

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض  عمومی و مشترک								
شماره پیمان: 053 – 073 – 9184	SPECIFICATION FOR BULK MATERIALS								شماره صفحه : 1 از 15
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه	
	BK	GNRAL	PEDCO	000	EL	SP	0008	D04	

## طرح نگهداشت و افزایش تولید 27 مخزن

## SPECIFICATION FOR BULK MATERIALS

### نگهداشت و افزایش تولید میدان نفتی بینک

D04	Mar. 2022	AFD	H.Shakiba	M.Fakharian	M.Mehrshad	
D03	Feb. 2022	AFD	H.Shakiba	M.Fakharian	M.Mehrshad	
D02	Oct. 2021	IFA	H.Shakiba	M.Fakharian	Sh.Ghalikar	
D01	Aug. 2021	IFA	M.Asgharnejad	M.Fakharian	Sh.Ghalikar	
D00	Jul. 2021	IFC	M.Asgharnejad	M.Fakharian	Sh.Ghalikar	
Rev.	Date	Purpose of Issue/Status	Prepared by:	Checked by:	Approved by:	CLIENT Approval

Class: 2

CLIENT Doc. Number: F0Z-707212

#### 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 Company Review  
AB-A: As-Built –Approved

	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>عمومی و مشترک</p>							
شماره پیمان: 053 – 073 – 9184	SPECIFICATION FOR BULK MATERIALS							شماره صفحه : 2 از 15
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GNRAL	PEDCO	000	EL	SP	0008	D04

### REVISION RECORD SHEET


PAGE	D00	D01	D02	D03	D04
1	X	X	X	X	X
2	X	X	X	X	X
3	X		X		
4	X		X		
5	X				
6	X	X	X		
7	X				
8	X				
9	X				
10	X				
11	X				
12	X				
13	X				
14	X				
15	X				
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
42					
43					
44					
45					
46					
47					
48					
49					
50					

PAGE	D00	D01	D02	D03	D04
51					
52					
53					
54					
55					
56					
57					
58					
59					
60					
61					
62					
63					
64					
65					
66					
67					
68					
69					
70					
71					
72					
73					
74					
75					
76					
77					
78					
79					
80					
81					
82					
83					
84					
85					
86					
87					
88					
89					
90					
91					
92					
93					
94					
95					
96					
97					
98					
99					
100					

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>عمومی و مشترک</p>							
شماره پیمان: 053 – 073 – 9184	SPECIFICATION FOR BULK MATERIALS							شماره صفحه : 3 از 15
	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GNRAL	PEDCO	000	EL	SP	0008	D04

## CONTENTS

<b>1.0</b>	<b>INTRODUCTION .....</b>	<b>4</b>
<b>2.0</b>	<b>SCOPE .....</b>	<b>5</b>
<b>3.0</b>	<b>NORMATIVE REFERENCES.....</b>	<b>5</b>
3.1	LOCAL CODES & STANDARDS.....	5
3.2	INTERNATIONAL CODES & STANDARDS.....	5
3.3	THE PROJECT DOCUMENTS.....	6
3.4	ENVIRONMENTAL DATA.....	6
3.5	ORDER OF PRECEDENCE.....	6
<b>4.0</b>	<b>DESIGN REQUIREMENT .....</b>	<b>7</b>
4.1	PROTECTIVE DEGREE.....	7
4.2	AREA CLASSIFICATION AND MATERIALS SELECTION .....	7
<b>5.0</b>	<b>CONSTRUCTION REQUIREMENT .....</b>	<b>7</b>
5.1	MOTOR CONTROL STATION .....	7
5.2	LIGHTING POLES/BRACKETS.....	9
5.3	JUNCTION/TERMINAL BOXES .....	10
5.4	CONDUIT & FITTINGS .....	11
5.5	CABLE TRAYS & LADDERS.....	12
5.6	CABLE GLANDS .....	13
5.7	CABLE TERMINATION AND JOINTS .....	13
5.8	IDENTIFICATION TAGS .....	14
<b>6.0</b>	<b>PAINTING/COATING .....</b>	<b>14</b>
<b>7.0</b>	<b>TEST &amp; INSPECTION .....</b>	<b>14</b>
<b>8.0</b>	<b>PACKING, PRESERVATION &amp; TRANSPORTATION .....</b>	<b>15</b>
<b>9.0</b>	<b>GUARANTEE .....</b>	<b>15</b>

	<p>نگهداشت و افزایش تولید میدان نفتی بینک</p> <p>سطح الارض و ابنیه تحت الارض</p> <p>عمومی و مشترک</p>							
شماره پیمان:	SPECIFICATION FOR BULK MATERIALS							شماره صفحه : 4 از 15
053 – 073 – 9184	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GNRAL	PEDCO	000	EL	SP	0008	D04

## 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.

### GENERAL DEFINITION

The following terms shall be used in this document.

CLIENT:	National Iranian South Oilfields Company (NISOC)
PROJECT:	Binak Oilfield Development – General Facilities
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 COMPANY (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 COMPANY rather than by an EPC/EPD CONTRACTOR, supplier or VENDOR.
MAY:	Is used where a provision is completely discretionary.

	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>عمومی و مشترک</p>							
شماره پیمان: 053 – 073 – 9184	SPECIFICATION FOR BULK MATERIALS							شماره صفحه : 5 از 15
	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GNRAL	PEDCO	000	EL	SP	0008	D04

## 2.0 SCOPE

This specification applies to Electrical Bulk Materials used in “Binak Oilfield Development”. The scope of work and supply for the specified material includes design, production of materials, fabrication, manufacturing, providing drawings and data sheets, assembly, painting, testing and all sub- suppliers coordination.

The bulk materials shall be completed with all accessories. Vendor shall guarantee safe and reliable performance of the equipment.

Compliance by the supplier with the provisions of this specification does not relieve him of this responsibility to furnish equipment and accessories of a suitable and safe design to meet the specified service conditions and the requirements of international and local codes and standards.

The following items are covered under this specification:

- 1) Local Control Station
- 2) Lighting Poles/Brackets
- 3) Junction/Terminal Boxes
- 4) Conduit & Fittings
- 5) Cable Trays & Ladders
- 6) Cable Glands
- 7) Cable Termination & Joints
- 8) Identification Tags


## 3.0 NORMATIVE REFERENCES

### 3.1 Local Codes & Standards

- IPS-E-EL-100(1) Engineering Standard for Electrical System Design  
IPS-M-EL-161(2) Material and Equipment Standard for General Electrical Items

### 3.2 International Codes & Standards

The design, rating, manufacturing, testing and assembly/installation of the electrical equipment/material shall proceed in accordance with the latest edition of the applicable codes and recommendation of IPS, IEC and any other relevant standards Symbols for wiring diagrams shall be in accordance with IEC.

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>عمومی و مشترک</p>							
شماره پیمان: 053 – 073 – 9184	SPECIFICATION FOR BULK MATERIALS							شماره صفحه : 6 از 15
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GNRAL	PEDCO	000	EL	SP	0008	D04

The electrical equipment used in hazardous areas shall be certified or approved to comply with the requirement for such installation by a recognized certifying authority such as BASEEFA, UL, ULC, CESI, KEMA, PTB or any other CENELEC approved authority.

### 3.3 The Project Documents

BK-GNRAL-PEDCO-000-EL-DC-0001

Electrical System Design Criteria

### 3.4 Environmental Data

The installation site is in south of Iran with corrosive, hot and high humid atmosphere. Therefore, all equipment shall be designed to fully comply with the performance specification in the environmental conditions. For more information refer to “Process Basis Design; section 11”.

For the Ambient Conditions, Special Care should be paid to:

- Enclosures of Equipment for Outdoor Installation
- Painting and Coating of Metal Parts to Resist to the Severe Environmental Conditions

Any environmental derating factors shall be considered by vendor before design.



### 3.5 Order of Precedence

In case of conflict between requirements specified herein & the requirements of any other referenced document, the most approved stringent requirements of below listed items shall be considered based on the approval given by the owner's representative:

- Purchase order
- Material Requisition
- MTO & Data Sheet
- This Specification
- Drawing & Other Specification
- Reference Project Specification
- Iranian Petroleum Standard (IPS)
- Reference international Code & Standards

When the term “Authorized”, “Authorization”, “Approval”, or “Approved” are used in this specification, it shall mean authorization or Approval from OWNER.

In case of any conflict between the project documents, the most stringent one shall be considered.

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>عمومی و مشترک</p>							
شماره پیمان: 053 – 073 – 9184	SPECIFICATION FOR BULK MATERIALS							شماره صفحه : 7 از 15
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GNRAL	PEDCO	000	EL	SP	0008	D04

## 4.0 DESIGN REQUIREMENT

### 4.1 Protective degree

The protection degree of the enclosures based on the location shall be as follows:

- Outdoor (under canopy) IP 55
- Outdoor (without canopy) IP 65
- Indoor IP 42

All outdoor equipment shall be protected against sandstorm and designed to obviate the entry of vermin and insects

### 4.2 Area Classification and Materials Selection

Recommended practice for classification of location for electrical installation at petroleum facilities classified as Zone 0, Zone 1, and Zone 2.

The selection of electrical equipment to be installed in classified areas will follow the recommendation of IEC 79-14.

The following table summarizes the minimum safety execution of the electrical apparatus suitable to be installed in the classified area.


Electrical Material	Qualification of Zones	
Items	Zone 1	Zone 2
Lighting fixtures	Ex-d or d/e	Ex-e
Plugs & sockets	Ex-d	Ex-d or d/e
Junction boxes	Ex-d or d/e	Ex-e
Pushbutton stations	Ex-d	Ex-d or d/e
Local boards	Ex-d	Ex-d or d/e

## 5.0 CONSTRUCTION REQUIREMENT

### 5.1 Motor Control Station

Motor control stations include pushbuttons and necessary components which will be used generally p of motors. They can also be used for controlling other electrical consumers such



 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>عمومی و مشترک</p>								
شماره پیمان: 053 – 073 – 9184	SPECIFICATION FOR BULK MATERIALS								شماره صفحه : 8 از 15
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه	
	BK	GNRAL	PEDCO	000	EL	SP	0008	D04	

as lighting, heating etc. In some technical documents they may be referred to as start-stop pushbuttons.

The types of motor control stations which will be shown on drawings or requisition are the following:

- Type A1 includes start / stop pushbuttons and an ammeter
- Type B1 includes start / stop pushbuttons plus a three position selector switch
- Type B2 includes start / stop pushbuttons plus a three position selector switch and an ammeter
- Type C1 includes one start pushbutton with normally open contact/s.
- Type C2 includes one stop pushbutton with normally closed contact/s (for emergency stop).

The function of the selector switch included in type B1 and B2 can be either Hand-Off-Auto or Local-Off-Remote which shall be marked on the motor control station as indicated on drawings or requisition.

Indicating light/s may be required to show Run, Stop or Fault condition on the motor control station. Such requirement will be shown on drawing/s, or requisition, when necessary.

Motor control stations will be generally located near the motors which they control.

The enclosure of the motor control stations shall be made of cast iron or copper free aluminum complete with earth terminals inside and outside of the enclosure. Vendor shall specify the metal and the thickness of the metal in his proposal. For indoor applications, enclosures made of Glass Reinforced Plastic (GRP) can be acceptable upon the approval of the Engineer.

Metallic enclosures shall be painted as per manufacturer's standard. Electrostatic powder coating is preferable. Vendor shall specify the type of painting and the color of enclosures in his proposal.

The enclosures of motor control stations for use in areas classified as zone 1 and zone 2 shall be Exd type with a degree of protection of IP65. Unless otherwise specified in requisitions the gas group classification shall be group IIB and the temperature class shall be T3. In areas where hydrogen is present the gas group classification shall be IIC with temperature class of T3. For ease of interchangeability similar motor control stations shall be used in safe areas of industrial plants (Exd IIBT3, Exd IICT3).



Pushbuttons and selector switches shall be suitable for operation on 230 V AC and 110 V DC. The contacts shall be rated for at least 5 amps.

Pushbuttons shall be spring return type.

Stop pushbuttons shall be fitted with suitable means to prevent accidental operation. Stop pushbuttons, except emergency stop buttons, shall be padlock able at depressed (Off) position.

Pushbuttons shall be colored. Green for start button and Red for stop button.



 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>عمومی و مشترک</p>							
شماره پیمان: 053 – 073 – 9184	SPECIFICATION FOR BULK MATERIALS							شماره صفحه : 9 از 15
	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GNRAL	PEDCO	000	EL	SP	0008	D04

Pushbuttons, selector switch and ammeter shall be wired to terminal blocks within the enclosure of the motor control station.

Two cable or conduit entries shall be provided at the bottom of the enclosure. One of the entries shall be equipped with Exd stopper plug. The cable or conduit entries to the enclosure shall be with metric threads of ISO form according to IEC 60423.

Ammeter shall be incorporated in the motor control station. Ammeter installed in separate enclosure adjacent to motor control station can be acceptable upon prior approval of the Engineer. Ammeters shall be in accordance with the requirements of IEC 60051. The accuracy class shall be 1.5 minimum.

Ammeters in motor control stations will operate from a CT with 1 amp secondary current. Separate current transformers shall be mounted in the motor starter compartments to be connected to ammeters at motor control stations.

Ammeters for motor duty shall withstand the motor starting current and shall have a compressed overload scale of at least 6 times the full load current of the motor. The full load current of the motor shall be indicated by a red line on the ammeter scale.

Motor control stations shall be provided with labels indicating the tag number of the motor or equipment it controls and the operating function of pushbuttons and selector switch. Labels shall be according to clause **Error! Reference source not found.** of this specification and shall be fixed to the enclosure by screws or rivets and not to be pasted.



Inside the main terminal box an earthing terminal shall be provided for earthing the cable shields. Such earth terminal shall be clearly marked with earthing symbol. The cable entries for Motor Control Stations shall be ISO metric threads to IEC60423 for specified cables.

## 5.2 Lighting Poles/Brackets

The designing, manufacturing, testing and assembly/installation of lighting poles/brackets shall proceed in accordance to the latest edition of standard IPS-M-EL-230 or any other relevant standards.

In general, lighting Poles/Brackets shall be manufactured from heavy duty steel and shall be hot dip galvanized after fabrication.

Fluorescent lighting Poles/Bracket's height, pipe size and thickness shall be in accordance to requisition/purchase order and related detail drawings.

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>عمومی و مشترک</p>							
شماره پیمان: 053 – 073 – 9184	SPECIFICATION FOR BULK MATERIALS							شماره صفحه : 10 از 15
	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GNRAL	PEDCO	000	EL	SP	0008	D04

Street lighting poles shall be Max. 10 meters height, 2 meters single or double arm according to requisition/purchase order. Pipe size and thickness shall be calculated by vendor based on site seismic, wind velocity conditions and send to purchaser for approval.

Flood lighting poles shall be 15 meters height. Their steel sheath thickness and base plate shall be calculated by vendor based on site seismic and wind velocity conditions and send to purchaser for approval.

Flood lighting poles need to be equipped with ladder (with safety cage) and a basket platform on their top for easy installation and maintenance of fixtures. Lightning air terminal need to be provided as well.

Earth lug shall be considered for self-stand fluorescent, street and flood lighting poles, beside a suitable plate for JB installation as per requisition and detail drawings.

All the selected materials for construction shall provide enhanced chemical resistance under the minimum, normal and maximum conditions of temperature and corrosive environment.

Galvanized thickness of poles shall be min. 65 micron.

### 5.3 Junction/Terminal Boxes

The junction/terminal boxes for power, lighting and communication system shall have the following requirements:

Outdoor junction/terminal boxes shall be weatherproof and dust proof corrosion resistant & if installed in the hazardous area shall meet requirement as specified in the section 4.2.

Indoor junction/terminal boxes shall be industrial type with the minimum degree of protection of IP42.

Explosion proof junction/terminal boxes shall be made of copper free aluminum or cast iron. Glass Reinforced Plastic (GRP) will be acceptable for installation in safe areas.

Indoor and Outdoor weather Proof junction/terminal boxes can be one of the following materials:

- Painted sheet steel (with externally earth screw)
- Galvanized metal sheet (with externally earth screw)
- Polycarbonate (robust and high quality)
- Polystyrene (impact resistant with very good qualities)
- Polyamide (robust and high quality)
- Unbreakable, self-extinguishing thermoplastic of high quality

GRP (Glass fiber reinforced polyester)

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>عمومی و مشترک</p>							 شماره صفحه : 11 از 15
شماره پیمان:	SPECIFICATION FOR BULK MATERIALS							
053 – 073 – 9184	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه
	BK	GNRAL	PEDCO	000	EL	SP	0008	D04

The material shall be of high mechanical and thermal strength, and preferably U.V. resistant. The nonmetallic material shall be anti-static and anti-magnetic.

If metal cable glands are installed on non-metal junction/terminal boxes, earth tag shall be provided to enhance the mechanical strength of junction/terminal boxes and for earthing purpose of cable gland.

Operating voltage shall be 230V, 1Ph, 50Hz/400V, 3Ph, 50Hz and insulation level > 500V.

Each junction/terminal box shall have suitable number of entries and shall be supplied with suitable stopper plugs or glands as specified in the requisition/ purchase order. Cable entry shall be from sides and bottom of junction/terminal boxes as mentioned in requisition/purchase order and all entries shall be ISO metric threaded. Cable entries (ISO threaded) and terminals shall be suitable for the cables specified in the requisition/purchase order.

Accessories for suitable mounting of junction/terminal box on steel structure, column, wall, handrail and etc. shall be supplied. All accessories such as bolts, nuts etc. shall be supplied with suitable material namely GRP, polyamide, tough nylon and stainless steel.

Junction/terminal boxes shall be provided completely with terminals, mounting rails, end plates, marking strips/tags, etc.

Outside identification plates shall be corrosion proof by nature stainless steel or as manufacturer standard and securely fixed to enclosure (not glued).

Large terminal boxes might be equipped with drain plug to prevent build-up of water and to vent the interior.


#### 5.4 Conduit & Fittings

The conduits and fittings shall be rigid steel heavy gauge and threaded. Conduits shall be steel, solid drawn or seamed by welding. Conduit fittings shall be cast steel and shall be galvanized after fabrication.

All conduits shall be hot dipped galvanized after fabrication. Conduits shall be bent without cracks and shall not be deformed to such extend that introduction of the cables through them becomes difficult and/or damage the cable insulation. All conduits and fittings shall be designed and fabricated to form a continuous metal raceway as grounding conductor.

Bushings and end belts shall be provided for installation on conduits and pipe sleeves to protect the cables during pulling.

Flexible conduits and related fittings shall be made of electro-galvanized, electro-tinned mild steel tertight. The thickness of coating shall be 65μ as a minimum

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>عمومی و مشترک</p>							
شماره پیمان: 053 – 073 – 9184	SPECIFICATION FOR BULK MATERIALS							شماره صفحه : 12 از 15
	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GNRAL	PEDCO	000	EL	SP	0008	D04

## 5.5 Cable Trays & Ladders

The cable trays, ladders and accessories shall be heavy duty, hot dipped galvanized steel.

Thickness of cable trays shall be 2.5mm for 750mm and 600mm width trays and 2mm for smaller sizes of cable trays. Maximum length of the tray section shall be 3m.

The complete equipment shall be designed and constructed for a minimum service life of 25 years.

The cable trays and ladders shall be resistant to a wide range of organic, inorganic substances, saliferous and H<sub>2</sub>S atmosphere, if required.

All the selected materials for construction shall provide enhanced chemical resistance under the minimum, normal and maximum conditions of temperature and corrosive environment.

The cable tray and ladder cover (where required) shall be designed to be "snap-fit" or by clips which shall be supplied for fixing the covers.

The cross rungs of ladders shall allow convenient use of cable clamps and reduce tendency for sections to fail by torsional instability. Rung shall be fixed in place by weld, rivets or bolts and fixing.

All the fittings such as couplers, bends, risers, tees, crosses, reducers, etc. shall be fabricated from the same material of cable trays/ladders as a single piece construction.

The supplier shall supply the fixing accessories such as hold down clamps, nuts, bolts and fasteners. All the fixing accessories shall be fabricated from galvanized steel material. Rivets for coupler plates are not acceptable. Cables shall be clamped to trays by nylon cable ties/aluminum strips.

The fittings shall be supplied with pre-drilled coupling holes to accept manufacture's standard coupler plates.

The cable trays and ladders interior and exterior surfaces shall be free from sharp edges and other projections, which could cause damage to cables.

All cut ends and holes completed either at factory or at site must maintain maximum corrosion resistance of the cable trays & ladders. The manufacture shall confirm that this requirement can be achieved at site without any additional applications of coating.

Maximum spacing between two supports shall be 2-3m (max.) for cable trays and ladders.

Horizontal supports shall be hot dip galvanized steel. Vertical supports shall be MS painted.

All profiles shall be free from surface defects, which may reduce the mechanical properties of the material.

	<p>نگهداشت و افزایش تولید میدان نفتی بینک</p> <p>سطح الارض و ابنیه تحت الارض</p> <p>عمومی و مشترک</p>							
شماره پیمان: 053 – 073 – 9184	SPECIFICATION FOR BULK MATERIALS							شماره صفحه : 13 از 15
	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GNRAL	PEDCO	000	EL	SP	0008	D04

The inspection shall be concerned with allowable defects and its applicable acceptance level described by the manufacturer's drawings. Defects in excess of those listed as allowed in the drawing for the cable ladders, trays and accessories shall be the cause for rejection.

## 5.6 Cable Glands

Cable glands shall be appropriate for the type of used cables and the type of enclosure to which the cable entry is made. Metallic glands shall be made of Nickel-plated brass. Cable glands shall have ISO metric threads. Cable gland shall be double compression type. Cable glands shall be manufactured to provide cable sealing of inner and outer sheaths and clamping of armor by special ring. The glands shall be constructed in such a way that same gland can be used for all types of armoring. Cable glands shall be provided with earth tag, lock nut and IP sealing washer. Each cable gland shall be provided with a UV protected sleeve/shroud. Cable glands for single core cables shall be non-magnetic type. Cable glands used for cable entry to indoor located enclosures shall have an outer seal with ingress protection of IP 42. Cable glands used for cable entry to outdoor located enclosures (including hazardous area) shall have both outer and inner seals with ingress of protection of IP-54.

Other cable gland material such as Polyamide might be used for non-armored cables as per requisition/purchase order.

## 5.7 Cable Termination and Joints

Terminations and joints shall be by means of mechanical clamps or compression type sockets, which shall correspond to the number and cross sectional area of the conductors. In case of short circuit, terminations and joints shall not exceed the maximum temperatures given by cable manufacturer or the following temperatures, whichever is lower:

- Soldered, welded or brazed joints: 160 °C for copper or aluminum conductors.
- Mechanical clamps or compression type joints: for copper or aluminum conductors the maximum allowable temperatures depend on the characteristics of the insulation material.

Terminations and joints shall be supplied in kit form (including all insulation and setting material, conductor fitting and consumable items). The termination kits shall be suitable for termination of cable to indoor switchgear (panel) or to a weatherproof cable box of an outdoor mounted motor or transformer.

The straight jointing kits shall be suitable for aboveground/underground buried installation with backfill and possibility of flooding by water.

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>عمومی و مشترک</p>							
شماره پیمان: 053 – 073 – 9184	SPECIFICATION FOR BULK MATERIALS							شماره صفحه : 14 از 15
	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GNRAL	PEDCO	000	EL	SP	0008	D04

End termination of MV cables shall be heat or cold shrinkable

## 5.8 Identification Tags

All items of equipment shall have suitably inscribed identification labels. The equipment shall be identified with an engraved nameplate at the front.

All inscriptions on nameplates shall be in English.

Nameplates shall be made of stainless steel and shall be permanently fixed.

The labels other than danger shall be of black letters on white background. The danger labels shall be of black letters on yellow background.

## 6.0 PAINTING/COATING

No painting is required for GRP (Glass fiber reinforced polyester) material enclosure. Cable trays shall have 65 micron galvanizing coating. For other metal enclosures, the supplier shall submit its standard protection and coating specification for purchaser's review at the bid stage.

All metal parts shall be protected against corrosion in accordance with supplier's standard corrosion protection system suitable for the environmental conditions specified.

Color of topcoat shall be supplier's standard if no specific color is specified in the requisition documents.

## 7.0 TEST & INSPECTION

Before dispatch of the equipment, the material and accessories shall be inspected for physical and dimensional details & satisfactory operation and conformity with the specification.

Supplier to provide material conformity certificate from a recognized authority for each type of equipment/ material and accessories.

Supplier has shall notify to purchaser/purchaser's representative at least ten (10) days in advance for each scheduled inspection.

Supplier shall provide adequate facilities for the purchaser's inspector to verify all equipment and accessories to be in compliance with the specifications.

Any rejections are made by the inspector, based on inspections or tests, will be final; however the inspector approval shall in no way release the supplier from guarantees as to the material and workmanship of the equipment.



 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک</p> <p>سطح الارض و ابنیه تحت الارض</p> <p>عمومی و مشترک</p>							
شماره پیمان: 053 – 073 – 9184	SPECIFICATION FOR BULK MATERIALS							شماره صفحه : 15 از 15
	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GNRAL	PEDCO	000	EL	SP	0008	D04

The cost of rectification and replacement of defective material and accessories discovered during inspection shall be borne by supplier.

Certified copies of all tests shall be furnished before dispatch of the items.

## 8.0 PACKING, PRESERVATION & TRANSPORTATION

The supplier shall submit detail as of his standards and procedures for any necessary site temporary corrosion protection to the purchaser for review.

All items shall be suitably protected to eliminate damage during loading, transport, off-loading and erection. The supplier shall provide details of his protection and packing specifications and methods to the purchaser for review.

## 9.0 GUARANTEE

The supplier of material under this specification shall guarantee the subject material and shall replace any material/part damaged as a result of poor workmanship and/or faulty design.

The guarantee period shall be 12 months after the subject material is placed in service which shall not exceed 18 months from date of dispatch from the manufacturer works.