Reko Diq Copper Gold Project

Request for Tender

2270-1510 Construction Water Pipeline Installation

Section 3 Scope of Work

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1.0 SCOPE OF WORK

1.1 Overview of the Project and the Work

Reko Diq is located within the Chagai District of Balochistan Province of Pakistan, as shown in Figure 1.1, in an area which can be characterised as harsh stony desert. Average annual rainfall is 32 mm with an elevation of 915 m above sea level. Temperatures range between minus 14ºC to 50ºC.

The region is sparsely populated, the nearest settlements are Siah Reg and Humai approximately 1 km and 19 km distant respectively, each having a population of a few dozen. Nok Kundi is approximately 75 km away with a population of around 10,000.

Figure 1.1 Location Map

In general, this Scope of Work includes the construction of the Construction Water Pipeline including headworks of select bores from a borefield, booster station and buried pipeline in accordance with the requirements of all the documents forming part of the Agreement.

2.0 SCOPE OF WORK

The Scope of Work shall include, but not necessarily be limited to, the supply of all adequate and competent management, supervision, labour, tools, construction plant, equipment and materials (other than specifically included under Item 2.1.16 Company Supplied Materials and Equipment), consumables, testing devices, temporary facilities, accommodation, transport to and from the job Site and every item of expense necessary for the supply, fabrication, field erection, application, hauling, receiving, installation, construction, assembly, testing (including soils and concrete testing), evaluation, and quality control necessary to perform the following Work in accordance with all the documents forming part of the Agreement.

2.1 Scope of Work - Detailed

All works shall be in accordance with the requirements of all documents forming part of the Agreement, as further detailed below.

The Contractor shall be responsible for examining the drawings, specifications, and pricing schedule to determine the full extent of the Work.

The Works includes but is not limited to the following, as detailed below:

a) Surveying and Setting out of the Works

b) Site Preparation

c) Bulk and Detailed Earthworks Installation:

   i) Clearing and grubbing

   ii) Topsoil removal and stockpiling

   iii) Establishment management and rehabilitation of borrow pits

   iv) Foundation Preparation

   v) Bulk Earthworks

   vi) Removal of Unsuitable Materials

   vii) Subgrade Preparation

   viii) Erosion and Sediment Control

   ix) Surface Water and Groundwater Control

   x) Drainage and Diversion Channels

xi) Culverts

xii) Subbase

xiii) Basecourse

xiv) Detailed Earthworks

xv) Consumable Materials

d) Concrete Supply & Installation:

i) Detailed Earthworks Construction

ii) Plastic Liners and Waterproof Membranes Supply & Installation

iii) Ring Beam Drainage Supply & Installation

iv) Formwork and Falsework Supply & Installation

v) Concrete Reinforcement Materials Supply & Installation

vi) Concrete Supply & Installation

vii) Cast-In Items Supply & Installation

viii) Holding Down Bolts Supply & Installation

ix) Electrical Conduit Supply & Installation

x) Mechanical Piping Supply & Installation

xi) Bollards Supply & Installation

xii) Concrete Consumable Materials Supply & Installation

e) Structural Steelwork Installation

f) Platework Installation

g) Tank Installation

h) Mechanical Equipment Installation

i) Pipework Supply & Installation including testing

j) Specials Installation

k) Electrical, Communications & Instrumentation Installation:

i) Cables

ii) Cable Terminations

iii) Cable Supports / Ladder

iv) Instrumentation

v) Electrical Equipment

vi) Switchrooms

vii) Transformers

viii) Electrical Field Devices

ix) Lighting and Small Power

x) Earthing

xi) Fibre Optic Cables

xii) Trenching

xiii) Testing and Commissioning

l) Welding

The Works has been divided into three Separable Portions and are broadly defined as follows and shall be read in conjunction with the design documentation, pricing schedule and battery limits:

- Separable Portion 1: Construction Water Borefield Pipeline
- Separable Portion 2: Construction Water Transfer Pipeline
- Separable Portion 3: Construction Water Pumping & Pipeline Supporting Infrastructure

Separable Portion 1: Construction Water Borefield Pipeline

The Separable Portion 1 (SP1) Works can be broadly defined as the installation, including trenching, and testing of the buried pipeline and fibre cable from the existing production bore holes in the Fan Sediment Borefield to the booster pump station which includes but is not limited to the following:

- Establishment and disestablishment of temporary yard/s, laydown, and facilities (including earthworks and fencing as deemed necessary by the Contractor) for use by the Contractor.

- Survey and setting out work including provision of as built survey of the pipeline prior to pressure testing of pipe and backfill of trenching.

- Material management including material handling and transportation to work fronts in accordance with Project Procedures and Specifications.

- Establishment and maintenance of a pushed, graded, and compacted access track adjacent the alignment of the borefield pipeline for utilisation by the Contractor and others.

- Earthworks activities including establishment of local borrow areas including winning, loading, and hauling of all materials necessary for the performance of the works, clearing, trench excavation, placement of bedding and backfill materials, compaction, and testing.

- Supply and installation of concrete valve pits complete with lockable lids along the pipeline.

- Installation and pressure testing of the buried pipeline, including the installation of valves, instrumentation, valve pits, scour pits, warning tape and line markers.

- Installation and terminations of direct buried (wire armoured) fibre optic communication cable Installation will include direct buried spliced kits, and terminations within each FOBOT.

- Installation and testing of all other items necessary for the completion of the works as detailed in this document, drawings, specifications, and pricing schedules.

Separable Portion 2: Construction Water Transfer Pipeline

The Separable Portion 2 (SP2) Works can be broadly defined as the Installation, including trenching and testing, of buried pipeline and fibre cable from the booster pump station to the process water pond and camp which includes but is not limited to the following:

- Establishment and disestablishment of temporary yard/s, laydown, and facilities (including earthworks and fencing as deemed necessary by the Contractor) for use by the Contractor.

- Survey and setting out work including provision of as built survey of the pipeline prior to pressure testing of pipe and backfill of trenching.

- Material management including material handling and transportation to work fronts in accordance with Project Procedures and Specifications.

- Establishment and maintenance of a pushed, graded, and compacted access track adjacent the alignment of the transfer pipeline for utilisation by the Contractor and others.

- Earthworks activities including establishment of local borrow areas including winning, loading, and hauling of all materials necessary for the performance of the works, clearing, trench excavation, placement of bedding and backfill materials, compaction, and testing.

- Supply and installation of concrete valve pits complete with lockable lids along the pipeline.

- Installation and testing of buried pipeline including installation of couplings, valves, valve pits, scour pits, external wrapping of joints, instrumentation, warning tape and line markers.

- Installation and terminations of direct buried (wire armoured) fibre optic communication cable. Installation will include direct buried spliced kits, terminations within each FOBOT.

- Installation and testing of all other items necessary for the completion of the works as detailed in this document, drawings, specifications, and pricing schedules.

Separable Portion 3: Construction Water Pumping & Pipeline Supporting Infrastructure

The Separable Portion 3 (SP3) Works can be broadly defined as the installation and testing of new bore pumps, bore headwork fit out, pigging systems and booster pumping station and various above ground structures and equipment along the pipeline, including but not limited to earthworks, concrete foundations, headworks piping, pigging stations, structural steel and cladding, water balance tank, surge vessels, water transfer pumps, diesel storage tanks, diesel day tanks, diesel generators, valves, instrumentation, electrical kiosk, MCCs and the electrical fit out of the various locations and facilities.

Installation of the Works includes but not limited to the following:

- Establishment and disestablishment of temporary yard/s, laydown, and facilities (including earthworks and fencing where necessary) for use by the Contractor.

- Survey and setting out the Works.

- Material management including material handling and transportation to work fronts in accordance with Project Procedures and Specifications.

- Installation of a bulk earthwork pads at the various locations including bore field production bores, booster station including fenced compounds and other locations as detailed, establishment of borrow locations including winning, hauling, conditioning, placement, compaction and testing of fill materials. Supply and installation of security fencing including lockable personnel and vehicular access gates.

- Supply and installation of concrete slabs and footings to the various locations and facilities including bore pump headworks, pigging systems and booster pump station. Supply of all bar bending schedules. Supply and installation of concrete including treated water, aggregates, cement, testing, rebar, mesh, holding down bolts, cast-ins, conduits, earthing, valve pits, pit lids and chemset anchors and all other materials required for completion of the concrete installation.

- Installation of steel frame booster pump station building, including erection of structural steel, grouting, crane support structures, purlins, girts, roller doors, access doors, frames, windows, vents, louvers, cladding, trimmings, seals, and all other components necessary for the installation of the building.

- Installation of submersible bore pumps into existing lined production wells within the Fan Sediment Borefield, including fabrication, installation and testing of headworks piping, pipe supports, valves, pigging stations, diesel generators, diesel storage tanks, MCC, control panels, instrumentation, all power and control cables, and all other items necessary for the complete installation of the bore headworks, borefield systems and pigging systems necessary for the completion of the Works.

- Installation and fit out of the booster station including but not limited to the installation of transfer pumps, tanks, runway trolley and chain block, diesel day tank, diesel storage tank and temporary power gensets, grouting and all hold down bolts.

- Fabrication, installation, and pressure testing of all above ground piping and piping related items including but not limited to pipe supports, valves and instrumentation at the necessary for completion of the Works.

- Installation and testing of all electrical equipment, instrumentation and communications as required for the completion of the Works including but not limited to; power supplies, free issued items, diesel driven gensets, switchroom/s housing main switchboard/MCC, L&SP DB, VSD, PLC, FOBOT and HVAC, control panels, small power, lighting, GPOS, earthing, main low voltage cables, fibre optic cables, diesel day tanks, self-bunded diesel storage tank complete with pipework, valves and instrumentation, area lighting and local lighting.

- Installation and testing of all other items necessary for the completion of the works as detailed in this document, drawings, specifications, and pricing schedules.

2.1.1 Surveying and Setting Out the Work

The Contractor shall be responsible for all surveying related to the Scope of Works. The Contractor must appoint a qualified and certified surveyor to supervise all survey and setting out for the Works. Any re-work resulting from incorrect Contractor surveying or setting out shall be at Contractor's cost.

The Company will establish the location of permanent benchmarks / monuments for the Site. The Contractor is responsible for providing all other survey for the construction of the Work from datum's established by the Company. The Contractor shall verify existing benchmarks provided by the Company prior to commencing the Work. Discrepancies in existing benchmarks shall be noted and forwarded to the Company prior to continuing survey. Mapping accuracy may require adjustments to the lines and elevations shown on the drawings to account for actual field conditions.

Any additional survey control installed by the Contractor shall be completed to the appropriate standards for survey control. The nominated grid datum for the survey is:

- UTM 41 North – WGS84

The Contractor shall perform survey work with the understanding that Work shall be measured and paid in accordance with Schedule 5 of the Schedules.

It is the Contractor's responsibility to periodically verify all points and elevations marked to assure that they have not been disturbed. The Contractor is responsible for protection of its survey work, and any rework required shall be at the Contractor's own time and cost.

The Contractor is responsible for replacement of any points, markers, and monuments (including those placed by others) disturbed by the Contractor's Work in preparing and developing the Site.

The Contractor shall perform the initial survey to establish existing Site conditions for the purposes of measurement and payment of clearing and topsoil strip. The initial ground survey must be provided to the Company for review and approval within 48 hours. If modifications to the control survey plan and additional surveys are required, the Contractor shall be responsible for full implementation of the modifications.

A post-topsoil strip survey shall be conducted to establish the Digital Terrain Model (DTM). The DTM will be submitted to the Company on a progressive basis for review and approval within 7 calendar days. Once the DTM is agreed, this will form the basis of measurement for earthworks quantities as detailed in Section 2 Schedules.

Surveys for quantity measurement shall be conducted by the Contractor during the progress of the Work and the Company shall complete checks on the survey at various times during the Work.

The Contractor, in planning and scheduling of the Work, shall allow sufficient time for the performance of such surveys and for resolution of any disparity with the authorisation to proceed with the Work on the Site.

The Contractor is responsible for reviewing existing drawings and facilities and locating existing underground utilities prior to performing any excavation. These utilities shall be adequately marked to provide visual location by earthmoving equipment operators. The Contractor shall mark the location on the Site drawings of all utilities found and not shown on the Site drawings. A copy of these drawings shall be forwarded to the Company.

The Contractor is responsible for providing survey data to verify the measurement of quantities for progress payments and final measurement.

Verification by the Company shall not in any way relieve the Contractor's responsibility for surveying and setting out the Work, nor any re-works resulting from incorrect surveying or setting out.

2.1.2 Site Preparation

The Contractor shall be responsible for the establishment of site facilities and laydown area including offices, accommodation, ablutions, messing facilities, construction water storage with pump and standpipe. The Contractor shall be responsible for the construction and maintenance of temporary construction access roads to enable the construction activities in accordance with the construction program. Temporary construction roads will be in accordance with the requirements identified in Item 2.2.6 of this document.

2.1.3 Bulk Earthworks and Trenching

The Contractor shall be responsible for examining the drawings and specifications to determine the full extent of the Works.

The Works includes the following, as detailed below:

a. Bulk and detailed earthworks including foundation preparation and trenching, cut to fill or stockpile, load, haul, condition, place, compact and shape to design levels and grades.

b. 'Cut to fill' mass balance management and work front management so as to allow Work to be performed productively.

c. Trenching activities for the pipeline including clearing, excavation, bedding, backfilling, and compaction.

d. Borrow pit development and management.

e. Subgrade preparation under pavements.

f. Subbase to pads installed to relevant specification including winning of material from borrow or cut, load, haul, condition, place, compact and trim to levels and grades.

g. Basecourse to pads installed to relevant specification including winning of material from borrow or cut, load, haul, condition, place, compact and trim to levels and grades.

h. Site drainage management.

i. Material management including material handling, grading, sizing, and selection activities, as well as segregation of material into types and removal and disposal of unsuitable material.

j. Materials testing on Site.

k. Stockpile management, including creation of interim stockpiles, as required by the Contractor.

l. Liaison with the Company appointed Site Geotechnical Engineer for inspections and sign off.

m. Drill and blasting activities, as required.

n. Supply and installation of culverts including excavation, bedding, pipe installation to grade and backfill to level.

o. Supply and installation of culvert end treatments including reinforced concrete headwalls and rock protection as shown on drawings.

p. Construction of drainage channels and drains to design levels and grades.

q. Trimming of embankment and cut batters to design levels and grades.

r. Erosion control and sedimentation control activities, including stone pitching protection.

Clearing and Grubbing

The Contractor shall be responsible for clearing and grubbing as referenced in the drawings and specifications. All spoil materials shall be hauled and disposed of at the locations designated by and in accordance with the Company's instructions.

Topsoil

The Contractor shall be responsible for stripping the Site of topsoil, excavating, hauling, and placing suitable fill material as necessary to obtain elevations and slopes as shown on the drawings, including hauling and disposal of excess material, as applicable. Topsoil, as it is removed, will be stockpiled in areas designated by the Company.

Borrow Pit Establishment and Rehabilitation

The Contractor shall be responsible for the development, management, and rehabilitation of borrow pits at the locations nominated by the Company. The Contractor is responsible for the testing and conformance of borrow areas and the provision of a Borrow Pit Management Plan for approval prior to the commencement of development activities.

The Contractor shall verify that there are adequate borrow areas and assigned areas for material stockpiles within or adjacent to the Work areas, to plan the appropriate methodology for economical movement of materials.

The Contractor shall request approval in writing from the Company for the use of alternate borrow areas and shall not proceed prior to obtaining written approval from the Company.

Foundation Preparation

The Contractor shall be responsible for the preparation of the existing ground to receive fill including scarifying, moisture conditioning and compacting. Should unsuitable material be identified the Contractor is responsible for notifying the Company to receive direction.

Bulk Earthworks

The Contractor is responsible for obtaining excavation permits to meet the Company's requirements. No excavation shall commence until excavation permits have been formally approved by the Company.

The Contractor shall be required to provide all material handling equipment to efficiently load, haul, place, stockpile, moisture condition, compact and grade earthworks in order to satisfactorily complete the Work.

Work shall be planned by the Contractor in order to optimise use of the appropriate earth materials. Under no circumstances will the Contractor seek additional compensation for having to overhaul materials due to inappropriate planning or other unforeseen circumstances.

The Contractor shall review the drawings to determine the most practical area for staging of suitable material for use as fill including common fill and pavement materials identified on site. The locations and size of these areas shall be subject to prior approval by the Company.

The Contractor is responsible for providing all equipment to obtain compaction, including water trucks and water as required to moisten the fill materials for dust control and to obtain the specified moisture content for compaction purposes.

The Contractor shall not proceed to use alternate compaction equipment as outlined in the specifications prior to obtaining written approval from the Company.

The Contractor shall undertake the following earthworks, including but not limited to:

a. Cut or fill as necessary to provide correct subgrade elevations and grades for the earthworks pad, roads embankments and structures.

b. Haul and dispose of excess materials at locations designated by the Company.

c. Borrow to fill as necessary to provide correct subgrade elevations and grades for the earthworks pad, roads embankments and structures.

d. Trimming of cut and fill batters to achieve specified level and grade tolerances. The embankment shall be overfilled and cut back on completion to ensure batters are compacted.

e. Excavation and trimming of drains within the bulk earthworks pad areas.

The Contractor is responsible for all necessary shoring required to complete the Work. Shoring methods used by the Contractor shall be subject to review by the Company for verification of compliance with Project safety requirements.

Unsuitable Material

Where unstable subgrade conditions are encountered and the material is unsuitable for compaction, the Contractor shall obtain written approval from the Company prior to the removal of unsuitable material. The Contractor will not be compensated for extra material removed without prior approval from the Company. Following the removal of unsuitable materials, the Contractor shall win, load, and haul suitable material and place where unsuitable material was removed. Suitable material shall be placed in accordance with the specifications.

All unsuitable material will be disposed of at the location designated by and in accordance with the Company's instructions.

Subgrade Preparation

The Contractor shall be responsible for the preparation of the cut surfaces and embankment fill areas to receive pavement materials including scarifying, moisture conditioning and compacting.

Should unsuitable material be identified the Contractor is responsible for notifying the Company to receive direction.

The Contractor shall trim subgrade to design levels and grades in accordance with the specified tolerances for earthworks or roadworks.

Erosion and Sediment Control

The Contractor shall be responsible for the detailed design, installation, maintenance and removal of temporary erosion and sediment control and surface water management structures in accordance with the drawings and specifications.

The Contractor shall submit the detailed design deliverables to the Company for approval and shall not proceed with supply and installation Work until the Company has approved the detailed design.

The Contractor shall be responsible for supplying and installing sediment and erosion control materials such as erosion sediment control structures, silt fences, straw bales, geotextile fabrics, gabion baskets, and similar.

The Contractor shall install all temporary erosion control and sedimentation control material during the installation period as and when required to ensure no water tributaries are affected and to prevent the suspended solids levels from exceeding required levels. The Contractor shall be responsible for the removal (and delivery to the nominated disposal area) of all temporary erosion control material as directed by the Company.

The Contractor shall be responsible for maintaining erosion and sediment control measures for specified use, during Site preparation and development.

The Contractor shall rehabilitate and revegetate temporary works and disturbed areas.

Surface Water and Groundwater Control

Except for the probable location of permanent structures, specific surface and groundwater control measures have not been included on the drawings. However, surface water and groundwater control techniques shall be implemented and maintained at all times to minimise damage and delays to the Work (including borrow areas) during and after construction. The Contractor shall be responsible for the removal and rehabilitation of temporary control measures.

The Contractor shall be responsible for supplying and installing all surface water and groundwater control materials and equipment, such as pumps, pipes, and similar.

The Contractor shall coordinate the excavation, backfill and compaction to maintain acceptable drainage of the Site and keep reusable materials staged properly to avoid saturation.

Drainage and Diversion Channels

Stormwater drainage and diversion channels will be constructed by the Contractor at multiple locations as shown on the drawings.

Channel sections are to be unlined and/or lined with rock pitching in accordance with the drawings and specifications.

The Contractor shall be responsible for the supply and installation of stone pitching.

Culverts

The Contractor is responsible for the supply and installation all necessary culverts for drainage as shown on the drawings and in accordance with the specifications. The Contractor is responsible for the supply and placement of any cement stabilised backfill and bedding material as shown on the drawings and in accordance with the specifications.

The Contractor shall supply and install all necessary materials for headwalls including but not limited to; formwork, reinforcing bar, concrete & puddle flanges for HDPE culvert pipe connection to headwall. The Contractor shall also be responsible for end treatment riprap, grouted rock pitching, as shown on the drawings and in accordance with the specifications.

Subbase

The Contractor is responsible for locally winning conforming subbase material from site, stockpiling at a suitable location as necessary and agreed with the Company.

The Contractor is responsible for the load, haul, conditioning, testing, placement, and compaction of the subbase to the design levels and grades and to the specified tolerances for minimum layer depth, shape, and width.

Any deviation from material specification will need to be proposed by the Contractor for Company review and approval 72 hours prior to use.

Any imported subbase material must be pre-approved by the Company's appointed Geotechnical Engineer for compliance with the specification, prior to delivery to Site.

Basecourse

The Contractor is responsible for locally winning conforming basecourse material from site, stockpiling at a suitable location as necessary and agreed with the Company.

The Contractor is responsible for the load, haul, conditioning, testing, placement, and compaction of the basecourse to the design levels and grades and to the specified tolerances for minimum layer depth, shape, and width.

The basecourse for pads is to be free of ponding.

Any deviation from material specification will need to be proposed by the Contractor for Company review and approval 72 hours prior to use.

Any imported basecourse material must be pre-approved by the Company's appointed Geotechnical Engineer for compliance with the specification, prior to delivery to Site.

Detailed Earthworks

The Contractor is responsible for the construction of facility and building earth pads to levels, lines and grades shown on the drawings, inclusive of winning suitable material from designated borrow areas, loading, hauling, placing, spreading, levelling and compaction as necessary.

Any deviation from material specification will need to be proposed by the Contractor for Company review and approval 72 hours prior to use.

Detailed excavation to reduced levels, lines and grades and compaction as necessary for the construction.

Any imported selected fill material must be pre-approved by the Company's appointed Geotechnical Engineer for compliance with the specification, prior to delivery to Site.

Consumable Materials

The Contractor shall supply all consumable materials other than those specifically excluded in the Scope of Work.

In particular, but without limitation, consumable items that are to be supplied by the Contractor include waterproof membranes, concrete and steel pipes, and other items as indicated on the drawings and specifications.

2.1.4 Concrete Supply and Installation

The Contractor shall be responsible for examining the drawings and specifications to determine the full extent of the Works.

The Works includes the following, as detailed below:

- Surveying and setting out of the Works
- Detailed Earthworks
- Plastic Liners and Waterproof Membranes
- Formwork and Falsework
- Steel Reinforcement Materials
- Concrete
- Cast-in Items
- Holding Down Bolts
- Electrical Conduit
- Bollards
- Consumables

Detailed Earthworks

The Contractor shall undertake detailed excavation to reduced levels, lines and grades and compaction as necessary for the construction of reinforced concrete footings, foundations, slabs, and other concrete structures.

The Company will nominate borrow source locations for the Contractor to borrow structural fill materials for backfilling, placement, and compaction of structural fill around concrete structures.

The Contractor shall undertake backfilling with suitable material and compaction around completed Works, grading to lines and levels.

The Contractor shall undertake removal and disposal of excess soil and waste material to a location nominated by the Company within a radius of 5 km from the Treatment Plant Site.

Testing of the level of compaction shall be performed by the Contractor. Compacted fill which does not meet requirements of the specifications shall be reworked, and all cost and time effects associated with removal, replacement and re-compaction shall be borne by Contractor.

Plastic Liners and Waterproof Membranes

The Contractor shall supply and install plastic liners and waterproof membranes in accordance with the drawings and specifications. The Contractor shall protect the plastic liners during placement of steel reinforcing, conduits, block outs, cast in items and concrete.

Ring Beam Drainage

The Contractor shall supply and install the ring beam drainage items in accordance with drawings, specifications, and the manufacturer's drawings, specifications, and recommendations, including:

a) Cast in waterstops and drainpipes;

b) Supply and mixing of sand and waste oil to produce oil impregnated sand;

c) Installation and compaction of backfill;

d) Supply and installation of HDPE liner/membranes, including extrusion welding of liners to drainpipes and waterstops. The Contractor is responsible for the supply of extrusion welding equipment, consumables, and competent HDPE poly welding expertise;

e) Supply and installation of geotextile filter fabric and steel bands for drainpipes; and

f) Supply, installation and compaction of stone drainage material and/or oil impregnated sand.

Formwork and Falsework

The Contractor shall supply and install all formwork and falsework to support concrete. Formwork and falsework panels shall be at least 19mm thick and plastic faced. The Contractor shall provide properly engineered design calculations and sketches for formwork and falsework to the Company Representative for approval at least seven working days prior to pouring the concrete. The submission of the designs and the Company Representative's approval of the same shall not relieve the Contractor of its responsibility for the suitability of the formwork and falsework.

The Contractor shall allow for stripping of formwork and falsework, transport and disposal off Site or re-use.

Where required, the Contractor shall erect scaffolding to provide appropriate access to carry out the Works. At no stage during construction shall the Contractor rely on backfill that has been nominated to be installed by the Company Representative or others to provide access to the Contractor's work areas.

Concrete Reinforcement Materials

The Contractor will supply all steel reinforcing bar in straight stock lengths and wire fabric mesh in stock sheets required for the Works.

The Contractor shall transport and unload all reinforcing steel and wire mesh to the Contactors laydown area or to the Contractor's bar bending and wire mesh cutting facility.

The Contractor shall cut and bend all reinforcing steel and wire mesh in accordance with the bar bending schedules sourced by the Contractor to the applicable specifications and standards. Bending of reinforcing steel, where there is an omission or error on the bending schedule shall be at the Contractor's risk.

The Contractor shall place and fix all reinforcing steel and wire mesh. The Contractor shall supply and install all supports required to position reinforcement such as chairs (including purpose made chairs), blocks, spacers, tie wires and similar.

Indicative reinforcement quantities should be allowed for as follows, unless noted otherwise on the drawings:

- Ground Slabs < 300 mm thick - 60 kg/m³
- Ground Slabs / Rafts > 300 mm thick - 95 kg/m³
- Minor Equipment Pedestals < 50 m³ - 70 kg/m³
- Major Equipment Pedestals > 50 m³ - 75 kg/m³
- Major Equipment Rafts > 50 m³ - 75 kg/m³
- Pad Footings and Pedestals - Large > 2m³ - 70 kg/m³
- Pad Footings and Pedestals - Small to Medium < 2m³ - 60 kg/m³
- Strip Footing / Pedestal 60 kg/m³
- Kerbs < 500 mm thick 60 kg/m³
- Walls < 250 mm thick 70 kg/m³
- Walls 250-600 mm thick 150 kg/m³

- Bund Walls > 500 mm high 60 kg/m³
- General Plinth 70 kg/m³
- Bollards 100 kg/m³

Concrete

The Contractor shall establish a batching plant that will enable the Contractor to be completely self-sufficient with respect to the supply of concrete for the Works. The location of the batching plant shall be nominated by the Company.

All reinforced concrete shall have a characteristic compressive 'cylinder' strength at 28 days of F'c= 32 MPa unless noted otherwise on the design drawings. Blinding and mass concrete shall have a characteristic compressive ‘cylinder’ strength of F’c=15 MPa.

The Contractor shall supply all feed constituents, including cement, sand, aggregates, and additives (as required), for the production of concrete. (Tenderer to submit with its tender submission information for the proposed feed constituents (i.e. supplier’s name, supplier’s location, transport distance to Site, relevant material properties, supply cost and similar)).

The Contractor shall submit test results for sand and aggregate to the Company for approval prior to delivering it to Site for use in production of concrete.

The Contractor shall ensure that the onsite batching facility including batch plant, cement supply and storage facilities, stockpiled sand and aggregate, loaders and agitator trucks are capable of batching and delivering structural concrete to meet the Contract construction schedule and major pours. The Contractor shall implement a remedial solution to the Company's satisfaction to ensure continuous concrete production in the event the batching plant experiences production issues and/or a breakdown.

Concrete shall be mixed to the approved mix designs in accordance with the specifications. The Contractor shall submit concrete mix designs for all concrete strengths nominated on the drawings and specifications, in which the unit quantities of sand, aggregate and cement, as well as the water to cement ratio are listed and provided to the Company for approval at least seven working days prior to mixing of concrete.

Concrete mix trials shall be undertaken by the Contractor based on the Company approved mix designs. Test results of the concrete mix trials must be approved by the Company prior to any concrete pour, in accordance with the specifications.

The Contractor shall deliver the concrete to carry out the Works. This shall include but not be limited to the delivery of blinding and structural concrete from the Contractor's batching plant to the general area of placement, via concrete mixing trucks and concrete pump trucks, where required. The Contractor shall be responsible for delivery of the concrete to the actual pour location by kibble, pump or other means, and installation of the concrete in accordance with the drawings and specifications.

The Contractor shall install blinding concrete to provide a sound working base for foundations, as and where required at the discretion of the Company before the main concrete pour.

The Contractor shall submit a 24 hours' notice for the Company to inspect the Works prior to commencing any concrete pours.

The Contractor may be required to provide to concrete to others performing works on the Project, as directed by the Company. This shall include but not be limited to the delivery of blinding and structural concrete from the Contractor's batching plant to the general area of placement, within a radius of 5 km of the batch plant location, via concrete mixing trucks and concrete pump trucks, where required. The Contractor shall be responsible for delivery of the concrete to the actual pour location by kibble, pump or other means, and installation of the concrete in accordance with the drawings and specifications.

The Contractor shall be responsible for the supply, operation, and reporting of quality control testing of the Works in accordance with the specifications and applicable testing standards. All testing is to be performed and costs borne by of the Contractor.

The Contractor is required to engage a suitably qualified and registered third party testing company to undertake all testing of the Contractor’s Works. The testing company must establish a testing laboratory on Site. (Tenderer to submit details of its proposed third-party testing company in Schedule 7 of Section 2 Schedules).

During the weekly contractor coordination meetings, the Contractor shall submit for review by the Company a four week (minimum) forecast for the planned pouring of concrete to meet the Contract construction schedule.

Cast-in Items

Cast in items shall include any mild steel items designed to be cast into concrete as shown on the drawings.

The Contractor will supply all cast in items shown on the drawings.

The Contractor shall place and fix all cast in items in accordance with the drawings and specifications.

Holding Down Bolts

Holding down bolts shall include all bolts designed to be cast into concrete as shown on the drawings.

The Contractor will supply all holding down bolts as shown on the drawings.

The Contractor shall place, fix, and cast in all holding down bolts in accordance with the drawings and specifications.

Electrical Conduit

The Contractor shall bend and install all embedded and under slab electrical conduit in accordance with the drawings and specifications. Electrical conduit bends shall be long radius.

Bollards

The Contractor shall supply and install bollards in accordance with the drawings and specifications, including the supply of all necessary materials, excavation, and provision of concrete for the encasement to the foot of bollard, concrete fill to the bollard pipe, grouting under base plate where required, and detail paint finish and touch up painting after erection.

Consumable Materials

The Contractor shall supply all consumable materials other than those specifically excluded in the Scope of Work.

In particular, but without limitation, consumable items that are to be supplied by the Contractor include waterproof membranes, additives, concrete pipes, mastic, bitumen impregnated filler compounds, concrete expansion joints filler materials, water stops, polystyrene block outs, joint sealants, and other items as required by the specifications and drawings.

The Contractor shall determine the full extent of the Works.

2.1.5 Structural Installation

The type, quantity, and location of structural steelwork to be assembled and installed is identified in the drawings provided. Structural steelwork shall be assembled and installed in accordance with the drawings and specifications.

The Scope of Works for structural steelwork installation shall include, but is not limited to:

a. Unloading of structural steelwork, from transport vehicles, at the Company's Site laydown area.

b. Loading of structural steelwork at Company's Site laydown area, delivery, and off loading at the installation area.

c. Pre-assembly of structural steelwork on Site, to the maximum extent possible to minimise the necessity for working at heights.

d. Verification of foundation levels, scabbling of concrete pedestals and cleaning of all hold-down bolts, including block-outs, prior to structural steelwork installation and grouting.

e. Installation of structural steelwork to the final locations for process plant buildings, platforms, frames, support structures, stair stringers, walkways, equipment supports, crane rails, conveyor trestles, trusses and low level modules, bends, including the installation of all attached and loose fabricated items together with all ancillary items including bracing, grating, stair treads, handrails, kickplate, guards, grid mesh, floor plate, mezzanine floor permanent forms, vertical ladders, safety and security mesh, nuts, bolts and washers and the like as per the drawings.

f. Installation of all architectural materials including but not limited to purlins, girts, wall and roof sheeting including natural lighting systems, insulation, roof plumbing, doors, flashings, filler strips, capping's, vents, louvres, safety and/or security mesh, roof drainage, associated ancillary items, sheeting fasteners and the like as per the drawings.

g. Supply and installation of all mild steel packers and stainless-steel shims to ensure the elevations of the Works to the required tolerances.

h. Installation of all bolts required for the assembly and fixing of steelwork.

i. Installation of all bolts and interface fasteners required for fixing and mounting of steelwork to supports and foundations.

j. Supply and placing of grout in accordance with the drawings, specification, and manufacturer's recommendations to underside of all base plates and individual equipment items mounted on concrete. The Contractor shall ensure that the baseplates shall drain freely after grouting. All suspended slab floor columns shall be grouted prior to pouring of the slab by others.

k. Supply, installation and removal of temporary supports as deemed necessary by the Contractor during the installation, and removal of these supports after the installation has been completed.

l. Performing quality tests (non-destructive testing) on Site welds in accordance with the specifications.

m. Touching up of paintwork, and quality testing of said touch up, on structural steelwork, handrail, kickplate, guards, mesh, ladders, grating and flooring damaged during transport to Site and/or installation in accordance with the specifications, standards and to the satisfaction of the Company Representative.

2.1.6 Platework Installation

Platework shall be assembled and installed in accordance with the drawings and specifications.

The Scope of Works for platework installation shall include, but is not limited to:

a. Unloading of platework, from transport vehicles, at the Company's Site laydown area.

b. Loading of platework at Company's Site laydown area, delivery, and off loading at the installation area.

c. Pre-assembly of platework on Site to the maximum extent possible to minimise the necessity for working at heights prior to installation in final location.

d. Verification of foundation levels, scabbling of concrete pedestals and cleaning of all hold-down bolts, including block-outs, prior to platework installation and grouting.

e. Installation of platework and shop fabricated items including hoppers, chutes, bins, and the like as detailed in the Mechanical Equipment List and as shown on the drawings including the installation of all attached and loose fabricated items together with all ancillary items such as chain curtains, rubbers, wheels and the like.

f. Installation of liner materials as noted on the drawings.

g. Installation of ductwork which will be supplied in flanged sections only.

h. Field weld preparation, welding, cutting, and drilling, i.e. fitting of platework and ancillary items required in accordance with the drawings and specifications.

i. Supply and installation of all mild steel packers and stainless-steel shims to ensure the elevations of the Works to the required tolerances.

j. Installation of all bolts required for the assembly and fixing of platework.

k. Supply, installation and removal of temporary supports as deemed necessary by the Contractor during the installation, and removal of these supports after the installation has been completed.

l. Supply and installation of all consumables and other fixing devices, necessary to install, position and secure all items.

m. Touching up of paintwork and quality testing of said touch up, on all platework items damaged during transport to Site and/or installation in accordance with the specifications, standards and to the satisfaction of the Company Representative.

2.1.7 Tank Installation

Tanks will be supplied as bolted type for site assembly or fully fabricated single piece units as nominated on the drawings and documentation.

The Scope of Work includes but is not limited to:

a. Loading of tank materials at Company’s Site laydown area, delivery, and off loading at the installation area.

b. Pre-assembly of tankage material on Site to the maximum extent possible to minimise the necessity for working at heights prior to installation in final location.

c. Verification of foundation levels, scabbling of concrete pedestals and bases and cleaning of all hold-down bolts, including block-outs, prior to tank installation and grouting.

d. Installation of tanks including weld preparation, welding, cutting, drilling, bolting, and fitting of external and internal ancillary items such nozzles, launders, weirs, baffles, overflow boxes, rubber lining and pipes, stiffeners, and all other items as shown on the drawings and in accordance with the specifications.

e. Supply and installation of all mild steel packers and stainless-steel shims to ensure the elevations of the Works to the required tolerances.

f. Installation of all bolts required for the assembly and fixing of tanks.

g. Installation of all bolts and interface fasteners required for fixing and mounting of tanks to supports and foundations.

h. Installation of bitumen board (Cellflex).

i. Supply and installation of consumables and other fixing devices, necessary to install, position and secure all items.

j. Surface treatment to completed tanks (where required), which shall be performed in accordance with the drawings and specifications including final surface treatment and touch ups on Site. Blasting and painting work is required to be planned to minimise the interference with other trades. The Contractor shall take all necessary measures to protect from blasting and painting overspray.

k. Nomination of suitable paint types for the Works, with consideration to Company specifications provided. Paint datasheet(s) for the nominated paint shall be provided to the Company for review and approval prior to supply and use by the Contractor. The Contractor shall allow for all handling and transport costs associated with surface treatment.

l. Supply, installation, surface preparation (if required) external (topcoat only) and internal (if required) surface treatment of all ancillary items (e.g. manholes) necessary for completion of the Works outlined on the drawings and in the specifications.

m. Installation of insulation.

n. Installation of any necessary signage and labelling (e.g. stencilled equipment number) required on tanks, as directed by the Company.

o. Supply and installation of all temporary supports as required by the Contractor during the erection and removal and grind smooth of these supports after the erection has been completed. Weld spatter and slag shall be removed without compromising the integrity of the parent material.

p. Vacuum box testing of all floor plate welds in accordance with the specifications.

q. Leak Testing and Non-Destructive Testing in accordance with the specifications.

r. Submission of welder qualifications for all Welders undertaking the Works in accordance with the specifications.

s. Hydrostatic testing of all tanks shall be carried using construction water supplied by the Company in accordance with the specifications.

t. Emptying the tanks to a storage location nominated by the Company. All equipment and materials required for filling and draining of the tanks shall be the responsibility of the Contractor.

u. Testing and commissioning.

2.1.8 Mechanical Equipment Installation

The type, quantity, and location of mechanical equipment items to be installed are defined in the Mechanical Equipment List, Pricing Schedule and on the drawings. Mechanical items will be supplied by the Company packed in various stages of assembly. The Contractor shall be responsible for examining the drawings and the specifications to determine the extent of work involved in installing mechanical equipment items.

The Scope of Works for mechanical equipment installation shall include, but is not limited to:

a. Unloading of mechanical equipment, from transport vehicles, at the Company's Site laydown area.

b. Loading of mechanical equipment at Company's Site laydown area, delivery, and off loading at the installation area.

c. Removal of any stops, retainers, packers and the like that have been installed for transportation purposes.

d. Verification of foundation levels, scabbling of concrete pedestals and cleaning of all hold-down bolts, including block-outs, prior to mechanical equipment installation and grouting.

e. Lifting, placing, cleaning, and fixing pre-assembled mechanical equipment to concrete and/or steel support structures.

f. Assembly of mechanical equipment requiring on Site assembly in line with the manufacturer's recommendation, lifting, placing, cleaning and fixing to concrete and/or steel support structures.

g. Removal of drive guards and decoupling the electric motor from the drive train such as removing drive belts or unbolt couplings and reinstating same correctly aligned after motor rotation checks. Coupling alignment checks and adjustments on all couplings between electric motors and pumps shall be confirmed within the specified tolerances both with pipes attached and pipes unattached (pipe-on, pipe-off).

h. Protection of mechanical equipment and concrete surface coatings where these are likely to be damaged during execution of the Works. The Contractor is responsible (at its cost) for rectification of damage caused by the Contractor during execution of the Works.

i. Supply, installation and removal of temporary supports as deemed necessary by the Contractor during the installation, and removal of these supports after the installation has been completed.

j. Supply and use of torque wrench to confirm that bolt torques are in line with the manufacturer's requirements complete with calibration certificates and as directed by the Company Representative.

k. Installation of all minor items necessary to complete the Works, including name plates and suitably sized and rated tubing and fittings from lubricating points on mechanical equipment to an accessible position in instances where safety guards need to be removed or equipment is inaccessible for routine maintenance.

l. Supply and installation of all mild steel packers and stainless-steel shims to ensure the elevations of the Works to the required tolerances.

m. Installation of all required interface fasteners, masonry anchors and chemical anchors.

n. Supply and installation of all consumables and other fixing devices, not cast-in the concrete structures, necessary to install, position and secure all items.

o. Supply and installation of grout for mechanical equipment as per the drawings, specifications, and OEM recommendations.

p. Plumbing and levelling of the Works in accordance with the specification, drawings, and manufacturer's recommendations.

q. Degreasing and cleaning of all equipment supplied with temporary surface protection for corrosion protection during transport.

r. Application of and subsequent removal of all flushing greases, lubricants, and hydraulic fluids prior to the commencement of commissioning with Company supplied fluids.

s. Application of all first fill equipment with grease, lubricants, and hydraulic oils prior to commencement of commissioning with Company supplied fluids.

t. Pre-commissioning of all mechanical equipment in accordance with the drawings, specifications, and manufacturers recommendations.

u. The provision of all test results including equipment alignments, crane deflection tests, temperature and vibration test results, pre-commissioning check sheets and the like associated with pre-commissioning and 'No-Load' Commissioning.

v. Provision of all labour, supervision, equipment, and materials necessary for 'No Load' Commissioning. The "No Load Commissioning" means that the Contractor ensures that everything has been installed to meet specifications and testing procedures (e.g. drive alignments, hydro testing of pipes, tank leak tests, etc.).

w. Checking the alignment of all mechanical components (e.g. drive trains and other rotating equipment) prior to 'No Load' commissioning of the plant.

x. Touching up of paintwork, and quality testing of said touch up, on all mechanical equipment items damaged during transport to Site and/or installation in accordance with the specifications, standards and to the satisfaction of the Company Representative.

y. Provision of assistance for wet commissioning which shall be carried out on daywork rates.

z. Engaging services of mechanical equipment vendors as required to assist the Contractor in assembly and installation.

aa. Certification of all gantry cranes, portal cranes, chain blocks, davits, hoists, and trolleys in accordance with local government requirements. The Contractor shall include a price to engage a third-party inspector (e.g. Bureau Veritas / APAVE or a Company approved alternate) for certification of the following cranes and hoists:

Table 2.1

Equipment Number	Description
9126-HT-001	5 tonne gantry crane – Booster Pump Station

2.1.9 Pipework Fabrication and Installation

The Contractor shall be responsible for fabrication and installation to final location and testing of all piping, including buried pipeline and associated items as indicated on the drawings and P&ID's. Pipe will be supplied in stock lengths; the Contractor will be responsible for fabricating the required lengths as per the design drawings in order to complete the Works.

The Contractor shall determine the full extent of piping Works by reference to the P&IDs, piping drawings, specifications, and the Scope of Works.

The Contractor shall determine the extent and location of field welds and field fit welds to suit its preferred construction methodology as well as spool identification.

The Scope of Works for pipework shall include, but is not limited to:

a. Receipt and inspection of Company supplied pipework from the delivery trucks at Company's Site laydown area, loading of Company supplied pipework at Company's Site laydown area, delivery, and off loading at the installation area.

b. Processing, fabrication, assembly, installation and testing of pipe and fittings consisting of materials including carbon steel, Flexible hose and HDPE as shown on the drawings and specifications.

c. Fabrication, assembly, painting, installation and testing of auxiliary pipe and fittings in addition to the materials supplied by the Company as per Item 2.1.16 Company Supplied Materials and Equipment, as required to complete the Works in accordance with the drawings and specifications.

d. Installation of valves, special items and in-line instrumentation and all associated ancillaries.

e. Supply and installation of all pipes supports, including scabbling and cleaning of concrete, cutting, welding and similar, required to properly support Site run piping and/or valves.

f. Installation of all mild steel packers, stainless steel shims and grout where applicable.

g. Installation of miscellaneous associated piping materials including but not limited to bolts, nuts, washers, and hangers.

h. Supply and installation of miscellaneous associated piping materials including but not limited to bolt anti seize, thread tape, thread sealant and gasket lubricants.

i. Installation of miscellaneous associated piping materials including but not limited to U-bolts, stud bolts, gaskets and plastic pipe caps for all open-ended pipe and materials to protect flange ends.

j. Installation of pipe labels and pipeline markers.

k. Supply and installation of all required consumables and other fixing devices necessary to install, position and secure all items.

l. Supply and installation of temporary test spools, fasteners, and gaskets in place of all inline instrumentation and actuated / modulated valves for hydro testing. Spools shall be removed after completion of test and instruments shall be re-instated.

m. Touching up of paintwork, and quality testing of said touch up, on all pipe work items damaged during transport to Site and/or installation in accordance with the specifications, standards and to the satisfaction of the Company Representative.

n. Pre-commissioning of all piping, valves, and inline instrumentation, including flushing and cleaning of all pipe work, pressure testing or service testing and reinstatement of all piping in accordance with the specification. This shall include the provision of piping test packs and all test results and commissioning check sheets.

o. Pressure and service testing of all pipe work in accordance with the specifications, including the supply and installation of all temporary items and provision for the protection of all valves, instrumentation and fittings that could be damaged during flushing and testing. The Contractor shall collect, transport, and distribute all water required for testing purposes and return the water or dispose of it as directed by the Company.

p. Provision of all labour, supervision, equipment, and materials necessary for 'No-Load' Commissioning.

q. Supply of pipe cutting and facing equipment, pipe testing equipment and materials such as pipe, spades, fittings, blinds, hoses, pumps, bolts, flanges, pre-calibrated gauges and chart recorders, compressors suitable for pressure testing scope, pumps of sufficient capacity for line flushing, settling tanks adequate for drainage and storage of any hydro-testing and storage of hydro-test and flushing liquids, temporary spool pieces for pipe installation, temporary strainers for flushing and cleaning, temporary valves, plugs, spools for line cleaning / air blowing.

r. Installation of blind flanges at battery limits where a future connection will be required. After testing pipe is to be buried with a flagged stake indicating the end of the pipe.

s. Provision of assistance for wet commissioning which shall be carried out on day work rates.

2.1.10 Specials Installation

The Contractor shall be responsible for the installation of Company supplied 'Special' items listed in the Pricing Schedule which includes, but is not limited to stainless steel bandings, clamps, couplings, orifice plates, gaskets, hoses, hose fittings, tank level measuring devices, grease nipples, trolley wheels, shed roller doors, , shear blocks, foundry billets, springs, hinges, nozzlesand other such miscellaneous items indicated on the drawings or required in the specifications, and all associated ancillaries.

2.1.11 Electrical and Instrumentation Installation

The Contractor shall be responsible for examining the drawings, specifications, and battery limits to determine the full extent of the Works for each Separable Portion.

The Works includes the following, as detailed below:

a. High Voltage (HV), Low Voltage (LV), instrumentation and communications cabling installation.

b. Cable terminations including cable glanding and lugging.

c. Cable supports / ladder installation.

d. Instrumentation installation.

e. Electrical equipment installation.

f. Electrical field devices installation.

g. Lighting and small power including distribution boards, general area lighting General Power Outlets (GPO), and three phase outlets.

h. Earthing installation including ladder, structural and equipment bonding.

i. Fibre optic installation including terminations.

j. Trenching and installation of underground buried services.

k. Preservation of all Company Provided Items.

l. Testing and pre-commissioning

Cable

The Contractor shall install, test and pre-commission all cables as described in the cable schedules and in accordance with the schematic and termination diagrams including but not limited to joints, terminations, and consumables. The method of installation shall be as described on the cable schedule and drawings.

Cable Terminations

The Contractor shall terminate all HV, LV, control, instrumentation, earthing, data, fibre optic and communications cabling in accordance with the cable schedule.

The Scope of Work shall include but not be limited to the fibre optic splicing and installation of cable glands, shrouds, locknuts, lugs, core identification, termination kits, reducers, and cable identification markers.

Cable Ladder / Racks

The Contractor shall supply, transport to Site, and install all cable support system including cable ladders, cable racks and conduits.

The Scope of Work shall include but not be limited to the supply, transport to Site and installation of cable ladders / racks, cable ladder supports, steel conduits, associated bends, tees, risers, cable barrier, hangers, covers, splice plates, earthing bonds across cable ladders or tray joints, supporting brackets, hangers, fixing bolts, conduits bushes and support clips / saddles, and all necessary cable accessories to complete the Works. The Contractor shall 'Site run', fabricate, and install, (wherever necessary), suitable mechanical / structural supports for the electrical cable ladders.

Generally, the cable ladder / racks will be installed onto existing steel structures by means of a drill and bolt type installation. However, some ladder / racks installation will require minor supports to be installed by the Contractor. Where necessary, steel channels / angle bars shall be supplied, fabricated and installed by the Contractor for the supports.

Conduit shall include but not be limited to installation of brackets, fixings, fittings, bends, joiners, flexible conduit, and connectors.

Instrumentation

The Contractor shall install, test and pre-commission all field instrumentation in accordance with the instrument list, drawings, and cable schedule to complete the Works.

The Scope of Work shall include but not be limited to supply and installation of brackets, stands, sunshades, junction boxes, equipment labels, tube, fittings, tubing supports and loop checks.

Electrical Equipment

The Contractor shall install, test and pre-commission all electrical equipment stipulated in the electrical equipment list as "Contractor installed".

The Scope of Work shall include but not be limited to installation of Company supplied outdoor MCCs for remote pumping stations, field control panels, remote IO panels, field instrument junction boxes, brackets, fixings, and cable supports.

Where electrical equipment requires some Site assembly, the Contractor shall carry out the assembly (including bolt tensioning) in accordance with OEM specifications.

Switchrooms

The type, quantity, and location of switchrooms to be assembled / installed is identified on the drawings and pricing schedule provided. The switchrooms will be offloaded, unpacked, assembled, and installed in accordance with the drawings and specifications.

Prefabricated Switchrooms

The prefabricated switchrooms will contain the equipment to be installed inside the prefabricated switchrooms shown on the drawings, which shall be free issued by the Company to the Contractor for installation, testing and pre-commissioning as part of the Contractor's Scope of Work.

The Scope of Works for prefabricated switchrooms shall include, but is not limited to:

a. Loading of Company supplied equipment to be installed in the switchroom at the Company's Site laydown area, delivery, and off loading at the installation area, as and when required on Site.

b. Installation of Company supplied HV switchboards, Motor Control Centres (MCC), Variable Speed Drives (VSD) and soft starters, Auxiliary Power Supplies (APS), light and small power distribution boards, lighting, General Power Outlets (GPO), Air Conditioning (AC), communications, control cubicles and VESDA system in accordance with drawings and specifications.

c. Installation of cable support system including cable ladders and accessories, wall, and floor penetrations, where required, along with gland plates for cabling associated with switchroom equipment.

d. Installation of all inter-panels High Voltage (HV), Low Voltage (LV), control instrumentation, earthing, and communications cabling in accordance with the drawings and specifications.

e. Installation, termination and testing of earthing system including the main substation earth grid and equipotential bonds with associated earth bars in accordance with the drawings and specifications.

f. Testing and pre-commissioning all switchroom equipment and instruments installed under this Scope of Work by the Contractor.

Containerised Switchrooms

The containerised switchrooms shall be free issued by the Company. The containerised switchrooms will be supplied complete with Motor Control Centres (MCC), Variable Speed Drives (VSD), Auxiliary Power Supplies (APS), communications panel, and VESDA system pre-installed and ready for termination.

The Scope of Works for containerised switchrooms shall include, but is not limited to:

a. Installation, testing and pre-commissioning of the switchrooms inter panel wirings and air conditioning units.

b. Installation of cable support system including cable ladders and accessories, wall, and floor penetrations, where required, along with gland plates for cabling associated with switchroom equipment.

c. Installation, termination and testing of earthing system including the earth grid and equipotential bonds with the earth bars in accordance with the drawings and specifications.

d. Inspection and submission of a written confirmation to the Company that no damage has occurred during transportation of the switchrooms to Site. In the event of any defects being identified, the Contractor shall submit a written report providing details of the defect and recommendations for rectification.

e. Testing and pre-commissioning of all switchroom equipment.

Distribution Transformers

The distribution transformers including those for the remote pumping stations shall be offloaded, positioned, and installed by the Contractor.

The Scope of Work for distribution transformer installation shall include, but is not limited to the installation, termination and testing of HV and LV power, and earth cabling in accordance with the single line diagrams, schematic drawings, termination drawings and cable schedules.

Electrical Field Devices

The Contractor shall supply, transport to Site, install, test and pre-commission all electrical field devices stipulated in the equipment list and drawings as required to complete the Works.

The Scope of Work shall include, but not be limited to installation of local control stations, motor decontactors, field isolators, brackets, fixings, and minor cable supports.

Lighting and Small Power

The Contractor shall supply, transport to Site, install, test and pre-commission all lighting (including area lighting) and small power components required to complete the Work.

The Scope of Work shall include but not be limited to distribution boards, cables, light fittings, poles, brackets, foundations, trenching, cable supports, cable, cable ties, junction boxes, power outlets, cable glands, locknuts, lugs, core identification and cable identification markers.

Earthing

The Contractor shall supply, transport to Site, install, test and pre-commission earthing system and complete lightning protection components required to complete the Works.

The earthing and lightning protection systems include substation buried earth grids, running earth, lightning finials, down conductors, electrodes, earth bars as well as bonding to Process Plant, buildings, and equipment in accordance with drawings and specifications.

The Scope of Work shall include but not be limited to trenching, cable, cable supports, cable ties, earth connections, exothermic joints, earth bars, cable glands, locknuts, lugs, core identification and cable identification markers.

Where additional earthing is required to obtain the minimum required earth resistance, the Contractor will be required to undertake these Works.

Fibre Optic Cables

The Contractor shall be responsible for installation and termination of the Fibre Optic cables as per cable schedule and Project Design Documents. This shall include trenching, supply, and installation of all cabling accessories such as cable pits, glands, cable termination kits / connectors, labelling, numbering, supports and all other miscellaneous items required to complete the Works. The Contractor shall ensure that all cable penetrations are sealed to prevent dust ingress. The details of Fibre installation are listed below and shall be in accordance with the drawings and specifications.

The Contractor shall install and terminate the Fibre Optic cables as in accordance with the drawings and specifications as required to complete the Works.

Trenching

Contractor shall be responsible for excavation of all trenches and the complete installation of underground services. The excavation and installation shall be in accordance with drawings, specifications, and applicable standards.

The Scope of Works shall include but not be limited to:

a. Excavation of all trenches for installation of underground services.

b. Preparation of surface trench.

c. Supply and installation of conduits, pits, draw wire, back fill materials and sundries.

d. Excavation for earth cable and grids, including drilling or each earth electrodes.

e. Supply, installation and termination of earth cable, inclusive of pits, electrodes, connections, and underground enhancement materials.

f. Supply and installation of underground warning tape above services and concrete slabs above buried high voltage cables.

g. Supply and installation of route markers and signage.

h. Supply and installation of cable support system including cable ladders and accessories, wall and floor penetrations where required along with gland plates for cabling associated with switchroom equipment.

i. Backfilling and compaction testing.

j. Ensuring all underground services are surveyed before backfilling.

Testing and Commissioning

The Contractor shall carry out all testing and commissioning in accordance with the specifications including but not limited to point to point testing, insulation resistance testing, loop tests, and submit all tests results to the Company on completion of the Work.

The Contractor may be requested to provide wet commissioning assistance to the Company, which will be undertaken as a Contract Variation.

2.1.12 Welding

Welding and weld details shall be in accordance with the design codes nominated on the specific drawings, data sheets and specifications.

Qualification of Welding Supervisor

All welding shall be carried out under the supervision of a qualified welding supervisor. The supervisor shall be qualified to the relevant standard in accordance with the design drawings, data sheets and specifications.

Welding Personnel

The results of welder qualification test shall be submitted for approval by the Company Representative prior to mobilisation and must be within 1 year validity. Additionally, upon mobilisation each welder shall undertake a Site weld test in the presence of the Company Representative prior to commencing any Works. The Contractor shall keep a log of qualified welders and date of testing. All welder operator tests shall be checked for validity and approved by the Superintendent prior to any welding being permitted on the works.

Weld Preparation

Surfaces and edges to be welded shall be uniform and free from cracks, burrs, and other defects. All edges shall be cleaned and free of grease, oil, dirt, and other detrimental substances.

Alignment of Butt Welded Joints

Alignment tolerance of butt welded joints shall be to the satisfaction of the Company Representative having due regard to the procedure being employed.

Welding Consumables

Electrodes and filler wires for manual metal-arc welding shall comply with the applicable standard. Electrodes or filler wires for welding processes other than manual metal-arc welding shall comply with the applicable standard. Electrodes which do not comply with these standards may be used provided that they are qualified in accordance with the relevant standards.

Structural Steel Field Butt Welds

All field butt welds for structural steel and conveyor steelwork shall have 100% Ultrasonic Testing (UT).

Site Testing – Non Destructive Testing of Site Fabricated Tanks

In each case, the Contractor shall bear the total cost of inspection, repairs, and the additional tests required for rectification if weld quality does not meet the criteria, including any root defects.

For each and every weld test taken which indicates faults and/or imperfections requiring repairs, two additional weld tests shall be taken at the Contractor's expense, at locations selected by the Company Representative.

The following requirements shall be adhered to as a minimum:

a) 100% visual inspection of all welds.

b) Vacuum box testing of floor plate joints as specified in API 650.

c) 5% radiographic inspection of all vertical and horizontal welds unless notified otherwise.

d) Radiographic inspection of all vertical "T" joints.

An equal number of spot radiographs shall be taken from the work of each welder or welding operator.

A weld is considered to be unacceptable when any defect exceeds the level stated in the relevant standard.

All defects exceeding the above shall be removed by grinding from one or both sides of the joint as required and the joint re-welded.

On horizontal and vertical square butt weld wall joints requiring two passes, a spot check dye penetration test may be requested by the Company Representative after grinding out the first pass.

Upon successful completion of the test all the dye compounds must be thoroughly removed prior to welding the second pass. If the spot check fails, additional welds will be selected for checking until a satisfactory result is achieved.

The welds of the tank bottom plates shall be 100% visually inspected prior to vacuum testing, if deemed necessary by the Company Representative.

Non Destructive Testing – Site Fabricated Tanks.

Site testing shall include:

a) Unless otherwise stated in the specific Contract Specification, water for hydrostatic testing will be potable and available from a nominated location. The Contractor shall supply all necessary equipment, material, and labour for transferring water from the pond to the tanks and back.

b) Hydrostatic testing of the tanks shall be in accordance with API 650.

c) Paint coating testing shall be in accordance with Specifications.

Final Acceptance

All weld testing and corrective work that may be found necessary, shall be carried out prior to the final inspection. The inside and outside surfaces of the tank shall be vacuum cleaned and free from slag, scale, and oil. Any retesting that may be required as a result of the Contractor's errors or failure to meet test requirements shall be carried out at no cost to the Company. The Contractor shall give at least two working days notice of any intended test work.

Acceptance Test and Procedures

All tanks shall be inspected as follows before acceptance:

a) receipt of "as built data"

b) inspection of dimensions and manufacturing tolerances

c) inspection of tank bottom where applicable

d) inspection of welds

e) inspection of the welding records

f) hydrostatic testing where applicable

g) surface treatment

h) other inspections.

2.1.13 Work Excluded

The following are specifically excluded from the Scope of Work:

a) Company Supplied Materials and Equipment detailed in 2.1.16

b) Establishment of survey benchmark and base line.

c) Dust suppression outside the Contractor's designated Work areas.

d) Supply of construction water source.

e) All Works beyond the battery limits as per Item 2.1.14 'Battery Limits'.

2.1.14 Battery Limits

The battery limits for this Scope of Work shall be in accordance with the Agreement drawings. The battery limits are broadly defined as follows and shall be read in conjunction with the rest of this Scope of Work:

a) Separable Portion 1 – Construction Water Borefield Pipeline Installation

- First above ground flange to all the various locations (bores, pigging system, booster station etc.) between the production bores and the booster station.
- Fibre optic terminations (via the buried fibre optic cable) to all FOBOTs at the various locations along the pipeline between the production bores and the booster station.

b) Separable Portion 2 – Construction Water Transfer Pipeline Installation

- First above ground flange to all the various locations (pigging system, booster station, camp, process water dam etc.) between the booster station, camp tie in and process water pond tie-in.
- Fibre optic terminations (via the buried fibre optic cable) to all FOBOTs at the various locations along the pipeline between the booster station and, tie ins at the camp and process plant.

c) Separable Portion 3 – Construction Water Pumping & Pipeline Supporting Infrastructure

- First above ground flange to all the various locations (production bores, pigging systems, booster station, camp, process water dam etc.) between the production bores, booster station, camp tie in and process water pond tie-in including all electrical Works.
- All FOBOTs at the various locations (production bores, pigging systems, booster station, camp, process water dam etc.) between the production bores and, tie ins at the camp and process plant.

2.1.15 Contractor Supplied Materials and Equipment

The Contractor shall supply where required, transport to Site, install, test and pre-commission items required to complete the Works which shall include but not be limited to:

a. All other materials required for the completion of the works except equipment and materials listed in 2.1.16 Company Supplied Materials and Equipment.

b. All consumables required to complete the Works.

2.1.16 Company Supplied Materials and Equipment

The Company will supply or cause to be supplied the following 'free issue' materials and equipment to the Contractor for use in the Work:

a) Designated uncleared area of land for Contractor's temporary facilities.

b) Permanent survey monuments and/or benchmarks.

c) Structural steel and platework items except those stated as supplied by the Contractor.

d) Mechanical equipment’s items except those stated as supplied by the Contractor.

e) Piping items except those stated as supplied by the Contractor.

f) Valves items except those stated as supplied by the Contractor.

g) Special Piping & Mechanical Items except those stated as supplied by the Contractor.

h) Electrical, Instrumentation and Communications Materials detailed as follows except where specified as supplied by the Contractor;

i. All HV and LV cables including communication, control, instrumentation, lighting, and small power as nominated on the issued cable schedules.

ii. Cable ladder including accessories to the quantities shown on the issued Bill of Materials (BOM).

iii. Instrumentation including instrument tubing, fittings, control panels and pneumatic panels as nominated in the included instrument list. The control panels will be supplied complete with rain canopy / hood. All Company supplied free issued instruments will be supplied complete with all the necessary mounting accessories and hoop-up materials.

iv. All major electrical equipment and field devices including containerised switchrooms, HV switchgear, field isolators, generators, LV MCCs, transformers, switchboards, distribution boards, decontactors, variable speed drives, power factor correction unit, uninterruptable power supplies, battery chargers, PLC hardware, remote IO panels, fire detection panels, network panels, FOBOTs and CCTV system, as nominated on the issued electrical equipment list.

v. All lighting and small power fixtures, accessories and light poles to the quantities shown in the issued BOM.

j) Bolts, nuts, washers, and gaskets except those stated as supplied by the Contractor.

The Contractor shall take possession from the Company's stores or lay down areas and shall install all Company supplied materials and equipment in accordance with the manufacturer's recommendations. The stores / laydown areas will be located within the Site.

The Contractor shall supply all labour, cranage and equipment to load, transport, unload at the Work Site, unpack, check, assemble and install the Company supplied materials and equipment. Materials and equipment that are surplus to the requirements shall be packed; an inventory prepared and returned to the Company's stores / laydown areas.

The Contractor shall advise acceptance in writing to the Company and report discrepancies, breakage, or loss within 24 hours of handover of the materials and equipment. Failure by the Contractor to submit such advice within 24 hours of handover shall constitute acceptance by the Contractor of the materials and equipment in a complete and sound state. Upon acceptance of the materials and equipment, the Contractor shall be responsible for all losses and breakages.

Unless noted otherwise, the Contractor shall notify the Company a minimum of 48 hours prior to the intended pickup of Company supplied materials and equipment.

Company supplied materials and equipment will be surface treated and painted prior to delivery to Site. Construction damage to surface treatment by the Contractor during transport, handling, installation and/or erection shall be repaired or replaced by the Contractor at its own cost.

2.1.17 Site Access, Interface, and Cooperation with Others

Subject to the Company's approval of the Contractor submitted pre-mobilisation deliverables stipulated in Schedule 12 of Section 2 Schedules and provided the Contractor has submitted reasonable prior written notice to the Company, the Company shall give the Contractor access to the Site as and when required to enable the Contractor to perform the Work in accordance with this Agreement.

The Contractor does not have exclusive possession of the Site and must interface and cooperate with others, including but not limited to other contractors engaged by the Company to perform Work on Site, any service providers, the public and similar.

2.2 Scope of Work – General

2.2.1 Project Management

The Contractor is responsible for the provision of all project management activities required to execute the Works in accordance with the Agreement. This includes, but is not limited to the following:

a) Management and coordination of all Contractor and subcontractor interfaces, activities, and progress reporting.

b) Procurement, expediting, transport, delivery, off-loading and storage of all materials and equipment unless supplied and free issued by the Company.

c) Design and design management of all temporary structures required for the Work.

The level of Site supervision and span of control must consider the hazards likely to be encountered, the labours' exposure to those hazards, and the level of labours' competence for the activities being undertaken. The level of supervision must be indicated by the Contractor in its labour histogram and the construction plan forming part of the Agreement as a span of control expressed against direct labour.

2.2.1 Construction Accommodation and Services

The Contractor shall be responsible for providing accommodation and messing facilities for the workforce for the duration of the Works, this shall include provision of all potable water, collection, and removal of all waste and waste water from site (no waste water treatment is available at the current facilities). Contractor to provide a price for removal of waste water for processing at an offsite facility.

The Contractor is responsible for the supply and storage of diesel for their use for the duration of the Works.

The Contractor shall provide all temporary power generation for the duration of the Works.

2.2.2 Construction Plan

Within 14 days of Effective Date of Agreement the Contractor shall prepare and submit to the Company a detailed construction plan, which shall detail the exact methodology the Contractor proposes to undertake to execute each section of the Work. The construction plan shall include manpower, supervision, type, and size of equipment to be used, work hours, servicing and fuelling details and times.

2.2.3 Material Take offs.

The Contractor shall be responsible for producing accurate material take offs for both the Company and the Contractor supplied materials during the progress of the Work, and issue to the Company within seven (7) days of new or revised drawings being issued by the Company.

The Contractor shall provide to the Company weekly expediting reports of all Contractor supplied material which shall, as a minimum, identify required on Site, purchase order date, supply date from issue of purchase order, forecast and actual delivery dates to Site and highlight deliveries that shall, or have the potential to, delay the critical path or adversely impact on the Work Schedule.

2.2.4 Mobilisation and Demobilisation

The Contractor shall formally in writing request permission from the Company for access to the Site a minimum of 7 days prior to mobilising its personnel, equipment, temporary facilities, and materials to Site.

The Contractor shall mobilise its personnel, equipment, and temporary facilities necessary for the Work, to sufficiently commence, sustain construction performance and complete the Work as required by the Agreement. This shall include all relevant expenses including all return airfares, ground travel, stopovers and rest and recreation breaks (if any) for the Contractor's personnel.

The Contractor shall submit a mobilisation plan to the Company within 21 days of the Effective Date of Agreement, which shall provide sufficient detail of personnel, equipment and temporary facilities being mobilised.

Upon completion of the Work the Contractor shall demobilise all personnel, equipment, vehicles, and tools, including rehabilitation of all areas disturbed by the Contractor. The Contractor must grade ground around structures to the levels shown on the drawings or blend in with surrounding ground levels as appropriate.

The Contractor shall formally in writing request permission from the Company to demobilise any of its personnel, equipment, temporary facilities, and materials from Site a minimum of 7 days prior to demobilising.

2.2.5 Travel to Site

The Contractor shall be responsible for transportation of labour, materials, equipment, and all other items required to perform the Work. Transportation vehicles shall be in roadworthy and safe working order.

The Contractor will be responsible for providing security for the transportation of labour, materials, equipment to and from Site. The Company will provide details of the recommended Security Contractor to assist with the Contractor engagement.

All vehicles carrying personnel shall be fitted with seatbelts and each person is to be allocated a seat and a seatbelt.

The Contractor shall comply with all the applicable rules, regulations, and policies in regard to travelling.

2.2.6 Contractors Temporary Facilities

The Contractor will be designated an uncleared area of land to establish its temporary facilities. The Contractor will be responsible for all clearing, grading and all earthworks required to establish its temporary facilities.

The Contractor shall supply, install, commission, properly maintain, and remove all temporary construction facilities and utilities necessary for full and complete performance of the Work. The facilities and utilities shall be kept free of waste and debris and shall be reinstated to near the original conditions and as approved by the Company upon completion of the Work. The Contractor shall establish a suitable staging and equipment service and laydown area in consultation and with the approval of the Company.

The Contractor shall submit its proposed Site plan indicating layouts of the proposed temporary facilities to the Company for approval a minimum of 7 days prior to mobilisation to Site.

All temporary construction buildings shall be adequately tied down and constructed with fire warning systems and firefighting equipment. The type of facilities, move-in and move-out dates, quantity, type, size and locations on Site shall be subject to and in accordance with the review and prior approval of the Company. As a minimum, the Contractor shall provide:

a) All temporary sanitary facilities, including janitorial services, offices, storage, and removal of sewage to a location / facility approved by the Company. All temporary toilets shall be kept in a good sanitary condition and shall be in compliance with all applicable health or other regulations. An adequate number of toilets must be provided for the Contractor's personnel. Portable enclosed toilets may be used in construction and fabrication areas provided they are cleaned and maintained on a daily basis. On completion of the Work, the Contractor shall remove all toilet facilities and disinfect and rehabilitate the areas occupied by the facilities to the approval of the Company.

b) Establish and maintain Contractor's laydown area, offices, storage, and Work areas. The Contractor must establish and maintain construction lay down areas in the locations nominated by the Company, including all necessary earthworks, construction of required drainage structures and erection of all signage.

c) All required temporary access roads, including construction, maintenance, rehabilitation, delineation, signage, and localised traffic control in accordance with the specifications and standards. The Contractor must take reasonable precautions to prevent damage to existing Company roads or roads developed on the Site. In the event that the execution of the Works causes damage to existing Company roads or roads developed on the Site, the Contractor shall rectify all damage at the Contractor's cost.

d) All small tools including any and all special tools required to perform the Work.

e) Security and safety items necessary to perform the Work and protect existing structures, goods, materials, equipment, including fire protection equipment, temporary fencing, barricading, signage and similar.

f) All expendable or consumable construction items and supplies.

h) Erosion control, including fabric and materials as required.

i) All necessary drainage and de-watering equipment.

j) Trucks, containers and services for hauling, removal and disposal of construction waste and debris. The Contractor shall advise the Company in writing of any need for disposal of hazardous waste prior to removal of such waste from the Site.

k) Temporary facilities constructed to a standard and quality suitable to the Site and suitable to the climatic conditions under which Contractor will be performing the Work.

2.2.7 Contractor's Office at Site of Work

During the performance of the Work, the Contractor shall maintain a suitable office facility, at or near the Site of the Work. Any communication given to the Contractor's Representative or delivered at the Contractors office at the Site of the Work in Contractor's Representative absence, shall be deemed to have been delivered to the Contractor.

The Contractor shall provide and maintain at the office facility all necessary office furniture and equipment, including but not limited to appropriate communication equipment sufficient computers and reproduction equipment, ablutions, to support the performance and completion of the Work.

The Contractor is required to be self-sufficient in relation to Site communications. The Company will not provide any telephone or data services to the Contractor.

2.2.8 Contractor's Construction Plant and Equipment

The Contractor shall provide and use only such construction plant and equipment as are capable of producing the quality and quantity of Work required under the Agreement. Construction plant and equipment used by the Contractor must have the Company's prior approval before mobilisation to Site.

Construction plant and equipment used by the Contractor must meet all necessary government and regulatory requirements as well as the Project health, safety, and environmental requirements. All construction plant and equipment must be fit for purpose and properly maintained to avoid delays. Use of equipment not meeting the required standards, as determined by the Company, shall be discontinued until repaired or replaced. The Company reserves the right to direct the Contractor to remove substandard construction plant and equipment from Site.

2.2.9 Supply, Unpacking and Installation of Materials and Equipment

The Contractor supply includes each and every cost associated with all stages from purchasing to purchase and delivery to Site, including loading, unpacking, storage, maintenance, and security, for all materials, equipment, consumables and any other items required to complete the Work.

All equipment and material supplied by the Contractor shall be in accordance with the drawings, schedules, specifications, and guidelines set forth in the Agreement. The Contractor shall provide samples of materials and equipment to the Company, for approval, prior to purchase and/or installation.

The Contractor shall deliver materials to Site on time and in sufficient quantities to complete the Work within the Agreement Work Schedule.

The Contractor must submit all proposed methods of off-loading, craneage and transport to storage, to the Company for approval minimum of 30 days prior to the commencement of deliveries.

The Contractor shall co-ordinate all deliveries to Site in accordance with all the applicable rules and regulation.

The Contractor shall unpack, assemble, move into position, and install all equipment and materials and all other items supplied by the Contractor or the Company for incorporation into the Work.

The Contractor shall provide dunnage to ensure any Contractor or Company supplied plant, equipment or materials are kept free from the effects of surface water interaction and contact damage from contact with the ground surface.

2.2.10 Touch Ups

The Contractor must supply the required paint and consumables and perform touch up painting on Site of all goods, equipment, and materials (including Company supplied) required for the Works. The Contractor must perform touch up painting and make good any construction and transportation damage in accordance with the specification and manufacturer's recommendations.

Any damage to galvanised coatings by the Contractor from handling, welding or any other damage must be repaired by abrasive whip blasting the damaged area and applying a cold galvanising compound.

2.2.11 Illumination

When any Work is performed at night or where daylight is insufficient or obscured, the Contractor shall, at the Contractor's expense, provide artificial light sufficient to permit Work to be carried out safely, efficiently, satisfactorily and to permit thorough inspection. During such time periods, the access to the place of work shall also be clearly illuminated. All wiring for electric light and power shall be installed and maintained in a first-class manner in accordance with the applicable standards, rules, and regulation. All electrical wiring shall be securely fastened in place at all points.

2.2.12 Catering and Accommodation

The Contractor is responsible for providing accommodation, catering, and housekeeping for the Contractor's personnel. The Contractor may utilise suitable accommodation for its personnel in nearby villages and towns. The Contractor shall submit its accommodation plan to the Company for review within 21 days of Effective Date of Agreement.

2.2.13 Power Supply

The Contractor is responsible for supplying, securing, and maintaining power required to complete the Work. Permanent power will not be available for the purposes of Contractor's Site facilities or construction activities.

2.2.14 Fuel Supply

The Contractor is responsible for the supply and storage of diesel fuel for the Work.

The Contractor shall submit its fuel supply and storage plan to the Company for review and approval within 21 days of Effective Date of Agreement and prior to mobilisation to Site.

2.2.15 Construction Water Supply

The Contractor shall supply all construction water required for performance of the Work.

2.2.16 Potable Water Supply

The Contractor shall supply all potable water required for performance of the Work.

2.2.17 Site Radios

The Contractor must supply and maintain sufficient number (as a minimum for each foreman and safety personnel) of Site radios required for the Contractor's Site based personnel. The Contractor must use an UHF licensed radio channel at each work area to meet its communication requirements. The Contractor's channel usage will be coordinated and documented by the Company to support cross communications on Site.

It is a requirement that each of the Contractor's supervisory personnel have access to both the dedicated emergency and coordination channel as well as the Contractor's work area channel. The Contractor must supply and maintain the required number of UHF radio handsets on Site. The Contractor must obtain Site specific licensed radio frequencies for all crane operations.

Radio frequencies not aligned to the Company Site radio frequencies must be licensed by law.

2.2.18 Site Signage

The Contractor shall supply and install all temporary Site signage associated with the Work, including signage and notices for safety or instruction. Safety signage shall display instructions/warnings in Urdu and English. Signage shall not be installed without prior approval from the Company and shall be removed by the Contractor once Work is complete.

2.2.19 Site Security

The Contractor shall at all times comply with the Site security rules and regulations set forth by the Company. The Contractor, its personnel and subcontractors shall abide, cooperate, and assist with the Company's security force in order to effectively implement all Site security rules and regulations.

The Contractor is directly responsible for the security of its personnel, including travel and accommodation security. The Contractor is responsible for the security of all on Site and off-Site items (Company and/or Contractor supplied equipment and materials) under custody and control of the Contractor. The Contractor will ensure that its temporary facilities, vehicles, storage areas, plant, equipment, laydown areas, stores and other Work areas are protected and secured to prevent loss or theft.

The Contractor shall only engage the Company nominated security subcontractor for security during logistics to and from the Mine site. Security for Works carried out on the Project will be provided by the Company.

The Contractor's personnel will be issued with identification badges / buttons after successful completion of the Company's Site induction. The identification badge / button must be worn and clearly displayed at all times whilst on Site and is required for entry and exit to the Site (no badge / button no entry). On completion of the Work the Contractor is responsible for the return to the Company of all identification badges / buttons, including those issued to its subcontractors, within a period of 48 hours of the Contractor's and/or subcontractors' personnel demobilising from Site.

2.2.20 Weather Protection

The Contractor shall be responsible for the supply and installation of all temporary diversions, roads, access ramps, bunds and all other Work and equipment necessary to protect the Work from the effects of inclement weather. The Contractor shall be required to work in a safe and efficient manner taking due cognisance of the expected climatic conditions. In particular, the Contractor shall manage and schedule the Work so that there is always Work undertaken even when weather interrupts construction production.

The Contractor acknowledges that the Site may be subject to storm activity, and must, as required:

a) Provide and utilise all necessary tie downs for all Contractor's Work, equipment, materials, temporary facilities, and structures to minimise any damage, which may result from storm events.

b) Demonstrate to the Company's satisfaction that all materials and equipment, including Company free issued materials and equipment, are adequately secured in a storm event prior to on Site storage.

c) Ensure all temporary facilities and structures are maintained in a storm ready state at all times.

The Contractor shall at its own cost be responsible to ensure any consignments while under the Contractor's responsibility is fully protected from weather and storm damage.

2.2.21 Dewatering and Drainage

The Contractor shall provide proper and adequate dewatering and drainage systems for all its Work, including storage, parking, construction, furnishing and installing any necessary well points, pumps, and/or piping for disposal to the Company's designated drainage areas. Temporary dewatering and drainage facilities shall be removed by the Contractor on completion of the Work and prior to demobilisation from Site.

2.2.22 Dust Control

The Contractor, for the duration of the Agreement, shall maintain all its assigned Work areas, laydown areas, camp areas and auxiliary roads into such areas, free from dust during the Contractor's work hours. The Contractor shall also minimise generating dust control on all public access roads to and from the Site and if necessary, maintain dust control in these areas. The Contractor may be required to commence dust control prior to the scheduled workday and/or post the scheduled end of the workday, if necessary, to maintain dust suppression during work hours. Dust control outside of work hours shall be required during dry conditions to prevent dust generation from moving equipment or vehicles. Industry accepted methods of dust control suitable for the area involved, such as water sprinkling, chemical treatment, light bituminous treatment, or similar methods shall only be permitted with prior approval from the Company. The supply of water for dust control shall be provided by the Contractor (via Company supplied source) and the method of supply shall be subject to approval by the Company.

2.2.23 Ventilation

The Contractor shall:

a) Prevent hazardous accumulation of dust, fumes, mists, vapours, or gases in areas occupied during construction.

b) Provide local ventilation to prevent harmful accumulation of hazardous substances into the atmosphere of occupied areas.

c) Dispose of materials in a manner that shall not result in harmful exposure to persons or disrupt or otherwise affect the operation of existing facilities.

d) Ventilate storage spaces and workspaces containing hazardous, volatile, high temperature or sensitive materials including explosives.

2.2.24 Water Pollution

The Contractor shall, at its own cost, provide suitable facilities to prevent the introduction of any substances or materials into any stream, lake, or other body of water, which may pollute the water or constitute substances or materials deleterious to fish and wildlife. The Contractor shall at all times comply with the water pollution laws, rules and regulations of the Government of Pakistan and the minimum/maximum levels set by the Project's environmental criteria.

2.2.25 Air Pollution

The Contractor shall perform its Work so as not to discharge into the atmosphere from any source whatever smoke, dust, or other air contaminants in violation of the laws, rules, and regulations of the Government of Pakistan and the minimum / maximum levels set by the Project's environmental criteria.

2.2.26 Explosives

The Contractor is solely responsible for permits and approvals required for explosives used by the Contractor or its subcontractors in the performance of the Work. Blasting will only be done at such times as authorised by the Company and in compliance with all permit conditions.

The Contractor is responsible for drilling, priming, stemming, tying in the blast, and firing the shot. All work relating to blasting, or the handling of explosives shall only be carried out by or under the direct supervision of personnel holding current blasting licences in accordance with the laws and regulations of Pakistan. The Contractor shall also be responsible for assisting in the carrying and placement of explosives in areas where access to explosive delivery trucks is not possible.

2.2.27 Safety and Protection of the Work

All Contractor's Work must comply with the Company's Fatality Risk Management (FRM) standards. The Contractor must protect all Site personnel from injury by the use of hard barricading and signage as required. The use of bunting is not acceptable for excavation protection as per the Company's Exclusion and Restriction Zone and Barricades Standard.

The Contractor must provide barriers to prevent damage to existing infrastructure, other contractor's Works, and injury to personnel. The barriers utilised must be of a suitable type for the purpose, and may include windrows, bunds, diversions, fences, or barricading. The Contractor must also provide and maintain all items (including flagging, warning lights, markers, and signage) to ensure that the barriers are effective. In particular, the Contractor must provide all barriers required to protect existing infrastructure from construction vehicle movements including the protection of edges of excavations and embankments along access and haul roads. The Contractor must also install barricading adjacent to existing operations, or where necessary, to exclude personnel from a construction area.

2.2.28 Personal Clothing, Equipment and Identification

In addition to the requirements contained in the Project Health and Safety Management Plan and Environmental Management Plan, the Contractor's personnel must wear hard hats, safety boots, safety glasses and all other necessary and required safety equipment and clothing appropriate to the nature of the particular work, including long sleeved collared shirts and long trousers. Personal Protective Equipment (PPE) requirements are as outlined in the guideline BRM-GUI-011.

2.2.29 Scaffolding, Rigging and Other Lifting Plans

The Contractor shall detail all scaffolding, rigging and other lifting plans within its construction plan. The Company's review of any scaffolding, rigging and or other lifting plans shall not constitute any wavier or release of Contractor's responsibility or liability under the Agreement or at law. Installation of scaffolding shall be conducted by trained and competent Contractor personnel only. Scaffolding shall be of safe and suitable quality. The cranes, lifting equipment and scaffolding guidelines are to be used when developing scaffolding, rigging and lift plans.

Controls for construction of temporary structures (form & false work, scaffolding greater than 4 levels, hanging / suspended scaffold, deep excavations, temporary ventilation walls and similar) shall meet minimum engineering Standard or Code of Practice (i.e., British Standard - BS5975 for false work or Australia Standard AS1576 for scaffolding).

The Contractor shall undertake a risk assessment for all temporary structures to determine the level of engineering design, review and inspection required. The Contractor is required to have the design for any temporary structures deemed to have high risk reviewed and stamped by a certified engineer, with a review of the design and inspection of the construction signed off by a third-party engineer prior to any work activity.

The Company's' Construction Manager must review and sign off on any pour plans for elevated structures.

2.2.30 Housekeeping

The Contractor shall at all times keep its work, office, camp and laydown areas in a neat, clean and safe condition. The Contractor shall remove from these areas and properly dispose of all debris and rubbish caused by daily operations. Upon completion of the Work, the Contractor shall promptly remove its equipment, temporary structures, debris, and excess materials from Site and leave its work, office, camp, and laydown areas and borrow pits in a neat, clean, and safe condition. Borrow pits must be left in a drained, and self-draining, condition, with adequate controls to trap sedimentation and solids generated by run-off.

All areas, including borrow pits and temporary Work shall be rehabilitated in accordance with the requirements of the specifications or as directed by the Company.

In the event the Contractor fails to maintain its work, office, camp and laydown areas as described above and elsewhere in the Agreement, and in a manner satisfactory to the Company, or should the Contractor fail to effect such clean-up or removal immediately after receipt of written notice to do so, the Company shall have the right, without further notice to the Contractor, to perform such clean-up and remove such items on behalf of, at the risk of, and at the expense of the Contractor. The Company may store items removed at a place of its choosing on behalf of the Contractor and at the Contractor's risk and expense. The Company shall promptly notify the Contractor of such place of storage.

The Contractor shall compensate the Company for the performance of such clean-up, removal and/or storage.

2.2.31 Local Labour

The Contractor shall submit a labour requisition to the Company for review and liaise with the Company's Human Relations (HR) and Community Relations (CR) departments to post job adverts in all local communities and sites. The CR team will determine selection quotas for the Contractor and communicate the casting of lots to all stakeholders.

The Contractor must submit labour requisitions a minimum of 6 weeks prior to requiring a local labour resource.

To ensure that contractors have full ownership of their unskilled labour recruitment, they are required to lead the process in local communities. The Contractor will be responsible for:

a) Owning and managing their unskilled labour.

b) Handling their employees' grievances.

c) Adhering to the local employment agreement.

d) Undergoing Company training and taking new hires through pre-employment medicals and construction safety awareness training.

e) Ensuring that all hired unskilled labour are issued with contract letter and confirming their agreement before scheduling inductions.

f) Submitting a monthly report on hired labour.

The Contractor shall utilise local labour for all unskilled Work and for other Work where possible.

2.3 Work Schedule

2.3.1 Period of Performance

Work to be performed under this Agreement shall commence upon Effective Date of Agreement and shall be completed in accordance with the dates nominated Schedule 6.1 of Section 2 Schedules. The Contractor agrees that this time schedule is reasonable.

2.3.2 Working Hours

Work hours shall normally be 65 hours per week, 10 hours per day, 13 days per fortnight (Monday through Sunday), between the hours of 7.00 a.m. and 6.00 p.m.

2.4 Performance Schedule

2.4.1 Specific Scheduling, Coordination and Reporting Requirements

Within 21 days of Date of Agreement the Contractor shall submit a draft detailed schedule (Work Schedule) to the Company for approval.

The Work Schedule shall be prepared and submitted in accordance with the “Contractor Project Planning and Scheduling Guidelines (PSG-GUI-001)”.

Approval and maintenance of the Work Schedule, and progress reporting are also covered in PSG-GUI-001.

2.5 Meetings

2.5.1 Weekly Progress Meeting

The Contractor shall attend a weekly progress meeting chaired by the Company Representative. The purpose of the meeting shall be to resolve any problems that may arise from time to time and assist the Contractor wherever possible, review the current week’s progress and review the succeeding two week’s work.

2.5.2 Weekly Coordination Meeting

The Contractor shall attend a weekly coordination meeting together with the various other contractors on the Site.

The person or persons designated by the Contractor to attend the meetings shall have all the required authority to make decisions and commit the Contractor to solutions agreed upon during any coordination meeting.

2.5.3 Other Meetings and Activities

The Contractor's participation in certain other meetings and non-productive activities will be required. These activities shall include, but not be limited to:

a) Agreement kick off meetings, which shall generally take place prior to Site mobilisation, however, the Contractor may be required to undertake a Site based kick off meeting as well.

b) Induction and orientation meeting conducted by the Company of all the Contractor's personnel prior to commencing work on Site (this shall include the entire labour force and all new hires).

c) Weekly toolbox safety meetings organised and conducted by the Contractor and attended by all Contractor's personnel. The meetings shall last approximately one-half (½) hour. The Company and / or Company Representative may attend the Contractor's toolbox safety meetings as required.

d) Daily pre-start meetings organised and conducted by the Contractor and attended by all Contractor's personnel. The daily prestart meetings shall be conducted in accordance with the Company's prestart meeting guidelines. The Company and / or Company Representative may attend the Contractor's daily pre-start meetings as required.

e) Any other meetings and activities as required by the Company.

2.6 Documentation

2.6.1 After Date of Agreement

The Contractor shall submit the deliverables nominated in Schedule 12 of Section 2 Schedules.

2.6.2 At Practical Completion

The Contractor shall submit practical completion deliverables nominated in Schedule 12 of Section 2 Schedules.

2.6.3 Submission Requirements

The Contractor's deliverables must be submitted at the time and format as outlined in Schedule 12 of Section 2 Schedules or elsewhere in the Agreement. The deliverables will be reviewed by the Company and returned to the Contractor stamped 'Approved', 'Approved as Noted', or 'Not Approved'. Any work carried out by the Contractor to deliverables other than 'Approved' or 'Approved as Noted' shall be at the Contractor's risk and all costs incurred shall be the Contractor's responsibility.

2.7 Quality Assurance

2.7.1 General

The Contractor shall be responsible for the quality of its supplies, workmanship, and materials by controlling its own activities and those of any subcontractors on all Work performed under this Agreement, including design, manufacture, testing, commissioning, servicing, remedy of defects and other Work required under the Agreement.

The Contractor shall submit its Quality Management Plan to the Company for review and approval within 21 days of Effective Date of Agreement and prior to mobilisation to Site.

The Company's approval of the Contractor's Quality Management Plan shall not relieve the Contractor of its responsibilities to comply fully with the Agreement documents, drawings, and specification.

2.7.2 Inspections and Testing

The Contractor shall perform all such inspections and tests as are appropriate to ensure that the Work is completed in accordance with the specifications.

2.7.3 Records

The Contractor shall maintain records in order to verify that the Work has at all times been carried out in accordance with the documents forming part of the Agreement.

All records shall be made available to the Company on completion of the Work and prior to Company issue of the Certificate of Practical and / or Final Completion.

2.8 Drawings and Technical Standards

2.8.1 Drawings

Any Work carried out by the Contractor to drawings other than those as "Approved for Construction" shall be at the Contractors risk and cost.

2.8.2 Technical Standards

All Work shall be carried out in accordance with the specifications listed in Section 4 of the Agreement.

2.8.3 Tolerances

Final levels shall be in accordance with the specifications listed in Section 4 of the Agreement and the drawings listed in Section 5 of the Agreement.

2.9 Safety and Health, Work Rules and Regulations

2.9.1 Health and Safety Management Plan

Within 14 days of Effective Date of Agreement and prior to mobilisation to the Site, the Contractor shall develop and submit to the Company for approval a written comprehensive Health and Safety Management Plan, detailing all aspects of the Contractor's Site operations, and which shall, as a minimum, strictly comply with the safety requirements and Site work rules set forth in the Project Health and Safety Management Plan.

The Company's approval of the Contractor's Health and Safety Management Plan shall not relieve the Contractor of its responsibilities to comply fully with all applicable health and safety laws and regulations in Pakistan as well as the Project Health and Safety Management Plan.

2.9.2 Workplace Risk Assessment and Control

The Contractor shall submit a Workplace Risk Assessment and Control (WRAC) to the Company for review and approval a minimum of 14 days prior to mobilisation to Site. The Contractor shall maintain the WRAC throughout the performance of the Work and in accordance with the Project Health and Safety Management Plan.

2.9.3 Emergency Response

The Company will provide emergency response capability to manage and respond to major incidents. The Contractor must support this commitment by providing emergency response team personnel at the rate in accordance with the Health & Safety Management Plan.

2.9.4 Traffic Management Plan

Within 14 days of Effective Date of Agreement and prior to mobilisation to the Site, the Contractor shall develop and submit to the Company for approval a written comprehensive Traffic Management Plan incorporating a safe working procedure and interface management procedure for all aspects of the Work, as well as addressing the transportation and delivery of all Contractor's supplied items to Site.

The Contractor must maintain the Traffic Management Plan up to date and adjust it as necessary to address the changes occurring throughout the performance of the Work. The Contractor must submit any changes to the Traffic Management Plan to the Company for approval prior to implementation a minimum of 72 hours prior to undertaking any change to existing conditions.

2.9.5 Health and Safety Improvement Programme

The Company is committed to the implementation and ongoing support of programmes and initiatives aimed at continuously improving the health and safety performance of the Project. The Contractor has committed to participating actively in these programmes as required by the Company and confirms that the Contractor's Agreement Price includes all costs associated with this commitment. The programmes will cover a range of activities, including attendance at development, alignment, education and awareness sessions, participation in training and coaching processes and the introduction and application of new and modified leadership and operational health and safety frameworks. The Contractor's personnel (direct, indirect and management) must be involved in these programmes in conjunction with the Company's personnel. All programme elements will be in addition to those health and safety requirements nominated in the Agreement. As a minimum, the Contractor is required to participate in the Fatality Risk Management (FRM) as outlined below.

2.9.6 Fatality Risk Management

The Company will implement a Fatality Risk Management (FRM) programme for the Project, utilising a framework developed by the Company, which involves all levels of the workforce and the Project team on Site. The aim of this process is to utilise the collective experience of all personnel on Site to help identify and control critical risks and eliminate potentially harmful events.

2.9.7 Site Medicals, Induction and Orientation

It is a pre-requisite for any of the Contractor's personnel (direct, indirect, management, supervision, administration, representatives, subcontractors, consultants or similar) entering the Site that the Contractor's personnel have completed medical examinations to the satisfaction of the Company. The Contractor will arrange for pre and post-employment medical examinations to be performed on all Contractor's personnel entering Site. Results of the medical examinations must be submitted to the Company. The Company, at its sole discretion, will approve or refuse Site access to any Contractor's personnel or alternatively may require additional medical examinations prior to determining Site access privileges.

All Contractor's personnel working on Site must complete a Company approved Site induction and orientation programme prior to commencing Work on Site.

Notwithstanding the above, Contractor's personnel (direct, indirect, management, supervision, administration, representatives, subcontractors, consultants or similar) visiting Site for a period not exceeding five (5) days will not be required to complete a Company approved Site induction and orientation programme provided that they complete a visitor's induction process and are accompanied at all times while at Site by a member of the Contractor's personnel who has completed the Company approved Site induction and orientation programme.

2.9.8 Contractor Safety / Environmental Representative

The Contractor shall appoint a senior qualified full time Safety / Environmental Representative(s) who shall have the duties as stated herein. The Contractor's Safety / Environmental Representative(s) shall be responsible for initiating the safety programme, ensuring that Site safety requirements and procedures are being accomplished, conducting safety inspections of work being performed, conducting weekly safety meetings with Contractor's personnel, and submitting a weekly report to the Company documenting safety activities. The Contractor's proposed Safety / Environmental Representative(s) shall be subject to approval by the Company and is considered a Key Personnel in accordance with Clause 6.0 of the Construction Agreement.

The Safety / Environmental Representative(s) will be responsible for a continuing survey of the Contractor's operations to ensure that the probable causes of injury or accident are controlled and that operating equipment, tools and facilities are used, inspected, and maintained as required by applicable safety, health, and environmental regulations.

The Contractor's Safety / Environmental Representative(s) shall be responsible for coordinating the Project Health and Safety Management Plan and the Environmental Management Plan, ensuring that Site health, safety and environmental requirements and procedures are being accomplished, conducting inspections of work being performed, conducting weekly safety and environmental meetings with Contractor's personnel and submitting a weekly report to the Company documenting safety and environmental activities.

As part of the Contractor's Health and Safety Management Plan and the Environmental Management Plan the Contractor must identify the appropriate resource allocation which the Contractor will provide to support the above requirements.

The Contractor must provide at least one representative within its organisation to conduct Incident Cause Analysis Method (ICAM) investigation on Site, as required. The representative must hold a valid training qualification for the type of incident investigation to be conducted.

2.9.9 HSE Violations

The Company shall have the right to stop work whenever safety violations are observed which could jeopardise the well-being of personnel and equipment. The cost of any such work stoppage and resultant standby time shall be for the Contractor's account.

The failure or refusal of the Contractor to correct the observed violation may result in the termination of the Agreement, and / or dismissal from the Site of those responsible for such failure or refusal.

The Company may, at its option, refuse access to Site or have removed from Site any Contractor's personnel including any subcontractors, consultants and similar, which in the opinion of the Company, poses an unacceptable risk of damage, injury or illness to the Company's property or personnel. The cost of any such Site access refusal or removal from Site shall be for the Contractor's account.

2.9.10 HSE Reporting

The Contractor shall maintain, and require its subcontractors to maintain, accurate incidents, accidents, and injury reports.

The Contractor shall provide to the Company a copy of all reports, including those reports made to government agencies or insurance companies relating to any incident, accident, or injury during the Contractor's performance of the Work.

The Contractor shall comply with incident reporting in accordance with the Project's safety requirements set forth in the Project Health and Safety Management Plan, Environmental Management Plan and with any Company provided insurance coverage.

2.10 Environmental Protection

2.10.1 Environmental Management Plan

Within 14 days of Effective Date of Agreement and prior to mobilisation to the Site, the Contractor shall develop and submit to the Company for approval a written comprehensive Environmental Management Plan, detailing all aspects of the Contractor's Site operations, and which shall, as a minimum, strictly comply with the environmental requirements set forth in the Project Environmental Management Plan.

The Company's approval of the Contractor's Environmental Management Plan shall not relieve the Contractor of its responsibilities to comply fully with all applicable environmental laws and regulations in Pakistan as well as the Project Environmental Management Plan.

2.10.2 Contractor's Obligations

In addition to the statutory requirements, the Contractor shall as a separate and independent obligation comply fully with the requirements for environmental management and protection set out in the Project Health and Safety Management Plan.

The Company may direct that the standards contained in the Agreement be varied and the Contractor shall modify its operation as required so as to comply with such changed standards.

The Contractor shall ensure that all persons engaged in performing work under the Agreement are fully aware of and comply with the requirements at the Site in relation to environmental protection and conservation.

2.10.3 Management Plan Requirements

The Contractor's Environmental Management Plan shall be based upon maintaining the minimum / maximum allowances for the discharge of emissions related to water quality, air quality, hydrocarbon management and suspended solids set out within the Agreement.

2.10.4 Failure to Effect Environmental Activities

Should the Contractor fail to effect the implementation of any of the environmental management activities required by the Project Environmental Management Plan or the Contractor's Environmental Management Plan after having received written notice to do so, the Company shall have the right, without further notice to the Contractor, to perform, or cause to be performed by others, such activity on behalf of, at the risk of, and at the cost of the Contractor. The Contractor shall promptly reimburse the Company for performance of the activity.

2.10.5 Material Safety Data

The Contractor shall submit to the Company, prior to transportation to Site, Material Safety Data Sheets for all materials for which manufacturers provide such data sheets and which shall be received and/or stored on Site.

The Contractor shall identify all hazardous materials to the Company, including those materials for which manufacturers do not provide Material Safety Data Sheets. Hazardous materials, generally as listed below, shall be defined as those materials declared to be hazardous by the Government of Pakistan and the Project Health and Safety Management Plan and the Environmental Management Plan.

a) Explosive

b) Flammable

c) Reactive

d) Toxic

e) Infectious

f) Corrosive

The Contractor is required to complete a new product review form for all proposed hazardous materials and submit for Company approval. Only Company approved chemicals will be permitted to be transported onto Site.

2.10.6 Costs

In the event that the Contractor or any of its personnel, subcontractors, agents, consultants or visitors breach any of the statutory requirements or standards for environmental protection contained in the Agreement, and as a result of such breach, work is required to be carried out to remedy the effect of such breach or in the event of claims being made by any government or local authority or private landowner or other party in respect of any such breach, all costs arising from such work or claims shall be borne by the Contractor.

2.11 Industrial Relations

2.11.1 Industrial Management Plan

Within 14 days of Effective Date of Agreement and prior to mobilisation to the Site, the Contractor shall develop and submit to the Company for approval an Industrial Management Plan.

The Company's approval of the Contractor's Industrial Management Plan shall not relieve the Contractor of its responsibilities to comply fully with all applicable laws and regulations in Pakistan.

2.11.2 Contractor's Responsibility

Within 14 days of Effective Date of Agreement the Contractor must nominate in writing to the Company which Site industrial, workplace or other employment agreement(s) the Contractor intends to adopt for all activity on Site.

The Contractor must ensure that its subcontractors comply with the nominated employment agreement(s) and all other industrial awards, agreements, determinations, or decisions that are binding upon the Contractor or subcontractors.

The Contractor must pursue a policy of training to ensure that it follows the most efficient work practices.

The Contractor must ensure that provisions identical to those stated herein are included in every subcontract that the Contractor enters into for the purpose of the performance of any part or all of the Work.

2.11.3 Contractor to Advise of Industrial Difficulties

The Contractor must advise the Company immediately of any work stoppages, bans, limitations on work or other industrial relations difficulties affecting:

a) or which may affect the Contractor or the performance of the Work, and must keep the Company fully informed of any dispute with Contractor's personnel; or

b) any union, or any demand for wages or conditions in excess of or outside of the scope of current and applicable agreements or awards.

The Contractor must keep the Company fully informed of any demarcation problem or dispute that arises amongst the Contractor's personnel or between the Contractor's personnel and the Company personnel or any other person or group of persons.

2.11.4 Contractor to Take Steps

If industrial relations difficulties of any kind develop that are the result of the existence of any subcontract or a subcontractor of the Contractor, which the Company considers to be detrimental to either the progress of the Work as a whole or the Contractor's or Company's operations, the Contractor must at the direction of the Company immediately terminate that subcontract and make other arrangements to perform the obligations under the Agreement which are the subject matter of that subcontract, without in either case the Company being liable for nor the Contractor being entitled to any compensation or payment by reason of doing so.

2.12 Drug and Alcohol Policy

Within 14 days of Effective Date of Agreement and prior to mobilisation to the Site, the Contractor shall develop and submit to the Company for approval a written comprehensive drug and alcohol policy, which shall, as a minimum, strictly comply at all times with the health and safety requirements.

Further to the Company's review and acceptance of the policy, the Contractor shall implement this policy and ensure that all of its personnel and subcontractors act in strict accordance with the Company-approved drug and alcohol policy.

The Contractor acknowledges that the Project has its own policy prohibiting the use, sale, transfer, purchase, or possession of a controlled substance (i.e., illegal drugs), alcohol, or firearms while on Site.

Furthermore, the Contractor acknowledges that the Company has a drug-free workplace policy that prohibits any person working on the Company's premises from having alcohol or controlled substances in such individual's system.

At the request of the Company, the Contractor shall immediately remove from the Site and/or camp facility any of its personnel or subcontractors' personnel that the Company determines, in its sole, absolute, and unreviewable discretion, pose a danger to the safety or health of those around them (including but not limited to because of the individual's use of alcohol or drugs) or are otherwise unfit or incompetent to perform the Work.

2.13 Compliance with Ordinances and Statutory Authorities

Whenever inspection of any work or any type of plant or machinery is required either by the specification or by the relevant statutory authority, the Contractor shall provide full details of such plant or machinery to the relevant statutory authority and make such applications as may be required within 14 days of Effective Date of Agreement.

In such cases, any approval given by the Company to information submitted by the Contractor shall not necessarily imply that such information meets the requirements of the relevant statutory authority.

2.14 Statutory Permits, Licences, Registrations and Approvals

The Company will arrange, obtain, and pay for all the permits, licences, registrations, and approvals required for the Project.

The Contractor shall arrange, obtain, and pay for all the applicable permits, licences, exemptions, consents, authorisations, and approvals required for the Contractor to perform the Work under this Agreement.

The Contractor must submit all relevant application documentation to the Company for review and approval prior to submission to external parties.

2.15 Miscellaneous Site Requirements

In addition to the requirements set forth elsewhere in the Contract, the Contractor shall perform, and (as relevant) cause all subcontractors and any vendors and suppliers to perform, all Work at Site in accordance with the following:

a) Cooperation – The Contractor acknowledges that the Company (and other contractors that may be working for the Company) may perform work, including normal operations of the Company, in the vicinity of or at the Site. The Contractor understands that the Work will need to be coordinated with the Company and any other contractors of the Company. The Contractor agrees to coordinate its performance of Work and otherwise cooperate with the Company and any other such contractors in this regard. The Contractor understands that its Work may be interfered with as a result of such concurrent activities. The Contractor further understands and agrees that the Company may direct changes in sequence or timing of the Work as the Company deems necessary.

b) Inspection of Work – The Contractor shall give, and cause its subcontractors to give, the Company and its representatives for purposes of observation or inspection of Work free access to all documents, materials, and any equipment related to the Work and to the Site and any other workplace or premises at which Work is performed. No inspection performed or failed to be performed, and no observation made by the Company will constitute a waiver of any of the Contractor's obligations under this Agreement or be construed as an approval or acceptance of all or any part of the Work.

c) Security, Access to Site, Smoking and Cameras – Entrance onto the Site by the Contractor's personnel will be subject to the Company's security rules and regulations, and the Contractor agrees to comply and cause compliance by its subcontractors therewith. Smoking will not be allowed in the work area(s) or outside of the designated smoking areas. The use of cameras on Site without specific prior approval from the Company is prohibited.

d) Security Responsibilities – The Contractor shall comply with any Company security programme on Site. The Contractor shall conduct all Work in a manner to avoid loss, theft or damage by vandalism, sabotage or other means to the Contractor's and Company's property. Unless otherwise specified in this Agreement, the Contractor shall be responsible for the security of its laydown and warehouse areas and for the Equipment and/or materials furnished, received, or issued by or to it.

e) Security Inspections – All Contractor's and subcontractor's personnel, vehicles, packages, containers and similar will be subject to inspection by the Company's security personnel at any time while on the Site. The Company shall have no responsibility for loss or damage, or replacement of or protection of, the Contractor's equipment, tools, or materials, which are on Site.

f) Protection of Work and Property – The Contractor shall, and shall cause each subcontractor to, take all precautions necessary to protect and safeguard the Work, the property of the Company and the property of third parties. The Contractor will, at its own cost, rework, repair, restore, or replace any Work, real or personal property, including tools and equipment, belonging to the Company or third parties, which the Contractor or its subcontractors may have damaged, destroyed, or removed while performing the Work.

g) Emergency Medical Services - The Company has a medical clinic available on Site for emergency medical services, which can be used by the Contractor's and its subcontractor's personnel. The Contractor's use of the Company's medical clinic for emergency medical services shall be in accordance with Clause 6.7 of the Construction Agreement.

h) First Aid –The Contractor shall be responsible for the provision of its own first-aid services, equipment and supplies including specific medical stocks and sufficiently equipped first-aid kits for its personnel within reasonable accessibility from the work areas.

i) Temporary Structures – The Contractor shall be responsible for the provision of all temporary buildings, structures, consumable materials, utilities, construction tools and equipment necessary for the proper execution and completion of the Work, other than such items as are specified in this Scope of Work to be provided by the Company.

j) Work Rules – Within 14 days of Effective Date of Agreement, the Contractor shall prepare for the Company's review and approval Work Rules with respect to the Work to be performed on Site. The Contractor shall comply and shall cause any subcontractors and vendors performing the Work on Site, and all of their respective personnel, agents, representatives, and visitors while on the Site to be fully informed of and to comply with the Work Rules approved by the Company.

k) Labour Relations – The Contractor shall not hold discussions, make commitments, or enter into agreements related to industrial and labour relations affecting the Work or the Company without prior written approval from the Company. All matters relating to industrial and labour relations brought to the attention of the Contractor shall be immediately communicated to the Company.

l) Excess Materials or Scrap – The Contractor will use all reasonable efforts to minimise excess material purchases. Excess materials or scrap generated by the Contractor in the performance of the Work will remain the property of the Company. The Contractor agrees to identify any such excess materials and advise the Company as soon as it becomes known to the Contractor that such materials are excess. The Contractor agrees to stockpile, store, or otherwise dispose of excess materials as directed by the Company. The Contractor will maintain, and if requested provide to the Company, records necessary to identify all materials and equipment as to vendor and purchase order. If requested by the Company, the Contractor will return all such materials to appropriate vendors for credit. The Contractor will negotiate and include a statement of restocking charges in relevant purchase orders with suppliers / vendors as directed by the Company.

m) Clean up – The Contractor shall at all times keep work areas, workshops, offices, camps, and lay-down areas in a neat, clean and safe condition. The Contractor shall arrange to remove from these areas and properly dispose of all debris and rubbish caused by its Work. At the completion of the Work, the Contractor shall promptly arrange for removal of equipment, temporary structures, debris, and excess materials from the Site and leave all areas in a neat, clean, and safe condition.

n) Community Relations – The Contractor shall at all times comply with the Company's community relations requirements stipulated within the Agreement.

2.16 Drawings, Specifications, Appendices

All Work shall be performed in strict accordance with the drawings, specifications, lists, documents, plans and similar as per Section 4 and 5 of the Agreement.

2.17 Practical Completion

Practical Completion shall occur when all the following conditions (to the extent relevant considering the nature and the Scope of Work) have been achieved with respect to the Work or portions of the Work.

The Contractor has performed the Work or portions of Work in accordance with this Agreement, to the point of completing all civil and structural construction, setting of Equipment on foundations, connecting Equipment to other Equipment as required by way of piping, wiring, controls, and safety systems, and completing Pre-commissioning of Sub-systems to include the following (as applicable for the Work):

a) All permits and approvals from governmental and regulatory agencies required to be in the name of the Contractor have been obtained.

b) All temporary supports, bracing, tie-downs, and materials provided for protection during shipping, storage and installation phases have been removed.

c) All construction debris is removed and disposed of, and all areas of Work are 'broom clean'.

d) All earthworks are completed to properly finished surfaces at the nominated RL's where applicable, including lining and drainage systems installed in accordance with the drawings and specifications, and to the satisfaction of the Company.

e) Any and all buildings and accessories, including HVAC Equipment have been properly installed and checked to confirm completeness.

f) Any and all initial fills have been completed.

g) Required insulation, painting, paving, fencing and items of like nature are complete except to extent identified on the Punch List.

h) All safety features are installed and operational, including guard enclosures, access handrails, and similar.

i) Mechanical checklists have been approved and submitted to the Company (include all QA/QC for alignment, electrical checks, megger results, first fills, run-in results, etc.).

j) All Work is ready for wet commissioning and can be operated, without damage thereto or to any other property and without injury to any person.

k) With respect to equipment, such equipment has been properly installed, checked out, to include:

i. Components of material processing and material handling equipment and auxiliary parts are properly installed.

- Direction of rotation for all rotating equipment has been checked and confirmed as correct.
- Pumps and drivers are aligned and connected after being set and grouted.
- Equipment and related operating systems are individually cleaned, leak checked, lubricated.
- Alignment on machines and drivers has been tested to confirm free to rotate.
- Interface points (e.g., piping) to equipment have been stress checked in cold condition.
- Temporary strainers required have been installed.
- Packing or mechanical seals are installed.
- Replace mechanical seals damaged during flushing operations.
- Temporary packing is replaced with permanent packing.

- Equipment requiring field testing has been inspected and tested.

- Pressure vessels have been hydrotested and all certification issued to Company.

l) With respect to piping and vessels:

i. Piping tie-ins are made (excepting those requiring 'hot taps').

- Location and position of pipe guides, anchors and directional anchors are checked to ensure properly located.

- Control valves, orifice plates and like items removed for testing are replaced.

- Line vents and drains, temporary strainers, spectacle blinds, temporary blinds and start-up-by-passes are installed.

- Piping not opened to the atmosphere is pressure tested (and documented) as required by pressure testing specification.

- Blanks are removed and spectacle blinds are rotated to normal position after pressure testing.

- Adjust pipe hangers and guides to provide for slope, anchoring, free movement, or cold springing, as required in the specifications and drawings (and record spring hanger settings).

- Piping is cleaned, hydro-tested and flushed.

- Any installation of fire or other water systems have been confirmed to be complete, correct and tested.

- Coordinate insurance company inspection of fire system, as required.

- Provide list of design settings for safety devices, and check and inspect devices to confirm such settings and provide evidence of such inspections.

- Internals for any vessels have been installed and tested.

- Tanks, including coatings and internals, have been installed, tested, cleaned, and properly closed.

m) With respect to electrical equipment and instrumentation:

i. Phase-to-phase and phase-to-ground insulation resistance of each switchgear bus and phase-to-ground resistance of associated control circuits are measured and recorded.

- Dielectric strength of insulating liquid in power transformers and disconnect switches is tested and measured by approved 3rd party.
- DC High voltage test on installed power cable is performed.
- Insulation resistance between the primary and secondary and between each of those and ground for each power transformer is measured and recorded.
- Insulation resistance of all power, control instrument (including thermocouple leads) and lighting circuits from phase-to-phase and from each phase-to-ground is measured and recorded.
- Insulation resistance of windings of all motors is measured.
- Resistance to earth for each grounding system is measured.
- Phase sequence and polarity is measured.
- Ground checks are made.
- Wiring is tagged in accordance with drawings and specifications.
- Tests to determine illumination level have been performed.
- Sealing compound is installed in all seals.
- Communication systems operability is tested.
- Electrical facilities are energised and de-energised as required.
- Generator panels have been energised.
- Switchyards are complete and ready to back feed.
- Electrical circuits have been point-to-point checked to verify that such equipment and operating systems have been correctly installed and verified to respond to simulated test signals equivalent to actual signals received during operation.
- Instruments are installed and properly connected.
- Relief valves have been properly installed.

- Control room equipment and process control systems are properly installed.
- Instrumentation system is properly checked out, including tagging, supports, accessibility, correct materials, and rating of fittings.
- Relays are set.
- Instruments (belt magnets, detectors, cameras, sensors, zero speed switches, tilt or plugged chute switches, etc.) are calibrated and checked.
- All temporary bridges required for testing have been removed and signed off a bridging register.

n) Commissioning plan for all Operable Systems has been approved by the Company.

o) Documentation of testing and other QA/QC requirements (e.g., tagging system, welding, hydrotesting, and similar) has been provided for Operable Systems in accordance with approved commissioning plan and commissioning packs, as advised by Company.

p) All other required submittals and Project Documentation have been provided.

q) The Company and the Contractor have agreed on the Punch List and there are no Category 1 items remaining on such Punch List.

r) The Company has issued the Certificate of Practical Completion pursuant to the procedure set forth in this Agreement.

s) The Contractor has provided all required as-built documentation to the Company, and has delivered all supplier / vendor drawings, data, certifications, warranties, and equipment manuals to the Company, and provided all other Project Documentation specified in the Scope of Work or otherwise requested by the Company.

2.18 Final Completion

Final Completion shall occur when all of the following conditions have been achieved with respect to the entire Work:

a) Practical Completion for the entire Work has occurred.

b) All Punch List items have been completed to the reasonable satisfaction of the Company in accordance with this Agreement.

c) The Contractor has delivered to the Company its final invoice in accordance with the Agreement.

d) The Contractor has provided the consent of its security provider, if any, to final payment.

e) Receipt by the Company of the Contractor Release and Certificate of Final Payment,

f) Receipt by the Company of the Subcontractor / Supplier Release and Certificate of Final Payment from any subcontractor used by the Contractor for which the Company requests such a release, and any vendor or supplier from whom the Contractor purchased Equipment or materials in connection with performance of the Work for which the Company requests such a release (or otherwise receipt of a lien bonds acceptable to the Company); and

g) The Contractor has otherwise completed performance of all Work required under this Agreement other than Work required by warranties.