

Client:  Petro Kavian Sanat Pars Co.	EXTENSION TO NEYRIZ 66/20 KV SUBSTATION		Consultant:  شرکت مهندسی مشاور انجی
	Document Title: Summary Of Works		
	Document Number: NRZ-ANJ-SS-SPC-121	Rev: Z	Page 1 of 10

EXTENSION TO NEYRIZ 66/20KVSUBSTATION

SUMMARY OF WORKS

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Rev.	Purpose of Issue	Date	Prepared	Check	Approved	Authorized

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1 INTRODUCTION

1.1 Purpose

This document has been prepared to specify and establish the minimum technical requirements for the design, supply, installation, and commissioning of the Extension to Neyriz 66/20 kV Substation.

1.2 Definitions

Within the context of this document, the following definitions will be applicable:

Project:	Extension to Neyriz 66/20 kV Substation
Client:	Petro Kavian Sanat Pars Co.
Owner:	Fars Regional Electric Co.
Consultants:	Aria Niroo Jam Co.
EPC Contractor:	Any firm who is responsible for providing any service and material with respect to detailed engineering, procurement, construction of all items and material in accordance with the contract between the CLIENT and him.
Vendor/Supplier:	The company, which has been selected to supply the equipment and material and products technical documentation mainly, related to the production of the ordered supply.

The word "shall" indicate a requirement. The word "should" indicate a recommendation.

Contractor shall be responsible for vendor goods.

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2 SCOPE OF WORKS AND DESCRIPTION OF THE PROJECT

This project is on a turnkey basis and consists of design, supply, manufacturing, factory testing of all equipment, packing, supply of necessary insurance policies, transportation, offloading and storage, complete erection, and commissioning works and necessary guarantees center for.

The work is split into the following sections for payment purposes.

A: Construction of neyriz 66/20 kv substation new 20kv outgoing feeders.

B: Spare parts equipment for substation

C: Maintenance equipment common for substation

The description of the equipment included in these specifications does not relieve the contractor from his duties of supplying the equipment complete & with all accessories necessary for operation.

Busbar arrangement and switchyard layout for the substations of this tender document shall be as shown on the drawings.

The specification requires the provision of all equipment necessary for the satisfactory performance of the substation within the following limits:

- (i) Connection from slack span to line feeder equipment, including provision of appropriate droppers, clamps and fittings for transmission lines (N.A).
- (ii) For control, indications, alarms and tele protection the interface between the work covered by this contract and the SCADA equipment shall be brought to interface cubicle.
- (iii) For equipment which are not in the SCOPE of supply of this tender all connections, cables, grounding system, clamps, droppers and bus work to complete the work will be supplied under scope of this tender.
- (iv) Cables and connection of signals, inter trips, alarms and all other communication media between extension point and existing substation shall be in scope of this contract.

3 CIVIL WORKS, ERECTION AND SITE TESTING AND COMMISSIONING WORKS

This is a turn-key contract which includes all civil engineering, storage of equipment, erection, site testing & commissioning works at the site. The tenderer will be deemed to have visited the site before preparing the tender to ascertain the local conditions under which the works will be carried out. He shall obtain his own information on all factors which might affect the supply, construction and completion of the building, site facilities and services, to meet the commissioning dates for the substation.

The contract shall assign qualified personnel to carry out the erection and site testing works, along with necessary data and calculations needed for the same. The contractor shall submit the followings:

- (a) In particular such information shall include the outline dimension and detailed design of all equipment, ancillaries and accessories as well as the magnitude, direction and point of application of all loads acting on each equipment foundations

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shall be indicated in detail so that designs for the foundations can be made.

(b) The method of mounting each equipment on its structure and on foundation and the type, dimensions, and locations of anchor bolts for all foundations.

(c) Full information, and detailed workings drawings and design calculations for the foundations, building, structures, etc.

The information and drawings shall include the equipment and panel arrangement, their weights and dimensions and cable entries. All cable trenches inside the building and the connecting cable trenches to the switchyard shall be indicated. The method of mounting and erection of each equipment and panel shall also be indicated. The services associated with the control building, such as the battery, A.C.-D.C., interfacing and communications rooms shall be indicated.

(d) Detailed data, information, drawings, catalogues, manuals, dimensions on the method of handling, storage, mounting and erection of each piece of equipment shall be furnished, so that the erection works can be carried out properly with no delays.

(e) The contractor shall state and indicate all allowable tolerances in carrying out the civil and erection works. The details shall be indicated for each foundation and each equipment erection.

(f) Complete and detailed site test procedure, drawings, manuals, relay setting data, calculation works, etc., shall be submitted for each equipment, each system, each section, and the substation as a whole all to the satisfaction of the Engineer.

(g) All control and protection schematics, interconnection, wiring diagrams, general arrangements diagrams, cable schedule,

layout and all other required drawings should be supplied by contractor.

(h) For the equipment supplied by the owner or already existing the contractor shall get necessary information from client and coordinate that information with whole substation design, as mentioned in the clause 1.2 hereto.

The contractor shall submit within three months from the signature of the contract all information and working drawings required by the Engineer and he is also bound to submit all information and documents required for storage and erection of equipments , on such time that the erection works can be proceeded according to schedule .

4 POWER AND AUXILIARY TRANSFORMERS (N.A)

Power transformer, earthing & auxiliary transformer supply, factory test, spare part, transportation, insurance erection, site testing & commissioning of mentioned equipment are in scope of work.

5 POWER SYSTEM/DISPATCH SYSTEM INTERFACE

The substation equipment (CB's, DS's, Tap changer, etc.) shall be properly designed and equipped with all auxiliaries and ancillaries to be suitable for local, remote and control via national electric power dispatch system (NEPDS) for control.

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All interface cubicles, fully equipped with cable terminals-aux. relays, racks, etc., shall be supplied by the Seller. The seller shall give all drawings and cable schedules and connection diagrams for the complete interfacing systems.

The supervisory control and data acquisition (SCADA) and PLC terminal equipment (transducers, receivers, etc.) shall be supplied and installed under this contract.

6 DELIVERY SCHEDULE

The contractor shall perform the works in accordance with the timing schedule.

7 LOCATION, ACCESS TO SITE

Location and access roads to the site are shown on the project area and project area access roads in general arrangement.

8 DRAWINGS

Drawings issued with and forming part of the tender documents are listed below. These drawings are intended to clarify the requirements of the specification.

The contractor shall perform the works in accordance with the drawings submitted to Engineer for approval as described in section "Submittals" of the specification.

9 MAJOR EQUIPMENT REQUIREMENTS

List of major equipment requirements for the substations site forming part of the works:

ITEM	EQUIPMENT DESCRIPTION	HIGH VOLTAGE (N.A)	20KV
1	Circuit breaker	-	As per SLD
2	Disconnecting switches	-	-
3	Disconnecting switches with earthing blades	-	As per SLD
4	Current transformer	-	As per SLD
5	Capacitive voltage transformer	-	As per SLD
6	Neutral current transformer	-	As per SLD
7	Lightning arresters (single phase)	-	As per SLD

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ITEM	EQUIPMENT DESCRIPTION	HIGH VOLTAGE (N.A)	20KV
8	Line traps	As req.	-
9	Post insulators	As req.	-
10	Steel structures for gantries and equipment	As req.	-
11	20kV switchgear	-	As per SLD
Buswork			
12	a) Bay interconnection equipment and conductor	as required	as required
	b) Tension and suspension insulators	as required	as required
	c) Shield wires	as required	as required
	d) Busbar and associated tubes.	as required	as required
	e) Post insulators	as required	as required
Cable systems:			
13	a) AC 400/230V power cable	as required	as required
	b) DC 110V and multi core control cable	as required	as required
	c) C.V.T and C.T secondary cables	as required	as required
	d) Coaxial cable for PLC purpose	as required	as required
	e) Cable for connection to interface panel	as required	as required
LVAC/LVDC systems:			
14	a) 110 & 48V volt D.C battery and distribution panels	as per SLD	Common
	b) 110 & 48V volt D.C. battery charger	as per SLD	Common
	c) 400/230 Volt AC distribution-panels	as req.	Common
15	Grounding equipment	As req.	As req.
16	Protection and control equipment	as per DWG.	as per DWG.
17	Interface panel for supervisory control and data acquisition equipment	as required	as required
18	20 kV outdoor structure/buswork and equipment	-	as required

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10 DESIGN PARAMETERS AND SPECIFICATION FOR SUBSTATION EQUIPMENT

Lists of minimum design parameters and specification for the design of substations forming part of the works:

Voltage Class	Design Fault Level	Trafo Bay Equipment Current Rating	Feeder Bay Equipment Current Rating	Bus Section Equipment Current Rating	Bus Coupler Equipment Current Rating	Main Bus Current Rating
kV	kA*/Sec	A (rms)	A (rms)	A (rms)	A (rms)	A (rms)
24	25/3	2000	1250	-	2000	2000

Note: 1- All quantities are for site condition, and for IEC condition should be adjusted by tenderer.

11 HANDLING FACILITIES, TRANSPORT LIMITATION

(a) The contractor is solely responsible for proper design and safe transport of the equipment. He should carefully check the selected routes, clearances and bearing capacities of tunnels and bridges at the design stage and at the time the shipment planned. Transport of materials and equipment from port(s) of to the site shall be under the contractor responsibility.

(b) The contractor shall ensure that all materials and items included in the works are adequately packed for transport by sea, rail and roads, that protection is provided against corrosion, physical damages, contamination, water damage and damages due to climatic conditions or any other source that may be encountered during handling, transport and storage. Packing materials and cases shall remain the property of the owner.

(c) The contractor shall make all necessary arrangements for custom clearance in Iran, in country of origin and in any country through which the transport may be routed. The Engineer shall be immediately informed if any item has not arrived when expected.

(d) The contractor shall obtain all the necessary import and export permits as well as any other documents required for transportation.

Copies of all forms and documents relating to customs, permits, packing lists, bills of lading, insurance etc., shall be forwarded to the Engineer.

(e) All labels, marking and codings on boxes, crates and containers shall be clear, legible waterproof, not affected by sunlight and shall be securely fixed or painted. Standard markings shall be applied e.g. "Lift here", "No hooks", "Fragile", "This side up", "Instruments", etc. Crates containing oil filled apparatuses, such as current transformers, shall be clearly marked with limits of inclination during any phase of the transport and handling. Oil, paints and other inflammable materials shall be clearly marked, including recommended storage temperatures.

(f) Shipping reports shall be submitted to the Engineer for all shipments. The report shall include weights, shipping dimensions and parcel numbers. Parcel numbers shall be unique and sequentially assigned for all parcels of the entire contract. In the shipping report the contents of each parcels shall show full details of inscriptions outside of all packages or containers.

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(g) Custom offices at points of entry in Iran shall be informed in advance of the size and quantity of packages, origin and destination, the name of the owner and carrier and expected date of arrival.

12 CO-OPERATION AND CO-ORDINATION OF THE WORKS WITH OTHER CONTRACTORS

The Contractor shall cooperate and exchange information with other contractors supplying equipment's to be connected to the equipment's included in this Contract. The Engineer shall arrange and give the guidelines for exchange of information between the contractors.

13 SPARE PARTS

The tenderer must state the spare equipment, parts and renewal items which he deems necessary for the first five years' normal service operation of the substation. The renewal parts and spare equipment shall include common maintenance accessories of which the tenderer shall give a list. The spare parts and equipment shall be quoted for with quantities and unit prices in the unit lists for the spare parts. The spare parts as described above shall be in addition to the spare equipment and parts which have been included in section "B" of price schedule for different types of equipment.

14 NAMEPLATES

Beveled sheet mica nameplates, placed in visible location, shall be provided for all panels and outdoor main equipment. They shall be prepared in appropriate size and color with black engraving for easy distinction. Descriptive nameplates shall also be provided for all protection relays, switches, fuses, indicating lamp and similar items.