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طرح نگهداشت و افزایش تولید 27 مخزن

BUILDINGS GENERAL SPECIFICATION

نگهداشت و افزایش تولید میدان نفتی بینک

D02	May. 2023	AFD	R.Berlouie	M.Fakharian	A.M.Mohseni	
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IDC: Inter-Discipline Check
 IFC: Issued For Comment
 IFA: Issued For Approval
 AFD: Approved For Design
 AFC: Approved For Construction
 AFP: Approved For Purchase
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 IFI: Issued For Information
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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.

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 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.

2.0 SCOPE

This document covers minimum necessary requirements for the design, construction, and inspection of PROJECT's buildings, including Gas Compression Station's newly built and extension buildings, and well maintenance facilities.

It shall be used in conjunction with data/requisition sheets for present document subject.

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3.0 NORMATIVE REFERENCES


3.1 LOCAL CODES AND STANDARDS

- | | |
|---|---|
| • IPS-E-CE-200 | Engineering Standard For Concrete Structures |
| • IPS-C-CE-200 | Construction Standard For Concrete Structures |
| • IPS-E-CE-500 | Engineering Standard For Loads |
| • IPS-M-CE-105(2) | Material Standard For Building Materials |
| • IPS-E-CE-120 | Engineering Standard For Foundations |
| • IPS-E-CE-130 | Engineering Standard For Piles |
| • IPS-C-CE-112 | Construction Standard For Earthworks |
| • IPS-C-CE-132 | Construction Standard For Foundations, Piles, Retaining Walls |
| • IPS-C-TP-102 | Construction Standard for Painting |
| • IPS-G-SF-900 | General Standard For Noise Control & Vibration |
| • IPS-G-IN-220 | Engineering & Installation Standard for Control Centers |
| • INBC (ch3) | Chapter 3, Fire protection regulations for buildings |
| • INBC (ch5) | Chapter 5, Building Material & Products |
| • INBC (ch6) | Chapter 6, Building Loads |
| • INBC (ch8) | Chapter 8, Masonry Building Construction |
| • INBC (ch19) | Chapter 19, Energy conservation in buildings. |
| • Buildings General Construction Specification- | Publication 55 of Management and Planning Organization |
| • IRI Design Code 2800 | Iranian Building Seismic Design Code – Standard no. 2800 |
| • NFPA | 101, Life Safety Code |



3.2 INTERNATIONAL AND NATIONAL CODES AND STANDARDS

- | | |
|--------|---|
| • ASTM | American Society for Testing Materials Relevant Parts (A36/A36M, A185, A307, A497, A615, C31, C39, C90, C91, C94, C126, C143, C145, C150, C156, C216, C260, C309, C476, C494, C595, C652, D698) |
| • BSI | British Standard Institution (BS 4449, BS 4483, BS5628) |
| • ANSI | American National Standards Institute (A10.9) |
| • ASCE | American Society of Civil Engineers (ASCE 7-05) |
| • ACI | American Concrete Institute (ACI 214, ACI 301, ACI |

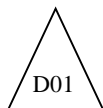
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302, ACI 305, ACI 308, ACI 309, ACI 318, ACI 315, ACI 350R, ACI 347, ACI 530 1-95, ACI 304R, ACI 117, ACI 212-3R, ACI 222R, ACI 224-3R)

- IBC (ch3) Use and occupancy classification
- IBC (ch7) Fire Resistance Rated Construction
- IBC (ch8) Interior finishes
- IBC (ch10) Means of egress
- IBC (ch11) Accessibility
- Neufert Architects' Data

3.3 THE PROJECT DOCUMENTS

- BK-GNRAL-PEDCO-000-PR-DB-0001 Process Basis of Design
- BK-GNRAL-PEDCO-000-ST-DC-0001 Design Criteria For Concrete Works
- BK-GNRAL-PEDCO-000-ST-SP-0001 Specification For Concrete Work



3.4 ENVIRONMENTAL DATA

Refer to "Process Basis of Design, document number BK-GNRAL-PEDCO-000-PR-DB-0001" section 7.

3.5 ORDER OF PRECEDENCE

In case of any conflict between the contents of this document or any discrepancy between this document and other project documents or reference standards, this issue must be reported to the CLIENT. The final decision in this situation will be made by CLIENT.

3.6 ABBREVIATION

Industry standard abbreviations shall take their usual meaning. Outlined herein are the most common, which may be used in this and other project documents:

AFC	Approved For Construction
AFT	Approved For Tender
AMER. STD	American Standard
ANSI	American National Standards Institute
AL	Air Lock
API	American Petroleum Institute
ARCH	Architectural
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Material
BS	British Standard
BLDG	Building

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C	Construction
CA	Calculation
CE	Civil Engineering
CHEM	Chemical
CHK	Check
CI	Civil Engineering(General) Including Architectural
CO	Company
COMB	Combination, Combine
CONST	Construction
DB	Design & Build
DEG	Degree
DET	Detail
DI	Dimension
DR	Door
DWG	Drawing
ELEC	Electric
ELEV	Elevation
ENDORSE	Endorsement
EXT	Exterior
FLEX	Flexible
EPC	Engineering, Procurement, & Construction
EPDM	Ethylene Propylene Diene Monomer
HSE	Health ,Safety & Environment
HVAC	Heating Ventilation and Air Conditioning
IBC	International Building Code
IP	Ingress Protection
IPS	Iranian Petroleum Standard
ISO	International Organization for Standardization
NISOC	National Iranian South Oil Company
NFPA	National Fire Protection Association
NISOC	National Iranian South Oil Company
PVC	PolyVinyl Chloride
UPS	Uninterruptible Power Supply
VO	Volatile Organic Compound
VOC	Open-Circuit Voltage



3.7 UNITS

SI metric system of measurement including “°C” and “bar” shall be used in design of the buildings.

It is noteworthy to mention that newly built buildings inside the site shall follow above building types according to their usage and safety requirements.

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4.0 SEISMIC DESIGN AND CONSTRUCTION

The materials of construction, structural and building detailing, building components and all equipment, fixtures and fittings shall be in accordance with the PROJECT Specifications requirements, Standard No. 2800, Iranian code of practice for seismic resistant design of buildings, and other relevant local/international codes. Aforesaid items shall be verified again during procurement and construction stages.

5.0 MATERIAL APPROVAL

- All materials used in construction of the buildings shall be brand-new and the best of their respective kind. The materials shall be in accordance with IPS-M-CE-105, the latest edition in force, or above-mentioned specification and/or standards, unless otherwise stated.
- All required specification tests and reference documents shall be carried out by an independent laboratory. All test reports shall be made available to on-site supervisors/engineers and submitted to the CLIENT for approval upon completion of each test.

The utilization of locally manufactured materials is encouraged and shall be maximized. Nevertheless, selected materials shall comply with requirements of this Specification and the local environmental condition.

6.0 MATERIAL SELECTION

6.1 GENERAL

The materials specified in this specification are intended to establish a standard of quality and level of performance and are not intended to prevent the use of equivalent or superior products.

All components (structural steels, reinforcements, bolts, nuts and washers, welding electrodes, cement aggregates, sand, concrete), as well as quality control of materials and workmanship shall comply with relevant reference documents.

The materials shall be new, without defects, and backed by supplier's test reports. The use of locally manufactured materials is allowed as far as the proposed materials are able to withstand the environment data and design criteria of the project. All materials containing "Asbestos" or "CFC gas" in all forms are prohibited.

6.2 ENVIRONMENTAL CONSTRAINTS

Selected materials shall withstand the site's climate that has cycles of fluctuating temperature and wind, dust, and relatively high humidity.

The seismic stability of building components including false ceiling, light-weight partition, elevated floors, and etc. shall be provided as specified in geotechnical report.

The size, number, and type of anchorage devices for reinforcement and stabilization of components shall be designed and/or reviewed by the structural engineer, after the initial evaluation.

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6.3 FIRE PRECAUTIONS

The choice of materials and appliances shall comply with BS 5588, and projects specification requirements.

6.4 COLORS AND MATERIALS

Color selection shall be in accordance with existing buildings and facilities (if any) and the surrounding natural context, due to passive defense principles. Reflective roofs shall be avoided.

7.0 DESCRIPTION OF WORKS

7.1 FOUNDATION

All concrete works shall be in accordance with

Design Criteria for Concrete Works	BK-GNRAL-PEDCO-000-ST-DC-0001
Specification for Concrete Work	BK-GNRAL-PEDCO-000-ST-SP-0001

All buildings shall be founded on shall foundations. The depth of the foundations shall be defined in accordance with the “soil report”, and be designed regarding the allowable bearing pressures.

All buried structures, including foundations, ground beams, columns, pits, and basement floors, shall be constructed using reinforced concrete.

7.2 CONCRETE STRUCTURE AND ROOF

Concrete materials, mixing, casting, and testing shall be in accordance with the following specifications:

Design Criteria for Concrete Works	BK-GNRAL-PEDCO-000-ST-DC-0001
Specification for Concrete Work	BK-GNRAL-PEDCO-000-ST-SP-0001

7.2.1 FLOORS AND SLAB

Floor types and “Finished Floor Levels” are shown on the drawings. As a general rule, ground floor consists of a concrete slab, cast on the filling. Level values are indicated on the drawings.

Certain buildings or parts of the buildings (i.e. control building) require raised floors. Please refer to the relative drawings.

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The structural floor in electrical operation areas shall be either:

- A structural floor designed to support a raised mounting floor, or
- A structural floor over a cable basement (cable gallery)

In case of the raised floor, sub-floor shall be constructed in the form a reinforced concrete floor, and shall be designed to support permanent and variable loads. The upper surface of the concrete shall be dust-free sealed with a water-resistant coating.

In case of the cable basement, the floor shall be constructed as a reinforced concrete floor with channels and openings for the installation of cables running from the basement to the electrical equipment. Floor finishing shall be tiled using oil-resistant material in case of an oil-filled switchgear is involved.

7.2.2 WALLS

Reinforced concrete walls are shown on the drawings.

7.2.3 BEAMS AND COLUMNS

Beams and columns shall be constructed of reinforced concrete, and cast-in-place. Positions are shown in the relative drawings.



7.2.4 ROOFS

Generally, roofs will consist of a one-way concrete slab, supported by structural beams, as shown in the drawings.

Roofs shall be designed and constructed to withstand the relative loads that are mentioned in the "Structural specifications." Moreover, roof concrete shall bear the load of suspended ceiling, electrical, and air distribution facilities. The roofs shall be constructed in a way to facilitate the rainwater self-drainage. The rainwater shall be collected means of external downpipes and discharged to specified rainwater collection system. No downpipes shall pass the technical and electrical area, whatsoever. Water, sewer, steam, and gas pipes are not permitted in electrical operating areas and cable basements.

7.2.5 CABLE PITS AND PENETRATIONS

Cable pits shall be precisely as the required size (and not larger). The cable entry holes shall be sealed for fire resistance, weatherproofed, and water-tight, in accordance with the relative electrical specifications. Spare cable entries shall be sealed with solid blocks or special sealant, depending on the size of the hole.

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7.2.6 SPILL CONTAINMENT FOR FUEL TANKS AND TRANSFORMERS

A sump shall be constructed beneath the fuel tanks with the capacity no less than respective tank's daily fuel, with all the standard and necessary details and oil-tightness.

A liquid-tight reinforced concrete catchment tank fitted with removable steel supports shall be installed beneath oil-filled transformers. Tanks shall be filled with proper gravel, for safety purposes.

7.2.7 TRANSFORMERS WALL AND CEILING

If two or more transformers are installed next to each other, masonry or concrete walls shall be constructed between them, with a minimum two-hour fire resistance rating, unless the distance between the devices is more than 15 meters.

7.2.8 DUST PROOF AND ACID RESISTANT SCREEDS

Screeds shall be incorporated directly on concrete slab and paving. The mixture of polymer resin into cement shall be done in order to give anti-dust and chemical resistance. The quantity and workmanship shall be in accordance with the manufacturer's recommendation. The top finishing shall be trowelled to get a smooth surface.


- Minimum thickness: 50mm; laid on the concrete slab
- Tolerances: 2mm for less than 3 meters of straightedge, 10mm over large
- Areas: measured from data
- Location: technical rooms that are not to receive a heavy-duty industrial floor finishing.
- Acid-resistant screed: in battery rooms, the floor shall be an in-situ cast reinforced concrete floor, unless otherwise stated. Those provisions shall comply with quoted codes and standards

7.3 INTERNAL SEWERS

Internal sewers for collection of sanitary and wastewater shall be delivered and installed with the adequate size, based on the number of the sanitary equipment and floor drains.

7.4 MASONRY WALLS

- Masonry units
All masonry units and materials shall conform to the applicable standards and codes noted above. Block & Tiles (unglazed) specifications shall be in accordance with IPS-M-CE-105 item no: 9 .
Detailed specifications of proposed products and materials shall be submitted for CLIENT/MC review and approval prior to incorporation in the works. Mortar and grout proportions and the specification of cement and aggregate materials shall comply with IPS-M-CE-105 item no: 5 .

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Walls shall be constructed with masonry units from a single-source manufacturer, to be approved by CLIENT/MC. A damp proof course or other means of preventing ingress of moisture shall be provided wherever specified.

Construction works shall include:

- ☐ Preferably steel lintels, installed where specified –e.g. to louver positions, doors, windows, and etc.
- ☐ Block work shall comply with related ASTM mentioned in IPS-M-CE-105.
- ☐ Cement for mortar: Portland type, complying with related ASTM mentioned in IPS-M-CE-105
- ☐ Sand shall be clean, sharp, mason's sand complying related ASTM mentioned in IPS-M-CE-105
- ☐ Water for mixing shall be free of alkalis, acids, and organic materials.

All masonry walls shall be tied into the surrounding concrete or steel structural framework . The external masonry walls of air-conditioned areas are 20 cm AAC block, internally covered by gypsum plaster or cement plaster. The building façade is designed to cover the masonry walls based on architectural details. The colour of the façade is generally bright to minimize radiated solar gain .

Internal walls where indicated on architectural drawings are generally constructed with gypsum board lining; except for the areas with fire resistance restriction. Light coloured, low maintenance render and coating systems shall be used to walls in accordance with architectural drawings.

• Masonry rendering

Unless otherwise stated, all external faces of all exposed masonry shall receive a 30 mm minimum thick of light coloured cement plaster. Uncoloured cement rendering, 15 mm minimum thick, shall be applied to all internal faces as required in the finishing schedules. All works should be protected against impact damage by proprietary angle beads, plaster stops, corner beads. A special protection should be provided against damage from trolley circulation, by wooden protection rails, fixed at appropriate height when required.

- Components shall be according to ASTM C270
- Cement; Portland type, complying with ASTM C150
- Fine aggregates; complying with ASTM C144

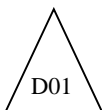
Water for mixing; Water shall be clean and free of amounts of oils, acids, alkali's, salts, organic materials, or other substances that are deleterious to mortar or any metal in the wall .


Laying By projection of two coats: First coat for rendering, Second coat for leveling and smoothing, hawk-tooled. Final thickness will be comprised between 30 mm and 50 mm.

• Masonry Accessories

Steel, zinc coated ties and anchoring systems shall conform to relevant codes and standards. Restraints to soffit and joint fillers to tops of internal non-load bearing walls shall be of an approved type to ensure compliance with design requirements .

Where holes for service entry below ground level are unavoidable, they shall be gas and water sealed using sealing compound. Sealing of penetrations above ground level shall be achieved using approved materials and details to the same fire rating as the wall affected, to local regulatory and CLIENT/MC approval.



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7.4.1 GENERAL

This section covers all concrete/cement block work (or alternatively bricks) wall, internal or external, load bearing or non-load bearing.

All works shall include necessary lintels, reinforcements, openings, thresholds, sills, ties, and etc.

7.4.2 EXTERNAL WALLS

When not built using reinforced concrete, external walls shall be designed and constructed to prevent condensation and the penetration of moisture for all air-conditioned or ventilated spaces and buildings.

Exterior walls of air-conditioned buildings, if not built using concrete, shall consist of an external 200mm block wall, a 50mm square-edge polystyrene insulation board or a 50mm air gap, and an internal 100mm or 200mm block wall.

- Components:

Construction of block work shall fully comply with ASTM-C-426. Precast concrete block work shall be hollow blocks complying with ASTM-C-90.

Cement for mortar: Portland type, complying with ASTM-C-150

Sand shall be clean, and sharp sand complying with ASTM-C144

The water used for mixing shall be free of alkalis, acids, organic materials.

Precast or cast-in-situ lintels shall comply with ASTM-C-780.

- Workmanship

Workmanship shall include cuts, lintels, clamping, and stiffening devices, sealing of doors and windows frames.

Maximum distance between vertical clamps and perpendicular walls: 10m.

Maximum height between ground (and slab) and horizontal clamp: 4m.

For openings over 0.2 sq.m. shall be provided with lintel.

These values are subject to change due to seismic design specifications.

7.4.3 INTERNAL WALLS

- Components

Internal walls, when not the structural concrete type, shall consist of a single leaf of 100mm or 200mm hollow concrete/cement block work, pressed brick or dry wall.

Other specifications are the same as 7.4.2. section, above.

- Workmanship

Specifications same as 7.4.2. section, above

Provisions for seismic design shall be observed as required.

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- Masonry rendering
Unless otherwise stated, all external faces of all exposed masonry walls shall receive a minimum 15mm of coloured cement rendering, or be painted.

Plain (Not coloured) cement rendering, minimum 15mm of thickness, shall be applied to all internal faces.

All works should be protected against impact damage by proprietary angle beads, plaster stops, and corner beads.

A special protection should be provided against damages cause by trolleys by wooden protection rails, fixed at appropriate height, when required

- Components
Cement: Portland type, complying with ASTM-C-150
Fine aggregates: complying with ASTM-C-144
Water for mixture: complying with BS5328 and BS3148 (seawater prohibited)
- Laying:
By projection of two coats:
First coat for rendering
Second coat for levelling and smoothing, hawk-tooled
Final thickness will be between 15mm and 30mm


7.3 OUTSIDE INSTALLATION

7.3.1 INSULATED ROOF AND CLADDED STEEL

In case of corrugated steel roofing and cladding, and for buildings requiring air-conditioning or ventilation, the sheeting shall consist of a double skin sandwich construction, incorporating a flat colour coated facing sheet of similar construction to the external profiled sheeting, a vapour barrier and an insulation layer of minimum 60mm thickness to achieve the insulation value of HVAC requirements.

7.3.2 CURRENT CONCRETE FAÇADE WALLS

Where required, and following drawings in buildings requiring air-conditioning, external walls shall be insulated by means of rock wool-plaster component sealed directly on concrete finish. Minimum thickness 90 mm shall be provided to achieve the insulation value of HVAC requirements.

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7.4 WATERPROOFING

7.4.1 FLAT CONCRETE ROOFS

For building with flat roof, waterproofing system shall include all necessary up stands, flashings, risings, capping, and rain water outlet as required. Rainwater inlets shall be provided for external down pipes.

Galvanized down pipes to be provided, including all fixing accessories on external walls
Waterproofing sheets shall be stuck and joined together by hot welding. End laps shall be of a minimum of 150 mm high.

Insulation materials shall comply with ASTM-C-518.

Drainage shall comply with relevant American standards or BS6367.

All roofs shall be considered as non-accessible.

No downpipes shall run through the technical and electrical rooms or buildings.

- Components
Insulating and waterproofing systems include:
Rigid rock wool panels with 45 mm of thickness shall be used for thermal insulation.
Thermal resistance values shall be considered 1.2 m².°C/W and density of 150 kg/m³.
Separating membrane, vapour barrier
Multicast hot-applied waterproofing membranes
Protection from sun radiation will be provided by a protected membrane grouted on the insulation in accordance with manufacturer's recommendations.
- Workmanship
Workmanship shall comply with American standards and manufacturer's recommendations.
Vapour barriers are required, whatsoever.

7.5 EXTERNAL DOORS AND WINDOWS

All windows are operable except at "Control Building" (if any) or if indicated on the drawings. Windows shall be double-glazing units with 5mm air gap (filled with the relative gas) for climatic condition and to achieve the required thermal insulation rate.

7.5.1 ALUMINUM GLAZED WINDOWS

All Frameworks: heavy-duty aluminium sections, anodized or powder coated.

Glazing: tinted insulating glass, complying for thermal and acoustic insulation with ASTM 1048.

Thermal insulation rate: 1.96 W/m²°C max

Acoustic insulation rate: 32 dBA min

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Solar factor: 0.70 max

Workmanship shall comply with ASTM E 330 & E331.

Wind pressure value, according to projects requirement and to ASTM 283 & E330

In air conditioned buildings, tightness of works shall be designed to provide the following items:

Windows shall be weather-stripped with consideration for blowing sand. Sealing system shall consist of EPDM gasket between frames or glass-frames and first category elastomer putty with structure.

Windows to be opened in an outward direction or the sash type following detailed drawings. Finish hardware shall be of high quality: aluminum handles, complete ironmongery.

7.5.2 STEEL-FRAMED WINDOWS

Windows frames shall be of galvanized steel (260 g/m² minimum zinc deposit) with a minimum rebate of 18 mm.

A factory shop prime finish should be provided including special preparation, to receive a final paint finish on site. Refer to painting for the paint finish.

Glazing: multiply laminated glass consisting of two layers of 3 mm tinted float glass each with an interlayer of polyvinyl butyral sheets (PVB).

The glass panes shall be fitted from the outside.

Windows to be opened in an outward direction

Heavy-duty hardware to be provided

7.5.3 DOORS

This section covers:

- Aluminium glazed doors (external or internal)

-


Frameworks: heavy-duty aluminum sections, anodized or powder coated.

Glazing: multiply laminated glass consisting of two layers of 4 mm tinted float glass each with an interlayer of polyvinyl butyral sheet (PVB).

Opaque claddings: thermal insulating core and anodized or powder coated aluminum sides.

Workmanship shall comply with ANSI/SDI-100.

Wind pressure value according to project's requirements and to ASTM E 283 & E 330.

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In air conditioned buildings tightness of works shall be designed to provide the following maximum permeability, only in pressurization controlled areas (Control room, Substation & Laboratory))

Handles and complete ironmonger in heavy-duty aluminum.

The normally closed door shall also be alarm monitored to prevent misuse.

- **Steel doors (external or internal)**

Door frames and leaves shall be of galvanized steel (260 g/m² minimum zinc deposit), single skin or double skins when fireproof or insulation performances required.

A factory shop prime finish should be provided including special preparation to receive a final paint finish on site. Refer to painting for the final finish.

Steel door frames shall be set into the structure by the use of galvanized metal lugs.

Fireproof doors and emergency exits shall be provided with a door closer and an anti-panic bar on each leaf.

- **Blast-resistant doors**

Blast-resistant doors shall be capable of resisting the explosion and transferring the explosion pressure to the surrounding structure.

- **Wooden Doors**

All wooden doors should be in accordance with IPS-M-CE-105 item no: 18. Timber door sets, used in office areas, shall be constructed from extruded wood fibre-board with plywood facings. Thickness 40 mm consists of a wooden doorframe with stiffeners and insulation or full core, following use and a double plated plane with following finish:

- ✓ In Administration Areas: Stratified finishes on both sides (Polymer type or equivalent)
- ✓ Everywhere else: Pre-painted finishes doors.

Each door shall be:

- ✓ Solid or honeycombs cored leaves
- ✓ According to fireproof and/or acoustic insulation performances required
- ✓ Stratified or pre-painted finish following location
- ✓ Minimum three stainless steel hinges per leaf



Doors to toilets and showers shall be provided with an indicator bolt and shall be undercut by 20mm. Vent grills should be incorporating where required in accordance with HVAC drawings.

- **MDF/HDF doors:**

All MDF/HDF internal doors shall comply with Iranian National Building Codes, Chapter 5 & Building General Technical Specification No. 55.

Stiles and rails of doors shall be prepared from timber strands and run through full length of the door. Cross bonds shall be made of HDF/MDF –according to location & function of any door- with at least 3mm thickness. Honey comb core shall be used by a density of not less than 70 Kg/Sq.M. as core material. Stiles, rails & cross bonds shall be bonded to core by using hot press. All frames shall be fixed into prepared openings within the wall. The MDF/HDF composite door surface is coated with 1 coats of high quality primer so that the



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door can be painted with any desired colour without the need of prime. Colour of face veneer shall be subject to CLIENT's approval.

- Steel Doors

All steel doors should be in accordance with IPS-M-CE-105 item no. 20 and other related clauses. Door frames and leaves shall be of galvanized steel (260 g/m² minimum zinc deposit), single skin or double skins when fireproof or insulation performances required. A factory shop prime finish should be provided including special preparation to receive a final paint finish on site. Refer to painting for the final finish.

- ✓ Steel door frames shall be set into the structure by the use of galvanized metal lugs.
- ✓ Weather stripping should be provided for external door
- ✓ Acoustic gaskets should be provided for acoustic doors, when required.
- ✓ Heavy-duty hardware, ironmonger and fittings to be provided with corrosion resistant finish, and appropriate when fire resistance is required.
- ✓ Vent grilles should be incorporating where required in accordance with HVAC drawings.
- ✓ Fireproof doors and emergency exits shall be provided with a door closer and an anti-panic bar on each leaf.
- ✓ Rubber silencer for each leaf (except for exterior and weather-stripped doors)
- ✓ Horizontal sliding doors shall be electrical motor operated for large openings, and equipped with all necessary features: power open/power close, reverse on contacts, adjustable time delay, automatic security locking, breakaway for emergency exit.



- Door Hardware

Doors hardware sets shall be obtained from the standard range of one single manufacturer. The colour, finish, texture and material shall be subject to CLIENT's approval. Hardware for fire rated door sets shall comply with all IBC requirements. Only hardware which has been tested for the types and sizes of doors and which complies with requirements for labelling/testing shall be provided. Hardware shall ensure exit door operation and shall comply with the swing and opening force requirements.

The system shall be installed complete with all necessary sheeting rails, cleats, matching flashings, closures, trims, rain water goods and fixing accessories as designed. The system specified shall include fastenings and fixings as will be recommended by the selected cladding manufacturer. All single skin metal cladding shall be aluminium trapezoidal sheets. The vendor is responsible for final design, shop drawing and installation of the single skin cladding at site.

7.6 METAL WORKS

Metal works shall include various works for all buildings, including:

- Trays and covers
- Exterior platforms for HVAC, ladder, steps, stairs, handrails, etc.
- Gratings
- Chequered plate, railings, steel walkways and stairs for access to technical rooms.

The construction material shall be resilient to the surrounding environment.

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7.6.1 ROOF ACCESS LADDERS

Roof access for each building shall be supplied and installed using fixed steel ladders, fastened to the main building. Access ladders shall follow safety regulations, including all handrails and protections.

In case of two roof levels, the ladders shall be placed in two separate parts.

7.7 METAL CLADDING

7.7.1 SANDWICH PANELS

Low-pitch roof and vertical wall cladding where specified as sandwich panels in the drawings shall be a 60mm thick aluminium proprietary composite panel system comprising an insulated core of non-combustible foam sandwiched between a profiled metal outer sheet and flat metal inner sheet, both finished with a factory applied chemical and pollution resistant coating.

The system shall be installed complete with all necessary sheeting rails, cleats, matching flashings, closures, trims, rain water goods and fixings accessories, insect screens shall be fitted to ventilations gaps and louvers.

The system specified shall include fastenings and fixings as will be recommended by the selected cladding manufacturer. The vendor is responsible for final design, shop drawing and installation of the sandwich panel in site.



7.7.2 LOUVERS


For external louvers in the buildings where depicted in building architectural drawing it is suggested to use the same vendor's products to match the installation systems and colours. The system specified shall include fastenings and fixings as recommended by the selected louver manufacturer. The vendor is responsible for the final design, shop drawing and installation of the louvers in site.

7.7.3 SINGLE SKIN METAL PROFILED CLADDING

Single skin metal profiled claddings are provisioned for roofs of transformers shelters, cylinder room and for the roof & side walls of equipment shelters. Sheetting shall be aluminium finished with a factory applied painting to both sides with all cut ends suitably treated. The system shall be installed in accordance with the recommendations of the selected cladding manufacturer.

7.8 INTERIOR LIGHT PARTITION

Interior light partitions shall include complete parts and details, including panels, walls, door, window, framing, skirting, closers, trims, etc.

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7.7.1 COMPONENTS

Structure: anodized aluminium or galvanized steel rails.

Acoustic insulation: minimal wool panels, 45 mm thick, high-density 60 kg/m³.

Panels (opaque parts): removable, factory vinyl faced gypsum panels systems, 13 mm minimum thick. The finish shall be fire resistant vinyl complying with NFPA requirements.

Glazed panels: 6 mm thick, laminated if located entirely or partly under 1, 00 m.

- Workmanship

Structure: screwed on main works, fixing on suspended ceiling is prohibited.

Plasterboard: screwed on structure sections, on both sides of partition, with self-drilling screws.

Acoustic insulating core: integrated between plasterboard sides; Rock-wool type or equivalent.

Position thickness: 70 mm overall.

Glazed parts and doors: workmanship shall comply with manufacturer's specifications.

Rigid Polyurethane/ Poly styrene panels 100mm thick for thermal insulation. Thermal resistance value to be obtained 12.m².C/W. Density 150 kg/m³.

7.9 INTERNAL DOORS

This section covers:

- Wooden internal doors
- General joinery works
- Hardware for internal doors and joinery

7.8.1 WOODEN DOORS

Wooden doors shall comply with BS-459.

Standard wooden interior doors with the minimum thickness 40mm consist of a wooden doorframe with stiffeners and insulation or full core.

Each door shall have solid or honeycomb cored leaves, according to fire safety and acoustic insulation performance requirements.

Toilets and showers doors shall have occupancy indicator lock.

Emergency exits shall have anti-panic bars per leaf.

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Doors in spaces with trolley circulation shall have metal sheet protection fitted at the lower part.

Handles and fittings shall be stainless steel.

The minimum suitable thickness for safety glasses for glazed door panels is 6mm. (Fire rating shall be met, if applicable)

7.10 GENERAL WOOD WORKS

Timber used in the wood works shall be of the best quality, well-seasoned and approved by the client.

Timber shall not exceed the 12% limit for moisture content.

All of the fittings shall be secured with metal screws that has the same metal material as the fittings, or shall be an approved type for the certain type of fittings.

Plastic laminates shall be of the best material and be applied using waterproof and heat-resistant adhesive, strictly in accordance with the manufacturer instructions.

Wood works shall be anchored to the masonry, concrete, or block work during installation, when required.

7.11 SUSPENDED CEILINGS AND CEILING FINISHES



In cases of explosion or earthquakes, the ceilings, light fittings, ducts, etc. shall remain in place.

All types of suspended ceiling and its associated finishing works shall comply with ASTM-C653, C636, and E580.

All suspended ceiling details shall be selected and constructed to meet the climatic condition of the site.

The upper area of the suspended ceiling shall be accessible through removable framing, with the same material as the ceiling and necessary dimensions, for maintenance and control.

- Ceiling anti-dust paint
Paint on the fair-faced concrete slab.
- Ceiling normal paint
Paint on cement plaster (complying with BS 5492 and BS 1191) or non-weaver canvas
- Mineral fiber suspended ceiling
Tiles with the dimensions of 600x600x19mm, and lightly corrugated finish and acoustic absorption.
Framework: Galvanized steel sections, pre-lacquered with visible hollow joints
Suspension: threaded rods, 6mm diameter
- Decorative metallic acoustic ceiling
Lattice panels: composed with vertical anodized aluminum blades, 50mm high on a format of a 50mmx50mm mesh.
Suspension: aluminum threaded rods, 6mm diameter

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Acoustic spray: black mineral fibers with inorganic binders.

Spraying shall comply with the manufacturer's recommendations, and carried out on the whole surface of concrete slab before ductwork, cable work, and device installations.

Lattice panels shall lay on framework sections. Finished ceiling shall have a flush look, with all appliances above (lightings, air diffusers, detectors, etc.). All panels shall be removable bare-handed. For outside spaces (canopies, airlocks, etc.) acoustic spray will not be applied.

7.12 RAISED ACCESS FLOOR

The system described below outlines the basic requirements for the design and construction of raised access floors as indicated on architectural layout drawings.

The systems described below are based on functional/operational and equipment manufacturer's requirements. The final shop drawings and construction of the raised access floor shall be subject to CLIENT approval.

The raised floor system shall be fully accessible, proprietary pre-fabricated system and shall comply with all relevant International Building Code (IBC) or equivalent local requirements for loading, electrical conductivity and physical performances. The selected system's structure shall be designed to accommodate specified equipment loads and shall include accessories, cavity barriers and integral floor finishes; all to be of a type recommended by the raised floor manufacturer.



The floor panels shall be formed from heavy-duty composite materials with acoustic properties to prevent impact noise, noise transference and tile rocking. They shall be finished with a factory applied, hard-wearing, anti-static vinyl surface (or other approved types) on an aluminium base.

The floor panels shall be supported on adjustable pedestals, manufactured of stainless steel, fixed to the sub floor, adjustable in height and providing a distance between the top of the cavity floor and the top of the concrete floor of 1200mm minimum. Bracing shall be installed to prevent lateral movements of the flooring system. Heavy electrical and instrumentation equipment shall be supported by an independent support system.

Cavity Fire barriers, where required shall be of a type compatible with the flooring system. Installation shall be done strictly in accordance with the selected floor manufacturer's recommendations. The concrete sub-floor and walls below floor level shall be finished with epoxy paint to prevent dust formation.

The elevated floor is provided for the installation of computers and instruments, or electrical equipment with the cable connections at the bottom of the equipment. Raised floors shall be in accordance with relevant codes and standards.

For the specific electrical and process control equipment to be installed, along with the associated dimensioning and layout, reference shall be made to the electrical engineering project specifications.

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Unless otherwise stated, the removable panels shall be no larger than 600 x 600 mm and minimum 40 mm thick, constructed of plywood or shipboard, finished with 2 mm thick factory-applied, antistatic, wearing surface at the tops and aluminium foil at the bottom. The floor panels shall be supported on the adjustable pedestals, manufactured of stainless steel, fixed to the sub floor, adjustable in height and providing a distance between the top of the cavity floor and the top of the concrete floor of 900 ~1100 mm (According to instrument cabling requirements). Bracing shall be installed to prevent lateral movements of the flooring system.

Separate steel structure shall be provided to support electrical equipment and battery benches.

The reinforced concrete floor and the wall under the cavity floor shall be painted with an epoxy paint to prevent formation of dust.

- Tolerances:
 - 0.2mm width and length
 - 0.3mm diagonal
 - 0.2mm thickness

7.11.1 LOADING AND SPECIAL FEATURES

- Each floor panel shall be capable of supporting a concentrated load of 4450N, applied to an area of 650 sq.mm. at any point, or 10KN/sq.m., with a maximum deflection of 1 mm.
- The whole system shall be conductive for electrostatic charges, and be connected to earthing system.
- Connection to the surrounding walls shall be a 3mm joint sealed with an appropriate neoprene sealant.
- Penetrations for cables and pipes shall be allowed for.
- The minimum amount of spare parts to be stored shall be 3% of each panel and pedestals types.

7.11.2 FIRE RESISTANCE

The minimum smoke and fire-resistance of 30 minutes shall be considered based on NFPA 220: Type II standard.


7.13 FLOOR FINISHES

The floor finishes shall be laid with or without screeding and bedded as specified. Expansion and movement joints shall be provided when necessary.

The floor finishes shall comply with relevant codes and standards, and shall be of the best manufactured quality.

7.12.1 SCREED

Sand cement screed in accordance with BS 882 and shall be of minimum 50 mm thick. Reinforcement by welded mesh (diameter 3.5 mm, mesh 15 x 15 cm)

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Finish smooth and granulated.

7.12.2 ANTI-DUST PAINT

Anti-dust paint finish on concrete

7.12.3 UNGLAZED CERAMIC TILES

Heavy duty vitrified tiles.

Shall comply with ANSI A 137.1 and ASTM C 650.

Tiles shall be bedded in a 6 cm reservation including:

- polyane sheet (for independence between slab and covering),
- Reinforced mortar bed.

Tiles shall be laid to 1% fall to floor drains in wet areas.

Straight joints filled with white or grey cement for joints.

Same tiles shall be used for floor and plinths.

When alkaline or acid-resistant floor required (refer to finishing schedules).

The tiles should be chemical alkaline or acid-resistant,

The cement joints should be alkaline or acid-resistant,

Tiles should be bedded on a polyisobutylene membrane with furane resin mortar, and shall comply with ANSI A 108.8 and A 118.3.

7.12.4 PVC TILING

30 x 30 cm or 50 x 50 PVC floor tiles flexible, or semi flexible, heavy duty vinyl with coved skirting 100 mm height minimum, fixed by adhesive as specified by manufacturer which shall be suitable for the climatic conditions

The tiles shall be laid to a square pattern.

PVC tiles shall comply with BS 3261.

Adhesive shall comply with BS 5442.

The floor covering shall be installed in accordance with BS 8203.

7.12.5 TERRAZZO

Terrazzo shall be either,

Cast-in-situ:

- The terrazzo finish shall be divided into bays of approximately 2 m² by noncorrosive metal bars,
- Terrazzo shall be polished to a fine grit finish.

Or

Tiles of 300x300mm (min.)

Types and grades of aggregates shall be carefully checked to obtain a decorative appearance. Terrazzo tiles shall be manufactured and laid in accordance with ANSI A-10.20.

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7.12.6 LOCAL MARBLE

30 x 60 cm polished marble, high quality local supply with a minimum thickness of 20 mm. The marble shall be solidly bedded on a cement and sand screed of minimum 4 cm thickness and shall be grouted on completion with a neat cement grout of a color to match the predominant color of the floor.

Final polishing shall be carried out wet and upon completion the marble shall be cleaned down and offered in perfect condition.

Marble floors shall have matching marble skirting.

All work on marble floors shall be carried out in accordance with BS 8000 and BS 5385.

7.14 PAINT AND WALL FINISHES

7.13.1 ROUGH

Fair faced concrete or block wall

7.13.2 ANTI-DUST PAINT

Paint finish to fair faced concrete or masonry (without render)

7.13.3 NORMAL PAINT

Paint finishes on rendering (sand-cement or gypsum)

7.13.4 GLAZED CERAMIC TILES

Wall tiles shall be 15x15cm or 20x20cm enamelled stoneware tiles, 6mm maximum thickness.

Tiles shall be from an approved manufacturer standard range, cushion edged and coloured, based on BS 6431.


Tiles shall be glued on mortar coating, using an appropriate adhesive in strict accordance with manufacturer instruction.

Straight joints filled with fine white waterproof cement. Wall joints must be lined up with floor joints.

Acid-resistant and Alkalis-resistant ceramic tiles shall comply with BS 6431.

7.13.5 PAINTING

All paints must be of the best quality obtainable and of approved manufacturer.




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All coats in a paint system shall be obtained from one manufacturer and be compatible with each other. All paints shall be used in accordance with the manufacturer's recommendations.

Painting works shall comply with BS 6150.

All painting works (except rudimentary works) shall include:

- Preparation: stopping of holes and depressions, smoothing, brushing, cleaning and primer paint when required by the manufacturer.
 - Finishing maximum two coats of paint.
- On concrete and cement mortar (exterior)
Surfaces exposed to air shall be primed with a low viscosity primer and coated with two coats of micro porous acrylic base resin paint.
- On concrete and masonry (interior)
- Normal paint works
Paint finish to be applied on cement mortar render for walls, cement plaster render or on non-weaver canvas (special painting application) for ceilings.
Preparation: brushing, stopping and filer smoothing, fine sand papering, and dusting.
System of paint: glycerophatic with alkyd resins in two coats with primer when required manufacturer.
 - Anti-dust paint work
Paint finish to be applied on fair face concrete floor or screed and to fair faced concrete walls and ceilings.
System of painting: single component polyurethane resin with solvent, in two coats, 250 to 300 g/sq.m. for the first coat and 200 to 250 g/sq.m. for the second coat.
Primer if required by manufacturer.
 - Paint on metal doors and windows
Paint finish to be applied on all galvanized and factory shop prime finished doors and windows.
Works shall comply with BS 5493.
Preparation: degreasing, local galvanization reconstitution if necessary, cleaning.
System of paint: polyurethane (1 or 2 components). Number of coats: 2.
Finish glossy, normal works.
 - On wood and derived products
Preparation: sand-papering, dusting, filler smoothing coating, fine and light sand-papering and dusting.
System of paint: glycerophatic with alkyd resins in two coats.
Finish: glossy, fine works.

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7.15 SANITARY EQUIPMENT

7.14.1 GENERAL

Water pipes and sewer pipes are not permissible in electrical operating area and cable basements (Only permissible for cooling system and battery room equipment).

The plumbing and sanitary fixtures shall be provided as shown on the drawings and specified hereafter, complete with all their trim, accessories and supports. Sanitary ware shall be in vitreous china and the first quality. Colours shall be generally white except other specification.

Water heaters shall supply hot water to sanitary, laboratory and first aid equipment. Water heaters shall be electric type.

All exposed hot and cold water supply piping and metal trim for the plumbing fixtures shall be chromium plated and shall be guaranteed not to strip or to peel off.

All vitreous china accessories shall match the plumbing fixtures, and shall be from the same Manufacturer.

Plumbing fixtures shall be connected to the drainage pipes, ensuring complete water tightness. All fixtures shall comply with "Specification for HVAC Piping & Plumbing System" document.

7.14.2 EQUIPMENT

The location of sanitary equipment is indicated on drawings. It shall be of the following type:

- Wash basin: It shall be of white vitreous china type, complete, with accessories and fixing with hot and cold water mixer taps. Average size: 0.40 x 0.50 m
- Shower: It shall be of white vitreous china type, complete, with Accessories and fixing with hot and cold water mixer taps. Average size: 0.80x0.80 m

Showerhead shall be completed with trim and accessories such as:

- exposed spout and shower combination fitting with built in connecting elbow
- piper riser
- Chrome plated shower head with swivel nut
- Vitreous china soap holder, with handgrip bar.

- Toilet: Water closet shall be of two types as indicated on drawings, eastern type and western type WC.

Water closets shall be white vitreous china siphoned action with flushing valve and shall be completed with the following:

- Chrome-plated water supply valve
- Metallic support and all require accessories for installation, connection to water supply and drainage
- Supports
- Seats and cover seat

- Eyewash dispenser: In the battery room and Laboratory an eyebath or an eyewash dispenser shall be provided in accordance with safety provisions.

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7.14.3 ACCESSORIES

- In shower: curtain, coat hook and seat
- For wash basin: mirror, hand dryer, paper towel dispenser
- For toilet: coat hook and toilet paper dispenser

7.14.4 WATER HEATERS

- Water heaters shall be suitable for supplying hot water to sanitary, laboratory and first aid equipment via mixer taps. They shall be located adjacent to the sanitary appliance which it serves.
- They shall be insulated, lacquered finish, stainless steel tank
- Equipped and include all the connections and fixing accessories

They shall be adequate for the following:

- o Sufficient capacity
- o Maximum hot water storage temperature: 85 C
- o Minimum water supply pressure: refer to local data

7.14.5 WASTEWATER FLOOR DRAINS


Floor drains shall be mandatory in every wet area, such as WC's, showers, kitchens and in ceramic tiled areas in general.

Floor drains shall be standard type in polypropylene dia. 145 mm with fixation flange and water-seal. The outlet dia. shall be 70 mm.


Floor drains shall always be placed a few mm below the finish floor covering level.

8.0 APPLICABLE DOCUMENTS

The following is the list of documents that this "Design Criteria" is applied to:

	<p>نگهداشت و افزایش تولید میدان نفتی بینک</p> <p>سطح الارض و ابنیه تحت الارض</p> <p>عمومی و مشترک</p>								
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Architectural Drawing For WHCP/HPU Shelter of Well Pads - W018	BK-W018S-PEDCO-110-AR-DW-0001
Architectural Drawing For WHCP/HPU Shelter of Well Pads - W028	BK-W028-PEDCO-110-AR-DW-0001
Architectural Drawing For Diesel Generator Shelter of Well Pads - W046S	BK-W046S-PEDCO-110-AR-DW-0001
Architectural Drawing For WHCP/HPU Shelter of Well Pads - W046S	BK-W046S-PEDCO-110-AR-DW-0002
Architectural Drawing For Switchgear Building of Well Pads - W046S	BK-W046S-PEDCO-110-AR-DW-0003
Architectural Drawing For Security Building of Well Pads - W046S	BK-W046S-PEDCO-110-AR-DW-0004
Architectural Drawing For WHCP/HPU Shelter of Well Pads - W035	BK-W035-PEDCO-110-AR-DW-0001
Architectural Drawing For WHCP/HPU Shelter of Well Pads - W008N	BK-W008N-PEDCO-110-AR-DW-0001
Architectural Drawing For Diesel Generator Shelter of Well Pads - W007S	BK-W007S-PEDCO-110-AR-DW-0001
Architectural Drawing For WHCP/HPU Shelter of Well Pads - W007S	BK-W007S-PEDCO-110-AR-DW-0002
Architectural Drawing For Switchgear Building of Well Pads - W007S	BK-W007S-PEDCO-110-AR-DW-0003
Architectural Drawing For Security Building of Well Pads - W007S	BK-W007S-PEDCO-110-AR-DW-0004
Architectural Drawing For Diesel Generator Shelter of Well Pads - BK-14	BK-BK14-PEDCO-110-AR-DW-0001
Architectural Drawing For Switchgear Building of Well Pads - BK-14	BK-BK14-PEDCO-110-AR-DW-0002
Architectural Drawing For Security Building of Well Pads - BK-14	BK-BK14-PEDCO-110-AR-DW-0003
Architectural Drawing For Diesel Generator Shelter of Well Pads - BK-12	BK-BK12-PEDCO-110-AR-DW-0001
Architectural Drawing For Switchgear Building of Well Pads - BK-12	BK-BK12-PEDCO-110-AR-DW-0002
Architectural Drawing For Security Building of Well Pads - BK-12	BK-BK12-PEDCO-110-AR-DW-0003
Architectural Drawing For Diesel Generator Shelter of Well Pads - BK-15	BK-BK15-PEDCO-110-AR-DW-0001
Architectural Drawing For Switchgear Building of Well Pads - BK-15	BK-BK15-PEDCO-110-AR-DW-0002
Architectural Drawing For Security Building of Well Pads - BK-15	BK-BK15-PEDCO-110-AR-DW-0003
Architectural Drawing For Diesel Generator Shelter of Well Pads - BK-05	BK-BK05-PEDCO-110-AR-DW-0001
Architectural Drawing For Switchgear Building of Well Pads - BK-05	BK-BK05-PEDCO-110-AR-DW-0002

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Architectural Drawing For Security Building of Well Pads - BK-05	BK-BK05-PEDCO-110-AR-DW-0003
Architectural Detail Drawing For Control Building	BK-GCS-PEDCO-120-AR-DW-0001
Architectural Detail Drawing For Extension of Existing Elect. Building	BK-GCS-PEDCO-120-AR-DW-0002
Architectural Drawing For Gas Compressors Shelter	BK-GCS-PEDCO-120-AR-DW-0003
Architectural Drawing For Chemical Inj. Packages/Chemical Storage Shelter	BK-GCS-PEDCO-120-AR-DW-0004
Architectural Drawing For Utility Shelter	BK-GCS-PEDCO-120-AR-DW-0005
Architectural Drawing For Fire Water Pumps Shelter	BK-GCS-PEDCO-120-AR-DW-0006
Architectural Drawing For Fire Shed	BK-GCS-PEDCO-120-AR-DW-0007

9.0 SUBMITTAL

The CONTRACTOR shall submit the architectural design to the client for approval during the detail design. The submittals shall include, but not limited to, the following:

- Drawings showing proposed layout of architecture work, indicating material types and quantities.
- Schedules showing program of implementation for each type of architecture work.
- Samples of all materials to be used in the project shall be submitted upon request of the CLIENT.
- A comprehensive "Operations and Maintenance Manual" shall be compiled by the contractor and submitted to the CLIENT for approval.