

	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک								
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طرح نگهداشت و افزایش تولید 27 مخزن

PIPING MATERIAL SPECIFICATION

نگهداشت و افزایش تولید میدان نفتی بینک

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Status:

IDC: Inter-Discipline Check
 IFC: Issued For Comment
 IFA: Issued For Approval
 AFD: Approved For Design
 AFC: Approved For Construction
 AFP: Approved For Purchase
 AFQ: Approved For Quotation
 IFI: Issued For Information
 AB-R: As-Built for CLIENT Review
 AB-A: As-Built –Approved

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	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک								
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1.0 INTRODUCTION

Binak oilfield in Bushehr province is a part of the southern oilfields of Iran, is located 20 km northwest of Genaveh city.

With the aim of increasing production of oil from Binak oilfield, an EPC/EPD Project has been defined by NIOC/NISOC and awarded to Petro Iran Development Company (PEDCO). Also PEDCO (as General Contractor) has assigned the EPC-packages of the Project to "Hirgan Energy - Design and Inspection" JV.

As a part of the Project, a New Gas Compressor Station (adjacent to existing Binak GCS) shall be constructed to gather of 15 MMSCFD (approx.) associated gases and compress & transfer them to Siahmakan GIS.

GENERAL DEFINITION

The following terms shall be used in this document.

CLIENT:	National Iranian South Oilfields CLIENT (NISOC)
PROJECT:	Binak Oilfield Development – Surface Facilities; New Gas Compressor Station
EPD/EPC CONTRACTOR (GC):	Petro Iran Development Company (PEDCO)
EPC CONTRACTOR:	Joint Venture of : Hirgan Energy – Design & Inspection (D&I) Companies
VENDOR:	The firm or person who will fabricate the equipment or material.
EXECUTOR:	Executor is the party which carries out all or part of construction and/or commissioning for the project.
THIRD PARTY INSPECTOR (TPI):	The firm appointed by EPD/EPC CONTRACTOR (GC) and approved by CLIENT (in writing) for the inspection of goods.
SHALL:	Is used where a provision is mandatory.
SHOULD:	Is used where a provision is advisory only.
WILL:	Is normally used in connection with the action by CLIENT rather than by an EPC/EPD CONTRACTOR, supplier or VENDOR.
MAY:	Is used where a provision is completely discretionary.

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2.0 SCOPE

The purpose of this specification is to supplement the requirements for the materials as specified in the requisition for BINAK Compressor Gas Station.

3.0 NORMATIVE REFERENCES

3.1 LOCAL CODES AND STANDARDS

- IPS-E-TP-350(1) Engineering Standard for Linings
- IPS-M-PI-110(1) Material and Equipment Standard for Valves
- IPS-M-PI-150(2) Material Standard for Flanges and Fittings
- IPS-M-PI-190(3) Material and Equipment Standard for Line Pipe
- IPS-E-PI-140(1) Engineering Standard for Onshore Transportation Pipelines
- IPS-E-PI-221(1) Engineering Standard for Piping Material Selection
- IPS-E-PI-240(2) Engineering Standard for Plant Piping System

3.2 INTERNATIONAL CODES AND STANDARDS

- ASME B1.20.1 Pipe Threads General Purpose (Inch)
- ASME B16.5 Steel Pipe Flanges And Flanged Fittings
- ASME B16.9 Factory–Made Wrought Steel Buttwelding Fittings
- ASME B16.10 Face To Face And End To End Dimension Of Valve
- ASME B16.11 Forged Steel Fittings, Socket Welding And Threaded
- ASME B16.21 Nonmetallic Flat Gaskets For Pipe Flanges
- ASME B16.25 Butt-Welding Ends
- ASME B16.34 Steel Valves, Flanged And Buttwelding Ends
- ASME B16.48 Steel Line Blanks
- ASME B18.2.1 Square And Hex. Bolts And Screws, Inch Series
- ASME B18.2.2 Square And Hex. Nuts
- ASME B31.3 Process Piping
- ASME B31.4 Pipeline Transportation Systems for Liquid Hydrocarbons and Other Liquids
- ASME B36.10M Welded and Seamless Wrought Steel Pipe
- ASME B36.19M Stainless Steel Pipe
- ASME B31.8 Gas Transmission and Distribution Piping Systems
- ASME B16.20 Metallic Gaskets for Pipe Flanges
- ASME B16.36 Orifice Flanges
- ASTM A105 Standard Specification for Carbon Steel Forgings

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	BK	GCS	PEDCO	120	PI	SP	0001	D02

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| <ul style="list-style-type: none"> • ASTM A106 • ASTM A234 • ASTM A193 • ASTM A194 • ASTM A216 • ASTM A516 • ASTM A312 • ASTM A182 • ASTM A403 • ASTM A240 • ASTM A351 • ASTM A153 • ASTM B148 • BS EN 10204 • ISO 4427 • BS 5154 • API 5L • API 6D | <p>for Piping Applications</p> <p>Standard Specification for Seamless Carbon Steel Pipe for High-Temperature Service</p> <p>Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service</p> <p>Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications</p> <p>Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both</p> <p>Standard Specification for Steel Castings, Carbon, Suitable for Fusion Welding, for High-Temperature Service</p> <p>Standard Specification for Pressure Vessel Plates, Carbon Steel, for Moderate- and Lower-Temperature Service</p> <p>Standard Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes</p> <p>Standard Specification for Forged or Rolled Alloy and Stainless Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service</p> <p>Standard Specification for Wrought Austenitic Stainless Steel Piping Fittings</p> <p>Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications</p> <p>Standard Specification for Castings, Austenitic, for Pressure-Containing Parts</p> <p>Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware</p> <p>Standard Specification for Copper-Zinc-Lead (Red Brass or Hardware Bronze) Rod, Bar, and Shapes</p> <p>Metallic products. Types of inspection documents</p> <p>Plastic piping systems – Polyethylene (PE) pipes and fittings for water supply</p> <p>Specification for copper alloy globe, globe stop and check, check and gate valves</p> <p>Specification For Line Pipe</p> <p>Pipeline Valves</p> |
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| <ul style="list-style-type: none"> • API 599 • API 600 • API 601 • API 602 • API 6FA • API 608 • BS-1868 • BS-1873 • BS EN ISO 17292:2015 • BS EN ISO 15761:2002 • BS 6775 (PART 2) • MSS SP-83 • MSS SP-80 • MSS SP-95 • MSS SP-97 • MSS SP-120 • ANSI/NACE MR0175/ ISO 15156 • NACE TM-0284 • NACE TM-0177 | <p>Steel Plug Valves, Flanged Or Buttwelding Ends</p> <p>Steel Gate Valves, Flanged And Buttwelding Ends</p> <p>Metallic Gaskets For Piping, Double-Jacketed, Corrugated And Spiral Wound</p> <p>Compact Steel Gate Valves</p> <p>Specification for Fire Test For Valves</p> <p>Metal Ball Valves-Flanged, Threaded, and Welding End</p> <p>Flanged And Butt-Welding Ends Steel Check Valves For Petroleum And Petrochemical Industries</p> <p>Flanged And Butt-Welding Ends Steel Globe Valves For Petroleum And Petrochemical Industries</p> <p>Metal ball valves for petroleum, petrochemical and allied industries</p> <p>Steel gate, globe and check valves for sizes DN 100 and smaller, for the petroleum and natural gas industries</p> <p>Testing Of Valve Specification For Fire Type Testing Requirement</p> <p>Class 300 and 6000 pipe unions, socket welding and threaded</p> <p>Bronze Gate, globe angle and check valves</p> <p>Swage Nipples And Ball Plugs</p> <p>Forged Carbon Steel Branch Olet Fittings</p> <p>Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends</p> <p>Petroleum And Natural Gas Industries - Materials For Use In H2S Containing Environments In Oil And Gas Production</p> <p>Standard Test Method - Evaluation Of Pipeline And Pressure Vessel Steels For Resistance To Hydrogen-Induced Cracking</p> <p>Laboratory Testing Of Metals For Resistance To Sulfide Stress Cracking And Stress Corrosion Cracking In H2s Environments</p> |
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3.3 THE PROJECT DOCUMENTS

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| <ul style="list-style-type: none"> • BK-GCS-PEDCO-120-PI-RT-0001 • BK-GCS-PEDCO-120-PI-RT-0006 | <p>Piping Corrosion Study & Material Selection Report</p> <p>Wall Thickness Calculation Report</p> |
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- BK-GNRAL-PEDCO-000-PI-SP-0008 Specification For Material Requirements in Sour service

3.4 ENVIRONMENTAL DATA

Refer to "Process Basis of Design; Doc. No. BK-GNRAL-PEDCO-000-PR-DB-0001"

3.5 ORDER OF PRECEDENCE

In case of any conflict between requirements specified herein & the requirements of any other referenced document, this subject shall be reflected to CLIENT and the final decision will be made by CLIENT..

4.0 ABBREVIATIONS

AFC:	Approved for Construction
AFD:	Approved for Design
# :	CLASS
A/G:	ABOVE GROUND
ASB :	ASBESTOS
BB :	BOLTED BONNET
BC :	BOLTED COVER
BE :	BEVEL ENDS
BLE :	BEVELED LARGE END
BW :	BUTT WELDING
C.A:	CORROSION ALLOWANCE
CONC :	CONCENTRIC
CS :	CARBON STEEL
ECC :	ECCENTRIC
FB:	FULL BORE
FLGD:	FLANGED
FR :	FLAT RING

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GJ. :	GASKET JOINT
GO:	GEAR OPERATED
GR. :	GRADE
HEX :	HEXAGONAL
HO:	HANDWHEEL OPERATED
LR :	LONG RADIUS
MO:	MOTOR OPERATED
NB :	NOMINAL BORE
NPS :	NOMINAL PIPE SIZE
NPT:	NOMINAL PIPE THREAD
OS&Y :	OUTSIDE SCREW & YOKE
PBE:	PLAIN BOTH END
PSE :	PLAIN SMALL END
PTFE:	POLYTETRAFLUOROETHYLENE
RB :	REDUCED BORE
RED :	REDUCER/REDUCING
RF :	RAISED FACE
S.S.:	STAINLESS STEEL
SB :	SCREWED BONNET
SCH :	SCHEDULE
SCR'D :	SCREWED
SF :	SERRATED FINISH
SG :	SCREWED GLAND
SMLS :	SEAMLESS
SPW :	SPIRAL WOUND
STD :	STANDARD
SW :	SOCKET WELDING
TBE :	THREADED BOTH ENDS
THK :	THICKNESS
THRD:	THREADED

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TLE :	THEREADED LARGE END
TR :	TRIM
TSE :	THEREADED SMALL END
UB :	UNION BONNET
W.T :	WALL THICKNESS
WB :	WELDED BONNET
WN :	WELDING NECK
XS :	EXTRA STRONG
XXS :	DOUBLE EXTRA STRONG

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5.0 PIPING COMPONENTS

5.1 PIPE

- 5.1.1 For carbon steel pipes, dimensions shall conform to ASME B36.10M or API 5L where applicable. The nominal thickness for “Stainless Steel Pipe” shall be selected in accordance with ASME B36.19M. Tolerances of pipes shall meet the requirements of IPS-M-PI-190(3).
- 5.1.2 End pipe for sizes 1/2” to 1 1/2” shall be plain end, for size 2” and above shall be beveled end. End of galvanized pipe shall be threaded.
- 5.1.3 For all Materials Carbon Content and $CE = C + (Mn/6) + (Cu+Ni)/15 + (Cr+Mo+V)/5$ shall meet the requirements of IPS-M-PI-190(3). In addition, all the main piping and related materials shall be according to the requirements of NACE MR 0175 / ISO 15156 and IPS-M-PI-190(3) for sour services.
- 5.1.4 Pipes with sizes 1/4", 3/8", 1 1/4", 2 1/2", 3 1/2", 4 1/2", 5", 7", 9", 14", 18", 22", shall not be used, except as may be required by equipment connections.

5.2 FITTING

- 5.2.1 Dimensions and tolerances for butt-weld fitting (be normally used for nominal diameter 2" and larger) shall conform to ASME B16.9.
- 5.2.2 Dimensions and tolerances for Socket weld fittings and/or screwed fitting (be normally used for nominal diameter 1 1/2" and smaller) shall conform to ASME B16.11.

5.3 FLANGES

- 5.3.1 Machining shall be in accordance with ASME B16.5. Roughness of RF shall be between 3.2 and 6.3 micrometers (125 to 250 micro inches AARH)
- 5.3.2 Orifice flanges shall conform to ASME B16.36. Quantities shown on Material Requisition must be understood as "pair" of orifice flanges supplied with assembly bolting.

5.4 VALVES

- 5.4.1 All socket welded ball valves of nominal sizes 1/2” to 1 1/2” shall have extended ends (Sch. 160 nipples) with an overall length of 400mm.
- 5.4.2 Valve trim numbers for gate, globe and check valves are as API 600 (2015) Table 8.

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5.5 GASKETS

- 5.5.1 Spiral wound gaskets shall conform to ASME B16.20 and Non-metallic flat gaskets shall conform to ASME B16.21.

5.6 BOLTS AND NUTS

- 5.6.1 Thread shall be in accordance with ASME B1.1 and Nuts shall conform to ASME B18.2.2.
- 5.6.2 Stud bolts shall be threaded full length and chamfered both ends. Length for standard flange assembly shall be in accordance with ASME B16.5. Stud bolts shall be supplied with 2 Heavy Hex nuts.

5.7 BRANCH CONNECTIONS

- 5.7.1 Branches shall be as specified in the individual line classes.
- 5.7.2 For pipe line to be pigged, tee or branch with 40% or more of the main line diameter shall be equipped with scraper guide bars.

5.8 UG SERVICE COATING

- 5.8.1 For UG services, all Pipes & Fittings Shall be Solvent Free Epoxy / Three Layer Cold Applied Plastic Tape at Field.

6.0 GENERAL TESTING REQUIRMENTS

- 6.1** Pressure testing of the following piping shall be in accordance with ASME B31.3 test procedures. The test pressure shall be held for a sufficient time to allow detection of any leaks and for a minimum time of 1 hour.
- a) Metallic piping including carbon steel, lined carbon steel, stainless steel, corrosion resistant alloys and ductile iron but excluding copper shall normally be tested at 1.5 x the design pressure.
- 6.2** Pipelines designed to ASME B31.8 where the operating pressure results in a hoop stress greater than 30% of the specified minimum yield strength shall be hydrostatically tested or tested with air or gas. The type of test and the test pressure is dependent on Location Class as defined in ASME B31.8 Para. 841.3.2. Test duration shall be a minimum of 2 hours.

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک								
شماره پیمان: 053 – 073 – 9184	PIPING MATERIAL SPECIFICATION							شماره صفحه : 13 از 55	
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	PEDCO	120	PI	SP	0001		D02

7.0 PIPING AND PIPELINE CLASSES

7.1 PIPING CLASSES NUMBERING

Each piping class is identified from two alphabetical characters which precede a two digit figure. The first alphabetical character indicates pressure rating of flange and the second alphabetical character indicates material as follows:

1st alphabetical character		2nd alphabetical character	
A	Class 150	N	Carbon Steel
C	Class 300	S	Stainless Steel
F	Class 600	X	Non Metal Pipe
G	Class 900	Z	Galvanized Carbon Steel
H	Class 1500		

The third figure indicates the design code and the forth figure indicates corrosion allowance for metallic as follows

3rd figure		4th figure for metal pipe			4th figure for non-metal pipe	
Fig.	Design standard	Fig.	C.A.	NACE MR 0175 / ISO 15156 Requirement	Fig.	Material type
0	ASME B 31.3 (For Inside of Plant)	0	0 mm	No	1	GRE
		1	1 mm	No	2	PE
1	ASME B 31.4 (For Liquid Pipeline)	2	1 mm	Yes	3	RTP (Reinforced Thermoplastic pipe)
		4	3 mm	No		
2	ASME B 31.8 (For Gas Pipeline)	5	3 mm	Yes		
		6	6 mm	No		
		7	6 mm	Yes		

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک								
شماره پیمان: 053 – 073 – 9184	PIPING MATERIAL SPECIFICATION							شماره صفحه : 14 از 55	
	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	PEDCO	120	PI	SP	0001		D02

7.2 SUMMARY OF PIPING AND PIPELINE CLASSES

Table 1: piping classes

Piping Class	ANSI Rating /Facing	Max Pipe Size (In)	Base Material	Max. TEMP. °C	NACE MR 0175 / ISO 15156 Req.	C.A. (mm)	Service
AN01	150/RF	10	Carbon Steel	85	---	1	Oily Water ,Diesel Oil,Nitrogen, Methanol
AN04	150/RF	16	Carbon Steel	85	---	3	Plant Air, Lean GLYCOL, Fire Water
AN05	150/RF	16	Carbon Steel	85	Yes	3	Close Drain, Process Gas
AN07	150/RF	20	Carbon Steel	85	Yes	6	Fuel Gas, Close Drain, Flare, Blow down, Process Gas
AS00	150/RF	16	Stainless Steel	85	---	0	Chemical, Close drain
AX02	150/RF	4	HDPE	85	---	0	Potable Water(UG)
AZ00	150/RF	4	Carbon Steel+Galv	85	---	0	Instrument Air<4", Potable Water
CN05	300/RF	6	Carbon Steel	155	Yes	3	Close Drain, Process Gas
CN07	300/RF	6	Carbon Steel	155	Yes	6	Close Drain, Process Gas
CS00	300/RF	6	Stainless Steel	155	---	0	Chemical, Close drain, Process Gas
FN05	600/RF	8	Carbon Steel	175	Yes	3	Hydrocarbon Gas
FN07	600/RF	8	Carbon Steel	175	Yes	6	Hydrocarbon Gas
FS00	600/RF	6	Stainless Steel	175	---	0	Chemical, Close drain



 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک								
شماره پیمان:	PIPING MATERIAL SPECIFICATION							شماره صفحه : 15 از 55	
053 – 073 – 9184	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	PEDCO	120	PI	SP	0001		D02

8.0 CLASSES DESCRIPTION

D02

SERVICES: Oily Water, Diesel Oil, Nitrogen, Methanol					CLASS: AN01			C.A.:1 mm
DES. (TEMP.)	°C	85	Basic Material	Carbon Steel	NACE MR 0175 / ISO 15156 Requirements : No			Rating: 150#
DES. (PRES.)	BARG	18.2			Design Code: ASME B31.3			
ITEM	SIZES (In)		END	SCH./RATING	DESCRIPTION	MATERIAL	STANDARD	NOTE
	FROM	TO						
PIPES	1/2	1 1/2	PBE/TOE/TBE	SCH.80	Seamless	ASTM A106 Gr.B	ASME B36.10M	NOTE 1
	2	6	BE	SCH.40	Seamless	ASTM A106 Gr.B	ASME B36.10M	
	8	10	BE	SCH.20	Seamless	ASTM A106 Gr.B	ASME B36.10M	
Nipples	1/2	1 1/2	PBE/PSE/BLE	Same as Pipe	Nipples	ASTM A106 Gr.B	MSS SP-95	
FITTINGS	1/2	1 1/2	SW	3000#	Cap	ASTM A105	ASME B16.11	
	1/2	1 1/2	SW	3000#	Reducer Conc.&Ecc.	ASTM A105	ASME B16.11	
	1/2	1 1/2	SW	3000#	Union	ASTM A105	MSS SP-83	
	1/2	1 1/2	SW	3000#	Coupling	ASTM A105	ASME B16.11	
	1/2	1 1/2	SW	3000#	Elbow 45° & 90° LR	ASTM A105	ASME B16.11	
	1/2	1 1/2	SW	3000#	Sockolet	ASTM A105	MSS SP-97	
	1/2	1 1/2	THD	2000#	Hex. Head Plug	ASTM A105	ASME B16.11	
	2	10	BW	Same as Pipe	Cap	ASTM 234 WPB	ASME B16.9	
	2	10	BW	Same as Pipe	Tee Eq. & Red	ASTM 234 WPB	ASME B16.9	
	2	10	BW	Same as Pipe	Reducer Conc.&Ecc.	ASTM 234 WPB	ASME B16.9	
	2	10	BW	Same as Pipe	Elbow 45° & 90° LR	ASTM 234 WPB	ASME B16.9	
	2	10	BW	Same as Pipe	Weldolet	ASTM A105	MSS SP-97	
FLANGES	1/2	1 1/2	SW	150#	Socket welded, RF,SW,SF	ASTM A105	ASME B16.5	
	1/2	1 1/2	SW	300#	Socket welded, RF,SF	ASTM A105	ASME B16.5	
	2	10	BW	Same as Pipe 150#	Weld Neck, RF, SF	ASTM A105	ASME B16.5	
	2	10	BW	Same as Pipe 300#	Weld Neck, RF, SF	ASTM A105	ASME B16.5	
	1/2	10	-	150#	Blind, RF, SF	ASTM A105	ASME B16.5	
	1/2	10	-	300#	Blind, RF, SF	ASTM A105	ASME B16.5	
	2	10	BW	Same as Pipe 300#	Orifice, With 2 Hole ½” NPT Female, RF	ASTM A105	ASME B16.36	
CLOUSERS	1/2	10	-	150#	Spectacle Blind.	ASTM A516-	ASME	

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک								
شماره پیمان:	PIPING MATERIAL SPECIFICATION							شماره صفحه : 16 از 55	
053 - 073 - 9184	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	PEDCO	120	PI	SP	0001		D02

					RF	Gr.60	B16.48	
GASKETS	1/2	10	-	150#	Spiral Wound, 4.45 mm Thick., RF, SF	S.S 316 Winding /Graphite Filler, C.S. Outer& S.S 316L Inner Ring	ASME B16.20	
	1/2	10	-	300#	Spiral Wound, 4.45 mm Thick., RF, SF	S.S 316 Winding /Graphite Filler, C.S. Outer& S.S 316L Inner Ring	ASME B16.20	
Nut & Bolt	1/2	10	-	150#	Stud bolt, Unified threaded	ASTM A 193-B7	ASME B18.2.1	
	1/2	10	-	150#	Nut, two heavy nuts for each bolt	ASTM A 194 -2H	ASME B18.2.2	
	1/2	10	-	300#	Stud bolt, Unified threaded	ASTM A 193-B7	ASME B18.2.1	
	1/2	10	-	300#	Nut, two heavy nuts for each bolt	ASTM A 194 -2H	ASME B18.2.2	
Gate Valve	1/2	1 1/2	SW/THRD	800#	Solid wedge, BB, OS.&Y, Renewable Seat Ring, HO	Body: A105 ,Trim No.8	API 602	
	2	10	FLGD	150#	Flexible wedge, BB, OS.&Y, Renewable Seat Ring, HO	Body: A216 GR. WCB, Trim No.8	API 600	
Globe Valve	1/2	1 1/2	SW/THRD	800#	OS&Y,BB, Renewable Seat Ring, HO	Body: A 105 .Trim No.8	ISO 15761	
	2	6	FLGD	150#	OS&Y,BB, Renewable Seat Ring, HO	Body: A216 GR. WCB., Trim No.8	BS 1873	
	8	10	FLGD	150#	OS&Y,BB, Renewable Seat Ring, GO		BS 1873	
Check Valve	1/2	1 1/2	SW	800#	Lift Type, Piston Type, Renewable Seat Ring	Body: A 105 .Trim No.8	ISO 15761	
	2	10	FLGD	150#	Swing Type	Body: A216 GR. WCB., Trim No.8	BS 1868	
Ball Valve	1/2	1 1/2	SW	800#	RB, Soft Seat, Floating Ball, Renewable Seat Ring, Lever Operated	Body: A105, Ball: 13Cr Stem: 13Cr Trim:13Cr+PTFE	ISO 17292	Note 2
	2	3	FLGD	150#	RB, Soft Seat, Floating Ball, Renewable Seat Ring, Lever Operated	Body: A216 Gr. WCB, Ball: 13Cr Stem: 13Cr Trim:13Cr+PTFE	API 6D	Note 2
	4	8	FLGD	150#	RB, Soft Seat, Trunnion mounted, Renewable Seat Ring, Lever Operated		API 6D	Note 2
	10	10	FLGD	150#	RB, Soft Seat,		API 6D	Note 2

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک								
شماره پیمان: 053 – 073 – 9184	PIPING MATERIAL SPECIFICATION								شماره صفحه : 17 از 55
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه	
	BK	GCS	PEDCO	120	PI	SP	0001	D02	

					Trunnion mounted, Renewable Seat Ring, GO			
STRAINER	1/2	1 1/2	SW	800#	Y-TYPE	Body: A105 , Screen :A 182 GR. F316L		
	2	3	FLGD	150#	Y-TYPE	Body: A216 , Screen :A 182 GR. F316L		
	4	10	FLGD	150#	T-TYPE	Body: A216 , Screen :A 182 GR. F316L		

Note 1: Thread end will be used just for Orifice flange connections

Note 2: Fire Safe per API 6FA Anti-Static, and Blow-Out Proof Stem shall be considered for these valves.

Note 3: For UG service, all Pipes & Fittings Shall be Solvent Free Epoxy.

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک								
شماره پیمان: 053 – 073 – 9184	PIPING MATERIAL SPECIFICATION							شماره صفحه : 18 از 55	
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	PEDCO	120	PI	SP	0001		D02

PIPE CLASS : AN01

Header Size (Inch)	1/2	1									
	3/4	2	1								
	1	2	2	1							
	1 1/2	2	2	2	1						
	2	4	4	4	4	3					
	3	4	4	4	4	5	3				
	4	4	4	4	4	5	5	3			
	6	4	4	4	4	6	5	5	3		
	8	4	4	4	4	6	6	5	5	3	
	10	4	4	4	4	6	6	6	5	5	3
	Size	1/2	3/4	1	1 1/2	2	3	4	6	8	10
Branch Size (Inch)											

Legend:	1. EQUAL TEE, SW	2. RED. TEE, SW	3. EQUAL TEE, BW
	4. SOCKOLET	5. RED. TEE, BW	6. WELDOLET

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک							 HIRGAN ENERGY 
شماره پیمان: 053 - 073 - 9184	PIPING MATERIAL SPECIFICATION							شماره صفحه : 19 از 55
	پروژه	بسته کاری	صادر کننده	تجهیزات	رشته	نوع مدرک	سریال	نسخه
	BK	GCS	PEDCO	120	PI	SP	0001	D02

SERVICES: Plant air, Lean GLYCOL, Fire Water					D02	CLASS: AN04			C.A.:3 mm
DES. (TEMP.)	°C	85	Basic Material	Carbon Steel	NACE MR 0175 / ISO 15156 Requirements : No			Rating: 150#	
DES. (PRES.)	BARG	18.2			Design Code: ASME B31.3				
ITEM	SIZES (In)		END	SCH./RATING	DESCRIPTION	MATERIAL	STANDARD	NOTE	
	FROM	TO							
PIPES	1/2	1 1/2	PBE/TOE/TBE	SCH.80	Seamless	ASTM A106 Gr.B	ASME B36.10M	NOTE 1	
	2	2	BE	SCH.80	Seamless	ASTM A106 Gr.B	ASME B36.10M		
	3	6	BE	SCH.40	Seamless	ASTM A106 Gr.B	ASME B36.10M		
	8	16	BE	SCH.20	Seamless	ASTM A106 Gr.B	ASME B36.10M		
Nipples	1/2	1 1/2	PBE/PSE/BLE	Same as Pipe	Nipples	ASTM A106 Gr.B	MSS SP-95		
FITTINGS	1/2	1 1/2	SW	3000#	Cap	ASTM A105	ASME B16.11		
	1/2	1 1/2	SW	3000#	Reducer Conc.&Ecc.	ASTM A105	ASME B16.11		
	1/2	1 1/2	SW	3000#	Union	ASTM A105	MSS SP-83		
	1/2	1 1/2	SW	3000#	Coupling	ASTM A105	ASME B16.11		
	1/2	1 1/2	SW	3000#	Elbow 45° & 90° LR	ASTM A105	ASME B16.11		
	1/2	1 1/2	SW	3000#	Sockolet	ASTM A105	MSS SP-97		
	1/2	1 1/2	THD	2000#	Hex. Head Plug	ASTM A105	ASME B16.11		
	2	16	BW	Same as Pipe	Cap	ASTM 234 WPB	ASME B16.9		
	2	16	BW	Same as Pipe	Tee Eq. & Red	ASTM 234 WPB	ASME B16.9		
	2	16	BW	Same as Pipe	Reducer Conc.&Ecc.	ASTM 234 WPB	ASME B16.9		
	2	16	BW	Same as Pipe	Elbow 45° & 90° LR	ASTM 234 WPB	ASME B16.9		
	2	16	BW	Same as Pipe	Weldolet	ASTM A105	MSS SP-97		
FLANGES	1/2	1 1/2	SW	150#	Socket welded, RF,SW,SF	ASTM A105	ASME B16.5		
	1/2	1 1/2	SW	300#	Socket welded, RF,SF	ASTM A105	ASME B16.5		
	2	16	BW	Same as Pipe 150#	Weld Neck, RF, SF	ASTM A105	ASME B16.5		
	1/2	16	-	150#	Blind, RF, SF	ASTM A105	ASME B16.5		
	1/2	16	-	300#	Blind, RF, SF	ASTM A105	ASME B16.5		
	2	16	BW	Same as Pipe 300#	Orifice, With 2 Hole ½” NPT Female, RF	ASTM A105	ASME B16.36		
CLOUSERS	1/2	10	-	150#	Spectacle Blind, RF	ASTM A516-Gr.60	ASME B16.48		
	12	16	-	150#	Spade (Ring&Blind), RF	ASTM A516-Gr.60	ASME B16.48		
GASKETS	1/2	16	-	150#	Spiral Wound, 4.45 mm Thick., RF, SF	S.S 316 Winding /Graphite Filler, C.S. Outer& S.S 316L Inner Ring	ASME B16.20		
	1/2	16	-	300#	Spiral Wound, 4.45 mm Thick.,	S.S 316 Winding /Graphite Filler,	ASME B16.20		

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک								
شماره پیمان: 053 - 073 - 9184	PIPING MATERIAL SPECIFICATION								شماره صفحه : 20 از 55
	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه	
	BK	GCS	PEDCO	120	PI	SP	0001	D02	

					RF, SF	C.S. Outer& S.S 316L Inner Ring		
Nut & Bolt	1/2	16	-	150#	Stud bolt, Unified threaded	ASTM A 193-B7	ASME B18.2.1	
	1/2	16	-	150#	Nut, two heavy nuts for each bolt	ASTM A 194 -2H	ASME B18.2.2	
	1/2	16	-	300#	Stud bolt, Unified threaded	ASTM A 193-B7	ASME B18.2.1	
	1/2	16	-	300#	Nut, two heavy nuts for each bolt	ASTM A 194 -2H	ASME B18.2.2	
Gate Valve	1/2	1 1/2	SW/THRD	800#	Solid wedge, BB, OS.&Y, Renewable Seat Ring, HO	Body: A105 ,Trim No.12	API 602	
	2	10	FLGD	150#	Flexible wedge, BB, OS.&Y, Renewable Seat Ring, HO	Body: A216 GR. WCB, Trim No.12	API 600	
	12	16	FLGD	150#	Flexible wedge, BB, OS.&Y, Renewable Seat Ring, GO	Body: A216 GR. WCB, Trim No.12	API 600	
Globe Valve	1/2	1 1/2	SW/THRD	800#	OS&Y,BB, Renewable Seat Ring, HO	Body: A 105 .Trim No.12	ISO 15761	
	2	6	FLGD	150#	OS&Y,BB, Renewable Seat Ring, HO	Body: A216 GR. WCB., Trim No.12	BS 1873	
	8	16	FLGD	150#	OS&Y,BB, Renewable Seat Ring, GO		BS 1873	
Check Valve	1/2	1 1/2	SW	800#	Lift Type, Piston Type, Renewable Seat Ring	Body: A 105 .Trim No.12	ISO 15761	
	2	16	FLGD	150#	Swing Type	Body: A216 GR. WCB., Trim No.12	BS 1868	
Ball Valve	1/2	1 1/2	SW	800#	RB, Soft Seat, Floating Ball, Renewable Seat Ring, Lever Operated	Body: A105, Ball: 316 Stem: 316 Trim:316+PTFE	ISO 17292	Note 2
	2	3	FLGD	150#	RB, Soft Seat, Floating Ball, Renewable Seat Ring, Lever Operated	Body: A216 Gr. WCB, Ball: 316 Stem: 316 Trim:316+PTFE	API 6D	Note 2
	4	8	FLGD	150#	RB, Soft Seat, Trunnion mounted, Renewable Seat Ring, Lever Operated		API 6D	Note 2
	10	16	FLGD	150#	RB, Soft Seat, Trunnion mounted, Renewable Seat Ring, GO		API 6D	Note 2

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک								
شماره پیمان: 053 – 073 – 9184	PIPING MATERIAL SPECIFICATION							شماره صفحه : 21 از 55	
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	PEDCO	120	PI	SP	0001		D02

STRAINER	1/2	1 1/2	SW	800#	Y-TYPE	Body: A105 , Screen :A 182 GR. F316L		
	2	3	FLGD	150#	Y-TYPE	Body: A216 , Screen :A 182 GR. F316L		
	4	16	FLGD	150#	T-TYPE	Body: A216 , Screen :A 182 GR. F316L		
Note 1: Thread end will be used just for Orifice flange connections Note 2: Fire Safe per API 6FA. Anti Static, and Blow-Out Proof Stem shall be considered for these valves.								

PIPE CLASS : AN04

Header Size (Inch)	1/2	1												
	3/4	2	1											
	1	2	2	1										
	1 1/2	2	2	2	1									
	2	4	4	4	4	3								
	3	4	4	4	4	5	3							
	4	4	4	4	4	5	5	3						
	6	4	4	4	4	6	5	5	3					
	8	4	4	4	4	6	6	5	5	3				
	10	4	4	4	4	6	6	6	5	5	3			
	12	4	4	4	4	6	6	6	6	5	5	3		
	14	4	4	4	4	6	6	6	6	6	5	5	3	
	16	4	4	4	4	6	6	6	6	6	6	5	5	3
Size	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16	
Branch Size (Inch)														

Legend:	1. EQUAL TEE, SW	2. RED. TEE, SW	3. EQUAL TEE, BW
	4. SOCKLET	5. RED. TEE, BW	6. WELDOLET

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک							 HIRGAN ENERGY 
شماره پیمان: 053 - 073 - 9184	PIPING MATERIAL SPECIFICATION							شماره صفحه : 22 از 55
	پروژه	بسته کاری	صادر کننده	تجهیزات	رشته	نوع مدرک	سریال	نسخه
	BK	GCS	PEDCO	120	PI	SP	0001	D02

SERVICES: Close Drain, Process Gas					D02	CLASS: AN05			C.A.:3 mm
DES. (TEMP.)	°C	85	Basic Material	Carbon Steel	NACE MR 0175 / ISO 15156 Requirements : Yes			Rating: 150#	
DES. (PRES.)	BARG	18.2			Design Code: ASME B31.3				
ITEM	SIZES (In)		END	SCH./RATING	DESCRIPTION	MATERIAL	STANDARD	NOTE	
	FROM	TO							
PIPES	1/2	1 1/2	PBE/TOE/TBE	SCH.80	Seamless	ASTM A106 Gr.B	ASME B36.10M	NOTE 1	
	2	2	BE	SCH.80	Seamless	ASTM A106 Gr.B	ASME B36.10M		
	3	6	BE	SCH.40	Seamless	ASTM A106 Gr.B	ASME B36.10M		
	8	16	BE	SCH.20	Seamless	ASTM A106 Gr.B	ASME B36.10M		
Nipples	1/2	1 1/2	PBE/PSE/BLE	Same as Pipe	Nipples	ASTM A106 Gr.B	MSS SP-95		
FITTINGS	1/2	1 1/2	SW	3000#	Cap	ASTM A105	ASME B16.11		
	1/2	1 1/2	SW	3000#	Reducer Conc.&Ecc.	ASTM A105	ASME B16.11		
	1/2	1 1/2	SW	3000#	Union	ASTM A105	MSS SP-83		
	1/2	1 1/2	SW	3000#	Coupling	ASTM A105	ASME B16.11		
	1/2	1 1/2	SW	3000#	Elbow 45° & 90° LR	ASTM A105	ASME B16.11		
	1/2	1 1/2	SW	3000#	Sockolet	ASTM A105	MSS SP-97		
	1/2	1 1/2	THD	2000#	Hex. Head Plug	ASTM A105	ASME B16.11		
	2	16	BW	Same as Pipe	Cap	ASTM 234 WPB	ASME B16.9		
	2	16	BW	Same as Pipe	Tee Eq. & Red	ASTM 234 WPB	ASME B16.9		
	2	16	BW	Same as Pipe	Reducer Conc.&Ecc.	ASTM 234 WPB	ASME B16.9		
	2	16	BW	Same as Pipe	Elbow 45° & 90° LR	ASTM 234 WPB	ASME B16.9		
	2	16	BW	Same as Pipe	Weldolet	ASTM A105	MSS SP-97		
FLANGES	1/2	1 1/2	SW	150#	Socket welded, RF,SW,SF	ASTM A105	ASME B16.5		
	1/2	1 1/2	SW	300#	Socket welded, RF,SF	ASTM A105	ASME B16.5		
	2	16	BW	Same as Pipe 150#	Weld Neck, RF, SF	ASTM A105	ASME B16.5		
	1/2	16	-	150#	Blind, RF, SF	ASTM A105	ASME B16.5		
	1/2	16	-	300#	Blind, RF, SF	ASTM A105	ASME B16.5		
	2	16	BW	Same as Pipe 300#	Orifice, With 2 Hole ½” NPT Female, RF	ASTM A105	ASME B16.36		
CLOUSERS	1/2	10	-	150#	Spectacle Blind, RF	ASTM A516-Gr.60	ASME B16.48		
	12	16	-	150#	Spade (Ring&Blind), RF	ASTM A516-Gr.60	ASME B16.48		
GASKETS	1/2	16	-	150#	Spiral Wound, 4.45 mm Thick., RF, SF	S.S 316 Winding /Graphite Filler, C.S. Outer& S.S 316L Inner Ring	ASME B16.20		
	1/2	16	-	300#	Spiral Wound, 4.45 mm Thick.,	S.S 316 Winding /Graphite Filler,	ASME B16.20		

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک							 	
شماره پیمان:	PIPING MATERIAL SPECIFICATION							شماره صفحه : 23 از 55	
053 - 073 - 9184	پروژه	بسته کاری	صادر کننده	تجهیزات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	PEDCO	120	PI	SP	0001		D02

					RF, SF	C.S. Outer& S.S 316L Inner Ring		
Nut & Bolt	1/2	16	-	150#	Stud bolt, Unified threaded	ASTM A 193-B7M	ASME B18.2.1	
	1/2	16	-	150#	Nut, two heavy nuts for each bolt	ASTM A 194 - 2HM	ASME B18.2.2	
	1/2	16	-	300#	Stud bolt, Unified threaded	ASTM A 193-B7M	ASME B18.2.1	
	1/2	16	-	300#	Nut, two heavy nuts for each bolt	ASTM A 194 - 2HM	ASME B18.2.2	
Gate Valve	1/2	1 1/2	SW/THRD	800#	Solid wedge, BB, OS.&Y, Renewable Seat Ring, HO	Body: A105 ,Trim No.12	API 602	
	2	10	FLGD	150#	Flexible wedge, BB, OS.&Y, Renewable Seat Ring, HO	Body: A216 GR. WCB, Trim No.12	API 600	
	12	16	FLGD	150#	Flexible wedge, BB, OS.&Y, Renewable Seat Ring, GO	Body: A216 GR. WCB, Trim No.12	API 600	
Globe Valve	1/2	1 1/2	SW/THRD	800#	OS&Y,BB, Renewable Seat Ring, HO	Body: A 105 .Trim No.12	ISO 15761	
	2	6	FLGD	150#	OS&Y,BB, Renewable Seat Ring, HO	Body: A216 GR. WCB., Trim No.12	BS 1873	
	8	16	FLGD	150#	OS&Y,BB, Renewable Seat Ring, GO		BS 1873	
Check Valve	1/2	1 1/2	SW	800#	Lift Type, Piston Type, Renewable Seat Ring	Body: A 105 .Trim No.12	ISO 15761	
	2	16	FLGD	150#	Swing Type	Body: A216 GR. WCB., Trim No.12	BS 1868	
Ball Valve	1/2	1 1/2	SW	800#	RB, Soft Seat, Floating Ball, Renewable Seat Ring, Lever Operated	Body: A105, Ball: 316 Stem: 316 Trim:316+PTFE	ISO 17292	Note 2
	2	3	FLGD	150#	RB, Soft Seat, Floating Ball, Renewable Seat Ring, Lever Operated	Body: A216 Gr. WCB Ball: 316 Stem: 316 Trim:316+PTFE	API 6D	Note 2
	4	8	FLGD	150#	RB, Soft Seat, Trunnion mounted, Renewable Seat Ring, Lever Operated		API 6D	Note 2
	10	16	FLGD	150#	RB, Soft Seat, Trunnion mounted, Renewable Seat Ring, GO		API 6D	Note 2

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک								
شماره پیمان: 053 – 073 – 9184	PIPING MATERIAL SPECIFICATION								شماره صفحه : 24 از 55
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه	
	BK	GCS	PEDCO	120	PI	SP	0001	D02	

STRAINER	1/2	1 1/2	SW	800#	Y-TYPE	Body: A105 , Screen :A 182 GR. F316L		
	2	3	FLGD	150#	Y-TYPE	Body: A216 , Screen :A 182 GR. F316L		
	4	16	FLGD	150#	T-TYPE	Body: A216 , Screen :A 182 GR. F316L		
Note 1: Thread end will be used just for Orifice flange connections Note 2: Fire Safe per API 6FA. Anti Static, and Blow-Out Proof Stem shall be considered for these valves.								

Header Size (Inch)	½	1											
	¾	2	1										
	1	2	2	1									
	1½	2	2	2	1								
	2	4	4	4	4	3							
	3	4	4	4	4	5	3						
	4	4	4	4	4	5	5	3					
	6	4	4	4	4	6	5	5	3				
	8	4	4	4	4	6	6	5	5	3			
	10	4	4	4	4	6	6	6	5	5	3		
	12	4	4	4	4	6	6	6	6	5	5	3	
	14	4	4	4	4	6	6	6	6	6	5	5	3
	16	4	4	4	4	6	6	6	6	6	6	5	5
Size	½	¾	1	1½	2	3	4	6	8	10	12	14	16
Branch Size (Inch)													

Legend:	1. EQUAL TEE, SW	2. RED. TEE, SW	3. EQUAL TEE, BW
	4. SOCKOLET	5. RED. TEE, BW	6. WELDOLET

PIPE CLASS : AN05

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک							 شرکت توسعه و پارس 
شماره پیمان: 053 - 073 - 9184	PIPING MATERIAL SPECIFICATION							شماره صفحه : 25 از 55
	پروژه	بسته کاری	صادر کننده	تجهیزات	رشته	نوع مدرک	سریال	
	BK	GCS	PEDCO	120	PI	SP	0001	
							D02	



SERVICES: Fuel Gas, Close Drain, Flare, Blow down, process gas					CLASS: AN07			C.A.:6 mm
DES. (TEMP.)	°C	85	Basic Material	Carbon Steel	NACE MR 0175 / ISO 15156 Requirements : Yes			Rating: 150#
DES. (PRES.)	BARG	18.2			Design Code: ASME B31.3			
ITEM	SIZES (In)		END	SCH./RATING	DESCRIPTION	MATERIAL	STANDARD	NOTE
	FROM	TO						
PIPES	1/2	1 1/2	PBE/TOE/TBE	SCH.XXS	Seamless	ASTM A106 Gr.B	ASME B36.10M	NOTE 1
	2	2	BE	SCH.160	Seamless	ASTM A106 Gr.B	ASME B36.10M	
	3	6	BE	SCH.80	Seamless	ASTM A106 Gr.B	ASME B36.10M	
	8	8	BE	SCH.60	Seamless	ASTM A106 Gr.B	ASME B36.10M	
	10	16	BE	SCH.40	Seamless	ASTM A106 Gr.B	ASME B36.10M	
	18	20	BE	SCH.30	Seamless	ASTM A106 Gr.B	ASME B36.10M	
Nipples	1/2	1 1/2	PBE/PSE/BLE	Same as Pipe	Nipples	ASTM A106 Gr.B	MSS SP-95	
FITTINGS	1/2	1 1/2	SW	9000#	Cap	ASTM A105	ASME B16.11	
	1/2	1 1/2	SW	9000#	Reducer Conc.&Ecc.	ASTM A105	ASME B16.11	
	1/2	1 1/2	SW	9000#	Union	ASTM A105	MSS SP-83	
	1/2	1 1/2	SW	9000#	Coupling	ASTM A105	ASME B16.11	
	1/2	1 1/2	SW	9000#	Elbow 45° & 90° LR	ASTM A105	ASME B16.11	
	1/2	1 1/2	SW	9000#	Socketlet	ASTM A105	MSS SP-97	
	1/2	1 1/2	THD	6000#	Hex. Head Plug	ASTM A105	ASME B16.11	
	2	20	BW	Same as Pipe	Cap	ASTM 234 WPB	ASME B16.9	
	2	20	BW	Same as Pipe	Tee Eq. & Red	ASTM 234 WPB	ASME B16.9	
	2	20	BW	Same as Pipe	Reducer Conc.&Ecc.	ASTM 234 WPB	ASME B16.9	
	2	20	BW	Same as Pipe	Elbow 45° & 90° LR	ASTM 234 WPB	ASME B16.9	
	2	20	BW	Same as Pipe	Weldolet	ASTM A105	MSS SP-97	
FLANGES	1/2	1 1/2	SW	150#	Socket welded, RF,SW,SF	ASTM A105	ASME B16.5	
	1/2	1 1/2	SW	300#	Socket welded, RF,SF	ASTM A105	ASME B16.5	
	2	20	BW	Same as Pipe 150#	Weld Neck, RF, SF	ASTM A105	ASME B16.5	
	1/2	20	-	150#	Blind, RF, SF	ASTM A105	ASME B16.5	
	1/2	20	-	300#	Blind, RF, SF	ASTM A105	ASME B16.5	
	2	20	BW	Same as Pipe 300#	Orifice, With 2 Hole ½” NPT Female, RF	ASTM A105	ASME B16.36	
CLOUSERS	1/2	10	-	150#	Spectacle Blind, RF	ASTM A516-Gr.60	ASME B16.48	
	12	20	-	150#	Spade(Ring & Blind), RF	ASTM A516-Gr.60	ASME B16.48	
GASKETS	1/2	20	-	150#	Spiral Wound,	S.S 316 Winding	ASME B16.20	

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک								
شماره پیمان: 053 – 073 – 9184	PIPING MATERIAL SPECIFICATION							شماره صفحه : 26 از 55	
	پروژه	بسته کاری	صادر کننده	تجهیزات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	PEDCO	120	PI	SP	0001		D02

					4.45 mm Thick., RF, SF	/Graphite Filler, C.S. Outer& S.S 316L Inner Ring		
	1/2	20	-	300#	Spiral Wound, 4.45 mm Thick., RF, SF	S.S 316 Winding /Graphite Filler, C.S. Outer& S.S 316L Inner Ring	ASME B16.20	
Nut & Bolt	1/2	20	-	150#	Stud bolt, Unified threaded	ASTM A 193-B7M	ASME B18.2.1	
	1/2	20	-	150#	Nut, two heavy nuts for each bolt	ASTM A 194 -2HM	ASME B18.2.2	
	1/2	20	-	300#	Stud bolt, Unified threaded	ASTM A 193-B7M	ASME B18.2.1	
	1/2	20	-	300#	Nut, two heavy nuts for each bolt	ASTM A 194 -2HM	ASME B18.2.2	
Gate Valve	1/2	1 1/2	SW/THRD	800#	Solid wedge, BB, OS.&Y, Renewable Seat Ring, HO	Body: A105 ,Trim No.12	API 602	
	2	10	FLGD	150#	Flexible wedge, BB, OS.&Y, Renewable Seat Ring, HO	Body: A216 GR. WCB, Trim No.12	API 600	
	12	20	FLGD	150#	Flexible wedge, BB, OS.&Y, Renewable Seat Ring, GO	Body: A216 GR. WCB, Trim No.12	API 600	
Globe Valve	1/2	1 1/2	SW/THRD	800#	OS&Y,BB, Renewable Seat Ring, HO	Body: A 105 Trim No.12	ISO 15761	
	2	6	FLGD	150#	OS&Y,BB, Renewable Seat Ring, HO	Body: A216 GR. WCB., Trim No.12	BS 1873	
	8	16	FLGD	150#	OS&Y,BB, Renewable Seat Ring, GO		BS 1873	
Check Valve	1/2	1 1/2	SW	800#	Lift Type, Piston Type, Renewable Seat Ring	Body: A 105 .Trim No.12	ISO 15761	
	2	20	FLGD	150#	Swing Type	Body: A216 GR. WCB., Trim No.12	BS 1868	
Ball Valve	1/2	1 1/2	SW	800#	RB, Soft Seat, Floating Ball, Renewable Seat Ring, Lever Operated	Body: A105, Ball: 316 Stem: 316 Trim:316+PTFE	ISO 17292	Note 2
	2	3	FLGD	150#	RB, Soft Seat, Floating Ball, Renewable Seat Ring, Lever Operated	Body: A216 Gr. WCB, Ball: 316 Stem: 316 Trim:316+PTFE	API 6D	Note 2
	4	8	FLGD	150#	RB, Soft Seat, Trunnion		API 6D	Note 2

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک							
شماره پیمان: 053 – 073 – 9184	PIPING MATERIAL SPECIFICATION							شماره صفحه : 27 از 55
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GCS	PEDCO	120	PI	SP	0001	
							D02	

					mounted, Renewable Seat Ring, Lever Operated			
	10	20	FLGD	150#	RB, Soft Seat, Trunnion mounted, Renewable Seat Ring, GO		API 6D	Note 2
STRAINER	1/2	1 1/2	SW	800#	Y-TYPE	Body: A105 , Screen :A 182 GR. F316L		
	2	3	FLGD	150#	Y-TYPE	Body: A216 , Screen :A 182 GR. F316L		
	4	20	FLGD	150#	T-TYPE	Body: A216 , Screen :A 182 GR. F316L		

Note 1: Thread end will be used just for Orifice flange connections

Note 2: Fire Safe per API 6FA. Anti Static, and Blow-Out Proof Stem shall be considered for these valves.

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک							
شماره پیمان: 053 – 073 – 9184	PIPING MATERIAL SPECIFICATION							شماره صفحه : 28 از 55
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GCS	PEDCO	120	PI	SP	0001	
							D02	

PIPE CLASS : AN07

Header Size (Inch)	1/2	1												
	3/4	2	1											
	1	2	2	1										
	1 1/2	2	2	2	1									
	2	4	4	4	4	3								
	3	4	4	4	4	5	3							
	4	4	4	4	4	5	5	3						
	6	4	4	4	4	6	5	5	3					
	8	4	4	4	4	6	6	5	5	3				
	10	4	4	4	4	6	6	6	5	5	3			
	12	4	4	4	4	6	6	6	6	5	5	3		
	14	4	4	4	4	6	6	6	6	6	5	5	3	
	16	4	4	4	4	6	6	6	6	6	6	5	5	3
	Size	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16
Branch Size (Inch)														

Legend:	1. EQUAL TEE, SW	2. RED. TEE, SW	3. EQUAL TEE, BW
	4. SOCKLET	5. RED. TEE, BW	6. WELDOLET

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک							 HIRGAN ENERGY 
شماره پیمان: 053 - 073 - 9184	PIPING MATERIAL SPECIFICATION							شماره صفحه : 29 از 55
	پروژه	بسته کاری	صادر کننده	تجهیزات	رشته	نوع مدرک	سریال	
	BK	GCS	PEDCO	120	PI	SP	0001	D02

SERVICES: Chemical, Close drain					D02	CLASS: AS00			C.A.:0 mm
DES. (TEMP.)	°C	85	Basic Material	Stainless Steel	NACE MR 0175 / ISO 15156 Requirements : No			Rating: 150#	
DES. (PRES.)	BARG	13.9			Design Code: ASME B31.3				
ITEM	SIZES (In)		END	SCH./RATING	DESCRIPTION	MATERIAL	STANDARD	NOTE	
	FROM	TO							
PIPES	1/2	1 1/2	PBE/TOE/TBE	SCH.40S	Seamless	ASTM A312 TP 316L	ASME B36.19M	NOTE 1	
	2	16	BE	SCH.10S	Seamless	ASTM A312 TP 316L	ASME B36.19M		
Nipples	1/2	1 1/2	PBE/PSE/BLE	Same as Pipe	Nipples	ASTM A312 TP 316L	MSS SP-95		
FITTINGS	1/2	1 1/2	SW	3000#	Cap	ASTM A182 GR.F316L	ASME B16.11		
	1/2	1 1/2	SW	3000#	Reducer Conc. &Ecc.	ASTM A182 GR.F316L	ASME B16.11		
	1/2	1 1/2	SW	3000#	Union	ASTM A182 GR.F316L	MSS SP-83		
	1/2	1 1/2	SW	3000#	Coupling	ASTM A182 GR.F316L	ASME B16.11		
	1/2	1 1/2	SW	3000#	Elbow 45° & 90° LR	ASTM A182 GR.F316L	ASME B16.11		
	1/2	1 1/2	SW	3000#	Sockolet	ASTM A182 GR.F316L	MSS SP-97		
	1/2	1 1/2	THD	2000#	Hex. Head Plug	ASTM A182 GR.F316L	ASME B16.11		
	2	16	BW	Same as Pipe	Cap	ASTM A403 GR.WP316L	ASME B16.9		
	2	16	BW	Same as Pipe	Tee Eq. & Red	ASTM A403 GR.WP316L	ASME B16.9		
	2	16	BW	Same as Pipe	Reducer Conc. &Ecc.	ASTM A403 GR.WP316L	ASME B16.9		
	2	16	BW	Same as Pipe	Elbow 45° & 90° LR	ASTM A403 GR.WP316L	ASME B16.9		
	2	16	BW	Same as Pipe	Weldolet	ASTM A403 GR.WP316L	MSS SP-97		
FLANGES	1/2	1 1/2	SW	150#	Socket welded, RF,SW,SF	ASTM A182 GR.F316L	ASME B16.5		
	1/2	1 1/2	SW	300#	Socket welded, RF,SW,SF	ASTM A182 GR.F316L	ASME B16.5		
	2	16	BW	Same as Pipe 150#	Weld Neck, RF, SF	ASTM A182 GR.F316L	ASME B16.5		
	1/2	16	-	150#	Blind, RF, SF	ASTM A182 GR.F316L	ASME B16.5		
	1/2	16	-	300#	Blind, RF, SF	ASTM A182 GR.F316L	ASME B16.5		
	2	16	BW	Same as Pipe 300#	Orifice, With 2 Hole ½” NPT Female, RF	ASTM A182 GR.F316L	ASME B16.36		
CLOUSERS	1/2	10	-	150#	Spectacle Blind, RF	ASTM A240-Gr.316L	ASME B16.48		
	12	16	-	150#	Spade(Ring &Blind), RF	ASTM A240-Gr.316L	ASME B16.48		

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک							 شرکت توسعه و پارسا	
شماره پیمان:	PIPING MATERIAL SPECIFICATION							شماره صفحه : 30 از 55	
053 - 073 - 9184	پروژه	بسته کاری	صادر کننده	تجهیزات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	PEDCO	120	PI	SP	0001		D02

GASKETS	1/2	16	-	150#	Spiral Wound, 4.45 mm Thick., RF, SF	S.S 316 Winding /Graphite Filler, C.S. Outer& S.S 316L Inner Ring	ASME B16.20	
	1/2	16	-	300#	Spiral Wound, 4.45 mm Thick., RF, SF	S.S 316 Winding /Graphite Filler, C.S. Outer& S.S 316L Inner Ring	ASME B16.20	
Nut & Bolt	1/2	16	-	150#	Stud bolt, Unified threaded	ASTM A 193-B8M	ASME B18.2.1	
	1/2	16	-	150#	Nut, two heavy nuts for each bolt	ASTM A 194 - 8M	ASME B18.2.2	
	1/2	16	-	300#	Stud bolt, Unified threaded	ASTM A 193-B8M	ASME B18.2.1	
	1/2	16	-	300#	Nut, two heavy nuts for each bolt	ASTM A 194 - 8M	ASME B18.2.2	
Gate Valve	1/2	1 1/2	SW/THRD	800#	Solid wedge, BB, OS.&Y, Renewable Seat Ring, HO	Body: ASTM A182 GR.F316L ,Trim No.10	API 602	
	2	10	FLGD	150#	Flexible wedge, BB, OS.&Y, Renewable Seat Ring, HO	Body: A351 GR. CF3M, Trim No.10	API 600	
	12	16	FLGD	150#	Flexible wedge, BB, OS.&Y, Renewable Seat Ring, GO	Body: A351 GR. CF3M, Trim No.10	API 600	
Globe Valve	1/2	1 1/2	SW	800#	OS&Y,BB,Renewable Seat Ring, HO	Body: ASTM A182 GR.F316L ,Trim No.10	ISO 15761	
	2	6	FLGD	150#	OS&Y,BB,Renewable Seat Ring, HO	Body: A351 GR. CF3M, Trim No.10	BS 1873	
	8	16	FLGD	150#	OS&Y,BB,Renewable Seat Ring, GO	Body: A351 GR. CF3M, Trim No.10	BS 1873	
Check Valve	1/2	1 1/2	SW	800#	Lift Type, Piston Type, Renewable Seat Ring	Body: ASTM A182 GR.F316L ,Trim No.10	ISO 15761	
	2	16	FLGD	150#	Swing Type	Body: A351 GR. CF3M, Trim No.10	BS 1868	
Ball Valve	1/2	1 1/2	SW	800#	RB, Soft Seat, Floating Ball, Renewable Seat Ring, Lever Operated	Body: ASTM A182 GR.F316L, Ball: 316 Stem: 316 Trim:316+PTFE	ISO 17292	Note 2
	2	3	FLGD	150#	RB, Soft Seat, Floating Ball, Renewable Seat Ring, Lever Operated	Body: ASTM A351 GR.CF3M, Ball: 316 Stem: 316 Trim:316+PTFE	API 6D	Note 2
	4	8	FLGD	150#	RB, Soft Seat, Trunnion mounted, Renewable Seat Ring, Lever Operated		API 6D	Note 2
	10	16	FLGD	150#	RB, Soft Seat,		API 6D	Note 2

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک							
شماره پیمان: 053 – 073 – 9184	PIPING MATERIAL SPECIFICATION							شماره صفحه : 31 از 55
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GCS	PEDCO	120	PI	SP	0001	
							D02	

					Trunnion mounted, Renewable Seat Ring, GO			
STRAINER	1/2	1 1/2	SW	800#	Y-TYPE	Body: ASTM A182 GR.F316L, Screen :A 182 GR. F316L		
	2	3	FLGD	150#	Y-TYPE	Body: ASTM A351 GR.CF3M, Screen :A 182 GR. F316L		
	4	16	FLGD	150#	T-TYPE	Body: ASTM A351 GR.CF3M, Screen :A 182 GR. F316L		

Note 1: Thread end will be used just for Orifice flange connections

Note 2: Fire Safe per API 6FA. Anti-Static and Blow-Out Proof Stem shall be considered for these valves.

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک								
شماره پیمان: 053 – 073 – 9184	PIPING MATERIAL SPECIFICATION							شماره صفحه : 32 از 55	
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	PEDCO	120	PI	SP	0001		D02

PIPE CLASS: AS00

Header Size (Inch)	1/2	1												
	3/4	2	1											
	1	2	2	1										
	1 1/2	2	2	2	1									
	2	4	4	4	4	3								
	3	4	4	4	4	5	3							
	4	4	4	4	4	5	5	3						
	6	4	4	4	4	6	5	5	3					
	8	4	4	4	4	6	6	5	5	3				
	10	4	4	4	4	6	6	6	5	5	3			
	12	4	4	4	4	6	6	6	6	5	5	3		
	14	4	4	4	4	6	6	6	6	6	5	5	3	
	16	4	4	4	4	6	6	6	6	6	6	5	5	3
	Size	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16
Branch Size (Inch)														

Legend:	1. EQUAL TEE, SW	2. RED. TEE, SW	3. EQUAL TEE, BW
	4. SOCKOLET	5. RED. TEE, BW	6. WELDOLET

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک								
شماره پیمان:	PIPING MATERIAL SPECIFICATION							شماره صفحه : 33 از 55	
053 - 073 - 9184	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	PEDCO	120	PI	SP	0001		D02

SERVICES: Potable Water(UG)					CLASS: AX02			C.A.:0 mm
DES. (TEMP.)	°C	85	Basic Material	HDPE (PE -100)	NACE MR 0175 / ISO 15156 Requirements : NO			Rating: 150#
DES. (PRES.)	BARG	18.2			Design Code: ASME B31.3			
ITEM	SIZES (In)		END	SCH./RATING	DESCRIPTION	MATERIAL	STANDARD	NOTE
	FROM	TO						
PIPES	1	4	Fusion Welding, PE	PN16	PIPE	PE 100	ISO 4427/Man.Std	
FITTINGS	1	4	Fusion Welding/Flanged	PN16	Tee Eq. & Red	PE 100	ISO 4427/Man.Std	
	1	4	Fusion Welding	PN16	Reducer Conc.&Ecc.	PE 100	ISO 4427/Man.Std	
	1	4	Fusion Welding	PN16	Saddle	PE 100	ISO 4427/Man.Std	
	1	4	Fusion Welding/Flanged	PN16	Cap	PE 100	ISO 4427/Man.Std	
	1	4	Fusion Welding/Flanged	PN16	Elbow 45° & 90° LR	PE 100	ISO 4427/Man.Std	
FLANGES	1	4	Fusion Welding	PN16	Flange Adapter, Butt-Weld Stub End	PE 100	Man. Std.,Drilling ACC. TO ASME B16.5	
RINGS	1	4	-	150#	Backing Ring	ASTM A105	Man. Std.,Drilling ACC. TO ASME B16.5	
GASKETS	1	4	-	150#	FLAT RING, 1.5 mm Thick.	Asbestos Free	ASME B16.20	
Nut & Bolt	1	4	-	150#	Stud bolt, Unified threaded	ASTM A 193-B7 (GALVD.)	ASME B18.2.1	
	1	4	-	150#	Nut, two heavy nuts for each bolt	ASTM A 194 - 2H (GALVD.)	ASME B18.2.2	
Gate Valve	1	4	FLGD	150#	Solid wedge, BB, OS.&Y, Renewable Seat Ring, HO	Body: ASTM B148 UNS C95800, Trim: Aluminum Bronze	ASME B16.34	
Globe Valve	1	4	FLGD	150#	OS&Y, BB, Renewable Seat Ring, HO	Body: ASTM B148 UNS C95800, Trim: Aluminum Bronze	ASME B16.34	
Check Valve	1	1 1/2	FLGD	150#	Lift Type, Piston Type, Renewable Seat Ring	Body and Trim: ASTM B148 UNS C95800	ASME B16.34	
	2	4	FLGD	150#	Swing Type			
Butterfly Valve	1	4	FLGD	150#	Lug, FF, Flanged END (B16.5).	Body and Trim: ASTM B148	ASME B16.34	

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک							
شماره پیمان: 053 – 073 – 9184	PIPING MATERIAL SPECIFICATION							شماره صفحه : 34 از 55
	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GCS	PEDCO	120	PI	SP	0001	
							D02	

					Center Line Seat, FB,HO	UNS C95800		
STRAINER	1	3	FLGD	150#	Y-TYPE	Body & COVER: Aluminum Bronze ASTM B148		
	4	4	FLGD	150#	T-TYPE			

Note 1: Branch Table will be finalized by vendor.

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک							 	
شماره پیمان: 053 – 073 – 9184	PIPING MATERIAL SPECIFICATION							شماره صفحه : 35 از 55	
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	PEDCO	120	PI	SP	0001		D02

SERVICES: Instrument Air<4”, Potable Water					CLASS: AZ00			C.A.:0 mm
DES. (TEMP.)	°C	85	Basic Material	Carbon Steel (GALVD.) NOTE 1	NACE MR 0175 / ISO 15156 Requirements : NO			Rating: 150#
DES. (PRES.)	BARG	18.2			Design Code: ASME B31.3			
ITEM	SIZES (In)		END	SCH./RATING	DESCRIPTION	MATERIAL	STANDARD	NOTE
	FROM	TO						
PIPES	1/2	1 1/2	NPT	SCH.80	Seamless	ASTM A106 Gr.B (GALVD.)	ASME B36.10M	NOTE 1
	2	4	NPT	SCH.40	Seamless	ASTM A106 Gr.B (GALVD.)	ASME B36.10M	
FITTINGS	1/2	4	THRD	2000#	Cap	ASTM A105 (GALVD.)	ASME B16.11	
	1/2	4	THRD	2000#	Reducer Conc.&Ecc.	ASTM A105 (GALVD.)	ASME B16.11	
	1/2	4	THRD	2000#	Union	ASTM A105 (GALVD.)	MSS SP-83	
	1/2	4	THRD	2000#	Coupling	ASTM A105 (GALVD.)	ASME B16.11	
	1/2	4	THRD	2000#	Elbow 45° & 90° LR	ASTM A105 (GALVD.)	ASME B16.11	
	1/2	4	THRD	2000#	Hex. Head Plug	ASTM A105 (GALVD.)	ASME B16.11	
	1/2	4	THRD	2000#	Threadolet	ASTM A105 (GALVD.)	MSS SP-97	
FLANGES	1/2	4	THRD	Same as Pipe 150#	Threaded, RF, SF	ASTM A105 (GALVD.)	ASME B16.5	
	1/2	4	THRD	Same as Pipe 300#	Blind, RF, SF	ASTM A105 (GALVD.)	ASME B16.5	
	1/2	4	-	150#	Blind, RF, SF	ASTM A105 (GALVD.)	ASME B16.5	
	1/2	4	-	300#	Blind, RF, SF	ASTM A105 (GALVD.)	ASME B16.5	
	1/2	4	THRD	Same as Pipe 300#	Orifice, With 2 Hole ½” NPT Female, RF	ASTM A105 (GALVD.)	ASME B16.36	
CLOUSERS	1/2	4	-	150#	Spectacle Blind, RF	ASTM A516-Gr.60(GALVD.)	ASME B16.48	
GASKETS	1/2	4	-	150#	FLAT RING, 1.5 mm Thick.	Non Metal, Non-Asbestos	ASME B16.21	
	1/2	4	-	300#	FLAT RING, 1.5 mm Thick.	Non Metal, Non-Asbestos	ASME B16.21	
Nut & Bolt	1/2	4	-	150#	Stud bolt, Unified threaded	ASTM A 193-B7 (GALVD.)	ASME B18.2.1	
	1/2	4	-	150#	Nut, two heavy nuts for each bolt	ASTM A 194 -2H (GALVD.)	ASME B18.2.2	
	1/2	4	-	300#	Stud bolt, Unified threaded	ASTM A 193-B7 (GALVD.)	ASME B18.2.1	
	1/2	4	-	300#	Nut, two heavy nuts for each bolt	ASTM A 194 -2H (GALVD.)	ASME B18.2.2	
Gate Valve	1/2	1 1/2	THRD	800#	Solid wedge, Screwed Bonnet, Renewable Seat Ring. HO	Body: ASTM B148 UNS C95800, Trim: Aluminum Bronze	BS 5154	

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک							
شماره پیمان: 053 – 073 – 9184	PIPING MATERIAL SPECIFICATION							شماره صفحه : 36 از 55
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GCS	PEDCO	120	PI	SP	0001	D02

	2	4	FLGD	150#	Solid wedge, BB, OS.&Y, Renewable Seat Ring, HO	Body: ASTM B148 UNS C95800, Trim: Aluminum Bronze	BS 5154	
Globe Valve	1/2	1 1/2	THRD	800#	OS&Y, BB, Renewable Seat Ring, HO	Body: ASTM B148 UNS C95800, Trim: Aluminum Bronze	BS 5154	
	2	4	FLGD	150#	Solid wedge, BB, OS.&Y, Renewable Seat Ring, HO	Body: ASTM B148 UNS C95800, Trim: Aluminum Bronze	BS 5154	
Check Valve	1/2	1 1/2	THRD	800#	Lift Type, Piston Type, Renewable Seat Ring	Body and Trim: ASTM B148 UNS C95800	BS 5154	
	2	4	FLGD	150#	Swing Type	Body and Trim: ASTM B148 UNS C95800	BS 5154	
Ball Valve	1/2	1 1/2	THRD	800#	RB, Soft Seat, Floating Ball, Renewable Seat Ring, Lever Operated	Body, Trim and Ball: ASTM B148 UNS C95800, Seat: PTFE	ISO 17292	Note 2
	2	4	FLGD	150#	RB, Soft Seat, Floating Ball, Renewable Seat Ring, Lever Operated	Body, Trim and Ball: ASTM B148 UNS C95800, Seat: PTFE	API 6D	Note 2
STRAINER	1/2	1 1/2	THRD	800#	Y-TYPE	Body: B62 , Screen :A 182 GR. F316L		
	2	3	FLGD	150#	Y-TYPE	Body: A216 , Screen :A 182 GR. F316L		
	4	4	FLGD	150#	T-TYPE	Body: A216 , Screen :A 182 GR. F316L		

Note 1: Hot dip galvanized coating on fabricated shall be according to ASTM A153.

Note 2: Fire Safe per API 6FA. Anti Static, and Blow-Out Proof Stem shall be considered for these valves.

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک							
شماره پیمان: 053 – 073 – 9184	PIPING MATERIAL SPECIFICATION							شماره صفحه : 37 از 55
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GCS	PEDCO	120	PI	SP	0001	
							D02	

PIPE CLASS : AZ00

Header Size (Inch)	1/2	1						
	3/4	2	1					
	1	2	2	1				
	1 1/2	2	2	2	1			
	2	2	2	2	2	1		
	3	3	3	3	2	2	1	
	4	3	3	3	2	2	2	1
	Size	1/2	3/4	1	1 1/2	2	3	4
Branch Size (Inch)								

Legend:	1. EQUAL TEE, THRD	2. RED. TEE, THRD
	3. RED. TEE+REDUCING BUSH, THRD	

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک							 HIRGAN ENERGY 
شماره پیمان: 053 - 073 - 9184	PIPING MATERIAL SPECIFICATION							شماره صفحه : 38 از 55
	پروژه	بسته کاری	صادر کننده	تجهیزات	رشته	نوع مدرک	سریال	
	BK	GCS	PEDCO	120	PI	SP	0001	D02

SERVICES: close drain, Process Gas					D02	CLASS: CN05			C.A.:3 mm
DES. (TEMP.)	°C	155	Basic Material	Carbon Steel	NACE 175 Requirements : Yes			Rating: 300#	
DES. (PRES.)	BARG	47.7			Design Code: ASME B31.3				
ITEM	SIZES (In)		END	SCH./RATING	DESCRIPTION	MATERIAL	STANDARD	NOTE	
	FROM	TO							
PIPES	1/2	1 1/2	PBE/TOE/TBE	SCH.160	Seamless	ASTM A106 Gr.B	ASME B36.10M	NOTE 1	
	2	2	BE	SCH.80	Seamless	ASTM A106 Gr.B	ASME B36.10M		
	3	6	BE	SCH.40	Seamless	ASTM A106 Gr.B	ASME B36.10M		
Nipples	1/2	1 1/2	PBE/PSE/BLE	Same as Pipe	Nipples	ASTM A106 Gr.B	MSS SP-95		
FITTINGS	1/2	1 1/2	SW	6000#	Cap	ASTM A105	ASME B16.11		
	1/2	1 1/2	SW	6000#	Reducer Conc.&Ecc.	ASTM A105	ASME B16.11		
	1/2	1 1/2	SW	6000#	Union	ASTM A105	MSS SP-83		
	1/2	1 1/2	SW	6000#	Coupling	ASTM A105	ASME B16.11		
	1/2	1 1/2	SW	6000#	Elbow 45° & 90° LR	ASTM A105	ASME B16.11		
	1/2	1 1/2	SW	6000#	Sockolet	ASTM A105	MSS SP-97		
	1/2	1 1/2	THD	3000#	Hex. Head Plug	ASTM A105	ASME B16.11		
	2	6	BW	Same as Pipe	Cap	ASTM 234 WPB	ASME B16.9		
	2	6	BW	Same as Pipe	Tee Eq. & Red	ASTM 234 WPB	ASME B16.9		
	2	6	BW	Same as Pipe	Reducer Conc.&Ecc.	ASTM 234 WPB	ASME B16.9		
	2	6	BW	Same as Pipe	Elbow 45° & 90° LR	ASTM 234 WPB	ASME B16.9		
	2	6	BW	Same as Pipe	Weldolet	ASTM A105	MSS SP-97		
FLANGES	1/2	1 1/2	SW	300#	Socket welded, RF,SW,SF	ASTM A105	ASME B16.5		
	2	6	BW	Same as Pipe 300#	Weld Neck, RF, SF	ASTM A105	ASME B16.5		
	1/2	6	-	300#	Blind, RF, SF	ASTM A105	ASME B16.5		
CLOUSERS	1/2	6	-	300#	Spectacle Blind, RF	ASTM A516-Gr.70	ASME B16.48		
GASKETS	1/2	6	-	300#	Spiral Wound, 4.45 mm Thick., RF, SF	S.S 316 Winding /Graphite Filler, C.S. Outer& S.S 316L Inner Ring	ASME B16.20		
Nut & Bolt	1/2	6	-	300#	Stud bolt, Unified threaded	ASTM A 193-B7M	ASME B18.2.1		
	1/2	6	-	300#	Nut, two heavy nuts for each bolt	ASTM A 194 - 2HM	ASME B18.2.2		

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک								
شماره پیمان: 053 – 073 – 9184	PIPING MATERIAL SPECIFICATION							شماره صفحه : 39 از 55	
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	PEDCO	120	PI	SP	0001	D02	

Gate Valve	1/2	1 1/2	SW/THRD	800#	Solid wedge, BB, OS.&Y, Renewable Seat Ring, HO	Body: A105 ,Trim No.12	API 602	
	2	6	FLGD	300#	Flexible wedge, BB, OS.&Y, Renewable Seat Ring, HO	Body: A216 GR. WCB, Trim No.12	API 600	
Globe Valve	1/2	1 1/2	SW	800#	OS&Y,BB,Renewable Seat Ring, HO	Body: A 105 Trim No.12	ISO 15761	
	2	6	FLGD	300#	OS&Y,BB,Renewable Seat Ring, HO	Body: A216 GR. WCB., Trim No.12	BS 1873	
Check Valve	1/2	1 1/2	SW	800#	Lift Type, Piston Type, Renewable Seat Ring	Body: A 105 .Trim No.12	ISO 15761	
	2	6	FLGD	300#	Swing Type	Body: A216 GR. WCB., Trim No.12	BS 1868	
Ball Valve	1/2	1 1/2	SW	800#	RB, Soft Seat, Floating Ball, Renewable Seat Ring, Lever Operated	Body: A105, Ball: 316 Stem: 316 Trim:316+RPTFE	ISO 17292	Note 2
	2	3	FLGD	300#	RB, Soft Seat, Floating Ball, Renewable Seat Ring, Lever Operated	Body: A216 Gr. WCB, Ball: 316 Stem: 316 Trim:316+RPTFE	API 6D	Note 2
	4	6	FLGD	300#	RB, Soft Seat, Trunnion mounted, Renewable Seat Ring, Lever Operated		API 6D	Note 2
STRAINER	1/2	1 1/2	SW	800#	Y-TYPE	Body: A105 , Screen :A 182 GR. F316L		
	2	3	FLGD	300#	Y-TYPE	Body: A216 GR. WCB , Screen :A 182 GR. F316L		
	4	6	FLGD	300#	T-TYPE	Body: A216 GR. WCB , Screen :A 182 GR. F316L		

Note 1: Thread end will be used just for Orifice flange connections

Note 2: Fire Safe per API 6FA. Anti Static, and Blow-Out Proof Stem shall be considered for these valves.

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک								
شماره پیمان: 053 – 073 – 9184	PIPING MATERIAL SPECIFICATION							شماره صفحه : 40 از 55	
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	PEDCO	120	PI	SP	0001		D02

PIPE CLASS : CN05

Header Size (Inch)	1/2	1							
	3/4	2	1						
	1	2	2	1					
	1 1/2	2	2	2	1				
	2	4	4	4	4	3			
	3	4	4	4	4	5	3		
	4	4	4	4	4	5	5	3	
	6	4	4	4	4	6	5	5	3
	Size	1/2	3/4	1	1 1/2	2	3	4	6
Branch Size (Inch)									

Legend:	1. EQUAL TEE, SW	2. RED. TEE, SW	3. EQUAL TEE, BW
	4. SOCKOLET	5. RED. TEE, BW	6. WELDOLET

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک							 HIRGAN ENERGY 
شماره پیمان: 053 - 073 - 9184	PIPING MATERIAL SPECIFICATION							شماره صفحه : 41 از 55
	پروژه	بسته کاری	صادر کننده	تجهیزات	رشته	نوع مدرک	سریال	
	BK	GCS	PEDCO	120	PI	SP	0001	D02

SERVICES: close drain, Process Gas					D02	CLASS: CN07			C.A.:6 mm
DES. (TEMP.)	°C	155	Basic Material	Carbon Steel	NACE 175 Requirements : Yes			Rating: 300#	
DES. (PRES.)	BARG	47.7			Design Code: ASME B31.3				
ITEM	SIZES (In)		END	SCH./RATING	DESCRIPTION	MATERIAL	STANDARD	NOTE	
	FROM	TO							
PIPES	1/2	1 1/2	PBE/TOE/TBE	XXS	Seamless	ASTM A106 Gr.B	ASME B36.10M	NOTE 1	
	2	3	BE	SCH 160	Seamless	ASTM A106 Gr.B	ASME B36.10M		
	4	4	BE	SCH 120	Seamless	ASTM A106 Gr.B	ASME B36.10M		
	6	6	BE	SCH 80	Seamless	ASTM A106 Gr.B	ASME B36.10M		
Nipples	1/2	1 1/2	PBE/PSE/BLE	Same as Pipe	Nipples	ASTM A106 Gr.B	MSS SP-95		
FITTINGS	1/2	1 1/2	SW	9000#	Cap	ASTM A105	ASME B16.11		
	1/2	1 1/2	SW	9000#	Reducer Conc.&Ecc.	ASTM A105	ASME B16.11		
	1/2	1 1/2	SW	9000#	Union	ASTM A105	MSS SP-83		
	1/2	1 1/2	SW	9000#	Coupling	ASTM A105	ASME B16.11		
	1/2	1 1/2	SW	9000#	Elbow 45° & 90° LR	ASTM A105	ASME B16.11		
	1/2	1 1/2	SW	9000#	Sockolet	ASTM A105	MSS SP-97		
	1/2	1 1/2	THD	3000#	Hex. Head Plug	ASTM A105	ASME B16.11		
	2	6	BW	Same as Pipe	Cap	ASTM 234 WPB	ASME B16.9		
	2	6	BW	Same as Pipe	Tee Eq. & Red	ASTM 234 WPB	ASME B16.9		
	2	6	BW	Same as Pipe	Reducer Conc.&Ecc.	ASTM 234 WPB	ASME B16.9		
	2	6	BW	Same as Pipe	Elbow 45° & 90° LR	ASTM 234 WPB	ASME B16.9		
	2	6	BW	Same as Pipe	Weldolet	ASTM A105	MSS SP-97		
FLANGES	1/2	1 1/2	SW	300#	Socket welded, RF,SW,SF	ASTM A105	ASME B16.5		
	2	6	BW	Same as Pipe 300#	Weld Neck, RF, SF	ASTM A105	ASME B16.5		
	1/2	6	-	300#	Blind, RF, SF	ASTM A105	ASME B16.5		
CLOUSERS	1/2	6	-	300#	Spectacle Blind, RF	ASTM A516-Gr.70	ASME B16.48		
GASKETS	1/2	6	-	300#	Spiral Wound, 4.45 mm Thick., RF, SF	S.S 316 Winding /Graphite Filler, C.S. Outer& S.S 316L Inner Ring	ASME B16.20		
Nut & Bolt	1/2	6	-	300#	Stud bolt, Unified threaded	ASTM A 193-B7M	ASME B18.2.1		

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک								
شماره پیمان: 053 – 073 – 9184	PIPING MATERIAL SPECIFICATION								شماره صفحه : 42 از 55
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه	
	BK	GCS	PEDCO	120	PI	SP	0001	D02	

	1/2	6	-	300#	Nut, two heavy nuts for each bolt	ASTM A 194 - 2HM	ASME B18.2.2	
Gate Valve	1/2	1 1/2	SW/THRD	800#	Solid wedge, BB, OS.&Y, Renewable Seat Ring, HO	Body: A105 ,Trim No.12	API 602	
	2	6	FLGD	300#	Flexible wedge, BB, OS.&Y, Renewable Seat Ring, HO	Body: A216 GR. WCB, Trim No.12	API 600	
Globe Valve	1/2	1 1/2	SW	800#	OS&Y,BB,Renewable Seat Ring, HO	Body: A 105 Trim No.12	ISO 15761	
	2	6	FLGD	300#	OS&Y,BB,Renewable Seat Ring, HO	Body: A216 GR. WCB., Trim No.12	BS 1873	
Check Valve	1/2	1 1/2	SW	800#	Lift Type, Piston Type, Renewable Seat Ring	Body: A 105 .Trim No.12	ISO 15761	
	2	6	FLGD	300#	Swing Type	Body: A216 GR. WCB., Trim No.12	BS 1868	
Ball Valve	1/2	1 1/2	SW	800#	RB, Soft Seat, Floating Ball, Renewable Seat Ring, Lever Operated	Body: A105, Ball: 316 Stem: 316 Trim:316+RPTFE	ISO 17292	Note 2
	2	3	FLGD	300#	RB, Soft Seat, Floating Ball, Renewable Seat Ring, Lever Operated	Body: A216 Gr. WCB, Ball: 316 Stem: 316 Trim:316+RPTFE	API 6D	Note 2
	4	6	FLGD	300#	RB, Soft Seat, Trunnion mounted, Renewable Seat Ring, Lever Operated		API 6D	Note 2
STRAINER	1/2	1 1/2	SW	800#	Y-TYPE	Body: A105 , Screen :A 182 GR. F316L		
	2	3	FLGD	300#	Y-TYPE	Body: A216 GR. WCB , Screen :A 182 GR. F316L		
	4	6	FLGD	300#	T-TYPE	Body: A216 GR. WCB , Screen :A 182 GR. F316L		

Note 1: Thread end will be used just for Orifice flange connections

Note 2: Fire Safe per API 6FA. Anti Static, and Blow-Out Proof Stem shall be considered for these valves.

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک							
شماره پیمان: 053 – 073 – 9184	PIPING MATERIAL SPECIFICATION							شماره صفحه : 43 از 55
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GCS	PEDCO	120	PI	SP	0001	
							D02	

PIPE CLASS : CN07

Header Size (Inch)	1/2	1							
	3/4	2	1						
	1	2	2	1					
	1 1/2	2	2	2	1				
	2	4	4	4	4	3			
	3	4	4	4	4	5	3		
	4	4	4	4	4	5	5	3	
	6	4	4	4	4	6	5	5	3
	Size	1/2	3/4	1	1 1/2	2	3	4	6
	Branch Size (Inch)								

Legend:	1. EQUAL TEE, SW	2. RED. TEE, SW	3. EQUAL TEE, BW
	4. SOCKOLET	5. RED. TEE, BW	6. WELDOLET

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک							
شماره پیمان: 053 – 073 – 9184	PIPING MATERIAL SPECIFICATION							شماره صفحه : 44 از 55
	پروژه	بسته کاری	صادر کننده	تجهیزات	رشته	نوع مدرک	سریال	
	BK	GCS	PEDCO	120	PI	SP	0001	
							D02	

SERVICES: Chemical, Close drain, Process Gas					CLASS: CS00			C.A.:0 mm	
DES. (TEMP.) °C 155					NACE MR 0175 / ISO 15156 Requirements : No			Rating: 300#	
DES. (PRES.) BARG 30.3					Design Code: ASME B31.3				
ITEM	SIZES (In)		END	SCH./RATING	DESCRIPTION	MATERIAL	STANDARD		NOTE
	FROM	TO							
PIPES	1/2	1 1/2	PBE/TOE/TBE	SCH.40S	Seamless	ASTM A312 TP 316L	ASME B36.19M		NOTE 1
	2	6	BE	SCH.10S	Seamless	ASTM A312 TP 316L	ASME B36.19M		
Nipples	1/2	1 1/2	PBE/PSE/BLE	Same as Pipe	Nipples	ASTM A312 TP 316L	MSS SP-95		
FITTINGS	1/2	1 1/2	SW	3000#	Cap	ASTM A182 GR.F316L	ASME B16.11		
	1/2	1 1/2	SW	3000#	Reducer Conc.&Ecc.	ASTM A182 GR.F316L	ASME B16.11		
	1/2	1 1/2	SW	3000#	Union	ASTM A182 GR.F316L	MSS SP-83		
	1/2	1 1/2	SW	3000#	Coupling	ASTM A182 GR.F316L	ASME B16.11		
	1/2	1 1/2	SW	3000#	Elbow 45° & 90° LR	ASTM A182 GR.F316L	ASME B16.11		
	1/2	1 1/2	SW	3000#	Sockolet	ASTM A182 GR.F316L	MSS SP-97		
	1/2	1 1/2	THD	2000#	Hex. Head Plug	ASTM A182 GR.F316L	ASME B16.11		
	2	6	BW	Same as Pipe	Cap	ASTM A403 GR.WP316L	ASME B16.9		
	2	6	BW	Same as Pipe	Tee Eq. & Red	ASTM A403 GR.WP316L	ASME B16.9		
	2	6	BW	Same as Pipe	Reducer Conc.&Ecc.	ASTM A403 GR.WP316L	ASME B16.9		
	2	6	BW	Same as Pipe	Elbow 45° & 90° LR	ASTM A403 GR.WP316L	ASME B16.9		
	2	6	BW	Same as Pipe	Weldolet	ASTM A403 GR.WP316L	MSS SP-97		
FLANGES	1/2	1 1/2	SW	300#	Socket welded, RF,SW,SF	ASTM A182 GR.F316L	ASME B16.5		
	2	6	BW	Same as Pipe 300#	Weld Neck, RF, SF	ASTM A182 GR.F316L	ASME B16.5		
	1/2	6	-	300#	Blind, RF, SF	ASTM A182 GR.F316L	ASME B16.5		
CLOUSERS	1/2	6	-	300#	Spectacle Blind, RF	ASTM A240-Gr.316L	ASME B16.48		
GASKETS	1/2	6	-	300#	Spiral Wound, 4.45 mm Thick., RF, SF	S.S 316 Winding /Graphite Filler, C.S. Outer& S.S 316L Inner Ring	ASME B16.20		
Nut & Bolt	1/2	6	-	300#	Stud bolt, Unified threaded	ASTM A 193-B8M	ASME B18.2.1		
	1/2	6	-	300#	Nut, two heavy nuts for each bolt	ASTM A 194 -8M	ASME B18.2.2		
Gate Valve	1/2	1	SW/THRD	800#	Solid wedge, BB,	Body: ASTM	API 602		

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک							
شماره پیمان: 053 – 073 – 9184	PIPING MATERIAL SPECIFICATION							شماره صفحه : 45 از 55
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GCS	PEDCO	120	PI	SP	0001	
							D02	

		1/2			OS.&Y, Renewable Seat Ring, HO	A182 GR.F316L ,Trim No.10		
	2	6	FLGD	300#	Flexible wedge, BB, OS.&Y, Renewable Seat Ring, HO	Body: A351 GR. CF3M, Trim No.10	API 600	
Globe Valve	1/2	1 1/2	SW	800#	OS&Y,BB,Renewable Seat Ring, HO	Body: ASTM A182 GR.F316L ,Trim No.10	ISO 15761	
	2	6	FLGD	300#	OS&Y,BB,Renewable Seat Ring, HO	Body: A351 GR. CF3M, Trim No.10	BS 1873	
Check Valve	1/2	1 1/2	SW	800#	Lift Type, Piston Type, Renewable Seat Ring	Body: ASTM A182 GR.F316L ,Trim No.10	ISO 15761	
	2	6	FLGD	300#	Swing Type	Body: A351 GR. CF3M, Trim No.10	BS 1868	
Ball Valve	1/2	1 1/2	SW	800#	RB, Soft Seat, Floating Ball, Renewable Seat Ring, Lever Operated	Body: ASTM A182 GR.F316L, Ball: 316 Stem: 316 Trim:316+RPTFE	ISO 17292	Note 2
	2	3	FLGD	300#	RB, Soft Seat, Floating Ball, Renewable Seat Ring, Lever Operated	Body: ASTM A351 GR.CF3M, Ball: 316 Stem: 316 Trim:316+RPTFE	API 6D	Note 2
	4	6	FLGD	300#	RB, Soft Seat, Trunnion mounted, Renewable Seat Ring, Lever Operated		API 6D	Note 2
STRAINER	1/2	1 1/2	SW	800#	Y-TYPE	Body: ASTM A182 GR.F316L, Screen :A 182 GR. F316L		
	2	3	FLGD	300#	Y-TYPE	Body: ASTM A351 GR.CF3M, Screen :A 182 GR. F316L		
	4	6	FLGD	300#	T-TYPE	Body: ASTM A351 GR.CF3M, Screen :A 182 GR. F316L		

Note 1: Thread end will be used just for Orifice flange connections

Note 2: Fire Safe per API 6FA. Anti Static, and Blow-Out Proof Stem shall be considered for these valves.

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک								
شماره پیمان: 053 – 073 – 9184	PIPING MATERIAL SPECIFICATION							شماره صفحه : 46 از 55	
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	PEDCO	120	PI	SP	0001		D02

PIPE CLASS : CS00

Header Size (Inch)	1/2	1							
	3/4	2	1						
	1	2	2	1					
	1 1/2	2	2	2	1				
	2	4	4	4	4	3			
	3	4	4	4	4	5	3		
	4	4	4	4	4	5	5	3	
	6	4	4	4	4	6	5	5	3
	Size	1/2	3/4	1	1 1/2	2	3	4	6
	Branch Size (Inch)								

Legend:	1. EQUAL TEE, SW	2. RED. TEE, SW	3. EQUAL TEE, BW
	4. SOCKOLET	5. RED. TEE, BW	6. WELDOLET

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک								
شماره پیمان:	PIPING MATERIAL SPECIFICATION							شماره صفحه : 47 از 55	
053 - 073 - 9184	پروژه	بسته کاری	صادر کننده	تجهیزات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	PEDCO	120	PI	SP	0001		D02

SERVICES: Hydrocarbon Gas					D02	CLASS: FN05			C.A.:3 mm
DES. (TEMP.)	°C	175	Basic Material	Carbon Steel	NACE MR 0175 / ISO 15156 Requirements : Yes			Rating: 600#	
DES. (PRES.)	BARG	90			Design Code: ASME B31.3				
ITEM	SIZES (In)		END	SCH./RATING	DESCRIPTION	MATERIAL	STANDARD	NOTE	
	FROM	TO							
PIPES	1/2	1 1/2	PBE/TOE/TBE	SCH.160	Seamless	ASTM A106 Gr.B	ASME B36.10M	NOTE 1	
	2	2	BE	SCH.160	Seamless	ASTM A106 Gr.B	ASME B36.10M		
	3	8	BE	SCH.80	Seamless	ASTM A106 Gr.B	ASME B36.10M		
Nipples	1/2	1 1/2	PBE/PSE/BLE	Same as Pipe	Nipples	ASTM A106 Gr.B	MSS SP-95		
FITTINGS	1/2	1 1/2	SW	6000#	Cap	ASTM A105	ASME B16.11		
	1/2	1 1/2	SW	6000#	Reducer Conc.&Ecc.	ASTM A105	ASME B16.11		
	1/2	1 1/2	SW	6000#	Union	ASTM A105	MSS SP-83		
	1/2	1 1/2	SW	6000#	Coupling	ASTM A105	ASME B16.11		
	1/2	1 1/2	SW	6000#	Elbow 45° & 90° LR	ASTM A105	ASME B16.11		
	1/2	1 1/2	SW	6000#	Sockolet	ASTM A105	MSS SP-97		
	1/2	1 1/2	THD		Hex. Head Plug	ASTM A105	ASME B16.11		
	2	6	BW	Same as Pipe	Cap	ASTM A234 WPB	ASME B16.9		
	2	6	BW	Same as Pipe	Tee Eq. & Red	ASTM A234 WPB	ASME B16.9		
	2	6	BW	Same as Pipe	Reducer Conc.&Ecc.	ASTM A234 WPB	ASME B16.9		
	2	6	BW	Same as Pipe	Elbow 45° & 90° LR	ASTM A234 WPB	ASME B16.9		
	2	6	BW	Same as Pipe	Weldolet	ASTM A105	MSS SP-97		
FLANGES	1/2	1 1/2	SW	600#	Socket welded, RF,SW,SF	ASTM A105	ASME B16.5		
	2	6	BW	Same as Pipe 600#	Weld Neck, RF, SF	ASTM A105	ASME B16.5		
	1/2	6	-	600#	Blind, RF, SF	ASTM A105	ASME B16.5		
CLOUSERS	1/2	6	-	600#	Spectacle Blind, RF	ASTM A516-Gr.70	ASME B16.48		
GASKETS	1/2	6	-	600#	Spiral Wound, 4.45 mm Thick., RF, SF	S.S 316 Winding /Graphite Filler, C.S. Outer& S.S 316L Inner Ring	ASME B16.20		
Nut & Bolt	1/2	6	-	600#	Stud bolt, Unified threaded	ASTM A 193-B7M	ASME B18.2.1		
	1/2	6	-	600#	Nut, two heavy hex nuts for each bolt	ASTM A 194 - 2HM	ASME B18.2.2		

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک								
شماره پیمان:	PIPING MATERIAL SPECIFICATION							شماره صفحه : 48 از 55	
053 - 073 - 9184	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	PEDCO	120	PI	SP	0001		D02

Gate Valve	1/2	1 1/2	SW/THRD	800#	Solid wedge, BB, OS.&Y, Renewable Seat Ring, HO	Body: A105 ,Trim No.12	API 602	
	2	6	FLGD-RF	600#	Flexible wedge, BB, OS.&Y, Renewable Seat Ring, HO	Body: A216 GR. WCB, Trim No.12	API 600	
Globe Valve	1/2	1 1/2	SW	800#	OS&Y,BB,Renewable Seat Ring, HO	Body: A 105 .Trim No.12	ISO 15761	
	2	4	FLGD-RF	600#	OS&Y,BB,Renewable Seat Ring, HO	Body: A216 GR. WCB., Trim No.12	BS 1873	
	6	6	FLGD-RF	600#	OS&Y,BB,Renewable Seat Ring, GO	Body: A216 GR. WCB., Trim No.12	BS 1873	
Check Valve	1/2	1 1/2	SW	800#	Piston Lift Type,BC, Renewable Seat Ring,Horizontal Install Type	Body: A 105 .Trim No.12	ISO 15761	
	2	6	FLGD-RF	600#	Swing Type,BC	Body: A216 GR. WCB., Trim No.12	BS 1868/ API 6D	
Ball Valve	1/2	1 1/2	SW	800#	RB, Soft Seat, Floating Ball, Renewable Seat Ring, Lever Operated	Body: A105, Ball: SS316 Trim:316+RPTFE	ISO 17292	Note 2
	2	4	FLGD-RF	600#	RB, Soft Seat, Trunnion mounted, Renewable Seat Ring, Lever Operated	Body: A216 Gr. WCB, Ball: SS316 Trim:316+RPTFE	API 6D	Note 2
	6	6	FLGD-RF	600#	RB, Soft Seat, Trunnion mounted, Renewable Seat Ring, Gear Operated	Body: A216 Gr. WCB, Ball: SS316 Trim:316+RPTFE	API 6D	Note 2
STRAINER	1/2	1 1/2	SW	800#	Y-TYPE	Body: A105 , Screen :A 182 GR. F316L		
	2	2	FLGD	600#	Y-TYPE	Body: A234 WPB Screen :A 182 GR. F316L		
	3	6	FLGD	600#	T-TYPE	Body: A234 WPB Screen :A 182 GR. F316L		

Note 1: Thread end will be used just for Orifice flange connections

Note 2: Fire Safe per API 6FA. Anti Static, and Blow-Out Proof Stem shall be considered for these valves.

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک							
شماره پیمان: 053 – 073 – 9184	PIPING MATERIAL SPECIFICATION							شماره صفحه : 49 از 55
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GCS	PEDCO	120	PI	SP	0001	
							D02	

PIPE CLASS : FN05

Header Size (Inch)	1/2	1								
	3/4	2	1							
	1	2	2	1						
	1 1/2	2	2	2	1					
	2	4	4	4	4	3				
	3	4	4	4	4	5	3			
	4	4	4	4	4	5	5	3		
	6	4	4	4	4	6	5	5	3	
	8	4	4	4	4	6	6	5	5	3
	Size	1/2	3/4	1	1 1/2	2	3	4	6	8
Branch Size (Inch)										

Legend:	1. EQUAL TEE, SW	2. RED. TEE, SW	3. EQUAL TEE, BW
	4. SOCKOLET	5. RED. TEE, BW	6. WELDOLET

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک							
شماره پیمان: 053 – 073 – 9184	PIPING MATERIAL SPECIFICATION							شماره صفحه : 50 از 55
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GCS	PEDCO	120	PI	SP	0001	D02

SERVICES: Hydrocarbon Gas					CLASS: FN07			C.A.: 6 mm
DES. (TEMP.)	°C D02 175		Basic Material	Carbon Steel	NACE MR 0175 / ISO 15156 Requirements : Yes			Rating: 600#
DES. (PRES.)	BARG	90			Design Code: ASME B31.8			
ITEM	SIZES (In)		END	SCH./RATING	DESCRIPTION	MATERIAL	STANDARD	NOTE
	FROM	TO						
PIPES	1/2	1 1/2	PBE/TOE/TBE	SCH.XXS	Seamless	ASTM A106 Gr.B	ASME B36.10M	NOTE 1
	2	2	BE	SCH.XXS	Seamless	ASTM A106 Gr.B	ASME B36.10M	
	3	3	BE	SCH.160	Seamless	ASTM A106 Gr.B	ASME B36.10M	
	4	6	BE	SCH.120	Seamless	ASTM A106 Gr.B	ASME B36.10M	
	8	8	BE	SCH.100	Seamless	ASTM A106 Gr.B	ASME B36.10M	
Nipples	1/2	1 1/2	PBE/PSE/BLE	Same as Pipe	Nipples	ASTM A106 Gr.B	MSS SP-95	
FITTINGS	1/2	1 1/2	SW	9000#	Cap	ASTM A105	ASME B16.11	
	1/2	1 1/2	SW	9000#	Reducer Conc.&Ecc.	ASTM A105	ASME B16.11	
	1/2	1 1/2	SW	9000#	Union	ASTM A105	MSS SP-83	
	1/2	1 1/2	SW	9000#	Coupling	ASTM A105	ASME B16.11	
	1/2	1 1/2	SW	9000#	Elbow 45° & 90° LR	ASTM A105	ASME B16.11	
	1/2	1 1/2	SW	9000#	Sockolet	ASTM A105	MSS SP-97	
	1/2	1 1/2	THD		Hex. Head Plug	ASTM A105	ASME B16.11	
	2	8	BW	Same as Pipe	Cap,SMLS	ASTM A234 WPB	ASME B16.9	
	2	8	BW	Same as Pipe	Tee Eq. & Red, SMLS	ASTM A234 WPB	ASME B16.9	
	2	8	BW	Same as Pipe	Reducer Conc.&Ecc, SMLS	ASTM A234 WPB	ASME B16.9	
	2	8	BW	Same as Pipe	Elbow 45° & 90°, SMLS,LR	ASTM A234 WPB	ASME B16.9	
	2	8	BW	Same as Pipe	Weldolet	ASTM A105	MSS SP-97	
FLANGES	1/2	1 1/2	SW	600#	Socket welded, RF,SW,SF	ASTM A105	ASME B16.5	
	2	8	BW	Same as Pipe 600#	Weld Neck, RF, SF	ASTM A105	ASME B16.5	
	1/2	8	-	600#	Blind, RF, SF	ASTM A105	ASME B16.5	
CLOUSERS	1/2	8	-	600#	Spectacle Blind, RF	ASTM A516-Gr.70	ASME B16.48	
GASKETS	1/2	8	-	600#	Spiral Wound. 4.45	S.S 316 Winding	ASME	

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک								
شماره پیمان:	PIPING MATERIAL SPECIFICATION							شماره صفحه : 51 از 55	
053 - 073 - 9184	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	PEDCO	120	PI	SP	0001		D02

					mm Thick., RF, SF	/Graphite Filler, C.S. Outer& S.S 316L Inner Ring	B16.20	
Nut & Bolt	1/2	8	-	600#	Stud bolt, Unified threaded	ASTM A 193-B7M	ASME B18.2.1	
	1/2	8	-	600#	Nut, two Heavy Hex nuts for each bolt	ASTM A 194 - 2HM	ASME B18.2.2	
Gate Valve	1/2	1 1/2	SW/THRD	800#	Solid wedge, BB, OS.&Y, Renewable Seat Ring, HO	Body: A105 ,Trim No.12	API 602	
	2	8	FLGD-RF	600#	Flexible wedge, BB, OS.&Y, Renewable Seat Ring, HO	Body: A216 GR. WCB, Trim No.12	API 600	
Globe Valve	1/2	1 1/2	SW	800#	OS&Y,BB, Renewable Seat Ring, HO	Body: A 105 . Trim No.12	ISO 15761	
	2	4	FLGD-RF	600#	OS&Y,BB, Renewable Seat Ring, HO	Body: A216 GR. WCB., Trim No.12	BS 1873	
	6	8	FLGD-RF	600#	OS&Y,BB, Renewable Seat Ring, GO		BS 1873	
Check Valve	1/2	1 1/2	SW	800#	Piston Lift Type,BC, Renewable Seat Ring,Horizontal Install Type	Body: A 105 .Trim No.12	ISO 15761	
	2	6	FLGD-RF	600#	Swing Type,BC	Body: A216 GR. WCB., Trim No.12	BS 1868	
Ball Valve	1/2	1 1/2	SW	800#	RB, Soft Seat, Floating Ball, Renewable Seat Ring, Lever Operated	Body: A105, Ball: A182 Ball: 316 Stem: 316 Trim:316+RPTFE	ISO 17292	Note 2
	2	4	FLGD-RF	600#	RB, Soft Seat, Trunnion mounted, Renewable Seat Ring, Lever Operated	Body: A216 Gr. WCB, Ball: SS316 Trim:316+RPTFE	API 6D	Note 2
	6	8	FLGD-RF	600#	RB, Soft Seat, Trunnion mounted, Renewable Seat Ring, Gear Operated	Body: A216 Gr. WCB, Ball: SS316 Trim:316+RPTFE	API 6D	Note 2
STRAINER	1/2	1 1/2	SW	800#	Y-TYPE	Body: A105 , Screen :A 182 GR. F316L		
	2	2	FLGD-RF	600#	Y-TYPE	Body: A216 , Screen :A 182 GR. F316L		
	3	8	FLGD-RF	600#	T-TYPE	Body: A234WPB, Screen :A 182 GR. F316L		

Note 1: Thread end will be used just for Orifice flange connections

Note 2: Fire Safe per API 6FA. Anti Static, and Blow-Out Proof Stem shall be considered for these valves.

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک							 HIRGAN ENERGY 	
شماره پیمان: 053 – 073 – 9184	PIPING MATERIAL SPECIFICATION							شماره صفحه : 52 از 55	
	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	PEDCO	120	PI	SP	0001		D02

PIPE CLASS : FN07

Header Size (Inch)	1/2	1								
	3/4	2	1							
	1	2	2	1						
	1 1/2	2	2	2	1					
	2	4	4	4	4	3				
	3	4	4	4	4	5	3			
	4	4	4	4	4	5	5	3		
	6	4	4	4	4	6	5	5	3	
	8	4	4	4	4	6	6	5	5	3
	Size	1/2	3/4	1	1 1/2	2	3	4	6	8
Branch Size (Inch)										

Legend:	1. EQUAL TEE, SW	2. RED. TEE, SW	3. EQUAL TEE, BW
	4. SOCKOLET	5. RED. TEE, BW	6. WELDOLET

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک							 HIRGAN ENERGY 
شماره پیمان: 053 - 073 - 9184	PIPING MATERIAL SPECIFICATION							شماره صفحه : 53 از 55
	پروژه	بسته کاری	صادر کننده	تجهیزات	رشته	نوع مدرک	سریال	
	BK	GCS	PEDCO	120	PI	SP	0001	D02

SERVICES: Chemical, Close drain,					D02	CLASS: FS00			C.A.:0 mm
DES. (TEMP.)	°C	175	Basic Material	Stainless Steel	NACE MR 0175 / ISO 15156 Requirements : No			Rating: 600#	
DES. (PRES.)	BARG	62.4			Design Code: ASME B31.3				
ITEM	SIZES (In)		END	SCH./RATING	DESCRIPTION	MATERIAL	STANDARD	NOTE	
	FROM	TO							
PIPES	1/2	1 1/2	PBE/TOE/TBE	SCH.40S	Seamless	ASTM A312 TP 316L	ASME B36.19M	NOTE 1	
	2	6	BE	SCH.40S	Seamless	ASTM A312 TP 316L	ASME B36.19M		
Nipples	1/2	1 1/2	PBE/PSE/BLE	Same as Pipe	Nipples	ASTM A312 TP 316L	MSS SP-95		
FITTINGS	1/2	1 1/2	SW	6000#	Cap	ASTM A182 GR.F316L	ASME B16.11		
	1/2	1 1/2	SW	6000#	Reducer Conc.&Ecc.	ASTM A182 GR.F316L	ASME B16.11		
	1/2	1 1/2	SW	6000#	Union	ASTM A182 GR.F316L	MSS SP-83		
	1/2	1 1/2	SW	6000#	Coupling	ASTM A182 GR.F316L	ASME B16.11		
	1/2	1 1/2	SW	6000#	Elbow 45° & 90° LR	ASTM A182 GR.F316L	ASME B16.11		
	1/2	1 1/2	SW	6000#	Sockolet	ASTM A182 GR.F316L	MSS SP-97		
	1/2	1 1/2	THD	3000#	Hex. Head Plug	ASTM A182 GR.F316L	ASME B16.11		
	2	6	BW	Same as Pipe	Cap	ASTM A403 GR.WP316L	ASME B16.9		
	2	6	BW	Same as Pipe	Tee Eq. & Red	ASTM A403 GR.WP316L	ASME B16.9		
	2	6	BW	Same as Pipe	Reducer Conc.&Ecc.	ASTM A403 GR.WP316L	ASME B16.9		
	2	6	BW	Same as Pipe	Elbow 45° & 90° LR	ASTM A403 GR.WP316L	ASME B16.9		
	2	6	BW	Same as Pipe	Weldolet	ASTM A403 GR.WP316L	MSS SP-97		
FLANGES	1/2	1 1/2	SW	600#	Socket welded, RF,SW,SF	ASTM A182 GR.F316L	ASME B16.5		
	2	6	BW	Same as Pipe 600#	Weld Neck, RF, SF	ASTM A182 GR.F316L	ASME B16.5		
	1/2	6	-	600#	Blind, RF, SF	ASTM A182 GR.F316L	ASME B16.5		
CLOUSERS	1/2	6	-	600#	Spectacle Blind, RF	ASTM A240-Gr.316L	ASME B16.48		
GASKETS	1/2	6	-	600#	Spiral Wound, 4.45 mm Thick., RF, SF	S.S 316 Winding /Graphite Filler, C.S. Outer& S.S 316L Inner Ring	ASME B16.20		
Nut & Bolt	1/2	6	-	600#	Stud bolt, Unified threaded	ASTM A 193-B8M	ASME B18.2.1		
	1/2	6	-	600#	Nut, two heavy nuts for each bolt	ASTM A 194 -8M	ASME B18.2.2		
Gate Valve	1/2	1	SW/THRD	800#	Solid wedge. BB.	Body: ASTM	API 602		

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک							
شماره پیمان: 053 – 073 – 9184	PIPING MATERIAL SPECIFICATION							شماره صفحه : 54 از 55
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GCS	PEDCO	120	PI	SP	0001	
							D02	

		1/2			OS.&Y, Renewable Seat Ring, HO	A182 GR.F316L ,Trim No.10		
	2	6	FLGD	600#	Flexible wedge, BB, OS.&Y, Renewable Seat Ring, HO	Body: A351 GR. CF3M, Trim No.10	API 600	
Globe Valve	1/2	1 1/2	SW	800#	OS&Y,BB,Renewable Seat Ring, HO	Body: ASTM A182 GR.F316L ,Trim No.10	ISO 15761	
	2	4	FLGD	600#	OS&Y,BB,Renewable Seat Ring, HO	Body: A351 GR. CF3M, Trim No.10	BS 1873	
	6	6	FLGD	600#	OS&Y,BB,Renewable Seat Ring, GO	Body: A351 GR. CF3M, Trim No.10	BS 1873	
Check Valve	1/2	1 1/2	SW	800#	Lift Type, Piston Type, Renewable Seat Ring	Body: ASTM A182 GR.F316L ,Trim No.10	ISO 15761	
	2	6	FLGD	600#	Swing Type	Body: A351 GR. CF3M, Trim No.10	BS 1868	
Ball Valve	1/2	1 1/2	SW	800#	RB, Soft Seat, Floating Ball, Renewable Seat Ring, Lever Operated	Body: ASTM A182 GR.F316L, Ball: 316 Stem: 316 Trim:316+RPTFE	ISO 17292	Note 2
	2	3	FLGD	600#	RB, Soft Seat, Floating Ball, Renewable Seat Ring, Lever Operated	Body: ASTM A351 GR.CF3M, Ball: 316 Stem: 316 Trim:316+RPTFE	API 6D	Note 2
	4	4	FLGD	600#	RB, Soft Seat, Trunnion mounted, Renewable Seat Ring, Lever Operated		API 6D	Note 2
	6	6	FLGD	600#	RB, Soft Seat, Trunnion mounted, Renewable Seat Ring, GO		API 6D	Note 2
STRAINER	1/2	1 1/2	SW	800#	Y-TYPE	Body: ASTM A182 GR.F316L, Screen :A 182 GR. F316L		
	2	3	FLGD	600#	Y-TYPE	Body: ASTM A351 GR.CF3M, Screen :A 182 GR. F316L		
	4	6	FLGD	600#	T-TYPE	Body: ASTM A351 GR.CF3M, Screen :A 182 GR. F316L		

Note 1: Thread end will be used just for Orifice flange connections

Note 2: Fire Safe per API 6FA. Anti Static, and Blow-Out Proof Stem shall be considered for these valves.

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک							
شماره پیمان: 053 – 073 – 9184	PIPING MATERIAL SPECIFICATION							شماره صفحه : 55 از 55
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GCS	PEDCO	120	PI	SP	0001	
							D02	

PIPE CLASS : FS00

Header Size (Inch)	1/2	1							
	3/4	2	1						
	1	2	2	1					
	1 1/2	2	2	2	1				
	2	4	4	4	4	3			
	3	4	4	4	4	5	3		
	4	4	4	4	4	5	5	3	
	6	4	4	4	4	6	5	5	3
	Size	1/2	3/4	1	1 1/2	2	3	4	6
Branch Size (Inch)									

Legend:	1. EQUAL TEE, SW	2. RED. TEE, SW	3. EQUAL TEE, BW
	4. SOCKLET	5. RED. TEE, BW	6. WELDOLET