



**OIL & GAS DEVELOPMENT COMPANY LIMITED**  
**PROCUREMENT DEPARTMENT (LOCAL), ISLAMABAD**  
**SCHEDULE OF REQUIREMENT**

Material : **DESIGN, FABRICATION, TESTING, PAINTING OF PIG LAUNCHER RECEIVER**

**Due Date:**

Tender Enquiry No: **PROC/LF/PT/17589/19**

Bid Bond Value : **RS. 250,000/-**

Attachment(if any) : **YES**

**EVALUATION WILL BE CARRIED OUT ON FULL**

Sr No	Description	Quantity	Make/Brand offered	Unit	Unit Price (PKR) Inclusive Of All Taxes Except GST	Unit Price (PKR) Inclusive of GST	Total Price (PKR) Inclusive of GST	Delivery Period Offered	deviation from Tender Spec. If Any
1	8" PIG LAUNCHER RECEIVER, DETAIL SPECIFICATION & TERMS & CONDITIONS ARE ATTACHED.	1		Number					

**Special Note:** The prospective bidders also download the master set of Tender Document

- The prospective bidders may keep in touch with OGDCL web site for downloading the clarifications/amendments (if any) issued by OGDCL.
- **DELIVERY WITHIN 120 DAYS FROM LPO ISSUE DATE ON FOR SINJHORO FIELD, DISTT. SANGHAR, SINDH. PAYMENT TERMS AFTER DELIVERY & SUCCESSFUL INSPECTION AT SITE.**

Discount (if any) shall only be entertained on Schedule of Requirement of Bidding Document (Financial Proposal). If the discount is mentioned elsewhere in the bid, the same shall not be entertained.



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**Mandatory Checklist**

Please confirm the compliance of the following mandatory information along with the bid(s) (failing which bids(s) will not be accepted)

Documents	To be Attached with the Technical/Financial Bids	Compliance	
Original Bid Bond	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Copy of NTN Certificate	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Copy of GST Certificate	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Confirmation that the Firm is appearing on FBR's Active Taxpayer List	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly signed and stamped <b>Annexure-A (Un-priced)</b>	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly filled, signed and stamped <b>Annexure-B</b>	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly filled, signed and stamped <b>Annexure-D</b>	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly filled, signed and stamped <b>Annexure-L</b> on Company's Letterhead	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly signed and stamped <b>Annexure-M</b> on Company's Letterhead	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly signed and stamped <b>Annexure-N</b> on Non-Judicial Stamp Paper duly attested by Notary Public	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly filled, signed and stamped <b>Annexure-A (Priced)</b>	Financial Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly filled, signed and stamped <b>Annexure-C</b>	Financial Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly filled, signed and stamped <b>Annexure-E</b>	Financial Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>



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**PROCUREMENT DEPARTMENT (LOCAL), ISLAMABAD**  
**SCHEDULE OF REQUIREMENT**

For the Vendors/Contractors who opt to submit Bank Draft/Call Deposit/Pay order against Bid Bond/Performance Bond, our Accounts Department has finalized an arrangement for online payment to such Vendors/Contractors, which will be processed through (IBFT & LFT) for which following information is required:

i.	IBAN No. (International Bank Account Number 24 Digits)	
ii.	Vendor Name as per Title of their Bank Account	
iii.	Contact No.of Company's CEO/ Owner (Mobile & Landline)	
iv.	Bank Name.	
v.	Bank Branch Name and Code	

Name, Sign and Stamp of the authorized official of the Bidder(s) \_\_\_\_\_

Job No.	
Spec. No. <b>4620-126-VA-3001</b>	
Page <b>1</b> of <b>17</b>	Rev. <b>1</b>

# SPECIFICATION FOR PIG LAUNCHER / RECEIVER SOUR SERVICE

Project: **BITRISM FIELD DEVELOPMENT**

Client: **Oil & Gas Development Company Limited**

Prepared by: **AS**  
Checked by: **AB**  
Approved by: **FA**

0	Issued for Bidding	24/11/2016	
<b>Rev.</b>	<b>Description of Revision</b>	<b>Date</b>	<b>Revised Page Nos.</b>

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## **1.0 GENERAL**

### **1.1 Scope**

This specification covers the criteria for design, manufacture, testing, inspection, and painting of launching and receiving scraper traps for Bitrism Field Development and Sour service application. Delivery period for these items is 120 days at Sinjhoru Gas Field.

### **1.2 Definitions**

Company means Oil & Gas Development Company Limited and Contractor mean Supplier/ Manufacturer/Sub-Contractor. This definition shall apply throughout this specification.

### **1.3 Errors or Omissions**

1.3.1 The review and comment by the Company of any contractor's or its manufacturer's drawings, procedures or documents shall only indicate acceptance of general requirements and shall not relieve the Contractor of its obligations to comply with the requirements of this specification and other related parts of the contract documents.

1.3.2 Any errors or omissions noted by the Contractor in this Specification shall be immediately brought to the attention of the Company prior bid submission.

### **1.4 Conflicting Requirements**

In the event of conflict, inconsistency or ambiguity between the contract scope of work, this Specification, National Codes & Standards referenced in this Specification or any other documents, the Contractor shall refer to the Company whose decision shall prevail.

### **1.5 Reporting Procedure**

1.6.1 A reporting and documentation system shall be agreed between the Company and the contractor for the status of procurement, design, manufacturing, inspection, testing and shipment of the equipment/material to be supplied under this specification. Contractor's manufacturer shall provide reports and summaries for production performance and testing operations in conformance with a manufacturing schedule approved by Company.

Daily, weekly monthly and run summaries of all major aspects of the production process shall be provided as reports to the Company.

**1.7 Third Party inspection**

In addition to the inspection and witnessing of tests by the inspectors to be appointed by the Contractor during the manufacturing and shipment of the Equipment Material, Company may appoint a third party or its own inspector for witnessing of the inspection and tests to be carried out at manufacturer's facility under this specification. Inspection can be divided into following three stages.

- Material Inspection.
- Hydrostatic Test.
- Final Inspection.

## **2.0 CODES, STANDARDS AND SPECIFICATION**

The scraper launching and receiving traps shall conform to the following:

- ANSI B31.3                      Chemical Plant & Petroleum Refinery Piping
- ANSI B31.8                      Gas Transmission and Distribution Piping Systems
- ASME VIII                      Boiler and pressure vessel code.
- API Spec. 5L                      Specification for Line Pipe
- API Spec. 6D                      Specification for Pipeline Valves (Gate, Plug, Ball  
& Check valves)
- API Spec.1104                      Standard for welding pipelines and related facilities.
- ASME Section IX                      Welding & Brazing Qualification
- ISO 15156                      Materials for use in H<sub>2</sub>S-containing environments in oil  
and gas production
- 

Other Project Specifications

- Project Specifications as applicable



### **3.0 GENERAL CHARACTERISTICS**

#### **3.1 Scope of Supply**

Contractor shall supply all necessary items shown within 'battery limits' in P&ID.

The Contractor shall prepare detailed fabrication drawings and get the same approved from Company before taking up the fabrication.

The general data for a launcher/receiver will be according to its P&ID.

Additional items to be provided with the Package.

- A set consisting of one transmitter/signaler and one tracker with 100 hours of battery life. 01 set
- PSV (Pressure Safety Valve) (Data sheet 2664-PDS-110) 02 Nos
- Pressure Gauges (Data Sheet 2664-PID-009) 02 Nos
- O Ring/ Seal of Closure Gates 02 Nos
- 8-Inch Steel Mandrel Pigs loaded with Cups/ Discs 04 Nos
- 8-Inch De-Watering dual cups Pigs 04 Nos
- 8-Inch Foam Pigs 04 Nos
- Pig Signal (Data Sheet 2734-IDS-008) 02 Nos

#### **3.2 Rating**

The ANSI rating corresponding to working pressures for each installation are defined in the data sheet.

#### **3.3 Maximum Pressures**

The maximum pressure value to be applied is indicated in the data sheet.

#### **3.4 Design**

The scraper traps shall be designed in the light of specs and drawings.

##### **3.4.1 Body**

NA

##### **3.4.2 Closure**

Scraper traps will be delivered fitted with a quick opening closure device provided with a locking and safety system precluding all opening of the door in case of a residual pressure remaining in the trap.

The door shall be hand operated. Its operation shall have to be easy, simple and shall not require excessive effort.

Closures of scraper traps shall be of steel ASTM A-105. They shall be of the welded end type. The ring joint shall be made of “Viton” or in any other synthetic material resistant to hydrocarbons (Sour Service).

Closures shall be of a well-tried type and shall be performed by manufacturers specialized in this kind of production

Screwed-type closures are strictly forbidden.

**3.4.3** Supports

As the scraper traps shall be installed on metallic cradles fixed in anchoring blocks, steel wear plates of minimum 12 mm in thickness shall be welded on the body and on the sleeve.

**3.4.4** Welded Ends

The dimensions of the welded end shall conform to the requirements of ANSI B 16.25 furthermore, their ovalization shall not exceed  $\pm 0,5$  %.

**3.4.5** Piping

NA

**3.4.6** Pressure Safety Valve

Vendor to Provide Safety relief valves for Scrapper launcher and receiver safety relief.

**3.4.7** Flow Recorder

NA



**4.2 Welding Qualifications**

The procedures and performances of welding used in the manufacture of the equipment covered by this specification shall conform to the requirements of the ASME code relating to boilers and pressure vessels – section IX 2 welder’s qualifications.

Welding shall be carried out according to the operating methods proposed by the manufacturer; it shall necessarily be done by welders qualified for each type of weld.

The Contractor shall supply the Company with qualification certificates in respect of welding process and welder qualifications.

**4.3 Method of Manufacture**

The equipment shall be made of forged or welded steel parts, assembled by welding. All welding operations shall be carried out according to the operating methods devised and proposed by the manufacturer for each type of welding.

Repairs shall be subject to the same conditions.

After all component parts have been welded together, the equipment shall be such that no dangerous residual stress due to welding remains, and the welds and neighboring transition zones (H.A.Z.) contain no harmful metallurgical heterogeneity or defect likely to cause a break.

The whole scraper trap, except the closure head, shall undergo heat treatment for stress relief in accordance with the relevant sections of ASME boiler and pressure vessel code, latest edition.

The Contractor shall undertake a radiographic inspection on all welds.

## **5.0 INSPECTION & TESTING**

Inspection will mainly include:

- A dimensional check.
- A 100% radiographic examination.
- Maneuverability of quick opening closure.
- Mechanical operability of door safety system, scraper detector (receiving traps).

The results of all inspections and tests must be agreed as satisfactory by the Company /inspector, prior to dispatch of equipment.

### **5.1 Checking of Materials**

Material shall be checked in each factory or workshop when the manufacturer undertakes the construction of the equipment in different factories. The manufacturer shall carry out the following checks:

#### **5.1.1 Forged Steel**

A certificate shall be supplied with forged steel parts indicating the results of the chemical analyses and mechanical tests (tensile test).

#### **5.1.2 Welded Steel**

Conformity Certificates for the quality and weldability of the steels used shall be submitted prior to commencement of the manufacturing. Failing this, chemical analyses and tensile tests of the sheet steel used shall be undertaken.

All welds shall be checked by radiography. Macrography of welds may be requested. Rapid hardness tests (BRINELL, ROCKWELL, VICKERS) shall be requested on high tensile steel parts or on steel parts that have undergone surface hardening treatment.

### **5.2 Hydrostatic test**

The Contractor shall have at his disposal all the necessary equipment, machines and apparatus to undertake hydrostatic tests in his own workshops.

Pressure and temperature shall be recorded throughout the test. Recorder strips shall clearly indicate in respect of each test:

- The date
- The type of test
- The duration
- The name and signature of the person responsible
- The name and signature of the representative of test responsible department or official organization previously approved by the Company.

This resistance test shall take place in the presence of the Company's representative and under the direction of an expert appointed by test responsible department or official organism previously approved by the Company who shall affix his stamp to apparatus which will be successfully tested.

The body of the vessel shall pass the water test successfully at 1½ times the design pressure.

The outer wall of the body of the apparatus shall be bare during the test. The pressure shall be maintained for at least 4 hours as long as it is necessary for this wall to be examined and the expert appointed by test responsible department or official organism previously approved by the Company, may require it to be maintained as long as he considers appropriate to enable him to detect any defect he may suspect.

If a defect is detected, the manufacturer shall determine its gravity by grinding or chiseling. The defect must be repaired or the part rejected must be replaced as the case may be.

### **5.3 Tests on Operation of Closing Devices of the Traps**

The aim of these tests will be to check in the factory, that each locking device of traps works properly.

#### **5.3.1 Tests**

The door shall be opened and closed several times.

The check shall cover:

- Ease of manual operation.

Effectiveness of the locking and safety device.

## **6.0 PIG / SCRAPER LOADING AND RETRIEVAL SYSTEM**

NA

## **7.0 MARKING**

Every item of equipment shall bear a stainless steel identification plate with cast or stamped letters indicating:

- Name of the Contractor or trade name
- Type
- Serial number
- Class of pressure
- Test pressure
- Date of the test and pressure
- Maximum service pressure
- Stamp of test responsible department or official organism previously approved by the Company.
- Stamp of the Company
- Nominal diameter of the body
- Indication concerning the material for the trap.



## **8.0 PAINING**

The scraper traps and retrieval system shall be painted after successful execution of pressure tests and clearance from the Company's Representative or his nominee. Surface cleaning and painting shall be performed according to Project Specification for Painting.

## **9.0 SHIPMENT**

Before shipment, the machined parts shall be painted with an antirust paint easy to remove.

Flanges or ends shall be plugged with pieces of wood suitable located to preclude the penetration of foreign mater in the body or damage to moving parts and sealed joints, and to afford effective protection to the machined surfaces of flanges or ends.

Fragile accessories shall be dismantled and packed separately, in duly marked boxes.

All parts shall be carefully plugged.

Packages shall be marked on the outside so that the contents can be identified without opening them.

The details of packing and shipment shall be as specified in the Project Specification for General Specification for Packing & Protection of Material & Equipment.

## **10.0 DOCUMENTS**

### **10.1 Preliminary Documents**

With the bid, the bidder shall submit:

The general arrangement drawings / sketches showing dimension of the equipment proposed.

- Material Specifications.
- A brief description of the system.

### **10.2 Design Documents**

Before the commencement of the manufacturing, the Contractor shall submit detailed design drawings, material specifications and design calculations for Company's approval.

- All documents listed above, updated if necessary.
- Operating manual
- Instructions for maintenance and dismantling
- List of spare parts for two years operation, after a guarantee period fixed to one year.

### **10.3 Material and Test Certificate**

The Contractor shall supply with the equipment, material certificates and records of all test and inspections performed on the equipment during its manufacturing and testing at the factory.

### **10.4 As Built Drawings and QA / QC Dossier:**

As built drawings and QA / QC dossier shall be provided with the equipment (Soft/Hard formats).

## **11.0 MANUFACTURER OF PIG LAUNCHER/ RECEIVER CRITERIA**

The Manufacturer of Pig launcher/ receiver should meet following criteria

- Manufacturing facility should be ASME U-Stamped.
- Manufacturer should submit valid ASME U-Stamp certificate along with 05 Years ASME U-Stamp certificate for qualification.
- Submission of documents as per TOR

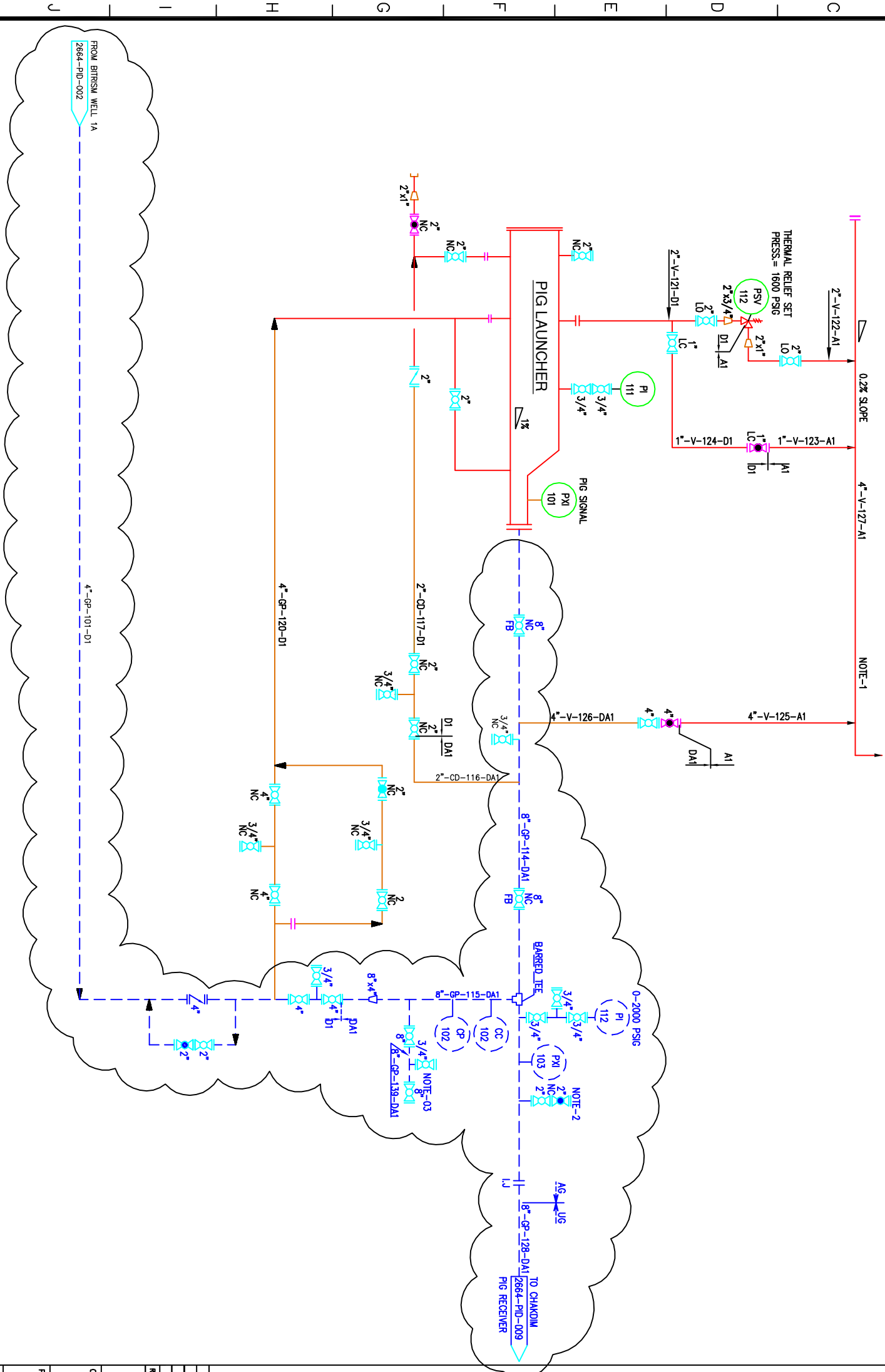
## **12.0 PREFERRED VENDOR CRITERIA.**

The Venders for material should meet following criteria.

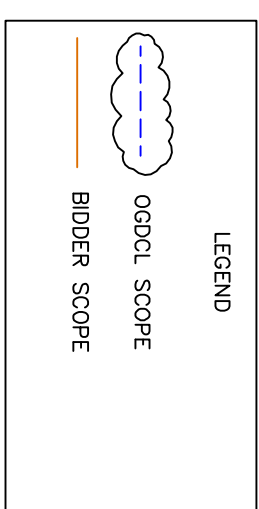
- Supply record to International E&P companies (Copies of five purchases Order).
- Manufacturing facility should have five years experience after obtaining relevant certifications like API 6D for valves, API 5L for Pipes.
- Supply record of last five years. Quality & HSE Certifications.
- Financial Information (Audited Statements for last three years).
- Manufacturer of Pig trap closure, Pigs, Pig signaler/ tracker & Pig signal should be member of PPSA (PIGGING PRODUCTS & SERVICES ASSOCIATION)

V-103

NAME: PIG LAUNCHER  
 DESIGN PRESSURE/TEMPERATURE: 1600 PSIG / 150 °F  
 OPERATING PRESSURE/TEMPERATURE : 1000-1200 PSIG / 80-100 °F



- NOTES
1. VENT AT SAFE LOCATION AT LEAST 3.0 M FROM THE HIGHEST POINT OF STRUCTURE/PLATFORM.
  2. PROVISION FOR FLOWLINE PURGING AND DEPRESSURIZING.
  3. PROVISION FOR FUTURE CONNECTION.



RE-ISSUED FOR CONSTRUCTION

REV.	DATE	DESCRIPTION OF REVISION	PREP'D	CHECK	APPR.
B	20/01/17	RE-ISSUED FOR CONSTRUCTION			
A	23/12/16	ISSUED FOR CONSTRUCTION			
0	09/08/16	ISSUED FOR REVIEW			

**PJ PETROCHEMICAL ENGINEERING CONSULTANTS**  
 C-2, BLOCK NO. 17, GULSHAN-E-IBRAHIM, NEAR NATIONAL STADIUM, KARACHI-75300, PAKISTAN.  
 TEL: +92 (21) 34627700, 34661088, FAX: +92 21 34661088, E-Mail: [contact@pec.com.pk](mailto:contact@pec.com.pk) web site: [www.pec.com.pk](http://www.pec.com.pk)

**OIL & GAS DEVELOPMENT COMPANY LIMITED**

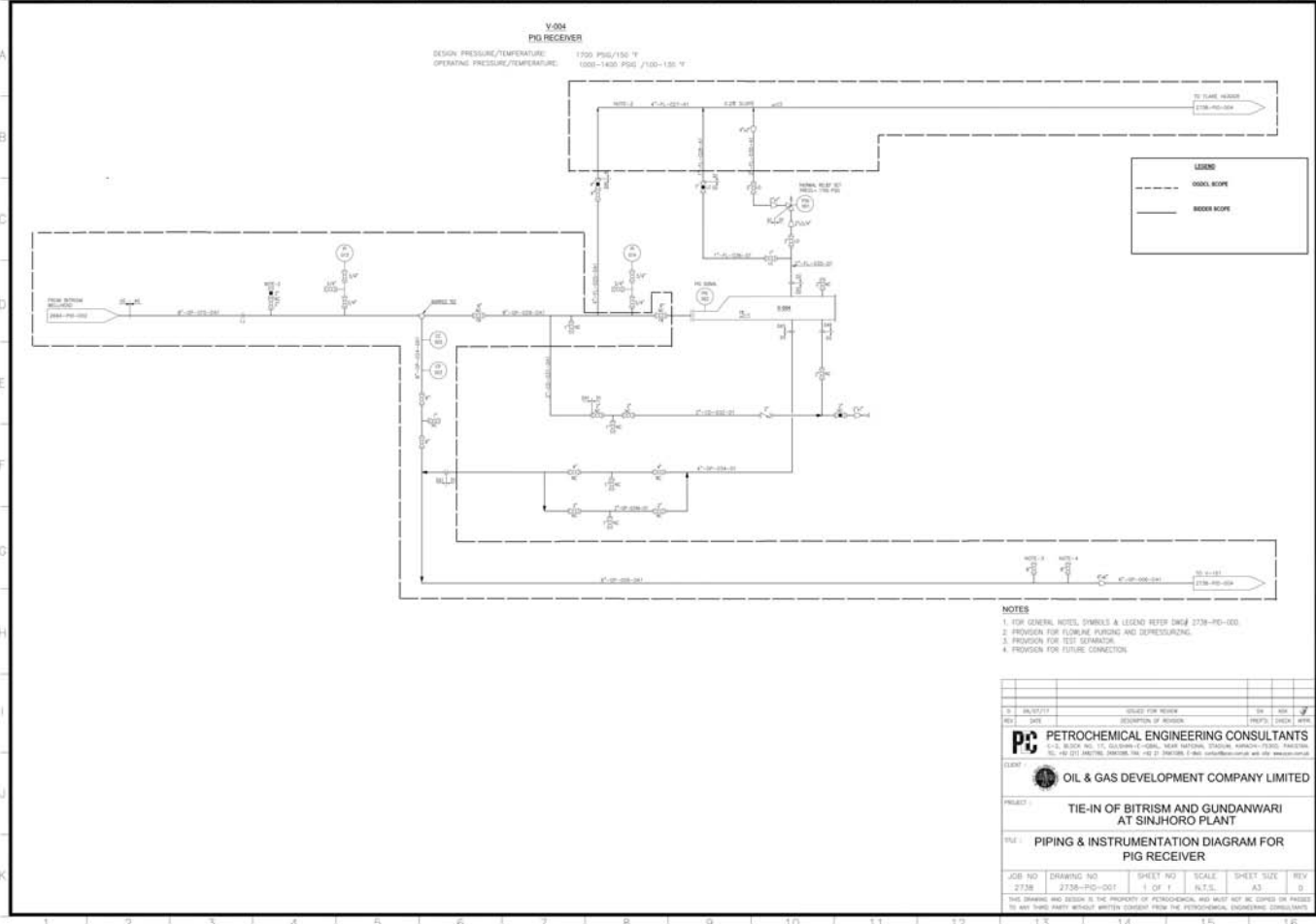
PROJECT : DEVELOPMENT OF BITRISM WEST 1A & TIE IN

TITLE : PIPING & INSTRUMENTATION DIAGRAM  
 PIG LAUNCHER

JOB NO	DRAWING NO	SHEET NO	SCALE	SHEET SIZE	REV
2664	2664-PID-008	1 OF 1	N.T.S.	A3	B

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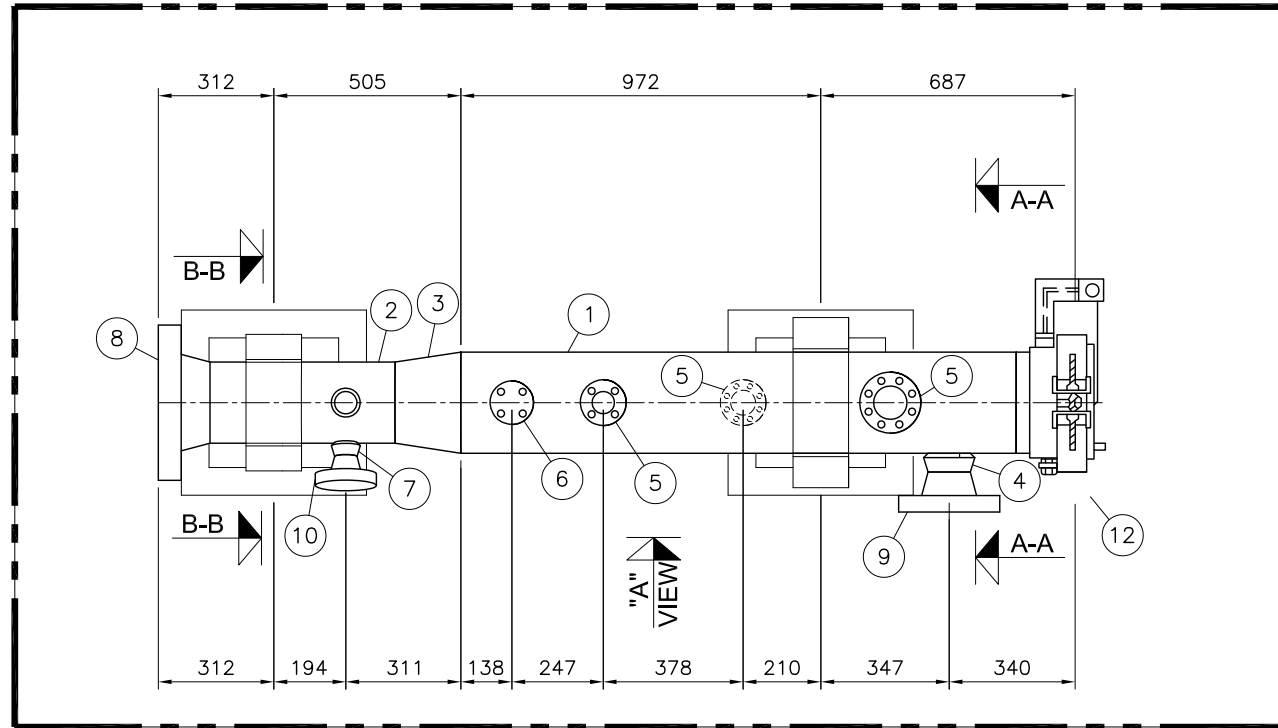
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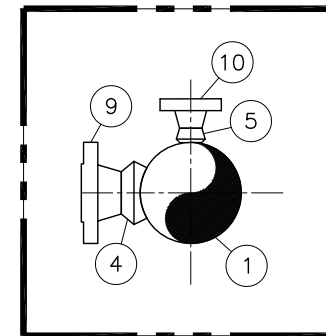
NO.	REVISION	BY	CHK	DATE
<b>PC PETROCHEMICAL ENGINEERING CONSULTANTS</b> OIL & GAS DEVELOPMENT COMPANY LIMITED				
<b>PROJECT</b> TIE-IN OF BITRISM AND GUNDANWARI AT SINJHORO PLANT				
<b>TITLE</b> PIPING & INSTRUMENTATION DIAGRAM FOR PIG RECEIVER				
JOB NO	DRAWING NO	SHEET NO	SCALE	SHEET SIZE
2738	2738-PD-001	1 OF 1	N.T.S.	A3
REV				
D				

BILL OF MATERIAL

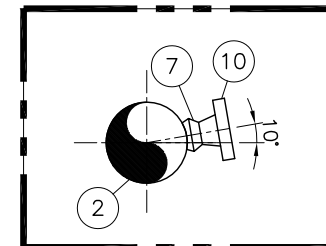
Sr.NO.	SIZE	DESCRIPTION	QTY.	(MAT. SPEC)	UNIT WEIGHT kg/piece	TOTAL WEIGHT kg
1	10"	PIPE SMLS, SCH. 80, API-5L GR.X52 BE	1.5M	-		
2	8"	PIPE SMLS, SCH. 80, API-5L GR.X52 BE	0.5M	DA1		
3	10"x8"	REDUCER, ECC. SCH. 80, BW. MSS SP-75 Gr.WPHY 52	1	-		
4	10"x4"	WELDOLET, BW SCH. 80x40, ASTM A-694 Gr-F52	1	-		
5	10"x2"	WELDOLET, BW SCH.80, ASTM A-694 Gr-F52	3	-		
6	10"x3/4"	SOCKOLET, SW 9000# ASTM A-694-Gr.F52	1	-		
7	8"x2"	WELDOLET, BW SCH.80, ASTM A-694 Gr-F52	2	DA1		
8	8"	FLG, WN 900# RTJ, SCH.80 ASTM A-694 Gr-F52	1	DA1		
9	4"	FLG, WN 900# RTJ, SCH. 40 ASTM A-694 Gr-F52	1	DA1		
10	2"	FLG, WN 900# RTJ, SCH. 80 ASTM A-694 Gr-F52	4	DA1		
11	3/4"	FLG, SW 1500# RTJ, ASTM A-694 Gr-F52	1	DA1		
12	10"	QUICK CLOSURE	1	-		



PLAN VIEW OF BARREL  
SCALE 1:20



SECTION A-A  
SCALE 1:20

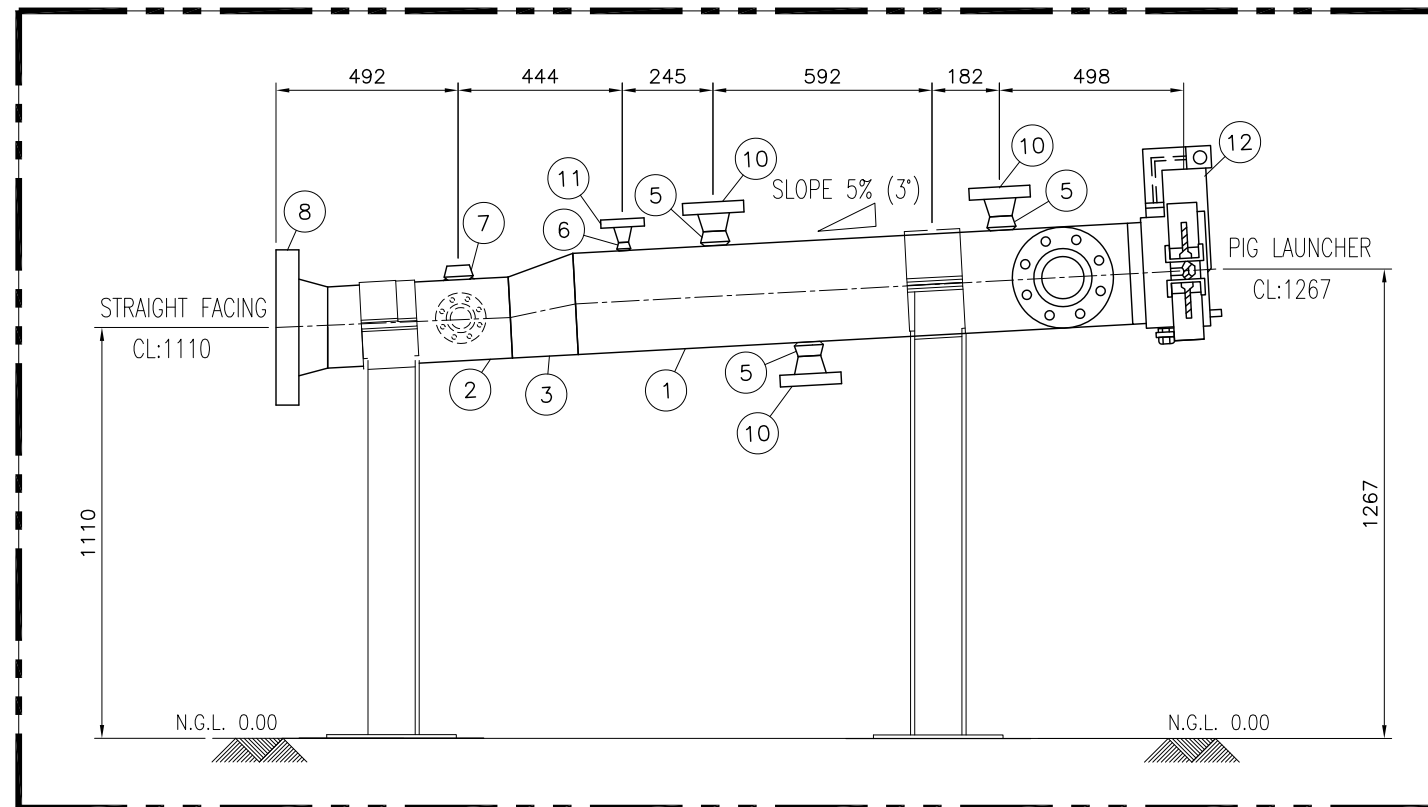


SECTION B-B  
SCALE 1:20

RE-ISSUED FOR CONSTRUCTION

NOTE:-

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED.
2. ALL DIMENSIONS, ELEVATIONS AND ORIENTATIONS TO BE VERIFIED BY THE CONTRACTOR BEFORE UNDERTAKING ANY KIND OF FABRICATION, CONSTRUCTION AND INSTALLATION WORK AT SITE.



VIEW "A"  
SCALE 1:20

B	30-01-2017	RE-ISSUED FOR CONSTRUCTION	AHK	AM	
A	22-12-2016	ISSUED FOR CONSTRUCTION	M.A	AM	
REV.	DATE	DESCRIPTION OF REVISION	PREP'D:	CHECK	APPR.

**PE** PETROCHEMICAL ENGINEERING CONSULTANTS  
C-2, BLOCK NO. 17, GULSHAN-E-IQBAL, NEAR NATIONAL STADIUM, KARACHI-75300. PAKISTAN.  
TEL: +92 (21) 34827780, 34961088, FAX: +92 21 34961089, E-Mail: contact@pcec.com.pk web site: www.pcec.com.pk

CLIENT : **OIL & GAS DEVELOPMENT COMPANY LTD.**

PROJECT : **DEVELOPMENT OF BITRISM WEST 1A & TIE IN**

TITLE : **GENERAL ARRANGEMENT Ø8" PIG LAUNCHER 900#**

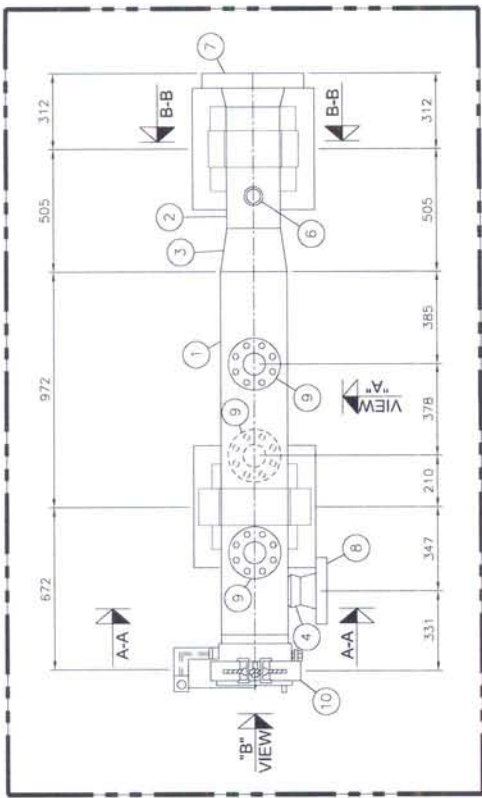
JOB NO	DRAWING NO	SHEET NO	SCALE	SHEET SIZE	REV
2664	2664-PL-102	1 OF 1	1:20	A3	B

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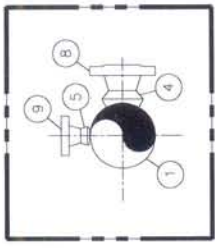
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

**BILL OF MATERIAL**

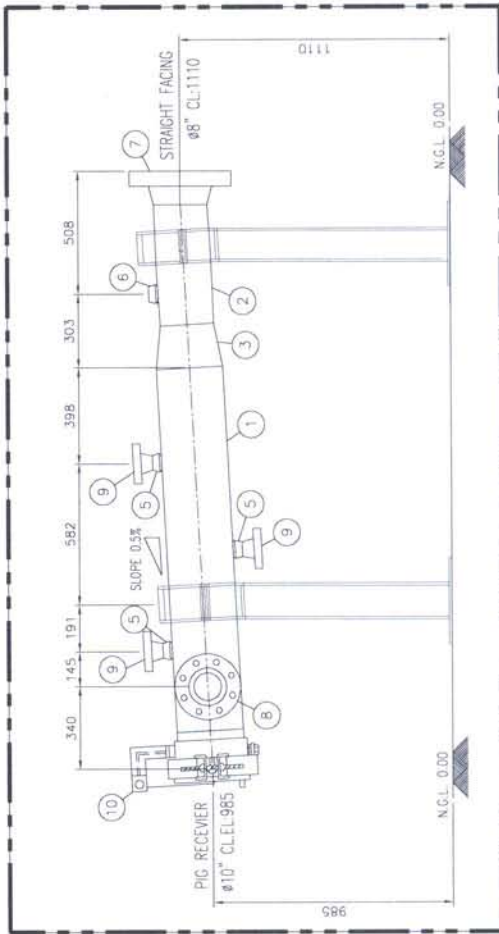
Sl. No.	SIZE	DESCRIPTION	QTY.	(MAT. SPEC.)	UNIT	TOTAL WEIGHT (kg)
1	10"	PIPE SMLS, SCH. 80, API-5L, GR X52, BE	1.5M	-	kg	
2	8"	PIPE SMLS, SCH. 80, API-5L, GR X52, BE	0.5M	DA1		
3	10"x8"	REDUCER CONC. SCH. 80, BW, MSS, SP-75, GR WPHY 52	1	-		
4	10"x4"	WELDOLET, BW, SCH. 80, ASTM A-694-G-F52	1	DA1		
5	10"x2"	WELDOLET, BW, SCH. 80, ASTM A-694-G-F52	3	DA1		
6	8"x2"	WELDOLET, BW, SCH. 80, ASTM A-694-G-F52	1	DA1		
7	8"	FLG. WN 900# RTI, SCH. 80, ASTM A-694 G-F52	1	DA1		
8	4"	FLG. WN 900# RTI, SCH. 80, ASTM A-694 G-F52	1	DA1		
9	2"	FLG. WN 900# RTI, SCH. 80, ASTM A-694 G-F52	3	DA1		
10	10"	QUICK CLOSURE	1	-		



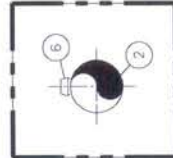
**PLAN VIEW OF BARREL**  
SCALE 1:20



**SECTION A-A**  
SCALE 1:20



**VIEW "A"**  
SCALE 1:20



**SECTION B-B**  
SCALE 1:20

**NOTE:**  
1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED.  
2. ALL DIMENSIONS, ELEVATIONS AND ORIENTATIONS TO BE VERIFIED BY THE CONTRACTOR BEFORE UNDERTAKING ANY KIND OF FABRICATION, CONSTRUCTION AND INSTALLATION WORK AT SITE.

REV.	DATE	ISSUED FOR REVIEW	AWK	SMK	PREP'D	CHECK	APPR.
0	19-12-2017						

**PG** PETROCHEMICAL ENGINEERING CONSULTANTS  
C-7, BLOCK NO. 17, GULSHAN-1-CHINA, NEAR NATIONAL STADIUM, MANCHA-33000, PAKISTAN  
TEL: 99 (07) 3407710, 3407708, FAX: 99 (7) 3407698, E-MAIL: info@petrochem.com.pk web: www.petrochem.com.pk

**CLIENT:** OIL & GAS DEVELOPMENT COMPANY LTD.  
**PROJECT:** TIE-IN OF BITRISM & GUNDANWARI AT SINJHORO PLANT

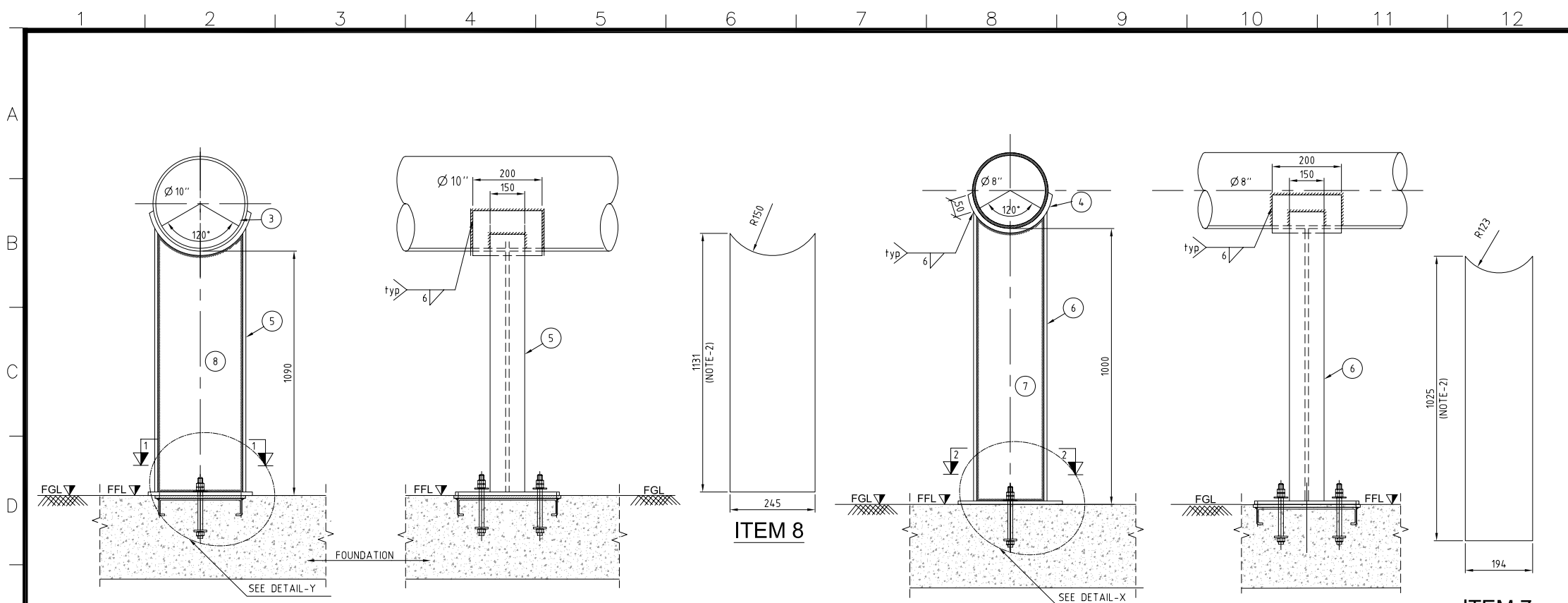
**FILE:** GENERAL ARRANGEMENT  
**08" PIG RECEIVER 900# (V-004)**

JOB NO.	DRAWING NO.	SHEET NO.	SCALE	SHEET SIZE	REV.
2738	2738-PR-004	1	1:20	A3	0

THIS DRAWING AND DESIGN IS THE PROPERTY OF PETROCHEMICAL AND MUST NOT BE COPIED OR PASSED TO ANY THIRD PARTY WITHOUT WRITTEN CONSENT FROM THE PETROCHEMICAL ENGINEERING CONSULTANTS

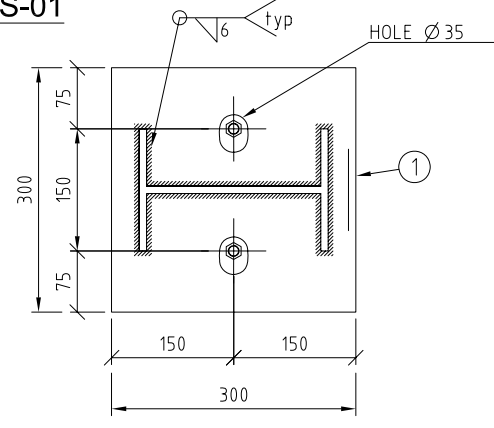
**Hammad Ahmed**  
JE (Mech) PE & FD



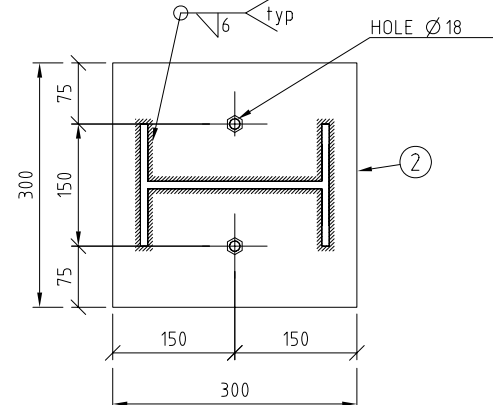


**SADDLE 1  
PLS-01**

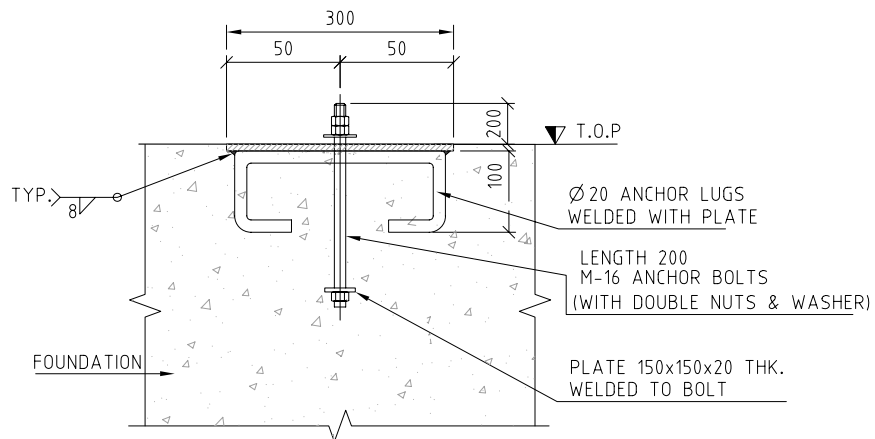
**SADDLE 2  
PLS-02**



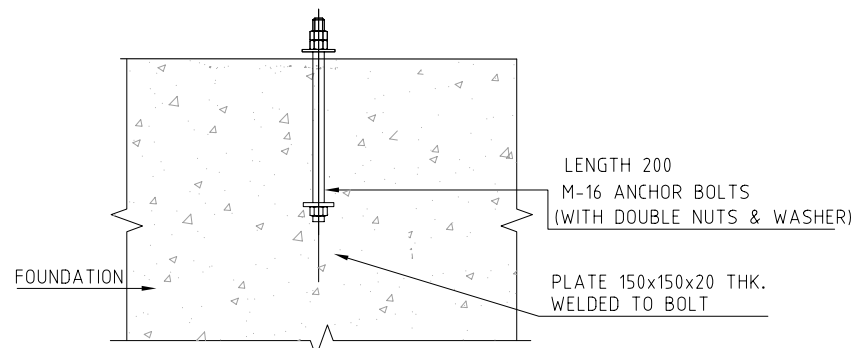
**SECTION 1-1  
FOR SLIDING END**



**SECTION 2-2  
FOR FIXED END**



**DETAIL - Y  
FOR SLIDING END  
(SCALE 1:30)**



**DETAIL - X  
FOR FIXED END  
(SCALE 1:30)**

PART NO.	DESCRIPTION	QTY.	MATERIAL	UNIT WT.(KG/M)	TOTAL WT. (KG)
9	BOLT M16x85	36	A193 Gr.B7 A194 Gr.2H	-	-
8	WEB PLATE 1131X245X10MM THK.	1	ASTM A-236	78.5 KG/M <sup>2</sup>	22
7	WEB PLATE 1025X194X10MM THK.	1	ASTM A-236	78.5 KG/M <sup>2</sup>	16
6	RIB PLATE 1040X150X10MM THK.	2	ASTM A-236	78.5 KG/M <sup>2</sup>	24
5	RIB PLATE 1147X150X10MM THK.	2	ASTM A-236	78.5 KG/M <sup>2</sup>	27
4	WEAR PLATE 345X200X13MM THK.	1	ASTM A-236	102.05 KG/M	7
3	WEAR PLATE 400X200X13MM THK.	1	ASTM A-236	102.05 KG/M	8
2	BASE PLATE 300x300x10mm THK.	1	ASTM A-236	78.5 KG/M <sup>2</sup>	7
1	BASE PLATE 300x300x10mm THK.	1	ASTM A-236	78.5 KG/M <sup>2</sup>	7
				TOTAL WT.(KG)	120

**BILL OF MATERIAL**

**RE-ISSUED FOR  
CONSTRUCTION**

**NOTE:-**

- ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED.
- THE CONTRACTOR IS RESPONSIBLE TO VERIFY THE DIMENSIONS FROM PIPING PLANS PRIOR TO FABRICATION OF STEEL WORKS.

REV.	DATE	DESCRIPTION OF REVISION	PREP'D:	CHECK	APPR.
B	17-01-2017	RE-ISSUED OF CONSTRUCTION	ZA	MM	
A	22-12-2016	ISSUED OF CONSTRUCTION	ZA	MM	

**PC PETROCHEMICAL ENGINEERING CONSULTANTS**  
C-2, BLOCK NO. 17, GULSHAN-E-IGBAL, NEAR NATIONAL STADIUM, KARACHI-75300. PAKISTAN.  
TEL: +92 (21) 34827780, 34961088, FAX: +92 21 34961089, E-Mail: contact@pcec.com.pk web site: www.pcec.com.pk

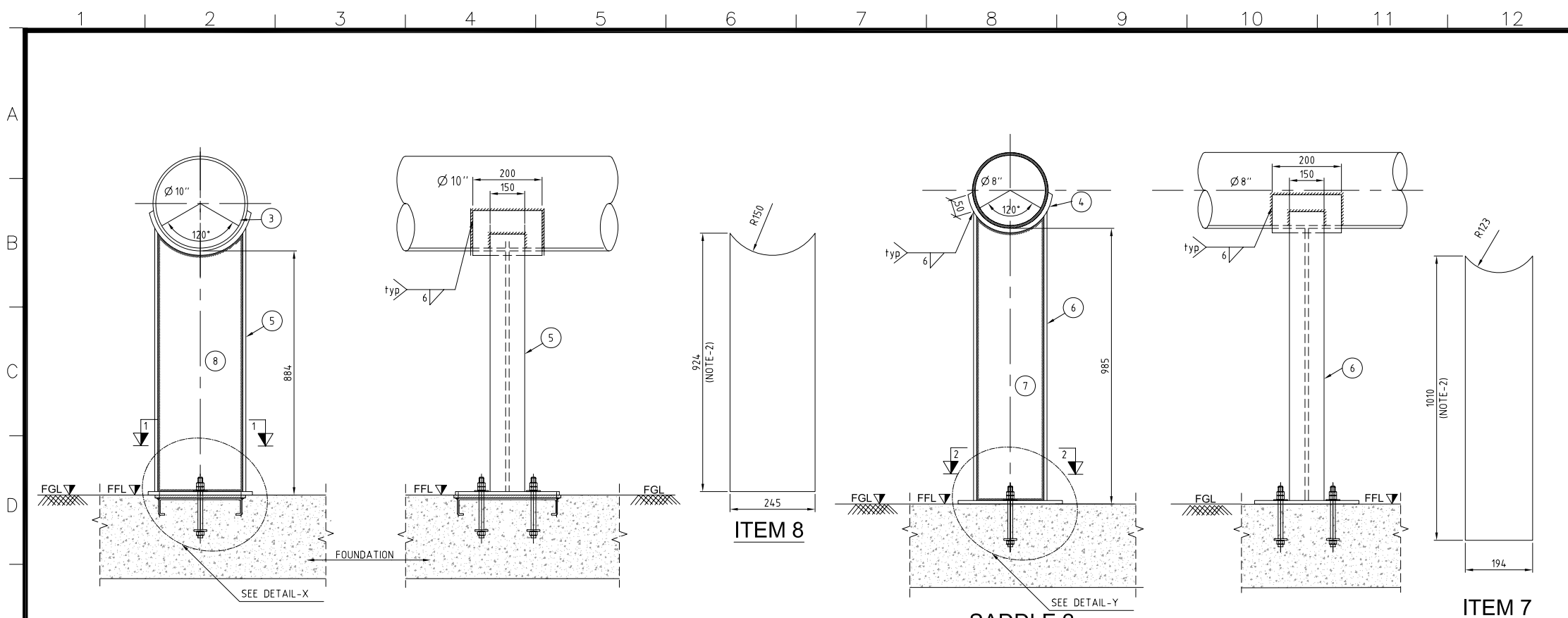
CLIENT : **OIL & GAS DEVELOPMENT COMPANY LTD**

PROJECT : **DEVELOPMENT OF BITRISM WEST 1A & TIE-IN**

TITLE : **SADDLE SUPPORT DETAILS FOR PIG LAUNCHER**

JOB NO	DRAWING NO	SHEET NO	SCALE	SHEET SIZE	REV
2664	2664-CIV-DT-105	1 OF 1	-	A2	B

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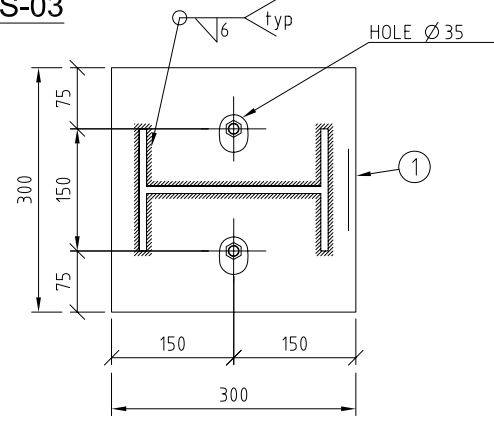


**SADDLE 1  
PLS-03**

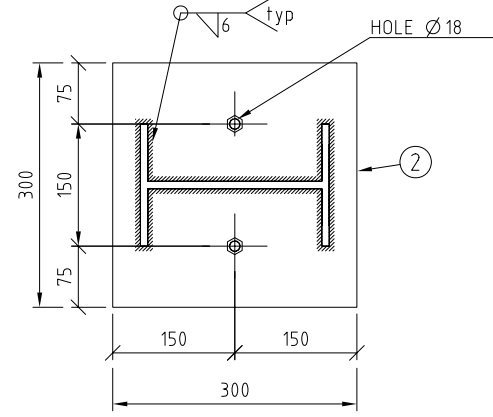
**SADDLE 2  
PLS-04**

**ITEM 8**

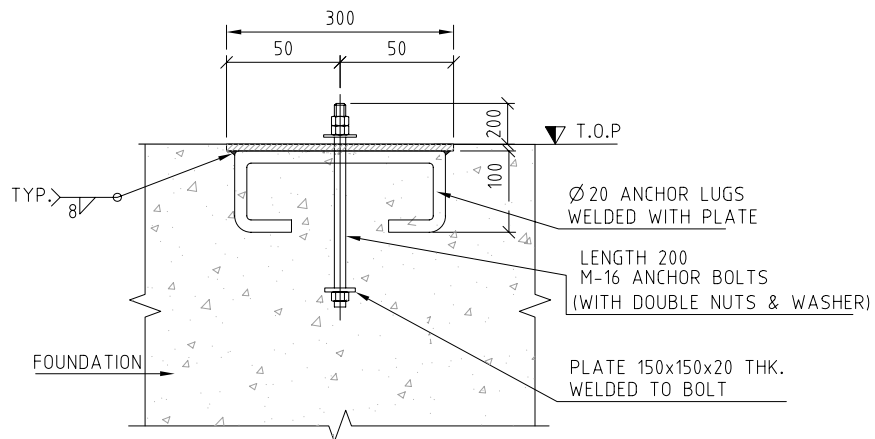
**ITEM 7**



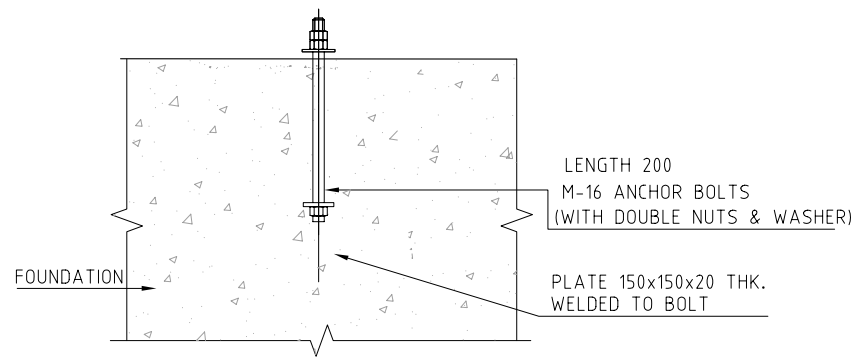
**SECTION 1-1  
FOR SLIDING END**



**SECTION 2-2  
FOR FIXED END**



**DETAIL - X  
FOR SLIDING END  
(SCALE 1:30)**



**DETAIL - Y  
FOR FIXED END  
(SCALE 1:30)**

PART NO.	DESCRIPTION	QTY.	MATERIAL	UNIT WT.(KG/M)	TOTAL WT. (KG)
9	BOLT M16x85	36	A193 Gr.B7 A194 Gr.2H	-	-
8	WEB PLATE 924X245X10MM THK.	1	ASTM A-36	78.5 KG/M <sup>2</sup>	18
7	WEB PLATE 1010X194X10MM THK.	1	ASTM A-36	78.5 KG/M <sup>2</sup>	15
6	RIB PLATE 909x150x10MM THK.	2	ASTM A-36	78.5 KG/M <sup>2</sup>	22
5	RIB PLATE 941x150x10MM THK.	2	ASTM A-36	78.5 KG/M <sup>2</sup>	22
4	WEAR PLATE 345X200X13MM THK.	1	ASTM A-36	102.05 KG/M <sup>2</sup>	7
3	WEAR PLATE 400X200X13MM THK.	1	ASTM A-36	102.05 KG/M <sup>2</sup>	8
2	BASE PLATE 250x150x10mm THK.	1	ASTM A-36	78.5 KG/M <sup>2</sup>	3
1	BASE PLATE 300x150x10mm THK.	1	ASTM A-36	78.5 KG/M <sup>2</sup>	4
				TOTAL WT.(KG)	99

**BILL OF MATERIAL**

**NOTE:-**

- ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED.
- THE CONTRACTOR IS RESPONSIBLE TO VERIFY THE DIMENSIONS FROM PIPING PLANS PRIOR TO FABRICATION OF STEEL WORKS.

REV.	DATE	DESCRIPTION OF REVISION	PREP'D:	CHECK	APPR.
B	22-01-2017	RE-ISSUED OF CONSTRUCTION	ZA	MM	
A	22-12-2016	ISSUED OF CONSTRUCTION	ZA	MM	

**PC PETROCHEMICAL ENGINEERING CONSULTANTS**  
 C-2, BLOCK NO. 17, GULSHAN-E-IQBAL, NEAR NATIONAL STADIUM, KARACHI-75300. PAKISTAN.  
 TEL: +92 (21) 34827780, 34961088, FAX: +92 21 34961089, E-Mail: contact@pcec.com.pk web site: www.pcec.com.pk

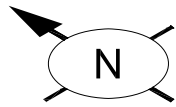
CLIENT : **OIL & GAS DEVELOPMENT COMPANY LTD**

PROJECT : **DEVELOPMENT OF BITRISM WEST 1A & TIE IN**

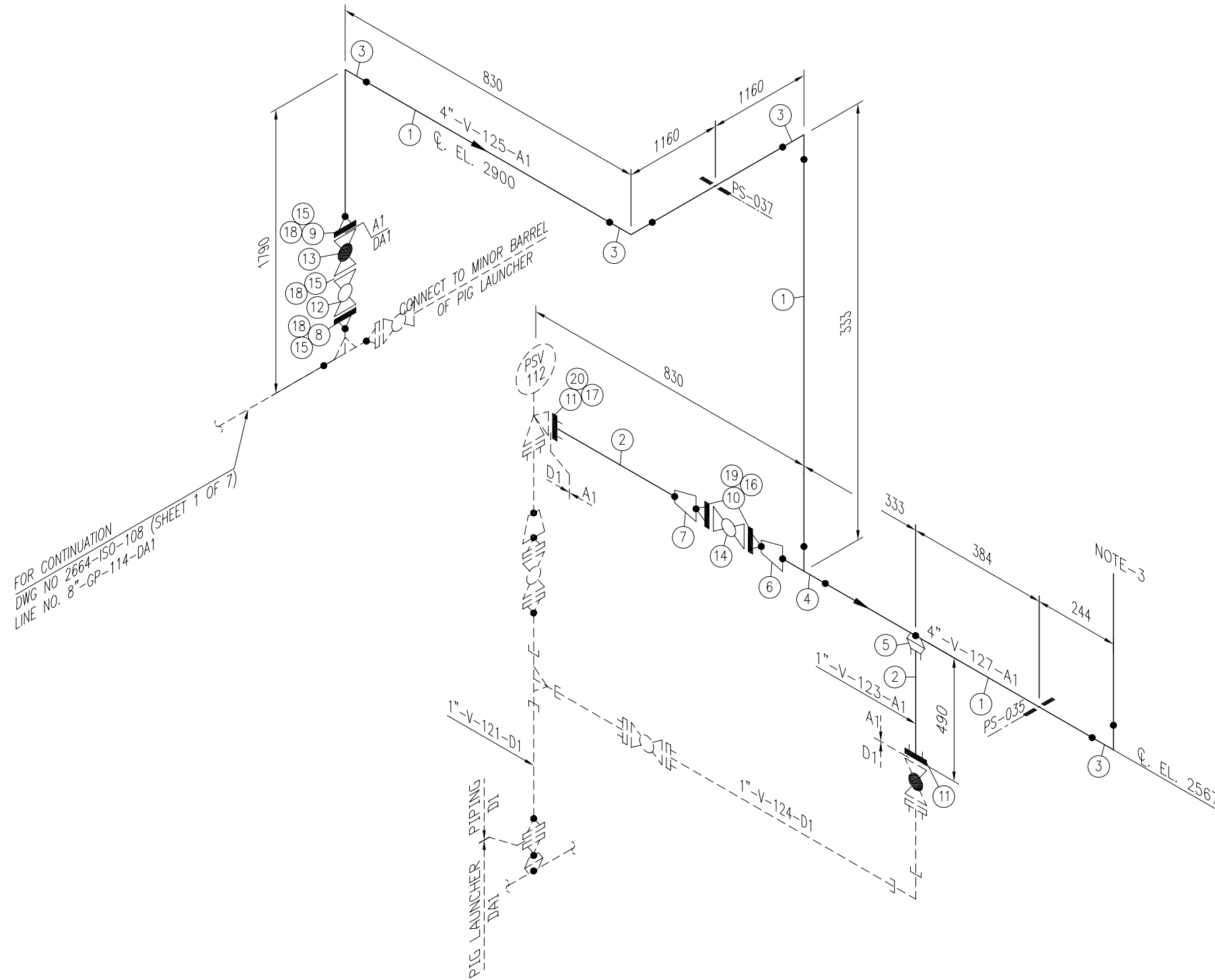
TITLE : **SADDLE SUPPORT DETAILS FOR PIG RECEIVER  
(TIE IN AT WELLHEAD CHAKDIM5-01)**

JOB NO	DRAWING NO	SHEET NO	SCALE	SHEET SIZE	REV
2664	2664-CIV-DT-205	1 OF 1	-	A2	B

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Sr. NO	SIZE	DESCRIPTION	QTY.	MATERIAL	(MAT. SPEC)	REMARKS
1	4"	PIPE SCH.30 BE SMLS	6.5M	ASTM A-106 Gr.B	A1	
2	1"	PIPE SCH.40 SMLS, BE	0.2M	ASTM A-106 Gr.B	A1	
3	4"	ELBOW 90° LR B.W SCH.30 BE	4	ASTM A-234 Gr. WPB	A1	
4	4"	EQUAL TEE SCH.30 BW	1	ASTM A-234 Gr. WPB	A1	
5	4"x1"	SOCKET 3000# S.W	1	ASTM A-105	A1	
6	4"x2"	CONC. RED. SCH.30 x SCH.40 BW.	1	ASTM A-234 Gr. WPB	A1	
7	2"x1"	CONC. RED. SCH.40 BW.	1	ASTM A-234 Gr. WPB	A1	
8	4"	W.N. FLANGE RTJ. SCH.40 BW 900#.	1	ASTM A-694 Gr. F52	-	
9	4"	W.N. FLANGE RTJ. SCH.30 BW 900#.	1	ASTM A-105	-	
10	2"	W.N. FLANGE RTJ. 150#, SCH.40 BW	2	ASTM A-105	A1	
11	1"	S.W FLANGE RTJ. 1500#.	2	ASTM A-105	-	
12	4"	BALL VALVE RTJ. 900#, FULL BORE	1	SEE TAG NO. VB-107	-	
13	4"	GLOBE VALVE RTJ. 900#, FULL BORE	1	SEE TAG NO. VB-104	-	
14	2"	BALL VALVE RTJ. 150#, FULL BORE	1	SEE TAG NO. VB-101	A1	
15	4"	OCTAGONAL RING, 900# R-37	3	316L S.S.	-	
16	2"	OCTAGONAL RING, 150# R-22	2	316L S.S.	A1	
17	1"	OCTAGONAL RING, 1500# R-16	1	316L S.S.	A1	
18	1 1/8"	LG STUD BOLTS C/W 2 NUTS 170mm LONG	24	ASTM A 193 Gr. B7M ASTM A-194 Gr. 2HM	-	
19	7/8"	LG STUD BOLTS C/W 2 NUTS 145mm LONG	16	ASTM A 193 Gr. B7M ASTM A-194 Gr. 2HM	A1	
20	7/8"	LG STUD BOLTS C/W 2 NUTS 125mm LONG	4	ASTM A 193 Gr. B7M ASTM A-194 Gr. 2HM	A1	

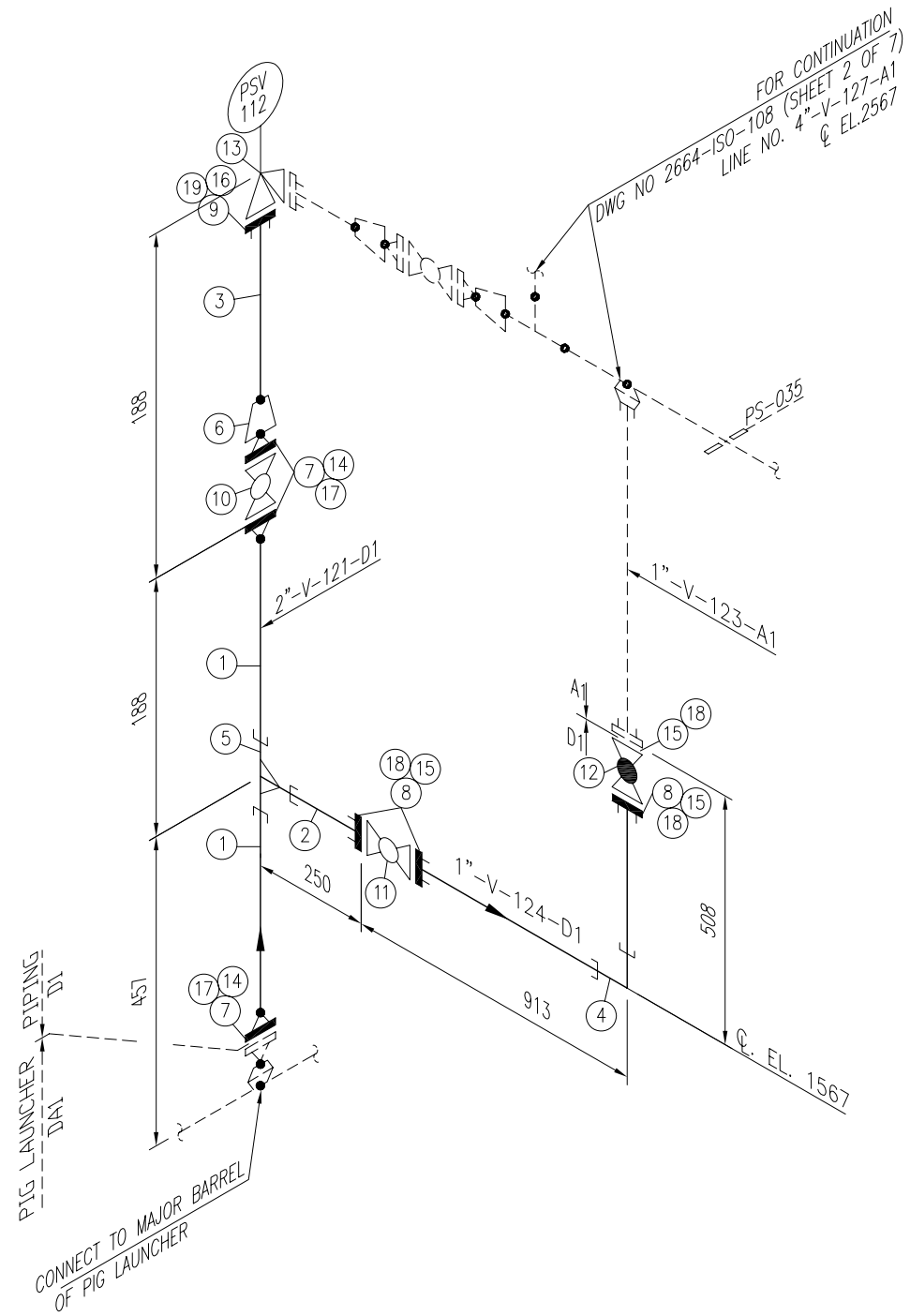
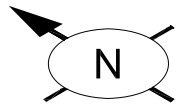


FOR CONTINUATION  
 DWG NO 2664-ISO-108 (SHEET 1 OF 7)  
 LINE NO. 8"-GP-114-DA1

**ISSUED FOR CONSTRUCTION**

- NOTES:**
1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED.
  2. ALL DIMENSIONS, ELEVATIONS AND ORIENTATIONS TO BE VERIFIED BY THE CONTRACTOR BEFORE UNDERTAKING ANY KIND OF FABRICATION, CONSTRUCTION AND INSTALLATION WORK AT SITE.
  3. VENT SHOULD BE AT LEAST 3m FROM THE HIGHEST POINT OF STRUCTURE/PLAT FORM.

A	22-12-16	ISSUED FOR CONSTRUCTION	M.A	AM		
REV.	DATE	DESCRIPTION	DRAWN	CHK'D	APP'VD	APP'VD
			CONSULTANT			CLIENT
<b>PEC PETROCHEMICAL ENGINEERING CONSULTANTS</b> <small>C-2, BLOCK NO. 17, GULSHAN-E-IOBAL, NEAR NATIONAL STADIUM, KARACHI-75300, PAKISTAN.        TEL: +92 (21) 3482780, 34961088, FAX: +92 21 34961089, E-Mail: contact@pec.com.pk web site: www.pec.com.pk</small>						
<b>CLIENT</b> <b>OIL &amp; GAS DEVELOPMENT COMPANY LTD.</b>						
<b>PROJECT :</b> DEVELOPMENT OF BITRISM WEST 1A & TIE IN						
<b>TITLE :</b> PIPING ISOMETRIC WELLHEAD BITRISM WEST 1A LINE No.4"-V-125-A1 / 4"-V-127-A1						
DRAWING NO.			SHEET	SCALE	REV.	
2664-ISO-108			NO. OF	N.T.S.	A	
			2	7	A3	



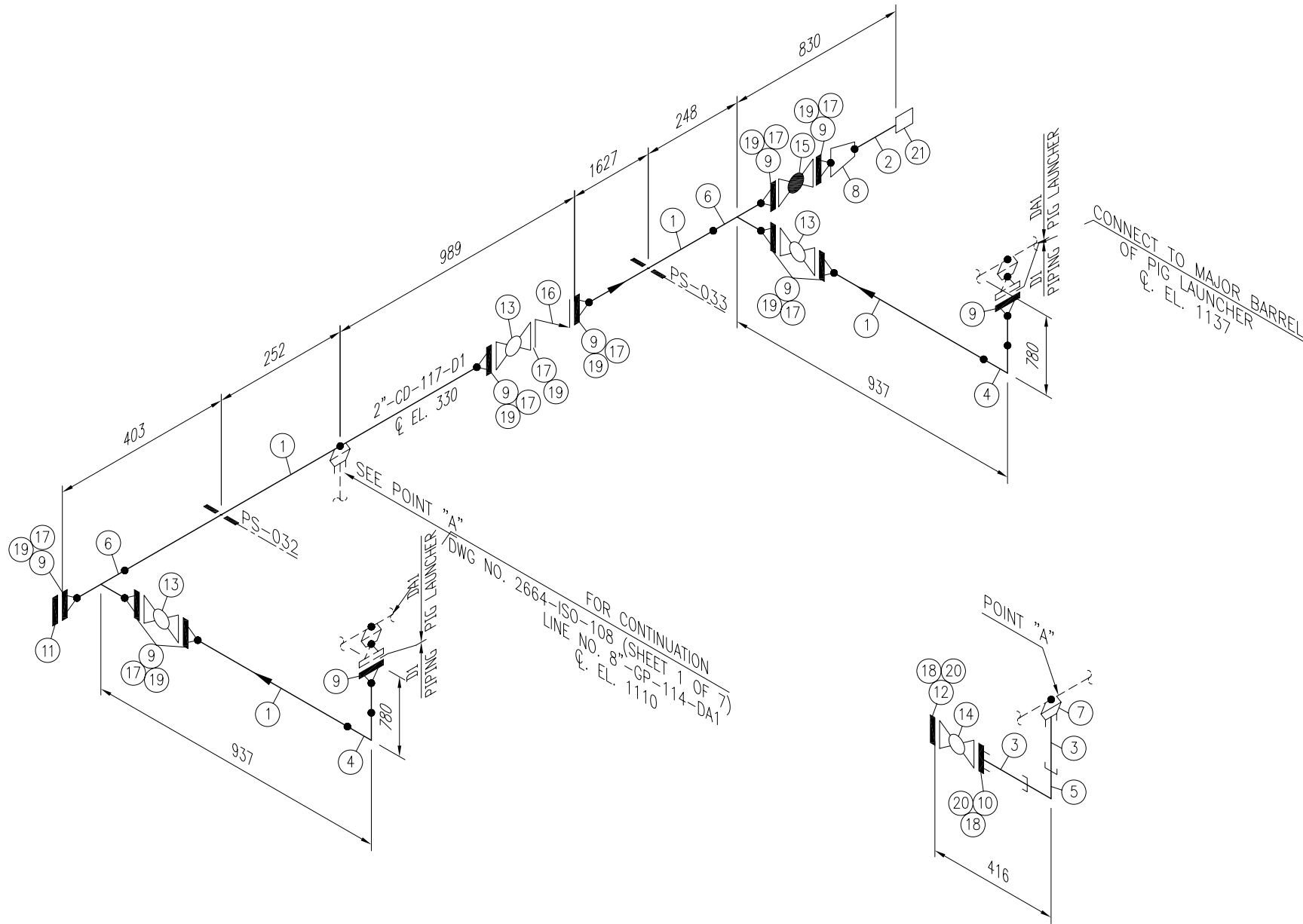
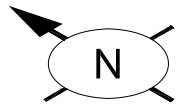
Sr. NO	SIZE	DESCRIPTION	QTY.	MATERIAL	(MAT. SPEC)	REMARKS
1	2"	PIPE SCH.160 BE SMLS	0.3M	ASTM A-106 GR.B	D1	
2	1"	PIPE SCH.160 SMLS, PE	0.1M	ASTM A-106 GR.B	D1	
3	3/4"	PIPE SCH.160 SMLS, PE	0.5M	ASTM A-106 GR.B	D1	
4	1"	ELBOW 90° LR 9000# S.W	1	ASTM A-105	D1	
5	2"x1"	RED. TEE 9000# S.W	1	ASTM A-105	D1	
6	2"x3/4"	CONG. RED. SCH.160 BW.	1	ASTM A-234 Gr. WPB	D1	
7	2"	W.N. FLANGE RTJ. SCH.160 BW 900#.	3	ASTM A-105	D1	
8	1"	S.W FLANGE RTJ. 1500#.	3	ASTM A-105	D1	
9	3/4"	S.W FLANGE RTJ. 1500#.	1	ASTM A-105	D1	
10	2"	BALL VALVE RTJ. 900#, RED BORE	1	SEE TAG NO. VB-107	D1	
11	1"	BALL VALVE RTJ. 1500#, FULL BORE	1	SEE TAG NO. VB-111	D1	
12	1"	GLOBE VALVE RTJ. 1500#, S.W	1	SEE TAG NO. VGL-105	D1	
13	1"x3/4"	PSV, RTJ. 900# FLG	1	SEE DATA SHEET	-	
14	2"	OCTAGONAL RING, 900# R-24	3	316L S.S.	D1	
15	1"	OCTAGONAL RING, 1500# R-16	4	316L S.S.	D1	
16	3/4"	OCTAGONAL RING, 1500# R-14	1	316L S.S.	D1	
17	7/8"	LG STUD BOLTS C/W 2 NUTS 145mm LONG	24	ASTM A 193 Gr. B7M ASTM A 194 GR. 2HM	D1	
18	7/8"	LG STUD BOLTS C/W 2 NUTS 125mm LONG	16	ASTM A 193 Gr. B7M ASTM A 194 GR. 2HM	D1	
19	3/4"	LG STUD BOLTS C/W 2 NUTS 115mm LONG	4	ASTM A 193 Gr. B7M ASTM A 194 GR. 2HM	D1	

ISSUED FOR CONSTRUCTION

**NOTES:**

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED.
2. ALL DIMENSIONS, ELEVATIONS AND ORIENTATIONS TO BE VERIFIED BY THE CONTRACTOR BEFORE UNDERTAKING ANY KIND OF FABRICATION, CONSTRUCTION AND INSTALLATION WORK AT SITE.

REV.	DATE	DESCRIPTION	DRAWN	CHK'D	APP'VD	APP'VD
			CONSULTANT		CLIENT	
<p><b>PC PETROCHEMICAL ENGINEERING CONSULTANTS</b>  <small>C-2, BLOCK NO. 17, GULSHAN-E-IOBAL, NEAR NATIONAL STADIUM, KARACHI-75300, PAKISTAN.          TEL. +92 (21) 34827780, 34961088, FAX: +92 21 34961089, E-Mail: contact@pcec.com.pk web site: www.pcec.com.pk</small></p>						
<p>CLIENT:  <b>OIL &amp; GAS DEVELOPMENT COMPANY LTD.</b></p>						
<p>PROJECT : <b>DEVELOPMENT OF BITRISM WEST 1A &amp; TIE IN</b></p>						
<p>TITLE : <b>PIPING ISOMETRIC WELLHEAD BITRISM WEST 1A LINE No.2"-V-121-D1 / 1"-V-124-D1</b></p>						
DRAWING NO.			SHEET	SCALE	REV.	
<b>2664-ISO-108</b>			NO. OF	N.T.S.	A	
			3	7	A3	



Sr. NO.	SIZE	DESCRIPTION	QTY.	MATERIAL	(MAT. SPEC)	REMARKS
1	2"	PIPE SCH.160 BE SMLS	3.4M	ASTM A-106 GR.B	D1	
2	1"	PIPE SCH.160 PE SMLS	0.1M	ASTM A-106 GR.B	D1	
3	3/4"	PIPE NIPPLE SCH.160 100mm LONG PE SMLS	2	ASTM A-106 GR.B	D1	
4	2"	ELBOW 90° LR SCH.160 BW	2	ASTM A-234 Gr. WPB	D1	
5	3/4"	ELBOW 90° LR 9000# S.W	1	ASTM A-105	D1	
6	2"	EQL. TEE SCH.160 BW	2	ASTM A-234 Gr. WPB	D1	
7	2"x3/4"	SOCKOLET, 9000# SW	1	ASTM A-105	D1	
8	2"x1"	CONC. RED. SCH.160 BW.	1	ASTM A-234 Gr. WPB	D1	
9	2"	W.N. FLANGE RTJ. SCH.160 BW 900#.	11	ASTM A-105	D1	
10	3/4"	S.W FLANGE RTJ. 1500#.	1	ASTM A-105	D1	
11	2"	BLIND FLANGE RTJ. 900#.	1	ASTM A-105	D1	
12	3/4"	BLIND FLANGE RTJ. 1500#.	1	ASTM A-105	D1	
13	2"	BALL VALVE RTJ. 900#, RED BORE	3	SEE TAG NO. VB-107	D1	
14	3/4"	BALL VALVE RTJ. 1500#, FULL BORE	1	SEE TAG NO. VB-111	D1	
15	2"	GLOBE VALVE RTJ. 900#.	1	SEE TAG NO. VGL-104	D1	
16	2"	CHECK VALVE RTJ. 900#.	1	SEE TAG NO. VC-104	D1	
17	2"	OCTAGONAL RING, 900# R-24	10	316L S.S.	D1	
18	3/4"	OCTAGONAL RING, 1500# R-14	2	316L S.S.	D1	
19	7/8"	LG STUD BOLTS C/W 2 NUTS 145mm LONG	80	ASTM A 193 Gr. B7M ASTM A 194 Gr. 2HM	D1	
20	3/4"	LG STUD BOLTS C/W 2 NUTS 115mm LONG	8	ASTM A 193 Gr. B7M ASTM A 194 Gr. 2HM	D1	
21	1"	HOSE COUPLING 9000#	1	ASTM A-105	D1	

**ISSUED FOR CONSTRUCTION**

**NOTES:**

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED.
2. ALL DIMENSIONS, ELEVATIONS AND ORIENTATIONS TO BE VERIFIED BY THE CONTRACTOR BEFORE UNDERTAKING ANY KIND OF FABRICATION, CONSTRUCTION AND INSTALLATION WORK AT SITE.

A	22-12-16	ISSUED FOR CONSTRUCTION	M.A	AM		
REV.	DATE	DESCRIPTION	DRAWN	CHK'D	APP'VD	APP'VD
			CONSULTANT		CLIENT	

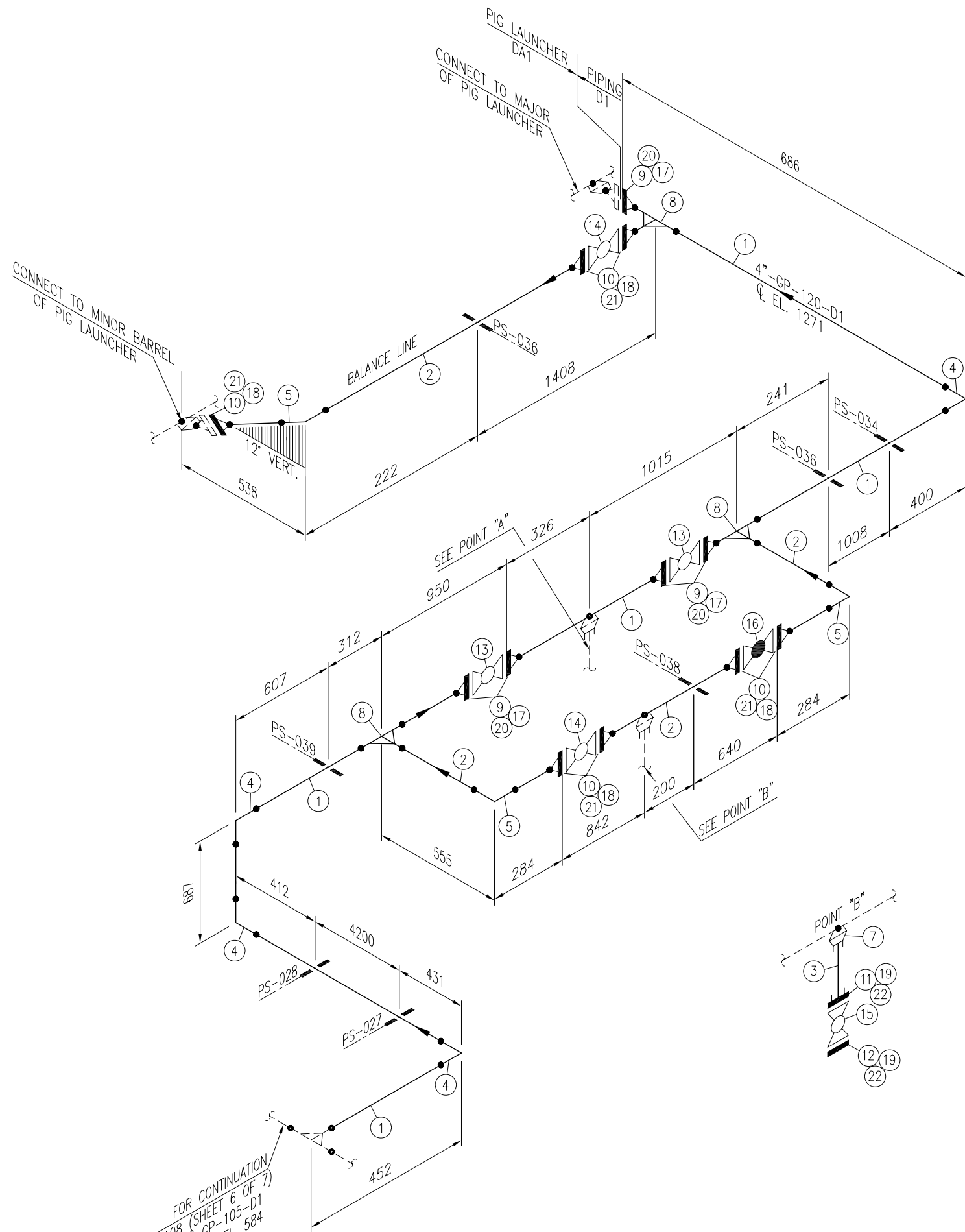
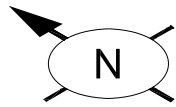
**PC PETROCHEMICAL ENGINEERING CONSULTANTS**  
 C-2, BLOCK NO. 17, GULSHAN-E-IOBAL, NEAR NATIONAL STADIUM, KARACHI-75300, PAKISTAN.  
 TEL: +92 (21) 34827780, 34961088, FAX: +92 21 34961089, E-Mail: contact@pcec.com.pk web site: www.pcec.com.pk

CLIENT: **OIL & GAS DEVELOPMENT COMPANY LTD.**

PROJECT : **DEVELOPMENT OF BITRISM WEST 1A & TIE IN**

TITLE : **PIPING ISOMETRIC WELLHEAD BITRISM WEST 1A LINE No. 2"-CD-117-D1**

DRAWING NO.	SHEET	SCALE	REV.
<b>2664-ISO-108</b>	NO. OF	N.T.S.	A
	4	7	A3



FOR CONTINUATION  
 DWG NO. 2664-ISO-108 (SHEET 6 OF 7)  
 LINE NO. 6"-GP-105-D1  
 & EL. 584

Sr. NO	SIZE	DESCRIPTION	QTY.	MATERIAL	(MAT. SPEC)	REMARKS
1	4"	PIPE SCH.120 BE SMLS	5.8M	ASTM A-106 GR.B	D1	
2	2"	PIPE SCH.160 BE SMLS	2M	ASTM A-106 GR.B	D1	
3	3/4"	PIPE NIPPLE SCH.160 100mm LONG PE SMLS	2	ASTM A-106 GR.B	D1	
4	4"	ELBOW 90° LR SCH.120 BW	4	ASTM A-234 Gr. WPB	D1	
5	2"	ELBOW 90° LR SCH.160 BW	3	ASTM A-234 Gr. WPB	D1	
6	4"x3/4"	SOCKOLET, 9000# SW	1	ASTM A-105	D1	
7	2"x3/4"	SOCKOLET, 9000# SW	1	ASTM A-105	D1	
8	4"x2"	RED. TEE SCH.120x160 BW	3	ASTM A-234 Gr. WPB	D1	
9	4"	W.N. FLANGE RTJ. SCH.120 BW 900#.	5	ASTM A-105	D1	
10	2"	W.N. FLANGE RTJ. SCH.160 BW 900#.	7	ASTM A-105	D1	
11	3/4"	S.W FLANGE RTJ. 1500#.	2	ASTM A-105	D1	
12	3/4"	BLIND FLANGE RTJ. 1500#.	2	ASTM A-105	D1	
13	4"	BALL VALVE RTJ. 900#, RED BORE	2	SEE TAG NO. VB-107	D1	
14	2"	BALL VALVE RTJ. 900#, RED BORE	2	SEE TAG NO. VB-107	D1	
15	3/4"	BALL VALVE RTJ. 1500#, FULL BORE	2	SEE TAG NO. VB-111	D1	
16	2"	GLOBE VALVE RTJ. 900#.	1	SEE TAG NO. VGL-104	D1	
17	4"	OCTAGONAL RING, 900# R-37	5	316L S.S.	D1	
18	2"	OCTAGONAL RING, 900# R-24	7	316L S.S.	D1	
19	3/4"	OCTAGONAL RING, 1500# R-14	4	316L S.S.	D1	
20	1 1/8"	LG STUD BOLTS C/W 2 NUTS 170mm LONG	40	ASTM A 193 Gr. B7M ASTM A 194 GR. 2HM	D1	
21	7/8"	LG STUD BOLTS C/W 2 NUTS 145mm LONG	56	ASTM A 193 Gr. B7M ASTM A 194 GR. 2HM	D1	
22	3/4"	LG STUD BOLTS C/W 2 NUTS 115mm LONG	16	ASTM A 193 Gr. B7M ASTM A 194 GR. 2HM	D1	

RE-ISSUED FOR CONSTRUCTION

**NOTES:**

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED.
2. ALL DIMENSIONS, ELEVATIONS AND ORIENTATIONS TO BE VERIFIED BY THE CONTRACTOR BEFORE UNDERTAKING ANY KIND OF FABRICATION, CONSTRUCTION AND INSTALLATION WORK AT SITE.

C	02-02-17	RE-ISSUED FOR CONSTRUCTION	M.U	SAR		
B	17-07-17	RE-ISSUED FOR CONSTRUCTION	M.U	SAR		
A	22-12-16	ISSUED FOR CONSTRUCTION	M.A	AM		
REV.	DATE	DESCRIPTION	DRAWN	CHK'D	APP'VD	APP'VD
			CONSULTANT			CLIENT

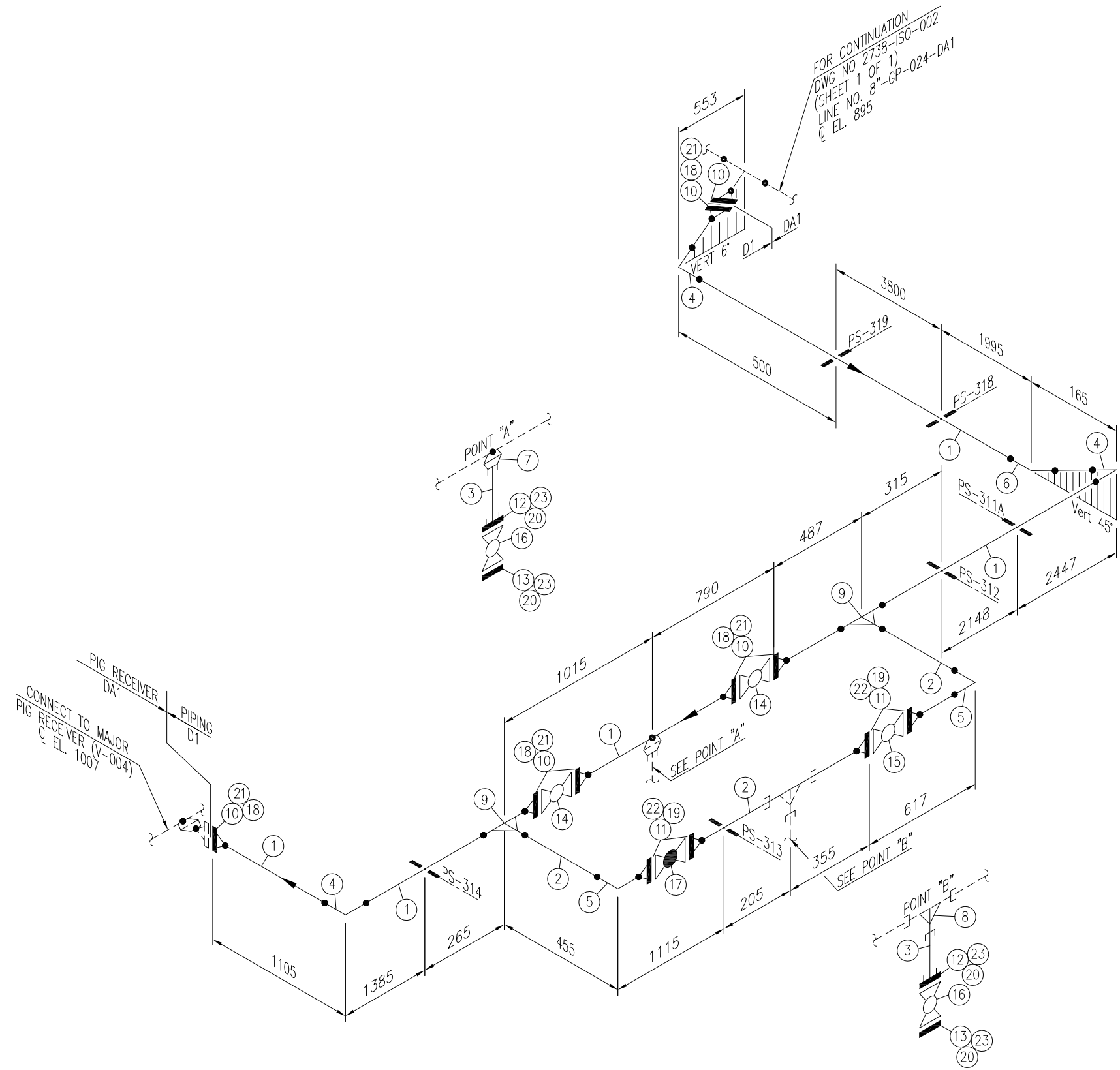
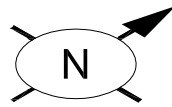
**PC PETROCHEMICAL ENGINEERING CONSULTANTS**  
 C-2, BLOCK NO. 17, GULSHAN-E-IQBAL, NEAR NATIONAL STADIUM, KARACHI-75300, PAKISTAN.  
 TEL. +92 (21) 34827780, 34961088, FAX: +92 21 34961089, E-Mail: contact@pcec.com.pk web site: www.pcec.com.pk

CLIENT  **OIL & GAS DEVELOPMENT COMPANY LTD.**

PROJECT : **DEVELOPMENT OF BITRISM WEST 1A & TIE IN**

TITLE : **PIPING ISOMETRIC  
 WELLHEAD BITRISM WEST 1A  
 LINE No. 4"-GP-120-D1**

DRAWING NO.	SHEET	SCALE	REV.
<b>2664-ISO-108</b>	NO. OF	N.T.S.	C
	5	7	A3



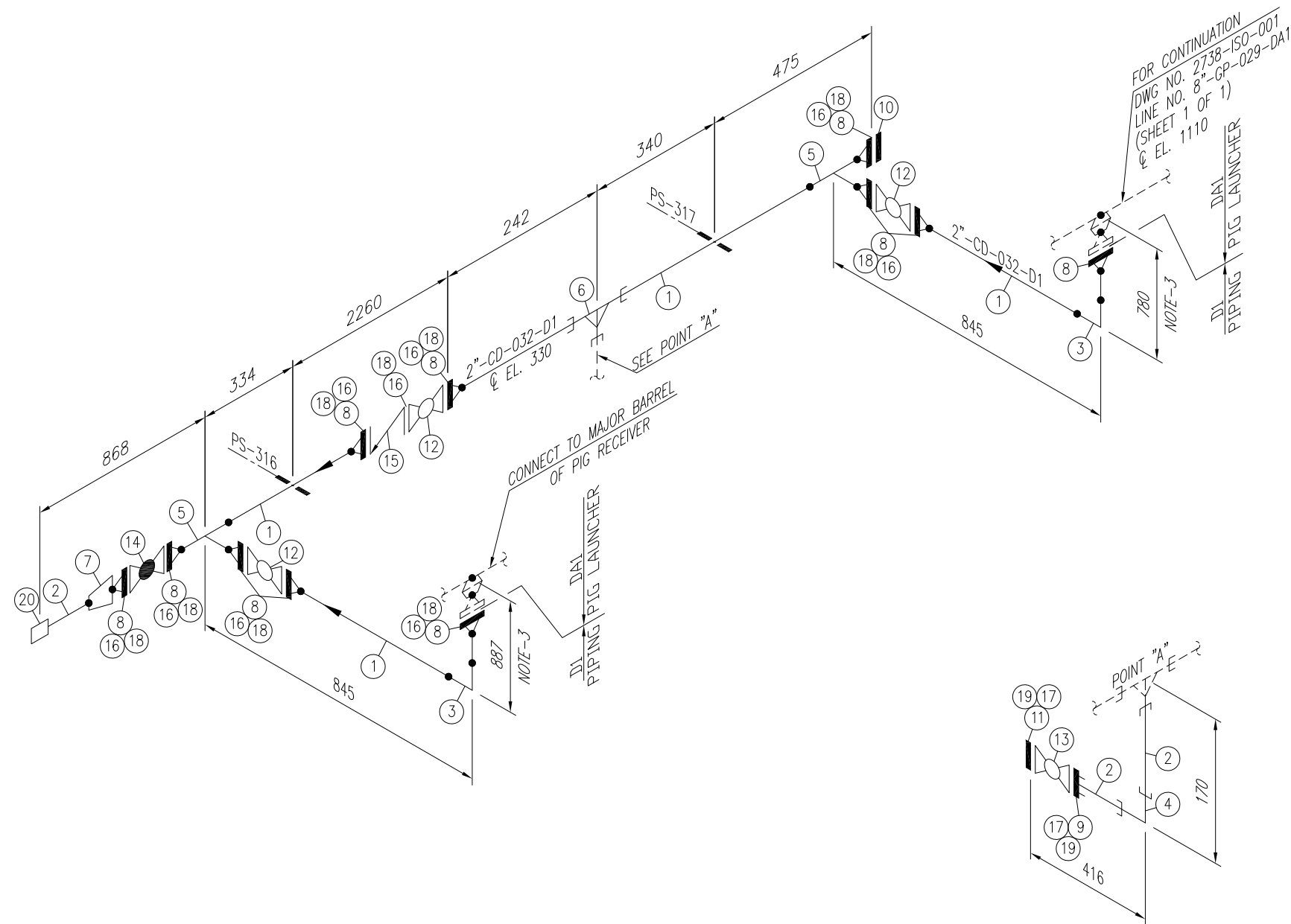
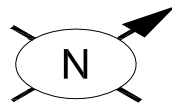
Sr. NO.	SIZE	DESCRIPTION	QTY.	MATERIAL	(MAT. SPEC)	REMARKS
1	4"	PIPE SCH.120 BE SMLS	13.7M	ASTM A-106 GR.B	D1	
2	2"	PIPE SCH.160 BE SMLS	1.5M	ASTM A-106 GR.B	D1	
3	1"	PIPE SCH.160 PE SMLS	0.2M	ASTM A-106 GR.B	D1	
4	4"	ELBOW 90° LR SCH.120 BW	3	ASTM A-234 Gr. WPB	D1	
5	2"	ELBOW 90° LR SCH.160 BW	2	ASTM A-234 Gr. WPB	D1	
6	4"	ELBOW 45° LR SCH.120 BW	1	ASTM A-234 Gr. WPB	D1	
7	4"x1"	SOCKOLET, 9000# SW	1	ASTM A-105	D1	
8	2"x1"	RED. TEE 9000# SW	1	ASTM A-105	D1	
9	4"x2"	RED. TEE SCH.120x160 BW	2	ASTM A-234 Gr. WPB	D1	
10	4"	W.N. FLANGE RTJ. SCH.120 BW 900#.	7	ASTM A-105	D1	
11	2"	W.N. FLANGE RTJ. SCH.160 BW 900#.	4	ASTM A-105	D1	
12	1"	S.W FLANGE RTJ. 1500#.	2	ASTM A-105	D1	
13	1"	BLIND FLANGE RTJ. 1500#.	2	ASTM A-105	D1	
14	4"	BALL VALVE RTJ. 900#.	2	SEE TAG NO. VB-107	D1	
15	2"	BALL VALVE RTJ. 900#.	1	SEE TAG NO. VB-107	D1	
16	1"	BALL VALVE RTJ. 1500#.	2	SEE TAG NO. VB-111	D1	
17	2"	GLOBE VALVE RTJ. 900#.	1	SEE TAG NO. VGL-104	D1	
18	4"	OCTAGONAL RING, 900# R-37	6	316L S.S.	D1	
19	2"	OCTAGONAL RING, 900# R-24	4	316L S.S.	D1	
20	1"	OCTAGONAL RING, 1500# R-16	4	316L S.S.	D1	
21	1 1/8"	LG STUD BOLTS C/W 2 NUTS 170mm LONG	48	ASTM A 193 Gr. B7M CADMIUM PLATED ASTM A 194 Gr. 2HM CADMIUM PLATED	D1	
22	7/8"	LG STUD BOLTS C/W 2 NUTS 145mm LONG	32	ASTM A 193 Gr. B7M CADMIUM PLATED ASTM A 194 Gr. 2HM CADMIUM PLATED	D1	
23	7/8"	LG STUD BOLTS C/W 2 NUTS 125mm LONG	16	ASTM A 193 Gr. B7M CADMIUM PLATED ASTM A 194 Gr. 2HM CADMIUM PLATED	D1	

**NOTES:**

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED.
2. ALL DIMENSIONS, ELEVATIONS AND ORIENTATIONS TO BE VERIFIED BY THE CONTRACTOR BEFORE UNDERTAKING ANY KIND OF FABRICATION, CONSTRUCTION AND INSTALLATION

0	19-12-17	ISSUED FOR REVIEW	AHK	SHAH		
REV.	DATE	DESCRIPTION	DRAWN	CHK'D	APP'VD	APP'VD
			CONSULTANT			CLIENT
<b>PETROCHEMICAL ENGINEERING CONSULTANTS</b> C-2, BLOCK NO. 17, GULSHAN-E-IQBAL, NEAR NATIONAL STADIUM, KARACHI-75300, PAKISTAN. TEL: +92 (21) 34827780, 34961088, FAX: +92 21 34961089, E-Mail: contact@pec.com.pk web site: www.pec.com.pk						
CLIENT <b>OIL &amp; GAS DEVELOPMENT COMPANY LTD.</b>						
PROJECT : <b>TIE-IN OF BITRISM &amp; GUNDANWARI AT SINJHORO PLANT</b>						
TITLE : <b>PIPING ISOMETRIC SINJHORO PLANT LINE NO. 4"GP-034-D1 \ 2"-GP-034A-D1</b>						
DRAWING NO.			SHEET	SCALE	REV.	
<b>2738-ISO-003</b>			NO. OF	N.T.S.	0	
			1	1	A3	





Sr. NO.	SIZE	DESCRIPTION	QTY.	MATERIAL	(MAT. SPEC)	REMARKS
1	2"	PIPE SCH.160 BE SMLS	4.3M	ASTM A-106 GR.B	D1	
2	1"	PIPE SCH.160 PE SMLS	0.3M	ASTM A-106 GR.B	D1	
3	2"	ELBOW 90° LR SCH.160 BW	2	ASTM A-234 Gr. WPB	D1	
4	1"	ELBOW 90° 9000# S.W	1	ASTM A-105	D1	
5	2"	EQL. TEE SCH.160 BW	2	ASTM A-234 Gr. WPB	D1	
6	2"x1"	RED. TEE 9000# SW	1	ASTM A-105	D1	
7	2"x1"	CONC. RED. SCH.160 BW.	1	ASTM A-234 Gr. WPB	D1	
8	2"	W.N. FLANGE RTJ. SCH.160 BW 900#.	11	ASTM A-105	D1	
9	1"	S.W FLANGE RTJ. 1500#.	1	ASTM A-105	D1	
10	2"	BLIND FLANGE RTJ. 900#.	1	ASTM A-105	D1	
11	1"	BLIND FLANGE RTJ. 1500#.	1	ASTM A-105	D1	
12	2"	BALL VALVE RTJ. 900#.	3	SEE TAG NO. VB-107	D1	
13	1"	BALL VALVE RTJ. 1500#.	1	SEE TAG NO. VB-111	D1	
14	2"	GLOBE VALVE RTJ. 900#.	1	SEE TAG NO. VGL-104	D1	
15	2"	CHECK VALVE RTJ. 900#.	1	SEE TAG NO. VC-104	D1	
16	2"	OCTAGONAL RING, 900# R-24	11	316L S.S.	D1	
17	1"	OCTAGONAL RING, 1500# R-16	2	316L S.S.	D1	
18	7/8"	LG STUD BOLTS C/W 2 NUTS 145mm LONG	88	ASTM A 193 Gr. B7M CADMIUM PLATED ASTM A 194 Gr. 2HM CADMIUM PLATED	D1	
19	7/8"	LG STUD BOLTS C/W 2 NUTS 125mm LONG	8	ASTM A 193 Gr. B7M CADMIUM PLATED ASTM A 194 Gr. 2HM CADMIUM PLATED	D1	
20	1"	HOSE COUPLING 9000#	1	ASTM A-105	D1	

**NOTES:**

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2. ALL DIMENSIONS, ELEVATIONS AND ORIENTATIONS TO BE VERIFIED BY THE CONTRACTOR BEFORE UNDERTAKING ANY KIND OF FABRICATION, CONSTRUCTION AND INSTALLATION
3. ELEVATION TO BE ADJUSTED AS PER SITE REQUIREMENT.

0	19-12-17	ISSUED FOR REVIEW	AHK	SHAH		
REV.	DATE	DESCRIPTION	DRAWN	CHK'D	APP'VD	APP'VD
			CONSULTANT			CLIENT

**PC PETROCHEMICAL ENGINEERING CONSULTANTS**  
 C-2, BLOCK NO. 17, GULSHAN-E-IQBAL, NEAR NATIONAL STADIUM, KARACHI-75300, PAKISTAN.  
 TEL: +92 (21) 34827780, 34961088, FAX: +92 21 34961089, E-Mail: contact@pcec.com.pk web site: www.pcec.com.pk

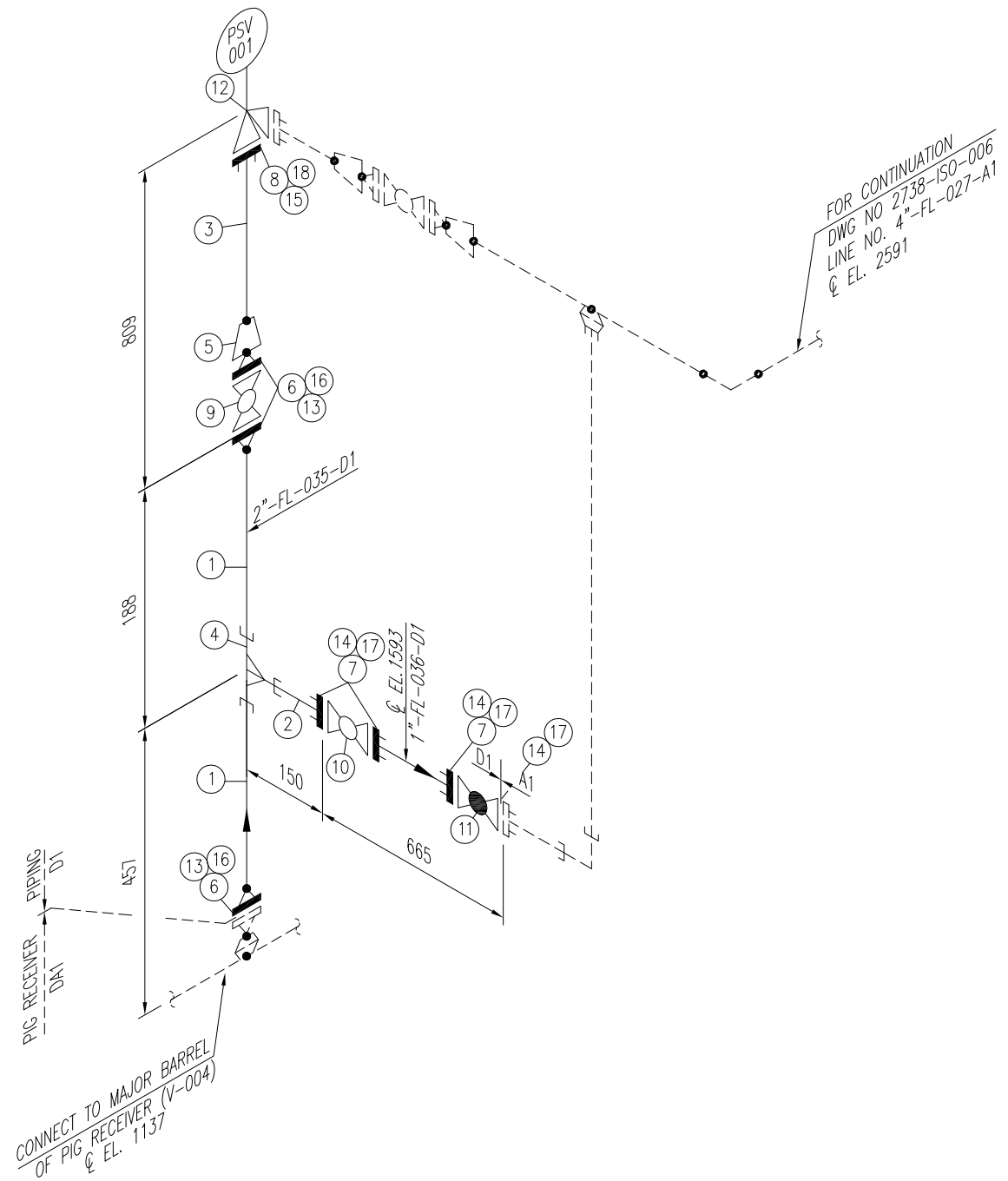
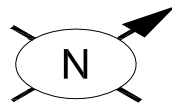
CLIENT: **OIL & GAS DEVELOPMENT COMPANY LTD.**

PROJECT: **TIE-IN OF BITRISM & GUNDANWARI AT SINJHORO PLANT**

TITLE: **PIPING ISOMETRIC SINJHORO PLANT LINE No. 2"-CD-032-D1**

DRAWING NO.	SHEET	SCALE	REV.
<b>2738-ISO-004</b>	NO. OF	N.T.S.	0
	1	A3	





Sr. NO.	SIZE	DESCRIPTION	QTY.	MATERIAL	(MAT. SPEC)	REMARKS
1	2"	PIPE SCH.160 BE SMLS	0.3M	ASTM A-106 GR.B	D1	
2	1"	PIPE SCH.160 SMLS, PE	0.2M	ASTM A-106 GR.B	D1	
3	3/4"	PIPE SCH.160 SMLS, PE	0.2M	ASTM A-106 GR.B	D1	
4	2"x1"	RED. TEE 900# S.W	1	ASTM A-105	D1	
5	2"x3/4"	CONC. RED. SCH.160 BW.	1	ASTM A-234 Gr. WPB	D1	
6	2"	W.N. FLANGE RTJ. SCH.160 BW 900#.	3	ASTM A-105	D1	
7	1"	S.W FLANGE RTJ. 1500#.	3	ASTM A-105	D1	
8	3/4"	S.W FLANGE RTJ. 900#.	1	ASTM A-105	-	
9	2"	BALL VALVE RTJ. 900#	1	SEE TAG NO. VB-107	D1	
10	1"	BALL VALVE RTJ. 1500#	1	SEE TAG NO. VB-111	D1	
11	1"	GLOBE VALVE RTJ. 1500#.	1	SEE TAG NO. VGL-105	D1	
12	3/4"x1"	PSV, RTJ. 900# X 300#	1	SEE DATA SHEET	-	
13	2"	OCTAGONAL RING, 900# R-24	3	316L S.S.	D1	
14	1"	OCTAGONAL RING, 1500# R-16	4	316L S.S.	-	
15	3/4"	OCTAGONAL RING, 900#, R-14	1	316L S.S.	D1	
16	7/8"	LG STUD BOLTS C/W 2 NUTS 145mm LONG	24	ASTM A 193 Gr. B7M CADMIUM PLATED ASTM A 194 Gr. 2HM CADMIUM PLATED	D1	
17	7/8"	LG STUD BOLTS C/W 2 NUTS 125mm LONG	16	ASTM A 193 Gr. B7M CADMIUM PLATED ASTM A 194 Gr. 2HM CADMIUM PLATED	D1	
18	3/4"	LG STUD BOLTS C/W 2 NUTS 115mm LONG	4	ASTM A 193 Gr. B7M CADMIUM PLATED ASTM A 194 Gr. 2HM CADMIUM PLATED	-	

**NOTES:**

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED.
2. ALL DIMENSIONS, ELEVATIONS AND ORIENTATIONS TO BE VERIFIED BY THE CONTRACTOR BEFORE UNDERTAKING ANY KIND OF FABRICATION, CONSTRUCTION AND INSTALLATION

0	19-12-17	ISSUED FOR REVIEW	AHK	SHAH		
REV.	DATE	DESCRIPTION	DRAWN	CHK'D	APP'VD	APP'VD
					CONSULTANT	CLIENT
<b>PETROCHEMICAL ENGINEERING CONSULTANTS</b> C-2, BLOCK NO. 17, GULSHAN-E-IGBAL, NEAR NATIONAL STADIUM, KARACHI-75300, PAKISTAN. TEL. +92 (21) 34827780, 34961088, FAX: +92 21 34961089, E-Mail: contact@pec.com.pk web site: www.pec.com.pk						
CLIENT <b>OIL &amp; GAS DEVELOPMENT COMPANY LTD.</b>						
PROJECT : <b>TIE-IN OF BITRISM &amp; GUNDANWARI AT SINJHORO PLANT</b>						
TITLE : <b>PIPING ISOMETRIC SINJHORO PLANT</b> <b>LINE No. 2"-FL-035-D1 \ 1"-FL-036-D1</b>						
DRAWING NO.			SHEET	SCALE	REV.	
<b>2738-ISO-005</b>			NO. OF	N.T.S.	0	
			1	A3		

**Data Sheet (Steel Mandrel PIG)**     **Doc 2734-PIG-001**

**Purpose:** Cleaning (Debris, product & rust Removal)

**Pipeline Size & Length :** 8"

**Wall Thickness:**

For 8"Ø    12.7mm (Sch-80)


**Pipeline Material:** API 5L Gr x 52

**Additional Requirements:**

Front pulling/handling rope required

Transmitter mounting optional

**Recommended Type:** Carbon steel body, 02 Polyurethane replaceable cups, 01 Polyurethane disc, Spring mounted Brushes with bolts.



<b>CLIENT</b>		<b>DEVELOPMENT OF BITRISM WEST 1A &amp; TIE IN</b>				<b>CONSULTANT</b>	
						<b>DOC. TITLE</b>	
		<b>DOC. NO.</b>		<b>2664-PDS-110</b>		<b>REV. B</b>	





S.No.	DESCRIPTION		PSV-112		PSV-113	
1	SERVICE		HYDROCARBON		HYDROCARBON	
2	LINE NO. / VESSEL NO.		V - 103		V - 104	
3	FULL NOZZLE / SEMI NOZZLE		FULL		FULL	
4	SAFETY OR RELIEF		THERMAL - RELIEF		THERMAL - RELIEF	
5	CONV. / BELLOWS / PILOT OP.		CONVENTIONAL		CONVENTIONAL	
6	BONNET TYPE		CLOSED		CLOSED	
7	SIZE: INLET	OUTLET	3/4"	1"	3/4"	1"
8	FLANGE RATING		900 X 300		900 X 300	
9	TYPE OF FACING		RF x RF		RF x RF	
10	BODY AND BONNET		ASME SA,216,GR,WCB.CARBON STEEL		ASME SA,216,GR,WCB.CARBON STEEL	
11	NOZZLE AND DISC		SS316L		SS316L	
12	GUIDE AND RINGS		SS316L		SS316L	
13	SPRING		ALUMINISED C.S		ALUMINISED C.S	
14	LIFTING GEAR-TYPE		REQUIRED		REQUIRED	
15	TEST GAG		REQUIRED		REQUIRED	
16	CAP: SCREWED OR BOLTED		SCREWED		SCREWED	
17	TEST CONNECTION		YES-CARBON STEEL		YES-CARBON STEEL	
18	MANUAL BLOWDOWN		YES-CARBON STEEL		YES-CARBON STEEL	
19	BACK FLOW PREVENTER		NO		NO	
20	CODE		ASME SEC VIII / API RP-520-521		ASME SEC VIII / API RP-520-521	
21	LEAKAGE CODE		ANSI / API 527		ANSI / API 527	
22	SIZING BASIS		THERMAL RELIEF		THERMAL RELIEF	
23	FLUID		HYDROCARBON		HYDROCARBON	
24	FLUID STATE		MIX		MIX	
25	SPECIFIC GRAVITY		0.6 - 0.7		0.6 - 0.7	
26	OPER. PRESS. (psig)	SET PRES. (psig)	1200 - 1400	1600	1200 - 1400	1600
27	OPER. TEMP. (°F)	MAX TEMP. (°F)	80 - 100	150	80 - 100	150
28	COLD BENCH TEST PRESSURE		VTS		VTS	
29	% ALLOWABLE OVERPRESSURE		10%		10%	
30	OVERPRESSURE FACTOR		N/A		N/A	
31	COMPRESSIBILITY FACTOR		-		-	
32	FLOW MAX		-		-	
33	RATIO OF SPECIFIC HEATS		-		-	
34	BACK PRESSURE		ATMOSPHERIC		ATMOSPHERIC	
35	DISCHARGE COEF kd		0.65		0.65	
36	CHANGE OF STATE COEF. C		VTS		VTS	
37	P&ID NO.		2664-PID-008		2664-PID-009	
38	CALC. AREA SQ. IN.		VTS		VTS	
39	SELECTED AREA SQ. IN.		VTS		VTS	
40	ORIFICE DESIGNATION		D		D	
41	MANUFACTURER		-		-	
42	MODEL NUMBER		VTS		VTS	



NOTES:

- VENDOR TO CONFIRM THE SUITABILITY OF THIS MODEL FOR THE REQUIRED SERVICE.
- VTS-VENDOR TO SPECIFY OR CONFIRM

CONSULTANT		DEVELOPMENT OF BITRISM WEST 1A & TIE IN				DOCUMENT NO. 2664-IDS-013				
 <b>PETROCHEMICAL ENGINEERING CONSULTANTS</b>					REV.	DATE.				
					C	19/01/2017				
CLIENT		INSTRUMENT DATA SHEET				BY	APPR.			
 <b>OIL &amp; GAS DEVELOPMENT COMPANY Ltd.</b>	<b>PRESSURE GAUGE</b>				ZUA	SAG				
	<b>2664-PID-008</b>				SHEET	1 OF 1				
<b>GENERAL</b>	1	Tag Number	PI-111							
	2	Service	PIG LAUNCHER							
	3	Line Size	-							
	4	P & ID Drawing Number	2664-PID-008							
	5									
<b>PROCESS CONDITION</b>	6	Fluid	Gas							
	7	Max. Pressure	Max. Temperature	1600	psi-g	150	°F			
	8	Min. Pressure	Oper. Temperature	1000	psi-g	80-100	°F			
	9	Pulsation	Vibration	NO		NO				
	10									
	11									
<b>GAUGE</b>	12	Type	INDICATOR							
	13	Calibration Range	Min	Max	0	psi	-g	2000	psi	-g
	14	Figure Interval	Manufacturer Standard							
	15	Minor Graduation	Yes							
	16	Mounting	Direct Mounted							
	17	Dial Size	160	mm						
	18	Dial Color	White Aluminium with Black Numerals							
	19	Case Material	304 St. Stl							
	20	Ring Construction	Ring Material	Bayonet		St. Stl				
	21	Blow-Out Protection	Yes							
	22	Lens Material	Solid Front Full Safety Pattern With Laminated Safety Glass							
	23	Pressure Element Type	Bourden Tube							
	24	Pressure Element Material	316 St. Stl							
	25	Socket Material	316 St. Stl							
	26	Connection Size	1/2" NPT-μ							
	27	Connection Location	Bottom							
28	Movement Material	St. Stl. Rack & Pinion								
29	Nominal Accuracy	+/- 1%								
30	Micrometer Material	Yes								
31	Ingress Protection	IP 65								
<b>DIAPHRAGM SEAL</b>	32	Type	N/A							
	33	Process Connection	N/A							
	34	Diaphragm Material	N/A							
	35	Bottom Housing Material	N/A							
	36	Fill Fluid	N/A							
	37	Capillary Length	N/A							
	38	Capillary Material	N/A							
	39	Flushing Connection	No							
	40	Top Housing Material	N/A							
	41	Connection to Instrument	N/A							
	42									
	<b>OPTIONS</b>	43	Syphon :	Type	Material	N/A	N/A			
44		Syphon :	Type	Material	N/A	N/A				
45		Movement Damping	N/A							
46										
47										
48										
<b>PURCHASE</b>	49	Manufacturer								
	50	Model								
	51	Purchase Order Number								
	52	Price	Item Number			N/A				
	53	Serial Number	N/A							
<b>NOTES :</b>										
	1									
	2									
	3									
	4									

CONSULTANT		DEVELOPMENT OF BITRISM WEST 1A & TIE IN				DOCUMENT NO.		
 <b>PETROCHEMICAL ENGINEERING CONSULTANTS</b>						2664-IDS-011		
	CLIENT		INSTRUMENT DATA SHEET				REV.	DATE.
 <b>OIL &amp; GAS DEVELOPMENT COMPANY Ltd.</b>	<b>PIG DETECTOR</b>				C	19/01/2017		
	<b>P&amp;ID NO. 2664-PD-008</b>				BY	APPR.		
						ZUA	SAG	
						SHEET	1 OF 1	
<b>GENERAL</b>	1	Tag Number		PXI-101				
	2	Service		PIG LAUNCHER				
	3	Line Size		-				
	4	P & ID Drawing Number		2664-PID-008				
	5	Area Classification		ZONE - 1, IIA, IIB ( AS PER IEC ), Temp. Class - T3				
<b>DETECTOR</b>	6	Mechanical Flag		REQD				
	7	Isolation Valve		REQD				
	8	MOC		SS316				
	9	NUTS & BOLTS		SS316				
	10	Trigger Assembly Components		Shaft & Plug Assembly with O-ring				
	11	Plug Assembly Type		Uni-directional				
<b>OPERATING CONDITION</b>	12							
	13	Fluid / State		NATURAL GAS				
	14	Process Connection		2"				
	15	Pressure psig Design	Min.	Operating	Max.	1600	1000	1200
	16	Temperature °F Design	Min.	Operating	Max.	150	80	100
<b>ELECTRICAL</b>	17	Signal Output		Load Resist		N/A		
	18	Power Supply		Electrical Connection		N/A		
	19	Local Indication		Response Time		N/A		
	20	Local Raiser		N/A				
	21	Enclosure Protection		N/A				
	22	Cable Entry		N/A				
	23							
<b>ACCESSORIES</b>	24							
	25							
<b>OTHER</b>	26	Model No.						
	27	Certification						
<b>PURCHASE</b>	28	Manufacturer						
	1	Model						
	2	Purchase Order Number						
	3	Price		Item Number				
	4	Serial Number						
<b>NOTES :</b>								
	1	Vendor/Contractor shall provide the piping nozzle stand out length during detail engineering.						
	2							
	3							
	4							

CONSULTANT		TIE-IN OF BITRISM & GUNDANWARI AT SINHORO PLANT (PIG RECEIVER)				DOCUMENT NO.			
 <b>PETROCHEMICAL ENGINEERING CONSULTANTS</b>						2738-IDS-016			
				REV.	DATE.				
				A	18/12/2017				
CLIENT		INSTRUMENT DATA SHEET				BY	APPR.		
 <b>OIL &amp; GAS DEVELOPMENT COMPANY Ltd.</b>		<b>PIG DETECTOR</b>				ZUA	SAG		
		<b>P&amp;ID NO. 2738-PD-001</b>				SHEET	1 OF 1		
<b>GENERAL</b>	1	Tag Number		PXI-002					
	2	Service		PIG RECEIVER					
	3	Line Size		-					
	4	P & ID Drawing Number		2738-PD-001					
	5	Area Classification		ZONE - 1, IIA, IIB ( AS PER IEC ), Temp. Class - T3					
<b>DETECTOR</b>	6	Mechanical Flag		REQD					
	7	Isolation Valve		REQD					
	8	MOC		SS316					
	9	NUTS & BOLTS		SS316					
	10	Trigger Assembly Components		Shaft & Plug Assembly with O-ring					
	11	Plug Assembly Type		Uni-directional					
<b>OPERATING CONDITION</b>	12								
	13	Fluid / State		NATURAL GAS					
	14	Process Connection		2"					
	15	Pressure Design	psig	Min.	Operating	Max.	1700	1000	1400
	16	Temperature Design	°F	Min.	Operating	Max.	150	80	130
	<b>ELECTRICAL</b>	17	Signal Output		Load Resist		N/A		
18		Power Supply		Electrical Connection		N/A			
19		Local Indication		Response Time		N/A			
20		Local Raiser		N/A					
21		Enclosure Protection		N/A					
22		Cable Entry		N/A					
23									
<b>ACCESSORIES</b>	24								
	25								
<b>OTHER</b>	26	Model No.							
	27	Certification							
<b>PURCHASE</b>	28	Manufacturer							
	1	Model							
	2	Purchase Order Number							
	3	Price		Item Number					
	4	Serial Number							
<b>NOTES :</b>									
	1	Vendor/Contractor shall provide the piping nozzle stand out length during detail engineering.							
	2								
	3								
	4								

<b>CONSULTANT</b>		<b>TIE-IN OF BITRISM &amp; GUNDANWARI AT SINJHORO PLANT</b>				<b>DOCUMENT NO.</b> 2738-IDS-018	
	<b>PETROCHEMICAL ENGINEERING CONSULTANTS</b>					<b>REV.</b> A	<b>DATE.</b> 18/12/2017
<b>CLIENT</b>		<b>INSTRUMENT DATA SHEET</b>				<b>BY</b>	<b>APPR.</b>
	<b>OIL &amp; GAS DEVELOPMENT COMPANY Ltd.</b>	<b>PRESSURE GAUGE</b>				ZUA	SAG
		<b>2738-PID-001</b>				<b>SHEET</b>	1 OF 1
<b>GENERAL</b>	1	Tag Number		PI-014			
	2	Service		PIG RECEIVER			
	3	Line Size		-			
	4	P & ID Drawing Number		2738-PID-001			
	5						
<b>PROCESS CONDITION</b>	6	Fluid		Gas			
	7	Max. Pressure	Max. Temperature	1700	psi-g	150	°F
	8	Min. Pressure	Oper. Temperature	1000	psi-g	80-1130	°F
	9	Pulsation	Vibration	NO		NO	
	10						
	11						
<b>GAUGE</b>	12	Type		INDICATOR			
	13	Calibration Range	Min	Max	0	psi	-g
	14	Figure Interval		Manufacturer Standard			
	15	Minor Graduation		Yes			
	16	Mounting		Direct Mounted			
	17	Dial Size		160	mm		
	18	Dial Color		White Aluminium with Black Numerals			
	19	Case Material		304 St. Stl			
	20	Ring Construction	Ring Material	Bayonet		St. Stl	
	21	Blow-Out Protection		Yes			
	22	Lens Material		Solid Front Full Safety Pattern With Laminated Safety Glass			
	23	Pressure Element Type		Bourden Tube			
	24	Pressure Element Material		316 St. Stl			
	25	Socket Material		316 St. Stl			
	26	Connection Size		1/2" NPT-μ			
	27	Connection Location		Bottom			
	28	Movement Material		St. Stl. Rack & Pinion			
	29	Nominal Accuracy		+/- 1%			
	30	Micrometer Material		Yes			
	31	Ingress Protection		IP 65			
<b>DIAPHRAGM SEAL</b>	32	Type		N/A			
	33	Process Connection		N/A			
	34	Diaphragm Material		N/A			
	35	Bottom Housing Material		N/A			
	36	Fill Fluid		N/A			
	37	Capillary Length		N/A			
	38	Capillary Material		N/A			
	39	Flushing Connection		No			
	40	Top Housing Material		N/A			
	41	Connection to Instrument		N/A			
	42						
<b>OPTIONS</b>	43	Syphon :	Type	Material	N/A	N/A	
	44	Syphon :	Type	Material	N/A	N/A	
	45	Movement Damping		N/A			
	46						
	47						
	48						
<b>PURCHASE</b>	49	Manufacturer					
	50	Model					
	51	Purchase Order Number					
	52	Price	Item Number			N/A	
	53	Serial Number		N/A			
<b>NOTES :</b>							
	1						
	2						
	3						
	4						