Truck Route that would guide trucks up past the south end of Church Street, following Buckmarsh north to bypass Route 7, directing them eastbound on bypass Route 7 to the light, and bringing them back into town on E. Main Street to Jack Enders Blvd (see attached). If possible, this signage could include the BVG logo.

These requests, if accepted, would replace the previous request for truck length restrictions. Please advise as to what next steps will be needed to advance this request.

Thank you,

Jean

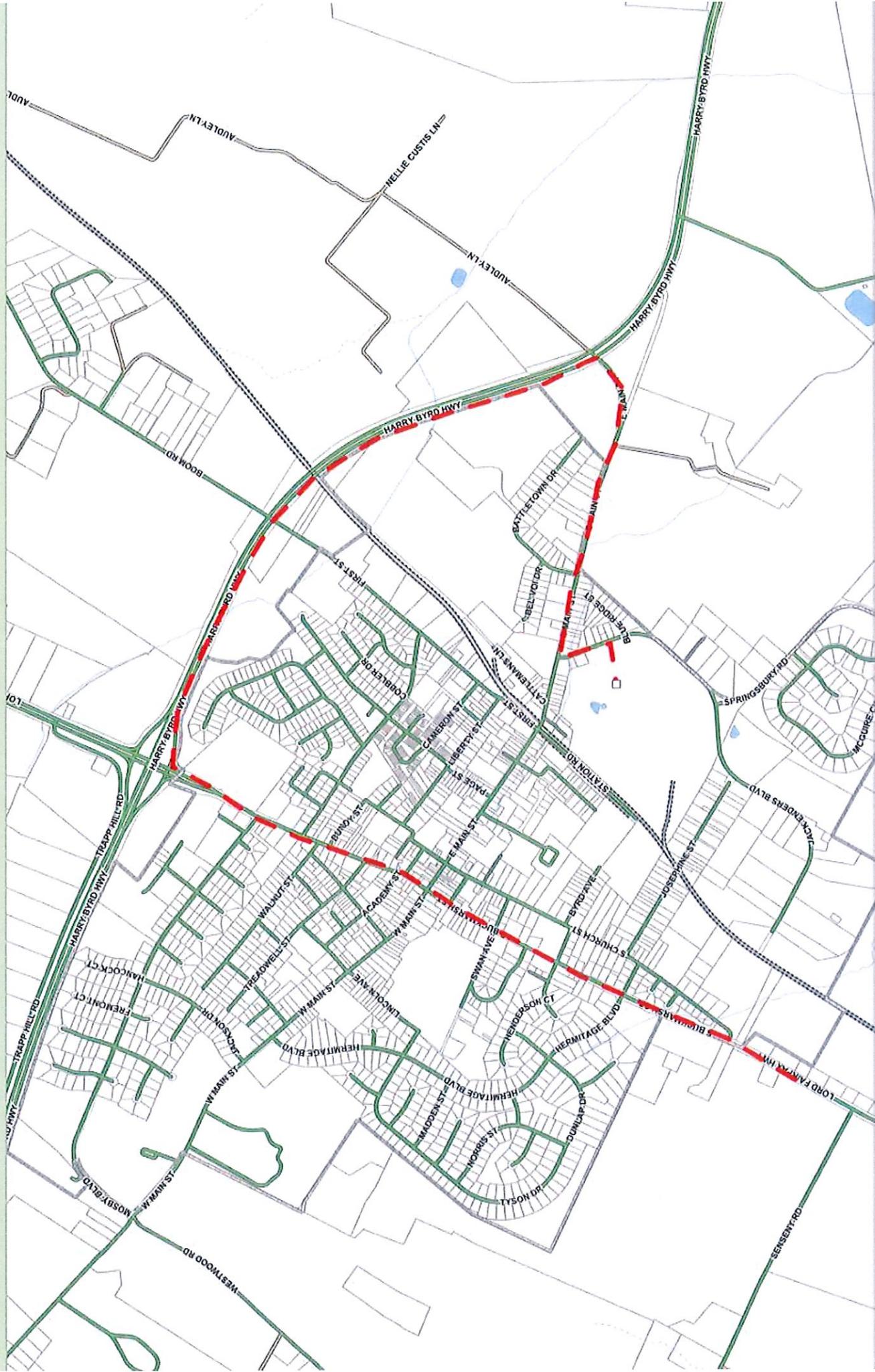
Jean Petti, Deputy Town Manager

Town of Berryville, VA

101 Chalmers Court, Suite A

Berryville, VA 22611

540.955.1099



RE: Following up on truck route request from Berryville

Carter, Edwin (VDOT) <edwin.carter@vdot.virginia.gov>

Thu 1/11/2024 8:04 AM

To: Deputy Town Manager <deputytownmanager@berryvilleva.gov>

Cc: Simpson, Darin (VDOT) <Darin.Simpson@vdot.virginia.gov>; True, Mike (VDOT) <Mike.TRUE@VDOT.Virginia.gov>

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Jean, Traffic Engineering is in agreement with your request. They are working on appropriate signage.

Thanks,

ED



Edwin Z. Carter
Residency Administrator/Edinburg Residency
Virginia Department of Transportation
540-534-3204
804-396-0082
edwin.carter@VDOT.Virginia.gov

From: Deputy Town Manager <deputytownmanager@berryvilleva.gov>

Sent: Wednesday, January 10, 2024 1:56 PM

To: Carter, Edwin (VDOT) <edwin.carter@vdot.virginia.gov>

Subject: Following up on truck route request from Berryville

Dear Ed,

I wanted to follow up on my voicemail inquiry regarding the status of our request for an establishment of a truck route. We emailed the request in early December and chatted briefly mid-December. Has engineering made any recommendations? Town Council asked at our meeting last night and I didn't have an update, but would like to have one by our January 23rd committee meeting.

Thank you,
Jean

Jean Petti, Deputy Town Manager

Town of Berryville, VA

101 Chalmers Court, Suite A

Berryville, VA 22611

540.955.1099

Streets and Utilities Committee Agenda Item Report Summary

January 23, 2024

Item Title

Construction Standards Updates

Prepared By

Christy Dunkle

Background/History/General Information

Staff is recommending modifications to the Town of Berryville Construction Standards and Modifications.

Findings/Current Activity

The following documents require Town Council approval prior to implementation. They are identified in red in the following chapters:

- Section 3 Water Mains and Appurtenances
- Section 4 Valves and Hydrants

The following items are not required to be approved by Town Council and are included for your information:

- Materials Specifications
- Construction Standards Details

Schedule/Deadlines

N/A

Other Considerations

N/A

Recommendation

Discuss at the meeting.

Sample Motion

N/A

Section 3

Water Main and Appurtenances

I. General

- A. This section includes construction of distribution system mains, service laterals, and other associated appurtenances. Also included are testing and disinfection requirements.
- B. All mains shall be cement mortar lined ductile iron ~~or PVC (C909)~~, with a minimum diameter of six inches (6"). The pipe shall have rubber gasket push-on joints, and all fittings shall be mechanical joint except as approved by the Town. Where special fabrication of ductile iron pipe is required to fit water mains within vaults, structures and buildings, the Contractor shall submit fully dimensioned drawings showing the piping in full detail with exact locations, dimensions, and schedules of all pipe, fittings, hangers, supports, and appurtenances before starting fabrication of the pipe and/or fittings. Where special fittings are required, they shall be shown in detail with all necessary dimensions. The design of such installations shall provide adequate space within the housing, and around the fittings to allow easy disassembly of pipe sections or other appurtenances.
- C. Utility Locations: Water mains shall be located a minimum of three (3) feet from the gutter of the streets with curb and gutter; or three (3) feet within the pavement edge of streets without curb and gutter. Whenever practical, sewer mains shall be located in the center of the street. A minimum 10 foot horizontal separation (outside to outside), or 6 feet horizontal separation with at least 1.5 foot vertical separation from bottom of water to top of sewer, shall be provided between all water lines and sanitary sewer lines. Should conditions require the water and sewer lines to be installed in the same trench, the water line must rest on a shelf of undisturbed earth to one side of the sewer with at least 18 inches of vertical separation between the top of the sewer line and bottom of the water line. Approval from the Town Engineer and Director of Public Works must be acquired before same trench installation is permitted. Typical minimum cover of four feet is to be provided for water mains. For short distances, reduced cover of as little as three feet may be approved, so as to preclude locating water below a crossing utility.

II. Mains

- A. Ductile Iron Pipe
 1. Ductile iron pipe shall be manufactured in accordance with ANSI A21.51/ AWWA C151. All pipe shall have a minimum Class 52 thickness.
 2. End designs shall conform to the ANSI/AWWA C 111/ A21.11 – “Rubber Gasket Joints Ductile Iron and Gray Iron Pressure Pipe and Fittings” Push-on

joints shall be "Tyton," "Super Bell Tite" or "Fast-Tite" joint, or approved equal.

3. The inside of the pipe shall be cement lined in accordance with ANSI/AWWA C 104/ A21.
4. Flanged connections shall only be permitted where indicated on construction plans and pre-approved by the Town, and shall conform to ANSI/AWWA C115/A21.15.

B. PVC (C909) Pipe Backfill and Bedding

1. Select Backfill

- a. There shall be 24" of select backfill above the stone aggregate which shall be compacted in eight inch lifts. The maximum particle size of the backfill material shall be no greater than one (1) inch. Backfill shall be compacted to 95% of maximum density.
- b. Above the select backfill, material shall be deposited in lifts not to exceed two (2) feet, and have a compaction to 95% of maximum density.
- c. A six (6) inch wide magnetized locating ribbon labeled "WATER LINE BURIED BELOW" shall be placed above the select fill.
- d. No rock shall be used in the select backfill. Any rock used *above* the select backfill shall be no larger than six (6) inches in diameter.
- e. A #12 gauge wire shall be placed next to the PVC (C909) line during installation of the main. This wire must maintain positive continuity at all times.

2. Stone Bedding

1. For excavation in dirt or clay, there must be six (6) inches of stone under and over the pipe.
2. For excavation through rock, there shall be twelve (12) inches of stone under and over pipe in rock trenches.

C. Fittings

1. All fittings shall be cast of ductile iron, and shall conform to ANSI/AWWA C153/A21.53. Fittings shall be made with mechanical joint ends in accordance with ANSI/AWWA C 111/A21.11.
2. A sufficient number of bolts, nuts, glands and gaskets shall be provided for each fitting. These accessories shall be of the proper dimensions for the size pipe. The bolts shall be made of high strength low alloy steel in accordance with ANSI/AWWA C 111/ A21.11.
3. The cement lining, shall conform to ANSI/AWWA C 104/A21.4.

III. Handling Ductile Iron Pipe and Fittings

- A. It shall be the responsibility of the pipe manufacturer to thoroughly inspect each length of pipe according to the applicable ANSI and AWWA standards and other requirements as set forth in these specifications.

- B. Ductile iron pipe, fittings, valves and accessories shall be handled in strict accordance with the provisions of ANSI/AWWA C 600, so as to ensure that these items are sound, undamaged, and entirely suitable in all aspects to the specified requirements of each particular fitting, pipe and accessory. Particular care shall be taken not to injure either the coating, the pipe or threads. Equipment, tools and methods used in loading, reloading, unloading, hauling and lying pipe and fittings shall be such that no damage is done to the pipe or the coatings. Where hooks are used for lifting, they shall have broad well-padded contact surfaces. Repair of defective or damaged coatings or linings shall be made under the direct supervision of a representative of the pipe manufacturer. No field repair work may be done on any damaged pipe coating or lining without the prior approval of the Town. Any bituminous pipe coating that is damaged by shipment or by the Contractor shall be repaired, prior to installation or placing of any backfill or hanging within hangers. Repairs shall be made by removing all damaged coating, then wire brushing to expose the metal, and applying two coats of coal tar coating material of a type and quality equal to that used originally for the bituminous coating of the pipe.
- C. Cutting, cleaning and inspecting ductile iron pipe: The cutting pipe for closure pieces or for other reasons shall be done in a neat and workmanlike manner by a method that will not damage the pipe or its lining. Sections shall be thoroughly swabbed or cleaned of all foreign matter before being installed into the system and shall be kept clean during and after installation. Before installation of any pipe or fitting, each piece shall be inspected for defects. All defective, damaged or unsound pipe or fittings shall be rejected.

IV. Installation

- A. Pipe laying shall be conducted in strict accordance with the provisions of ANSI/AWWA C 600. The lay shall proceed with the bell end of the pipe pointing in the direction of the next pipe joint to be laid. Each pipe shall be laid true to line and grade and in such manner as to form a close concentric joint with the adjoining pipe and to prevent sudden offsets of the flow line. Proper precautions shall be taken to keep the interior of the pipe free of all dirt and superfluous materials of every description as the work progresses.
- B. Trenches shall be kept free from water until the pipe jointing is complete. At all times when work is not in progress, open ends of pipe and fittings shall be securely closed to the satisfaction of the Town so that no trench water, earth or other substance will enter the pipe or fittings. Adequate backfill shall be deposited on the pipe to prevent floating. Any pipe which has floated shall be removed from the trench and be re-laid.
- C. All tees, bends and dead ends shall be restrained by means of concrete blocking, and be installed with Megalug™ retainer gland or approved equal.

- D. ScotchMark Electronic Marker System (EMS 1257) or approved equal shall be included with the installation of all water mains. The markers shall respond to a frequency of 145.7 kHz, with placement as follows:
 - 1. 50-foot intervals on mains.
 - 2. Each bend
 - 3. The end on each joint that is deflected and each “T”
 - 4. Any additional location directed by the Town of Berryville
- E. A six-inch wide magnetized location ribbon labeled [water line buried below] shall be installed above the select backfill.
- F. A #12 gauge wire shall be placed next to all main lines and service laterals. The wire shall maintain continuity at all times.

V. Separation of Water Lines and Sewers

- A. General – The following factors shall be considered in providing adequate separation:
 - 1. Materials and types of joints for water and sewer pipes.
 - 2. Service branch connections into the water line and sewer lines.
 - 3. Space for repairs and alterations of water and sewer pipes.
 - 4. Avoiding offset of pipes around manholes.
- B. Parallel Installation
 - 1. Normal Conditions – Water lines shall be laid at least ten feet horizontally from a sewer or sewer manhole wherever possible. The distance shall be measured edge-to-edge.
 - 2. Unusual Conditions – When local conditions prevent a horizontal separation of ten feet, the water line may be laid closer to a sewer or sewer manhole provided that:
 - a. The bottom (invert) of the water main shall be at least 18 inches above the top (crown) of the sewer. Should conditions require the water and sewer lines to be installed in the same trench, the water line must rest on a shelf of undisturbed earth to one side of the sewer with at least 18 inches of vertical separation between the top of the sewer line and bottom of the water line. Approval from the Town Engineer and Director of Public Works must be acquired before same trench installation is permitted.
 - b. The sewer manhole shall be of watertight construction and tested in place.
 - c. Where vertical separation of at least 18 inches cannot be maintained between the bottom of the waterline and the top of the sewer, the sewer line shall be constructed of water pipe conforming to AWWA C 900 and shall be pressure tested in place, as specified in AWWA standard C 600, with a minimum test pressure of 30 psi. Leakage is not permitted during the AWWA C600 pressure testing.
 - d. When sanitary sewers cross over water lines, the sewer joints must also be centered at the point of crossing so that joints are equidistant and as far as possible from the water line.

- e. Sewer Manholes and Drainage Structures —A minimum of 10 feet (outside to outside) of separation shall be provided between water pipes and sanitary sewer manholes. Where this distance cannot be maintained, the manhole shall be of watertight construction and tested in place. A minimum of 6 feet of separation shall be maintained between waterlines and drainage structures.

C. Crossings

1. Normal Conditions – Water lines crossing sanitary and storm sewers shall be laid to provide a separation of at least 18 inches between the bottom of the water line and the top of the sewer.
2. Unusual Conditions – When local conditions prevent a vertical separation described in C.1., or where waterline must cross below sanitary sewers, the sewer line shall be constructed of water pipe conforming to AWWA C 900 and shall be pressure tested in place, as specified in AWWA standard C 600, with a minimum test pressure of 30 psi. Water lines passing under sewers shall, in addition, be protected by providing:
 - i) A vertical separation of at least 24-inches between the bottom of the sanitary sewer and the top of the water line.
 - ii) Adequate structural support for the sewer to prevent excessive deflection of the joints and the settling on and breaking of the water line.
 - iii) That the length of the water line be centered at the point of the crossing so that joints shall be equidistant and as far as possible from the sewer.
 - iv) When conditions do not allow for water lines to pass over storm sewers, a minimum of 18 inches clearance shall be maintained from top of water line to bottom of storm sewer.
 - v) If conditions do not allow for separation during installation around existing structures, bridging or other methods of protecting water quality and pipe integrity may be submitted and considered for approval by the Town Engineer. New Construction must maintain required separations.
3. Stream Crossing and highway crossings shall be installed as shown in the Standard Details unless otherwise specified. The crossing shall be made in such a manner to minimize erosion and blockage of the stream flow. Backfill under the rip-rap shall be compacted to ninety percent density.

VI. Testing and Disinfection of Water Lines

A. General

The Contractor will supply the water used for flushing, disinfection, and testing. If Town water is used, the water shall be metered and the contractor shall pay the Town for its cost. Filling of water lines may not be performed until permission has been obtained from the Town Superintendent. The contractor is not permitted to operate valves on any existing water line.

B. Testing

1. All new water mains and hydrant connections shall be subject to a hydrostatic pressure test after thrust restraints have been installed, the line has been backfilled, and at least 3 days after the last concrete reaction anchor has been poured and all water house connections have been installed (lateral from main to meter box). Testing shall be in accordance with AWWA C-600. Water mains shall be filled with clean water at a velocity of approximately 1 foot per second while necessary measures are taken to eliminate all air. A hydrostatic pressure of not less than 150 psi or 150% of normal operating pressure, whichever is greater, shall be maintained for two (2) hours. Lines of different sizes shall be tested separately. Hydrants shall be in the closed position. All high points in the portion of the system under test shall be vented and air shall be expelled from the system prior to beginning the test.
2. After the portion of the system under test has reached the required pressure as stated herein, the pressure shall be maintained for two (2) hours. At the conclusion of the pressure test, the volume of the makeup water required to refill the pipeline shall be determined by measurement with a displacement meter or by pumping from a vessel of known volume.
3. All visible leakage must be eliminated by the contractor, regardless of the amount. Should test results show displacement, damage or leakage in excess of the allowable amount (see table below for representative values), the contractor shall repair the displacement and damage to eliminate the leakage. The contractor shall retest until the specified conditions are met to the satisfaction of the Town Superintendent.

Allowable Leakage per 1,000 feet of Pipeline – gph
 Nominal Pipe Diameter – in

Psi	4	6	8	10	12	16
250	0.47	0.71	0.95	1.19	1.42	1.90
225	0.45	0.68	0.90	1.13	1.35	1.80
200	0.43	0.64	0.85	1.06	1.28	1.70
175	0.40	0.59	0.80	0.99	1.19	1.59
150	0.37	0.55	0.74	0.92	1.10	1.47

The above table is presented for convenience only. Please refer to AWWA C600 for complete up-to-date table.

C. Disinfection

1. After leakage testing, and before final inspection of the completed systems, water mains shall be flushed and then disinfected in accordance with ANSI/AWWA C-651 standards. All disinfection procedures and final testing shall be carried out under the observation of a utility inspector approved by the Town Superintendent. Either the tablet method or continuous feed method shall be used.
 - a) The tablet method can only be used if the pipes and appurtenances are kept clean and dry during construction. The mains should be filled at the rate of 1 ft/sec or less. Water must remain in the main for a minimum of 24 hours when the water temperature is 41 F (5 C) or more. If the water temperature drops below this then the water must remain a minimum of 48 hours. A detectable chlorine residual should be found at each sampling point after the prescribed contact time.
 - b) If the continuous feed method is to be used, a preflushing shall be accomplished at a flow velocity of not less than 2.5 feet per second. All valves, hydrants, and water house connection shall be operated during this operation. Clean water shall be flushed throughout the system until there is no trace of cuttings, oil, dirt, or other foreign matter flowing out of the pipe. The water shall be chlorinated so that after the 24 hour contact time, a free chlorine residual of not less than 10 ppm is maintained.
2. Final flushing will occur as soon as practically possible after the required contact time to prevent damage to the pipe lining or to prevent corrosion damage to the pipe itself. When the chlorine residual has been reduced to within the range of 0.2 and 2.0 ppm, bacteriological samples can be collected.
3. Bacteriological Sampling – Water samples for bacteriological analysis shall be taken by the contractor at regular intervals not exceeding 2,000 feet, as approved by the Town, witnessed by the utility inspector, and analyzed by a certified laboratory. Two satisfactory bacteriological samples, collected twenty-four hours apart must be obtained prior to placing the lines in service. Satisfactory samples are those that indicate the presence no coliform bacteria. If contamination is found in one or both sets of samples, the entire disinfection and bacteriological sampling procedure must be repeated.
4. It is expected that any water flushed from the mains will have to be dechlorinated with a neutralizing chemical to insure that environmental damage will not occur. The recommended neutralizing chemicals, and procedural guidelines for dechlorination are explained in the ANSI/AWWA C-651 standards. The contractor shall be responsible for the proper application of the neutralizing chemicals to reduce the chlorine residual to a non-detectable level. The contractor shall assume full responsibility for the discharge of all water used during any flushing, and shall be responsible for any environmental damage including, but not limited to, vegetation, trees, streams, ponds, lakes, or any other damage to public or private property.

VII. Service Laterals

A. General

1. All material used shall meet or exceed ANSI/AWWA C800 standards.
2. All taps made on ductile iron mains shall be made direct, without a saddle, unless otherwise specified or approved by the Town.
3. Where applicable, and when tapping PVC mains, a Ford Style FS202 or approved equal shall be used.
4. All water services shall be installed as per Standard Detail shown in Specification Detail section.
5. Service lines shall be type 200 psi HDPE copper tubing sized piping conforming to ANSI/ASTM standard specifications. The line shall be one continuous piece from corporation stop to meter setter and the line will be equal to the size of the corporation stop. Line must be accompanied by a twelve gage copper tracer wire.
6. Meter boxes will be set on the street side at the property line, unless approved by the Town.

B. ¾-Inch Water Service

1. Corporation stop shall be ¾" ball style and conforming to the requirements of the AWWA Standards. Connection at the corporation stop shall be compression.
2. The meter box shall be 18 inches in diameter, and 30 inches in depth, with an 18 inch diameter frame and 11½ inch diameter lid. The frame and lid shall be made of cast iron, and lid shall include the FP cast iron plug where applicable.
3. The meter setter shall consist of a copper setter, inlet angle valve, and outlet angle ASSE approved dual check valves (top loading).

C. 1 Inch Water Service

1. Corporation stop shall be 1 inch in size and ball style and conforming to the requirements of the ANSI/AWWA B88 Standards. Connection at the corporation stop shall be compression type.
2. The meter box shall be 18 inches in diameter, and 30 inches in depth, with an 18 inch diameter frame and 11½ inch diameter lid. The frame and lid shall be made of cast iron, and lid shall include the FP cast iron plug where applicable.
3. The meter setter shall consist of a copper setter, inlet angle valve, and outlet angle ASSE approved dual check valves (top loading).

D. 1½ and 2 Inch Water Services

1. Service shall be taken off the main by means of a wet tap or an anchoring tee, with 6 inch branch and a 6 inch branch valve. A tapped mechanical joint plug shall be used in the downstream side of this valve, with a male IPT to compression adapter.
2. The meter shall be set in a custom box with a custom meter setter consisting of a flanged angle valve on the inlet and an ASSE approved dual check valve on the outlet. The setter shall include a by-pass with ball valve and locking cap.

3. Meter vault shall conform to the dimensions shown in the Standard Details, or as approved by the Town.

VIII. Backflow Prevention Assemblies

- A. Each metered service connection must have an A.S.S.E. (American Society of Sanitary Engineers) approved backflow prevention device installed for service line protection. The Town must approve the type of device submitted based on the degree of hazard of the planned use.
 1. Metered service lines with a low degree of hazard must be provided with a double-check valve backflow prevention assembly that is tagged, stamped, or embossed to indicate it meets A.S.S.E. Standard No. 1015.
 2. Metered service lines with a high degree of hazard must be provided with a reduced pressure zone device that is tagged, stamped, or embossed to indicate it does meet A.S.S.E. Standard No. 1013.
 3. Backflow prevention devices that require yearly inspection must be installed above grade and/or in a location not subject to flooding. The location of a backflow prevention device to be approved by the Town's Director of Utilities.
- B. Each fire line service connection must have an A.S.S.E. approved backflow prevention device with leak detector installed for fire service line protection. The Town must approve the type of device submitted based on degree of hazard of the planned fire service.
 1. Fire lines with a low degree of hazard (no additives or antifreeze) must be provided with a detector double check backflow prevention assembly with A.S.S.E. Standard No. 1048 identification made part of the device.
 2. Fire lines with a high degree of hazard (additives or antifreeze) must be provided with a reduced pressure assembly with A.S.S.E. Standard No. 1047 identification made part of the device.
- C. All detector (metered) assemblies are required to have a meter that is compatible with the Town's meter reading device.
- D. All backflow prevention devices must be inspected annually by the owner and a report submitted to the Town's Director of Utilities for review. Residential premises without secondary uses, exclusive of multifamily that present a low degree of hazard (no additives or anti-freeze), are not required to submit annual reports.

A written request to the Director of Public Works is required for necessary inspections for acceptance of improvements. The request shall include as-built drawings, easements and other pertinent information as deemed necessary by the Department of Public Works and the Town's Engineer. A response from the Department of Public Works after review will be forwarded to the applicant outlining deficiencies or for approval of the project.

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Section 4

Valves and Hydrants

I. General

- A. Valve or hydrant manufacturer shall be regularly engaged in the design, manufacture, and maintenance of valves or hydrants of the type specified, and shall have furnished valves or hydrants of the same general design, type, and comparable size specified herein, which have been used and proved satisfactory under similar test, service, and operating conditions for at least five years. The manufacturer shall furnish satisfactory evidence of adequate facilities for furnishing parts for repairs and for maintenance of the hydrants or valves furnished. Unless otherwise indicated, valves shall be designed to provide tight shut-off at the following pressure differential: 250 psi upstream and 0 psi downstream in either direction. Design flows shall be a minimum 15 feet per second for opening and closing.
- B. All valves furnished through 12 inches shall be resilient wedge-valves with nonrising stems. Valves larger than 12 inches shall be butterfly type unless otherwise required by the Town.
- C. A valve box shall be provided for each buried valve. Boxes shall be screw type. Telescoping type are prohibited. Extension stems shall be provided for valves where the operating nut is greater than 4'-0" below grade. The stem shall extend to a minimum of 2'-0" below finished grade.
- D. Unless otherwise specified herein, 4-inch and larger valves and all hydrants shall have mechanical joint ends.

II. Gate Valves

A. General

1. Gate Valves shall be manufactured to meet, and/or exceed, all the requirements of ANSI/AWWA C509-01 or ANSI/AWWA C515 Standard for resilient wedge ductile iron gate valves.
2. The manufacturer must provide a ten (10) year warranty against defective material and workmanship.

III. Specifications

Valves shall meet the following minimum design criteria:

1. Valve body shall be manufactured of ductile iron, and have a working pressure of 250 psi.
2. All ferrous components shall be ductile iron, body, wrench nut, stuffing box, and valve wedge.
3. The marking "DI" or "ductile iron" shall be cast into the valve body along with "250W" or "250 psi".

4. The valve wedge shall be ductile iron, encapsulated with nitrite rubber. The wedge shall be symmetrical and seal equally well with flow in either direction.
5. Valves shall have a fusion-bonded epoxy coating inside and out for maximum corrosion resistance, complying with ANSI/AWWA C550 Standard, applied electrostatically prior to assembly.
6. The valve shall have a smooth full diameter waterway with no recesses to trap debris or obstruct flow.
7. Valve stem shall be high strength corrosion resistant bronze. Stem shall be sealed by three o-rings. The top two o-rings shall be replaceable with valve fully open and while subject to full rated working pressure. O-ring set in a cartridge shall not be allowed.
8. Sealing gaskets shall be pressure energized o-rings.
9. Torque minimizing thrust washers located with one (1) above, and one (1) below the thrust collar, to assure trouble free operation of the valve.
10. Valves shall conform to (U.L.) Underwriters Laboratories, and (F.M) Factory Mutual Research Corporation. Valves shall be NSF standard G1 certified.
11. Bolting materials shall develop the physical strength requirements of ASTM A307 Standard, and may have either regular square or hexagonal heads with dimensions conforming to ANSI B18.2.1 Standard. Metric size socket head cap screws are not allowed. Bolts and nuts securing valve bonnets, stems and operating nuts shall be stainless steel.
12. Operating nut shall have four flats at stem connection to assure even input torque to the stem.
13. Flanged valves shall be O S & Y 125 lb. flanges. The manufacturer shall be able to furnish 250 lb. flanges upon request.

IV. Tapping Sleeves

- A. Mechanical joint tapping sleeves meet the following design criteria:
 1. Sleeves shall be the split type mechanical joint with side and end gaskets, manufactured of ductile iron.
 2. Sleeves shall conform to all applicable requirements of ANSI/AWWA C110 A21.10; ANSI/AWWA C111 A21.11; and ANSI B16.11 Class 125 flange.
 3. When sleeves are to be installed on pipe that is larger than 12", field verification by the contractor of the existing pipe's outside diameter shall be required before ordering said sleeve.
 4. All tapping sleeves shall be iron, mechanical joint tapping sleeves unless otherwise approved by the Town's Superintendent. Stainless steel tapping sleeves will be considered where the existing main is PVC pipe, or cast iron of irregular outside diameter.

V. Fire Hydrants

- A. General
 1. Fire hydrants shall be the dry-barrel type manufactured to meet, and/or exceed, all the requirements of ANSI/AWWA C502-94 Standard.

2. Drainage capability must be provided for fire hydrant weep holes. If areas of high water table are encountered, the contractor shall contact the Director of Public Works or the Town Engineer to relocate the hydrant to prevent possible cross contamination.
3. Fire hydrants shall be painted in accordance with standards established in the Materials Specifications document.
4. The manufacturer must provide a ten (10) year warranty against defective material and workmanship.
5. Fire hydrants shall be located as follows:
 - a. At street intersections and at intermediate locations where deemed necessary by the Town Director of Public Works and/or the State Fire Marshall's Office after consultation with the Fire Chief.
 - b. At the end of all cul-de-sacs in a location determined by the Town Superintendent.
 - c. No closer than fifty (50) feet and no further away than one hundred (100) feet of any standpipe or sprinkler system fire department connections.
 - d. As required by the following schedule according to use group. The distance shall be measured along an unobstructed path around the structure, to the most remote part of the structure that the hydrant will serve.

Industrial Buildings	250 feet
School Buildings	300 feet
Commercial, Church and Office Buildings	350 feet
Apartments, Multifamily, and Town Houses	250 feet
Single-Family Detached and Two-Family Attached Dwellings	400 feet
 - e. All hydrants shall be a minimum of fifty (50) feet away from any buildings other than single-family detached and two-family attached dwellings unless deemed appropriate by the Town Superintendent.
 - f. In no case shall the distance between fire hydrants, measured along the centerline of accessible streets, be greater than six hundred (600) feet.
6. No landscaping shall be permitted within five (5) feet of a fire hydrant, with the "no landscape" area indicated on the plat.
7. **Fiberglass hydrant marker flags shall be installed by the developer and approved by the Director of Public Works.**

B. Specifications

Hydrants shall meet the following minimum design criteria:

1. Hydrant shall have a rated working pressure of 200 psi with a test pressure of 400 psi.
2. The main valve closure shall be of the compression type, opening against the pressure and closing with the pressure.
3. Traffic feature to be designed so that the nozzle section of the hydrant can be rotated (by degree) to full 360 circle during field installations, if necessary.
4. The main valve opening shall not be less than 5 ¼" and be designed so that removal of seat, drain valve mechanism, internal rod, and all working parts,

can be removed through the top of the hydrant, without disturbing the ground line joint or the nozzle section of the hydrant.

5. The bronze seat shall be threaded into mating threads of bronze for easy field removal.
6. The draining system of the hydrant shall be bronze, and activated by the main stem without the use of auxiliary rods, toggles, pins, etc. The drain mechanism shall be completely closed after no more than three turns of the operating nut in the opening direction, allowing throttling of the hydrant as needed. Provide a minimum of two inside ports and four drain port outlets to the exterior of the hydrant, to insure positive drain when closed. Drain shut-offs shall be by direct compression closure.
7. The operating nut, main stem, coupling, and main valve assembly shall be capable of withstanding input torque of 200 ft/lbs in opening or closing directions.
8. There shall be an internal top housing with triple o-rings to seal operating threads from the waterway and accommodate an antifriction washer.
9. Nozzle sections of the hydrant shall be designed to permit field replacement of damaged threads without special tools, excavation, or disturbing the ground line joint. Bronze nozzles are to be locked into the hydrant barrel with locking lugs, and be sealed by heavy duty 0-rings. The operating nut size, as well as hose and pumper threads, shall conform to National Standard Specifications.
10. Hydrants shall conform to (U.L.) Underwriters Laboratories U.L. 246 standards, and (F.M) Factory Mutual Research Corporation.
11. The maximum friction loss through the hydrant shall not exceed 2.8 psi at 1000 gpm through the pumper nozzle. The flow test and certification of this feature shall be conducted by an independent testing laboratory, and be in accordance with ANSI/AWWA C502-94 standard. The records of all tests performed shall be made available to the Town upon request.
12. The standard depth of bury shall be a minimum of 4' to a maximum of 7' without the use of extensions. When the water main is deeper than the standard depth, the use of quarter and eighth bends between the tee at the main and the fire hydrant will be required to bring it to the proper grade.

VI. Installation

A. Valves

1. Valves shall be carefully erected in their respective positions and free from all distortion and strain with stems vertical. The valve box shall be set over the operating nut and shall have its top flush with the final surface. The valve box top section shall overlap the lower section by at least 6 inches.
2. Restraint of valves shall be performed by the Contractor in accordance with the Standard Details, or as specified by the Town Engineer.
3. Where valves occur on the end of the pipeline, a mechanical joint plug shall be placed and secured in the exposed bell before backfilling the trench.

4. The contractor shall backfill and compact under and around valve boxes to ensure no vertical loads are transmitted to the valve operators.
5. All valves shall be installed with Megalug™ retainer gland or approved equal.

B. Fire Hydrants

1. Fire hydrants shall be installed where indicated on the Plans, in accordance with the Standard Details, and set plumb, with bury line at finished grade. The pumper outlet shall be placed facing the street.
2. Bollards shall be installed as shown on plans or as directed by the Town.
3. Every effort shall be made to avoid the use of barrel extensions, and such extensions shall only be used when approved on a case-by-case basis by the Director of Public Works.
4. A 6-inch valve shall be provided in the lead of each hydrant. This valve shall be restrained to the main by an anchoring tee or anchoring coupling. Where a hydrant is used to terminate the main, restraint of this valve shall be by means of a dead-end anchor, cast around the main.
5. All privately owned hydrants shall have stenciled on the hydrant the word "PRIVATE" to identify the unit as a privately owned hydrant. The stenciling shall be sized and placed to be easily seen from the direction of hydrant access.
6. Hydrants shall be located no more than ten (10) feet from the face of curb and at least ten (10) feet from any entrance or driveway.
7. Prior to acceptance, hydrants shall be flow tested under Town supervision to assure compliance with the Town of Berryville Construction Standards Manual. The flow report shall be submitted to the Town Director of Public Works for review and approval.

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WATER DISTRIBUTION SYSTEM * April 2015 (Listed in order of preference)

Updated December, 2023

Items for Water Distribution	Manufacturer	Model #	ANSI/AWWA spec.* or other Requirement
Water lines	Griffin		C151/A121.5
	Atlantic States		AWWA C151
	JM Eagle		C0909
Fire Hydrants	Mueller Centurion American Flow Control	Super Centurion 200 B62B 4' D.O.B.	AWWA C502
Gate Valves R.S. Ductile Iron	Mueller American Flow Control	A2361 AFC 2500	AWWA C502
Swing Check Valves	Mueller American Flow Control	A 2600-6 AFC 2100	AWWA C508
Combination Air Release & Air Vacuum Valves	Valmatic Apco	VM 201 C & VM 202 C 143C & 145C	ASTM A126 Class B
Valves Boxes	Tyler Union Pipe Bingham and Taylor	564S BT 22	AWWA C110 ASTM A438-62
Valve Box Adapter	Adapter, Inc.	Valve Box Adapter II (VBAll)	N/A
Bolts and Gasket Kits	Stewart	S-FBK-FF-1/8	
	Carson	C-FBK-FF-1/8	
Mechanical Joint Fittings	Tyler Union Pipe Star	Compact	AWWA C153
Mech. Joint Restraints Mega Lug Glands	EBAA Iron Mega Lugs	1100 Series	ASTM A536-80
	Ford Meter Box Co.	1400 Series	
Wall pipe/Sleeve/Flg Spools – Ductile Iron Pipe and Flanges	Higgins Eng. Davis K Clow		AWWA C115
Service Line Fittings	Ford Meter Box Co.	C44 Series	compression
	Mueller	110 Series	AWWA C800
Service Tubing	Mueller Howell	HDPE	CTS 200 PSI
Threaded Fittings	Trenton	Red Brass	ANSI B16.15
	Lee Brass	Red Brass	

(Continued)

*Must meet the requirements of the ANSI/AWWA and/or ASTM standards as described.

WATER DISTRIBUTION SYSTEM * April 2015 (Listed in order of preference)

Updated December, 2023

Items for Water Distribution	Manufacturer	Model #	ANSI/AWWA spec.* or other Requirement
Service Saddles	Ford Meter Box Co. FS 202 Mueller	Double Strap H10500	Stainless Steel Bands
Ball Corporation Stops	Ford Meter Box Co. Mueller	FB 1000 Series 300 Series	AWWA C800
Coppersettters			
Single Service 1 ¹ / ₂ "	Ford Meter Box Co.	VBHH76-15C11-66NL	AWWA C800
Single Service 5/8"	Ford Meter Box Co.	VBHC172-12WW443NL	W/ dual bypass
Single Service 1"	Ford Meter Box Co.	VBHC174-15W444NL	check valve
Double Service 5/8"	Ford Meter Box Co.	VBHC172-12W1433NL	
Single Service 2"	Ford Meter Box Co.	VBHH77-15BHC 11-77NL	
Dual Cartridge			
Style Check	Ford Meter Box Co.	HHC Series	AWWA C800
Meter Box			
Single Service 5/8"	Mid-States Plastics	Bingham & Taylor 18" x 30"	ASTM-D1505 High density plastic
Single Service 1"	Mid-States Plastics	Bingham & Taylor 24" x 30"	High density plastic
Double Service 5/8"	Mid-States Plastics	36" x 36"	Polyethylene
Meter Box Insulation Pads	Mid-States Plastics	TP-18, 24, 36 Series	Polyethylene
Meter Box Frame and Cover			
5/8" to 2"	Ford Meter Box Co.	Style M32C PW REC	Cast Iron
5/8" to 2"		MC36 or M36	
Single service 5/8"	AY McDonald	Style 74M32CRG	Cast Iron
Single service 5/8"	Bingham & Taylor	Style #180-18-C	Cast Iron
Meter Box Cover	Ford Meter Box Co.	NO#1	Extensions
Extension Rings	MBC	NO 18-24	Cast Iron
Cold Water Meters	Neptune	T-10	AWWA C700
Blow-off Hydrants	Kupferle Foundary	#77	
Sampling Stations	Kupferle Foundary	NO88-WC (Eclipse)	
Mechanical Joint Connections			
	Infact Corporation	Foster Adaptor	
Backflow Assemblies Low Hazard	Ames	3000 SS	ASSE 1048
Backflow Assemblies High Hazard	Watts	709 DCA	
Backflow Assemblies Low Hazard	Ames	5000 SS	ASSE 1047
Backflow Assemblies High Hazard	Watts	909 RPDA	

*Must meet the requirements of the ANSI/AWWA and/or ASTM standards as described

SEWER COLLECTION SYSTEM * April 2015 (Listed in order of preference)

Items for Sewer Collection	Manufacturer	Model #	ANSI/AWWA spec.* or other Requirement
Gravity Sewer Mains PVC	J.M. Eagle	C909/905	AWWA C909 ASTM F1483
Gravity Sewer laterals 4" through 6"	National NAPCO	DR25 PVC	ASTM D3139
Force Main (PVC) 6" through 12"	J.M. Eagle	C909	AWWA C909
Force Main PVC Pressure Pipe 1½" through 4"	J.M. Eagle	C900	AWWA C900
Sewer Main Fittings Gravity	HARCO	C900 Fittings	PVC ASTM D 1784
Mechanical Joint Fittings 3" through 12"	Tyler Union Pipe Star	Compact	AWWA C153
Ball Curb Stops 2"	Ford Meter Box, Inc. Mueller	B11 Series	AWWA C800
Manhole Frames And Cover 24" diameter	Neenah	Watertight R1916-F Standard R1642	ASTM-A-48 Class 35B Gray Iron

(Continued)

*Must meet the requirements of the ANSI/AWWA and/or ASTM standards as described.

SEWER COLLECTION SYSTEM * April 2015 (Listed in order of preference)

Items for Sewer Collection	Manufacturer	Model #	ANSI/AWWA spec.* or other
Hour Meters	Cramer		
Flow Meters	Polysonics		
Pumps	Gorman-Rupp		
Ball Valve	Geneco	EST ST-3.0	ASTM A-36
Extension Stems	Trumble		84A
Gate Valves R5	AFC 2500	250 PSI R. S.	AWWA C515
Ductile Iron	Mueller A 2361	Ductile Iron	
Air Release and Air Vacuum Valve	Valmatic APCO	801 BW, 802 BW	ASTM A126 Class B
Valve Boxes	Tyler Union Bingham & Taylor	24" x 36" 36" x 48"	Cast Iron
Gate Valve	Geneco	EST ST-3.0	ASTM A-36-84A
Extension Stems	Trumble		
Clean Out Adapters and Plug	Jones Manufacturing	C.I. Clean Out Adapter	Cast Iron
Clean Out Wye Fabricated	HARCO	SDR 21 Long Sweed T-Wye	ASTMD-1784
Clean Out Frame and Cover	Capital Foundaries	Lamp Pole Frame and Cover	Cast Iron
Manhole Internal And External Chimney Seals	N.P.C., Inc. Cretex Wrapid		

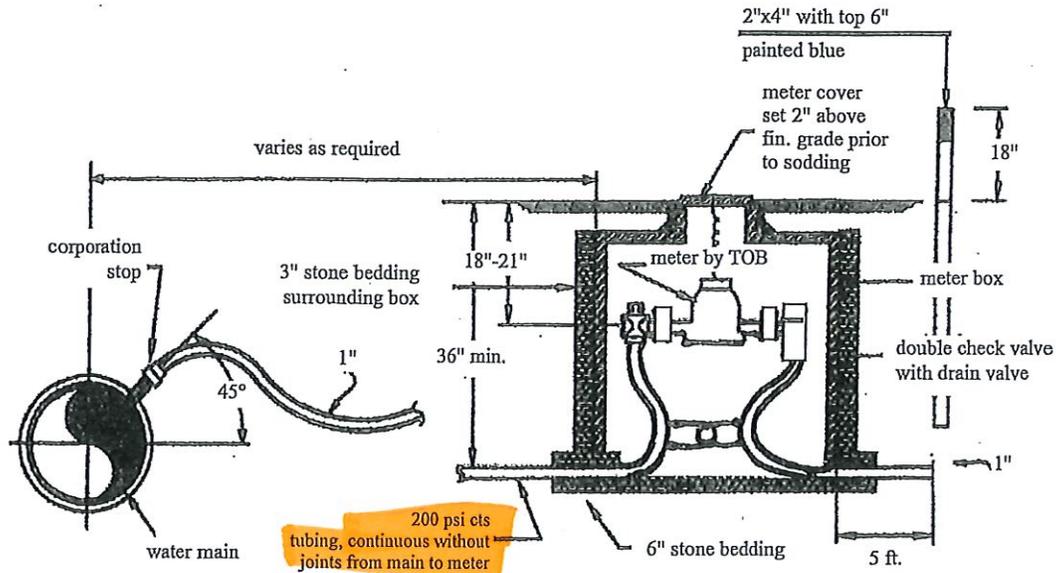
*Must meet the requirements of the ANSI/AWWA and/or ASTM standards as described.

STREET SIGNAGE * November 2019

Items for Street Signage	Manufacturer	Model #	Specifications
Standard public street name sign	N/A	N/A	MUTCD D3-1 3M Green background, white letters white rounded corners
Standard private street name sign	N/A	N/A	MUTCD D3-1 3M3430EGP3430 brown background, white letters white rounded corners
Perforated traffic post	Trinity Highway	SQR-LOC	2" square 14 gauge Aluminum, FHWA approved breakaway support
Enforcement and warning sign posts	N/A	N/A	2" square 14 gauge galvanized yellow post
Sign slot hardware	N/A	N/A	Standard sign 5.6" sign slot 5.6" t slot
Sign T slot hardware	N/A	N/A	

METER BOX & COVER

Meter Size	Meter Box		Meter Box Cover
5/8"x3/4" or 3/4"	18 in Dia.	Non-Traffic	M32C-PW + FP cast iron plug
		Traffic	A32HH-T
1"	24 in Dia.	Non Traffic	MC-24 (Frame) WITH RML-1-T (Top Lid)
		Traffic	MC-24 (Frame) WITH RML-12-T (Top Lid)



METER SETTING PARTS		
SERVICE PIPING DIA.	METER SIZE	FORD METER SETTER
3/4"	5/8x3/4" (20 GPM)	VBHC 72 12W 4433
1"	5/8"x3/4" (20 GPM)	VBHC 72 15W 44-44B4
1"	3/4" (30 GPM)	VBHC 72 15W 44-44B4
1"	1" (50 GPM)	VBHC 74 15W 4444

NOTE: Equivalent meter setters by other manufacturers may be installed with prior approval of the Director of Public Works.

INSTALLATION NOTES:

1. Exact location of meter box assembly to be approved prior to installation.

5/8" x 3/4", 3/4" & 1" Meter Installation

Figure 5

Town of Berryville

Water and Sewer Construction Standards and Specifications 2015

Changes to the Materials listing & Detail Sheet Sections

Meter Box Section

Delete all reference to Mid-States Plastics meter boxes

Add the following to replace Mid-States Plastics

Single service 5/8"	Bingham & Taylor	18"x30"	High Density Plastic
Single service 1"	Bingham & Taylor	24"x30"	High Density Plastic

Meter Box Frame and Cover Section

Add the following to this section

Single service 5/8"	AY McDonald	Style 74M32CRG	Cast Iron
Single service 5/8"	Bingham & Taylor	Style # 180-18-C	Cast Iron

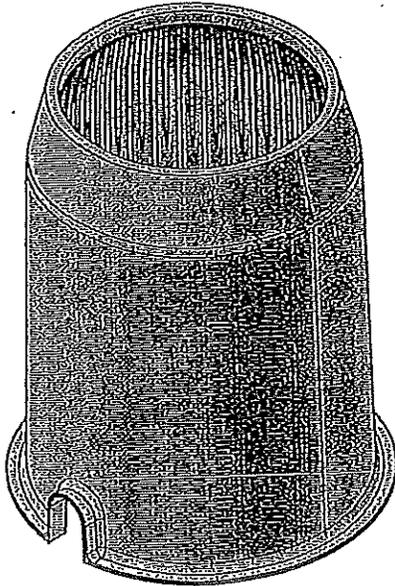
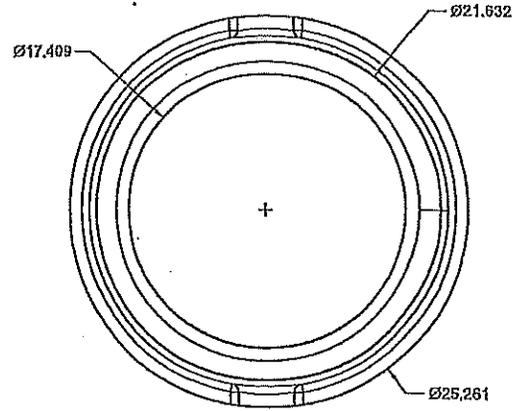
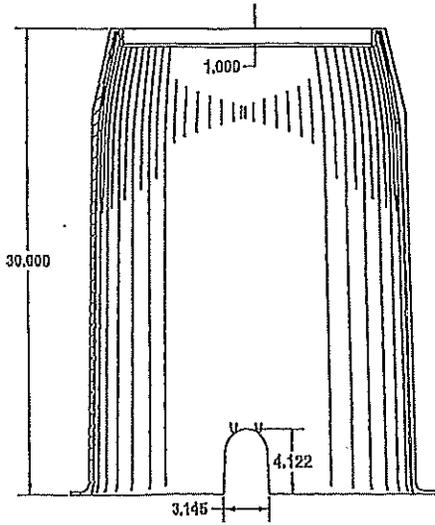
Detail Sheets Meter Boxes

Delete all details sheets of Mid-States Meter Boxes

Replace the meter box detail sheets with the attached meter box details

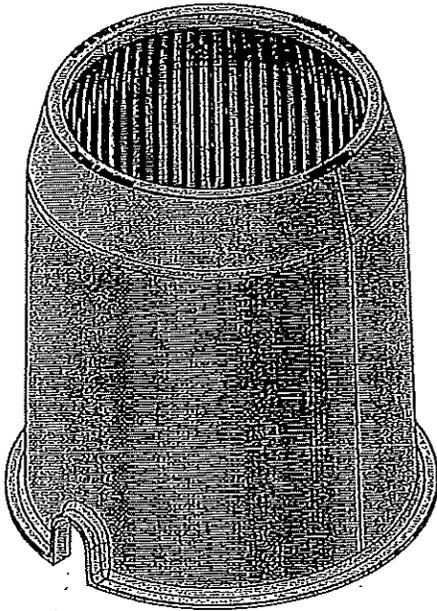
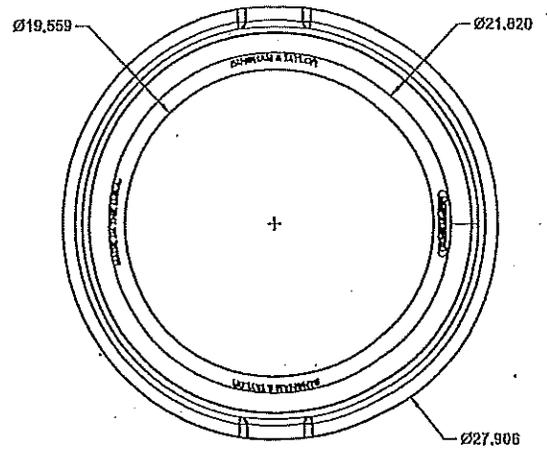
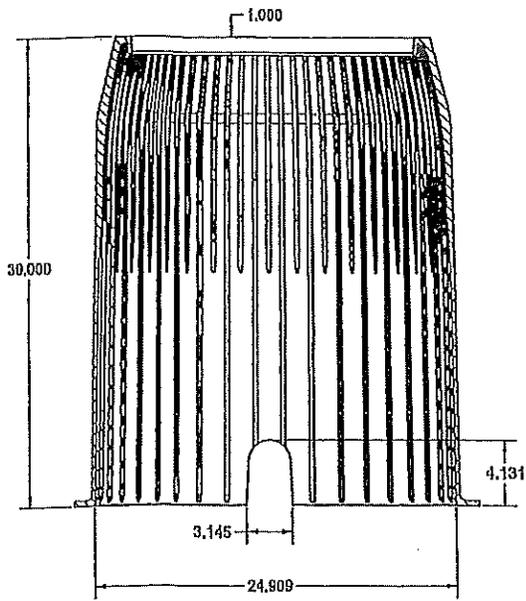
Detail Sheets for Meter Box Frame and Covers

Add the attached detail sheets to the meter box frame & cover section



NOTES- ALL EDGES HAVE A 1/16 RADIUS TOLERANCE ± .0825		
REV.	DATE	COMMENT
A		RELEASED
 Bingham & Taylor 1872		BINGHAM & TAYLOR MMP182230
Molded Meter PII 18x22x30		J.Klopp 02/18/16
		0 lbs

18x22x30 Molded Meter Box
Figure 32



NOTES- ALL EDGES HAVE A 1/16 RADIUS
TOLERANCE $\pm .0825$

REV.	DATE	COMMENT
A		RELEASED
 Bingham & Taylor <small>EST. 1925</small>		BINGHAM & TAYLOR MMP202430
Molded Meter PII 20x24x30		DATE: J. Klopp 02/18/16 WEIGHT: 20.0 lbs
DATE:		DATE: 11/27/17
DATE:		DATE:

20x24x30 Molded Meter Box
Figure 31

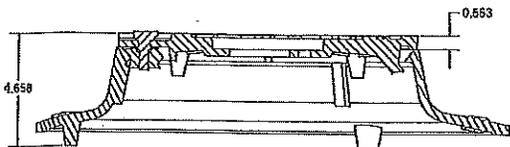
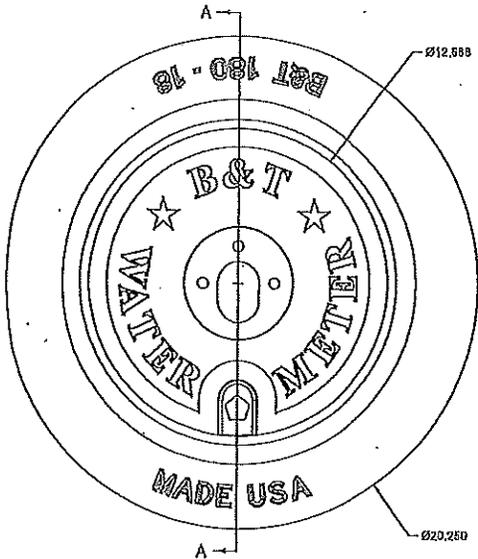
CULF190301WS
#180 LID TOUCH READ DUEL
PRV2-90301 - WATER METER

BOLTSMMB
MALL METER BOX BOLT

CULF18018WSSC
#180-18-C-TYPE
FRAME DOUBLE

CULFWG
WORM GEAR FOR
METER BOXES

WASHBRNYLON
NYLON M11250X1 WASHER/METER BOX
WASHERBRASS
M11250-L BRASS WASHER/METER BOX



NOTES- ALL EDGES HAVE A 1/16 RADIUS
TOLERANCE ± .0625
ASTM A48 CLASS 30 IRON

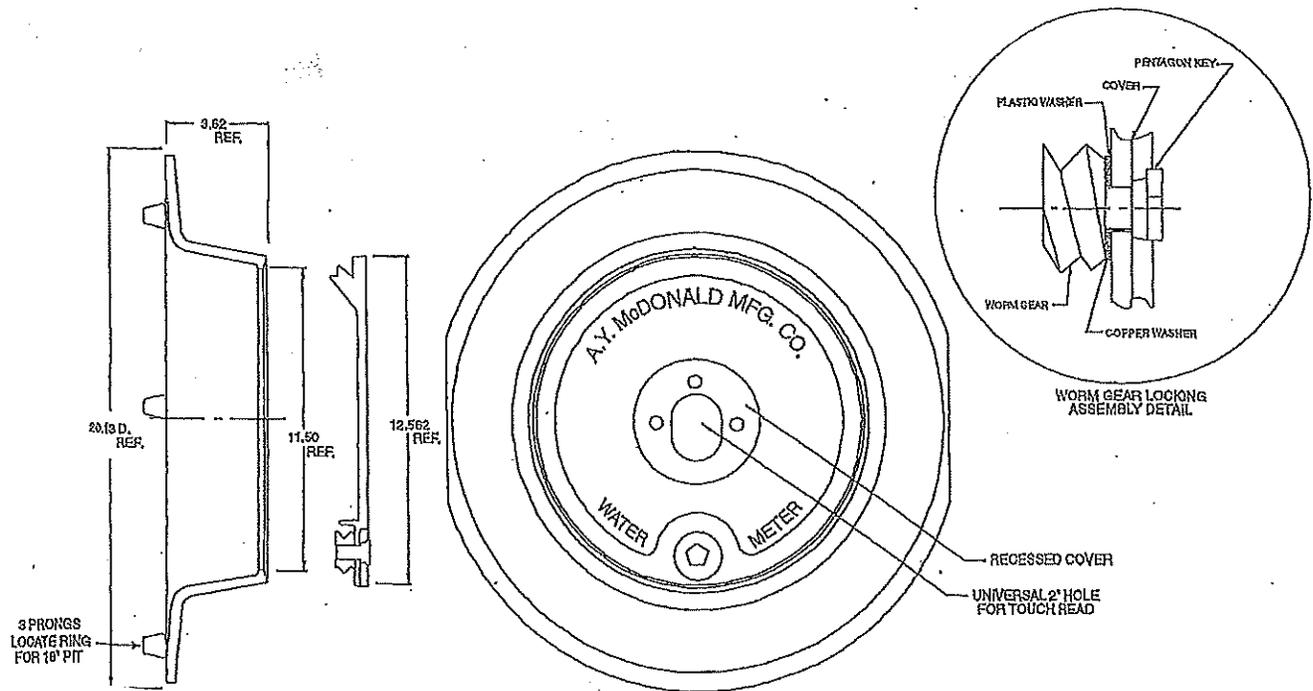
REV.	DATE	COMMENT
A		RELEASED
 Bingham & Taylor <small>EST. 1873</small>		BINGHAM & TAYLOR IFL18018WSSC90301WS
#180-18-C-TYPE FRAME DOUBLE & LID TOUCH READ DUEL PRP V2-90301 SLOTTED HOLE -SMALL BOLT WATER METER		DESIGNED BY: J.Klopp DATE: 02/17/16 WEIGHT: 34,5 lbs
DRAWN BY: D.Clark		DATE: 04/09/18
CHECKED BY:		DATE:

#180-18-C-Type Frame Double and Lid Touch Read Cast Iron Meter Cover

Figure 33

Town of Berryville

Water and Sewer Construction Standards and Specifications 2024 Update



Cast Iron Meter Box Frame and Cover

Figure 34

Town of Berryville

Water and Sewer Construction Standards and Specifications 2024 Update

Streets and Utilities Committee Agenda Item Report Summary

January 23, 2024

Item Title

Streets and Street Lighting

Prepared By

Christy Dunkle

Background/History/General Information

Staff presented information about street design requirements and street lighting at the last Committee meeting.

Findings/Current Activity

Streets

Staff is recommending a review of the chart below to include in the Construction Standards and Specifications Manual under *Section 2 General Design Standards, VIII Streets and Related Improvements in the Public Right-of-Way; Section 314.7(a) Streets and Rights-of-Way* of the Berryville Zoning Ordinance; and *Article IV Subdivision Design Standards, Section B. Streets* of the Berryville Subdivision Ordinance. VDOT reviewed the numbers and agreed with the need for a wider right-of-way width as the width of sidewalks has been modified from four (4) feet to five (5) feet.

ROW WIDTH	ADT	Design Speed	Road Width (Parking 2 sides)	Curb & Gutter	Buffer Strip	Sidewalk Width
55'	Up to 2,000	25 mph	30'	CG-6	5'	5'
65'	2,001 to 4,000	25 mph	36'	CG-6	7'	5'

Street Lights

Staff is recommending guidelines for street light placement as discussed at the previous meeting. Recommendations were added to include road classifications and commercial guidelines. The following is a draft of guidelines that would be included in the Construction Standards Manual under *Section 2 General Design Standards, VIII Streets and Related Improvements in the Public Right-of-Way; Section 314.7(a) Streets and Rights-of-Way* of the Berryville Zoning Ordinance; and *Article IV Subdivision Design Standards, Section B. Streets* of the Berryville Subdivision Ordinance.

Street Lights

The placement of street lights shall follow the guidelines below.

Residential

- At intersections:

In order to provide lighting within the intersection area of two local streets, a light ball shall be installed on one corner of any intersection or opposite the intersection in the case of a T-intersection.

- Within cul-de-sac bulbs:

A light pole will be installed within the cul-de-sac bulb when the cul-de-sac street is longer than 200 feet measured from the intersection of the intersection local streets to the center of the cul-de-sac bulb.

- Mid-block streetlights:

A minimum number of mid-block streetlights shall be installed in order to achieve a desired pole spacing of approximately 250 feet. The maximum spacing between lights should not exceed 300 feet and the minimum spacing between lights should not be less than 200 feet unless otherwise approved by the Director of Public Works. Lights should desirably be located on or near property lines and not in front of structures when possible.

Commercial

Commercial street lighting will be reviewed on a performance-based review as part of the site plan review and based on guidelines established above.

Collector Street Lighting

Street lights on collector streets with rights-of-way of sixty 60 feet or more with ADT's of 2,001 vehicles or more shall maintain separation based on the guidelines established above. Cobra head fixtures may be installed on these roadways.

Schedule/Deadlines

N/A

Other Considerations

The draft regulations are for discussion at this meeting. Text amendments for street requirements and street lights will be forwarded to the Planning Commission for discussion and recommendation to Town Council for full approval.

Recommendation

Discuss at the meeting.

Sample Motion

N/A