

PART 1 - GENERAL

1.1 Related Work

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| .1 | Valves | Section 11240 |
| .2 | Mechanical | Division 15 |

1.2 Work Included

- .1 Supply and installation of process piping.

1.3 Testing

- .1 Test all piping systems to withstand a hydrostatic pressure equal to the 350 kPa.
- .2 Flush all systems thoroughly prior to testing.
- .3 Conduct tests with all equipment connected, support bracing, anchoring and blocking in place.
- .4 Pressurize sections between valves with valves closed and hold pressure for one hour.
- .5 Test piping system for period of 1 hour.

PART 2 - PRODUCTS

2.1 Piping and Fittings

- .1 Use CSA certified PVC Schedule 80 piping for all process piping unless otherwise indicated in the specifications or indicated on the plans.
- .2 PVC pipe shall be potable water approved Type 1 Grade 1 in accordance with ASTM D-1784.
- .3 All bolts and nuts shall be the proper size and strength for the pipe diameter and 1035 kPa working pressure.
- .4 All fittings shall be PVC Schedule 80 CSA B137 unless otherwise stated on plans.
- .5 Use Sch 80 male or female adapters to provide threaded ends to PVC piping.
- .6 All pipe and fittings 12 mm or smaller to be brass unless otherwise indicated.

2.2 PVC Cement

- .1 PVC cement - Use heavy bodied type equivalent to Ipex 717. Clear type not acceptable.
- .2 Primer - use Ipex P-70.

2.3 Flanges

- .1 For PVC pipe use vanstone type PVC Sch 80 solvent weld flanges.

2.3 Gaskets

- .1 Use NSF/ANSI 61 or approved full face gaskets.
 - .1 Gaskets shall be full face red rubber, 1.6 mm thick or approved equal in accordance with B7.

2.4 Nuts Bolts, Fasteners
and Screws

- .1 Use stainless steel type 316 (a) nuts, washers and bolts (b) screws and (c) fasteners in the assembly of valves, flanges, supports, fittings, hangers, etc.
 - .1 Ensure all bolts/nuts and washers have a grade identification mark on one face.
 - .2 Stamped ASTM A320/A320M.
 - .3 Provide manufacturers certification of product material type.

2.5 Existing Water
Supply Pipe

- .1 Copper
 - .1 Water – Water service and interior domestic piping - Copper pipe Type M (hard). Solder for joints shall not contain any lead, i.e. nickel instead of lead.

2.6 Hangers and
Supports

- .1 All pipe hangers or supports to be constructed of rust proof materials - galvanized steel or stainless steel unless specifically stated elsewhere in specifications or shown on the plans.
 - .1 For galvanized coat all cut ends with zinc rich primer.
- .2 Hanger and support spacing and alignment as per pipe manufacturer's recommendations.
- .3 Hangers for piping off walls and ceilings to be Anvil -Strut or Uni-Strut type. Loads to building members only. Ensure loading does not exceed available design loading of support member.

PART 3 - EXECUTION

3.1 Pipe Assembly

- .1 Dry fit all piping prior to final solvent welding.

3.2 Misalignment

- .1 Do not use coupling(s) to correct misalignment between pipes.
- .2 Install all piping true and plumb.

3.3 PVC Joint Solvent
Welding Procedure

- .1 Cut end of pipe square; remove all burrs from the inside and outside of the pipe with a file. Cut 15° chamfer to a depth of 2.5 mm. Clean pipe with a clean, dry rag.
- .2 Check pipe and fittings for fit (**DRY**). For proper fit the pipe must fully bottom in the socket with no interference but without excessive tolerance. Use brush applicator for sizes less than 75 mm or roller applicator for sizes greater than 75 mm to apply primers and cement.
- .3 Using proper applicator apply primer freely to fitting socket keeping the surface wet for minimum 10-15 seconds. Redip the applicator in primer as required. Remove puddling by

tilting the socket to allow excess to run to waste. Apply primer to the pipe in the same manner as the socket. A second application of primer in the socket is required if the fitting surface is especially hard.

- .4 Immediately and while surfaces are still wet apply appropriate PVC cement with the appropriate applicator. Cement must be in a fluid condition, if it is "gel-like" or "ropey" it should not be used.
- .5 Stir the cement and apply a full even layer of cement to the pipe. Flow the cement on with the applicator - do not brush it out to a thin paint type layer which will dry in a few seconds.
- .6 Apply a medium layer of cement to the fitting socket; avoiding puddling cement in the socket. Apply a second full layer of cement to the pipe.
- .7 Assemble the pipe and fitting without delay. Cement must be wet. Ensure the pipe bottoms in the fitting socket. If possible, twist the pipe 1/8 to 1/4 turn as you insert it. Hold the pipe together for 15-30 seconds to eliminate push out.
- .8 After assembly the joint should have a ring or bead of cement completely around the junction of the pipe and fitting. If voids in this ring are present sufficient cement was not applied and the joint may be deemed defective.
- .9 Handle newly assembled joints carefully until initial set has taken place. Initial set times are as per the following.

Temperature Range	Pipe Sizes 12 to 32	Pipe Sizes 40 to 50	Pipe Sizes 60 to 200
16° to 38°C	2 min	5 min	30 min
5° to 16°C	5 min	10 min	2 hrs
-15° to 5°C	10 min	15 min	12 hrs

* In damp or humid weather allow 50% more set time; extended set times are required for chemical applications.

Note - Initial set time is the necessary time needed before the joint can be carefully handled.

3.4 Saddle Clamps

- .1 Drill hole through discharging tapping of saddle clamp.
- .2 Install and secure to ensure a tight fit without causing pipe deformation, prior to drilling the hole into the pipe.
- .3 Drill round type hole with sharp clean edges the maximum diameter allowed by the saddle.
- .4 Ensure cuttings and plug (core) from drilling the hole does not fall into the pipe.

3.5 Hangers and Supports

- .1 Install hangers to support all piping and equipment. If supporting a non rigid pipe on an exterior wall utilize supports as required to run pipe straight without "drooping".
- .2 Use sufficient hangers to restrain all piping and equipment from movement.
- .3 Ensure all brackets used are constructed of rust proof materials.

- .4 Secure piping to the wall, floor and ceiling in a firm manner that results in “no movement” under all operating conditions.

End Section 11250