PART 1 - INTRODUCTION

1.1 PURPOSE
   A. This section is intended to define the general installation and minimum product requirements for hydronic and steam valves.

PART 2 - GENERAL DESIGN REQUIREMENTS

2.1 GENERAL VALVE REQUIREMENTS

   A. Refer to the most current version of the Service Index Standard 23 05 23 01 for approved valve types.
   B. Valve Pressure and Temperature Ratings: Not less than indicated and as required for system operating, maximum, and test pressures and temperatures.
   C. Manual Valve Sizes: Same as upstream piping unless otherwise indicated.
   D. Valve Actuator Types:
      1. Gear Actuator: For quarter-turn valves with wheels NPS 6 and larger.
      2. Hand wheel: Fastened to valve stem, for valves other than quarter turn.
      3. Hand lever: For quarter-turn valves NPS 6 and smaller.
      4. Wrench: For plug valves with square heads. Furnish Owner with 1 wrench for every plug valve, for each size square plug-valve head.
      5. Chain wheel: Device for attachment to valve hand wheel, stem, or other actuator; for all valves installed 6 feet or higher above finished floor extend chains to an elevation of 5 feet above finished floor. Chain shall be equipped with clasp and hook to secure chain as not to be in the path of egress.
   E. Valves in Insulated Piping: Provide valve handle stem extensions and the following features:
      1. Gate Valves: With rising stem.
      3. Ball Valves: With extended operating handle of non-thermal-conductive material, and protective sleeve that allows operation of valve without breaking the vapor seal or disturbing insulation.
   F. Valve-End Connections:
      1. Flanged: With flanges according to ASME B16.1 for iron valves.
      2. Grooved: With grooves according to AWWA C606.
      4. Threaded: With threads according to ASME B1.20.1.
      5. Valve Bypass and Drain Connections: MSS SP-45.
   G. By-pass and Drain Connections: Isolation valves shall be provided with by-passes for Pressure Reducing Stations (PRS) and other systems as directed by Yale. Comply with MSS SP-45 bypass and drain connections.
H. Wet Tap/ Hot Tap Valves
   1. Valves shall conform to the requirements of this and other applicable university standards.

2.2 MANUAL VALVE DESIGNATION
   A. This section includes the valve identification code, and Standard used in the Service Index.

1. Table 1: Valve Identification

<table>
<thead>
<tr>
<th>Valve Designation</th>
<th>Valve Type</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA</td>
<td>Ball</td>
<td>Ball Valves</td>
</tr>
<tr>
<td>BF</td>
<td>Butterfly</td>
<td>Butterfly Valves</td>
</tr>
<tr>
<td>GA</td>
<td>Gate</td>
<td>Gate Valves</td>
</tr>
<tr>
<td>PL</td>
<td>Plug</td>
<td>Plug Valves</td>
</tr>
<tr>
<td>GL</td>
<td>Globe</td>
<td>Globe Valves</td>
</tr>
<tr>
<td>CK</td>
<td>Check</td>
<td>Check Valves</td>
</tr>
</tbody>
</table>

2.3 DESIGN DOCUMENT REQUIREMENTS
   A. The design drawings shall include a riser and flow diagram and details of system specialties for all HVAC systems. Collectively, the drawing elements shall capture and illustrate all valve applications including: shut-off, balancing, bypass, control, direction flow control, and drain valves.

   B. The riser flow diagram shall include valve tags as identified in the university Service Index and applicable Valve Standard.

   C. Standard details, and plan view drawings shall include valves, and specialty items. Valves and specialty items shall be tagged per university Service Index.

2.4 DESIGN SYSTEM REQUIREMENTS:
   A. Where new piping connections are indicated to be connected to existing system, the consultant shall confirm and indicate in the contract documents the location of existing isolation valves. If there are no existing isolation valves to connect the new piping to existing piping without requiring a pipe freeze, wet, or hot tap the consultant shall identify the scope of work in the contract documents. The scope of work shall identify the following
      1. Location of POC
      2. System and equipment interruption and coordination shutdowns.
      3. Type of tie-in procedure
      4. Work associated with recommissioning existing system

   B. Valve flange rating shall be compliant with system working, maximum and test pressure, per ANSI pressure classification tables.
C. Within each building there shall be a building valve to isolate the service to the building.

D. Isolation valves shall be provided at all pumps, tanks, reducing and automatic or mechanical flow control devices, radiation, coils and heat exchangers, and at all other apparatus requiring partial drainage of the system for periodic maintenance or inspection. The isolation valves shall be so located as to permit removal and/or service of the isolated equipment without draining complete or substantial portions of the system. Except where flanged valves are used, each connection to equipment shall be made with screwed or flanged union on the equipment side of the valve.

E. Isolation valves shall be provided at supply and return branch takeoffs from the system supply and return mains. A main is considered to be either a riser from one level to another, or a horizontal run of pipe which supplies terminal type equipment such as but not limited to VAV RH coils, or Fine-Tube Radiation.

F. Check valves will be installed where required to prevent backflow. Examples include but are not limited to locations where parallel pumps are installed and only one unit will operate. Check valves installed in the horizontal position shall be swing checks; valves installed in the vertical position shall be silent checks.

G. Strainers shall have isolation valves up and down stream of strainer, to avoid draining the entire system or hydronic circuit the strainer serves.

H. Provide blow-down valves at all strainers, and pipe to drain.

I. Risers shall have drain valves installed at the low point to permit draining of supply and return risers without impacting other system risers. Drain valves shall have approved ball valve type hose bibs and caps.

J. Provide balancing valves in the branch lines of water systems where hydraulic disparities between the branches may exist.

K. Provide isolation valves of water piping leaving MER's to permit repairs of MER equipment without draining the entire system.

L. High-performance butterfly valves shall be in the closed position during installation in the piping systems. Leave all valves in the closed position at the completion of the installation.

2.5 MECHANICAL IDENTIFICATION REQUIREMENTS

A. Manual and control valves shall be labeled with 1-1/2” (one and one half inch) brass tags bearing a letter to indicate the service and a number to indicate the valve. A permanent valve chart and system schematic diagram shall show the location of all valves. Valve Tags and schematic diagram names shall be coordinated with the final P&ID diagram.
B. Valves shall have the name of the manufacturer and the nominal size of the valve on the body or bonnet or shown on a permanently attached plate in die-stamped letters.

2.6 INDUSTRY STANDARDS, CODE AND MANUFACTURE REQUIREMENTS

A. Valves for potable water service shall comply with the most current version NSF 61, SDWA and shall not exceed the allowable content of lead.

B. Valves and flanges shall comply with applicable ANSI, AWWA, API, ASTM, ASME, OSHA, and MSS requirements.

C. Valve installation shall be in accordance with manufacturer's recommendations.

PART 3 - MINIMUM PRODUCT CRITERIA

3.1 PRODUCT DATA SHEETS

See following Product Data Sheets.
VALVE DATA SHEET

Valve tag: BA-1
Function: On/off
Service: Steam: Low, Medium, High-Pressure, Steam Condensate Gravity and Pumped
Class: Class 600: ¼ inch to 2 inch;
Pressure: Refer to Service Index and Piping Standard for minimum requirements
Temperature, F: 500 F, max
Vacuum: 29 in. Hg
Body: ASTM A216 WCB
Ball: 316 SS (ball and stem)
Trim: -
Seats: TFM
Seals: Graphite (Body)
Packing: NOVA
End connection: Threaded, Socket, Butt, Class 300 and 600 Flange (match to valve).
Body construction: Three piece
Trim construction: N/A
Accepted Models:

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Model Number</th>
<th>Size Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sharpe</td>
<td>Series 84-</td>
<td>2” and below</td>
</tr>
<tr>
<td></td>
<td>46MG-“XX”-L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Notes:
1.) Shall be full port ball valve
2.) Condensate valves shall accommodate schedule-80 pipe.
3.) Provide appurtenances as outlined in this standard.
VALVE DATA SHEET

Valve tag: BA-2
Function: On/off
Service: Chilled Water, Heating Hot Water, Condenser Water
Class: -
Pressure: 600 psi CWP, 150 psi SWP
Temperature, F: 400 F, max
Vacuum: 29 in. Hg
Body: Bronze, B584-C84400
Ball: 316 SS Ball and Stem
Trim: 316 SS
Seats: RPTFE
Seals: -
Packing: RPTFE
End connection: Threaded, Solder
Body construction: Two piece
Trim construction: N/A

Accepted Models:

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Model Number</th>
<th>Size Range (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apollo</td>
<td>77F-140/240</td>
<td>2” and below</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Notes:
4.) Provide appurtenances as outlined in this standard.
VALVE DATA SHEET

Valve tag: BA-3
Function: On/off
Service: Potable, Well, and Tempered Water

Pressure: 600 psi CWP, 150 psi SWP
Temperature, F: 400 F, max
Vacuum: 29 in. Hg
Body: Lead Free Brass, C27451
Ball & Stem: Stainless Steel Ball and Stem
Trim: Lead Free
Seats: RPTFE
Seals:
Packing: RPTFE
End connection: NPT, Solder
Body construction: Two piece
Trim construction: N/A

Accepted Models:

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Figure Number</th>
<th>Size Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apollo</td>
<td>77FLF-140/240</td>
<td>1/4 .. 4 inch</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Notes:
1. Full ported valves
2. Provide appurtenances as outlined in this standard.
VALVE DATA SHEET

Valve tag: BA-4

Function: On/off

Service: LP, Natural Gas, and Fuel Oil

Pressure: 600 psig CWP, 150 psig SWP, 250 psig LP Gas,

Temperature, F: -

Vacuum: -

Body: Bronze

Ball: Brass, Chrome Plated

Trim: -

Seats: RPTFE

Seals: RPTFE

Packing: -

End connection: NPT

Body construction: Two piece

Trim construction: N/A

Accepted Models:

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Figure Number</th>
<th>Size Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apollo</td>
<td>80-100 Series</td>
<td>3” and less</td>
</tr>
</tbody>
</table>

Notes:
1.) UL Listed for LP and Natural Gas, 250 F Heated #6 Oil.
2.) Provide appurtenances as outlined in this standard.
VALVE DATA SHEET

Valve tag: BA-5

Function: On/off

Service: Medical Compressed Air, and Vacuum

Class: -

Pressure: 600 CWP, 150 psi SWP

Temperature, F: 350 F, max

Vacuum: 29 in. Hg

Body: Bronze, B584-C84400

Ball:

Trim: -

Seats: -

Seals: -

Stem Packing:

End connection: Solder

Body construction: Three piece

Trim construction: N/A

Accepted Models:

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Model Number</th>
<th>Size Range (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apollo</td>
<td>82-200</td>
<td>¼ - 4</td>
</tr>
</tbody>
</table>

Notes:
1.) Full port ball valve.
2.) Provide appurtenances as outlined in this standard.
VALVE DATA SHEET

Valve tag: BA-6
Function: On/off
Service: Lab Compressed Air
Class: -
Pressure: 600 psi CWP, 150 psi SWP
Temperature, F: 350 F, max
Vacuum: 29 in. Hg
Body: Bronze, B584-C84400
Ball: -
Trim: -
Seats: -
Seals: -
Stem Packing: -
End connection: - Solder
Body construction: Two piece
Trim construction: N/A

Accepted Models:

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Model Number</th>
<th>Size Range (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apollo</td>
<td>77-200</td>
<td>¼ - 2-1/2</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Notes:
1.) Full port ball valve.
2.) Provide appurtenances as outlined in this standard.
VALVE DATA SHEET

Valve Specification: BF-1
Valve Type: Butterfly
Function: Shutoff
Service: Steam and Condensate
Design Code: API 609, ASME B16.34
Size: 2.5” and above
Pressure Class: 150

Body
- ASTM A216 WCB Carbon Steel
- P265GH (ASTM A516 Gr. 60) Carbon Steel

Stem
- 410 Stainless Steel
- 431 Stainless Steel

Disc:
- ASTM A105 Carbon Steel
- A216 WCB Carbon Steel
- P265GH (ASTM A516 Gr. 60) Carbon Steel

Seat:
- Stellite Gr. 21
- Inconel 625

Seal:
- 316Ti/Graphite or Duplex/Graphite

Packing:
- Graphite

End Connection:
- Lug/Class 150 RF Flange

Special Features:
- Gear Operator

Accepted Models:

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Pattern/Figure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vanessa</td>
<td>30,000 MLAAC</td>
</tr>
<tr>
<td>Quadax</td>
<td>EQA1AX</td>
</tr>
<tr>
<td>Velan</td>
<td>Torqueseal M-0C</td>
</tr>
</tbody>
</table>
VALVE DATA SHEET

Valve Specification: BF-2
Valve Type: Butterfly
Function: Shutoff
Service: Steam and Condensate
Design Code: API 609, ASME B16.34
Size: 2.5” and above
Pressure Class: 300

Body
ASTM A216 WCB Carbon Steel
P265GH (ASTM A516 Gr. 60) Carbon Steel

Stem
410 Stainless Steel
431 Stainless Steel

Disc:
ASTM A105 Carbon Steel
A216 WCB Carbon Steel
P265GH (ASTM A516 Gr. 60) Carbon Steel

Seat:
Stellite Gr. 21
Inconel 625

Seal:
316Ti/Graphite or Duplex/Graphite

Packing:
Graphite

End Connection:
Lug/Class 300 RF Flange

Special Features: Gear Operator

Accepted Models:

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Pattern/Figure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vanessa</td>
<td>30,000 MLBBC</td>
</tr>
<tr>
<td>Quadax</td>
<td>EQA1BX</td>
</tr>
<tr>
<td>Velan</td>
<td>Torqueseal M-1C</td>
</tr>
</tbody>
</table>
**VALVE DATA SHEET**

Valve tag: BF-3  
Function: On/off  
Service: Chilled Water, Heating Hot Water, Condenser Water  
Pressure: ANSI Class 150  
Temperature, F: 500, F max  
Body: ASTM A216 WCB  
Operator: 8 inch and under, lever operator with position latch for open, closed, and intermediate positions.  
10 inch and over, manual enclosed gear operator.  
Shaft: 316 SS or 17-4 PH SS  
Disc: 316 SS  
Seats: PTFE  
Seals: PTFE  
Packing: PTFE  
End connection: ANSI Class 150  
Body construction: Lug RF Flange  

**Accepted Models:**

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Figure Number</th>
<th>Trim Codes</th>
<th>Size Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jamesbury</td>
<td>815L</td>
<td>-</td>
<td>2-1/2” to 24”</td>
</tr>
<tr>
<td>Keystone</td>
<td>K-Lok 362</td>
<td>-</td>
<td>2-1/2” to 24”</td>
</tr>
<tr>
<td>DeZurik</td>
<td>BHP L1</td>
<td>-</td>
<td>2-1/2” to 24”</td>
</tr>
</tbody>
</table>

Notes:  
1.) Valve shall be rated for bi-directional flow.  
2.) Provide appurtenances as outlined in this standard.  
3.) Valve shall be bubble tight rated.
VALVE DATA SHEET

Valve Specification: GA-1
Valve Type: Gate
Function: Shutoff
Service: Steam and Condensate: Low, Medium, & High Pressure
Design Code: API 602, ASME B16.34
Size: 2” and below
Pressure Class: 800
Body: ASTM A105 Carbon Steel
Bonnet: ASTM A105 Carbon Steel
Trim: 13% Cr 410 Stainless Steel
Disc Surface: 13% Cr 410 Stainless Steel
Seat Surface: CoCr HF (Stellite)
Packing: Graphite
End Connection: Thread or Socket Weld

Accepted Models:

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Figure Number</th>
<th>Size Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vogt</td>
<td>12111</td>
<td>2” and less</td>
</tr>
<tr>
<td>Velan</td>
<td>2054B-02TY</td>
<td>-</td>
</tr>
<tr>
<td>Bonney Forge</td>
<td>HL11</td>
<td></td>
</tr>
<tr>
<td>Sharpe</td>
<td>3483-4</td>
<td>-</td>
</tr>
</tbody>
</table>

Notes:
1.) Provide appurtenances as outlined in this standard.
VALVE DATA SHEET

Valve Specification: GA-2
Valve Type: Gate
Function: Shutoff
Service: Steam and Condensate
Design Code: API 600, ASME B16.34
Size: 2.5” and above
Pressure Class: 150
Body: ASTM A216 WCB Carbon Steel
Bonnet: ASTM A216 WCB Carbon Steel
Trim: 13% Cr 410 Stainless Steel
Disc Surface: 13% Cr 410 Stainless Steel
Seat: CoCr HF (Stellite)
Packing: Graphite
End Connection: ANSI Class 150 RF Flange

Accepted Models:

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Pattern/Figure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crane</td>
<td>47XUF</td>
</tr>
<tr>
<td>Powell</td>
<td>1503FC8</td>
</tr>
<tr>
<td>Velan</td>
<td>0064C-02TY</td>
</tr>
<tr>
<td>Sharpe</td>
<td>35114</td>
</tr>
</tbody>
</table>
**VALVE DATA SHEET**

Valve Specification: GA-3  
Valve Type: Gate  
Function: Shutoff  
Service: Steam and Condensate  
Design Code: API 600, ASME B16.34  
Size: 2.5” and above  
Pressure Class: 300  
Body: ASTM A216 WCB Carbon Steel  
Bonnet: ASTM A216 WCB Carbon Steel  
Trim: 13% Cr 410 Stainless Steel  
Disc Surface: 13% Cr 410 Stainless Steel  
Seat: CoCr HF (Stellite)  
Packing: Graphite  
End Connection: ANSI Class 300 RF Flange  
Accepted Models:

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Pattern/Figure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crane</td>
<td>37XUF</td>
</tr>
<tr>
<td>Powell</td>
<td>3003FC8</td>
</tr>
<tr>
<td>Velan</td>
<td>1064C-02TY</td>
</tr>
<tr>
<td>Sharpe</td>
<td>35314</td>
</tr>
</tbody>
</table>
VALVE DATA SHEET

Valve tag: GA-4
Function: On/off
Service: Chilled Water, Glycol Chilled Water, Heating Hot Water
Design pressure: 230 psig at 300 degrees F
Body: ASTM A216 WCB, cast steel
Bonnet: ASTM A216 WCB, cast steel
Trim: API 8
Seats: -
Seals: -
Packing: Graphite
End connection: Class 150, RF, Butt Weld
Body construction: Bolted bonnet, OS&Y
Trim construction: Screwed

Accepted Models:

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Figure Number</th>
<th>Size Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milwaukee</td>
<td>1550 / 1552</td>
<td>2” to 12”</td>
</tr>
</tbody>
</table>

Notes:
1.) Heating Hot Water not to exceed 240 F
2.) Glycol Chilled water, check fluid compatibility with valve material.
3.) Provide appurtenances as outlined in this standard.
VALVE DATA SHEET

Valve tag: GA-5
Function: On/off
Service: Potable and Non-Potable Water

A. Gate Valves 3 inches and smaller shall be: Class 125, 200 psi non-shock cold water working pressure, ANSI / NSF61 cast bronze body and bonnet, solid bronze wedge, copper silicon alloy rising stem, teflon-impregnated packing with bronze packing nut, and with malleable iron hand wheel.

B. Manufacturer and Model: (Soldered End Connections)

1. Apollo Valve – Model 101S-LF
2. Hammond Valve – Model UP635
3. Milwaukee Valve Company – Model UP149

C. Gate Valves 4 inches and larger shall be: 200 psi non-shock cold water, ANSI / NSF 61, Class 125 cast iron flanged valve, cast iron body and bonnet, full port encapsulated wedge, brass alloy stem, and with cast iron hand wheel.

D. Manufacturer and Model: (Flanged End Connections)

1. Apollo Valve – Model 610F-LFA
2. Milwaukee Valve – Model F-2885-M26

Notes:
1.) Heating Hot Water not to exceed 240 F
2.) Glycol Chilled water, check fluid compatibility with valve material.
3.) Provide appurtenances as outlined in this standard.
VALVE DATA SHEET

Valve Specification: GL-1
Valve Type: Globe
Function: Throttling
Service: Steam and Condensate
Design Code: API 602, ASME B16.34
Size: 2” and below
Pressure Class: 800
Body: ASTM A105 Carbon Steel
Bonnet: ASTM A105 Carbon Steel
Trim: 13% Cr 410 Stainless Steel
Disc Surface: 13% Cr 410 Stainless Steel
Seat Surface: CoCr HF (Stellite)
Packing: Graphite
End Connection: Thread or Socket Weld

Accepted Models:

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Figure Number</th>
<th>Size Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vogt</td>
<td>12141</td>
<td>2” and below</td>
</tr>
<tr>
<td>Velan</td>
<td>2074B-02TY</td>
<td>2” and below</td>
</tr>
<tr>
<td>Bonney Forge</td>
<td>HL31</td>
<td>2” and below</td>
</tr>
<tr>
<td>Sharpe</td>
<td>4483-4</td>
<td>2” and below</td>
</tr>
</tbody>
</table>

Notes:
1.) Provide appurtenances as outlined in this standard.
VALVE DATA SHEET

Valve tag: PL-1
Function: On/Off
Service: No. 2 fuel oil
Design pressure: 125 psi at 100 degrees F
Body: Carbon steel
Trim: Stainless steel plug
Seats: Viton
Sleeve: Tufline XP sleeved PTFE
Packing: N/A
End connection: 2” and up: Flanged
½” through 1 ½”: Threaded

Accepted Models:

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Figure Number</th>
<th>Size Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>XOMOX</td>
<td>XX-066-TS-2-6-P1-WY-X</td>
<td>1/2 inch thru 1 1/2 inches</td>
</tr>
<tr>
<td>XOMOX</td>
<td>XX-067-TS-2-6-P1-WY-X</td>
<td>2 inches to 6 inches</td>
</tr>
</tbody>
</table>

Notes:
1.) Provide valve with locked closed option.
VALVE DATA SHEET

Valve tag: PL-2
Function: On/off
Service: Natural Gas and LPG
Design pressure: 200 psi at 150 degrees F
Body: Ductile iron
Trim: Lubricated
Seats: Ductile iron
Seals: TFE
Packing: N/A
End connection: Class 125 FF
Body construction: Bolted, wrench operated
Trim construction: Cylindrical port plug

Accepted Models:

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Figure Number</th>
<th>Size Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homestead</td>
<td>622 with 650 sealant</td>
<td>1 inch to 6 inches</td>
</tr>
</tbody>
</table>

Notes:
1.) Provide valve with locked closed option.
VALVE DATA SHEET

Valve Specification: CK-1
Valve Type: Check
Function: Check
Service: Steam and Condensate
Design Code: API 602, ASME B16.34
Size: 2” and below
Pressure Class: 800
Body: ASTM A105 Carbon Steel
Bonnet: ASTM A105 Carbon Steel
Trim: 13% Cr 410 Stainless Steel
Disc Surface: 13% Cr 410 Stainless Steel
Seat Surface: CoCr HF (Stellite)
Packing: Graphite
End Connection: Thread or Socket Weld

Accepted Models:

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Figure Number</th>
<th>Size Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vogt</td>
<td>S701</td>
<td></td>
</tr>
<tr>
<td>Velan</td>
<td>2114B-02TY</td>
<td></td>
</tr>
<tr>
<td>Bonney Forge</td>
<td>HL61</td>
<td></td>
</tr>
<tr>
<td>Sharpe</td>
<td>24834SC</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1.) Verify application before specifying check valve, for example swing or spring type.
VALVE DATA SHEET

Valve tag: CK-6

Function: Flow Direction,

Service: Sanitary, backwater type valve

Design pressure: -

Body: -

Trim: -

Seats: -

Seals: -

Packing: -

End connection: -

Body construction: -

Trim construction: -

Accepted Models:

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Figure Number</th>
<th>Size Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yale Approved</td>
<td>-</td>
<td>2 inch to 12 inches</td>
</tr>
</tbody>
</table>

Notes:
1.) Shall be accessible for service and repair.
2.) Locate inside building
3.) The applications for backwater valves vary, review design and approach with facility engineering for approval of application.

<table>
<thead>
<tr>
<th>Date</th>
<th>Description of Change</th>
<th>Pages / Sections Modified</th>
<th>ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>06/15/16</td>
<td>Entire document</td>
<td>-</td>
<td>mlamore</td>
</tr>
<tr>
<td>08/01/21</td>
<td>Coordinated valve types with Utilities and added additional Yale approved valves.</td>
<td>-</td>
<td>mlamore</td>
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