Corporation of the Town of LaSalle

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# 1 DESIGN STANDARDS: WATER

## 1.1 GENERAL

Watermains and Appurtenances shall be designed and constructed in accordance with the information specified herein. All chemicals and materials used in the drinking water system that comes into contact with water within the system shall meet all applicable standards set by MECP, the Ontario Water Works Association (OWWA) and the American National Standards Institute (ANSI) safety criteria standards NSF/60 and NSF/61. Any deviation from the specifications contained herein and/or proposed alternatives require approval in writings from the Town Engineer.

## 1.2 DESIGN CONSIDERATIONS

In order to establish watermain sizes, the Consulting Engineer is required to design potable water distribution using the following design criteria. The criteria was designed using current Town standards and the Design Guidelines for Drinking-Water Systems as detailed by the MECP. In addition to these written guidelines, reference should also be made to the approved manufacturer's most up-to-date model's products for linear water systems. Proposed development shall consult with the Town to ensure current design is within Town's current water model and standards.

### 1.2.1 FLOW CALCULATIONS

The Owner's Consultant shall propose the size of the watermain to accommodate the development. The watermain size shall be determined by the fire flow plus maximum day use. Peaking factors are based on the below chart:

| Population Range | Minimum Rate actor (min. hour) | Maximum Day Factor | Peak Rate Factor (max. hour) |
|---|---|---|---|
| 500 -1000 | 0.40 | 2.75 | 4.13 |
| 1001 -2000 | 0.45 | 2.50 | 3.75 |
| 2001 – 3000 | 0.45 | 2.25 | 3.38 |
| 3001 – 10000 | 0.50 | 2.00 | 3.00 |

| | | | |
|---|---|---|---|
| 10001 – 25000 | 0.60 | 1.90 | 2.85 |
| 25001 – 50000 | 0.65 | 1.80 | 2.70 |
| 5001 – 75000 | 0.65 | 1.75 | 2.62 |
| 75001 – 150000 | 0.70 | 1.65 | 2.48 |
| > 150000 | 0.80 | 1.50 | 2.25 |

Fire flow testing is required for all development applications to establish and confirm boundary conditions for the development, and will provide the basis for the design proposal.

Fire flows shall adhere to the following criteria:

- Residential: Minimum fire flow = 30 l/s (based on MECP Guidelines)
- Other (based on the OBC 1997):

$$Q = K * V * S_{tot}$$

Where: Q = minim supply of water in litres

K = water supply coefficient (K = 39 (which covers major occupancy classifications A – F2))

V = total building volume in cubic meters

$S_{tot}$ = total of spatial coefficient values from property line exposures on all side (max. value = 2)

Minimum Residential Pressures shall adhere to the following criteria:

- 140 kPa at max. day demands plus fire flows
- 275 kPa at max. hourly demand
- 350 kPa – 550 kPa at max. daily flow

#### 1.2.1.1 HAZEN WILLIAMS EQUATION

$$Q = V * \pi * \frac{D^2}{4}$$

Where: Q = Discharge ($m^3/s$)

D = Diameter of the pipe (m)

V = Velocity (m/s) as found in the below formula:

$$V = K * C * \frac{D^{0.63}}{4} * S^{0.54}$$

Where: K = 0.85 (for SI Units)

C = Hazen Coefficient

D = Diameter of the pipe (m)

S = Energy Slope (m/m) as found in the below formula:

$$S = \frac{H_f}{L}$$

Where: $H_f$ = Head Loss (m)

L = Length of the pipe (m)

Hazen Williams Coefficient values:

| Diameter (mm) | Coefficient Factor |
|---|---|
| **150** | 100 |
| **200 – 250** | 110 |
| **300 – 600** | 120 |
| **> 600** | 130 |

### 1.2.2 WATER DEMANDS

Water demands are to be calculated by the Design Engineer and approved by the Town Engineer. Custom demands for larger volume consumers or those with exceptional peak demands like ICI (Industrial, Commercial and Institutional) projects require special consideration regarding flow calculations.

For projects that require fire protection; the fire flow requires shall be determined through the Formula discussion in "Flow Calculations". A fire flow test will be required by the Owner on hydrants surrounding the project to determine if adequate water is available.

Water Demands should also take into account the following table:

| Proposed Land Use | Avg. Daily Flow | Population Densities [1] |
|---|---|---|
| **Chrysler Canada Greenway Extension/Hydro Corridor** | 0 | -- |
| **Employment[2]** | 35 $m^3$/Ha/d | 78 people/Ha |
| **Golf Course** | 95 l/patron/d | 4 patrons/Ha |
| **Highway Commercial[3]** | 28 $m^3$/Ha/d | 62 people/Ha |
| **Institutional — Heavenly Rest Cemetery (29.8 Ha)**<br>**— Other (4.9 Ha) (assumed school)** | 0.12 $m^3$/Ha/d<br>140 l/student/d | 0.3 people/Ha<br>165 students/Ha |
| **Neighbourhood Centre** | 28 $m^3$/Ha/d | 62 people/Ha |
| **Park/Open Space[5]** | 1.4 $m^3$/Ha/d | 3 people/Ha |
| **Recreation Complex[6]** | 4.2 $m^3$/Ha/d | 10 people/Ha |
| **Residential** | 450 l pcd | 60 people/Ha |
| **School** | 140 l/student/d | 165 students/Ha |
| **Stormwater Management Pond** | 0 | -- |
| **Town Centre (Mixed Use)** | 36 $m^3$/Ha/d | 80 people/Ha |
| **Woodlot/Natural Corridors** | 0 | -- |

1. Refer to Appendix 1 – Detailed Calculations for Equivalent Populations
2. Based on light industrial
3. Commercial/Big box
4. Heavenly Rest Cemetery – sewage flows based on the assumed fixtures of 3 wash basins and 2 water closets.
5. Assumed each park (total of 5) has one washroom facility (men and women) – sewage flows based on the assumed fixtures of 2 urinals, wash basins and 3 water closets
6. Based on 2,500 people and 100 l/person/day

## 1.3 WATERMAINS

### 1.3.1 MINIMUM SIZE

Sizing and looping of watermains will be discussed at the preliminary stage of the project. The Town requires a minimum pipe diameter of 200 mm. Unless required, all watermains within the right-of-way shall be designed for 1, 035 kPa (150 psi) test pressure.

### 1.3.2 LOCATIONS

Pipes shall be laid in an evenly graded trench to provide a minimum of 1.5 m cover below future or existing road grades, whichever is lower. Care must be exercised to prevent deformed sections in the pipe caused by excessive bending. All deformed sections shall be removed and replaced at the Owner's expense. A separation of 2.5 m paralleling sewer service is required.

### 1.3.3 FITTINGS

All PVC fittings shall be restrained in accordance with Standard Drawing L-WD-01. Refer to the section 3.11 Material Specifications for approved materials. Tie in and Thrust Blocking as per Applicable Standard Drawing L-WD-02.

### 1.3.4 BACKFLOW PROTECTION FOR WATERMAIN CONSTRUCTION IN THE RIGHT-OF-WAY

Contractors will be required to follow backflow prevention procedures as required by the MECP. Backflow devices are to be supplied by the contractor and up to date certification.

Applicable Drawing: L-WD-17, L-WD-18, L-WD-19 (same as section 3.10 Backflow Prevention in Buildings)

### 1.3.5 DEAD-END MAINS

Dead-end mains are to be avoided wherever possible. Where dead-ends cannot be avoid, dead-ends on new mains shall be closed with cast iron plugs or caps; such dead ends shall be equipped with suitable blow-off facilities. Auto flushers may also be required as a temporary measure where developments are phased and required by the Town Engineer.

### 1.3.6 Abandonments and service disconnections

Watermains to be abandoned shall be capped or removed as decided by the Town. All service disconnects are to be completed by the Owner and inspected by the Town.

### 1.3.7 Easements

The Engineer shall also consider the soil conditions and constructability and future maintenance when selecting the easement width. In addition, if more than one utility is installed in the easement, the easement width should be increased by the separation distance of the utilities.

The minimum easement width shall be 6.1 m for all watermains.

### 1.3.8 Trench Requirements

The trench shall be excavated of sufficient as specified in Part III of The Occupational Health & Safety Act, 1980 and Regulations for Construction Projects, and the proper laying and jointing of the pipe. Trench walls shall be vertical to 300 mm (12 in.) above the top of the pipe and the width at this location shall not exceed the maximum. Trench width for a single pipe shall be as per Standard Drawing L-WD-03.

### 1.3.9 Replacement or Installation of Service from Main to Property Line

A new service shall be installed from the new main to property line as per Applicable Standard Drawings

The new curb stop shall be installed as close as possible to the property line.

## 1.4 TRACER WIRE

A tracer wirer shall be used with all PVC pipes and hydrants. The wire shall be installed along the side or top of the pipe as close to the pipe as possible. The tracer wire shall be brought to the surface at all fire hydrants and valve locations. Refer to the section 3.11 Material Specifications for approved materials.

Applicable Standard Drawing: L-WD-04 (WUC 50.12.01)

## 1.5 MAINLINE VALVES

Mainline valves shall be the same size as the watermain. A valve box shall be provided for every valve. Refer to the section 3.11 Material Specifications for approved materials.

### 1.5.1 GATE VALVES

The Town of LaSalle prefers the use of gate valves for pipes 100 mm to 600 mm. Any pipes above 600 mm requires the Contractor to consult with the Town Engineer. Refer to the Material Specification section for approved materials.

### 1.5.2 TAPPING VALVES

Tapping valves are allowed if they are a stainless steel type as approved by the Town Engineer. Refer to the Material Specification section for approved materials.

### 1.5.3 NUMBER AND LOCATION

Two valves are required to isolate a tee intersection and three valves are required to isolate a cross intersection. These valves are to be located close to the intersecting pipes if possible. Valve required on each side of a railway crossing or at each end where the watermain is installed in a casing or under a drain crossing.

Valves are to be placed at intersections and the spaced at a maximum of 250 m.

### 1.5.4 VALVE BOXES AND VALVE BOX PROTECTION

All valves shall be equipped with valve boxes and restrained, unless installed in a chamber. Valve boxes shall be two-piece screw type to suit the size of valves. Valve boxes shall not rest on the valve.

All main line valve boxes are to be protected during construction and during the maintenance period.

## 1.6 HYDRANTS

Hydrants are to adhere to the specifications as described in the Town of LaSalle's list of approved products: Refer to the section 3.11 Material Specifications for approved materials.

The Consulting Engineer shall obtain the Fire Chief's written approval of fire hydrant location. The Owner is required to seek preliminary approval from the Fire Chief. This may require flow testing on existing hydrants. Once the Fire Chief is in agreeance with the concepts for fire protection, the Owner can continue on with engineering and design of servicing.

All hydrants shall stand plumb and shall have their nozzles parallel with, or at right angles to the curb (road) with the pumper nozzle facing the road.

In order to prevent confusion of availability of water for firefighting purposes, immediately after installation, all hydrants shall be covered with neutral coloured plastic covers, secured to prevent removal. This cover shall be removed only after the watermain has been completely installed, tested and approved for use by the Owner.

Applicable Standard Drawing: L-WD-05 and L-WD-06.

### 1.6.1 SPACING

Hydrants are to be installed on 150 mm diameter and larger watermains are to be spaced at intersections and at a maximum of 150 m and meet minimum spacing requirements for all proposed dwellings. The maximum spacing may be altered at the Fire Chief's request.

When replacing existing hydrants use the same location if possible. If a new location is required, notify the homeowner in writing prior to engineering approval and provide proof of notification to the Town. Where an existing hydrant does not meet current spacing standards, the current standard shall apply.

### 1.6.2 LOCATIONS

The location of the hydrants in relation to the street line shall be in accordance with the Town of LaSalle approved relevant cross-sections. Any non-standard locations will require individual approval. Hydrants are to be located at intersections.

Hydrants near driveways shall be located at a minimum of 1.2 m clear from the projected garage (or edge of driveway, whichever is greater) in residential applications and 2.5 m separations in ICI areas. Where boulevard grass is limited, hydrant leads may require an additional 90° lead turn T and valve. Hydrants shall be 5 m from street trees.

If subsequent changes are made to the property or design during construction (i.e. driveway widening, entrance feature, etc.), all costs associated with the relocation shall be borne by the Owner, Builder or property owner.

### 1.6.3 Depth of Bury

The depth of bury for the hydrant shall be 1.65 m unless otherwise stated by the Town. The hydrant safety breakaway flange must be located between 50 mm and 100 mm above finished grade and field adjusted if required. Hydrant extension to adjust the length of a hydrant barrel, if necessary, shall be obtained from the manufacturer supplying the hydrant and installed as per manufacturer's direction.

### 1.6.4 Private Hydrant Maintenance

The Owner, for private hydrants on private property, must allow Town to access hydrants to conduct annual maintenance. The Owner will be charged for the annual maintenance as per user fee by-law.

## 1.7 WATER SERVICES

All water services shall be single service connections and be supplied as described:

All unutilized water services shall be abandoned at the watermain with valve or curb box removed. Services being utilized for future re-development can be abandoned at the curb box or valve box at the property line.

Private Service connections to the watermain will not be permitted until the watermain has been tested, chlorinated and accepted for service.  Dry taps will not be permitted.

### 1.7.1 Service Sizing

The minimum nominal service size shall be 19 mm from the watermain to the property line. The maximum nominal service size shall be 250 mm from the watermain to the property line.

For pressure testing of a fire service line systems, must be tested to 1035 kPa (150 psi) for 2 hours.

The service shall not exceed the diameter of the watermains. The material type shall be as per Section 3.10: Material Specifications.

### 1.7.2 SERVICE LOCATION

Water services must be installed perpendicular to the road and/or the watermain. Wherever practical the service shall be installed in the center of the lot frontage. All water services shall have a 2.5 m horizontal separation from all sewers and 1.2 m vertical clearance from structures.

In cases where a fire and domestic service are required one connection from the watermain is made and branched off into two services before the property line. In situations where a fire service is required and a public hydrant is not at a sufficient location to the Siamese connection a private hydrant must be installed. This hydrant must be maintained annually.

### 1.7.3 SERVICE TRANSFER

Under certain conditions if the existing service is of copper, the Town may decide to transfer the existing service to the new main.

The following procedures must be strictly adhered to;

1. Expose and clean surface of main pipe in preparation for tapping.
2. Install stainless steel tapping saddle on all watermains.
3. Install corporation main stop. Proceed to tap using an approved tapping machine.
4. Locate, expose, and clean old water service at the old water main to allow old main stop to be shut and old water service replaced.
5. A minimum of 1.0m clearance is recommended at the sides of both water mains to allow proper service pipe installation. Prior to cutting away old metallic water service,
6. Contractor must install a temporary jumper connection. Install ground plate. Notify homeowner of water disruption (give ample notice prior to shut off).

Service transfer in ROW shall be as per Standard Drawings L-WD-12.

### 1.7.4 SERVICE ABANDONMENTS

Water services to be abandoned based on future usage of said service. If the service is to be used again in the near future it is to be abandoned at the valve at the property line. If the service is not to be re-used then it is shall abandoned at the watermain. Abandonment of watermains to be completed by the Owner and must be approved by the Town.

### 1.7.5 Pipe Crossing and Clearance

All water services to be 1.5 m in depth. Where the above mentioned requirements cannot be satisfied, the Owner's Contractor must get approval from the Town Engineer.

Sanitary sewers and watermains located parallel to each other shall be constructed in separate trenches, maintaining a minimum clear horizontal separation distance of 2.5 m from outside edge to outside edge of the pipe. When it is not possible to maintain a separate trench and the minimum horizontal separation distance, the crown of the sewer should be at least 0.5m below the invert of the watermain and separated by in situ material or compacted backfill.

Where a crossing of a sanitary sewer and watermain is required, the watermain should cross above the sewer whenever possible. Whether the watermain crosses above or below the sewer, a minimum vertical distance of 0.5 m between the outside edge of the watermain and the outside edge of the sewer should be provided to allow for proper bedding and structural support of the watermain and sewer pipes.

Applicable Standard Drawing: L-WD-07 (WUC 50.01.03)

### 1.7.6 Main stops and Curb Stops

All water services shall have the same size mainstop as the service pipe. Mainstops are not required on water services greater than 50 mm diameter.

Service Saddles are required for all services connected to concrete pressure pipe manufactured to the latest edition of AWWA C301 and AWWA C303 specifications for all tap sizes.

Main stops or corporation curb stops shall be copper compression type conforming to AWWA C800. All services shall have curbs stops and boxes installed at the property line, be flush with grade and accessible at all times. Non-Draining curb stops are to be used. Curb stops shall be supported with concrete blocks or bricks.

For residential applications, all water service curb stops and boxes are to be installed in grass areas with a minimum distance of 1 m from the edge of the driveway if possible.

## 1.7.7 METERING

All water services shall be metered. All meters shall be accessible at all times. Refer to the section 3.11 Material Specifications for approved materials. Meters shall not be installed until flushing and testing is complete.

Applicable Standard Drawings: L-WD-08 and L-WD-09

### 1.7.7.1 METER CHAMBERS AND PITS

Meters in chambers or in pits shall be as per the Towns Standard Drawings. Meters shall not be installed until flushing and testing is complete.

## 1.7.8 SERVICING VACANT LOTS

All materials shall be as per the Town of LaSalle specifications as described herein. The Owner pay a construction rate that begins when connections to curb box is made until the meter is installed.

### 1.7.8.1 EXISTING WATER SERVICE AT THE PROPERTY LINE

Water service request is created through the building permit process. Inspection is scheduled and completed by the building department. Applicant is to call the Public Works Department a minimum of 48 hours in advanced for meter installation. Meter must be installed prior to occupancy being granted.

### 1.7.8.2 NO WATER SERIVCE AT THE PROPERTY LINE

Water service request is created through the building permit process. The fee of a 19 mm (3/4”) service is collected at this time. This fee covers meter supply and installation.

Applicant must specify that a service and tap to the watermain is also required. This should be communicated verbally as well as noted on the building permit applicant.

The Applicant retains a Contractor that is licensed and bonded with the Town of LaSalle to carry out the work; the Applicant is required to obtain the list from the Public Works Department. Water Service Tap fee will be as per the Towns fee by-lay. The Town to perform the tap at the watermains. All other works such as excavation, traffic control, backfilling, restoration, and materials are to be carried out by Owner. The fee will be billed to the Contractor upon completion of the work. All restoration within the Right-of-Way is to be done as per the Town of LaSalle standards.

## 1.8 CATHODIC PROTECTION

All metallic underground appurtenances are to have a non-woven synthetic fabric tape fully impregnated with a special blend of adhesive compound based on petrolatum polymers applied. Installers of this tape are to be properly trained as per manufacturer's standards. All mechanical parts that are not PVC must be corrosion protected with Denso Paste; it is applied prior to the tape application (Denso Petrolatum Tapes or Denso Bituminous Tapes). Denso Profiling Mastic will be used to provide a smooth profile on irregular shaped fittings such as flanged and mechanical joints and valves.

Anodes are to be used when connecting new watermains to an existing watermain line. Refer to the section 3.11 Material Specifications for approved materials.

## 1.9 TESTING PROCEDURE

### 1.9.1 PRESSURE TESTING

Prior to pressure testing and disinfection, the Engineer and a licensed water operator from the Town shall inspect the installation. During this inspection, each and every valve will be checked using the proper valve operating key. Each valve must fully open or close as required.

Pressure tests shall be witnessed by the Engineer and the Owner.

The Contractor shall notify the Engineer and the Owner at least 48 hours in advance of the intended testing time. The Owner shall be charged for the Town's time and any sampling costs.

The Contractor is responsible for:

- Supplying pressure tester
- Chlorination
- Backflow prevention
- De-chlorination

The Town is responsible for:

- Witnessing the procedure
- Attaining chlorine and microbial samples

The test pressure shall be 1035 kPa (150 psi) for a period not less than two (2) hours. Maximum permissible leakage shall be 2.22 litres per day per mm diameter per km of pipe. Work to be done as per the most current Ontario Watermain Disinfection Procedure.

After the pressure test passes, the new system is filled with highly chlorinated water using continuous feed method with chlorine concentration >25mg/L.

Work to be completed as per Applicable Town of LaSalle's Standard Drawings.

### 1.9.2 Flushing and Disinfecting Watermains

Flushing and disinfecting operations shall be carried out in accordance with the MECP and the requirements of the Town. The Town shall be notified at least 48 hours in advance of the proposed date on which disinfection operations are to commence. The Contractor shall de-chlorinate and flush.

The discharge of chlorinated water shall be in accordance with "Environmental Construction Guidelines for Municipal Road, Sewage and Water Projects" by Municipal Engineers Association, Appendix 'B'.

Watermains shall be swabbed and flushed in a sequence and in accordance with the procedure set out by the Engineer and the Town Engineer. The Engineer may permit or require the flushing to be carried out in stages as sections of the system are completed. No unsuitable matter shall be allowed to enter the sections which have been flushed. A soft foam swab is to be inserted into the main at the filling end.

Once swabbing is complete, water from the existing distribution system shall be allowed to flow at a controlled rate into the new pipeline until flushed and full then the control valve shall be closed immediately. The system shall be tested for residual, documented and left charged with the chlorine solution for 24 hours. All valves and hydrants shall NOT be operated during the 24-hour period.

The chlorine residual will be re-tested in the section after 24 hours. The maximum allowable decrease in chlorine concentration is 40% of the initial chlorine concentration to a maximum decrease of 50 mg/L.

Once acceptable, the section shall be flushed completely and recharged with water normal to the requirements. The chlorination procedure shall be repeated until satisfactory results are obtained. If chlorine residual tests are satisfactory, microbial testing (by an accredited facility) must be carried out on two consecutive days (maximum one every 24 hr. period).

The system shall not be put into operation until approved by the Town.

Sample stations shall be installed where the Public Works Department deems necessary.

Work to be completed as per Applicable Town of LaSalle's Standard Drawings.

### 1.9.3 TRACER WIRE TEST

The Town is to perform a Tracer Wire Test, and the Contractor is responsible for repairing any disruptions found in the test.

## 1.10 BACKFLOW PREVENTION IN BUILDINGS

Installation of backflow prevention devices and all other procedures related to potable drinking water and such are to be to the standard as described by the Cross Connection and Backflow Prevention By-Law #7847. It applies to industrial, commercial, institutional and multi-residential buildings and structures except buildings of residential occupancies.

All new ICI buildings require backflow prevention device to be installed right at the point of entry to the building. Such a device would be determined by the Town building inspector. Isolation and backflow prevention must be maintained when constructing new Municipal Watermains.

Materials shall be installed as per Section 3.11: Material Specifications.

## 1.11 MATERIAL SPECIFICATIONS

The Contractor is required to utilize the materials for all objects related to distribution of the potable water system in the Town as specified in the tables below:

| Product | Specification | Manufacturer | Description/Model No. |
|---|---|---|---|
| **Pipes** | | | |
| PVC pipe<br>100 mm – 300 mm (4'' – 12'' dia.) | PVC Class 150 DR-18<br>AWWA C900, CSA-B137.3<br>Capped in Factory, blue in colour | IPEX | Blue Brute & Bionax |
| | | REHAU | Aqualoc |
| | | NAPCO | CIOD PVC Pressure Pie |
| PVC Pipe<br>350 mm – 400 mm<br>(14'' – 16'' dia.) | PVC DR-18<br>(Pressure rated 235 psi)<br>AWWA-C905, CSA-B137.3<br>Capped at Factory, Blue in Colour | IPEX | Centurion |
| PVC Pipe | PVC DR-25 | IPEX | Centurion |

| | | | |
|---|---|---|---|
| 450 mm – 600 mm<br>(18'' – 24 '')<br>Prior approval required | (Pressure rated 165 psi)<br>AWWA-C905, CSA-B137.3<br>Capped at factory, Blue in colour | | |
| Concrete Pipe<br>350 mm – 500 mm<br>(14'' – 20'' dia.) | Concrete Pressure Pipe<br>AWWA-C303<br>Min. class 14 as approved by TOL | HYPRESCON | |
| High Density Polyethylene pipe<br>100 mm – 1575 mm<br>(4'' – 63'' dia.) | High Density Polyethylene DR-11<br>Ductile Iron Pipe Size (DIPS)<br>Pressure rating of 160 psi<br>AWWA-C906, CSA B137.1, ASTM D3035/D3350, CGSB 41-GP-25M | IFRA PIPE | SCLAIRPIPE |
| Pipe End Caps | OPSS 441.07.07. Tamper evident seals to display manufacturer or logo. | | |
| **Service Piping** | | | |
| Copper<br>19 mm – 50 mm<br>(3/4'' – 2'' dia.) | Copper tubing<br>AWWA-C800<br>Certified ASTM B88-49<br>Type "k" soft copper | Great Lakes Copper | |
| | | CERRO | CERROTUBE |
| Polyethylene<br>25 mm – 50 mm<br>(1'' – 2'' dia.) | Polyethylene Class 160 CTS<br>AWWA-C901<br>CSA B137.1 | IPEX | BLUE904 |
| | | LEGEND | AquaPure PE-RT |
| | | REHAU | Municpex |
| | | | |
| **D.I. Stand pipes** | "Ductile Iron Pipe, Centrifugally Cast for Water"<br>ANSI/AWWA-C151/A21.51 | | |
| **Foam Swabs** | High Density Polyurethane for Pipe Cleaning to fit 100 mm - 300 mm (4'' – 12'' dia.) | | High Density Polyurethane for Pipe Cleaning to fit 100 mm - 300 mm |
| **Fittings** | | | |
| D.I Bends, Tees, Reducers and Crosses<br>LONG BODY | ANSI A21.10<br>AWWA C153/C111<br>Cement Mortar lined as per ANSI A21.4 (AWWA-C104) | SIGMA<br>STAR<br>BIBBY/TYLER/UNION | Notes: Furnished with push-on Tyton Joints as per ANSI A21.11 (AWWA-C111)<br>Only used for tying into existing watermains or on special approval |
| D.I Bends, Tees, Reducers and Crosses<br>COMPACT FITTINGS<br>SHORT BODY | ANSI A21.10<br>AWWA C110<br>Cement Mortar lined as per ANSI A21.4 (AWWA-C104) | SIGMA<br>STAR<br>BIBBY/TYLER/UNION | Notes: Mechanical type ends |
| D.I Bends, Tees, Reducers and Crosses | PVC AWWA-C907 Class 150<br>CSA-B137.2<br>UL listed and FM approved | IPEX | Blue brute injection-molded PVC<br>100 mm – 400 mm (4'' – 16'') |
| | | HARCO | Injection-molded PVC<br>100 mm – 200 mm (4'' – 8'') |
| Transition Couplings | To AWWA C-219<br>Sleeve -Ductile Iron minimum - ASTM A 536<br>End Rings -Ductile Iron ASTM 536 Grade 65-45-12<br>Bolts and Nuts<br>Stainless steel OR<br>Carbon Steel Exceed ASTM A 307<br>Epoxy coated to AWWA C-213 | VIKING JOHNSON | Maxifit and Large Diameter Maxifit |
| | | FORD | Flex FC2w & FC1 (100 mm - 300 mm) |
| | | ROMAC | XR501 (100mm to 300mm) |
| | | | TC400 (300mm to 2400mm) |
| | | ROBAR | 1406 (100mm to 600mm) |
| | | STRAUB | Straub Flex/Open & Straub Grip |
| | | SMITH BLAIR | Series 441, 441 ( 100 mm – 400 mm) |
| | | | Series 411 (450 mm – 500 mm) |
| 2 Bolt Coupling | To AWWA C-219<br>Epoxy coated to AWWA C-213<br>Stainless steel or Carbon steel exceed ASTM C-213<br>304 Stainless steel bolts and nuts | SMITH BLAIR | Series 421 |
| | | ROBAR | 1696-2B |
| | | HYMAX | Hymax 2 |
| | | ROMAC | Macro HP |
| Flanged Couplings | To AWWA C-219<br>Sleeve -Ductile Iron or carbon steel<br>Minimum - ASTM A 536<br>End Rings -Ductile Iron<br>ASTM 536 Grade 65-45-12<br>Bolts and Nuts, Stainless Steel or Carbon Steel exceed ASTM A 307<br>Epoxy coated to AWWA C-213 | SMITH BLAIR | OMNI 912 Series ( 100 mm – 300 mm) |
| | | ROBAR | 7400 Series ( 100 mm – 300 mm) |
| | | ROMAC | FCA 501 (100 mm – 300 mm) |
| | | FORD | Flex FFCA (100 mm – 300 mm) |

| | | | |
|---|---|---|---|
| Reducing Couplings | Sleeve -Ductile Iron<br>Minimum - ASTM A 536<br>End Rings -Ductile Iron<br>ASTM 536 Grade 65-45-12<br>Bolts and Nuts, Stainless Steel or<br>Carbon Steel exceed ASTM A 307<br>Epoxy coated to AWWA C-550 | FORD | Flex FRC |
| | | SMITH-BLAIR | 415 |
| | | ROBAR | 1506R & 1508R |
| | | ROMAC | RC501 & RC400 |
| Repair Clamps | Band – stainless steel Type 304, 18 gauge<br>with tapered conductivity pad<br>Lugs – ASTM A536 epoxy coated<br>Gasket - Grade 60<br>Bridge Plate - stainless steel<br>bolts - Stainless Steel to ASTM A325 or A242<br>Nuts - Type 304 Teflon coated | CAMBRIDGE BRASS | Series 425 Teck (100 mm – 300 mm) |
| | | | Series 835 Teck (350 mm – 500 mm) |
| | | FORD | FS1 (100 mm – 300 mm) |
| | | | FS3 (400 mm to 600 mm) |
| | | SMITH BLAIR | series 261, 262 (100 mm – 300 mm) |
| | | | series 263 (350 mm – 600 mm) |
| | | ROBAR | Robar5616 (100 mm – 300 mm) |
| | | | Robar 5636 (350 mm – 750 mm) |
| | | STRAUB | |
| | | CONCORD | D76R-Series 200 (100 mm - 350 mm) |
| PVC Repair Coupling<br>100mm to 300mm<br>(4" to 12" | AWWA C907 Injected molded PVC<br>CSA B137.2 PVC gasketed fittings<br>ASTM D1598 | IPEX - Blue Brute<br>Molded PVC Fittings | 073404, 073406, 073408, 273529,<br>273530 |
| **Thrust Blocks**<br>Concrete | OPSS 1350, 20mpa at 28 days<br>10mpa as per OBA | | |
| **Thrust Restraining Devices (Mechanical)** | | | |
| Thrust Restraint Device<br>For PVC Pipe | Gland Ring to ASTM 536, Ductile Iron,<br>Side square head clamping bolts and hex nuts<br>to ANSI B 18.2.1 and zinc plated to ASTM A<br>153.<br>Sizes compatible to AWWA C900 & C905 PVC<br>Extra-long T bolts to AWWA/ANSI<br>C111/A21.11 | FORD | Uniflange 1300C w/ mech joint/push<br>on |
| | | | Uniflange 1350C for pipe bell joints |
| | | | Uniflange 1400C MJ retainer gland<br>restraint |
| | | STAR | 1000G2, 4000, & 4000G2 MJ fittings<br>only |
| | | | 1100G2 for pipe bell joints |
| | | | 1200G2 PVC fittings only |
| | | | 4300 series |
| | | CLOW | Series 300 & 360 Restrainers |
| | | SIGMA | Series PWP for pipe bell joints |
| | | | Series PWM MJ fittings only |
| | | | Series PWPF PVC fittings only |
| | | EBAA IRON | Series 1500 & 1600 for pipe bell joints |
| | | | Series 2000 MJ fittings only |
| | | | Series 2600 PVC fittings only |
| Thrust Restraint Device<br>for Ductile or Cast Iron Pipe | High Tensile Ductile iron to<br>ASTM A 536.<br>dimensions to suit Mechanical fittings made as<br>per<br>ANSI/ AWWA C111/A21.11and ANSI/ AWWA<br>C153/A21.53<br>T bolts and nuts to AWWA C 111 | FORD | Uniflange Series 1400 |
| | | EBAA IRON | Megalug Series 1100 |
| | | CLOW | Tyler Union TufGrip Series 1000 |
| | | STAR | Series 3000 & 4300 |
| | | SIGMA | One-Lok SLD |
| Thrust Restraint Device<br>for PVC pipe<br>(Molecularly oriented PVC | High Tensile Ductile Iron to<br>ASTM A 536<br>T bolts and nuts to AWWA C-111<br>CSA B137.3.1-09 certified<br>AWWA C909 and NSF 61 certified | SIGMA | Series PWPF PVC fittings only |
| | | | Series PWP for pipe bell joints |
| | | | Series PWM MJ fittings only |
| | | CLOW | Series 300, 360 & 390 Restrainers |
| | | STAR | 3500PF & 1200R PVC fittings only |
| | | | 3500C & 1100C for pipe bell joints |
| | | | 3500, 1000C, & 4000G2 MJ fittings<br>only |
| | | | series 4300 |
| | | FORD | Uniflange Series 1369 PVC fittings<br>only |
| | | | Uniflange Series 1399 & 1559 for pipe<br>bell joints |
| | | | Uniflange Series 1309-C MJ fittings<br>only |
| | | EBAA IRON | Series 1900 for pipe bell joints |
| **Gland Rings for MJ/Dismantling joints/Flange Adapters** | | | |
| Dismantling Joints | Flanged adaptor body to be carbon steel per<br>ASTM A53, ASTM A512, ASTM A283 GRC, | Smith-Blair | Series 971, 972 and 975 |

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| | ASTM A36. Follower flange to be ductile iron per ASTM A536, steel section per ASTM A576 GR1020HR. Finish to be fusion bonded flexi-coat epoxy. Flanges to be carbon steel per AWWA C207, Class D | | |
| Flange Adapters for DI pipes Size 100 mm - 300 mm. (4" - 12" dia.) | High Tensile Ductile iron to ASTM A 536. Grade 65-45-12 colour code red for D.I .O.D. Gasket - EPDM Drilling-ANSI B16.1 for cast iron flange and ANSI B 16.5 for steel Flange | FORD | Uniflange Series 200 & 400 |
| | | CLOW | Series 40 |
| Flange Adapters for PVC pipes Size 100 mm – 300 mm (4" -12" dia.) | High Tensile Ductile iron to ASTM A 536. Grade 65-45-12 colour code red for D.I .O.D. Gasket - EPDM Drilling-ANSI B16.1 for cast iron flange and ANSI B 16.5 for steel Flange | FORD | Uniflange Series 900 |
| | | CLOW | Series 90-C |
| MJ Gland Rings For MJ Fittings Sizes 100 mm - 300 mm (4" - 12" dia.) | Ductile Iron to ASTM A 536 pressure rated same as the pipe rating Asphaltic coating manufactures identity stamped or casted as per AWWA C111 & C153 | BIBBY/TYLER/UNION | D011 – D014 |
| | | SIGMA | FMC9149 – 9152 |
| | | STAR | MJG06, MJG08, MJG10, MJG12 |
| **Hydrants** | | | |
| Hydrants | AWWA C-502 3-Way Dry Barrel Type Barrel - Two piece with Break away Safety Flange operating nut- CSA 1.5"(37mm) Square open to the left (Counter clockwise) Externally Plugged. 2- 65(2.5") mm hose connection AND ONE 4'' Storz nozzle 6" M.J. Shoe 1650mm in bury length unless stated otherwise Exterior above ground - One coat neutral Orange Rust inhibitive Primer and one coat quick dry brushing enamel - Yellow in Colour Ductile under- Ground portion of Hydrant shall be coated with Bitumen. Type 316 Stainless Steel Nuts and Bolts on boot Assembly All interior epoxy coated. Use food grade lubricant on hydrants only. Hydrant bases shall be 150 mm mechanical joint. Each hydrant shall have a shut-off valve. | CLOW CANADA | McAvity Brigadier M67B |
| | | MUELLER CANADA/ CANADA VALVE | Century & Darling B-50 & B-18 |
| **Valves** | | | |
| Gate Valves non rising stem 100 mm - 300 mm (4" - 12" dia.) | AWWA C-509 & C-515 Red Operating Nut, open clockwise pressure rated to minimum of 200psi Non rising stem Epoxy coated inside and out to C-550 Fully encapsulated Resilient Wedge Mechanical joint only for 250 mm (10") and 300 mm (12") | CLOW | C.I. MODEL 2640 D.I. MODEL 2638 |
| | | MUELLER | SERIES A-2361 |
| Gate Valves non rising stem > 300mm (> 12") | AWWA C-509 & C-515 Red Operating Nut, open clockwise pressure rated to minimum of 200psi Non rising stem Epoxy coated inside and out to C-550 Fully Encapsulated Resilient Wedge mechanical joint only | CLOW | C.I. MODEL 2640 D.I. MODEL 2638 |
| | | MUELLER | SERIES A-2361 |
| Tapping Valves 100 mm - 300 mm (4" - 12" dia.) | 2" sq. Red Operating Nut pressure rated to minimum of 200psi. opening clockwise, one end mechanical unless specified as flanged Non Rising Stem Bronze stem Resilient Seat, complete with paper Gasket, fully encapsulated wedge with Elastomer | MUELLER | SERIES A-2361 |
| | | AVK | SERIES 45 (FULL WALL) SERIES 65 (REDUCED WALL) |
| | | CLOW | C.I. MODEL 2640 D.I. MODEL 2638 |

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| | minimum 8 mm thick Epoxy coated inside only<br>C/W 8 - 3/4" X 4" UNC Type 316 S/Steel<br>Hex Head Nuts & Bolts<br>To meet A.W.W.A Specification<br>C-509, C-515 & C-550 | EJ | SERIES 2500 |
| Tapping Valves<br>400 mm - 600 mm<br>(16" - 24" dia.) | 2" sq. Red Operating Nut opening clockwise<br>one end mechanical unless specified as flanged<br>Non Rising stem Bronze stem<br>Resilient Seat, complete with paper Gasket fully encapsulated wedge with Elastomer minimum 8 mm thick Epoxy coated inside only<br>C/W 8 - 3/4" X 4"<br>UNC Type 316 S/Steel<br>Hex Head Nuts & Bolts to meet A.W.W.A specification<br>C-509, C-515 & C-550 | Requires prior approval from THE TOWN | |
| **Backflow Preventers** | | | |
| Reduced Pressure Principle Backflow Preventer (RP) | Reduced pressure principle back flow preventer as per CSA B-46.10 and the Town of LaSalle Backflow Prevention By-law. | WATTS<br>WILKENS<br>FEBCO | |
| **Tapping Sleeves & Service Saddles** | | | |
| Service Saddles | Saddle Clamp, Single Band, 2-Bolt Stainless Steel, 18 gauge<br>AWWA Tapper Outlet, Stainless Steel Nuts and Bolts, Fluorocarbon Teflon coated.<br>19 mm - 50 mm ( 1" to 2")<br>Belleville Washers required on all saddles | CAMBRIDGE BRASS<br>SMITH-BLAIR<br>ROBAR | TECK 8403-BW, TECK 8410, 8413, 8415<br>SERIES 370<br>2616 |
| Tapping Sleeves for PVC and Iron Mains<br>100 mm - 300 mm<br>(4" - 12" dia.) | Pressure rated to175 psi, min test pressure of 200psi<br>Body, Lugs and neck: Full circumference band 18-8 Type 304 Stainless steel, 18 gauge<br>Flange as per AWWA C-207 class D<br>18-8 Type 304 Stainless Steel,<br>Stainless steel studs and nuts 18-8 Type 304 with Type 304 stainless steel and Nylon Washers- Fluorocarbon / Teflon Coated<br>19mm (3/4") NPT bronze test plug with square head.<br>Nitrile Gaskets | FORD<br>ROBAR<br>ROMAC<br>SMITH-BLAIR<br>POWERSEAL | Fast Series<br>6606<br>SST<br>663<br>3480AS |
| Tapping Sleeves for PVC and Iron Mains<br>400 mm - 600 mm<br>(16" - 24" dia.) | Pressure rated to100-150 psi,<br>18-8 Type 304 Stainless steel, 18 gauge<br>Flange as per AWWA C-207 class D<br>18-8 Type 304 Stainless Steel,<br>Stainless steel studs and nuts 18-8 Type 304 with Type 304 stainless steel and Nylon Washers- Fluorocarbon / Teflon Coated<br>19mm ( 3/4") NPT bronze test plug with square head<br>Nitrile Gaskets | | Requires approval from the Town |
| Tapping Sleeves for Concrete pressure pipes Outlet greater than 100 mm – Strap Type | Body - ASTM 283 Gr. C or<br>Mild steel plate ASTM A36<br>Flange AWWA C 207 Class D ANSI 150 or MSS - SP 60 Gasket Nitrile<br>Straps Type 304 stainless steel or ASTM 36, 18 gauge<br>Type 304 stainless steel bolts and nuts<br>Grout Pipes ASTM A 53 | HANSON<br>SMITH-BLAIR | Prior he Town and manufacturer approval required |
| Tapping Sleeve for Concrete pressure pipes. Outlet greater than 100 mm | As per manufacturer recommendations.<br>Prior approval by the Town required. | | |
| **Gaskets** | | | |
| Rubber Gaskets for Push on Joints | CAN/CSA-B137.3 and have a minimum pressure rating of 1100 kPa<br>Flexible elastomeric seals (SBR) as per ASTM D-3139, also AWWA C-111 Sec. 4.4.4 | IPEX<br>ROYAL<br>DIAMOND<br>REHAU | |
| | SBR as per AWWA C111 Sec 4.4.4 | ROL | WWW55 (204, 206, 208 SERIES) |

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| Rubber Gaskets for M.J. fittings<br>100 mm – 1200 mm (4" - 48" dia.) | Size, mould number, manufactures mark, country, year of manufacture shall be moulded or permanently marked on the gasket. | SIGMA | PTL (04, 06, 08, 10, 12 SERIES) |
| | | STAR | MJGAS (04, 06, 08, 10, 12 SERIES) |
| Rubber Gaskets for Flanged Joints | | | |
| Nitrile Gaskets for special site conditions | ASTM Designation NBR,<br>Generally resistant to hydrocarbons, fats, oils, greases, hydraulic fluids and chemicals. | | |
| **Blow-offs** | | | |
| 50 mm Valves | 50 mm (2") Brass Gate Valve/Ball Valve F.I.P.T x F.I.P.T | | |
| 50 mm dia. Blow-off valve | 50 mm (2") Galvanized Pipe<br>1.5 M (5 ') long M.I.P.T x M.I.P.T | | |
| 50 mm dia. Cap | 50 mm (2") Galvanized Cap F.I.P.T | | |
| 50 mm diameter bend | 50 mm (2") Galvanized $45^0$ or $90^o$ elbow F.I.P.T/ F.I.P.T | | |
| 50 mm Nipples | 50 mm (2") brass or galvanized nipples x 150 mm (6") long | | |
| **Cathodic Protection** | | | |
| 5.4 Kg (12 Lbs) Zinc | Packaged to meet ASTM B418-73 Type 11 Purity Standards<br>Including #10-7 Strand 5' Copper Wire with Jacket | MAPLE AGENCIES | ADZBP12 |
| | | INTERPROVINCIAL CORROSION CONTROL | ICCC: 12S14ZP |
| | | BTI | ZA-12 |
| 10.9 Kg (24 Lbs) Zinc | Packaged to meet ASTM B418-73 Type 11 Purity Standards<br>Including #8 Solid Copper Wire with Jacket – 5' | INTERPROVINCIAL CORROSION CONTROL | 24SI-4ZP |
| | | CORROSION SERVICES | 2448 |
| | | MAPLE AGENCIES | SP-24 |
| | | COREXCO | Cor Z-24 |
| | | BTI | ZA-24 |
| 14.5 Kg (32 lbs) Magnesium Anode | High Potential Magnesium Supplied with 3 m. 10 AWG Copper Wire<br>TWU 75', 600 V Black Coated Jacket | INTERPROVINCIAL CORROSION CONTROL | 32D5GG – 32lb |
| | | BTI | MA-32 |
| Petroleum Tape Systems | Anti-corrosion wrap shall consist of Denso paste or Denso priming Solution(cold Temp), Denso Profiling Mastic and Denso LT Tape | Denso North America Inc. | Denso North America Inc |
| **Sac Caps** | | | |
| 12 mm – 19 mm<br>(1/2" – ¾" dia.) | Zinc Caps<br>½" UNC<br>5/8" UNC<br>¾" UNC | INTERPROVINCIAL CORROSION CONTROL | |
| Cadweld Powder Cartridge | Cadweld Connections | ERICO PRODUCTS | |
| Cathodic Protection Test Stations | Flush Mount | PRO-MARK | PM-TS5 |
| **Insulation** | | | |
| Rigid Foam<br>600 mm x 2400 mm x 50 mm | Expanded, Extruded Polystyrene Boards.<br>Min. R 10 and Blue in colour<br>ASTM C578 Type VI or IV<br>UL Classified | DOW CHEMICAL | HI 40 |
| | | CELFORTEC INC. | Formula R-400 |
| Insulated Pipe<br>25 mm – 600 mm<br>(1'' – 24'' dia.) | Factory applied Polyurethane Foam | URECON | Refer to Manufacturer's Spec. |
| **Tracer Wire and Appurtenances** | | | |
| Tracer Wire | #12 AWG high-strength copper clad steel insulated with a 30 mil, high density polyethylene insulation, blue in colour | COPPERHEAD | 1230Blue-SF Open Cut only |
| | | | 1245Blue-EHS Directional Drill |
| | | PROTRACE | HF-CCD-PE30 Open Cut Only |
| | | | HDD-CCS-PE45 Directional Drill |
| | | DRYCONN | Direct Bury Waterproof Connectors |
| Insulating Mastic Tape | | PLYMOUTH BISHOP | #10 Polyseal |
| **Curb Boxes** | | | |
| Curb Service Box | 1.35 m - 1.65 m (4.5' - 5.5' ) Deep<br>Marked "water"<br>Brass Pentagon Plug | BIBBY/TYLER/UNION STE. CROIX | VSB1 19 mm – 25 mm (3/4 " – 1") |
| | | | VSB2 37 mm – 50 mm ( 1 ½" – 2") |
| | | MUELLER | A-726 19 mm – 25 mm (3/4 " – 1") |

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| | Arch Base Type<br>Bolt on curb box lid for tracer wire | | A-728 37 mm – 50 mm ( 1 ½" – 2") |
| | | DOMCAST | DF9007 |
| Stainless steel road for curb service box | 304 Stainless Steel Road SCH 40<br>900 mm (36") Long Top of the rod<br>Shaped 25 mm Wide x 6.5 mm thick ( 1" x ¼") | BIBBY/TYLER/UNION STE. CROIX | |
| | | MUELLER | |
| | | DOMCAST | |
| Stainless Steel Cotter Pin | 304 Stainless steel | | |
| Service Box Repair Cover | Marked "water" 3/8" set<br>Screw – Unthreaded 1" pipe | Mueller | 165 |
| **Valve Boxes** | | | |
| Upper Section | OPSS 1850<br>Cast Iron to ASTM-A48 or ASTM-A536<br>Drilled for tracer wire<br>130 mm (5 ¼") dia. X 700 mm (28" Screw Type) | BIBBY/STE. CROIX | VB650 |
| | | STAR | VB-5007 |
| | | DOMCAST | DF69 SERIES |
| Lower Section | OPSS 1850<br>Cast Iron to ASTM-A48 or ASTM-A536<br>600 mm (24") | BIBBY/STE. CROIX | VB550 |
| | | STAR | VB-006 VBDHD |
| | | DOMCAST | DF69 SERIES |
| Iron Cover | OPSS 1850<br>Cast Iron to ASTM-A48 or ASTM-A536 | BIBBY/STE. CROIX | VB825 |
| | | STAR | VB-5007 |
| | | DOMCAST | DF69 SERIES |
| Valve Box Base | OPSS 1850<br>Cast Iron to ASTM-A48 or ASTM-A536 | BIBBY/STE. CROIX | VB900 |
| | | STAR | VB-5007 |
| | | DOMCAST | DF69 SERIES |
| Extensions | 300 mm (12") Long<br>OPSS 1850<br>Cast Iron to ASTM-A48 or ASTM-A536 | BIBBY/STE. CROIX | VB750 |
| | | STAR | VB-5023, VB-5024, VB-5025 |
| | | DOMCAST | |
| **Fasteners** | | | |
| T-bolts with nuts | AWWA-C110 High Strength, Corten (low alloy steel), min yield strength of 45, 000 psi | BIBBY | FMC2337, FMC2112 |
| | | INGERSOL FASTNER | |
| ¾" UNC x 4" | | SELCO | |
| ¾" UNC x 4 ½" | | SIGMA | |
| | | STAR | Bolt CS40, CS45 |
| ¾" UNC x 4" Anti Rotational "T" Bolt & Nut | AWWA-C110 High Strength, Corten (low alloy steel), min yield strength of 45, 000 psi | STAR | Bolt AR40 |
| ¾" UNC Galvanized Plated All Threaded Rod | | | |
| ¾" UNC Corten Nuts | | | |
| **Water Service Materials** | | | |
| Curb Stops | AWWA-C800<br>Ball Type and Non-draining<br>Inlet/Outlet Compression Joints for CTS | CAMBRIDGE | 202NL-H4H4 25 mm (1") |
| | | | 202NL-C4C4 Copper flare 25 mm (1") |
| | | | 202NL-H6H6 37 mm (1 1/2") |
| | | | 202NL-C6C6 37 mm (1 1/2") |
| | | | 202NL-H7H7 50 mm (2") |
| | | | 202NL-C7C7 50 mm (2") |
| | | MUELLER | B25209N |
| | | FORD | B-44-444-Q-NL 25 mm (1") |
| | | | B-44-566-Q-NL 37 mm (1 ½") |
| | | | B-44-777-Q-NL 50 mm (2") |
| Main Stop | AWWA-C800<br>Ball type,<br>Inlet male AWWA Taper Thread/Outlet compression joint for CTS | CAMBRIDGE BRASS | 301NL-A4C4 25 mm (1") |
| | | | 301NL-A6H6 37 mm (1 ½") |
| | | | 301NL-A6C6 37 mm (1 ½") |
| | | | 301NL-A7H7 50 mm (2") |
| | | | 301NL-A7C7 50 mm (2") |
| | | MUELLER | B25008N |
| | | FORD | FB1000-4-NL 25 mm (1") |
| | | | FB100-6-Q-NL 37 mm ( 1 ½") |
| | | | FB100-7-Q-NL 50 mm ( 2") |
| Compression Coupling | Inlet/outlet compression for CTS | CAMBRIDGE BRASS | 118NL-H4H4 25 mm (1") |
| | | | 118NL-H3H3 19 mm (3/4") |
| | | | 118NL-H4H3 19 mm x 25 mm transition |
| | | | 120NL-V3V3 19 mm (3/4") |
| | | | 120NL-V4V4 25 mm (1") |
| | | | 120NL-V6V6 37 mm ( 1 ½") |
| | | | 120NL-V7V7 50 mm ( 2") |
| | | MUELLER | H15403N |

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|---|---|---|---|
| | | FORD | C44-44-NL 25 mm (1”) |
| | | | C44-33-NL 19 mm (3/4”) |
| | | | C44-34-NL 19 mm x 25 mm transition |
| **Transition Couplings** | | | |
| 5/8” XS x ¾” CTS Lead x Copper/Plastic Coupling | Inlet Compression for CTS/Outlet compression joints for various pipe size | CAMBRIDGE BRASS | Q24-23 |
| | | FORD | CB119NL U2, U3, U4, U5 |
| 5/8” XXS x ¾” CTS Lead x Copper/Plastic Coupling | Inlet Compression for CTS/Outlet compression joints for various pipe size | CAMBRIDGE BRASS | Q34-23 |
| | | FORD | CB119NL U2, U3, U4, U5 |
| ¾” XS x ¾” CTS Lead x Copper/Plastic Coupling | Inlet Compression for CTS/Outlet compression joints for various pipe size | CAMBRIDGE BRASS | Q24-33 |
| | | FORD | CB119NL U2, U3, U4, U5 |
| ¾” XXS x ¾” CTS Lead x Copper/Plastic Coupling | Inlet Compression for CTS/Outlet compression joints for various pipe size | CAMBRIDGE BRASS | Q34-33 |
| | | FORD | CB119NL U2, U3, U4, U5 |
| 1” XXS x 1” CTS Lead x Copper/Plastic Coupling | Inlet Compression for CTS/Outlet compression joints for various pipe size | CAMBRIDGE BRASS | Q34-44 |
| | | FORD | CB119NL U2, U3, U4, U5 |
| **Inserts** 19 mm (3/4”) – CTS 25 mm (1”) – CTS 37 mm (1 ½”) –CTS 50 mm (2”) – CTS | Stainless steel inserts fluted end for 100 Compression connection | FORD | INSERT-51, 52, 54, 55 |
| | | CAMBRIDGE BRASS | 86-3, 86-4, 86-6, 86-7 |
| | | MUELLER | INSERTS |
| **Meter Pits** | Seek Lasalle Water Dept. Approval | | |
| | | | |
| | | | |
| **Sample Station** | | KUPFERLE | Model #88 Eclipse Sampling Station |
| **Miscellaneous** | | | |
| Pipe Joint Lubricant | NSF/ANSI 61-2008 AWWA-C111 SEC. 4.4.4 Lubricant to be food grade only | | |
| Casing Spacers | Plastic, polyethylene Town Approval Required | ADVANCED PRODUCTS & SYSTEM | Model SS1 or CI |
| Casing Rubber End Seals | Synthetic Rubber | LINK SEAL | Thunderline Link Seal |
| | | ADVANCED PRODUCTS & SYSTEM | |
| | | PSI | PSI End Seal |
| Automatic and Continuous Flusher | | KUPFERLE | Eclipse #9800 |
| Hardwood Wedges | Seek Lasalle Water Dept. Approval | | |
| Solid Concrete Bricks/Blocks | Seek Lasalle Water Dept. Approval | | |