TENDER DOCUMENT NO. T-370-2026 (Lot-I)

REPLACEMENT OF NORMAL/FOG TYPE DISC INSULATORS WITH RTV COATED DISC INSULATORS FOR 220kV TRANSMISSION LINES UNDER FIELD OPERATIONS LAHORE (Lot-I)

(Single Stage Two Envelope Procedure)

(National Competitive Bidding)

PREPARED BY:
O/o DIRECTOR GENERAL (FIELD OPERATIONS) NORTH
NTDC HOUSE, LAHORE

NATIONAL GRID COMPANY (NGC) OF PAKISTAN

November, 2026

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FOR
CONTRACT NO. T-370-2026 (Lot-I)

REPLACEMENT OF NORMAL/FOG TYPE DISC INSULATORS WITH RTV COATED DISC INSULATORS FOR 220kV TRANSMISSION LINES UNDER FIELD OPERATIONS LAHORE (Lot-I)

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SECTION I

INVITATION FOR BIDS

Ref No. DG/FON/P&S/T-370-2026/_____
Date: _____/11/2026

Field Operations North
Director General (FO) North Lahore

INVITATION FOR BID

1. NationalGrid (formerly NTDC), "The Purchaser", is responsible for development and control of power transmission system in the country, invites electronic bids on E-PADS v2.0 for execution of below mentioned works through "Single Stage Two Envelope Procedure" (SSTE) on National Competitive Bidding (NCB) basis from eligible firms registered with Income Tax and Sales Tax Departments and who are on Active Tax payers List of the Federal Board of Revenue (detailed terms & conditions, types and quantities mentioned in the bidding document).

Tender No.	NAME OF WORK
T-370-2026 (Lot-I)	Replacement of Normal/ Fog Type Disc Insulators with RTV Coated Disc Insulators for 220kV Transmission Lines under Field Operations Lahore (Lot-I)
T-370-2026 (Lot-II)	Replacement of Normal/ Fog Type Disc Insulators with RTV Coated Disc Insulators for 220kV Transmission Lines under Field Operations Lahore (Lot-II)
T-370-2026 (Lot-III)	Replacement of Normal/ Fog Type Disc Insulators with RTV Coated Disc Insulators for 220kV Transmission Lines under Field Operations Lahore (Lot-III)

2. Bidding Documents, containing detailed terms and conditions, etc. can be accessed through E-PAK Acquisition and Disposal System (E-PADS v2.0) at **(www.epads.gov.pk)**. Interested eligible bidders are requested to register themselves on E-PADS v2.0 and submit their bid on E-PADS before the date & time of opening of Bids. Manual bids shall not be accepted, in any case.

3. This advertisement is also available on PPRA and NGC websites (www.ppra.org.pk & www.ntdc.com.pk). All eligible bidders need to prepare their bids according to the instructions given in Bidding Document and submit their bids electronically through E-PAK Acquisition and Disposal System (E-PADS v2.0) up to 07.12.2026 at 11:00 hrs. The bids will be opened on the same day at 11:30 hrs through E-PADS in the office of Director General (FO) North, NGC Lahore at below mentioned address.

   Director General (Field Operations) North NationalGrid,
   34, Industrial Area, NTDC House, Gulberg-III, Lahore
   Telephone: 042-99263023

4. A bidder may participate in any number of lots and may be awarded contracts for any number of lots, subject to meeting the eligibility and qualification requirements stipulated in the Bidding Documents. However, for award of contracts for multiple lots/works, the bidder shall independently meet the prescribed manpower/equipment/ labor requirements and financial criteria for each lot/works for which it is being considered for award.

5. All Bids must be accompanied by a Bid Security in favor of "Chief Engineer (AM) North, NTDC Lahore", equal to an amount mentioned in bidding document, in the form of CDR or Pay Order from a Bank in Pakistan. The Bid Security must be submitted in original to this office on or before the date and time of submission of bids on E-PADS.

6. The NationalGrid reserves the right to reject all bids and to annul bidding process at any stage prior to contract award as defined in Clause 45 & 46 of Public Procurement Rules 2026.

7. The bidder should not be blacklisted from NationalGrid, DISCO or any Government organization at the time of bidding.

Director General (Field Operations) North, NationalGrid
NTDC House Lahore

Ref No. DG/FON/P&S/T-370-2026/_____
Date: _____/11/2026

Field Operations North
Director General (FO) North Lahore

C.C.

1. Executive Director D (FO) North NGC, Wapda House, Lahore.
2. Director (Media & Public Relations) NGC G-63, WAPDA House Lahore for publication in the leading newspapers as per Government policy.
3. Director (I.T) NGC, WAPDA House, Lahore with the request to upload the above tender notice on NTDC website, please.
4. Dy. Director (Finance) FO North, NGC Lahore.

SECTION II

INSTRUCTIONS TO BIDDERS

SECTION I

INSTRUCTIONS TO BIDDERS

A. GENERAL

IB.1 Scope of Bid

1.1 The Employer as defined in the Bidding Data hereinafter called "the Employer" wishes to receive bids for the construction and completion of works as described in these Bidding Documents, and summarized in the Bidding Data hereinafter referred to as the "Works".

1.2 The successful bidder will be expected to complete the Works within the time specified in Appendix-A to Bid.

IB.2 Source of Funds

2.1 The Employer has applied for/received a loan/credit from the source (s) indicated in the Bidding Data in various currencies towards the cost of the project specified in the Bidding Data and it is intended that part of the proceeds of this loan/credit will be applied to eligible payments under the Contract for which these Bidding Documents are issued.

IB.3 Eligible Bidders

3.1 This Invitation for Bids is open to all bidders meeting the following requirements:

a. Duly licensed by the Pakistan Engineering Council (PEC) in the category relevant to the value of the Works.
b. Duly prequalified/enlisted with the Employer.

3.2 A Bidder may be natural person, company or firm or public or semi-public agency of Pakistan or any foreign country**,** or any combination of them with a formal existing agreement (on Judicial Papers) in the form of a joint venture, consortium, or association. In the case of a joint venture, consortium, or association, all members shall be jointly and severally liable for the execution of the Contract in accordance with the terms and conditions of the Contract. The joint venture, consortium, or association shall nominate a Lead Member as nominated in the BDS, who shall have the authority to conduct all business for and on behalf of any and all the members of the joint venture, consortium, or association during the Bidding process, and in case of award of contract, during the execution of contract.

3.3 A Bidder may be ineligible if –

(a) he is declared bankrupt or, in the case of company or firm, insolvent;
(b) payments in favor of the Bidder is suspended in accordance with the judgment of a court of law other than a judgment declaring bankruptcy and resulting (in accordance with the national laws) in the total or partial loss of the right to administer and dispose of its property;

(c) legal proceedings are instituted against such Bidder involving an order suspending payments and which may result, in accordance with the national laws, in a declaration of bankruptcy or in any other situation entailing the total or partial loss of the right to administer and dispose of the property;

(d) the Bidder is convicted, by a final judgment, of any offence involving professional conduct;

(e) the Bidder is blacklisted and hence debarred due to involvement in corrupt and fraudulent practices, or performance failure or due to breach of bid securing declaration.

(f) The firm, supplier and contractor is blacklisted or debarred by a foreign country, international organization, or other foreign institutions for the period defined by them.

IB.4 One Bid per Bidder

4.1 (a) Each bidder shall upload only one bid on E-PADS in same bidding process either by himself, or as a partner in a joint venture. A bidder who uploads or participates in more than one bid (other than alternatives pursuant to Clause IB.16) will be disqualified.

(b) No bidder can be a sub-contractor while submitting a Bid individually or as a member of a joint venture in the same Bidding process.

IB.5 Cost of Bidding

5.1 The bidders shall bear all costs associated with the preparation and submission of their bids and the Employer will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

IB.6 Site Visit

6.1 The bidders are advised to visit and examine the Site of Works and its surroundings and obtain for themselves on their own responsibility all information that may be necessary for preparing the bid and entering into a contract for construction and dismantling Works. All cost in this respect shall be at the bidder's own expense.

6.2 The bidders and any of their personnel or agents will be granted permission by the Employer to enter upon his premises and lands for the purpose of such inspection, but only upon the express condition that the bidders, their personnel and agents, will release and indemnify the Employer, his personnel and agents from and against all liability in respect thereof and will be responsible for death or personal injury, loss of or damage to property and any other loss, damage, costs and expenses incurred as a result of such inspection.

B. BIDDING DOCUMENTS

IB.7 Contents of Bidding Documents

7.1 The Bidding Documents, in addition to invitation for bids, are those stated below and should be read in conjunction with any Addenda issued in accordance with Clause IB.9.

1. Instructions to Bidders.
2. Bidding Data.
3. General Conditions of Contract, Part-I (GCC).

4. Particular Conditions of Contract, Part-II (PCC).
5. Specifications – Special Provisions.
6. Specifications - Technical Provisions.
7. Form of Bid & Appendices to Bid.
8. Bill of Quantities
9. Form of Bid Security.
10. Form of Contract Agreement.
11. Forms of Performance Security and Mobilization Advance Guarantee/Bond.
12. Drawings. (If applicable)

7.2 The bidders are expected to examine carefully the contents of all the above documents. Failure to comply with the requirements of bid submission will be at the Bidder's own risk. Pursuant to Clause IB.26, bids which are not substantially responsive to the requirements of the Bidding Documents will be rejected.

7.3 The Procuring Agency is not responsible for the completeness of the Bidding Documents and their addenda, if they were not obtained directly from the Procuring Agency or the signed pdf version downloaded from the website of the Procuring Agency/ E-PADS. However, Procuring Agency shall place both the pdf and same editable version to facilitate the bidder for filling the forms.

7.4 The Bidder is expected to examine all instructions, forms, terms and specifications in the Bidding Documents. Failure to furnish all the information required in the Bidding Documents will be at the Bidder's risk and may result in the rejection of his Bid.

IB.8 Clarification of Bidding Documents

8.1 Any prospective bidder requiring any clarification (s) in respect of the Bidding Documents may notify the Employer in writing at the Employer's address and through E-PADS indicated in the Invitation for Bids. The Procuring Agency will within three (3) working days after receiving the request for clarification, respond in writing or in electronic form to any request for clarification provided that such request is received not later than three (03) days prior to the deadline for the submission of Bids on E-PADS.

Copies of the Employer's response will be forwarded to all participants in bid, including a description of the enquiry but without identifying its source.

IB.9 Amendment of Bidding Documents

9.1 At any time prior to the deadline for submission of bids, the Employer may, for any reason, whether at his own initiative or in response to a clarification requested by a prospective bidder, modify the Bidding Documents on E-PADS by issuing addendum.

9.2 Any addendum thus issued shall be part of the Bidding Documents pursuant to Sub-Clause 7.1 hereof and shall be communicated in writing/ through E-PADS to all purchasers of the Bidding Documents. Prospective bidders shall acknowledge receipt of each addendum in writing to the Employer.

9.3 To afford prospective bidders reasonable time in which to take an addendum into account in preparing their bids, the Employer may extend the deadline for submission of bids in accordance with Clause IB.20

C. PREPARATION OF BIDS

IB.10 Language of Bid

10.1 The bid and all correspondence and documents related to the bid exchanged by a bidder and the Employer shall be in the bid language stipulated in the Bidding Data and Particular Conditions of Contract. Supporting documents and printed literature furnished by the bidders may be in any other language provided the same are accompanied by an accurate translation of the relevant parts in the bid language, in which case, for purposes of evaluation of the bid, the translation in bid language shall prevail.

IB.11 Documents Accompanying the Bid

11.1 Each bidder shall:

(a) submit a power of attorney authorizing the signatory of the bid to act for and on behalf of the bidder; (as per requirement of E-PADS)

(b) update the information indicated and listed in the Bidding Data and previously submitted with the application for prequalification, and continue to meet the minimum criteria set out in the prequalification documents which as a minimum, would include the following:

(i) Evidence of access to financial resources along with average annual construction turnover;
(ii) Financial predictions for the current year and the two following years including the effect of known commitments;
(iii) Work commitments since prequalification;
(iv) Current litigation information; and
(v) Availability of critical equipment.

and

(c) furnish a technical proposal (as per requirement of E-PADS) taking into account the various Appendices to Bid specially the following:

Appendix-E to Bid	Proposed Replacement Schedule
Appendix-F to Bid	Method of Performing the Work
Appendix-G to Bid	List of Major Equipment
Appendix-M to Bid	Organization Chart for Supervisory Staff

And other pertinent information such as mobilization programme etc.

11.2 Bids submitted by a joint venture of two (2) or more firms shall comply with the following requirements:

(a) the bid and in case of a successful bid, the Form of Contract Agreement shall be signed so as to be legally binding on all partners;
(b) one of the joint venture partners shall be nominated as being in charge; and this authorization shall be evidenced by submitting a power of attorney signed by legally authorized signatories of all the joint venture partners;
(c) the partner-in-charge shall always be duly authorized to deal with the Employer regarding all matters related with and/or incidental to the execution of Works as per the terms and Conditions of Contract and in this regard to incur any and all liabilities, receive instructions, give binding undertakings and receive payments on behalf of the joint venture;
(d) all partners of the joint venture shall at all times and under all circumstances be liable jointly and severally for the execution of the Contract in accordance with

the Contract terms and a statement to this effect shall be included in the authorization mentioned under Sub-Para(b) above as well as in the Form of Bid and in the Form of Contract Agreement (in case of a successful bid); and

(e) a copy of the agreement entered into by the joint venture partners shall be submitted with the bid stating the conditions under which it will function, its period of duration, the persons authorized to represent and obligate it and which persons will be directly responsible for due performance of the Contract and can give valid receipts on behalf of the joint venture, the proportionate participation of the several firms forming the joint venture, and any other information necessary to permit a full appraisal of its functioning. No amendments / modifications whatsoever in the joint venture agreement shall be agreed to between the joint venture partners without prior written consent of the Employer.

11.3 Bidders shall also submit proposals of work methods and schedule, in sufficient detail to demonstrate the adequacy of the Bidders' proposals to meet the technical specifications and the completion time referred to in Sub-Clause 1.2 hereof.

11.4 The Bidder shall fill the Form of Bid furnished in the Bidding Documents. The Bid Form must be completed without any alterations to its format and no substitute shall be accepted.

IB.12 Bid Prices

12.1 Unless stated otherwise in the Bidding Documents, the Contract shall be for the whole of the Works as described in Sub-Clause 1.1 hereof, based on the unit rates and / or prices submitted by the bidder.

12.2 The bidders shall fill in rates and prices for all items of the Works described in the Bill of Quantities. Items against which no rate or price is entered by a bidder will not be paid for by the Employer when executed and shall be deemed covered by rates and prices for other items in the Bill of Quantities.

12.3 All duties, taxes and other levies payable by the Contractor under the Contract, or for any other cause, as on the date 28 days prior to the deadline for submission of bids shall be included in the rates and prices and the total Bid Price submitted by a bidder.

Additional / reduced duties, taxes and levies due to subsequent additions or changes in legislation shall be reimbursed / deducted as per Sub-Clause 70.2 of the General Conditions of Contract Part-I.

12.4 The rates and prices quoted by the bidders are subject to adjustment during the performance of the Contract in accordance with the provisions of Clause 70 of the Conditions of Contract. The bidders shall furnish the prescribed information for the price adjustment formulae in Appendix-C to Bid, and shall submit with their bids such other supporting information as required under the said Clause.

12.5 Prices quoted by the Bidder shall be fixed during the Bidder's performance of the contract and not subject to variation on any account. A Bid submitted with an adjustable price will be treated as non-responsive and shall be rejected.

IB.13 Currencies of Bid and Payment

13.1 The unit rates and the prices shall be quoted by the bidder entirely in Pak rupees. A bidder expecting to incur expenditures in other currencies for inputs to the Works supplied from outside the Employer's country (referred to as the "Foreign Currency Requirements") shall indicate the same in Appendix-B to Bid. The proportion of the Bid Price (excluding Provisional Sums) needed by him for the payment of such Foreign Currency Requirements either (i) entirely in the currency of the Bidder's home country or, (ii) at the bidder's option, entirely in Pak rupees provided always that a bidder expecting to incur expenditures in a currency or currencies other than those stated in (i) and (ii) above for a portion of the foreign currency requirements, and wishing to be paid accordingly, shall indicate the respective portions in his bid.

13.2 The rates of exchange to be used by the bidder for currency conversion shall be the TT&OD Selling Rates published or authorized by the State Bank of Pakistan prevailing on the date 28 days prior to the deadline for submission of bids.

For the purpose of payments, the exchange rates used in bid preparation shall apply for the duration of the Contract.

IB.14 Bid Validity

14.1 Bids shall remain valid for the period stipulated in the Bidding Data after the Date of Bid Opening specified in Clause IB.23.

14.2 In exceptional circumstances, prior to expiry of the original bid validity period, the Employer may request that the bidders extend the period of validity for a specified additional period which shall in no case be more than the original bid validity period. The request and the responses thereto shall be made in writing. A bidder may refuse the request without forfeiting his Bid Security. A bidder agreeing to the request will not be required or permitted to modify his bid, but will be required to extend the validity of his Bid Security for the period of the extension, and in compliance with Clause IB.15 in all respects.

IB.15 Bid Security

15.1 Each bidder shall furnish, as part of his bid, a Bid Security in the amount stipulated in the Bidding Data in Pak Rupees or an equivalent amount in a freely convertible currency.

15.2 The Bid Security shall be, at the option of the bidder, in the form of CDR, Pay Order, Banker's Cheque or a Bank Guarantee issued by a Scheduled Bank in Pakistan or from a foreign bank duly counter guaranteed by a Scheduled Bank in Pakistan in favor of the Employer valid for a period 28 days beyond the Bid Validity date.

15.3 Any bid not accompanied by an acceptable Bid Security shall be rejected by the Employer as non-responsive.

15.4 The bid securities of unsuccessful bidders will be returned as promptly as possible, but not later than 28 days after the expiration of the period of Bid Validity.

15.5 The Bid Security of the successful bidder will be returned when the bidder has furnished the required Performance Security and signed the Contract Agreement.

15.6 The Bid Security may be forfeited:

(a) if the bidder withdraws his bid except as provided in Sub-Clause 22.1;

(b) if the bidder does not accept the correction of his Bid Price pursuant to Sub-Clause 27.2 hereof; or

(c) In the case of successful bidder, if he fails within the specified time limit to:

(i) furnish the required Performance Security; or

(ii) sign the Contract Agreement.

IB.16 Alternate Proposals by Bidder

16.1 Should any bidder consider that he can offer any advantages to the Employer by a modification to the designs, specifications or other conditions, he may, in addition to his bid to be submitted in strict compliance with the Bidding Documents, submit any Alternate Proposal(s) containing (a) relevant design calculations; (b) technical specifications; (c) proposed construction methodology; and (d) any other relevant details / conditions, provided always that the total sum entered on the Form of Bid shall be that which represents complete compliance with the Bidding Documents.

16.2 Alternate Proposal(s), if any, of the lowest evaluated responsive bidder only may be considered by the Employer as the basis for the award of Contract to such bidder.

IB.17 Pre-Bid Meeting (Not Applicable)

17.1 The Employer may, on his own motion or at the request of any prospective bidder(s), hold a pre-bid meeting to clarify issues and to answer any questions on matters related to the Bidding Documents. The date, time and venue of pre-bid meeting, if convened, is as stipulated in the Bidding Data. All prospective bidders or their authorized representatives shall be invited to attend such a pre-bid meeting.

17.2 The bidders are requested to submit questions, if any, in writing so as to reach the Employer not later than seven (7) days before the proposed pre-bid meeting.

17.3 Minutes of the pre-bid meeting, including the text of the questions raised and the replies given, will be transmitted without delay to all prospective bidders. Any modification of the Bidding Documents listed in Sub-Clause 7.1 hereof which may become necessary as a result of the pre-bid meeting shall be made by the Employer exclusively through the issue of an Addendum pursuant to Clause IB.9 and not through the minutes of the pre-bid meeting.

17.4 Absence at the pre-bid meeting will not be a cause for disqualification of a bidder.

IB.18 Format and Signing of Bid

18.1 Bidders are particularly directed that the amount entered on the Form of Bid shall be for performing the Contract strictly in accordance with the Bidding Documents.

18.2 All appendices to Bid are to be properly completed and signed.

18.3 No alteration is to be made in the Form of Bid nor in the Appendices thereto except in filling up the blanks as directed. If any such alterations be made or if these instructions be not fully complied with, the bid may be rejected.

18.4 Each bidder shall prepare by filling out the forms completely and without alterations, specified in the Bidding Data, of the documents comprising the bid as described in Clause IB.7 and upload the scanned version of duly filled, signed and stamped on each page of bid.

18.5 The bid shall be typed or written in indelible ink and shall be signed by a person or persons duly authorized to sign on behalf of the bidder pursuant to Sub- Clause 11.1(a) hereof. All pages of the bid shall be initialed and stamped by the person or persons signing the bid, authorized to sign on behalf of the Bidder bid before uploading on EPADS. The scanned form of "ORIGINAL" Signed Bid will be uploaded by each Bidder on EPADS.

18.6 The bid shall contain no alterations, omissions or additions, except to comply with instructions issued by the Employer, or as are necessary to correct errors made by the bidder, in which case such corrections shall be initialed by the person or persons signing the bid.

18.7 Bidders shall indicate in the space provided in the Form of Bid their full and proper addresses at which notices may be legally served on them and to which all correspondence in connection with their bids and the Contract is to be sent.

18.8 Bidders should retain a copy of the Bidding Documents as their file copy.

D. SUBMISSION OF BIDS

IB.19 Sealing and Marking of Bids

19.1 Bidder shall upload the bid on E-PADS as per the requirement of PPRA's E-PAD portal and bidding document requirements. The technical & financial bids must be submitted/ uploaded on E-PADS in respective section, before the closing date & time of bid submission.

19.2 In case of Single Stage Two Envelope Procedure, The Bid shall comprise two parts submitted simultaneously on E-PADS, one called the Technical Proposal and the other Financial Proposal. Each Bidder shall submit his bid as under:

a) Bidder shall prepare his TECHNICAL PROPOSAL and FINANCIAL PROPOSAL which will be separately uploaded on E-PADS before closing date & time of bid submission.

IB.20 Deadline for Submission of Bids

20.1 (a) Bids must be submitted on E-PADS no later than the time and date stipulated in the Bidding Data.

(b) Bids with charges payable will not be accepted, nor will arrangements be undertaken to collect the bids from any delivery point other than that specified above. Bidders shall bear all expenses incurred in the preparation and delivery of bids. No claims will be entertained for refund of such expenses.

20.2 The Employer may, at his discretion, extend the deadline for submission of bids by issuing an amendment in accordance with Clause IB.9, in which case all rights and obligations of the Employer and the bidders previously subject to the original deadline will thereafter be subject to the deadline as extended.

IB.21 Late Bids

21.1 (a) Any bid uploaded by the bidder after the deadline or in hard copy for submission of bids prescribed in Clause IB.20 will not be accepted at any cost.

IB.22 Modification, Substitution and Withdrawal of Bids

22.1 Any bidder may modify**,** substitute or withdraw his bid after bid submission provided that the modification, substitution or written notice of withdrawal is received by the Employer prior to the deadline for submission of bids. (As per Provisions of E-PADS)

22.2 The modification, substitution, or notice for withdrawal of any bid shall be prepared, sealed, marked and delivered in accordance with the provisions of Clause IB.19 with the outer and inner envelopes additionally marked "MODIFICATION", "SUBSTITUTION" or "WITHDRAWAL" as appropriate. (As per Provisions of E-PADS)

22.3 No bid may be modified by a bidder after the deadline for submission of bids except in accordance with Sub-Clauses 22.1 and 27.2. (As per Provisions of E-PADS)

22.4 Withdrawal of a bid during the interval between the deadline for submission of bids and the expiration of the period of bid validity specified in the Form of Bid may result in forfeiture of the Bid Security in pursuance to Clause IB.15. (As per Provisions of E-PADS)

E. BID OPENING AND EVALUATION

IB.23 Bid Opening

23.1 The Employer will open the bids through E-PADS only, including withdrawals, substitution and modifications made pursuant to Clause IB.22, in the presence of bidders' representatives who choose to attend, at the time, date and location stipulated in the Bidding Data. The bidders' representatives who are present shall sign a register evidencing their attendance.

23.2 Envelopes marked "MODIFICATION", "SUBSTITUTION" or "WITHDRAWAL" shall be opened and read out first (as per provisions of E-PADS). Bids for which an acceptable notice of withdrawal has been submitted pursuant to Clause IB.22 shall not be opened.

23.3 The bidder's name, total Bid Price and price of any Alternate Proposal(s), any discounts, bid modifications**,** substitution and withdrawals, the presence or absence of Bid Security, and such other details as the Employer may consider appropriate, will be announced by the Employer at the opening of bids.

23.4 Employer shall prepare minutes of the bid opening, including the information disclosed to those present in accordance with the Sub-Clause 23.3.

23.5 In case of Single Stage Two Envelope Procedure, the Procuring Agency will open the Technical Proposals on E-PADS in public at the address, date and time specified in the BDS in the presence of Bidders` designated representatives who choose to attend and other parties with a legitimate interest in the Bid proceedings. The Financial Proposals will remain unopened and will be retained on E-PADS by the Procuring Agency until the specified time of their opening.

23.6 The Technical Proposals on E-PADS shall be opened one at a time, and the following read out and recorded: (a) the name of the Bidder; (b) the presence of a Bid Security, if required; and (c) Any other details as the Procuring Agency may consider appropriate.

23.7 Bidders are advised to send in a representative with the knowledge of the content of the Bid who shall verify the information read out from the submitted documents. Failure to send a representative or to point out any un-read information by the sent Bidder's representative shall indemnify the Procuring Agency against any claim or failure to read out the correct information contained in the Bidder's Bid.

23.8 The Procuring Agency shall prepare minutes of the Bid opening. The record of the Bid opening shall include, as a minimum: the name of the Bidder, the Bid price if applicable, including any discounts and alternative offers and the presence or absence of a Bid Security or Bid Securing Declaration.

23.9 In case of Single Stage Two Envelop Bidding Procedure, after the evaluation and approval of technical proposal the procuring agency, shall at a time within the bid validity period, publically open the financial proposals of the technically accepted bids only, on E-PADS. The financial proposal of bids found technically non-responsive will not be opened in any case, subject to redress of the grievances from all tiers of grievances. The bid should remain valid for minimum 180 days after the date of opening of bids.

IB.24 Process to be Confidential

24.1 Information relating to the examination, clarification, evaluation and comparison of bid and recommendations for the award of a contract shall not be disclosed to bidders or any other person not officially concerned with such process before the announcement of bid evaluation report which shall be done at least ten (10) days prior to issue of Letter of Acceptance. The announcement to all Bidders will include table(s) comprising read out prices, discounted prices, price adjustments made, final evaluated prices and recommendations against all the bids evaluated.

Any effort by a bidder to influence the Employer's processing of bids or award decisions may result in the rejection of such bidder's bid. Whereas any bidder feeling aggrieved may lodge a written complaint not later than seven (07) days after the announcement of the bid evaluation report; however mere fact of lodging a complaint shall not warrant suspension of the procurement process.

IB.25 Clarification of Bids

25.1 To assist in the examination, evaluation and comparison of bids, the Employer may, at his discretion, ask any bidder for clarification of his bid, including breakdowns of unit rates. The request for clarification and the response shall be in writing but no change in the price or substance of the bid shall be sought, offered or permitted except as required to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the bids in accordance with Clause IB.28.

IB.26 Examination of Bids and Determination of Responsiveness

26.1 Prior to the detailed evaluation of bids, the Employer will determine whether each bid is substantially responsive to the requirements of the Bidding Documents.

26.2 A substantially responsive bid is one which (i) meets the eligibility criteria; (ii) has been properly signed; (iii) is accompanied by the required Bid Security; and (iv) conforms to all the terms, conditions and specifications of the Bidding Documents, without material deviation or reservation. A material deviation or reservation is one (i) which affect in any substantial way the scope, quality or performance of the Works; (ii) which limits in any substantial way, inconsistent with the Bidding Documents, the Employer's rights or the bidder's obligations under the Contract; or (iii) adoption/rectification whereof would affect unfairly the competitive position of other bidders presenting substantially responsive bids.

26.3 If a bid is not substantially responsive, it will be rejected by the Employer, and may not subsequently be made responsive by correction or withdrawal of the non-conforming deviation or reservation.

IB.27 Correction of Errors

27.1 Bids determined to be substantially responsive will be checked by the Employer for any arithmetic errors. Errors will be corrected by the Employer as follows:

(a) where there is a discrepancy between the amounts in figures and in words, the amount in words will govern; and

(b) where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will govern, unless in the opinion of the Employer there is an obviously gross misplacement of the decimal point in the unit rate, in which case the line item total as quoted will govern and the unit rate will be corrected.

(c) if there is an error in a total corresponding to the addition or subtraction of sub-totals, the sub-totals shall prevail and the total shall be corrected.

27.2 The amount stated in the Form of Bid will be adjusted by the Employer in accordance with the above procedure for the correction of errors and with the concurrence of the bidder, shall be considered as binding upon the bidder. If the bidder does not accept the corrected Bid Price, his Bid will be rejected, and the Bid Security shall be forfeited in accordance with Sub- Clause 15.6(b) hereof.

IB.28 Evaluation and Comparison of Bids

28.1 The Employer will evaluate and compare only the Bids determined to be substantially responsive in accordance with Clause IB.26.

28.2 In evaluating the Bids, the Employer will determine for each Bid the evaluated Bid Price by adjusting the Bid Price as follows:

(a) making any correction for errors pursuant to Clause IB.27;
(b) excluding Provisional Sums and the provision, if any, for contingencies in the Summary Bill of Quantities, but including competitively priced Daywork; and
(c) making an appropriate adjustment for any other acceptable variation or deviation.

28.3 The estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be taken into account in Bid evaluation.

28.4 If the Bid of the successful bidder is seriously unbalanced in relation to the Employer's estimate of the cost of work to be performed under the Contract, the Employer may require the bidder to produce detailed price analyses for any or all items of the Bill of Quantities to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analyses, the Employer may require that the amount of the Performance Security set forth in Clause IB.32 be increased at the expense of the successful bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful bidder under the Contract.

28.5 In evaluating the Technical Proposal of each Bid, the Procuring Agency shall use the criteria and methodologies listed in the BDS and in terms of Statement of Requirements and Technical Specifications. No other evaluation criteria or methodologies shall be permitted.

F. AWARD OF CONTRACT

IB.29 Award

29.1 Subject to Clauses IB.30 and IB.34, the Employer will award the Contract to the bidder whose bid has been determined to be substantially responsive to the Bidding Documents and who has offered the lowest evaluated Bid Price**,** provided that such bidder has been determined to be eligible in accordance with the provisions of Clause IB.3 and qualify pursuant to Sub-Clause IB 29.2.

29.2 The Employer, at any stage of the bid evaluation, having credible reasons for or *prima facie* evidence of any defect in supplier's or contractor's capacities, may require the suppliers or contractors to provide information concerning their

professional, technical, financial, legal or managerial competence whether already pre-qualified or not:

Provided that such qualification shall only be laid down after recording reasons therefor in writing. They shall form part of the records of that bid evaluation report.

IB.30 Employer's Right to Accept any Bid and to Reject any or all Bids

30.1 Notwithstanding Clause IB.29, the Employer reserves the right to accept or reject any Bid, and to annul the bidding process and reject all bids, at any time prior to award of Contract, without thereby incurring any liability to the affected bidders or any obligation except that the grounds for rejection of all bids shall upon request be communicated to any bidder who submitted a bid, without justification of grounds. Rejection of all bids shall be notified to all bidders promptly.

30.2 Notice of the rejection of all Bids shall be given promptly to all Bidders that have submitted Bids.

IB.31 Notification of Award

31.1 Prior to expiration of the period of bid validity prescribed by the Employer, the Employer will notify the successful bidder in writing ("Letter of Acceptance") that his Bid has been accepted. This letter shall name the sum which the Employer will pay the Contractor in consideration of the execution and completion of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Conditions of Contract called the "Contract Price").

31.2 No Negotiation with the bidder having evaluated as lowest responsive or any other bidder shall be permitted, however, Employer may have clarification meetings to get clarify any item in the bid evaluation report.

31.3 The notification of award and its acceptance by the bidder will constitute the formation of the Contract, binding the Employer and the bidder till signing of the formal Contract Agreement.

31.4 Upon furnishing by the successful bidder of a Performance Security, the Employer will promptly notify the other bidders that their Bids have been unsuccessful and return their bid securities.

31.5 Where no complaints have been lodged, the Bidder whose Bid has been accepted will be notified of the award by the Procuring Agency prior to expiration of the Bid Validity period in writing or electronic forms that provide record of the content of communication. The Letter of Acceptance will state the sum that the Procuring Agency will pay the successful Bidder in consideration for the execution of the scope of works as prescribed by the Contract.

IB.32 Performance Security

32.1 The successful bidder shall furnish to the Employer a Performance Security in the form and the amount stipulated in the Bidding Data and the Conditions of Contract within a period of 14 days after the receipt of Letter of Acceptance.

32.2 Failure of the successful bidder to comply with the requirements of Sub-Clause IB.32.1 or Clauses IB.33 or IB.35 shall constitute sufficient grounds for the annulment of the award and forfeiture of the Bid Security.

32.3 If the Performance Security (or Guarantee) is provided by the successful Bidder and it shall be in the form specified in the BDS which shall be in any of the following:

a) A bank guarantee,
b) an irrevocable letter of credit issued by a reputable bank, or in the form provided in the Bidding Documents or another form acceptable to the Procuring Agency; or
c) A cash deposit receipt issued by any reputable scheduled bank of Pakistan.
d) Performance Guarantee in the form of Insurance Guarantee issued by an Insurance firm having AA rating

The cost of complying with the requirements of this Sub-Clause shall be borne by the Supplier.

IB.33 Signing of Contract Agreement

33.1 Within 14 days from the date of furnishing of acceptable Performance Security under the Conditions of Contract, the Employer will send the successful bidder the Contract Agreement in the form provided in the Bidding Documents, incorporating all agreements between the parties.

33.2 The formal Agreement between the Employer and the successful bidder shall be executed within 14 days of the receipt of the Contract Agreement by the successful bidder from the Employer.

IB.34 General Performance of the Bidders

The Employer reserves the right to obtain information regarding performance of the bidders on their previously awarded contracts/works. The Employer may in case of consistent poor performance of any Bidder as reported by the employers of the previously awarded contracts, interalia, reject his bid and/or refer the case to the Pakistan Engineering Council (PEC). Upon such reference, PEC in accordance with its rules, procedures and relevant laws of the land take such action as may be deemed appropriate under the circumstances of the case including black listing of such Bidder and debarring him from participation in future bidding for similar works.

IB.35 Integrity Pact

The Bidder shall sign and stamp the Integrity Pact provided at Appendix-O to Bid in the Bidding Documents for all Federal Government procurement contracts exceeding Rupees ten million. Failure to provide such Integrity Pact shall make the bidder non-responsive.

IB.36 Instructions not Part of Contract

Bids shall be prepared and submitted in accordance with these Instructions which are provided to assist bidders in preparing their bids, and do not constitute part of the Bid or the Contract Documents.

SECTION III

BID DATA SHEET

BID DATA SHEET

The following specific data for the Works to be bided shall complement, amend, or supplement the provisions in the Instructions to Bidders. Wherever there is a conflict, the provisions herein shall prevail over those in the Instructions to Bidders.

IB 1.1	Name and address of the Employer: **Director General (Field Operations) North Lahore, National Grid Company of Pakistan (NGC)** 34-Industrial Area, NTDC House, Gulberg-III, Lahore-Pakistan Telephone No. 92-42-99268292 E-mail address: ce.amnl@ntdc.com.pk
IB 1.1	The bidding is open to National Competitive Bidding (NCB).
IB 1.1	The name of the NCB is: REPLACEMENT OF NORMAL DISC INSULATORS WITH RTV COATED DISC INSULATORS OF 220kV TRANSMISSION LINES UNDER FIELD OPERATIONS LAHORE (Lot-I) The identification number of the NCB is: **CE/AMN/P&S/T-370-2026 (Lot-I)**
IB 2.1	Source of Funding: NGC's own resources
IB 3.1 (a)	The existing sub clause 3.1(a) is deleted and replaced with following: The Invitation for Bids is open to all bidders in their sole capacity or as joint venture meeting the following requirements: i) The Bidder shall be duly licensed by the Pakistan Engineering Council (PEC) minimum in the category C-5 with EE-05 or had applied for renewal of license before submission of its bid. In case of Joint Venture, all the partners shall be duly licensed by PEC and the sum total of the limit of construction cost permitted by the categories of the individual licensees shall not be less than limit of construction cost permitted by the category required here above. ii) Only those Firms/Companies/Contractors will be eligible to bid who are Active Taxpayers List (ATL) for both Income Tax & Sales Tax and Provincial revenue authorities/boards as the case may be. iii) Foreign Firms/Companies/ Contractors, if applicable in this tender, if required as per law of the country will get them registered from relevant tax authorities after award of contract. iv) All payments (including advance) will be subject to withholding taxes as per Income Tax Ordinates, 2001/international Tax Treaty & Sales Tax Act. 1990,

	further payments shall made only to those entities appearing in Active Tax payer List (ATL) for both Income Tax &Sales Tax. v) Performance Guarantee will be exclusive of indirect Taxes The Bidder shall not be blacklisted by NGC/WAPDA/DISCOs/any Government/Public department/Donor Agencies at the time of submission of bids. The Bidder should provide details of previous black listing, if any. An affidavit is to be provided by the Bidder that the Bidder is not black listed by NGC/WAPDA/DISCOs/any Government/Public department/Donor Agencies at the time of submission of bids. Further, the bidder shall submit an undertaking along with his bid that he has read and accepts the provisions of NGC Policy for Blacklisting of Contractors (copy of policy attached with the bidding documents). Non-submission of this undertaking may result in the rejection of the bid. The undertaking will subsequently become part of the Contract Agreement as well.
IB 3.1(b)	Delete IB 3.1(b) and replace it with the following. **Qualification of the Bidder** To be qualified for award of a contract, the Bidder shall meet the qualification criteria delineated herein below: 1. <u>Construction Experience:</u> i. The bidder as a main contractor (as single entity or as JV Partner) must have completed construction contracts comprising of construction of conventional/pile foundations, erection of towers, stringing, testing and commissioning of 220kV or high voltage bundled T/Lines of at least 20 KM strung by controlled tension method during last ten years. Such transmission lines must have been operating successfully for at least 02 years prior to deadline for submission of bid. ii. In case the bid is submitted by a Joint Venture, lead partner shall meet the above-mentioned criteria. Each JV Partner, other than the lead partner, must have completed as a main contractor or approved sub-contractor, construction contractors comprising of construction of conventional/pile foundations, erection of towers, stringing, testing and commissioning of 132kV or High voltage T/Lines of at least 20 KM strung by controlled tension method during last 10 years **<u>OR</u>** The bidder as a main contractor must have completed 02 Nos. of similar nature of work i.e replacement of 100kN/ 120kN normal/ fog type disc insulators with RTV coated disc insulators of 132kV or high voltage T/Lines

of at least cumulative 150 Towers during last ten years. Such transmission lines must have been operating successfully for at least 02 years prior to deadline for submission of bid.

*If the Bidder has executed these contract(s) as a JV partner, he shall have carried out all the activities mentioned here before.

iii. Such transmission lines must have been operating successfully for at least two (02) years prior to deadline for submission of bids.

iv. In case the bid is submitted by a joint venture under this bidding process, lead partners and each JV partner shall independently meet the above experience criteria.

v. The Bidder shall submit with the Bid evidence in this regard including inter alia copies (with English translation) of the contract agreement(s), substantial completion certificate(s) and Defects Liability Certificate for the contract(s).

vi. The bidder shall have his own twin bundle tension stringing equipment along with associated T&P and critical equipment duly supported with documentary evidence/catalogues/drawings for undertaking such like works in good working condition. Alternatively, if not so, the bidder will identify the confirmed source of the said machinery, T&P etc. along with documentary evidence/catalogues/drawings and shall provide necessary guarantee/surety that he will arrange the said equipment in good working condition through its own resources prior to start of stringing activity. The aforementioned documentary evidence shall be submitted with the bid.

2. Key Personnel:

The Bidder shall have the personnel for the key positions to be deployed for meeting the following requirements: (Information to be submitted in Appendix-G to Bid given in Section-III of the Bidding Documents)

Positions	Relevant Construction Experience	No. of Personnel
Project Manager	08	01
Electrical Engineers	04	01

The above personnel shall be graduate engineers or equivalent.

Bidder's Financial Capability:

The Employer will take into account the following criteria to verify the financial qualification of the Bidder.

i. The audited Financial "Standalone" Statements (Balance Sheet along with Notes, Profit & Loss Accounts and Cash Flow Statement) audited

by Chartered Accountant for the last three (03) years shall be submitted by the Bidder. The audited Financial Report issued for year 2024 and onwards should have UDIN as per ICAP letter circular No. 12/2024 dated 12.09.2024. The Bidder's Financial Statements for the last three years of the audited accounts should show that it has positive "NET WORTH" calculated as a difference between total assets and total liabilities (Information to be submitted in prescribed Form QF-5 of Appendix-N to Bid given in Section-III of the Bidding Documents). In case of JV, each JV partner shall meet the aforementioned criteria.

The Bidder's Income & Expenditure/Profit and Loss Accounts should show minimum average annual turnover for the last three years not less than **11 Million PKR**. The Average Annual Turnover may include turnover of affiliates and subsidiaries to the extent of shareholding percentage of the Bidding company provided the turnover is accrued from similar business activity as the Bidding company. **(**Information to be submitted in prescribed Form QF-6 of Appendix-N to Bid given in Section-III of the Bidding Documents).

In case of JV, all the JV partners shall combinedly meet the requisite criteria with the lead partner and other partner(s) meeting not less than 40% and 25% respectively of the said criteria.

ii. The Bidder must demonstrate access to, or availability of, financial resources such as liquid assets, lines of credit, and other financial means to meet the total cash flow demands of this contract which is being considered equal to **11 Million PKR plus 25% of the Bidder's commitments for running contracts**. (Information to be submitted in prescribed Form QF-7 of Appendix-P to Bid given in Section-III of the Bidding Documents).
In case of JV, all the JV partners shall combinedly meet the requisite criteria with the lead partner and other partner(s) meeting not less than 40% and 25% respectively of the said criteria.
The Bidder shall provide his current work commitments in form QF-4 of Appendix-P to Bid given in Section-III of the Bidding Documents.

The bidder shall provide bank certificate for his lines of credit on the prescribed Form QF-8 of Appendix-P to Bid given in Section-III of the Bidding Documents.

4. <u>Bidder's Litigation History</u>

Bidders are required to submit details of all litigation, arbitration and other claims whether pending, threatened or resolved in the last five years. The Employer may disqualify bidder in the event that the total amount of pending or threatened litigation, arbitration or other claims represents fifty percent (50%) of the Bidder's net worth. Details in this regard should be

	submitted in the prescribed Form QF-9 given in Appendix-P of Section-III of Bidding Document. Construction Experience and Financial Capability of sub-contractors, subsidiaries or parent/sister/affiliate companies shall not be considered for qualification of the Bidder. The Qualification of the Bidders will be based on meeting the pass/fail criteria as demonstrated by the Bidders' responses in the respective Appendices. The above stated requirements are the minimum and the Employer reserves the right to request for any additional information. The Employer also reserves the right to reject the proposal of any Bidder, if in the opinion of the Employer the qualification details are incomplete, ambiguous or the Bidder is found not qualified to satisfactorily perform the Contract. The above stated Appendices should be completed as per prescribed format and submitted along with required attachments. The missing or incomplete information/documents may render the bid substantially non-responsive. In this regard, the Employer does not have an obligation to request any document/certificates.
IB 3.2	The following sub clause is added after 3.1: A Bidder shall not have a conflict of interest. All Bidders found to have a conflict of interest shall be disqualified. A Bidder may be considered to be in a conflict of interest with one or more parties in this bidding process if, including but not limited to: (i) they have controlling shareholders in common; or (ii) they receive or have received any direct or indirect subsidy from any of them; or (iii) they have the same legal representative for purposes of this bid; or (iv) they have a relationship with each other, directly or through common third parties, that puts them in a position to have access to material information about or improperly influence the bid of another Bidder, or influence the decisions of the Employer regarding this bidding process; or (v) A Bidder or any affiliated entity, participated as a consultant in the preparation of the design or technical specifications of the plant and services that are the subject of the bid.

IB 6.1	The Bidder shall inspect the site, examine and obtain all information required and satisfy himself regarding matters and things such as access to site, communication, transport, right of way, the type and number of equipment and facilities required for the satisfactory completion of work, the quantity of various sections of the work, the availability of local labor, availability and rates of materials, local working conditions, uncertainties of weather, obstructions and hindrances that may arise etc., which may affect the work or cost thereof, before submission of his bid. Ignorance of site conditions shall not be accepted by the Employer as basis for any claim for compensation. The submission of a bid by the bidder will be construed as evidence that such an examination was made and any later claims/disputes in regard to rates quoted shall not be entertained or considered by the Employer.
IB 7.2	The Bidders should ensure that they have received the Bidding Documents including Addenda (if any) complete in all respects through E-PADS. The Employer accepts no responsibility for any Bidder lacking a complete set of Bidding Documents including Addenda (if any).
IB 8.1	The Sub-Clause 8.1 is amended to the following extent: No request for clarification will be entertained which will be received later than 14 days prior to the date fixed for submission of Bids through E-PADS. The Purchaser's response will be made not later than 7 days prior to the date fixed for submission of Bids through E-PADS. Further, the mere request for clarification from the bidders shall not be a ground for seeking extension in the deadline for submission of Bids.
IB 10.1	The bid with all accompanying documents and all communications in relation to or concerning the bidding Process shall be in **English** language and strictly on the forms provided in the bidding Documents. In case any of these Documents is in another language, it must be accompanied by an accurate translation of the relevant passages in English, in which case, for all purposes of interpretation of the bid, the translation in English shall prevail. Any portions of Bids that are not in English may not be evaluated. Failure to comply with this may disqualify a bid.
IB 11.1	**Documents Comprising the Bid** Delete the text of this Sub-Clause and substitute with the following: The Bid submitted on E-PADS by the Bidder shall be prepared in two (02) separate parts and should be uploaded on E-PADS seperately, one containing the "Technical Bid" and the other containing "Price Bid" comprising the following documents in the respective envelope: **I. Technical Bid** a) Duly filled-in Form of Technical Bid with following Appendices to Bid: i) Appendix-A to Bid Special Stipulations ii) Appendix-E to Bid Proposed Work Schedule iii) Appendix-F to Bid Method of Performing the Work

	iv) Appendix-G to Bid Proposed Personnel v) Appendix-H to Bid List of Major Equipment-Related Items vi) Appendix-I to Bid Construction Camp and Housing Facilities vii) Appendix-J to Bid Organizational Chart of the Supervisory Staff and Labor viii) Appendix-K to Bid List of Sub-Contractors ix) Appendix-L to Bid Source of Materials x) Appendix-N to Bid Deviations xi) Appendix-O to Bid Integrity Pact (N/A) xii) Appendix-P to Bid Bidder's Qualification Forms b) Bid security of Fixed amount of **PKR. 500,000/- in the favor of "Chief Engineer (AM) North, NTDC Lahore" (this must be submitted in original in the office of Director General (Field Operations) North, NGC Lahore before the closing date and time of bid submission on E-PADS)** c) Undertaking by the Bidder in respect of submission of required Bid Security as per Appendix-Q to Bid; d) Written Power of Attorney, duly notarized, authorizing the signatory of the bid to act for and on behalf of the Bidder; e) Copies of Original Documents defining the constitution or legal status, place of registration and principal place of business of the bidder and JV partners; f) An affidavit that the Bidder has not been blacklisted pursuant to Sub-Clause 3.1(iv); g) An Affidavit that the Bidder has read and accepts NGC's SOP for blacklisting of Contractors pursuant to Sub-Clause 3.1(iv); h) PEC license pursuant to Sub-Clause 3.1(i); and i) Any other document required to be submitted in accordance with these Bidding Documents. **II. Price Bid** a) Duly filled-in Form of Price Bid with following Appendices to Bid: xiii) Appendix-B to Bid Foreign Currency Requirements (Not Used) xiv) Appendix-D to Bid Bill of Quantities xv) Appendix-M to Bid Estimated Progress Payments b) Any other document required to be submitted in accordance with these Bidding Documents.
IB 11.2	Following is added at the end of Sub-Clause IB.11.2: "(f) The maximum J.V. partners shall not be more than three (03)."

IB 12.5	Add the following new Sub-Clause IB 12.5: The Bidder shall quote Provincial Sales Tax (PST) in a separate column given in Bill of Quantities (BOQ) of Section-III to Bid.
IB 12.6	Add the following new Sub-Clause IB 12.6: The cost of the material for this line/project would be 60 million PKR approx. for calculating insurance charges.
IB 13	Clause IB.13 is substituted with the following: "The unit rates and prices shall be quoted by the Bidder entirely in Pak Rupees. All payments under the contract shall be made in Pak Rupees only. Bidders expecting to incur expenditures in currency(ies) other than Pak Rupees shall manage foreign currency(ies) at their own arrangement. The exchange risk in this regard, if any, shall be deemed to be included in unit rates and prices quoted by the Bidder."
IB 14.1	The period for Bid validity shall be minimum One Hundred and Eighty (180) days after the date of Bid opening through E-PADS.
IB 15.1	The amount of Bid Security shall be of **fixed amount of PKR. 500,000/- to be submitted in original before closing date and time of bid uploading.**
IB 15.2	Sub-Clause IB.15.2 is substituted with the following: "The Bid Security shall be, at the option of the Bidder, in the form of Deposit at Call or a Guarantee issued by a Scheduled Bank in Pakistan or from a foreign bank duly counter guaranteed by a Scheduled Bank in Pakistan in favor of the Employer on the prescribed Form annexed to these Documents valid for a period 28 days beyond the Bid Validity date. The Bid Security of Joint Venture shall be in the name of Joint Venture submitting the Bid. For avoidance of doubt, a Bid Security issued by a foreign bank but not counter guaranteed by a Scheduled Bank in Pakistan shall not be acceptable and rejected as non-responsive."
IB 15.6	The following is added at the end of Sub-Clause IB.15.6: "(d) If the Bidder is found involved in corrupt and fraudulent practices."
IB 17.1	No Pre-bid meeting will be held.
IB 18.4	Sub-Clause 18.4 is substituted with the following: "Each Bidder shall prepare by filling out the forms completely and without alterations one original set of the Technical Bid and one original set of the Price Bid as described in IB. 11 and clearly mark each "ORIGINAL - TECHNICAL BID" and "ORIGINAL - PRICE BID". In addition, the Bidder shall submit two (02) copies each of the Technical Bid and the Price Bid, clearly marked as "COPY NO… - TECHNICAL BID" and "COPY NO…. - PRICE BID". In the event of any discrepancy between the original and the copies, the original shall prevail. (Not Applicable, as

	technical & financial bids will be uploaded by the bidder on E-PADS separately) The Bidders are also required to provide an electronic version (in USB Drive) of the technical bid and price bid in PDF format scanned from the Original bid and Price Schedules in MS Excel format. Electronic version of Technical and Price bids should be submitted separately in their respective envelopes. Electronic version of Price bid and price schedules should be placed in financial envelope which shall remain sealed until financial bid opening. Non-submission of the electronic version of the Bids shall not be a reason for rejection of Bid. (N/A)
IB.19.1	Sub-Clause 19.1 is substituted by the following: "The Technical Bid and Price Bid (comprising the relevant documents as stated under Sub-Clause IB.11) shall be prepared separately. The ORIGINAL and each COPY of Technical Bid shall be sealed in one envelope marked as such. Similarly, the ORIGINAL and each COPY of the Price Bid shall be sealed in another envelope and marked as such. Price Bid shall be sealed in a separate envelope. The outer envelope comprising both 'Technical Bid' and 'Price Bid' shall be addressed/identified as given in Sub-Clause 19.2 hereof." (Not Applicable)
IB 19.2 (a)	Employer's address for the purpose of Bid Security submission: Director General (Field Operations) North , NGC, 34-Industrial Area, NTDC House, Gulberg-III, Lahore-Pakistan Telephone No. 92-42-99268292 E-mail address: ce.amnl@ntdc.com.pk
IB 19.2 (b)	**Name of the Project:** REPLACEMENT OF NORMAL DISC INSULATORS WITH RTV COATED DISC INSULATORS OF 220kV TRANSMISSION LINES UNDER FIELD OPERATIONS LAHORE (Lot-I) **Identification No.: CE/AMN/P&S/T-370-2026 (LOT-I)**
IB 19.2 (c)	Para (c) of Sub-Clause 19.2 is substituted by the following: The outer envelopes and the inner envelopes containing the Technical Bid shall bear a warning not to open before the time and date for the opening of Technical Bids, in accordance with IB 23.1. The envelopes containing the Price Bid shall bear a warning not to open until advised by the Purchaser in accordance with IB 23.2. (Not Applicable)
IB 20.1 (a)	Deadline for Submission of bid on E-PADS v2.0: **Date: 07.12.2026** **Time: 11:00 HRS**
IB 20.1 (c)	Bids shall be submitted through E-PADS only. Hard copy submission, if any, shall be optional. In the event of any discrepancy, the contents of the bid submitted on E-PADS shall be considered final and binding. Hard form of bids will not be accepted if the bid is not uploaded on E-PADS by bidder.

IB 20.1	Add the following new Para (e) at the end of Sub-Clause: "(e) Bids submitted through fax or email shall not be considered."
IB.23 23.1	**Bid Opening:** Sub-Clause IB.23.1 is substituted by the following: The Employer shall open the Technical Bids through E-PADS only in public at the address, on the date, and time specified herein in the presence of Bidder's designated representatives who choose to attend. The Bidders' representatives who are present shall sign a register evidencing their attendance. **Time: 11:30 HRS** **Date: 07.12.2026** Address: 34-Industrial Area , Gulberg-III Lahore - Pakistan
23.2	The Price Bids will remain unopened on E-PADS section and will be held in custody of the Employer until the time of opening of the Price Bids. The date, time, and location of the opening of Price Bids will be advised in writing by the Employer.
23.3	First, envelopes marked "WITHDRAWAL" shall be opened, read out, and recorded, and the envelope containing the corresponding bid shall not be opened, but returned to the Bidder. No bid withdrawal shall be permitted unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal and is read out and recorded at bid opening. (As per provisions of E-PADS)
23.4	Next, outer envelopes marked "SUBSTITUTION" shall be opened. The inner envelopes containing the Substitution Technical Bid and/or Substitution Price Bid shall be exchanged for the corresponding envelopes being substituted, which are to be returned to the Bidder unopened. Only the Substitution Technical Bid, if any, shall be opened, read out, and recorded. Substitution Price Bid will remain unopened in accordance with IB 23.2. No envelope shall be substituted unless the corresponding substitution notice contains a valid authorization to request the substitution and is read out and recorded at bid opening. (As per provisions of E-PADS)
23.5	Next, outer envelopes marked "MODIFICATION" shall be opened. No Technical Bid and/or Price Bid shall be modified unless the corresponding modification notice contains a valid authorization to request the modification and is read out and recorded at the opening of Technical Bids. Only the Technical Bids, both Original as well as Modification are to be opened, read out, and recorded at the opening. Price Bids, both Original as well as Modification, will remain unopened in accordance with IB 23.2. (As per provisions of E-PADS)
23.6	All other sections of E-PADS holding the Technical Bids, except the Bids rejected pursuant to Sub-Clause IB.23.2, shall be opened one at a time, and the following read out and recorded (a) the name of the Bidder; (b) whether there is a modification or substitution; (c) the presence of an undertaking by the Bidder in respect of

	submission of required Bid Security; and (d) any other details as the Employer may consider appropriate. Only Technical Bids and alternative Technical Bids (if allowed under Sub-Clause IB.16 hereof) read out and recorded at bid opening shall be considered for evaluation. Unless otherwise specified in the BDS, the Form of Technical Bid is to be initialed by the nominated representatives of the Employer attending the bid opening. No Bid shall be rejected at the opening of Technical Bids except for late bids, in accordance with IB.21.1.
23.7	The Employer shall prepare a record of the opening of Technical Bids that shall include, as a minimum: the name of the Bidder and whether there is a withdrawal, substitution, modification, or alternative offer; and the presence or absence of an undertaking of Bid Security. A copy of the record shall be distributed to all Bidders.
23.8	At the end of the evaluation of the Technical Bids, the Employer will invite bidders who have submitted substantially responsive Technical Bids and who have been determined as being qualified for award to attend the opening of the Price Bids through E-PADS. The date, time, and location of the opening of Price Bids will be advised in writing by the Employer. Bidders shall be given reasonable notice of the opening of Price Bids through E-PADS.
23.9	The Employer will notify Bidders in writing who have been rejected on the grounds of being substantially non-responsive to the requirements of the Bidding Documents and return their Price Bids unopened.
23.10	The Employer shall conduct the opening of Price Bids of all Bidders through E-PADS, who submitted substantially responsive Technical Bids, in the presence of Bidders` representatives who choose to attend at the address, on the date, and time specified by the Employer. The Bidder's representatives who are present shall be requested to sign a register evidencing their attendance.
23.11	All sections of E-PADS containing Price Bids shall be opened one at a time and the following read out and recorded (a) the name of the Bidder; (b) whether there is a modification or substitution; (c) the Bid Prices, including any discounts, cross discounts and alternative offers; (d) the presence of Bid Security; and (e) any other details as the Employer may consider appropriate. Only Price Bids, discounts, cross discounts and alternative offers (if allowed under Sub-Clause IB.16 hereof) read out and recorded during the opening of Price Bids shall be considered for evaluation. Unless otherwise specified in the Bidding Data, the Form of Price Bid and Price Schedules are to be initialed by nominated representatives of the Employer attending the bid opening.

23.12	The Employer shall prepare a record of the opening of Price Bids that shall include, as a minimum: the name of the Bidder, the Bid Price (per lot if applicable), any discounts, cross discounts, any alternative offers and presence of Bid Security. A copy of the record shall be distributed to all Bidders present at the time of Bid opening.
IB 24.2	Add the following new Sub Clause after IB 24.1: 24.2 Bidders and their respective agents, suppliers, sub-contractors, representatives and anyone else on behalf of the bidder will not communicate or attempt to communicate directly or indirectly with the Employer, including any employees, directors, officers, agents or representatives of any of them during any part of the Competitive Bidding Process, except as expressly directed or permitted by the Employer. Bidders will also not engage in any form of political or other lobbying whatsoever with respect to their Bids, or otherwise attempt to influence the outcome of the Competitive Bidding Process. In the event of any such communications or lobbying, Employer may at any time reject any Bid by that Bidder without further consideration.
IB 25.1	Add the following at the end of Sub-Clause 25.1: The Employer may, at his discretion, ask any Bidder for confirmation/submission of missing information to clarify its Bid. However, the Employer does not have an obligation to request any additional information or clarification with respect to missing or deficient information in a Bid. Any clarification submitted by a Bidder that is not in response to a request by the Employer shall not be considered.
IB 25.2	Add the following new Sub-Clause: If a Bidder does not provide clarifications of its Bid by the date and time set in the Employer's request for clarification, its Bid may be rejected.
IB 26.1	Sub-Clause 26.1 is substituted by the following: "The Employer will determine whether Bid is substantially responsive to the requirements of the Bidding Documents."

IB 26.2	Sub-Clause 26.2 is substituted by the following: "A substantially responsive Technical Bid is one which (i) meets the eligibility criteria; (ii) has been properly signed; (iii) meets the qualification criteria delineated at Sub-Clause IB.3A hereof; and (iv) conforms to all the terms, conditions and specifications of the Bidding Documents, without material deviation or reservation. A substantially responsive Price Bid is one which (i) has been properly signed; (ii) is accompanied by the required Bid Security submitted in original before the date & time of bid opening; and (iii) conforms to all the terms, conditions and specifications of the Bidding Documents, without material deviation or reservation. A material deviation or reservation is one (i) which affect in any substantial way the scope, quality or performance of the Works; (ii) which limits in any substantial way, inconsistent with the Bidding Documents, the Employer's rights or the Bidder's obligations under the Contract; or (iii) adoption/rectification whereof would affect unfairly the competitive position of other Bidders presenting substantially responsive bids. Any minor informality or non-conformity or irregularity in a Bid which does not constitute a material deviation may be waived by the Employer, provided such waiver does not prejudice or affect the relative ranking of any Bidder."
IB 26.4	Following Sub-Clauses are added at the end of Sub-Clause 26.3: The Employer may reject any Bid as non-responsive if found materially incomplete, obscure, irregular or omits any material information required to be submitted by the Bidding Documents.
IB 27.3	Following Sub Clause is added after Sub Clause 27.2: If as a result of arithmetic correction, the Bid Price is increased substantially, the Bidder may be asked to increase the amount of its Bid Security accordingly by submitting its amendment within fifteen (15) days from issuing date of such notification. If the Bidder fails to provide the requisite amendment of the Bid Security within the stipulated period, his Bid will be held substantially non-responsive and will be rejected.
IB 28.1	Following Para is added at the end of the Sub-Clause 28.1: "The Works will be evaluated and compared on Lot basis (if applicable)."
IB 28.2	Following Para is added after the Para (c) of IB. 28.2: (d) applying cross discount in case of combination of Lots to arrive at least cost combination
IB 28.4	Following is added at the end of Sub-clause IB 28.4: "or the employer may require the successful Bidder to balance his bid."

IB 28.5	Following new Sub Clause is added after IB 28.4: The Employer will evaluate the Bids, including all clarifications, additional information, modifications and negotiated changes, by applying the Eligibility and Qualification Criteria. Without limiting the particular criteria, the Employer may take into account the following in the Evaluation of Bids: i. Non-performance by a Bidder on previous contracts with Employer or others; ii. The quality of a Bidder's performance on previous contracts with Employer or others; iii. Anticipated or ongoing claims with or in connection with a Bidder; iv. Any security of safety concerns which Employer may have in respect of a Bidder or its facilities, subcontractors or suppliers; v. The results of any interview with a Bidder or supplied references: or vi. Any knowledge of or experience with a Bidder or its principals, directions, officers and employees. The Employer may independently verify any information (including conducting credit, reference and other checks with respect to a Bidder) and consider such findings in its evaluation. Employer is not required to inform Bidders of how Bids were ranked in the evaluation process.
IB 28.6	Add the following new Sub-Clause IB 12.5: The Employer's evaluation of a Bid will exclude and not take into Provincial sales Tax (PST).
IB 29.1	Add the words "for the respective Lot(s)" after the words "evaluated Bid Price" in 3rd line of this Sub-Clause. Add the following at the end of this Sub-Clause, if applicable: "Provided further in case a Bidder is determined to be the lowest evaluated substantially responsive in more than one Lot, the aggregate requirements delineated under Sub-Clause IB.3 hereof shall apply."
IB 29.2	Following text is added at the end of Sub Clause 29.2 The Employer reserves the right to assess the capacity and capability of the Bidder, to successfully execute the scope of work covered under the Bidding Documents within stipulated completion period. This assessment may interalia include for (i) document verification; (ii) details of work executed, work in hand, anticipated in future; (iii) details of tools & plant; (iv) availability of requisite key personnel (v) financial resources; (vi) details of quality system in place; (vii) past experience and performance; (viii) customer feedback (ix) Bank's feedback etc.

IB 30.1	The Employer reserves the right to reject any bid on the following accounts, apart from those mentioned in the bidding documents: i. Bid is not uploaded by the due date and time specified. ii. Cost of the bidding documents is not remitted. iii. Bid is not accompanied by Bid security as specified in the document; Bid security is inadequate; Bid guarantee is not in the specified format. iv. Bid does not cover the complete scope of work. v. Bid does not contain all required particulars as per Schedules & Forms prescribed in the bidding documents. vi. Deviations, conditionality or reservations have been introduced to any part of the bidding documents which may not be acceptable to the Employer in its sole discretion. vii. Bidder does not respond promptly and thoroughly to the request for supplementary information required for the evaluation of his Bid. viii. Bid does not meet minimum acceptable standards of completeness, consistency and detail. ix. Bid received from any Black listed Firm / Contractor. If at any time it is found that a material misrepresentation of facts is made or uncovered; the information submitted by the bidder concerning his qualification was false and materially inaccurate or incomplete. If the bidder is the Lead Member of a consortium, then the entire consortium may be disqualified/ rejected.
IB 32.1	The Bidder shall furnish an unconditional Performance Security, equal to ten percent (10%) of the amount mentioned in Letter of Acceptance in the form prescribed in the conditions of Contract.
IB 33	Text of Clause IB.33 is deleted and substituted as follows: Within fourteen (14) days from the date of furnishing of acceptable Performance Security under the Conditions of Contract, the successful bidder shall depute its representative duly authorized for formal signing of the Contract Agreement, Form of which is provided in the Bidding Documents.

Annexure - 1 to Bidding Data Sheet

FORMAT FOR POWER OF ATTORNEY FOR SIGNING OF BID

POWER OF ATTORNEY

Know all men by these presents, we _____(name and address of the registered office of the Bidder) do hereby constitute, appoint and authorize Mr. / Ms. _____R/o _____(name and address of residence) who is presently employed with us and holding the position of _____, as our attorney, to do in our name and on our behalf, all such acts, deeds and things necessary in connection with or incidental to the bid of the (please state the name and address of the bidder) for Bidding Document No. CE/AMN/P&S/T-370-2026 (LOT-I)*:* REPLACEMENT OF NORMAL DISC INSULATORS WITH RTV COATED DISC INSULATORS OF 220kV TRANSMISSION LINES UNDER FIELD OPERATIONS LAHORE (Lot-I) (the "tender"), including signing and submission of all documents and providing information / responses to National Grid Company of Pakistan (NGC), representing us in all matters in connection with our bid for the said tender.

We hereby agree to ratify all acts, deeds and things done by our said attorney pursuant to this Power of Attorney and agree that all acts, deeds and things done by our aforesaid attorney shall and shall always be deemed to have been done by us.

For

(Signature)
(Name, Title, Email ID and Address)

Accepted
……(Signature)
(Name, Title, Email ID and Address of the Attorney)

ACKNOWLEDGMENT

Before me, a Notary Public for and in the City of _____, this _____ of _____ 2020 personally came and appeared:

NAME	IDENTIFICATION DOCUMENT
_____	_____

Known to me to be the same person/s who executed the foregoing Special Power of Attorney in favor of _____, and acknowledged to me the same is/are his/her/their free and voluntary act and deed.
IN WITNESS WHEREOF, I have hereunto set my hand and affixed my notarial seal, the date and place above written.

NOTARY PUBLIC

Annexure - 2 to Bidding Data Sheet

A. FORM OF UNDERTAKING BY THE JOINT VENTURE PARTNERS

(On Company's Letter Head)

THIS JOINT DEED OF UNDERTAKING executed on this……. day of……. Two Thousand and ……..by……. a company incorporated under the laws of …… and having its Registered Office at..... (hereinafter called the "Party No.1" which expression shall include its successors, executors and permitted assigns) and M/s……a company incorporated under the laws of…… and having its Registered Office at…… (hereinafter called the "Party No.2" which expression shall include its successors, executors and permitted assigns) and M/s.. .. .. .a Company incorporated under the laws of…….. and having its Registered Office at……. (hereinafter called the "Party No.3" which expression shall include its successors, executors and permitted assigns) for the purpose of making a bid and entering into a contract [hereinafter called the "Contract"_{in case of award)] against the Identification No……for _____ associated with _____ of ……. (hereinafter called the "**Employer**").

WHEREAS the Party No.1, Party No.2 and Party No.3 have entered into an Agreement dated..... AND WHEREAS the Employer invited bids for the design, manufacture, Supply of Equipment Materials stipulated in the bidding documents under _____ _____ associated with _____.

AND WHEREAS Clause 2, Section-ITB and 'Qualification & Evaluation Requirement of the Bidder'(clause 13, 24 & 26 of ITB), and technical provisions forming part of the bidding documents, inter-alia, stipulates that an Undertaking of two or more qualified partners, meeting the requirements of 'Qualification & Evaluation Requirement of the Bidder', as applicable may bid, provided, the Joint Venture fulfills all other requirements under Clause 2, 13, 24 & 26 of ITB and in such a case, the Letter of Bids (Bid Form) shall be signed by the Partner –In Charge so as to legally bind all the Partners of the Joint Venture, who will be jointly and severally liable to perform the Contract and all obligations hereunder.

The above clause further states that this Undertaking shall be attached to the bid and the Contract performance guarantee will be as per the format enclosed with the bidding document without any restrictions or liability for either party.

AND WHEREAS the bid is being submitted to the Employer vide proposal No……..dated…... by Party No.1 based on this Undertaking between all the parties; under these presents and the bid in accordance with the requirements of Clause 2, 13, 24 & 26 (Section-ITB) has been signed by all the parties.

NOW THIS UNDERTAKING WITNESSETH AS UNDER:

In consideration of the above premises and agreements all the parties of this Deed of Undertaking do hereby declare and undertake:

1. In requirement of the award of the Contract by the Employer to the Joint Venture Partners, we, the Parties do hereby undertake that M/s…… the Party No.1, shall act as Lead Partner and further declare and confirm that we the parties to the Joint Venture shall jointly and severally be bound unto the Employer for the successful performance of the Contract and shall be fully responsible for the design, manufacture, Supply, and successful performance of the equipment in accordance with the Contract:

2. In case of any breach or default of the said Contract by any of the parties to the Joint Venture, the party(s) do hereby undertake to be fully responsible for the successful performance of the Contract and to carry out all the obligations and responsibilities under the Contract in accordance with the requirements of the Contract.

3. Further, if the Employer suffers any loss or damage on account of any breach in the Contract or any shortfall in the performance of the equipment in meeting the performances guaranteed as per the specification in terms of the Contract, the Party(s) of these presents undertake to promptly make good such loss or damages caused to the Employer, on its demand without any demur. It shall not be necessary or obligatory for the Employer to proceed against Lead Partner to these presents before proceeding against or dealing with the other Party(s), the Employer can proceed against any of the parties who shall be jointly and severally liable for the performance and all other liabilities/obligations under the Contract to the Employer.

4. The financial liability of the Parties of this Deed of Undertaking to the Employer, with respect to any of the claims arising out of the performance or non-performance of the obligations set forth in this Deed of Undertaking, read in conjunction with the relevant conditions of the Contract shall, however not be limited in any way so as to restrict or limit the liabilities or obligations of any of the Parties of this Deed of Undertaking.

5. It is expressly understood and agreed between the Parties to this Undertaking that the responsibilities and obligations of each of the Parties shall be as delineated in Annexure attached with this undertaking. It is further undertaken by the parties that the above sharing of responsibilities and obligations shall not in any way be a limitation of joint and several responsibilities of the Parties under the Contract.

6. It is also understood that this Undertaking is provided for the purposes of undertaking joint and several liabilities of the partners to the Joint Venture for submission of the bid and performance of the Contract if awarded and that this Undertaking shall not be deemed to give rise to any additional liabilities or obligations, in any manner or any law, on any of the Parties to this Undertaking or on the Joint Venture, other than the express provisions of the Contract.

7. This Undertaking shall be construed and interpreted in accordance with the provisions of the Contract.

8. In case of an award of a Contract, we the parties to this Deed of Undertaking do hereby agree that we shall be jointly and severally responsible for furnishing a Contract performance security from a bank in favor of the Employer in the currency/currencies of the Contract.

9. It is further agreed that this Deed of Undertaking shall be irrevocable and shall form an integral part of the bid and shall continue to be enforceable till the Employer discharges the same or upon the completion of the Contract in accordance with its provisions, whichever is earlier. It shall be effective from the date first mentioned above for all purposes and intents.

IN WITNESS WHEREOF, the Parties to this Deed of Undertaking have through their authorized representatives executed these presents and affixed Common Seals of their companies, on the day, month and year first mentioned above.

Common Seal of …….
has been affixed in my/ our
presence pursuant to Board of
Director's Resolution dated …….

Name ……..

Designation …….

Signature …….

For Lead Partner (Party No.-1)
For and on behalf of M/s
……..

(Signature of the authorized representative)

WITNESS :

I. ……

II. ……

Common Seal of …….
has been affixed in my/ our
presence pursuant to Board of
Director's Resolution dated …….

Name ……..

Designation …….

Signature …….

For Party No.-2
For and on behalf of M/s……..

(Signature of the authorized representative)

WITNESS :

I. ……

II. ……

Common Seal of ……. has been affixed in my/ our presence pursuant to Board of Director's Resolution dated …….

For Party No.-3
For and on behalf of M/s.
……..

Name ……..

Designation ……..

Signature ……..

(Signature of the authorized representative)

WITNESS :

I. ……

II. ……

Notes:

1. In the event that the successful Bidder is a joint venture formed of two or more companies, the Employer requires that the parties to the joint venture accept joint and several liabilities for all obligations under the Contract.
2. The maximum number of J.V partners is three (03).

Annexure - 3 to Bidding Data Sheet

B. FORM OF LETTER OF INTENT BY JV PARTNERS TO ENTER INTO JV AGREEMENT

THIS LETTER OF INTENT signed on this……. day of……. Two Thousand and ……..by……. a company incorporate under the laws of …… and having its Registered Office at..... (hereinafter called the "Party No.1" which expression shall include its successors, executors and permitted assigns) and M/s……a company incorporated under the laws of…… and having its Registered Office at…… (hereinafter called the "Party No.2" which expression shall include its successors, executors and permitted assigns) and M/s.. .. .. …. .. a Company incorporated under the laws of …….. and having its Registered Office at……. (hereinafter called the "Party No.3" which expression shall include its successors, executors and permitted assigns) for the purpose of making a bid and entering into a contract [hereinafter called the "Contract" {in case of award)] against the Specification No……for _____ associated with _____ of …….. (hereinafter called the "**Employer**").

WHEREAS the Party No.1, Party No.2 and Party No.3 intend to enter into a Joint Venture Agreement

AND WHEREAS the Employer invited bids as per the above mentioned Specification for the design, manufacture, Supply of Equipment Materials stipulated in the bidding documents under _____ associated with _____.

AND WHEREAS Clause 2, Section-ITB and 'Qualification & Evaluation Requirement of the Bidder'(clause 13, 24 & 26 of ITB), and technical provisions forming part of the bidding documents, inter-alia, stipulates that two or more qualified partners, meeting the requirements of Clause 2, Section-ITB and 'Qualification & Evaluation Requirement of the Bidder'(clause 13, 24 & 26 of ITB), as applicable may bid, provided, they submit a Letter of Intent to enter into Joint Venture Agreement and the Joint Venture Partners fulfill all other requirements under Clause 2, Section-ITB and 'Qualification & Evaluation Requirement of the Bidder'(clause 13, 24 & 26 of ITB), and technical provisions forming part of the bidding documents and in such a case, the Letter of Bid (Bid Form) shall be signed by all the proposed partners so as to legally bind all the Partners of the Joint Venture, who will be jointly and severally liable to perform the Contract by entering into Joint Venture Agreement as per proforma specified in this Section IV. Bidding Forms of the Bidding Documents which will be legally binding on all partners and all obligations hereunder.

The above clause further states that this Letter of Intent shall be attached to the bid and the Contract performance guarantee will be as per the format enclosed with the bidding document without any restrictions or liability for either party.

AND WHEREAS the bid is being submitted to the Employer vide proposal No……..dated…... by Party No.1 based on this Letter of Intent between all the parties; under these presents and the bid in accordance with the requirements of Clause 4.1, Section-ITB and

'Qualification Requirement of the Bidder', Section-Evaluation and Qualification Criteria, has been signed by all the parties.

NOW THIS UNDERTAKING WITNESSED AS UNDER:

In consideration of the above premises and agreements all the parties of this Letter of Intent do hereby declare and undertake:

1. In requirement of the award of the Contract by the Employer to the Joint Venture Partners, we, the Parties do hereby undertake that M/s…… the Party No.1, shall act as Lead Partner and further declare and confirm that we the parties to the Joint Venture shall jointly and severally be bound unto the Employer for the successful performance of the Contract and shall be fully responsible for the design, manufacture, Supply, and successful performance of the equipment in accordance with the Contract for which we shall enter into Joint Venture Agreement as per proforma specified in this Section IV. Bidding Forms of the Bidding Documents which will be legally binding on all partners:

2. If the Contract is awarded to Joint Venture then in case of any breach or default of the said Contract by any of the parties to the Joint Venture, the party(s) will be fully responsible for the successful performance of the Contract and to carry out all the obligations and responsibilities under the Contract in accordance with the requirements of the Contract.

3. Further, if the Employer suffers any loss or damage on account of any breach in the Contract or any shortfall in the performance of the equipment in meeting the performances guaranteed as per the specification in terms of the Contract, the Party(s) of these presents will promptly make good such loss or damages caused to the Employer, on its demand without any demur. It shall not be necessary or obligatory for the Employer to proceed against Lead Partner to these presents before proceeding against or dealing with the other Party(s), the Employer can proceed against any of the parties who shall be jointly and severally liable for the performance and all other liabilities/obligations under the Contract to the Employer.

4. The financial liability of the Parties of the Deed of Undertaking to the Employer in the event of award of Contract on the Joint Venture, with respect to any of the claims rising out of the performance or non-performance of the obligations set forth in the Deed of Undertaking, read in conjunction with the relevant conditions of the Contract shall, however not be limited in any way so as to restrict or limit the liabilities or obligations of any of the Parties of the Deed of Undertaking.

5. It is expressly understood and agreed between the Parties to this Letter of Intent that the responsibilities and obligations of each of the Parties shall be as delineated in Annexure attached with this Letter of Intent. It is further undertaken by the parties that the above sharing of responsibilities and obligations shall not in any

way be a limitation of joint and several responsibilities of the Parties under the Contract in the event of award on Joint Venture.

6. It is also understood that this Letter of Intent is provided for the purposes of undertaking joint and several liabilities of the partners to the Joint Venture for submission of the bid and performance of the Contract if awarded and that this Letter of Intent shall not be deemed to give rise to any additional liabilities or obligations, in any manner or any law, on any of the Parties to this Letter of Intent or on the Joint Venture, other than the express provisions of the Contract.

7. This Letter of Intent shall be construed and interpreted in accordance with the provisions of the Contract.

8. In case of an award of a Contract, we the parties to this Letter of Intent do hereby agree that we shall enter into Joint Venture Agreement as per proforma specified in this Section IV. Bidding Forms of the Bidding Documents which will be legally binding on all partners and we shall be jointly and severally responsible for furnishing a Contract performance security from a bank in favor of the Employer in the currency/currencies of the Contract.

9. It is further agreed that this Letter of Intent shall be irrevocable and shall form an integral part of the bid. It shall be effective from the date first mentioned above for all purposes and intents.

IN WITNESS WHEREOF, the Parties to this Letter of Intent have through their authorized representatives executed these presents and affixed Common Seals of their companies, on the day, month and year first mentioned above.

Common Seal of ……. has been affixed in my/ our presence pursuant to Board of Director's Resolution dated …….

For Lead Partner (Party No.-1)
For and on behalf of M/s
……..

Name ……..
Designation …….

(Signature of the authorized representative)

Signature …….

WITNESS :

I. ……

II. ……

Common Seal of …….
has been affixed in my/ our
presence pursuant to Board of
Director's Resolution dated …….

Name ……..

Designation ……

Signature ……

WITNESS :

I. ……

II. ……

For Party No.-2
For and on behalf of M/s……..

(Signature of the authorized
representative)

Common Seal of …….
has been affixed in my/ our
presence pursuant to Board of
Director's Resolution dated …….

Name ……..

Designation ……

Signature ……

WITNESS :

I. ……

II. ……

For Party No.-3
For and on behalf of M/s.
……..

(Signature of the authorized
representative)

Notes:

1. In the event that the successful Bidder is a joint venture formed of two or more companies, the Employer requires that the parties to the joint venture accept joint and several liabilities for all obligations under the Contract.
2. The maximum number of J.V. partners is three (3).

SECTION IV

FORM OF BID & APPENDICES TO BID

Section –IV: FORM OF TECHNICAL AND PRICE BID AND APPENDICES TO BID FOR TENDER NO. CE/AMN/P&S/T-370-2026 (LOT-I)

Sr. No.	Description	Page No.
1.	Form of Technical Bid	A-1 to A-2
2.	Form of Financial Bid	A-3 to A-4
Appendices to Bid		
3.	Appendix A to Bid: Special Stipulations	A-5
4.	Appendix B to Bid: Foreign Currency Requirements	A-6
5.	Appendix C to Bid: Price Adjustment	A-7 to A-9
6.	Appendix D to Bid: Bill of Quantities	A-10 to A-12
7.	Appendix E to Bid: Proposed Replacement Schedule	A-16 to A-17
8.	Appendix F to Bid: Method of Performing Works	A-18
9.	Appendix G to Bid: Proposed Personnel	A-19 to A-20
10.	Appendix H to Bid: Equipment	A-21 to A-22
11.	Appendix I to Bid: Construction Camp and Housing Facilities	A-23
12.	Appendix J to Bid: Organization Chart for Supervisory Staff	A-24
13.	Appendix K to Bid: List of Subcontractors	A-25
14.	Appendix L to Bid: Source of Material	A-26
15.	Appendix M to Bid: Estimated Progress Payments	A-27
16.	Appendix N to Bid: Deviations	A-28 to A-29
17.	Appendix O to Bid: Integrity Pact	A-30 to A-31

18.	**Appendix P to Bid: Bidder's Qualification Forms**		
	QF-1	General Information	A-33
	QF-2	Construction Experience	A-34
	QF-3	Performance Certificate	A-35
	QF-4	Current Contract Commitments	A-36
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	QF-8	Bank Certificate	A-40
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19.	Appendix Q to Bid: Undertaking of bid security		A-42
20.	**Standard Forms**		
	I	Bid Security (Bank Guarantee)	A-44 to A-45
	II	Form of Performance Security	A-46 to A-47
	III	Form of Contract Agreement	A-48 to A-49
	IV	Mobilization Advance Guarantee/Bond (N/A)	A-50 to A-51

Form of Technical Bid

Bid Reference No. _____

_____

_____

(Name of Contract/Works)

To:

_____

_____

_____

We, the undersigned, declare that:

(a) We have examined the Bidding Documents including Instructions to Bidders, Bidding Data, Conditions of Contract, Contract Data, Specifications, Drawings, if any, Schedule of Prices and Addenda Nos. _____ in accordance with Instructions to Bidders (IB) 9 for the execution of the above-named Works, we, the undersigned, being a company doing business under the name of and address _____ and being duly incorporated under the laws of Pakistan hereby offer to execute and complete such Works and remedy any defects therein in conformity with the said Documents including Addenda.

(b) Our Bid consisting of the Technical Bid and the Price Bid shall be valid for a period of …… days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;

(c) As security for due performance of the under takings and obligations of our bid, we submit here with a Bid security, in the amount specified in Bidding Data Sheet, which is valid (at least) 28 days beyond validity of Bid itself.

(d) We undertake, if our Bid is accepted, to commence the Works and to deliver and complete the Works comprised in the Contract within the time(s) stated in Contract Data.

(e) We are not participating, as a Bidder or as a subcontractor, in more than one bid in this bidding process, other than alternative offers submitted in accordance with IB16 (as applicable).

(f) We agree to permit Employer or its representative to inspect our accounts and records and other documents relating to the bid submission and to have them audited by

auditors. This Technical Bid IB.11.1 of the permission is extended for verification of any information provided in our which comprises all documents enclosed herewith in accordance with Bidding Data Sheet.

Name……

In the capacity of……

Signed……

Duly authorized to sign the Bid for and on behalf of……

Date……

Address……

Email……

Form of Price Bid

Bid Reference No. _____

_____

_____

(Name of Contract/Works)

To:

_____

_____

_____

We, the undersigned, declare that:

(a) We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders (IB)9;

(b) The total price of our Bid, excluding any discounts offered including Addenda thereto for the Total Bid Price of Rupees

(Rupees_____)

or such other sum as may be ascertained in accordance with the said Documents.

(c) The discounts offered and the methodology for their application is: …….

(d) Our Bid shall be valid for a period of …….. days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;

(e) If our Bid is accepted, we commit to obtain a performance security in accordance with the Bidding Documents;

(f) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed and we do hereby declare that the Bid is made without any collusion, comparison of figures or arrangement with any other bidder for the Works.

(g) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.

(h) We agree to permit Employer or its representative to inspect our accounts and records and other documents relating to the bid submission and to have them

audited by auditors. This permission is extended for verification of any information provided in our Technical Bid which comprises all documents enclosed herewith in accordance with IB.11.1 of the Bidding Data Sheet.

(i) If awarded the contract, the person named below shall act as Contractor's Representative.

(j) We do hereby declare that the Bid is made without any collusion, comparison of figures or arrangement with any other person or persons making a bid for the Works.

Name……

In the capacity of…….

Signed……

Duly authorized to sign the Bid for and on behalf of……

Date……

Address……

Email……

Appendix-A to Bid

SPECIAL STIPULATIONS
Clause
Conditions of Contract

1.	Engineer's Authority to issue Variation in emergency	2.1	15% of the Contract Price stated in the Letter of Acceptance.
2.	Law Applicable	5.1(b)	The law to be applied is the law of Islamic Republic of Pakistan.
3.	Amount of Performance Security	10.1	10% of Contract Price stated in the Letter of Acceptance.
4.	Time for Furnishing Programme	14.1	Within 07 days from the date of receipt of Letter of Acceptance.
5.	Minimum amount of third-party Insurance	23.2	Rs. 250,000 per occurrence with number of occurrences unlimited.
6.	Time for Commencement	41.1	Within 14 days from the date of receipt of the letter of acceptance.
7.	Time for Completion	43.1, 48.2	30-days from the date of acceptance of NOA or within 10 days of the final approved shutdown by ISMO Islamabad, whichever is later.
8.	a) Amount of Liquidated Damages	47.1	0.5% for each day of delay in completion of the Works subject to a maximum of 10% of Contract Price stated in the Letter of Acceptance.
	b) Amount of Bonus	47.3	Not Applicable
9.	Defects Liability Period	49.1	365 days from the effective date of Taking Over Certificate.
10.	Percentage of Retention Money	60.2	10% of the amount of Interim Payment Certificate.
11.	Limit of Retention Money	60.2	10% of Contract Price stated in the Letter of Acceptance.
12.	Minimum amount of Interim Payment Certificates (Running Bills)	60.2	20% (at least) more than the amount of all applicable retentions and deductions on the said bill.
13.	Time of Payment from delivery of Engineer's Interim Payment Certificate to the Employer.	60.10	As per NGC's policy
14.	Mobilization Advance (Interest Free)	60.12	Not Applicable

Appendix-B To Bid

FOREIGN CURRENCY REQUIREMENTS (Not Used)

1. The Bidder may indicate here in below his requirements of foreign currency (if any), with reference to various inputs to the Works.

2. Foreign Currency Requirement as percentage of the Bid Price excluding Provisional Sums _____%.

3. Table of Exchange Rates

Unit of Currency	**Equivalent in Pak. Rupees**
Australian Dollar	----------
Euro	----------
Japanese Yen	----------
U.K. Pound	----------
U.S. Dollars	----------
----------	----------
----------	----------

Appendix-C to Bid

PRICE ADJUSTMENT (Not Applicable)

Price Adjustment Formula for BOQ item 2 (foundations) and "additional work (items 6, 7, 8, 14 & 15)"

Prices payable to the Contractor, in accordance with the Contract, shall be subject to adjustment during performance of the Contract to reflect changes in the cost of civil works' inputs viz. skilled & unskilled labor, reinforcing steel bars, cement, petrol and diesel, in accordance with the formula given here below, for any increase or decrease in the costs of the following:

(a) Rate of wages of skilled or unskilled labour.
(b) Petrol and Diesel Fuel
(c) Cement
(d) Reinforcing Steel Bars

Not Applicable

No increase in the price of each of the above-mentioned components will be allowed beyond the scheduled completion period of Civil Works if the price increase is because of reasons attributable to the Contractor. The escalation for each component shall be according to the scheduled completion of that item provided that extension is granted.

For the avoidance of doubt, the price adjustment regarding Civil Works carried out later than the Scheduled period, shall continue to be paid at the revised rate of the constituent prevailing as on the date of its scheduled completion. For each claim, the Contractor shall submit invoice from each source of supply.

The increase or decrease in the amount payable by Employer to the Contractor shall be calculated on the basis of the following formula:

$$A1 = A/100 \left(30 + 20 \frac{UL1}{UL} + 14 \frac{L1}{L} + 5 \frac{P1}{P} + 11 \frac{D1}{D} + 15 \frac{S1}{S} + 5 \frac{C1}{C}\right)$$

Where

A1 = Revised amount for payment.

A = is the amount payable to the Contractor at the rates entered in Price Schedules, for the work executed after the date of change in the rates or prices of labour or materials mentioned in this section.

UL = is the basic minimum monthly wage rate for unskilled labour (PKR per month) twenty eight (28) days prior to the date of Bid opening as stated in Table 11.12 (Intercity Prices of Construction Input Items and Labour Wages) of Monthly Statistical Bulletin for the Karachi City, published by the Federal Bureau of Statistics (FBS), Statistics Division, Government of Pakistan.

UL1 = is the revised minimum monthly wage rate for unskilled labour (PKR per month) twenty-eight (28) days prior to the start of the execution month as stated in Table 11.12 (Intercity Prices of Construction Input Items and Labour Wages) of Monthly Statistical Bulletin for the Karachi City, published by the FBS, Statistics Division, Government of Pakistan.

L = is the basic minimum monthly wage rate for skilled labour (mason) (PKR per month) twenty-eight (28) days prior to the date of Bid opening as stated in Table 11.12 (Intercity Prices of Construction Input Items and Labour Wages) of Monthly Statistical Bulletin for the Karachi City, published by the FBS, Statistics Division, Government of Pakistan.

L1 = is the revised minimum monthly wage rate for skilled labour (mason) (PKR per month) twenty-eight (28) days prior to start of execution month as stated in Table 11.12 (Intercity Prices of Construction Input Items and Labour Wages) of Monthly Statistical Bulletin for the Karachi City, published by the FBS, Statistics Division, Government of Pakistan.

P = is the basic rate of premium motor gasoline (for sale through retail outlets), maximum Ex-Depot Sales Price (PKR per liter), twenty-eight (28) days prior to the date of Bid opening as notified by Pakistan State Oil (PSO) Limited.

P1 = is the revised rate of premium motor gasoline (for sale through retail outlets), maximum Ex-Depot Sales Price (PKR per litter), twenty-eight (28) days prior to execution month as notified by Pakistan State Oil (PSO) Limited.

D = is the basic rate of high-speed diesel oil (HSD) maximum Ex-Depot Sales Price (PKR per liter), twenty-eight (28) days prior to the date of Bid opening as notified by Pakistan State Oil (PSO) Limited.

D1 = is the revised rate of high-speed diesel oil (HSD) maximum Ex-Depot Sales Price (PKR per liter), twenty-eight (28) days prior to execution month as notified by Pakistan State Oil (PSO) Limited.

S = is the basic rate of reinforcing steel ½ inch round MS bars (PKR per metric ton), twenty-eight (28) days prior to the date of Bid opening, as stated in Table 11.10 (Intercity Wholesale Prices of Selected Commodities) Monthly Statistical Bulletin for the Karachi City, published by the FBS, Statistics Division, Government of Pakistan.

S1 = is the revised rate of reinforcing steel ½ inch round MS bars (PKR per metric ton), twenty-eight (28) days prior to the start of execution month, as stated in Table 11.10 (Intercity Wholesale Prices of Selected Commodities) of Monthly Statistical Bulletin for the Karachi City, published by the FBS, Statistics Division, Government of Pakistan.

C = is the basic rate of Ordinary Portland Cement (PKR per bag), twenty-eight (28) days prior to the date of Bid opening as stated in Table 11.12 (Intercity Prices of Construction Input Items and Labour Wages) of Monthly Statistical Bulletin for the Karachi City, published by the FBS, Statistics Division, Government of Pakistan.

C1 = is the revised rate of Ordinary Portland Cement (PKR per bag), twenty-eight (28) days prior to the start of execution month as stated in Table 11.12 (Intercity Prices of Construction Input Items and Labour Wages) of Monthly Statistical Bulletin for the Karachi City, published by the FBS, Statistics Division, Government of Pakistan.

30 = is the fixed percentage coefficient.

In determining the amount of any increase or decrease to the Contract Price pursuant to this section, no account shall be taken of any fluctuation as a result of Government Orders or otherwise in the cost of benefits i.e. bonus, gratuity, education, group insurance, paid holidays, casual leaves, workmen compensation etc. Any increase or decrease in the price of materials which have not been used on the project during that month shall not be considered in the adjustment of the Contract Price, and the ratio will be taken as one (1). No price adjustment shall be payable on the portion of the Contract Price paid to the Contractor as an Advance Payment.

Appendix-D to Bid

BILL OF QUANTITIES
A. Preamble

General

1. The Schedule of Quantities shall be read in conjunction with the Conditions of Contract, Specifications and Drawings. The Schedules do not generally give a full description of the Services to be performed under each item. Bidders shall be deemed to have read the Technical Specifications and other sections of the Bidding Documents and reviewed the Drawings to ascertain the full scope of the requirements included in each item prior to filling in the rates and prices. The entered rates and prices shall be deemed to include for the full scope as aforesaid, including overheads and profit.

2. If bidders are unclear or uncertain as to the scope of any item, they shall seek clarification in accordance with IB 8 prior to submitting their bids.

3. The quantities given in the Schedule of Quantities are estimated and provisional, and are given to provide a common basis for bidding. The basis of payment will be the actual quantities of work executed and measured by the Contractor and verified by the Engineer and valued at the rates and prices entered in the priced Schedule of Quantities, where applicable, and otherwise at such rates and prices as the Engineer may fix in accordance with provisions of the Contract.

4. The rates and prices entered in the priced Schedule of Quantities shall, except insofar as it is otherwise provided under the Contract include all costs of Contractor's plant, labor, supervision, materials, execution, insurance, profit, taxes and duties, together with all general risks, liabilities and obligations set out or implied in the Contract. Furthermore, all duties, taxes and other levies payable by the Contractor under the Contract, or for any other cause, as on the date 28 days prior to deadline for submission of Bids, shall be included in the rates and prices and the total Bid Price submitted by the Bidder.

5. A rate or price shall be entered against each item in the priced Schedule of Quantities, whether quantities are stated or not. The cost of items against which the Contractor will have failed to enter a rate or price shall be deemed to be covered by other rates and prices entered in the Schedule of Quantities.

6. The whole cost of complying with the provisions of the Contract shall be included in the items provided in the priced Schedule of Quantities, and where no items are provided, the cost shall be deemed to be distributed among the rates and prices entered for the related items of the Works.

7. General directions and description of work and materials are not necessarily repeated nor summarized in the Schedule of Quantities. References to the relevant sections of the Bidding Documents shall be made before entering prices against each item in the priced Schedule of Quantities.

8. Provisional sums if included and so designated in the Schedule of Quantities shall be expended in whole or in part at the direction and discretion of the Engineer in accordance with Conditions of Contract.

Units & Abbreviations

9. Units of measurement, symbols and abbreviations expressed in the Bidding Documents shall comply with the System International Unites (SI Units).

10. The following abbreviations shall be used in the Price Schedules:

Abbreviation

Pakistani Rupees	PKR
Number	No.
Kilometre	km
Kilogram	kg
Cubic Meter	Cu.m
Provisional Sums	PS
Percent	%
Quantity	Qty

Pricing

11. Prices shall be filled in indelible ink, and any alterations necessary due to errors, etc., shall be initialed by the Bidder.

12. As specified in the Bid Data Sheet prices shall be subject to adjustment in accordance with the corresponding Appendix-E to Price Bid (Price Adjustment) to the Contract Agreement.

13. For each item, bidders shall complete each appropriate column in the respective Schedules, giving the price breakdown as indicated in the Schedules. Prices given in the Schedules against each item shall be for the scope covered by that item as detailed in Section 6 (Employer's Requirements), Technical Specifications, Drawings or elsewhere in the Bidding Documents.

14. The TOTAL for each Schedule and TOTAL of the Grand Summary shall be deemed to be the total price for executing and completing the Facilities in accordance with the Contract, whether or not each individual item has been priced.

15. When requested by the Employer for the purposes of making payments or part payments, valuing variations or evaluating claims, or for such other purposes as the Employer may reasonably require, the Contractor shall provide the Employer with a breakdown of any composite or lump sum items included in the Schedules.

16. Except as otherwise expressly provided under the Conditions of Contract, the unit rates and lump sum amounts entered in the Price Schedules will be the rates at which the Contractor will be paid, and shall be deemed to include for the full scope and all costs incurred by the Contractor in the performance of the Facilities, the provision of services

including his overheads, income tax, super tax, other indirect costs, profits and costs of accepting the general risks, liabilities and obligations set forth or implied in the Contract, except for such costs which are specified as reimbursable under the Contract.

17. Arithmetic errors will be corrected by the Employer as per ITB 31.

18. Price of any other item not specifically covered in the Price Schedules but is required for the completion, commissioning and operation of the overhead transmission line shall be deemed to be included in the Schedule of Quantities.

19. The Contractor of any Lot may be required by the Engineer/Employer to carry out foundation /installation work on any location falling in any other Lot.

20. The Contractor shall take all the safeguards at site for safety/security of men, material and machinery at his own responsibility and cost.

NATIONAL GRID COMPANY of PAKISTAN

BOQ for Replacement of Normal Disc Insulators with RTV Coated Disc Insulators of 220KV Transmission Lines under Field Operations Lahore (Lot-I)

Description	Unit	Quantity (Nos.)	Unit Rate PKR.	Total Price Exclusive of Taxes
1	2	3	4	5=(3X4)
Replacement of existing Normal Type Disc Insulators with RTV Coated Disc Insulators of 220KV Transmission Lines (Lot-I) 1- 220KV T/L KSK-QABP CCT-II 47 Towers 2- 220KV T/L Wapda Town-Sheikhupura CCT 103 Towers **The Scope of work to be carried out is as under.** i) Dismantling of existing disc Insulators and packing, shifting/ transportation from site to NGC designated store. ii) Shifting/Transportation of 100KN, 120KN RTV Coated Disc insulators from A-Type Store NKLP Lahore to Site stores iii) Installation of RTV Coated Disc Insulators iv) The work to be carried out during Shut down on daily basis.	Towers	150		
			Total:	
			Provincial Service Tax @ 16% (In Punjab Province)	
			Grand Total:	

CONDITIONS:

1. The quantities mentioned in the BOQ are estimated quantities.
2. Contractor will collect RTV coated disc insulators from A-Type Store, NKLP NGC Lahore.
3. The breakup of unit rates for each item/works quoted in the BOQ shall be provided with the bid in accordance with the design provided with the tender and the work at site shall be executed as per construction drawings provided/ approved by the Engineer.
4. In case of discrepancy between unit price and total price, unit price shall prevail and the payment will be made accordingly.
5. The cost quoted for above works shall include cost of labor and cost of all accessories / material / equipment required for successful completion and operation along with clearance of Right of Way (RoW), if any.
6. The rates of above items are to be quoted by the tenderers will be considered on item rate basis.
7. All pages of tender documents shall be initialized/signature by the person or persons with signed the bid.
8. Omission & errors can be rectified at any stage.
9. No extra payment will be made on account of fluctuation in prices of labour, fuel, lubrication and material etc.
10. The work will be completed within 30-days from the date of acceptance of NOA or within 10 days of the final approved shutdown by ISMO Islamabad, whichever is later.

Bidder Name & Signature: _____

Appendix-E to Bid
Sheet 1 of 2

PROPOSED REPLACEMENT SCHEDULE

Pursuant to Sub-Clause 43.1 of the General Conditions of Contract, the Works shall be completed on or before the date stated in Appendix-A to Bid. The Bidder shall provide as Appendix-E to Bid, the Construction Schedule in the bar chart (CPM, PERT or any other to be specified herein) showing the sequence of work items and the period of time during which he proposes to complete the Works including the activities like mobilization, survey for stalking, replacement of existing disc insulators with RTV coated disc insulators on 220kV Transmission Lines of Lahore region and returning of dismantled insulators to designated NGC store, to be executed under the Contract. It shall include but not limited to the following:

Sr. No.	Description of Work	Period in days from the effective date of contract/ approval of shutdown
1.	Establishment of site office	
2.	Replacement of Disc Insulators on 220kV KSK-QABP-II circuit a) Commencement b) Completion	
3.	Returning of dismantled insulators to NGC Store a) Commencement b) Completion	
4.	Replacement of Disc Insulators on 220kV Wapda Town-Sheikhupura circuit a) Commencement b) Completion	
5.	Returning of dismantled insulators to NGC Store a) Commencement b) Completion	

To provide the accumulative effective of the activities per month, the bidder shall also provide the graph/ chart as following:

Sr. No.	Description	Days				
1.	Signing of contract	6	12	18	24	30
2.	Effective Date					
3.	Mobilization					
4.	Replacement of Disc Insulators on 220kV KSK-QABP-II circuit					
5.	Returning of dismantled insulators to NGC Store					
6.	Replacement of Disc Insulators on 220kV Wapda Town-Sheikhupura circuit					
7.	Returning of dismantled insulators to NGC Store					
8.	Testing & commissioning (N/A)					

The proposed program of Works shall base on the Schedule of Implementation (30 days) as per Bidding Documents.

Appendix-E to Bid
Sheet 2 of 2

Note: The bidder shall also indicate the construction crews employed to achieve the completion target for the following:

Type of Crews	No. of Crew employed	Expected Progress/month/crew*
Shifting Crew		
Dismantling & Replacement Crew		

*****Mention the required time per tower of a crew to complete a certain activity e.g., dismantling, replacement and shifting of insulators.

Appendix-F to Bid

METHOD OF PERFORMING THE WORK

The Bidder is required to submit a narrative outlining the method of performing the Work. The narrative should indicate in detail and include but not be limited to:

1. Organization Chart indicating head office and field office personnel involved in management and supervision, engineering, equipment maintenance and purchasing.

2. Mobilization in Pakistan, the type of facilities including personnel accommodation, office accommodation, provision for maintenance and for storage, communications, security and other services to be used.

3. The method of executing the Works, the procedures for installation of disc insulators and machinery and transportation of equipment and materials to the site.

4. Quality control / Quality assurance measures to be adopted including procedures to be followed for carrying out all tests required under specifications.

Appendix-G to Bid

Personnel

Form PER – 1: Proposed Personnel

Bidders should provide the names of suitably qualified personnel to meet the specified requirements for each of the positions listed in Section 2. The data on their experience should be supplied using the Form below for each candidate.

1.	**Title of position**
	Name
2.	**Title of position***
	Name
3.	**Title of position***
	Name
4.	**Title of position***
	Name
5.	**Title of position***
	Name

Form PER – 2: Resume of Proposed Personnel

The Bidder shall provide all the information requested below. Fields with asterisk (*) shall be used for evaluation.

Position*		
Personnel information	**Name**	**Date of birth**
	Professional qualifications	
Present employment	**Name of employer**	
	Address of employer	
	Telephone	**Contact (manager / personnel officer)**
	Fax	**E-mail**
	Job title	**Years with present employer**

Summarize professional experience in reverse chronological order. Indicate particular technical and managerial experience relevant to the project.

From*	To*	Company, Project, Position and Relevant Technical and Management Experience*

Appendix-H to Bid

EQUIPMENT

Form EQ – 1: List of Major Equipment – Related Items

The Bidder will provide on Sheet 2 of this Appendix a list of all major equipment and related items, under separate heading for items owned, to be purchased or to be arranged on lease by him to carry out the Works. The information shall include make, type, capacity, and anticipated period of utilization for all equipment which shall be in sufficient detail to demonstrate fully that the equipment will meet all requirements of the Specifications. The list of major equipment for construction works of the project should be addressed under the following categories:

a) Right of way
b) Survey for staking
c) Foundation work (If applicable)
    i) For dry foundation crew
    ii) For crew working in water logged area (If applicable)
d) Pile work/Pile Caps with Beams (If applicable)
e) Dismantling of Existing Disc Insulators and Installation of RTV Coated Insulators
f) Any other

Form EQ – 2: List of Major Equipment

Owned Purchased or Leased	Description of Unit (Make, Model, Year)	Capacity HP Rating	Condition	Present Location or Source	Date of Delivery at Site	Period of Work on Project
1	2	3	4	5	6	7
A) Right of way **a**. Owned **b.** To be Purchased **c.** To be arranged on Lease						
B) Survey for staking **a**. Owned **b.** To be Purchased **c.** To be arranged on Lease						
C) Foundation work* (If applicable) **a**. Owned **b.** To be Purchased **c.** To be arranged on Lease						
D) Pile work/Pile Caps with Beams (If Applicable) **a**. Owned **b.** To be Purchased **c.** To be arranged on Lease						
E) Dismantling of Insulators **a**. Owned **b.** To be Purchased **c.** To be arranged on Lease						
F) Installation of Insulators **a**. Owned **b.** To be Purchased **c.** To be arranged on Lease						
G) Conductor stringing (if applicable) **a**. Owned **b.** To be Purchased **c.** To be arranged on Lease						

* Foundation work will involve both dry type foundation and water logged foundation equipment.

Appendix-I to Bid

CONSTRUCTION CAMP AND HOUSING FACILITIES

The Contractor in accordance with Clause 34 of the Conditions of Contract shall provide description of his construction camp's facilities and staff housing requirements.

The Contractor shall be responsible for pumps, electrical power, water and electrical distribution systems, and sewerage system including all fittings, pipes and other items necessary for servicing the Contractor's construction camp.

The Bidder shall list or explain his plans for providing these facilities for the service of the Contract as follows:

i. Site Preparation (clearing, land preparation, etc.).

2. Provision of Services.

   a) Power (expected power load, etc.).
   b) Water (required amount and system proposed).
   c) Sanitation (sewage disposal system, etc.).

3. Construction of Facilities

   a) Contractor's Office. Workshop and Work Areas (areas required and proposed layout, type of construction of buildings, etc.).
   b) Warehouses and Storage Areas (area required, type of construction and layout).
   c) Housing and Staff Facilities (Plans for housing for proposed staff, layout, type of construction, etc.).

4. Construction Equipment Assembly and Preparation (detailed plans for carrying out this activity).

5. Other Items Proposed (Security services, etc.).

6. Detail of testing Lab with testing equipment etc.

Appendix-J to Bid

ORGANIZATION CHART
FOR THE
SUPERVISORY STAFF AND LABOR

Appendix-K to Bid

LIST OF SUBCONTRACTORS

I/We intend to subcontract the following parts of the Work to subcontractors. In my/our opinion, the subcontractors named hereunder are reliable and competent to perform that part of the work for which each is listed.

Enclosed are documentation outlining experience of subcontractors, the curriculum vitae and experience of their key personnel who will be assigned to the Contract, equipment to be supplied by them, size, location and type of contracts carried out in the past.

Part of Works (Give Details)	**Subcontractor (With Complete Address)**
1	**2**

Appendix-L to Bid

SOURCES OF MATERIAL
LIST OF MATERIALS LIKE CEMENT, REINFORCING STEEL

The bidder shall list in this Schedule the names of materials forming part of tower foundations such as cement, reinforcing steel which he intends to procure in connection with this Contract along with the names and complete addresses of the sources.

Name of Goods/Material/ Equipment	Name of Factory	Address

Use additional sheets if required.

Appendix-M To Bid

ESTIMATED PROGRESS PAYMENTS

Bidder's estimate of the value of work which would be executed by him during each of the periods stated below, based on his Program of Works and the Rates in the Schedule of Prices,

Period	Amounts (Rs.)
1st Month	
2nd Month	
Total Bid Price	

Initials of Signatory to Bid: ……

Appendix-N to Bid

DEVIATIONS

Form D1-Deviations from Contractual Conditions

Deviations if any, which the bidder has taken to the Contractual Conditions in preparation of his bid, must be listed below.

Sr. No.	Clause No. /Section No.	Deviations

Note: Attach additional sheets, if necessary.

Form D2-Deviations from Technical Conditions

Deviations if any, which the bidder has taken to the Technical Provisions in preparation of his bid, must be listed below.

Sr. No.	Clause No. /Section No.	Deviations

Note: Attach additional sheets, if necessary.

Appendix-O to Bid

INTEGRITY PACT

**DECLARATION OF FEES, COMMISSION AND BROKERAGE ETC.
PAYABLE BY THE SUPPLIERS OF GOODS, SERVICES & WORKS
IN CONTRACTS WORTH RS. 10.00 MILLION OR MORE**

Contract No._____ Dated _____
Contract Value: _____
Contract Title: _____

[Name of Supplier] hereby declares that it has not obtained or induced the procurement of any contract, right, interest, privilege or other obligation or benefit from Government of Pakistan (GoP) or any administrative subdivision or agency thereof or any other entity owned or controlled by GoP through any corrupt business practice.

Without limiting the generality of the foregoing, [name of Supplier] represents and warrants that it has fully declared the brokerage, commission, fees etc. paid or payable to anyone and not given or agreed to give and shall not give or agree to give to anyone within or outside Pakistan either directly or indirectly through any natural or juridical person, including its affiliate, agent, associate, broker, consultant, director, promoter, shareholder, sponsor or subsidiary, any commission, gratification, bribe, finder's fee or kickback, whether described as consultation fee or otherwise, with the object of obtaining or inducing the procurement of a contract, right, interest, privilege or other obligation or benefit in whatsoever form from GoP, except that which has been expressly declared pursuant hereto.

[name of Supplier] certifies that it has made and will make full disclosure of all agreements and arrangements with all persons in respect of or related to the transaction with GoP and has not taken any action or will not take any action to circumvent the above declaration, representation or warranty.

[name of Supplier] accepts full responsibility and strict liability for making any false declaration, not making full disclosure, misrepresenting facts or taking any action likely to defeat the purpose of this declaration, representation and warranty. It agrees that any contract, right, interest, privilege or other obligation or benefit obtained or procured as aforesaid shall, without prejudice to any other rights and remedies available to GoP under any law, contract or other instrument, be voidable at the option of GoP.

Notwithstanding any rights and remedies exercised by GoP in this regard, [name of Supplier] agrees to indemnify GoP for any loss or damage incurred by it on account of its corrupt business practices and further pay compensation to GoP in an amount equivalent to ten time the sum of any commission, gratification, bribe, finder's fee or kickback given by [name of

Supplier] as aforesaid for the purpose of obtaining or inducing the procurement of any contract, right, interest, privilege or other obligation or benefit in whatsoever form from GoP.

Name of Buyer: ……	Name of Seller/Supplier: ……
Signature: ……	Signature: ……
[Seal]	[Seal]

Appendix-P to Bid

BIDDER'S QUALIFICATION FORMS

QF-1	General Information
QF-2	Construction Experience
QF-3	Performance Certificate
QF-4	Current Contract Commitments
QF-5	Financial Data
QF-6	Annual Turnover Data
QF-7	Financial Resources
QF-8	Bank Certificate
QF-9	Pending Litigation

Note:-

1. These forms shall be filled up and furnished by the Bidder and its Joint Venture partner(s), if any.
2. If necessary, additional sheets may be added to the forms. Each page of each form should be clearly marked in the right top corner as follows: Form QF1, page 1; Form QF1, page 2, etc.
3. Some forms will require attachments. Such attachments should be clearly marked as follows: Attachment 1 to Form QF1, Attachment 2 to Form QF1, etc.

Form QF-1: General Information

Bidder and its Joint Venture Partner(s) and/or Subcontractors are requested to complete the information in this form. Nationally information of Bidders should also be provided.

1.	Name of Bidder	
2.	Head office address	
3.	Local office address (if any)	
4.	Telephone	Contract
5.	Facsimile	e-mail
6.	Place of incorporation/registration	Year of incorporation/registration
7.	Main lines of Business 1. 2. 3. 4.	 Since: Since: Since: Since:

Note:
Copies of following credentials shall be attached:

(a) Copy of incorporation/registration certificate
(b) Organization chart
(c) PEC registration certificate in the appropriate category

Signature and Seal of Bidder:

Form QF-2: Construction Experience

Note: To be filled in accordance with criteria described in clause IB3.1 (b) Section-II of the bidding documents

(For a period of Last 10 Years)

Name of the Project: ……..

Order Placed by (full address of Employer)	Order No. and date	Description of Works	Value of order	Date of completion as per contract	Date of actual completion	Remarks indicating reasons for late completion, if any	Has the project been running satisfactorily ? (Attach a certificate from the Employer)	Contact person along with Telephone No., Fax No. and email address

Signature and Seal of the Bidder……

Place:

Date:

Form QF-3: Performance Certificate

(To be issued on the Letter Head of Issuing Authority)

It is to certify that M/s._____ has conducted the following works against mentioned project.

Sr.No.	Contract No. & Date	Designation & address of order placing authority/User	Name of Project	Description of Works	Date of Completion	Work Performance

The above services/Works have been performed against our Project and their performance is found satisfactory.

Date of issuing _____

Signature of issuing authority with seal
Name and designation of issuing authority
Address along with Email, Phone No. and
Fax of issuing authority

Note:

i. In case of those bidders who have provided services to NGC shall furnish the details of such works in the above Performa which shall be signed by their authorized signatory along with seal and certificate is not required from the Employer in this respect.

ii. In case the performance certificate is not verifiable through the given contact address and email, the bid may be rejected.

Form QF-4: Current Contract Commitments

Bidders should provide information on their current commitments on all contracts that have been awarded, or for which a letter of intent or acceptance has been received, or for contracts approaching completion, but for which an unqualified, full completion certificate has yet to be issued.

Sr. No.	Particulars of works executed	Contract No. & Date	Name of Contract placing Authority	Ordered Value (PKR)	Value of balance work (PKR)
1	2	3	4	5	6
2					
3					
4					
5					
6					
7					

Signature & Seal of the bidder:

Form QF-5: Financial Data

Financial Data for Previous 3 Years			
Particular			
Total Assets			
Total Liabilities			
Net Worth			
Current Assets			
Current Liabilities			
Information from Income Statement			
Total Revenues			
Profits Before Taxes			
Profits After Taxes			
Attached are copies of financial statements (balance sheets including all related notes, and income statements) for the last three years, as indicated above, complying with the following conditions.			
• All such documents reflect the financial situation of the Bidder and not sister or parent companies. • Historic financial statements must be audited by a certified accountant. • Historic Financial statements must be complete, including all notes to the financial statements. • Historic financial statements must correspond to accounting periods already completed and audited (no statements for partial periods shall be requested or accepted).			

Signature and Seal of the bidder:

Form QF-6: Annual Turnover Data

Name of Bidder/Joint Venture Partner:

Bidder and its Joint Venture Partner(s) are requested to complete the information in this form separately. The information supplied should be the annual turnover of the Bidder, in terms of the amounts billed to clients for each year for work in progress or completed. In case of a joint venture, a copy of the Joint Venture Agreement must be attached. The Average Annual Turnover may include turnover of affiliates and subsidiaries to the extent of shareholding percentage of the Bidding company provided the turnover is accrued from similar business activity as the Bidding company. Average Annual Turnover will be considered on "Net Sales" i.e. without Sales tax, discounts etc.

Use a separate sheet for bidder and its Joint Venture partner(s).

Annual turnover data for the following last three fiscal years			
Year	**Amount Currency**	**Exchange Rate**	**Equivalent Amount (in the currency of Bid)**
		Average Annual Turnover	

Signature and Seal of Bidder:

Form QF-7: Financial Resources

Specify proposed sources of financing, such as liquid assets, lines of credit, and other financial means, available to meet the total construction cash flow demands of the subject contract.

Financial Resources		
Sr. No.	Source of Financing	Amount
1.		
2.		
3.		
4.		

Signature and Seal of Bidder:

Form QF-8: Bank Certificate

This is to certify that M/s…… is a reputed company with a good financial standing.

If the contract for the work, namely,…… is awarded to the above firm, we shall be able to provide overdraft/credit facilities to the extent of Rs…… to meet their working capital requirements for executing the above contract.

Signature of Senior Bank Manager:_____
Name of the Senior Bank Manager:_____
Address of the Bank:_____

Stamp of the Bank

Note: Certificate should be on the letter head of the bank.

- **Change the text as follows for Joint Venture:**

This is to certify that M/s…… who has formed a JV with M/s……and M/s……..for participating in this bid, is a reputed company with a good financial standing.

If the contract for the work, namely…… is awarded to the above Joint Venture, we shall be able to provide overdraft/credit facilities to the extent of Rs…… to M/s…….. to meet the working capital requirements for executing the above contract.

[This should be given by each of the JV members in proportion to their financial participation.]

Form QF-9: Pending Litigation

Each Bidder or member of a JV must fill in this form

Pending Litigation					
Year	Name of Other Party(s)	Matter of Dispute	Litigation where (Court/ arbitration)	Amount involved	Value of pending claim as a %age of net worth

Signature and Seal of the bidder:

Appendix-Q to Bid

UNDERTAKING OF BID SECURITY
(To be Submitted on a Non-Judicial Stamp Paper)

We _____ (name of Bidder) undertake that Bid Security in accordance with Clause IB-19 of the bidding document is enclosed with our Price bid.

Signature and Seal of the Bidder:

STANDARD FORMS

BID SECURITY (**Bank Guarantee)**

Security Executed on _____
(Date)
Name of Surety (Bank) with Address: _____
(Scheduled Bank in Pakistan)
Name of Principal (Bidder) with Address _____
_____
Penal Sum of Security Rupees. _____ (Rs. _____)
Bid Reference No. _____
KNOW ALL MEN BY THESE PRESENTS, that in pursuance of the terms of the Bid and at the request of the said Principal (Bidder) we, the Surety above named, are held and firmly bound unto **Chief Engineer (AM) North , National Grid Company of Pakistan Ltd (NGC)** (hereinafter called the 'Employer') in the sum stated above for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Bidder has submitted the accompanying Bid dated _____ for Bid No. _____ for_____ (Particulars of Bid) to the said Employer; and

WHEREAS, the Employer has required as a condition for considering said Bid that the Bidder furnishes a Bid Security in the above said sum from a Scheduled Bank in Pakistan or from a foreign bank duly counter-guaranteed by a Scheduled Bank in Pakistan, to the Employer, conditioned as under:

(1) that the Bid Security shall remain in force up to and including the date 28 days after the deadline for validity of bids as stated in the Instructions to Bidders or as it may be extended by the Employer, notice of which extension(s) to the Surety is hereby waived;

(2) that the Bid Security of unsuccessful Bidders will be returned by the Employer after expiry of its validity or upon signing of the Contract Agreement; and

(3) that in the event of failure of the successful Bidder to execute the proposed Contract Agreement for such work and furnish the required Performance Security, the entire said sum be paid immediately to the said Employer pursuant to Clause 15.6 of the Instruction to Bidders for the successful Bidder's failure to perform.

NOW THEREFORE, if the successful Bidder shall, within the period specified therefor, on the prescribed form presented to him for signature enter into a formal Contract with the said Employer in accordance with his Bid as accepted and furnish within twenty eight (28) days of his being requested to do so, a Performance Security with good and sufficient surety, as may be required, upon the form prescribed by the said Employer for the faithful performance and proper fulfilment of the said Contract or in the event of non-withdrawal of the said Bid within

the time specified for its validity then this obligation shall be void and of no effect, but otherwise to remain in full force and effect.

PROVIDED THAT the Surety shall forthwith pay the Employer the said sum upon first written demand of the Employer (without cavil or argument) and without requiring the Employer to prove or to show grounds or reasons for such demand, notice of which shall be sent by the Employer by registered post duly addressed to the Surety at its address given above.

PROVIDED ALSO THAT the Employer shall be the sole and final judge for deciding whether the Principal (Bidder) has duly performed his obligations to sign the Contract Agreement and to furnish the requisite Performance Security within the time stated above, or has defaulted in fulfilling said requirements and the Surety shall pay without objection the said sum upon demand from the Employer forthwith and without any reference to the Principal (Bidder) or any other person.

IN WITNESS WHEREOF, the above bounden Surety has executed the instrument under its seal on the date indicated above, the name and seal of the Surety being hereto affixed and these presents duly signed by its undersigned representative pursuant to authority of its governing body.

SURETY (Bank)

WITNESS: Signature _____

1. _____ Name _____

_____ Title _____

Corporate Secretary (Seal) Corporate Guarantor (Seal)

2. _____

_____

Name, Title & Address

FORM OF PERFORMANCE SECURITY
(Bank Guarantee)

Guarantee No._____
Executed on _____
Expiry date _____

[Letter by the Guarantor to the Employer]

Name of Guarantor (Bank) with address: _____
(Scheduled Bank in Pakistan)

Name of Principal (Contractor) with address: _____
_____

Penal Sum of Security (express in words and figures) _____
_____

Letter of Acceptance No. _____Dated _____

KNOW ALL MEN BY THESE PRESENTS, that in pursuance of the terms of the Bidding Documents and above said Letter of Acceptance (hereinafter called the Documents) and at the request of the said Principal we, the Guarantor above named, are held and firmly bound unto the _____ (hereinafter called the Employer) in the penal sum of the amount stated above for the payment of which sum well and truly to be made to the said Employer, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal has accepted the Employer's above said Letter of Acceptance for _____ _____ (Name of Contract) for the _____ _____ (Name of Project).

NOW THEREFORE, if the Principal (Contractor) shall well and truly perform and fulfill all the undertakings, covenants, terms and conditions of the said Documents during the original terms of the said Documents and any extensions thereof that may be granted by the Employer, with or without notice to the Guarantor, which notice is, hereby, waived and shall also well and truly perform and fulfill all the undertakings, covenants terms and conditions of the Contract and of any and all modifications of said Documents that may hereafter be made, notice of which modifications to the Guarantor being hereby waived, then, this obligation to be void; otherwise to remain in full force and virtue till all requirements of Clause 49, Defects Liability, of Conditions of Contract are fulfilled.

Our total liability under this Guarantee is limited to the sum stated above and it is a condition of any liability attaching to us under this Guarantee that the claim for payment in writing shall be received by us within the validity period of this Guarantee, failing which we shall be discharged of our liability, if any, under this Guarantee.

We, _____ (the Guarantor), waiving all objections and

defences under the Contract, do hereby irrevocably and independently guarantee to pay to the Employer without delay upon the Employer's first written demand without cavil or arguments and without requiring the Employer to prove or to show grounds or reasons for such demand any sum or sums up to the amount stated above, against the Employer's written declaration that the Principal has refused or failed to perform the obligations under the Contract which payment will be effected by the Guarantor to Employer's designated Bank & Account Number.

PROVIDED ALSO THAT the Employer shall be the sole and final judge for deciding whether the Principal (Contractor) has duly performed his obligations under the Contract or has defaulted in fulfilling said obligations and the Guarantor shall pay without objection any sum or sums up to the amount stated above upon first written demand from the Employer forthwith and without any reference to the Principal or any other person.

IN WITNESS WHEREOF, the above-bounden Guarantor has executed this Instrument under its seal on the date indicated above, the name and corporate seal of the Guarantor being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

_____
Guarantor (Bank)

Witness:

1. _____ Signature _____

_____ Name _____
Corporate Secretary (Seal)

Title _____

2. _____

_____ _____
Name, Title & Address Corporate Guarantor (Seal)

FORM OF CONTRACT AGREEMENT

THIS CONTRACT AGREEMENT (hereinafter called the "Agreement") made on the _____ day of _____ (month) 20_____ between _____ (hereafter called the "Employer") of the one part and _____ (hereafter called the "Contractor") of the other part.

WHEREAS the Employer is desirous that certain Works, viz _____ should be executed by the Contractor and has accepted a Bid by the Contractor for the execution and completion of such Works and the remedying of any defects therein.

NOW this Agreement witnesseth as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.

2. The following documents after incorporating addenda, if any, except those parts relating to Instructions to Bidders shall be deemed to form and be read and construed as part of this Agreement, viz:

   (a) The Contract Agreement;
   (b) The Letter of Acceptance;
   (c) The completed Form of Bid;
   (d) Special Stipulations (Appendix-A to Bid);
   (e) The Particular Conditions of Contract;
   (f) The General Conditions;
   (g) The priced Bill of Quantities;
   (h) The completed Appendices to Bid;
   (i) The Drawings;
   (j) The Specifications.
   (k) _____ (any other)

3. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to execute and complete the Works and remedy defects therein in conformity and in all respects with the provisions of the Contract.

4. The Employer hereby covenants to pay the Contractor, in consideration of the execution and completion of the Works as per provisions of the Contract, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS WHEREOF the parties hereto have caused this Agreement to be executed on the day, month and year first before written in accordance with their respective laws.

Signature of the Contactor	Signature of Employer
_____	_____
(Seal)	(Seal)

Signed, Sealed and Delivered in the presence of:

Witness:	Witness:
_____	_____
(Name, Title and Address)	(Name, Title and Address)

MOBILIZATION ADVANCE GUARANTEE/BOND

Guarantee No._____ Date _____

WHEREAS _____(hereinafter called the 'Employer') has entered into a Contract for _____
(Particulars of Contract)
with _____ (hereinafter called the "Contractor').

AND WHEREAS, the Employer has agreed to advance to the Contractor, at the Contractor's request, an amount of Rupees _____ (Rs _____) which amount shall be advanced to the Contractor as per provisions of the Contract.

AND WHEREAS, the Employer has asked the Contractor to furnish Guarantee to secure the mobilization advance for the performance of his obligations under the said Contract.

AND WHEREAS, _____
(Scheduled Bank in Pakistan or Insurance Company acceptable to the Employer)
(hereinafter called the "Guarantor") at the request of the Contractor and in consideration of the Employer agreeing to make the above advance to the Contractor, has agreed to furnish the said Guarantee.

NOW, THEREFORE, the Guarantor hereby guarantees that the Contractor shall use the advance for the purpose of above mentioned Contract and if he fails and commits default in fulfilment of any of his obligations for which the advance payment is made, the Guarantor shall be liable to the Employer for payment not exceeding the aforementioned amount.

Notice in writing of any default, of which the Employer shall be the sole and final judge, on the part of the Contractor, shall be given by the Employer to the Guarantor, and on such first written demand, payment shall be made by the Guarantor of all sums then due under this Guarantee without any reference to the Contractor and without any objection.

This Guarantee shall remain in force until the advance is fully adjusted against payments from the Interim Payment Certificates of the Contractor or until _____whichever is earlier.
(Date)
The Guarantor's liability under this Guarantee shall not in any case exceed the sum of Rupees _____(Rs _____).

This Guarantee shall remain valid up to the aforesaid date and shall be null and void after the aforesaid date or earlier if the advance made to the Contractor is fully adjusted against payments from Interim Payment Certificates of the Contractor provided that the Guarantor agrees that the aforesaid period of validity shall be deemed to be extended if on the above mentioned date the advance payment is not fully adjusted.

GUARANTOR

1. Signature _____
2. Name _____
3. Title _____

WITNESS

1. _____
_____
Corporate Secretary (Seal)

2. _____ _____
(Name Title & Address) Corporate Guarantor (Seal)

SECTION V

GENERAL CONDITIONS OF CONTRACT

SECTION-IV GENERAL CONDITIONS OF CONTRACT

This bidding document follows the FIDIC conditions of contract for construction works. The Conditions of Contract Comprise of two Sections: Section-IV – General Conditions of Contract, and Section-V – Special Conditions of Contract.

All the general Conditions shall be as per the FIDIC documents indicated below. These shall be read along with the Particular Conditions of Contract for interpretation. In case of any discrepancy between these General Conditions of Contract and the Particular Conditions of the Contract of Section-V, the provisions under the latter shall govern.

FIDIC FEDERATION INTERNATIONALE DES INGENIEURS – CONSEILS

CONDITIONS OF CONTRACT FOR WORKS OF CIVIL ENGINEERING CONSTRUCTION

FOURTH EDITION 1987

Reprinted 1988 with editorial amendments
Reprinted 1992 with editorial amendments



FEDERATION INTERNATIONALE DES INGENIEURS-CONSEILS

CONDITIONS OF CONTRACT FOR WORKS OF CIVIL ENGINEERING CONSTRUCTION

PART I GENERAL CONDITIONS
WITH FORMS OF TENDER AND AGREEMENT

PART II CONDITIONS OF PARTICULAR APPLICATION
WITH GUIDELINES FOR PREPARATION OF PART II CLAUSES

FOURTH EDITION 1987

Reprinted 1988 with editorial amendments

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FEDERATION INTERNATIONALE DES INGENIEURS-CONSEILS

CONDITIONS OF CONTRACT FOR WORKS OF CIVIL ENGINEERING CONSTRUCTION

PART I GENERAL CONDITIONS

WITH FORMS OF TENDER AND AGREEMENT

FOURTH EDITION 1987
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FOREWORD

The terms of the Fourth Edition of the Conditions of Contract for Works of Civil Engineering Construction have been prepared by the Fédération Internationale des Ingénieurs Conseils (FIDIC) and are recommended for general use for the purpose of construction of such works where tenders are invited on an international basis. The Conditions, subject to minor modifications, are also suitable for use on domestic contracts.

The version in English of the Conditions is considered by FIDIC as the official and authentic text for the purpose of translation.

In the preparation of the Conditions it was recognised that while there are numerous Clauses which will be generally applicable there are some Clauses which must necessarily vary to take account of the circumstances and locality of the Works. The Clauses of general application have been grouped together in this document and are referred to as Part I – General Conditions. They have been printed in a form which will facilitate their inclusion as printed in the contract documents normally prepared.

The General Conditions are linked with the Conditions of Particular Application, referred to as Part II, by the corresponding numbering of the Clauses, so that Parts I and II together comprise the Conditions governing the rights and obligations of the parties.

Part II must be specially drafted to suit each individual Contract.

When dredging and certain types of reclamation work are involved special consideration must be given to Part II.

To assist in the preparation of Part II explanatory material and example clauses are published with the Conditions in a separately bound document entitled "Conditions of Contract for Works of Civil Engineering Construction, Part II – Conditions of Particular Application, with Guidelines for preparation of Part II Clauses, Fourth Edition".

FIDIC has published a "Guide to the Use of FIDIC Conditions of Contract for Works of Civil Engineering Construction" which includes comments on the provisions of the Fourth Edition of the Conditions. Users of the Fourth Edition may find it helpful to refer to this Guide.

It may also be helpful for users to refer to other FIDIC publications, such as:

Tendering Procedure (First Edition 1982)
Construction, Insurance and Law (1986)

FIDIC gratefully acknowledges the suggestions and comments it has received during the preparation of this edition from European International Contractors (EIC) as mandatory of Confederation of International Contractors Associations (CICA) with participation of Associated General Contractors of America (AGC).

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PART I - GENERAL CONDITIONS

Definitions and Interpretation

Definitions **1.1** In the Contract (as hereinafter defined) the following words and expressions shall have the meanings hereby assigned to them, except where the context otherwise requires:

(a) (i) "Employer" means the person named as such in Part II of these Conditions and the legal successors in title to such person, but not (except with the consent of the Contractor) any assignee of such person.

(ii) "Contractor" means the person whose tender has been accepted by the Employer and the legal successors in title to such person, but not (except with the consent of the Employer) any assignee of such person.

(iii) "Subcontractor" means any person named in the Contract as a Subcontractor for a part of the Works or any person to whom a part of the Works has been subcontracted with the consent of the Engineer and the legal successors in title to such person, but not any assignee of any such person.

(iv) "Engineer" means the person appointed by the Employer to act as Engineer for the purposes of the Contract and named as such in Part II of these Conditions.

(v) "Engineer's Representative" means a person appointed from time to time by the Engineer under Sub-Clause 2.2.

(b) (i) "Contract" means these Conditions (Parts I and II), the Specification, the Drawings, the Bill of Quantities, the Tender, the Letter of Acceptance, the Contract Agreement (if completed) and such further documents as may be expressly incorporated in the Letter of Acceptance or Contract Agreement (if completed).

(ii) "Specification" means the specification of the Works included in the Contract and any modification thereof or addition thereto made under Clause 51 or submitted by the Contractor and approved by the Engineer.

(iii) "Drawings" means all drawings, calculations and technical information of a like nature provided by the Engineer to the Contractor under the Contract and all drawings, calculations, samples, patterns, models, operation and maintenance manuals and other technical information of a like nature submitted by the Contractor and approved by the Engineer.

(iv) "Bill of Quantities" means the priced and completed bill of quantities forming part of the Tender.

(v) "Tender" means the Contractor's priced offer to the Employer for the execution and completion of the Works and the remedying of any defects therein in accordance with the provisions of the Contract, as accepted by the Letter of Acceptance.

(vi) "Letter of Acceptance" means the formal acceptance by the Employer of the Tender.

(vii) "Contract Agreement" means the contract agreement (if any) referred to in Sub-Clause 9.1.

(viii) "Appendix to Tender" means the appendix comprised in the form of Tender annexed to these Conditions.

(c) (i) "Commencement Date" means the date upon which the Contractor receives the notice to commence issued by the Engineer pursuant to Clause 41.

(ii) "Time for Completion" means the time for completing the execution of and passing the Tests on Completion of the Works or any Section or part thereof as stated in the Contract (or as extended under Clause 44) calculated from the Commencement Date.

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(d) (i) "Tests on Completion" means the tests specified in the Contract or otherwise agreed by the Engineer and the Contractor which are to be made by the Contractor before the Works or any Section or part thereof are taken over by the Employer.

(ii) "Taking-Over Certificate" means a certificate issued pursuant to Clause 48.

(e) (i) "Contract Price" means the sum stated in the Letter of Acceptance as payable to the Contractor for the execution and completion of the Works and the remedying of any defects therein in accordance with the provisions of the Contract.

(ii) "Retention Money" means the aggregate of all monies retained by the Employer pursuant to Sub-Clause 60.2(a).

(iii) "Interim Payment Certificate" means any certificate of payment issued by the Engineer other than the Final Payment Certificate.

(iv) "Final Payment Certificate" means the certificate of payment issued by the Engineer pursuant to Sub-Clause 60.8.

(f) (i) "Works" means the Permanent Works and the Temporary Works or either of them as appropriate.

(ii) "Permanent Works" means the permanent works to be executed (including Plant) in accordance with the Contract.

(iii) "Temporary Works" means all temporary works of every kind (other than Contractor's Equipment) required in or about the execution and completion of the Works and the remedying of any defects therein.

(iv) "Plant" means machinery, apparatus and the like intended to form or forming part of the Permanent Works.

(v) "Contractor's Equipment" means all appliances and things of whatsoever nature (other than Temporary Works) required for the execution and completion of the Works and the remedying of any defects therein, but does not include Plant, materials or other things intended to form or forming part of the Permanent Works.

(vi) "Section" means a part of the Works specifically identified in the Contract as a Section.

(vii) "Site" means the places provided by the Employer where the Works are to be executed and any other places as may be specifically designated in the Contract as forming part of the Site.

(g) (i) "cost" means all expenditure properly incurred or to be incurred, whether on or off the Site, including overhead and other charges properly allocable thereto but does not include any allowance for profit.

(ii) "day" means calendar day.

(iii) "foreign currency" means a currency of a country other than that in which the Works are to be located.

(iv) "writing" means any hand-written, type-written, or printed communication, including telex, cable and facsimile transmission.

Headings and Marginal Notes **1.2** The headings and marginal notes in these Conditions shall not be deemed part thereof or be taken into consideration in the interpretation or construction thereof or of the Contract.

Interpretation **1.3** Words importing persons or parties shall include firms and corporations and any organisation having legal capacity.

Singular and Plural **1.4** Words importing the singular only also include the plural and vice versa where the context requires.

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Notices, Consents, Approvals, Certificates and Determinations **1.5** Wherever in the Contract provision is made for the giving or issue of any notice, consent, approval, certificate or determination by any person, unless otherwise specified such notice, consent, approval, certificate or determination shall be in writing and the words "notify", "certify" or "determine" shall be construed accordingly. Any such consent, approval, certificate or determination shall not unreasonably be withheld or delayed.

Engineer and Engineer's Representative

Engineer's Duties and Authority **2. 1** (a) The Engineer shall carry out the duties specified in the Contract.

(b) The Engineer may exercise the authority specified in or necessarily to be implied from the Contract, provided, however, that if the Engineer is required, under the terms of his appointment by the Employer, to obtain the specific approval of the Employer before exercising any such authority, particulars of such requirements shall be set out in Part II of these Conditions. Provided further that any requisite approval shall be deemed to have been given by the Employer for any such authority exercised by the Engineer.

(c) Except as expressly stated in the Contract, the Engineer shall have no authority to relieve the Contractor of any of his obligations under the Contract.

Engineer's Representative **2.2** The Engineer's Representative shall be appointed by and be responsible to the Engineer and shall carry out such duties and exercise such authority as may be delegated to him by the Engineer under Sub-Clause 2.3.

Engineer's Authority to Delegate **2.3** The Engineer may from time to time delegate to the Engineer's Representative any of the duties and authorities vested in the Engineer and he may at any time revoke such delegation. Any such delegation or revocation shall be in writing and shall not take effect until a copy thereof has been delivered to the Employer and the Contractor.

Any communication given by the Engineer's Representative to the Contractor in accordance with such delegation shall have the same effect as though it had been given by the Engineer. Provided that:

(a) any failure of the Engineer's Representative to disapprove any work, materials or Plant shall not prejudice the authority of the Engineer to disapprove such work, materials or Plant and to give instructions for the rectification thereof; and

(b) if the Contractor questions any communication of the Engineer's Representative he may refer the matter to the Engineer who shall confirm, reverse or vary the contents of such communication.

Appointment of Assistants **2.4** The Engineer or the Engineer's Representative may appoint any number of persons to assist the Engineer's Representative in the carrying out of his duties under Sub-Clause 2.2. He shall notify to the Contractor the names, duties and scope of authority of such persons. Such assistants shall have no authority to issue any instructions to the Contractor save in so far as such instructions may be necessary to enable them to carry out their duties and to secure their acceptance of materials, Plant or workmanship as being in accordance with the Contract, and any instructions given by any of them for those purposes shall be deemed to have been given by the Engineer's Representative.

Instructions in Writing **2.5** Instructions given by the Engineer shall be in writing, provided that if for any reason the Engineer considers it necessary to give any such instruction orally, the Contractor shall comply with such instruction. Confirmation in writing of such oral instruction given by the Engineer, whether before or after the carrying out of the instruction, shall be deemed to be an instruction within the meaning of this Sub-Clause. Provided further that if the Contractor, within 7 days, confirms in writing to the Engineer any oral instruction of the Engineer and such confirmation is not contradicted in writing within 7 days by the Engineer, it shall be deemed to be an instruction of the Engineer.

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The provisions of this Sub-Clause shall equally apply to instructions given by the Engineer's Representative and any assistants of the Engineer or the Engineer's Representative appointed pursuant to Sub-Clause 2.4.

Engineer to Act Impartially **2.6** Wherever, under the Contract, the Engineer is required to exercise his discretion by:

(a) giving his decision, opinion or consent,

(b) expressing his satisfaction or approval,

(c) determining value, or

(d) otherwise taking action which may affect the rights and obligations of the Employer or the Contractor

he shall exercise such discretion impartially within the terms of the Contract and having regard to all the circumstances. Any such decision, opinion, consent, expression of satisfaction, or approval, determination of value or action may be opened up, reviewed or revised as provided in Clause 67.

Assignment and Subcontracting

Assignment of Contract **3. 1** The Contractor shall not, without the prior consent of the Employer (which consent, notwithstanding the provisions of Sub-Clause 1.5, shall be at the sole discretion of the Employer), assign the Contract or any part thereof, or any benefit or interest therein or thereunder, otherwise than by:

(a) a charge in favour of the Contractor's bankers of any monies due or to become due under the Contract, or

(b) assignment to the Contractor's insurers (in cases where the insurers have discharged the Contractor's loss or liability) of the Contractor's right to obtain relief against any other party liable.

Subcontracting **4. 1** The Contractor shall not subcontract the whole of the Works. Except where otherwise provided by the Contract, the Contractor shall not subcontract any part of the Works without the prior consent of the Engineer. Any such consent shall not relieve the Contractor from any liability or obligation under the Contract and he shall be responsible for the acts, defaults and neglects of any Subcontractor, his agents, servants or workmen as fully as if they were the acts, defaults or neglects of the Contractor, his agents, servants or workmen.

Provided that the Contractor shall not be required to obtain such consent for:

(a) the provision of labour,

(b) the purchase of materials which are in accordance with the standards specified in the Contract, or

(c) the subcontracting of any part of the Works for which the Subcontractor is named in the Contract.

Assignment of Subcontractors' Obligations **4.2** In the event of a Subcontractor having undertaken towards the Contractor in respect of the work executed, or the goods, materials, Plant or services supplied by such Subcontractor, any continuing obligation extending for a period exceeding that of the Defects Liability Period under the Contract, the Contractor shall at any time, after the expiration of such Period, assign to the Employer, at the Employer's request and cost, the benefit of such obligation for the unexpired duration thereof.

Contract Documents

Language/s and Law **5. 1** There is stated in Part II of these Conditions:

(a) the language or languages in which the Contract documents shall be drawn up, and

(b) the country or state the law of which shall apply to the Contract and according to which the Contract shall be construed.

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If the said documents are written in more than one language, the language according to which the Contract shall be construed and interpreted is also stated in Part II of these Conditions, being therein designated the "Ruling Language".

Priority of Contract Documents

5.2 The several documents forming the Contract are to be taken as mutually explanatory of one another, but in case of ambiguities or discrepancies the same shall be explained and adjusted by the Engineer who shall thereupon issue to the Contractor instructions thereon and in such event, unless otherwise provided in the Contract, the priority of the documents forming the Contract shall be as follows:

(1) The Contract Agreement (if completed);

(2) The Letter of Acceptance;

(3) The Tender;

(4) Part II of these Conditions;

(5) Part I of these Conditions; and

(6) Any other document forming part of the Contract.

Custody and Supply of Drawings and Documents

6.1 The Drawings shall remain in the sole custody of the Engineer, but two copies thereof shall be provided to the Contractor free of charge. The Contractor shall make at his own cost any further copies required by him. Unless it is strictly necessary for the purposes of the Contract, the Drawings, Specification and other documents provided by the Employer or the Engineer shall not, without the consent of the Engineer, be used or communicated to a third party by the Contractor. Upon issue of the Defects Liability Certificate, the Contractor shall return to the Engineer all Drawings, Specification and other documents provided under the Contract.

The Contractor shall supply to the Engineer four copies of all Drawings, Specification and other documents submitted by the Contractor and approved by the Engineer in accordance with Clause 7, together with a reproducible copy of any material which cannot be reproduced to an equal standard by photocopying. In addition the Contractor shall supply such further copies of such Drawings, Specification and other documents as the Engineer may request in writing for the use of the Employer, who shall pay the cost thereof.

One Copy of Drawings to be Kept on Site

6.2 One copy of the Drawings, provided to or supplied by the Contractor as aforesaid, shall be kept by the Contractor on the Site and the same shall at all reasonable times be available for inspection and use by the Engineer and by any other person authorised by the Engineer in writing.

Disruption of Progress

6.3 The Contractor shall give notice to the Engineer, with a copy to the Employer, whenever planning or execution of the Works is likely to be delayed or disrupted unless any further drawing or instruction is issued by the Engineer within a reasonable time. The notice shall include details of the drawing or instruction required and of why and by when it is required and of any delay or disruption likely to be suffered if it is late.

Delays and Cost of Delay of Drawings

6.4 If, by reason of any failure or inability of the Engineer to issue, within a time reasonable in all the circumstances, any drawing or instruction for which notice has been given by the Contractor in accordance with Sub-Clause 63, the Contractor suffers delay and/or incurs costs then the Engineer shall, after due consultation with the Employer and the Contractor, determine:

(a) any extension of time to which the Contractor is entitled under Clause 44, and

(b) the amount of such costs, which shall be added to the Contract Price,

and shall notify the Contractor accordingly, with a copy to the Employer.

Failure by Contractor to Submit Drawings

6.5 If the failure or inability of the Engineer to issue any drawings or instructions is caused in whole or in part by the failure of the Contractor to submit Drawings, Specification or other documents which he is required to submit under the Contract, the Engineer shall take such failure by the Contractor into account when making his determination pursuant to Sub-Clause 6.4.

Supplementary Drawings and Instructions **7.1** The Engineer shall have authority to issue to the Contractor, from time to time, such supplementary Drawings and instructions as shall be necessary for the purpose of the proper and adequate execution and completion of the Works and the remedying of any defects therein. The Contractor shall carry out and be bound by the same.

Permanent Works Designed by Contractor **7.2** Where the Contract expressly provides that part of the Permanent Works shall be designed by the Contractor, he shall submit to the Engineer, for approval:

(a) such drawings, specifications, calculations and other information as shall be necessary to satisfy the Engineer as to the suitability and adequacy of that design, and

(b) operation and maintenance manuals together with drawings of the Permanent Works as completed, in sufficient detail to enable the Employer to operate, maintain, dismantle, reassemble and adjust the Permanent Works incorporating that design. The Works shall not be considered to be completed for the purposes of taking over in accordance with Clause 48 until such operation and maintenance manuals, together with drawings on completion, have been submitted to and approved by the Engineer.

Responsibility Unaffected by Approval **7.3** Approval by the Engineer, in accordance with Sub-Clause 7.2, shall not relieve the Contractor of any of his responsibilities under the Contract.

General Obligations

Contractor's General Responsibilities **8.1** The Contractor shall, with due care and diligence, design (to the extent provided for by the Contract), execute and complete the Works and remedy any defects therein in accordance with the provisions of the Contract. The Contractor shall provide all superintendence, labour, materials, Plant, Contractor's Equipment and all other things, whether of a temporary or permanent nature, required in and for such design, execution, completion and remedying of any defects, so far as the necessity for providing the same is specified in or is reasonably to be inferred from the Contract.

The Contractor shall give prompt notice to the Engineer, with a copy to the Employer, of any error, omission, fault or other defect in the design of or Specification for the Works which he discovers when reviewing the Contract or executing the Works.

Site Operations and Methods of Construction **8.2** The Contractor shall take full responsibility for the adequacy, stability and safety of all Site operations and methods of construction. Provided that the Contractor shall not be responsible (except as stated hereunder or as may be otherwise agreed) for the design or specification of Permanent Works, or for the design or specification of any Temporary Works not prepared by the Contractor. Where the Contract expressly provides that part of the Permanent Works shall be designed by the Contractor, he shall be fully responsible for that part of such Works, notwithstanding any approval by the Engineer.

Contract Agreement **9.1** The Contractor shall, if called upon so to do, enter into and execute the Contract Agreement, to be prepared and completed at the cost of the Employer, in the form annexed to these Conditions with such modification as may be necessary.

Performance Security **10.1** If the Contract requires the Contractor to obtain security for his proper performance of the Contract, he shall obtain and provide to the Employer such security within 28 days after the receipt of the Letter of Acceptance, in the sum stated in the Appendix to Tender. When providing such security to the Employer, the Contractor shall notify the Engineer of so doing. Such security shall be in the form annexed to these Conditions or in such other form as may be agreed between the Employer and the Contractor. The institution providing such security shall be subject to the approval of the Employer. The cost of complying with the requirements of this Clause shall be borne by the Contractor, unless the Contract otherwise provides.

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Period of Validity of Performance Security

10.2 The performance security shall be valid until the Contractor has executed and completed the Works and remedied any defects therein in accordance with the Contract. No claim shall be made against such security after the issue of the Defects Liability Certificate in accordance with Sub-Clause 62.1 and such security shall be returned to the Contractor within 14 days of the issue of the said Defects Liability Certificate.

Claims under Performance Security

10.3 Prior to making a claim under the performance security the Employer shall, in every case, notify the Contractor stating the nature of the default in respect of which the claim is to be made.

Inspection of Site

11.1 The Employer shall have made available to the Contractor, before the submission by the Contractor of the Tender, such data on hydrological and sub-surface conditions as have been obtained by or on behalf of the Employer from investigations undertaken relevant to the Works but the Contractor shall be responsible for his own interpretation thereof.

The Contractor shall be deemed to have inspected and examined the Site and its surroundings and information available in connection therewith and to have satisfied himself (so far as is practicable, having regard to considerations of cost and time) before submitting his Tender, as to:

(a) the form and nature thereof, including the sub-surface conditions,

(b) the hydrological and climatic conditions,

(c) the extent and nature of work and materials necessary for the execution and completion of the Works and the remedying of any defects therein, and

(d) the means of access to the Site and the accommodation he may require,

and, in general, shall be deemed to have obtained all necessary information, subject as above mentioned, as to risks, contingencies and all other circumstances which may influence or affect his Tender.

The Contractor shall be deemed to have based his Tender on the data made available by the Employer and on his own inspection and examination, all as aforementioned.

Sufficiency of Tender

12.1 The Contractor shall be deemed to have satisfied himself as to the correctness and sufficiency of the Tender and of the rates and prices stated in the Bill of Quantities, all of which shall, except insofar as it is otherwise provided in the Contract, cover all his obligations under the Contract (including those in respect of the supply of goods, materials, Plant or services or of contingencies for which there is a Provisional Sum) and all matters and things necessary for the proper execution and completion of the Works and the remedying of any defects therein.

Not Foreseeable Physical Obstructions or Conditions

12.2 If, however, during the execution of the Works the Contractor encounters physical obstructions or physical conditions, other than climatic conditions on the Site, which obstructions or conditions were, in his opinion, not foreseeable by an experienced contractor, the Contractor shall forthwith give notice thereof to the Engineer, with a copy to the Employer. On receipt of such notice, the Engineer shall, if in his opinion such obstructions or conditions could not have been reasonably foreseen by an experienced contractor, after due consultation with the Employer and the Contractor, determine:

(a) any extension of time to which the Contractor is entitled under Clause 44, and

(b) the amount of any costs which may have been incurred by the Contractor by reason of such obstructions or conditions having been encountered, which shall be added to the Contract Price,

and shall notify the Contractor accordingly, with a copy to the Employer. Such determination shall take account of any instruction which the Engineer may issue to the Contractor in connection therewith, and any proper and reasonable measures acceptable to the Engineer which the Contractor may take in the absence of specific instructions from the Engineer.

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Work to be in Accordance with Contract **13.1** Unless it is legally or physically impossible, the Contractor shall execute and complete the Works and remedy any defects therein in strict accordance with the Contract to the satisfaction of the Engineer. The Contractor shall comply with and adhere strictly to the Engineer's instructions on any matter, whether mentioned in the Contract or not, touching or concerning the Works. The Contractor shall take instructions only from the Engineer (or his delegate).

Programme to be Submitted **14.1** The Contractor shall, within the time stated in Part II of these Conditions after the date of the Letter of Acceptance, submit to the Engineer for his consent a programme, in such form and detail as the Engineer shall reasonably prescribe, for the execution of the Works. The Contractor shall, whenever required by the Engineer, also provide in writing for his information a general description of the arrangements and methods which the Contractor proposes to adopt for the execution of the Works.

Revised Programme **14.2** If at any time it should appear to the Engineer that the actual progress of the Works does not conform to the programme to which consent has been given under Sub-Clause 14.1, the Contractor shall produce, at the request of the Engineer, a revised programme showing the modifications to such programme necessary to ensure completion of the Works within the Time for Completion.

Cash Flow Estimate to be Submitted **14.3** The Contractor shall, within the time stated in Part II of these Conditions after the date of the Letter of Acceptance, provide to the Engineer for his information a detailed cash flow estimate, in quarterly periods, of all payments to which the Contractor will be entitled under the Contract and the Contractor shall subsequently supply revised cash flow estimates at quarterly intervals, if required to do so by the Engineer.

Contractor not Relieved of Duties or Responsibilities **14.4** The submission to and consent by the Engineer of such programmes or the provision of such general descriptions or cash flow estimates shall not relieve the Contractor of any of his duties or responsibilities under the Contract.

Contractor's Superintendence **15. 1** The Contractor shall provide all necessary superintendence during the execution of the Works and as long thereafter as the Engineer may consider necessary for the proper fulfilling of the Contractor's obligations under the Contract. The Contractor, or a competent and authorised representative approved of by the Engineer, which approval may at any time be withdrawn, shall give his whole time to the superintendence of the Works. Such authorised representative shall receive, on behalf of the Contractor, instructions from the Engineer.

If approval of the representative is withdrawn by the Engineer, the Contractor shall, as soon as is practicable, having regard to the requirement of replacing him as hereinafter mentioned, after receiving notice of such withdrawal, remove the representative from the Works and shall not thereafter employ him again on the Works in any capacity and shall replace him by another representative approved by the Engineer.

Contractor's Employees **16. 1** The Contractor shall provide on the Site in connection with the execution and completion of the Works and the remedying of any defects therein:

(a) only such technical assistants as are skilled and experienced in their respective callings and such foremen and leading hands as are competent to give proper superintendence of the Works, and

(b) such skilled, semi-skilled and unskilled labour as is necessary for the proper and timely fulfilling of the Contractor's obligations under the Contract.

Engineer at Liberty to Object **16.2** The Engineer shall be at liberty to object to and require the Contractor to remove forthwith from the Works any person provided by the Contractor who, in the opinion of the Engineer, misconducts himself, or is incompetent or negligent in the proper performance of his duties, or whose presence on Site is otherwise considered by the Engineer to be undesirable, and such person shall not be again allowed upon the Works without the consent of the Engineer. Any person so removed from the Works shall be replaced as soon as possible.

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Setting-out **17. 1** The Contractor shall be responsible for:

(a) the accurate setting-out of the Works in relation to original points, lines and levels of reference given by the Engineer in writing,

(b) the correctness, subject as above mentioned, of the position, levels, dimensions and alignment of all parts of the Works, and

(c) the provision of all necessary instruments, appliances and labour in connection with the foregoing responsibilities.

If, at any time during the execution of the Works, any error appears in the position, levels, dimensions or alignment of any part of the Works, the Contractor, on being required so to do by the Engineer, shall, at his own cost, rectify such error to the satisfaction of the Engineer, unless such error is based on incorrect data supplied in writing by the Engineer, in which case the Engineer shall determine an addition to the Contract Price in accordance with Clause 52 and shall notify the Contractor accordingly, with a copy to the Employer.

The checking of any setting-out or of any line or level by the Engineer shall not in any way relieve the Contractor of his responsibility for the accuracy thereof and the Contractor shall carefully protect and preserve all bench-marks, sight-rails, pegs and other things used in setting-out the Works.

Boreholes and Exploratory Excavation **18.1** If, at any time during the execution of the Works, the Engineer requires the Contractor to make boreholes or to carry out exploratory excavation, such requirement shall be the subject of an instruction in accordance with Clause 51, unless an item or a Provisional Sum in respect of such work is included in the Bill of Quantities.

Safety, Security and Protection of the Environment **19.1** The Contractor shall, throughout the execution and completion of the Works and the remedying of any defects therein:

(a) have full regard for the safety of all persons entitled to be upon the Site and keep the Site (so far as the same is under his control) and the Works (so far as the same are not completed or occupied by the Employer) in an orderly state appropriate to the avoidance of danger to such persons,

(b) provide and maintain at his own cost all lights, guards, fencing, warning signs and watching, when and where necessary or required by the Engineer or by any duly constituted authority, for the protection of the Works or for the safety and convenience of the public or others, and

(c) take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other causes arising as a consequence of his methods of operation.

Employer's Responsibilities **19.2** If under Clause 31 the Employer shall carry out work on the Site with his own workmen he shall, in respect of such work:

(a) have full regard to the safety of all persons entitled to be upon the Site, and

(b) keep the Site in an orderly state appropriate to the avoidance of danger to such persons.

If under Clause 31 the Employer shall employ other contractors on the Site he shall require them to have the same regard for safety and avoidance of danger.

Care of Works **20.1** The Contractor shall take full responsibility for the care of the Works and materials and Plant for incorporation therein from the Commencement Date until the date of issue of the Taking-Over Certificate for the whole of the Works, when the responsibility for the said care shall pass to the Employer. Provided that:

(a) if the Engineer issues a Taking-Over Certificate for any Section or part of the Permanent Works the Contractor shall cease to be liable for the care of that Section or part from the date of issue of the Taking-Over Certificate, when the responsibility for the care of that Section or part shall pass to the Employer, and

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(b) the Contractor shall take full responsibility for the care of any outstanding Works and materials and Plant for incorporation therein which he undertakes to finish during the Defects Liability Period until such outstanding Works have been completed pursuant to Clause 49.

Responsibility to Rectify Loss or Damage **20.2** If any loss or damage happens to the Works, or any part thereof, or materials or Plant for incorporation therein, during the period for which the Contractor is responsible for the care thereof, from any cause whatsoever, other than the risks defined in Sub-Clause 20.4, the Contractor shall, at his own cost, rectify such loss or damage so that the Permanent Works conform in every respect with the provisions of the Contract to the satisfaction of the Engineer. The Contractor shall also be liable for any loss or damage to the Works occasioned by him in the course of any operations carried out by him for the purpose of complying with his obligations under Clauses 49 and 50.

Loss or Damage Due to Employer's Risks **20.3** In the event of any such loss or damage happening from any of the risks defined in Sub-Clause 20.4, or in combination with other risks, the Contractor shall, if and to the extent required by the Engineer, rectify the loss or damage and the Engineer shall determine an addition to the Contract Price in accordance with Clause 52 and shall notify the Contractor accordingly, with a copy to the Employer. In the case of a combination of risks causing loss or damage any such determination shall take into account the proportional responsibility of the Contractor and the Employer.

Employer's Risks **20.4** The Employer's risks are:

(a) war, hostilities (whether war be declared or not), invasion, act of foreign enemies,

(b) rebellion, revolution, insurrection, or military or usurped power, or civil war,

(c) ionising radiations, or contamination by radio-activity from any nuclear fuel, or from any nuclear waste from the combustion of nuclear fuel, radio-active toxic explosive or other hazardous properties of any explosive nuclear assembly or nuclear component thereof,

(d) pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds,

(e) riot, commotion or disorder, unless solely restricted to employees of the Contractor or of his Subcontractors and arising from the conduct of the Works,

(f) loss or damage due to the use or occupation by the Employer of any Section or part of the Permanent Works, except as may be provided for in the Contract,

(g) loss or damage to the extent that it is due to the design of the Works, other than any part of the design provided by the Contractor or for which the Contractor is responsible, and

(h) any operation of the forces of nature against which an experienced contractor could not reasonably have been expected to take precautions.

Insurance of Works and Contractor's Equipment **21.1** The Contractor shall, without limiting his or the Employer's obligations and responsibilities under Clause 20, insure:

(a) the Works, together with materials and Plant for incorporation therein, to the full replacement cost (the term "cost" in this context shall include profit),

(b) an additional sum of 15 per cent of such replacement cost, or as may be specified in Part II of these Conditions, to cover any additional costs of and incidental to the rectification of loss or damage including professional fees and the cost of demolishing and removing any part of the Works and of removing debris of whatsoever nature, and

(c) the Contractor's Equipment and other things brought onto the Site by the Contractor, for a sum sufficient to provide for their replacement at the Site.

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Scope of Cover **21.2** The insurance in paragraphs (a) and (b) of Sub-Clause 21.1 shall be in the joint names of the Contractor and the Employer and shall cover:

(a) the Employer and the Contractor against all loss or damage from whatsoever cause arising, other than as provided in Sub-Clause 21.4, from the start of work at the Site until the date of issue of the relevant Taking-Over Certificate in respect of the Works or any Section or part thereof as the case may be, and

(b) the Contractor for his liability:

(i) during the Defects Liability Period for loss or damage arising from a cause occurring prior to the commencement of the Defects Liability Period, and

(ii) for loss or damage occasioned by the Contractor in the course of any operations carried out by him for the purpose of complying with his obligations under Clauses 49 and 50.

Responsibility for Amounts not Recovered **21.3** Any amounts not insured or not recovered from the insurers shall be borne by the Employer or the Contractor in accordance with their responsibilities under Clause 20.

Exclusions **21.4** There shall be no obligation for the insurances in Sub-Clause 21.1 to include loss or damage caused by:

(a) war, hostilities (whether war be declared or not), invasion, act of foreign enemies,

(b) rebellion, revolution, insurrection, or military or usurped power, or civil war,

(c) ionising radiations, or contamination by radio-activity from any nuclear fuel, or from any nuclear waste from the combustion of nuclear fuel, radio-active toxic explosive or other hazardous properties of any explosive nuclear assembly or nuclear component thereof, or

(d) pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds.

Damage to Persons and Property **22.1** The Contractor shall, except if and so far as the Contract provides otherwise, indemnify the Employer against all losses and claims in respect of:

(a) death of or injury to any person, or

(b) loss of or damage to any property (other than the Works),

which may arise out of or in consequence of the execution and completion of the Works and the remedying of any defects therein, and against all claims, proceedings, damages, costs, charges and expenses whatsoever in respect thereof or in relation thereto, subject to the exceptions defined in Sub-Clause 22.2.

Exceptions **22.2** The "exceptions" referred to in Sub-Clause 22.1 are:

(a) the permanent use or occupation of land by the Works, or any part thereof,

(b) the right of the Employer to execute the Works, or any part thereof, on, over, under, in or through any land,

(c) damage to property which is the unavoidable result of the execution and completion of the Works, or the remedying of any defects therein, in accordance with the Contract, and

(d) death of or injury to persons or loss of or damage to property resulting from any act or neglect of the Employer, his agents, servants or other contractors, not being employed by the Contractor, or in respect of any claims, proceedings, damages, costs, charges and expenses in respect thereof or in relation thereto or, where the injury or damage was contributed to by the Contractor, his servants or agents, such part of the said injury or damage as may be just and equitable having regard to the extent of the responsibility of the Employer, his servants or agents or other contractors for the injury or damage.

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Indemnity by Employer **22.3** The Employer shall indemnify the Contractor against all claims, proceedings, damages, costs, charges and expenses in respect of the matters referred to in the exceptions defined in Sub-Clause 22.2.

Third Party Insurance (including Employer's Property) **23.1** The Contractor shall, without limiting his or the Employer's obligations and responsibilities under Clause 22, insure, in the joint names of the Contractor and the Employer, against liabilities for death of or injury to any person (other than as provided in Clause 24) or loss of or damage to any property (other than the Works) arising out of the performance of the Contract, other than the exceptions defined in paragraphs (a), (b) and (c) of Sub-Clause 22.2.

Minimum Amount of Insurance **23.2** Such insurance shall be for at least the amount stated in the Appendix to Tender.

Cross Liabilities **23.3** The insurance policy shall include a cross liability clause such that the insurance shall apply to the Contractor and to the Employer as separate insureds.

Accident or Injury to Workmen **24.1** The Employer shall not be liable for or in respect of any damages or compensation payable to any workman or other person in the employment of the Contractor or any Subcontractor, other than death or injury resulting from any act or default of the Employer, his agents or servants. The Contractor shall indemnify and keep indemnified the Employer against all such damages and compensation, other than those for which the Employer is liable as aforesaid, and against all claims, proceedings, damages, costs, charges, and expenses whatsoever in respect thereof or in relation thereto.

Insurance Against Accident to Workmen **24.2** The Contractor shall insure against such liability and shall continue such insurance during the whole of the time that any persons are employed by him on the Works. Provided that, in respect of any persons employed by any Subcontractor, the Contractor's obligations to insure as aforesaid under this Sub-Clause shall be satisfied if the Subcontractor shall have insured against the liability in respect of such persons in such manner that the Employer is indemnified under the policy, but the Contractor shall require such Subcontractor to produce to the Employer, when required, such policy of insurance and the receipt for the payment of the current premium.

Evidence and Terms of Insurances **25.1** The Contractor shall provide evidence to the Employer prior to the start of work at the Site that the insurances required under the Contract have been effected and shall, within 84 days of the Commencement Date, provide the insurance policies to the Employer. When providing such evidence and such policies to the Employer, the Contractor shall notify the Engineer of so doing. Such insurance policies shall be consistent with the general terms agreed prior to the issue of the Letter of Acceptance. The Contractor shall effect all insurances for which he is responsible with insurers and in terms approved by the Employer.

Adequacy of Insurances **25.2** The Contractor shall notify the insurers of changes in the nature, extent or programme for the execution of the Works and ensure the adequacy of the insurances at all times in accordance with the terms of the Contract and shall, when required, produce to the Employer the insurance policies in force and the receipts for payment of the current premiums.

Remedy on Contractor's Failure to Insure **25.3** If the Contractor fails to effect and keep in force any of the insurances required under the Contract, or fails to provide the policies to the Employer within the period required by Sub-Clause 25.1, then and in any such case the Employer may effect and keep in force any such insurances and pay any premium as may be necessary for that purpose and from time to time deduct the amount so paid from any monies due or to become due to the Contractor, or recover the same as a debt due from the Contractor.

Compliance with Policy Conditions **25.4** In the event that the Contractor or the Employer fails to comply with conditions imposed by the insurance policies effected pursuant to the Contract, each shall indemnify the other against all losses and claims arising from such failure.

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Compliance with Statutes, Regulations **26.1** The Contractor shall conform in all respects, including by the giving of all notices and the paying of all fees, with the provisions of:

(a) any National or State Statute, Ordinance, or other Law, or any regulation, or bye-law of any local or other duly constituted authority in relation to the execution and completion of the Works and the remedying of any defects therein, and

(b) the rules and regulations of all public bodies and companies whose property or rights are affected or may be affected in any way by the Works,

and the Contractor shall keep the Employer indemnified against all penalties and liability of every kind for breach of any such provisions. Provided always that the Employer shall be responsible for obtaining any planning, zoning or other similar permission required for the Works to proceed and shall indemnify the Contractor in accordance with Sub-Clause 22.3.

Fossils **27.1** All fossils, coins, articles of value or antiquity and structures and other remains or things of geological or archaeological interest discovered on the Site shall, as between the Employer and the Contractor, be deemed to be the absolute property of the Employer. The Contractor shall take reasonable precautions to prevent his workmen or any other persons from removing or damaging any such article or thing and shall, immediately upon discovery thereof and before removal, acquaint the Engineer of such discovery and carry out the Engineer's instructions for dealing with the same. If, by reason of such instructions, the Contractor suffers delay and/or incurs costs then the Engineer shall, after due consultation with the Employer and the Contractor, determine:

(a) any extension of time to which the Contractor is entitled under Clause 44, and

(b) the amount of such costs, which shall be added to the Contract Price,

and shall notify the Contractor accordingly, with a copy to the Employer.

Patent Rights **28.1** The Contractor shall save harmless and indemnify the Employer from and against all claims and proceedings for or on account of infringement of any patent rights, design trademark or name or other protected rights in respect of any Contractor's Equipment, materials or Plant used for or in connection with or for incorporation in the Works and from and against all damages, costs, charges and expenses whatsoever in respect thereof or in relation thereto, except where such infringement results from compliance with the design or Specification provided by the Engineer.

Royalties **28.2** Except where otherwise stated, the Contractor shall pay all tonnage and other royalties, rent and other payments or compensation, if any, for getting stone, sand, gravel, clay or other materials required for the Works.

Interference with Traffic and Adjoining Properties **29.1** All operations necessary for the execution and completion of the Works and the remedying of any defects therein shall, so far as compliance with the requirements of the Contract permits, be carried on so as not to interfere unnecessarily or improperly with:

(a) the convenience of the public, or

(b) the access to, use and occupation of public or private roads and footpaths to or of properties whether in the possession of the Employer or of any other person.

The Contractor shall save harmless and indemnify the Employer in respect of all claims, proceedings, damages, costs, charges and expenses whatsoever arising out of, or in relation to, any such matters insofar as the Contractor is responsible therefor.

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Avoidance of Damage to Roads **30.1** The Contractor shall use every reasonable means to prevent any of the roads or bridges communicating with or on the routes to the Site from being damaged or injured by any traffic of the Contractor or any of his Subcontractors and, in particular, shall select routes, choose and use vehicles and restrict and distribute loads so that any such extraordinary traffic as will inevitably arise from the moving of materials, Plant, Contractor's Equipment or Temporary Works from and to the Site shall be limited, as far as reasonably possible, and so that no unnecessary damage or injury may be occasioned to such roads and bridges.

Transport of Contractor's Equipment or Temporary Works **30.2** Save insofar as the Contract otherwise provides, the Contractor shall be responsible for and shall pay the cost of strengthening any bridges or altering or improving any road communicating with or on the routes to the Site to facilitate the movement of Contractor's Equipment or Temporary Works and the Contractor shall indemnify and keep indemnified the Employer against all claims for damage to any such road or bridge caused by such movement, including such claims as may be made directly against the Employer, and shall negotiate and pay all claims arising solely out of such damage.

Transport of Materials or Plant **30.3** If, notwithstanding Sub-Clause 30.1, any damage occurs to any bridge or road communicating with or on the routes to the Site arising from the transport of materials or Plant, the Contractor shall notify the Engineer with a copy to the Employer, as soon as he becomes aware of such damage or as soon as he receives any claim from the authority entitled to make such claim. Where under any law or regulation the haulier of such materials or Plant is required to indemnify the road authority against damage the Employer shall not be liable for any costs, charges or expenses in respect thereof or in relation thereto. In other cases the Employer shall negotiate the settlement of and pay all sums due in respect of such claim and shall indemnify the Contractor in respect thereof and in respect of all claims, proceedings, damages, costs, charges and expenses in relation thereto. Provided that if and so far as any such claim or part thereof is, in the opinion of the Engineer, due to any failure on the part of the Contractor to observe and perform his obligations under Sub-Clause 30.1, then the amount, determined by the Engineer, after due consultation with the Employer and the Contractor, to be due to such failure shall be recoverable from the Contractor by the Employer and may be deducted by the Employer from any monies due or to become due to the Contractor and the Engineer shall notify the Contractor accordingly, with a copy to the Employer. Provided also that the Employer shall notify the Contractor whenever a settlement is to be negotiated and, where any amount may be due from the Contractor, the Employer shall consult with the Contractor before such settlement is agreed.

Waterborne Traffic **30.4** Where the nature of the Works is such as to require the use by the Contractor of waterborne transport the foregoing provisions of this Clause shall be construed as though "road" included a lock, dock, sea wall or other structure related to a waterway and "vehicle" included craft, and shall have effect accordingly.

Opportunities for Other Contractors **31.1** The Contractor shall, in accordance with the requirements of the Engineer, afford all reasonable opportunities for carrying out their work to:

(a) any other contractors employed by the Employer and their workmen,

(b) the workmen of the Employer, and

(c) the workmen of any duly constituted authorities who may be employed in the execution on or near the Site of any work not included in the Contract or of any contract which the Employer may enter into in connection with or ancillary to the Works.

Facilities for Other Contractors **31.2** If, however, pursuant to Sub-Clause 31.1 the Contractor shall, on the written request of the Engineer:

(a) make available to any such other contractor, or to the Employer or any such authority, any roads or ways for the maintenance of which the Contractor is responsible,

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(b) permit the use, by any such, of Temporary Works or Contractor's Equipment on the Site, or

(c) provide any other service of whatsoever nature for any such,

the Engineer shall determine an addition to the Contract Price in accordance with Clause 52 and shall notify the Contractor accordingly, with a copy to the Employer.

Contractor to Keep Site Clear **32.1** During the execution of the Works the Contractor shall keep the Site reasonably free from all unnecessary obstruction and shall store or dispose of any Contractor's Equipment and surplus materials and clear away and remove from the Site any wreckage, rubbish or Temporary Works no longer required.

Clearance of Site on Completion **33.1** Upon the issue of any Taking-Over Certificate the Contractor shall clear away and remove from that part of the Site to which such Taking-Over Certificate relates all Contractor's Equipment, surplus material, rubbish and Temporary Works of every kind, and leave such part of the Site and Works clean and in a workmanlike condition to the satisfaction of the Engineer. Provided that the Contractor shall be entitled to retain on Site, until the end of the Defects Liability Period, such materials, Contractor's Equipment and Temporary Works as are required by him for the purpose of fulfilling his obligations during the Defects Liability Period.

Labour

Engagement of Staff and Labour **34.1** The Contractor shall, unless otherwise provided in the Contract, make his own arrangements for the engagement of all staff and labour, local or other, and for their payment, housing, feeding and transport.

Returns of Labour and Contractor's Equipment **35.1** The Contractor shall, if required by the Engineer, deliver to the Engineer a return in detail, in such form and at such intervals as the Engineer may prescribe, showing the staff and the numbers of the several classes of labour from time to time employed by the Contractor on the Site and such information respecting Contractor's Equipment as the Engineer may require.

Materials, Plant and Workmanship

Quality of Materials, Plant and Workmanship **36.1** All materials, Plant and workmanship shall be:

(a) of the respective kinds described in the Contract and in accordance with the Engineer's instructions, and

(b) subjected from time to time to such tests as the Engineer may require at the place of manufacture, fabrication or preparation, or on the Site or at such other place or places as may be specified in the Contract, or at all or any of such places.

The Contractor shall provide such assistance, labour, electricity, fuels, stores, apparatus and instruments as are normally required for examining, measuring and testing any materials or Plant and shall supply samples of materials, before incorporation in the Works, for testing as may be selected and required by the Engineer.

Cost of Samples **36.2** All samples shall be supplied by the Contractor at his own cost if the supply thereof is clearly intended by or provided for in the Contract.

Cost of Tests **36.3** The cost of making any test shall be borne by the Contractor if such test is:

(a) clearly intended by or provided for in the Contract, or

(b) particularised in the Contract (in cases only of a test under load or of a test to ascertain whether the design of any finished or partially finished work is appropriate for the purposes which it was intended to fulfil) in sufficient detail to enable the Contractor to price or allow for the same in his Tender.

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Cost of Tests not Provided for **36.4** If any test required by the Engineer which is:

(a) not so intended by or provided for,

(b) (in the cases above mentioned) not so particularised, or

(c) (though so intended or provided for) required by the Engineer to be carried out at any place other than the Site or the place of manufacture, fabrication or preparation of the materials or Plant tested,

shows the materials, Plant or workmanship not to be in accordance with the provisions of the Contract to the satisfaction of the Engineer, then the cost of such test shall be borne by the Contractor, but in any other case Sub-Clause 36.5 shall apply.

Engineer's Determination where Tests not Provided for **36.5** Where, pursuant to Sub-Clause 36.4, this Sub-Clause applies the Engineer shall, after due consultation with the Employer and the Contractor, determine:

(a) any extension of time to which the Contractor is entitled under Clause 44, and

(b) the amount of such costs, which shall be added to the Contract Price,

and shall notify the Contractor accordingly, with a copy to the Employer.

Inspection of Operations **37.1** The Engineer, and any person authorised by him, shall at all reasonable times have access to the Site and to all workshops and places where materials or Plant are being manufactured, fabricated or prepared for the Works and the Contractor shall afford every facility for and every assistance in obtaining the right to such access.

Inspection and Testing **37.2** The Engineer shall be entitled, during manufacture, fabrication or preparation to inspect and test the materials and Plant to be supplied under the Contract. If materials or Plant are being manufactured, fabricated or prepared in workshops or places other than those of the Contractor, the Contractor shall obtain permission for the Engineer to carry out such inspection and testing in those workshops or places. Such inspection or testing shall not release the Contractor from any obligation under the Contract.

Dates for Inspection and Testing **37.3** The Contractor shall agree with the Engineer on the time and place for the inspection or testing of any materials or Plant as provided in the Contract. The Engineer shall give the Contractor not less than 24 hours notice of his intention to carry out the inspection or to attend the tests. If the Engineer, or his duly authorised representative, does not attend on the date agreed, the Contractor may, unless otherwise instructed by the Engineer, proceed with the tests, which shall be deemed to have been made in the presence of the Engineer. The Contractor shall forthwith forward to the Engineer duly certified copies of the test readings. If the Engineer has not attended the tests, he shall accept the said readings as accurate.

Rejection **37.4** If, at the time and place agreed in accordance with Sub-Clause 37.3, the materials or Plant are not ready for inspection or testing or if, as a result of the inspection or testing referred to in this Clause, the Engineer determines that the materials or Plant are defective or otherwise not in accordance with the Contract, he may reject the materials or Plant and shall notify the Contractor thereof immediately. The notice shall state the Engineer's objections with reasons. The Contractor shall then promptly make good the defect or ensure that rejected materials or Plant comply with the Contract. If the Engineer so requests, the tests of rejected materials or Plant shall be made or repeated under the same terms and conditions. All costs incurred by the Employer by the repetition of the tests shall, after due consultation with the Employer and the Contractor, be determined by the Engineer and shall be recoverable from the Contractor by the Employer and may be deducted from any monies due or to become due to the Contractor and the Engineer shall notify the Contractor accordingly, with a copy to the Employer.

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Independent Inspection **37.5** The Engineer may delegate inspection and testing of materials or Plant to an independent inspector. Any such delegation shall be effected in accordance with Sub-Clause 2.4 and for this purpose such independent inspector shall be considered as an assistant of the Engineer. Notice of such appointment (not being less than 14 days) shall be given by the Engineer to the Contractor.

Examination of Work before Covering up **38.1** No part of the Works shall be covered up or put out of view without the approval of the Engineer and the Contractor shall afford full opportunity for the Engineer to examine and measure any such part of the Works which is about to be covered up or put out of view and to examine foundations before any part of the Works is placed thereon. The Contractor shall give notice to the Engineer whenever any such part of the Works or foundations is or are ready or about to be ready for examination and the Engineer shall, without unreasonable delay, unless he considers it unnecessary and advises the Contractor accordingly, attend for the purpose of examining and measuring such part of the Works or of examining such foundations.

Uncovering and Making Openings **38.2** The Contractor shall uncover any part of the Works or make openings in or through the same as the Engineer may from time to time instruct and shall reinstate and make good such part. If any such part has been covered up or put out of view after compliance with the requirement of Sub-Clause 38.1 and is found to be executed in accordance with the Contract, the Engineer shall, after due consultation with the Employer and the Contractor, determine the amount of the Contractor's costs in respect of such of uncovering, making openings in or through, reinstating and making good the same, which shall be added to the Contract Price, and shall notify the Contractor accordingly, with a copy to the Employer. In any other case all costs shall be borne by the Contractor.

Removal of Improper Work, Materials or Plant **39.1** The Engineer shall have authority to issue instructions from time to time, for:

(a) the removal from the Site, within such time or times as may be specified in the instruction, of any materials or Plant which, in the opinion of the Engineer, are not in accordance with the Contract,

(b) the substitution of proper and suitable materials or Plant, and

(c) the removal and proper re-execution, notwithstanding any previous test thereof or interim payment therefor, of any work which, in respect of

(i) materials, Plant or workmanship, or

(ii) design by the Contractor or for which he is responsible,

is not, in the opinion of the Engineer, in accordance with the Contract.

Default of Contractor in Compliance **39.2** In case of default on the part of the Contractor in carrying out such instruction within the time specified therein or, if none, within a reasonable time, the Employer shall be entitled to employ and pay other persons to carry out the same and all costs consequent thereon or incidental thereto shall, after due consultation with the Employer and the Contractor, be determined by the Engineer and shall be recoverable from the Contractor by the Employer, and may be deducted by the Employer from any monies due or to become due to the Contractor and the Engineer shall notify the Contractor accordingly, with a copy to the Employer.

Suspension

Suspension of Work **40. 1** The Contractor shall, on the instructions of the Engineer, suspend the progress of the Works or any part thereof for such time and in such manner as the Engineer may consider necessary and shall, during such suspension, properly protect and secure the Works or such part thereof so far as is necessary in the opinion of the Engineer. Unless such suspension is:

(a) otherwise provided for in the Contract,

(b) necessary by reason of some default of or breach of contract by the Contractor or for which he is responsible,

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(c) necessary by reason of climatic conditions on the Site, or

(d) necessary for the proper execution of the Works or for the safety of the Works or any part thereof (save to the extent that such necessity arises from any act or default by the Engineer or the Employer or from any of the risks defined in Sub-Clause 20.4),

Sub-Clause 40.2 shall apply.

Engineer's Determination following Suspension **40.2** Where, pursuant to Sub-Clause 40.1, this Sub-Clause applies the Engineer shall, after due consultation with the Employer and the Contractor, determine:

(a) any extension of time to which the Contractor is entitled under Clause 44, and

(b) the amount, which shall be added to the Contract Price, in respect of the cost incurred by the Contractor by reason of such suspension,

and shall notify the Contractor accordingly, with a copy to the Employer.

Suspension lasting more than 84 Days **40.3** If the progress of the Works or any part thereof is suspended on the instructions of the Engineer and if permission to resume work is not given by the Engineer within a period of 84 days from the date of suspension then, unless such suspension is within paragraph (a), (b), (c) or (d) of Sub-Clause 40.1, the Contractor may give notice to the Engineer requiring permission, within 28 days from the receipt thereof, to proceed with the Works or that part thereof in regard to which progress is suspended. If, within the said time, such permission is not granted, the Contractor may, but is not bound to, elect to treat the suspension, where it affects part only of the Works, as an omission of such part under Clause 51 by giving a further notice to the Engineer to that effect, or, where it affects the whole of the Works, treat the suspension as an event of default by the Employer and terminate his employment under the Contract in accordance with the provisions of Sub-Clause 69.1, whereupon the provisions of Sub-Clauses 69.2 and 69.3 shall apply.

Commencement and Delays

Commencement of Works **41.1** The Contractor shall commence the Works as soon as is reasonably possible after the receipt by him of a notice to this effect from the Engineer, which notice shall be issued within the time stated in the Appendix to Tender after the date of the Letter of Acceptance. Thereafter, the Contractor shall proceed with the Works with due expedition and without delay.

Possession of Site and Access Thereto **42.1** Save insofar as the Contract may prescribe:

(a) the extent of portions of the Site of which the Contractor is to be given possession from time to time,

(b) the order in which such portions shall be made available to the Contractor,

and, subject to any requirement in the Contract as to the order in which the Works shall be executed, the Employer will, with the Engineer's notice to commence the Works, give to the Contractor possession of

(c) so much of the Site, and

(d) such access as, in accordance with the Contract, is to be provided by the Employer as may be required to enable the Contractor to commence and proceed with the execution of the Works in accordance with the programme referred to in Clause 14, if any, and otherwise in accordance with such reasonable proposals as the Contractor shall, by notice to the Engineer with a copy to the Employer, make. The Employer will, from time to time as the Works proceed, give to the Contractor possession of such further portions of the Site as may be required to enable the Contractor to proceed with the execution of the Works with due dispatch in accordance with such programme or proposals, as the case may be.

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Failure to Give Possession **42.2** If the Contractor suffers delay and/or incurs costs from failure on the part of the Employer to give possession in accordance with the terms of Sub-Clause 42. 1, the Engineer shall, after due consultation with the Employer and the Contractor, determine:

(a) any extension of time to which the Contractor is entitled under Clause 44, and

(b) the amount of such costs, which shall be added to the Contract Price,

and shall notify the Contractor accordingly, with a copy to the Employer.

Rights of Way and Facilities **42.3** The Contractor shall bear all costs and charges for special or temporary rights of way required by him in connection with access to the Site. The Contractor shall also provide at his own cost any additional facilities outside the Site required by him for the purposes of the Works.

Time for Completion **43.1** The whole of the Works and, if applicable, any Section required to be completed within a particular time as stated in the Appendix to Tender, shall be completed, in accordance with the provisions of Clause 48, within the time stated in the Appendix to Tender for the whole of the Works or the Section (as the case may be), calculated from the Commencement Date, or such extended time as may be allowed under Clause 44.

Extension of Time for Completion **44.1** In the event of:

(a) the amount or nature of extra or additional work,

(b) any cause of delay referred to in these Conditions,

(c) exceptionally adverse climatic conditions,

(d) any delay, impediment or prevention by the Employer, or

(e) other special circumstances which may occur, other than through a default of or breach of contract by the Contractor or for which he is responsible,

being such as fairly to entitle the Contractor to an extension of the Time for Completion of the Works, or any Section or part thereof, the Engineer shall, after due consultation with the Employer and the Contractor, determine the amount of such extension and shall notify the Contractor accordingly, with a copy to the Employer.

Contractor to Provide Notification and Detailed Particulars **44.2** Provided that the Engineer is not bound to make any determination unless the Contractor has

(a) within 28 days after such event has first arisen notified the Engineer with a copy to the Employer, and

(b) within 28 days, or such other reasonable time as may be agreed by the Engineer, after such notification submitted to the Engineer detailed particulars of any extension of time to which he may consider himself entitled in order that such submission may be investigated at the time.

Interim Determination of Extension **44.3** Provided also that where an event has a continuing effect such that it is not practicable for the Contractor to submit detailed particulars within the period of 28 days referred to in Sub-Clause 44.2(b), he shall nevertheless be entitled to an extension of time provided that he has submitted to the Engineer interim particulars at intervals of not more than 28 days and final particulars within 28 days of the end of the effects resulting from the event. On receipt of such interim particulars, the Engineer shall, without undue delay, make an interim determination of extension of time and, on receipt of the final particulars, the Engineer shall review all the circumstances and shall determine an overall extension of time in regard to the event. In both such cases the Engineer shall make his determination after due consultation with the Employer and the Contractor and shall notify the Contractor of the determination, with a copy to the Employer. No final review shall result in a decrease of any extension of time already determined by the Engineer.

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Restriction on Working Hours **45.1** Subject to any provision to the contrary contained in the Contract, none of the Works shall, save as hereinafter provided, be carried on during the night or on locally recognised days of rest without the consent of the Engineer, except when work is unavoidable or absolutely necessary for the saving of life or property or for the safety of the Works, in which case the Contractor shall immediately advise the Engineer. Provided that the provisions of this Clause shall not be applicable in the case of any work which it is customary to carry out by multiple shifts.

Rate of Progress **46.1** If for any reason, which does not entitle the Contractor to an extension of time, the rate of progress of the Works or any Section is at any time, in the opinion of the Engineer, too slow to comply with the Time for Completion, the Engineer shall so notify the Contractor who shall thereupon take such steps as are necessary, subject to the consent of the Engineer, to expedite progress so as to comply with the Time for Completion. The Contractor shall not be entitled to any additional payment for taking such steps. If, as a result of any notice given by the Engineer under this Clause, the Contractor considers that it is necessary to do any work at night or on locally recognised days of rest, he shall be entitled to seek the consent of the Engineer so to do. Provided that if any steps, taken by the Contractor in meeting his obligations under this Clause, involve the Employer in additional supervision costs, such costs shall, after due consultation with the Employer and the Contractor, be determined by the Engineer and shall be recoverable from the Contractor by the Employer, and may be deducted by the Employer from any monies due or to become due to the Contractor and the Engineer shall notify the Contractor accordingly, with a copy to the Employer.

Liquidated Damages for Delay **47.1** If the Contractor fails to comply with the Time for Completion in accordance with Clause 48, for the whole of the Works or, if applicable, any Section within the relevant time prescribed by Clause 43, then the Contractor shall pay to the Employer the relevant sum stated in the Appendix to Tender as liquidated damages for such default and not as a penalty (which sum shall be the only monies due from the Contractor for such default) for every day or part of a day which shall elapse between the relevant Time for Completion and the date stated in a Taking-Over Certificate of the whole of the Works or the relevant Section, subject to the applicable limit stated in the Appendix to Tender. The Employer may, without prejudice to any other method of recovery, deduct the amount of such damages from any monies due or to become due to the Contractor. The payment or deduction of such damages shall not relieve the Contractor from his obligation to complete the Works, or from any other of his obligations and liabilities under the Contract.

Reduction of Liquidated Damages **47.2** If, before the Time for Completion of the whole of the Works or, if applicable, any Section, a Taking-Over Certificate has been issued for any part of the Works or of a Section, the liquidated damages for delay in completion of the remainder of the Works or of that Section shall, for any period of delay after the date stated in such Taking-Over Certificate, and in the absence of alternative provisions in the Contract, be reduced in the proportion which the value of the part so certified bears to the value of the whole of the Works or Section, as applicable. The provisions of this Sub-Clause shall only apply to the rate of liquidated damages and shall not affect the limit thereof.

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Taking-Over Certificate **48.1** When the whole of the Works have been substantially completed and have satisfactorily passed any Tests on Completion prescribed by the Contract, the Contractor may give a notice to that effect to the Engineer, with a copy to the Employer, accompanied by a written undertaking to finish with due expedition any outstanding work during the Defects Liability Period. Such notice and undertaking shall be deemed to be a request by the Contractor for the Engineer to issue a Taking-Over Certificate in respect of the Works. The Engineer shall, within 21 days of the date of delivery of such notice, either issue to the Contractor, with a copy to the Employer, a Taking-Over Certificate, stating the date on which, in his opinion, the Works were substantially completed in accordance with the Contract, or give instructions in writing to the Contractor specifying all the work which, in the Engineer's opinion, is required to be done by the Contractor before the issue of such Certificate. The Engineer shall also notify the Contractor of any defects in the Works affecting substantial completion that may appear after such instructions and before completion of the Works specified therein. The Contractor shall be entitled to receive such Taking-Over Certificate within 21 days of completion, to the satisfaction of the Engineer, of the Works so specified and remedying any defects so notified.

Taking Over of Sections or Parts **48.2** Similarly, in accordance with the procedure set out in Sub-Clause 48.1, the Contractor may request and the Engineer shall issue a Taking-Over Certificate in respect of:

(a) any Section in respect of which a separate Time for Completion is provided in the Appendix to Tender,

(b) any substantial part of the Permanent Works which has been both completed to the satisfaction of the Engineer and, otherwise than as provided for in the Contract, occupied or used by the Employer, or

(c) any part of the Permanent Works which the Employer has elected to occupy or use prior to completion (where such prior occupation or use is not provided for in the Contract or has not been agreed by the Contractor as a temporary measure).

Substantial Completion of Parts **48.3** If any part of the Permanent Works has been substantially completed and has satisfactorily passed any Tests on Completion prescribed by the Contract, the Engineer may issue a Taking-Over Certificate in respect of that part of the Permanent Works before completion of the whole of the Works and, upon the issue of such Certificate, the Contractor shall be deemed to have undertaken to complete with due expedition any outstanding work in that part of the Permanent Works during the Defects Liability Period.

Surfaces Requiring Reinstatement **48.4** Provided that a Taking-Over Certificate given in respect of any Section or part of the Permanent Works before completion of the whole of the Works shall not be deemed to certify completion of any ground or surfaces requiring reinstatement, unless such Taking-Over Certificate shall expressly so state.

Defects Liability

Defects Liability Period **49.1** In these Conditions the expression "Defects Liability Period" shall mean the defects liability period named in the Appendix to Tender, calculated from:

(a) the date of completion of the Works certified by the Engineer in accordance with Clause 48, or

(b) in the event of more than one certificate having been issued by the Engineer under Clause 48, the respective dates so certified,

and in relation to the Defects Liability Period the expression "the Works" shall be construed accordingly.

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Completion of Outstanding Work and Remedying Defects **49.2** To the intent that the Works shall, at or as soon as practicable after the expiration of the Defects Liability Period, be delivered to the Employer in the condition required by the Contract, fair wear and tear excepted, to the satisfaction of the Engineer, the Contractor shall:

(a) complete the work, if any, outstanding on the date stated in the Taking-Over Certificate as soon as practicable after such date, and

(b) execute all such work of amendment, reconstruction, and remedying defects, shrinkages or other faults as the Engineer may, during the Defects Liability Period or within 14 days after its expiration, as a result of an inspection made by or on behalf of the Engineer prior to its expiration, instruct the Contractor to execute.

Cost of Remedying Defects **49.3** All work referred to in Sub-Clause 49.2 (b) shall be executed by the Contractor at his own cost if the necessity thereof is, in the opinion of the Engineer, due to:

(a) the use of materials, Plant or workmanship not in accordance with the Contract,

(b) where the Contractor is responsible for the design of part of the Permanent Works, any fault in such design, or

(c) the neglect or failure on the part of the Contractor to comply with any obligation, expressed or implied, on the Contractor's part under the Contract.

If, in the opinion of the Engineer, such necessity is due to any other cause, he shall determine an addition to the Contract Price in accordance with Clause 52 and shall notify the Contractor accordingly, with a copy to the Employer.

Contractor's Failure to Carry Out Instructions **49.4** In case of default on the part of the Contractor in carrying out such instruction within a reasonable time, the Employer shall be entitled to employ and pay other persons to carry out the same and if such work is work which, in the opinion of the Engineer, the Contractor was liable to do at his own cost under the Contract, then all costs consequent thereon or incidental thereto shall, after due consultation with the Employer and the Contractor, be determined by the Engineer and shall be recoverable from the Contractor by the Employer, and may be deducted by the Employer from any monies due or to become due to the Contractor and the Engineer shall notify the Contractor accordingly, with a copy to the Employer.

Contractor to Search **50.1** If any defect, shrinkage or other fault in the Works appears at any time prior to the end of the Defects Liability Period, the Engineer may instruct the Contractor, with copy to the Employer, to search under the directions of the Engineer for the cause thereof. Unless such defect, shrinkage or other fault is one for which the Contractor is liable under the Contract, the Engineer shall, after due consultation with the Employer and the Contractor, determine the amount in respect of the costs of such search incurred by the Contractor, which shall be added to the Contract Price and shall notify the Contractor accordingly, with a copy to the Employer. If such defect, shrinkage or other fault is one for which the Contractor is liable, the cost of the work carried out in searching as aforesaid shall be borne by the Contractor and he shall in such case remedy such defect, shrinkage or other fault at his own cost in accordance with the provisions of Clause 49.

Alterations, Additions and Omissions

Variations **51.1** The Engineer shall make any variation of the form, quality or quantity of the Works or any part thereof that may, in his opinion, be necessary and for that purpose, or if for any other reason it shall, in his opinion, be appropriate, he shall have the authority to instruct the Contractor to do and the Contractor shall do any of the following:

(a) increase or decrease the quantity of any work included in the Contract,

(b) omit any such work (but not if the omitted work is to be carried out by the Employer or by another contractor),

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(c) change the character or quality or kind of any such work,

(d) change the levels, lines, position and dimensions of any part of the Works,

(e) execute additional work of any kind necessary for the completion of the Works, or

(f) change any specified sequence or timing of construction of any part of the Works.

No such variation shall in any way vitiate or invalidate the Contract, but the effect, if any, of all such variations shall be valued in accordance with Clause 52. Provided that where the issue of an instruction to vary the Works is necessitated by some default of or breach of contract by the Contractor or for which he is responsible, any additional cost attributable to such default shall be borne by the Contractor.

Instructions for Variations **51.2** The Contractor shall not make any such variation without an instruction of the Engineer. Provided that no instruction shall be required for increase or decrease in the quantity of any work where such increase or decrease is not the result of an instruction given under this Clause, but is the result of the quantities exceeding or being less than those stated in the Bill of Quantities.

Valuation of Variations **52.1** All variations referred to in Clause 51 and any additions to the Contract Price which are required to be determined in accordance with Clause 52 (for the purposes of this Clause referred to as "varied work"), shall be valued at the rates and prices set out in the Contract if, in the opinion of the Engineer, the same shall be applicable. If the Contract does not contain any rates or prices applicable to the varied work, the rates and prices in the Contract shall be used as the basis for valuation so far as may be reasonable, failing which, after due consultation by the Engineer with the Employer and the Contractor, suitable rates or prices shall be agreed upon between the Engineer and the Contractor. In the event of disagreement the Engineer shall fix such rates or prices as are, in his opinion, appropriate and shall notify the Contractor accordingly, with a copy to the Employer. Until such time as rates or prices are agreed or fixed, the Engineer shall determine provisional rates or prices to enable on-account payments to be included in certificates issued in accordance with Clause 60.

Power of Engineer to Fix Rates **52.2** Provided that if the nature or amount of any varied work relative to the nature or amount of the whole of the Works or to any part thereof, is such that, in the opinion of the Engineer, the rate or price contained in the Contract for any item of the Works is, by reason of such varied work, rendered inappropriate or inapplicable, then, after due consultation by the Engineer with the Employer and the Contractor, a suitable rate or price shall be agreed upon between the Engineer and the Contractor. In the event of disagreement the Engineer shall fix such other rate or price as is, in his opinion, appropriate and shall notify the Contractor accordingly, with a copy to the Employer. Until such time as rates or prices are agreed or fixed, the Engineer shall determine provisional rates or prices to enable on-account payments to be included in certificates issued in accordance with Clause 60.

Provided also that no varied work instructed to be done by the Engineer pursuant to Clause 51 shall be valued under Sub-Clause 52.1 or under this Sub-Clause unless, within 14 days of the date of such instruction and, other than in the case of omitted work, before the commencement of the varied work, notice shall have been given either:

(a) by the Contractor to the Engineer of his intention to claim extra payment or a varied rate or price, or

(b) by the Engineer to the Contractor of his intention to vary a rate or price.

Variations Exceeding 15 per cent **52.3** If, on the issue of the Taking-Over Certificate for the whole of the Works, it is found that as a result of:

(a) all varied work valued under Sub-Clauses 52.1 and 52.2, and

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(b) all adjustments upon measurement of the estimated quantities set out in the Bill of Quantities, excluding Provisional Sums, dayworks and adjustments of price made under Clause 70,

but not from any other cause, there have been additions to or deductions from the Contract Price which taken together are in excess of 15 per cent of the "Effective Contract Price" (which for the purposes of this Sub-Clause shall mean the Contract Price, excluding Provisional Sums and allowance for dayworks, if any) then and in such event (subject to any action already taken under any other Sub-Clause of this Clause), after due consultation by the Engineer with the Employer and the Contractor, there shall be added to or deducted from the Contract Price such further sum as may be agreed between the Contractor and the Engineer or, failing agreement, determined by the Engineer having regard to the Contractor's Site and general overhead costs of the Contract. The Engineer shall notify the Contractor of any determination made under this Sub-Clause, with a copy to the Employer. Such sum shall be based only on the amount by which such additions or deductions shall be in excess of 15 per cent of the Effective Contract Price.

Daywork **52.4** The Engineer may, if in his opinion it is necessary or desirable, issue an instruction that any varied work shall be executed on a daywork basis. The Contractor shall then be paid for such varied work under the terms set out in the daywork schedule included in the Contract and at the rates and prices affixed thereto by him in the Tender.

The Contractor shall furnish to the Engineer such receipts or other vouchers as may be necessary to prove the amounts paid and, before ordering materials, shall submit to the Engineer quotations for the same for his approval.

In respect of such of the Works executed on a daywork basis, the Contractor shall, during the continuance of such work, deliver each day to the Engineer an exact list in duplicate of the names, occupation and time of all workmen employed on such work and a statement, also in duplicate, showing the description and quantity of all materials and Contractor's Equipment used thereon or therefor other than Contractor's Equipment which is included in the percentage addition in accordance with such daywork schedule. One copy of each list and statement will, if correct, or when agreed, be signed by the Engineer and returned to the Contractor.

At the end of each month the Contractor shall deliver to the Engineer a priced statement of the labour, materials and Contractor's Equipment, except as aforesaid, used and the Contractor shall not be entitled to any payment unless such lists and statements have been fully and punctually rendered. Provided always that if the Engineer considers that for any reason the sending of such lists or statements by the Contractor, in accordance with the foregoing provision, was impracticable he shall nevertheless be entitled to authorise payment for such work, either as daywork, on being satisfied as to the time employed and the labour, materials and Contractor's Equipment used on such work, or at such value therefor as shall, in his opinion, be fair and reasonable.

Procedure for Claims

Notice of Claims **53.1** Notwithstanding any other provision of the Contract, if the Contractor intends to claim any additional payment pursuant to any Clause of these Conditions or otherwise, he shall give notice of his intention to the Engineer, with a copy to the Employer, within 28 days after the event giving rise to the claim has first arisen.

Contemporary Records **53.2** Upon the happening of the event referred to in Sub-Clause 53.1, the Contractor shall keep such contemporary records as may reasonably be necessary to support any claim he may subsequently wish to make. Without necessarily admitting the Employer's liability, the Engineer shall, on receipt of a notice under Sub-Clause 53.1, inspect such contemporary records and may instruct the Contractor to keep

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any further contemporary records as are reasonable and may be material to the claim of which notice has been given. The Contractor shall permit the Engineer to inspect all records kept pursuant to this Sub-Clause and shall supply him with copies thereof as and when the Engineer so instructs.

Substantiation of Claims **53.3** Within 28 days, or such other reasonable time as may be agreed by the Engineer, of giving notice under Sub-Clause 53.1, the Contractor shall send to the Engineer an account giving detailed particulars of the amount claimed and the grounds upon which the claim is based. Where the event giving rise to the claim has a continuing effect, such account shall be considered to be an interim account and the Contractor shall, at such intervals as the Engineer may reasonably require, send further interim accounts giving the accumulated amount of the claim and any further grounds upon which it is based. In cases where interim accounts are sent to the Engineer, the Contractor shall send a final account within 28 days of the end of the effects resulting from the event. The Contractor shall, if required by the Engineer so to do, copy to the Employer all accounts sent to the Engineer pursuant to this Sub-Clause.

Failure to Comply **53.4** If the Contractor fails to comply with any of the provisions of this Clause in respect of any claim which he seeks to make, his entitlement to payment in respect thereof shall not exceed such amount as the Engineer or any arbitrator or arbitrators appointed pursuant to Sub-Clause 67.3 assessing the claim considers to be verified by contemporary records (whether or not such records were brought to the Engineer's notice as required under Sub-Clauses 53.2 and 53.3).

Payment of Claims **53.5** The Contractor shall be entitled to have included in any interim payment certified by the Engineer pursuant to Clause 60 such amount in respect of any claim as the Engineer, after due consultation with the Employer and the Contractor, may consider due to the Contractor provided that the Contractor has supplied sufficient particulars to enable the Engineer to determine the amount due. If such particulars are insufficient to substantiate the whole of the claim, the Contractor shall be entitled to payment in respect of such part of the claim as such particulars may substantiate to the satisfaction of the Engineer. The Engineer shall notify the Contractor of any determination made under this Sub-Clause, with a copy to the Employer.

Contractor's Equipment, Temporary Works and Materials

Contractor's Equipment, Temporary Works and Materials; Exclusive Use for the Works **54.1** All Contractor's Equipment, Temporary Works and materials provided by the Contractor shall, when brought on to the Site, be deemed to be exclusively intended for the execution of the Works and the Contractor shall not remove the same or any part thereof, except for the purpose of moving it from one part of the Site to another, without the consent of the Engineer. Provided that consent shall not be required for vehicles engaged in transporting any staff, labour, Contractor's Equipment, Temporary Works, Plant or materials to or from the Site.

Employer not Liable for Damage **54.2** The Employer shall not at any time be liable, save as mentioned in Clauses 20 and 65, for the loss of or damage to any of the said Contractor's Equipment, Temporary Works or materials.

Customs Clearance **54.3** The Employer will use his best endeavours in assisting the Contractor, where required, in obtaining clearance through the Customs of Contractor's Equipment, materials and other things required for the Works.

Re-export of Contractor's Equipment **54.4** In respect of any Contractor's Equipment which the Contractor has imported for the purposes of the Works, the Employer will use his best endeavours to assist the Contractor, where required, in procuring any necessary Government consent to the re-export of such Contractor's Equipment by the Contractor upon the removal thereof pursuant to the terms of the Contract.

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Conditions of Hire of Contractor's Equipment **54.5** With a view to securing, in the event of termination under Clause 63, the continued availability, for the purpose of executing the Works, of any hired Contractor's Equipment, the Contractor shall not bring on to the Site any hired Contractor's Equipment unless there is an agreement for the hire thereof (which agreement shall be deemed not to include an agreement for hire purchase) which contains a provision that the owner thereof will, on request in writing made by the Employer within 7 days after the date on which any termination has become effective, and on the Employer undertaking to pay all hire charges in respect thereof from such date, hire such Contractor's Equipment to the Employer on the same terms in all respects as the same was hired to the Contractor save that the Employer shall be entitled to permit the use thereof by any other contractor employed by him for the purpose of executing and completing the Works and remedying any defects therein, under the terms of the said Clause 63.

Costs for the Purpose of Clause 63 **54.6** In the event of the Employer entering into any agreement for the hire of Contractor's Equipment pursuant to Sub-Clause 54.5, all sums properly paid by the Employer under the provisions of any such agreement and all costs incurred by him (including stamp duties) in entering into such agreement shall be deemed, for the purpose of Clause 63, to be part of the cost of executing and completing the Works and the remedying of any defects therein.

Incorporation of Clause in Subcontracts **54.7** The Contractor shall, where entering into any subcontract for the execution of any part of the Works, incorporate in such subcontract (by reference or otherwise) the provisions of this Clause in relation to Contractor's Equipment, Temporary Works or materials brought on to the Site by the Subcontractor.

Approval of Materials not Implied **54.8** The operation of this Clause shall not be deemed to imply any approval by the Engineer of the materials or other matters referred to therein nor shall it prevent the rejection of any such materials at any time by the Engineer.

Measurement

Quantities **55.1** The quantities set out in the Bill of Quantities are the estimated quantities for the Works, and they are not to be taken as the actual and correct quantities of the Works to be executed by the Contractor in fulfilment of his obligations under the Contract.

Works to be Measured **56.1** The Engineer shall, except as otherwise stated, ascertain and determine by measurement the value of the Works in accordance with the Contract and the Contractor shall be paid that value in accordance with Clause 60. The Engineer shall, when he requires any part of the Works to be measured, give reasonable notice to the Contractor's authorised agent, who shall:

(a) forthwith attend or send a qualified representative to assist the Engineer in making such measurement, and

(b) supply all particulars required by the Engineer.

Should the Contractor not attend, or neglect or omit to send such representative, then the measurement made by the Engineer or approved by him shall be taken to be the correct measurement of such part of the Works. For the purpose of measuring such Permanent Works as are to be measured by records and drawings, the Engineer shall prepare records and drawings as the work proceeds and the Contractor, as and when called upon to do so in writing, shall, within 14 days, attend to examine and agree such records and drawings with the Engineer and shall sign the same when so agreed. If the Contractor does not attend to examine and agree such records and drawings, they shall be taken to be correct. If, after examination of such records and drawings, the Contractor does not agree the same or does not sign the same as agreed, they shall nevertheless be taken to be correct, unless the Contractor, within 14 days of such examination, lodges with the Engineer notice of the respects in which such records and drawings are claimed by him to be incorrect. On receipt of such notice, the Engineer shall review the records and drawings and either confirm or vary them.

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Method of Measurement **57.1** The Works shall be measured net, notwithstanding any general or local custom, except where otherwise provided for in the Contract.

Breakdown of Lump Sum Items **57.2** For the purposes of statements submitted in accordance with Sub-Clause 60.1, the Contractor shall submit to the Engineer, within 28 days after the receipt of the Letter of Acceptance, a breakdown for each of the lump sum items contained in the Tender. Such breakdowns shall be subject to the approval of the Engineer.

Provisional Sums

Definition of "Provisional Sum" **58.1** "Provisional Sum" means a sum included in the Contract and so designated in the Bill of Quantities for the execution of any part of the Works or for the supply of goods, materials, Plant or services, or for contingencies, which sum may be used, in whole or in part, or not at all, on the instructions of the Engineer. The Contractor shall be entitled to only such amounts in respect of the work, supply or contingencies to which such Provisional Sums relate as the Engineer shall determine in accordance with this Clause. The Engineer shall notify the Contractor of any determination made under this Sub-Clause, with a copy to the Employer.

Use of Provisional Sums **58.2** In respect of every Provisional Sum the Engineer shall have authority to issue instructions for the execution of work or for the supply of goods, materials, Plant or services by:

(a) the Contractor, in which case the Contractor shall be entitled to an amount equal to the value thereof determined in accordance with Clause 52, and

(b) a nominated Subcontractor, as hereinafter defined, in which case the sum to be paid to the Contractor therefor shall be determined and paid in accordance with Sub-Clause 59.4.

Production of Vouchers **58.3** The Contractor shall produce to the Engineer all quotations, invoices, vouchers and accounts or receipts in connection with expenditure in respect of Provisional Sums, except where work is valued in accordance with rates or prices set out in the Tender.

Nominated Subcontractors

Definition of "Nominated Subcontractors" **59.1** All specialists, merchants, tradesmen and others executing any work or supplying any goods, materials, Plant or services for which Provisional Sums are included in the Contract, who may have been or be nominated or selected or approved by the Employer or the Engineer, and all persons to whom by virtue of the provisions of the Contract the Contractor is required to subcontract shall, in the execution of such work or the supply of such goods, materials, Plant or services, be deemed to be subcontractors to the Contractor and are referred to in this Contract as "nominated Subcontractors".

Nominated Subcontractors; Objection to Nomination **59.2** The Contractor shall not be required by the Employer or the Engineer, or be deemed to be under any obligation, to employ any nominated Subcontractor against whom the Contractor may raise reasonable objection, or who declines to enter into a subcontract with the Contractor containing provisions:

(a) that in respect of the work, goods, materials, Plant or services the subject of the subcontract, the nominated Subcontractor will undertake towards the Contractor such obligations and liabilities as will enable the Contractor to discharge his own obligations and liabilities towards the Employer under the terms of the Contract and will save harmless and indemnify the Contractor from and against the same and from all claims, proceedings, damages, costs, charges and expenses whatsoever arising out of or in connection therewith, or arising out of or in connection with any failure to perform such obligations or to fulfil such liabilities, and

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(b) that the nominated Subcontractor will save harmless and indemnify the Contractor from and against any negligence by the nominated Subcontractor, his agents, workmen and servants and from and against any misuse by him or them of any Temporary Works provided by the Contractor for the purposes of the Contract and from all claims as aforesaid.

Design Requirements to be Expressly Stated

59.3 If in connection with any Provisional Sum the services to be provided include any matter of design or specification of any part of the Permanent Works or of any Plant to be incorporated therein, such requirement shall be expressly stated in the Contract and shall be included in any nominated Subcontract. The nominated Subcontract shall specify that the nominated Subcontractor providing such services will save harmless and indemnify the Contractor from and against the same and from all claims, proceedings, damages, costs, charges and expenses whatsoever arising out of or in connection with any failure to perform such obligations or to fulfil such liabilities.

Payments to Nominated Subcontractors

59.4 For all work executed or goods, materials, Plant or services supplied by any nominated Subcontractor, the Contractor shall be entitled to:

(a) the actual price paid or due to be paid by the Contractor, on the instructions of the Engineer, and in accordance with the subcontract;

(b) in respect of labour supplied by the Contractor, the sum, if any, entered in the Bill of Quantities or, if instructed by the Engineer pursuant to paragraph (a) of Sub-Clause 58.2, as may be determined in accordance with Clause 52; and

(c) in respect of all other charges and profit, a sum being a percentage rate of the actual price paid or due to be paid calculated, where provision has been made in the Bill of Quantities for a rate to be set against the relevant Provisional Sum, at the rate inserted by the Contractor against that item or, where no such provision has been made, at the rate inserted by the Contractor in the Appendix to Tender and repeated where provision for such is made in a special item provided in the Bill of Quantities for such purpose.

Certification of Payments to Nominated Subcontractors

59.5 Before issuing, under Clause 60, any certificate, which includes any payment in respect of work done or goods, materials, Plant or services supplied by any nominated Subcontractor, the Engineer shall be entitled to demand from the Contractor reasonable proof that all payments, less retentions, included in previous certificates in respect of the work or goods, materials, Plant or services of such nominated Subcontractor have been paid or discharged by the Contractor. If the Contractor fails to supply such proof then, unless the Contractor:

(a) satisfies the Engineer in writing that he has reasonable cause for withholding or refusing to make such payments, and

(b) produces to the Engineer reasonable proof that he has so informed such nominated Subcontractor in writing,

the Employer shall be entitled to pay to such nominated Subcontractor direct, upon the certificate of the Engineer, all payments, less retentions, provided for in the nominated Subcontract, which the Contractor has failed to make to such nominated Subcontractor and to deduct by way of set-off the amount so paid by the Employer from any sums due or to become due from the Employer to the Contractor.

Provided that, where the Engineer has certified and the Employer has paid direct as aforesaid, the Engineer shall, in issuing any further certificate in favour of the Contractor, deduct from the amount thereof the amount so paid, direct as aforesaid, but shall not withhold or delay the issue of the certificate itself when due to be issued under the terms of the Contract.

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Certificates and Payment

Monthly Statements **60.1** The Contractor shall submit to the Engineer after the end of each month six copies, each signed by the Contractor's representative approved by the Engineer in accordance with Sub-Clause 15.1, of a statement, in such form as the Engineer may from time to time prescribe, showing the amounts to which the Contractor considers himself to be entitled up to the end of the month in respect of:

(a) the value of the Permanent Works executed,

(b) any other items in the Bill of Quantities including those for Contractor's Equipment, Temporary Works, dayworks and the like,

(c) the percentage of the invoice value of listed materials, all as stated in the Appendix to Tender, and Plant delivered by the Contractor on the Site for incorporation in the Permanent Works but not incorporated in such Works,

(d) adjustments under Clause 70, and

(e) any other sum to which the Contractor may be entitled under the Contract or otherwise.

Monthly Payments **60.2** The Engineer shall, within 28 days of receiving such statement, deliver to the Employer an Interim Payment Certificate stating the amount of payment to the Contractor which the Engineer considers due and payable in respect of such statement, subject:

(a) firstly, to the retention of the amount calculated by applying the Percentage of Retention stated in the Appendix to Tender, to the amount to which the Contractor is entitled under paragraphs (a), (b), (c) and (e) of Sub-Clause 60.1 until the amount so retained reaches the Limit of Retention Money stated in the Appendix to Tender, and

(b) secondly, to the deduction, other than pursuant to Clause 47, of any sums which may have become due and payable by the Contractor to the Employer.

Provided that the Engineer shall not be bound to certify any payment under this Sub-Clause if the net amount thereof, after all retentions and deductions, would be less than the Minimum Amount of Interim Payment Certificates stated in the Appendix to Tender.

Notwithstanding the terms of this Clause or any other Clause of the Contract no amount will be certified by the Engineer for payment until the performance security, if required under the Contract, has been provided by the Contractor and approved by the Employer.

Payment of Retention Money **60.3** (a) Upon the issue of the Taking-Over Certificate with respect to the whole of the Works, one half of the Retention Money, or upon the issue of a Taking-Over Certificate with respect to a Section or part of the Permanent Works only such proportion thereof as the Engineer determines having regard to the relative value of such Section or part of the Permanent Works, shall be certified by the Engineer for payment to the Contractor.

(b) Upon the expiration of the Defects Liability Period for the Works the other half of the Retention Money shall be certified by the Engineer for payment to the Contractor. Provided that, in the event of different Defects Liability Periods having become applicable to different Sections or parts of the Permanent Works pursuant to Clause 48, the expression "expiration of the Defects Liability Period" shall, for the purposes of this Sub-Clause, be deemed to mean the expiration of the latest of such periods. Provided also that if at such time there shall remain to be executed by the Contractor any work instructed, pursuant to Clauses 49 and 50, in respect of the Works, the Engineer shall be entitled to withhold certification until completion of such work of so much of the balance of the Retention Money as shall, in the opinion of the Engineer, represent the cost of the work remaining to be executed.

Correction of Certificates **60.4** The Engineer may by any Interim Payment Certificate make any correction or modification in any previous Interim Payment Certificate which shall have been issued by him and shall have authority, if any work is not being carried out to his satisfaction, to omit or reduce the value of such work in any Interim Payment Certificate.

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Statement at Completion **60.5** Not later than 84 days after the issue of the Taking-Over Certificate in respect of the whole of the Works, the Contractor shall submit to the Engineer six copies of a Statement at Completion with supporting documents showing in detail, in the form approved by the Engineer:

(a) the final value of all work done in accordance with the Contract up to the date stated in such Taking-Over Certificate,

(b) any further sums which the Contractor considers to be due, and

(c) an estimate of amounts which the Contractor considers will become due to him under the Contract.

The estimated amounts shall be shown separately in such Statement at Completion. The Engineer shall certify payment in accordance with Sub-Clause 60.2.

Final Statement **60.6** Not later than 56 days after the issue of the Defects Liability Certificate pursuant to Sub-Clause 62.1, the Contractor shall submit to the Engineer for consideration six copies of a draft final statement with supporting documents showing in detail, in the form approved by the Engineer:

(a) the value of all work done in accordance with the Contract, and

(b) any further sums which the Contractor considers to be due to him under the Contract or otherwise.

If the Engineer disagrees with or cannot verify any part of the draft final statement, the Contractor shall submit such further information as the Engineer may reasonably require and shall make such changes in the draft as may be agreed between them. The Contractor shall then prepare and submit to the Engineer the final statement as agreed (for the purposes of these Conditions referred to as the "Final Statement").

If, following discussions between the Engineer and the Contractor and any changes to the draft final statement which may be agreed between them, it becomes evident that a dispute exists, the Engineer shall deliver to the Employer an Interim Payment Certificate for those parts of the draft final statement, if any, which are not in dispute. The dispute may then be settled in accordance with Clause 67.

Discharge **60.7** Upon submission of the Final Statement, the Contractor shall give to the Employer, with a copy to the Engineer, a written discharge confirming that the total of the Final Statement represents full and final settlement of all monies due to the Contractor arising out of or in respect of the Contract. Provided that such discharge shall become effective only after payment due under the Final Payment Certificate issued pursuant to Sub-Clause 60.8 has been made and the performance security referred to in Sub-Clause 10.1, if any, has been returned to the Contractor.

Final Payment Certificate **60.8** Within 28 days after receipt of the Final Statement, and the written discharge, the Engineer shall issue to the Employer (with a copy to the Contractor) a Final Payment Certificate stating:

(a) the amount which, in the opinion of the Engineer, is finally due under the Contract or otherwise, and

(b) after giving credit to the Employer for all amounts previously paid by the Employer and for all sums to which the Employer is entitled other than under Clause 47, the balance, if any, due from the Employer to the Contractor or from the Contractor to the Employer as the case may be.

Cessation of Employer's Liability **60.9** The Employer shall not be liable to the Contractor for any matter or thing arising out of or in connection with the Contract or execution of the Works, unless the Contractor shall have included a claim in respect thereof in his Final Statement and (except in respect of matters or things arising after the issue of the Taking-Over Certificate in respect of the whole of the Works) in the Statement at Completion referred to in Sub-Clause 60.5.

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Time for Payment **60.10** The amount due to the Contractor under any Interim Payment Certificate issued by the Engineer pursuant to this Clause, or to any other term of the Contract, shall, subject to Clause 47, be paid by the Employer to the Contractor within 28 days after such Interim Payment Certificate has been delivered to the Employer, or, in the case of the Final Payment Certificate referred to in Sub-Clause 60.8, within 56 days, after such Final Payment Certificate has been delivered to the Employer. In the event of the failure of the Employer to make payment within the times stated, the Employer shall pay to the Contractor interest at the rate stated in the Appendix to Tender upon all sums unpaid from the date by which the same should have been paid. The provisions of this Sub-Clause are without prejudice to the Contractor's entitlement under Clause 69 or otherwise.

Approval only by Defects Liability Certificate **61.1** Only the Defects Liability Certificate, referred to in Clause 62, shall be deemed to constitute approval of the Works.

Defects Liability Certificate **62.1** The Contract shall not be considered as completed until a Defects Liability Certificate shall have been signed by the Engineer and delivered to the Employer, with a copy to the Contractor, stating the date on which the Contractor shall have completed his obligations to execute and complete the Works and remedy any defects therein to the Engineer's satisfaction. The Defects Liability Certificate shall be given by the Engineer within 28 days after the expiration of the Defects Liability Period, or, if different defects liability periods shall become applicable to different Sections or parts of the Permanent Works, the expiration of the latest such period, or as soon thereafter as any works instructed, pursuant to Clauses 49 and 50, have been completed to the satisfaction of the Engineer. Provided that the issue of the Defects Liability Certificate shall not be a condition precedent to payment to the Contractor of the second portion of the Retention Money in accordance with the conditions set out in Sub-Clause 60.3.

Unfulfilled Obligations **62.2** Notwithstanding the issue of the Defects Liability Certificate the Contractor and the Employer shall remain liable for the fulfilment of any obligation incurred under the provisions of the Contract prior to the issue of the Defects Liability Certificate which remains unperformed at the time such Defects Liability Certificate is issued and, for the purposes of determining the nature and extent of any such obligation, the Contract shall be deemed to remain in force between the parties to the Contract.

Remedies

Default of Contractor **63.1** If the Contractor is deemed by law unable to pay his debts as they fall due, or enters into voluntary or involuntary bankruptcy, liquidation or dissolution (other than a voluntary liquidation for the purposes of amalgamation or reconstruction), or becomes insolvent, or makes an arrangement with, or assignment in favour of, his creditors, or agrees to carry out the Contract under a committee of inspection of his creditors, or if a receiver, administrator, trustee or liquidator is appointed over any substantial part of his assets, or if, under any law or regulation relating to reorganization, arrangement or readjustment of debts, proceedings are commenced against the Contractor or resolutions passed in connection with dissolution or liquidation or if any steps are taken to enforce any security interest over a substantial part of the assets of the Contractor, or if any act is done or event occurs with respect to the Contractor or his assets which, under any applicable law has a substantially similar effect to any of the foregoing acts or events, or if the Contractor has contravened Sub-Clause 3.1, or has an execution levied on his goods, or if the Engineer certifies to the Employer, with a copy to the Contractor, that, in his opinion, the Contractor:

(a) has repudiated the Contract,

(b) without reasonable excuse has failed

(i) to commence the Works in accordance with Sub-Clause 41.1, or

(ii) to proceed with the Works, or any Section thereof, within 28 days after receiving notice pursuant to Sub-Clause 46.1,

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(c) has failed to comply with a notice issued pursuant to Sub-Clause 37.4 or an instruction issued pursuant to Sub-Clause 39.1 within 28 days after having received it,

(d) despite previous warning from the Engineer, in writing, is otherwise persistently or flagrantly neglecting to comply with any of his obligations under the Contract, or

(e) has contravened Sub-Clause 4.1,

then the Employer may, after giving 14 days' notice to the Contractor, enter upon the Site and the Works and terminate the employment of the Contractor without thereby releasing the Contractor from any of his obligations or liabilities under the Contract, or affecting the rights and authorities conferred on the Employer or the Engineer by the Contract, and may himself complete the Works or may employ any other contractor to complete the Works. The Employer or such other contractor may use for such completion so much of the Contractor's Equipment, Temporary Works and materials as he or they may think proper.

Valuation at Date of Termination **63.2** The Engineer shall, as soon as may be practicable after any such entry and termination by the Employer, fix and determine ex parte, or by or after reference to the parties or after such investigation or enquiries as he may think fit to make or institute, and shall certify:

a) what amount (if any) had, at the time of such entry and termination, been reasonably earned by or would reasonably accrue to the Contractor in respect of work then actually done by him under the Contract, and

(b) the value of any of the said unused or partially used materials, any Contractor's Equipment and any Temporary Works.

Payment after Termination **63.3** If the Employer terminates the Contractor's employment under this Clause, he shall not be liable to pay to the Contractor any further amount (including damages) in respect of the Contract until the expiration of the Defects Liability Period and there after until the costs of execution, completion and remedying of any defects, damages for delay in completion (if any) and all other expenses incurred by the Employer have been ascertained and the amount thereof certified by the Engineer. The Contractor shall then be entitled to receive only such sum (if any) as the Engineer may certify would have been payable to him upon due completion by him after deducting the said amount. If such amount exceeds the sum which would have been payable to the Contractor on due completion by him, then the Contractor shall, upon demand, pay to the Employer the amount of such excess and it shall be deemed a debt due by the Contractor to the Employer and shall be recoverable accordingly.

Assignment of Benefit of Agreement **63.4** Unless prohibited by law, the Contractor shall, if so instructed by the Engineer within 14 days of such entry and termination referred to in Sub-Clause 63.1, assign to the Employer the benefit of any agreement for the supply of any goods or materials or services and/or for the execution of any work for the purposes of the Contract, which the Contractor may have entered into.

Urgent Remedial Work **64.1** If, by reason of any accident, or failure, or other event occurring to, in, or in connection with the Works, or any part thereof, either during the execution of the Works, or during the Defects Liability Period, any remedial or other work is, in the opinion of the Engineer, urgently necessary for the safety of the Works and the Contractor is unable or unwilling at once to do such work, the Employer shall be entitled to employ and pay other persons to carry out such work as the Engineer may consider necessary. If the work or repair so done by the Employer is work which, in the opinion of the Engineer, the Contractor was liable to do at his own cost under the Contract, then all costs consequent thereon or incidental thereto shall, after due consultation with the Employer and the Contractor, be determined by the Engineer and shall be recoverable from the Contractor by the Employer, and may be deducted by the Employer from any monies due or to become due to the Contractor and the Engineer shall notify the Contractor accordingly, with a copy to the Employer. Provided that the Engineer shall, as soon after the occurrence of any such emergency as may be reasonably practicable, notify the Contractor thereof.

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Special Risks

No Liability for Special Risks **65.1** The Contractor shall be under no liability whatsoever in consequence of any of the special risks referred to in Sub-Clause 65.2, whether by way of indemnity or otherwise, for or in respect of:

(a) destruction of or damage to the Works, save to work condemned under the provisions of Clause 39 prior to the occurrence of any of the said special risks,

(b) destruction of or damage to property, whether of the Employer or third parties, or

(c) injury or loss of life.

Special Risks **65.2** The special risks are:

(a) the risks defined under paragraphs (a), (c), (d) and (e) of Sub-Clause 20.4, and

(b) the risks defined under paragraph (b) of Sub-Clause 20.4 insofar as these relate to the country in which the Works are to be executed.

Damage to Works by Special Risks **65.3** If the Works or any materials or Plant on or near or in transit to the Site, or any of the Contractor's Equipment, sustain destruction or damage by reason of any of the said special risks, the Contractor shall be entitled to payment in accordance with the Contract for any Permanent Works duly executed and for any materials or Plant so destroyed or damaged and, so far as may be required by the Engineer or as may be necessary for the completion of the Works, to payment for:

(a) rectifying any such destruction or damage to the Works, and

(b) replacing or rectifying such materials or Contractor's Equipment,

and the Engineer shall determine an addition to the Contract Price in accordance with Clause 52 (which shall in the case of the cost of replacement of Contractor's Equipment include the fair market value thereof as determined by the Engineer) and shall notify the Contractor accordingly, with a copy to the Employer.

Projectile, Missile **65.4** Destruction, damage, injury or loss of life caused by the explosion or impact, whenever and wherever occurring, of any mine, bomb, shell, grenade, or other projectile, missile, munition, or explosive of war, shall be deemed to be a consequence of the said special risks.

Increased Costs arising from Special Risks **65.5** Save to the extent that the Contractor is entitled to payment under any other provision of the Contract, the Employer shall repay to the Contractor any costs of the execution of the Works (other than such as may be attributable to the cost of reconstructing work condemned under the provisions of Clause 39 prior to the occurrence of any special risk) which are howsoever attributable to or consequent on or the result of or in any way whatsoever connected with the said special risks, subject however to the provisions in this Clause hereinafter contained in regard to outbreak of war, but the Contractor shall, as soon as any such cost comes to his knowledge, forthwith notify the Engineer thereof. The Engineer shall, after due consultation with the Employer and the Contractor, determine the amount of the Contractor's costs in respect thereof which shall be added to the Contract Price and shall notify the Contractor accordingly, with a copy to the Employer.

Outbreak of War **65.6** If, during the currency of the Contract, there is an outbreak of war, whether war is declared or not, in any part of the world which, whether financially or otherwise, materially affects the execution of the Works, the Contractor shall, unless and until the Contract is terminated under the provisions of this Clause, continue to use his best endeavours to complete the execution of the Works. Provided that the Employer shall be entitled, at any time after such outbreak of war, to terminate the Contract by giving notice to the Contractor and, upon such notice being given, the Contract shall, except as to the rights of the parties under this Clause and Clause 67, terminate, but without prejudice to the rights of either party in respect of any antecedent breach thereof.

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Removal of Contractor's Equipment on Termination

65.7 If the Contract is terminated under the provisions of Sub-Clause 65.6, the Contractor shall, with all reasonable dispatch, remove from the Site all Contractor's Equipment and shall give similar facilities to his Subcontractors to do so.

Payment if Contract Terminated

65.8 If the Contract is terminated as aforesaid, the Contractor shall be paid by the Employer, insofar as such amounts or items have not already been covered by payments on account made to the Contractor, for all work executed prior to the date of termination at the rates and prices provided in the Contract and in addition:

(a) the amounts payable in respect of any preliminary items referred to in the Bill of Quantities, so far as the work or service comprised therein has been carried out or performed, and a proper proportion of any such items which have been partially carried out or performed;

(b) the cost of materials, Plant or goods reasonably ordered for the Works which have been delivered to the Contractor or of which the Contractor is legally liable to accept delivery, such materials, Plant or goods becoming the property of the Employer upon such payments being made by him;

(c) a sum being the amount of any expenditure reasonably incurred by the Contractor in the expectation of completing the whole of the Works insofar as such expenditure has not been covered by any other payments referred to in this Sub-Clause;

(d) any additional sum payable under the provisions of Sub-Clauses 65.3 and 65.5;

(e) such proportion of the cost as may be reasonable, taking into account payments made or to be made for work executed, of removal of Contractor's Equipment under Sub-Clause 65.7 and, if required by the Contractor, return thereof to the Contractor's main plant yard in his country of registration or to other destination, at no greater cost; and

(f) the reasonable cost of repatriation of all the Contractor's staff and workmen employed on or in connection with the Works at the time of such termination.

Provided that against any payment due from the Employer under this Sub-Clause, the Employer shall be entitled to be credited with any outstanding balances due from the Contractor for advances in respect of Contractor's Equipment, materials and Plant and any other sums which, at the date of termination, were recoverable by the Employer from the Contractor under the terms of the Contract. Any sums payable under this Sub-Clause shall, after due consultation with the Employer and the Contractor, be determined by the Engineer who shall notify the Contractor accordingly, with a copy to the Employer.

Release from Performance

Payment in Event of Release from Performance

66.1 If any circumstance outside the control of both parties arises after the issue of the Letter of Acceptance which renders it impossible or unlawful for either or both parties to fulfil his or their contractual obligations, or under the law governing the Contract the parties are released from further performance, then the parties shall be discharged from the Contract, except as to their rights under this Clause and Clause 67 and without prejudice to the rights of either party in respect of any antecedent breach of the Contract, and the sum payable by the Employer to the Contractor in respect of the work executed shall be the same as that which would have been payable under Clause 65 if the Contract had been terminated under the provisions of Clause 65.

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Settlement of Disputes

Engineer's Decision **67.1** If a dispute of any kind whatsoever arises between the Employer and the Contractor in connection with, or arising out of, the Contract or the execution of the Works, whether during the execution of the Works or after their completion and whether before or after repudiation or other termination of the Contract, including any dispute as to any opinion, instruction, determination, certificate or valuation of the Engineer, the matter in dispute shall, in the first place, be referred in writing to the Engineer, with a copy to the other party. Such reference shall state that it is made pursuant to this Clause. No later than the eighty-fourth day after the day on which he received such reference the Engineer shall give notice of his decision to the Employer and the Contractor. Such decision shall state that it is made pursuant to this Clause.

Unless the Contract has already been repudiated or terminated, the Contractor shall, in every case, continue to proceed with the Works with all due diligence and the Contractor and the Employer shall give effect forthwith to every such decision of the Engineer unless and until the same shall be revised, as hereinafter provided, in an amicable settlement or an arbitral award.

If either the Employer or the Contractor be dissatisfied with any decision of the Engineer, or if the Engineer fails to give notice of his decision on or before the eighty-fourth day after the day on which he received the reference, then either the Employer or the Contractor may, on or before the seventieth day after the day on which he received notice of such decision, or on or before the seventieth day after the day on which the said period of 84 days expired, as the case may be, give notice to the other party, with a copy for information to the Engineer, of his intention to commence arbitration, as hereinafter provided, as to the matter in dispute. Such notice shall establish the entitlement of the party giving the same to commence arbitration, as hereinafter provided, as to such dispute and, subject to Sub-Clause 67.4, no arbitration in respect thereof may be commenced unless such notice is given.

If the Engineer has given notice of his decision as to a matter in dispute to the Employer and the Contractor and no notice of intention to commence arbitration as to such dispute has been given by either the Employer or the Contractor on or before the seventieth day after the day on which the parties received notice as to such decision from the Engineer, the said decision shall become final and binding upon the Employer and the Contractor.

Amicable Settlement **67.2** Where notice of intention to commence arbitration as to a dispute has been given in accordance with Sub-Clause 67.1, the parties shall attempt to settle such dispute amicably before the commencement of arbitration. Provided that, unless the parties otherwise agree, arbitration may be commenced on or after the fifty-sixth day after the day on which notice of intention to commence arbitration of such dispute was given, even if no attempt at amicable settlement thereof has been made.

Arbitration **67.3** Any dispute in respect of which:

(a) the decision, if any, of the Engineer has not become final and binding pursuant to Sub-Clause 67.1, and

(b) amicable settlement has not been reached within the period stated in Sub-Clause 67.2,

shall be finally settled, unless otherwise specified in the Contract, under the Rules of Conciliation and Arbitration of the International Chamber of Commerce by one or more arbitrators appointed under such Rules. The said arbitrator/s shall have full power to open up, review and revise any decision, opinion, instruction, determination, certificate or valuation of the Engineer related to the dispute.

Neither party shall be limited in the proceedings before such arbitrator/s to the evidence or arguments put before the Engineer for the purpose of obtaining his said decision pursuant to Sub-Clause 67.1. No such decision shall disqualify the Engineer from being called as a witness and giving evidence before the arbitrator/s on any matter whatsoever relevant to the dispute.

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Arbitration may be commenced prior to or after completion of the Works, provided that the obligations of the Employer, the Engineer and the Contractor shall not be altered by reason of the arbitration being conducted during the progress of the Works.

Failure to Comply with Engineer's Decision **67.4** Where neither the Employer nor the Contractor has given notice of intention to commence arbitration of a dispute within the period stated in Sub-Clause 67.1 and the related decision has become final and binding, either party may, if the other party fails to comply with such decision, and without prejudice to any other rights it may have, refer the failure to arbitration in accordance with Sub-Clause 67.3. The provisions of Sub-Clauses 67.1 and 67.2 shall not apply to any such reference.

Notices

Notice to Contractor **68.1** All certificates, notices or instructions to be given to the Contractor by the Employer or the Engineer under the terms of the Contract shall be sent by post, cable, telex or facsimile transmission to or left at the Contractor's principal place of business or such other address as the Contractor shall nominate for that purpose.

Notice to Employer and Engineer **68.2** Any notice to be given to the Employer or to the Engineer under the terms of the Contract shall be sent by post, cable, telex or facsimile transmission to or left at the respective addresses nominated for that purpose in Part II of these Conditions.

Change of Address **68.3** Either party may change a nominated address to another address in the country where the Works are being executed by prior notice to the other party, with a copy to the Engineer, and the Engineer may do so by prior notice to both parties.

Default of Employer

Default of Employer **69.1** In the event of the Employer:

(a) failing to pay to the Contractor the amount due under any certificate of the Engineer within 28 days after the expiry of the time stated in Sub-Clause 60.10 within which payment is to be made, subject to any deduction that the Employer is entitled to make under the Contract,

(b) interfering with or obstructing or refusing any required approval to the issue of any such certificate,

(c) becoming bankrupt or, being a company, going into liquidation, other than for the purpose of a scheme of reconstruction or amalgamation, or

(d) giving notice to the Contractor that for unforeseen economic reasons it is impossible for him to continue to meet his contractual obligations,

the Contractor shall be entitled to terminate his employment under the Contract by giving notice to the Employer, with a copy to the Engineer. Such termination shall take effect 14 days after the giving of the notice.

Removal of Contractor's Equipment **69.2** Upon the expiry of the 14 days' notice referred to in Sub-Clause 69.1, the Contractor shall, notwithstanding the provisions of Sub-Clause 54.1, with all reasonable despatch, remove from the Site all Contractor's Equipment brought by him thereon.

Payment on Termination **69.3** In the event of such termination the Employer shall be under the same obligations to the Contractor in regard to payment as if the Contract had been terminated under the provisions of Clause 65, but, in addition to the payments specified in Sub-Clause 65.8, the Employer shall pay to the Contractor the amount of any loss or damage to the Contractor arising out of or in connection with or by consequence of such termination.

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Contractor's Entitlement to Suspend Work

69.4 Without prejudice to the Contractor's entitlement to interest under Sub-Clause 60.10 and to terminate under Sub-Clause 69.1, the Contractor may, if the Employer fails to pay the Contractor the amount due under any certificate of the Engineer within 28 days after the expiry of the time stated in Sub-Clause 60.10 within which payment is to be made, subject to any deduction that the Employer is entitled to make under the Contract, after giving 28 days' prior notice to the Employer, with a copy to the Engineer, suspend work or reduce the rate of work.

If the Contractor suspends work or reduces the rate of work in accordance with the provisions of this Sub-Clause and thereby suffers delay or incurs costs the Engineer shall, after due consultation with the Employer and the Contractor, determine:

(a) any extension of time to which the Contractor is entitled under Clause 44, and

(b) the amount of such costs, which shall be added to the Contract Price,

and shall notify the Contractor accordingly, with a copy to the Employer.

Resumption of Work

69.5 Where the Contractor suspends work or reduces the rate of work. having given notice in accordance with Sub-Clause 69.4, and the Employer subsequently pays the amount due, including interest pursuant to Sub-Clause 60.10, the Contractor's entitlement under Sub-Clause 69.1 shall, if notice of termination has not been given, lapse and the Contractor shall resume normal working as soon as is reasonably possible.

Changes in Cost and Legislation

Increase or Decrease of Cost

70.1 There shall be added to or deducted from the Contract Price such sums in respect of rise or fall in the cost of labour and/or materials or any other matters affecting the cost of the execution of the Works as may be determined in accordance with Part II of these Conditions.

Subsequent Legislation

70.2 If, after the date 28 days prior to the latest date for submission of tenders for the Contract there occur in the country in which the Works are being or are to be executed changes to any National or State Statute, Ordinance, Decree or other Law or any regulation or bye-law of any local or other duly constituted authority, or the introduction of any such State Statute, Ordinance, Decree, Law, regulation or bye-law which causes additional or reduced cost to the Contractor, other than under Sub-Clause 70.1, in the execution of the Contract, such additional or reduced cost shall, after due consultation with the Employer and the Contractor, be determined by the Engineer and shall be added to or deducted from the Contract Price- and the Engineer shall notify the Contractor accordingly, with a copy to the Employer.

Currency and Rates of Exchange

Currency Restrictions

71.1 If, after the date 28 days prior to the latest date for submission of tenders for the Contract, the Government or authorised agency of the Government of the country in which the Works are being or are to be executed imposes currency restrictions and/or transfer of currency restrictions in relation to the currency or currencies in which the Contract Price is to be paid, the Employer shall reimburse any loss or damage to the Contractor arising therefrom, without prejudice to the right of the Contractor to exercise any other rights or remedies to which he is entitled in such event.

Rates of Exchange

72.1 Where the Contract provides for payment in whole or in part to be made to the Contractor in foreign currency or currencies, such payment shall not be subject to variations in the rate or rates of exchange between such specified foreign currency or currencies and the currency of the country in which the Works are to be executed.

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Currency Proportions **72.2** Where the Employer has required the Tender to be expressed in a single currency but with payment to be made in more than one currency and the Contractor has stated the proportions or amounts of other currency or currencies in which he requires payment to be made, the rate or rates of exchange applicable for calculating the payment of such proportions or amounts shall, unless otherwise stated in Part II of these Conditions, be those prevailing, as determined by the Central Bank of the country in which the Works are to be executed, on the date 28 days prior to the latest date for the submission of tenders for the Contract, as has been notified to the Contractor by the Employer prior to the submission of tenders or as provided for in the Tender.

Currencies of Payment for Provisional Sums **72.3** Where the Contract provides for payment in more than one currency, the proportions or amounts to be paid in foreign currencies in respect of Provisional Sums shall be determined in accordance with the principles set forth in Sub-Clauses 72.1 and 72.2 as and when these sums are utilised in whole or in part in accordance with the provisions of Clauses 58 and 59.

REFERENCE TO PART II

As stated in the Foreword at the beginning of this document, the FIDIC Conditions comprise both Part I and Part II. Certain Clauses, namely Sub-Clauses 1.1 paragraph (a) (i) and (iv), 5.1 (part), 14.1, 14.3, 68.2 and 70.1 must include additional wording in Part II for the Conditions to be complete. Other Clauses may require additional wording to supplement Part I or to cover particular circumstances or the type of work (dredging is an example).

Part II Conditions of Particular Application with guidelines for the preparation of Part II are printed in a separately bound document.

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PART I – GENERAL CONDITIONS

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TENDER

NAME OF CONTRACT: * _____

_____

TO:* _____

_____

Gentlemen,

1. Having examined the Conditions of Contract, Specification, Drawings, and Bill of Quantities and Addenda Nos _____ for the execution of the above-named Works, we, the undersigned, offer to execute and complete such Works and remedy any defects therein in conformity with the Conditions of Contract, Specification, Drawings, Bill of Quantities and Addenda for the sum of

_____

_____

(_____)
or such other sum as may be ascertained in accordance with the said Conditions.

2. We acknowledge that the Appendix forms part of our Tender.

3. We undertake, if our Tender is accepted, to commence the Works as soon as is reasonably possible after the receipt of the Engineer's notice to commence, and to complete the whole of the Works comprised in the Contract within the time stated in the Appendix to Tender.

4. We agree to abide by this Tender for the period of *____ days from the date fixed for receiving the same and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

5. Unless and until a formal Agreement is prepared and executed this Tender, together with your written acceptance thereof, shall constitute a binding contract between us.

6. We understand that you are not bound to accept the lowest or any tender you may receive.

Dated this _____ day of _____ 19 ____

Signature _____ in the capacity of _____

duly authorised to sign tenders for and on behalf of _____

_____

(IN BLOCK CAPITALS)

Address _____

_____

Witness _____

Address _____

_____

Occupation _____

(Note: All details marked * shall be inserted before issue of Tender documents.)

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Appendix

	Sub-Clause	
Amount of security (if any) _____	10.1	_____ per cent of the Contract Price
Minimum amount of third party insurance	23.2	_____ per occurrence, with the number of occurrences unlimited
Time for issue of notice to commence	41.1	_____ days
Time for Completion _____	43.1	_____ days
Amount of liquidated damages _____	47.1	_____ per day
Limit of liquidated damages _____	47.1	_____
Defects Liability Period _____	49.1	_____ days
Percentage for adjustment of Provisional Sums	59.4(c)	_____ per cent
Percentage of invoice value of listed materials and Plant _____	60.1 (c)	_____ per cent
Percentage of Retention _____	60.2	_____ per cent
Limit of Retention Money _____	60.2	_____
Minimum Amount of Interim Payment Certificates _____	60.2	_____
Rate of interest upon unpaid sums _____	60.10	_____ per cent per annum

Initials of Signatory of Tender _____ _____

(Notes: All details in the list above, other than percentage figure against Sub-Clause 59.4, shall be inserted before issue of Tender documents. Where a number of days is to be inserted, it is desirable, for consistency with the Conditions, that the number should be a multiple of seven.

Additional entries are necessary where provision is included in the Contract for:

(a) completion of Sections (Sub-Clauses 43.1 and 48.2(a))

(b) liquidated damages for Sections (Sub-Clause 47.1)

(c) a bonus (Sub-Clause 47.3 – Part II)

(d) payment for materials on Site (Sub-Clause 60.1(c))

(e) payment in foreign currencies (Clause 60 – Part II)

(f) an advance payment (Clause 60 – Part II)

(g) adjustments to the Contract Price on account of Specified Materials (Sub-Clause 70.1 – Part II)

(h) rates of exchange (Sub-Clause 72.2 – Part II))

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Agreement

This Agreement made the _____ day of _____ 19 _____

Between _____

of _____

_____ (hereinafter called "the Employer") of the one part and

_____ of _____

(hereinafter called "the Contractor") of the other part

Whereas the Employer is desirous that certain Works should be executed by the Contractor, viz _____

and has accepted a Tender by the Contractor for the execution and completion of such Works and the remedying of any defects therein

Now this Agreement witnesseth as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.

2. The following documents shall be deemed to form and be read and construed as part of this Agreement, viz:

   (a) The Letter of Acceptance;

   (b) The said Tender;

   (c) The Conditions of Contract (Parts I and II);

   (d) The Specification;

   (e) The Drawings; and

   (f) The Bill of Quantities.

3. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned the Contractor hereby covenants with the Employer to execute and complete the Works and remedy any defects therein in conformity in all respects with the provisions of the Contract.

4. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the works and the remedying of defects therein the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

In Witness whereof the parties hereto have caused this Agreement to be executed the day and year first before written in accordance with their respective laws.

The Common Seal of _____

_____

was hereunto affixed in the presence of:-

or

Signed Sealed and Delivered by the

said _____

in the presence of:

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EDITORIAL AMENDMENTS IN 1988

Following publication of the Fourth Edition in 1987 of the Conditions of Contract for Works of Civil Engineering Construction, a number of editorial amendments were agreed by FIDIC. The amendments were incorporated during a 1988 reprinting and the list below clarifies the differences between the 1988 reprint and the original document.

Foreword		The last sentence of the first paragraph previously read "The Conditions are equally suitable for use on domestic contracts. "
Page	**6**	Sub-Clause 10.1. A comma has been inserted after the word "Contract" in the second line. The third sentence previously read "Such security shall be in such form as may be agreed between the Employer and the Contractor."
Page	**11**	Sub-Clause 22.1 (b) was previously one complete paragraph, ie there was no space between the words " . . . other than the Works), " and the remainder of the Sub-Clause.
Page	**15**	Sub-Clause 31.2 (c) was previously one complete paragraph, ie there was no space between the words "... nature for any such," and the remainder of the Sub-Clause.
Page	**20**	Sub-Clause 44.3. The penultimate sentence was previously, "In both such cases the Engineer shall notify the Contractor accordingly, with a copy to the Employer. "
Page	**21**	Sub-Clause 49.1 (a). The word "substantial" has been deleted.
Page	**29**	Sub-Clause 60.3 (b) was previously two paragraphs, the second beginning with the words "Provided also that if at such time . . ."
Page	**30**	Sub-Clause 60.5. The word "The" has been inserted at the beginning of the final paragraph.
Page	**35**	Sub-Clause 67.1. In the eighth line of the third paragraph, a comma has been inserted after the word "provided". In the second line of the fourth paragraph, the word "notice" replaces the word "notification".
Page	**38**	Reference to Part II. In the third line, the words "and (iv)" have been inserted after paragraph (a) (i).
Tender		
Item	**3.**	The word "Works" has been capitalised.
Agreement		
Line	**4**	Inverted commas have been inserted following the words "the Employer."
Line	**6**	Inverted commas have been inserted before the word "the" instead of before the word "Contractor."
Line	**8**	The word "Contractor" has been capitalised.
Line	**9**	The words "Tender by the Contractor" were previously "Tender by Contractor. "
Line	**11**	The word "Agreement" has been capitalised.
Last lines		The Agreement previously ended with the words "Binding Signature of Employer" and "Binding Signature of Contractor".

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FURTHER AMENDMENTS IN 1992

The following amendments have been made to the 1988 Reprint of the Fourth Edition of the Conditions of Contract for Works of Civil Engineering Construction. The amendments of the 1988 Reprint are shown on the previous page. In addition, some minor changes in the use of punctuation marks (commas, semicolons, colons and stops), as well as the use of the words "or" and "and" have been introduced to attain uniformity in the style of all Clauses. These minor changes which improve the style, but which have no effect on the meaning of Clauses, have not been listed below.

FOREWORD The eighth paragraph previously referred to the anticipated publication of the "Guide to the Use of FIDIC Conditions of Contract for Works of Civil Engineering Construction".

Page 2 Sub-Clause 1.1, sub-para (e). Definitions (iii) "Interim Payment Certificate" and (iv) "Final Payment Certificate" have been added.

Page 6 Sub-Clause 8.1. Second paragraph has been added.

Page 7 Sub-Clause 12.2. Marginal note. The word "Adverse" has been changed to read "Not Foreseeable" (also amended in the Contents and the Index).

Page 8 Sub-Clause 13.1. Last sentence has been shortened by deleting the words "or, subject to the provisions of Clause 2, from the Engineer's Representative.", and adding the words "(or his delegate).".

Sub-Clause 15.1, para 1. Last sentence has been shortened by placing a full stop after the word "Engineer", deleting the words " or subject to the provisions of Clause 2, the Engineer's Representative."

Page 10 Sub-Clause 21.1, sub-para (a). The words "(the term "cost" in this context shall include profit)" have been added.

Page 11 Sub-Clause 21.4, sub-para (a). The word "where" has been corrected to read "whether".

Page 18 Sub-Clause 40.3. The word "written" has been deleted at the end of the first line.

Page 19 Sub-Clause 42.3. The word "wayleaves" has been changed to read "rights of way" in the text and marginal note (also amended in the Contents and the Index).

Page 29 Sub-Clause 60.1, sub-para (e). The words "or otherwise" have been added at the end

Sub-Clause 60.2. The words "certify to the Employer" have been changed to read "deliver to the Employer an Interim Payment Certificate stating", the word "thereof" has been changed to read "of such statement" and the word "he" has been changed to read "the Engineer". Sub-para (b). The words "Interim Certificates" have been changed to read "Interim Payment Certificates".

Sub-Clause 60.3, sub-para (b). In the eighth line, the word "ordered" has been changed to read "instructed".

Sub-Clause 60.4. The words "interim certificate" in the first and fourth lines, and the word "certificate" in the second line, have been changed to read "Interim Payment Certificate".

Page 30 Sub-Clause 60.5. In the second line, after the word "Engineer", the words "six copies of" have been added.

Sub-Clause 60.6. In the second line, after the word "consideration", the words "six copies of" have been added. Sub-para (b). The words "or otherwise" have been added at the end. At the end of the sub-clause, the final paragraph has been added.

Sub-Clause 60.7 and Sub-Clause 60.8 (text and marginal note). The words "Final Certificate" have been changed to read "Final Payment Certificate" (also amended in the Contents and the Index).

Sub-Clause 60.8 (a). The words "or otherwise" have been added. Sub-Clause 60.8 (b). The words "under the Contract other than Clause 47" have been changed to read "other than under Clause 47".
Sub-Clause 60.10. In the first and fourth lines, the words "interim certificate" have

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Page	**31**	been changed to read "Interim Payment Certificate". In the fifth and sixth lines, the words "Final Certificate" have been changed to read "Final Payment Certificate". The words "or otherwise" have been added at the end.
Page	**33**	Sub-Clause 65.6. In the ninth line, the words "and to the operation of Clause 67" have been changed to read "and Clause 67".
Page	**34**	Sub-Clause 66.1. In the second line the word "party" has been changed to read "or both parties", in the third line between the words "his" and "contractual" the words "or their" have been added. In the fourth line after the word "then", the words "the parties shall be discharged from the Contract, except as to their rights under this Clause and Clause 67 and without prejudice to the rights of either party in respect of any antecedent breach of the Contract, and " have been added.
Page	**35**	Sub-Clause 67.2. The words "arbitration of such dispute shall not be commenced unless an attempt has first been made by the parties to settle such dispute amicably" have been changed to read " the parties shall attempt to settle such dispute amicably before the commencement of arbitration." The words "whether or not any attempt at amicable settlement thereof has been made" have been changed to read "even if no attempt at amicable settlement thereof has been made".
Page	**37**	Sub-Clause 69.1, Sub-para (d). The words "unforseen reasons, due to economic dislocation" have been changed to read "unforseen economic reasons". Sub-Clause 69.4. In the second line of the second paragraph, the word "cost" has been changed to read "costs".
Page	**38**	REFERENCE TO PART II. In the third line, the words "5.1 part" have been changed to read "5.1 (part)".
TENDER		Paragraph 1. In the last line, the word "sums" has been changed to read "sum".
Appendix		In the ninth line, the words "and Plant" have been added. In the twelth line, the word "Payment" has been added. In the thirteenth line, the words "per annum" have been added.
EDITORIAL AMENDMENTS		For page 35, after the words "Sub-Clause 67.1" the first sentence has been inserted.

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FEDERATION INTERNATIONALE DES INGENIEURS-CONSEILS

CONDITIONS OF CONTRACT FOR WORKS OF CIVIL ENGINEERING CONSTRUCTION

PART II CONDITIONS OF PARTICULAR APPLICATION WITH GUIDELINES FOR PREPARATION OF PART II CLAUSES

FOURTH EDITION 1987
Reprinted 1988 with editorial amendments
Reprinted 1992 with further amendments

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INTRODUCTION

The terms of the Fourth Edition of the Conditions of Contract for Works of Civil Engineering Construction have been prepared by the Fédération Internationale des Ingénieurs Conseils (FIDIC) and are recommended for general use for the purpose of construction of such works where tenders are invited on an international basis. The Conditions, subject to minor modifications, are also suitable for use on domestic contracts.

The version in English of the Conditions is considered by FIDIC as the official and authentic text for the purpose of translation.

The Clauses of general application have been grouped together in a separately bound document and are referred to as Part I—General Conditions. They have been printed in a form which will facilitate their inclusion, as printed, in the contract documents normally prepared.

In the preparation of the Conditions it was recognised that while there are numerous Clauses which will be generally applicable there are some Clauses which must necessarily vary to take account of the circumstances and locality of the Works.

Part I – General Conditions and Part II – Conditions of Particular Application together comprise the Conditions governing the rights and obligations of the parties.

For this reason a Part II standard form has not been produced. It will be necessary to prepare a Part II document for each individual contract and the Guidelines are intended to aid in this task by giving options for various clauses where appropriate.

Part II clauses may arise for one or more reasons, of which the following are examples:

(i) Where the wording in Part I specifically requires that further information is to be included in Part II and the Conditions would not be complete without that information, namely in Sub-Clauses 1.1 paragraphs (a) (i) and (iv), 5.1 (part), 14.1, 14.3, 68.2 and 70.1

(ii) Where the wording in Part I indicates that supplementary information may be included in Part II, but the conditions would still be complete without any such information, namely in Sub-Clauses 2.1 paragraph (b), 5.1 (part), 21.1 paragraph (b) and 72.2.

(iii) Where the type, circumstances or locality of the Works necessitates additional Clauses or Sub-Clauses.

(iv) Where the law of the country or exceptional circumstances necessitate an alteration in Part I. Such alterations should be effected by stating in Part II that a particular Clause, or part of a Clause, in Part I is deleted and giving the substitute Clause, or part, as applicable.

As far as possible, in the Clauses that are mentioned hereunder, example wording is provided. In the case of some Clauses, however, only an aide-memoire for the preparation is given. Before incorporating any example wording it must be checked to ensure that it is wholly suitable for the particular circumstances and, if not, it must be varied. Where example wording is varied and in all cases where additional material is included in Part II, care must be taken that no ambiguity is created with Part I or between the Clauses in Part II.

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Dredging and Reclamation Work

Special consideration must be given to Part II where dredging and certain types of reclamation work are involved. Dredgers are considerably more expensive than most items of Contractor's Equipment and the capital value of a dredger can often exceed the value of the Contract on which it is used.

For this reason, it is in the interests of both the Employer and the Contractor that a dredger is operated intensively in the most economic fashion, subject to the quality of work and any other over-riding factors. With this end in view, it is customary to allow the Contractor to execute dredging work continuously by day and by night seven days a week. Another difference from most civil engineering is that on dredging work the Contractor is not normally held responsible for the remedying of defects after the date of completion as certified under Clause 48. Part II contains explanations and example wording to cover the above points and others relating to dredging. Clauses 11, 12, 18, 19, 28, 40, 45, 49, 50 and 51 are those which most often require attention in Part II when dredging work is involved and reference is included under each of these Clauses. Other Clauses may also need additions in Part II in certain circumstances. Reclamation work varies greatly in character and each instance must be considered before deciding whether it is appropriate to introduce in Part II changes similar to those adopted for dredging, or to use the standard civil engineering form unaltered.

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PART II CONDITIONS OF PARTICULAR APPLICATION

Clause 1

Sub-Clause 1.1 – Definitions

(a) (i) The Employer is (insert name)

(a) (iv) The Engineer is (insert name)

If further definitions are essential, additions should be made to the list.

Clause 2

Sub-Clause 2.1 – Engineer's Duties

EXAMPLE
The Engineer shall obtain the specific approval of the Employer before carrying out his duties in accordance with the following Clauses of Part 1:

(a) Clause (insert applicable number)

(b) Clause (insert applicable number)

(c) Clause (insert applicable number)

This list should be extended or reduced as necessary.

In some cases the obligation to obtain the approval of the Employer may apply to only one Sub-Clause out of several in a Clause or approval may only be necessary beyond certain limits, monetary or otherwise. Where this is so, the example wording must be varied.

If the obligation to obtain the approval of the Employer could lead to the Engineer being unable to take action in an emergency, where matters of safety are involved, an additional paragraph may be necessary.

EXAMPLE
Notwithstanding the obligation, as set out above, to obtain approval, if, in the opinion of the Engineer, an emergency occurs affecting the safety of life or of the Works or of adjoining property, he may, without relieving the Contractor of any of his duties and responsibilities under the Contract, instruct the Contractor to execute all such work or to do all such things as may, in the opinion of the Engineer, be necessary to abate or reduce the risk. The Contractor shall forthwith comply, despite the absence of approval of the Employer, with any such instruction of the Engineer. The Engineer shall determine an addition to the Contract Price, in respect of such instruction, in accordance with Clause 52 and shall notify the Contractor accordingly, with a copy to the Employer.

Clause 5

Sub-Clause 5.1 – Language/s and Law

(a) The language is (insert as applicable)

(b) The law is that in force in (insert name of country)

If necessary (a) above should be varied to read:

The languages are (insert as applicable)

and there should be added

The Ruling Language is (insert as applicable)

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Sub-Clause 5.2 – Priority of Contract Documents

Where it is decided that an order of precedence of all documents should be included, this Sub-Clause may be varied as follows:

EXAMPLE
Delete the documents listed 1 - 6 and substitute:

(1) the Contract Agreement (if completed);

(2) the Letter of Acceptance;

(3) the Tender;

(4) the Conditions of Contract Part II;

(5) the Conditions of Contract Part I;

(6) the Specification;

(7) the Drawings; and

(8) the priced Bill of Quantities

or

Where it is decided that no order of precedence of documents should be included, this Sub-Clause may be varied as follows:

EXAMPLE
Delete the text of the Sub-Clause and substitute:

The several documents forming the Contract are to be taken as mutually explanatory of one another, but in the case of ambiguities or discrepancies the priority shall be that accorded by law. If, in the opinion of the Engineer, such ambiguities or discrepancies make it necessary to issue any instruction to the Contractor in explanation or adjustment, the Engineer shall have authority to issue such instruction.

Clause 9

Where it is decided that a Contract Agreement should be entered into and executed the form must be annexed to these Conditions as stated in Sub-Clause 9.1 of Part I of these Conditions.

A suitable form is annexed to Part I – General Conditions.

Clause 10

Sub-Clause 10.1 – Performance Security

Where it is decided that a performance security should be obtained by the Contractor, the form must be annexed to these Conditions as stated in Sub-Clause 10.1 of Part I of these Conditions.

Two example forms of performance security are given on pages 7, 8 and 9. The Clause and wording of the example forms may have to be varied to comply with the law of the Contract which may require the forms to be executed under seal.

Where there is provision in the Contract for payments to the Contractor to be made in foreign currency, Sub-Clause 10.1 of Part I of these Conditions may be varied.

EXAMPLE
After the first sentence, insert the following sentence:

The security shall be denominated in the types and proportions of currencies stated in the Appendix to Tender.

Where the source of the performance security is to be restricted, an additional Sub-Clause may be added.

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EXAMPLE SUB-CLAUSES

Source of Performance Security **10.4** *The performance security, submitted by the Contractor in accordance with Sub-Clause 10.1, shall be furnished by an institution registered in (insert the country where the Works are to be executed) or licensed to do business in such country.*

or

Source of Performance Security **10.4** *Where the performance security is in the form of a bank guarantee, it shall be issued by:*

(a) a bank located in the country of the Employer, or

(b) a foreign bank through a correspondent bank located in the country of the Employer.

Clause 11

Where the bulk or complexity of the data, or reasons of security enforced by the country where the Works are to be executed, makes it impracticable for the Employer to make all data available with the Tender Documents and inspection of some data by the Contractor at an office is therefore expected, it would be advisable to make the circumstances clear.

EXAMPLE SUB-CLAUSE

Access to Data **11.2** *Data made available by the Employer in accordance with Sub-Clause 11.1 shall be deemed to include data listed elsewhere in the Contract as open for inspection at (insert particulars of the office or offices where such data is stored)*

Sub-Clause 11.1 – Inspection of Site

For a Contract comprising dredging and reclamation work the Clause may be varied as follows:

EXAMPLE

In the first paragraph, delete the words "hydrological and sub-surface" and substitute "hydrographic and sub-seabed".

In the second paragraph, under (a) delete the word "sub-surface" and substitute "sub-seabed" and under (b) delete the word "hydrological" and substitute "hydrographic".

Clause 12

Sub-Clause 12.2 – Not Foreseeable Obstructions or Conditions

For a Contract comprising dredging and some types of reclamation work the Sub-Clause may require to be varied.

EXAMPLE

Delete the words ", other than climatic conditions on the Site,".

Clause 14

Sub-Clause 14.1 – Programme to be Submitted

The time within which the programme shall be submitted shall be (insert number) days.

Sub-Clause 14.3 – Cash Flow Estimate to be Submitted

The time within which the detailed cash flow estimate shall be submitted shall be (insert number) days.

In both examples given above it is desirable for consistency with the rest of the Conditions that the number of days inserted should be a multiple of seven.

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EXAMPLE PERFORMANCE GUARANTEE

By this guarantee *We, _____.*

whose registered office is at _____.

(hereinafter called "the Contractor") and _____

whose registered office is at _____

(hereinafter called "the Guarantor") are held and firmly bound unto

_____ _____ (hereinafter called "the Employer")

in the sum of _____ for the payment of which sum

the Contractor and the Guarantor bind themselves, their successors and assigns jointly and severally by these presents.

Whereas *the Contractor by an Agreement made between the Employer of the one part and the Contractor of the other part has entered into a Contract (hereinafter called "the said Contract") to execute and complete certain Works and remedy any defects therein as therein mentioned in conformity with the provisions of the said Contract.*

Now the Condition *of the above-written Guarantee is such that if the Contractor shall duly perform and observe all the terms provisions conditions and stipulations of the said Contract on the Contractor's part to be performed and observed according to the true purport intent and meaning thereof or if on default by the Contractor the Guarantor shall satisfy and discharge the damages sustained by the Employer thereby up to the amount of the above-written Guarantee then this obligation shall be null and void but otherwise shall be and remain in full force and effect but no alteration in terms of the said Contract or in the extent or nature of the Works to be executed, completed and defects therein remedied thereunder and no allowance of time by the Employer or the Engineer under the said Contract nor any forbearance or forgiveness in or in respect of any matter or thing concerning the said Contract on the part of the Employer or the said Engineer shall in any way release the Guarantor from any liability under the above-written Guarantee. Provided always that the above obligation of Guarantor to satisfy and discharge the damages sustained by the Employer shall arise only*

(a) on written notice from both the Employer and the Contractor that the Employer and the Contractor have mutually agreed that the amount of damages concerned is payable to the Employer or

(b) on receipt by the Guarantor of a legally certified copy of an award issued in arbitration proceeding carried out in conformity with the terms of the said Contract that the amount of the damages is payable to the Employer.

Signed on _____	*Signed on* _____
on behalf of _____	*on behalf of* _____
by _____	*by* _____
in the capacity of _____	*in the capacity of* _____
in the presence of _____	*in the presence of* _____

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EXAMPLE SURETY BOND FOR PERFORMANCE

Know all Men by these Presents that (name and address of Contractor)

_____

_____

as Principal (hereinafter called "the Contractor") and (name, legal title and address of Surety) _____

_____

as Surety (hereinafter called "the Surety"), are held and firmly bound unto (name and address of Employer) _____

_____ *as Obligee (hereinafter called "the Employer") in the amount of* _____ *for the payment of which sum, well and truly to be made, the Contractor and the Surety bind themselves, their successors and assigns, jointly and severally, firmly by these presents.*

Whereas the Contractor has entered into a written contract agreement with the Employer dated the _____ *day of* _____ *19*___

for(name of Works) _____
in accordance with the plans and specifications and amendments thereto, to the extent herein provided for, are by reference made part hereof and are hereinafter referred to as the Contract.

Now, therefore, the Condition of this Obligation is such that, if the Contractor shall promptly and faithfully perform the said Contract (including any amendments thereto) then this obligation shall be null and void; otherwise it shall remain in full force and effect.

Whenever Contractor shall be, and declared by Employer to be, in default under the Contract, the Employer having performed the Employer's obligations thereunder, the Surety may promptly remedy the default, or shall promptly:

(1) Complete the Contract in accordance with its terms and conditions; or

(2) Obtain a bid or bids for submission to the Employer for completing the Contract in accordance with its terms and conditions, and upon determination by Employer and Surety of the lowest responsible bidder, arrange for a contract between such bidder and Employer and make available as work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the Contract Value; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the Contract Value", as used in this paragraph, shall mean the total amount payable by Employer to Contractor under the Contract, less the amount properly paid by Employer to Contractor; or

(3) Pay the Employer the amount required by Employer to complete the Contract in accordance with its terms and conditions any amount up to a total not exceeding the amount of this Bond.

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The Surety shall not be liable for a greater sum than the specified penalty of this Bond.

Any suit under this Bond must be instituted before the issue of the Defects Liability Certificate.

No right of action shall accrue on this Bond to or for the use of any person or corporation other than the Employer named herein or the heirs, executors, administrators or successors of the Employer.

Signed on _____	*Signed on* _____
on behalf of _____	*on behalf of* _____
by _____	*by* _____
in the capacity of _____	*in the capacity of* _____
in the presence of _____	*in the presence of* _____

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Clause 15

Where the language in which the Contract documents have been drawn up is not the language of the country in which the Works are to be executed, or where for any other reason it is necessary to stipulate that the Contractor's authorised representative shall be fluent in a particular language, an additional Sub-Clause may be added.

EXAMPLE SUB-CLAUSES

Language Ability of Contractor's Representative **15.2** *The Contractor's authorised representative shall be fluent in (insert name of language).*

or

Interpreter to be Made Available **15.2** *If the Contractor's authorised representative is not, in the opinion of the Engineer, fluent in (insert name of language), the Contractor shall have available on Site at all times a competent interpreter to ensure the proper transmission of instructions and information.*

Clause 16

Where the language in which the Contract documents have been drawn up is not the language of the country in which the Works are to be executed, or where for any other reason it is necessary to stipulate that members of the Contractor's superintending staff shall be fluent in a particular language, an additional Sub-Clause may be added.

EXAMPLE SUB-CLAUSE

Language Ability of Superintending Staff **16.3** *A reasonable proportion of the Contractor's superintending staff shall have a working knowledge of (insert name of language) or the Contractor shall have available on Site at all times a sufficient number of competent interpreters to ensure the proper transmission of instructions and information.*

Where there is a desire, but not a legal requirement, that the Contractor makes reasonable use of materials from or persons resident in the country in which the Works are to be executed, an additional Sub-Clause may be added.

EXAMPLE SUB-CLAUSE

Employment of Local Personnel **16.4** *The Contractor is encouraged, to the extent practicable and reasonable, to employ staff and labour from sources within (insert name of country).*

Clause 18

Sub-Clause 18.1 – Boreholes and Exploratory Excavation

For a Contract comprising dredging and reclamation work the Sub-Clause may require to be varied.

EXAMPLE

Add second sentence as follows:

Such exploratory excavation shall be deemed to include dredging.

Clause 19

Sub-Clause 19.1 – Safety, Security and Protection of the Environment

Where a Contract includes dredging the possibility of pollution should be given particular attention and additional wording may be required. For example, where fishing and recreation areas might be influenced, the Contractor should be required to plan and execute the dredging so that the effect is kept to a minimum. Where there is a risk of chemical pollution from soluble sediments in the dredging area, for instance in a harbour, it is important that sufficient information is provided with the Tender documents. Responsibilities should be clearly defined.

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Clause 21

Sub-Clause 21.1 – Insurance of Works and Contractor's Equipment

Where there is provision in the Contract for payments to the Contractor to be made in foreign currency, this Sub-Clause may be varied.

EXAMPLE
Add final sentence as follows:

The insurance in paragraphs (a) and (b) shall provide for compensation to be payable in the types and proportions of currencies required to rectify the loss or damage incurred.

Where it is decided to state the deductible limits for the Employer's Risks, this Sub-Clause may be varied.

EXAMPLE
Add to paragraph (a) as follows:

and with deductible limits for the Employer's Risks not exceeding (insert amounts)

Clauses 21, 23 and 25. Insurances Arranged by Employer

In certain circumstances, such as where a number of separate contractors are employed on a single project, or phased take-over is involved, it may be preferable for the Employer to arrange insurance of the Works, and Third Party insurance. In such case, it must be clear in the Contract that the Contractor is not precluded from taking out any additional insurance, should he desire to do so, over and above that to be arranged by the Employer.

Tenderers must be provided at the Tender stage with details of the insurance to be arranged by the Employer, in order to assess what provision to make in their rates and prices for any additional insurance, and for the amount of policy deductibles which they will be required to bear. Such details shall form part of the Contract between the Employer and the Contractor.

Example wording to allow for the arrangement of insurance by the Employer is as follows:

EXAMPLE

Clause 21

Delete the text of the Clause and substitute the following re-numbered Sub-Clauses:

Insurance of Works **21.1** *Without limiting his or the Contractor's obligations and responsibilities under Clause 20, the Employer will insure:*

(a) the Works, together with materials and Plant for incorporation therein, to the full replacement cost (the term "cost" in this context shall include profit), and

(b) an additional sum to cover any additional costs of and incidental to the rectification of loss or damage including professional fees and the cost of demolishing and removing any part of the Works and of removing debris of whatsoever nature.

Insurance of Contractor's Equipment **21.2** *The Contractor shall, without limiting his obligations and responsibilities under Clause 20, insure the Contractor's Equipment and other things brought onto the site by the Contractor, for a sum sufficient to provide for their replacement at the Site.*

Scope of Cover **21.3** *The insurance in Sub-Clause 21.1 shall be in the joint names of the Contractor and the Employer and shall cover:*

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(a) the Employer and the Contractor against loss or damage as provided in the details of insurance annexed to these Conditions, from the start of work at the Site until the date of issue of the relevant Taking-Over Certificate in respect of the Works or any Section or part thereof as the case may be, and

(b) the Contractor for his liability:

(i) during the Defects Liability Period for loss or damage arising from a cause occurring prior to the commencement of the Defects Liability Period, or

(ii) occasioned by the Contractor in the course of any operations carried out by him for the purpose of complying with his obligations under Clauses 49 and 50.

Responsibility for Amounts not Recovered **21.4** *Any amounts not insured or not recovered from the insurers shall be borne by the Employer or the Contractor in accordance with their responsibilities under Clause 20.*

Clause 23

Delete the text of the Clause and substitute:

Third Party Insurance (including Employer's Property) **23.1** *Without limiting his or the Contractor's obligations and responsibilities under Clause 22, the Employer will insure in the joint names of the Contractor and the Employer, against liabilities for death of or injury to any person (other than as provided in Clause 24) or loss of or damage to any property other than the Works) arising out of the performance of the Contract, as provided in the details of insurance referred to in Sub-Clause 21.3.*

Clause 25

Delete the text of the Clause and substitute:

Evidence and Terms of Insurances **25.1** *The insurance policies to be arranged by the Employer pursuant to Clauses 21 and 23 shall be consistent with the general terms described in the Tender and copies of such policies shall when required be supplied by the Employer to the Contractor.*

Adequacy of Insurances **25.2** *The Employer shall notify the insurers of changes in the nature, extent or programme for execution of the Works and ensure the adequacy of the insurances at all times in accordance with the terms of the Contract and shall, when required, produce to the Contractor the insurance policies in force and the receipts for payment of the premiums. No variations shall be made to the insurances by the Employer without the prior approval of the Contractor.*

Remedy on Employer's Failure to Insure **25.3** *If and so far as the Employer fails to effect and keep in force any of the insurances referred to in Sub-Clause 25.1, then the Contractor may effect and keep in force any such insurance and pay any premium as may be necessary for that purpose and add the amount so paid to any monies due or to become due to the Contractor, or recover the same as a debt due from the Employer.*

Compliance with Policy Conditions **25.4** *In the event that the Contractor or the Employer fails to comply with conditions imposed by the insurance policies effected pursuant to the Contract, each shall indemnify the other against all losses and claims arising from such failure.*

Clause 28

Sub-Clause 28.2 – Royalties

For a Contract comprising dredging and reclamation work and for any other Contract involving the dumping of materials the Sub-Clause may require to be varied.

EXAMPLE
Add second sentence as follows:

The Contractor shall also be liable for all payments or compensation, if any, levied in relation to the dumping of part or all of any such materials.

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It is sometimes the case on dredging contracts for the Employer to bear the costs of tonnage and other royalties, rent and other payments or compensation. If such conditions are to apply, Sub-Clause 28.2 should be varied either by adding wording or by deleting the existing wording and substituting new wording.

Clause 31

Where the particular requirements of other contractors are known within reasonable limits at the time of preparation of the Contract documents, details must be stated. The Specification is usually the appropriate place to do so but, exceptionally, some reference may be desirable in the Conditions. In that case, an additional Sub-Clause or Sub-Clauses could be added to this Clause.

Clause 34

It will generally be necessary to add a number of Sub-Clauses, to take account of the circumstances and locality of the Works, covering such matters as: permits and registration of expatriate employees; repatriation to place of recruitment; provision of temporary housing for employees; requirements in respect of accommodation for staff of Employer and Engineer; standards of accommodation to be provided; provision of access roads, hospital, school, power, water, drainage, fire services, refuse collection, communal buildings, shops, telephones; hours and conditions of working; rates of pay; compliance with labour legislation; maintenance of records of safety and health.

EXAMPLE SUB-CLAUSES (to be numbered, as appropriate)

Rates of Wages and Conditions of Labour **34.** *The Contractor shall pay rates of wages and observe conditions of labour not less favourable than those established for the trade or industry where the work is carried out. In the absence of any rates of wages or conditions of labour so established, the Contractor shall pay rates of wages and observe conditions of labour which are not less favourable than the general level of wages and conditions observed by other employers whose general circumstances in the trade or industry in which the Contractor is engaged are similar.*

Employment of Persons in the Service of Others **34.** *The Contractor shall not recruit or attempt to recruit his staff and labour from amongst persons in the service of the Employer or the Engineer.*

Repatriation of Labour **34.** *The Contractor shall be responsible for the return to the place where they were recruited or to their domicile of all such persons as he recruited and employed for the purposes of or in connection with the Contract and shall maintain such persons as are to be so returned in a suitable manner until they shall have left the Site or, in the case of persons who are not nationals of and have been recruited outside (insert name of country), shall have left (insert name of country).*

Housing for Labour **34.** *Save insofar as the Contract otherwise provides, the Contractor shall provide and maintain such accommodation and amenities as he may consider necessary for all his staff and labour, employed for the purposes of or in connection with the Contract, including all fencing, water supply (both for drinking and other purposes), electricity supply, sanitation, cookhouses, fire prevention and fire-fighting equipment, air conditioning, cookers, refrigerators, furniture and other requirements in connection with such accommodation or amenities. On completion of the Contract, unless otherwise agreed with the Employer, the temporary camps/housing provided by the Contractor shall be removed and the site reinstated to its original condition, all to the approval of the Engineer.*

Accident Prevention Officer; Accidents **34.** *The Contractor shall have on his staff at the Site an officer dealing only with questions regarding the safety and protection against accidents of all staff and labour. This officer shall be qualified for this work and shall have the authority to issue instructions and shall take protective measures to prevent accidents.*

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Health and Safety **34.** *Due precautions shall be taken by the Contractor, and at his own cost, to ensure the safety of his staff and labour and, in collaboration with and to the requirements of the local health authorities, to ensure that medical staff first aid equipment and stores, sick bay and suitable ambulance service are available at the camps, housing and on the Site at all times throughout the period of the Contract and that suitable arrangements are made for the prevention of epidemics and for all necessary welfare and hygiene requirements.*

Measures against Insect and Pest Nuisance **34.** *The Contractor shall at all times take the necessary precautions to protect all staff and labour employed on the site from insect nuisance, rats and other pests and reduce the dangers to health and the general nuisance occasioned by the same. The Contractor shall provide his staff and labour with suitable prophylactics for the prevention of malaria and take steps to prevent the formation of stagnant pools of water. He shall comply with all the regulations of the local health authorities in these respects and shall in particular arrange to spray thoroughly with approved insecticide all buildings erected on the Site. Such treatment shall be carried out at least once a year or as instructed by the Engineer. The Contractor shall warn his staff and labour of the dangers of bilharzia and wild animals.*

Epidemics **34.** *In the event of any outbreak of illness of an epidemic nature, the Contractor shall comply with and carry out such regulations, orders and requirements as may be made by the Government, or the local medical or sanitary authorities, for the purpose of dealing with and overcoming the same.*

Burial of the Dead **34.** *The Contractor shall make all necessary arrangements for the transport, to any place as required for burial, of any of his expatriate employees or members of their families who may die in (insert name of country). The Contractor shall also be responsible, to the extent required by the local regulations, for making any arrangements with regard to burial of any of his local employees who may die while engaged upon the Works.*

Supply of Foodstuffs **34.** *The Contractor shall arrange for the provision of a sufficient supply of suitable food at reasonable prices for all his staff, labour and Subcontractors, for the purposes of or in connection with the Contract.*

Supply of Water **34.** *The Contractor shall, so far as is reasonably practicable, having regard to local conditions, provide on the Site an adequate supply of drinking and other water for the use of his staff and labour.*

Alcoholic Liquor or Drugs **34.** *The Contractor shall not, otherwise than in accordance with the Statutes, Ordinances and Government Regulations or Orders for the time being in force, import, sell, give, barter or otherwise dispose of any alcoholic liquor or drugs, or permit or suffer any such importation, sale, gift, barter or disposal by his Subcontractors, agents, staff or labour.*

Arms and Ammunition **34.** *The Contractor shall not give, barter or otherwise dispose of to any person or persons, any arms or ammunition of any kind or permit or suffer the same as aforesaid.*

Festivals and Religious Customs **34.** *The Contractor shall in all dealings with his staff and labour have due regard to all recognised festivals, days of rest and religious or other customs.*

Disorderly Conduct **34.** *The Contractor shall at all times take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by or amongst his staff and labour and for the preservation of peace and protection of persons and property in the neighbourhood of the Works against the same.*

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Clause 35

Additional Sub-Clauses may be desirable to cover circumstances which require the maintenance of particular records or the provision of certain specific reports.

EXAMPLE SUB-CLAUSES (to be numbered, as appropriate)

Records of Safety and Health **35.** *The Contractor shall maintain such records and make such reports concerning safety, health and welfare of persons and damage to property as the Engineer may from time to time prescribe.*

Reporting of Accidents **35.** *The Contractor shall report to the Engineer details of any accident as soon as possible after its occurrence. In the case of any fatality or serious accident, the Contractor shall, in addition, notify the Engineer immediately by the quickest available means.*

Clause 40

For a Contract comprising dredging and some types of reclamation work the Clause may be varied.

Sub-Clause 40.1 – Suspension of Work

EXAMPLE
Delete paragraph (c) and renumber paragraph (d) as (c).

Sub-Clause 40.3 – Suspension Lasting more than 84 Days

EXAMPLE
In the first sentence delete the words ", (c) or (d)" and substitute "or (c)".

Clause 43

Sub-Clause 43.1 – Time for Completion

Where completion is stated to be by a date and not within a period of time, the Sub-Clause will require to be varied.

EXAMPLE
Delete the words, "within the time... such extended time" and substitute "by the date or dates stated in the Appendix to Tender for the whole of the Works or the Section (as the case may be) or such later date or dates".

Clause 45

For a Contract located in an isolated area, where environmental restrictions do not apply, or where a Contract comprises work, such as dredging and reclamation, that may require continuous working, the Clause may be varied.

EXAMPLE
Delete Sub-Clause 45.1 and substitute:

Working Hours **45.1** *Subject to any provision to the contrary contained in the Contract, the Contractor shall have the option to work continuously by day and by night and on locally recognised days of rest.*

The Contractor's option may be further extended by substituting, in place of the last three words:

holidays or days of rest.

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Clause 47

Where it is desired to make provision for the payment of a bonus or bonuses for early completion, an additional Sub-Clause may be added.

In the case where a bonus is provided for early completion of the whole of the Works:

EXAMPLE SUB-CLAUSE

Bonus for Completion **47.3** *If the Contractor achieves completion of the Works prior to the time prescribed by Clause 43, the Employer shall pay to the Contractor a sum of (insert figure) for every day which shall elapse between the date stated in the Taking-Over Certificate in respect of the Works issued in accordance with Clause 48 and the time prescribed in Clause 43.*

or

In the case where bonuses are provided for early completion of Sections of the Works and details, other than the dates, are given in the Specification:

EXAMPLE SUB-CLAUSE

Bonus for Completion **47.3** *Sections are required to be completed by the dates given in the Appendix to Tender in order that such Sections may be occupied and used by the Employer in advance of the completion of the whole of the Works.*

Details of the work required to be executed to entitle the Contractor to bonus payments and the amount of the bonuses are stated in the Specification.

For the purposes of calculating bonus payments, the dates given in the Appendix to Tender for completion of Sections are fixed and, unless otherwise agreed, no adjustments of the dates by reason of granting an extension of time pursuant to Clause 44 or any other Clause of these Conditions will be allowed.

Issue of certificates by the Engineer that the Sections were satisfactory and complete by the dates given on the certificates shall, subject to Clause 60, entitle the Contractor to the bonus payments calculated in accordance with the Specification.

Clause 48

Where it can be foreseen that, when the whole of the Works have been substantially completed, the Contractor may be prevented by reasons beyond his control from carrying out the Tests on Completion, an additional Sub-Clause may be added.

EXAMPLE SUB-CLAUSE

Prevention from Testing **48.5** *If the Contractor is prevented from carrying out the Tests on Completion by a cause for which the Employer or the Engineer or other contractors employed by the Employer are responsible, the Employer shall be deemed to have taken over the Works on the date when the Tests on Completion would have been completed but for such prevention. The Engineer shall issue a Taking-Over Certificate accordingly. Provided always that the Works shall not be deemed to have been taken over if they are not substantially in accordance with the Contract.*

If the Works are taken over under this Sub-Clause the Contractor shall nevertheless carry out the Tests on Completion during the Defects Liability Period. The Engineer shall require the Tests to be carried out by giving 14 days notice.

Any additional costs to which the Contractor may be put, in making the Tests on Completion during the Defects Liability Period, shall be added to the Contract Price.

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Clause 49

For a Contract which includes a high proportion of Plant, an additional Sub-Clause may be necessary.

EXAMPLE SUB-CLAUSE

Extension of Defects Liability **49.5** *The provisions of this Clause shall apply to all replacements or renewals of Plant carried out by the Contractor to remedy defects and damage as if the replacements and renewals had been taken over on the date they were completed. The Defects Liability Period for the Works shall be extended by a period equal to the period during which the Works cannot be used by reason of a defect or damage. If only part of the Works is affected the Defects Liability Period shall be extended only for that part. In neither case shall the Defects Liability Period extend beyond 2 years from the date of taking over.*

When progress in respect of Plant has been suspended under Clause 40, the Contractor's obligations under this Clause shall not apply to any defects occurring more than 3 years after the Time for Completion established on the date of the Letter of Acceptance.

For a Contract comprising dredging work an additional Sub-Clause may be added.

EXAMPLE SUB-CLAUSE

No Remedying of Defects in Dredging Work after Completion **49.5** *Notwithstanding Sub-Clause 49.2, the Contractor shall have no responsibility for the remedying of defects, shrinkages or other faults in respect of dredging work after the date stated in the Taking-Over Certificate.*

Clause 50

For a Contract comprising dredging work and where the second Example Sub-Clause 49.5 has been adopted, an additional Sub-Clause should be added.

EXAMPLE SUB-CLAUSE

No Responsibility for Cost of Searching of Dredging Work **50.2** *Notwithstanding Sub-Clause 50.1, the Contractor shall have no responsibility to bear the cost of searching for any defect, shrinkage or other fault in respect of dredging work after the date stated in the Taking-Over Certificate.*

Clause 51

Sub-Clause 51.1 – Variations

For a Contract comprising dredging and some types of reclamation work the Sub-Clause may require to be varied.

EXAMPLE

Add final sentence as follows:

Provided also that the Contractor shall be under no obligation to execute any variation which cannot be executed by the Contractor's Equipment being used or to be used on the Works.

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Clause 52

Where provision is made in the Contract for payment in foreign currency, this Clause may be varied.

Sub-Clause 52.1 – Valuation of Variations

EXAMPLE
Add final sentence as follows:

The agreement, fixing or determination of any rates or prices as aforesaid shall include any foreign currency and the proportion thereof.

Sub-Clause 52.2 –Power of Engineer to Fix Rates

Add to first paragraph final sentence as follows:

The agreement or fixing of any rates or prices as aforesaid shall include any foreign currency and the proportion thereof.

Sub-Clause 52.3 – Variations Exceeding 15 per cent

Add final sentence as follows:

The adjustment or fixing of any sum as aforesaid shall have due regard to any foreign currency included in the Effective Contract Price and the proportion thereof.

Where it is required to place some limitation on the range of items for which the rates and prices may be subject to review, the Clause may be varied.

Sub-Clause 52.2 – Power of Engineer to Fix Rates

EXAMPLE
At the end of the first paragraph add:

Provided further that no change in the rate or price for any item contained in the Contract shall be considered unless such item accounts for an amount more than 2 per cent of the Contract Price, and the actual quantity of work executed under the item exceeds or falls short of the quantity set out in the Bill of Quantities by more than 25 per cent.

Clause 54

Where vesting of Contractor's Equipment, Temporary Works and materials in the Employer is required, additional Sub-Clauses may be added.

EXAMPLE WORDING AND SUB-CLAUSES
Sub-Clauses 54.2 and 54.3 shall be renumbered as 54.3 and 54.4 and Sub-Clauses 54.4 to 54.8 shall be renumbered as 54.6 to 54.10. Add additional Sub-Clauses as follows:

Vesting 54.2 *All Contractor's Equipment, Temporary Works and materials owned by the Contractor, or by any company in which the Contractor has a controlling interest, shall, when on the Site, be deemed to be the property of the Employer. Provided always that the vesting of such property in the Employer shall not prejudice the right of the Contractor to the sole use of the said Contractor's Equipment, Temporary Works and materials for the purpose of the Works nor shall it affect the Contractor's responsibility to operate and maintain the same under the provisions of the Contract.*

Revesting and Removal 54.5 *Upon the removal, with the consent of the Engineer under Sub-Clauses 54.1, of any such Contractor's Equipment, Temporary Works or materials as have been deemed to have become the property of the Employer under Sub-Clause 54.2, the property therein shall be deemed to revest in the Contractor and, upon completion of the Works, the property in the remainder of such Contractor's Equipment, Temporary Works and materials shall, subject to Clause 63, be deemed to revest in the Contractor.*

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Clause 60

Additional Sub-Clauses may be necessary to cover certain other matters relating to payments.

Where payments are to be made in various currencies in predetermined proportions and calculated at fixed rates of exchange the following 3 Sub-Clauses, which should be taken together, may be added:

EXAMPLE SUB-CLAUSES (to be numbered, as appropriate)

Currency of Account and Rates of Exchange

60. *The currency of account shall be the (insert name of currency) and for the purposes of the Contract conversion between (insert name of currency) and other currencies stated in the Appendix to Tender shall be made in accordance with the Table of Exchange Rates in the Appendix to Tender. Conversion between the currencies stated in such Table other than the (insert name of currency) shall be made at rates of exchange determined by use of the relative rates of exchange between such currencies and the (insert name of currency) set out therein.*

Payments to Contractor

60. *All payments to the Contractor by the Employer shall be made:*

(a) in the case of payment(s) under Sub-Clause(s) 70.2 and (insert number of any other applicable Clause), in (insert name of currency/ies);

(b) in the case of payments for certain provisional sum items excluded from the Appendix to Tender, in the currencies and proportions applicable to these items at the time when the Engineer gives instructions for the work covered by these items to be carried out; and

(c) in any other case, including Increase or Decrease of Costs under Sub-Clause 70.1, in the currencies and proportions stated in the Appendix to Tender as applicable to such payment provided that the proportions of currencies stated in the Appendix to Tender may from time to time upon the application of either party be varied as may be agreed.

Payments to Employer

60. *All payments to the Employer by the Contractor including payments made by way of deduction or set-off shall be made:*

(a) in the case of credit(s) under Sub-Clause(s) 70.2 and (insert number of any other applicable Clause) in (insert name of currency/ies);

(b) in the case of liquidated damages under Clause 47, in (insert name of currency/ies);

(c) in the case of reimbursement of any sum previously expended by the Employer, in the currency in which the sum was expended by the Employer; and

(d) in any other case, in such currency as may be agreed.

If the part payable in a particular currency of any sum payable to the Contractor is wholly or partly insufficient to satisfy by way of deduction or set-off a payment due to the Employer in that currency, in accordance with the provisions of this Sub-Clause, then the Employer may if he so desires make such deduction or set-off wholly or partly as the case may be from the balance of such sum payable in other currencies.

Where all payments are to be made in one currency the following Sub-Clause may be added:

EXAMPLE SUB-CLAUSE (to be numbered, as appropriate)

Currency of Account and Payments

60. *The currency of account shall be the (insert name of currency) and all payments made in accordance with the Contract shall be in (insert name of currency). Such (insert name of currency), other than for local costs, shall be fully convertible. The percentage of such payments attributed to local costs shall be as stated in the Appendix to Tender.*

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Where place of payment is to be defined the following Sub-Clause may be added:

EXAMPLE SUB-CLAUSE (to be numbered, as appropriate)

Place of Payment ***60.*** *Payments to the Contractor by the Employer shall be made into a bank account nominated by the Contractor in the country of the currency of payment. Where payment is to be made in more than one currency separate bank accounts shall be nominated by the Contractor in the country of each currency and payments shall be made by the Employer accordingly.*

Where provision is to be included for an advance payment the following Sub-Clause may be added:

EXAMPLE SUB-CLAUSE (to be numbered, as appropriate)

Advance Payment ***60.*** *An advance payment of the amount stated in the Appendix to Tender shall, following the presentation by the Contractor to the Employer of an approved performance security in accordance with Sub-Clause 10.1 and a Guarantee in terms approved by the Employer for the full value of the advance payment, be certified by the Engineer for payment to the Contractor. Such Guarantee shall be progressively reduced by the amount repaid by the Contractor as indicated in Interim Payment Certificates of the Engineer issued in accordance with this Clause. The advance payment shall not be subject to retention. The advance payment shall be repaid by way of reduction in Interim Payment Certificates commencing with the next certificate issued after the total certified value of the Permanent Works and any other items in the Bill of Quantities (excluding the deduction of retention) exceeds (insert figure) per cent of the sum stated in the Letter of Acceptance. The amount of the reduction in each Interim Payment Certificate shall be one (insert fraction) of the difference between the total value of the Permanent Works and any other items in the Bill of Quantities (excluding the deduction of retention) due for certification in such Interim Payment Certificate and the said value in the last preceding Interim Payment Certificate until the advance payment has been repaid in full. Provided that upon the issue of a Taking-Over Certificate for the whole of the Works or upon the happening of any of the events specified in Sub-Clause 63.1 or termination under Clauses 65, 66 or 69, the whole of the balance then outstanding shall immediately become due and payable by the Contractor to the Employer.*

Clause 67

Where it is considered desirable to add to Sub-Clauses 67.3 provisions with respect to the number of arbitrators, the place of arbitration and the language of arbitration, the following paragraphs may be added to Sub-Clause 67.3:

EXAMPLE

The arbitral tribunal shall consist of ..... (a sole or three) arbitrator(s).

The place of arbitration shall be .....(city and country).

The language of the arbitration shall be.....

It is desirable that the place of arbitration be situated in a state, other than that of the Employer or the Contractor, which has a modern and liberal arbitration law and which has ratified a bilateral or multilateral convention (such as the 1958 New York Convention on the Recognition and Enforcement of Foreign Arbitral Awards), or both, that would facilitate the enforcement of an arbitral award in the states of the parties to the Contract.

In the absence of stipulations as to the three above mentioned matters, (number of arbitrators, place of arbitration and language of arbitration), the ICC will decide on the number of arbitrators (typically three in any substantial construction dispute) and on the place of arbitration. The arbitral tribunal will decide on the language of the arbitration if the parties cannot agree.

It may also be considered desirable in some cases for other parties to be joined into any arbitration between the Employer and the Contractor, thereby creating a multi-party arbitration. While this may be feasible, multi-party arbitration clauses require skillful draftmanship on a case-by-case basis. No satisfactory standard form of multi-party arbitration clause for international use has yet been developed.

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Where it is decided that a settlement of dispute procedure, other than that of the International Chamber of Commerce (ICC), should be used the Clause may be varied.

Sub-Clause 67.3 – Arbitration

EXAMPLE
Following paragraph (b), delete the words "shall be finally settled... International Chamber of Commerce" and substitute "shall be finally settled under the UNCITRAL Arbitration Rules as administered by (insert name of administering authority)".

Where alternatives to the ICC are considered care should be taken to establish that the favoured alternative is appropriate for the circumstances of the Contract and that the wording of Clause 67 is checked and amended as may be necessary to avoid any ambiguity with the alternative. Care should be taken to define exactly how the arbitral tribunal is to be appointed and, where appropriate, an appointing authority should be designated.

Clause 68

Sub-Clause 68.2 – Notice to Employer and Engineer

For the purposes of this Sub-Clause the respective addresses are:

(a) The Employer (insert address)

(b) The Engineer (insert address)

The addresses should be inserted when the documents are being prepared prior to inviting tenders.

Clause 69

Sub-Clause 69.1 – Default of Employer

Where the Employer is a government it may be considered appropriate to vary the Sub-Clause.

EXAMPLE
Delete paragraph (c) and renumber paragraph (d) as (c).

Where the terms of the Sub-Clause, when read in conjunction with Sub-Clause 69.3, are in conflict with the law of the country the Sub-Clause may require to be varied.

EXAMPLE
Delete "or" at the end of paragraph (c) and delete paragraph (d).

Clause 70

Three alternative methods of dealing with price adjustment are given below.

The first alternative is suitabie where a contract is of short duration and no price adjustment is to be made:

Sub-Clause 70.1—Increase or Decrease in Cost

EXAMPLE
Delete the text of the Sub-Clause and substitute

Subject to Sub-Clause 70.2, the Contract Price shall not be subject to any adjustment in respect of rise or fall in the cost of labour, materials or any other matters affecting the cost of execution of the Contract.

Sub-Clause 70.2—Subsequent Legislation

EXAMPLE
Delete the words ", other than under Sub-Clause 70.1, ".

The second alternative is suitable where price adjustment is to be made by establishing the difference in cost between the basic price and the current price of local labour and specified materials:

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Sub-Clause 70.1—Increase or Decrease in Cost

EXAMPLE

Delete the text of the Sub-Clause and substitute

Adjustments to the Contract Price shall be made in respect of rise or fall in the cost of local labour and specified materials as set out in this Sub-Clause.

(a) Local Workmen

(i) For the purpose of this Sub-Clause:
"Local Workmen" means skilled, semi-skilled and unskilled workmen of all trades engaged by the Contractor on the Site for the purpose of or in connection with the Contract or engaged full time by the Contractor off the Site for the purpose of or in connection with the Contract (by way of illustration but not limitation: workmen engaged full time in any office, store, workshop or quarry);
"Basic Rate" means the applicable basic minimum wage rate prevailing on the date 28 days prior to the latest date for submission of tenders by reason of any National or State Statute, Ordinance, Decree or other Law or any regulations or bye-law of any local or other duly constituted authority, or in order to conform with practice amongst good employers generally in the area where the Works are to be carried out; and
"Current Rate" means the applicable basic minimum wage rate for Local Workmen prevailing on any date subsequent to the date 28 days prior to the latest date set for submission of tenders by reason of any National or State Statute, Ordinance, Decree or other Law or any regulation or bye-law of any local or other duly constituted authority, or in order to conform with practice amongst good employers generally in the area where the works are to be carried out.

(ii) The adjustment to the Contract Price under the terms of this Sub-Clause shall be calculated by multiplying the difference between the Basic and Current Rates for Local workmen by:

(a) the number of all hours actually worked, and

(b) in respect of those hours worked at overtime rates, by the product of the number of said hours and the percentage addition required by the law to be paid by the Contractor for overtime.

Such adjustment may be either an addition to or a deduction from the Contract Price.

(iii) No other adjustment of the Contract Price on account of fluctuation in the remuneration of Local Workmen shall be made.

(b) Specified Materials

(i) For the purpose of this Sub-Clause:
"Specified Materials" means the materials stated in Appendix (insert reference) to Tender required on the Site for the execution and completion of the Works;

"Basic Prices" means the current prices for the specified materials prevailing on the date 28 days prior to the latest date for submission of tenders; and

"Current Prices" means the current prices for the specified materials prevailing at any date subsequent to the date 28 days prior to the latest date for submission of tenders.

(ii) The adjustment to the Contract Price under the terms of this Sub-Clause shall be calculated by applying the difference between the Basic and Current Prices to the quantity of the appropriate Specified Material which is delivered to the Site during the period for which the particular Current Price is effective. Such adjustment may be either an addition to or a deduction from the Contract Price.

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(iii) The Contractor shall use due diligence to ensure that excessive wastage of the Specified Materials shall not occur. Any Specified Materials removed from the Site shall be clearly identified in the records required under paragraph (d) of this Sub-Clause.

(iv) The provisions of this Sub-Clause shall apply to fuels used in Contractor's Equipment engaged on the Site for the purposes of executing the Works, including vehicles owned by the Contractor (or hired by him under long term arrangements under which the Contractor is obligated to supply fuel) engaged in transporting any staff, labour, Contractor's Equipment, Temporary Works, Plant or materials to and from the Site. Such fuels shall be clearly identified in the records required under paragraph (d) of this Sub-Clause. The provisions of this Sub-Clause shall not apply to any fuels sold or supplied to any employee of the Contractor or to any person for use in any motor vehicle not being used for the purposes of the Contract.

(v) The Contractor shall at all times have regard to suitable markets and shall, whenever buying materials a variation in the cost of which would give rise to an adjustment of the Contract Price under this Sub-Clause, be diligent to buy or procure the same at the most economical prices as are consistent with the due performance by the Contractor of his obligations under the Contract.

If at any time there shall have been any lack of diligence, default or negligence on the part of the Contractor, whether in observing the above requirements or otherwise, then, for the purposes of adjusting the Contract Price pursuant hereto, no account shall be taken of any increase in cost which may be attributable to such lack of diligence, default or negligence and the amount by which any cost would have been decreased but for such lack of diligence, default or negligence shall be deducted from the Contract Price.

(vi) No other adjustment to the Contract Price on account of fluctuation in the cost of materials shall be made.

(c) Overheads and Profits Excluded

In determining the amount of any adjustment to the Contract Price pursuant to this Sub-Clause no account shall be taken of any overheads or profits.

(d) Notices and Records

The Contractor shall forthwith, upon the happening of any event which may or may be likely to give rise to adjustment of the Contract Price pursuant to this Sub-Clause, give notice thereof to the Engineer and the Contractor shall keep such books, accounts and other documents and records as are necessary to enable adjustment under this Sub-Clause to be made and shall, at the request of the Engineer, furnish any invoices, accounts, documents or records so kept and such other information as the Engineer may require.

(e) Adjustment after Date of Completion

Adjustment to the Contract Price, after the due date for completion of the whole of the Works pursuant to Clause 43, or after the date of completion of the whole of the Works certified pursuant to Clause 48, shall be made in accordance with Current Rates or Current Prices, as applicable, ruling at the due date for completion or the date stated in the Taking-Over Certificate, whichever is the earlier.

(f) Determination of Adjustment to Contract Price

The amount of any adjustment to the Contract Price pursuant to this Sub-Clause shall be determined by the Engineer in accordance with the foregoing rules.

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EXAMPLE APPENDIX TO TENDER
for use in conjunction with the second alternative.

SPECIFIED MATERIALS

MATERIAL	*UNIT*	*PRICE AND LOCATION*	*TRANSPORT TO SITE*	*PRICE DELIVERED TO SITE*	*REMARKS*
Bitumen					
Diesel *Petrol* *Lubricants*					
Cement					
Reinforcing Steel					
Explosives					

NOTES:

1. The Contractor shall provide copies of quotations to substantiate all prices included in the above table.

2. All subsequent price substantiation shall be from the same source as original unless otherwise agreed by the Engineer.

3. The Contractor shall submit full explanation and provide substantiating documentation for the mode of transport to Site he proposes. Only the proposed documented mode of transport shall qualify for price adjustment.

(Note: Materials stated in the Appendix to Tender should be those of which substantial quantities are involved.)

The third alternative is suitable where price adjustment is to be made through the application of indices in a formula:

Sub-Clause 70.1 – Increase or Decrease in Cost

EXAMPLE
Delete the text of the Sub-Clause and substitute

(a) Adjustments to the Contract Price in respect of rise and fall in the cost of labour and materials and other matters affecting the cost of execution of the Works shall be calculated for each monthly statement pursuant to Sub-Clause 60.1, the Statement at Completion pursuant to Sub-Clause 60.5 and the Final Statement pursuant to Sub-Clause 60.6 in accordance with the provisions of this Sub-Clause if there shall be any changes in the following Index figures compiled by (insert details of source of indices) and published by (insert details of publication):

(i) the Index of the cost of Labour in (insert name of country),

(ii) the Index of the cost of (insert other factor, as relevant), or

(iii) the Index of the cost of (insert other factor, as relevant).

(b) For the purpose of this Sub-Clause:

(i) "Base Index Figure" shall mean the index figure applicable on the date 28 days prior to the latest date for submission of tenders, and

(ii) "Current Index Figure" shall mean the index figure applicable on the last day of the period to which the particular statement relates.

Provided that in respect of any work the value of which is included in any such monthly statement (or Statement at Completion or Final Statement) and which was executed after the due date (or extended date) for completion of the whole of the Works, pursuant to Clause 43, the Current Index Figure shall be the index figure applicable on the aforesaid due date (or extended date) for completion of the whole of the Works.

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(iii) "Effective Value" shall be the difference between:

(a) The amount which is due to the Contractor under the provisions of Sub-Clauses 60.2, 60.5 or 60.8 (before deducting retention and excluding repayment of the advance payment) less any amounts for:

work executed under nominated Subcontracts

materials and Plant on the Site, as referred to in Sub-Clause 60.1 (c)

dayworks, variations or any other items based on actual cost or current prices, and bonuses (if any)

adjustments under Clause 70,

and

(b) The amount calculated in accordance with (b) (iii) (a) of this Sub-Clause and included in the last preceding statement.

(c) The adjustment to the Contract Price shall be calculated by multiplying the Effective Value by a Price Fluctuation Factor which shall be the net sum of the products obtained by multiplying each of the proportions given in paragraph (d) of this Sub-Clause by the following fraction:

$$\frac{\text{Current Index Figure} - \text{Base Index Figure}}{\text{Base Index Figure}}$$

calculated using the relevant index figures.

(d) For the purpose of calculating the Price Fluctuation Factor, the proportions referred to in paragraph (c) of this Sub-Clause shall (irrespective of the actual constituents of the work) be as follows:

0. in respect of labour (and supervision) costs subject to adjustment by reference to the Index referred to in (a) (i) of this Sub-Clause;

0. in respect of by reference to the Index referred to in (a) (ii) of this Sub-Clause;

0. in respect of by reference to the Index referred to in (a) (iii) of this Sub-Clause;

0. in respect of all other costs which shall not be subject to any adjustment;

1.00 Total

(e) Where the value of an Index is not known at the time of calculation, the latest available value shall be used and any adjustment necessary shall be made in subsequent monthly statements.

(Note: The number of indices included under (a) of this Sub-Clause may be varied, if it is determined that a different number of factors should be separately identified, and in such case (d) of this Sub-Clause must be altered to be consistent.)

Clause 72

Sub-Clause 72.2 – Currency Proportions

Where it is decided that the rate or rates of exchange shall be established from a source other than the Central Bank of the country, the Sub-Clause may be varied.

EXAMPLE

Delete the words from "prevailing... " to the end of the sentence and substitute "stated in the Appendix to Tender".

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Clause 73 onwards

Where circumstances require, additional Clauses may be added.

EXAMPLE CLAUSES (to be numbered, starting with Clause 73, as appropriate).

Where the law applicable to the Contract does not cover bribery, the following example Clause may be added.

Bribes **.1** *If the Contractor or any of his Subcontractors, agents or servants offers to give or agrees to offer or give to any person, any bribe, gift, gratuity or commission as an inducement or reward for doing or forbearing to do any action in relation to the Contract or any other contract with the Employer or for showing or forbearing to show favour or disfavour to any person in relation to the Contract or any other contract with the Employer, then the Employer may enter upon the Site and the Works and terminate the employment of the Contractor and the provisions of Clause 63 hereof shall apply as if such entry and termination had been made pursuant to that Clause.*

Where circumstances require that particular confidentiality is observed, the following example Clause may be added.

Details to be Confidential **.1** *The Contractor shall treat the details of the Contract as private and confidential, save in so far as may be necessary for the purposes thereof, and shall not publish or disclose the same or any particulars thereof in any trade or technical paper or elsewhere without the previous consent in writing of the Employer or the Engineer. If any dispute arises as to the necessity of any publication or disclosure for the purpose of the Contract the same shall be referred to the Employer whose determination shall be final.*

Where the Contract is being financed wholly or in part by an international financial institution whose rules or policies require a restriction on the use of the funds provided, the following example Clause may be added.

Expenditure Restricted **.1** *The Contractor shall not make any expenditures for the purpose of the Contract in the territories of any country which is not a member of (insert name of international financial institution) nor shall he make any expenditure for goods produced in or services supplied from such territories.*

Where the Contractor may be a joint venture, the following example Clause may be added.

Joint and Several Liability **.1** *If the Contractor is a joint venture of two or more persons, all such persons shall be jointly and severally bound to the Employer for the fulfilment of the terms of the Contract and shall designate one of such persons to act as leader with authority to bind the joint venture. The composition or the constitution of the joint venture shall not be altered without the prior consent of the Employer.*

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PART II –
CONDITIONS OF PARTICULAR APPLICATION

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EDITORIAL AMENDMENTS IN 1988

Following publication in 1987 of the Fourth Edition of the Conditions of Contract for Works of Civil Engineering Construction, a number of editorial amendments were agreed by FIDIC. The amendments have been incorporated during reprinting in 1988 and the list below clarifies the differences between the 1988 reprint and the original document.

Page 5 Clause 9. The words "as stated in Sub-Clause 9.1 of Part 1 of these Conditions" have been added to the final line of the first paragraph.

Page 6 Sub-Clause 12.2. A comma has been moved from after the word "words" to immediately before the word "other". The word "Site" has been capitalised.

Page 7 Example performance guarantee. A comma previously appeared between the words "and" and "complete" in the third line of the paragraph beginning "Whereas" .
The fifth line of the paragraph beginning "Now the Condition . . ." previously read ". . . default by the Contract . . ."

Page 12 Sub-Clause 21.3. (b) (ii). A full stop has been inserted following "50".

Page 13 Sub-Clause 34. Repatriation of Labour. A comma has been inserted between the words "country)" and "shall".

Page 14 Sub-Clause 34. Epidemics. The word "Contractor" has been capitalised in the first line.
Sub-Clause 34. Alcoholic Liquor or Drugs. The word "Contractor" has been capitalised in the first line.

Page 15 Sub-Clause 40.3. This was previously incorrectly listed as 40.2.

Page 17 Sub-Clause 49.5. The last line of the first paragraph previously read " . . . extend beyond 730 days".

Page 20 Sub-Clause 67.3. The word "a" previously appeared before the bracket on the penultimate line of the Example.

Page 21 Sub-Clause 70.2. A comma has been moved from after the word "words" to immediately before the word "other".

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FURTHER AMENDMENTS IN 1992

The following amendments have been made to the 1988 reprint of the Fourth Edition. In addition, some minor changes in the use of punctuation marks (commas, semicolons, colons and stops), as well as the use of the words "or" and "and" have been introduced to attain uniformity in the style of all Clauses. These minor changes which improve the style, but which have no effect on the meaning of Clauses, have not been listed below.

Contents The words "Index" and "Editorial Amendments" have been added at the bottom of the page.

Page 1 INTRODUCTION. The words ", subject to minor modifications" have been added, and the word " equally" changed to read "also".

Page 3 Sub-Clause 1.1. In the last sentence, the words "for example the name of an International Financing Institution (IFI)" have been deleted.

Page 4 Clause 9. In the first paragraph the words "of Part I" have been added. In the second paragraph "1" has been corrected to read "I".

Page 5 Clause 12. Sub-Clause 12.2. In the title the word "Adverse" has been changed to read "Not Foreseeable" (also amended in the Contents and the Index).

Page 10 Sub-Clause 21.1, sub-para (a). The words "(the term "cost" in this context shall include profit)" have been added.

Page 13 Example Sub-Clause for Supply of Foodstuffs. The words "staff and labour, or his Subcontractors" have been changed to read " staff, labour and Subcontractors"

Page 19 Example Sub-Clause for Advance Payment. The words "interim certificate" have been changed to read "Interim Payment Certificate", in both the singular and plural.

Clause 67. The first four paragraphs of the commentary have been added.

Page 24 Sub-Clause 70.1. In the formula, the word "Based" has been corrected to read "Base".

Page 25 Example Clause for Bribes. The word "Sub-contractors" has been corrected to read "Subcontractors".

Example Clause for Details to be Confidential. In the sixth line, the words "the decision of" have been deleted. In the seventh line, the word "award" has been changed to read "determination"

Example Clause for Expediture Restricted. In the commentary and text, the leading capital letters on the words "International Financing Institutions" have been changed to small letters. In the commentary, the word "Articles" has been changed to read "rules or policies". In the third line, the word "not" has been corrected to read "nor".

EDITORIAL AMENDMENTS (1988). In the last item, the words "Line 21" have been corrected to read "Page 21".

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SECTION VI

SPECIAL CONDITIONS OF CONTRACT

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SPECIAL CONDITIONS OF CONTRACT

(Mandatory Provisions not to be Amended / Substituted except as instructed by PEC)

1.1 Definitions

(a) (i) The Employer is:

Director General (FO), North
National Grid Company of Pakistan (NGC)
34-Industrial Area, NGC House,
Gulberg-III, Lahore-Pakistan
Telephone No. 92-42-99268292
E-mail address: ce.amnl@ntdc.com.pk

(a) (iv) The Engineer is:

Director General (FO), North
National Grid Company of Pakistan (NGC)
34-Industrial Area, NGC House,
Gulberg-III, Lahore-Pakistan
Telephone No. 92-42-99268292
E-mail address: ce.amnl@ntdc.com.pk

or any other competent person appointed by the Employer, and notified to the Contractor, to act in replacement of the Engineer. Provided always that except in cases of professional misconduct, the outgoing Engineers is to formulate his certifications/recommendations in relation to all outstanding matters, disputes and claims relating to the execution of the Works during his tenure.

The following paragraph is added:

(a)(vi) "Bidder or Tenderer" means any person or persons, company, corporation, firm or joint venture submitting a Bid or Tender.

(b)(v) The following is added at the end of the paragraph:

The word "Tender" is synonymous with "Bid" and the word "Tender Documents" with "Bidding Documents".

The following paragraph is added:

(b)(ix) "Programme" means the programme to be submitted by the Contractor in accordance with Sub-Clause 14.1 and any approved revisions thereto.

(e)(i) The text is deleted and substituted with the following:

"Contract Price" means the sum stated in the Letter of Acceptance as payable to the Contractor for the execution and completion of the Works subject to such additions thereto or deductions there from as may be made and remedying of any defects therein in accordance with the provisions of the Contract.

2.1 Engineer's Duties and Authority

With reference to Sub-Clause 2.1(b), the following provisions shall also apply;

The Engineer shall obtain the specific approval of the Employer before carrying out his duties in accordance with the following Clauses:

(i) Consenting to the sub-letting of any part of the Works under Sub-Clause 4.1 "Subcontracting".

(ii) Certifying additional cost determined under Sub-Clause 12.2 "Not Foreseeable Physical Obstructions or Conditions".

(iii) Any action under Clause 10 "Performance Security" and Clauses 21,23,24 & 25 "Insurance" of sorts.

(iv) Any action under Clause 40 "Suspension".

(v) Any action under Clause 44 "Extension of Time for Completion".

(vi) Any action under Clause 47 "Liquidated Damages for Delay" or Payment of Bonus for Early Completion of Works (PCC Sub-Clause 47.3).

(vii) Issuance of "Taking over Certificate" under Clause 48.

(viii) Issuing a Variation Order under Clause 51, except:

a) in an emergency* situation, as stated here below, or

b) if such variation would increase the Contract Price by less than the amount stated in the Appendix-A to Bid.

(ix) Fixing rates or prices under Clause 52.

(x) Extra payment as a result of Contractor's claims under Clause 53.

(xi) Release of Retention Money to the Contractor under Sub-Clause 60.3 "Payment of Retention Money".

(xii) Issuance of "Final Payment Certificate" under Sub-Clause 60.8.

(xiii) Issuance of "Defect Liability Certificate" under Sub-Clause 62.1.

(xiv) Any change in the ratios of Contract currency proportions and payments thereof under Clause 72 "Currency and Rate of Exchange".

(Note: Employer may further vary according to need of the project)

* (If in the opinion of the Engineer an emergency occurs affecting the safety of life or of the Works or of adjoining property, the Engineer may, without relieving the Contractor of any of his duties and responsibilities under the Contract, instruct the Contractor to execute all such work or to do all such things as may, in the opinion of the Engineer, be necessary to abate or reduce the risk. The Contractor shall forthwith comply with any such instruction of the Engineer. The Engineer shall

determine an addition to the Contract Price, in respect of such instruction, in accordance with Clause 52 and shall notify the Contractor accordingly, with a copy to the Employer.)

2.3 Engineer's Authority to delegate:

The following paragraph is added:

The Chief Engineer (T/L Design) shall act as representative of Engineer for providing in house Engineering Services including but not limited to the following:

a) Review & approval of technical data/ drawings/design
b) Interpretation of the bidding documents
c) Review & approval of profile/plan tabling/route plan
d) Foundation designs, review and approvals
e) Site visits for attending any technical problem if necessary
f) Resolution of disputes
g) Review & approval of all technical matters

The following Sub-Clauses 2.7 and 2.8 are added:

2.7 Engineer Not Liable

Approval, reviews and inspection by the Engineer of any part of the Works does not relieve the Contractor from his sole responsibility and liability for the supply of materials, plant and equipment for construction of the Works and their parts in accordance with the Contract and neither the Engineer's authority to act nor any decision made by him in good faith as provided for under the Contract whether to exercise or not to exercise such authority shall give rise to any duty or responsibility of the Engineer to the Contractor, any Subcontractor, any of their representatives or employees or any other person performing any portion of the Works.

2.8 Replacement of the Engineer

If the Employer intends to replace the Engineer, the Employer shall, not less than 14 days before the intended date of replacement, give notice to the Contractor, of the name, address and relevant experience of the intended replacement Engineer. The Employer shall not replace the Engineer with a person against whom the Contractor raises reasonable objection by notice to the Employer, with supporting particulars.

5.1 Language(s) and Law

(a) The Contract Documents shall be drawn up in the English language.
(b) The Contract shall be subject to the Laws of Islamic Republic of Pakistan.

5.2 Priority of Contract Documents

The documents listed at (1) to (6) of the Sub-Clause are deleted and substituted with the following:

(1) The Contract Agreement (if completed);

(2) The Letter of Acceptance;
(3) The completed Form of Bid;
(4) Special Stipulations (Appendix-A to Bid);
(5) The Special Conditions of Contract;
(6) The General Conditions;
(7) The priced Bill of Quantities;
(8) The completed Appendices to Bid;
(9) The Specifications
(10) The Drawings;

All Drawings and Specifications shall be interpreted in conformity with the Contract and these Conditions. Addendum, if any, shall be deemed to have been incorporated at the appropriate places in the documents forming the Contract. If any ambiguity or discrepancy is found in the documents, the Engineer shall issue any necessary clarification or instruction which shall be binding.

6.1 Custody and supply of Drawings & Documents

The contractor shall supply a soft copy of such drawings in source file and any other format specified by the Engineer.

The following Sub-Clauses 6.6 and 6.7 are added:

6.6 Shop Drawings

The Contractor shall submit to the Engineer for review 3 copies of all shop and erection drawings applicable to this Contract as per provision of relevant Sub-Clause of the Contract.

Review and approval by the Engineer shall not be construed as a complete check but will indicate only that the general method of construction and detailing is satisfactory and that the Engineer's review or approval shall not relieve the Contractor of any of his responsibilities under the Contract.

6.7 As-Built Drawings

At the completion of the Works under the Contract, the Contractor shall furnish to the Engineer 6 copies and one reproducible of all drawings amended to conform to the Works as built. The price of such Drawings shall be deemed to be included in the Contract Price.

10.1 Performance Security

The text is deleted and substituted with the following:

The Contractor shall provide Performance Security to the Employer in the prescribed form. The said Security shall be furnished or caused to be furnished by the Contractor within 14 days after the receipt of the Letter of Acceptance. The

Performance Security shall be of an amount equal to 10% of the Contract Price stated in the Letter of Acceptance. Such Security shall, at the option of the bidder, be in the form of bank guarantee from any Scheduled Bank in Pakistan. The cost of complying with requirements of this Sub-Clause shall be borne by the Contractor.

The following Sub-Clause 10.4 is added:

10.4 Performance Security Binding on Variations and Changes

The Performance Security shall be binding irrespective of changes in the quantities or variations in the Works or extensions in Time for Completion of the Works which are granted or agreed upon under the provisions of the Contract.

11.1 Inspection of Site

Bidder shall inspect the site, examine and obtain all information required and satisfy himself regarding matters and things such as access to site, communication, transport, right of way, the type and number of equipment and facilities required for the satisfactory completion of work, the quantity of various sections of the work, the availability of local labour, availability and rates of materials, local working conditions, uncertainties of weather, obstructions and hindrances that may arise etc., which may affect the work or cost thereof, before submission of his bid. Ignorance of site conditions shall not be accepted by the owner as basis for any claim for compensation. The submission of a bid by the bidder will be construed as evidence that such an examination was made and any later claims/disputes in regard to rates quoted shall not be entertained or considered by the owner.

If any temporary feeder road within site is considered essential for the proper execution of the work this shall have to be formed by the Contractor at his own cost with the prior approval of the Engineer. The Contractor shall organize his own arrangement to transport his equipment, men and materials in such a manner that the completion period will not be exceeded on any account.

The rates quoted by Bidder shall be based on his own knowledge and judgement of the conditions and hazards involved and shall not be based on any representations to the Engineer.

14.1 Programme to be submitted

The Contractor shall submit a detailed time programme to the Engineer within 14 days after receipt of Letter of Acceptance.

The Contractor shall also submit a revised programme whenever the previous programme is inconsistent with actual progress or with the Contractor's obligations.

Each programme shall be in the form of bar chart or a CPM chart identifying the critical activities and include:

a) The order in which the Contractor intends to carry out the Works, including the anticipated timing of each stage of design (if any), Contractor's Documents,

procurement, delivery to Site, construction, erection and testing.

b) Each of these stages for work by each nominated subcontractor

c) The sequence and timing of site inspections and tests specified in the Contract, and a supporting report which includes:

i) A general description of the methods which the Contractor intends to adopt, and of the major stages, in the execution of the Works, and

ii) Details showing the Contractor's reasonable estimate of the number of each class of Contractor's Personnel and of each type of Contractor's Equipment, required on the Site for each major stage.

Unless the Engineer, within 21 days after receiving a programme, gives notice to the Contractor stating the extent to which it does not comply with the Contract, the Contractor shall proceed in accordance with the programme, subject to his other obligations under the Contract. The Employer's Personnel shall be entitled to rely upon the programme when planning their activities.

If, at any time, the Engineer gives notice to the Contractor that a programme fails (to the extent stated) to comply with the Contract or to be consistent with actual progress and the Contractor's stated intentions, the Contractor shall submit a revised programme to the Engineer in accordance with this Sub-Clause.

The period between the Program updates will be 30 days. If the contractor fails to submit an updated program in time, any payment due for his current bills will be withheld till the submission of such programme.

14.3 Cash Flow Estimate to be submitted

The detailed Cash Flow Estimate shall be submitted within 21 days from the date of receipt of Letter of Acceptance

The following Sub-Clause 14.5 is added:

14.5 Monthly Progress Report

During the period of the Contract, the Contractor shall submit to the Engineer not later than the 8th day of the following month, copies of Monthly Progress Reports covering:

(1) A Construction Schedule indicating the monthly progress in percentage;
(2) Description of all work carried out since the last report;
(3) Description of the work planned for the next 56 days sufficiently detailed to enable the Engineer to determine his programme of inspection and testing;
(4) Monthly summary of daily job record;
(5) Photographs to illustrate the status of progress on the Site.
(6) Information about problems and difficulties encountered, if any, and

proposals to overcome the same.

(7) Charts and detailed descriptions of progress, including each stage of design (if any), Contractor's Documents, delivery of material to Site, construction, erection and testing; and including these stages for work by each nominated Subcontractor.

(8) The details described in Sub-Clause 35.1 [Return of labor & Contractor's Equipment]

(9) Copies of quality assurance documents, test results and certificates of Materials.

(10) List of notices given under Sub-Clause 68.1[Notice to Contractor] and notices given under Sub-Clause 68.2[Notice to Employer & Engineer].

(11) Safety statistics, including details of any hazardous incidents and activities relating to environmental aspects and public relations.

(12) Comparisons of actual and planned progress, with details of any events or circumstances which may jeopardize the completion in accordance with the Contract, and the measures being (or to be) adopted to overcome delays.

These progress reports will be submitted as per the following distribution list:

(1) G.M (AM) North, NGC
(2) CE (AM), NGC
(3) CE (T/L Design), NGC
(4) Manager (AM) NGC Concerned
(5) XEN (AM) NGC Concerned

During the period of the Contract, the Contractor shall keep a daily record of the work progress, which shall be made available to the Engineer as and when requested. The daily record shall include particulars of weather conditions, number of men working, deliveries of materials, quantity, location and assignment of Contractor's equipment.

15.1 Contractor's Superintendence

The Contractor's authorised representative and his other professional engineers working at Site shall register themselves with the Pakistan Engineering Council.

The Contractor's authorised representative at Site shall be authorised to exercise adequate administrative and financial powers on behalf of the Contractor so as to achieve completion of the Works as per the Contract.

The following Sub-Clauses 15.2 is added:

15.2 Language Ability of Contractor's Representative

The Contractor's authorized representative shall be fluent in the English language. Alternately an interpreter with ability of English language shall be provided by the Contractor on full time basis.

The following Sub-Clauses 16.3 and 16.4 are added:

16.3 Language Ability of Superintending Staff of Contractor

A reasonable proportion of the Contractor's superintending staff shall have a working knowledge of the English language. If the Contractor's superintending staffs is not fluent in English language, the Contractor shall make competent interpreters available during all working hours in a number deemed sufficient by the Engineer.

16.4 Employment of Local Personnel

The Contractor is encouraged, to the extent practicable and reasonable, to employ staff and labour from sources within Pakistan.

The following Sub-Clauses 19.3 and 19.4 are added:

19.3 Safety Precautions

In order to provide for the safety, health and welfare of' persons, and for prevention of damage of any kind, all operations for the purposes of or in connection with the Contract shall be carried out in compliance with the Safety Requirements of the Government of Pakistan with such modifications thereto as the Engineer may authorise or direct and the Contractor shall take or cause to be taken such further measures and comply with such further requirements as the Engineer may determine to be reasonably necessary for such purpose.

The Contractor shall make, maintain and submit reports to the Engineer concerning safety, health and welfare of persons and damage to property, as the Engineer may from time to time prescribe.

19.4 Lighting Work at Night

In the event of work being carried out at night, the Contractor shall at his own cost, provide and maintain such good and sufficient light as will enable the work to proceed satisfactorily and without danger. The approaches to the Site and the Works where the night-work is being carried out shall be sufficiently lighted. All arrangement adopted for such lighting shall be to the satisfaction of the Engineer's Representative.

20.4 Employer's Risks

The Employer's risks are:

Notwithstanding anything contained (in GCC 20.4), the Employer shall not be responsible, compensate or bear any kind of risk/liability whatsoever in nature. The responsibility for safe and sound handling of all dismantled material will be on part of contractor. The watch and ward of site with material will be responsibility of contractor round the clock to avoid any theft incident.

21.1 Insurance of Works and Contractor's Equipment

The minimum insurance amounts and deductibles shall be:

(a) For the Works and Materials: Full value of material.

(b) For loss or damage to Equipment: Full value of the loss/damage.

(c) For loss or damage to property (except the Works, Materials, and Equipment) in connection with Contract: Full value of loss/damage to property

(d) For personal injury or death:

i) of the Contractor's employees: In accordance with such applicable laws in Pakistan

ii) of other people: : In accordance with such applicable laws in Pakistan

21.4 Exclusions

The text is deleted and substituted with the following:

There shall be no obligation for the insurances in Sub-Clause 21.1 to include loss or damage caused by the risks listed under Sub-Clause 20.4 sub paragraph (a) to (h).

25.3 Remedy on Contractor Failure to Insure

Delete the text and substitute with the following:

The Contractor shall effect and keep in force all insurances required under the contract. The Employer shall not affect any kind of insurance on behalf of this project.

25.4 Compliance with Policy Conditions

Delete the text and substitute with the following:

"In the event that the Contractor fails to comply with conditions imposed by the insurance policies affected pursuant to the contract, the Contractor shall indemnify the employer against all losses and claims arising from such failure."

The following Sub-Clause 25.5 is added:

25.5 Insurance Company

The Contractor shall be obliged to place all insurances relating to the Contract (including, but not limited to, the insurances referred to in Clauses 21, 23 and 24) with either National Insurance Company of Pakistan or any other insurance company operating in Pakistan and acceptable to the Employer.

Costs of such insurances shall be borne by the Contractor.

The following Sub-Clause 31.3 is added:

31.3 Co-operation with other Contractors

During the execution of the Works, the Contractor shall co-operate fully with other contractors working for the Employer at and in the vicinity of the Site and also shall

provide adequate precautionary facilities not to make himself a nuisance to local residents and other contractors.

The following Sub-Clauses 34.2 to 34.12 are added:

34.2 Rates of Wages and Conditions of Labour

The Contractor shall pay rates of' wages and observe conditions of labour not less favourable than those established for the trade or industry where the work is carried out. In the absence of any rates of wages or conditions of labour so established, the Contractor shall pay rates of wages and observe conditions of labour which are not less favourable than the general level of wages and conditions observed by other employers whose general circumstances in the trade or in industry in which the Contractor is engaged are similar.

34.3 Employment of Persons in the Service of Others

The Contractor shall not recruit his staff and labour from amongst the persons in the services of the Employer or the Engineer; except with the prior written consent of the Employer or the Engineer, as the case may be.

34.4 Housing for Labour

Save insofar as the Contract otherwise provides, the Contractor shall provide and maintain such housing accommodation and amenities as he may consider necessary for all his supervisory staff and labour, employed for the purposes of or in connection with the Contract including all fencing, electricity supply, sanitation, cookhouses, fire prevention, water supply and other requirements in connection with such housing accommodation or amenities. On completion of the Contract, these facilities shall be handed over to the Employer or if the Employer so desires, the temporary camps or housing provided by the Contractor shall be removed and the Site reinstated to its original condition, all to the approval of the Engineer.

34.5 Health and Safety

Due precautions shall be taken by the Contractor, and at his own cost, to ensure the safety of his staff and labour at all times throughout the period of the Contract. The Contractor shall further ensure that suitable arrangements are made for the prevention of epidemics and for all necessary welfare and hygiene requirements.

34.6 Epidemics

In the event of any outbreak of illness of an epidemic nature, the Contractor shall comply with and carry out such regulations, orders and requirements as may be made by the Government, or the local medical or sanitary authorities, for purpose of dealing with and overcoming the same.

34.7 Supply of Water

The Contractor shall, so far as is reasonably practicable, having regard to local conditions**,** provide on the Site, to the satisfaction of the Engineer or his representative, adequate supply of drinking and other water for the use of his staff and labour.

34.8 Alcoholic Liquor or Drugs

The Contractor shall not, otherwise than in accordance with the Statutes, Ordinances and Government Regulations or Orders for the time being in force, import, sell, give, barter or otherwise dispose of any alcoholic liquor or drugs, or permit or suffer any such importation, sale, gift, barter or disposal by his Subcontractors, agents, staff or labour.

34.9 Arms and Ammunition

The Contractor shall not give, or otherwise dispose of to any person or persons, any arms or ammunition of any kind or permit or suffer the same as aforesaid.

34.10 Festivals and Religious Customs

The Contractor shall in all dealings with his staff and labour have due regard to all recognised festivals, days of rest and religious and other customs.

34.11 Disorderly Conduct

The Contractor shall at all times take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by or amongst staff and labour and for the preservation of peace and protection of persons and property in the neighbourhood of the Works against the same.

34.12 Compliance by Subcontractors

The Contractor shall be responsible for compliance by his Subcontractors of the provisions of this Clause.

35.1 Returns of Labour and Contractor's Equipment

The Contractor shall submit, to the Engineer, details showing the number of each class of Contractor's Personnel and of each type of Contractor's Equipment on the Site. Details shall be submitted each calendar month, in a form approved by the Engineer, until the Contractor has completed all work which is known to be outstanding at the completion date stated in the Taking Over Certificate for the Works.

The following Sub-Clauses 35.2 and 35.3 are added:

35.2 Records of Safety and Health

The Contractor shall maintain such records and make such reports concerning safety, health and welfare of persons and damage to property as the Engineer may from time to time prescribe.

35.3 Reporting of Accidents

The Contractor shall report to the Engineer details of any accident as soon as possible after its occurrence. In the case of any fatality or serious accident, the Contractor shall, in addition, notify the Engineer immediately by the quickest available means.

The following Sub-Clause 36.6 is added:

36.6 Use of Pakistani Materials and Services

The Contractor shall , so far as may be consistent with the Contract, make the maximum use of materials, supplies, plant and equipment indigenous to or produced or fabricated in Pakistan and services, available in Pakistan provided such materials, supplies, plant, equipment and services shall be of required standard.

41.1 Commencement of Works

The text is deleted and substituted with the following:

The Contractor shall commence the Works on Site within the period named in Appendix-A to Bid. Thereafter, the Contractor shall proceed with the Works with due expedition and without delay.

The following Sub-Clause 47.3 is added:

47.3 Bonus for Early Completion of Works

No bonus is admissible for the project.

48.2 Taking Over of Sections or Parts

For the purposes of para (a) of this Sub-Clause, separate Times for Completion shall be provided in the Appendix-A to Bid “Special Stipulations”.

The following Sub-Clause 49.5 is added:

49.5 Extensions of Defects Liability Period

The provisions of this Sub-Clause shall apply to all replacements or renewals of plant and equipment carried out by the Contractor to remedy defects and damage as if the replacements and renewals had been taken over on the date they were completed. The Defects Liability Period for the Works shall be extended by a period equal to the

period during which the Works cannot be used by reason of a defect or damage. If only a part of the Works is affected the Defects Liability Period shall be extended only for that part. In neither case shall the Defects Liability Period extend beyond two (2) years from the date of taking over.

51.2 Instructions for Variations

At the end of the first sentence, after the word “Engineer", the words “in writing” are added.

52.1 Valuation of Variations

In the tenth line, after the words “Engineer shall” the following is added:

Within a period not exceeding one-eighth of the completion time subject to a minimum of 56 days from the date of disagreement whichever is later.

53.4 Failure to Comply

This Sub-Clause is deleted in its entirety.

54.5 Conditions of Hire of Contractor’s Equipment

The following paragraph is added:

The Contractor shall, upon request by the Engineer at any time in relation to any item of hired Contractor’s Equipment, forthwith notify the Engineer in writing the name and address of the Owner of the equipment and shall certify that the agreement for the hire thereof contains a provision in accordance with the requirements set forth above.

The following Sub-Clauses59.4 & 59.5 are added:

59.4 Payments to Nominated Subcontractors

The Contractor shall pay to the nominated Subcontractor the amounts which the Engineer certifies to be due in accordance with the subcontract. These amounts plus other charges shall be included in the Contract Price in accordance with Clause 58 [Provisional Sums], except as stated in Sub-Clause 59.5 [Certification of Payments].

59.5 Certification of Payments & Nominated Subcontractors

Before issuing a Payment Certificate which includes an amount payable to a nominated Subcontractor, the Engineer may request the Contractor to supply reasonable evidence that the nominated Subcontractor has received all amounts due in accordance with previous Payment Certificates, less applicable deductions for retention or otherwise. Unless the Contractor:

a) submits reasonable evidence to the Engineer, or
b) i) satisfies the Engineer in writing that the Contractor is reasonably

entitled to withhold or refuse to pay these amounts, and

ii) submits to the Engineer reasonable evidence that the nominated Subcontractor has been notified of the Contractor's entitlement,

Then the Employer may (at his sole discretion) pay direct to the nominated Subcontractor, part or all of such amounts previously certified (less applicable deductions) as are due to the nominated Subcontractor and for which the Contractor has failed to submit the evidence described in sub-paragraphs (a) or (b) above. The Contractor shall then repay, to the Employer, the amount which the nominated Subcontractor was directly paid by the Employer.

60.1 Monthly Statements

In the first line after the word "shall", the following is added:

"on the basis of the joint measurement of work done under Clause 56.1,"

In Para (c) the words "the Appendix to Tender" are deleted and substituted with the words "Sub-Cause 60.11 (a)(6) hereof".
(in case Clause 60.11 is applicable)

60.2 Monthly Payments

In the first line, "28" is substituted by "14".

60.3 Payment of Retention Money

a) The following text is added at the end:
"In addition to above, release of this retention money is subject to issuance of GRN/SRS by In charge of designated NGC Warehouse for balance material of the project as per material reconciliation report along with certification from In charge of the Ware House of completeness and healthiness of the returned material. The material reconciliation report shall be duly vetted by Chief Engineer (T/L) Design as per as-built profile of the project."

60.10 Time for Payment

No interest is applicable on any delay at the part of the employer. Second Para starting from "In the event of failure" and ending on "under clause 69 otherwise" is deleted.

63.1 Default of Contractor

The following para is added at the end of the Sub-Clause:

Provided further that in addition to the action taken by the Employer against the Contractor under this Clause, the Employer may also refer the case of default of the Contractor to Pakistan Engineering Council for punitive action under the

Construction and Operation of Engineering Works Bye-Laws 1987, as amended from time to time.

65.2 Special Risks

The text is deleted and substituted with the following:

The Special Risks are the risks defined under Sub-Clause 20.4 sub paragraph (a) to (h).

67.1 Engineer's Decision

Replace eighty fourth with sixtieth in the eighth line of Para 1 of this clause.
Replace eighty fourth with sixtieth in the third line of Para 3 of this clause.
Replace seventieth with thirtieth in the fourth and fifth line of Para 3 of this clause.
Replace 84 with 60 in the sixth line of Para 3 of this clause.
Replace seventieth with thirtieth in the fourth line of Para 4 of this clause.

67.2 Amicable Settlement

Replace fifty sixth with thirtieth in the fourth line of Para 1 of this clause.

67. 3 Arbitration

In the sixth to eight lines, the words "shall be finally settled ..... appointed under such Rules" are deleted and substituted with the following:

shall be finally settled under the provisions of the Arbitration Act, 1940 as amended or any statutory modification or re-enactment thereof for the time being in force.

The following paragraph is added:

The place of arbitration shall be Lahore, Pakistan.

68.1 Notices to Contractor

The following paragraph is added:

For the purposes of this Sub-Clause, the Contractor shall, immediately after receipt of Letter of Acceptance, intimate in writing to the Employer and the Engineer by registered post, the address of his principal place of business or any change in such address during the period of the Contract.

68.2 Notices to Employer and Engineer

For the purposes of this Sub-Clause, the respective addresses are:

a) The Employer: Director General (FO), North
National Grid Company of Pakistan (NGC)

34-Industrial Area, NGC House,
Gulberg-III, Lahore-Pakistan
Telephone No. 92-42-99268292
E-mail address: ce.amnl@ntdc.com.pk

b) The Engineer is: Director General (FO), North
National Grid Company of Pakistan (NGC)
34-Industrial Area, NGC House,
Gulberg-III, Lahore-Pakistan
Telephone No. 92-42-99268292
E-mail address: ce.amnl@ntdc.com.pk

69.0 Default of Employer

This clause with all sub clauses is deleted in its entirety.

70.1 Increase or Decrease of Cost

Sub-Clause 70.1 is deleted in its entirety.

The following Sub-Clauses 73.1, 73.2, 74.1, 75.1, 76.1, 77.1 and 78.1 are added:

73.1 Payment of Income Tax

The Contractor, Subcontractors and their employees shall be responsible for payment of all their income tax, super tax and other taxes on income arising out of the Contract and the rates and prices stated in the Contract shall be deemed to cover all such taxes.

73.2 Customs Duty & Taxes

Contractor will submit the invoice inclusive of Provincial Sales Tax. Provincial Sales Tax shall be charged by the contractor and payments will be subject to income tax and sales tax withholding as per Rules mentioned in Federal or Respective Provincial Laws. Copy of sales tax return will be will be provided by the contractor.

74.1 Integrity Pact

If the Contractor or any of his Subcontractors, agents or servants is found to have violated or involved in violation of the Integrity Pact signed by the Contractor as Appendix-O to his Bid, then the Employer shall be entitled to:

(a) recover from the Contractor an amount equivalent to ten times the sum of any commission, gratification, bribe, finder's fee or kickback given by the Contractor or any of his Subcontractors, agents or servants;
(b) terminate the Contract; and
(c) recover from the Contractor any loss or damage to the Employer as a result of such termination or of any other corrupt business practices of the Contractor or any of his Subcontractors, agents or servants.

The termination under Sub-Para (b) of this Sub-Clause shall proceed in the manner

prescribed under Sub-Clauses 63.1 to 63.4 and the payment under Sub-Clause 63.3 shall be made after having deducted the amounts due to the Employer under Sub-Para (a) and (c) of this Sub-Clause.

75.1 Termination of Contract for Employer's Convenience

The Employer shall be entitled to terminate the Contract at any time for the Employer's convenience after giving 56 days prior notice to the Contractor, with a copy to the Engineer. In the event of such termination, the Contractor:

(a) shall proceed as provided in Sub-Clause 65.7 hereof; and
(b) shall be paid by the Employer as provided in Sub-Clause 65.8 hereof.

76.1 Liability of Contractor

The Contractor or his Subcontractors or assigns shall follow strictly, all relevant labour laws including the Workmen's Compensation Act and the Employer shall be fully indemnified for all claims, damages etc. arising out of any dispute between the Contractor, his Subcontractors or assigns and the labour employed by them.

77.1 Joint and Several Liabilities

If the Contractor is a joint venture of two or more persons, all such persons shall be jointly and severally bound to the Employer for the fulfilment of the terms of the Contract and shall designate one of such persons to act as leader with authority to bind the joint venture. The composition or the constitution of the joint venture shall not be altered without the prior consent of the Employer.

78.1 Details to be Confidential

The Contractor shall treat the details of the Contract as private and confidential, save in so far as may be necessary for the purposes thereof, and shall not publish or disclose the same or any particulars thereof in any trade or technical paper or elsewhere without the prior consent in writing of the Employer or the Engineer. If any dispute arises as to the necessity of any publication or disclosure for the purpose of the Contract, the same shall be referred to the decision of the Engineer whose award shall be final.

SECTION VII

SPECIFICATIONS –
SPECIAL PROVISIONS

SECTION VI
SPECIFICATIONS - SPECIAL PROVISIONS

SP-01 ACQUAINTANCE WITH SITE

The Contractor shall be deemed to have inspected and examined the Site and its surroundings and information available in connection therewith and before submitting his Bid, as to the form and nature thereof, including the subsurface conditions, the hydrological and climatic conditions, the extent and nature of Works for completion, the means of access to the Site and the accommodation he may require and, in general, shall be deemed to have obtained all necessary information, subject as above mentioned, as to risks, contingencies and all other circumstances which may influence or affect his Contract.

SP-02 DESCRIPTION OF PROJECT

For continuous uninterrupted dispersal of power in Lahore Region during Smog and Fog of Winter season replacement of normal disc insulators, of different 220kV transmission line as mentioned in BOQ, with RTV coated disc insulators through NGC own resources in accordance with Bidding Documents.

REPLACEMENT OF NORMAL DISC INSULATORS WITH RTV COATED DISC INSULATORS OF 220kV TRANSMISSION LINES UNDER FIELD OPERATIONS LAHORE (Lot-I)

SP-02.1 Location of Project

The route of the lines passes through bare, cultivated land of Punjab Province through the districts of Lahore Division, river crossings and road crossings.

SP-03 SITE CONDITIONS

SP-03.1 Site Conditions and Meteorological Data

The Employer does not guarantee the correctness of any data provided herein nor any interpretations, deductions or conclusions relative to subsurface conditions at Site. The Contractor must form his own opinion of the character and type of materials to be excavated. He must make his own interpretations, and satisfy himself by his own investigations and research regarding all conditions works. The Contractor must assume all responsibility for deductions and conclusions as to the nature or conditions of the materials to be excavated and of doing other work affected by the geology at the Site.

SP-04 WORKS

SP-04.1 Works

The intent of these Specifications is that the Works under this Contract should be equal to or superior than those actually described herein. In choosing indigenous materials and their finishes due regard shall be given to the conditions prevailing at Site.

SP-04.2 Extent of Specifications

The extent of the Bidding Documents is to provide for the Works herein specified to be fully complete in every detail for the function designated. All Works which are not specifically mentioned in the Bidding Documents, but which, in the opinion of the Engineer, are usual or necessary for the satisfactory completion of the Works shall be deemed to be included in the Contract Documents and shall be provided by the Contractor without extra cost to Employer.

SP-05 WORKS BY CONTRACTOR

SP-05.1 Scope

The scope of Works includes but not limited to insurance, loading at Employer's Storage Yard, transportation, unloading of material provided by the Employer i.e., RTV coated disc insulators along with associated equipment, T&P and other accessories, its installation, loading of fog type disc insulators from project site and delivering to NGC store and all other Works required to construct and complete the followings works.

i. Replacement of Normal Disc Insulators with RTV coated Disc Insulators of subject transmission line as mentioned in BOQ (No. of towers are also mentioned)

The scope of works shall also include the loading of RTV coated disc insulators at store site, its transportation and unloading of project site and loading of dismantled material at project site, its transportation and unloading at Employer's Storage Yard. (A-Type Store, 220kV Grid Station NGC NKLP or any other suitable storage site)

The 220kV Transmission Lines could be twin bundle, double circuit.

The Works to be performed under these Specifications are based on the rates provided in the Bill of Quantities and include but not limited to the following:

i) Provision of all guarantees, insurances, field offices/camps, storage camps, labour, services, Plant and Contractor's tools and equipment (including tension stringing and construction equipment) to construct, complete, test and commission the said transmission line in accordance with the requirements of the Contract Documents.
ii) Prepare and furnish all drawings and documents.
iii) Provision of access roads where necessary.
iv) Clearing right-of-way including disposal of cleared materials.

v) Check Survey including pegging out and layout of tower locations, spotting / stalking of towers, tower spotting adjustment etc.
vi) Establishing route alignment of any diversion required and detailed survey not limited to chainage & leveling.
vii) Preparation of plan & profile drawings (only diverted portion), tower spotting etc.
viii) Preparation of construction structure lists, sag-tension charts for conductor & Shieldwire stringing and construction drawings.
ix) Surveying of tower sites, tower staking, tower spotting adjustment and establishing correct locations of footings.
x) Excavation, formation of ramps, grading, blasting, leveling, cutting and backfilling including disposal of surplus/excavated material.
xi) Furnishing materials for constructing reinforced concrete tower foundations including installation of steel stub angles and tower grounding.
xii) Ground assembly of tower sections and erection of steel towers.
xiii) Dismantling of existing conductor along with all accessories, insulators, hardware, dampers etc. complete in all respects, shifting/transporting and properly stacking of the material at designated NGC Warehouse/Store.
xiv) Installing insulator assemblies for conductors.
xv) Stringing conductors, overhead shield wire complete with hardware, accessories and dampers.
xvi) Furnishing and installing tower signs (Aerial Markers, Danger Signs, Number and Phase Plates etc.), and anti-climbing devices.
xvii) Latitude and Longitude by hand held GPS of each tower location.
xviii) Testing and commissioning of the aforesaid Transmission Line.
xix) The security arrangements to be provided by the Contractor for his own crews/staff/storage yards.
xx) Preparation & submission of monthly progress reports including site photographs, as-built data and drawings including copies on reproducible transparencies and computer compact diskettes (CD/DVD) using AutoCAD.
xxi) Any other item which is not included here but is necessary for integrated operation of the Transmission Line as advised by the Engineer.
xxii) Making all necessary arrangements free of cost to access to tower locations on dry patches/land engulfed in river Indus creeks.
xxiii) Welding of bolts and Painting of tower stub/tower member/plates/bolts or repair of already painted tower as advised by the Engineer.
xxiv) Preparation of complete as built profile by the contractor. As built profile shall be vetted by Project Manager/ Consultant and will be submitted to Chief Engineer (T/L) Design NGC.
xxv) Preparation of Material Reconciliation Report as per as-built profile.
xxvi) Any other activity specifically not covered in the scope of work but is required for the completion, testing & commissioning and operation of the overhead line shall be deemed to be included in the scope of work.

NOTE:

(1) The Contractor is responsible to mobilize sufficient numbers of crews for foundations, tower erection, dismantling and stringing etc. equipped with T&P complete in all respects for smooth execution of each activity. For timely completion of the Project, Contractor is responsible to adhere to the project schedule and ensure that the sufficient resources are available with the crews before commencement of each activity. Detailed methodology and list of T&P shall have to be got approved from the Engineer well before the commencement of each activity. The detail of construction equipment/T&P to be arranged/imported from abroad by the Contractor must be furnished in his Bid.

(2) In case Contractor fails to arrange the required numbers of crews along with requisite T&P in good working condition for inspection at site prior to commencement of respective activity, Employer has the right, in addition to withhold current payments, terminate the Contract at any stage and to get executed the balance work through other Contractors at the Contractor's risk and cost.

SP-06 DRAWINGS

SP-06.1 Drawings in Contract

SP-06.1.1 Specification Drawings (If Any)

The specification drawings contained in Volume II of the Contract Documents show the Specifications and Scope of Works to be performed by the Contractor.

SP-06.1.2 Contractor's Bid Drawings

The Contractor's bid drawings are the drawings prepared by the Contractor for bidding purposes, and shall be part of his Bid.

The specification drawings and Contractor's bid drawings shall not be used for execution of the Works unless specific instructions for such use are given by the Engineer.

SP-06.1.3 Approved Drawings

The Works shall be performed in accordance with the approved drawings.

SP-06.2 Drawings and Other Data to be furnished by the Contractor

All drawings shall be in English language and all dimensions shall be in Metric System. Symbols shall be in accordance with IEC standards. All drawings shall be clearly marked "National Grid Company of Pakistan (NGC) for Installation & dismantling of 220kV Double Circuit Twin Bundle Sheikhupura-Ravi Transmission Line. All drawings/data submitted for approval shall conform to ISO paper sizes A0 to A4.

The Contractor shall submit detailed drawings as required herein below:

(i) Plan & profile drawings (only diverted portion) showing spotted towers, construction structure list, sag-tension charts for conductor & OPGW stringing, soil investigation reports and other data as required by the Engineer.

(ii) Bar bending schedule for various types of foundations/piles.

(iii) Drawings indicating crossings of transmission line over Railway tracks and Highways.

(iv) Specifications and details of concrete mix ratio and aggregate grading.

(v) Sag-templates for tower spotting.

(vi) Any other information and drawing which may be required for construction purposes.

SP-06.3 Distribution of Drawings

The drawings shall be submitted to the Engineer/Employer within the time given in the Contract or within such reasonable time as the Engineer may require, and in the number as specified hereunder:

Documents	Engineer		Employer/ Project Director	Total
	Head Office	Site Office		
Drawings for approval	3	-	1	4
Approved Drawings	2	2	1	5
Schedules, specifications and other documents/data	2	1	1	4
Construction Drawings	2	6	2	10
Record (As-Built) Drawings	2	-	4	6
Reproducible transparency Record (As-Built) Drawings	1	-	1	2
Record (As-Built) Drawings on computer compact diskette (CD/DVD) using Autocad Software	1	-	1	2

Insurance Certificates	1	1	2	4
Receiving reports	1	1	2	4
Damage reports	1	1	2	4
Erection progress Reports	2	1	2	5
List of Construction Stringing and Erection Equipment	1	1	1	3
Correspondence with Employer	1	1	1	3
Correspondence with Head office of Engineer	1	1	1	3
Correspondence with Site office of Engineer	1	1	1	3

SP-06.3.1 Record Drawings

In the event of the Works or any part thereof being, with the approval of the Engineer, properly built-in or installed otherwise than in accordance with the Approved Drawings, then the Contractor shall ensure that the Approved Drawings are marked up to show the conditions of the Works as installed and at least two (2) copies of such marked up drawings shall be submitted by the Contractor to the Engineer for approval. One copy of each of marked up drawings approved by the Engineer shall be returned to the Contractor by the Engineer and these shall be used for preparation of the Record Drawings within sixty (60) days after completion of Works of the line. A further copy of each of the marked-up drawings shall be retained by the Engineer for the purpose of checking the Record Drawings.

The Contractor shall furnish to the Engineer two (2) complete sets of all Record Drawings and Data prior to issuance of the Operational Acceptance Certificate. The Contractor shall also furnish to the Engineer one (1) mylar polyester base full size reproducible and one copy on computer compact diskette (CD/DVD) using AutoCAD, of all final Record and other drawings which, in the opinion of the Engineer, may be required for the Works operation and maintenance, for identification of parts and for ordering replacement parts and materials. The mylar reproducible shall be 50/70 microns thick, double matte film, wash off film, printed on the front.

SP-07 INSURANCE OF MATERIALS FURNISHED BY NGC

The Contractor shall maintain and pay for insurance for Materials furnished by NGC, against loss or damage of the Material caused by, or resulting from but not limited to the following:

(1) Fire, smoke, explosion, falling objects, impacts by aircrafts or land vehicles, lightning, riot, the escape of water, flood, Act of God, land sliding, vandalism or malicious mischief, windstorm, rain or hailstorm, and

(2) Theft or attempted theft:

for the full assessed value of the Materials. The insurance shall commence and shall be in force no later than the time of receipt from NGC's stores where the Contractor is required to obtain the Materials. This insurance must remain in force until the contractor clears and finalizes all accounts of Materials furnished by NGC and the Material is returned to NGC. Certificates of such insurance and all renewals thereof shall be filed with the Engineer. The insurance cover shall be obtained from an insurance company approved by NGC.

The Contractor shall be responsible for the safety and protection of Materials from the point where and at the specified time when he is required to obtain the Materials until the Material is returned to NGC. Should a loss be sustained, the Contractor shall replace or repair any loss or damage and complete the Works in accordance with the Contract on a priority basis after such loss or damage without waiting for the settlement of the insurance claim.

SP-08 HANDLING, LOADING AND UNLOADING OF EQUIPMENT & MATERIAL

SP-8.1 Lifting

The method of lifting, type of equipment and type of slings, used for handling the conductor reels are subject to approval by the Engineer. The wooden reels are so constructed as to be supported either on an axle through the arbor hole or by the reel flange. When the reels are lifted by an axle supported from above, a spreader bar must be employed to prevent reel damage by inward pressure on reel flange. In no case shall metallic slings or other metallic equipment shall come in contact with conductor or overhead shield wire or ground wire.

SP-8.2 Slings

If the use of slings is necessary, these shall be of a flexible type and preferably manila rope or other non- metallic materials. The use of steel wire, mesh or chain link slings is prohibited unless they are covered with rubber hose or some similar material.

SP-8.3 Unloading and Storage at the Site

(1) The Contractor shall unload all Plant and other material at the Site. Items for permanent installations shall be properly stored and shall be protected as required to prevent damage or deterioration of any type. Storage/ Stacking

methods shall be such as to cause minimum inconvenience to others and shall be arranged to facilitate inspection.

(2) All Plant and other material storage shall comply with the requirements of the Specifications or to the approval of the Engineer.

SP-8.4 Ownership of Packing Materials

All packing boxes, reels, shipping containers except those containers which are not the property of the Contractor, planking covers, etc. shall become the property of Employer. All the packing materials shall be handed over to Employer immediately after storage requirements of the Plant or parts including spares thereof and other materials are over.

SP-9 SCHEDULE, PROGRESS REPORTS AND MEETINGS

SP-9.1 Schedule

The Contractor shall carry out the Works in accordance with the dates/periods specified in Appendix-A to Bid. The Contractor shall regularly review the Schedule and notify the Engineer promptly of any revisions which in his view may be required from time to time.

SP-9.1.1 Form of Construction Schedule

The Schedule shall be a detailed CPM (critical path method) type, time scaled according to calendar dates and Project month numbers. The CPM for planning, scheduling, and controlling will be used for the Contract. The Contractor shall submit a schedule showing the logical sequence in which the Plant will be carried out in sufficient detail to satisfy the Engineer that the Plant is thoroughly planned and meets all the requirements of the Contract Documents.

SP-9.2 Progress Meetings

(1) Soon after the date of signing of Contract, the Engineer will, with the approval of Employer require a conference with Employer and the Contractor at a place mutually agreed upon, to discuss progress monitoring and proper execution of Contract.

(2) At monthly intervals or from time to time during the execution of the Contract, the Engineer may call meetings, either in his offices or at the Contractor's offices or Employer's office as is deemed necessary for the purpose of progress monitoring and proper execution of the Contract.

(1) As required by the Engineer, responsible representatives of the Contractor shall attend such meetings.

(2) All expenses incurred by the Contractor for attending such meetings shall be borne by the Contractor and shall not be reimbursable.

SP-10 SITE WORKS

Attention is drawn to the obligations of the Contractor to make his own arrangements at his own expense for Works provided to his employees. Any cost incurred by the Contractor in respect of any of such Site Works under the Contract shall be deemed to be included in the rates and prices in the Price Schedules and no separate payment, therefore, will be made to the Contractor.

SP-10.1 Accommodation

(1) The Contractor shall provide and maintain at his cost residential accommodation and transportation Works for his own use.

(2) The Contractor shall provide and maintain such housing accommodation and amenities as he may consider necessary for all of his supervisory staff and labour employed for the purposes of or in connection with this Contract including all fencing, electricity supply, sanitation, cook, houses, fire prevention, water supply and other requirements in connection with such housing accommodation or amenities.

SP-10.2 Offices

The Contractor shall arrange and maintain his offices at his own cost.

SP-10.3 Work-yards and Storage Areas

(1) No storage site shall be provided by Employer to store Plant and other material. The Contractor shall, furnish all the necessary services and be responsible for the construction and maintenance of the necessary construction camps, offices and stores; and perform all other work necessary for completion of the Works described herein in strict conformance with these Specifications.

(2) The Contractor shall provide his own watchman service to ensure security and safety of the Plant and other material prior to Employer taking over the Works.

SP-10.4 Temporary Buildings

(1) The Contractor shall provide and maintain all temporary structures required including warehouses, change houses for workmen, sheds, etc. He shall also provide his own field office complete with telephone so that he or his official representative can be contacted by Employer and/or Engineer at all times.

(2) Such temporary buildings and/or utilities shall remain the property of the Contractor and shall be removed by him at his expense upon the completion of the Works and the Site reinstated to its original condition, all to the approval of the Engineer.

SP-11 QUALITY CONTROL

The Contractor's Quality Control Department shall review all contract and specification requirements and ensure that they are understood.

Upon the award of the Contract, the Contractor, NGC and the Engineer shall establish mutually acceptable quality control and inspection procedures between the Contractor and the Engineer and indications are to be given at that time by Contractor as to how the agreed procedures will be implemented.

All Works covered by the Contract and the inspection thereof by the Contractor, shall be subject to surveillance and/or further inspection by NGC and/or the Engineer or by their authorized representative for which purpose the Contractor (or Sub-Contractor) shall:

(1) Demonstrate to the satisfaction of the Engineer or his authorized Representative that the Works meets the requirements of the Contract.

(2) Not cover up or put out of view Works until the Engineer or his authorized representative has been notified and release of Works has been obtained.

(3) Afford full opportunity for the Engineer or the Engineer's Representative to examine and measure any work which is about to be covered up or put out of view and to examine foundations before permanent work is placed thereon.

(4) Give due notice to the Engineer's Representative whenever any Work or foundations is/are ready or about to be ready for Examination.

SP-12 URGENT REPAIRS

If by reason of any accident or failure or other event occurring to in or in connection with the Work or any part thereof either during the execution of the Work or during the Period of Guarantee any remedial of other Work or repair shall in the opinion of the Engineer or the Engineer' Representative be urgently necessary for security and the Contractor is unable or unwilling at once to do such Work or repair, NGC may employ its own or other workmen do such work or repair as the Engineer or the Engineer's representative may consider necessary. If the Work or repair so done by NGC is Work which in the opinion of the Engineer the Contractor was liable to do at his own expense under the Contract all costs and charges properly incurred by NGC in so doing shall on demand be paid by the Contractor to NGC or may be deducted by NGC from any money due or which may become due to the Contractor.

SP-13 MEASUREMENT FOR PAYMENT

The measurement for payment and payment for the various items of Price Schedules shall be as follows:

(a) **Construct Right-of-Way Road**

No payment will be made for the construction of a right-of-way road and access routes. The cost of such road and access routes, if constructed, shall be deemed to be included in other prices in the Contract.

Employer will assess the compensation for unavoidable crop damage that occurs on the right of way in cultivated areas and will pay the compensation amount.

(b) **Clearing Right-of-Way (Not Applicable as it will be on part of contractor)**

Measurement for payment will be made horizontally along the center line of right-of-way cleared and disposal completed.

Payment will be made based on the unit price quoted in Price Schedules. The payment shall include, but not be limited to the brushing out the centerline, tower locations and conductor pulling sites within 25 meters on each side of the centerline. Trees over 2.5 meters in height which constitute a hazard or danger to the transmission line, or whose tops are within 6 meters of the 75°C final conductor position shall be removed.

(c) **Check Survey**

Measurement for payment will be made on the check survey carried out as given Technical Provisions.
Payment will be made based on lump sum basis after fulfilling all requirements given in Technical Provisions.

(d) **Survey (Only for diverted portion)**

Measurement for payment will be made horizontally along the center line of the line route.

Payment will be made based on the unit price quoted in the Price Schedules after the approval by Engineer of detailed survey, plan and profile drawings, and construction structure list. The unit price shall include but not be limited to the route establishing, detailed survey, route maps, plan tabling, profile preparation, tower spotting, construction structure list and all other work necessary for the completion of this phase of work.

(e) **Reinforced Concrete Foundations (N/A)**

Measurement for payment will be made for each type of foundation installed as shown on the approved relevant construction drawings for the various foundations. Bid drawings are firm & final and no change is acceptable except from Engineer.

The quoted unit price shall include, but not be limited to tower staking, the cost of furnishing all labour, equipment, materials (including concrete and reinforcement etc.) site leveling, blasting/cutting/grading of tower site, excavation, shuttering, dewatering, shorting, forming, reinforcing, concreting, curing, backfilling, installing stub angles, tower grounding, setting and all other associated Works to produce finished foundations.

(f) Dismantling & Installation of Disc Insulators

Measurement for payment will be made for each type of component dismantled as shown on the relevant drawings for the various towers.

Payment will be made based on the unit prices quoted on per Tower basis in the bid for dismantling and installation of RTV coated insulators of all tower types. The unit prices shall include, but not be limited to, the cost of all labor, equipment, dismantling of and installation of RTV coated insulators on complete tower (without damaging any component), bundling/packing, loading, transporting, unloading & properly staking at designated warehouse and all other associated work necessary for the completion of this phase of the work.

Note: Dismantling and installation work will be carried our in the presence of representative of concerned formation of NGC, for which the contractor will give advance notice to NGC for supervision and inspection.

(g) Erection of Steel Towers (N/A)

Measurement for payment will be made for each type of component installed as shown on the relevant drawings for the various towers.

Payment will be made based on the unit prices quoted on per Tower basis in the bid for each type of component installed of all tower types. The unit prices shall include, but not be limited to, detailing of tower fabrication drawings supplied by Employer, the cost of all labour, equipment, requisitioning, loading, transporting, from site storage areas to the sites, erecting together with bolts, nuts, washers, stepbolts, including back bolting and punching of nuts and bolts and all other associated work necessary for the completion of the towers ready for installation of overhead alumoweld shield wire, OPGW and conductors thereon.

(h) **Welding of Nuts & Bolts (N/A)**

Measurement for measurement will be made for each tower.

Payment will be made on the unit price quoted for each tower. The unit prices shall include, but not limited to welding of nuts & bolts up to 8.0 m height and application of galvanox as specified in technical provisions and price schedule.

(i) **Dismantling of Existing Conductor Insulators & associated hardware etc. (N/A)**

Measurement for payment will be made horizontally along the center line of the line route.

Payment will be made based on the unit price quoted in the Price Schedules. The unit prices shall include, but not be limited to, the cost of all labour, equipment, dismantling including but limited up to the removal of spacer dampers for conductor & stock bridge vibration dampers for earth wire, dismantling of conductor, earth wire & jumpers including spacer dampers, removal of accessories for conductor and earth wire along with associated equipment, removal of hardware & insulator strings, and all other associated work necessary for the completion of this phase of the work.

(J) **Stringing of Conductor**

Measurement for payment will be made horizontally along the center line of the line route.

Payment will be made based on the unit price quoted in the Price Schedules. The unit prices shall include, but not be limited to, the cost of all labour, equipment, requisitioning, loading, transporting, distributing, stringing including but limited up to the installation of insulator accessories for conductor; spacer dampers for conductor, sagging, clipping-in, dead-ends, jumpers including installation of spacer, together with all hardware as shown on the relevant drawings, and all other associated work necessary for the completion of this phase of the work.

(K) **Cost of Dismantled Stringing Material (N/A)**

Measurement for cost of dismantled material will be made horizontally along the center line of the line route.

Cost of the dismantled material handed over to the contractor will be deducted from the invoices of the contractor.

(L) **Testing & Commissioning (N/A)**

Measurement for payment will be made on successfully testing & commissioning of transmission line.

Payment will be made based on the lumpsum amount quoted in the Price Schedules. The lumpsum amount shall include but not be limited to successful testing & commissioning of transmission line and all other associated work necessary for the completion of this phase of the work.

SP-14 PAYMENT FOR WORKS REQUIRED BY SPECIAL PROVISIONS

Unless expressly excluded, the cost of all Works required by the "Special Provisions" shall be considered to be included in the price and amounts quoted in the Price Schedules.

SECTION VIII

SPECIFICATIONS –
TECHNICAL PROVISIONS

1. SPECIFICATIONS - TECHNICAL PROVISIONS

1.1 General

(1) Clearing Right-of-Way

Right-of-Way clearing shall be restricted to the minimum necessary for the safe construction and operation of the line. Clearing shall generally consist of brushing out the center line, tower locations and conductor pulling sites within 25 meters on each side of the center line. Trees over 2.5 meters in height which constitute a hazard or danger to the transmission line, or whose tops are within 6 meters at 75°C final conductor sag position, shall be removed.

The clearing of desert vegetation shall be restricted to that required for placement of footings and for the assembly and erection of towers and wire pulling Site.

No clearing will be allowed in orchards or other areas of fruit bearing trees, except as specifically approved by the Engineer.

The cleared materials will be the property of the Land Owner. If any disposal of cleared material is required, it will be disposed of by burning or other methods approved by the Engineer.

(2) Survey and Profiling

The technical specifications cover detailed survey including route alignment, profiling, tower spotting and contouring. The scope of work inter-alia shall include the following:

Route alignment using Google Maps, Survey of Pakistan Maps and Walk over survey etc.

Detailed Survey using RTK, GPS, DGPS, Total Stations, long range scanners & Digital theodolites of reasonable accuracies.

Digitized contouring at hilly/undulated locations.

Preparation of Survey reports including estimation of Bill of Quantities, identification and explanation of route constraints, infrastructure details available enroute etc.

All the bidders shall present their proposed methodology for execution of the work as per specifications and details of the equipment and facilities including soft wares available with them.

The Contractor must note that the Employer shall not be responsible for loss or damage to properties, trees etc. due to their work during survey. The Contractor shall indemnify the Employer for any loss or damage to properties, trees etc. during the survey work

The Contractor should note that Employer will not furnish the topographical maps prepared by survey of Pakistan but will render available assistance that may be required in obtaining these by providing letters of recommendation to the concerned authorities.

The Bidders shall give along with their bid clause by clause commentary indicating their confirmation/comments/observations in respect of all clauses of this functional requirements.

The work shall be carried out by the Contractor using modern surveying techniques i.e. RTK. The bidder shall indicate in his offer, the detailed description of the procedure to be deployed. The details of the equipment & facilities including software's for image processing, computer aided tower spotting etc. available with the bidder or his associates shall also be furnished with the bid

After carrying out the detailed survey, the Contractor shall estimate complete BOQ of the transmission lines and submit the same to the Employer.

The bidders are advised that while making bid proposals and quoting prices, all technical provisions may appropriately be taken into consideration. The bidder shall complete all the schedules and annexures in the bid proposal sheets, technical data sheets specified elsewhere.

Route Alignment

Route Alignment shall be done using Google Maps and Survey of Pakistan Maps (scale 1:50,000). After a study of these maps, alternate routes will be identified & marked within 5 km of the beeline.

Walkover survey will be carried out on the alternate routes to obtain first-hand information of various important field data required for transmission line works and observe features on the ground which may not be clearly available in the maps such as Power lines, Type of terrain and nature of soil strata, expanding villages and towns, rich gardens and plantations, forests and high tree areas, national parks and wildlife sanctuaries, archaeological monuments, aerodromes and prohibited areas etc. Walkover survey means going on foot over the area covering the route however vehicle may also be used wherever the terrain permits and where long distances can be seen without obstacles.

Then a comparative evaluation of the alternate routes will be done, inter alia considering, route length, number and type of angle points, nature and number of major crossings, deviation in the line due to civil/military aerodromes and other industrial installations, approach to the line in general for construction, reaches through protected or reserve forests and continuous long stretches in paddy fields etc.

Based on this evaluation, the Contractor will propose the optimal route alignment and, along with it, will provide all information/data /details collected. The Contractor will arrange joint site visits with the Employer‘s representatives for field verifications. Final route alignment will be selected with mutual consensus of the Contractor and Employer.

Final digitized route alignment drawing with latest topographical and other details/features up to 5km on both sides of selected route alignment shall be submitted for the Employer‘s approval along with report containing other information/details as mentioned above (both in hard and soft copies). Changes in the route alignment, if any, during detail survey, shall be incorporated in the final digitized route alignment drawings.

Requirement of Transmission Line Routing

The alignment of the transmission line shall be most economical from the point of view of construction and maintenance.

Routing of transmission line through protected /reserved forest area should be avoided. In case it is not possible to avoid the forests or areas having large trees completely, then keeping in view of the overall economy, the route should be aligned in such a way that cutting of trees is minimum.

The route should have minimum crossings of Major Rivers, Railway lines, National / State highways, overhead EHV power lines and communication lines.

The number of angle points shall be kept to a minimum.

The distance between the terminal points specified shall be kept shortest possible, consistent with the terrain that is encountered.

Marshy and low lying areas, river beds and earth slip zones shall be avoided to minimize risk to the foundations and towers.

It would be preferable to utilize level ground for the alignment.

Crossing of power lines shall be minimum. Alignment shall be kept at a specified distance from existing lines considering RoW and tower falling distances.

Crossing of communication line shall be minimized and it shall be preferably at right angle. Proximity and parallelism with telecom lines shall be eliminated to avoid danger of induction to them.

Areas subjected to flooding such as nalla shall be avoided.

Restricted areas such as civil and military airfield shall be avoided. Care shall also be taken to avoid aircraft landing approaches.

It is desirable to take the line as near the paths and roads as practicable without unduly increasing the length of the line so as to facilitate transportation of material during construction and the patrolling / maintenance of the line. Where the line cannot be routed near paths / roads economically, care shall be taken to see that easy access is possible at every 5 to 8 km. It shall be ensured that all angle / tension points are approachable to facilitate easy transportation of stringing equipment during construction and for maintenance / breakdowns.

The line shall be aligned suitably so that it can be diverted / looped in looped out to cater for possible future loads / sub stations along the route.

In general, large angles in the line are to be avoided wherever possible. The magnitude of the angle should be small as far as possible and should never be more than 60 degrees. Angle points should be selected such that shifting of the points within 100 m radius is possible at the time of construction of the

The route of the transmission line is to be so located that, as far as possible, it is protected from high winds and falling trees & branches. In hilly tracks, the line is to be routed, as far as possible, along the side of the hills or through valleys rather than over high points. However, a route of the line very close to steep slopes of hills be avoided as far as possible as there may be difficulty in obtaining lateral (side) clearance to ground for conductors. Also, there may be overhanging / loose boulders which may roll down and damage the line.

Certain areas such as quarry sites, rich plantations, gardens & nurseries which will present the Employer problems in acquisition of right of way and way leave clearance during construction and maintenance should be avoided.

The line routing should avoid large habitations, densely populated areas, forest, animal/ bird sanctuary etc., to the extent possible.

The areas requiring special foundations and those prone to flooding should be avoided.

Detailed Survey

The detailed survey shall be carried out using RTK, DGPS, Total Stations, digital theodolites etc. along the approved route alignment, inter alia including the following

Digitized profiling along the selected route along with plan details using

Power Line Systems Computer Aided Design and Drafting (PLS-CADD).

Computer aided tower spotting & optimization.

Route Marking

The route of the transmission line shall be recorded using DGPS of positional accuracy less than 3mtr.

The co-ordinates of all the angle points as well as other important crossings, landmarks etc. shall be recorded using DGPS for easy relocating. In addition the angle point locations shall be marked using marking stones of size 200 x

200 x 1000 mm, with approved marks including painting above the ground level.

At the starting point of the commencement of route survey the coordinates shall be recorded. The co-ordinates of the location of the survey instrument shall also be recorded. Further, the co-ordinates at prominent position at intervals of not more than 750m along the transmission line to be surveyed up to the next angle point shall also be recorded. Wherever the line alignment crosses the EHV line, railway line or main roads, the Contractor shall record co-ordinates on the points of crossing. Wherever line route alignment passes over permanent land marks such as rock, boulders, culverts etc. suitable white paint marks with directional and NGC markings shall be made and co-ordinates recorded.

Profiling

Detailed survey and profiling will be carried out for complete corridor, as described in clause 3.5 (h) of this specification, using modern surveying equipment such as RTK equipment, long range scanners and total stations etc. Density of survey data collection should be sufficient to ensure that proper surface imitating actual ground situation of the surveyed corridor can be generated in PLS-CADD. In any case, distance between any two points of survey data grid should not be more than 05m. For hilly/undulated terrain, this distance should be reduced appropriately to ensure that a representative surface is generated in PLS-CADD. R/L's at other undulations in the corridor and other details such as crossings, building & structure, trees & other infrastructure etc. shall also be recorded. Areas along the route, which in the view of the Contractor, are not suitable for tower spotting, shall also be

marked. Recorded survey data shall be exported to MS-Excel file format and submitted along with profile for review of the Engineer.

The complete profiling details shall be digitized and the data shall be prepared & stored in the format compatible to computer-aided tower spotting software.

Route plan and longitudinal profile, commonly referred to as 'Route Profile' or simply 'Profile', will be prepared/ plotted on square paper rolls of graphed tracing paper (1mm / 5mm / 1cm). The profile is plotted to a scale of 1: 2000 horizontal and 1:200 vertical. The profile shall progress from left to right. The height of the sheet shall be taken so that the ground profile and the towers, including extensions can be fully shown. For hilly terrain, greater height of the sheet may be taken, or the sections may be plotted on separate sheets. The length of each sheet may be taken so that approximately 5 km of the line route can be plotted. A gap of 5 to 10 cm shall be kept between sections.

The profile shall show the longitudinal profiles along the center line of the transmission line route and also the cross section profile wherever appreciable difference in level exists with reference to the center line level. The angle of line deviation, duly marked left (L) or right (R) as the case may be, shall also be shown.

Plan table drawing shall show the details of all objects lying within 50 meters on both sides of the center line of the route. Objects and their distances along the route within 50 meters on both sides of the center line, nearby villages, important roads or rivers shall be marked on the drawing.

Crossing details of power lines, roads, railway lines, canals or rivers etc. shall be marked as clearly as possible. Levels of roads, canal and river embankments, maximum water / flood levels, railway top levels and heights of supports / lines being crossed, and shall be shown in the offsets part of the profile. All trees coming within the zone of the right of way and which need to be cut / trimmed shall also be indicated.

Printed/plotted output of the digitized profiling shall be submitted by the Contractor to Employer for review before taking up computer-aided tower spotting.

Optimization of Tower Location/Tower Spotting.

Optimization of tower locations shall be done by the Contractor using computer-aided tower spotting software PLS-CADD and NGC's recommended tower family. In order to verify the results of computer aided tower spotting, the Contractor shall furnish sample calculations and manual tower spotting drawings for some typical sections.

The sag-tension characteristics of the conductor as well as tower spotting data shall be furnished by the Contractor for the Employer's approval before execution. Sag template curves, shall be prepared by the Contractor on acrylic sheet indicating cold curve, hot curve, ground clearance curve and support footing curve and the same shall be submitted to the Employer.

Tower Spotting

While, profiling and spotting the towers the following shall be borne in mind.

Extension

An individual span shall be as near to the normal design span as possible. In case an individual span becomes too short with normal supports on account of undulations in ground profile, one or both the supports of the span may be extended by inserting standard body / leg extension.

Section Length:

The number of consecutive spans between the section points shall not exceed 13 spans or 5km in plain terrain and 10 spans or 3 km in hilly terrain for double circuit 500kV line. The number of consecutive spans between the section points shall not exceed 12 spans or 4.5 km in plain terrain and 10 spans or 3 km in hilly terrain for 220kV line. The number of consecutive spans between the section points shall not exceed 14 spans or 4.5 km in plain terrain and 10 spans or 3 km in hilly terrain for 132kV line. A section point shall comprise of tension point with angle type tower.

Loading

There shall not be any upward force on suspension towers under normal working conditions and the suspension towers shall support at least the minimum weight span as provided in the designs. In case uplift is unavoidable, it shall be examined if the same can be overcome by adding standard body extensions to the towers failing which tension towers designed for the purpose shall be employed at such positions.

Road Crossing

The ground clearance at the roads under maximum temperature and in still air shall be such that even with conductor broken on adjacent span, ground clearance of the conductor from the road surfaces shall not be less than be less than 10.0m for 500kV and 8.0m for 220kV and 132 line. At all national highways, tension towers shall be used and crossing span shall not be more than 350 meters.

Railway Crossings

All the railway crossings in the route of transmission line shall be identified by the Contractor. At the time of detailed survey, the railway crossings shall be finalized as per the regulation laid down by the Railway Authorities. Following are important considerations in this regard.

The crossings shall be supported on angle tower on either side depending on the merits of each case.

The crossing shall normally be at right angle to the railway track.

The minimum distance of the crossing tower shall be at least equal to the height of the tower plus 6m away measured from the center of the nearest railway track.

No crossing shall be located over a booster transformer, traction switching station, traction sub-station or a track cabin location in an electrified area.

Minimum ground clearance above rail level of the lowest portion of any conductor under condition of maximum sag shall be maintained at 11.75m for 500 kV, 11.28m for 220kV line and 10.97 for 132kV line.

The crossing span shall be limited to 300/250 meters for 500kV/220kV/132kV lines.

River Crossings

In case of major river crossing, towers shall be of suspension type and the anchor towers (Balancing towers) on either side of the main river crossing shall be used with zero-degree deviation. Clearance required for navigation shall be provided. For non-navigable river, clearance shall be reckoned with respect to highest flood level (HFL).

Power line Crossings

Wherever the line is to cross another power line, it will be ensured that higher voltage line will pass above the lower voltage line. Minimum clearance in between lines when crossing each other will be as per NGC standard. The angle of crossing has to be preferably 90 degrees and at any time should not be below 60 degrees.

The crossing of the new line over an existing power line is preferably done in the middle of the span between towers of existing power line where there is maximum sag of the conductor. When the line to be constructed is crossing another important EHV line for which shutdown may be difficult, suspension towers in combination with angle / dead end towers, with extensions as required, may be used.

The crossing of the new line below an existing power line shall be done at locations where adequate ground clearance for the new line and the specified clearance from the existing power line are available. Such crossing shall preferably be in the mid span between towers / structures of the new power line, where there is maximum sag of the conductor, and near one of the towers of the crossing span of the existing line for taking advantage of the higher height of the conductors. These measures reduce the requirement of increasing the height of the existing line for obtaining the requisite clearance.

Details Enroute

All topographical details, permanent features, such as trees, building etc. 25m (Total-50 meter) for 500kV, 17.5m (Total- 35 meter) for 220kV line and 13.5m (Total- 27 meter) for 132kV line on either side of the alignment shall be detailed on the profile plan. All the topographical details (trees, buildings, permanent structures, including open land) shall be included in the report.

Clearance from Ground, Building, Trees etc.

Clearance from ground, buildings, trees and telephone lines shall be provided in conformity with NGC standard as amended up to date.

The Contractor shall also intimate the Employer, his assessment about the likely amount of tree & crop compensation etc. required to be paid by the Employer during execution stage. This assessment shall be done considering prevailing practices/guidelines, local regulations and other inquiries from local authorities.

Right of Way

Following right of way width shall be maintained taking into consideration the theoretical requirement of right of way and transport requirements of maintenance:

Transmission Voltage	Recommended Width of Right of Way
132 kV	27 meters
220 kV	35 meters
500 kV	50 meters

Preliminary Schedule

The profile sheets showing the locations of the towers together with preliminary schedules of quantities indicating tower types, wind & weight spans, angle of deviation, crossing & other details etc. shall be submitted by the Contractor for review & approval by Employer.

Detailed Survey of Tower Locations.

The detailed survey shall be conducted for spotting the tower locations on ground conforming to the approved profile and tower schedule.

The co-ordinates of all the tower locations shall also be recorded using DGPS of positional accuracy less than 3m. The position of all tower locations shall be marked in the final digitized route alignment drawing with relative distance from any permanent benchmark in the area.

The Contractor shall also collect required data at each tower location in respect of soil strata, ground water level, history of water table in adjacent areas/surface water and classify the suitable type of foundation at each location.

Contouring at hilly / undulated locations

The levels up or down of each pit center with respect to center of tower location shall be recorded at intervals of 2m using RTK / total stations / DGPS / digital theodolite and digitized contour plans shall be made. Based on the digitized elevation plans, the quantities of benching & protection work vis-a.-vis possible unequal leg extensions shall be optimized using suitable computer-aided techniques/ software's. Required tower and foundation details, cost data for comparative evaluation of benching & protection work vis-a-vis unequal leg extensions shall be provided by the Contractor to the Employer before execution stage.

The changes desired by the Employer in the preliminary tower schedule or as may be required based on detailed survey of tower locations & contouring by the Contractor, shall be carried out by the Contractor and the final tower schedule shall be submitted for approval of Employer. The tower schedule shall show position of all type of towers, span length, type of foundation for each tower, benching & revetment requirement, unequal leg extensions, deviation at all angles, crossing and other details etc.

Survey Methodology & Precision

All elevations shall be referenced to benchmarks established by the survey of Pakistan. Leveling operations shall begin and end at benchmarks approved by the Employer.

During the leveling of the profile, check surveys will be effected at intervals not exceeding 50 km. With benchmarks of known elevations. The difference in elevations as surveyed by the Contractor and as declared by Survey of Pakistan for these benchmarks shall not exceed the precision required for 3rd order surveys $e \leq 24k$ where k is the distance between benchmarks in km and e is the difference between elevations in mm.

In the absence of suitable benchmarks, the leveling shall be done by two independent leveling parties working in opposite directions along the same line. The difference in elevations between the two surveys shall not exceed the precision required for 3rd order surveys as stated above.

All-important objects and features along the transmission line centerline (railways, highways, roads, canals, rivers, transmission lines, distribution lines, telephone lines etc.) shall be surveyed and located with a positional accuracy of 1:2000 between points of known horizontal position.

3) Detailed Check Survey

The indicative drawing showing the line route and substation's locations are attached in Volume 2 of Specification Drawings.

The Employer has already carried out the detailed survey of transmission line along the selected route and prepared the profile / plan tabling which shall be handed over to the Contractor after award. The Contractor shall conduct the check survey to locate tower locations on ground conforming to the approved profile and tower schedule and to ensure that ground features, angle deviations, levels, distances, clearances, crossings etc; as shown on profile correspond with actual features at site. Any variance shall be noted and marked by the contactor. The requirement of tower site leveling and revetment work, if required, shall also be marked by the Contractor on the profiles. Locations, where benching might be required, shall also be identified. Contractor shall make contour measurements along with the calculations for the volume of benching and revetment, so that a decision can be made whether to accept benching and/or use unequal leg extensions. The co-ordinates of all the tower locations shall also be recorded using GPS/DGPS of positional accuracy less than 1m for easy relocating which shall be incorporated in the final digitized route alignment/profile.

After completing the check survey, profiles shall be re-submitted to the Employer for approval along with check survey report.

The Contractor will be responsible for the correct setting of towers as shown in approved profiles. If towers after erection are found to be out of the approved alignment/position in the profile, the Contractor will dismantle and re-erect them correctly fully at his own cost and without extension of time.

The Contractor shall be responsible to carry out survey including pegging out and layout of tower locations, spotting/staking of towers and preparation of construction structure list.

The work to be done by the Contractor shall include but not limited to the following:

(i) Validation & updating of the already prepared plan & profile drawings and construction structure lists (to be provided to the contractor after award of contract) of the proposed transmission line route with the prevailing field developments. Staking (centre and reference pegs) of the tower locations which have to be concreted are included in the Contractor's scope.

Latitude and longitude by hand held GPS of each angle location should be collected and submitted to the Engineer.

(ii) In case of route diversion, detail survey shall be conducted and approved by the Engineer, the Contractor will carry out investigation of diversion route alongwith necessary plan tabling of the area and shall make necessary modification and establish the terminal points, the angle locations, road crossing and other points of interest as advised by the Engineer or his authorized representative.

(iii) The contractor shall also be responsible to prepare plan tabling and profile drawings, tower spotting and construction structure list of any diversion route.

(iv) The Contractor shall obtain necessary rules and regulations. Survey of Pakistan maps will be shown to the successful bidder in the office of the Engineer when requested.

(v) The line route will be marked on the ground with permanent concrete markers. The Contractor will install the Concrete markers of at least 130 x 150 mm at top and bottom with a height not less than 1m. The markers shall be buried 0.5 m below existing ground level. The markers shall be white washed and a red point shall be made on the top of the marker to indicate the exact center of the line. This point shall be further encircled by red paint.

(4) Survey Report

Complete BoQ of the transmission lines as per the technical specifications shall be furnished in the survey report.

Each angle point locations shall be shown with detailed sketches showing existing in the close vicinity permanent land marks such as specific trees, cattle shed, homes, tube wells, temples, electric pole/tower, telephone pole, canal, roads, railway lines etc. The relative distance of land marks from the angle points and their bearings shall be indicated in the sketch. These details shall be included in the survey report.

Information w.r.t. infrastructure details available enroute, identification and explanation of route constraints, etc. shall also be furnished in the Survey report and shall inter-alia include the following:

Information regarding infrastructural facilities available along the final route alignment like access to roads, railway stations, construction material sources (like quarry points for stone, sand and availability of construction water), labor, existing transport facilities, fuel availability etc. shall be furnished in the survey report.

All observations which the Contractor thinks would be useful to the construction of the transmission lines mentioned under scope of work are to be reported.

Suggestions regarding the number of convenient zones (line segments/portions) in which the entire alignment can be divided keeping in view the convenience of line construction, operation, maintenance etc. are to be given.

Suggestions regarding location for setting up stores during line construction in consultation with Employer representatives shall also be provided by Contractor.

Working months available during various seasons along the final route alignment, with period, time of sowing & harvesting of different type of crops and the importance attached to the crops particularly in the context of way leave problems and compensation payable shall be stated by the Contractor.

Availability of labor of various categories and contractors of civil works shall also be reported.

Some portions of the line may require clearance from various authorities. The Contractor shall indicate the portion of the line so affected, the nature of clearance required and the name of concerned organizations such as local bodies, municipalities, Irrigation Department, Railway Authorities, Forest Authorities, Military and Defense Authorities etc.

4.1 Sub Soil Investigation

General Information & Scope of Work

The scope of work includes detailed soil investigation at various selected tower locations as approved/desired by the Engineer such as selected angle points, railway crossings, road crossings, power line crossings, river crossings etc. In addition, soil investigation may be required to be carried out at other locations at the discretion of the Engineer depending upon the soil strata, terrain and other factors.

These specifications cover the technical requirements for a detailed Geotechnical Investigation and submission of a detailed Geotechnical Report.

Mobilization of all necessary tools and equipment, provision of necessary engineering supervision and technical personnel, skilled and unskilled labor, etc. as required to carry out the entire field investigation as well as laboratory tests, analysis and interpretation of data collected and preparation of the Geotechnical Report.

Contractor shall also collect data regarding variation of subsoil water table along the proposed line route.

The Work specified herein is to determine the type and geotechnical characteristics of the foundation strata to the specified depth and location. This is to be accomplished through rotary drilling, field testing, ground water observations, soil sampling and laboratory testing. The location along with depth of investigation boreholes on the ground shall be established by the Contractor in accordance with the Drawings and from reference points approved by the Engineer as per requirement.

The Geo-technical investigations and report shall conform to all International ASTM Standards, Specifications (shall be the latest editions including all applicable official amendments and revision)

The Contractor shall have at site, at all times only qualified experienced geologist/engineer who will conduct and supervise drilling/logging activities. Hand held GPS should be available at investigation site for verification of bore hole/test pit location by the Engineer.

The Contractor shall also measure soil resistivity at each borehole.

The Contractor shall propose suitable foundation design on the basis of soil investigation. If it is determined that a new foundation design, other than those being already used by NGC, is required depending on the soil investigation results, the Contractor would design such new foundations types such as grillage foundation, undercut foundation, rock-anchor foundation, augured foundation etc.

4.2 Method of Drilling

Drilling shall be done by rotary including rock coring method by means of which a hole of specified diameter is extended in depths. Use of bottom discharge drilling bit shall not be permitted. The Contractor shall only be allowed to use percussion method where gravels and boulders are encountered after the approval by the Engineer.

4.3 Drilling of boreholes in flowing water conditions

Drilling may be carried out under water conditions. During the investigation, the Engineer may change such locations to land drilling depending upon the prevailing water way conditions.

4.4 Test Pit

The test pits shall be excavated at the locations as specified by the Engineer. Excavations of test pits shall be made to the depths as directed by the Engineer by manual labor and with the help of suitable digging tools. Test pits shall generally be excavated to a depth of about 3 meters below the ground surface or bed rock whichever is encountered earlier. Undisturbed black (30cm x 30cm x 30cm) sample shall also be extracted from each test pit. The dimension at the bottom of pit shall not be less than 1.5 m x 1.5 m. After field testing and sampling, the test pit should be backfilled as instructed by the Engineer.

4.5 Drilling Fluid

The drilling fluid used for rotary drilling shall be clean water clear from suspended sediments. The Contractor may use the natural or commercial drilling mud/bentonite slurry as drilling fluid.

4.6 Casing of Boreholes.

Casing of a required size allowing entry of sampling tools shall be used in conjunction with drilling to wall the boring to the bottom of the hole.

The casing shall be made of cylindrical steel pipes and shall have sufficient strength so as to maintain position and shape during drilling operations.

The casing may be omitted only where it can be shown to the satisfaction of the Engineer that sampling operations without the casing will not entrain soils from an elevation higher than the depth at which field testing or sampling is to be made.

It shall be the Contractor's responsibility to pull out casing from the bore holes after its completion for which no extra payment shall be made.

4.7 Field Testing

Field testing shall include Standard Penetration Test. Standard Penetration Test shall conform to ASTM D-1586. This designation describes as procedure to obtain a record of the resistance of subsoils to the penetration of a standard sampler and to obtain representative disturbed samples of the material for identification purposes and laboratory testing. The penetration resistance shall be expressed as the number of blows of a 63.4 kg (140 lbs) hammer freely dropping 762 mm (30 inches) required to force the standard sampler 305 mm (12 inches) into the soil. Standard Penetration Tests shall be conducted in the bore holes at one-meter interval from 1-meter depth to 10/15-meter depth of bore hole and up to 40 m in case of river crossing locations, unless otherwise directed by the Engineer. Immediately after each

penetration test a representative portion of the soil core shall be placed in moisture proof container.

4.8 Undisturbed Sampling

The undisturbed samples shall be taken in cohesive and non-cohesive materials. Samples shall be obtained using Denison or Pitcher sampler or equivalent double tube core barrel or Shelby tube. The sampling procedure shall conform to latest B.S./ASTM Standards. The length of undisturbed samples obtained shall not be less than 30 cm. immediately upon extraction from the hole, the sample shall be properly waxed. The number and depth of undisturbed samples from each hole shall be as directed by the Engineer during the progress of the drilling work at site.

4.9 Labeling and Disposition of Samples

Each sample shall have identification tags giving information regarding Sample No., Top Elevation of Hole/Test Pit, Date of Sampling, Depth and Length of Sample, and Description of Sample. The selected undisturbed and disturbed samples shall be carefully transported for testing by the Contractor to the approved testing laboratory. Every precaution shall be taken to avoid damage to samples as a result of careless handling and undue delay in transportation. The tubes containing undisturbed samples and cores shall be well packed in wooden boxes to protect the samples against vibration.

Ground Water Observations

Whenever required by the Engineer, bore holes shall be preserved for observations of ground water conditions. When the borings are advanced by using natural or commercial drilling mud/bentonite to stabilize the hole, the hole shall be flushed thoroughly with clean water at the completion of boring for the purpose of observing ground water levels.

4.10 Laboratory Tests

(i) General

- Laboratory tests shall be scheduled and performed by qualified and experienced personnel who are thoroughly conversant with the work.

- The laboratories in which the samples are to be tested shall be approved by the Engineer.

Laboratory tests shall be conducted using approved apparatus complying with the requirements and specification of International Standards for this type of work. It shall be checked that the apparatus are in good working condition before starting the laboratory tests. Calibration of all the

instruments and their accessories shall be done carefully and precisely at an approved laboratory.

One copy of all laboratory test data records shall be submitted to the Employer progressively every week. Laboratory tests shall be carried out concurrently with the field investigations as initial laboratory test results could be useful in planning the later stages of field work.

A schedule of laboratory tests shall be established by Contractor to the satisfaction of the owner within one week of completion of the first bore hole.

- The person representing to the Engineer shall have access to the laboratories to supervise and check the laboratory testing of the samples.

- The testing shall be carried out in accordance with ASTM or equivalent British Standards, or as directed by the Engineer.

(ii) Tests

The Contractor shall arrange to carry out laboratory tests on the specified samples of the subsoil material/water sample. The samples to be tested and the tests to be carried out for each sample shall be specified by the Engineer.

Undisturbed soil samples retained in liners or seamless tube samplers shall be removed, without causing any disturbance to the samples, using suitably designed extruders just prior to actual testing

Laboratory testing may include but not limited to the tests listed below:

Grain Size Analysis (Sieve + Hydrometer)
Soil Classification with percentage of gravel, sand, silt and clay at different depths.
Safe Soil Bearing Capacity (particularly at 5m depth)
Atterberg's Limits
Chloride Content (soil and water)
Bulk Density and Moisture Content
Dry Density
Generalized Subsurface Geotechnical Models with tables showing soil characteristics for each tower location
Capacity Curves at 4, 5, 6, 7m depths and Allowable Load vs Foundation Width for different Models.
Organic Matter Content
Sulphate Content (soil and water)
PH value (soil and water)
Unconfined Compression Test
Direct Shear Test
Consolidation Test

Total Soluble Salts.

4.11 Confirmatory Sub-Soil Investigation

After preliminary subsoil investigations confirmatory investigation (if required) up to maximum depths of 30 meters will be carried out by the Contractor. The location of selected confirmatory investigation will be conveyed to the Contractor by the Engineer.

4.12 Record

The Contractor shall have at site, at all times only qualified, experienced, orderly and thoroughly competent graduate Geologist who shall conduct and supervise drilling operations sampling and logging.

Contractor shall submit a formal report containing geological information of the region, procedures adopted for geotechnical investigation, field observations, summarized test data, conclusions and recommendations. The report shall also include detailed bore logs, subsoil sections, field test results, laboratory observations and test result both in tabular as well as graphical form, practical and theoretical considerations for the interpretation of test results, supporting calculations for the conclusions drawn etc.

The Contractor shall keep accurate logs and records of all the Work accomplished under this Contract. All such records shall be preserved in good condition by the Contractor until they are delivered and accepted by the Engineer. The Engineer shall have the right to examine such records at any time prior to their delivery to him. The following information shall be included in the records for each investigation borehole:

Bore hole/test pit number or designation, coordinates and elevation of top of the bore hole/test pit;

Type of drilling operations;

Dates and time by depths when drilling operations were performed;

Depths at which samples were recovered and field-testing was performed including complete data of field-testing;

Depth of Ground water table from NSL; and

Description of subsoil conditions.

The presence of the Engineer Representative or keeping of separate records by him shall not relieve the Contractor of the responsibility for the Work specified in this clause. Payment will not be made if the Contractor has not furnished the records.

4.13 Foundation design/designation

Contractor shall submit the foundation design/designation for each tower location duly considering soil type and tower spotting data along with the data/calculations to establish that the proposed foundation type is optimized and cost effective for the review and approval of the Engineer:

The recommendations shall provide all design parameters and considerations required for proper selection, dimensioning and future performance of tower foundation and the following:

Necessary soil design parameters to verify the bearing capacity based on geological data (bore log) and laboratory test results i.e. from (a) standard penetration test & (b) analytical method.

Immediate and consolidation settlements of soil.

Seasonal fluctuation of ground water.

Cement type to be used for foundation construction (based on ACI-318 Table 4.3.1).

The Contractor shall propose suitable foundation design on the basis of soil investigation. If it is determined that a new foundation design, other than those being already used by NGC, is required depending on the soil investigation results, the Contractor would design such new foundations types such as grillage foundation, undercut foundation, rock-anchor foundation, augured foundation etc. The Contractor shall be responsible for satisfactory performance of new foundation after erection and commissioning of towers on these foundations. Price of Design of new foundation would be quoted on “per type of foundation” basis.

Contractor shall submit the foundation design/designation along with the following data/calculations to establish that the proposed foundation type is optimized and cost effective for the review and approval of the Engineer:

- Necessary soil design parameters to verify the bearing capacity based on geological data (bore log) and laboratory test results i.e. from (a) standard penetration test & (b) analytical method.
- Immediate and consolidation settlements of soil.
- Seasonal fluctuation of ground water.
- Cement type to be used for foundation construction (based on ACI-318 Table 4.3.1).

1.2 Foundation Requirements

(1) **General**

The items in the Price Schedules for constructing the various types of concrete foundations (including pile foundations) for steel towers include the following:

(a) Tower staking;

(b) Performing all clearing, grading, cutting, blasting and leveling as required to construct the footings and erect the steel towers at the specified tower locations;

(c) Performing all required excavation, blasting (in all types of soil/rock), dewatering, shuttering, curing and compacting backfill for the concrete footings;

(d) Installing steel stub angles in the concrete footings;

(e) Tower grounding before placement of concrete;

(f) All concrete work for the concrete footings, including the cost of furnishing all reinforcing bars, and all materials for concrete;

(g) Installing pile foundations (pile, pile cap & tie beam) where required, including the cost of furnishing all reinforcing bars and all materials for concrete; and

(h) The foundation drawings included in Bidding Document are firm & final and only be changed (if required) as directed by Engineer.

(2) **Excavation for Tower Footings**

The Contractor shall perform all excavation required for constructing various types of concrete foundations for the steel towers. During excavation of towers sites near to amenities, the Contractor shall ensure to perform the work in such a manner as to minimum damage to them and if any prior approval is required that must be obtained at his own. However, in case of any damage the Contractor shall be get repair of it at his own risk and cost under intimation to the concerned agency.

The tower sites shall be leveled, graded/cut and cleared of trees, brush and stumps as may be required to construct the tower footings and to erect the steel towers. Cleared materials shall be disposed off, as directed by the Engineer or his nominated person.

All excavations shall be sufficient to provide concrete footings with dimensions not less than shown on the drawings.

After the Contractor has excavated the footing to the required depth, the Engineer will inspect the bottom of the excavation and determine if the bearing material is suitable for the type of footing designated for that location. If it is found that the bearing material is unsatisfactory for the type of footing designated, the Engineer or his nominated person will either designate another type of footing or ask for compacted crushed stone mixed with sand 50:50 ratio to be placed underneath the footing for a depth of up to 1.2 meters. The Contractor will be paid only for the type of footing actually installed. However, no payment will be made to the excavation & replaced material underneath the footing.

A maximum variation of 60 mm above or below established grade will be permitted. However, if excavations are below specified grade plus tolerance, those shall be backfilled to required grade by the Contractor with the Contractor's furnished concrete at his own cost.

All excavated material which is suitable for backfilling shall be laid aside to be used for backfilling at the tower site from which it was excavated, and the excess material shall be spread evenly around the site as directed by the Engineer or his nominated person.
Concrete shall be placed as soon as practicable after each excavation is completed and all excavations shall be protected so as to maintain a clean sub-grade until the footing is placed, using dewatering, timbering, shoring, or casing, as necessary. Any sand, mud, silt, or other objectionable material which may accumulate in the excavation shall be removed at the expense of the Contractor before placing concrete. After completion of foundations all the dewatering holes shall be filled with dry sand.

(3) **Rock Excavation**

Rocks shall be excavated to the depth required to provide suitable base for the foundations as indicated on relevant drawings.

Rock excavation includes drilling, blasting, removal, drainage and pumping as required. Drilling and blasting techniques shall keep over break to a minimum and no extra compensation shall be paid for the removal of over broken material. The contact surface of the rock shall be cleared of all loose rock and soil.

The cost of any damage whatsoever caused by blasting shall be payable by the Contractor. He shall not be relieved of these costs in spite of having received approval of his methods from the Engineer.

(4) **Erosion/Slope Protection**

For erosion protection against water current, gravel blankets shall be placed such that they do not flow away with water current. These gravel blankets

shall be placed at or adjacent to tower sites in the manner as directed by the Engineer or his nominated person. Gravel for the blankets shall be furnished by the Contractor, and it shall be pit-run, free draining, containing no stones larger than 635 mm size obtained from the closest source approved by the Engineer or his nominated person. The gravel shall be reasonably clean and free from vegetation, pieces of timber, or other foreign matter, and shall be distributed and graded evenly over the required areas. No compaction will be required.

Slope protection will be provided for foundations, which are located/placed on uneven ground, and/or they are partially or fully exposed in such a way that designed burden cannot be provided on these foundations safely. Slope protection shall include but not limited to construction of retaining walls of stone or brick masonry to a height and depth so as to provide adequate protection and necessary burden by making a leveled platform with or without brick/stone mortar after filling with earth as per specifications/drawings or as directed by the Engineer. The slope protection drawings will be prepared by the Contractor and submitted to the Engineer for review/approval prior to execution of Project.

(5) **Concrete Foundations**

Each tower foundation will have four footings and each footing will consist of a steel stub angle embedded in reinforced concrete. The footings for each tower in a tangent section of the line shall be placed so that the longitudinal axis of the tower cross-arm will lie in a plane perpendicular to the traverses of the line. Unless otherwise directed by the Engineer, the footings for each angle tower shall be placed so that the tower cross-arm will lie in a plane bisecting the interior angle formed by the inter-section of the traverses of adjacent sections of the line.

The footings at the various tower sites shall be constructed in accordance with the criteria shown on Drawings.

Pile foundations will be required where the field and laboratory tests confirm the requirements. The pile foundations will be installed as shown on the relevant drawings and in accordance with these Specifications.

Any type of spread footing foundation may be changed to another type of spread footing foundation or pile foundation in accordance with field requirements during execution of the project with the prior approval of the Engineer.

(6) **Placing of Stub Angles in Footings**

Stub angles shall be placed in the tower footings as shown on the drawings and shall be supported in the proper position by means of a rigid frame or

equivalent suitable device to ensure placement of the stubs within the tolerances specified below. The stub angles shall be held rigidly in a manner to prevent displacement during placing of concrete.

All stub angles for the tower legs shall be set accurately to the grade and alignment designated on the drawings and as directed by the Engineer. Work that is not within the tolerance will be corrected as directed by the Engineer, and at the Contractor's expense. The setting tolerances following complete foundation installation including backfilling and compacting are as follows:

(a) Tower Center from theoretical location:

(i) Transverse ..... ± 150 mm
(ii) Longitudinal ..... ± 500 mm

(b) Tower Orientation (angular departure from the theoretical location measured at the point of intersection of a tower face and the longitudinal center-line).....25 mm

(c) Difference in Elevation between working point marks on Stub Angles including diagonally opposite legs ..... 8 mm

(d) Departure from theoretical Horizontal Dimensions between tower center line and working point marks on stub angle:

(i) Along the tower face,
plus minus ..... 5 mm

(ii) Along the tower diagonal,
plus minus ..... 7 mm

(e) Batter ..... 5 mm
per meter

(f) Twist (about heel of stub angle) ..... 2°

(7) **Tower Grounding**

Each tower shall be grounded by installing one ground rod below each of two diagonal footings. Ground rods shall be driven at least 2.5 meters into undisturbed soil at the bottom of the footing excavation, as shown on the Drawings. The ground rod shall be connected to the stub angle by a 7 No. 10 stranded annealed copper covered ground wire. The connection of this wire to the ground rod and to the stub angle shall be made by a bolted clamp in accordance with the Drawings.

Where it is not possible to drive a ground rod an alternative grounding by installing 'crowfoot' shall be adopted.

The resistance of the two rods/crowfoot in parallel shall be measured and recorded before concrete footings are poured. If the resistance is more than 10 ohms, additional rods/crowfoot shall be installed as directed by the Engineer or his nominated person. No extra payment would be allowed for excavation/blasting/laying/back-filling on account of this.
The dead end terminal tower of the overhead lines must be connected to the earthing system of the grid stations.

(8) **Concrete**

(a) **General**

All concrete and reinforcement placed for tower footings shall conform to the requirements of this section.

At least 30 days prior to beginning concrete placement, the Contractor shall submit to the Engineer for approval, a design mix (along with quantity and source of each material) along with six (6) test cylinders using the actual materials to be incorporated into the Work. Approval of the design mix will in no way relieve the Contractor from meeting all the requirements of these Specifications. Whenever the Contractor proposes to use a different material source, a new design mix must be submitted and approved as outlined above. During construction if in the Engineer’s opinion the mix shall be adjusted, the Contractor shall submit a new design mix as directed by the Engineer.

(b) **Materials**

The Contractor shall furnish all materials for use in concrete, including but not limited to cement, sand, coarse aggregate, water, reinforcing bars, admixture, (including ground slag) and concrete curing compound. Air-entraining agent and curing compound shall be accepted on manufacturer's certification of compliance with specification requirements. However, the Engineer reserves the right to require submission of and to perform tests on samples of the agent and/or compound prior to shipment and use in the Work at the cost of Contractor.

(i) **Cement**

Cement shall meet the requirements of ASTM C150. The cement shall be free from lumps and properly packed in bags when used in concrete. Adequate provisions shall be made by the Contractor to prevent absorption of moisture when

cement is stored. Cement Type-V (sulfate resistant cement) will be used. Volume of one bag of cement should be taken as 1.25 cubic-ft.

(ii) **Sand and Coarse Aggregate**

Sand and coarse aggregate shall be furnished from any approved source. The sand particles shall be clean, hard, dense, durable, uncoated rock fragments that will pass a screen having 6.5 mm square openings. The sand shall be well graded from fine to coarse and shall be free from injurious amounts of dirt, organic matter, and other deleterious substances.

The coarse aggregate shall consist of clean, hard, dense, durable, uncoated rock fragments, shall be free from injurious amounts of flat and elongated pieces, organic matter, or other deleterious substances. The maximum size of crushed coarse aggregate for piles shall be 19 mm and for spread footings, pile cap and tie beam 38 mm or as directed by the Engineer. The grading of these sizes shall conform to ASTM C33.

The Contractor shall submit, for testing and approval, representative samples of the sand and coarse aggregate proposed for use in the concrete work. All testing will be conducted at CMTL, Lahore or UET Jamshoro. All aggregates shall conform to the requirements of ASTM C33 including petrographic test. During construction the Contractor shall also arrange testing of sand and coarse aggregate if directed by the Engineer to determine compliance with Specifications. The cost of all laboratory testing of these samples shall be borne by the Contractor.

(iii) **Water**

Water used for mixing concrete shall be clean and free from injurious amounts of oils, acids, alkalis, salts, organic materials, or other substances that may be deleterious to concrete or reinforcement and shall meet the requirements shown in Table-1 below. A complete chemical analysis of water shall be submitted prior to the start of construction work and shall be required for each new water source being chosen. The cost of all laboratory tests of the samples shall be borne by the Contractor. No change in water source shall be permitted without prior approval by the Engineer.

TABLE-1

Total Dissolved Solids (TDS)	800 ppm (max)
Magnesium, Chlorides and Sulfates	250 ppm (max)

pH Value	6.5 – 8.0

(iv) **Reinforcing Bars**

Reinforcing bars shall be deformed bars conforming to ASTM Designation A615, Grade 60. Representative steel bar samples shall be collected from the site and tested in the laboratory approved by the Engineer. The testing shall be witnessed by the Engineer. The cost of all laboratory tests and traveling of Engineer shall be arranged/borne by the Contractor.

Negative variation in weight [mass] maximum up to 2% of reinforcement bar(s) from the applicable weight [mass] per unit length prescribed in Table 1 of ASTM A615 will be allowed for bar(s) placement. Contractor will have to make adjustments in bar spacing/number of bars to accommodate the excessive negative variation in weight [mass] if greater than 2%. Contractor will not be allowed for bar(s) adjustment in case of overweight [excessive mass] of any deformed bar.

(v) **Curing Compound**

Curing compound shall be wax-base and white-pigmented (Type 2) and conforming to ASTM Designation C-309 to reflect solar radiation.

(vi) **Admixtures and Ground Slag**

Admixtures to be used in concrete shall be subject to prior approval of the Engineer and shall meet the following requirements:

(1) **Chemical Admixtures**

a) Air-entraining admixtures shall conform to ASTM C 260,"Specification for Air-Entraining Admixtures for Concrete.

b) Water reducing or water reducing and retarding admixtures (Normal Plasticizers) shall conform to ASTM C 494, “Specification for Chemical Admixtures for Concrete”, Type A or D, respectively.

c) Super plasticizers shall conform to ASTM C 494, Type F or G, respectively

d) Only one of the Admixtures A, D, F or G, shall be added at a time.

e) Chloride-bearing admixtures shall not be permitted.

f) Super Plasticizers shall be checked for their compatibility with pozzolanic materials in blended cement concrete.

(2) **Ground Granulated Blast-Furnace Slag**

In area where high sulphate and chloride contents are present in soil/water, finely ground granulated blast-furnace slag can be used as cementatious material in concrete by replacing SRC cement by maximum up to 30%. The properties of ground granulated blast-furnace slag should meet ASTM C 989. The cost of all laboratory testing of these samples shall be borne by the Contractor. Contractor will not be paid extra for the purchase/procurement of ground granulated blast-furnace slag to the construction sites.

(c) **Composition**

The Contractor shall determine the proportions of the sand, coarse aggregate, and cement needed to provide concrete, meeting the requirements of these Specifications, and shall be approved by the Engineer. Concrete which contains 38 mm maximum-size aggregate shall have a cement content of not less than 380 kg per cubic meter and concrete which contains 19 mm maximum size aggregate shall have a cement content of not less than 440 kg per cubic meter. 38 mm maximum size aggregate shall be used for spread footing, pile caps, tie beams and 19 mm aggregate for piles. The net water cement ratio by weight shall not exceed 0.5. Surface water contained in the aggregate shall be included as part of the mixing water in determining the water content. Reinforced concrete design will be checked in accordance with the ACI Building Code.

The Contractor will take minimum three test cylinders (152mm x 305mm) per leg, and the average compressive strength at 28 days shall exceed 210 kg/cm² (3000 psi) and no individual test value should fall more than 35 kg/cm² (500 psi) from the minimum specified value.

The compressive strength of the concrete will be determined by the Engineer through the medium of test of (152 x 305 mm) cylinders made and tested in accordance with ASTM C39. The Contractor shall furnish all necessary sampling equipment such as slump cones, test cylinders, etc. at the site. This equipment is to be approved by the

Engineer or nominated person by Engineer. The cost of the material lab tests shall be borne by the Contractor.
In the event that the concrete cylinder fails to meet the specified strength requirements then in-place testing of concrete shall be conducted under the supervision of the Engineer. In-place as approved by Engineer testing of concrete shall be conducted by one or a combination of the following methods:

(i) ASTM C42 "Test Method of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete."

(ii) ASTM C805 "Test Method of Rebound Number of Hardened Concrete."

The use of calcium chloride in concrete will not be permitted.

The slump of the concrete shall not exceed 75 mm for conventional foundation, pile cap & tie beam and 150-180 mm for piles.

(d) **Batching and Mixing**

Unless specifically approved by the Engineer, all concrete used on the Project shall be machine mixed. Hand mixing shall only be used when authorized by the Engineer and shall be performed under his directions.

The sand and coarse aggregate shall be weighed and shall be proportioned on the basis of integral bags of cement unless the cement is weighed. After weighing, the materials may be proportioned on the basis of equivalent volumes. The Contractor shall provide equipment and shall maintain and operate the equipment as required to accurately determine and control the amount of each separate ingredient entering the concrete. Batching shall be such that combined inaccuracies in feeding and measuring the materials will not exceed 1.5 percent for water and weighed cement and 2 percent for sand and each size of coarse aggregate. The concrete shall be uniform in composition and consistency throughout the mixed batch, and from batch to batch, except where changes in composition or consistency are directed. The mixing time shall be at least 1.5 minutes for stationary mixers. Excessive over-mixing requiring the addition of water to preserve the required consistency will not be permitted. The temperature of the concrete when it is being placed shall be not more than 35°C and not less than 5°C in moderate weather or 10°C when the mean daily temperature drops below 5°C. Truck mixers will be permitted only when the mixers and their operation are such that the concrete throughout the mixed batch and from batch to batch is uniform with respect to consistency and grading. Any concrete

retained in truck mixers so long as to require additional water to permit satisfactory placing shall be wasted.

(e) **Forms Preparation for Placing of Concrete**

Unless otherwise provided for on the Drawings or approved by the Engineer, all concrete placed will be monolithic.

Forms shall be sufficiently tight to prevent loss of mortar from the concrete and shall be maintained rigidly in position until the concrete has hardened sufficiently to prevent damage by form removal. All surfaces of foundations upon or against which concrete is to be placed shall be free from standing water, mud and debris. The surfaces of absorptive foundations against which concrete are to be placed shall be moistened thoroughly so that moisture will not be drawn from the freshly placed concrete. The surfaces of construction joints shall be clean, rough and surface dry when covered with fresh concrete. Cleaning shall consist of the removal of all laitance, loose or defective concrete, coatings, sand, curing compound if used, and other foreign material. A mortar layer shall not be used on concrete construction joints.

The methods and equipment used for transporting concrete, and the time that elapses during transportation shall be such as will not cause appreciable segregation of coarse aggregate or slump loss in excess of 25 mm in the concrete as it is delivered into the Work. Concrete may be transported from the mixer to the forms and deposited in the forms by any method approved by the Engineer such as transit mixers, buckets, chutes and pumping. Aluminum pipe or chutes shall not be used for tremie trunk line, or chute for placing of concrete, or for the delivery of pumped concrete. Re-tempering of concrete will not be permitted. Any concrete which has become so stiff that proper placing cannot be assured shall be wasted. Formed concrete shall be placed in continuous approximately horizontal layers, the depths of which generally shall not exceed 500 mm. Concrete shall be vibrated (internal vibrators having a minimum frequency of 8,000 vibrations per minute) until it has been consolidated to the maximum practicable density, is free from rock pockets of coarse aggregate, and closes snugly against all surfaces of forms and embedded materials. Standby vibrators shall be available during concrete placement.

Exposed unformed surfaces of concrete shall be brought to uniform surfaces and worked with suitable tools to a reasonably smooth wood float or steel-trowel finish as directed. Concrete in the tops of foundations in which stub angles are embedded shall be sloped to provide drainage away from the stub angles.

(f) **Reinforcement**

Steel reinforcing bars shall be placed in the concrete where shown on the drawings. Before reinforcement is placed, the surfaces shall be cleaned of heavy flaky rust, loose mill scale, dirt, grease, or other foreign substances. Reinforcement shall be accurately placed and secured in position so that it will not be displaced during placing of concrete.

The Engineer shall not furnish supplemental bar-placing diagrams, bar lists, and bar-bending diagrams. Any such additional diagrams and bar lists of this type which the Contractor may require to facilitate the fabrication and placement of reinforcement shall be provided by the Contractor.

Reinforcement will be inspected for compliance with requirements as to size, shape, length, splicing, position, and amount after it has been placed.

Any bar-placing diagrams, bar lists, and bar-bending diagrams prepared by the Contractor shall conform to the requirements shown on the reinforcement design drawings and shall be approved by the Engineer. Maximum two numbers of bars (2+2) in pad and chimney can be lapped.

Lap splices shall be as under:

Bar #	3	4	5	6	7	8	9	10	11
Lap Length (mm)	305	360	460	610	840	1100	1400	1800	2160

(g) **Protection and Curing**

The Contractor shall protect all concrete against injury until final acceptance. The concrete shall be cured with two applications (coats) at right angles to each other to ensure uniform and more complete coverage with approved membrane type curing compound to be applied preferably by power sprayer as soon as possible after concrete placement and in no case later than 2 hours. Curing with water shall be used only as an alternative to the type curing and with Engineer approval. The application of the curing compound shall be in accordance with the procedures outlined by the Manufacturer. In case of pile-cap & tie beam with form, ties are loosened and vertical forms are still in place water should be applied to run down on the inside of the form to keep the concrete wet. Immediately after form removal, the surfaces should be kept continuously wet by water spray

or water-saturated fabric until the membrane-forming curing compound is applied.

In exceptional cases where extremely corrosive soil conditions are encountered, or as directed by the Engineer, the surfaces of the concrete, both exposed and unexposed, shall be treated with an approved type of bituminous compound. A minimum of two applications shall be required, and the applications shall be 100 percent effective. Surfaces to be treated shall not be coated with curing compound. No extra payment will be made to the Contractor for procurement/treating concrete surfaces with bituminous compound.

(h) **Repair of Concrete**

Any concrete that is damaged or defective from any cause; concrete that is honey-combed, fractured, or otherwise defective, and concrete damaged because of excessive surface depressions, must be excavated and built up to bring the surfaces to the prescribed lines, shall be removed and replaced and any imperfections and irregularities on concrete surfaces shall be corrected. The removal and replacement of damaged or defective concrete, and the correction of surface imperfections and irregularities shall be made with concrete dry pack, or mortar (Portland cement mortar), or at the option of the Contractor, with epoxy-bonded concrete, or epoxy-bonded epoxy mortar, where and as applicable for the type of repair involved. All repairs should be completed within 24 hours after removal of forms, and as directed by the Engineer or his nominated person. However, forms shall not be removed for a period of at least 24 hours after the concrete work until it has acquired sufficient strength to safely carry its own weight and any construction loads that may be imposed on it.

(i) **Tolerances for Concrete Construction**

The Contractor shall be responsible for setting and maintaining concrete forms within the tolerance limits necessary to insure that the completed Work will be within the tolerances specified or within good construction practices. Concrete work that exceeds the tolerance limits specified herein shall be inspected by the Engineer and he will determine what effect the deviations will have upon the structural action or operational function of the structure, and what remedies may be necessary. If after such inspection the Contractor is directed to remove or replace any defective Work, he will do so at his own expense.

(aa) Tolerances for footings:

- Variation from plumb In any length of 3.0

	or specified batter for lines and surfaces of stems	meters ..... 13 mm Maximum for entire length ..... 26 mm
-	Variation in cross-sectional dimensions of stems	Minus..... 7 mm Plus ..... 26 mm
-	Variation from specified elevation for top of concrete	Minus ..... 13 mm Plus ..... 13 mm
-	Variation of dimensions in plan	Minus ..... 13 mm Plus ..... 52 mm
-	Misplacement or Eccentricity	2 percent of the footing width in the direction of misplacement but not more than 52 mm
-	Reduction in thickness	5 percent of specified thickness

(bb) Tolerance for placing reinforcing steel:

-	Variation of protective covering:	with cover of 64 mm or less ……07mm with cover of more than 64mm …….. 13mm
-	Variation from indicated spacing	..... 26 mm

(9) **Backfill for Tower Footings**

Backfill shall be placed about the tower footings to elevations indicated on the drawings or as directed. The material used for backfilling, the amount thereof, and the manner of depositing this material shall be approved by the Engineer. Where the excavated materials are insufficient in quantity or are not suitable, as determined by the Engineer nominated person, for use as backfill, the Contractor shall obtain suitable material from the borrow. No borrow pits shall be made within 25 meter radius from center of tower. Backfill shall be placed about the tower footings as soon as practicable after removal of concrete forms, but not earlier than 8 hours from application of sealing compound or bitumen coating to concrete surfaces.

The excavated material not suitable for backfilling or in excess of backfilling requirement shall be spread evenly over or adjacent to the Site. The backfill adjacent to footing stems shall be approximately 150 mm above the original

ground, and shall be graded and sloped uniformly away from the stems so that there is no pond at or around the footing.

In backfilling for concrete footings, the pad of the footing shall be covered with fine material of 300 mm thickness (after compaction) before any coarse material is deposited. Care shall be taken to avoid damage to the concrete when backfilling. The backfill material shall be clean and free from vegetation, pieces of timber, or other foreign matter. Suitable material for backfilling shall be a compatible granular material having a granularity within the following limits.

Sieve	% Passing
76 mm (3 in)	100
No. 200	0-15

(10) **Compacting Backfill**

Backfill shall be placed in horizontal layers which after compaction shall not be more than 150 mm thickness. Each layer shall be compacted by tamping machines or other mechanical means approved by the Engineer.

Backfill shall be moistened properly where required. When excavated material is so wet that it is not suitable for backfilling, it shall be spread and aerated until the proper moisture content is attained, at which time the material shall be used as backfill around tower footings. The backfill material shall not be placed until all forms and timber used for shoring or bracing have been removed, unless otherwise permitted by the Engineer or his nominated person.

The Contractor shall submit, for laboratory testing and approval, representative samples of the materials proposed to be used as backfill. On the basis of laboratory test results the Engineer shall specify the degree of compaction to be obtained in the field, which shall not be less than 90% of the maximum dry density as obtained by ASTM D-1557.

Density shall be measured in the field according to ASTM D1556 or ASTM D2937 by the Contractor in the presence of nominated person of the Engineer to determine compliance with the specified degree of compaction. The cost of all laboratory and field testing shall be borne by the Contractor.

(11) **Additional Foundations**

In case other foundations are required to be installed, which are of different design than the specific types listed, the Contractor shall install these foundations as directed by the Engineer. All work performed will be in accordance with these Specifications. Payment for additional foundations will

be made at the applicable unit prices provided in the Price Schedules for similar Works.

(12) **Foundation Test (Not Required)**

The Contractor may be required to perform an uplift load test on any one footing for double circuit suspension type tower. The Engineer will designate the location and type of footing to be tested. All methods, procedures, equipment, jigs, apparatus etc., shall be subject to approval by the Engineer. No testing shall be commenced until 28 days after the final concreting nor until all backfill is placed and compacted as specified herein.

An uplift load shall be applied until a design value is reached or the footing fails. The rate of load application will be determined by the Engineer.

1.3 Pile Foundations

(1) **General**

(a) **Description of Work**

The Work to be performed under these Specifications shall be carried out at the proposed site of towers after the field and laboratory test results confirmation. The Work includes, but is not limited to the following:

(i) Construction of bored, cast-in-place reinforced concrete piles, pile cap and tie beam as shown in the Bid Drawings or as directed by the Engineer.

(ii) Complete borehole logs and record of all operations performed during the execution of the Work.

(b) **Location of Piles**

(i) The location of piles on the ground shall be established by the Contractor in accordance with the construction drawings. Establishing the pile locations accurately in the field shall be sole responsibility of the Contractor.

(ii) The Contractor will provide the levels, survey and ground elevations for each pile location. The elevations will be given with respect to permanent Bench Marks in the vicinity of the Site.

(c) **Diameter and Length of Piles**

Bored, cast-in-place reinforced concrete piles shall be constructed having uniform diameter throughout the length as specified in the

relevant Bid drawings or as directed by the Engineer. Pile footings shall only be installed where the field and laboratory tests confirm the requirements. The final length of the piles shall be determined based on field and laboratory test results.

(d) **Drillers and Supervisory Staff**

The Contractor shall have at Site, at all times only qualified, experienced, orderly and thoroughly competent persons including graduate civil engineers/geologists who shall conduct and supervise drilling/concreting operations during, sampling, logging, in-situ testing and piles construction.

(2) **Execution of Piles**

(a) **General**

This clause covers all the work necessary for the execution of the bored, cast-in-place reinforced concrete piles namely:

(i) Formation of ramp.
(ii) Drilling and stabilizing of bore holes for the piles.
(iii) Placing of steel reinforcement.
(iv) Mixing and placing of concrete.

The Contractor shall perform all such work in accordance with requirements of this clause as well as in accordance with the methods proposed or described by him at the time of submitting his Bid and approved by the Engineer.

(b) **Method of Drilling**

The drilling of holes for piling shall be done by reverse rotary or percussion method or any other method suggested by the Contractor and approved by the Engineer. Regardless of the method used for drilling holes, drilling operations shall be carried out in such a way as to avoid any disturbance of the surrounding soil especially at the bottom of the hole and successful drilling through all types of soil/rock/boulder.

(c) **Stabilizing of Holes**

There will be no permanent casing installed. Any temporary protective casing at the start of the drilling shall be later pulled out. The stabilizing of the drilled holes shall be achieved by using natural or commercial drilling mud/bentonite. Permanent casing shall only be allowed with the prior approval of the Engineer.

(d) **Tolerances**

Tolerances for setting out and for concrete construction shall conform to Clause 1.3 of these Technical Provisions. In case of piles, deviation from the vertical shall not exceed one percent on any section of the length of the holes.

(e) **Concrete**

All concrete and reinforcement placed in the construction of piles shall conform to the requirements of Clause 1.3(8) of these Technical Provisions. In addition to this, following requirements shall also be fulfilled.

(i) Promptly after cleaning of the borehole to the entire satisfaction of the Engineer Representative, concrete shall be placed in a manner that will not cause segregation of the particles or permit infiltration of water or any other occurrence which would tend to decrease the strength of the concrete or the capacity of the finished pile. The slump shall be 150-180mm.

(ii) The minimum clear distance between vertical reinforcement, including lapped bars, shall be 100 mm (if applicable).

(iii) Either tremied or pumped-in concrete can be used in presence of water or of drilling mud. Tremie or pump pipe shall be made of steel and have watertight joints. Tremie pipe shall have a minimum diameter of 8 inches (200 mm) and pump pipe shall have a minimum diameter of 4 inches (100 mm) should be used. Embed tremie or pump pipe a minimum of 3 meters in the concrete throughout concreting. The method and equipment used shall be subject to the prior approval of the Engineer.

(iv) Concrete placement shall proceed without interruption until the pile is complete.

(v) Vibrate top 3 to 4 meters of concrete after temporary casing has been withdrawn.

(vi) The Contractor shall make three test cylinders per pile or as directed by the Engineer during the concreting of piles.

(vii) The vertical bars of pile can be coupled together as directed by the Engineer according to the site requirement.

(viii) The inner dia of stand casing/permanent casing should be at least 25mm larger than the pile dia, whereas bit dia should be equal to pile design dia.

(f) **Record**

The Contractor shall keep accurate logs and records of all the Work accomplished under this Contract. All such records shall be preserved in good condition by the Contractor until they are delivered and accepted by the Engineer. The Engineer shall have the right to examine such records at any time. The following information shall be included in the records for each pile.

- A general description of sub-soil conditions and water table position at the location of the pile.
- Pile number, ground elevation of borehole and elevation of top of pile.
- Type of drilling operations.
- Date and time by depths when drilling operations were performed and piles constructed.
- Total depth of each borehole.
- Quantity of concrete and steel used for the construction of each pile.
- Quantity of constituents for each batch of mix, water cement ratio and the results of all quality control tests.
- Time of start and completion of Concrete.
- Remarks concerning any unusual occurrence during drilling and concreting of piles.

1.4 Dismantling of Insulators

The dismantled disc insulators are envisaged for reuse/re-utilization by the employer in other projects. Proper handling and safety of the tower components/members during dismantling, counting & recording of each insulator, bundling/packing, storage at site and safe transportation of material to employer designated warehouse shall be included in the scope of work. The contractor shall be entirely responsible for any damage to the NGC material during execution of work. In case of any damage/breakage/loss of material of NGC, recovery shall make from the contractor by employer.

The contractor shall also make every effort to minimize the breakage/loss of dismantled fasteners (nut & Bolts, washers, step bolts etc.) during execution

of work. However, if breakage/loss of fasteners is inevitable, the same may be allowed/approved by the Engineer.

1.5 Tower Erection

(1) General

Contractor's work includes supply of manpower, providing construction equipment, vehicles, rigging tackles for complete assembly of towers.

Erection shall be done strictly in accordance with the approved manufacturer's drawings, material lists and approved construction data sheets.

No tower shall be erected **until seven days after the last concrete** was placed in the foundation, nor until backfill has been completed where and as required.

(2) Handling

Tower steel shall be handled so as to prevent deformation of the members and damage to the galvanizing. Materials shall not be dumped, dragged, barred; rolled or dropped but shall be carefully loaded, unloaded and stored. A mechanical means such as hoist or crane shall be used when material cannot be properly handled or placed by hand.

Bare wire rope or steel chains shall not be used for handling without adequate protection of the surface coating. Heavy members shall not be stacked on top of lighter members. Structural members shall be stored according to size, lengths and markings. The maximum weight of steel bundles shall not exceed a specified weight, typically 1600 kg to 1800 kg, to facilitate handling and unloading. Members with dissimilar finishes shall not be stored over one another to minimize discoloration of the lower members.

All members shall be placed on wood blocking or other suitable material to ensure that the materials to be stored are not in contact with the ground. Blocking shall also be used to separate layers of stacked materials. Members shall be supported in such a manner as to prevent bending and distortion as well as to allow water to drain from the materials.

Failure to provide for proper drainage of stacked galvanized steel members could result in the formation of white rust. White rust (zinc oxide) forms when two galvanized surfaces are closely rested for an extended time without adequate ventilation. Ingress of water between the surfaces forms an electrolytic cell, which may, in time, erode some of the zinc layer. The white rusting action will stop after exposure to air. Spacers placed between the nested pieces ensure adequate ventilation when extended transport storage is anticipated.

The material yard shall be kept relatively neat and clean and the growth of vegetation kept to a minimum. Good housekeeping minimizes damage and loss of material handling; periodic physical inventories and complies with environmental considerations.

(3) **Assembly Methods**

All assembly and erection shall be done by methods and equipment that will not cause damage to, or distort any part of the tower. Extreme care shall be taken to establish and maintain the true geometric shape of the sections of tower assembled.

Preassembly techniques are generally influenced by site terrain and available equipment. Generally, the larger section that can be pre-assembled, the more efficient is the assembly/erection operation. Preassembly techniques shall consider placement of the assembled sections to provide for the most efficient, safe lifting for erection. Structural assemblies, which are not sufficiently rigid to be raised in one piece, shall be stiffened by means of adequate temporary bracings.

Towers assembled on the ground shall be placed on suitable blocking so as to be kept free of dirt, mud or other foreign material that might adhere to the structure and damage the coating. Blocking shall be placed in such a manner as to provide a flat surface in order to prevent over stressing or distortion of members and to maintain the true geometric shape of the assembled members. Mud, dirt, white rust and other foreign material shall be removed from the contact surfaces of joints prior to assembly. Steel members shall not be dragged over the ground or otherwise handled in such a manner as to damage the galvanizing.
The structures shall be assembled in accordance with the fabricator's erection and detail drawings. The diameter, type, and length of bolts as shown on these drawings shall be used for each connection. Orientation of bolts can facilitate access, final tightening and installation of locking devices and subsequent checking of the erected structure. Tower bolts shall normally be installed so that the nuts are to the outside of the tower or, in the case of horizontal members, to the top of the connection unless such positioning is clearly impracticable.

Installation of bolts by hammering or any method that damages the galvanized coating shall not be allowed.

When sections of towers are being assembled prior to erection, assembly shall be on blocks that will provide support, sufficient to prevent distortion of tower steel. If all bolts in an assembly are not inserted, at least 50 percent of the bolts in each connection shall be inserted and those bolts shall be finger-tightened only. All bolts in an assembly shall be inserted before any bolt in the assembly is fully tightened.

Only wrenches which properly fit the nuts and bolt heads shall be used. The use of wrenches, which in any way deform the nut or cut or flake the galvanizing is prohibited. All bolts shall be entered clear to the head. All 16 mm diameter bolts shall be tightened to a torque of 10-14 kg - meters and 20 mm and 24 mm diameter bolts to a torque 17-23 kg-meters. All bolts after torque shall be center punched adjacent to the nut in order to prevent loosening of the nut. This method of locking the nuts will be used instead of locknuts.

(4) **Method for Erection**

Towers shall be erected by any suitable method in the sequence best adapted to the equipment, workers' experience and site conditions which will not overstress structure members.

When handling assembled portions of the structure, spreader bars or other devices with proper points of attachment shall be used to avoid distorting or overstressing members and to maintain the true geometric shape of the section.

Adequate tag lines shall be used to ensure that no section of the tower being lifted will drag on the ground or against any section of the tower already erected.

Temporary guying may be required when erecting a structure in sections. Any temporary guying system shall be checked to ensure that the structure section is stable before workers are allowed to work on the section.

Structures shall be completely erected, correctly oriented, with all members in place, all bolts installed and properly tightened, and the entire structure checked in accordance with the specifications prior to the installation of insulators, conductors and OPGW.

When erecting structure members or sections in the vicinity of energized lines, care shall be taken to ground these members or sections before any workers come in contact with them.

The use of a crane erection is generally an efficient method of erecting latticed steel structures. With ground pre-assembly of sections, the time spent in final erection can be greatly reduced.

Cranes with telescoping booms can be more efficient than rigid boom cranes in rough terrain. Considerable productivity can be lost in the process of assembly and disassembly of rigid boom cranes. In addition, continuous handling of boom sections can lead to boom damage. Preplanning of the crane location at the structure site allows for any necessary grading work (building of ramps, soil stabilization etc.) to be accomplished during the foundation construction operations when suitable equipment is

available at the site. Depending on soil conditions, additional bearing support may be required under outriggers, tracks, and tires. All soil shall be returned to a condition acceptable to the Engineer after erection.

Gin Pole is a boom of steel or aluminum pipe, wood pole or latticed truss secured at its base and usually inclined at a slight angle to the vertical is also used for tower erection. Two wire-guys about 60º to 90º apart in the plan view are attached to the top of the gin pole to resist or support the load to be lifted. For safety, a third, and preferably a fourth guy, is installed in front to prevent the pole from falling over backward in the event of an unexpected impact or the sudden release of load.

(5) **Correction of Misfabricated and Damaged Steel**

All shop errors and damaged steel shall be reported to the Engineer who will decide the manner in which corrections shall be made. All costs incurred due to punching, drilling or cutting shall be deemed to be included in the steel erection cost.

Pieces bent in handling may be used if they can be straightened to the satisfaction of the Engineer, without structurally damaging the metal. If bent pieces cannot be satisfactorily repaired, they shall be replaced.

Field punching or drilling of holes and field clipping shall be done only with the approval of Engineer, if the hole or clip was missed in fabrication of the member but was called for on the fabrication detail drawings. The edges of clipped angles, new or reamed holes or any member which has its coating scratched or damaged shall be repaired with a coating approved by the Engineer. Members having mis-punched holes shall not be repaired by welding and shall be replaced with correctly fabricated members. If the field fabrication of a member is required, the bolt spacing and edge distances shall be in accordance with the fabrication detail drawings.

Reaming shall be done only with the approval of the Engineer, and will be permitted, for the correction of undersized holes, for removing excessive galvanizing, and for holes off gauge line, to the extent that the connection cannot be made by loosening bolts in related connections. No hole shall be reamed more than one-eighth of its original diameter.

Reaming to remove fitting difficulty due to improperly set footings, to correct improper tower assembly and erection, that would distort holes or distort any member, or that would damage the galvanizing, is prohibited.

(6) **Damage to Galvanizing/Paint**

Small areas of galvanizing damaged by abrasion, in straightening bent pieces or by necessary clipping-in the field, shall be repaired by carefully cleaning the affected area and painting.

Damaged area shall be wiped with clean rags saturated with Xylene or equivalent solvent, followed by wire brushing then recleaned with solvent to remove residue, and painted with one coat of "Galvanox", or approved equivalent.

Galvanizing damaged by drilling or punching shall be repaired by applying an Aluminum paste or zinc rich coating material to completely fill all voids between the bolt and the surfaces bared, or all exposed steel surfaces around the holes or on cuts on which such corrective work is permitted. The coating material shall be "Galvanox" or approved equivalent.

(7) **Tower Signs and Aerial Markers**

a) **Material**

All the plates i.e. danger sign, number & phase plates and aerial markers shall be baked ceramic surfaces on high grade steel base plates of minimum thickness of 1.5 mm except aerial marker plate which shall be of 3.0 mm thickness. The fabrication details and dimensions of the plates are shown on the drawings in Volume-II: Drawings.

The plates shall be painted with ceramic paint on both sides and shall be thoroughly cleaned before painting and the ceramic paint shall completely cover the front and back of the plates and also the edges of plates and the interior edges of the attachment holes. The ceramic paint shall be of even thickness, reasonably free from cracks, patches, pin holes, blisters and shall have a uniform gloss. The ceramic paint around the holes shall be protected by means of fiber washers.

Three coats of ceramic paint shall be applied on the danger sign and number plates. The first coating of black ceramic paint shall be applied on both sides of the plates. The other two coats of white ceramic paint shall be applied on the front side of the danger & number plates and yellow on aerial marker plates.

In case of phase plates, three coats of ceramic paint shall be applied. The first coat of black ceramic paint shall be applied on both sides. The other two coats of red, yellow and blue colour shall be applied as specified on both side of the plate.

Nos. of bolts, nuts, washers and fixtures where required shall be supplied with each plate as shown in the drawings. Bolts, nuts and washers to be supplied with the fixture shall be galvanized in accordance with ASTM A153.

b) **Acceptance Tests**

The following acceptance tests for Sign & Number Plates and Aerial Markers shall be carried out:

(i) Visual examination
(ii) Verification of dimensions
(iii) Galvanizing test (on fixture and nuts & bolts only)
(iv) Resistance to thermal shock (vitreous enamel finish)

(i) Visual Examination:

Examination	Defects
a. Construction	Not of the shape given in relevant Drawing. Any crack on the nut& bolt.
b. Material	Not of proper material.
c. Finish	Galvanizing of bolts, nuts, washers and fixture not proper, presence of black spots, blisters, flux, dress, un-coated areas or any other defects. Bolts and nuts, rusty. Threads marred. The plates not properly enameled or presence of cracks, patches, pin-holes, blisters or any other defect. Letters and numbers broken or not properly enameled.
d. Marking	Missing or in-complete or not as per drawing.

(ii) Verification of Dimensions:

Dimensions of the danger, number, aerial markers, phase plates and fixtures shall conform to those given in drawings in Volume-II with allowable tolerances as marked on the individual drawings. Any variation from the specified dimensions shall constitute a defect.

(iii) Galvanizing Test:

The galvanizing of the nuts, bolts, washers and fixtures shall be tested in accordance with ASTM Specifications.

(iv) Resistance to Thermal Shock:

This test shall be carried out by subjecting the test specimen to radiant heat so as to reach a steady temperature of 185-195°C in about ten minutes. The temperature shall be measured by means of a surface pyrometer in contact with the top surface of the heated part of the specimen.

Remove the radiant heat and within 5 seconds quench the surface with 1000 ml of water at 15-20°C direct from an aspirator or other container through a 5 mm diameter tube, the end of the tube being 150 mm above the center of the heated portion of the test specimen. The flow rate of water shall be adjusted to 10 ml per second. It is convenient to mark the test area to ensure

that the water is correctly applied. Dry the plate, replace in the same position under radiant heat source and repeat this procedure until six cycles have been completed.

After subjecting the test specimen to the above test, the vitreous enamel surface shall be considered to be resistant to thermal shock provided that the enamel shows no signs of flaking-off or crazing.

Sampling, Acceptance and Rejection:

Danger, number, phase plates, aerial markers and fixtures offered for acceptance shall be divided into lots containing up to 200 units in each lot. A sample of 12 units (3 each from danger, number, phase and aerial marker) shall be drawn at random from each lot. For thermal shock test two samples each shall be randomly selected from the offered lot.

The selected samples shall be subjected to the visual examination, verification of dimensions and galvanizing. If the number of defective units is two, the lot shall be accepted. If the number of defective units is more than two the lot shall be rejected. If the number of defective units is three, another sample of 12 units shall be selected at random and subjected to tests. If the number of defective units is again three or more then the lot shall be rejected and if the number of defective units is less than three then the lot shall be accepted.

c) **Installation**

Tower signs (danger sign and number signs) shall normally be installed on the tower so that they will be readily visible when viewed in the direction of increasing tower numbers. However, if signs installed in the normal position will not be readily visible from a permanent access road, they shall be installed on the tower faces best exposed to view from the access roads. These signs shall be supplied by the Contractor, and before the manufacturing, a sample shall be submitted to the Engineer for approval.

Aerial markers shall be installed on the upper side of bridge structure, as shown on the drawings. Two markers shall be installed on every tenth tower of the line; one marker faced back on line and the other ahead on line. These shall also be supplied by the Contractor.

(8) **Anti-climbing Devices**

a) **Material**

Material, dimensions and testing of the barbed wire shall be in accordance with ASTM A121.

The size and characteristics of the zinc coated barbed wire shall be as per design number 12-2-4-14R, Type Z with Class 3 coating.

The material of structural steel of anti-climbing devices shall be maximum of mild steel as per ASTM A36 and galvanization according to ASTM A153.

b) **Acceptance Tests**

The following acceptance tests for barbed wire shall be carried out:

(i) Visual examination
(ii) Verification of dimensions
(iii) Galvanizing
(iv) Physical
(v) Mechanical

These tests shall be carried out on the selected samples as per the test procedure defined in the relevant ASTM specification.

c) **Installation**

An anti-climbing device will be installed on each tower as shown on the relevant drawings. The anti-climbing device normally will not be installed until all the tower and wire stringing work is completed.

The tower steel will be provided with holes for mounting the anti-climbing device brackets. The brackets shall be fabricated from mild steel and shall be galvanized in accordance with ASTM A153. The brackets along with barbed wire shall be supplied by the Contractor. Any holes required to be punched/drilled for installation of Anti-climbing Devices and applying of Galvanox, shall be carried out by the Contractor without any extra cost.
Anti-climbing device will be provided with an arrangement of barbed wire around the tower to prevent unauthorized person(s) from climbing the tower.

After erection, tower shall be cleaned of any foreign matter.

(9) **Supporting Device for Joint Boxes of OPGW**

Supporting device for joint boxes of OPGW to be designed, manufactured and supplied by OPGW manufacturer will be installed on the towers where joint boxes are required to be installed. Joint boxes will be installed on the tower on completion or just before completion of each OPGW reels of about 3.2 km length or wherever particularly required. The holes required to be drilled in the tower braces for installation of these supporting devices including provision and applying of Galvanox at the holes drilled shall be responsibility and to the cost of the Contractor.

(10) **Welding of Nuts & Bolts**

All nut & bolt connections of all types of towers shall be welded according to drawing in Volume-II, up to 8.0 m height from the top of chimney. After welding, cold galvanized paint (zinc rich paint) having at least 90% zinc content shall be applied to the welded portion. At least two coats of the paint shall be applied. The cost of welding including application of paint shall be deemed to be included in the unit rate/tower quoted.

1.6 De-Stringing/Dismantling of Conductor, Earth wire, Insulators & Hardware etc.

The contractor shall be entirely responsible for any damage to the tower or during execution of work. Necessary calculations shall be carried out by the contractor to ensure that the loading on towers due to conductor tension as well as loads on account of de-stringing or re-conductoring activities shall be within limits.

Towers not designed for sided stringing shall be well guyed to avoid damage. In this respect, all the expenditure related to this work is deemed to be included in the price schedule and no extra payment shall be made.

Dismantled material (i.e. conductor only) shall become property of the contractor. The contractor shall be responsible for the removal of dismantled material from the Site or otherwise disposed off the dismantled material. Therefore, the contractor is required to estimate the valuation of the dismantled material and fill the same in Item No. E of BoQ.

1.7 Installation of RTV Coated Insulators and Hardware

Insulators and insulator hardware shall be assembled and installed as shown on the drawings and in accordance with the recommendations of the manufacturers.

No insulator with chips or cracks in the porcelain or defects in the fittings shall be installed.

Uncrated or otherwise unsupported strings of insulators shall not be picked up or suspended except by the upper units of the string. All cotter pins installed by the Manufacturer shall be checked.

All insulators shall be cleaned with a clean cloth when installed. The porcelain shall be bright and all other parts free from dirt. Only clean rags free from any abrasive material shall be used for cleaning insulators.

Wire brushes shall not be used for the cleaning of any parts, metal or otherwise. The use of solvents will not be permitted.

Each completed suspension assembly shall be adjusted to hang in a vertical plane through the axis of the tower. Where it would be possible, nuts, locknuts and cotter pins shall be placed to face the tower body.

Workmen shall not climb on insulators during stringing operations or at any other time.

When raising conductor strain assemblies, the insulators shall be kept under tension to avoid possibility of those being damaged due to excessive bending.

1.8 Stringing Conductors and OPGW

(1) General

The conductor and OPGW shall be installed as shown on the drawings and as specified herein.

(2) Safety Grounding

It shall be the Contractor's responsibility to take adequate safety precautions to protect his employees and others from the potential voltage build-up during construction. The voltage build-up may be comparatively small during normal operations, but could be lethal during switching and ground fault conditions on the energized parallel line. The following minimum safety and grounding procedures shall be followed by the Contractor during stringing operations in the Sections with parallel existing high voltage lines.

Temporary electrical grounds shall be placed at both ends of the section requiring special safety precautions and at intervals along the line which is under construction. The grounding sets installed at both ends of the section of line shall remain in place until the completion of the work and shall be removed as the last phase of cleanup. Hot stick shall be used for installing and removing the grounding sets.

All temporary grounds furnished and installed for protection shall be clearly visible for inspection and shall be flagged by use of a red cloth placed at the point of grounding. All grounds, except those placed at both ends of the section, and red flags shall be removed when they are no longer needed for protection.

All pulling and tensioning equipment shall be bonded and effectively grounded with approved-type driven grounds securely attached to the equipment. At least two driven grounds shall be used at both the pulling and tensioning set up. All conductive parts of the tensioning set up and equipment shall be operated from grounded or insulated platform provided with barricades or insulated walkways.

Running grounds shall be installed within 6 meters of the tensioning set up to constantly ground each sub-conductor and OPGW. At the pulling set up grounding shall be achieved by the use of block grounds connected to the adjacent tower by approved type ground leads bonded to the tower with approved type clamps. These connections shall be removed by the use of a hot-stick.

An approved-type driven ground shall be located at each side and within 3 meters of working areas where conductors or OPGW are being compressed to dead-end assemblies or spliced at ground level or jointed. The two ends to be spliced shall be effectively bonded together prior to and during splicing operation. Splicing and compression operations at dead-end assemblies shall be carried out on either an insulated platform or on a conductive metallic grounding mat roped off with an insulated walkway provided for access to the mat.

Installation and removal of temporary jumpers, at any time the conductor is not continuous, shall be performed by hot stick methods.

All conductors and OPGW shall be bonded to the tower with approved-type tower grounds at any isolated tower where it may be necessary to complete Work. Work on dead-end towers shall require grounding on both sides of the tower. Grounds may be removed when the Work is completed, providing the line is not left open circuited at an isolated tower at which work is being completed.

For all sections of the line under work, which are not in parallel with energized high voltage lines or otherwise requiring special safety precautions, only the provision of the grounding at the pulling and tensioning stations shall be required.

All provisions specified herein shall not prevent the Contractor from installing as many additional grounds as deemed necessary for the protection of workmen against static and accidental contacts with foreign circuits.

Clipping crews and all others working on the conductive pulling lines, isolated conductors or OPGW shall be protected by individual hot stick clamp type grounds installed at every work location.

(3) **Approved Type Grounding Material**

Approved type moving grounds shall be such as to exert constant pressure on the conductor or OPGW, and the contact rollers shall be with permanently lubricated-type bearings.

Approved-type driven ground rods shall be minimum of 16 mm diameter copper-weld or equivalent. Ground rods shall be driven into the ground a minimum of 2.5 meters.

Approved-type tower grounds shall be hot stick clamp grounds, bonded to the tower with a flexible ground lead.
Approved-type ground leads shall be at least 43 mm^2 cross-section copper or equivalent.

Approved-type insulated platforms shall be constructed of 65 mm nominal dimension lumber supported on 102 mm nominal dimension sills, or of materials of equivalent insulation.

At the tensioning set up, the insulated platform and rope barriers shall extend completely around the equipment set up in such a manner as to prevent any one standing on the ground from contacting any conductive part of the equipment.

(4) **General Safety Precautions**

Prior to initiation of the stringing in any section of the line the following shall be insured.

(a) The installation of all towers within the section of the line is satisfactorily completed.

(b) The stringing loads will not exceed the design loads for any of the towers.

(c) If any tower is to be subjected to loads exceeding the design loads, the Contractor shall provide temporary bracing for such tower, and the bracing is subject to approval by the Engineer.

(d) The stringing and sagging operation is such that no sudden loads will be applied on the towers.

(5) **Safety Precautions at Crossings**

Wherever any power line, communication line, highway or railroad is to be crossed, the owners shall be notified 30 days in advance and all temporary changes shall be pre-arranged.

The Contractor shall not erect towers near, or string conductors or OPGW over energized power circuits until a Hot-Line Order is placed on the energized line.

Qualified personnel shall remain at the site of work while the Hot-Line Order is in effect and shall ascertain that all personnel are in the clear and properly notified before the Hot-Line Order is released.

All existing lines which are de-energized for crossing shall be short-circuited and grounded at each side of the crossing.

Guard structures shall be provided at all crossings, as required for the protection of the conductor, line, road, structure, or feature being crossed, and as required by the owner, or the Employer.

Guard structures shall be of sufficient strength and stability to withstand the stresses to which they may be subjected.

As soon as a guard structure has served its purpose, it shall be removed and all holes shall be backfilled.

(6) **Atmospheric Adverse Conditions**

All pulling and stringing operations shall cease when either wind velocities are such as to cause conductors to deflect more than 1.5 meters at mid-span from the normal no wind position or there is any indication of lightning activity in the area.

(7) **Handling and Stringing of Conductors**

The conductor will be furnished in matched sets of twenty four (24) reels and shall be strung by the controlled tension method. At no time will the conductor be allowed to contact the ground or any object which might cause damage to the conductor.

All reels shall be inspected in the field prior to installation. Reels showing signs of careless or unusually rough handling, such as split frames or crashed outer protective lagging shall be inspected carefully for conductor damage.

Preparatory to un-reeling a conductor from the reel, the outer protective lagging shall be removed carefully, and all surfaces in contact with the running conductor shall be examined for protruding objects which might damage the conductor.

Care shall be taken to insure that no dirt is carried by the conductors from the reels. Reels shall be properly cleaned before starting stringing operation of any line section.

A spreader bar shall be used when lifting or lowering the reels. Full or partial reels shall not be dropped or rolled under any circumstances.

The four conductors in a bundle shall be strung simultaneously and shall hang in stringing blocks for the same period of time not exceeding 24 hours and, in exceptional cases, up to 48 hours before being sagged to the specified sag.

Four conductors shall start and end approximately at the same points of the line and stringing operations shall be planned to keep waste to a minimum. Lengths of conductor less than 100 meters are scrap lengths and shall not be spliced into the line without the approval of the Engineer. Jumpers shall be cut only from scrap lengths unless otherwise permitted.

Stringing sheaves may be hung on the insulator strings or in straps of equal length attached to the structure arms with suitable hooks or clamps. The sheave shall support the conductors at the same elevation as when clipped in.

Stringing of conductors and temporary guying of conductors shall be done by methods that will prevent damage to the conductor and structures in any way. Temporary guying/dead ending to tower footings will not be permitted. Where temporary dead end is required, the conductors shall be attached to suitable temporary anchors.

The general requirements for installation of the temporary anchors are as follows:

The angle formed by conductors/OPGW to the horizontal shall not exceed 15 degrees.

The anchors shall be aligned in the direction of stringing:
The anchors and their accessories shall withstand the maximum conductor tensions with a factor of safety of three.
Four sub-conductors of one phase shall be strung simultaneously by means of running board attached to a single pulling line with a swivel. Sub-conductors shall be connected to the running boards with a swivel connection and a stocking-type grip. The grips shall be secured to the conductor by means of a band installed around the tail end of the grip.

Following stringing, measures shall be taken to prevent the sub-conductors of the bundle from contacting each other. Before adjusting the sag of the conductors, sub-conductor slapping may be prevented by pulling each of them to a different sag which will separate them at least 153 mm vertically from either of the other sub-conductor at mid-span. After adjusting the sag, the following conditions will require sub-conductors tie-off: any time that sub-conductors slapping is noted, any time that prior to spacer installation the conductors are left unattended.

Two reel lengths of conductor may be pulled into the sheaves using only approved swivels and grips to make the connections between reel lengths. Double socking will be permitted, but permanent splices shall not be pulled through a sheave or bull-wheel.

All sheaves, swivels and grips shall be inspected daily for free and easy movements and to assure that such may be safely used. Sheaves carrying pulling lines shall not be used for conductors.

The conductor shall be kept clean by removing grease, dust or any other contamination. Cleaning shall be done immediately after the conductors leave the tensioning device. The method of cleaning shall be wiping with a clean cloth saturated with proper cleaning agent. When it is necessary to slack the conductor at any time during the stringing operation, it shall be done with the approval of the Engineer. Rigid plank guard or lagging, or a combination of both shall be used to prevent damage. Lagging shall consist of nonmetallic material which will not damage the conductor and shall be rigid so that it will not be displaced by the motion of the conductor. It shall be free of any material, which can be transferred to the conductor.

Sections of the conductor damaged by application of gripping attachments or any other way during stringing shall be removed before the conductor is sagged in place.

The conductor repairs shall be done as outlined in Clause 1.7(11) (b) of the Technical Provisions.

All stringing operation must be conducted so that at no time will any suspension structure be subjected to longitudinal loads and at no time will any tension structure except dead end structure be subjected to excessive unbalanced loads resulting from longitudinal loads on opposing faces. At no time shall any structure be subjected to torsion. The vertical angles of pulling lines shall be such as to minimize the vertical loading on towers. The attachment of temporary guys and stringing equipment on towers shall be done only with approval of the Engineer.

The conductor reels, tensioners, and pulling machines shall be located as near to mid-span as possible but in no case shall the slope of the OPGW or conductor between any machine and the stringing block or any anchor lead be steeper than three horizontal to one vertical (15°-20° to the horizontal).

The tension in the conductor during stringing shall be maintained as constant as practicable. The sag in each conductor must be maintained at least 20 percent greater than the sagging value specified in sag charts and the maximum pulling tension shall never exceed the sagging tensions.

If the conductor is left unattended, during stringing operations, it shall be freely suspended between stringing sheaves so as to provide a safe clear distance over ground or obstructions.

The minimum tension shall be such as to maintain the conductors at a minimum distance of 3 meters above ground or any obstacle.
When there is possibility of conductor being damaged due to wind or other conditions they shall immediately be fully tensioned. It is recommended that variations in stringing tensions be as small as possible and the tension shall be near the maximum permitted. Immediately after completing stringing of a section of the line, the tensions shall be increased to the maximum permitted stringing values.

The spinning of the conductors and OPGW shall be prevented during stringing. Unreeling of the conductors shall be closely watched at all times in order to detect any damage or flaw in the conductor.

(8) **Handling and Stringing of OPGW**

One 12mm OPGW shall be strung for the entire length of line. The specifications used for handling and stringing the OPGW shall be the same as for the conductors.

(9) **Conductor Sagging**

After being pulled into the sheaves all sub-conductors in a sag section shall be sagged within 24 hours.

The conductors shall be sagged in accordance with sag charts, furnished by the Contractor. The exact value of sag for a given span length at a given temperature can be ascertained from the appropriate table or by linear interpolation of data.

Conductor sagging temperature shall be measured by an accurate thermometer. A length of core shall be pulled from a 0.5 meter length of the conductor sufficient for thermometer to be inserted into the space vacated by the core.

The length of conductor shall be placed in the full sun at least 4 meters above the ground for a minimum period of 15 minutes. A thermometer in a container which stimulates the effect of the conductor may also be used.

The length of conductor sagged in one operation shall be limited to the length that can be sagged satisfactorily, usually 3,000 meters to 6,000 meters.
Temporary snubs shall be used between a section previously sagged and clipped in and the section being sagged. Dead ending or snubbing will not be

permitted on any tower except dead end towers at the normal point of attachment.

When conductors are sagged a mark shall be placed on each conductor at the last structure in each pull. The location of this mark shall be checked after the succeeding sag has been made to ascertain whether or not the back spans are still sagged properly. The wire grips may be removed only after the next section of the line has been sagged.

When sagging conductor shall have lengths of more than four spans, the sag shall be checked near each end span and at or near the middle span of the length being sagged. The length of the spans used for checking sag shall be as nearly equal to the ruling span as practicable.

The sag of each span more than 600 meters in length shall be checked in addition to above. Sag at sharp vertical angles and horizontal angles of 10 or more degrees shall also be checked on both sides of the angle.

The sags shall be determined by means of a transit or other approved methods. At least one person shall be provided to measure the correct sag for pulls up to five spans, two persons for six to ten spans and three persons for eleven spans or more.
The total number of spans to be checked shall be not less than two in a four-span section, three for a section up to two kilometers and in proportion for a longer section.

In the quad conductor bundle the sag of the two upper sub-conductors shall be the same. The lower sub-conductors shall be sagged from 30 to 60 mm more than the upper sub-conductors.
A tolerance of plus or minus 10 mm of sag per 30 meter of horizontal span length, but not to exceed 150 mm in any one span, will be permitted, provided that: (1) upper sub-conductors in the span assume the same sag; (2) the necessary ground clearance is obtained; (3) the conductor tension between successive sagging operations is equalized so that the suspension insulator assemblies will assume the proper position when the conductor is clipped in; (4) the sag in the lower sub-conductor of the bundle is 30 to 60 mm more than the sag in the upper sub-conductors.

Log books shall be maintained to record all conductor installation data and chronological progress.

The temperature, spans, tower, general weather, wind velocity and direction, sags, tensions, and drawing references shall be recorded for each section of conductor as it is being installed, tensioned and sagged. When possible, sagging operations shall be scheduled when wind velocity is at or near zero.
Radio or telephone communication shall be used to relay information and instructions between the conductor payout station, intermediate check points, mobile stations and the pulling stations at all times during stringing

operations. A failure of communication requires immediate cessation of the conductor pulling operation.

(10) **Conductor Clipping-in**

After being sagged, the conductor shall be allowed to hang in the stringing blocks for not less than 2 hours before clipping-in is commenced, to permit the conductor tension to equalize.

Plumb marks shall be made on the conductors in the vertical plane through the centerline of the tower prior to clipping-in. Only paint, crayon, or wax pencil shall be used for marks on conductors.

All conductors marking in the section being sagged shall be accomplished while the conductors are in the sheaves and before clipping-in or dead ending is begun.

The total time during which the conductor is allowed to remain in the stringing blocks before being clipped-in shall not exceed 72 hours.

Torque wrenches shall be used to tighten all nuts on clamps. The torque applied shall be in conformance with the recommendation of the manufacturer.

Yoke plates for V-Vee string insulators shall be installed as shown on the drawings and shall hang at 90 degrees to the conductor axis within a tolerance of plus or minus 2.5 cm.

Well-padded pull-lift hooks or other approved methods shall be used for handling conductors during the clipping-in operation.

(11) **Installation of Conductor and OPGW Accessories**

(a) **Splices and Dead Ends**

All splices shall be of the compression type.

All splices shall be made at least 15 meters away from structures and no splices shall be made in dead end spans or spans greater than 600 meters or spans crossing over the highways, railroads, major canals, rivers and transmission lines of voltages greater than 33 kV unless approved by the Engineer.

As a rule not more than one joint or splice should be made in any one conductor in any one span. However, in exceptional cases, as in the repair of damaged conductors, or when necessary owing to stringing limitations two splices will be allowed.

The splices and compression dead ends shall be installed in accordance with the recommendations of the Manufacturer of the accessories.

Conductor shall be laid out straight for a distance of 15 meters and straightened at the end before preparation of the ends for splicing or dead-ending. The ends of the conductor shall be thoroughly cleaned immediately prior to compressing. After the compression has been completed, all corners, sharp projections and indentations shall be carefully rounded and smoothed, and tape, tape residue, and filler paste shall be removed from splice and conductor. If the completed splice requires straightening, it shall be straightened on a wood block by use of a wooden maul.

Splicing, dead-ending and repair of damaged conductor shall be done in the presence of nominated person of the Engineer.

If the completed splice or dead-end is not satisfactory, in the opinion of the Engineer or his nominated person, it shall be removed and a new splice or dead-end shall be properly installed.

The Contractor's inspector shall stamp his own initials on the aluminum sleeve of each compression joint and compression dead end completed under his supervision.

(b) **Repair of Conductors**

Damage is any deformity on the surface of the conductor which can be detected by eye or by feel and shall be repaired by whichever the following methods is appropriate:

(i) Repair by manual polishing
(ii) Installation of repair sleeves over the damaged part
(iii) Installation of compression joints
(iv) Replacement with new conductor

Slight damage such as superficial scratches or abrasions, which are not deeper than one-third the strand diameter, can be repaired by dressing with a fine emery cloth.

Severe cuts which cannot be repaired with emery cloth due to their depth or extension, and cause increase in the resistance of the external layers shall be repaired by use of repair sleeves, provided that not more than one-third of the outer layer is cut or damaged over a length of less than 10 centimeters.

Damages of extent greater than described in above paragraphs shall be repaired by replacing the damaged length of the cable using compression joints.

When there is repeated damage in the same span or in consecutive spans, the Engineer or his nominated person may require all conductors in these spans to be replaced.

In the case when signs of corrosion are detected during the stringing operation, the reels containing corroded conductors shall be set aside, the operation shall be interrupted and the Engineer or his nominated person shall be informed immediately.

Whenever a repair sleeve is installed, a rope cage shall be placed on the sleeve to ensure that there will be no damage from sub-conductor slapping prior to installation of the spacer-dampers.

(c) **Jumper Connections**

Where compression type dead-ends are used, the jumper shall be one continuous piece, and compression-type jumper terminals bolted to the compression-type dead-ends shall be used.

(12) **OPGW Jointing/Splicing and Installation of OPGW Joint Boxes**

OPGW jointing/splicing and joint boxes installation will be carried out by the Contractor. However, following general instructions should be followed:

No mid span joint shall be allowed in the OPGW. All joints shall be performed in a joint box located on the tower just above the location of anti-climbing device. OPGW jointing (splicing) and joint boxes installation including supporting device for joint boxes shall be executed by the Contractor. OPGW shall be dropped to the joint boxes along with tower braces by installing OPGW attaching clamps at about one meter interval.

1.9 Installation of Dampers

(1) **Spacer Dampers**

The two sub-conductors of each phase shall be secured to each other by means of spacer dampers installed strictly in accordance with data furnished.

The intervals, measured along the length of the conductors at which spacers are installed shall be as shown on the data sheets with tolerances not more than plus/minus 1.0 meter.

Spacer-dampers shall be installed in a span only after that span has been dead-ended and clipped-in. The installation of spacer dampers shall be

completed in each section within 72 hours after the sub-conductors have been sagged.

The clamps shall be properly aligned on the conductors. Distorted shape of the spacer dampers will be considered an unsatisfactory installation and shall be corrected or the spacer damper replaced.
The bolts of the breakaway type shall be tightened until the outer head breaks off.

Spacer dampers shall be installed with the bolt heads in a downward position for viewing from the ground.

(2) **Vibration Dampers**

Vibration dampers shall be attached to the OPGW at the ends of all spans and as designated on the data sheets. The vibration dampers shall be fastened securely to OPGW so that they will hang in vertical planes. Spacing of dampers shall be in accordance with the Drawings. Breakaway type bolts shall be tightened until the outer head breaks off.

2 PRE COMMISSIONING AND COMMISSIONING TESTS

2.1 Pre Commissioning Tests

(a) **Mechanical Tests**

1. For steel structures, ensure that structure type is as per specification/drawings/structure list.
2. Check galvanizing and thickness (rust is not acceptable).
3. Check bolt types and tightness (torque wrench method).
4. Ensure anti-climbing guards are correctly installed.
5. Check step bolt tightness.
6. For RTV Coated porcelain insulators, check insulators for chips, cracks, etc. Ensure correct number of insulators have been installed in each string. Ensure that cotter keys have been properly installed.
7. Make sure that insulators are clean and line is safe to be energized.
8. Check that all line hardware and fittings (insulators, corona rings, vibration dampers, spacer dampers, conductor clamps, armor rods, etc) is installed correctly and in correct locations as per specifications and drawings.
9. Check that all splices are correct and installed in correct span locations.

10. Check that all jumpers are installed correctly. Ensure correct clearances between jumper and structure as well as with other phases at acute angle locations.

11. Ensure there is no twist in the insulator string.

12. Check that OPGW is grounded to towers as specified.

13. Ensure that sags for phase and overhead ground conductors are even and according to the specification.

14. Check that ground clearances are as per specification.

15. Check circuit/phase identification plates, structure number plates, danger sign plates, etc. have been correctly installed at each structure and aerial markers at the required structures.

16. Check line/phase correctly transposed at the specified locations and clearance between the phases is as per specification.

(b) **Electrical Tests**

1. Check tower footing resistance as per specification.

2. Verification of physical phase arrangement.

3. Perform sequence impedance test (both zero and positive sequence).

4. Perform continuity and insulation test of complete transmission line with appropriate test equipment.

5. Tests on OPGW:
   - OTDR test of each fiber
   - Attenuation test
   - Continuity test

2.2 Commissioning Tests

1. Perform phase sequence/rotation check.
2. Inspection of Facilities for any visual/audible abnormality.

SECTION IX

BILL OF QUANTITIES

NATIONAL GRID COMPANY of PAKISTAN

BOQ for Replacement of Normal Disc Insulators with RTV Coated Disc Insulators of 220KV Transmission Lines under Field Operations Lahore (Lot-I)

Description	Unit	Quantity (Nos.)	Unit Rate PKR.	Total Price Exclusive of Taxes
1	2	3	4	5=(3X4)
Replacement of existing Normal Type Disc Insulators with RTV Coated Disc Insulators of 220KV Transmission Lines (Lot-I) 1- 220KV T/L KSK-QABP CCT-II 47 Towers 2- 220KV T/L Wapda Town-Sheikhupura CCT 103 Towers **The Scope of work to be carried out is as under.** i) Dismantling of existing disc Insulators and packing, shifting/ transportation from site to NGC designated store. ii) Shifting/Transportation of 100KN, 120KN RTV Coated Disc insulators from A-Type Store NKLP Lahore to Site stores iii) Installation of RTV Coated Disc Insulators iv) The work to be carried out during Shut down on daily basis.	Towers	150		
			Total:	
			Provincial Service Tax @ 16% (In Punjab Province)	
			Grand Total:	

CONDITIONS:

1. The quantities mentioned in the BOQ are estimated quantities.
2. Contractor will collect RTV coated disc insulators from A-Type Store, NKLP NGC Lahore.
3. The breakup of unit rates for each item/works quoted in the BOQ shall be provided with the bid in accordance with the design provided with the tender and the work at site shall be executed as per construction drawings provided/ approved by the Engineer.
4. In case of discrepancy between unit price and total price, unit price shall prevail and the payment will be made accordingly.
5. The cost quoted for above works shall include cost of labor and cost of all accessories / material / equipment required for successful completion and operation along with clearance of Right of Way (RoW), if any.
6. The rates of above items are to be quoted by the tenderers will be considered on item rate basis.
7. All pages of tender documents shall be initialized/signature by the person or persons with signed the bid.
8. Omission & errors can be rectified at any stage.
9. No extra payment will be made on account of fluctuation in prices of labour, fuel, lubrication and material etc.
10. The work will be completed within 30-days from the date of acceptance of NOA or within 10 days of the final approved shutdown by ISMO Islamabad, whichever is later.

Bidder Name & Signature: _____

SECTION X

SOP FOR BLACKLISTING OF CONTRACTORS

NATIONAL TRANSMISSION & DESPATCH CO. LTD

Company Secretary

No. NTDC/CS/ 191-207 Dated: 27 – 02 – 2019

NOTIFICATION

Approval for revision of SoP for Blacklisting

Ref: This office notification No.NTDC/CS/1728-42 dated 25.07.2017.

The Board of Directors National Transmission & Despatch Company Limited (NTDC) in its 150th meeting held on 25.02.2019 against agenda item No.10 has unanimously resolved and approved the revised/amended SoP for Blacklisting.

Ijaz Ahmad
Company Secretary

Copy to:

1. Managing Director.
2. Dy. Managing Director (AD&M).
3. Dy. Managing Director (P&E).
4. All General Managers.
5. Chief Financial Officer.
6. Chief Law Officer.
7. Chief Internal Auditor.
8. Chief Information System.

A copy of the revised SoP for Blacklisting is enclosed.

NATIONAL TRANSMISSION & DESPATCH CO. LTD

Company Secretary

No. NTDC/CS/ 444-60 Dated: 29 - 03 - 2019

CORRIGENDUM

Approval for revision of SoP for Blacklisting

In continuation to this office Notification No.NTDC/CS/191-207 dated 27.02.2019 on the subject matter, the designation of Chief Engineer (Reliability Assessment) being a committee member in Chapter No.3 under Clause 3.1 at page # 7 of the approved revised/amended SoP for Blacklisting may be read as 'Chief Engineer (Reliability Compliance)'.

Note:

- **All other contents of the notification will remain intact.**

Ijaz Ahmad
Company Secretary

Copy to:

1. Managing Director.
2. Dy. Managing Director (AD&M).
3. Dy. Managing Director (P&E).
4. All General Managers.
5. Chief Financial Officer.
6. Chief Law Officer.
7. Chief Internal Auditor.
8. Chief Information System.

NATIONAL TRANSMISSION AND DESPATCH COMPANY LIMITED (NTDC)

REVISED SOP FOR BLACKLISTING

(As on 25.02.2019)

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CHAPTER NO.1

1.1 INTRODUCTION

The main objectives of any procurement process are transparency, economy, fairness and efficiency so that value for money is achieved.

Blacklisting is one of the most effective tools used in the struggle against inefficiencies and corruption in connection with public procurement. In addition, it serves as a major deterrent against any material breach of contract and further ensures the timely execution of projects by holding delinquent persons accountable.

Rule-19 "Blacklisting of suppliers and contractors" of the Public Procurement Rules, 2004 (hereinafter "**PPRA Rules**") stipulates that;

"The procuring agencies shall specify a mechanism and manner to permanently or temporarily bar, from participating in their respective procurement proceedings, suppliers and contractors who either consistently fail to provide satisfactory performances or are found to be indulging in corrupt or fraudulent practices. Such barring action shall be duly publicized and communicated to the Authority:
Provided that any supplier or contractor who is to be blacklisted shall be accorded adequate opportunity of being heard."

In the light of the Clause above, this SOP has been drafted for procurements made by NTDC.

Any capitalised terms and abbreviations used in this SOP which are not defined herein shall have the meanings given to them in Public Procurement Regulatory Authority Ordinance, 2002 (hereinafter "**PPRA Ordinance**") and PPRA Rules.

1.2 EXTENT OF APPLICATION

i. The procedure shall be applicable and remain in force, along with any amendments thereto, within NTDC until any clear instructions or guidelines are imparted by the Government through PPRA, PEC, or any other competent forum.

ii. The procedure shall also be applicable on the pre-qualified firms.

iii. The procedure shall be applicable on any "Person", which for the purposes of this SOP shall *interalia* include suppliers, bidders, contractors, consultants, firms, individuals, and organizations transacting business with NTDC.

iv. Wherever any provision of this SOP shall be in conflict with provisions of any applicable guidelines of donor agencies, or any other applicable Statute / Law or Rule enforced at the time in Pakistan, the provisions of such applicable guidelines, laws, or rules shall prevail.

v. This SOP shall become a part of the future Bidding Documents and the person(s) will submit an Undertaking along-with his bid that he has read and accepts the provisions of this SOP. Non-submission of an Undertaking may result in rejection of his bid. The said Undertaking will subsequently become part of the Contract Agreement as well.

CHAPTER NO. 2

2. REASONS OF BLACKLISTING

2.1 The causes and reasons to be taken into consideration for Debarment / Blacklisting of any person are given as under:

2.1.1 Pre- Award Stage:

The following shall be considered, *interalia*, the causes / reasons for initiating proceedings under this SOP at the Pre-Award Stage:

i. Indulging in Corrupt, Fraudulent as well as Collusive practices.

ii. Submission of false and spurious documents, making false statements, making frivolous complaints and allegations to gain undue advantage.

iii. Commission of embezzlement, criminal breach of trust, theft, cheating, forgery, bribery, falsification or destruction of records, receiving stolen property, false use of trademark, securing fraudulent registration, giving false evidence, furnishing of false information of serious nature.

iv. Submission of false bid security or infringement of documents to get undue monetary or any other benefit.

v. Breach of confidentiality of evaluation process as mentioned in Appendix-1 based on illegal access or in any way to get undue benefit or to provide benefit or to frustrate the bidding/evaluation process. This will also include attempts to sabotage the bidding process directly or indirectly.

2.1.2 Post- Award Stage:

The following shall be considered, *interalia*, the causes / reasons for initiating proceedings under this SOP at the Post-Award Stage:-

i. Extraordinary delay in signing or refusal to accept the Notification of Award and/or the contract without any cogent reason.

ii. Misconduct, i.e., failure to proceed with the signed contract, withdrawal of commitments, quoting an unreasonably and unfairly low financial offer and subsequently withdrawing such an offer, frustrating the evaluation/bidding process and not responding to written communication in a reasonable time.

iii. Causes mentioned in Clause 2.1.1 (i, ii & iii) above.

iv. Submission of fake / frivolous or mutilated Performance Guarantee or Advance Payment Guarantee etc.

v. Non-satisfactory performance as mentioned in Appendix-2 during the execution of the contract.

vi. Non-performance or Breach of provisions / clauses of the contract agreements.

vii. Notwithstanding the warranty/defect liability period, any defect in a product, equipment, plant, facility or services rendered that may subsequently surface during field operations within 5 years of its commissioning.

viii. Failure to honour obligations within warranty period or defect liability period as defined in the contract.

2.1.3 Other Causes

i. The person is blacklisted by any Government department in Pakistan, or it is established that the firm is involved in any kind of corruption or corrupt practices anywhere in the world.

ii. Violations of provisions / instructions set down in the Bidding Documents.

iii. Any attempt / activity to malign or bring NTDC into disrepute and harm its interest(s).

iv. Person(s) blacklisted by International Financial Institutions (donor agencies) will be liable to be blacklisted after receipt of confirmation from the donor agencies without any further proceeding.

v. Any other cause deemed just and appropriate by NTDC in the given circumstances.

Note:

(1) If above mentioned causes occur either on part of the principal bidder or the local agent, both shall be considered for blacklisting / debarment.

(2) The authorization of the foreign bidder to local agent shall contain his complete particulars including the name of the company, name of the owner, National Tax number (NTN), CNIC (Computerized National Identity Card) No. etc. In case, the said information is found to be missing, even after calling for the same within a reasonable time, the authority letter shall not be accepted.

(3) The Bidding Documents shall be issued against original authority letter or in case of scanned copy, the email of the foreign bidder shall be enclosed. However, at the time of bidding, the original authority letter shall be attached with the bid. In the absence of the same, the bid shall be rejected.

CHAPTER NO. 3

3. FORMULATION OF "NTDC'S RIGHTS PROTECTION COMMITTEE"

3.1 A permanent Committee namely "NTDC's Rights Protection Committee (**RPC or Committee**)" comprising of the following members shall examine the justification of the reasons given by the Project Authority prior to blacklisting / debarment of any firm/supplier/contractor/ individual.

- General Manager (Performance Assessment) NTDC — Convener
- Chief Engineer (Reliability Compliance) NTDC — Member
- Representative of the Chief Law Officer's Office — Member

Depending upon the nature of the case, the Committee may consult or appoint / nominate additional members from within NTDC with the approval of Managing Director (NTDC), provided that the Committee consists of an odd number of individuals as per spirit of Rule 48(1) of the PPRA Rules. Independence of any additional members shall be ensured while making the selection of such additional members. Furthermore, the aforementioned RPC shall also be authorized to seek external expert advice as and when required.

CHAPTER NO. 4

4.1 PROCEDURE FOR BLACKLISTING

Upon receipt of or obtaining information and/or knowledge that any person(s) is involved in practices mentioned in Chapter-2 earlier, the concerned Project Authority / formation shall promptly formulate its recommendations and submit through MD NTDC to NTDC RPC along with its findings, details of charges and documentary evidences to initiate proceedings under this SOP.

4.2 INITIATION OF AN ACTION

(i) Within a period of 15 days after receiving the recommendations of Blacklisting / Debarment from the concerned Project Authority, the Convener of the Committee shall issue a Show Cause Notice ("**Notice**") thereby informing the Person about the alleged charges and shall provide an opportunity to the defend said charges within a time period of 15 (fifteen) days.

(ii) The person(s) shall be accorded adequate opportunity of hearing in order to defend the charges within the given timelines.

(iii) The Notice to the Person shall be sent at the mailing/postal address as provided under the Contract or any other address provided by way of subsequent written communication by the Person The non-receipt of the Notice due to incorrect / change in mailing address without any written communication shall not be attributable to NTDC. In case of non-receipt of any reply from the accused person within the formulated time, but not less than the time given in 4.2 (i) above, the Committee shall have the right to proceed on Ex-parte basis.

4.3 DECISION

i. The committee shall hold an independent inquiry/investigation as the case may be, and, which may include site visits and interviews with the parties concerned. The Committee shall complete the entire inquiry/investigation, preferably within a period of 30 days after receipt of response from the person against whom proceedings under this SOP have been initiated and shall present the report to the MD NTDC.

ii. If required, the Committee may report the case to an appropriate law enforcement agency depending upon the nature of the case for detailed investigations with the prior approval of Managing Director (NTDC).

iii. The person against whom proceedings have been initiated under this SOP shall not proceed for arbitration/litigation during the proceedings for blacklisting.

4.4 COMMUNICATION OF DECISION

After recommendation for blacklisting by "NTDC's Rights Protection Committee **(RPC)**", the person concerned shall be informed within 10 days of such decision. The decision of the Committee will be notified on NTDC's and PPRA's websites and shall also be conveyed to Pakistan Engineering Council. Blacklisting of firms shall also be conveyed by circular to other Government Departments. All other relevant procuring agencies including PEPCO, DISCOs, and WAPDA, etc., will also be informed simultaneously.

4.5 PERIOD OF DEBARMENT FOR BLACKLISTED FIRMS

(i) The Blacklisting on the grounds and reasons specified herein above in Chapter No. 2 shall be for a reasonable specified period of time and as a general rule of prudence, the period may not exceed three years, except in cases where debarment/blacklisting has been done by any other government department or an International Financial Institution (Donor Agency).

(ii) In case the person has been blacklisted by the government department or the International Financial Institution (donor agency), the period of blacklisting/debarment shall be for a maximum period of 3 years or the time period for which the concerned government department/International Financial Institution (Donor Agency) debarred the contractor (whichever is higher).

4.6 ACTION AFTER PERSONS ARE PLACED ON BLACKLISTING LIST.

i. The decision of blacklisting will be immediately circulated to all concerned as mentioned at Clause 4.4 above.

ii. In case of a contract already awarded to a person which has been blacklisted and termination is either not possible or not feasible, the concerned Project Authority may proceed in this case to complete the contract with the approval of Competent Authority.

iii. The blacklisted person shall stand disqualified from bidding from the date of decision against them. Any pending bids shall also stand rejected. If a contract has

already been awarded to person, it shall be voidable at the option of NTDC as per 4.6 (ii) above.

iv. A separate register or data base will be maintained for blacklisted firms indicating reasons and period.

4.7 EFFECTIVENESS

These guidelines / SOP or any amendments thereof shall take effect immediately after its approval from Board of Directors of NTDC.

APPENDIX-1

PROCESS TO DEAL WITH FRIVOLOUS COMPLAINTS

It has been frequently observed that after opening of tenders, the bidders start to influence the evaluation process. Such attempts result in delay in finalizing of award of contract and cause financial loss to the National exchequer. The evaluation process is confidential till publication of award of contract process.

Provision of guidelines of international donor agencies and PPRA provides sufficient opportunity to bidders for redressal of their grievances. Hence, the attempts made by the bidders during evaluation process or thereafter to influence the contract award decisions fall under the definition of corrupt and fraudulent practices. Therefore, during bidding stage, the following mechanism shall be adopted in case of receipt of any frivolous complaint from the bidder.

i. Anonymous complaints shall not be entertained.

ii. The Procuring Agency reserves the right to call for an affidavit from the complainant verifying the truthfulness and correctness of the contents of the complaint.

iii. The notice of displeasure and explanation will be immediately sent to those persons who lodge frivolous complaint(s) during the evaluation process.

iii (a) If the person itself or through its agent or any third party does not refrain from making frivolous complaints in the same tender or any other tender, an official warning will be sent and their case may be sent to "NTDC's Rights Protection Committee" which may analyse the situation and suggest action including the rejection of the bid of the complainant. However, Project Authority may reject the bid even in first instance depending upon nature of the case or provision of the Bidding Documents.

iii (b) If the same person itself or through its agent or any third party lodges a frivolous complaint in another tender floating in parallel before decision of the Grievance Committee, its bid will straight forwardly be rejected by the project authority. It may also be debarred to participate in the next tender for a minimum period of six months under intimation to the Grievance Committee and MD NTDC.

iv. In order to monitor the record of the persons, a data base will be maintained at NTDC's website and the offices of the project authorities regarding such persons who consistently lodge frivolous complaints during the evaluation process by making clandestine access to confidential record and hamper the award of contract process.

NOTE: It is clarified that the process provided above in Appendix 1 is to discourage anonymous and frivolous complaints only, and does not bar any person feeling aggrieved by any act of the procuring agency from lodging a genuine complaint/grievance as provided under Rule 48 of the PPRA Rules, 2004.

APPENDIX-2

GUIDELINES FOR EVALUATION OF PERFORMANCE OF CONTRACTORS

i. After signing of the contract, the Project authority (or the Consultant / Engineer) must monitor and evaluate the Contractor's performance, that is, whether the Contractor is fulfilling his obligations based on the terms of the contract and plans that were developed and agreed upon with the Project authority at the time of signing of contract or during kick-off meetings..

ii. Though the performance evaluation of any person is an on-going process, which takes place throughout the duration of the contract and also during the Defect Liability / Warranty Period, nevertheless, a person's Performance Evaluation Report may be prepared for the consumption and benefit of the procuring agency or for any other purpose at the completion of the project, as the case may be.

iii. The performance evaluation report shall be prepared for all contracts of more than Rs. 100 million. When based on the Evaluation Report, the performance of a person is non-satisfactory, the procuring agency may initiate the case for blacklisting of the person in accordance with the terms of this SOP. For the avoidance of doubt, consistent failure to provide satisfactory performance shall also include performances in a single or multiple contracts executed or being executed by the same person, as the case may be.

iv. In case of any extra-ordinary delay in performance of a single contract of vital and critical importance, the procuring agency shall have the right to initiate proceedings under this SOP and/or avail any other remedy provided under the law which may *interalia* include: termination of the contract, recovery of losses, debarring the person from participation in future tenders. The procuring agency shall be the sole judge to determine the projects of vital or critical importance.

v. In case of ordinary delay in performance in 2 consecutive contracts within a period of 3 years, the procuring agency shall have the right to initiate proceedings under this SOP and/or avail any other remedy provided under the law which may *interalia* include: termination of the contract, recovery of losses, debarring the person from participation in future tenders.

vi. The proceedings under this SOP shall not prejudice any other rights and/or remedies available to the procuring agency under the contract documents and/or any other law in force.

TENDER DOCUMENT NO. T-370-2026 (Lot-II)

REREPLACEMENT OF NORMAL/FOG TYPE DISC INSULATORS WITH RTV COATED DISC INSULATORS FOR 220kV TRANSMISSION LINES UNDER FIELD OPERATIONS LAHORE (Lot-II)

(Single Stage Two Envelope Procedure)

(National Competitive Bidding)

PREPARED BY:
O/o DIRECTOR GENERAL (FIELD OPERATIONS) NORTH
NTDC HOUSE, LAHORE

NATIONAL GRID COMPANY (NGC) OF PAKISTAN

November, 2026

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FOR
CONTRACT NO. T-370-2026 (Lot-II)

REPLACEMENT OF NORMAL/FOG TYPE DISC INSULATORS WITH RTV COATED DISC INSULATORS FOR 220kV TRANSMISSION LINES UNDER FIELD OPERATIONS LAHORE (Lot-II)

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SECTION I

INVITATION FOR BIDS

Ref No. DG/FON/P&S/T-370-2026/_____
Date: _____/11/2026

Field Operations North
Director General (FO) North Lahore

INVITATION FOR BID

1. NationalGrid (formerly NTDC), "The Purchaser", is responsible for development and control of power transmission system in the country, invites electronic bids on E-PADS v2.0 for execution of below mentioned works through "Single Stage Two Envelope Procedure" (SSTE) on National Competitive Bidding (NCB) basis from eligible firms registered with Income Tax and Sales Tax Departments and who are on Active Tax payers List of the Federal Board of Revenue (detailed terms & conditions, types and quantities mentioned in the bidding document).

Tender No.	NAME OF WORK
T-370-2026 (Lot-I)	Replacement of Normal/ Fog Type Disc Insulators with RTV Coated Disc Insulators for 220kV Transmission Lines under Field Operations Lahore (Lot-I)
T-370-2026 (Lot-II)	Replacement of Normal/ Fog Type Disc Insulators with RTV Coated Disc Insulators for 220kV Transmission Lines under Field Operations Lahore (Lot-II)
T-370-2026 (Lot-III)	Replacement of Normal/ Fog Type Disc Insulators with RTV Coated Disc Insulators for 220kV Transmission Lines under Field Operations Lahore (Lot-III)

2. Bidding Documents, containing detailed terms and conditions, etc. can be accessed through E-PAK Acquisition and Disposal System (E-PADS v2.0) at **(www.epads.gov.pk)**. Interested eligible bidders are requested to register themselves on E-PADS v2.0 and submit their bid on E-PADS before the date & time of opening of Bids. Manual bids shall not be accepted, in any case.

3. This advertisement is also available on PPRA and NGC websites (www.ppra.org.pk & www.ntdc.com.pk). All eligible bidders need to prepare their bids according to the instructions given in Bidding Document and submit their bids electronically through E-PAK Acquisition and Disposal System (E-PADS v2.0) up to 07.12.2026 at 11:00 hrs. The bids will be opened on the same day at 11:30 hrs through E-PADS in the office of Director General (FO) North, NGC Lahore at below mentioned address.

   Director General (Field Operations) North NationalGrid,
   34, Industrial Area, NTDC House, Gulberg-III, Lahore
   Telephone: 042-99263023

4. A bidder may participate in any number of lots and may be awarded contracts for any number of lots, subject to meeting the eligibility and qualification requirements stipulated in the Bidding Documents. However, for award of contracts for multiple lots/works, the bidder shall independently meet the prescribed manpower/equipment/ labor requirements and financial criteria for each lot/works for which it is being considered for award.

5. All Bids must be accompanied by a Bid Security in favor of "Chief Engineer (AM) North, NTDC Lahore", equal to an amount mentioned in bidding document, in the form of CDR or Pay Order from a Bank in Pakistan. The Bid Security must be submitted in original to this office on or before the date and time of submission of bids on E-PADS.

6. The NationalGrid reserves the right to reject all bids and to annul bidding process at any stage prior to contract award as defined in Clause 45 & 46 of Public Procurement Rules 2026.

7. The bidder should not be blacklisted from NationalGrid, DISCO or any Government organization at the time of bidding.

Director General (Field Operations) North, NationalGrid
NTDC House Lahore

Ref No. DG/FON/P&S/T-370-2026/_____
Date: _____/11/2026

Field Operations North
Director General (FO) North Lahore

C.C.

1. Executive Director D (FO) North NGC, Wapda House, Lahore.
2. Director (Media & Public Relations) NGC G-63, WAPDA House Lahore for publication in the leading newspapers as per Government policy.
3. Director (I.T) NGC, WAPDA House, Lahore with the request to upload the above tender notice on NTDC website, please.
4. Dy. Director (Finance) FO North, NGC Lahore.

SECTION II

INSTRUCTIONS TO BIDDERS

SECTION I

INSTRUCTIONS TO BIDDERS

A. GENERAL

IB.1 Scope of Bid

1.1 The Employer as defined in the Bidding Data hereinafter called "the Employer" wishes to receive bids for the construction and completion of works as described in these Bidding Documents, and summarized in the Bidding Data hereinafter referred to as the "Works".

1.2 The successful bidder will be expected to complete the Works within the time specified in Appendix-A to Bid.

IB.2 Source of Funds

2.1 The Employer has applied for/received a loan/credit from the source (s) indicated in the Bidding Data in various currencies towards the cost of the project specified in the Bidding Data and it is intended that part of the proceeds of this loan/credit will be applied to eligible payments under the Contract for which these Bidding Documents are issued.

IB.3 Eligible Bidders

3.1 This Invitation for Bids is open to all bidders meeting the following requirements:

a. Duly licensed by the Pakistan Engineering Council (PEC) in the category relevant to the value of the Works.
b. Duly prequalified/enlisted with the Employer.

3.2 A Bidder may be natural person, company or firm or public or semi-public agency of Pakistan or any foreign country**,** or any combination of them with a formal existing agreement (on Judicial Papers) in the form of a joint venture, consortium, or association. In the case of a joint venture, consortium, or association, all members shall be jointly and severally liable for the execution of the Contract in accordance with the terms and conditions of the Contract. The joint venture, consortium, or association shall nominate a Lead Member as nominated in the BDS, who shall have the authority to conduct all business for and on behalf of any and all the members of the joint venture, consortium, or association during the Bidding process, and in case of award of contract, during the execution of contract.

3.3 A Bidder may be ineligible if –

(a) he is declared bankrupt or, in the case of company or firm, insolvent;
(b) payments in favor of the Bidder is suspended in accordance with the judgment of a court of law other than a judgment declaring bankruptcy and resulting (in accordance with the national laws) in the total or partial loss of the right to administer and dispose of its property;

(c) legal proceedings are instituted against such Bidder involving an order suspending payments and which may result, in accordance with the national laws, in a declaration of bankruptcy or in any other situation entailing the total or partial loss of the right to administer and dispose of the property;

(d) the Bidder is convicted, by a final judgment, of any offence involving professional conduct;

(e) the Bidder is blacklisted and hence debarred due to involvement in corrupt and fraudulent practices, or performance failure or due to breach of bid securing declaration.

(f) The firm, supplier and contractor is blacklisted or debarred by a foreign country, international organization, or other foreign institutions for the period defined by them.

IB.4 One Bid per Bidder

4.1 (a) Each bidder shall upload only one bid on E-PADS in same bidding process either by himself, or as a partner in a joint venture. A bidder who uploads or participates in more than one bid (other than alternatives pursuant to Clause IB.16) will be disqualified.

(b) No bidder can be a sub-contractor while submitting a Bid individually or as a member of a joint venture in the same Bidding process.

IB.5 Cost of Bidding

5.1 The bidders shall bear all costs associated with the preparation and submission of their bids and the Employer will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

IB.6 Site Visit

6.1 The bidders are advised to visit and examine the Site of Works and its surroundings and obtain for themselves on their own responsibility all information that may be necessary for preparing the bid and entering into a contract for construction and dismantling Works. All cost in this respect shall be at the bidder's own expense.

6.2 The bidders and any of their personnel or agents will be granted permission by the Employer to enter upon his premises and lands for the purpose of such inspection, but only upon the express condition that the bidders, their personnel and agents, will release and indemnify the Employer, his personnel and agents from and against all liability in respect thereof and will be responsible for death or personal injury, loss of or damage to property and any other loss, damage, costs and expenses incurred as a result of such inspection.

B. BIDDING DOCUMENTS

IB.7 Contents of Bidding Documents

7.1 The Bidding Documents, in addition to invitation for bids, are those stated below and should be read in conjunction with any Addenda issued in accordance with Clause IB.9.

1. Instructions to Bidders.
2. Bidding Data.
3. General Conditions of Contract, Part-I (GCC).

4. Particular Conditions of Contract, Part-II (PCC).
5. Specifications – Special Provisions.
6. Specifications - Technical Provisions.
7. Form of Bid & Appendices to Bid.
8. Bill of Quantities
9. Form of Bid Security.
10. Form of Contract Agreement.
11. Forms of Performance Security and Mobilization Advance Guarantee/Bond.
12. Drawings. (If applicable)

7.2 The bidders are expected to examine carefully the contents of all the above documents. Failure to comply with the requirements of bid submission will be at the Bidder's own risk. Pursuant to Clause IB.26, bids which are not substantially responsive to the requirements of the Bidding Documents will be rejected.

7.3 The Procuring Agency is not responsible for the completeness of the Bidding Documents and their addenda, if they were not obtained directly from the Procuring Agency or the signed pdf version downloaded from the website of the Procuring Agency/ E-PADS. However, Procuring Agency shall place both the pdf and same editable version to facilitate the bidder for filling the forms.

7.4 The Bidder is expected to examine all instructions, forms, terms and specifications in the Bidding Documents. Failure to furnish all the information required in the Bidding Documents will be at the Bidder's risk and may result in the rejection of his Bid.

IB.8 Clarification of Bidding Documents

8.1 Any prospective bidder requiring any clarification (s) in respect of the Bidding Documents may notify the Employer in writing at the Employer's address and through E-PADS indicated in the Invitation for Bids. The Procuring Agency will within three (3) working days after receiving the request for clarification, respond in writing or in electronic form to any request for clarification provided that such request is received not later than three (03) days prior to the deadline for the submission of Bids on E-PADS.

Copies of the Employer's response will be forwarded to all participants in bid, including a description of the enquiry but without identifying its source.

IB.9 Amendment of Bidding Documents

9.1 At any time prior to the deadline for submission of bids, the Employer may, for any reason, whether at his own initiative or in response to a clarification requested by a prospective bidder, modify the Bidding Documents on E-PADS by issuing addendum.

9.2 Any addendum thus issued shall be part of the Bidding Documents pursuant to Sub-Clause 7.1 hereof and shall be communicated in writing/ through E-PADS to all purchasers of the Bidding Documents. Prospective bidders shall acknowledge receipt of each addendum in writing to the Employer.

9.3 To afford prospective bidders reasonable time in which to take an addendum into account in preparing their bids, the Employer may extend the deadline for submission of bids in accordance with Clause IB.20

C. PREPARATION OF BIDS

IB.10 Language of Bid

10.1 The bid and all correspondence and documents related to the bid exchanged by a bidder and the Employer shall be in the bid language stipulated in the Bidding Data and Particular Conditions of Contract. Supporting documents and printed literature furnished by the bidders may be in any other language provided the same are accompanied by an accurate translation of the relevant parts in the bid language, in which case, for purposes of evaluation of the bid, the translation in bid language shall prevail.

IB.11 Documents Accompanying the Bid

11.1 Each bidder shall:

(a) submit a power of attorney authorizing the signatory of the bid to act for and on behalf of the bidder; (as per requirement of E-PADS)

(b) update the information indicated and listed in the Bidding Data and previously submitted with the application for prequalification, and continue to meet the minimum criteria set out in the prequalification documents which as a minimum, would include the following:

(i) Evidence of access to financial resources along with average annual construction turnover;
(ii) Financial predictions for the current year and the two following years including the effect of known commitments;
(iii) Work commitments since prequalification;
(iv) Current litigation information; and
(v) Availability of critical equipment.

and

(c) furnish a technical proposal (as per requirement of E-PADS) taking into account the various Appendices to Bid specially the following:

Appendix-E to Bid	Proposed Replacement Schedule
Appendix-F to Bid	Method of Performing the Work
Appendix-G to Bid	List of Major Equipment
Appendix-M to Bid	Organization Chart for Supervisory Staff

And other pertinent information such as mobilization programme etc.

11.2 Bids submitted by a joint venture of two (2) or more firms shall comply with the following requirements:

(a) the bid and in case of a successful bid, the Form of Contract Agreement shall be signed so as to be legally binding on all partners;
(b) one of the joint venture partners shall be nominated as being in charge; and this authorization shall be evidenced by submitting a power of attorney signed by legally authorized signatories of all the joint venture partners;
(c) the partner-in-charge shall always be duly authorized to deal with the Employer regarding all matters related with and/or incidental to the execution of Works as per the terms and Conditions of Contract and in this regard to incur any and all liabilities, receive instructions, give binding undertakings and receive payments on behalf of the joint venture;
(d) all partners of the joint venture shall at all times and under all circumstances be liable jointly and severally for the execution of the Contract in accordance with

the Contract terms and a statement to this effect shall be included in the authorization mentioned under Sub-Para(b) above as well as in the Form of Bid and in the Form of Contract Agreement (in case of a successful bid); and

(e) a copy of the agreement entered into by the joint venture partners shall be submitted with the bid stating the conditions under which it will function, its period of duration, the persons authorized to represent and obligate it and which persons will be directly responsible for due performance of the Contract and can give valid receipts on behalf of the joint venture, the proportionate participation of the several firms forming the joint venture, and any other information necessary to permit a full appraisal of its functioning. No amendments / modifications whatsoever in the joint venture agreement shall be agreed to between the joint venture partners without prior written consent of the Employer.

11.3 Bidders shall also submit proposals of work methods and schedule, in sufficient detail to demonstrate the adequacy of the Bidders' proposals to meet the technical specifications and the completion time referred to in Sub-Clause 1.2 hereof.

11.4 The Bidder shall fill the Form of Bid furnished in the Bidding Documents. The Bid Form must be completed without any alterations to its format and no substitute shall be accepted.

IB.12 Bid Prices

12.1 Unless stated otherwise in the Bidding Documents, the Contract shall be for the whole of the Works as described in Sub-Clause 1.1 hereof, based on the unit rates and / or prices submitted by the bidder.

12.2 The bidders shall fill in rates and prices for all items of the Works described in the Bill of Quantities. Items against which no rate or price is entered by a bidder will not be paid for by the Employer when executed and shall be deemed covered by rates and prices for other items in the Bill of Quantities.

12.3 All duties, taxes and other levies payable by the Contractor under the Contract, or for any other cause, as on the date 28 days prior to the deadline for submission of bids shall be included in the rates and prices and the total Bid Price submitted by a bidder.

Additional / reduced duties, taxes and levies due to subsequent additions or changes in legislation shall be reimbursed / deducted as per Sub-Clause 70.2 of the General Conditions of Contract Part-I.

12.4 The rates and prices quoted by the bidders are subject to adjustment during the performance of the Contract in accordance with the provisions of Clause 70 of the Conditions of Contract. The bidders shall furnish the prescribed information for the price adjustment formulae in Appendix-C to Bid, and shall submit with their bids such other supporting information as required under the said Clause.

12.5 Prices quoted by the Bidder shall be fixed during the Bidder's performance of the contract and not subject to variation on any account. A Bid submitted with an adjustable price will be treated as non-responsive and shall be rejected.

IB.13 Currencies of Bid and Payment

13.1 The unit rates and the prices shall be quoted by the bidder entirely in Pak rupees. A bidder expecting to incur expenditures in other currencies for inputs to the Works supplied from outside the Employer's country (referred to as the "Foreign Currency Requirements") shall indicate the same in Appendix-B to Bid. The proportion of the Bid Price (excluding Provisional Sums) needed by him for the payment of such Foreign Currency Requirements either (i) entirely in the currency of the Bidder's home country or, (ii) at the bidder's option, entirely in Pak rupees provided always that a bidder expecting to incur expenditures in a currency or currencies other than those stated in (i) and (ii) above for a portion of the foreign currency requirements, and wishing to be paid accordingly, shall indicate the respective portions in his bid.

13.2 The rates of exchange to be used by the bidder for currency conversion shall be the TT&OD Selling Rates published or authorized by the State Bank of Pakistan prevailing on the date 28 days prior to the deadline for submission of bids.

For the purpose of payments, the exchange rates used in bid preparation shall apply for the duration of the Contract.

IB.14 Bid Validity

14.1 Bids shall remain valid for the period stipulated in the Bidding Data after the Date of Bid Opening specified in Clause IB.23.

14.2 In exceptional circumstances, prior to expiry of the original bid validity period, the Employer may request that the bidders extend the period of validity for a specified additional period which shall in no case be more than the original bid validity period. The request and the responses thereto shall be made in writing. A bidder may refuse the request without forfeiting his Bid Security. A bidder agreeing to the request will not be required or permitted to modify his bid, but will be required to extend the validity of his Bid Security for the period of the extension, and in compliance with Clause IB.15 in all respects.

IB.15 Bid Security

15.1 Each bidder shall furnish, as part of his bid, a Bid Security in the amount stipulated in the Bidding Data in Pak Rupees or an equivalent amount in a freely convertible currency.

15.2 The Bid Security shall be, at the option of the bidder, in the form of CDR, Pay Order, Banker's Cheque or a Bank Guarantee issued by a Scheduled Bank in Pakistan or from a foreign bank duly counter guaranteed by a Scheduled Bank in Pakistan in favor of the Employer valid for a period 28 days beyond the Bid Validity date.

15.3 Any bid not accompanied by an acceptable Bid Security shall be rejected by the Employer as non-responsive.

15.4 The bid securities of unsuccessful bidders will be returned as promptly as possible, but not later than 28 days after the expiration of the period of Bid Validity.

15.5 The Bid Security of the successful bidder will be returned when the bidder has furnished the required Performance Security and signed the Contract Agreement.

15.6 The Bid Security may be forfeited:

(a) if the bidder withdraws his bid except as provided in Sub-Clause 22.1;

(b) if the bidder does not accept the correction of his Bid Price pursuant to Sub-Clause 27.2 hereof; or

(c) In the case of successful bidder, if he fails within the specified time limit to:

(i) furnish the required Performance Security; or

(ii) sign the Contract Agreement.

IB.16 Alternate Proposals by Bidder

16.1 Should any bidder consider that he can offer any advantages to the Employer by a modification to the designs, specifications or other conditions, he may, in addition to his bid to be submitted in strict compliance with the Bidding Documents, submit any Alternate Proposal(s) containing (a) relevant design calculations; (b) technical specifications; (c) proposed construction methodology; and (d) any other relevant details / conditions, provided always that the total sum entered on the Form of Bid shall be that which represents complete compliance with the Bidding Documents.

16.2 Alternate Proposal(s), if any, of the lowest evaluated responsive bidder only may be considered by the Employer as the basis for the award of Contract to such bidder.

IB.17 Pre-Bid Meeting (Not Applicable)

17.1 The Employer may, on his own motion or at the request of any prospective bidder(s), hold a pre-bid meeting to clarify issues and to answer any questions on matters related to the Bidding Documents. The date, time and venue of pre-bid meeting, if convened, is as stipulated in the Bidding Data. All prospective bidders or their authorized representatives shall be invited to attend such a pre-bid meeting.

17.2 The bidders are requested to submit questions, if any, in writing so as to reach the Employer not later than seven (7) days before the proposed pre-bid meeting.

17.3 Minutes of the pre-bid meeting, including the text of the questions raised and the replies given, will be transmitted without delay to all prospective bidders. Any modification of the Bidding Documents listed in Sub-Clause 7.1 hereof which may become necessary as a result of the pre-bid meeting shall be made by the Employer exclusively through the issue of an Addendum pursuant to Clause IB.9 and not through the minutes of the pre-bid meeting.

17.4 Absence at the pre-bid meeting will not be a cause for disqualification of a bidder.

IB.18 Format and Signing of Bid

18.1 Bidders are particularly directed that the amount entered on the Form of Bid shall be for performing the Contract strictly in accordance with the Bidding Documents.

18.2 All appendices to Bid are to be properly completed and signed.

18.3 No alteration is to be made in the Form of Bid nor in the Appendices thereto except in filling up the blanks as directed. If any such alterations be made or if these instructions be not fully complied with, the bid may be rejected.

18.4 Each bidder shall prepare by filling out the forms completely and without alterations, specified in the Bidding Data, of the documents comprising the bid as described in Clause IB.7 and upload the scanned version of duly filled, signed and stamped on each page of bid.

18.5 The bid shall be typed or written in indelible ink and shall be signed by a person or persons duly authorized to sign on behalf of the bidder pursuant to Sub- Clause 11.1(a) hereof. All pages of the bid shall be initialed and stamped by the person or persons signing the bid, authorized to sign on behalf of the Bidder bid before uploading on EPADS. The scanned form of "ORIGINAL" Signed Bid will be uploaded by each Bidder on EPADS.

18.6 The bid shall contain no alterations, omissions or additions, except to comply with instructions issued by the Employer, or as are necessary to correct errors made by the bidder, in which case such corrections shall be initialed by the person or persons signing the bid.

18.7 Bidders shall indicate in the space provided in the Form of Bid their full and proper addresses at which notices may be legally served on them and to which all correspondence in connection with their bids and the Contract is to be sent.

18.8 Bidders should retain a copy of the Bidding Documents as their file copy.

D. SUBMISSION OF BIDS

IB.19 Sealing and Marking of Bids

19.1 Bidder shall upload the bid on E-PADS as per the requirement of PPRA's E-PAD portal and bidding document requirements. The technical & financial bids must be submitted/ uploaded on E-PADS in respective section, before the closing date & time of bid submission.

19.2 In case of Single Stage Two Envelope Procedure, The Bid shall comprise two parts submitted simultaneously on E-PADS, one called the Technical Proposal and the other Financial Proposal. Each Bidder shall submit his bid as under:

a) Bidder shall prepare his TECHNICAL PROPOSAL and FINANCIAL PROPOSAL which will be separately uploaded on E-PADS before closing date & time of bid submission.

IB.20 Deadline for Submission of Bids

20.1 (a) Bids must be submitted on E-PADS no later than the time and date stipulated in the Bidding Data.

(b) Bids with charges payable will not be accepted, nor will arrangements be undertaken to collect the bids from any delivery point other than that specified above. Bidders shall bear all expenses incurred in the preparation and delivery of bids. No claims will be entertained for refund of such expenses.

20.2 The Employer may, at his discretion, extend the deadline for submission of bids by issuing an amendment in accordance with Clause IB.9, in which case all rights and obligations of the Employer and the bidders previously subject to the original deadline will thereafter be subject to the deadline as extended.

IB.21 Late Bids

21.1 (a) Any bid uploaded by the bidder after the deadline or in hard copy for submission of bids prescribed in Clause IB.20 will not be accepted at any cost.

IB.22 Modification, Substitution and Withdrawal of Bids

22.1 Any bidder may modify**,** substitute or withdraw his bid after bid submission provided that the modification, substitution or written notice of withdrawal is received by the Employer prior to the deadline for submission of bids. (As per Provisions of E-PADS)

22.2 The modification, substitution, or notice for withdrawal of any bid shall be prepared, sealed, marked and delivered in accordance with the provisions of Clause IB.19 with the outer and inner envelopes additionally marked "MODIFICATION", "SUBSTITUTION" or "WITHDRAWAL" as appropriate. (As per Provisions of E-PADS)

22.3 No bid may be modified by a bidder after the deadline for submission of bids except in accordance with Sub-Clauses 22.1 and 27.2. (As per Provisions of E-PADS)

22.4 Withdrawal of a bid during the interval between the deadline for submission of bids and the expiration of the period of bid validity specified in the Form of Bid may result in forfeiture of the Bid Security in pursuance to Clause IB.15. (As per Provisions of E-PADS)

E. BID OPENING AND EVALUATION

IB.23 Bid Opening

23.1 The Employer will open the bids through E-PADS only, including withdrawals, substitution and modifications made pursuant to Clause IB.22, in the presence of bidders' representatives who choose to attend, at the time, date and location stipulated in the Bidding Data. The bidders' representatives who are present shall sign a register evidencing their attendance.

23.2 Envelopes marked "MODIFICATION", "SUBSTITUTION" or "WITHDRAWAL" shall be opened and read out first (as per provisions of E-PADS). Bids for which an acceptable notice of withdrawal has been submitted pursuant to Clause IB.22 shall not be opened.

23.3 The bidder's name, total Bid Price and price of any Alternate Proposal(s), any discounts, bid modifications**,** substitution and withdrawals, the presence or absence of Bid Security, and such other details as the Employer may consider appropriate, will be announced by the Employer at the opening of bids.

23.4 Employer shall prepare minutes of the bid opening, including the information disclosed to those present in accordance with the Sub-Clause 23.3.

23.5 In case of Single Stage Two Envelope Procedure, the Procuring Agency will open the Technical Proposals on E-PADS in public at the address, date and time specified in the BDS in the presence of Bidders` designated representatives who choose to attend and other parties with a legitimate interest in the Bid proceedings. The Financial Proposals will remain unopened and will be retained on E-PADS by the Procuring Agency until the specified time of their opening.

23.6 The Technical Proposals on E-PADS shall be opened one at a time, and the following read out and recorded: (a) the name of the Bidder; (b) the presence of a Bid Security, if required; and (c) Any other details as the Procuring Agency may consider appropriate.

23.7 Bidders are advised to send in a representative with the knowledge of the content of the Bid who shall verify the information read out from the submitted documents. Failure to send a representative or to point out any un-read information by the sent Bidder's representative shall indemnify the Procuring Agency against any claim or failure to read out the correct information contained in the Bidder's Bid.

23.8 The Procuring Agency shall prepare minutes of the Bid opening. The record of the Bid opening shall include, as a minimum: the name of the Bidder, the Bid price if applicable, including any discounts and alternative offers and the presence or absence of a Bid Security or Bid Securing Declaration.

23.9 In case of Single Stage Two Envelop Bidding Procedure, after the evaluation and approval of technical proposal the procuring agency, shall at a time within the bid validity period, publically open the financial proposals of the technically accepted bids only, on E-PADS. The financial proposal of bids found technically non-responsive will not be opened in any case, subject to redress of the grievances from all tiers of grievances. The bid should remain valid for minimum 180 days after the date of opening of bids.

IB.24 Process to be Confidential

24.1 Information relating to the examination, clarification, evaluation and comparison of bid and recommendations for the award of a contract shall not be disclosed to bidders or any other person not officially concerned with such process before the announcement of bid evaluation report which shall be done at least ten (10) days prior to issue of Letter of Acceptance. The announcement to all Bidders will include table(s) comprising read out prices, discounted prices, price adjustments made, final evaluated prices and recommendations against all the bids evaluated.

Any effort by a bidder to influence the Employer's processing of bids or award decisions may result in the rejection of such bidder's bid. Whereas any bidder feeling aggrieved may lodge a written complaint not later than seven (07) days after the announcement of the bid evaluation report; however mere fact of lodging a complaint shall not warrant suspension of the procurement process.

IB.25 Clarification of Bids

25.1 To assist in the examination, evaluation and comparison of bids, the Employer may, at his discretion, ask any bidder for clarification of his bid, including breakdowns of unit rates. The request for clarification and the response shall be in writing but no change in the price or substance of the bid shall be sought, offered or permitted except as required to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the bids in accordance with Clause IB.28.

IB.26 Examination of Bids and Determination of Responsiveness

26.1 Prior to the detailed evaluation of bids, the Employer will determine whether each bid is substantially responsive to the requirements of the Bidding Documents.

26.2 A substantially responsive bid is one which (i) meets the eligibility criteria; (ii) has been properly signed; (iii) is accompanied by the required Bid Security; and (iv) conforms to all the terms, conditions and specifications of the Bidding Documents, without material deviation or reservation. A material deviation or reservation is one (i) which affect in any substantial way the scope, quality or performance of the Works; (ii) which limits in any substantial way, inconsistent with the Bidding Documents, the Employer's rights or the bidder's obligations under the Contract; or (iii) adoption/rectification whereof would affect unfairly the competitive position of other bidders presenting substantially responsive bids.

26.3 If a bid is not substantially responsive, it will be rejected by the Employer, and may not subsequently be made responsive by correction or withdrawal of the non-conforming deviation or reservation.

IB.27 Correction of Errors

27.1 Bids determined to be substantially responsive will be checked by the Employer for any arithmetic errors. Errors will be corrected by the Employer as follows:

(a) where there is a discrepancy between the amounts in figures and in words, the amount in words will govern; and

(b) where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will govern, unless in the opinion of the Employer there is an obviously gross misplacement of the decimal point in the unit rate, in which case the line item total as quoted will govern and the unit rate will be corrected.

(c) if there is an error in a total corresponding to the addition or subtraction of sub-totals, the sub-totals shall prevail and the total shall be corrected.

27.2 The amount stated in the Form of Bid will be adjusted by the Employer in accordance with the above procedure for the correction of errors and with the concurrence of the bidder, shall be considered as binding upon the bidder. If the bidder does not accept the corrected Bid Price, his Bid will be rejected, and the Bid Security shall be forfeited in accordance with Sub- Clause 15.6(b) hereof.

IB.28 Evaluation and Comparison of Bids

28.1 The Employer will evaluate and compare only the Bids determined to be substantially responsive in accordance with Clause IB.26.

28.2 In evaluating the Bids, the Employer will determine for each Bid the evaluated Bid Price by adjusting the Bid Price as follows:

(a) making any correction for errors pursuant to Clause IB.27;
(b) excluding Provisional Sums and the provision, if any, for contingencies in the Summary Bill of Quantities, but including competitively priced Daywork; and
(c) making an appropriate adjustment for any other acceptable variation or deviation.

28.3 The estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be taken into account in Bid evaluation.

28.4 If the Bid of the successful bidder is seriously unbalanced in relation to the Employer's estimate of the cost of work to be performed under the Contract, the Employer may require the bidder to produce detailed price analyses for any or all items of the Bill of Quantities to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analyses, the Employer may require that the amount of the Performance Security set forth in Clause IB.32 be increased at the expense of the successful bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful bidder under the Contract.

28.5 In evaluating the Technical Proposal of each Bid, the Procuring Agency shall use the criteria and methodologies listed in the BDS and in terms of Statement of Requirements and Technical Specifications. No other evaluation criteria or methodologies shall be permitted.

F. AWARD OF CONTRACT

IB.29 Award

29.1 Subject to Clauses IB.30 and IB.34, the Employer will award the Contract to the bidder whose bid has been determined to be substantially responsive to the Bidding Documents and who has offered the lowest evaluated Bid Price**,** provided that such bidder has been determined to be eligible in accordance with the provisions of Clause IB.3 and qualify pursuant to Sub-Clause IB 29.2.

29.2 The Employer, at any stage of the bid evaluation, having credible reasons for or *prima facie* evidence of any defect in supplier's or contractor's capacities, may require the suppliers or contractors to provide information concerning their

professional, technical, financial, legal or managerial competence whether already pre-qualified or not:

Provided that such qualification shall only be laid down after recording reasons therefor in writing. They shall form part of the records of that bid evaluation report.

IB.30 Employer's Right to Accept any Bid and to Reject any or all Bids

30.1 Notwithstanding Clause IB.29, the Employer reserves the right to accept or reject any Bid, and to annul the bidding process and reject all bids, at any time prior to award of Contract, without thereby incurring any liability to the affected bidders or any obligation except that the grounds for rejection of all bids shall upon request be communicated to any bidder who submitted a bid, without justification of grounds. Rejection of all bids shall be notified to all bidders promptly.

30.2 Notice of the rejection of all Bids shall be given promptly to all Bidders that have submitted Bids.

IB.31 Notification of Award

31.1 Prior to expiration of the period of bid validity prescribed by the Employer, the Employer will notify the successful bidder in writing ("Letter of Acceptance") that his Bid has been accepted. This letter shall name the sum which the Employer will pay the Contractor in consideration of the execution and completion of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Conditions of Contract called the "Contract Price").

31.2 No Negotiation with the bidder having evaluated as lowest responsive or any other bidder shall be permitted, however, Employer may have clarification meetings to get clarify any item in the bid evaluation report.

31.3 The notification of award and its acceptance by the bidder will constitute the formation of the Contract, binding the Employer and the bidder till signing of the formal Contract Agreement.

31.4 Upon furnishing by the successful bidder of a Performance Security, the Employer will promptly notify the other bidders that their Bids have been unsuccessful and return their bid securities.

31.5 Where no complaints have been lodged, the Bidder whose Bid has been accepted will be notified of the award by the Procuring Agency prior to expiration of the Bid Validity period in writing or electronic forms that provide record of the content of communication. The Letter of Acceptance will state the sum that the Procuring Agency will pay the successful Bidder in consideration for the execution of the scope of works as prescribed by the Contract.

IB.32 Performance Security

32.1 The successful bidder shall furnish to the Employer a Performance Security in the form and the amount stipulated in the Bidding Data and the Conditions of Contract within a period of 14 days after the receipt of Letter of Acceptance.

32.2 Failure of the successful bidder to comply with the requirements of Sub-Clause IB.32.1 or Clauses IB.33 or IB.35 shall constitute sufficient grounds for the annulment of the award and forfeiture of the Bid Security.

32.3 If the Performance Security (or Guarantee) is provided by the successful Bidder and it shall be in the form specified in the BDS which shall be in any of the following:

a) A bank guarantee,
b) an irrevocable letter of credit issued by a reputable bank, or in the form provided in the Bidding Documents or another form acceptable to the Procuring Agency; or
c) A cash deposit receipt issued by any reputable scheduled bank of Pakistan.
d) Performance Guarantee in the form of Insurance Guarantee issued by an Insurance firm having AA rating

The cost of complying with the requirements of this Sub-Clause shall be borne by the Supplier.

IB.33 Signing of Contract Agreement

33.1 Within 14 days from the date of furnishing of acceptable Performance Security under the Conditions of Contract, the Employer will send the successful bidder the Contract Agreement in the form provided in the Bidding Documents, incorporating all agreements between the parties.

33.2 The formal Agreement between the Employer and the successful bidder shall be executed within 14 days of the receipt of the Contract Agreement by the successful bidder from the Employer.

IB.34 General Performance of the Bidders

The Employer reserves the right to obtain information regarding performance of the bidders on their previously awarded contracts/works. The Employer may in case of consistent poor performance of any Bidder as reported by the employers of the previously awarded contracts, interalia, reject his bid and/or refer the case to the Pakistan Engineering Council (PEC). Upon such reference, PEC in accordance with its rules, procedures and relevant laws of the land take such action as may be deemed appropriate under the circumstances of the case including black listing of such Bidder and debarring him from participation in future bidding for similar works.

IB.35 Integrity Pact

The Bidder shall sign and stamp the Integrity Pact provided at Appendix-O to Bid in the Bidding Documents for all Federal Government procurement contracts exceeding Rupees ten million. Failure to provide such Integrity Pact shall make the bidder non-responsive.

IB.36 Instructions not Part of Contract

Bids shall be prepared and submitted in accordance with these Instructions which are provided to assist bidders in preparing their bids, and do not constitute part of the Bid or the Contract Documents.

SECTION III

BID DATA SHEET

BID DATA SHEET

The following specific data for the Works to be bided shall complement, amend, or supplement the provisions in the Instructions to Bidders. Wherever there is a conflict, the provisions herein shall prevail over those in the Instructions to Bidders.

IB 1.1	Name and address of the Employer: **Director General (Field Operations) North Lahore, National Grid Company of Pakistan (NGC)** 34-Industrial Area, NTDC House, Gulberg-III, Lahore-Pakistan Telephone No. 92-42-99268292 E-mail address: ce.amnl@ntdc.com.pk
IB 1.1	The bidding is open to National Competitive Bidding (NCB).
IB 1.1	The name of the NCB is: REPLACEMENT OF NORMAL DISC INSULATORS WITH RTV COATED DISC INSULATORS OF 220kV TRANSMISSION LINES UNDER FIELD OPERATIONS LAHORE (Lot-II) The identification number of the NCB is: **CE/AMN/P&S/T-370-2026 (LOT-II)**
IB 2.1	Source of Funding: NGC's own resources
IB 3.1 (a)	The existing sub clause 3.1(a) is deleted and replaced with following: The Invitation for Bids is open to all bidders in their sole capacity or as joint venture meeting the following requirements: i) The Bidder shall be duly licensed by the Pakistan Engineering Council (PEC) minimum in the category C-5 with EE-05 or had applied for renewal of license before submission of its bid. In case of Joint Venture, all the partners shall be duly licensed by PEC and the sum total of the limit of construction cost permitted by the categories of the individual licensees shall not be less than limit of construction cost permitted by the category required here above. ii) Only those Firms/Companies/Contractors will be eligible to bid who are Active Taxpayers List (ATL) for both Income Tax & Sales Tax and Provincial revenue authorities/boards as the case may be. iii) Foreign Firms/Companies/ Contractors, if applicable in this tender, if required as per law of the country will get them registered from relevant tax authorities after award of contract. iv) All payments (including advance) will be subject to withholding taxes as per Income Tax Ordinates, 2001/international Tax Treaty & Sales Tax Act. 1990,

	further payments shall made only to those entities appearing in Active Tax payer List (ATL) for both Income Tax &Sales Tax. v) Performance Guarantee will be exclusive of indirect Taxes The Bidder shall not be blacklisted by NGC/WAPDA/DISCOs/any Government/Public department/Donor Agencies at the time of submission of bids. The Bidder should provide details of previous black listing, if any. An affidavit is to be provided by the Bidder that the Bidder is not black listed by NGC/WAPDA/DISCOs/any Government/Public department/Donor Agencies at the time of submission of bids. Further, the bidder shall submit an undertaking along with his bid that he has read and accepts the provisions of NGC Policy for Blacklisting of Contractors (copy of policy attached with the bidding documents). Non-submission of this undertaking may result in the rejection of the bid. The undertaking will subsequently become part of the Contract Agreement as well.
IB 3.1(b)	Delete IB 3.1(b) and replace it with the following. **Qualification of the Bidder** To be qualified for award of a contract, the Bidder shall meet the qualification criteria delineated herein below: 1. <u>Construction Experience:</u> i. The bidder as a main contractor (as single entity or as JV Partner) must have completed construction contracts comprising of construction of conventional/pile foundations, erection of towers, stringing, testing and commissioning of 220kV or high voltage bundled T/Lines of at least 20 KM strung by controlled tension method during last ten years. Such transmission lines must have been operating successfully for at least 02 years prior to deadline for submission of bid. ii. In case the bid is submitted by a Joint Venture, lead partner shall meet the above-mentioned criteria. Each JV Partner, other than the lead partner, must have completed as a main contractor or approved sub-contractor, construction contractors comprising of construction of conventional/pile foundations, erection of towers, stringing, testing and commissioning of 132kV or High voltage bundled T/Lines of at least 20 KM strung by controlled tension method during last 10 years. **<u>OR</u>** The bidder as a main contractor must have completed 02 Nos similar nature of work i.e replacement of 100KN normal disc insulators with RTV Coated disc insulators of 132KV or high voltage bundled T/Lines of at least

Cumulative 150 Towers during last ten years. Such transmission lines must have been operating successfully for at least 02 years prior to deadline for submission of bid.

*If the Bidder has executed these contract(s) as a JV partner, he shall have carried out all the activities mentioned here before.

iii. Such transmission lines must have been operating successfully for at least two (02) years prior to deadline for submission of bids.

iv. In case the bid is submitted by a joint venture under this bidding process, lead partners and each JV partner shall independently meet the above experience criteria.

v. The Bidder shall submit with the Bid evidence in this regard including inter alia copies (with English translation) of the contract agreement(s), substantial completion certificate(s) and Defects Liability Certificate for the contract(s).

vi. The bidder shall have his own twin bundle tension stringing equipment along with associated T&P and critical equipment duly supported with documentary evidence/catalogues/drawings for undertaking such like works in good working condition. Alternatively, if not so, the bidder will identify the confirmed source of the said machinery, T&P etc. along with documentary evidence/catalogues/drawings and shall provide necessary guarantee/surety that he will arrange the said equipment in good working condition through its own resources prior to start of stringing activity. The aforementioned documentary evidence shall be submitted with the bid.

2. Key Personnel:

The Bidder shall have the personnel for the key positions to be deployed for meeting the following requirements: (Information to be submitted in Appendix-G to Bid given in Section-III of the Bidding Documents)

Positions	Relevant Construction Experience	No. of Personnel
Project Manager	08	01
Electrical Engineers	04	01

The above personnel shall be graduate engineers or equivalent.

Bidder's Financial Capability:

The Employer will take into account the following criteria to verify the financial qualification of the Bidder.

i. The audited Financial "Standalone" Statements (Balance Sheet along with Notes, Profit & Loss Accounts and Cash Flow Statement) audited

	by Chartered Accountant for the last three (03) years shall be submitted by the Bidder. The audited Financial Report issued for year 2024 and onwards should have UDIN as per ICAP letter circular No. 12/2024 dated 12.09.2024. The Bidder's Financial Statements for the last three years of the audited accounts should show that it has positive "NET WORTH" calculated as a difference between total assets and total liabilities (Information to be submitted in prescribed Form QF-5 of Appendix-N to Bid given in Section-III of the Bidding Documents). In case of JV, each JV partner shall meet the aforementioned criteria. The Bidder's Income & Expenditure/Profit and Loss Accounts should show minimum average annual turnover for the last three years not less than **12 Million PKR**. The Average Annual Turnover may include turnover of affiliates and subsidiaries to the extent of shareholding percentage of the Bidding company provided the turnover is accrued from similar business activity as the Bidding company. **(**Information to be submitted in prescribed Form QF-6 of Appendix-N to Bid given in Section-III of the Bidding Documents). In case of JV, all the JV partners shall combinedly meet the requisite criteria with the lead partner and other partner(s) meeting not less than 40% and 25% respectively of the said criteria. ii. The Bidder must demonstrate access to, or availability of, financial resources such as liquid assets, lines of credit, and other financial means to meet the total cash flow demands of this contract which is being considered equal to **12 Million PKR plus 25% of the Bidder's commitments for running contracts**. (Information to be submitted in prescribed Form QF-7 of Appendix-P to Bid given in Section-III of the Bidding Documents). In case of JV, all the JV partners shall combinedly meet the requisite criteria with the lead partner and other partner(s) meeting not less than 40% and 25% respectively of the said criteria. The Bidder shall provide his current work commitments in form QF-4 of Appendix-P to Bid given in Section-III of the Bidding Documents. The bidder shall provide bank certificate for his lines of credit on the prescribed Form QF-8 of Appendix-P to Bid given in Section-III of the Bidding Documents. 4. <u>Bidder's Litigation History</u> Bidders are required to submit details of all litigation, arbitration and other claims whether pending, threatened or resolved in the last five years. The Employer may disqualify bidder in the event that the total amount of pending or threatened litigation, arbitration or other claims represents fifty percent (50%) of the Bidder's net worth. Details in this regard should be

	submitted in the prescribed Form QF-9 given in Appendix-P of Section-III of Bidding Document. Construction Experience and Financial Capability of sub-contractors, subsidiaries or parent/sister/affiliate companies shall not be considered for qualification of the Bidder. The Qualification of the Bidders will be based on meeting the pass/fail criteria as demonstrated by the Bidders' responses in the respective Appendices. The above stated requirements are the minimum and the Employer reserves the right to request for any additional information. The Employer also reserves the right to reject the proposal of any Bidder, if in the opinion of the Employer the qualification details are incomplete, ambiguous or the Bidder is found not qualified to satisfactorily perform the Contract. The above stated Appendices should be completed as per prescribed format and submitted along with required attachments. The missing or incomplete information/documents may render the bid substantially non-responsive. In this regard, the Employer does not have an obligation to request any document/certificates.
IB 3.2	The following sub clause is added after 3.1: A Bidder shall not have a conflict of interest. All Bidders found to have a conflict of interest shall be disqualified. A Bidder may be considered to be in a conflict of interest with one or more parties in this bidding process if, including but not limited to: (i) they have controlling shareholders in common; or (ii) they receive or have received any direct or indirect subsidy from any of them; or (iii) they have the same legal representative for purposes of this bid; or (iv) they have a relationship with each other, directly or through common third parties, that puts them in a position to have access to material information about or improperly influence the bid of another Bidder, or influence the decisions of the Employer regarding this bidding process; or (v) A Bidder or any affiliated entity, participated as a consultant in the preparation of the design or technical specifications of the plant and services that are the subject of the bid.

IB 6.1	The Bidder shall inspect the site, examine and obtain all information required and satisfy himself regarding matters and things such as access to site, communication, transport, right of way, the type and number of equipment and facilities required for the satisfactory completion of work, the quantity of various sections of the work, the availability of local labor, availability and rates of materials, local working conditions, uncertainties of weather, obstructions and hindrances that may arise etc., which may affect the work or cost thereof, before submission of his bid. Ignorance of site conditions shall not be accepted by the Employer as basis for any claim for compensation. The submission of a bid by the bidder will be construed as evidence that such an examination was made and any later claims/disputes in regard to rates quoted shall not be entertained or considered by the Employer.
IB 7.2	The Bidders should ensure that they have received the Bidding Documents including Addenda (if any) complete in all respects through E-PADS. The Employer accepts no responsibility for any Bidder lacking a complete set of Bidding Documents including Addenda (if any).
IB 8.1	The Sub-Clause 8.1 is amended to the following extent: No request for clarification will be entertained which will be received later than 14 days prior to the date fixed for submission of Bids through E-PADS. The Purchaser's response will be made not later than 7 days prior to the date fixed for submission of Bids through E-PADS. Further, the mere request for clarification from the bidders shall not be a ground for seeking extension in the deadline for submission of Bids.
IB 10.1	The bid with all accompanying documents and all communications in relation to or concerning the bidding Process shall be in **English** language and strictly on the forms provided in the bidding Documents. In case any of these Documents is in another language, it must be accompanied by an accurate translation of the relevant passages in English, in which case, for all purposes of interpretation of the bid, the translation in English shall prevail. Any portions of Bids that are not in English may not be evaluated. Failure to comply with this may disqualify a bid.
IB 11.1	**Documents Comprising the Bid** Delete the text of this Sub-Clause and substitute with the following: The Bid submitted on E-PADS by the Bidder shall be prepared in two (02) separate parts and should be uploaded on E-PADS seperately, one containing the "Technical Bid" and the other containing "Price Bid" comprising the following documents in the respective envelope: **I. Technical Bid** a) Duly filled-in Form of Technical Bid with following Appendices to Bid: i) Appendix-A to Bid Special Stipulations ii) Appendix-E to Bid Proposed Work Schedule iii) Appendix-F to Bid Method of Performing the Work

	iv) Appendix-G to Bid Proposed Personnel v) Appendix-H to Bid List of Major Equipment-Related Items vi) Appendix-I to Bid Construction Camp and Housing Facilities vii) Appendix-J to Bid Organizational Chart of the Supervisory Staff and Labor viii) Appendix-K to Bid List of Sub-Contractors ix) Appendix-L to Bid Source of Materials x) Appendix-N to Bid Deviations xi) Appendix-O to Bid Integrity Pact (N/A) xii) Appendix-P to Bid Bidder's Qualification Forms b) Bid security of Fixed amount of **PKR. 500,000/- in the name of "Chief Engineer (AM) North, NTDC Lahore" (this must be submitted in original in the office of Director General (Field Operations) North, NGC Lahore before the closing date and time of bid submission on E-PADS)** c) Undertaking by the Bidder in respect of submission of required Bid Security as per Appendix-Q to Bid; d) Written Power of Attorney, duly notarized, authorizing the signatory of the bid to act for and on behalf of the Bidder; e) Copies of Original Documents defining the constitution or legal status, place of registration and principal place of business of the bidder and JV partners; f) An affidavit that the Bidder has not been blacklisted pursuant to Sub-Clause 3.1(iv); g) An Affidavit that the Bidder has read and accepts NGC's SOP for blacklisting of Contractors pursuant to Sub-Clause 3.1(iv); h) PEC license pursuant to Sub-Clause 3.1(i); and i) Any other document required to be submitted in accordance with these Bidding Documents. **II. Price Bid** a) Duly filled-in Form of Price Bid with following Appendices to Bid: xiii) Appendix-B to Bid Foreign Currency Requirements (Not Used) xiv) Appendix-D to Bid Bill of Quantities xv) Appendix-M to Bid Estimated Progress Payments b) Any other document required to be submitted in accordance with these Bidding Documents.
IB 11.2	Following is added at the end of Sub-Clause IB.11.2: "(f) The maximum J.V. partners shall not be more than three (03)."

IB 12.5	Add the following new Sub-Clause IB 12.5: The Bidder shall quote Provincial Sales Tax (PST) in a separate column given in Bill of Quantities (BOQ) of Section-III to Bid.
IB 12.6	Add the following new Sub-Clause IB 12.6: The cost of the material for this line/project would be 60 million PKR approx. for calculating insurance charges.
IB 13	Clause IB.13 is substituted with the following: "The unit rates and prices shall be quoted by the Bidder entirely in Pak Rupees. All payments under the contract shall be made in Pak Rupees only. Bidders expecting to incur expenditures in currency(ies) other than Pak Rupees shall manage foreign currency(ies) at their own arrangement. The exchange risk in this regard, if any, shall be deemed to be included in unit rates and prices quoted by the Bidder."
IB 14.1	The period for Bid validity shall be minimum One Hundred and Eighty (180) days after the date of Bid opening through E-PADS.
IB 15.1	The amount of Bid Security shall be of **fixed amount of PKR. 500,000/- to be submitted in original before closing date and time of bid uploading.**
IB 15.2	Sub-Clause IB.15.2 is substituted with the following: "The Bid Security shall be, at the option of the Bidder, in the form of Deposit at Call or a Guarantee issued by a Scheduled Bank in Pakistan or from a foreign bank duly counter guaranteed by a Scheduled Bank in Pakistan in favor of the Employer on the prescribed Form annexed to these Documents valid for a period 28 days beyond the Bid Validity date. The Bid Security of Joint Venture shall be in the name of Joint Venture submitting the Bid. For avoidance of doubt, a Bid Security issued by a foreign bank but not counter guaranteed by a Scheduled Bank in Pakistan shall not be acceptable and rejected as non-responsive."
IB 15.6	The following is added at the end of Sub-Clause IB.15.6: "(d) If the Bidder is found involved in corrupt and fraudulent practices."
IB 17.1	No Pre-bid meeting will be held.
IB 18.4	Sub-Clause 18.4 is substituted with the following: "Each Bidder shall prepare by filling out the forms completely and without alterations one original set of the Technical Bid and one original set of the Price Bid as described in IB. 11 and clearly mark each "ORIGINAL - TECHNICAL BID" and "ORIGINAL - PRICE BID". In addition, the Bidder shall submit two (02) copies each of the Technical Bid and the Price Bid, clearly marked as "COPY NO… - TECHNICAL BID" and "COPY NO…. - PRICE BID". In the event of any discrepancy between the original and the copies, the original shall prevail. (Not Applicable, as

	technical & financial bids will be uploaded by the bidder on E-PADS separately) The Bidders are also required to provide an electronic version (in USB Drive) of the technical bid and price bid in PDF format scanned from the Original bid and Price Schedules in MS Excel format. Electronic version of Technical and Price bids should be submitted separately in their respective envelopes. Electronic version of Price bid and price schedules should be placed in financial envelope which shall remain sealed until financial bid opening. Non-submission of the electronic version of the Bids shall not be a reason for rejection of Bid. (N/A)
IB.19.1	Sub-Clause 19.1 is substituted by the following: "The Technical Bid and Price Bid (comprising the relevant documents as stated under Sub-Clause IB.11) shall be prepared separately. The ORIGINAL and each COPY of Technical Bid shall be sealed in one envelope marked as such. Similarly, the ORIGINAL and each COPY of the Price Bid shall be sealed in another envelope and marked as such. Price Bid shall be sealed in a separate envelope. The outer envelope comprising both 'Technical Bid' and 'Price Bid' shall be addressed/identified as given in Sub-Clause 19.2 hereof." (Not Applicable)
IB 19.2 (a)	Employer's address for the purpose of Bid Security submission: Director General (Field Operations) North , NGC, 34-Industrial Area, NTDC House, Gulberg-III, Lahore-Pakistan Telephone No. 92-42-99268292 E-mail address: ce.amnl@ntdc.com.pk
IB 19.2 (b)	**Name of the Project:** REPLACEMENT OF NORMAL DISC INSULATORS WITH RTV COATED DISC INSULATORS OF 220kV TRANSMISSION LINES UNDER FIELD OPERATIONS LAHORE (Lot-II) **Identification No.: CE/AMN/P&S/T-370-2026 (LOT-II)**
IB 19.2 (c)	Para (c) of Sub-Clause 19.2 is substituted by the following: The outer envelopes and the inner envelopes containing the Technical Bid shall bear a warning not to open before the time and date for the opening of Technical Bids, in accordance with IB 23.1. The envelopes containing the Price Bid shall bear a warning not to open until advised by the Purchaser in accordance with IB 23.2. (Not Applicable)
IB 20.1 (a)	Deadline for Submission of bid on E-PADS: **Date: 07.12.2026** **Time: 11:00 HRS**
IB 20.1 (c)	Bids shall be submitted through E-PADS only. Hard copy submission, if any, shall be optional. In the event of any discrepancy, the contents of the bid submitted on E-PADS shall be considered final and binding. Hard form of bids will not be accepted if the bid is not uploaded on E-PADS by bidder.

IB 20.1	Add the following new Para (e) at the end of Sub-Clause: "(e) Bids submitted through fax or email shall not be considered."
IB.23 23.1	**Bid Opening:** Sub-Clause IB.23.1 is substituted by the following: The Employer shall open the Technical Bids through E-PADS only in public at the address, on the date, and time specified herein in the presence of Bidder's designated representatives who choose to attend. The Bidders' representatives who are present shall sign a register evidencing their attendance. **Time: 11:30 HRS** **Date: 07.12.2026** Address: 34-Industrial Area , Gulberg-III Lahore - Pakistan
23.2	The Price Bids will remain unopened on E-PADS section and will be held in custody of the Employer until the time of opening of the Price Bids. The date, time, and location of the opening of Price Bids will be advised in writing by the Employer.
23.3	First, envelopes marked "WITHDRAWAL" shall be opened, read out, and recorded, and the envelope containing the corresponding bid shall not be opened, but returned to the Bidder. No bid withdrawal shall be permitted unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal and is read out and recorded at bid opening. (As per provisions of E-PADS)
23.4	Next, outer envelopes marked "SUBSTITUTION" shall be opened. The inner envelopes containing the Substitution Technical Bid and/or Substitution Price Bid shall be exchanged for the corresponding envelopes being substituted, which are to be returned to the Bidder unopened. Only the Substitution Technical Bid, if any, shall be opened, read out, and recorded. Substitution Price Bid will remain unopened in accordance with IB 23.2. No envelope shall be substituted unless the corresponding substitution notice contains a valid authorization to request the substitution and is read out and recorded at bid opening. (As per provisions of E-PADS)
23.5	Next, outer envelopes marked "MODIFICATION" shall be opened. No Technical Bid and/or Price Bid shall be modified unless the corresponding modification notice contains a valid authorization to request the modification and is read out and recorded at the opening of Technical Bids. Only the Technical Bids, both Original as well as Modification are to be opened, read out, and recorded at the opening. Price Bids, both Original as well as Modification, will remain unopened in accordance with IB 23.2. (As per provisions of E-PADS)
23.6	All other sections of E-PADS holding the Technical Bids, except the Bids rejected pursuant to Sub-Clause IB.23.2, shall be opened one at a time, and the following read out and recorded (a) the name of the Bidder; (b) whether there is a modification or substitution; (c) the presence of an undertaking by the Bidder in respect of

	submission of required Bid Security; and (d) any other details as the Employer may consider appropriate. Only Technical Bids and alternative Technical Bids (if allowed under Sub-Clause IB.16 hereof) read out and recorded at bid opening shall be considered for evaluation. Unless otherwise specified in the BDS, the Form of Technical Bid is to be initialed by the nominated representatives of the Employer attending the bid opening. No Bid shall be rejected at the opening of Technical Bids except for late bids, in accordance with IB.21.1.
23.7	The Employer shall prepare a record of the opening of Technical Bids that shall include, as a minimum: the name of the Bidder and whether there is a withdrawal, substitution, modification, or alternative offer; and the presence or absence of an undertaking of Bid Security. A copy of the record shall be distributed to all Bidders.
23.8	At the end of the evaluation of the Technical Bids, the Employer will invite bidders who have submitted substantially responsive Technical Bids and who have been determined as being qualified for award to attend the opening of the Price Bids through E-PADS. The date, time, and location of the opening of Price Bids will be advised in writing by the Employer. Bidders shall be given reasonable notice of the opening of Price Bids through E-PADS.
23.9	The Employer will notify Bidders in writing who have been rejected on the grounds of being substantially non-responsive to the requirements of the Bidding Documents and return their Price Bids unopened.
23.10	The Employer shall conduct the opening of Price Bids of all Bidders through E-PADS, who submitted substantially responsive Technical Bids, in the presence of Bidders` representatives who choose to attend at the address, on the date, and time specified by the Employer. The Bidder's representatives who are present shall be requested to sign a register evidencing their attendance.
23.11	All sections of E-PADS containing Price Bids shall be opened one at a time and the following read out and recorded (a) the name of the Bidder; (b) whether there is a modification or substitution; (c) the Bid Prices, including any discounts, cross discounts and alternative offers; (d) the presence of Bid Security; and (e) any other details as the Employer may consider appropriate. Only Price Bids, discounts, cross discounts and alternative offers (if allowed under Sub-Clause IB.16 hereof) read out and recorded during the opening of Price Bids shall be considered for evaluation. Unless otherwise specified in the Bidding Data, the Form of Price Bid and Price Schedules are to be initialed by nominated representatives of the Employer attending the bid opening.

23.12	The Employer shall prepare a record of the opening of Price Bids that shall include, as a minimum: the name of the Bidder, the Bid Price (per lot if applicable), any discounts, cross discounts, any alternative offers and presence of Bid Security. A copy of the record shall be distributed to all Bidders present at the time of Bid opening.
IB 24.2	Add the following new Sub Clause after IB 24.1: 24.2 Bidders and their respective agents, suppliers, sub-contractors, representatives and anyone else on behalf of the bidder will not communicate or attempt to communicate directly or indirectly with the Employer, including any employees, directors, officers, agents or representatives of any of them during any part of the Competitive Bidding Process, except as expressly directed or permitted by the Employer. Bidders will also not engage in any form of political or other lobbying whatsoever with respect to their Bids, or otherwise attempt to influence the outcome of the Competitive Bidding Process. In the event of any such communications or lobbying, Employer may at any time reject any Bid by that Bidder without further consideration.
IB 25.1	Add the following at the end of Sub-Clause 25.1: The Employer may, at his discretion, ask any Bidder for confirmation/submission of missing information to clarify its Bid. However, the Employer does not have an obligation to request any additional information or clarification with respect to missing or deficient information in a Bid. Any clarification submitted by a Bidder that is not in response to a request by the Employer shall not be considered.
IB 25.2	Add the following new Sub-Clause: If a Bidder does not provide clarifications of its Bid by the date and time set in the Employer's request for clarification, its Bid may be rejected.
IB 26.1	Sub-Clause 26.1 is substituted by the following: "The Employer will determine whether Bid is substantially responsive to the requirements of the Bidding Documents."

IB 26.2	Sub-Clause 26.2 is substituted by the following: "A substantially responsive Technical Bid is one which (i) meets the eligibility criteria; (ii) has been properly signed; (iii) meets the qualification criteria delineated at Sub-Clause IB.3A hereof; and (iv) conforms to all the terms, conditions and specifications of the Bidding Documents, without material deviation or reservation. A substantially responsive Price Bid is one which (i) has been properly signed; (ii) is accompanied by the required Bid Security submitted in original before the date & time of bid opening; and (iii) conforms to all the terms, conditions and specifications of the Bidding Documents, without material deviation or reservation. A material deviation or reservation is one (i) which affect in any substantial way the scope, quality or performance of the Works; (ii) which limits in any substantial way, inconsistent with the Bidding Documents, the Employer's rights or the Bidder's obligations under the Contract; or (iii) adoption/rectification whereof would affect unfairly the competitive position of other Bidders presenting substantially responsive bids. Any minor informality or non-conformity or irregularity in a Bid which does not constitute a material deviation may be waived by the Employer, provided such waiver does not prejudice or affect the relative ranking of any Bidder."
IB 26.4	Following Sub-Clauses are added at the end of Sub-Clause 26.3: The Employer may reject any Bid as non-responsive if found materially incomplete, obscure, irregular or omits any material information required to be submitted by the Bidding Documents.
IB 27.3	Following Sub Clause is added after Sub Clause 27.2: If as a result of arithmetic correction, the Bid Price is increased substantially, the Bidder may be asked to increase the amount of its Bid Security accordingly by submitting its amendment within fifteen (15) days from issuing date of such notification. If the Bidder fails to provide the requisite amendment of the Bid Security within the stipulated period, his Bid will be held substantially non-responsive and will be rejected.
IB 28.1	Following Para is added at the end of the Sub-Clause 28.1: "The Works will be evaluated and compared on Lot basis (if applicable)."
IB 28.2	Following Para is added after the Para (c) of IB. 28.2: (d) applying cross discount in case of combination of Lots to arrive at least cost combination
IB 28.4	Following is added at the end of Sub-clause IB 28.4: "or the employer may require the successful Bidder to balance his bid."

IB 28.5	Following new Sub Clause is added after IB 28.4: The Employer will evaluate the Bids, including all clarifications, additional information, modifications and negotiated changes, by applying the Eligibility and Qualification Criteria. Without limiting the particular criteria, the Employer may take into account the following in the Evaluation of Bids: i. Non-performance by a Bidder on previous contracts with Employer or others; ii. The quality of a Bidder's performance on previous contracts with Employer or others; iii. Anticipated or ongoing claims with or in connection with a Bidder; iv. Any security of safety concerns which Employer may have in respect of a Bidder or its facilities, subcontractors or suppliers; v. The results of any interview with a Bidder or supplied references: or vi. Any knowledge of or experience with a Bidder or its principals, directions, officers and employees. The Employer may independently verify any information (including conducting credit, reference and other checks with respect to a Bidder) and consider such findings in its evaluation. Employer is not required to inform Bidders of how Bids were ranked in the evaluation process.
IB 28.6	Add the following new Sub-Clause IB 12.5: The Employer's evaluation of a Bid will exclude and not take into Provincial sales Tax (PST).
IB 29.1	Add the words "for the respective Lot(s)" after the words "evaluated Bid Price" in 3rd line of this Sub-Clause. Add the following at the end of this Sub-Clause, if applicable: "Provided further in case a Bidder is determined to be the lowest evaluated substantially responsive in more than one Lot, the aggregate requirements delineated under Sub-Clause IB.3 hereof shall apply."
IB 29.2	Following text is added at the end of Sub Clause 29.2 The Employer reserves the right to assess the capacity and capability of the Bidder, to successfully execute the scope of work covered under the Bidding Documents within stipulated completion period. This assessment may interalia include for (i) document verification; (ii) details of work executed, work in hand, anticipated in future; (iii) details of tools & plant; (iv) availability of requisite key personnel (v) financial resources; (vi) details of quality system in place; (vii) past experience and performance; (viii) customer feedback (ix) Bank's feedback etc.

IB 30.1	The Employer reserves the right to reject any bid on the following accounts, apart from those mentioned in the bidding documents: i. Bid is not uploaded by the due date and time specified. ii. Cost of the bidding documents is not remitted. iii. Bid is not accompanied by Bid security as specified in the document; Bid security is inadequate; Bid guarantee is not in the specified format. iv. Bid does not cover the complete scope of work. v. Bid does not contain all required particulars as per Schedules & Forms prescribed in the bidding documents. vi. Deviations, conditionality or reservations have been introduced to any part of the bidding documents which may not be acceptable to the Employer in its sole discretion. vii. Bidder does not respond promptly and thoroughly to the request for supplementary information required for the evaluation of his Bid. viii. Bid does not meet minimum acceptable standards of completeness, consistency and detail. ix. Bid received from any Black listed Firm / Contractor. If at any time it is found that a material misrepresentation of facts is made or uncovered; the information submitted by the bidder concerning his qualification was false and materially inaccurate or incomplete. If the bidder is the Lead Member of a consortium, then the entire consortium may be disqualified/ rejected.
IB 32.1	The Bidder shall furnish an unconditional Performance Security, equal to ten percent (10%) of the amount mentioned in Letter of Acceptance in the form prescribed in the conditions of Contract.
IB 33	Text of Clause IB.33 is deleted and substituted as follows: Within fourteen (14) days from the date of furnishing of acceptable Performance Security under the Conditions of Contract, the successful bidder shall depute its representative duly authorized for formal signing of the Contract Agreement, Form of which is provided in the Bidding Documents.

Annexure - 1 to Bidding Data Sheet

FORMAT FOR POWER OF ATTORNEY FOR SIGNING OF BID

POWER OF ATTORNEY

Know all men by these presents, we _____(name and address of the registered office of the Bidder) do hereby constitute, appoint and authorize Mr. / Ms. _____R/o _____(name and address of residence) who is presently employed with us and holding the position of _____, as our attorney, to do in our name and on our behalf, all such acts, deeds and things necessary in connection with or incidental to the bid of the (please state the name and address of the bidder) for Bidding Document No. CE/AMN/P&S/T-370-2026 (Lot-II)*:* REPLACEMENT OF NORMAL DISC INSULATORS WITH RTV COATED DISC INSULATORS OF 220kV TRANSMISSION LINES UNDER FIELD OPERATIONS LAHORE (Lot-II) (the "tender"), including signing and submission of all documents and providing information / responses to National Grid Company of Pakistan (NGC), representing us in all matters in connection with our bid for the said tender.

We hereby agree to ratify all acts, deeds and things done by our said attorney pursuant to this Power of Attorney and agree that all acts, deeds and things done by our aforesaid attorney shall and shall always be deemed to have been done by us.

For

(Signature)
(Name, Title, Email ID and Address)

Accepted
…….(Signature)
(Name, Title, Email ID and Address of the Attorney)

ACKNOWLEDGMENT

Before me, a Notary Public for and in the City of _____, this _____ of _____ 2020 personally came and appeared:

NAME	IDENTIFICATION DOCUMENT
_____	_____

Known to me to be the same person/s who executed the foregoing Special Power of Attorney in favor of _____, and acknowledged to me the same is/are his/her/their free and voluntary act and deed.
IN WITNESS WHEREOF, I have hereunto set my hand and affixed my notarial seal, the date and place above written.

NOTARY PUBLIC

Annexure - 2 to Bidding Data Sheet

A. FORM OF UNDERTAKING BY THE JOINT VENTURE PARTNERS

(On Company's Letter Head)

THIS JOINT DEED OF UNDERTAKING executed on this……. day of……. Two Thousand and ……..by……. a company incorporated under the laws of …… and having its Registered Office at..... (hereinafter called the "Party No.1" which expression shall include its successors, executors and permitted assigns) and M/s……a company incorporated under the laws of…… and having its Registered Office at…… (hereinafter called the "Party No.2" which expression shall include its successors, executors and permitted assigns) and M/s.. .. .. .a Company incorporated under the laws of…….. and having its Registered Office at……. (hereinafter called the "Party No.3" which expression shall include its successors, executors and permitted assigns) for the purpose of making a bid and entering into a contract [hereinafter called the "Contract"_{in case of award)] against the Identification No……for _____ associated with _____ of ……. (hereinafter called the "**Employer**").

WHEREAS the Party No.1, Party No.2 and Party No.3 have entered into an Agreement dated..... AND WHEREAS the Employer invited bids for the design, manufacture, Supply of Equipment Materials stipulated in the bidding documents under _____ _____ associated with _____.

AND WHEREAS Clause 2, Section-ITB and 'Qualification & Evaluation Requirement of the Bidder'(clause 13, 24 & 26 of ITB), and technical provisions forming part of the bidding documents, inter-alia, stipulates that an Undertaking of two or more qualified partners, meeting the requirements of 'Qualification & Evaluation Requirement of the Bidder', as applicable may bid, provided, the Joint Venture fulfills all other requirements under Clause 2, 13, 24 & 26 of ITB and in such a case, the Letter of Bids (Bid Form) shall be signed by the Partner –In Charge so as to legally bind all the Partners of the Joint Venture, who will be jointly and severally liable to perform the Contract and all obligations hereunder.

The above clause further states that this Undertaking shall be attached to the bid and the Contract performance guarantee will be as per the format enclosed with the bidding document without any restrictions or liability for either party.

AND WHEREAS the bid is being submitted to the Employer vide proposal No……..dated…... by Party No.1 based on this Undertaking between all the parties; under these presents and the bid in accordance with the requirements of Clause 2, 13, 24 & 26 (Section-ITB) has been signed by all the parties.

NOW THIS UNDERTAKING WITNESSETH AS UNDER:

In consideration of the above premises and agreements all the parties of this Deed of Undertaking do hereby declare and undertake:

1. In requirement of the award of the Contract by the Employer to the Joint Venture Partners, we, the Parties do hereby undertake that M/s…… the Party No.1, shall act as Lead Partner and further declare and confirm that we the parties to the Joint Venture shall jointly and severally be bound unto the Employer for the successful performance of the Contract and shall be fully responsible for the design, manufacture, Supply, and successful performance of the equipment in accordance with the Contract:

2. In case of any breach or default of the said Contract by any of the parties to the Joint Venture, the party(s) do hereby undertake to be fully responsible for the successful performance of the Contract and to carry out all the obligations and responsibilities under the Contract in accordance with the requirements of the Contract.

3. Further, if the Employer suffers any loss or damage on account of any breach in the Contract or any shortfall in the performance of the equipment in meeting the performances guaranteed as per the specification in terms of the Contract, the Party(s) of these presents undertake to promptly make good such loss or damages caused to the Employer, on its demand without any demur. It shall not be necessary or obligatory for the Employer to proceed against Lead Partner to these presents before proceeding against or dealing with the other Party(s), the Employer can proceed against any of the parties who shall be jointly and severally liable for the performance and all other liabilities/obligations under the Contract to the Employer.

4. The financial liability of the Parties of this Deed of Undertaking to the Employer, with respect to any of the claims arising out of the performance or non-performance of the obligations set forth in this Deed of Undertaking, read in conjunction with the relevant conditions of the Contract shall, however not be limited in any way so as to restrict or limit the liabilities or obligations of any of the Parties of this Deed of Undertaking.

5. It is expressly understood and agreed between the Parties to this Undertaking that the responsibilities and obligations of each of the Parties shall be as delineated in Annexure attached with this undertaking. It is further undertaken by the parties that the above sharing of responsibilities and obligations shall not in any way be a limitation of joint and several responsibilities of the Parties under the Contract.

6. It is also understood that this Undertaking is provided for the purposes of undertaking joint and several liabilities of the partners to the Joint Venture for submission of the bid and performance of the Contract if awarded and that this Undertaking shall not be deemed to give rise to any additional liabilities or obligations, in any manner or any law, on any of the Parties to this Undertaking or on the Joint Venture, other than the express provisions of the Contract.

7. This Undertaking shall be construed and interpreted in accordance with the provisions of the Contract.

8. In case of an award of a Contract, we the parties to this Deed of Undertaking do hereby agree that we shall be jointly and severally responsible for furnishing a Contract performance security from a bank in favor of the Employer in the currency/currencies of the Contract.

9. It is further agreed that this Deed of Undertaking shall be irrevocable and shall form an integral part of the bid and shall continue to be enforceable till the Employer discharges the same or upon the completion of the Contract in accordance with its provisions, whichever is earlier. It shall be effective from the date first mentioned above for all purposes and intents.

IN WITNESS WHEREOF, the Parties to this Deed of Undertaking have through their authorized representatives executed these presents and affixed Common Seals of their companies, on the day, month and year first mentioned above.

Common Seal of …….
has been affixed in my/ our
presence pursuant to Board of
Director's Resolution dated …….

Name ……..

Designation …….

Signature …….

For Lead Partner (Party No.-1)
For and on behalf of M/s
……..

(Signature of the authorized representative)

WITNESS :

I. ……

II. ……

Common Seal of …….
has been affixed in my/ our
presence pursuant to Board of
Director's Resolution dated …….

Name ……..

Designation …….

Signature …….

For Party No.-2
For and on behalf of M/s……..

(Signature of the authorized representative)

WITNESS :

I. ……

II. ……

Common Seal of ……. has been affixed in my/ our presence pursuant to Board of Director's Resolution dated …….

For Party No.-3
For and on behalf of M/s.
……..

Name ……..

Designation ……..

Signature ……..

(Signature of the authorized representative)

WITNESS :

I. ……

II. ……

Notes:

1. In the event that the successful Bidder is a joint venture formed of two or more companies, the Employer requires that the parties to the joint venture accept joint and several liabilities for all obligations under the Contract.
2. The maximum number of J.V partners is three (03).

Annexure - 3 to Bidding Data Sheet

B. FORM OF LETTER OF INTENT BY JV PARTNERS TO ENTER INTO JV AGREEMENT

THIS LETTER OF INTENT signed on this……. day of……. Two Thousand and ……..by……. a company incorporate under the laws of …… and having its Registered Office at..... (hereinafter called the "Party No.1" which expression shall include its successors, executors and permitted assigns) and M/s……a company incorporated under the laws of…… and having its Registered Office at…… (hereinafter called the "Party No.2" which expression shall include its successors, executors and permitted assigns) and M/s.. .. .. …. .. a Company incorporated under the laws of …….. and having its Registered Office at……. (hereinafter called the "Party No.3" which expression shall include its successors, executors and permitted assigns) for the purpose of making a bid and entering into a contract [hereinafter called the "Contract" {in case of award)] against the Specification No……for _____ associated with _____ of …….. (hereinafter called the "**Employer**").

WHEREAS the Party No.1, Party No.2 and Party No.3 intend to enter into a Joint Venture Agreement

AND WHEREAS the Employer invited bids as per the above mentioned Specification for the design, manufacture, Supply of Equipment Materials stipulated in the bidding documents under _____ associated with _____.

AND WHEREAS Clause 2, Section-ITB and 'Qualification & Evaluation Requirement of the Bidder'(clause 13, 24 & 26 of ITB), and technical provisions forming part of the bidding documents, inter-alia, stipulates that two or more qualified partners, meeting the requirements of Clause 2, Section-ITB and 'Qualification & Evaluation Requirement of the Bidder'(clause 13, 24 & 26 of ITB), as applicable may bid, provided, they submit a Letter of Intent to enter into Joint Venture Agreement and the Joint Venture Partners fulfill all other requirements under Clause 2, Section-ITB and 'Qualification & Evaluation Requirement of the Bidder'(clause 13, 24 & 26 of ITB), and technical provisions forming part of the bidding documents and in such a case, the Letter of Bid (Bid Form) shall be signed by all the proposed partners so as to legally bind all the Partners of the Joint Venture, who will be jointly and severally liable to perform the Contract by entering into Joint Venture Agreement as per proforma specified in this Section IV. Bidding Forms of the Bidding Documents which will be legally binding on all partners and all obligations hereunder.

The above clause further states that this Letter of Intent shall be attached to the bid and the Contract performance guarantee will be as per the format enclosed with the bidding document without any restrictions or liability for either party.

AND WHEREAS the bid is being submitted to the Employer vide proposal No……..dated…... by Party No.1 based on this Letter of Intent between all the parties; under these presents and the bid in accordance with the requirements of Clause 4.1, Section-ITB and

'Qualification Requirement of the Bidder', Section-Evaluation and Qualification Criteria, has been signed by all the parties.

NOW THIS UNDERTAKING WITNESSED AS UNDER:

In consideration of the above premises and agreements all the parties of this Letter of Intent do hereby declare and undertake:

1. In requirement of the award of the Contract by the Employer to the Joint Venture Partners, we, the Parties do hereby undertake that M/s…… the Party No.1, shall act as Lead Partner and further declare and confirm that we the parties to the Joint Venture shall jointly and severally be bound unto the Employer for the successful performance of the Contract and shall be fully responsible for the design, manufacture, Supply, and successful performance of the equipment in accordance with the Contract for which we shall enter into Joint Venture Agreement as per proforma specified in this Section IV. Bidding Forms of the Bidding Documents which will be legally binding on all partners:

2. If the Contract is awarded to Joint Venture then in case of any breach or default of the said Contract by any of the parties to the Joint Venture, the party(s) will be fully responsible for the successful performance of the Contract and to carry out all the obligations and responsibilities under the Contract in accordance with the requirements of the Contract.

3. Further, if the Employer suffers any loss or damage on account of any breach in the Contract or any shortfall in the performance of the equipment in meeting the performances guaranteed as per the specification in terms of the Contract, the Party(s) of these presents will promptly make good such loss or damages caused to the Employer, on its demand without any demur. It shall not be necessary or obligatory for the Employer to proceed against Lead Partner to these presents before proceeding against or dealing with the other Party(s), the Employer can proceed against any of the parties who shall be jointly and severally liable for the performance and all other liabilities/obligations under the Contract to the Employer.

4. The financial liability of the Parties of the Deed of Undertaking to the Employer in the event of award of Contract on the Joint Venture, with respect to any of the claims rising out of the performance or non-performance of the obligations set forth in the Deed of Undertaking, read in conjunction with the relevant conditions of the Contract shall, however not be limited in any way so as to restrict or limit the liabilities or obligations of any of the Parties of the Deed of Undertaking.

5. It is expressly understood and agreed between the Parties to this Letter of Intent that the responsibilities and obligations of each of the Parties shall be as delineated in Annexure attached with this Letter of Intent. It is further undertaken by the parties that the above sharing of responsibilities and obligations shall not in any

way be a limitation of joint and several responsibilities of the Parties under the Contract in the event of award on Joint Venture.

6. It is also understood that this Letter of Intent is provided for the purposes of undertaking joint and several liabilities of the partners to the Joint Venture for submission of the bid and performance of the Contract if awarded and that this Letter of Intent shall not be deemed to give rise to any additional liabilities or obligations, in any manner or any law, on any of the Parties to this Letter of Intent or on the Joint Venture, other than the express provisions of the Contract.

7. This Letter of Intent shall be construed and interpreted in accordance with the provisions of the Contract.

8. In case of an award of a Contract, we the parties to this Letter of Intent do hereby agree that we shall enter into Joint Venture Agreement as per proforma specified in this Section IV. Bidding Forms of the Bidding Documents which will be legally binding on all partners and we shall be jointly and severally responsible for furnishing a Contract performance security from a bank in favor of the Employer in the currency/currencies of the Contract.

9. It is further agreed that this Letter of Intent shall be irrevocable and shall form an integral part of the bid. It shall be effective from the date first mentioned above for all purposes and intents.

IN WITNESS WHEREOF, the Parties to this Letter of Intent have through their authorized representatives executed these presents and affixed Common Seals of their companies, on the day, month and year first mentioned above.

Common Seal of ……. has been affixed in my/ our presence pursuant to Board of Director's Resolution dated …….

For Lead Partner (Party No.-1)
For and on behalf of M/s
……..

Name ……..
Designation …….

(Signature of the authorized representative)

Signature …….

WITNESS :

I. ……

II. ……

Common Seal of …….
has been affixed in my/ our
presence pursuant to Board of
Director's Resolution dated …….

Name ……..

Designation ……

Signature …….

WITNESS :

I. ……

II. ……

For Party No.-2
For and on behalf of M/s……..

(Signature of the authorized
representative)

Common Seal of …….
has been affixed in my/ our
presence pursuant to Board of
Director's Resolution dated …….

Name ……..

Designation ……

Signature …….

WITNESS :

I. ……

II. ……

For Party No.-3
For and on behalf of M/s.
……..

(Signature of the authorized
representative)

Notes:

1. In the event that the successful Bidder is a joint venture formed of two or more companies, the Employer requires that the parties to the joint venture accept joint and several liabilities for all obligations under the Contract.
2. The maximum number of J.V. partners is three (3).

SECTION IV

FORM OF BID & APPENDICES TO BID

Section –IV: FORM OF TECHNICAL AND PRICE BID AND APPENDICES TO BID FOR TENDER NO. CE/AMN/P&S/T-370-2026 (LOT-II)

Sr. No.	Description	Page No.
1.	Form of Technical Bid	A-1 to A-2
2.	Form of Financial Bid	A-3 to A-4
Appendices to Bid		
3.	Appendix A to Bid: Special Stipulations	A-5
4.	Appendix B to Bid: Foreign Currency Requirements	A-6
5.	Appendix C to Bid: Price Adjustment	A-7 to A-9
6.	Appendix D to Bid: Bill of Quantities	A-10 to A-12
7.	Appendix E to Bid: Proposed Replacement Schedule	A-16 to A-17
8.	Appendix F to Bid: Method of Performing Works	A-18
9.	Appendix G to Bid: Proposed Personnel	A-19 to A-20
10.	Appendix H to Bid: Equipment	A-21 to A-22
11.	Appendix I to Bid: Construction Camp and Housing Facilities	A-23
12.	Appendix J to Bid: Organization Chart for Supervisory Staff	A-24
13.	Appendix K to Bid: List of Subcontractors	A-25
14.	Appendix L to Bid: Source of Material	A-26
15.	Appendix M to Bid: Estimated Progress Payments	A-27
16.	Appendix N to Bid: Deviations	A-28 to A-29
17.	Appendix O to Bid: Integrity Pact	A-30 to A-31

18.	**Appendix P to Bid: Bidder's Qualification Forms**		
	QF-1	General Information	A-33
	QF-2	Construction Experience	A-34
	QF-3	Performance Certificate	A-35
	QF-4	Current Contract Commitments	A-36
	QF-5	Financial Data	A-37
	QF-6	Annual Turnover Data	A-38
	QF-7	Financial Resources	A-39
	QF-8	Bank Certificate	A-40
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19.	Appendix Q to Bid: Undertaking of bid security		A-42
20.	**Standard Forms**		
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	II	Form of Performance Security	A-46 to A-47
	III	Form of Contract Agreement	A-48 to A-49
	IV	Mobilization Advance Guarantee/Bond (N/A)	A-50 to A-51

Form of Technical Bid

Bid Reference No. _____

_____

_____

(Name of Contract/Works)

To:

_____

_____

_____

We, the undersigned, declare that:

(a) We have examined the Bidding Documents including Instructions to Bidders, Bidding Data, Conditions of Contract, Contract Data, Specifications, Drawings, if any, Schedule of Prices and Addenda Nos. _____ in accordance with Instructions to Bidders (IB) 9 for the execution of the above-named Works, we, the undersigned, being a company doing business under the name of and address _____ and being duly incorporated under the laws of Pakistan hereby offer to execute and complete such Works and remedy any defects therein in conformity with the said Documents including Addenda.

(b) Our Bid consisting of the Technical Bid and the Price Bid shall be valid for a period of …… days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;

(c) As security for due performance of the under takings and obligations of our bid, we submit here with a Bid security, in the amount specified in Bidding Data Sheet, which is valid (at least) 28 days beyond validity of Bid itself.

(d) We undertake, if our Bid is accepted, to commence the Works and to deliver and complete the Works comprised in the Contract within the time(s) stated in Contract Data.

(e) We are not participating, as a Bidder or as a subcontractor, in more than one bid in this bidding process, other than alternative offers submitted in accordance with IB16 (as applicable).

(f) We agree to permit Employer or its representative to inspect our accounts and records and other documents relating to the bid submission and to have them audited by

auditors. This Technical Bid IB.11.1 of the permission is extended for verification of any information provided in our which comprises all documents enclosed herewith in accordance with Bidding Data Sheet.

Name……

In the capacity of……

Signed……

Duly authorized to sign the Bid for and on behalf of……

Date……

Address……

Email……

Form of Price Bid

Bid Reference No. _____

_____

_____

(Name of Contract/Works)

To:

_____

_____

_____

We, the undersigned, declare that:

(a) We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders (IB)9;

(b) The total price of our Bid, excluding any discounts offered including Addenda thereto for the Total Bid Price of Rupees

(Rupees_____)

or such other sum as may be ascertained in accordance with the said Documents.

(c) The discounts offered and the methodology for their application is: …….

(d) Our Bid shall be valid for a period of …….. days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;

(e) If our Bid is accepted, we commit to obtain a performance security in accordance with the Bidding Documents;

(f) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed and we do hereby declare that the Bid is made without any collusion, comparison of figures or arrangement with any other bidder for the Works.

(g) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.

(h) We agree to permit Employer or its representative to inspect our accounts and records and other documents relating to the bid submission and to have them

audited by auditors. This permission is extended for verification of any information provided in our Technical Bid which comprises all documents enclosed herewith in accordance with IB.11.1 of the Bidding Data Sheet.

(i) If awarded the contract, the person named below shall act as Contractor's Representative.

(j) We do hereby declare that the Bid is made without any collusion, comparison of figures or arrangement with any other person or persons making a bid for the Works.

Name……

In the capacity of…….

Signed……

Duly authorized to sign the Bid for and on behalf of……

Date……

Address……

Email……

Appendix-A to Bid

SPECIAL STIPULATIONS
Clause
Conditions of Contract

1.	Engineer's Authority to issue Variation in emergency	2.1	15% of the Contract Price stated in the Letter of Acceptance.
2.	Law Applicable	5.1(b)	The law to be applied is the law of Islamic Republic of Pakistan.
3.	Amount of Performance Security	10.1	10% of Contract Price stated in the Letter of Acceptance.
4.	Time for Furnishing Programme	14.1	Within 07 days from the date of receipt of Letter of Acceptance.
5.	Minimum amount of third-party Insurance	23.2	Rs. 250,000 per occurrence with number of occurrences unlimited.
6.	Time for Commencement	41.1	Within 14 days from the date of receipt of the letter of acceptance.
7.	Time for Completion	43.1, 48.2	30-days from the date of acceptance of NOA or within 10 days of the final approved shutdown by ISMO Islamabad, whichever is later.
8.	a) Amount of Liquidated Damages	47.1	0.5% for each day of delay in completion of the Works subject to a maximum of 10% of Contract Price stated in the Letter of Acceptance.
	b) Amount of Bonus	47.3	Not Applicable
9.	Defects Liability Period	49.1	365 days from the effective date of Taking Over Certificate.
10.	Percentage of Retention Money	60.2	10% of the amount of Interim Payment Certificate.
11.	Limit of Retention Money	60.2	10% of Contract Price stated in the Letter of Acceptance.
12.	Minimum amount of Interim Payment Certificates (Running Bills)	60.2	20% (at least) more than the amount of all applicable retentions and deductions on the said bill.
13.	Time of Payment from delivery of Engineer's Interim Payment Certificate to the Employer.	60.10	As per NGC's policy
14.	Mobilization Advance (Interest Free)	60.12	Not Applicable

Appendix-B To Bid

FOREIGN CURRENCY REQUIREMENTS (Not Used)

1. The Bidder may indicate here in below his requirements of foreign currency (if any), with reference to various inputs to the Works.

2. Foreign Currency Requirement as percentage of the Bid Price excluding Provisional Sums _____%.

3. Table of Exchange Rates

Unit of Currency	**Equivalent in Pak. Rupees**
Australian Dollar	----------
Euro	----------
Japanese Yen	----------
U.K. Pound	----------
U.S. Dollars	----------
----------	----------
----------	----------

Appendix-C to Bid

PRICE ADJUSTMENT (Not Applicable)

Price Adjustment Formula for BOQ item 2 (foundations) and "additional work (items 6, 7, 8, 14 & 15)"

Prices payable to the Contractor, in accordance with the Contract, shall be subject to adjustment during performance of the Contract to reflect changes in the cost of civil works' inputs viz. skilled & unskilled labor, reinforcing steel bars, cement, petrol and diesel, in accordance with the formula given here below, for any increase or decrease in the costs of the following:

(a) Rate of wages of skilled or unskilled labour.
(b) Petrol and Diesel Fuel
(c) Cement
(d) Reinforcing Steel Bars

Not Applicable

No increase in the price of each of the above-mentioned components will be allowed beyond the scheduled completion period of Civil Works if the price increase is because of reasons attributable to the Contractor. The escalation for each component shall be according to the scheduled completion of that item provided that extension is granted.

For the avoidance of doubt, the price adjustment regarding Civil Works carried out later than the Scheduled period, shall continue to be paid at the revised rate of the constituent prevailing as on the date of its scheduled completion. For each claim, the Contractor shall submit invoice from each source of supply.

The increase or decrease in the amount payable by Employer to the Contractor shall be calculated on the basis of the following formula:

$$A1 = A/100 \left(30 + 20 \frac{UL1}{UL} + 14 \frac{L1}{L} + 5 \frac{P1}{P} + 11 \frac{D1}{D} + 15 \frac{S1}{S} + 5 \frac{C1}{C}\right)$$

Where

A1 = Revised amount for payment.

A = is the amount payable to the Contractor at the rates entered in Price Schedules, for the work executed after the date of change in the rates or prices of labour or materials mentioned in this section.

UL = is the basic minimum monthly wage rate for unskilled labour (PKR per month) twenty eight (28) days prior to the date of Bid opening as stated in Table 11.12 (Intercity Prices of Construction Input Items and Labour Wages) of Monthly Statistical Bulletin for the Karachi City, published by the Federal Bureau of Statistics (FBS), Statistics Division, Government of Pakistan.

UL1 = is the revised minimum monthly wage rate for unskilled labour (PKR per month) twenty-eight (28) days prior to the start of the execution month as stated in Table 11.12 (Intercity Prices of Construction Input Items and Labour Wages) of Monthly Statistical Bulletin for the Karachi City, published by the FBS, Statistics Division, Government of Pakistan.

L = is the basic minimum monthly wage rate for skilled labour (mason) (PKR per month) twenty-eight (28) days prior to the date of Bid opening as stated in Table 11.12 (Intercity Prices of Construction Input Items and Labour Wages) of Monthly Statistical Bulletin for the Karachi City, published by the FBS, Statistics Division, Government of Pakistan.

L1 = is the revised minimum monthly wage rate for skilled labour (mason) (PKR per month) twenty-eight (28) days prior to start of execution month as stated in Table 11.12 (Intercity Prices of Construction Input Items and Labour Wages) of Monthly Statistical Bulletin for the Karachi City, published by the FBS, Statistics Division, Government of Pakistan.

P = is the basic rate of premium motor gasoline (for sale through retail outlets), maximum Ex-Depot Sales Price (PKR per liter), twenty-eight (28) days prior to the date of Bid opening as notified by Pakistan State Oil (PSO) Limited.

P1 = is the revised rate of premium motor gasoline (for sale through retail outlets), maximum Ex-Depot Sales Price (PKR per litter), twenty-eight (28) days prior to execution month as notified by Pakistan State Oil (PSO) Limited.

D = is the basic rate of high-speed diesel oil (HSD) maximum Ex-Depot Sales Price (PKR per liter), twenty-eight (28) days prior to the date of Bid opening as notified by Pakistan State Oil (PSO) Limited.

D1 = is the revised rate of high-speed diesel oil (HSD) maximum Ex-Depot Sales Price (PKR per liter), twenty-eight (28) days prior to execution month as notified by Pakistan State Oil (PSO) Limited.

S = is the basic rate of reinforcing steel ½ inch round MS bars (PKR per metric ton), twenty-eight (28) days prior to the date of Bid opening, as stated in Table 11.10 (Intercity Wholesale Prices of Selected Commodities) Monthly Statistical Bulletin for the Karachi City, published by the FBS, Statistics Division, Government of Pakistan.

S1 = is the revised rate of reinforcing steel ½ inch round MS bars (PKR per metric ton), twenty-eight (28) days prior to the start of execution month, as stated in Table 11.10 (Intercity Wholesale Prices of Selected Commodities) of Monthly Statistical Bulletin for the Karachi City, published by the FBS, Statistics Division, Government of Pakistan.

C = is the basic rate of Ordinary Portland Cement (PKR per bag), twenty-eight (28) days prior to the date of Bid opening as stated in Table 11.12 (Intercity Prices of Construction Input Items and Labour Wages) of Monthly Statistical Bulletin for the Karachi City, published by the FBS, Statistics Division, Government of Pakistan.

C1 = is the revised rate of Ordinary Portland Cement (PKR per bag), twenty-eight (28) days prior to the start of execution month as stated in Table 11.12 (Intercity Prices of Construction Input Items and Labour Wages) of Monthly Statistical Bulletin for the Karachi City, published by the FBS, Statistics Division, Government of Pakistan.

30 = is the fixed percentage coefficient.

In determining the amount of any increase or decrease to the Contract Price pursuant to this section, no account shall be taken of any fluctuation as a result of Government Orders or otherwise in the cost of benefits i.e. bonus, gratuity, education, group insurance, paid holidays, casual leaves, workmen compensation etc. Any increase or decrease in the price of materials which have not been used on the project during that month shall not be considered in the adjustment of the Contract Price, and the ratio will be taken as one (1). No price adjustment shall be payable on the portion of the Contract Price paid to the Contractor as an Advance Payment.

Appendix-D to Bid

BILL OF QUANTITIES
A. Preamble

General

1. The Schedule of Quantities shall be read in conjunction with the Conditions of Contract, Specifications and Drawings. The Schedules do not generally give a full description of the Services to be performed under each item. Bidders shall be deemed to have read the Technical Specifications and other sections of the Bidding Documents and reviewed the Drawings to ascertain the full scope of the requirements included in each item prior to filling in the rates and prices. The entered rates and prices shall be deemed to include for the full scope as aforesaid, including overheads and profit.

2. If bidders are unclear or uncertain as to the scope of any item, they shall seek clarification in accordance with IB 8 prior to submitting their bids.

3. The quantities given in the Schedule of Quantities are estimated and provisional, and are given to provide a common basis for bidding. The basis of payment will be the actual quantities of work executed and measured by the Contractor and verified by the Engineer and valued at the rates and prices entered in the priced Schedule of Quantities, where applicable, and otherwise at such rates and prices as the Engineer may fix in accordance with provisions of the Contract.

4. The rates and prices entered in the priced Schedule of Quantities shall, except insofar as it is otherwise provided under the Contract include all costs of Contractor's plant, labor, supervision, materials, execution, insurance, profit, taxes and duties, together with all general risks, liabilities and obligations set out or implied in the Contract. Furthermore, all duties, taxes and other levies payable by the Contractor under the Contract, or for any other cause, as on the date 28 days prior to deadline for submission of Bids, shall be included in the rates and prices and the total Bid Price submitted by the Bidder.

5. A rate or price shall be entered against each item in the priced Schedule of Quantities, whether quantities are stated or not. The cost of items against which the Contractor will have failed to enter a rate or price shall be deemed to be covered by other rates and prices entered in the Schedule of Quantities.

6. The whole cost of complying with the provisions of the Contract shall be included in the items provided in the priced Schedule of Quantities, and where no items are provided, the cost shall be deemed to be distributed among the rates and prices entered for the related items of the Works.

7. General directions and description of work and materials are not necessarily repeated nor summarized in the Schedule of Quantities. References to the relevant sections of the Bidding Documents shall be made before entering prices against each item in the priced Schedule of Quantities.

8. Provisional sums if included and so designated in the Schedule of Quantities shall be expended in whole or in part at the direction and discretion of the Engineer in accordance with Conditions of Contract.

Units & Abbreviations

9. Units of measurement, symbols and abbreviations expressed in the Bidding Documents shall comply with the System International Unites (SI Units).

10. The following abbreviations shall be used in the Price Schedules:

Abbreviation

Pakistani Rupees	PKR
Number	No.
Kilometre	km
Kilogram	kg
Cubic Meter	Cu.m
Provisional Sums	PS
Percent	%
Quantity	Qty

Pricing

11. Prices shall be filled in indelible ink, and any alterations necessary due to errors, etc., shall be initialed by the Bidder.

12. As specified in the Bid Data Sheet prices shall be subject to adjustment in accordance with the corresponding Appendix-E to Price Bid (Price Adjustment) to the Contract Agreement.

13. For each item, bidders shall complete each appropriate column in the respective Schedules, giving the price breakdown as indicated in the Schedules. Prices given in the Schedules against each item shall be for the scope covered by that item as detailed in Section 6 (Employer's Requirements), Technical Specifications, Drawings or elsewhere in the Bidding Documents.

14. The TOTAL for each Schedule and TOTAL of the Grand Summary shall be deemed to be the total price for executing and completing the Facilities in accordance with the Contract, whether or not each individual item has been priced.

15. When requested by the Employer for the purposes of making payments or part payments, valuing variations or evaluating claims, or for such other purposes as the Employer may reasonably require, the Contractor shall provide the Employer with a breakdown of any composite or lump sum items included in the Schedules.

16. Except as otherwise expressly provided under the Conditions of Contract, the unit rates and lump sum amounts entered in the Price Schedules will be the rates at which the Contractor will be paid, and shall be deemed to include for the full scope and all costs incurred by the Contractor in the performance of the Facilities, the provision of services

including his overheads, income tax, super tax, other indirect costs, profits and costs of accepting the general risks, liabilities and obligations set forth or implied in the Contract, except for such costs which are specified as reimbursable under the Contract.

17. Arithmetic errors will be corrected by the Employer as per ITB 31.

18. Price of any other item not specifically covered in the Price Schedules but is required for the completion, commissioning and operation of the overhead transmission line shall be deemed to be included in the Schedule of Quantities.

19. The Contractor of any Lot may be required by the Engineer/Employer to carry out foundation /installation work on any location falling in any other Lot.

20. The Contractor shall take all the safeguards at site for safety/security of men, material and machinery at his own responsibility and cost.

NATIONAL GRID COMPANY of PAKISTAN

BOQ for Replacement of Normal Disc Insulators with RTV Coated Disc Insulators of 220KV Transmission Lines under Field Operations Lahore (Lot-II)

Description	Unit	Quantity (Nos.)	Unit Rate PKR.	Total Price Exclusive of Taxes
1	2	3	4	5=(3X4)
Replacement of existing Normal Type Disc Insulators with RTV Coated Disc Insulators of 220KV Transmission Lines (Lot-II) 1- 220KV T/L Lahore North-Ghazi CCT 105 Towers 2- 220KV T/L KSK-Bund Road CCT-I 65 Towers **The Scope of work to be carried out is as under.** i) Dismantling of existing disc Insulators and packing, shifting/ transportation from site to NGC designated store. ii) Shifting/Transportation of 100KN, 120KN RTV Coated Disc insulators from A-Type Store NKLP Lahore to Site stores iii) Installation of RTV Coated Disc Insulators iv) The work to be carried out during Shut down on daily basis.	Towers	170		
			Total:	
			Provincial Service Tax @ 16% (In Punjab Province)	
			Grand Total:	

CONDITIONS:

1. The quantities mentioned in the BOQ are estimated quantities.
2. Contractor will collect RTV coated disc insulators from A-Type Store, NKLP NGC Lahore.
3. The breakup of unit rates for each item/works quoted in the BOQ shall be provided with the bid in accordance with the design provided with the tender and the work at site shall be executed as per construction drawings provided/approved by the Engineer.
4. In case of discrepancy between unit price and total price, unit price shall prevail and the payment will be made accordingly.
5. The cost quoted for above works shall include cost of labor and cost of all accessories / material / equipment required for successful completion and operation along with clearance of Right of Way (RoW), if any.
6. The rates of above items are to be quoted by the tenderers will be considered on item rate basis.
7. All pages of tender documents shall be initialized/signature by the person or persons with signed the bid.
8. Omission & errors can be rectified at any stage.
9. No extra payment will be made on account of fluctuation in prices of labour, fuel, lubrication and material etc.
10. The work will be completed within 30-days from the date of acceptance of NOA or within 10 days of the final approved shutdown by ISMO Islamabad, whichever is later.

Bidder Name & Signatures: _____

Appendix-E to Bid
Sheet 1 of 2

PROPOSED REPLACEMENT SCHEDULE

Pursuant to Sub-Clause 43.1 of the General Conditions of Contract, the Works shall be completed on or before the date stated in Appendix-A to Bid. The Bidder shall provide as Appendix-E to Bid, the Construction Schedule in the bar chart (CPM, PERT or any other to be specified herein) showing the sequence of work items and the period of time during which he proposes to complete the Works including the activities like mobilization, survey for stalking, replacement of existing disc insulators with RTV coated disc insulators on 220kV Transmission Lines of Lahore region and returning of dismantled insulators to designated NGC store, to be executed under the Contract. It shall include but not limited to the following:

Sr. No.	Description of Work	Period in days from the effective date of contract/ approval of shutdown
1.	Establishment of site office	
2.	Replacement of Disc Insulators on 220kV KSK-QABP-II circuit a) Commencement b) Completion	
3.	Returning of dismantled insulators to NGC Store a) Commencement b) Completion	
4.	Replacement of Disc Insulators on 220kV Wapda Town-Sheikhupura circuit a) Commencement b) Completion	
5.	Returning of dismantled insulators to NGC Store a) Commencement b) Completion	

To provide the accumulative effective of the activities per month, the bidder shall also provide the graph/ chart as following:

Sr. No.	Description	Days				
1.	Signing of contract	6	12	18	24	30
2.	Effective Date					
3.	Mobilization					
4.	Replacement of Disc Insulators on 220kV KSK-QABP-II circuit					
5.	Returning of dismantled insulators to NGC Store					
6.	Replacement of Disc Insulators on 220kV Wapda Town-Sheikhupura circuit					
7.	Returning of dismantled insulators to NGC Store					
8.	Testing & commissioning (N/A)					

The proposed program of Works shall base on the Schedule of Implementation (30 days) as per Bidding Documents.

Appendix-E to Bid
Sheet 2 of 2

Note: The bidder shall also indicate the construction crews employed to achieve the completion target for the following:

Type of Crews	No. of Crew employed	Expected Progress/month/crew*
Shifting Crew		
Dismantling & Replacement Crew		

*****Mention the required time per tower of a crew to complete a certain activity e.g., dismantling, replacement and shifting of insulators.

Appendix-F to Bid

METHOD OF PERFORMING THE WORK

The Bidder is required to submit a narrative outlining the method of performing the Work. The narrative should indicate in detail and include but not be limited to:

1. Organization Chart indicating head office and field office personnel involved in management and supervision, engineering, equipment maintenance and purchasing.

2. Mobilization in Pakistan, the type of facilities including personnel accommodation, office accommodation, provision for maintenance and for storage, communications, security and other services to be used.

3. The method of executing the Works, the procedures for installation of disc insulators and machinery and transportation of equipment and materials to the site.

4. Quality control / Quality assurance measures to be adopted including procedures to be followed for carrying out all tests required under specifications.

Appendix-G to Bid

Personnel

Form PER – 1: Proposed Personnel

Bidders should provide the names of suitably qualified personnel to meet the specified requirements for each of the positions listed in Section 2. The data on their experience should be supplied using the Form below for each candidate.

1.	**Title of position**
	Name
2.	**Title of position***
	Name
3.	**Title of position***
	Name
4.	**Title of position***
	Name
5.	**Title of position***
	Name

Form PER – 2: Resume of Proposed Personnel

The Bidder shall provide all the information requested below. Fields with asterisk (*) shall be used for evaluation.

Position*		
Personnel information	**Name**	**Date of birth**
	Professional qualifications	
Present employment	**Name of employer**	
	Address of employer	
	Telephone	**Contact (manager / personnel officer)**
	Fax	**E-mail**
	Job title	**Years with present employer**

Summarize professional experience in reverse chronological order. Indicate particular technical and managerial experience relevant to the project.

From*	To*	Company, Project, Position and Relevant Technical and Management Experience*

Appendix-H to Bid

EQUIPMENT

Form EQ – 1: List of Major Equipment – Related Items

The Bidder will provide on Sheet 2 of this Appendix a list of all major equipment and related items, under separate heading for items owned, to be purchased or to be arranged on lease by him to carry out the Works. The information shall include make, type, capacity, and anticipated period of utilization for all equipment which shall be in sufficient detail to demonstrate fully that the equipment will meet all requirements of the Specifications. The list of major equipment for construction works of the project should be addressed under the following categories:

a) Right of way
b) Survey for staking
c) Foundation work (If applicable)
    i) For dry foundation crew
    ii) For crew working in water logged area (If applicable)
d) Pile work/Pile Caps with Beams (If applicable)
e) Dismantling of Existing Disc Insulators and Installation of RTV Coated Insulators
f) Any other

Form EQ – 2: List of Major Equipment

Owned Purchased or Leased	Description of Unit (Make, Model, Year)	Capacity HP Rating	Condition	Present Location or Source	Date of Delivery at Site	Period of Work on Project
1	2	3	4	5	6	7
A) Right of way **a**. Owned **b.** To be Purchased **c.** To be arranged on Lease						
B) Survey for staking **a**. Owned **b.** To be Purchased **c.** To be arranged on Lease						
C) Foundation work* (If applicable) **a**. Owned **b.** To be Purchased **c.** To be arranged on Lease						
D) Pile work/Pile Caps with Beams (If Applicable) **a**. Owned **b.** To be Purchased **c.** To be arranged on Lease						
E) Dismantling of Insulators **a**. Owned **b.** To be Purchased **c.** To be arranged on Lease						
F) Installation of Insulators **a**. Owned **b.** To be Purchased **c.** To be arranged on Lease						
G) Conductor stringing (if applicable) **a**. Owned **b.** To be Purchased **c.** To be arranged on Lease						

* Foundation work will involve both dry type foundation and water logged foundation equipment.

Appendix-I to Bid

CONSTRUCTION CAMP AND HOUSING FACILITIES

The Contractor in accordance with Clause 34 of the Conditions of Contract shall provide description of his construction camp's facilities and staff housing requirements.

The Contractor shall be responsible for pumps, electrical power, water and electrical distribution systems, and sewerage system including all fittings, pipes and other items necessary for servicing the Contractor's construction camp.

The Bidder shall list or explain his plans for providing these facilities for the service of the Contract as follows:

i. Site Preparation (clearing, land preparation, etc.).

2. Provision of Services.

   a) Power (expected power load, etc.).
   b) Water (required amount and system proposed).
   c) Sanitation (sewage disposal system, etc.).

3. Construction of Facilities

   a) Contractor's Office. Workshop and Work Areas (areas required and proposed layout, type of construction of buildings, etc.).
   b) Warehouses and Storage Areas (area required, type of construction and layout).
   c) Housing and Staff Facilities (Plans for housing for proposed staff, layout, type of construction, etc.).

4. Construction Equipment Assembly and Preparation (detailed plans for carrying out this activity).

5. Other Items Proposed (Security services, etc.).

6. Detail of testing Lab with testing equipment etc.

Appendix-J to Bid

ORGANIZATION CHART
FOR THE
SUPERVISORY STAFF AND LABOR

Appendix-K to Bid

LIST OF SUBCONTRACTORS

I/We intend to subcontract the following parts of the Work to subcontractors. In my/our opinion, the subcontractors named hereunder are reliable and competent to perform that part of the work for which each is listed.

Enclosed are documentation outlining experience of subcontractors, the curriculum vitae and experience of their key personnel who will be assigned to the Contract, equipment to be supplied by them, size, location and type of contracts carried out in the past.

Part of Works (Give Details)	**Subcontractor (With Complete Address)**
1	**2**

Appendix-L to Bid

SOURCES OF MATERIAL
LIST OF MATERIALS LIKE CEMENT, REINFORCING STEEL

The bidder shall list in this Schedule the names of materials forming part of tower foundations such as cement, reinforcing steel which he intends to procure in connection with this Contract along with the names and complete addresses of the sources.

Name of Goods/Material/ Equipment	Name of Factory	Address

Use additional sheets if required.

Appendix-M To Bid

ESTIMATED PROGRESS PAYMENTS

Bidder's estimate of the value of work which would be executed by him during each of the periods stated below, based on his Program of Works and the Rates in the Schedule of Prices,

Period	Amounts (Rs.)
1st Month	
2nd Month	
Total Bid Price	

Initials of Signatory to Bid: ……

Appendix-N to Bid

DEVIATIONS

Form D1-Deviations from Contractual Conditions

Deviations if any, which the bidder has taken to the Contractual Conditions in preparation of his bid, must be listed below.

Sr. No.	Clause No. /Section No.	Deviations

Note: Attach additional sheets, if necessary.

Form D2-Deviations from Technical Conditions

Deviations if any, which the bidder has taken to the Technical Provisions in preparation of his bid, must be listed below.

Sr. No.	Clause No. /Section No.	Deviations

Note: Attach additional sheets, if necessary.

Appendix-O to Bid

INTEGRITY PACT

**DECLARATION OF FEES, COMMISSION AND BROKERAGE ETC.
PAYABLE BY THE SUPPLIERS OF GOODS, SERVICES & WORKS
IN CONTRACTS WORTH RS. 10.00 MILLION OR MORE**

Contract No._____ Dated _____
Contract Value: _____
Contract Title: _____

[Name of Supplier] hereby declares that it has not obtained or induced the procurement of any contract, right, interest, privilege or other obligation or benefit from Government of Pakistan (GoP) or any administrative subdivision or agency thereof or any other entity owned or controlled by GoP through any corrupt business practice.

Without limiting the generality of the foregoing, [name of Supplier] represents and warrants that it has fully declared the brokerage, commission, fees etc. paid or payable to anyone and not given or agreed to give and shall not give or agree to give to anyone within or outside Pakistan either directly or indirectly through any natural or juridical person, including its affiliate, agent, associate, broker, consultant, director, promoter, shareholder, sponsor or subsidiary, any commission, gratification, bribe, finder's fee or kickback, whether described as consultation fee or otherwise, with the object of obtaining or inducing the procurement of a contract, right, interest, privilege or other obligation or benefit in whatsoever form from GoP, except that which has been expressly declared pursuant hereto.

[name of Supplier] certifies that it has made and will make full disclosure of all agreements and arrangements with all persons in respect of or related to the transaction with GoP and has not taken any action or will not take any action to circumvent the above declaration, representation or warranty.

[name of Supplier] accepts full responsibility and strict liability for making any false declaration, not making full disclosure, misrepresenting facts or taking any action likely to defeat the purpose of this declaration, representation and warranty. It agrees that any contract, right, interest, privilege or other obligation or benefit obtained or procured as aforesaid shall, without prejudice to any other rights and remedies available to GoP under any law, contract or other instrument, be voidable at the option of GoP.

Notwithstanding any rights and remedies exercised by GoP in this regard, [name of Supplier] agrees to indemnify GoP for any loss or damage incurred by it on account of its corrupt business practices and further pay compensation to GoP in an amount equivalent to ten time the sum of any commission, gratification, bribe, finder's fee or kickback given by [name of

Supplier] as aforesaid for the purpose of obtaining or inducing the procurement of any contract, right, interest, privilege or other obligation or benefit in whatsoever form from GoP.

Name of Buyer: ……	Name of Seller/Supplier: ……
Signature: ……	Signature: ……
[Seal]	[Seal]

Appendix-P to Bid

BIDDER'S QUALIFICATION FORMS

QF-1	General Information
QF-2	Construction Experience
QF-3	Performance Certificate
QF-4	Current Contract Commitments
QF-5	Financial Data
QF-6	Annual Turnover Data
QF-7	Financial Resources
QF-8	Bank Certificate
QF-9	Pending Litigation

Note:-

1. These forms shall be filled up and furnished by the Bidder and its Joint Venture partner(s), if any.
2. If necessary, additional sheets may be added to the forms. Each page of each form should be clearly marked in the right top corner as follows: Form QF1, page 1; Form QF1, page 2, etc.
3. Some forms will require attachments. Such attachments should be clearly marked as follows: Attachment 1 to Form QF1, Attachment 2 to Form QF1, etc.

Form QF-1: General Information

Bidder and its Joint Venture Partner(s) and/or Subcontractors are requested to complete the information in this form. Nationally information of Bidders should also be provided.

1.	Name of Bidder	
2.	Head office address	
3.	Local office address (if any)	
4.	Telephone	Contract
5.	Facsimile	e-mail
6.	Place of incorporation/registration	Year of incorporation/registration
7.	Main lines of Business 1. 2. 3. 4.	 Since: Since: Since: Since:

Note:
Copies of following credentials shall be attached:

(a) Copy of incorporation/registration certificate
(b) Organization chart
(c) PEC registration certificate in the appropriate category

Signature and Seal of Bidder:

Form QF-2: Construction Experience

Note: To be filled in accordance with criteria described in clause IB3.1 (b) Section-II of the bidding documents

(For a period of Last 10 Years)

Name of the Project: ……..

Order Placed by (full address of Employer)	Order No. and date	Description of Works	Value of order	Date of completion as per contract	Date of actual completion	Remarks indicating reasons for late completion, if any	Has the project been running satisfactorily ? (Attach a certificate from the Employer)	Contact person along with Telephone No., Fax No. and email address

Signature and Seal of the Bidder……

Place:

Date:

Form QF-3: Performance Certificate

(To be issued on the Letter Head of Issuing Authority)

It is to certify that M/s._____ has conducted the following works against mentioned project.

Sr.No.	Contract No. & Date	Designation & address of order placing authority/User	Name of Project	Description of Works	Date of Completion	Work Performance

The above services/Works have been performed against our Project and their performance is found satisfactory.

Date of issuing _____

Signature of issuing authority with seal
Name and designation of issuing authority
Address along with Email, Phone No. and
Fax of issuing authority

Note:

i. In case of those bidders who have provided services to NGC shall furnish the details of such works in the above Performa which shall be signed by their authorized signatory along with seal and certificate is not required from the Employer in this respect.

ii. In case the performance certificate is not verifiable through the given contact address and email, the bid may be rejected.

Form QF-4: Current Contract Commitments

Bidders should provide information on their current commitments on all contracts that have been awarded, or for which a letter of intent or acceptance has been received, or for contracts approaching completion, but for which an unqualified, full completion certificate has yet to be issued.

Sr. No.	Particulars of works executed	Contract No. & Date	Name of Contract placing Authority	Ordered Value (PKR)	Value of balance work (PKR)
1	2	3	4	5	6
2					
3					
4					
5					
6					
7					

Signature & Seal of the bidder:

Form QF-5: Financial Data

Financial Data for Previous 3 Years			
Particular			
Total Assets			
Total Liabilities			
Net Worth			
Current Assets			
Current Liabilities			
Information from Income Statement			
Total Revenues			
Profits Before Taxes			
Profits After Taxes			
Attached are copies of financial statements (balance sheets including all related notes, and income statements) for the last three years, as indicated above, complying with the following conditions.			
• All such documents reflect the financial situation of the Bidder and not sister or parent companies. • Historic financial statements must be audited by a certified accountant. • Historic Financial statements must be complete, including all notes to the financial statements. • Historic financial statements must correspond to accounting periods already completed and audited (no statements for partial periods shall be requested or accepted).			

Signature and Seal of the bidder:

Form QF-6: Annual Turnover Data

Name of Bidder/Joint Venture Partner:

Bidder and its Joint Venture Partner(s) are requested to complete the information in this form separately. The information supplied should be the annual turnover of the Bidder, in terms of the amounts billed to clients for each year for work in progress or completed. In case of a joint venture, a copy of the Joint Venture Agreement must be attached. The Average Annual Turnover may include turnover of affiliates and subsidiaries to the extent of shareholding percentage of the Bidding company provided the turnover is accrued from similar business activity as the Bidding company. Average Annual Turnover will be considered on "Net Sales" i.e. without Sales tax, discounts etc.

Use a separate sheet for bidder and its Joint Venture partner(s).

Annual turnover data for the following last three fiscal years			
Year	**Amount Currency**	**Exchange Rate**	**Equivalent Amount (in the currency of Bid)**
		Average Annual Turnover	

Signature and Seal of Bidder:

Form QF-7: Financial Resources

Specify proposed sources of financing, such as liquid assets, lines of credit, and other financial means, available to meet the total construction cash flow demands of the subject contract.

Financial Resources		
Sr. No.	Source of Financing	Amount
1.		
2.		
3.		
4.		

Signature and Seal of Bidder:

Form QF-8: Bank Certificate

This is to certify that M/s…… is a reputed company with a good financial standing.

If the contract for the work, namely,…… is awarded to the above firm, we shall be able to provide overdraft/credit facilities to the extent of Rs…… to meet their working capital requirements for executing the above contract.

Signature of Senior Bank Manager:_____
Name of the Senior Bank Manager:_____
Address of the Bank:_____

Stamp of the Bank

Note: Certificate should be on the letter head of the bank.

- **Change the text as follows for Joint Venture:**

This is to certify that M/s…… who has formed a JV with M/s……and M/s……..for participating in this bid, is a reputed company with a good financial standing.

If the contract for the work, namely…… is awarded to the above Joint Venture, we shall be able to provide overdraft/credit facilities to the extent of Rs…… to M/s…….. to meet the working capital requirements for executing the above contract.

[This should be given by each of the JV members in proportion to their financial participation.]

Form QF-9: Pending Litigation

Each Bidder or member of a JV must fill in this form

Pending Litigation					
Year	Name of Other Party(s)	Matter of Dispute	Litigation where (Court/ arbitration)	Amount involved	Value of pending claim as a %age of net worth

Signature and Seal of the bidder:

Appendix-Q to Bid

UNDERTAKING OF BID SECURITY
(To be Submitted on a Non-Judicial Stamp Paper)

We _____ (name of Bidder) undertake that Bid Security in accordance with Clause IB-19 of the bidding document is enclosed with our Price bid.

Signature and Seal of the Bidder:

STANDARD FORMS

BID SECURITY (**Bank Guarantee)**

Security Executed on _____
(Date)
Name of Surety (Bank) with Address: _____
(Scheduled Bank in Pakistan)
Name of Principal (Bidder) with Address _____
_____
Penal Sum of Security Rupees. _____ (Rs. _____)
Bid Reference No. _____
KNOW ALL MEN BY THESE PRESENTS, that in pursuance of the terms of the Bid and at the request of the said Principal (Bidder) we, the Surety above named, are held and firmly bound unto **Chief Engineer (AM) North , National Grid Company of Pakistan Ltd (NGC)** (hereinafter called the 'Employer') in the sum stated above for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Bidder has submitted the accompanying Bid dated _____ for Bid No. _____ for_____ (Particulars of Bid) to the said Employer; and

WHEREAS, the Employer has required as a condition for considering said Bid that the Bidder furnishes a Bid Security in the above said sum from a Scheduled Bank in Pakistan or from a foreign bank duly counter-guaranteed by a Scheduled Bank in Pakistan, to the Employer, conditioned as under:

(1) that the Bid Security shall remain in force up to and including the date 28 days after the deadline for validity of bids as stated in the Instructions to Bidders or as it may be extended by the Employer, notice of which extension(s) to the Surety is hereby waived;

(2) that the Bid Security of unsuccessful Bidders will be returned by the Employer after expiry of its validity or upon signing of the Contract Agreement; and

(3) that in the event of failure of the successful Bidder to execute the proposed Contract Agreement for such work and furnish the required Performance Security, the entire said sum be paid immediately to the said Employer pursuant to Clause 15.6 of the Instruction to Bidders for the successful Bidder's failure to perform.

NOW THEREFORE, if the successful Bidder shall, within the period specified therefor, on the prescribed form presented to him for signature enter into a formal Contract with the said Employer in accordance with his Bid as accepted and furnish within twenty eight (28) days of his being requested to do so, a Performance Security with good and sufficient surety, as may be required, upon the form prescribed by the said Employer for the faithful performance and proper fulfilment of the said Contract or in the event of non-withdrawal of the said Bid within

the time specified for its validity then this obligation shall be void and of no effect, but otherwise to remain in full force and effect.

PROVIDED THAT the Surety shall forthwith pay the Employer the said sum upon first written demand of the Employer (without cavil or argument) and without requiring the Employer to prove or to show grounds or reasons for such demand, notice of which shall be sent by the Employer by registered post duly addressed to the Surety at its address given above.

PROVIDED ALSO THAT the Employer shall be the sole and final judge for deciding whether the Principal (Bidder) has duly performed his obligations to sign the Contract Agreement and to furnish the requisite Performance Security within the time stated above, or has defaulted in fulfilling said requirements and the Surety shall pay without objection the said sum upon demand from the Employer forthwith and without any reference to the Principal (Bidder) or any other person.

IN WITNESS WHEREOF, the above bounden Surety has executed the instrument under its seal on the date indicated above, the name and seal of the Surety being hereto affixed and these presents duly signed by its undersigned representative pursuant to authority of its governing body.

SURETY (Bank)

WITNESS: Signature _____

1. _____ Name _____

_____ Title _____

Corporate Secretary (Seal) Corporate Guarantor (Seal)

2. _____

_____

Name, Title & Address

FORM OF PERFORMANCE SECURITY
(Bank Guarantee)

Guarantee No._____
Executed on _____
Expiry date _____

[Letter by the Guarantor to the Employer]

Name of Guarantor (Bank) with address: _____
(Scheduled Bank in Pakistan)
Name of Principal (Contractor) with address: _____
_____
Penal Sum of Security (express in words and figures) _____
_____
Letter of Acceptance No. _____Dated _____

KNOW ALL MEN BY THESE PRESENTS, that in pursuance of the terms of the Bidding Documents and above said Letter of Acceptance (hereinafter called the Documents) and at the request of the said Principal we, the Guarantor above named, are held and firmly bound unto the _____ (hereinafter called the Employer) in the penal sum of the amount stated above for the payment of which sum well and truly to be made to the said Employer, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal has accepted the Employer's above said Letter of Acceptance for _____ _____ (Name of Contract) for the _____ _____ (Name of Project).

NOW THEREFORE, if the Principal (Contractor) shall well and truly perform and fulfill all the undertakings, covenants, terms and conditions of the said Documents during the original terms of the said Documents and any extensions thereof that may be granted by the Employer, with or without notice to the Guarantor, which notice is, hereby, waived and shall also well and truly perform and fulfill all the undertakings, covenants terms and conditions of the Contract and of any and all modifications of said Documents that may hereafter be made, notice of which modifications to the Guarantor being hereby waived, then, this obligation to be void; otherwise to remain in full force and virtue till all requirements of Clause 49, Defects Liability, of Conditions of Contract are fulfilled.

Our total liability under this Guarantee is limited to the sum stated above and it is a condition of any liability attaching to us under this Guarantee that the claim for payment in writing shall be received by us within the validity period of this Guarantee, failing which we shall be discharged of our liability, if any, under this Guarantee.

We, _____ (the Guarantor), waiving all objections and

defences under the Contract, do hereby irrevocably and independently guarantee to pay to the Employer without delay upon the Employer's first written demand without cavil or arguments and without requiring the Employer to prove or to show grounds or reasons for such demand any sum or sums up to the amount stated above, against the Employer's written declaration that the Principal has refused or failed to perform the obligations under the Contract which payment will be effected by the Guarantor to Employer's designated Bank & Account Number.

PROVIDED ALSO THAT the Employer shall be the sole and final judge for deciding whether the Principal (Contractor) has duly performed his obligations under the Contract or has defaulted in fulfilling said obligations and the Guarantor shall pay without objection any sum or sums up to the amount stated above upon first written demand from the Employer forthwith and without any reference to the Principal or any other person.

IN WITNESS WHEREOF, the above-bounden Guarantor has executed this Instrument under its seal on the date indicated above, the name and corporate seal of the Guarantor being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

_____
Guarantor (Bank)

Witness:

1. _____ Signature _____

_____ Name _____
Corporate Secretary (Seal)

Title _____

2. _____

_____ _____
Name, Title & Address Corporate Guarantor (Seal)

FORM OF CONTRACT AGREEMENT

THIS CONTRACT AGREEMENT (hereinafter called the "Agreement") made on the _____ day of _____ (month) 20_____ between _____ (hereafter called the "Employer") of the one part and _____ (hereafter called the "Contractor") of the other part.

WHEREAS the Employer is desirous that certain Works, viz _____ should be executed by the Contractor and has accepted a Bid by the Contractor for the execution and completion of such Works and the remedying of any defects therein.

NOW this Agreement witnesseth as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.

2. The following documents after incorporating addenda, if any, except those parts relating to Instructions to Bidders shall be deemed to form and be read and construed as part of this Agreement, viz:

   (a) The Contract Agreement;
   (b) The Letter of Acceptance;
   (c) The completed Form of Bid;
   (d) Special Stipulations (Appendix-A to Bid);
   (e) The Particular Conditions of Contract;
   (f) The General Conditions;
   (g) The priced Bill of Quantities;
   (h) The completed Appendices to Bid;
   (i) The Drawings;
   (j) The Specifications.
   (k) _____ (any other)

3. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to execute and complete the Works and remedy defects therein in conformity and in all respects with the provisions of the Contract.

4. The Employer hereby covenants to pay the Contractor, in consideration of the execution and completion of the Works as per provisions of the Contract, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS WHEREOF the parties hereto have caused this Agreement to be executed on the day, month and year first before written in accordance with their respective laws.

Signature of the Contactor	Signature of Employer
_____	_____
(Seal)	(Seal)
Signed, Sealed and Delivered in the presence of:	
Witness:	Witness:
_____	_____
(Name, Title and Address)	(Name, Title and Address)

MOBILIZATION ADVANCE GUARANTEE/BOND

Guarantee No._____ Date _____

WHEREAS _____(hereinafter called the 'Employer') has entered into a Contract for _____
(Particulars of Contract)
with _____ (hereinafter called the "Contractor').

AND WHEREAS, the Employer has agreed to advance to the Contractor, at the Contractor's request, an amount of Rupees _____ (Rs _____) which amount shall be advanced to the Contractor as per provisions of the Contract.

AND WHEREAS, the Employer has asked the Contractor to furnish Guarantee to secure the mobilization advance for the performance of his obligations under the said Contract.

AND WHEREAS, _____
(Scheduled Bank in Pakistan or Insurance Company acceptable to the Employer)
(hereinafter called the "Guarantor") at the request of the Contractor and in consideration of the Employer agreeing to make the above advance to the Contractor, has agreed to furnish the said Guarantee.

NOW, THEREFORE, the Guarantor hereby guarantees that the Contractor shall use the advance for the purpose of above mentioned Contract and if he fails and commits default in fulfilment of any of his obligations for which the advance payment is made, the Guarantor shall be liable to the Employer for payment not exceeding the aforementioned amount.

Notice in writing of any default, of which the Employer shall be the sole and final judge, on the part of the Contractor, shall be given by the Employer to the Guarantor, and on such first written demand, payment shall be made by the Guarantor of all sums then due under this Guarantee without any reference to the Contractor and without any objection.

This Guarantee shall remain in force until the advance is fully adjusted against payments from the Interim Payment Certificates of the Contractor or until _____whichever is earlier.
(Date)
The Guarantor's liability under this Guarantee shall not in any case exceed the sum of Rupees _____(Rs _____).

This Guarantee shall remain valid up to the aforesaid date and shall be null and void after the aforesaid date or earlier if the advance made to the Contractor is fully adjusted against payments from Interim Payment Certificates of the Contractor provided that the Guarantor agrees that the aforesaid period of validity shall be deemed to be extended if on the above mentioned date the advance payment is not fully adjusted.

GUARANTOR

1. Signature _____
2. Name _____
3. Title _____

WITNESS

1. _____
_____
Corporate Secretary (Seal)

2. _____ _____
(Name Title & Address) Corporate Guarantor (Seal)

SECTION V

GENERAL CONDITIONS OF CONTRACT

SECTION-IV GENERAL CONDITIONS OF CONTRACT

This bidding document follows the FIDIC conditions of contract for construction works. The Conditions of Contract Comprise of two Sections: Section-IV – General Conditions of Contract, and Section-V – Special Conditions of Contract.

All the general Conditions shall be as per the FIDIC documents indicated below. These shall be read along with the Particular Conditions of Contract for interpretation. In case of any discrepancy between these General Conditions of Contract and the Particular Conditions of the Contract of Section-V, the provisions under the latter shall govern.

FIDIC FEDERATION INTERNATIONALE DES INGENIEURS – CONSEILS

CONDITIONS OF CONTRACT FOR WORKS OF CIVIL ENGINEERING CONSTRUCTION

FOURTH EDITION 1987

Reprinted 1988 with editorial amendments
Reprinted 1992 with editorial amendments



FEDERATION INTERNATIONALE DES INGENIEURS-CONSEILS

CONDITIONS OF CONTRACT FOR WORKS OF CIVIL ENGINEERING CONSTRUCTION

PART I GENERAL CONDITIONS
WITH FORMS OF TENDER AND AGREEMENT

PART II CONDITIONS OF PARTICULAR APPLICATION
WITH GUIDELINES FOR PREPARATION OF PART II CLAUSES

FOURTH EDITION 1987

Reprinted 1988 with editorial amendments

Reprinted 1992 with further amendments



FEDERATION INTERNATIONALE DES INGENIEURS-CONSEILS

CONDITIONS OF CONTRACT FOR WORKS OF CIVIL ENGINEERING CONSTRUCTION

PART I GENERAL CONDITIONS

WITH FORMS OF TENDER AND AGREEMENT

FOURTH EDITION 1987
Reprinted 1988 with editorial amendments
Reprinted 1992 with further amendments

FOREWORD

The terms of the Fourth Edition of the Conditions of Contract for Works of Civil Engineering Construction have been prepared by the Fédération Internationale des Ingénieurs Conseils (FIDIC) and are recommended for general use for the purpose of construction of such works where tenders are invited on an international basis. The Conditions, subject to minor modifications, are also suitable for use on domestic contracts.

The version in English of the Conditions is considered by FIDIC as the official and authentic text for the purpose of translation.

In the preparation of the Conditions it was recognised that while there are numerous Clauses which will be generally applicable there are some Clauses which must necessarily vary to take account of the circumstances and locality of the Works. The Clauses of general application have been grouped together in this document and are referred to as Part I – General Conditions. They have been printed in a form which will facilitate their inclusion as printed in the contract documents normally prepared.

The General Conditions are linked with the Conditions of Particular Application, referred to as Part II, by the corresponding numbering of the Clauses, so that Parts I and II together comprise the Conditions governing the rights and obligations of the parties.

Part II must be specially drafted to suit each individual Contract.

When dredging and certain types of reclamation work are involved special consideration must be given to Part II.

To assist in the preparation of Part II explanatory material and example clauses are published with the Conditions in a separately bound document entitled "Conditions of Contract for Works of Civil Engineering Construction, Part II – Conditions of Particular Application, with Guidelines for preparation of Part II Clauses, Fourth Edition".

FIDIC has published a "Guide to the Use of FIDIC Conditions of Contract for Works of Civil Engineering Construction" which includes comments on the provisions of the Fourth Edition of the Conditions. Users of the Fourth Edition may find it helpful to refer to this Guide.

It may also be helpful for users to refer to other FIDIC publications, such as:

Tendering Procedure (First Edition 1982)
Construction, Insurance and Law (1986)

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PART I - GENERAL CONDITIONS

Definitions and Interpretation

Definitions **1.1** In the Contract (as hereinafter defined) the following words and expressions shall have the meanings hereby assigned to them, except where the context otherwise requires:

(a) (i) "Employer" means the person named as such in Part II of these Conditions and the legal successors in title to such person, but not (except with the consent of the Contractor) any assignee of such person.

(ii) "Contractor" means the person whose tender has been accepted by the Employer and the legal successors in title to such person, but not (except with the consent of the Employer) any assignee of such person.

(iii) "Subcontractor" means any person named in the Contract as a Subcontractor for a part of the Works or any person to whom a part of the Works has been subcontracted with the consent of the Engineer and the legal successors in title to such person, but not any assignee of any such person.

(iv) "Engineer" means the person appointed by the Employer to act as Engineer for the purposes of the Contract and named as such in Part II of these Conditions.

(v) "Engineer's Representative" means a person appointed from time to time by the Engineer under Sub-Clause 2.2.

(b) (i) "Contract" means these Conditions (Parts I and II), the Specification, the Drawings, the Bill of Quantities, the Tender, the Letter of Acceptance, the Contract Agreement (if completed) and such further documents as may be expressly incorporated in the Letter of Acceptance or Contract Agreement (if completed).

(ii) "Specification" means the specification of the Works included in the Contract and any modification thereof or addition thereto made under Clause 51 or submitted by the Contractor and approved by the Engineer.

(iii) "Drawings" means all drawings, calculations and technical information of a like nature provided by the Engineer to the Contractor under the Contract and all drawings, calculations, samples, patterns, models, operation and maintenance manuals and other technical information of a like nature submitted by the Contractor and approved by the Engineer.

(iv) "Bill of Quantities" means the priced and completed bill of quantities forming part of the Tender.

(v) "Tender" means the Contractor's priced offer to the Employer for the execution and completion of the Works and the remedying of any defects therein in accordance with the provisions of the Contract, as accepted by the Letter of Acceptance.

(vi) "Letter of Acceptance" means the formal acceptance by the Employer of the Tender.

(vii) "Contract Agreement" means the contract agreement (if any) referred to in Sub-Clause 9.1.

(viii) "Appendix to Tender" means the appendix comprised in the form of Tender annexed to these Conditions.

(c) (i) "Commencement Date" means the date upon which the Contractor receives the notice to commence issued by the Engineer pursuant to Clause 41.

(ii) "Time for Completion" means the time for completing the execution of and passing the Tests on Completion of the Works or any Section or part thereof as stated in the Contract (or as extended under Clause 44) calculated from the Commencement Date.

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(d) (i) "Tests on Completion" means the tests specified in the Contract or otherwise agreed by the Engineer and the Contractor which are to be made by the Contractor before the Works or any Section or part thereof are taken over by the Employer.

(ii) "Taking-Over Certificate" means a certificate issued pursuant to Clause 48.

(e) (i) "Contract Price" means the sum stated in the Letter of Acceptance as payable to the Contractor for the execution and completion of the Works and the remedying of any defects therein in accordance with the provisions of the Contract.

(ii) "Retention Money" means the aggregate of all monies retained by the Employer pursuant to Sub-Clause 60.2(a).

(iii) "Interim Payment Certificate" means any certificate of payment issued by the Engineer other than the Final Payment Certificate.

(iv) "Final Payment Certificate" means the certificate of payment issued by the Engineer pursuant to Sub-Clause 60.8.

(f) (i) "Works" means the Permanent Works and the Temporary Works or either of them as appropriate.

(ii) "Permanent Works" means the permanent works to be executed (including Plant) in accordance with the Contract.

(iii) "Temporary Works" means all temporary works of every kind (other than Contractor's Equipment) required in or about the execution and completion of the Works and the remedying of any defects therein.

(iv) "Plant" means machinery, apparatus and the like intended to form or forming part of the Permanent Works.

(v) "Contractor's Equipment" means all appliances and things of whatsoever nature (other than Temporary Works) required for the execution and completion of the Works and the remedying of any defects therein, but does not include Plant, materials or other things intended to form or forming part of the Permanent Works.

(vi) "Section" means a part of the Works specifically identified in the Contract as a Section.

(vii) "Site" means the places provided by the Employer where the Works are to be executed and any other places as may be specifically designated in the Contract as forming part of the Site.

(g) (i) "cost" means all expenditure properly incurred or to be incurred, whether on or off the Site, including overhead and other charges properly allocable thereto but does not include any allowance for profit.

(ii) "day" means calendar day.

(iii) "foreign currency" means a currency of a country other than that in which the Works are to be located.

(iv) "writing" means any hand-written, type-written, or printed communication, including telex, cable and facsimile transmission.

Headings and Marginal Notes **1.2** The headings and marginal notes in these Conditions shall not be deemed part thereof or be taken into consideration in the interpretation or construction thereof or of the Contract.

Interpretation **1.3** Words importing persons or parties shall include firms and corporations and any organisation having legal capacity.

Singular and Plural **1.4** Words importing the singular only also include the plural and vice versa where the context requires.

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Notices, Consents, Approvals, Certificates and Determinations **1.5** Wherever in the Contract provision is made for the giving or issue of any notice, consent, approval, certificate or determination by any person, unless otherwise specified such notice, consent, approval, certificate or determination shall be in writing and the words "notify", "certify" or "determine" shall be construed accordingly. Any such consent, approval, certificate or determination shall not unreasonably be withheld or delayed.

Engineer and Engineer's Representative

Engineer's Duties and Authority **2. 1** (a) The Engineer shall carry out the duties specified in the Contract.

(b) The Engineer may exercise the authority specified in or necessarily to be implied from the Contract, provided, however, that if the Engineer is required, under the terms of his appointment by the Employer, to obtain the specific approval of the Employer before exercising any such authority, particulars of such requirements shall be set out in Part II of these Conditions. Provided further that any requisite approval shall be deemed to have been given by the Employer for any such authority exercised by the Engineer.

(c) Except as expressly stated in the Contract, the Engineer shall have no authority to relieve the Contractor of any of his obligations under the Contract.

Engineer's Representative **2.2** The Engineer's Representative shall be appointed by and be responsible to the Engineer and shall carry out such duties and exercise such authority as may be delegated to him by the Engineer under Sub-Clause 2.3.

Engineer's Authority to Delegate **2.3** The Engineer may from time to time delegate to the Engineer's Representative any of the duties and authorities vested in the Engineer and he may at any time revoke such delegation. Any such delegation or revocation shall be in writing and shall not take effect until a copy thereof has been delivered to the Employer and the Contractor.

Any communication given by the Engineer's Representative to the Contractor in accordance with such delegation shall have the same effect as though it had been given by the Engineer. Provided that:

(a) any failure of the Engineer's Representative to disapprove any work, materials or Plant shall not prejudice the authority of the Engineer to disapprove such work, materials or Plant and to give instructions for the rectification thereof; and

(b) if the Contractor questions any communication of the Engineer's Representative he may refer the matter to the Engineer who shall confirm, reverse or vary the contents of such communication.

Appointment of Assistants **2.4** The Engineer or the Engineer's Representative may appoint any number of persons to assist the Engineer's Representative in the carrying out of his duties under Sub-Clause 2.2. He shall notify to the Contractor the names, duties and scope of authority of such persons. Such assistants shall have no authority to issue any instructions to the Contractor save in so far as such instructions may be necessary to enable them to carry out their duties and to secure their acceptance of materials, Plant or workmanship as being in accordance with the Contract, and any instructions given by any of them for those purposes shall be deemed to have been given by the Engineer's Representative.

Instructions in Writing **2.5** Instructions given by the Engineer shall be in writing, provided that if for any reason the Engineer considers it necessary to give any such instruction orally, the Contractor shall comply with such instruction. Confirmation in writing of such oral instruction given by the Engineer, whether before or after the carrying out of the instruction, shall be deemed to be an instruction within the meaning of this Sub-Clause. Provided further that if the Contractor, within 7 days, confirms in writing to the Engineer any oral instruction of the Engineer and such confirmation is not contradicted in writing within 7 days by the Engineer, it shall be deemed to be an instruction of the Engineer.

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The provisions of this Sub-Clause shall equally apply to instructions given by the Engineer's Representative and any assistants of the Engineer or the Engineer's Representative appointed pursuant to Sub-Clause 2.4.

Engineer to Act Impartially **2.6** Wherever, under the Contract, the Engineer is required to exercise his discretion by:

(a) giving his decision, opinion or consent,

(b) expressing his satisfaction or approval,

(c) determining value, or

(d) otherwise taking action which may affect the rights and obligations of the Employer or the Contractor

he shall exercise such discretion impartially within the terms of the Contract and having regard to all the circumstances. Any such decision, opinion, consent, expression of satisfaction, or approval, determination of value or action may be opened up, reviewed or revised as provided in Clause 67.

Assignment and Subcontracting

Assignment of Contract **3. 1** The Contractor shall not, without the prior consent of the Employer (which consent, notwithstanding the provisions of Sub-Clause 1.5, shall be at the sole discretion of the Employer), assign the Contract or any part thereof, or any benefit or interest therein or thereunder, otherwise than by:

(a) a charge in favour of the Contractor's bankers of any monies due or to become due under the Contract, or

(b) assignment to the Contractor's insurers (in cases where the insurers have discharged the Contractor's loss or liability) of the Contractor's right to obtain relief against any other party liable.

Subcontracting **4. 1** The Contractor shall not subcontract the whole of the Works. Except where otherwise provided by the Contract, the Contractor shall not subcontract any part of the Works without the prior consent of the Engineer. Any such consent shall not relieve the Contractor from any liability or obligation under the Contract and he shall be responsible for the acts, defaults and neglects of any Subcontractor, his agents, servants or workmen as fully as if they were the acts, defaults or neglects of the Contractor, his agents, servants or workmen.

Provided that the Contractor shall not be required to obtain such consent for:

(a) the provision of labour,

(b) the purchase of materials which are in accordance with the standards specified in the Contract, or

(c) the subcontracting of any part of the Works for which the Subcontractor is named in the Contract.

Assignment of Subcontractors' Obligations **4.2** In the event of a Subcontractor having undertaken towards the Contractor in respect of the work executed, or the goods, materials, Plant or services supplied by such Subcontractor, any continuing obligation extending for a period exceeding that of the Defects Liability Period under the Contract, the Contractor shall at any time, after the expiration of such Period, assign to the Employer, at the Employer's request and cost, the benefit of such obligation for the unexpired duration thereof.

Contract Documents

Language/s and Law **5. 1** There is stated in Part II of these Conditions:

(a) the language or languages in which the Contract documents shall be drawn up, and

(b) the country or state the law of which shall apply to the Contract and according to which the Contract shall be construed.

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If the said documents are written in more than one language, the language according to which the Contract shall be construed and interpreted is also stated in Part II of these Conditions, being therein designated the "Ruling Language".

Priority of Contract Documents

5.2 The several documents forming the Contract are to be taken as mutually explanatory of one another, but in case of ambiguities or discrepancies the same shall be explained and adjusted by the Engineer who shall thereupon issue to the Contractor instructions thereon and in such event, unless otherwise provided in the Contract, the priority of the documents forming the Contract shall be as follows:

(1) The Contract Agreement (if completed);

(2) The Letter of Acceptance;

(3) The Tender;

(4) Part II of these Conditions;

(5) Part I of these Conditions; and

(6) Any other document forming part of the Contract.

Custody and Supply of Drawings and Documents

6.1 The Drawings shall remain in the sole custody of the Engineer, but two copies thereof shall be provided to the Contractor free of charge. The Contractor shall make at his own cost any further copies required by him. Unless it is strictly necessary for the purposes of the Contract, the Drawings, Specification and other documents provided by the Employer or the Engineer shall not, without the consent of the Engineer, be used or communicated to a third party by the Contractor. Upon issue of the Defects Liability Certificate, the Contractor shall return to the Engineer all Drawings, Specification and other documents provided under the Contract.

The Contractor shall supply to the Engineer four copies of all Drawings, Specification and other documents submitted by the Contractor and approved by the Engineer in accordance with Clause 7, together with a reproducible copy of any material which cannot be reproduced to an equal standard by photocopying. In addition the Contractor shall supply such further copies of such Drawings, Specification and other documents as the Engineer may request in writing for the use of the Employer, who shall pay the cost thereof.

One Copy of Drawings to be Kept on Site

6.2 One copy of the Drawings, provided to or supplied by the Contractor as aforesaid, shall be kept by the Contractor on the Site and the same shall at all reasonable times be available for inspection and use by the Engineer and by any other person authorised by the Engineer in writing.

Disruption of Progress

6.3 The Contractor shall give notice to the Engineer, with a copy to the Employer, whenever planning or execution of the Works is likely to be delayed or disrupted unless any further drawing or instruction is issued by the Engineer within a reasonable time. The notice shall include details of the drawing or instruction required and of why and by when it is required and of any delay or disruption likely to be suffered if it is late.

Delays and Cost of Delay of Drawings

6.4 If, by reason of any failure or inability of the Engineer to issue, within a time reasonable in all the circumstances, any drawing or instruction for which notice has been given by the Contractor in accordance with Sub-Clause 63, the Contractor suffers delay and/or incurs costs then the Engineer shall, after due consultation with the Employer and the Contractor, determine:

(a) any extension of time to which the Contractor is entitled under Clause 44, and

(b) the amount of such costs, which shall be added to the Contract Price,

and shall notify the Contractor accordingly, with a copy to the Employer.

Failure by Contractor to Submit Drawings

6.5 If the failure or inability of the Engineer to issue any drawings or instructions is caused in whole or in part by the failure of the Contractor to submit Drawings, Specification or other documents which he is required to submit under the Contract, the Engineer shall take such failure by the Contractor into account when making his determination pursuant to Sub-Clause 6.4.

Supplementary Drawings and Instructions **7.1** The Engineer shall have authority to issue to the Contractor, from time to time, such supplementary Drawings and instructions as shall be necessary for the purpose of the proper and adequate execution and completion of the Works and the remedying of any defects therein. The Contractor shall carry out and be bound by the same.

Permanent Works Designed by Contractor **7.2** Where the Contract expressly provides that part of the Permanent Works shall be designed by the Contractor, he shall submit to the Engineer, for approval:

(a) such drawings, specifications, calculations and other information as shall be necessary to satisfy the Engineer as to the suitability and adequacy of that design, and

(b) operation and maintenance manuals together with drawings of the Permanent Works as completed, in sufficient detail to enable the Employer to operate, maintain, dismantle, reassemble and adjust the Permanent Works incorporating that design. The Works shall not be considered to be completed for the purposes of taking over in accordance with Clause 48 until such operation and maintenance manuals, together with drawings on completion, have been submitted to and approved by the Engineer.

Responsibility Unaffected by Approval **7.3** Approval by the Engineer, in accordance with Sub-Clause 7.2, shall not relieve the Contractor of any of his responsibilities under the Contract.

General Obligations

Contractor's General Responsibilities **8.1** The Contractor shall, with due care and diligence, design (to the extent provided for by the Contract), execute and complete the Works and remedy any defects therein in accordance with the provisions of the Contract. The Contractor shall provide all superintendence, labour, materials, Plant, Contractor's Equipment and all other things, whether of a temporary or permanent nature, required in and for such design, execution, completion and remedying of any defects, so far as the necessity for providing the same is specified in or is reasonably to be inferred from the Contract.

The Contractor shall give prompt notice to the Engineer, with a copy to the Employer, of any error, omission, fault or other defect in the design of or Specification for the Works which he discovers when reviewing the Contract or executing the Works.

Site Operations and Methods of Construction **8.2** The Contractor shall take full responsibility for the adequacy, stability and safety of all Site operations and methods of construction. Provided that the Contractor shall not be responsible (except as stated hereunder or as may be otherwise agreed) for the design or specification of Permanent Works, or for the design or specification of any Temporary Works not prepared by the Contractor. Where the Contract expressly provides that part of the Permanent Works shall be designed by the Contractor, he shall be fully responsible for that part of such Works, notwithstanding any approval by the Engineer.

Contract Agreement **9.1** The Contractor shall, if called upon so to do, enter into and execute the Contract Agreement, to be prepared and completed at the cost of the Employer, in the form annexed to these Conditions with such modification as may be necessary.

Performance Security **10.1** If the Contract requires the Contractor to obtain security for his proper performance of the Contract, he shall obtain and provide to the Employer such security within 28 days after the receipt of the Letter of Acceptance, in the sum stated in the Appendix to Tender. When providing such security to the Employer, the Contractor shall notify the Engineer of so doing. Such security shall be in the form annexed to these Conditions or in such other form as may be agreed between the Employer and the Contractor. The institution providing such security shall be subject to the approval of the Employer. The cost of complying with the requirements of this Clause shall be borne by the Contractor, unless the Contract otherwise provides.

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Period of Validity of Performance Security

10.2 The performance security shall be valid until the Contractor has executed and completed the Works and remedied any defects therein in accordance with the Contract. No claim shall be made against such security after the issue of the Defects Liability Certificate in accordance with Sub-Clause 62.1 and such security shall be returned to the Contractor within 14 days of the issue of the said Defects Liability Certificate.

Claims under Performance Security

10.3 Prior to making a claim under the performance security the Employer shall, in every case, notify the Contractor stating the nature of the default in respect of which the claim is to be made.

Inspection of Site

11.1 The Employer shall have made available to the Contractor, before the submission by the Contractor of the Tender, such data on hydrological and sub-surface conditions as have been obtained by or on behalf of the Employer from investigations undertaken relevant to the Works but the Contractor shall be responsible for his own interpretation thereof.

The Contractor shall be deemed to have inspected and examined the Site and its surroundings and information available in connection therewith and to have satisfied himself (so far as is practicable, having regard to considerations of cost and time) before submitting his Tender, as to:

(a) the form and nature thereof, including the sub-surface conditions,

(b) the hydrological and climatic conditions,

(c) the extent and nature of work and materials necessary for the execution and completion of the Works and the remedying of any defects therein, and

(d) the means of access to the Site and the accommodation he may require,

and, in general, shall be deemed to have obtained all necessary information, subject as above mentioned, as to risks, contingencies and all other circumstances which may influence or affect his Tender.

The Contractor shall be deemed to have based his Tender on the data made available by the Employer and on his own inspection and examination, all as aforementioned.

Sufficiency of Tender

12.1 The Contractor shall be deemed to have satisfied himself as to the correctness and sufficiency of the Tender and of the rates and prices stated in the Bill of Quantities, all of which shall, except insofar as it is otherwise provided in the Contract, cover all his obligations under the Contract (including those in respect of the supply of goods, materials, Plant or services or of contingencies for which there is a Provisional Sum) and all matters and things necessary for the proper execution and completion of the Works and the remedying of any defects therein.

Not Foreseeable Physical Obstructions or Conditions

12.2 If, however, during the execution of the Works the Contractor encounters physical obstructions or physical conditions, other than climatic conditions on the Site, which obstructions or conditions were, in his opinion, not foreseeable by an experienced contractor, the Contractor shall forthwith give notice thereof to the Engineer, with a copy to the Employer. On receipt of such notice, the Engineer shall, if in his opinion such obstructions or conditions could not have been reasonably foreseen by an experienced contractor, after due consultation with the Employer and the Contractor, determine:

(a) any extension of time to which the Contractor is entitled under Clause 44, and

(b) the amount of any costs which may have been incurred by the Contractor by reason of such obstructions or conditions having been encountered, which shall be added to the Contract Price,

and shall notify the Contractor accordingly, with a copy to the Employer. Such determination shall take account of any instruction which the Engineer may issue to the Contractor in connection therewith, and any proper and reasonable measures acceptable to the Engineer which the Contractor may take in the absence of specific instructions from the Engineer.

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Work to be in Accordance with Contract **13.1** Unless it is legally or physically impossible, the Contractor shall execute and complete the Works and remedy any defects therein in strict accordance with the Contract to the satisfaction of the Engineer. The Contractor shall comply with and adhere strictly to the Engineer's instructions on any matter, whether mentioned in the Contract or not, touching or concerning the Works. The Contractor shall take instructions only from the Engineer (or his delegate).

Programme to be Submitted **14.1** The Contractor shall, within the time stated in Part II of these Conditions after the date of the Letter of Acceptance, submit to the Engineer for his consent a programme, in such form and detail as the Engineer shall reasonably prescribe, for the execution of the Works. The Contractor shall, whenever required by the Engineer, also provide in writing for his information a general description of the arrangements and methods which the Contractor proposes to adopt for the execution of the Works.

Revised Programme **14.2** If at any time it should appear to the Engineer that the actual progress of the Works does not conform to the programme to which consent has been given under Sub-Clause 14.1, the Contractor shall produce, at the request of the Engineer, a revised programme showing the modifications to such programme necessary to ensure completion of the Works within the Time for Completion.

Cash Flow Estimate to be Submitted **14.3** The Contractor shall, within the time stated in Part II of these Conditions after the date of the Letter of Acceptance, provide to the Engineer for his information a detailed cash flow estimate, in quarterly periods, of all payments to which the Contractor will be entitled under the Contract and the Contractor shall subsequently supply revised cash flow estimates at quarterly intervals, if required to do so by the Engineer.

Contractor not Relieved of Duties or Responsibilities **14.4** The submission to and consent by the Engineer of such programmes or the provision of such general descriptions or cash flow estimates shall not relieve the Contractor of any of his duties or responsibilities under the Contract.

Contractor's Superintendence **15. 1** The Contractor shall provide all necessary superintendence during the execution of the Works and as long thereafter as the Engineer may consider necessary for the proper fulfilling of the Contractor's obligations under the Contract. The Contractor, or a competent and authorised representative approved of by the Engineer, which approval may at any time be withdrawn, shall give his whole time to the superintendence of the Works. Such authorised representative shall receive, on behalf of the Contractor, instructions from the Engineer.

If approval of the representative is withdrawn by the Engineer, the Contractor shall, as soon as is practicable, having regard to the requirement of replacing him as hereinafter mentioned, after receiving notice of such withdrawal, remove the representative from the Works and shall not thereafter employ him again on the Works in any capacity and shall replace him by another representative approved by the Engineer.

Contractor's Employees **16. 1** The Contractor shall provide on the Site in connection with the execution and completion of the Works and the remedying of any defects therein:

(a) only such technical assistants as are skilled and experienced in their respective callings and such foremen and leading hands as are competent to give proper superintendence of the Works, and

(b) such skilled, semi-skilled and unskilled labour as is necessary for the proper and timely fulfilling of the Contractor's obligations under the Contract.

Engineer at Liberty to Object **16.2** The Engineer shall be at liberty to object to and require the Contractor to remove forthwith from the Works any person provided by the Contractor who, in the opinion of the Engineer, misconducts himself, or is incompetent or negligent in the proper performance of his duties, or whose presence on Site is otherwise considered by the Engineer to be undesirable, and such person shall not be again allowed upon the Works without the consent of the Engineer. Any person so removed from the Works shall be replaced as soon as possible.

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Setting-out **17. 1** The Contractor shall be responsible for:

(a) the accurate setting-out of the Works in relation to original points, lines and levels of reference given by the Engineer in writing,

(b) the correctness, subject as above mentioned, of the position, levels, dimensions and alignment of all parts of the Works, and

(c) the provision of all necessary instruments, appliances and labour in connection with the foregoing responsibilities.

If, at any time during the execution of the Works, any error appears in the position, levels, dimensions or alignment of any part of the Works, the Contractor, on being required so to do by the Engineer, shall, at his own cost, rectify such error to the satisfaction of the Engineer, unless such error is based on incorrect data supplied in writing by the Engineer, in which case the Engineer shall determine an addition to the Contract Price in accordance with Clause 52 and shall notify the Contractor accordingly, with a copy to the Employer.

The checking of any setting-out or of any line or level by the Engineer shall not in any way relieve the Contractor of his responsibility for the accuracy thereof and the Contractor shall carefully protect and preserve all bench-marks, sight-rails, pegs and other things used in setting-out the Works.

Boreholes and Exploratory Excavation **18.1** If, at any time during the execution of the Works, the Engineer requires the Contractor to make boreholes or to carry out exploratory excavation, such requirement shall be the subject of an instruction in accordance with Clause 51, unless an item or a Provisional Sum in respect of such work is included in the Bill of Quantities.

Safety, Security and Protection of the Environment **19.1** The Contractor shall, throughout the execution and completion of the Works and the remedying of any defects therein:

(a) have full regard for the safety of all persons entitled to be upon the Site and keep the Site (so far as the same is under his control) and the Works (so far as the same are not completed or occupied by the Employer) in an orderly state appropriate to the avoidance of danger to such persons,

(b) provide and maintain at his own cost all lights, guards, fencing, warning signs and watching, when and where necessary or required by the Engineer or by any duly constituted authority, for the protection of the Works or for the safety and convenience of the public or others, and

(c) take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other causes arising as a consequence of his methods of operation.

Employer's Responsibilities **19.2** If under Clause 31 the Employer shall carry out work on the Site with his own workmen he shall, in respect of such work:

(a) have full regard to the safety of all persons entitled to be upon the Site, and

(b) keep the Site in an orderly state appropriate to the avoidance of danger to such persons.

If under Clause 31 the Employer shall employ other contractors on the Site he shall require them to have the same regard for safety and avoidance of danger.

Care of Works **20.1** The Contractor shall take full responsibility for the care of the Works and materials and Plant for incorporation therein from the Commencement Date until the date of issue of the Taking-Over Certificate for the whole of the Works, when the responsibility for the said care shall pass to the Employer. Provided that:

(a) if the Engineer issues a Taking-Over Certificate for any Section or part of the Permanent Works the Contractor shall cease to be liable for the care of that Section or part from the date of issue of the Taking-Over Certificate, when the responsibility for the care of that Section or part shall pass to the Employer, and

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(b) the Contractor shall take full responsibility for the care of any outstanding Works and materials and Plant for incorporation therein which he undertakes to finish during the Defects Liability Period until such outstanding Works have been completed pursuant to Clause 49.

Responsibility to Rectify Loss or Damage **20.2** If any loss or damage happens to the Works, or any part thereof, or materials or Plant for incorporation therein, during the period for which the Contractor is responsible for the care thereof, from any cause whatsoever, other than the risks defined in Sub-Clause 20.4, the Contractor shall, at his own cost, rectify such loss or damage so that the Permanent Works conform in every respect with the provisions of the Contract to the satisfaction of the Engineer. The Contractor shall also be liable for any loss or damage to the Works occasioned by him in the course of any operations carried out by him for the purpose of complying with his obligations under Clauses 49 and 50.

Loss or Damage Due to Employer's Risks **20.3** In the event of any such loss or damage happening from any of the risks defined in Sub-Clause 20.4, or in combination with other risks, the Contractor shall, if and to the extent required by the Engineer, rectify the loss or damage and the Engineer shall determine an addition to the Contract Price in accordance with Clause 52 and shall notify the Contractor accordingly, with a copy to the Employer. In the case of a combination of risks causing loss or damage any such determination shall take into account the proportional responsibility of the Contractor and the Employer.

Employer's Risks **20.4** The Employer's risks are:

(a) war, hostilities (whether war be declared or not), invasion, act of foreign enemies,

(b) rebellion, revolution, insurrection, or military or usurped power, or civil war,

(c) ionising radiations, or contamination by radio-activity from any nuclear fuel, or from any nuclear waste from the combustion of nuclear fuel, radio-active toxic explosive or other hazardous properties of any explosive nuclear assembly or nuclear component thereof,

(d) pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds,

(e) riot, commotion or disorder, unless solely restricted to employees of the Contractor or of his Subcontractors and arising from the conduct of the Works,

(f) loss or damage due to the use or occupation by the Employer of any Section or part of the Permanent Works, except as may be provided for in the Contract,

(g) loss or damage to the extent that it is due to the design of the Works, other than any part of the design provided by the Contractor or for which the Contractor is responsible, and

(h) any operation of the forces of nature against which an experienced contractor could not reasonably have been expected to take precautions.

Insurance of Works and Contractor's Equipment **21.1** The Contractor shall, without limiting his or the Employer's obligations and responsibilities under Clause 20, insure:

(a) the Works, together with materials and Plant for incorporation therein, to the full replacement cost (the term "cost" in this context shall include profit),

(b) an additional sum of 15 per cent of such replacement cost, or as may be specified in Part II of these Conditions, to cover any additional costs of and incidental to the rectification of loss or damage including professional fees and the cost of demolishing and removing any part of the Works and of removing debris of whatsoever nature, and

(c) the Contractor's Equipment and other things brought onto the Site by the Contractor, for a sum sufficient to provide for their replacement at the Site.

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Scope of Cover **21.2** The insurance in paragraphs (a) and (b) of Sub-Clause 21.1 shall be in the joint names of the Contractor and the Employer and shall cover:

(a) the Employer and the Contractor against all loss or damage from whatsoever cause arising, other than as provided in Sub-Clause 21.4, from the start of work at the Site until the date of issue of the relevant Taking-Over Certificate in respect of the Works or any Section or part thereof as the case may be, and

(b) the Contractor for his liability:

(i) during the Defects Liability Period for loss or damage arising from a cause occurring prior to the commencement of the Defects Liability Period, and

(ii) for loss or damage occasioned by the Contractor in the course of any operations carried out by him for the purpose of complying with his obligations under Clauses 49 and 50.

Responsibility for Amounts not Recovered **21.3** Any amounts not insured or not recovered from the insurers shall be borne by the Employer or the Contractor in accordance with their responsibilities under Clause 20.

Exclusions **21.4** There shall be no obligation for the insurances in Sub-Clause 21.1 to include loss or damage caused by:

(a) war, hostilities (whether war be declared or not), invasion, act of foreign enemies,

(b) rebellion, revolution, insurrection, or military or usurped power, or civil war,

(c) ionising radiations, or contamination by radio-activity from any nuclear fuel, or from any nuclear waste from the combustion of nuclear fuel, radio-active toxic explosive or other hazardous properties of any explosive nuclear assembly or nuclear component thereof, or

(d) pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds.

Damage to Persons and Property **22.1** The Contractor shall, except if and so far as the Contract provides otherwise, indemnify the Employer against all losses and claims in respect of:

(a) death of or injury to any person, or

(b) loss of or damage to any property (other than the Works),

which may arise out of or in consequence of the execution and completion of the Works and the remedying of any defects therein, and against all claims, proceedings, damages, costs, charges and expenses whatsoever in respect thereof or in relation thereto, subject to the exceptions defined in Sub-Clause 22.2.

Exceptions **22.2** The "exceptions" referred to in Sub-Clause 22.1 are:

(a) the permanent use or occupation of land by the Works, or any part thereof,

(b) the right of the Employer to execute the Works, or any part thereof, on, over, under, in or through any land,

(c) damage to property which is the unavoidable result of the execution and completion of the Works, or the remedying of any defects therein, in accordance with the Contract, and

(d) death of or injury to persons or loss of or damage to property resulting from any act or neglect of the Employer, his agents, servants or other contractors, not being employed by the Contractor, or in respect of any claims, proceedings, damages, costs, charges and expenses in respect thereof or in relation thereto or, where the injury or damage was contributed to by the Contractor, his servants or agents, such part of the said injury or damage as may be just and equitable having regard to the extent of the responsibility of the Employer, his servants or agents or other contractors for the injury or damage.

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Indemnity by Employer **22.3** The Employer shall indemnify the Contractor against all claims, proceedings, damages, costs, charges and expenses in respect of the matters referred to in the exceptions defined in Sub-Clause 22.2.

Third Party Insurance (including Employer's Property) **23.1** The Contractor shall, without limiting his or the Employer's obligations and responsibilities under Clause 22, insure, in the joint names of the Contractor and the Employer, against liabilities for death of or injury to any person (other than as provided in Clause 24) or loss of or damage to any property (other than the Works) arising out of the performance of the Contract, other than the exceptions defined in paragraphs (a), (b) and (c) of Sub-Clause 22.2.

Minimum Amount of Insurance **23.2** Such insurance shall be for at least the amount stated in the Appendix to Tender.

Cross Liabilities **23.3** The insurance policy shall include a cross liability clause such that the insurance shall apply to the Contractor and to the Employer as separate insureds.

Accident or Injury to Workmen **24.1** The Employer shall not be liable for or in respect of any damages or compensation payable to any workman or other person in the employment of the Contractor or any Subcontractor, other than death or injury resulting from any act or default of the Employer, his agents or servants. The Contractor shall indemnify and keep indemnified the Employer against all such damages and compensation, other than those for which the Employer is liable as aforesaid, and against all claims, proceedings, damages, costs, charges, and expenses whatsoever in respect thereof or in relation thereto.

Insurance Against Accident to Workmen **24.2** The Contractor shall insure against such liability and shall continue such insurance during the whole of the time that any persons are employed by him on the Works. Provided that, in respect of any persons employed by any Subcontractor, the Contractor's obligations to insure as aforesaid under this Sub-Clause shall be satisfied if the Subcontractor shall have insured against the liability in respect of such persons in such manner that the Employer is indemnified under the policy, but the Contractor shall require such Subcontractor to produce to the Employer, when required, such policy of insurance and the receipt for the payment of the current premium.

Evidence and Terms of Insurances **25.1** The Contractor shall provide evidence to the Employer prior to the start of work at the Site that the insurances required under the Contract have been effected and shall, within 84 days of the Commencement Date, provide the insurance policies to the Employer. When providing such evidence and such policies to the Employer, the Contractor shall notify the Engineer of so doing. Such insurance policies shall be consistent with the general terms agreed prior to the issue of the Letter of Acceptance. The Contractor shall effect all insurances for which he is responsible with insurers and in terms approved by the Employer.

Adequacy of Insurances **25.2** The Contractor shall notify the insurers of changes in the nature, extent or programme for the execution of the Works and ensure the adequacy of the insurances at all times in accordance with the terms of the Contract and shall, when required, produce to the Employer the insurance policies in force and the receipts for payment of the current premiums.

Remedy on Contractor's Failure to Insure **25.3** If the Contractor fails to effect and keep in force any of the insurances required under the Contract, or fails to provide the policies to the Employer within the period required by Sub-Clause 25.1, then and in any such case the Employer may effect and keep in force any such insurances and pay any premium as may be necessary for that purpose and from time to time deduct the amount so paid from any monies due or to become due to the Contractor, or recover the same as a debt due from the Contractor.

Compliance with Policy Conditions **25.4** In the event that the Contractor or the Employer fails to comply with conditions imposed by the insurance policies effected pursuant to the Contract, each shall indemnify the other against all losses and claims arising from such failure.

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Compliance with Statutes, Regulations **26.1** The Contractor shall conform in all respects, including by the giving of all notices and the paying of all fees, with the provisions of:

(a) any National or State Statute, Ordinance, or other Law, or any regulation, or bye-law of any local or other duly constituted authority in relation to the execution and completion of the Works and the remedying of any defects therein, and

(b) the rules and regulations of all public bodies and companies whose property or rights are affected or may be affected in any way by the Works,

and the Contractor shall keep the Employer indemnified against all penalties and liability of every kind for breach of any such provisions. Provided always that the Employer shall be responsible for obtaining any planning, zoning or other similar permission required for the Works to proceed and shall indemnify the Contractor in accordance with Sub-Clause 22.3.

Fossils **27.1** All fossils, coins, articles of value or antiquity and structures and other remains or things of geological or archaeological interest discovered on the Site shall, as between the Employer and the Contractor, be deemed to be the absolute property of the Employer. The Contractor shall take reasonable precautions to prevent his workmen or any other persons from removing or damaging any such article or thing and shall, immediately upon discovery thereof and before removal, acquaint the Engineer of such discovery and carry out the Engineer's instructions for dealing with the same. If, by reason of such instructions, the Contractor suffers delay and/or incurs costs then the Engineer shall, after due consultation with the Employer and the Contractor, determine:

(a) any extension of time to which the Contractor is entitled under Clause 44, and

(b) the amount of such costs, which shall be added to the Contract Price,

and shall notify the Contractor accordingly, with a copy to the Employer.

Patent Rights **28.1** The Contractor shall save harmless and indemnify the Employer from and against all claims and proceedings for or on account of infringement of any patent rights, design trademark or name or other protected rights in respect of any Contractor's Equipment, materials or Plant used for or in connection with or for incorporation in the Works and from and against all damages, costs, charges and expenses whatsoever in respect thereof or in relation thereto, except where such infringement results from compliance with the design or Specification provided by the Engineer.

Royalties **28.2** Except where otherwise stated, the Contractor shall pay all tonnage and other royalties, rent and other payments or compensation, if any, for getting stone, sand, gravel, clay or other materials required for the Works.

Interference with Traffic and Adjoining Properties **29.1** All operations necessary for the execution and completion of the Works and the remedying of any defects therein shall, so far as compliance with the requirements of the Contract permits, be carried on so as not to interfere unnecessarily or improperly with:

(a) the convenience of the public, or

(b) the access to, use and occupation of public or private roads and footpaths to or of properties whether in the possession of the Employer or of any other person.

The Contractor shall save harmless and indemnify the Employer in respect of all claims, proceedings, damages, costs, charges and expenses whatsoever arising out of, or in relation to, any such matters insofar as the Contractor is responsible therefor.

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Avoidance of Damage to Roads **30.1** The Contractor shall use every reasonable means to prevent any of the roads or bridges communicating with or on the routes to the Site from being damaged or injured by any traffic of the Contractor or any of his Subcontractors and, in particular, shall select routes, choose and use vehicles and restrict and distribute loads so that any such extraordinary traffic as will inevitably arise from the moving of materials, Plant, Contractor's Equipment or Temporary Works from and to the Site shall be limited, as far as reasonably possible, and so that no unnecessary damage or injury may be occasioned to such roads and bridges.

Transport of Contractor's Equipment or Temporary Works **30.2** Save insofar as the Contract otherwise provides, the Contractor shall be responsible for and shall pay the cost of strengthening any bridges or altering or improving any road communicating with or on the routes to the Site to facilitate the movement of Contractor's Equipment or Temporary Works and the Contractor shall indemnify and keep indemnified the Employer against all claims for damage to any such road or bridge caused by such movement, including such claims as may be made directly against the Employer, and shall negotiate and pay all claims arising solely out of such damage.

Transport of Materials or Plant **30.3** If, notwithstanding Sub-Clause 30.1, any damage occurs to any bridge or road communicating with or on the routes to the Site arising from the transport of materials or Plant, the Contractor shall notify the Engineer with a copy to the Employer, as soon as he becomes aware of such damage or as soon as he receives any claim from the authority entitled to make such claim. Where under any law or regulation the haulier of such materials or Plant is required to indemnify the road authority against damage the Employer shall not be liable for any costs, charges or expenses in respect thereof or in relation thereto. In other cases the Employer shall negotiate the settlement of and pay all sums due in respect of such claim and shall indemnify the Contractor in respect thereof and in respect of all claims, proceedings, damages, costs, charges and expenses in relation thereto. Provided that if and so far as any such claim or part thereof is, in the opinion of the Engineer, due to any failure on the part of the Contractor to observe and perform his obligations under Sub-Clause 30.1, then the amount, determined by the Engineer, after due consultation with the Employer and the Contractor, to be due to such failure shall be recoverable from the Contractor by the Employer and may be deducted by the Employer from any monies due or to become due to the Contractor and the Engineer shall notify the Contractor accordingly, with a copy to the Employer. Provided also that the Employer shall notify the Contractor whenever a settlement is to be negotiated and, where any amount may be due from the Contractor, the Employer shall consult with the Contractor before such settlement is agreed.

Waterborne Traffic **30.4** Where the nature of the Works is such as to require the use by the Contractor of waterborne transport the foregoing provisions of this Clause shall be construed as though "road" included a lock, dock, sea wall or other structure related to a waterway and "vehicle" included craft, and shall have effect accordingly.

Opportunities for Other Contractors **31.1** The Contractor shall, in accordance with the requirements of the Engineer, afford all reasonable opportunities for carrying out their work to:

(a) any other contractors employed by the Employer and their workmen,

(b) the workmen of the Employer, and

(c) the workmen of any duly constituted authorities who may be employed in the execution on or near the Site of any work not included in the Contract or of any contract which the Employer may enter into in connection with or ancillary to the Works.

Facilities for Other Contractors **31.2** If, however, pursuant to Sub-Clause 31.1 the Contractor shall, on the written request of the Engineer:

(a) make available to any such other contractor, or to the Employer or any such authority, any roads or ways for the maintenance of which the Contractor is responsible,

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(b) permit the use, by any such, of Temporary Works or Contractor's Equipment on the Site, or

(c) provide any other service of whatsoever nature for any such,

the Engineer shall determine an addition to the Contract Price in accordance with Clause 52 and shall notify the Contractor accordingly, with a copy to the Employer.

Contractor to Keep Site Clear **32.1** During the execution of the Works the Contractor shall keep the Site reasonably free from all unnecessary obstruction and shall store or dispose of any Contractor's Equipment and surplus materials and clear away and remove from the Site any wreckage, rubbish or Temporary Works no longer required.

Clearance of Site on Completion **33.1** Upon the issue of any Taking-Over Certificate the Contractor shall clear away and remove from that part of the Site to which such Taking-Over Certificate relates all Contractor's Equipment, surplus material, rubbish and Temporary Works of every kind, and leave such part of the Site and Works clean and in a workmanlike condition to the satisfaction of the Engineer. Provided that the Contractor shall be entitled to retain on Site, until the end of the Defects Liability Period, such materials, Contractor's Equipment and Temporary Works as are required by him for the purpose of fulfilling his obligations during the Defects Liability Period.

Labour

Engagement of Staff and Labour **34.1** The Contractor shall, unless otherwise provided in the Contract, make his own arrangements for the engagement of all staff and labour, local or other, and for their payment, housing, feeding and transport.

Returns of Labour and Contractor's Equipment **35.1** The Contractor shall, if required by the Engineer, deliver to the Engineer a return in detail, in such form and at such intervals as the Engineer may prescribe, showing the staff and the numbers of the several classes of labour from time to time employed by the Contractor on the Site and such information respecting Contractor's Equipment as the Engineer may require.

Materials, Plant and Workmanship

Quality of Materials, Plant and Workmanship **36.1** All materials, Plant and workmanship shall be:

(a) of the respective kinds described in the Contract and in accordance with the Engineer's instructions, and

(b) subjected from time to time to such tests as the Engineer may require at the place of manufacture, fabrication or preparation, or on the Site or at such other place or places as may be specified in the Contract, or at all or any of such places.

The Contractor shall provide such assistance, labour, electricity, fuels, stores, apparatus and instruments as are normally required for examining, measuring and testing any materials or Plant and shall supply samples of materials, before incorporation in the Works, for testing as may be selected and required by the Engineer.

Cost of Samples **36.2** All samples shall be supplied by the Contractor at his own cost if the supply thereof is clearly intended by or provided for in the Contract.

Cost of Tests **36.3** The cost of making any test shall be borne by the Contractor if such test is:

(a) clearly intended by or provided for in the Contract, or

(b) particularised in the Contract (in cases only of a test under load or of a test to ascertain whether the design of any finished or partially finished work is appropriate for the purposes which it was intended to fulfil) in sufficient detail to enable the Contractor to price or allow for the same in his Tender.

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Cost of Tests not Provided for **36.4** If any test required by the Engineer which is:

(a) not so intended by or provided for,

(b) (in the cases above mentioned) not so particularised, or

(c) (though so intended or provided for) required by the Engineer to be carried out at any place other than the Site or the place of manufacture, fabrication or preparation of the materials or Plant tested,

shows the materials, Plant or workmanship not to be in accordance with the provisions of the Contract to the satisfaction of the Engineer, then the cost of such test shall be borne by the Contractor, but in any other case Sub-Clause 36.5 shall apply.

Engineer's Determination where Tests not Provided for **36.5** Where, pursuant to Sub-Clause 36.4, this Sub-Clause applies the Engineer shall, after due consultation with the Employer and the Contractor, determine:

(a) any extension of time to which the Contractor is entitled under Clause 44, and

(b) the amount of such costs, which shall be added to the Contract Price,

and shall notify the Contractor accordingly, with a copy to the Employer.

Inspection of Operations **37.1** The Engineer, and any person authorised by him, shall at all reasonable times have access to the Site and to all workshops and places where materials or Plant are being manufactured, fabricated or prepared for the Works and the Contractor shall afford every facility for and every assistance in obtaining the right to such access.

Inspection and Testing **37.2** The Engineer shall be entitled, during manufacture, fabrication or preparation to inspect and test the materials and Plant to be supplied under the Contract. If materials or Plant are being manufactured, fabricated or prepared in workshops or places other than those of the Contractor, the Contractor shall obtain permission for the Engineer to carry out such inspection and testing in those workshops or places. Such inspection or testing shall not release the Contractor from any obligation under the Contract.

Dates for Inspection and Testing **37.3** The Contractor shall agree with the Engineer on the time and place for the inspection or testing of any materials or Plant as provided in the Contract. The Engineer shall give the Contractor not less than 24 hours notice of his intention to carry out the inspection or to attend the tests. If the Engineer, or his duly authorised representative, does not attend on the date agreed, the Contractor may, unless otherwise instructed by the Engineer, proceed with the tests, which shall be deemed to have been made in the presence of the Engineer. The Contractor shall forthwith forward to the Engineer duly certified copies of the test readings. If the Engineer has not attended the tests, he shall accept the said readings as accurate.

Rejection **37.4** If, at the time and place agreed in accordance with Sub-Clause 37.3, the materials or Plant are not ready for inspection or testing or if, as a result of the inspection or testing referred to in this Clause, the Engineer determines that the materials or Plant are defective or otherwise not in accordance with the Contract, he may reject the materials or Plant and shall notify the Contractor thereof immediately. The notice shall state the Engineer's objections with reasons. The Contractor shall then promptly make good the defect or ensure that rejected materials or Plant comply with the Contract. If the Engineer so requests, the tests of rejected materials or Plant shall be made or repeated under the same terms and conditions. All costs incurred by the Employer by the repetition of the tests shall, after due consultation with the Employer and the Contractor, be determined by the Engineer and shall be recoverable from the Contractor by the Employer and may be deducted from any monies due or to become due to the Contractor and the Engineer shall notify the Contractor accordingly, with a copy to the Employer.

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Independent Inspection **37.5** The Engineer may delegate inspection and testing of materials or Plant to an independent inspector. Any such delegation shall be effected in accordance with Sub-Clause 2.4 and for this purpose such independent inspector shall be considered as an assistant of the Engineer. Notice of such appointment (not being less than 14 days) shall be given by the Engineer to the Contractor.

Examination of Work before Covering up **38.1** No part of the Works shall be covered up or put out of view without the approval of the Engineer and the Contractor shall afford full opportunity for the Engineer to examine and measure any such part of the Works which is about to be covered up or put out of view and to examine foundations before any part of the Works is placed thereon. The Contractor shall give notice to the Engineer whenever any such part of the Works or foundations is or are ready or about to be ready for examination and the Engineer shall, without unreasonable delay, unless he considers it unnecessary and advises the Contractor accordingly, attend for the purpose of examining and measuring such part of the Works or of examining such foundations.

Uncovering and Making Openings **38.2** The Contractor shall uncover any part of the Works or make openings in or through the same as the Engineer may from time to time instruct and shall reinstate and make good such part. If any such part has been covered up or put out of view after compliance with the requirement of Sub-Clause 38.1 and is found to be executed in accordance with the Contract, the Engineer shall, after due consultation with the Employer and the Contractor, determine the amount of the Contractor's costs in respect of such of uncovering, making openings in or through, reinstating and making good the same, which shall be added to the Contract Price, and shall notify the Contractor accordingly, with a copy to the Employer. In any other case all costs shall be borne by the Contractor.

Removal of Improper Work, Materials or Plant **39.1** The Engineer shall have authority to issue instructions from time to time, for:

(a) the removal from the Site, within such time or times as may be specified in the instruction, of any materials or Plant which, in the opinion of the Engineer, are not in accordance with the Contract,

(b) the substitution of proper and suitable materials or Plant, and

(c) the removal and proper re-execution, notwithstanding any previous test thereof or interim payment therefor, of any work which, in respect of

(i) materials, Plant or workmanship, or

(ii) design by the Contractor or for which he is responsible,

is not, in the opinion of the Engineer, in accordance with the Contract.

Default of Contractor in Compliance **39.2** In case of default on the part of the Contractor in carrying out such instruction within the time specified therein or, if none, within a reasonable time, the Employer shall be entitled to employ and pay other persons to carry out the same and all costs consequent thereon or incidental thereto shall, after due consultation with the Employer and the Contractor, be determined by the Engineer and shall be recoverable from the Contractor by the Employer, and may be deducted by the Employer from any monies due or to become due to the Contractor and the Engineer shall notify the Contractor accordingly, with a copy to the Employer.

Suspension

Suspension of Work **40. 1** The Contractor shall, on the instructions of the Engineer, suspend the progress of the Works or any part thereof for such time and in such manner as the Engineer may consider necessary and shall, during such suspension, properly protect and secure the Works or such part thereof so far as is necessary in the opinion of the Engineer. Unless such suspension is:

(a) otherwise provided for in the Contract,

(b) necessary by reason of some default of or breach of contract by the Contractor or for which he is responsible,

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(c) necessary by reason of climatic conditions on the Site, or

(d) necessary for the proper execution of the Works or for the safety of the Works or any part thereof (save to the extent that such necessity arises from any act or default by the Engineer or the Employer or from any of the risks defined in Sub-Clause 20.4),

Sub-Clause 40.2 shall apply.

Engineer's Determination following Suspension **40.2** Where, pursuant to Sub-Clause 40.1, this Sub-Clause applies the Engineer shall, after due consultation with the Employer and the Contractor, determine:

(a) any extension of time to which the Contractor is entitled under Clause 44, and

(b) the amount, which shall be added to the Contract Price, in respect of the cost incurred by the Contractor by reason of such suspension,

and shall notify the Contractor accordingly, with a copy to the Employer.

Suspension lasting more than 84 Days **40.3** If the progress of the Works or any part thereof is suspended on the instructions of the Engineer and if permission to resume work is not given by the Engineer within a period of 84 days from the date of suspension then, unless such suspension is within paragraph (a), (b), (c) or (d) of Sub-Clause 40.1, the Contractor may give notice to the Engineer requiring permission, within 28 days from the receipt thereof, to proceed with the Works or that part thereof in regard to which progress is suspended. If, within the said time, such permission is not granted, the Contractor may, but is not bound to, elect to treat the suspension, where it affects part only of the Works, as an omission of such part under Clause 51 by giving a further notice to the Engineer to that effect, or, where it affects the whole of the Works, treat the suspension as an event of default by the Employer and terminate his employment under the Contract in accordance with the provisions of Sub-Clause 69.1, whereupon the provisions of Sub-Clauses 69.2 and 69.3 shall apply.

Commencement and Delays

Commencement of Works **41.1** The Contractor shall commence the Works as soon as is reasonably possible after the receipt by him of a notice to this effect from the Engineer, which notice shall be issued within the time stated in the Appendix to Tender after the date of the Letter of Acceptance. Thereafter, the Contractor shall proceed with the Works with due expedition and without delay.

Possession of Site and Access Thereto **42.1** Save insofar as the Contract may prescribe:

(a) the extent of portions of the Site of which the Contractor is to be given possession from time to time,

(b) the order in which such portions shall be made available to the Contractor,

and, subject to any requirement in the Contract as to the order in which the Works shall be executed, the Employer will, with the Engineer's notice to commence the Works, give to the Contractor possession of

(c) so much of the Site, and

(d) such access as, in accordance with the Contract, is to be provided by the Employer as may be required to enable the Contractor to commence and proceed with the execution of the Works in accordance with the programme referred to in Clause 14, if any, and otherwise in accordance with such reasonable proposals as the Contractor shall, by notice to the Engineer with a copy to the Employer, make. The Employer will, from time to time as the Works proceed, give to the Contractor possession of such further portions of the Site as may be required to enable the Contractor to proceed with the execution of the Works with due dispatch in accordance with such programme or proposals, as the case may be.

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Failure to Give Possession **42.2** If the Contractor suffers delay and/or incurs costs from failure on the part of the Employer to give possession in accordance with the terms of Sub-Clause 42. 1, the Engineer shall, after due consultation with the Employer and the Contractor, determine:

(a) any extension of time to which the Contractor is entitled under Clause 44, and

(b) the amount of such costs, which shall be added to the Contract Price,

and shall notify the Contractor accordingly, with a copy to the Employer.

Rights of Way and Facilities **42.3** The Contractor shall bear all costs and charges for special or temporary rights of way required by him in connection with access to the Site. The Contractor shall also provide at his own cost any additional facilities outside the Site required by him for the purposes of the Works.

Time for Completion **43.1** The whole of the Works and, if applicable, any Section required to be completed within a particular time as stated in the Appendix to Tender, shall be completed, in accordance with the provisions of Clause 48, within the time stated in the Appendix to Tender for the whole of the Works or the Section (as the case may be), calculated from the Commencement Date, or such extended time as may be allowed under Clause 44.

Extension of Time for Completion **44.1** In the event of:

(a) the amount or nature of extra or additional work,

(b) any cause of delay referred to in these Conditions,

(c) exceptionally adverse climatic conditions,

(d) any delay, impediment or prevention by the Employer, or

(e) other special circumstances which may occur, other than through a default of or breach of contract by the Contractor or for which he is responsible,

being such as fairly to entitle the Contractor to an extension of the Time for Completion of the Works, or any Section or part thereof, the Engineer shall, after due consultation with the Employer and the Contractor, determine the amount of such extension and shall notify the Contractor accordingly, with a copy to the Employer.

Contractor to Provide Notification and Detailed Particulars **44.2** Provided that the Engineer is not bound to make any determination unless the Contractor has

(a) within 28 days after such event has first arisen notified the Engineer with a copy to the Employer, and

(b) within 28 days, or such other reasonable time as may be agreed by the Engineer, after such notification submitted to the Engineer detailed particulars of any extension of time to which he may consider himself entitled in order that such submission may be investigated at the time.

Interim Determination of Extension **44.3** Provided also that where an event has a continuing effect such that it is not practicable for the Contractor to submit detailed particulars within the period of 28 days referred to in Sub-Clause 44.2(b), he shall nevertheless be entitled to an extension of time provided that he has submitted to the Engineer interim particulars at intervals of not more than 28 days and final particulars within 28 days of the end of the effects resulting from the event. On receipt of such interim particulars, the Engineer shall, without undue delay, make an interim determination of extension of time and, on receipt of the final particulars, the Engineer shall review all the circumstances and shall determine an overall extension of time in regard to the event. In both such cases the Engineer shall make his determination after due consultation with the Employer and the Contractor and shall notify the Contractor of the determination, with a copy to the Employer. No final review shall result in a decrease of any extension of time already determined by the Engineer.

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Restriction on Working Hours **45.1** Subject to any provision to the contrary contained in the Contract, none of the Works shall, save as hereinafter provided, be carried on during the night or on locally recognised days of rest without the consent of the Engineer, except when work is unavoidable or absolutely necessary for the saving of life or property or for the safety of the Works, in which case the Contractor shall immediately advise the Engineer. Provided that the provisions of this Clause shall not be applicable in the case of any work which it is customary to carry out by multiple shifts.

Rate of Progress **46.1** If for any reason, which does not entitle the Contractor to an extension of time, the rate of progress of the Works or any Section is at any time, in the opinion of the Engineer, too slow to comply with the Time for Completion, the Engineer shall so notify the Contractor who shall thereupon take such steps as are necessary, subject to the consent of the Engineer, to expedite progress so as to comply with the Time for Completion. The Contractor shall not be entitled to any additional payment for taking such steps. If, as a result of any notice given by the Engineer under this Clause, the Contractor considers that it is necessary to do any work at night or on locally recognised days of rest, he shall be entitled to seek the consent of the Engineer so to do. Provided that if any steps, taken by the Contractor in meeting his obligations under this Clause, involve the Employer in additional supervision costs, such costs shall, after due consultation with the Employer and the Contractor, be determined by the Engineer and shall be recoverable from the Contractor by the Employer, and may be deducted by the Employer from any monies due or to become due to the Contractor and the Engineer shall notify the Contractor accordingly, with a copy to the Employer.

Liquidated Damages for Delay **47.1** If the Contractor fails to comply with the Time for Completion in accordance with Clause 48, for the whole of the Works or, if applicable, any Section within the relevant time prescribed by Clause 43, then the Contractor shall pay to the Employer the relevant sum stated in the Appendix to Tender as liquidated damages for such default and not as a penalty (which sum shall be the only monies due from the Contractor for such default) for every day or part of a day which shall elapse between the relevant Time for Completion and the date stated in a Taking-Over Certificate of the whole of the Works or the relevant Section, subject to the applicable limit stated in the Appendix to Tender. The Employer may, without prejudice to any other method of recovery, deduct the amount of such damages from any monies due or to become due to the Contractor. The payment or deduction of such damages shall not relieve the Contractor from his obligation to complete the Works, or from any other of his obligations and liabilities under the Contract.

Reduction of Liquidated Damages **47.2** If, before the Time for Completion of the whole of the Works or, if applicable, any Section, a Taking-Over Certificate has been issued for any part of the Works or of a Section, the liquidated damages for delay in completion of the remainder of the Works or of that Section shall, for any period of delay after the date stated in such Taking-Over Certificate, and in the absence of alternative provisions in the Contract, be reduced in the proportion which the value of the part so certified bears to the value of the whole of the Works or Section, as applicable. The provisions of this Sub-Clause shall only apply to the rate of liquidated damages and shall not affect the limit thereof.

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Taking-Over Certificate **48.1** When the whole of the Works have been substantially completed and have satisfactorily passed any Tests on Completion prescribed by the Contract, the Contractor may give a notice to that effect to the Engineer, with a copy to the Employer, accompanied by a written undertaking to finish with due expedition any outstanding work during the Defects Liability Period. Such notice and undertaking shall be deemed to be a request by the Contractor for the Engineer to issue a Taking-Over Certificate in respect of the Works. The Engineer shall, within 21 days of the date of delivery of such notice, either issue to the Contractor, with a copy to the Employer, a Taking-Over Certificate, stating the date on which, in his opinion, the Works were substantially completed in accordance with the Contract, or give instructions in writing to the Contractor specifying all the work which, in the Engineer's opinion, is required to be done by the Contractor before the issue of such Certificate. The Engineer shall also notify the Contractor of any defects in the Works affecting substantial completion that may appear after such instructions and before completion of the Works specified therein. The Contractor shall be entitled to receive such Taking-Over Certificate within 21 days of completion, to the satisfaction of the Engineer, of the Works so specified and remedying any defects so notified.

Taking Over of Sections or Parts **48.2** Similarly, in accordance with the procedure set out in Sub-Clause 48.1, the Contractor may request and the Engineer shall issue a Taking-Over Certificate in respect of:

(a) any Section in respect of which a separate Time for Completion is provided in the Appendix to Tender,

(b) any substantial part of the Permanent Works which has been both completed to the satisfaction of the Engineer and, otherwise than as provided for in the Contract, occupied or used by the Employer, or

(c) any part of the Permanent Works which the Employer has elected to occupy or use prior to completion (where such prior occupation or use is not provided for in the Contract or has not been agreed by the Contractor as a temporary measure).

Substantial Completion of Parts **48.3** If any part of the Permanent Works has been substantially completed and has satisfactorily passed any Tests on Completion prescribed by the Contract, the Engineer may issue a Taking-Over Certificate in respect of that part of the Permanent Works before completion of the whole of the Works and, upon the issue of such Certificate, the Contractor shall be deemed to have undertaken to complete with due expedition any outstanding work in that part of the Permanent Works during the Defects Liability Period.

Surfaces Requiring Reinstatement **48.4** Provided that a Taking-Over Certificate given in respect of any Section or part of the Permanent Works before completion of the whole of the Works shall not be deemed to certify completion of any ground or surfaces requiring reinstatement, unless such Taking-Over Certificate shall expressly so state.

Defects Liability

Defects Liability Period **49.1** In these Conditions the expression "Defects Liability Period" shall mean the defects liability period named in the Appendix to Tender, calculated from:

(a) the date of completion of the Works certified by the Engineer in accordance with Clause 48, or

(b) in the event of more than one certificate having been issued by the Engineer under Clause 48, the respective dates so certified,

and in relation to the Defects Liability Period the expression "the Works" shall be construed accordingly.

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Completion of Outstanding Work and Remedying Defects **49.2** To the intent that the Works shall, at or as soon as practicable after the expiration of the Defects Liability Period, be delivered to the Employer in the condition required by the Contract, fair wear and tear excepted, to the satisfaction of the Engineer, the Contractor shall:

(a) complete the work, if any, outstanding on the date stated in the Taking-Over Certificate as soon as practicable after such date, and

(b) execute all such work of amendment, reconstruction, and remedying defects, shrinkages or other faults as the Engineer may, during the Defects Liability Period or within 14 days after its expiration, as a result of an inspection made by or on behalf of the Engineer prior to its expiration, instruct the Contractor to execute.

Cost of Remedying Defects **49.3** All work referred to in Sub-Clause 49.2 (b) shall be executed by the Contractor at his own cost if the necessity thereof is, in the opinion of the Engineer, due to:

(a) the use of materials, Plant or workmanship not in accordance with the Contract,

(b) where the Contractor is responsible for the design of part of the Permanent Works, any fault in such design, or

(c) the neglect or failure on the part of the Contractor to comply with any obligation, expressed or implied, on the Contractor's part under the Contract.

If, in the opinion of the Engineer, such necessity is due to any other cause, he shall determine an addition to the Contract Price in accordance with Clause 52 and shall notify the Contractor accordingly, with a copy to the Employer.

Contractor's Failure to Carry Out Instructions **49.4** In case of default on the part of the Contractor in carrying out such instruction within a reasonable time, the Employer shall be entitled to employ and pay other persons to carry out the same and if such work is work which, in the opinion of the Engineer, the Contractor was liable to do at his own cost under the Contract, then all costs consequent thereon or incidental thereto shall, after due consultation with the Employer and the Contractor, be determined by the Engineer and shall be recoverable from the Contractor by the Employer, and may be deducted by the Employer from any monies due or to become due to the Contractor and the Engineer shall notify the Contractor accordingly, with a copy to the Employer.

Contractor to Search **50.1** If any defect, shrinkage or other fault in the Works appears at any time prior to the end of the Defects Liability Period, the Engineer may instruct the Contractor, with copy to the Employer, to search under the directions of the Engineer for the cause thereof. Unless such defect, shrinkage or other fault is one for which the Contractor is liable under the Contract, the Engineer shall, after due consultation with the Employer and the Contractor, determine the amount in respect of the costs of such search incurred by the Contractor, which shall be added to the Contract Price and shall notify the Contractor accordingly, with a copy to the Employer. If such defect, shrinkage or other fault is one for which the Contractor is liable, the cost of the work carried out in searching as aforesaid shall be borne by the Contractor and he shall in such case remedy such defect, shrinkage or other fault at his own cost in accordance with the provisions of Clause 49.

Alterations, Additions and Omissions

Variations **51.1** The Engineer shall make any variation of the form, quality or quantity of the Works or any part thereof that may, in his opinion, be necessary and for that purpose, or if for any other reason it shall, in his opinion, be appropriate, he shall have the authority to instruct the Contractor to do and the Contractor shall do any of the following:

(a) increase or decrease the quantity of any work included in the Contract,

(b) omit any such work (but not if the omitted work is to be carried out by the Employer or by another contractor),

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(c) change the character or quality or kind of any such work,

(d) change the levels, lines, position and dimensions of any part of the Works,

(e) execute additional work of any kind necessary for the completion of the Works, or

(f) change any specified sequence or timing of construction of any part of the Works.

No such variation shall in any way vitiate or invalidate the Contract, but the effect, if any, of all such variations shall be valued in accordance with Clause 52. Provided that where the issue of an instruction to vary the Works is necessitated by some default of or breach of contract by the Contractor or for which he is responsible, any additional cost attributable to such default shall be borne by the Contractor.

Instructions for Variations **51.2** The Contractor shall not make any such variation without an instruction of the Engineer. Provided that no instruction shall be required for increase or decrease in the quantity of any work where such increase or decrease is not the result of an instruction given under this Clause, but is the result of the quantities exceeding or being less than those stated in the Bill of Quantities.

Valuation of Variations **52.1** All variations referred to in Clause 51 and any additions to the Contract Price which are required to be determined in accordance with Clause 52 (for the purposes of this Clause referred to as "varied work"), shall be valued at the rates and prices set out in the Contract if, in the opinion of the Engineer, the same shall be applicable. If the Contract does not contain any rates or prices applicable to the varied work, the rates and prices in the Contract shall be used as the basis for valuation so far as may be reasonable, failing which, after due consultation by the Engineer with the Employer and the Contractor, suitable rates or prices shall be agreed upon between the Engineer and the Contractor. In the event of disagreement the Engineer shall fix such rates or prices as are, in his opinion, appropriate and shall notify the Contractor accordingly, with a copy to the Employer. Until such time as rates or prices are agreed or fixed, the Engineer shall determine provisional rates or prices to enable on-account payments to be included in certificates issued in accordance with Clause 60.

Power of Engineer to Fix Rates **52.2** Provided that if the nature or amount of any varied work relative to the nature or amount of the whole of the Works or to any part thereof, is such that, in the opinion of the Engineer, the rate or price contained in the Contract for any item of the Works is, by reason of such varied work, rendered inappropriate or inapplicable, then, after due consultation by the Engineer with the Employer and the Contractor, a suitable rate or price shall be agreed upon between the Engineer and the Contractor. In the event of disagreement the Engineer shall fix such other rate or price as is, in his opinion, appropriate and shall notify the Contractor accordingly, with a copy to the Employer. Until such time as rates or prices are agreed or fixed, the Engineer shall determine provisional rates or prices to enable on-account payments to be included in certificates issued in accordance with Clause 60.

Provided also that no varied work instructed to be done by the Engineer pursuant to Clause 51 shall be valued under Sub-Clause 52.1 or under this Sub-Clause unless, within 14 days of the date of such instruction and, other than in the case of omitted work, before the commencement of the varied work, notice shall have been given either:

(a) by the Contractor to the Engineer of his intention to claim extra payment or a varied rate or price, or

(b) by the Engineer to the Contractor of his intention to vary a rate or price.

Variations Exceeding 15 per cent **52.3** If, on the issue of the Taking-Over Certificate for the whole of the Works, it is found that as a result of:

(a) all varied work valued under Sub-Clauses 52.1 and 52.2, and

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(b) all adjustments upon measurement of the estimated quantities set out in the Bill of Quantities, excluding Provisional Sums, dayworks and adjustments of price made under Clause 70,

but not from any other cause, there have been additions to or deductions from the Contract Price which taken together are in excess of 15 per cent of the "Effective Contract Price" (which for the purposes of this Sub-Clause shall mean the Contract Price, excluding Provisional Sums and allowance for dayworks, if any) then and in such event (subject to any action already taken under any other Sub-Clause of this Clause), after due consultation by the Engineer with the Employer and the Contractor, there shall be added to or deducted from the Contract Price such further sum as may be agreed between the Contractor and the Engineer or, failing agreement, determined by the Engineer having regard to the Contractor's Site and general overhead costs of the Contract. The Engineer shall notify the Contractor of any determination made under this Sub-Clause, with a copy to the Employer. Such sum shall be based only on the amount by which such additions or deductions shall be in excess of 15 per cent of the Effective Contract Price.

Daywork **52.4** The Engineer may, if in his opinion it is necessary or desirable, issue an instruction that any varied work shall be executed on a daywork basis. The Contractor shall then be paid for such varied work under the terms set out in the daywork schedule included in the Contract and at the rates and prices affixed thereto by him in the Tender.

The Contractor shall furnish to the Engineer such receipts or other vouchers as may be necessary to prove the amounts paid and, before ordering materials, shall submit to the Engineer quotations for the same for his approval.

In respect of such of the Works executed on a daywork basis, the Contractor shall, during the continuance of such work, deliver each day to the Engineer an exact list in duplicate of the names, occupation and time of all workmen employed on such work and a statement, also in duplicate, showing the description and quantity of all materials and Contractor's Equipment used thereon or therefor other than Contractor's Equipment which is included in the percentage addition in accordance with such daywork schedule. One copy of each list and statement will, if correct, or when agreed, be signed by the Engineer and returned to the Contractor.

At the end of each month the Contractor shall deliver to the Engineer a priced statement of the labour, materials and Contractor's Equipment, except as aforesaid, used and the Contractor shall not be entitled to any payment unless such lists and statements have been fully and punctually rendered. Provided always that if the Engineer considers that for any reason the sending of such lists or statements by the Contractor, in accordance with the foregoing provision, was impracticable he shall nevertheless be entitled to authorise payment for such work, either as daywork, on being satisfied as to the time employed and the labour, materials and Contractor's Equipment used on such work, or at such value therefor as shall, in his opinion, be fair and reasonable.

Procedure for Claims

Notice of Claims **53.1** Notwithstanding any other provision of the Contract, if the Contractor intends to claim any additional payment pursuant to any Clause of these Conditions or otherwise, he shall give notice of his intention to the Engineer, with a copy to the Employer, within 28 days after the event giving rise to the claim has first arisen.

Contemporary Records **53.2** Upon the happening of the event referred to in Sub-Clause 53.1, the Contractor shall keep such contemporary records as may reasonably be necessary to support any claim he may subsequently wish to make. Without necessarily admitting the Employer's liability, the Engineer shall, on receipt of a notice under Sub-Clause 53.1, inspect such contemporary records and may instruct the Contractor to keep

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any further contemporary records as are reasonable and may be material to the claim of which notice has been given. The Contractor shall permit the Engineer to inspect all records kept pursuant to this Sub-Clause and shall supply him with copies thereof as and when the Engineer so instructs.

Substantiation of Claims **53.3** Within 28 days, or such other reasonable time as may be agreed by the Engineer, of giving notice under Sub-Clause 53.1, the Contractor shall send to the Engineer an account giving detailed particulars of the amount claimed and the grounds upon which the claim is based. Where the event giving rise to the claim has a continuing effect, such account shall be considered to be an interim account and the Contractor shall, at such intervals as the Engineer may reasonably require, send further interim accounts giving the accumulated amount of the claim and any further grounds upon which it is based. In cases where interim accounts are sent to the Engineer, the Contractor shall send a final account within 28 days of the end of the effects resulting from the event. The Contractor shall, if required by the Engineer so to do, copy to the Employer all accounts sent to the Engineer pursuant to this Sub-Clause.

Failure to Comply **53.4** If the Contractor fails to comply with any of the provisions of this Clause in respect of any claim which he seeks to make, his entitlement to payment in respect thereof shall not exceed such amount as the Engineer or any arbitrator or arbitrators appointed pursuant to Sub-Clause 67.3 assessing the claim considers to be verified by contemporary records (whether or not such records were brought to the Engineer's notice as required under Sub-Clauses 53.2 and 53.3).

Payment of Claims **53.5** The Contractor shall be entitled to have included in any interim payment certified by the Engineer pursuant to Clause 60 such amount in respect of any claim as the Engineer, after due consultation with the Employer and the Contractor, may consider due to the Contractor provided that the Contractor has supplied sufficient particulars to enable the Engineer to determine the amount due. If such particulars are insufficient to substantiate the whole of the claim, the Contractor shall be entitled to payment in respect of such part of the claim as such particulars may substantiate to the satisfaction of the Engineer. The Engineer shall notify the Contractor of any determination made under this Sub-Clause, with a copy to the Employer.

Contractor's Equipment, Temporary Works and Materials

Contractor's Equipment, Temporary Works and Materials; Exclusive Use for the Works **54.1** All Contractor's Equipment, Temporary Works and materials provided by the Contractor shall, when brought on to the Site, be deemed to be exclusively intended for the execution of the Works and the Contractor shall not remove the same or any part thereof, except for the purpose of moving it from one part of the Site to another, without the consent of the Engineer. Provided that consent shall not be required for vehicles engaged in transporting any staff, labour, Contractor's Equipment, Temporary Works, Plant or materials to or from the Site.

Employer not Liable for Damage **54.2** The Employer shall not at any time be liable, save as mentioned in Clauses 20 and 65, for the loss of or damage to any of the said Contractor's Equipment, Temporary Works or materials.

Customs Clearance **54.3** The Employer will use his best endeavours in assisting the Contractor, where required, in obtaining clearance through the Customs of Contractor's Equipment, materials and other things required for the Works.

Re-export of Contractor's Equipment **54.4** In respect of any Contractor's Equipment which the Contractor has imported for the purposes of the Works, the Employer will use his best endeavours to assist the Contractor, where required, in procuring any necessary Government consent to the re-export of such Contractor's Equipment by the Contractor upon the removal thereof pursuant to the terms of the Contract.

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Conditions of Hire of Contractor's Equipment **54.5** With a view to securing, in the event of termination under Clause 63, the continued availability, for the purpose of executing the Works, of any hired Contractor's Equipment, the Contractor shall not bring on to the Site any hired Contractor's Equipment unless there is an agreement for the hire thereof (which agreement shall be deemed not to include an agreement for hire purchase) which contains a provision that the owner thereof will, on request in writing made by the Employer within 7 days after the date on which any termination has become effective, and on the Employer undertaking to pay all hire charges in respect thereof from such date, hire such Contractor's Equipment to the Employer on the same terms in all respects as the same was hired to the Contractor save that the Employer shall be entitled to permit the use thereof by any other contractor employed by him for the purpose of executing and completing the Works and remedying any defects therein, under the terms of the said Clause 63.

Costs for the Purpose of Clause 63 **54.6** In the event of the Employer entering into any agreement for the hire of Contractor's Equipment pursuant to Sub-Clause 54.5, all sums properly paid by the Employer under the provisions of any such agreement and all costs incurred by him (including stamp duties) in entering into such agreement shall be deemed, for the purpose of Clause 63, to be part of the cost of executing and completing the Works and the remedying of any defects therein.

Incorporation of Clause in Subcontracts **54.7** The Contractor shall, where entering into any subcontract for the execution of any part of the Works, incorporate in such subcontract (by reference or otherwise) the provisions of this Clause in relation to Contractor's Equipment, Temporary Works or materials brought on to the Site by the Subcontractor.

Approval of Materials not Implied **54.8** The operation of this Clause shall not be deemed to imply any approval by the Engineer of the materials or other matters referred to therein nor shall it prevent the rejection of any such materials at any time by the Engineer.

Measurement

Quantities **55.1** The quantities set out in the Bill of Quantities are the estimated quantities for the Works, and they are not to be taken as the actual and correct quantities of the Works to be executed by the Contractor in fulfilment of his obligations under the Contract.

Works to be Measured **56.1** The Engineer shall, except as otherwise stated, ascertain and determine by measurement the value of the Works in accordance with the Contract and the Contractor shall be paid that value in accordance with Clause 60. The Engineer shall, when he requires any part of the Works to be measured, give reasonable notice to the Contractor's authorised agent, who shall:

(a) forthwith attend or send a qualified representative to assist the Engineer in making such measurement, and

(b) supply all particulars required by the Engineer.

Should the Contractor not attend, or neglect or omit to send such representative, then the measurement made by the Engineer or approved by him shall be taken to be the correct measurement of such part of the Works. For the purpose of measuring such Permanent Works as are to be measured by records and drawings, the Engineer shall prepare records and drawings as the work proceeds and the Contractor, as and when called upon to do so in writing, shall, within 14 days, attend to examine and agree such records and drawings with the Engineer and shall sign the same when so agreed. If the Contractor does not attend to examine and agree such records and drawings, they shall be taken to be correct. If, after examination of such records and drawings, the Contractor does not agree the same or does not sign the same as agreed, they shall nevertheless be taken to be correct, unless the Contractor, within 14 days of such examination, lodges with the Engineer notice of the respects in which such records and drawings are claimed by him to be incorrect. On receipt of such notice, the Engineer shall review the records and drawings and either confirm or vary them.

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Method of Measurement **57.1** The Works shall be measured net, notwithstanding any general or local custom, except where otherwise provided for in the Contract.

Breakdown of Lump Sum Items **57.2** For the purposes of statements submitted in accordance with Sub-Clause 60.1, the Contractor shall submit to the Engineer, within 28 days after the receipt of the Letter of Acceptance, a breakdown for each of the lump sum items contained in the Tender. Such breakdowns shall be subject to the approval of the Engineer.

Provisional Sums

Definition of "Provisional Sum" **58.1** "Provisional Sum" means a sum included in the Contract and so designated in the Bill of Quantities for the execution of any part of the Works or for the supply of goods, materials, Plant or services, or for contingencies, which sum may be used, in whole or in part, or not at all, on the instructions of the Engineer. The Contractor shall be entitled to only such amounts in respect of the work, supply or contingencies to which such Provisional Sums relate as the Engineer shall determine in accordance with this Clause. The Engineer shall notify the Contractor of any determination made under this Sub-Clause, with a copy to the Employer.

Use of Provisional Sums **58.2** In respect of every Provisional Sum the Engineer shall have authority to issue instructions for the execution of work or for the supply of goods, materials, Plant or services by:

(a) the Contractor, in which case the Contractor shall be entitled to an amount equal to the value thereof determined in accordance with Clause 52, and

(b) a nominated Subcontractor, as hereinafter defined, in which case the sum to be paid to the Contractor therefor shall be determined and paid in accordance with Sub-Clause 59.4.

Production of Vouchers **58.3** The Contractor shall produce to the Engineer all quotations, invoices, vouchers and accounts or receipts in connection with expenditure in respect of Provisional Sums, except where work is valued in accordance with rates or prices set out in the Tender.

Nominated Subcontractors

Definition of "Nominated Subcontractors" **59.1** All specialists, merchants, tradesmen and others executing any work or supplying any goods, materials, Plant or services for which Provisional Sums are included in the Contract, who may have been or be nominated or selected or approved by the Employer or the Engineer, and all persons to whom by virtue of the provisions of the Contract the Contractor is required to subcontract shall, in the execution of such work or the supply of such goods, materials, Plant or services, be deemed to be subcontractors to the Contractor and are referred to in this Contract as "nominated Subcontractors".

Nominated Subcontractors; Objection to Nomination **59.2** The Contractor shall not be required by the Employer or the Engineer, or be deemed to be under any obligation, to employ any nominated Subcontractor against whom the Contractor may raise reasonable objection, or who declines to enter into a subcontract with the Contractor containing provisions:

(a) that in respect of the work, goods, materials, Plant or services the subject of the subcontract, the nominated Subcontractor will undertake towards the Contractor such obligations and liabilities as will enable the Contractor to discharge his own obligations and liabilities towards the Employer under the terms of the Contract and will save harmless and indemnify the Contractor from and against the same and from all claims, proceedings, damages, costs, charges and expenses whatsoever arising out of or in connection therewith, or arising out of or in connection with any failure to perform such obligations or to fulfil such liabilities, and

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(b) that the nominated Subcontractor will save harmless and indemnify the Contractor from and against any negligence by the nominated Subcontractor, his agents, workmen and servants and from and against any misuse by him or them of any Temporary Works provided by the Contractor for the purposes of the Contract and from all claims as aforesaid.

Design Requirements to be Expressly Stated

59.3 If in connection with any Provisional Sum the services to be provided include any matter of design or specification of any part of the Permanent Works or of any Plant to be incorporated therein, such requirement shall be expressly stated in the Contract and shall be included in any nominated Subcontract. The nominated Subcontract shall specify that the nominated Subcontractor providing such services will save harmless and indemnify the Contractor from and against the same and from all claims, proceedings, damages, costs, charges and expenses whatsoever arising out of or in connection with any failure to perform such obligations or to fulfil such liabilities.

Payments to Nominated Subcontractors

59.4 For all work executed or goods, materials, Plant or services supplied by any nominated Subcontractor, the Contractor shall be entitled to:

(a) the actual price paid or due to be paid by the Contractor, on the instructions of the Engineer, and in accordance with the subcontract;

(b) in respect of labour supplied by the Contractor, the sum, if any, entered in the Bill of Quantities or, if instructed by the Engineer pursuant to paragraph (a) of Sub-Clause 58.2, as may be determined in accordance with Clause 52; and

(c) in respect of all other charges and profit, a sum being a percentage rate of the actual price paid or due to be paid calculated, where provision has been made in the Bill of Quantities for a rate to be set against the relevant Provisional Sum, at the rate inserted by the Contractor against that item or, where no such provision has been made, at the rate inserted by the Contractor in the Appendix to Tender and repeated where provision for such is made in a special item provided in the Bill of Quantities for such purpose.

Certification of Payments to Nominated Subcontractors

59.5 Before issuing, under Clause 60, any certificate, which includes any payment in respect of work done or goods, materials, Plant or services supplied by any nominated Subcontractor, the Engineer shall be entitled to demand from the Contractor reasonable proof that all payments, less retentions, included in previous certificates in respect of the work or goods, materials, Plant or services of such nominated Subcontractor have been paid or discharged by the Contractor. If the Contractor fails to supply such proof then, unless the Contractor:

(a) satisfies the Engineer in writing that he has reasonable cause for withholding or refusing to make such payments, and

(b) produces to the Engineer reasonable proof that he has so informed such nominated Subcontractor in writing,

the Employer shall be entitled to pay to such nominated Subcontractor direct, upon the certificate of the Engineer, all payments, less retentions, provided for in the nominated Subcontract, which the Contractor has failed to make to such nominated Subcontractor and to deduct by way of set-off the amount so paid by the Employer from any sums due or to become due from the Employer to the Contractor.

Provided that, where the Engineer has certified and the Employer has paid direct as aforesaid, the Engineer shall, in issuing any further certificate in favour of the Contractor, deduct from the amount thereof the amount so paid, direct as aforesaid, but shall not withhold or delay the issue of the certificate itself when due to be issued under the terms of the Contract.

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Certificates and Payment

Monthly Statements **60.1** The Contractor shall submit to the Engineer after the end of each month six copies, each signed by the Contractor's representative approved by the Engineer in accordance with Sub-Clause 15.1, of a statement, in such form as the Engineer may from time to time prescribe, showing the amounts to which the Contractor considers himself to be entitled up to the end of the month in respect of:

(a) the value of the Permanent Works executed,

(b) any other items in the Bill of Quantities including those for Contractor's Equipment, Temporary Works, dayworks and the like,

(c) the percentage of the invoice value of listed materials, all as stated in the Appendix to Tender, and Plant delivered by the Contractor on the Site for incorporation in the Permanent Works but not incorporated in such Works,

(d) adjustments under Clause 70, and

(e) any other sum to which the Contractor may be entitled under the Contract or otherwise.

Monthly Payments **60.2** The Engineer shall, within 28 days of receiving such statement, deliver to the Employer an Interim Payment Certificate stating the amount of payment to the Contractor which the Engineer considers due and payable in respect of such statement, subject:

(a) firstly, to the retention of the amount calculated by applying the Percentage of Retention stated in the Appendix to Tender, to the amount to which the Contractor is entitled under paragraphs (a), (b), (c) and (e) of Sub-Clause 60.1 until the amount so retained reaches the Limit of Retention Money stated in the Appendix to Tender, and

(b) secondly, to the deduction, other than pursuant to Clause 47, of any sums which may have become due and payable by the Contractor to the Employer.

Provided that the Engineer shall not be bound to certify any payment under this Sub-Clause if the net amount thereof, after all retentions and deductions, would be less than the Minimum Amount of Interim Payment Certificates stated in the Appendix to Tender.

Notwithstanding the terms of this Clause or any other Clause of the Contract no amount will be certified by the Engineer for payment until the performance security, if required under the Contract, has been provided by the Contractor and approved by the Employer.

Payment of Retention Money **60.3** (a) Upon the issue of the Taking-Over Certificate with respect to the whole of the Works, one half of the Retention Money, or upon the issue of a Taking-Over Certificate with respect to a Section or part of the Permanent Works only such proportion thereof as the Engineer determines having regard to the relative value of such Section or part of the Permanent Works, shall be certified by the Engineer for payment to the Contractor.

(b) Upon the expiration of the Defects Liability Period for the Works the other half of the Retention Money shall be certified by the Engineer for payment to the Contractor. Provided that, in the event of different Defects Liability Periods having become applicable to different Sections or parts of the Permanent Works pursuant to Clause 48, the expression "expiration of the Defects Liability Period" shall, for the purposes of this Sub-Clause, be deemed to mean the expiration of the latest of such periods. Provided also that if at such time there shall remain to be executed by the Contractor any work instructed, pursuant to Clauses 49 and 50, in respect of the Works, the Engineer shall be entitled to withhold certification until completion of such work of so much of the balance of the Retention Money as shall, in the opinion of the Engineer, represent the cost of the work remaining to be executed.

Correction of Certificates **60.4** The Engineer may by any Interim Payment Certificate make any correction or modification in any previous Interim Payment Certificate which shall have been issued by him and shall have authority, if any work is not being carried out to his satisfaction, to omit or reduce the value of such work in any Interim Payment Certificate.

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Statement at Completion **60.5** Not later than 84 days after the issue of the Taking-Over Certificate in respect of the whole of the Works, the Contractor shall submit to the Engineer six copies of a Statement at Completion with supporting documents showing in detail, in the form approved by the Engineer:

(a) the final value of all work done in accordance with the Contract up to the date stated in such Taking-Over Certificate,

(b) any further sums which the Contractor considers to be due, and

(c) an estimate of amounts which the Contractor considers will become due to him under the Contract.

The estimated amounts shall be shown separately in such Statement at Completion. The Engineer shall certify payment in accordance with Sub-Clause 60.2.

Final Statement **60.6** Not later than 56 days after the issue of the Defects Liability Certificate pursuant to Sub-Clause 62.1, the Contractor shall submit to the Engineer for consideration six copies of a draft final statement with supporting documents showing in detail, in the form approved by the Engineer:

(a) the value of all work done in accordance with the Contract, and

(b) any further sums which the Contractor considers to be due to him under the Contract or otherwise.

If the Engineer disagrees with or cannot verify any part of the draft final statement, the Contractor shall submit such further information as the Engineer may reasonably require and shall make such changes in the draft as may be agreed between them. The Contractor shall then prepare and submit to the Engineer the final statement as agreed (for the purposes of these Conditions referred to as the "Final Statement").

If, following discussions between the Engineer and the Contractor and any changes to the draft final statement which may be agreed between them, it becomes evident that a dispute exists, the Engineer shall deliver to the Employer an Interim Payment Certificate for those parts of the draft final statement, if any, which are not in dispute. The dispute may then be settled in accordance with Clause 67.

Discharge **60.7** Upon submission of the Final Statement, the Contractor shall give to the Employer, with a copy to the Engineer, a written discharge confirming that the total of the Final Statement represents full and final settlement of all monies due to the Contractor arising out of or in respect of the Contract. Provided that such discharge shall become effective only after payment due under the Final Payment Certificate issued pursuant to Sub-Clause 60.8 has been made and the performance security referred to in Sub-Clause 10.1, if any, has been returned to the Contractor.

Final Payment Certificate **60.8** Within 28 days after receipt of the Final Statement, and the written discharge, the Engineer shall issue to the Employer (with a copy to the Contractor) a Final Payment Certificate stating:

(a) the amount which, in the opinion of the Engineer, is finally due under the Contract or otherwise, and

(b) after giving credit to the Employer for all amounts previously paid by the Employer and for all sums to which the Employer is entitled other than under Clause 47, the balance, if any, due from the Employer to the Contractor or from the Contractor to the Employer as the case may be.

Cessation of Employer's Liability **60.9** The Employer shall not be liable to the Contractor for any matter or thing arising out of or in connection with the Contract or execution of the Works, unless the Contractor shall have included a claim in respect thereof in his Final Statement and (except in respect of matters or things arising after the issue of the Taking-Over Certificate in respect of the whole of the Works) in the Statement at Completion referred to in Sub-Clause 60.5.

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Time for Payment **60.10** The amount due to the Contractor under any Interim Payment Certificate issued by the Engineer pursuant to this Clause, or to any other term of the Contract, shall, subject to Clause 47, be paid by the Employer to the Contractor within 28 days after such Interim Payment Certificate has been delivered to the Employer, or, in the case of the Final Payment Certificate referred to in Sub-Clause 60.8, within 56 days, after such Final Payment Certificate has been delivered to the Employer. In the event of the failure of the Employer to make payment within the times stated, the Employer shall pay to the Contractor interest at the rate stated in the Appendix to Tender upon all sums unpaid from the date by which the same should have been paid. The provisions of this Sub-Clause are without prejudice to the Contractor's entitlement under Clause 69 or otherwise.

Approval only by Defects Liability Certificate **61.1** Only the Defects Liability Certificate, referred to in Clause 62, shall be deemed to constitute approval of the Works.

Defects Liability Certificate **62.1** The Contract shall not be considered as completed until a Defects Liability Certificate shall have been signed by the Engineer and delivered to the Employer, with a copy to the Contractor, stating the date on which the Contractor shall have completed his obligations to execute and complete the Works and remedy any defects therein to the Engineer's satisfaction. The Defects Liability Certificate shall be given by the Engineer within 28 days after the expiration of the Defects Liability Period, or, if different defects liability periods shall become applicable to different Sections or parts of the Permanent Works, the expiration of the latest such period, or as soon thereafter as any works instructed, pursuant to Clauses 49 and 50, have been completed to the satisfaction of the Engineer. Provided that the issue of the Defects Liability Certificate shall not be a condition precedent to payment to the Contractor of the second portion of the Retention Money in accordance with the conditions set out in Sub-Clause 60.3.

Unfulfilled Obligations **62.2** Notwithstanding the issue of the Defects Liability Certificate the Contractor and the Employer shall remain liable for the fulfilment of any obligation incurred under the provisions of the Contract prior to the issue of the Defects Liability Certificate which remains unperformed at the time such Defects Liability Certificate is issued and, for the purposes of determining the nature and extent of any such obligation, the Contract shall be deemed to remain in force between the parties to the Contract.

Remedies

Default of Contractor **63.1** If the Contractor is deemed by law unable to pay his debts as they fall due, or enters into voluntary or involuntary bankruptcy, liquidation or dissolution (other than a voluntary liquidation for the purposes of amalgamation or reconstruction), or becomes insolvent, or makes an arrangement with, or assignment in favour of, his creditors, or agrees to carry out the Contract under a committee of inspection of his creditors, or if a receiver, administrator, trustee or liquidator is appointed over any substantial part of his assets, or if, under any law or regulation relating to reorganization, arrangement or readjustment of debts, proceedings are commenced against the Contractor or resolutions passed in connection with dissolution or liquidation or if any steps are taken to enforce any security interest over a substantial part of the assets of the Contractor, or if any act is done or event occurs with respect to the Contractor or his assets which, under any applicable law has a substantially similar effect to any of the foregoing acts or events, or if the Contractor has contravened Sub-Clause 3.1, or has an execution levied on his goods, or if the Engineer certifies to the Employer, with a copy to the Contractor, that, in his opinion, the Contractor:

(a) has repudiated the Contract,

(b) without reasonable excuse has failed

(i) to commence the Works in accordance with Sub-Clause 41.1, or

(ii) to proceed with the Works, or any Section thereof, within 28 days after receiving notice pursuant to Sub-Clause 46.1,

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(c) has failed to comply with a notice issued pursuant to Sub-Clause 37.4 or an instruction issued pursuant to Sub-Clause 39.1 within 28 days after having received it,

(d) despite previous warning from the Engineer, in writing, is otherwise persistently or flagrantly neglecting to comply with any of his obligations under the Contract, or

(e) has contravened Sub-Clause 4.1,

then the Employer may, after giving 14 days' notice to the Contractor, enter upon the Site and the Works and terminate the employment of the Contractor without thereby releasing the Contractor from any of his obligations or liabilities under the Contract, or affecting the rights and authorities conferred on the Employer or the Engineer by the Contract, and may himself complete the Works or may employ any other contractor to complete the Works. The Employer or such other contractor may use for such completion so much of the Contractor's Equipment, Temporary Works and materials as he or they may think proper.

Valuation at Date of Termination **63.2** The Engineer shall, as soon as may be practicable after any such entry and termination by the Employer, fix and determine ex parte, or by or after reference to the parties or after such investigation or enquiries as he may think fit to make or institute, and shall certify:

a) what amount (if any) had, at the time of such entry and termination, been reasonably earned by or would reasonably accrue to the Contractor in respect of work then actually done by him under the Contract, and

(b) the value of any of the said unused or partially used materials, any Contractor's Equipment and any Temporary Works.

Payment after Termination **63.3** If the Employer terminates the Contractor's employment under this Clause, he shall not be liable to pay to the Contractor any further amount (including damages) in respect of the Contract until the expiration of the Defects Liability Period and there after until the costs of execution, completion and remedying of any defects, damages for delay in completion (if any) and all other expenses incurred by the Employer have been ascertained and the amount thereof certified by the Engineer. The Contractor shall then be entitled to receive only such sum (if any) as the Engineer may certify would have been payable to him upon due completion by him after deducting the said amount. If such amount exceeds the sum which would have been payable to the Contractor on due completion by him, then the Contractor shall, upon demand, pay to the Employer the amount of such excess and it shall be deemed a debt due by the Contractor to the Employer and shall be recoverable accordingly.

Assignment of Benefit of Agreement **63.4** Unless prohibited by law, the Contractor shall, if so instructed by the Engineer within 14 days of such entry and termination referred to in Sub-Clause 63.1, assign to the Employer the benefit of any agreement for the supply of any goods or materials or services and/or for the execution of any work for the purposes of the Contract, which the Contractor may have entered into.

Urgent Remedial Work **64.1** If, by reason of any accident, or failure, or other event occurring to, in, or in connection with the Works, or any part thereof, either during the execution of the Works, or during the Defects Liability Period, any remedial or other work is, in the opinion of the Engineer, urgently necessary for the safety of the Works and the Contractor is unable or unwilling at once to do such work, the Employer shall be entitled to employ and pay other persons to carry out such work as the Engineer may consider necessary. If the work or repair so done by the Employer is work which, in the opinion of the Engineer, the Contractor was liable to do at his own cost under the Contract, then all costs consequent thereon or incidental thereto shall, after due consultation with the Employer and the Contractor, be determined by the Engineer and shall be recoverable from the Contractor by the Employer, and may be deducted by the Employer from any monies due or to become due to the Contractor and the Engineer shall notify the Contractor accordingly, with a copy to the Employer. Provided that the Engineer shall, as soon after the occurrence of any such emergency as may be reasonably practicable, notify the Contractor thereof.

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Special Risks

No Liability for Special Risks **65.1** The Contractor shall be under no liability whatsoever in consequence of any of the special risks referred to in Sub-Clause 65.2, whether by way of indemnity or otherwise, for or in respect of:

(a) destruction of or damage to the Works, save to work condemned under the provisions of Clause 39 prior to the occurrence of any of the said special risks,

(b) destruction of or damage to property, whether of the Employer or third parties, or

(c) injury or loss of life.

Special Risks **65.2** The special risks are:

(a) the risks defined under paragraphs (a), (c), (d) and (e) of Sub-Clause 20.4, and

(b) the risks defined under paragraph (b) of Sub-Clause 20.4 insofar as these relate to the country in which the Works are to be executed.

Damage to Works by Special Risks **65.3** If the Works or any materials or Plant on or near or in transit to the Site, or any of the Contractor's Equipment, sustain destruction or damage by reason of any of the said special risks, the Contractor shall be entitled to payment in accordance with the Contract for any Permanent Works duly executed and for any materials or Plant so destroyed or damaged and, so far as may be required by the Engineer or as may be necessary for the completion of the Works, to payment for:

(a) rectifying any such destruction or damage to the Works, and

(b) replacing or rectifying such materials or Contractor's Equipment,

and the Engineer shall determine an addition to the Contract Price in accordance with Clause 52 (which shall in the case of the cost of replacement of Contractor's Equipment include the fair market value thereof as determined by the Engineer) and shall notify the Contractor accordingly, with a copy to the Employer.

Projectile, Missile **65.4** Destruction, damage, injury or loss of life caused by the explosion or impact, whenever and wherever occurring, of any mine, bomb, shell, grenade, or other projectile, missile, munition, or explosive of war, shall be deemed to be a consequence of the said special risks.

Increased Costs arising from Special Risks **65.5** Save to the extent that the Contractor is entitled to payment under any other provision of the Contract, the Employer shall repay to the Contractor any costs of the execution of the Works (other than such as may be attributable to the cost of reconstructing work condemned under the provisions of Clause 39 prior to the occurrence of any special risk) which are howsoever attributable to or consequent on or the result of or in any way whatsoever connected with the said special risks, subject however to the provisions in this Clause hereinafter contained in regard to outbreak of war, but the Contractor shall, as soon as any such cost comes to his knowledge, forthwith notify the Engineer thereof. The Engineer shall, after due consultation with the Employer and the Contractor, determine the amount of the Contractor's costs in respect thereof which shall be added to the Contract Price and shall notify the Contractor accordingly, with a copy to the Employer.

Outbreak of War **65.6** If, during the currency of the Contract, there is an outbreak of war, whether war is declared or not, in any part of the world which, whether financially or otherwise, materially affects the execution of the Works, the Contractor shall, unless and until the Contract is terminated under the provisions of this Clause, continue to use his best endeavours to complete the execution of the Works. Provided that the Employer shall be entitled, at any time after such outbreak of war, to terminate the Contract by giving notice to the Contractor and, upon such notice being given, the Contract shall, except as to the rights of the parties under this Clause and Clause 67, terminate, but without prejudice to the rights of either party in respect of any antecedent breach thereof.

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Removal of Contractor's Equipment on Termination

65.7 If the Contract is terminated under the provisions of Sub-Clause 65.6, the Contractor shall, with all reasonable dispatch, remove from the Site all Contractor's Equipment and shall give similar facilities to his Subcontractors to do so.

Payment if Contract Terminated

65.8 If the Contract is terminated as aforesaid, the Contractor shall be paid by the Employer, insofar as such amounts or items have not already been covered by payments on account made to the Contractor, for all work executed prior to the date of termination at the rates and prices provided in the Contract and in addition:

(a) the amounts payable in respect of any preliminary items referred to in the Bill of Quantities, so far as the work or service comprised therein has been carried out or performed, and a proper proportion of any such items which have been partially carried out or performed;

(b) the cost of materials, Plant or goods reasonably ordered for the Works which have been delivered to the Contractor or of which the Contractor is legally liable to accept delivery, such materials, Plant or goods becoming the property of the Employer upon such payments being made by him;

(c) a sum being the amount of any expenditure reasonably incurred by the Contractor in the expectation of completing the whole of the Works insofar as such expenditure has not been covered by any other payments referred to in this Sub-Clause;

(d) any additional sum payable under the provisions of Sub-Clauses 65.3 and 65.5;

(e) such proportion of the cost as may be reasonable, taking into account payments made or to be made for work executed, of removal of Contractor's Equipment under Sub-Clause 65.7 and, if required by the Contractor, return thereof to the Contractor's main plant yard in his country of registration or to other destination, at no greater cost; and

(f) the reasonable cost of repatriation of all the Contractor's staff and workmen employed on or in connection with the Works at the time of such termination.

Provided that against any payment due from the Employer under this Sub-Clause, the Employer shall be entitled to be credited with any outstanding balances due from the Contractor for advances in respect of Contractor's Equipment, materials and Plant and any other sums which, at the date of termination, were recoverable by the Employer from the Contractor under the terms of the Contract. Any sums payable under this Sub-Clause shall, after due consultation with the Employer and the Contractor, be determined by the Engineer who shall notify the Contractor accordingly, with a copy to the Employer.

Release from Performance

Payment in Event of Release from Performance

66.1 If any circumstance outside the control of both parties arises after the issue of the Letter of Acceptance which renders it impossible or unlawful for either or both parties to fulfil his or their contractual obligations, or under the law governing the Contract the parties are released from further performance, then the parties shall be discharged from the Contract, except as to their rights under this Clause and Clause 67 and without prejudice to the rights of either party in respect of any antecedent breach of the Contract, and the sum payable by the Employer to the Contractor in respect of the work executed shall be the same as that which would have been payable under Clause 65 if the Contract had been terminated under the provisions of Clause 65.

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Settlement of Disputes

Engineer's Decision **67.1** If a dispute of any kind whatsoever arises between the Employer and the Contractor in connection with, or arising out of, the Contract or the execution of the Works, whether during the execution of the Works or after their completion and whether before or after repudiation or other termination of the Contract, including any dispute as to any opinion, instruction, determination, certificate or valuation of the Engineer, the matter in dispute shall, in the first place, be referred in writing to the Engineer, with a copy to the other party. Such reference shall state that it is made pursuant to this Clause. No later than the eighty-fourth day after the day on which he received such reference the Engineer shall give notice of his decision to the Employer and the Contractor. Such decision shall state that it is made pursuant to this Clause.

Unless the Contract has already been repudiated or terminated, the Contractor shall, in every case, continue to proceed with the Works with all due diligence and the Contractor and the Employer shall give effect forthwith to every such decision of the Engineer unless and until the same shall be revised, as hereinafter provided, in an amicable settlement or an arbitral award.

If either the Employer or the Contractor be dissatisfied with any decision of the Engineer, or if the Engineer fails to give notice of his decision on or before the eighty-fourth day after the day on which he received the reference, then either the Employer or the Contractor may, on or before the seventieth day after the day on which he received notice of such decision, or on or before the seventieth day after the day on which the said period of 84 days expired, as the case may be, give notice to the other party, with a copy for information to the Engineer, of his intention to commence arbitration, as hereinafter provided, as to the matter in dispute. Such notice shall establish the entitlement of the party giving the same to commence arbitration, as hereinafter provided, as to such dispute and, subject to Sub-Clause 67.4, no arbitration in respect thereof may be commenced unless such notice is given.

If the Engineer has given notice of his decision as to a matter in dispute to the Employer and the Contractor and no notice of intention to commence arbitration as to such dispute has been given by either the Employer or the Contractor on or before the seventieth day after the day on which the parties received notice as to such decision from the Engineer, the said decision shall become final and binding upon the Employer and the Contractor.

Amicable Settlement **67.2** Where notice of intention to commence arbitration as to a dispute has been given in accordance with Sub-Clause 67.1, the parties shall attempt to settle such dispute amicably before the commencement of arbitration. Provided that, unless the parties otherwise agree, arbitration may be commenced on or after the fifty-sixth day after the day on which notice of intention to commence arbitration of such dispute was given, even if no attempt at amicable settlement thereof has been made.

Arbitration **67.3** Any dispute in respect of which:

(a) the decision, if any, of the Engineer has not become final and binding pursuant to Sub-Clause 67.1, and

(b) amicable settlement has not been reached within the period stated in Sub-Clause 67.2,

shall be finally settled, unless otherwise specified in the Contract, under the Rules of Conciliation and Arbitration of the International Chamber of Commerce by one or more arbitrators appointed under such Rules. The said arbitrator/s shall have full power to open up, review and revise any decision, opinion, instruction, determination, certificate or valuation of the Engineer related to the dispute.

Neither party shall be limited in the proceedings before such arbitrator/s to the evidence or arguments put before the Engineer for the purpose of obtaining his said decision pursuant to Sub-Clause 67.1. No such decision shall disqualify the Engineer from being called as a witness and giving evidence before the arbitrator/s on any matter whatsoever relevant to the dispute.

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Arbitration may be commenced prior to or after completion of the Works, provided that the obligations of the Employer, the Engineer and the Contractor shall not be altered by reason of the arbitration being conducted during the progress of the Works.

Failure to Comply with Engineer's Decision **67.4** Where neither the Employer nor the Contractor has given notice of intention to commence arbitration of a dispute within the period stated in Sub-Clause 67.1 and the related decision has become final and binding, either party may, if the other party fails to comply with such decision, and without prejudice to any other rights it may have, refer the failure to arbitration in accordance with Sub-Clause 67.3. The provisions of Sub-Clauses 67.1 and 67.2 shall not apply to any such reference.

Notices

Notice to Contractor **68.1** All certificates, notices or instructions to be given to the Contractor by the Employer or the Engineer under the terms of the Contract shall be sent by post, cable, telex or facsimile transmission to or left at the Contractor's principal place of business or such other address as the Contractor shall nominate for that purpose.

Notice to Employer and Engineer **68.2** Any notice to be given to the Employer or to the Engineer under the terms of the Contract shall be sent by post, cable, telex or facsimile transmission to or left at the respective addresses nominated for that purpose in Part II of these Conditions.

Change of Address **68.3** Either party may change a nominated address to another address in the country where the Works are being executed by prior notice to the other party, with a copy to the Engineer, and the Engineer may do so by prior notice to both parties.

Default of Employer

Default of Employer **69.1** In the event of the Employer:

(a) failing to pay to the Contractor the amount due under any certificate of the Engineer within 28 days after the expiry of the time stated in Sub-Clause 60.10 within which payment is to be made, subject to any deduction that the Employer is entitled to make under the Contract,

(b) interfering with or obstructing or refusing any required approval to the issue of any such certificate,

(c) becoming bankrupt or, being a company, going into liquidation, other than for the purpose of a scheme of reconstruction or amalgamation, or

(d) giving notice to the Contractor that for unforeseen economic reasons it is impossible for him to continue to meet his contractual obligations,

the Contractor shall be entitled to terminate his employment under the Contract by giving notice to the Employer, with a copy to the Engineer. Such termination shall take effect 14 days after the giving of the notice.

Removal of Contractor's Equipment **69.2** Upon the expiry of the 14 days' notice referred to in Sub-Clause 69.1, the Contractor shall, notwithstanding the provisions of Sub-Clause 54.1, with all reasonable despatch, remove from the Site all Contractor's Equipment brought by him thereon.

Payment on Termination **69.3** In the event of such termination the Employer shall be under the same obligations to the Contractor in regard to payment as if the Contract had been terminated under the provisions of Clause 65, but, in addition to the payments specified in Sub-Clause 65.8, the Employer shall pay to the Contractor the amount of any loss or damage to the Contractor arising out of or in connection with or by consequence of such termination.

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Contractor's Entitlement to Suspend Work

69.4 Without prejudice to the Contractor's entitlement to interest under Sub-Clause 60.10 and to terminate under Sub-Clause 69.1, the Contractor may, if the Employer fails to pay the Contractor the amount due under any certificate of the Engineer within 28 days after the expiry of the time stated in Sub-Clause 60.10 within which payment is to be made, subject to any deduction that the Employer is entitled to make under the Contract, after giving 28 days' prior notice to the Employer, with a copy to the Engineer, suspend work or reduce the rate of work.

If the Contractor suspends work or reduces the rate of work in accordance with the provisions of this Sub-Clause and thereby suffers delay or incurs costs the Engineer shall, after due consultation with the Employer and the Contractor, determine:

(a) any extension of time to which the Contractor is entitled under Clause 44, and

(b) the amount of such costs, which shall be added to the Contract Price,

and shall notify the Contractor accordingly, with a copy to the Employer.

Resumption of Work

69.5 Where the Contractor suspends work or reduces the rate of work. having given notice in accordance with Sub-Clause 69.4, and the Employer subsequently pays the amount due, including interest pursuant to Sub-Clause 60.10, the Contractor's entitlement under Sub-Clause 69.1 shall, if notice of termination has not been given, lapse and the Contractor shall resume normal working as soon as is reasonably possible.

Changes in Cost and Legislation

Increase or Decrease of Cost

70.1 There shall be added to or deducted from the Contract Price such sums in respect of rise or fall in the cost of labour and/or materials or any other matters affecting the cost of the execution of the Works as may be determined in accordance with Part II of these Conditions.

Subsequent Legislation

70.2 If, after the date 28 days prior to the latest date for submission of tenders for the Contract there occur in the country in which the Works are being or are to be executed changes to any National or State Statute, Ordinance, Decree or other Law or any regulation or bye-law of any local or other duly constituted authority, or the introduction of any such State Statute, Ordinance, Decree, Law, regulation or bye-law which causes additional or reduced cost to the Contractor, other than under Sub-Clause 70.1, in the execution of the Contract, such additional or reduced cost shall, after due consultation with the Employer and the Contractor, be determined by the Engineer and shall be added to or deducted from the Contract Price- and the Engineer shall notify the Contractor accordingly, with a copy to the Employer.

Currency and Rates of Exchange

Currency Restrictions

71.1 If, after the date 28 days prior to the latest date for submission of tenders for the Contract, the Government or authorised agency of the Government of the country in which the Works are being or are to be executed imposes currency restrictions and/or transfer of currency restrictions in relation to the currency or currencies in which the Contract Price is to be paid, the Employer shall reimburse any loss or damage to the Contractor arising therefrom, without prejudice to the right of the Contractor to exercise any other rights or remedies to which he is entitled in such event.

Rates of Exchange

72.1 Where the Contract provides for payment in whole or in part to be made to the Contractor in foreign currency or currencies, such payment shall not be subject to variations in the rate or rates of exchange between such specified foreign currency or currencies and the currency of the country in which the Works are to be executed.

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Currency Proportions **72.2** Where the Employer has required the Tender to be expressed in a single currency but with payment to be made in more than one currency and the Contractor has stated the proportions or amounts of other currency or currencies in which he requires payment to be made, the rate or rates of exchange applicable for calculating the payment of such proportions or amounts shall, unless otherwise stated in Part II of these Conditions, be those prevailing, as determined by the Central Bank of the country in which the Works are to be executed, on the date 28 days prior to the latest date for the submission of tenders for the Contract, as has been notified to the Contractor by the Employer prior to the submission of tenders or as provided for in the Tender.

Currencies of Payment for Provisional Sums **72.3** Where the Contract provides for payment in more than one currency, the proportions or amounts to be paid in foreign currencies in respect of Provisional Sums shall be determined in accordance with the principles set forth in Sub-Clauses 72.1 and 72.2 as and when these sums are utilised in whole or in part in accordance with the provisions of Clauses 58 and 59.

REFERENCE TO PART II

As stated in the Foreword at the beginning of this document, the FIDIC Conditions comprise both Part I and Part II. Certain Clauses, namely Sub-Clauses 1.1 paragraph (a) (i) and (iv), 5.1 (part), 14.1, 14.3, 68.2 and 70.1 must include additional wording in Part II for the Conditions to be complete. Other Clauses may require additional wording to supplement Part I or to cover particular circumstances or the type of work (dredging is an example).

Part II Conditions of Particular Application with guidelines for the preparation of Part II are printed in a separately bound document.

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TENDER

NAME OF CONTRACT: * _____

_____

TO:* _____

_____

Gentlemen,

1. Having examined the Conditions of Contract, Specification, Drawings, and Bill of Quantities and Addenda Nos _____ for the execution of the above-named Works, we, the undersigned, offer to execute and complete such Works and remedy any defects therein in conformity with the Conditions of Contract, Specification, Drawings, Bill of Quantities and Addenda for the sum of

_____

_____

(_____)
or such other sum as may be ascertained in accordance with the said Conditions.

2. We acknowledge that the Appendix forms part of our Tender.

3. We undertake, if our Tender is accepted, to commence the Works as soon as is reasonably possible after the receipt of the Engineer's notice to commence, and to complete the whole of the Works comprised in the Contract within the time stated in the Appendix to Tender.

4. We agree to abide by this Tender for the period of *____ days from the date fixed for receiving the same and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

5. Unless and until a formal Agreement is prepared and executed this Tender, together with your written acceptance thereof, shall constitute a binding contract between us.

6. We understand that you are not bound to accept the lowest or any tender you may receive.

Dated this _____ day of _____ 19 ____

Signature _____ in the capacity of _____

duly authorised to sign tenders for and on behalf of _____

_____

(IN BLOCK CAPITALS)

Address _____

_____

Witness _____

Address _____

_____

Occupation _____

(Note: All details marked * shall be inserted before issue of Tender documents.)

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Appendix

	Sub-Clause	
Amount of security (if any) _____	10.1	_____ per cent of the Contract Price
Minimum amount of third party insurance	23.2	_____ per occurrence, with the number of occurrences unlimited
Time for issue of notice to commence	41.1	_____ days
Time for Completion _____	43.1	_____ days
Amount of liquidated damages _____	47.1	_____ per day
Limit of liquidated damages _____	47.1	_____
Defects Liability Period _____	49.1	_____ days
Percentage for adjustment of Provisional Sums	59.4(c)	_____ per cent
Percentage of invoice value of listed materials and Plant _____	60.1 (c)	_____ per cent
Percentage of Retention _____	60.2	_____ per cent
Limit of Retention Money _____	60.2	_____
Minimum Amount of Interim Payment Certificates _____	60.2	_____
Rate of interest upon unpaid sums _____	60.10	_____ per cent per annum

Initials of Signatory of Tender _____ _____

(Notes: All details in the list above, other than percentage figure against Sub-Clause 59.4, shall be inserted before issue of Tender documents. Where a number of days is to be inserted, it is desirable, for consistency with the Conditions, that the number should be a multiple of seven.

Additional entries are necessary where provision is included in the Contract for:

(a) completion of Sections (Sub-Clauses 43.1 and 48.2(a))

(b) liquidated damages for Sections (Sub-Clause 47.1)

(c) a bonus (Sub-Clause 47.3 – Part II)

(d) payment for materials on Site (Sub-Clause 60.1(c))

(e) payment in foreign currencies (Clause 60 – Part II)

(f) an advance payment (Clause 60 – Part II)

(g) adjustments to the Contract Price on account of Specified Materials (Sub-Clause 70.1 – Part II)

(h) rates of exchange (Sub-Clause 72.2 – Part II))

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Agreement

This Agreement made the _____ day of _____ 19 _____

Between _____

of _____

_____ (hereinafter called "the Employer") of the one part and

_____ of _____

(hereinafter called "the Contractor") of the other part

Whereas the Employer is desirous that certain Works should be executed by the Contractor, viz _____

and has accepted a Tender by the Contractor for the execution and completion of such Works and the remedying of any defects therein

Now this Agreement witnesseth as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.

2. The following documents shall be deemed to form and be read and construed as part of this Agreement, viz:

   (a) The Letter of Acceptance;

   (b) The said Tender;

   (c) The Conditions of Contract (Parts I and II);

   (d) The Specification;

   (e) The Drawings; and

   (f) The Bill of Quantities.

3. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned the Contractor hereby covenants with the Employer to execute and complete the Works and remedy any defects therein in conformity in all respects with the provisions of the Contract.

4. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the works and the remedying of defects therein the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

In Witness whereof the parties hereto have caused this Agreement to be executed the day and year first before written in accordance with their respective laws.

The Common Seal of _____

_____

was hereunto affixed in the presence of:-

or

Signed Sealed and Delivered by the

said _____

in the presence of:

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EDITORIAL AMENDMENTS IN 1988

Following publication of the Fourth Edition in 1987 of the Conditions of Contract for Works of Civil Engineering Construction, a number of editorial amendments were agreed by FIDIC. The amendments were incorporated during a 1988 reprinting and the list below clarifies the differences between the 1988 reprint and the original document.

Foreword		The last sentence of the first paragraph previously read "The Conditions are equally suitable for use on domestic contracts. "
Page	**6**	Sub-Clause 10.1. A comma has been inserted after the word "Contract" in the second line. The third sentence previously read "Such security shall be in such form as may be agreed between the Employer and the Contractor."
Page	**11**	Sub-Clause 22.1 (b) was previously one complete paragraph, ie there was no space between the words " . . . other than the Works), " and the remainder of the Sub-Clause.
Page	**15**	Sub-Clause 31.2 (c) was previously one complete paragraph, ie there was no space between the words "... nature for any such," and the remainder of the Sub-Clause.
Page	**20**	Sub-Clause 44.3. The penultimate sentence was previously, "In both such cases the Engineer shall notify the Contractor accordingly, with a copy to the Employer. "
Page	**21**	Sub-Clause 49.1 (a). The word "substantial" has been deleted.
Page	**29**	Sub-Clause 60.3 (b) was previously two paragraphs, the second beginning with the words "Provided also that if at such time . . ."
Page	**30**	Sub-Clause 60.5. The word "The" has been inserted at the beginning of the final paragraph.
Page	**35**	Sub-Clause 67.1. In the eighth line of the third paragraph, a comma has been inserted after the word "provided". In the second line of the fourth paragraph, the word "notice" replaces the word "notification".
Page	**38**	Reference to Part II. In the third line, the words "and (iv)" have been inserted after paragraph (a) (i).
Tender		
Item	**3.**	The word "Works" has been capitalised.
Agreement		
Line	**4**	Inverted commas have been inserted following the words "the Employer."
Line	**6**	Inverted commas have been inserted before the word "the" instead of before the word "Contractor."
Line	**8**	The word "Contractor" has been capitalised.
Line	**9**	The words "Tender by the Contractor" were previously "Tender by Contractor. "
Line	**11**	The word "Agreement" has been capitalised.
Last lines		The Agreement previously ended with the words "Binding Signature of Employer" and "Binding Signature of Contractor".

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FURTHER AMENDMENTS IN 1992

The following amendments have been made to the 1988 Reprint of the Fourth Edition of the Conditions of Contract for Works of Civil Engineering Construction. The amendments of the 1988 Reprint are shown on the previous page. In addition, some minor changes in the use of punctuation marks (commas, semicolons, colons and stops), as well as the use of the words "or" and "and" have been introduced to attain uniformity in the style of all Clauses. These minor changes which improve the style, but which have no effect on the meaning of Clauses, have not been listed below.

FOREWORD The eighth paragraph previously referred to the anticipated publication of the "Guide to the Use of FIDIC Conditions of Contract for Works of Civil Engineering Construction".

Page 2 Sub-Clause 1.1, sub-para (e). Definitions (iii) "Interim Payment Certificate" and (iv) "Final Payment Certificate" have been added.

Page 6 Sub-Clause 8.1. Second paragraph has been added.

Page 7 Sub-Clause 12.2. Marginal note. The word "Adverse" has been changed to read "Not Foreseeable" (also amended in the Contents and the Index).

Page 8 Sub-Clause 13.1. Last sentence has been shortened by deleting the words "or, subject to the provisions of Clause 2, from the Engineer's Representative.", and adding the words "(or his delegate).".

Sub-Clause 15.1, para 1. Last sentence has been shortened by placing a full stop after the word "Engineer", deleting the words " or subject to the provisions of Clause 2, the Engineer's Representative."

Page 10 Sub-Clause 21.1, sub-para (a). The words "(the term "cost" in this context shall include profit)" have been added.

Page 11 Sub-Clause 21.4, sub-para (a). The word "where" has been corrected to read "whether".

Page 18 Sub-Clause 40.3. The word "written" has been deleted at the end of the first line.

Page 19 Sub-Clause 42.3. The word "wayleaves" has been changed to read "rights of way" in the text and marginal note (also amended in the Contents and the Index).

Page 29 Sub-Clause 60.1, sub-para (e). The words "or otherwise" have been added at the end

Sub-Clause 60.2. The words "certify to the Employer" have been changed to read "deliver to the Employer an Interim Payment Certificate stating", the word "thereof" has been changed to read "of such statement" and the word "he" has been changed to read "the Engineer". Sub-para (b). The words "Interim Certificates" have been changed to read "Interim Payment Certificates".

Sub-Clause 60.3, sub-para (b). In the eighth line, the word "ordered" has been changed to read "instructed".

Sub-Clause 60.4. The words "interim certificate" in the first and fourth lines, and the word "certificate" in the second line, have been changed to read "Interim Payment Certificate".

Page 30 Sub-Clause 60.5. In the second line, after the word "Engineer", the words "six copies of" have been added.

Sub-Clause 60.6. In the second line, after the word "consideration", the words "six copies of" have been added. Sub-para (b). The words "or otherwise" have been added at the end. At the end of the sub-clause, the final paragraph has been added.

Sub-Clause 60.7 and Sub-Clause 60.8 (text and marginal note). The words "Final Certificate" have been changed to read "Final Payment Certificate" (also amended in the Contents and the Index).

Sub-Clause 60.8 (a). The words "or otherwise" have been added. Sub-Clause 60.8 (b). The words "under the Contract other than Clause 47" have been changed to read "other than under Clause 47".
Sub-Clause 60.10. In the first and fourth lines, the words "interim certificate" have

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Page	**31**	been changed to read "Interim Payment Certificate". In the fifth and sixth lines, the words "Final Certificate" have been changed to read "Final Payment Certificate". The words "or otherwise" have been added at the end.
Page	**33**	Sub-Clause 65.6. In the ninth line, the words "and to the operation of Clause 67" have been changed to read "and Clause 67".
Page	**34**	Sub-Clause 66.1. In the second line the word "party" has been changed to read "or both parties", in the third line between the words "his" and "contractual" the words "or their" have been added. In the fourth line after the word "then", the words "the parties shall be discharged from the Contract, except as to their rights under this Clause and Clause 67 and without prejudice to the rights of either party in respect of any antecedent breach of the Contract, and " have been added.
Page	**35**	Sub-Clause 67.2. The words "arbitration of such dispute shall not be commenced unless an attempt has first been made by the parties to settle such dispute amicably" have been changed to read " the parties shall attempt to settle such dispute amicably before the commencement of arbitration." The words "whether or not any attempt at amicable settlement thereof has been made" have been changed to read "even if no attempt at amicable settlement thereof has been made".
Page	**37**	Sub-Clause 69.1, Sub-para (d). The words "unforseen reasons, due to economic dislocation" have been changed to read "unforseen economic reasons". Sub-Clause 69.4. In the second line of the second paragraph, the word "cost" has been changed to read "costs".
Page	**38**	REFERENCE TO PART II. In the third line, the words "5.1 part" have been changed to read "5.1 (part)".
TENDER		Paragraph 1. In the last line, the word "sums" has been changed to read "sum".
Appendix		In the ninth line, the words "and Plant" have been added. In the twelth line, the word "Payment" has been added. In the thirteenth line, the words "per annum" have been added.
EDITORIAL AMENDMENTS		For page 35, after the words "Sub-Clause 67.1" the first sentence has been inserted.

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FEDERATION INTERNATIONALE DES INGENIEURS-CONSEILS

CONDITIONS OF CONTRACT FOR WORKS OF CIVIL ENGINEERING CONSTRUCTION

PART II CONDITIONS OF PARTICULAR APPLICATION WITH GUIDELINES FOR PREPARATION OF PART II CLAUSES

FOURTH EDITION 1987
Reprinted 1988 with editorial amendments
Reprinted 1992 with further amendments

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INTRODUCTION

The terms of the Fourth Edition of the Conditions of Contract for Works of Civil Engineering Construction have been prepared by the Fédération Internationale des Ingénieurs Conseils (FIDIC) and are recommended for general use for the purpose of construction of such works where tenders are invited on an international basis. The Conditions, subject to minor modifications, are also suitable for use on domestic contracts.

The version in English of the Conditions is considered by FIDIC as the official and authentic text for the purpose of translation.

The Clauses of general application have been grouped together in a separately bound document and are referred to as Part I—General Conditions. They have been printed in a form which will facilitate their inclusion, as printed, in the contract documents normally prepared.

In the preparation of the Conditions it was recognised that while there are numerous Clauses which will be generally applicable there are some Clauses which must necessarily vary to take account of the circumstances and locality of the Works.

Part I – General Conditions and Part II – Conditions of Particular Application together comprise the Conditions governing the rights and obligations of the parties.

For this reason a Part II standard form has not been produced. It will be necessary to prepare a Part II document for each individual contract and the Guidelines are intended to aid in this task by giving options for various clauses where appropriate.

Part II clauses may arise for one or more reasons, of which the following are examples:

(i) Where the wording in Part I specifically requires that further information is to be included in Part II and the Conditions would not be complete without that information, namely in Sub-Clauses 1.1 paragraphs (a) (i) and (iv), 5.1 (part), 14.1, 14.3, 68.2 and 70.1

(ii) Where the wording in Part I indicates that supplementary information may be included in Part II, but the conditions would still be complete without any such information, namely in Sub-Clauses 2.1 paragraph (b), 5.1 (part), 21.1 paragraph (b) and 72.2.

(iii) Where the type, circumstances or locality of the Works necessitates additional Clauses or Sub-Clauses.

(iv) Where the law of the country or exceptional circumstances necessitate an alteration in Part I. Such alterations should be effected by stating in Part II that a particular Clause, or part of a Clause, in Part I is deleted and giving the substitute Clause, or part, as applicable.

As far as possible, in the Clauses that are mentioned hereunder, example wording is provided. In the case of some Clauses, however, only an aide-memoire for the preparation is given. Before incorporating any example wording it must be checked to ensure that it is wholly suitable for the particular circumstances and, if not, it must be varied. Where example wording is varied and in all cases where additional material is included in Part II, care must be taken that no ambiguity is created with Part I or between the Clauses in Part II.

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Dredging and Reclamation Work

Special consideration must be given to Part II where dredging and certain types of reclamation work are involved. Dredgers are considerably more expensive than most items of Contractor's Equipment and the capital value of a dredger can often exceed the value of the Contract on which it is used.

For this reason, it is in the interests of both the Employer and the Contractor that a dredger is operated intensively in the most economic fashion, subject to the quality of work and any other over-riding factors. With this end in view, it is customary to allow the Contractor to execute dredging work continuously by day and by night seven days a week. Another difference from most civil engineering is that on dredging work the Contractor is not normally held responsible for the remedying of defects after the date of completion as certified under Clause 48. Part II contains explanations and example wording to cover the above points and others relating to dredging. Clauses 11, 12, 18, 19, 28, 40, 45, 49, 50 and 51 are those which most often require attention in Part II when dredging work is involved and reference is included under each of these Clauses. Other Clauses may also need additions in Part II in certain circumstances. Reclamation work varies greatly in character and each instance must be considered before deciding whether it is appropriate to introduce in Part II changes similar to those adopted for dredging, or to use the standard civil engineering form unaltered.

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PART II CONDITIONS OF PARTICULAR APPLICATION

Clause 1

Sub-Clause 1.1 – Definitions

(a) (i) The Employer is (insert name)

(a) (iv) The Engineer is (insert name)

If further definitions are essential, additions should be made to the list.

Clause 2

Sub-Clause 2.1 – Engineer's Duties

EXAMPLE
The Engineer shall obtain the specific approval of the Employer before carrying out his duties in accordance with the following Clauses of Part 1:

(a) Clause (insert applicable number)

(b) Clause (insert applicable number)

(c) Clause (insert applicable number)

This list should be extended or reduced as necessary.

In some cases the obligation to obtain the approval of the Employer may apply to only one Sub-Clause out of several in a Clause or approval may only be necessary beyond certain limits, monetary or otherwise. Where this is so, the example wording must be varied.

If the obligation to obtain the approval of the Employer could lead to the Engineer being unable to take action in an emergency, where matters of safety are involved, an additional paragraph may be necessary.

EXAMPLE
Notwithstanding the obligation, as set out above, to obtain approval, if, in the opinion of the Engineer, an emergency occurs affecting the safety of life or of the Works or of adjoining property, he may, without relieving the Contractor of any of his duties and responsibilities under the Contract, instruct the Contractor to execute all such work or to do all such things as may, in the opinion of the Engineer, be necessary to abate or reduce the risk. The Contractor shall forthwith comply, despite the absence of approval of the Employer, with any such instruction of the Engineer. The Engineer shall determine an addition to the Contract Price, in respect of such instruction, in accordance with Clause 52 and shall notify the Contractor accordingly, with a copy to the Employer.

Clause 5

Sub-Clause 5.1 – Language/s and Law

(a) The language is (insert as applicable)

(b) The law is that in force in (insert name of country)

If necessary (a) above should be varied to read:

The languages are (insert as applicable)

and there should be added

The Ruling Language is (insert as applicable)

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Sub-Clause 5.2 – Priority of Contract Documents

Where it is decided that an order of precedence of all documents should be included, this Sub-Clause may be varied as follows:

EXAMPLE
Delete the documents listed 1 - 6 and substitute:

(1) the Contract Agreement (if completed);

(2) the Letter of Acceptance;

(3) the Tender;

(4) the Conditions of Contract Part II;

(5) the Conditions of Contract Part I;

(6) the Specification;

(7) the Drawings; and

(8) the priced Bill of Quantities

or

Where it is decided that no order of precedence of documents should be included, this Sub-Clause may be varied as follows:

EXAMPLE
Delete the text of the Sub-Clause and substitute:

The several documents forming the Contract are to be taken as mutually explanatory of one another, but in the case of ambiguities or discrepancies the priority shall be that accorded by law. If, in the opinion of the Engineer, such ambiguities or discrepancies make it necessary to issue any instruction to the Contractor in explanation or adjustment, the Engineer shall have authority to issue such instruction.

Clause 9

Where it is decided that a Contract Agreement should be entered into and executed the form must be annexed to these Conditions as stated in Sub-Clause 9.1 of Part I of these Conditions.

A suitable form is annexed to Part I – General Conditions.

Clause 10

Sub-Clause 10.1 – Performance Security

Where it is decided that a performance security should be obtained by the Contractor, the form must be annexed to these Conditions as stated in Sub-Clause 10.1 of Part I of these Conditions.

Two example forms of performance security are given on pages 7, 8 and 9. The Clause and wording of the example forms may have to be varied to comply with the law of the Contract which may require the forms to be executed under seal.

Where there is provision in the Contract for payments to the Contractor to be made in foreign currency, Sub-Clause 10.1 of Part I of these Conditions may be varied.

EXAMPLE
After the first sentence, insert the following sentence:

The security shall be denominated in the types and proportions of currencies stated in the Appendix to Tender.

Where the source of the performance security is to be restricted, an additional Sub-Clause may be added.

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EXAMPLE SUB-CLAUSES

Source of Performance Security **10.4** *The performance security, submitted by the Contractor in accordance with Sub-Clause 10.1, shall be furnished by an institution registered in (insert the country where the Works are to be executed) or licensed to do business in such country.*

or

Source of Performance Security **10.4** *Where the performance security is in the form of a bank guarantee, it shall be issued by:*

(a) a bank located in the country of the Employer, or

(b) a foreign bank through a correspondent bank located in the country of the Employer.

Clause 11

Where the bulk or complexity of the data, or reasons of security enforced by the country where the Works are to be executed, makes it impracticable for the Employer to make all data available with the Tender Documents and inspection of some data by the Contractor at an office is therefore expected, it would be advisable to make the circumstances clear.

EXAMPLE SUB-CLAUSE

Access to Data **11.2** *Data made available by the Employer in accordance with Sub-Clause 11.1 shall be deemed to include data listed elsewhere in the Contract as open for inspection at (insert particulars of the office or offices where such data is stored)*

Sub-Clause 11.1 – Inspection of Site

For a Contract comprising dredging and reclamation work the Clause may be varied as follows:

EXAMPLE

In the first paragraph, delete the words "hydrological and sub-surface" and substitute "hydrographic and sub-seabed".

In the second paragraph, under (a) delete the word "sub-surface" and substitute "sub-seabed" and under (b) delete the word "hydrological" and substitute "hydrographic".

Clause 12

Sub-Clause 12.2 – Not Foreseeable Obstructions or Conditions

For a Contract comprising dredging and some types of reclamation work the Sub-Clause may require to be varied.

EXAMPLE

Delete the words ", other than climatic conditions on the Site,".

Clause 14

Sub-Clause 14.1 – Programme to be Submitted

The time within which the programme shall be submitted shall be (insert number) days.

Sub-Clause 14.3 – Cash Flow Estimate to be Submitted

The time within which the detailed cash flow estimate shall be submitted shall be (insert number) days.

In both examples given above it is desirable for consistency with the rest of the Conditions that the number of days inserted should be a multiple of seven.

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EXAMPLE PERFORMANCE GUARANTEE

By this guarantee *We, _____.*

whose registered office is at _____.

(hereinafter called "the Contractor") and _____

whose registered office is at _____

(hereinafter called "the Guarantor") are held and firmly bound unto

_____ _____ (hereinafter called "the Employer")

in the sum of _____ for the payment of which sum

the Contractor and the Guarantor bind themselves, their successors and assigns jointly and severally by these presents.

Whereas *the Contractor by an Agreement made between the Employer of the one part and the Contractor of the other part has entered into a Contract (hereinafter called "the said Contract") to execute and complete certain Works and remedy any defects therein as therein mentioned in conformity with the provisions of the said Contract.*

Now the Condition *of the above-written Guarantee is such that if the Contractor shall duly perform and observe all the terms provisions conditions and stipulations of the said Contract on the Contractor's part to be performed and observed according to the true purport intent and meaning thereof or if on default by the Contractor the Guarantor shall satisfy and discharge the damages sustained by the Employer thereby up to the amount of the above-written Guarantee then this obligation shall be null and void but otherwise shall be and remain in full force and effect but no alteration in terms of the said Contract or in the extent or nature of the Works to be executed, completed and defects therein remedied thereunder and no allowance of time by the Employer or the Engineer under the said Contract nor any forbearance or forgiveness in or in respect of any matter or thing concerning the said Contract on the part of the Employer or the said Engineer shall in any way release the Guarantor from any liability under the above-written Guarantee. Provided always that the above obligation of Guarantor to satisfy and discharge the damages sustained by the Employer shall arise only*

(a) on written notice from both the Employer and the Contractor that the Employer and the Contractor have mutually agreed that the amount of damages concerned is payable to the Employer or

(b) on receipt by the Guarantor of a legally certified copy of an award issued in arbitration proceeding carried out in conformity with the terms of the said Contract that the amount of the damages is payable to the Employer.

Signed on _____	*Signed on* _____
on behalf of _____	*on behalf of* _____
by _____	*by* _____
in the capacity of _____	*in the capacity of* _____
in the presence of _____	*in the presence of* _____

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EXAMPLE SURETY BOND FOR PERFORMANCE

Know all Men by these Presents that (name and address of Contractor)

_____

_____

as Principal (hereinafter called "the Contractor") and (name, legal title and address of Surety) _____

_____

as Surety (hereinafter called "the Surety"), are held and firmly bound unto (name and address of Employer) _____

_____ *as Obligee (hereinafter called "the Employer") in the amount of* _____ *for the payment of which sum, well and truly to be made, the Contractor and the Surety bind themselves, their successors and assigns, jointly and severally, firmly by these presents.*

Whereas the Contractor has entered into a written contract agreement with the Employer dated the _____ *day of* _____ *19*___

for(name of Works) _____
in accordance with the plans and specifications and amendments thereto, to the extent herein provided for, are by reference made part hereof and are hereinafter referred to as the Contract.

Now, therefore, the Condition of this Obligation is such that, if the Contractor shall promptly and faithfully perform the said Contract (including any amendments thereto) then this obligation shall be null and void; otherwise it shall remain in full force and effect.

Whenever Contractor shall be, and declared by Employer to be, in default under the Contract, the Employer having performed the Employer's obligations thereunder, the Surety may promptly remedy the default, or shall promptly:

(1) Complete the Contract in accordance with its terms and conditions; or

(2) Obtain a bid or bids for submission to the Employer for completing the Contract in accordance with its terms and conditions, and upon determination by Employer and Surety of the lowest responsible bidder, arrange for a contract between such bidder and Employer and make available as work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the Contract Value; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the Contract Value", as used in this paragraph, shall mean the total amount payable by Employer to Contractor under the Contract, less the amount properly paid by Employer to Contractor; or

(3) Pay the Employer the amount required by Employer to complete the Contract in accordance with its terms and conditions any amount up to a total not exceeding the amount of this Bond.

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The Surety shall not be liable for a greater sum than the specified penalty of this Bond.

Any suit under this Bond must be instituted before the issue of the Defects Liability Certificate.

No right of action shall accrue on this Bond to or for the use of any person or corporation other than the Employer named herein or the heirs, executors, administrators or successors of the Employer.

Signed on _____	*Signed on* _____
on behalf of _____	*on behalf of* _____
by _____	*by* _____
in the capacity of _____	*in the capacity of* _____
in the presence of _____	*in the presence of* _____

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Clause 15

Where the language in which the Contract documents have been drawn up is not the language of the country in which the Works are to be executed, or where for any other reason it is necessary to stipulate that the Contractor's authorised representative shall be fluent in a particular language, an additional Sub-Clause may be added.

EXAMPLE SUB-CLAUSES

Language Ability of Contractor's Representative **15.2** *The Contractor's authorised representative shall be fluent in (insert name of language).*

or

Interpreter to be Made Available **15.2** *If the Contractor's authorised representative is not, in the opinion of the Engineer, fluent in (insert name of language), the Contractor shall have available on Site at all times a competent interpreter to ensure the proper transmission of instructions and information.*

Clause 16

Where the language in which the Contract documents have been drawn up is not the language of the country in which the Works are to be executed, or where for any other reason it is necessary to stipulate that members of the Contractor's superintending staff shall be fluent in a particular language, an additional Sub-Clause may be added.

EXAMPLE SUB-CLAUSE

Language Ability of Superintending Staff **16.3** *A reasonable proportion of the Contractor's superintending staff shall have a working knowledge of (insert name of language) or the Contractor shall have available on Site at all times a sufficient number of competent interpreters to ensure the proper transmission of instructions and information.*

Where there is a desire, but not a legal requirement, that the Contractor makes reasonable use of materials from or persons resident in the country in which the Works are to be executed, an additional Sub-Clause may be added.

EXAMPLE SUB-CLAUSE

Employment of Local Personnel **16.4** *The Contractor is encouraged, to the extent practicable and reasonable, to employ staff and labour from sources within (insert name of country).*

Clause 18

Sub-Clause 18.1 – Boreholes and Exploratory Excavation

For a Contract comprising dredging and reclamation work the Sub-Clause may require to be varied.

EXAMPLE

Add second sentence as follows:

Such exploratory excavation shall be deemed to include dredging.

Clause 19

Sub-Clause 19.1 – Safety, Security and Protection of the Environment

Where a Contract includes dredging the possibility of pollution should be given particular attention and additional wording may be required. For example, where fishing and recreation areas might be influenced, the Contractor should be required to plan and execute the dredging so that the effect is kept to a minimum. Where there is a risk of chemical pollution from soluble sediments in the dredging area, for instance in a harbour, it is important that sufficient information is provided with the Tender documents. Responsibilities should be clearly defined.

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Clause 21

Sub-Clause 21.1 – Insurance of Works and Contractor's Equipment

Where there is provision in the Contract for payments to the Contractor to be made in foreign currency, this Sub-Clause may be varied.

EXAMPLE
Add final sentence as follows:

The insurance in paragraphs (a) and (b) shall provide for compensation to be payable in the types and proportions of currencies required to rectify the loss or damage incurred.

Where it is decided to state the deductible limits for the Employer's Risks, this Sub-Clause may be varied.

EXAMPLE
Add to paragraph (a) as follows:

and with deductible limits for the Employer's Risks not exceeding (insert amounts)

Clauses 21, 23 and 25. Insurances Arranged by Employer

In certain circumstances, such as where a number of separate contractors are employed on a single project, or phased take-over is involved, it may be preferable for the Employer to arrange insurance of the Works, and Third Party insurance. In such case, it must be clear in the Contract that the Contractor is not precluded from taking out any additional insurance, should he desire to do so, over and above that to be arranged by the Employer.

Tenderers must be provided at the Tender stage with details of the insurance to be arranged by the Employer, in order to assess what provision to make in their rates and prices for any additional insurance, and for the amount of policy deductibles which they will be required to bear. Such details shall form part of the Contract between the Employer and the Contractor.

Example wording to allow for the arrangement of insurance by the Employer is as follows:

EXAMPLE

Clause 21

Delete the text of the Clause and substitute the following re-numbered Sub-Clauses:

Insurance of Works **21.1** *Without limiting his or the Contractor's obligations and responsibilities under Clause 20, the Employer will insure:*

(a) the Works, together with materials and Plant for incorporation therein, to the full replacement cost (the term "cost" in this context shall include profit), and

(b) an additional sum to cover any additional costs of and incidental to the rectification of loss or damage including professional fees and the cost of demolishing and removing any part of the Works and of removing debris of whatsoever nature.

Insurance of Contractor's Equipment **21.2** *The Contractor shall, without limiting his obligations and responsibilities under Clause 20, insure the Contractor's Equipment and other things brought onto the site by the Contractor, for a sum sufficient to provide for their replacement at the Site.*

Scope of Cover **21.3** *The insurance in Sub-Clause 21.1 shall be in the joint names of the Contractor and the Employer and shall cover:*

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(a) the Employer and the Contractor against loss or damage as provided in the details of insurance annexed to these Conditions, from the start of work at the Site until the date of issue of the relevant Taking-Over Certificate in respect of the Works or any Section or part thereof as the case may be, and

(b) the Contractor for his liability:

(i) during the Defects Liability Period for loss or damage arising from a cause occurring prior to the commencement of the Defects Liability Period, or

(ii) occasioned by the Contractor in the course of any operations carried out by him for the purpose of complying with his obligations under Clauses 49 and 50.

Responsibility for Amounts not Recovered **21.4** *Any amounts not insured or not recovered from the insurers shall be borne by the Employer or the Contractor in accordance with their responsibilities under Clause 20.*

Clause 23

Delete the text of the Clause and substitute:

Third Party Insurance (including Employer's Property) **23.1** *Without limiting his or the Contractor's obligations and responsibilities under Clause 22, the Employer will insure in the joint names of the Contractor and the Employer, against liabilities for death of or injury to any person (other than as provided in Clause 24) or loss of or damage to any property other than the Works) arising out of the performance of the Contract, as provided in the details of insurance referred to in Sub-Clause 21.3.*

Clause 25

Delete the text of the Clause and substitute:

Evidence and Terms of Insurances **25.1** *The insurance policies to be arranged by the Employer pursuant to Clauses 21 and 23 shall be consistent with the general terms described in the Tender and copies of such policies shall when required be supplied by the Employer to the Contractor.*

Adequacy of Insurances **25.2** *The Employer shall notify the insurers of changes in the nature, extent or programme for execution of the Works and ensure the adequacy of the insurances at all times in accordance with the terms of the Contract and shall, when required, produce to the Contractor the insurance policies in force and the receipts for payment of the premiums. No variations shall be made to the insurances by the Employer without the prior approval of the Contractor.*

Remedy on Employer's Failure to Insure **25.3** *If and so far as the Employer fails to effect and keep in force any of the insurances referred to in Sub-Clause 25.1, then the Contractor may effect and keep in force any such insurance and pay any premium as may be necessary for that purpose and add the amount so paid to any monies due or to become due to the Contractor, or recover the same as a debt due from the Employer.*

Compliance with Policy Conditions **25.4** *In the event that the Contractor or the Employer fails to comply with conditions imposed by the insurance policies effected pursuant to the Contract, each shall indemnify the other against all losses and claims arising from such failure.*

Clause 28

Sub-Clause 28.2 – Royalties

For a Contract comprising dredging and reclamation work and for any other Contract involving the dumping of materials the Sub-Clause may require to be varied.

EXAMPLE
Add second sentence as follows:

The Contractor shall also be liable for all payments or compensation, if any, levied in relation to the dumping of part or all of any such materials.

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It is sometimes the case on dredging contracts for the Employer to bear the costs of tonnage and other royalties, rent and other payments or compensation. If such conditions are to apply, Sub-Clause 28.2 should be varied either by adding wording or by deleting the existing wording and substituting new wording.

Clause 31

Where the particular requirements of other contractors are known within reasonable limits at the time of preparation of the Contract documents, details must be stated. The Specification is usually the appropriate place to do so but, exceptionally, some reference may be desirable in the Conditions. In that case, an additional Sub-Clause or Sub-Clauses could be added to this Clause.

Clause 34

It will generally be necessary to add a number of Sub-Clauses, to take account of the circumstances and locality of the Works, covering such matters as: permits and registration of expatriate employees; repatriation to place of recruitment; provision of temporary housing for employees; requirements in respect of accommodation for staff of Employer and Engineer; standards of accommodation to be provided; provision of access roads, hospital, school, power, water, drainage, fire services, refuse collection, communal buildings, shops, telephones; hours and conditions of working; rates of pay; compliance with labour legislation; maintenance of records of safety and health.

EXAMPLE SUB-CLAUSES (to be numbered, as appropriate)

Rates of Wages and Conditions of Labour **34.** *The Contractor shall pay rates of wages and observe conditions of labour not less favourable than those established for the trade or industry where the work is carried out. In the absence of any rates of wages or conditions of labour so established, the Contractor shall pay rates of wages and observe conditions of labour which are not less favourable than the general level of wages and conditions observed by other employers whose general circumstances in the trade or industry in which the Contractor is engaged are similar.*

Employment of Persons in the Service of Others **34.** *The Contractor shall not recruit or attempt to recruit his staff and labour from amongst persons in the service of the Employer or the Engineer.*

Repatriation of Labour **34.** *The Contractor shall be responsible for the return to the place where they were recruited or to their domicile of all such persons as he recruited and employed for the purposes of or in connection with the Contract and shall maintain such persons as are to be so returned in a suitable manner until they shall have left the Site or, in the case of persons who are not nationals of and have been recruited outside (insert name of country), shall have left (insert name of country).*

Housing for Labour **34.** *Save insofar as the Contract otherwise provides, the Contractor shall provide and maintain such accommodation and amenities as he may consider necessary for all his staff and labour, employed for the purposes of or in connection with the Contract, including all fencing, water supply (both for drinking and other purposes), electricity supply, sanitation, cookhouses, fire prevention and fire-fighting equipment, air conditioning, cookers, refrigerators, furniture and other requirements in connection with such accommodation or amenities. On completion of the Contract, unless otherwise agreed with the Employer, the temporary camps/housing provided by the Contractor shall be removed and the site reinstated to its original condition, all to the approval of the Engineer.*

Accident Prevention Officer; Accidents **34.** *The Contractor shall have on his staff at the Site an officer dealing only with questions regarding the safety and protection against accidents of all staff and labour. This officer shall be qualified for this work and shall have the authority to issue instructions and shall take protective measures to prevent accidents.*

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Health and Safety **34.** *Due precautions shall be taken by the Contractor, and at his own cost, to ensure the safety of his staff and labour and, in collaboration with and to the requirements of the local health authorities, to ensure that medical staff first aid equipment and stores, sick bay and suitable ambulance service are available at the camps, housing and on the Site at all times throughout the period of the Contract and that suitable arrangements are made for the prevention of epidemics and for all necessary welfare and hygiene requirements.*

Measures against Insect and Pest Nuisance **34.** *The Contractor shall at all times take the necessary precautions to protect all staff and labour employed on the site from insect nuisance, rats and other pests and reduce the dangers to health and the general nuisance occasioned by the same. The Contractor shall provide his staff and labour with suitable prophylactics for the prevention of malaria and take steps to prevent the formation of stagnant pools of water. He shall comply with all the regulations of the local health authorities in these respects and shall in particular arrange to spray thoroughly with approved insecticide all buildings erected on the Site. Such treatment shall be carried out at least once a year or as instructed by the Engineer. The Contractor shall warn his staff and labour of the dangers of bilharzia and wild animals.*

Epidemics **34.** *In the event of any outbreak of illness of an epidemic nature, the Contractor shall comply with and carry out such regulations, orders and requirements as may be made by the Government, or the local medical or sanitary authorities, for the purpose of dealing with and overcoming the same.*

Burial of the Dead **34.** *The Contractor shall make all necessary arrangements for the transport, to any place as required for burial, of any of his expatriate employees or members of their families who may die in (insert name of country). The Contractor shall also be responsible, to the extent required by the local regulations, for making any arrangements with regard to burial of any of his local employees who may die while engaged upon the Works.*

Supply of Foodstuffs **34.** *The Contractor shall arrange for the provision of a sufficient supply of suitable food at reasonable prices for all his staff, labour and Subcontractors, for the purposes of or in connection with the Contract.*

Supply of Water **34.** *The Contractor shall, so far as is reasonably practicable, having regard to local conditions, provide on the Site an adequate supply of drinking and other water for the use of his staff and labour.*

Alcoholic Liquor or Drugs **34.** *The Contractor shall not, otherwise than in accordance with the Statutes, Ordinances and Government Regulations or Orders for the time being in force, import, sell, give, barter or otherwise dispose of any alcoholic liquor or drugs, or permit or suffer any such importation, sale, gift, barter or disposal by his Subcontractors, agents, staff or labour.*

Arms and Ammunition **34.** *The Contractor shall not give, barter or otherwise dispose of to any person or persons, any arms or ammunition of any kind or permit or suffer the same as aforesaid.*

Festivals and Religious Customs **34.** *The Contractor shall in all dealings with his staff and labour have due regard to all recognised festivals, days of rest and religious or other customs.*

Disorderly Conduct **34.** *The Contractor shall at all times take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by or amongst his staff and labour and for the preservation of peace and protection of persons and property in the neighbourhood of the Works against the same.*

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Clause 35

Additional Sub-Clauses may be desirable to cover circumstances which require the maintenance of particular records or the provision of certain specific reports.

EXAMPLE SUB-CLAUSES (to be numbered, as appropriate)

Records of Safety and Health **35.** *The Contractor shall maintain such records and make such reports concerning safety, health and welfare of persons and damage to property as the Engineer may from time to time prescribe.*

Reporting of Accidents **35.** *The Contractor shall report to the Engineer details of any accident as soon as possible after its occurrence. In the case of any fatality or serious accident, the Contractor shall, in addition, notify the Engineer immediately by the quickest available means.*

Clause 40

For a Contract comprising dredging and some types of reclamation work the Clause may be varied.

Sub-Clause 40.1 – Suspension of Work

EXAMPLE
Delete paragraph (c) and renumber paragraph (d) as (c).

Sub-Clause 40.3 – Suspension Lasting more than 84 Days

EXAMPLE
In the first sentence delete the words ", (c) or (d)" and substitute "or (c)".

Clause 43

Sub-Clause 43.1 – Time for Completion

Where completion is stated to be by a date and not within a period of time, the Sub-Clause will require to be varied.

EXAMPLE
Delete the words, "within the time... such extended time" and substitute "by the date or dates stated in the Appendix to Tender for the whole of the Works or the Section (as the case may be) or such later date or dates".

Clause 45

For a Contract located in an isolated area, where environmental restrictions do not apply, or where a Contract comprises work, such as dredging and reclamation, that may require continuous working, the Clause may be varied.

EXAMPLE
Delete Sub-Clause 45.1 and substitute:

Working Hours **45.1** *Subject to any provision to the contrary contained in the Contract, the Contractor shall have the option to work continuously by day and by night and on locally recognised days of rest.*

The Contractor's option may be further extended by substituting, in place of the last three words:

holidays or days of rest.

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Clause 47

Where it is desired to make provision for the payment of a bonus or bonuses for early completion, an additional Sub-Clause may be added.

In the case where a bonus is provided for early completion of the whole of the Works:

EXAMPLE SUB-CLAUSE

Bonus for Completion **47.3** *If the Contractor achieves completion of the Works prior to the time prescribed by Clause 43, the Employer shall pay to the Contractor a sum of (insert figure) for every day which shall elapse between the date stated in the Taking-Over Certificate in respect of the Works issued in accordance with Clause 48 and the time prescribed in Clause 43.*

or

In the case where bonuses are provided for early completion of Sections of the Works and details, other than the dates, are given in the Specification:

EXAMPLE SUB-CLAUSE

Bonus for Completion **47.3** *Sections are required to be completed by the dates given in the Appendix to Tender in order that such Sections may be occupied and used by the Employer in advance of the completion of the whole of the Works.*

Details of the work required to be executed to entitle the Contractor to bonus payments and the amount of the bonuses are stated in the Specification.

For the purposes of calculating bonus payments, the dates given in the Appendix to Tender for completion of Sections are fixed and, unless otherwise agreed, no adjustments of the dates by reason of granting an extension of time pursuant to Clause 44 or any other Clause of these Conditions will be allowed.

Issue of certificates by the Engineer that the Sections were satisfactory and complete by the dates given on the certificates shall, subject to Clause 60, entitle the Contractor to the bonus payments calculated in accordance with the Specification.

Clause 48

Where it can be foreseen that, when the whole of the Works have been substantially completed, the Contractor may be prevented by reasons beyond his control from carrying out the Tests on Completion, an additional Sub-Clause may be added.

EXAMPLE SUB-CLAUSE

Prevention from Testing **48.5** *If the Contractor is prevented from carrying out the Tests on Completion by a cause for which the Employer or the Engineer or other contractors employed by the Employer are responsible, the Employer shall be deemed to have taken over the Works on the date when the Tests on Completion would have been completed but for such prevention. The Engineer shall issue a Taking-Over Certificate accordingly. Provided always that the Works shall not be deemed to have been taken over if they are not substantially in accordance with the Contract.*

If the Works are taken over under this Sub-Clause the Contractor shall nevertheless carry out the Tests on Completion during the Defects Liability Period. The Engineer shall require the Tests to be carried out by giving 14 days notice.

Any additional costs to which the Contractor may be put, in making the Tests on Completion during the Defects Liability Period, shall be added to the Contract Price.

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Clause 49

For a Contract which includes a high proportion of Plant, an additional Sub-Clause may be necessary.

EXAMPLE SUB-CLAUSE

Extension of Defects Liability **49.5** *The provisions of this Clause shall apply to all replacements or renewals of Plant carried out by the Contractor to remedy defects and damage as if the replacements and renewals had been taken over on the date they were completed. The Defects Liability Period for the Works shall be extended by a period equal to the period during which the Works cannot be used by reason of a defect or damage. If only part of the Works is affected the Defects Liability Period shall be extended only for that part. In neither case shall the Defects Liability Period extend beyond 2 years from the date of taking over.*

When progress in respect of Plant has been suspended under Clause 40, the Contractor's obligations under this Clause shall not apply to any defects occurring more than 3 years after the Time for Completion established on the date of the Letter of Acceptance.

For a Contract comprising dredging work an additional Sub-Clause may be added.

EXAMPLE SUB-CLAUSE

No Remedying of Defects in Dredging Work after Completion **49.5** *Notwithstanding Sub-Clause 49.2, the Contractor shall have no responsibility for the remedying of defects, shrinkages or other faults in respect of dredging work after the date stated in the Taking-Over Certificate.*

Clause 50

For a Contract comprising dredging work and where the second Example Sub-Clause 49.5 has been adopted, an additional Sub-Clause should be added.

EXAMPLE SUB-CLAUSE

No Responsibility for Cost of Searching of Dredging Work **50.2** *Notwithstanding Sub-Clause 50.1, the Contractor shall have no responsibility to bear the cost of searching for any defect, shrinkage or other fault in respect of dredging work after the date stated in the Taking-Over Certificate.*

Clause 51

Sub-Clause 51.1 – Variations

For a Contract comprising dredging and some types of reclamation work the Sub-Clause may require to be varied.

EXAMPLE

Add final sentence as follows:

Provided also that the Contractor shall be under no obligation to execute any variation which cannot be executed by the Contractor's Equipment being used or to be used on the Works.

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Clause 52

Where provision is made in the Contract for payment in foreign currency, this Clause may be varied.

Sub-Clause 52.1 – Valuation of Variations

EXAMPLE
Add final sentence as follows:

The agreement, fixing or determination of any rates or prices as aforesaid shall include any foreign currency and the proportion thereof.

Sub-Clause 52.2 –Power of Engineer to Fix Rates

Add to first paragraph final sentence as follows:

The agreement or fixing of any rates or prices as aforesaid shall include any foreign currency and the proportion thereof.

Sub-Clause 52.3 – Variations Exceeding 15 per cent

Add final sentence as follows:

The adjustment or fixing of any sum as aforesaid shall have due regard to any foreign currency included in the Effective Contract Price and the proportion thereof.

Where it is required to place some limitation on the range of items for which the rates and prices may be subject to review, the Clause may be varied.

Sub-Clause 52.2 – Power of Engineer to Fix Rates

EXAMPLE
At the end of the first paragraph add:

Provided further that no change in the rate or price for any item contained in the Contract shall be considered unless such item accounts for an amount more than 2 per cent of the Contract Price, and the actual quantity of work executed under the item exceeds or falls short of the quantity set out in the Bill of Quantities by more than 25 per cent.

Clause 54

Where vesting of Contractor's Equipment, Temporary Works and materials in the Employer is required, additional Sub-Clauses may be added.

EXAMPLE WORDING AND SUB-CLAUSES
Sub-Clauses 54.2 and 54.3 shall be renumbered as 54.3 and 54.4 and Sub-Clauses 54.4 to 54.8 shall be renumbered as 54.6 to 54.10. Add additional Sub-Clauses as follows:

Vesting 54.2 *All Contractor's Equipment, Temporary Works and materials owned by the Contractor, or by any company in which the Contractor has a controlling interest, shall, when on the Site, be deemed to be the property of the Employer. Provided always that the vesting of such property in the Employer shall not prejudice the right of the Contractor to the sole use of the said Contractor's Equipment, Temporary Works and materials for the purpose of the Works nor shall it affect the Contractor's responsibility to operate and maintain the same under the provisions of the Contract.*

Revesting and Removal 54.5 *Upon the removal, with the consent of the Engineer under Sub-Clauses 54.1, of any such Contractor's Equipment, Temporary Works or materials as have been deemed to have become the property of the Employer under Sub-Clause 54.2, the property therein shall be deemed to revest in the Contractor and, upon completion of the Works, the property in the remainder of such Contractor's Equipment, Temporary Works and materials shall, subject to Clause 63, be deemed to revest in the Contractor.*

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Clause 60

Additional Sub-Clauses may be necessary to cover certain other matters relating to payments.

Where payments are to be made in various currencies in predetermined proportions and calculated at fixed rates of exchange the following 3 Sub-Clauses, which should be taken together, may be added:

EXAMPLE SUB-CLAUSES (to be numbered, as appropriate)

Currency of Account and Rates of Exchange

60. *The currency of account shall be the (insert name of currency) and for the purposes of the Contract conversion between (insert name of currency) and other currencies stated in the Appendix to Tender shall be made in accordance with the Table of Exchange Rates in the Appendix to Tender. Conversion between the currencies stated in such Table other than the (insert name of currency) shall be made at rates of exchange determined by use of the relative rates of exchange between such currencies and the (insert name of currency) set out therein.*

Payments to Contractor

60. *All payments to the Contractor by the Employer shall be made:*

(a) in the case of payment(s) under Sub-Clause(s) 70.2 and (insert number of any other applicable Clause), in (insert name of currency/ies);

(b) in the case of payments for certain provisional sum items excluded from the Appendix to Tender, in the currencies and proportions applicable to these items at the time when the Engineer gives instructions for the work covered by these items to be carried out; and

(c) in any other case, including Increase or Decrease of Costs under Sub-Clause 70.1, in the currencies and proportions stated in the Appendix to Tender as applicable to such payment provided that the proportions of currencies stated in the Appendix to Tender may from time to time upon the application of either party be varied as may be agreed.

Payments to Employer

60. *All payments to the Employer by the Contractor including payments made by way of deduction or set-off shall be made:*

(a) in the case of credit(s) under Sub-Clause(s) 70.2 and (insert number of any other applicable Clause) in (insert name of currency/ies);

(b) in the case of liquidated damages under Clause 47, in (insert name of currency/ies);

(c) in the case of reimbursement of any sum previously expended by the Employer, in the currency in which the sum was expended by the Employer; and

(d) in any other case, in such currency as may be agreed.

If the part payable in a particular currency of any sum payable to the Contractor is wholly or partly insufficient to satisfy by way of deduction or set-off a payment due to the Employer in that currency, in accordance with the provisions of this Sub-Clause, then the Employer may if he so desires make such deduction or set-off wholly or partly as the case may be from the balance of such sum payable in other currencies.

Where all payments are to be made in one currency the following Sub-Clause may be added:

EXAMPLE SUB-CLAUSE (to be numbered, as appropriate)

Currency of Account and Payments

60. *The currency of account shall be the (insert name of currency) and all payments made in accordance with the Contract shall be in (insert name of currency). Such (insert name of currency), other than for local costs, shall be fully convertible. The percentage of such payments attributed to local costs shall be as stated in the Appendix to Tender.*

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Where place of payment is to be defined the following Sub-Clause may be added:

EXAMPLE SUB-CLAUSE (to be numbered, as appropriate)

Place of Payment ***60.*** *Payments to the Contractor by the Employer shall be made into a bank account nominated by the Contractor in the country of the currency of payment. Where payment is to be made in more than one currency separate bank accounts shall be nominated by the Contractor in the country of each currency and payments shall be made by the Employer accordingly.*

Where provision is to be included for an advance payment the following Sub-Clause may be added:

EXAMPLE SUB-CLAUSE (to be numbered, as appropriate)

Advance Payment ***60.*** *An advance payment of the amount stated in the Appendix to Tender shall, following the presentation by the Contractor to the Employer of an approved performance security in accordance with Sub-Clause 10.1 and a Guarantee in terms approved by the Employer for the full value of the advance payment, be certified by the Engineer for payment to the Contractor. Such Guarantee shall be progressively reduced by the amount repaid by the Contractor as indicated in Interim Payment Certificates of the Engineer issued in accordance with this Clause. The advance payment shall not be subject to retention. The advance payment shall be repaid by way of reduction in Interim Payment Certificates commencing with the next certificate issued after the total certified value of the Permanent Works and any other items in the Bill of Quantities (excluding the deduction of retention) exceeds (insert figure) per cent of the sum stated in the Letter of Acceptance. The amount of the reduction in each Interim Payment Certificate shall be one (insert fraction) of the difference between the total value of the Permanent Works and any other items in the Bill of Quantities (excluding the deduction of retention) due for certification in such Interim Payment Certificate and the said value in the last preceding Interim Payment Certificate until the advance payment has been repaid in full. Provided that upon the issue of a Taking-Over Certificate for the whole of the Works or upon the happening of any of the events specified in Sub-Clause 63.1 or termination under Clauses 65, 66 or 69, the whole of the balance then outstanding shall immediately become due and payable by the Contractor to the Employer.*

Clause 67

Where it is considered desirable to add to Sub-Clauses 67.3 provisions with respect to the number of arbitrators, the place of arbitration and the language of arbitration, the following paragraphs may be added to Sub-Clause 67.3:

EXAMPLE

The arbitral tribunal shall consist of ..... (a sole or three) arbitrator(s).

The place of arbitration shall be .....(city and country).

The language of the arbitration shall be.....

It is desirable that the place of arbitration be situated in a state, other than that of the Employer or the Contractor, which has a modern and liberal arbitration law and which has ratified a bilateral or multilateral convention (such as the 1958 New York Convention on the Recognition and Enforcement of Foreign Arbitral Awards), or both, that would facilitate the enforcement of an arbitral award in the states of the parties to the Contract.

In the absence of stipulations as to the three above mentioned matters, (number of arbitrators, place of arbitration and language of arbitration), the ICC will decide on the number of arbitrators (typically three in any substantial construction dispute) and on the place of arbitration. The arbitral tribunal will decide on the language of the arbitration if the parties cannot agree.

It may also be considered desirable in some cases for other parties to be joined into any arbitration between the Employer and the Contractor, thereby creating a multi-party arbitration. While this may be feasible, multi-party arbitration clauses require skillful draftmanship on a case-by-case basis. No satisfactory standard form of multi-party arbitration clause for international use has yet been developed.

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Where it is decided that a settlement of dispute procedure, other than that of the International Chamber of Commerce (ICC), should be used the Clause may be varied.

Sub-Clause 67.3 – Arbitration

EXAMPLE
Following paragraph (b), delete the words "shall be finally settled... International Chamber of Commerce" and substitute "shall be finally settled under the UNCITRAL Arbitration Rules as administered by (insert name of administering authority)".

Where alternatives to the ICC are considered care should be taken to establish that the favoured alternative is appropriate for the circumstances of the Contract and that the wording of Clause 67 is checked and amended as may be necessary to avoid any ambiguity with the alternative. Care should be taken to define exactly how the arbitral tribunal is to be appointed and, where appropriate, an appointing authority should be designated.

Clause 68

Sub-Clause 68.2 – Notice to Employer and Engineer

For the purposes of this Sub-Clause the respective addresses are:

(a) The Employer (insert address)

(b) The Engineer (insert address)

The addresses should be inserted when the documents are being prepared prior to inviting tenders.

Clause 69

Sub-Clause 69.1 – Default of Employer

Where the Employer is a government it may be considered appropriate to vary the Sub-Clause.

EXAMPLE
Delete paragraph (c) and renumber paragraph (d) as (c).

Where the terms of the Sub-Clause, when read in conjunction with Sub-Clause 69.3, are in conflict with the law of the country the Sub-Clause may require to be varied.

EXAMPLE
Delete "or" at the end of paragraph (c) and delete paragraph (d).

Clause 70

Three alternative methods of dealing with price adjustment are given below.

The first alternative is suitabie where a contract is of short duration and no price adjustment is to be made:

Sub-Clause 70.1—Increase or Decrease in Cost

EXAMPLE
Delete the text of the Sub-Clause and substitute

Subject to Sub-Clause 70.2, the Contract Price shall not be subject to any adjustment in respect of rise or fall in the cost of labour, materials or any other matters affecting the cost of execution of the Contract.

Sub-Clause 70.2—Subsequent Legislation

EXAMPLE
Delete the words ", other than under Sub-Clause 70.1, ".

The second alternative is suitable where price adjustment is to be made by establishing the difference in cost between the basic price and the current price of local labour and specified materials:

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Sub-Clause 70.1—Increase or Decrease in Cost

EXAMPLE

Delete the text of the Sub-Clause and substitute

Adjustments to the Contract Price shall be made in respect of rise or fall in the cost of local labour and specified materials as set out in this Sub-Clause.

(a) Local Workmen

(i) For the purpose of this Sub-Clause:
"Local Workmen" means skilled, semi-skilled and unskilled workmen of all trades engaged by the Contractor on the Site for the purpose of or in connection with the Contract or engaged full time by the Contractor off the Site for the purpose of or in connection with the Contract (by way of illustration but not limitation: workmen engaged full time in any office, store, workshop or quarry);
"Basic Rate" means the applicable basic minimum wage rate prevailing on the date 28 days prior to the latest date for submission of tenders by reason of any National or State Statute, Ordinance, Decree or other Law or any regulations or bye-law of any local or other duly constituted authority, or in order to conform with practice amongst good employers generally in the area where the Works are to be carried out; and
"Current Rate" means the applicable basic minimum wage rate for Local Workmen prevailing on any date subsequent to the date 28 days prior to the latest date set for submission of tenders by reason of any National or State Statute, Ordinance, Decree or other Law or any regulation or bye-law of any local or other duly constituted authority, or in order to conform with practice amongst good employers generally in the area where the works are to be carried out.

(ii) The adjustment to the Contract Price under the terms of this Sub-Clause shall be calculated by multiplying the difference between the Basic and Current Rates for Local workmen by:

(a) the number of all hours actually worked, and

(b) in respect of those hours worked at overtime rates, by the product of the number of said hours and the percentage addition required by the law to be paid by the Contractor for overtime.

Such adjustment may be either an addition to or a deduction from the Contract Price.

(iii) No other adjustment of the Contract Price on account of fluctuation in the remuneration of Local Workmen shall be made.

(b) Specified Materials

(i) For the purpose of this Sub-Clause:
"Specified Materials" means the materials stated in Appendix (insert reference) to Tender required on the Site for the execution and completion of the Works;

"Basic Prices" means the current prices for the specified materials prevailing on the date 28 days prior to the latest date for submission of tenders; and

"Current Prices" means the current prices for the specified materials prevailing at any date subsequent to the date 28 days prior to the latest date for submission of tenders.

(ii) The adjustment to the Contract Price under the terms of this Sub-Clause shall be calculated by applying the difference between the Basic and Current Prices to the quantity of the appropriate Specified Material which is delivered to the Site during the period for which the particular Current Price is effective. Such adjustment may be either an addition to or a deduction from the Contract Price.

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(iii) The Contractor shall use due diligence to ensure that excessive wastage of the Specified Materials shall not occur. Any Specified Materials removed from the Site shall be clearly identified in the records required under paragraph (d) of this Sub-Clause.

(iv) The provisions of this Sub-Clause shall apply to fuels used in Contractor's Equipment engaged on the Site for the purposes of executing the Works, including vehicles owned by the Contractor (or hired by him under long term arrangements under which the Contractor is obligated to supply fuel) engaged in transporting any staff, labour, Contractor's Equipment, Temporary Works, Plant or materials to and from the Site. Such fuels shall be clearly identified in the records required under paragraph (d) of this Sub-Clause. The provisions of this Sub-Clause shall not apply to any fuels sold or supplied to any employee of the Contractor or to any person for use in any motor vehicle not being used for the purposes of the Contract.

(v) The Contractor shall at all times have regard to suitable markets and shall, whenever buying materials a variation in the cost of which would give rise to an adjustment of the Contract Price under this Sub-Clause, be diligent to buy or procure the same at the most economical prices as are consistent with the due performance by the Contractor of his obligations under the Contract.

If at any time there shall have been any lack of diligence, default or negligence on the part of the Contractor, whether in observing the above requirements or otherwise, then, for the purposes of adjusting the Contract Price pursuant hereto, no account shall be taken of any increase in cost which may be attributable to such lack of diligence, default or negligence and the amount by which any cost would have been decreased but for such lack of diligence, default or negligence shall be deducted from the Contract Price.

(vi) No other adjustment to the Contract Price on account of fluctuation in the cost of materials shall be made.

(c) Overheads and Profits Excluded

In determining the amount of any adjustment to the Contract Price pursuant to this Sub-Clause no account shall be taken of any overheads or profits.

(d) Notices and Records

The Contractor shall forthwith, upon the happening of any event which may or may be likely to give rise to adjustment of the Contract Price pursuant to this Sub-Clause, give notice thereof to the Engineer and the Contractor shall keep such books, accounts and other documents and records as are necessary to enable adjustment under this Sub-Clause to be made and shall, at the request of the Engineer, furnish any invoices, accounts, documents or records so kept and such other information as the Engineer may require.

(e) Adjustment after Date of Completion

Adjustment to the Contract Price, after the due date for completion of the whole of the Works pursuant to Clause 43, or after the date of completion of the whole of the Works certified pursuant to Clause 48, shall be made in accordance with Current Rates or Current Prices, as applicable, ruling at the due date for completion or the date stated in the Taking-Over Certificate, whichever is the earlier.

(f) Determination of Adjustment to Contract Price

The amount of any adjustment to the Contract Price pursuant to this Sub-Clause shall be determined by the Engineer in accordance with the foregoing rules.

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EXAMPLE APPENDIX TO TENDER
for use in conjunction with the second alternative.

SPECIFIED MATERIALS

MATERIAL	*UNIT*	*PRICE AND LOCATION*	*TRANSPORT TO SITE*	*PRICE DELIVERED TO SITE*	*REMARKS*
Bitumen					
Diesel *Petrol* *Lubricants*					
Cement					
Reinforcing Steel					
Explosives					

NOTES:

1. The Contractor shall provide copies of quotations to substantiate all prices included in the above table.

2. All subsequent price substantiation shall be from the same source as original unless otherwise agreed by the Engineer.

3. The Contractor shall submit full explanation and provide substantiating documentation for the mode of transport to Site he proposes. Only the proposed documented mode of transport shall qualify for price adjustment.

(Note: Materials stated in the Appendix to Tender should be those of which substantial quantities are involved.)

The third alternative is suitable where price adjustment is to be made through the application of indices in a formula:

Sub-Clause 70.1 – Increase or Decrease in Cost

EXAMPLE
Delete the text of the Sub-Clause and substitute

(a) Adjustments to the Contract Price in respect of rise and fall in the cost of labour and materials and other matters affecting the cost of execution of the Works shall be calculated for each monthly statement pursuant to Sub-Clause 60.1, the Statement at Completion pursuant to Sub-Clause 60.5 and the Final Statement pursuant to Sub-Clause 60.6 in accordance with the provisions of this Sub-Clause if there shall be any changes in the following Index figures compiled by (insert details of source of indices) and published by (insert details of publication):

(i) the Index of the cost of Labour in (insert name of country),

(ii) the Index of the cost of (insert other factor, as relevant), or

(iii) the Index of the cost of (insert other factor, as relevant).

(b) For the purpose of this Sub-Clause:

(i) "Base Index Figure" shall mean the index figure applicable on the date 28 days prior to the latest date for submission of tenders, and

(ii) "Current Index Figure" shall mean the index figure applicable on the last day of the period to which the particular statement relates.

Provided that in respect of any work the value of which is included in any such monthly statement (or Statement at Completion or Final Statement) and which was executed after the due date (or extended date) for completion of the whole of the Works, pursuant to Clause 43, the Current Index Figure shall be the index figure applicable on the aforesaid due date (or extended date) for completion of the whole of the Works.

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(iii) "Effective Value" shall be the difference between:

(a) The amount which is due to the Contractor under the provisions of Sub-Clauses 60.2, 60.5 or 60.8 (before deducting retention and excluding repayment of the advance payment) less any amounts for:

work executed under nominated Subcontracts

materials and Plant on the Site, as referred to in Sub-Clause 60.1 (c)

dayworks, variations or any other items based on actual cost or current prices, and bonuses (if any)

adjustments under Clause 70,

and

(b) The amount calculated in accordance with (b) (iii) (a) of this Sub-Clause and included in the last preceding statement.

(c) The adjustment to the Contract Price shall be calculated by multiplying the Effective Value by a Price Fluctuation Factor which shall be the net sum of the products obtained by multiplying each of the proportions given in paragraph (d) of this Sub-Clause by the following fraction:

$$\frac{\text{Current Index Figure} - \text{Base Index Figure}}{\text{Base Index Figure}}$$

calculated using the relevant index figures.

(d) For the purpose of calculating the Price Fluctuation Factor, the proportions referred to in paragraph (c) of this Sub-Clause shall (irrespective of the actual constituents of the work) be as follows:

0. in respect of labour (and supervision) costs subject to adjustment by reference to the Index referred to in (a) (i) of this Sub-Clause;

0. in respect of by reference to the Index referred to in (a) (ii) of this Sub-Clause;

0. in respect of by reference to the Index referred to in (a) (iii) of this Sub-Clause;

0. in respect of all other costs which shall not be subject to any adjustment;

1.00 Total

(e) Where the value of an Index is not known at the time of calculation, the latest available value shall be used and any adjustment necessary shall be made in subsequent monthly statements.

(Note: The number of indices included under (a) of this Sub-Clause may be varied, if it is determined that a different number of factors should be separately identified, and in such case (d) of this Sub-Clause must be altered to be consistent.)

Clause 72

Sub-Clause 72.2 – Currency Proportions

Where it is decided that the rate or rates of exchange shall be established from a source other than the Central Bank of the country, the Sub-Clause may be varied.

EXAMPLE

Delete the words from "prevailing... " to the end of the sentence and substitute "stated in the Appendix to Tender".

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Clause 73 onwards

Where circumstances require, additional Clauses may be added.

EXAMPLE CLAUSES (to be numbered, starting with Clause 73, as appropriate).

Where the law applicable to the Contract does not cover bribery, the following example Clause may be added.

Bribes **.1** *If the Contractor or any of his Subcontractors, agents or servants offers to give or agrees to offer or give to any person, any bribe, gift, gratuity or commission as an inducement or reward for doing or forbearing to do any action in relation to the Contract or any other contract with the Employer or for showing or forbearing to show favour or disfavour to any person in relation to the Contract or any other contract with the Employer, then the Employer may enter upon the Site and the Works and terminate the employment of the Contractor and the provisions of Clause 63 hereof shall apply as if such entry and termination had been made pursuant to that Clause.*

Where circumstances require that particular confidentiality is observed, the following example Clause may be added.

Details to be Confidential **.1** *The Contractor shall treat the details of the Contract as private and confidential, save in so far as may be necessary for the purposes thereof, and shall not publish or disclose the same or any particulars thereof in any trade or technical paper or elsewhere without the previous consent in writing of the Employer or the Engineer. If any dispute arises as to the necessity of any publication or disclosure for the purpose of the Contract the same shall be referred to the Employer whose determination shall be final.*

Where the Contract is being financed wholly or in part by an international financial institution whose rules or policies require a restriction on the use of the funds provided, the following example Clause may be added.

Expenditure Restricted **.1** *The Contractor shall not make any expenditures for the purpose of the Contract in the territories of any country which is not a member of (insert name of international financial institution) nor shall he make any expenditure for goods produced in or services supplied from such territories.*

Where the Contractor may be a joint venture, the following example Clause may be added.

Joint and Several Liability **.1** *If the Contractor is a joint venture of two or more persons, all such persons shall be jointly and severally bound to the Employer for the fulfilment of the terms of the Contract and shall designate one of such persons to act as leader with authority to bind the joint venture. The composition or the constitution of the joint venture shall not be altered without the prior consent of the Employer.*

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CONDITIONS OF PARTICULAR APPLICATION

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EDITORIAL AMENDMENTS IN 1988

Following publication in 1987 of the Fourth Edition of the Conditions of Contract for Works of Civil Engineering Construction, a number of editorial amendments were agreed by FIDIC. The amendments have been incorporated during reprinting in 1988 and the list below clarifies the differences between the 1988 reprint and the original document.

Page 5 Clause 9. The words "as stated in Sub-Clause 9.1 of Part 1 of these Conditions" have been added to the final line of the first paragraph.

Page 6 Sub-Clause 12.2. A comma has been moved from after the word "words" to immediately before the word "other". The word "Site" has been capitalised.

Page 7 Example performance guarantee. A comma previously appeared between the words "and" and "complete" in the third line of the paragraph beginning "Whereas" .
The fifth line of the paragraph beginning "Now the Condition . . ." previously read ". . . default by the Contract . . ."

Page 12 Sub-Clause 21.3. (b) (ii). A full stop has been inserted following "50".

Page 13 Sub-Clause 34. Repatriation of Labour. A comma has been inserted between the words "country)" and "shall".

Page 14 Sub-Clause 34. Epidemics. The word "Contractor" has been capitalised in the first line.
Sub-Clause 34. Alcoholic Liquor or Drugs. The word "Contractor" has been capitalised in the first line.

Page 15 Sub-Clause 40.3. This was previously incorrectly listed as 40.2.

Page 17 Sub-Clause 49.5. The last line of the first paragraph previously read " . . . extend beyond 730 days".

Page 20 Sub-Clause 67.3. The word "a" previously appeared before the bracket on the penultimate line of the Example.

Page 21 Sub-Clause 70.2. A comma has been moved from after the word "words" to immediately before the word "other".

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FURTHER AMENDMENTS IN 1992

The following amendments have been made to the 1988 reprint of the Fourth Edition. In addition, some minor changes in the use of punctuation marks (commas, semicolons, colons and stops), as well as the use of the words "or" and "and" have been introduced to attain uniformity in the style of all Clauses. These minor changes which improve the style, but which have no effect on the meaning of Clauses, have not been listed below.

Contents The words "Index" and "Editorial Amendments" have been added at the bottom of the page.

Page 1 INTRODUCTION. The words ", subject to minor modifications" have been added, and the word " equally" changed to read "also".

Page 3 Sub-Clause 1.1. In the last sentence, the words "for example the name of an International Financing Institution (IFI)" have been deleted.

Page 4 Clause 9. In the first paragraph the words "of Part I" have been added. In the second paragraph "1" has been corrected to read "I".

Page 5 Clause 12. Sub-Clause 12.2. In the title the word "Adverse" has been changed to read "Not Foreseeable" (also amended in the Contents and the Index).

Page 10 Sub-Clause 21.1, sub-para (a). The words "(the term "cost" in this context shall include profit)" have been added.

Page 13 Example Sub-Clause for Supply of Foodstuffs. The words "staff and labour, or his Subcontractors" have been changed to read " staff, labour and Subcontractors"

Page 19 Example Sub-Clause for Advance Payment. The words "interim certificate" have been changed to read "Interim Payment Certificate", in both the singular and plural.

Clause 67. The first four paragraphs of the commentary have been added.

Page 24 Sub-Clause 70.1. In the formula, the word "Based" has been corrected to read "Base".

Page 25 Example Clause for Bribes. The word "Sub-contractors" has been corrected to read "Subcontractors".

Example Clause for Details to be Confidential. In the sixth line, the words "the decision of" have been deleted. In the seventh line, the word "award" has been changed to read "determination"

Example Clause for Expediture Restricted. In the commentary and text, the leading capital letters on the words "International Financing Institutions" have been changed to small letters. In the commentary, the word "Articles" has been changed to read "rules or policies". In the third line, the word "not" has been corrected to read "nor".

EDITORIAL AMENDMENTS (1988). In the last item, the words "Line 21" have been corrected to read "Page 21".

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SECTION VI

SPECIAL CONDITIONS OF CONTRACT

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SPECIAL CONDITIONS OF CONTRACT

(Mandatory Provisions not to be Amended / Substituted except as instructed by PEC)

1.1 Definitions

(a) (i) The Employer is:

Director General (FO), North
National Grid Company of Pakistan (NGC)
34-Industrial Area, NGC House,
Gulberg-III, Lahore-Pakistan
Telephone No. 92-42-99268292
E-mail address: ce.amnl@ntdc.com.pk

(a) (iv) The Engineer is:

Director General (FO), North
National Grid Company of Pakistan (NGC)
34-Industrial Area, NGC House,
Gulberg-III, Lahore-Pakistan
Telephone No. 92-42-99268292
E-mail address: ce.amnl@ntdc.com.pk

or any other competent person appointed by the Employer, and notified to the Contractor, to act in replacement of the Engineer. Provided always that except in cases of professional misconduct, the outgoing Engineers is to formulate his certifications/recommendations in relation to all outstanding matters, disputes and claims relating to the execution of the Works during his tenure.

The following paragraph is added:

(a)(vi) "Bidder or Tenderer" means any person or persons, company, corporation, firm or joint venture submitting a Bid or Tender.

(b)(v) The following is added at the end of the paragraph:

The word "Tender" is synonymous with "Bid" and the word "Tender Documents" with "Bidding Documents".

The following paragraph is added:

(b)(ix) "Programme" means the programme to be submitted by the Contractor in accordance with Sub-Clause 14.1 and any approved revisions thereto.

(e)(i) The text is deleted and substituted with the following:

"Contract Price" means the sum stated in the Letter of Acceptance as payable to the Contractor for the execution and completion of the Works subject to such additions thereto or deductions there from as may be made and remedying of any defects therein in accordance with the provisions of the Contract.

2.1 Engineer's Duties and Authority

With reference to Sub-Clause 2.1(b), the following provisions shall also apply;

The Engineer shall obtain the specific approval of the Employer before carrying out his duties in accordance with the following Clauses:

(i) Consenting to the sub-letting of any part of the Works under Sub-Clause 4.1 "Subcontracting".

(ii) Certifying additional cost determined under Sub-Clause 12.2 "Not Foreseeable Physical Obstructions or Conditions".

(iii) Any action under Clause 10 "Performance Security" and Clauses 21,23,24 & 25 "Insurance" of sorts.

(iv) Any action under Clause 40 "Suspension".

(v) Any action under Clause 44 "Extension of Time for Completion".

(vi) Any action under Clause 47 "Liquidated Damages for Delay" or Payment of Bonus for Early Completion of Works (PCC Sub-Clause 47.3).

(vii) Issuance of "Taking over Certificate" under Clause 48.

(viii) Issuing a Variation Order under Clause 51, except:

a) in an emergency* situation, as stated here below, or

b) if such variation would increase the Contract Price by less than the amount stated in the Appendix-A to Bid.

(ix) Fixing rates or prices under Clause 52.

(x) Extra payment as a result of Contractor's claims under Clause 53.

(xi) Release of Retention Money to the Contractor under Sub-Clause 60.3 "Payment of Retention Money".

(xii) Issuance of "Final Payment Certificate" under Sub-Clause 60.8.

(xiii) Issuance of "Defect Liability Certificate" under Sub-Clause 62.1.

(xiv) Any change in the ratios of Contract currency proportions and payments thereof under Clause 72 "Currency and Rate of Exchange".

(Note: Employer may further vary according to need of the project)

* (If in the opinion of the Engineer an emergency occurs affecting the safety of life or of the Works or of adjoining property, the Engineer may, without relieving the Contractor of any of his duties and responsibilities under the Contract, instruct the Contractor to execute all such work or to do all such things as may, in the opinion of the Engineer, be necessary to abate or reduce the risk. The Contractor shall forthwith comply with any such instruction of the Engineer. The Engineer shall

determine an addition to the Contract Price, in respect of such instruction, in accordance with Clause 52 and shall notify the Contractor accordingly, with a copy to the Employer.)

2.3 Engineer's Authority to delegate:

The following paragraph is added:

The Chief Engineer (T/L Design) shall act as representative of Engineer for providing in house Engineering Services including but not limited to the following:

a) Review & approval of technical data/ drawings/design
b) Interpretation of the bidding documents
c) Review & approval of profile/plan tabling/route plan
d) Foundation designs, review and approvals
e) Site visits for attending any technical problem if necessary
f) Resolution of disputes
g) Review & approval of all technical matters

The following Sub-Clauses 2.7 and 2.8 are added:

2.7 Engineer Not Liable

Approval, reviews and inspection by the Engineer of any part of the Works does not relieve the Contractor from his sole responsibility and liability for the supply of materials, plant and equipment for construction of the Works and their parts in accordance with the Contract and neither the Engineer's authority to act nor any decision made by him in good faith as provided for under the Contract whether to exercise or not to exercise such authority shall give rise to any duty or responsibility of the Engineer to the Contractor, any Subcontractor, any of their representatives or employees or any other person performing any portion of the Works.

2.8 Replacement of the Engineer

If the Employer intends to replace the Engineer, the Employer shall, not less than 14 days before the intended date of replacement, give notice to the Contractor, of the name, address and relevant experience of the intended replacement Engineer. The Employer shall not replace the Engineer with a person against whom the Contractor raises reasonable objection by notice to the Employer, with supporting particulars.

5.1 Language(s) and Law

(a) The Contract Documents shall be drawn up in the English language.
(b) The Contract shall be subject to the Laws of Islamic Republic of Pakistan.

5.2 Priority of Contract Documents

The documents listed at (1) to (6) of the Sub-Clause are deleted and substituted with the following:

(1) The Contract Agreement (if completed);

(2) The Letter of Acceptance;
(3) The completed Form of Bid;
(4) Special Stipulations (Appendix-A to Bid);
(5) The Special Conditions of Contract;
(6) The General Conditions;
(7) The priced Bill of Quantities;
(8) The completed Appendices to Bid;
(9) The Specifications
(10) The Drawings;

All Drawings and Specifications shall be interpreted in conformity with the Contract and these Conditions. Addendum, if any, shall be deemed to have been incorporated at the appropriate places in the documents forming the Contract. If any ambiguity or discrepancy is found in the documents, the Engineer shall issue any necessary clarification or instruction which shall be binding.

6.1 Custody and supply of Drawings & Documents

The contractor shall supply a soft copy of such drawings in source file and any other format specified by the Engineer.

The following Sub-Clauses 6.6 and 6.7 are added:

6.6 Shop Drawings

The Contractor shall submit to the Engineer for review 3 copies of all shop and erection drawings applicable to this Contract as per provision of relevant Sub-Clause of the Contract.

Review and approval by the Engineer shall not be construed as a complete check but will indicate only that the general method of construction and detailing is satisfactory and that the Engineer's review or approval shall not relieve the Contractor of any of his responsibilities under the Contract.

6.7 As-Built Drawings

At the completion of the Works under the Contract, the Contractor shall furnish to the Engineer 6 copies and one reproducible of all drawings amended to conform to the Works as built. The price of such Drawings shall be deemed to be included in the Contract Price.

10.1 Performance Security

The text is deleted and substituted with the following:

The Contractor shall provide Performance Security to the Employer in the prescribed form. The said Security shall be furnished or caused to be furnished by the Contractor within 14 days after the receipt of the Letter of Acceptance. The

Performance Security shall be of an amount equal to 10% of the Contract Price stated in the Letter of Acceptance. Such Security shall, at the option of the bidder, be in the form of bank guarantee from any Scheduled Bank in Pakistan. The cost of complying with requirements of this Sub-Clause shall be borne by the Contractor.

The following Sub-Clause 10.4 is added:

10.4 Performance Security Binding on Variations and Changes

The Performance Security shall be binding irrespective of changes in the quantities or variations in the Works or extensions in Time for Completion of the Works which are granted or agreed upon under the provisions of the Contract.

11.1 Inspection of Site

Bidder shall inspect the site, examine and obtain all information required and satisfy himself regarding matters and things such as access to site, communication, transport, right of way, the type and number of equipment and facilities required for the satisfactory completion of work, the quantity of various sections of the work, the availability of local labour, availability and rates of materials, local working conditions, uncertainties of weather, obstructions and hindrances that may arise etc., which may affect the work or cost thereof, before submission of his bid. Ignorance of site conditions shall not be accepted by the owner as basis for any claim for compensation. The submission of a bid by the bidder will be construed as evidence that such an examination was made and any later claims/disputes in regard to rates quoted shall not be entertained or considered by the owner.

If any temporary feeder road within site is considered essential for the proper execution of the work this shall have to be formed by the Contractor at his own cost with the prior approval of the Engineer. The Contractor shall organize his own arrangement to transport his equipment, men and materials in such a manner that the completion period will not be exceeded on any account.

The rates quoted by Bidder shall be based on his own knowledge and judgement of the conditions and hazards involved and shall not be based on any representations to the Engineer.

14.1 Programme to be submitted

The Contractor shall submit a detailed time programme to the Engineer within 14 days after receipt of Letter of Acceptance.

The Contractor shall also submit a revised programme whenever the previous programme is inconsistent with actual progress or with the Contractor's obligations.

Each programme shall be in the form of bar chart or a CPM chart identifying the critical activities and include:

a) The order in which the Contractor intends to carry out the Works, including the anticipated timing of each stage of design (if any), Contractor's Documents,

procurement, delivery to Site, construction, erection and testing.

b) Each of these stages for work by each nominated subcontractor

c) The sequence and timing of site inspections and tests specified in the Contract, and a supporting report which includes:

i) A general description of the methods which the Contractor intends to adopt, and of the major stages, in the execution of the Works, and

ii) Details showing the Contractor's reasonable estimate of the number of each class of Contractor's Personnel and of each type of Contractor's Equipment, required on the Site for each major stage.

Unless the Engineer, within 21 days after receiving a programme, gives notice to the Contractor stating the extent to which it does not comply with the Contract, the Contractor shall proceed in accordance with the programme, subject to his other obligations under the Contract. The Employer's Personnel shall be entitled to rely upon the programme when planning their activities.

If, at any time, the Engineer gives notice to the Contractor that a programme fails (to the extent stated) to comply with the Contract or to be consistent with actual progress and the Contractor's stated intentions, the Contractor shall submit a revised programme to the Engineer in accordance with this Sub-Clause.

The period between the Program updates will be 30 days. If the contractor fails to submit an updated program in time, any payment due for his current bills will be withheld till the submission of such programme.

14.3 Cash Flow Estimate to be submitted

The detailed Cash Flow Estimate shall be submitted within 21 days from the date of receipt of Letter of Acceptance

The following Sub-Clause 14.5 is added:

14.5 Monthly Progress Report

During the period of the Contract, the Contractor shall submit to the Engineer not later than the 8th day of the following month, copies of Monthly Progress Reports covering:

(1) A Construction Schedule indicating the monthly progress in percentage;
(2) Description of all work carried out since the last report;
(3) Description of the work planned for the next 56 days sufficiently detailed to enable the Engineer to determine his programme of inspection and testing;
(4) Monthly summary of daily job record;
(5) Photographs to illustrate the status of progress on the Site.
(6) Information about problems and difficulties encountered, if any, and

proposals to overcome the same.

(7) Charts and detailed descriptions of progress, including each stage of design (if any), Contractor's Documents, delivery of material to Site, construction, erection and testing; and including these stages for work by each nominated Subcontractor.

(8) The details described in Sub-Clause 35.1 [Return of labor & Contractor's Equipment]

(9) Copies of quality assurance documents, test results and certificates of Materials.

(10) List of notices given under Sub-Clause 68.1[Notice to Contractor] and notices given under Sub-Clause 68.2[Notice to Employer & Engineer].

(11) Safety statistics, including details of any hazardous incidents and activities relating to environmental aspects and public relations.

(12) Comparisons of actual and planned progress, with details of any events or circumstances which may jeopardize the completion in accordance with the Contract, and the measures being (or to be) adopted to overcome delays.

These progress reports will be submitted as per the following distribution list:

(1) G.M (AM) North, NGC
(2) CE (AM), NGC
(3) CE (T/L Design), NGC
(4) Manager (AM) NGC Concerned
(5) XEN (AM) NGC Concerned

During the period of the Contract, the Contractor shall keep a daily record of the work progress, which shall be made available to the Engineer as and when requested. The daily record shall include particulars of weather conditions, number of men working, deliveries of materials, quantity, location and assignment of Contractor's equipment.

15.1 Contractor's Superintendence

The Contractor's authorised representative and his other professional engineers working at Site shall register themselves with the Pakistan Engineering Council.

The Contractor's authorised representative at Site shall be authorised to exercise adequate administrative and financial powers on behalf of the Contractor so as to achieve completion of the Works as per the Contract.

The following Sub-Clauses 15.2 is added:

15.2 Language Ability of Contractor's Representative

The Contractor's authorized representative shall be fluent in the English language. Alternately an interpreter with ability of English language shall be provided by the Contractor on full time basis.

The following Sub-Clauses 16.3 and 16.4 are added:

16.3 Language Ability of Superintending Staff of Contractor

A reasonable proportion of the Contractor's superintending staff shall have a working knowledge of the English language. If the Contractor's superintending staffs is not fluent in English language, the Contractor shall make competent interpreters available during all working hours in a number deemed sufficient by the Engineer.

16.4 Employment of Local Personnel

The Contractor is encouraged, to the extent practicable and reasonable, to employ staff and labour from sources within Pakistan.

The following Sub-Clauses 19.3 and 19.4 are added:

19.3 Safety Precautions

In order to provide for the safety, health and welfare of' persons, and for prevention of damage of any kind, all operations for the purposes of or in connection with the Contract shall be carried out in compliance with the Safety Requirements of the Government of Pakistan with such modifications thereto as the Engineer may authorise or direct and the Contractor shall take or cause to be taken such further measures and comply with such further requirements as the Engineer may determine to be reasonably necessary for such purpose.

The Contractor shall make, maintain and submit reports to the Engineer concerning safety, health and welfare of persons and damage to property, as the Engineer may from time to time prescribe.

19.4 Lighting Work at Night

In the event of work being carried out at night, the Contractor shall at his own cost, provide and maintain such good and sufficient light as will enable the work to proceed satisfactorily and without danger. The approaches to the Site and the Works where the night-work is being carried out shall be sufficiently lighted. All arrangement adopted for such lighting shall be to the satisfaction of the Engineer's Representative.

20.4 Employer's Risks

The Employer's risks are:

Notwithstanding anything contained (in GCC 20.4), the Employer shall not be responsible, compensate or bear any kind of risk/liability whatsoever in nature. The responsibility for safe and sound handling of all dismantled material will be on part of contractor. The watch and ward of site with material will be responsibility of contractor round the clock to avoid any theft incident.

21.1 Insurance of Works and Contractor's Equipment

The minimum insurance amounts and deductibles shall be:

(a) For the Works and Materials: Full value of material.

(b) For loss or damage to Equipment: Full value of the loss/damage.

(c) For loss or damage to property (except the Works, Materials, and Equipment) in connection with Contract: Full value of loss/damage to property

(d) For personal injury or death:

i) of the Contractor's employees: In accordance with such applicable laws in Pakistan

ii) of other people: : In accordance with such applicable laws in Pakistan

21.4 Exclusions

The text is deleted and substituted with the following:

There shall be no obligation for the insurances in Sub-Clause 21.1 to include loss or damage caused by the risks listed under Sub-Clause 20.4 sub paragraph (a) to (h).

25.3 Remedy on Contractor Failure to Insure

Delete the text and substitute with the following:

The Contractor shall effect and keep in force all insurances required under the contract. The Employer shall not affect any kind of insurance on behalf of this project.

25.4 Compliance with Policy Conditions

Delete the text and substitute with the following:

"In the event that the Contractor fails to comply with conditions imposed by the insurance policies affected pursuant to the contract, the Contractor shall indemnify the employer against all losses and claims arising from such failure."

The following Sub-Clause 25.5 is added:

25.5 Insurance Company

The Contractor shall be obliged to place all insurances relating to the Contract (including, but not limited to, the insurances referred to in Clauses 21, 23 and 24) with either National Insurance Company of Pakistan or any other insurance company operating in Pakistan and acceptable to the Employer.

Costs of such insurances shall be borne by the Contractor.

The following Sub-Clause 31.3 is added:

31.3 Co-operation with other Contractors

During the execution of the Works, the Contractor shall co-operate fully with other contractors working for the Employer at and in the vicinity of the Site and also shall

provide adequate precautionary facilities not to make himself a nuisance to local residents and other contractors.

The following Sub-Clauses 34.2 to 34.12 are added:

34.2 Rates of Wages and Conditions of Labour

The Contractor shall pay rates of' wages and observe conditions of labour not less favourable than those established for the trade or industry where the work is carried out. In the absence of any rates of wages or conditions of labour so established, the Contractor shall pay rates of wages and observe conditions of labour which are not less favourable than the general level of wages and conditions observed by other employers whose general circumstances in the trade or in industry in which the Contractor is engaged are similar.

34.3 Employment of Persons in the Service of Others

The Contractor shall not recruit his staff and labour from amongst the persons in the services of the Employer or the Engineer; except with the prior written consent of the Employer or the Engineer, as the case may be.

34.4 Housing for Labour

Save insofar as the Contract otherwise provides, the Contractor shall provide and maintain such housing accommodation and amenities as he may consider necessary for all his supervisory staff and labour, employed for the purposes of or in connection with the Contract including all fencing, electricity supply, sanitation, cookhouses, fire prevention, water supply and other requirements in connection with such housing accommodation or amenities. On completion of the Contract, these facilities shall be handed over to the Employer or if the Employer so desires, the temporary camps or housing provided by the Contractor shall be removed and the Site reinstated to its original condition, all to the approval of the Engineer.

34.5 Health and Safety

Due precautions shall be taken by the Contractor, and at his own cost, to ensure the safety of his staff and labour at all times throughout the period of the Contract. The Contractor shall further ensure that suitable arrangements are made for the prevention of epidemics and for all necessary welfare and hygiene requirements.

34.6 Epidemics

In the event of any outbreak of illness of an epidemic nature, the Contractor shall comply with and carry out such regulations, orders and requirements as may be made by the Government, or the local medical or sanitary authorities, for purpose of dealing with and overcoming the same.

34.7 Supply of Water

The Contractor shall, so far as is reasonably practicable, having regard to local conditions**,** provide on the Site, to the satisfaction of the Engineer or his representative, adequate supply of drinking and other water for the use of his staff and labour.

34.8 Alcoholic Liquor or Drugs

The Contractor shall not, otherwise than in accordance with the Statutes, Ordinances and Government Regulations or Orders for the time being in force, import, sell, give, barter or otherwise dispose of any alcoholic liquor or drugs, or permit or suffer any such importation, sale, gift, barter or disposal by his Subcontractors, agents, staff or labour.

34.9 Arms and Ammunition

The Contractor shall not give, or otherwise dispose of to any person or persons, any arms or ammunition of any kind or permit or suffer the same as aforesaid.

34.10 Festivals and Religious Customs

The Contractor shall in all dealings with his staff and labour have due regard to all recognised festivals, days of rest and religious and other customs.

34.11 Disorderly Conduct

The Contractor shall at all times take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by or amongst staff and labour and for the preservation of peace and protection of persons and property in the neighbourhood of the Works against the same.

34.12 Compliance by Subcontractors

The Contractor shall be responsible for compliance by his Subcontractors of the provisions of this Clause.

35.1 Returns of Labour and Contractor's Equipment

The Contractor shall submit, to the Engineer, details showing the number of each class of Contractor's Personnel and of each type of Contractor's Equipment on the Site. Details shall be submitted each calendar month, in a form approved by the Engineer, until the Contractor has completed all work which is known to be outstanding at the completion date stated in the Taking Over Certificate for the Works.

The following Sub-Clauses 35.2 and 35.3 are added:

35.2 Records of Safety and Health

The Contractor shall maintain such records and make such reports concerning safety, health and welfare of persons and damage to property as the Engineer may from time to time prescribe.

35.3 Reporting of Accidents

The Contractor shall report to the Engineer details of any accident as soon as possible after its occurrence. In the case of any fatality or serious accident, the Contractor shall, in addition, notify the Engineer immediately by the quickest available means.

The following Sub-Clause 36.6 is added:

36.6 Use of Pakistani Materials and Services

The Contractor shall , so far as may be consistent with the Contract, make the maximum use of materials, supplies, plant and equipment indigenous to or produced or fabricated in Pakistan and services, available in Pakistan provided such materials, supplies, plant, equipment and services shall be of required standard.

41.1 Commencement of Works

The text is deleted and substituted with the following:

The Contractor shall commence the Works on Site within the period named in Appendix-A to Bid. Thereafter, the Contractor shall proceed with the Works with due expedition and without delay.

The following Sub-Clause 47.3 is added:

47.3 Bonus for Early Completion of Works

No bonus is admissible for the project.

48.2 Taking Over of Sections or Parts

For the purposes of para (a) of this Sub-Clause, separate Times for Completion shall be provided in the Appendix-A to Bid “Special Stipulations”.

The following Sub-Clause 49.5 is added:

49.5 Extensions of Defects Liability Period

The provisions of this Sub-Clause shall apply to all replacements or renewals of plant and equipment carried out by the Contractor to remedy defects and damage as if the replacements and renewals had been taken over on the date they were completed. The Defects Liability Period for the Works shall be extended by a period equal to the

period during which the Works cannot be used by reason of a defect or damage. If only a part of the Works is affected the Defects Liability Period shall be extended only for that part. In neither case shall the Defects Liability Period extend beyond two (2) years from the date of taking over.

51.2 Instructions for Variations

At the end of the first sentence, after the word “Engineer", the words “in writing” are added.

52.1 Valuation of Variations

In the tenth line, after the words “Engineer shall” the following is added:

Within a period not exceeding one-eighth of the completion time subject to a minimum of 56 days from the date of disagreement whichever is later.

53.4 Failure to Comply

This Sub-Clause is deleted in its entirety.

54.5 Conditions of Hire of Contractor’s Equipment

The following paragraph is added:

The Contractor shall, upon request by the Engineer at any time in relation to any item of hired Contractor’s Equipment, forthwith notify the Engineer in writing the name and address of the Owner of the equipment and shall certify that the agreement for the hire thereof contains a provision in accordance with the requirements set forth above.

The following Sub-Clauses59.4 & 59.5 are added:

59.4 Payments to Nominated Subcontractors

The Contractor shall pay to the nominated Subcontractor the amounts which the Engineer certifies to be due in accordance with the subcontract. These amounts plus other charges shall be included in the Contract Price in accordance with Clause 58 [Provisional Sums], except as stated in Sub-Clause 59.5 [Certification of Payments].

59.5 Certification of Payments & Nominated Subcontractors

Before issuing a Payment Certificate which includes an amount payable to a nominated Subcontractor, the Engineer may request the Contractor to supply reasonable evidence that the nominated Subcontractor has received all amounts due in accordance with previous Payment Certificates, less applicable deductions for retention or otherwise. Unless the Contractor:

a) submits reasonable evidence to the Engineer, or
b) i) satisfies the Engineer in writing that the Contractor is reasonably

entitled to withhold or refuse to pay these amounts, and

ii) submits to the Engineer reasonable evidence that the nominated Subcontractor has been notified of the Contractor's entitlement,

Then the Employer may (at his sole discretion) pay direct to the nominated Subcontractor, part or all of such amounts previously certified (less applicable deductions) as are due to the nominated Subcontractor and for which the Contractor has failed to submit the evidence described in sub-paragraphs (a) or (b) above. The Contractor shall then repay, to the Employer, the amount which the nominated Subcontractor was directly paid by the Employer.

60.1 Monthly Statements

In the first line after the word "shall", the following is added:

"on the basis of the joint measurement of work done under Clause 56.1,"

In Para (c) the words "the Appendix to Tender" are deleted and substituted with the words "Sub-Cause 60.11 (a)(6) hereof".
(in case Clause 60.11 is applicable)

60.2 Monthly Payments

In the first line, "28" is substituted by "14".

60.3 Payment of Retention Money

a) The following text is added at the end:
"In addition to above, release of this retention money is subject to issuance of GRN/SRS by In charge of designated NGC Warehouse for balance material of the project as per material reconciliation report along with certification from In charge of the Ware House of completeness and healthiness of the returned material. The material reconciliation report shall be duly vetted by Chief Engineer (T/L) Design as per as-built profile of the project."

60.10 Time for Payment

No interest is applicable on any delay at the part of the employer. Second Para starting from "In the event of failure" and ending on "under clause 69 otherwise" is deleted.

63.1 Default of Contractor

The following para is added at the end of the Sub-Clause:

Provided further that in addition to the action taken by the Employer against the Contractor under this Clause, the Employer may also refer the case of default of the Contractor to Pakistan Engineering Council for punitive action under the

Construction and Operation of Engineering Works Bye-Laws 1987, as amended from time to time.

65.2 Special Risks

The text is deleted and substituted with the following:

The Special Risks are the risks defined under Sub-Clause 20.4 sub paragraph (a) to (h).

67.1 Engineer's Decision

Replace eighty fourth with sixtieth in the eighth line of Para 1 of this clause.
Replace eighty fourth with sixtieth in the third line of Para 3 of this clause.
Replace seventieth with thirtieth in the fourth and fifth line of Para 3 of this clause.
Replace 84 with 60 in the sixth line of Para 3 of this clause.
Replace seventieth with thirtieth in the fourth line of Para 4 of this clause.

67.2 Amicable Settlement

Replace fifty sixth with thirtieth in the fourth line of Para 1 of this clause.

67. 3 Arbitration

In the sixth to eight lines, the words "shall be finally settled ..... appointed under such Rules" are deleted and substituted with the following:

shall be finally settled under the provisions of the Arbitration Act, 1940 as amended or any statutory modification or re-enactment thereof for the time being in force.

The following paragraph is added:

The place of arbitration shall be Lahore, Pakistan.

68.1 Notices to Contractor

The following paragraph is added:

For the purposes of this Sub-Clause, the Contractor shall, immediately after receipt of Letter of Acceptance, intimate in writing to the Employer and the Engineer by registered post, the address of his principal place of business or any change in such address during the period of the Contract.

68.2 Notices to Employer and Engineer

For the purposes of this Sub-Clause, the respective addresses are:

a) The Employer: Director General (FO), North
National Grid Company of Pakistan (NGC)

34-Industrial Area, NGC House,
Gulberg-III, Lahore-Pakistan
Telephone No. 92-42-99268292
E-mail address: ce.amnl@ntdc.com.pk

b) The Engineer is: Director General (FO), North
National Grid Company of Pakistan (NGC)
34-Industrial Area, NGC House,
Gulberg-III, Lahore-Pakistan
Telephone No. 92-42-99268292
E-mail address: ce.amnl@ntdc.com.pk

69.0 Default of Employer

This clause with all sub clauses is deleted in its entirety.

70.1 Increase or Decrease of Cost

Sub-Clause 70.1 is deleted in its entirety.

The following Sub-Clauses 73.1, 73.2, 74.1, 75.1, 76.1, 77.1 and 78.1 are added:

73.1 Payment of Income Tax

The Contractor, Subcontractors and their employees shall be responsible for payment of all their income tax, super tax and other taxes on income arising out of the Contract and the rates and prices stated in the Contract shall be deemed to cover all such taxes.

73.2 Customs Duty & Taxes

Contractor will submit the invoice inclusive of Provincial Sales Tax. Provincial Sales Tax shall be charged by the contractor and payments will be subject to income tax and sales tax withholding as per Rules mentioned in Federal or Respective Provincial Laws. Copy of sales tax return will be will be provided by the contractor.

74.1 Integrity Pact

If the Contractor or any of his Subcontractors, agents or servants is found to have violated or involved in violation of the Integrity Pact signed by the Contractor as Appendix-O to his Bid, then the Employer shall be entitled to:

(a) recover from the Contractor an amount equivalent to ten times the sum of any commission, gratification, bribe, finder's fee or kickback given by the Contractor or any of his Subcontractors, agents or servants;
(b) terminate the Contract; and
(c) recover from the Contractor any loss or damage to the Employer as a result of such termination or of any other corrupt business practices of the Contractor or any of his Subcontractors, agents or servants.

The termination under Sub-Para (b) of this Sub-Clause shall proceed in the manner

prescribed under Sub-Clauses 63.1 to 63.4 and the payment under Sub-Clause 63.3 shall be made after having deducted the amounts due to the Employer under Sub-Para (a) and (c) of this Sub-Clause.

75.1 Termination of Contract for Employer's Convenience

The Employer shall be entitled to terminate the Contract at any time for the Employer's convenience after giving 56 days prior notice to the Contractor, with a copy to the Engineer. In the event of such termination, the Contractor:

(a) shall proceed as provided in Sub-Clause 65.7 hereof; and
(b) shall be paid by the Employer as provided in Sub-Clause 65.8 hereof.

76.1 Liability of Contractor

The Contractor or his Subcontractors or assigns shall follow strictly, all relevant labour laws including the Workmen's Compensation Act and the Employer shall be fully indemnified for all claims, damages etc. arising out of any dispute between the Contractor, his Subcontractors or assigns and the labour employed by them.

77.1 Joint and Several Liabilities

If the Contractor is a joint venture of two or more persons, all such persons shall be jointly and severally bound to the Employer for the fulfilment of the terms of the Contract and shall designate one of such persons to act as leader with authority to bind the joint venture. The composition or the constitution of the joint venture shall not be altered without the prior consent of the Employer.

78.1 Details to be Confidential

The Contractor shall treat the details of the Contract as private and confidential, save in so far as may be necessary for the purposes thereof, and shall not publish or disclose the same or any particulars thereof in any trade or technical paper or elsewhere without the prior consent in writing of the Employer or the Engineer. If any dispute arises as to the necessity of any publication or disclosure for the purpose of the Contract, the same shall be referred to the decision of the Engineer whose award shall be final.

SECTION VII

SPECIFICATIONS –
SPECIAL PROVISIONS

SECTION VI
SPECIFICATIONS - SPECIAL PROVISIONS

SP-01 ACQUAINTANCE WITH SITE

The Contractor shall be deemed to have inspected and examined the Site and its surroundings and information available in connection therewith and before submitting his Bid, as to the form and nature thereof, including the subsurface conditions, the hydrological and climatic conditions, the extent and nature of Works for completion, the means of access to the Site and the accommodation he may require and, in general, shall be deemed to have obtained all necessary information, subject as above mentioned, as to risks, contingencies and all other circumstances which may influence or affect his Contract.

SP-02 DESCRIPTION OF PROJECT

For continuous uninterrupted dispersal of power in Lahore Region during Smog and Fog of Winter season replacement of normal disc insulators, of different 220kV transmission line as mentioned in BOQ, with RTV coated disc insulators through NGC own resources in accordance with Bidding Documents.

REPLACEMENT OF NORMAL DISC INSULATORS WITH RTV COATED DISC INSULATORS OF 220kV TRANSMISSION LINES UNDER FIELD OPERATIONS LAHORE (Lot-II)

SP-02.1 Location of Project

The route of the lines passes through bare, cultivated land of Punjab Province through the districts of Lahore Division, river crossings and road crossings.

SP-03 SITE CONDITIONS

SP-03.1 Site Conditions and Meteorological Data

The Employer does not guarantee the correctness of any data provided herein nor any interpretations, deductions or conclusions relative to subsurface conditions at Site. The Contractor must form his own opinion of the character and type of materials to be excavated. He must make his own interpretations, and satisfy himself by his own investigations and research regarding all conditions works. The Contractor must assume all responsibility for deductions and conclusions as to the nature or conditions of the materials to be excavated and of doing other work affected by the geology at the Site.

SP-04 WORKS

SP-04.1 Works

The intent of these Specifications is that the Works under this Contract should be equal to or superior than those actually described herein. In choosing indigenous materials and their finishes due regard shall be given to the conditions prevailing at Site.

SP-04.2 Extent of Specifications

The extent of the Bidding Documents is to provide for the Works herein specified to be fully complete in every detail for the function designated. All Works which are not specifically mentioned in the Bidding Documents, but which, in the opinion of the Engineer, are usual or necessary for the satisfactory completion of the Works shall be deemed to be included in the Contract Documents and shall be provided by the Contractor without extra cost to Employer.

SP-05 WORKS BY CONTRACTOR

SP-05.1 Scope

The scope of Works includes but not limited to insurance, loading at Employer's Storage Yard, transportation, unloading of material provided by the Employer i.e., RTV coated disc insulators along with associated equipment, T&P and other accessories, its installation, loading of fog type disc insulators from project site and delivering to NGC store and all other Works required to construct and complete the followings works.

i. Replacement of Normal Disc Insulators with RTV coated Disc Insulators of subject transmission line as mentioned in BOQ (No. of towers are also mentioned)

The scope of works shall also include the loading of RTV coated disc insulators at store site, its transportation and unloading of project site and loading of dismantled material at project site, its transportation and unloading at Employer's Storage Yard. (A-Type Store, 220kV Grid Station NGC NKLP or any other suitable storage site)

The 220kV Transmission Lines could be twin bundle, double circuit.

The Works to be performed under these Specifications are based on the rates provided in the Bill of Quantities and include but not limited to the following:

i) Provision of all guarantees, insurances, field offices/camps, storage camps, labour, services, Plant and Contractor's tools and equipment (including tension stringing and construction equipment) to construct, complete, test and commission the said transmission line in accordance with the requirements of the Contract Documents.
ii) Prepare and furnish all drawings and documents.
iii) Provision of access roads where necessary.
iv) Clearing right-of-way including disposal of cleared materials.

v) Check Survey including pegging out and layout of tower locations, spotting / stalking of towers, tower spotting adjustment etc.
vi) Establishing route alignment of any diversion required and detailed survey not limited to chainage & leveling.
vii) Preparation of plan & profile drawings (only diverted portion), tower spotting etc.
viii) Preparation of construction structure lists, sag-tension charts for conductor & Shieldwire stringing and construction drawings.
ix) Surveying of tower sites, tower staking, tower spotting adjustment and establishing correct locations of footings.
x) Excavation, formation of ramps, grading, blasting, leveling, cutting and backfilling including disposal of surplus/excavated material.
xi) Furnishing materials for constructing reinforced concrete tower foundations including installation of steel stub angles and tower grounding.
xii) Ground assembly of tower sections and erection of steel towers.
xiii) Dismantling of existing conductor along with all accessories, insulators, hardware, dampers etc. complete in all respects, shifting/transporting and properly stacking of the material at designated NGC Warehouse/Store.
xiv) Installing insulator assemblies for conductors.
xv) Stringing conductors, overhead shield wire complete with hardware, accessories and dampers.
xvi) Furnishing and installing tower signs (Aerial Markers, Danger Signs, Number and Phase Plates etc.), and anti-climbing devices.
xvii) Latitude and Longitude by hand held GPS of each tower location.
xviii) Testing and commissioning of the aforesaid Transmission Line.
xix) The security arrangements to be provided by the Contractor for his own crews/staff/storage yards.
xx) Preparation & submission of monthly progress reports including site photographs, as-built data and drawings including copies on reproducible transparencies and computer compact diskettes (CD/DVD) using AutoCAD.
xxi) Any other item which is not included here but is necessary for integrated operation of the Transmission Line as advised by the Engineer.
xxii) Making all necessary arrangements free of cost to access to tower locations on dry patches/land engulfed in river Indus creeks.
xxiii) Welding of bolts and Painting of tower stub/tower member/plates/bolts or repair of already painted tower as advised by the Engineer.
xxiv) Preparation of complete as built profile by the contractor. As built profile shall be vetted by Project Manager/ Consultant and will be submitted to Chief Engineer (T/L) Design NGC.
xxv) Preparation of Material Reconciliation Report as per as-built profile.
xxvi) Any other activity specifically not covered in the scope of work but is required for the completion, testing & commissioning and operation of the overhead line shall be deemed to be included in the scope of work.

NOTE:

(1) The Contractor is responsible to mobilize sufficient numbers of crews for foundations, tower erection, dismantling and stringing etc. equipped with T&P complete in all respects for smooth execution of each activity. For timely completion of the Project, Contractor is responsible to adhere to the project schedule and ensure that the sufficient resources are available with the crews before commencement of each activity. Detailed methodology and list of T&P shall have to be got approved from the Engineer well before the commencement of each activity. The detail of construction equipment/T&P to be arranged/imported from abroad by the Contractor must be furnished in his Bid.

(2) In case Contractor fails to arrange the required numbers of crews along with requisite T&P in good working condition for inspection at site prior to commencement of respective activity, Employer has the right, in addition to withhold current payments, terminate the Contract at any stage and to get executed the balance work through other Contractors at the Contractor's risk and cost.

SP-06 DRAWINGS

SP-06.1 Drawings in Contract

SP-06.1.1 Specification Drawings (If Any)

The specification drawings contained in Volume II of the Contract Documents show the Specifications and Scope of Works to be performed by the Contractor.

SP-06.1.2 Contractor's Bid Drawings

The Contractor's bid drawings are the drawings prepared by the Contractor for bidding purposes, and shall be part of his Bid.

The specification drawings and Contractor's bid drawings shall not be used for execution of the Works unless specific instructions for such use are given by the Engineer.

SP-06.1.3 Approved Drawings

The Works shall be performed in accordance with the approved drawings.

SP-06.2 Drawings and Other Data to be furnished by the Contractor

All drawings shall be in English language and all dimensions shall be in Metric System. Symbols shall be in accordance with IEC standards. All drawings shall be clearly marked "National Grid Company of Pakistan (NGC) for Installation & dismantling of 220kV Double Circuit Twin Bundle Sheikhupura-Ravi Transmission Line. All drawings/data submitted for approval shall conform to ISO paper sizes A0 to A4.

The Contractor shall submit detailed drawings as required herein below:

(i) Plan & profile drawings (only diverted portion) showing spotted towers, construction structure list, sag-tension charts for conductor & OPGW stringing, soil investigation reports and other data as required by the Engineer.

(ii) Bar bending schedule for various types of foundations/piles.

(iii) Drawings indicating crossings of transmission line over Railway tracks and Highways.

(iv) Specifications and details of concrete mix ratio and aggregate grading.

(v) Sag-templates for tower spotting.

(vi) Any other information and drawing which may be required for construction purposes.

SP-06.3 Distribution of Drawings

The drawings shall be submitted to the Engineer/Employer within the time given in the Contract or within such reasonable time as the Engineer may require, and in the number as specified hereunder:

Documents	Engineer		Employer/ Project Director	Total
	Head Office	Site Office		
Drawings for approval	3	-	1	4
Approved Drawings	2	2	1	5
Schedules, specifications and other documents/data	2	1	1	4
Construction Drawings	2	6	2	10
Record (As-Built) Drawings	2	-	4	6
Reproducible transparency Record (As-Built) Drawings	1	-	1	2
Record (As-Built) Drawings on computer compact diskette (CD/DVD) using Autocad Software	1	-	1	2

Insurance Certificates	1	1	2	4
Receiving reports	1	1	2	4
Damage reports	1	1	2	4
Erection progress Reports	2	1	2	5
List of Construction Stringing and Erection Equipment	1	1	1	3
Correspondence with Employer	1	1	1	3
Correspondence with Head office of Engineer	1	1	1	3
Correspondence with Site office of Engineer	1	1	1	3

SP-06.3.1 Record Drawings

In the event of the Works or any part thereof being, with the approval of the Engineer, properly built-in or installed otherwise than in accordance with the Approved Drawings, then the Contractor shall ensure that the Approved Drawings are marked up to show the conditions of the Works as installed and at least two (2) copies of such marked up drawings shall be submitted by the Contractor to the Engineer for approval. One copy of each of marked up drawings approved by the Engineer shall be returned to the Contractor by the Engineer and these shall be used for preparation of the Record Drawings within sixty (60) days after completion of Works of the line. A further copy of each of the marked-up drawings shall be retained by the Engineer for the purpose of checking the Record Drawings.

The Contractor shall furnish to the Engineer two (2) complete sets of all Record Drawings and Data prior to issuance of the Operational Acceptance Certificate. The Contractor shall also furnish to the Engineer one (1) mylar polyester base full size reproducible and one copy on computer compact diskette (CD/DVD) using AutoCAD, of all final Record and other drawings which, in the opinion of the Engineer, may be required for the Works operation and maintenance, for identification of parts and for ordering replacement parts and materials. The mylar reproducible shall be 50/70 microns thick, double matte film, wash off film, printed on the front.

SP-07 INSURANCE OF MATERIALS FURNISHED BY NGC

The Contractor shall maintain and pay for insurance for Materials furnished by NGC, against loss or damage of the Material caused by, or resulting from but not limited to the following:

(1) Fire, smoke, explosion, falling objects, impacts by aircrafts or land vehicles, lightning, riot, the escape of water, flood, Act of God, land sliding, vandalism or malicious mischief, windstorm, rain or hailstorm, and

(2) Theft or attempted theft:

for the full assessed value of the Materials. The insurance shall commence and shall be in force no later than the time of receipt from NGC's stores where the Contractor is required to obtain the Materials. This insurance must remain in force until the contractor clears and finalizes all accounts of Materials furnished by NGC and the Material is returned to NGC. Certificates of such insurance and all renewals thereof shall be filed with the Engineer. The insurance cover shall be obtained from an insurance company approved by NGC.

The Contractor shall be responsible for the safety and protection of Materials from the point where and at the specified time when he is required to obtain the Materials until the Material is returned to NGC. Should a loss be sustained, the Contractor shall replace or repair any loss or damage and complete the Works in accordance with the Contract on a priority basis after such loss or damage without waiting for the settlement of the insurance claim.

SP-08 HANDLING, LOADING AND UNLOADING OF EQUIPMENT & MATERIAL

SP-8.1 Lifting

The method of lifting, type of equipment and type of slings, used for handling the conductor reels are subject to approval by the Engineer. The wooden reels are so constructed as to be supported either on an axle through the arbor hole or by the reel flange. When the reels are lifted by an axle supported from above, a spreader bar must be employed to prevent reel damage by inward pressure on reel flange. In no case shall metallic slings or other metallic equipment shall come in contact with conductor or overhead shield wire or ground wire.

SP-8.2 Slings

If the use of slings is necessary, these shall be of a flexible type and preferably manila rope or other non- metallic materials. The use of steel wire, mesh or chain link slings is prohibited unless they are covered with rubber hose or some similar material.

SP-8.3 Unloading and Storage at the Site

(1) The Contractor shall unload all Plant and other material at the Site. Items for permanent installations shall be properly stored and shall be protected as required to prevent damage or deterioration of any type. Storage/ Stacking

methods shall be such as to cause minimum inconvenience to others and shall be arranged to facilitate inspection.

(2) All Plant and other material storage shall comply with the requirements of the Specifications or to the approval of the Engineer.

SP-8.4 Ownership of Packing Materials

All packing boxes, reels, shipping containers except those containers which are not the property of the Contractor, planking covers, etc. shall become the property of Employer. All the packing materials shall be handed over to Employer immediately after storage requirements of the Plant or parts including spares thereof and other materials are over.

SP-9 SCHEDULE, PROGRESS REPORTS AND MEETINGS

SP-9.1 Schedule

The Contractor shall carry out the Works in accordance with the dates/periods specified in Appendix-A to Bid. The Contractor shall regularly review the Schedule and notify the Engineer promptly of any revisions which in his view may be required from time to time.

SP-9.1.1 Form of Construction Schedule

The Schedule shall be a detailed CPM (critical path method) type, time scaled according to calendar dates and Project month numbers. The CPM for planning, scheduling, and controlling will be used for the Contract. The Contractor shall submit a schedule showing the logical sequence in which the Plant will be carried out in sufficient detail to satisfy the Engineer that the Plant is thoroughly planned and meets all the requirements of the Contract Documents.

SP-9.2 Progress Meetings

(1) Soon after the date of signing of Contract, the Engineer will, with the approval of Employer require a conference with Employer and the Contractor at a place mutually agreed upon, to discuss progress monitoring and proper execution of Contract.

(2) At monthly intervals or from time to time during the execution of the Contract, the Engineer may call meetings, either in his offices or at the Contractor's offices or Employer's office as is deemed necessary for the purpose of progress monitoring and proper execution of the Contract.

(1) As required by the Engineer, responsible representatives of the Contractor shall attend such meetings.

(2) All expenses incurred by the Contractor for attending such meetings shall be borne by the Contractor and shall not be reimbursable.

SP-10 SITE WORKS

Attention is drawn to the obligations of the Contractor to make his own arrangements at his own expense for Works provided to his employees. Any cost incurred by the Contractor in respect of any of such Site Works under the Contract shall be deemed to be included in the rates and prices in the Price Schedules and no separate payment, therefore, will be made to the Contractor.

SP-10.1 Accommodation

(1) The Contractor shall provide and maintain at his cost residential accommodation and transportation Works for his own use.

(2) The Contractor shall provide and maintain such housing accommodation and amenities as he may consider necessary for all of his supervisory staff and labour employed for the purposes of or in connection with this Contract including all fencing, electricity supply, sanitation, cook, houses, fire prevention, water supply and other requirements in connection with such housing accommodation or amenities.

SP-10.2 Offices

The Contractor shall arrange and maintain his offices at his own cost.

SP-10.3 Work-yards and Storage Areas

(1) No storage site shall be provided by Employer to store Plant and other material. The Contractor shall, furnish all the necessary services and be responsible for the construction and maintenance of the necessary construction camps, offices and stores; and perform all other work necessary for completion of the Works described herein in strict conformance with these Specifications.

(2) The Contractor shall provide his own watchman service to ensure security and safety of the Plant and other material prior to Employer taking over the Works.

SP-10.4 Temporary Buildings

(1) The Contractor shall provide and maintain all temporary structures required including warehouses, change houses for workmen, sheds, etc. He shall also provide his own field office complete with telephone so that he or his official representative can be contacted by Employer and/or Engineer at all times.

(2) Such temporary buildings and/or utilities shall remain the property of the Contractor and shall be removed by him at his expense upon the completion of the Works and the Site reinstated to its original condition, all to the approval of the Engineer.

SP-11 QUALITY CONTROL

The Contractor's Quality Control Department shall review all contract and specification requirements and ensure that they are understood.

Upon the award of the Contract, the Contractor, NGC and the Engineer shall establish mutually acceptable quality control and inspection procedures between the Contractor and the Engineer and indications are to be given at that time by Contractor as to how the agreed procedures will be implemented.

All Works covered by the Contract and the inspection thereof by the Contractor, shall be subject to surveillance and/or further inspection by NGC and/or the Engineer or by their authorized representative for which purpose the Contractor (or Sub-Contractor) shall:

(1) Demonstrate to the satisfaction of the Engineer or his authorized Representative that the Works meets the requirements of the Contract.

(2) Not cover up or put out of view Works until the Engineer or his authorized representative has been notified and release of Works has been obtained.

(3) Afford full opportunity for the Engineer or the Engineer's Representative to examine and measure any work which is about to be covered up or put out of view and to examine foundations before permanent work is placed thereon.

(4) Give due notice to the Engineer's Representative whenever any Work or foundations is/are ready or about to be ready for Examination.

SP-12 URGENT REPAIRS

If by reason of any accident or failure or other event occurring to in or in connection with the Work or any part thereof either during the execution of the Work or during the Period of Guarantee any remedial of other Work or repair shall in the opinion of the Engineer or the Engineer' Representative be urgently necessary for security and the Contractor is unable or unwilling at once to do such Work or repair, NGC may employ its own or other workmen do such work or repair as the Engineer or the Engineer's representative may consider necessary. If the Work or repair so done by NGC is Work which in the opinion of the Engineer the Contractor was liable to do at his own expense under the Contract all costs and charges properly incurred by NGC in so doing shall on demand be paid by the Contractor to NGC or may be deducted by NGC from any money due or which may become due to the Contractor.

SP-13 MEASUREMENT FOR PAYMENT

The measurement for payment and payment for the various items of Price Schedules shall be as follows:

(a) **Construct Right-of-Way Road**

No payment will be made for the construction of a right-of-way road and access routes. The cost of such road and access routes, if constructed, shall be deemed to be included in other prices in the Contract.

Employer will assess the compensation for unavoidable crop damage that occurs on the right of way in cultivated areas and will pay the compensation amount.

(b) **Clearing Right-of-Way (Not Applicable as it will be on part of contractor)**

Measurement for payment will be made horizontally along the center line of right-of-way cleared and disposal completed.

Payment will be made based on the unit price quoted in Price Schedules. The payment shall include, but not be limited to the brushing out the centerline, tower locations and conductor pulling sites within 25 meters on each side of the centerline. Trees over 2.5 meters in height which constitute a hazard or danger to the transmission line, or whose tops are within 6 meters of the 75°C final conductor position shall be removed.

(c) **Check Survey**

Measurement for payment will be made on the check survey carried out as given Technical Provisions.
Payment will be made based on lump sum basis after fulfilling all requirements given in Technical Provisions.

(d) **Survey (Only for diverted portion)**

Measurement for payment will be made horizontally along the center line of the line route.

Payment will be made based on the unit price quoted in the Price Schedules after the approval by Engineer of detailed survey, plan and profile drawings, and construction structure list. The unit price shall include but not be limited to the route establishing, detailed survey, route maps, plan tabling, profile preparation, tower spotting, construction structure list and all other work necessary for the completion of this phase of work.

(e) **Reinforced Concrete Foundations (N/A)**

Measurement for payment will be made for each type of foundation installed as shown on the approved relevant construction drawings for the various foundations. Bid drawings are firm & final and no change is acceptable except from Engineer.

The quoted unit price shall include, but not be limited to tower staking, the cost of furnishing all labour, equipment, materials (including concrete and reinforcement etc.) site leveling, blasting/cutting/grading of tower site, excavation, shuttering, dewatering, shorting, forming, reinforcing, concreting, curing, backfilling, installing stub angles, tower grounding, setting and all other associated Works to produce finished foundations.

(f) Dismantling & Installation of Disc Insulators

Measurement for payment will be made for each type of component dismantled as shown on the relevant drawings for the various towers.

Payment will be made based on the unit prices quoted on per Tower basis in the bid for dismantling and installation of RTV coated insulators of all tower types. The unit prices shall include, but not be limited to, the cost of all labor, equipment, dismantling of and installation of RTV coated insulators on complete tower (without damaging any component), bundling/packing, loading, transporting, unloading & properly staking at designated warehouse and all other associated work necessary for the completion of this phase of the work.

Note: Dismantling and installation work will be carried our in the presence of representative of concerned formation of NGC, for which the contractor will give advance notice to NGC for supervision and inspection.

(g) Erection of Steel Towers (N/A)

Measurement for payment will be made for each type of component installed as shown on the relevant drawings for the various towers.

Payment will be made based on the unit prices quoted on per Tower basis in the bid for each type of component installed of all tower types. The unit prices shall include, but not be limited to, detailing of tower fabrication drawings supplied by Employer, the cost of all labour, equipment, requisitioning, loading, transporting, from site storage areas to the sites, erecting together with bolts, nuts, washers, stepbolts, including back bolting and punching of nuts and bolts and all other associated work necessary for the completion of the towers ready for installation of overhead alumoweld shield wire, OPGW and conductors thereon.

(h) **Welding of Nuts & Bolts (N/A)**

Measurement for measurement will be made for each tower.

Payment will be made on the unit price quoted for each tower. The unit prices shall include, but not limited to welding of nuts & bolts up to 8.0 m height and application of galvanox as specified in technical provisions and price schedule.

(i) **Dismantling of Existing Conductor Insulators & associated hardware etc. (N/A)**

Measurement for payment will be made horizontally along the center line of the line route.

Payment will be made based on the unit price quoted in the Price Schedules. The unit prices shall include, but not be limited to, the cost of all labour, equipment, dismantling including but limited up to the removal of spacer dampers for conductor & stock bridge vibration dampers for earth wire, dismantling of conductor, earth wire & jumpers including spacer dampers, removal of accessories for conductor and earth wire along with associated equipment, removal of hardware & insulator strings, and all other associated work necessary for the completion of this phase of the work.

(J) **Stringing of Conductor**

Measurement for payment will be made horizontally along the center line of the line route.

Payment will be made based on the unit price quoted in the Price Schedules. The unit prices shall include, but not be limited to, the cost of all labour, equipment, requisitioning, loading, transporting, distributing, stringing including but limited up to the installation of insulator accessories for conductor; spacer dampers for conductor, sagging, clipping-in, dead-ends, jumpers including installation of spacer, together with all hardware as shown on the relevant drawings, and all other associated work necessary for the completion of this phase of the work.

(K) **Cost of Dismantled Stringing Material (N/A)**

Measurement for cost of dismantled material will be made horizontally along the center line of the line route.

Cost of the dismantled material handed over to the contractor will be deducted from the invoices of the contractor.

(L) **Testing & Commissioning (N/A)**

Measurement for payment will be made on successfully testing & commissioning of transmission line.

Payment will be made based on the lumpsum amount quoted in the Price Schedules. The lumpsum amount shall include but not be limited to successful testing & commissioning of transmission line and all other associated work necessary for the completion of this phase of the work.

SP-14 PAYMENT FOR WORKS REQUIRED BY SPECIAL PROVISIONS

Unless expressly excluded, the cost of all Works required by the "Special Provisions" shall be considered to be included in the price and amounts quoted in the Price Schedules.

SECTION VIII

SPECIFICATIONS –
TECHNICAL PROVISIONS

1. SPECIFICATIONS - TECHNICAL PROVISIONS

1.1 General

(1) Clearing Right-of-Way

Right-of-Way clearing shall be restricted to the minimum necessary for the safe construction and operation of the line. Clearing shall generally consist of brushing out the center line, tower locations and conductor pulling sites within 25 meters on each side of the center line. Trees over 2.5 meters in height which constitute a hazard or danger to the transmission line, or whose tops are within 6 meters at 75°C final conductor sag position, shall be removed.

The clearing of desert vegetation shall be restricted to that required for placement of footings and for the assembly and erection of towers and wire pulling Site.

No clearing will be allowed in orchards or other areas of fruit bearing trees, except as specifically approved by the Engineer.

The cleared materials will be the property of the Land Owner. If any disposal of cleared material is required, it will be disposed of by burning or other methods approved by the Engineer.

(2) Survey and Profiling

The technical specifications cover detailed survey including route alignment, profiling, tower spotting and contouring. The scope of work inter-alia shall include the following:

Route alignment using Google Maps, Survey of Pakistan Maps and Walk over survey etc.

Detailed Survey using RTK, GPS, DGPS, Total Stations, long range scanners & Digital theodolites of reasonable accuracies.

Digitized contouring at hilly/undulated locations.

Preparation of Survey reports including estimation of Bill of Quantities, identification and explanation of route constraints, infrastructure details available enroute etc.

All the bidders shall present their proposed methodology for execution of the work as per specifications and details of the equipment and facilities including soft wares available with them.

The Contractor must note that the Employer shall not be responsible for loss or damage to properties, trees etc. due to their work during survey. The Contractor shall indemnify the Employer for any loss or damage to properties, trees etc. during the survey work

The Contractor should note that Employer will not furnish the topographical maps prepared by survey of Pakistan but will render available assistance that may be required in obtaining these by providing letters of recommendation to the concerned authorities.

The Bidders shall give along with their bid clause by clause commentary indicating their confirmation/comments/observations in respect of all clauses of this functional requirements.

The work shall be carried out by the Contractor using modern surveying techniques i.e. RTK. The bidder shall indicate in his offer, the detailed description of the procedure to be deployed. The details of the equipment & facilities including software's for image processing, computer aided tower spotting etc. available with the bidder or his associates shall also be furnished with the bid

After carrying out the detailed survey, the Contractor shall estimate complete BOQ of the transmission lines and submit the same to the Employer.

The bidders are advised that while making bid proposals and quoting prices, all technical provisions may appropriately be taken into consideration. The bidder shall complete all the schedules and annexures in the bid proposal sheets, technical data sheets specified elsewhere.

Route Alignment

Route Alignment shall be done using Google Maps and Survey of Pakistan Maps (scale 1:50,000). After a study of these maps, alternate routes will be identified & marked within 5 km of the beeline.

Walkover survey will be carried out on the alternate routes to obtain first-hand information of various important field data required for transmission line works and observe features on the ground which may not be clearly available in the maps such as Power lines, Type of terrain and nature of soil strata, expanding villages and towns, rich gardens and plantations, forests and high tree areas, national parks and wildlife sanctuaries, archaeological monuments, aerodromes and prohibited areas etc. Walkover survey means going on foot over the area covering the route however vehicle may also be used wherever the terrain permits and where long distances can be seen without obstacles.

Then a comparative evaluation of the alternate routes will be done, inter alia considering, route length, number and type of angle points, nature and number of major crossings, deviation in the line due to civil/military aerodromes and other industrial installations, approach to the line in general for construction, reaches through protected or reserve forests and continuous long stretches in paddy fields etc.

Based on this evaluation, the Contractor will propose the optimal route alignment and, along with it, will provide all information/data /details collected. The Contractor will arrange joint site visits with the Employer‘s representatives for field verifications. Final route alignment will be selected with mutual consensus of the Contractor and Employer.

Final digitized route alignment drawing with latest topographical and other details/features up to 5km on both sides of selected route alignment shall be submitted for the Employer‘s approval along with report containing other information/details as mentioned above (both in hard and soft copies). Changes in the route alignment, if any, during detail survey, shall be incorporated in the final digitized route alignment drawings.

Requirement of Transmission Line Routing

The alignment of the transmission line shall be most economical from the point of view of construction and maintenance.

Routing of transmission line through protected /reserved forest area should be avoided. In case it is not possible to avoid the forests or areas having large trees completely, then keeping in view of the overall economy, the route should be aligned in such a way that cutting of trees is minimum.

The route should have minimum crossings of Major Rivers, Railway lines, National / State highways, overhead EHV power lines and communication lines.

The number of angle points shall be kept to a minimum.

The distance between the terminal points specified shall be kept shortest possible, consistent with the terrain that is encountered.

Marshy and low lying areas, river beds and earth slip zones shall be avoided to minimize risk to the foundations and towers.

It would be preferable to utilize level ground for the alignment.

Crossing of power lines shall be minimum. Alignment shall be kept at a specified distance from existing lines considering RoW and tower falling distances.

Crossing of communication line shall be minimized and it shall be preferably at right angle. Proximity and parallelism with telecom lines shall be eliminated to avoid danger of induction to them.

Areas subjected to flooding such as nalla shall be avoided.

Restricted areas such as civil and military airfield shall be avoided. Care shall also be taken to avoid aircraft landing approaches.

It is desirable to take the line as near the paths and roads as practicable without unduly increasing the length of the line so as to facilitate transportation of material during construction and the patrolling / maintenance of the line. Where the line cannot be routed near paths / roads economically, care shall be taken to see that easy access is possible at every 5 to 8 km. It shall be ensured that all angle / tension points are approachable to facilitate easy transportation of stringing equipment during construction and for maintenance / breakdowns.

The line shall be aligned suitably so that it can be diverted / looped in looped out to cater for possible future loads / sub stations along the route.

In general, large angles in the line are to be avoided wherever possible. The magnitude of the angle should be small as far as possible and should never be more than 60 degrees. Angle points should be selected such that shifting of the points within 100 m radius is possible at the time of construction of the

The route of the transmission line is to be so located that, as far as possible, it is protected from high winds and falling trees & branches. In hilly tracks, the line is to be routed, as far as possible, along the side of the hills or through valleys rather than over high points. However, a route of the line very close to steep slopes of hills be avoided as far as possible as there may be difficulty in obtaining lateral (side) clearance to ground for conductors. Also, there may be overhanging / loose boulders which may roll down and damage the line.

Certain areas such as quarry sites, rich plantations, gardens & nurseries which will present the Employer problems in acquisition of right of way and way leave clearance during construction and maintenance should be avoided.

The line routing should avoid large habitations, densely populated areas, forest, animal/ bird sanctuary etc., to the extent possible.

The areas requiring special foundations and those prone to flooding should be avoided.

Detailed Survey

The detailed survey shall be carried out using RTK, DGPS, Total Stations, digital theodolites etc. along the approved route alignment, inter alia including the following

Digitized profiling along the selected route along with plan details using

Power Line Systems Computer Aided Design and Drafting (PLS-CADD).

Computer aided tower spotting & optimization.

Route Marking

The route of the transmission line shall be recorded using DGPS of positional accuracy less than 3mtr.

The co-ordinates of all the angle points as well as other important crossings, landmarks etc. shall be recorded using DGPS for easy relocating. In addition the angle point locations shall be marked using marking stones of size 200 x

200 x 1000 mm, with approved marks including painting above the ground level.

At the starting point of the commencement of route survey the coordinates shall be recorded. The co-ordinates of the location of the survey instrument shall also be recorded. Further, the co-ordinates at prominent position at intervals of not more than 750m along the transmission line to be surveyed up to the next angle point shall also be recorded. Wherever the line alignment crosses the EHV line, railway line or main roads, the Contractor shall record co-ordinates on the points of crossing. Wherever line route alignment passes over permanent land marks such as rock, boulders, culverts etc. suitable white paint marks with directional and NGC markings shall be made and co-ordinates recorded.

Profiling

Detailed survey and profiling will be carried out for complete corridor, as described in clause 3.5 (h) of this specification, using modern surveying equipment such as RTK equipment, long range scanners and total stations etc. Density of survey data collection should be sufficient to ensure that proper surface imitating actual ground situation of the surveyed corridor can be generated in PLS-CADD. In any case, distance between any two points of survey data grid should not be more than 05m. For hilly/undulated terrain, this distance should be reduced appropriately to ensure that a representative surface is generated in PLS-CADD. R/L's at other undulations in the corridor and other details such as crossings, building & structure, trees & other infrastructure etc. shall also be recorded. Areas along the route, which in the view of the Contractor, are not suitable for tower spotting, shall also be

marked. Recorded survey data shall be exported to MS-Excel file format and submitted along with profile for review of the Engineer.

The complete profiling details shall be digitized and the data shall be prepared & stored in the format compatible to computer-aided tower spotting software.

Route plan and longitudinal profile, commonly referred to as 'Route Profile' or simply 'Profile', will be prepared/ plotted on square paper rolls of graphed tracing paper (1mm / 5mm / 1cm). The profile is plotted to a scale of 1: 2000 horizontal and 1:200 vertical. The profile shall progress from left to right. The height of the sheet shall be taken so that the ground profile and the towers, including extensions can be fully shown. For hilly terrain, greater height of the sheet may be taken, or the sections may be plotted on separate sheets. The length of each sheet may be taken so that approximately 5 km of the line route can be plotted. A gap of 5 to 10 cm shall be kept between sections.

The profile shall show the longitudinal profiles along the center line of the transmission line route and also the cross section profile wherever appreciable difference in level exists with reference to the center line level. The angle of line deviation, duly marked left (L) or right (R) as the case may be, shall also be shown.

Plan table drawing shall show the details of all objects lying within 50 meters on both sides of the center line of the route. Objects and their distances along the route within 50 meters on both sides of the center line, nearby villages, important roads or rivers shall be marked on the drawing.

Crossing details of power lines, roads, railway lines, canals or rivers etc. shall be marked as clearly as possible. Levels of roads, canal and river embankments, maximum water / flood levels, railway top levels and heights of supports / lines being crossed, and shall be shown in the offsets part of the profile. All trees coming within the zone of the right of way and which need to be cut / trimmed shall also be indicated.

Printed/plotted output of the digitized profiling shall be submitted by the Contractor to Employer for review before taking up computer-aided tower spotting.

Optimization of Tower Location/Tower Spotting.

Optimization of tower locations shall be done by the Contractor using computer-aided tower spotting software PLS-CADD and NGC's recommended tower family. In order to verify the results of computer aided tower spotting, the Contractor shall furnish sample calculations and manual tower spotting drawings for some typical sections.

The sag-tension characteristics of the conductor as well as tower spotting data shall be furnished by the Contractor for the Employer's approval before execution. Sag template curves, shall be prepared by the Contractor on acrylic sheet indicating cold curve, hot curve, ground clearance curve and support footing curve and the same shall be submitted to the Employer.

Tower Spotting

While, profiling and spotting the towers the following shall be borne in mind.

Extension

An individual span shall be as near to the normal design span as possible. In case an individual span becomes too short with normal supports on account of undulations in ground profile, one or both the supports of the span may be extended by inserting standard body / leg extension.

Section Length:

The number of consecutive spans between the section points shall not exceed 13 spans or 5km in plain terrain and 10 spans or 3 km in hilly terrain for double circuit 500kV line. The number of consecutive spans between the section points shall not exceed 12 spans or 4.5 km in plain terrain and 10 spans or 3 km in hilly terrain for 220kV line. The number of consecutive spans between the section points shall not exceed 14 spans or 4.5 km in plain terrain and 10 spans or 3 km in hilly terrain for 132kV line. A section point shall comprise of tension point with angle type tower.

Loading

There shall not be any upward force on suspension towers under normal working conditions and the suspension towers shall support at least the minimum weight span as provided in the designs. In case uplift is unavoidable, it shall be examined if the same can be overcome by adding standard body extensions to the towers failing which tension towers designed for the purpose shall be employed at such positions.

Road Crossing

The ground clearance at the roads under maximum temperature and in still air shall be such that even with conductor broken on adjacent span, ground clearance of the conductor from the road surfaces shall not be less than be less than 10.0m for 500kV and 8.0m for 220kV and 132 line. At all national highways, tension towers shall be used and crossing span shall not be more than 350 meters.

Railway Crossings

All the railway crossings in the route of transmission line shall be identified by the Contractor. At the time of detailed survey, the railway crossings shall be finalized as per the regulation laid down by the Railway Authorities. Following are important considerations in this regard.

The crossings shall be supported on angle tower on either side depending on the merits of each case.

The crossing shall normally be at right angle to the railway track.

The minimum distance of the crossing tower shall be at least equal to the height of the tower plus 6m away measured from the center of the nearest railway track.

No crossing shall be located over a booster transformer, traction switching station, traction sub-station or a track cabin location in an electrified area.

Minimum ground clearance above rail level of the lowest portion of any conductor under condition of maximum sag shall be maintained at 11.75m for 500 kV, 11.28m for 220kV line and 10.97 for 132kV line.

The crossing span shall be limited to 300/250 meters for 500kV/220kV/132kV lines.

River Crossings

In case of major river crossing, towers shall be of suspension type and the anchor towers (Balancing towers) on either side of the main river crossing shall be used with zero-degree deviation. Clearance required for navigation shall be provided. For non-navigable river, clearance shall be reckoned with respect to highest flood level (HFL).

Power line Crossings

Wherever the line is to cross another power line, it will be ensured that higher voltage line will pass above the lower voltage line. Minimum clearance in between lines when crossing each other will be as per NGC standard. The angle of crossing has to be preferably 90 degrees and at any time should not be below 60 degrees.

The crossing of the new line over an existing power line is preferably done in the middle of the span between towers of existing power line where there is maximum sag of the conductor. When the line to be constructed is crossing another important EHV line for which shutdown may be difficult, suspension towers in combination with angle / dead end towers, with extensions as required, may be used.

The crossing of the new line below an existing power line shall be done at locations where adequate ground clearance for the new line and the specified clearance from the existing power line are available. Such crossing shall preferably be in the mid span between towers / structures of the new power line, where there is maximum sag of the conductor, and near one of the towers of the crossing span of the existing line for taking advantage of the higher height of the conductors. These measures reduce the requirement of increasing the height of the existing line for obtaining the requisite clearance.

Details Enroute

All topographical details, permanent features, such as trees, building etc. 25m (Total-50 meter) for 500kV, 17.5m (Total- 35 meter) for 220kV line and 13.5m (Total- 27 meter) for 132kV line on either side of the alignment shall be detailed on the profile plan. All the topographical details (trees, buildings, permanent structures, including open land) shall be included in the report.

Clearance from Ground, Building, Trees etc.

Clearance from ground, buildings, trees and telephone lines shall be provided in conformity with NGC standard as amended up to date.

The Contractor shall also intimate the Employer, his assessment about the likely amount of tree & crop compensation etc. required to be paid by the Employer during execution stage. This assessment shall be done considering prevailing practices/guidelines, local regulations and other inquiries from local authorities.

Right of Way

Following right of way width shall be maintained taking into consideration the theoretical requirement of right of way and transport requirements of maintenance:

Transmission Voltage	Recommended Width of Right of Way
132 kV	27 meters
220 kV	35 meters
500 kV	50 meters

Preliminary Schedule

The profile sheets showing the locations of the towers together with preliminary schedules of quantities indicating tower types, wind & weight spans, angle of deviation, crossing & other details etc. shall be submitted by the Contractor for review & approval by Employer.

Detailed Survey of Tower Locations.

The detailed survey shall be conducted for spotting the tower locations on ground conforming to the approved profile and tower schedule.

The co-ordinates of all the tower locations shall also be recorded using DGPS of positional accuracy less than 3m. The position of all tower locations shall be marked in the final digitized route alignment drawing with relative distance from any permanent benchmark in the area.

The Contractor shall also collect required data at each tower location in respect of soil strata, ground water level, history of water table in adjacent areas/surface water and classify the suitable type of foundation at each location.

Contouring at hilly / undulated locations

The levels up or down of each pit center with respect to center of tower location shall be recorded at intervals of 2m using RTK / total stations / DGPS / digital theodolite and digitized contour plans shall be made. Based on the digitized elevation plans, the quantities of benching & protection work vis-a.-vis possible unequal leg extensions shall be optimized using suitable computer-aided techniques/ software's. Required tower and foundation details, cost data for comparative evaluation of benching & protection work vis-a-vis unequal leg extensions shall be provided by the Contractor to the Employer before execution stage.

The changes desired by the Employer in the preliminary tower schedule or as may be required based on detailed survey of tower locations & contouring by the Contractor, shall be carried out by the Contractor and the final tower schedule shall be submitted for approval of Employer. The tower schedule shall show position of all type of towers, span length, type of foundation for each tower, benching & revetment requirement, unequal leg extensions, deviation at all angles, crossing and other details etc.

Survey Methodology & Precision

All elevations shall be referenced to benchmarks established by the survey of Pakistan. Leveling operations shall begin and end at benchmarks approved by the Employer.

During the leveling of the profile, check surveys will be effected at intervals not exceeding 50 km. With benchmarks of known elevations. The difference in elevations as surveyed by the Contractor and as declared by Survey of Pakistan for these benchmarks shall not exceed the precision required for 3rd order surveys $e \leq 24k$ where k is the distance between benchmarks in km and e is the difference between elevations in mm.

In the absence of suitable benchmarks, the leveling shall be done by two independent leveling parties working in opposite directions along the same line. The difference in elevations between the two surveys shall not exceed the precision required for 3rd order surveys as stated above.

All-important objects and features along the transmission line centerline (railways, highways, roads, canals, rivers, transmission lines, distribution lines, telephone lines etc.) shall be surveyed and located with a positional accuracy of 1:2000 between points of known horizontal position.

3) Detailed Check Survey

The indicative drawing showing the line route and substation's locations are attached in Volume 2 of Specification Drawings.

The Employer has already carried out the detailed survey of transmission line along the selected route and prepared the profile / plan tabling which shall be handed over to the Contractor after award. The Contractor shall conduct the check survey to locate tower locations on ground conforming to the approved profile and tower schedule and to ensure that ground features, angle deviations, levels, distances, clearances, crossings etc; as shown on profile correspond with actual features at site. Any variance shall be noted and marked by the contactor. The requirement of tower site leveling and revetment work, if required, shall also be marked by the Contractor on the profiles. Locations, where benching might be required, shall also be identified. Contractor shall make contour measurements along with the calculations for the volume of benching and revetment, so that a decision can be made whether to accept benching and/or use unequal leg extensions. The co-ordinates of all the tower locations shall also be recorded using GPS/DGPS of positional accuracy less than 1m for easy relocating which shall be incorporated in the final digitized route alignment/profile.

After completing the check survey, profiles shall be re-submitted to the Employer for approval along with check survey report.

The Contractor will be responsible for the correct setting of towers as shown in approved profiles. If towers after erection are found to be out of the approved alignment/position in the profile, the Contractor will dismantle and re-erect them correctly fully at his own cost and without extension of time.

The Contractor shall be responsible to carry out survey including pegging out and layout of tower locations, spotting/staking of towers and preparation of construction structure list.

The work to be done by the Contractor shall include but not limited to the following:

(i) Validation & updating of the already prepared plan & profile drawings and construction structure lists (to be provided to the contractor after award of contract) of the proposed transmission line route with the prevailing field developments. Staking (centre and reference pegs) of the tower locations which have to be concreted are included in the Contractor's scope.

Latitude and longitude by hand held GPS of each angle location should be collected and submitted to the Engineer.

(ii) In case of route diversion, detail survey shall be conducted and approved by the Engineer, the Contractor will carry out investigation of diversion route alongwith necessary plan tabling of the area and shall make necessary modification and establish the terminal points, the angle locations, road crossing and other points of interest as advised by the Engineer or his authorized representative.

(iii) The contractor shall also be responsible to prepare plan tabling and profile drawings, tower spotting and construction structure list of any diversion route.

(iv) The Contractor shall obtain necessary rules and regulations. Survey of Pakistan maps will be shown to the successful bidder in the office of the Engineer when requested.

(v) The line route will be marked on the ground with permanent concrete markers. The Contractor will install the Concrete markers of at least 130 x 150 mm at top and bottom with a height not less than 1m. The markers shall be buried 0.5 m below existing ground level. The markers shall be white washed and a red point shall be made on the top of the marker to indicate the exact center of the line. This point shall be further encircled by red paint.

(4) Survey Report

Complete BoQ of the transmission lines as per the technical specifications shall be furnished in the survey report.

Each angle point locations shall be shown with detailed sketches showing existing in the close vicinity permanent land marks such as specific trees, cattle shed, homes, tube wells, temples, electric pole/tower, telephone pole, canal, roads, railway lines etc. The relative distance of land marks from the angle points and their bearings shall be indicated in the sketch. These details shall be included in the survey report.

Information w.r.t. infrastructure details available enroute, identification and explanation of route constraints, etc. shall also be furnished in the Survey report and shall inter-alia include the following:

Information regarding infrastructural facilities available along the final route alignment like access to roads, railway stations, construction material sources (like quarry points for stone, sand and availability of construction water), labor, existing transport facilities, fuel availability etc. shall be furnished in the survey report.

All observations which the Contractor thinks would be useful to the construction of the transmission lines mentioned under scope of work are to be reported.

Suggestions regarding the number of convenient zones (line segments/portions) in which the entire alignment can be divided keeping in view the convenience of line construction, operation, maintenance etc. are to be given.

Suggestions regarding location for setting up stores during line construction in consultation with Employer representatives shall also be provided by Contractor.

Working months available during various seasons along the final route alignment, with period, time of sowing & harvesting of different type of crops and the importance attached to the crops particularly in the context of way leave problems and compensation payable shall be stated by the Contractor.

Availability of labor of various categories and contractors of civil works shall also be reported.

Some portions of the line may require clearance from various authorities. The Contractor shall indicate the portion of the line so affected, the nature of clearance required and the name of concerned organizations such as local bodies, municipalities, Irrigation Department, Railway Authorities, Forest Authorities, Military and Defense Authorities etc.

4.1 Sub Soil Investigation

General Information & Scope of Work

The scope of work includes detailed soil investigation at various selected tower locations as approved/desired by the Engineer such as selected angle points, railway crossings, road crossings, power line crossings, river crossings etc. In addition, soil investigation may be required to be carried out at other locations at the discretion of the Engineer depending upon the soil strata, terrain and other factors.

These specifications cover the technical requirements for a detailed Geotechnical Investigation and submission of a detailed Geotechnical Report.

Mobilization of all necessary tools and equipment, provision of necessary engineering supervision and technical personnel, skilled and unskilled labor, etc. as required to carry out the entire field investigation as well as laboratory tests, analysis and interpretation of data collected and preparation of the Geotechnical Report.

Contractor shall also collect data regarding variation of subsoil water table along the proposed line route.

The Work specified herein is to determine the type and geotechnical characteristics of the foundation strata to the specified depth and location. This is to be accomplished through rotary drilling, field testing, ground water observations, soil sampling and laboratory testing. The location along with depth of investigation boreholes on the ground shall be established by the Contractor in accordance with the Drawings and from reference points approved by the Engineer as per requirement.

The Geo-technical investigations and report shall conform to all International ASTM Standards, Specifications (shall be the latest editions including all applicable official amendments and revision)

The Contractor shall have at site, at all times only qualified experienced geologist/engineer who will conduct and supervise drilling/logging activities. Hand held GPS should be available at investigation site for verification of bore hole/test pit location by the Engineer.

The Contractor shall also measure soil resistivity at each borehole.

The Contractor shall propose suitable foundation design on the basis of soil investigation. If it is determined that a new foundation design, other than those being already used by NGC, is required depending on the soil investigation results, the Contractor would design such new foundations types such as grillage foundation, undercut foundation, rock-anchor foundation, augured foundation etc.

4.2 Method of Drilling

Drilling shall be done by rotary including rock coring method by means of which a hole of specified diameter is extended in depths. Use of bottom discharge drilling bit shall not be permitted. The Contractor shall only be allowed to use percussion method where gravels and boulders are encountered after the approval by the Engineer.

4.3 Drilling of boreholes in flowing water conditions

Drilling may be carried out under water conditions. During the investigation, the Engineer may change such locations to land drilling depending upon the prevailing water way conditions.

4.4 Test Pit

The test pits shall be excavated at the locations as specified by the Engineer. Excavations of test pits shall be made to the depths as directed by the Engineer by manual labor and with the help of suitable digging tools. Test pits shall generally be excavated to a depth of about 3 meters below the ground surface or bed rock whichever is encountered earlier. Undisturbed black (30cm x 30cm x 30cm) sample shall also be extracted from each test pit. The dimension at the bottom of pit shall not be less than 1.5 m x 1.5 m. After field testing and sampling, the test pit should be backfilled as instructed by the Engineer.

4.5 Drilling Fluid

The drilling fluid used for rotary drilling shall be clean water clear from suspended sediments. The Contractor may use the natural or commercial drilling mud/bentonite slurry as drilling fluid.

4.6 Casing of Boreholes.

Casing of a required size allowing entry of sampling tools shall be used in conjunction with drilling to wall the boring to the bottom of the hole.

The casing shall be made of cylindrical steel pipes and shall have sufficient strength so as to maintain position and shape during drilling operations.

The casing may be omitted only where it can be shown to the satisfaction of the Engineer that sampling operations without the casing will not entrain soils from an elevation higher than the depth at which field testing or sampling is to be made.

It shall be the Contractor's responsibility to pull out casing from the bore holes after its completion for which no extra payment shall be made.

4.7 Field Testing

Field testing shall include Standard Penetration Test. Standard Penetration Test shall conform to ASTM D-1586. This designation describes as procedure to obtain a record of the resistance of subsoils to the penetration of a standard sampler and to obtain representative disturbed samples of the material for identification purposes and laboratory testing. The penetration resistance shall be expressed as the number of blows of a 63.4 kg (140 lbs) hammer freely dropping 762 mm (30 inches) required to force the standard sampler 305 mm (12 inches) into the soil. Standard Penetration Tests shall be conducted in the bore holes at one-meter interval from 1-meter depth to 10/15-meter depth of bore hole and up to 40 m in case of river crossing locations, unless otherwise directed by the Engineer. Immediately after each

penetration test a representative portion of the soil core shall be placed in moisture proof container.

4.8 Undisturbed Sampling

The undisturbed samples shall be taken in cohesive and non-cohesive materials. Samples shall be obtained using Denison or Pitcher sampler or equivalent double tube core barrel or Shelby tube. The sampling procedure shall conform to latest B.S./ASTM Standards. The length of undisturbed samples obtained shall not be less than 30 cm. immediately upon extraction from the hole, the sample shall be properly waxed. The number and depth of undisturbed samples from each hole shall be as directed by the Engineer during the progress of the drilling work at site.

4.9 Labeling and Disposition of Samples

Each sample shall have identification tags giving information regarding Sample No., Top Elevation of Hole/Test Pit, Date of Sampling, Depth and Length of Sample, and Description of Sample. The selected undisturbed and disturbed samples shall be carefully transported for testing by the Contractor to the approved testing laboratory. Every precaution shall be taken to avoid damage to samples as a result of careless handling and undue delay in transportation. The tubes containing undisturbed samples and cores shall be well packed in wooden boxes to protect the samples against vibration.

Ground Water Observations

Whenever required by the Engineer, bore holes shall be preserved for observations of ground water conditions. When the borings are advanced by using natural or commercial drilling mud/bentonite to stabilize the hole, the hole shall be flushed thoroughly with clean water at the completion of boring for the purpose of observing ground water levels.

4.10 Laboratory Tests

(i) General

- Laboratory tests shall be scheduled and performed by qualified and experienced personnel who are thoroughly conversant with the work.

- The laboratories in which the samples are to be tested shall be approved by the Engineer.

Laboratory tests shall be conducted using approved apparatus complying with the requirements and specification of International Standards for this type of work. It shall be checked that the apparatus are in good working condition before starting the laboratory tests. Calibration of all the

instruments and their accessories shall be done carefully and precisely at an approved laboratory.

One copy of all laboratory test data records shall be submitted to the Employer progressively every week. Laboratory tests shall be carried out concurrently with the field investigations as initial laboratory test results could be useful in planning the later stages of field work.

A schedule of laboratory tests shall be established by Contractor to the satisfaction of the owner within one week of completion of the first bore hole.

- The person representing to the Engineer shall have access to the laboratories to supervise and check the laboratory testing of the samples.

- The testing shall be carried out in accordance with ASTM or equivalent British Standards, or as directed by the Engineer.

(ii) Tests

The Contractor shall arrange to carry out laboratory tests on the specified samples of the subsoil material/water sample. The samples to be tested and the tests to be carried out for each sample shall be specified by the Engineer.

Undisturbed soil samples retained in liners or seamless tube samplers shall be removed, without causing any disturbance to the samples, using suitably designed extruders just prior to actual testing

Laboratory testing may include but not limited to the tests listed below:

Grain Size Analysis (Sieve + Hydrometer)
Soil Classification with percentage of gravel, sand, silt and clay at different depths.
Safe Soil Bearing Capacity (particularly at 5m depth)
Atterberg's Limits
Chloride Content (soil and water)
Bulk Density and Moisture Content
Dry Density
Generalized Subsurface Geotechnical Models with tables showing soil characteristics for each tower location
Capacity Curves at 4, 5, 6, 7m depths and Allowable Load vs Foundation Width for different Models.
Organic Matter Content
Sulphate Content (soil and water)
PH value (soil and water)
Unconfined Compression Test
Direct Shear Test
Consolidation Test

Total Soluble Salts.

4.11 Confirmatory Sub-Soil Investigation

After preliminary subsoil investigations confirmatory investigation (if required) up to maximum depths of 30 meters will be carried out by the Contractor. The location of selected confirmatory investigation will be conveyed to the Contractor by the Engineer.

4.12 Record

The Contractor shall have at site, at all times only qualified, experienced, orderly and thoroughly competent graduate Geologist who shall conduct and supervise drilling operations sampling and logging.

Contractor shall submit a formal report containing geological information of the region, procedures adopted for geotechnical investigation, field observations, summarized test data, conclusions and recommendations. The report shall also include detailed bore logs, subsoil sections, field test results, laboratory observations and test result both in tabular as well as graphical form, practical and theoretical considerations for the interpretation of test results, supporting calculations for the conclusions drawn etc.

The Contractor shall keep accurate logs and records of all the Work accomplished under this Contract. All such records shall be preserved in good condition by the Contractor until they are delivered and accepted by the Engineer. The Engineer shall have the right to examine such records at any time prior to their delivery to him. The following information shall be included in the records for each investigation borehole:

Bore hole/test pit number or designation, coordinates and elevation of top of the bore hole/test pit;

Type of drilling operations;

Dates and time by depths when drilling operations were performed;

Depths at which samples were recovered and field-testing was performed including complete data of field-testing;

Depth of Ground water table from NSL; and

Description of subsoil conditions.

The presence of the Engineer Representative or keeping of separate records by him shall not relieve the Contractor of the responsibility for the Work specified in this clause. Payment will not be made if the Contractor has not furnished the records.

4.13 Foundation design/designation

Contractor shall submit the foundation design/designation for each tower location duly considering soil type and tower spotting data along with the data/calculations to establish that the proposed foundation type is optimized and cost effective for the review and approval of the Engineer:

The recommendations shall provide all design parameters and considerations required for proper selection, dimensioning and future performance of tower foundation and the following:

Necessary soil design parameters to verify the bearing capacity based on geological data (bore log) and laboratory test results i.e. from (a) standard penetration test & (b) analytical method.

Immediate and consolidation settlements of soil.

Seasonal fluctuation of ground water.

Cement type to be used for foundation construction (based on ACI-318 Table 4.3.1).

The Contractor shall propose suitable foundation design on the basis of soil investigation. If it is determined that a new foundation design, other than those being already used by NGC, is required depending on the soil investigation results, the Contractor would design such new foundations types such as grillage foundation, undercut foundation, rock-anchor foundation, augured foundation etc. The Contractor shall be responsible for satisfactory performance of new foundation after erection and commissioning of towers on these foundations. Price of Design of new foundation would be quoted on “per type of foundation” basis.

Contractor shall submit the foundation design/designation along with the following data/calculations to establish that the proposed foundation type is optimized and cost effective for the review and approval of the Engineer:

- Necessary soil design parameters to verify the bearing capacity based on geological data (bore log) and laboratory test results i.e. from (a) standard penetration test & (b) analytical method.
- Immediate and consolidation settlements of soil.
- Seasonal fluctuation of ground water.
- Cement type to be used for foundation construction (based on ACI-318 Table 4.3.1).

1.2 Foundation Requirements

(1) **General**

The items in the Price Schedules for constructing the various types of concrete foundations (including pile foundations) for steel towers include the following:

(a) Tower staking;

(b) Performing all clearing, grading, cutting, blasting and leveling as required to construct the footings and erect the steel towers at the specified tower locations;

(c) Performing all required excavation, blasting (in all types of soil/rock), dewatering, shuttering, curing and compacting backfill for the concrete footings;

(d) Installing steel stub angles in the concrete footings;

(e) Tower grounding before placement of concrete;

(f) All concrete work for the concrete footings, including the cost of furnishing all reinforcing bars, and all materials for concrete;

(g) Installing pile foundations (pile, pile cap & tie beam) where required, including the cost of furnishing all reinforcing bars and all materials for concrete; and

(h) The foundation drawings included in Bidding Document are firm & final and only be changed (if required) as directed by Engineer.

(2) **Excavation for Tower Footings**

The Contractor shall perform all excavation required for constructing various types of concrete foundations for the steel towers. During excavation of towers sites near to amenities, the Contractor shall ensure to perform the work in such a manner as to minimum damage to them and if any prior approval is required that must be obtained at his own. However, in case of any damage the Contractor shall be get repair of it at his own risk and cost under intimation to the concerned agency.

The tower sites shall be leveled, graded/cut and cleared of trees, brush and stumps as may be required to construct the tower footings and to erect the steel towers. Cleared materials shall be disposed off, as directed by the Engineer or his nominated person.

All excavations shall be sufficient to provide concrete footings with dimensions not less than shown on the drawings.

After the Contractor has excavated the footing to the required depth, the Engineer will inspect the bottom of the excavation and determine if the bearing material is suitable for the type of footing designated for that location. If it is found that the bearing material is unsatisfactory for the type of footing designated, the Engineer or his nominated person will either designate another type of footing or ask for compacted crushed stone mixed with sand 50:50 ratio to be placed underneath the footing for a depth of up to 1.2 meters. The Contractor will be paid only for the type of footing actually installed. However, no payment will be made to the excavation & replaced material underneath the footing.

A maximum variation of 60 mm above or below established grade will be permitted. However, if excavations are below specified grade plus tolerance, those shall be backfilled to required grade by the Contractor with the Contractor's furnished concrete at his own cost.

All excavated material which is suitable for backfilling shall be laid aside to be used for backfilling at the tower site from which it was excavated, and the excess material shall be spread evenly around the site as directed by the Engineer or his nominated person.
Concrete shall be placed as soon as practicable after each excavation is completed and all excavations shall be protected so as to maintain a clean sub-grade until the footing is placed, using dewatering, timbering, shoring, or casing, as necessary. Any sand, mud, silt, or other objectionable material which may accumulate in the excavation shall be removed at the expense of the Contractor before placing concrete. After completion of foundations all the dewatering holes shall be filled with dry sand.

(3) **Rock Excavation**

Rocks shall be excavated to the depth required to provide suitable base for the foundations as indicated on relevant drawings.

Rock excavation includes drilling, blasting, removal, drainage and pumping as required. Drilling and blasting techniques shall keep over break to a minimum and no extra compensation shall be paid for the removal of over broken material. The contact surface of the rock shall be cleared of all loose rock and soil.

The cost of any damage whatsoever caused by blasting shall be payable by the Contractor. He shall not be relieved of these costs in spite of having received approval of his methods from the Engineer.

(4) **Erosion/Slope Protection**

For erosion protection against water current, gravel blankets shall be placed such that they do not flow away with water current. These gravel blankets

shall be placed at or adjacent to tower sites in the manner as directed by the Engineer or his nominated person. Gravel for the blankets shall be furnished by the Contractor, and it shall be pit-run, free draining, containing no stones larger than 635 mm size obtained from the closest source approved by the Engineer or his nominated person. The gravel shall be reasonably clean and free from vegetation, pieces of timber, or other foreign matter, and shall be distributed and graded evenly over the required areas. No compaction will be required.

Slope protection will be provided for foundations, which are located/placed on uneven ground, and/or they are partially or fully exposed in such a way that designed burden cannot be provided on these foundations safely. Slope protection shall include but not limited to construction of retaining walls of stone or brick masonry to a height and depth so as to provide adequate protection and necessary burden by making a leveled platform with or without brick/stone mortar after filling with earth as per specifications/drawings or as directed by the Engineer. The slope protection drawings will be prepared by the Contractor and submitted to the Engineer for review/approval prior to execution of Project.

(5) **Concrete Foundations**

Each tower foundation will have four footings and each footing will consist of a steel stub angle embedded in reinforced concrete. The footings for each tower in a tangent section of the line shall be placed so that the longitudinal axis of the tower cross-arm will lie in a plane perpendicular to the traverses of the line. Unless otherwise directed by the Engineer, the footings for each angle tower shall be placed so that the tower cross-arm will lie in a plane bisecting the interior angle formed by the inter-section of the traverses of adjacent sections of the line.

The footings at the various tower sites shall be constructed in accordance with the criteria shown on Drawings.

Pile foundations will be required where the field and laboratory tests confirm the requirements. The pile foundations will be installed as shown on the relevant drawings and in accordance with these Specifications.

Any type of spread footing foundation may be changed to another type of spread footing foundation or pile foundation in accordance with field requirements during execution of the project with the prior approval of the Engineer.

(6) **Placing of Stub Angles in Footings**

Stub angles shall be placed in the tower footings as shown on the drawings and shall be supported in the proper position by means of a rigid frame or

equivalent suitable device to ensure placement of the stubs within the tolerances specified below. The stub angles shall be held rigidly in a manner to prevent displacement during placing of concrete.

All stub angles for the tower legs shall be set accurately to the grade and alignment designated on the drawings and as directed by the Engineer. Work that is not within the tolerance will be corrected as directed by the Engineer, and at the Contractor's expense. The setting tolerances following complete foundation installation including backfilling and compacting are as follows:

(a) Tower Center from theoretical location:

(i) Transverse ..... ± 150 mm
(ii) Longitudinal ..... ± 500 mm

(b) Tower Orientation (angular departure from the theoretical location measured at the point of intersection of a tower face and the longitudinal center-line).....25 mm

(c) Difference in Elevation between working point marks on Stub Angles including diagonally opposite legs ..... 8 mm

(d) Departure from theoretical Horizontal Dimensions between tower center line and working point marks on stub angle:

(i) Along the tower face,
plus minus ..... 5 mm

(ii) Along the tower diagonal,
plus minus ..... 7 mm

(e) Batter ..... 5 mm
per meter

(f) Twist (about heel of stub angle) ..... 2°

(7) **Tower Grounding**

Each tower shall be grounded by installing one ground rod below each of two diagonal footings. Ground rods shall be driven at least 2.5 meters into undisturbed soil at the bottom of the footing excavation, as shown on the Drawings. The ground rod shall be connected to the stub angle by a 7 No. 10 stranded annealed copper covered ground wire. The connection of this wire to the ground rod and to the stub angle shall be made by a bolted clamp in accordance with the Drawings.

Where it is not possible to drive a ground rod an alternative grounding by installing 'crowfoot' shall be adopted.

The resistance of the two rods/crowfoot in parallel shall be measured and recorded before concrete footings are poured. If the resistance is more than 10 ohms, additional rods/crowfoot shall be installed as directed by the Engineer or his nominated person. No extra payment would be allowed for excavation/blasting/laying/back-filling on account of this.
The dead end terminal tower of the overhead lines must be connected to the earthing system of the grid stations.

(8) **Concrete**

(a) **General**

All concrete and reinforcement placed for tower footings shall conform to the requirements of this section.

At least 30 days prior to beginning concrete placement, the Contractor shall submit to the Engineer for approval, a design mix (along with quantity and source of each material) along with six (6) test cylinders using the actual materials to be incorporated into the Work. Approval of the design mix will in no way relieve the Contractor from meeting all the requirements of these Specifications. Whenever the Contractor proposes to use a different material source, a new design mix must be submitted and approved as outlined above. During construction if in the Engineer’s opinion the mix shall be adjusted, the Contractor shall submit a new design mix as directed by the Engineer.

(b) **Materials**

The Contractor shall furnish all materials for use in concrete, including but not limited to cement, sand, coarse aggregate, water, reinforcing bars, admixture, (including ground slag) and concrete curing compound. Air-entraining agent and curing compound shall be accepted on manufacturer's certification of compliance with specification requirements. However, the Engineer reserves the right to require submission of and to perform tests on samples of the agent and/or compound prior to shipment and use in the Work at the cost of Contractor.

(i) **Cement**

Cement shall meet the requirements of ASTM C150. The cement shall be free from lumps and properly packed in bags when used in concrete. Adequate provisions shall be made by the Contractor to prevent absorption of moisture when

cement is stored. Cement Type-V (sulfate resistant cement) will be used. Volume of one bag of cement should be taken as 1.25 cubic-ft.

(ii) **Sand and Coarse Aggregate**

Sand and coarse aggregate shall be furnished from any approved source. The sand particles shall be clean, hard, dense, durable, uncoated rock fragments that will pass a screen having 6.5 mm square openings. The sand shall be well graded from fine to coarse and shall be free from injurious amounts of dirt, organic matter, and other deleterious substances.

The coarse aggregate shall consist of clean, hard, dense, durable, uncoated rock fragments, shall be free from injurious amounts of flat and elongated pieces, organic matter, or other deleterious substances. The maximum size of crushed coarse aggregate for piles shall be 19 mm and for spread footings, pile cap and tie beam 38 mm or as directed by the Engineer. The grading of these sizes shall conform to ASTM C33.

The Contractor shall submit, for testing and approval, representative samples of the sand and coarse aggregate proposed for use in the concrete work. All testing will be conducted at CMTL, Lahore or UET Jamshoro. All aggregates shall conform to the requirements of ASTM C33 including petrographic test. During construction the Contractor shall also arrange testing of sand and coarse aggregate if directed by the Engineer to determine compliance with Specifications. The cost of all laboratory testing of these samples shall be borne by the Contractor.

(iii) **Water**

Water used for mixing concrete shall be clean and free from injurious amounts of oils, acids, alkalis, salts, organic materials, or other substances that may be deleterious to concrete or reinforcement and shall meet the requirements shown in Table-1 below. A complete chemical analysis of water shall be submitted prior to the start of construction work and shall be required for each new water source being chosen. The cost of all laboratory tests of the samples shall be borne by the Contractor. No change in water source shall be permitted without prior approval by the Engineer.

TABLE-1

Total Dissolved Solids (TDS)	800 ppm (max)
Magnesium, Chlorides and Sulfates	250 ppm (max)

pH Value	6.5 – 8.0

(iv) **Reinforcing Bars**

Reinforcing bars shall be deformed bars conforming to ASTM Designation A615, Grade 60. Representative steel bar samples shall be collected from the site and tested in the laboratory approved by the Engineer. The testing shall be witnessed by the Engineer. The cost of all laboratory tests and traveling of Engineer shall be arranged/borne by the Contractor.

Negative variation in weight [mass] maximum up to 2% of reinforcement bar(s) from the applicable weight [mass] per unit length prescribed in Table 1 of ASTM A615 will be allowed for bar(s) placement. Contractor will have to make adjustments in bar spacing/number of bars to accommodate the excessive negative variation in weight [mass] if greater than 2%. Contractor will not be allowed for bar(s) adjustment in case of overweight [excessive mass] of any deformed bar.

(v) **Curing Compound**

Curing compound shall be wax-base and white-pigmented (Type 2) and conforming to ASTM Designation C-309 to reflect solar radiation.

(vi) **Admixtures and Ground Slag**

Admixtures to be used in concrete shall be subject to prior approval of the Engineer and shall meet the following requirements:

(1) **Chemical Admixtures**

a) Air-entraining admixtures shall conform to ASTM C 260,"Specification for Air-Entraining Admixtures for Concrete.

b) Water reducing or water reducing and retarding admixtures (Normal Plasticizers) shall conform to ASTM C 494, “Specification for Chemical Admixtures for Concrete”, Type A or D, respectively.

c) Super plasticizers shall conform to ASTM C 494, Type F or G, respectively

d) Only one of the Admixtures A, D, F or G, shall be added at a time.

e) Chloride-bearing admixtures shall not be permitted.

f) Super Plasticizers shall be checked for their compatibility with pozzolanic materials in blended cement concrete.

(2) **Ground Granulated Blast-Furnace Slag**

In area where high sulphate and chloride contents are present in soil/water, finely ground granulated blast-furnace slag can be used as cementatious material in concrete by replacing SRC cement by maximum up to 30%. The properties of ground granulated blast-furnace slag should meet ASTM C 989. The cost of all laboratory testing of these samples shall be borne by the Contractor. Contractor will not be paid extra for the purchase/procurement of ground granulated blast-furnace slag to the construction sites.

(c) **Composition**

The Contractor shall determine the proportions of the sand, coarse aggregate, and cement needed to provide concrete, meeting the requirements of these Specifications, and shall be approved by the Engineer. Concrete which contains 38 mm maximum-size aggregate shall have a cement content of not less than 380 kg per cubic meter and concrete which contains 19 mm maximum size aggregate shall have a cement content of not less than 440 kg per cubic meter. 38 mm maximum size aggregate shall be used for spread footing, pile caps, tie beams and 19 mm aggregate for piles. The net water cement ratio by weight shall not exceed 0.5. Surface water contained in the aggregate shall be included as part of the mixing water in determining the water content. Reinforced concrete design will be checked in accordance with the ACI Building Code.

The Contractor will take minimum three test cylinders (152mm x 305mm) per leg, and the average compressive strength at 28 days shall exceed 210 kg/cm² (3000 psi) and no individual test value should fall more than 35 kg/cm² (500 psi) from the minimum specified value.

The compressive strength of the concrete will be determined by the Engineer through the medium of test of (152 x 305 mm) cylinders made and tested in accordance with ASTM C39. The Contractor shall furnish all necessary sampling equipment such as slump cones, test cylinders, etc. at the site. This equipment is to be approved by the

Engineer or nominated person by Engineer. The cost of the material lab tests shall be borne by the Contractor.
In the event that the concrete cylinder fails to meet the specified strength requirements then in-place testing of concrete shall be conducted under the supervision of the Engineer. In-place as approved by Engineer testing of concrete shall be conducted by one or a combination of the following methods:

(i) ASTM C42 "Test Method of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete."

(ii) ASTM C805 "Test Method of Rebound Number of Hardened Concrete."

The use of calcium chloride in concrete will not be permitted.

The slump of the concrete shall not exceed 75 mm for conventional foundation, pile cap & tie beam and 150-180 mm for piles.

(d) **Batching and Mixing**

Unless specifically approved by the Engineer, all concrete used on the Project shall be machine mixed. Hand mixing shall only be used when authorized by the Engineer and shall be performed under his directions.

The sand and coarse aggregate shall be weighed and shall be proportioned on the basis of integral bags of cement unless the cement is weighed. After weighing, the materials may be proportioned on the basis of equivalent volumes. The Contractor shall provide equipment and shall maintain and operate the equipment as required to accurately determine and control the amount of each separate ingredient entering the concrete. Batching shall be such that combined inaccuracies in feeding and measuring the materials will not exceed 1.5 percent for water and weighed cement and 2 percent for sand and each size of coarse aggregate. The concrete shall be uniform in composition and consistency throughout the mixed batch, and from batch to batch, except where changes in composition or consistency are directed. The mixing time shall be at least 1.5 minutes for stationary mixers. Excessive over-mixing requiring the addition of water to preserve the required consistency will not be permitted. The temperature of the concrete when it is being placed shall be not more than 35°C and not less than 5°C in moderate weather or 10°C when the mean daily temperature drops below 5°C. Truck mixers will be permitted only when the mixers and their operation are such that the concrete throughout the mixed batch and from batch to batch is uniform with respect to consistency and grading. Any concrete

retained in truck mixers so long as to require additional water to permit satisfactory placing shall be wasted.

(e) **Forms Preparation for Placing of Concrete**

Unless otherwise provided for on the Drawings or approved by the Engineer, all concrete placed will be monolithic.

Forms shall be sufficiently tight to prevent loss of mortar from the concrete and shall be maintained rigidly in position until the concrete has hardened sufficiently to prevent damage by form removal. All surfaces of foundations upon or against which concrete is to be placed shall be free from standing water, mud and debris. The surfaces of absorptive foundations against which concrete are to be placed shall be moistened thoroughly so that moisture will not be drawn from the freshly placed concrete. The surfaces of construction joints shall be clean, rough and surface dry when covered with fresh concrete. Cleaning shall consist of the removal of all laitance, loose or defective concrete, coatings, sand, curing compound if used, and other foreign material. A mortar layer shall not be used on concrete construction joints.

The methods and equipment used for transporting concrete, and the time that elapses during transportation shall be such as will not cause appreciable segregation of coarse aggregate or slump loss in excess of 25 mm in the concrete as it is delivered into the Work. Concrete may be transported from the mixer to the forms and deposited in the forms by any method approved by the Engineer such as transit mixers, buckets, chutes and pumping. Aluminum pipe or chutes shall not be used for tremie trunk line, or chute for placing of concrete, or for the delivery of pumped concrete. Re-tempering of concrete will not be permitted. Any concrete which has become so stiff that proper placing cannot be assured shall be wasted. Formed concrete shall be placed in continuous approximately horizontal layers, the depths of which generally shall not exceed 500 mm. Concrete shall be vibrated (internal vibrators having a minimum frequency of 8,000 vibrations per minute) until it has been consolidated to the maximum practicable density, is free from rock pockets of coarse aggregate, and closes snugly against all surfaces of forms and embedded materials. Standby vibrators shall be available during concrete placement.

Exposed unformed surfaces of concrete shall be brought to uniform surfaces and worked with suitable tools to a reasonably smooth wood float or steel-trowel finish as directed. Concrete in the tops of foundations in which stub angles are embedded shall be sloped to provide drainage away from the stub angles.

(f) **Reinforcement**

Steel reinforcing bars shall be placed in the concrete where shown on the drawings. Before reinforcement is placed, the surfaces shall be cleaned of heavy flaky rust, loose mill scale, dirt, grease, or other foreign substances. Reinforcement shall be accurately placed and secured in position so that it will not be displaced during placing of concrete.

The Engineer shall not furnish supplemental bar-placing diagrams, bar lists, and bar-bending diagrams. Any such additional diagrams and bar lists of this type which the Contractor may require to facilitate the fabrication and placement of reinforcement shall be provided by the Contractor.

Reinforcement will be inspected for compliance with requirements as to size, shape, length, splicing, position, and amount after it has been placed.

Any bar-placing diagrams, bar lists, and bar-bending diagrams prepared by the Contractor shall conform to the requirements shown on the reinforcement design drawings and shall be approved by the Engineer. Maximum two numbers of bars (2+2) in pad and chimney can be lapped.

Lap splices shall be as under:

Bar #	3	4	5	6	7	8	9	10	11
Lap Length (mm)	305	360	460	610	840	1100	1400	1800	2160

(g) **Protection and Curing**

The Contractor shall protect all concrete against injury until final acceptance. The concrete shall be cured with two applications (coats) at right angles to each other to ensure uniform and more complete coverage with approved membrane type curing compound to be applied preferably by power sprayer as soon as possible after concrete placement and in no case later than 2 hours. Curing with water shall be used only as an alternative to the type curing and with Engineer approval. The application of the curing compound shall be in accordance with the procedures outlined by the Manufacturer. In case of pile-cap & tie beam with form, ties are loosened and vertical forms are still in place water should be applied to run down on the inside of the form to keep the concrete wet. Immediately after form removal, the surfaces should be kept continuously wet by water spray

or water-saturated fabric until the membrane-forming curing compound is applied.

In exceptional cases where extremely corrosive soil conditions are encountered, or as directed by the Engineer, the surfaces of the concrete, both exposed and unexposed, shall be treated with an approved type of bituminous compound. A minimum of two applications shall be required, and the applications shall be 100 percent effective. Surfaces to be treated shall not be coated with curing compound. No extra payment will be made to the Contractor for procurement/treating concrete surfaces with bituminous compound.

(h) **Repair of Concrete**

Any concrete that is damaged or defective from any cause; concrete that is honey-combed, fractured, or otherwise defective, and concrete damaged because of excessive surface depressions, must be excavated and built up to bring the surfaces to the prescribed lines, shall be removed and replaced and any imperfections and irregularities on concrete surfaces shall be corrected. The removal and replacement of damaged or defective concrete, and the correction of surface imperfections and irregularities shall be made with concrete dry pack, or mortar (Portland cement mortar), or at the option of the Contractor, with epoxy-bonded concrete, or epoxy-bonded epoxy mortar, where and as applicable for the type of repair involved. All repairs should be completed within 24 hours after removal of forms, and as directed by the Engineer or his nominated person. However, forms shall not be removed for a period of at least 24 hours after the concrete work until it has acquired sufficient strength to safely carry its own weight and any construction loads that may be imposed on it.

(i) **Tolerances for Concrete Construction**

The Contractor shall be responsible for setting and maintaining concrete forms within the tolerance limits necessary to insure that the completed Work will be within the tolerances specified or within good construction practices. Concrete work that exceeds the tolerance limits specified herein shall be inspected by the Engineer and he will determine what effect the deviations will have upon the structural action or operational function of the structure, and what remedies may be necessary. If after such inspection the Contractor is directed to remove or replace any defective Work, he will do so at his own expense.

(aa) Tolerances for footings:

- Variation from plumb In any length of 3.0

	or specified batter for lines and surfaces of stems	meters ..... 13 mm Maximum for entire length ..... 26 mm
-	Variation in cross-sectional dimensions of stems	Minus..... 7 mm Plus ..... 26 mm
-	Variation from specified elevation for top of concrete	Minus ..... 13 mm Plus ..... 13 mm
-	Variation of dimensions in plan	Minus ..... 13 mm Plus ..... 52 mm
-	Misplacement or Eccentricity	2 percent of the footing width in the direction of misplacement but not more than 52 mm
-	Reduction in thickness	5 percent of specified thickness

(bb) Tolerance for placing reinforcing steel:

-	Variation of protective covering:	with cover of 64 mm or less ……07mm with cover of more than 64mm ……. 13mm
-	Variation from indicated spacing	..... 26 mm

(9) **Backfill for Tower Footings**

Backfill shall be placed about the tower footings to elevations indicated on the drawings or as directed. The material used for backfilling, the amount thereof, and the manner of depositing this material shall be approved by the Engineer. Where the excavated materials are insufficient in quantity or are not suitable, as determined by the Engineer nominated person, for use as backfill, the Contractor shall obtain suitable material from the borrow. No borrow pits shall be made within 25 meter radius from center of tower. Backfill shall be placed about the tower footings as soon as practicable after removal of concrete forms, but not earlier than 8 hours from application of sealing compound or bitumen coating to concrete surfaces.

The excavated material not suitable for backfilling or in excess of backfilling requirement shall be spread evenly over or adjacent to the Site. The backfill adjacent to footing stems shall be approximately 150 mm above the original

ground, and shall be graded and sloped uniformly away from the stems so that there is no pond at or around the footing.

In backfilling for concrete footings, the pad of the footing shall be covered with fine material of 300 mm thickness (after compaction) before any coarse material is deposited. Care shall be taken to avoid damage to the concrete when backfilling. The backfill material shall be clean and free from vegetation, pieces of timber, or other foreign matter. Suitable material for backfilling shall be a compatible granular material having a granularity within the following limits.

Sieve	% Passing
76 mm (3 in)	100
No. 200	0-15

(10) **Compacting Backfill**

Backfill shall be placed in horizontal layers which after compaction shall not be more than 150 mm thickness. Each layer shall be compacted by tamping machines or other mechanical means approved by the Engineer.

Backfill shall be moistened properly where required. When excavated material is so wet that it is not suitable for backfilling, it shall be spread and aerated until the proper moisture content is attained, at which time the material shall be used as backfill around tower footings. The backfill material shall not be placed until all forms and timber used for shoring or bracing have been removed, unless otherwise permitted by the Engineer or his nominated person.

The Contractor shall submit, for laboratory testing and approval, representative samples of the materials proposed to be used as backfill. On the basis of laboratory test results the Engineer shall specify the degree of compaction to be obtained in the field, which shall not be less than 90% of the maximum dry density as obtained by ASTM D-1557.

Density shall be measured in the field according to ASTM D1556 or ASTM D2937 by the Contractor in the presence of nominated person of the Engineer to determine compliance with the specified degree of compaction. The cost of all laboratory and field testing shall be borne by the Contractor.

(11) **Additional Foundations**

In case other foundations are required to be installed, which are of different design than the specific types listed, the Contractor shall install these foundations as directed by the Engineer. All work performed will be in accordance with these Specifications. Payment for additional foundations will

be made at the applicable unit prices provided in the Price Schedules for similar Works.

(12) **Foundation Test (Not Required)**

The Contractor may be required to perform an uplift load test on any one footing for double circuit suspension type tower. The Engineer will designate the location and type of footing to be tested. All methods, procedures, equipment, jigs, apparatus etc., shall be subject to approval by the Engineer. No testing shall be commenced until 28 days after the final concreting nor until all backfill is placed and compacted as specified herein.

An uplift load shall be applied until a design value is reached or the footing fails. The rate of load application will be determined by the Engineer.

1.3 Pile Foundations

(1) **General**

(a) **Description of Work**

The Work to be performed under these Specifications shall be carried out at the proposed site of towers after the field and laboratory test results confirmation. The Work includes, but is not limited to the following:

(i) Construction of bored, cast-in-place reinforced concrete piles, pile cap and tie beam as shown in the Bid Drawings or as directed by the Engineer.

(ii) Complete borehole logs and record of all operations performed during the execution of the Work.

(b) **Location of Piles**

(i) The location of piles on the ground shall be established by the Contractor in accordance with the construction drawings. Establishing the pile locations accurately in the field shall be sole responsibility of the Contractor.

(ii) The Contractor will provide the levels, survey and ground elevations for each pile location. The elevations will be given with respect to permanent Bench Marks in the vicinity of the Site.

(c) **Diameter and Length of Piles**

Bored, cast-in-place reinforced concrete piles shall be constructed having uniform diameter throughout the length as specified in the

relevant Bid drawings or as directed by the Engineer. Pile footings shall only be installed where the field and laboratory tests confirm the requirements. The final length of the piles shall be determined based on field and laboratory test results.

(d) **Drillers and Supervisory Staff**

The Contractor shall have at Site, at all times only qualified, experienced, orderly and thoroughly competent persons including graduate civil engineers/geologists who shall conduct and supervise drilling/concreting operations during, sampling, logging, in-situ testing and piles construction.

(2) **Execution of Piles**

(a) **General**

This clause covers all the work necessary for the execution of the bored, cast-in-place reinforced concrete piles namely:

(i) Formation of ramp.
(ii) Drilling and stabilizing of bore holes for the piles.
(iii) Placing of steel reinforcement.
(iv) Mixing and placing of concrete.

The Contractor shall perform all such work in accordance with requirements of this clause as well as in accordance with the methods proposed or described by him at the time of submitting his Bid and approved by the Engineer.

(b) **Method of Drilling**

The drilling of holes for piling shall be done by reverse rotary or percussion method or any other method suggested by the Contractor and approved by the Engineer. Regardless of the method used for drilling holes, drilling operations shall be carried out in such a way as to avoid any disturbance of the surrounding soil especially at the bottom of the hole and successful drilling through all types of soil/rock/boulder.

(c) **Stabilizing of Holes**

There will be no permanent casing installed. Any temporary protective casing at the start of the drilling shall be later pulled out. The stabilizing of the drilled holes shall be achieved by using natural or commercial drilling mud/bentonite. Permanent casing shall only be allowed with the prior approval of the Engineer.

(d) **Tolerances**

Tolerances for setting out and for concrete construction shall conform to Clause 1.3 of these Technical Provisions. In case of piles, deviation from the vertical shall not exceed one percent on any section of the length of the holes.

(e) **Concrete**

All concrete and reinforcement placed in the construction of piles shall conform to the requirements of Clause 1.3(8) of these Technical Provisions. In addition to this, following requirements shall also be fulfilled.

(i) Promptly after cleaning of the borehole to the entire satisfaction of the Engineer Representative, concrete shall be placed in a manner that will not cause segregation of the particles or permit infiltration of water or any other occurrence which would tend to decrease the strength of the concrete or the capacity of the finished pile. The slump shall be 150-180mm.

(ii) The minimum clear distance between vertical reinforcement, including lapped bars, shall be 100 mm (if applicable).

(iii) Either tremied or pumped-in concrete can be used in presence of water or of drilling mud. Tremie or pump pipe shall be made of steel and have watertight joints. Tremie pipe shall have a minimum diameter of 8 inches (200 mm) and pump pipe shall have a minimum diameter of 4 inches (100 mm) should be used. Embed tremie or pump pipe a minimum of 3 meters in the concrete throughout concreting. The method and equipment used shall be subject to the prior approval of the Engineer.

(iv) Concrete placement shall proceed without interruption until the pile is complete.

(v) Vibrate top 3 to 4 meters of concrete after temporary casing has been withdrawn.

(vi) The Contractor shall make three test cylinders per pile or as directed by the Engineer during the concreting of piles.

(vii) The vertical bars of pile can be coupled together as directed by the Engineer according to the site requirement.

(viii) The inner dia of stand casing/permanent casing should be at least 25mm larger than the pile dia, whereas bit dia should be equal to pile design dia.

(f) **Record**

The Contractor shall keep accurate logs and records of all the Work accomplished under this Contract. All such records shall be preserved in good condition by the Contractor until they are delivered and accepted by the Engineer. The Engineer shall have the right to examine such records at any time. The following information shall be included in the records for each pile.

- A general description of sub-soil conditions and water table position at the location of the pile.
- Pile number, ground elevation of borehole and elevation of top of pile.
- Type of drilling operations.
- Date and time by depths when drilling operations were performed and piles constructed.
- Total depth of each borehole.
- Quantity of concrete and steel used for the construction of each pile.
- Quantity of constituents for each batch of mix, water cement ratio and the results of all quality control tests.
- Time of start and completion of Concrete.
- Remarks concerning any unusual occurrence during drilling and concreting of piles.

1.4 Dismantling of Insulators

The dismantled disc insulators are envisaged for reuse/re-utilization by the employer in other projects. Proper handling and safety of the tower components/members during dismantling, counting & recording of each insulator, bundling/packing, storage at site and safe transportation of material to employer designated warehouse shall be included in the scope of work. The contractor shall be entirely responsible for any damage to the NGC material during execution of work. In case of any damage/breakage/loss of material of NGC, recovery shall make from the contractor by employer.

The contractor shall also make every effort to minimize the breakage/loss of dismantled fasteners (nut & Bolts, washers, step bolts etc.) during execution

of work. However, if breakage/loss of fasteners is inevitable, the same may be allowed/approved by the Engineer.

1.5 Tower Erection

(1) General

Contractor's work includes supply of manpower, providing construction equipment, vehicles, rigging tackles for complete assembly of towers.

Erection shall be done strictly in accordance with the approved manufacturer's drawings, material lists and approved construction data sheets.

No tower shall be erected **until seven days after the last concrete** was placed in the foundation, nor until backfill has been completed where and as required.

(2) Handling

Tower steel shall be handled so as to prevent deformation of the members and damage to the galvanizing. Materials shall not be dumped, dragged, barred; rolled or dropped but shall be carefully loaded, unloaded and stored. A mechanical means such as hoist or crane shall be used when material cannot be properly handled or placed by hand.

Bare wire rope or steel chains shall not be used for handling without adequate protection of the surface coating. Heavy members shall not be stacked on top of lighter members. Structural members shall be stored according to size, lengths and markings. The maximum weight of steel bundles shall not exceed a specified weight, typically 1600 kg to 1800 kg, to facilitate handling and unloading. Members with dissimilar finishes shall not be stored over one another to minimize discoloration of the lower members.

All members shall be placed on wood blocking or other suitable material to ensure that the materials to be stored are not in contact with the ground. Blocking shall also be used to separate layers of stacked materials. Members shall be supported in such a manner as to prevent bending and distortion as well as to allow water to drain from the materials.

Failure to provide for proper drainage of stacked galvanized steel members could result in the formation of white rust. White rust (zinc oxide) forms when two galvanized surfaces are closely rested for an extended time without adequate ventilation. Ingress of water between the surfaces forms an electrolytic cell, which may, in time, erode some of the zinc layer. The white rusting action will stop after exposure to air. Spacers placed between the nested pieces ensure adequate ventilation when extended transport storage is anticipated.

The material yard shall be kept relatively neat and clean and the growth of vegetation kept to a minimum. Good housekeeping minimizes damage and loss of material handling; periodic physical inventories and complies with environmental considerations.

(3) **Assembly Methods**

All assembly and erection shall be done by methods and equipment that will not cause damage to, or distort any part of the tower. Extreme care shall be taken to establish and maintain the true geometric shape of the sections of tower assembled.

Preassembly techniques are generally influenced by site terrain and available equipment. Generally, the larger section that can be pre-assembled, the more efficient is the assembly/erection operation. Preassembly techniques shall consider placement of the assembled sections to provide for the most efficient, safe lifting for erection. Structural assemblies, which are not sufficiently rigid to be raised in one piece, shall be stiffened by means of adequate temporary bracings.

Towers assembled on the ground shall be placed on suitable blocking so as to be kept free of dirt, mud or other foreign material that might adhere to the structure and damage the coating. Blocking shall be placed in such a manner as to provide a flat surface in order to prevent over stressing or distortion of members and to maintain the true geometric shape of the assembled members. Mud, dirt, white rust and other foreign material shall be removed from the contact surfaces of joints prior to assembly. Steel members shall not be dragged over the ground or otherwise handled in such a manner as to damage the galvanizing.
The structures shall be assembled in accordance with the fabricator's erection and detail drawings. The diameter, type, and length of bolts as shown on these drawings shall be used for each connection. Orientation of bolts can facilitate access, final tightening and installation of locking devices and subsequent checking of the erected structure. Tower bolts shall normally be installed so that the nuts are to the outside of the tower or, in the case of horizontal members, to the top of the connection unless such positioning is clearly impracticable.

Installation of bolts by hammering or any method that damages the galvanized coating shall not be allowed.

When sections of towers are being assembled prior to erection, assembly shall be on blocks that will provide support, sufficient to prevent distortion of tower steel. If all bolts in an assembly are not inserted, at least 50 percent of the bolts in each connection shall be inserted and those bolts shall be finger-tightened only. All bolts in an assembly shall be inserted before any bolt in the assembly is fully tightened.

Only wrenches which properly fit the nuts and bolt heads shall be used. The use of wrenches, which in any way deform the nut or cut or flake the galvanizing is prohibited. All bolts shall be entered clear to the head. All 16 mm diameter bolts shall be tightened to a torque of 10-14 kg - meters and 20 mm and 24 mm diameter bolts to a torque 17-23 kg-meters. All bolts after torque shall be center punched adjacent to the nut in order to prevent loosening of the nut. This method of locking the nuts will be used instead of locknuts.

(4) **Method for Erection**

Towers shall be erected by any suitable method in the sequence best adapted to the equipment, workers' experience and site conditions which will not overstress structure members.

When handling assembled portions of the structure, spreader bars or other devices with proper points of attachment shall be used to avoid distorting or overstressing members and to maintain the true geometric shape of the section.

Adequate tag lines shall be used to ensure that no section of the tower being lifted will drag on the ground or against any section of the tower already erected.

Temporary guying may be required when erecting a structure in sections. Any temporary guying system shall be checked to ensure that the structure section is stable before workers are allowed to work on the section.

Structures shall be completely erected, correctly oriented, with all members in place, all bolts installed and properly tightened, and the entire structure checked in accordance with the specifications prior to the installation of insulators, conductors and OPGW.

When erecting structure members or sections in the vicinity of energized lines, care shall be taken to ground these members or sections before any workers come in contact with them.

The use of a crane erection is generally an efficient method of erecting latticed steel structures. With ground pre-assembly of sections, the time spent in final erection can be greatly reduced.

Cranes with telescoping booms can be more efficient than rigid boom cranes in rough terrain. Considerable productivity can be lost in the process of assembly and disassembly of rigid boom cranes. In addition, continuous handling of boom sections can lead to boom damage. Preplanning of the crane location at the structure site allows for any necessary grading work (building of ramps, soil stabilization etc.) to be accomplished during the foundation construction operations when suitable equipment is

available at the site. Depending on soil conditions, additional bearing support may be required under outriggers, tracks, and tires. All soil shall be returned to a condition acceptable to the Engineer after erection.

Gin Pole is a boom of steel or aluminum pipe, wood pole or latticed truss secured at its base and usually inclined at a slight angle to the vertical is also used for tower erection. Two wire-guys about 60º to 90º apart in the plan view are attached to the top of the gin pole to resist or support the load to be lifted. For safety, a third, and preferably a fourth guy, is installed in front to prevent the pole from falling over backward in the event of an unexpected impact or the sudden release of load.

(5) **Correction of Misfabricated and Damaged Steel**

All shop errors and damaged steel shall be reported to the Engineer who will decide the manner in which corrections shall be made. All costs incurred due to punching, drilling or cutting shall be deemed to be included in the steel erection cost.

Pieces bent in handling may be used if they can be straightened to the satisfaction of the Engineer, without structurally damaging the metal. If bent pieces cannot be satisfactorily repaired, they shall be replaced.

Field punching or drilling of holes and field clipping shall be done only with the approval of Engineer, if the hole or clip was missed in fabrication of the member but was called for on the fabrication detail drawings. The edges of clipped angles, new or reamed holes or any member which has its coating scratched or damaged shall be repaired with a coating approved by the Engineer. Members having mis-punched holes shall not be repaired by welding and shall be replaced with correctly fabricated members. If the field fabrication of a member is required, the bolt spacing and edge distances shall be in accordance with the fabrication detail drawings.

Reaming shall be done only with the approval of the Engineer, and will be permitted, for the correction of undersized holes, for removing excessive galvanizing, and for holes off gauge line, to the extent that the connection cannot be made by loosening bolts in related connections. No hole shall be reamed more than one-eighth of its original diameter.

Reaming to remove fitting difficulty due to improperly set footings, to correct improper tower assembly and erection, that would distort holes or distort any member, or that would damage the galvanizing, is prohibited.

(6) **Damage to Galvanizing/Paint**

Small areas of galvanizing damaged by abrasion, in straightening bent pieces or by necessary clipping-in the field, shall be repaired by carefully cleaning the affected area and painting.

Damaged area shall be wiped with clean rags saturated with Xylene or equivalent solvent, followed by wire brushing then recleaned with solvent to remove residue, and painted with one coat of "Galvanox", or approved equivalent.

Galvanizing damaged by drilling or punching shall be repaired by applying an Aluminum paste or zinc rich coating material to completely fill all voids between the bolt and the surfaces bared, or all exposed steel surfaces around the holes or on cuts on which such corrective work is permitted. The coating material shall be "Galvanox" or approved equivalent.

(7) **Tower Signs and Aerial Markers**

a) **Material**

All the plates i.e. danger sign, number & phase plates and aerial markers shall be baked ceramic surfaces on high grade steel base plates of minimum thickness of 1.5 mm except aerial marker plate which shall be of 3.0 mm thickness. The fabrication details and dimensions of the plates are shown on the drawings in Volume-II: Drawings.

The plates shall be painted with ceramic paint on both sides and shall be thoroughly cleaned before painting and the ceramic paint shall completely cover the front and back of the plates and also the edges of plates and the interior edges of the attachment holes. The ceramic paint shall be of even thickness, reasonably free from cracks, patches, pin holes, blisters and shall have a uniform gloss. The ceramic paint around the holes shall be protected by means of fiber washers.

Three coats of ceramic paint shall be applied on the danger sign and number plates. The first coating of black ceramic paint shall be applied on both sides of the plates. The other two coats of white ceramic paint shall be applied on the front side of the danger & number plates and yellow on aerial marker plates.

In case of phase plates, three coats of ceramic paint shall be applied. The first coat of black ceramic paint shall be applied on both sides. The other two coats of red, yellow and blue colour shall be applied as specified on both side of the plate.

Nos. of bolts, nuts, washers and fixtures where required shall be supplied with each plate as shown in the drawings. Bolts, nuts and washers to be supplied with the fixture shall be galvanized in accordance with ASTM A153.

b) **Acceptance Tests**

The following acceptance tests for Sign & Number Plates and Aerial Markers shall be carried out:

(i) Visual examination
(ii) Verification of dimensions
(iii) Galvanizing test (on fixture and nuts & bolts only)
(iv) Resistance to thermal shock (vitreous enamel finish)

(i) Visual Examination:

Examination	Defects
a. Construction	Not of the shape given in relevant Drawing. Any crack on the nut& bolt.
b. Material	Not of proper material.
c. Finish	Galvanizing of bolts, nuts, washers and fixture not proper, presence of black spots, blisters, flux, dress, un-coated areas or any other defects. Bolts and nuts, rusty. Threads marred. The plates not properly enameled or presence of cracks, patches, pin-holes, blisters or any other defect. Letters and numbers broken or not properly enameled.
d. Marking	Missing or in-complete or not as per drawing.

(ii) Verification of Dimensions:

Dimensions of the danger, number, aerial markers, phase plates and fixtures shall conform to those given in drawings in Volume-II with allowable tolerances as marked on the individual drawings. Any variation from the specified dimensions shall constitute a defect.

(iii) Galvanizing Test:

The galvanizing of the nuts, bolts, washers and fixtures shall be tested in accordance with ASTM Specifications.

(iv) Resistance to Thermal Shock:

This test shall be carried out by subjecting the test specimen to radiant heat so as to reach a steady temperature of 185-195°C in about ten minutes. The temperature shall be measured by means of a surface pyrometer in contact with the top surface of the heated part of the specimen.

Remove the radiant heat and within 5 seconds quench the surface with 1000 ml of water at 15-20°C direct from an aspirator or other container through a 5 mm diameter tube, the end of the tube being 150 mm above the center of the heated portion of the test specimen. The flow rate of water shall be adjusted to 10 ml per second. It is convenient to mark the test area to ensure

that the water is correctly applied. Dry the plate, replace in the same position under radiant heat source and repeat this procedure until six cycles have been completed.

After subjecting the test specimen to the above test, the vitreous enamel surface shall be considered to be resistant to thermal shock provided that the enamel shows no signs of flaking-off or crazing.

Sampling, Acceptance and Rejection:

Danger, number, phase plates, aerial markers and fixtures offered for acceptance shall be divided into lots containing up to 200 units in each lot. A sample of 12 units (3 each from danger, number, phase and aerial marker) shall be drawn at random from each lot. For thermal shock test two samples each shall be randomly selected from the offered lot.

The selected samples shall be subjected to the visual examination, verification of dimensions and galvanizing. If the number of defective units is two, the lot shall be accepted. If the number of defective units is more than two the lot shall be rejected. If the number of defective units is three, another sample of 12 units shall be selected at random and subjected to tests. If the number of defective units is again three or more then the lot shall be rejected and if the number of defective units is less than three then the lot shall be accepted.

c) **Installation**

Tower signs (danger sign and number signs) shall normally be installed on the tower so that they will be readily visible when viewed in the direction of increasing tower numbers. However, if signs installed in the normal position will not be readily visible from a permanent access road, they shall be installed on the tower faces best exposed to view from the access roads. These signs shall be supplied by the Contractor, and before the manufacturing, a sample shall be submitted to the Engineer for approval.

Aerial markers shall be installed on the upper side of bridge structure, as shown on the drawings. Two markers shall be installed on every tenth tower of the line; one marker faced back on line and the other ahead on line. These shall also be supplied by the Contractor.

(8) **Anti-climbing Devices**

a) **Material**

Material, dimensions and testing of the barbed wire shall be in accordance with ASTM A121.

The size and characteristics of the zinc coated barbed wire shall be as per design number 12-2-4-14R, Type Z with Class 3 coating.

The material of structural steel of anti-climbing devices shall be maximum of mild steel as per ASTM A36 and galvanization according to ASTM A153.

b) **Acceptance Tests**

The following acceptance tests for barbed wire shall be carried out:

(i) Visual examination
(ii) Verification of dimensions
(iii) Galvanizing
(iv) Physical
(v) Mechanical

These tests shall be carried out on the selected samples as per the test procedure defined in the relevant ASTM specification.

c) **Installation**

An anti-climbing device will be installed on each tower as shown on the relevant drawings. The anti-climbing device normally will not be installed until all the tower and wire stringing work is completed.

The tower steel will be provided with holes for mounting the anti-climbing device brackets. The brackets shall be fabricated from mild steel and shall be galvanized in accordance with ASTM A153. The brackets along with barbed wire shall be supplied by the Contractor. Any holes required to be punched/drilled for installation of Anti-climbing Devices and applying of Galvanox, shall be carried out by the Contractor without any extra cost.
Anti-climbing device will be provided with an arrangement of barbed wire around the tower to prevent unauthorized person(s) from climbing the tower.

After erection, tower shall be cleaned of any foreign matter.

(9) **Supporting Device for Joint Boxes of OPGW**

Supporting device for joint boxes of OPGW to be designed, manufactured and supplied by OPGW manufacturer will be installed on the towers where joint boxes are required to be installed. Joint boxes will be installed on the tower on completion or just before completion of each OPGW reels of about 3.2 km length or wherever particularly required. The holes required to be drilled in the tower braces for installation of these supporting devices including provision and applying of Galvanox at the holes drilled shall be responsibility and to the cost of the Contractor.

(10) **Welding of Nuts & Bolts**

All nut & bolt connections of all types of towers shall be welded according to drawing in Volume-II, up to 8.0 m height from the top of chimney. After welding, cold galvanized paint (zinc rich paint) having at least 90% zinc content shall be applied to the welded portion. At least two coats of the paint shall be applied. The cost of welding including application of paint shall be deemed to be included in the unit rate/tower quoted.

1.6 De-Stringing/Dismantling of Conductor, Earth wire, Insulators & Hardware etc.

The contractor shall be entirely responsible for any damage to the tower or during execution of work. Necessary calculations shall be carried out by the contractor to ensure that the loading on towers due to conductor tension as well as loads on account of de-stringing or re-conductoring activities shall be within limits.

Towers not designed for sided stringing shall be well guyed to avoid damage. In this respect, all the expenditure related to this work is deemed to be included in the price schedule and no extra payment shall be made.

Dismantled material (i.e. conductor only) shall become property of the contractor. The contractor shall be responsible for the removal of dismantled material from the Site or otherwise disposed off the dismantled material. Therefore, the contractor is required to estimate the valuation of the dismantled material and fill the same in Item No. E of BoQ.

1.7 Installation of RTV Coated Insulators and Hardware

Insulators and insulator hardware shall be assembled and installed as shown on the drawings and in accordance with the recommendations of the manufacturers.

No insulator with chips or cracks in the porcelain or defects in the fittings shall be installed.

Uncrated or otherwise unsupported strings of insulators shall not be picked up or suspended except by the upper units of the string. All cotter pins installed by the Manufacturer shall be checked.

All insulators shall be cleaned with a clean cloth when installed. The porcelain shall be bright and all other parts free from dirt. Only clean rags free from any abrasive material shall be used for cleaning insulators.

Wire brushes shall not be used for the cleaning of any parts, metal or otherwise. The use of solvents will not be permitted.

Each completed suspension assembly shall be adjusted to hang in a vertical plane through the axis of the tower. Where it would be possible, nuts, locknuts and cotter pins shall be placed to face the tower body.

Workmen shall not climb on insulators during stringing operations or at any other time.

When raising conductor strain assemblies, the insulators shall be kept under tension to avoid possibility of those being damaged due to excessive bending.

1.8 Stringing Conductors and OPGW

(1) General

The conductor and OPGW shall be installed as shown on the drawings and as specified herein.

(2) Safety Grounding

It shall be the Contractor's responsibility to take adequate safety precautions to protect his employees and others from the potential voltage build-up during construction. The voltage build-up may be comparatively small during normal operations, but could be lethal during switching and ground fault conditions on the energized parallel line. The following minimum safety and grounding procedures shall be followed by the Contractor during stringing operations in the Sections with parallel existing high voltage lines.

Temporary electrical grounds shall be placed at both ends of the section requiring special safety precautions and at intervals along the line which is under construction. The grounding sets installed at both ends of the section of line shall remain in place until the completion of the work and shall be removed as the last phase of cleanup. Hot stick shall be used for installing and removing the grounding sets.

All temporary grounds furnished and installed for protection shall be clearly visible for inspection and shall be flagged by use of a red cloth placed at the point of grounding. All grounds, except those placed at both ends of the section, and red flags shall be removed when they are no longer needed for protection.

All pulling and tensioning equipment shall be bonded and effectively grounded with approved-type driven grounds securely attached to the equipment. At least two driven grounds shall be used at both the pulling and tensioning set up. All conductive parts of the tensioning set up and equipment shall be operated from grounded or insulated platform provided with barricades or insulated walkways.

Running grounds shall be installed within 6 meters of the tensioning set up to constantly ground each sub-conductor and OPGW. At the pulling set up grounding shall be achieved by the use of block grounds connected to the adjacent tower by approved type ground leads bonded to the tower with approved type clamps. These connections shall be removed by the use of a hot-stick.

An approved-type driven ground shall be located at each side and within 3 meters of working areas where conductors or OPGW are being compressed to dead-end assemblies or spliced at ground level or jointed. The two ends to be spliced shall be effectively bonded together prior to and during splicing operation. Splicing and compression operations at dead-end assemblies shall be carried out on either an insulated platform or on a conductive metallic grounding mat roped off with an insulated walkway provided for access to the mat.

Installation and removal of temporary jumpers, at any time the conductor is not continuous, shall be performed by hot stick methods.

All conductors and OPGW shall be bonded to the tower with approved-type tower grounds at any isolated tower where it may be necessary to complete Work. Work on dead-end towers shall require grounding on both sides of the tower. Grounds may be removed when the Work is completed, providing the line is not left open circuited at an isolated tower at which work is being completed.

For all sections of the line under work, which are not in parallel with energized high voltage lines or otherwise requiring special safety precautions, only the provision of the grounding at the pulling and tensioning stations shall be required.

All provisions specified herein shall not prevent the Contractor from installing as many additional grounds as deemed necessary for the protection of workmen against static and accidental contacts with foreign circuits.

Clipping crews and all others working on the conductive pulling lines, isolated conductors or OPGW shall be protected by individual hot stick clamp type grounds installed at every work location.

(3) **Approved Type Grounding Material**

Approved type moving grounds shall be such as to exert constant pressure on the conductor or OPGW, and the contact rollers shall be with permanently lubricated-type bearings.

Approved-type driven ground rods shall be minimum of 16 mm diameter copper-weld or equivalent. Ground rods shall be driven into the ground a minimum of 2.5 meters.

Approved-type tower grounds shall be hot stick clamp grounds, bonded to the tower with a flexible ground lead.
Approved-type ground leads shall be at least 43 mm^2 cross-section copper or equivalent.

Approved-type insulated platforms shall be constructed of 65 mm nominal dimension lumber supported on 102 mm nominal dimension sills, or of materials of equivalent insulation.

At the tensioning set up, the insulated platform and rope barriers shall extend completely around the equipment set up in such a manner as to prevent any one standing on the ground from contacting any conductive part of the equipment.

(4) **General Safety Precautions**

Prior to initiation of the stringing in any section of the line the following shall be insured.

(a) The installation of all towers within the section of the line is satisfactorily completed.

(b) The stringing loads will not exceed the design loads for any of the towers.

(c) If any tower is to be subjected to loads exceeding the design loads, the Contractor shall provide temporary bracing for such tower, and the bracing is subject to approval by the Engineer.

(d) The stringing and sagging operation is such that no sudden loads will be applied on the towers.

(5) **Safety Precautions at Crossings**

Wherever any power line, communication line, highway or railroad is to be crossed, the owners shall be notified 30 days in advance and all temporary changes shall be pre-arranged.

The Contractor shall not erect towers near, or string conductors or OPGW over energized power circuits until a Hot-Line Order is placed on the energized line.

Qualified personnel shall remain at the site of work while the Hot-Line Order is in effect and shall ascertain that all personnel are in the clear and properly notified before the Hot-Line Order is released.

All existing lines which are de-energized for crossing shall be short-circuited and grounded at each side of the crossing.

Guard structures shall be provided at all crossings, as required for the protection of the conductor, line, road, structure, or feature being crossed, and as required by the owner, or the Employer.

Guard structures shall be of sufficient strength and stability to withstand the stresses to which they may be subjected.

As soon as a guard structure has served its purpose, it shall be removed and all holes shall be backfilled.

(6) **Atmospheric Adverse Conditions**

All pulling and stringing operations shall cease when either wind velocities are such as to cause conductors to deflect more than 1.5 meters at mid-span from the normal no wind position or there is any indication of lightning activity in the area.

(7) **Handling and Stringing of Conductors**

The conductor will be furnished in matched sets of twenty four (24) reels and shall be strung by the controlled tension method. At no time will the conductor be allowed to contact the ground or any object which might cause damage to the conductor.

All reels shall be inspected in the field prior to installation. Reels showing signs of careless or unusually rough handling, such as split frames or crashed outer protective lagging shall be inspected carefully for conductor damage.

Preparatory to un-reeling a conductor from the reel, the outer protective lagging shall be removed carefully, and all surfaces in contact with the running conductor shall be examined for protruding objects which might damage the conductor.

Care shall be taken to insure that no dirt is carried by the conductors from the reels. Reels shall be properly cleaned before starting stringing operation of any line section.

A spreader bar shall be used when lifting or lowering the reels. Full or partial reels shall not be dropped or rolled under any circumstances.

The four conductors in a bundle shall be strung simultaneously and shall hang in stringing blocks for the same period of time not exceeding 24 hours and, in exceptional cases, up to 48 hours before being sagged to the specified sag.

Four conductors shall start and end approximately at the same points of the line and stringing operations shall be planned to keep waste to a minimum. Lengths of conductor less than 100 meters are scrap lengths and shall not be spliced into the line without the approval of the Engineer. Jumpers shall be cut only from scrap lengths unless otherwise permitted.

Stringing sheaves may be hung on the insulator strings or in straps of equal length attached to the structure arms with suitable hooks or clamps. The sheave shall support the conductors at the same elevation as when clipped in.

Stringing of conductors and temporary guying of conductors shall be done by methods that will prevent damage to the conductor and structures in any way. Temporary guying/dead ending to tower footings will not be permitted. Where temporary dead end is required, the conductors shall be attached to suitable temporary anchors.

The general requirements for installation of the temporary anchors are as follows:

The angle formed by conductors/OPGW to the horizontal shall not exceed 15 degrees.

The anchors shall be aligned in the direction of stringing:
The anchors and their accessories shall withstand the maximum conductor tensions with a factor of safety of three.
Four sub-conductors of one phase shall be strung simultaneously by means of running board attached to a single pulling line with a swivel. Sub-conductors shall be connected to the running boards with a swivel connection and a stocking-type grip. The grips shall be secured to the conductor by means of a band installed around the tail end of the grip.

Following stringing, measures shall be taken to prevent the sub-conductors of the bundle from contacting each other. Before adjusting the sag of the conductors, sub-conductor slapping may be prevented by pulling each of them to a different sag which will separate them at least 153 mm vertically from either of the other sub-conductor at mid-span. After adjusting the sag, the following conditions will require sub-conductors tie-off: any time that sub-conductors slapping is noted, any time that prior to spacer installation the conductors are left unattended.

Two reel lengths of conductor may be pulled into the sheaves using only approved swivels and grips to make the connections between reel lengths. Double socking will be permitted, but permanent splices shall not be pulled through a sheave or bull-wheel.

All sheaves, swivels and grips shall be inspected daily for free and easy movements and to assure that such may be safely used. Sheaves carrying pulling lines shall not be used for conductors.

The conductor shall be kept clean by removing grease, dust or any other contamination. Cleaning shall be done immediately after the conductors leave the tensioning device. The method of cleaning shall be wiping with a clean cloth saturated with proper cleaning agent. When it is necessary to slack the conductor at any time during the stringing operation, it shall be done with the approval of the Engineer. Rigid plank guard or lagging, or a combination of both shall be used to prevent damage. Lagging shall consist of nonmetallic material which will not damage the conductor and shall be rigid so that it will not be displaced by the motion of the conductor. It shall be free of any material, which can be transferred to the conductor.

Sections of the conductor damaged by application of gripping attachments or any other way during stringing shall be removed before the conductor is sagged in place.

The conductor repairs shall be done as outlined in Clause 1.7(11) (b) of the Technical Provisions.

All stringing operation must be conducted so that at no time will any suspension structure be subjected to longitudinal loads and at no time will any tension structure except dead end structure be subjected to excessive unbalanced loads resulting from longitudinal loads on opposing faces. At no time shall any structure be subjected to torsion. The vertical angles of pulling lines shall be such as to minimize the vertical loading on towers. The attachment of temporary guys and stringing equipment on towers shall be done only with approval of the Engineer.

The conductor reels, tensioners, and pulling machines shall be located as near to mid-span as possible but in no case shall the slope of the OPGW or conductor between any machine and the stringing block or any anchor lead be steeper than three horizontal to one vertical (15°-20° to the horizontal).

The tension in the conductor during stringing shall be maintained as constant as practicable. The sag in each conductor must be maintained at least 20 percent greater than the sagging value specified in sag charts and the maximum pulling tension shall never exceed the sagging tensions.

If the conductor is left unattended, during stringing operations, it shall be freely suspended between stringing sheaves so as to provide a safe clear distance over ground or obstructions.

The minimum tension shall be such as to maintain the conductors at a minimum distance of 3 meters above ground or any obstacle.
When there is possibility of conductor being damaged due to wind or other conditions they shall immediately be fully tensioned. It is recommended that variations in stringing tensions be as small as possible and the tension shall be near the maximum permitted. Immediately after completing stringing of a section of the line, the tensions shall be increased to the maximum permitted stringing values.

The spinning of the conductors and OPGW shall be prevented during stringing. Unreeling of the conductors shall be closely watched at all times in order to detect any damage or flaw in the conductor.

(8) **Handling and Stringing of OPGW**

One 12mm OPGW shall be strung for the entire length of line. The specifications used for handling and stringing the OPGW shall be the same as for the conductors.

(9) **Conductor Sagging**

After being pulled into the sheaves all sub-conductors in a sag section shall be sagged within 24 hours.

The conductors shall be sagged in accordance with sag charts, furnished by the Contractor. The exact value of sag for a given span length at a given temperature can be ascertained from the appropriate table or by linear interpolation of data.

Conductor sagging temperature shall be measured by an accurate thermometer. A length of core shall be pulled from a 0.5 meter length of the conductor sufficient for thermometer to be inserted into the space vacated by the core.

The length of conductor shall be placed in the full sun at least 4 meters above the ground for a minimum period of 15 minutes. A thermometer in a container which stimulates the effect of the conductor may also be used.

The length of conductor sagged in one operation shall be limited to the length that can be sagged satisfactorily, usually 3,000 meters to 6,000 meters.
Temporary snubs shall be used between a section previously sagged and clipped in and the section being sagged. Dead ending or snubbing will not be

permitted on any tower except dead end towers at the normal point of attachment.

When conductors are sagged a mark shall be placed on each conductor at the last structure in each pull. The location of this mark shall be checked after the succeeding sag has been made to ascertain whether or not the back spans are still sagged properly. The wire grips may be removed only after the next section of the line has been sagged.

When sagging conductor shall have lengths of more than four spans, the sag shall be checked near each end span and at or near the middle span of the length being sagged. The length of the spans used for checking sag shall be as nearly equal to the ruling span as practicable.

The sag of each span more than 600 meters in length shall be checked in addition to above. Sag at sharp vertical angles and horizontal angles of 10 or more degrees shall also be checked on both sides of the angle.

The sags shall be determined by means of a transit or other approved methods. At least one person shall be provided to measure the correct sag for pulls up to five spans, two persons for six to ten spans and three persons for eleven spans or more.
The total number of spans to be checked shall be not less than two in a four-span section, three for a section up to two kilometers and in proportion for a longer section.

In the quad conductor bundle the sag of the two upper sub-conductors shall be the same. The lower sub-conductors shall be sagged from 30 to 60 mm more than the upper sub-conductors.
A tolerance of plus or minus 10 mm of sag per 30 meter of horizontal span length, but not to exceed 150 mm in any one span, will be permitted, provided that: (1) upper sub-conductors in the span assume the same sag; (2) the necessary ground clearance is obtained; (3) the conductor tension between successive sagging operations is equalized so that the suspension insulator assemblies will assume the proper position when the conductor is clipped in; (4) the sag in the lower sub-conductor of the bundle is 30 to 60 mm more than the sag in the upper sub-conductors.

Log books shall be maintained to record all conductor installation data and chronological progress.

The temperature, spans, tower, general weather, wind velocity and direction, sags, tensions, and drawing references shall be recorded for each section of conductor as it is being installed, tensioned and sagged. When possible, sagging operations shall be scheduled when wind velocity is at or near zero.
Radio or telephone communication shall be used to relay information and instructions between the conductor payout station, intermediate check points, mobile stations and the pulling stations at all times during stringing

operations. A failure of communication requires immediate cessation of the conductor pulling operation.

(10) **Conductor Clipping-in**

After being sagged, the conductor shall be allowed to hang in the stringing blocks for not less than 2 hours before clipping-in is commenced, to permit the conductor tension to equalize.

Plumb marks shall be made on the conductors in the vertical plane through the centerline of the tower prior to clipping-in. Only paint, crayon, or wax pencil shall be used for marks on conductors.

All conductors marking in the section being sagged shall be accomplished while the conductors are in the sheaves and before clipping-in or dead ending is begun.

The total time during which the conductor is allowed to remain in the stringing blocks before being clipped-in shall not exceed 72 hours.

Torque wrenches shall be used to tighten all nuts on clamps. The torque applied shall be in conformance with the recommendation of the manufacturer.

Yoke plates for V-Vee string insulators shall be installed as shown on the drawings and shall hang at 90 degrees to the conductor axis within a tolerance of plus or minus 2.5 cm.

Well-padded pull-lift hooks or other approved methods shall be used for handling conductors during the clipping-in operation.

(11) **Installation of Conductor and OPGW Accessories**

(a) **Splices and Dead Ends**

All splices shall be of the compression type.

All splices shall be made at least 15 meters away from structures and no splices shall be made in dead end spans or spans greater than 600 meters or spans crossing over the highways, railroads, major canals, rivers and transmission lines of voltages greater than 33 kV unless approved by the Engineer.

As a rule not more than one joint or splice should be made in any one conductor in any one span. However, in exceptional cases, as in the repair of damaged conductors, or when necessary owing to stringing limitations two splices will be allowed.

The splices and compression dead ends shall be installed in accordance with the recommendations of the Manufacturer of the accessories.

Conductor shall be laid out straight for a distance of 15 meters and straightened at the end before preparation of the ends for splicing or dead-ending. The ends of the conductor shall be thoroughly cleaned immediately prior to compressing. After the compression has been completed, all corners, sharp projections and indentations shall be carefully rounded and smoothed, and tape, tape residue, and filler paste shall be removed from splice and conductor. If the completed splice requires straightening, it shall be straightened on a wood block by use of a wooden maul.

Splicing, dead-ending and repair of damaged conductor shall be done in the presence of nominated person of the Engineer.

If the completed splice or dead-end is not satisfactory, in the opinion of the Engineer or his nominated person, it shall be removed and a new splice or dead-end shall be properly installed.

The Contractor's inspector shall stamp his own initials on the aluminum sleeve of each compression joint and compression dead end completed under his supervision.

(b) **Repair of Conductors**

Damage is any deformity on the surface of the conductor which can be detected by eye or by feel and shall be repaired by whichever the following methods is appropriate:

(i) Repair by manual polishing
(ii) Installation of repair sleeves over the damaged part
(iii) Installation of compression joints
(iv) Replacement with new conductor

Slight damage such as superficial scratches or abrasions, which are not deeper than one-third the strand diameter, can be repaired by dressing with a fine emery cloth.

Severe cuts which cannot be repaired with emery cloth due to their depth or extension, and cause increase in the resistance of the external layers shall be repaired by use of repair sleeves, provided that not more than one-third of the outer layer is cut or damaged over a length of less than 10 centimeters.

Damages of extent greater than described in above paragraphs shall be repaired by replacing the damaged length of the cable using compression joints.

When there is repeated damage in the same span or in consecutive spans, the Engineer or his nominated person may require all conductors in these spans to be replaced.

In the case when signs of corrosion are detected during the stringing operation, the reels containing corroded conductors shall be set aside, the operation shall be interrupted and the Engineer or his nominated person shall be informed immediately.

Whenever a repair sleeve is installed, a rope cage shall be placed on the sleeve to ensure that there will be no damage from sub-conductor slapping prior to installation of the spacer-dampers.

(c) **Jumper Connections**

Where compression type dead-ends are used, the jumper shall be one continuous piece, and compression-type jumper terminals bolted to the compression-type dead-ends shall be used.

(12) **OPGW Jointing/Splicing and Installation of OPGW Joint Boxes**

OPGW jointing/splicing and joint boxes installation will be carried out by the Contractor. However, following general instructions should be followed:

No mid span joint shall be allowed in the OPGW. All joints shall be performed in a joint box located on the tower just above the location of anti-climbing device. OPGW jointing (splicing) and joint boxes installation including supporting device for joint boxes shall be executed by the Contractor. OPGW shall be dropped to the joint boxes along with tower braces by installing OPGW attaching clamps at about one meter interval.

1.9 Installation of Dampers

(1) **Spacer Dampers**

The two sub-conductors of each phase shall be secured to each other by means of spacer dampers installed strictly in accordance with data furnished.

The intervals, measured along the length of the conductors at which spacers are installed shall be as shown on the data sheets with tolerances not more than plus/minus 1.0 meter.

Spacer-dampers shall be installed in a span only after that span has been dead-ended and clipped-in. The installation of spacer dampers shall be

completed in each section within 72 hours after the sub-conductors have been sagged.

The clamps shall be properly aligned on the conductors. Distorted shape of the spacer dampers will be considered an unsatisfactory installation and shall be corrected or the spacer damper replaced.
The bolts of the breakaway type shall be tightened until the outer head breaks off.

Spacer dampers shall be installed with the bolt heads in a downward position for viewing from the ground.

(2) **Vibration Dampers**

Vibration dampers shall be attached to the OPGW at the ends of all spans and as designated on the data sheets. The vibration dampers shall be fastened securely to OPGW so that they will hang in vertical planes. Spacing of dampers shall be in accordance with the Drawings. Breakaway type bolts shall be tightened until the outer head breaks off.

2 PRE COMMISSIONING AND COMMISSIONING TESTS

2.1 Pre Commissioning Tests

(a) **Mechanical Tests**

1. For steel structures, ensure that structure type is as per specification/drawings/structure list.
2. Check galvanizing and thickness (rust is not acceptable).
3. Check bolt types and tightness (torque wrench method).
4. Ensure anti-climbing guards are correctly installed.
5. Check step bolt tightness.
6. For RTV Coated porcelain insulators, check insulators for chips, cracks, etc. Ensure correct number of insulators have been installed in each string. Ensure that cotter keys have been properly installed.
7. Make sure that insulators are clean and line is safe to be energized.
8. Check that all line hardware and fittings (insulators, corona rings, vibration dampers, spacer dampers, conductor clamps, armor rods, etc) is installed correctly and in correct locations as per specifications and drawings.
9. Check that all splices are correct and installed in correct span locations.

10. Check that all jumpers are installed correctly. Ensure correct clearances between jumper and structure as well as with other phases at acute angle locations.

11. Ensure there is no twist in the insulator string.

12. Check that OPGW is grounded to towers as specified.

13. Ensure that sags for phase and overhead ground conductors are even and according to the specification.

14. Check that ground clearances are as per specification.

15. Check circuit/phase identification plates, structure number plates, danger sign plates, etc. have been correctly installed at each structure and aerial markers at the required structures.

16. Check line/phase correctly transposed at the specified locations and clearance between the phases is as per specification.

(b) **Electrical Tests**

1. Check tower footing resistance as per specification.

2. Verification of physical phase arrangement.

3. Perform sequence impedance test (both zero and positive sequence).

4. Perform continuity and insulation test of complete transmission line with appropriate test equipment.

5. Tests on OPGW:
   - OTDR test of each fiber
   - Attenuation test
   - Continuity test

2.2 Commissioning Tests

1. Perform phase sequence/rotation check.
2. Inspection of Facilities for any visual/audible abnormality.

SECTION IX

BILL OF QUANTITIES

NATIONAL GRID COMPANY of PAKISTAN

BOQ for Replacement of Normal Disc Insulators with RTV Coated Disc Insulators of 220KV Transmission Lines under Field Operations Lahore (Lot-II)

Description	Unit	Quantity (Nos.)	Unit Rate PKR.	Total Price Exclusive of Taxes
1	2	3	4	5=(3X4)
Replacement of existing Normal Type Disc Insulators with RTV Coated Disc Insulators of 220KV Transmission Lines (Lot-II) 1- 220KV T/L Lahore North-Ghazi CCT 105 Towers 2- 220KV T/L KSK-Bund Road CCT-I 65 Towers **The Scope of work to be carried out is as under.** i) Dismantling of existing disc Insulators and packing, shifting/ transportation from site to NGC designated store. ii) Shifting/Transportation of 100KN, 120KN RTV Coated Disc insulators from A-Type Store NKLP Lahore to Site stores iii) Installation of RTV Coated Disc Insulators iv) The work to be carried out during Shut down on daily basis.	Towers	170		
			Total:	
			Provincial Service Tax @ 16% (In Punjab Province)	
			Grand Total:	

CONDITIONS:

1. The quantities mentioned in the BOQ are estimated quantities.
2. Contractor will collect RTV coated disc insulators from A-Type Store, NKLP NGC Lahore.
3. The breakup of unit rates for each item/works quoted in the BOQ shall be provided with the bid in accordance with the design provided with the tender and the work at site shall be executed as per construction drawings provided/approved by the Engineer.
4. In case of discrepancy between unit price and total price, unit price shall prevail and the payment will be made accordingly.
5. The cost quoted for above works shall include cost of labor and cost of all accessories / material / equipment required for successful completion and operation along with clearance of Right of Way (RoW), if any.
6. The rates of above items are to be quoted by the tenderers will be considered on item rate basis.
7. All pages of tender documents shall be initialized/signature by the person or persons with signed the bid.
8. Omission & errors can be rectified at any stage.
9. No extra payment will be made on account of fluctuation in prices of labour, fuel, lubrication and material etc.
10. The work will be completed within 30-days from the date of acceptance of NOA or within 10 days of the final approved shutdown by ISMO Islamabad, whichever is later.

Bidder Name & Signatures: _____

SECTION X

SOP FOR BLACKLISTING OF CONTRACTORS

NATIONAL TRANSMISSION & DESPATCH CO. LTD

Company Secretary

No. NTDC/CS/ 191-207 Dated: 27 – 02 – 2019

NOTIFICATION

Approval for revision of SoP for Blacklisting

Ref: This office notification No.NTDC/CS/1728-42 dated 25.07.2017.

The Board of Directors National Transmission & Despatch Company Limited (NTDC) in its 150th meeting held on 25.02.2019 against agenda item No.10 has unanimously resolved and approved the revised/amended SoP for Blacklisting.

Ijaz Ahmad
Company Secretary

Copy to:

1. Managing Director.
2. Dy. Managing Director (AD&M).
3. Dy. Managing Director (P&E).
4. All General Managers.
5. Chief Financial Officer.
6. Chief Law Officer.
7. Chief Internal Auditor.
8. Chief Information System.

A copy of the revised SoP for Blacklisting is enclosed.

NATIONAL TRANSMISSION & DESPATCH CO. LTD

Company Secretary

No. NTDC/CS/ 444-60 Dated: 29 - 03 - 2019

CORRIGENDUM

Approval for revision of SoP for Blacklisting

In continuation to this office Notification No.NTDC/CS/191-207 dated 27.02.2019 on the subject matter, the designation of Chief Engineer (Reliability Assessment) being a committee member in Chapter No.3 under Clause 3.1 at page # 7 of the approved revised/amended SoP for Blacklisting may be read as 'Chief Engineer (Reliability Compliance)'.

Note:

- **All other contents of the notification will remain intact.**

Ijaz Ahmad
Company Secretary

Copy to:

1. Managing Director.
2. Dy. Managing Director (AD&M).
3. Dy. Managing Director (P&E).
4. All General Managers.
5. Chief Financial Officer.
6. Chief Law Officer.
7. Chief Internal Auditor.
8. Chief Information System.

NATIONAL TRANSMISSION AND DESPATCH COMPANY LIMITED (NTDC)

REVISED SOP FOR BLACKLISTING

(As on 25.02.2019)

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CHAPTER NO.1

1.1 INTRODUCTION

The main objectives of any procurement process are transparency, economy, fairness and efficiency so that value for money is achieved.

Blacklisting is one of the most effective tools used in the struggle against inefficiencies and corruption in connection with public procurement. In addition, it serves as a major deterrent against any material breach of contract and further ensures the timely execution of projects by holding delinquent persons accountable.

Rule-19 "Blacklisting of suppliers and contractors" of the Public Procurement Rules, 2004 (hereinafter "**PPRA Rules**") stipulates that;

"The procuring agencies shall specify a mechanism and manner to permanently or temporarily bar, from participating in their respective procurement proceedings, suppliers and contractors who either consistently fail to provide satisfactory performances or are found to be indulging in corrupt or fraudulent practices. Such barring action shall be duly publicized and communicated to the Authority:
Provided that any supplier or contractor who is to be blacklisted shall be accorded adequate opportunity of being heard."

In the light of the Clause above, this SOP has been drafted for procurements made by NTDC.

Any capitalised terms and abbreviations used in this SOP which are not defined herein shall have the meanings given to them in Public Procurement Regulatory Authority Ordinance, 2002 (hereinafter "**PPRA Ordinance**") and PPRA Rules.

1.2 EXTENT OF APPLICATION

i. The procedure shall be applicable and remain in force, along with any amendments thereto, within NTDC until any clear instructions or guidelines are imparted by the Government through PPRA, PEC, or any other competent forum.

ii. The procedure shall also be applicable on the pre-qualified firms.

iii. The procedure shall be applicable on any "Person", which for the purposes of this SOP shall *interalia* include suppliers, bidders, contractors, consultants, firms, individuals, and organizations transacting business with NTDC.

iv. Wherever any provision of this SOP shall be in conflict with provisions of any applicable guidelines of donor agencies, or any other applicable Statute / Law or Rule enforced at the time in Pakistan, the provisions of such applicable guidelines, laws, or rules shall prevail.

v. This SOP shall become a part of the future Bidding Documents and the person(s) will submit an Undertaking along-with his bid that he has read and accepts the provisions of this SOP. Non-submission of an Undertaking may result in rejection of his bid. The said Undertaking will subsequently become part of the Contract Agreement as well.

CHAPTER NO. 2

2. REASONS OF BLACKLISTING

2.1 The causes and reasons to be taken into consideration for Debarment / Blacklisting of any person are given as under:

2.1.1 Pre- Award Stage:

The following shall be considered, *interalia*, the causes / reasons for initiating proceedings under this SOP at the Pre-Award Stage:

i. Indulging in Corrupt, Fraudulent as well as Collusive practices.

ii. Submission of false and spurious documents, making false statements, making frivolous complaints and allegations to gain undue advantage.

iii. Commission of embezzlement, criminal breach of trust, theft, cheating, forgery, bribery, falsification or destruction of records, receiving stolen property, false use of trademark, securing fraudulent registration, giving false evidence, furnishing of false information of serious nature.

iv. Submission of false bid security or infringement of documents to get undue monetary or any other benefit.

v. Breach of confidentiality of evaluation process as mentioned in Appendix-1 based on illegal access or in any way to get undue benefit or to provide benefit or to frustrate the bidding/evaluation process. This will also include attempts to sabotage the bidding process directly or indirectly.

2.1.2 Post- Award Stage:

The following shall be considered, *interalia*, the causes / reasons for initiating proceedings under this SOP at the Post-Award Stage:-

i. Extraordinary delay in signing or refusal to accept the Notification of Award and/or the contract without any cogent reason.

ii. Misconduct, i.e., failure to proceed with the signed contract, withdrawal of commitments, quoting an unreasonably and unfairly low financial offer and subsequently withdrawing such an offer, frustrating the evaluation/bidding process and not responding to written communication in a reasonable time.

iii. Causes mentioned in Clause 2.1.1 (i, ii & iii) above.

iv. Submission of fake / frivolous or mutilated Performance Guarantee or Advance Payment Guarantee etc.

v. Non-satisfactory performance as mentioned in Appendix-2 during the execution of the contract.

vi. Non-performance or Breach of provisions / clauses of the contract agreements.

vii. Notwithstanding the warranty/defect liability period, any defect in a product, equipment, plant, facility or services rendered that may subsequently surface during field operations within 5 years of its commissioning.

viii. Failure to honour obligations within warranty period or defect liability period as defined in the contract.

2.1.3 Other Causes

i. The person is blacklisted by any Government department in Pakistan, or it is established that the firm is involved in any kind of corruption or corrupt practices anywhere in the world.

ii. Violations of provisions / instructions set down in the Bidding Documents.

iii. Any attempt / activity to malign or bring NTDC into disrepute and harm its interest(s).

iv. Person(s) blacklisted by International Financial Institutions (donor agencies) will be liable to be blacklisted after receipt of confirmation from the donor agencies without any further proceeding.

v. Any other cause deemed just and appropriate by NTDC in the given circumstances.

Note:

(1) If above mentioned causes occur either on part of the principal bidder or the local agent, both shall be considered for blacklisting / debarment.

(2) The authorization of the foreign bidder to local agent shall contain his complete particulars including the name of the company, name of the owner, National Tax number (NTN), CNIC (Computerized National Identity Card) No. etc. In case, the said information is found to be missing, even after calling for the same within a reasonable time, the authority letter shall not be accepted.

(3) The Bidding Documents shall be issued against original authority letter or in case of scanned copy, the email of the foreign bidder shall be enclosed. However, at the time of bidding, the original authority letter shall be attached with the bid. In the absence of the same, the bid shall be rejected.

CHAPTER NO. 3

3. FORMULATION OF "NTDC'S RIGHTS PROTECTION COMMITTEE"

3.1 A permanent Committee namely "NTDC's Rights Protection Committee (**RPC or Committee**)" comprising of the following members shall examine the justification of the reasons given by the Project Authority prior to blacklisting / debarment of any firm/supplier/contractor/ individual.

- General Manager (Performance Assessment) NTDC — Convener
- Chief Engineer (Reliability Compliance) NTDC — Member
- Representative of the Chief Law Officer's Office — Member

Depending upon the nature of the case, the Committee may consult or appoint / nominate additional members from within NTDC with the approval of Managing Director (NTDC), provided that the Committee consists of an odd number of individuals as per spirit of Rule 48(1) of the PPRA Rules. Independence of any additional members shall be ensured while making the selection of such additional members. Furthermore, the aforementioned RPC shall also be authorized to seek external expert advice as and when required.

CHAPTER NO. 4

4.1 PROCEDURE FOR BLACKLISTING

Upon receipt of or obtaining information and/or knowledge that any person(s) is involved in practices mentioned in Chapter-2 earlier, the concerned Project Authority / formation shall promptly formulate its recommendations and submit through MD NTDC to NTDC RPC along with its findings, details of charges and documentary evidences to initiate proceedings under this SOP.

4.2 INITIATION OF AN ACTION

(i) Within a period of 15 days after receiving the recommendations of Blacklisting / Debarment from the concerned Project Authority, the Convener of the Committee shall issue a Show Cause Notice ("**Notice**") thereby informing the Person about the alleged charges and shall provide an opportunity to the defend said charges within a time period of 15 (fifteen) days.

(ii) The person(s) shall be accorded adequate opportunity of hearing in order to defend the charges within the given timelines.

(iii) The Notice to the Person shall be sent at the mailing/postal address as provided under the Contract or any other address provided by way of subsequent written communication by the Person The non-receipt of the Notice due to incorrect / change in mailing address without any written communication shall not be attributable to NTDC. In case of non-receipt of any reply from the accused person within the formulated time, but not less than the time given in 4.2 (i) above, the Committee shall have the right to proceed on Ex-parte basis.

4.3 DECISION

i. The committee shall hold an independent inquiry/investigation as the case may be, and, which may include site visits and interviews with the parties concerned. The Committee shall complete the entire inquiry/investigation, preferably within a period of 30 days after receipt of response from the person against whom proceedings under this SOP have been initiated and shall present the report to the MD NTDC.

ii. If required, the Committee may report the case to an appropriate law enforcement agency depending upon the nature of the case for detailed investigations with the prior approval of Managing Director (NTDC).

iii. The person against whom proceedings have been initiated under this SOP shall not proceed for arbitration/litigation during the proceedings for blacklisting.

4.4 COMMUNICATION OF DECISION

After recommendation for blacklisting by "NTDC's Rights Protection Committee **(RPC)**", the person concerned shall be informed within 10 days of such decision. The decision of the Committee will be notified on NTDC's and PPRA's websites and shall also be conveyed to Pakistan Engineering Council. Blacklisting of firms shall also be conveyed by circular to other Government Departments. All other relevant procuring agencies including PEPCO, DISCOs, and WAPDA, etc., will also be informed simultaneously.

4.5 PERIOD OF DEBARMENT FOR BLACKLISTED FIRMS

(i) The Blacklisting on the grounds and reasons specified herein above in Chapter No. 2 shall be for a reasonable specified period of time and as a general rule of prudence, the period may not exceed three years, except in cases where debarment/blacklisting has been done by any other government department or an International Financial Institution (Donor Agency).

(ii) In case the person has been blacklisted by the government department or the International Financial Institution (donor agency), the period of blacklisting/debarment shall be for a maximum period of 3 years or the time period for which the concerned government department/International Financial Institution (Donor Agency) debarred the contractor (whichever is higher).

4.6 ACTION AFTER PERSONS ARE PLACED ON BLACKLISTING LIST.

i. The decision of blacklisting will be immediately circulated to all concerned as mentioned at Clause 4.4 above.

ii. In case of a contract already awarded to a person which has been blacklisted and termination is either not possible or not feasible, the concerned Project Authority may proceed in this case to complete the contract with the approval of Competent Authority.

iii. The blacklisted person shall stand disqualified from bidding from the date of decision against them. Any pending bids shall also stand rejected. If a contract has

already been awarded to person, it shall be voidable at the option of NTDC as per 4.6 (ii) above.

iv. A separate register or data base will be maintained for blacklisted firms indicating reasons and period.

4.7 EFFECTIVENESS

These guidelines / SOP or any amendments thereof shall take effect immediately after its approval from Board of Directors of NTDC.

APPENDIX-1

PROCESS TO DEAL WITH FRIVOLOUS COMPLAINTS

It has been frequently observed that after opening of tenders, the bidders start to influence the evaluation process. Such attempts result in delay in finalizing of award of contract and cause financial loss to the National exchequer. The evaluation process is confidential till publication of award of contract process.

Provision of guidelines of international donor agencies and PPRA provides sufficient opportunity to bidders for redressal of their grievances. Hence, the attempts made by the bidders during evaluation process or thereafter to influence the contract award decisions fall under the definition of corrupt and fraudulent practices. Therefore, during bidding stage, the following mechanism shall be adopted in case of receipt of any frivolous complaint from the bidder.

i. Anonymous complaints shall not be entertained.

ii. The Procuring Agency reserves the right to call for an affidavit from the complainant verifying the truthfulness and correctness of the contents of the complaint.

iii. The notice of displeasure and explanation will be immediately sent to those persons who lodge frivolous complaint(s) during the evaluation process.

iii (a) If the person itself or through its agent or any third party does not refrain from making frivolous complaints in the same tender or any other tender, an official warning will be sent and their case may be sent to "NTDC's Rights Protection Committee" which may analyse the situation and suggest action including the rejection of the bid of the complainant. However, Project Authority may reject the bid even in first instance depending upon nature of the case or provision of the Bidding Documents.

iii (b) If the same person itself or through its agent or any third party lodges a frivolous complaint in another tender floating in parallel before decision of the Grievance Committee, its bid will straight forwardly be rejected by the project authority. It may also be debarred to participate in the next tender for a minimum period of six months under intimation to the Grievance Committee and MD NTDC.

iv. In order to monitor the record of the persons, a data base will be maintained at NTDC's website and the offices of the project authorities regarding such persons who consistently lodge frivolous complaints during the evaluation process by making clandestine access to confidential record and hamper the award of contract process.

NOTE: It is clarified that the process provided above in Appendix 1 is to discourage anonymous and frivolous complaints only, and does not bar any person feeling aggrieved by any act of the procuring agency from lodging a genuine complaint/grievance as provided under Rule 48 of the PPRA Rules, 2004.

APPENDIX-2

GUIDELINES FOR EVALUATION OF PERFORMANCE OF CONTRACTORS

i. After signing of the contract, the Project authority (or the Consultant / Engineer) must monitor and evaluate the Contractor's performance, that is, whether the Contractor is fulfilling his obligations based on the terms of the contract and plans that were developed and agreed upon with the Project authority at the time of signing of contract or during kick-off meetings..

ii. Though the performance evaluation of any person is an on-going process, which takes place throughout the duration of the contract and also during the Defect Liability / Warranty Period, nevertheless, a person's Performance Evaluation Report may be prepared for the consumption and benefit of the procuring agency or for any other purpose at the completion of the project, as the case may be.

iii. The performance evaluation report shall be prepared for all contracts of more than Rs. 100 million. When based on the Evaluation Report, the performance of a person is non-satisfactory, the procuring agency may initiate the case for blacklisting of the person in accordance with the terms of this SOP. For the avoidance of doubt, consistent failure to provide satisfactory performance shall also include performances in a single or multiple contracts executed or being executed by the same person, as the case may be.

iv. In case of any extra-ordinary delay in performance of a single contract of vital and critical importance, the procuring agency shall have the right to initiate proceedings under this SOP and/or avail any other remedy provided under the law which may *interalia* include: termination of the contract, recovery of losses, debarring the person from participation in future tenders. The procuring agency shall be the sole judge to determine the projects of vital or critical importance.

v. In case of ordinary delay in performance in 2 consecutive contracts within a period of 3 years, the procuring agency shall have the right to initiate proceedings under this SOP and/or avail any other remedy provided under the law which may *interalia* include: termination of the contract, recovery of losses, debarring the person from participation in future tenders.

vi. The proceedings under this SOP shall not prejudice any other rights and/or remedies available to the procuring agency under the contract documents and/or any other law in force.

TENDER DOCUMENT NO. T-370-2026 (Lot-III)

REPLACEMENT OF NORMAL/FOG TYPE DISC INSULATORS WITH RTV COATED DISC INSULATORS FOR 220kV TRANSMISSION LINES UNDER FIELD OPERATIONS LAHORE (Lot-III)

(Single Stage Two Envelope Procedure)

(National Competitive Bidding)

PREPARED BY:
O/o DIRECTOR GENERAL (FIELD OPERATIONS) NORTH
NTDC HOUSE, LAHORE

NATIONAL GRID COMPANY (NGC) OF PAKISTAN

November, 2026

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FOR
CONTRACT NO. T-370-2026 (Lot-III)

REPLACEMENT OF NORMAL/FOG TYPE DISC INSULATORS WITH RTV COATED DISC INSULATORS FOR 220kV TRANSMISSION LINES UNDER FIELD OPERATIONS LAHORE (Lot-III)

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SECTION I

INVITATION FOR BIDS

Ref No. DG/FON/P&S/T-370-2026/_____
Date: _____/11/2026

Field Operations North
Director General (FO) North Lahore

INVITATION FOR BID

1. NationalGrid (formerly NTDC), "The Purchaser", is responsible for development and control of power transmission system in the country, invites electronic bids on E-PADS v2.0 for execution of below mentioned works through "Single Stage Two Envelope Procedure" (SSTE) on National Competitive Bidding (NCB) basis from eligible firms registered with Income Tax and Sales Tax Departments and who are on Active Tax payers List of the Federal Board of Revenue (detailed terms & conditions, types and quantities mentioned in the bidding document).

Tender No.	NAME OF WORK
T-370-2026 (Lot-I)	Replacement of Normal/ Fog Type Disc Insulators with RTV Coated Disc Insulators for 220kV Transmission Lines under Field Operations Lahore (Lot-I)
T-370-2026 (Lot-II)	Replacement of Normal/ Fog Type Disc Insulators with RTV Coated Disc Insulators for 220kV Transmission Lines under Field Operations Lahore (Lot-II)
T-370-2026 (Lot-III)	Replacement of Normal/ Fog Type Disc Insulators with RTV Coated Disc Insulators for 220kV Transmission Lines under Field Operations Lahore (Lot-III)

2. Bidding Documents, containing detailed terms and conditions, etc. can be accessed through E-PAK Acquisition and Disposal System (E-PADS v2.0) at **(www.epads.gov.pk)**. Interested eligible bidders are requested to register themselves on E-PADS v2.0 and submit their bid on E-PADS before the date & time of opening of Bids. Manual bids shall not be accepted, in any case.

3. This advertisement is also available on PPRA and NGC websites (www.ppra.org.pk & www.ntdc.com.pk). All eligible bidders need to prepare their bids according to the instructions given in Bidding Document and submit their bids electronically through E-PAK Acquisition and Disposal System (E-PADS v2.0) up to 07.12.2026 at 11:00 hrs. The bids will be opened on the same day at 11:30 hrs through E-PADS in the office of Director General (FO) North, NGC Lahore at below mentioned address.

   Director General (Field Operations) North NationalGrid,
   34, Industrial Area, NTDC House, Gulberg-III, Lahore
   Telephone: 042-99263023

4. A bidder may participate in any number of lots and may be awarded contracts for any number of lots, subject to meeting the eligibility and qualification requirements stipulated in the Bidding Documents. However, for award of contracts for multiple lots/works, the bidder shall independently meet the prescribed manpower/equipment/ labor requirements and financial criteria for each lot/works for which it is being considered for award.

5. All Bids must be accompanied by a Bid Security in favor of "Chief Engineer (AM) North, NTDC Lahore", equal to an amount mentioned in bidding document, in the form of CDR or Pay Order from a Bank in Pakistan. The Bid Security must be submitted in original to this office on or before the date and time of submission of bids on E-PADS.

6. The NationalGrid reserves the right to reject all bids and to annul bidding process at any stage prior to contract award as defined in Clause 45 & 46 of Public Procurement Rules 2026.

7. The bidder should not be blacklisted from NationalGrid, DISCO or any Government organization at the time of bidding.

Director General (Field Operations) North, NationalGrid
NTDC House Lahore

Ref No. DG/FON/P&S/T-370-2026/_____
Date: _____/11/2026

Field Operations North
Director General (FO) North Lahore

C.C.

1. Executive Director D (FO) North NGC, Wapda House, Lahore.
2. Director (Media & Public Relations) NGC G-63, WAPDA House Lahore for publication in the leading newspapers as per Government policy.
3. Director (I.T) NGC, WAPDA House, Lahore with the request to upload the above tender notice on NTDC website, please.
4. Dy. Director (Finance) FO North, NGC Lahore.

SECTION II

INSTRUCTIONS TO BIDDERS

SECTION I

INSTRUCTIONS TO BIDDERS

A. GENERAL

IB.1 Scope of Bid

1.1 The Employer as defined in the Bidding Data hereinafter called "the Employer" wishes to receive bids for the construction and completion of works as described in these Bidding Documents, and summarized in the Bidding Data hereinafter referred to as the "Works".

1.2 The successful bidder will be expected to complete the Works within the time specified in Appendix-A to Bid.

IB.2 Source of Funds

2.1 The Employer has applied for/received a loan/credit from the source (s) indicated in the Bidding Data in various currencies towards the cost of the project specified in the Bidding Data and it is intended that part of the proceeds of this loan/credit will be applied to eligible payments under the Contract for which these Bidding Documents are issued.

IB.3 Eligible Bidders

3.1 This Invitation for Bids is open to all bidders meeting the following requirements:

a. Duly licensed by the Pakistan Engineering Council (PEC) in the category relevant to the value of the Works.
b. Duly prequalified/enlisted with the Employer.

3.2 A Bidder may be natural person, company or firm or public or semi-public agency of Pakistan or any foreign country**,** or any combination of them with a formal existing agreement (on Judicial Papers) in the form of a joint venture, consortium, or association. In the case of a joint venture, consortium, or association, all members shall be jointly and severally liable for the execution of the Contract in accordance with the terms and conditions of the Contract. The joint venture, consortium, or association shall nominate a Lead Member as nominated in the BDS, who shall have the authority to conduct all business for and on behalf of any and all the members of the joint venture, consortium, or association during the Bidding process, and in case of award of contract, during the execution of contract.

3.3 A Bidder may be ineligible if –

(a) he is declared bankrupt or, in the case of company or firm, insolvent;
(b) payments in favor of the Bidder is suspended in accordance with the judgment of a court of law other than a judgment declaring bankruptcy and resulting (in accordance with the national laws) in the total or partial loss of the right to administer and dispose of its property;

(c) legal proceedings are instituted against such Bidder involving an order suspending payments and which may result, in accordance with the national laws, in a declaration of bankruptcy or in any other situation entailing the total or partial loss of the right to administer and dispose of the property;

(d) the Bidder is convicted, by a final judgment, of any offence involving professional conduct;

(e) the Bidder is blacklisted and hence debarred due to involvement in corrupt and fraudulent practices, or performance failure or due to breach of bid securing declaration.

(f) The firm, supplier and contractor is blacklisted or debarred by a foreign country, international organization, or other foreign institutions for the period defined by them.

IB.4 One Bid per Bidder

4.1 (a) Each bidder shall upload only one bid on E-PADS in same bidding process either by himself, or as a partner in a joint venture. A bidder who uploads or participates in more than one bid (other than alternatives pursuant to Clause IB.16) will be disqualified.

(b) No bidder can be a sub-contractor while submitting a Bid individually or as a member of a joint venture in the same Bidding process.

IB.5 Cost of Bidding

5.1 The bidders shall bear all costs associated with the preparation and submission of their bids and the Employer will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

IB.6 Site Visit

6.1 The bidders are advised to visit and examine the Site of Works and its surroundings and obtain for themselves on their own responsibility all information that may be necessary for preparing the bid and entering into a contract for construction and dismantling Works. All cost in this respect shall be at the bidder's own expense.

6.2 The bidders and any of their personnel or agents will be granted permission by the Employer to enter upon his premises and lands for the purpose of such inspection, but only upon the express condition that the bidders, their personnel and agents, will release and indemnify the Employer, his personnel and agents from and against all liability in respect thereof and will be responsible for death or personal injury, loss of or damage to property and any other loss, damage, costs and expenses incurred as a result of such inspection.

B. BIDDING DOCUMENTS

IB.7 Contents of Bidding Documents

7.1 The Bidding Documents, in addition to invitation for bids, are those stated below and should be read in conjunction with any Addenda issued in accordance with Clause IB.9.

1. Instructions to Bidders.
2. Bidding Data.
3. General Conditions of Contract, Part-I (GCC).

4. Particular Conditions of Contract, Part-II (PCC).
5. Specifications – Special Provisions.
6. Specifications - Technical Provisions.
7. Form of Bid & Appendices to Bid.
8. Bill of Quantities
9. Form of Bid Security.
10. Form of Contract Agreement.
11. Forms of Performance Security and Mobilization Advance Guarantee/Bond.
12. Drawings. (If applicable)

7.2 The bidders are expected to examine carefully the contents of all the above documents. Failure to comply with the requirements of bid submission will be at the Bidder's own risk. Pursuant to Clause IB.26, bids which are not substantially responsive to the requirements of the Bidding Documents will be rejected.

7.3 The Procuring Agency is not responsible for the completeness of the Bidding Documents and their addenda, if they were not obtained directly from the Procuring Agency or the signed pdf version downloaded from the website of the Procuring Agency/ E-PADS. However, Procuring Agency shall place both the pdf and same editable version to facilitate the bidder for filling the forms.

7.4 The Bidder is expected to examine all instructions, forms, terms and specifications in the Bidding Documents. Failure to furnish all the information required in the Bidding Documents will be at the Bidder's risk and may result in the rejection of his Bid.

IB.8 Clarification of Bidding Documents

8.1 Any prospective bidder requiring any clarification (s) in respect of the Bidding Documents may notify the Employer in writing at the Employer's address and through E-PADS indicated in the Invitation for Bids. The Procuring Agency will within three (3) working days after receiving the request for clarification, respond in writing or in electronic form to any request for clarification provided that such request is received not later than three (03) days prior to the deadline for the submission of Bids on E-PADS.

Copies of the Employer's response will be forwarded to all participants in bid, including a description of the enquiry but without identifying its source.

IB.9 Amendment of Bidding Documents

9.1 At any time prior to the deadline for submission of bids, the Employer may, for any reason, whether at his own initiative or in response to a clarification requested by a prospective bidder, modify the Bidding Documents on E-PADS by issuing addendum.

9.2 Any addendum thus issued shall be part of the Bidding Documents pursuant to Sub-Clause 7.1 hereof and shall be communicated in writing/ through E-PADS to all purchasers of the Bidding Documents. Prospective bidders shall acknowledge receipt of each addendum in writing to the Employer.

9.3 To afford prospective bidders reasonable time in which to take an addendum into account in preparing their bids, the Employer may extend the deadline for submission of bids in accordance with Clause IB.20

C. PREPARATION OF BIDS

IB.10 Language of Bid

10.1 The bid and all correspondence and documents related to the bid exchanged by a bidder and the Employer shall be in the bid language stipulated in the Bidding Data and Particular Conditions of Contract. Supporting documents and printed literature furnished by the bidders may be in any other language provided the same are accompanied by an accurate translation of the relevant parts in the bid language, in which case, for purposes of evaluation of the bid, the translation in bid language shall prevail.

IB.11 Documents Accompanying the Bid

11.1 Each bidder shall:

(a) submit a power of attorney authorizing the signatory of the bid to act for and on behalf of the bidder; (as per requirement of E-PADS)

(b) update the information indicated and listed in the Bidding Data and previously submitted with the application for prequalification, and continue to meet the minimum criteria set out in the prequalification documents which as a minimum, would include the following:

(i) Evidence of access to financial resources along with average annual construction turnover;
(ii) Financial predictions for the current year and the two following years including the effect of known commitments;
(iii) Work commitments since prequalification;
(iv) Current litigation information; and
(v) Availability of critical equipment.

and

(c) furnish a technical proposal (as per requirement of E-PADS) taking into account the various Appendices to Bid specially the following:

Appendix-E to Bid	Proposed Replacement Schedule
Appendix-F to Bid	Method of Performing the Work
Appendix-G to Bid	List of Major Equipment
Appendix-M to Bid	Organization Chart for Supervisory Staff

And other pertinent information such as mobilization programme etc.

11.2 Bids submitted by a joint venture of two (2) or more firms shall comply with the following requirements:

(a) the bid and in case of a successful bid, the Form of Contract Agreement shall be signed so as to be legally binding on all partners;
(b) one of the joint venture partners shall be nominated as being in charge; and this authorization shall be evidenced by submitting a power of attorney signed by legally authorized signatories of all the joint venture partners;
(c) the partner-in-charge shall always be duly authorized to deal with the Employer regarding all matters related with and/or incidental to the execution of Works as per the terms and Conditions of Contract and in this regard to incur any and all liabilities, receive instructions, give binding undertakings and receive payments on behalf of the joint venture;
(d) all partners of the joint venture shall at all times and under all circumstances be liable jointly and severally for the execution of the Contract in accordance with

the Contract terms and a statement to this effect shall be included in the authorization mentioned under Sub-Para(b) above as well as in the Form of Bid and in the Form of Contract Agreement (in case of a successful bid); and

(e) a copy of the agreement entered into by the joint venture partners shall be submitted with the bid stating the conditions under which it will function, its period of duration, the persons authorized to represent and obligate it and which persons will be directly responsible for due performance of the Contract and can give valid receipts on behalf of the joint venture, the proportionate participation of the several firms forming the joint venture, and any other information necessary to permit a full appraisal of its functioning. No amendments / modifications whatsoever in the joint venture agreement shall be agreed to between the joint venture partners without prior written consent of the Employer.

11.3 Bidders shall also submit proposals of work methods and schedule, in sufficient detail to demonstrate the adequacy of the Bidders' proposals to meet the technical specifications and the completion time referred to in Sub-Clause 1.2 hereof.

11.4 The Bidder shall fill the Form of Bid furnished in the Bidding Documents. The Bid Form must be completed without any alterations to its format and no substitute shall be accepted.

IB.12 Bid Prices

12.1 Unless stated otherwise in the Bidding Documents, the Contract shall be for the whole of the Works as described in Sub-Clause 1.1 hereof, based on the unit rates and / or prices submitted by the bidder.

12.2 The bidders shall fill in rates and prices for all items of the Works described in the Bill of Quantities. Items against which no rate or price is entered by a bidder will not be paid for by the Employer when executed and shall be deemed covered by rates and prices for other items in the Bill of Quantities.

12.3 All duties, taxes and other levies payable by the Contractor under the Contract, or for any other cause, as on the date 28 days prior to the deadline for submission of bids shall be included in the rates and prices and the total Bid Price submitted by a bidder.

Additional / reduced duties, taxes and levies due to subsequent additions or changes in legislation shall be reimbursed / deducted as per Sub-Clause 70.2 of the General Conditions of Contract Part-I.

12.4 The rates and prices quoted by the bidders are subject to adjustment during the performance of the Contract in accordance with the provisions of Clause 70 of the Conditions of Contract. The bidders shall furnish the prescribed information for the price adjustment formulae in Appendix-C to Bid, and shall submit with their bids such other supporting information as required under the said Clause.

12.5 Prices quoted by the Bidder shall be fixed during the Bidder's performance of the contract and not subject to variation on any account. A Bid submitted with an adjustable price will be treated as non-responsive and shall be rejected.

IB.13 Currencies of Bid and Payment

13.1 The unit rates and the prices shall be quoted by the bidder entirely in Pak rupees. A bidder expecting to incur expenditures in other currencies for inputs to the Works supplied from outside the Employer's country (referred to as the "Foreign Currency Requirements") shall indicate the same in Appendix-B to Bid. The proportion of the Bid Price (excluding Provisional Sums) needed by him for the payment of such Foreign Currency Requirements either (i) entirely in the currency of the Bidder's home country or, (ii) at the bidder's option, entirely in Pak rupees provided always that a bidder expecting to incur expenditures in a currency or currencies other than those stated in (i) and (ii) above for a portion of the foreign currency requirements, and wishing to be paid accordingly, shall indicate the respective portions in his bid.

13.2 The rates of exchange to be used by the bidder for currency conversion shall be the TT&OD Selling Rates published or authorized by the State Bank of Pakistan prevailing on the date 28 days prior to the deadline for submission of bids.

For the purpose of payments, the exchange rates used in bid preparation shall apply for the duration of the Contract.

IB.14 Bid Validity

14.1 Bids shall remain valid for the period stipulated in the Bidding Data after the Date of Bid Opening specified in Clause IB.23.

14.2 In exceptional circumstances, prior to expiry of the original bid validity period, the Employer may request that the bidders extend the period of validity for a specified additional period which shall in no case be more than the original bid validity period. The request and the responses thereto shall be made in writing. A bidder may refuse the request without forfeiting his Bid Security. A bidder agreeing to the request will not be required or permitted to modify his bid, but will be required to extend the validity of his Bid Security for the period of the extension, and in compliance with Clause IB.15 in all respects.

IB.15 Bid Security

15.1 Each bidder shall furnish, as part of his bid, a Bid Security in the amount stipulated in the Bidding Data in Pak Rupees or an equivalent amount in a freely convertible currency.

15.2 The Bid Security shall be, at the option of the bidder, in the form of CDR, Pay Order, Banker's Cheque or a Bank Guarantee issued by a Scheduled Bank in Pakistan or from a foreign bank duly counter guaranteed by a Scheduled Bank in Pakistan in favor of the Employer valid for a period 28 days beyond the Bid Validity date.

15.3 Any bid not accompanied by an acceptable Bid Security shall be rejected by the Employer as non-responsive.

15.4 The bid securities of unsuccessful bidders will be returned as promptly as possible, but not later than 28 days after the expiration of the period of Bid Validity.

15.5 The Bid Security of the successful bidder will be returned when the bidder has furnished the required Performance Security and signed the Contract Agreement.

15.6 The Bid Security may be forfeited:

(a) if the bidder withdraws his bid except as provided in Sub-Clause 22.1;

(b) if the bidder does not accept the correction of his Bid Price pursuant to Sub-Clause 27.2 hereof; or

(c) In the case of successful bidder, if he fails within the specified time limit to:

(i) furnish the required Performance Security; or

(ii) sign the Contract Agreement.

IB.16 Alternate Proposals by Bidder

16.1 Should any bidder consider that he can offer any advantages to the Employer by a modification to the designs, specifications or other conditions, he may, in addition to his bid to be submitted in strict compliance with the Bidding Documents, submit any Alternate Proposal(s) containing (a) relevant design calculations; (b) technical specifications; (c) proposed construction methodology; and (d) any other relevant details / conditions, provided always that the total sum entered on the Form of Bid shall be that which represents complete compliance with the Bidding Documents.

16.2 Alternate Proposal(s), if any, of the lowest evaluated responsive bidder only may be considered by the Employer as the basis for the award of Contract to such bidder.

IB.17 Pre-Bid Meeting (Not Applicable)

17.1 The Employer may, on his own motion or at the request of any prospective bidder(s), hold a pre-bid meeting to clarify issues and to answer any questions on matters related to the Bidding Documents. The date, time and venue of pre-bid meeting, if convened, is as stipulated in the Bidding Data. All prospective bidders or their authorized representatives shall be invited to attend such a pre-bid meeting.

17.2 The bidders are requested to submit questions, if any, in writing so as to reach the Employer not later than seven (7) days before the proposed pre-bid meeting.

17.3 Minutes of the pre-bid meeting, including the text of the questions raised and the replies given, will be transmitted without delay to all prospective bidders. Any modification of the Bidding Documents listed in Sub-Clause 7.1 hereof which may become necessary as a result of the pre-bid meeting shall be made by the Employer exclusively through the issue of an Addendum pursuant to Clause IB.9 and not through the minutes of the pre-bid meeting.

17.4 Absence at the pre-bid meeting will not be a cause for disqualification of a bidder.

IB.18 Format and Signing of Bid

18.1 Bidders are particularly directed that the amount entered on the Form of Bid shall be for performing the Contract strictly in accordance with the Bidding Documents.

18.2 All appendices to Bid are to be properly completed and signed.

18.3 No alteration is to be made in the Form of Bid nor in the Appendices thereto except in filling up the blanks as directed. If any such alterations be made or if these instructions be not fully complied with, the bid may be rejected.

18.4 Each bidder shall prepare by filling out the forms completely and without alterations, specified in the Bidding Data, of the documents comprising the bid as described in Clause IB.7 and upload the scanned version of duly filled, signed and stamped on each page of bid.

18.5 The bid shall be typed or written in indelible ink and shall be signed by a person or persons duly authorized to sign on behalf of the bidder pursuant to Sub- Clause 11.1(a) hereof. All pages of the bid shall be initialed and stamped by the person or persons signing the bid, authorized to sign on behalf of the Bidder bid before uploading on EPADS. The scanned form of "ORIGINAL" Signed Bid will be uploaded by each Bidder on EPADS.

18.6 The bid shall contain no alterations, omissions or additions, except to comply with instructions issued by the Employer, or as are necessary to correct errors made by the bidder, in which case such corrections shall be initialed by the person or persons signing the bid.

18.7 Bidders shall indicate in the space provided in the Form of Bid their full and proper addresses at which notices may be legally served on them and to which all correspondence in connection with their bids and the Contract is to be sent.

18.8 Bidders should retain a copy of the Bidding Documents as their file copy.

D. SUBMISSION OF BIDS

IB.19 Sealing and Marking of Bids

19.1 Bidder shall upload the bid on E-PADS as per the requirement of PPRA's E-PAD portal and bidding document requirements. The technical & financial bids must be submitted/ uploaded on E-PADS in respective section, before the closing date & time of bid submission.

19.2 In case of Single Stage Two Envelope Procedure, The Bid shall comprise two parts submitted simultaneously on E-PADS, one called the Technical Proposal and the other Financial Proposal. Each Bidder shall submit his bid as under:

a) Bidder shall prepare his TECHNICAL PROPOSAL and FINANCIAL PROPOSAL which will be separately uploaded on E-PADS before closing date & time of bid submission.

IB.20 Deadline for Submission of Bids

20.1 (a) Bids must be submitted on E-PADS no later than the time and date stipulated in the Bidding Data.

(b) Bids with charges payable will not be accepted, nor will arrangements be undertaken to collect the bids from any delivery point other than that specified above. Bidders shall bear all expenses incurred in the preparation and delivery of bids. No claims will be entertained for refund of such expenses.

20.2 The Employer may, at his discretion, extend the deadline for submission of bids by issuing an amendment in accordance with Clause IB.9, in which case all rights and obligations of the Employer and the bidders previously subject to the original deadline will thereafter be subject to the deadline as extended.

IB.21 Late Bids

21.1 (a) Any bid uploaded by the bidder after the deadline or in hard copy for submission of bids prescribed in Clause IB.20 will not be accepted at any cost.

IB.22 Modification, Substitution and Withdrawal of Bids

22.1 Any bidder may modify**,** substitute or withdraw his bid after bid submission provided that the modification, substitution or written notice of withdrawal is received by the Employer prior to the deadline for submission of bids. (As per Provisions of E-PADS)

22.2 The modification, substitution, or notice for withdrawal of any bid shall be prepared, sealed, marked and delivered in accordance with the provisions of Clause IB.19 with the outer and inner envelopes additionally marked "MODIFICATION", "SUBSTITUTION" or "WITHDRAWAL" as appropriate. (As per Provisions of E-PADS)

22.3 No bid may be modified by a bidder after the deadline for submission of bids except in accordance with Sub-Clauses 22.1 and 27.2. (As per Provisions of E-PADS)

22.4 Withdrawal of a bid during the interval between the deadline for submission of bids and the expiration of the period of bid validity specified in the Form of Bid may result in forfeiture of the Bid Security in pursuance to Clause IB.15. (As per Provisions of E-PADS)

E. BID OPENING AND EVALUATION

IB.23 Bid Opening

23.1 The Employer will open the bids through E-PADS only, including withdrawals, substitution and modifications made pursuant to Clause IB.22, in the presence of bidders' representatives who choose to attend, at the time, date and location stipulated in the Bidding Data. The bidders' representatives who are present shall sign a register evidencing their attendance.

23.2 Envelopes marked "MODIFICATION", "SUBSTITUTION" or "WITHDRAWAL" shall be opened and read out first (as per provisions of E-PADS). Bids for which an acceptable notice of withdrawal has been submitted pursuant to Clause IB.22 shall not be opened.

23.3 The bidder's name, total Bid Price and price of any Alternate Proposal(s), any discounts, bid modifications**,** substitution and withdrawals, the presence or absence of Bid Security, and such other details as the Employer may consider appropriate, will be announced by the Employer at the opening of bids.

23.4 Employer shall prepare minutes of the bid opening, including the information disclosed to those present in accordance with the Sub-Clause 23.3.

23.5 In case of Single Stage Two Envelope Procedure, the Procuring Agency will open the Technical Proposals on E-PADS in public at the address, date and time specified in the BDS in the presence of Bidders` designated representatives who choose to attend and other parties with a legitimate interest in the Bid proceedings. The Financial Proposals will remain unopened and will be retained on E-PADS by the Procuring Agency until the specified time of their opening.

23.6 The Technical Proposals on E-PADS shall be opened one at a time, and the following read out and recorded: (a) the name of the Bidder; (b) the presence of a Bid Security, if required; and (c) Any other details as the Procuring Agency may consider appropriate.

23.7 Bidders are advised to send in a representative with the knowledge of the content of the Bid who shall verify the information read out from the submitted documents. Failure to send a representative or to point out any un-read information by the sent Bidder's representative shall indemnify the Procuring Agency against any claim or failure to read out the correct information contained in the Bidder's Bid.

23.8 The Procuring Agency shall prepare minutes of the Bid opening. The record of the Bid opening shall include, as a minimum: the name of the Bidder, the Bid price if applicable, including any discounts and alternative offers and the presence or absence of a Bid Security or Bid Securing Declaration.

23.9 In case of Single Stage Two Envelop Bidding Procedure, after the evaluation and approval of technical proposal the procuring agency, shall at a time within the bid validity period, publically open the financial proposals of the technically accepted bids only, on E-PADS. The financial proposal of bids found technically non-responsive will not be opened in any case, subject to redress of the grievances from all tiers of grievances. The bid should remain valid for minimum 180 days after the date of opening of bids.

IB.24 Process to be Confidential

24.1 Information relating to the examination, clarification, evaluation and comparison of bid and recommendations for the award of a contract shall not be disclosed to bidders or any other person not officially concerned with such process before the announcement of bid evaluation report which shall be done at least ten (10) days prior to issue of Letter of Acceptance. The announcement to all Bidders will include table(s) comprising read out prices, discounted prices, price adjustments made, final evaluated prices and recommendations against all the bids evaluated.

Any effort by a bidder to influence the Employer's processing of bids or award decisions may result in the rejection of such bidder's bid. Whereas any bidder feeling aggrieved may lodge a written complaint not later than seven (07) days after the announcement of the bid evaluation report; however mere fact of lodging a complaint shall not warrant suspension of the procurement process.

IB.25 Clarification of Bids

25.1 To assist in the examination, evaluation and comparison of bids, the Employer may, at his discretion, ask any bidder for clarification of his bid, including breakdowns of unit rates. The request for clarification and the response shall be in writing but no change in the price or substance of the bid shall be sought, offered or permitted except as required to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the bids in accordance with Clause IB.28.

IB.26 Examination of Bids and Determination of Responsiveness

26.1 Prior to the detailed evaluation of bids, the Employer will determine whether each bid is substantially responsive to the requirements of the Bidding Documents.

26.2 A substantially responsive bid is one which (i) meets the eligibility criteria; (ii) has been properly signed; (iii) is accompanied by the required Bid Security; and (iv) conforms to all the terms, conditions and specifications of the Bidding Documents, without material deviation or reservation. A material deviation or reservation is one (i) which affect in any substantial way the scope, quality or performance of the Works; (ii) which limits in any substantial way, inconsistent with the Bidding Documents, the Employer's rights or the bidder's obligations under the Contract; or (iii) adoption/rectification whereof would affect unfairly the competitive position of other bidders presenting substantially responsive bids.

26.3 If a bid is not substantially responsive, it will be rejected by the Employer, and may not subsequently be made responsive by correction or withdrawal of the non-conforming deviation or reservation.

IB.27 Correction of Errors

27.1 Bids determined to be substantially responsive will be checked by the Employer for any arithmetic errors. Errors will be corrected by the Employer as follows:

(a) where there is a discrepancy between the amounts in figures and in words, the amount in words will govern; and

(b) where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will govern, unless in the opinion of the Employer there is an obviously gross misplacement of the decimal point in the unit rate, in which case the line item total as quoted will govern and the unit rate will be corrected.

(c) if there is an error in a total corresponding to the addition or subtraction of sub-totals, the sub-totals shall prevail and the total shall be corrected.

27.2 The amount stated in the Form of Bid will be adjusted by the Employer in accordance with the above procedure for the correction of errors and with the concurrence of the bidder, shall be considered as binding upon the bidder. If the bidder does not accept the corrected Bid Price, his Bid will be rejected, and the Bid Security shall be forfeited in accordance with Sub- Clause 15.6(b) hereof.

IB.28 Evaluation and Comparison of Bids

28.1 The Employer will evaluate and compare only the Bids determined to be substantially responsive in accordance with Clause IB.26.

28.2 In evaluating the Bids, the Employer will determine for each Bid the evaluated Bid Price by adjusting the Bid Price as follows:

(a) making any correction for errors pursuant to Clause IB.27;
(b) excluding Provisional Sums and the provision, if any, for contingencies in the Summary Bill of Quantities, but including competitively priced Daywork; and
(c) making an appropriate adjustment for any other acceptable variation or deviation.

28.3 The estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be taken into account in Bid evaluation.

28.4 If the Bid of the successful bidder is seriously unbalanced in relation to the Employer's estimate of the cost of work to be performed under the Contract, the Employer may require the bidder to produce detailed price analyses for any or all items of the Bill of Quantities to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analyses, the Employer may require that the amount of the Performance Security set forth in Clause IB.32 be increased at the expense of the successful bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful bidder under the Contract.

28.5 In evaluating the Technical Proposal of each Bid, the Procuring Agency shall use the criteria and methodologies listed in the BDS and in terms of Statement of Requirements and Technical Specifications. No other evaluation criteria or methodologies shall be permitted.

F. AWARD OF CONTRACT

IB.29 Award

29.1 Subject to Clauses IB.30 and IB.34, the Employer will award the Contract to the bidder whose bid has been determined to be substantially responsive to the Bidding Documents and who has offered the lowest evaluated Bid Price**,** provided that such bidder has been determined to be eligible in accordance with the provisions of Clause IB.3 and qualify pursuant to Sub-Clause IB 29.2.

29.2 The Employer, at any stage of the bid evaluation, having credible reasons for or *prima facie* evidence of any defect in supplier's or contractor's capacities, may require the suppliers or contractors to provide information concerning their

professional, technical, financial, legal or managerial competence whether already pre-qualified or not:

Provided that such qualification shall only be laid down after recording reasons therefor in writing. They shall form part of the records of that bid evaluation report.

IB.30 Employer's Right to Accept any Bid and to Reject any or all Bids

30.1 Notwithstanding Clause IB.29, the Employer reserves the right to accept or reject any Bid, and to annul the bidding process and reject all bids, at any time prior to award of Contract, without thereby incurring any liability to the affected bidders or any obligation except that the grounds for rejection of all bids shall upon request be communicated to any bidder who submitted a bid, without justification of grounds. Rejection of all bids shall be notified to all bidders promptly.

30.2 Notice of the rejection of all Bids shall be given promptly to all Bidders that have submitted Bids.

IB.31 Notification of Award

31.1 Prior to expiration of the period of bid validity prescribed by the Employer, the Employer will notify the successful bidder in writing ("Letter of Acceptance") that his Bid has been accepted. This letter shall name the sum which the Employer will pay the Contractor in consideration of the execution and completion of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Conditions of Contract called the "Contract Price").

31.2 No Negotiation with the bidder having evaluated as lowest responsive or any other bidder shall be permitted, however, Employer may have clarification meetings to get clarify any item in the bid evaluation report.

31.3 The notification of award and its acceptance by the bidder will constitute the formation of the Contract, binding the Employer and the bidder till signing of the formal Contract Agreement.

31.4 Upon furnishing by the successful bidder of a Performance Security, the Employer will promptly notify the other bidders that their Bids have been unsuccessful and return their bid securities.

31.5 Where no complaints have been lodged, the Bidder whose Bid has been accepted will be notified of the award by the Procuring Agency prior to expiration of the Bid Validity period in writing or electronic forms that provide record of the content of communication. The Letter of Acceptance will state the sum that the Procuring Agency will pay the successful Bidder in consideration for the execution of the scope of works as prescribed by the Contract.

IB.32 Performance Security

32.1 The successful bidder shall furnish to the Employer a Performance Security in the form and the amount stipulated in the Bidding Data and the Conditions of Contract within a period of 14 days after the receipt of Letter of Acceptance.

32.2 Failure of the successful bidder to comply with the requirements of Sub-Clause IB.32.1 or Clauses IB.33 or IB.35 shall constitute sufficient grounds for the annulment of the award and forfeiture of the Bid Security.

32.3 If the Performance Security (or Guarantee) is provided by the successful Bidder and it shall be in the form specified in the BDS which shall be in any of the following:

a) A bank guarantee,
b) an irrevocable letter of credit issued by a reputable bank, or in the form provided in the Bidding Documents or another form acceptable to the Procuring Agency; or
c) A cash deposit receipt issued by any reputable scheduled bank of Pakistan.
d) Performance Guarantee in the form of Insurance Guarantee issued by an Insurance firm having AA rating

The cost of complying with the requirements of this Sub-Clause shall be borne by the Supplier.

IB.33 Signing of Contract Agreement

33.1 Within 14 days from the date of furnishing of acceptable Performance Security under the Conditions of Contract, the Employer will send the successful bidder the Contract Agreement in the form provided in the Bidding Documents, incorporating all agreements between the parties.

33.2 The formal Agreement between the Employer and the successful bidder shall be executed within 14 days of the receipt of the Contract Agreement by the successful bidder from the Employer.

IB.34 General Performance of the Bidders

The Employer reserves the right to obtain information regarding performance of the bidders on their previously awarded contracts/works. The Employer may in case of consistent poor performance of any Bidder as reported by the employers of the previously awarded contracts, interalia, reject his bid and/or refer the case to the Pakistan Engineering Council (PEC). Upon such reference, PEC in accordance with its rules, procedures and relevant laws of the land take such action as may be deemed appropriate under the circumstances of the case including black listing of such Bidder and debarring him from participation in future bidding for similar works.

IB.35 Integrity Pact

The Bidder shall sign and stamp the Integrity Pact provided at Appendix-O to Bid in the Bidding Documents for all Federal Government procurement contracts exceeding Rupees ten million. Failure to provide such Integrity Pact shall make the bidder non-responsive.

IB.36 Instructions not Part of Contract

Bids shall be prepared and submitted in accordance with these Instructions which are provided to assist bidders in preparing their bids, and do not constitute part of the Bid or the Contract Documents.

SECTION III

BID DATA SHEET

BID DATA SHEET

The following specific data for the Works to be bided shall complement, amend, or supplement the provisions in the Instructions to Bidders. Wherever there is a conflict, the provisions herein shall prevail over those in the Instructions to Bidders.

IB 1.1	Name and address of the Employer: **Director General (Field Operations) North Lahore, National Grid Company of Pakistan (NGC)** 34-Industrial Area, NTDC House, Gulberg-III, Lahore-Pakistan Telephone No. 92-42-99268292 E-mail address: ce.amnl@ntdc.com.pk
IB 1.1	The bidding is open to National Competitive Bidding (NCB).
IB 1.1	The name of the NCB is: REPLACEMENT OF NORMAL DISC INSULATORS WITH RTV COATED DISC INSULATORS OF 220kV TRANSMISSION LINES UNDER FIELD OPERATIONS LAHORE (Lot-III) The identification number of the NCB is: **CE/AMN/P&S/T-370-2026 (LOT-III)**
IB 2.1	Source of Funding: NGC's own resources
IB 3.1 (a)	The existing sub clause 3.1(a) is deleted and replaced with following: The Invitation for Bids is open to all bidders in their sole capacity or as joint venture meeting the following requirements: i) The Bidder shall be duly licensed by the Pakistan Engineering Council (PEC) minimum in the category C-5 with EE-05 or had applied for renewal of license before submission of its bid. In case of Joint Venture, all the partners shall be duly licensed by PEC and the sum total of the limit of construction cost permitted by the categories of the individual licensees shall not be less than limit of construction cost permitted by the category required here above. ii) Only those Firms/Companies/Contractors will be eligible to bid who are Active Taxpayers List (ATL) for both Income Tax & Sales Tax and Provincial revenue authorities/boards as the case may be. iii) Foreign Firms/Companies/ Contractors, if applicable in this tender, if required as per law of the country will get them registered from relevant tax authorities after award of contract. iv) All payments (including advance) will be subject to withholding taxes as per Income Tax Ordinates, 2001/international Tax Treaty & Sales Tax Act. 1990,

	further payments shall made only to those entities appearing in Active Tax payer List (ATL) for both Income Tax &Sales Tax. v) Performance Guarantee will be exclusive of indirect Taxes The Bidder shall not be blacklisted by NGC/WAPDA/DISCOs/any Government/Public department/Donor Agencies at the time of submission of bids. The Bidder should provide details of previous black listing, if any. An affidavit is to be provided by the Bidder that the Bidder is not black listed by NGC/WAPDA/DISCOs/any Government/Public department/Donor Agencies at the time of submission of bids. Further, the bidder shall submit an undertaking along with his bid that he has read and accepts the provisions of NGC Policy for Blacklisting of Contractors (copy of policy attached with the bidding documents). Non-submission of this undertaking may result in the rejection of the bid. The undertaking will subsequently become part of the Contract Agreement as well.
IB 3.1(b)	Delete IB 3.1(b) and replace it with the following. **Qualification of the Bidder** To be qualified for award of a contract, the Bidder shall meet the qualification criteria delineated herein below: 1. <u>Construction Experience:</u> i. The bidder as a main contractor (as single entity or as JV Partner) must have completed construction contracts comprising of construction of conventional/pile foundations, erection of towers, stringing, testing and commissioning of 220kV or high voltage bundled T/Lines of at least 20 KM strung by controlled tension method during last ten years. Such transmission lines must have been operating successfully for at least 02 years prior to deadline for submission of bid. ii. In case the bid is submitted by a Joint Venture, lead partner shall meet the above-mentioned criteria. Each JV Partner, other than the lead partner, must have completed as a main contractor or approved sub-contractor, construction contractors comprising of construction of conventional/pile foundations, erection of towers, stringing, testing and commissioning of 132kV or High voltage bundled T/Lines of at least 20 KM strung by controlled tension method during last 10 years. **<u>OR</u>** The bidder as a main contractor must have completed 02 Nos similar nature of work i.e replacement of 100KN normal disc insulators with RTV Coated disc insulators of 132KV or high voltage bundled T/Lines of at least

Cumulative 150 Towers during last ten years. Such transmission lines must have been operating successfully for at least 02 years prior to deadline for submission of bid.

*If the Bidder has executed these contract(s) as a JV partner, he shall have carried out all the activities mentioned here before.

iii. Such transmission lines must have been operating successfully for at least two (02) years prior to deadline for submission of bids.

iv. In case the bid is submitted by a joint venture under this bidding process, lead partners and each JV partner shall independently meet the above experience criteria.

v. The Bidder shall submit with the Bid evidence in this regard including inter alia copies (with English translation) of the contract agreement(s), substantial completion certificate(s) and Defects Liability Certificate for the contract(s).

vi. The bidder shall have his own twin bundle tension stringing equipment along with associated T&P and critical equipment duly supported with documentary evidence/catalogues/drawings for undertaking such like works in good working condition. Alternatively, if not so, the bidder will identify the confirmed source of the said machinery, T&P etc. along with documentary evidence/catalogues/drawings and shall provide necessary guarantee/surety that he will arrange the said equipment in good working condition through its own resources prior to start of stringing activity. The aforementioned documentary evidence shall be submitted with the bid.

2. Key Personnel:

The Bidder shall have the personnel for the key positions to be deployed for meeting the following requirements: (Information to be submitted in Appendix-G to Bid given in Section-III of the Bidding Documents)

Positions	Relevant Construction Experience	No. of Personnel
Project Manager	08	01
Electrical Engineers	04	01

The above personnel shall be graduate engineers or equivalent.

Bidder's Financial Capability:

The Employer will take into account the following criteria to verify the financial qualification of the Bidder.

i. The audited Financial "Standalone" Statements (Balance Sheet along with Notes, Profit & Loss Accounts and Cash Flow Statement) audited

by Chartered Accountant for the last three (03) years shall be submitted by the Bidder. The audited Financial Report issued for year 2024 and onwards should have UDIN as per ICAP letter circular No. 12/2024 dated 12.09.2024. The Bidder's Financial Statements for the last three years of the audited accounts should show that it has positive "NET WORTH" calculated as a difference between total assets and total liabilities (Information to be submitted in prescribed Form QF-5 of Appendix-N to Bid given in Section-III of the Bidding Documents). In case of JV, each JV partner shall meet the aforementioned criteria.

The Bidder's Income & Expenditure/Profit and Loss Accounts should show minimum average annual turnover for the last three years not less than **10 Million PKR**. The Average Annual Turnover may include turnover of affiliates and subsidiaries to the extent of shareholding percentage of the Bidding company provided the turnover is accrued from similar business activity as the Bidding company. **(**Information to be submitted in prescribed Form QF-6 of Appendix-N to Bid given in Section-III of the Bidding Documents).

In case of JV, all the JV partners shall combinedly meet the requisite criteria with the lead partner and other partner(s) meeting not less than 40% and 25% respectively of the said criteria.

ii. The Bidder must demonstrate access to, or availability of, financial resources such as liquid assets, lines of credit, and other financial means to meet the total cash flow demands of this contract which is being considered equal to **10 Million PKR plus 25% of the Bidder's commitments for running contracts**. (Information to be submitted in prescribed Form QF-7 of Appendix-P to Bid given in Section-III of the Bidding Documents).
In case of JV, all the JV partners shall combinedly meet the requisite criteria with the lead partner and other partner(s) meeting not less than 40% and 25% respectively of the said criteria.
The Bidder shall provide his current work commitments in form QF-4 of Appendix-P to Bid given in Section-III of the Bidding Documents.

The bidder shall provide bank certificate for his lines of credit on the prescribed Form QF-8 of Appendix-P to Bid given in Section-III of the Bidding Documents.

4. <u>Bidder's Litigation History</u>

Bidders are required to submit details of all litigation, arbitration and other claims whether pending, threatened or resolved in the last five years. The Employer may disqualify bidder in the event that the total amount of pending or threatened litigation, arbitration or other claims represents fifty percent (50%) of the Bidder's net worth. Details in this regard should be

	submitted in the prescribed Form QF-9 given in Appendix-P of Section-III of Bidding Document. Construction Experience and Financial Capability of sub-contractors, subsidiaries or parent/sister/affiliate companies shall not be considered for qualification of the Bidder. The Qualification of the Bidders will be based on meeting the pass/fail criteria as demonstrated by the Bidders' responses in the respective Appendices. The above stated requirements are the minimum and the Employer reserves the right to request for any additional information. The Employer also reserves the right to reject the proposal of any Bidder, if in the opinion of the Employer the qualification details are incomplete, ambiguous or the Bidder is found not qualified to satisfactorily perform the Contract. The above stated Appendices should be completed as per prescribed format and submitted along with required attachments. The missing or incomplete information/documents may render the bid substantially non-responsive. In this regard, the Employer does not have an obligation to request any document/certificates.
IB 3.2	The following sub clause is added after 3.1: A Bidder shall not have a conflict of interest. All Bidders found to have a conflict of interest shall be disqualified. A Bidder may be considered to be in a conflict of interest with one or more parties in this bidding process if, including but not limited to: (i) they have controlling shareholders in common; or (ii) they receive or have received any direct or indirect subsidy from any of them; or (iii) they have the same legal representative for purposes of this bid; or (iv) they have a relationship with each other, directly or through common third parties, that puts them in a position to have access to material information about or improperly influence the bid of another Bidder, or influence the decisions of the Employer regarding this bidding process; or (v) A Bidder or any affiliated entity, participated as a consultant in the preparation of the design or technical specifications of the plant and services that are the subject of the bid.

IB 6.1	The Bidder shall inspect the site, examine and obtain all information required and satisfy himself regarding matters and things such as access to site, communication, transport, right of way, the type and number of equipment and facilities required for the satisfactory completion of work, the quantity of various sections of the work, the availability of local labor, availability and rates of materials, local working conditions, uncertainties of weather, obstructions and hindrances that may arise etc., which may affect the work or cost thereof, before submission of his bid. Ignorance of site conditions shall not be accepted by the Employer as basis for any claim for compensation. The submission of a bid by the bidder will be construed as evidence that such an examination was made and any later claims/disputes in regard to rates quoted shall not be entertained or considered by the Employer.
IB 7.2	The Bidders should ensure that they have received the Bidding Documents including Addenda (if any) complete in all respects through E-PADS. The Employer accepts no responsibility for any Bidder lacking a complete set of Bidding Documents including Addenda (if any).
IB 8.1	The Sub-Clause 8.1 is amended to the following extent: No request for clarification will be entertained which will be received later than 14 days prior to the date fixed for submission of Bids through E-PADS. The Purchaser's response will be made not later than 7 days prior to the date fixed for submission of Bids through E-PADS. Further, the mere request for clarification from the bidders shall not be a ground for seeking extension in the deadline for submission of Bids.
IB 10.1	The bid with all accompanying documents and all communications in relation to or concerning the bidding Process shall be in **English** language and strictly on the forms provided in the bidding Documents. In case any of these Documents is in another language, it must be accompanied by an accurate translation of the relevant passages in English, in which case, for all purposes of interpretation of the bid, the translation in English shall prevail. Any portions of Bids that are not in English may not be evaluated. Failure to comply with this may disqualify a bid.
IB 11.1	**Documents Comprising the Bid** Delete the text of this Sub-Clause and substitute with the following: The Bid submitted on E-PADS by the Bidder shall be prepared in two (02) separate parts and should be uploaded on E-PADS seperately, one containing the "Technical Bid" and the other containing "Price Bid" comprising the following documents in the respective envelope: **I. Technical Bid** a) Duly filled-in Form of Technical Bid with following Appendices to Bid: i) Appendix-A to Bid Special Stipulations ii) Appendix-E to Bid Proposed Work Schedule iii) Appendix-F to Bid Method of Performing the Work

	iv) Appendix-G to Bid Proposed Personnel v) Appendix-H to Bid List of Major Equipment-Related Items vi) Appendix-I to Bid Construction Camp and Housing Facilities vii) Appendix-J to Bid Organizational Chart of the Supervisory Staff and Labor viii) Appendix-K to Bid List of Sub-Contractors ix) Appendix-L to Bid Source of Materials x) Appendix-N to Bid Deviations xi) Appendix-O to Bid Integrity Pact (N/A) xii) Appendix-P to Bid Bidder's Qualification Forms b) Bid security of Fixed amount of **PKR. 500,000/- in the favor of "Chief Engineer (AM) North, NTDC Lahore" (this must be submitted in original in the office of Director General (Field Operations) North, NGC Lahore before the closing date and time of bid submission on E-PADS)** c) Undertaking by the Bidder in respect of submission of required Bid Security as per Appendix-Q to Bid; d) Written Power of Attorney, duly notarized, authorizing the signatory of the bid to act for and on behalf of the Bidder; e) Copies of Original Documents defining the constitution or legal status, place of registration and principal place of business of the bidder and JV partners; f) An affidavit that the Bidder has not been blacklisted pursuant to Sub-Clause 3.1(iv); g) An Affidavit that the Bidder has read and accepts NGC's SOP for blacklisting of Contractors pursuant to Sub-Clause 3.1(iv); h) PEC license pursuant to Sub-Clause 3.1(i); and i) Any other document required to be submitted in accordance with these Bidding Documents. **II. Price Bid** a) Duly filled-in Form of Price Bid with following Appendices to Bid: xiii) Appendix-B to Bid Foreign Currency Requirements (Not Used) xiv) Appendix-D to Bid Bill of Quantities xv) Appendix-M to Bid Estimated Progress Payments b) Any other document required to be submitted in accordance with these Bidding Documents.
IB 11.2	Following is added at the end of Sub-Clause IB.11.2: "(f) The maximum J.V. partners shall not be more than three (03)."

IB 12.5	Add the following new Sub-Clause IB 12.5: The Bidder shall quote Provincial Sales Tax (PST) in a separate column given in Bill of Quantities (BOQ) of Section-III to Bid.
IB 12.6	Add the following new Sub-Clause IB 12.6: The cost of the material for this line/project would be 60 million PKR approx. for calculating insurance charges.
IB 13	Clause IB.13 is substituted with the following: "The unit rates and prices shall be quoted by the Bidder entirely in Pak Rupees. All payments under the contract shall be made in Pak Rupees only. Bidders expecting to incur expenditures in currency(ies) other than Pak Rupees shall manage foreign currency(ies) at their own arrangement. The exchange risk in this regard, if any, shall be deemed to be included in unit rates and prices quoted by the Bidder."
IB 14.1	The period for Bid validity shall be minimum One Hundred and Eighty (180) days after the date of Bid opening through E-PADS.
IB 15.1	The amount of Bid Security shall be of **fixed amount of PKR. 500,000/- to be submitted in original before closing date and time of bid uploading.**
IB 15.2	Sub-Clause IB.15.2 is substituted with the following: "The Bid Security shall be, at the option of the Bidder, in the form of Deposit at Call or a Guarantee issued by a Scheduled Bank in Pakistan or from a foreign bank duly counter guaranteed by a Scheduled Bank in Pakistan in favor of the Employer on the prescribed Form annexed to these Documents valid for a period 28 days beyond the Bid Validity date. The Bid Security of Joint Venture shall be in the name of Joint Venture submitting the Bid. For avoidance of doubt, a Bid Security issued by a foreign bank but not counter guaranteed by a Scheduled Bank in Pakistan shall not be acceptable and rejected as non-responsive."
IB 15.6	The following is added at the end of Sub-Clause IB.15.6: "(d) If the Bidder is found involved in corrupt and fraudulent practices."
IB 17.1	No Pre-bid meeting will be held.
IB 18.4	Sub-Clause 18.4 is substituted with the following: "Each Bidder shall prepare by filling out the forms completely and without alterations one original set of the Technical Bid and one original set of the Price Bid as described in IB. 11 and clearly mark each "ORIGINAL - TECHNICAL BID" and "ORIGINAL - PRICE BID". In addition, the Bidder shall submit two (02) copies each of the Technical Bid and the Price Bid, clearly marked as "COPY NO… - TECHNICAL BID" and "COPY NO…. - PRICE BID". In the event of any discrepancy between the original and the copies, the original shall prevail. (Not Applicable, as

	technical & financial bids will be uploaded by the bidder on E-PADS separately) The Bidders are also required to provide an electronic version (in USB Drive) of the technical bid and price bid in PDF format scanned from the Original bid and Price Schedules in MS Excel format. Electronic version of Technical and Price bids should be submitted separately in their respective envelopes. Electronic version of Price bid and price schedules should be placed in financial envelope which shall remain sealed until financial bid opening. Non-submission of the electronic version of the Bids shall not be a reason for rejection of Bid. (N/A)
IB.19.1	Sub-Clause 19.1 is substituted by the following: "The Technical Bid and Price Bid (comprising the relevant documents as stated under Sub-Clause IB.11) shall be prepared separately. The ORIGINAL and each COPY of Technical Bid shall be sealed in one envelope marked as such. Similarly, the ORIGINAL and each COPY of the Price Bid shall be sealed in another envelope and marked as such. Price Bid shall be sealed in a separate envelope. The outer envelope comprising both 'Technical Bid' and 'Price Bid' shall be addressed/identified as given in Sub-Clause 19.2 hereof." (Not Applicable)
IB 19.2 (a)	Employer's address for the purpose of Bid Security submission: Director General (Field Operations) North , NGC, 34-Industrial Area, NTDC House, Gulberg-III, Lahore-Pakistan Telephone No. 92-42-99268292 E-mail address: ce.amnl@ntdc.com.pk
IB 19.2 (b)	**Name of the Project:** REPLACEMENT OF NORMAL DISC INSULATORS WITH RTV COATED DISC INSULATORS OF 220kV TRANSMISSION LINES UNDER FIELD OPERATIONS LAHORE (Lot-III) **Identification No.: CE/AMN/P&S/T-370-2026 (LOT-III)**
IB 19.2 (c)	Para (c) of Sub-Clause 19.2 is substituted by the following: The outer envelopes and the inner envelopes containing the Technical Bid shall bear a warning not to open before the time and date for the opening of Technical Bids, in accordance with IB 23.1. The envelopes containing the Price Bid shall bear a warning not to open until advised by the Purchaser in accordance with IB 23.2. (Not Applicable)
IB 20.1 (a)	Deadline for Submission of bid on E-PADS: **Date: 07.12.2026** **Time: 11:00 HRS**
IB 20.1 (c)	Bids shall be submitted through E-PADS only. Hard copy submission, if any, shall be optional. In the event of any discrepancy, the contents of the bid submitted on E-PADS shall be considered final and binding. Hard form of bids will not be accepted if the bid is not uploaded on E-PADS by bidder.

IB 20.1	Add the following new Para (e) at the end of Sub-Clause: "(e) Bids submitted through fax or email shall not be considered."
IB.23 23.1	**Bid Opening:** Sub-Clause IB.23.1 is substituted by the following: The Employer shall open the Technical Bids through E-PADS only in public at the address, on the date, and time specified herein in the presence of Bidder's designated representatives who choose to attend. The Bidders' representatives who are present shall sign a register evidencing their attendance. **Time: 11:30 HRS** **Date: 07.12.2026** Address: 34-Industrial Area , Gulberg-III Lahore - Pakistan
23.2	The Price Bids will remain unopened on E-PADS section and will be held in custody of the Employer until the time of opening of the Price Bids. The date, time, and location of the opening of Price Bids will be advised in writing by the Employer.
23.3	First, envelopes marked "WITHDRAWAL" shall be opened, read out, and recorded, and the envelope containing the corresponding bid shall not be opened, but returned to the Bidder. No bid withdrawal shall be permitted unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal and is read out and recorded at bid opening. (As per provisions of E-PADS)
23.4	Next, outer envelopes marked "SUBSTITUTION" shall be opened. The inner envelopes containing the Substitution Technical Bid and/or Substitution Price Bid shall be exchanged for the corresponding envelopes being substituted, which are to be returned to the Bidder unopened. Only the Substitution Technical Bid, if any, shall be opened, read out, and recorded. Substitution Price Bid will remain unopened in accordance with IB 23.2. No envelope shall be substituted unless the corresponding substitution notice contains a valid authorization to request the substitution and is read out and recorded at bid opening. (As per provisions of E-PADS)
23.5	Next, outer envelopes marked "MODIFICATION" shall be opened. No Technical Bid and/or Price Bid shall be modified unless the corresponding modification notice contains a valid authorization to request the modification and is read out and recorded at the opening of Technical Bids. Only the Technical Bids, both Original as well as Modification are to be opened, read out, and recorded at the opening. Price Bids, both Original as well as Modification, will remain unopened in accordance with IB 23.2. (As per provisions of E-PADS)
23.6	All other sections of E-PADS holding the Technical Bids, except the Bids rejected pursuant to Sub-Clause IB.23.2, shall be opened one at a time, and the following read out and recorded (a) the name of the Bidder; (b) whether there is a modification or substitution; (c) the presence of an undertaking by the Bidder in respect of

	submission of required Bid Security; and (d) any other details as the Employer may consider appropriate. Only Technical Bids and alternative Technical Bids (if allowed under Sub-Clause IB.16 hereof) read out and recorded at bid opening shall be considered for evaluation. Unless otherwise specified in the BDS, the Form of Technical Bid is to be initialed by the nominated representatives of the Employer attending the bid opening. No Bid shall be rejected at the opening of Technical Bids except for late bids, in accordance with IB.21.1.
23.7	The Employer shall prepare a record of the opening of Technical Bids that shall include, as a minimum: the name of the Bidder and whether there is a withdrawal, substitution, modification, or alternative offer; and the presence or absence of an undertaking of Bid Security. A copy of the record shall be distributed to all Bidders.
23.8	At the end of the evaluation of the Technical Bids, the Employer will invite bidders who have submitted substantially responsive Technical Bids and who have been determined as being qualified for award to attend the opening of the Price Bids through E-PADS. The date, time, and location of the opening of Price Bids will be advised in writing by the Employer. Bidders shall be given reasonable notice of the opening of Price Bids through E-PADS.
23.9	The Employer will notify Bidders in writing who have been rejected on the grounds of being substantially non-responsive to the requirements of the Bidding Documents and return their Price Bids unopened.
23.10	The Employer shall conduct the opening of Price Bids of all Bidders through E-PADS, who submitted substantially responsive Technical Bids, in the presence of Bidders` representatives who choose to attend at the address, on the date, and time specified by the Employer. The Bidder's representatives who are present shall be requested to sign a register evidencing their attendance.
23.11	All sections of E-PADS containing Price Bids shall be opened one at a time and the following read out and recorded (a) the name of the Bidder; (b) whether there is a modification or substitution; (c) the Bid Prices, including any discounts, cross discounts and alternative offers; (d) the presence of Bid Security; and (e) any other details as the Employer may consider appropriate. Only Price Bids, discounts, cross discounts and alternative offers (if allowed under Sub-Clause IB.16 hereof) read out and recorded during the opening of Price Bids shall be considered for evaluation. Unless otherwise specified in the Bidding Data, the Form of Price Bid and Price Schedules are to be initialed by nominated representatives of the Employer attending the bid opening.

23.12	The Employer shall prepare a record of the opening of Price Bids that shall include, as a minimum: the name of the Bidder, the Bid Price (per lot if applicable), any discounts, cross discounts, any alternative offers and presence of Bid Security. A copy of the record shall be distributed to all Bidders present at the time of Bid opening.
IB 24.2	Add the following new Sub Clause after IB 24.1: 24.2 Bidders and their respective agents, suppliers, sub-contractors, representatives and anyone else on behalf of the bidder will not communicate or attempt to communicate directly or indirectly with the Employer, including any employees, directors, officers, agents or representatives of any of them during any part of the Competitive Bidding Process, except as expressly directed or permitted by the Employer. Bidders will also not engage in any form of political or other lobbying whatsoever with respect to their Bids, or otherwise attempt to influence the outcome of the Competitive Bidding Process. In the event of any such communications or lobbying, Employer may at any time reject any Bid by that Bidder without further consideration.
IB 25.1	Add the following at the end of Sub-Clause 25.1: The Employer may, at his discretion, ask any Bidder for confirmation/submission of missing information to clarify its Bid. However, the Employer does not have an obligation to request any additional information or clarification with respect to missing or deficient information in a Bid. Any clarification submitted by a Bidder that is not in response to a request by the Employer shall not be considered.
IB 25.2	Add the following new Sub-Clause: If a Bidder does not provide clarifications of its Bid by the date and time set in the Employer's request for clarification, its Bid may be rejected.
IB 26.1	Sub-Clause 26.1 is substituted by the following: "The Employer will determine whether Bid is substantially responsive to the requirements of the Bidding Documents."

IB 26.2	Sub-Clause 26.2 is substituted by the following: "A substantially responsive Technical Bid is one which (i) meets the eligibility criteria; (ii) has been properly signed; (iii) meets the qualification criteria delineated at Sub-Clause IB.3A hereof; and (iv) conforms to all the terms, conditions and specifications of the Bidding Documents, without material deviation or reservation. A substantially responsive Price Bid is one which (i) has been properly signed; (ii) is accompanied by the required Bid Security submitted in original before the date & time of bid opening; and (iii) conforms to all the terms, conditions and specifications of the Bidding Documents, without material deviation or reservation. A material deviation or reservation is one (i) which affect in any substantial way the scope, quality or performance of the Works; (ii) which limits in any substantial way, inconsistent with the Bidding Documents, the Employer's rights or the Bidder's obligations under the Contract; or (iii) adoption/rectification whereof would affect unfairly the competitive position of other Bidders presenting substantially responsive bids. Any minor informality or non-conformity or irregularity in a Bid which does not constitute a material deviation may be waived by the Employer, provided such waiver does not prejudice or affect the relative ranking of any Bidder."
IB 26.4	Following Sub-Clauses are added at the end of Sub-Clause 26.3: The Employer may reject any Bid as non-responsive if found materially incomplete, obscure, irregular or omits any material information required to be submitted by the Bidding Documents.
IB 27.3	Following Sub Clause is added after Sub Clause 27.2: If as a result of arithmetic correction, the Bid Price is increased substantially, the Bidder may be asked to increase the amount of its Bid Security accordingly by submitting its amendment within fifteen (15) days from issuing date of such notification. If the Bidder fails to provide the requisite amendment of the Bid Security within the stipulated period, his Bid will be held substantially non-responsive and will be rejected.
IB 28.1	Following Para is added at the end of the Sub-Clause 28.1: "The Works will be evaluated and compared on Lot basis (if applicable)."
IB 28.2	Following Para is added after the Para (c) of IB. 28.2: (d) applying cross discount in case of combination of Lots to arrive at least cost combination
IB 28.4	Following is added at the end of Sub-clause IB 28.4: "or the employer may require the successful Bidder to balance his bid."

IB 28.5	Following new Sub Clause is added after IB 28.4: The Employer will evaluate the Bids, including all clarifications, additional information, modifications and negotiated changes, by applying the Eligibility and Qualification Criteria. Without limiting the particular criteria, the Employer may take into account the following in the Evaluation of Bids: i. Non-performance by a Bidder on previous contracts with Employer or others; ii. The quality of a Bidder's performance on previous contracts with Employer or others; iii. Anticipated or ongoing claims with or in connection with a Bidder; iv. Any security of safety concerns which Employer may have in respect of a Bidder or its facilities, subcontractors or suppliers; v. The results of any interview with a Bidder or supplied references: or vi. Any knowledge of or experience with a Bidder or its principals, directions, officers and employees. The Employer may independently verify any information (including conducting credit, reference and other checks with respect to a Bidder) and consider such findings in its evaluation. Employer is not required to inform Bidders of how Bids were ranked in the evaluation process.
IB 28.6	Add the following new Sub-Clause IB 12.5: The Employer's evaluation of a Bid will exclude and not take into Provincial sales Tax (PST).
IB 29.1	Add the words "for the respective Lot(s)" after the words "evaluated Bid Price" in 3rd line of this Sub-Clause. Add the following at the end of this Sub-Clause, if applicable: "Provided further in case a Bidder is determined to be the lowest evaluated substantially responsive in more than one Lot, the aggregate requirements delineated under Sub-Clause IB.3 hereof shall apply."
IB 29.2	Following text is added at the end of Sub Clause 29.2 The Employer reserves the right to assess the capacity and capability of the Bidder, to successfully execute the scope of work covered under the Bidding Documents within stipulated completion period. This assessment may interalia include for (i) document verification; (ii) details of work executed, work in hand, anticipated in future; (iii) details of tools & plant; (iv) availability of requisite key personnel (v) financial resources; (vi) details of quality system in place; (vii) past experience and performance; (viii) customer feedback (ix) Bank's feedback etc.

IB 30.1	The Employer reserves the right to reject any bid on the following accounts, apart from those mentioned in the bidding documents: i. Bid is not uploaded by the due date and time specified. ii. Cost of the bidding documents is not remitted. iii. Bid is not accompanied by Bid security as specified in the document; Bid security is inadequate; Bid guarantee is not in the specified format. iv. Bid does not cover the complete scope of work. v. Bid does not contain all required particulars as per Schedules & Forms prescribed in the bidding documents. vi. Deviations, conditionality or reservations have been introduced to any part of the bidding documents which may not be acceptable to the Employer in its sole discretion. vii. Bidder does not respond promptly and thoroughly to the request for supplementary information required for the evaluation of his Bid. viii. Bid does not meet minimum acceptable standards of completeness, consistency and detail. ix. Bid received from any Black listed Firm / Contractor. If at any time it is found that a material misrepresentation of facts is made or uncovered; the information submitted by the bidder concerning his qualification was false and materially inaccurate or incomplete. If the bidder is the Lead Member of a consortium, then the entire consortium may be disqualified/ rejected.
IB 32.1	The Bidder shall furnish an unconditional Performance Security, equal to ten percent (10%) of the amount mentioned in Letter of Acceptance in the form prescribed in the conditions of Contract.
IB 33	Text of Clause IB.33 is deleted and substituted as follows: Within fourteen (14) days from the date of furnishing of acceptable Performance Security under the Conditions of Contract, the successful bidder shall depute its representative duly authorized for formal signing of the Contract Agreement, Form of which is provided in the Bidding Documents.

Annexure - 1 to Bidding Data Sheet

FORMAT FOR POWER OF ATTORNEY FOR SIGNING OF BID

POWER OF ATTORNEY

Know all men by these presents, we _____(name and address of the registered office of the Bidder) do hereby constitute, appoint and authorize Mr. / Ms. _____R/o _____(name and address of residence) who is presently employed with us and holding the position of _____, as our attorney, to do in our name and on our behalf, all such acts, deeds and things necessary in connection with or incidental to the bid of the (please state the name and address of the bidder) for Bidding Document No. CE/AMN/P&S/T-370-2026 (LOT-III)*:* REPLACEMENT OF NORMAL DISC INSULATORS WITH RTV COATED DISC INSULATORS OF 220kV TRANSMISSION LINES UNDER FIELD OPERATIONS LAHORE (Lot-III) (the "tender"), including signing and submission of all documents and providing information / responses to National Grid Company of Pakistan (NGC), representing us in all matters in connection with our bid for the said tender.

We hereby agree to ratify all acts, deeds and things done by our said attorney pursuant to this Power of Attorney and agree that all acts, deeds and things done by our aforesaid attorney shall and shall always be deemed to have been done by us.

For

(Signature)
(Name, Title, Email ID and Address)

Accepted
……(Signature)
(Name, Title, Email ID and Address of the Attorney)

ACKNOWLEDGMENT

Before me, a Notary Public for and in the City of _____, this _____ of _____ 2020 personally came and appeared:

NAME	IDENTIFICATION DOCUMENT
_____	_____

Known to me to be the same person/s who executed the foregoing Special Power of Attorney in favor of _____, and acknowledged to me the same is/are his/her/their free and voluntary act and deed.
IN WITNESS WHEREOF, I have hereunto set my hand and affixed my notarial seal, the date and place above written.

NOTARY PUBLIC

Annexure - 2 to Bidding Data Sheet

A. FORM OF UNDERTAKING BY THE JOINT VENTURE PARTNERS

(On Company's Letter Head)

THIS JOINT DEED OF UNDERTAKING executed on this……. day of……. Two Thousand and ……..by……. a company incorporated under the laws of …… and having its Registered Office at..... (hereinafter called the "Party No.1" which expression shall include its successors, executors and permitted assigns) and M/s……a company incorporated under the laws of…… and having its Registered Office at…… (hereinafter called the "Party No.2" which expression shall include its successors, executors and permitted assigns) and M/s.. .. .. .a Company incorporated under the laws of…….. and having its Registered Office at……. (hereinafter called the "Party No.3" which expression shall include its successors, executors and permitted assigns) for the purpose of making a bid and entering into a contract [hereinafter called the "Contract"_{in case of award)] against the Identification No……for _____ associated with _____ of ……. (hereinafter called the "**Employer**").

WHEREAS the Party No.1, Party No.2 and Party No.3 have entered into an Agreement dated..... AND WHEREAS the Employer invited bids for the design, manufacture, Supply of Equipment Materials stipulated in the bidding documents under _____ _____ associated with _____.

AND WHEREAS Clause 2, Section-ITB and 'Qualification & Evaluation Requirement of the Bidder'(clause 13, 24 & 26 of ITB), and technical provisions forming part of the bidding documents, inter-alia, stipulates that an Undertaking of two or more qualified partners, meeting the requirements of 'Qualification & Evaluation Requirement of the Bidder', as applicable may bid, provided, the Joint Venture fulfills all other requirements under Clause 2, 13, 24 & 26 of ITB and in such a case, the Letter of Bids (Bid Form) shall be signed by the Partner –In Charge so as to legally bind all the Partners of the Joint Venture, who will be jointly and severally liable to perform the Contract and all obligations hereunder.

The above clause further states that this Undertaking shall be attached to the bid and the Contract performance guarantee will be as per the format enclosed with the bidding document without any restrictions or liability for either party.

AND WHEREAS the bid is being submitted to the Employer vide proposal No……..dated…... by Party No.1 based on this Undertaking between all the parties; under these presents and the bid in accordance with the requirements of Clause 2, 13, 24 & 26 (Section-ITB) has been signed by all the parties.

NOW THIS UNDERTAKING WITNESSETH AS UNDER:

In consideration of the above premises and agreements all the parties of this Deed of Undertaking do hereby declare and undertake:

1. In requirement of the award of the Contract by the Employer to the Joint Venture Partners, we, the Parties do hereby undertake that M/s…… the Party No.1, shall act as Lead Partner and further declare and confirm that we the parties to the Joint Venture shall jointly and severally be bound unto the Employer for the successful performance of the Contract and shall be fully responsible for the design, manufacture, Supply, and successful performance of the equipment in accordance with the Contract:

2. In case of any breach or default of the said Contract by any of the parties to the Joint Venture, the party(s) do hereby undertake to be fully responsible for the successful performance of the Contract and to carry out all the obligations and responsibilities under the Contract in accordance with the requirements of the Contract.

3. Further, if the Employer suffers any loss or damage on account of any breach in the Contract or any shortfall in the performance of the equipment in meeting the performances guaranteed as per the specification in terms of the Contract, the Party(s) of these presents undertake to promptly make good such loss or damages caused to the Employer, on its demand without any demur. It shall not be necessary or obligatory for the Employer to proceed against Lead Partner to these presents before proceeding against or dealing with the other Party(s), the Employer can proceed against any of the parties who shall be jointly and severally liable for the performance and all other liabilities/obligations under the Contract to the Employer.

4. The financial liability of the Parties of this Deed of Undertaking to the Employer, with respect to any of the claims arising out of the performance or non-performance of the obligations set forth in this Deed of Undertaking, read in conjunction with the relevant conditions of the Contract shall, however not be limited in any way so as to restrict or limit the liabilities or obligations of any of the Parties of this Deed of Undertaking.

5. It is expressly understood and agreed between the Parties to this Undertaking that the responsibilities and obligations of each of the Parties shall be as delineated in Annexure attached with this undertaking. It is further undertaken by the parties that the above sharing of responsibilities and obligations shall not in any way be a limitation of joint and several responsibilities of the Parties under the Contract.

6. It is also understood that this Undertaking is provided for the purposes of undertaking joint and several liabilities of the partners to the Joint Venture for submission of the bid and performance of the Contract if awarded and that this Undertaking shall not be deemed to give rise to any additional liabilities or obligations, in any manner or any law, on any of the Parties to this Undertaking or on the Joint Venture, other than the express provisions of the Contract.

7. This Undertaking shall be construed and interpreted in accordance with the provisions of the Contract.

8. In case of an award of a Contract, we the parties to this Deed of Undertaking do hereby agree that we shall be jointly and severally responsible for furnishing a Contract performance security from a bank in favor of the Employer in the currency/currencies of the Contract.

9. It is further agreed that this Deed of Undertaking shall be irrevocable and shall form an integral part of the bid and shall continue to be enforceable till the Employer discharges the same or upon the completion of the Contract in accordance with its provisions, whichever is earlier. It shall be effective from the date first mentioned above for all purposes and intents.

IN WITNESS WHEREOF, the Parties to this Deed of Undertaking have through their authorized representatives executed these presents and affixed Common Seals of their companies, on the day, month and year first mentioned above.

Common Seal of …….
has been affixed in my/ our
presence pursuant to Board of
Director's Resolution dated …….

Name ……..

Designation …….

Signature …….

For Lead Partner (Party No.-1)
For and on behalf of M/s
……..

(Signature of the authorized representative)

WITNESS :

I. ……

II. ……

Common Seal of …….
has been affixed in my/ our
presence pursuant to Board of
Director's Resolution dated …….

Name ……..

Designation …….

Signature …….

For Party No.-2
For and on behalf of M/s……..

(Signature of the authorized representative)

WITNESS :

I. ……

II. ……

Common Seal of ……. has been affixed in my/ our presence pursuant to Board of Director's Resolution dated …….

For Party No.-3
For and on behalf of M/s. ……..

Name ……..

Designation ……..

Signature ……..

(Signature of the authorized representative)

WITNESS :

I. ……

II. ……

Notes:

1. In the event that the successful Bidder is a joint venture formed of two or more companies, the Employer requires that the parties to the joint venture accept joint and several liabilities for all obligations under the Contract.
2. The maximum number of J.V partners is three (03).

Annexure - 3 to Bidding Data Sheet

B. FORM OF LETTER OF INTENT BY JV PARTNERS TO ENTER INTO JV AGREEMENT

THIS LETTER OF INTENT signed on this……. day of……. Two Thousand and ……..by……. a company incorporate under the laws of …… and having its Registered Office at..... (hereinafter called the "Party No.1" which expression shall include its successors, executors and permitted assigns) and M/s……a company incorporated under the laws of…… and having its Registered Office at…… (hereinafter called the "Party No.2" which expression shall include its successors, executors and permitted assigns) and M/s.. .. .. …. .. a Company incorporated under the laws of …….. and having its Registered Office at……. (hereinafter called the "Party No.3" which expression shall include its successors, executors and permitted assigns) for the purpose of making a bid and entering into a contract [hereinafter called the "Contract" {in case of award)] against the Specification No……for _____ associated with _____ of …….. (hereinafter called the "**Employer**").

WHEREAS the Party No.1, Party No.2 and Party No.3 intend to enter into a Joint Venture Agreement

AND WHEREAS the Employer invited bids as per the above mentioned Specification for the design, manufacture, Supply of Equipment Materials stipulated in the bidding documents under _____ associated with _____.

AND WHEREAS Clause 2, Section-ITB and 'Qualification & Evaluation Requirement of the Bidder'(clause 13, 24 & 26 of ITB), and technical provisions forming part of the bidding documents, inter-alia, stipulates that two or more qualified partners, meeting the requirements of Clause 2, Section-ITB and 'Qualification & Evaluation Requirement of the Bidder'(clause 13, 24 & 26 of ITB), as applicable may bid, provided, they submit a Letter of Intent to enter into Joint Venture Agreement and the Joint Venture Partners fulfill all other requirements under Clause 2, Section-ITB and 'Qualification & Evaluation Requirement of the Bidder'(clause 13, 24 & 26 of ITB), and technical provisions forming part of the bidding documents and in such a case, the Letter of Bid (Bid Form) shall be signed by all the proposed partners so as to legally bind all the Partners of the Joint Venture, who will be jointly and severally liable to perform the Contract by entering into Joint Venture Agreement as per proforma specified in this Section IV. Bidding Forms of the Bidding Documents which will be legally binding on all partners and all obligations hereunder.

The above clause further states that this Letter of Intent shall be attached to the bid and the Contract performance guarantee will be as per the format enclosed with the bidding document without any restrictions or liability for either party.

AND WHEREAS the bid is being submitted to the Employer vide proposal No……..dated…... by Party No.1 based on this Letter of Intent between all the parties; under these presents and the bid in accordance with the requirements of Clause 4.1, Section-ITB and

'Qualification Requirement of the Bidder', Section-Evaluation and Qualification Criteria, has been signed by all the parties.

NOW THIS UNDERTAKING WITNESSED AS UNDER:

In consideration of the above premises and agreements all the parties of this Letter of Intent do hereby declare and undertake:

1. In requirement of the award of the Contract by the Employer to the Joint Venture Partners, we, the Parties do hereby undertake that M/s…… the Party No.1, shall act as Lead Partner and further declare and confirm that we the parties to the Joint Venture shall jointly and severally be bound unto the Employer for the successful performance of the Contract and shall be fully responsible for the design, manufacture, Supply, and successful performance of the equipment in accordance with the Contract for which we shall enter into Joint Venture Agreement as per proforma specified in this Section IV. Bidding Forms of the Bidding Documents which will be legally binding on all partners:

2. If the Contract is awarded to Joint Venture then in case of any breach or default of the said Contract by any of the parties to the Joint Venture, the party(s) will be fully responsible for the successful performance of the Contract and to carry out all the obligations and responsibilities under the Contract in accordance with the requirements of the Contract.

3. Further, if the Employer suffers any loss or damage on account of any breach in the Contract or any shortfall in the performance of the equipment in meeting the performances guaranteed as per the specification in terms of the Contract, the Party(s) of these presents will promptly make good such loss or damages caused to the Employer, on its demand without any demur. It shall not be necessary or obligatory for the Employer to proceed against Lead Partner to these presents before proceeding against or dealing with the other Party(s), the Employer can proceed against any of the parties who shall be jointly and severally liable for the performance and all other liabilities/obligations under the Contract to the Employer.

4. The financial liability of the Parties of the Deed of Undertaking to the Employer in the event of award of Contract on the Joint Venture, with respect to any of the claims rising out of the performance or non-performance of the obligations set forth in the Deed of Undertaking, read in conjunction with the relevant conditions of the Contract shall, however not be limited in any way so as to restrict or limit the liabilities or obligations of any of the Parties of the Deed of Undertaking.

5. It is expressly understood and agreed between the Parties to this Letter of Intent that the responsibilities and obligations of each of the Parties shall be as delineated in Annexure attached with this Letter of Intent. It is further undertaken by the parties that the above sharing of responsibilities and obligations shall not in any

way be a limitation of joint and several responsibilities of the Parties under the Contract in the event of award on Joint Venture.

6. It is also understood that this Letter of Intent is provided for the purposes of undertaking joint and several liabilities of the partners to the Joint Venture for submission of the bid and performance of the Contract if awarded and that this Letter of Intent shall not be deemed to give rise to any additional liabilities or obligations, in any manner or any law, on any of the Parties to this Letter of Intent or on the Joint Venture, other than the express provisions of the Contract.

7. This Letter of Intent shall be construed and interpreted in accordance with the provisions of the Contract.

8. In case of an award of a Contract, we the parties to this Letter of Intent do hereby agree that we shall enter into Joint Venture Agreement as per proforma specified in this Section IV. Bidding Forms of the Bidding Documents which will be legally binding on all partners and we shall be jointly and severally responsible for furnishing a Contract performance security from a bank in favor of the Employer in the currency/currencies of the Contract.

9. It is further agreed that this Letter of Intent shall be irrevocable and shall form an integral part of the bid. It shall be effective from the date first mentioned above for all purposes and intents.

IN WITNESS WHEREOF, the Parties to this Letter of Intent have through their authorized representatives executed these presents and affixed Common Seals of their companies, on the day, month and year first mentioned above.

Common Seal of ……. has been affixed in my/ our presence pursuant to Board of Director's Resolution dated …….

For Lead Partner (Party No.-1)
For and on behalf of M/s
……..

Name ……..
Designation …….

(Signature of the authorized representative)

Signature …….

WITNESS :

I. ……

II. ……

Common Seal of …….
has been affixed in my/ our
presence pursuant to Board of
Director's Resolution dated …….

Name ……..

Designation ……

Signature ……

WITNESS :

I. ……

II. ……

For Party No.-2
For and on behalf of M/s……..

(Signature of the authorized
representative)

Common Seal of …….
has been affixed in my/ our
presence pursuant to Board of
Director's Resolution dated …….

Name ……..

Designation ……

Signature ……

WITNESS :

I. ……

II. ……

For Party No.-3
For and on behalf of M/s.
……..

(Signature of the authorized
representative)

Notes:

1. In the event that the successful Bidder is a joint venture formed of two or more companies, the Employer requires that the parties to the joint venture accept joint and several liabilities for all obligations under the Contract.
2. The maximum number of J.V. partners is three (3).

SECTION IV

FORM OF BID & APPENDICES TO BID

Section –IV: FORM OF TECHNICAL AND PRICE BID AND APPENDICES TO BID FOR TENDER NO. CE/AMN/P&S/T-370-2026 (LOT-III)

Sr. No.	Description	Page No.
1.	Form of Technical Bid	A-1 to A-2
2.	Form of Financial Bid	A-3 to A-4
Appendices to Bid		
3.	Appendix A to Bid: Special Stipulations	A-5
4.	Appendix B to Bid: Foreign Currency Requirements	A-6
5.	Appendix C to Bid: Price Adjustment	A-7 to A-9
6.	Appendix D to Bid: Bill of Quantities	A-10 to A-12
7.	Appendix E to Bid: Proposed Replacement Schedule	A-16 to A-17
8.	Appendix F to Bid: Method of Performing Works	A-18
9.	Appendix G to Bid: Proposed Personnel	A-19 to A-20
10.	Appendix H to Bid: Equipment	A-21 to A-22
11.	Appendix I to Bid: Construction Camp and Housing Facilities	A-23
12.	Appendix J to Bid: Organization Chart for Supervisory Staff	A-24
13.	Appendix K to Bid: List of Subcontractors	A-25
14.	Appendix L to Bid: Source of Material	A-26
15.	Appendix M to Bid: Estimated Progress Payments	A-27
16.	Appendix N to Bid: Deviations	A-28 to A-29
17.	Appendix O to Bid: Integrity Pact	A-30 to A-31

18.	**Appendix P to Bid: Bidder's Qualification Forms**		
	QF-1	General Information	A-33
	QF-2	Construction Experience	A-34
	QF-3	Performance Certificate	A-35
	QF-4	Current Contract Commitments	A-36
	QF-5	Financial Data	A-37
	QF-6	Annual Turnover Data	A-38
	QF-7	Financial Resources	A-39
	QF-8	Bank Certificate	A-40
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19.	Appendix Q to Bid: Undertaking of bid security		A-42
20.	**Standard Forms**		
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	II	Form of Performance Security	A-46 to A-47
	III	Form of Contract Agreement	A-48 to A-49
	IV	Mobilization Advance Guarantee/Bond (N/A)	A-50 to A-51

Form of Technical Bid

Bid Reference No. _____

_____

_____

(Name of Contract/Works)

To:

_____

_____

_____

We, the undersigned, declare that:

(a) We have examined the Bidding Documents including Instructions to Bidders, Bidding Data, Conditions of Contract, Contract Data, Specifications, Drawings, if any, Schedule of Prices and Addenda Nos. _____ in accordance with Instructions to Bidders (IB) 9 for the execution of the above-named Works, we, the undersigned, being a company doing business under the name of and address _____ and being duly incorporated under the laws of Pakistan hereby offer to execute and complete such Works and remedy any defects therein in conformity with the said Documents including Addenda.

(b) Our Bid consisting of the Technical Bid and the Price Bid shall be valid for a period of …… days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;

(c) As security for due performance of the under takings and obligations of our bid, we submit here with a Bid security, in the amount specified in Bidding Data Sheet, which is valid (at least) 28 days beyond validity of Bid itself.

(d) We undertake, if our Bid is accepted, to commence the Works and to deliver and complete the Works comprised in the Contract within the time(s) stated in Contract Data.

(e) We are not participating, as a Bidder or as a subcontractor, in more than one bid in this bidding process, other than alternative offers submitted in accordance with IB16 (as applicable).

(f) We agree to permit Employer or its representative to inspect our accounts and records and other documents relating to the bid submission and to have them audited by

auditors. This Technical Bid IB.11.1 of the permission is extended for verification of any information provided in our which comprises all documents enclosed herewith in accordance with Bidding Data Sheet.

Name……

In the capacity of……

Signed……

Duly authorized to sign the Bid for and on behalf of……

Date……

Address……

Email……

Form of Price Bid

Bid Reference No. _____

_____

_____

(Name of Contract/Works)

To:

_____

_____

_____

We, the undersigned, declare that:

(a) We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders (IB)9;

(b) The total price of our Bid, excluding any discounts offered including Addenda thereto for the Total Bid Price of Rupees

(Rupees_____)

or such other sum as may be ascertained in accordance with the said Documents.

(c) The discounts offered and the methodology for their application is: …….

(d) Our Bid shall be valid for a period of …….. days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;

(e) If our Bid is accepted, we commit to obtain a performance security in accordance with the Bidding Documents;

(f) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed and we do hereby declare that the Bid is made without any collusion, comparison of figures or arrangement with any other bidder for the Works.

(g) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.

(h) We agree to permit Employer or its representative to inspect our accounts and records and other documents relating to the bid submission and to have them

audited by auditors. This permission is extended for verification of any information provided in our Technical Bid which comprises all documents enclosed herewith in accordance with IB.11.1 of the Bidding Data Sheet.

(i) If awarded the contract, the person named below shall act as Contractor's Representative.

(j) We do hereby declare that the Bid is made without any collusion, comparison of figures or arrangement with any other person or persons making a bid for the Works.

Name……

In the capacity of…….

Signed……

Duly authorized to sign the Bid for and on behalf of……

Date……

Address……

Email……

Appendix-A to Bid

SPECIAL STIPULATIONS
Clause
Conditions of Contract

1.	Engineer's Authority to issue Variation in emergency	2.1	15% of the Contract Price stated in the Letter of Acceptance.
2.	Law Applicable	5.1(b)	The law to be applied is the law of Islamic Republic of Pakistan.
3.	Amount of Performance Security	10.1	10% of Contract Price stated in the Letter of Acceptance.
4.	Time for Furnishing Programme	14.1	Within 07 days from the date of receipt of Letter of Acceptance.
5.	Minimum amount of third-party Insurance	23.2	Rs. 250,000 per occurrence with number of occurrences unlimited.
6.	Time for Commencement	41.1	Within 14 days from the date of receipt of the letter of acceptance.
7.	Time for Completion	43.1, 48.2	30-days from the date of acceptance of NOA or within 10 days of the final approved shutdown by ISMO Islamabad, whichever is later.
8.	a) Amount of Liquidated Damages	47.1	0.5% for each day of delay in completion of the Works subject to a maximum of 10% of Contract Price stated in the Letter of Acceptance.
	b) Amount of Bonus	47.3	Not Applicable
9.	Defects Liability Period	49.1	365 days from the effective date of Taking Over Certificate.
10.	Percentage of Retention Money	60.2	10% of the amount of Interim Payment Certificate.
11.	Limit of Retention Money	60.2	10% of Contract Price stated in the Letter of Acceptance.
12.	Minimum amount of Interim Payment Certificates (Running Bills)	60.2	20% (at least) more than the amount of all applicable retentions and deductions on the said bill.
13.	Time of Payment from delivery of Engineer's Interim Payment Certificate to the Employer.	60.10	As per NGC's policy
14.	Mobilization Advance (Interest Free)	60.12	Not Applicable

Appendix-B To Bid

FOREIGN CURRENCY REQUIREMENTS (Not Used)

1. The Bidder may indicate here in below his requirements of foreign currency (if any), with reference to various inputs to the Works.

2. Foreign Currency Requirement as percentage of the Bid Price excluding Provisional Sums _____%.

3. Table of Exchange Rates

Unit of Currency	**Equivalent in Pak. Rupees**
Australian Dollar	----------
Euro	----------
Japanese Yen	----------
U.K. Pound	----------
U.S. Dollars	----------
----------	----------
----------	----------

Appendix-C to Bid

PRICE ADJUSTMENT (Not Applicable)

Price Adjustment Formula for BOQ item 2 (foundations) and "additional work (items 6, 7, 8, 14 & 15)"

Prices payable to the Contractor, in accordance with the Contract, shall be subject to adjustment during performance of the Contract to reflect changes in the cost of civil works' inputs viz. skilled & unskilled labor, reinforcing steel bars, cement, petrol and diesel, in accordance with the formula given here below, for any increase or decrease in the costs of the following:

(a) Rate of wages of skilled or unskilled labour.
(b) Petrol and Diesel Fuel
(c) Cement
(d) Reinforcing Steel Bars

Not Applicable

No increase in the price of each of the above-mentioned components will be allowed beyond the scheduled completion period of Civil Works if the price increase is because of reasons attributable to the Contractor. The escalation for each component shall be according to the scheduled completion of that item provided that extension is granted.

For the avoidance of doubt, the price adjustment regarding Civil Works carried out later than the Scheduled period, shall continue to be paid at the revised rate of the constituent prevailing as on the date of its scheduled completion. For each claim, the Contractor shall submit invoice from each source of supply.

The increase or decrease in the amount payable by Employer to the Contractor shall be calculated on the basis of the following formula:

$$A1 = A/100 \left(30 + 20 \frac{UL1}{UL} + 14 \frac{L1}{L} + 5 \frac{P1}{P} + 11 \frac{D1}{D} + 15 \frac{S1}{S} + 5 \frac{C1}{C}\right)$$

Where

A1 = Revised amount for payment.

A = is the amount payable to the Contractor at the rates entered in Price Schedules, for the work executed after the date of change in the rates or prices of labour or materials mentioned in this section.

UL = is the basic minimum monthly wage rate for unskilled labour (PKR per month) twenty eight (28) days prior to the date of Bid opening as stated in Table 11.12 (Intercity Prices of Construction Input Items and Labour Wages) of Monthly Statistical Bulletin for the Karachi City, published by the Federal Bureau of Statistics (FBS), Statistics Division, Government of Pakistan.

UL1 = is the revised minimum monthly wage rate for unskilled labour (PKR per month) twenty-eight (28) days prior to the start of the execution month as stated in Table 11.12 (Intercity Prices of Construction Input Items and Labour Wages) of Monthly Statistical Bulletin for the Karachi City, published by the FBS, Statistics Division, Government of Pakistan.

L = is the basic minimum monthly wage rate for skilled labour (mason) (PKR per month) twenty-eight (28) days prior to the date of Bid opening as stated in Table 11.12 (Intercity Prices of Construction Input Items and Labour Wages) of Monthly Statistical Bulletin for the Karachi City, published by the FBS, Statistics Division, Government of Pakistan.

L1 = is the revised minimum monthly wage rate for skilled labour (mason) (PKR per month) twenty-eight (28) days prior to start of execution month as stated in Table 11.12 (Intercity Prices of Construction Input Items and Labour Wages) of Monthly Statistical Bulletin for the Karachi City, published by the FBS, Statistics Division, Government of Pakistan.

P = is the basic rate of premium motor gasoline (for sale through retail outlets), maximum Ex-Depot Sales Price (PKR per liter), twenty-eight (28) days prior to the date of Bid opening as notified by Pakistan State Oil (PSO) Limited.

P1 = is the revised rate of premium motor gasoline (for sale through retail outlets), maximum Ex-Depot Sales Price (PKR per litter), twenty-eight (28) days prior to execution month as notified by Pakistan State Oil (PSO) Limited.

D = is the basic rate of high-speed diesel oil (HSD) maximum Ex-Depot Sales Price (PKR per liter), twenty-eight (28) days prior to the date of Bid opening as notified by Pakistan State Oil (PSO) Limited.

D1 = is the revised rate of high-speed diesel oil (HSD) maximum Ex-Depot Sales Price (PKR per liter), twenty-eight (28) days prior to execution month as notified by Pakistan State Oil (PSO) Limited.

S = is the basic rate of reinforcing steel ½ inch round MS bars (PKR per metric ton), twenty-eight (28) days prior to the date of Bid opening, as stated in Table 11.10 (Intercity Wholesale Prices of Selected Commodities) Monthly Statistical Bulletin for the Karachi City, published by the FBS, Statistics Division, Government of Pakistan.

S1 = is the revised rate of reinforcing steel ½ inch round MS bars (PKR per metric ton), twenty-eight (28) days prior to the start of execution month, as stated in Table 11.10 (Intercity Wholesale Prices of Selected Commodities) of Monthly Statistical Bulletin for the Karachi City, published by the FBS, Statistics Division, Government of Pakistan.

C = is the basic rate of Ordinary Portland Cement (PKR per bag), twenty-eight (28) days prior to the date of Bid opening as stated in Table 11.12 (Intercity Prices of Construction Input Items and Labour Wages) of Monthly Statistical Bulletin for the Karachi City, published by the FBS, Statistics Division, Government of Pakistan.

C1 = is the revised rate of Ordinary Portland Cement (PKR per bag), twenty-eight (28) days prior to the start of execution month as stated in Table 11.12 (Intercity Prices of Construction Input Items and Labour Wages) of Monthly Statistical Bulletin for the Karachi City, published by the FBS, Statistics Division, Government of Pakistan.

30 = is the fixed percentage coefficient.

In determining the amount of any increase or decrease to the Contract Price pursuant to this section, no account shall be taken of any fluctuation as a result of Government Orders or otherwise in the cost of benefits i.e. bonus, gratuity, education, group insurance, paid holidays, casual leaves, workmen compensation etc. Any increase or decrease in the price of materials which have not been used on the project during that month shall not be considered in the adjustment of the Contract Price, and the ratio will be taken as one (1). No price adjustment shall be payable on the portion of the Contract Price paid to the Contractor as an Advance Payment.

Appendix-D to Bid

BILL OF QUANTITIES
A. Preamble

General

1. The Schedule of Quantities shall be read in conjunction with the Conditions of Contract, Specifications and Drawings. The Schedules do not generally give a full description of the Services to be performed under each item. Bidders shall be deemed to have read the Technical Specifications and other sections of the Bidding Documents and reviewed the Drawings to ascertain the full scope of the requirements included in each item prior to filling in the rates and prices. The entered rates and prices shall be deemed to include for the full scope as aforesaid, including overheads and profit.

2. If bidders are unclear or uncertain as to the scope of any item, they shall seek clarification in accordance with IB 8 prior to submitting their bids.

3. The quantities given in the Schedule of Quantities are estimated and provisional, and are given to provide a common basis for bidding. The basis of payment will be the actual quantities of work executed and measured by the Contractor and verified by the Engineer and valued at the rates and prices entered in the priced Schedule of Quantities, where applicable, and otherwise at such rates and prices as the Engineer may fix in accordance with provisions of the Contract.

4. The rates and prices entered in the priced Schedule of Quantities shall, except insofar as it is otherwise provided under the Contract include all costs of Contractor's plant, labor, supervision, materials, execution, insurance, profit, taxes and duties, together with all general risks, liabilities and obligations set out or implied in the Contract. Furthermore, all duties, taxes and other levies payable by the Contractor under the Contract, or for any other cause, as on the date 28 days prior to deadline for submission of Bids, shall be included in the rates and prices and the total Bid Price submitted by the Bidder.

5. A rate or price shall be entered against each item in the priced Schedule of Quantities, whether quantities are stated or not. The cost of items against which the Contractor will have failed to enter a rate or price shall be deemed to be covered by other rates and prices entered in the Schedule of Quantities.

6. The whole cost of complying with the provisions of the Contract shall be included in the items provided in the priced Schedule of Quantities, and where no items are provided, the cost shall be deemed to be distributed among the rates and prices entered for the related items of the Works.

7. General directions and description of work and materials are not necessarily repeated nor summarized in the Schedule of Quantities. References to the relevant sections of the Bidding Documents shall be made before entering prices against each item in the priced Schedule of Quantities.

8. Provisional sums if included and so designated in the Schedule of Quantities shall be expended in whole or in part at the direction and discretion of the Engineer in accordance with Conditions of Contract.

Units & Abbreviations

9. Units of measurement, symbols and abbreviations expressed in the Bidding Documents shall comply with the System International Unites (SI Units).

10. The following abbreviations shall be used in the Price Schedules:

Abbreviation

Pakistani Rupees	PKR
Number	No.
Kilometre	km
Kilogram	kg
Cubic Meter	Cu.m
Provisional Sums	PS
Percent	%
Quantity	Qty

Pricing

11. Prices shall be filled in indelible ink, and any alterations necessary due to errors, etc., shall be initialed by the Bidder.

12. As specified in the Bid Data Sheet prices shall be subject to adjustment in accordance with the corresponding Appendix-E to Price Bid (Price Adjustment) to the Contract Agreement.

13. For each item, bidders shall complete each appropriate column in the respective Schedules, giving the price breakdown as indicated in the Schedules. Prices given in the Schedules against each item shall be for the scope covered by that item as detailed in Section 6 (Employer's Requirements), Technical Specifications, Drawings or elsewhere in the Bidding Documents.

14. The TOTAL for each Schedule and TOTAL of the Grand Summary shall be deemed to be the total price for executing and completing the Facilities in accordance with the Contract, whether or not each individual item has been priced.

15. When requested by the Employer for the purposes of making payments or part payments, valuing variations or evaluating claims, or for such other purposes as the Employer may reasonably require, the Contractor shall provide the Employer with a breakdown of any composite or lump sum items included in the Schedules.

16. Except as otherwise expressly provided under the Conditions of Contract, the unit rates and lump sum amounts entered in the Price Schedules will be the rates at which the Contractor will be paid, and shall be deemed to include for the full scope and all costs incurred by the Contractor in the performance of the Facilities, the provision of services

including his overheads, income tax, super tax, other indirect costs, profits and costs of accepting the general risks, liabilities and obligations set forth or implied in the Contract, except for such costs which are specified as reimbursable under the Contract.

17. Arithmetic errors will be corrected by the Employer as per ITB 31.

18. Price of any other item not specifically covered in the Price Schedules but is required for the completion, commissioning and operation of the overhead transmission line shall be deemed to be included in the Schedule of Quantities.

19. The Contractor of any Lot may be required by the Engineer/Employer to carry out foundation /installation work on any location falling in any other Lot.

20. The Contractor shall take all the safeguards at site for safety/security of men, material and machinery at his own responsibility and cost.

NATIONAL GRID COMPANY of PAKISTAN

BOQ for Replacement of Normal Disc Insulators with RTV Coated Disc Insulators of 220KV Transmission Lines under Field Operations Lahore (Lot-III)

Description	Unit	Quantity (Nos.)	Unit Rate PKR.	Total Price Exclusive of Taxes
1	2	3	4	5=(3X4)
Replacement of existing Normal Type Disc Insulators with RTV Coated Disc Insulators of 220KV Transmission Lines (Lot-III) 1- 220KV T/L Lahore North-Ravi CCT-II 72 Towers 2- 220KV T/L Lahore North-Sheikhupura CCT 31 Towers 3- 220KV T/L Lahore North-KSK CCT-II 36 Towers **The Scope of work to be carried out is as under.** i) Dismantling of existing disc Insulators and packing, shifting/ transportation from site to NGC designated store. ii) Shifting/Transportation of 100KN, 120KN RTV Coated Disc insulators from A-Type Store NKLP Lahore to Site stores iii) Installation of RTV Coated Disc Insulators iv) The work to be carried out during Shut down on daily basis.	Towers	139		
			Total:	
			Provincial Service Tax @ 16% (In Punjab Province)	
			Grand Total:	

CONDITIONS:

1. The quantities mentioned in the BOQ are estimated quantities.
2. Contractor will collect RTV coated disc insulators from A-Type Store, NKLP NGC Lahore.
3. The breakup of unit rates for each item/works quoted in the BOQ shall be provided with the bid in accordance with the design provided with the tender and the work at site shall be executed as per construction drawings provided/approved by the Engineer.
4. In case of discrepancy between unit price and total price, unit price shall prevail and the payment will be made accordingly.
5. The cost quoted for above works shall include cost of labor and cost of all accessories / material / equipment required for successful completion and operation along with clearance of Right of Way (RoW), if any.
6. The rates of above items are to be quoted by the tenderers will be considered on item rate basis.
7. All pages of tender documents shall be initialized/signature by the person or persons with signed the bid.
8. Omission & errors can be rectified at any stage.
9. No extra payment will be made on account of fluctuation in prices of labour, fuel, lubrication and material etc.
10. The work will be completed within 30-days from the date of acceptance of NOA or within 10 days of the final approved shutdown by ISMO Islamabad, whichever is later.

Name & Signature of Bidder: _____

Appendix-E to Bid
Sheet 1 of 2

PROPOSED REPLACEMENT SCHEDULE

Pursuant to Sub-Clause 43.1 of the General Conditions of Contract, the Works shall be completed on or before the date stated in Appendix-A to Bid. The Bidder shall provide as Appendix-E to Bid, the Construction Schedule in the bar chart (CPM, PERT or any other to be specified herein) showing the sequence of work items and the period of time during which he proposes to complete the Works including the activities like mobilization, survey for stalking, replacement of existing disc insulators with RTV coated disc insulators on 220kV Transmission Lines of Lahore region and returning of dismantled insulators to designated NGC store, to be executed under the Contract. It shall include but not limited to the following:

Sr. No.	Description of Work	Period in days from the effective date of contract/ approval of shutdown
1.	Establishment of site office	
2.	Replacement of Disc Insulators on 220kV KSK-QABP-II circuit a) Commencement b) Completion	
3.	Returning of dismantled insulators to NGC Store a) Commencement b) Completion	
4.	Replacement of Disc Insulators on 220kV Wapda Town-Sheikhupura circuit a) Commencement b) Completion	
5.	Returning of dismantled insulators to NGC Store a) Commencement b) Completion	

To provide the accumulative effective of the activities per month, the bidder shall also provide the graph/ chart as following:

Sr. No.	Description	Days				
1.	Signing of contract	6	12	18	24	30
2.	Effective Date					
3.	Mobilization					
4.	Replacement of Disc Insulators on 220kV KSK-QABP-II circuit					
5.	Returning of dismantled insulators to NGC Store					
6.	Replacement of Disc Insulators on 220kV Wapda Town-Sheikhupura circuit					
7.	Returning of dismantled insulators to NGC Store					
8.	Testing & commissioning (N/A)					

The proposed program of Works shall base on the Schedule of Implementation (30 days) as per Bidding Documents.

Appendix-E to Bid
Sheet 2 of 2

Note: The bidder shall also indicate the construction crews employed to achieve the completion target for the following:

Type of Crews	No. of Crew employed	Expected Progress/month/crew*
Shifting Crew		
Dismantling & Replacement Crew		

*****Mention the required time per tower of a crew to complete a certain activity e.g., dismantling, replacement and shifting of insulators.

Appendix-F to Bid

METHOD OF PERFORMING THE WORK

The Bidder is required to submit a narrative outlining the method of performing the Work. The narrative should indicate in detail and include but not be limited to:

1. Organization Chart indicating head office and field office personnel involved in management and supervision, engineering, equipment maintenance and purchasing.

2. Mobilization in Pakistan, the type of facilities including personnel accommodation, office accommodation, provision for maintenance and for storage, communications, security and other services to be used.

3. The method of executing the Works, the procedures for installation of disc insulators and machinery and transportation of equipment and materials to the site.

4. Quality control / Quality assurance measures to be adopted including procedures to be followed for carrying out all tests required under specifications.

Appendix-G to Bid

Personnel

Form PER – 1: Proposed Personnel

Bidders should provide the names of suitably qualified personnel to meet the specified requirements for each of the positions listed in Section 2. The data on their experience should be supplied using the Form below for each candidate.

1.	**Title of position**
	Name
2.	**Title of position***
	Name
3.	**Title of position***
	Name
4.	**Title of position***
	Name
5.	**Title of position***
	Name

Form PER – 2: Resume of Proposed Personnel

The Bidder shall provide all the information requested below. Fields with asterisk (*) shall be used for evaluation.

Position*		
Personnel information	**Name**	**Date of birth**
	Professional qualifications	
Present employment	**Name of employer**	
	Address of employer	
	Telephone	**Contact (manager / personnel officer)**
	Fax	**E-mail**
	Job title	**Years with present employer**

Summarize professional experience in reverse chronological order. Indicate particular technical and managerial experience relevant to the project.

From*	To*	Company, Project, Position and Relevant Technical and Management Experience*

Appendix-H to Bid

EQUIPMENT

Form EQ – 1: List of Major Equipment – Related Items

The Bidder will provide on Sheet 2 of this Appendix a list of all major equipment and related items, under separate heading for items owned, to be purchased or to be arranged on lease by him to carry out the Works. The information shall include make, type, capacity, and anticipated period of utilization for all equipment which shall be in sufficient detail to demonstrate fully that the equipment will meet all requirements of the Specifications. The list of major equipment for construction works of the project should be addressed under the following categories:

a) Right of way
b) Survey for staking
c) Foundation work (If applicable)
    i) For dry foundation crew
    ii) For crew working in water logged area (If applicable)
d) Pile work/Pile Caps with Beams (If applicable)
e) Dismantling of Existing Disc Insulators and Installation of RTV Coated Insulators
f) Any other

Form EQ – 2: List of Major Equipment

Owned Purchased or Leased	Description of Unit (Make, Model, Year)	Capacity HP Rating	Condition	Present Location or Source	Date of Delivery at Site	Period of Work on Project
1	2	3	4	5	6	7
A) Right of way **a**. Owned **b.** To be Purchased **c.** To be arranged on Lease						
B) Survey for staking **a**. Owned **b.** To be Purchased **c.** To be arranged on Lease						
C) Foundation work* (If applicable) **a**. Owned **b.** To be Purchased **c.** To be arranged on Lease						
D) Pile work/Pile Caps with Beams (If Applicable) **a**. Owned **b.** To be Purchased **c.** To be arranged on Lease						
E) Dismantling of Insulators **a**. Owned **b.** To be Purchased **c.** To be arranged on Lease						
F) Installation of Insulators **a**. Owned **b.** To be Purchased **c.** To be arranged on Lease						
G) Conductor stringing (if applicable) **a**. Owned **b.** To be Purchased **c.** To be arranged on Lease						

* Foundation work will involve both dry type foundation and water logged foundation equipment.

Appendix-I to Bid

CONSTRUCTION CAMP AND HOUSING FACILITIES

The Contractor in accordance with Clause 34 of the Conditions of Contract shall provide description of his construction camp's facilities and staff housing requirements.

The Contractor shall be responsible for pumps, electrical power, water and electrical distribution systems, and sewerage system including all fittings, pipes and other items necessary for servicing the Contractor's construction camp.

The Bidder shall list or explain his plans for providing these facilities for the service of the Contract as follows:

i. Site Preparation (clearing, land preparation, etc.).

2. Provision of Services.

   a) Power (expected power load, etc.).
   b) Water (required amount and system proposed).
   c) Sanitation (sewage disposal system, etc.).

3. Construction of Facilities

   a) Contractor's Office. Workshop and Work Areas (areas required and proposed layout, type of construction of buildings, etc.).
   b) Warehouses and Storage Areas (area required, type of construction and layout).
   c) Housing and Staff Facilities (Plans for housing for proposed staff, layout, type of construction, etc.).

4. Construction Equipment Assembly and Preparation (detailed plans for carrying out this activity).

5. Other Items Proposed (Security services, etc.).

6. Detail of testing Lab with testing equipment etc.

Appendix-J to Bid

ORGANIZATION CHART
FOR THE
SUPERVISORY STAFF AND LABOR

Appendix-K to Bid

LIST OF SUBCONTRACTORS

I/We intend to subcontract the following parts of the Work to subcontractors. In my/our opinion, the subcontractors named hereunder are reliable and competent to perform that part of the work for which each is listed.

Enclosed are documentation outlining experience of subcontractors, the curriculum vitae and experience of their key personnel who will be assigned to the Contract, equipment to be supplied by them, size, location and type of contracts carried out in the past.

Part of Works (Give Details)	**Subcontractor (With Complete Address)**
1	**2**

Appendix-L to Bid

SOURCES OF MATERIAL
LIST OF MATERIALS LIKE CEMENT, REINFORCING STEEL

The bidder shall list in this Schedule the names of materials forming part of tower foundations such as cement, reinforcing steel which he intends to procure in connection with this Contract along with the names and complete addresses of the sources.

Name of Goods/Material/ Equipment	Name of Factory	Address

Use additional sheets if required.

Appendix-M To Bid

ESTIMATED PROGRESS PAYMENTS

Bidder's estimate of the value of work which would be executed by him during each of the periods stated below, based on his Program of Works and the Rates in the Schedule of Prices,

Period	Amounts (Rs.)
1st Month	
2nd Month	
Total Bid Price	

Initials of Signatory to Bid: ……

Appendix-N to Bid

DEVIATIONS

Form D1-Deviations from Contractual Conditions

Deviations if any, which the bidder has taken to the Contractual Conditions in preparation of his bid, must be listed below.

Sr. No.	Clause No. /Section No.	Deviations

Note: Attach additional sheets, if necessary.

Form D2-Deviations from Technical Conditions

Deviations if any, which the bidder has taken to the Technical Provisions in preparation of his bid, must be listed below.

Sr. No.	Clause No. /Section No.	Deviations

Note: Attach additional sheets, if necessary.

Appendix-O to Bid

INTEGRITY PACT

**DECLARATION OF FEES, COMMISSION AND BROKERAGE ETC.
PAYABLE BY THE SUPPLIERS OF GOODS, SERVICES & WORKS
IN CONTRACTS WORTH RS. 10.00 MILLION OR MORE**

Contract No._____ Dated _____
Contract Value: _____
Contract Title: _____

[Name of Supplier] hereby declares that it has not obtained or induced the procurement of any contract, right, interest, privilege or other obligation or benefit from Government of Pakistan (GoP) or any administrative subdivision or agency thereof or any other entity owned or controlled by GoP through any corrupt business practice.

Without limiting the generality of the foregoing, [name of Supplier] represents and warrants that it has fully declared the brokerage, commission, fees etc. paid or payable to anyone and not given or agreed to give and shall not give or agree to give to anyone within or outside Pakistan either directly or indirectly through any natural or juridical person, including its affiliate, agent, associate, broker, consultant, director, promoter, shareholder, sponsor or subsidiary, any commission, gratification, bribe, finder's fee or kickback, whether described as consultation fee or otherwise, with the object of obtaining or inducing the procurement of a contract, right, interest, privilege or other obligation or benefit in whatsoever form from GoP, except that which has been expressly declared pursuant hereto.

[name of Supplier] certifies that it has made and will make full disclosure of all agreements and arrangements with all persons in respect of or related to the transaction with GoP and has not taken any action or will not take any action to circumvent the above declaration, representation or warranty.

[name of Supplier] accepts full responsibility and strict liability for making any false declaration, not making full disclosure, misrepresenting facts or taking any action likely to defeat the purpose of this declaration, representation and warranty. It agrees that any contract, right, interest, privilege or other obligation or benefit obtained or procured as aforesaid shall, without prejudice to any other rights and remedies available to GoP under any law, contract or other instrument, be voidable at the option of GoP.

Notwithstanding any rights and remedies exercised by GoP in this regard, [name of Supplier] agrees to indemnify GoP for any loss or damage incurred by it on account of its corrupt business practices and further pay compensation to GoP in an amount equivalent to ten time the sum of any commission, gratification, bribe, finder's fee or kickback given by [name of

Supplier] as aforesaid for the purpose of obtaining or inducing the procurement of any contract, right, interest, privilege or other obligation or benefit in whatsoever form from GoP.

Name of Buyer: ……	Name of Seller/Supplier: ……
Signature: ……	Signature: ……
[Seal]	[Seal]

Appendix-P to Bid

BIDDER'S QUALIFICATION FORMS

QF-1	General Information
QF-2	Construction Experience
QF-3	Performance Certificate
QF-4	Current Contract Commitments
QF-5	Financial Data
QF-6	Annual Turnover Data
QF-7	Financial Resources
QF-8	Bank Certificate
QF-9	Pending Litigation

Note:-

1. These forms shall be filled up and furnished by the Bidder and its Joint Venture partner(s), if any.
2. If necessary, additional sheets may be added to the forms. Each page of each form should be clearly marked in the right top corner as follows: Form QF1, page 1; Form QF1, page 2, etc.
3. Some forms will require attachments. Such attachments should be clearly marked as follows: Attachment 1 to Form QF1, Attachment 2 to Form QF1, etc.

Form QF-1: General Information

Bidder and its Joint Venture Partner(s) and/or Subcontractors are requested to complete the information in this form. Nationally information of Bidders should also be provided.

1.	Name of Bidder	
2.	Head office address	
3.	Local office address (if any)	
4.	Telephone	Contract
5.	Facsimile	e-mail
6.	Place of incorporation/registration	Year of incorporation/registration
7.	Main lines of Business 1. 2. 3. 4.	 Since: Since: Since: Since:

Note:
Copies of following credentials shall be attached:

(a) Copy of incorporation/registration certificate
(b) Organization chart
(c) PEC registration certificate in the appropriate category

Signature and Seal of Bidder:

Form QF-2: Construction Experience

Note: To be filled in accordance with criteria described in clause IB3.1 (b) Section-II of the bidding documents

(For a period of Last 10 Years)

Name of the Project: ……..

Order Placed by (full address of Employer)	Order No. and date	Description of Works	Value of order	Date of completion as per contract	Date of actual completion	Remarks indicating reasons for late completion, if any	Has the project been running satisfactorily ? (Attach a certificate from the Employer)	Contact person along with Telephone No., Fax No. and email address

Signature and Seal of the Bidder……

Place:

Date:

Form QF-3: Performance Certificate

(To be issued on the Letter Head of Issuing Authority)

It is to certify that M/s._____ has conducted the following works against mentioned project.

Sr.No.	Contract No. & Date	Designation & address of order placing authority/User	Name of Project	Description of Works	Date of Completion	Work Performance

The above services/Works have been performed against our Project and their performance is found satisfactory.

Date of issuing _____

Signature of issuing authority with seal
Name and designation of issuing authority
Address along with Email, Phone No. and
Fax of issuing authority

Note:

i. In case of those bidders who have provided services to NGC shall furnish the details of such works in the above Performa which shall be signed by their authorized signatory along with seal and certificate is not required from the Employer in this respect.

ii. In case the performance certificate is not verifiable through the given contact address and email, the bid may be rejected.

Form QF-4: Current Contract Commitments

Bidders should provide information on their current commitments on all contracts that have been awarded, or for which a letter of intent or acceptance has been received, or for contracts approaching completion, but for which an unqualified, full completion certificate has yet to be issued.

Sr. No.	Particulars of works executed	Contract No. & Date	Name of Contract placing Authority	Ordered Value (PKR)	Value of balance work (PKR)
1	2	3	4	5	6
2					
3					
4					
5					
6					
7					

Signature & Seal of the bidder:

Form QF-5: Financial Data

Financial Data for Previous 3 Years			
Particular			
Total Assets			
Total Liabilities			
Net Worth			
Current Assets			
Current Liabilities			
Information from Income Statement			
Total Revenues			
Profits Before Taxes			
Profits After Taxes			
Attached are copies of financial statements (balance sheets including all related notes, and income statements) for the last three years, as indicated above, complying with the following conditions.			
• All such documents reflect the financial situation of the Bidder and not sister or parent companies. • Historic financial statements must be audited by a certified accountant. • Historic Financial statements must be complete, including all notes to the financial statements. • Historic financial statements must correspond to accounting periods already completed and audited (no statements for partial periods shall be requested or accepted).			

Signature and Seal of the bidder:

Form QF-6: Annual Turnover Data

Name of Bidder/Joint Venture Partner:

Bidder and its Joint Venture Partner(s) are requested to complete the information in this form separately. The information supplied should be the annual turnover of the Bidder, in terms of the amounts billed to clients for each year for work in progress or completed. In case of a joint venture, a copy of the Joint Venture Agreement must be attached. The Average Annual Turnover may include turnover of affiliates and subsidiaries to the extent of shareholding percentage of the Bidding company provided the turnover is accrued from similar business activity as the Bidding company. Average Annual Turnover will be considered on "Net Sales" i.e. without Sales tax, discounts etc.

Use a separate sheet for bidder and its Joint Venture partner(s).

Annual turnover data for the following last three fiscal years			
Year	**Amount Currency**	**Exchange Rate**	**Equivalent Amount (in the currency of Bid)**
	Average Annual Turnover		

Signature and Seal of Bidder:

Form QF-7: Financial Resources

Specify proposed sources of financing, such as liquid assets, lines of credit, and other financial means, available to meet the total construction cash flow demands of the subject contract.

Financial Resources		
Sr. No.	Source of Financing	Amount
1.		
2.		
3.		
4.		

Signature and Seal of Bidder:

Form QF-8: Bank Certificate

This is to certify that M/s…… is a reputed company with a good financial standing.

If the contract for the work, namely,…… is awarded to the above firm, we shall be able to provide overdraft/credit facilities to the extent of Rs…… to meet their working capital requirements for executing the above contract.

Signature of Senior Bank Manager:_____
Name of the Senior Bank Manager:_____
Address of the Bank:_____

Stamp of the Bank

Note: Certificate should be on the letter head of the bank.

- **Change the text as follows for Joint Venture:**

This is to certify that M/s…… who has formed a JV with M/s……and M/s……..for participating in this bid, is a reputed company with a good financial standing.

If the contract for the work, namely…… is awarded to the above Joint Venture, we shall be able to provide overdraft/credit facilities to the extent of Rs…… to M/s…….. to meet the working capital requirements for executing the above contract.

[This should be given by each of the JV members in proportion to their financial participation.]

Form QF-9: Pending Litigation

Each Bidder or member of a JV must fill in this form

Pending Litigation					
Year	Name of Other Party(s)	Matter of Dispute	Litigation where (Court/ arbitration)	Amount involved	Value of pending claim as a %age of net worth

Signature and Seal of the bidder:

Appendix-Q to Bid

UNDERTAKING OF BID SECURITY
(To be Submitted on a Non-Judicial Stamp Paper)

We _____ (name of Bidder) undertake that Bid Security in accordance with Clause IB-19 of the bidding document is enclosed with our Price bid.

Signature and Seal of the Bidder:

STANDARD FORMS

BID SECURITY (**Bank Guarantee)**

Security Executed on _____
(Date)
Name of Surety (Bank) with Address: _____
(Scheduled Bank in Pakistan)
Name of Principal (Bidder) with Address _____
_____
Penal Sum of Security Rupees. _____ (Rs. _____)
Bid Reference No. _____
KNOW ALL MEN BY THESE PRESENTS, that in pursuance of the terms of the Bid and at the request of the said Principal (Bidder) we, the Surety above named, are held and firmly bound unto **Chief Engineer (AM) North , National Grid Company of Pakistan Ltd (NGC)** (hereinafter called the 'Employer') in the sum stated above for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Bidder has submitted the accompanying Bid dated _____ for Bid No. _____ for_____ (Particulars of Bid) to the said Employer; and

WHEREAS, the Employer has required as a condition for considering said Bid that the Bidder furnishes a Bid Security in the above said sum from a Scheduled Bank in Pakistan or from a foreign bank duly counter-guaranteed by a Scheduled Bank in Pakistan, to the Employer, conditioned as under:

(1) that the Bid Security shall remain in force up to and including the date 28 days after the deadline for validity of bids as stated in the Instructions to Bidders or as it may be extended by the Employer, notice of which extension(s) to the Surety is hereby waived;

(2) that the Bid Security of unsuccessful Bidders will be returned by the Employer after expiry of its validity or upon signing of the Contract Agreement; and

(3) that in the event of failure of the successful Bidder to execute the proposed Contract Agreement for such work and furnish the required Performance Security, the entire said sum be paid immediately to the said Employer pursuant to Clause 15.6 of the Instruction to Bidders for the successful Bidder's failure to perform.

NOW THEREFORE, if the successful Bidder shall, within the period specified therefor, on the prescribed form presented to him for signature enter into a formal Contract with the said Employer in accordance with his Bid as accepted and furnish within twenty eight (28) days of his being requested to do so, a Performance Security with good and sufficient surety, as may be required, upon the form prescribed by the said Employer for the faithful performance and proper fulfilment of the said Contract or in the event of non-withdrawal of the said Bid within

the time specified for its validity then this obligation shall be void and of no effect, but otherwise to remain in full force and effect.

PROVIDED THAT the Surety shall forthwith pay the Employer the said sum upon first written demand of the Employer (without cavil or argument) and without requiring the Employer to prove or to show grounds or reasons for such demand, notice of which shall be sent by the Employer by registered post duly addressed to the Surety at its address given above.

PROVIDED ALSO THAT the Employer shall be the sole and final judge for deciding whether the Principal (Bidder) has duly performed his obligations to sign the Contract Agreement and to furnish the requisite Performance Security within the time stated above, or has defaulted in fulfilling said requirements and the Surety shall pay without objection the said sum upon demand from the Employer forthwith and without any reference to the Principal (Bidder) or any other person.

IN WITNESS WHEREOF, the above bounden Surety has executed the instrument under its seal on the date indicated above, the name and seal of the Surety being hereto affixed and these presents duly signed by its undersigned representative pursuant to authority of its governing body.

SURETY (Bank)

WITNESS: Signature _____

1. _____ Name _____

_____ Title _____

Corporate Secretary (Seal) Corporate Guarantor (Seal)

2. _____

_____

Name, Title & Address

FORM OF PERFORMANCE SECURITY
(Bank Guarantee)

Guarantee No._____
Executed on _____
Expiry date _____

[Letter by the Guarantor to the Employer]

Name of Guarantor (Bank) with address: _____
(Scheduled Bank in Pakistan)
Name of Principal (Contractor) with address: _____
_____
Penal Sum of Security (express in words and figures) _____
_____
Letter of Acceptance No. _____Dated _____

KNOW ALL MEN BY THESE PRESENTS, that in pursuance of the terms of the Bidding Documents and above said Letter of Acceptance (hereinafter called the Documents) and at the request of the said Principal we, the Guarantor above named, are held and firmly bound unto the _____ (hereinafter called the Employer) in the penal sum of the amount stated above for the payment of which sum well and truly to be made to the said Employer, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal has accepted the Employer's above said Letter of Acceptance for _____ _____ (Name of Contract) for the _____ _____ (Name of Project).

NOW THEREFORE, if the Principal (Contractor) shall well and truly perform and fulfill all the undertakings, covenants, terms and conditions of the said Documents during the original terms of the said Documents and any extensions thereof that may be granted by the Employer, with or without notice to the Guarantor, which notice is, hereby, waived and shall also well and truly perform and fulfill all the undertakings, covenants terms and conditions of the Contract and of any and all modifications of said Documents that may hereafter be made, notice of which modifications to the Guarantor being hereby waived, then, this obligation to be void; otherwise to remain in full force and virtue till all requirements of Clause 49, Defects Liability, of Conditions of Contract are fulfilled.

Our total liability under this Guarantee is limited to the sum stated above and it is a condition of any liability attaching to us under this Guarantee that the claim for payment in writing shall be received by us within the validity period of this Guarantee, failing which we shall be discharged of our liability, if any, under this Guarantee.

We, _____ (the Guarantor), waiving all objections and

defences under the Contract, do hereby irrevocably and independently guarantee to pay to the Employer without delay upon the Employer's first written demand without cavil or arguments and without requiring the Employer to prove or to show grounds or reasons for such demand any sum or sums up to the amount stated above, against the Employer's written declaration that the Principal has refused or failed to perform the obligations under the Contract which payment will be effected by the Guarantor to Employer's designated Bank & Account Number.

PROVIDED ALSO THAT the Employer shall be the sole and final judge for deciding whether the Principal (Contractor) has duly performed his obligations under the Contract or has defaulted in fulfilling said obligations and the Guarantor shall pay without objection any sum or sums up to the amount stated above upon first written demand from the Employer forthwith and without any reference to the Principal or any other person.

IN WITNESS WHEREOF, the above-bounden Guarantor has executed this Instrument under its seal on the date indicated above, the name and corporate seal of the Guarantor being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

_____
Guarantor (Bank)

Witness:

1. _____ Signature _____

_____ Name _____
Corporate Secretary (Seal)

Title _____

2. _____

_____ _____
Name, Title & Address Corporate Guarantor (Seal)

FORM OF CONTRACT AGREEMENT

THIS CONTRACT AGREEMENT (hereinafter called the "Agreement") made on the _____ day of _____ (month) 20_____ between _____ (hereafter called the "Employer") of the one part and _____ (hereafter called the "Contractor") of the other part.

WHEREAS the Employer is desirous that certain Works, viz _____ should be executed by the Contractor and has accepted a Bid by the Contractor for the execution and completion of such Works and the remedying of any defects therein.

NOW this Agreement witnesseth as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.

2. The following documents after incorporating addenda, if any, except those parts relating to Instructions to Bidders shall be deemed to form and be read and construed as part of this Agreement, viz:

   (a) The Contract Agreement;
   (b) The Letter of Acceptance;
   (c) The completed Form of Bid;
   (d) Special Stipulations (Appendix-A to Bid);
   (e) The Particular Conditions of Contract;
   (f) The General Conditions;
   (g) The priced Bill of Quantities;
   (h) The completed Appendices to Bid;
   (i) The Drawings;
   (j) The Specifications.
   (k) _____ (any other)

3. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to execute and complete the Works and remedy defects therein in conformity and in all respects with the provisions of the Contract.

4. The Employer hereby covenants to pay the Contractor, in consideration of the execution and completion of the Works as per provisions of the Contract, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS WHEREOF the parties hereto have caused this Agreement to be executed on the day, month and year first before written in accordance with their respective laws.

Signature of the Contactor	Signature of Employer
_____	_____
(Seal)	(Seal)
Signed, Sealed and Delivered in the presence of:	
Witness:	Witness:
_____	_____
(Name, Title and Address)	(Name, Title and Address)

MOBILIZATION ADVANCE GUARANTEE/BOND

Guarantee No._____ Date _____

WHEREAS _____(hereinafter called the 'Employer') has entered into a Contract for _____
(Particulars of Contract)
with _____ (hereinafter called the "Contractor').

AND WHEREAS, the Employer has agreed to advance to the Contractor, at the Contractor's request, an amount of Rupees _____ (Rs _____) which amount shall be advanced to the Contractor as per provisions of the Contract.

AND WHEREAS, the Employer has asked the Contractor to furnish Guarantee to secure the mobilization advance for the performance of his obligations under the said Contract.

AND WHEREAS, _____
(Scheduled Bank in Pakistan or Insurance Company acceptable to the Employer)
(hereinafter called the "Guarantor") at the request of the Contractor and in consideration of the Employer agreeing to make the above advance to the Contractor, has agreed to furnish the said Guarantee.

NOW, THEREFORE, the Guarantor hereby guarantees that the Contractor shall use the advance for the purpose of above mentioned Contract and if he fails and commits default in fulfilment of any of his obligations for which the advance payment is made, the Guarantor shall be liable to the Employer for payment not exceeding the aforementioned amount.

Notice in writing of any default, of which the Employer shall be the sole and final judge, on the part of the Contractor, shall be given by the Employer to the Guarantor, and on such first written demand, payment shall be made by the Guarantor of all sums then due under this Guarantee without any reference to the Contractor and without any objection.

This Guarantee shall remain in force until the advance is fully adjusted against payments from the Interim Payment Certificates of the Contractor or until _____whichever is earlier.
(Date)
The Guarantor's liability under this Guarantee shall not in any case exceed the sum of Rupees _____(Rs _____).

This Guarantee shall remain valid up to the aforesaid date and shall be null and void after the aforesaid date or earlier if the advance made to the Contractor is fully adjusted against payments from Interim Payment Certificates of the Contractor provided that the Guarantor agrees that the aforesaid period of validity shall be deemed to be extended if on the above mentioned date the advance payment is not fully adjusted.

GUARANTOR

1. Signature _____
2. Name _____
3. Title _____

WITNESS

1. _____
_____
Corporate Secretary (Seal)

2. _____ _____
(Name Title & Address) Corporate Guarantor (Seal)

SECTION V

GENERAL CONDITIONS OF CONTRACT

SECTION-IV GENERAL CONDITIONS OF CONTRACT

This bidding document follows the FIDIC conditions of contract for construction works. The Conditions of Contract Comprise of two Sections: Section-IV – General Conditions of Contract, and Section-V – Special Conditions of Contract.

All the general Conditions shall be as per the FIDIC documents indicated below. These shall be read along with the Particular Conditions of Contract for interpretation. In case of any discrepancy between these General Conditions of Contract and the Particular Conditions of the Contract of Section-V, the provisions under the latter shall govern.

FIDIC FEDERATION INTERNATIONALE DES INGENIEURS – CONSEILS

CONDITIONS OF CONTRACT FOR WORKS OF CIVIL ENGINEERING CONSTRUCTION

FOURTH EDITION 1987

Reprinted 1988 with editorial amendments
Reprinted 1992 with editorial amendments



FEDERATION INTERNATIONALE DES INGENIEURS-CONSEILS

CONDITIONS OF CONTRACT FOR WORKS OF CIVIL ENGINEERING CONSTRUCTION

PART I GENERAL CONDITIONS
WITH FORMS OF TENDER AND AGREEMENT

PART II CONDITIONS OF PARTICULAR APPLICATION
WITH GUIDELINES FOR PREPARATION OF PART II CLAUSES

FOURTH EDITION 1987

Reprinted 1988 with editorial amendments

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FEDERATION INTERNATIONALE DES INGENIEURS-CONSEILS

CONDITIONS OF CONTRACT FOR WORKS OF CIVIL ENGINEERING CONSTRUCTION

PART I GENERAL CONDITIONS

WITH FORMS OF TENDER AND AGREEMENT

FOURTH EDITION 1987
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FOREWORD

The terms of the Fourth Edition of the Conditions of Contract for Works of Civil Engineering Construction have been prepared by the Fédération Internationale des Ingénieurs Conseils (FIDIC) and are recommended for general use for the purpose of construction of such works where tenders are invited on an international basis. The Conditions, subject to minor modifications, are also suitable for use on domestic contracts.

The version in English of the Conditions is considered by FIDIC as the official and authentic text for the purpose of translation.

In the preparation of the Conditions it was recognised that while there are numerous Clauses which will be generally applicable there are some Clauses which must necessarily vary to take account of the circumstances and locality of the Works. The Clauses of general application have been grouped together in this document and are referred to as Part I – General Conditions. They have been printed in a form which will facilitate their inclusion as printed in the contract documents normally prepared.

The General Conditions are linked with the Conditions of Particular Application, referred to as Part II, by the corresponding numbering of the Clauses, so that Parts I and II together comprise the Conditions governing the rights and obligations of the parties.

Part II must be specially drafted to suit each individual Contract.

When dredging and certain types of reclamation work are involved special consideration must be given to Part II.

To assist in the preparation of Part II explanatory material and example clauses are published with the Conditions in a separately bound document entitled "Conditions of Contract for Works of Civil Engineering Construction, Part II – Conditions of Particular Application, with Guidelines for preparation of Part II Clauses, Fourth Edition".

FIDIC has published a "Guide to the Use of FIDIC Conditions of Contract for Works of Civil Engineering Construction" which includes comments on the provisions of the Fourth Edition of the Conditions. Users of the Fourth Edition may find it helpful to refer to this Guide.

It may also be helpful for users to refer to other FIDIC publications, such as:

Tendering Procedure (First Edition 1982)
Construction, Insurance and Law (1986)

FIDIC gratefully acknowledges the suggestions and comments it has received during the preparation of this edition from European International Contractors (EIC) as mandatory of Confederation of International Contractors Associations (CICA) with participation of Associated General Contractors of America (AGC).

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PART I - GENERAL CONDITIONS

Definitions and Interpretation

Definitions **1.1** In the Contract (as hereinafter defined) the following words and expressions shall have the meanings hereby assigned to them, except where the context otherwise requires:

(a) (i) "Employer" means the person named as such in Part II of these Conditions and the legal successors in title to such person, but not (except with the consent of the Contractor) any assignee of such person.

(ii) "Contractor" means the person whose tender has been accepted by the Employer and the legal successors in title to such person, but not (except with the consent of the Employer) any assignee of such person.

(iii) "Subcontractor" means any person named in the Contract as a Subcontractor for a part of the Works or any person to whom a part of the Works has been subcontracted with the consent of the Engineer and the legal successors in title to such person, but not any assignee of any such person.

(iv) "Engineer" means the person appointed by the Employer to act as Engineer for the purposes of the Contract and named as such in Part II of these Conditions.

(v) "Engineer's Representative" means a person appointed from time to time by the Engineer under Sub-Clause 2.2.

(b) (i) "Contract" means these Conditions (Parts I and II), the Specification, the Drawings, the Bill of Quantities, the Tender, the Letter of Acceptance, the Contract Agreement (if completed) and such further documents as may be expressly incorporated in the Letter of Acceptance or Contract Agreement (if completed).

(ii) "Specification" means the specification of the Works included in the Contract and any modification thereof or addition thereto made under Clause 51 or submitted by the Contractor and approved by the Engineer.

(iii) "Drawings" means all drawings, calculations and technical information of a like nature provided by the Engineer to the Contractor under the Contract and all drawings, calculations, samples, patterns, models, operation and maintenance manuals and other technical information of a like nature submitted by the Contractor and approved by the Engineer.

(iv) "Bill of Quantities" means the priced and completed bill of quantities forming part of the Tender.

(v) "Tender" means the Contractor's priced offer to the Employer for the execution and completion of the Works and the remedying of any defects therein in accordance with the provisions of the Contract, as accepted by the Letter of Acceptance.

(vi) "Letter of Acceptance" means the formal acceptance by the Employer of the Tender.

(vii) "Contract Agreement" means the contract agreement (if any) referred to in Sub-Clause 9.1.

(viii) "Appendix to Tender" means the appendix comprised in the form of Tender annexed to these Conditions.

(c) (i) "Commencement Date" means the date upon which the Contractor receives the notice to commence issued by the Engineer pursuant to Clause 41.

(ii) "Time for Completion" means the time for completing the execution of and passing the Tests on Completion of the Works or any Section or part thereof as stated in the Contract (or as extended under Clause 44) calculated from the Commencement Date.

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(d) (i) "Tests on Completion" means the tests specified in the Contract or otherwise agreed by the Engineer and the Contractor which are to be made by the Contractor before the Works or any Section or part thereof are taken over by the Employer.

(ii) "Taking-Over Certificate" means a certificate issued pursuant to Clause 48.

(e) (i) "Contract Price" means the sum stated in the Letter of Acceptance as payable to the Contractor for the execution and completion of the Works and the remedying of any defects therein in accordance with the provisions of the Contract.

(ii) "Retention Money" means the aggregate of all monies retained by the Employer pursuant to Sub-Clause 60.2(a).

(iii) "Interim Payment Certificate" means any certificate of payment issued by the Engineer other than the Final Payment Certificate.

(iv) "Final Payment Certificate" means the certificate of payment issued by the Engineer pursuant to Sub-Clause 60.8.

(f) (i) "Works" means the Permanent Works and the Temporary Works or either of them as appropriate.

(ii) "Permanent Works" means the permanent works to be executed (including Plant) in accordance with the Contract.

(iii) "Temporary Works" means all temporary works of every kind (other than Contractor's Equipment) required in or about the execution and completion of the Works and the remedying of any defects therein.

(iv) "Plant" means machinery, apparatus and the like intended to form or forming part of the Permanent Works.

(v) "Contractor's Equipment" means all appliances and things of whatsoever nature (other than Temporary Works) required for the execution and completion of the Works and the remedying of any defects therein, but does not include Plant, materials or other things intended to form or forming part of the Permanent Works.

(vi) "Section" means a part of the Works specifically identified in the Contract as a Section.

(vii) "Site" means the places provided by the Employer where the Works are to be executed and any other places as may be specifically designated in the Contract as forming part of the Site.

(g) (i) "cost" means all expenditure properly incurred or to be incurred, whether on or off the Site, including overhead and other charges properly allocable thereto but does not include any allowance for profit.

(ii) "day" means calendar day.

(iii) "foreign currency" means a currency of a country other than that in which the Works are to be located.

(iv) "writing" means any hand-written, type-written, or printed communication, including telex, cable and facsimile transmission.

Headings and Marginal Notes **1.2** The headings and marginal notes in these Conditions shall not be deemed part thereof or be taken into consideration in the interpretation or construction thereof or of the Contract.

Interpretation **1.3** Words importing persons or parties shall include firms and corporations and any organisation having legal capacity.

Singular and Plural **1.4** Words importing the singular only also include the plural and vice versa where the context requires.

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Notices, Consents, Approvals, Certificates and Determinations **1.5** Wherever in the Contract provision is made for the giving or issue of any notice, consent, approval, certificate or determination by any person, unless otherwise specified such notice, consent, approval, certificate or determination shall be in writing and the words "notify", "certify" or "determine" shall be construed accordingly. Any such consent, approval, certificate or determination shall not unreasonably be withheld or delayed.

Engineer and Engineer's Representative

Engineer's Duties and Authority **2. 1** (a) The Engineer shall carry out the duties specified in the Contract.

(b) The Engineer may exercise the authority specified in or necessarily to be implied from the Contract, provided, however, that if the Engineer is required, under the terms of his appointment by the Employer, to obtain the specific approval of the Employer before exercising any such authority, particulars of such requirements shall be set out in Part II of these Conditions. Provided further that any requisite approval shall be deemed to have been given by the Employer for any such authority exercised by the Engineer.

(c) Except as expressly stated in the Contract, the Engineer shall have no authority to relieve the Contractor of any of his obligations under the Contract.

Engineer's Representative **2.2** The Engineer's Representative shall be appointed by and be responsible to the Engineer and shall carry out such duties and exercise such authority as may be delegated to him by the Engineer under Sub-Clause 2.3.

Engineer's Authority to Delegate **2.3** The Engineer may from time to time delegate to the Engineer's Representative any of the duties and authorities vested in the Engineer and he may at any time revoke such delegation. Any such delegation or revocation shall be in writing and shall not take effect until a copy thereof has been delivered to the Employer and the Contractor.

Any communication given by the Engineer's Representative to the Contractor in accordance with such delegation shall have the same effect as though it had been given by the Engineer. Provided that:

(a) any failure of the Engineer's Representative to disapprove any work, materials or Plant shall not prejudice the authority of the Engineer to disapprove such work, materials or Plant and to give instructions for the rectification thereof; and

(b) if the Contractor questions any communication of the Engineer's Representative he may refer the matter to the Engineer who shall confirm, reverse or vary the contents of such communication.

Appointment of Assistants **2.4** The Engineer or the Engineer's Representative may appoint any number of persons to assist the Engineer's Representative in the carrying out of his duties under Sub-Clause 2.2. He shall notify to the Contractor the names, duties and scope of authority of such persons. Such assistants shall have no authority to issue any instructions to the Contractor save in so far as such instructions may be necessary to enable them to carry out their duties and to secure their acceptance of materials, Plant or workmanship as being in accordance with the Contract, and any instructions given by any of them for those purposes shall be deemed to have been given by the Engineer's Representative.

Instructions in Writing **2.5** Instructions given by the Engineer shall be in writing, provided that if for any reason the Engineer considers it necessary to give any such instruction orally, the Contractor shall comply with such instruction. Confirmation in writing of such oral instruction given by the Engineer, whether before or after the carrying out of the instruction, shall be deemed to be an instruction within the meaning of this Sub-Clause. Provided further that if the Contractor, within 7 days, confirms in writing to the Engineer any oral instruction of the Engineer and such confirmation is not contradicted in writing within 7 days by the Engineer, it shall be deemed to be an instruction of the Engineer.

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The provisions of this Sub-Clause shall equally apply to instructions given by the Engineer's Representative and any assistants of the Engineer or the Engineer's Representative appointed pursuant to Sub-Clause 2.4.

Engineer to Act Impartially **2.6** Wherever, under the Contract, the Engineer is required to exercise his discretion by:

(a) giving his decision, opinion or consent,

(b) expressing his satisfaction or approval,

(c) determining value, or

(d) otherwise taking action which may affect the rights and obligations of the Employer or the Contractor

he shall exercise such discretion impartially within the terms of the Contract and having regard to all the circumstances. Any such decision, opinion, consent, expression of satisfaction, or approval, determination of value or action may be opened up, reviewed or revised as provided in Clause 67.

Assignment and Subcontracting

Assignment of Contract **3. 1** The Contractor shall not, without the prior consent of the Employer (which consent, notwithstanding the provisions of Sub-Clause 1.5, shall be at the sole discretion of the Employer), assign the Contract or any part thereof, or any benefit or interest therein or thereunder, otherwise than by:

(a) a charge in favour of the Contractor's bankers of any monies due or to become due under the Contract, or

(b) assignment to the Contractor's insurers (in cases where the insurers have discharged the Contractor's loss or liability) of the Contractor's right to obtain relief against any other party liable.

Subcontracting **4. 1** The Contractor shall not subcontract the whole of the Works. Except where otherwise provided by the Contract, the Contractor shall not subcontract any part of the Works without the prior consent of the Engineer. Any such consent shall not relieve the Contractor from any liability or obligation under the Contract and he shall be responsible for the acts, defaults and neglects of any Subcontractor, his agents, servants or workmen as fully as if they were the acts, defaults or neglects of the Contractor, his agents, servants or workmen.

Provided that the Contractor shall not be required to obtain such consent for:

(a) the provision of labour,

(b) the purchase of materials which are in accordance with the standards specified in the Contract, or

(c) the subcontracting of any part of the Works for which the Subcontractor is named in the Contract.

Assignment of Subcontractors' Obligations **4.2** In the event of a Subcontractor having undertaken towards the Contractor in respect of the work executed, or the goods, materials, Plant or services supplied by such Subcontractor, any continuing obligation extending for a period exceeding that of the Defects Liability Period under the Contract, the Contractor shall at any time, after the expiration of such Period, assign to the Employer, at the Employer's request and cost, the benefit of such obligation for the unexpired duration thereof.

Contract Documents

Language/s and Law **5. 1** There is stated in Part II of these Conditions:

(a) the language or languages in which the Contract documents shall be drawn up, and

(b) the country or state the law of which shall apply to the Contract and according to which the Contract shall be construed.

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If the said documents are written in more than one language, the language according to which the Contract shall be construed and interpreted is also stated in Part II of these Conditions, being therein designated the "Ruling Language".

Priority of Contract Documents

5.2 The several documents forming the Contract are to be taken as mutually explanatory of one another, but in case of ambiguities or discrepancies the same shall be explained and adjusted by the Engineer who shall thereupon issue to the Contractor instructions thereon and in such event, unless otherwise provided in the Contract, the priority of the documents forming the Contract shall be as follows:

(1) The Contract Agreement (if completed);

(2) The Letter of Acceptance;

(3) The Tender;

(4) Part II of these Conditions;

(5) Part I of these Conditions; and

(6) Any other document forming part of the Contract.

Custody and Supply of Drawings and Documents

6.1 The Drawings shall remain in the sole custody of the Engineer, but two copies thereof shall be provided to the Contractor free of charge. The Contractor shall make at his own cost any further copies required by him. Unless it is strictly necessary for the purposes of the Contract, the Drawings, Specification and other documents provided by the Employer or the Engineer shall not, without the consent of the Engineer, be used or communicated to a third party by the Contractor. Upon issue of the Defects Liability Certificate, the Contractor shall return to the Engineer all Drawings, Specification and other documents provided under the Contract.

The Contractor shall supply to the Engineer four copies of all Drawings, Specification and other documents submitted by the Contractor and approved by the Engineer in accordance with Clause 7, together with a reproducible copy of any material which cannot be reproduced to an equal standard by photocopying. In addition the Contractor shall supply such further copies of such Drawings, Specification and other documents as the Engineer may request in writing for the use of the Employer, who shall pay the cost thereof.

One Copy of Drawings to be Kept on Site

6.2 One copy of the Drawings, provided to or supplied by the Contractor as aforesaid, shall be kept by the Contractor on the Site and the same shall at all reasonable times be available for inspection and use by the Engineer and by any other person authorised by the Engineer in writing.

Disruption of Progress

6.3 The Contractor shall give notice to the Engineer, with a copy to the Employer, whenever planning or execution of the Works is likely to be delayed or disrupted unless any further drawing or instruction is issued by the Engineer within a reasonable time. The notice shall include details of the drawing or instruction required and of why and by when it is required and of any delay or disruption likely to be suffered if it is late.

Delays and Cost of Delay of Drawings

6.4 If, by reason of any failure or inability of the Engineer to issue, within a time reasonable in all the circumstances, any drawing or instruction for which notice has been given by the Contractor in accordance with Sub-Clause 63, the Contractor suffers delay and/or incurs costs then the Engineer shall, after due consultation with the Employer and the Contractor, determine:

(a) any extension of time to which the Contractor is entitled under Clause 44, and

(b) the amount of such costs, which shall be added to the Contract Price,

and shall notify the Contractor accordingly, with a copy to the Employer.

Failure by Contractor to Submit Drawings

6.5 If the failure or inability of the Engineer to issue any drawings or instructions is caused in whole or in part by the failure of the Contractor to submit Drawings, Specification or other documents which he is required to submit under the Contract, the Engineer shall take such failure by the Contractor into account when making his determination pursuant to Sub-Clause 6.4.

Supplementary Drawings and Instructions **7.1** The Engineer shall have authority to issue to the Contractor, from time to time, such supplementary Drawings and instructions as shall be necessary for the purpose of the proper and adequate execution and completion of the Works and the remedying of any defects therein. The Contractor shall carry out and be bound by the same.

Permanent Works Designed by Contractor **7.2** Where the Contract expressly provides that part of the Permanent Works shall be designed by the Contractor, he shall submit to the Engineer, for approval:

(a) such drawings, specifications, calculations and other information as shall be necessary to satisfy the Engineer as to the suitability and adequacy of that design, and

(b) operation and maintenance manuals together with drawings of the Permanent Works as completed, in sufficient detail to enable the Employer to operate, maintain, dismantle, reassemble and adjust the Permanent Works incorporating that design. The Works shall not be considered to be completed for the purposes of taking over in accordance with Clause 48 until such operation and maintenance manuals, together with drawings on completion, have been submitted to and approved by the Engineer.

Responsibility Unaffected by Approval **7.3** Approval by the Engineer, in accordance with Sub-Clause 7.2, shall not relieve the Contractor of any of his responsibilities under the Contract.

General Obligations

Contractor's General Responsibilities **8.1** The Contractor shall, with due care and diligence, design (to the extent provided for by the Contract), execute and complete the Works and remedy any defects therein in accordance with the provisions of the Contract. The Contractor shall provide all superintendence, labour, materials, Plant, Contractor's Equipment and all other things, whether of a temporary or permanent nature, required in and for such design, execution, completion and remedying of any defects, so far as the necessity for providing the same is specified in or is reasonably to be inferred from the Contract.

The Contractor shall give prompt notice to the Engineer, with a copy to the Employer, of any error, omission, fault or other defect in the design of or Specification for the Works which he discovers when reviewing the Contract or executing the Works.

Site Operations and Methods of Construction **8.2** The Contractor shall take full responsibility for the adequacy, stability and safety of all Site operations and methods of construction. Provided that the Contractor shall not be responsible (except as stated hereunder or as may be otherwise agreed) for the design or specification of Permanent Works, or for the design or specification of any Temporary Works not prepared by the Contractor. Where the Contract expressly provides that part of the Permanent Works shall be designed by the Contractor, he shall be fully responsible for that part of such Works, notwithstanding any approval by the Engineer.

Contract Agreement **9.1** The Contractor shall, if called upon so to do, enter into and execute the Contract Agreement, to be prepared and completed at the cost of the Employer, in the form annexed to these Conditions with such modification as may be necessary.

Performance Security **10.1** If the Contract requires the Contractor to obtain security for his proper performance of the Contract, he shall obtain and provide to the Employer such security within 28 days after the receipt of the Letter of Acceptance, in the sum stated in the Appendix to Tender. When providing such security to the Employer, the Contractor shall notify the Engineer of so doing. Such security shall be in the form annexed to these Conditions or in such other form as may be agreed between the Employer and the Contractor. The institution providing such security shall be subject to the approval of the Employer. The cost of complying with the requirements of this Clause shall be borne by the Contractor, unless the Contract otherwise provides.

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Period of Validity of Performance Security

10.2 The performance security shall be valid until the Contractor has executed and completed the Works and remedied any defects therein in accordance with the Contract. No claim shall be made against such security after the issue of the Defects Liability Certificate in accordance with Sub-Clause 62.1 and such security shall be returned to the Contractor within 14 days of the issue of the said Defects Liability Certificate.

Claims under Performance Security

10.3 Prior to making a claim under the performance security the Employer shall, in every case, notify the Contractor stating the nature of the default in respect of which the claim is to be made.

Inspection of Site

11.1 The Employer shall have made available to the Contractor, before the submission by the Contractor of the Tender, such data on hydrological and sub-surface conditions as have been obtained by or on behalf of the Employer from investigations undertaken relevant to the Works but the Contractor shall be responsible for his own interpretation thereof.

The Contractor shall be deemed to have inspected and examined the Site and its surroundings and information available in connection therewith and to have satisfied himself (so far as is practicable, having regard to considerations of cost and time) before submitting his Tender, as to:

(a) the form and nature thereof, including the sub-surface conditions,

(b) the hydrological and climatic conditions,

(c) the extent and nature of work and materials necessary for the execution and completion of the Works and the remedying of any defects therein, and

(d) the means of access to the Site and the accommodation he may require,

and, in general, shall be deemed to have obtained all necessary information, subject as above mentioned, as to risks, contingencies and all other circumstances which may influence or affect his Tender.

The Contractor shall be deemed to have based his Tender on the data made available by the Employer and on his own inspection and examination, all as aforementioned.

Sufficiency of Tender

12.1 The Contractor shall be deemed to have satisfied himself as to the correctness and sufficiency of the Tender and of the rates and prices stated in the Bill of Quantities, all of which shall, except insofar as it is otherwise provided in the Contract, cover all his obligations under the Contract (including those in respect of the supply of goods, materials, Plant or services or of contingencies for which there is a Provisional Sum) and all matters and things necessary for the proper execution and completion of the Works and the remedying of any defects therein.

Not Foreseeable Physical Obstructions or Conditions

12.2 If, however, during the execution of the Works the Contractor encounters physical obstructions or physical conditions, other than climatic conditions on the Site, which obstructions or conditions were, in his opinion, not foreseeable by an experienced contractor, the Contractor shall forthwith give notice thereof to the Engineer, with a copy to the Employer. On receipt of such notice, the Engineer shall, if in his opinion such obstructions or conditions could not have been reasonably foreseen by an experienced contractor, after due consultation with the Employer and the Contractor, determine:

(a) any extension of time to which the Contractor is entitled under Clause 44, and

(b) the amount of any costs which may have been incurred by the Contractor by reason of such obstructions or conditions having been encountered, which shall be added to the Contract Price,

and shall notify the Contractor accordingly, with a copy to the Employer. Such determination shall take account of any instruction which the Engineer may issue to the Contractor in connection therewith, and any proper and reasonable measures acceptable to the Engineer which the Contractor may take in the absence of specific instructions from the Engineer.

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Work to be in Accordance with Contract **13.1** Unless it is legally or physically impossible, the Contractor shall execute and complete the Works and remedy any defects therein in strict accordance with the Contract to the satisfaction of the Engineer. The Contractor shall comply with and adhere strictly to the Engineer's instructions on any matter, whether mentioned in the Contract or not, touching or concerning the Works. The Contractor shall take instructions only from the Engineer (or his delegate).

Programme to be Submitted **14.1** The Contractor shall, within the time stated in Part II of these Conditions after the date of the Letter of Acceptance, submit to the Engineer for his consent a programme, in such form and detail as the Engineer shall reasonably prescribe, for the execution of the Works. The Contractor shall, whenever required by the Engineer, also provide in writing for his information a general description of the arrangements and methods which the Contractor proposes to adopt for the execution of the Works.

Revised Programme **14.2** If at any time it should appear to the Engineer that the actual progress of the Works does not conform to the programme to which consent has been given under Sub-Clause 14.1, the Contractor shall produce, at the request of the Engineer, a revised programme showing the modifications to such programme necessary to ensure completion of the Works within the Time for Completion.

Cash Flow Estimate to be Submitted **14.3** The Contractor shall, within the time stated in Part II of these Conditions after the date of the Letter of Acceptance, provide to the Engineer for his information a detailed cash flow estimate, in quarterly periods, of all payments to which the Contractor will be entitled under the Contract and the Contractor shall subsequently supply revised cash flow estimates at quarterly intervals, if required to do so by the Engineer.

Contractor not Relieved of Duties or Responsibilities **14.4** The submission to and consent by the Engineer of such programmes or the provision of such general descriptions or cash flow estimates shall not relieve the Contractor of any of his duties or responsibilities under the Contract.

Contractor's Superintendence **15. 1** The Contractor shall provide all necessary superintendence during the execution of the Works and as long thereafter as the Engineer may consider necessary for the proper fulfilling of the Contractor's obligations under the Contract. The Contractor, or a competent and authorised representative approved of by the Engineer, which approval may at any time be withdrawn, shall give his whole time to the superintendence of the Works. Such authorised representative shall receive, on behalf of the Contractor, instructions from the Engineer.

If approval of the representative is withdrawn by the Engineer, the Contractor shall, as soon as is practicable, having regard to the requirement of replacing him as hereinafter mentioned, after receiving notice of such withdrawal, remove the representative from the Works and shall not thereafter employ him again on the Works in any capacity and shall replace him by another representative approved by the Engineer.

Contractor's Employees **16. 1** The Contractor shall provide on the Site in connection with the execution and completion of the Works and the remedying of any defects therein:

(a) only such technical assistants as are skilled and experienced in their respective callings and such foremen and leading hands as are competent to give proper superintendence of the Works, and

(b) such skilled, semi-skilled and unskilled labour as is necessary for the proper and timely fulfilling of the Contractor's obligations under the Contract.

Engineer at Liberty to Object **16.2** The Engineer shall be at liberty to object to and require the Contractor to remove forthwith from the Works any person provided by the Contractor who, in the opinion of the Engineer, misconducts himself, or is incompetent or negligent in the proper performance of his duties, or whose presence on Site is otherwise considered by the Engineer to be undesirable, and such person shall not be again allowed upon the Works without the consent of the Engineer. Any person so removed from the Works shall be replaced as soon as possible.

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Setting-out **17. 1** The Contractor shall be responsible for:

(a) the accurate setting-out of the Works in relation to original points, lines and levels of reference given by the Engineer in writing,

(b) the correctness, subject as above mentioned, of the position, levels, dimensions and alignment of all parts of the Works, and

(c) the provision of all necessary instruments, appliances and labour in connection with the foregoing responsibilities.

If, at any time during the execution of the Works, any error appears in the position, levels, dimensions or alignment of any part of the Works, the Contractor, on being required so to do by the Engineer, shall, at his own cost, rectify such error to the satisfaction of the Engineer, unless such error is based on incorrect data supplied in writing by the Engineer, in which case the Engineer shall determine an addition to the Contract Price in accordance with Clause 52 and shall notify the Contractor accordingly, with a copy to the Employer.

The checking of any setting-out or of any line or level by the Engineer shall not in any way relieve the Contractor of his responsibility for the accuracy thereof and the Contractor shall carefully protect and preserve all bench-marks, sight-rails, pegs and other things used in setting-out the Works.

Boreholes and Exploratory Excavation **18.1** If, at any time during the execution of the Works, the Engineer requires the Contractor to make boreholes or to carry out exploratory excavation, such requirement shall be the subject of an instruction in accordance with Clause 51, unless an item or a Provisional Sum in respect of such work is included in the Bill of Quantities.

Safety, Security and Protection of the Environment **19.1** The Contractor shall, throughout the execution and completion of the Works and the remedying of any defects therein:

(a) have full regard for the safety of all persons entitled to be upon the Site and keep the Site (so far as the same is under his control) and the Works (so far as the same are not completed or occupied by the Employer) in an orderly state appropriate to the avoidance of danger to such persons,

(b) provide and maintain at his own cost all lights, guards, fencing, warning signs and watching, when and where necessary or required by the Engineer or by any duly constituted authority, for the protection of the Works or for the safety and convenience of the public or others, and

(c) take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other causes arising as a consequence of his methods of operation.

Employer's Responsibilities **19.2** If under Clause 31 the Employer shall carry out work on the Site with his own workmen he shall, in respect of such work:

(a) have full regard to the safety of all persons entitled to be upon the Site, and

(b) keep the Site in an orderly state appropriate to the avoidance of danger to such persons.

If under Clause 31 the Employer shall employ other contractors on the Site he shall require them to have the same regard for safety and avoidance of danger.

Care of Works **20.1** The Contractor shall take full responsibility for the care of the Works and materials and Plant for incorporation therein from the Commencement Date until the date of issue of the Taking-Over Certificate for the whole of the Works, when the responsibility for the said care shall pass to the Employer. Provided that:

(a) if the Engineer issues a Taking-Over Certificate for any Section or part of the Permanent Works the Contractor shall cease to be liable for the care of that Section or part from the date of issue of the Taking-Over Certificate, when the responsibility for the care of that Section or part shall pass to the Employer, and

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(b) the Contractor shall take full responsibility for the care of any outstanding Works and materials and Plant for incorporation therein which he undertakes to finish during the Defects Liability Period until such outstanding Works have been completed pursuant to Clause 49.

Responsibility to Rectify Loss or Damage **20.2** If any loss or damage happens to the Works, or any part thereof, or materials or Plant for incorporation therein, during the period for which the Contractor is responsible for the care thereof, from any cause whatsoever, other than the risks defined in Sub-Clause 20.4, the Contractor shall, at his own cost, rectify such loss or damage so that the Permanent Works conform in every respect with the provisions of the Contract to the satisfaction of the Engineer. The Contractor shall also be liable for any loss or damage to the Works occasioned by him in the course of any operations carried out by him for the purpose of complying with his obligations under Clauses 49 and 50.

Loss or Damage Due to Employer's Risks **20.3** In the event of any such loss or damage happening from any of the risks defined in Sub-Clause 20.4, or in combination with other risks, the Contractor shall, if and to the extent required by the Engineer, rectify the loss or damage and the Engineer shall determine an addition to the Contract Price in accordance with Clause 52 and shall notify the Contractor accordingly, with a copy to the Employer. In the case of a combination of risks causing loss or damage any such determination shall take into account the proportional responsibility of the Contractor and the Employer.

Employer's Risks **20.4** The Employer's risks are:

(a) war, hostilities (whether war be declared or not), invasion, act of foreign enemies,

(b) rebellion, revolution, insurrection, or military or usurped power, or civil war,

(c) ionising radiations, or contamination by radio-activity from any nuclear fuel, or from any nuclear waste from the combustion of nuclear fuel, radio-active toxic explosive or other hazardous properties of any explosive nuclear assembly or nuclear component thereof,

(d) pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds,

(e) riot, commotion or disorder, unless solely restricted to employees of the Contractor or of his Subcontractors and arising from the conduct of the Works,

(f) loss or damage due to the use or occupation by the Employer of any Section or part of the Permanent Works, except as may be provided for in the Contract,

(g) loss or damage to the extent that it is due to the design of the Works, other than any part of the design provided by the Contractor or for which the Contractor is responsible, and

(h) any operation of the forces of nature against which an experienced contractor could not reasonably have been expected to take precautions.

Insurance of Works and Contractor's Equipment **21.1** The Contractor shall, without limiting his or the Employer's obligations and responsibilities under Clause 20, insure:

(a) the Works, together with materials and Plant for incorporation therein, to the full replacement cost (the term "cost" in this context shall include profit),

(b) an additional sum of 15 per cent of such replacement cost, or as may be specified in Part II of these Conditions, to cover any additional costs of and incidental to the rectification of loss or damage including professional fees and the cost of demolishing and removing any part of the Works and of removing debris of whatsoever nature, and

(c) the Contractor's Equipment and other things brought onto the Site by the Contractor, for a sum sufficient to provide for their replacement at the Site.

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Scope of Cover **21.2** The insurance in paragraphs (a) and (b) of Sub-Clause 21.1 shall be in the joint names of the Contractor and the Employer and shall cover:

(a) the Employer and the Contractor against all loss or damage from whatsoever cause arising, other than as provided in Sub-Clause 21.4, from the start of work at the Site until the date of issue of the relevant Taking-Over Certificate in respect of the Works or any Section or part thereof as the case may be, and

(b) the Contractor for his liability:

(i) during the Defects Liability Period for loss or damage arising from a cause occurring prior to the commencement of the Defects Liability Period, and

(ii) for loss or damage occasioned by the Contractor in the course of any operations carried out by him for the purpose of complying with his obligations under Clauses 49 and 50.

Responsibility for Amounts not Recovered **21.3** Any amounts not insured or not recovered from the insurers shall be borne by the Employer or the Contractor in accordance with their responsibilities under Clause 20.

Exclusions **21.4** There shall be no obligation for the insurances in Sub-Clause 21.1 to include loss or damage caused by:

(a) war, hostilities (whether war be declared or not), invasion, act of foreign enemies,

(b) rebellion, revolution, insurrection, or military or usurped power, or civil war,

(c) ionising radiations, or contamination by radio-activity from any nuclear fuel, or from any nuclear waste from the combustion of nuclear fuel, radio-active toxic explosive or other hazardous properties of any explosive nuclear assembly or nuclear component thereof, or

(d) pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds.

Damage to Persons and Property **22.1** The Contractor shall, except if and so far as the Contract provides otherwise, indemnify the Employer against all losses and claims in respect of:

(a) death of or injury to any person, or

(b) loss of or damage to any property (other than the Works),

which may arise out of or in consequence of the execution and completion of the Works and the remedying of any defects therein, and against all claims, proceedings, damages, costs, charges and expenses whatsoever in respect thereof or in relation thereto, subject to the exceptions defined in Sub-Clause 22.2.

Exceptions **22.2** The "exceptions" referred to in Sub-Clause 22.1 are:

(a) the permanent use or occupation of land by the Works, or any part thereof,

(b) the right of the Employer to execute the Works, or any part thereof, on, over, under, in or through any land,

(c) damage to property which is the unavoidable result of the execution and completion of the Works, or the remedying of any defects therein, in accordance with the Contract, and

(d) death of or injury to persons or loss of or damage to property resulting from any act or neglect of the Employer, his agents, servants or other contractors, not being employed by the Contractor, or in respect of any claims, proceedings, damages, costs, charges and expenses in respect thereof or in relation thereto or, where the injury or damage was contributed to by the Contractor, his servants or agents, such part of the said injury or damage as may be just and equitable having regard to the extent of the responsibility of the Employer, his servants or agents or other contractors for the injury or damage.

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Indemnity by Employer **22.3** The Employer shall indemnify the Contractor against all claims, proceedings, damages, costs, charges and expenses in respect of the matters referred to in the exceptions defined in Sub-Clause 22.2.

Third Party Insurance (including Employer's Property) **23.1** The Contractor shall, without limiting his or the Employer's obligations and responsibilities under Clause 22, insure, in the joint names of the Contractor and the Employer, against liabilities for death of or injury to any person (other than as provided in Clause 24) or loss of or damage to any property (other than the Works) arising out of the performance of the Contract, other than the exceptions defined in paragraphs (a), (b) and (c) of Sub-Clause 22.2.

Minimum Amount of Insurance **23.2** Such insurance shall be for at least the amount stated in the Appendix to Tender.

Cross Liabilities **23.3** The insurance policy shall include a cross liability clause such that the insurance shall apply to the Contractor and to the Employer as separate insureds.

Accident or Injury to Workmen **24.1** The Employer shall not be liable for or in respect of any damages or compensation payable to any workman or other person in the employment of the Contractor or any Subcontractor, other than death or injury resulting from any act or default of the Employer, his agents or servants. The Contractor shall indemnify and keep indemnified the Employer against all such damages and compensation, other than those for which the Employer is liable as aforesaid, and against all claims, proceedings, damages, costs, charges, and expenses whatsoever in respect thereof or in relation thereto.

Insurance Against Accident to Workmen **24.2** The Contractor shall insure against such liability and shall continue such insurance during the whole of the time that any persons are employed by him on the Works. Provided that, in respect of any persons employed by any Subcontractor, the Contractor's obligations to insure as aforesaid under this Sub-Clause shall be satisfied if the Subcontractor shall have insured against the liability in respect of such persons in such manner that the Employer is indemnified under the policy, but the Contractor shall require such Subcontractor to produce to the Employer, when required, such policy of insurance and the receipt for the payment of the current premium.

Evidence and Terms of Insurances **25.1** The Contractor shall provide evidence to the Employer prior to the start of work at the Site that the insurances required under the Contract have been effected and shall, within 84 days of the Commencement Date, provide the insurance policies to the Employer. When providing such evidence and such policies to the Employer, the Contractor shall notify the Engineer of so doing. Such insurance policies shall be consistent with the general terms agreed prior to the issue of the Letter of Acceptance. The Contractor shall effect all insurances for which he is responsible with insurers and in terms approved by the Employer.

Adequacy of Insurances **25.2** The Contractor shall notify the insurers of changes in the nature, extent or programme for the execution of the Works and ensure the adequacy of the insurances at all times in accordance with the terms of the Contract and shall, when required, produce to the Employer the insurance policies in force and the receipts for payment of the current premiums.

Remedy on Contractor's Failure to Insure **25.3** If the Contractor fails to effect and keep in force any of the insurances required under the Contract, or fails to provide the policies to the Employer within the period required by Sub-Clause 25.1, then and in any such case the Employer may effect and keep in force any such insurances and pay any premium as may be necessary for that purpose and from time to time deduct the amount so paid from any monies due or to become due to the Contractor, or recover the same as a debt due from the Contractor.

Compliance with Policy Conditions **25.4** In the event that the Contractor or the Employer fails to comply with conditions imposed by the insurance policies effected pursuant to the Contract, each shall indemnify the other against all losses and claims arising from such failure.

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Compliance with Statutes, Regulations **26.1** The Contractor shall conform in all respects, including by the giving of all notices and the paying of all fees, with the provisions of:

(a) any National or State Statute, Ordinance, or other Law, or any regulation, or bye-law of any local or other duly constituted authority in relation to the execution and completion of the Works and the remedying of any defects therein, and

(b) the rules and regulations of all public bodies and companies whose property or rights are affected or may be affected in any way by the Works,

and the Contractor shall keep the Employer indemnified against all penalties and liability of every kind for breach of any such provisions. Provided always that the Employer shall be responsible for obtaining any planning, zoning or other similar permission required for the Works to proceed and shall indemnify the Contractor in accordance with Sub-Clause 22.3.

Fossils **27.1** All fossils, coins, articles of value or antiquity and structures and other remains or things of geological or archaeological interest discovered on the Site shall, as between the Employer and the Contractor, be deemed to be the absolute property of the Employer. The Contractor shall take reasonable precautions to prevent his workmen or any other persons from removing or damaging any such article or thing and shall, immediately upon discovery thereof and before removal, acquaint the Engineer of such discovery and carry out the Engineer's instructions for dealing with the same. If, by reason of such instructions, the Contractor suffers delay and/or incurs costs then the Engineer shall, after due consultation with the Employer and the Contractor, determine:

(a) any extension of time to which the Contractor is entitled under Clause 44, and

(b) the amount of such costs, which shall be added to the Contract Price,

and shall notify the Contractor accordingly, with a copy to the Employer.

Patent Rights **28.1** The Contractor shall save harmless and indemnify the Employer from and against all claims and proceedings for or on account of infringement of any patent rights, design trademark or name or other protected rights in respect of any Contractor's Equipment, materials or Plant used for or in connection with or for incorporation in the Works and from and against all damages, costs, charges and expenses whatsoever in respect thereof or in relation thereto, except where such infringement results from compliance with the design or Specification provided by the Engineer.

Royalties **28.2** Except where otherwise stated, the Contractor shall pay all tonnage and other royalties, rent and other payments or compensation, if any, for getting stone, sand, gravel, clay or other materials required for the Works.

Interference with Traffic and Adjoining Properties **29.1** All operations necessary for the execution and completion of the Works and the remedying of any defects therein shall, so far as compliance with the requirements of the Contract permits, be carried on so as not to interfere unnecessarily or improperly with:

(a) the convenience of the public, or

(b) the access to, use and occupation of public or private roads and footpaths to or of properties whether in the possession of the Employer or of any other person.

The Contractor shall save harmless and indemnify the Employer in respect of all claims, proceedings, damages, costs, charges and expenses whatsoever arising out of, or in relation to, any such matters insofar as the Contractor is responsible therefor.

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Avoidance of Damage to Roads **30.1** The Contractor shall use every reasonable means to prevent any of the roads or bridges communicating with or on the routes to the Site from being damaged or injured by any traffic of the Contractor or any of his Subcontractors and, in particular, shall select routes, choose and use vehicles and restrict and distribute loads so that any such extraordinary traffic as will inevitably arise from the moving of materials, Plant, Contractor's Equipment or Temporary Works from and to the Site shall be limited, as far as reasonably possible, and so that no unnecessary damage or injury may be occasioned to such roads and bridges.

Transport of Contractor's Equipment or Temporary Works **30.2** Save insofar as the Contract otherwise provides, the Contractor shall be responsible for and shall pay the cost of strengthening any bridges or altering or improving any road communicating with or on the routes to the Site to facilitate the movement of Contractor's Equipment or Temporary Works and the Contractor shall indemnify and keep indemnified the Employer against all claims for damage to any such road or bridge caused by such movement, including such claims as may be made directly against the Employer, and shall negotiate and pay all claims arising solely out of such damage.

Transport of Materials or Plant **30.3** If, notwithstanding Sub-Clause 30.1, any damage occurs to any bridge or road communicating with or on the routes to the Site arising from the transport of materials or Plant, the Contractor shall notify the Engineer with a copy to the Employer, as soon as he becomes aware of such damage or as soon as he receives any claim from the authority entitled to make such claim. Where under any law or regulation the haulier of such materials or Plant is required to indemnify the road authority against damage the Employer shall not be liable for any costs, charges or expenses in respect thereof or in relation thereto. In other cases the Employer shall negotiate the settlement of and pay all sums due in respect of such claim and shall indemnify the Contractor in respect thereof and in respect of all claims, proceedings, damages, costs, charges and expenses in relation thereto. Provided that if and so far as any such claim or part thereof is, in the opinion of the Engineer, due to any failure on the part of the Contractor to observe and perform his obligations under Sub-Clause 30.1, then the amount, determined by the Engineer, after due consultation with the Employer and the Contractor, to be due to such failure shall be recoverable from the Contractor by the Employer and may be deducted by the Employer from any monies due or to become due to the Contractor and the Engineer shall notify the Contractor accordingly, with a copy to the Employer. Provided also that the Employer shall notify the Contractor whenever a settlement is to be negotiated and, where any amount may be due from the Contractor, the Employer shall consult with the Contractor before such settlement is agreed.

Waterborne Traffic **30.4** Where the nature of the Works is such as to require the use by the Contractor of waterborne transport the foregoing provisions of this Clause shall be construed as though "road" included a lock, dock, sea wall or other structure related to a waterway and "vehicle" included craft, and shall have effect accordingly.

Opportunities for Other Contractors **31.1** The Contractor shall, in accordance with the requirements of the Engineer, afford all reasonable opportunities for carrying out their work to:

(a) any other contractors employed by the Employer and their workmen,

(b) the workmen of the Employer, and

(c) the workmen of any duly constituted authorities who may be employed in the execution on or near the Site of any work not included in the Contract or of any contract which the Employer may enter into in connection with or ancillary to the Works.

Facilities for Other Contractors **31.2** If, however, pursuant to Sub-Clause 31.1 the Contractor shall, on the written request of the Engineer:

(a) make available to any such other contractor, or to the Employer or any such authority, any roads or ways for the maintenance of which the Contractor is responsible,

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(b) permit the use, by any such, of Temporary Works or Contractor's Equipment on the Site, or

(c) provide any other service of whatsoever nature for any such,

the Engineer shall determine an addition to the Contract Price in accordance with Clause 52 and shall notify the Contractor accordingly, with a copy to the Employer.

Contractor to Keep Site Clear **32.1** During the execution of the Works the Contractor shall keep the Site reasonably free from all unnecessary obstruction and shall store or dispose of any Contractor's Equipment and surplus materials and clear away and remove from the Site any wreckage, rubbish or Temporary Works no longer required.

Clearance of Site on Completion **33.1** Upon the issue of any Taking-Over Certificate the Contractor shall clear away and remove from that part of the Site to which such Taking-Over Certificate relates all Contractor's Equipment, surplus material, rubbish and Temporary Works of every kind, and leave such part of the Site and Works clean and in a workmanlike condition to the satisfaction of the Engineer. Provided that the Contractor shall be entitled to retain on Site, until the end of the Defects Liability Period, such materials, Contractor's Equipment and Temporary Works as are required by him for the purpose of fulfilling his obligations during the Defects Liability Period.

Labour

Engagement of Staff and Labour **34.1** The Contractor shall, unless otherwise provided in the Contract, make his own arrangements for the engagement of all staff and labour, local or other, and for their payment, housing, feeding and transport.

Returns of Labour and Contractor's Equipment **35.1** The Contractor shall, if required by the Engineer, deliver to the Engineer a return in detail, in such form and at such intervals as the Engineer may prescribe, showing the staff and the numbers of the several classes of labour from time to time employed by the Contractor on the Site and such information respecting Contractor's Equipment as the Engineer may require.

Materials, Plant and Workmanship

Quality of Materials, Plant and Workmanship **36.1** All materials, Plant and workmanship shall be:

(a) of the respective kinds described in the Contract and in accordance with the Engineer's instructions, and

(b) subjected from time to time to such tests as the Engineer may require at the place of manufacture, fabrication or preparation, or on the Site or at such other place or places as may be specified in the Contract, or at all or any of such places.

The Contractor shall provide such assistance, labour, electricity, fuels, stores, apparatus and instruments as are normally required for examining, measuring and testing any materials or Plant and shall supply samples of materials, before incorporation in the Works, for testing as may be selected and required by the Engineer.

Cost of Samples **36.2** All samples shall be supplied by the Contractor at his own cost if the supply thereof is clearly intended by or provided for in the Contract.

Cost of Tests **36.3** The cost of making any test shall be borne by the Contractor if such test is:

(a) clearly intended by or provided for in the Contract, or

(b) particularised in the Contract (in cases only of a test under load or of a test to ascertain whether the design of any finished or partially finished work is appropriate for the purposes which it was intended to fulfil) in sufficient detail to enable the Contractor to price or allow for the same in his Tender.

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Cost of Tests not Provided for **36.4** If any test required by the Engineer which is:

(a) not so intended by or provided for,

(b) (in the cases above mentioned) not so particularised, or

(c) (though so intended or provided for) required by the Engineer to be carried out at any place other than the Site or the place of manufacture, fabrication or preparation of the materials or Plant tested,

shows the materials, Plant or workmanship not to be in accordance with the provisions of the Contract to the satisfaction of the Engineer, then the cost of such test shall be borne by the Contractor, but in any other case Sub-Clause 36.5 shall apply.

Engineer's Determination where Tests not Provided for **36.5** Where, pursuant to Sub-Clause 36.4, this Sub-Clause applies the Engineer shall, after due consultation with the Employer and the Contractor, determine:

(a) any extension of time to which the Contractor is entitled under Clause 44, and

(b) the amount of such costs, which shall be added to the Contract Price,

and shall notify the Contractor accordingly, with a copy to the Employer.

Inspection of Operations **37.1** The Engineer, and any person authorised by him, shall at all reasonable times have access to the Site and to all workshops and places where materials or Plant are being manufactured, fabricated or prepared for the Works and the Contractor shall afford every facility for and every assistance in obtaining the right to such access.

Inspection and Testing **37.2** The Engineer shall be entitled, during manufacture, fabrication or preparation to inspect and test the materials and Plant to be supplied under the Contract. If materials or Plant are being manufactured, fabricated or prepared in workshops or places other than those of the Contractor, the Contractor shall obtain permission for the Engineer to carry out such inspection and testing in those workshops or places. Such inspection or testing shall not release the Contractor from any obligation under the Contract.

Dates for Inspection and Testing **37.3** The Contractor shall agree with the Engineer on the time and place for the inspection or testing of any materials or Plant as provided in the Contract. The Engineer shall give the Contractor not less than 24 hours notice of his intention to carry out the inspection or to attend the tests. If the Engineer, or his duly authorised representative, does not attend on the date agreed, the Contractor may, unless otherwise instructed by the Engineer, proceed with the tests, which shall be deemed to have been made in the presence of the Engineer. The Contractor shall forthwith forward to the Engineer duly certified copies of the test readings. If the Engineer has not attended the tests, he shall accept the said readings as accurate.

Rejection **37.4** If, at the time and place agreed in accordance with Sub-Clause 37.3, the materials or Plant are not ready for inspection or testing or if, as a result of the inspection or testing referred to in this Clause, the Engineer determines that the materials or Plant are defective or otherwise not in accordance with the Contract, he may reject the materials or Plant and shall notify the Contractor thereof immediately. The notice shall state the Engineer's objections with reasons. The Contractor shall then promptly make good the defect or ensure that rejected materials or Plant comply with the Contract. If the Engineer so requests, the tests of rejected materials or Plant shall be made or repeated under the same terms and conditions. All costs incurred by the Employer by the repetition of the tests shall, after due consultation with the Employer and the Contractor, be determined by the Engineer and shall be recoverable from the Contractor by the Employer and may be deducted from any monies due or to become due to the Contractor and the Engineer shall notify the Contractor accordingly, with a copy to the Employer.

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Independent Inspection **37.5** The Engineer may delegate inspection and testing of materials or Plant to an independent inspector. Any such delegation shall be effected in accordance with Sub-Clause 2.4 and for this purpose such independent inspector shall be considered as an assistant of the Engineer. Notice of such appointment (not being less than 14 days) shall be given by the Engineer to the Contractor.

Examination of Work before Covering up **38.1** No part of the Works shall be covered up or put out of view without the approval of the Engineer and the Contractor shall afford full opportunity for the Engineer to examine and measure any such part of the Works which is about to be covered up or put out of view and to examine foundations before any part of the Works is placed thereon. The Contractor shall give notice to the Engineer whenever any such part of the Works or foundations is or are ready or about to be ready for examination and the Engineer shall, without unreasonable delay, unless he considers it unnecessary and advises the Contractor accordingly, attend for the purpose of examining and measuring such part of the Works or of examining such foundations.

Uncovering and Making Openings **38.2** The Contractor shall uncover any part of the Works or make openings in or through the same as the Engineer may from time to time instruct and shall reinstate and make good such part. If any such part has been covered up or put out of view after compliance with the requirement of Sub-Clause 38.1 and is found to be executed in accordance with the Contract, the Engineer shall, after due consultation with the Employer and the Contractor, determine the amount of the Contractor's costs in respect of such of uncovering, making openings in or through, reinstating and making good the same, which shall be added to the Contract Price, and shall notify the Contractor accordingly, with a copy to the Employer. In any other case all costs shall be borne by the Contractor.

Removal of Improper Work, Materials or Plant **39.1** The Engineer shall have authority to issue instructions from time to time, for:

(a) the removal from the Site, within such time or times as may be specified in the instruction, of any materials or Plant which, in the opinion of the Engineer, are not in accordance with the Contract,

(b) the substitution of proper and suitable materials or Plant, and

(c) the removal and proper re-execution, notwithstanding any previous test thereof or interim payment therefor, of any work which, in respect of

(i) materials, Plant or workmanship, or

(ii) design by the Contractor or for which he is responsible,

is not, in the opinion of the Engineer, in accordance with the Contract.

Default of Contractor in Compliance **39.2** In case of default on the part of the Contractor in carrying out such instruction within the time specified therein or, if none, within a reasonable time, the Employer shall be entitled to employ and pay other persons to carry out the same and all costs consequent thereon or incidental thereto shall, after due consultation with the Employer and the Contractor, be determined by the Engineer and shall be recoverable from the Contractor by the Employer, and may be deducted by the Employer from any monies due or to become due to the Contractor and the Engineer shall notify the Contractor accordingly, with a copy to the Employer.

Suspension

Suspension of Work **40. 1** The Contractor shall, on the instructions of the Engineer, suspend the progress of the Works or any part thereof for such time and in such manner as the Engineer may consider necessary and shall, during such suspension, properly protect and secure the Works or such part thereof so far as is necessary in the opinion of the Engineer. Unless such suspension is:

(a) otherwise provided for in the Contract,

(b) necessary by reason of some default of or breach of contract by the Contractor or for which he is responsible,

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(c) necessary by reason of climatic conditions on the Site, or

(d) necessary for the proper execution of the Works or for the safety of the Works or any part thereof (save to the extent that such necessity arises from any act or default by the Engineer or the Employer or from any of the risks defined in Sub-Clause 20.4),

Sub-Clause 40.2 shall apply.

Engineer's Determination following Suspension **40.2** Where, pursuant to Sub-Clause 40.1, this Sub-Clause applies the Engineer shall, after due consultation with the Employer and the Contractor, determine:

(a) any extension of time to which the Contractor is entitled under Clause 44, and

(b) the amount, which shall be added to the Contract Price, in respect of the cost incurred by the Contractor by reason of such suspension,

and shall notify the Contractor accordingly, with a copy to the Employer.

Suspension lasting more than 84 Days **40.3** If the progress of the Works or any part thereof is suspended on the instructions of the Engineer and if permission to resume work is not given by the Engineer within a period of 84 days from the date of suspension then, unless such suspension is within paragraph (a), (b), (c) or (d) of Sub-Clause 40.1, the Contractor may give notice to the Engineer requiring permission, within 28 days from the receipt thereof, to proceed with the Works or that part thereof in regard to which progress is suspended. If, within the said time, such permission is not granted, the Contractor may, but is not bound to, elect to treat the suspension, where it affects part only of the Works, as an omission of such part under Clause 51 by giving a further notice to the Engineer to that effect, or, where it affects the whole of the Works, treat the suspension as an event of default by the Employer and terminate his employment under the Contract in accordance with the provisions of Sub-Clause 69.1, whereupon the provisions of Sub-Clauses 69.2 and 69.3 shall apply.

Commencement and Delays

Commencement of Works **41.1** The Contractor shall commence the Works as soon as is reasonably possible after the receipt by him of a notice to this effect from the Engineer, which notice shall be issued within the time stated in the Appendix to Tender after the date of the Letter of Acceptance. Thereafter, the Contractor shall proceed with the Works with due expedition and without delay.

Possession of Site and Access Thereto **42.1** Save insofar as the Contract may prescribe:

(a) the extent of portions of the Site of which the Contractor is to be given possession from time to time,

(b) the order in which such portions shall be made available to the Contractor,

and, subject to any requirement in the Contract as to the order in which the Works shall be executed, the Employer will, with the Engineer's notice to commence the Works, give to the Contractor possession of

(c) so much of the Site, and

(d) such access as, in accordance with the Contract, is to be provided by the Employer as may be required to enable the Contractor to commence and proceed with the execution of the Works in accordance with the programme referred to in Clause 14, if any, and otherwise in accordance with such reasonable proposals as the Contractor shall, by notice to the Engineer with a copy to the Employer, make. The Employer will, from time to time as the Works proceed, give to the Contractor possession of such further portions of the Site as may be required to enable the Contractor to proceed with the execution of the Works with due dispatch in accordance with such programme or proposals, as the case may be.

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Failure to Give Possession **42.2** If the Contractor suffers delay and/or incurs costs from failure on the part of the Employer to give possession in accordance with the terms of Sub-Clause 42. 1, the Engineer shall, after due consultation with the Employer and the Contractor, determine:

(a) any extension of time to which the Contractor is entitled under Clause 44, and

(b) the amount of such costs, which shall be added to the Contract Price,

and shall notify the Contractor accordingly, with a copy to the Employer.

Rights of Way and Facilities **42.3** The Contractor shall bear all costs and charges for special or temporary rights of way required by him in connection with access to the Site. The Contractor shall also provide at his own cost any additional facilities outside the Site required by him for the purposes of the Works.

Time for Completion **43.1** The whole of the Works and, if applicable, any Section required to be completed within a particular time as stated in the Appendix to Tender, shall be completed, in accordance with the provisions of Clause 48, within the time stated in the Appendix to Tender for the whole of the Works or the Section (as the case may be), calculated from the Commencement Date, or such extended time as may be allowed under Clause 44.

Extension of Time for Completion **44.1** In the event of:

(a) the amount or nature of extra or additional work,

(b) any cause of delay referred to in these Conditions,

(c) exceptionally adverse climatic conditions,

(d) any delay, impediment or prevention by the Employer, or

(e) other special circumstances which may occur, other than through a default of or breach of contract by the Contractor or for which he is responsible,

being such as fairly to entitle the Contractor to an extension of the Time for Completion of the Works, or any Section or part thereof, the Engineer shall, after due consultation with the Employer and the Contractor, determine the amount of such extension and shall notify the Contractor accordingly, with a copy to the Employer.

Contractor to Provide Notification and Detailed Particulars **44.2** Provided that the Engineer is not bound to make any determination unless the Contractor has

(a) within 28 days after such event has first arisen notified the Engineer with a copy to the Employer, and

(b) within 28 days, or such other reasonable time as may be agreed by the Engineer, after such notification submitted to the Engineer detailed particulars of any extension of time to which he may consider himself entitled in order that such submission may be investigated at the time.

Interim Determination of Extension **44.3** Provided also that where an event has a continuing effect such that it is not practicable for the Contractor to submit detailed particulars within the period of 28 days referred to in Sub-Clause 44.2(b), he shall nevertheless be entitled to an extension of time provided that he has submitted to the Engineer interim particulars at intervals of not more than 28 days and final particulars within 28 days of the end of the effects resulting from the event. On receipt of such interim particulars, the Engineer shall, without undue delay, make an interim determination of extension of time and, on receipt of the final particulars, the Engineer shall review all the circumstances and shall determine an overall extension of time in regard to the event. In both such cases the Engineer shall make his determination after due consultation with the Employer and the Contractor and shall notify the Contractor of the determination, with a copy to the Employer. No final review shall result in a decrease of any extension of time already determined by the Engineer.

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Restriction on Working Hours **45.1** Subject to any provision to the contrary contained in the Contract, none of the Works shall, save as hereinafter provided, be carried on during the night or on locally recognised days of rest without the consent of the Engineer, except when work is unavoidable or absolutely necessary for the saving of life or property or for the safety of the Works, in which case the Contractor shall immediately advise the Engineer. Provided that the provisions of this Clause shall not be applicable in the case of any work which it is customary to carry out by multiple shifts.

Rate of Progress **46.1** If for any reason, which does not entitle the Contractor to an extension of time, the rate of progress of the Works or any Section is at any time, in the opinion of the Engineer, too slow to comply with the Time for Completion, the Engineer shall so notify the Contractor who shall thereupon take such steps as are necessary, subject to the consent of the Engineer, to expedite progress so as to comply with the Time for Completion. The Contractor shall not be entitled to any additional payment for taking such steps. If, as a result of any notice given by the Engineer under this Clause, the Contractor considers that it is necessary to do any work at night or on locally recognised days of rest, he shall be entitled to seek the consent of the Engineer so to do. Provided that if any steps, taken by the Contractor in meeting his obligations under this Clause, involve the Employer in additional supervision costs, such costs shall, after due consultation with the Employer and the Contractor, be determined by the Engineer and shall be recoverable from the Contractor by the Employer, and may be deducted by the Employer from any monies due or to become due to the Contractor and the Engineer shall notify the Contractor accordingly, with a copy to the Employer.

Liquidated Damages for Delay **47.1** If the Contractor fails to comply with the Time for Completion in accordance with Clause 48, for the whole of the Works or, if applicable, any Section within the relevant time prescribed by Clause 43, then the Contractor shall pay to the Employer the relevant sum stated in the Appendix to Tender as liquidated damages for such default and not as a penalty (which sum shall be the only monies due from the Contractor for such default) for every day or part of a day which shall elapse between the relevant Time for Completion and the date stated in a Taking-Over Certificate of the whole of the Works or the relevant Section, subject to the applicable limit stated in the Appendix to Tender. The Employer may, without prejudice to any other method of recovery, deduct the amount of such damages from any monies due or to become due to the Contractor. The payment or deduction of such damages shall not relieve the Contractor from his obligation to complete the Works, or from any other of his obligations and liabilities under the Contract.

Reduction of Liquidated Damages **47.2** If, before the Time for Completion of the whole of the Works or, if applicable, any Section, a Taking-Over Certificate has been issued for any part of the Works or of a Section, the liquidated damages for delay in completion of the remainder of the Works or of that Section shall, for any period of delay after the date stated in such Taking-Over Certificate, and in the absence of alternative provisions in the Contract, be reduced in the proportion which the value of the part so certified bears to the value of the whole of the Works or Section, as applicable. The provisions of this Sub-Clause shall only apply to the rate of liquidated damages and shall not affect the limit thereof.

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Taking-Over Certificate **48.1** When the whole of the Works have been substantially completed and have satisfactorily passed any Tests on Completion prescribed by the Contract, the Contractor may give a notice to that effect to the Engineer, with a copy to the Employer, accompanied by a written undertaking to finish with due expedition any outstanding work during the Defects Liability Period. Such notice and undertaking shall be deemed to be a request by the Contractor for the Engineer to issue a Taking-Over Certificate in respect of the Works. The Engineer shall, within 21 days of the date of delivery of such notice, either issue to the Contractor, with a copy to the Employer, a Taking-Over Certificate, stating the date on which, in his opinion, the Works were substantially completed in accordance with the Contract, or give instructions in writing to the Contractor specifying all the work which, in the Engineer's opinion, is required to be done by the Contractor before the issue of such Certificate. The Engineer shall also notify the Contractor of any defects in the Works affecting substantial completion that may appear after such instructions and before completion of the Works specified therein. The Contractor shall be entitled to receive such Taking-Over Certificate within 21 days of completion, to the satisfaction of the Engineer, of the Works so specified and remedying any defects so notified.

Taking Over of Sections or Parts **48.2** Similarly, in accordance with the procedure set out in Sub-Clause 48.1, the Contractor may request and the Engineer shall issue a Taking-Over Certificate in respect of:

(a) any Section in respect of which a separate Time for Completion is provided in the Appendix to Tender,

(b) any substantial part of the Permanent Works which has been both completed to the satisfaction of the Engineer and, otherwise than as provided for in the Contract, occupied or used by the Employer, or

(c) any part of the Permanent Works which the Employer has elected to occupy or use prior to completion (where such prior occupation or use is not provided for in the Contract or has not been agreed by the Contractor as a temporary measure).

Substantial Completion of Parts **48.3** If any part of the Permanent Works has been substantially completed and has satisfactorily passed any Tests on Completion prescribed by the Contract, the Engineer may issue a Taking-Over Certificate in respect of that part of the Permanent Works before completion of the whole of the Works and, upon the issue of such Certificate, the Contractor shall be deemed to have undertaken to complete with due expedition any outstanding work in that part of the Permanent Works during the Defects Liability Period.

Surfaces Requiring Reinstatement **48.4** Provided that a Taking-Over Certificate given in respect of any Section or part of the Permanent Works before completion of the whole of the Works shall not be deemed to certify completion of any ground or surfaces requiring reinstatement, unless such Taking-Over Certificate shall expressly so state.

Defects Liability

Defects Liability Period **49.1** In these Conditions the expression "Defects Liability Period" shall mean the defects liability period named in the Appendix to Tender, calculated from:

(a) the date of completion of the Works certified by the Engineer in accordance with Clause 48, or

(b) in the event of more than one certificate having been issued by the Engineer under Clause 48, the respective dates so certified,

and in relation to the Defects Liability Period the expression "the Works" shall be construed accordingly.

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Completion of Outstanding Work and Remedying Defects **49.2** To the intent that the Works shall, at or as soon as practicable after the expiration of the Defects Liability Period, be delivered to the Employer in the condition required by the Contract, fair wear and tear excepted, to the satisfaction of the Engineer, the Contractor shall:

(a) complete the work, if any, outstanding on the date stated in the Taking-Over Certificate as soon as practicable after such date, and

(b) execute all such work of amendment, reconstruction, and remedying defects, shrinkages or other faults as the Engineer may, during the Defects Liability Period or within 14 days after its expiration, as a result of an inspection made by or on behalf of the Engineer prior to its expiration, instruct the Contractor to execute.

Cost of Remedying Defects **49.3** All work referred to in Sub-Clause 49.2 (b) shall be executed by the Contractor at his own cost if the necessity thereof is, in the opinion of the Engineer, due to:

(a) the use of materials, Plant or workmanship not in accordance with the Contract,

(b) where the Contractor is responsible for the design of part of the Permanent Works, any fault in such design, or

(c) the neglect or failure on the part of the Contractor to comply with any obligation, expressed or implied, on the Contractor's part under the Contract.

If, in the opinion of the Engineer, such necessity is due to any other cause, he shall determine an addition to the Contract Price in accordance with Clause 52 and shall notify the Contractor accordingly, with a copy to the Employer.

Contractor's Failure to Carry Out Instructions **49.4** In case of default on the part of the Contractor in carrying out such instruction within a reasonable time, the Employer shall be entitled to employ and pay other persons to carry out the same and if such work is work which, in the opinion of the Engineer, the Contractor was liable to do at his own cost under the Contract, then all costs consequent thereon or incidental thereto shall, after due consultation with the Employer and the Contractor, be determined by the Engineer and shall be recoverable from the Contractor by the Employer, and may be deducted by the Employer from any monies due or to become due to the Contractor and the Engineer shall notify the Contractor accordingly, with a copy to the Employer.

Contractor to Search **50.1** If any defect, shrinkage or other fault in the Works appears at any time prior to the end of the Defects Liability Period, the Engineer may instruct the Contractor, with copy to the Employer, to search under the directions of the Engineer for the cause thereof. Unless such defect, shrinkage or other fault is one for which the Contractor is liable under the Contract, the Engineer shall, after due consultation with the Employer and the Contractor, determine the amount in respect of the costs of such search incurred by the Contractor, which shall be added to the Contract Price and shall notify the Contractor accordingly, with a copy to the Employer. If such defect, shrinkage or other fault is one for which the Contractor is liable, the cost of the work carried out in searching as aforesaid shall be borne by the Contractor and he shall in such case remedy such defect, shrinkage or other fault at his own cost in accordance with the provisions of Clause 49.

Alterations, Additions and Omissions

Variations **51.1** The Engineer shall make any variation of the form, quality or quantity of the Works or any part thereof that may, in his opinion, be necessary and for that purpose, or if for any other reason it shall, in his opinion, be appropriate, he shall have the authority to instruct the Contractor to do and the Contractor shall do any of the following:

(a) increase or decrease the quantity of any work included in the Contract,

(b) omit any such work (but not if the omitted work is to be carried out by the Employer or by another contractor),

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(c) change the character or quality or kind of any such work,

(d) change the levels, lines, position and dimensions of any part of the Works,

(e) execute additional work of any kind necessary for the completion of the Works, or

(f) change any specified sequence or timing of construction of any part of the Works.

No such variation shall in any way vitiate or invalidate the Contract, but the effect, if any, of all such variations shall be valued in accordance with Clause 52. Provided that where the issue of an instruction to vary the Works is necessitated by some default of or breach of contract by the Contractor or for which he is responsible, any additional cost attributable to such default shall be borne by the Contractor.

Instructions for Variations **51.2** The Contractor shall not make any such variation without an instruction of the Engineer. Provided that no instruction shall be required for increase or decrease in the quantity of any work where such increase or decrease is not the result of an instruction given under this Clause, but is the result of the quantities exceeding or being less than those stated in the Bill of Quantities.

Valuation of Variations **52.1** All variations referred to in Clause 51 and any additions to the Contract Price which are required to be determined in accordance with Clause 52 (for the purposes of this Clause referred to as "varied work"), shall be valued at the rates and prices set out in the Contract if, in the opinion of the Engineer, the same shall be applicable. If the Contract does not contain any rates or prices applicable to the varied work, the rates and prices in the Contract shall be used as the basis for valuation so far as may be reasonable, failing which, after due consultation by the Engineer with the Employer and the Contractor, suitable rates or prices shall be agreed upon between the Engineer and the Contractor. In the event of disagreement the Engineer shall fix such rates or prices as are, in his opinion, appropriate and shall notify the Contractor accordingly, with a copy to the Employer. Until such time as rates or prices are agreed or fixed, the Engineer shall determine provisional rates or prices to enable on-account payments to be included in certificates issued in accordance with Clause 60.

Power of Engineer to Fix Rates **52.2** Provided that if the nature or amount of any varied work relative to the nature or amount of the whole of the Works or to any part thereof, is such that, in the opinion of the Engineer, the rate or price contained in the Contract for any item of the Works is, by reason of such varied work, rendered inappropriate or inapplicable, then, after due consultation by the Engineer with the Employer and the Contractor, a suitable rate or price shall be agreed upon between the Engineer and the Contractor. In the event of disagreement the Engineer shall fix such other rate or price as is, in his opinion, appropriate and shall notify the Contractor accordingly, with a copy to the Employer. Until such time as rates or prices are agreed or fixed, the Engineer shall determine provisional rates or prices to enable on-account payments to be included in certificates issued in accordance with Clause 60.

Provided also that no varied work instructed to be done by the Engineer pursuant to Clause 51 shall be valued under Sub-Clause 52.1 or under this Sub-Clause unless, within 14 days of the date of such instruction and, other than in the case of omitted work, before the commencement of the varied work, notice shall have been given either:

(a) by the Contractor to the Engineer of his intention to claim extra payment or a varied rate or price, or

(b) by the Engineer to the Contractor of his intention to vary a rate or price.

Variations Exceeding 15 per cent **52.3** If, on the issue of the Taking-Over Certificate for the whole of the Works, it is found that as a result of:

(a) all varied work valued under Sub-Clauses 52.1 and 52.2, and

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(b) all adjustments upon measurement of the estimated quantities set out in the Bill of Quantities, excluding Provisional Sums, dayworks and adjustments of price made under Clause 70,

but not from any other cause, there have been additions to or deductions from the Contract Price which taken together are in excess of 15 per cent of the "Effective Contract Price" (which for the purposes of this Sub-Clause shall mean the Contract Price, excluding Provisional Sums and allowance for dayworks, if any) then and in such event (subject to any action already taken under any other Sub-Clause of this Clause), after due consultation by the Engineer with the Employer and the Contractor, there shall be added to or deducted from the Contract Price such further sum as may be agreed between the Contractor and the Engineer or, failing agreement, determined by the Engineer having regard to the Contractor's Site and general overhead costs of the Contract. The Engineer shall notify the Contractor of any determination made under this Sub-Clause, with a copy to the Employer. Such sum shall be based only on the amount by which such additions or deductions shall be in excess of 15 per cent of the Effective Contract Price.

Daywork **52.4** The Engineer may, if in his opinion it is necessary or desirable, issue an instruction that any varied work shall be executed on a daywork basis. The Contractor shall then be paid for such varied work under the terms set out in the daywork schedule included in the Contract and at the rates and prices affixed thereto by him in the Tender.

The Contractor shall furnish to the Engineer such receipts or other vouchers as may be necessary to prove the amounts paid and, before ordering materials, shall submit to the Engineer quotations for the same for his approval.

In respect of such of the Works executed on a daywork basis, the Contractor shall, during the continuance of such work, deliver each day to the Engineer an exact list in duplicate of the names, occupation and time of all workmen employed on such work and a statement, also in duplicate, showing the description and quantity of all materials and Contractor's Equipment used thereon or therefor other than Contractor's Equipment which is included in the percentage addition in accordance with such daywork schedule. One copy of each list and statement will, if correct, or when agreed, be signed by the Engineer and returned to the Contractor.

At the end of each month the Contractor shall deliver to the Engineer a priced statement of the labour, materials and Contractor's Equipment, except as aforesaid, used and the Contractor shall not be entitled to any payment unless such lists and statements have been fully and punctually rendered. Provided always that if the Engineer considers that for any reason the sending of such lists or statements by the Contractor, in accordance with the foregoing provision, was impracticable he shall nevertheless be entitled to authorise payment for such work, either as daywork, on being satisfied as to the time employed and the labour, materials and Contractor's Equipment used on such work, or at such value therefor as shall, in his opinion, be fair and reasonable.

Procedure for Claims

Notice of Claims **53.1** Notwithstanding any other provision of the Contract, if the Contractor intends to claim any additional payment pursuant to any Clause of these Conditions or otherwise, he shall give notice of his intention to the Engineer, with a copy to the Employer, within 28 days after the event giving rise to the claim has first arisen.

Contemporary Records **53.2** Upon the happening of the event referred to in Sub-Clause 53.1, the Contractor shall keep such contemporary records as may reasonably be necessary to support any claim he may subsequently wish to make. Without necessarily admitting the Employer's liability, the Engineer shall, on receipt of a notice under Sub-Clause 53.1, inspect such contemporary records and may instruct the Contractor to keep

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any further contemporary records as are reasonable and may be material to the claim of which notice has been given. The Contractor shall permit the Engineer to inspect all records kept pursuant to this Sub-Clause and shall supply him with copies thereof as and when the Engineer so instructs.

Substantiation of Claims **53.3** Within 28 days, or such other reasonable time as may be agreed by the Engineer, of giving notice under Sub-Clause 53.1, the Contractor shall send to the Engineer an account giving detailed particulars of the amount claimed and the grounds upon which the claim is based. Where the event giving rise to the claim has a continuing effect, such account shall be considered to be an interim account and the Contractor shall, at such intervals as the Engineer may reasonably require, send further interim accounts giving the accumulated amount of the claim and any further grounds upon which it is based. In cases where interim accounts are sent to the Engineer, the Contractor shall send a final account within 28 days of the end of the effects resulting from the event. The Contractor shall, if required by the Engineer so to do, copy to the Employer all accounts sent to the Engineer pursuant to this Sub-Clause.

Failure to Comply **53.4** If the Contractor fails to comply with any of the provisions of this Clause in respect of any claim which he seeks to make, his entitlement to payment in respect thereof shall not exceed such amount as the Engineer or any arbitrator or arbitrators appointed pursuant to Sub-Clause 67.3 assessing the claim considers to be verified by contemporary records (whether or not such records were brought to the Engineer's notice as required under Sub-Clauses 53.2 and 53.3).

Payment of Claims **53.5** The Contractor shall be entitled to have included in any interim payment certified by the Engineer pursuant to Clause 60 such amount in respect of any claim as the Engineer, after due consultation with the Employer and the Contractor, may consider due to the Contractor provided that the Contractor has supplied sufficient particulars to enable the Engineer to determine the amount due. If such particulars are insufficient to substantiate the whole of the claim, the Contractor shall be entitled to payment in respect of such part of the claim as such particulars may substantiate to the satisfaction of the Engineer. The Engineer shall notify the Contractor of any determination made under this Sub-Clause, with a copy to the Employer.

Contractor's Equipment, Temporary Works and Materials

Contractor's Equipment, Temporary Works and Materials; Exclusive Use for the Works **54.1** All Contractor's Equipment, Temporary Works and materials provided by the Contractor shall, when brought on to the Site, be deemed to be exclusively intended for the execution of the Works and the Contractor shall not remove the same or any part thereof, except for the purpose of moving it from one part of the Site to another, without the consent of the Engineer. Provided that consent shall not be required for vehicles engaged in transporting any staff, labour, Contractor's Equipment, Temporary Works, Plant or materials to or from the Site.

Employer not Liable for Damage **54.2** The Employer shall not at any time be liable, save as mentioned in Clauses 20 and 65, for the loss of or damage to any of the said Contractor's Equipment, Temporary Works or materials.

Customs Clearance **54.3** The Employer will use his best endeavours in assisting the Contractor, where required, in obtaining clearance through the Customs of Contractor's Equipment, materials and other things required for the Works.

Re-export of Contractor's Equipment **54.4** In respect of any Contractor's Equipment which the Contractor has imported for the purposes of the Works, the Employer will use his best endeavours to assist the Contractor, where required, in procuring any necessary Government consent to the re-export of such Contractor's Equipment by the Contractor upon the removal thereof pursuant to the terms of the Contract.

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Conditions of Hire of Contractor's Equipment **54.5** With a view to securing, in the event of termination under Clause 63, the continued availability, for the purpose of executing the Works, of any hired Contractor's Equipment, the Contractor shall not bring on to the Site any hired Contractor's Equipment unless there is an agreement for the hire thereof (which agreement shall be deemed not to include an agreement for hire purchase) which contains a provision that the owner thereof will, on request in writing made by the Employer within 7 days after the date on which any termination has become effective, and on the Employer undertaking to pay all hire charges in respect thereof from such date, hire such Contractor's Equipment to the Employer on the same terms in all respects as the same was hired to the Contractor save that the Employer shall be entitled to permit the use thereof by any other contractor employed by him for the purpose of executing and completing the Works and remedying any defects therein, under the terms of the said Clause 63.

Costs for the Purpose of Clause 63 **54.6** In the event of the Employer entering into any agreement for the hire of Contractor's Equipment pursuant to Sub-Clause 54.5, all sums properly paid by the Employer under the provisions of any such agreement and all costs incurred by him (including stamp duties) in entering into such agreement shall be deemed, for the purpose of Clause 63, to be part of the cost of executing and completing the Works and the remedying of any defects therein.

Incorporation of Clause in Subcontracts **54.7** The Contractor shall, where entering into any subcontract for the execution of any part of the Works, incorporate in such subcontract (by reference or otherwise) the provisions of this Clause in relation to Contractor's Equipment, Temporary Works or materials brought on to the Site by the Subcontractor.

Approval of Materials not Implied **54.8** The operation of this Clause shall not be deemed to imply any approval by the Engineer of the materials or other matters referred to therein nor shall it prevent the rejection of any such materials at any time by the Engineer.

Measurement

Quantities **55.1** The quantities set out in the Bill of Quantities are the estimated quantities for the Works, and they are not to be taken as the actual and correct quantities of the Works to be executed by the Contractor in fulfilment of his obligations under the Contract.

Works to be Measured **56.1** The Engineer shall, except as otherwise stated, ascertain and determine by measurement the value of the Works in accordance with the Contract and the Contractor shall be paid that value in accordance with Clause 60. The Engineer shall, when he requires any part of the Works to be measured, give reasonable notice to the Contractor's authorised agent, who shall:

(a) forthwith attend or send a qualified representative to assist the Engineer in making such measurement, and

(b) supply all particulars required by the Engineer.

Should the Contractor not attend, or neglect or omit to send such representative, then the measurement made by the Engineer or approved by him shall be taken to be the correct measurement of such part of the Works. For the purpose of measuring such Permanent Works as are to be measured by records and drawings, the Engineer shall prepare records and drawings as the work proceeds and the Contractor, as and when called upon to do so in writing, shall, within 14 days, attend to examine and agree such records and drawings with the Engineer and shall sign the same when so agreed. If the Contractor does not attend to examine and agree such records and drawings, they shall be taken to be correct. If, after examination of such records and drawings, the Contractor does not agree the same or does not sign the same as agreed, they shall nevertheless be taken to be correct, unless the Contractor, within 14 days of such examination, lodges with the Engineer notice of the respects in which such records and drawings are claimed by him to be incorrect. On receipt of such notice, the Engineer shall review the records and drawings and either confirm or vary them.

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Method of Measurement **57.1** The Works shall be measured net, notwithstanding any general or local custom, except where otherwise provided for in the Contract.

Breakdown of Lump Sum Items **57.2** For the purposes of statements submitted in accordance with Sub-Clause 60.1, the Contractor shall submit to the Engineer, within 28 days after the receipt of the Letter of Acceptance, a breakdown for each of the lump sum items contained in the Tender. Such breakdowns shall be subject to the approval of the Engineer.

Provisional Sums

Definition of "Provisional Sum" **58.1** "Provisional Sum" means a sum included in the Contract and so designated in the Bill of Quantities for the execution of any part of the Works or for the supply of goods, materials, Plant or services, or for contingencies, which sum may be used, in whole or in part, or not at all, on the instructions of the Engineer. The Contractor shall be entitled to only such amounts in respect of the work, supply or contingencies to which such Provisional Sums relate as the Engineer shall determine in accordance with this Clause. The Engineer shall notify the Contractor of any determination made under this Sub-Clause, with a copy to the Employer.

Use of Provisional Sums **58.2** In respect of every Provisional Sum the Engineer shall have authority to issue instructions for the execution of work or for the supply of goods, materials, Plant or services by:

(a) the Contractor, in which case the Contractor shall be entitled to an amount equal to the value thereof determined in accordance with Clause 52, and

(b) a nominated Subcontractor, as hereinafter defined, in which case the sum to be paid to the Contractor therefor shall be determined and paid in accordance with Sub-Clause 59.4.

Production of Vouchers **58.3** The Contractor shall produce to the Engineer all quotations, invoices, vouchers and accounts or receipts in connection with expenditure in respect of Provisional Sums, except where work is valued in accordance with rates or prices set out in the Tender.

Nominated Subcontractors

Definition of "Nominated Subcontractors" **59.1** All specialists, merchants, tradesmen and others executing any work or supplying any goods, materials, Plant or services for which Provisional Sums are included in the Contract, who may have been or be nominated or selected or approved by the Employer or the Engineer, and all persons to whom by virtue of the provisions of the Contract the Contractor is required to subcontract shall, in the execution of such work or the supply of such goods, materials, Plant or services, be deemed to be subcontractors to the Contractor and are referred to in this Contract as "nominated Subcontractors".

Nominated Subcontractors; Objection to Nomination **59.2** The Contractor shall not be required by the Employer or the Engineer, or be deemed to be under any obligation, to employ any nominated Subcontractor against whom the Contractor may raise reasonable objection, or who declines to enter into a subcontract with the Contractor containing provisions:

(a) that in respect of the work, goods, materials, Plant or services the subject of the subcontract, the nominated Subcontractor will undertake towards the Contractor such obligations and liabilities as will enable the Contractor to discharge his own obligations and liabilities towards the Employer under the terms of the Contract and will save harmless and indemnify the Contractor from and against the same and from all claims, proceedings, damages, costs, charges and expenses whatsoever arising out of or in connection therewith, or arising out of or in connection with any failure to perform such obligations or to fulfil such liabilities, and

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(b) that the nominated Subcontractor will save harmless and indemnify the Contractor from and against any negligence by the nominated Subcontractor, his agents, workmen and servants and from and against any misuse by him or them of any Temporary Works provided by the Contractor for the purposes of the Contract and from all claims as aforesaid.

Design Requirements to be Expressly Stated

59.3 If in connection with any Provisional Sum the services to be provided include any matter of design or specification of any part of the Permanent Works or of any Plant to be incorporated therein, such requirement shall be expressly stated in the Contract and shall be included in any nominated Subcontract. The nominated Subcontract shall specify that the nominated Subcontractor providing such services will save harmless and indemnify the Contractor from and against the same and from all claims, proceedings, damages, costs, charges and expenses whatsoever arising out of or in connection with any failure to perform such obligations or to fulfil such liabilities.

Payments to Nominated Subcontractors

59.4 For all work executed or goods, materials, Plant or services supplied by any nominated Subcontractor, the Contractor shall be entitled to:

(a) the actual price paid or due to be paid by the Contractor, on the instructions of the Engineer, and in accordance with the subcontract;

(b) in respect of labour supplied by the Contractor, the sum, if any, entered in the Bill of Quantities or, if instructed by the Engineer pursuant to paragraph (a) of Sub-Clause 58.2, as may be determined in accordance with Clause 52; and

(c) in respect of all other charges and profit, a sum being a percentage rate of the actual price paid or due to be paid calculated, where provision has been made in the Bill of Quantities for a rate to be set against the relevant Provisional Sum, at the rate inserted by the Contractor against that item or, where no such provision has been made, at the rate inserted by the Contractor in the Appendix to Tender and repeated where provision for such is made in a special item provided in the Bill of Quantities for such purpose.

Certification of Payments to Nominated Subcontractors

59.5 Before issuing, under Clause 60, any certificate, which includes any payment in respect of work done or goods, materials, Plant or services supplied by any nominated Subcontractor, the Engineer shall be entitled to demand from the Contractor reasonable proof that all payments, less retentions, included in previous certificates in respect of the work or goods, materials, Plant or services of such nominated Subcontractor have been paid or discharged by the Contractor. If the Contractor fails to supply such proof then, unless the Contractor:

(a) satisfies the Engineer in writing that he has reasonable cause for withholding or refusing to make such payments, and

(b) produces to the Engineer reasonable proof that he has so informed such nominated Subcontractor in writing,

the Employer shall be entitled to pay to such nominated Subcontractor direct, upon the certificate of the Engineer, all payments, less retentions, provided for in the nominated Subcontract, which the Contractor has failed to make to such nominated Subcontractor and to deduct by way of set-off the amount so paid by the Employer from any sums due or to become due from the Employer to the Contractor.

Provided that, where the Engineer has certified and the Employer has paid direct as aforesaid, the Engineer shall, in issuing any further certificate in favour of the Contractor, deduct from the amount thereof the amount so paid, direct as aforesaid, but shall not withhold or delay the issue of the certificate itself when due to be issued under the terms of the Contract.

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Certificates and Payment

Monthly Statements **60.1** The Contractor shall submit to the Engineer after the end of each month six copies, each signed by the Contractor's representative approved by the Engineer in accordance with Sub-Clause 15.1, of a statement, in such form as the Engineer may from time to time prescribe, showing the amounts to which the Contractor considers himself to be entitled up to the end of the month in respect of:

(a) the value of the Permanent Works executed,

(b) any other items in the Bill of Quantities including those for Contractor's Equipment, Temporary Works, dayworks and the like,

(c) the percentage of the invoice value of listed materials, all as stated in the Appendix to Tender, and Plant delivered by the Contractor on the Site for incorporation in the Permanent Works but not incorporated in such Works,

(d) adjustments under Clause 70, and

(e) any other sum to which the Contractor may be entitled under the Contract or otherwise.

Monthly Payments **60.2** The Engineer shall, within 28 days of receiving such statement, deliver to the Employer an Interim Payment Certificate stating the amount of payment to the Contractor which the Engineer considers due and payable in respect of such statement, subject:

(a) firstly, to the retention of the amount calculated by applying the Percentage of Retention stated in the Appendix to Tender, to the amount to which the Contractor is entitled under paragraphs (a), (b), (c) and (e) of Sub-Clause 60.1 until the amount so retained reaches the Limit of Retention Money stated in the Appendix to Tender, and

(b) secondly, to the deduction, other than pursuant to Clause 47, of any sums which may have become due and payable by the Contractor to the Employer.

Provided that the Engineer shall not be bound to certify any payment under this Sub-Clause if the net amount thereof, after all retentions and deductions, would be less than the Minimum Amount of Interim Payment Certificates stated in the Appendix to Tender.

Notwithstanding the terms of this Clause or any other Clause of the Contract no amount will be certified by the Engineer for payment until the performance security, if required under the Contract, has been provided by the Contractor and approved by the Employer.

Payment of Retention Money **60.3** (a) Upon the issue of the Taking-Over Certificate with respect to the whole of the Works, one half of the Retention Money, or upon the issue of a Taking-Over Certificate with respect to a Section or part of the Permanent Works only such proportion thereof as the Engineer determines having regard to the relative value of such Section or part of the Permanent Works, shall be certified by the Engineer for payment to the Contractor.

(b) Upon the expiration of the Defects Liability Period for the Works the other half of the Retention Money shall be certified by the Engineer for payment to the Contractor. Provided that, in the event of different Defects Liability Periods having become applicable to different Sections or parts of the Permanent Works pursuant to Clause 48, the expression "expiration of the Defects Liability Period" shall, for the purposes of this Sub-Clause, be deemed to mean the expiration of the latest of such periods. Provided also that if at such time there shall remain to be executed by the Contractor any work instructed, pursuant to Clauses 49 and 50, in respect of the Works, the Engineer shall be entitled to withhold certification until completion of such work of so much of the balance of the Retention Money as shall, in the opinion of the Engineer, represent the cost of the work remaining to be executed.

Correction of Certificates **60.4** The Engineer may by any Interim Payment Certificate make any correction or modification in any previous Interim Payment Certificate which shall have been issued by him and shall have authority, if any work is not being carried out to his satisfaction, to omit or reduce the value of such work in any Interim Payment Certificate.

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Statement at Completion **60.5** Not later than 84 days after the issue of the Taking-Over Certificate in respect of the whole of the Works, the Contractor shall submit to the Engineer six copies of a Statement at Completion with supporting documents showing in detail, in the form approved by the Engineer:

(a) the final value of all work done in accordance with the Contract up to the date stated in such Taking-Over Certificate,

(b) any further sums which the Contractor considers to be due, and

(c) an estimate of amounts which the Contractor considers will become due to him under the Contract.

The estimated amounts shall be shown separately in such Statement at Completion. The Engineer shall certify payment in accordance with Sub-Clause 60.2.

Final Statement **60.6** Not later than 56 days after the issue of the Defects Liability Certificate pursuant to Sub-Clause 62.1, the Contractor shall submit to the Engineer for consideration six copies of a draft final statement with supporting documents showing in detail, in the form approved by the Engineer:

(a) the value of all work done in accordance with the Contract, and

(b) any further sums which the Contractor considers to be due to him under the Contract or otherwise.

If the Engineer disagrees with or cannot verify any part of the draft final statement, the Contractor shall submit such further information as the Engineer may reasonably require and shall make such changes in the draft as may be agreed between them. The Contractor shall then prepare and submit to the Engineer the final statement as agreed (for the purposes of these Conditions referred to as the "Final Statement").

If, following discussions between the Engineer and the Contractor and any changes to the draft final statement which may be agreed between them, it becomes evident that a dispute exists, the Engineer shall deliver to the Employer an Interim Payment Certificate for those parts of the draft final statement, if any, which are not in dispute. The dispute may then be settled in accordance with Clause 67.

Discharge **60.7** Upon submission of the Final Statement, the Contractor shall give to the Employer, with a copy to the Engineer, a written discharge confirming that the total of the Final Statement represents full and final settlement of all monies due to the Contractor arising out of or in respect of the Contract. Provided that such discharge shall become effective only after payment due under the Final Payment Certificate issued pursuant to Sub-Clause 60.8 has been made and the performance security referred to in Sub-Clause 10.1, if any, has been returned to the Contractor.

Final Payment Certificate **60.8** Within 28 days after receipt of the Final Statement, and the written discharge, the Engineer shall issue to the Employer (with a copy to the Contractor) a Final Payment Certificate stating:

(a) the amount which, in the opinion of the Engineer, is finally due under the Contract or otherwise, and

(b) after giving credit to the Employer for all amounts previously paid by the Employer and for all sums to which the Employer is entitled other than under Clause 47, the balance, if any, due from the Employer to the Contractor or from the Contractor to the Employer as the case may be.

Cessation of Employer's Liability **60.9** The Employer shall not be liable to the Contractor for any matter or thing arising out of or in connection with the Contract or execution of the Works, unless the Contractor shall have included a claim in respect thereof in his Final Statement and (except in respect of matters or things arising after the issue of the Taking-Over Certificate in respect of the whole of the Works) in the Statement at Completion referred to in Sub-Clause 60.5.

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Time for Payment **60.10** The amount due to the Contractor under any Interim Payment Certificate issued by the Engineer pursuant to this Clause, or to any other term of the Contract, shall, subject to Clause 47, be paid by the Employer to the Contractor within 28 days after such Interim Payment Certificate has been delivered to the Employer, or, in the case of the Final Payment Certificate referred to in Sub-Clause 60.8, within 56 days, after such Final Payment Certificate has been delivered to the Employer. In the event of the failure of the Employer to make payment within the times stated, the Employer shall pay to the Contractor interest at the rate stated in the Appendix to Tender upon all sums unpaid from the date by which the same should have been paid. The provisions of this Sub-Clause are without prejudice to the Contractor's entitlement under Clause 69 or otherwise.

Approval only by Defects Liability Certificate **61.1** Only the Defects Liability Certificate, referred to in Clause 62, shall be deemed to constitute approval of the Works.

Defects Liability Certificate **62.1** The Contract shall not be considered as completed until a Defects Liability Certificate shall have been signed by the Engineer and delivered to the Employer, with a copy to the Contractor, stating the date on which the Contractor shall have completed his obligations to execute and complete the Works and remedy any defects therein to the Engineer's satisfaction. The Defects Liability Certificate shall be given by the Engineer within 28 days after the expiration of the Defects Liability Period, or, if different defects liability periods shall become applicable to different Sections or parts of the Permanent Works, the expiration of the latest such period, or as soon thereafter as any works instructed, pursuant to Clauses 49 and 50, have been completed to the satisfaction of the Engineer. Provided that the issue of the Defects Liability Certificate shall not be a condition precedent to payment to the Contractor of the second portion of the Retention Money in accordance with the conditions set out in Sub-Clause 60.3.

Unfulfilled Obligations **62.2** Notwithstanding the issue of the Defects Liability Certificate the Contractor and the Employer shall remain liable for the fulfilment of any obligation incurred under the provisions of the Contract prior to the issue of the Defects Liability Certificate which remains unperformed at the time such Defects Liability Certificate is issued and, for the purposes of determining the nature and extent of any such obligation, the Contract shall be deemed to remain in force between the parties to the Contract.

Remedies

Default of Contractor **63.1** If the Contractor is deemed by law unable to pay his debts as they fall due, or enters into voluntary or involuntary bankruptcy, liquidation or dissolution (other than a voluntary liquidation for the purposes of amalgamation or reconstruction), or becomes insolvent, or makes an arrangement with, or assignment in favour of, his creditors, or agrees to carry out the Contract under a committee of inspection of his creditors, or if a receiver, administrator, trustee or liquidator is appointed over any substantial part of his assets, or if, under any law or regulation relating to reorganization, arrangement or readjustment of debts, proceedings are commenced against the Contractor or resolutions passed in connection with dissolution or liquidation or if any steps are taken to enforce any security interest over a substantial part of the assets of the Contractor, or if any act is done or event occurs with respect to the Contractor or his assets which, under any applicable law has a substantially similar effect to any of the foregoing acts or events, or if the Contractor has contravened Sub-Clause 3.1, or has an execution levied on his goods, or if the Engineer certifies to the Employer, with a copy to the Contractor, that, in his opinion, the Contractor:

(a) has repudiated the Contract,

(b) without reasonable excuse has failed

(i) to commence the Works in accordance with Sub-Clause 41.1, or

(ii) to proceed with the Works, or any Section thereof, within 28 days after receiving notice pursuant to Sub-Clause 46.1,

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(c) has failed to comply with a notice issued pursuant to Sub-Clause 37.4 or an instruction issued pursuant to Sub-Clause 39.1 within 28 days after having received it,

(d) despite previous warning from the Engineer, in writing, is otherwise persistently or flagrantly neglecting to comply with any of his obligations under the Contract, or

(e) has contravened Sub-Clause 4.1,

then the Employer may, after giving 14 days' notice to the Contractor, enter upon the Site and the Works and terminate the employment of the Contractor without thereby releasing the Contractor from any of his obligations or liabilities under the Contract, or affecting the rights and authorities conferred on the Employer or the Engineer by the Contract, and may himself complete the Works or may employ any other contractor to complete the Works. The Employer or such other contractor may use for such completion so much of the Contractor's Equipment, Temporary Works and materials as he or they may think proper.

Valuation at Date of Termination **63.2** The Engineer shall, as soon as may be practicable after any such entry and termination by the Employer, fix and determine ex parte, or by or after reference to the parties or after such investigation or enquiries as he may think fit to make or institute, and shall certify:

a) what amount (if any) had, at the time of such entry and termination, been reasonably earned by or would reasonably accrue to the Contractor in respect of work then actually done by him under the Contract, and

(b) the value of any of the said unused or partially used materials, any Contractor's Equipment and any Temporary Works.

Payment after Termination **63.3** If the Employer terminates the Contractor's employment under this Clause, he shall not be liable to pay to the Contractor any further amount (including damages) in respect of the Contract until the expiration of the Defects Liability Period and there after until the costs of execution, completion and remedying of any defects, damages for delay in completion (if any) and all other expenses incurred by the Employer have been ascertained and the amount thereof certified by the Engineer. The Contractor shall then be entitled to receive only such sum (if any) as the Engineer may certify would have been payable to him upon due completion by him after deducting the said amount. If such amount exceeds the sum which would have been payable to the Contractor on due completion by him, then the Contractor shall, upon demand, pay to the Employer the amount of such excess and it shall be deemed a debt due by the Contractor to the Employer and shall be recoverable accordingly.

Assignment of Benefit of Agreement **63.4** Unless prohibited by law, the Contractor shall, if so instructed by the Engineer within 14 days of such entry and termination referred to in Sub-Clause 63.1, assign to the Employer the benefit of any agreement for the supply of any goods or materials or services and/or for the execution of any work for the purposes of the Contract, which the Contractor may have entered into.

Urgent Remedial Work **64.1** If, by reason of any accident, or failure, or other event occurring to, in, or in connection with the Works, or any part thereof, either during the execution of the Works, or during the Defects Liability Period, any remedial or other work is, in the opinion of the Engineer, urgently necessary for the safety of the Works and the Contractor is unable or unwilling at once to do such work, the Employer shall be entitled to employ and pay other persons to carry out such work as the Engineer may consider necessary. If the work or repair so done by the Employer is work which, in the opinion of the Engineer, the Contractor was liable to do at his own cost under the Contract, then all costs consequent thereon or incidental thereto shall, after due consultation with the Employer and the Contractor, be determined by the Engineer and shall be recoverable from the Contractor by the Employer, and may be deducted by the Employer from any monies due or to become due to the Contractor and the Engineer shall notify the Contractor accordingly, with a copy to the Employer. Provided that the Engineer shall, as soon after the occurrence of any such emergency as may be reasonably practicable, notify the Contractor thereof.

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Special Risks

No Liability for Special Risks **65.1** The Contractor shall be under no liability whatsoever in consequence of any of the special risks referred to in Sub-Clause 65.2, whether by way of indemnity or otherwise, for or in respect of:

(a) destruction of or damage to the Works, save to work condemned under the provisions of Clause 39 prior to the occurrence of any of the said special risks,

(b) destruction of or damage to property, whether of the Employer or third parties, or

(c) injury or loss of life.

Special Risks **65.2** The special risks are:

(a) the risks defined under paragraphs (a), (c), (d) and (e) of Sub-Clause 20.4, and

(b) the risks defined under paragraph (b) of Sub-Clause 20.4 insofar as these relate to the country in which the Works are to be executed.

Damage to Works by Special Risks **65.3** If the Works or any materials or Plant on or near or in transit to the Site, or any of the Contractor's Equipment, sustain destruction or damage by reason of any of the said special risks, the Contractor shall be entitled to payment in accordance with the Contract for any Permanent Works duly executed and for any materials or Plant so destroyed or damaged and, so far as may be required by the Engineer or as may be necessary for the completion of the Works, to payment for:

(a) rectifying any such destruction or damage to the Works, and

(b) replacing or rectifying such materials or Contractor's Equipment,

and the Engineer shall determine an addition to the Contract Price in accordance with Clause 52 (which shall in the case of the cost of replacement of Contractor's Equipment include the fair market value thereof as determined by the Engineer) and shall notify the Contractor accordingly, with a copy to the Employer.

Projectile, Missile **65.4** Destruction, damage, injury or loss of life caused by the explosion or impact, whenever and wherever occurring, of any mine, bomb, shell, grenade, or other projectile, missile, munition, or explosive of war, shall be deemed to be a consequence of the said special risks.

Increased Costs arising from Special Risks **65.5** Save to the extent that the Contractor is entitled to payment under any other provision of the Contract, the Employer shall repay to the Contractor any costs of the execution of the Works (other than such as may be attributable to the cost of reconstructing work condemned under the provisions of Clause 39 prior to the occurrence of any special risk) which are howsoever attributable to or consequent on or the result of or in any way whatsoever connected with the said special risks, subject however to the provisions in this Clause hereinafter contained in regard to outbreak of war, but the Contractor shall, as soon as any such cost comes to his knowledge, forthwith notify the Engineer thereof. The Engineer shall, after due consultation with the Employer and the Contractor, determine the amount of the Contractor's costs in respect thereof which shall be added to the Contract Price and shall notify the Contractor accordingly, with a copy to the Employer.

Outbreak of War **65.6** If, during the currency of the Contract, there is an outbreak of war, whether war is declared or not, in any part of the world which, whether financially or otherwise, materially affects the execution of the Works, the Contractor shall, unless and until the Contract is terminated under the provisions of this Clause, continue to use his best endeavours to complete the execution of the Works. Provided that the Employer shall be entitled, at any time after such outbreak of war, to terminate the Contract by giving notice to the Contractor and, upon such notice being given, the Contract shall, except as to the rights of the parties under this Clause and Clause 67, terminate, but without prejudice to the rights of either party in respect of any antecedent breach thereof.

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Removal of Contractor's Equipment on Termination

65.7 If the Contract is terminated under the provisions of Sub-Clause 65.6, the Contractor shall, with all reasonable dispatch, remove from the Site all Contractor's Equipment and shall give similar facilities to his Subcontractors to do so.

Payment if Contract Terminated

65.8 If the Contract is terminated as aforesaid, the Contractor shall be paid by the Employer, insofar as such amounts or items have not already been covered by payments on account made to the Contractor, for all work executed prior to the date of termination at the rates and prices provided in the Contract and in addition:

(a) the amounts payable in respect of any preliminary items referred to in the Bill of Quantities, so far as the work or service comprised therein has been carried out or performed, and a proper proportion of any such items which have been partially carried out or performed;

(b) the cost of materials, Plant or goods reasonably ordered for the Works which have been delivered to the Contractor or of which the Contractor is legally liable to accept delivery, such materials, Plant or goods becoming the property of the Employer upon such payments being made by him;

(c) a sum being the amount of any expenditure reasonably incurred by the Contractor in the expectation of completing the whole of the Works insofar as such expenditure has not been covered by any other payments referred to in this Sub-Clause;

(d) any additional sum payable under the provisions of Sub-Clauses 65.3 and 65.5;

(e) such proportion of the cost as may be reasonable, taking into account payments made or to be made for work executed, of removal of Contractor's Equipment under Sub-Clause 65.7 and, if required by the Contractor, return thereof to the Contractor's main plant yard in his country of registration or to other destination, at no greater cost; and

(f) the reasonable cost of repatriation of all the Contractor's staff and workmen employed on or in connection with the Works at the time of such termination.

Provided that against any payment due from the Employer under this Sub-Clause, the Employer shall be entitled to be credited with any outstanding balances due from the Contractor for advances in respect of Contractor's Equipment, materials and Plant and any other sums which, at the date of termination, were recoverable by the Employer from the Contractor under the terms of the Contract. Any sums payable under this Sub-Clause shall, after due consultation with the Employer and the Contractor, be determined by the Engineer who shall notify the Contractor accordingly, with a copy to the Employer.

Release from Performance

Payment in Event of Release from Performance

66.1 If any circumstance outside the control of both parties arises after the issue of the Letter of Acceptance which renders it impossible or unlawful for either or both parties to fulfil his or their contractual obligations, or under the law governing the Contract the parties are released from further performance, then the parties shall be discharged from the Contract, except as to their rights under this Clause and Clause 67 and without prejudice to the rights of either party in respect of any antecedent breach of the Contract, and the sum payable by the Employer to the Contractor in respect of the work executed shall be the same as that which would have been payable under Clause 65 if the Contract had been terminated under the provisions of Clause 65.

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Settlement of Disputes

Engineer's Decision **67.1** If a dispute of any kind whatsoever arises between the Employer and the Contractor in connection with, or arising out of, the Contract or the execution of the Works, whether during the execution of the Works or after their completion and whether before or after repudiation or other termination of the Contract, including any dispute as to any opinion, instruction, determination, certificate or valuation of the Engineer, the matter in dispute shall, in the first place, be referred in writing to the Engineer, with a copy to the other party. Such reference shall state that it is made pursuant to this Clause. No later than the eighty-fourth day after the day on which he received such reference the Engineer shall give notice of his decision to the Employer and the Contractor. Such decision shall state that it is made pursuant to this Clause.

Unless the Contract has already been repudiated or terminated, the Contractor shall, in every case, continue to proceed with the Works with all due diligence and the Contractor and the Employer shall give effect forthwith to every such decision of the Engineer unless and until the same shall be revised, as hereinafter provided, in an amicable settlement or an arbitral award.

If either the Employer or the Contractor be dissatisfied with any decision of the Engineer, or if the Engineer fails to give notice of his decision on or before the eighty-fourth day after the day on which he received the reference, then either the Employer or the Contractor may, on or before the seventieth day after the day on which he received notice of such decision, or on or before the seventieth day after the day on which the said period of 84 days expired, as the case may be, give notice to the other party, with a copy for information to the Engineer, of his intention to commence arbitration, as hereinafter provided, as to the matter in dispute. Such notice shall establish the entitlement of the party giving the same to commence arbitration, as hereinafter provided, as to such dispute and, subject to Sub-Clause 67.4, no arbitration in respect thereof may be commenced unless such notice is given.

If the Engineer has given notice of his decision as to a matter in dispute to the Employer and the Contractor and no notice of intention to commence arbitration as to such dispute has been given by either the Employer or the Contractor on or before the seventieth day after the day on which the parties received notice as to such decision from the Engineer, the said decision shall become final and binding upon the Employer and the Contractor.

Amicable Settlement **67.2** Where notice of intention to commence arbitration as to a dispute has been given in accordance with Sub-Clause 67.1, the parties shall attempt to settle such dispute amicably before the commencement of arbitration. Provided that, unless the parties otherwise agree, arbitration may be commenced on or after the fifty-sixth day after the day on which notice of intention to commence arbitration of such dispute was given, even if no attempt at amicable settlement thereof has been made.

Arbitration **67.3** Any dispute in respect of which:

(a) the decision, if any, of the Engineer has not become final and binding pursuant to Sub-Clause 67.1, and

(b) amicable settlement has not been reached within the period stated in Sub-Clause 67.2,

shall be finally settled, unless otherwise specified in the Contract, under the Rules of Conciliation and Arbitration of the International Chamber of Commerce by one or more arbitrators appointed under such Rules. The said arbitrator/s shall have full power to open up, review and revise any decision, opinion, instruction, determination, certificate or valuation of the Engineer related to the dispute.

Neither party shall be limited in the proceedings before such arbitrator/s to the evidence or arguments put before the Engineer for the purpose of obtaining his said decision pursuant to Sub-Clause 67.1. No such decision shall disqualify the Engineer from being called as a witness and giving evidence before the arbitrator/s on any matter whatsoever relevant to the dispute.

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Arbitration may be commenced prior to or after completion of the Works, provided that the obligations of the Employer, the Engineer and the Contractor shall not be altered by reason of the arbitration being conducted during the progress of the Works.

Failure to Comply with Engineer's Decision **67.4** Where neither the Employer nor the Contractor has given notice of intention to commence arbitration of a dispute within the period stated in Sub-Clause 67.1 and the related decision has become final and binding, either party may, if the other party fails to comply with such decision, and without prejudice to any other rights it may have, refer the failure to arbitration in accordance with Sub-Clause 67.3. The provisions of Sub-Clauses 67.1 and 67.2 shall not apply to any such reference.

Notices

Notice to Contractor **68.1** All certificates, notices or instructions to be given to the Contractor by the Employer or the Engineer under the terms of the Contract shall be sent by post, cable, telex or facsimile transmission to or left at the Contractor's principal place of business or such other address as the Contractor shall nominate for that purpose.

Notice to Employer and Engineer **68.2** Any notice to be given to the Employer or to the Engineer under the terms of the Contract shall be sent by post, cable, telex or facsimile transmission to or left at the respective addresses nominated for that purpose in Part II of these Conditions.

Change of Address **68.3** Either party may change a nominated address to another address in the country where the Works are being executed by prior notice to the other party, with a copy to the Engineer, and the Engineer may do so by prior notice to both parties.

Default of Employer

Default of Employer **69.1** In the event of the Employer:

(a) failing to pay to the Contractor the amount due under any certificate of the Engineer within 28 days after the expiry of the time stated in Sub-Clause 60.10 within which payment is to be made, subject to any deduction that the Employer is entitled to make under the Contract,

(b) interfering with or obstructing or refusing any required approval to the issue of any such certificate,

(c) becoming bankrupt or, being a company, going into liquidation, other than for the purpose of a scheme of reconstruction or amalgamation, or

(d) giving notice to the Contractor that for unforeseen economic reasons it is impossible for him to continue to meet his contractual obligations,

the Contractor shall be entitled to terminate his employment under the Contract by giving notice to the Employer, with a copy to the Engineer. Such termination shall take effect 14 days after the giving of the notice.

Removal of Contractor's Equipment **69.2** Upon the expiry of the 14 days' notice referred to in Sub-Clause 69.1, the Contractor shall, notwithstanding the provisions of Sub-Clause 54.1, with all reasonable despatch, remove from the Site all Contractor's Equipment brought by him thereon.

Payment on Termination **69.3** In the event of such termination the Employer shall be under the same obligations to the Contractor in regard to payment as if the Contract had been terminated under the provisions of Clause 65, but, in addition to the payments specified in Sub-Clause 65.8, the Employer shall pay to the Contractor the amount of any loss or damage to the Contractor arising out of or in connection with or by consequence of such termination.

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Contractor's Entitlement to Suspend Work

69.4 Without prejudice to the Contractor's entitlement to interest under Sub-Clause 60.10 and to terminate under Sub-Clause 69.1, the Contractor may, if the Employer fails to pay the Contractor the amount due under any certificate of the Engineer within 28 days after the expiry of the time stated in Sub-Clause 60.10 within which payment is to be made, subject to any deduction that the Employer is entitled to make under the Contract, after giving 28 days' prior notice to the Employer, with a copy to the Engineer, suspend work or reduce the rate of work.

If the Contractor suspends work or reduces the rate of work in accordance with the provisions of this Sub-Clause and thereby suffers delay or incurs costs the Engineer shall, after due consultation with the Employer and the Contractor, determine:

(a) any extension of time to which the Contractor is entitled under Clause 44, and

(b) the amount of such costs, which shall be added to the Contract Price,

and shall notify the Contractor accordingly, with a copy to the Employer.

Resumption of Work

69.5 Where the Contractor suspends work or reduces the rate of work. having given notice in accordance with Sub-Clause 69.4, and the Employer subsequently pays the amount due, including interest pursuant to Sub-Clause 60.10, the Contractor's entitlement under Sub-Clause 69.1 shall, if notice of termination has not been given, lapse and the Contractor shall resume normal working as soon as is reasonably possible.

Changes in Cost and Legislation

Increase or Decrease of Cost

70.1 There shall be added to or deducted from the Contract Price such sums in respect of rise or fall in the cost of labour and/or materials or any other matters affecting the cost of the execution of the Works as may be determined in accordance with Part II of these Conditions.

Subsequent Legislation

70.2 If, after the date 28 days prior to the latest date for submission of tenders for the Contract there occur in the country in which the Works are being or are to be executed changes to any National or State Statute, Ordinance, Decree or other Law or any regulation or bye-law of any local or other duly constituted authority, or the introduction of any such State Statute, Ordinance, Decree, Law, regulation or bye-law which causes additional or reduced cost to the Contractor, other than under Sub-Clause 70.1, in the execution of the Contract, such additional or reduced cost shall, after due consultation with the Employer and the Contractor, be determined by the Engineer and shall be added to or deducted from the Contract Price- and the Engineer shall notify the Contractor accordingly, with a copy to the Employer.

Currency and Rates of Exchange

Currency Restrictions

71.1 If, after the date 28 days prior to the latest date for submission of tenders for the Contract, the Government or authorised agency of the Government of the country in which the Works are being or are to be executed imposes currency restrictions and/or transfer of currency restrictions in relation to the currency or currencies in which the Contract Price is to be paid, the Employer shall reimburse any loss or damage to the Contractor arising therefrom, without prejudice to the right of the Contractor to exercise any other rights or remedies to which he is entitled in such event.

Rates of Exchange

72.1 Where the Contract provides for payment in whole or in part to be made to the Contractor in foreign currency or currencies, such payment shall not be subject to variations in the rate or rates of exchange between such specified foreign currency or currencies and the currency of the country in which the Works are to be executed.

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Currency Proportions **72.2** Where the Employer has required the Tender to be expressed in a single currency but with payment to be made in more than one currency and the Contractor has stated the proportions or amounts of other currency or currencies in which he requires payment to be made, the rate or rates of exchange applicable for calculating the payment of such proportions or amounts shall, unless otherwise stated in Part II of these Conditions, be those prevailing, as determined by the Central Bank of the country in which the Works are to be executed, on the date 28 days prior to the latest date for the submission of tenders for the Contract, as has been notified to the Contractor by the Employer prior to the submission of tenders or as provided for in the Tender.

Currencies of Payment for Provisional Sums **72.3** Where the Contract provides for payment in more than one currency, the proportions or amounts to be paid in foreign currencies in respect of Provisional Sums shall be determined in accordance with the principles set forth in Sub-Clauses 72.1 and 72.2 as and when these sums are utilised in whole or in part in accordance with the provisions of Clauses 58 and 59.

REFERENCE TO PART II

As stated in the Foreword at the beginning of this document, the FIDIC Conditions comprise both Part I and Part II. Certain Clauses, namely Sub-Clauses 1.1 paragraph (a) (i) and (iv), 5.1 (part), 14.1, 14.3, 68.2 and 70.1 must include additional wording in Part II for the Conditions to be complete. Other Clauses may require additional wording to supplement Part I or to cover particular circumstances or the type of work (dredging is an example).

Part II Conditions of Particular Application with guidelines for the preparation of Part II are printed in a separately bound document.

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in original

TENDER

NAME OF CONTRACT: * _____

_____

TO:* _____

_____

Gentlemen,

1. Having examined the Conditions of Contract, Specification, Drawings, and Bill of Quantities and Addenda Nos _____ for the execution of the above-named Works, we, the undersigned, offer to execute and complete such Works and remedy any defects therein in conformity with the Conditions of Contract, Specification, Drawings, Bill of Quantities and Addenda for the sum of

_____

_____

(_____)
or such other sum as may be ascertained in accordance with the said Conditions.

2. We acknowledge that the Appendix forms part of our Tender.

3. We undertake, if our Tender is accepted, to commence the Works as soon as is reasonably possible after the receipt of the Engineer's notice to commence, and to complete the whole of the Works comprised in the Contract within the time stated in the Appendix to Tender.

4. We agree to abide by this Tender for the period of *____ days from the date fixed for receiving the same and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

5. Unless and until a formal Agreement is prepared and executed this Tender, together with your written acceptance thereof, shall constitute a binding contract between us.

6. We understand that you are not bound to accept the lowest or any tender you may receive.

Dated this _____ day of _____ 19 ____

Signature _____ in the capacity of _____

duly authorised to sign tenders for and on behalf of _____

_____

(IN BLOCK CAPITALS)

Address _____

_____

Witness _____

Address _____

_____

Occupation _____

(Note: All details marked * shall be inserted before issue of Tender documents.)

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Appendix

	Sub-Clause	
Amount of security (if any) _____	10.1	_____ per cent of the Contract Price
Minimum amount of third party insurance	23.2	_____ per occurrence, with the number of occurrences unlimited
Time for issue of notice to commence	41.1	_____ days
Time for Completion _____	43.1	_____ days
Amount of liquidated damages _____	47.1	_____ per day
Limit of liquidated damages _____	47.1	_____
Defects Liability Period _____	49.1	_____ days
Percentage for adjustment of Provisional Sums	59.4(c)	_____ per cent
Percentage of invoice value of listed materials and Plant _____	60.1 (c)	_____ per cent
Percentage of Retention _____	60.2	_____ per cent
Limit of Retention Money _____	60.2	_____
Minimum Amount of Interim Payment Certificates _____	60.2	_____
Rate of interest upon unpaid sums _____	60.10	_____ per cent per annum

Initials of Signatory of Tender _____ _____

(Notes: All details in the list above, other than percentage figure against Sub-Clause 59.4, shall be inserted before issue of Tender documents. Where a number of days is to be inserted, it is desirable, for consistency with the Conditions, that the number should be a multiple of seven.

Additional entries are necessary where provision is included in the Contract for:

(a) completion of Sections (Sub-Clauses 43.1 and 48.2(a))

(b) liquidated damages for Sections (Sub-Clause 47.1)

(c) a bonus (Sub-Clause 47.3 – Part II)

(d) payment for materials on Site (Sub-Clause 60.1(c))

(e) payment in foreign currencies (Clause 60 – Part II)

(f) an advance payment (Clause 60 – Part II)

(g) adjustments to the Contract Price on account of Specified Materials (Sub-Clause 70.1 – Part II)

(h) rates of exchange (Sub-Clause 72.2 – Part II))

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Agreement

This Agreement made the _____ day of _____ 19 _____

Between _____

of _____

_____ (hereinafter called "the Employer") of the one part and

_____ of _____

(hereinafter called "the Contractor") of the other part

Whereas the Employer is desirous that certain Works should be executed by the Contractor, viz _____

and has accepted a Tender by the Contractor for the execution and completion of such Works and the remedying of any defects therein

Now this Agreement witnesseth as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.

2. The following documents shall be deemed to form and be read and construed as part of this Agreement, viz:

   (a) The Letter of Acceptance;

   (b) The said Tender;

   (c) The Conditions of Contract (Parts I and II);

   (d) The Specification;

   (e) The Drawings; and

   (f) The Bill of Quantities.

3. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned the Contractor hereby covenants with the Employer to execute and complete the Works and remedy any defects therein in conformity in all respects with the provisions of the Contract.

4. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the works and the remedying of defects therein the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

In Witness whereof the parties hereto have caused this Agreement to be executed the day and year first before written in accordance with their respective laws.

The Common Seal of _____

_____

was hereunto affixed in the presence of:-

or

Signed Sealed and Delivered by the

said _____

in the presence of:

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EDITORIAL AMENDMENTS IN 1988

Following publication of the Fourth Edition in 1987 of the Conditions of Contract for Works of Civil Engineering Construction, a number of editorial amendments were agreed by FIDIC. The amendments were incorporated during a 1988 reprinting and the list below clarifies the differences between the 1988 reprint and the original document.

Foreword		The last sentence of the first paragraph previously read "The Conditions are equally suitable for use on domestic contracts. "
Page	**6**	Sub-Clause 10.1. A comma has been inserted after the word "Contract" in the second line. The third sentence previously read "Such security shall be in such form as may be agreed between the Employer and the Contractor."
Page	**11**	Sub-Clause 22.1 (b) was previously one complete paragraph, ie there was no space between the words " . . . other than the Works), " and the remainder of the Sub-Clause.
Page	**15**	Sub-Clause 31.2 (c) was previously one complete paragraph, ie there was no space between the words "... nature for any such," and the remainder of the Sub-Clause.
Page	**20**	Sub-Clause 44.3. The penultimate sentence was previously, "In both such cases the Engineer shall notify the Contractor accordingly, with a copy to the Employer. "
Page	**21**	Sub-Clause 49.1 (a). The word "substantial" has been deleted.
Page	**29**	Sub-Clause 60.3 (b) was previously two paragraphs, the second beginning with the words "Provided also that if at such time . . ."
Page	**30**	Sub-Clause 60.5. The word "The" has been inserted at the beginning of the final paragraph.
Page	**35**	Sub-Clause 67.1. In the eighth line of the third paragraph, a comma has been inserted after the word "provided". In the second line of the fourth paragraph, the word "notice" replaces the word "notification".
Page	**38**	Reference to Part II. In the third line, the words "and (iv)" have been inserted after paragraph (a) (i).
Tender		
Item	**3.**	The word "Works" has been capitalised.
Agreement		
Line	**4**	Inverted commas have been inserted following the words "the Employer."
Line	**6**	Inverted commas have been inserted before the word "the" instead of before the word "Contractor."
Line	**8**	The word "Contractor" has been capitalised.
Line	**9**	The words "Tender by the Contractor" were previously "Tender by Contractor. "
Line	**11**	The word "Agreement" has been capitalised.
Last lines		The Agreement previously ended with the words "Binding Signature of Employer" and "Binding Signature of Contractor".

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FURTHER AMENDMENTS IN 1992

The following amendments have been made to the 1988 Reprint of the Fourth Edition of the Conditions of Contract for Works of Civil Engineering Construction. The amendments of the 1988 Reprint are shown on the previous page. In addition, some minor changes in the use of punctuation marks (commas, semicolons, colons and stops), as well as the use of the words "or" and "and" have been introduced to attain uniformity in the style of all Clauses. These minor changes which improve the style, but which have no effect on the meaning of Clauses, have not been listed below.

FOREWORD The eighth paragraph previously referred to the anticipated publication of the "Guide to the Use of FIDIC Conditions of Contract for Works of Civil Engineering Construction".

Page 2 Sub-Clause 1.1, sub-para (e). Definitions (iii) "Interim Payment Certificate" and (iv) "Final Payment Certificate" have been added.

Page 6 Sub-Clause 8.1. Second paragraph has been added.

Page 7 Sub-Clause 12.2. Marginal note. The word "Adverse" has been changed to read "Not Foreseeable" (also amended in the Contents and the Index).

Page 8 Sub-Clause 13.1. Last sentence has been shortened by deleting the words "or, subject to the provisions of Clause 2, from the Engineer's Representative.", and adding the words "(or his delegate).".

Sub-Clause 15.1, para 1. Last sentence has been shortened by placing a full stop after the word "Engineer", deleting the words " or subject to the provisions of Clause 2, the Engineer's Representative."

Page 10 Sub-Clause 21.1, sub-para (a). The words "(the term "cost" in this context shall include profit)" have been added.

Page 11 Sub-Clause 21.4, sub-para (a). The word "where" has been corrected to read "whether".

Page 18 Sub-Clause 40.3. The word "written" has been deleted at the end of the first line.

Page 19 Sub-Clause 42.3. The word "wayleaves" has been changed to read "rights of way" in the text and marginal note (also amended in the Contents and the Index).

Page 29 Sub-Clause 60.1, sub-para (e). The words "or otherwise" have been added at the end

Sub-Clause 60.2. The words "certify to the Employer" have been changed to read "deliver to the Employer an Interim Payment Certificate stating", the word "thereof" has been changed to read "of such statement" and the word "he" has been changed to read "the Engineer". Sub-para (b). The words "Interim Certificates" have been changed to read "Interim Payment Certificates".

Sub-Clause 60.3, sub-para (b). In the eighth line, the word "ordered" has been changed to read "instructed".

Sub-Clause 60.4. The words "interim certificate" in the first and fourth lines, and the word "certificate" in the second line, have been changed to read "Interim Payment Certificate".

Page 30 Sub-Clause 60.5. In the second line, after the word "Engineer", the words "six copies of" have been added.

Sub-Clause 60.6. In the second line, after the word "consideration", the words "six copies of" have been added. Sub-para (b). The words "or otherwise" have been added at the end. At the end of the sub-clause, the final paragraph has been added.

Sub-Clause 60.7 and Sub-Clause 60.8 (text and marginal note). The words "Final Certificate" have been changed to read "Final Payment Certificate" (also amended in the Contents and the Index).

Sub-Clause 60.8 (a). The words "or otherwise" have been added. Sub-Clause 60.8 (b). The words "under the Contract other than Clause 47" have been changed to read "other than under Clause 47".
Sub-Clause 60.10. In the first and fourth lines, the words "interim certificate" have

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Page	**31**	been changed to read "Interim Payment Certificate". In the fifth and sixth lines, the words "Final Certificate" have been changed to read "Final Payment Certificate". The words "or otherwise" have been added at the end.
Page	**33**	Sub-Clause 65.6. In the ninth line, the words "and to the operation of Clause 67" have been changed to read "and Clause 67".
Page	**34**	Sub-Clause 66.1. In the second line the word "party" has been changed to read "or both parties", in the third line between the words "his" and "contractual" the words "or their" have been added. In the fourth line after the word "then", the words "the parties shall be discharged from the Contract, except as to their rights under this Clause and Clause 67 and without prejudice to the rights of either party in respect of any antecedent breach of the Contract, and " have been added.
Page	**35**	Sub-Clause 67.2. The words "arbitration of such dispute shall not be commenced unless an attempt has first been made by the parties to settle such dispute amicably" have been changed to read " the parties shall attempt to settle such dispute amicably before the commencement of arbitration." The words "whether or not any attempt at amicable settlement thereof has been made" have been changed to read "even if no attempt at amicable settlement thereof has been made".
Page	**37**	Sub-Clause 69.1, Sub-para (d). The words "unforseen reasons, due to economic dislocation" have been changed to read "unforseen economic reasons". Sub-Clause 69.4. In the second line of the second paragraph, the word "cost" has been changed to read "costs".
Page	**38**	REFERENCE TO PART II. In the third line, the words "5.1 part" have been changed to read "5.1 (part)".
TENDER		Paragraph 1. In the last line, the word "sums" has been changed to read "sum".
Appendix		In the ninth line, the words "and Plant" have been added. In the twelth line, the word "Payment" has been added. In the thirteenth line, the words "per annum" have been added.
EDITORIAL AMENDMENTS		For page 35, after the words "Sub-Clause 67.1" the first sentence has been inserted.

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FEDERATION INTERNATIONALE DES INGENIEURS-CONSEILS

CONDITIONS OF CONTRACT FOR WORKS OF CIVIL ENGINEERING CONSTRUCTION

PART II CONDITIONS OF PARTICULAR APPLICATION WITH GUIDELINES FOR PREPARATION OF PART II CLAUSES

FOURTH EDITION 1987
Reprinted 1988 with editorial amendments
Reprinted 1992 with further amendments

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INTRODUCTION

The terms of the Fourth Edition of the Conditions of Contract for Works of Civil Engineering Construction have been prepared by the Fédération Internationale des Ingénieurs Conseils (FIDIC) and are recommended for general use for the purpose of construction of such works where tenders are invited on an international basis. The Conditions, subject to minor modifications, are also suitable for use on domestic contracts.

The version in English of the Conditions is considered by FIDIC as the official and authentic text for the purpose of translation.

The Clauses of general application have been grouped together in a separately bound document and are referred to as Part I—General Conditions. They have been printed in a form which will facilitate their inclusion, as printed, in the contract documents normally prepared.

In the preparation of the Conditions it was recognised that while there are numerous Clauses which will be generally applicable there are some Clauses which must necessarily vary to take account of the circumstances and locality of the Works.

Part I – General Conditions and Part II – Conditions of Particular Application together comprise the Conditions governing the rights and obligations of the parties.

For this reason a Part II standard form has not been produced. It will be necessary to prepare a Part II document for each individual contract and the Guidelines are intended to aid in this task by giving options for various clauses where appropriate.

Part II clauses may arise for one or more reasons, of which the following are examples:

(i) Where the wording in Part I specifically requires that further information is to be included in Part II and the Conditions would not be complete without that information, namely in Sub-Clauses 1.1 paragraphs (a) (i) and (iv), 5.1 (part), 14.1, 14.3, 68.2 and 70.1

(ii) Where the wording in Part I indicates that supplementary information may be included in Part II, but the conditions would still be complete without any such information, namely in Sub-Clauses 2.1 paragraph (b), 5.1 (part), 21.1 paragraph (b) and 72.2.

(iii) Where the type, circumstances or locality of the Works necessitates additional Clauses or Sub-Clauses.

(iv) Where the law of the country or exceptional circumstances necessitate an alteration in Part I. Such alterations should be effected by stating in Part II that a particular Clause, or part of a Clause, in Part I is deleted and giving the substitute Clause, or part, as applicable.

As far as possible, in the Clauses that are mentioned hereunder, example wording is provided. In the case of some Clauses, however, only an aide-memoire for the preparation is given. Before incorporating any example wording it must be checked to ensure that it is wholly suitable for the particular circumstances and, if not, it must be varied. Where example wording is varied and in all cases where additional material is included in Part II, care must be taken that no ambiguity is created with Part I or between the Clauses in Part II.

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Dredging and Reclamation Work

Special consideration must be given to Part II where dredging and certain types of reclamation work are involved. Dredgers are considerably more expensive than most items of Contractor's Equipment and the capital value of a dredger can often exceed the value of the Contract on which it is used.

For this reason, it is in the interests of both the Employer and the Contractor that a dredger is operated intensively in the most economic fashion, subject to the quality of work and any other over-riding factors. With this end in view, it is customary to allow the Contractor to execute dredging work continuously by day and by night seven days a week. Another difference from most civil engineering is that on dredging work the Contractor is not normally held responsible for the remedying of defects after the date of completion as certified under Clause 48. Part II contains explanations and example wording to cover the above points and others relating to dredging. Clauses 11, 12, 18, 19, 28, 40, 45, 49, 50 and 51 are those which most often require attention in Part II when dredging work is involved and reference is included under each of these Clauses. Other Clauses may also need additions in Part II in certain circumstances. Reclamation work varies greatly in character and each instance must be considered before deciding whether it is appropriate to introduce in Part II changes similar to those adopted for dredging, or to use the standard civil engineering form unaltered.

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PART II CONDITIONS OF PARTICULAR APPLICATION

Clause 1

Sub-Clause 1.1 – Definitions

(a) (i) The Employer is (insert name)

(a) (iv) The Engineer is (insert name)

If further definitions are essential, additions should be made to the list.

Clause 2

Sub-Clause 2.1 – Engineer's Duties

EXAMPLE
The Engineer shall obtain the specific approval of the Employer before carrying out his duties in accordance with the following Clauses of Part 1:

(a) Clause (insert applicable number)

(b) Clause (insert applicable number)

(c) Clause (insert applicable number)

This list should be extended or reduced as necessary.

In some cases the obligation to obtain the approval of the Employer may apply to only one Sub-Clause out of several in a Clause or approval may only be necessary beyond certain limits, monetary or otherwise. Where this is so, the example wording must be varied.

If the obligation to obtain the approval of the Employer could lead to the Engineer being unable to take action in an emergency, where matters of safety are involved, an additional paragraph may be necessary.

EXAMPLE
Notwithstanding the obligation, as set out above, to obtain approval, if, in the opinion of the Engineer, an emergency occurs affecting the safety of life or of the Works or of adjoining property, he may, without relieving the Contractor of any of his duties and responsibilities under the Contract, instruct the Contractor to execute all such work or to do all such things as may, in the opinion of the Engineer, be necessary to abate or reduce the risk. The Contractor shall forthwith comply, despite the absence of approval of the Employer, with any such instruction of the Engineer. The Engineer shall determine an addition to the Contract Price, in respect of such instruction, in accordance with Clause 52 and shall notify the Contractor accordingly, with a copy to the Employer.

Clause 5

Sub-Clause 5.1 – Language/s and Law

(a) The language is (insert as applicable)

(b) The law is that in force in (insert name of country)

If necessary (a) above should be varied to read:

The languages are (insert as applicable)

and there should be added

The Ruling Language is (insert as applicable)

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Sub-Clause 5.2 – Priority of Contract Documents

Where it is decided that an order of precedence of all documents should be included, this Sub-Clause may be varied as follows:

EXAMPLE
Delete the documents listed 1 - 6 and substitute:

(1) the Contract Agreement (if completed);

(2) the Letter of Acceptance;

(3) the Tender;

(4) the Conditions of Contract Part II;

(5) the Conditions of Contract Part I;

(6) the Specification;

(7) the Drawings; and

(8) the priced Bill of Quantities

or

Where it is decided that no order of precedence of documents should be included, this Sub-Clause may be varied as follows:

EXAMPLE
Delete the text of the Sub-Clause and substitute:

The several documents forming the Contract are to be taken as mutually explanatory of one another, but in the case of ambiguities or discrepancies the priority shall be that accorded by law. If, in the opinion of the Engineer, such ambiguities or discrepancies make it necessary to issue any instruction to the Contractor in explanation or adjustment, the Engineer shall have authority to issue such instruction.

Clause 9

Where it is decided that a Contract Agreement should be entered into and executed the form must be annexed to these Conditions as stated in Sub-Clause 9.1 of Part I of these Conditions.

A suitable form is annexed to Part I – General Conditions.

Clause 10

Sub-Clause 10.1 – Performance Security

Where it is decided that a performance security should be obtained by the Contractor, the form must be annexed to these Conditions as stated in Sub-Clause 10.1 of Part I of these Conditions.

Two example forms of performance security are given on pages 7, 8 and 9. The Clause and wording of the example forms may have to be varied to comply with the law of the Contract which may require the forms to be executed under seal.

Where there is provision in the Contract for payments to the Contractor to be made in foreign currency, Sub-Clause 10.1 of Part I of these Conditions may be varied.

EXAMPLE
After the first sentence, insert the following sentence:

The security shall be denominated in the types and proportions of currencies stated in the Appendix to Tender.

Where the source of the performance security is to be restricted, an additional Sub-Clause may be added.

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EXAMPLE SUB-CLAUSES

Source of Performance Security **10.4** *The performance security, submitted by the Contractor in accordance with Sub-Clause 10.1, shall be furnished by an institution registered in (insert the country where the Works are to be executed) or licensed to do business in such country.*

or

Source of Performance Security **10.4** *Where the performance security is in the form of a bank guarantee, it shall be issued by:*

(a) a bank located in the country of the Employer, or

(b) a foreign bank through a correspondent bank located in the country of the Employer.

Clause 11

Where the bulk or complexity of the data, or reasons of security enforced by the country where the Works are to be executed, makes it impracticable for the Employer to make all data available with the Tender Documents and inspection of some data by the Contractor at an office is therefore expected, it would be advisable to make the circumstances clear.

EXAMPLE SUB-CLAUSE

Access to Data **11.2** *Data made available by the Employer in accordance with Sub-Clause 11.1 shall be deemed to include data listed elsewhere in the Contract as open for inspection at (insert particulars of the office or offices where such data is stored)*

Sub-Clause 11.1 – Inspection of Site

For a Contract comprising dredging and reclamation work the Clause may be varied as follows:

EXAMPLE

In the first paragraph, delete the words "hydrological and sub-surface" and substitute "hydrographic and sub-seabed".

In the second paragraph, under (a) delete the word "sub-surface" and substitute "sub-seabed" and under (b) delete the word "hydrological" and substitute "hydrographic".

Clause 12

Sub-Clause 12.2 – Not Foreseeable Obstructions or Conditions

For a Contract comprising dredging and some types of reclamation work the Sub-Clause may require to be varied.

EXAMPLE

Delete the words ", other than climatic conditions on the Site,".

Clause 14

Sub-Clause 14.1 – Programme to be Submitted

The time within which the programme shall be submitted shall be (insert number) days.

Sub-Clause 14.3 – Cash Flow Estimate to be Submitted

The time within which the detailed cash flow estimate shall be submitted shall be (insert number) days.

In both examples given above it is desirable for consistency with the rest of the Conditions that the number of days inserted should be a multiple of seven.

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EXAMPLE PERFORMANCE GUARANTEE

By this guarantee *We, _____.*

whose registered office is at _____.

(hereinafter called "the Contractor") and _____

whose registered office is at _____

(hereinafter called "the Guarantor") are held and firmly bound unto

_____ _____ (hereinafter called "the Employer")

in the sum of _____ for the payment of which sum

the Contractor and the Guarantor bind themselves, their successors and assigns jointly and severally by these presents.

Whereas *the Contractor by an Agreement made between the Employer of the one part and the Contractor of the other part has entered into a Contract (hereinafter called "the said Contract") to execute and complete certain Works and remedy any defects therein as therein mentioned in conformity with the provisions of the said Contract.*

Now the Condition *of the above-written Guarantee is such that if the Contractor shall duly perform and observe all the terms provisions conditions and stipulations of the said Contract on the Contractor's part to be performed and observed according to the true purport intent and meaning thereof or if on default by the Contractor the Guarantor shall satisfy and discharge the damages sustained by the Employer thereby up to the amount of the above-written Guarantee then this obligation shall be null and void but otherwise shall be and remain in full force and effect but no alteration in terms of the said Contract or in the extent or nature of the Works to be executed, completed and defects therein remedied thereunder and no allowance of time by the Employer or the Engineer under the said Contract nor any forbearance or forgiveness in or in respect of any matter or thing concerning the said Contract on the part of the Employer or the said Engineer shall in any way release the Guarantor from any liability under the above-written Guarantee. Provided always that the above obligation of Guarantor to satisfy and discharge the damages sustained by the Employer shall arise only*

(a) on written notice from both the Employer and the Contractor that the Employer and the Contractor have mutually agreed that the amount of damages concerned is payable to the Employer or

(b) on receipt by the Guarantor of a legally certified copy of an award issued in arbitration proceeding carried out in conformity with the terms of the said Contract that the amount of the damages is payable to the Employer.

Signed on _____	*Signed on* _____
on behalf of _____	*on behalf of* _____
by _____	*by* _____
in the capacity of _____	*in the capacity of* _____
in the presence of _____	*in the presence of* _____

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EXAMPLE SURETY BOND FOR PERFORMANCE

Know all Men by these Presents that (name and address of Contractor)

_____

_____

as Principal (hereinafter called "the Contractor") and (name, legal title and address of Surety) _____

_____

as Surety (hereinafter called "the Surety"), are held and firmly bound unto (name and address of Employer) _____

_____ *as Obligee (hereinafter called "the Employer") in the amount of* _____ *for the payment of which sum, well and truly to be made, the Contractor and the Surety bind themselves, their successors and assigns, jointly and severally, firmly by these presents.*

Whereas the Contractor has entered into a written contract agreement with the Employer dated the _____ *day of* _____ *19*___

for(name of Works) _____
in accordance with the plans and specifications and amendments thereto, to the extent herein provided for, are by reference made part hereof and are hereinafter referred to as the Contract.

Now, therefore, the Condition of this Obligation is such that, if the Contractor shall promptly and faithfully perform the said Contract (including any amendments thereto) then this obligation shall be null and void; otherwise it shall remain in full force and effect.

Whenever Contractor shall be, and declared by Employer to be, in default under the Contract, the Employer having performed the Employer's obligations thereunder, the Surety may promptly remedy the default, or shall promptly:

(1) Complete the Contract in accordance with its terms and conditions; or

(2) Obtain a bid or bids for submission to the Employer for completing the Contract in accordance with its terms and conditions, and upon determination by Employer and Surety of the lowest responsible bidder, arrange for a contract between such bidder and Employer and make available as work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the Contract Value; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the Contract Value", as used in this paragraph, shall mean the total amount payable by Employer to Contractor under the Contract, less the amount properly paid by Employer to Contractor; or

(3) Pay the Employer the amount required by Employer to complete the Contract in accordance with its terms and conditions any amount up to a total not exceeding the amount of this Bond.

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The Surety shall not be liable for a greater sum than the specified penalty of this Bond.

Any suit under this Bond must be instituted before the issue of the Defects Liability Certificate.

No right of action shall accrue on this Bond to or for the use of any person or corporation other than the Employer named herein or the heirs, executors, administrators or successors of the Employer.

Signed on _____	*Signed on* _____
on behalf of _____	*on behalf of* _____
by _____	*by* _____
in the capacity of _____	*in the capacity of* _____
in the presence of _____	*in the presence of* _____

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Clause 15

Where the language in which the Contract documents have been drawn up is not the language of the country in which the Works are to be executed, or where for any other reason it is necessary to stipulate that the Contractor's authorised representative shall be fluent in a particular language, an additional Sub-Clause may be added.

EXAMPLE SUB-CLAUSES

Language Ability of Contractor's Representative **15.2** *The Contractor's authorised representative shall be fluent in (insert name of language).*

or

Interpreter to be Made Available **15.2** *If the Contractor's authorised representative is not, in the opinion of the Engineer, fluent in (insert name of language), the Contractor shall have available on Site at all times a competent interpreter to ensure the proper transmission of instructions and information.*

Clause 16

Where the language in which the Contract documents have been drawn up is not the language of the country in which the Works are to be executed, or where for any other reason it is necessary to stipulate that members of the Contractor's superintending staff shall be fluent in a particular language, an additional Sub-Clause may be added.

EXAMPLE SUB-CLAUSE

Language Ability of Superintending Staff **16.3** *A reasonable proportion of the Contractor's superintending staff shall have a working knowledge of (insert name of language) or the Contractor shall have available on Site at all times a sufficient number of competent interpreters to ensure the proper transmission of instructions and information.*

Where there is a desire, but not a legal requirement, that the Contractor makes reasonable use of materials from or persons resident in the country in which the Works are to be executed, an additional Sub-Clause may be added.

EXAMPLE SUB-CLAUSE

Employment of Local Personnel **16.4** *The Contractor is encouraged, to the extent practicable and reasonable, to employ staff and labour from sources within (insert name of country).*

Clause 18

Sub-Clause 18.1 – Boreholes and Exploratory Excavation

For a Contract comprising dredging and reclamation work the Sub-Clause may require to be varied.

EXAMPLE

Add second sentence as follows:

Such exploratory excavation shall be deemed to include dredging.

Clause 19

Sub-Clause 19.1 – Safety, Security and Protection of the Environment

Where a Contract includes dredging the possibility of pollution should be given particular attention and additional wording may be required. For example, where fishing and recreation areas might be influenced, the Contractor should be required to plan and execute the dredging so that the effect is kept to a minimum. Where there is a risk of chemical pollution from soluble sediments in the dredging area, for instance in a harbour, it is important that sufficient information is provided with the Tender documents. Responsibilities should be clearly defined.

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Clause 21

Sub-Clause 21.1 – Insurance of Works and Contractor's Equipment

Where there is provision in the Contract for payments to the Contractor to be made in foreign currency, this Sub-Clause may be varied.

EXAMPLE
Add final sentence as follows:

The insurance in paragraphs (a) and (b) shall provide for compensation to be payable in the types and proportions of currencies required to rectify the loss or damage incurred.

Where it is decided to state the deductible limits for the Employer's Risks, this Sub-Clause may be varied.

EXAMPLE
Add to paragraph (a) as follows:

and with deductible limits for the Employer's Risks not exceeding (insert amounts)

Clauses 21, 23 and 25. Insurances Arranged by Employer

In certain circumstances, such as where a number of separate contractors are employed on a single project, or phased take-over is involved, it may be preferable for the Employer to arrange insurance of the Works, and Third Party insurance. In such case, it must be clear in the Contract that the Contractor is not precluded from taking out any additional insurance, should he desire to do so, over and above that to be arranged by the Employer.

Tenderers must be provided at the Tender stage with details of the insurance to be arranged by the Employer, in order to assess what provision to make in their rates and prices for any additional insurance, and for the amount of policy deductibles which they will be required to bear. Such details shall form part of the Contract between the Employer and the Contractor.

Example wording to allow for the arrangement of insurance by the Employer is as follows:

EXAMPLE

Clause 21

Delete the text of the Clause and substitute the following re-numbered Sub-Clauses:

Insurance of Works **21.1** *Without limiting his or the Contractor's obligations and responsibilities under Clause 20, the Employer will insure:*

(a) the Works, together with materials and Plant for incorporation therein, to the full replacement cost (the term "cost" in this context shall include profit), and

(b) an additional sum to cover any additional costs of and incidental to the rectification of loss or damage including professional fees and the cost of demolishing and removing any part of the Works and of removing debris of whatsoever nature.

Insurance of Contractor's Equipment **21.2** *The Contractor shall, without limiting his obligations and responsibilities under Clause 20, insure the Contractor's Equipment and other things brought onto the site by the Contractor, for a sum sufficient to provide for their replacement at the Site.*

Scope of Cover **21.3** *The insurance in Sub-Clause 21.1 shall be in the joint names of the Contractor and the Employer and shall cover:*

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(a) the Employer and the Contractor against loss or damage as provided in the details of insurance annexed to these Conditions, from the start of work at the Site until the date of issue of the relevant Taking-Over Certificate in respect of the Works or any Section or part thereof as the case may be, and

(b) the Contractor for his liability:

(i) during the Defects Liability Period for loss or damage arising from a cause occurring prior to the commencement of the Defects Liability Period, or

(ii) occasioned by the Contractor in the course of any operations carried out by him for the purpose of complying with his obligations under Clauses 49 and 50.

Responsibility for Amounts not Recovered **21.4** *Any amounts not insured or not recovered from the insurers shall be borne by the Employer or the Contractor in accordance with their responsibilities under Clause 20.*

Clause 23

Delete the text of the Clause and substitute:

Third Party Insurance (including Employer's Property) **23.1** *Without limiting his or the Contractor's obligations and responsibilities under Clause 22, the Employer will insure in the joint names of the Contractor and the Employer, against liabilities for death of or injury to any person (other than as provided in Clause 24) or loss of or damage to any property other than the Works) arising out of the performance of the Contract, as provided in the details of insurance referred to in Sub-Clause 21.3.*

Clause 25

Delete the text of the Clause and substitute:

Evidence and Terms of Insurances **25.1** *The insurance policies to be arranged by the Employer pursuant to Clauses 21 and 23 shall be consistent with the general terms described in the Tender and copies of such policies shall when required be supplied by the Employer to the Contractor.*

Adequacy of Insurances **25.2** *The Employer shall notify the insurers of changes in the nature, extent or programme for execution of the Works and ensure the adequacy of the insurances at all times in accordance with the terms of the Contract and shall, when required, produce to the Contractor the insurance policies in force and the receipts for payment of the premiums. No variations shall be made to the insurances by the Employer without the prior approval of the Contractor.*

Remedy on Employer's Failure to Insure **25.3** *If and so far as the Employer fails to effect and keep in force any of the insurances referred to in Sub-Clause 25.1, then the Contractor may effect and keep in force any such insurance and pay any premium as may be necessary for that purpose and add the amount so paid to any monies due or to become due to the Contractor, or recover the same as a debt due from the Employer.*

Compliance with Policy Conditions **25.4** *In the event that the Contractor or the Employer fails to comply with conditions imposed by the insurance policies effected pursuant to the Contract, each shall indemnify the other against all losses and claims arising from such failure.*

Clause 28

Sub-Clause 28.2 – Royalties

For a Contract comprising dredging and reclamation work and for any other Contract involving the dumping of materials the Sub-Clause may require to be varied.

EXAMPLE
Add second sentence as follows:

The Contractor shall also be liable for all payments or compensation, if any, levied in relation to the dumping of part or all of any such materials.

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It is sometimes the case on dredging contracts for the Employer to bear the costs of tonnage and other royalties, rent and other payments or compensation. If such conditions are to apply, Sub-Clause 28.2 should be varied either by adding wording or by deleting the existing wording and substituting new wording.

Clause 31

Where the particular requirements of other contractors are known within reasonable limits at the time of preparation of the Contract documents, details must be stated. The Specification is usually the appropriate place to do so but, exceptionally, some reference may be desirable in the Conditions. In that case, an additional Sub-Clause or Sub-Clauses could be added to this Clause.

Clause 34

It will generally be necessary to add a number of Sub-Clauses, to take account of the circumstances and locality of the Works, covering such matters as: permits and registration of expatriate employees; repatriation to place of recruitment; provision of temporary housing for employees; requirements in respect of accommodation for staff of Employer and Engineer; standards of accommodation to be provided; provision of access roads, hospital, school, power, water, drainage, fire services, refuse collection, communal buildings, shops, telephones; hours and conditions of working; rates of pay; compliance with labour legislation; maintenance of records of safety and health.

EXAMPLE SUB-CLAUSES (to be numbered, as appropriate)

Rates of Wages and Conditions of Labour **34.** *The Contractor shall pay rates of wages and observe conditions of labour not less favourable than those established for the trade or industry where the work is carried out. In the absence of any rates of wages or conditions of labour so established, the Contractor shall pay rates of wages and observe conditions of labour which are not less favourable than the general level of wages and conditions observed by other employers whose general circumstances in the trade or industry in which the Contractor is engaged are similar.*

Employment of Persons in the Service of Others **34.** *The Contractor shall not recruit or attempt to recruit his staff and labour from amongst persons in the service of the Employer or the Engineer.*

Repatriation of Labour **34.** *The Contractor shall be responsible for the return to the place where they were recruited or to their domicile of all such persons as he recruited and employed for the purposes of or in connection with the Contract and shall maintain such persons as are to be so returned in a suitable manner until they shall have left the Site or, in the case of persons who are not nationals of and have been recruited outside (insert name of country), shall have left (insert name of country).*

Housing for Labour **34.** *Save insofar as the Contract otherwise provides, the Contractor shall provide and maintain such accommodation and amenities as he may consider necessary for all his staff and labour, employed for the purposes of or in connection with the Contract, including all fencing, water supply (both for drinking and other purposes), electricity supply, sanitation, cookhouses, fire prevention and fire-fighting equipment, air conditioning, cookers, refrigerators, furniture and other requirements in connection with such accommodation or amenities. On completion of the Contract, unless otherwise agreed with the Employer, the temporary camps/housing provided by the Contractor shall be removed and the site reinstated to its original condition, all to the approval of the Engineer.*

Accident Prevention Officer; Accidents **34.** *The Contractor shall have on his staff at the Site an officer dealing only with questions regarding the safety and protection against accidents of all staff and labour. This officer shall be qualified for this work and shall have the authority to issue instructions and shall take protective measures to prevent accidents.*

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Health and Safety **34.** *Due precautions shall be taken by the Contractor, and at his own cost, to ensure the safety of his staff and labour and, in collaboration with and to the requirements of the local health authorities, to ensure that medical staff first aid equipment and stores, sick bay and suitable ambulance service are available at the camps, housing and on the Site at all times throughout the period of the Contract and that suitable arrangements are made for the prevention of epidemics and for all necessary welfare and hygiene requirements.*

Measures against Insect and Pest Nuisance **34.** *The Contractor shall at all times take the necessary precautions to protect all staff and labour employed on the site from insect nuisance, rats and other pests and reduce the dangers to health and the general nuisance occasioned by the same. The Contractor shall provide his staff and labour with suitable prophylactics for the prevention of malaria and take steps to prevent the formation of stagnant pools of water. He shall comply with all the regulations of the local health authorities in these respects and shall in particular arrange to spray thoroughly with approved insecticide all buildings erected on the Site. Such treatment shall be carried out at least once a year or as instructed by the Engineer. The Contractor shall warn his staff and labour of the dangers of bilharzia and wild animals.*

Epidemics **34.** *In the event of any outbreak of illness of an epidemic nature, the Contractor shall comply with and carry out such regulations, orders and requirements as may be made by the Government, or the local medical or sanitary authorities, for the purpose of dealing with and overcoming the same.*

Burial of the Dead **34.** *The Contractor shall make all necessary arrangements for the transport, to any place as required for burial, of any of his expatriate employees or members of their families who may die in (insert name of country). The Contractor shall also be responsible, to the extent required by the local regulations, for making any arrangements with regard to burial of any of his local employees who may die while engaged upon the Works.*

Supply of Foodstuffs **34.** *The Contractor shall arrange for the provision of a sufficient supply of suitable food at reasonable prices for all his staff, labour and Subcontractors, for the purposes of or in connection with the Contract.*

Supply of Water **34.** *The Contractor shall, so far as is reasonably practicable, having regard to local conditions, provide on the Site an adequate supply of drinking and other water for the use of his staff and labour.*

Alcoholic Liquor or Drugs **34.** *The Contractor shall not, otherwise than in accordance with the Statutes, Ordinances and Government Regulations or Orders for the time being in force, import, sell, give, barter or otherwise dispose of any alcoholic liquor or drugs, or permit or suffer any such importation, sale, gift, barter or disposal by his Subcontractors, agents, staff or labour.*

Arms and Ammunition **34.** *The Contractor shall not give, barter or otherwise dispose of to any person or persons, any arms or ammunition of any kind or permit or suffer the same as aforesaid.*

Festivals and Religious Customs **34.** *The Contractor shall in all dealings with his staff and labour have due regard to all recognised festivals, days of rest and religious or other customs.*

Disorderly Conduct **34.** *The Contractor shall at all times take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by or amongst his staff and labour and for the preservation of peace and protection of persons and property in the neighbourhood of the Works against the same.*

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Clause 35

Additional Sub-Clauses may be desirable to cover circumstances which require the maintenance of particular records or the provision of certain specific reports.

EXAMPLE SUB-CLAUSES (to be numbered, as appropriate)

Records of Safety and Health **35.** *The Contractor shall maintain such records and make such reports concerning safety, health and welfare of persons and damage to property as the Engineer may from time to time prescribe.*

Reporting of Accidents **35.** *The Contractor shall report to the Engineer details of any accident as soon as possible after its occurrence. In the case of any fatality or serious accident, the Contractor shall, in addition, notify the Engineer immediately by the quickest available means.*

Clause 40

For a Contract comprising dredging and some types of reclamation work the Clause may be varied.

Sub-Clause 40.1 – Suspension of Work

EXAMPLE
Delete paragraph (c) and renumber paragraph (d) as (c).

Sub-Clause 40.3 – Suspension Lasting more than 84 Days

EXAMPLE
In the first sentence delete the words ", (c) or (d)" and substitute "or (c)".

Clause 43

Sub-Clause 43.1 – Time for Completion

Where completion is stated to be by a date and not within a period of time, the Sub-Clause will require to be varied.

EXAMPLE
Delete the words, "within the time... such extended time" and substitute "by the date or dates stated in the Appendix to Tender for the whole of the Works or the Section (as the case may be) or such later date or dates".

Clause 45

For a Contract located in an isolated area, where environmental restrictions do not apply, or where a Contract comprises work, such as dredging and reclamation, that may require continuous working, the Clause may be varied.

EXAMPLE
Delete Sub-Clause 45.1 and substitute:

Working Hours **45.1** *Subject to any provision to the contrary contained in the Contract, the Contractor shall have the option to work continuously by day and by night and on locally recognised days of rest.*

The Contractor's option may be further extended by substituting, in place of the last three words:

holidays or days of rest.

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Clause 47

Where it is desired to make provision for the payment of a bonus or bonuses for early completion, an additional Sub-Clause may be added.

In the case where a bonus is provided for early completion of the whole of the Works:

EXAMPLE SUB-CLAUSE

Bonus for Completion **47.3** *If the Contractor achieves completion of the Works prior to the time prescribed by Clause 43, the Employer shall pay to the Contractor a sum of (insert figure) for every day which shall elapse between the date stated in the Taking-Over Certificate in respect of the Works issued in accordance with Clause 48 and the time prescribed in Clause 43.*

or

In the case where bonuses are provided for early completion of Sections of the Works and details, other than the dates, are given in the Specification:

EXAMPLE SUB-CLAUSE

Bonus for Completion **47.3** *Sections are required to be completed by the dates given in the Appendix to Tender in order that such Sections may be occupied and used by the Employer in advance of the completion of the whole of the Works.*

Details of the work required to be executed to entitle the Contractor to bonus payments and the amount of the bonuses are stated in the Specification.

For the purposes of calculating bonus payments, the dates given in the Appendix to Tender for completion of Sections are fixed and, unless otherwise agreed, no adjustments of the dates by reason of granting an extension of time pursuant to Clause 44 or any other Clause of these Conditions will be allowed.

Issue of certificates by the Engineer that the Sections were satisfactory and complete by the dates given on the certificates shall, subject to Clause 60, entitle the Contractor to the bonus payments calculated in accordance with the Specification.

Clause 48

Where it can be foreseen that, when the whole of the Works have been substantially completed, the Contractor may be prevented by reasons beyond his control from carrying out the Tests on Completion, an additional Sub-Clause may be added.

EXAMPLE SUB-CLAUSE

Prevention from Testing **48.5** *If the Contractor is prevented from carrying out the Tests on Completion by a cause for which the Employer or the Engineer or other contractors employed by the Employer are responsible, the Employer shall be deemed to have taken over the Works on the date when the Tests on Completion would have been completed but for such prevention. The Engineer shall issue a Taking-Over Certificate accordingly. Provided always that the Works shall not be deemed to have been taken over if they are not substantially in accordance with the Contract.*

If the Works are taken over under this Sub-Clause the Contractor shall nevertheless carry out the Tests on Completion during the Defects Liability Period. The Engineer shall require the Tests to be carried out by giving 14 days notice.

Any additional costs to which the Contractor may be put, in making the Tests on Completion during the Defects Liability Period, shall be added to the Contract Price.

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Clause 49

For a Contract which includes a high proportion of Plant, an additional Sub-Clause may be necessary.

EXAMPLE SUB-CLAUSE

Extension of Defects Liability **49.5** *The provisions of this Clause shall apply to all replacements or renewals of Plant carried out by the Contractor to remedy defects and damage as if the replacements and renewals had been taken over on the date they were completed. The Defects Liability Period for the Works shall be extended by a period equal to the period during which the Works cannot be used by reason of a defect or damage. If only part of the Works is affected the Defects Liability Period shall be extended only for that part. In neither case shall the Defects Liability Period extend beyond 2 years from the date of taking over.*

When progress in respect of Plant has been suspended under Clause 40, the Contractor's obligations under this Clause shall not apply to any defects occurring more than 3 years after the Time for Completion established on the date of the Letter of Acceptance.

For a Contract comprising dredging work an additional Sub-Clause may be added.

EXAMPLE SUB-CLAUSE

No Remedying of Defects in Dredging Work after Completion **49.5** *Notwithstanding Sub-Clause 49.2, the Contractor shall have no responsibility for the remedying of defects, shrinkages or other faults in respect of dredging work after the date stated in the Taking-Over Certificate.*

Clause 50

For a Contract comprising dredging work and where the second Example Sub-Clause 49.5 has been adopted, an additional Sub-Clause should be added.

EXAMPLE SUB-CLAUSE

No Responsibility for Cost of Searching of Dredging Work **50.2** *Notwithstanding Sub-Clause 50.1, the Contractor shall have no responsibility to bear the cost of searching for any defect, shrinkage or other fault in respect of dredging work after the date stated in the Taking-Over Certificate.*

Clause 51

Sub-Clause 51.1 – Variations

For a Contract comprising dredging and some types of reclamation work the Sub-Clause may require to be varied.

EXAMPLE

Add final sentence as follows:

Provided also that the Contractor shall be under no obligation to execute any variation which cannot be executed by the Contractor's Equipment being used or to be used on the Works.

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Clause 52

Where provision is made in the Contract for payment in foreign currency, this Clause may be varied.

Sub-Clause 52.1 – Valuation of Variations

EXAMPLE
Add final sentence as follows:

The agreement, fixing or determination of any rates or prices as aforesaid shall include any foreign currency and the proportion thereof.

Sub-Clause 52.2 –Power of Engineer to Fix Rates

Add to first paragraph final sentence as follows:

The agreement or fixing of any rates or prices as aforesaid shall include any foreign currency and the proportion thereof.

Sub-Clause 52.3 – Variations Exceeding 15 per cent

Add final sentence as follows:

The adjustment or fixing of any sum as aforesaid shall have due regard to any foreign currency included in the Effective Contract Price and the proportion thereof.

Where it is required to place some limitation on the range of items for which the rates and prices may be subject to review, the Clause may be varied.

Sub-Clause 52.2 – Power of Engineer to Fix Rates

EXAMPLE
At the end of the first paragraph add:

Provided further that no change in the rate or price for any item contained in the Contract shall be considered unless such item accounts for an amount more than 2 per cent of the Contract Price, and the actual quantity of work executed under the item exceeds or falls short of the quantity set out in the Bill of Quantities by more than 25 per cent.

Clause 54

Where vesting of Contractor's Equipment, Temporary Works and materials in the Employer is required, additional Sub-Clauses may be added.

EXAMPLE WORDING AND SUB-CLAUSES
Sub-Clauses 54.2 and 54.3 shall be renumbered as 54.3 and 54.4 and Sub-Clauses 54.4 to 54.8 shall be renumbered as 54.6 to 54.10. Add additional Sub-Clauses as follows:

Vesting 54.2 *All Contractor's Equipment, Temporary Works and materials owned by the Contractor, or by any company in which the Contractor has a controlling interest, shall, when on the Site, be deemed to be the property of the Employer. Provided always that the vesting of such property in the Employer shall not prejudice the right of the Contractor to the sole use of the said Contractor's Equipment, Temporary Works and materials for the purpose of the Works nor shall it affect the Contractor's responsibility to operate and maintain the same under the provisions of the Contract.*

Revesting and Removal 54.5 *Upon the removal, with the consent of the Engineer under Sub-Clauses 54.1, of any such Contractor's Equipment, Temporary Works or materials as have been deemed to have become the property of the Employer under Sub-Clause 54.2, the property therein shall be deemed to revest in the Contractor and, upon completion of the Works, the property in the remainder of such Contractor's Equipment, Temporary Works and materials shall, subject to Clause 63, be deemed to revest in the Contractor.*

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Clause 60

Additional Sub-Clauses may be necessary to cover certain other matters relating to payments.

Where payments are to be made in various currencies in predetermined proportions and calculated at fixed rates of exchange the following 3 Sub-Clauses, which should be taken together, may be added:

EXAMPLE SUB-CLAUSES (to be numbered, as appropriate)

Currency of Account and Rates of Exchange

60. *The currency of account shall be the (insert name of currency) and for the purposes of the Contract conversion between (insert name of currency) and other currencies stated in the Appendix to Tender shall be made in accordance with the Table of Exchange Rates in the Appendix to Tender. Conversion between the currencies stated in such Table other than the (insert name of currency) shall be made at rates of exchange determined by use of the relative rates of exchange between such currencies and the (insert name of currency) set out therein.*

Payments to Contractor

60. *All payments to the Contractor by the Employer shall be made:*

(a) in the case of payment(s) under Sub-Clause(s) 70.2 and (insert number of any other applicable Clause), in (insert name of currency/ies);

(b) in the case of payments for certain provisional sum items excluded from the Appendix to Tender, in the currencies and proportions applicable to these items at the time when the Engineer gives instructions for the work covered by these items to be carried out; and

(c) in any other case, including Increase or Decrease of Costs under Sub-Clause 70.1, in the currencies and proportions stated in the Appendix to Tender as applicable to such payment provided that the proportions of currencies stated in the Appendix to Tender may from time to time upon the application of either party be varied as may be agreed.

Payments to Employer

60. *All payments to the Employer by the Contractor including payments made by way of deduction or set-off shall be made:*

(a) in the case of credit(s) under Sub-Clause(s) 70.2 and (insert number of any other applicable Clause) in (insert name of currency/ies);

(b) in the case of liquidated damages under Clause 47, in (insert name of currency/ies);

(c) in the case of reimbursement of any sum previously expended by the Employer, in the currency in which the sum was expended by the Employer; and

(d) in any other case, in such currency as may be agreed.

If the part payable in a particular currency of any sum payable to the Contractor is wholly or partly insufficient to satisfy by way of deduction or set-off a payment due to the Employer in that currency, in accordance with the provisions of this Sub-Clause, then the Employer may if he so desires make such deduction or set-off wholly or partly as the case may be from the balance of such sum payable in other currencies.

Where all payments are to be made in one currency the following Sub-Clause may be added:

EXAMPLE SUB-CLAUSE (to be numbered, as appropriate)

Currency of Account and Payments

60. *The currency of account shall be the (insert name of currency) and all payments made in accordance with the Contract shall be in (insert name of currency). Such (insert name of currency), other than for local costs, shall be fully convertible. The percentage of such payments attributed to local costs shall be as stated in the Appendix to Tender.*

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Where place of payment is to be defined the following Sub-Clause may be added:

EXAMPLE SUB-CLAUSE (to be numbered, as appropriate)

Place of Payment ***60.*** *Payments to the Contractor by the Employer shall be made into a bank account nominated by the Contractor in the country of the currency of payment. Where payment is to be made in more than one currency separate bank accounts shall be nominated by the Contractor in the country of each currency and payments shall be made by the Employer accordingly.*

Where provision is to be included for an advance payment the following Sub-Clause may be added:

EXAMPLE SUB-CLAUSE (to be numbered, as appropriate)

Advance Payment ***60.*** *An advance payment of the amount stated in the Appendix to Tender shall, following the presentation by the Contractor to the Employer of an approved performance security in accordance with Sub-Clause 10.1 and a Guarantee in terms approved by the Employer for the full value of the advance payment, be certified by the Engineer for payment to the Contractor. Such Guarantee shall be progressively reduced by the amount repaid by the Contractor as indicated in Interim Payment Certificates of the Engineer issued in accordance with this Clause. The advance payment shall not be subject to retention. The advance payment shall be repaid by way of reduction in Interim Payment Certificates commencing with the next certificate issued after the total certified value of the Permanent Works and any other items in the Bill of Quantities (excluding the deduction of retention) exceeds (insert figure) per cent of the sum stated in the Letter of Acceptance. The amount of the reduction in each Interim Payment Certificate shall be one (insert fraction) of the difference between the total value of the Permanent Works and any other items in the Bill of Quantities (excluding the deduction of retention) due for certification in such Interim Payment Certificate and the said value in the last preceding Interim Payment Certificate until the advance payment has been repaid in full. Provided that upon the issue of a Taking-Over Certificate for the whole of the Works or upon the happening of any of the events specified in Sub-Clause 63.1 or termination under Clauses 65, 66 or 69, the whole of the balance then outstanding shall immediately become due and payable by the Contractor to the Employer.*

Clause 67

Where it is considered desirable to add to Sub-Clauses 67.3 provisions with respect to the number of arbitrators, the place of arbitration and the language of arbitration, the following paragraphs may be added to Sub-Clause 67.3:

EXAMPLE

The arbitral tribunal shall consist of ..... (a sole or three) arbitrator(s).

The place of arbitration shall be .....(city and country).

The language of the arbitration shall be.....

It is desirable that the place of arbitration be situated in a state, other than that of the Employer or the Contractor, which has a modern and liberal arbitration law and which has ratified a bilateral or multilateral convention (such as the 1958 New York Convention on the Recognition and Enforcement of Foreign Arbitral Awards), or both, that would facilitate the enforcement of an arbitral award in the states of the parties to the Contract.

In the absence of stipulations as to the three above mentioned matters, (number of arbitrators, place of arbitration and language of arbitration), the ICC will decide on the number of arbitrators (typically three in any substantial construction dispute) and on the place of arbitration. The arbitral tribunal will decide on the language of the arbitration if the parties cannot agree.

It may also be considered desirable in some cases for other parties to be joined into any arbitration between the Employer and the Contractor, thereby creating a multi-party arbitration. While this may be feasible, multi-party arbitration clauses require skillful draftmanship on a case-by-case basis. No satisfactory standard form of multi-party arbitration clause for international use has yet been developed.

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Where it is decided that a settlement of dispute procedure, other than that of the International Chamber of Commerce (ICC), should be used the Clause may be varied.

Sub-Clause 67.3 – Arbitration

EXAMPLE
Following paragraph (b), delete the words "shall be finally settled... International Chamber of Commerce" and substitute "shall be finally settled under the UNCITRAL Arbitration Rules as administered by (insert name of administering authority)".

Where alternatives to the ICC are considered care should be taken to establish that the favoured alternative is appropriate for the circumstances of the Contract and that the wording of Clause 67 is checked and amended as may be necessary to avoid any ambiguity with the alternative. Care should be taken to define exactly how the arbitral tribunal is to be appointed and, where appropriate, an appointing authority should be designated.

Clause 68

Sub-Clause 68.2 – Notice to Employer and Engineer

For the purposes of this Sub-Clause the respective addresses are:

(a) The Employer (insert address)

(b) The Engineer (insert address)

The addresses should be inserted when the documents are being prepared prior to inviting tenders.

Clause 69

Sub-Clause 69.1 – Default of Employer

Where the Employer is a government it may be considered appropriate to vary the Sub-Clause.

EXAMPLE
Delete paragraph (c) and renumber paragraph (d) as (c).

Where the terms of the Sub-Clause, when read in conjunction with Sub-Clause 69.3, are in conflict with the law of the country the Sub-Clause may require to be varied.

EXAMPLE
Delete "or" at the end of paragraph (c) and delete paragraph (d).

Clause 70

Three alternative methods of dealing with price adjustment are given below.

The first alternative is suitabie where a contract is of short duration and no price adjustment is to be made:

Sub-Clause 70.1—Increase or Decrease in Cost

EXAMPLE
Delete the text of the Sub-Clause and substitute

Subject to Sub-Clause 70.2, the Contract Price shall not be subject to any adjustment in respect of rise or fall in the cost of labour, materials or any other matters affecting the cost of execution of the Contract.

Sub-Clause 70.2—Subsequent Legislation

EXAMPLE
Delete the words ", other than under Sub-Clause 70.1, ".

The second alternative is suitable where price adjustment is to be made by establishing the difference in cost between the basic price and the current price of local labour and specified materials:

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Sub-Clause 70.1—Increase or Decrease in Cost

EXAMPLE

Delete the text of the Sub-Clause and substitute

Adjustments to the Contract Price shall be made in respect of rise or fall in the cost of local labour and specified materials as set out in this Sub-Clause.

(a) Local Workmen

(i) For the purpose of this Sub-Clause:
"Local Workmen" means skilled, semi-skilled and unskilled workmen of all trades engaged by the Contractor on the Site for the purpose of or in connection with the Contract or engaged full time by the Contractor off the Site for the purpose of or in connection with the Contract (by way of illustration but not limitation: workmen engaged full time in any office, store, workshop or quarry);
"Basic Rate" means the applicable basic minimum wage rate prevailing on the date 28 days prior to the latest date for submission of tenders by reason of any National or State Statute, Ordinance, Decree or other Law or any regulations or bye-law of any local or other duly constituted authority, or in order to conform with practice amongst good employers generally in the area where the Works are to be carried out; and
"Current Rate" means the applicable basic minimum wage rate for Local Workmen prevailing on any date subsequent to the date 28 days prior to the latest date set for submission of tenders by reason of any National or State Statute, Ordinance, Decree or other Law or any regulation or bye-law of any local or other duly constituted authority, or in order to conform with practice amongst good employers generally in the area where the works are to be carried out.

(ii) The adjustment to the Contract Price under the terms of this Sub-Clause shall be calculated by multiplying the difference between the Basic and Current Rates for Local workmen by:

(a) the number of all hours actually worked, and

(b) in respect of those hours worked at overtime rates, by the product of the number of said hours and the percentage addition required by the law to be paid by the Contractor for overtime.

Such adjustment may be either an addition to or a deduction from the Contract Price.

(iii) No other adjustment of the Contract Price on account of fluctuation in the remuneration of Local Workmen shall be made.

(b) Specified Materials

(i) For the purpose of this Sub-Clause:
"Specified Materials" means the materials stated in Appendix (insert reference) to Tender required on the Site for the execution and completion of the Works;

"Basic Prices" means the current prices for the specified materials prevailing on the date 28 days prior to the latest date for submission of tenders; and

"Current Prices" means the current prices for the specified materials prevailing at any date subsequent to the date 28 days prior to the latest date for submission of tenders.

(ii) The adjustment to the Contract Price under the terms of this Sub-Clause shall be calculated by applying the difference between the Basic and Current Prices to the quantity of the appropriate Specified Material which is delivered to the Site during the period for which the particular Current Price is effective. Such adjustment may be either an addition to or a deduction from the Contract Price.

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(iii) The Contractor shall use due diligence to ensure that excessive wastage of the Specified Materials shall not occur. Any Specified Materials removed from the Site shall be clearly identified in the records required under paragraph (d) of this Sub-Clause.

(iv) The provisions of this Sub-Clause shall apply to fuels used in Contractor's Equipment engaged on the Site for the purposes of executing the Works, including vehicles owned by the Contractor (or hired by him under long term arrangements under which the Contractor is obligated to supply fuel) engaged in transporting any staff, labour, Contractor's Equipment, Temporary Works, Plant or materials to and from the Site. Such fuels shall be clearly identified in the records required under paragraph (d) of this Sub-Clause. The provisions of this Sub-Clause shall not apply to any fuels sold or supplied to any employee of the Contractor or to any person for use in any motor vehicle not being used for the purposes of the Contract.

(v) The Contractor shall at all times have regard to suitable markets and shall, whenever buying materials a variation in the cost of which would give rise to an adjustment of the Contract Price under this Sub-Clause, be diligent to buy or procure the same at the most economical prices as are consistent with the due performance by the Contractor of his obligations under the Contract.

If at any time there shall have been any lack of diligence, default or negligence on the part of the Contractor, whether in observing the above requirements or otherwise, then, for the purposes of adjusting the Contract Price pursuant hereto, no account shall be taken of any increase in cost which may be attributable to such lack of diligence, default or negligence and the amount by which any cost would have been decreased but for such lack of diligence, default or negligence shall be deducted from the Contract Price.

(vi) No other adjustment to the Contract Price on account of fluctuation in the cost of materials shall be made.

(c) Overheads and Profits Excluded

In determining the amount of any adjustment to the Contract Price pursuant to this Sub-Clause no account shall be taken of any overheads or profits.

(d) Notices and Records

The Contractor shall forthwith, upon the happening of any event which may or may be likely to give rise to adjustment of the Contract Price pursuant to this Sub-Clause, give notice thereof to the Engineer and the Contractor shall keep such books, accounts and other documents and records as are necessary to enable adjustment under this Sub-Clause to be made and shall, at the request of the Engineer, furnish any invoices, accounts, documents or records so kept and such other information as the Engineer may require.

(e) Adjustment after Date of Completion

Adjustment to the Contract Price, after the due date for completion of the whole of the Works pursuant to Clause 43, or after the date of completion of the whole of the Works certified pursuant to Clause 48, shall be made in accordance with Current Rates or Current Prices, as applicable, ruling at the due date for completion or the date stated in the Taking-Over Certificate, whichever is the earlier.

(f) Determination of Adjustment to Contract Price

The amount of any adjustment to the Contract Price pursuant to this Sub-Clause shall be determined by the Engineer in accordance with the foregoing rules.

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EXAMPLE APPENDIX TO TENDER
for use in conjunction with the second alternative.

SPECIFIED MATERIALS

MATERIAL	*UNIT*	*PRICE AND LOCATION*	*TRANSPORT TO SITE*	*PRICE DELIVERED TO SITE*	*REMARKS*
Bitumen					
Diesel *Petrol* *Lubricants*					
Cement					
Reinforcing Steel					
Explosives					

NOTES:

1. The Contractor shall provide copies of quotations to substantiate all prices included in the above table.

2. All subsequent price substantiation shall be from the same source as original unless otherwise agreed by the Engineer.

3. The Contractor shall submit full explanation and provide substantiating documentation for the mode of transport to Site he proposes. Only the proposed documented mode of transport shall qualify for price adjustment.

(Note: Materials stated in the Appendix to Tender should be those of which substantial quantities are involved.)

The third alternative is suitable where price adjustment is to be made through the application of indices in a formula:

Sub-Clause 70.1 – Increase or Decrease in Cost

EXAMPLE
Delete the text of the Sub-Clause and substitute

(a) Adjustments to the Contract Price in respect of rise and fall in the cost of labour and materials and other matters affecting the cost of execution of the Works shall be calculated for each monthly statement pursuant to Sub-Clause 60.1, the Statement at Completion pursuant to Sub-Clause 60.5 and the Final Statement pursuant to Sub-Clause 60.6 in accordance with the provisions of this Sub-Clause if there shall be any changes in the following Index figures compiled by (insert details of source of indices) and published by (insert details of publication):

(i) the Index of the cost of Labour in (insert name of country),

(ii) the Index of the cost of (insert other factor, as relevant), or

(iii) the Index of the cost of (insert other factor, as relevant).

(b) For the purpose of this Sub-Clause:

(i) "Base Index Figure" shall mean the index figure applicable on the date 28 days prior to the latest date for submission of tenders, and

(ii) "Current Index Figure" shall mean the index figure applicable on the last day of the period to which the particular statement relates.

Provided that in respect of any work the value of which is included in any such monthly statement (or Statement at Completion or Final Statement) and which was executed after the due date (or extended date) for completion of the whole of the Works, pursuant to Clause 43, the Current Index Figure shall be the index figure applicable on the aforesaid due date (or extended date) for completion of the whole of the Works.

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(iii) "Effective Value" shall be the difference between:

(a) The amount which is due to the Contractor under the provisions of Sub-Clauses 60.2, 60.5 or 60.8 (before deducting retention and excluding repayment of the advance payment) less any amounts for:

work executed under nominated Subcontracts

materials and Plant on the Site, as referred to in Sub-Clause 60.1 (c)

dayworks, variations or any other items based on actual cost or current prices, and bonuses (if any)

adjustments under Clause 70,

and

(b) The amount calculated in accordance with (b) (iii) (a) of this Sub-Clause and included in the last preceding statement.

(c) The adjustment to the Contract Price shall be calculated by multiplying the Effective Value by a Price Fluctuation Factor which shall be the net sum of the products obtained by multiplying each of the proportions given in paragraph (d) of this Sub-Clause by the following fraction:

$$\frac{\text{Current Index Figure} - \text{Base Index Figure}}{\text{Base Index Figure}}$$

calculated using the relevant index figures.

(d) For the purpose of calculating the Price Fluctuation Factor, the proportions referred to in paragraph (c) of this Sub-Clause shall (irrespective of the actual constituents of the work) be as follows:

0. in respect of labour (and supervision) costs subject to adjustment by reference to the Index referred to in (a) (i) of this Sub-Clause;

0. in respect of by reference to the Index referred to in (a) (ii) of this Sub-Clause;

0. in respect of by reference to the Index referred to in (a) (iii) of this Sub-Clause;

0. in respect of all other costs which shall not be subject to any adjustment;

1.00 Total

(e) Where the value of an Index is not known at the time of calculation, the latest available value shall be used and any adjustment necessary shall be made in subsequent monthly statements.

(Note: The number of indices included under (a) of this Sub-Clause may be varied, if it is determined that a different number of factors should be separately identified, and in such case (d) of this Sub-Clause must be altered to be consistent.)

Clause 72

Sub-Clause 72.2 – Currency Proportions

Where it is decided that the rate or rates of exchange shall be established from a source other than the Central Bank of the country, the Sub-Clause may be varied.

EXAMPLE

Delete the words from "prevailing... " to the end of the sentence and substitute "stated in the Appendix to Tender".

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Clause 73 onwards

Where circumstances require, additional Clauses may be added.

EXAMPLE CLAUSES (to be numbered, starting with Clause 73, as appropriate).

Where the law applicable to the Contract does not cover bribery, the following example Clause may be added.

Bribes **.1** *If the Contractor or any of his Subcontractors, agents or servants offers to give or agrees to offer or give to any person, any bribe, gift, gratuity or commission as an inducement or reward for doing or forbearing to do any action in relation to the Contract or any other contract with the Employer or for showing or forbearing to show favour or disfavour to any person in relation to the Contract or any other contract with the Employer, then the Employer may enter upon the Site and the Works and terminate the employment of the Contractor and the provisions of Clause 63 hereof shall apply as if such entry and termination had been made pursuant to that Clause.*

Where circumstances require that particular confidentiality is observed, the following example Clause may be added.

Details to be Confidential **.1** *The Contractor shall treat the details of the Contract as private and confidential, save in so far as may be necessary for the purposes thereof, and shall not publish or disclose the same or any particulars thereof in any trade or technical paper or elsewhere without the previous consent in writing of the Employer or the Engineer. If any dispute arises as to the necessity of any publication or disclosure for the purpose of the Contract the same shall be referred to the Employer whose determination shall be final.*

Where the Contract is being financed wholly or in part by an international financial institution whose rules or policies require a restriction on the use of the funds provided, the following example Clause may be added.

Expenditure Restricted **.1** *The Contractor shall not make any expenditures for the purpose of the Contract in the territories of any country which is not a member of (insert name of international financial institution) nor shall he make any expenditure for goods produced in or services supplied from such territories.*

Where the Contractor may be a joint venture, the following example Clause may be added.

Joint and Several Liability **.1** *If the Contractor is a joint venture of two or more persons, all such persons shall be jointly and severally bound to the Employer for the fulfilment of the terms of the Contract and shall designate one of such persons to act as leader with authority to bind the joint venture. The composition or the constitution of the joint venture shall not be altered without the prior consent of the Employer.*

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PART II –
CONDITIONS OF PARTICULAR APPLICATION

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EDITORIAL AMENDMENTS IN 1988

Following publication in 1987 of the Fourth Edition of the Conditions of Contract for Works of Civil Engineering Construction, a number of editorial amendments were agreed by FIDIC. The amendments have been incorporated during reprinting in 1988 and the list below clarifies the differences between the 1988 reprint and the original document.

Page 5 Clause 9. The words "as stated in Sub-Clause 9.1 of Part 1 of these Conditions" have been added to the final line of the first paragraph.

Page 6 Sub-Clause 12.2. A comma has been moved from after the word "words" to immediately before the word "other". The word "Site" has been capitalised.

Page 7 Example performance guarantee. A comma previously appeared between the words "and" and "complete" in the third line of the paragraph beginning "Whereas" .
The fifth line of the paragraph beginning "Now the Condition . . ." previously read ". . . default by the Contract . . ."

Page 12 Sub-Clause 21.3. (b) (ii). A full stop has been inserted following "50".

Page 13 Sub-Clause 34. Repatriation of Labour. A comma has been inserted between the words "country)" and "shall".

Page 14 Sub-Clause 34. Epidemics. The word "Contractor" has been capitalised in the first line.
Sub-Clause 34. Alcoholic Liquor or Drugs. The word "Contractor" has been capitalised in the first line.

Page 15 Sub-Clause 40.3. This was previously incorrectly listed as 40.2.

Page 17 Sub-Clause 49.5. The last line of the first paragraph previously read " . . . extend beyond 730 days".

Page 20 Sub-Clause 67.3. The word "a" previously appeared before the bracket on the penultimate line of the Example.

Page 21 Sub-Clause 70.2. A comma has been moved from after the word "words" to immediately before the word "other".

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FURTHER AMENDMENTS IN 1992

The following amendments have been made to the 1988 reprint of the Fourth Edition. In addition, some minor changes in the use of punctuation marks (commas, semicolons, colons and stops), as well as the use of the words "or" and "and" have been introduced to attain uniformity in the style of all Clauses. These minor changes which improve the style, but which have no effect on the meaning of Clauses, have not been listed below.

Contents The words "Index" and "Editorial Amendments" have been added at the bottom of the page.

Page 1 INTRODUCTION. The words ", subject to minor modifications" have been added, and the word " equally" changed to read "also".

Page 3 Sub-Clause 1.1. In the last sentence, the words "for example the name of an International Financing Institution (IFI)" have been deleted.

Page 4 Clause 9. In the first paragraph the words "of Part I" have been added. In the second paragraph "1" has been corrected to read "I".

Page 5 Clause 12. Sub-Clause 12.2. In the title the word "Adverse" has been changed to read "Not Foreseeable" (also amended in the Contents and the Index).

Page 10 Sub-Clause 21.1, sub-para (a). The words "(the term "cost" in this context shall include profit)" have been added.

Page 13 Example Sub-Clause for Supply of Foodstuffs. The words "staff and labour, or his Subcontractors" have been changed to read " staff, labour and Subcontractors"

Page 19 Example Sub-Clause for Advance Payment. The words "interim certificate" have been changed to read "Interim Payment Certificate", in both the singular and plural.

Clause 67. The first four paragraphs of the commentary have been added.

Page 24 Sub-Clause 70.1. In the formula, the word "Based" has been corrected to read "Base".

Page 25 Example Clause for Bribes. The word "Sub-contractors" has been corrected to read "Subcontractors".

Example Clause for Details to be Confidential. In the sixth line, the words "the decision of" have been deleted. In the seventh line, the word "award" has been changed to read "determination"

Example Clause for Expediture Restricted. In the commentary and text, the leading capital letters on the words "International Financing Institutions" have been changed to small letters. In the commentary, the word "Articles" has been changed to read "rules or policies". In the third line, the word "not" has been corrected to read "nor".

EDITORIAL AMENDMENTS (1988). In the last item, the words "Line 21" have been corrected to read "Page 21".

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SECTION VI

SPECIAL CONDITIONS OF CONTRACT

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SPECIAL CONDITIONS OF CONTRACT

(Mandatory Provisions not to be Amended / Substituted except as instructed by PEC)

1.1 Definitions

(a) (i) The Employer is:

Director General (FO), North
National Grid Company of Pakistan (NGC)
34-Industrial Area, NGC House,
Gulberg-III, Lahore-Pakistan
Telephone No. 92-42-99268292
E-mail address: ce.amnl@ntdc.com.pk

(a) (iv) The Engineer is:

Director General (FO), North
National Grid Company of Pakistan (NGC)
34-Industrial Area, NGC House,
Gulberg-III, Lahore-Pakistan
Telephone No. 92-42-99268292
E-mail address: ce.amnl@ntdc.com.pk

or any other competent person appointed by the Employer, and notified to the Contractor, to act in replacement of the Engineer. Provided always that except in cases of professional misconduct, the outgoing Engineers is to formulate his certifications/recommendations in relation to all outstanding matters, disputes and claims relating to the execution of the Works during his tenure.

The following paragraph is added:

(a)(vi) "Bidder or Tenderer" means any person or persons, company, corporation, firm or joint venture submitting a Bid or Tender.

(b)(v) The following is added at the end of the paragraph:

The word "Tender" is synonymous with "Bid" and the word "Tender Documents" with "Bidding Documents".

The following paragraph is added:

(b)(ix) "Programme" means the programme to be submitted by the Contractor in accordance with Sub-Clause 14.1 and any approved revisions thereto.

(e)(i) The text is deleted and substituted with the following:

"Contract Price" means the sum stated in the Letter of Acceptance as payable to the Contractor for the execution and completion of the Works subject to such additions thereto or deductions there from as may be made and remedying of any defects therein in accordance with the provisions of the Contract.

2.1 Engineer's Duties and Authority

With reference to Sub-Clause 2.1(b), the following provisions shall also apply;

The Engineer shall obtain the specific approval of the Employer before carrying out his duties in accordance with the following Clauses:

(i) Consenting to the sub-letting of any part of the Works under Sub-Clause 4.1 "Subcontracting".

(ii) Certifying additional cost determined under Sub-Clause 12.2 "Not Foreseeable Physical Obstructions or Conditions".

(iii) Any action under Clause 10 "Performance Security" and Clauses 21,23,24 & 25 "Insurance" of sorts.

(iv) Any action under Clause 40 "Suspension".

(v) Any action under Clause 44 "Extension of Time for Completion".

(vi) Any action under Clause 47 "Liquidated Damages for Delay" or Payment of Bonus for Early Completion of Works (PCC Sub-Clause 47.3).

(vii) Issuance of "Taking over Certificate" under Clause 48.

(viii) Issuing a Variation Order under Clause 51, except:

a) in an emergency* situation, as stated here below, or

b) if such variation would increase the Contract Price by less than the amount stated in the Appendix-A to Bid.

(ix) Fixing rates or prices under Clause 52.

(x) Extra payment as a result of Contractor's claims under Clause 53.

(xi) Release of Retention Money to the Contractor under Sub-Clause 60.3 "Payment of Retention Money".

(xii) Issuance of "Final Payment Certificate" under Sub-Clause 60.8.

(xiii) Issuance of "Defect Liability Certificate" under Sub-Clause 62.1.

(xiv) Any change in the ratios of Contract currency proportions and payments thereof under Clause 72 "Currency and Rate of Exchange".

(Note: Employer may further vary according to need of the project)

* (If in the opinion of the Engineer an emergency occurs affecting the safety of life or of the Works or of adjoining property, the Engineer may, without relieving the Contractor of any of his duties and responsibilities under the Contract, instruct the Contractor to execute all such work or to do all such things as may, in the opinion of the Engineer, be necessary to abate or reduce the risk. The Contractor shall forthwith comply with any such instruction of the Engineer. The Engineer shall

determine an addition to the Contract Price, in respect of such instruction, in accordance with Clause 52 and shall notify the Contractor accordingly, with a copy to the Employer.)

2.3 Engineer's Authority to delegate:

The following paragraph is added:

The Chief Engineer (T/L Design) shall act as representative of Engineer for providing in house Engineering Services including but not limited to the following:

a) Review & approval of technical data/ drawings/design
b) Interpretation of the bidding documents
c) Review & approval of profile/plan tabling/route plan
d) Foundation designs, review and approvals
e) Site visits for attending any technical problem if necessary
f) Resolution of disputes
g) Review & approval of all technical matters

The following Sub-Clauses 2.7 and 2.8 are added:

2.7 Engineer Not Liable

Approval, reviews and inspection by the Engineer of any part of the Works does not relieve the Contractor from his sole responsibility and liability for the supply of materials, plant and equipment for construction of the Works and their parts in accordance with the Contract and neither the Engineer's authority to act nor any decision made by him in good faith as provided for under the Contract whether to exercise or not to exercise such authority shall give rise to any duty or responsibility of the Engineer to the Contractor, any Subcontractor, any of their representatives or employees or any other person performing any portion of the Works.

2.8 Replacement of the Engineer

If the Employer intends to replace the Engineer, the Employer shall, not less than 14 days before the intended date of replacement, give notice to the Contractor, of the name, address and relevant experience of the intended replacement Engineer. The Employer shall not replace the Engineer with a person against whom the Contractor raises reasonable objection by notice to the Employer, with supporting particulars.

5.1 Language(s) and Law

(a) The Contract Documents shall be drawn up in the English language.
(b) The Contract shall be subject to the Laws of Islamic Republic of Pakistan.

5.2 Priority of Contract Documents

The documents listed at (1) to (6) of the Sub-Clause are deleted and substituted with the following:

(1) The Contract Agreement (if completed);

(2) The Letter of Acceptance;
(3) The completed Form of Bid;
(4) Special Stipulations (Appendix-A to Bid);
(5) The Special Conditions of Contract;
(6) The General Conditions;
(7) The priced Bill of Quantities;
(8) The completed Appendices to Bid;
(9) The Specifications
(10) The Drawings;

All Drawings and Specifications shall be interpreted in conformity with the Contract and these Conditions. Addendum, if any, shall be deemed to have been incorporated at the appropriate places in the documents forming the Contract. If any ambiguity or discrepancy is found in the documents, the Engineer shall issue any necessary clarification or instruction which shall be binding.

6.1 Custody and supply of Drawings & Documents

The contractor shall supply a soft copy of such drawings in source file and any other format specified by the Engineer.

The following Sub-Clauses 6.6 and 6.7 are added:

6.6 Shop Drawings

The Contractor shall submit to the Engineer for review 3 copies of all shop and erection drawings applicable to this Contract as per provision of relevant Sub-Clause of the Contract.

Review and approval by the Engineer shall not be construed as a complete check but will indicate only that the general method of construction and detailing is satisfactory and that the Engineer's review or approval shall not relieve the Contractor of any of his responsibilities under the Contract.

6.7 As-Built Drawings

At the completion of the Works under the Contract, the Contractor shall furnish to the Engineer 6 copies and one reproducible of all drawings amended to conform to the Works as built. The price of such Drawings shall be deemed to be included in the Contract Price.

10.1 Performance Security

The text is deleted and substituted with the following:

The Contractor shall provide Performance Security to the Employer in the prescribed form. The said Security shall be furnished or caused to be furnished by the Contractor within 14 days after the receipt of the Letter of Acceptance. The

Performance Security shall be of an amount equal to 10% of the Contract Price stated in the Letter of Acceptance. Such Security shall, at the option of the bidder, be in the form of bank guarantee from any Scheduled Bank in Pakistan. The cost of complying with requirements of this Sub-Clause shall be borne by the Contractor.

The following Sub-Clause 10.4 is added:

10.4 Performance Security Binding on Variations and Changes

The Performance Security shall be binding irrespective of changes in the quantities or variations in the Works or extensions in Time for Completion of the Works which are granted or agreed upon under the provisions of the Contract.

11.1 Inspection of Site

Bidder shall inspect the site, examine and obtain all information required and satisfy himself regarding matters and things such as access to site, communication, transport, right of way, the type and number of equipment and facilities required for the satisfactory completion of work, the quantity of various sections of the work, the availability of local labour, availability and rates of materials, local working conditions, uncertainties of weather, obstructions and hindrances that may arise etc., which may affect the work or cost thereof, before submission of his bid. Ignorance of site conditions shall not be accepted by the owner as basis for any claim for compensation. The submission of a bid by the bidder will be construed as evidence that such an examination was made and any later claims/disputes in regard to rates quoted shall not be entertained or considered by the owner.

If any temporary feeder road within site is considered essential for the proper execution of the work this shall have to be formed by the Contractor at his own cost with the prior approval of the Engineer. The Contractor shall organize his own arrangement to transport his equipment, men and materials in such a manner that the completion period will not be exceeded on any account.

The rates quoted by Bidder shall be based on his own knowledge and judgement of the conditions and hazards involved and shall not be based on any representations to the Engineer.

14.1 Programme to be submitted

The Contractor shall submit a detailed time programme to the Engineer within 14 days after receipt of Letter of Acceptance.

The Contractor shall also submit a revised programme whenever the previous programme is inconsistent with actual progress or with the Contractor's obligations.

Each programme shall be in the form of bar chart or a CPM chart identifying the critical activities and include:

a) The order in which the Contractor intends to carry out the Works, including the anticipated timing of each stage of design (if any), Contractor's Documents,

procurement, delivery to Site, construction, erection and testing.

b) Each of these stages for work by each nominated subcontractor

c) The sequence and timing of site inspections and tests specified in the Contract, and a supporting report which includes:

i) A general description of the methods which the Contractor intends to adopt, and of the major stages, in the execution of the Works, and

ii) Details showing the Contractor's reasonable estimate of the number of each class of Contractor's Personnel and of each type of Contractor's Equipment, required on the Site for each major stage.

Unless the Engineer, within 21 days after receiving a programme, gives notice to the Contractor stating the extent to which it does not comply with the Contract, the Contractor shall proceed in accordance with the programme, subject to his other obligations under the Contract. The Employer's Personnel shall be entitled to rely upon the programme when planning their activities.

If, at any time, the Engineer gives notice to the Contractor that a programme fails (to the extent stated) to comply with the Contract or to be consistent with actual progress and the Contractor's stated intentions, the Contractor shall submit a revised programme to the Engineer in accordance with this Sub-Clause.

The period between the Program updates will be 30 days. If the contractor fails to submit an updated program in time, any payment due for his current bills will be withheld till the submission of such programme.

14.3 Cash Flow Estimate to be submitted

The detailed Cash Flow Estimate shall be submitted within 21 days from the date of receipt of Letter of Acceptance

The following Sub-Clause 14.5 is added:

14.5 Monthly Progress Report

During the period of the Contract, the Contractor shall submit to the Engineer not later than the 8th day of the following month, copies of Monthly Progress Reports covering:

(1) A Construction Schedule indicating the monthly progress in percentage;
(2) Description of all work carried out since the last report;
(3) Description of the work planned for the next 56 days sufficiently detailed to enable the Engineer to determine his programme of inspection and testing;
(4) Monthly summary of daily job record;
(5) Photographs to illustrate the status of progress on the Site.
(6) Information about problems and difficulties encountered, if any, and

proposals to overcome the same.

(7) Charts and detailed descriptions of progress, including each stage of design (if any), Contractor's Documents, delivery of material to Site, construction, erection and testing; and including these stages for work by each nominated Subcontractor.

(8) The details described in Sub-Clause 35.1 [Return of labor & Contractor's Equipment]

(9) Copies of quality assurance documents, test results and certificates of Materials.

(10) List of notices given under Sub-Clause 68.1[Notice to Contractor] and notices given under Sub-Clause 68.2[Notice to Employer & Engineer].

(11) Safety statistics, including details of any hazardous incidents and activities relating to environmental aspects and public relations.

(12) Comparisons of actual and planned progress, with details of any events or circumstances which may jeopardize the completion in accordance with the Contract, and the measures being (or to be) adopted to overcome delays.

These progress reports will be submitted as per the following distribution list:

(1) G.M (AM) North, NGC
(2) CE (AM), NGC
(3) CE (T/L Design), NGC
(4) Manager (AM) NGC Concerned
(5) XEN (AM) NGC Concerned

During the period of the Contract, the Contractor shall keep a daily record of the work progress, which shall be made available to the Engineer as and when requested. The daily record shall include particulars of weather conditions, number of men working, deliveries of materials, quantity, location and assignment of Contractor's equipment.

15.1 Contractor's Superintendence

The Contractor's authorised representative and his other professional engineers working at Site shall register themselves with the Pakistan Engineering Council.

The Contractor's authorised representative at Site shall be authorised to exercise adequate administrative and financial powers on behalf of the Contractor so as to achieve completion of the Works as per the Contract.

The following Sub-Clauses 15.2 is added:

15.2 Language Ability of Contractor's Representative

The Contractor's authorized representative shall be fluent in the English language. Alternately an interpreter with ability of English language shall be provided by the Contractor on full time basis.

The following Sub-Clauses 16.3 and 16.4 are added:

16.3 Language Ability of Superintending Staff of Contractor

A reasonable proportion of the Contractor's superintending staff shall have a working knowledge of the English language. If the Contractor's superintending staffs is not fluent in English language, the Contractor shall make competent interpreters available during all working hours in a number deemed sufficient by the Engineer.

16.4 Employment of Local Personnel

The Contractor is encouraged, to the extent practicable and reasonable, to employ staff and labour from sources within Pakistan.

The following Sub-Clauses 19.3 and 19.4 are added:

19.3 Safety Precautions

In order to provide for the safety, health and welfare of' persons, and for prevention of damage of any kind, all operations for the purposes of or in connection with the Contract shall be carried out in compliance with the Safety Requirements of the Government of Pakistan with such modifications thereto as the Engineer may authorise or direct and the Contractor shall take or cause to be taken such further measures and comply with such further requirements as the Engineer may determine to be reasonably necessary for such purpose.

The Contractor shall make, maintain and submit reports to the Engineer concerning safety, health and welfare of persons and damage to property, as the Engineer may from time to time prescribe.

19.4 Lighting Work at Night

In the event of work being carried out at night, the Contractor shall at his own cost, provide and maintain such good and sufficient light as will enable the work to proceed satisfactorily and without danger. The approaches to the Site and the Works where the night-work is being carried out shall be sufficiently lighted. All arrangement adopted for such lighting shall be to the satisfaction of the Engineer's Representative.

20.4 Employer's Risks

The Employer's risks are:

Notwithstanding anything contained (in GCC 20.4), the Employer shall not be responsible, compensate or bear any kind of risk/liability whatsoever in nature. The responsibility for safe and sound handling of all dismantled material will be on part of contractor. The watch and ward of site with material will be responsibility of contractor round the clock to avoid any theft incident.

21.1 Insurance of Works and Contractor's Equipment

The minimum insurance amounts and deductibles shall be:

(a) For the Works and Materials: Full value of material.

(b) For loss or damage to Equipment: Full value of the loss/damage.

(c) For loss or damage to property (except the Works, Materials, and Equipment) in connection with Contract: Full value of loss/damage to property

(d) For personal injury or death:

i) of the Contractor's employees: In accordance with such applicable laws in Pakistan

ii) of other people: : In accordance with such applicable laws in Pakistan

21.4 Exclusions

The text is deleted and substituted with the following:

There shall be no obligation for the insurances in Sub-Clause 21.1 to include loss or damage caused by the risks listed under Sub-Clause 20.4 sub paragraph (a) to (h).

25.3 Remedy on Contractor Failure to Insure

Delete the text and substitute with the following:

The Contractor shall effect and keep in force all insurances required under the contract. The Employer shall not affect any kind of insurance on behalf of this project.

25.4 Compliance with Policy Conditions

Delete the text and substitute with the following:

"In the event that the Contractor fails to comply with conditions imposed by the insurance policies affected pursuant to the contract, the Contractor shall indemnify the employer against all losses and claims arising from such failure."

The following Sub-Clause 25.5 is added:

25.5 Insurance Company

The Contractor shall be obliged to place all insurances relating to the Contract (including, but not limited to, the insurances referred to in Clauses 21, 23 and 24) with either National Insurance Company of Pakistan or any other insurance company operating in Pakistan and acceptable to the Employer.

Costs of such insurances shall be borne by the Contractor.

The following Sub-Clause 31.3 is added:

31.3 Co-operation with other Contractors

During the execution of the Works, the Contractor shall co-operate fully with other contractors working for the Employer at and in the vicinity of the Site and also shall

provide adequate precautionary facilities not to make himself a nuisance to local residents and other contractors.

The following Sub-Clauses 34.2 to 34.12 are added:

34.2 Rates of Wages and Conditions of Labour

The Contractor shall pay rates of' wages and observe conditions of labour not less favourable than those established for the trade or industry where the work is carried out. In the absence of any rates of wages or conditions of labour so established, the Contractor shall pay rates of wages and observe conditions of labour which are not less favourable than the general level of wages and conditions observed by other employers whose general circumstances in the trade or in industry in which the Contractor is engaged are similar.

34.3 Employment of Persons in the Service of Others

The Contractor shall not recruit his staff and labour from amongst the persons in the services of the Employer or the Engineer; except with the prior written consent of the Employer or the Engineer, as the case may be.

34.4 Housing for Labour

Save insofar as the Contract otherwise provides, the Contractor shall provide and maintain such housing accommodation and amenities as he may consider necessary for all his supervisory staff and labour, employed for the purposes of or in connection with the Contract including all fencing, electricity supply, sanitation, cookhouses, fire prevention, water supply and other requirements in connection with such housing accommodation or amenities. On completion of the Contract, these facilities shall be handed over to the Employer or if the Employer so desires, the temporary camps or housing provided by the Contractor shall be removed and the Site reinstated to its original condition, all to the approval of the Engineer.

34.5 Health and Safety

Due precautions shall be taken by the Contractor, and at his own cost, to ensure the safety of his staff and labour at all times throughout the period of the Contract. The Contractor shall further ensure that suitable arrangements are made for the prevention of epidemics and for all necessary welfare and hygiene requirements.

34.6 Epidemics

In the event of any outbreak of illness of an epidemic nature, the Contractor shall comply with and carry out such regulations, orders and requirements as may be made by the Government, or the local medical or sanitary authorities, for purpose of dealing with and overcoming the same.

34.7 Supply of Water

The Contractor shall, so far as is reasonably practicable, having regard to local conditions**,** provide on the Site, to the satisfaction of the Engineer or his representative, adequate supply of drinking and other water for the use of his staff and labour.

34.8 Alcoholic Liquor or Drugs

The Contractor shall not, otherwise than in accordance with the Statutes, Ordinances and Government Regulations or Orders for the time being in force, import, sell, give, barter or otherwise dispose of any alcoholic liquor or drugs, or permit or suffer any such importation, sale, gift, barter or disposal by his Subcontractors, agents, staff or labour.

34.9 Arms and Ammunition

The Contractor shall not give, or otherwise dispose of to any person or persons, any arms or ammunition of any kind or permit or suffer the same as aforesaid.

34.10 Festivals and Religious Customs

The Contractor shall in all dealings with his staff and labour have due regard to all recognised festivals, days of rest and religious and other customs.

34.11 Disorderly Conduct

The Contractor shall at all times take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by or amongst staff and labour and for the preservation of peace and protection of persons and property in the neighbourhood of the Works against the same.

34.12 Compliance by Subcontractors

The Contractor shall be responsible for compliance by his Subcontractors of the provisions of this Clause.

35.1 Returns of Labour and Contractor's Equipment

The Contractor shall submit, to the Engineer, details showing the number of each class of Contractor's Personnel and of each type of Contractor's Equipment on the Site. Details shall be submitted each calendar month, in a form approved by the Engineer, until the Contractor has completed all work which is known to be outstanding at the completion date stated in the Taking Over Certificate for the Works.

The following Sub-Clauses 35.2 and 35.3 are added:

35.2 Records of Safety and Health

The Contractor shall maintain such records and make such reports concerning safety, health and welfare of persons and damage to property as the Engineer may from time to time prescribe.

35.3 Reporting of Accidents

The Contractor shall report to the Engineer details of any accident as soon as possible after its occurrence. In the case of any fatality or serious accident, the Contractor shall, in addition, notify the Engineer immediately by the quickest available means.

The following Sub-Clause 36.6 is added:

36.6 Use of Pakistani Materials and Services

The Contractor shall , so far as may be consistent with the Contract, make the maximum use of materials, supplies, plant and equipment indigenous to or produced or fabricated in Pakistan and services, available in Pakistan provided such materials, supplies, plant, equipment and services shall be of required standard.

41.1 Commencement of Works

The text is deleted and substituted with the following:

The Contractor shall commence the Works on Site within the period named in Appendix-A to Bid. Thereafter, the Contractor shall proceed with the Works with due expedition and without delay.

The following Sub-Clause 47.3 is added:

47.3 Bonus for Early Completion of Works

No bonus is admissible for the project.

48.2 Taking Over of Sections or Parts

For the purposes of para (a) of this Sub-Clause, separate Times for Completion shall be provided in the Appendix-A to Bid “Special Stipulations”.

The following Sub-Clause 49.5 is added:

49.5 Extensions of Defects Liability Period

The provisions of this Sub-Clause shall apply to all replacements or renewals of plant and equipment carried out by the Contractor to remedy defects and damage as if the replacements and renewals had been taken over on the date they were completed. The Defects Liability Period for the Works shall be extended by a period equal to the

period during which the Works cannot be used by reason of a defect or damage. If only a part of the Works is affected the Defects Liability Period shall be extended only for that part. In neither case shall the Defects Liability Period extend beyond two (2) years from the date of taking over.

51.2 Instructions for Variations

At the end of the first sentence, after the word “Engineer", the words “in writing” are added.

52.1 Valuation of Variations

In the tenth line, after the words “Engineer shall” the following is added:

Within a period not exceeding one-eighth of the completion time subject to a minimum of 56 days from the date of disagreement whichever is later.

53.4 Failure to Comply

This Sub-Clause is deleted in its entirety.

54.5 Conditions of Hire of Contractor’s Equipment

The following paragraph is added:

The Contractor shall, upon request by the Engineer at any time in relation to any item of hired Contractor’s Equipment, forthwith notify the Engineer in writing the name and address of the Owner of the equipment and shall certify that the agreement for the hire thereof contains a provision in accordance with the requirements set forth above.

The following Sub-Clauses59.4 & 59.5 are added:

59.4 Payments to Nominated Subcontractors

The Contractor shall pay to the nominated Subcontractor the amounts which the Engineer certifies to be due in accordance with the subcontract. These amounts plus other charges shall be included in the Contract Price in accordance with Clause 58 [Provisional Sums], except as stated in Sub-Clause 59.5 [Certification of Payments].

59.5 Certification of Payments & Nominated Subcontractors

Before issuing a Payment Certificate which includes an amount payable to a nominated Subcontractor, the Engineer may request the Contractor to supply reasonable evidence that the nominated Subcontractor has received all amounts due in accordance with previous Payment Certificates, less applicable deductions for retention or otherwise. Unless the Contractor:

a) submits reasonable evidence to the Engineer, or
b) i) satisfies the Engineer in writing that the Contractor is reasonably

entitled to withhold or refuse to pay these amounts, and

ii) submits to the Engineer reasonable evidence that the nominated Subcontractor has been notified of the Contractor's entitlement,

Then the Employer may (at his sole discretion) pay direct to the nominated Subcontractor, part or all of such amounts previously certified (less applicable deductions) as are due to the nominated Subcontractor and for which the Contractor has failed to submit the evidence described in sub-paragraphs (a) or (b) above. The Contractor shall then repay, to the Employer, the amount which the nominated Subcontractor was directly paid by the Employer.

60.1 Monthly Statements

In the first line after the word "shall", the following is added:

"on the basis of the joint measurement of work done under Clause 56.1,"

In Para (c) the words "the Appendix to Tender" are deleted and substituted with the words "Sub-Cause 60.11 (a)(6) hereof".
(in case Clause 60.11 is applicable)

60.2 Monthly Payments

In the first line, "28" is substituted by "14".

60.3 Payment of Retention Money

a) The following text is added at the end:
"In addition to above, release of this retention money is subject to issuance of GRN/SRS by In charge of designated NGC Warehouse for balance material of the project as per material reconciliation report along with certification from In charge of the Ware House of completeness and healthiness of the returned material. The material reconciliation report shall be duly vetted by Chief Engineer (T/L) Design as per as-built profile of the project."

60.10 Time for Payment

No interest is applicable on any delay at the part of the employer. Second Para starting from "In the event of failure" and ending on "under clause 69 otherwise" is deleted.

63.1 Default of Contractor

The following para is added at the end of the Sub-Clause:

Provided further that in addition to the action taken by the Employer against the Contractor under this Clause, the Employer may also refer the case of default of the Contractor to Pakistan Engineering Council for punitive action under the

Construction and Operation of Engineering Works Bye-Laws 1987, as amended from time to time.

65.2 Special Risks

The text is deleted and substituted with the following:

The Special Risks are the risks defined under Sub-Clause 20.4 sub paragraph (a) to (h).

67.1 Engineer's Decision

Replace eighty fourth with sixtieth in the eighth line of Para 1 of this clause.
Replace eighty fourth with sixtieth in the third line of Para 3 of this clause.
Replace seventieth with thirtieth in the fourth and fifth line of Para 3 of this clause.
Replace 84 with 60 in the sixth line of Para 3 of this clause.
Replace seventieth with thirtieth in the fourth line of Para 4 of this clause.

67.2 Amicable Settlement

Replace fifty sixth with thirtieth in the fourth line of Para 1 of this clause.

67. 3 Arbitration

In the sixth to eight lines, the words "shall be finally settled ..... appointed under such Rules" are deleted and substituted with the following:

shall be finally settled under the provisions of the Arbitration Act, 1940 as amended or any statutory modification or re-enactment thereof for the time being in force.

The following paragraph is added:

The place of arbitration shall be Lahore, Pakistan.

68.1 Notices to Contractor

The following paragraph is added:

For the purposes of this Sub-Clause, the Contractor shall, immediately after receipt of Letter of Acceptance, intimate in writing to the Employer and the Engineer by registered post, the address of his principal place of business or any change in such address during the period of the Contract.

68.2 Notices to Employer and Engineer

For the purposes of this Sub-Clause, the respective addresses are:

a) The Employer: Director General (FO), North
National Grid Company of Pakistan (NGC)

34-Industrial Area, NGC House,
Gulberg-III, Lahore-Pakistan
Telephone No. 92-42-99268292
E-mail address: ce.amnl@ntdc.com.pk

b) The Engineer is: Director General (FO), North
National Grid Company of Pakistan (NGC)
34-Industrial Area, NGC House,
Gulberg-III, Lahore-Pakistan
Telephone No. 92-42-99268292
E-mail address: ce.amnl@ntdc.com.pk

69.0 Default of Employer

This clause with all sub clauses is deleted in its entirety.

70.1 Increase or Decrease of Cost

Sub-Clause 70.1 is deleted in its entirety.

The following Sub-Clauses 73.1, 73.2, 74.1, 75.1, 76.1, 77.1 and 78.1 are added:

73.1 Payment of Income Tax

The Contractor, Subcontractors and their employees shall be responsible for payment of all their income tax, super tax and other taxes on income arising out of the Contract and the rates and prices stated in the Contract shall be deemed to cover all such taxes.

73.2 Customs Duty & Taxes

Contractor will submit the invoice inclusive of Provincial Sales Tax. Provincial Sales Tax shall be charged by the contractor and payments will be subject to income tax and sales tax withholding as per Rules mentioned in Federal or Respective Provincial Laws. Copy of sales tax return will be will be provided by the contractor.

74.1 Integrity Pact

If the Contractor or any of his Subcontractors, agents or servants is found to have violated or involved in violation of the Integrity Pact signed by the Contractor as Appendix-O to his Bid, then the Employer shall be entitled to:

(a) recover from the Contractor an amount equivalent to ten times the sum of any commission, gratification, bribe, finder's fee or kickback given by the Contractor or any of his Subcontractors, agents or servants;
(b) terminate the Contract; and
(c) recover from the Contractor any loss or damage to the Employer as a result of such termination or of any other corrupt business practices of the Contractor or any of his Subcontractors, agents or servants.

The termination under Sub-Para (b) of this Sub-Clause shall proceed in the manner

prescribed under Sub-Clauses 63.1 to 63.4 and the payment under Sub-Clause 63.3 shall be made after having deducted the amounts due to the Employer under Sub-Para (a) and (c) of this Sub-Clause.

75.1 Termination of Contract for Employer's Convenience

The Employer shall be entitled to terminate the Contract at any time for the Employer's convenience after giving 56 days prior notice to the Contractor, with a copy to the Engineer. In the event of such termination, the Contractor:

(a) shall proceed as provided in Sub-Clause 65.7 hereof; and
(b) shall be paid by the Employer as provided in Sub-Clause 65.8 hereof.

76.1 Liability of Contractor

The Contractor or his Subcontractors or assigns shall follow strictly, all relevant labour laws including the Workmen's Compensation Act and the Employer shall be fully indemnified for all claims, damages etc. arising out of any dispute between the Contractor, his Subcontractors or assigns and the labour employed by them.

77.1 Joint and Several Liabilities

If the Contractor is a joint venture of two or more persons, all such persons shall be jointly and severally bound to the Employer for the fulfilment of the terms of the Contract and shall designate one of such persons to act as leader with authority to bind the joint venture. The composition or the constitution of the joint venture shall not be altered without the prior consent of the Employer.

78.1 Details to be Confidential

The Contractor shall treat the details of the Contract as private and confidential, save in so far as may be necessary for the purposes thereof, and shall not publish or disclose the same or any particulars thereof in any trade or technical paper or elsewhere without the prior consent in writing of the Employer or the Engineer. If any dispute arises as to the necessity of any publication or disclosure for the purpose of the Contract, the same shall be referred to the decision of the Engineer whose award shall be final.

SECTION VII

SPECIFICATIONS –
SPECIAL PROVISIONS

SECTION VI
SPECIFICATIONS - SPECIAL PROVISIONS

SP-01 ACQUAINTANCE WITH SITE

The Contractor shall be deemed to have inspected and examined the Site and its surroundings and information available in connection therewith and before submitting his Bid, as to the form and nature thereof, including the subsurface conditions, the hydrological and climatic conditions, the extent and nature of Works for completion, the means of access to the Site and the accommodation he may require and, in general, shall be deemed to have obtained all necessary information, subject as above mentioned, as to risks, contingencies and all other circumstances which may influence or affect his Contract.

SP-02 DESCRIPTION OF PROJECT

For continuous uninterrupted dispersal of power in Lahore Region during Smog and Fog of Winter season replacement of normal disc insulators, of different 220kV transmission line as mentioned in BOQ, with RTV coated disc insulators through NGC own resources in accordance with Bidding Documents.

REPLACEMENT OF NORMAL DISC INSULATORS WITH RTV COATED DISC INSULATORS OF 220kV TRANSMISSION LINES UNDER FIELD OPERATIONS LAHORE (Lot-III)

SP-02.1 Location of Project

The route of the lines passes through bare, cultivated land of Punjab Province through the districts of Lahore Division, river crossings and road crossings.

SP-03 SITE CONDITIONS

SP-03.1 Site Conditions and Meteorological Data

The Employer does not guarantee the correctness of any data provided herein nor any interpretations, deductions or conclusions relative to subsurface conditions at Site. The Contractor must form his own opinion of the character and type of materials to be excavated. He must make his own interpretations, and satisfy himself by his own investigations and research regarding all conditions works. The Contractor must assume all responsibility for deductions and conclusions as to the nature or conditions of the materials to be excavated and of doing other work affected by the geology at the Site.

SP-04 WORKS

SP-04.1 Works

The intent of these Specifications is that the Works under this Contract should be equal to or superior than those actually described herein. In choosing indigenous materials and their finishes due regard shall be given to the conditions prevailing at Site.

SP-04.2 Extent of Specifications

The extent of the Bidding Documents is to provide for the Works herein specified to be fully complete in every detail for the function designated. All Works which are not specifically mentioned in the Bidding Documents, but which, in the opinion of the Engineer, are usual or necessary for the satisfactory completion of the Works shall be deemed to be included in the Contract Documents and shall be provided by the Contractor without extra cost to Employer.

SP-05 WORKS BY CONTRACTOR

SP-05.1 Scope

The scope of Works includes but not limited to insurance, loading at Employer's Storage Yard, transportation, unloading of material provided by the Employer i.e., RTV coated disc insulators along with associated equipment, T&P and other accessories, its installation, loading of fog type disc insulators from project site and delivering to NGC store and all other Works required to construct and complete the followings works.

i. Replacement of Normal Disc Insulators with RTV coated Disc Insulators of subject transmission line as mentioned in BOQ (No. of towers are also mentioned)

The scope of works shall also include the loading of RTV coated disc insulators at store site, its transportation and unloading of project site and loading of dismantled material at project site, its transportation and unloading at Employer's Storage Yard. (A-Type Store, 220kV Grid Station NGC NKLP or any other suitable storage site)

The 220kV Transmission Lines could be twin bundle, double circuit.

The Works to be performed under these Specifications are based on the rates provided in the Bill of Quantities and include but not limited to the following:

i) Provision of all guarantees, insurances, field offices/camps, storage camps, labour, services, Plant and Contractor's tools and equipment (including tension stringing and construction equipment) to construct, complete, test and commission the said transmission line in accordance with the requirements of the Contract Documents.
ii) Prepare and furnish all drawings and documents.
iii) Provision of access roads where necessary.
iv) Clearing right-of-way including disposal of cleared materials.

v) Check Survey including pegging out and layout of tower locations, spotting / stalking of towers, tower spotting adjustment etc.
vi) Establishing route alignment of any diversion required and detailed survey not limited to chainage & leveling.
vii) Preparation of plan & profile drawings (only diverted portion), tower spotting etc.
viii) Preparation of construction structure lists, sag-tension charts for conductor & Shieldwire stringing and construction drawings.
ix) Surveying of tower sites, tower staking, tower spotting adjustment and establishing correct locations of footings.
x) Excavation, formation of ramps, grading, blasting, leveling, cutting and backfilling including disposal of surplus/excavated material.
xi) Furnishing materials for constructing reinforced concrete tower foundations including installation of steel stub angles and tower grounding.
xii) Ground assembly of tower sections and erection of steel towers.
xiii) Dismantling of existing conductor along with all accessories, insulators, hardware, dampers etc. complete in all respects, shifting/transporting and properly stacking of the material at designated NGC Warehouse/Store.
xiv) Installing insulator assemblies for conductors.
xv) Stringing conductors, overhead shield wire complete with hardware, accessories and dampers.
xvi) Furnishing and installing tower signs (Aerial Markers, Danger Signs, Number and Phase Plates etc.), and anti-climbing devices.
xvii) Latitude and Longitude by hand held GPS of each tower location.
xviii) Testing and commissioning of the aforesaid Transmission Line.
xix) The security arrangements to be provided by the Contractor for his own crews/staff/storage yards.
xx) Preparation & submission of monthly progress reports including site photographs, as-built data and drawings including copies on reproducible transparencies and computer compact diskettes (CD/DVD) using AutoCAD.
xxi) Any other item which is not included here but is necessary for integrated operation of the Transmission Line as advised by the Engineer.
xxii) Making all necessary arrangements free of cost to access to tower locations on dry patches/land engulfed in river Indus creeks.
xxiii) Welding of bolts and Painting of tower stub/tower member/plates/bolts or repair of already painted tower as advised by the Engineer.
xxiv) Preparation of complete as built profile by the contractor. As built profile shall be vetted by Project Manager/ Consultant and will be submitted to Chief Engineer (T/L) Design NGC.
xxv) Preparation of Material Reconciliation Report as per as-built profile.
xxvi) Any other activity specifically not covered in the scope of work but is required for the completion, testing & commissioning and operation of the overhead line shall be deemed to be included in the scope of work.

NOTE:

(1) The Contractor is responsible to mobilize sufficient numbers of crews for foundations, tower erection, dismantling and stringing etc. equipped with T&P complete in all respects for smooth execution of each activity. For timely completion of the Project, Contractor is responsible to adhere to the project schedule and ensure that the sufficient resources are available with the crews before commencement of each activity. Detailed methodology and list of T&P shall have to be got approved from the Engineer well before the commencement of each activity. The detail of construction equipment/T&P to be arranged/imported from abroad by the Contractor must be furnished in his Bid.

(2) In case Contractor fails to arrange the required numbers of crews along with requisite T&P in good working condition for inspection at site prior to commencement of respective activity, Employer has the right, in addition to withhold current payments, terminate the Contract at any stage and to get executed the balance work through other Contractors at the Contractor's risk and cost.

SP-06 DRAWINGS

SP-06.1 Drawings in Contract

SP-06.1.1 Specification Drawings (If Any)

The specification drawings contained in Volume II of the Contract Documents show the Specifications and Scope of Works to be performed by the Contractor.

SP-06.1.2 Contractor's Bid Drawings

The Contractor's bid drawings are the drawings prepared by the Contractor for bidding purposes, and shall be part of his Bid.

The specification drawings and Contractor's bid drawings shall not be used for execution of the Works unless specific instructions for such use are given by the Engineer.

SP-06.1.3 Approved Drawings

The Works shall be performed in accordance with the approved drawings.

SP-06.2 Drawings and Other Data to be furnished by the Contractor

All drawings shall be in English language and all dimensions shall be in Metric System. Symbols shall be in accordance with IEC standards. All drawings shall be clearly marked "National Grid Company of Pakistan (NGC) for Installation & dismantling of 220kV Double Circuit Twin Bundle Sheikhupura-Ravi Transmission Line. All drawings/data submitted for approval shall conform to ISO paper sizes A0 to A4.

The Contractor shall submit detailed drawings as required herein below:

(i) Plan & profile drawings (only diverted portion) showing spotted towers, construction structure list, sag-tension charts for conductor & OPGW stringing, soil investigation reports and other data as required by the Engineer.

(ii) Bar bending schedule for various types of foundations/piles.

(iii) Drawings indicating crossings of transmission line over Railway tracks and Highways.

(iv) Specifications and details of concrete mix ratio and aggregate grading.

(v) Sag-templates for tower spotting.

(vi) Any other information and drawing which may be required for construction purposes.

SP-06.3 Distribution of Drawings

The drawings shall be submitted to the Engineer/Employer within the time given in the Contract or within such reasonable time as the Engineer may require, and in the number as specified hereunder:

Documents	Engineer		Employer/ Project Director	Total
	Head Office	Site Office		
Drawings for approval	3	-	1	4
Approved Drawings	2	2	1	5
Schedules, specifications and other documents/data	2	1	1	4
Construction Drawings	2	6	2	10
Record (As-Built) Drawings	2	-	4	6
Reproducible transparency Record (As-Built) Drawings	1	-	1	2
Record (As-Built) Drawings on computer compact diskette (CD/DVD) using Autocad Software	1	-	1	2

Insurance Certificates	1	1	2	4
Receiving reports	1	1	2	4
Damage reports	1	1	2	4
Erection progress Reports	2	1	2	5
List of Construction Stringing and Erection Equipment	1	1	1	3
Correspondence with Employer	1	1	1	3
Correspondence with Head office of Engineer	1	1	1	3
Correspondence with Site office of Engineer	1	1	1	3

SP-06.3.1 Record Drawings

In the event of the Works or any part thereof being, with the approval of the Engineer, properly built-in or installed otherwise than in accordance with the Approved Drawings, then the Contractor shall ensure that the Approved Drawings are marked up to show the conditions of the Works as installed and at least two (2) copies of such marked up drawings shall be submitted by the Contractor to the Engineer for approval. One copy of each of marked up drawings approved by the Engineer shall be returned to the Contractor by the Engineer and these shall be used for preparation of the Record Drawings within sixty (60) days after completion of Works of the line. A further copy of each of the marked-up drawings shall be retained by the Engineer for the purpose of checking the Record Drawings.

The Contractor shall furnish to the Engineer two (2) complete sets of all Record Drawings and Data prior to issuance of the Operational Acceptance Certificate. The Contractor shall also furnish to the Engineer one (1) mylar polyester base full size reproducible and one copy on computer compact diskette (CD/DVD) using AutoCAD, of all final Record and other drawings which, in the opinion of the Engineer, may be required for the Works operation and maintenance, for identification of parts and for ordering replacement parts and materials. The mylar reproducible shall be 50/70 microns thick, double matte film, wash off film, printed on the front.

SP-07 INSURANCE OF MATERIALS FURNISHED BY NGC

The Contractor shall maintain and pay for insurance for Materials furnished by NGC, against loss or damage of the Material caused by, or resulting from but not limited to the following:

(1) Fire, smoke, explosion, falling objects, impacts by aircrafts or land vehicles, lightning, riot, the escape of water, flood, Act of God, land sliding, vandalism or malicious mischief, windstorm, rain or hailstorm, and

(2) Theft or attempted theft:

for the full assessed value of the Materials. The insurance shall commence and shall be in force no later than the time of receipt from NGC's stores where the Contractor is required to obtain the Materials. This insurance must remain in force until the contractor clears and finalizes all accounts of Materials furnished by NGC and the Material is returned to NGC. Certificates of such insurance and all renewals thereof shall be filed with the Engineer. The insurance cover shall be obtained from an insurance company approved by NGC.

The Contractor shall be responsible for the safety and protection of Materials from the point where and at the specified time when he is required to obtain the Materials until the Material is returned to NGC. Should a loss be sustained, the Contractor shall replace or repair any loss or damage and complete the Works in accordance with the Contract on a priority basis after such loss or damage without waiting for the settlement of the insurance claim.

SP-08 HANDLING, LOADING AND UNLOADING OF EQUIPMENT & MATERIAL

SP-8.1 Lifting

The method of lifting, type of equipment and type of slings, used for handling the conductor reels are subject to approval by the Engineer. The wooden reels are so constructed as to be supported either on an axle through the arbor hole or by the reel flange. When the reels are lifted by an axle supported from above, a spreader bar must be employed to prevent reel damage by inward pressure on reel flange. In no case shall metallic slings or other metallic equipment shall come in contact with conductor or overhead shield wire or ground wire.

SP-8.2 Slings

If the use of slings is necessary, these shall be of a flexible type and preferably manila rope or other non- metallic materials. The use of steel wire, mesh or chain link slings is prohibited unless they are covered with rubber hose or some similar material.

SP-8.3 Unloading and Storage at the Site

(1) The Contractor shall unload all Plant and other material at the Site. Items for permanent installations shall be properly stored and shall be protected as required to prevent damage or deterioration of any type. Storage/ Stacking

methods shall be such as to cause minimum inconvenience to others and shall be arranged to facilitate inspection.

(2) All Plant and other material storage shall comply with the requirements of the Specifications or to the approval of the Engineer.

SP-8.4 Ownership of Packing Materials

All packing boxes, reels, shipping containers except those containers which are not the property of the Contractor, planking covers, etc. shall become the property of Employer. All the packing materials shall be handed over to Employer immediately after storage requirements of the Plant or parts including spares thereof and other materials are over.

SP-9 SCHEDULE, PROGRESS REPORTS AND MEETINGS

SP-9.1 Schedule

The Contractor shall carry out the Works in accordance with the dates/periods specified in Appendix-A to Bid. The Contractor shall regularly review the Schedule and notify the Engineer promptly of any revisions which in his view may be required from time to time.

SP-9.1.1 Form of Construction Schedule

The Schedule shall be a detailed CPM (critical path method) type, time scaled according to calendar dates and Project month numbers. The CPM for planning, scheduling, and controlling will be used for the Contract. The Contractor shall submit a schedule showing the logical sequence in which the Plant will be carried out in sufficient detail to satisfy the Engineer that the Plant is thoroughly planned and meets all the requirements of the Contract Documents.

SP-9.2 Progress Meetings

(1) Soon after the date of signing of Contract, the Engineer will, with the approval of Employer require a conference with Employer and the Contractor at a place mutually agreed upon, to discuss progress monitoring and proper execution of Contract.

(2) At monthly intervals or from time to time during the execution of the Contract, the Engineer may call meetings, either in his offices or at the Contractor's offices or Employer's office as is deemed necessary for the purpose of progress monitoring and proper execution of the Contract.

(1) As required by the Engineer, responsible representatives of the Contractor shall attend such meetings.

(2) All expenses incurred by the Contractor for attending such meetings shall be borne by the Contractor and shall not be reimbursable.

SP-10 SITE WORKS

Attention is drawn to the obligations of the Contractor to make his own arrangements at his own expense for Works provided to his employees. Any cost incurred by the Contractor in respect of any of such Site Works under the Contract shall be deemed to be included in the rates and prices in the Price Schedules and no separate payment, therefore, will be made to the Contractor.

SP-10.1 Accommodation

(1) The Contractor shall provide and maintain at his cost residential accommodation and transportation Works for his own use.

(2) The Contractor shall provide and maintain such housing accommodation and amenities as he may consider necessary for all of his supervisory staff and labour employed for the purposes of or in connection with this Contract including all fencing, electricity supply, sanitation, cook, houses, fire prevention, water supply and other requirements in connection with such housing accommodation or amenities.

SP-10.2 Offices

The Contractor shall arrange and maintain his offices at his own cost.

SP-10.3 Work-yards and Storage Areas

(1) No storage site shall be provided by Employer to store Plant and other material. The Contractor shall, furnish all the necessary services and be responsible for the construction and maintenance of the necessary construction camps, offices and stores; and perform all other work necessary for completion of the Works described herein in strict conformance with these Specifications.

(2) The Contractor shall provide his own watchman service to ensure security and safety of the Plant and other material prior to Employer taking over the Works.

SP-10.4 Temporary Buildings

(1) The Contractor shall provide and maintain all temporary structures required including warehouses, change houses for workmen, sheds, etc. He shall also provide his own field office complete with telephone so that he or his official representative can be contacted by Employer and/or Engineer at all times.

(2) Such temporary buildings and/or utilities shall remain the property of the Contractor and shall be removed by him at his expense upon the completion of the Works and the Site reinstated to its original condition, all to the approval of the Engineer.

SP-11 QUALITY CONTROL

The Contractor's Quality Control Department shall review all contract and specification requirements and ensure that they are understood.

Upon the award of the Contract, the Contractor, NGC and the Engineer shall establish mutually acceptable quality control and inspection procedures between the Contractor and the Engineer and indications are to be given at that time by Contractor as to how the agreed procedures will be implemented.

All Works covered by the Contract and the inspection thereof by the Contractor, shall be subject to surveillance and/or further inspection by NGC and/or the Engineer or by their authorized representative for which purpose the Contractor (or Sub-Contractor) shall:

(1) Demonstrate to the satisfaction of the Engineer or his authorized Representative that the Works meets the requirements of the Contract.

(2) Not cover up or put out of view Works until the Engineer or his authorized representative has been notified and release of Works has been obtained.

(3) Afford full opportunity for the Engineer or the Engineer's Representative to examine and measure any work which is about to be covered up or put out of view and to examine foundations before permanent work is placed thereon.

(4) Give due notice to the Engineer's Representative whenever any Work or foundations is/are ready or about to be ready for Examination.

SP-12 URGENT REPAIRS

If by reason of any accident or failure or other event occurring to in or in connection with the Work or any part thereof either during the execution of the Work or during the Period of Guarantee any remedial of other Work or repair shall in the opinion of the Engineer or the Engineer' Representative be urgently necessary for security and the Contractor is unable or unwilling at once to do such Work or repair, NGC may employ its own or other workmen do such work or repair as the Engineer or the Engineer's representative may consider necessary. If the Work or repair so done by NGC is Work which in the opinion of the Engineer the Contractor was liable to do at his own expense under the Contract all costs and charges properly incurred by NGC in so doing shall on demand be paid by the Contractor to NGC or may be deducted by NGC from any money due or which may become due to the Contractor.

SP-13 MEASUREMENT FOR PAYMENT

The measurement for payment and payment for the various items of Price Schedules shall be as follows:

(a) **Construct Right-of-Way Road**

No payment will be made for the construction of a right-of-way road and access routes. The cost of such road and access routes, if constructed, shall be deemed to be included in other prices in the Contract.

Employer will assess the compensation for unavoidable crop damage that occurs on the right of way in cultivated areas and will pay the compensation amount.

(b) **Clearing Right-of-Way (Not Applicable as it will be on part of contractor)**

Measurement for payment will be made horizontally along the center line of right-of-way cleared and disposal completed.

Payment will be made based on the unit price quoted in Price Schedules. The payment shall include, but not be limited to the brushing out the centerline, tower locations and conductor pulling sites within 25 meters on each side of the centerline. Trees over 2.5 meters in height which constitute a hazard or danger to the transmission line, or whose tops are within 6 meters of the 75°C final conductor position shall be removed.

(c) **Check Survey**

Measurement for payment will be made on the check survey carried out as given Technical Provisions.
Payment will be made based on lump sum basis after fulfilling all requirements given in Technical Provisions.

(d) **Survey (Only for diverted portion)**

Measurement for payment will be made horizontally along the center line of the line route.

Payment will be made based on the unit price quoted in the Price Schedules after the approval by Engineer of detailed survey, plan and profile drawings, and construction structure list. The unit price shall include but not be limited to the route establishing, detailed survey, route maps, plan tabling, profile preparation, tower spotting, construction structure list and all other work necessary for the completion of this phase of work.

(e) **Reinforced Concrete Foundations (N/A)**

Measurement for payment will be made for each type of foundation installed as shown on the approved relevant construction drawings for the various foundations. Bid drawings are firm & final and no change is acceptable except from Engineer.

The quoted unit price shall include, but not be limited to tower staking, the cost of furnishing all labour, equipment, materials (including concrete and reinforcement etc.) site leveling, blasting/cutting/grading of tower site, excavation, shuttering, dewatering, shorting, forming, reinforcing, concreting, curing, backfilling, installing stub angles, tower grounding, setting and all other associated Works to produce finished foundations.

(f) Dismantling & Installation of Disc Insulators

Measurement for payment will be made for each type of component dismantled as shown on the relevant drawings for the various towers.

Payment will be made based on the unit prices quoted on per Tower basis in the bid for dismantling and installation of RTV coated insulators of all tower types. The unit prices shall include, but not be limited to, the cost of all labor, equipment, dismantling of and installation of RTV coated insulators on complete tower (without damaging any component), bundling/packing, loading, transporting, unloading & properly staking at designated warehouse and all other associated work necessary for the completion of this phase of the work.

Note: Dismantling and installation work will be carried our in the presence of representative of concerned formation of NGC, for which the contractor will give advance notice to NGC for supervision and inspection.

(g) Erection of Steel Towers (N/A)

Measurement for payment will be made for each type of component installed as shown on the relevant drawings for the various towers.

Payment will be made based on the unit prices quoted on per Tower basis in the bid for each type of component installed of all tower types. The unit prices shall include, but not be limited to, detailing of tower fabrication drawings supplied by Employer, the cost of all labour, equipment, requisitioning, loading, transporting, from site storage areas to the sites, erecting together with bolts, nuts, washers, stepbolts, including back bolting and punching of nuts and bolts and all other associated work necessary for the completion of the towers ready for installation of overhead alumoweld shield wire, OPGW and conductors thereon.

(h) **Welding of Nuts & Bolts (N/A)**

Measurement for measurement will be made for each tower.

Payment will be made on the unit price quoted for each tower. The unit prices shall include, but not limited to welding of nuts & bolts up to 8.0 m height and application of galvanox as specified in technical provisions and price schedule.

(i) **Dismantling of Existing Conductor Insulators & associated hardware etc. (N/A)**

Measurement for payment will be made horizontally along the center line of the line route.

Payment will be made based on the unit price quoted in the Price Schedules. The unit prices shall include, but not be limited to, the cost of all labour, equipment, dismantling including but limited up to the removal of spacer dampers for conductor & stock bridge vibration dampers for earth wire, dismantling of conductor, earth wire & jumpers including spacer dampers, removal of accessories for conductor and earth wire along with associated equipment, removal of hardware & insulator strings, and all other associated work necessary for the completion of this phase of the work.

(J) **Stringing of Conductor**

Measurement for payment will be made horizontally along the center line of the line route.

Payment will be made based on the unit price quoted in the Price Schedules. The unit prices shall include, but not be limited to, the cost of all labour, equipment, requisitioning, loading, transporting, distributing, stringing including but limited up to the installation of insulator accessories for conductor; spacer dampers for conductor, sagging, clipping-in, dead-ends, jumpers including installation of spacer, together with all hardware as shown on the relevant drawings, and all other associated work necessary for the completion of this phase of the work.

(K) **Cost of Dismantled Stringing Material (N/A)**

Measurement for cost of dismantled material will be made horizontally along the center line of the line route.

Cost of the dismantled material handed over to the contractor will be deducted from the invoices of the contractor.

(L) **Testing & Commissioning (N/A)**

Measurement for payment will be made on successfully testing & commissioning of transmission line.

Payment will be made based on the lumpsum amount quoted in the Price Schedules. The lumpsum amount shall include but not be limited to successful testing & commissioning of transmission line and all other associated work necessary for the completion of this phase of the work.

SP-14 PAYMENT FOR WORKS REQUIRED BY SPECIAL PROVISIONS

Unless expressly excluded, the cost of all Works required by the "Special Provisions" shall be considered to be included in the price and amounts quoted in the Price Schedules.

SECTION VIII

SPECIFICATIONS –
TECHNICAL PROVISIONS

1. SPECIFICATIONS - TECHNICAL PROVISIONS

1.1 General

(1) Clearing Right-of-Way

Right-of-Way clearing shall be restricted to the minimum necessary for the safe construction and operation of the line. Clearing shall generally consist of brushing out the center line, tower locations and conductor pulling sites within 25 meters on each side of the center line. Trees over 2.5 meters in height which constitute a hazard or danger to the transmission line, or whose tops are within 6 meters at 75°C final conductor sag position, shall be removed.

The clearing of desert vegetation shall be restricted to that required for placement of footings and for the assembly and erection of towers and wire pulling Site.

No clearing will be allowed in orchards or other areas of fruit bearing trees, except as specifically approved by the Engineer.

The cleared materials will be the property of the Land Owner. If any disposal of cleared material is required, it will be disposed of by burning or other methods approved by the Engineer.

(2) Survey and Profiling

The technical specifications cover detailed survey including route alignment, profiling, tower spotting and contouring. The scope of work inter-alia shall include the following:

Route alignment using Google Maps, Survey of Pakistan Maps and Walk over survey etc.

Detailed Survey using RTK, GPS, DGPS, Total Stations, long range scanners & Digital theodolites of reasonable accuracies.

Digitized contouring at hilly/undulated locations.

Preparation of Survey reports including estimation of Bill of Quantities, identification and explanation of route constraints, infrastructure details available enroute etc.

All the bidders shall present their proposed methodology for execution of the work as per specifications and details of the equipment and facilities including soft wares available with them.

The Contractor must note that the Employer shall not be responsible for loss or damage to properties, trees etc. due to their work during survey. The Contractor shall indemnify the Employer for any loss or damage to properties, trees etc. during the survey work

The Contractor should note that Employer will not furnish the topographical maps prepared by survey of Pakistan but will render available assistance that may be required in obtaining these by providing letters of recommendation to the concerned authorities.

The Bidders shall give along with their bid clause by clause commentary indicating their confirmation/comments/observations in respect of all clauses of this functional requirements.

The work shall be carried out by the Contractor using modern surveying techniques i.e. RTK. The bidder shall indicate in his offer, the detailed description of the procedure to be deployed. The details of the equipment & facilities including software's for image processing, computer aided tower spotting etc. available with the bidder or his associates shall also be furnished with the bid

After carrying out the detailed survey, the Contractor shall estimate complete BOQ of the transmission lines and submit the same to the Employer.

The bidders are advised that while making bid proposals and quoting prices, all technical provisions may appropriately be taken into consideration. The bidder shall complete all the schedules and annexures in the bid proposal sheets, technical data sheets specified elsewhere.

Route Alignment

Route Alignment shall be done using Google Maps and Survey of Pakistan Maps (scale 1:50,000). After a study of these maps, alternate routes will be identified & marked within 5 km of the beeline.

Walkover survey will be carried out on the alternate routes to obtain first-hand information of various important field data required for transmission line works and observe features on the ground which may not be clearly available in the maps such as Power lines, Type of terrain and nature of soil strata, expanding villages and towns, rich gardens and plantations, forests and high tree areas, national parks and wildlife sanctuaries, archaeological monuments, aerodromes and prohibited areas etc. Walkover survey means going on foot over the area covering the route however vehicle may also be used wherever the terrain permits and where long distances can be seen without obstacles.

Then a comparative evaluation of the alternate routes will be done, inter alia considering, route length, number and type of angle points, nature and number of major crossings, deviation in the line due to civil/military aerodromes and other industrial installations, approach to the line in general for construction, reaches through protected or reserve forests and continuous long stretches in paddy fields etc.

Based on this evaluation, the Contractor will propose the optimal route alignment and, along with it, will provide all information/data /details collected. The Contractor will arrange joint site visits with the Employer‘s representatives for field verifications. Final route alignment will be selected with mutual consensus of the Contractor and Employer.

Final digitized route alignment drawing with latest topographical and other details/features up to 5km on both sides of selected route alignment shall be submitted for the Employer‘s approval along with report containing other information/details as mentioned above (both in hard and soft copies). Changes in the route alignment, if any, during detail survey, shall be incorporated in the final digitized route alignment drawings.

Requirement of Transmission Line Routing

The alignment of the transmission line shall be most economical from the point of view of construction and maintenance.

Routing of transmission line through protected /reserved forest area should be avoided. In case it is not possible to avoid the forests or areas having large trees completely, then keeping in view of the overall economy, the route should be aligned in such a way that cutting of trees is minimum.

The route should have minimum crossings of Major Rivers, Railway lines, National / State highways, overhead EHV power lines and communication lines.

The number of angle points shall be kept to a minimum.

The distance between the terminal points specified shall be kept shortest possible, consistent with the terrain that is encountered.

Marshy and low lying areas, river beds and earth slip zones shall be avoided to minimize risk to the foundations and towers.

It would be preferable to utilize level ground for the alignment.

Crossing of power lines shall be minimum. Alignment shall be kept at a specified distance from existing lines considering RoW and tower falling distances.

Crossing of communication line shall be minimized and it shall be preferably at right angle. Proximity and parallelism with telecom lines shall be eliminated to avoid danger of induction to them.

Areas subjected to flooding such as nalla shall be avoided.

Restricted areas such as civil and military airfield shall be avoided. Care shall also be taken to avoid aircraft landing approaches.

It is desirable to take the line as near the paths and roads as practicable without unduly increasing the length of the line so as to facilitate transportation of material during construction and the patrolling / maintenance of the line. Where the line cannot be routed near paths / roads economically, care shall be taken to see that easy access is possible at every 5 to 8 km. It shall be ensured that all angle / tension points are approachable to facilitate easy transportation of stringing equipment during construction and for maintenance / breakdowns.

The line shall be aligned suitably so that it can be diverted / looped in looped out to cater for possible future loads / sub stations along the route.

In general, large angles in the line are to be avoided wherever possible. The magnitude of the angle should be small as far as possible and should never be more than 60 degrees. Angle points should be selected such that shifting of the points within 100 m radius is possible at the time of construction of the

The route of the transmission line is to be so located that, as far as possible, it is protected from high winds and falling trees & branches. In hilly tracks, the line is to be routed, as far as possible, along the side of the hills or through valleys rather than over high points. However, a route of the line very close to steep slopes of hills be avoided as far as possible as there may be difficulty in obtaining lateral (side) clearance to ground for conductors. Also, there may be overhanging / loose boulders which may roll down and damage the line.

Certain areas such as quarry sites, rich plantations, gardens & nurseries which will present the Employer problems in acquisition of right of way and way leave clearance during construction and maintenance should be avoided.

The line routing should avoid large habitations, densely populated areas, forest, animal/ bird sanctuary etc., to the extent possible.

The areas requiring special foundations and those prone to flooding should be avoided.

Detailed Survey

The detailed survey shall be carried out using RTK, DGPS, Total Stations, digital theodolites etc. along the approved route alignment, inter alia including the following

Digitized profiling along the selected route along with plan details using

Power Line Systems Computer Aided Design and Drafting (PLS-CADD).

Computer aided tower spotting & optimization.

Route Marking

The route of the transmission line shall be recorded using DGPS of positional accuracy less than 3mtr.

The co-ordinates of all the angle points as well as other important crossings, landmarks etc. shall be recorded using DGPS for easy relocating. In addition the angle point locations shall be marked using marking stones of size 200 x

200 x 1000 mm, with approved marks including painting above the ground level.

At the starting point of the commencement of route survey the coordinates shall be recorded. The co-ordinates of the location of the survey instrument shall also be recorded. Further, the co-ordinates at prominent position at intervals of not more than 750m along the transmission line to be surveyed up to the next angle point shall also be recorded. Wherever the line alignment crosses the EHV line, railway line or main roads, the Contractor shall record co-ordinates on the points of crossing. Wherever line route alignment passes over permanent land marks such as rock, boulders, culverts etc. suitable white paint marks with directional and NGC markings shall be made and co-ordinates recorded.

Profiling

Detailed survey and profiling will be carried out for complete corridor, as described in clause 3.5 (h) of this specification, using modern surveying equipment such as RTK equipment, long range scanners and total stations etc. Density of survey data collection should be sufficient to ensure that proper surface imitating actual ground situation of the surveyed corridor can be generated in PLS-CADD. In any case, distance between any two points of survey data grid should not be more than 05m. For hilly/undulated terrain, this distance should be reduced appropriately to ensure that a representative surface is generated in PLS-CADD. R/L's at other undulations in the corridor and other details such as crossings, building & structure, trees & other infrastructure etc. shall also be recorded. Areas along the route, which in the view of the Contractor, are not suitable for tower spotting, shall also be

marked. Recorded survey data shall be exported to MS-Excel file format and submitted along with profile for review of the Engineer.

The complete profiling details shall be digitized and the data shall be prepared & stored in the format compatible to computer-aided tower spotting software.

Route plan and longitudinal profile, commonly referred to as 'Route Profile' or simply 'Profile', will be prepared/ plotted on square paper rolls of graphed tracing paper (1mm / 5mm / 1cm). The profile is plotted to a scale of 1: 2000 horizontal and 1:200 vertical. The profile shall progress from left to right. The height of the sheet shall be taken so that the ground profile and the towers, including extensions can be fully shown. For hilly terrain, greater height of the sheet may be taken, or the sections may be plotted on separate sheets. The length of each sheet may be taken so that approximately 5 km of the line route can be plotted. A gap of 5 to 10 cm shall be kept between sections.

The profile shall show the longitudinal profiles along the center line of the transmission line route and also the cross section profile wherever appreciable difference in level exists with reference to the center line level. The angle of line deviation, duly marked left (L) or right (R) as the case may be, shall also be shown.

Plan table drawing shall show the details of all objects lying within 50 meters on both sides of the center line of the route. Objects and their distances along the route within 50 meters on both sides of the center line, nearby villages, important roads or rivers shall be marked on the drawing.

Crossing details of power lines, roads, railway lines, canals or rivers etc. shall be marked as clearly as possible. Levels of roads, canal and river embankments, maximum water / flood levels, railway top levels and heights of supports / lines being crossed, and shall be shown in the offsets part of the profile. All trees coming within the zone of the right of way and which need to be cut / trimmed shall also be indicated.

Printed/plotted output of the digitized profiling shall be submitted by the Contractor to Employer for review before taking up computer-aided tower spotting.

Optimization of Tower Location/Tower Spotting.

Optimization of tower locations shall be done by the Contractor using computer-aided tower spotting software PLS-CADD and NGC's recommended tower family. In order to verify the results of computer aided tower spotting, the Contractor shall furnish sample calculations and manual tower spotting drawings for some typical sections.

The sag-tension characteristics of the conductor as well as tower spotting data shall be furnished by the Contractor for the Employer's approval before execution. Sag template curves, shall be prepared by the Contractor on acrylic sheet indicating cold curve, hot curve, ground clearance curve and support footing curve and the same shall be submitted to the Employer.

Tower Spotting

While, profiling and spotting the towers the following shall be borne in mind.

Extension

An individual span shall be as near to the normal design span as possible. In case an individual span becomes too short with normal supports on account of undulations in ground profile, one or both the supports of the span may be extended by inserting standard body / leg extension.

Section Length:

The number of consecutive spans between the section points shall not exceed 13 spans or 5km in plain terrain and 10 spans or 3 km in hilly terrain for double circuit 500kV line. The number of consecutive spans between the section points shall not exceed 12 spans or 4.5 km in plain terrain and 10 spans or 3 km in hilly terrain for 220kV line. The number of consecutive spans between the section points shall not exceed 14 spans or 4.5 km in plain terrain and 10 spans or 3 km in hilly terrain for 132kV line. A section point shall comprise of tension point with angle type tower.

Loading

There shall not be any upward force on suspension towers under normal working conditions and the suspension towers shall support at least the minimum weight span as provided in the designs. In case uplift is unavoidable, it shall be examined if the same can be overcome by adding standard body extensions to the towers failing which tension towers designed for the purpose shall be employed at such positions.

Road Crossing

The ground clearance at the roads under maximum temperature and in still air shall be such that even with conductor broken on adjacent span, ground clearance of the conductor from the road surfaces shall not be less than be less than 10.0m for 500kV and 8.0m for 220kV and 132 line. At all national highways, tension towers shall be used and crossing span shall not be more than 350 meters.

Railway Crossings

All the railway crossings in the route of transmission line shall be identified by the Contractor. At the time of detailed survey, the railway crossings shall be finalized as per the regulation laid down by the Railway Authorities. Following are important considerations in this regard.

The crossings shall be supported on angle tower on either side depending on the merits of each case.

The crossing shall normally be at right angle to the railway track.

The minimum distance of the crossing tower shall be at least equal to the height of the tower plus 6m away measured from the center of the nearest railway track.

No crossing shall be located over a booster transformer, traction switching station, traction sub-station or a track cabin location in an electrified area.

Minimum ground clearance above rail level of the lowest portion of any conductor under condition of maximum sag shall be maintained at 11.75m for 500 kV, 11.28m for 220kV line and 10.97 for 132kV line.

The crossing span shall be limited to 300/250 meters for 500kV/220kV/132kV lines.

River Crossings

In case of major river crossing, towers shall be of suspension type and the anchor towers (Balancing towers) on either side of the main river crossing shall be used with zero-degree deviation. Clearance required for navigation shall be provided. For non-navigable river, clearance shall be reckoned with respect to highest flood level (HFL).

Power line Crossings

Wherever the line is to cross another power line, it will be ensured that higher voltage line will pass above the lower voltage line. Minimum clearance in between lines when crossing each other will be as per NGC standard. The angle of crossing has to be preferably 90 degrees and at any time should not be below 60 degrees.

The crossing of the new line over an existing power line is preferably done in the middle of the span between towers of existing power line where there is maximum sag of the conductor. When the line to be constructed is crossing another important EHV line for which shutdown may be difficult, suspension towers in combination with angle / dead end towers, with extensions as required, may be used.

The crossing of the new line below an existing power line shall be done at locations where adequate ground clearance for the new line and the specified clearance from the existing power line are available. Such crossing shall preferably be in the mid span between towers / structures of the new power line, where there is maximum sag of the conductor, and near one of the towers of the crossing span of the existing line for taking advantage of the higher height of the conductors. These measures reduce the requirement of increasing the height of the existing line for obtaining the requisite clearance.

Details Enroute

All topographical details, permanent features, such as trees, building etc. 25m (Total-50 meter) for 500kV, 17.5m (Total- 35 meter) for 220kV line and 13.5m (Total- 27 meter) for 132kV line on either side of the alignment shall be detailed on the profile plan. All the topographical details (trees, buildings, permanent structures, including open land) shall be included in the report.

Clearance from Ground, Building, Trees etc.

Clearance from ground, buildings, trees and telephone lines shall be provided in conformity with NGC standard as amended up to date.

The Contractor shall also intimate the Employer, his assessment about the likely amount of tree & crop compensation etc. required to be paid by the Employer during execution stage. This assessment shall be done considering prevailing practices/guidelines, local regulations and other inquiries from local authorities.

Right of Way

Following right of way width shall be maintained taking into consideration the theoretical requirement of right of way and transport requirements of maintenance:

Transmission Voltage	Recommended Width of Right of Way
132 kV	27 meters
220 kV	35 meters
500 kV	50 meters

Preliminary Schedule

The profile sheets showing the locations of the towers together with preliminary schedules of quantities indicating tower types, wind & weight spans, angle of deviation, crossing & other details etc. shall be submitted by the Contractor for review & approval by Employer.

Detailed Survey of Tower Locations.

The detailed survey shall be conducted for spotting the tower locations on ground conforming to the approved profile and tower schedule.

The co-ordinates of all the tower locations shall also be recorded using DGPS of positional accuracy less than 3m. The position of all tower locations shall be marked in the final digitized route alignment drawing with relative distance from any permanent benchmark in the area.

The Contractor shall also collect required data at each tower location in respect of soil strata, ground water level, history of water table in adjacent areas/surface water and classify the suitable type of foundation at each location.

Contouring at hilly / undulated locations

The levels up or down of each pit center with respect to center of tower location shall be recorded at intervals of 2m using RTK / total stations / DGPS / digital theodolite and digitized contour plans shall be made. Based on the digitized elevation plans, the quantities of benching & protection work vis-a.-vis possible unequal leg extensions shall be optimized using suitable computer-aided techniques/ software's. Required tower and foundation details, cost data for comparative evaluation of benching & protection work vis-a-vis unequal leg extensions shall be provided by the Contractor to the Employer before execution stage.

The changes desired by the Employer in the preliminary tower schedule or as may be required based on detailed survey of tower locations & contouring by the Contractor, shall be carried out by the Contractor and the final tower schedule shall be submitted for approval of Employer. The tower schedule shall show position of all type of towers, span length, type of foundation for each tower, benching & revetment requirement, unequal leg extensions, deviation at all angles, crossing and other details etc.

Survey Methodology & Precision

All elevations shall be referenced to benchmarks established by the survey of Pakistan. Leveling operations shall begin and end at benchmarks approved by the Employer.

During the leveling of the profile, check surveys will be effected at intervals not exceeding 50 km. With benchmarks of known elevations. The difference in elevations as surveyed by the Contractor and as declared by Survey of Pakistan for these benchmarks shall not exceed the precision required for 3rd order surveys $e \leq 24k$ where k is the distance between benchmarks in km and e is the difference between elevations in mm.

In the absence of suitable benchmarks, the leveling shall be done by two independent leveling parties working in opposite directions along the same line. The difference in elevations between the two surveys shall not exceed the precision required for 3rd order surveys as stated above.

All-important objects and features along the transmission line centerline (railways, highways, roads, canals, rivers, transmission lines, distribution lines, telephone lines etc.) shall be surveyed and located with a positional accuracy of 1:2000 between points of known horizontal position.

3) Detailed Check Survey

The indicative drawing showing the line route and substation's locations are attached in Volume 2 of Specification Drawings.

The Employer has already carried out the detailed survey of transmission line along the selected route and prepared the profile / plan tabling which shall be handed over to the Contractor after award. The Contractor shall conduct the check survey to locate tower locations on ground conforming to the approved profile and tower schedule and to ensure that ground features, angle deviations, levels, distances, clearances, crossings etc; as shown on profile correspond with actual features at site. Any variance shall be noted and marked by the contactor. The requirement of tower site leveling and revetment work, if required, shall also be marked by the Contractor on the profiles. Locations, where benching might be required, shall also be identified. Contractor shall make contour measurements along with the calculations for the volume of benching and revetment, so that a decision can be made whether to accept benching and/or use unequal leg extensions. The co-ordinates of all the tower locations shall also be recorded using GPS/DGPS of positional accuracy less than 1m for easy relocating which shall be incorporated in the final digitized route alignment/profile.

After completing the check survey, profiles shall be re-submitted to the Employer for approval along with check survey report.

The Contractor will be responsible for the correct setting of towers as shown in approved profiles. If towers after erection are found to be out of the approved alignment/position in the profile, the Contractor will dismantle and re-erect them correctly fully at his own cost and without extension of time.

The Contractor shall be responsible to carry out survey including pegging out and layout of tower locations, spotting/staking of towers and preparation of construction structure list.

The work to be done by the Contractor shall include but not limited to the following:

(i) Validation & updating of the already prepared plan & profile drawings and construction structure lists (to be provided to the contractor after award of contract) of the proposed transmission line route with the prevailing field developments. Staking (centre and reference pegs) of the tower locations which have to be concreted are included in the Contractor's scope.

Latitude and longitude by hand held GPS of each angle location should be collected and submitted to the Engineer.

(ii) In case of route diversion, detail survey shall be conducted and approved by the Engineer, the Contractor will carry out investigation of diversion route alongwith necessary plan tabling of the area and shall make necessary modification and establish the terminal points, the angle locations, road crossing and other points of interest as advised by the Engineer or his authorized representative.

(iii) The contractor shall also be responsible to prepare plan tabling and profile drawings, tower spotting and construction structure list of any diversion route.

(iv) The Contractor shall obtain necessary rules and regulations. Survey of Pakistan maps will be shown to the successful bidder in the office of the Engineer when requested.

(v) The line route will be marked on the ground with permanent concrete markers. The Contractor will install the Concrete markers of at least 130 x 150 mm at top and bottom with a height not less than 1m. The markers shall be buried 0.5 m below existing ground level. The markers shall be white washed and a red point shall be made on the top of the marker to indicate the exact center of the line. This point shall be further encircled by red paint.

(4) Survey Report

Complete BoQ of the transmission lines as per the technical specifications shall be furnished in the survey report.

Each angle point locations shall be shown with detailed sketches showing existing in the close vicinity permanent land marks such as specific trees, cattle shed, homes, tube wells, temples, electric pole/tower, telephone pole, canal, roads, railway lines etc. The relative distance of land marks from the angle points and their bearings shall be indicated in the sketch. These details shall be included in the survey report.

Information w.r.t. infrastructure details available enroute, identification and explanation of route constraints, etc. shall also be furnished in the Survey report and shall inter-alia include the following:

Information regarding infrastructural facilities available along the final route alignment like access to roads, railway stations, construction material sources (like quarry points for stone, sand and availability of construction water), labor, existing transport facilities, fuel availability etc. shall be furnished in the survey report.

All observations which the Contractor thinks would be useful to the construction of the transmission lines mentioned under scope of work are to be reported.

Suggestions regarding the number of convenient zones (line segments/portions) in which the entire alignment can be divided keeping in view the convenience of line construction, operation, maintenance etc. are to be given.

Suggestions regarding location for setting up stores during line construction in consultation with Employer representatives shall also be provided by Contractor.

Working months available during various seasons along the final route alignment, with period, time of sowing & harvesting of different type of crops and the importance attached to the crops particularly in the context of way leave problems and compensation payable shall be stated by the Contractor.

Availability of labor of various categories and contractors of civil works shall also be reported.

Some portions of the line may require clearance from various authorities. The Contractor shall indicate the portion of the line so affected, the nature of clearance required and the name of concerned organizations such as local bodies, municipalities, Irrigation Department, Railway Authorities, Forest Authorities, Military and Defense Authorities etc.

4.1 Sub Soil Investigation

General Information & Scope of Work

The scope of work includes detailed soil investigation at various selected tower locations as approved/desired by the Engineer such as selected angle points, railway crossings, road crossings, power line crossings, river crossings etc. In addition, soil investigation may be required to be carried out at other locations at the discretion of the Engineer depending upon the soil strata, terrain and other factors.

These specifications cover the technical requirements for a detailed Geotechnical Investigation and submission of a detailed Geotechnical Report.

Mobilization of all necessary tools and equipment, provision of necessary engineering supervision and technical personnel, skilled and unskilled labor, etc. as required to carry out the entire field investigation as well as laboratory tests, analysis and interpretation of data collected and preparation of the Geotechnical Report.

Contractor shall also collect data regarding variation of subsoil water table along the proposed line route.

The Work specified herein is to determine the type and geotechnical characteristics of the foundation strata to the specified depth and location. This is to be accomplished through rotary drilling, field testing, ground water observations, soil sampling and laboratory testing. The location along with depth of investigation boreholes on the ground shall be established by the Contractor in accordance with the Drawings and from reference points approved by the Engineer as per requirement.

The Geo-technical investigations and report shall conform to all International ASTM Standards, Specifications (shall be the latest editions including all applicable official amendments and revision)

The Contractor shall have at site, at all times only qualified experienced geologist/engineer who will conduct and supervise drilling/logging activities. Hand held GPS should be available at investigation site for verification of bore hole/test pit location by the Engineer.

The Contractor shall also measure soil resistivity at each borehole.

The Contractor shall propose suitable foundation design on the basis of soil investigation. If it is determined that a new foundation design, other than those being already used by NGC, is required depending on the soil investigation results, the Contractor would design such new foundations types such as grillage foundation, undercut foundation, rock-anchor foundation, augured foundation etc.

4.2 Method of Drilling

Drilling shall be done by rotary including rock coring method by means of which a hole of specified diameter is extended in depths. Use of bottom discharge drilling bit shall not be permitted. The Contractor shall only be allowed to use percussion method where gravels and boulders are encountered after the approval by the Engineer.

4.3 Drilling of boreholes in flowing water conditions

Drilling may be carried out under water conditions. During the investigation, the Engineer may change such locations to land drilling depending upon the prevailing water way conditions.

4.4 Test Pit

The test pits shall be excavated at the locations as specified by the Engineer. Excavations of test pits shall be made to the depths as directed by the Engineer by manual labor and with the help of suitable digging tools. Test pits shall generally be excavated to a depth of about 3 meters below the ground surface or bed rock whichever is encountered earlier. Undisturbed black (30cm x 30cm x 30cm) sample shall also be extracted from each test pit. The dimension at the bottom of pit shall not be less than 1.5 m x 1.5 m. After field testing and sampling, the test pit should be backfilled as instructed by the Engineer.

4.5 Drilling Fluid

The drilling fluid used for rotary drilling shall be clean water clear from suspended sediments. The Contractor may use the natural or commercial drilling mud/bentonite slurry as drilling fluid.

4.6 Casing of Boreholes.

Casing of a required size allowing entry of sampling tools shall be used in conjunction with drilling to wall the boring to the bottom of the hole.

The casing shall be made of cylindrical steel pipes and shall have sufficient strength so as to maintain position and shape during drilling operations.

The casing may be omitted only where it can be shown to the satisfaction of the Engineer that sampling operations without the casing will not entrain soils from an elevation higher than the depth at which field testing or sampling is to be made.

It shall be the Contractor's responsibility to pull out casing from the bore holes after its completion for which no extra payment shall be made.

4.7 Field Testing

Field testing shall include Standard Penetration Test. Standard Penetration Test shall conform to ASTM D-1586. This designation describes as procedure to obtain a record of the resistance of subsoils to the penetration of a standard sampler and to obtain representative disturbed samples of the material for identification purposes and laboratory testing. The penetration resistance shall be expressed as the number of blows of a 63.4 kg (140 lbs) hammer freely dropping 762 mm (30 inches) required to force the standard sampler 305 mm (12 inches) into the soil. Standard Penetration Tests shall be conducted in the bore holes at one-meter interval from 1-meter depth to 10/15-meter depth of bore hole and up to 40 m in case of river crossing locations, unless otherwise directed by the Engineer. Immediately after each

penetration test a representative portion of the soil core shall be placed in moisture proof container.

4.8 Undisturbed Sampling

The undisturbed samples shall be taken in cohesive and non-cohesive materials. Samples shall be obtained using Denison or Pitcher sampler or equivalent double tube core barrel or Shelby tube. The sampling procedure shall conform to latest B.S./ASTM Standards. The length of undisturbed samples obtained shall not be less than 30 cm. immediately upon extraction from the hole, the sample shall be properly waxed. The number and depth of undisturbed samples from each hole shall be as directed by the Engineer during the progress of the drilling work at site.

4.9 Labeling and Disposition of Samples

Each sample shall have identification tags giving information regarding Sample No., Top Elevation of Hole/Test Pit, Date of Sampling, Depth and Length of Sample, and Description of Sample. The selected undisturbed and disturbed samples shall be carefully transported for testing by the Contractor to the approved testing laboratory. Every precaution shall be taken to avoid damage to samples as a result of careless handling and undue delay in transportation. The tubes containing undisturbed samples and cores shall be well packed in wooden boxes to protect the samples against vibration.

Ground Water Observations

Whenever required by the Engineer, bore holes shall be preserved for observations of ground water conditions. When the borings are advanced by using natural or commercial drilling mud/bentonite to stabilize the hole, the hole shall be flushed thoroughly with clean water at the completion of boring for the purpose of observing ground water levels.

4.10 Laboratory Tests

(i) General

- Laboratory tests shall be scheduled and performed by qualified and experienced personnel who are thoroughly conversant with the work.

- The laboratories in which the samples are to be tested shall be approved by the Engineer.

Laboratory tests shall be conducted using approved apparatus complying with the requirements and specification of International Standards for this type of work. It shall be checked that the apparatus are in good working condition before starting the laboratory tests. Calibration of all the

instruments and their accessories shall be done carefully and precisely at an approved laboratory.

One copy of all laboratory test data records shall be submitted to the Employer progressively every week. Laboratory tests shall be carried out concurrently with the field investigations as initial laboratory test results could be useful in planning the later stages of field work.

A schedule of laboratory tests shall be established by Contractor to the satisfaction of the owner within one week of completion of the first bore hole.

- The person representing to the Engineer shall have access to the laboratories to supervise and check the laboratory testing of the samples.

- The testing shall be carried out in accordance with ASTM or equivalent British Standards, or as directed by the Engineer.

(ii) Tests

The Contractor shall arrange to carry out laboratory tests on the specified samples of the subsoil material/water sample. The samples to be tested and the tests to be carried out for each sample shall be specified by the Engineer.

Undisturbed soil samples retained in liners or seamless tube samplers shall be removed, without causing any disturbance to the samples, using suitably designed extruders just prior to actual testing

Laboratory testing may include but not limited to the tests listed below:

Grain Size Analysis (Sieve + Hydrometer)
Soil Classification with percentage of gravel, sand, silt and clay at different depths.
Safe Soil Bearing Capacity (particularly at 5m depth)
Atterberg's Limits
Chloride Content (soil and water)
Bulk Density and Moisture Content
Dry Density
Generalized Subsurface Geotechnical Models with tables showing soil characteristics for each tower location
Capacity Curves at 4, 5, 6, 7m depths and Allowable Load vs Foundation Width for different Models.
Organic Matter Content
Sulphate Content (soil and water)
PH value (soil and water)
Unconfined Compression Test
Direct Shear Test
Consolidation Test

Total Soluble Salts.

4.11 Confirmatory Sub-Soil Investigation

After preliminary subsoil investigations confirmatory investigation (if required) up to maximum depths of 30 meters will be carried out by the Contractor. The location of selected confirmatory investigation will be conveyed to the Contractor by the Engineer.

4.12 Record

The Contractor shall have at site, at all times only qualified, experienced, orderly and thoroughly competent graduate Geologist who shall conduct and supervise drilling operations sampling and logging.

Contractor shall submit a formal report containing geological information of the region, procedures adopted for geotechnical investigation, field observations, summarized test data, conclusions and recommendations. The report shall also include detailed bore logs, subsoil sections, field test results, laboratory observations and test result both in tabular as well as graphical form, practical and theoretical considerations for the interpretation of test results, supporting calculations for the conclusions drawn etc.

The Contractor shall keep accurate logs and records of all the Work accomplished under this Contract. All such records shall be preserved in good condition by the Contractor until they are delivered and accepted by the Engineer. The Engineer shall have the right to examine such records at any time prior to their delivery to him. The following information shall be included in the records for each investigation borehole:

Bore hole/test pit number or designation, coordinates and elevation of top of the bore hole/test pit;

Type of drilling operations;

Dates and time by depths when drilling operations were performed;

Depths at which samples were recovered and field-testing was performed including complete data of field-testing;

Depth of Ground water table from NSL; and

Description of subsoil conditions.

The presence of the Engineer Representative or keeping of separate records by him shall not relieve the Contractor of the responsibility for the Work specified in this clause. Payment will not be made if the Contractor has not furnished the records.

4.13 Foundation design/designation

Contractor shall submit the foundation design/designation for each tower location duly considering soil type and tower spotting data along with the data/calculations to establish that the proposed foundation type is optimized and cost effective for the review and approval of the Engineer:

The recommendations shall provide all design parameters and considerations required for proper selection, dimensioning and future performance of tower foundation and the following:

Necessary soil design parameters to verify the bearing capacity based on geological data (bore log) and laboratory test results i.e. from (a) standard penetration test & (b) analytical method.

Immediate and consolidation settlements of soil.

Seasonal fluctuation of ground water.

Cement type to be used for foundation construction (based on ACI-318 Table 4.3.1).

The Contractor shall propose suitable foundation design on the basis of soil investigation. If it is determined that a new foundation design, other than those being already used by NGC, is required depending on the soil investigation results, the Contractor would design such new foundations types such as grillage foundation, undercut foundation, rock-anchor foundation, augured foundation etc. The Contractor shall be responsible for satisfactory performance of new foundation after erection and commissioning of towers on these foundations. Price of Design of new foundation would be quoted on “per type of foundation” basis.

Contractor shall submit the foundation design/designation along with the following data/calculations to establish that the proposed foundation type is optimized and cost effective for the review and approval of the Engineer:

- Necessary soil design parameters to verify the bearing capacity based on geological data (bore log) and laboratory test results i.e. from (a) standard penetration test & (b) analytical method.
- Immediate and consolidation settlements of soil.
- Seasonal fluctuation of ground water.
- Cement type to be used for foundation construction (based on ACI-318 Table 4.3.1).

1.2 Foundation Requirements

(1) **General**

The items in the Price Schedules for constructing the various types of concrete foundations (including pile foundations) for steel towers include the following:

(a) Tower staking;

(b) Performing all clearing, grading, cutting, blasting and leveling as required to construct the footings and erect the steel towers at the specified tower locations;

(c) Performing all required excavation, blasting (in all types of soil/rock), dewatering, shuttering, curing and compacting backfill for the concrete footings;

(d) Installing steel stub angles in the concrete footings;

(e) Tower grounding before placement of concrete;

(f) All concrete work for the concrete footings, including the cost of furnishing all reinforcing bars, and all materials for concrete;

(g) Installing pile foundations (pile, pile cap & tie beam) where required, including the cost of furnishing all reinforcing bars and all materials for concrete; and

(h) The foundation drawings included in Bidding Document are firm & final and only be changed (if required) as directed by Engineer.

(2) **Excavation for Tower Footings**

The Contractor shall perform all excavation required for constructing various types of concrete foundations for the steel towers. During excavation of towers sites near to amenities, the Contractor shall ensure to perform the work in such a manner as to minimum damage to them and if any prior approval is required that must be obtained at his own. However, in case of any damage the Contractor shall be get repair of it at his own risk and cost under intimation to the concerned agency.

The tower sites shall be leveled, graded/cut and cleared of trees, brush and stumps as may be required to construct the tower footings and to erect the steel towers. Cleared materials shall be disposed off, as directed by the Engineer or his nominated person.

All excavations shall be sufficient to provide concrete footings with dimensions not less than shown on the drawings.

After the Contractor has excavated the footing to the required depth, the Engineer will inspect the bottom of the excavation and determine if the bearing material is suitable for the type of footing designated for that location. If it is found that the bearing material is unsatisfactory for the type of footing designated, the Engineer or his nominated person will either designate another type of footing or ask for compacted crushed stone mixed with sand 50:50 ratio to be placed underneath the footing for a depth of up to 1.2 meters. The Contractor will be paid only for the type of footing actually installed. However, no payment will be made to the excavation & replaced material underneath the footing.

A maximum variation of 60 mm above or below established grade will be permitted. However, if excavations are below specified grade plus tolerance, those shall be backfilled to required grade by the Contractor with the Contractor's furnished concrete at his own cost.

All excavated material which is suitable for backfilling shall be laid aside to be used for backfilling at the tower site from which it was excavated, and the excess material shall be spread evenly around the site as directed by the Engineer or his nominated person.
Concrete shall be placed as soon as practicable after each excavation is completed and all excavations shall be protected so as to maintain a clean sub-grade until the footing is placed, using dewatering, timbering, shoring, or casing, as necessary. Any sand, mud, silt, or other objectionable material which may accumulate in the excavation shall be removed at the expense of the Contractor before placing concrete. After completion of foundations all the dewatering holes shall be filled with dry sand.

(3) **Rock Excavation**

Rocks shall be excavated to the depth required to provide suitable base for the foundations as indicated on relevant drawings.

Rock excavation includes drilling, blasting, removal, drainage and pumping as required. Drilling and blasting techniques shall keep over break to a minimum and no extra compensation shall be paid for the removal of over broken material. The contact surface of the rock shall be cleared of all loose rock and soil.

The cost of any damage whatsoever caused by blasting shall be payable by the Contractor. He shall not be relieved of these costs in spite of having received approval of his methods from the Engineer.

(4) **Erosion/Slope Protection**

For erosion protection against water current, gravel blankets shall be placed such that they do not flow away with water current. These gravel blankets

shall be placed at or adjacent to tower sites in the manner as directed by the Engineer or his nominated person. Gravel for the blankets shall be furnished by the Contractor, and it shall be pit-run, free draining, containing no stones larger than 635 mm size obtained from the closest source approved by the Engineer or his nominated person. The gravel shall be reasonably clean and free from vegetation, pieces of timber, or other foreign matter, and shall be distributed and graded evenly over the required areas. No compaction will be required.

Slope protection will be provided for foundations, which are located/placed on uneven ground, and/or they are partially or fully exposed in such a way that designed burden cannot be provided on these foundations safely. Slope protection shall include but not limited to construction of retaining walls of stone or brick masonry to a height and depth so as to provide adequate protection and necessary burden by making a leveled platform with or without brick/stone mortar after filling with earth as per specifications/drawings or as directed by the Engineer. The slope protection drawings will be prepared by the Contractor and submitted to the Engineer for review/approval prior to execution of Project.

(5) **Concrete Foundations**

Each tower foundation will have four footings and each footing will consist of a steel stub angle embedded in reinforced concrete. The footings for each tower in a tangent section of the line shall be placed so that the longitudinal axis of the tower cross-arm will lie in a plane perpendicular to the traverses of the line. Unless otherwise directed by the Engineer, the footings for each angle tower shall be placed so that the tower cross-arm will lie in a plane bisecting the interior angle formed by the inter-section of the traverses of adjacent sections of the line.

The footings at the various tower sites shall be constructed in accordance with the criteria shown on Drawings.

Pile foundations will be required where the field and laboratory tests confirm the requirements. The pile foundations will be installed as shown on the relevant drawings and in accordance with these Specifications.

Any type of spread footing foundation may be changed to another type of spread footing foundation or pile foundation in accordance with field requirements during execution of the project with the prior approval of the Engineer.

(6) **Placing of Stub Angles in Footings**

Stub angles shall be placed in the tower footings as shown on the drawings and shall be supported in the proper position by means of a rigid frame or

equivalent suitable device to ensure placement of the stubs within the tolerances specified below. The stub angles shall be held rigidly in a manner to prevent displacement during placing of concrete.

All stub angles for the tower legs shall be set accurately to the grade and alignment designated on the drawings and as directed by the Engineer. Work that is not within the tolerance will be corrected as directed by the Engineer, and at the Contractor's expense. The setting tolerances following complete foundation installation including backfilling and compacting are as follows:

(a) Tower Center from theoretical location:

(i) Transverse ..... ± 150 mm
(ii) Longitudinal ..... ± 500 mm

(b) Tower Orientation (angular departure from the theoretical location measured at the point of intersection of a tower face and the longitudinal center-line).....25 mm

(c) Difference in Elevation between working point marks on Stub Angles including diagonally opposite legs ..... 8 mm

(d) Departure from theoretical Horizontal Dimensions between tower center line and working point marks on stub angle:

(i) Along the tower face,
plus minus ..... 5 mm

(ii) Along the tower diagonal,
plus minus ..... 7 mm

(e) Batter ..... 5 mm
per meter

(f) Twist (about heel of stub angle) ..... 2°

(7) **Tower Grounding**

Each tower shall be grounded by installing one ground rod below each of two diagonal footings. Ground rods shall be driven at least 2.5 meters into undisturbed soil at the bottom of the footing excavation, as shown on the Drawings. The ground rod shall be connected to the stub angle by a 7 No. 10 stranded annealed copper covered ground wire. The connection of this wire to the ground rod and to the stub angle shall be made by a bolted clamp in accordance with the Drawings.

Where it is not possible to drive a ground rod an alternative grounding by installing 'crowfoot' shall be adopted.

The resistance of the two rods/crowfoot in parallel shall be measured and recorded before concrete footings are poured. If the resistance is more than 10 ohms, additional rods/crowfoot shall be installed as directed by the Engineer or his nominated person. No extra payment would be allowed for excavation/blasting/laying/back-filling on account of this.
The dead end terminal tower of the overhead lines must be connected to the earthing system of the grid stations.

(8) **Concrete**

(a) **General**

All concrete and reinforcement placed for tower footings shall conform to the requirements of this section.

At least 30 days prior to beginning concrete placement, the Contractor shall submit to the Engineer for approval, a design mix (along with quantity and source of each material) along with six (6) test cylinders using the actual materials to be incorporated into the Work. Approval of the design mix will in no way relieve the Contractor from meeting all the requirements of these Specifications. Whenever the Contractor proposes to use a different material source, a new design mix must be submitted and approved as outlined above. During construction if in the Engineer’s opinion the mix shall be adjusted, the Contractor shall submit a new design mix as directed by the Engineer.

(b) **Materials**

The Contractor shall furnish all materials for use in concrete, including but not limited to cement, sand, coarse aggregate, water, reinforcing bars, admixture, (including ground slag) and concrete curing compound. Air-entraining agent and curing compound shall be accepted on manufacturer's certification of compliance with specification requirements. However, the Engineer reserves the right to require submission of and to perform tests on samples of the agent and/or compound prior to shipment and use in the Work at the cost of Contractor.

(i) **Cement**

Cement shall meet the requirements of ASTM C150. The cement shall be free from lumps and properly packed in bags when used in concrete. Adequate provisions shall be made by the Contractor to prevent absorption of moisture when

cement is stored. Cement Type-V (sulfate resistant cement) will be used. Volume of one bag of cement should be taken as 1.25 cubic-ft.

(ii) **Sand and Coarse Aggregate**

Sand and coarse aggregate shall be furnished from any approved source. The sand particles shall be clean, hard, dense, durable, uncoated rock fragments that will pass a screen having 6.5 mm square openings. The sand shall be well graded from fine to coarse and shall be free from injurious amounts of dirt, organic matter, and other deleterious substances.

The coarse aggregate shall consist of clean, hard, dense, durable, uncoated rock fragments, shall be free from injurious amounts of flat and elongated pieces, organic matter, or other deleterious substances. The maximum size of crushed coarse aggregate for piles shall be 19 mm and for spread footings, pile cap and tie beam 38 mm or as directed by the Engineer. The grading of these sizes shall conform to ASTM C33.

The Contractor shall submit, for testing and approval, representative samples of the sand and coarse aggregate proposed for use in the concrete work. All testing will be conducted at CMTL, Lahore or UET Jamshoro. All aggregates shall conform to the requirements of ASTM C33 including petrographic test. During construction the Contractor shall also arrange testing of sand and coarse aggregate if directed by the Engineer to determine compliance with Specifications. The cost of all laboratory testing of these samples shall be borne by the Contractor.

(iii) **Water**

Water used for mixing concrete shall be clean and free from injurious amounts of oils, acids, alkalis, salts, organic materials, or other substances that may be deleterious to concrete or reinforcement and shall meet the requirements shown in Table-1 below. A complete chemical analysis of water shall be submitted prior to the start of construction work and shall be required for each new water source being chosen. The cost of all laboratory tests of the samples shall be borne by the Contractor. No change in water source shall be permitted without prior approval by the Engineer.

TABLE-1

Total Dissolved Solids (TDS)	800 ppm (max)
Magnesium, Chlorides and Sulfates	250 ppm (max)

pH Value	6.5 – 8.0

(iv) **Reinforcing Bars**

Reinforcing bars shall be deformed bars conforming to ASTM Designation A615, Grade 60. Representative steel bar samples shall be collected from the site and tested in the laboratory approved by the Engineer. The testing shall be witnessed by the Engineer. The cost of all laboratory tests and traveling of Engineer shall be arranged/borne by the Contractor.

Negative variation in weight [mass] maximum up to 2% of reinforcement bar(s) from the applicable weight [mass] per unit length prescribed in Table 1 of ASTM A615 will be allowed for bar(s) placement. Contractor will have to make adjustments in bar spacing/number of bars to accommodate the excessive negative variation in weight [mass] if greater than 2%. Contractor will not be allowed for bar(s) adjustment in case of overweight [excessive mass] of any deformed bar.

(v) **Curing Compound**

Curing compound shall be wax-base and white-pigmented (Type 2) and conforming to ASTM Designation C-309 to reflect solar radiation.

(vi) **Admixtures and Ground Slag**

Admixtures to be used in concrete shall be subject to prior approval of the Engineer and shall meet the following requirements:

(1) **Chemical Admixtures**

a) Air-entraining admixtures shall conform to ASTM C 260,"Specification for Air-Entraining Admixtures for Concrete.

b) Water reducing or water reducing and retarding admixtures (Normal Plasticizers) shall conform to ASTM C 494, “Specification for Chemical Admixtures for Concrete”, Type A or D, respectively.

c) Super plasticizers shall conform to ASTM C 494, Type F or G, respectively

d) Only one of the Admixtures A, D, F or G, shall be added at a time.

e) Chloride-bearing admixtures shall not be permitted.

f) Super Plasticizers shall be checked for their compatibility with pozzolanic materials in blended cement concrete.

(2) **Ground Granulated Blast-Furnace Slag**

In area where high sulphate and chloride contents are present in soil/water, finely ground granulated blast-furnace slag can be used as cementatious material in concrete by replacing SRC cement by maximum up to 30%. The properties of ground granulated blast-furnace slag should meet ASTM C 989. The cost of all laboratory testing of these samples shall be borne by the Contractor. Contractor will not be paid extra for the purchase/procurement of ground granulated blast-furnace slag to the construction sites.

(c) **Composition**

The Contractor shall determine the proportions of the sand, coarse aggregate, and cement needed to provide concrete, meeting the requirements of these Specifications, and shall be approved by the Engineer. Concrete which contains 38 mm maximum-size aggregate shall have a cement content of not less than 380 kg per cubic meter and concrete which contains 19 mm maximum size aggregate shall have a cement content of not less than 440 kg per cubic meter. 38 mm maximum size aggregate shall be used for spread footing, pile caps, tie beams and 19 mm aggregate for piles. The net water cement ratio by weight shall not exceed 0.5. Surface water contained in the aggregate shall be included as part of the mixing water in determining the water content. Reinforced concrete design will be checked in accordance with the ACI Building Code.

The Contractor will take minimum three test cylinders (152mm x 305mm) per leg, and the average compressive strength at 28 days shall exceed 210 kg/cm² (3000 psi) and no individual test value should fall more than 35 kg/cm² (500 psi) from the minimum specified value.

The compressive strength of the concrete will be determined by the Engineer through the medium of test of (152 x 305 mm) cylinders made and tested in accordance with ASTM C39. The Contractor shall furnish all necessary sampling equipment such as slump cones, test cylinders, etc. at the site. This equipment is to be approved by the

Engineer or nominated person by Engineer. The cost of the material lab tests shall be borne by the Contractor.
In the event that the concrete cylinder fails to meet the specified strength requirements then in-place testing of concrete shall be conducted under the supervision of the Engineer. In-place as approved by Engineer testing of concrete shall be conducted by one or a combination of the following methods:

(i) ASTM C42 "Test Method of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete."

(ii) ASTM C805 "Test Method of Rebound Number of Hardened Concrete."

The use of calcium chloride in concrete will not be permitted.

The slump of the concrete shall not exceed 75 mm for conventional foundation, pile cap & tie beam and 150-180 mm for piles.

(d) **Batching and Mixing**

Unless specifically approved by the Engineer, all concrete used on the Project shall be machine mixed. Hand mixing shall only be used when authorized by the Engineer and shall be performed under his directions.

The sand and coarse aggregate shall be weighed and shall be proportioned on the basis of integral bags of cement unless the cement is weighed. After weighing, the materials may be proportioned on the basis of equivalent volumes. The Contractor shall provide equipment and shall maintain and operate the equipment as required to accurately determine and control the amount of each separate ingredient entering the concrete. Batching shall be such that combined inaccuracies in feeding and measuring the materials will not exceed 1.5 percent for water and weighed cement and 2 percent for sand and each size of coarse aggregate. The concrete shall be uniform in composition and consistency throughout the mixed batch, and from batch to batch, except where changes in composition or consistency are directed. The mixing time shall be at least 1.5 minutes for stationary mixers. Excessive over-mixing requiring the addition of water to preserve the required consistency will not be permitted. The temperature of the concrete when it is being placed shall be not more than 35°C and not less than 5°C in moderate weather or 10°C when the mean daily temperature drops below 5°C. Truck mixers will be permitted only when the mixers and their operation are such that the concrete throughout the mixed batch and from batch to batch is uniform with respect to consistency and grading. Any concrete

retained in truck mixers so long as to require additional water to permit satisfactory placing shall be wasted.

(e) **Forms Preparation for Placing of Concrete**

Unless otherwise provided for on the Drawings or approved by the Engineer, all concrete placed will be monolithic.

Forms shall be sufficiently tight to prevent loss of mortar from the concrete and shall be maintained rigidly in position until the concrete has hardened sufficiently to prevent damage by form removal. All surfaces of foundations upon or against which concrete is to be placed shall be free from standing water, mud and debris. The surfaces of absorptive foundations against which concrete are to be placed shall be moistened thoroughly so that moisture will not be drawn from the freshly placed concrete. The surfaces of construction joints shall be clean, rough and surface dry when covered with fresh concrete. Cleaning shall consist of the removal of all laitance, loose or defective concrete, coatings, sand, curing compound if used, and other foreign material. A mortar layer shall not be used on concrete construction joints.

The methods and equipment used for transporting concrete, and the time that elapses during transportation shall be such as will not cause appreciable segregation of coarse aggregate or slump loss in excess of 25 mm in the concrete as it is delivered into the Work. Concrete may be transported from the mixer to the forms and deposited in the forms by any method approved by the Engineer such as transit mixers, buckets, chutes and pumping. Aluminum pipe or chutes shall not be used for tremie trunk line, or chute for placing of concrete, or for the delivery of pumped concrete. Re-tempering of concrete will not be permitted. Any concrete which has become so stiff that proper placing cannot be assured shall be wasted. Formed concrete shall be placed in continuous approximately horizontal layers, the depths of which generally shall not exceed 500 mm. Concrete shall be vibrated (internal vibrators having a minimum frequency of 8,000 vibrations per minute) until it has been consolidated to the maximum practicable density, is free from rock pockets of coarse aggregate, and closes snugly against all surfaces of forms and embedded materials. Standby vibrators shall be available during concrete placement.

Exposed unformed surfaces of concrete shall be brought to uniform surfaces and worked with suitable tools to a reasonably smooth wood float or steel-trowel finish as directed. Concrete in the tops of foundations in which stub angles are embedded shall be sloped to provide drainage away from the stub angles.

(f) **Reinforcement**

Steel reinforcing bars shall be placed in the concrete where shown on the drawings. Before reinforcement is placed, the surfaces shall be cleaned of heavy flaky rust, loose mill scale, dirt, grease, or other foreign substances. Reinforcement shall be accurately placed and secured in position so that it will not be displaced during placing of concrete.

The Engineer shall not furnish supplemental bar-placing diagrams, bar lists, and bar-bending diagrams. Any such additional diagrams and bar lists of this type which the Contractor may require to facilitate the fabrication and placement of reinforcement shall be provided by the Contractor.

Reinforcement will be inspected for compliance with requirements as to size, shape, length, splicing, position, and amount after it has been placed.

Any bar-placing diagrams, bar lists, and bar-bending diagrams prepared by the Contractor shall conform to the requirements shown on the reinforcement design drawings and shall be approved by the Engineer. Maximum two numbers of bars (2+2) in pad and chimney can be lapped.

Lap splices shall be as under:

Bar #	3	4	5	6	7	8	9	10	11
Lap Length (mm)	305	360	460	610	840	1100	1400	1800	2160

(g) **Protection and Curing**

The Contractor shall protect all concrete against injury until final acceptance. The concrete shall be cured with two applications (coats) at right angles to each other to ensure uniform and more complete coverage with approved membrane type curing compound to be applied preferably by power sprayer as soon as possible after concrete placement and in no case later than 2 hours. Curing with water shall be used only as an alternative to the type curing and with Engineer approval. The application of the curing compound shall be in accordance with the procedures outlined by the Manufacturer. In case of pile-cap & tie beam with form, ties are loosened and vertical forms are still in place water should be applied to run down on the inside of the form to keep the concrete wet. Immediately after form removal, the surfaces should be kept continuously wet by water spray

or water-saturated fabric until the membrane-forming curing compound is applied.

In exceptional cases where extremely corrosive soil conditions are encountered, or as directed by the Engineer, the surfaces of the concrete, both exposed and unexposed, shall be treated with an approved type of bituminous compound. A minimum of two applications shall be required, and the applications shall be 100 percent effective. Surfaces to be treated shall not be coated with curing compound. No extra payment will be made to the Contractor for procurement/treating concrete surfaces with bituminous compound.

(h) **Repair of Concrete**

Any concrete that is damaged or defective from any cause; concrete that is honey-combed, fractured, or otherwise defective, and concrete damaged because of excessive surface depressions, must be excavated and built up to bring the surfaces to the prescribed lines, shall be removed and replaced and any imperfections and irregularities on concrete surfaces shall be corrected. The removal and replacement of damaged or defective concrete, and the correction of surface imperfections and irregularities shall be made with concrete dry pack, or mortar (Portland cement mortar), or at the option of the Contractor, with epoxy-bonded concrete, or epoxy-bonded epoxy mortar, where and as applicable for the type of repair involved. All repairs should be completed within 24 hours after removal of forms, and as directed by the Engineer or his nominated person. However, forms shall not be removed for a period of at least 24 hours after the concrete work until it has acquired sufficient strength to safely carry its own weight and any construction loads that may be imposed on it.

(i) **Tolerances for Concrete Construction**

The Contractor shall be responsible for setting and maintaining concrete forms within the tolerance limits necessary to insure that the completed Work will be within the tolerances specified or within good construction practices. Concrete work that exceeds the tolerance limits specified herein shall be inspected by the Engineer and he will determine what effect the deviations will have upon the structural action or operational function of the structure, and what remedies may be necessary. If after such inspection the Contractor is directed to remove or replace any defective Work, he will do so at his own expense.

(aa) Tolerances for footings:

- Variation from plumb In any length of 3.0

	or specified batter for lines and surfaces of stems	meters ..... 13 mm Maximum for entire length ..... 26 mm
-	Variation in cross-sectional dimensions of stems	Minus..... 7 mm Plus ..... 26 mm
-	Variation from specified elevation for top of concrete	Minus ..... 13 mm Plus ..... 13 mm
-	Variation of dimensions in plan	Minus ..... 13 mm Plus ..... 52 mm
-	Misplacement or Eccentricity	2 percent of the footing width in the direction of misplacement but not more than 52 mm
-	Reduction in thickness	5 percent of specified thickness

(bb) Tolerance for placing reinforcing steel:

-	Variation of protective covering:	with cover of 64 mm or less ……07mm with cover of more than 64mm ……. 13mm
-	Variation from indicated spacing	..... 26 mm

(9) **Backfill for Tower Footings**

Backfill shall be placed about the tower footings to elevations indicated on the drawings or as directed. The material used for backfilling, the amount thereof, and the manner of depositing this material shall be approved by the Engineer. Where the excavated materials are insufficient in quantity or are not suitable, as determined by the Engineer nominated person, for use as backfill, the Contractor shall obtain suitable material from the borrow. No borrow pits shall be made within 25 meter radius from center of tower. Backfill shall be placed about the tower footings as soon as practicable after removal of concrete forms, but not earlier than 8 hours from application of sealing compound or bitumen coating to concrete surfaces.

The excavated material not suitable for backfilling or in excess of backfilling requirement shall be spread evenly over or adjacent to the Site. The backfill adjacent to footing stems shall be approximately 150 mm above the original

ground, and shall be graded and sloped uniformly away from the stems so that there is no pond at or around the footing.

In backfilling for concrete footings, the pad of the footing shall be covered with fine material of 300 mm thickness (after compaction) before any coarse material is deposited. Care shall be taken to avoid damage to the concrete when backfilling. The backfill material shall be clean and free from vegetation, pieces of timber, or other foreign matter. Suitable material for backfilling shall be a compatible granular material having a granularity within the following limits.

Sieve	% Passing
76 mm (3 in)	100
No. 200	0-15

(10) **Compacting Backfill**

Backfill shall be placed in horizontal layers which after compaction shall not be more than 150 mm thickness. Each layer shall be compacted by tamping machines or other mechanical means approved by the Engineer.

Backfill shall be moistened properly where required. When excavated material is so wet that it is not suitable for backfilling, it shall be spread and aerated until the proper moisture content is attained, at which time the material shall be used as backfill around tower footings. The backfill material shall not be placed until all forms and timber used for shoring or bracing have been removed, unless otherwise permitted by the Engineer or his nominated person.

The Contractor shall submit, for laboratory testing and approval, representative samples of the materials proposed to be used as backfill. On the basis of laboratory test results the Engineer shall specify the degree of compaction to be obtained in the field, which shall not be less than 90% of the maximum dry density as obtained by ASTM D-1557.

Density shall be measured in the field according to ASTM D1556 or ASTM D2937 by the Contractor in the presence of nominated person of the Engineer to determine compliance with the specified degree of compaction. The cost of all laboratory and field testing shall be borne by the Contractor.

(11) **Additional Foundations**

In case other foundations are required to be installed, which are of different design than the specific types listed, the Contractor shall install these foundations as directed by the Engineer. All work performed will be in accordance with these Specifications. Payment for additional foundations will

be made at the applicable unit prices provided in the Price Schedules for similar Works.

(12) **Foundation Test (Not Required)**

The Contractor may be required to perform an uplift load test on any one footing for double circuit suspension type tower. The Engineer will designate the location and type of footing to be tested. All methods, procedures, equipment, jigs, apparatus etc., shall be subject to approval by the Engineer. No testing shall be commenced until 28 days after the final concreting nor until all backfill is placed and compacted as specified herein.

An uplift load shall be applied until a design value is reached or the footing fails. The rate of load application will be determined by the Engineer.

1.3 Pile Foundations

(1) **General**

(a) **Description of Work**

The Work to be performed under these Specifications shall be carried out at the proposed site of towers after the field and laboratory test results confirmation. The Work includes, but is not limited to the following:

(i) Construction of bored, cast-in-place reinforced concrete piles, pile cap and tie beam as shown in the Bid Drawings or as directed by the Engineer.

(ii) Complete borehole logs and record of all operations performed during the execution of the Work.

(b) **Location of Piles**

(i) The location of piles on the ground shall be established by the Contractor in accordance with the construction drawings. Establishing the pile locations accurately in the field shall be sole responsibility of the Contractor.

(ii) The Contractor will provide the levels, survey and ground elevations for each pile location. The elevations will be given with respect to permanent Bench Marks in the vicinity of the Site.

(c) **Diameter and Length of Piles**

Bored, cast-in-place reinforced concrete piles shall be constructed having uniform diameter throughout the length as specified in the

relevant Bid drawings or as directed by the Engineer. Pile footings shall only be installed where the field and laboratory tests confirm the requirements. The final length of the piles shall be determined based on field and laboratory test results.

(d) **Drillers and Supervisory Staff**

The Contractor shall have at Site, at all times only qualified, experienced, orderly and thoroughly competent persons including graduate civil engineers/geologists who shall conduct and supervise drilling/concreting operations during, sampling, logging, in-situ testing and piles construction.

(2) **Execution of Piles**

(a) **General**

This clause covers all the work necessary for the execution of the bored, cast-in-place reinforced concrete piles namely:

(i) Formation of ramp.
(ii) Drilling and stabilizing of bore holes for the piles.
(iii) Placing of steel reinforcement.
(iv) Mixing and placing of concrete.

The Contractor shall perform all such work in accordance with requirements of this clause as well as in accordance with the methods proposed or described by him at the time of submitting his Bid and approved by the Engineer.

(b) **Method of Drilling**

The drilling of holes for piling shall be done by reverse rotary or percussion method or any other method suggested by the Contractor and approved by the Engineer. Regardless of the method used for drilling holes, drilling operations shall be carried out in such a way as to avoid any disturbance of the surrounding soil especially at the bottom of the hole and successful drilling through all types of soil/rock/boulder.

(c) **Stabilizing of Holes**

There will be no permanent casing installed. Any temporary protective casing at the start of the drilling shall be later pulled out. The stabilizing of the drilled holes shall be achieved by using natural or commercial drilling mud/bentonite. Permanent casing shall only be allowed with the prior approval of the Engineer.

(d) **Tolerances**

Tolerances for setting out and for concrete construction shall conform to Clause 1.3 of these Technical Provisions. In case of piles, deviation from the vertical shall not exceed one percent on any section of the length of the holes.

(e) **Concrete**

All concrete and reinforcement placed in the construction of piles shall conform to the requirements of Clause 1.3(8) of these Technical Provisions. In addition to this, following requirements shall also be fulfilled.

(i) Promptly after cleaning of the borehole to the entire satisfaction of the Engineer Representative, concrete shall be placed in a manner that will not cause segregation of the particles or permit infiltration of water or any other occurrence which would tend to decrease the strength of the concrete or the capacity of the finished pile. The slump shall be 150-180mm.

(ii) The minimum clear distance between vertical reinforcement, including lapped bars, shall be 100 mm (if applicable).

(iii) Either tremied or pumped-in concrete can be used in presence of water or of drilling mud. Tremie or pump pipe shall be made of steel and have watertight joints. Tremie pipe shall have a minimum diameter of 8 inches (200 mm) and pump pipe shall have a minimum diameter of 4 inches (100 mm) should be used. Embed tremie or pump pipe a minimum of 3 meters in the concrete throughout concreting. The method and equipment used shall be subject to the prior approval of the Engineer.

(iv) Concrete placement shall proceed without interruption until the pile is complete.

(v) Vibrate top 3 to 4 meters of concrete after temporary casing has been withdrawn.

(vi) The Contractor shall make three test cylinders per pile or as directed by the Engineer during the concreting of piles.

(vii) The vertical bars of pile can be coupled together as directed by the Engineer according to the site requirement.

(viii) The inner dia of stand casing/permanent casing should be at least 25mm larger than the pile dia, whereas bit dia should be equal to pile design dia.

(f) **Record**

The Contractor shall keep accurate logs and records of all the Work accomplished under this Contract. All such records shall be preserved in good condition by the Contractor until they are delivered and accepted by the Engineer. The Engineer shall have the right to examine such records at any time. The following information shall be included in the records for each pile.

- A general description of sub-soil conditions and water table position at the location of the pile.
- Pile number, ground elevation of borehole and elevation of top of pile.
- Type of drilling operations.
- Date and time by depths when drilling operations were performed and piles constructed.
- Total depth of each borehole.
- Quantity of concrete and steel used for the construction of each pile.
- Quantity of constituents for each batch of mix, water cement ratio and the results of all quality control tests.
- Time of start and completion of Concrete.
- Remarks concerning any unusual occurrence during drilling and concreting of piles.

1.4 Dismantling of Insulators

The dismantled disc insulators are envisaged for reuse/re-utilization by the employer in other projects. Proper handling and safety of the tower components/members during dismantling, counting & recording of each insulator, bundling/packing, storage at site and safe transportation of material to employer designated warehouse shall be included in the scope of work. The contractor shall be entirely responsible for any damage to the NGC material during execution of work. In case of any damage/breakage/loss of material of NGC, recovery shall make from the contractor by employer.

The contractor shall also make every effort to minimize the breakage/loss of dismantled fasteners (nut & Bolts, washers, step bolts etc.) during execution

of work. However, if breakage/loss of fasteners is inevitable, the same may be allowed/approved by the Engineer.

1.5 Tower Erection

(1) General

Contractor's work includes supply of manpower, providing construction equipment, vehicles, rigging tackles for complete assembly of towers.

Erection shall be done strictly in accordance with the approved manufacturer's drawings, material lists and approved construction data sheets.

No tower shall be erected **until seven days after the last concrete** was placed in the foundation, nor until backfill has been completed where and as required.

(2) Handling

Tower steel shall be handled so as to prevent deformation of the members and damage to the galvanizing. Materials shall not be dumped, dragged, barred; rolled or dropped but shall be carefully loaded, unloaded and stored. A mechanical means such as hoist or crane shall be used when material cannot be properly handled or placed by hand.

Bare wire rope or steel chains shall not be used for handling without adequate protection of the surface coating. Heavy members shall not be stacked on top of lighter members. Structural members shall be stored according to size, lengths and markings. The maximum weight of steel bundles shall not exceed a specified weight, typically 1600 kg to 1800 kg, to facilitate handling and unloading. Members with dissimilar finishes shall not be stored over one another to minimize discoloration of the lower members.

All members shall be placed on wood blocking or other suitable material to ensure that the materials to be stored are not in contact with the ground. Blocking shall also be used to separate layers of stacked materials. Members shall be supported in such a manner as to prevent bending and distortion as well as to allow water to drain from the materials.

Failure to provide for proper drainage of stacked galvanized steel members could result in the formation of white rust. White rust (zinc oxide) forms when two galvanized surfaces are closely rested for an extended time without adequate ventilation. Ingress of water between the surfaces forms an electrolytic cell, which may, in time, erode some of the zinc layer. The white rusting action will stop after exposure to air. Spacers placed between the nested pieces ensure adequate ventilation when extended transport storage is anticipated.

The material yard shall be kept relatively neat and clean and the growth of vegetation kept to a minimum. Good housekeeping minimizes damage and loss of material handling; periodic physical inventories and complies with environmental considerations.

(3) **Assembly Methods**

All assembly and erection shall be done by methods and equipment that will not cause damage to, or distort any part of the tower. Extreme care shall be taken to establish and maintain the true geometric shape of the sections of tower assembled.

Preassembly techniques are generally influenced by site terrain and available equipment. Generally, the larger section that can be pre-assembled, the more efficient is the assembly/erection operation. Preassembly techniques shall consider placement of the assembled sections to provide for the most efficient, safe lifting for erection. Structural assemblies, which are not sufficiently rigid to be raised in one piece, shall be stiffened by means of adequate temporary bracings.

Towers assembled on the ground shall be placed on suitable blocking so as to be kept free of dirt, mud or other foreign material that might adhere to the structure and damage the coating. Blocking shall be placed in such a manner as to provide a flat surface in order to prevent over stressing or distortion of members and to maintain the true geometric shape of the assembled members. Mud, dirt, white rust and other foreign material shall be removed from the contact surfaces of joints prior to assembly. Steel members shall not be dragged over the ground or otherwise handled in such a manner as to damage the galvanizing.
The structures shall be assembled in accordance with the fabricator's erection and detail drawings. The diameter, type, and length of bolts as shown on these drawings shall be used for each connection. Orientation of bolts can facilitate access, final tightening and installation of locking devices and subsequent checking of the erected structure. Tower bolts shall normally be installed so that the nuts are to the outside of the tower or, in the case of horizontal members, to the top of the connection unless such positioning is clearly impracticable.

Installation of bolts by hammering or any method that damages the galvanized coating shall not be allowed.

When sections of towers are being assembled prior to erection, assembly shall be on blocks that will provide support, sufficient to prevent distortion of tower steel. If all bolts in an assembly are not inserted, at least 50 percent of the bolts in each connection shall be inserted and those bolts shall be finger-tightened only. All bolts in an assembly shall be inserted before any bolt in the assembly is fully tightened.

Only wrenches which properly fit the nuts and bolt heads shall be used. The use of wrenches, which in any way deform the nut or cut or flake the galvanizing is prohibited. All bolts shall be entered clear to the head. All 16 mm diameter bolts shall be tightened to a torque of 10-14 kg - meters and 20 mm and 24 mm diameter bolts to a torque 17-23 kg-meters. All bolts after torque shall be center punched adjacent to the nut in order to prevent loosening of the nut. This method of locking the nuts will be used instead of locknuts.

(4) **Method for Erection**

Towers shall be erected by any suitable method in the sequence best adapted to the equipment, workers' experience and site conditions which will not overstress structure members.

When handling assembled portions of the structure, spreader bars or other devices with proper points of attachment shall be used to avoid distorting or overstressing members and to maintain the true geometric shape of the section.

Adequate tag lines shall be used to ensure that no section of the tower being lifted will drag on the ground or against any section of the tower already erected.

Temporary guying may be required when erecting a structure in sections. Any temporary guying system shall be checked to ensure that the structure section is stable before workers are allowed to work on the section.

Structures shall be completely erected, correctly oriented, with all members in place, all bolts installed and properly tightened, and the entire structure checked in accordance with the specifications prior to the installation of insulators, conductors and OPGW.

When erecting structure members or sections in the vicinity of energized lines, care shall be taken to ground these members or sections before any workers come in contact with them.

The use of a crane erection is generally an efficient method of erecting latticed steel structures. With ground pre-assembly of sections, the time spent in final erection can be greatly reduced.

Cranes with telescoping booms can be more efficient than rigid boom cranes in rough terrain. Considerable productivity can be lost in the process of assembly and disassembly of rigid boom cranes. In addition, continuous handling of boom sections can lead to boom damage. Preplanning of the crane location at the structure site allows for any necessary grading work (building of ramps, soil stabilization etc.) to be accomplished during the foundation construction operations when suitable equipment is

available at the site. Depending on soil conditions, additional bearing support may be required under outriggers, tracks, and tires. All soil shall be returned to a condition acceptable to the Engineer after erection.

Gin Pole is a boom of steel or aluminum pipe, wood pole or latticed truss secured at its base and usually inclined at a slight angle to the vertical is also used for tower erection. Two wire-guys about 60º to 90º apart in the plan view are attached to the top of the gin pole to resist or support the load to be lifted. For safety, a third, and preferably a fourth guy, is installed in front to prevent the pole from falling over backward in the event of an unexpected impact or the sudden release of load.

(5) **Correction of Misfabricated and Damaged Steel**

All shop errors and damaged steel shall be reported to the Engineer who will decide the manner in which corrections shall be made. All costs incurred due to punching, drilling or cutting shall be deemed to be included in the steel erection cost.

Pieces bent in handling may be used if they can be straightened to the satisfaction of the Engineer, without structurally damaging the metal. If bent pieces cannot be satisfactorily repaired, they shall be replaced.

Field punching or drilling of holes and field clipping shall be done only with the approval of Engineer, if the hole or clip was missed in fabrication of the member but was called for on the fabrication detail drawings. The edges of clipped angles, new or reamed holes or any member which has its coating scratched or damaged shall be repaired with a coating approved by the Engineer. Members having mis-punched holes shall not be repaired by welding and shall be replaced with correctly fabricated members. If the field fabrication of a member is required, the bolt spacing and edge distances shall be in accordance with the fabrication detail drawings.

Reaming shall be done only with the approval of the Engineer, and will be permitted, for the correction of undersized holes, for removing excessive galvanizing, and for holes off gauge line, to the extent that the connection cannot be made by loosening bolts in related connections. No hole shall be reamed more than one-eighth of its original diameter.

Reaming to remove fitting difficulty due to improperly set footings, to correct improper tower assembly and erection, that would distort holes or distort any member, or that would damage the galvanizing, is prohibited.

(6) **Damage to Galvanizing/Paint**

Small areas of galvanizing damaged by abrasion, in straightening bent pieces or by necessary clipping-in the field, shall be repaired by carefully cleaning the affected area and painting.

Damaged area shall be wiped with clean rags saturated with Xylene or equivalent solvent, followed by wire brushing then recleaned with solvent to remove residue, and painted with one coat of "Galvanox", or approved equivalent.

Galvanizing damaged by drilling or punching shall be repaired by applying an Aluminum paste or zinc rich coating material to completely fill all voids between the bolt and the surfaces bared, or all exposed steel surfaces around the holes or on cuts on which such corrective work is permitted. The coating material shall be "Galvanox" or approved equivalent.

(7) **Tower Signs and Aerial Markers**

a) **Material**

All the plates i.e. danger sign, number & phase plates and aerial markers shall be baked ceramic surfaces on high grade steel base plates of minimum thickness of 1.5 mm except aerial marker plate which shall be of 3.0 mm thickness. The fabrication details and dimensions of the plates are shown on the drawings in Volume-II: Drawings.

The plates shall be painted with ceramic paint on both sides and shall be thoroughly cleaned before painting and the ceramic paint shall completely cover the front and back of the plates and also the edges of plates and the interior edges of the attachment holes. The ceramic paint shall be of even thickness, reasonably free from cracks, patches, pin holes, blisters and shall have a uniform gloss. The ceramic paint around the holes shall be protected by means of fiber washers.

Three coats of ceramic paint shall be applied on the danger sign and number plates. The first coating of black ceramic paint shall be applied on both sides of the plates. The other two coats of white ceramic paint shall be applied on the front side of the danger & number plates and yellow on aerial marker plates.

In case of phase plates, three coats of ceramic paint shall be applied. The first coat of black ceramic paint shall be applied on both sides. The other two coats of red, yellow and blue colour shall be applied as specified on both side of the plate.

Nos. of bolts, nuts, washers and fixtures where required shall be supplied with each plate as shown in the drawings. Bolts, nuts and washers to be supplied with the fixture shall be galvanized in accordance with ASTM A153.

b) **Acceptance Tests**

The following acceptance tests for Sign & Number Plates and Aerial Markers shall be carried out:

(i) Visual examination
(ii) Verification of dimensions
(iii) Galvanizing test (on fixture and nuts & bolts only)
(iv) Resistance to thermal shock (vitreous enamel finish)

(i) Visual Examination:

Examination	Defects
a. Construction	Not of the shape given in relevant Drawing. Any crack on the nut& bolt.
b. Material	Not of proper material.
c. Finish	Galvanizing of bolts, nuts, washers and fixture not proper, presence of black spots, blisters, flux, dress, un-coated areas or any other defects. Bolts and nuts, rusty. Threads marred. The plates not properly enameled or presence of cracks, patches, pin-holes, blisters or any other defect. Letters and numbers broken or not properly enameled.
d. Marking	Missing or in-complete or not as per drawing.

(ii) Verification of Dimensions:

Dimensions of the danger, number, aerial markers, phase plates and fixtures shall conform to those given in drawings in Volume-II with allowable tolerances as marked on the individual drawings. Any variation from the specified dimensions shall constitute a defect.

(iii) Galvanizing Test:

The galvanizing of the nuts, bolts, washers and fixtures shall be tested in accordance with ASTM Specifications.

(iv) Resistance to Thermal Shock:

This test shall be carried out by subjecting the test specimen to radiant heat so as to reach a steady temperature of 185-195°C in about ten minutes. The temperature shall be measured by means of a surface pyrometer in contact with the top surface of the heated part of the specimen.

Remove the radiant heat and within 5 seconds quench the surface with 1000 ml of water at 15-20°C direct from an aspirator or other container through a 5 mm diameter tube, the end of the tube being 150 mm above the center of the heated portion of the test specimen. The flow rate of water shall be adjusted to 10 ml per second. It is convenient to mark the test area to ensure

that the water is correctly applied. Dry the plate, replace in the same position under radiant heat source and repeat this procedure until six cycles have been completed.

After subjecting the test specimen to the above test, the vitreous enamel surface shall be considered to be resistant to thermal shock provided that the enamel shows no signs of flaking-off or crazing.

Sampling, Acceptance and Rejection:

Danger, number, phase plates, aerial markers and fixtures offered for acceptance shall be divided into lots containing up to 200 units in each lot. A sample of 12 units (3 each from danger, number, phase and aerial marker) shall be drawn at random from each lot. For thermal shock test two samples each shall be randomly selected from the offered lot.

The selected samples shall be subjected to the visual examination, verification of dimensions and galvanizing. If the number of defective units is two, the lot shall be accepted. If the number of defective units is more than two the lot shall be rejected. If the number of defective units is three, another sample of 12 units shall be selected at random and subjected to tests. If the number of defective units is again three or more then the lot shall be rejected and if the number of defective units is less than three then the lot shall be accepted.

c) **Installation**

Tower signs (danger sign and number signs) shall normally be installed on the tower so that they will be readily visible when viewed in the direction of increasing tower numbers. However, if signs installed in the normal position will not be readily visible from a permanent access road, they shall be installed on the tower faces best exposed to view from the access roads. These signs shall be supplied by the Contractor, and before the manufacturing, a sample shall be submitted to the Engineer for approval.

Aerial markers shall be installed on the upper side of bridge structure, as shown on the drawings. Two markers shall be installed on every tenth tower of the line; one marker faced back on line and the other ahead on line. These shall also be supplied by the Contractor.

(8) **Anti-climbing Devices**

a) **Material**

Material, dimensions and testing of the barbed wire shall be in accordance with ASTM A121.

The size and characteristics of the zinc coated barbed wire shall be as per design number 12-2-4-14R, Type Z with Class 3 coating.

The material of structural steel of anti-climbing devices shall be maximum of mild steel as per ASTM A36 and galvanization according to ASTM A153.

b) **Acceptance Tests**

The following acceptance tests for barbed wire shall be carried out:

(i) Visual examination
(ii) Verification of dimensions
(iii) Galvanizing
(iv) Physical
(v) Mechanical

These tests shall be carried out on the selected samples as per the test procedure defined in the relevant ASTM specification.

c) **Installation**

An anti-climbing device will be installed on each tower as shown on the relevant drawings. The anti-climbing device normally will not be installed until all the tower and wire stringing work is completed.

The tower steel will be provided with holes for mounting the anti-climbing device brackets. The brackets shall be fabricated from mild steel and shall be galvanized in accordance with ASTM A153. The brackets along with barbed wire shall be supplied by the Contractor. Any holes required to be punched/drilled for installation of Anti-climbing Devices and applying of Galvanox, shall be carried out by the Contractor without any extra cost.
Anti-climbing device will be provided with an arrangement of barbed wire around the tower to prevent unauthorized person(s) from climbing the tower.

After erection, tower shall be cleaned of any foreign matter.

(9) **Supporting Device for Joint Boxes of OPGW**

Supporting device for joint boxes of OPGW to be designed, manufactured and supplied by OPGW manufacturer will be installed on the towers where joint boxes are required to be installed. Joint boxes will be installed on the tower on completion or just before completion of each OPGW reels of about 3.2 km length or wherever particularly required. The holes required to be drilled in the tower braces for installation of these supporting devices including provision and applying of Galvanox at the holes drilled shall be responsibility and to the cost of the Contractor.

(10) **Welding of Nuts & Bolts**

All nut & bolt connections of all types of towers shall be welded according to drawing in Volume-II, up to 8.0 m height from the top of chimney. After welding, cold galvanized paint (zinc rich paint) having at least 90% zinc content shall be applied to the welded portion. At least two coats of the paint shall be applied. The cost of welding including application of paint shall be deemed to be included in the unit rate/tower quoted.

1.6 De-Stringing/Dismantling of Conductor, Earth wire, Insulators & Hardware etc.

The contractor shall be entirely responsible for any damage to the tower or during execution of work. Necessary calculations shall be carried out by the contractor to ensure that the loading on towers due to conductor tension as well as loads on account of de-stringing or re-conductoring activities shall be within limits.

Towers not designed for sided stringing shall be well guyed to avoid damage. In this respect, all the expenditure related to this work is deemed to be included in the price schedule and no extra payment shall be made.

Dismantled material (i.e. conductor only) shall become property of the contractor. The contractor shall be responsible for the removal of dismantled material from the Site or otherwise disposed off the dismantled material. Therefore, the contractor is required to estimate the valuation of the dismantled material and fill the same in Item No. E of BoQ.

1.7 Installation of RTV Coated Insulators and Hardware

Insulators and insulator hardware shall be assembled and installed as shown on the drawings and in accordance with the recommendations of the manufacturers.

No insulator with chips or cracks in the porcelain or defects in the fittings shall be installed.

Uncrated or otherwise unsupported strings of insulators shall not be picked up or suspended except by the upper units of the string. All cotter pins installed by the Manufacturer shall be checked.

All insulators shall be cleaned with a clean cloth when installed. The porcelain shall be bright and all other parts free from dirt. Only clean rags free from any abrasive material shall be used for cleaning insulators.

Wire brushes shall not be used for the cleaning of any parts, metal or otherwise. The use of solvents will not be permitted.

Each completed suspension assembly shall be adjusted to hang in a vertical plane through the axis of the tower. Where it would be possible, nuts, locknuts and cotter pins shall be placed to face the tower body.

Workmen shall not climb on insulators during stringing operations or at any other time.

When raising conductor strain assemblies, the insulators shall be kept under tension to avoid possibility of those being damaged due to excessive bending.

1.8 Stringing Conductors and OPGW

(1) General

The conductor and OPGW shall be installed as shown on the drawings and as specified herein.

(2) Safety Grounding

It shall be the Contractor's responsibility to take adequate safety precautions to protect his employees and others from the potential voltage build-up during construction. The voltage build-up may be comparatively small during normal operations, but could be lethal during switching and ground fault conditions on the energized parallel line. The following minimum safety and grounding procedures shall be followed by the Contractor during stringing operations in the Sections with parallel existing high voltage lines.

Temporary electrical grounds shall be placed at both ends of the section requiring special safety precautions and at intervals along the line which is under construction. The grounding sets installed at both ends of the section of line shall remain in place until the completion of the work and shall be removed as the last phase of cleanup. Hot stick shall be used for installing and removing the grounding sets.

All temporary grounds furnished and installed for protection shall be clearly visible for inspection and shall be flagged by use of a red cloth placed at the point of grounding. All grounds, except those placed at both ends of the section, and red flags shall be removed when they are no longer needed for protection.

All pulling and tensioning equipment shall be bonded and effectively grounded with approved-type driven grounds securely attached to the equipment. At least two driven grounds shall be used at both the pulling and tensioning set up. All conductive parts of the tensioning set up and equipment shall be operated from grounded or insulated platform provided with barricades or insulated walkways.

Running grounds shall be installed within 6 meters of the tensioning set up to constantly ground each sub-conductor and OPGW. At the pulling set up grounding shall be achieved by the use of block grounds connected to the adjacent tower by approved type ground leads bonded to the tower with approved type clamps. These connections shall be removed by the use of a hot-stick.

An approved-type driven ground shall be located at each side and within 3 meters of working areas where conductors or OPGW are being compressed to dead-end assemblies or spliced at ground level or jointed. The two ends to be spliced shall be effectively bonded together prior to and during splicing operation. Splicing and compression operations at dead-end assemblies shall be carried out on either an insulated platform or on a conductive metallic grounding mat roped off with an insulated walkway provided for access to the mat.

Installation and removal of temporary jumpers, at any time the conductor is not continuous, shall be performed by hot stick methods.

All conductors and OPGW shall be bonded to the tower with approved-type tower grounds at any isolated tower where it may be necessary to complete Work. Work on dead-end towers shall require grounding on both sides of the tower. Grounds may be removed when the Work is completed, providing the line is not left open circuited at an isolated tower at which work is being completed.

For all sections of the line under work, which are not in parallel with energized high voltage lines or otherwise requiring special safety precautions, only the provision of the grounding at the pulling and tensioning stations shall be required.

All provisions specified herein shall not prevent the Contractor from installing as many additional grounds as deemed necessary for the protection of workmen against static and accidental contacts with foreign circuits.

Clipping crews and all others working on the conductive pulling lines, isolated conductors or OPGW shall be protected by individual hot stick clamp type grounds installed at every work location.

(3) **Approved Type Grounding Material**

Approved type moving grounds shall be such as to exert constant pressure on the conductor or OPGW, and the contact rollers shall be with permanently lubricated-type bearings.

Approved-type driven ground rods shall be minimum of 16 mm diameter copper-weld or equivalent. Ground rods shall be driven into the ground a minimum of 2.5 meters.

Approved-type tower grounds shall be hot stick clamp grounds, bonded to the tower with a flexible ground lead.
Approved-type ground leads shall be at least 43 mm^2 cross-section copper or equivalent.

Approved-type insulated platforms shall be constructed of 65 mm nominal dimension lumber supported on 102 mm nominal dimension sills, or of materials of equivalent insulation.

At the tensioning set up, the insulated platform and rope barriers shall extend completely around the equipment set up in such a manner as to prevent any one standing on the ground from contacting any conductive part of the equipment.

(4) **General Safety Precautions**

Prior to initiation of the stringing in any section of the line the following shall be insured.

(a) The installation of all towers within the section of the line is satisfactorily completed.

(b) The stringing loads will not exceed the design loads for any of the towers.

(c) If any tower is to be subjected to loads exceeding the design loads, the Contractor shall provide temporary bracing for such tower, and the bracing is subject to approval by the Engineer.

(d) The stringing and sagging operation is such that no sudden loads will be applied on the towers.

(5) **Safety Precautions at Crossings**

Wherever any power line, communication line, highway or railroad is to be crossed, the owners shall be notified 30 days in advance and all temporary changes shall be pre-arranged.

The Contractor shall not erect towers near, or string conductors or OPGW over energized power circuits until a Hot-Line Order is placed on the energized line.

Qualified personnel shall remain at the site of work while the Hot-Line Order is in effect and shall ascertain that all personnel are in the clear and properly notified before the Hot-Line Order is released.

All existing lines which are de-energized for crossing shall be short-circuited and grounded at each side of the crossing.

Guard structures shall be provided at all crossings, as required for the protection of the conductor, line, road, structure, or feature being crossed, and as required by the owner, or the Employer.

Guard structures shall be of sufficient strength and stability to withstand the stresses to which they may be subjected.

As soon as a guard structure has served its purpose, it shall be removed and all holes shall be backfilled.

(6) **Atmospheric Adverse Conditions**

All pulling and stringing operations shall cease when either wind velocities are such as to cause conductors to deflect more than 1.5 meters at mid-span from the normal no wind position or there is any indication of lightning activity in the area.

(7) **Handling and Stringing of Conductors**

The conductor will be furnished in matched sets of twenty four (24) reels and shall be strung by the controlled tension method. At no time will the conductor be allowed to contact the ground or any object which might cause damage to the conductor.

All reels shall be inspected in the field prior to installation. Reels showing signs of careless or unusually rough handling, such as split frames or crashed outer protective lagging shall be inspected carefully for conductor damage.

Preparatory to un-reeling a conductor from the reel, the outer protective lagging shall be removed carefully, and all surfaces in contact with the running conductor shall be examined for protruding objects which might damage the conductor.

Care shall be taken to insure that no dirt is carried by the conductors from the reels. Reels shall be properly cleaned before starting stringing operation of any line section.

A spreader bar shall be used when lifting or lowering the reels. Full or partial reels shall not be dropped or rolled under any circumstances.

The four conductors in a bundle shall be strung simultaneously and shall hang in stringing blocks for the same period of time not exceeding 24 hours and, in exceptional cases, up to 48 hours before being sagged to the specified sag.

Four conductors shall start and end approximately at the same points of the line and stringing operations shall be planned to keep waste to a minimum. Lengths of conductor less than 100 meters are scrap lengths and shall not be spliced into the line without the approval of the Engineer. Jumpers shall be cut only from scrap lengths unless otherwise permitted.

Stringing sheaves may be hung on the insulator strings or in straps of equal length attached to the structure arms with suitable hooks or clamps. The sheave shall support the conductors at the same elevation as when clipped in.

Stringing of conductors and temporary guying of conductors shall be done by methods that will prevent damage to the conductor and structures in any way. Temporary guying/dead ending to tower footings will not be permitted. Where temporary dead end is required, the conductors shall be attached to suitable temporary anchors.

The general requirements for installation of the temporary anchors are as follows:

The angle formed by conductors/OPGW to the horizontal shall not exceed 15 degrees.

The anchors shall be aligned in the direction of stringing:
The anchors and their accessories shall withstand the maximum conductor tensions with a factor of safety of three.
Four sub-conductors of one phase shall be strung simultaneously by means of running board attached to a single pulling line with a swivel. Sub-conductors shall be connected to the running boards with a swivel connection and a stocking-type grip. The grips shall be secured to the conductor by means of a band installed around the tail end of the grip.

Following stringing, measures shall be taken to prevent the sub-conductors of the bundle from contacting each other. Before adjusting the sag of the conductors, sub-conductor slapping may be prevented by pulling each of them to a different sag which will separate them at least 153 mm vertically from either of the other sub-conductor at mid-span. After adjusting the sag, the following conditions will require sub-conductors tie-off: any time that sub-conductors slapping is noted, any time that prior to spacer installation the conductors are left unattended.

Two reel lengths of conductor may be pulled into the sheaves using only approved swivels and grips to make the connections between reel lengths. Double socking will be permitted, but permanent splices shall not be pulled through a sheave or bull-wheel.

All sheaves, swivels and grips shall be inspected daily for free and easy movements and to assure that such may be safely used. Sheaves carrying pulling lines shall not be used for conductors.

The conductor shall be kept clean by removing grease, dust or any other contamination. Cleaning shall be done immediately after the conductors leave the tensioning device. The method of cleaning shall be wiping with a clean cloth saturated with proper cleaning agent. When it is necessary to slack the conductor at any time during the stringing operation, it shall be done with the approval of the Engineer. Rigid plank guard or lagging, or a combination of both shall be used to prevent damage. Lagging shall consist of nonmetallic material which will not damage the conductor and shall be rigid so that it will not be displaced by the motion of the conductor. It shall be free of any material, which can be transferred to the conductor.

Sections of the conductor damaged by application of gripping attachments or any other way during stringing shall be removed before the conductor is sagged in place.

The conductor repairs shall be done as outlined in Clause 1.7(11) (b) of the Technical Provisions.

All stringing operation must be conducted so that at no time will any suspension structure be subjected to longitudinal loads and at no time will any tension structure except dead end structure be subjected to excessive unbalanced loads resulting from longitudinal loads on opposing faces. At no time shall any structure be subjected to torsion. The vertical angles of pulling lines shall be such as to minimize the vertical loading on towers. The attachment of temporary guys and stringing equipment on towers shall be done only with approval of the Engineer.

The conductor reels, tensioners, and pulling machines shall be located as near to mid-span as possible but in no case shall the slope of the OPGW or conductor between any machine and the stringing block or any anchor lead be steeper than three horizontal to one vertical (15°-20° to the horizontal).

The tension in the conductor during stringing shall be maintained as constant as practicable. The sag in each conductor must be maintained at least 20 percent greater than the sagging value specified in sag charts and the maximum pulling tension shall never exceed the sagging tensions.

If the conductor is left unattended, during stringing operations, it shall be freely suspended between stringing sheaves so as to provide a safe clear distance over ground or obstructions.

The minimum tension shall be such as to maintain the conductors at a minimum distance of 3 meters above ground or any obstacle.
When there is possibility of conductor being damaged due to wind or other conditions they shall immediately be fully tensioned. It is recommended that variations in stringing tensions be as small as possible and the tension shall be near the maximum permitted. Immediately after completing stringing of a section of the line, the tensions shall be increased to the maximum permitted stringing values.

The spinning of the conductors and OPGW shall be prevented during stringing. Unreeling of the conductors shall be closely watched at all times in order to detect any damage or flaw in the conductor.

(8) **Handling and Stringing of OPGW**

One 12mm OPGW shall be strung for the entire length of line. The specifications used for handling and stringing the OPGW shall be the same as for the conductors.

(9) **Conductor Sagging**

After being pulled into the sheaves all sub-conductors in a sag section shall be sagged within 24 hours.

The conductors shall be sagged in accordance with sag charts, furnished by the Contractor. The exact value of sag for a given span length at a given temperature can be ascertained from the appropriate table or by linear interpolation of data.

Conductor sagging temperature shall be measured by an accurate thermometer. A length of core shall be pulled from a 0.5 meter length of the conductor sufficient for thermometer to be inserted into the space vacated by the core.

The length of conductor shall be placed in the full sun at least 4 meters above the ground for a minimum period of 15 minutes. A thermometer in a container which stimulates the effect of the conductor may also be used.

The length of conductor sagged in one operation shall be limited to the length that can be sagged satisfactorily, usually 3,000 meters to 6,000 meters.
Temporary snubs shall be used between a section previously sagged and clipped in and the section being sagged. Dead ending or snubbing will not be

permitted on any tower except dead end towers at the normal point of attachment.

When conductors are sagged a mark shall be placed on each conductor at the last structure in each pull. The location of this mark shall be checked after the succeeding sag has been made to ascertain whether or not the back spans are still sagged properly. The wire grips may be removed only after the next section of the line has been sagged.

When sagging conductor shall have lengths of more than four spans, the sag shall be checked near each end span and at or near the middle span of the length being sagged. The length of the spans used for checking sag shall be as nearly equal to the ruling span as practicable.

The sag of each span more than 600 meters in length shall be checked in addition to above. Sag at sharp vertical angles and horizontal angles of 10 or more degrees shall also be checked on both sides of the angle.

The sags shall be determined by means of a transit or other approved methods. At least one person shall be provided to measure the correct sag for pulls up to five spans, two persons for six to ten spans and three persons for eleven spans or more.
The total number of spans to be checked shall be not less than two in a four-span section, three for a section up to two kilometers and in proportion for a longer section.

In the quad conductor bundle the sag of the two upper sub-conductors shall be the same. The lower sub-conductors shall be sagged from 30 to 60 mm more than the upper sub-conductors.
A tolerance of plus or minus 10 mm of sag per 30 meter of horizontal span length, but not to exceed 150 mm in any one span, will be permitted, provided that: (1) upper sub-conductors in the span assume the same sag; (2) the necessary ground clearance is obtained; (3) the conductor tension between successive sagging operations is equalized so that the suspension insulator assemblies will assume the proper position when the conductor is clipped in; (4) the sag in the lower sub-conductor of the bundle is 30 to 60 mm more than the sag in the upper sub-conductors.

Log books shall be maintained to record all conductor installation data and chronological progress.

The temperature, spans, tower, general weather, wind velocity and direction, sags, tensions, and drawing references shall be recorded for each section of conductor as it is being installed, tensioned and sagged. When possible, sagging operations shall be scheduled when wind velocity is at or near zero.
Radio or telephone communication shall be used to relay information and instructions between the conductor payout station, intermediate check points, mobile stations and the pulling stations at all times during stringing

operations. A failure of communication requires immediate cessation of the conductor pulling operation.

(10) **Conductor Clipping-in**

After being sagged, the conductor shall be allowed to hang in the stringing blocks for not less than 2 hours before clipping-in is commenced, to permit the conductor tension to equalize.

Plumb marks shall be made on the conductors in the vertical plane through the centerline of the tower prior to clipping-in. Only paint, crayon, or wax pencil shall be used for marks on conductors.

All conductors marking in the section being sagged shall be accomplished while the conductors are in the sheaves and before clipping-in or dead ending is begun.

The total time during which the conductor is allowed to remain in the stringing blocks before being clipped-in shall not exceed 72 hours.

Torque wrenches shall be used to tighten all nuts on clamps. The torque applied shall be in conformance with the recommendation of the manufacturer.

Yoke plates for V-Vee string insulators shall be installed as shown on the drawings and shall hang at 90 degrees to the conductor axis within a tolerance of plus or minus 2.5 cm.

Well-padded pull-lift hooks or other approved methods shall be used for handling conductors during the clipping-in operation.

(11) **Installation of Conductor and OPGW Accessories**

(a) **Splices and Dead Ends**

All splices shall be of the compression type.

All splices shall be made at least 15 meters away from structures and no splices shall be made in dead end spans or spans greater than 600 meters or spans crossing over the highways, railroads, major canals, rivers and transmission lines of voltages greater than 33 kV unless approved by the Engineer.

As a rule not more than one joint or splice should be made in any one conductor in any one span. However, in exceptional cases, as in the repair of damaged conductors, or when necessary owing to stringing limitations two splices will be allowed.

The splices and compression dead ends shall be installed in accordance with the recommendations of the Manufacturer of the accessories.

Conductor shall be laid out straight for a distance of 15 meters and straightened at the end before preparation of the ends for splicing or dead-ending. The ends of the conductor shall be thoroughly cleaned immediately prior to compressing. After the compression has been completed, all corners, sharp projections and indentations shall be carefully rounded and smoothed, and tape, tape residue, and filler paste shall be removed from splice and conductor. If the completed splice requires straightening, it shall be straightened on a wood block by use of a wooden maul.

Splicing, dead-ending and repair of damaged conductor shall be done in the presence of nominated person of the Engineer.

If the completed splice or dead-end is not satisfactory, in the opinion of the Engineer or his nominated person, it shall be removed and a new splice or dead-end shall be properly installed.

The Contractor's inspector shall stamp his own initials on the aluminum sleeve of each compression joint and compression dead end completed under his supervision.

(b) **Repair of Conductors**

Damage is any deformity on the surface of the conductor which can be detected by eye or by feel and shall be repaired by whichever the following methods is appropriate:

(i) Repair by manual polishing
(ii) Installation of repair sleeves over the damaged part
(iii) Installation of compression joints
(iv) Replacement with new conductor

Slight damage such as superficial scratches or abrasions, which are not deeper than one-third the strand diameter, can be repaired by dressing with a fine emery cloth.

Severe cuts which cannot be repaired with emery cloth due to their depth or extension, and cause increase in the resistance of the external layers shall be repaired by use of repair sleeves, provided that not more than one-third of the outer layer is cut or damaged over a length of less than 10 centimeters.

Damages of extent greater than described in above paragraphs shall be repaired by replacing the damaged length of the cable using compression joints.

When there is repeated damage in the same span or in consecutive spans, the Engineer or his nominated person may require all conductors in these spans to be replaced.

In the case when signs of corrosion are detected during the stringing operation, the reels containing corroded conductors shall be set aside, the operation shall be interrupted and the Engineer or his nominated person shall be informed immediately.

Whenever a repair sleeve is installed, a rope cage shall be placed on the sleeve to ensure that there will be no damage from sub-conductor slapping prior to installation of the spacer-dampers.

(c) **Jumper Connections**

Where compression type dead-ends are used, the jumper shall be one continuous piece, and compression-type jumper terminals bolted to the compression-type dead-ends shall be used.

(12) **OPGW Jointing/Splicing and Installation of OPGW Joint Boxes**

OPGW jointing/splicing and joint boxes installation will be carried out by the Contractor. However, following general instructions should be followed:

No mid span joint shall be allowed in the OPGW. All joints shall be performed in a joint box located on the tower just above the location of anti-climbing device. OPGW jointing (splicing) and joint boxes installation including supporting device for joint boxes shall be executed by the Contractor. OPGW shall be dropped to the joint boxes along with tower braces by installing OPGW attaching clamps at about one meter interval.

1.9 Installation of Dampers

(1) **Spacer Dampers**

The two sub-conductors of each phase shall be secured to each other by means of spacer dampers installed strictly in accordance with data furnished.

The intervals, measured along the length of the conductors at which spacers are installed shall be as shown on the data sheets with tolerances not more than plus/minus 1.0 meter.

Spacer-dampers shall be installed in a span only after that span has been dead-ended and clipped-in. The installation of spacer dampers shall be

completed in each section within 72 hours after the sub-conductors have been sagged.

The clamps shall be properly aligned on the conductors. Distorted shape of the spacer dampers will be considered an unsatisfactory installation and shall be corrected or the spacer damper replaced.
The bolts of the breakaway type shall be tightened until the outer head breaks off.

Spacer dampers shall be installed with the bolt heads in a downward position for viewing from the ground.

(2) **Vibration Dampers**

Vibration dampers shall be attached to the OPGW at the ends of all spans and as designated on the data sheets. The vibration dampers shall be fastened securely to OPGW so that they will hang in vertical planes. Spacing of dampers shall be in accordance with the Drawings. Breakaway type bolts shall be tightened until the outer head breaks off.

2 PRE COMMISSIONING AND COMMISSIONING TESTS

2.1 Pre Commissioning Tests

(a) **Mechanical Tests**

1. For steel structures, ensure that structure type is as per specification/drawings/structure list.
2. Check galvanizing and thickness (rust is not acceptable).
3. Check bolt types and tightness (torque wrench method).
4. Ensure anti-climbing guards are correctly installed.
5. Check step bolt tightness.
6. For RTV Coated porcelain insulators, check insulators for chips, cracks, etc. Ensure correct number of insulators have been installed in each string. Ensure that cotter keys have been properly installed.
7. Make sure that insulators are clean and line is safe to be energized.
8. Check that all line hardware and fittings (insulators, corona rings, vibration dampers, spacer dampers, conductor clamps, armor rods, etc) is installed correctly and in correct locations as per specifications and drawings.
9. Check that all splices are correct and installed in correct span locations.

10. Check that all jumpers are installed correctly. Ensure correct clearances between jumper and structure as well as with other phases at acute angle locations.

11. Ensure there is no twist in the insulator string.

12. Check that OPGW is grounded to towers as specified.

13. Ensure that sags for phase and overhead ground conductors are even and according to the specification.

14. Check that ground clearances are as per specification.

15. Check circuit/phase identification plates, structure number plates, danger sign plates, etc. have been correctly installed at each structure and aerial markers at the required structures.

16. Check line/phase correctly transposed at the specified locations and clearance between the phases is as per specification.

(b) **Electrical Tests**

1. Check tower footing resistance as per specification.

2. Verification of physical phase arrangement.

3. Perform sequence impedance test (both zero and positive sequence).

4. Perform continuity and insulation test of complete transmission line with appropriate test equipment.

5. Tests on OPGW:
   - OTDR test of each fiber
   - Attenuation test
   - Continuity test

2.2 Commissioning Tests

1. Perform phase sequence/rotation check.
2. Inspection of Facilities for any visual/audible abnormality.

SECTION IX

BILL OF QUANTITIES

NATIONAL GRID COMPANY of PAKISTAN

BOQ for Replacement of Normal Disc Insulators with RTV Coated Disc Insulators of 220KV Transmission Lines under Field Operations Lahore (Lot-III)

Description	Unit	Quantity (Nos.)	Unit Rate PKR.	Total Price Exclusive of Taxes
1	2	3	4	5=(3X4)
Replacement of existing Normal Type Disc Insulators with RTV Coated Disc Insulators of 220KV Transmission Lines (Lot-III) 1- 220KV T/L Lahore North-Ravi CCT-II 72 Towers 2- 220KV T/L Lahore North-Sheikhupura CCT 31 Towers 3- 220KV T/L Lahore North-KSK CCT-II 36 Towers **The Scope of work to be carried out is as under.** i) Dismantling of existing disc Insulators and packing, shifting/ transportation from site to NGC designated store. ii) Shifting/Transportation of 100KN, 120KN RTV Coated Disc insulators from A-Type Store NKLP Lahore to Site stores iii) Installation of RTV Coated Disc Insulators iv) The work to be carried out during Shut down on daily basis.	Towers	139		
			Total:	
			Provincial Service Tax @ 16% (In Punjab Province)	
			Grand Total:	

CONDITIONS:

1. The quantities mentioned in the BOQ are estimated quantities.
2. Contractor will collect RTV coated disc insulators from A-Type Store, NKLP NGC Lahore.
3. The breakup of unit rates for each item/works quoted in the BOQ shall be provided with the bid in accordance with the design provided with the tender and the work at site shall be executed as per construction drawings provided/approved by the Engineer.
4. In case of discrepancy between unit price and total price, unit price shall prevail and the payment will be made accordingly.
5. The cost quoted for above works shall include cost of labor and cost of all accessories / material / equipment required for successful completion and operation along with clearance of Right of Way (RoW), if any.
6. The rates of above items are to be quoted by the tenderers will be considered on item rate basis.
7. All pages of tender documents shall be initialized/signature by the person or persons with signed the bid.
8. Omission & errors can be rectified at any stage.
9. No extra payment will be made on account of fluctuation in prices of labour, fuel, lubrication and material etc.
10. The work will be completed within 30-days from the date of acceptance of NOA or within 10 days of the final approved shutdown by ISMO Islamabad, whichever is later.

Name & Signature of Bidder: _____

SECTION X

SOP FOR BLACKLISTING OF CONTRACTORS

NATIONAL TRANSMISSION & DESPATCH CO. LTD

Company Secretary

No. NTDC/CS/ 191-207 Dated: 27 – 02 – 2019

NOTIFICATION

Approval for revision of SoP for Blacklisting

Ref: This office notification No.NTDC/CS/1728-42 dated 25.07.2017.

The Board of Directors National Transmission & Despatch Company Limited (NTDC) in its 150th meeting held on 25.02.2019 against agenda item No.10 has unanimously resolved and approved the revised/amended SoP for Blacklisting.

Ijaz Ahmad
Company Secretary

Copy to:

1. Managing Director.
2. Dy. Managing Director (AD&M).
3. Dy. Managing Director (P&E).
4. All General Managers.
5. Chief Financial Officer.
6. Chief Law Officer.
7. Chief Internal Auditor.
8. Chief Information System.

A copy of the revised SoP for Blacklisting is enclosed.

NATIONAL TRANSMISSION & DESPATCH CO. LTD

Company Secretary

No. NTDC/CS/ 444-60 Dated: 29 - 03 - 2019

CORRIGENDUM

Approval for revision of SoP for Blacklisting

In continuation to this office Notification No.NTDC/CS/191-207 dated 27.02.2019 on the subject matter, the designation of Chief Engineer (Reliability Assessment) being a committee member in Chapter No.3 under Clause 3.1 at page # 7 of the approved revised/amended SoP for Blacklisting may be read as 'Chief Engineer (Reliability Compliance)'.

Note:

- **All other contents of the notification will remain intact.**

Ijaz Ahmad
Company Secretary

Copy to:

1. Managing Director.
2. Dy. Managing Director (AD&M).
3. Dy. Managing Director (P&E).
4. All General Managers.
5. Chief Financial Officer.
6. Chief Law Officer.
7. Chief Internal Auditor.
8. Chief Information System.

NATIONAL TRANSMISSION AND DESPATCH COMPANY LIMITED (NTDC)

REVISED SOP FOR BLACKLISTING

(As on 25.02.2019)

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CHAPTER NO.1

1.1 INTRODUCTION

The main objectives of any procurement process are transparency, economy, fairness and efficiency so that value for money is achieved.

Blacklisting is one of the most effective tools used in the struggle against inefficiencies and corruption in connection with public procurement. In addition, it serves as a major deterrent against any material breach of contract and further ensures the timely execution of projects by holding delinquent persons accountable.

Rule-19 "Blacklisting of suppliers and contractors" of the Public Procurement Rules, 2004 (hereinafter "**PPRA Rules**") stipulates that;

"The procuring agencies shall specify a mechanism and manner to permanently or temporarily bar, from participating in their respective procurement proceedings, suppliers and contractors who either consistently fail to provide satisfactory performances or are found to be indulging in corrupt or fraudulent practices. Such barring action shall be duly publicized and communicated to the Authority:
Provided that any supplier or contractor who is to be blacklisted shall be accorded adequate opportunity of being heard."

In the light of the Clause above, this SOP has been drafted for procurements made by NTDC.

Any capitalised terms and abbreviations used in this SOP which are not defined herein shall have the meanings given to them in Public Procurement Regulatory Authority Ordinance, 2002 (hereinafter "**PPRA Ordinance**") and PPRA Rules.

1.2 EXTENT OF APPLICATION

i. The procedure shall be applicable and remain in force, along with any amendments thereto, within NTDC until any clear instructions or guidelines are imparted by the Government through PPRA, PEC, or any other competent forum.

ii. The procedure shall also be applicable on the pre-qualified firms.

iii. The procedure shall be applicable on any "Person", which for the purposes of this SOP shall *interalia* include suppliers, bidders, contractors, consultants, firms, individuals, and organizations transacting business with NTDC.

iv. Wherever any provision of this SOP shall be in conflict with provisions of any applicable guidelines of donor agencies, or any other applicable Statute / Law or Rule enforced at the time in Pakistan, the provisions of such applicable guidelines, laws, or rules shall prevail.

v. This SOP shall become a part of the future Bidding Documents and the person(s) will submit an Undertaking along-with his bid that he has read and accepts the provisions of this SOP. Non-submission of an Undertaking may result in rejection of his bid. The said Undertaking will subsequently become part of the Contract Agreement as well.

CHAPTER NO. 2

2. REASONS OF BLACKLISTING

2.1 The causes and reasons to be taken into consideration for Debarment / Blacklisting of any person are given as under:

2.1.1 Pre- Award Stage:

The following shall be considered, *interalia*, the causes / reasons for initiating proceedings under this SOP at the Pre-Award Stage:

i. Indulging in Corrupt, Fraudulent as well as Collusive practices.

ii. Submission of false and spurious documents, making false statements, making frivolous complaints and allegations to gain undue advantage.

iii. Commission of embezzlement, criminal breach of trust, theft, cheating, forgery, bribery, falsification or destruction of records, receiving stolen property, false use of trademark, securing fraudulent registration, giving false evidence, furnishing of false information of serious nature.

iv. Submission of false bid security or infringement of documents to get undue monetary or any other benefit.

v. Breach of confidentiality of evaluation process as mentioned in Appendix-1 based on illegal access or in any way to get undue benefit or to provide benefit or to frustrate the bidding/evaluation process. This will also include attempts to sabotage the bidding process directly or indirectly.

2.1.2 Post- Award Stage:

The following shall be considered, *interalia*, the causes / reasons for initiating proceedings under this SOP at the Post-Award Stage:-

i. Extraordinary delay in signing or refusal to accept the Notification of Award and/or the contract without any cogent reason.

ii. Misconduct, i.e., failure to proceed with the signed contract, withdrawal of commitments, quoting an unreasonably and unfairly low financial offer and subsequently withdrawing such an offer, frustrating the evaluation/bidding process and not responding to written communication in a reasonable time.

iii. Causes mentioned in Clause 2.1.1 (i, ii & iii) above.

iv. Submission of fake / frivolous or mutilated Performance Guarantee or Advance Payment Guarantee etc.

v. Non-satisfactory performance as mentioned in Appendix-2 during the execution of the contract.

vi. Non-performance or Breach of provisions / clauses of the contract agreements.

vii. Notwithstanding the warranty/defect liability period, any defect in a product, equipment, plant, facility or services rendered that may subsequently surface during field operations within 5 years of its commissioning.

viii. Failure to honour obligations within warranty period or defect liability period as defined in the contract.

2.1.3 Other Causes

i. The person is blacklisted by any Government department in Pakistan, or it is established that the firm is involved in any kind of corruption or corrupt practices anywhere in the world.

ii. Violations of provisions / instructions set down in the Bidding Documents.

iii. Any attempt / activity to malign or bring NTDC into disrepute and harm its interest(s).

iv. Person(s) blacklisted by International Financial Institutions (donor agencies) will be liable to be blacklisted after receipt of confirmation from the donor agencies without any further proceeding.

v. Any other cause deemed just and appropriate by NTDC in the given circumstances.

Note:

(1) If above mentioned causes occur either on part of the principal bidder or the local agent, both shall be considered for blacklisting / debarment.

(2) The authorization of the foreign bidder to local agent shall contain his complete particulars including the name of the company, name of the owner, National Tax number (NTN), CNIC (Computerized National Identity Card) No. etc. In case, the said information is found to be missing, even after calling for the same within a reasonable time, the authority letter shall not be accepted.

(3) The Bidding Documents shall be issued against original authority letter or in case of scanned copy, the email of the foreign bidder shall be enclosed. However, at the time of bidding, the original authority letter shall be attached with the bid. In the absence of the same, the bid shall be rejected.

CHAPTER NO. 3

3. FORMULATION OF "NTDC'S RIGHTS PROTECTION COMMITTEE"

3.1 A permanent Committee namely "NTDC's Rights Protection Committee (**RPC or Committee**)" comprising of the following members shall examine the justification of the reasons given by the Project Authority prior to blacklisting / debarment of any firm/supplier/contractor/ individual.

- General Manager (Performance Assessment) NTDC — Convener
- Chief Engineer (Reliability Compliance) NTDC — Member
- Representative of the Chief Law Officer's Office — Member

Depending upon the nature of the case, the Committee may consult or appoint / nominate additional members from within NTDC with the approval of Managing Director (NTDC), provided that the Committee consists of an odd number of individuals as per spirit of Rule 48(1) of the PPRA Rules. Independence of any additional members shall be ensured while making the selection of such additional members. Furthermore, the aforementioned RPC shall also be authorized to seek external expert advice as and when required.

CHAPTER NO. 4

4.1 PROCEDURE FOR BLACKLISTING

Upon receipt of or obtaining information and/or knowledge that any person(s) is involved in practices mentioned in Chapter-2 earlier, the concerned Project Authority / formation shall promptly formulate its recommendations and submit through MD NTDC to NTDC RPC along with its findings, details of charges and documentary evidences to initiate proceedings under this SOP.

4.2 INITIATION OF AN ACTION

(i) Within a period of 15 days after receiving the recommendations of Blacklisting / Debarment from the concerned Project Authority, the Convener of the Committee shall issue a Show Cause Notice ("**Notice**") thereby informing the Person about the alleged charges and shall provide an opportunity to the defend said charges within a time period of 15 (fifteen) days.

(ii) The person(s) shall be accorded adequate opportunity of hearing in order to defend the charges within the given timelines.

(iii) The Notice to the Person shall be sent at the mailing/postal address as provided under the Contract or any other address provided by way of subsequent written communication by the Person The non-receipt of the Notice due to incorrect / change in mailing address without any written communication shall not be attributable to NTDC. In case of non-receipt of any reply from the accused person within the formulated time, but not less than the time given in 4.2 (i) above, the Committee shall have the right to proceed on Ex-parte basis.

4.3 DECISION

i. The committee shall hold an independent inquiry/investigation as the case may be, and, which may include site visits and interviews with the parties concerned. The Committee shall complete the entire inquiry/investigation, preferably within a period of 30 days after receipt of response from the person against whom proceedings under this SOP have been initiated and shall present the report to the MD NTDC.

ii. If required, the Committee may report the case to an appropriate law enforcement agency depending upon the nature of the case for detailed investigations with the prior approval of Managing Director (NTDC).

iii. The person against whom proceedings have been initiated under this SOP shall not proceed for arbitration/litigation during the proceedings for blacklisting.

4.4 COMMUNICATION OF DECISION

After recommendation for blacklisting by "NTDC's Rights Protection Committee **(RPC)**", the person concerned shall be informed within 10 days of such decision. The decision of the Committee will be notified on NTDC's and PPRA's websites and shall also be conveyed to Pakistan Engineering Council. Blacklisting of firms shall also be conveyed by circular to other Government Departments. All other relevant procuring agencies including PEPCO, DISCOs, and WAPDA, etc., will also be informed simultaneously.

4.5 PERIOD OF DEBARMENT FOR BLACKLISTED FIRMS

(i) The Blacklisting on the grounds and reasons specified herein above in Chapter No. 2 shall be for a reasonable specified period of time and as a general rule of prudence, the period may not exceed three years, except in cases where debarment/blacklisting has been done by any other government department or an International Financial Institution (Donor Agency).

(ii) In case the person has been blacklisted by the government department or the International Financial Institution (donor agency), the period of blacklisting/debarment shall be for a maximum period of 3 years or the time period for which the concerned government department/International Financial Institution (Donor Agency) debarred the contractor (whichever is higher).

4.6 ACTION AFTER PERSONS ARE PLACED ON BLACKLISTING LIST.

i. The decision of blacklisting will be immediately circulated to all concerned as mentioned at Clause 4.4 above.

ii. In case of a contract already awarded to a person which has been blacklisted and termination is either not possible or not feasible, the concerned Project Authority may proceed in this case to complete the contract with the approval of Competent Authority.

iii. The blacklisted person shall stand disqualified from bidding from the date of decision against them. Any pending bids shall also stand rejected. If a contract has

already been awarded to person, it shall be voidable at the option of NTDC as per 4.6 (ii) above.

iv. A separate register or data base will be maintained for blacklisted firms indicating reasons and period.

4.7 EFFECTIVENESS

These guidelines / SOP or any amendments thereof shall take effect immediately after its approval from Board of Directors of NTDC.

APPENDIX-1

PROCESS TO DEAL WITH FRIVOLOUS COMPLAINTS

It has been frequently observed that after opening of tenders, the bidders start to influence the evaluation process. Such attempts result in delay in finalizing of award of contract and cause financial loss to the National exchequer. The evaluation process is confidential till publication of award of contract process.

Provision of guidelines of international donor agencies and PPRA provides sufficient opportunity to bidders for redressal of their grievances. Hence, the attempts made by the bidders during evaluation process or thereafter to influence the contract award decisions fall under the definition of corrupt and fraudulent practices. Therefore, during bidding stage, the following mechanism shall be adopted in case of receipt of any frivolous complaint from the bidder.

i. Anonymous complaints shall not be entertained.

ii. The Procuring Agency reserves the right to call for an affidavit from the complainant verifying the truthfulness and correctness of the contents of the complaint.

iii. The notice of displeasure and explanation will be immediately sent to those persons who lodge frivolous complaint(s) during the evaluation process.

iii (a) If the person itself or through its agent or any third party does not refrain from making frivolous complaints in the same tender or any other tender, an official warning will be sent and their case may be sent to "NTDC's Rights Protection Committee" which may analyse the situation and suggest action including the rejection of the bid of the complainant. However, Project Authority may reject the bid even in first instance depending upon nature of the case or provision of the Bidding Documents.

iii (b) If the same person itself or through its agent or any third party lodges a frivolous complaint in another tender floating in parallel before decision of the Grievance Committee, its bid will straight forwardly be rejected by the project authority. It may also be debarred to participate in the next tender for a minimum period of six months under intimation to the Grievance Committee and MD NTDC.

iv. In order to monitor the record of the persons, a data base will be maintained at NTDC's website and the offices of the project authorities regarding such persons who consistently lodge frivolous complaints during the evaluation process by making clandestine access to confidential record and hamper the award of contract process.

NOTE: It is clarified that the process provided above in Appendix 1 is to discourage anonymous and frivolous complaints only, and does not bar any person feeling aggrieved by any act of the procuring agency from lodging a genuine complaint/grievance as provided under Rule 48 of the PPRA Rules, 2004.

APPENDIX-2

GUIDELINES FOR EVALUATION OF PERFORMANCE OF CONTRACTORS

i. After signing of the contract, the Project authority (or the Consultant / Engineer) must monitor and evaluate the Contractor's performance, that is, whether the Contractor is fulfilling his obligations based on the terms of the contract and plans that were developed and agreed upon with the Project authority at the time of signing of contract or during kick-off meetings..

ii. Though the performance evaluation of any person is an on-going process, which takes place throughout the duration of the contract and also during the Defect Liability / Warranty Period, nevertheless, a person's Performance Evaluation Report may be prepared for the consumption and benefit of the procuring agency or for any other purpose at the completion of the project, as the case may be.

iii. The performance evaluation report shall be prepared for all contracts of more than Rs. 100 million. When based on the Evaluation Report, the performance of a person is non-satisfactory, the procuring agency may initiate the case for blacklisting of the person in accordance with the terms of this SOP. For the avoidance of doubt, consistent failure to provide satisfactory performance shall also include performances in a single or multiple contracts executed or being executed by the same person, as the case may be.

iv. In case of any extra-ordinary delay in performance of a single contract of vital and critical importance, the procuring agency shall have the right to initiate proceedings under this SOP and/or avail any other remedy provided under the law which may *interalia* include: termination of the contract, recovery of losses, debarring the person from participation in future tenders. The procuring agency shall be the sole judge to determine the projects of vital or critical importance.

v. In case of ordinary delay in performance in 2 consecutive contracts within a period of 3 years, the procuring agency shall have the right to initiate proceedings under this SOP and/or avail any other remedy provided under the law which may *interalia* include: termination of the contract, recovery of losses, debarring the person from participation in future tenders.

vi. The proceedings under this SOP shall not prejudice any other rights and/or remedies available to the procuring agency under the contract documents and/or any other law in force.