



BRUNSWICK-GLYNN COUNTY JOINT WATER & SEWER COMMISSION

January 10, 2020

PROJECT: Request for Proposal No. 20-028 – Advanced Metering Infrastructure and Meter Data Management System for the BGJWSC

ADDENDUM: Three (3)

DUE DATE: TUESDAY, January 28, 2020 12:00PM, NOON

THIS ADDENDUM IS FOR THE PURPOSE OF ANSWERING THE FOLLOWING QUESTIONS:

- 1) **QUESTION:** Page STR-6, Section 4.2.1 – What ANSI Tier Rating is being required, or does BGJWSC have a particular brand and model box they intend to specify?

ANSWER: Tier 15. Please reference attached spec sheet.

- 2) **QUESTION:** What is the end goal of the Pilot Program?

ANSWER: The goal of the Pilot Program is to confirm that the guarantees regarding billing system integration and meter data transfer made within the proposal can be met.

3) QUESTION: Please clarify the longevity of the maintenance plan?

ANSWER: The maintenance plan regarding software shall be renewable annually. Should the BGJWSC choose to internalize network hardware maintenance at a later date, the BGJWSC will work with the provider to determine appropriate cost to purchase the installed data collection hardware at that time.

4) QUESTION: What are the options for financing?

ANSWER: The JWSC intends to provide financing. However, if the proposer has financing available, please present the terms for comparison.

5) QUESTION: What is the pricing/installation process? Are there specific boxes? Should they be replaced like for like (curb stop, backflow)

ANSWER: Please see attached Construction Details

6) QUESTION: Are there large meters with strainers? If so, could JWSC please provide the specs?

ANSWER: Please see attached Construction Details.

7) QUESTION: Is the contractor required to keep metal lids?

ANSWER: A drop off location for surplus inventory will be provided by the JWSC to facilitate recycling.

8) QUESTION: Are the 1 ½" and 2" dual check meters unserviceable?

ANSWER: Yes. Where larger meters have dual check backflow preventers attached, existing units may be used where possible. No replacement is necessary of unserviceable dual checks. Where testable devices exist, they are to remain in place as they are the property and responsibility of the customer.

9) QUESTION: How many meters are in asphalt or concrete?

ANSWER: That is unknown at this time.

10) QUESTION: Will specs for vaults be released?

ANSWER: Please see attached Construction Details.

11) QUESTION: Does the JWSC have access to street lights or electric poles from the municipalities or electric providers within your service area? If so, will the JWSC provide a listing of these assets so we can utilize within our AMI planning and propagation analysis?

ANSWER: No, we do not. All locations and assets have been provided in the Dropbox link.

12) QUESTION: Would the JWSC reconsider using digital display meters if we can prove that there are benefits to the customer that the analog meters cannot provide?

ANSWER: No. JWSC needs the fall back of an analog dial to accommodate the utility in the instance that the digital LCD screen goes blank.

13) QUESTION: Is the JWSC open to have the lids cut or drilled to accommodate RF antenna vs. lid replacement?

ANSWER: Yes, meters greater than 1 ½" should be drilled. Please see attached standard

14) QUESTION: Will BGJWSC be sending customer notifications that backflows will be installed and that an expansion tank is needed?

ANSWER: Yes. Public education efforts will take place to advise of expansion tank and/or pressure relief valve requirements.

15) QUESTION: Are any BGJWSC meters on risers?

ANSWER: Yes, and those shall remain in place.

16) QUESTION: Are BGJWSC 1.5" and 2" meters flanged or screw type?

ANSWER: To the best of our knowledge, all 1.5" and 2" meters are flanged type.

17) QUESTION: Will any 1.5" through 8" meters be replaced during the Pilot?

ANSWER: Only 5/8" x 3/4" and 1" meters will be replaced during the Pilot

18) QUESTION: Is the NaaS solution BGJWSC is requesting defined as a managed network completely owned and maintained by bidder or a third party contracted by the bidder? Meaning the BGJWSC does not want to purchase or own the network or hardware (Gateways, Bay stations, Collectors) for a determined length of time.

ANSWER: The BGJWSC does not intend to own or maintain any of the NaaS hardware at this time.

- 19) QUESTION:** It is our understanding that BGJWSC is requesting an AMI solution with mobile redundancy. Is BGJWSC requiring a minimum read success rate (i.e – 90% or 95% over a 3 day billing read) via the AMI network with regards that 100% of the system will have AMI capable meters?

ANSWER: BGJWSC expects 90% success rate over three days of attempted data retrieval via network with a 100% success rate with the AMI system, overall. The mobile drive by data collection backup is to ensure that BGJWSC still gets the reads if a network data collector goes down or if there is some other type of failure.

- 20) QUESTION:** Is the mass meter change out data required to be electronically transferred to Harris? Is this the responsibility of the bidder?

ANSWER: No. The proposer will need to supply meter information and transceiver information that can be imported into the Harris system.

- 21) QUESTION:** Is the AMI network operation “guarantee” a minimum of 10 years for each installed phase?

ANSWER: Yes. The network shall be guaranteed a minimum of 10 years from the date of the last meter/transceiver installation within the project scope. As previously answered, the maintenance contract will then be approved year to year. If the BGJWSC chooses not to renew the maintenance contract at any point, the BGJWSC will negotiate with the provider to assume full ownership and responsibility of the network data collectors.

- 22) QUESTION:** Will BGJWSC mark/locate each meter prior to the survey grade data collection process beginning?

ANSWER: No, the BGJWSC will not have the resources available to locate and mark every meter. This needs to be done during the installation of the new meter. BGJWSC staff will help locate meters in the event that the installer cannot find it within 20 minutes. Once the contract has been awarded, you may send a team to locate and GPS the meters independently and ahead of the meter installation team.

- 23) QUESTION:** Will BGJWSC be available at all times during the meter swap out process to respond to potential emergency situations that may occur outside the scope and ability of the contractor to repair?

ANSWER: Yes, staff will be available in the event of an emergency.

- 24) QUESTION: Following up from the pre-bid meeting, will the vault and meter set detail documents that BGJWSC will be releasing contain specific manufacturer model numbers? If not, will potential bidders be given a list of these items?**

ANSWER: Yes, please see attached documents.

- 25) QUESTION: Regarding Addendum #2, Question 6, will BGJWSC provide tank heights for all of the 25 tanks?**

**ANSWER: All measurements for tanks are provided in the Dropbox link from Addendum 1,
<https://www.dropbox.com/sh/vp6iugt6nddb53c/AADUQ7dTDXnYFSt3M4Sqz81Da?dl=0>**

- 26) QUESTION: Regarding Addendum #2, Question 6, will BGJWSC provide a list of all RF equipment currently installed on infrastructure along with the frequency ranges in use?**

ANSWER: Only cellular equipment is presently installed on the Elevated Storage Tanks.

- 27) QUESTION: Regarding Addendum #2, Question 13, if a performance guarantee or service level guarantee is submitted by different bidders, will the Pilot Program be used to differentiate proof of concept and/or capabilities?**

ANSWER: The BGJWSC intends to choose only one vendor for the Pilot Program based on all contributed performance or service level guarantees. Failure to meet expectations during the pilot will result in moving to the next highest qualified bidder.

- 28) QUESTION: Regarding Addendum #2, Question 17, Open AMI is not clearly defined within the question nor the answer. The Q&A seems to indicate the meaning behind the verbiage to indicate a multi-utility solution. We, however, interpret this type of network to be adhering to the global networking standards. This is normally meant to indicate that a third party will own the infrastructure, and will charge either the endpoint manufacturer or the end customer re-occurring service fees to utilize back haul of the data. Since BGJWSC will not own the back haul network, will BGJWSC provide easements for the site locations?**

ANSWER: Access easements/right-of-entry agreements shall be provided by the BGJWSC for each data collector location to enable maintenance and repair by the proposer for so long as the maintenance contract is renewed by the BGJWSC

- 29) QUESTION: Regarding Addendum #2, Question 17, since the network will not allow the third party to sell other users (not BGJWSC) connection services through the network, will BGJWSC require a rental fee for the property being used to facilitate this type of commerce?**

ANSWER: Should other users find value from use of the equipment, terms will be negotiated at that time.

- 30) QUESTION: Regarding Addendum #2, Question 17, how long of a term will BGJWSC grant for an easement into the site in the event BGJWSC decides to transition to a different network in the future?**

ANSWER: Unless BGJWSC and provider negotiate a purchase agreement for the infrastructure at termination of maintenance agreement, provider will have ninety days to remove network infrastructure.

- 31) QUESTION: Regarding Addendum #2, Question 17, if this network is chosen, may other manufacturers resubmit costs for endpoints/meters that have interoperability with the awarded third party network provider?**

ANSWER: Following the award of the contract for the Pilot Program, the BGJWSC will only consider changing network providers or meters if the pilot does not meet standard. A single source will then be used throughout the project scope.

- 32) QUESTION: Will BGJWSC provide all of the vendors with a GPS service area map?**

**ANSWER: Yes, a full service area map is included in the following Dropbox link in map grade,
<https://www.dropbox.com/sh/vp6iugt6nddb53c/AADUQ7dTDXnYFSt3M4Sqz81Da?dl=0>**

- 33) QUESTION: Most manufacturers will not “lock” pricing for a period greater than 12 months. Due to the projected length of 5 years for this project from start to completion, will there be an allowance for a COST increase based on actual verifiable material and labor cost increases or an accepted government financial index or a commodities index? This will allow for**

better or more accurate front end pricing for BGJWSC at the beginning of the project.

ANSWER: To be consistent in our up-front evaluation, all proposals are to be developed over the entire project period using present values.

34) QUESTION: Is BGJWSC a tax exempt entity in regards to federal and state (not sales tax).

ANSWER: The BGJWSC is exempt from federal, state, and local taxes, including sales tax.

35) QUESTION: In Addendum #2, Question 2, it stated that a GA contractor's license would not be required for this project. However, based on current GA Title 43 for Utility Contractors, a "utility system" is described as "any system at least five feet underground, when installed or accessed by trenching, open cut, cut and cover, or other similar construction methods which install or access the system from the ground surface, including but not limited to, gas distribution systems, electrical distribution systems, communication systems, water supply systems, and sanitary sewerage drainage systems and reservoirs and filtration plants, water and wastewater treatment plants, leachate collection and treatment systems associated with landfills or pump stations, when the system distributes or collects a service, product, or commodity for which a fee or price is paid for said service, product or commodity or for the disposal of said service, product, or commodity". Therefore, wouldn't a GA Licensed Utility Contractor be required for the installation of the meters?

ANSWER: Yes, a GA Contractor's license will be required for this project. Please disregard the answer in Addendum 2.

36) QUESTION: A project of this scope and size should have a detailed site survey with drawings on the typical meter site for each type and size of meter conducted on all meter locations. When will this be available to the proposers?

ANSWER: Please see attached Construction Details.

37) QUESTION: Is the BGJWSC doing one trial of an AMI system with the RFP solution provider or will there be multiple trials?

ANSWER: Only one award for the Pilot Program shall be made.

38) QUESTION: What does the BGJWSC consider to be a successful trial? Meter to Collector? Meter to Cash?

ANSWER: Meter-to-Collector. A successful trial will require 90% read success rate via collector will no more than 10% required for drive-by within three days of route initialization. During the Pilot Program, Meter-to-Cash will not be scored as BGJWSC expects some challenges in integration with Harris CIS.

39) QUESTION: How long will the trial be after it has been set up?

ANSWER: Per Section 5.0 of the RFP, the Pilot Program will begin May 1, 2020 and last until no later than January 1, 2021. The trial may be considered successful sooner.

40) QUESTION: Who owns the equipment after the trial, if it is not successful? What happens to the equipment after the trial? Who is responsible for removing it?

ANSWER: The vendor will be responsible for the full cost of the phase-in of all required data collectors. If the vendor is abandoned during the pilot, ninety days would be given for hardware removal by the vendor unless terms can be negotiated for the BGJWSC to purchase the equipment.

41) QUESTION: Is the BGJWSC interested in a company taking the risk and responsibility for the full system maintenance or any part of it?

ANSWER: The BGJWSC will expect a quote for the annual maintenance cost of the network. At this time there is no interest in a full meter service program.

42) QUESTION: What is the brand, part number, and size of the backflow preventer currently being used?

**ANSWER: ¾" Watts LF7R Dual Check 10XU2
1" Watts LF7 Dual Check 10-U2**

43) QUESTION: If backflow devices are to be installed, are there expansion tanks on the property water tanks?

ANSWER: As the BGJWSC does not keep records of private plumbing compliance with National Plumbing Code standards, public education efforts will take place to advise of expansion tank and/or pressure relief valve requirement to reduce exposure. Compliance is measured/enforced by Glynn County or the City of Brunswick ONLY, not BGJWSC.

44) QUESTION: If backflow is not currently being used, who is responsible for the potential damage to existing water heaters that do not have expansion tanks?

ANSWER: The property owner will bear the responsibility of potential damage.

- 45) QUESTION:** Does the installer have to install the backflow and is there an installation drawing?

ANSWER: To ease proposal preparation and evaluation, each meter below 3" should include pricing for box, lid, and dual check backflow preventer.

- 46) QUESTION:** How does the BGJWSC define an open AMI system?

ANSWER: The BGJWSC defines open AMI as providing us with access to a hybrid system of data collection from various endpoints and protocols using a single network data collection backbone capable of reading cellular, mesh, or other communications types.

- 47) QUESTION:** Does an open AMI system include being compatible with Gas and Electric Meters and/or accepting input from remote sensors?

ANSWER: The BGJWSC intends to use an AMI system that can read compatible water meters. Gas and electric meter reading is not required.

- 48) QUESTION:** Does the BGJWSC require remote disconnect valve functionality, and if so for how many meters?

ANSWER: Remote disconnect valve is not required at this time.

- 49) QUESTION:** Why is the requirement for a 5 year installation? If financially advantageous, would the BGJWSC consider a short term frame for the full installation?

ANSWER: In order to avoid large investment and future rate of failure concerns, the phased installation is a requirement.

- 50) QUESTION:** In regards to the hosted system, is there a preference on having the server hosted on-site or cloud based?

ANSWER: Please reference Section 4.2.3 of the RFP, which states that initially the system shall be remotely hosted. Following the Pilot Program, the terms of the maintenance contract may allow the BGJWSC to host the system locally.

- 51) QUESTION:** What is the version of the BGJWSC billing software? Is it the latest version?

ANSWER: The BGJWSC uses the Innoprise Customer Information and Billing System from Harris. It is the latest version – R3.32.0

- 52) QUESTION: Does the BGJWSC have a location for storing the equipment? If not, will proposals need to include warehousing?**

ANSWER: Warehousing will be provided by the BGJWSC

- 53) QUESTION: The Price Sheet states: “The Proposer is to list separately individual pricing of all meters in Proposal. Water meters will be listed as module costs, composite meter box and lid costs, Nicor connection costs, or integrated water meters with modules at cost for various sizes of water pipe. (PSF-8)”. Will replacement of meter box and lid be included with the line item for meter change out? Are all boxes and lids to be replaced up to 2”, because under this heading it lists all meter sizes?**

ANSWER: To ease proposal preparation and evaluation, each meter below 3” should include pricing for box, lid, and dual check backflow preventer.

- 54) QUESTION: Does the BGJWSC intend to replace all meters or will some need to just be retrofitted, because it states there is battery failure?**

ANSWER: All meters are to be replaced.

- 55) QUESTION: The RFP states, “The proposals shall include the design and installation of all aspects associated with the system, including but not limited to meters, meter boxes, lids, backflow preventers, (up to and including 2” meters), registers, transmitters, and antenna mounts as needed to properly operate the system. Piping adjustments necessary due to lay length changes must be accommodated by Proposers. Proposers will work in conjunction with BGJWSC staff to accommodate any needed changes to vaults or setters for all meters 3” and above in size”. Is the Contractor required to replace backflow preventers, and if yes, on all of the meters? Are there existing backflows and who provides the backflows?**

ANSWER: To ease proposal preparation and evaluation, each meter below 3” should include pricing for box, lid, and dual check backflow preventer.

- 56) QUESTION: Will the BGJWSC consider adding line items for replacing meter boxes and backflows?**

ANSWER: To ease proposal preparation and evaluation, each meter below 3” should include pricing for box, lid, and dual check backflow preventer.

- 57) QUESTION: What is the existing meter brand/brands?**

ANSWER: The present system contains approximately 28,000 Badger AMR and 2,000 Metron-Farnier cellular AMI.

- 58) QUESTION: Please clarify what is meant by “Proposers will work in conjunction with BGJWSC staff to accommodate any needed changed to vaults or setters for all meters 3” and above in size”.**

ANSWER: As a state-licensed distribution technician may be required, BGJWSC staff will assist with replacement of meters in vaults requiring maintenance and rehabilitation. Heavy equipment, such as an excavator, will be provided along with an operator.

- 59) QUESTION: Over the 4 year period, will 7,000+ meters be installed over the entire 1 year or will the Contractor be able to install all 7,000+ meters in 5-6 months?**

ANSWER: The meters in each phase of the contract can be installed as quickly as possible.

- 60) QUESTION: Will BGJWSC take into consideration an expedited timeframe to complete this project?**

ANSWER: In order to avoid large investment and future rate of failure concerns, the phased installation is required.

- 61) QUESTION: What is the approximate geographic area of the meters to be covered under this contract?**

ANSWER: Diameter of 18 miles.

- 62) QUESTION: Who will take possession of the old meters?**

ANSWER: A drop off location for surplus inventory will be provided to the selected proposer by the BGJWSC to facilitate recycling.

- 63) QUESTION: What is the material of the existing meter box lids?**

ANSWER: Cast iron, plastic, and composite lids are currently present

- 64) QUESTION: Are there existing holes in the lids?**

ANSWER: Yes, although not in the majority as cast iron is the prevalent material.

- 65) QUESTION: What percentage of meter boxes are located in concrete or**

asphalt?

ANSWER: Please reference Question #9 of this Addendum

66) QUESTION: Do all settings have shut off valves before the meters?

ANSWER: Yes.

67) QUESTION: Are all valves in the meter box?

ANSWER: No.

68) QUESTION: What is the procedure for inoperable or broken valves?

ANSWER: BGJWSC staff will respond and repair as needed.

69) QUESTION: Will the proposer/contractor be installing any additional product, i.e broken shut off valves, curb stops, set box to grade?

ANSWER: Valves on the utility side of the meter are to be replaced by BGJWSC staff. The proposer will set box to grade.

70) QUESTION: Will the BGJWSC have an area to drop a storage container?

ANSWER: Yes.

71) QUESTION: What is the primary service line make-up (plastic, copper, galvanized)?

ANSWER: Galvanized is the most common with plastic and copper installed as well.

72) QUESTION: Are the meters in setters or are the connected with straight meter couplings?

ANSWER: Both exist.

73) QUESTION: For large meters 3" and above, are there drawings/pictures of these settings? Will the Contractor be required to make modifications to these settings, provide material, etc?

ANSWER: Please see attached Construction Standards.

74) QUESTION: Do the existing 1 ½" and 2" meters have flanged or threaded ends?

ANSWER: To the best of our knowledge, all 1 ½" and 2" meters are

flanged.

75) QUESTION: Would potential proposers be allowed to inspect the current BGJWSC infrastructure prior to submitting their proposals?

ANSWER: No. There will be no additional site visits will be allowed as the deadline for questions has officially passed.

76) QUESTION: Will galvanized fittings be accepted as an option for this proposal?

ANSWER: No, BGJWSC will not accept any galvanized fittings.



All applicants under this Request for Proposal are kindly requested to acknowledge receipt of this Addendum in original only.

**ACKNOWLEDGEMENT
ADDENDUM: THREE (3)**

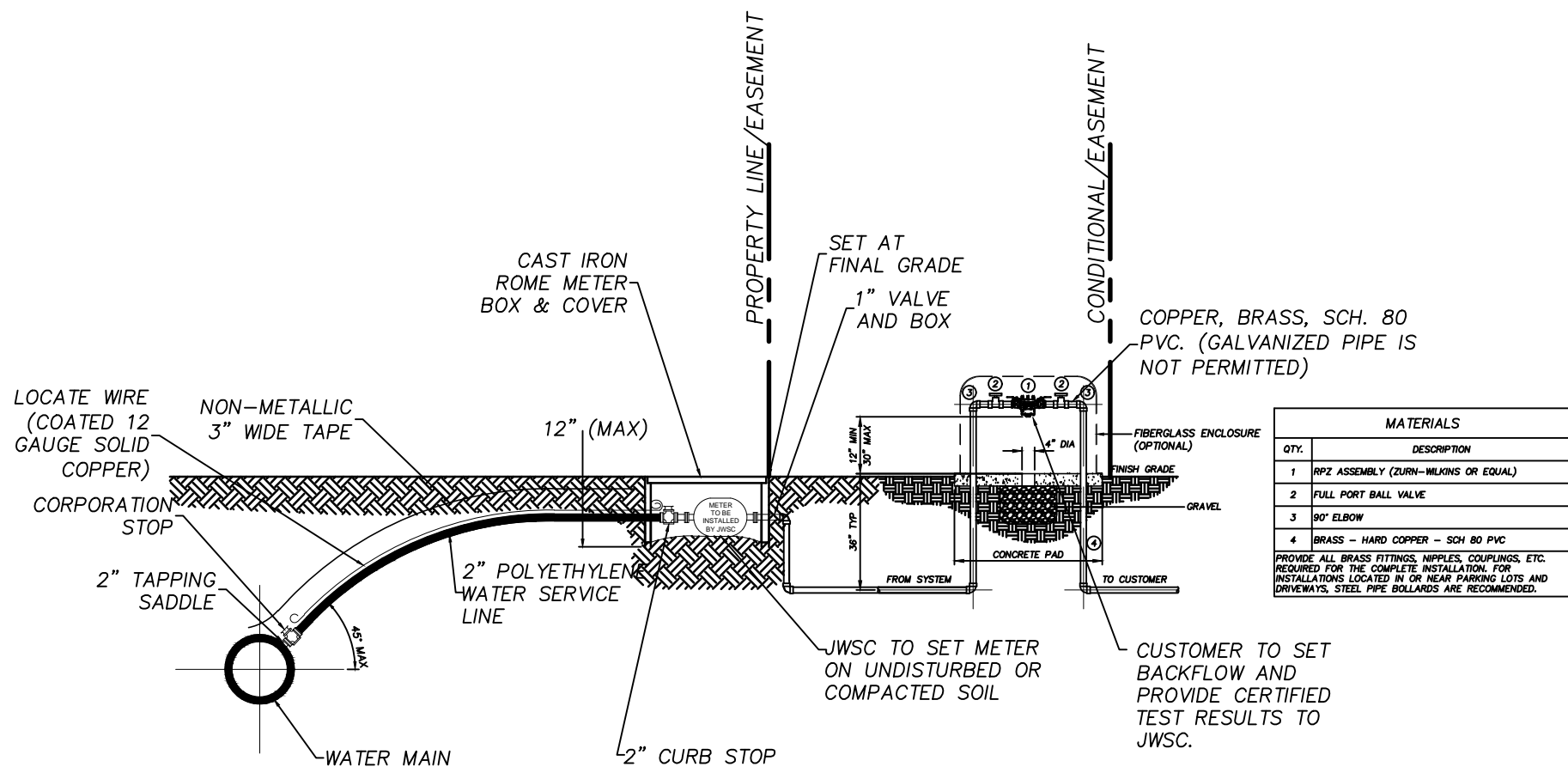
DATE: _____

The above Addendum is hereby acknowledged:

(NAME OF BIDDER)

Signature

Title



NOTE:

1. FOR IRRIGATION METERS 2" AND LARGER, WILL REQUIRE A STRAINER BEFORE THE RPZ OR DCVA
2. METER SIZE WILL BE BASED ON IRRIGATION SYSTEM NEEDS.
3. IRRIGATION TAP TO BE SEPARATE FROM POTABLE WATER.
4. INSTALLATION OF WET WEATHER SENSOR IN ACCORDANCE WITH EPD REGULATIONS.

NOT TO SCALE



**BRUNSWICK-GLYNN COUNTY
JOINT WATER & SEWER
COMMISSION**

1703 Gloucester Street
Brunswick, Georgia 31520

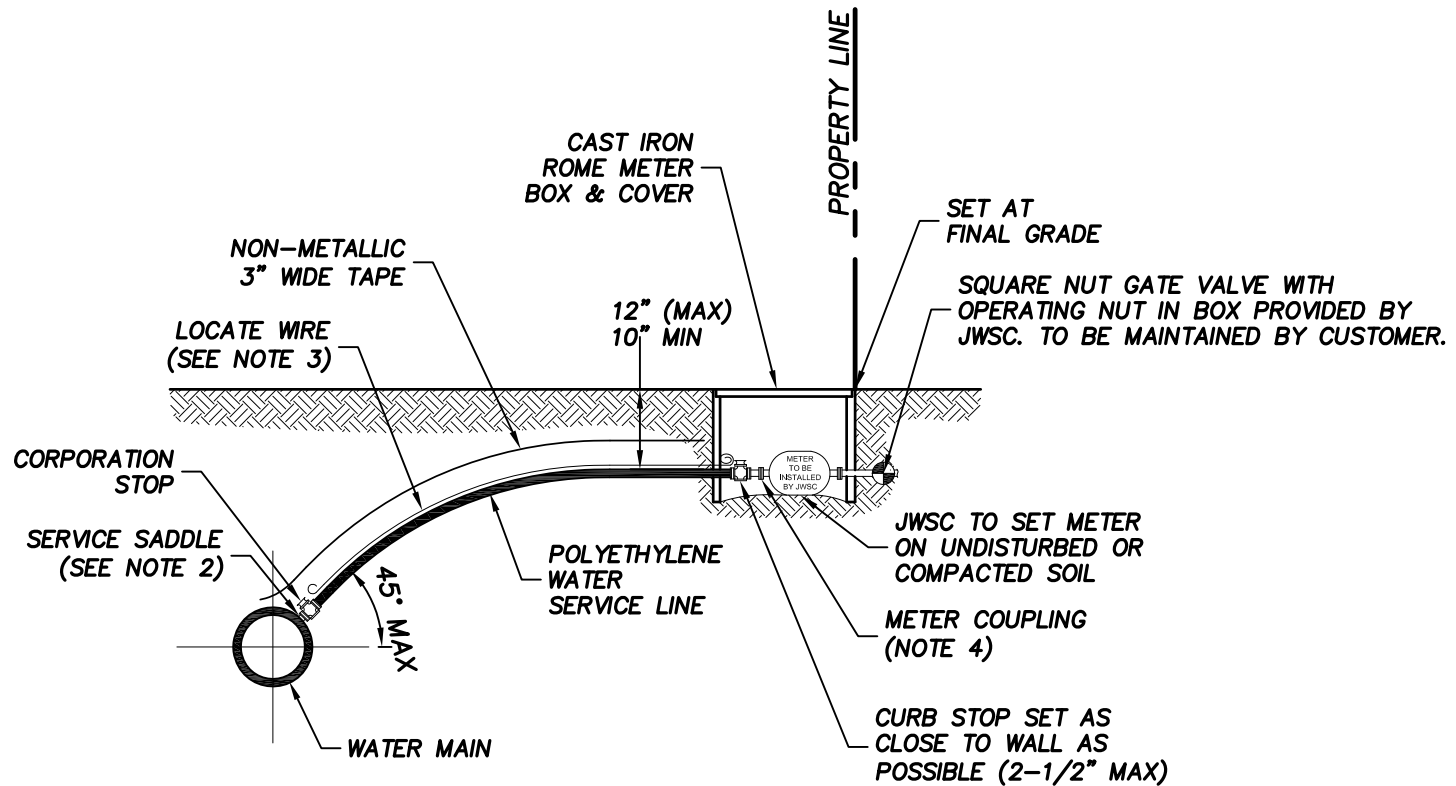
Website: www.bgjwsc.org

Phone: (912) 261-7110
Fax: (912) 261-7178

**IRRIGATION METER WITH BACKFLOW
PREVENTOR DETAIL**

JWSC STANDARD DETAIL 2-16A

Date: DEC 2019



NOTES:

1. JWSC TO INSTALL METER AND METER BOX. METER IS TO BE PURCHASED THROUGH JWSC.
2. ALL FITTINGS IN LATERAL SHALL BE COMPRESSION TYPE.
3. A MINIMUM OF TWO FULL THREADS ARE REQUIRED FOR TAPPING SLEEVE TO GO INTO THE PIPE WALL.
4. INSULATED SINGLE STAND COPPER WIRE SHALL BE STRAPPED TO THE PIPE AND ATTACHED TO THE CORPORATION AND CURB STOPS.
5. INSTALL PVC PLUG IN ALL CURB STOPS IF WATER SERVICE IS "NOT IN USE" (NO METER IS INSTALLED).
6. WATER SERVICES SERVING VACANT LOTS (SERVICE NOT IN USE), SHALL INCLUDE A "W" CUT INTO THE CURB. FOR NEW DEVELOPMENT AREAS WHERE THE WATER SERVICE IS "NOT IN USE", A #4 REBAR STAKE PAINTED BLUE. BLUE STAKE SHALL BE VISIBLE WITH 4" TO 6" ABOVE GRADE.
7. POLYETHYLENE WATER SERVICE LINE SHALL BE PERPENDICULAR TO THE MAIN UNLESS APPROVED OTHERWISE BY BGJWSC.

NOT TO SCALE



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JOINT WATER & SEWER
COMMISSION**

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Phone: (912) 261-7110
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Website: www.bgjwsc.org

SINGLE WATER SERVICE DETAIL

JWSC STANDARD DETAIL 2-16

Date: JUNE 2018

PRICING SHEET

Submit a quote for contingency labor items that may occur during installation. All contingency items are at the discretion of the city, and approval must be granted before any contingency work is performed.

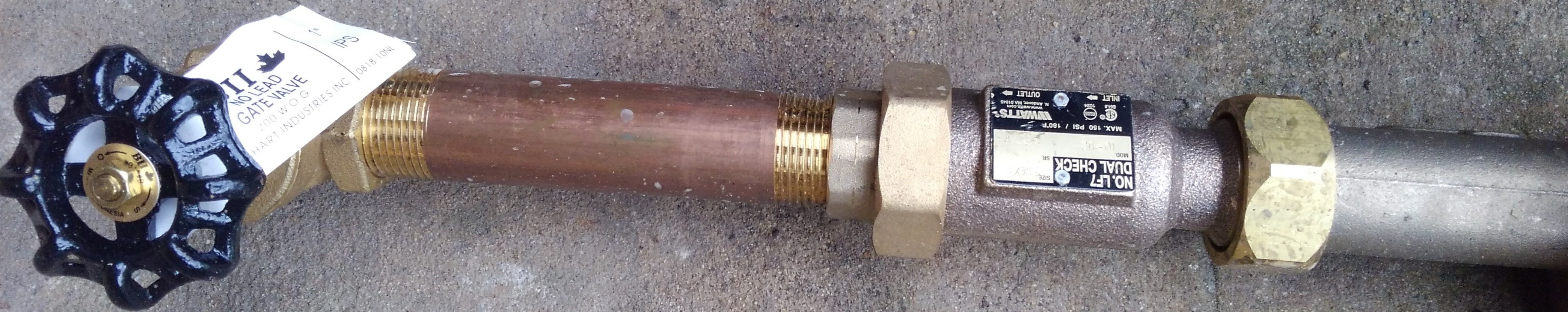
<u>Potential Contingency Labor Items</u>	<u>Unit Price</u>
Replace Meter Box / Box Only / Plastic & Cast Iron	_____
Replace Plastic Lid	_____
Replace Cast Iron or Concrete Lid	_____
Reset or Regrade Existing Meter Box	_____
Insert Hole in Plastic Lid for Transceiver	_____
Insert Hole in Cast Iron Lid for Transceiver	_____
Replace Curb Stop – 5/8" – 3/4"	_____
Replace Dual Check – 5/8" – 3/4"	_____
Replace Curb Stop – 1"	_____
Replace Dual Check – 1"	_____
Large Meter Replumbing (Per Crew Hour)	_____
Excessive Root Removal (2" Diameter and Larger)	_____

Meter box - 1 and 5/8



12/30/2019 09:10:36

1 meter setup-end



12/30/2019 09:10:56



1 meter setup-end-2nd end

12/30/2019 09:10:59



1 inch meter box

12/30/2019 09:11:02

1 1/2 & 2 inch meter box

12/30/2019 09:11:08

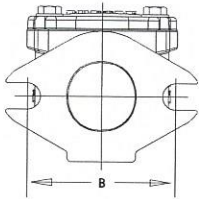
2 Inch Meter and Meter Setter



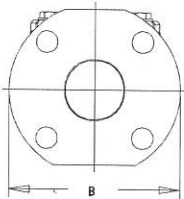
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Plus 5 x the Diameter

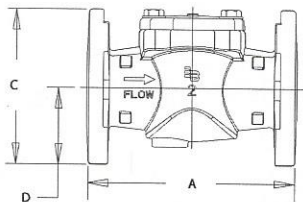
DIMENSIONS



Dual Elliptical Flange

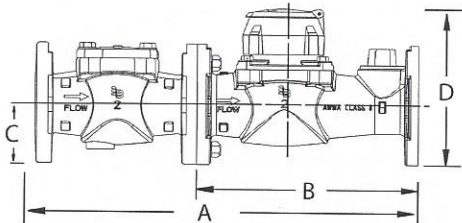


Dual Round Flange



Strainer Type	Nominal Size	Dimensions						Flange		Net Wt.
		A	B	C	D	Drain Plug (NPT)	Hsg. Bolt Dia.	No. Mtg. Holes	Hole Dia.	
Dual Ellip. Flange	2" (50 mm)	7" (178 mm)	4-1/2" (114 mm)	4-7/8" (122 mm)	1-7/8" (48 mm)	—	3/8-16	2	13/16" (21 mm)	11 lb (5.0 kg)
Dual Round Flange	2" (50 mm)	7" (178 mm)	6" (152 mm)	5-1/2" (140 mm)	2-5/8" (66 mm)	—	3/8-16	4	3/4" (19 mm)	14 lb (6.3 kg)
	3" (80 mm)	7" (178 mm)	7-1/2" (190 mm)	7-1/4" (184 mm)	3-5/8" (92 mm)	—	1/4-20	4	3/4" (19 mm)	22 lb (9.9 kg)
	4" (100 mm)	9" (229 mm)	9" (229 mm)	8-3/4" (223 mm)	4-3/8" (112 mm)	—	3/8-16	8	3/4" (19 mm)	35 lb (16 kg)
	6" (150 mm)	9" (229 mm)	11" (279 mm)	11" (279 mm)	5-1/2" (140 mm)	3/4"-14	3/8-16	8	7/8" (22mm)	59 lb (26.5 kg)

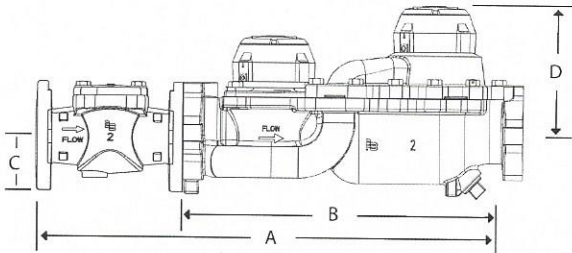
Recordall Turbo/Strainer **



Meter Size	Dimensions			
	A	B	C	D
2" (50 mm)	17" (432 mm)	10" (254 mm) RD	2-5/8" (66 mm) EL 2-1/16" (52 mm) RD	7-19/64" (185 mm) EL 6-23/32" (170 mm)
3" (80 mm)	19" (482 mm)	12" (305 mm)	3-5/8" (92 mm)	8-23/32" (221 mm)
4" (100 mm)	23" (584 mm)	14" (355 mm)	4-3/8" (112 mm)	9-21/32" (245 mm)
6" (150 mm)	27" (686 mm)	18" (457 mm)	5-1/2" (140 mm)	12-9/16" (319 mm)

** Badger Meter recommends a distance of five (5) pipe diameters between the strainer and the meter. (See individual meter Users manual.)

Recordall Compound/Strainer **



Meter Size	Dimensions			
	A	B	C	D
2" (50 mm)	22-1/4" (560 mm)	15-1/4" (387 mm)	2-5/8" (66 mm)	5-7/8" (149 mm)
3" (80 mm)	24" (609 mm)	17" (432 mm)	3-5/8" (92 mm)	6-5/8" (168 mm)
4" (100 mm)	29" (737 mm)	20" (508 mm)	4-3/8" (112 mm)	7-1/4" (184 mm)
6" (150 mm)	33" (838 mm)	24" (609 mm)	5-1/2" (140 mm)	8-7/8" (225 mm)

** Badger Meter recommends a distance of five (5) pipe diameters between the strainer and the meter. (See individual meter Users manual.)

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Legacy Document Number: PS-T-1

Plate Strainers

Lead-Free Bronze Alloy, Sizes 2", 3", 4", and 6"

DESCRIPTION

Badger Meter® offers dual flange plate strainers, sizes 2...6", in a lead-free bronze alloy. Badger Meter plate strainers comply with the lead-free provisions of the Safe Drinking Water Act, are certified to NSF/ANSI Standards 61 and 372 (Trade Designation: Plate Strainer LL-NS) and carry the NSF-61 mark on the housing.

FEATURES

Badger Meter plate strainers exceed AWWA standards with an effective screening area to minimize flow restrictions to meters. The straining area is double the inlet to turbo and compound meter cases. These strainers also reduce turbine rotor bearing loading and resultant wear to maintain and extend accurate meter registration, by minimizing velocity profile distortion caused by changes in pipe direction or valving. For added flexibility, these strainers are compatible with all makes of meters. The rubber head O-Ring or gasket is reusable, which reduces replacement part costs. The screen is removable to clean the strainer in the service line. All sizes have a drain plug incorporated.

SCREENS

Made of non-corrosive 316 stainless steel with 3/16" or 1/4" perforations to effectively strain any larger foreign matter, and can be easily removed and cleaned.

HYDROSTATICALLY TESTED MATERIALS

Housings are designed and individually tested to withstand 150 psi maximum working pressure and 300 psi static pressure.

SPECIFICATIONS

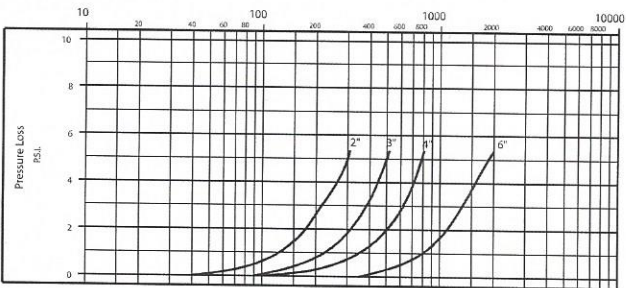
Sizes and Configurations	2" Dual elliptical flange 2" Dual round flange 3" Dual round flange 4" Dual round flange 6" Dual round flange Compatible WITH any ASA 125 flange
Maximum Working Pressure	150 psi (10 bar)
Static Test Pressure	300 psi (20 bar)
Screen Area Ratio	Minimum 2-to-1 ratio of meter inlet
Screen	Removable in-line service
Screen Perforations	3/16" holes for 2", 3" and 4" strainers 1/4" holes for 6" strainer
Drain Plug	1/2" or 3/4" – 14 NPT removable in-line service
Recommended Applications	Recordall Turbo Series, Recordall Compound Series, and other makes of meters



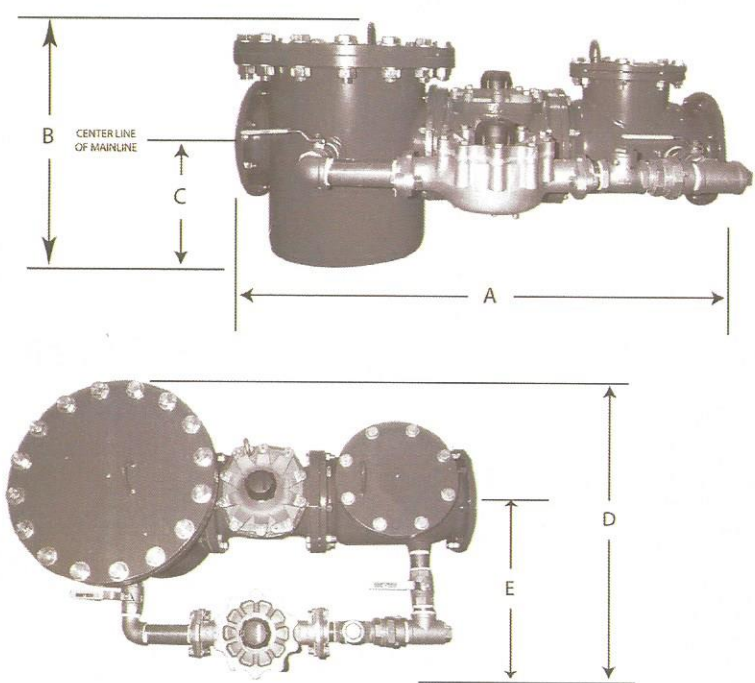
Materials

Strainer Housing	Lead-free bronze alloy
Housing Cover	Lead-free bronze alloy
Housing Cover Seal	Rubber
Strainer Screen	Stainless steel
Drain Plug	Lead-free bronze alloy
Housing Bolts	Stainless steel

Flow Rate vs Pressure Loss



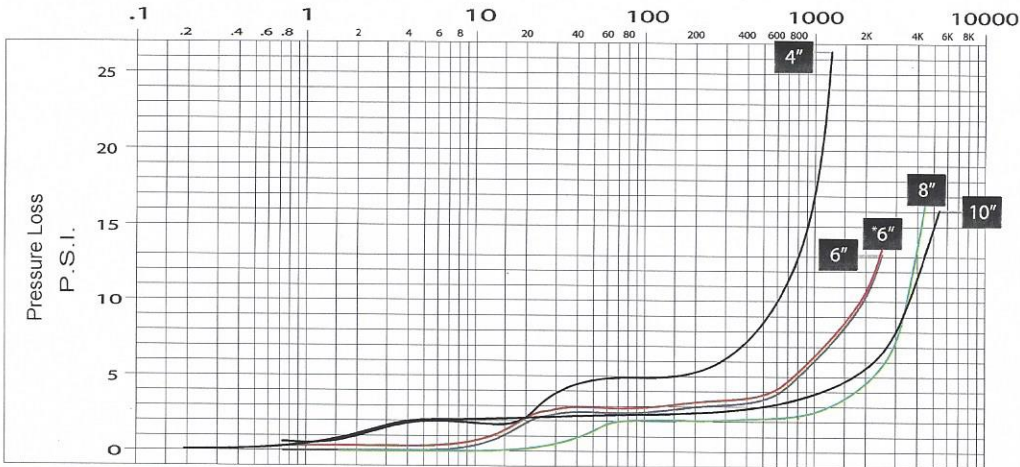
DIMENSIONS



FSA Model Includes Disc Bypass Meter	4 in. (100 mm)	6 in. (150 mm)	6 in. (150 mm)	8 in. (200 mm)	10 in. (250 mm)
Meter & Pipe Size	4 in. (100 mm)	—	6 in. (150 mm)	8 in. (200 mm)	10 in. (250 mm)
Disc Bypass Meter	1 in. (25 mm)	1 in. (25 mm)	1-1/2 in. (38 mm)	2 in. (50 mm)	2 in. (50 mm)
Shipping Weigh Fully Assembled	312 lb (142 kg)	507 lb (230 kg)	507 lb (230 kg)	767 lb (348 kg)	1073 lb (487 kg)
Length (A)	33 in. (838 mm)	45 in. (1143 mm)	45 in. (1143 mm)	53 in. (1346 mm)	68 in. (1727 mm)
Height (B)	20-5/8 in. (524 mm)	22-3/8 in. (568 mm)	22-3/8 in. (568 mm)	25-1/16 in. (637 mm)	25-5/16 in. (643 mm)
Height (C)	10-5/8 in. (270 mm)	11-1/16 in. (281 mm)	11-1/16 in. (281 mm)	12-1/16 in. (306 mm)	14-13/16 in. (376 mm)
Height (D)	23-3/16 in. (589 mm)	30 in. (762 mm)	34-1/4 in. (870 mm)	35-1/2 in. (902 mm)	34-1/2 in. (876 mm)
Height (E)	16-7/16 in. (418 mm)	20-1/2 in. (521 mm)	24-3/4 in. (629 mm)	23 in. (584 mm)	20-3/4 in. (527 mm)

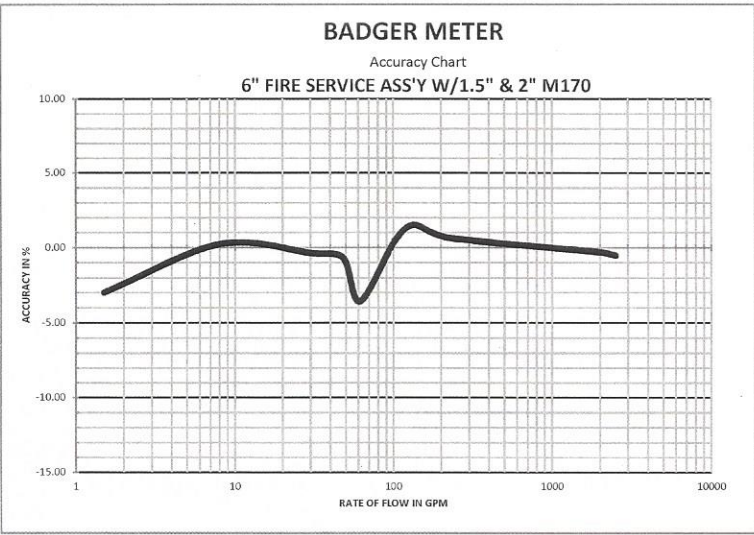
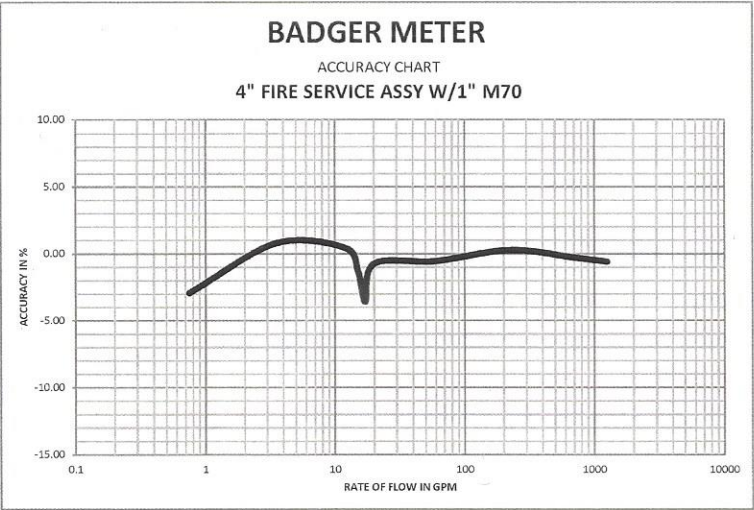
PRESSURE LOSS CHART

Rate of flow in gallons per minute (gpm).

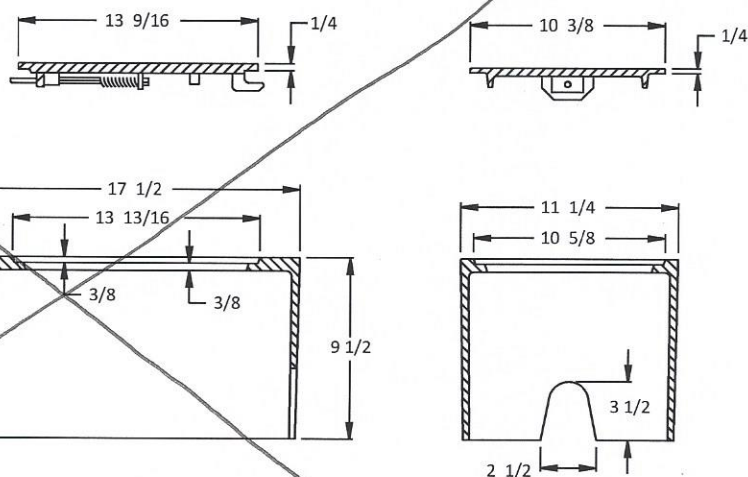


ACCURACY CHARTS

Rate of flow in gallons per minute (gpm).



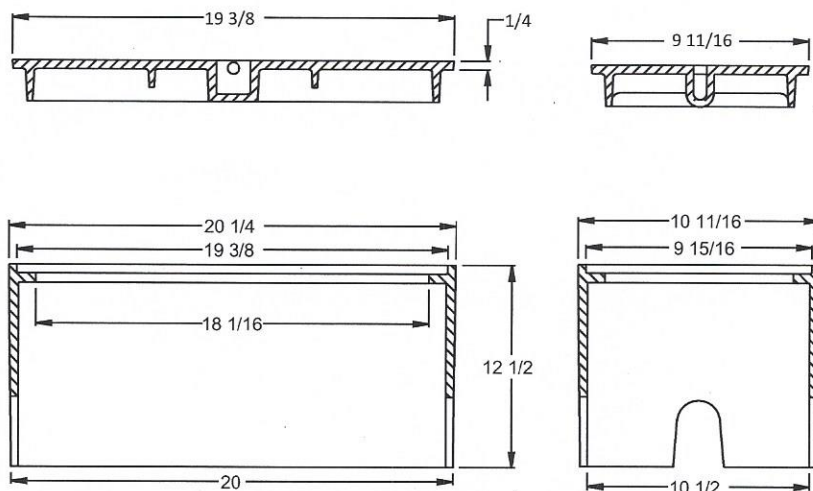
ITEM # : 6401 - 6407 OVAL METER BOX EQ. B85 / B86



ITEM #	DESCRIPTION
6401	OVAL BODY ONLY FOR EQ. B85 OR B86
6402	EQ. B85 OVAL BODY W/ LOCKING LID
6403	EQ. B86 OVAL BODY W/ PLAIN LID ONLY
6404	LOCKING LID ONLY FOR EQ. B85 OVAL BODY
6405	PLAIN LID ONLY FOR EQ. B86 OVAL BODY
6406	EQ. B85 OVAL BODY W/ KEYHOLE LID
6406L	EQ. B86 OVAL BODY KEYHOLE LID ONLY
6407	EQ. B85 LOCKING LID ONLY W/ RH FOR OVAL BODY

Material : Cast Iron, ASTM A48, Class 30B
Dimensions : All are in Inch

ITEM # : 6408 - 6413 METER BOX MBX - EQ. #1

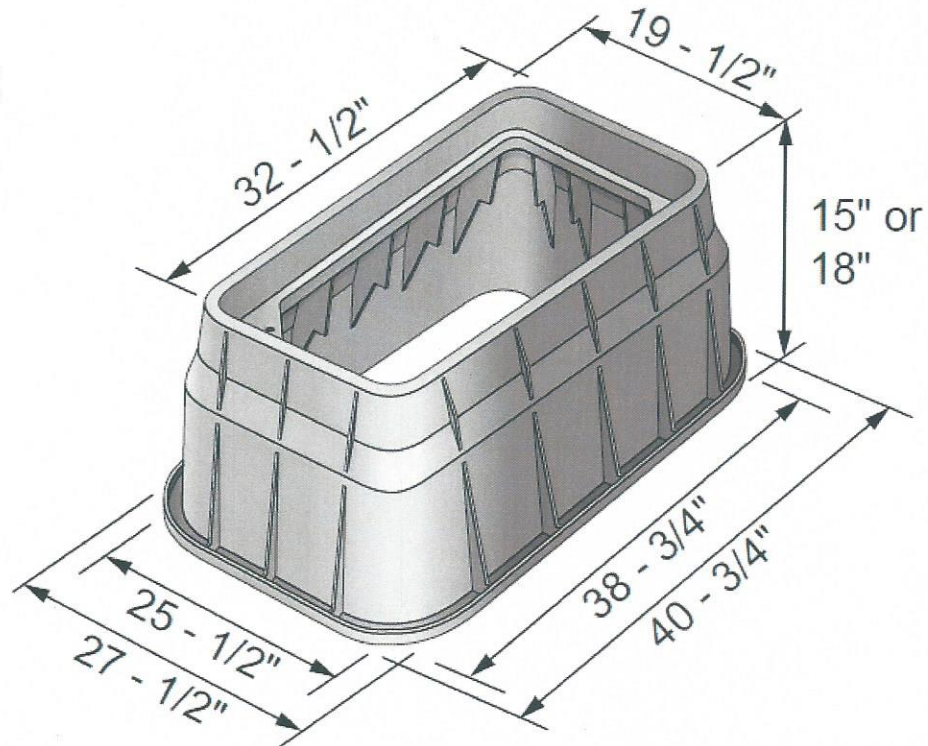
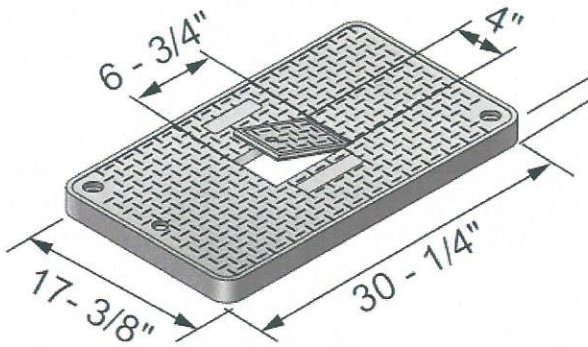


ITEM #	DESCRIPTION
6408	EQ. MBX-1 COMPLETE SET
6409	EQ. MBX-1 LID ONLY
6413	EQ. MBX-1 COMPLETE SET WITH R HOLE
6413L	EQ. MBX-1 LID ONLY WITH READER HOLE

Material : Cast Iron, ASTM A48, Class 30B
Dimensions : All are in Inch

126BCDMB

17" x 30" x 18" Box, Bolt-Down Drop-in Plastic with Plastic Reader Cover – Water Meter



The NDS 17" x 30" meter boxes and cover are injection molded of structural foam polyolefin material with a melt index between 10-12. Coloring and UV stabilizers are added, along with processing lubricants when needed. The 17" x 30" body is tapered and has a minimum wall thickness of 0.32". The body has a double wall at the top cover seat area with a minimum thickness of 0.32". The cover seat area has 20 structural support ribs on the underside of the seat, each with a minimum thickness of 0.25". The bottom of the body has a 1" flange. The 17" x 30" cover has an average thickness of 0.35". The meter box has a 3/8" 304SS nut for the bolt-down as a standard feature.



Class A

- Loads of 1-60 psi.
- Recommended for pedestrians, bicycles and wheel chair traffic.