



1. GENERAL

This section presents design guidelines for Pressure Reducing Stations (PRV) and concrete vaults to be installed within the the Black Mountain Irrigation District (BMID). PRVs are separated into two classifications that would be determined by the BMID based on location of the station, watermain size, and service area.

- 1 **Class 1;** Defined as a major PRV station. Has all features required for a Class 2 Station but in addition includes a magnetic flowmeter and remote terminal unit RTU for pressure recording upstream and downstream of the pressure reducing valve.
- 2 **Class 2;** Defined as the standard BMID PRV station.

1.1 Station Location

- .1 Location to be public right of way or defined easement acceptable to the BMID. Lands adjacent to station is to be graded for positive drainage away from station.

1.2 Bypass Requirements

- .1 Bypass lines are required for all station

1.3 Step Down in Station Size

- .1 One size step down is allowed for piping and valves through PRV station, subject to engineering approval. Piping can be reduced either inside or outside of vault subject to restrictions in working space.

2 PRODUCTS

2.1 Vault

- .1 Concrete vaults to be pre-cast. Shop drawings of the vault are to be submitted to BMID for review. If vault is cast-in-place, the structure is to meet H2O loading and be designed by Professional Engineer.
- .2 A minimum clearance of 0.45 m from piping to walls to be provided for sufficient room for working.
- .3 Minimum inside height 1.98 metres

2.2 Vault Hatch

- .1 Hatch to be Bilco, MSU or approved equal. Hatch to have drip proof lid. Manhole or B.C. Tel lid is not acceptable.

2.3 Vent Pipes

- .1 2 - 100 mm \varnothing vent pipes c/w bird screen. One vent pipe is to extend to underside of vault roof interior, one to 300 mm above from vault floor. Pipes are to vent through station kiosk.



2.5 Electrical

- .1 Electrical enclosure; kiosk above ground. NEEMA IV weatherproof for outdoor service.
- .2 Electrical service to station; 120volt, 60amp service (min).
- .3 Ventilation Fan; 360 cfm Max., activated by switch in kiosk.
- .4 Lighting is required inside the station.
- .5 Heater, electrical, 1000 watt, plug in type, c/w built-in thermostat.
- .6 Dry contacts required in electrical panel for future B.C. Tel connections.
- .7 2 duplex receptacles are required.

2.6 Sump Drain

- .1 If sump cannot be drained to daylight by gravity, hydraulically operated sump drain or electrical sump pump to be installed. BCA type sump injector pump with double check valve acceptable.
- .2 Sump size, 300mm width x 300mm length x 450 mm depth.
- .3 Sump drain not to be connected to sewers if possibility of sewer back up exists.

2.7 Valves

- .1 Pressure Reducing Valves: "Clayton" or "Singer" type valve sized to match long term peak flows for the service area. Valve with clear poly pilot filter, wall mounted, c/w pipe to sump. Air gap on pipe to sump to be maintained.
- .2 Isolating valving on bypass line to be Ball valves for up to 50mm \varnothing , butterfly valves for 100 mm \varnothing and larger. Butterfly valves are to meet AWWA C504.
- .3 Valves: Wafer style is not allowed. Minimum of two valves required on watermain to allow servicing of PRV in the station. Additional valves are to be installed if necessary.
- .4 PRV is to have stainless steel body, trim and pilot lines.
- .5 PRV pilots are to be stainless steel.

2.8 Piping

- .1 Premanufactured pipe supports to be installed, similar to pipe supports as supplied by ITT Grinnell.
- .2 Minimum of one 1 - Victaulic coupling required inside station for flexibility
- .3 Flexible connections required 1.0 metres outside of each side of station, 1.0 metres from wall. Robar couplings acceptable.
- .4 Major piping inside station; stainless steel or Ssteel epoxy lined and coated as per AWWA C210 standard, flanged connections. All piping and fittings of stock sizes fabricated in factory. No field fabrication of fittings allowed for pipes larger than 50mm \varnothing .



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- .5 Bypass piping; Galvanized, field fabrication allowed.
- .6 All pipe painted and labeled complete with directional arrows. Coat all interior piping to AWWA Standards,
 - Inlet piping Mid Blue
 - Outlet piping Dark Green
 - Drain piping Gull Grey

2.09 Air Release

- .1 12mm \varnothing tap into piping downstream from valve. Ball valve installation for manual control air release. Larger air release may be required for larger pipe installations.

2.10 Pressure Gauges

- .1 Select pressure gauge scale so that normal operating pressure falls within 50 to 80% of full scale.
- .2 Provide gauges 110mm diameter, 270 degree movement, 0.5% accuracy, full scale and suitable for bottom stem mounting.
- .3 Provide gauges with a 316 stainless steel bourdon tube.
- .4 Provide 300 series stainless steel cases, shatterproof glass, and the bottom connection 6mm NPT.
- .5 Provide each gauge with brass gauge cock.

2.11 Pressure Recording

- .1 Pressure Transmitter necessary in Class 1 Stations.

2.12 Meter

- .1 Installed in Class 1 stations only. Meter to be to accuracy of +/- 1 %. Analog output and have capability to send to recorder station and SCADA system.