SECTION 46 00 00 00

ASR DOWN HOLE (PRESSURE – FLOW – LEVEL) CONTROL VALVE Sysyem

# GENERAL

## SUMMARY

### Section Includes:

#### Flow-control valve

#### Flow-control valve control system

## REFERENCES

### ASTM International (ASTM) Standard Specifications:

### Hydraulic Institute (HI) Standards

### American Water Works Association (AWWA):

### NSF international

#### Complies with all federal, state, and local laws or codes regarding NSF 61 lead free and NSF 372 drinking water system components.

## SUBMITTALS

### Project Data

#### Provide head loss calculations.

#### Provide flow calculations through valve.

#### Provide manufactures warranty statement.

### Shop Drawings:

#### Seismic anchorage calculations where required by federal, state or local requirements

#### Dimensional drawings of flow-control valve and any associated control system provided by valve manufacture

### Quality Assurance Submittals

#### Manufacturer’s Instructions: recommended procedures for storage and installation operation and maintenance manuals, bulletins, and spare parts lists.

#### Affidavits: Submit affidavit from the manufacturer stating the equipment has been properly installed, adjusted, and tested and is ready for full time operation.

### Closeout Submittals

#### Operation and maintenance manuals

#### Spare parts lists

## QUALITY ASSURANCE

### All equipment furnished under this Section shall: 1) be of a manufacturer who has been regularly engaged in the design and manufacture of the equipment for at least 5 years; and 2) be demonstrated to the satisfaction of the Engineer that the quality is equal to equipment made by those manufacturers specifically named herein

### Valve supplier shall have unit responsibility for furnishing all equipment specified under this section.

### Valve supplier shall be certified and recognized by NSF International as:

#### NSF 61 – Drinking Water System Components – Health Effects.

#### NSF 372 – Drinking Water System Components – Lead Content.

### Valve manufacture shall provide a 5 year installation and performance warranty of the valve only and one year on all other components. The warranty shall start upon given the notice of substantial completion.

# PRODUCTS

## Flow-control valve system

#### Manufacturer

##### 3R Valve, LLC; Echo, OR; (541) 571-0581

##### Or approved equal

#### Design Requirements

##### Valve shall be a 6” Valve that can be forced closed from the surface if there is a valve failure

##### Valve shall be provided with the following thread type:

###### NPT at both ends.

##### Valve and control system shall a closed loop system.

###### Valve and control system shall not require the customer – owner to purchase additional disposable products.

##### Valve and control system shall be designed to automatically maintain a flow setpoint under the following conditions:

###### Injection flow range: 0 gpm – 1,000 gpm

###### Differential head: 40 ft or greater but not to exceed 2000 ft (pending results from testing program)

##### Valve and control system shall be designed to automatically maintain a well head pressure setpoint under the following conditions:

###### Injection pressure range: 1 PSI – 150 PSI.

##### Valve and control system shall be designed to automatically maintain the aquifer level.

###### Aquifer level range : up to 2000 feet

##### Valve and vendor-designed control system shall automatically:

###### Regulate injection flows to user-specified flow setpoint

###### Regulate minimum pressure at the well head to user-specified setpoint

###### Regulate aquifer level if level transducer is installed.

##### Performance requirements

###### Maximum-allowable deviation from flow setpoint: 100 gpm

###### Average deviation from setpoint: 50 gpm

###### Maximum system power requirement:

Maximum Current: 18 / 14 amps

Voltage: 115 AC / 230 VAC

##### Functional requirements

###### Provide alarm signal for any of the following conditions

Injection flow above setpoint

Injection-flow below setpoint

Well-head pressure above setpoint

Well-head pressure below setpoint

Any malfunction of hydraulic power unit

Malfunction of control system

Provide valve position indicators/hydraulic pump isolators at the surface with PLC loop to show the valve position on the HMI

###### Provide 7 inch color human-machine interface (HMI) as a touch screen for

user-specified setpoints (flow, pressure and level)

Alarm setpoints for flow and pressure

End user remote access.

###### Use PID algorithm to automatically control flows into the deep-injection well based on user-specified flow setpoint

##### Provide local control panel with human-machine interface

###### User inputs:

Flow setpoint [gpm]

Flow deadband [gpm]

Well-head pressure [psig]

Well-head pressure deadband [psig]

Aquifer level [feet]

Aquifer level deadband [feet]

##### Valve Control:

###### Provide programmable logic controller with software to automatically implement all specified requirements.

Provide tag based PLC.

Allen Bradley – L16 Control Logix Controller or equal.

###### Provide Ethernet interface module to exchange data between Flow-control valve PLC and SCADA master

##### Trending Data:

###### Provide the following data for trending and reporting purposes.

Well flow.

Well head pressure.

Well aquifer level.

Valve position.

###### Trending data shall be accessible to owner for reporting purposes.

##### Graphing Data:

###### Provide the following data graph screens at the HMI.

Well flow.

Well pressure.

Well aquifer level.

Valve position.

#### Materials

##### Valve body: 316L stainless steel

##### Hydraulic hose: NSF 61 certified

##### Local control panel

###### NEMA 4X

# EXECUTION

## INSTALLATION

### Install the valve per manufacturer's installation instructions.

## FIELD SERVICE

### The equipment manufacturer shall supply a competent field service engineer to thoroughly check and inspect the equipment after installation, place the equipment in operation, make necessary adjustments, calibrate instruments, and conduct field tests.

End of section