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SPECIAL CONDITIONS OF CONTRACT

1.0.0 GENERAL

- 1.1.0 Special Conditions of Contract (SCC) shall be read in conjunction with the General Conditions of Contract (GCC), specifications of work, drawings and other documents forming part of this contract wherever the context so requires.
- 1.2.0 Notwithstanding the sub-division of the documents into these separate parts and volumes, every part of each shall be deemed to be supplementary to and complementary of every other part and shall be read with and into the contract in so far as it may be practicable to do so.
- 1.3.0 Where any provision of the GCC is repugnant to or at variance with any provision of the SCC, then the provision of the SCC shall be deemed to override the provisions of the GCC and shall, to the extent of such repugnance or variations, prevail.
- 1.4.0 Wherever it is mentioned in the specifications that the Contractor shall perform certain works or provide certain facilities, it is understood that the Contractor shall do so at his own cost, being deemed to be part of the relevant item in the Schedule of Rates (SOR) whether expressly stated or not.
- 1.5.0 The materials, design and workmanship shall satisfy the relevant Indian/ ASME/API/BS/OISD or any other Standards, the specifications contained herein and codes referred to. Where the specifications stipulate requirements in addition to these contained in the standard codes and specifications, these additional requirements shall also be satisfied.

2.0.0 BRIEF DESCRIPTION

2.1.0 Indian Oil Corporation Limited proposes to lay Natural Gas Steel Pipeline in Geographical Area (GAs) authorised to IOCL by PNGRB.

- 2.2.0 **Indian Oil Corporation Limited. invites tenders from bona fide and experienced Contractors of financial standing and reputation for the following job in three different groups as detailed below:**

Name of Work:	3 LPE COATED CARBON STEEL PIPELINE LAYING AND ASSOCIATED WORKS IN
	GROUP-A: Jehanabad GA
	GROUP-B: Salem GA
	GROUP-C: Madurai GA

- 2.3.0 The scope of work under this tender broadly involves Laying of 6.625"/4.5" OD 3 LPE coated Carbon Steel Natural Gas Pipeline in GAs Under CGD Project in Multiple groups
- 2.4.0 The pipeline network will traverse in different districts in the state of Tamil Nadu and Bihar.
- 2.5.0 The work broadly involves Mainline laying, testing and commissioning & associated works like Temporary Cathodic Protection (TCP), Optical Fibre Cable (OFC) laying works, Combined Station Works (CSW) viz. Civil, Mechanical, Electrical, Telecommunication & Instrumentation works at Sectionalizing Valve (SV) stations.
- 2.6.0 The mainline works to be carried out under the scope of present tender shall include all

crossings including HDD crossings across Rivers, Highways, Railway, Ponds, Nala & Canals.

2.7.0 The entire work under this tender is to be carried out under three groups as detailed below:

Group	Mainline Section (From / To)	Nominal Steel Mainline Pipe size OD	Mainline length (Km) (approx.)	Total Length of Different Diameters (Km)
A	Jehanabad GA	6.625"	34.08	34.30
		4.5"	0.22	
B	Salem GA	4.5"	32.30	32.30
C	Madurai GA	4.5"	6.05	6.050

3.0.0 SCOPE OF WORK

The scope of work to be executed under this tender shall include but not limited to the works mentioned below which is only indicative but not exhaustive. The Contractor shall carry out and complete all related works so as to make the scheme complete in all respects of technical requirements and to deliver the desired output/performance.

3.1.0 MAINLINE LAYING WORKS

3.1.1 The scope of mainline work envisaged under this tender shall include, but not limited to, the following:

- 1) Bidders shall also be responsible for liaisoning of all permissions from respective statutory authorities i.e. PWD, NHAI, Railway, Nagar Nigam, Local authorities, Forest/ central forest etc. Liaisoning for Permission from Statutory Authorities comprises carry out detail survey and preparing the drawing as per the requirement of statutory authority, applying for permissions, regular follow ups and obtaining the permission. IOCL is responsible only for preparing the letter towards application for permission and submission of demand note raised by statutory authorities.
- 2) Taking delivery of Owner-supplied 3LPE coated carrier pipes of various thicknesses from Owner's designated stockpile locations, and transporting them to work sites including transit insurance of pipes, placing of pipe trailers for taking delivery of pipes from stockpile, providing pipe lifting equipment at stockpile location for lifting and placing on trailers.
- 3) Taking delivery, transportation & Installation of Mainline Valves from Owner's designated stockpile locations, and transporting the same to site for permanent incorporation in the works
- 4) Setting out the works.
- 5) **Arrangement of additional land for construction activities, if required, beyond the available ROW at no extra cost to Owner.**
- 6) Welding, visual inspection of welds including radiographic inspection:

- a) The work shall include, but not limited to, Welding Procedure Qualification, Welders' Qualification Test, visual inspection of all production welding, radiographic inspection of specified and selected field joints, analysis & interpretation of the radiographic inspection results and submitting processed radiographic films and digitized radiographic film & record along with recommendation, re-examination of all defective welds after repairs etc.
 - b) Apart from the conventional method, the Contractor may also adopt either Semi-Automatic or Fully Automatic Welding methodology, at his discretion subject to prior approval of procedure by Engineer-in-Charge.
 - c) Visual inspection of all welds shall be carried out by qualified & experienced Welding Engineer provided by the Contractor under the scope of work.
 - d) **100% radiographic inspection shall be carried out for all field joints including mainline, all crossings, tie-ins, Valve installations with pup-pieces etc.**
 - e) The welded joints found defective shall be repaired and radiographically re-examined. This shall be at no extra cost to the Owner.
 - f) The work of Welding Procedure & Welder qualification and inspection of welding, including radiographic inspection & testing of welds shall be carried out as per **API Standard 1104 (Welding of Pipelines and Related Facilities)**.
 - g) Minimum One destructive test of field weld shall be conducted for each spread.
 - h) If there is a substantial gap between welding & joint coating work, welding stickers shall be provided by the contractor at no extra cost.
- 7) Cleaning and joint coating of all the pipe joints.
 - 8) Trenching in all kinds of soil, marshy areas etc. and to all depths for maintaining clear earth cover to the mainline pipe as per the specifications / drawings
 - 9) Rock trenching including controlled blasting as per specific instructions of Engineer-in-Charge (to be separately paid as per actual quantity of rock trenching subject to standard trench dimensions and cover requirements, on instruction of EIC). Use of rock trencher in place of blasting is permitted at no additional cost to the Owner.
 - 10) Filling fine sand, of specified thickness, around mainline pipe in trenches at hard rocky stretches & in stretches other than normal soil and hard rock, for providing padding on top as well as at bottom of the mainline pipe to safeguard the pipe coating. In case of non-availability of fine sand, soft soil padding shall be used upon approval from EIC.
 - 11) Filling fine sand, of specified thickness, around mainline pipe in trenches at locations where Seismic Fault Line(s) are either crossing or running parallel to the pipeline.
 - 12) Supplying & providing approved type of extruded polyethylene mesh (rock shield) on mainline pipe to protect the coating against rocky soil.
 - 13) Carrying out holiday detection and repair of coating damage, if required.
 - 14) Laying mainline by open cut method as per the following:
 - a) Laying mainline by open cut crossing method in other area including roads, minor drains, minor canals, other watercourses, ponds, dobas, low lying areas etc., which

shall be classified as **normal Mainline work**.

- b) Twin Line Laying of mainline is a method of laying of two mainline pipes (same diameter or variable diameter) in common trench with a clear gap of 500 mm between them in other area including roads, minor drains, minor canals, other watercourses, ponds, dobas, low lying areas etc. which shall be classified as **Twin Line normal Mainline work**.
 - c) Triple Line Laying of mainline is a method of laying three mainline pipes (same diameter or variable diameter) in common trench with a clear gap of 500 mm between them in other area including roads, minor drains, minor canals, other watercourses, ponds, dobas, low lying areas etc. which shall be classified as **Triple Line normal Mainline work**.
- 15) Installation of pipeline in **Marshy area using concrete coated pipes**. Concrete sheathing shall be paid separately as per the relevant Item of SOR.
- 16) Installation of pipeline by **Cased Crossing** (wherever applicable) by horizontal auger boring/Horizontal directional drilling (HDD) technique (through all kinds of soil including rock) across Railways and specified Highways/other metalled roads/Canals etc. using pre-tested pipes (i.e. pre-hydrotested carrier pipes) including supplying & providing two coats of bitumastic paint over a coat of suitable primer to external surface of casing pipe.
- a) A single boring shall be done for carrier pipe in case of **cased crossings across Highways/ other metalled roads/Canals**. Carrier pipes with HDPE insulators (interlocking type, free from metallic nuts & bolts) fixed shall be inserted carefully, by jacking/ pushing inside the casing pipe, taking care not to damage the HDPE insulators and coated carrier pipe. End seals shall be installed at the end of casing at both ends, by skilled personnel as per procedure given in specifications, and as per demonstration by manufacturer's representative (to be arranged by contractor). **The insulator (interlocking type free from metallic nuts and bolts) shall be of around 1" thickness suitable for fixing of HDPE duct and insertion inside casing pipe along with carrier pipe.**
 - b) Separate borings shall be done for carrier pipe and OFC conduit in case of cased crossings across Railways. Epoxy coating (two components) over compatible primer shall be provided to internal surface of casing pipes (including supply of paint & primer). **The insulators (inter-locking type, free from metallic nuts & bolts) shall be of around 2" thickness.**
 - c) Pre-installation hydrotest of the carrier pipe shall be carried out at a pressure corresponding 1.50 times of maximum operating pressure (MOP) of mainline for 6 hours as per the table indicated below:

Carrier Pipe details	Pre-installation hydrotest pressure (Kg/cm ²) (to be confirmed prior to test)
8.625" OD X.279" WT /6.625" OD X.279" WT/ 4.5" OD x 0.25" WT, API 5L X-52	75

- d) Post-installation hydrotest of the carrier pipe shall be carried out along with mainline as per the details given hereinafter.
- 17) Installation of carrier pipe with/without OFC duct by **shallow Horizontal Directional Drilling (HDD)** technique using pre-hydro tested pipes. Post-installation hydrotest of the carrier pipe shall be carried out along with mainline as per the details given hereinafter.
- 18) Crossings which have been envisaged as cased crossings in the tender, viz., cased crossings of railway/ highways/ canal etc. may alternately be executed by HDD technique with equivalent straight length as indicated in the tender.
- 19) Installation of carrier pipe with/without OFC duct by **Horizontal Directional Drilling (HDD)** technique across specified Rivers, Highways, Railways, Canals, Ponds, Drains etc. using pre-hydro tested pipes as per details given herein after.
- 20) Installation of pipeline by **Submerged Crossing technique** (in all kinds of soil including rock) using pre-tested concrete coated pipes as per the approved construction drawings.
- a) Pre-installation hydrotest of the carrier pipe shall be carried out at a pressure corresponding 1.50 times of maximum operating pressure (MOP) of mainline for 6 hours as per the table indicated below:

Carrier Pipe details	Pre-installation hydrotest pressure (Kg/cm ²) (to be confirmed prior to test)
8.625" OD X.279" WT / 6.625" OD X.279" WT / 4.5" OD x 0.25" WT, API 5L X-52	75

- b) Post-installation hydrostatic testing of the installed submerged crossing sections shall be carried out at test pressure corresponding to **1.50 times of maximum operating pressure (MOP) of mainline for 24 hours** as per the hydrotest pressure & MOP indicated in the table below. The combined stresses during post installation hydro test shall not exceed 95% of SMYS of the pipe material.

Carrier Pipe details	Post-installation hydrotest pressure (Kg/cm ²) (to be confirmed prior to test)	MOP for Mainline (Kg/cm ²) (to be confirmed prior to test)
8.625" OD X.279" WT / 6.625" OD X.279" WT / 4.5" OD x 0.25" WT, API 5L X-52	75	49

- 21) Supply and installation of **warning tape** of 1.0 mm thickness & width (300mm) over entire pipeline except for HDD/cased crossing as per relevant specification. Warning tape shall be laid 300mm above the top of pipeline. The material of **warning tape** shall be of high-density polyethylene and non-biodegradable type. It shall have nontoxic and anti-rodent properties as per the technical specifications.
- 22) Fabrication of **Hot-pulled bends** from Owner-supplied bare pipes, which is **optional and shall be operated under specific instructions of Engineer-in-Charge**.
- 23) Installation of hot-pulled bends in mainline including PU / High Build Solvent Free Liquid

Epoxy coating of the bend. The cost of PU/ High Build Solvent Free Liquid Epoxy coating over bare pipe shall be included in the rate of mainline laying item, which is **optional and shall be operated under specific instructions of Engineer-in-Charge.**

- 24) The mainline pipe sections which have been cleared for lowering shall be sealed immediately with full circumferentially welded end caps (only one run) prior to lowering. This is to prevent any ingress of water, mud etc. into the section before the tie-in is completed.
- 25) Lowering the pipeline in trench & backfilling.
- 26) Tying-in of welded pipeline sections including Tying-in with HDD sections under this tender.
- 27) Post installation Hydrostatic testing of complete pipeline section (between the limits of the respective sections) along with crossings including HDD sections across highways/railways/ canals/ drains etc. included in the scope of this tender with 24 hours hold period, including arrangement of water for hydrostatic testing and providing sufficient quantity of approved corrosion inhibitors depending upon the quality of water.
- 28) Detection of leak & pipe failures (if any), repair and/or replacement of defective stretch of pipeline during hydro test.
- 29) Dewatering and swabbing the pipeline by running a series of foam/ cup pigs or pig trains to prepare the pipeline for caliper survey.
- 30) Carrying out caliper survey of the entire pipeline section including HDD sections under the scope of work of this tender, by using caliper instrument vehicles and replacing the dented pipes (beyond permissible limits) with pre-tested pipes and tying-in. **This is an optional item and shall be operated under specific instructions of Engineer-in-Charge.**
- 31) **Air Drying of the entire pipeline**, including all HDD sections (covered under this tender as well as HDD crossings not in the scope of this tender and executed by separate agency). **This is an optional item and shall be operated under specific instructions of Engineer-in-Charge.**
- 32) **Nitrogen purging of the entire pipeline**, including all HDD sections. **This item shall be operated under specific instructions of Engineer-in-Charge.**
- 33) Supply and installation of pipeline direction markers, warning signs & kilometer posts.
- 34) Supply and installation boundary pillars in new ROW.
- 35) Installation of Mainline Valve (including hydrotest of new valve) with / without tapping for pressure transmitter.
- 36) Transportation of unutilized pipes at respective stockpile locations to the nearest IOCL installation **under specific instructions of Engineer-in-Charge.**
- 37) **Arranging pipeline locators in adequate numbers, whenever needed, to locate the existing embedded pipeline.**
- 38) Supply of all the materials, consumables etc. other than specifically undertaken to be supplied by the Owner.
- 39) Final cleanup & restoration of ROW.

- 40) Submission of “As-Built” drawings / documents and “Pipe Book” in soft as well as hard copy.

3.2.0 Horizontal Directional Drilling (HDD) Works.

- 3.2.1 The scope of work in this tender includes HDD crossings across Rivers, Highways, Railways, Canals, ponds etc. The HDD shall be installed to correct profile as per drawings approved by Owner/ EPMC.
- 3.2.2 If in the opinion of owner any other crossing, is required to be executed by HDD method, same shall be carried out by Contractor for which payment shall be made as per unit rates in SOR. Soil investigation/ survey for such crossing(s) shall have to be carried out by the Contractor on his own initiative and responsibility for bidding as well as for execution.
- 3.2.3 The scope of work of HDD crossings envisaged under this tender shall include, but not limited to, the following:
- 1) Carrying out geo-technical surveys investigation for the crossings for which details have not been made available by Owner or for other crossings wherever felt necessary.
 - 2) Carrying out fresh topographic survey of the proposed crossing and developing cross sectional profile drawings of the crossing locations indicating pipeline string alignment and soil lithograph/ soil bore-log details. Carrying out any other additional surveys that may be required for collecting data relevant to design and construction of the crossing. This includes obtaining information about the structures beneath proposed HDD profile from concerned authorities.
 - 3) Design & detailed engineering for installation of the crossing by HDD method to meet the technical parameters of the crossing and specifications.
 - 4) Performing all engineering and design calculations for preparing a suitable HDD profile drawing in accordance with requirements of applicable codes/ standards and submission of designed HDD profile for Owner's review and approval.
 - 5) Preparation & submission of all detailed construction / installation drawings, method statements for Owner's approval.
 - 6) Arranging access by Contractor at their own cost and initiative to HDD site for placement of HDD rig and other equipment required for the works on one side and preparation of pipe string on another side.
 - 7) Submission of QA/QC procedure for various activities of work for EPMC/EIC/Owner's approval. Submission of procedure for carrying out HDD work including piloting, reaming of hole, pull back of pipe string and restoration of site location for approval of Owner. The procedure shall also includes details of HDD rig, mud pump, bentonite, reamer, reaming steps, drill rods, drill bit, tracking system, other equipments, manpower to be deployed, etc required for completion of HDD work as per specifications.
 - 8) Procurement and inspection of all materials and consumables (required for or in connection with execution of the crossing), other than those specifically undertaken to be supplied by the Owner.
 - 9) Taking delivery of Owner-supplied 3LPE coated carrier pipes from Owner's designated

stockpile locations and transporting them to work sites including transit insurance of pipes.

- 10) Repair of pipe and coating damages, if any. For coating damages heat shrinkable sleeves ('DIRAX' make of Covalence Heat Shrinkable Products manufactured by M/s Seal for Life India Private Limited, Vadodara or DDXTM Directional Drilling kit of M/s Canusa or any other approved equivalent makes heat shrinkable sleeves which can only be used after acceptance by EIC) shall be used. The Contractor shall be responsible, at his own cost, for repair of pipe & coating damages that may occur subsequent to taking over of the coated pipes from the Owner's stockpile.
- 11) Mobilizing all equipment for stringing, welding & other piping activities, Welding machines, Bending machines, Hydro testing equipment, pipe trailers etc., and **HDD Rig(s) of adequate capacity as per minimum requirements stated in Special Instructions to Tenderers.**
- 12) Mobilizing all skilled manpower (Surveyor, Driller, Tracking engineer, mud engineer etc.) and other resources.
- 13) Site preparation including arranging of additional land temporarily required for pipeline assembly/ fabrication, stringing and equipment placement, preparation of pipeline launching area/ facilities and access to work site etc.
- 14) Critically examining the availability of necessary approach to the various crossing sites for transportation of the HDD rig and other equipment. Temporary access road, wherever required, shall be developed by the Contractor at his own cost. Payment of rentals for land for approach road, crop compensation etc., shall be made by the Contractor. Contractor shall also restore the land taken for making necessary approaches to site, after completion of the work to the satisfaction of the concerned authority/ owner and obtain necessary no-objection certificates thereof.
- 15) **Contractor shall note that the liability of Owner for providing ROW and compensation for land in Owner's ROW and crop standing in the ROW shall be limited to the extent of crossing between the hook-up points on both sides of the crossing and space required in ROW for pipe string preparation and placement of rigs and accessories. Any additional land required by contractor for performance of works under this tender shall be at contractor's own cost & initiative. Contractor shall not use existing ROW for gaining access to the crossing locations/ work sites and shall arrange/make his own independent access from the nearest accessible location/road for movement of equipment/ personnel for mobilization-demobilization and performance of works.**
- 16) String preparation including repair of pipe, welding inspection and 100% radiographic inspection (**by X-Ray**) of the girth welds.
- 17) Carrying out **pre-installation hydrotest** of the completed HDD string at pressure corresponding to **1.50 times of maximum operating pressure (MOP) of mainline for 6 hours**, including repair/ replacement of defects and re-testing till successful pre-installation hydrotest is achieved. The combined stresses during pre- installation hydro test shall not exceed 95% of SMYS of the pipe material. The pre-installation test pressures for HDD pipes involved in this project is given in table below:

Carrier Pipe details	Pre-installation hydrotest pressure (Kg/cm ²) (to be confirmed prior to test)
8.625" OD X.279" WT / 6.625" OD X.279" WT / 4.5" OD x 0.25" WT, API 5L X-52	75

18) Coating of girth weld field joints and repair of coating:

- a) Coating of girth field weld joints shall be carried out by using wraparound heat shrinkable sleeves of 'DIRAX' make of Covalence Heat Shrinkable Products manufactured by M/s Seal for Life India Private Limited or DDXTM Directional Drilling Kit of M/s Canusa or of any other approved equivalent make which can only be used after acceptance by EIC.
- b) All the repairs of pipe coating shall be carried out using appropriate wraparound cut sections of 'DIRAX' make of Covalence Heat Shrinkable Products manufactured by M/s Seal for Life India Private Limited or DDXTM Directional Drilling Kit of M/s Canusa or of any other approved equivalent make heat shrinkable sleeves which can only be used after acceptance by EIC.

19) Taking delivery of Owner supplied 24 fibre single mode metal free optical fibre cable from Owner's storage location and its transportation from the designated location to the work sites/ HDD crossing locations.

20) Supply, transportation and fabrication of conduit for OFC with 89 mm OD Schedule 80 API 5L Grade B/ASTM A106 Grade B MS pipes with inner duct of pre-lubricated flexible HDPE pipe including welding of steel pipes and joining for making the conduit ready for installation along with the mainline pipe for HDD crossings.

21) Setting out works including establishing the location of extremity points (i.e. entry and exit locations of drilled portion of pipeline to be laid by HDD technique, etc.) on ground including carrying out of pre-construction survey and collection of all necessary data.

22) Carrying out holiday detection and repair of coating damages, if any.

23) Installation of carrier pipe with/without OFC conduit/duct by Horizontal Directional Drilling (HDD) technique across specified Rivers, Highways, Railways, Canals, Ponds, Drains etc. using pre-hydro tested pipes.

24) Carrying out post-installation hydrostatic testing of the installed HDD crossing sections at test pressure corresponding to **1.50 times of maximum operating pressure (MOP) of mainline for 24 hours** as per the hydrotest pressure and MAOP indicated in the table below, before tie-in with mainline section. The combined stresses during post installation hydro test shall not exceed 95% of SMYS of the pipe material.

Carrier Pipe details	Post-installation hydrotest pressure (Kg/cm ²) (to be confirmed prior to test)	MOP for Mainline (Kg/cm ²) (to be confirmed prior to test)
8.625" OD X.279" WT /6.625" OD X.279" WT/ 4.5" OD x 0.25" WT, API 5L X-52	75	49

- 25) Hook-up of HDD section with the mainline section on both sides.
- 26) Carrying out Caliper survey of the installed HDD section along with Mainline and rectification of defects, if any. **This is an optional item and shall be operated under specific instructions of Engineer-in-Charge**
- 27) Installation of welded endcaps (with full circumferentially welded end caps (only one run)) on both sides of installed HDD section to prevent ingress of any unwanted material/ living things before hook-up with Mainline section.
- 28) Disposal of drilling fluid, returns and cuttings produced from drilling operation from work site including arranging disposal site at Contractor's cost and initiative.
- 29) Preparation & submission of "As-Built" drawings & record.
- 30) Submission of daily log of activities, with all relevant details pertaining to pilot hole drilling, reaming, pulling of pipeline in drilled hole etc., as required by Engineer-in-Charge.
- 31) Restoration of site and final clean-up including de-mobilization.
- 32) All other works, which are not specifically indicated above, but required for successful completion of the HDD works as per the tender documents, drawings, construction methodology & detailed engineering calculations etc.

3.3.0 Jobs at SV station works

- 1) Construction of SV Stations, pit, enclosures, fence etc.
- 2) Piping fabrication for installation of new pipings, MOV/ HOV, insulating couplings, drain valves with piping connection.
- 3) Taking delivery of equipment like MOV, HOVs, insulating couplings etc. and installation on prelaid foundations.
- 4) Pneumatic testing (seal) & Hydrotetsing of fabricated valve aseembly as detailed in technical specification.
- 5) Erection of Sectionalizing Valves
- 6) Installation of insulating couplings, if required.
- 7) Abrasive blast cleaning and painting of above ground piping, valves equipment/ machinery, pipe supports, all structures etc. (wherever necessary).

- 8) Abrasive blast cleaning and coating of underground piping including supply of coating material as per tender specifications. Supply and application of PU /liquid epoxy Coating on underground pipings/ piping sections/ bypass sections/vent line inside chambers.
- 9) Arranging the services of specialists in the specific fields such as radiography for welding joints and digitization of films, NDT services, internal coating, painting, etc., to ensure the smooth completion and commissioning of station.
- 10) Carrying out UT/MPI tests when required by EIC.
- 11) Any other work as assigned by EIC/ Site -Engineer for smooth completion of hook-up work and making line ready for operation.
- 12) Only the major jobs have been outlined above and the entire scheme is to be executed as per SOR, direction of EIC, drawings issued to Contractor. Any other job as envisaged necessary by EIC for completion of the scope of work shall be executed by Contractor without any additional cost to Corporation. Only non-sparking tools are to be used for hook-up works.
- 13) The sequence of works outlined above is tentative and may change as per direction of EIC/ Job Safety Analysis. All labour, material (except Owner supplied material), consumable, safety equipment, equipment hiring cost involved in execution of the work shall be in the scope of contractor. Before any hook up job, any step as deemed necessary by EIC would be carried out. All arrangement including, Fire and Safety arrangement etc. for safe and successful execution of job shall be made by Contractor without any additional cost to Corporation.

3.4.0 CATHODIC PROTECTION WORKS

The Scope of work for TCP works shall include but not limited to the following:

- 3.4.1 The work shall consist of detailed engineering, supply, installation, testing and commissioning of Temporary (TCP) system for protection against corrosion of the Mainline pipes, coated with anti-corrosive coating (specified in Project specific requirements) and underground coated station piping and other buried structure in the pump stations / delivery stations over the entire envisaged life span of 35 years, provision for linking the CP stations to the owner's SCADA system and monitoring of the data and carrying out appropriate remedial measures to ensure complete cathodic protection system and acceptance by the owner for the specified pipeline system as per Attachment-4 & respective SOR items.
- 3.4.2 Detailed engineering for Ground bed and its layout.
- 3.4.3 Supply of all materials required for incorporation in the Permanent Cathodic protection system for the mainline and station.
- 3.4.4 Conducting surveys as per the approved procedure and specification.
- 3.4.5 Preparation and submission of detailed engineering including detail engineering data, drawings, material specifications, work procedures etc., for the owner's approval.
(For detailed Description, SOR & Specification to be referred.)

3.4.6 The Broad list of materials to be supplied at site (as per approved make listed in **tender**) shall include but not limited to the following:

- Cathodic Protection Transformer Rectifier (AC CP Unit of 25V, 25A capacity)
- MMO anodes / Anode strings
- Zinc anodes and grounding cells
- Calcined Petroleum Coke (CPC) back-fill material
- Test Lead Points or Test Stations (FLP and non-FLP)
- Cathode and Anode JB
- Soil resistivity meter
- Multimeter with data-logging
- Portable data logger
- Surge diverters
- Solid State Decoupling device
- LT cables (as per SOR / requirement)

3.4.7 Works / composite items (For detailed Description, SOR & Specifications are to be referred.)

- Detailed engineering, installation, testing and commissioning of all materials in respect of TCP & PCP system of the Mainline and Station, against corrosion and provision for integration with the owners SCADA system.
- Selection, procurement and supply of all materials for TCP & PCP system.
- Preparation and submission of detailed engineering document including design data, drawings, material specifications etc.
- Installation, testing and commissioning of Cathodic Protection Transformer rectifier (CPTR) units having 'Manual' and 'Auto' PSP control facility, as per owner requirements for station CP works.
- Installation, testing and commissioning of CPTR and CPPSM units having 'Manual' and 'Auto' PSP control facility, as per owner requirements for mainline CP works.
- Identification of anode bed locations for each CP station.
- Installation, testing & commissioning of shallow - horizontal / vertical and deep well type anode beds at CP locations and integration with CP units.
- Establishment of Permanent Impressed Current CP system using MMO anode with the selected configuration at each CP location.
- Selection of anode configuration suitable for Station & mainline CP system (shall be prepared & vouched by the manufacturer of anode).
- Installation, testing and commissioning of Flame proof Cathode JB, Anode JB and FLP type TLP.
- Installation, testing and commissioning of permanent reference cells.
- Measuring, recording and submitting PSP values & CP station data to assess the status of protection in the stretches of pipeline, on quarterly basis till handing over of the system to Owner.
- Repair of all coating damages occurred during connection of cables to the piping intended to be protected cathodically.
- Obtain statutory clearances from local, state as well as central Govt. authorities in respect of installation, testing and commissioning of the complete PCP system (as required).

3.4.8 Testing & Commissioning

Contractor is responsible for testing & commissioning of complete system as per technical specification and approved procedure.

3.5.0 OFC/INSTRUMENTATION WORKS

BRIEF SCOPE OF WORK FOR HDPE Pipe laying AND OPTICAL FIBRE CABLE BLOWING WORKS IN THE MAINLINE INCLUSIVE OF HDD SECTIONS (ROAD/ DRAIN)

The scope of work under this tender shall comprise but not limited to the following:

3.5.1 OFC Laying Works with Mainline Works

Supply & transportation of 40 mm OD HDPE pipe, HDPE duct accessories such as plastic couplers, end caps, end plugs, cable sealing plugs etc. as per specifications to different work sites along ROW.

Laying of the HDPE pipes along with mainline pipe in the same trench, installation of the required duct accessories, end sealing of the HDPE pipes for OFC blowing as per specifications.

3.5.2 Testing of HDPE Duct after laying.

Supply, transportation and fabrication of conduit for OFC with 89 mm OD schedule 80 API 5L Grade B/ ASTM A106 Grade B MS pipes with inner duct of pre-lubricated flexible HDPE pipes including welding of steel pipes and joining for making the conduit ready for installation along with the mainline pipe for HDD Crossings.

3.5.3 Taking delivery of Owner supplied 24 fibre single mode metal free optical fibre cable from Owner's storage location as per tender and its transportation from the designated location to the work sites/ HDD crossing locations.

3.5.4 Pre-laying testing of Owner supplied OFC (OFC drum length shall be approx. 4 KM) and maintaining, submitting the OTDR traces.

- a. Blowing of the Owner supplied OFC through HDPE pipe as per approved blowing methodology.
- b. Jointing, splicing and testing of OFC upon installation as per detailed scope of work / specifications and drawings.
- c. Supply and installation of the OFC Jointing kits, Fiber Termination Box, Pre-Fabricated RCC Joint box, RFI Electronic Markers, Electronic Marker Locator cum Cable/ Pipe Fault Locator, pre-fabricated printed markers, joint pit markers, transition pits as per specifications.
- d. Writing/ storing data in the installed RFI Electronic Markers at different joint locations all along the pipeline as per directions of Site Engineer/ Engineer-in-charge and on-site demonstration of features & functions of Electronic Marker Locator, Fault Locator Unit.

- e. Supply, installation and commissioning of cable tray in each actuated SV locations in the route of Mainline for routing of OFC cable from building entry transition pit upto the Fiber termination box (installed in rack of telecom system being supplied and installed through separate contract.
- f. Supply of spare OFC jointing kits and Electronic Markers.
- g. Hop to hop post-laying testing of laid OFC, taking OTDR trace printouts of each fibre. The testing shall be witnessed by the Owner's representative.
- h. Handing over the laid & tested OFC to the Owner.
- i. Arranging tools, tackles, machinery, test instruments including OTDR, skilled manpower etc. complete in all respects for carrying out above jobs.
- j. Preparation of as built Drawings & Documents as per details specified elsewhere in this Chapter.

Details of the sections / stations wherein jobs are to be carried out are specified in tender

3.5.5 Broad details of documentation to be submitted are as below:

- i. **Optical Fibre Cable (OFC) As Built Route Map** consisting of Optical Fibre Cable route details on Geographical Map drawn to scale with prominent landmarks (with reference/ distance from nearby permanent features/ structures) reflecting details of joint locations, pit markers, electronic markers, etc. The route map shall include GPS co-ordinates along with Geographical locations. The route map shall also indicate the Cable drum numbers used for the respective stretch and optical length of the cable along with the pipeline chainage. These drawings shall be prepared on sheets of A2 size.
- ii. **Joint Location Diagram:**
This diagram shall indicate
 - a) Geographical location along with GPS co-ordinates of all the joints.
 - b) Depth of RCC Joint Chamber lid/ cover from the ground level.
 - c) Length of Optical Fibre Cable kept inside the RCC Joint Chamber from either direction.
- iii. Hop to hop OTDR Trace Print-outs for each fibre of OFC laid.
- iv. Splice Loss Reports of each fibre at each joint location

3.6.0 Six (6) hard copies of As built drawings along with a soft copy of CAD Drawings in DVD media shall be submitted. Bidder to note that all documentation shall be clear and legible and is to be submitted in proper bound folders. Photocopied documents shall not be acceptable.

3.7.0 The As-built Drawings/ Documents shall bear the signatures of the Contractor and shall be duly verified/ approved by the Engineer-in-Charge after review.

3.8.0 SCOPE OF WORK - SUPPLIES AND SERVICES TO BE COVERED UNDER MAINLINE FOR HDPE LAYING AND OPTICAL FIBRE CABLE BLOWING WORKS

3.8.1 HDPE PIPE LAYING

Owner has planned to lay optical fibre cable along the upcoming pipeline under City Gas Distribution (CGD) Project, through permanently lubricated 40 mm OD HDPE duct. The HDPE duct, as conduit for Optical Fibre Cables, shall primarily be laid in the same trench bed of mainline pipe.

The HDPE conduit thus laid, shall be used to house the Owner supplied metal free un-armoured optical fibre cable by air blowing method by the contractor. The HDPE pipe shall be laid with steel line as mentioned in the tender. All jobs including excavation, laying of HDPE pipe, blowing the OFC, backfilling, splicing, testing, supply and installation of Fiber Termination Boxes, RCC joint enclosures, jointing kits, Electronic markers, transition pits etc. shall be in contractor's scope.

In the HDD sections for Road/ Drain Crossings, 89 mm OD schedule 80 API 5L Grade B/ ASTM A106 Grade B MS pipe inner ducted with flexible permanently lubricated HDPE (40mm OD) as per TEC GR No. GR/TX/CDS-008/03/MAR-11 (amendment No.1 Dated 25/28.03.2013) conduit shall be installed by the contractor.

3.8.2 OWNER SUPPLIED OPTICAL FIBRE CABLE

24 fibre metal free Optical Fibre Cable of nominal diameter 15 mm (approx.) suitable for underground installation in ducts shall be supplied by Owner for installation by air blowing method & commissioning by the contractor within the scope of this tender. The nominal length of the Owner supplied OFC shall be 4 Km per drum.

3.8.3 DETAILED SCOPE OF WORK

Contractor shall supply permanently lubricated HDPE pipe of 40mm diameter as per TEC GR NO. GR/TX/CDS-008/03/MAR-11 (amendment No.1 Dated 25/28.03.2013) with minimum pressure rating of 6 kg/cm² and wall thickness of 3.5 mm, in nominal length of 1000 metres.

HDPE LAYING- The details of HDPE laying in common trench with Mainline Pipe as well as HDPE laying in a separate trench have been covered below:

Contractor shall supply warning tape of 150 mm wide marked as "WARNING - IOCL OPTICAL FIBRE CABLE BELOW" in English, Hindi and local language throughout the length of the HDPE pipe under the scope of this tender.

Transportation and loading/ unloading of the HDPE pipes safely up to site, shall be the responsibility of Contractor. It will be a prerequisite to inspect entire length of HDPE against any possible damage/ crushing of HDPE pipe prior to lowering in the trench.

Laying of HDPE in the same trench with Mainline Pipe- For laying of the HDPE pipe in the same trench with mainline pipe, HDPE pipe shall be placed on the trench bed only after lowering of mainline pipe in the trench. **Contractor shall ensure that the distance between HDPE and mainline pipe (from outer edge of mainline pipe) is maintained between 40 cm and 50 cm.** In case due to positioning of pipe, the specified distance is not manageable, width of the trench is to be increased to maintain minimum 40 cm spacing

from mainline pipe at all such locations. Contractor shall take extra precaution to ensure maximum possible clearance and to prevent future contact after backfilling.

Laying of HDPE in a separate trench [Drawing as per tender document]

- a) For laying of the HDPE pipe in a separate trench, the excavation job in any stretch shall be carried out only after properly tracing & locating the existing mainline pipe buried underground. Contractor shall ensure that a distance of minimum 1 Metre is maintained between the HDPE and the existing mainline pipe (from outer edge of mainline pipe). Contractor shall take extra precautions to ensure that in any case no damage is caused to the existing Mainline pipe and to the pipe Coating. The Contractor shall be totally responsible for any damage caused to the existing Mainline pipe/ pipe coating.
- b) The HDPE pipe shall be laid in a separate trench at a depth of 1.65 meters from original ground level. Excavation and clearing the trench up-to the desired depth shall be carried out to lay the OFC in a separate trench. The trench shall be backfilled after laying of HDPE pipe to restore up to the original ground level.

The HDPE duct length of 1000 metres shall be laid in the trench bed and as far as possible joints should be avoided. Wherever it is not possible to lay 1 Kms continuous length, the contractor shall lay the duct in smaller lengths with due permission of Engineer-in-charge / Site Engineer. These lengths shall then be jointed through split coupler, which shall be made of same material and supplied by the contractor, to make continuous pipe sections. Such joints shall exhibit a strength factor of one and shall be airtight so that the HDPE pipe with the joints can withstand air pressure of 6 kg/cm². All efforts shall be made to minimize joints in less than 1000 metres, which is likely to happen due to road/ river/ nallah/ railways crossings etc. In all open cut crossings it is to be ensured that no joints take place in subducting and only HDPE pipes without joint are used.

Contractor shall supply and put suitable size end caps at both the ends of each HDPE section to seal each HDPE duct section after laying to prevent ingress of silt, water, litter, dust etc., prior to back filling. Contractor to note that at the end of each day's work, the open ends of the HDPE pipe sections shall be tightly closed with end caps to prevent the entry of dirt/ mud, water or any foreign matter into HDPE pipes until the work is resumed. Soft soil padding shall be done up to the top level of the mainline pipe prior to back filling operation, so that heavy impact on the HDPE pipe is avoided during back filling. During back filling, Contractor shall ensure that HDPE pipe does not change its position due to heavy impact of soil or due to any other cause. To ensure the same the following methods may be adopted (applicable for HDPE laying in common trench with Mainline Pipe):

- a) Installation of 8 mm diameter steel rods at an interval of about 10 meters along the HDPE pipe (towards mainline pipe on temporary basis) before back filling so as to prevent shifting of HDPE pipe during back filling.
- b) After back filling for a certain trench, the steel rods as mentioned in 'a' above shall be taken out for use in the next trench.
- c) Contractor may use any other better or more economic method with prior approval from the Owner.

At every 1 km, HDPE duct sections overlap each other (i.e. from both sides) by approx. 1 meter, so as to facilitate the blowing of optical fibre cable at a later date by the Contractor. Such provision is also to be kept where optical fibre cable joints are likely to come, in consultation with Engineer-in-charge/ Site Engineer. Contractor shall install pre-fabricated RCC (1:1.5:3) joint box at joint location in consultation with Engineer-in-charge / Site Engineer. The contractor shall plan and install joint box at locations where cable

joints are likely to come keeping in view that the nominal cable length / drum is 4 kms. At such joint locations the HDPE shall overlap by approx. 2 meters to facilitate OFC blowing. Contractor shall try to minimise the number of joints. The quantity of the items envisaged in the schedule of rates is based on proper planning by the contractor. Contractor to note that any additional quantity (for Supply as well as Services items) over & above the SOR quantity of items applicable for an OFC Joint (i.e. OFC Joint kits, RCC Joint box/ enclosure, Electronic Marker, Pit Marker) due to poor planning and negligence of the contractor shall not be paid by the Owner and shall be to the contractor's account.

The details of RCC joint box shall be as per drawing. While installing the RCC joint box, the contractor shall ensure easy approachability for maintenance purpose and the RCC joint box shall be installed near the road crossings / edge of the fields to the extent possible. The location of the joint RCC box is to be recorded. The contractor shall ensure that the RCC joint box is not installed in low-lying areas and in the centre of the fields. Installation of the joint box shall be done in consultation with Engineer-In-Charge / Site Engineer.

Bidder to note that crossings for Roads/ Drain as per details stated elsewhere in the tender shall be executed by Horizontal Directional Drilling method as a part of this tender. Across each HDD crossing for Road/ Drain, the contractor shall:

- a) Supply the HDPE pipe along with accessories such as end cap, cable sealing plug and all the machinery, tools, tackles etc. to complete the job in all respects (except OFC which shall be Owner supplied) to lay the HDPE & OFC across each HDD crossing. The contractor while supplying the HDPE duct shall make sure that the length of the HDPE duct for HDD Crossing shall be at least equivalent to the length of the crossing plus 60 Mtrs (i.e. 30 Mtrs on either side of crossing) without any jointing. Jointing of the HDPE shall not be accepted.
- b) Supply & fabricate the string of 89 mm OD schedule 80 API 5L Grade B/ ASTM A106 Grade B MS pipes by welding as per the owner's approved procedures. The MS pipe conduit fabricated as above shall be inner ducted with contractor supplied flexible permanently lubricated HDPE of 40 mm OD as per the specifications defined elsewhere in the tender document. The HDPE duct sub ducted in a 89 mm OD schedule 80 API 5L Grade B/ ASTM A106 Grade B MS pipe shall be laid by Horizontal Directional Drilling (HDD) Technique across the HDD crossings.
- c) Pull back the conduit along with the mainline pipe as per the pullback procedure. Any damage in schedule 80 MS pipe and HDPE pipe during the pullback operation will be on Contractors account. If any breakage in Schedule 80/ HDPE pipe occurs during laying of HDD, Contractor shall be responsible to re-install the HDPE pipe and/ or Schedule 80 pipe as required without any extra cost to the Owner. (However, in case of laying in a separate trench, the HDD shall be carried out only for the conduit for OFC).
- d) Seal the two ends of HDPE conduit immediately after installation with heat shrinkable duct end caps to prevent ingress of water, dirt and rodents. The gap between MS pipe & HDPE conduit shall be sealed with M-Seal compound to prevent ingress of water, dirt & rodents.
- e) Bidder to note that it is not desirable to have a joint location of OFC in vicinity of the HDD crossing for Road/ Drain. However, in case it is unavoidable, the joint location of OFC (in vicinity of the HDD crossing for Roads/ Drain, if any) shall be

minimum 30 Mtrs away from HDD Crossing ends at both sides. Similarly, 30 Mtrs on either side across the HDD crossings, the HDPE Conduit shall be of single piece and in no case joining of HDPE conduit shall be allowed.

Bidder to note that the blowing of OFC through the above mentioned Road/ Drain HDD Crossings shall be carried out along with the blowing of OFC in the mainline by air blowing techniques as per the specifications, so that unnecessary additional joints are not created.

Apart from the HDD crossings for Roads/ Drain mentioned above, River crossings in the Project shall be executed by Horizontal Directional Drilling method by a separate agency (called HDD contractor) under a separate contract. Across each said HDD crossing, the HDD contractor shall supply & install HDPE pipe sub-ducted in MS Pipe and blow optical fibre cable through the same. At both the ends of each HDD crossing for such rivers, the HDPE duct shall be sealed by the HDD contractor and the same shall be left in RCC transition pit. At both ends of these river HDD crossings, the HDD contractor shall leave a loop of approx. 300 meters optical fibre cable in the transition pit. **The contractor under the scope of this tender for mainline works shall: -**

- a. Expose the transition pit across HDD crossings wherein the Optical Fibre Cable is left by the HDD contractor.
- b. Supply and install HDPE duct as conduit for the OFC for the 300 Meter section (at both ends of River HDD crossing). Supply & installation of associated accessories like couplers, end caps etc. shall also be contractor's responsibility.
- c. At the respective River HDD crossing, uncoil and lay the optical fibre cable loop left by the HDD contractor along the mainline & splice with the optical fibre cable laid in the mainline ROW. The OFC shall be laid in 40 mm OD HDPE conduit as per the procedure defined in previous sections to maintain continuity in the OFC.
- d. Supply and install jointing kits and RCC enclosures for splicing of the OFC. Contractor to note that RCC joint box/ transition pit provided by HDD contractor at the river HDD crossings shall be abandoned.
- e. Contractor shall supply & install HDPE, warning tape and OFC markers as per drawing at every 1 KM (at appropriate locations) at the HDPE ends.

At SV locations where actuated valves will be installed, contractor shall leave a loop of approx. 100 meters optical fibre cable in the transition pit.
Contractor shall supply and install pit markers as per Drawing at every joint location.

At the railway crossing locations, where mainline pipe shall be installed in casing pipe by boring or jacking method, the contractor shall supply and install GI Pipe of 100 mm nominal bore heavy class as per IS1239 by boring or jacking method at these crossings. All boring machinery, tools tackles etc. shall be arranged by the contractor to complete the job in all respects. Each 100 mm GI pipe installed in such crossings shall be sub-ducted by a 40 mm OD HDPE through which Optical Fibre Cable shall be laid by blowing method by the contractor. All boring machines, tools tackles etc. shall be arranged by the Contractor to complete the job in all respect. The HDPE pipe, end sealing materials and all the machinery, tools, tackles etc. shall be supplied by the contractor to lay the HDPE across

such crossings. **In all crossings it is to be ensured that no joints take place in sub-ducting and only HDPE pipes without joint are used.**

At the road and other cased crossing locations (except railway crossings) where mainline pipe shall be installed in casing pipe by boring or jacking method, the 40 mm HDPE duct shall be laid in the same casing pipe along with mainline pipe. **The contractor shall ensure that single length of HDPE duct is laid at cased crossings; no joints would be acceptable.**

At submerged river crossings, canal crossings, marshy areas, water course crossings, saltpan areas etc. where mainline shall be laid in open cut method, the contractor shall suitably strap the 40 mm OD HDPE pipe with the mainline pipe and further strengthen by making a PCC (1:2:4) block on the weld joint points of mainline pipe at 'just before start of crossings, in the portion of submerged crossing, just after finish of submerged crossing' for anti-buoyancy. The contractor may adopt other suitable method for anti-buoyancy with prior approval of Engineer-in-charge / Site Engineer. The material to be used for strapping shall preferably be same as HDPE pipe and shall preferably be biodegradable material. The contractor shall ensure that while strapping the HDPE pipe with the mainline, the HDPE pipe shall be at 3 O'clock or 9 O'clock position. For such crossings in case of independent OFC laying, drawing as per tender document shall be followed.

Railway crossings/ road crossings/ other crossings for HDPE laying in a separate trench- In case of HDPE laying in a separate trench at the railway crossing/ road crossing/ other crossing locations, the contractor shall supply and install GI Pipe of 100 mm nominal bore heavy class as per IS1239 by boring or jacking method at these crossings. All boring machinery, tools tackles etc. shall be arranged by the contractor to complete the job in all respects. Each 100 mm GI pipe installed in such crossings shall be sub-ducted by a 40 mm OD HDPE through which Optical Fibre Cable shall be laid by blowing method by the contractor. The HDPE pipe, end sealing materials and all the machinery, tools, tackles etc. shall be supplied by the contractor to lay the HDPE across such crossings. **In all crossings it is to be ensured that no joints take place in sub-ducting and only HDPE pipes without joint are used.**

3.8.4 HDPE DUCT TESTING AFTER LAYING

The 1 km long section 40 mm OD HDPE pipes will be properly positioned and laid in trench following details in pre-paragraphs. After installation of HDPE duct, the duct shall be tested by **Air Blow Test** -Air with 10 bar pressure will be allowed to pass through the duct at the far end if the air flow volume is good, duct continuity is in order

The 1 km long section 40 mm OD HDPE pipes will be properly positioned and laid in trench following details in pre-paragraphs. After installation of HDPE duct, the duct shall be tested by **Sponge Test** for duct cleaning - The lubricated sponge is blown through the duct from one end and collected at other end. This will clean any dirt and water. Sponges are blown through the duct until clean sponge comes out of the duct.

The 1 km long section 40 mm OD HDPE pipes will be properly positioned and laid in trench following details in pre-paragraphs. After installation of HDPE duct, the duct shall be tested by blowing mandrel (OD of mandrel shall be 80% of ID of the HDPE) through the duct and thus carrying out mandrel passing test. If any permanent constriction or leakage is observed due to damage in the HDPE duct or otherwise, the constricted/ damaged / leakage portion shall be replaced by a suitable piece of HDPE with couplers at both ends to join it. The test then shall be repeated, till successful completion. Immediately upon successful completion

of this test, both ends of respective section of HDPE shall be plugged using end caps. Testing of the HDPE duct shall be carried out only after backfilling of the trench.

After successful completion of the mandrel test, the HDPE section shall be pressure tested at 6 kg/cm² with air for a period of 30 minutes and the pressure shall be recorded at every 5 minutes interval. Pressure drop upto 5% is acceptable. All arrangements for this pressure testing including compressor, couplers, tools, tackles shall be arranged by the contractor. In case of any leak/burst of the HDPE, the contractor shall rectify (including re-excavating the damage/ leak site and back filling after repair) the same without any extra cost to the Owner. Cost towards supply of required HDPE duct, accessories and associated services for replacement of defective section shall be borne by the contractor. After rectification, mandrel test shall be done and the HDPE pipe shall be pressure tested again for a period of 30 minutes to the specified pressure.

3.8.5 OPTICAL FIBRE CABLE BLOWING WORKS

The Contractor shall lay by air blowing method, splice, terminate and test the Owner supplied 1310 / 1550 nm, single mode 24 (Twenty-four) fibre, unarmoured optical fibre cable (OFC) through the tested 40 mm OD HDPE pipe. The contractor shall lay, splice, test and terminate OFC in complete pipeline section including the Repeater/ MOV stations en-route. The OFC shall be tested thoroughly as per standard test procedures before and after laying so as to ensure proper functioning.

The contractor shall be fully responsible for:

- a. Transportation of OFC from Owner's storage point to different work sites.
- b. Pre-laying testing of Owner supplied OFC, blowing of the OFC through HDPE duct, splicing and jointing of OFC along the route (including supply and installation of RCC joint box, joint kit), entry inside building and post laying testing of the OFC for the entire route, submitting OTDR trace printouts for each fibre & each hop. Inside Owner's premises i.e. at all stations and repeater stations en-route, the contractor shall lay the OFC through HDPE pipe from the transition pits up to the inside of Telecom Equipment Room & terminate it in the Fiber Termination Box.

Guidelines shall be based on international standards of practice for installation of optical fibres. The OFC shall be laid in contractor laid 40 mm OD HDPE conduit by air blowing method. All machinery like cable blowing machine, compressor, lifting jack for cable drum, transport vehicle, tools, tackles shall be arranged by the contractor to complete the job in all respect.

For HDPE laying and OFC blowing the contractor shall ensure and carry out the activities but not limited to the following:

- a. Transportation of machinery and materials to different work sites.
- b. **Minimize joints and identify joint locations. Any additional joint above the SOR quantity shall not be payable to the Contractor.**
- c. Placement of route markers
- d. Methods of room entries for termination.

- e. Identify physical hindrances and taking suitable action.
- f. Recommended best method of installation and plant/ machinery required.
- g. Determine exact bill of quantities for HDPE and other accessories.
- h. Rotation of the cable drum shall be controlled to ensure that there is always some slack in the cable during pay-off so as to ensure cable installation at near zero tension.
- i. During blowing it shall be ensured that there is no dust or obstacles remaining in the duct which can damage the cable. Lubricant shall be used during blowing of the cable in ducts if required.
- j. The cable shall be tested in each hop of pipeline section for individual splice loss, fibre loss, connector loss using appropriate test instruments and the records of the values so obtained shall be furnished to the Owner. Hop-wise OTDR traces for each fibre shall be taken for each hop from both directions and the printouts to be submitted to Engineer-in-charge for review.
- k. In case of joint failure/ cable fault / damage of the cable, it shall be the responsibility of the contractor to locate the cable fault, rectify the same and establish the specified performance.
- l. Contractor shall supply and install RCC joint box and joint kit at each joint location. A cable loop of approx. 10 Meter (5 Meter each from both directions) shall be kept for future maintenance in RCC joint box. However, in transition pits at building entry points, such cable loop shall be 20 M (10 meter each from both directions).
- m. Sealing of RCC Joint Box/ Transition Pit- Proper sealing of the entries of RCC Joint Box/ Transition Pit with hard rubber bush of suitable size shall be ensured to prevent entry of insects, rodents and rainwater. Also, the RCC Joint Box/ Transition Pit shall be filled up with clean sand to prevent any rodent/ insect/ pest entry into the enclosure.
- n. Sealing of HDPE Ducts- Cable Sealing plug shall be used to seal the ends of the duct perfectly after the cable is installed in the duct in order to prevent the entry of dirt, water, moisture, insects / rodents etc. This is required to be installed at all the places where cable has come out of the duct either for jointing or entry into the building as required.
- o. The cable shall be spliced/ jointed by skilled personnel using fully automatic splicing machines (fusion splicer) to achieve the specification of joint loss of not more than 0.10 dB/splice. It should also be ensured that during splicing no fibres are interchanged and hop to hop continuity of all 24 fibres in each hop is to be maintained. All splices shall be protected by heat shrinkable sleeves. Dust free environment shall be ensured for fusion splicing. The joints shall be housed in appropriate joint kit and the location of the same shall be indicated by providing suitable joint markers. The route markers suitable for the purpose for indicating the position of the cable shall be provided along the length as defined elsewhere in the tender.
- p. Each splice joint should be coated with epoxy resin to protect against moisture and increase the mechanical strength. As an alternative to joints coated with epoxy resin, bidder may provide satisfactory method for permanently protecting each splice joint against moisture and providing mechanical strength.
- q. Contractor shall submit methodology for HDPE laying & OFC blowing, QA/ QC procedure to Engineer-In-Charge for Owner's review & approval prior to installation of HDPE and blowing of OFC.
- r. Contractor shall submit a detailed deployment plan giving details of pipeline segment (chainage etc.), mobilization plan for excavator, vehicles, machinery, OTDR, splicing

machine, truck/ trailer for carrying OFC, lifting jacks, engineering, supervisors, labors etc. for each pipeline segment to EIC before start of job.

- s. At all road crossings and other cased crossings (except railway crossings) 40 mm HDPE duct shall be installed through the casing pipe common for mainline pipe & HDPE duct for the optical fibre cable. The pipes shall be sealed after cable installation to avoid ingress of water/ insects and rodents. Within station limits, 40 mm OD HDPE duct shall be sub-ducted in GI Pipe of 100 mm nominal bore medium class B as per IS1239 at road crossings and at places where HDPE duct is crossing the mainline pipe/ station piping. Wherever GI pipes are used, special care should be taken to ensure that the GI pipes are coupled properly with the sockets so as to avoid damage to HDPE duct and eventually the Optical Fibre Cable. Rubber bushes shall be used at either ends of the GI pipe to protect the HDPE duct from damage.
- t. GI Pipe of 100 mm nominal bore heavy class as per IS1239 used for Railway Crossings in case of HDPE laying in common trench with mainline pipe/ used for Railway Crossings/ Road Crossings/ Other Crossings in case of HDPE laying in separate trench shall be installed with a HDPE sub duct for the optical fibre cable. The pipes shall be sealed after cable installation to avoid ingress of water/ insects and rodents.
- u. While laying cable, the tensile load of the OFC must not be exceeded.
- v. In all sections, it shall be ensured that during back filling first 20 cm of the soil shall not contain any stones which can damage the HDPE pipe.
- w. After 40 cm of back-filling a warning tape of 150 mm wide marked as "WARNING - IOCL OPTICAL FIBRE CABLE BELOW" in English, Hindi and local language shall be provided throughout the length of the HDPE pipe.

3.8.6 TESTING THE OFC

The Owner shall provide factory tested OFC in nominal drum length of 4 Kms per drum. Prior to installation, the Contractor shall physically see the cable for any damage and test the Owner supplied OFC using the Optical Time Domain Reflectometer (OTDR). The contractor shall be responsible for taking the OTDR traces and other test parameters for each drum and keeping record of the OFC traces of such tests. OTDR Trace results shall be submitted to the Site Engineer/ Engineer-in-charge for review.

After blowing of the each cable drum through the HDPE, the Contractor shall again test the cable and take OTDR traces. The post installation OTDR traces (hard copy and soft copy) shall be submitted to Engineer-in-charge for review. Testing shall be performed on each fibre and on all the drums.

No variation in the test parameters indicates the quality of the cable blowing works. The cable laying is liable for rejection if the variation in test parameters is observed. Under such conditions, the contractor shall be responsible to supply and install tested cables in the defective stretch / section without any extra cost to the Owner. The above testing procedure shall be performed for replaced cable also. All costs towards replacement of the damaged cables including supply of the cable shall be borne by the contractor. Contractor to note that the cable to be supplied as replacement shall be similar in design to the Owner supplied cable.

After splicing and termination, the contractor shall test the OFC for each fibre as stated in previous section. The splice loss shall be recorded by the contractor in the format enclosed in the tender. For each splice, loss of 0.1 dB is allowed. If splice loss is more than 0.1 dB, such splices shall be rectified in consultation with the Engineer-in-charge/ Site Engineer.

All efforts shall be made to keep the wastage of OFC at minimum. After laying of OFC leftover cable shall be tested for OTDR traces and returned to the Owner in good, coiled condition. Cable pieces of length less than 50 meters shall be considered as scrap. A maximum of 0.5% of the total OFC length may be allowed as scrap generated during cable installation including wastage during splicing / jointing. This shall include pieces of cable left after installation, jointing, repairing etc.

All left over OFC after laying shall be thoroughly tested before handing over to the Owner along with the test reports. If any discontinuity / point loss beyond 0.1 dB in any fibre is found, the cable shall not be accepted by Owner.

The Contractor shall be equipped with the following minimum equipment's for testing the OFC:

- Optical Fibre Fusion Splicer
- Fusion Splicer Tool Kit
- Optical Time Domain Reflectometer.

In all cases, the Contractor shall notify the Owner ten working days in advance for testing of the cable so that the Owner or his representative may be present on mutually agreed date.

The record of the OFC laid during the day shall be maintained on daily basis as per the format enclosed in the tender. To facilitate the traceability after installation at a later date, this record should contain OFC drum No., sequential meter reading of the OFC laid, pipeline chainage between which the OFC has been laid along with the sequential meter reading. The Owner supplied OFC shall have sequential marking at every 1 meter to facilitate the record maintenance. Record of Cable laying at HDD Crossing shall be maintained as per APPROVED format.

4.0.0 SCOPE OF SUPPLY

4.1.0 OWNER'S SCOPE OF SUPPLY

4.1.1 The Owner's scope of supply shall be limited to the supply of the following:

- (a) 3LPE coated pipes, with a cut-back length of 150 mm +0, -25 mm and conforming to API 5L (Double random length) from IOCL stockpile location.
- (b) 24 Fibre single mode unarmoured Optical Fibre Cable.

Bidder to note that Owner has envisaged to lay unarmoured optical fibre cable across through HDPE duct in each HDD crossing. However, Owner may decide to lay armoured optical fibre cable in place of unarmoured optical fibre cable. Details shall be finalized during detailed engineering stage and communicated to the bidder before execution. Decision in this regard shall be taken by the Owner and the same shall be binding on the contractor.

- (c) Mainline valves for 2" NB & above size.

4.1.2 Transportation of mainline coated pipes on trailers: The contractor shall submit to owner a complete procedure (including calculation) indicating the manner and arrangement proposed for handling coated pipes at stockpile, during transportation to site (ROW) and at pipe laying site for EIC/Owner's approval prior to its implementation, indicating reference of international standard / code, if any. Coated pipes will be loaded in the trailer as per API 5L1 (API recommended practice for Railroad transportation of Line pipes) for transportation. Loading and transportation should be done in a manner so as not to damage the coated pipes in any way.

4.2.0 CONTRACTOR'S SCOPE OF SUPPLY

- 4.2.1 Without prejudice to the provisions under Section 3 of the General Conditions of Contract, the following indicative list of materials to be provided by the Contractor is given for information. It is to be clearly understood that the following list is not exhaustive and that barring the items specifically undertaken to be supplied by Owner, supply of all other materials and consumable necessary for completion of various jobs to their entirety shall be Contractor's responsibility.
- 4.2.2 All the equipment, materials, field instruments, consumables, etc. which are not specifically indicated in Owner's Scope of Supply but are required for successful completion of the works as per specification, drawing, construction methodology etc., shall be included in the Contractor's Scope of Supply. However, an indicative list of the materials to be supplied by the Contractor, but not limited to, is given below:
- 4.2.3 Specific approval of IOCL Site Representatives must be obtained by the contractor before purchase of any material proposed to be used in works. The approved samples for all materials shall be kept at Site office and exhibited for reference and inspection at all times and till the completion of works.

4.2.4 Mainline Works

The following items shall be supplied by the Contractor:

- (1) HDPE Casing insulators (interlocking type) and casing end seals, if required.
- (2) Vent pipe, Vent pipe top, if required.
- (3) Pipeline markers.
- (4) Heat shrinkable sleeves of approved make for field joint coating & its repair for Mainline & HDD pipes.
- (5) Materials for repairing of damaged coating.
- (6) Application tools & tackles required for field joint coating and repair of pipe coating.
- (7) All materials, consumables and equipments required for carrying out welding and radiographic inspection of joints.
- (8) All materials & equipment required for hydrostatic testing.
- (9) All materials & equipment required for carrying out caliper pigging.
- (10) All materials & equipment required for carrying out pipeline drying & nitrogen purging activities.
- (11) All materials required for providing tapping on both sides of MOV's for pressure transmitter.
- (12) Supply of warning tape of 1.0 mm thickness & width (300mm) as per specifications.
- (13) All materials for carrying out preservation of pipeline.
- (14) Steel fittings, flanges, gaskets, studs & nuts, Insulation Joints etc.
- (15) All valves of size below 2" NB.
- (16) Any other material required to complete the job in all respect.

4.2.5 Civil Works

- (1) All materials required for the civil works including cement, reinforcement, structural steel, consumables, testing appliances, tools and tackles etc. necessary for completing the work conforming to the specifications and schedule of rates.
- (2) All other equipment, materials, consumables, etc. not specifically indicated above, but are required for successful completion of the works, as per the tender documents, drawings / construction methodology / detailed engineering calculations etc., except those specifically undertaken to be provided by owner, shall be included in the Contractor's scope of supply.
- (3) Specific approval of Owner's Site Representatives must be obtained by the contractor before purchase of any material proposed to be used in works. The approved samples for all materials shall be kept at Site office and exhibited for reference and inspection at all times and till the completion of works.

4.2.6 TCP Works

All material including but not limited to cables, TLP boxes of all types, Mg Anodes, Zn Anodes, Zn ribbon, SSD, Surge divertors, Civil works, etc. complete the job as per specifications.

5.0.0 CONDITIONS FOR OWNER-SUPPLIED MATERIALS

- 5.1.0 The Contractor shall be responsible at his own initiative and cost to take delivery of the materials to be supplied by Owner from the godown / stockpile and to transport the same to the job site for placement, utilization, fabrication, erection etc.
- 5.2.0 On completion of the works, or upon prior determination of the contract, the Contractor shall forthwith at his own risk and cost, transport to the Owner's store at stores /godown at the Respective stations or otherwise directed by the Engineer-in-Charge/ Site Engineer, all empties, pipes and other surplus materials including but not limited to salvageable wastage remaining in the hands of the Contractor.
- 5.3.0 If, in the opinion of the Owner, any material, returned by the Contractor shall not be in good condition, or shall be unusable, the Owner may reject the same in which event the Contractor shall be deemed to have failed to return to the Owner the surplus material(s) with the same consequences as to breach as specified in clause 3.2.1.0 of General Conditions of Contract (GCC).
- 5.4.0 The provisions of clause 3.2.1.0 of the GCC shall apply to materials supplied by Owner pursuant to their responsibility under clause 5.0.0 (and associated clauses thereunder) hereof in the same manner and to the same extent as they apply to materials supplied by the Owner to the Contractor as contemplated in the said clause of the GCC.
- 5.5.0 The Contractor shall return all empty packing cases, wood packing which had contained materials issued by the Owner to their store/stockyard or as directed.
- 5.6.0 All materials issued by the Owner to the Contractor shall be preserved against deterioration and corrosion due to poor or improper storage while under Contractor's custody. Any damages/ losses suffered, on account of non-compliance with requirements stipulated

herein, shall be considered as losses suffered due to willful negligence on the part of the Contractor and he shall be liable to compensate for the losses suffered at penal rates to be determined by the Engineer-in-Charge and his decision with regard to the rates charged for the purpose of recovery shall be final and binding on the Contractor.

- 5.7.0 Various equipment and materials etc. intended for installation will be received by Owner in unpacked, skidded, crated, packed or loose condition and will be stored in the warehouse and open yards in and around the job site. In general, materials will be issued to the Contractor in as received condition.
- 5.8.0 Further to the provisions contained in Cl.3.2.0.0 of General Conditions of contract (GCC), following conditions shall also apply:
- 5.9.0 All materials issued to the Contractor shall be duly protected with the appropriate preservative coating which should be examined while receiving the materials from Owner's store/ stockpile and subsequently renewed from time to time by the Contractors wherever necessary. The Contractor shall be responsible for procuring these preservatives and applying them at his cost, if such protective coating of the equipment and materials are damaged while in his custody. In particular, the following aspects, but not limited to them, are brought to the Contractor's attention:
- (1) Pipes shall be stacked at job site by the Contractor according to the identification marks and the stacks shall be arranged on sleeper supports, at least 300 mm above ground.
 - (2) The Contractor shall check condition of the valves, fittings and specials to ensure that they are not subject to corrosion from hydrostatic test liquid. Any such conditions when detected should be brought to notice of the Site Engineer and remedial measures should be taken by the Contractor at his own cost as directed. Small and medium size pipe fittings shall be stored in racks in a covered place. When large size pipe fittings of size 8" and above are to be stored, these may be kept in the open surfaced store yards with proper wooden supports.
 - (3) All machined surfaces shall be properly greased and should be maintained and protected from damages.
 - (4) Opening of equipment, machinery, valves etc. shall be kept blocked / covered with blinds to prevent entry of foreign matter.
 - (5) Rotating machinery e.g. motors etc. should be as far as possible kept re-packaged in the packing cases in covered godown.
 - (6) When machinery including all electrical and instrumentation panels, motors etc., are stored in the open, they should be covered by sufficient tarpaulin to prevent water & dust getting inside and damaging the same.
- 5.10.0 As far as possible materials/ equipment shall be transported to the site of erection from the storage point only just prior to their actual erection and shall not be left lying around indefinitely. Instructions of the Site Engineer shall be followed strictly in this regard.
- 5.11.0 At the end of every month, the Contractor shall submit an account for the materials issued to him by the Owner in the Proforma prescribed by the Engineer-in-Charge.
- 5.12.0 The Contractor shall furnish indemnity bond as per tender for the Owner-supplied materials issued to the Contractor for the work till the completed job is handed over to Owner.

6.0.0 VENDORS FOR CONTRACTOR-SUPPLIED MATERIALS/SERVICES

- 6.1.0 A list of approved Vendors / sub-contractors for certain materials and services is enclosed in tender document/technical specifications.
- 6.2.0 The name of the brand, specification/ technical literature etc. for all the materials & services proposed to be covered under the Contractor's scope shall clearly be mentioned and listed out separately and be submitted in the manner described under respective clauses of Special Instruction to Tenderers for submission of tender
- 6.3.0 List of **materials/services of approved brand and/ or manufacturer** is enclosed with the Technical Specification.
- 6.4.0 Contractor may engage any of the above Vendors for the specified category of material to be supplied and obtain the Owner's approval regarding the same.
- 6.5.0 However, in exceptional case, the Engineer-in-Charge may consider any other potential Vendor, provided, the technical capability of such Vendors is established based on the documentary evidence and quality performance submitted in support of their capability. The decision of Engineer-in-Charge shall be final and binding in this regard.
- 6.6.0 In the case of Standard items, only the makes of material is specified in the tender document. In such cases, the Contractor shall affect delivery of materials directly from the manufacturer or from the Original Equipment Manufacturers upon approval from the Owner.
- 6.7.0 Approval before placement of order**
- 6.6.1 Before placement of any order for supply of materials, it shall be binding on the Contractor to furnish the following (in two sets) for the approval of the Owner:
- (i) Name of the Vendor for supply of particular material/ equipment/ instrument.
 - (ii) Letter from the Vendor that the specified item shall be supplied as per the technical specification furnished by the Owner without any deviation.
 - (iii) Delivery schedule to match the work requirement/ schedule.
 - (iv) QAP for the item under supply.
 - (v) Documentary proof of the Vendor's capability to manufacture / supply of the item.
 - (vi) Guarantee and period of guarantee.
 - (vii) Agreement from the Vendor that the manufacturer's Guarantee shall be extended to the Owner.
 - (viii) Inspection agency likely to be engaged along with their credentials to carry out the inspection and testing of specified items.
- 6.8.0 Approval upon placement of order**
- 6.7.1 Upon placement of orders for supply of materials as per approvals given above, the Contractor shall **furnish the following (in two sets) for the approval of the Owner:**
- (i) Signed copy of Purchase Order indicating the specification, quantity, and delivery schedule.
 - (ii) QAP, inspection and testing plan.

- (iii) General arrangement and dimensional drawings.
- (iv) Datasheets, circuit diagrams etc.
- (v) Any other drawing/document as deemed necessary by EIC.

6.9.0 Inspection and testing of material

- 6.8.1 It shall be the responsibility of the Contractor to line up a third party inspection agency to carry out the inspection and testing of materials before despatch.
- 6.8.2 A list of approved TPI is included in technical specification of Mechanical works.
- 6.8.3 The Contractor shall notify the Owner at least 3 weeks in advance about the readiness of the offered material for inspection and testing.
- 6.8.4 The Owner, at his discretion, may witness the inspection or may depute their authorized inspection agency or their own Engineer(s) for witnessing the same or may advise the Contractor to furnish only the inspection and test report for their review and approval or may waive off inspection, on a case to case basis.

6.10.0 Despatch of material

- 6.9.1 Upon successful completion of the inspection and testing of material, the Contractor shall submit the following documents (as applicable) in two sets to the Owner and seek clearance for the despatch of material to the site(s):
 - 1) Material test certificate.
 - 2) Chemical composition of raw material.
 - 3) Dimensional conformity certificate.
 - 4) Performance test report.
 - 5) Hydro-test report.
 - 6) Guarantee certificate.
 - 7) GA and dimensional drawing.
 - 8) Data sheets, performance curves etc.
 - 9) Details of weight etc.
 - 10) Any other relevant information.
- 6.9.2 The Contractor shall advise the Vendor for delivery of material upon acceptance of inspection & test reports and getting despatch clearance from the Owner. Two sets of documents indicated above shall be furnished as part of despatch document.

6.11.0 Transit insurance

- 6.10.1 Contractor shall take appropriate insurance policy to cover the Contractor-supplied equipment/ materials during their transit, till delivery at site.

6.12.0 Delivery at site and storage

- 6.11.1 The Contractor shall be responsible at his own cost and initiative within his scope of work to take delivery of the materials (on behalf of the Owner) from the port of delivery in India in respect of imported materials and from the factory or warehouse and other places of delivery

in respect of indigenous materials and to transport the same to the work site for incorporation in the permanent works.

6.11.2 The work of delivery and transportation of materials shall include (but not be limited to) the following:

- 1) Clearance of the goods through customs and port including filling of all customs manifests, bills of entry, and customs declarations and other documents as may be required for the clearance of the goods from customs or port authorities.
- 2) Clearing, forwarding and handling services as required for clearing, forwarding and handling imported and indigenous materials and consignments including, payment at Contractor's cost of any demurrage, wharfage, port charges, siding charges, retention charges or other charges whatsoever and howsoever designated levies by any railway, airport, ship, transporter and/ or other authorities for or in connection with the loading, unloading or detention of any materials beyond the free period or unloading, clearance, retention or detention or loading, as the case may be, specified by the relevant authority(ies) or carrier(s) in this behalf.
- 3) All works and operations necessary to lift and to remove the material from port, warehouse, railway or other siding, factory or other places of delivery, loading, handling, transporting and unloading the same at appropriate place including securing or protecting the same in transit and during storage.
- 4) Supply, procurement, mobilization, deployment of all labour, materials, equipment and machinery necessary for lifting, loading, handling, removing, transporting, unloading, stacking or securing the materials.
- 5) To comply with all requirements and to do all acts, deeds, matters and things required for attaching and/ or putting into operation, transit and/ or storage insurance for the materials delivered under the relevant insurance policy to be taken by the Contractor covering transit and/ or storage insurance policy(ies) and to indemnify the Owner from and against the consequences of any failure to do so or to put into full effect the transit and/ or storage insurance policy(ies) aforesaid.
- 6) All acts, deeds, matters or things required to fulfill and pay all local, municipal and other statutory authorities with respect to the transportation of any materials through any State, Municipal, local or other barriers or limits or for the import of the materials or any of them within the limits of such barrier, including payment of octroi or other local toll, terminal or entry or other taxes payable on the passage or entry of the materials within any local limits, for which purpose Owner shall give the Contractor and/ or Contractor's designate(s) any and all authority(ies) as may be reasonably required in this behalf.
- 7) All other acts, deeds, matters and things whatsoever ancillary, auxiliary or incidental to the above including but not limited to the grading of the route and/ or creation of temporary approaches and ramps etc. as may be required.

6.11.3 The Contractor shall within the scope of work undertake the following activities and responsibilities with respect to and in addition and without prejudice to the activities and responsibilities under clauses there under in respect of materials, to be supplied by them.

- 1) The Contractor shall in taking delivery, ensure compliance of any condition for delivery applicable to deliveries from the concerned authorities or carrier, and shall be exclusively responsible to pay and bear any demurrage or penalty or other charges payable by virtue of any delay or failure by the Contractor in lifting the materials or in observing any of the conditions aforesaid, and shall keep the Owner indemnified from and against all consequences thereof.
- 2) The Contractor shall maintain a day to day account of all materials indicating the daily receipt(s), consumption(s) and balance of each material and category thereof. Such account shall be prescribed by the Engineer-in-Charge and shall be supported by all documents necessary to verify the correctness of the entries in the account. Such account shall be maintained at Contractor's relative office(s) and site(s) and shall be open for inspection and verification (by verification of documents in support of the entry as also by feasible verification of the stock) at all times by the Engineer-in-Charge and the Site Engineer with authority in them at all times without obstruction to enter in to or upon any godown or other place(s) or premise(s) where the materials or any part of them are laying or stored and to inspect the same himself and or through his representative(s).
- 3) All materials shall be taken delivery of, held, stored and utilized by the Contractor as trustee of the Owner, and delivery of the material to the Contractor shall constitute an entrustment thereof to the Contractor, with the intent that any utilization, application or disposal thereof by the Contractor otherwise than for permanent incorporation in the contractual works in terms of the contract shall constitute a breach of trust by the Contractor.
- 4) All materials, including materials in respect of which licenses/ release orders/ permits/ authorizations have been accorded in the name of Owner shall, without prejudice to the responsibility/ liability of the Contractor in respect thereof, vest in the Owner on the date of delivery, and the Contractor shall be deemed to be acting on behalf of the Owner and as an agent of the Owner in respect of deliveries taken by the Contractor in respect of any material.
- 5) The Contractor shall at all times be exclusively responsible for any and all loss(es), damage(s), deterioration, misuse, wastage, theft or other application or mis-application or disposal of the materials or any of them contrary to the provisions hereof and shall keep the Owner indemnified from and against the same and shall forthwith at his own cost and expenses replace any such material, lost, damaged, deteriorated, misused, wasted, stolen, applied, mis-applied and/ or disposal as aforesaid with other material of equivalent quality and quantity delivered to site at the Contractor's risks and costs in all respect.
- 6) Contractor shall comply with all requirements and to do all acts, deeds, matters and things required for attaching and/ or putting into operation by policy(ies) of insurance taken out by the Owner as the case may be in respect of materials lying stored and/ or unutilized or in the process of use in the execution of the work and shall keep the Owner indemnified from and against the consequences of any default or failure of the Contractor to do so or to put into full effect any policy(ies) of insurance aforesaid.
- 7) Notwithstanding anything herein provided and notwithstanding the transference of all

risks in respect of the materials to the Contractor, the Ownership in respect of the material shall at all times be and remain in the Owner.

- 8) An inventory shall be made by the Contractor of all surplus materials and empties including but not limited to scrap, wastage and unserviceable material remaining in the hands of the Contractor upon completion of the contract for whatsoever reason, and the Contractor shall forthwith, upon being required to do so, place the Owner in undisputed possession and custody of all such materials, empties etc. and shall at his own risks and costs, lift and transport the said material to the Owner's store or otherwise as directed by the Engineer-in-Charge.
- 9) If the Contractor shall default in replacing any material lost, damaged, deteriorated, misused, wasted, excess used, stolen, misapplied or disposed of within the provisions hereof, or shall fail to return to the Owner any surplus material or empties within the provisions hereof, the Contractor shall be liable to pay to the Owner the cost of such material or empties delivered at Owner's stockpile / godown plus departmental charges calculated at 25% (twenty five percent) of the said cost determined by the Engineer-in-Charge, and the decision of the Engineer-in-Charge as to such cost shall be final and binding upon the Contractor.

6.11.4 The Contractor shall undertake and complete the supply of materials within the scope of supply to meet the scheduled progress and requirement of the work within the scope of work and on no account later than the delivery dates in this behalf specified in the Delivery Schedule.

6.11.5 The Owner shall not be responsible for any delay in the supply of any materials by the Contractor within the scope of supply and the Contractor assumes full responsibility for any and all delays in the supply of any materials within the scope of supply and no such delay or failure in respect thereof shall anyway render the Owner liable for any claim or damages or compensation notwithstanding that an increase in the time of performance of the Contractor is involved by virtue of the delay or failure and notwithstanding that any labour, machinery or equipment brought upon the site by the Contractor or any sub-Contractor is rendered idle by such delay or failure and the Contractor undertakes to indemnify and keep indemnified the Owner from and against any and all transactions, demands and proceedings whatsoever or the resultant costs (including between attorney and client), charges and expenses and losses and damages incurred by such delay or failure. Without prejudice to the generality of the foregoing, it is specifically declared that except in the case of force majeure as hereinafter referred to, any delay or failure by the Contractor to supply, any materials within the Contractor's scope of supply shall on no account constitute a ground for extension of time for performance or completion of any work(s).

7.0.0 OWNER'S RESPONSIBILITIES FOR HDD WORKS

7.1.0 The reports and information regarding soil strata conditions furnished by owner (if any) shall be treated as guideline indication only. For crossings for which soil investigation report is not available, bidder has to make his own assessment for submission of bid as well as carry out soil investigation for execution purpose.

7.2.0 Contractor shall prepare profile of all crossings by surveying along the alignment marked at site, indicating soil lithograph/ bore-log details thereon. Profile of all crossings prepared by contractor shall be jointly verified by the contractor's representative along with owner's

representative/EPMC at site and shall be submitted by the Contractor, before taking up execution of the crossing, to the Owner for review.

7.3.0 Should any additional investigation/ survey be necessary, the same shall be carried out by the Contractor at his own cost.

7.4.0 Owner/EPMC shall review and approve detailed engineering, including engineering analysis/ calculations, work procedures /execution methodology and drawings, QA/QC documents etc. prepared by the Contractor for execution of the entire job.

8.0.0 CONTRACTOR'S RESPONSIBILITIES FOR HDD WORKS

8.1.0 Prior to quoting prices, the Tenderer shall be deemed to have visited all the crossing sites and satisfied himself regarding the details furnished by the Owner in the tender document and the feasibility of the method of construction for the crossing and associated work and assume full responsibility for successful completion of the job.

8.2.0 Any topographical surveys or geo-technical investigations as may be felt necessary for the execution of the work shall be carried out by the Contractor at his own cost.

8.3.0 **Additional land required (if any) temporarily for positioning the rig, pipeline assembly, stringing, associated facilities etc. shall have to be arranged by the Contractor at his own cost and responsibility. Cost of making temporary access road to ROW (from the nearest accessible location/road), payment of rentals to the landowners, crop compensation etc. for the aforesaid purpose shall be borne by the Contractor.**

8.4.0 Contractor shall assess and make necessary arrangements for ensuring availability of sufficient quantity of quality water required for drilling purpose. Contractor shall obtain necessary permits/clearance from the concerned river/canal authorities before using the water.

8.5.0 Contractor shall be solely responsible for settling all compensation and disputes arising out of crop, property or any other damage caused by him or his workmen during positioning the rig, pipeline assembly, stringing, associated facilities etc. Owner shall pay only the crop compensation for the area falling within the acquired ROW between the hook-up points on both sides of the crossing.

8.6.0 The Drill rods to be used for pilot drilling/ reaming should be sufficiently able to sustain the torque & thrust/ pull expected during the entire HDD operation. The suitability & strength of drill rods to be used for the present work shall meet the requirements for the work and are in good working condition (to be given in SCC).

8.7.0 Disposal of drilling fluid (Bentonite mud slurry), other wastes etc., shall be exclusive responsibility of the Contractor and any permits, permission or clearances required in this regard shall be obtained by the Contractor. The unusable drilling mud (of any composition) after reclamation shall be disposed suitably at a secured landfill site approved by the State Government / State Pollution Control Board. The disposal of mud should conform to the guidelines provided by the Ministry of Environment and Forests (MoE&F), Govt. of India under the Hazardous Wastes (Management & Handling) Rules, 1989.

8.8.0 Contractor shall make arrangement at his own cost and initiative to dispose off the drilling fluid, return and cutting produce from the drilling site.

- 8.9.0 Contractor shall perform all design and detailed engineering including engineering analysis/calculations etc. for the crossing and associated work and prepare all necessary design basis, work procedures and construction drawings in accordance with the requirements of the tender document and shall obtain Owner's prior approval for all such design and drawings.
- 8.10.0 Contractor shall provide all qualified and skilled personnel such as Surveyor, Driller, Drilling engineer, Tracking engineer, Mud engineer, qualified welders, welding & radiography inspection engineer etc. and unskilled personnel and all equipment, instruments, tools and tackles and all other necessary materials and facilities required for successful execution of the entire job.
- 8.11.0 Contractor shall supply all the materials required for permanent incorporation in the works as per his scope of supply specified hereinabove.
- 8.12.0 Contractor shall use reasonable means / endeavors to protect from damage all existing structures or utilities which Contractor is aware of, at or near the site, including any government or other third party facilities or installations, and shall repair and restore any damage thereto resulting from Contractor's failure to use such means / endeavors to protect the same in carrying out its obligations hereunder. Any such repair or restoration shall be at Contractor's expense and shall not be reimbursable.
- 8.13.0 Contractor shall restore the work site used for the construction of the pipeline crossing in accordance with the requirements of tender document and instructions of Owner.
- 8.14.0 All surplus materials supplied by Contractor/ Owner and all trash, refuse and spoil materials shall be collected and disposed of / returned to the Owner's store by the Contractor at his own expenses.
- 8.15.0 Contractor shall carry out tie-in & hook-up with mainline section on either side of HDD crossings.
- 8.16.0 Contractor may have to make ditches at entry/ exit side for placing of Rig/ pull-back of pipes etc. as per site requirements at no extra cost to Owner.
- 8.17.0 Contractor has to plan the HDDs across rivers, canals/ drains/ highways, railways etc. in a safe way so as not to damage any of the above utilities or other utilities by their side. If any survey / investigations are required to be carried out, for successful execution of the HDD works, the Contractor shall do so at his own initiative & cost.

9.0.0 TECHNICAL PARAMETERS FOR HDD WORKS

- 9.1.0 HDD crossing profile lengths mentioned elsewhere in the tender documents are only **indicative length**. The Contractor shall design a suitable pipe profile to meet the technical parameters detailed in the following clauses. .
- 9.2.0 The extent of the HDD crossing i.e. exit and entry points shall be decided in accordance with the crossing profile drawing enclosed in the tender document and shall meet the indicated length of the crossing. The HDD crossing profile shall be decided based on Sub-soil conditions below the bed/ banks. **Highly disintegrated rock, gravels/ cobbles/boulders and very loose deposits (with low 'N' value) shall be avoided to the extent possible and profile should preferably pass through firm soil/ rock. Artesian condition, if indicated in soil reports or if encountered during drilling, shall be necessarily avoided.**

- 9.3.0 The drawings and the details of site furnished with the tender document are only indicative. Actual construction shall be as per construction drawings developed by the Contractor and approved by Owner. Contractor shall be deemed to have made his own site investigation to take into account all such likely variations at the time of formulating his tender and no extra compensation shall be payable to the Contractor on this account.
- 9.4.0 Depending upon the width of crossing, minimum requirement of cover and limitation of elastic bend radius, Contractor may have to drill a greater depth and a larger length of pipeline for the crossing than indicated in the tender document. Contractor shall be deemed to have taken into account the contingencies of all such additional drilling length as may be necessary while formulating his tender and no extra compensation shall be payable to the Contractor on this account. Payment shall be made on the basis of drawings approved by Owner/ Engineer-in-Charge for construction purpose. There shall not be any change in unit rate given in Schedule of Rates.
- 9.5.0 The field joint coating material shall be of DIRAX make of Covalence Heat Shrinkable Products manufactured by M/s Seal for Life India Private Limited or DDX™ Directional Drilling Kit of M/s Canusa or of any other equivalent approved make heat shrinkable sleeves. The method of application shall be strictly as per the manufacturer's recommendations and shall be subject to the Owner's approval prior to use.
- 9.6.0 Repair material for the damages to 3LPE coating system of the pipe, shall be of appropriate wraparound cut sections of 'DIRAX' make of Covalence Heat Shrinkable Products manufactured by M/s Seal for Life India Private Limited or DDX™ Directional Drilling Kit of M/s Canusa or of any other equivalent approved make heat shrinkable sleeves.
- 9.7.0 The recommended minimum top cover to the pipeline from the road top level, lowest bed level of canal/ drain bed, lowest riverbed level shall be as under:

Crossing	Min. Top Cover (m)
National Highway	7
State Highway	5
Road (other than highway)	2
Railway	7
Nala/Drain/Canal/Water bodies/ Minor River crossing	10
Major River Crossing	15 (below scour depth as per the permission obtained)

- 9.8.0 The duration of pre-installation hydrostatic testing of HDD section (1.50 times of maximum operating pressure (MOP) of mainline for 24 hours) shall be 6 hours. Test pressures for pre-installation hydrostatic testing shall be as under:

Carrier Pipe details	Pre-installation hydrotest pressure (Kg/cm ²) for HDD Crossing (to be confirmed prior to test)
8.625" OD X.279" WT /6.625" OD X.279" WT/ 4.5" OD x 0.25" WT, API 5L X-52	75

- 9.9.0 The duration of post-installation hydrostatic testing of HDD Section shall be 24 hours. Test pressures corresponding to 1.5 times MOP of mainline for post-installation hydrostatic testing and their corresponding MAOP shall be as under:

Carrier Pipe details	Post-installation hydrotest pressure (Kg/cm ²) for HDD Crossing (to be confirmed prior to test)	MAOP for Mainline (Kg/cm ²) (to be confirmed prior to test)
8.625" OD X.279" WT /6.625" OD X.279" WT/ 4.5" OD x 0.25" WT, API 5L X-52	75	49

- 9.10.0 The pipeline trajectory in the drilled hole and spacing of pipe supports/conveyors should be designed, such that the combined stresses in the pipeline due to pre & post installation test pressures is limited to 95% of SMYS of the pipe material. The Tenderer shall submit design calculations in support of having checked that the combined equivalent stress in the pipeline during pre-testing on supports, during pull back and during post-installation hydrostatic testing is within 95% of SMYS of the pipe material.
- 9.11.0 The Drill rods to be used for pilot drilling/ reaming should be manufactured from good quality steel grade and should be sufficiently able to sustain the torque & thrust/ pull expected during the entire HDD operation.
- 9.12.0 Sufficient quantity of good quality Drilling mud should be available for execution at each crossing location. Special 'additives' suitable for meeting the sub-soil conditions may have to be added for enhancing the quality of drilling mud for providing stability to the borehole and meeting other drilling requirements till completion of the crossing. Contractor shall deploy necessary Field equipments for testing drilling fluid parameters like viscosity and consistency etc. at site and shall employ them regularly for meeting the required quality parameters for drilling. The ingredients of drilling mud shall meet the sub-soil as well as drilling requirements.
- 9.13.0 Magnetic Wireline steering & tracking system shall be employed for tracking of pilot-hole drill head.
- 9.14.0 Reaming shall be done in suitable size steps depending upon size of pilot hole drill bit, pipe/pipe bundle dia, type of soil etc. Suitable reamers of appropriate size and Inrock make shall be used in special soil conditions.
- 9.15.0 The contractor shall submit detailed procedure covering all activities of HDD work for approval of Engineer-in-charge before commencement of work.
- 9.16.0 The contractor shall use casing pipe of adequate size and length for drilling through soft,

unconsolidated deposits and highly weathered rock etc., if any. The cost of casing pipe is deemed to be included in the HDD work and no separate payment for the same shall be entertained.

9.17.0 While hooking up with the existing mainline on either sides of the HDD crossing, it shall be ensured that the hook-up joint is not subjected to adverse stress as a result of execution of the hook-up.

10.0.0 WATER & POWER SUPPLY

10.1.0 Water supply:

- 1) The contractor shall arrange water/ procure water required for the work at his own cost for all leads and lifts. IOCL shall not be responsible for supplying water and Contractor shall ensure timely and adequate supply of water to meet the schedule.
- 2) In partial modification of the provisions of clause 3.3.0.0, 3.4.0.0 and 3.5.0.0 of the GCC, the Contractor may be permitted to tap water required for the work by making cavity wells or tube wells at his own cost within the station, subject to its being suitable for the work and further subject to the convenience and other requirements of the Owner. The cavity wells/tube wells upon completion of work shall not be filled back but shall be left behold & properly covered/capped in the existing operating conditions without the equipments for future use by the corporation.

10.2.0 Power supply:

- 1) The contractor shall make his own arrangement for power required for the work at his cost. DG set of suitable capacity may be installed and operated by the contractor at his cost. IOCL. shall not be responsible for power supply and contractor shall ensure proper supply of electricity to meet the schedule.
- 2) The electrical works shall be carried out through Licensed Electrical personal only.
- 3) In case, electrical power is given by the Corporation at its discretion then, the electrical charges incurred on monthly basis shall be deducted from the bills payable to the contractors as per the prevailing tariff indicated in the electricity bills. The successful contractor shall make all arrangements to draw power from a single point in the depot as per directions at site including all necessary electrical cables, panel boards, energy meters etc. In such an event, the Corporation shall not be responsible for any power outages occurring during the contract period. **However, the tenderers may note that there is no commitment on part of the Owner to provide electrical power at site.**

11.0.0 TIME OF COMPLETION

Time of completion for the entire works shall be as follows :

GROUP-A: Jehanabad GA	12 Months from the date of issuance of specific notice. Specific Notice shall be issued within 03 months from date of Letter of Acceptance/Work Order
GROUP-B: Salem GA	9 Months from the date of issuance of specific notice. Specific Notice shall be

	issued within 03 months from date of Letter of Acceptance/Work Order
GROUP-C: Madurai GA	6 Months from the date of issuance of specific notice. Specific Notice shall be issued within 03 months from date of Letter of Acceptance/Work Order

11.1.0 The aforementioned time of completion shall be inclusive of mobilization period, intervening monsoon and approval of the design and materials.

11.2.0 In addition to the provisions of clause 4.3.0.0 of the General Conditions of Contract and the associated clauses there under, the Contractor shall be prepared to execute the works in three shifts and on Sundays and holidays if so directed by the Engineer-in-Charge. No claim for a compensation or extra payment whatsoever on this account will be entertained.

12.0.0 WORKS SCHEDULE

12.1.0 Upon award of work the Contractor shall submit detailed work schedule to the Engineer -In-Charge covering all activities related to supply, installation, testing and commissioning under their scope of work.

13.0.0 CLASSIFICATION OF CROSSINGS

13.1.0 For the purpose of payment, the mainline crossings have been classified in the following categories:

1. Laying mainline across railway tracks, major roads and canals using bored cased crossing method shall be classified as **cased crossings** and shall be paid for separately under relevant Item of SOR.
2. Laying mainline across major waterways using concrete coated line pipes of heavier wall thickness shall be classified as **submerged crossings** and shall be paid for separately under relevant items of SOR. Concrete sheathing shall be paid separately as per the relevant Item of SOR.
3. Laying mainline across major rivers/canal/ drain/ highway/ railways/ roads/ marshy area/ forest area etc. by Horizontal Directional Drilling (HDD) technique shall be classified as **HDD crossings** and shall be paid for separately under relevant items of SOR.
4. Laying mainline by open cut crossing method in other area including roads, minor drains, minor canals, other watercourses, ponds, dobas, low lying areas etc., using normal/ heavy wall line pipe shall be classified as **normal Mainline work**

14.0.0 MODE OF MEASUREMENT

14.1.0 Mainline Laying & HDD Works

14.1.1 Measurement for laying of mainline shall be made on the basis of total length of mainline installed as per Pipe Book between **barrel to barrel or SV to SV or any other**, and it shall be exclusive of the pipeline lengths measured for Cased, submerged, HDD crossings and

Marshy areas as mentioned below:

- 1) The measurement for **Cased crossings** shall be as per the actual length of casing pipe installed.
 - 2) The measurement for **shallow HDD crossings** shall be as per the actual length of carrier pipe installed
 - 3) The measurement for laying of pipeline across major waterways (i.e., **submerged crossing** using normal/ heavy wall pipes) shall be made on the basis of the actual length of the pipe measured from the end of over bend pipe on one bank to that on the other bank (both over bends inclusive)
 - 4) **The HDD profile length for payment purposes shall be calculated from total length of pipe installed between the hook-up points of HDD string** (as per approved drawing) and mainline pipe / transition pipes (of intermittent wall thickness) on either side of HDD crossing. The hook up point of transition pipe and HDD string installed pipe is generally located at a depth of 1.5 M to 2.0 M (depth of mainline pipe cover + half of mainline pipe diameter) from Ground level.
 - 5) Payment for valve installation shall be on unit basis and shall include pup pieces on either side of the valve. The length of valve installation to be excluded from mainline length including pup piece at both the ends.
 - 6) Payment for Rock trenching shall be made on the basis of quantity of rock trenching as per standard trench drawings/ actual trenching whichever is less as per instructions of EIC.
 - 7) Payment for sand/soft soil padding shall be made on the basis of length of pipe over which pre- & post-padding has been done as per instructions of EIC
 - 8) Payment for Rockshield shall be made on the basis of length of pipe over which rockshield has been applied as per instructions of EIC.
 - 9) For those cased crossings, for which crossing methodology is changed to HDD technique in place of cased crossing (by auger boring) as per tender, the length of HDD measured for payment shall be equivalent to length of cased crossing indicated in tender/ approved drawings.
- 14.1.2 Turning Points (TPs) and their total numbers indicated in the accompanying Route Maps are indicative. There is possibility of change in this due to diversion during construction. Tenderers shall make their own assessment of number of TPs, field bends (both horizontal as well as vertical) along the pipeline route. No extra payment shall be made on account of increase in TPs and number of field bends.
- 14.1.3 The accompanying Route Maps are meant for reference purpose only. The pipeline shall be laid in the ROW acquired by the Owner as per the instructions of Engineer-in-Charge.

15.0.0 ON ACCOUNT PAYMENT

15.1.0 Mainline Laying Works

Without prejudice to the provisions of clause 6.4.0.0 of GCC, in applying unit measurement for the purpose of preparation of Running Account Bill(s) for mainline work, the mainline work shall be broken up into the following operations relative to each of which the completed

operation for the measured length shall be reckoned as representing in terms of value of the percentage mentioned hereof of the lump sum rate of the mainline work specified in the Schedule of Rates:

Sl. No.	Description	Payment Term
1	After grading, stringing, welding, NDT, repair of weld joints and Joint coating (as per respective item rate of SOR)	15 % progressively
2	After trenching, lowering of pipes, backfilling and debris removal as per EIC's instructions (as per respective item rate of SOR)	35% progressively
3	Tie-in, NDT & field coating of tie-in joints, backfilling of respective area.	15 % progressively
4	Thermite welding, Hydro-testing, dewatering, swabbing.	15 % progressively
5	TCP installation, installation of route markers, Commissioning of entire pipeline.	10 % progressively
6	Final clean-up, restoration (as applicable) of ROU and obtaining NOC from Statutory authorities, submission of As built drawings and documents line-pipe book etc., & re-conciliation of Materials.	5 % progressively
7	Final completion, handing over of complete pipeline system and acceptance of the System by Owner.	5%

Subject to the following:

- 1) The first stage payment of 15% as per sub-clause 1 above will be released after completion of continuous stretch of 0.5 km of grading, stringing, welding, NDT, repair of weld joints and Joint coating and no intermediate stage will be acceptable. However, EIC may approve stretch length less than 0.5 km for release of payment subject to site condition.
- 2) The second stage payment of 35% as per sub-clause 2 above will be released after completion of continuous stretch of 0.5 km of trenching, lowering of pipes, backfilling, and debris removal as per EIC's instructions and no intermediate stage will be acceptable. However, EIC may approve stretch length less than 0.5 km for release of payment subject to site condition.
- 3) The third stage payment of 15% as per sub-clause 3 above will be released on completion of continuous stretch of 1.0 km.
- 4) For discontinuity on account of major crossings specified in SOR, crossing length shall not be taken into account for (i), (ii) & (iii) above for payment purposes.

15.2.0 Tie-ins shall be measured for the purpose of Running Account Bill(s) only on completion of all tie-ins excluding those tie-ins left out for completion of hydrostatic testing, submerged crossing, cased crossing & HDD crossings in a given pipeline section. Engineer-in-Charge shall effect pro-rata reductions for tie-ins between the measured stretches.

- 15.3.0 In the case of shallow HDD/cased crossing, 80% payment shall be made after insertion/pulling of carrier pipe and end sealing. Balance 20% payment shall be made after completion of all the works including tying-in at both ends and providing firm support to carrier pipe at both ends to prevent settlement of carrier pipe with respect to casing pipe and submission of As-built drawings.
- 15.4.0 In the case of submerged crossing, 80% payment shall be made after post installation hydro testing. Balance 20% payment shall be made after completion of all the works including tying-in at both ends and submission of As-built drawings
- 15.5.0 In the case of items for which the contract stipulates a lump sum as payable for the work or where the lump sum rate is stipulated for a measured unit of the work in the Schedule of Rates in respect of any work or part thereof and/ or the works are not at any intervening stage capable of being measured, the Owner may, at its discretion, pay on a Running Account Bill prepared by the Contractor according to the provisions of clause 6.4.1.1 of GCC, the percentage of the lump sum rate provided for the entirety of the work or item or work, as the case may be, on the basis of a value assessment of such work certified for payment by the Engineer-in-Charge.
- 15.6.0 The amount certified for payment by the Engineer-in-Charge on any Running Account Bill or otherwise within the provisions of clause 6.4.1.1 of GCC shall be conclusive for the determination of any on account payments as envisaged in clause 6.4.1.0 of GCC and no claim shall be entertained by the Owner contrary thereto or in contradiction thereof.

15.7.0 HDD Works

Without prejudice to the provisions of GCC, in applying unit measurement for the purpose of preparation of Running Account Bill(s) against relevant Item of Schedule of Rates, the payment shall be released to the Contractor on the basis of accepted unit rates specified in the Schedule of Rates of the contract in the following manner:

Payment break up of unit rate of composite HDD work item - Bundle pulling of Carrier pipe and MS Pipe/ HDPE duct for OFC:

HDD Crossings / Normal HDD / Profile HDD

S. No.	Description of Work	% Payment
1	After HDD profile/design submission and approval, Stringing, pipeline welding, NDT, repair of weld joints and Joint coating & Pre-Hydrotesting of pipeline string	5% progressively
2	After Completion of Pulling & submission of as built profile	45% progressively
3	After Post Hydro-testing, dewatering, swabbing.	15% progressively
4	After tie-in joints, NDT, Joint Coating, backfilling of respective area and restoration of entry/exit pits as per EIC's instruction, TCP installation and hydrotesting with mainline	10% progressively
5	After installation of route & pipeline markers, Commissioning of entire pipeline.	10% progressively

6	Final clean-up, restoration (as applicable) of ROU, submission of As built drawings and documents line-pipe book etc., & re-conciliation of Materials.	10% progressively
7	Final completion, obtaining NOC from Statutory authorities and handing over of complete pipeline system and acceptance of the System by Owner.	5% progressively

Shallow HDD / laying by HDD along the road

S. No.	Description of Work	% Payment
1	After HDD profile submission and approval, Stringing, pipeline welding, NDT, repair of weld joints and Joint coating & Pre-Hydrotesting of pipeline string	15% progressively
2	After Completion of Pulling submission of as built profile	35% progressively
3	Tie-in, NDT & field coating of tie-in joints, backfilling of respective area and restoration of entry/exit pits as per EIC's instruction	15% progressively
4	Thermite welding, TCP installation	10% progressively
5	After Hydro-testing with mainline, dewatering, swabbing	10% progressively
6	After installation of route & pipeline markers, Commissioning of pipeline, Final clean-up, restoration (as applicable) of ROU, submission of As built drawings and documents line-pipe book etc., & re-conciliation of Materials.	10% progressively
7	Final completion, obtaining NOC from Statutory authorities and handing over of complete pipeline system and acceptance of the System by Owner.	5% progressively

PE pipeline laying (with or without casing) in common trench along with steel pipeline.

S. No.	Description of Work	% Payment
1	On completion of GIS Data Collection, PE laying work including electro-fusion jointing of pipeline, backfilling and compaction for the complete stretch as per scope of work and on submission of DPR/WPR and graphs.	50% progressively
2	On Pneumatic testing of completed network and submission of "As Built, As Graph Drawings"	20% progressively
3	On pre-commissioning of the network at positive pressure of the network subject to installation of valve chambers, permanent markers and reconciliation of free issue materials	15% progressively
4	On commissioning (Gas charging) of the network. In case of delay in gas charging of network due to reason not attributed to contractor beyond 3 months from the date of pre-commissioning, balance payment related with commissioning (gas charging) will be released.	10% progressively
5	On submission of all documents and Closure of contract.	5% progressively

PE pipeline laying (with or without casing) by trenchless method along with steel pipeline

S. No.	Description of Work	% Payment
1	On completion of Installation of PE pipeline, GIS Data Collection, backfilling of pits and compaction as per scope of work and on submission of DPR/WPR and graphs.	40% progressively
2	On Pneumatic testing of completed network and submission of "As Built, As Graph Drawings"	25% progressively
3	On pre-commissioning of the network at positive pressure of the network subject to installation of valve chambers, permanent markers and reconciliation of free issue materials	20% progressively
4	On commissioning (Gas charging) of the network. In case of delay in gas charging of network due to reason not attributed to contractor beyond 3 months from the date of pre-commissioning, balance payment related with commissioning (gas charging) will be released.	10% progressively
5	On submission of all documents and Closure of contract.	5% progressively

Submerged/Cased crossings

Sl. No.	Description of work	%Payment
1	Stringing, pipeline welding, NDT, repair of weld joints and Joint coating & Pre-Hydrotesting of pipeline string	5% of respective SOR progressively
2	After Insertion of casing & carrier pipe / Lowering of concrete coated pipes / lowering of pipe string with anti-buoyancy measures	45% of respective SOR progressively
3	Completion of all balance work including post hydro-testing/hydrotesting with mainline section (as applicable), TCP works, vent installation etc.	40% of respective SOR progressively
6	Final clean-up, restoration (as applicable) of ROU and obtaining NOC from Statutory authorities, submission of As built drawings and documents linepipe book etc., & reconciliation of Materials.	5% of respective SOR progressively
7	Final completion, handing over of complete pipeline system and acceptance of the System by Owner.	5% of respective SOR progressively

15.8.0 TCP Works:

S. No.	Description of Work	% Payment
For Survey & Design of TCP		
1	After soil resistivity survey submission of TCP design document and approval	90% of respective SOR progressively
2	After submission of reports, as built drawings & documents	5% of respective SOR progressively

3	Final completion, handing over of complete pipeline system and acceptance of the System by Owner	5% of respective SOR progressively
For Supply & Installation of TCP		
1	On receipt of material at site and inspection.	50% of respective SOR progressively
2	After installation of TCP, testing and commissioning of TCP system	30% of respective SOR progressively
3	After submission of reports, as built drawings & documents	10% of respective SOR progressively
4	Final completion, handing over of complete pipeline system and acceptance of the System by Owner	10% of respective SOR progressively

Note: - In case of any dispute, decision of EIC would be bound to the contractor and shall be final

15.9.0 TERMINALS WORKS

Piping & Mechanical, Electricals and Instrumentation Works

For Supply Items

- i) 80% on receipt of material at site and inspection.
- ii) 10% on installation and testing.
- iii) 10% after completion of all works in all respects and acceptance by EIC.

For Erection Items

- i) 80% on completion of installation.
- ii) 10% on testing.
- iii) 10% after completion of all works in all respects and acceptance by EIC.

For Items involving both Supply & Erection

- i) 60% on receipt of materials at site and inspection.
- ii) 20% after erection and alignment.
- iii) 10% on testing.
- iv) 10% after completion of all works in all respects and acceptance by EIC.

15.1.0 Civil & Structural Works

Subject to the provisions of Clause 6.4.0.0 and associated sub-clauses of General Conditions of Contract, "On Account" payment shall be made for following items on the basis provided here under:

S.N.	Percentage Payment	Details of Work
1	90%	Completion of individual item of work including supplies as per SOR
2	10%	Successful completion & handing over of terminal

- (i) Unless & otherwise explicitly specified, payment for other composite items shall be made as per item rate per unit as mentioned in Schedule of Rates (SOR) on the basis of measurement of the executed work for the Running Account bills as per provisions of Clause 6.4.0.0 and associated sub-clauses of General Conditions of Contract.

Note: In case of any dispute, decision of EIC would be bound to the contractor and shall be final.

15.2.0 Any other item not covered above or elsewhere in the tender:

Sl. No.	Description of work	%Payment
1	Completion of individual item of work as per SOR including supplies wherever involved	90% of respective SOR progressively
2	After successful completion & handing over of terminal.	10% of respective SOR progressively

15.3.0 Liaisoning for Permission/permits and licenses etc.

Sl. No.	Description of work	%Payment
1	70% payment after successful lowering and backfilling of pipeline with requisite permissions and liaisoning with respective authorities & utilities/local bodies. Payment shall be made for actual length of pipeline laid.	70% of respective SOR progressively
2	Final completion, handing over of complete pipeline system and NOC by Concerned Authorities and acceptance of the system by Owner.	30% of respective SOR progressively

15.4.0 OFC Work:

FOR SUPPLY OF MATERIALS

S. No.	Item Description	Payment
1	Against receipt of materials at site except Instrumentation items	60% (Sixty percent) price of relative material.
2	Against installation and testing of the item specified in S. No. 1 above as per specifications and submission of test results & OTDR traces.	30% (Thirty percent) price of relative material.
3	Against submission of As built drawings/ documents	10% (Ten percent) price of relative material.

FOR SERVICES & COMPOSITE WORKS

S. No.	Item Description	Payment
1	Against laying of the HDPE duct , blowing of the Optical Fibre Cable (OFC) through the HDPE duct, installation of the Fiber Termination Box, RCC joint box, OFC Joint kits, RFID type Electronic markers, Electronic Marker Locator cum Cable/ Pipe Fault Locator, printed KM markers, Joint pit markers, jointing / splicing of the OFC, transportation & pre-laying testing of owner supplied OFC etc. as per specifications.	60% (Sixty percent) price of relative works

S. No.	Item Description	Payment
2	Against testing of installed 40mm HDPE duct, Optical Fibre Cable as per specifications, submission of test results & OTDR traces and handing over the installed HDPE duct and Optical Fibre Cable to the Owner.	30% (Thirty percent) price of relative works
3	Against submission of As built drawings/ documents	10% (Ten percent) price of relative works

15.9.1 The payment against supply of equipment/ material at site will be made by the Owner only after obtaining an undertaking from the Contractor that such equipment and materials will be incorporated for the works covered under this contract and will not be taken out without Owner's prior permission. The Contractor has to hypothecate all these equipments/ materials to the Owner and keep them as issued items to him.

15.9.2 Running Account Bill(s) based on payment terms in the Contract shall be paid based on joint measurement and subject to approval of Engineer-in-charge after deduction of necessary dues and duties as applicable and payable by Contractor in accordance with various provisions made elsewhere in this tender.

15.9.3 Payment of other items of SOR shall be made on the basis of item rate per unit as mentioned in the SOR.

16.0.0 COMPENSATION FOR FAILURE OF PRE-COATED PIPE DURING FIELD HYDROTEST (Mainline works)

As per SOR item.

17.0.0 COMPENSATION FOR PIPE FAILURE OF PRE-COATED PIPE DURING PRE-INSTALLATION HYDROTEST OF CROSSING WORKS (INCLUDING HDD)

As per SOR item.

18.0.0 SCRAP & WASTAGE ALLOWANCE

18.1.0 Line Pipes

18.1.1 All coated line pipes as per line pipe specifications enclosed elsewhere in the bidding document, shall be issued on linear measurement basis. All other piping materials shall be issued on numbers basis. All cut pieces pipes in length measuring 2 m to 9 m when returned to Owner's storage points after beveling, shall be considered as serviceable material. All cut pieces of pipes measuring less than 2 m will be treated as wastage/ scrap. All pipes above 9 m will be considered as good pipe.

18.1.2 For the purpose of accounting of pipes all cut pieces in length of 2 m and above when returned to the Owner's storage point shall be considered as serviceable material. All pipes measuring less than 2 m shall be treated as scrap/wastage.

18.1.3 The scrap allowance for OWNER supplied mainline pipes shall be limited to **0.8%** of the installed pipeline length, to be computed from Pipe Book. The pieces of pipe of length less than **2 meters** shall be treated and categorized as scrap.

18.1.4 Wastage of materials by way of scrap and unaccountable wastage shall be limited to **0.2%** of the installed pipeline length, to be computed from Pipe Book. Wastage of any materials

either by way of scrap or unaccountable wastage beyond limits as adjudged by Engineer-in-Charge shall be to the Contractor's account. The rate of recovery for the line pipes shall be calculated as landed price of the pipe

18.2.0 For MDPE Pipes

18.2.1 For the purpose of accounting of MDPE pipes following maximum allowances shall be permitted for 125mm, 90mm & 63mm Pipe

Unaccountable Wastage - 1% of the length laid (of respective sizes)

Scrap - 2% of the length laid (of respective sizes)

All pipes below 5 m shall be treated as scrap.

18.3.0 Associated Station Works

18.3.1 The following scrap allowance by weight is permissible for pipes in station works. The percentage allowance shall be accounted on the basis of erected weights computed from site measurements.

Detail	Salvageable	Non-recoverable
Pipes	2.0%	0.4%

Note: The pieces of pipe of length less than 2 meters shall be treated as scrap / wastage.

18.4.0 Penal Rates for non-return of owner supplied materials

All unused, scrap materials and salvageable materials shall be the property of the Owner and shall be returned by the Contractor category-wise at his cost to the Owner's designated store yard (s). In case the Contractor fails to do so or exceeds the limits of allowances specified above for scrap/ serviceable materials, then recovery for such quantities not returned as well as returned in excess of permitted limit by the Contractor will be done at the penal rate. Contractor shall also be responsible for suitable segregation of returned materials into separate stacks of serviceable and scrap materials.

If the Contractor shall default in replacing any material lost, damaged, deteriorated, misused, wasted, excess used, stolen, misapplied or disposed of within the provisions hereof, or shall fail to return to the Owner any surplus material or empties within the provisions hereof, the Contractor shall be liable to pay to the Owner the cost of such material or empties delivered at Owner's stockpile / godown plus departmental charges calculated at 25% (twenty five percent) of the said cost determined by the Engineer-in-Charge, and the decision of the Engineer-in-Charge as to such cost shall be final and binding upon the Contractor.

19.0.0 CONSTRUCTION RIGHT OF WAY (ROW) AND PERMITS

19.1.0 The Contractor shall, at his own cost and initiative, have to arrange the additional land required, if any, for plying / movement of the construction equipments and associated activities.

19.2.0 In locations, where pipeline is to be laid in the body of a road, canal, dyke or other structures/ locations under jurisdiction of Government/Public Bodies, the Contractor shall perform such work on obtaining the written permission from the respective Govt. /Public bodies under whose jurisdiction it falls, according to the requirement of concerned Authorities. When it becomes necessary that Contractor has to resort to manual digging, installation of well point system, erection of sheet piling or any other special construction

method in these areas. Contractor shall contact the Authorities concerned in order to become familiar with their requirements. In locations, where the pipeline has to be laid more or less parallel to an existing pipeline, cable and/or other utilities in the ROW, Contractor shall perform the work to the satisfaction of the Authority of the existing pipeline/ cable/utility. In such locations Contractor shall perform work in such a way that even under the worst weather and flooding conditions, the existing pipeline/utilities remain stable and shall neither become undermined nor have the tendency to slide towards the trench. Contractor shall be liable for any damage occurring to, or resulting from damage to other pipelines, underground structures/utilities.

20.0.0 ACCESS TO SITE, EASEMENTS & WAY RIGHTS

20.1.0 Notwithstanding the provisions of clause 3.8.0.0 of GCC, the Contractor shall confine his operations to the right-of-way unless he has made with persons interested in the adjoining land capable of permitting the same, arrangements to use land beyond the ROW for the relative operation(s). Such arrangements shall be entirely at the cost, initiative and responsibility of the Contractor and shall be in writing, a copy of which (certified by or on behalf of the Contractor to be a true copy thereof) shall forthwith be lodged with the Owner and such writing shall specifically stipulate that the Owner shall not be responsible for any claim or any loss, damage or injury to the land or to any material, item or things thereon arising out of or in connection with or incidental to any act or omission of the Contractor and/or his servants, agents and/or workmen and the Contractor shall keep the Owner indemnified from and against all claims, actions, demands, and proceeding whatsoever by any persons interested in any land adjoining the ROW in respect of any act, matter or thing done or omitted by the Contractor, and/or his servants, agents or workmen.

20.2.0 The Contractor shall at his own cost and initiative arrange for and provide access to the right-of-way for labour, equipment and material as may be necessary for any cause in addition to the ingress and egress available from points where the right-of-way intersects public highways. Any arrangements in respect thereof as may be entered into by the Contractor with any person interested in the land through which access is sought, shall be in writing and a copy of the writing (certified by or on behalf of the Contractor to be a true copy thereof) shall forthwith be lodged with the Owner. Such a writing shall specifically stipulate that the Owner shall not be responsible for any claims under the contract or for any damage, loss or injury to the land or any material, item or thing thereon arising out of or in connection with or incidental to any act or omission of the Contractor and/or his servants, agents and/or workmen and the Contractor shall keep the Owner indemnified from and against any claim, action or proceeding in respect thereof.

20.3.0 The Contractor shall at his own cost & initiative arrange for and obtain all necessary permissions, permits, consents and licenses as may be necessary to transport the Contractor's materials, tools, equipment, machinery and labour along or across any highway, roadway, railway, bridge, dyke, dam or embankment or lake, pond, river, toll, octroi, or other line, border or barrier (including along the ROW).

21.0.0 CONDITIONS OF WORK

21.1.0 In addition to the provisions of clause 4.2.0.0 of GCC and other associated clauses thereunder, notwithstanding the shutdown of work during rain, the Contractor shall without entitlement to any additional compensation or remuneration at his own cost and initiative,

shall take all steps necessary to protect the trenches already dug, and pipes already laid, and/or the pipes and other materials, equipment and machinery at site during the rain and from the effects thereof, and the Contractor shall, at his own cost and initiative, do and perform all such rectification, repairs and/or re-workings as shall be necessary.

22.0.0 SPECIFIC REQUIREMENT FOR RADIOGRAPHY AND WELDING INSPECTION AGENCY - STATION WORKS

- 26.1.0 All process piping, including drain and vent, welds shall be subjected to 100% radiographic inspection and service lines such as air and water lines including hydrant lines to 10% radiographic inspection **at random**. The Contractor shall arrange radiographic inspection of welds through an experienced and reputed independent agency that will be treated as a sub-Contractor. The procedure and quality of radiographic examination, limits of acceptability, repair and removal of defects etc. shall be as per API standard 1104. The independent agency to be appointed by the Contractor for radiographic examination shall be competent to carry out the job and shall have required qualified personnel such as welding Engineers, Radiographers, helpers etc. and shall supply necessary equipment and materials such as radiographic source cameras, films penetrometers, dark room screen etc. The welding Engineer employed by the agency shall be thoroughly conversant with welding metallurgy as well as field welding and weld testing practice in accordance with API Standard 1104, ASME Boiler and Pressure Vessel code and shall be able to determine the acceptability of welds by visual and radiographic inspection. The radiographers employed shall be qualified as stipulated in the said codes and must be fully familiar with radiographic equipment and methods including safety procedure and thoroughly experienced in the field of radiographic works. He should be aware of rules and regulations of radiation protection as well as other relevant safety standards in vogue in the country.
- 26.2.0 Contractor shall offer all necessary facilities to the Site Engineer such as dark room with controlled temperature viewer etc. for the examination of radiographic films. All radiographic records shall be digitized and provided to EIC/ Site Engineer in USB drives/ Hard disk/ CD.
- 26.3.0 The welding Engineer of the agency carrying out radiographic examination shall submit the radiographic films together with his findings, report and recommendation as to the acceptability or otherwise of welds radiographed to the Site Engineer. The Site Engineer's decision as to the acceptability or otherwise of the welds irrespective of the opinion or advice tendered by the welding Engineer shall be final and binding upon the Contractor.
- 26.4.0 The independent agency to be appointed by the Contractor for radiographic inspection shall be appointed only with the prior approval of the Engineer-in-Charge.

23.0.0 COMMISSIONING (MAINLINE & ASSOCIATED FACILITIES)

- 23.1.0 The Contractor shall provide all necessary inputs including labour and equipment/ machinery to the Owner's Engineers to enable them to commission the entire system as per the technical specifications.
- 23.2.0 The Contractor at his own cost and initiative shall carry out rectification of defect in any work done by them without delay to suit and match the commissioning programme.

24.0.0 COMPLETION CERTIFICATE

24.1.0 In partial modifications of the provisions of **clause 5.5.0.0** of GCC, within 15 (fifteen) days of issue of Final Test Certificate the Contractor shall clear the job site of all pipes, surplus materials, Contractor's labour, equipment and machinery and shall demolish, dismantle and remove all temporary work structures, and construction and other items and things whatsoever brought upon, erected upon the job site and not incorporated in the permanent works and shall remove all rubbish from the job site and shall clear dress and restore the job site to the satisfaction of the Site Engineer and shall completely vacate the job site and unless the Contractor shall have fulfilled other provisions of this clause the works shall not be deemed to have been completed, and failing compliance by the Contractor of the provisions of this clause, the provisions of **clause 7.0.6.0** of GCC and associated provisions thereunder shall apply in the same manner as they apply to a failure under **clause 7.0.5.0** of GCC.

24.2.0 In addition to the stipulations contained in **clause 5.5.2.0** of the General Conditions of Contract, the Contractor shall submit to the Engineer-in-Charge the following additional documents in the manner prescribed by the Engineer-in-Charge in this behalf:

- 1) Certificate of completion of embedded works;
- 2) Material reconciliation statement duly verified and certified by the Site Engineer;
- 3) Manufacturer's certificates and test certificates for materials supplied by the Contractor
- 4) Certificate of control, checking and test of materials;
- 5) Certificate for return of all surplus materials, equipment, machinery etc. if any, supplied by the Owner;
- 6) Trial run record and certificates for piping works;
- 7) Operating, maintenance & trouble shooting manuals in four (4) copies each for the equipment/ system and material supplied by the Contractor under this Contract.
- 8) Collection all the relevant drawings from the Owner along with the contractor drawings and submit the same to the Electrical Inspector to get his statutory approval.
- 9) Submission of approval certificate from Electrical Inspector to IOCL in original.
- 10) Any other certificate(s) required to be furnished as desired by the Owner.

24.3.0 In addition to the provisions of **clause 5.5.3.0** of GCC, if the Engineer-in-Charge is satisfied of the proper reconciliation and accounting of all materials supplied to the Contractor by the Owner, the Engineer-in-Charge shall within 14 (fourteen) days of receipt of the application of the Completion Certificate issue a Completion Certificate in respect of the works for which the Completion Certificate has been applied. If the Contractor cannot produce to the satisfaction of the Engineer-in-Charge a Statement of Reconciliation or other explanation of issues, utilization and returns of materials supplied by the Owner to the Contractor, the Engineer-in-Charge shall (after taking into account irrecoverable losses, if any, as specified or determined to be reasonable by the Engineer-in-Charge) debit the Contractor, for non-return of such material, and issue the Completion Certificate subject thereto. The decision of the Engineer-in-Charge as to the acceptability of the Material Reconciliation furnished by the Contractor and as to the irrecoverable losses, if any determined to be reasonable, shall be final and binding upon the Contractor.

24.4.0 Issue of Completion Certificate by Engineer-In-Charge shall be subject to the following:

- 1) Collection all the relevant drawings from the Owner along with the contractor drawings and submit the same to the Electrical Inspector to get his statutory approval.
- 2) Submission of approval certificate from Electrical Inspector to IOCL in original.
- 3) Submission of report of testing during commissioning to IOCL in 04 sets.
- 4) Submission of as built drawings in 6 sets along with one set of reproducible.
- 5) Submission of No claim certificate by the contractor.
- 6) Any other certificate(s) required to be furnished as desired by the Owner.

24.5.0 The Final Bill shall not be accepted for processing unless the requisite completion certificate accompanies it.

25.0.0 DEFECT LIABILITY PERIOD

- 25.1.0 The defect liability period as defined in clause 5.6.1.0 of the General Conditions of Contract shall be 12 months from the date of successful commissioning and handing over of the entire system in all respect to the owner.
- 25.2.0 Contractor shall depute his Engineer/ Experts/ Specialists/ Manufacturer's representatives to the site, as and when required by the Engineer-in-charge during the first 12 months from the date of completion certificate for operation of the facilities to render advice and guidance on any difficulty in operation or control of the system, at no extra cost to the owner.
- 25.3.0 In addition to provisions of clause 5.4.0.0 of General Conditions of Contract the following shall also apply during defect liability period.
- 25.4.0 The Contractor shall perform all work and render all services pertaining to the Contractor's design services with due diligence in accordance with sound engineering practice and shall be entirely responsible for any advice, recommendation, data calculation, specification, construction method or directive, designs, drawings, plans, bill of materials or other information made, prepared, given checked verified or accepted by the Contractor and for all consultancy and other services and functions performed by him in connection with his design services and shall be deemed to have certified the soundness of any advice, recommendation, data calculation, specification, construction, method or directive, designs, drawings, plans, bill of materials or other information and consultancy and other services and functions the efficiency and ability of the design to meet the stated aims of the work.
- 25.5.0 Should any defect or inadequacy appear within one year from the date of issue of completion certificate, arising out of the adoption of any design, drawings specification, advice, recommendation, calculation, data, acceptance of any design, consultancy service performed by the Contractor, then the Contractor shall forthwith prepare, perform, free of any cost to the Owner at his own initiative, all such design and consultancy service and correct, repair and/or rectify any and all defect(s) arising out of such design etc., as shall be necessary to remedy the said defect or inadequacy and further guarantee the said rectified/replaced system/ design/equipment/machinery/work etc., satisfactory performance for a further period of 12 (Twelve) months.
- 25.6.0 Contractor shall indemnify and keep indemnified Owner against all loss and damage suffered by the Owner arising from any negligence, omission or defaults on the part of Contractor or breach of any of the terms of the contract by the Contractor, his servants or agents,

observed within the defects liability period.

26.0.0 GUARANTEE

26.1.0 Manufacturer's guarantee:

- 26.1.1 The manufacturer's guarantee for all bought out items shall be made available to the Owner and shall be valid for the entire defect liability period. However, this does not absolve the Contractor of his responsibilities under defect liability clause to perform in attending to the defects noticed and rectifying these without any delay.
- 26.1.2 Manufacturer's/ Contractors guarantee, for any replaced equipment shall also be made available to the Owner and shall be kept valid at least for one year from the date of last replacement.

26.2.0 Performance guarantee:

- 26.2.1 The Contractor shall guarantee efficient working of all new facilities etc., for a period of twelve months from the date of issue of Completion Certificate. Any defects found in the workmanship of materials, of equipments used or from faulty erections of the facilities by the Contractor or otherwise defective performance, Contractor shall at his own cost remedy such defects, within the time specified by Engineer-in-Charge.
- 26.2.2 If it becomes necessary for the Contractor to replace or renew any defective portions of the new facilities under this clause, the provisions of this clause shall apply to the portions of the facilities so replaced or renewed, until the expiry of twelve months from the date of such replacements or renewals. If any defect is not rectified within a reasonable time, the Owner/ Engineer-in-Charge may proceed to do the work at Contractor's risk and cost/ expenses but without prejudice to any other rights which the Engineer-in- Charge/ Owner may have against the Contractor in respect of such defects.
- 26.2.3 If the replacement or renewal is of such a nature as may affect the efficiency of the new facilities, the Contractor should after making such replacement/ repairs or renewals, furnish the guarantee for the satisfaction of the Engineer-in-Charge.
- 26.2.4 All inspection, adjustments, or renewals carried out by the Contractor during performance guarantee period shall be subject to the General Conditions of Contract.
- 26.2.5 The Contractor shall, at his own cost, in consultation with the Engineer-in-Charge start and commission the new facilities and prove that they are giving satisfactory services. The date on which the system is handed over to the Owner shall be taken as the date of successful commissioning.
- 26.2.6 The security deposit furnished by the successful Tenderer, as per clause 2.1.0.0 of General Conditions of Contract, shall be valid till the completion date of guarantee period (+) plus three months after the defect liability period stated above.
- 26.2.7 The Contractor shall guarantee for the period mentioned above, the facilities against defective performance of all equipment/ instruments/ mechanical or electrical parts under Contractor's scope of supply.
- 26.2.8 Any defect found either in material or workmanship shall be made good by the Contractor at his own expenses within the time specified by the Engineer-in- Charge.

- 26.2.9 In the event of failure of any particular part of any equipment more than three times during the guarantee period, it shall not be repaired but the complete part shall be replaced by the Contractor. In case it is found that the above mentioned failure is due to some other connected part of the equipment, then that part shall also be rectified or replaced by the Contractor without any extra cost to Owner to avoid such failure in future. The guarantee for such replaced part shall be extended by one year from the date of last replacement.

27.0.0 CO-OPERATION WITH OTHER CONTRACTOR

- 27.1.0 Further to clause 4.0.5.0 of GCC the owner shall be engaging at the work site(s) other contractors or agencies to carry out works relating to installation of telecom equipments, test lead points, construction of building, construction of station works etc. the performance of which is contingent on and/or dependent upon the performance of work by the contractor and /or the Contractor's work by other contractors or agencies and therefore the contractor shall co-operate with the other contractor or agencies engaged at the works sites to ensure harmonious working between the contractor and the owner and the contractor or agencies involved and shall comply with any instruction issued by the Engineer-in-charge and/or Site Engineer for this purpose.
- 27.2.0 Works shall be carried out in such a manner as to cause least interference with or effect or retard or disturb the progress of works being executed by other Contractor or Agencies.

28.0.0 PROGRESS SCHEDULE

- 28.1.0 In addition to the provisions of the General Conditions of Contract relating to 'Progress Schedule' the contractor shall take into account the instructions of the Engineer-in-Charge regarding the constraints, restraints and other requirements of works and the required sequence of works, in preparing the progress schedule. Notwithstanding the provisions relating to 'Approved Progress Schedule' weekly or monthly work programs may be drawn up by the Engineer-in-Charge/ Site Engineer taking into account the availability of work fronts and the requirements of other contractor or Agencies involved at the work sites and the contractor shall abide by the weekly or monthly work program so drawn up.
- 28.2.0 In the event of failure on the part of the Contractor to adhere to the weekly or monthly work program drawn up by the Site Engineer/ Engineer-in-Charge, the provisions of clause 4.7.4.0 of General Conditions of Contract shall apply. The decision of the Engineer-in-Charge as to whether a failure on the part of the contractor to comply with the weekly or monthly work programs drawn up has occurred or not shall be final and binding on the contractor.
- 28.4.0 The contractor shall ensure that local labour (unskilled as well as skilled) to the extent possible and available from local sources is preferably employed on work, with special priority being given to the persons and /or dependents of person whose land has been acquired or the already mentioned works or any other facility in connection with the project. For any infringement of these provisions, the owner shall be at liberty to rescind the contract without any liability to pay any compensation what-so-ever to the contractor.

29.0.0 PROGRESS REPORTS

- 29.1.0 Daily Progress Report: This report shall be submitted to EIC on **daily basis** without any fail in the approved format.
- 29.2.0 Monthly Progress Report: This report shall be submitted by the contractor on a monthly basis to the Engineer-in-charge within three calendar days from cut-off date as agreed upon, covering overall scenario of work.
- 29.3.0 The report shall include but not limited to the following:
1. Brief Introduction of work.
 2. Activities executed /achievements during the month.
 3. Schedule Vs Actual percentage progress of work and progress for sub-ordering, manufacturing/delivery. Overall progress status of Purchase orders.
 4. Areas of concern/problem/hold ups, impact and action plans
 5. Resource deployment status.
- 29.4.0 Any other report / details in addition to above shall also be prepared & submitted by the contractor as required by the Engineer in-charge / Site Engineer from time to time.

30.0.0 FAMILIARIZATION PROGRAMMES

- 30.1.0 Contractor shall carry out familiarization programs for the OWNER's personnel in all aspects of power supply package, impressed current CP system, including auto control and maintaining of PSP level.

31.0.0 CONSTRUCTION

31.1.0 Rules and regulations

- 31.1.1 Contractor shall observe, in addition to codes specified in respective specifications, all national and local laws, rules and regulations and requirements pertaining to the work.

31.2.0 Quality Assurance/Quality Control Procedures

- 31.2.1 The Tenderer shall submit, a detailed Quality Assurance Procedure (QAP) to the Owner for approval. The QAP should indicate the organizational approach for quality control and quality assurance plan for the job and also provide objective, verifiable evidence that they have carried out all activities for the purpose and followed the specifications, as laid down in the tender documents and procedure. The QAP will include the following:
- (i) Quality Control Plans showing the details of all the activities to be examined by the quality control group of the Contractor and also the activities which are proposed to be inspected by inspection agency of the Contractor appointed with due approval of the Owner and along with the documentation which shall be maintained and submitted to the Owner.
 - (ii) Quality Control Plan and Quality Assurance Procedure, in case a portion of the work or supply is being carried out by a sub-contractor/ specialized agency.

31.3.0 Field inspection

- 31.3.1 Contractor shall have a competent Superintendent on the premises, at all the times during performance of the work. Any instruction given to the Superintendent shall be construed as having been given to the Contractor.

31.4.0 Erection and installation

31.4.1 The Contractor shall carry out required supervision and inspection as per the Quality Assurance plan and furnish all assistance required by the Owner in carrying out inspection work during this phase. The Owner shall have engineers, inspectors or other authorized representatives, who shall have free access to the work, at all the times. If representative of the Owner notifies the Contractor's authorized representative, of any deficiency, or recommends action regarding compliance with the specifications, the Contractor shall make every effort to carry out such instructions to complete the work conforming to the specifications and approved drawings in the fullest degree consistent with the best engineering practice.

31.5.0 Existing services

31.5.1 Existing drains, pipes, petroleum pipelines, cables, overhead wires and similar services encountered in the course of the work shall be protected against damage by the Contractor at his own cost, so that they may continue in full and uninterrupted use to the satisfaction of the Owner thereof, or otherwise occupy a part of the site in a manner, not likely to hinder the operation of such services.

31.5.2 Any damage affecting the existing facilities / structures due to the Contractor's fault shall be repaired by the Contractor at his own cost to the satisfaction of Engineer-in-Charge/ concerned authority.

31.6.0 Construction equipment

31.6.1 Contractor shall ensure all construction equipment to be in sound operating condition, safe and fit for the purpose and use intended for and to have a sufficient supply of spare parts to avoid delays in the performance of the work resulting from loss of use. Latest test certificates wherever required shall be made available for reference to the Site Engineer/ Engineer-in-Charge. All construction equipment shall be subject to inspection and approval from time to time by the Owner for the purpose of ensuring conformity with the foregoing standard. Any such equipment which is rejected or not conforming with the foregoing shall be promptly repaired or removed by Contractor and if removed shall be replaced as soon as practicable at Contractor's expense with suitable equipment.

31.7.0 CLEAN UP

31.7.1 The trenching and cutting involved in installation and removal of anodes and associated cabling shall be restored to original condition after installations.

31.7.2 The contractor shall clear all the debris, metal / cable cut pieces etc. and other leftovers from all the job sites.

32.0.0 SAFETY & POLLUTION CONTROL

32.1.0 In addition to the provisions of clause 10.0.0 of GCC, the Contractor shall take all reasonable precautions to avoid pollution or contamination of the air, land or water arising out of the performance of the work. Disposal of returns and cuttings produced by the work shall not be allowed to be discharged in the river. Contractor shall make arrangement at his own cost and initiatives to dispose off the return and cuttings generated from the drilling operation, as to avoid any pollution to the environment. Should there be a discharge or escape of appreciable quantity of pollutants or contaminants during performance of its obligations

under this contract which occurs as a result of activities of the Contractor or its sub-contractor, the Contractor shall immediately take all necessary actions to contain, control, recover or disperse the substance and to eliminate the safety and environmental risks and correct the damage resulting therefrom.

32.2.0 ADHERANCE TO SAFETY PROCEDURES AND PRACTICES

With a view to improve the safety aspects of execution of the job based on the job requirements following penalties will be imposed for violation/non-adherence of safety procedures:

Sl. No.	Nature of Violation	Penalty
a)	For nonuse of PPE (Personal Protective Equipment)	Rs. 1000/- per occasion
b)	Working without clearance	Rs. 5000/- per occasion
c)	Violation of applicable safety, health and environment related norms	Rs. 5000/- per occasion
d) *	Violation of applicable safety, health and environment related norms resulting in	
	(i) Any physical injury	0.5% of the contract value (maximum of Rs. 2 lakh) per injury + Rs. 5000/-
	(ii) Fatal accident	1% of the contract value (maximum of Rs. 10 lakh) per fatality + Rs. 5000/-
e)	Hot work without proper Clearance / permit	Rs. 10000/- per occasion
f)	Non Display of name board / Permit etc.	Rs. 500/- per occasion
g)	Non fencing of excavated area in operating station	Rs. 1000/- per occasion
h)	Non-protection of deep excavation by way of shoring and strutting.	Rs. 10000/- per occasion
i)	Over speeding of jeep / bus etc. in operating station	Rs. 1000/- per occasion
j)	Inadequate or non-availability of First Aid Box	Rs. 500/- per occasion

*Aforesaid penalty clause is over and above, the applicable statutory requirements.

In case of accidents depending on the seriousness of injury etc. in addition to the hospitalization / Treatment charges and Group insurance amount, compensation shall be paid by the Contractor to the affected person / his family members in presence of Engineer-in-charge as per Workmen Compensation Act.

32.3.0 Safety practices while working at height

32.4.0 In line with the OISD guidelines on "Safety practices during construction" (OISD-GDN-192), the Contractor shall ensure that additional safety measures like providing Fall Arrestor type safety belt, safety net for all activities being done in line with tender requirements at a

height of 2.5 meters and more depending upon the site conditions and job requirements.

33.0.0 DRAWINGS

- 33.1.0 The drawings accompanying this tender documents (in Compact Disk in PDF/ DWG form) are preliminary and are intended to be studied by the Tenderer in order to form an idea about the nature and extent of works involved. **The tenderers are required to base their proposals on their independent survey.**
- 33.2.0 The drawings and detailed specifications submitted by the tenderers (as part of their proposals) shall give all details such as dimensions, weights, manufacturer's name of materials, catalogues, details of supporting drawings and general arrangements, data etc.
- 33.3.0 Approved for Construction drawings shall be issued to the Contractor progressively in due course matching with the progress of work.
- 33.4.0 All dimensions / details on drawings must be in metric units. However where the items are marked in other standards & units, the metric units shall be shown in brackets along with other such units.
- 33.5.0 All drawings prepared for this work after award of the work shall be the property of the owner and the contractor shall not use the same for any other work except the work under this contract.
- 33.6.0 Drawings for execution of works must be submitted by the contractor to the owner, for approval, within a period specified in the approved work schedule. Any point raised by Owner regarding clarifications/ changes in the drawings and documents shall be cleared/ incorporated in the drawings to the entire satisfaction of the owner without any extra cost and without prejudice to the contractual responsibility of the contractor, for the correctness & soundness of the drawings, detail engineering documents etc. Any change/ modifications carried out by contractor, at the instance of the owner shall not absolve the contractor of his responsibility for the correctness of the drawings, detail engineering etc. adopted by him for the work. After the completion of the work all the site modifications shall be incorporated in the drawings and six sets of 'As Built' drawings along with one set of reproducible shall be supplied to the owner.

34.0.0 DOCUMENTATION

- 34.1.0 **"AS-BUILT" Drawings and Documents (Mainline & HDD works)**
- 34.2.0 Notwithstanding the provision contained in standard specifications, upon completion of work, the Contractor shall submit the following drawings and documents to the "AS-BUILT" stage (including all vendor / sub-vendor drawings for bought out items) and provide the Owner including electronic copies using AUTOCAD in External Hard Disk, but not limited to, the following:-
- (1) Route Map with crossing details*
 - (2) Profile Map*
 - (3) Individual Crossing Drawings*
 - (a) Open Cut Heavy Wall Road crossings

- (b) Open cut Canal/ drain/ minor water course crossings
- (c) Cased Road / Railway / Canal crossings
- (d) Submerged Crossings (River / drain / major water course)
- (e) HDD Crossings
- (4) Alignment Plan of entire Pipeline showing all relevant ROW and pipeline details including but not limited to ROW boundary, pipeline, OFC, Pipeline markers (Boundary pillar, T.P.'s, Warning signs), T.L.P.'s, OFC cable details like joint pits etc., Crossings including HT line crossings etc. with reference/ distance from nearby permanent features*
- (5) Pipe Book containing all details as per approved Format*
- (6) Approved Mainline Procedures including WPS, PQT, PQR*
- (7) Permission from authorities for work execution of crossings**
- (8) Detailed Caliper Survey Reports*
- (9) Hydrotest Reports*
- (10) Test report of Hydrotest water and recommendation of preservative manufacturer**
- (11) Test Certificates of all Contractor-supplied materials and consumables including Batch test certificates of Welding Electrodes*
- (12) Calibration test certificates of all measuring/ recording/ testing equipment used in the work*
- (13) Daily Progress & Inspection Reports**
- (14) Radiography Reports**
- (15) Radiographs of field weld joints and repairs**
- (16) No-Objection Certificates (NOC) from all concerned, viz. farmers, local bodies, authorities etc. pertaining to entire ROW, after restoration of land.
- (17) Indemnity Certificate in favour of IOCL pertaining to settlement of claims arising out of non-restoration/ improper restoration to satisfaction of landowner/ authority etc.

* - Six (6) Signed Hard Copies of As built drawings with electronic copy of CAD Drawings in EXTERNAL HARD DISK media and Original shall be submitted.

** - Original along with electronic copy in EXTERNAL HARD DISK shall be submitted.

Bidder to note that all documentation shall be clear and legible and shall be submitted in proper bound folders. Photocopied documents shall not be acceptable.

The As-built Drawings/ Documents shall bear the signatures of the Contractor and shall be duly verified/ approved by the Engineer-in-Charge after review.

34.3.0 "AS-BUILT" Drawings

Bidder to provide as-built drawings of Civil/ Mechanical/Instrumentation/ Electrical/OFC/ Piping etc. in Original Hard Copy with electronic copy of CAD Drawings in EXTERNAL HARD DISK media

35.0.0 "DEFINITIONS

1. “Act” shall mean the Petroleum and Minerals Pipeline (Acquisition of Right of User in Land) Act, 1962; Amendment Act, 1977 or any amendment/ re-enactment/ replacement thereof for the time being in force and any rules, orders, instructions and/or specifications issued thereunder.
2. All headings of the clauses in these conditions of contract or otherwise in any contract document are intended solely for the purpose of giving a broad indication of the contents of the clause and not as a summary of the contents thereof.
3. “Bid” and “Bidder” shall have the same meaning as “Tender” and “Tenderer” respectively, as defined in GCC.

36.0.0 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

1. Scope of work shall also include submission of QA/QC procedure for all activities in line with the detailed work specification, relevant codes / standards of practice. The works shall be executed in line with the approved QA/QC procedures.
2. The Tenderer shall submit, a detailed Quality Assurance Plan. The quality Assurance Procedure should indicate the organizational approach for quality control and quality assurance plan for the job and also provide objective, verifiable evidence that they have carried out all activities for the purpose and followed the specifications as laid down in the tender documents and procedure. The procedure for quality assurance will include the following.
 - a) Quality control plans showing the details of all the activities to be examined by the quality control group of the contractor and also the activities which are proposed to be inspected by inspection agency of the Contractor appointed with due approval of the Owner and along with the documentation which shall be maintained and submitted to the Owner.
 - b) Quality control and quality assurance procedure in case a portion of work or supply is being carried out by a Sub-Contractor/specialized agency.

37.0.0 Off-loading Right to IOCL

At any stage of performance evaluation, in the event contractor’s performance is rated as Fair or Unsatisfactory, IOCL, without prejudice to any or all other rights & remedies available to it under the contract shall be entitled to offload part of the work in terms of clause 4.7.4.0 of GCC with all consequences thereto and/or without prejudice to any other rights and remedies available to IOCL. in terms of the contract, IOCL shall be entitled to terminate the Contract in terms of clause 7.0.1.0 of GCC with all consequences thereto.

38.0.0 GUIDELINES FOR EVALUATION OF CONTRACTORS’ PERFORMANCE

1.0 OBJECTIVE

The objective of Contractor Performance Evaluation (CPE) is to ascertain the performance of the contractor with respect to satisfactory execution of work while maintaining safety and quality standards and to develop reliable contractors so that they consistently meet or exceed expectations and requirements.

The purpose of this guideline is to put in place a system to monitor performance of contractors associated with IOCL Pipelines Division so as to ensure smooth, timely & qualitative completion of various contracts. Contractor's Performance Evaluation methodology will be an integral part of the tenders.

2.0 METHODOLOGY

2.1 Measurement of Performance

Standard format attached as **Annexure-A & B** shall be used for evaluating Contractors' performance. All contracts with contractual value of more than Rs. 25 Lakhs (including GST) would be evaluated under this system. The performance of the contractor would depend upon the total marks obtained.

3.0 PROCESS OF EVALUATION OF PERFORMANCE OF CONTRACTORS

3.1 The contractors' performance till completion/ mechanical completion of work shall form the basis for the evaluation of performance of contractor before release of the final bill.

3.2 Stages of Evaluation:

Performance Evaluation of Contractor shall be done on completion/ mechanical completion of work of each contract before release of final bill.

CPE should become part of mandatory document to process the final Bill.

For Zonal Contracts in CGD, the performance evaluation of the Contractor shall be carried out at the end of contract period or at any stage during pendency of contract as deemed suitable by EIC.

3.3 Allocation of Marks

3.3.1 Allocation of marks shall be based on parameters and weightages as per format attached as **Annexure B**.

3.3.2 Maximum marks reflects the maximum weightage assigned for the corresponding activity considering a total score of 100. In case certain activities are not applicable, scores shall be computed on a reduced total and then absolute score shall be reworked to 100.

3.4 Performance Rating:

Depending upon the total marks obtained by the contractor, the performance rating of the contractor shall be finalized as per following:

Sl.No.	%age of Marks obtained	Performance Rating
1	> 40%	Satisfactory

2	≤ 40%	Unsatisfactory
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3.5 Action in case of Unsatisfactory Performance

- a) In case of Unsatisfactory Performance rating, the Contractor shall be holiday listed as per Holiday Listing Guidelines of the corporation.

Annexure-A

FORMAT FOR

EVALUATION OF CONTRACTORS' PERFORMANCE - (For Contract value ≥ Rs. 25 Lacs)

- 1.0 Name of Contractor & SAP vendor code :
- 2.0 Work Order No. & Date :
- 3.0 Name of Work :
- 4.0 Contract Value (Rs.) :
- 5.0 Scheduled Completion Period :
- 6.0 Date of Start :
- 7.0 Contractual Completion Date :
- 8.0 Actual Completion Date :
- 9.0 Final Execution Amount :

10.0 Total Marks as allocated to Contractor:

SN	DESCRIPTION	MAXIMUM MARKS	SCORE
1	Safe work practices	25	
2	Job schedule related	50	

A	Mobilisation Time (Actual handing over at Site)	5	
B	Deployment of manpower etc	15	
C	Compliance of labour related commitments	15	
D	Instances of work stoppage due to reason attributable to contractor	5	
E	Completion Time	10	

SN	DESCRIPTION	MAXIMUM MARKS	SCORE
3	Quality of work	10	
4	Contract closure & other Contract related obligations	15	
A	Timely Submission of Financial instruments (BGs/SDs/BG extensions etc)	5	
B	Statutory authorities complaints	5	
C	Clearance of site after completion of work	5	
	Grand Total	100	

11.0 Performance Rating of Contractor:

Performance rating chart:

SN	%age of Marks obtained	Performance Rating
1	> 40%	Satisfactory
2	≤ 40%	Unsatisfactory

Depending upon the total marks as obtained by the contractor at 10.0 above, the Performance Rating of the contractor is rated as.....

Site Engineer
(Name, Designation, Signature, Date)

Engineer In-charge	Approving Authority
(Name, Designation, Signature, Date)	(Name, Designation, Signature, Date)
Reviewed by	Approved by



Contractor Performance Evaluation sheet

Annexure B

S.No.	Description	Max Marks	Computation Philosophy					Score
1	Safety Related Performance Evaluation	25	Violation of applicable health, safety and environment related norm with warning/caution letter issued by EIC: 0.5 marks deduction for each instance	Violation of applicable health, safety and environment related norm with imposition of penalty 3 marks deduction for each instance of imposition of penalty	Physical Injury: 5 marks deduction for each instance	Fatal Accident: Full marks (25) Deduction		
2	Job Schedule Related	50						
a	Mobilization of contractor at site	5	As per schedule mentioned in Work Order/Specific Notice/as instructed by EIC Award 5 Marks (5)	Delay upto 7 days Award 4 Marks	Delay more than 7 days but upto 15 days Award 3 Marks	Delay more than 15 Days and upto 30 days Award 2 Marks	More than 30 days - Award 1 mark	
b	Deployment of adequate man-Power, material and other resources to meet the progress as per desired schedule	15	All deployments adequate Award Full marks (15)	letter issued to contractor by EIC during execution to ensure sufficient deployment Deduction of 1.5 mark per week of delay	IOCL forced to arrange manpower, material or any other Resources Full marks (15) Deduction			
c	Compliance of labour related commitments and all statutory requirements, i.e., payment of minimum wages, submission of PF, etc within time.	15	All commitments made on time Award Full marks (15)	Delay in payment to Labour & PF etc Deduction of 1 Mark Per Occasion	Direct payment by IOCL to sub-contractor/ Labour: Deduction of 2.5 Marks Per Occasion			
d	Instances of work stoppage due to reason attributable to contractor	5	Nil slowdown / stoppages Award 5 Marks	1 incidence (More than 1 working day each) Award 3 marks	2 incidences (more than 1 working day each) Award 1 marks	More than 2 incidences Award Nil Marks		
e	Completion as per Schedule	10	Within time including Extensions granted Award 10 marks	Price Adjustment for delay upto 1.5 % of the Total Contract Value. Award 7.5 marks	Price Adjustment for delay above 1.5% but upto 3 % of the Total Contract Value Award 5 marks	Price Adjustment for delay above 3% upto 4 % - Award 2.5 marks	Price Adjustment for delay beyond 4 % Award Nil Marks	



S.No.	Description	Max Marks	Computation Philosophy					Score
3	Job Quality Related	10						
a	Quality of work	10	Quality of work is acceptable and no-rework is done Award Full Marks (10)	Communication issued by EIC to contractor regarding concerns on quality Uniform Deduction of 0.5 mark per occasion				
4	Contract Closure & other Contract related obligations	15						
a	Timely Submission of Financial instruments (BGs/SDs/ BG extensions etc)	5	Within time as per Contract requirement Award 5 Marks	Delay upto 1 week Award 4 Marks	Delay upto 2 weeks Award 3 Marks	Delay more than 2 weeks. Deduction of 1 mark per week.		
b	Violation of Statutory compliance	5	No Penal action— Award 5 Marks	Penalty imposed – Award Nil marks				
c	Clearance of site after completion of work	5	Cleared Completely as per requirement of EIC Award 5 Marks	Cleared Site after written communication/Reminder from EIC Deduction of 1 mark per occasion	Partially cleared hence penalty/recovery imposed by IOCL Deduction of 2.5 mark	Not cleared hence penalty/recovery imposed by IOCL Deduction of 5 marks		

39.0.0 ECLMS Portal

Successful contractor shall adhere to maintain the details of engaged contract manpower on e-CLMS Portal of IOCL as per guidelines. The detailed guideline is available on IOCL Portal <https://associates.indianoil.co.in/Vendor/>. Bidder to refer to the website mentioned above for further details.”