



Foster Wheeler USA Corporation

Contract N.: 1310087902

Client: Valero Refining Company - Texas

Location: Texas City, Texas

Project: Valero Refinery Reconfiguration (TCRR)

Piping Material Specification

Spec. No. : 10087902-SP-50-03

Class : A2Z

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Appr. by: L.SMITH

Issued for : E
Issued by: T.WILLIAMSON

Checked by: T.WILLIAMSON

Service:

AMINE SERVICE,
(PWHT REQUIRED FOR ALL WELDS SEE JOB SPEC -88A1.)
(FOR BRANCH CONNECTIONS SEE ATTACHMENT "A")

Gaskets : SPIRAL WOUND GRAPHITE / S.S.304	Rating/Facing : CL150 RF	Corrosion : 0.125" (3.0MM) See Note 6	Facing Finish : ASME B16.5	Block Valve Trim : API TRIM No. 10	Weld Quality Insp : PER JOB SPEC -52A1	Stress Relief : YES (See Note 7)
Materials : CARBON STEEL PIPING & VALVES (SEE GENERAL NOTES 1 THRU 24)			Temp/Press Limits : 285 PSIG AT -20F TO 100F ; 260 PSIG AT 200F ; 230 PSIG AT 300F ; 200 PSIG AT 400F ; 170 PSIG AT 500F ; 140 PSIG AT 600F ; 125 PSIG AT 650F ; 110 PSIG AT 700F ; 95 PSIG AT 750F MAX. TEMP. (THUR 24") (30"-36"- 260 PSIG AT 100F) (See Note 8)			

Item Name	Range		Det	Rev
Unique/Client* Code	from	to		
GATE VALVE 512GQ0015	1/2"	2"	GAT	
Body Mat'l : ASTM A105 Codes : API 602 Body constr. : BOLTED BONNET Rating : 800# Ends : S.W. Trim constr. : PLAIN SOLID WEDGE, O.S.& Y. Trim Mat'l : API TRIM N.10 (SS.316 TRIM) Bolt Mat'l : PER API STANDARD 602. Gasket Mat'l : PER API STANDARD 602. Packing : GRAPHITE PACKING . Note : GENERAL NOTES FOR VALVES: SEE JOB SPEC 59B9 Operator : HANDWHEEL				
GATE VALVE 511GA0003	3"	24"	GAT	
Body Mat'l : ASTM A216 GR.WCB Codes : API 600 Body constr. : BOLTED BONNET Rating : 150# Ends : RF Face finish : ASME B16.5 Trim constr. : PLAIN OR FLEXIBLE SOLID WEDGE, O.S.& Y. Trim Mat'l : API TRIM N.10 (SS.316 TRIM) Bolt Mat'l : PER API STANDARD 600. Gasket Mat'l : PER API STANDARD 600. Packing : GRAPHITE PACKING . Note : GENERAL NOTES FOR VALVES: SEE JOB SPEC 59B9 Operator : HANDWHEEL				

* Client codes only, not including sizes



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GATE VALVE N 14" 24"

511GA0004

GATN

Body Mat'l : ASTM A216 GR.WCB
Codes : API 600
Body constr. : BOLTED BONNET
Rating : 150#
Ends : RF
Face finish : ASME B16.5
Trim constr. : PLAIN OR FLEXIBLE SOLID WEDGE, O.S.& Y.
Trim Mat'l : API TRIM N.10 (SS.316 TRIM)
Bolt Mat'l : PER API STANDARD 600.
Gasket Mat'l : PER API STANDARD 600.
Packing : GRAPHITE PACKING .
Note : GENERAL NOTES FOR VALVES: SEE JOB SPEC 59B9
Operator : GEAR OP (N) PINION SHAFT AT RIGHT ANGLE TO RUN OF VALVE.

GATE V.FP 1/2" 2"

512GA0003

GAFF

Body Mat'l : ASTM A105
Codes : API 602
Body constr. : BOLTED BONNET, FULL PORT.
Rating : 150#
Ends : RF
Face finish : ASME B16.5
Trim constr. : PLAIN SOLID WEDGE, FULL PORT, O.S. & Y.
Trim Mat'l : API TRIM N.10 (SS.316 TRIM)
Bolt Mat'l : PER API STANDARD 602.
Gasket Mat'l : PER API STANDARD 602.
Packing : GRAPHITE PACKING .
Note : GENERAL NOTES FOR VALVES: SEE JOB SPEC 59B9
Operator : HANDWHEEL

GATE V.FP 1/2" 2"

512GB0004

GAFF1

Body Mat'l : ASTM A105
Codes : API 602
Body constr. : BOLTED BONNET, FULL PORT.
Rating : 300#
Ends : RF
Face finish : ASME B16.5
Trim constr. : PLAIN SOLID WEDGE, FULL PORT, O.S. & Y.
Trim Mat'l : API TRIM N.10 (SS.316 TRIM)
Bolt Mat'l : PER API STANDARD 602.
Gasket Mat'l : PER API STANDARD 602.
Packing : GRAPHITE PACKING .
Note : GENERAL NOTES FOR VALVES: SEE JOB SPEC 59B9
Operator : HANDWHEEL

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GATE V.FP

1/2"

2"

GAFPS

512GQ0014

Body Mat'l : ASTM A105

Codes : API 602

Body constr. : BOLTED BONNET, FULL PORT.

Rating : 800#

Ends : S.W.

Trim constr. : PLAIN SOLID WEDGE, FULL PORT, O.S. & Y.

Trim Mat'l : API TRIM N.10 (SS.316 TRIM)

Bolt Mat'l : PER API STANDARD 602.

Gasket Mat'l : PER API STANDARD 602.

Packing : GRAPHITE PACKING .

Note : GENERAL NOTES FOR VALVES: SEE JOB SPEC 59B9

Operator : HANDWHEEL

DRIVE VALVE

1/2"

2"

GAD

512EQ0005

Body Mat'l : ASTM A105

Codes : API 602

Body constr. : EXTENDED BODY, BOLTED BONNET.

Rating : 800#

Ends : MALE PE x FEMALE NPT

Trim constr. : PLAIN SOLID WEDGE, O.S.& Y.

Trim Mat'l : API TRIM N.10 (SS.316 TRIM)

Bolt Mat'l : PER API STANDARD 602.

Gasket Mat'l : PER API STANDARD 602.

Packing : GRAPHITE PACKING .

Note : GENERAL NOTES FOR VALVES: SEE JOB SPEC 59B9

Operator : HANDWHEEL

INSTR. VALVE

1/2"

3/4"

GAI

512EQ0008

Body Mat'l : ASTM A105

Codes : API 602

Body constr. : EXTENDED BODY, BOLTED BONNET.

Rating : 800#

Ends : MALE NPT x FEMALE NPT

Trim constr. : PLAIN SOLID WEDGE, O.S.& Y.

Trim Mat'l : API TRIM N.10 (SS.316 TRIM)

Bolt Mat'l : PER API STANDARD 602.

Gasket Mat'l : PER API STANDARD 602.

Packing : GRAPHITE PACKING .

Note : GENERAL NOTES FOR VALVES: SEE JOB SPEC 59B9

Operator : HANDWHEEL

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GATE V. FLG.

1/2"

2"

GAF1

512GA0006

Body Mat'l : ASTM A105

Codes : API 602

Body constr. : BOLTED BONNET

Rating : 150#

Ends : RF

Face finish : ASME B16.5

Trim constr. : PLAIN SOLID WEDGE, O.S.& Y.

Trim Mat'l : API TRIM N.10 (SS.316 TRIM)

Bolt Mat'l : PER API STANDARD 602.

Gasket Mat'l : PER API STANDARD 602.

Packing : GRAPHITE PACKING .

Note : GENERAL NOTES FOR VALVES: SEE JOB SPEC 59B9

Operator : HANDWHEEL

GATE V. FLG.

1/2"

2"

GAF1

512GB0006

Body Mat'l : ASTM A105

Codes : API 602

Body constr. : BOLTED BONNET

Rating : 300#

Ends : RF

Face finish : ASME B16.5

Trim constr. : PLAIN SOLID WEDGE, O.S.& Y.

Trim Mat'l : API TRIM N.10 (SS.316 TRIM)

Bolt Mat'l : PER API STANDARD 602.

Gasket Mat'l : PER API STANDARD 602.

Packing : GRAPHITE PACKING .

Note : GENERAL NOTES FOR VALVES: SEE JOB SPEC 59B9

Operator : HANDWHEEL

GATE V. FLG.

3"

24"

GAF1

511GB0003

Body Mat'l : ASTM A216 GR.WCB

Codes : API 600

Body constr. : BOLTED BONNET

Rating : 300#

Ends : RF

Face finish : ASME B16.5

Trim constr. : PLAIN OR FLEXIBLE SOLID WEDGE, O.S.& Y.

Trim Mat'l : API TRIM N.10 (SS.316 TRIM)

Bolt Mat'l : PER API STANDARD 600.

Gasket Mat'l : PER API STANDARD 600.

Packing : GRAPHITE PACKING .

Note : GENERAL NOTES FOR VALVES: SEE JOB SPEC 59B9

Operator : HANDWHEEL

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GLOBE VALVE **1/2"** **2"**
512DQ0003

GLO

Body Mat'l : ASTM A105
Codes : API 602 / ASME B16.34
Body constr. : BOLTED BONNET
Rating : 800#
Ends : S.W.
Trim constr. : LOOSE DISC, O.S. & Y.
Trim Mat'l : API TRIM N.10 (SS.316 TRIM)
Bolt Mat'l : PER API STANDARD 602.
Gasket Mat'l : PER API STANDARD 602.
Packing : GRAPHITE PACKING .
Note : GENERAL NOTES FOR VALVES: SEE JOB SPEC 59B9
Operator : HANDWHEEL

GLOBE VALVE **3"** **8"**
511DA0003

GLO

Body Mat'l : ASTM A216 GR.WCB
Codes : API 600 / ASME B16.34
Body constr. : BOLTED BONNET
Rating : 150#
Ends : RF
Face finish : ASME B16.5
Trim constr. : PLUG DISC TYPE, O.S. & Y.
Trim Mat'l : API TRIM N.10 (SS.316 TRIM)
Bolt Mat'l : PER API STANDARD 600.
Gasket Mat'l : PER API STANDARD 600.
Packing : GRAPHITE PACKING .
Note : GENERAL NOTES FOR VALVES: SEE JOB SPEC 59B9
Operator : HANDWHEEL

CHECK VALVE **1/2"** **2"**
512CQ0004

CHE

Body Mat'l : ASTM A105
Codes : API 602 / ASME B16.34
Body constr. : BOLTED CAP
Rating : 800#
Ends : S.W.
Trim constr. : PISTON TYPE,T-BODY,HORIZONTAL INSTALLATION
Trim Mat'l : API TRIM N.10 (SS.316 TRIM)
Bolt Mat'l : PER API STANDARD 602.
Gasket Mat'l : PER API STANDARD 602.
Note : GENERAL NOTES FOR VALVES: SEE JOB SPEC 59B9

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CHECK VALVE **3"** **24"** **CHE**
511CA0003

Body Mat'l : ASTM A216 GR.WCB
Codes : API 600 / ASME B16.34
Body constr. : BOLTED CAP
Rating : 150#
Ends : RF
Face finish : ASME B16.5
Trim constr. : SWING TYPE, HORIZONTAL & VERTICAL INSTALLATION
Trim Mat'l : API TRIM N.10 (SS.316 TRIM)
Bolt Mat'l : PER API STANDARD 600.
Gasket Mat'l : PER API STANDARD 600.
Note : GENERAL NOTES FOR VALVES: SEE JOB SPEC 59B9

PIPE A/G **1/2"** **1-1/2"** **SCH. 160** **PIP**
541SG0003

Material : KILLED C.S. ASTM A106 GR.B
Manufact. : SMLS
Codes : ASME B36.10
Note : PIPE SHALL COMPLY WITH JOB SPEC 52A2
Ends : P.E.

PIPE A/G **2"** **2"** **SCH. XS** **PIP**
541SG0001

Material : KILLED C.S. ASTM A106 GR.B
Manufact. : SMLS
Codes : ASME B36.10
Note : PIPE SHALL COMPLY WITH JOB SPEC 52A2
Ends : P.E.

PIPE A/G **3"** **24"** **SCH. STD** **PIP**
541SG0002

Material : KILLED C.S. ASTM A106 GR.B
Manufact. : SMLS
Codes : ASME B36.10
Note : PIPE SHALL COMPLY WITH JOB SPEC 52A2
Ends : B.E.

PIPE A/G **30"** **36"** **SCH. STD** **PIP**
541WL0001

Material : C.S. ASTM A672 GR.C70 CL.22
Manufact. : E.F.W.
Codes : ASME B36.10
Note : PIPE SHALL COMPLY WITH JOB SPEC 52A2
Ends : B.E.

* Client codes only, not including sizes

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PIPE A/G	3"	24"	SCH. STD	PIP2
541SGAAAC				

Material : KILLED C.S. ASTM A106 GR.B
 Manufact. : SMLS
 Coating : PAINTING SYSTEM NO. 2, PER VALERO JOB SPEC NO. SP-80-02.
 Codes : ASME B36.10
 Note : PIPE SHALL COMPLY WITH JOB SPEC 52A2
 Ends : **PIPE**

NIPPLES	1/2"	2"	SCH. XXS	NIP
551NC0002				

Material : C.S. ASTM A106 GR.B
Codes : ASME B36.10
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2
Ends : T.O.E.

FLANGE	1/2"	1-1/2"	SCH. 160	FLG
561NB0008				

Type : S.W.
Material : ASTM A105
Codes : ASME B16.5
Rating : 150#
Ends : RF
Note : FLANGES SHALL COMPLY WITH JOB SPECS 50A2 AND 52A2

FLANGE	2"	2"	SCH. XS		FLG
561NB0004					

Type : S.W.
Material : ASTM A105
Codes : ASME B16.5
Rating : **150#**
Ends : **RF**
Note : FLANGES SHALL COMPLY WITH JOB SPECS 50A2 AND 52A2

FLANGE	3"	24"	SCH. STD	FLG
561WB0002				

Type: W.N.
Material: ASTM A105
Codes: ASME B16.5
Rating: **150#**
Ends: **RF**
Note: FLANGES SHALL COMPLY WITH JOB SPECS 50A2 AND 52A2



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FLANGE W.N. **30"** **36"** **SCH. STD** **FWN7A**
561WB0004

Type : W.N.
Material : ASTM A105
Codes : ASME B16.47 "A" (EX MSS-SP44)
Rating : **150#**
Ends : **RF**
Note : FLANGES SHALL COMPLY WITH JOB SPECS 50A2 AND 52A2

FLANGE W.N. **30"** **36"** **SCH. STD** **FWN7B**
561WB0003

Type : W.N.
Material : ASTM A105
Codes : ASME B16.47 "B" (EX API-605)
Rating : **150#**
Ends : **RF**
Note : FLANGES SHALL COMPLY WITH JOB SPECS 50A2 AND 52A2

FLANGE **1/2"** **1-1/2"** **SCH. 160** **FL1**
561NB0006

Type : S.W.
Material : ASTM A105
Codes : ASME B16.5
Rating : **300#**
Ends : **RF**
Note : FLANGES SHALL COMPLY WITH JOB SPECS 50A2 AND 52A2

FLANGE **2"** **2"** **SCH. XS** **FL1**
561NB0005

Type : S.W.
Material : ASTM A105
Codes : ASME B16.5
Rating : **300#**
Ends : **RF**
Note : FLANGES SHALL COMPLY WITH JOB SPECS 50A2 AND 52A2

FLANGE **3"** **24"** **SCH. STD** **FL1**
561WB0005

Type : W.N.
Material : ASTM A105
Codes : ASME B16.5
Rating : **300#**
Ends : **RF**
Note : FLANGES SHALL COMPLY WITH JOB SPECS 50A2 AND 52A2

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FLANGE F.F. 1/2" 1-1/2" SCH. 160

561NB0007

FLGFF

Type : S.W.
Material : ASTM A105
Codes : ASME B16.5
Rating : **150#**
Ends : **FF**
Note : FLANGES SHALL COMPLY WITH JOB SPECS 50A2 AND 52A2

FLANGE F.F. 2" 2" SCH. XS

561NB0003

FLGFF

Type : S.W.
Material : ASTM A105
Codes : ASME B16.5
Rating : **150#**
Ends : **FF**
Note : FLANGES SHALL COMPLY WITH JOB SPECS 50A2 AND 52A2

FLANGE F.F. 3" 24" SCH. STD

561WB0001

FLGFF

Type : W.N.
Material : ASTM A105
Codes : ASME B16.5
Rating : **150#**
Ends : **FF**
Note : FLANGES SHALL COMPLY WITH JOB SPECS 50A2 AND 52A2

BLIND FLANGE 1/2" 24"

561BB0001

FBL

Material : ASTM A105
Codes : ASME B16.5
Rating : **150#**
Ends : **RF**
Note : FLANGES SHALL COMPLY WITH JOB SPECS 50A2 AND 52A2

BLIND FLANGE 1/2" 24"

561BB0004

FBL1

Material : ASTM A105
Codes : ASME B16.5
Rating : **300#**
Ends : **RF**
Note : FLANGES SHALL COMPLY WITH JOB SPECS 50A2 AND 52A2

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BLIND F.47/A

30"

36"

FBL7A

561BB0003

Material : ASTM A105

Codes : ASME B16.47 "A" (EX MSS-SP44)

Rating : **150#**

Ends : **RF**

Note : FLANGES SHALL COMPLY WITH JOB SPECS 50A2 AND 52A2

BLIND F.47/B

30"

36"

FBL7B

561BB0002

Material : ASTM A105

Codes : ASME B16.47 "B" (EX API-605)

Rating : **150#**

Ends : **RF**

Note : FLANGES SHALL COMPLY WITH JOB SPECS 50A2 AND 52A2

ORIFICE FLG

2"

2"

SCH. XS

FTR

561CB0007

Material : ASTM A105

Component : ORIFICE FLANGE SET, WELD NECK TYPE

Codes : ASME B16.36

Rating : **300#**

Ends : **RF**

Hole Tape : N.2 HOLES 180 DEGREES 1/2" S.W.

Note : WITHOUT BOLTS AND GASKETS. FLANGES SHALL COMPLY WITH JOB SPECS 50A2, 52A2, AND 57B12 (JACK SCREWS).

ORIFICE FLG

3"

16"

SCH. STD

FTR

561CB0008

Material : ASTM A105

Component : ORIFICE FLANGE SET, WELD NECK TYPE

Codes : ASME B16.36

Rating : **300#**

Ends : **RF**

Hole Tape : N.2 HOLES 180 DEGREES 1/2" S.W.

Note : WITHOUT BOLTS AND GASKETS. FLANGES SHALL COMPLY WITH JOB SPECS 50A2, 52A2, AND 57B12 (JACK SCREWS).

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ORIFICE FLG **2"** **2"** **SCH. XS** **FTRI**
561CB0009

Material : ASTM A105
Component : ORIFICE FLANGE SET, WELD NECK TYPE
Codes : ASME B16.36
Rating : 300#
Ends : RF
Hole Tape : N.4 HOLES 90 DEGREES 1/2" S.W.
Note : USE ONLY FOR SPECIAL INSTR. CONNECTIONS. WITHOUT BOLTS AND GASKETS. FLANGES SHALL COMPLY WITH JOB SPECS 50A2, 52A2, AND 57B12 (JACK SCREWS).

ORIFICE FLG **3"** **16"** **SCH. STD** **FTRI**
561CB0010

Material : ASTM A105
Component : ORIFICE FLANGE SET, WELD NECK TYPE
Codes : ASME B16.36
Rating : 300#
Ends : RF
Hole Tape : N.4 HOLES 90 DEGREES 1/2" S.W.
Note : USE ONLY FOR SPECIAL INSTR. CONNECTIONS. WITHOUT BOLTS AND GASKETS. FLANGES SHALL COMPLY WITH JOB SPECS 50A2, 52A2, AND 57B12 (JACK SCREWS).

90 ELBOW **1/2"** **1-1/2"** **90E**
551HB0010

Material : C.S. ASTM A105
Component : 90 DEGREES ELBOWS
Codes : ASME B16.11
Rating : 6000#
Ends : S.W.
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2

90 ELBOW **2"** **2"** **90E**
551HB0001

Material : C.S. ASTM A105
Component : 90 DEGREES ELBOWS
Codes : ASME B16.11
Rating : 3000#
Ends : S.W.
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2

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90 ELBOW **3"** **24"** **SCH. STD** **90E**
551EF0001

Material : C.S. ASTM A234 WPB
Component : 90 DEGREES LONG RADIUS
Codes : ASME B16.9
Manufact. : SMLS
Ends : **B.W.**
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2

90 ELBOW **30"** **36"** **SCH. STD** **90E**
551EF0002

Material : C.S. ASTM A234 WPB
Component : 90 DEGREES LONG RADIUS
Codes : ASME B16.9
Manufact. : WELDED
Ends : **B.W.**
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2

45 ELBOW **1/2"** **1-1/2"** **45E**
551HB0011

Material : C.S. ASTM A105
Component : 45 DEGREES ELBOWS
Codes : ASME B16.11
Rating : **6000#**
Ends : **S.W.**
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2

45 ELBOW **2"** **2"** **45E**
551HB0002

Material : C.S. ASTM A105
Component : 45 DEGREES ELBOWS
Codes : ASME B16.11
Rating : **3000#**
Ends : **S.W.**
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2

45 ELBOW **3"** **24"** **SCH. STD** **45E**
551EF0003

Material : C.S. ASTM A234 WPB
Component : 45 DEGREES LONG RADIUS
Codes : ASME B16.9
Manufact. : SMLS
Ends : **B.W.**
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2

* Client codes only, not including sizes



Foster Wheeler USA Corporation

Contract N.: 1310087902

Client: Valero Refining Company - Texas

Location: Texas City, Texas

Project: Valero Refinery Reconfiguration (TCRR)

Piping Material Specification

Spec. No. : 10087902-SP-50-03

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45 ELBOW **30"** **36"** **SCH. STD** **45E**
551EF0004

Material : C.S. ASTM A234 WPB
Component : 45 DEGREES LONG RADIUS
Codes : ASME B16.9
Manufact. : WELDED
Ends : **B.W.**
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2

CAP **1/2"** **1-1/2"** **CAP**
551HB0012

Material : C.S. ASTM A105
Component : CAP
Codes : ASME B16.11
Rating : **6000#**
Ends : **S.W.**
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2

CAP **2"** **2"** **CAP**
551HB0003

Material : C.S. ASTM A105
Component : CAP
Codes : ASME B16.11
Rating : **3000#**
Ends : **S.W.**
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2

CAP **3"** **24"** **SCH. STD** **CAP**
551EF0006

Material : C.S. ASTM A234 WPB
Component : CAP
Codes : ASME B16.9
Manufact. : SMLS
Ends : **B.W.**
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2

CAP **30"** **36"** **SCH. STD** **CAP**
551EF0005

Material : C.S. ASTM A234 WPB
Component : CAP
Codes : ASME B16.9
Manufact. : WELDED
Ends : **B.W.**
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2

* Client codes only, not including sizes

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Foster Wheeler USA Corporation

Contract N.: 1310087902

Client: Valero Refining Company - Texas

Location: Texas City, Texas

Project: Valero Refinery Reconfiguration (TCRR)

Piping Material Specification

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PLUG 1/2" 2" **ROU**
551HB0004

Material : C.S. ASTM A105
Component : PLUG ROUND BAR STOCK L=75 MM (3")
Codes : ASME B16.11
Ends : SCRD
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2

PLUG ORI 1/2" 1/2" **ROUO**
551HB0005

Material : C.S. ASTM A105
Component : PLUG ROUND BAR STOCK L=75 MM (3")
Codes : ASME B16.11
Ends : P.E.
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2

CONC. RED. 3" 24" **SCH. STD** **CRE**
551RF0001

Material : C.S. ASTM A234 WPB
Component : CONCENTRIC REDUCER
Codes : ASME B16.9
Manufact. : SMLS
Ends : B.W.
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2

CONC. RED. 30" 36" **SCH. STD** **CRE**
551RF0002

Material : C.S. ASTM A234 WPB
Component : CONCENTRIC REDUCER
Codes : ASME B16.9
Manufact. : WELDED
Ends : B.W.
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2

ECC.RED. 3" 24" **SCH. STD** **ERE**
551RF0003

Material : C.S. ASTM A234 WPB
Component : ECCENTRIC REDUCER
Codes : ASME B16.9
Manufact. : SMLS
Ends : B.W.
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2

* Client codes only, not including sizes

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Contract N.: 1310087902

Client: Valero Refining Company - Texas

Location: Texas City, Texas

Project: Valero Refinery Reconfiguration (TCRR)

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ECC.RED. **30"** **36"** **SCH. STD** **ERE**
551RF0004

Material : C.S. ASTM A234 WPB
Component : ECCENTRIC REDUCER
Codes : ASME B16.9
Manufact. : WELDED
Ends : **B.W.**
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2

TEE **1/2"** **1-1/2"** **TEE**
551HB0013

Material : C.S. ASTM A105
Component : TEE
Codes : ASME B16.11
Rating : **6000#**
Ends : **S.W.**
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2

TEE **2"** **2"** **TEE**
551HB0006

Material : C.S. ASTM A105
Component : TEE
Codes : ASME B16.11
Rating : **3000#**
Ends : **S.W.**
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2

TEE **3"** **24"** **SCH. STD** **TEE**
551EF0007

Material : C.S. ASTM A234 WPB
Component : TEE
Codes : ASME B16.9
Manufact. : SMLS
Ends : **B.W.**
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2

TEE **30"** **36"** **SCH. STD** **TEE**
551EF0008

Material : C.S. ASTM A234 WPB
Component : TEE
Codes : ASME B16.9
Manufact. : WELDED
Ends : **B.W.**
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2

* Client codes only, not including sizes



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Client: Valero Refining Company - Texas

Location: Texas City, Texas

Project: Valero Refinery Reconfiguration (TCRR)

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RED.TEE **1/2"** **1-1/2"** **TER**
551FB0006

Material : C.S. ASTM A105
Component : REDUCER TEE
Codes : ASME B16.11
Ends : **S.W.**
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2
Rating : **6000#**

RED.TEE **2"** **2"** **TER**
551FB0004

Material : C.S. ASTM A105
Component : REDUCER TEE
Codes : ASME B16.11
Ends : **S.W.**
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2
Rating : **3000#**

CONC.SWAGE **1/2"** **2"** **SCH. 160** **CSA**
551SC0008

Material : C.S. ASTM A106 GR.B
Component : CONCENTRIC SWAGE
Codes : MANUFACTURED TO ASTM A234
Manufact. : SMLS
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2
Ends : **P.E.**

CONC.SWAGE **1/2"** **4"** **SCH. 160** **CSC**
551SC0009

Material : C.S. ASTM A106 GR.B
Component : CONCENTRIC SWAGE
Codes : MANUFACTURED TO ASTM A234
Manufact. : SMLS
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2
Ends : **LEB-SEP**

ECC.SWAGE **1/2"** **2"** **SCH. 160** **ESA**
551SC0031

Material : C.S. ASTM A106 GR.B
Component : ECCENTRIC SWAGE
Codes : MANUFACTURED TO ASTM A234
Manufact. : SMLS
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2
Ends : **P.E.**

* Client codes only, not including sizes

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Foster Wheeler USA Corporation

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Client: Valero Refining Company - Texas

Location: Texas City, Texas

Project: Valero Refinery Reconfiguration (TCRR)

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ECC.SWAGE **1/2"** **4"** **SCH. 160** **ESC**
551SC0011

Material : C.S. ASTM A106 GR.B
Component : ECCENTRIC SWAGE
Codes : MANUFACTURED TO ASTM A234
Manufact. : SMLS
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2
Ends : **LEB-SEP**

ELBOLET BW **3"** **36"** **SCH. STD** **ELBBW**
551WB0001

Material : C.S. ASTM A105
Component : ELBOLET
Codes : MSS SP97
Ends : **B.W.**
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2

ELBOLET SW **1/2"** **36"** **ELBS**
551LB0017

Material : C.S. ASTM A105
Component : ELBOLET
Codes : MSS SP97
Ends : **S.W.**
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2
Rating : **6000#**

ELBOLET SW **2"** **36"** **ELBS1**
551LB0010

Material : C.S. ASTM A105
Component : ELBOLET
Codes : MSS SP97
Ends : **S.W.**
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2
Rating : **3000#**

SOCKOLET **1/2"** **36"** **SOL**
551LB0018

Material : C.S. ASTM A105
Component : SOCKOLET
Codes : MSS SP97
Ends : **S.W.**
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2
Rating : **6000#**

* Client codes only, not including sizes

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Foster Wheeler USA Corporation

Contract N.: 1310087902

Client: Valero Refining Company - Texas

Location: Texas City, Texas

Project: Valero Refinery Reconfiguration (TCRR)

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SOCKOLET 2" 36" **SOL1**
551LB0011

Material : C.S. ASTM A105
Component : SOCKOLET
Codes : MSS SP97
Ends : **S.W.**
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2
Rating : **3000#**

WELDOLET 3" 36" **SCH. STD** **WOL**
551WB0002

Material : C.S. ASTM A105
Component : WELDOLET
Codes : MSS SP97
Ends : **B.W.**
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2

LATROLET BW 3" 36" **SCH. STD** **LATBW**
551WB0003

Material : C.S. ASTM A105
Component : LATROLET
Codes : MSS SP97
Ends : **B.W.**
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2

LATROLET SW 1/2" 36" **LATS**
551LB0016

Material : C.S. ASTM A105
Component : LATROLET
Codes : MSS SP97
Ends : **S.W.**
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2
Rating : **6000#**

LATROLET SW 2" 36" **LATS1**
551LB0012

Material : C.S. ASTM A105
Component : LATROLET
Codes : MSS SP97
Ends : **S.W.**
Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2
Rating : **3000#**

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Contract N.: 1310087902

Client: Valero Refining Company - Texas

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Project: Valero Refinery Reconfiguration (TCRR)

Piping Material Specification			
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FULL CPLG. 551HB0014	1/2"	1-1/2"	CPL
Material : C.S. ASTM A105 Component : FULL COUPLING Codes : ASME B16.11 Rating : 6000# Ends : S.W. Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2			
FULL CPLG. 551HB0007	2"	2"	CPL
Material : C.S. ASTM A105 Component : FULL COUPLING Codes : ASME B16.11 Rating : 3000# Ends : S.W. Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2			
UNION 551HB0008	1/2"	1-1/2"	GRO
Material : C.S. ASTM A105 Component : UNION, GROUND JOINT, INTEGRAL CS SEATS Codes : MSS SP83 Rating : 6000# Ends : S.W. Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2			
UNION 551HB0009	2"	2"	GRO
Material : C.S. ASTM A105 Component : UNION, GROUND JOINT, INTEGRAL CS SEATS Codes : MSS SP83 Rating : 3000# Ends : S.W. Note : FITTINGS SHALL COMPLY WITH JOB SPEC 52A2			

* Client codes only, not including sizes

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Contract N.: 1310087902

Client: Valero Refining Company - Texas

Location: Texas City, Texas

Project: Valero Refinery Reconfiguration (TCRR)

Piping Material Specification

Spec. No. : 10087902-SP-50-03

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Y STRAINER 592YA0012	1/2"	2"	YST
Body Mat'l : ASTM A216 GR.WCB Codes : ACCORDING TO MANUFACTURER'S STD Body constr. : BOLTED CAP Rating : 600# Ends : S.W. Screen Mat'l : S.S.304, .033" PERFORATION Bolt Mat'l : BODY BOLTING AND GLAND BOLTING PER MANUFACTURER'S STANDARD Gasket Mat'l : SPIRAL WOUND SS.304/GRAPHITE Note : TO BE SUPPLIED WITH S.W. BLOW-OFF CONNECTION.			
TEMP. CONIC. 592TE0001	2"	24"	TCS
Rating : 150# Codes : ASME B16.5 Ends : RF Material : C.S. CONICAL SCREEN. Mesh size : 14 GA PERFORATED PLATE WITH 1/8" DIA. HOLES ON 3/16" CENTERS, 200% OPEN AREA.			
TEMP. CONIC. 592TE0002	30"	36"	TCS
Rating : 150# Codes : ASME B16.47 "B" (EX API-605) Ends : RF Material : C.S. CONICAL SCREEN. Mesh size : 14 GA PERFORATED PLATE WITH 1/8" DIA. HOLES ON 3/16" CENTERS, 200% OPEN AREA.			
FIGURE 8 561FP0002	6"	12"	F8F
Material : ASTM A516 GR.70 Codes : ASME B16.48 Rating : 150# Ends : RF Face finish : ASME B16.5 Note : FLANGES SHALL COMPLY WITH JOB SPECS 50A2 AND 52A2			

* Client codes only, not including sizes

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Contract N.: 1310087902

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Location: Texas City, Texas

Project: Valero Refinery Reconfiguration (TCRR)

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PADDLE BLIND **1"** **4"** **PBL**
561PP0003

Material : ASTM A516 GR.70
Codes : ASME B16.48
Rating : 150#
Ends : RF
Face finish : ASME B16.5
Note : FLANGES SHALL COMPLY WITH JOB SPECS 50A2 AND 52A2

PADDLE BLIND **14"** **24"** **PBL**
561PP0003

Material : ASTM A516 GR.70
Codes : ASME B16.48
Rating : 150#
Ends : RF
Face finish : ASME B16.5
Note : FLANGES SHALL COMPLY WITH JOB SPECS 50A2 AND 52A2

PAD.B16.47/B **30"** **36"** **PAD7B**
561PP0011

Material : ASTM A516 GR.70
Codes : ASME B16.47 "B" (EX API-605)
Rating : 150#
Ends : RF
Note : FLANGES SHALL COMPLY WITH JOB SPECS 50A2 AND 52A2

DRIP RING **1"** **12"** **DRI**
561DP0008

Material : ASTM A516 GR.70
Codes : ASME B16.48
Rating : 150#
Ends : RF
Face finish : ASME B16.5
Hole on body : HOLE 3/4" SOCKET WELD
Note : FLANGES SHALL COMPLY WITH JOB SPECS 50A2 AND 52A2

SPACER RING **1"** **4"** **SPA**
561RP0003

Material : ASTM A516 GR.70
Codes : ASME B16.48
Rating : 150#
Ends : RF
Face finish : ASME B16.5
Note : FLANGES SHALL COMPLY WITH JOB SPECS 50A2 AND 52A2

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Project: Valero Refinery Reconfiguration (TCRR)

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SPACER RING **14"** **24"** **SPA**
561RP0003

Material : ASTM A516 GR.70
Codes : ASME B16.48
Rating : 150#
Ends : RF
Face finish : ASME B16.5
Note : FLANGES SHALL COMPLY WITH JOB SPECS 50A2 AND 52A2

SPA.R.47/B **30"** **36"** **SPA7B**
561RP0011

Material : ASTM A516 GR.70
Codes : ASME B16.47 "B" (EX API-605)
Rating : 150#
Ends : RF
Note : FLANGES SHALL COMPLY WITH JOB SPECS 50A2 AND 52A2

STUD BOLTS **1/2"** **4"** **STU**
572SC0002

Material : ASTM A193 GR.B7 / WITH (2) HEAVY HEX NUTS ASTM A194 GR.2H
Thrd Code : ANSI B18.2.1 & B18.2.2
Note : BOLTING SHALL COMPLY WITH JOB SPEC 52A3

GASK.16.47/B **30"** **36"** **GA1**
574SC0001

Material : SPIRAL WOUND SS.304/GRAPHITE
Codes : GASKET DIMENSIONS PER ASME B16.20 ; FLANGES DIMENSIONS PER ASME B16.47 "B" (API-605)
Thickness : 3.2 MM (1/8")
Rating : 150#
Ring Out/In : 3.2 MM (1/8") THK. OUTER C.S. RING / INNER SS.304 RING
Note : GASKETS SHALL COMPLY WITH JOB SPEC 52A3. GASKETS TO BE SUPPLIED W/O TAPE, STRING OR OTHER WRAPPING AROUND SPIRAL WINDING.
Ends : RF

* Client codes only, not including sizes

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GASK.16.47/A **30"** **36"** **GA2**
574SC0002

Material : SPIRAL WOUND SS.304/GRAPHITE

Codes : GASKET DIMENSIONS PER ASME B16.20 ; FLANGES DIMENSIONS PER ASME B16.47 "A" (MSS-SP44)

Thickness : 3.2 MM (1/8")

Rating : **150#**

Ring Out/In : 3.2 MM (1/8") THK. OUTER C.S. RING / INNER SS.304 RING

Note : GASKETS SHALL COMPLY WITH JOB SPEC 52A3. GASKETS TO BE SUPPLIED W/O TAPE, STRING OR OTHER WRAPPING AROUND SPIRAL WINDING.

Ends : **RF**

GASKET **1/2"** **24"** **GAS**
574SA0001

Material : SPIRAL WOUND SS.304/GRAPHITE

Codes : DIMENSIONS PER ASME B16.20

Thickness : 3.2 MM (1/8")

Rating : **150#**

Ring Out/In : 3.2 MM (1/8") THK. OUTER C.S. RING

Note : GASKETS SHALL COMPLY WITH JOB SPEC 52A3. GASKETS TO BE SUPPLIED W/O TAPE, STRING OR OTHER WRAPPING AROUND SPIRAL WINDING.

Ends : **RF**

GASKET **1/2"** **24"** **GAS1**
574SA0002

Material : SPIRAL WOUND SS.304/GRAPHITE

Codes : DIMENSIONS PER ASME B16.20

Thickness : 3.2 MM (1/8")

Rating : **300#**

Ring Out/In : 3.2 MM (1/8") THK. OUTER C.S. RING

Note : GASKETS SHALL COMPLY WITH JOB SPEC 52A3. GASKETS TO BE SUPPLIED W/O TAPE, STRING OR OTHER WRAPPING AROUND SPIRAL WINDING.

Ends : **RF**

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Contract N.: 1310087902

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GASK.16.47/A

30"

36"

GAS1A

574SC0009

Material : SPIRAL WOUND SS.304/GRAPHITE

Codes : GASKET DIMENSIONS PER ASME B16.20 ; FLANGES DIMENSIONS PER ASME B16.47 "A" (MSS-SP44)

Thickness : 3.2 MM (1/8")

Rating : **300#**

Ring Out/In : 3.2 MM (1/8") THK. OUTER C.S. RING / INNER SS.304 RING

Note : GASKETS SHALL COMPLY WITH JOB SPEC 52A3. GASKETS TO BE SUPPLIED W/O TAPE, STRING OR OTHER WRAPPING AROUND SPIRAL WINDING.

Ends : **RF**

GASK.16.47/B

30"

36"

GAS1B

574SC0010

Material : SPIRAL WOUND SS.304/GRAPHITE

Codes : GASKET DIMENSIONS PER ASME B16.20 ; FLANGES DIMENSIONS PER ASME B16.47 "B" (API-605)

Thickness : 3.2 MM (1/8")

Rating : **300#**

Ring Out/In : 3.2 MM (1/8") THK. OUTER C.S. RING / INNER SS.304 RING

Note : GASKETS SHALL COMPLY WITH JOB SPEC 52A3. GASKETS TO BE SUPPLIED W/O TAPE, STRING OR OTHER WRAPPING AROUND SPIRAL WINDING.

Ends : **RF**

GASKET FF

1/2"

24"

GASFF

574Cy0001

Material : FLEXIBLE GRAPHITE ENCAPSULATED GASKET. CORR-A-SEAL / GRAPHONICS

Codes : DIMENSIONS PER ASME B16.21

Thickness : 1.6 MM (1/16")

Rating : **150#**

Note : GASKETS SHALL COMPLY WITH JOB SPEC 52A3

Ends : **FF**

General Notes:

1.) Use Extended Body Gate Valves, Threaded Outlet, For Branches Not In Process Flow (Such As Vent, Drain, PI, Orifice Taps, Etc. Connections). Piping Downstream, If Any, Shall Usually Be In Accord With The Applicable Instrument Piping Material Specification. If No Piping, Insert A Plug In The Threaded Outlet. Other Valves, Such As SW x T Should Only Be Used When Spaced Restrictions Are Encountered.

2.) Dets 'GAF' AND 'GAF1' Are To Be Used At Flanged Equipment Or When Required At Instrument.

3.) Globe Valves Shall Be Sized Such That Its Minimum % Open Is Not Less Than 20%. These Valves Shall Not Be Subject To Pressure Differential Greater Than 30% Of Its Cold Working Pressure.

4.) Check Valves When Install In The Horizontal Position Shall Be Bonnet Cover Up & Those Install In The Vertical Position Shall Be Flow Up Only.

* Client codes only, not including sizes

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Foster Wheeler USA Corporation

Contract N.: 1310087902

Client: Valero Refining Company - Texas

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Project: Valero Refinery Reconfiguration (TCRR)

Piping Material Specification

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5.) Gear Operated Valves Shall Be Used When Indicated On The EFD'S.

6.) A Minimum Of 0.10" Corrosion Allowance May Be Used To Substantiate Wall Schedule For Boderline Cases. Such Cases Must Be Approved By The Project Engineering Manager And A Remark Added To The Line List.

7.) Heat Treatment Noted Is For General Fabrication. Weld Size For Fillet and/OR Branch Connections Shall Govern Per ASME B31.3 Para. 331.1.3. Heat Treatment For Bends Shall Be Per ASME B31.3 Parra. 332.4.1 & 332.4.2 And Specs 52A5 And 52A6 Accordingly.

8.) Typical Hydrotest Limiting Factor Is 1.5 x ASME Class Rating Cold Working Pressure Exception To This Include:

* 1.1 x CWP For Closed Valves (Test Against Seat. This Method Is Not Preferred.)

* Check Manufactures Data For Ball Valves.

9.) Pipe And Components > 1/2" Thickness May Require Impact Tested Materials When The Minimum Design Metal Temperature Is Below 100F Per ASME B31.3 Para. 323.2.2.

10.) All Fabrication Shall Comply With 52A1.

11.) Pipe Supports And Spring Hangers Shall Comply With 59A2 And 59A3 Respectively.

12.) 'BEP' Nipples Shall Be Cut From Pipe.

13.) The Crotch Thickness Of The Branch Outlet Of Buttweld Tees Shall Be No Less Than 150% Of The Nominal Wall Thickness Of The Tee. The Crotch Radius Of The Branch Outlet Of Buttweld Tees Shall Be No Less Than 12.5% Of The Branch Outlet OD.

14.) Use Union Or Coupling To Join Pipe. Flanged Joint To Be Used Only Where Indicated On EFD'S.

15.) Couplings Shall Not Be Used For Branch Connections Use Inline Only.

16.) Use Flat Face Valve, Flange & Full Face Gasket To Mate With Flat Face Nozzles Only.

17.) Flanges Shall Not Be Insulated.

18.) Temperature Instrument Connection Shall Be NPS 1-1/2" Flanged.

19.) Pressure Instrument Connection Shall Be NPS 3/4" Socket-weld.

20.) In Sizes Above NPS 24", Flanges In Accord With ASME B16.47 Series B (API-605) Preferred. Where Required To Match Equipment Or Wafer Style Valves, Flanges Per ASME B16.47 SERIES A MSS-SP44) May Be Used.

21.) Branch Connections Should Follow The Guidelines Of Job Spec 52B2 And The Attachment Unless Specifically Overriden By The Pipe Stress Engineer.

22.) CORR-A-SEAL / GRAPHONICS Gaskets Shall Be Used For Flat Face Flanges.

23.) Concentric & Eccentric Reducers Are Limited To 2 Nominal Diameter Size Reductions Without Piping Engineer Approval.

24.) Remove Temporary Strainers After Flushing.

END OF DOCUMENT

* Client codes only, not including sizes

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Foster Wheeler USA Corporation

Contract #: 1310087902
Client: Valero Refining Company - Texas
Location: Texas City, Texas
Project: Valero Refinery Reconfiguration (TCRR)

Piping Material Specification

Spec. No.: 10087902-SP-50-03

Class: A2Z

Client Ref. VALERO	Rev. No. 3	Issue Date 3-Jun-02	Page 1
Compared with:			

ATTACHMENT "A"

REINFORCEMENT CHART																							
APPLICABLE TO PIPE SPECIFICATION (S) : A2Z																							
MATERIAL (S) : CARBON STEEL, SMLS, ASTM A106 GR. B										P/SE :			C.A. : 0.125"										
CARBON STEEL, EFW, ASTM, A672 GR. C70 CL. 22																							
DESIGN LIMIT (S) : 285 PSIG AT -20F TO 100F; 95 PSIG AT 750F MAX. TEMP.																							
NOM. SIZE	NOM. THICK.	NOMINAL SIZE OF BRANCH CONNECTION (INCHES)																					
		1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24	30/36					
1/2	160	T																					
3/4	160	RT	T																				
1	160	RT	RT	T				NOTE : FOR FABRICATION DETAILS AND CALCULATED WALL SEE ENGINEERING STANDARD 52B2															
1 1/2	160	RT	RT	RT	T																		
2	XS	RT	RT	RT	RT	T																	
3	STD	SK	SK	SK	SK	SK	T																
4	STD	SK	SK	SK	SK	SK	W	T															
6	STD	SK	SK	SK	SK	SK	W	W	T														
8	STD	SK	SK	SK	SK	SK	W	W	W	T													
10	STD	SK	SK	SK	SK	SK	W	W	W	W	T												
12	STD	SK	SK	SK	SK	SK	W	W	W	W	W	T											
14	STD	SK	SK	SK	SK	SK	W	W	W	W	W	W	T										
16	STD	SK	SK	SK	SK	SK	W	W	W	W	W	W	P2	T									
18	STD	SK	SK	SK	SK	SK	W	W	W	W	W	W	P2	P3	T								
20	STD	SK	SK	SK	SK	SK	W	W	W	W	W	W	P3	P3	P4	T							
24	STD	SK	SK	SK	SK	SK	W	W	W	W	W	W	P4	P5	P6	P6	T						
30/36	STD	SK	SK	SK	SK	SK	W	W	W	W	W	W	CA	CA	CA	CA	CA	T					

LEGEND :

T = TEE

RT = REDUCING TEE

RE = TEE AND REDUCER OR REDUCING INSERT

SK = SOCKOLET, SW ELBOLET OR LATROLET

TH = THREDOLET, THD ELBOLET OR LATROLET

W = WELDOLET, BW ELBOLET OR LATROLET

LW = LONG WELD NECK FLANGE

TB = TEE AND BUSHING

CA = CALCULATE

F1 = STUB IN WITH 3/8" FILLET WELD

P2 = STUB IN WITH 2" WIDE PAD (PAD TO BE SAME THICKNESS AS RUN SIZE)

P3 = STUB IN WITH 3" WIDE PAD (PAD TO BE SAME THICKNESS AS RUN SIZE)

P4 = STUB IN WITH 4" WIDE PAD (PAD TO BE SAME THICKNESS AS RUN SIZE)

P5 = STUB IN WITH 5" WIDE PAD (PAD TO BE SAME THICKNESS AS RUN SIZE)

P6 = STUB IN WITH 6" WIDE PAD (PAD TO BE SAME THICKNESS AS RUN SIZE)

P7 = STUB IN WITH 7" WIDE PAD (PAD TO BE SAME THICKNESS AS RUN SIZE)

NOTE : ANY SITUATION NOT COVERED BY THE ABOVE CHART SHOULD BE BROUGHT TO THE ATTENTION OF THE ASSIGNED PIPING ENGINEER.