

## Material Specification – 31

### SUPERVISORY CONTROL AND DATA ACQUISITION

**1. GENERAL**

SCADA equipment listed in this Specification needs to be approved by Denver Water.

**2. PLC FOR CONTROL SYSTEMS**

PLC for control systems needs to be preapproved by Denver Water's Process Control Section.

**3. PRESSURE TRANSMITTERS**

Pressure transmitters shall be Rosemount 3051S Series with 4 mA to 20 mA transmitter output, an LCD display, and NSF/ANSI 61 certified when required.

**4. CONTROL ENCLOSURES**

Control enclosures shall be Hoffman enclosures.

**5. FLOW TRANSMITTERS**

Flow transmitters shall be Rosemount differential pressure transmitter model 3051S Series with 4 mA to 20 mA transmitter output, an LCD display, and NSF/ANSI 61 certified when required. Two transmitters are required for flow indications. The high range transmitter shall be calibrated to 25% of the maximum design flow rate.

**6. INTRUSION ALARMS**

The limit switches for intrusion alarms shall be heavy duty precision turret head type. The limit switch assembly shall be enclosed in a die cast zinc standard box that is oil-tight and watertight with DPDT snap action, silver alloy type contacts. The turret head shall be a standard pretravel spring return with Viton shaft seals on the lever arm; the plunger and wobble stick boots shall be made of neoprene. The lever arm shall be operable in clockwise and counter-clockwise directions.

**7. WATER ON THE FLOOR ALARMS**

Water on the floor alarms shall not contain mercury. The float shall be SPDT and the alarm shall be wired normal closed.

**8. PRESSURE SIGHT GAUGES**

Pressure sight gauges shall be industry general service Grade 1A, 1.0% F.S. accuracy, 12-inch diameter face, epoxy painted aluminum case, AISI Type 316 stainless steel drawing C bourdon tube and socket, 1/4-inch NPT bottom piping connection, calibrated zero to maximum operational psi.

**9. TERMINAL BLOCKS**

Terminal blocks shall be Phoenix Controls UK 6, UK 6-FSI/C, UK 4-TG, and UK 5-MTK-P/P; din rail-mount with disconnect. Knife, plug, or lever fuse disconnects preferred.

**10. QUALITY CONTROL**

The Manufacturer shall submit a written statement that the inspection and all specified tests have been completed and that results comply with the requirements of these Standards. A copy of the certification shall be provided to Denver Water, if requested.