



**Contract 3793P**

**Single-Family and Duplex Voluntary Water Metering Program**

**1. Introduction**

The City of Richmond proposes to engage the services of a company to manage a three-year water-metering program effective April 1, 2010 to December 31, 2012. The scope of work involves:

1. Effective promotion of the voluntary metering program and attraction of single-family and duplex resident participants;
2. Installation and maintenance of water meters; and
3. Reading water meters and reporting the data to the City (as an optional item).

The objective of this request for proposal (RFP) is to provide the City with qualified proponents capable of carrying out the work herein defined. The subsequent proponent submissions will form the basis for evaluation, interview and selection.

**2. Submission Details**

Four (4) copies of proposals marked “**Single-Family and Duplex Voluntary Water Metering Program - Contract 3793P**” addressed to the Purchasing Section, will be received at the Information Counter, Main Floor, Richmond City Hall, 6911 No. 3 Road, Richmond BC V6Y 2C1, until 2:00pm, Pacific Time on March 1, 2010. Submissions received after this time will be returned to the sender.

Proposals may be withdrawn by written notice only provided such notice is received at the office of the City’s Purchasing Section prior to the date/time set as the closing time for receiving proposals.

Proposals shall be open for acceptance for one hundred and twenty (120) days following the submission closing date.

Proponents are advised that the City will not necessarily accept any Proposal and the City reserves the right to reject any or all Proposals at any time without further explanation or to accept any Proposal considered advantageous to the City.

The City reserves the right to cancel this Request for Proposal for any reason without any liability to any proponent or to waive irregularities at their own discretion.

A Proposal which contains an error, omission, or misstatement, which contains qualifying conditions, which does not fully address all the requirements of this RFP, or which otherwise fails to conform to the requirements in this RFP may be rejected in whole or in part by the City at its sole discretion.

The City may waive any non-compliance with the RFP, specifications, or any conditions including the timing of delivery of anything required by the RFP and may, at its sole discretion, elect to retain for consideration Proposals which are non-conforming, which do not contain the content or form required by the RFP or because they have not complied with the process for submission set out herein.

The City may choose, at its sole discretion, to proceed with all of the components of the Services (defined in Section five), none of the components or selected components.

All proposals will remain confidential, subject to the *Freedom of Information and Protection of Privacy Act of British Columbia*.

Any interpretation of, additions to, deletions from, or any other corrections to the Proposal document, will be issued as written addenda by the City of Richmond. It is the sole responsibility of the potential Bidders to check with the City of Richmond's Website, and / or BC Bid to ensure that all available information has been received prior to submitting a bid.

Except as expressly and specifically permitted in these instructions, no Proponent shall have any claim for any compensation of any kind whatsoever, as a result of participating in the RFP, and by submitting a proposal each proponent shall be deemed to have agreed that it has no claim.

### **3. Enquiries**

**3.1** Clarification of terms and conditions of the proposal process shall be directed to:

Purchasing

Sumita Dosanjh

Telephone: 604-276-4097

Buyer II – Contracting Specialist

E-mail: [purchasing@richmond.ca](mailto:purchasing@richmond.ca)

Purchasing Section

City of Richmond

The City, its agents and employees shall not be responsible for any information given by way of oral or verbal communication.

Any questions that are received by City of Richmond Staff that affect the Proposal Process will be issued as addenda by the City of Richmond.

#### **4. Negotiations**

**4.1** The award of the contract is subject to negotiations with the Proponent that offers, in the City's opinion, the best value Proposal (the "Lead Proponent"). Such negotiations include, but are not limited to, the following:

- a) changes or work refinements in the service requirements or scope of work proposed by the Lead Proponent;
- b) price – if directly related to a change or refinement in the proposed scope of work proposed by the Lead Proponent and
- c) specific contract details as deemed reasonable for negotiation by the City of Richmond.

**4.2** If a written agreement cannot be negotiated within thirty (30) days of notification to the Lead Proponent, the City may, at its discretion at any time thereafter, terminate negotiations with the Lead Proponent and either enter into negotiations with the next qualified Proponent or cancel the RFP process and not enter into a contract with any Proponent.

#### **5. Project Background**

The City of Richmond has a population of approximately 188,000 people and is located on Canada's Pacific Coast in the province of British Columbia. In 2002, Richmond's City Council endorsed a water management and metering strategy for the City and, in 2003, endorsed a voluntary water metering program for single-family residences. The program includes marketing, installation, maintenance of meters, as well as the option for reading all single-family and duplex dwelling residential meters throughout the City.

This RFP is for the initiation of the third of such programs implemented since 2003.

This program is scheduled to start on April 1, 2010 with program promotion and meter installation. Should the City agree to include meter reading, this component will commence within the second quarter of 2010.

Richmond has approximately 28,900 single-family dwellings (single-family and duplex residents), of which 14,502 are metered. The single-family and duplex residential metering program has two components:

1. A mandatory program implemented in 1993, whereby the City requires meter installations for all new dwellings, service connection replacements, and on major home renovation projects; and
2. A voluntary program implemented and managed by a third party.

The number of meters installed under the two programs since 1993 are indicated in Table 1 below:

**Table 1: Summary of Single Family and Duplex Resident Meters**

	<b>Pre 2004</b>	<b>2004 - 2006</b>	<b>2007 – 2009</b>	<b>Totals</b>
Mandatory program	1,713	2,218	1,222	5,153
Voluntary program	-	5,813	3,536	9,349
Total metered single-family & duplex dwellings	1,713	8,031	4,758	14,502

The City has an inventory of meter chambers and meters already installed. This information will be made available to the successful proponent.

## 6. Program Objectives

The City's vision for this program is to establish a fair and equitable method of charging residents for water usage based on a "user-pay" basis, and reduce per capita water consumption. The particular objectives of this program are:

1. That Richmond residents are well informed of water conservation measures, including the social, environmental, and economic benefits of water metering.
2. The percentage of metered single-family and duplex residences is significantly increased. A desirable target is to have at least 1,500 new volunteer meter installations for single-family and duplex residences installed per year.
3. That meters are properly installed, accurate, reliable, and well maintained.
4. That meters and reading technology are readily available, good technical support is provided, and long-term supply of meters is assured;
5. That meter readings are accurate, and provided to the City in a timely fashion for the billing cycles.
6. That resident concerns and complaints are dealt with in an appropriate and timely fashion and are ultimately minimized.

## 7. Project Scope of Work

The successful proponent will meet the program objectives by successfully educating the public, promoting the program, installing and maintaining the water meters and reading technology, and potentially reading water meters for a three-year period. The successful proponent will also provide essential customer service.

Meter installations will conform to the terms and conditions outlined in this RFP. At a minimum, the successful proponent shall perform the scope of work according to the requirements in this RFP, the detail drawing W2g-SD (Rev.) included with this document in Appendix A and the City's current *Supplementary Specifications and Detail Drawings*. Should any of the above conflict, the order of precedence shall be as listed in this paragraph.

## 7.1 Resident Conservation Education and Program Promotion

The promotion and marketing of the voluntary water metering program is critical to the voluntary water meter program's success and will be the full responsibility of the successful proponent. The potential number of single-family and duplex residences currently available to the volunteer program is approximately 14,383.

The successful proponent's marketing strategy will:

1. Build and maintain awareness of the water meter program;
2. Educate the public on the importance of conserving water, the benefits and costs of the metering program to themselves and to society at large, and how metering will assist in building a more sustainable future;
3. Align marketing and advertising campaigns with the City's Mission, Values, and Community Plan (<http://www.richmond.ca/vision.htm> and <http://www.richmond.ca/services/planning/ocp/sched1.htm>);
4. Measure the effectiveness of the promotion campaign in meeting the program objectives, and demonstrate flexibility in approach.

Promotion of the program must be done in a respectful and tasteful manner. All advertising, marketing materials, presentation materials and any other publications shall be approved by the City prior to issuance.

The successful proponent will be required to provide monthly reports on the marketing campaign and its effectiveness. Effectiveness can be measured by the number of enquiries and the number of volunteers that have committed to meter installation.

## 7.2 Meter Installation

Meter installations installed under the volunteer program shall typically be installed within the private property on the home side of the curb stop. The exact location will be agreed with the property owner and the City, but will be within 1.5 m of the existing service connection.

The successful proponent will be responsible for locating all utilities, including those covered by the *BC One* call. The City will provide the specific co-ordinate location for the curb-stop, if available, and the "as built" information as required. The City does not guarantee the accuracy of this information, and due care shall be exercised in undertaking excavations.

The following situations could arise, and are to be dealt with as described:

- a) Should the service not be located, the City shall be advised within 15 days. The City shall then locate the service. If City forces locate the service within 30 minutes of commencing the search, the City may, at its discretion, charge the Successful Proponent for its costs for locating the service up to a maximum of

\$110.00, and identify the location of the service for the Successful Proponent to install the meter. However, should the City forces take more than 30 minutes to locate the service, the City will install the meter unit at no charge to the successful proponent. Payment to the Successful Proponent will be restricted to the *Locate, excavate and backfill* payment item in the schedule of quantities.

- b) Should the successful proponent locate the service, but find that no curb stop is present, they shall advise the City forthwith. The City will install a curb stop prior to the Successful Proponent installing the meter unit. In this case, the Successful Proponent will be required to supply and install a 100 mm diameter PVC riser pipe and NCR service box as per City Supplementary Detail Drawing W2a-SD and W2b-SD. Separate payment is provided for this as identified in the schedule of quantities.
- c) Should a wall or other solid structure/obstruction be located between the curb stop and the meter location, the City shall be advised forthwith. The City may relocate the curb stop. At such time, the City may at their discretion, install the meter unit. The meter may be installed in the boulevard rather than on private property.

The manufacturer and style of all water meters installed must be approved by the City. Direct read registers will not be considered. Touch pad technology is also not acceptable. Refer to Appendix D: Water Meter Specifications.

Electronic meter reading technology shall be compatible with the City's existing systems. A full description of the proposed equipment must be included in the proponent's proposal, along with a strategy for integrating with the City's existing systems.

The successful proponent will report on a weekly basis all new meters to the City in a MS Excel file that includes but is not limited to the following: address, meter location, meter serial number, meter size, date of installation and date of acceptance by the City. The format of this spreadsheet will be provided by the City upon contract award.

All meter installations shall be warranted against material, installation, and operational defects for a period of one year from the date of acceptance of the meter unit (meter, register, antenna, etc) by the City.

### **7.3 Meter Maintenance – Repair and Replacement**

The successful proponent will be expected to undertake the repair and replacement of meter components on single-family and duplex meters throughout the City. This applies to meter installations not installed under this contract, or where warranties no longer apply, and components have failed. Components may include curb stop riser pipes, curb stop service box lids, meter boxes, meter box lids, meters, registers, antennae and wires, and, in some cases, double check valves. The type and manufacturer of replacement

double check valves shall meet the approval of the City. Separate payment items are provided for these components.

The above tasks shall only be undertaken at the direction of the City.

Records of all maintenance activities shall be provided in a database or Excel spreadsheet format, and updated with the City on a monthly basis. Activity descriptions shall be consistent and the format of the report shall be agreed with the City upon project initiation. All removed meters, registers and touchpads/antennae are to be returned to Water Services Department within three months of removal.

#### **7.4 Meter Reading – Optional Scope**

Meter reading is an optional component of the proposal, and will be selected at the sole discretion of the City. However, invoicing residents for metered rates will remain the responsibility of the City.

Meter reading may include all single-family and duplex residences throughout Richmond – i.e. all installed single-family and duplex water meters.

The City's current meter reading technology is based on a mix of Neptune E-coder R900i radio units and touch pads. The approximate breakdown is as follows:

**Table 2: Summary of Single Family and Duplex Meter Reading Technology**

	No. of meters
Total residential meters	14,502
Touch pad	13,077
Neptune Radio Read Meters	1,425

Note that the City currently uses an *Advantage 2* probe and a DAP 9800 handheld for touch pad meter reading.

Meters shall be read on a quarterly basis either within a four-week period OR may be read continuously throughout the year – at the City's discretion. Proponents are to provide prices for either reading methods. Meter reading is to be coordinated with the City's billing cycle. The delivery dates will be provided by the City upon award. Though the proponent will be responsible for meter reading, the City will continue to create and distribute water bills. Therefore, the successful proponent will format the collected meter data as directed by the City and submit that data to the City (Appendix B).

The proposal should specifically address how meter misreads and re-reads will be addressed.

## **7.5 Customer Communication**

The successful proponent will be required to establish a toll-free “hot-line” to deal with questions and complaints from the public. A log of all calls shall be maintained and will include at a minimum:

1. Name and address of resident.
2. Time and date of call.
3. Subject issue.
4. Follow-up action initiated.
5. Time and date of resolution of issue.
6. Follow-up call to resident when action has been taken to confirm satisfactory resolution.

A scanned copy of the log shall be submitted monthly to the City for their records. The “hot-line” shall be available during business hours Monday to Friday (minimum 40-hour per week basis), and shall have provision to accept customer messages and voice mails. Sufficient storage for voice mails during non-business hours shall be provided by the successful proponent.

In addition, the City will require the successful proponent to receive calls for the new Multi-Family Voluntary Water Meter Program. All calls will be logged and forwarded to the City for action. The proponent will not be responsible for responding to the inquiries but will be required to catalogue the calls for a City representative to respond.

## **8. Measurement and Payment**

Refer to the schedule of quantities, included with the RFP as Appendix C. All invoices shall be on a monthly basis and will be paid within two weeks of approval of the works. The City will require a minimum three-week approval period to complete the inspections/reviews. Any repairs or defects that require remedy will require an additional three-week inspection period. All credits shall be processed in the month that the works were invoiced. Any charges from the City to the proponent will be resolved prior to approval of the invoice for the works involved.

There will be no partial payment of the invoices as such the proponent may wish to separate the invoices into three separate invoices for Water Meter Installations (Sections 8.1, 8.2, and 8.5), Meter Maintenance (Section 8.3) and Meter Reads (Section 8.4).

### **8.1 Program Education and Promotion (Item 1 Schedule of Quantities)**

Payment for item 1. (SoQ) will be based on the breakdown of this payment item into the components proposed by the proponent – see 7.1 above. The sum of the components shall become the annual upset limit. Payments for the components shall be as per the frequency and measures proposed.

Typical components (and examples of payments) could include:

- Initial start-up costs of developing the education and promotion program and the overall marketing strategy (payment on acceptance of program by City).
- Advertising (payment based on publications of advertisements).
- Promotional items (payment based on distribution).
- Community events (payment based on number of events held).
- Conservation devices (payment based on supplied and/or installed devices).
- Managing the program (monthly payments).
- Measuring its effectiveness, and making adjustments (quarterly payments).

## **8.2 Meter Installation (Item 2 Schedule of Quantities)**

- .1** Payment for item 2.1 (SoQ) for *Locate, excavate, and backfill* covers all administration work in accepting and processing the volunteer application, identifying the location of the future meter, locating the existing service connection, locating existing services and utilities, and excavating a pit that can accommodate a meter box up to 1 m depth in preparation for installation. It shall also include the backfill and restoration of the excavation to property owner's or the City's satisfaction in addition to the disposal of surplus excavated material. All surface restoration in accordance with Paragraph .4 below.

Payment shall also include the cost of excavating within the root zone, dealing with root mass and roots up to 75 mm in diameter, as well as dealing with boulders or debris up to 300 mm at their largest dimension. In situations where roots exceed 75 mm diameter, or debris and boulders exceed 300 mm, the Successful Proponent shall advise the City forthwith. If necessary, the work will be completed on a force account basis. The number of labourers and the time to be taken shall be agreed to and authorized by the City representative prior to the work proceeding. This documentation for each incident shall be produced by the Successful Proponent for payment on a monthly basis.

The force account rate shall be the actual cost paid by the Successful Proponent for labour and shall include all related taxes as well as any statutory schemes such as Workers Compensation, employment insurance, holiday pay, insurance, and all employee benefits. A mark-up of 25% shall be applied to this to cover tools, overhead and profit.

- .2** Payment for item 2.2 *Supply & install chamber, water meter, register, and antenna* shall include all activities required to install the connection as per City drawing W2g-SD as revised. This includes installation of chamber, supply and installation of new meter and appurtenant services, testing, obtaining City inspection and approval, and completing all records. Separate payments will be made for different service connection sizes.

Measurement will be for each completed water meter installed.

- .3 Payment for item 2.3 (SoQ) for *Extra payment* shall include compensation for additional activities authorized by the City, including dewatering, asphalt or concrete cut and restoration (including the use of a concrete box and lid as per the City drawing W2g-SD), installation of standpipes and NCR chambers and lids for curb stops installed by the City, and excavations beyond 1m in depth.

Asphalt and concrete cuts and restoration shall include neatly and minimally saw-cutting asphalt or concrete (no distinction for payment purposes) and its restoration including the supply and compaction of crushed gravel base material, and new asphalt or concrete, all as required. It shall include any other work resulting from installing meters within an asphalt or concrete area that restores the location to a similar or better condition than prior to the work being undertaken.

Excavations will be paid according to depth, with separate payment items provided for depths between 1m and 1.5m, and depths beyond 1.5m. Payment will be irrespective of volume or excavation size, roots and boulders, and shall include shoring as necessary.

Installations of curb stop chambers shall be as per City standard drawing W2a-SD and W2b-SD.

Measurement for extra work activities shall be as stated in the schedule of quantities.

- .4 Surface restorations must include restoring all disturbed surfaces to condition at least equal to that which existed prior to construction, making good any damage to adjacent lands. Restorations must include the following: restore unimproved surfaces with material equal to that removed at surface, restore gardens with approved topsoil or bark mulch to match existing conditions, restore lawns with approved topsoil and seed or sod to match existing lawn, restore gravel surfaces with matching granular materials, asphalt and concrete patching as required, and complete final restoration immediately upon completion of backfill.

**8.3 Meter Maintenance (Item 3 Schedule of Quantities)**

- .5 Separate payment items are provided for the payment for the replacement of one or more of the various components associated with the meter unit, including the curb-stop stand-pipe and cap – all as directed by the City. Payment shall cover all costs associated with the removal and disposal of components, and their replacement with components complying with the current specifications. In the case of a complete replacement of the meter and associated register and antenna, the replacement items shall be the same as those accepted for new installations under this agreement.

Payment also includes all restoration work to the resident's satisfaction and the City's approval.

**8.4 Meter Reading – Optional (Item 4 Schedule of Quantities)**

- .6 Payment for item 4.1 (SoQ) *quarterly meter reading* will be made quarterly once the Successful Proponent has submitted a report including the meter readings and locations, in the format required by the City, and submitted by the dates established during the project initiation meeting. Payment shall be based on a quarterly basis within a 4-week period and continuously throughout the year for each touch-pad read and for each radio read.
- .7 Payment for item 4.2 (SoQ) for *individual call-outs* will be made separately and on a per-callout basis, as requested by the City.

**8.5 Customer Service (Item 5 Schedule of Quantities)**

- .8 Payment for item 5 (SoQ) for *customer service* will be made on a monthly basis. Payment includes providing a customer service during business hours Monday to Friday, a messaging system for out of business hours, maintaining call logs, directing action items appropriately, reporting to the City, and any other related activity necessary to achieve the program objectives for this service

**9. Report Submission**

The successful proponent will be required to submit written reports on a monthly basis that document the status of the voluntary water meter program. The monthly reports will include, but are not limited to, the status of the promotion campaign, the number of water meters installed, the locations of the new installations, and a log of public complaints.

**10. City Provided Items**

The City will provide to the successful proponent the following items:

1. Inventory information on meter chambers and meters already installed.

2. Curb stop location coordinates (if available).
3. As constructed record drawings (as required).
4. Water service locations when requested.
5. Water meter standard.
6. Data file format for meter information.

**11. Note:** There will be a pre-bid meeting conducted on Wednesday, February 3, 2010 at 3 pm, with sign-in attendance forms. Potential Bidders are asked to meet in front of Council Chambers at City Hall, 6911 No. 3 Road, Richmond, BC. The City **strongly encourages** all potential Bidders to attend this session. No other sessions will be organised or arranged for this project.

**12. Proposal Submissions**

All proponents are required to provide the following information with their submissions, and in the order that follows:

1. A Corporate profile of their firm outlining its history, philosophy and target market.
2. A detailed listing of experience in managing water meter programs.
3. A description of the Contractor's understanding of the project objectives/outcomes and vision, and how these will be achieved.
4. A detailed project methodology explaining each project task including what will be expected of both the Contractor and the City with respect to each task.
5. Team Composition – a complete listing of all key personnel who will be assigned to this project. This will include their relevant experience, qualifications for this project, roles and responsibilities, leadership, etc., in addition to their availability for this project.
6. A detailed proposal of what will be delivered, including the expected outcome and benefits to the City of Richmond.
7. A complete definition of the process that will be employed to meet the objectives of this project, e.g., approach to be taken, feasibility and market study, etc.
8. A detailed schedule of all activities, including milestones, project meetings, interim reports and progress reports required for this project.
9. Provision of a priced methodology complete with a time allotment for each identified task you propose to employ to carry out the work, this shall form the basis for payments to the successful proponent. Supplement this with a schedule of fees for staff to be assigned to the project. These rates shall be the basis for

adjustments to the value of the contract in the event the scope of work varies from that proposed.

For the Program Promotion and Marketing component, proponents shall submit a fixed upset annual fee that shall cover the program development, implementation, and effectiveness measurement. Within the upset limit, the program shall be broken down into its various components. Typical components could include items such as:

1. Program development
2. Advertising
3. Direct marketing campaigns (example - flyers)
4. Open houses

Each component shall include its own estimated fee, with the sum of the component fees not exceeding the annual fixed upset fee for each year. Payments will be based on delivery of the various components. For example, should a component include the delivery of a certain number of flyers, payment will be made against that component only once delivery of the target number of flyers is complete.

The City will be flexible in allowing adjustments to the various component fees, as long as the total fixed fee is not exceeded.

10. A minimum of three (3) client references from projects of a similar size and scope.
11. Program Promotion
12. Meter Installation
13. Meter Reading
14. Customer Communication. Proponents shall provide details of this service, including target response times to (a) deal with messages left on the voice-mail system, and (b) resolving and reporting back to residents upon resolution. The proposal should include the avenues that will be made available for communicating with the public and performance standards for addressing public complaints.

### **13. Working Agreement**

The successful proponent will enter into a contract for services with the City based upon the information contained in this request for proposal and the successful proponents submission and any modifications thereto.

Proponents may include their standard terms of engagement.

**14. Evaluation Criteria**

Proposals shall be evaluated on but not limited to the following:

1. Understanding of project objectives/outcomes and vision
2. Project Methodology.
3. Team Composition – Experience and Qualifications of those staff to be assigned to the project.
4. Project Deliverables.
5. Value for Money.
6. References.
7. Interview (if required)



**City of Richmond**  
Business & Financial Services Department

**Notice of No Bid**

**Note:** Receipt of this completed form will assist us in calling for future bids. Please complete and submit this form prior to the closing date and time as shown on the Request for Quotation/Proposal/Tender form.  
Please remember to include Quotation/Proposal/Tender No. at right.

Quotation/Proposal/Tender No.

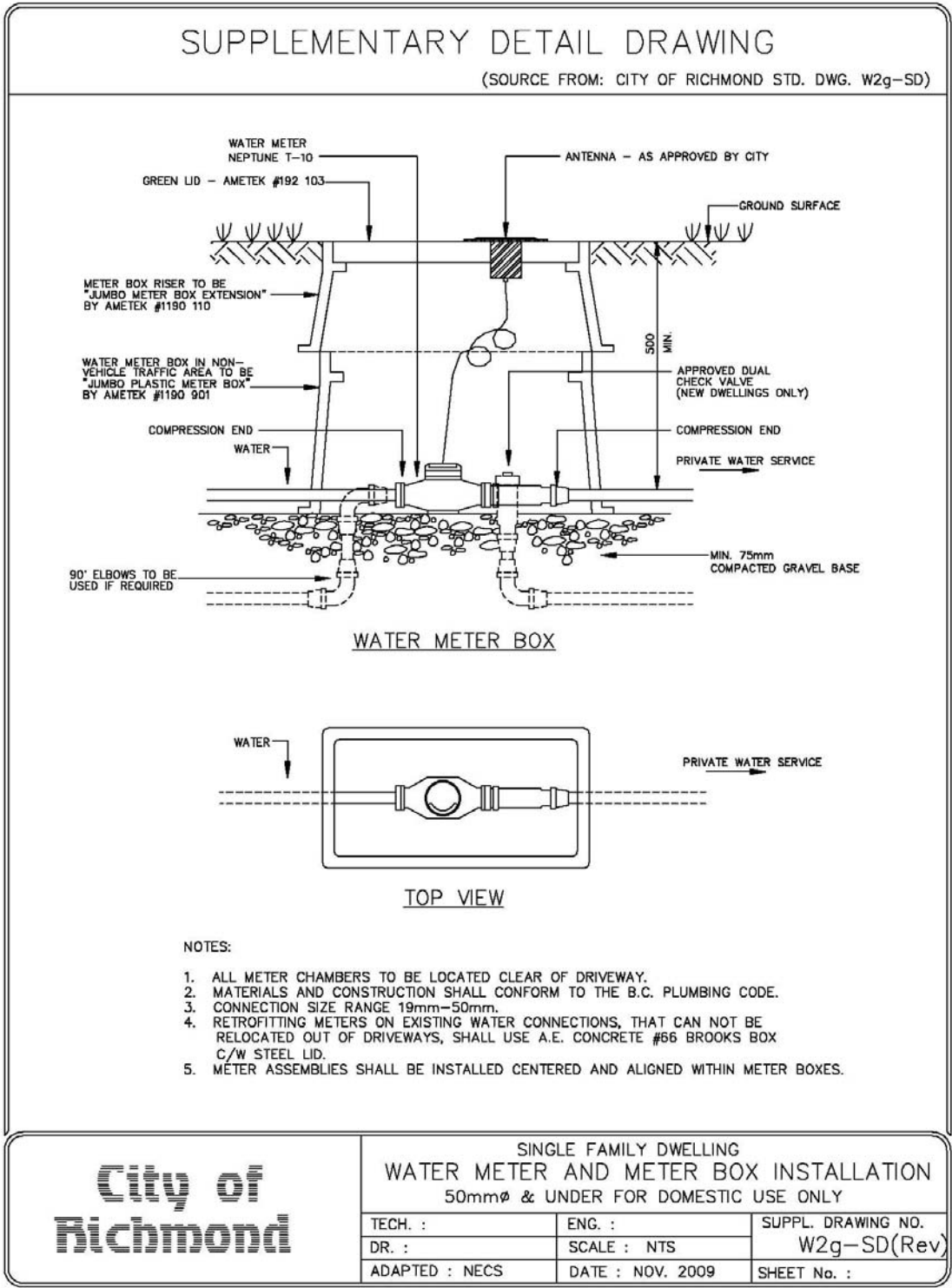
**3793P**

**A Quotation/Proposal/Tender is not being submitted for the following reason(s):**

- |                                                                                    |                                                                                                  |
|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> We do not manufacture/supply the required goods/services  | <input type="checkbox"/> Cannot obtain raw materials/goods in time to meet delivery requirements |
| <input type="checkbox"/> We do not manufacture/supply to stated specifications     | <input type="checkbox"/> Cannot meet delivery requirements                                       |
| <input type="checkbox"/> Specifications are not sufficiently defined               | <input type="checkbox"/> Cannot quote/tender a firm price at this time                           |
| <input type="checkbox"/> Insufficient information to prepare quote/proposal/tender | <input type="checkbox"/> Insufficient time to prepare quote/tender.                              |
| <input type="checkbox"/> Quantity too small                                        | <input type="checkbox"/> We are unable to competitively quote/tender at this time.               |
| <input type="checkbox"/> Quantity too large                                        | <input type="checkbox"/> We do not have facilities to handle this requirement                    |
| <input type="checkbox"/> Quantity beyond our production capacity                   | <input type="checkbox"/> Licensing restrictions (please explain)                                 |
| <input type="checkbox"/> Cannot meet packaging requirements                        | <input type="checkbox"/> Agreements with distributors/dealers do not permit us to sell directly. |
| <input type="checkbox"/> Cannot handle due to present plant loading                | <input type="checkbox"/> Other reasons or additional comments (please explain below)             |

I / We wish to quote / tender on similar goods / services in future <input type="checkbox"/> Yes <input type="checkbox"/> No	Authorized Company Official – Signature and Title	Date
This space for City of Richmond Comments		Firm Name
		Address
		City
		Province <span style="float: right;">Postal Code</span>
		Telephone Number

Appendix A – Detail Drawing



**Appendix B Report Formats**

**Layout for Meter System Import/Export File**

<b>Description</b>	<b>From</b>	<b>To</b>	<b>Comment</b>
Route - type	1	4	
Route - number	5	6	
Route - filler	7	7	set to blank
Route - current year	8	9	
Route - current quarter	10	10	
Walking Sequence	11	14	
Page Number	15	18	
Reading Sequence	19	20	
Filler (HH number)	21	26	set to blanks
Reading Direction	27	27	
Number of Dials	28	28	
ID Expected	29	41	left adjusted
ID Captured	42	54	left adjusted
ID Override	55	67	left adjusted
Decimal Location	68	68	set to 0
Meter Reading	69	78	zero fill
Meter Reading Override	79	88	zero fill
Meter Reading High Limit	89	98	zero fill
Meter Reading Low Limit	99	108	zero fill
Reading Import Date	109	114	MMDDYY
Reading Export Date	115	120	MMDDYY
Meter Note Code 1	121	122	in notes table
Meter Note Code 2	123	124	in notes table
Meter Note Code 3	125	126	in notes table
Meter Note Code 4	127	128	in notes table
Location Code	129	130	set to blanks
Reader Code	131	132	
Record Type	133	134	
Record Status	135	135	
Entered Date	136	141	MMDDYY
Entered Time	142	147	HHMMSS
Reading Type	148	148	set to blank
Net Number	149	150	set to blanks
Reading Attempts	151	151	set to blank
Meter Memo	152	158	set to blanks
Manufacturer	159	159	set to blank
Active Code	160	160	set to A
Meter Type Code	161	161	set to blank
Reading Status	162	162	
Previous Reading	163	172	zero fill

<b>Description</b>	<b>From</b>	<b>To</b>	<b>Comment</b>
Previous Reading Date	173	178	set to blanks
Meter Property Address	179	202	left adjusted
Pipe Size	204	226	left adjusted
Meter Location	227	250	left adjusted
Serial Number	251	274	left adjusted
Display 21 Line	275	298	comments
Display 22 Line	299	322	comments
Display 23 Line	323	246	comments
Display 24 Line	347	370	comments
Meter Brand	371	394	left adjusted
Meter Type Description	395	418	left adjusted
Meter Installed Date	419	442	left adjusted
Meter Recondition Code	443	466	left adjusted
Meter ID	467	490	
Property Roll Number	491	507	xxx/xxx/xxx

### **Production Report Layout**

<b>Description</b>	<b>Max Size</b>	<b>Comment</b>
Property Number	10	Richmond property number (i.e. Richmond Key)
Install Date	12	date meter was installed (MM/DD/YYYY)
Property Address	30	Richmond civic address of meter
Work Completed Description	256	description of type of install
Meter Size	10	meter size
Meter Serial Number	20	serial number on body of meter
Meter Location	20	location of meter on property - short description for meter reader
Meter Reading	10	initial meter reading at installation (digits only, actual reading will be determined using multiplier code)
Meter Register/Remote ID	10	meter id on register or remote device
Reading Multiplier Code	10	indicator if meter reading is to be multiplied by .1, 1, or 10 (DEC, N, Y)
Old Meter Final Reading	10	if install is a replacement, meter reading of old meter (rounded to nearest integer)
Meter Comments	512	installation comments
Customer Install Type	5	type of installation, either mandatory or volunteer (MAN, VOL)

PLEASE NOTE: As a comma is used as a delimiter, no commas are to be used in any of the fields

**Appendix C - Schedule of Quantities**

**2010 - 2012 Single Family and Duplex Voluntary Water Meter Program - Schedule of Quantities and Prices**

Ref	Item	Item Description	Unit	Quantity	Unit Price	Price
8.1 - RFP	<b>1</b>	<b>Program Promotion Upset Limit</b>	<b>Each Year</b>			
		<b>Made up of:</b>				
	1.1	Component 1:				
	1.2	Component 2:				
	1.3	Component 3:				
	1.4	Component 4:				
	1.5	Component 5:				
	1.6	Component 6:				
8.2 - RFP	<b>2</b>	<b>Meter Installation</b>				
8.2.1-RFP	2.1	Locate, excavate, backfill and restore to property owner and City satisfaction	Each			
8.2.2-RFP	2.2	Supply & install chamber, water meter, register, and antenna for the following service connection sizes:				
	2.2.1	19 mm existing service	Each			
	2.2.2	25 mm existing service	Each			
	2.2.3	38 mm existing service	Each			
	2.2.4	50 mm existing service	Each			
	2.3	Extra Payment for:				
8.2.3 - RFP	2.3.1	Dewatering	Each			
8.2.3 - RFP	2.3.2	Asphalt or concrete cut & restoration	Each			
8.2.3 - RFP	2.3.3	Excavations deeper than 1.0 m, but less than 1.5 m	Each			
8.2.3 - RFP	2.3.4	Excavations deeper than 1.5 m, but less than 2.5 m	Each			

Ref	Item	Item Description	Unit	Quantity	Unit Price	Price
8.2.3 - RFP	2.3.5	Install 100 mm stand pipe for curb stop and NCR service box lid	Each			
<b>8.3 - RFP</b>	<b>3</b>	<b>Meter Maintenance</b>				
	3.1	Repair and replace the following components:				
	3.1.1	Plastic Meter boxes	Each			
	3.1.2	Concrete Meter boxes	Each			
	3.1.3	Plastic Meter box lids	Each			
	3.1.4	Concrete Meter box lids	Each			
	3.2.3	Meters for:				
	3.1.3.1	19 mm dia services	Each			
	3.1.3.2	25 mm dia services	Each			
	3.1.3.3	38 mm dia services	Each			
	3.1.3.4	50 mm dia services	Each			
	3.2.4	Registers for:				
	3.2.4.1	19 mm dia services	Each			
	3.2.4.2	25 mm dia services	Each			
	3.2.4.3	38 mm dia services	Each			
	3.2.4.4	50 mm dia services	Each			
	3.2.5	Touchpads	Each			
	3.2.6	Antenna	Each			
	3.2.7	Raise box without raising plumbing and meter	Each			
	3.2.8	Raise box including all plumbing, meters, etc	Each			
	3.2.9	Replace dual check valve for:				
	3.2.9.1	19 mm dia services	Each			
	3.2.9.2	25 mm dia services	Each			
	3.2.9.3	38 mm dia services	Each			
	3.2.9.4	50 mm dia services	Each			
	3.2.10	Replace curb stop box lid	Each			
	3.2.11	Replace curb stop box complete	Each			
	3.2.12	Replace curb stop 100 mm dia standpipe	Each			

Ref	Item	Item Description	Unit	Quantity	Unit Price	Price
8.4	<b>4</b>	<b>Meter Reading</b>				
8.4.1 - RFP	4.1	Meter Reading (Quarterly-within 4 weeks)				
	4.1.1	Touch Pads	Each			
	4.1.2	Radio Reads	Each			
8.4.1 - RFP	4.2	Meter Reading (Quarterly-continuously throughout year)				
	4.2.1	Touch Pads	Each			
	4.2.2	Radio Reads	Each			
8.4.2 - RFP	4.3	Individual call-outs	Each			
8.5	<b>5</b>	<b>Customer Service</b>				
8.5.1 - RFP		Provide toll-free line	Monthly	36		

Quantity	Item Description	Unit	Price
	Public Education Monthly Fee	Each	
	Supply & Install 3/4" Water Meter in Existing Pit	Each	
	Supply & Install 3/4" Water Meter in Plastic Pit	Each	
	Supply & Install 3/4" Water Meter in Concrete Pit	Each	
	Supply & Install 1" Water Meter Existing Pit	Each	
	Supply & Install 1" Water Meter in Plastic Pit	Each	
	Supply & Install 1" Water Meter in Concrete Pit	Each	
	Supply & Install Plastic Pit (not including meter)	Each	
	Supply & Install Concrete Pit (not including meter)	Each	
	Replace existing stand-pipe	Each	
	Excavation 36.01" to 48.00"	Each	
	Excavation 48.01" to 60.00"	Each	
	Excavation 60.01" to 72.00"	Each	
	Asphalt Cut & Restoration	Each	
	Concrete Cut & Restoration	Each	
	Leak Audit	Each	
	Data Collection	Each	

Quantity	Item Description	Unit	Price
	Conservation Device Appointment (Labour only)	Each	
	Supply & Install of Showerhead (Product only)	Each	
	Supply & Install of Kitchen Aerator (Product only)	Each	
	Supply & Install of Faucet Aerator (Product only)	Each	
	Supply & Install of Pop Flush Toilet Device (Product only)	Each	
	Supply & Replace Plastic Pit Lid	Each	
	Supply & Replace Steel Pit Lid	Each	
	Meter Reading (Quarterly schedule)	Each	
	Meter Reading (Monthly schedule)	Each	
	Re-Read	Each	
	Residential Demand Read	Each	
	Wire Repair	Each	
	Supply & Replace 3/4" Register on existing meter	Each	
	Supply & Replace 1" Register on existing meter	Each	
	Supply & Replace Pit Antenna on existing meter	Each	
	Dewatering	Each	
	Excessive root & debris removal	Hourly	
	Service call - technical	Hourly	
	Service call - non-technical	Hourly	
	Curb-stop locate	Hourly	
	Ground-penetrating radar	Hourly	

## APPENDIX D.

### Small Water Meter Performance Specifications

#### Section 1 Requirements

##### Sec. 1.1 Materials

Materials shall comply with the requirements of the Safe Drinking Water Act and other federal requirements.

1.1.1 *General.* All materials used in the manufacture of water meters shall conform to the requirements stipulated in the following section. Where plastic materials are allowed, the manufacturer may provide any plastic materials that meet the performance requirements specified.

1.1.1.1 *Materials.* Materials shall be selected for their strength and resistance to corrosion and shall not impart to the water objectionable taste or odor, nor toxic substances in normalized concentrations exceeding the maximum contaminant levels (MCLs) as defined by the US Environmental Protection Agency (USEPA) and Canadian Drinking Water Guidelines, whichever is the higher standard.

1.1.2 *Pressure casings.* Materials used in the construction of meter main cases shall have sufficient dimensional stability to retain operating clearances at working temperatures up to 105°F (40°C) and shall not permanently warp or deform when exposed to temperatures up to 150°F (66°C) for 1 hr.

1.1.3 *Register-box rings and lids.* Materials used in the construction of register-box rings and lids shall have sufficient dimensional stability to retain operating clearances at working temperatures up to 105°F (40°C) and shall not permanently warp or deform when exposed to temperatures up to 150°F (66°C) for 1 hr.

1.1.4 *Measuring chambers.* Measuring chambers shall have sufficient dimensional stability to retain operating clearances at working temperatures up to 80°F (27°C) and shall not warp or deform when exposed to operating temperatures of 100°F (38°C).

1.1.5 *Pistons and discs.* Pistons and discs shall have sufficient dimensional stability to retain operating clearances at working temperatures up to 80°F (27°C) and shall not warp or deform when exposed to operating temperatures of 100°F (38°C).

1.1.6 *Measuring-chamber diaphragms.* Measuring-chamber diaphragms shall have sufficient dimensional stability to retain operating clearances at working temperatures up to 80°F (27°C) and shall not warp or deform when exposed to operating temperatures of 100°F (38°C).

1.1.7 *Piston/disc spindles, thrust rollers, and thrust-roller bearing plates.* Piston/disc spindles, thrust rollers, and thrust-roller bearing plates shall have sufficient dimensional stability to retain operating clearances at working temperatures up to 80°F (27°C) and shall not warp or deform when exposed to operating temperatures of 100°F (38°C).

1.1.8 *Register gear trains.* Frames, gears, and pinions of gear trains shall not be exposed to water. Register gear trains shall have sufficient dimensional stability to retain operating clearances at working temperatures up to 80°F (27°C) and shall not warp or deform when exposed to operating temperatures of 100°F (38°C).

1.1.9 *Covers, top or bottom.* Engineering plastic covers, top or bottom, shall have sufficient dimensional stability to retain operating clearances at working temperatures up to 105°F (40°C) and shall not permanently warp or deform when exposed to temperatures up to 150°F (66°C) for 1 hr. Breakable and nonbreakable top or bottom covers shall be as follows:

1.1.9.1 *Breakable.* The design and composition of breakable covers will be such that they will satisfy the break or yield requirements stated in Sec. 1.2.9. Meters equipped with frost-protection devices can cause flooding to occur due to frost-protection devices yielding or fracturing, as indicated in AWWA Manual M6, Water Meters—Selection, Installation, Testing, and Maintenance.

1.1.9.2 *Nonbreakable.* The design and composition of nonbreakable covers shall be such that they will satisfy the break or yield requirements stated in Sec. 1.2.9.

## **Sec. 1.2 General Design**

1.2.1 *Size.* The operating and physical characteristics listed in Tables 1 and 2 shall determine the nominal size of meters.

1.2.2 *Capacity.\** The nominal capacity ratings and the related pressure loss limits shall be the same as those listed in Table 1 for the safe maximum operating capacities.

1.2.3 *Length.* The length of the meters shall be the face-to-face dimensions of the spuds or flanges listed in Table 2.

1.2.4 *Pressure requirement.* Meters supplied under this standard shall operate without leakage or damage to any part at a continuous working pressure of 150 psi (1,050 kPa).

1.2.5 *Frost-protection devices.* Frost-protection devices, when provided, shall be of such design that they will yield or break under normal freezing conditions in order to minimize damage to any other part of the meter. The internal portion of the top or bottom covers, designed to provide frost protection, may be protected from corrosion by an inner lining or coating.

WARNING: Meters equipped with frost-protection devices can cause flooding to occur because of frost-protection devices yielding or fracturing, as indicated in AWWA Manual M6, Water Meters—Selection, Installation, Testing, and Maintenance.

1.2.6 *External-case closure fasteners.* External-case closures, such as rings, clamps, screws, bolts, cap bolts, nuts, and washers, shall be designed for easy removal following lengthy service.

1.2.7 *Accessibility.* Meters larger than 1 in. (25 mm) shall be designed for easy removal of all interior parts without disturbing the connections to the pipeline.

1.2.8 *Registration accuracy.* Meters shall meet the following requirements for accuracy with water at a temperature less than 80°F (27°C):

1.2.8.1 Normal flow limits. At any rate of flow within the normal test-flow limits as listed in Table 1, the meter shall register not less than 98.5 percent and not more than 101.5 percent of the water that actually passes through it.

1.2.8.2 Minimum flow rate. At the minimum test-flow rate to the lowest normal test-flow rate as listed in Table 1, the meter shall register not less than 95 percent and not more than 101 percent of the water that actually passes through it.

1.2.9 *Plastic covers, top or bottom design.* The design of plastic covers, top or bottom (Sec. 1.1.9), shall meet the following requirements:

1.2.9.1 Fatigue limit. Covers, top or bottom, shall be designed to be watertight and capable of withstanding, without exceeding the fatigue limit of the material or being structurally damaged, a hydrostatic pressure of two times the rated maximum working pressure (300 psi [2,100 kPa] minimum) for a period of 15 min.

1.2.9.2 Burst pressure. Covers, top or bottom, not designed to break shall be designed to have a burst pressure of at least four times the rated maximum working-line pressure (600 psi [4,200 kPa] minimum). Breakable covers, top or bottom, shall be designed to have a burst pressure of at least three times the rated maximum working-line pressure (450 psi [3,100 kPa]). Components shall be watertight at 150 psi (1,050 kPa) after being subjected to a minimum of 100,000 pressure cycles of 100–300 psi (700–2,100 kPa) in 1.5 sec and a hold time of 1 min and followed by an immediate release of pressure to the 100-psi (700-kPa) lower limit.

**Table I Characteristics of potable water meters**  
 Maximum

Meter Size	Safe Maximum Operating Capacity*		Pressure Loss at Safe Maximum Operating Capacity		Recommended Maximum Rate for Continuous Operations†		Minimum Test Flow‡		Normal Test Flow Limits‡	
	gpm	(m <sup>3</sup> /hr)	psi	(kPa)	gpm	(m <sup>3</sup> /hr)	gpm	(m <sup>3</sup> /hr)	gpm	(m <sup>3</sup> /hr)
½	15	(3.4)	15	(103)	7.5	(1.7)	¼	(0.06)	1-15	(0.2-3.4)
½ x ¾	15	(3.4)	15	(103)	7.5	(1.7)	¼	(0.06)	1-15	(0.2-3.4)
⅝	20	(4.5)	15	(103)	10	(2.3)	¼	(0.06)	1-20	(0.2-4.5)
⅝ x ¾	20	(4.5)	15	(103)	10	(2.3)	¼	(0.06)	1-20	(0.2-4.5)
¾	30	(6.8)	15	(103)	15	(3.4)	½	(0.11)	2-30	(0.5-6.8)
1	50	(11.4)	15	(103)	25	(5.7)	¾	(0.17)	3-50	(0.7-11.4)
1½	100	(22.7)	15	(103)	50	(11.3)	1½	(0.34)	5-100	(1.1-22.7)
2	160	(36.3)	15	(103)	80	(18.2)	2	(0.45)	8-160	(1.8-36.3)

\* Operation at this flow rate should not exceed 10 percent of usage, or two (2) hr in a 24-hr period.

† See Sec. B.5.1.

‡ See Sec. 1.2.8.

**Table 2 Dimensional design limits for meters and external connections**

Meter Size		Meter Length*				Meter-Casing Spuds		Coupling Tailpieces			
		Threaded Spud Ends		Flanged Ends		Nominal Thread Size		Length		Nominal Thread Size	
<i>in.</i>	<i>(mm)</i>	<i>in.</i>	<i>(mm)</i>	<i>in.</i>	<i>(mm)</i>	<i>in.</i>	<i>(mm)</i>	<i>in.</i>	<i>(mm)</i>	<i>in.</i>	<i>(mm)</i>
½	(13)	7½	(190)			¾	(19)	2⅜	(60)	½	(13)
½ × ¾	(13 × 20)	7½	(190)			1	(25)	2½	(64)	¾	(19)
⅝	(15)	7½	(190)			¾	(19)	2⅜	(60)	½	(13)
⅝ × ¾	(15 × 20)	7½	(190)			1	(25)	2½	(64)	¾	(19)
¾	(20)	9	(229)			1	(25)	2½	(64)	¾	(19)
1	(25)	10¾	(273)			1¼	(32)	2⅝	(67)	1	(25)
1½	(40)	12⅝	(321)	13	(330)	1½	(38)†				
2	(50)	15¼	(387)	17	(432)	2	(51)†				

\*0.003937 in. (1 mm).

†Internal threaded spuds.

### Sec. 1.3 Detailed Design

1.3.1 *Main casing.* Meters shall have an outer case with separate, removable measuring chambers. Cases shall not be repaired in any manner. The inlet and outlet shall have a common axis. Connection flanges shall be parallel.

1.3.1.1 Small-size meter casings. Casings of meters in sizes ½ in. (13 mm) through 1 in. (25 mm) shall be of either frost-protection or split-case design, as designated by the purchaser.

#### 1.3.2 Connections.

1.3.2.1 ½-in. (13-mm), ½-in. × ¾-in. (13-mm × 20-mm), ⅝-in. (15-mm), ⅝-in. × ¾-in. (15-mm × 20-mm), ¾-in. (20-mm), and 1-in. (25-mm) meters. Main-case connections for meters ½-in. (13-mm) through 1-in. (25-mm) sizes shall be meter-casing spuds having external straight threads (NPSM) conforming to ASME B1.20.1. When a ½-in. (13-mm) or ⅝-in. (15-mm) meter is provided with connections for a ¾-in. (20-mm) pipe, the spud dimensions shall be as shown for the ½-in. × ¾-in. (13-mm × 20-mm) or ⅝-in. × ¾-in. (15-mm × 20-mm) sizes.

Coupling nuts, if required, shall have internal straight pipe threads (NPSM) conforming to ASME B1.20.1.

Coupling tailpieces, if required, shall have external taper pipe threads (NPT) conforming to ASME B1.20.1 and internal diameters that

are approximately equal to the nominal thread size of the tailpiece. Lengths and thread sizes shall be as listed in Table 2.

1.3.2.2 1½-in. (40-mm) and 2-in. (50-mm) meters. Main-case connections for 1½-in. (40-mm) and 2-in. (50-mm) meters shall be either spuds on both ends or flanges on both ends.

Spuds shall have internal taper pipe threads (NPT) conforming to ASME B1.20.1.

Flanges shall be faced and drilled and shall be of the oval type. The drilling shall be on the horizontal axis; the number of boltholes and the diameters of the boltholes and bolt circle shall be as listed for companion flanges in Table 3.

Companion flanges shall be faced, drilled, and tapped in conformance with ASME B1.20.1. Dimensions shall be as listed in Table 3.

1.3.3 *Registers*. Registers shall be permanently sealed by the manufacturer, or have replaceable change gears, and shall read in US gallons, cubic feet, or cubic meters. The billing software shall convert readings to cubic meters. No portion of the reduction gearing or totalizing mechanism shall be in contact with the measured water. The minimum capacity shall be as listed in Table 4.

1.3.3.1 Configuration. Register gear trains shall be located in the register compartment. Piston oscillations or disc nutations shall be transmitted by magnetic couplings.

1.3.3.2 Number-wheel numerals. The totalizing numbers on the registers shall not be less than 5/32 in. (4.0 mm) in height and shall be readable at a 45-degree angle from the vertical. Billable units shall be clearly indicated on the register.

1.3.3.3 Test hands. Registers shall be furnished with center-sweep test hands with an index circle located near the periphery of the register and graduated in 100 equal parts, with each tenth graduation being numbered. The hand or pointer shall taper to a point, and shall be set accurately and held securely in place. The quantities indicated by a single revolution of the test hand shall be as listed in Table 4 for initial dial indication.

1.3.4 *Measuring chambers*. The measuring chambers shall be self-contained units, smoothly-finished, firmly-seated, and easily removed from the main cases and shall not be produced as part of the main cases. Measuring chambers shall be secured in the main cases so that the accuracy of the meter will not be affected by any distortion of the main case that might occur when operating with a pressure less than 150 psi (1,050 kPa).

1.3.5 *Pistons and discs*. Pistons and discs shall be smoothly finished. Disc plates, whether flat or conical, shall be either reinforced or equipped with thrust rollers if required. Discs may be one piece or

composed of a plate with two halfballs. The piston and disc spindles shall be fastened securely. The disc nutations or piston oscillations shall not exceed the quantities listed in Table 1.

1.3.6 *Tamper-resistant features.* Register-box screws, locking pins, case bolts, and inlet and outlet coupling nuts, if furnished, shall be equipped with tamper-resistant features. If drilled for seal wires, seal-wire holes shall not be less than 3/32 in. (2.4 mm) in diameter.

**Table 3 Flange dimensions**

Meter Size		Minimum Thickness at Bolthole		Diameter of Bolt Circle		Number of Boltholes	Diameter of Boltholes*		Thickness at Hub	
<i>in.</i>	<i>(mm)</i>	<i>in.</i>	<i>(mm)</i>	<i>in.</i>	<i>(mm)</i>		<i>in.</i>	<i>(mm)</i>	<i>in.</i>	<i>(mm)</i>
1½	(40)	⅞	(14.3)	4	(102)	2	⅞	(17.5)	⅜	(20.6)
2	(50)	⅞	(15.9)	4½	(114)	2	¾	(19)	⅞	(22.2)

\*Minimum

**Table 4 Maximum indication on initial dial and minimum register capacity**

Meter Size		Maximum Allowable Indication of Initial Dial			Minimum Allowable Capacity of Register (Millions)		
<i>in.</i>	<i>(mm)</i>	<i>ft<sup>3</sup></i>	<i>gal</i>	<i>m<sup>3</sup></i>	<i>ft<sup>3</sup></i>	<i>gal</i>	<i>m<sup>3</sup></i>
½	(13)	1	10	0.1	0.1	1	0.01
⅝	(15)	1	10	0.1	0.1	1	0.01
¾	(20)	1	10	0.1	1	10	0.1
1	(25)	10	100	1	1	10	0.1
1½	(40)	10	100	1	10	100	1
2	(50)	10	100	1	10	100	1

**Section 2 Delivery**

**Sec. 2.1 Marking**

The size, model, and direction of flow through the meter shall be marked permanently on the outer cases of all meters. The size (or sizes) of the meter shall be marked permanently on the register dial face. The

manufacturer's meter serial number shall be imprinted permanently on the outer case.

6.1.1 Register-box marking. The name of the manufacturer shall be marked permanently on the lid of the register box. The serial number of the meter shall be imprinted on the lid.