



# CONSTRUCTION SCOPE OF WORK

## Construction of New Industrial Security Forces Building

**Tender No. HT676PC20**

**(ISSUED FOR CONSTRUCTION)**

Company General Use

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**1.0 Project Summary**

- 1.1 This project is to construct:
- Additional Quarters for Officers
  - Extension of existing office facilities

Including the following:

- Site Development to match with the existing site
  - Supply and installation of Electrical and Communication System
  - Supply and installation of HVAC system to match with the existing
  - Supply and installation of Plumbing/Sanitary fittings & accessories
  - Tie-in of new utility lines with the existing lines
  - Provision of shop drawings & As Built Drawings as required
- 1.2 This Scope of Work generally describes the major components of the WORK. The CONTRACTOR shall also refer to all the construction drawings and reference standards for a complete description of the WORK.
- 1.3 The WORK involved shall include but not necessarily be limited to the following major activities.

**2.0 CONTRACTOR'S RESPONSIBILITY**

- 2.1 The CONTRACTOR shall perform all the WORK in accordance with the approved construction drawings, the Construction Scope of Work including all relevant industry codes and standards and the applicable SAUDI ARAMCO standards, and contract drawings
- 2.2 The CONTRACTOR shall provide all materials required for the WORK. All CONTRACTOR-supplied materials shall be approved by KJO and shall conform to the applicable KJO/SAUDI ARAMCO Material Specification.
- 2.3 The CONTRACTOR shall supply all equipment, labor, and supervision and complete the WORK safely and efficiently such that the facilities being constructed are fully operational on or before the Time for Completion. All labor and supervisory personnel shall be fully qualified and experienced in their job classification.
- 2.4 The CONTRACTOR shall provide all necessary vehicles for the transportation of the construction personnel, utilities, equipment and materials to or from the job site. The CONTRACTOR shall maintain all the vehicles in good operating condition at all times.
- 2.5 The CONTRACTOR shall develop and implement a Safety Plan that describes the objectives and the CONTRACTOR's

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commitment to maintain and administer the Safety Plan. The Plan shall be in the form of an execution plan specifically tailored for the Contract. The Plan shall not be a detailed manual of rules and regulations. The Plan shall describe to KJO, how the CONTRACTOR will implement, administer and enforce its safety program for its own and that of its Subcontractors employees.

- 2.6 The CONTRACTOR shall take all proper steps for protection of all areas on or around the WORK site, which may be dangerous to the personnel or any other persons or traffic.
- 2.7 The CONTRACTOR shall provide adequate barricades and maintain warning and safety signs, warning lamps, tapes at deep excavation, roads and other work sites as required throughout the construction period.
- 2.8 The CONTRACTOR shall clear the work site, remove and dispose of any material that is unsuitable for incorporation into the WORK to authorized disposal sites.
- 2.9 Prior to grading, trenching or excavating, the CONTRACTOR shall verify, mark and expose all utilities in the path of construction and take precautions to preserve their integrity. Extra care shall be taken when working near, crossing under or exposing existing pipelines, communication and electrical cables.
- 2.10 The CONTRACTOR shall check and verify all dimensions and elevations at each Site prior to fabrication.
- 2.11 As-built surveys shall be performed by the CONTRACTOR in a timely manner during construction. Such surveys shall be sufficiently detailed to enable as-built marked-up drawings to be prepared. The CONTRACTOR shall keep one set of current updated as-built drawings in the Site Office reflecting current site conditions.
- 2.12 The CONTRACTOR shall submit to KJO detailed safety procedures that will be implemented throughout the duration of the project. The procedure shall include but not be limited to issuance/receipt of work permits, safety meetings, orientation seminars, etc.

### **3.0 DEMOLITION WORK**

#### **3.1 Civil Works**

- 3.2 Level, clear and compact the proposed area of the building to the required elevation as specified in the plan. Should there be discrepancy with the elevations, coordinate with KJO representative.
- 3.3 Open areas most likely to be asphalted shall conform to surface conforming to base and sub-base preparation standards. Building

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area subject for excavation shall conform to Saudi Aramco guidelines for safety procedures.

- 3.4 All demolished debris shall be removed from the work place and transported to approved KJO dumpsite, as per the instruction of KJO Representative.

**4.0 NEW WORK**

**4.1 Verification of Site Conditions and Dimensions**

Before the execution of the WORK, the CONTRACTOR shall check existing conditions and all dimensions involved in the Scope of Work to ensure compatibility. The CONTRACTOR shall notify KJO Representative(s) of any discrepancy between field measurements and dimensions shown on drawings for immediate resolution.

**Site Works**

The CONTRACTOR shall carryout all required surveys necessary to ensure that the construction of foundations, ground beams and all below ground structures/utilities are in accordance with the Scope of Work and applicable standards.

The CONTRACTOR shall maintain a person at site to note in his survey report the existing utilities and structures encountered.

The CONTRACTOR shall document the location and elevations of existing underground utilities identified during the exploratory surface sensing and subsequent excavation for the utility lines and facilities by redlining the layout drawings affected and reflect as part of the as built document.

Any existing underground utilities found during the survey shall be immediately reported to KJO for further action.

**4.1.1 Architectural**

4.1.2 All materials to be used by the CONTRACTOR shall be submitted to KJO authorized representative(s) for approval prior to purchase and installation.

4.1.3 The CONTRACTOR shall supply and install all materials as specified in the drawings.

4.1.4 The CONTRACTOR shall apply/install all materials as per manufacturer's procedure or Aramco Standard Procedure whichever is applicable. The CONTRACTOR shall submit literature and sample of materials of Toilet partition and door assembly for KJO approval.

**4.1.5 Civil / Structural**

4.1.6 Excavate, backfill and compact to required elevations. Should there be restoration needed, coordinate with KJO Project Engineer or any representative.

4.1.7 Concrete works shall be done as per SAES-Q-001 and SAES-Q-005.

4.1.8 Concrete shall have a compressive strength of 28 Mpa after 28 days.

4.1.9 Layout and construct foundations as shown on Drawings.

4.1.10 Construct support foundation pad to all Split Type Air Conditioning - outdoor condensing units. (Similar to the nearby concrete foundation dedicated for AC condensing units located outside Maintenance Shop building.)

4.1.11 All reinforcing bars shall be Fusion Bonded Epoxy (FBE) coated as per 09-SAMSS-106.

4.1.12 Asphaltting shall be applied on areas indicated in the plan. Coarse aggregates for asphalt paving shall be crushed stone, crushed slag, or crushed gravel conforming to ASTM D692. Fine aggregates shall be natural or manufactured sands conforming to ASTM C131. Asphaltting must have a minimum of 2% pavement slope towards existing roads.

4.1.13 Asphalt cement shall be viscosity grade AC-5, AC-10, or AC-20 conforming to ASTM D3381.

4.1.14 Cutback asphalt shall conform to ASTM D2026, ASTM D2027, or ASTM D2028.

4.1.15 Emulsified asphalt shall conform to ASTM D977 and ASTM D3628.

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- 4.1.16 Liquid asphalt or prime coat shall be grade MC-70, grade MC-250, grade RG-70, or grade RC-250 conforming to ASTM D2027 or ASTM D2028. After the sub-grade or base has been prepared and compacted, prime coat shall be applied and allowed to cure at least 24 hours before asphalt paving.
- 4.1.17 Materials for aggregate pavement base and sub-base shall consist of durable and sound crushed gravel, crushed stone or slag conforming to ASTM D2940. The aggregate shall have a soaked California Bearing Ratio (CBR) of at least 80% when tested in accordance with ASTM D1883 and percentage of wear not exceeding 45% when tested with ASTM C131.
- 4.1.18 Fill material and compaction shall conform to PIP CVS2100. Prior to the sub-base, selected fill shall be at least 500mm thick and shall be compacted.
- 4.1.19 Sub-grade preparation for base and sub-base coarse placement shall conform to PIP CVS2100.
- 4.1.20 The thickness of the sub-base (if required) shall be 4 inches (100mm), unless otherwise specified.
- 4.1.21 The thickness of the base course or binding coarse (if required) shall be at least 80mm.

#### **4.5 Electrical Work**

- 4.5.1 Electrical installation of power distribution system to new office building, includes electrical installation at inside & outside building, electrical materials and equipment shall be provided in accordance to Saudi Aramco Standards, but not limited to the requirements described in the issued project drawings and all duly approved industry codes and standards.
- 4.5.2 The CONTRACTOR shall supply, install, test, commission and perform all required electrical works, which include but not limited to the power distribution system of the new office building.

Electrical works shall include but not be limited to:

- a) Supply and installation of all materials as specified in construction drawings. All materials to be used shall be submitted to KJO authorized representative(s) for approval prior to purchase and installation.
- b) At Office Building. All electrical works inside & outside building including Fire detection/alarm

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system shall be performed and completed as indicated in the issued construction drawings. Work shall be done in accordance to Saudi Aramco Standard SAES-P-104, SAES-P-123 and NEC (NFPA 70).

- c) Grounding work, install all grounding requirement as indicated in the issued construction drawings. Work shall be done in accordance to Saudi Aramco Standard SAES-P-111.
- d) The CONTRACTOR shall provide means to penetrate the new cables into the existing concrete trench. Utilized spare conduit, PVC sleeves, cable trays shall suit site condition.

4.5.3 Equipment and materials shall be installed in accordance with Saudi Aramco Standards installation requirements and the approved instructions of equipment Manufacturer and/or Vendor. Extreme care shall be taken in handling equipment and moving it into place. Cost for damage due to negligence shall be deemed accountable to the CONTRACTOR.

4.5.4 The CONTRACTOR shall perform all required checkout, testing to make the Electrical, Tel./Comm. & Fire Alarm system ready for energization & operation. All checks, to be deemed acceptable, shall be done in the presence of a KJO representative and recorded in a standard Saudi Aramco/KJO Form.

4.5.5 All equipment and devices shall be secured in place, shall be level, plumb and shall be left with a neat, workmanlike appearance.

4.5.6 Tie-in connection to existing system such as Power, Fire Alarm & grounding grid system shall be coordinated to KJO authorized Rep./ or Department.

4.5.7 Testing and Pre-Commissioning.

- a) The CONTRACTOR shall supply all labor, required for testing and adjusting all equipment installed and/or connected during the periods of preparation for service, energization and initial operation prior to acceptance by KJO.
- b) Installed equipment and wiring shall be checked under the supervision of KJO Representative at convenient time during progress of the work.

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- c) Wire and cable connections shall be visually checked.
- d) Power and control cables shall be rung out promptly after installation and tested for continuity, shorts and grounds and corrected, as required.
- e) Insulation and resistance tests shall be made of power and control cables. Tests shall be made by suitable megger. The CONTRACTOR shall furnish a record of such readings on forms approved by KJO.
- f) Circuit components to be tested shall include, but not limited to the following;
  - 1) Test operation of molded case circuit breaker.
  - 2) Control circuit check for correct functional operation of devices.

#### **4.6 Plumbing/Utilities**

4.6.1 All materials to be used by the CONTRACTOR shall be submitted to KJO authorized representative(s) for approval prior to purchase and installation.

4.6.2 The CONTRACTOR shall supply and install all materials as specified in contract drawings.

4.6.2 The CONTRACTOR shall restore any excavated portion conducted during installation of the piping.

#### **4.7 Telecommunication**

The CONTRACTOR shall supply, install, test, commission and perform all the required Telecom System work as specified in drawings.

Telecom System works shall include but not be limited to:

- a) Supply and installation of all materials as specified in contract drawings.
- b) All materials to be used shall be submitted to KJO authorized representative(s) for approval prior to purchase and installation.

4.7.1 All equipment and devices shall be secured in place, shall be level, plumb and shall be left with a neat, workmanlike appearance.

4.7.2 Tie-in connection to existing Telephone & Data system shall be properly coordinated to KJO authorized Rep. and Tel./

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Comm. Department. The CONTRACTOR shall provide assistance to KJO Rep. for Tie-in termination to existing system

4.7.3 Testing and Pre-Commissioning

a) Shall be similar to 4.5.7 “Testing & Pre-commissioning”, as applicable.

**5.0 STANDARDS AND CODES**

**5.1 General**

Perform the work in accordance with the latest edition of the following KJO standards and specifications, Industry codes and standards and SAUDI ARAMCO standards and specifications:

**5.2 Codes and Standards**

<u>Standard Number</u>	<u>Title</u>
ACI 318 Concrete	American Concrete Institute; Building Code Part 1, 2 & 3 Requirements for Reinforced Concrete
ACI 347 Formwork	Recommended Practice for Concrete
ACI 207.2R	Cracking of Mass Concrete
ACI 308R	Guide to Concrete Curing
BICSI International	Building Industry Consulting Services
IPCEA Association	Insulated Power Cable Engineers
NESC	National Electrical Safety Code
NFPA 30	Flammable and Combustible Liquids Code
NFPA 70	National Electrical Code or NEC
SASO	Saudi Arabian Standard Organization
ANSI	American National Standards Institute

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PIP CVS02350	Process Industry Practices (PIP)
PIP CVS02100	Process Industry Practices (PIP)
ASTM	American Society for Testing and Materials
KJO-6400 series	Safety Core Procedure Manual
KJO-6401	Safety Working Practices Manual
SAF-02	Environmental, Health & Safety Management
SAF-25	Incident Reporting & Investigation
SAEF-13	Project Environmental Impact Assessment

**5.3 SAUDI ARAMCO Engineering Standards**

<u>Standard Number</u>	<u>Title</u>
SAES-A-114	Excavation and Backfill
SAES-B-014	Safety Requirements for Plant and Operations Support Buildings
SAES-B-050	Plant Layout
SAES-B-068	Electrical Area Classification
SAES-H-003	Coating Requirements for Concrete Surfaces
SAES-H-101	Approved Protective Coating Systems
SAES-M-001 Structures	Structural Design Criteria for Non-Building Structures
SAES-M-100	SAUDI ARAMCO Building Code
SAES-O-100	General Requirements Safety and Security
SAES-P-100	Basic Power System Design Criteria
SAES-P-104	Wiring Methods and Materials
SAES-P-111	Grounding
SAES-P-123	Lighting

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SAES-Q-001	Criteria for Design and Construction of Concrete Structures
SAES-Q-005	Concrete Foundations
SAES-Q-006	Asphalt Concrete Paving
SAES-S-060 -	Saudi Aramco Plumbing Code

**5.4 SAUDI ARAMCO Materials System Specifications**

09-SAMSS-097	Ready-Mixed Portland Cement Concrete
09-SAMSS-106	Epoxy Coating of Steel Reinforcing Bars
12-SAMSS-007	Fabrication of Structural and Miscellaneous Steel
12-SAMSS-008	Erection of Structural and Miscellaneous Steel
16-SAMSS-518	Low Voltage Panel boards

**5.5 SAUDI ARAMCO Standard/library Drawing**

Drawing	Index	Description
AD-036874	P	Installation Direct Buried Elect. Cable & Conduit
DD-950022	P	Ground Connection Details

**5.6 Saudi Aramco Pre-Commissioning Forms**

P-100	Testing Guidelines
P-003	Cables – Low Volt
P-012	Grounding System

**6.0 MATERIALS**

All CONTRACTOR-supplied materials shall conform to the applicable KJO/Saudi Aramco Material Specifications. The CONTRACTOR shall determine the materials and exact quantities to complete the WORK.

Technical data and information for all CONTRACTOR-furnished materials shall be submitted to the Company Representative for review and approval prior to purchase.

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**7.0 GENERAL STATEMENT**

**7.1 General**

During the performance of the WORK, the CONTRACTOR shall maintain a set of marked-up construction Drawings to reflect the current as-built status of the facilities. The CONTRACTOR shall furnish three (3) sets of final as-built Drawings along with AutoCAD electronic file of the facilities prior to the submission of the CONTRACTOR'S final invoice to KJO representative. These Drawings shall be signed and concurred by the KJO REPRESENTATIVE(S).

**END OF SCOPE OF WORK**

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