

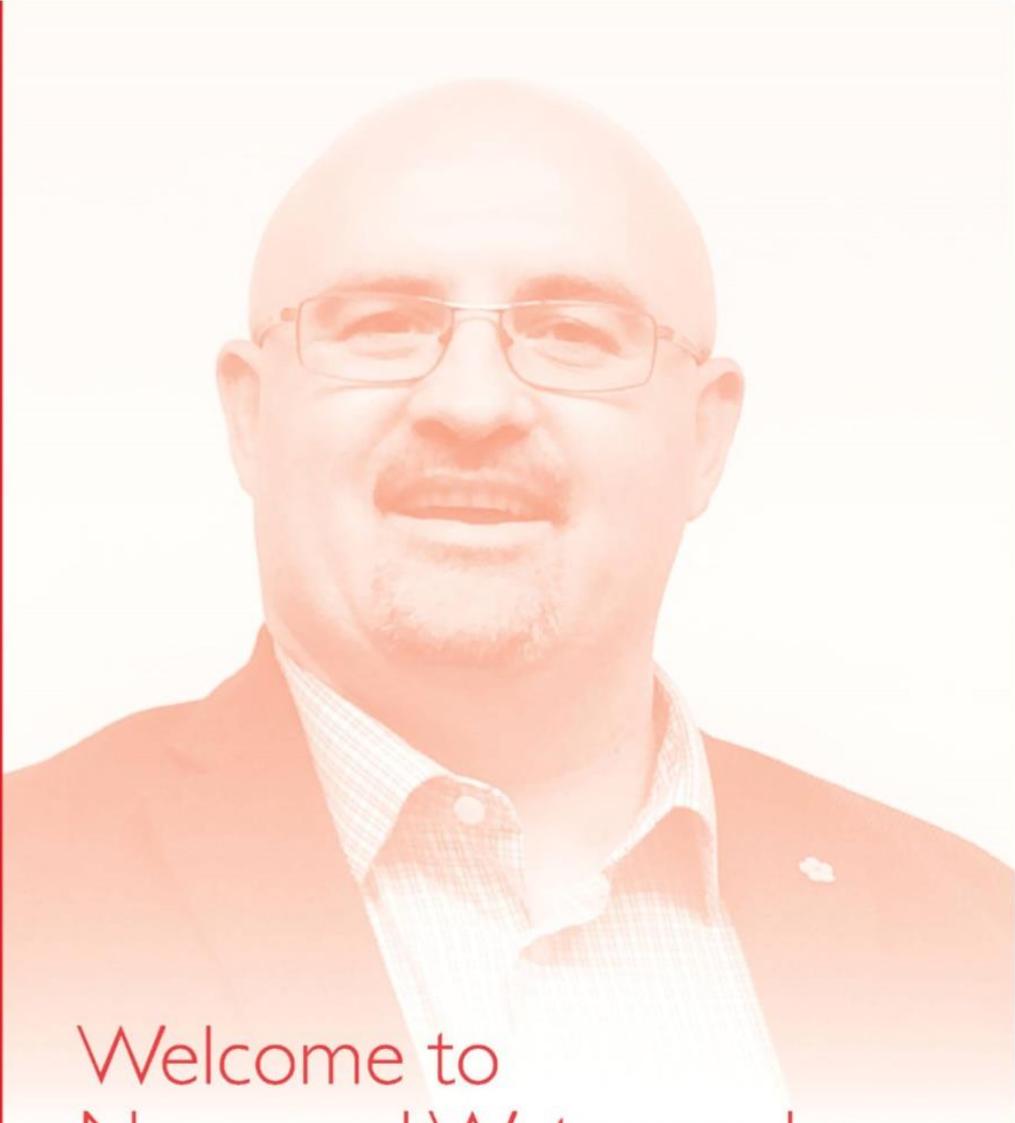


Waterworks 101

What you need to know to survive and thrive in the waterworks industry

Norwood Waterworks Phone: 780-488-7788

www.NorwoodWaterworks.com



Welcome to Norwood Waterworks.

We've put this Waterworks 101 guide together to help you learn about our industry and what we are passionate about.

Next time you need to purchase waterworks products, please think of us!

Keith Lumby, P.Eng.
General Manager
Norwood Waterworks



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Pipe

C900/C905 (Water) Pipe

- This pressure pipe is blue in color and is designed to handle potable water. The pipe is available in 6.1 meter / 20 foot lengths (3 meter / 10 foot lengths, available upon request). It is the heaviest type of PVC pipe that we stock.
- We stock 100mm – 300mm C900 PVC Pipe (4"-12") in our yard. Pipe diameters 350mm – 750mm (14"– 30") are also available, but are typically only brought in as a special order. These larger sizes are referred to as C905 rather than C900.
- *Interesting Fact: The Outside Diameter (OD) of C900/C905 PVC pipe is the same as Cast Iron. This allows C900/C905 PVC pipe to fit into Cast Iron (CI) fittings such as tees, crosses, and bends. This is useful, as some sharp-angled bend fittings, crosses, and substantial reduction fittings (ex. going from 12" to 6") are only available in CI due to pressure limitations of PVC.*



SDR35 (Sewer) Pipe

- This pipe is green in colour and is used for storm sewer and sanitary sewer lines. In comparison to C900, SDR35 is much thinner and lighter as it is only used in gravity pressure applications.
- IpeX SDR35 comes in 4M / 13ft lengths and Royal SDR35 comes in 4.27M / 14ft lengths.



Ultra-Rib (Storm) Pipe

- This pipe is green in colour and is used for storm sewer lines. It differs from SDR, in that it has ridges along the entire body of the pipe, which give it a “ribbed” look. It also has a gasket installed on the outside of the spigot end.
- Unlike SDR and C900, Ultra-Rib is only offered by IPEX.
- *Interesting Fact: The “ribs” on Ultra-Rib pipe, give it the similar strength to regular SDR with the benefit of being even lighter.*



Korflo (Storm) Pipe

- This pipe is green in colour and is used for storm sewer lines. It differs from SDR in that it has ridges along the entire body of the pipe, which give it a “flattened ribbed” look. 200mm – 375mm Korflo has 2 gaskets on the spigot end. 450mm – 900mm Korflo, has 1 gasket.
- This is Royal’s comparable product to IPEX’s Ultra-rib. The ribs are flattened out compared to Ultra rib.
- Korflo is a dual-wall pipe, with the ribbed outside wall attached to the inner smooth wall.
- *Interesting Fact: The “ribs” on Korflo pipe give it the similar strength to regular SDR with the benefit of being lighter.*

Note the 2 gaskets on the spigot end of the Korflo pipe (200mm-375mm Pipe)



Perforated PVC Pipe

- Any PVC pipe can be “perforated,” but perforated SDR35 is the most common. These pipes are typically used in drainage arrangements, where water is allowed to slowly move into the pipe from the surrounding drainage rock or gravel, etc.
- Depending on the application, a “filter sock” is sometimes provided along with the perf pipe. This fabric tube fits over the perf pipe, and prevents sediment or dirt from entering the pipe. These socks are special ordered, and are not stocked.



Pipe Lubricant

- Pipe lubricant is used when joining two pieces of pipe together or joining pipe to a fitting. It is used for all types of stocked PVC pipe.
- As a general rule of thumb, **4 - 1kg tubs of pipe lubricant** is included with each lift of pipe going to site. Below, is a usage chart for pipe lube.

Pipe Size		Average Number of Joints Per Container					
Metric	Nominal	250 g	516 g	1 kg	4 kg	11 kg	23 kg
mm	in	9 Oz	Pint	Quart	Gallon	2.5 Gallon	5 Gallon
100	4	17	34	70	280	805	1610
125	5	14	28	56	225	645	1290
150	6	10	20	40	160	460	920
200	8	7	14	28	110	320	640
250	10	5	10	20	80	230	460
300	12	3	7	14	55	160	320
375	15	2	4	8	32	87	175
450	18	1	2	4	16	45	90
500	20	1	2	3	12	35	70
525	21	1	2	3	12	35	70
600	24	1	1	2	8	22	45
675	27		1	2	6	17	35
750	30			1	4	12	25
900	36				3	7	15
1050	42				2	5	10
1200	48				1	3	7

Polyethylene CSA Series 200 Pipe (municipal tubing)

- This black tubing comes in coiled lengths, of 100ft, 200ft, 500ft and 1000ft. Some diameters of municipal tubing are also available in 300ft coils. The tubing size, can be found printed along the wall of the tube. Available in $\frac{3}{4}$ ", 1", 1 $\frac{1}{4}$ ", 1 $\frac{1}{2}$ ", and 2" diameters.



Q-Line Water Service Tube

- This tubing comes in blue coils. Q-Line comes in 150ft and 300ft rolls, in both $\frac{3}{4}$ " and 1" diameters.



Type K Soft Copper Tubing

- $\frac{3}{4}$ " and 1" Type K soft copper is available in 66' and 100' coils. 1-1/4" & 1-1/2" copper is available in 66' coils. And 2" comes in both 40' coils and 20' straight lengths.



Fittings

- **Tee (Page 9):** Tee's look like longer couplings with a gasket opening coming out of the side at a 90° angle, resembling the letter "T". Tees can be used to connect pipe of the same diameter or 2 different diameters.
- **Cross:** These are similar to Tees, only they have four ends (at right angles to each other). As the name suggests, the fitting looks like a "+" shape. They also, can be used to connect pipe of the same diameter or 2 different diameters.
- **Wye (Page 9):** These are similar to Tee's, only the pipe branching off the side of the fitting will be at a 45 degree angle instead of a 90 degree angle.
- **Elbow (Page 9):** These are similar to couplings but they direct the pipe on an angle. The most common bends for elbows are, 22-1/2°, 45°, and 90°. 11-1/4° elbows are available for C900 and Ultrarib.
- **Sweep (Page 10):** these are similar to elbows but differ in that they create a bend in the pipe in a smooth rounded bend rather than an angled bend.
- **Increaser (Page 10):** These fittings are sometimes also referred to as, reducers, bushings, or adapters. An increaser will have 1 spigot end and 1 bell end, and is used to connect two pieces of pipe of different diameters.
- **Plug (Page 10):** These go into the gasket (bell) end of a pipe to plug the end of it.
- **Cap (Page 10):** Similar to a plug, however they fit over top of the spigot end of pipe instead of going inside.
- **Coupling (Page 10):** Couplings are straight fittings with 2 bell ends, which join two pieces of pipe together. They come either with or without a stop (represented as "w/stp" or "l/stp"). A "stop" is a plastic ledge which is in the middle of the inside of a coupling which stops someone from pushing a piece of pipe too far into the coupling.



Note the difference in gasket location as well as the bulkier outer ridges on the Royal fitting above

Tees

- Tees are available for all types of pipe (C900, SDR, and Ultra-Rib). Cast iron (CI) tees are also available.

PVC SDR Tee (Sewer)



Wyes

- Wyes are available for both SDR and Ultra-Rib (or a combination). They are not available for C900 due to pressure limitations.



Ultra-Rib Wye: Note how the ends bell turns outwards slightly, this a dead giveaway that a fitting is Ultra-Rib rather than SDR.



Ultra-Rib Wye connecting to SDR: Note the difference between the ultra-rib ends and the SDR end.



SDR Wye fitting. All 3 bells have a gasket inside.

Elbows

- Elbows are available for all types of pipe (C900, SDR, and Ultra-Rib). Cast iron (CI) elbows are also available. SDR and Ultra-Rib come in 90°, 45°, and 22.5° angles. C900 comes in 90°, 45°, 22.5°, and 11.25° angles. "5° Sweeps" are available for C900 pipe only.



PVC SDR 90° Elbow (**G-G**)



PVC SDR 45° Elbow (**SP-G**)

Long Radius Bend

- The same as an elbow but a more gradual turn in the bend, these are basically a long elbow.



Increasesers & Plugs / Caps

- Commonly called “increaser”, “reducer”, or “bushings”. They are available for Ultra-Rib, SDR, a combination of Ultra-Rib to SDR, or C900.
- Most Common Increaseer is 150x100mm PVC SDR INCR SPG-G



PVC SDR Increaseer (also known as a reducer or bushing)



PVC SDR Plug (like in your sink)



PVC SDR Cap (like on a bottle)

Couplings

- PVC couplings are available in both L/STP and W/STP configuration. Couplings with a stop have a built in ring that prevents the pipe from moving more than halfway into the coupling. They are typically used in new construction. Couplings without a stop are often called “repair couplings”. They can be slid all the way onto a pipe, and are useful for repairs.
- There are also 2-bolt mechanical couplings available - Hymax and Macro. Each is used in different situations and has different customer preferences, engineering approval, and different sizing availability



SDR Coupling (L/STP)



SDR Coupling (W/STP)

Ultra-Rib Gaskets

- All Ultra-Rib fittings require gaskets on all bell ends. When in doubt read the edges of the gasket. The size information should be printed on them.



Korflo Gaskets

- Fittings for Korflo pipe are the exact same fittings used for Ultra-Rib pipe. Korflo gaskets must be supplied in place of the Ultra-Rib gaskets. 2 gaskets must be pulled for each bell end on 200mm – 375mm fittings. 1 gasket per end on larger diameter fittings.



Service Boxes

- Service boxes are used to operate/access curb stops (ball valves), which supply water to individual homes and some businesses from the water main. There are two types of service boxes.

Country Service Box

- As the name suggests, these service boxes are used outside of the City of Edmonton. The bottom casing of these service boxes is coated with a green epoxy. The top casing is secured in place with a set screw. The Country Service Boxes come in two sizes, 1-inch and 2-inch. The service box “boot” is noticeably different in size.

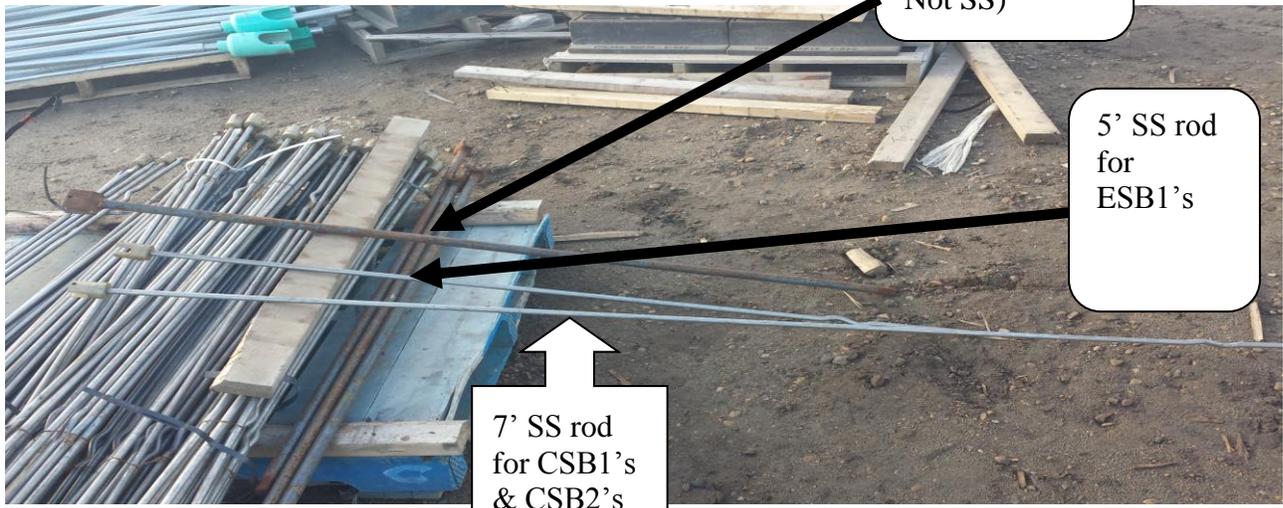


Edmonton Service Box

- These service boxes are used in the City of Edmonton and have a galvanized metal casing. Unlike the country boxes, the sliding tops have no set screws. They come in two sizes 1 inch and 2 inch.



Service Box Rods (3 most common types/lengths)



Cotter Pins

- All Service Boxes require a cotter pin for the supplied rod. Brass is standard for the CSB1 & CSB2, Stainless Steel for the ESB1 & ESB2.



Service Box Chairs

- These hold a curb stop in place and allow the service box to sit properly prior to backfill. The differences are slight, but it is important to note them.

ESB / CSB CHAIRS

These are the standard chairs for service boxes. They are the most common type of chair. For ESB1 & ESB2 the chair size is cast on the side in millimeters. For CSB1 & CSB2 the size is in inches. It is important to compare these chairs with the boot of the service box until you are familiar. For example a chair for a CSB2 will have 2" cast on the side, while a chair for an ESB2 will have 50 (in millimeters).



Universal Chairs

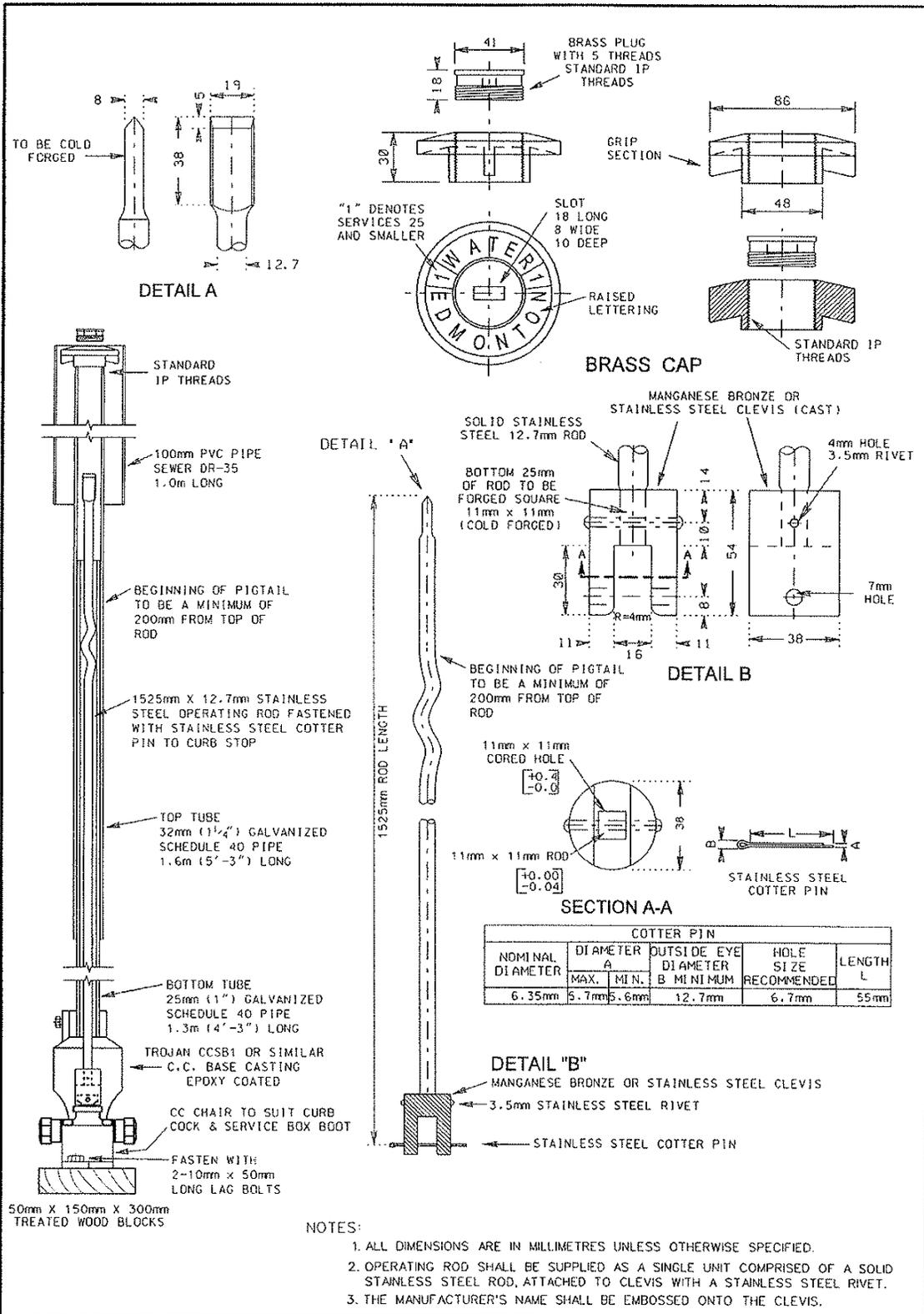
These chairs are designed to be more compatible with various styles of service box and curb stops, but they only come in a few select sizes. They can be distinguished by the letters "UNIV" cast on the one end. Universal chairs are often the preference of some customers over the equivalent sized ESB/CSB chair, so it is important to check.



CC Chairs

Although not as common in use these chairs in comparison to the other styles look very different. This makes distinguishing them fairly easy. Their use is dependent on certain situations.

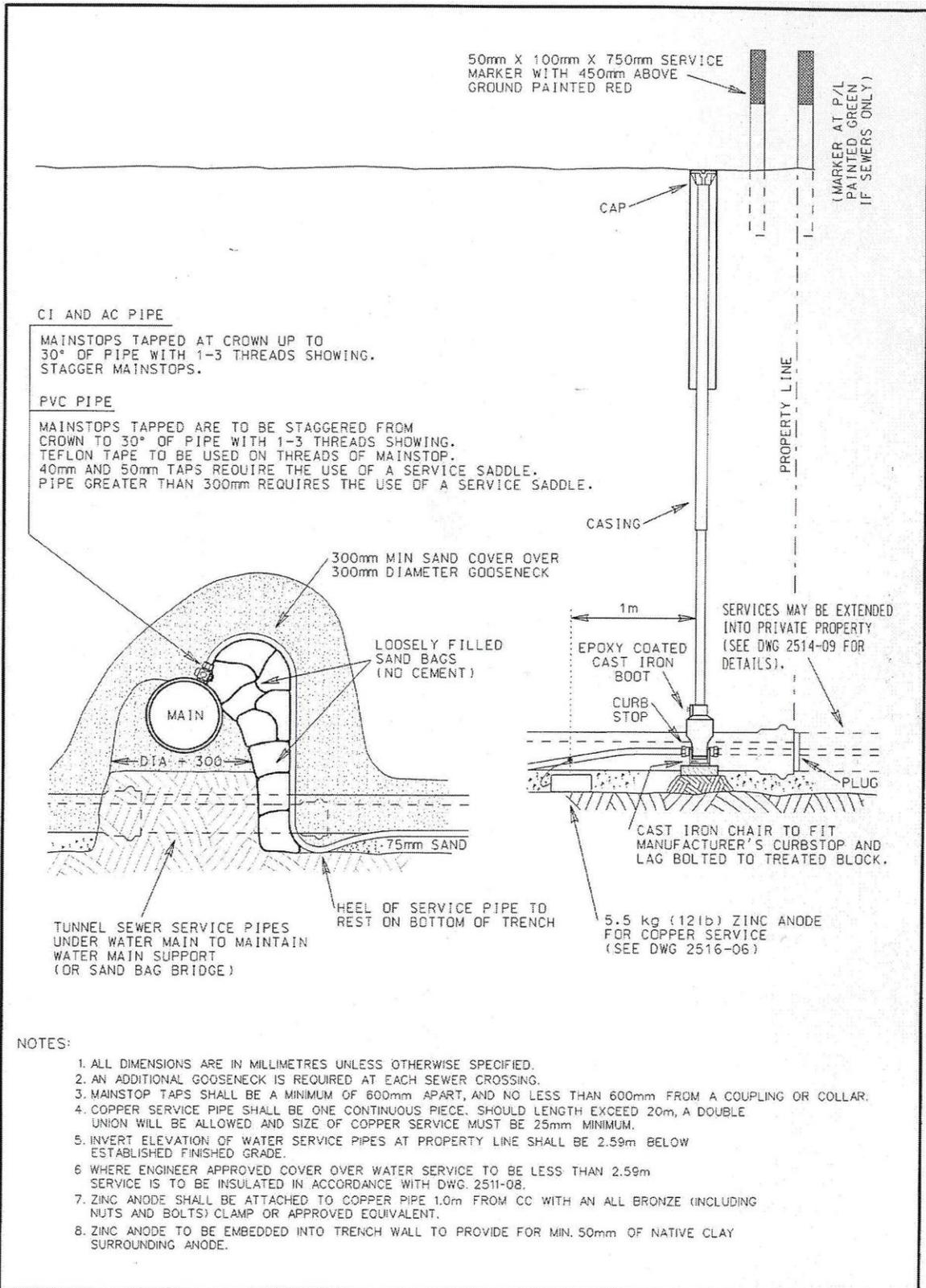




50mm x 150mm x 300mm
TREATED WOOD BLOCKS

- NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
 2. OPERATING ROD SHALL BE SUPPLIED AS A SINGLE UNIT COMPRISED OF A SOLID STAINLESS STEEL ROD, ATTACHED TO CLEVIS WITH A STAINLESS STEEL RIVET.
 3. THE MANUFACTURER'S NAME SHALL BE EMBOSSED ONTO THE CLEVIS.

	SERVICE BOX DETAIL FOR 20mm, 25mm WATER SERVICE		
	APPROVED JANUARY 2013 SCALE N T S	DRAWN BY Dale Vandenberg CHECKED BY Doug S.	APPROVED DIRECTOR, WATER DISTRIBUTION AND TRANSMISSION

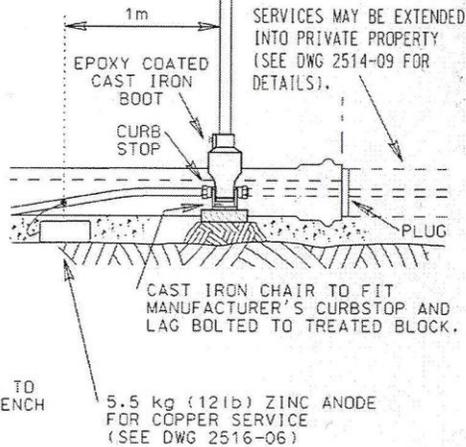
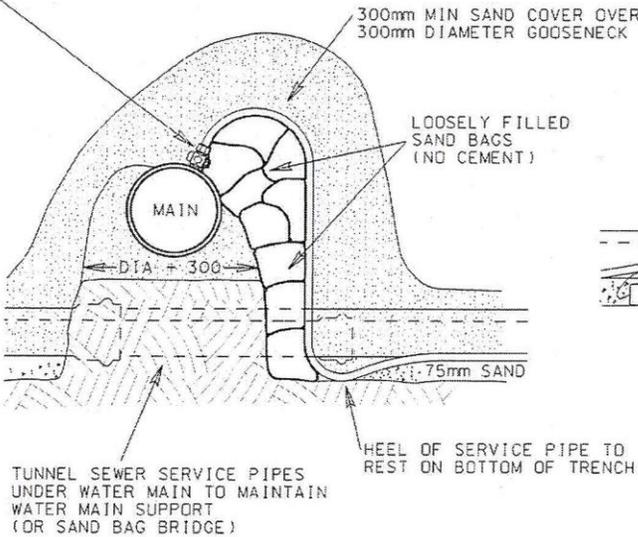


CI AND AC PIPE

MAINSTOPS TAPPED AT CROWN UP TO 30° OF PIPE WITH 1-3 THREADS SHOWING. STAGGER MAINSTOPS.

PVC PIPE

MAINSTOPS TAPPED ARE TO BE STAGGERED FROM CROWN TO 30° OF PIPE WITH 1-3 THREADS SHOWING. TEFLON TAPE TO BE USED ON THREADS OF MAINSTOP. 40mm AND 50mm TAPS REQUIRE THE USE OF A SERVICE SADDLE. PIPE GREATER THAN 300mm REQUIRES THE USE OF A SERVICE SADDLE.



NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
2. AN ADDITIONAL GOOSENECK IS REQUIRED AT EACH SEWER CROSSING.
3. MAINSTOP TAPS SHALL BE A MINIMUM OF 600mm APART, AND NO LESS THAN 600mm FROM A COUPLING OR COLLAR.
4. COPPER SERVICE PIPE SHALL BE ONE CONTINUOUS PIECE. SHOULD LENGTH EXCEED 20m, A DOUBLE UNION WILL BE ALLOWED AND SIZE OF COPPER SERVICE MUST BE 25mm MINIMUM.
5. INVERT ELEVATION OF WATER SERVICE PIPES AT PROPERTY LINE SHALL BE 2.59m BELOW ESTABLISHED FINISHED GRADE.
6. WHERE ENGINEER APPROVED COVER OVER WATER SERVICE TO BE LESS THAN 2.59m SERVICE IS TO BE INSULATED IN ACCORDANCE WITH DWG. 2511-08.
7. ZINC ANODE SHALL BE ATTACHED TO COPPER PIPE 1.0m FROM CC WITH AN ALL BRONZE (INCLUDING NUTS AND BOLTS) CLAMP OR APPROVED EQUIVALENT.
8. ZINC ANODE TO BE EMBEDDED INTO TRENCH WALL TO PROVIDE FOR MIN. 50mm OF NATIVE CLAY SURROUNDING ANODE.



50mm AND SMALLER COPPER WATER SERVICE

APPROVED JAN. 2008	DRAWN BY Dole Vandenberg	APPROVED <i>Susan Ouel</i>	OLD DRAWING 6401	DRAWING NUMBER 2514-01
SCALE N.T.S.	CHECKED BY S. P.	GENERAL MANAGER, NETWORK SERVICES AND OPERATIONS	REVISION 2	

Valve Boxes

- Valve boxes extend from the top of a gate valve to grade, in order to encase a valve box rod which is used to operate the valve (open or closed). There are three types of valve boxes, Type-A, Type-B, and Type-C. All valve boxes are the same approximate shape and design, but feature different parts.

Type A Valve Box

- Type A valve boxes are the most common type of valve box used outside of Edmonton. The top and bottom slide together rather than screw together. The type-A valve box has a bonnet that is built into the bottom casing. Bottoms casings for the type-A, come in PVC and cast iron.

The main parts of a Type A valve box are:

1. valve box top
2. valve box bottom (PVC or cast iron)
3. lid
4. valve box rod
5. top nut



A Valve Box Top Section (no threads, sliding type)



A Valve Box Bottom Section (Cast Iron)



A Valve Box Bottom Section (PVC)



Valve Box Rod



Valve Box Lid



Top Nut

Type B Valve Box

- Type-B valve boxes are the main type used in the City of Edmonton, but are also utilized in surrounding communities. Unlike the type-A, the top and bottoms of B valve boxes “screw together” rather than slide. They are made of all ductile iron. Type-B boxes also feature a separate bonnet rather than the built-in style of the type-A.
- Lids for type-B valve boxes, though they look similar, are made from ductile iron and are labeled “B”. Ensure the right lid is supplied for the right box.
- The City of Edmonton does not keep rods in their boxes for cost cutting and security reasons. As such, most B valve boxes are sold without rods or top nuts. When they are required, the same rods are supplied as with the type-A. The type-B top nuts are slightly smaller than the type-A.

The main parts of a Type B valve box are:

1. valve box top
2. valve box bottom
3. valve box bonnet
4. lid (type-B ductile iron lid)
5. valve box rod (if required)
6. top nut (if required)



Type B Valve Box Top Section (note the thread on the interior)



Type B Valve Box Bottom Section (note the thread on the outside)



Type B Valve Box Bonnet



Top Nut

Valve-Box Extensions

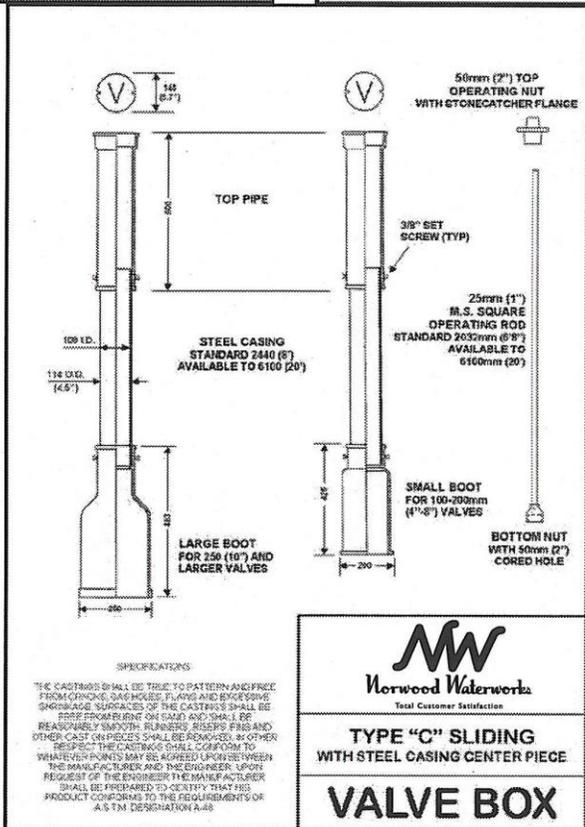
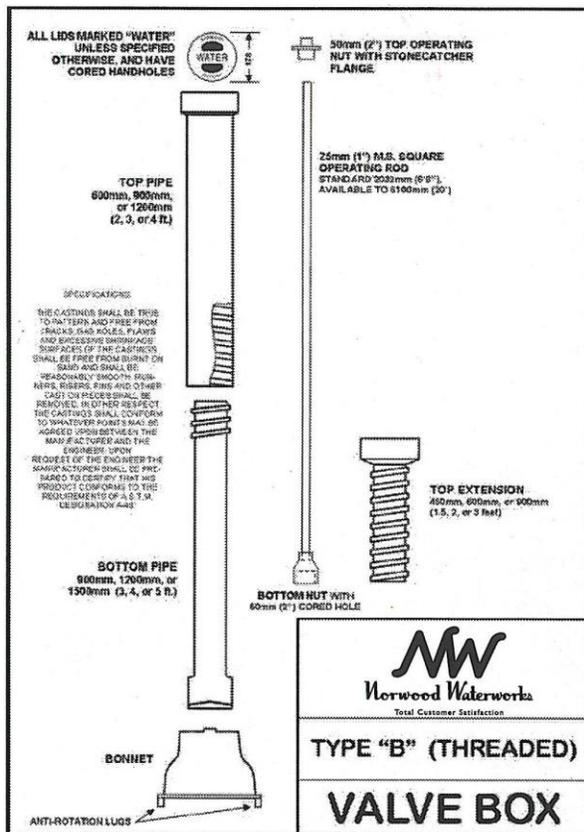
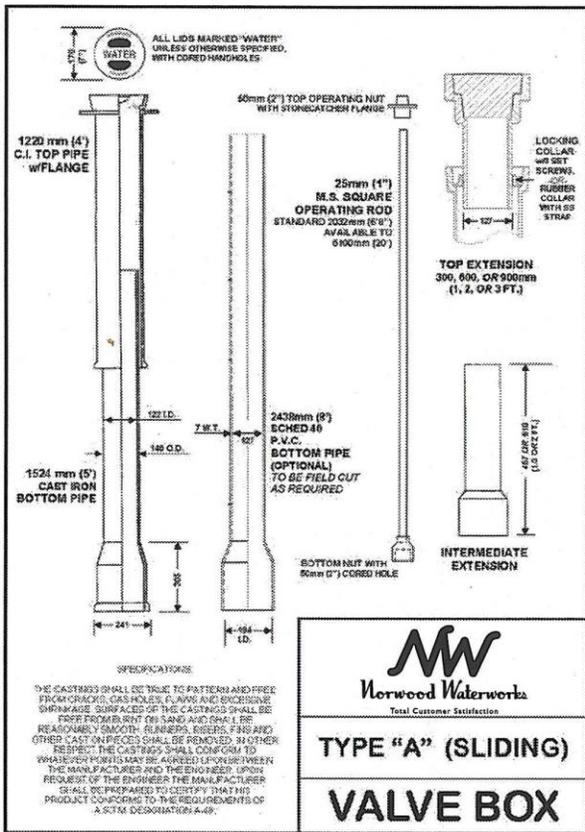
- A variety of extensions are available for both Type-A and Type-B valve boxes, These extensions can be used on new installations that are going to uncommon burial depths, or to adjust for later grade changes.
- Type-B extensions will be thread-in, while Type- A extensions will be sliding.
- Top extensions and intermediate extensions are available for both Type A and Type B Valve Boxes.

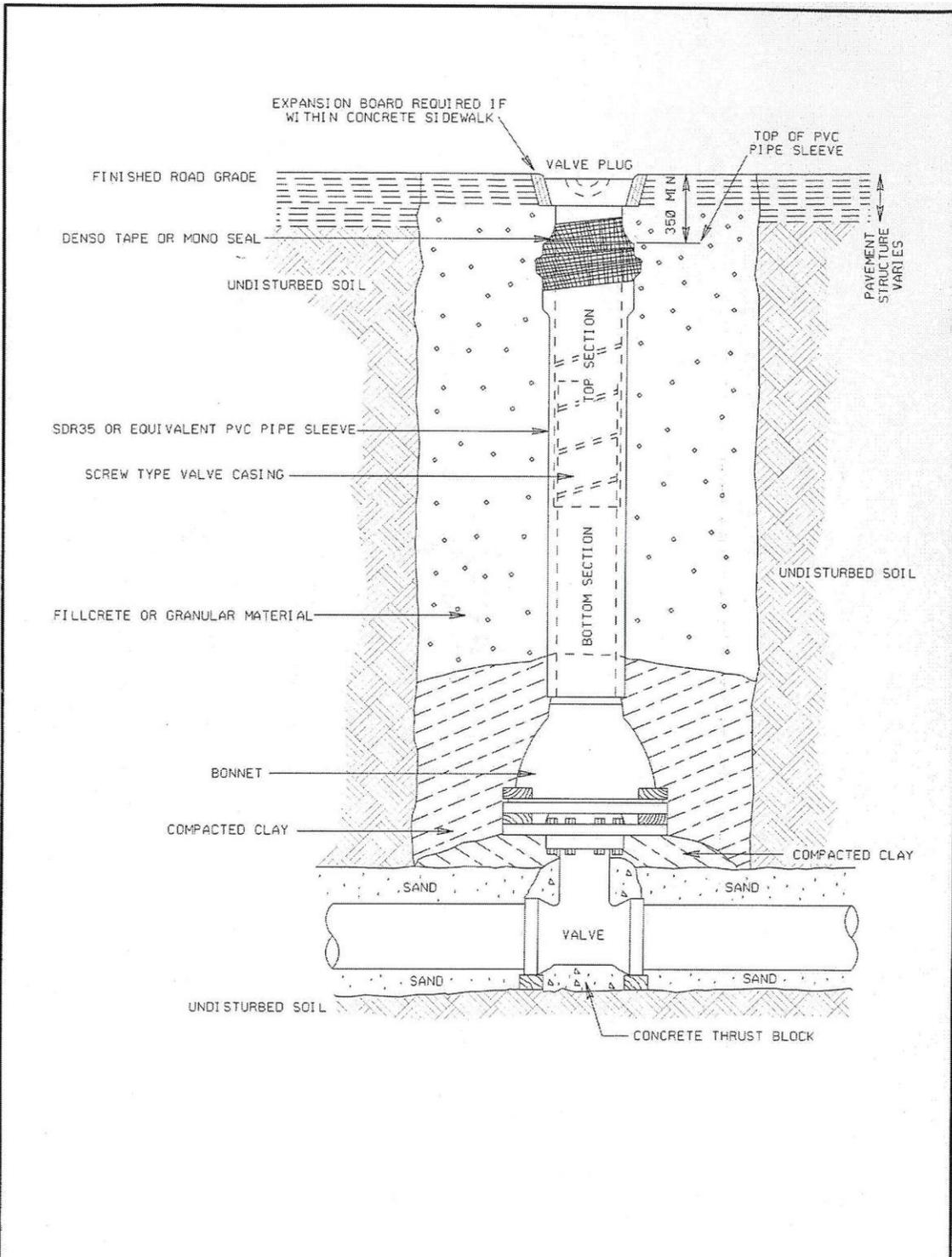


Valve Box Bonnet Supports

- Valve Box Bonnet Supports (or “bonnet boxes”) are wooden platforms designed to help support a valve box bonnet in place over the valve. They are made from pressure treated wood, and feature one sliding top piece to move it on and off the bottom of a bonnet.
- They are available for both Type A and Type B valve boxes. They can be easily distinguished, as the Type B support will be larger than the Type A.







NOTES:
 1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.

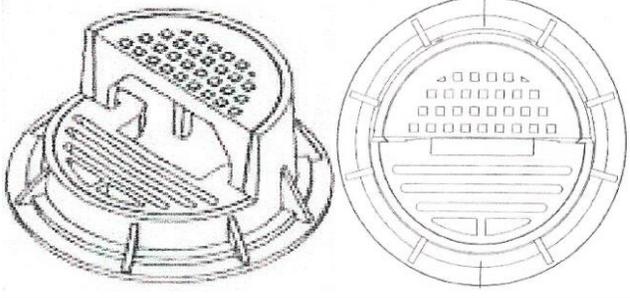
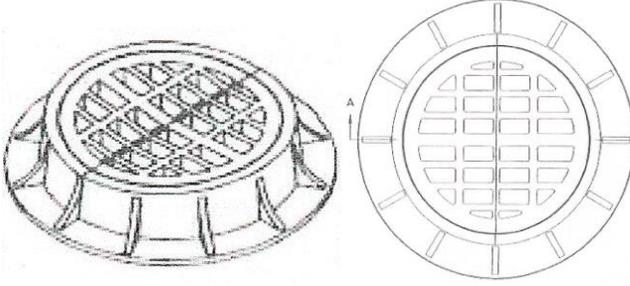
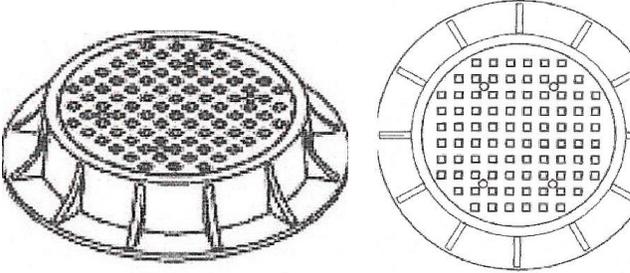
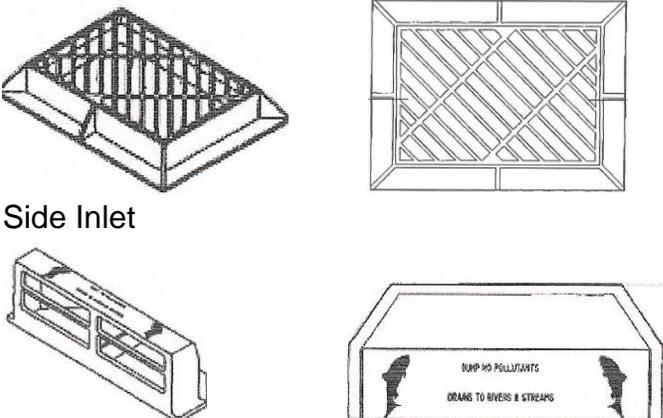


VALVE CASING DETAIL FOR FILLCRETE AND GRANULAR MATERIAL

APPROVED JAN. 2008	DRAWN BY Waldo Ponce	APPROVED <i>Ausau Carl</i>	OLD DRAWING 6208	DRAWING NUMBER 2512-08
SCALE N.T.S.	CHECKED BY S. P.	GENERAL MANAGER, NETWORK SERVICES AND OPERATIONS	REVISION 2	

Frames & Covers/Grates

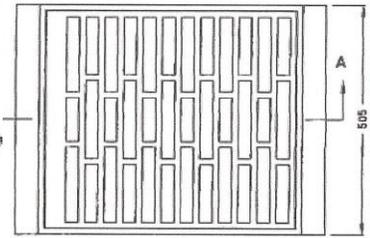
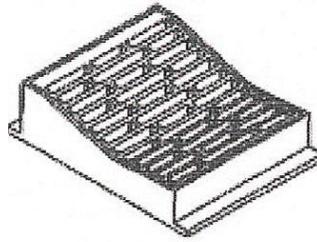
- Manhole Frames & Covers come in several different designs which are used for different applications. Most Frames & Covers/Grates come either “dipped” or “undipped.” A dipped frame & cover has a black coating, while an undipped frame & cover does not. The undipped F&C is just bare iron. F&C’s used in the City of Edmonton are undipped, while most Alberta Communities require dipped. The dipped F&C’s can also be used on Private Sites.

<p>F36 & F36A (Edmonton Type #2A & #4A)</p> <ul style="list-style-type: none"> The F36 and F36A basically look the same. The only difference is that the F36A is larger. The F36 & F36A Frame & Grates are available with either a one-piece or two-piece grate. Available as both dipped & undipped. 	
<p>F38 (Edmonton Type #8)</p> <ul style="list-style-type: none"> The F38 comes in both dipped and undipped as well. The F38 only comes with a grate, there is no option of a “cover.” The F38 Frame & Grate is concave in comparison to an F39, which is either flat or slightly convex (dome shape). 	
<p>F39 (Edmonton Type #6)</p> <ul style="list-style-type: none"> The F39 is available as both dipped and undipped. The F39 Frame can be supplied with either a Cover or a Grate. The F39 is the most common style of Frame & Cover/Grate. 	
<p>F51</p> <ul style="list-style-type: none"> The complete F51 Frame & Grate has 4 parts. The Catch Basin F&G (pictured on the right. Sits in the roadway), and the Side Inlet Frame & Cover sits in the curb). Side inlets can be 1-piece or 2-piece (most common). 2-piece Side Inlet’s are supplied with a pin that holds the grate securely in place. 	<p>Frame & Grate</p>  <p>Side Inlet</p>

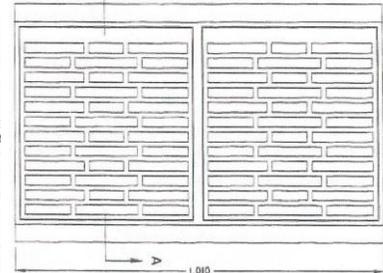
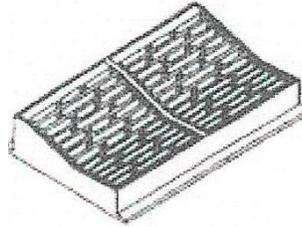
K7 F&G (Single & Double)

- K7 Catch Basin F&G's are rectangular in shape and slope downwards (from the curb to the road). The K7 Single Frame takes 1 Grate, while the Double Frame requires 2 Grates. The same grate is used whether supplying a Single or a Double Frame.

Single



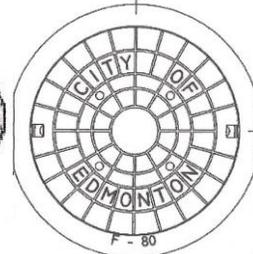
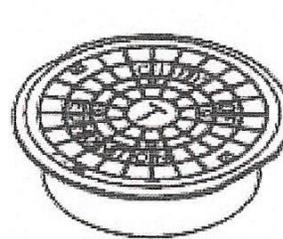
Double



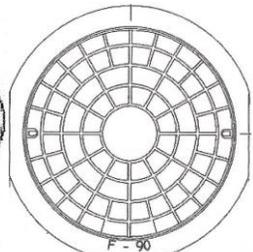
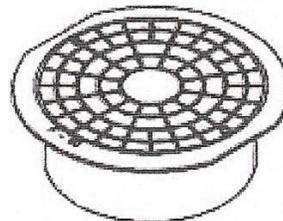
F80 & F90 Floating Frame & Cover

- F80's and F90's are referred to as "Floating" F&C's. They both look very similar and it can sometimes be hard to tell them apart at first glance. One giveaway between the two is that an F80 has two "tabs" on the Cover which line up with 2 "notches" on the Frame.
- F90 F&C has 2 vent holes and the F80 has 4.
- The F90's are always supplied with 2 plastic plugs for the vent holes, as well as a gasket that fits between the Frame & the Cover.

F80



F90



Riser Rings

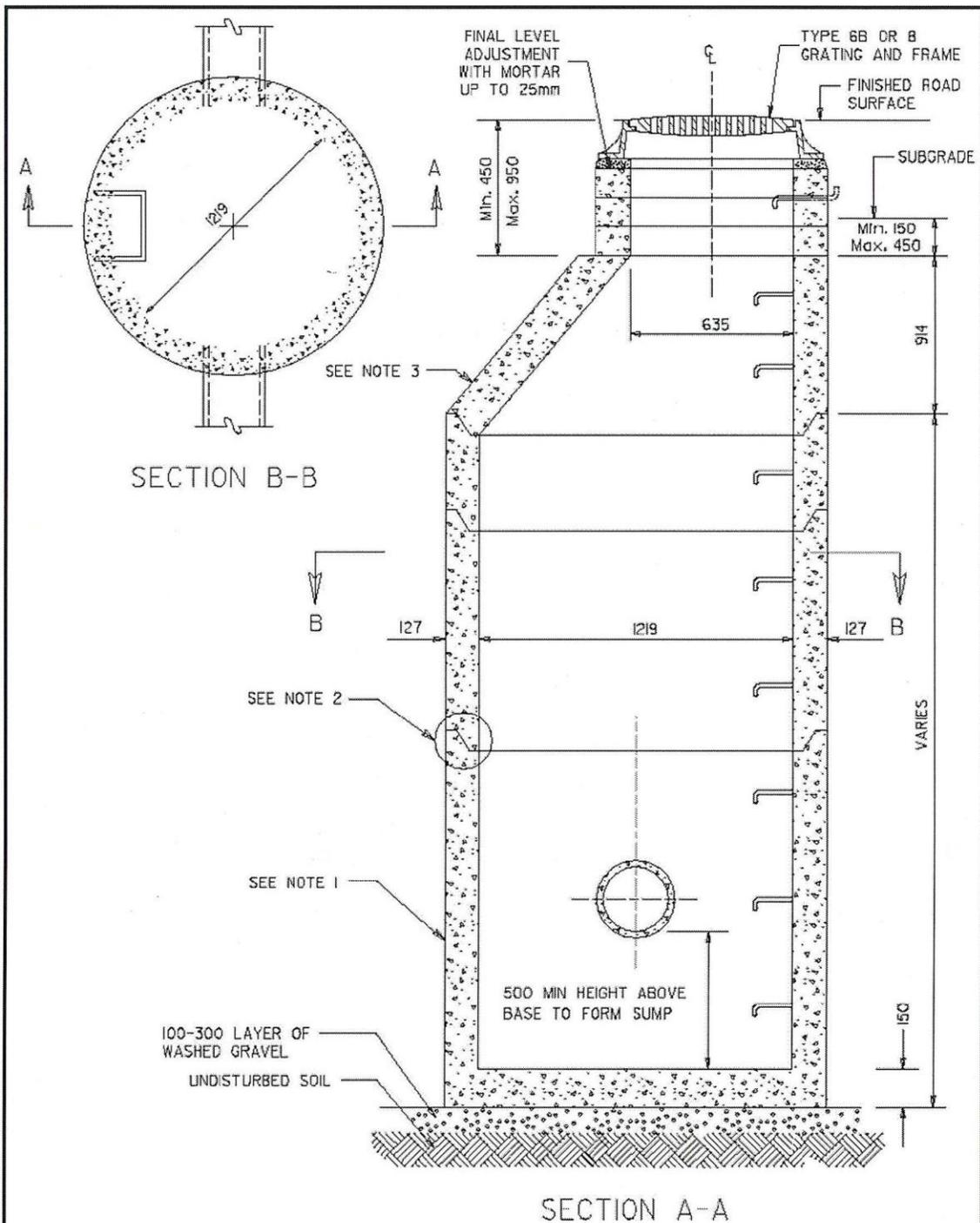
- Riser rings are used to raise the final surface level of an F39 Grate or Cover, after re-paving. The rings sit on top of the frame and underneath the grate or cover. These Riser Rings are available in 1", 1½", 2" and 3".



Trash Grates

- Trash grates are used with an F39 Frame & Grate to prevent trash and other debris from entering into the Storm Sewer. They come in a short and tall style.





SECTION B-B

SECTION A-A

- NOTES:
1. UNIT COULD BE MADE UP FROM TWO ITEMS (BASE AND BARREL).
 2. OPPOSITE ORIENTATION OF JOINTS IS ACCEPTABLE.
 3. 1200 x 635 SLAB TOP COULD BE USED INSTEAD OF CONE IN SHALLOW BURY INSTALLATION.

		STANDARD 1200 C.B. MANHOLE WITH GRATING AND FRAME TYPE 6B OR 8	
Date Approved: 03-02-26	Drawn By: J.L.	Approved 	Revision * 1
Scale: NTS	Checked By: MJB	Drawing * 7011	

April 2, 2002 mfp: spec7011.dgn

Brass Fittings

- The brass fittings we carry range from ¾" to 2". They are usually used for water services. We stock couplings, curb stops (ball valves), main stops and various adapters as well as a variety of threaded bushings, elbows and pipe nipples. There are several different connections for the brass fittings, such as Compression, Kitec, MIP (male iron pipe), FIP (female iron pipe), and AWWA (also known as CC thread).



Curb Stop (ball valve)
Kitec x Kitec



Compression Coupling



Main Stop
Compression x CC



90° Elbow
Compression x Compression

Service Saddle

- Service Saddles are used to strap around a piece of pipe to attach a main stop to a main line pipe. They come in a variety of sizes to wrap around pipe from 2" to 24" and to accommodate main stops from $\frac{3}{4}$ " to 2".
- *Interesting Fact: A quick way to confirm if a saddle is CC or IP is to run your finger perpendicular over the surface of the hole. If the edges feel smooth, the threading is CC. If the edges are rough, it is IP.*



Hydrants

- There are several different manufacturers of Fire Hydrants. Also, there are numerous configurations when it comes to Operating Nuts for the hydrants. It is important to know which type of hydrant is specified for the City/Town/Municipality.
- The 2 most common brands of hydrants are the M67 Brigadier (McAvity) Hydrant from Clow Canada and the Canada Valve Hydrant, manufactured by Mueller.
- There are two main types of pumper nozzle's (or steamer ports) on hydrants. Standard threaded and Storz (1/4 turn connection).
- Hydrants come in varying depths of bury. 8'6" is the standard depth of bury hydrant in the City of Edmonton. We stock 8'6 – 11'0 depth of bury hydrants.
- There are also OL (open left) and OR (open right) hydrants. This is in reference to the direction the top nut turns to open the hydrant. The majority of Alberta use OL. Calgary requires OR hydrants and valves.
- Hydrants can also come with tyton or flanged bottom connections (or boots). Again this is dependent upon the hydrant spec, where the work is being completed.



M67 Hydrant



Storz Nozzle

Hydrant Boot Types

- Tyton (push on) or Flange (bolt on)



Hydrant Extensions

- Hydrant extensions are used to bring a new hydrant up to required burial depth, or to raise an existing hydrant. They are attached to the hydrant with a combination of bolts and flanges to the existing hydrant (flanges and bolts are included). Extensions are available in 6" to 48" lengths.



Gate Valves

- The most common gate valves are Tyton (also known as “push on”) or Flanged. Tyton Valves are supplied with a Tyton gasket for each end. A Tyton Valve will also have “ears” on either end, should you need to restrain the valve. Flanged Valves have a flat surface on either end with bolt holes to connect to other Flanged Fittings or Flanged Hydrant Boots.
- The valves can come Tyton x Tyton, Tyton x Flange or Flange x Flange.



Tyton Gate Valve



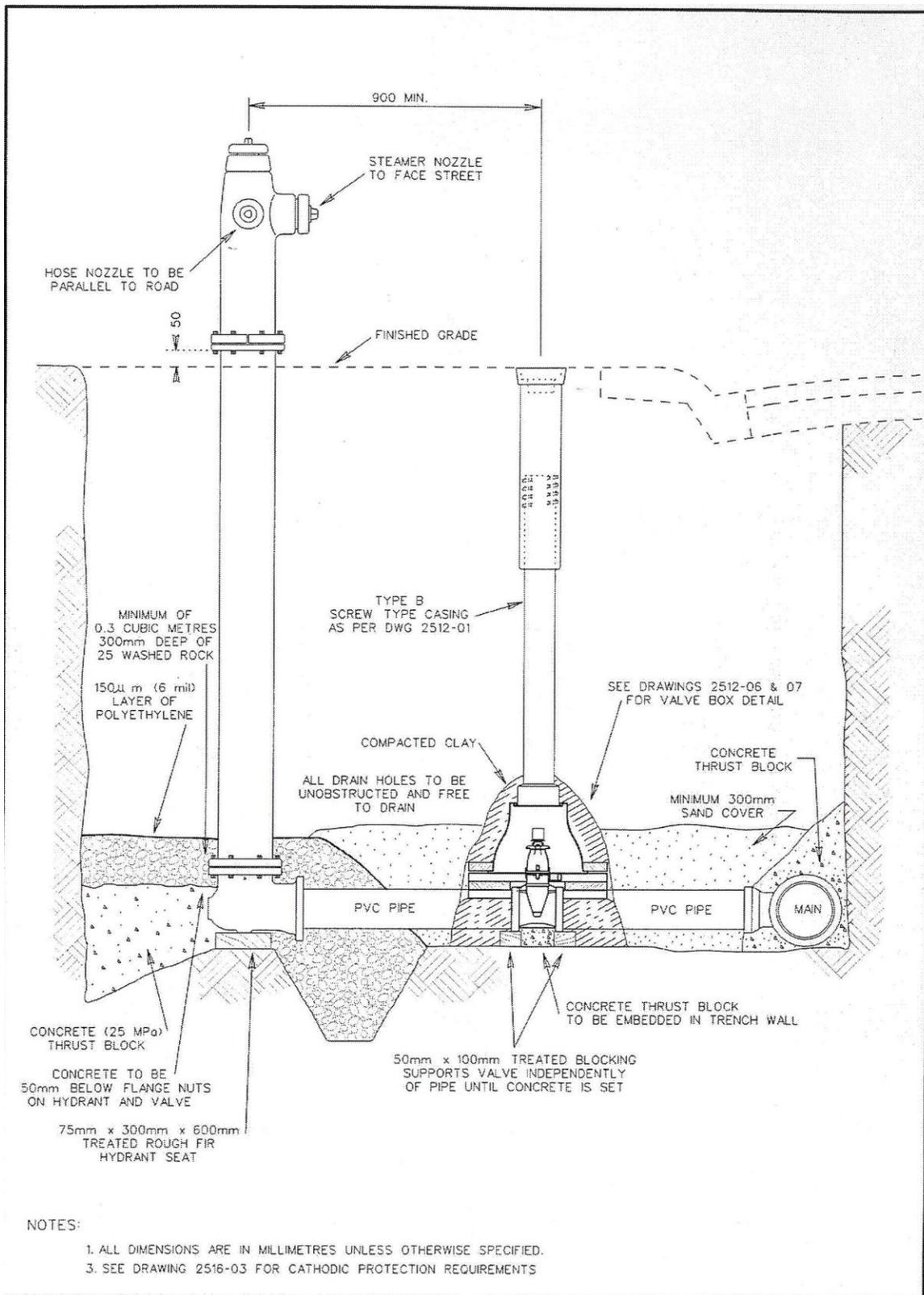
Flange Gate Valve



Tyton x Flange Gate Valve

Tapping Valves

- Tapping valves differ slightly from the standard Flange x Tyton Gate Valves. Tapping Valves will have one Tyton end and one “machined” Flange end (no epoxy coating on the flange face). These valves are supplied with a Tyton Gasket, as well as a 304SS Bolt Pack (which includes a Red Rubber Gasket for the Flanged Connection).
- Since the machined flange face is not epoxy coated, it is important to keep tapping valves dry, to prevent this exposed side from rusting.



EPCOR		FIRE HYDRANT PLACEMENT (TYPICAL)	
APPROVED JAN. 2008	DRAWN BY Waldo Ponce	APPROVED <i>Aislan Oul</i>	OLD DRAWING 6220
SCALE N.T.S.	CHECKED BY S. P.	GENERAL MANAGER, NETWORK SERVICES AND OPERATIONS	DRAWING NUMBER 2513-01
			REVISION 2

Pipe Restraint

- A Pipe Restraint is used to restrain a piece of pipe. The pipe restraint has teeth or serrations on the inner surface that will grip the pipe when tightened. It can be used in conjunction with a Backup Ring (also known as a fitting restraint) to restrain a PVC fitting to the pipe.



Pipe Restraint



Pipe Restraint & Bell Restraint

Backup Ring (bell restraint)

- Backup Rings are used to restrain the bell of a piece of pipe or the bell of a PVC fitting. 304SS Redi-Rod nuts and washers are required to properly install.

Redi-Rod

- 304SS Redi-Rod is required to properly install joint restrainers and backup rings. The threaded rod comes in 12' lengths and is cut on site. Hex nuts and washers are sold along with the rod.



900C Flange Adapter

- The 900C Flange Adapter can be used to connect the end of a C900 PVC riser pipe to a Control valve for a building service. This is an above ground connection.



Fernco Coupling

- Fernco couplings are used to connect two pieces of pipe in a gravity sewer application. Use a Fernco Coupling to connect similar pipe, or different types of pipe (sizes or material).



304SS Stud Pack

- 304SS Bolt Packs are used when connecting 2 flanges. The Stud Pack consists of studs, nuts, washers and a black neoprene rubber gasket.

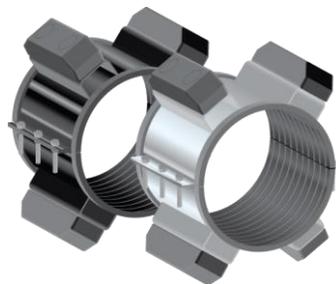
Anodes

- There are a couple different types of Anodes (Zinc, Magnesium). Zinc is the most common. 5lb Zinc Anodes are typically used for Valves and Cast Iron Fittings. 12lb Anodes are required when installing hydrants.
- The important thing to remember about anodes is they cannot get wet! Always store them in a dry location. When exposed to water, anodes release hydrogen gas and present a severe fire hazard.



Casing Spacers

- Casing spacers are used when a cased bore section of pipe is to be installed. The Casing Spacers are attached to the carrier pipe which is then pushed or pulled through a casing.



Repair Clamps

- Repair clamps can be used to fix a leak in a piece of pipe. These clamps are made with stainless steel and have a rubberized interior to provide a watertight seal.



Stainless Steel Inserts

- Stainless steel inserts are used when installing compression style fittings with Municipal Tubing. The insert prevents the tubing from collapsing.
- Inserts come in $\frac{3}{4}$ ", 1", $1\frac{1}{4}$ ", $1\frac{1}{2}$ ", and 2".



Weeping Tile/Drain Tube

- Both 4" (100' & 250' coils) and 6" (100' Coils) are stocked, in solid wall, perforated or perforated with sock.



SLD DRN
TUBE



Perforated
with Filter
Sock

Inserta Tees

- A cost effective way to efficiently tap Storm Services, 4" Inserta Tees are regularly stocked. Inserta Tees for 6" and larger services are also available upon request. Hole Saws for the 4" and 6" are in stock, larger hole saws are also available.



Cast Iron fittings

- Tyton Joint, Cast Iron fittings are used for water main installation when specified or as a contractor preference. We stock 4" thru to 12". Large sizes are available as well, within a couple days once an order is placed.

