

ISLAMIC REPUBLIC OF PAKISTAN

MINISTRY OF COMMUNICATIONS



Asian Development Bank Loan 48404-004 PAK:
Central Asia Regional Economic Cooperation (CAREC)
Corridor Development Investment Program – Tranche-II
Projects

BIDDING DOCUMENT

Construction of Additional Carriageway from Shikarpur to Rajanpur of N-55 (221.95 Km)

Lot – 1: Shikarpur – Kandhkot Section

From Km 43+400 to Km 105+820 (62.42 Km)

Lot – 2: Kandhkot – Kashmore Section

From Km 105+820 to Km 164+600 (58.78 Km)

Lot – 3: Kashmore – Rojhan Section

From Km 164+600 to Km 213+500 (48.90)

Lot – 4: Rojhan – Rajanpur Section

From Km 213+500 to Km 265+350 (51.85)

Volume-1

***On Post Qualification Basis
(Single-Stage Two Envelope)***

National Highway Authority

28-Mauve Area, G-9/1, Islamabad, Pakistan.

Phone: 0092-51-9032727, Fax: 0092-51-9260419

Procurement of Works

Single-Stage: Two-Envelope Bidding Procedure

BIDDING DOCUMENT for Procurement of

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Central Asia Regional Economic Cooperation (CAREC)

Corridor Development Investment Program – Tranche-II Projects

Issued on:	April 2021
Invitation for Bids No.:	OCB/CAREC/T-II
OCB No.:	OCB/CAREC/T-II
Employer:	National Highway Authority
Country:	Pakistan

Preface

This Bidding Document for the Procurement of Works has been prepared by National Highway Authority and is based on the Standard Bidding Document for the Procurement of Works (*SBD Works*) issued by the Asian Development Bank dated June 2018.

ADB's *SBD Works* has the structure and the provisions of the Master Procurement Document entitled "Bidding Documents for the Procurement of Works", prepared by multilateral development banks and other public international financial institutions, except where ADB-specific considerations have required a change.



Table of Contents - Summary Description

PART I BIDDING PROCEDURES

Section 1 - Instructions to Bidders (ITB) -----	1-1
This Section specifies the procedures Bidders should follow when preparing and submitting their Bids. Information is also provided on the submission, opening, evaluation of bids, and on the award of contract.	
Section 2 - Bid Data Sheet (BDS) -----	2-1
This Section consists of provisions that are specific to each procurement and supplement the information or requirements included in Section 1 - Instructions to Bidders.	
Section 3 - Evaluation and Qualification Criteria (EQC) -----	3-1
This Section contains the criteria to determine the lowest evaluated bid and the qualifications of the Bidder to perform the contract.	
Section 4 - Bidding Forms (BDF) -----	4-1
This Section contains the forms to be completed by the Bidder and submitted as part of its Bid.	
Section 5 - Eligible Countries (ELC) -----	5-1
This Section contains the list of eligible countries.	

PART II REQUIREMENTS

Section 6 - Employer's Requirements (ERQ) -----	6-1
This Section contains the Specifications, Drawings, and Supplementary Information that describe the Works to be procured, Personnel Requirements, and Equipment Requirements.	

PART III CONDITIONS OF CONTRACT AND CONTRACT FORMS

Section 7 - General Conditions of Contract (GCC) -----	7-1
This Section contains the general clauses that govern the Contract. These General Conditions shall be the Conditions of Contract for Construction, Multilateral Development Bank Harmonized Edition, prepared by the Fédération Internationale des Ingénieurs-Conseil (FIDIC MDB Edition, June 2010). These Conditions are subject to the variations and additions set out in Section 8 (Particular Conditions of Contract).	
Section 8 - Particular Conditions of Contract (PCC) -----	8-1
This Section contains provisions that are specific to each contract and that modify or supplement the General Conditions of Contract. Whenever there is a conflict, the provisions herein shall prevail over those in the General Conditions of Contract.	
Section 9 - Contract Forms (COF) -----	9-1
This Section contains forms that, once completed, will form part of the Contract. The forms for Performance Security and Advance Payment Security, when required, shall only be completed by the successful Bidder after contract award.	



Section 1: Instructions to Bidders

This Section specifies the procedures to be followed by Bidders in the preparation and submission of their Bids. Information is also provided on the submission, opening, evaluation of bids, and award of contract.

Table of Contents

A. General.....	1-3
1. Scope of Bid	1-3
2. Source of Funds	1-3
3. Fraud and Corruption	1-3
4. Eligible Bidders.....	1-6
5. Eligible Materials, Equipment, and Services	1-7
B. Contents of Bidding Document.....	1-8
6. Sections of Bidding Document.....	1-8
7. Clarification of Bidding Document, Site Visit, Pre-Bid Meeting	1-8
8. Amendment of Bidding Document	1-9
C. Preparation of Bids.....	1-9
9. Cost of Bidding	1-9
10. Language of Bid	1-9
11. Documents Comprising the Bid.....	1-10
12. Letters of Bid and Schedules	1-10
13. Alternative Bids	1-10
14. Bid Prices and Discounts	1-11
15. Currencies of Bid and Payment	1-12
16. Documents Comprising the Technical Proposal	1-13
17. Documents Establishing the Qualifications of the Bidder	1-13
18. Period of Validity of Bids	1-13
19. Bid Security/Bid-Securing Declaration	1-13
20. Format and Signing of Bid.....	1-15
D. Submission and Opening of Bids	1-15
21. Sealing and Marking of Bids	1-15
22. Deadline for Submission of Bids	1-16
23. Late Bids.....	1-16
24. Withdrawal, Substitution, and Modification of Bids	1-16
25. Bid Opening.....	1-17



E. Evaluation and Comparison of Bids	1-19
26. Confidentiality	1-19
27. Clarification of Bids	1-19
28. Deviations, Reservations, and Omissions	1-19
29. Examination of Technical Bids	1-19
30. Responsiveness of Technical Bids	1-20
31. Nonmaterial Nonconformities	1-20
32. Qualification of the Bidder	1-21
33. Subcontractors	1-21
34. Correction of Arithmetical Errors	1-21
35. Conversion to Single Currency	1-22
36. Domestic Preference	1-22
37. Evaluation and Comparison of Price Bids	1-22
38. Abnormally Low Bids	1-22
39. Unbalanced or Front-Loaded Bids	1-23
40. Employer's Right to Accept Any Bid, and to Reject Any or All Bids	1-24
41. Notice of Intention for Award of Contract	1-24
F. Award of Contract	1-24
42. Award Criteria	1-24
43. Notification of Award	1-24
44. Signing of Contract	1-25
45. Performance Security	1-25
46. Bidding-Related Complaints	1-25



A. General

- 1. Scope of Bid**
- 1.1 In connection with the Invitation for Bids (IFB) indicated in the Bid Data Sheet (BDS), the Employer, as indicated in the BDS, issues this Bidding Document for the procurement of Works as specified in Section 6 (Employer's Requirements). The name, identification, and number of contracts of the open competitive bidding (OCB) are provided in the BDS.
- 1.2 Throughout this Bidding Document,
- (a) the term "in writing" means communicated in written form and delivered against receipt;
 - (b) except where the context requires otherwise, words indicating the singular also include the plural and words indicating the plural also include the singular; and
 - (c) "day" means calendar day.
- 2. Source of Funds**
- 2.1 The Borrower or Recipient (hereinafter called "Borrower") indicated in the BDS has applied for or received financing (hereinafter called "funds") from the Asian Development Bank (hereinafter called "ADB") toward the cost of the project named in the BDS. The Borrower intends to apply a portion of the funds to eligible payments under the contract(s) for which this Bidding Document is issued.
- 2.2 Payments by the ADB will be made only at the request of the Borrower and upon approval by ADB in accordance with the terms and conditions of the Financing Agreement between the Borrower and ADB (hereinafter called "Financing Agreement"), and will be subjected in all respects to the terms and conditions of that Financing Agreement. No party other than the Borrower shall derive any rights from the Financing Agreement or have any claim to the funds.
- 3. Fraud and Corruption**
- 3.1 ADB's Anticorruption Policy (1998, as amended to date) requires Borrowers (including beneficiaries of ADB-financed activity), as well as Bidders, Suppliers, and Contractors under ADB-financed contracts, observes the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, ADB
- (a) defines, for the purposes of this provision, the terms set forth below as follows:
 - (i) "corrupt practice" means the offering, giving, receiving, or soliciting, directly or indirectly, anything of value to influence improperly the actions of another party;
 - (ii) "fraudulent practice" means any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;
 - (iii) "coercive practice" means impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;



- (iv) "collusive practice" means an arrangement between two or more parties designed to achieve an improper purpose, including influencing improperly the actions of another party;
 - (v) "abuse" means theft, waste or improper use of assets related to ADB-related activity, either committed intentionally or through reckless disregard;
 - (vi) "conflict of interest" means any situation in which a party has interests that could improperly influence that party's performance of official duties or responsibilities, contractual obligations, or compliance with applicable laws and regulations;
 - (vii) "obstructive practice" means (a) deliberately destroying, falsifying, altering or concealing of evidence material to an ADB investigation, or deliberately making false statements to investigators, with the intent to impede an ADB investigation; (b) threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to a Bank investigation or from pursuing the investigation; or (c) deliberate acts intended to impede the exercise of ADB's contractual rights of audit or inspection or access to information; and
 - (viii) "integrity violation" is any act, as defined under ADB's Integrity Principles and Guidelines (2015, as amended from time to time), which violates ADB's Anticorruption Policy, including (i) to (vii) above and the following: violations of ADB sanctions, retaliation against whistleblowers or witnesses, and other violations of ADB's Anticorruption Policy, including failure to adhere to the highest ethical standard.
- (b) will reject a proposal for award if it determines that the Bidder recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices or other integrity violations in competing for the Contract;
 - (c) will cancel the portion of the financing allocated to a contract if it determines at any time that representatives of the Borrower or of a beneficiary of ADB-financing engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices or other integrity violations during the procurement or the execution of that contract, without the Borrower having taken timely and appropriate action satisfactory to ADB to remedy the situation;
 - (d) will impose remedial actions on a firm or an individual, at any time, in accordance with ADB's Anticorruption Policy and Integrity Principles and Guidelines, including declaring ineligible, either indefinitely or for a stated period of time, to participate¹ in ADB-financed, -administered, or -supported activities or to benefit from an ADB-financed, -administered, or -supported contract, financially or otherwise, if it at any time determines that the firm or individual has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices or other integrity

¹ Whether as a Contractor, Subcontractor, Consultant, Manufacturer or Supplier, or Service Provider; or in any other capacity (different names are used depending on the particular Bidding Document).



violations; and

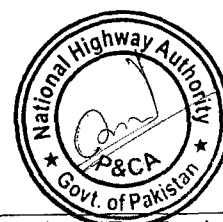
- (e) will have the right to require that a provision be included in bidding documents and in contracts financed by ADB, requiring Bidders, suppliers and contractors to permit ADB or its representative to inspect their accounts and records and other documents relating to the bid submission and contract performance and to have them audited by auditors appointed by ADB.

3.2 All Bidders, consultants, contractors, suppliers, and other third parties engaged or involved in ADB-related activities have a duty to cooperate fully in any screening or investigation when requested by ADB to do so. Such cooperation includes, but is not limited to, the following:

- (a) being available to be interviewed and replying fully and truthfully to all questions asked;
- (b) providing ADB with any items requested that are within the party's control including, but not limited to, documents and other physical objects;
- (c) upon written request by ADB, authorizing other related entities to release directly to ADB such information that is specifically and materially related, directly or indirectly, to the said entities or issues which are the subject of the investigation;
- (d) cooperating with all reasonable requests to search or physically inspect their person and/or work areas, including files, electronic databases, and personal property used on ADB activities, or that utilizes ADB's ICT resources or systems (including mobile phones, personal electronic devices, and electronic storage devices such as external disk drives);
- (e) cooperating in any testing requested by ADB, including but not limited to, fingerprint identification, handwriting analysis, and physical examination and analysis; and
- (f) preserving and protecting confidentiality of all information discussed with, and as required by, ADB.

3.3 All Bidders, consultants, contractors and suppliers shall ensure that, in its contract with its sub-consultants, sub-contractors and other third parties engaged or involved in ADB-related activities, such sub-consultants, sub-contractors and other third parties similarly undertake the foregoing duty to cooperate fully in any screening or investigation when requested by ADB to do so.

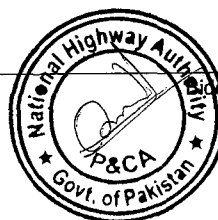
3.4 The Employer hereby puts the Bidder on notice that the Bidder or any Joint Venture partner of the Bidder (if any) may not be able to receive any payments under the Contract if the Bidder or any of its Joint Venture partners, as appropriate, is, or is owned (in whole or in part) by a person or entity subject to applicable sanctions.



- 3.5 Furthermore, Bidders shall be made aware of the provision stated in Subclause 1.15 and 15.6 of the Conditions of Contract.

4. Eligible Bidders

- 4.1 A Bidder may be a natural person, private entity, or government-owned enterprise subject to ITB 4.5—or any combination of them with a formal intent to enter into an agreement or under an existing agreement in the form of a Joint Venture. In the case of a Joint Venture,
- (a) all partners shall be jointly and severally liable; and
 - (b) the Joint Venture shall nominate a Representative who shall have the authority to conduct all business for and on behalf of any and all the parties of the Joint Venture during the bidding process and, in the event the Joint Venture is awarded the Contract, during contract execution.
- 4.2 A Bidder, and all parties constituting the Bidder, shall have the nationality of an eligible country, in accordance with Section 5 (Eligible Countries). A Bidder shall be deemed to have the nationality of a country if the Bidder is a citizen or is constituted, incorporated, or registered, and operates in conformity with the provisions of the laws of that country. This criterion shall also apply to the determination of the nationality of proposed Subcontractors or Suppliers for any part of the Contract including related services.
- 4.3 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 the bidding process if any of, including but not limited to, the following apply:
- (a) they have controlling shareholders in common; or
 - (b) they receive or have received any direct or indirect subsidy from any of them; or
 - (c) they have the same legal representative for purposes of this bid; or
 - (d) 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
 - (e) a Bidder participates in more than one bid in this bidding process, either individually or as a partner in a Joint Venture, except for alternative offers permitted under ITB 13 of the Bidding Document. This will result in the disqualification of all Bids in which it is involved. However, subject to any finding of a conflict of interest in terms of ITB 4.3(a)-(d) above, this does not limit the participation of a Bidder as a Subcontractor in another Bid or of a firm as a Subcontractor in more than one Bid; or
 - (f) a Bidder, Joint Venture partner, associates, parent company, or any affiliated entity, participated as a Consultant in the preparation



(g) a Bidder was affiliated with a firm or entity that has been hired (or is proposed to be hired) by the Employer or Borrower as Engineer for the contract; or

(h) a Bidder would be providing goods, works, or nonconsulting services resulting from or directly related to consulting services for the preparation or implementation of the project specified in the BDS ITB 2.1 that it provided or were provided by any affiliate that directly or indirectly controls, is controlled by, or is under common control with that firm.

4.4 A firm shall not be eligible to participate in any procurement activities under an ADB-financed, -administered, or -supported project while under temporary suspension or debarment by ADB pursuant to its Anticorruption Policy (see ITB 3), whether such debarment was directly imposed by ADB, or enforced by ADB pursuant to the Agreement for Mutual Enforcement of Debarment Decisions. A bid from a temporary suspended or debarred firm will be rejected.

4.5 Government-owned enterprises in the Employer's country shall be eligible only if they can establish that they (i) are legally and financially autonomous, (ii) operate under commercial law, and (iii) are not a dependent agency of the Employer.

4.6 A Bidder shall not be under suspension from bidding by the Employer as the result of the execution of a Bid-Securing Declaration.

4.7 Bidders shall provide such evidence of their continued eligibility satisfactory to the Employer, as the Employer shall reasonably request.

4.8 Firms shall be excluded if by an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, the Borrower's country prohibits any import of goods or contracting of works or services from that country or any payments to persons or entities in that country.

4.9 In case a prequalification process has been conducted prior to the bidding process, this bidding is open only to prequalified Bidders.

5. Eligible Materials, Equipment and Services

5.1 The materials, equipment, and services to be supplied under the Contract shall have their origin in eligible source countries as defined in ITB 4.2, and all expenditures under the Contract will be limited to such materials, equipment, and services. At the Employer's request, Bidders may be required to provide evidence of the origin of materials, equipment, and services.

For purposes of ITB 5.1 above, "origin" means the place where the materials and equipment are mined, grown, produced, or manufactured, and from which the services are provided. Materials and equipment are produced when, through manufacturing, processing, or substantial or major assembling of components, a commercially recognized product results that differs substantially in its basic characteristics or in purpose or utility from its components.



B. Contents of Bidding Document

6. **Sections of Bidding Document**
- 6.1 The Bidding Document consist of Parts I, II, and III, which include all the sections indicated below, and should be read in conjunction with any addenda issued in accordance with ITB 8.
- PART I Bidding Procedures**
- Section 1 - Instructions to Bidders (ITB)
Section 2 - Bid Data Sheet (BDS)
Section 3 - Evaluation and Qualification Criteria (EQC)
Section 4 - Bidding Forms (BDF)
Section 5 - Eligible Countries (ELC)
- PART II Requirements**
- Section 6 - Employer's Requirements (ERQ)
- PART III Conditions of Contract and Contract Forms**
- Section 7 - General Conditions of Contract (GCC)
Section 8 - Particular Conditions of Contract (PCC)
Section 9 - Contract Forms (COF)
- 6.2 The IFB issued by the Employer is not part of the Bidding Document.
- 6.3 The Employer is not responsible for the completeness of the Bidding Document and their addenda, if they were not obtained directly from the source stated by the Employer in the IFB.
- 6.4 The Bidder is expected to examine all instructions, forms, terms, and specifications in the Bidding Document. Failure to furnish all information or documentation required by the Bidding Document may result in the rejection of the bid.
7. **Clarification of Bidding Document, Site Visit, Pre-Bid Meeting**
- 7.1 A prospective Bidder requiring any clarification on the Bidding Document shall contact the Employer in writing at the Employer's address indicated in the BDS or raise his inquiries during the pre-bid meeting if provided for in accordance with ITB 7.4. The Employer will respond in writing to any request for clarification, provided that such request is received no later than 21 days prior to the deadline for submission of bids. The Employer shall forward copies of its response to all Bidders who have acquired the Bidding Document in accordance with ITB 6.3, including a description of the inquiry but without identifying its source. Should the Employer deem it necessary to amend the Bidding Document as a result of a request for clarification, it shall do so following the procedure under ITB 8 and ITB 22.2.
- 7.2 The Bidder is advised to visit and examine the Site of Works and its surroundings and obtain for itself on its own responsibility all information that may be necessary for preparing the Bid and entering into a contract for construction of the Works. The costs of visiting the Site shall be at the Bidder's own expense.
- 7.3 The Bidder and any of its personnel or agents will be granted permission by the Employer to enter its premises and lands for the purpose of such visit, but only upon the express condition that the Bidder, its personnel, and agents will release and indemnify the



Employer and its 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 the inspection.

- 7.4 The Bidder's designated representative is invited to attend a pre-bid meeting, if provided for in the BDS. The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.
- 7.5 The Bidder is requested to submit any questions in writing, to reach the Employer not later than 1 week before the meeting.
- 7.6 Minutes of the pre-bid meeting, including the text of the questions raised, without identifying the source, and the responses given, together with any responses prepared after the meeting, will be transmitted promptly to all Bidders who have acquired the Bidding Document in accordance with ITB 6.3. Any modification to the Bidding Document that 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 ITB 8 and not through the minutes of the pre-bid meeting.
- 7.7 ~~Nonattendance~~ ^{None attendance} at the pre-bid meeting will not be a cause for disqualification of a Bidder.

8. Amendment of Bidding Document

- 8.1 At any time prior to the deadline for submission of Bids, the Employer may amend the Bidding Document by issuing addenda.
- 8.2 Any addendum issued shall be part of the Bidding Document and shall be communicated in writing to all who have obtained the Bidding Document from the Employer in accordance with ITB 6.3.
- 8.3 To give prospective Bidders reasonable time in which to take an addendum into account in preparing their Bids, the Employer may, at its discretion, extend the deadline for the submission of Bids, pursuant to ITB 22.2.

C. Preparation of Bids

9. Cost of Bidding

- 9.1 The Bidder shall bear all costs associated with the preparation and submission of its Bid, and the Employer shall in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

10. Language of Bid

- 10.1 The Bid, as well as all correspondence and documents relating to the bid exchanged by the Bidder and the Employer, shall be written in the language specified in the BDS. Supporting documents and printed literature that are part of the Bid may be in another language provided they are accompanied by an accurate translation of the relevant passages in the language specified in the BDS, in which case, for purposes of interpretation of the Bid, such translation shall govern.



11. Documents Comprising the Bid

11.1 The Bid shall comprise two envelopes submitted simultaneously, one called the Technical Bid containing the documents listed in ITB 11.2 and the other the Price Bid containing the documents listed in ITB 11.3, both envelopes enclosed together in an outer single envelope.

11.2 The Technical Bid shall comprise the following:

- (a) Letter of Technical Bid;
- (b) Bid Security or Bid-Securing Declaration, in accordance with ITB 19;
- (c) alternative Bids, if permissible, in accordance with ITB 13;
- (d) written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB 20.2;
- (e) documentary evidence in accordance with ITB 17, establishing the Bidder's qualifications to perform the contract;
- (f) Technical Proposal in accordance with ITB 16; and
- (g) Any other document required in the BDS.

11.3 The Price Bid shall comprise the following:

- (a) Letter of Price Bid;
- (b) completed Price Schedules, in accordance with ITB 12 and ITB 14;
- (c) alternative price Bids, at Bidder's option and if permissible, in accordance with ITB 13; and
- (d) Any other document required in the BDS.

11.4 In addition to the requirements under ITB 11.2, Bids submitted by a Joint Venture shall include a copy of the Joint Venture Agreement entered into by all partners. Alternatively, a Letter of Intent to execute a Joint Venture Agreement in the event of a successful Bid shall be signed by all partners and submitted with the Bid, together with a copy of the proposed agreement.

12. Letters of Bid and Schedules

12.1 The Letters of Technical Bid and Price Bid, and the Schedules, including the Bill of Quantities, shall be prepared using the relevant forms furnished in Section 4 (Bidding Forms). The forms must be completed without any alterations to the text, and no substitutes shall be accepted. All blank spaces shall be filled in with the information requested and as required in the BDS.

13. Alternative Bids

13.1 Unless otherwise indicated in the BDS, alternative Bids shall not be considered.

13.2 When alternative times for completion are explicitly invited, a statement to that effect will be included in the BDS, as will the method of evaluating different times for completion.

13.3 Except as provided under ITB 13.4 below, Bidders wishing to offer technical alternatives to the requirements of the Bidding Document must first price the Employer's design as described in the Bidding Document and shall further provide all information necessary for a



complete evaluation of the alternative by the Employer, including drawings, design calculations, technical specifications, breakdown of prices, and proposed construction methodology and other relevant details. Only the technical alternatives, if any, of the lowest evaluated Bidder conforming to the basic technical requirements shall be considered by the Employer.

- 13.4 When specified in the BDS, Bidders are permitted to submit alternative technical solutions for specified parts of the Works. Such parts will be identified in the BDS and described in Section 6 (Employer's Requirements). The method for their evaluation will be stipulated in Section 3 (Evaluation and Qualification Criteria).

14. Bid Prices and Discounts

- 14.1 The prices and discounts quoted by the Bidder in the Letter of Price Bid and in the Bill of Quantities shall conform to the requirements specified below.
- 14.2 The Bidder 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 the Bidder will not be paid for by the Employer when executed and shall be deemed covered by the rates for other items and prices in the Bill of Quantities.
- 14.3 The price to be quoted in the Letter of Price Bid, in accordance with ITB 12.1, shall be the total price of the Bid, excluding any discounts offered. Absence of the total bid price in the Letter of Price Bid may result in the rejection of the Bid.
- 14.4 The Bidder shall quote any discounts and the methodology for their application in the Letter of Price Bid, in accordance with ITB 12.1.
- 14.5 The prices shall be either fixed or adjustable as specified in the BDS.
- (a) In the case of Fixed Price, 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 rejected.
- (b) In the case of Adjustable Price, prices quoted by the Bidder shall be subject to adjustment during performance of the contract to reflect changes in the cost elements such as labor, material, transport, and contractor's equipment in accordance with the provisions of the Conditions of Contract. A Bid submitted with a fixed price will be treated as non-responsive and be rejected. The Bidder shall furnish the indexes and weightings for the price adjustment formulas in the Tables of Adjustment Data included in Section 4 (Bidding Forms) and the Employer may require the Bidder to justify its proposed indexes and weightings. Any bid that omits indexes and weightings shall be subject to clarification with the Bidder.
- 14.6 If so indicated in ITB 1.1, bids are being invited for individual contracts or for any combination of contracts (packages). Bidders wishing to offer any price reduction for the award of more than one Contract shall specify in their bid the price reductions applicable to each package, or



alternatively, to individual Contracts within the package. Price reductions or discounts shall be submitted in accordance with ITB 14.4, provided the Bids for all contracts are submitted and opened at the same time.

- 14.7 All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause, as of 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 the Bidder.

15. Currencies of Bid and Payment

- 15.1 The unit rates and the prices shall be quoted by the Bidder entirely in the currency specified in the BDS.
- 15.2 Bidders shall indicate the portion of the bid price that corresponds to expenditures incurred in the currency of the Employer's country in the Schedule of Payment Currencies included in Section 4 (Bidding Forms).
- 15.3 Bidders expecting to incur expenditures in other currencies for inputs to the Works supplied from outside the Employer's country and wishing to be paid accordingly may indicate the other currencies in the Schedule of Payment Currencies included in Section 4 (Bidding Forms).
- 15.4 The rates of exchange to be used by the Bidder for currency conversion during bid preparation shall be the selling rates for similar transactions prevailing on the date 28 days prior to the deadline for submission of bids published by the source specified in the BDS. If exchange rates are not so published for certain currencies, the Bidder shall state the rates used and the source. Bidders should note that for the purpose of payments, the exchange rates confirmed by the source specified in the BDS as the selling rates prevailing 28 days prior to the deadline for submission of Bids shall apply for the duration of the Contract so that no currency exchange risk is borne by the Bidder.
- 15.5 Foreign currency requirements indicated by the Bidders in the Schedule of Payment Currencies shall include but not limited to the specific requirements for
- (a) expatriate staff and labor employed directly on the Works;
 - (b) social, insurance, medical and other charges relating to such expatriate staff and labor, and foreign travel expenses;
 - (c) imported materials, both temporary and permanent, including fuels, oil and lubricants required for the Works;
 - (d) depreciation and usage of imported Plant and Contractor's Equipment, including spare parts, required for the Works;
 - (e) foreign insurance and freight charges for imported materials, Plant and Contractor's Equipment, including spare parts; and
 - (f) overhead expenses, fees, profit, and financial charges arising outside the Employer's country in connection with the Works.



- 15.6 Bidders may be required by the Employer to clarify their foreign currency requirements, and to substantiate that the amounts included in the unit rates and prices and shown in the Schedule of Payment Currencies are reasonable and responsive to ITB 15.3 above, in which case a detailed breakdown of its foreign currency requirements shall be provided by the Bidder.
- 15.7 Bidders should note that during the progress of the Works, the foreign currency requirements of the outstanding balance of the Contract Price may be adjusted by agreement between the Employer and the Contractor in order to reflect any changes in foreign currency requirements for the Contract, in accordance with Subclause 14.15 of the Conditions of Contract. Any such adjustment shall be effected by comparing the percentages quoted in the bid with the amounts already used in the Works and the Contractor's future needs for imported items.
- 16. Documents Comprising the Technical Proposal**
- 16.1 The Bidder shall furnish a Technical Proposal including a statement of work methods, equipment, personnel, schedule, and any other information as stipulated in Section 4 (Bidding Forms), in sufficient detail to demonstrate the adequacy of the Bidders' proposal to meet the work requirements and the completion time.
- 17. Documents Establishing the Qualifications of the Bidder**
- 17.1 To establish its qualifications to perform the Contract in accordance with Section 3 (Evaluation and Qualification Criteria) the Bidder shall provide the information requested in the corresponding information sheets included in Section 4 (Bidding Forms).
- 17.2 Domestic Bidders, individually or in Joint Ventures, applying for eligibility for domestic preference shall supply all information required to satisfy the criteria for eligibility as described in ITB 36.
- 18. Period of Validity of Bids**
- 18.1 Bids shall remain valid for the period specified in the BDS after the bid submission deadline date prescribed by the Employer. A bid valid for a shorter period shall be rejected by the Employer as nonresponsive.
- 18.2 In exceptional circumstances, prior to the expiration of the bid validity period, the Employer may request Bidders to extend the period of validity of their Bids. The request and the responses shall be made in writing. If a bid security is requested in accordance with ITB 19, it shall also be extended 28 days beyond the deadline of the extended validity period. A Bidder may refuse the request without forfeiting its bid security. A Bidder granting the request shall not be required or permitted to modify its Bid.
- 19. Bid Security/Bid-Securing Declaration**
- 19.1 Unless otherwise specified in the BDS, the Bidder shall furnish as part of its Bid, in original form, either a Bid-Securing Declaration or a bid security as specified in the BDS. In the case of a bid security, the amount and currency shall be as specified in the BDS.
- 19.2 If a Bid-Securing Declaration is required pursuant to ITB 19.1, it shall use the form included in Section 4 (Bidding Forms). The Employer will declare a Bidder ineligible to be awarded a Contract for a specified period of time, as indicated in the BDS, if the Bid-Securing Declaration



is executed.

19.3 If a bid security is specified pursuant to ITB 19.1, the bid security shall be, at the Bidder's option, in any of the following forms:

- (a) an unconditional bank guarantee,
- (b) an irrevocable letter of credit,
- (c) a cashier's or certified check, or
- (d) SWIFT message in the form of MT760.

all from a reputable source from an eligible country as described in Section 5 (Eligible Countries). In the case of a bank guarantee, the bid security shall be submitted either using the Bid Security Form included in Section 4 (Bidding Forms) or another form acceptable to the Employer. The form must include the complete name of the Bidder. The bid security shall be valid for 28 days beyond the original validity period of the bid, or beyond any period of extension if requested under ITB 18.2.

19.4 Unless otherwise specified in the BDS, any Bid not accompanied by a substantially compliant bid security or Bid-Securing Declaration, if one is required in accordance with ITB 19.1, shall be rejected by the Employer as nonresponsive.

19.5 If a bid security is specified pursuant to ITB 19.1, the bid security of unsuccessful Bidders shall be returned promptly upon the successful Bidder's furnishing of the performance security pursuant to ITB 45.

19.6 If a bid security is specified pursuant to ITB 19.1, the bid security of the successful Bidder shall be returned promptly once the successful Bidder has signed the Contract and furnished the required performance security.

19.7 The bid security may be forfeited or the Bid Securing Declaration executed, if

- (a) notwithstanding ITB 24.3, a Bidder withdraws its bid during the period of bid validity specified by the Bidder on the Letters of Technical Bid and Price Bid, except as provided in ITB 18.2; or
- (b) the successful Bidder fails to
 - (i) sign the Contract in accordance with ITB 44;
 - (ii) furnish a performance security in accordance with ITB 45;
 - (iii) accept the arithmetical correction of its Bid in accordance with ITB 34; or
 - (iv) furnish a domestic preference security, if so required.

19.8 If the bid security is required as per ITB 19.1, the bid security of a Joint Venture shall be in the name of the Joint Venture that submits the Bid. If the Joint Venture has not been legally constituted at the time of bidding, the bid security shall be in the name of any or all of the Joint Venture partners. If the Bid-Securing Declaration is required as per ITB 19.1, the Bid-Securing Declaration of a Joint Venture shall be in the



name of the Joint Venture that submits the Bid. If the Joint Venture has not been legally constituted at the time of bidding, the Bid-Securing Declaration shall be in the names of all future partners as named in the letter of intent mentioned in ITB 4.1.

**20. Format and
Signing of Bid**

- 20.1 The Bidder shall prepare one original set of the Technical Bid and one original set of the Price Bid comprising the Bid as described in ITB 11 and clearly mark it "ORIGINAL - TECHNICAL BID" and "ORIGINAL - PRICE BID." Alternative Bids, if permitted in accordance with ITB 13, shall be clearly marked "ALTERNATIVE." In addition, the Bidder shall submit copies of the Technical and Price Bids, in the number specified in the BDS, and clearly mark each of them "COPY." In the event of any discrepancy between the original and the copies, the original shall prevail.
- 20.2 The original and all copies of the Bid shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Bidder. This authorization shall consist of a written confirmation as specified in the BDS and shall be attached to the bid. The name and position held by each person signing the authorization must be typed or printed below the signature. If a Bidder submits a deficient authorization, the Bid shall not be rejected in the first instance. The Employer shall request the Bidder to submit an acceptable authorization within the number of days as specified in the BDS. Failure to provide an acceptable authorization within the period as stated in the Employer's request shall cause the rejection of the Bid. If either the Letter of Technical Bid or Letter of Price Bid or Bid-Securing Declaration (if applicable) is not signed, the Bid shall be rejected.
- 20.3 Any amendments such as interlineations, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the Bid.

D. Submission and Opening of Bids

**21. Sealing and
Marking of Bids**

- 21.1 Bidders may always submit their Bids by mail or by hand. When so specified in the BDS, Bidders shall have the option of submitting their Bids electronically. Procedures for submission, sealing, and marking are as follows:
- (a) Bidders submitting Bids by mail or by hand shall enclose the original of the Technical Bid, the original of the Price Bid, and each copy of the Technical Bid and each copy of the Price Bid, in separate sealed envelopes, duly marking the envelopes as "ORIGINAL - TECHNICAL BID," "ORIGINAL - PRICE BID," and "COPY NO... - TECHNICAL BID" and "COPY NO... - PRICE BID." These envelopes, the first containing the originals and the others containing copies, shall then be enclosed in one single envelope per set. If permitted in accordance with ITB 13, alternative Bids shall be similarly sealed, marked and included in the sets. The rest of the procedure shall be in accordance with ITB 21.2 and ITB 21.5.

Bidders submitting Bids electronically shall follow the electronic bid



submission procedures specified in the BDS.

21.2 The inner and outer envelopes shall

- (a) bear the name and address of the Bidder;
- (b) be addressed to the Employer in accordance with BDS 22.1; and
- (c) bear the specific identification of this bidding process indicated in the BDS 1.1.

21.3 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 Bid, in accordance with ITB 25.1.

21.4 The inner envelopes containing the Price Bid shall bear a warning not to open until advised by the Employer in accordance with ITB 25.7.

21.5 If all envelopes are not sealed and marked as required, the Employer will assume no responsibility for the misplacement or premature opening of the Bid.

22. Deadline for Submission of Bids

22.1 Bids must be received by the Employer at the address and no later than the date and time indicated in the BDS.

22.2 The Employer may, at its discretion, extend the deadline for the submission of Bids by amending the Bidding Document in accordance with ITB 8, in which case all rights and obligations of the Employer and Bidders previously subject to the deadline shall thereafter be subject to the deadline as extended.

23. Late Bids

23.1 The Employer shall not consider any Bid that arrives after the deadline for submission of bids, in accordance with ITB 22. Any bid received by the Employer after the deadline for submission of Bids shall be declared late, rejected, and returned unopened to the Bidder.

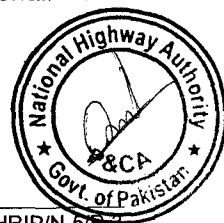
24. Withdrawal, Substitution, and Modification of Bids

24.1 A Bidder may withdraw, substitute, or modify its Bid – Technical or Price – after it has been submitted by sending a written notice, duly signed by an authorized representative, and shall include a copy of the authorization in accordance with ITB 20.2, (except for withdrawal notices, which do not require copies). The corresponding substitution or modification of the Bid must accompany the respective written notice. All notices must be

- (a) prepared and submitted in accordance with ITB 20 and ITB 21 (except for withdrawal notices, which do not require copies), and in addition, the respective envelopes shall be clearly marked "WITHDRAWAL," "SUBSTITUTION," "MODIFICATION"; and

- (b) received by the Employer no later than the deadline prescribed for submission of Bids, in accordance with ITB 22.

24.2 Bids requested to be withdrawn in accordance with ITB 24.1 shall be returned unopened to the Bidders.



24.3 No Bid may be withdrawn, substituted, or modified in the interval between the deadline for submission of Bids and the expiration of the period of bid validity specified by the Bidder on the Letters of Technical Bid and Price Bid or any extension thereof.

25. Bid Opening

25.1 The Employer shall open the Technical Bids in public at the address, on the date and time specified in the BDS in the presence of Bidders' designated representatives and anyone who chooses to attend. Any specific electronic bid opening procedures required if electronic bidding is permitted in accordance with ITB 21.1, shall be as specified in the BDS. The Price Bids will remain unopened and will be held in custody of the Employer until the specified time of their opening. If the Technical Bid and the Price Bid are submitted together in one envelope, the Employer may reject the entire Bid. Alternatively, the Price Bid may be immediately resealed for later evaluation.

25.2 First, envelopes marked "WITHDRAWAL" shall be opened and read out and the envelope with 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 at bid opening.

25.3 Second, 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 ITB 25.1. 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.

25.4 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 ITB 25.1.

25.5 All other envelopes holding the Technical 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 presence of a bid security or Bid-Securing Declaration, if required; and
- (d) any other details as the Employer may consider appropriate.

Only Technical Bids and alternative Technical Bids read out and recorded at bid opening shall be considered for evaluation. Unless otherwise specified in the BDS, all pages of the Letter of Technical Bid are to be initialed by at least three representatives of the Employer



attending bid opening. No Bid shall be rejected at the opening of Technical Bids except for late bids, in accordance with ITB 23.1.

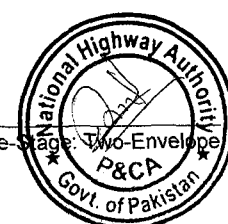
- 25.6 The Employer shall prepare a record of the opening of Technical Bids that shall include, as a minimum, the name of the Bidder and whether there is a withdrawal, substitution, or modification; alternative proposals; and the presence or absence of a bid security or Bid-Securing Declaration, if one was required. The Bidders' representatives who are present shall be requested to sign the record. The omission of a Bidder's signature on the record shall not invalidate the contents and effect of the record. A copy of the record shall be distributed to all Bidders who submitted Bids on time, and posted online when electronic bidding is permitted.
- 25.7 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. 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.
- 25.8 The Employer will notify Bidders in writing who have been rejected on the grounds of their Technical Bids being substantially nonresponsive to the requirements of the Bidding Document and return their Price Bids unopened.
- 25.9 The Employer shall conduct the opening of Price Bids of all Bidders 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.
- 25.10 All envelopes 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 and alternative offers; and
 - (d) any other details as the Employer may consider appropriate.
- Only Price Bids discounts, and alternative offers read out and recorded during the opening of Price Bids shall be considered for evaluation. Unless otherwise specified in the BDS, all pages of the Letter of Price Bid and Bill of Quantities are to be initialed by at least three representatives of the Employer attending bid opening. No Bid shall be rejected at the opening of Price Bids.
- 25.11 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, and alternative offers. The Bidders' representatives who are present shall be requested to sign the record. The omission of a Bidder's signature on the record shall not invalidate the contents and effect of the record. A copy of the record shall be



distributed to all Bidders who submitted Bids on time, and posted online when electronic bidding is permitted.

E. Evaluation and Comparison of Bids

- 26. Confidentiality**
- 26.1 Information relating to the examination, evaluation, comparison, and postqualification of Bids and recommendation of contract award, shall not be disclosed to Bidders or any other persons not officially concerned with such process until information on the Contract award is communicated to all Bidders.
- 26.2 Any attempt by a Bidder to influence the Employer in the evaluation of the Bids or Contract award decisions may result in the rejection of its Bid.
- 26.3 Notwithstanding ITB 26.2, from the time of bid opening to the time of Contract award, if any Bidder wishes to contact the Employer on any matter related to the bidding process, it may do so in writing.
- 27. Clarification of Bids**
- 27.1 To assist in the examination, evaluation, and comparison of the Technical and Price Bids, the Employer may, at its discretion, ask any Bidder for a clarification of its Bid. Any clarification submitted by a Bidder that is not in response to a request by the Employer shall not be considered. The Employer's request for clarification and the response shall be in writing. No change in the substance of the Technical Bid or prices in the Price Bid shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the Price Bids, in accordance with ITB 33.
- 27.2 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.
- 28. Deviations, Reservations, and Omissions**
- 28.1 During the evaluation of Bids, the following definitions apply:
- (a) "Deviation" is a departure from the requirements specified in the Bidding Document;
 - (b) "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Bidding Document; and
 - (c) "Omission" is the failure to submit part or all of the information or documentation required in the Bidding Document.
- 29. Examination of Technical Bids**
- 29.1 The Employer shall examine the Technical Bid to confirm that all documents and technical documentation requested in ITB 11.2 have been provided, and to determine the completeness of each document submitted.
- 29.2 The Employer shall confirm that the following documents and information have been provided in the Technical Bid. If any of these documents or information is missing, the offer shall be rejected.
- (a) Letter of Technical Bid;



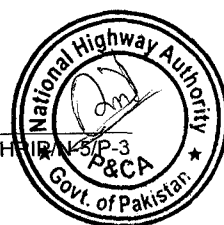
- (b) written confirmation of authorization to commit the Bidder;
- (c) Bid Security or Bid-Securing Declaration, if applicable; and
- (d) Technical Proposal in accordance with ITB 16.

30. Responsiveness of Technical Bid

- 30.1 The Employer's determination of a Bid's responsiveness is to be based on the contents of the bid itself, as defined in ITB11.
- 30.2 A substantially responsive Technical Bid is one that meets the requirements of the Bidding Document without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that,
- (a) if accepted, would:
 - (i) affect in any substantial way the scope, quality, or performance of the Works specified in the Contract; or
 - (ii) limit in any substantial way, inconsistent with the Bidding Document, the Employer's rights or the Bidder's obligations under the proposed Contract; or
 - (b) if rectified, would unfairly affect the competitive position of other Bidders presenting substantially responsive Bids.
- 30.3 The Employer shall examine the technical aspects of the Bid submitted in accordance with ITB 16, Technical Proposal, in particular, to confirm that all requirements of Section 6 (Employer's Requirements) have been met without any material deviation, reservation, or reservation.
- 30.4 If a Bid is not substantially responsive to the requirements of the Bidding Document, it shall be rejected by the Employer and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.

31. Nonmaterial Nonconformities

- 31.1 Provided that a Bid is substantially responsive, the Employer may waive any nonconformities in the Bid that do not constitute a material deviation, reservation, or omission.
- 31.2 Provided that a Technical Bid is substantially responsive, the Employer may request that the Bidder submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities in the Technical Bid related to documentation requirements. Requesting information or documentation on such nonconformities shall not be related to any aspect of the Price Bid. Failure of the Bidder to comply with the request may result in the rejection of its Bid.
- 31.3 Provided that a Technical Bid is substantially responsive, the Employer shall rectify quantifiable nonmaterial nonconformities related to the Bid Price. To this effect, the Bid Price shall be adjusted, for comparison purposes only, to reflect the price of a missing or non-conforming item or component. The adjustment shall be made using the method indicated in Section 3 (Evaluation and Qualification Criteria).



32. Qualification of the Bidder

32.1 The Employer shall determine to its satisfaction during the evaluation of Technical Bids whether Bidders meet the qualifying criteria specified in Section 3 (Evaluation and Qualification Criteria).

32.2 The determination shall be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, pursuant to ITB 17.1. Unless permitted in the BDS, the determination shall not take into consideration the qualifications of other firms such as the Bidder's subsidiaries, parent entities, affiliates, Subcontractors (other than Specialist Subcontractors if permitted in ITB 33.2 of the Bidding document), or any other firm(s) different from the Bidder.

32.3 An affirmative determination shall be a prerequisite for the opening and evaluation of a Bidder's Price Bid. The Employer reserves the right to reject the bid of any bidder found to be in circumstances described in GCC 15.2(e). A negative determination shall result into the disqualification of the Bid, in which event the Employer shall return the unopened Price Bid to the Bidder.

33. Subcontractors

33.1 Unless otherwise stated in the BDS, the Employer does not intend for the contractor to execute any specific elements of the Works through nominated subcontractors.

33.2 If subcontractors are proposed for any of the key activities listed in Section 3 (Evaluation and Qualification) Criteria 2.4.2, they shall be considered as "Specialist Subcontractors" and shall meet qualification requirements for the relevant key activities.

34. Correction of Arithmetical Errors

34.1 During the evaluation of Price Bids, the Employer shall correct arithmetical errors on the following basis:

- (a) If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected, unless in the opinion of the Employer there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price shall be corrected.
- (b) If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected.
- (c) If there is a discrepancy between the bid price in the Summary of Bill of Quantities and the bid amount in item (c) of the Letter of Price Bid, the bid price in the Summary of Bill of Quantities will prevail and the bid amount in item (c) of the Letter of Price Bid will be corrected.
- (d) If there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a), (b) and (c) above.

34.2 If the Bidder that submitted the lowest evaluated bid does not accept the correction of errors, its Bid shall be disqualified and its bid security



may be forfeited or its Bid-Securing Declaration executed.

35. Conversion to Single Currency

35.1 For evaluation and comparison purposes, the currency(ies) of the Bid shall be converted into a single currency as specified in the BDS.

36. Domestic Preference

36.1 Unless otherwise specified in the BDS, domestic preference shall not apply.

37. Evaluation and Comparison of Price Bids

37.1 The Employer shall use the criteria and methodologies listed in this Clause. No other evaluation criteria or methodologies shall be permitted.

37.2 To evaluate the Price Bid, the Employer shall consider the following:

- (a) the bid price, excluding Provisional Sums and the provision, if any, for contingencies in the Summary Bill of Quantities, but including Daywork items, where priced competitively;
- (b) price adjustment for correction of arithmetic errors in accordance with ITB 34.1;
- (c) price adjustment due to discounts offered in accordance with ITB 14.4;
- (d) converting the amount resulting from applying (a) to (c) above, if relevant, to a single currency in accordance with ITB 35;
- (e) adjustment for nonmaterial nonconformities in accordance with ITB 31.3;
- (f) assessment whether the bid is abnormally low in accordance with ITB 38; and
- (g) application of all the evaluation factors indicated in Section 3 (Evaluation and Qualification Criteria).

37.3 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.

37.4 If this Bidding Document allows Bidders to quote separate prices for different contracts, and the award to a single Bidder of multiple contracts, the methodology to determine the lowest evaluated price of the contract combinations, including any discounts offered in the Letter of Price Bid, is specified in Section 3 (Evaluation and Qualification Criteria).

37.5 The Employer shall compare all substantially responsive Bids to determine the lowest evaluated Bid price, in accordance with ITB 37.2.

38. Abnormally Low bids

38.1 An abnormally low bid is one where the bid price, in combination with other elements of the bid, appears to be so low that it raises concerns as to the capability of the Bidder to perform the contract for the offered bid price.

38.2 When the offered bid price appears to be abnormally low, the Employer shall undertake a three-step review process as follows:

- (a) identify abnormally low costs and unit rates by comparing them



with the engineer's estimates, other substantially responsive bids, or recently awarded similar contracts;

- (b) clarify and analyze the bidder's resource inputs and pricing, including overheads, contingencies and profit margins; and

decide whether to accept or reject the bid.

38.3 With regard to ITB 38.2 (b) above, the Employer will seek a written explanation from the bidder of the reasons for the offered bid price, including a detailed analysis of costs and unit prices, by reference to the scope, proposed methodology, schedule, and allocation of risks and responsibilities. This may also include information regarding the economy of the manufacturing process; the services to be provided, or the construction method to be used; the technical solutions to be adopted; and any exceptionally favorable conditions available to the bidder for the works, equipment or services proposed.

38.4 After examining the explanation given and the detailed price analyses presented by the bidder, the Employer may:

- (a) accept the bid, if the evidence provided satisfactorily accounts for the low bid price and costs, in which case the bid is not considered abnormally low;
- (b) accept the bid, but require that the amount of the performance security be increased at the expense of the bidder to a level sufficient to protect the Employer against financial loss. The amount of the performance security shall generally be not more than 20% of the contract price; or
- (c) reject the bid if the evidence provided does not satisfactorily account for the low bid price, and make a similar determination for the next ranked bid, if required.

39. Unbalanced or Front-Loaded Bids

39.1 If the Bid, which results in the lowest evaluated Bid Price, is seriously unbalanced or front-loaded in the opinion of the Employer, 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, as well as the pricing and sources of materials, equipment and labor.

39.2 After the evaluation of the information and detailed price analyses presented by the Bidder, the Employer may as appropriate:

- (a) accept the Bid; or
- (b) accept the Bid, but require that the total amount of the Performance Security be increased at the expense of the Bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful Bidder under the Contract subject to ITB 45.2; or
- (c) reject the Bid and make a similar determination for the next ranked bid.



- 40. Employer's Right to Accept Any Bid, and to Reject Any or All Bids** 40.1 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 contract award, without thereby incurring any liability to Bidders. In case of annulment, all Bids submitted and specifically, bid securities, shall be promptly returned to the Bidders.
- 41. Notice of Intention for Award of Contract** 41.1 If Standstill provisions apply as specified in the BDS, the standstill period shall be defined in the BDS to specify the duration subsequent to notification of intention for award of contract (before making the actual contract award) within which any unsuccessful bidder can challenge the proposed award.

F. Award of Contract

- 42. Award Criteria** 42.1 The Employer shall award the Contract to the Bidder whose offer has been determined in line with ITB 37 to ITB 39 above to be the lowest evaluated Bid and is substantially responsive to the Bidding Document, provided further that the Bidder is determined to be qualified to perform the Contract satisfactorily.
- 43. Notification of Award** 43.1 Prior to the expiration of the period of bid validity and upon expiry of the standstill period specified in ITB 41.1, or upon satisfactory resolution of a complaint filed within standstill period, if applicable, the Employer shall transmit the Notification of Award using the form included in Section 9 (Contract Forms) to the successful Bidder, in writing, that its Bid has been accepted.
- 43.2 Unless standstill period applies, upon notification of award, unsuccessful Bidders may request in writing to the Employer for a debriefing seeking explanations on the grounds on which their Bids were not selected. The Employer shall promptly respond in writing and/or in a debriefing meeting to any unsuccessful Bidder who, after publication of contract award, requests a debriefing.
- 43.3 Until a formal contract is prepared and executed, the notification of award shall constitute a binding Contract.
- 43.4 Within 2 weeks of the award of contract or expiry of the standstill period, where such period applies, or, if a complaint has been filed within the standstill period, upon receipt of ADB's confirmation of satisfactory resolution of the complaint, the borrower shall publish in an English language newspaper or widely known and freely accessible website the results identifying the bid and lot or package numbers, as applicable and the following information:
- (a) name of each Bidder who submitted a Bid;
 - (b) bid prices as read out at bid opening;
 - (c) name and evaluated prices of each Bid that was evaluated;
 - (d) name of Bidders whose bids were rejected and the reasons for their rejection; and
 - (e) name of the winning Bidder, and the price it offered, as well as the duration and summary scope of the contract awarded.



44. Signing of Contract

44.1 Promptly after notification, the Employer shall send the successful Bidder the Contract Agreement.

44.2 Within 28 days of receipt of the Contract Agreement, the successful Bidder shall sign, date, and return it to the Employer.

45. Performance Security

45.1 Within 28 days of the receipt of notification of award from the Employer, the successful Bidder shall furnish the performance security in accordance with the conditions of contract, subject to ITB 38 and 3ITB 9, using for that purpose the Performance Security Form included in Section 9 (Contract Forms), or another form acceptable to the Employer. If the institution issuing the performance security is located outside the country of the employer, it shall have a correspondent financial institution located in the country of the employer to make it enforceable.

45.2 Failure of the successful Bidder to submit the above-mentioned Performance Security or to sign the Contract Agreement shall constitute sufficient grounds for the annulment of the award and forfeiture of the bid security or execution of the Bid-Securing Declaration. In that event, the Employer may award the Contract to the next lowest evaluated Bidder whose offer is substantially responsive and is determined by the Employer to be qualified to perform the Contract satisfactorily.

45.3 The above provision shall also apply to the furnishing of a domestic preference security if so required.

46. Bidding-Related Complaints

46.1 The procedures for dealing with Bidding-Related Complaints arising out of this bidding process are specified in the BDS.



Section 2: Bid Data Sheet

This Section consists of provisions that are specific to each procurement and supplement the information or requirements included in Section 1 (Instructions to Bidders).

A. General

ITB 1.1	The number of the Invitation for Bids (IFB) is <u>OCB/CAREC/T-II</u>
ITB 1.1	The Employer is: <u>National Highway Authority</u>
ITB 1.1	<p>The name of the open competitive bidding (OCB) is: <u>Construction of Additional Carriageway from Shikarpur to Rajanpur of N-55 (221.95 Km)</u></p> <p>The identification number of the OCB is: <u>OCB/CAREC/T-II</u></p> <p>The number and identification of lots comprising this OCB is: Four (04)</p> <p>Lot – 1: Shikarpur – Kandhkot Section From Km 43+400 to Km 105+820 (62.42 Km)</p> <p>Lot – 2: Kandhkot – Kashmore Section From Km 105+820 to Km 164+600 (58.78 Km)</p> <p>Lot – 3: Kashmore – Rojhan Section From Km 164+600 to Km 213+500 (48.90 Km)</p> <p>Lot – 4: Rojhan – Rajanpur Section From Km 213+500 to Km 265+350 (51.85 Km)</p> <p>The bidder has the option to bid any number of lots.</p>
ITB 2.1	The Borrower is: Islamic Republic of Pakistan.
ITB 2.1	The name of the Project is: <u>Central Asia Regional Economic Cooperation (CAREC) Corridor Development Investment Program – Tranche-II Projects.</u>

B. Contents of Bidding Documents

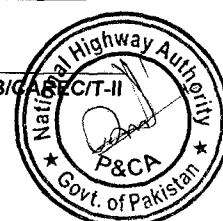
ITB 7.1	<p>For <u>clarification purposes</u> only, the Employer's address is:</p> <p>Attention: General Manager (P&CA)</p> <p>Street Address: <i>National Highway Authority, 28-Mauve Area, Sector: G-9/1</i></p> <p>Floor/Room number: <i>2nd Floor, Room No. 223</i></p> <p>City: <i>Islamabad</i></p> <p>ZIP Code: <i>44000</i></p> <p>Country: <i>Pakistan</i></p> <p>Telephone: <i>00-92-51-9032727</i></p> <p>Facsimile number: <i>00-92-51-9260419</i></p>
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	Electronic mail address: gmpca@nha.gov.pk
ITB 7.1	The Employer will respond in writing to any request for clarification, provided that such request is received no later than 14 days prior to the deadline for submission of bids.
ITB 7.4	<p>A Pre-Bid meeting shall take place.</p> <p>Date: Thursday 22 April 2021</p> <p>Time: 1100 Hours</p> <p>Place: NHA Auditorium, NHA Headquarters 2nd Floor, Room No. 207 28-Mauve Area, Sector: G-9/1 Islamabad, Pakistan</p> <p>A site visit conducted by the Employer will not be organized.</p>

C. Preparation of Bids

ITB 10.1	<p>The language of the Bid is: English.</p> <p>The translation of the documents shall be duly notarized.</p>
ITB 11.2 (g)	<p>The Bidder shall submit with its Technical Bid the following additional documents:</p> <ol style="list-style-type: none"> Quality Control Methods for Asphalt & Concrete Work; Construction Schedule (on Primavera /MS project or equivalent) by allocating the equipment and other resources; critical activities must be identified. Diversion of Traffic and Safety Management Plan. Environmental Safety Plan. COVID-19 Health and Safety Management Plan. Letter of Acceptance / Award, completion certificates, IPCs / BOQs to substantiate construction experience. Documents indicating availability of Financial Resources shown by the bidder to meet with the Cash Flow Requirement (refer 2.3.3 of Section 3) i.e. latest year's audited financial statements, line of credit (specific to this project) confirmed by issuing bank within last three months, etc Bidders are encouraged to submit colored photographs of project area describing Work Site.
ITB 11.3 (d)	<p>The Bidder shall submit with its Price Bid the following additional documents:</p> <ul style="list-style-type: none"> Any other documents mentioned in Section-4 Page 4-26 "Schedule of payment currency". Unit price analysis for major items of works.
ITB 12.1	<p>The units and rates in figures entered into the Bill of Quantities should be unambiguous and typewritten, if written by hand, must be in print form. Bill of Quantities not presented accordingly may be considered nonresponsive; and subject to approval of the Evaluation Report by ADB, the Bidder shall not</p>



	challenge the decision of the Employer in this regard.
ITB 13.1	Alternative Bids shall not be permitted.
ITB 13.2	Alternative times for completion shall not be permitted.
ITB 13.4	Alternative technical solutions shall be permitted for the following parts of the Works: Not Applicable .
ITB 14.5	The prices quoted by the Bidder shall be Adjustable .
ITB 15.1	The unit rates and the prices shall be quoted by the Bidder entirely in: "Pakistan Rupees" .
ITB 15.4	The rates of exchange shall be the selling rates 28 days prior to the deadline for submission of bids published by State Bank of Pakistan .
ITB 16.1	The technical Proposal shall also include a Health and Safety COVID-19 Management Plan, in accordance with Standard Operating Procedures (SOPs) issued by the Government of Pakistan from time to time on COVID-19 prevention and controls, and with international good practice guidelines [<i>World Health Organization, Considerations for public health and social measures in the workplace in the context of COVID-19. Geneva. Available here: https://www.who.int/publications-detail/considerations-for-public-health-and-social-measures-in-the-workplace-in-the-context-of-covid-19.</i>] Absence of or incomplete submission may result in rejection of the bid.
ITB 18.1	The bid validity period shall be one hundred and eighty days (180) days .
ITB 19.1	The Bidder shall furnish a bid security in the following for each lot: Lot-1: Pak. Rs. 182 Million or US\$ 1,102,000. Lot-2: Pak. Rs. 246 Million or US\$ 1,488,000. Lot-3: Pak. Rs. 136 Million or US\$ 826,700. Lot-4: Pak. Rs. 154 Million or US\$ 932,400.
ITB 19.2	The ineligibility period is: Not Applicable . The bid securing declaration is: Not Applicable .
ITB 19.3	Bid security in the form of SWIFT message is not acceptable.
ITB 19.4	Subject to the succeeding sentences, any bid not accompanied by an irrevocable and callable bid security shall be rejected by the Employer as nonresponsive. If a Bidder submits a bid security that (i) deviates in form, amount, and/or period of validity, or (ii) does not provide sufficient identification of the Bidder (including, without limitation, failure to indicate the name of the Joint Venture or, where the Joint Venture has not yet been constituted, the names of all future Joint Venture Partners), the Employer shall request the Bidder to submit a compliant bid security within Seven (07) days of receiving such a request. Failure to provide a compliant bid security within the prescribed period of receiving such a request shall cause the rejection of the Bid.
ITB 20.1	In addition to the original Bid, the number of copies is: Three (03)



	<p>To facilitate evaluation, bidders are encouraged to submit soft copies (two CDs) one each in PDF format with its Technical Bid and Price Bid. The soft copy (CD) of the Technical Bid shall be enclosed in the envelope containing the hard copy of the Bidder's Original Technical Bid, and the soft copy (CD) of the Price Bid shall be enclosed in the envelope containing the hard copy of the Bidder's Original Price Bid. If there is any discrepancy between the data/information in the soft copy (CD) of the Bidder's Technical Bid and the hard copy of the Bidder's Technical Bid and between the price indicated in the hard copy of the Bidder's Original Price Bid, and in the soft copy (CD) of the Bidder's Price Bid, the data and information indicated in the hard copy of the Original Technical Bid and the Original Price Bid shall prevail.</p> <p>In addition to above, soft copy of Financial Bid in "Excel format" shall also be enclosed in the envelope containing the hard copy of the Bidder's Original Price Bid, to facilitate review and evaluation process.</p> <p>Note: Submission of the CD is only for reference and shall not constitute electronic bid submission as stipulated in ITB 21.1(b) and is provision in the Data Sheet.</p>
ITB 20.2	<p>The written confirmation of authorization to sign on behalf of the Bidder shall consist of <i>a board resolution or its equivalent, or power of attorney, which should either be:</i></p> <ul style="list-style-type: none"> a) <i>notarized, or</i> b) <i>attested to by an appropriate forum (authority) in the Bidder's home country, specifying the representative's authority to sign the bid on behalf of the bidder.</i> <p><i>If the bidder is an intended or existing joint venture, such authorization should be signed by all parties and specify the representative's authority to sign the bid on behalf of the intended or existing joint venture.</i></p> <p><i>If the joint venture has not yet been formed, also include written evidence from all proposed partners of joint venture of their intent to enter into a joint venture in the event of a contract award.</i></p>
ITB 20.2	The Bidder shall submit an acceptable authorization within seven (07) days .

D. Submission and Opening of Bids

ITB 21.1	Bidders do not have the option of submitting their Bids electronically.
ITB 21.1 (b)	If Bidders shall have the option of submitting their Bids electronically, the electronic bidding submission procedures shall be: Not Applicable
ITB 22.1	<p>For bid submission purposes only, the Employer's address is:</p> <p>Attention: General Manager (P&CA)</p> <p>Street address: 28-Mauve Area, Sector: G-9/1</p> <p>Floor/Room number: 2nd Floor, Room No. 223</p> <p>City: <i>Islamabad</i></p> <p>ZIP code: <i>44000</i></p> <p>Country: <i>Pakistan</i></p> <p>The deadline for bid submission is:</p>



	Date: Thursday 20 May 2021 Time: 1100 Hours
ITB 25.1	The opening of the Technical Bid shall take place at: NHA Auditorium, NHA Headquarters Street Address: 28-Mauve Area, Sector: G-9/1 Floor/Room number: 2 nd Floor, Room No. 207 City: Islamabad Country: Pakistan Date: Thursday 20 May 2021 Time: 1130 Hours
ITB 25.1	Electronic bid opening procedure shall be as follows: Not Applicable.
ITB 25.5	The Letter of Technical Bid shall be initialed by three (03) representatives of the Employer attending Bid opening.
ITB 25.10	The Letter of Price Bid and Bill of Quantities shall be initialed by three (03) representatives of the Employer attending Bid opening.

E. Evaluation and Comparison of Bids

ITB 32.2	Qualifications of other firms such as the Bidder's subsidiaries, parent entities, affiliates, subcontractors shall not be permitted.
ITB 33.1	The Employer does not intend for the contractor to execute any specific elements of the Works through nominated subcontractors.
ITB 35.1	The currency that shall be used for bid evaluation and comparison purposes to convert all bid prices expressed in various currencies into a single currency is: Not relevant.
ITB 36.1	Domestic preference shall not apply.
ITB 41.1	Standstill provisions shall not apply.

F. Award of Contracts

ITB 46.1	The procedures for Bidding-Related Complaints are referenced in the "Procurement Regulations for ADB Borrowers (Appendix 7)." The Bidder should
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	<p>submit its complaint following these procedures, in writing, to:</p> <p>For the attention: Grievance Redressal Committee</p> <p>Title/position: General Manager (Planning)</p> <p>Employer: National Highway Authority</p> <p>Email address: gmplanningnha@gmail.com</p> <p>Fax number: 00-92-51-9260346</p>
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Section 3: Evaluation and Qualification Criteria

- Without Prequalification -

This Section contains all the criteria that the Employer shall use to evaluate bids and qualify Bidders. In accordance with ITB 32 and ITB 37, no other methods, criteria and factors shall be used. The Bidder shall provide all the information requested in the forms included in Section 4 (Bidding Forms).

Table of Criteria

1.	Evaluation	3-2
1.1	Adequacy of Technical Proposal	3-2
1.2	Completion Time	3-2
1.3	Technical Alternatives	3-2
1.4	Specialist Subcontractors	3-2
1.5	Quantifiable Nonconformities and Omissions	3-3
1.6	Domestic Preference	3-3
1.7	Other Criteria	3-3
1.8	Multiple Contracts	3-3
2.	Qualification	3-4
2.1	Eligibility	3-4
2.1.1	Nationality	3-4
2.1.2	Conflict of Interest	3-4
2.1.3	ADB Eligibility	3-4
2.1.4	Government-Owned Enterprise	3-4
2.1.5	United Nations Eligibility	3-4
2.1.6	Registration with Pakistan Engineering Council (PEC)	3-4
2.2	Historical Contract Nonperformance	3-5
2.2.1	History of Nonperforming Contracts	3-5
2.2.2	Suspension Based on Bid-Securing Declaration	3-5
2.2.3	Pending Litigation and Arbitration	3-5
2.3	Financial Situation	3-6
2.3.1	Historical Financial Performance	3-6
2.3.2	Average Annual Construction Turnover	3-6
2.3.3	Financial Resources	3-7
2.4	Construction Experience	3-8
2.4.1	Contracts of Similar Size and Nature	3-8
2.4.2	Construction Experience in Key Activities	3-9



1. Evaluation

In addition to the criteria listed in ITB 37.2 (a)–(f), other relevant factors are as follows:

1.1 Adequacy of Technical Proposal

Evaluation of the Bidder's Technical Proposal will include an assessment of the Bidder's technical capacity to mobilize key equipment and personnel for the contract consistent with its proposal regarding work methods, scheduling, and material sourcing in sufficient detail and fully in accordance with the requirements stipulated in Section 6 (Employer's Requirements).

Non-compliance with equipment and personnel requirements described in Section 6 (Employer's Requirements) shall not normally be a ground for bid rejection and such non-compliance will be subject to clarification during bid evaluation and rectification prior to contract award.

1.2 Completion Time

An alternative Completion Time, if permitted under ITB 13.2, will be evaluated as follows:

Not Applicable.

1.3 Technical Alternatives

Technical alternatives, if permitted under ITB 13.4, will be evaluated as follows:

Not Applicable.

1.4 Specialist Subcontractors

Only the specific experience of Specialist Subcontractors for key activities specified in criterion 2.4.2 Construction Experience in Key Activities will be considered. The experience of Specialist Subcontractors in contracts of similar size and nature, and their financial resources shall not be added to those of the Bidder for purposes of qualification of the Bidder.

1.5 Quantifiable Nonconformities and Omissions

Subject to ITB 14.2 and ITB 37.2 (e), the evaluated cost of quantifiable nonconformities including omissions, is determined as follows:

"Pursuant to ITB 31.3, the cost of all quantifiable nonmaterial nonconformities shall be evaluated, including omissions in Daywork where competitively priced but excluding omission of prices in the Bill of Quantities. The Employer will make its own assessment of the cost of any nonmaterial nonconformities and omissions for the purpose of ensuring fair comparison of Bids."



1.6 Domestic Preference

If domestic preference is provided for under ITB 36.1, the following procedure shall apply:
Not Applicable.

1.7 Other Criteria

The Employer will take into account the quality of the Health and Safety COVID -19 Management Plan ('the Plan') attached to the Technical Proposal in its evaluation of the Adequacy of the Technical Proposal.

The bidder should demonstrate in the Plan the health and safety measures they will put in place on site in relation to COVID-19 prevention and controls, including but not limited to, PPE requirements, site set up, training, induction and mobilization of new personnel, equipment and plants cleaning and other hazard management measures while undertaking site work activities, site visitors health and safety protocols, as well as the approach to the monitoring and reporting of the Plan. The Plan should be fit for purpose for the particular construction works of this contract and be aligned with any relevant government regulations and guidelines on COVID-19 prevention and controls, as well as workplace safety requirements or, where relevant, with international good practice guidelines [World Health Organization, Considerations for public health and social measures in the workplace in the context of COVID-19. Geneva. Available here: <https://www.who.int/publications-detail/considerations-for-public-health-and-social-measures-in-the-workplace-in-the-context-of-covid-19>].

1.8 Multiple Contracts

Works are grouped in multiple lots and pursuant to ITB 37.4, the Employer shall evaluate and compare Bids on the basis of a lot, or a combination of lots, or as a total of lots in order to arrive at the least-cost combination for the Employer by taking into account discounts offered by Bidders in case of award of multiple lots.

- Lot – 1: Shikarpur – Kandhkot Section from Km 43+400 to Km 105+820 (62.42 Km)**
- Lot – 2: Kandhkot – Kashmore Section from Km 105+820 to Km 164+600 (58.78 Km)**
- Lot – 3: Kashmore – Rojhan Section from Km 164+600 to Km 213+500 (48.90 Km)**
- Lot – 4: Rojhan – Rajanpur Section from Km 213+500 to Km 265+350 (51.85 Km)**

If a Bidder submits several successful (lowest evaluated substantially responsive) bids, the evaluation will also include an assessment of the Bidder's capacity to meet the following aggregated requirements as presented in the bid:

- Average annual construction turnover,
- Financial resources,
- Equipment to be allocated, and
- Personnel to be fielded.



2. Qualification

2.1 Eligibility

Criteria	Compliance Requirements			Documents
Requirement	Single Entity	Joint Venture		Submission Requirements
		All Partners Combined	Each Partner	

2.1.1 Nationality

Nationality in accordance with ITB 4.2.	Must meet requirement	Must meet requirement	Must meet requirement	Not applicable	Forms ELI - 1; ELI - 2 with attachments
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2.1.2 Conflict of Interest

No conflicts of interest in accordance with ITB 4.3.	Must meet requirement	Must meet requirement	Must meet requirement	Not applicable	Letter of Technical Bid
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2.1.3 ADB Eligibility

Not having been declared ineligible by ADB, as described in ITB 4.4.	Must meet requirement	Must meet requirement	Must meet requirement	Not applicable	Letter of Technical Bid
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2.1.4 Government-Owned Entity

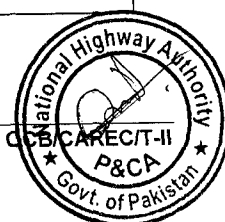
Bidder required to meet conditions of ITB 4.5.	Must meet requirement	Must meet requirement	Must meet requirement	Not applicable	Forms ELI - 1; ELI - 2 with attachments
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2.1.5 United Nations Eligibility

Not having been excluded by an act of compliance with a United Nations Security Council resolution in accordance with ITB 4.8.	Must meet requirement	Must meet requirement	Must meet requirement	Not applicable	Letter of Technical Bid
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2.1.6 Registration with Pakistan Engineering Council (PEC)

National Bidder must be registered with Pakistan Engineering Council (PEC) and shall have a valid registration Certificate in following category with Specialization in CE-01 & CE-02. Lot - 1 Category C-A Lot - 2 Category C-A Lot - 3 Category C-A Lot - 4 Category C-A	must meet requirement	not applicable	Local JV partner must meet requirement as per their respective JV s hare	must meet requirement	Forms ELI - 1; ELI - 2 with attachments
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2.2 Historical Contract Nonperformance

2.2.1 History of Nonperforming Contracts

Criteria	Compliance Requirements			Documents
Requirement	Single Entity	Joint Venture		
		All Partners Combined	Each Partner	One Partner
Nonperformance of a contract ^a did not occur as a result of contractor default since 1 st January 2014.	Must meet requirement	Must meet requirement	Must meet requirement ^b	Not Applicable
Submission Requirements: Form CON-1				

^a Nonperformance, as decided by the Employer, shall include all contracts where (i) nonperformance was not challenged by the contractor, including through referral to the dispute resolution mechanism under the respective contract; and (ii) contracts that were so challenged but fully settled against the contractor. Nonperformance shall not include contracts where the Employer's decision was overruled by the dispute resolution mechanism. Nonperformance must be based on all information on fully settled disputes or litigation, i.e. dispute or litigation that has been resolved in accordance with the dispute resolution mechanism under the respective contract and where all appeal instances available to the Bidder have been exhausted.

^b This requirement also applies to contracts executed by the Bidder as JV member.

2.2.2 Suspension Based on Execution of Bid-Securing Declaration

Criteria	Compliance Requirements			Documents
Requirement	Single Entity	Joint Venture		
		All Partners Combined	Each Partner	One Partner
Not under suspension based on execution of a Bid-Securing Declaration pursuant to ITB 4.6.	Must meet requirement	Must meet requirement	Must meet requirement	Not applicable
Submission Requirements: Letter of Technical Bid				

2.2.3 Pending Litigation and Arbitration

Pending litigation and arbitration criterion shall apply.

Criteria	Compliance Requirements			Documents
Requirement	Single Entity	Joint Venture		
		All Partners Combined	Each Partner	One Partner
All pending litigation and arbitration, if any, shall be treated as resolved against the Bidder and so shall in total not represent more than fifty percent (50%) of the Bidder's net worth calculated as the difference between total assets and total liabilities.	must meet requirement	not applicable	must meet requirement	Not applicable
Submission Requirements: Form CON - 1				



2.3 Financial Situation

2.3.1 Historical Financial Performance

Criteria	Compliance Requirements				Documents
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	One Partner	
Submission of audited financial statements or, if not required by the law of the Bidder's country, other financial statements acceptable to the Employer, for the last three (03) years (i.e. 2017, 2018, 2019 or latest) to demonstrate the current soundness of the Bidder's financial position. As a minimum, the Bidder's net worth for the last year calculated as the difference between total assets and total liabilities should be positive.	Must meet requirement	Not applicable	Must meet requirement	Not applicable	Form FIN - 1 with attachments

2.3.2 Average Annual Construction Turnover

Criteria	Compliance Requirements				Documents
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	One Partner	
Minimum average annual construction turnover of following value calculated as total certified payments received for contracts in progress or completed, within the last three (03) years .	Must meet requirement	Must meet requirement	Must meet 25% of the requirement	Must meet 40% of the requirement	Form FIN - 2
for Lot – 1 US \$ 42 Million					
for Lot – 2 US \$ 56 Million					
for Lot – 3 US \$ 31 Million					
for Lot – 4 US \$ 35 Million					



2.3.3 Financial Resources

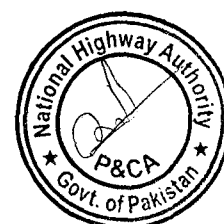
Criteria Requirement	Compliance Requirements				Documents
	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	One Partner	
For Single Entities The Bidder must demonstrate that its financial resources defined in FIN - 3, less its financial obligations for its current contract commitments defined in FIN - 4, meet or exceed the total requirement of the following lots: for Lot - 1 US \$ 07 Million for Lot - 2 US \$ 10 Million for Lot - 3 US \$ 06 Million for Lot - 4 US \$ 06 Million	Must meet requirement	Not applicable	Not applicable	Not applicable	Form FIN - 3 and Form FIN - 4
For Joint Ventures One partner must demonstrate that its financial resources defined in FIN - 3, less its financial obligations for its own current contract commitments defined in FIN - 4, meet or exceed its required share from the total requirement for the Subject Contract of the following lots: for Lot - 1 US \$ 2.8 Million for Lot - 2 US \$ 4.0 Million for Lot - 3 US \$ 2.4 Million for Lot - 4 US \$ 2.4 Million AND	Not applicable	Not applicable	Not applicable	Must meet requirement	Form FIN - 3 and Form FIN - 4
(1) Each partner must demonstrate that its financial resources defined in FIN - 3, less its financial obligations for its own current contract commitments defined in FIN - 4, meet or exceed its required share from the total requirement for the Subject Contract of the following lots: for Lot - 1 US \$ 1.75 Million for Lot - 2 US \$ 2.50 Million for Lot - 3 US \$ 1.50 Million for Lot - 4 US \$ 1.50 Million AND	Not applicable	Not applicable	Must meet requirement	Not applicable	Form FIN - 3 and Form FIN - 4
(2) The Joint Venture must demonstrate that the combined financial resources of all partners defined in FIN-3, less all the partners' total financial obligations for the current contract commitments defined in FIN-4, meet or exceed the total requirement for the Subject Contract of the following lots: for Lot - 1 US \$ 07 Million for Lot - 2 US \$ 10 Million for Lot - 3 US \$ 06 Million for Lot - 4 US \$ 06 Million	Not applicable	Must meet requirement	Not applicable	Not applicable	Form FIN - 3 and Form FIN - 4



2.4 Construction Experience

2.4.1 Contracts of Similar Size and Nature

Criteria	Compliance Requirements			Documents	
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	One Partner	
Participation as a contractor, Joint Venture partner, or Subcontractor, in at least one contract that has been successfully or substantially completed within the last seven (07) years and that is similar to the proposed works, where the value of the Bidder's participation exceeds amounts mentioned below. The similarity of the Bidder's participation shall be based on : 1. the physical size 2. nature of works 3. complexity, methods 4. technology or 5. other characteristics as described in Section 6, Employer's Requirements. for Lot – 1 US \$ 39 Million for Lot – 2 US \$ 53 Million for Lot – 3 US \$ 29 Million for Lot – 4 US \$ 33 Million	Must meet requirement	Not applicable	Not applicable	Must meet requirement	Form EXP - 1

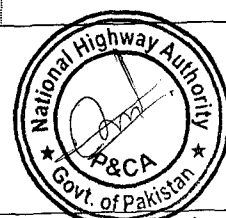


2.4.2 Construction Experience in Key Activities

May be complied with by the Bidder or by Specialist Subcontractor. If Specialist Subcontractors are proposed by the Bidder for key activities, each Specialist Subcontract must have experience in related key activity as a single entity.

If the key activity is to be undertaken by a Specialist Subcontractor, the Employer shall require evidence of the subcontracting agreement from the Bidder.

Criteria Requirement	Compliance Requirements		Documents
	Single Entity or Its Specialist Subcontractors	Joint Venture or Its Specialist Subcontractors	Submission Requirements
For the above or other contracts executed during the period stipulated in 2.4.1, a minimum construction experience is required in the following key activities:	Must meet requirement	Must meet requirement	Form EXP - 2
LOT - 1			
Embankment 656,000 Cu.m/ in any one year			
Sub-Base / Base Course 275,000 Cu.m/ in any one year			
Asphaltic Concrete Pavement 18,100 Cu.m/ in any one year			
Concrete (for bridges) 63,000 Cu.m/ in any one year			
LOT - 2			
Embankment 1,510,400 Cu.m/ in any one year			
Sub-Base / Base Course 267,300 Cu.m/ in any one year			
Asphaltic Concrete Pavement 18,500 Cu.m/ in any one year			
Concrete (for bridges) 137,100 Cu.m/ in any one year			
LOT - 3			
Embankment 132,600 Cu.m/ in any one year			
Sub-Base / Base Course 145,800 Cu.m/ in any one year			
Asphaltic Concrete Pavement 47,600 Cu.m/ in any one year			
Concrete (for bridges) 30,500 Cu.m/ in any one year			
LOT - 4			
Embankment 223,500 Cu.m/ in any one year			
Sub-Base / Base Course 175,800 Cu.m/ in any one year			
Asphaltic Concrete Pavement 60,600 Cu.m/ in any one year			
Concrete (for bridges) 32,000 Cu.m/ in any one year			

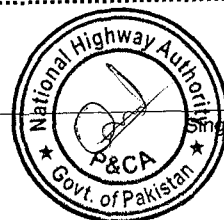


Section 4: Bidding Forms

- Without Prequalification -

Table of Forms

Letter of Technical Bid.....	4-2
Letter of Price Bid	4-5
Bid Security.....	4-7
Bid-Securing Declaration	4-8
Affiliate Company Guarantee	4-9
Technical Proposal	4-10
Personnel	4-11
Form PER – 1: Proposed Personnel	4-11
Form PER – 2: Resume of Proposed Personnel	4-12
Equipment	4-13
Site Organization	4-14
Method Statement	4-14
Mobilization Schedule	4-14
Construction Schedule	4-14
Other Documents	4-14
Bidders Qualification.....	4-15
Form ELI – 1: Bidder's Information Sheet	4-16
Form ELI – 2: Joint Venture Information Sheet	4-17
Form CON – 1: Historical Contract Nonperformance.....	4-18
Form FIN – 1: Historical Financial Performance	4-19
Form FIN – 2: Average Annual Construction Turnover	4-20
Form FIN – 3: Availability of Financial Resources	4-21
Form FIN – 4: Financial Requirements for Current Contract Commitments	4-22
Form FIN – 5: Self-Assessment Tool for Bidder's Compliance to Financial Resources	4-23
Form EXP – 1: Contracts of Similar Size and Nature.....	4-24
Form EXP – 2: Construction Experience in Key Activities.....	4-25
Schedules.....	4-26
Schedule of Payment Currencies	4-26
Tables of Adjustment Data	4-27
List of Materials for Payment (Reference GCC/PCC 14.5).....	4-29
Bill of Quantities	4-30



Letter of Technical Bid

Date:

OCB No.: OCB/CAREC/T-II

Invitation for Bid No.: OCB/CAREC/T-II

To:

**General Manager (P&CA),
National Highway Authority
Islamabad.**

We, the undersigned, declare that:

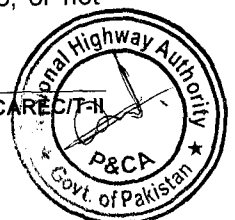
- (a) We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders (ITB) 8.
- (b) We offer to execute in conformity with the Bidding Documents the following Works:

Construction of Additional Carriageway from Shikarpur – Rajanpur of N-55 (221.95 Km)

Lot – 1: Shikarpur – Kandhkot Section from Km 43+400 to Km 105+820 (62.42 Km)
Lot – 2: Kandhkot – Kashmore Section from Km 105+820 to Km 164+600 (58.78 Km)
Lot – 3: Kashmore – Rojhan Section from Km 164+600 to Km 213+500 (48.90 Km)
Lot – 4: Rojhan – Rajanpur Section from Km 213+500 to Km 265+350 (51.85 Km)

[the bidder must insert number, location and chainage of one or the lots (as per ITB 1.1 under BDS) for which this Bid is being submitted]

- (c) Our Bid consisting of the Technical Bid and the Price Bid shall be valid for a period of **180 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.
- (d) Our firm, including any Subcontractors or Suppliers for any part of the Contract, have nationalities from eligible countries in accordance with ITB 4.2.
- (e) We, including any Subcontractors or Suppliers for any part of the contract, do not have any conflict of interest in accordance with ITB 4.3.
- (f) We are not participating, as a Bidder, either individually or as partner in a Joint Venture, in more than one Bid in this bidding process in accordance with ITB 4.3(e), other than alternative offers submitted in accordance with ITB 13.
- (g) Our firm, Joint Venture partners, associates, parent company, its affiliates or subsidiaries, including any Subcontractors or Suppliers for any part of the contract, are not subject to, or not



controlled by any entity or individual that is subject to, a temporary suspension or a debarment imposed by the Asian Development Bank or a debarment imposed by the Asian Development Bank in accordance with the Agreement for Mutual Enforcement of Debarment Decisions between the Asian Development Bank and other development banks.¹

- (h) Our firm, Joint Venture partners, associates, parent company, affiliates or subsidiaries, including any Subcontractors or Suppliers for any part of the Contract, are not, or have never been, temporarily suspended, debarred, declared ineligible, or blacklisted by the Employer's country, any international organization, and other donor agency.

If so debarred, declared ineligible, temporarily suspended, or blacklisted, please state details (as applicable to each Joint Venture partner, associate, parent company, affiliate, subsidiaries, Subcontractors, and/or Suppliers):

- (i) Name of Institution: _____
 (ii) Period of debarment, ineligibility, or blacklisting [*start and end date*]: _____
 (iii) Reason for the debarment, ineligibility, or blacklisting: _____

- (i) Our firm's, Joint Venture partners, associates, parent company's affiliates or subsidiaries, including any Subcontractors or Suppliers key officers and directors have not been [charged or convicted] of any criminal offense (including felonies and misdemeanors) or infractions/violations of ordinance which carry the penalty of imprisonment.

If so charged or convicted, please state details:

- (i) Nature of the offense/violation: _____
 (ii) Court/Area of jurisdiction: _____
 (iii) Resolution [*i.e. dismissed; settled; convicted/duration of penalty*]: _____
 (iv) Other relevant details [*please specify details*]: _____

- (j) We understand that it is our obligation to notify ADB should our firm, Joint Venture partners, associates, parent company, affiliates or subsidiaries, including any Subcontractors or Suppliers, be temporarily suspended, debarred or become ineligible to work with ADB or any other MDBs, the Employer's country, international organizations, and other donor agencies, or any of our key officers and directors be charged or convicted of any criminal offense or infractions/violations of ordinance which carry the penalty of imprisonment.

- (k) Our firm, Joint Venture partners, associates, parent company, affiliates or subsidiaries, including any Subcontractors or Suppliers, are not from a country which is prohibited to export goods to or receive any payments from the Employer's country by an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations.

- (l) [We are not a government-owned enterprise] / [We are a government-owned enterprise but meet the requirements of ITB 4.5].²

¹ These institutions include African Development Bank, European Bank for Reconstruction and Development (EBRD), Inter-American Development Bank (IADB), and the World Bank Group. According to paragraph 9 of the Agreement, other international financial institutions may join upon the consent of all Participating Institutions and signature of a Letter of Adherence by the international financial institution substantially in the form provided (Annex B to the Agreement). Upon adherence, such international financial institution shall become a Participating Institution for purposes of the Agreement. Bidders are advised to check www.adb.org/integrity for updates.

² Use one of the two options as appropriate.



- (m) We have not been suspended nor declared ineligible by the Employer based on execution of a Bid-Securing Declaration in accordance with ITB 4.6.
- (n) We agree to permit ADB or its representative to inspect our accounts and records and other documents relating to the bid submission and to have them audited by auditors appointed by ADB.
- (o) If our Bid is accepted, we commit to mobilizing key equipment and personnel in accordance with the requirements set forth in Section 6 (Employer's Requirements) and our technical proposal, or as otherwise agreed with the Employer.
- (p) We understand that any misrepresentation that knowingly or recklessly misleads, or attempts to mislead may lead to the automatic rejection of the Bid or cancellation of the contract, if awarded; and may result in remedial actions, in accordance with ADB's Anticorruption Policy (1998, as amended to date) and Integrity Principles and Guidelines (2015, as amended from time to time).

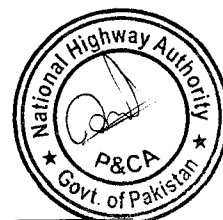
Name

In the capacity of

Signed

Duly authorized to sign the Bid for and on behalf of

Date



Letter of Price Bid

Date:

OCB No.: OCB/CAREC/T-II/Invitation for Bid No.: OCB/CAREC/T-II

To:

**General Manager (P&CA),
National Highway Authority
Islamabad.**

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 (ITB) 8.
- (b) We offer to execute in conformity with the Bidding Documents and the Technical Bid submitted for the following Works:

Construction of Additional Carriageway from Shikarpur – Rajanpur of N-55 (221.95 Km)

- Lot – 1: Shikarpur – Kandhkot Section from Km 43+400 to Km 105+820 (62.42 Km)**
Lot – 2: Kandhkot – Kashmore Section from Km 105+820 to Km 164+600 (58.78 Km)
Lot – 3: Kashmore – Rojhan Section from Km 164+600 to Km 213+500 (48.90 Km)
Lot – 4: Rojhan – Rajanpur Section from Km 213+500 to Km 265+350 (51.85 Km)

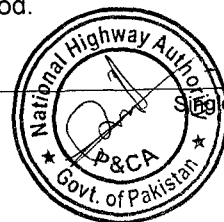
[the bidder must insert number, location and chainage of one or the lots (as per ITB 1.1 under BDS) for which this Bid is being submitted]

- (c) The total price of our Bid, excluding any discounts offered in item (d) below is:

[amount in Pakistan Rupee in words], [amount in figures]

The total bid price from the Summary of Bill of Quantities should be entered by the bidder inside this box. Absence of the total bid price in the Letter of Price Bid may result in the rejection of the bid.

- (d) The discounts offered and the methodology for their application are: _____ [insert discounts and methodology for their application if any]
- (e) Our Bid shall be valid for a period of **180 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.



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

(g) We have paid, or will pay the following commissions, gratuities, or fees with respect to the bidding process or execution of the Contract.¹

Name of Recipient	Address	Reason	Amount
.....
.....

(h) 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.

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

(j) We agree to permit ADB or its representative to inspect our accounts and records and other documents relating to the bid submission and to have them audited by auditors appointed by ADB.

Name

In the capacity of

Signed

Duly authorized to sign the Bid for and on behalf of

Date

¹ If none has been paid or is to be paid, indicate "None".



Bid Security Bank Guarantee

[Bank's name, and address of issuing branch or office]¹

Beneficiary: [Name and address of the employer]

Date:

Bid Security No.:

We have been informed that [name of the bidder] (hereinafter called "the Bidder") has submitted to you its bid dated [please specify] (hereinafter called "the Bid") for the execution of [name of contract] under Invitation for Bids No. [please specify] ("the IFB").

Furthermore, we understand that, according to your conditions, bids must be supported by a bid guarantee.

At the request of the Bidder, we [name of bank] hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of [amount in words] [amount in figures] upon receipt by us of your first demand in writing accompanied by a written statement stating that the Bidder is in breach of its obligation(s) under the bid conditions, because the Bidder

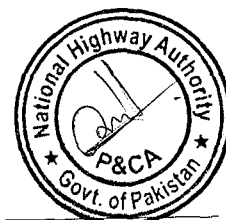
- (a) has withdrawn its Bid during the period of bid validity specified by the Bidder in the Letters of Technical and Price Bid; or
- (b) does not accept the correction of errors in accordance with the Instructions to Bidders (hereinafter "the ITB"); or
- (c) having been notified of the acceptance of its Bid by the Employer during the period of bid validity, (i) fails or refuses to execute the Contract Agreement, or (ii) fails or refuses to furnish the performance security, in accordance with the ITB, or (iii) fails or refuses to furnish a domestic preference security, if required.

This guarantee will expire (a) if the Bidder is the successful Bidder, upon our receipt of copies of the Contract Agreement signed by the Bidder and the Performance Security issued to you upon the instruction of the Bidder; or (b) if the Bidder is not the successful Bidder, upon the earlier of (i) our receipt of a copy of your notification to the Bidder of the name of the successful Bidder, or (ii) 28 days after the expiration of the Bidder's bid.

Consequently, any demand for payment under this guarantee must be received by us at the office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 758

..... [Authorized signature(s) and bank's seal (where appropriate)]



Bid-Securing Declaration

Date: *[insert date (as day, month and year)]*

Bid No.: *[insert number of bidding process]*

Alternative No.: *[insert identification No if this is a bid for an alternative]*

To: *[insert complete name of the employer]*

We, the undersigned, declare that:

We understand that, according to your conditions, Bids must be supported by a Bid-Securing Declaration.

We accept that we will automatically be suspended from being eligible for bidding in any contract with the Borrower for the period of time of *[insert number of years as indicated in ITB 19.2 of the BDS]*, starting on the date that we receive a notification from the Employer, if we are in breach of our obligation(s) under the bid conditions, because we

- (a) have withdrawn our Bid during the period of bid validity specified in the Letters of Technical and Price Bid; or
- (b) do not accept the correction of errors in accordance with the Instructions to Bidders (hereinafter "the ITB"); or
- (c) having been notified of the acceptance of our Bid by the Employer during the period of bid validity, (i) fail or refuse to execute the Contract, if required; or (ii) fail or refuse to furnish the Performance Security, in accordance with the ITB; or (iii) fail or refuse to furnish a domestic preference security, if required.

We understand this Bid-Securing Declaration shall expire if we are not the successful Bidder, upon the earlier of (i) our receipt of your notification to us of the name of the successful Bidder; or (ii) 28 days after the expiration of our Bid.

Signed: *[insert signature of person whose name and capacity are shown]*

In the capacity of *[insert legal capacity of person signing the Bid-Securing Declaration]*

Name: *[insert complete name of person signing the Bid-Securing Declaration]*

Duly authorized to sign the bid for and on behalf of *[insert complete name of the bidder]*

Dated on _____ day of _____, _____ *[insert date of signing]*

Corporate Seal *[where appropriate]*



AFFILIATE COMPANY GUARANTEE

Name of Contract/Contract No.: _____

Name and address of Employer: _____

(together with successors and assigns).

We have been informed that [name of Contractor] (hereinafter called the "Contractor") is submitting an offer for the above-referenced Contract in response to your invitation, and that the conditions of your invitation require its offer to be supported by an affiliate company guarantee.

In consideration of you, the Employer, awarding the Contract to the Contractor, we [name of affiliated company] irrevocably and unconditionally guarantee to you, as a primary obligation, that (i) throughout the duration of the Contract, we will make available to the Contractor our financial, technical capacity, expertise and resources required for the Contractor's satisfactory performance of the Contract; and (ii) we are fully committed, along with the Contractor, to ensuring a satisfactory performance of the Contract.

If the Contractor fails to so perform its obligations and liabilities and comply with the Contract, we will indemnify the Employer against and from all damages, losses and expenses (including legal fees and expenses) which arise from any such failure for which the Contractor is liable to the Employer under the Contract.

This guarantee shall come into full force and effect when the Contract comes into full force and effect. If the Contract does not come into full force and effect within a year of the date of this guarantee, or if you demonstrate that you do not intend to enter into the Contract with the Contractor, this guarantee shall be void and ineffective. This guarantee shall continue in full force and effect until all the Contractor's obligations and liabilities under the Contract have been discharged, when this guarantee shall expire and shall be returned to us, and our liability hereunder shall be discharged absolutely.

This guarantee shall apply and be supplemental to the Contract as amended or varied by the Employer and the Contractor from time to time. We hereby authorize them to agree on any such amendment or variation, the due performance of which and compliance with which by the Contractor are likewise guaranteed hereunder. Our obligations and liabilities under this guarantee shall not be discharged by any allowance of time or other indulgence whatsoever by the Employer to the Contractor, or by any variation or suspension of the works to be executed under the Contract, or by any amendments to the Contract or to the constitution of the Contractor or the Employer, or by any other matters, whether with or without our knowledge or consent.

This guarantee shall be governed by the law of the same country (or other jurisdiction) that governs the Contract and any dispute under this guarantee shall be finally settled under the [Rules or Arbitration provided in the Contract]. We confirm that the benefit of this guarantee may be assigned subject only to the provisions for assignment of the Contract.

Signed by:.....

[signature]

.....
[name]

.....
[position in parent/subsidiary company]

Signed by:.....

[signature]

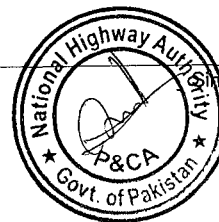
.....
[name]

.....
[position in parent/subsidiary company]

Date:.....

-- Note --

If permitted in accordance with ITB 32.2 of the BDS, the Bidder shall fill out the Affiliate Company Guarantee Form for each subsidiary, parent entity, affiliate, subcontractor, etc. that the Bidder submits for consideration of the Employer in determining its qualifications.



Technical Proposal

Personnel

Equipment

Site Organization

Method Statement

Mobilization Schedule

Construction Schedule

Other Documents in accordance with ITB 11.2(g) of Section 2-Bid Data Sheet, as under:

- (i) Quality Control Methods for Asphalt Work.
- (ii) Diversion of Traffic and Safety management plan.
- (iii) Environment Safety Plan.
- (iv) *COVID-19 Health and Safety Management Plan*

[Note:

- (i) *A health and safety management plan shall be submitted which takes into account COVID-19 related health and safety risks. The site-specific health and safety management plan (HS COVID-19 Plan) should be developed in accordance with the Pakistan's policy, legislation and regulatory requirements on COVID-19 prevention and control and/or in accordance with international good practice guidelines.]*

- (v) Colored photographs of project area (Not Mandatory)



Personnel

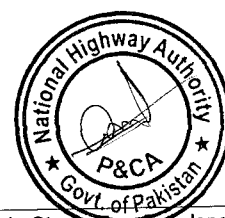
Form PER – 1: Proposed Personnel

Bidder should provide the details of the proposed personnel and their experience record in the relevant Information Forms 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
6.	Title of position*
	Name
etc.	Title of position*
	Name

-- Note --

* As listed in Section 6 (Employer's Requirements).



The Bidder shall provide all the information requested below. Use one form for each position.

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

[illegible]

Equipment

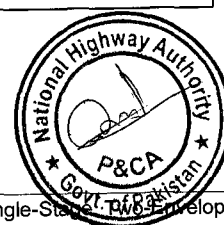
Form EQU: Equipment

The Bidder shall provide adequate information and details to demonstrate clearly that it has the capability to meet the equipment requirements indicated in Section 6 (Employer's Requirements), using the Forms below. A separate Form shall be prepared for each item of equipment listed, or for alternative equipment proposed by the Bidder.

Item of Equipment		
Equipment Information	Name of manufacturer	Model and power rating
	Capacity	Year of manufacture
Current Status	Current location	
	Details of current commitments	
Source	Indicate source of the equipment <input type="checkbox"/> Owned <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	

Omit the following information for equipment owned by the Bidder.

Owner	Name of owner	
	Address of owner	
	Telephone	Contact name and title
	Fax	Telex
Agreements	Details of rental / lease / manufacture agreements specific to the project	



Site Organization

[Note: *Evaluation of the Bidder's Site Organization will include an assessment of the Bidder's capacity to mobilize key personnel for the Contract consistent with its proposal regarding work methods, scheduling, and material sourcing in sufficient detail and fully in accordance with the requirements stipulated in Section 6 (Employer's Requirements).]*

Method Statement

The bidder shall provide detailed Method Statement of executing the project.

- In case of a JV, the Method Statement shall include clear delineation of activities / role to be performed by each JV partner consistent with the indicated JV share in the JV Agreement.

Mobilization Schedule

The bidder shall provide graphical (Bar Chart) presentation of its mobilization schedule, harmonized with the Construction Schedule to complete the Works in the stipulated time under the contract (refer Part A- Contract Data under Section-8, Particular Conditions of Contracts).

Construction Schedule

[Note: *Evaluation of the Bidder's Construction Schedule will include an assessment of the Bidder's technical capacity to mobilize equipment for the Contract consistent with its proposal regarding work methods, scheduling, and material sourcing in sufficient detail and fully in accordance with the requirements stipulated in Section 6 (Employer's Requirements).*

Bidders must provide their Construction Schedule on primavera / MS project or equivalent by allocating the equipment and other resources, critical activities must be identified.]

Other Documents

To be provided as per detail given on Page 4-10.



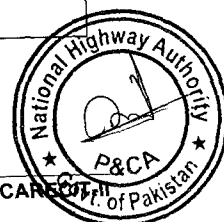
Bidders Qualification

To establish its qualifications to perform the contract in accordance with Section 3 (Evaluation and Qualification Criteria) the Bidder shall provide the following information requested in the corresponding Information Sheets.



Form ELI - 1: Bidder's Information Sheet

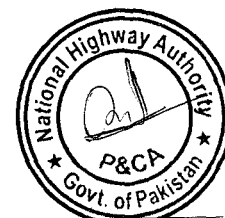
Bidder's Information	
Bidder's legal name	
In case of a Joint Venture, legal name of each partner	
Bidder's country of constitution	
Bidder's year of constitution	
Bidder's legal address in country of constitution	
Bidder's authorized representative (name, address, telephone number(s), fax number(s), e- mail address)	
<p>Attached are copies of the following documents.</p> <p><input type="checkbox"/> 1. In case of a single entity, articles of incorporation or constitution of the legal entity named above, in accordance with ITB 4.1 and ITB 4.2.</p> <p><input type="checkbox"/> 2. Authorization to represent the firm or Joint Venture named above, in accordance with ITB 20.2.</p> <p><input type="checkbox"/> 3. In case of a Joint Venture, a letter of intent to form a Joint Venture or Joint Venture agreement, in accordance with ITB 4.1.</p> <p><input type="checkbox"/> 4. In case of a government-owned enterprise, documents establishing legal and financial autonomy and compliance with commercial law in accordance with ITB 4.5.</p> <p><input type="checkbox"/> 5. Registration with Pakistan Engineering Council (PEC), where required, in accordance with criterion 2.1.6 for eligibility under Section 3, Evaluation and Qualification Criteria.</p>	



Form ELI - 2: Joint Venture Information Sheet

Each Partner of the Joint Venture and Specialist Subcontractor must fill out this form separately.

Joint Venture / Specialist Subcontractor Information	
Bidder's legal name	
Joint Venture Partner's or Specialist Subcontractor's legal name	
Joint Venture Partner's or Specialist Subcontractor's country of constitution	
Joint Venture Partner's or Specialist Subcontractor's year of constitution	
Joint Venture Partner's or Specialist Subcontractor's legal address in country of constitution	
Joint Venture Partner's or Specialist Subcontractor's authorized representative information (name, address, telephone number(s), fax number(s), e-mail address)	
Attached are copies of the following documents. <ul style="list-style-type: none"> <input type="checkbox"/> 1. Articles of incorporation or constitution of the legal entity named above, in accordance with ITB 4.1 and ITB 4.2. <input type="checkbox"/> 2. Authorization to represent the firm named above, in accordance with ITB 20.2. <input type="checkbox"/> 3. In the case of a government-owned enterprise, documents establishing legal and financial autonomy and compliance with commercial law, in accordance with ITB 4.5. <input type="checkbox"/> 4. Registration with Pakistan Engineering Council (PEC), where required, in accordance with criterion 2.1.6 for eligibility under Section 3, Evaluation and Qualification Criteria. 	



Form CON - 1: Historical Contract Nonperformance

Each Bidder must fill out this form in accordance with Criteria 2.2.1 and 2.2.3 of Section 3 (Evaluation and Qualification Criteria) to describe any history of nonperforming contracts and pending litigation or arbitration formally commenced against it.

In case of a Joint Venture, each Joint Venture Partner must fill out this form separately and provide the Joint Venture Partner's name:

Joint Venture Partner: _____

Table 1: History of Nonperforming Contracts

Choose one of the following:

- ☐ No nonperforming contracts.
- ☐ Below is a description of nonperforming contracts involving the Bidder (or each Joint Venture Partner if Bidder is a Joint Venture).

Year	Description	Amount of Nonperformed Portion of Contract (\$ equivalent)	Total Contract Amount (\$ equivalent)
[insert year]	Contract Identification: [indicate complete contract name/ number, and any other identification] Name of Employer: [insert full name] Address of Employer: [insert street/city/country] Reason(s) for nonperformance: [indicate main reason(s)]	[insert amount]	[insert amount]

Table 2: Pending Litigation and Arbitration

Choose one of the following:

- ☐ No pending litigation and Arbitration.
- ☐ Below is a description of all pending litigation and Arbitration involving the Bidder (or each Joint Venture Partner if Bidder is a Joint Venture).

Year	Matter in Dispute	Value of Pending Claim in \$ Equivalent	Value of Pending Claim as a Percentage of Net Worth
[insert year]	Contract Identification: [indicate complete contract name/ number, and any other identification] Name of Employer: [insert full name] Address of Employer: [insert street/city/country] Matter of Dispute: [indicate full description of dispute] Party who initiated the dispute: [indicate "Employer" or "Contractor"] Status: [indicate status of dispute]	[insert amount]	[insert amount]

Note -

Table 2 of this form shall only be included if Criterion 2.2.3 of Section 3 (Evaluation and Qualification Criteria) is applicable.



Form FIN - 1: Historical Financial Performance

Each Bidder must fill out this form.

In case of a Joint Venture, each Joint Venture Partner must fill out this form separately and provide the Joint Venture Partner's name:

Joint Venture Partner: _____

Financial Data for Previous three (03) Years [\$ Equivalent]		
Year 1:	Year 2:	Year 3:

Information from Balance Sheet

Total Assets (TA)			
Total Liabilities (TL)			
Net Worth = TA – TL			
Current Assets (CA)			
Current Liabilities (CL)			
Working Capital = CA – CL			

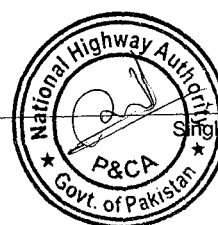
Most Recent Working Capital

To be obtained for most recent year and carried forward to FIN - 3 Line 1; in case of Joint Ventures, to the corresponding Joint Venture Partner's FIN – 3.

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:
- Unless otherwise required by Section 3 of the Bidding Document, all such documents reflect the financial situation of the legal entity or entities comprising the Bidder and not the Bidder's parent companies, subsidiaries, or affiliates.
 - Historical financial statements must be audited by a certified accountant.
 - Historical financial statements must be complete, including all notes to the financial statements.
 - Historical financial statements must correspond to accounting periods already completed and audited (no statements for partial periods shall be requested or accepted).



Form FIN - 2: Average Annual Construction Turnover

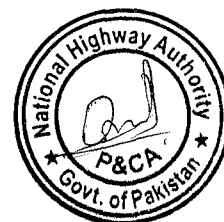
Each Bidder must fill out this form.

The information supplied should be the Annual Construction Turnover of the Bidder or each Partner of a Joint Venture in terms of the amounts billed to clients for each year for work in progress or completed, converted to US dollars at the rate of exchange at the end of the period reported.

In case of a Joint Venture, each Joint Venture Partner must fill out this form separately and provide the Joint Venture Partner's name:

Joint Venture Partner: _____

Annual Turnover Data for the Last three (03) Years (Construction only)			
Year	Amount Currency	Exchange Rate	\$ Equivalent
Average Annual Construction Turnover			



Form FIN – 3: Availability of Financial Resources

Bidders must demonstrate sufficient financial resources, usually comprising of Working Capital supplemented by credit line statements or overdraft facilities and others to meet the Bidder's financial requirements for

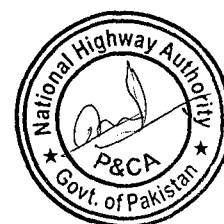
- (a) its current contract commitments, and
- (b) the subject contract.

In case of a Joint Venture, each Joint Venture Partner must fill out this form separately and provide the Joint Venture Partner's name:

Joint Venture Partner: _____

Financial Resources		
No.	Source of financing	Amount (\$ equivalent)
1	Working Capital (to be taken from FIN - 1)	
2	Credit Line ^a	
3	Other Financial Resources	
Total Available Financial Resources		

^a To be substantiated by a letter from the bank issuing the line of credit. Line of credited (specific to this project) confirmed by issuing bank within last two months (prior to submission of the bid).



Form FIN- 4: Financial Requirements for Current Contract Commitments

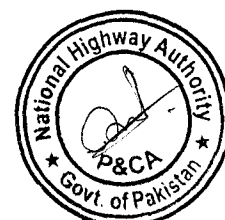
Bidders (or each Joint Venture Partner) should provide information on their current commitments on all contracts that have been awarded, or for which a letter of intent or acceptance has been received, or for contracts approaching completion, but for which an unqualified, full completion certificate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

In case of a Joint Venture, each Joint Venture Partner must fill out this form separately and provide the Joint Venture Partner's name:

Joint Venture Partner: _____

Current Contract Commitments						
No.	Name of Contract	Employer's Contact (Address, Tel, Fax)	Contract Completion Date	Outstanding Contract Value in \$ (X) ^a	Remaining Contract Period in months (Y) ^b	Monthly Financial Resources Requirement in \$ (X / Y)
1						
2						
3						
4						
Total Monthly Financial Requirement for Current Contract Commitments						\$

- ^a Remaining outstanding contract values to be calculated from 28 days prior to the bid submission deadline (\$ equivalent based on the foreign exchange rate as of the same date).
- ^b Remaining contract period to be calculated from 28 days prior to bid submission deadline.



Form FIN - 5: Self-Assessment Tool for Bidder's Compliance to Financial Resources (Criterion 2.3.3 of Section 3)

This form requires the same information submitted in Forms FIN - 3 and FIN - 4. All conditions of "Available Financial Resources Net of CCC \geq Requirement for the Subject Contract" must be satisfied to qualify.

Form FIN - 5A: For Single Entities

For Single Entities: (A)	Total Available Financial Resources from FIN - 3 (B)	Total Monthly Financial Requirement for Current Contract Commitments (CCC) from FIN - 4 (C)	Available Financial Resources Net of CCC $D = (B - C)$	Requirement for the Subject Contract (E)	Results: Yes or No [D must be greater than or equal to E] (F)
_____ (Name of Bidder)				

Form FIN - 5B: For Joint Ventures

For Joint Ventures: (A)	Total Available Financial Resources from FIN - 3 (B)	Total Monthly Financial Requirement for Current Contract Commitments (CCC) from FIN - 4 (C)	Available Financial Resources Net of CCC $D = (B - C)$	Requirement for the Subject Contract (E)	Results: Yes or No [D must be greater than or equal to E] (F)
One Partner:					
_____ (Name of Partner)				.....
Each Partner:					
_____ (Name of Partner 1)				.....
_____ (Name of Partner 2)				.....
_____ (Name of Partner 3)				.....
All Partners combined	$\Sigma D =$ Sum of available financial resources net of current contract commitments for all Partners		$\Sigma D =$ _____	.....

Form FIN - 5 is made available for use by the bidder as a self-assessment tool, and by the employer as an evaluation work sheet, to determine compliance with the financial resources requirement as stated in 2.3.3. Failure to submit Form FIN - 5 by the Bidder shall not lead to bid rejection.



Form EXP – 1: Contracts of Similar Size and Nature

Fill out one (1) form per contract.

The exchange rate to be used to calculate the value of the contract for conversion to a specific currency shall be the selling rate of the borrower's national bank on the date of the contract.

Contract of Similar Size and Nature		
Contract No of	Contract Identification	
Award Date		Completion Date
Total Contract Amount	\$	
If Partner in a Joint Venture or Subcontractor, specify participation of total contract amount	Percent of Total	Amount
Employer's name Address Telephone number Fax number E-mail		
Description of the Similarity in Accordance with Criterion 2.4.1 of Section 3 (Evaluation and Qualification Criteria)		
As described in Section 6, Employer's Requirement	As of the Contract No. of indicated above [to be filled by the Bidder and supported with documentary evidence]	
The similarity of the Bidder's participation shall be based on : 1. the physical size 2. nature of works 3. complexity, methods 4. technology or 5. other characteristics		



Form EXP - 2: Construction Experience in Key Activities

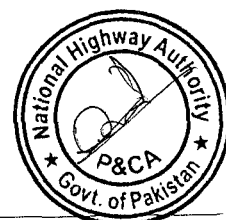
Fill out one (1) form per contract.

Each Bidder must fill out this form.

If complied by Specialist Subcontractor, each Specialist Subcontractor must fill out this form and provide the Specialist Subcontractor's name:

Specialist Subcontractor: _____

Contract with Similar Key Activities		
Contract No of	Contract Identification	
Award Date	Completion Date	
Total Contract Amount	\$	
If Partner in a Joint Venture or Subcontractor, specify participation of total contract amount	Percent of Total	Amount \$
Employer's name Address Telephone number Fax number E-mail		
Description of the Key Activities in Accordance with Criterion 2.4.2 of Section 3 (Evaluation and Qualification Criteria)		
Construction experience is required in the following key activities:		



Schedules

Schedule of Payment Currencies

**For Construction of Additional Carriageway from Shikarpur – Rajanpur of N-55 (221.95 Km)
Lot – 1: Shikarpur – Kandhkot Section from Km 43+400 to Km 105+820 (62.42 Km)**

Separate tables may be required if the various sections of the Works (or of the Bill of Quantities) will have substantially different foreign and local currency requirements. In such a case, the Employer should prepare separate tables for each Section of the Works.

	A	B	C	D
Name of Payment Currency	Amount of Currency	Rate of Exchange to Local Currency	Local Currency Equivalent $C = A \times B$	Percentage of Net Bid Price (NBP) $\frac{100 \times C}{NBP}$
Local Currency		1.00		
Foreign Currency #1				
Foreign Currency #2				
Foreign Currency #3				
Net Bid Price				100.00
Provisional Sums Expressed in Local Currency		1.00		
BID PRICE				

- Note -

- The rates of exchange shall be the selling rates 28 days prior to the deadline for submission of bids published by the source specified in BDS 15.
- The bidder is required to substantiate and rationalize the justification of the Foreign Currency Component.
- The Foreign Currency Component shall be payable on actual expenditures.
- Actual expenditures and receipts may include but not limited to:
 - (a) For Equipment and Spare Parts: Lading / L. C. Papers, sale-purchase documents. Evidence of mobilization of equipment at project site etc.
 - (b) For Staff: The master payroll, evidence of presence of staff at project site. Payment / withdrawal of salary i.e. cross-check-bank account details.

Schedules

Schedule of Payment Currencies

**For Construction of Additional Carriageway from Shikarpur – Rajanpur of N-55 (221.95 Km)
Lot – 2: Kandhkot – Kashmore Section from Km 105+820 to Km 164+600 (58.78 Km)**

Separate tables may be required if the various sections of the Works (or of the Bill of Quantities) will have substantially different foreign and local currency requirements. In such a case, the Employer should prepare separate tables for each Section of the Works.

	A	B	C	D
Name of Payment Currency	Amount of Currency	Rate of Exchange to Local Currency	Local Currency Equivalent $C = A \times B$	Percentage of Net Bid Price (NBP) $\frac{100 \times C}{NBP}$
Local Currency		1.00		
Foreign Currency #1				
Foreign Currency #2				
Foreign Currency #3				
Net Bid Price				100.00
Provisional Sums Expressed in Local Currency				
BID PRICE				

- Note -

- The rates of exchange shall be the selling rates 28 days prior to the deadline for submission of bids published by the source specified in BDS 15.
- The bidder is required to substantiate and rationalize the justification of the Foreign Currency Component.
- The Foreign Currency Component shall be payable on actual expenditures.
- Actual expenditures and receipts may include but not limited to:
 - (a) For Equipment and Spare Parts: Lading / L. C. Papers, sale-purchase documents. Evidence of mobilization of equipment at project site etc.
 - (b) For Staff: The master payroll, evidence of presence of staff at project site. Payment / withdrawal of salary i.e. cross-check-bank account details.



Schedules

Schedule of Payment Currencies

**For Construction of Additional Carriageway from Shikarpur – Rajanpur of N-55 (221.95 Km)
Lot – 3: Kashmore – Rojhan Section from Km 164+600 to Km 213+500 (48.90 Km)**

Separate tables may be required if the various sections of the Works (or of the Bill of Quantities) will have substantially different foreign and local currency requirements. In such a case, the Employer should prepare separate tables for each Section of the Works.

	A	B	C	D
Name of Payment Currency	Amount of Currency	Rate of Exchange to Local Currency	Local Currency Equivalent $C = A \times B$	Percentage of Net Bid Price (NBP) $\frac{100 \times C}{NBP}$
Local Currency		1.00		
Foreign Currency #1				
Foreign Currency #2				
Foreign Currency #3				
Net Bid Price				100.00
Provisional Sums Expressed in Local Currency		1.00		
BID PRICE				

Note

- The rates of exchange shall be the selling rates 28 days prior to the deadline for submission of bids published by the source specified in BDS 15.
- The bidder is required to substantiate and rationalize the justification of the Foreign Currency Component.
- The Foreign Currency Component shall be payable on actual expenditures.
- Actual expenditures and receipts may include but not limited to:
 - (a) For Equipment and Spare Parts: Lading / L. C. Papers, sale-purchase documents. Evidence of mobilization of equipment at project site etc.
 - (b) For Staff: The master payroll, evidence of presence of staff at project site. Payment / withdrawal of salary i.e. cross-check-bank account details.



Schedules

Schedule of Payment Currencies

**For Construction of Additional Carriageway from Shikarpur – Rajanpur of N-55 (221.95 Km)
Lot – 4: Rojhan – Rajanpur Section from Km 213+500 to Km 265+350 (51.85 Km)**

Separate tables may be required if the various sections of the Works (or of the Bill of Quantities) will have substantially different foreign and local currency requirements. In such a case, the Employer should prepare separate tables for each Section of the Works.

	A	B	C	D
Name of Payment Currency	Amount of Currency	Rate of Exchange to Local Currency	Local Currency Equivalent $C = A \times B$	Percentage of Net Bid Price (NBP) $\frac{100 \times C}{NBP}$
Local Currency		1.00		
Foreign Currency #1				
Foreign Currency #2				
Foreign Currency #3				
Net Bid Price				100.00
Provisional Sums Expressed in Local Currency		1.00		
BID PRICE				

Note -

- The rates of exchange shall be the selling rates 28 days prior to the deadline for submission of bids published by the source specified in BDS 15.
- The bidder is required to substantiate and rationalize the justification of the Foreign Currency Component.
- The Foreign Currency Component shall be payable on actual expenditures.
- Actual expenditures and receipts may include but not limited to:
 - (a) For Equipment and Spare Parts: Lading / L. C. Papers, sale-purchase documents. Evidence of mobilization of equipment at project site etc.
 - (b) For Staff: The master payroll, evidence of presence of staff at project site. Payment / withdrawal of salary i.e. cross-check-bank account details.



Tables of Adjustment Data

Table A - Local Currency

**For Construction of Additional Carriageway from Shikarpur – Rajanpur of N-55 (221.95 Km)
Lot – 1: Shikarpur – Kandhkot Section from Km 43+400 to Km 105+820 (62.42 Km)**

Sr. No.	Description	Unit	Weightages	Applicable Index
1	2	3	4	5
(i)	Fixed Portion	-	0.52	-
(ii)	High Speed Diesel [for all types of fuel]	Liter	0.15	Monthly Statistical Bulletin, Pakistan Bureau of Statistics / Pakistan State Oil
(iii)	Labour Unskilled	Day (Per Day)	0.05	Monthly Statistical Bulletin, Pakistan Bureau of Statistics GOP (District: Dera Ghazi Khan)
(iv)	Cement (Ordinary Portland Cement) [for all types of Cement]	Per Bag	0.05	Monthly Statistical Bulletin, Pakistan Bureau of Statistics GOP (District: Dera Ghazi Khan)
(v)	Iron Bar (M.S. Bar) 1/2" [for all types of Steel elements]	Metric Ton	0.06	Monthly Statistical Bulletin, Pakistan Bureau of Statistics GOP (District: Dera Ghazi Khan)
(vi)	Asphalt Cement in Bulk Penetration Grade 60/70 (in bulk)	Metric Ton	0.17	EX (NRL), Karachi.
	Total		1.000	

Note:

1. Base prices of Specified Materials shall be as of actually prevailing on the base date notified by the Engineer with the approval of the Employer after the award of works. As per GCC 1.1.3.1, "Base Date" means the date 28 days prior to the deadline for bid submission".
2. The basic prices are meant to be ex-factory prices and inclusive of all kinds of taxes and duties that can be levied at source.
3. Adjustment of increase / decrease shall only be admissible for the materials (elements representing relevant category) listed above.
4. Value of work done for escalation purpose shall be value of permanent works (Excluding Bill for General Items & Provisional Sums).
5. All Amounts in Pak Rupees only.



Tables of Adjustment Data**Table A - Local Currency**

**For Construction of Additional Carriageway from Shikarpur – Rajanpur of N-55 (221.95 Km)
Lot – 2: Kandhkot – Kashmore Section from Km 105+820 to Km 164+600 (58.78 Km)**

Sr. No.	Description	Unit	Weightages	Applicable Index
1	2	3	4	5
(i)	Fixed Portion	-	0.57	-
(ii)	High Speed Diesel [for all types of fuel]	Liter	0.14	Monthly Statistical Bulletin, Pakistan Bureau of Statistics / Pakistan State Oil
(iii)	Labour Unskilled	Day (Per Day)	0.05	Monthly Statistical Bulletin, Pakistan Bureau of Statistics GOP (District: Dera Ghazi Khan)
(iv)	Cement (Ordinary Portland Cement) [for all types of Cement]	Per bag	0.05	Monthly Statistical Bulletin, Pakistan Bureau of Statistics GOP (District: Dera Ghazi Khan)
(v)	Iron Bar (M.S. Bar) 1/2" [for all types of Steel elements]	Metric Ton	0.06	Monthly Statistical Bulletin, Pakistan Bureau of Statistics GOP (District: Dera Ghazi Khan)
(vi)	Asphalt Cement in Bulk Penetration Grade 60/70 (in bulk)	Metric Ton	0.13	EX (NRL), Karachi.
	Total		1.000	

Note:

1. Base prices of Specified Materials shall be as of actually prevailing on the base date notified by the Engineer with the approval of the Employer after the award of works. As per GCC 1.1.3.1, "Base Date" means the date 28 days prior to the deadline for bid submission".
2. The basic prices are meant to be ex-factory prices and inclusive of all kinds of taxes and duties that can be levied at source.
3. Adjustment of increase / decrease shall only be admissible for the materials (elements representing relevant category) listed above.
4. Value of work done for escalation purpose shall be value of permanent works (Excluding Bill for General Items & Provisional Sums).
5. All Amounts in Pak Rupees only.



Tables of Adjustment Data

Table A - Local Currency

**For Construction of Additional Carriageway from Shikarpur – Rajanpur of N-55 (221.95 Km)
Lot – 3: Kashmore – Rojhan Section from Km 164+600 to Km 213+500 (48.90 Km)**

Sr. No.	Description	Unit	Weightages	Applicable Index
1	2	3	4	5
(i)	Fixed Portion	-	0.55	-
(ii)	High Speed Diesel [for all types of fuel]	Liter	0.12	Monthly Statistical Bulletin, Pakistan Bureau of Statistics / Pakistan State Oil
(iii)	Labour Unskilled	Day (Per Day)	0.05	Monthly Statistical Bulletin, Pakistan Bureau of Statistics GOP (District: Dera Ghazi Khan)
(iv)	Cement (Ordinary Portland Cement) [for all types of Cement]	Per Bag	0.05	Monthly Statistical Bulletin, Pakistan Bureau of Statistics GOP (District: Dera Ghazi Khan)
(v)	Iron Bar (M.S. Bar) 1/2" [for all types of Steel elements]	Metric Ton	0.08	Monthly Statistical Bulletin, Pakistan Bureau of Statistics GOP (District: Dera Ghazi Khan)
(vi)	Asphalt Cement in Bulk Penetration Grade 60/70 (in bulk)	Metric Ton	0.15	EX (NRL), Karachi.
	Total		1.000	

Note:

1. Base prices of Specified Materials shall be as of actually prevailing on the base date notified by the Engineer with the approval of the Employer after the award of works. As per GCC 1.1.3.1, "Base Date" means the date 28 days prior to the deadline for bid submission".
2. The basic prices are meant to be ex-factory prices and inclusive of all kinds of taxes and duties that can be levied at source.
3. Adjustment of increase / decrease shall only be admissible for the materials (elements representing relevant category) listed above.
4. Value of work done for escalation purpose shall be value of permanent works (Excluding Bill for General Items & Provisional Sums).
5. All Amounts in Pak Rupees only.



Tables of Adjustment Data

Table A - Local Currency

**For Construction of Additional Carriageway from Shikarpur – Rajanpur of N-55 (221.95 Km)
Lot – 4: Rojhan – Rajanpur Section from Km 213+500 to Km 265+350 (51.85 Km)**

Sr. No.	Description	Unit	Weightages	Applicable Index
1	2	3	4	5
(i)	Fixed Portion	-	0.54	-
(ii)	High Speed Diesel	Liter	0.12	Monthly Statistical Bulletin, Pakistan Bureau of Statistics / Pakistan State Oil
(iii)	Labour Unskilled	Day (Per Day)	0.05	Monthly Statistical Bulletin, Pakistan Bureau of Statistics GOP (District: Dera Ghazi Khan)
(iv)	Cement (Ordinary Portland Cement) [for all types of Cement]	Per Bag	0.05	Monthly Statistical Bulletin, Pakistan Bureau of Statistics GOP (District: Dera Ghazi Khan)
(v)	Iron Bar (M.S. Bar) 1/2" [for all types of Steel elements]	Metric Ton	0.07	Monthly Statistical Bulletin, Pakistan Bureau of Statistics GOP (District: Dera Ghazi Khan)
(vi)	Asphalt Cement in Bulk Penetration Grade 60/70 (in bulk)	Metric Ton	0.17	EX (NRL), Karachi
	Total		1.000	

Note:

1. Base prices of Specified Materials shall be as of actually prevailing on the base date notified by the Engineer with the approval of the Employer after the award of works. As per GCC 1.1.3.1, "Base Date" means the date 28 days prior to the deadline for bid submission".
2. The basic prices are meant to be ex-factory prices and inclusive of all kinds of taxes and duties that can be levied at source.
3. Adjustment of increase / decrease shall only be admissible for the materials (elements representing relevant category) listed above.
4. Value of work done for escalation purpose shall be value of permanent works (Excluding Bill for General Items & Provisional Sums).
5. All Amounts in Pak Rupees only.



Table B - Foreign Currency

[the bidder must insert number, location and chainage of one or the lots (as per ITB 1.1 under BDS) for which this Bid is being submitted]

Name of Currency:

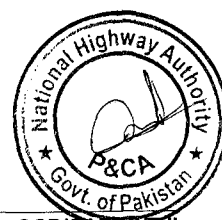
Insert name of currency. If the bidder wishes to quote in more than one foreign currency, but in no case more than three, this table should be repeated for each foreign currency.

To be entered by the bidder						
Index Code	Index Description	Source of Index	Base Value and Date	Bidder's Currency in Type/Amount	Equivalent in FC1	Bidder's Proposed Weighting
	Nonadjustable	—	—	—		A: 0.15 B: _____ C: _____ D: _____ E: _____
Total						1.00

- Note -

As per GCC 1.1.3.1, "Base Date" means the date 28 days prior to the latest date for submission of the bid.

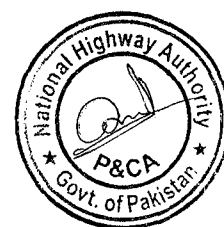
Tables of Adjustment Data shall only be included if prices are to be quoted as adjustable prices in accordance with ITB 14.5.



List of Materials for Payment (Reference GCC/PCC 14.5)

Sr. No.	Type of Material	Limit for Payment*			
		Lot - 1	Lot - 2	Lot - 3	Lot - 4
1	Steel Reinforcement (Grade 60) (Approximately four (04) times of average monthly consumption)	PKR 100 Million	PKR 130 Million	PKR 115 Million	PKR 115 Million
2	Asphalt Cement (Grades 60-70 and 80-100) only if stored in sealed drums (Approximately three (03) times of average monthly consumption)	PKR 350 Million	PKR 400 Million	PKR 200 Million	PKR 200 Million
3	Cement (OPC) (Approximately two (02) times of average monthly consumption)	PKR 100 Million	PKR 130 Million	PKR 115 Million	PKR 115 Million

* prescribes upper limit for net amount of payment, at any time, which shall not exceed in any certification by the Engineer against Contractor's Statement in accordance with GCC 14.3(e); the Engineer shall, however, make sure that the quantities stored and accepted for payments do not exceed their consumption requirements for execution and completion of Works particularly when the Works are in advanced stage / nearing completion.



Bill of Quantities

A. Preamble

1. The Bill of Quantities shall be read in conjunction with the Conditions of Contract, Specifications and Drawings.
2. The quantities given in the Bill 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 Bill of Quantities, where applicable, and otherwise at such rates and prices as the Engineer may fix as per the Contract.
3. The rates and prices entered in the priced Bill of Quantities shall, except insofar as it is otherwise provided under the Contract include all costs of Contractor's plant, labour, 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.
4. A rate or price shall be entered against each item in the priced Bill 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 Bill of Quantities.
5. The whole cost of complying with the provisions of the Contract shall be included in the items provided in the priced Bill 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.
6. General directions and description of work and materials are not necessarily repeated nor summarised in the Bill of Quantities. References to the relevant sections of the Bidding Documents shall be made before entering prices against each item in the priced Bill of Quantities.
7. Provisional sums included and so designated in the Bill of Quantities shall be expended in whole or in part at the direction and discretion of the Engineer and the Employer in accordance with Conditions of Contract.

B. Work Items

1. The Bill of Quantities mainly contains the following Bills:
 - 1 Earth Work
 - 2 Sub-Base and Base Course
 - 3 Surfacing and Pavement
 - 4 Structures
 - 5 Drainage and Erosion Works
 - 6 Ancillary Works
 - 6a Ancillary Works (Toll Plaza & Allied Works)
 - 7 General Items

Summary of Bill of Quantities
2. Bidders shall Price the Bill of Quantities in Pakistani Rupees Only





Lot-1

**GOVERNMENT OF PAKISTAN
MINISTRY OF COMMUNICATIONS
NATIONAL HIGHWAY AUTHORITY**

**INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD
PROJECT**

SHIKARPUR ~ KANDHKOT SECTION

KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

BILL OF QUANTITIES

SEPTEMBER 2020



**NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.
HIGHWAYS & TRANSPORTATION ENGINEERING SECTION,
ATTATURK AVENUE, SECTOR G-5/2, ISLAMABAD**

Lot – 1: Shikarpur – Kandhkot Section

From Km 43+400 to Km 105+820 (62.42 Km)

INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

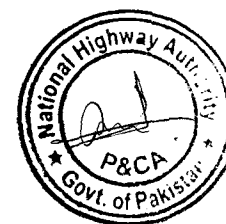
lot-1:

SHIKARPUR ~ KANDHKOT SECTION
KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

BILL OF QUANTITIES

ABSTRACT OF COST

Bill No.	Description	Amount (Rs.)
1	Earth Work	
2	Sub Base & Base	
3	Surface Course & Pavement	
4a	Structures (Box Culverts)	
4b	Structures (Retaining Walls & Toe Walls)	
4c	Structures (Bridges Including Soil Investigation)	
4d	Structures (Underpasses)	
5	Drainage And Erosion Works	
6	Ancillary Works	
6a	Ancillary Works (Toll Plaza & Allied Works)	
7	General Items	
TOTAL AMOUNT (BILL NO. 1 - 7)		



Rupees in Words: _____



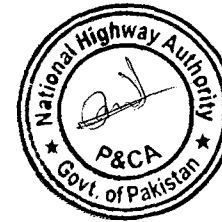
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INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

SHIKARPUR ~ KANDHKOT SECTION
KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

BILL OF QUANTITIES

BILL OF QUANTITIES						
Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
BILL NO. 01 EARTH WORKS						
101	Clearing and Grubbing	SM	1,460,807			
102a	Removal of Trees 150-300 mm Girth	Each	100			
102b	Removal of Trees 301-600 mm Girth	Each	100			
102c	Removal of Trees 601mm or over Girth	Each	50			
104	Compaction of Natural Ground	SM	1,460,807			
106a	Excavate Unsuitable Common Material	CM	24,000			
108c	Formation of Embankment from borrow excavation in common material	CM	1,422,981			
108d	Formation of Embankment from Structural Excavation in common material	CM	17,026			
109a	Subgrade Preparation in Earthcut	SM	13,200			
SP-117a	Formation of granular material platform	CM	11,880			
SP-117b	Formation of Embankment from Borrow Rock Material	CM	199,760			
SP-118	Filling of Center Median With Sweet Soil	CM	5,940			
110	Improved Subgrade (CBR > 25)	CM	265,519			
TOTAL (BILL NO. 01)						



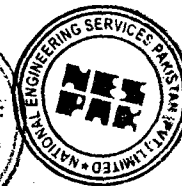
INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

SHIKARPUR ~ KANDHKOT SECTION

KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

BILL OF QUANTITIES

BILL OF QUANTITIES						
Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
BILL NO. 02 SUB-BASE & BASE						
201	Granular Subbase	CM	295,775			
202	Aggregate Base (Laid With Paver)	CM	256,969			
203b	Asphaltic Base Course Plant mix (Class B)	CM	137,776			
209a	Breaking of Existing Road Pavement Structure	CM	66,049			
209b	Scarification of Existing Road Pavement	SM	60,375			
				TOTAL (BILL NO. 02)		



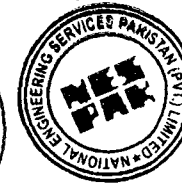
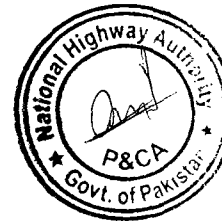
INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

SHIKARPUR ~ KANDHKOT SECTION

KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

BILL OF QUANTITIES

BILL OF QUANTITIES						
Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
BILL NO. 03 SURFACING & PAVEMENTS						
302a	Cut back Asphalt for Bituminous Prime Coat	SM	907,959.00			
303a	Cut back Asphalt for Bituminous Tack Coat	SM	1,722,203.70			
304c	Triple Surface Treatment	SM	329,679.00			
305a	Asphaltic Concrete for Wearing Course (Class A)	CM	45,193.16			
TOTAL (BILL NO. 03)						



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

SHIKARPUR - KANDHKOT SECTION

KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
Bill No 4a	Structure (Box Culverts)					
107a	Structural Excavation in Common Material	CM	5,016.10			
107d	Granular Backfill	CM	978.72			
107e	Common Backfill	CM	1,468.08			
401 a2i	Concrete Class A2 (Underground)	CM	60.81			
401a2ii	Concrete Class A2 (On ground)	CM	2,782.56			
401 a3ii	Concrete Class A3 (On ground)	CM	1,041.81			
401 a3iii	Concrete Class A3 (Elevated)	CM	2,364.75			
401f	Lean Concrete	CM	1,140.20			
SS-1	Extra Over for Providing Sulphate Resistant Cement in Concrete Works of specified Class:					
	for Concrete Class A 2	CM	2,843.37			
	for Concrete Class A 3	CM	1,041.81			
	for Lean Concrete	CM	1,140.20			
404b	Reinforcement as per AASHTO M-31 Grade-60	Ton	980.79			
406a	Premoulded Joint Filler 25mm Thick with Bitumastic Joint Seal	SM	397.93			
406dii	PVC Water Stop 9" Size	M	1,037.30			
509d	Grouted Rip Rap Class A	CM	207.51			
509 b	Riprap Class B	CM	1,013.86			
509 h	Filter Layer of Granular Material	CM	103.76			
SP-505	Cleaning & Minor Repair of Existing Structure (Culverts)	Each	62.00			
TOTAL (BILL NO. 4a)						



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

SHIKARPUR ~ KANDHKOT SECTION

KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
Bill No 4b	Structure (Retaining Walls & Toe Walls)					
107a	Structural Excavation in Common Material	CM	17,770.50			
401f	Lean Concrete	CM	8,096.00			
401b	Concrete Class B	CM	774.50			
401h	Plum (Cyclopean / Rubble) Concrete (2:1 Conc. Stone Ratio)	CM	73,510.25			
SS-1	Extra Over for Providing Sulphate Resistant Cement in Concrete Works of specified Class:					
	for Plum Concrete	CM	73,510.25			
	for Concrete Class B	CM	774.50			
	for Lean Concrete	CM	8,096.00			
TOTAL (BILL NO. 4b)						



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

SHIKARPUR - KANDHKOT SECTION
KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
Bill No 4c	Structure (Bridges)					
107a	Structural Excavation in Common Material	CM	1,535.68			
107d	Granular Backfill	CM	1,535.68			
107e	Common Backfill	CM	1,535.68			
401 a2ii	Concrete Class 'A2' (ON GROUND) Approach Slab, Barrier	CM	811.41			
401 a3iii	Concrete Class 'A3' (ELEVATED) Pier, Transom, Deck Slab, Diaphragm, Coping, Beam Seat, Back wall & Wing Walls	CM	4,549.70			
401 a3i	Concrete Class 'A3' (UNDERGROUND) Piles	CM	6,295.64			
401 giv	Precast Concrete Class D1	CM	3,968.58			
401 f	Lean Concrete	CM	89.44			
SS-1	Extra Over for Providing Sulphate Resistant Cement in Concrete Works of specified Class:					
	for Concrete Class A 2	CM	811.41			
	for Concrete Class A 3	CM	6,295.64			
	for Lean Concrete	CM	89.44			
404 b	Reinforcement as per AASHTO M 31 Grade 60.	Tons	2,608.73			
404 h	Reinforcement (Structural Shapes) as per ASTM A-36.	Tons	8.76			
405 a	Prestressing Wire Strand, 3/8" - 1/2 " dia. Complete in all respects	Tons	192.39			
405 b	Launching of Girder	Tons	9,167.03			
406 ei	Elastomeric Bearing Pads (According to size & thickness) USA/EU Make	Cu.cm	1,372,800.00			



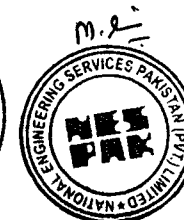
INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

SHIKARPUR ~ KANDHKOT SECTION

KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
407 d1	Cast-in place concrete piles, upto 1.00 M dia in Normal Soil (Boring only)	LM	910.80			
407 d2	Cast-in place concrete piles, upto 1.00 M dia in Gravel Soil (Boring only)	LM	1,366.20			
407 d3	Cast-in place concrete piles, 1.1 - 1.5 M dia in Normal Soil (Boring only)	LM	1,333.20			
407 d4	Cast-in place concrete piles, 1.1 - 1.5 M dia in Gravel Strata(Boring only)	LM	1,999.80			
407 i	Pile Load Test for dia 1 - 1.5 M (2.5 times Design Load)	Each	10.00			
407h	Proof Load Test on Working pile (1.5 times Design Load)	Each	10.00			
407 n	Permanent Pile casing (liner 12 mm Thick) for piles	Tons	202.49			
509 d	Grouted Rip Rap Class A	CM	3,542.59			
509 h	Filter Layer of Granular Material	CM	3,620.39			
SP-417(a)	Sonic Integrity Tests (SIT) on all Piles	Each	160.00			
SP-417	Manufactured Trade Marks expansion joints for roadway (25 ~ 30) mm movement	M	454.96			
SP-418	GI Drain Pipe Dia 100 mm	M	1,433.00			
TOTAL (BILL NO. 4c)						



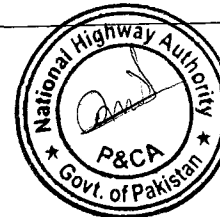
INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

SHIKARPUR ~ KANDHKOT SECTION

KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
Bill No 4c (I)	Structure (Soil Investigation for Bridges)					
SP-414 (a)	6" minimum dia drilling straight rotary/ Percussion including back filling of holes from NSL upto 45m depth or till the rock level which ever is met earlier.	LM	500.00			
SP-414(b)	Perform SPT at 1 m interval i/c collection, preservation & Transportation of disturbed samples to an approved Laboratory.	No.	150.00			
SP-414(b-1)	Continuous core drilling in bedrock up to a maximum of 5 m depth below rock strike level, including determination of core recovery/ RQD, preservation of core samples in core boxes, labelling, waxing of selected core samples, photography of rock cores and transportation of core samples to the laboratory. In case core recovery is less than 80% reduce run length to 0.5 m.	LM	80.00			
SP-414(c)	Collection of undisturbed soil samples from boreholes using Shelby pitcher/denison sampler i/c preservation and transportation of samples to an approved Laboratory.	No.	80.00			
SP-414(d)	Performance of FDT in test pits through sand replacement method i/c moisture content determination.	No.	180.00			
SP-414(e)	Excavation of testpits upto 1.5 m depth along road alignment including backfilling of pits to original condition.	M	80.00			
SP-414(f)	Collection of undisturbed block samples from test pits at appropriate location as directed by the Engineer.	No.	80.00			
SP-414(f1)	Collection of composite bulk sample (atleast 60 kg for sandy/clayey soils and 120 kg for gravelly soils).	No.	80.00			
SP-414(g)	Collection & preservation of water samples from bore holes & transportation to an approved Laboratory.	No.	80.00			



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

SHIKARPUR ~ KANDHKOT SECTION

KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
SP-414(h)i.	Laboratory Testing Grain size analysis.	No.	50.00			
ii.	Hydrometer analysis.	No.	50.00			
iii.	Atterberg limits	No.	50.00			
iv.	Specific gravity	No.	50.00			
v.	Natural moisture content	No.	50.00			
vi.	Bulk density & Dry density (Soil/rock cores)	No.	50.00			
vii.	Direct shear test	No.	50.00			
viii.	Consolidation test (collapse/swell potential)	No.	50.00			
ix.	Unconfined compression test (Soil/rock cores)	No.	50.00			
x.	Chemical analysis of soil	No.	50.00			
xi.	Chemical analysis of water	No.	50.00			
xii.	Submission of Investigation Report (triplicate)	No.	50.00			
xiii.	CBR	No.	50.00			
xvi.	Modified Proctor Test	No.	50.00			
TOTAL BILL NO. 4c (I)						



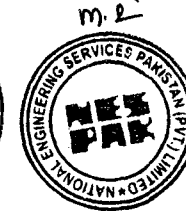
INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

SHIKARPUR ~ KANDHKOT SECTION

KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

BILL OF QUANTITIES

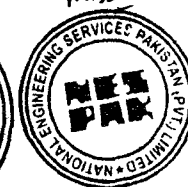
Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
Bill No. 4d:	Structures (Underpasses)					
107a	Structural Excavation in Common Material	CM	3477.72			
107d	Granular Backfill	CM	9924.80			
401 a2i	Concrete Class A2 (Underground) Cutoff Walls	CM	79.51			
401 a2ii	Concrete Class A2 (On Ground) Approach Slab	CM	499.48			
401 a3ii	Concrete Class A3 (On ground) Base Slabs	CM	2319.53			
401 a3iii	Concrete Class A3 (Elevated) Abutment Walls, Top Slab, Wingwalls, Parapets	CM	5502.12			
401f	Lean Concrete	CM	423.73			
SS-1	Extra Over for Providing Sulphate Resistant Cement in Concrete Works of specified Class:					
	for Concrete Class A 2	CM	578.99			
	for Concrete Class A 3	CM	7821.65			
	for Lean Concrete	CM	423.73			
404b	Reinforcement as per AASHTO M-31 Grade-60	Ton	1492.88			
406a	Premoulded Joint Filler 25mm Thick with Bitumastic Joint Seal	SM	62.44			
406dii	PVC Water Stops 9" Size	M	1313.99			
509 a	Rip Rap Class A	CM	869.91			
TOTAL BILL NO. 4d						



SHIKARPUR ~ KANDHKOT SECTION
KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

BILL OF QUANTITIES						Amount (Rs.)
Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		
				In Figures	In Words	
Bill No 5	Drainage & Erosion Works					
401a1ii	Concrete Class A-1 (On Ground) for Chutes, Ducts (Services Crossing) & Drain	CM	8,652.80			
401f	Lean Concrete (Drain)	CM	1,562.00			
404b	Reinforcement as per AASHTO M-31 Grade 60	Ton	865.28			
412a	Stone Masonary Dressed Coursed with Mortar	CM	507.54			
501d	Reinforced Concrete Pipe AASHTO M 170, Class II diameter 610 mm	M	220.00			
501e	Reinforced Concrete Pipe AASHTO M 170, Class II diameter 760 mm	M	660.00			
501f	Reinforced Concrete Pipe AASHTO M 170, Class II diameter 910 mm	M	660.00			
501h	Reinforced Concrete Pipe AASHTO M 170, Class II diameter 1220 mm	M	264.00			
502b	Concrete Class B in bedding and Encasement of Concrete Pipe Culvert	CM	3,144.22			
507a	Steel Wire Mesh for Gabions	Kg	66,026.00			
507b	Rock Fill in Gabions	CM	6,602.59			
510	Dismantling of Structures and Obstructions	CM	3,000.00			
511b2	Grouted Stone Pitching 20-25 cm Thick with Bitumen Joints	SM	47,777.40			
SP-501	Supplying & Installation of uPVC Pipe 100/150 mm dia	M	20,000.00			
SP-502	Relocation of Unlined Watercourse	SM	500.00			
SP-503	Relocation of Brick Lined Watercourse	SM	500.00			
TOTAL BILL NO. 5						

TOTAL BILL NO. 5

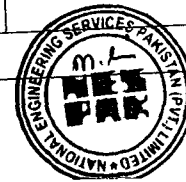
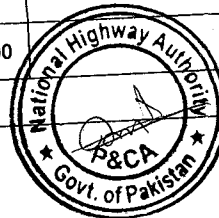


INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

SHIKARPUR ~ KANDHKOT SECTION
KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
Bill No 6	Ancillary Works					
401f	Lean Concrete (New Jersey Barrier)	CM	6,015.52			
601ai	RCC New Jersey Barrier (In-situ) for median ; double face (including reinforcement)	M	61,995.00			
601aii	RCC New Jersey Barrier (In Situ) as per drawings ; Single face (including reinforcement)	M	1,000.00			
601dii	Pre-cast Curb in Concrete Class A-1 including bedding and haunching as per drawings	M	14,175.00			
604a	Metal Guard Rail	M	10,120.00			
604b	Metal Guard Rail End Pieces	Each	203.00			
604d	Steel Post for Metal Guard Rail	Each	5,326.32			
607a	Traffic Road Signs, Category -1	Each	150.00			
607b	Traffic Road Signs, Category - 2	Each	150.00			
607e	Traffic Road Signs, Category - 3c	SM	350.00			
608h2	Pavement Marking in Reflective TP Paint of 15 cm Width	M	310,878.26			
608j2	Pavement Marking in Reflective TP Paint for 4m Arrows	Each	115.00			
609ci	Reflectorised Plastic Pavement Studs ,(Raised Profile Type - Single)	Each	29,185.20			
610c	Kilometer Post	Each	63.00			
612a	Furnishing and Planting of Trees Including Maintenance of 2 Years	Each	6,300.00			
SP-504	Delineators/Angle Reflector	Each	4,752.95			
SP-507	Dismantling of Existing Guard Rail	M	2,000.00			
SP-601a	Gantry Sign Type -I as shown on drawings	Each	3.00			
SP-601b	Gantry Sign Type -II (Cantilever) as shown on drawings	Each	3.00			
NSI-I	Installation of Antiglare screen on New Jersey Barrier as per drawings and specifications.	Each	124,843.00			
TOTAL BILL NO. 6						



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (SHIKARPUR ~ KANDHKOT SECTION)

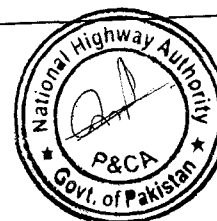
KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

SUMMARY COST

BILL NO 6a :(TOLL PLAZA & ALLIED WORKS)

Sr No	Description	Civil Works	Plumbing Works	Electrical Works	Total Cost (Rs.)
1	Toll Plaza				
2	Toll Booth				
3	Steel Canopy				
4	Office & Accomodation				
5	Generator Room				
6	Weigh Station & Allied Works				
	Total Cost In Rs.				

Rupees in
Words:



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (SHIKARPUR ~ KANDHKOT SECTION)
KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
BILL NO. 01 PAVEMENT WORKS:						
101	Clearing and Grubbing	SM	7,035.00			
102a	Removal of Trees 150-300 mm Girth	Each	12.00			
102b	Removal of Trees 301-600 mm Girth	Each	11.00			
102c	Removal of Trees 600 mm or over girth	Each	31.00			
104	Compaction of Natural Ground	SM	7,035.00			
106c	Excavation of Surplus common material	CM	1,280.00			
107a	Structural excavation in common material	CM	67.00			
107d	Granular Backfill	CM	22.00			
107e	Common Backfill	CM	16.00			
108a	Formation of Embankment from roadway excavation in common material	CM	768.00			
108c	Formation of Embankment from borrow excavation in common material	CM	6,151.00			
109a	Subgrade preparation in earth cut	SM	3,333.00			
203b	Asphaltic Base Course Class B	CM	329.00			
206b	Water Bound Macadam base with coarse aggregate Class B	CM	823.00			
209a	Breaking of Existing road pavement structure	CM	555.00			
302a	Cut-Back Asphalt For Bituminous Prime Coat	SM	4,113.00			
303a	Cut-Back Asphalt For Bituminous Tack Coat	SM	4,113.00			
305b	Asphaltic concrete wearing course class-B	CM	206.00			
401a1ii	Concrete Class A-1 (on ground) for rigid pavement & barrier.	CM	1,450.00			
401b	Concrete Class B Toll Booth protection works	CM	78.00			

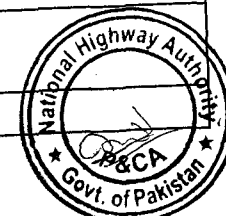


INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (SHIKARPUR ~ KANDHKOT SECTION)
KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
401f	Lean Concrete	CM	495.00			
404a	Reinforcement as per AASHTO M-31 grade 40	Tons	2.00			
404b	Reinforcement as per AASHTO M-31 grade 60	Tons	20.00			
410	Brick work for manhole, crash barrier etc.	CM	31.00			
510	Dismantling of structure and obstruction	CM	24.00			
601dii	Precast kerb in concrete class A-1 of size 450 x 150 mm including concrete bedding and haunching.	LM	128.00			
604a	Metal guard rail	LM	160.00			
604d	Steel post of metal guard rail	LM	96.00			
607a	Traffic road sign category 1	Each	4.00			
607b	Traffic road sign category 2	Each	4.00			
607c	Traffic road sign category (3a)	Each	6.00			
607e	Traffic road sign category (3c)	SM	38.00			
608h1	Pavement marking in reflectorized CR paint 150mm	LM	2,000.00			
609c	Reflecting Pavement studs raised profile type single sided	Each	950.00			
501a	Providing and placing of RCC pipe 310mm dia for drainage complete with all respect as per drawing and specifications.	LM	110.00			
NSI-2	Apply 03 coats plastic emulsion paint as specified.	SM	1,200.00			
NSI-3	Providing and placing plastic drums with sand in position. As per drawings	Each	192.00			
NSI-4	Providing and placing soft wooden blocks (0.3 x 0.15 x 0.15m) in position.	Each	272.00			
NSI-5	Providing and placing polythene sheet under rigid pavement	SM	5,167.00			
NSI-6	Providing all the material as per drawings & specifications and making of expansion joint as instruction of engineer in charge.	LM	980.00			
NSI-7	Providing all the material as per drawings & specifications and making of construction joint as instruction of engineer in charge.	LM	621.00			
TOTAL OF BILL NO. 6A-01 PAVEMENT WORKS:						

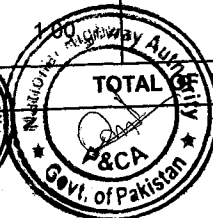


INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (SHIKARPUR ~ KANDHKOT SECTION)
KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
BILL NO. 02 PLUMBING WORKS:						
S.P-PW -1	Boring of well in all types of soil 100mm dia upto 90m depth.	LM	80.00			
S.P-PW -2	S/I of 100mm dia Pak therm PVC pipe casing of wall 1/4" thickness.	LM	70.00			
S.P-PW -3	S/I testing and commisioning pumping set of capacity 100m head and 60gpm including electrical wiring and pipe from pump setting to ground level and foundation etc. complete in all respect.	Set	1.00			
S.P-PW -4	S/I testing and commisioning centrifugal pumping set AC electrical motor driven 400V, 3 phase, 50 Hz, 2hp motor mounted on common channel base plate duly aligned including starter wiring and foundations etc. complete in all respect.	Set	1.00			
S.P-PW -5	Supply and fix tubes water quality (RAKtherm) with all fitting (i.e sockets, bends, tees, elbows, where required) and laid complete in trenches inclusive of excavation and backfilling or fixed to wall, ceiling, floors etc including caps, plugs as required 20mm diameter (high quality)	LM	70.00			
S.P-PW -6	.....Ditto..... But 25mm diameter	LM	60.00			
S.P-PW -7	.....Ditto..... But 50mm diameter	LM	30.00			
S.P-PW -8	Supply and fix valves "pets" pattern, strong gunmetal, high pressure " full way" valves with iron wheel head screwed both ends for iron pipe, 25mm diameter.	Each	4.00			
S.P-PW -9	.....Ditto..... But 50mm diameter.	Each	2.00			
S.P-PW -10	S / F bib cock brass chromium plated fancy type screwed down BSP 20mm diameter.	Each	6.00			
S.P-PW -11	Construction of RCC under ground water tank complete in all respect of capacity 4250 liters.	Job	1.00			
S.P-PW -12	Construction of soakage pit as per drawings and specifications.					
				TOTAL OF BILL NO. 6A-02 : 02 PLUMBING WORKS:		

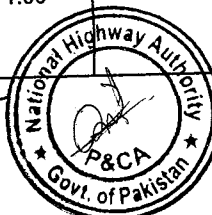


INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (SHIKARPUR ~ KANDHKOT SECTION)
KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
BILL NO 03. ELECTRICAL WORKS:						
SP/EW-1	Supply and Installation of Transformer 100KVa Complete with all respects.	Each	1.00			
SP/EW-2	Supply, Installation, testing and commissioning of PVC/PVC SWA cable 4 core cable copper/ conductor 16mm ² laid in trenches with sand cushion and brick including excavation and backfilling or fixed to wall, ceiling and floors as per site requirements complete in all respects.	LM	180.00			
SP/EW-2a	.....ditto..... but 25mm ²	LM	126.00			
SP/EW-2b	.....ditto..... but 25mm ³	LM	32.00			
SP/EW-3	S/F earthing including boring/excavation, copper conductor etc. complete as drawings in all respect to achieve resistance not more than 2 Ohms.	Each	1.00			
SP/EW-4	Supply, Installation, testing and commissioning of feedar pillar for supply of power to residence, stop over, toll plaza, external lighting and tube well installation having appropriate sizes as under earthing terminals for connecting of the incoming and outgoing cables complete in all respects as per drawings. 1 Magnetic contactor 225 Amps Schneider LC1F225 2,2 MCCB (TP) 250Amp Schneider EZC- 250N 5,3 C/T 200Amp 3, 6 ATS / AMF Relay 1, 7 timer with base OMRON H3BA-N 1, 8 Emergency Stop Switch 1, 9 Fuse Type Terminal Block 6mm 10, 10 Stopper for Terminal Block 2.5mm ONKA 20, 11 Selector Switch 3-Position FUJI AR22-PR2 2, 12 indication light RED/Green 5, 13 Cable Numbering Tagging & Drawing 1, 14 Wiring Duct Bus Bar Din rail & Crimps 1, 15 Wiring Charges 1, 16 Metal Enclosure (1000 x 8000 x 300mm) 1.	No.	1.00			
SP/EW-5	Supply, Installation, testing and commissioning of feedar pillar for supply of power to residence, toll plaza, external lighting and tube well installation having appropriate sizes as under earthing terminals for connecting of the incoming and outgoing cables complete in all respects as per drawings.	No.	1.00			



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (SHIKARPUR ~ KANDHKOT SECTION)
KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
SP/EW-6	Supply, installation, testing and commissioning of feedar pillar for supply of power to stop over, toll plaza, external lighting and tube well installation having appropriate sizes as under earthing terminals for connecting of the incoming and outgoing cables complete in all respects as per drawings.	Each	1.00			
SP/EW-7	Supply and installation of Tubular Poles 9m Long with 2 nos. of Crest LED Flood Light Model No. CR-TGA 100W-FL, LED Brand Bridgelux, Led Driver Mean Well UL Approved. Made in Pakistan Control Box with complete fittings.	No.	6.00			
SP/EW-8	Supply and installation of Tubular Poles 9.5m High of complete with single arm on RCC foundation as per drawings i/e wiring of crest LED street light Model No. CR-B100W-STL, LED Brand Bridgelux, LED Driver Mean Well UL Approved) controlled by Feedar Pillar also supply and installation with all 4 core 16mm ² cables and 3 core PVC insulated cables in PVC pipe as per drawings and specifications complete in all respect.	No.	12.00			
SP/EW-9	Supply and installation of Tubular Poles 9.5m High of complete with double arm on RCC foundation as per drawings i/e wiring of crest LED street light Model No. CR-B100W-STL, LED Brand Bridgelux, LED Driver Mean Well UL Approved) controlled by Feedar Pillar also supply and installation with all 4 core 16mm ² cables and 3 core PVC insulated cables in PVC pipe as per drawings and specifications complete in all respect i.e earthing.	No.	6.00			
SP/EW-10	Supply and fixing PVC conduit for ETTM system cables, fixed as per ETTM system companies required in concrete or trench, complete with all respects, excavation, bricks and backfilling as required & instructed by the engineers incharge.					
SP/EW-10-i	50mm i/d Class B polo / Beta or Shawal.	LM	30.00			
SP/EW-10-ii	75mm i/d Class B polo / Beta or Shawal.	LM	30.00			
SP/EW-10-iii	100mm i/d Class B polo / Beta or Shawal.	LM	270.00			
TOTAL OF BILL NO. 6A-03. ELECTRICAL WORKS:						



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (SHIKARPUR ~ KANDHKOT SECTION)
KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
BILL NO 04: TOLL BOOTH						
NSI-1	P/F of Aluminium Composite Panel on outer side of booth	SM	24.94			
NSI-2	P/F of 2 ply Fiber glass on inner side of toll booth	SM	24.94			
NSI-3	P/F of insulation Thermo pore 25 kg / cum in between ms sheet and fiber glass in toll booth	SM	21.91			
NSI-4	P/F of False Ceiling 0.6x0.6 side of toll booth	SM	4.06			
NSI-5	P/F of computer and cash table with Lassani (16mm) 3/4" thick	SM	1.35			
NSI-6	P/F of Ventilator of Aluminium Sliding shutter with grill in Toll Booth	SM	0.23			
NSI-7	P/F of 50mm Sqr. 16 swg Frame pipe for toll booth	M	93.06			
NSI-8	P/F of 100mm with 8.0 mm wall thickness steel pipe frame for Toll Booth protection	M	49.96			
NSI-9	P/F of Tempered Glass 5mm thick in toll booth	SM	7.37			
NSI-10	P/F of 10" dia Exhaust fan along with closers and fly netting	Each	1.00			
NSI-12	P/F of Rawplug 12.5mm thick 150mm long for booth protection pipe.	No.	16.00			
NSI-13	P/F of steel base plate 250 mm dia 16mm thick for booth protection pipe.	No.	4.00			
NSI-14	P/F of steel base plate 250x250 mm dia 16 mm thick for booth protection pipe	No.	4.00			
NSI-16	P/F of Crest brand LED slim Panel Lights (Model: CR-882-8PL) in false ceiling (12 watts of Toll Booth as per approved drawing.)	No.	2.00			
NSI-17	P/F of Door lock of Toll Booth as per approved drawing.	No.	1.00			
NSI-18	P/F of complete Wiring with PVC conduit in Booth for Exhaust fan, two LED Slim Lights and two sockets, A/C 1.0 ton etc. as per approved drawing	No.	1.00			
NSI-19	P/F of Circuit breaker as per requirement, as per approved drawing.	No.	3.00			
NSI-20	P/F of one three pin socket outlet 15/20 amps point controlled by one switch wiring complete with pvc single core cable 4 sq. m in concealed pvc conduit including earth wire. Circuit breaker as per requirement, as per approved drawing	No.	3.00			
NSI-21	P/F of Power plug along with accessories	No.	1.00			



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (SHIKARPUR ~ KANDHKOT SECTION)
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BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
NSI-22	P/I of A/C 1.0 ton ACSON / Mitsubishi or Equal of MS pipe grill fixed for outdoor unit complete fitting with all safety measures and necessary welding bolts and nuts as required, rubber packing and other materials. Power plug along with accessories.	No.	1.00			
NSI-23	P/I circuit wiring from DB to switch board, wiring with PVC single core cable 2.5 sq. mm + 1.5 mm as ECC in PVC conduit concealed as per site requirement of als. Power plug along with accessories	M	25.00			
NSI-24	Providing of Revolving Chair as per requirement or as directed by the engineer	No.	1.00			
SUB TOTAL OF BILL NO. 6A-04: TOLL BOOTH (01 No)						
TOTAL OF BILL NO. 6A-04: 16 Nos TOLL BOOTH						

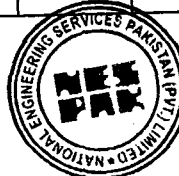


INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (SHIKARPUR ~ KANDHKOT SECTION)
KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
BILL NO 05: (STEEL WORKS) Fabrication						
SC-1	Providing Fabricating and installing structural steel works including shop welding, field splicing, bolting, painting over exposed surfaces as required in the structural drawings and notes also including all accessories such as bolts, connecting angles, connection, plates, the rods etc complete in all respects as per drawings and specifications or as directed by the engineer. Steel Column Box Section- 15" 15" 0.5" Thick 28.72 Kg/ft	Kg	45,000.00			
SC-2	Ditto..... High Tensile anchor bolts and nuts , 25mm dia	Nos.	64.00			
SC-3	Supply, cutting to size and erecting 22 SWG Black Iron Powder coated sheet for false ceiling including overtape, edge elements and making openings. Also including fixing with "J" bolts , nuts and washers etc. complete in all respects as per specification and as directed by the engineer	Sqm.	740.00			
SC-4	Providing and fixing specified GI corrugated sheeting 22 SWG for roof including anchor bolts. Complete in all respects as per details given in the drawings or as directed by the engineer	Sqm.	740.00			
SC-5	Providing and fixing specified GI rain water pipe (ILL or equivalent approved) fixed along steel columns, including bends and other fixing etc. complete in all respects as per drawings and the specifications or as directed by the Engineer. a) 100mm dia	m	53.60			
SC-6	Provide, fabricate and fix G.I sheet drainage gully as per details on the structural drawings and specified or as directed by the engineer complete in all respects (750mm x 500mm)	m	40.00			
SC-7	Supply / installation of 3M (high intensity Grade reflecting Sheet) on 16 SWG G.I sheet with the name of Toll Plaza of appropriate readable size complete in all respects without air bubbles the rate shall inclusive of all materials steel pipe and angle frame , riveting and installation complete at site as directed by the engineer	Sqm m ²	60.00			



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (SHIKARPUR ~ KANDHKOT SECTION)
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BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
SC-8	Supply and install canopy Light (Crest LED Canopy Light Model No. CR-56-90W-KPL, LED Brand: CREE, LED Driver : Mean Well UL approved) electrical connections and wiring (Pakistan/life/new age cables) all items should be made in Pakistan.	Nos.	16.00			
SC-9	Supply and install Facia illumination (Crest LED Flood Light (Model No. CR-TGA30W-FL, LED Brand Bridgelux, Led Driver Mean Well UL Approved) on Bracket Along with pipe as per site requirement) Electrical connections and wiring (Pakistan/life/new age cables) all items should be made in Pakistan	Nos.	16.00			
SC-10	Supply/install G.I channel hanging frame with appropriate spacing for fixing of false ceiling sheet	SM	768.00			
SC-11	Providing/grouting master flow 524 (non shrinkage material) between existing foundation and base plate, having 650 x 650 mm foundation including cost of carriage labor etc	Nos.	6.00			
SC-12	Encasing of 100mm drain pipe and 65mm dia electric pipe with the "H" column with 16 gauge GI sheet fixed with 10mm dia nuts welded with angle iron and bolts 40mm long duly painted with enamel paint etc. complete	Sqm.	56.00			
TOTAL OF BILL NO. 6A-05: (STEEL WORKS) Fabrication						

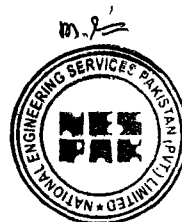


INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (SHIKARPUR ~ KANDHKOT SECTION)
KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
BILL NO 06 (ELECTRICAL WORKS) Steel Canopy:						
SC/E-01	Supply installation and commissioning of cu PVC insulated 3 core cables in PVC pipe including all material and accessories as shown on drawings all complete (iv) 3 core 4mm sq. (Pakistan/life/new age Cables)	LM	240.00			
SC/E-02	Supply installation and commissioning of cu PVC insulated 3 core cables in PVC pipe including all material and accessories as shown on drawings all complete (iv) 3 core 2.5mm sq. (Pakistan/life/new age Cables)	LM	240.00			
SC/E-03	Supply installation testing and commissioning of cu PVC pipes including all material and accessories as shown on drawings all complete (iv) 4 core 10mm sq. (Pakistan/life/new age Cables)	LM	248.00			
SC/E-04	Supplying and laying of following heavy duty PVC pipe buried under ground in ceiling, walls, floor & columns etc for incoming and outgoing cables at various points and also weather proof from both ends including all materials and accessories as per site requirement as shown on drawings complete in all respects					
	(i) 100mm polo/ beta or Shawal	LM	112.00			
	(i) 50mm polo/ beta or Shawal	LM	96.00			
TOTAL OF BILL NO. 6A-06: (ELECTRICAL WORKS) Steel Canopy:						

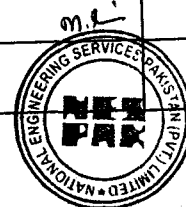


INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (SHIKARPUR ~ KANDHKOT SECTION)
KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
BILL NO 07: CIVIL WORKS (OFFICE AND ACCOMODATION BUILDING)						
107a	Excavate as in common soil upto 1.5 meter depth in foundations and pipe trenches and throw earth clear of edges of excavation with in 10 meter	Cum	141.00			
108c	Making embankment as in hard soil, filling in foundations, pipe trenches under floors or around buildings etc 1.5 meter below or above ground level spoil obtained from excavation in foundations over areas with in 10 meter including watering and compaction in 150mm layers and dressing to required profiles and shapes	Cum	364.00			
401f	Providing and laying of lean concrete as in foundation using crushed or broken stone graded as specified (Lean concrete)	Cum	23.00			
401a1	Providing and laying of reinforced cement concrete class "A" using crushed stone in foundations, independent column footings, roof slab, walls landings, plinth beams and bends etc, as specified requiring shuttering (reinforcement measured and paid separately)	Cum	121.00			
404a	Supply and fix round deformed bars grade 40 (as per AASHTO M31) including cutting, bending, binding and placing reinforcement in position as specified	ton	1.21			
404b	Supply and fix round deformed bars grade 60 (as per AASHTO M31) including cutting, bending, binding and placing reinforcement in position as specified	ton	10.93			
401f	Providing and laying 75mm thick PCC 1:4:8 laid under floors using crush stone all as specified (Lean concrete)	Cum	21.00			
401b	Providing laying cement concrete 1:2:4 using crushed stone laid in floor slabs as under layer of terrazo/tiles etc as specified (Concrete Class B)	Cum	21.00			
410	Burnt brickwork in wall over 115mm thick laid And jointed in cement mortar 1:4 staright or to curve with inner radius of 1.5m.	Cum	315.00			
S-P 1	Providing and laying of sand cushion under floors all as per drawings & specifications.	Cum	29.00			



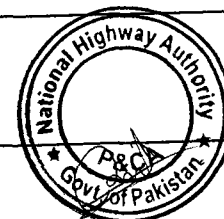
INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (SHIKARPUR ~ KANDHKOT SECTION)

KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
S-P 2	Providing and laying of brick ballast under floors all as per drawing & specifications	Cum	21.00			
S-P 3	Termite proofing to all building area with approved chemical all as specified.	Sqm	560.00			
S-P 4	50mm thick DPC of PCC (1:2:4) using 3mm aggregate and finished smooth with steel float covered with two coats of hot bitumen @0.75 kg per Sqm and double layer of polythene sheet as required	Sqm	42.00			
S-P 5	75mm thick PCC (1:2:4) screeding with XPM weigh n.exc 4.5kg/Sqm over 50mm thick thermopore sheet, two layers polythene sheet and two coats water proofing compound using bitumen 10-20 applied hot @4.9 kg/ 10 Sqm per coat including pee gravels and cleaning the surface before applying bitumen as specified complete with all respects	Sqm	371.00			
S-P 6	Supply and fix kitchen floor sink cabinet with or without drawers including all necessary chromium plated mongry, fitting/fixtures and deodar wood edging provided to doors and drawer of cabinet and 20mm thick prepolished marble slab fix on top of cabinet as specified all as per drawing	Mater	6.00			
S-P 7	Supply and fix kitchen wall cabinet including all necessary chromium plated mongry, fitting/fixtures and deodar wood edging provided to doors of cabinet as specified all as per drawings	Meter	6.00			
S-P 8	Supply and fix kitchen exhaust hood and duct of 20mm thick lamination board with 26 gauge GI sheet lining inside including fitting/fixtures as specified all as per drawings	Meter	1.00			
S-P 9	Wooden flush doors covered with fibre glass and steel frame, imported lock, brass mongry and architrave where shown, including 3 coats synthetic enamel paint etc all as per drawing.	Sqm	38.00			
S-P 10	Supply and fix aluminium premium model bronze colour sliding windows including fly/insect proofing 5mm tinted imported glass etc all as per drawings	Sqm	44.00			



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (SHIKARPUR ~ KANDHKOT SECTION)
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BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
S-P 11	Supply and fix aluminium door powder coated with 5mm frosted glass of washroom areas all as per drawing	Sqm	2.00			
S-P 12	Supply and fix cast iron work weight n.exc 6 kg in grating, mahole covers all as per drawings and specifications	Kg	15.00			
S-P 13	Supply and fix MS 16 gauge square pipe railing & grills with painting complete all as per drawings and specifications.	Sqm	43.00			
S-P 14	Supply and fix steel grill & (stair hand rail) with painting complete all as per drawings & specifications	Sqm	6.00			
S-P 15	Providing and laying 300mmx300mmx20mm thick Marble tiles in floors setting and jointing in CM (1:2) including cutting, rubbing and polishing all as per drawings & specifications	Sqm	286.00			
S-P 16	Providing and laying 12mm thick boticina cream marble set in CM (1:2) as in skirting including cutting, rubbing, and polishing all as per drawigs and specifications	Sqm	20.00			
S-P 17	.....Ditto..... but venity top slabs if granite marble including cutting bowl etc all as per drawings & specifications	Sqm	2.00			
S-P 18	Supply and fix 200mmx200mm ceramic mat tiles set in CM(1:2) including joints fitted with white cement all as per drawing.	Sqm	142.00			
S-P 19	Providing and fixing 20mm laminated win board ward robe with wooden frame and lamination win board drawers including brass mangy fittings all as per drawings	Each	24.00			
S-P 20	13mm thick cement plaster (1:4) finished smooth as specified	Sqm	2,715.00			
S-P 21	13mm thick cement plaster (1:4) with 3% puddlo finsiherd smooth as specified	Sqm	16.00			
S-P 22	Appy 3 coasts plastic emulsion paint as specified	Sqm	2,155.00			
S-P 23	Apply grapitio coating external face of walls	Sqm	560.00			
S-P 24	24 gauge CGI rolling shutter with frame and other accessories all as per drawings	Sqm	9.00			
TOTAL OF BILL NO. 6A-07: CIVIL WORKS (OFFICE AND ACCOMODATION BUILDING)						

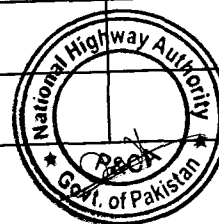


INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (SHIKARPUR ~ KANDHKOT SECTION)
KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
BILL NO 08: PLUMBING WORKS (OFFICE AND ACCOMODATION BUILDING):						
SP-WS-1	Supply and fix tubes water quality (G.I) with all fitting (i.e sockets, bends, tees, elbows etc.) and laid complete in trenches (exclusive of excavation) or fixed to walls, ceilings, floors etc including caps, plugs as required 15mm diameter (light quality)	Meter	62.00			
SP-WS-2	Ditto..... But 20mm diameter	Meter	46.00			
SP-WS-3	Ditto..... But 25mm diameter	Meter	80.00			
SP-WS-4	Ditto..... But 32mm diameter	Meter	15.00			
SP-WS-5	Ditto..... But 50mm diameter	Meter	25.00			
SP-WS-6	Supply and fix valves "peets" pattern, strong gunmetal, high pressure, "full-way" valves with iron wheel head screwed both ends for iron pipe, 20 mm diameter	Each	5.00			
SP-WS-7	Ditto..... But 25mm diameter	Each	4.00			
SP-WS-8	Ditto..... But 40mm diameter	Each	2.00			
SP-WS-9	Ditto..... But 60mm diameter	Each	1.00			
SP-WS-10	S/F bib cock brass chromium plated fancy type screwed down BSP 15mm diameter	Each	14.00			
SP-WS-11	S/F 15mm Tee stop cock brass chromium plated screw down high pressure fancy type	Each	30.00			
SP-WS-12	S/F 15mm stop cock brass chromium plated screw down high pressure fancy type	Each	24.00			
SP-WS-13	S/F adjustable CP shower fancy type	Each	7.00			
SP-WS-14	S/F Electric gyser of capacity 45 ltr.	Each	3.00			

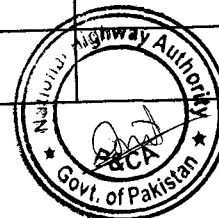


INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (SHIKARPUR ~ KANDHKOT SECTION)
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BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
SP-WS-15	Supply and fix water closet apparatus European pattern complete comprising closet, 13 ltr cistern flushing, seat cover etc (coupled set) in white / light colour any size or make fixed to concrete.	Each	7.00			
SP-WS-16	Supply and fix sink scullery of stainless steel with single drainage board complete shallow or deep pattern upto 6000 centimeter square, super, fixed to brick work or wood (Pak made).	Each	1.00			
SP-WS-17	Supply and fix venity in white/light colour with one hole, coupling chain & plug and bottle trap best quality (imported) fixed to brick or concrete work.	Each	6.00			
SP-WS-18	Supply and fixed urinals blazed ware complete with flush tank.	Each	7.00			
SP-WS-19	Supply and fix mirror any shape and pattern 5mm thick of sizes, foreign made edged ground complete fixed to brick or concrete work	Sqm	6.00			
SP-WS-20	Supply and fix 100mm dia CI floor trap including reducer etc complete	Each	18.00			
SP-WS-21	Supply and fix casted grating chromium plated 150mm x 150mm	Each	16.00			
SP-WS-22	Supply and fix 50mm bore cast iron soil waste and vent pipes and fitting as specified (Spun pipe)	Meter	50.00			
SP-WS-23	.....Ditto..... But 75mm bore	Meter	40.00			
SP-WS-24	.....Ditto..... But 100mm bore	Meter	65.00			
SP-WS-25	Supply and fix 50mm bore CI bends tapers, double socket and ovel pattern accessories complete	Each	22.00			
SP-WS-26	.....Ditto..... But 75mm bore	Each	22.00			
SP-WS-27	.....Ditto..... But 100mm bore	Each	27.00			
SP-WS-28	Supply and fix 50mm bore CI tee branch pieces single equal or unequal arms etc complete	Each	3.00			
SP-WS-29	.....Ditto..... But 75mm bore	Each	3.00			



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (SHIKARPUR ~ KANDHKOT SECTION)

KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
SP-WS-30	.....Ditto..... But 100mm bore	Each	5.00			
SP-WS-31	Supply and fix 50mm bore CI cowls for vent pipes	Each	5.00			
SP-WS-32	Supply and fix reinforced cement concrete pipe 100mm bore, laid and jointed with spigot socket or collars as specified	Meter	15.00			
SP-WS-33	.....Ditto..... But 150mm bore	Meter	20.00			
SP-WS-34	Supply and fix glazed ware gully trap embedding in PCC (1:2:4) concrete 150mm all around and at bottom of gully trap all as specified	Each	4.00			
SP-WS-35	Construction man holes rectangular exceeding 600mm deep from invert to surface of cover, including main channel set in CM (1:1) 230 mm thick brick walls complete with man hole covers	Each	2.00			
SP-WS-36	Construction of septic tank for 24Men all as per drawings and Specifications	Each	1.00			
SP-WS-37	Supply and fix CP Mixer 15mm dia best quality for vanities and sink etc	Each	4.00			
SP-WS-38	Providing and laying 100mm dia wire ballon grating over rain water pipes	Each	6.00			
TOTAL OF BILL NO. 6A-08: PLUMBING WORKS (OFFICE AND ACCOMODATION BUILDING):						

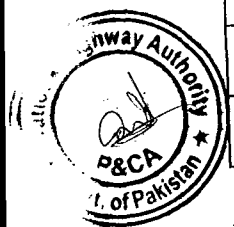


INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (SHIKARPUR ~ KANDHKOT SECTION)
KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
BILL NO 09 : ELECTRICAL WORKS (OFFICE AND ACCOMODATION BUILDING)						
SP-EW-1	S/F Circuit wiring from DB to switch board, wiring with PVC single core cable 2.5 Sq. mm + 1.5 Sq. mm as ECC in PVC conduit concealed as per site requirement	Point	13.00			
SP-EW-2	S/F of one fan point, one light point, one bell point controlled by one switch, wiring complete with PVC single core cable 1.5 mm ² in concealed PVC conduit	Point	160.00			
SP-EW-3	S/F of one three pin socket outlet 5 Amps point controlled by one switch wiring complete with PVC single core cable 1.5 mm in concealed PVC conduit including earthwire.	Point	18.00			
SP-EW-4	S/F of one three pin socket outlet 15/20 Amps point controlled by one switch wiring complete with PVC single core cable 4 Sq.mm in concealed PVC conduit including earth wire	Point	19.00			
SP-EW-5	S/F bracket wall with globe white glass opal 150mm dia complete with gallery and lamps holder BC	Each	30.00			
SP-EW-6	S/F Philips patty fitting complete with 1x40 W tube lamp starter and holders	Each	32.00			
SP-EW-7	S/F Ceiling mounted Philips light complete with flourecent tube, choke, starter and capacitor TCS 4 x 20W	Each	6.00			
SP-EW-8	S/F SPOT LIGHTs philips made with holder/ reflector complete	Each	1.00			
SP-EW-9	S/F ceiling lights fancy type as approved by Engineer in Charge	Each	3.00			
SP-EW-10	S/F schandlier single bulb fancy type as approved by engineer in charge	Each	3.00			
SP-EW-11	S/F bulb head fitting cast iron with guard tapped 20mm E.T. according to BSS No. 229 of 1957	Each	25.00			
SP-EW-12	S/F switch SP 5 amps piano type mounted in cast or malleable iron galvanized conduit box with bakelite plate	Each	150.00			
SP-EW-13	S/F switch socket outlet 3 pin 5 Amps bakelite shuttered complete	Each	27.00			

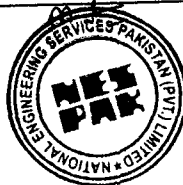


INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (SHIKARPUR ~ KANDHKOT SECTION)
KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
SP-EW-14	.....ditto..... but 20 Amps.	Each	20.00			
SP-EW-15	S/F earthing including boring/excavation, copper rod 25mm, 3000 mm long and copper conductor etc. complete in all respects to achieve resistance not more than 5 Ohms.	Each	1.00			
SP-EW-16	S/F clamp hooked for fan concealed	Each	27.00			
SP-EW-17	S/F fan electric with regulator blades, canopy and rod including connections, provision of cables and fan of 140 CM sweep of approved make	Each	25.00			
SP-EW-18	S/F exhaust fan 250mm capacity with shutter/grill plastic body single action (Pak fan)	Each	7.00			
SP-EW-19	S/F fan electric AC exhaust 30 CM 220/230 volts S.P. complete with shutter	Each	5.00			
SP-EW-20	S/F wall bracket fan fancy plastic body 450mm Pak fan	Each	3.00			
SP-EW-21	S/F PVC conduit 40mm dia complete with all bands, tees, boxes, saddles, etc for concealed wiring	Metre	17.00			
SP-EW-22	S/F of board distribution MS sheet steel 16 BG thick with hinged cover and locking arrangement duly painted inside/outside with suitable size of busbar for connecting incoming and outgoing MCCB consisting of following:-					
	INCOMING					
	MCCB TP 500/660 volts 50 cycle complete with thermal & magnetic trip 60 Amps (Breaking capacity 7.5 KA)					
	OUTGOING					
	1. MCB SP 220V 10A to 20A = 33 Nos.	Set	1.00			
TOTAL OF BILL NO. 6A-09 : ELECTRICAL WORKS (OFFICE AND ACCOMODATION BUILDING)						



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (SHIKARPUR ~ KANDHKOT SECTION)
KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
BILL NO 10 : ELECTRICAL WORKS (GENERATOR ROOM)						
G-EW-1	S/F circuit wiring from DB to switch board, wiring with PVC single core cable 2.5 Sq.mm + 1.5 Sq.mm ECC in PVC conduit concealed as per site requirement	Point	1.00			
G-EW-2	S/F of one fan point, one light point, one bell point controlled by one switch, wiring complete with PVC single core cable 1.5mm ² in concealed PVC conduit	Point	10.00			
G-EW-3	S/F of one three pin socket outlet 5 Amps point controlled by one switch wiring complete with PVC single core cable 1.5mm in concealed with PVC conduit including earth wire.	Point	2.00			
G-EW-4	S/F of one three pin socket outlet 15/20 Amps point controlled by one switch wiring complete with PVC single core cable 4 Sq.mm in concealed PVC conduit including earth wire	Point	1.00			
G-EW-5	S/F bracket wall with globe white glass opal 150 mm dia complete with gallery and lamp holder BC	Each	1.00			
G-EW-6	S/F Philips patty fitting complete with 1x40 W tube lamp starter and holders.	Each	1.00			
G-EW-7	S/F bulb head fitting cast iron with guard tapped 20mm E.T. according to BSS No. 229 of 1957	Each	4.00			
G-EW-8	S/F switch SP 5 amps piano type mounted in cast or malleable iron galvanized conduit box bakelite plate	Each	9.00			
G-EW-9	S/F switch SP socket outlet 3 pin 5 Amps bakelite shuttered pattern complete	Each	2.00			

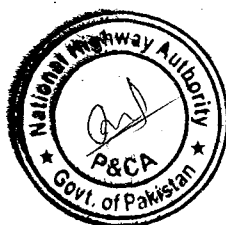


INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (SHIKARPUR ~ KANDHKOT SECTION)
KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
G-EW-10	.....ditto..... But 20 Amps	Each	1.00			
G-EW-11	S/F earthing including boring/excavation, copper rod 25mm Ø, 3000 mm long and copper conductor etc. complete in all respects to achieve resistance not more than 5 Ohms,	Each	1.00			
G-EW-12	S/F clamp hook for fan concealed	Each	1.00			
G-EW-13	S/F fan electric with regulator blades, canopy and rod incl. connections, provision of cables of fan 140 CM sweep of approved make	Each	1.00			
G-EW-14	S/F fan electric AC exhaust 45 CM 220/230 volts S.P complete with shutter	Each	2.00			
G-EW-15	S/F of board distribution MS sheet steel 16 BG thick with hinged cover and locking arrangement duly painted inside/ouside with suitable size of busbar fro connecting incoming and outgoing MCCB consisting of following:-					
	<u>INCOMING</u>					
	1. MCB SP 220 volts 50 cycle complete 30 ampsd 1 No.					
	<u>OUTGOING</u>					
	1. MCB SP 220 V 10 A to 20 A = 4 No.s	Set	1.00			
	STANDBY POWER GENERATION					
G-EW-16	Supply, installation, testing and commissioning diesel engine power, Caterpillar Made or equivalent, 100 KVA capacity 0.8 PF, 3 phase, 4 wire, 220/415 V, 50 Hz including AMF/ATS panel, making foundation and all other arrangements to make the set functional having diesel tank capacity of atleast 8 hours.	No.	1.00			
TOTAL OF BILL NO. 6A-10 : ELECTRICAL WORKS (GENERATOR ROOM)						



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (SHIKARPUR ~ KANDHKOT SECTION)
KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

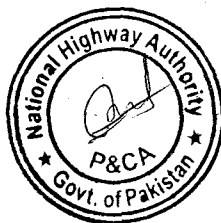
BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
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BILL NO. 11 : WEIGH STATION & ALLIED WORKS

11.1	Installation of SSWIM equipment including vault construction loop sensor installation ,necessary conduiting for power and communication cables,scale hardware at location shown in drawings including foundations. Complete in all respect as per the direction of the Engineer In Charge at site.	No	1.00			
11.2	Construction of Weigh station building having 1 x living room , 1 x Admin room , Washroom & Kitchen & control room including complete furnishing. Complete in all respect as per drawings.	No	1.00			
11.3	Construction of manholes / junction boxes for drainage and cabling from weigh scale to scale house / control room.	No	6.00			
TOTAL OF BILL NO. 6A-11 : ELECTRICAL WORKS (WEIGH STATION & ALLIED WORKS)						



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

SHIKARPUR ~ KANDHKOT SECTION

KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
Bill No 7	General Items					
Sp-701 (a)	Provide Surveying & allied instruments	PS	-	1,500,000.00	One Point Five Million	1,500,000.00
Sp-701 (b)	Maintain Survey Instruments, provide vehicle, Survey Team & helpers	Month	24.00			
Sp-702 a	Provide the Employer's and Engineer's Representative's Office & Residence (on rental basis)	PS	-	2,500,000.00	Two Point Five Million Only	2,500,000.00
Sp-702b	Furnish and Equip. Employer's & Engineer's Representative office & Residence.	PS	-	2,000,000.00	Two Million Only	2,000,000.00
Sp-702c	Maintain Employer's and Engineer's Representative office & Residence.	Month	24.00			
Sp-703a	Provide Material Testing Project Laboratory (rental basis)	PS	-	1,500,000.00	One Point Five Million	1,500,000.00
Sp-703b	Equip & Furnish Material Testing Project Laboratory.	PS	-	3,500,000.00	Three Point Five Million Only	3,500,000.00
Sp-703c	Maintain Material Testing Project Laboratory including provision 04 helpers	Month	24.00			
Sp-708b	Provide Engineer's Representative Transport (i) Toyota Double Cabin with A/C (4 wheel drive)	Each	1.00			
	(ii) Suzuki Bolan (Carry)	Each	1.00			
SP-708bi	Provide OHS Manager and support staff Transport (On rental basis) (i) Toyota Corrolla 1300 cc with A/C (01 No)	Vehicle-Month	24.00			
	(ii) Suzuki Carry (01 No)	Vehicle-Month	24.00			
Sp-708c	Running & Maintenance of Employer's / Engineer's Representative's Transport	Vehicle-Month	264.00			
NSI-IV	Employing Trainee Engineer's with Boarding, Lodging and messing	Man-Month	96.00			



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

SHIKARPUR ~ KANDHKOT SECTION
KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
	<u>OHS Provisions:</u>					
<u>SP-OHS</u>						
i)	Provide 1 x Qualified OHS Manager having international certifications as per specifications.	Man-Month	24.00			
ii)	Provide 4 nos support staff as assistant to OHS Manager as per specifications.	Man-Month	96.00			
iii)	Equip OHS Manager with necessary accessories i.e. stationery, laptop etc for proper monitoring of OHS activities.	LS	-			
iv)	Conduct OHS awareness trainings for Employer and contractor staff at site and conducting courses to visitors and new comers.	Month	24.00			
v)	Carrying out and submit the OHS manual to the Engineer's representative, monitoring of all site activities as per OHS manual and submitting monthly progress report to the Engineer representative at site.	LS	-			
vi)	Construct and maintain detours i.e. installation of safety signs and other related safety features, preparing diversion plans and submit to the Engineer's representative in accordance with GCC.	LS	-			
vii)	Provide and maintain PPE's at site.	Month	24.00			
viii)	Provide and maintain first aid kit at site.	Month	24.00			
	TOTAL BILL NO. 7					





Lot-2

**GOVERNMENT OF PAKISTAN
MINISTRY OF COMMUNICATIONS
NATIONAL HIGHWAY AUTHORITY**

**INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD
PROJECT**

**KANDH KOT ~ KASHMORE SECTION
(INCLUDING KASHMORE BYPASS)**

KM. (105+820 - KM. 164+600) LENGTH : 58.78 KM

BILL OF QUANTITIES

SEPTEMBER 2020



**NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.
HIGHWAYS & TRANSPORTATION ENGINEERING SECTION,
ATTATURK AVENUE, SECTOR G-5/2, ISLAMABAD**

Lot – 2: Kandhkot – Kashmore Section

From Km 105+820 to Km 164+600 (58.78 Km)

INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

Lot-2:

KANDH KOT ~ KASHMORE SECTION (INCLUDING KASHMORE BYPASS)

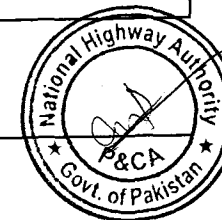
KM. (105+820 - KM. 164+600) LENGTH : 58.78 KM

BILL OF QUANTITIES

ABSTRACT OF COST

Bill No.	Description	Amount (Rs.)
1	Earth Work	
2	Sub Base & Base	
3	Surface Course & Pavement	
4a	Structures (Box Culverts)	
4b	Structures (Retaining Walls & Toe Walls)	
4c	Structures (Bridges Including Soil Investigation)	
4d	Structures (Underpasses)	
5	Drainage And Erosion Works	
6	Ancillary Works	
6a	Ancillary Works (Toll Plaza & Allied Works)	
7	General Items	
TOTAL AMOUNT (BILL NO. 1 - 7)		

Rupees in Words: _____



for

INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT
KANDH KOT - KASHMORE SECTION (INCLUDING KASHMORE BYPASS)
 KM. (105+820 - KM. 164+600) LENGTH : 58.78 KM

BILL OF QUANTITIES

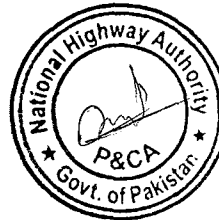
BILL OF QUANTITIES						
Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
BILL NO. 01 EARTH WORKS						
101	Clearing and Grubbing	SM	1,875,453.80			
102a	Removal of Trees 150-300 mm Girth	Each	100.00			
102b	Removal of Trees 301-600 mm Girth	Each	100.00			
102c	Removal of Trees 601mm or over Girth	Each	50.00			
104	Compaction of Natural Ground	SM	1,875,453.80			
106a	Excavate Unsuitable Common Material	CM	19,200.00			
108c	Formation of Embankment from borrow excavation in common material	CM	3,236,434.16			
108d	Formation of Embankment from Structural Excavation in common material	CM	20,775.64			
109a	Subgrade Preparation in Earthcut	SM	13,200.00			
SP-117a	Formation of granular material platform	CM	89,100.00			
SP-117b	Formation of Embankment from Borrow Rock Material	CM	478,720.00			
SP-118	Filling of Center Median With Sweet Soil	CM	40,755.00			
110	Improved Subgrade (CBR > 25)	CM	312,098.22			
TOTAL (BILL NO. 01)						



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT
KANDH KOT ~ KASHMORE SECTION (INCLUDING KASHMORE BYPASS)
 KM. (105+820 - KM. 164+600) LENGTH : 58.78 KM

BILL OF QUANTITIES

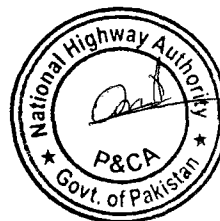
Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
BILL NO. 02 SUB-BASE & BASE						
201	Granular Subbase	CM	299,061.84			
202	Aggregate Base (Laid With Paver)	CM	236,609.52			
203b	Asphaltic Base Course Plant mix (Class B)	CM	129,510.70			
209a	Breaking of Existing Road Pavement Structure	CM	10,110.14			
209b	Scarification of Existing Road Pavement	SM	39,375.00			
	TOTAL (BILL NO. 02)					



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT
KANDH KOT - KASHMORE SECTION (INCLUDING KASHMORE BYPASS)
 KM. (105+820 - KM. 164+600) LENGTH : 58.78 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
BILL NO. 03 SURFACING & PAVEMENTS						
302a	Cut back Asphalt for Bituminous Prime Coat	SM	941,286.00			
303a	Cut back Asphalt for Bituminous Tack Coat	SM	1,860,173.70			
304c	Triple Surface Treatment	SM	333,270.00			
305a	Asphaltic Concrete for Wearing Course (Class A)	CM	47,587.16			
	TOTAL (BILL NO. 03)					



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT
KANDH KOT ~ KASHMORE SECTION (INCLUDING KASHMORE BYPASS)
KM. (105+820 - KM. 164+600) LENGTH : 58.78 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
BIII No 4a	Structure (Box Culverts)					
107a	Structural Excavation in Common Material	CM	4,974.98			
107d	Granular Backfill	CM	922.34			
107e	Common Backfill	CM	1,383.52			
401 a2i	Concrete Class A2 (Underground)	CM	65.03			
401a2ii	Concrete Class A2 (On ground)	CM	2,333.76			
401 a3ii	Concrete Class A3 (On ground)	CM	1,114.49			
401 a3iii	Concrete Class A3 (Elevated)	CM	2,351.85			
401f	Lean Concrete	CM	1,014.98			
SS-1	Extra Over for Providing Sulphate Resistant Cement in Concrete Works of specified Class:					
	for Concrete Class A 2	CM	2,398.79			
	for Concrete Class A 3	CM	1,114.49			
	for Lean Concrete	CM	1,014.98			
404b	Reinforcement as per AASHTO M-31 Grade-60	Ton	947.33			
406a	Premoulded Joint Filler 25mm Thick with Bitumastic Joint Seal	SM	366.79			
406dii	PVC Water Stop 9" Size	M	1,045.00			
509d	Grouted Rip Rap Class A	CM	212.91			
509 b	Riprap Class B	CM	859.58			
509 h	Filter Layer of Granular Material	CM	106.45			
SP-505	Cleaning & Minor Repair of Existing Structure (Culverts)	Each	52.00			
	TOTAL (BILL NO. 4a)					



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT
KANDH KOT - KASHMORE SECTION (INCLUDING KASHMORE BYPASS)
 KM. (105+820 - KM. 164+600) LENGTH : 58.78 KM

BILL OF QUANTITIES

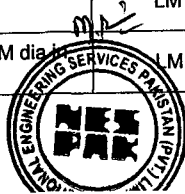
Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
Bill No 4b	Structure (Retaining Walls & Toe Walls)					
107a	Structural Excavation in Common Material	CM	22,720.50			
401f	Lean Concrete	CM	10,972.50			
401b	Concrete Class B	CM	843.70			
401h	Plum (Cyclopean / Rubble) Concrete (2:1 Conc. Stone Ratio)	CM	91,814.25			
SS-1	Extra Over for Providing Sulphate Resistant Cement in Concrete Works of specified Class:					
	for Plum Concrete	CM	91,814.25			
	for Concrete Class B	CM	843.70			
	for Lean Concrete	CM	10,972.50			
TOTAL (BILL NO. 4b)						



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT
KANDH KOT ~ KASHMORE SECTION (INCLUDING KASHMORE BYPASS)
 KM. (105+820 - KM. 164+600) LENGTH : 58.78 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
Bill No 4c	<u>Structure (Bridges)</u>					
107a	Structural Excavation in Common Material	CM	1,984.00			
107d	Granular Backfill	CM	1,811.18			
107e	Common Backfill	CM	1,811.18			
401 a2ii	Concrete Class 'A2' (ON GROUND) Approach Slab, Barrier	CM	1,271.01			
401 a3iii	Concrete Class 'A3' (ELEVATED) Pier, Transom, Deck Slab, Diaphragm, Coping, Beam Seat, Back wall & Wing Walls	CM	10,939.16			
401 a3i	Concrete Class 'A3' (UNDERGROUND) Piles	CM	9,446.08			
401 giv	Precast Concrete Class D1	CM	6,468.00			
401 f	Lean Concrete	CM	145.62			
SS-1	Extra Over for Providing Sulphate Resistant Cement in Concrete Works of specified Class:					
	for Concrete Class A 2	CM	1,271.01			
	for Concrete Class A 3	CM	9,446.08			
	for Lean Concrete	CM	145.62			
404 b	Reinforcement as per AASHTO M 31 Grade 60.	Tons	4,666.90			
404 h	Reinforcement (Structural Shapes) as per ASTM A-36.	Tons	12.71			
405 a	Prestressing Wire Strand, 3/8" - 1/2" dia. Complete in all respects	Tons	323.40			
405 b	Launching of Girder	Tons	15,178.42			
406 ei	Elastomeric Bearing Pads (According to size & thickness) USA/EU Make	Cu.cm	1,853,280.00			
407 d1	Cast-in place concrete piles, upto 1.00 M dia in Normal Soil (Boring only)	LM	343.20			
407 d2	Cast-in place concrete piles, upto 1.00 M dia in Gravel Soil (Boring only)	LM	514.80			



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT
KANDH KOT - KASHMORE SECTION (INCLUDING KASHMORE BYPASS)
KM. (105+820 - KM. 164+600) LENGTH : 58.78 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
407 d3	Cast-in place concrete piles, 1.1 - 1.5 M dia in Normal Soil (Boring only)	LM	2,609.20			
407 d4	Cast-in place concrete piles, 1.1 - 1.5 M dia in Gravel Strata(Boring only)	LM	3,913.80			
407 i	Pile Load Test for dia 1 - 1.5 M (2.5 times Design Load)	Each	7.00			
407h	Proof Load Test on Working pile (1.5 times Design Load)	Each	7.00			
407 n	Permanent Pile casing (liner 12 mm Thick) for piles	Tons	186.91			
509 d	Grouted Rip Rap Class A	CM	3,760.15			
509 h	Filter Layer of Granular Material	CM	3,760.15			
SP-417(a)	Sonic Integrity Tests (SIT) on all Piles	Each	224.00			
SP-417	Manufactured Trade Marks expansion joints for roadway (25 ~ 30) mm movement	M	828.65			
SP-418	GI Drain Pipe Dia 100 mm	M	1,476.00			
TOTAL (BILL NO. 4c)						



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT
KANDH KOT ~ KASHMORE SECTION (INCLUDING KASHMORE BYPASS)
KM. (105+820 - KM. 164+600) LENGTH : 58.78 KM

BILL OF QUANTITIES

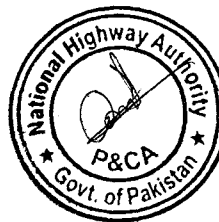
Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
Bill No 4c (i)	Structure (Soil Investigation for Bridges)					
SP-414 (a)	6" minimum dia drilling straight rotary/ Percussion including back filling of holes from NSL upto 45m depth or till the rock level which ever is met earlier.	LM	600.00			
SP-414(b)	Perform SPT at 1 m interval i/c collection, preservation & Transportation of disturbed samples to an approved Laboratory.	No.	180.00			
SP-414(b-1)	Continuous core drilling in bedrock up to a maximum of 5 m depth below rock strike level, including determination of core recovery/ RQD, preservation of core samples in core boxes, labelling, waxing of selected core samples, photography of rock cores and transportation of core samples to the laboratory. In case core recovery is less than 80% reduce run length to 0.5 m.	LM	96.00			
SP-414(c)	Collection of undisturbed soil samples from boreholes using Shelby pitcher/denison sampler i/c preservation and transportation of samples to an approved Laboratory.	No.	96.00			
SP-414(d)	Performance of FDT in test pits through sand replacement method i/c moisture content determination.	No.	216.00			
SP-414(e)	Excavation of testpits upto 1.5 m depth along road alignment including backfilling of pits to original condition.	M	96.00			
SP-414(f)	Collection of undisturbed block samples from test pits at appropriate location as directed by the Engineer.	No.	96.00			
SP-414(f1)	Collection of composite bulk sample (atleast 60 kg for sandy/clayey soils and 120 kg for gravelly soils).	No.	96.00			
SP-414(g)	Collection & preservation of water samples from bore holes & transportation to an approved Laboratory.	No.	96.00			



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT
KANDH KOT ~ KASHMORE SECTION (INCLUDING KASHMORE BYPASS)
 KM. (105+820 - KM. 164+600) LENGTH : 58.78 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
SP-414(h)i.	Laboratory Testing Grain size analysis.	No.	60.00			
ii.	Hydrometer analysis.	No.	60.00			
iii.	Atterberg limits	No.	60.00			
iv.	Specific gravity	No.	60.00			
v.	Natural moisture content	No.	60.00			
vi.	Bulk density & Dry density (Soil/rock cores)	No.	60.00			
vii.	Direct shear test	No.	60.00			
viii.	Consolidation test (collapse/swell potential)	No.	60.00			
ix.	Unconfined compression test (Soil/rock cores)	No.	60.00			
x.	Chemical analysis of soil	No.	60.00			
xi.	Chemical analysis of water	No.	60.00			
xii.	Submission of Investigation Report (triplicate)	No.	60.00			
xiii.	CBR	No.	60.00			
xvi.	Modified Proctor Test	No.	60.00			
TOTAL BILL NO. 4c (i)						



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT
KANDH KOT ~ KASHMORE SECTION (INCLUDING KASHMORE BYPASS)
KM. (105+820 - KM. 164+600) LENGTH : 58.78 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
Bill No 4d	Structure (Underpasses)					
107a	Structural Excavation in Common Material	CM	5,199.31			
107d	Granular Backfill	CM	19,625.00			
401 a2i	Concrete Class A2 (Underground) Cutoff Walls	CM	110.40			
401 a2ii	Concrete Class A2 (On Ground) Approach Slab	CM	1,149.96			
401 a3ii	Concrete Class A3 (On ground) Base Slabs	CM	3,295.91			
401 a3iii	Concrete Class A3 (Elevated) Abutment Walls, Top Slab, Wingwalls, Parapets	CM	8,515.23			
401f	Lean Concrete	CM	785.32			
SS-1	Extra Over for Providing Sulphate Resistant Cement in Concrete Works of specified Class:					
	for Concrete Class A 2	CM	1,260.37			
	for Concrete Class A 3	CM	11,811.14			
	for Lean Concrete	CM	785.32			
404b	Reinforcement as per AASHTO M-31 Grade-60	Ton	2,206.74			
406a	Premoulded Joint Filler 25mm Thick with Bitumastic Joint Seal	SM	94.51			
406dii	PVC Water Stops 9" Size	M	2,388.07			
509 a	Rip Rap Class A	CM	1,349.66			
TOTAL BILL NO. 4d						



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT
KANDH KOT ~ KASHMORE SECTION (INCLUDING KASHMORE BYPASS)
KM. (105+820 - KM. 164+600) LENGTH : 58.78 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
Bill No 5	<u>Drainage & Erosion Works</u>					
401a1ii	Concrete Class A-1 (On Ground) for Chutes, Ducts (Services Crossing) & Drain	CM	10,179.31			
401f	Lean Concrete (Drain)	CM	2,010.80			
404b	Reinforcement as per AASHTO M-31 Grade 60	Ton	1,017.93			
412a	Stone Masonary Dressed Coursed with Mortar	CM	1,015.08			
501d	Reinforced Concrete Pipe AASHTO M 170, Class II diameter 610 mm	M	220.00			
501e	Reinforced Concrete Pipe AASHTO M 170, Class II diameter 760 mm	M	660.00			
501f	Reinforced Concrete Pipe AASHTO M 170, Class II diameter 910 mm	M	660.00			
501h	Reinforced Concrete Pipe AASHTO M 170, Class II diameter 1220 mm	M	1,848.00			
502b	Concrete Class B in bedding and Encasement of Concrete Pipe Culvert	CM	4,343.18			
507a	Steel Wire Mesh for Gabions	Kg	58,078.00			
507b	Rock Fill in Gabions	CM	5,807.78			
510	Dismantling of Structures and Obstructions	CM	5,000.00			
511b2	Grouted Stone Pitching 20-25 cm Thick with Bitumen Joints	SM	180,315.30			
SP-501	Supplying & Installation of uPVC Pipe 100/150 mm dia	M	19,200.00			
SP-502	Relocation of Unlined Watercourse	SM	500.00			
SP-503	Relocation of Brick Lined Watercourse	SM	500.00			
TOTAL BILL NO. 5						



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT
KANDH KOT ~ KASHMORE SECTION (INCLUDING KASHMORE BYPASS)
 KM. (105+820 - KM. 164+600) LENGTH : 58.78 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
Bill No 6	Ancillary Works					
401f	Lean Concrete (New Jersey Barrier)	CM	6,308.96			
601ai	RCC New Jersey Barrier (In-situ) for median ; double face (including reinforcement)	M	58,425.00			
601ail	RCC New Jersey Barrier (In Situ) as per drawings ; Single face (including reinforcement)	M	10,940.00			
601dii	Pre-cast Curb in Concrete Class A-1 including bedding and haunching as per drawings	M	29,442.00			
604a	Metal Guard Rail	M	36,520.00			
604b	Metal Guard Rail End Pieces	Each	731.00			
604d	Steel Post for Metal Guard Rail	Each	19,221.05			
607a	Traffic Road Signs, Category -1	Each	150.00			
607b	Traffic Road Signs, Category - 2	Each	150.00			
607e	Traffic Road Signs, Category - 3c	SM	350.00			
608h2	Pavement Marking in Reflective TP Paint of 15 cm Width	M	317,201.94			
608j2	Pavement Marking in Reflective TP Paint for 4m Arrows	Each	75.00			
609ci	Reflectorised Plastic Pavement Studs ,(Raised Profile Type - Single)	Each	31,825.20			
610c	Kilometer Post	Each	78.00			
612a	Furnishing and Planting of Trees Including Maintenance of 2 Years	Each	8,280.00			
SP-504	Delineators/Angle Reflector	Each	4,479.25			
SP-507	Dismantling of Existing Guard Rail	M	2,000.00			
SP-601a	Gantry Sign Type -I as shown on drawings	Each	3.00			
SP-601b	Gantry Sign Type -II (Cantilever) as shown on drawings	Each	3.00			
NSI-I	Installation of Antiglare screen on New Jersey Barrier as per drawings and specifications.	Each	117,563.00			
TOTAL BILL NO. 6						



**INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT
KANDH KOT ~ KASHMORE SECTION (INCLUDING KASHMORE BYPASS)**

KM. (105+820 - KM. 164+600) LENGTH : 58.78 KM

SUMMARY COST

BILL NO 6a :(TOLL PLAZA & ALLIED WORKS)

Sr No	Description	Civil Works	Plumbing Works	Electrical Works	Total Cost (Rs.)
1	Toll Plaza				
2	Toll Booth				
3	Steel Canopy				
4	Office & Accomodation				
5	Generator Room				
6	Weigh Station & Allied Works				
	Total Cost In Rs.				

Rupees in
Words:



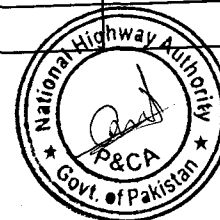
**INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT KANDH KOT ~ KASHMORE SECTION
(INCLUDING KASHMORE BYPASS)**

KM. (105+820 - KM. 164+600) LENGTH : 58.78 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
BILL NO. 01 PAVEMENT WORKS:						
101	Clearing and Grubbing	SM	7,035.00			
102a	Removal of Trees 150-300 mm Girth	Each	12.00			
102b	Removal of Trees 301-600 mm Girth	Each	11.00			
102c	Removal of Trees 600 mm or over girth	Each	31.00			
104	Compaction of Natural Ground	SM	7,035.00			
106c	Excavation of Surplus common material	CM	1,280.00			
107a	Structural excavation in common material	CM	67.00			
107d	Granular Backfill	CM	22.00			
107e	Common Backfill	CM	16.00			
108a	Formation of Embankment from roadway excavation in common material	CM	768.00			
108c	Formation of Embankment from borrow excavation in common material	CM	6,151.00			
109a	Subgrade preparation in earth cut	SM	3,333.00			
203b	Asphaltic Base Course Class B	CM	329.00			
206b	Water Bound Macadam base with coarse aggregate Class B	CM	823.00			
209a	Breaking of Existing road pavement structure	CM	555.00			
302a	Cut-Back Asphalt For Bituminous Prime Coat	SM	4,113.00			
303a	Cut-Back Asphalt For Bituminous Tack Coat	SM	4,113.00			
305b	Asphaltic concrete wearing course class-B	CM	206.00			
401a1ii	Concrete Class A-1 (on ground) for rigid pavement & barrier.	CM	1,450.00			
401b	Concrete Class B Toll Booth protection works	CM	78.00			



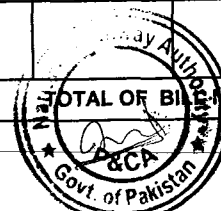
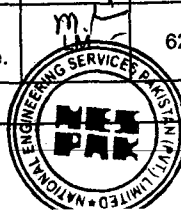
**INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT KANDH KOT ~ KASHMORE SECTION
(INCLUDING KASHMORE BYPASS)**

KM. (105+820 - KM. 164+600) LENGTH : 58.78 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
401f	Lean Concrete	CM	495.00			
404a	Reinforcement as per AASHTO M-31 grade 40	Tons	2.00			
404b	Reinforcement as per AASHTO M-31 grade 60	Tons	20.00			
410	Brick work for manhole, crash barrier etc.	CM	31.00			
510	Dismantling of structure and obstruction	CM	24.00			
601dii	Precast kerb in concrete class A-1 of size 450 x 150 mm including concrete bedding and haunching.	LM	128.00			
604a	Metal guard rail	LM	160.00			
604d	Steel post of metal guard rail	LM	96.00			
607a	Traffic road sign category 1	Each	4.00			
607b	Traffic road sign category 2	Each	4.00			
607c	Traffic road sign category (3a)	Each	6.00			
607e	Traffic road sign category (3c)	SM	38.00			
608h1	Pavement marking in reflectorized CR paint 150mm	LM	2,000.00			
609c	Reflecting Pavement studs raised profile type single sided	Each	950.00			
501a	Providing and placing of RCC pipe 310mm dia for drainage complete with all respect as per drawing and specifications.	LM	110.00			
NSI-2	Apply 03 coats plastic emulsion paint as specified.	SM	1,200.00			
NSI-3	Providing and placing plastic drums with sand in position. As per drawings	Each	192.00			
NSI-4	Providing and placing soft wooden blocks (0.3 x 0.15 x 0.15m) in position.	Each	272.00			
NSI-5	Providing and placing polythene sheet under rigid pavement	SM	5,167.00			
NSI-6	Providing all the material as per drawings & specifications and making of expansion joint as instruction of engineer in charge.	LM	980.00			
NSI-7	Providing all the material as per drawings & specifications and making of construction joint as instruction of engineer in charge.	LM	621.00			
				TOTAL OF BILL NO. 6A-01 PAVEMENT WORKS:		



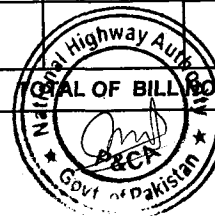
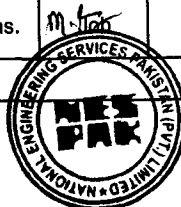
**INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT KANDH KOT ~ KASHMORE SECTION
(INCLUDING KASHMORE BYPASS)**

KM. (105+820 - KM. 164+600) LENGTH : 58.78 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
BILL NO. 02 PLUMBING WORKS:						
S.P-PW -1	Boring of well in all types of soil 100mm dia upto 90m depth.	LM	80.00			
S.P-PW -2	S/I of 100mm dia Pak therm PVC pipe casing of wall 1/4" thickness.	LM	70.00			
S.P-PW -3	S/I testing and commisioning pumping set of capacity 100m head and 60gpm including electrical wiring and pipe from pump setting to ground level and foundation etc. complete in all respect.	Set	1.00			
S.P-PW -4	S/I testing and commisioning centrifugal pumping set AC electrical motor driven 400V, 3 phase, 50 Hz, 2hp motor mounted on common channel base plate duly aligned including starter wiring and foundations etc. complete in all respect.	Set	1.00			
S.P-PW -5	Supply and fix tubes water quality (RAKtherm) with all fitting (i.e sockets, bends, tees, elbows, where required) and laid complete in trenches inclusive of excavation and backfilling or fixed to wall, ceiling, floors etc including caps, plugs as required 20mm diameter (high quality)	LM	70.00			
S.P-PW -6	.....Ditto..... But 25mm diameter	LM	60.00			
S.P-PW -7	.....Ditto..... But 50mm diameter	LM	30.00			
S.P-PW -8	Supply and fix valves "pets" pattern, strong gunmetal, high pressure " full way" valves with iron wheel head screwed both ends for iron pipe, 25mm diameter.	Each	4.00			
S.P-PW -9	.....Ditto.... But 50mm diameter.	Each	2.00			
S.P-PW -10	S / F bib cock brass chromium plated fancy type screwed down BSP 20mm diameter.	Each	6.00			
S.P-PW -11	Construction of RCC under ground water tank complete in all respect of capacity 4250 liters.	Job	1.00			
S.P-PW -12	Construction of soakage pit as per drawings and specifications.	Job	1.00			
				TOTAL OF BILL NO. 6A-02 : 02 PLUMBING WORKS:		



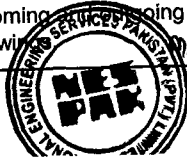
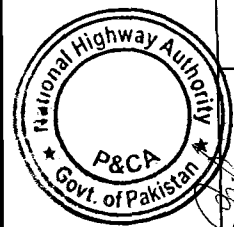
**INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT KANDH KOT ~ KASHMORE SECTION
(INCLUDING KASHMORE BYPASS)**

KM. (105+820 - KM. 164+600) LENGTH : 58.78 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
BILL NO 03. ELECTRICAL WORKS:						
SP/EW-1	Supply and Installation of Transformer 100KVa Complete with all respects.	Each	1.00			
SP/EW-2	Supply, Installation, testing and commissioning of PVC/PVC SWA cable 4 core cable copper/ conductor 16mm ² laid in trenches with sand cushion and brick including excavation and backfilling or fixed to wall, ceiling and floors as per site requirements complete in all respects.	LM	180.00			
SP/EW-2a	.....ditto..... but 25mm ²	LM	126.00			
SP/EW-2b	.....ditto..... but 25mm ³	LM	32.00			
SP/EW-3	S/F earthing including boring/excavation, copper conductor etc. complete as drawings in all respect to achieve resistance not more than 2 Ohms.	Each	1.00			
SP/EW-4	Supply, Installation, testing and commissioning of feedar pillar for supply of power to residence, stop over, toll plaza, external lighting and tube well installation having appropriate sizes as under earthing terminals for connecting of the incoming and outgoing cables complete in all respects as per drawings. 1 Magnetic contactor 225 Amps Schneider LC1F225 2,2 MCCB (TP) 250Amp Schneider EZC- 250N 5,3 C/T 200Amp 3, 6 ATS / AMF Relay 1, 7 timer with base OMRON H3BA-N 1, 8 Emergency Stop Switch 1, 9 Fuse Type Terminal Block 6mm 10, 10 Stopper for Terminal Block 2.5mm ONKA 20, 11 Selector Switch 3-Position FUJI AR22-PR2 2, 12 indication light RED/Green 5, 13 Cable Numbering Tagging & Drawing 1, 14 Wiring Duct Bus Bar Din rail & Crimps 1, 15 Wiring Charges 1, 16 Metal Enclosure (1000 x 800x 300mm) 1.	No.	1.00			
SP/EW-5	Supply, Installation, testing and commissioning of feedar pillar for supply of power to residence, toll plaza, external lighting and tube well installation having appropriate sizes as under earthing terminals for connecting of the incoming and outgoing cables complete in all respects as per drawings.	No.	1.00			



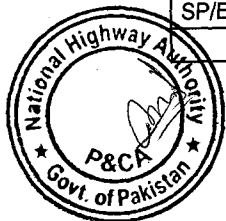
**INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT KANDH KOT ~ KASHMORE SECTION
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KM. (105+820 - KM. 164+600) LENGTH : 58.78 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
SP/EW-6	Supply, Installation, testing and commissioning of feedar pillar for supply of power to stop over, toll plaza, external lighting and tube well installation having appropriate sizes as under earthing terminals for connecting of the incoming and outgoing cables complete in all respects as per drawings.	Each	1.00			
SP/EW-7	Supply and installation of Tubular Poles 9m Long with 2 nos. of Crest LED Flood Light Model No. CR-TGA 100W-FL, LED Brand Bridgelux, Led Driver Mean Well UL Approved. Made in Pakistan Control Box with complete fittings.	No.	6.00			
SP/EW-8	Supply and installation of Tubular Poles 9.5m High of complete with single arm on RCC foundation as per drawings i/e wiring of crest LED street light Model No. CR-B100W-STL, LED Brand Bridgelux, LED Driver Mean Well UL Approved) controlled by Feedar Pillar also supply and installation with all 4 core 16mm2 cables and 3 core PVC insulated cables in PVC pipe as per drawings and specifications complete in all respect.	No.	12.00			
SP/EW-9	Supply and installation of Tubular Poles 9.5m High of complete with double arm on RCC foundation as per drawings i/e wiring of crest LED street light Model No. CR-B100W-STL, LED Brand Bridgelux, LED Driver Mean Well UL Approved) controlled by Feedar Pillar also supply and installation with all 4 core 16mm2 cables and 3 core PVC insulated cables in PVC pipe as per drawings and specifications complete in all respect i.e earthing.	No.	6.00			
SP/EW-10	Supply and fixing PVC conduit for ETTM system cables, fixed as per ETTM system companies required in concrete or trench, complete with all respects, excavation, bricks and backfilling as required & instructed by the engineers incharge.					
SP/EW-10-i	50mm i/d Class B polo / Beta or Shawal.	LM	30.00			
SP/EW-10-ii	75mm i/d Class B polo / Beta or Shawal.	LM	30.00			
SP/EW-10-iii	100mm i/d Class B polo / Beta or Shawal.	LM	270.00			
TOTAL OF BILL NO. 6A-03. ELECTRICAL WORKS:						



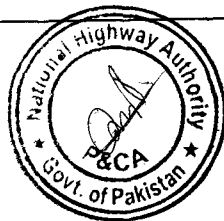
**INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT KANDH KOT ~ KASHMORE SECTION
(INCLUDING KASHMORE BYPASS)**

KM. (105+820 - KM. 164+600) LENGTH : 58.78 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
BILL NO 04: TOLL BOOTH						
NSI-1	P/F of Aluminium Composite Panel on outer side of booth	SM	24.94			
NSI-2	P/F of 2 ply Fiber glass on inner side of toll booth	SM	24.94			
NSI-3	P/F of insulation Thermo pore 25 kg / cum in between ms sheet and fiber glass in toll booth	SM	21.91			
NSI-4	P/F of False Ceiling 0.6x0.6 side of toll booth	SM	4.06			
NSI-5	P/F of computer and cash table with Lassani (16mm) 3/4" thick	SM	1.35			
NSI-6	P/F of Ventilator of Aluminium Sliding shutter with grill in Toll Booth	SM	0.23			
NSI-7	P/F of 50mm Sqr. 16 swg Frame pipe for toll booth	M	93.06			
NSI-8	P/F of 100mm with 8.0 mm wall thickness steel pipe frame for Toll Booth protection	M	49.96			
NSI-9	P/F of Tempered Glass 5mm thick in toll booth	SM	7.37			
NSI-10	P/F of 10" dia Exhaust fan along with closers and fly netting	Each	1.00			
NSI-12	P/F of Rawplug 12.5mm thick 150mm long for booth protection pipe.	No.	16.00			
NSI-13	P/F of steel base plate 250 mm dia 16mm thick for booth protection pipe.	No.	4.00			
NSI-14	P/F of steel base plate 250x250 mm dia 16 mm thick for booth protection pipe	No.	4.00			
NSI-16	P/F of Crest brand LED slim Panel Lights (Model: CR-882-8PL) in false ceiling (12 watts of Toll Booth as per approved drawing.)	No.	2.00			
NSI-17	P/F of Door lock of Toll Booth as per approved drawing.	No.	1.00			
NSI-18	P/F of complete Wiring with PVC conduit in Booth for Exhaust fan, two LED Slim Lights and two sockets, A/C 1.0 ton etc. as per approved drawing	No.	1.00			
NSI-19	P/F of Circuit breaker as per requirement, as per approved drawing.	No.	3.00			



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BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
NSI-20	P/F of one three pin socket outlet 15/20 amps point controlled by one switch wiring complete with pvc single core cable 4 sq. m in concealed pvc conduit including earth wire. Circuit breaker as per requirement, as per approved drawing	No.	3.00			
NSI-21	P/F of Power plug along with accessories	No.	1.00			
NSI-22	P/I of A/C 1.0 ton ACSON / Mitsubishi or Equal of MS pipe grill fixed for outdoor unit complete fitting with all safety measures and necessary welding bolts and nuts as required, rubber packing and other materials. Power plug along with accessories.	No.	1.00			
NSI-23	P/I circuit wiring from DB to switch board, wiring with PVC single core cable 2.5 sq. mm + 1.5 mm as ECC in PVC conduit concealed as per site requirement of als. Power plug along with accessories	M	25.00			
NSI-24	Providing of Revolving Chair as per requirement or as directed by the engineer	No.	1.00			
SUB TOTAL OF BILL NO. 6A-04: TOLL BOOTH (01 No)						
TOTAL OF BILL NO. 6A-04: 16 Nos TOLL BOOTH						



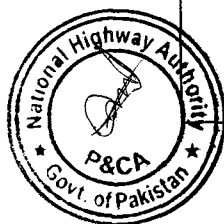
**INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT KANDH KOT ~ KASHMORE SECTION
(INCLUDING KASHMORE BYPASS)**

KM. (105+820 - KM. 164+600) LENGTH : 58.78 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
BILL NO 05: (STEEL WORKS) Fabrication						
SC-1	Providing Fabricating and installing structural steel works including shop welding, field splicing, bolting, painting over exposed surfaces as required in the structural drawings and notes also including all accessories such as bolts, connecting angles, connection, plates, the rods etc complete in all respects as per drawings and specifications or as directed by the engineer. Steel Column Box Section- 15" 15" 0.5" Thick 28.72 Kg/ft	Kg	45,000.00			
SC-2	.....Ditto..... High Tensile anchor bolts and nuts , 25mm dia	Nos.	64.00			
SC-3	Supply, cutting to size and erecting 22 SWG Black Iron Powder coated sheet for false ceiling including overtape, edge elements and making openings. Also including fixing with "J" bolts , nuts and washers etc. complete in all respects as per specification and as directed by the engineer	Sqm.	740.00			
SC-4	Providing and fixing specified GI corrugated sheeting 22 SWG for roof including anchor bolts. Complete in all respects as per details given in the drawings or as directed by the engineer	Sqm.	740.00			
SC-5	Providing and fixing specified GI rain water pipe (ILL or equivalent approved) fixed along steel columns, including bends and other fixing etc. complete in all respects as per drawings and the specifications or as directed by the Engineer. a) 100mm dia	m	53.60			
SC-6	Provide, fabricate and fix G.I sheet drainage gully as per details on the structural drawings and specified or as directed by the engineer complete in all respects (750mm x 500mm)	m	40.00			
SC-7	Supply / installation of 3M (high intensity Grade reflecting Sheet) on 16 SWG G.I sheet with the name of Toll Plaza of appropriate readable size complete in all respects without air bubbles the rate shall inclusive of all materials steel pipe and angle frame , riveting and installation complete at site as directed by the engineer	Sqm	60.00			



**INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT KANDH KOT ~ KASHMORE SECTION
(INCLUDING KASHMORE BYPASS)**

KM. (105+820 - KM. 164+600) LENGTH : 58.78 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
SC-8	Supply and install canopy Light (Crest LED Canopy Light Model No. CR-56-90W-KPL, LED Brand: CREE, LED Driver : Mean Well UL approved) electrical connections and wiring (Pakistan/life/new age cables) all items should be made in Pakistan.	Nos.	16.00			
SC-9	Supply and install Facia illumination (Crest LED Flood Light (Model No. CR-TGA30W-FL, LED Brand Bridgelux, Led Driver Mean Well UL Approved) on Bracket Along with pipe as per site requirement) Electrical connections and wiring (Pakistan/life/new age cables) all items should be made in Pakistan	Nos.	16.00			
SC-10	Supply/install G.I channel hanging frame with appropriate spacing for fixing of false ceiling sheet	SM	768.00			
SC-11	Providing/grouting master flow 524 (non shrinkage material) between existing foundation and base plate, having 650 x 650 mm foundation including cost of carriage labor etc	Nos.	6.00			
SC-12	Encasing of 100mm drain pipe and 65mm dia electric pipe with the "H" column with 16 gauge GI sheet fixed with 10mm dia nuts welded with angle iron and bolts 40mm long duly painted with enamel paint etc. complete	Sqm.	56.00			
TOTAL OF BILL NO. 6A-05: (STEEL WORKS) Fabrication						



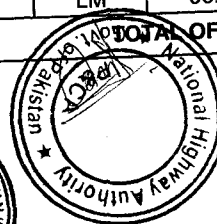
**INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT KANDH KOT ~ KASHMORE SECTION
(INCLUDING KASHMORE BYPASS)**

KM. (105+820 - KM. 164+600) LENGTH : 58.78 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
BILL NO 06 (ELECTRICAL WORKS) Steel Canopy:						
SC/E-01	Supply installation and commissioning of cu PVC insulated 3 core cables in PVC pipe including all material and accessories as shown on drawings all complete (iv) 3 core 4mm sq. (Pakistan/life/new age Cables)	LM	240.00			
SC/E-02	Supply installation and commissioning of cu PVC insulated 3 core cables in PVC pipe including all material and accessories as shown on drawings all complete (iv) 3 core 2.5mm sq. (Pakistan/life/new age Cables)	LM	240.00			
SC/E-03	Supply installation testing and commissioning of cu PVC pipes including all material and accessories as shown on drawings all complete (iv) 4 core 10mm sq. (Pakistan/life/new age Cables)	LM	248.00			
SC/E-04	Supplying and laying of following heavy duty PVC pipe buried under ground in ceiling, walls, floor & columns etc for incoming and outgoing cables at various points and also weather proof from both ends including all materials and accessories as per site requirement as shown on drawings complete in all respects					
	(i) 100mm polo/ beta or Shawal	LM	112.00			
	(i) 50mm polo/ beta or Shawal	LM	96.00			
TOTAL OF BILL NO. 6A-06: (ELECTRICAL WORKS) Steel Canopy:						



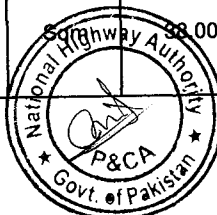
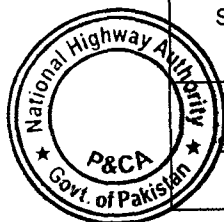
**INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT KANDH KOT ~ KASHMORE SECTION
(INCLUDING KASHMORE BYPASS)**

KM. (105+820 - KM. 164+600) LENGTH : 58.78 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
S-P 1	Providing and laying of sand cushion under floors all as per drawings & specifications.	Cum	29.00			
S-P 2	Providing and laying of brick ballast under floors all as per drawing & specifications	Cum	21.00			
S-P 3	Termite proofing to all building area with approved chemical all as specified.	Sqm	560.00			
S-P 4	50mm thick DPC of PCC (1:2:4) using 3mm aggregate and finished smooth with steel float covered with two coats of hot bitumen @0.75 kg per Sqm and double layer of polythene sheet as required	Sqm	42.00			
S-P 5	75mm thick PCC (1:2:4) screeding with XPM weigh n.exc 4.5kg/Sqm over 50mm thick thermopore sheet, two layers polythene sheet and two coats water proofing compound using bitumen 10-20 applied hot @4.9 kg/ 10 Sqm per coat including pee gravels and cleaning the surface before applying bitumen as specified complete with all respects	Sqm	371.00			
S-P 6	Supply and fix kitchen floor sink cabinet with or without drawers including all necessary chromium plated mongry, fitting/fixtures and deodar wood eding provided to doors and drawer of cabinet and 20mm thick prepolished marble slab fix on top of cabinet as specified all as per drawing	Meter	6.00			
S-P 7	Supply and fix kitchen wall cabinet including all necessary chromium plated mongry, fitting/fixtures and deodar wood edging provided to doors of cabinet as specified all as per drawings	Meter	6.00			
S-P 8	Supply and fix kitchen exhaust hood and duct of 20mm thick lamination board with 26 gauge GI sheet lining inside including fitting/fixtures as specified all as per drawings	Meter	1.00			
S-P 9	Wooden flush doors covered with fibre glass and steel frame, imported lock, brass mongry and architrave as shown, including 3 coats synthetic enamel paint etc all as per drawing.	Sqm	98.00			



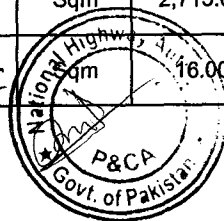
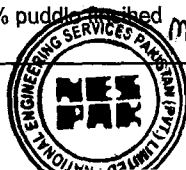
**INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT KANDH KOT ~ KASHMORE SECTION
(INCLUDING KASHMORE BYPASS)**

KM. (105+820 - KM. 164+600) LENGTH : 58.78 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
S-P 10	Supply and fix aluminium premium model bronze colour sliding windows including fly/insect proofing 5mm tinted imported glass etc all as per drawings	Sqm	44.00			
S-P 11	Supply and fix aluminium door powder coated with 5mm frosted glass of washroom areas all as per drawing	Sqm	2.00			
S-P 12	Supply and fix cast iron work weight n.exc 6 kg in grating, mahole covers all as per drawings and specifications	Kg	15.00			
S-P 13	Supply and fix MS 16 gauge square pipe railing & grills with painting complete all as per drawings and specifications.	Sqm	43.00			
S-P 14	Supply and fix steel grill & (stair hand rail) with painting complete all as per drawings & specifications	Sqm	6.00			
S-P 15	Providing and laying 300mmx300mmx20mm thick Marble tiles in floors setting and jointing in CM (1:2) including cutting, rubbing and polishing all as per drawings & specifications	Sqm	286.00			
S-P 16	Providing and laying 12mm thick boticina cream marble set in CM (1:2) as in skirting including cutting, rubbing, and polishing all as per drawigs and specifications	Sqm	20.00			
S-P 17	.....Ditto..... but venity top slabs if granite marble including cutting bowl etc all as per drawings & specifications	Sqm	2.00			
S-P 18	Supply and fix 200mmx200mm ceramic mat tiles set in CM(1:2) including joints fitted with white cement all as per drawing.	Sqm	142.00			
S-P 19	Providing and fixing 20mm laminated win board ward robe with wooden frame and lamination win board drawers including brass mangy fittings all as per drawings	Each	24.00			
S-P 20	13mm thick cement plaster (1:4) finished smooth as specified	Sqm	2,715.00			
S-P 21	13mm thick cement plaster (1:4) with 3% puddle finished smooth as specified	Sqm	16.00			



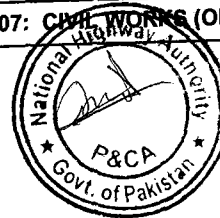
**INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT KANDH KOT ~ KASHMORE SECTION
(INCLUDING KASHMORE BYPASS)**

KM. (105+820 - KM. 164+600) LENGTH : 58.78 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
S-P 22	Apply 3 coats plastic emulsion paint as specified	Sqm	2,155.00			
S-P 23	Apply grapitio coating external face of walls	Sqm	560.00			
S-P 24	24 gauge CGI rolling shutter with frame and other accessories all as per drawings	Sqm	9.00			
TOTAL OF BILL NO. 6A-07: CIVIL WORKS (OFFICE AND ACCOMODATION BUILDING)						



**INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT KANDH KOT ~ KASHMORE SECTION
(INCLUDING KASHMORE BYPASS)**

KM. (105+820 - KM. 164+600) LENGTH : 58.78 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
BILL NO 08: PLUMBING WORKS (OFFICE AND ACCOMODATION BUILDING):						
SP-WS-1	Supply and fix tubes water quality (G.I) with all fitting (i.e sockets, bends, tees, elbows etc.) and laid complete in trenches (exclusive of excavation) or fixed to walls, ceilings, floors etc including caps, plugs as required 15mm diameter (light quality)	Meter	62.00			
SP-WS-2	Ditto..... But 20mm diameter	Meter	46.00			
SP-WS-3	Ditto..... But 25mm diameter	Meter	80.00			
SP-WS-4	Ditto..... But 32mm diameter	Meter	15.00			
SP-WS-5	Ditto..... But 50mm diameter	Meter	25.00			
SP-WS-6	Supply and fix valves "peets" pattern, strong gunmetal, high pressure, "full-way" valves with iron wheel head screwed both ends for iron pipe, 20 mm diameter	Each	5.00			
SP-WS-7	Ditto..... But 25mm diameter	Each	4.00			
SP-WS-8	Ditto..... But 40mm diameter	Each	2.00			
SP-WS-9	Ditto..... But 60mm diameter	Each	1.00			
SP-WS-10	S/F bib cock brass chromium plated fancy type screwed down BSP 15mm diameter	Each	14.00			
SP-WS-11	S/F 15mm Tee stop cock brass chromium plated screw down high pressure fancy type	Each	30.00			
SP-WS-12	S/F 15mm stop cock brass chromium plated screw down high pressure fancy type	Each	24.00			
SP-WS-13	S/F adjustable CP shower fancy type	Each	7.00			



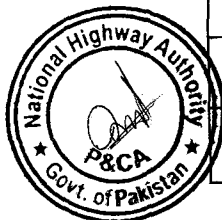
**INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT KANDH KOT ~ KASHMORE SECTION
(INCLUDING KASHMORE BYPASS)**

KM. (105+820 - KM. 164+600) LENGTH : 58.78 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
SP-WS-14	S/F Electric gyser of capacity 45 ltr.	Each	3.00			
SP-WS-15	Supply and fix water closet apparatus European pattern complete comprising closet, 13 ltr cistern flushing, seat cover etc (coupled set) in white / light colour any size or make fixed to concrete.	Each	7.00			
SP-WS-16	Supply and fix sink scullery of stainless steel with single drainage board complete shallow or deep pattern upto 6000 centimeter square, super, fixed to brick work or wood (Pak made).	Each	1.00			
SP-WS-17	Supply and fix venity in white/light colour with one hole, coupling chain & plug and bottle trap best quality (imported) fixed to brick or concrete work.	Each	6.00			
SP-WS-18	Supply and fixed urinals blazed ware complete with flush tank.	Each	7.00			
SP-WS-19	Supply and fix mirror any shape and pattern 5mm thick of sizes, foreign made edged ground complete fixed to brick or concrete work	Sqm	6.00			
SP-WS-20	Supply and fix 100mm dia CI floor trap including reducer etc complete	Each	18.00			
SP-WS-21	Supply and fix casted grating chromium plated 150mm x 150mm	Each	16.00			
SP-WS-22	Supply and fix 50mm bore cast iron soil waste and vent pipes and fitting as specified (Spun pipe)	Meter	50.00			
SP-WS-23	.....Ditto.... But 75mm bore	Meter	40.00			
SP-WS-24	.....Ditto.... But 100mm bore	Meter	65.00			
SP-WS-25	Supply and fix 50mm bore CI bends tapers, double socket and oval pattern accessories complete	Each	22.00			
SP-WS-26Ditto.... But 75mm bore	Each	22.00			
SP-WS-27Ditto.... But 100mm bore	Each	27.00			



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BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
SP-WS-28	Supply and fix 50mm bore CI tee branch pieces single equal or unequal arms etc complete	Each	3.00			
SP-WS-29	.....Ditto..... But 75mm bore	Each	3.00			
SP-WS-30	.....Ditto..... But 100mm bore	Each	5.00			
SP-WS-31	Supply and fix 50mm bore CI cowls for vent pipes	Each	5.00			
SP-WS-32	Supply and fix reinforced cement concrete pipe 100mm bore , laid and jointed with spigot socket or collars as specified	Meter	15.00			
SP-WS-33	.....Ditto..... But 150mm bore	Meter	20.00			
SP-WS-34	Supply and fix glazed ware gully trap embedding in PCC (1:2:4) concrete 150mm all around and at bottom of gully trap all as specified	Each	4.00			
SP-WS-35	Construction man holes rectangular exceeding 600mm deep from invert to surface of cover, including main channel set in CM (1:1) 230 mm thick brick walls complete with man hole covers	Each	2.00			
SP-WS-36	Construction of septic tank for 24Men all as per drawins and Specifications	Each	1.00			
SP-WS-37	Supply and fix CP Mixer 15mm dia best quality for vanities and sink etc	Each	4.00			
SP-WS-38	Providing and laying 100mm dia wire ballon grating over rain water pipes	Each	6.00			
TOTAL OF BILL NO. 6A-08: PLUMBING WORKS (OFFICE AND ACCOMODATION BUILDING):						



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KM. (105+820 - KM. 164+600) LENGTH : 58.78 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
BILL NO 09 : ELECTRICAL WORKS (OFFICE AND ACCOMODATION BUILDING)						
SP-EW-1	S/F Circuit wiring from DB to switch board, wiring with PVC single core cable 2.5 Sq. mm + 1.5 Sq. mm as ECC in PVC conduit concealed as per site requirement	Point	13.00			
SP-EW-2	S/F of one fan point, one light point, one bell point controlled by one switch, wiring complete with PVC single core cable 1.5 mm ² in concealed PVC conduit	Point	160.00			
SP-EW-3	S/F of one three pin socket outlet 5 Amps point controlled by one switch wiring complete with PVC single core cable 1.5 mm in concealed PVC conduit including earthwire.	Point	18.00			
SP-EW-4	S/F of one three pin socket outlet 15/20 Amps point controlled by one switch wiring complete with PVC single core cable 4 Sq.mm in concealed PVC conduit including earth wire	Point	19.00			
SP-EW-5	S/F bracket wall with globe white glass opal 150mm dia complete with gallery and lamps holder BC	Each	30.00			
SP-EW-6	S/F Philips patty fitting complete with 1x40 W tube lamp starter and holders	Each	32.00			
SP-EW-7	S/F Ceiling mounted Philips light complete with flourocent tube, choke, starter and capacitor TCS 4 x 20W	Each	6.00			
SP-EW-8	S/F SPOT LIGHTs philips made with holder/ reflector complete	Each	1.00			
SP-EW-9	S/F ceiling lights fancy type as approved by Engineer in Charge	Each	3.00			
SP-EW-10	S/F schandlier single bulb fancy type as approved by engineer in charge	Each	3.00			
SP-EW-11	S/F bulb head fitting cast iron with guard tapped 20mm E.T. according to BSS No. 229 of 1957	Each	25.00			
SP-EW-12	S/F switch SP 5 amps piano type mounted in cast or malleable iron galvanized conduit box with bakelite plate	Each	150.00			



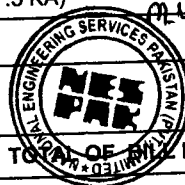
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BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
SP-EW-13	S/F switch socket outlet 3 pin 5 Amps bakelite shuttered pattern complete	Each	27.00			
SP-EW-14	.....ditto..... but 20 Amps.	Each	20.00			
SP-EW-15	S/F earthing including boring/excavation, copper rod 25mm, 3000 mm long and copper conductor etc. complete in all respects to achieve resistance not more than 5 Ohms.	Each	1.00			
SP-EW-16	S/F clamp hooked for fan concealed	Each	27.00			
SP-EW-17	S/F fan electric with regulator blades, canopy and rod including connections, provision of cables and fan of 140 CM sweep of approved make	Each	25.00			
SP-EW-18	S/F exhaust fan 250mm capacity with shutter/grill plastic body single action (Pak fan)	Each	7.00			
SP-EW-19	S/F fan electric AC exhaust 30 CM 220/230 volts S.P. complete with shutter	Each	5.00			
SP-EW-20	S/F wall bracket fan fancy plastic body 450mm Pak fan	Each	3.00			
SP-EW-21	S/F PVC conduit 40mm dia complete with all bands, tees, boxes, saddles, etc for concealed wiring	Metre	17.00			
SP-EW-22	S/F of board distribution MS sheet steel 16 BG thick with hinged cover and locking arrangement duly painted inside/outside with suitable size of busbar for connecting incoming and outgoing MCCB consisting of following:-					
	INCOMING					
	MCCB TP 500/660 volts 50 cycle complete with thermal & magnetic trip 60 Amps (Breaking capacity 7.5 KA)					
	OUTGOING					
	1. MCB SP 220V 10A to 20A = 33 Nos.	Set	1.00			
TOTAL OF BILL NO. 6A-09 : ELECTRICAL WORKS (OFFICE AND ACCOMODATION BUILDING)						



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BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
BILL NO 10 : ELECTRICAL WORKS (GENERATOR ROOM)						
G-EW-1	S/F circuit wiring from DB to switch board, wiring with PVC single core cable 2.5 Sq.mm + 1.5 Sq.mm ECC in PVC conduit concealed as per site requirement	Point	1.00			
G-EW-2	S/F of one fan point, one light point, one bell point controlled by one switch, wiring complete with PVC single core cable 1.5mm ² in concealed PVC conduit	Point	10.00			
G-EW-3	S/F of one three pin socket outlet 5 Amps point controlled by one switch wiring complete with PVC single core cable 1.5mm in concealed with PVC conduit including earth wire.	Point	2.00			
G-EW-4	S/F of one three pin socket outlet 15/20 Amps point controlled by one switch wiring complete with PVC single core cable 4 Sq.mm in concealed PVC conduit including earth wire	Point	1.00			
G-EW-5	S/F bracket wall with globe white glass opal 150 mm dia complete with gallery and lamp holder BC	Each	1.00			
G-EW-6	S/F Philips patty fitting complete with 1x40 W tube lamp starter and holders.	Each	1.00			
G-EW-7	S/F bulb head fitting cast iron with guard tapped 20mm E.T. according to BSS No. 229 of 1957	Each	4.00			
G-EW-8	S/F switch SP 5 amps piano type mounted in cast or malleable iron galvanized conduit box bakelite plate	Each	9.00			
G-EW-9	S/F switch SP socket outlet 3 pin 5 Amps bakelite shuttered pattern complete	Each	2.00			



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BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

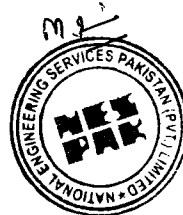
Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
G-EW-10	.....ditto..... But 20 Amps	Each	1.00			
G-EW-11	S/F earthing including boring/excavation, copper rod 25mm Ø, 3000 mm long and copper conductor etc. complete in all respects to achieve resistance not more than 5 Ohms,	Each	1.00			
G-EW-12	S/F clamp hook for fan concealed	Each	1.00			
G-EW-13	S/F fan electric with regulator blades, canopy and rod incl. connections, provision of cables of fan 140 CM sweep of approved make	Each	1.00			
G-EW-14	S/F fan electric AC exhaust 45 CM 220/230 volts S.P complete with shutter	Each	2.00			
G-EW-15	S/F of board distribution MS sheet steel 16 BG thick with hinged cover and locking arrangmenting duly painted inside/ouside with suitable size of busbar fro connecting incoming and outgoing MCCB consisting of following:-					
	INCOMING					
	1. MCB SP 220 volts 50 cycle complete 30 ampsd 1 No.					
	OUTGOING					
	1. MCB SP 220 V 10 A to 20 A = 4 No.s	Set	1.00			
	STANDBY POWER GENERATION					
G-EW-16	Supply, installation, testing and commissioning diesel engine power, Caterpillar Made or equivalent, 100 KVA capacity 0.8 PF, 3 phase, 4 wire, 220/415 V, 50 Hz including AMF/ATS panel, making foundation and all other arrangements to make the set functional having diesel tank capacity of atleast 8 hours.	No.	1.00			
TOTAL OF BILL NO. 6A-10 : ELECTRICAL WORKS (GENERATOR ROOM)						



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT
KANDH KOT - KASHMORE SECTION (INCLUDING KASHMORE BYPASS)
 KM. (105+820 - KM. 164+600) LENGTH : 58.78 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
Bill No 7	General Items					
Sp-701 (a)	Provide Surveying & allied instruments	PS	-	1,500,000.00	One Point Five Million Only	1,500,000.00
Sp-701 (b)	Maintain Survey Instruments, provide vehicle, Survey Team & helpers	Month	24.00			
Sp-702 a	Provide the Employer's and Engineer's Representative's Office & Residence (on rental basis)	PS	-	2,500,000.00	Two Point Five Million Only	2,500,000.00
Sp-702b	Furnish and Equip. Employer's & Engineer's Representative office & Residence.	PS	-	2,000,000.00	Two Million Only	2,000,000.00
Sp-702c	Maintain Employer's and Engineer's Representative office & Residence.	Month	24.00			
Sp-703a	Provide Material Testing Project Laboratory (rental basis)	PS	-	1,500,000.00	One Point Five Million Only	1,500,000.00
Sp-703b	Equip & Furnish Material Testing Project Laboratory.	PS	-	3,500,000.00	Three Point Five Million Only	3,500,000.00
Sp-703c	Maintain Material Testing Project Laboratory including provision 04 helpers	Month	24.00			
Sp-708b	Provide Engineer's Representative Transport					
	Suzuki Bolan (Carry)	Each	1.00			
SP-708bi	Provide OHS Manager and support staff Transport (On rental basis) (i) Toyota Corrolla 1300 cc with A/C (01 No)	Vehicle-Month	24.00			
	(ii) Suzuki Carry (01 No)	Vehicle-Month	24.00			
Sp-708c	Running & Maintenance of Employer's / Engineer's Representative's Transport	Vehicle-Month	264.00			
NSI-IV	Employing Trainee Engineer's with Boarding, Lodging and messing	Man-Month	96.00			



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT
KANDH KOT - KASHMORE SECTION (INCLUDING KASHMORE BYPASS)
KM. (105+820 - KM. 164+600) LENGTH : 58.78 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
	<u>OHS Provisions:</u>					
<u>SP-OHS</u>						
i)	Provide 1 x Qualified OHS Manager having international certifications as per specifications.	Man-Month	24.00			
ii)	Provide 4 nos support staff as assistant to OHS Manager as per specifications.	Man-Month	96.00			
iii)	Equip OHS Manager with necessary accessories i.e. stationery, laptop etc for proper monitoring of OHS activities.	LS	-			
iv)	Conduct OHS awareness trainings for Employer and contractor staff at site and conducting courses to visitors and new comers.	Month	24.00			
v)	Carrying out and submit the OHS manual to the Engineer's representative, monitoring of all site activities as per OHS manual and submitting monthly progress report to the Engineer representative at site.	LS	-			
vi)	Construct and maintain detours i.e. installation of safety signs and other related safety features, preparing diversion plans and submit to the Engineer's representative in accordance with GCC.	LS	-			
vii)	Provide and maintain PPE's at site.	Month	24.00			
viii)	Provide and maintain first aid kit at site.	Month	24.00			
TOTAL BILL NO. 7						



(Final) By hand
07/07/20



Lot-3

**GOVERNMENT OF PAKISTAN
MINISTRY OF COMMUNICATIONS
NATIONAL HIGHWAY AUTHORITY**

**INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT
(N-55)**

KASHMORE ~ ROJHAN SECTION

KM. (164+600 - KM. 213+500) LENGTH : 48.90 KM

BILL OF QUANTITIES

JUNE 2020



**NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.
HIGHWAYS & TRANSPORTATION ENGINEERING SECTION,
ATTATURK AVENUE, SECTOR G-5/2, ISLAMABAD**

Lot – 3: Kashmore – Rojhan Section

From Km 164+600 to Km 213+500 (48.90 KM)

INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

KASHMORE ~ ROJHAN SECTION

Lot-3:

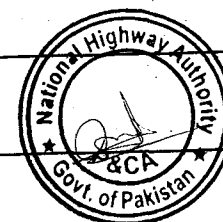
KM. (164+600 - KM. 213+500) LENGTH : 48.90 KM

BILL OF QUANTITIES

ABSTRACT OF COST

Bill No.	Description	Amount (Rs.)
1	Earth Work	
2	Sub Base & Base	
3	Surface Course & Pavement	
4a	Structures (Box Culverts)	
4b	Structures (Retaining Walls & Toe Walls)	
4c	Structures (Bridges Including Soil Investigation)	
5	Drainage And Erosion Works	
6	Ancillary Works	
7	General Items	
TOTAL AMOUNT (BILL NO. 1 - 7)		

Rupees in Words: _____



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

KASHMORE ~ ROJHAN SECTION

KM. (164+600 - KM. 213+500) LENGTH : 48.90 KM

BILL OF QUANTITIES

BILL OF QUANTITIES						
Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
BILL NO. 01 EARTH WORKS						
101	Clearing and Grubbing	SM	1,109,856.00			
102a	Removal of Trees 150-300 mm Girth	Each	100.00			
102b	Removal of Trees 301-600 mm Girth	Each	100.00			
102c	Removal of Trees 601mm or over Girth	Each	150.00			
104	Compaction of Natural Ground	SM	1,109,856.00			
106a	Excavate Unsuitable Common Material	CM	38,400.00			
108c	Formation of Embankment from borrow excavation in common material	CM	801,902.15			
108d	Formation of Embankment from Structural Excavation in common material	CM	20,809.85			
109a	Subgrade Preparation in Earthcut	SM	13,200.00			
SP-117a	Formation of granular material platform	CM	5,940.00			
SP-118	Filling of Center Median With Sweet Soil	CM	3,712.50			
110	Improved Subgrade (CBR > 25)	CM	220,991.40			
TOTAL (BILL NO. 01)						



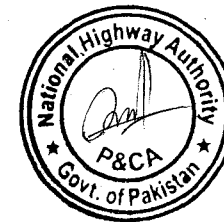
INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

KASHMORE ~ ROJHAN SECTION

KM. (164+600 - KM. 213+500) LENGTH : 48.90 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
BILL NO. 02 SUB-BASE & BASE						
201	Granular Subbase	CM	204,202.32			
202	Aggregate Base (Laid With Paver)	CM	160,161.12			
203b	Asphaltic Base Course Plant mix (Class B)	CM	90,376.94			
209a	Breaking of Existing Road Pavement Structure	CM	13,390.44			
209b	Scarification of Existing Road Pavement	SM	16,500.00			
	TOTAL (BILL NO. 02)					



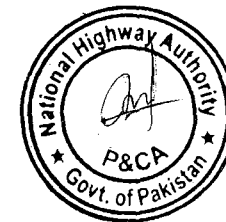
INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

KASHMORE ~ ROJHAN SECTION

KM. (164+600 - KM. 213+500) LENGTH : 48.90 KM

BILL OF QUANTITIES

BILL OF QUANTITIES						
Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
BILL NO. 03 SURFACING & PAVEMENTS						
302a	Cut back Asphalt for Bituminous Prime Coat	SM	573,519.00			
303a	Cut back Asphalt for Bituminous Tack Coat	SM	1,129,711.80			
304c	Triple Surface Treatment	SM	194,544.00			
305a	Asphaltic Concrete for Wearing Course (Class A)	CM	28,675.92			
TOTAL (BILL NO. 03)						



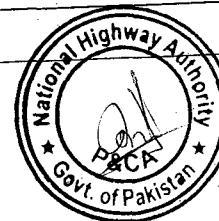
INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

KASHMORE ~ ROJHAN SECTION

KM. (164+600 - KM. 213+500) LENGTH : 48.90 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
Bill No 4a	Structure (Box Culverts)					
107a	Structural Excavation in Common Material	CM	25,063.54			
107d	Granular Backfill	CM	2,753.13			
107e	Common Backfill	CM	4,129.69			
401 a2i	Concrete Class A2 (Underground)	CM	393.84			
401a2ii	Concrete Class A2 (On ground)	CM	5,969.04			
401 a3ii	Concrete Class A3 (On ground)	CM	6,234.49			
401 a3iii	Concrete Class A3 (Elevated)	CM	12,331.23			
401f	Lean Concrete	CM	3,542.51			
SS-1	Extra Over for Providing Sulphate Resistant Cement in Concrete Works of specified Class:					
	for Concrete Class A 2	CM	6,362.88			
	for Concrete Class A 3	CM	6,234.49			
	for Lean Concrete	CM	3,542.51			
404b	Reinforcement as per AASHTO M-31 Grade-60	Ton	4,070.66			
406a	Premoulded Joint Filler 25mm Thick with Bitumastic Joint Seal	SM	1,289.86			
406dii	PVC Water Stop 9" Size	M	3,415.87			
509d	Grouted Rip Rap Class A	CM	1,137.83			
509 b	Riprap Class B	CM	2,193.06			
509 h	Filter Layer of Granular Material	CM	568.92			
SP-505	Cleaning & Minor Repair of Existing Structure (Culverts)	Each	124.00			
TOTAL (BILL NO. 4a)						



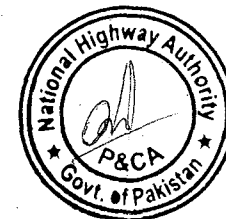
INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

KASHMORE ~ ROJHAN SECTION

KM. (164+600 - KM. 213+500) LENGTH : 48.90 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
Bill No 4b	Structure (Retaining Walls & Toe Walls)					
107a	Structural Excavation in Common Material	CM	3,542.00			
401f	Lean Concrete	CM	1,472.90			
401b	Concrete Class B	CM	196.70			
401h	Plum (Cyclopean / Rubble) Concrete (2:1 Conc. Stone Ratio)	CM	13,964.50			
SS-1	Extra Over for Providing Sulphate Resistant Cement in Concrete Works of specified Class:					
	for Plum Concrete	CM	13,964.50			
	for Concrete Class B	CM	196.70			
	for Lean Concrete	CM	1,472.90			
TOTAL (BILL NO. 4b)						



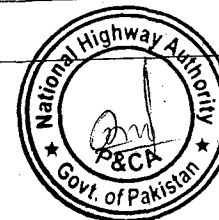
INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

KASHMORE ~ ROJHAN SECTION

KM. (164+600 - KM. 213+500) LENGTH : 48.90 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
Bill No 4c	Structure (Bridges)					
107a	Structural Excavation in Common Material	CM	1,122.81			
107d	Granular Backfill	CM	1,013.00			
107e	Common Backfill	CM	1,013.00			
401 a2ii	Concrete Class 'A2' (ON GROUND) Approach Slab, Barrier	CM	420.43			
401 a3iii	Concrete Class 'A3' (ELEVATED) Pier, Transom, Deck Slab, Diaphragm, Coving, Beam Seat, Back wall & Wing Walls	CM	2,693.99			
401 a3i	Concrete Class 'A3' (UNDERGROUND) Piles	CM	4,265.14			
401 giv	Precast Concrete Class D1	CM	2,541.00			
401 f	Lean Concrete	CM	35.75			
SS-1	Extra Over for Providing Sulphate Resistant Cement in Concrete Works of specified Class:					
	for Concrete Class A 2	CM	420.43			
	for Concrete Class A 3	CM	4,265.14			
	for Lean Concrete	CM	35.75			
404 b	Reinforcement as per AASHTO M 31 Grade 60.	Tons	1,755.07			
404 h	Reinforcement (Structural Shapes) as per ASTM A-36.	Tons	6.14			
405 a	Prestressing Wire Strand, 3/8" - 1/2 " dia. Complete in all respects	Tons	117.25			
405 b	Launching of Girder	Tons	5,547.95			
406 ei	Elastomeric Bearing Pads (According to size & thickness) USA/EU Make	Cu.cm	960,960.00			



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

KASHMORE ~ ROJHAN SECTION

KM. (164+600 - KM. 213+500) LENGTH : 48.90 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
407 d1	Cast-in place concrete piles, upto 1.00 M dia in Normal Soil (Boring only)	LM	1,003.00			
407 d2	Cast-in place concrete piles, upto 1.00 M dia in Gravel Soil (Boring only)	LM	1,327.00			
407 d3	Cast-in place concrete piles, 1.1 - 1.5 M dia in Normal Soil (Boring only)	LM	748.00			
407 d4	Cast-in place concrete piles, 1.1 - 1.5 M dia in Gravel Strata(Boring only)	LM	1,122.00			
407 i	Pile Load Test for dia 1 - 1.5 M (2.5 times Design Load)	Each	5.00			
407h	Proof Load Test on Working pile (1.5 times Design Load)	Each	5.00			
407 n	Permanent Pile casing (liner 12 mm Thick) for piles	Tons	155.76			
509 d	Grouted Rip Rap Class A	CM	1,607.57			
509 h	Filter Layer of Granular Material	CM	1,685.37			
SP-417(a)	Sonic Integrity Tests (SIT) on all Piles	Each	112.00			
SP-417	Manufactured Trade Marks expansion joints for roadway (25 ~ 30) mm movement	M	258.00			
SP-418	GI Drain Pipe Dia 100 mm	M	1,285.00			
TOTAL (BILL NO. 4c)						

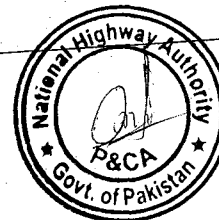


INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

KASHMORE ~ ROJHAN SECTION
KM. (164+600 - KM. 213+500) LENGTH : 48.90 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
Bill No 4c (i)	Structure (Soil Investigation for Bridges)					
SP-414 (a)	6" minimum dia drilling straight rotary/ Percussion including back filling of holes from NSL upto 45m depth or till the rock level which ever is met earlier.	LM	250.00			
SP-414(b)	Perform SPT at 1 m interval i/c collection, preservation & Transportation of disturbed samples to an approved Laboratory.	No.	75.00			
SP-414(b-1)	Continuous core drilling in bedrock up to a maximum of 5 m depth below rock strike level, including determination of core recovery/ RQD, preservation of core samples in core boxes, labelling, waxing of selected core samples, photography of rock cores and transportation of core samples to the laboratory. In case core recovery is less than 80% reduce run length to 0.5 m.	LM	40.00			
SP-414(c)	Collection of undisturbed soil samples from boreholes using Shelby pitcher/denison sampler i/c preservation and transportation of samples to an approved Laboratory.	No.	40.00			
SP-414(d)	Performance of FDT in test pits through sand replacement method i/c moisture content determination.	No.	90.00			
SP-414(e)	Excavation of testpits upto 1.5 m depth along road alignment including backfilling of pits to original condition.	M	40.00			
SP-414(f)	Collection of undisturbed block samples from test pits at appropriate location as directed by the Engineer.	No.	40.00			
SP-414(f1)	Collection of composite bulk sample (atleast 60 kg for sandy/clayey soils and 120 kg for gravelly soils).	No.	40.00			
SP-414(g)	Collection & preservation of water samples from bore holes & transportation to an approved Laboratory.	No.	40.00			

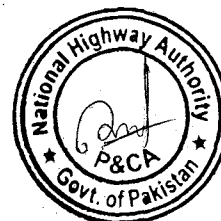


INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

KASHMORE ~ ROJHAN SECTION
KM. (164+600 - KM. 213+500) LENGTH : 48.90 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
SP-414(h)i.	Laboratory Testing Grain size analysis.	No.	25.00			
ii.	Hydrometer analysis.	No.	25.00			
iii.	Atterberg limits	No.	25.00			
iv.	Specific gravity	No.	25.00			
v.	Natural moisture content	No.	25.00			
vi.	Bulk density & Dry density (Soil/rock cores)	No.	25.00			
vii.	Direct shear test	No.	25.00			
viii.	Consolidation test (collapse/swell potential)	No.	25.00			
ix.	Unconfined compression test (Soil/rock cores)	No.	25.00			
x.	Chemical analysis of soil	No.	25.00			
xi.	Chemical analysis of water	No.	25.00			
xii.	Submission of Investigation Report (triplicate)	No.	25.00			
xiii.	CBR	No.	25.00			
xvi.	Modified Proctor Test	No.	25.00			
TOTAL BILL NO. 4c (I)						



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

KASHMORE ~ ROJHAN SECTION
KM. (164+600 - KM. 213+500) LENGTH : 48.90 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
Bill No 5	Drainage & Erosion Works					
401a1ii	Concrete Class A-1 (On Ground) for Chutes, Ducts (Services Crossing) & Drain	CM	2,973.17			
401f	Lean Concrete (Drain)	CM	575.30			
404b-	Reinforcement as per AASHTO M-31 Grade 60	Ton	297.32			
412a	Stone Masonary Dressed Coursed with Mortar	CM	507.54			
501d	Reinforced Concrete Pipe AASHTO M 170, Class II diameter 610 mm	M	110.00			
501e	Reinforced Concrete Pipe AASHTO M 170, Class II diameter 760 mm	M	110.00			
501f	Reinforced Concrete Pipe AASHTO M 170, Class II diameter 910 mm	M	792.00			
501h	Reinforced Concrete Pipe AASHTO M 170, Class II diameter 1220 mm	M	110.00			
502b	Concrete Class B in bedding and Encasement of Concrete Pipe Culvert	CM	2,402.39			
507a	Steel Wire Mesh for Gabions	Kg	131,023.00			
507b	Rock Fill in Gabions	CM	13,102.22			
510	Dismantling of Structures and Obstructions	CM	4,000.00			
511b2	Grouted Stone Pitching 20-25 cm Thick with Bitumen Joints	SM	23,468.50			
SP-501	Supplying & Installation of uPVC Pipe 100/150 mm dia	M	16,000.00			
SP-502	Relocation of Unlined Watercourse	SM	2,500.00			
SP-503	Relocation of Brick Lined Watercourse	SM	500.00			
TOTAL BILL NO. 5						



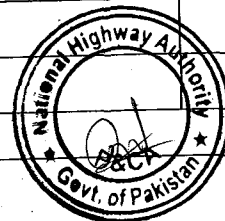
INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

KASHMORE - ROJHAN SECTION

KM. (164+600 - KM. 213+500) LENGTH : 48.90 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
Bill No 6	Ancillary Works					
401f	Lean Concrete (New Jersey Barrier)	CM	4,721.12			
601ai	RCC New Jersey Barrier (In-situ) for median ; double face (including reinforcement)	M	48,445.00			
601aii	RCC New Jersey Barrier (In Situ) as per drawings ; Single face (including reinforcement)	M	1,100.00			
601dii	Pre-cast Curb in Concrete Class A-1 including bedding and haunching as per drawings	M	2,200.00			
604a	Metal Guard Rail	M	14,850.00			
604b	Metal Guard Rail End Pieces	Each	297.00			
604d	Steel Post for Metal Guard Rail	Each	7,815.79			
607a	Traffic Road Signs, Category -1	Each	100.00			
607b	Traffic Road Signs, Category - 2	Each	100.00			
607e	Traffic Road Signs, Category - 3c	SM	250.00			
608h2	Pavement Marking in Reflective TP Paint of 15 cm Width	M	211,513.94			
608j2	Pavement Marking in Reflective TP Paint for 4m Arrows	Each	50.00			
609ci	Reflectorised Plastic Pavement Studs ,(Raised Profile Type - Single)	Each	21,379.60			
610c	Kilometer Post	Each	49.00			
612a	Furnishing and Planting of Trees Including Maintenance of 2 Years	Each	5,000.00			
SP-504	Delineators/Angle Reflector	Each	3,714.12			
SP-507	Dismantling of Existing Guard Rail	M	3,000.00			
SP-601a	Gantry Sign Type -I as shown on drawings	Each	2.00			
SP-601b	Gantry Sign Type -II (Cantilever) as shown on drawings	Each	2.00			
NSI-I	Installation of Antiglare screen on New Jersey Barrier as per drawings and specifications.	Each	97,802.00			
TOTAL BILL NO. 6						



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

KASHMORE ~ ROJHAN SECTION

KM. (164+600 - KM. 213+500) LENGTH : 48.90 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
Bill No 7	General Items					
Sp-701 (a)	Provide Surveying & allied instruments	PS	-	3,000,000.00	Three Million Only	3,000,000.00
Sp-701 (b)	Maintain Survey Instruments, provide vehicle, Survey Team & helpers	Month	24.00			
Sp-702 a	Provide the Employer's and Engineer's Representative's Office & Residence (on rental basis)	PS	-	3,000,000.00	Three Million Only	3,000,000.00
Sp-702b	Furnish and Equip. Employer's & Engineer's Representative office & Residence.	PS	-	3,000,000.00	Three Million Only	3,000,000.00
Sp-702c	Maintain Employer's and Engineer's Representative office & Residence.	Month	24.00			
Sp-703a	Provide Material Testing Project Laboratory (rental basis)	PS	-	3,000,000.00	Three Million Only	3,000,000.00
Sp-703b	Equip & Furnish Material Testing Project Laboratory.	PS	-	3,500,000.00	Three Point Five Million Only	3,500,000.00
Sp-703c	Maintain Material Testing Project Laboratory including provision 04 helpers	Month	24.00			
Sp-708b	Provide Engineer's Representative Transport (i) Toyota Double Cabin with A/C (4 wheel drive)	Each	1.00			
	(ii) Suzuki Bolan (Carry)	Each	1.00			
SP-708bi	Provide OHS Manager and support staff Transport (On rental basis) (i) Toyota Corolla 1300 cc with A/C (01 No)	Vehicle-Month	24.00			
	(ii) Suzuki Carry (01 No)	Vehicle-Month	24.00			
Sp-708c	Running & Maintenance of Employer's / Engineer's Representative's Transport	Vehicle-Month	264.00			
NSI-IV	Employing Trainee Engineer's with Boarding, Lodging and messing	Man-Month	96.00			



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT**KASHMORE - ROJHAN SECTION****KM. (164+600 - KM. 213+500) LENGTH : 48.90 KM****BILL OF QUANTITIES**

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
	<u>OHS Provisions:</u>					
<u>SP-OHS</u>						
i)	Provide 1 x Qualified OHS Manager having international certifications as per specifications.	Man-Month	24.00			
ii)	Provide 4 nos support staff as assistant to OHS Manager as per specifications.	Man-Month	96.00			
iii)	Equip OHS Manager with necessary accessories i.e. stationery, laptop etc for proper monitoring of OHS activities.	LS	-			
iv)	Conduct OHS awareness trainings for Employer and contractor staff at site and conducting courses to visitors and new comers.	Month	24.00			
v)	Carrying out and submit the OHS manual to the Engineer's representative, monitoring of all site activities as per OHS manual and submitting monthly progress report to the Engineer representative at site.	LS	-			
vi)	Construct and maintain detours i.e. installation of safety signs and other related safety features, preparing diversion plans and submit to the Engineer's representative in accordance with GCC.	LS	-			
vii)	Provide and maintain PPE's at site.	Month	24.00			
viii)	Provide and maintain first aid kit at site.	Month	24.00			
					TOTAL BILL NO. 7	



(Final) By Hand
07/07/20



Lot-4

**GOVERNMENT OF PAKISTAN
MINISTRY OF COMMUNICATIONS
NATIONAL HIGHWAY AUTHORITY**

**INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT
(N-55)**

**ROJHAN ~ RAJANPUR SECTION
KM. (213+500 - KM. 265+350) LENGTH : 51.85 KM**

BILL OF QUANTITIES

JUNE 2020



**NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.
HIGHWAYS & TRANSPORTATION ENGINEERING SECTION,
ATTATURK AVENUE, SECTOR G-5/2, ISLAMABAD**

Lot – 4: Rojhan – Rajanpur Section

From Km 213+500 to Km 265+350 (51.85 KM)

INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

ROJHAN ~ RAJANPUR SECTION

lot-4: KM. (213+500 - KM. 265+350) LENGTH : 51.85 KM

BILL OF QUANTITIES

ABSTRACT OF COST

Bill No.	Description	Amount (Rs.)
1	Earth Work	
2	Sub Base & Base	
3	Surface Course & Pavement	
4a	Structures (Box Culverts)	
4b	Structures (Retaining Walls & Toe Walls)	
4c	Structures (Bridges Including Soil Investigation)	
4d	Structures (Underpasses)	
5	Drainage And Erosion Works	
6	Ancillary Works	
6a	Ancillary Works (Toll Plaza & Allied Works)	
7	General Items	
TOTAL AMOUNT (BILL NO. 1 - 7)		



Rupees in Words: _____



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

ROJHAN ~ RAJANPUR SECTION

KM. (213+500 - KM. 265+350) LENGTH : 51.85 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
BILL NO. 01 EARTH WORKS						
101	Clearing and Grubbing	SM	1,185,663.60			
102a	Removal of Trees 150-300 mm Girth	Each	100.00			
102b	Removal of Trees 301-600 mm Girth	Each	100.00			
102c	Removal of Trees 601mm or over Girth	Each	150.00			
104	Compaction of Natural Ground	SM	1,185,663.60			
106a	Excavate Unsuitable Common Material	CM	38,400.00			
108c	Formation of Embankment from borrow excavation in common material	CM	528,614.78			
108d	Formation of Embankment from Structural Excavation in common material	CM	21,264.02			
109a	Subgrade Preparation in Earthcut	SM	13,200.00			
SP-117a	Formation of granular material platform	CM	5,940.00			
SP-117b	Formation of Embankment from Borrow Rock Material	CM	8,800.00			
SP-118	Filling of Center Median With Sweet Soil	CM	5,197.50			
110	Improved Subgrade (CBR > 25)	CM	222,823.44			
	TOTAL (BILL NO. 01)					



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

ROJHAN ~ RAJANPUR SECTION

KM. (213+500 - KM. 265+350) LENGTH : 51.85 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
BILL NO. 02 SUB-BASE & BASE						
201	Granular Subbase	CM	236,248.74			
202	Aggregate Base (Laid With Paver)	CM	203,118.93			
203b	Asphaltic Base Course Plant mix (Class B)	CM	114,859.58			
209a	Breaking of Existing Road Pavement Structure	CM	59,737.18			
209b	Scarification of Existing Road Pavement	SM	22,000.00			
	TOTAL (BILL NO. 02)					



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

ROJHAN ~ RAJANPUR SECTION

KM. (213+500 - KM. 265+350) LENGTH : 51.85 KM

BILL OF QUANTITIES

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
BILL NO. 03 SURFACING & PAVEMENTS						
302a	Cut back Asphalt for Bituminous Prime Coat	SM	734,673.00			
303a	Cut back Asphalt for Bituminous Tack Coat	SM	1,435,744.80			
304c	Triple Surface Treatment	SM	253,932.00			
305a	Asphaltic Concrete for Wearing Course (Class A)	CM	36,733.62			
TOTAL (BILL NO. 03)						



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

ROJHAN - RAJANPUR SECTION

KM. (213+500 - KM. 265+350) LENGTH : 51.85 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
Bill No 4a	Structure (Box Culverts)					
107a	Structural Excavation in Common Material	CM	29,392.37			
107d	Granular Backfill	CM	3,272.84			
107e	Common Backfill	CM	4,909.26			
401 a2i	Concrete Class A2 (Underground)	CM	469.37			
401a2ii	Concrete Class A2 (On ground)	CM	7,584.72			
401 a3ii	Concrete Class A3 (On ground)	CM	7,059.21			
401 a3iii	Concrete Class A3 (Elevated)	CM	13,878.91			
401f	Lean Concrete	CM	4,329.92			
SS-1	Extra Over for Providing Sulphate Resistant Cement in Concrete Works of specified Class:					
	for Concrete Class A 2	CM	8,054.09			
	for Concrete Class A 3	CM	7,059.21			
	for Lean Concrete	CM	4,329.92			
404b	Reinforcement as per AASHTO M-31 Grade-60	Ton	4,564.81			
406a	Premoulded Joint Filler 25mm Thick with Bitumastic Joint Seal	SM	1,508.61			
406dii	PVC Water Stop 9" Size	M	3,951.93			
509d	Grouted Rip Rap Class A	CM	1,259.53			
509 b	Riprap Class B	CM	2,849.73			
509 h	Filter Layer of Granular Material	CM	629.77			
SP-505	Cleaning & Minor Repair of Existing Structure (Culverts)	Each	161.00			
TOTAL (BILL NO. 4a)						



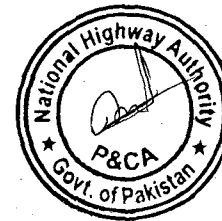
INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

ROJHAN ~ RAJANPUR SECTION

KM. (213+500 - KM. 265+350) LENGTH : 51.85 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
Bill No 4b	Structure (Retaining Walls & Toe Walls)					
107a	Structural Excavation in Common Material	CM	858.00			
401f	Lean Concrete	CM	105.60			
401b	Concrete Class B	CM	132.00			
401h	Plum (Cyclopean / Rubble) Concrete (2:1 Conc. Stone Ratio)	CM	783.75			
SS-1	Extra Over for Providing Sulphate Resistant Cement in Concrete Works of specified Class:					
	for Plum Concrete	CM	783.75			
	for Concrete Class B	CM	132.00			
	for Lean Concrete	CM	105.60			
TOTAL (BILL NO. 4b)						



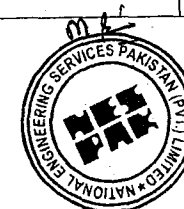
INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

ROJHAN ~ RAJANPUR SECTION

KM. (213+500 - KM. 265+350) LENGTH : 51.85 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
Bill No 4c	Structure (Bridges)					
107a	Structural Excavation in Common Material	CM	126.79			
107d	Granular Backfill	CM	126.79			
107e	Common Backfill	CM	126.79			
401 a2ii	Concrete Class 'A2' (ON GROUND) Approach Slab, Barrier	CM	57.49			
401 a3iii	Concrete Class 'A3' (ELEVATED) Pier, Transom, Deck Slab, Diaphragm, Coping, Beam Seat, Back wall & Wing Walls	CM	289.30			
401 a3i	Concrete Class 'A3' (UNDERGROUND) Piles	CM	335.90			
401 giv	Precast Concrete Class D1	CM	217.80			
401 f	Lean Concrete	CM	7.95			
SS-1	Extra Over for Providing Sulphate Resistant Cement in Concrete Works of specified Class:					
	for Concrete Class A 2	CM	57.49			
	for Concrete Class A 3	CM	335.90			
	for Lean Concrete	CM	7.95			
404 b	Reinforcement as per AASHTO M 31 Grade 60.	Tons	154.40			
404 h	Reinforcement (Structural Shapes) as per ASTM A-36.	Tons	0.44			
405 a	Prestressing Wire Strand, 3/8" - 1/2 " dia. Complete in all respects	Tons	10.89			
405 b	Launching of Girder	Tons	523.59			
406 ei	Elastomeric Bearing Pads (According to size & thickness) USA/EU Make	Cu.cm	68,640.00			



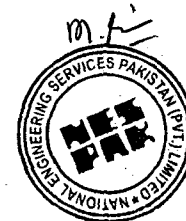
INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

ROJHAN ~ RAJANPUR SECTION

KM. (213+500 - KM. 265+350) LENGTH : 51.85 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
407 d1	Cast-in place concrete piles, 1.1 - 1.5 M dia in Normal Soil (Boring only)	LM	119.00			
407 d2	Cast-in place concrete piles, 1.1 - 1.5 M dia in Gravel Strata(Boring only)	LM	178.00			
407 d3	Pile Load Test for dia 1 - 1.5 M (2.5 times Design Load)	Each	1.00			
407 d4	Proof Load Test on Working pile (1.5 times Design Load)	Each	1.00			
407 i	Permanent Pile casing (liner 12 mm Thick) for piles	Tons	15.58			
407h	Grouted Rip Rap Class A	CM	348.26			
407 n	Filter Layer of Granular Material	CM	348.26			
509 d	Sonic Integrity Tests (SIT) on all Piles	Each	8.00			
509 h	Manufactured Trade Marks expansion joints for roadway (25 ~ 30) mm movement	M	30.74			
SP-417(a)	GI Drain Pipe Dia 100 mm	M	94.00			
TOTAL (BILL NO. 4c)						



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

ROJHAN ~ RAJANPUR SECTION

KM. (213+500 - KM. 265+350) LENGTH : 51.85 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
Bill No 4c (i)	Structure (Soil Investigation for Bridges)					
SP-414 (a)	6" minimum dia drilling straight rotary/ Percussion including back filling of holes from NSL upto 45m depth or till the rock level which ever is met earlier.	LM	50.00			
SP-414(b)	Perform SPT at 1 m interval i/c collection, preservation & Transportation of disturbed samples to an approved Laboratory.	No.	15.00			
SP-414(b-1)	Continuous core drilling in bedrock up to a maximum of 5 m depth below rock strike level, including determination of core recovery/ RQD, preservation of core samples in core boxes, labelling, waxing of selected core samples, photography of rock cores and transportation of core samples to the laboratory. In case core recovery is less than 80% reduce run length to 0.5 m.	LM	8.00			
SP-414(c)	Collection of undisturbed soil samples from boreholes using Shelby pitcher/denison sampler i/c preservation and transportation of samples to an approved Laboratory.	No.	8.00			
SP-414(d)	Performance of FDT in test pits through sand replacement method i/c moisture content determination.	No.	18.00			
SP-414(e)	Excavation of testpits upto 1.5 m depth along road alignment including backfilling of pits to original condition.	M	8.00			
SP-414(f)	Collection of undisturbed block samples from test pits at appropriate location as directed by the Engineer.	No.	8.00			
SP-414(f1)	Collection of composite bulk sample (atleast 60 kg for sandy/clayey soils and 120 kg for gravelly soils).	No.	8.00			
SP-414(g)	Collection & preservation of water samples from bore holes & transportation to an approved Laboratory.	No.	8.00			



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

ROJHAN ~ RAJANPUR SECTION

KM. (213+500 - KM. 265+350) LENGTH : 51.85 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
SP-414(h)i.	Laboratory Testing Grain size analysis.	No.	5.00			
ii.	Hydrometer analysis.	No.	5.00			
iii.	Atterberg limits	No.	5.00			
iv.	Specific gravity	No.	5.00			
v.	Natural moisture content	No.	5.00			
vi.	Bulk density & Dry density (Soil/rock cores)	No.	5.00			
vii.	Direct shear test	No.	5.00			
viii.	Consolidation test (collapse/swell potential)	No.	5.00			
ix.	Unconfined compression test (Soil/rock cores)	No.	5.00			
x.	Chemical analysis of soil	No.	5.00			
xi.	Chemical analysis of water	No.	5.00			
xii.	Submission of Investigation Report (triplicate)	No.	5.00			
xiii.	CBR	No.	5.00			
xvi.	Modified Proctor Test	No.	5.00			
TOTAL BILL NO. 4c (I)						

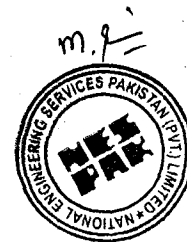
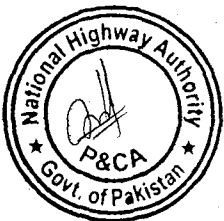


INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

ROJHAN ~ RAJANPUR SECTION
KM. (213+500 - KM. 265+350) LENGTH : 51.85 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
Bill No 4d	Structure (Underpasses)					
107a	Structural Excavation in Common Material	CM	518.23			
107d	Granular Backfill	CM	1,406.58			
401 a2i	Concrete Class A2 (Underground) Cutoff Walls	CM	11.84			
401 a2ii	Concrete Class A2 (On Ground) Approach Slab	CM	69.69			
401 a3ii	Concrete Class A3 (On ground) Base Slabs	CM	349.14			
401 a3iii	Concrete Class A3 (Elevated) Abutment Walls, Top Slab, Wingwalls, Parapets	CM	809.13			
401f	Lean Concrete	CM	61.31			
SS-1	Extra Over for Providing Sulphate Resistant Cement in Concrete Works of specified Class:					
	for Concrete Class A 2	CM	81.54			
	for Concrete Class A 3	CM	1,158.27			
	for Lean Concrete	CM	61.31			
404b	Reinforcement as per AASHTO M-31 Grade-60	Ton	223.17			
406a	Premoulded Joint Filler 25mm Thick with Bitumastic Joint Seal	SM	8.98			
406dii	PVC Water Stops 9" Size	M	191.32			
509 a	Rip Rap Class A	CM	124.67			
TOTAL BILL NO. 4d						



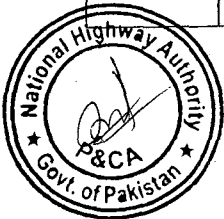
INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

ROJHAN ~ RAJANPUR SECTION

KM. (213+500 - KM. 265+350) LENGTH : 51.85 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
Bill No 5	<u>Drainage & Erosion Works</u>					
401a1ii	Concrete Class A-1 (On Ground) for Chutes, Ducts (Services Crossing) & Drain	CM	12,795.54			
401f	Lean Concrete (Drain)	CM	2,358.95			
404b	Reinforcement as per AASHTO M-31 Grade 60	Ton	1,279.55			
412a	Stone Masonary Dressed Coursed with Mortar	CM	507.54			
501d	Reinforced Concrete Pipe AASHTO M 170, Class II diameter 610 mm	M	110.00			
501e	Reinforced Concrete Pipe AASHTO M 170, Class II diameter 760 mm	M	220.00			
501f	Reinforced Concrete Pipe AASHTO M 170, Class II diameter 910 mm	M	836.00			
501h	Reinforced Concrete Pipe AASHTO M 170, Class II diameter 1220 mm	M	220.00			
502b	Concrete Class B in bedding and Encasement of Concrete Pipe Culvert	CM	2,757.29			
507a	Steel Wire Mesh for Gabions	Kg	169,275.00			
507b	Rock Fill in Gabions	CM	16,927.46			
510	Dismantling of Structures and Obstructions	CM	4,000.00			
511b2	Grouted Stone Pitching 20-25 cm Thick with Bitumen Joints	SM	11,641.85			
SP-501	Supplying & Installation of uPVC Pipe 100/150 mm dia	M	16,000.00			
SP-502	Relocation of Unlined Watercourse	SM	2,500.00			
SP-503	Relocation of Brick Lined Watercourse	SM	500.00			
TOTAL BILL NO. 5						



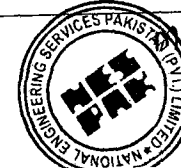
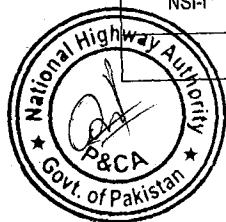
INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

ROJHAN ~ RAJANPUR SECTION

KM. (213+500 - KM. 265+350) LENGTH : 51.85 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
Bill No 6	Ancillary Works					
401f	Lean Concrete (New Jersey Barrier)	CM	4,994.24			
601ai	RCC New Jersey Barrier (In-situ) for median ; double face (including reinforcement)	M	51,690.00			
601ail	RCC New Jersey Barrier (In Situ) as per drawings ; Single face (including reinforcement)	M	500.00			
601dii	Pre-cast Curb in Concrete Class A-1 including bedding and haunching as per drawings	M	2,200.00			
604a	Metal Guard Rail	M	19,800.00			
604b	Metal Guard Rail End Pieces	Each	396.00			
604d	Steel Post for Metal Guard Rail	Each	10,421.05			
607a	Traffic Road Signs, Category - 1	Each	100.00			
607b	Traffic Road Signs, Category - 2	Each	100.00			
607e	Traffic Road Signs, Category - 3c	SM	250.00			
608h2	Pavement Marking in Reflective TP Paint of 15 cm Width	M	250,296.97			
608j2	Pavement Marking in Reflective TP Paint for 4m Arrows	Each	50.00			
609ci	Reflectorised Plastic Pavement Studs ,(Raised Profile Type - Single)	Each	24,659.80			
610c	Kilometer Post	Each	51.00			
612a	Furnishing and Planting of Trees Including Maintenance of 2 Years	Each	5,000.00			
SP-504	Delineators/Angle Reflector	Each	3,962.90			
SP-507	Dismantling of Existing Guard Rail	M	2,000.00			
SP-601a	Gantry Sign Type -I as shown on drawings	Each	3.00			
SP-601b	Gantry Sign Type -II (Cantilever) as shown on drawings	Each	3.00			
NSI-I	Installation of Antiglare screen on New Jersey Barrier as per drawings and specifications.	Each	103,783.00			
TOTAL BILL NO. 6						



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (ROJHAN ~ RAJANPUR SECTION)

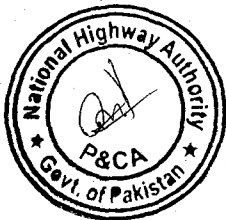
KM (213+500 - KM. 265+350): LENGTH : 51.85 KM

SUMMARY COST

BILL NO 6a :(TOLL PLAZA & ALLIED WORKS)

Sr No	Description	Civil Works	Plumbing Works	Electrical Works	Total Cost (Rs.)
1	Toll Plaza				
2	Toll Booth				
3	Steel Canopy				
4	Office & Accomodation				
5	Generator Room				
6	Weigh Station & Allied Works				
	Total Cost In Rs.				

Rupees in
Words:



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (ROJHAN ~ RAJANPUR SECTION)

KM (213+500 - KM. 265+350): LENGTH : 51.85 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
BILL NO. 01 PAVEMENT WORKS:						
101	Clearing and Grubbing	SM	7,035.00			
102a	Removal of Trees 150-300 mm Girth	Each	12.00			
102b	Removal of Trees 301-600 mm Girth	Each	11.00			
102c	Removal of Trees 600 mm or over girth	Each	31.00			
104	Compaction of Natural Ground	SM	7,035.00			
106c	Excavation of Surplus common material	CM	1,280.00			
107a	Structural excavation in common material	CM	67.00			
107d	Granular Backfill	CM	22.00			
107e	Common Backfill	CM	16.00			
108a	Formation of Embankment from roadway excavation in common material	CM	768.00			
108c	Formation of Embankment from borrow excavation in common material	CM	6,151.00			
109a	Subgrade preparation in earth cut	SM	3,333.00			
203b	Asphaltic Base Course Class B	CM	329.00			
206b	Water Bound Macadam base with coarse aggregate Class B	CM	823.00			
209a	Breaking of Existing road pavement structure	CM	555.00			
302a	Cut-Back Asphalt For Bituminous Prime Coat	SM	4,113.00			
303a	Cut-Back Asphalt For Bituminous Tack Coat	SM	4,113.00			
305b	Asphaltic concrete wearing course class-B	CM	206.00			
401a1ii	Concrete Class A-1 (on ground) for rigid pavement & barrier.	CM	1,450.00			
401b	Concrete Class B Toll Booth protection works	CM	78.00			

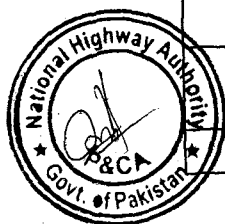


INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (ROJHAN ~ RAJANPUR SECTION)
KM (213+500 - KM. 265+350): LENGTH : 51.85 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
401f	Lean Concrete	CM	495.00			
404a	Reinforcement as per AASHTO M-31 grade 40	Tons	2.00			
404b	Reinforcement as per AASHTO M-31 grade 60	Tons	20.00			
410	Brick work for manhole, crash barrier etc.	CM	31.00			
510	Dismantling of structure and obstruction	CM	24.00			
601dii	Precast kerb in concrete class A-1 of size 450 x 150 mm including concrete bedding and haunching.	LM	128.00			
604a	Metal guard rail	LM	160.00			
604d	Steel post of metal guard rail	LM	96.00			
607a	Traffic road sign category 1	Each	4.00			
607b	Traffic road sign category 2	Each	4.00			
607c	Traffic road sign category (3a)	Each	6.00			
607e	Traffic road sign category (3c)	SM	38.00			
608h1	Pavement marking in reflectorized CR paint 150mm	LM	2,000.00			
609c	Reflecting Pavement studs raised profile type single sided	Each	950.00			
501a	Providing and placing of RCC pipe 310mm dia for drainage complete with all respect as per drawing and specifications.	LM	110.00			
NSI-2	Apply 03 coats plastic emulsion paint as specified.	SM	1,200.00			
NSI-3	Providing and placing plastic drums with sand in position. As per drawings	Each	192.00			
NSI-4	Providing and placing soft wooden blocks (0.3 x 0.15 x 0.15m) in position.	Each	272.00			
NSI-5	Providing and placing polythene sheet under rigid pavement	SM	5,167.00			
NSI-6	Providing all the material as per drawings & specifications and making of expansion joint as instruction of engineer in charge.	LM	980.00			
NSI-7	Providing all the material as per drawings & specifications and making of construction joint as instruction of engineer in charge	LM	621.00			
TOTAL OF BILL NO. 6A-01 PAVEMENT WORKS:						



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (ROJHAN ~ RAJANPUR SECTION)

KM (213+500 - KM. 265+350): LENGTH : 51.85 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
BILL NO. 02 PLUMBING WORKS:						
S.P-PW -1	Boring of well in all types of soil 100mm dia upto 90m depth.	LM	80.00			
S.P-PW -2	S/I of 100mm dia Pak therm PVC pipe casing of wall 1/4" thickness.	LM	70.00			
S.P-PW -3	S/I testing and commisioning pumping set of capacity 100m head and 60gpm including electrical wiring and pipe from pump setting to ground level and foundation etc. complete in all respect.	Set	1.00			
S.P-PW -4	S/I testing and commisioning centrifugal pumping set AC electrical motor driven 400V, 3 phase, 50 Hz, 2hp motor mounted on common channel base plate duly aligned including starter wiring and foundations etc. complete in all respect.	Set	1.00			
S.P-PW -5	Supply and fix tubes water quality (RAKtherm) with all fitting (i.e sockets, bends, tees, elbows, where required) and laid complete in trenches inclusive of excavation and backfilling or fixed to wall, ceiling, floors etc including caps, plugs as required 20mm diameter (high quality)	LM	70.00			
S.P-PW -6	.....Ditto..... But 25mm diameter	LM	60.00			
S.P-PW -7	.....Ditto..... But 50mm diameter	LM	30.00			
S.P-PW -8	Supply and fix valves "pets" pattern, strong gunmetal, high pressure " full way" valves with iron wheel head screwed both ends for iron pipe, 25mm diameter.	Each	4.00			
S.P-PW -9	.....Ditto.... But 50mm diameter.	Each	2.00			
S.P-PW -10	S / F bib cock brass chromium plated fancy type screwed down BSP 20mm diameter.	Each	6.00			
S.P-PW -11	Construction of RCC under ground water tank complete in all respect of capacity 4250 liters.	Job	1.00			
S.P-PW -12	Construction of soakage pit as per drawings and specifications.	Job	1.00			
TOTAL OF BILL NO. 6A-02 : 02 PLUMBING WORKS:						



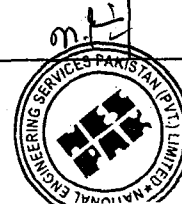
INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (ROJHAN ~ RAJANPUR SECTION)

KM (213+500 - KM. 265+350): LENGTH : 51.85 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
BILL NO 03. ELECTRICAL WORKS:						
SP/EW-1	Supply and Installation of Transformer 100KV _a Complete with all respects.	Each	1.00			
SP/EW-2	Supply, Installation, testing and commissioning of PVC/PVC SWA cable 4 core cable copper/ conductor 16mm ² laid in trenches with sand cushion and brick including excavation and backfilling or fixed to wall, ceiling and floors as per site requirements complete in all respects.	LM	180.00			
SP/EW-2a	.....ditto..... but 25mm ²	LM	126.00			
SP/EW-2b	.....ditto..... but 25mm ³	LM	32.00			
SP/EW-3	S/F earthing including boring/excavation, copper conductor etc. complete as drawings in all respect to achieve resistance not more than 2 Ohms.	Each	1.00			
SP/EW-4	Supply, Installation, testing and commissioning of feedar pillar for supply of power to residence, stop over, toll plaza, external lighting and tube well installation having appropriate sizes as under earthing terminals for connecting of the incoming and outgoing cables complete in all respects as per drawings. 1 Magnetic contactor 225 Amps Schneider LC1F225 2,2 MCCB (TP) 250Amp Schneider EZC- 250N 5,3 C/T 200Amp 3, 6 ATS / AMF Relay 1, 7 timer with base OMRON H3BA-N 1, 8 Emergency Stop Switch 1, 9 Fuse Type Terminal Block 6mm 10, 10 Stopper for Terminal Block 2.5mm ONKA 20, 11 Selector Switch 3-Position FUJI AR22-PR2 2, 12 indication light RED/Green 5, 13 Cable Numbering Tagging & Drawing 1, 14 Wiring Duct Bus Bar Din rail & Crimps 1, 15 Wiring Charges 1, 16 Metal Enclosure (1000 x 8000x 300mm) 1.	No.	1.00			
SP/EW-5	Supply, Installation, testing and commissioning of feedar pillar for supply of power to residence, toll plaza, external lighting and tube well installation having appropriate sizes as under earthing terminals for connecting of the incoming and outgoing cables complete in all respects as per drawings.	No.	1.00			



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KM (213+500 - KM. 265+350): LENGTH : 51.85 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
SP/EW-6	Supply, Installation, testing and commissioning of feedar pillar for supply of power to stop over, toll plaza, external lighting and tube well installation having appropriate sizes as under earthing terminals for connecting of the incoming and outgoing cables complete in all respects as per drawings.	Each	1.00			
SP/EW-7	Supply and installation of Tubular Poles 9m Long with 2 nos. of Crest LED Flood Light Model No. CR-TGA 100W-FL, LED Brand Bridgelux, Led Driver Mean Well UL Approved. Made in Pakistan Control Box with complete fittings.	No.	6.00			
SP/EW-8	Supply and installation of Tubular Poles 9.5m High of complete with single arm on RCC foundation as per drawings i/e wiring of crest LED street light Model No. CR-B100W-STL, LED Brand Bridgelux, LED Driver Mean Well UL Approved) controlled by Feedar Pillar also supply and installation with all 4 core 16mm2 cables and 3 core PVC insulated cables in PVC pipe as per drawings and specifications complete in all respect.	No.	12.00			
SP/EW-9	Supply and installation of Tubular Poles 9.5m High of complete with double arm on RCC foundation as per drawings i/e wiring of crest LED street light Model No. CR-B100W-STL, LED Brand Bridgelux, LED Driver Mean Well UL Approved) controlled by Feedar Pillar also supply and installation with all 4 core 16mm2 cables and 3 core PVC insulated cables in PVC pipe as per drawings and specifications complete in all respect i.e earthing.	No.	6.00			
SP/EW-10	Supply and fixing PVC conduit for ETTM system cables, fixed as per ETTM system companies required in concrete or trench, complete with all respects, excavation, bricks and backfilling as required & instructed by the engineers incharge.					
SP/EW-10-i	50mm i/d Class B polo / Beta or Shawal.	LM	30.00			
SP/EW-10-ii	75mm i/d Class B polo / Beta or Shawal.	LM	30.00			
SP/EW-10-iii	100mm i/d Class B polo / Beta or Shawal.	LM	270.00			
TOTAL OF BILL NO. 6A-03. ELECTRICAL WORKS:						



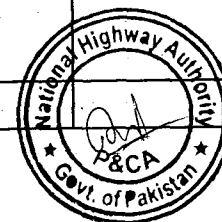
INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (ROJHAN ~ RAJANPUR SECTION)

KM (213+500 - KM. 265+350): LENGTH : 51.85 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
BILL NO 04: TOLL BOOTH						
NSI-1	P/F of Aluminium Composite Panel on outer side of booth	SM	24.94			
NSI-2	P/F of 2 ply Fiber glass on inner side of toll booth	SM	24.94			
NSI-3	P/F of insulation Thermo pore 25 kg / cum in between ms sheet and fiber glass in toll booth	SM	21.91			
NSI-4	P/F of False Ceiling 0.6x0.6 side of toll booth	SM	4.06			
NSI-5	P/F of computer and cash table with Lassani (16mm) 3/4" thick	SM	1.35			
NSI-6	P/F of Ventilator of Aluminium Sliding shutter with grill in Toll Booth	SM	0.23			
NSI-7	P/F of 50mm Sqr. 16 swg Frame pipe for toll booth	M	93.06			
NSI-8	P/F of 100mm with 8.0 mm wall thickness steel pipe frame for Toll Booth protection	M	49.96			
NSI-9	P/F of Tempered Glass 5mm thick in toll booth	SM	7.37			
NSI-10	P/F of 10" dia Exhaust fan along with closers and fly netting	Each	1.00			
NSI-12	P/F of Rawplug 12.5mm thick 150mm long for booth protection pipe.	No.	16.00			
NSI-13	P/F of steel base plate 250 mm dia 16mm thick for booth protection pipe.	No.	4.00			
NSI-14	P/F of steel base plate 250x250 mm dia 16 mm thick for booth protection pipe	No.	4.00			
NSI-16	P/F of Crest brand LED slim Panel Lights (Model: CR-882-8PL) in false ceiling (12 watts of Toll Booth as per approved drawing.)	No.	2.00			
NSI-17	P/F of Door lock of Toll Booth as per approved drawing.	No.	1.00			
NSI-18	P/F of complete Wiring with PVC conduit in Booth for Exhaust fan, two LED Slim Lights and two sockets, A/C 1.0 ton etc. as per approved drawing	No.	1.00			
NSI-19	P/F of Circuit breaker as per requirement, as per approved drawing.	No.	3.00			
NSI-20	P/F of one three pin socket outlet 15/20 amps point controlled by one switch wiring complete with pvc single core cable 4 sq. m in concealed pvc conduit including earth wire. Circuit breaker as per requirement, as per approved drawing	No.	3.00			
NSI-21	P/F of Power plug along with accessories	No.	1.00			

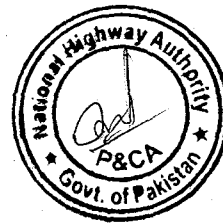


INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (ROJHAN ~ RAJANPUR SECTION)
KM (213+500 - KM. 265+350): LENGTH : 51.85 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
NSI-22	P/I of A/C 1.0 ton ACSON / Mitsubishi or Equal of MS pipe grill fixed for outdoor unit complete fitting with all safety measures and necessary welding bolts and nuts as required, rubber packing and other materials. Power plug along with accessories.	No.	1.00			
NSI-23	P/I circuit wiring from DB to switch board, wiring with PVC single core cable 2.5 sq. mm + 1.5 mm as ECC in PVC conduit concealed as per site requirement of als. Power plug along with accessories	M	25.00			
NSI-24	Providing of Revolving Chair as per requirement or as directed by the engineer	No.	1.00			
SUB TOTAL OF BILL NO. 6A-04: TOLL BOOTH (01 No)						
TOTAL OF BILL NO. 6A-04: 16 Nos TOLL BOOTH						



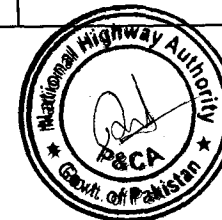
INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (ROJHAN ~ RAJANPUR SECTION)

KM (213+500 - KM. 265+350): LENGTH : 51.85 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
BILL NO 05: (STEEL WORKS) Fabrication						
SC-1	Providing Fabricating and installing structural steel works including shop welding, field splicing, bolting, painting over exposed surfaces as required in the structural drawings and notes also including all accessories such as bolts, connecting angles, connection, plates, the rods etc complete in all respects as per drawings and specifications or as directed by the engineer. Steel Column Box Section- 15" 15" 0.5" Thick 28.72 Kg/ft	Kg	45,000.00			
SC-2	.....Ditto..... High Tensile anchor bolts and nuts , 25mm dia	Nos.	64.00			
SC-3	Supply, cutting to size and erecting 22 SWG Black Iron Powder coated sheet for false ceiling including overtape, edge elements and making openings. Also including fixing with "J" bolts , nuts and washers etc. complete in all respects as per specification and as directed by the engineer	Sqm.	740.00			
SC-4	Providing and fixing specified GI corrugated sheeting 22 SWG for roof including anchor bolts. Complete in all respects as per details given in the drawings or as directed by the engineer	Sqm.	740.00			
SC-5	Providing and fixing specified GI rain water pipe (ILL or equivalent approved) fixed along steel columns, including bends and other fixing etc. complete in all respects as per drawings and the specifications or as directed by the Engineer. a) 100mm dia	m	53.60			
SC-6	Provide, fabricate and fix G.I sheet drainage gully as per details on the structural drawings and specified or as directed by the engineer complete in all respects (750mm x 500mm)	m	40.00			
SC-7	Supply / installation of 3M (high intensity Grade reflecting Sheet) on 16 SWG G.I sheet with the name of Toll Plaza of appropriate readable size complete in all respects without air bubbles the rate shall inclusive of all materials steel pipe and angle frame , riveting and installation complete at site as directed by the engineer	Sqm	60.00			



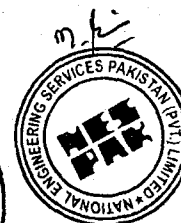
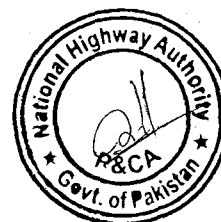
INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (ROJHAN ~ RAJANPUR SECTION)

KM (213+500 - KM. 265+350): LENGTH : 51.85 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
SC-8	Supply and install canopy Light (Crest LED Canopy Light Model No. CR-56-90W-KPL, LED Brand: CREE, LED Driver : Mean Well UL approved) electrical connections and wiring (Pakistan/life/new age cables) all items should be made in Pakistan.	Nos.	16.00			
SC-9	Supply and install Facia illumination (Crest LED Flood Light (Model No. CR-TGA30W-FL, LED Brand Bridgelux, Led Driver Mean Well UL Approved) on Bracket Along with pipe as per site requirement) Electrical connections and wiring (Pakistan/life/new age cables) all items should be made in Pakistan	Nos.	16.00			
SC-10	Supply/install G.I channel hanging frame with appropriate spacing for fixing of false ceiling sheet	SM	768.00			
SC-11	Providing/grouting master flow 524 (non shrinkage material) between existing foundation and base plate, having 650 x 650 mm foundation including cost of carriage labor etc	Nos.	6.00			
SC-12	Encasing of 100mm drain pipe and 65mm dia electric pipe with the "H" column with 16 gauge GI sheet fixed with 10mm dia nuts welded with angle iron and bolts 40mm long duly painted with enamel paint etc. complete	Sqm.	56.00			
TOTAL OF BILL NO. 6A-05: (STEEL WORKS) Fabrication						

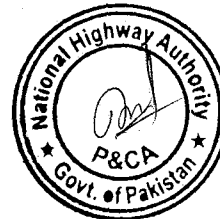


INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (ROJHAN ~ RAJANPUR SECTION)
KM (213+500 - KM. 265+350): LENGTH : 51.85 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
BILL NO 06 (ELECTRICAL WORKS) Steel Canopy:						
SC/E-01	Supply installation and commissioning of cu PVC insulated 3 core cables in PVC pipe including all material and accessories as shown on drawings all complete (iv) 3 core 4mm sq. (Pakistan/life/new age Cables)	LM	240.00			
SC/E-02	Supply installation and commissioning of cu PVC insulated 3 core cables in PVC pipe including all material and accessories as shown on drawings all complete (iv) 3 core 2.5mm sq. (Pakistan/life/new age Cables)	LM	240.00			
SC/E-03	Supply installation testing and commissioning of cu PVC pipes including all material and accessories as shown on drawings all complete (iv) 4 core 10mm sq. (Pakistan/life/new age Cables)	LM	248.00			
SC/E-04	Supplying and laying of following heavy duty PVC pipe buried under ground in ceiling, walls, floor & columns etc for incoming and outgoing cables at various points and also weather proof from both ends including all materials and accessories as per site requirement as shown on drawings complete in all respects					
	(i) 100mm polo/ beta or Shawal	LM	112.00			
	(i) 50mm polo/ beta or Shawal	LM	96.00			
TOTAL OF BILL NO. 6A-06: (ELECTRICAL WORKS) Steel Canopy:						



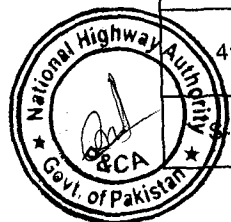
INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (ROJHAN ~ RAJANPUR SECTION)

KM (213+500 - KM. 265+350): LENGTH : 51.85 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
BILL NO 07: CIVIL WORKS (OFFICE AND ACCOMODATION BUILDING)						
107a	Excavate as in common soil upto 1.5 meter depth in foundations and pipe trenches and throw earth clear of edges of excavation with in 10 meter	Cum	141.00			
108c	Making embankment as in hard soil, filling in foundations, pipe trenches under floors or around buildings etc 1.5 meter below or above ground level spoil obtained from excavation in foundations over areas with in 10 meter including watering and compaction in 150mm layers and dressing to required profiles and shapes	Cum	364.00			
401f	Providing and laying of lean concrete as in foundation using crushed or broken stone graded as specified (Lean concrete)	Cum	23.00			
401a1	Providing and laying of reinforced cement concrete class "A" using crushed stone in foundations, independent column footings, roof slab, walls landings, plinth beams and bends etc, as specified requiring shuttering (reinforcement measured and paid separately)	Cum	121.00			
404a	Supply and fix round deformed bars grade 40 (as per AASHTO M31) including cutting, bending, binding and placing reinforcement in position as specified	ton	1.21			
404b	Supply and fix round deformed bars grade 60 (as per AASHTO M31) including cutting, bending, binding and placing reinforcement in position as specified	ton	10.93			
401f	Providing and laying 75mm thick PCC 1:4:8 laid under floors using crush stone all as specified (Lean concrete)	Cum	21.00			
401b	Providing laying cement concrete 1:2:4 using crushed stone laid in floor slabs as under layer of terrazo/tiles etc as specified (Concrete Class B)	Cum	21.00			
410	Burnt brickwork in wall over 115mm thick laid And jointed in cement mortar 1:4 staright or to curve with inner radius of 1.5m.	Cum	315.00			
S P 1	Providing and laying of sand cushion under floors all as per drawings & specifications.	Cum	29.00			



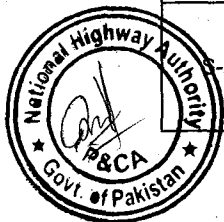
INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (ROJHAN ~ RAJANPUR SECTION)

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BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
S-P 2	Providing and laying of brick ballast under floors all as per drawing & specifications	Cum	21.00			
S-P 3	Termite proofing to all building area with approved chemical all as specified.	Sqm	560.00			
S-P 4	50mm thick DPC of PCC (1:2:4) using 3mm aggregate and finished smooth with steel float covered with two coats of hot bitumen @0.75 kg per Sqm and double layer of polythene sheet as required	Sqm	42.00			
S-P 5	75mm thick PCC (1:2:4) screeding with XPM weigh n.exc 4.5kg/Sqm over 50mm thick thermopore sheet, two layers polythene sheet and two coats water proofing compound using bitumen 10-20 applied hot @4.9 kg/ 10 Sqm per coat including pee gravels and cleaning the surface before applying bitumen as specified complete with all respects	Sqm	371.00			
S-P 6	Supply and fix kitchen floor sink cabinet with or without drawers including all necessary chromium plated mongry, fitting/fixtures and deodar wood edging provided to doors and drawer of cabinet and 20mm thick prepolished marble slab fix on top of cabinet as specified all as per drawing	Mater	6.00			
S-P 7	Supply and fix kitchen wall cabinet including all necessary chromium plated mongry, fitting/fixtures and deodar wood edging provided to doors of cabinet as specified all as per drawings	Meter	6.00			
S-P 8	Supply and fix kitchen exhaust hood and duct of 20mm thick lamination board with 26 gauge GI sheet lining inside including fitting/fixtures as specified all as per drawings	Meter	1.00			
S-P 9	Wooden flush doors covered with fibre glass and steel frame, imported lock, brass mongry and architrave where shown, including 3 coats synthetic enamel paint etc all as per drawing.	Sqm	38.00			
S-P 10	Supply and fix aluminium premium model bronze colour sliding windows including fly/insect proofing 5mm tinted imported glass etc all as per drawings	Sqm	44.00			



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BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
S-P 11	Supply and fix aluminium door powder coated with 5mm frosted glass of washroom areas all as per drawing	Sqm	2.00			
S-P 12	Supply and fix cast iron work weight n.exc 6 kg in grating, mahole covers all as per drawings and specifications	Kg	15.00			
S-P 13	Supply and fix MS 16 gauge square pipe railing & grills with painting complete all as per drawings and specifications.	Sqm	43.00			
S-P 14	Supply and fix steel grill & (stair hand rail) with painting complete all as per drawings & specifications	Sqm	6.00			
S-P 15	Providing and laying 300mmx300mmx20mm thick Marble tiles in floors setting and jointing in CM (1:2) including cutting, rubbing and polishing all as per drawings & specifications	Sqm	286.00			
S-P 16	Providing and laying 12mm thick boticina cream marble set in CM (1:2) as in skirting including cutting, rubbing, and polishing all as per drawigs and specifications	Sqm	20.00			
S-P 17	.....Ditto..... but venity top slabs if granite marble including cutting bowl etc all as per drawings & specifications	Sqm	2.00			
S-P 18	Supply and fix 200mmx200mm ceramic mat tiles set in CM(1:2) including joints fitted with white cement all as per drawing.	Sqm	142.00			
S-P 19	Providing and fixing 20mm laminated win board ward robe with wooden frame and lamination win board drawers including brass mangy fittings all as per drawings	Each	24.00			
S-P 20	13mm thick cement plaster (1:4) finished smooth as specified	Sqm	2,715.00			
S-P 21	13mm thick cement plaster (1:4) with 3% puddlo finished smooth as specified	Sqm	16.00			
S-P 22	Appy 3 coasts plastic emulsion paint as specified	Sqm	2,155.00			
S-P 23	Apply grapitio coating external face of walls	Sqm	560.00			
S-P 24	24 gauge CGI rolling shutter with frame and other accessories all as per drawings	Sqm	9.00			
TOTAL OF BILL NO. 6A-07: CIVIL WORKS (OFFICE AND ACCOMODATION BUILDING)						



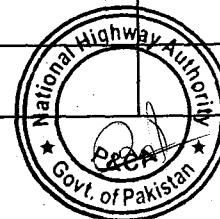
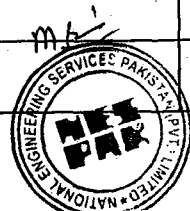
INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (ROJHAN ~ RAJANPUR SECTION)

KM (213+500 - KM. 265+350): LENGTH : 51.85 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
BILL NO 08: PLUMBING WORKS (OFFICE AND ACCOMODATION BUILDING):						
SP-WS-1	Supply and fix tubes water quality (G.I) with all fitting (i.e sockets, bends, tees, elbows etc.) and laid complete in trenches (exclusive of excavation) or fixed to walls, ceilings, floors etc including caps, plugs as required 15mm diameter (light quality)	Meter	62.00			
SP-WS-2	Ditto..... But 20mm diameter	Meter	46.00			
SP-WS-3	Ditto..... But 25mm diameter	Meter	80.00			
SP-WS-4	Ditto..... But 32mm diameter	Meter	15.00			
SP-WS-5	Ditto..... But 50mm diameter	Meter	25.00			
SP-WS-6	Supply and fix valves "peets" pattern, strong gunmetal, high pressure, "full-way" valves with iron wheel head screwed both ends for iron pipe, 20 mm diameter	Each	5.00			
SP-WS-7	Ditto..... But 25mm diameter	Each	4.00			
SP-WS-8	Ditto..... But 40mm diameter	Each	2.00			
SP-WS-9	Ditto..... But 60mm diameter	Each	1.00			
SP-WS-10	S/F bib cock brass chromium plated fancy type screwed down BSP 15mm diameter	Each	14.00			
SP-WS-11	S/F 15mm Tee stop cock brass chromium plated screw down high pressure fancy type	Each	30.00			
SP-WS-12	S/F 15mm stop cock brass chromium plated screw down high pressure fancy type	Each	24.00			
SP-WS-13	S/F adjustable CP shower fancy type	Each	7.00			
SP-WS-14	S/F Electric gyser of capacity 45 ltr.	Each	3.00			



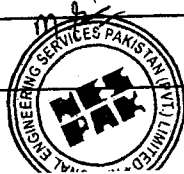
INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (ROJHAN ~ RAJANPUR SECTION)

KM (213+500 - KM. 265+350): LENGTH : 51.85 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
SP-WS-15	Supply and fix water closet apparatus European pattern complete comprising closet, 13 ltr cistern flushing, seat cover etc (coupled set) in white / light colour any size or make fixed to concrete.	Each	7.00			
SP-WS-16	Supply and fix sink scullery of stainless steel with single drainage board complete shallow or deep pattern upto 6000 centimeter square, super, fixed to brick work or wood (Pak made).	Each	1.00			
SP-WS-17	Supply and fix venity in white/light colour with one hole, coupling chain & plug and bottle trap best quality (imported) fixed to brick or concrete work.	Each	6.00			
SP-WS-18	Supply and fixed urinals blazed ware complete with flush tank.	Each	7.00			
SP-WS-19	Supply and fix mirror any shape and pattern 5mm thick of sizes, foreign made edged ground complete fixed to brick or concrete work	Sqm	6.00			
SP-WS-20	Supply and fix 100mm dia CI floor trap including reducer etc complete	Each	18.00			
SP-WS-21	Supply and fix casted grating chromium plated 150mm x 150mm	Each	16.00			
SP-WS-22	Supply and fix 50mm bore cast iron soil waste and vent pipes and fitting as specified (Spun pipe)	Meter	50.00			
SP-WS-23	.....Ditto.... But 75mm bore	Meter	40.00			
SP-WS-24	.....Ditto.... But 100mm bore	Meter	65.00			
SP-WS-25	Supply and fix 50mm bore CI bends tapers, double socket and ovel pattern accessories complete	Each	22.00			
SP-WS-26	.....Ditto.... But 75mm bore	Each	22.00			
SP-WS-27	.....Ditto.... But 100mm bore	Each	27.00			
SP-WS-28	Supply and fix 50mm bore CI tee branch pieces single equal or unequal arms etc complete	Each	3.00			
SP-WS-29	.....Ditto.... But 75mm bore	Each	3.00			



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (ROJHAN ~ RAJANPUR SECTION)

KM (213+500 - KM. 265+350): LENGTH : 51.85 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
SP-WS-30	.....Ditto..... But 100mm bore	Each	5.00			
SP-WS-31	Supply and fix 50mm bore CI cowls for vent pipes	Each	5.00			
SP-WS-32	Supply and fix reinforced cement concrete pipe 100mm bore , laid and jointed with spigot socket or collars as specified	Meter	15.00			
SP-WS-33	.....Ditto..... But 150mm bore	Meter	20.00			
SP-WS-34	Supply and fix glazed ware gully trap embedding in PCC (1:2:4) concrete 150mm all around and at bottom of gully trap all as specified	Each	4.00			
SP-WS-35	Construction man holes rectangular exceeding 600mm deep from invert to surface of cover, including main channel set in CM (1:1) 230 mm thick brick walls complete with man hole covers	Each	2.00			
SP-WS-36	Construction of septic tank for 24Men all as per drawings and Specifications	Each	1.00			
SP-WS-37	Supply and fix CP Mixer 15mm dia best quality for vanities and sink etc	Each	4.00			
SP-WS-38	Providing and laying 100mm dia wire ballon grating over rain water pipes	Each	6.00			
TOTAL OF BILL NO. 6A-08: PLUMBING WORKS (OFFICE AND ACCOMODATION BUILDING):						

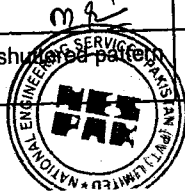


INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (ROJHAN ~ RAJANPUR SECTION)
KM (213+500 - KM. 265+350): LENGTH : 51.85 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
BILL NO 09 : ELECTRICAL WORKS (OFFICE AND ACCOMODATION BUILDING)						
SP-EW-1	S/F Circuit wiring from DB to switch board, wiring with PVC single core cable 2.5 Sq. mm + 1.5 Sq. mm as ECC in PVC conduit concealed as per site requirement	Point	13.00			
SP-EW-2	S/F of one fan point, one light point, one bell point controlled by one switch, wiring complete with PVC single core cable 1.5 mm ² in concealed PVC conduit	Point	160.00			
SP-EW-3	S/F of one three pin socket outlet 5 Amps point controlled by one switch wiring complete with PVC single core cable 1.5 mm in concealed PVC conduit including earthwire.	Point	18.00			
SP-EW-4	S/F of one three pin socket outlet 15/20 Amps point controlled by one switch wiring complete with PVC single core cable 4 Sq.mm in concealed PVC conduit including earth wire	Point	19.00			
SP-EW-5	S/F bracket wall with globe white glass opal 150mm dia complete with gallery and lamps holder BC	Each	30.00			
SP-EW-6	S/F Philips patty fitting complete with 1x40 W tube lamp starter and holders	Each	32.00			
SP-EW-7	S/F Ceiling mounted Philips light complete with flourecent tube, choke, starter and capacitor TCS 4 x 20W	Each	6.00			
SP-EW-8	S/F SPOT LIGHTs philips made with holder/ reflector complete	Each	1.00			
SP-EW-9	S/F ceiling lights fancy type as approved by Engineer in Charge	Each	3.00			
SP-EW-10	S/F schandlier single bulb fancy type as approved by engineer in charge	Each	3.00			
SP-EW-11	S/F bulb head fitting cast iron with guard tapped 20mm E.T. according to BSS No. 229 of 1957	Each	25.00			
SP-EW-12	S/F switch SP 5 amps piano type mounted in cast or malleable iron galvanized conduit box with bakelite plate	Each	150.00			
SP-EW-13	S/F switch socket outlet 3 pin 5 Amps bakelite shuttered pattern complete	Each	27.00			



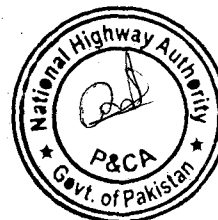
INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (ROJHAN ~ RAJANPUR SECTION)

KM (213+500 - KM. 265+350): LENGTH : 51.85 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
SP-EW-14	.....ditto..... but 20 Amps.	Each	20.00			
SP-EW-15	S/F earthing including boring/excavation, copper rod 25mm, 3000 mm long and copper conductor etc. complete in all respects to achieve resistance not more than 5 Ohms.	Each	1.00			
SP-EW-16	S/F clamp hooked for fan concealed	Each	27.00			
SP-EW-17	S/F fan electric with regulator blades, canopy and rod including connections, provision of cables and fan of 140 CM sweep of approved make	Each	25.00			
SP-EW-18	S/F exhaust fan 250mm capacity with shutter/grill plastic body single action (Pak fan)	Each	7.00			
SP-EW-19	S/F fan electric AC exhaust 30 CM 220/230 volts S.P. complete with shutter	Each	5.00			
SP-EW-20	S/F wall bracket fan fancy plastic body 450mm Pak fan	Each	3.00			
SP-EW-21	S/F PVC conduit 40mm dia complete with all bands, tees, boxes, saddles, etc for concealed wiring	Metre	17.00			
SP-EW-22	S/F of board distribution MS sheet steel 16 BG thick with hinged cover and locking arrangement duly painted inside/outside with suitable size of busbar for connecting incoming and outgoing MCCB consisting of following:-					
	INCOMING					
	MCCB TP 500/660 volts 50 cycle complete with thermal & magnetic trip 60 Amps (Brreaking capcity 7.5 KA)					
	OUTGOING					
	1. MCB SP 220V 10A to 20A = 33 Nos.	Set	1.00			
TOTAL OF BILL NO. 6A-09 : ELECTRICAL WORKS (OFFICE AND ACCOMODATION BUILDING)						



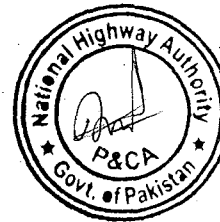
INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (ROJHAN ~ RAJANPUR SECTION)

KM (213+500 - KM. 265+350): LENGTH : 51.85 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
BILL NO 10 : ELECTRICAL WORKS (GENERATOR ROOM)						
G-EW-1	S/F circuit wiring from DB to switch board, wiring with PVC single core cable 2.5 Sq.mm + 1.5 Sq.mm ECC in PVC conduit concealed as per site requirement	Point	1.00			
G-EW-2	S/F of one fan point, one light point, one bell point controlled by one switch, wiring complete with PVC single core cable 1.5mm ² in concealed PVC conduit	Point	10.00			
G-EW-3	S/F of one three pin socket outlet 5 Amps point controlled by one switch wiring complete with PVC single core cable 1.5mm in concealed with PVC conduit including earth wire.	Point	2.00			
G-EW-4	S/F of one three pin socket outlet 15/20 Amps point controlled by one switch wiring complete with PVC single core cable 4 Sq.mm in concealed PVC conduit including earth wire	Point	1.00			
G-EW-5	S/F bracket wall with globe white glass opal 150 mm dia complete with gallery and lamp holder BC	Each	1.00			
G-EW-6	S/F Philips patty fitting complete with 1x40 W tube lamp starter and holders.	Each	1.00			
G-EW-7	S/F bulb head fitting cast iron with guard tapped 20mm E.T. according to BSS No. 229 of 1957	Each	4.00			
G-EW-8	S/F switch SP 5 amps piano type mounted in cast or malleable iron galvanized conduit box bakelite plate	Each	9.00			
G-EW-9	S/F switch SP socket outlet 3 pin 5 Amps bakelite shuttered pattern complete	Each	2.00			



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (ROJHAN ~ RAJANPUR SECTION)

KM (213+500 - KM. 265+350): LENGTH : 51.85 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
G-EW-10	.....ditto..... But 20 Amps	Each	1.00			
G-EW-11	S/F earthing including boring/excavation, copper rod 25mm Ø, 3000 mm long and copper conductor etc. complete in all respects to achieve resistance not more than 5 Ohms,	Each	1.00			
G-EW-12	S/F clamp hook for fan concealed	Each	1.00			
G-EW-13	S/F fan electric with regulator blades, canopy and rod incl. connections, provision of cables of fan 140 CM sweep of approved make	Each	1.00			
G-EW-14	S/F fan electric AC exhaust 45 CM 220/230 volts S.P complete with shutter	Each	2.00			
G-EW-15	S/F of board distribution MS sheet steel 16 BG thick with hinged cover and locking arrangement duly painted inside/outside with suitable size of busbar for connecting incoming and outgoing MCCB consisting of following:-					
	INCOMING					
	1. MCB SP 220 volts 50 cycle complete 30 amperes 1 No.					
	OUTGOING					
	1. MCB SP 220 V 10 A to 20 A = 4 No.s	Set	1.00			
	STANDBY POWER GENERATION					
G-EW-16	Supply, installation, testing and commissioning diesel engine power, Caterpillar Made or equivalent, 100 KVA capacity 0.8 PF, 3 phase, 4 wire, 220/415 V, 50 Hz including AMF/ATS panel, making foundation and all other arrangements to make the set functional having diesel tank capacity of atleast 8 hours.	No.	1.00			
TOTAL OF BILL NO. 6A-10 : ELECTRICAL WORKS (GENERATOR ROOM)						



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT (ROJHAN ~ RAJANPUR SECTION)

KM (213+500 - KM. 265+350): LENGTH : 51.85 KM

BILL OF QUANTITIES

BILL NO. 6a : ANCILLARY WORKS (TOLL PLAZA & ALLIED WORKS)

Item No.	Description	Unit	Quantity	Rate (Rs. in Figures)	RATE (Rs. in Words)	Amount (Rs.)
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BILL NO. 11 : WEIGH STATION & ALLIED WORKS

11.1	Installation of SSWIM equipment including vault construction loop sensor installation ,necessary conduiting for power and communication cables,scale hardware at location shown in drawings including foundations. Complete in all respect as per the direction of the Engineer In Charge at site.	No	1.00			
11.2	Construction of Weigh station building having 1 x living room ,1 x Admin room , Washroom & Kitchen & control room including complete furnishing. Complete in all respect as per drawings.	No	1.00			
11.3	Construction of manholes / junction boxes for drainage and cabling from weigh scale to scale house / control room.	No	6.00			
TOTAL OF BILL NO. 6A-11 : ELECTRICAL WORKS (WEIGH STATION & ALLIED WORKS)						



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

ROJHAN ~ RAJANPUR SECTION

KM. (213+500 - KM. 265+350) LENGTH : 51.85 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
Bill No 7	General Items					
Sp-701 (a)	Provide Surveying & allied instruments	PS	-	3,000,000.00	Three Million Only	3,000,000.00
Sp-701 (b)	Maintain Survey Instruments, provide vehicle, Survey Team & helpers	Month	24.00			
Sp-702 a	Provide the Employer's and Engineer's Representative's Office & Residence (on rental basis)	PS	-	3,000,000.00	Three Million Only	3,000,000.00
Sp-702b	Furnish and Equip. Employer's & Engineer's Representative office & Residence.	PS	-	3,000,000.00	Three Million Only	3,000,000.00
Sp-702c	Maintain Employer's and Engineer's Representative office & Residence.	Month	24.00			
Sp-703a	Provide Material Testing Project Laboratory (rental basis)	PS	-	3,000,000.00	Three Million Only	3,000,000.00
Sp-703b	Equip & Furnish Material Testing Project Laboratory.	PS	-	3,500,000.00	Three Point Five Million Only	3,500,000.00
Sp-703c	Maintain Material Testing Project Laboratory including provision 04 helpers	Month	24.00			
Sp-708b	Provide Engineer's Representative Transport (I) Suzuki Bolan (Carry)	Each	1.00			
SP-708bi	Provide OHS Manager and support staff Transport (On rental basis)	Each	24.00			
	(i) Toyota Corolla 1300 cc with A/C (01 No)					
	(ii) Suzuki Carry (01 No)	Vehicle-Month	24.00			
Sp-708c	Running & Maintenance of Employer's / Engineer's Representative's Transport	Vehicle-Month	264.00			
NSI-IV	Employing Trainee Engineer's with Boarding, Lodging and messing	Vehicle-Month	96.00			



INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT

ROJHAN ~ RAJANPUR SECTION

KM. (213+500 - KM. 265+350) LENGTH : 51.85 KM

BILL OF QUANTITIES

Item No.	Description	Unit	Quantity	Unit Rate (Rs.)		Amount (Rs.)
				In Figures	In Words	
	<u>OHS Provisions:</u>					
<u>SP-OHS</u>						
i)	Provide 1 x Qualified OHS Manager having international certifications as per specifications.	Man-Month	24.00			
ii)	Provide 4 nos support staff as assistant to OHS Manager as per specifications.	Man-Month	96.00			
iii)	Equip OHS Manager with necessary accessories i.e. stationery, laptop etc for proper monitoring of OHS activities.	LS	-			
iv)	Conduct OHS awareness trainings for Employer and contractor staff at site and conducting courses to visitors and new comers.	Month	24.00			
v)	Carrying out and submit the OHS manual to the Engineer's representative, monitoring of all site activities as per OHS manual and submitting monthly progress report to the Engineer representative at site.	LS	-			
vi)	Construct and maintain detours i.e. installation of safety signs and other related safety features, preparing diversion plans and submit to the Engineer's representative in accordance with GCC.	LS	-			
vii)	Provide and maintain PPE's at site.	Month	24.00			
viii)	Provide and maintain first aid kit at site.	Month	24.00			
TOTAL BILL NO. 7						



Section 5: Eligible Countries

This Section contains the list of eligible countries.

- | | |
|--------------------------------------|---|
| 1. Afghanistan | 35. Micronesia, Federal States of |
| 2. Armenia | 36. Mongolia |
| 3. Australia | 37. Myanmar |
| 4. Austria | 38. Nauru, Republic of |
| 5. Azerbaijan | 39. Nepal |
| 6. Bangladesh | 40. Netherlands |
| 7. Belgium | 41. New Zealand |
| 8. Bhutan | 42. Norway |
| 9. Brunei Darussalam | 43. Pakistan |
| 10. Cambodia | 44. Palau, Republic of |
| 11. Canada | 45. Papua New Guinea |
| 12. China, People's Republic of | 46. Philippines |
| 13. Cook Islands | 47. Portugal |
| 14. Denmark | 48. Samoa |
| 15. Fiji Islands, Republic of | 49. Singapore |
| 16. Finland | 50. Solomon Islands |
| 17. France | 51. Spain |
| 18. Georgia | 52. Sri Lanka |
| 19. Germany | 53. Sweden |
| 20. Hong Kong, China | 54. Switzerland |
| 21. India | 55. Tajikistan |
| 22. Indonesia | 56. Taipei, China |
| 23. Ireland | 57. Thailand |
| 24. Italy | 58. Timor-Leste, Democratic Republic of |
| 25. Japan | 59. Tonga |
| 26. Kazakhstan | 60. Turkey |
| 27. Kiribati | 61. Turkmenistan |
| 28. Korea, Republic of | 62. Tuvalu |
| 29. Kyrgyz, Republic of | 63. United Kingdom |
| 30. Lao People's Democratic Republic | 64. United States of America |
| 31. Luxembourg | 65. Uzbekistan |
| 32. Malaysia | 66. Vanuatu |
| 33. Maldives | 67. Viet Nam |
| 34. Marshall Islands | 68. Niue |



Section 6: Employer's Requirements

This Section contains the Specifications, Drawings, Supplementary Information that describe the Works to be procured, Personnel Requirements, and Equipment Requirements.

TABLE OF CONTENTS

Specifications.....	6-2
Drawings.....	6-3
Supplementary Information Regarding Works to Be Procured.....	6-4
Personnel Requirements.....	6-5
Equipment Requirements.....	6-6
Environmental Management Plan.....	6-7



Specifications

- | | |
|--|--|
| (a) General Specifications | (NHA's General Specifications 1998) attached as Bidding Document, Volume-II : Specifications |
| (b) The Addenda/Corrigenda to NHA's General Specifications | Attached in Above Volume-II |
| (c) Special Provisions (Specifications) | (SP-Items) Attached within Bidding Document as Special Provisions (SP) under this Section 6 (as follows) |





Leaf-1

**GOVERNMENT OF PAKISTAN
MINISTRY OF COMMUNICATIONS
NATIONAL HIGHWAY AUTHORITY**

**INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD
PROJECT**

SHIKARPUR ~ KANDHKOT SECTION

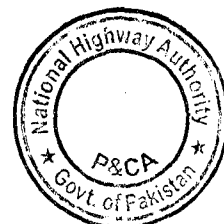
KM. (43+400 - KM. 105+820) LENGTH : 62.42 KM

SPECIAL PROVISIONS

SEPTEMBER 2020



**NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.
HIGHWAYS & TRANSPORTATION ENGINEERING SECTION,
ATTATURK AVENUE, SECTOR G-5/2, ISLAMABAD**



Lot – 1: Shikarpur – Kandhkot Section

From Km 43+400 to Km 105+820 (62.42 Km)

Ref-1

SP 117a FORMATION OF GRANULAR MATERIAL PLATFORM
SP 117b FORMATION OF EMBANKMENT FROM BORROW ROCK MATERIAL

117.1 DESCRIPTION

This work shall consist of the formation of embankment in areas of soft embankment foundation, water ponding areas, high water levels, where compaction of natural ground is unable to achieve the density required in Item 104 with the prescribed general method. This would also include the wet areas which cannot be dried by scarifying or other measures and which exhibit moderate to severe heaving of surface during proof-rolling.

The embankment shall consist of a working platform of the granular material or rock material followed by the embankment fill material at toe of the embankment, all placed in accordance with these specifications and the specifications for other work items involved and in conformity with the lines, grades, sections and dimensions shown on the drawings or as directed by the Engineer's Representative.

117.2 MATERIAL REQUIREMENTS

117.2.1 Granular Material Platform

The material for the granular material platform shall consist of normal or processed granular fill material obtained from borrow excavation or quarry waste. This material shall conform to the following Specifications:

Size	%age of Weight Passing Mesh Sieve AASHTO T-27
37.5 mm	100
10 mm	75 - 100
# 4	60 - 80
# 10	45 - 65
# 40	25 - 40
# 100	0 - 15
# 200	0 - 5

It shall also be checked that selected grading is such that intrusion into the working platform material of subgrade or natural ground surface material is not allowed. For this condition to be met it will be required that the ratio as below shall be checked and followed:

$$\frac{D15 - (\text{Granular Fill Material})}{D85 - (\text{Natural Ground Material})} < 5$$

D85 and D15 mean the practical diameters corresponding to 85% and 15% respectively, passing (by weight) in a grain size analysis.

117.2.2 Rock Fill Material

Rock fill material shall be as per 108.2 (d) and shall consist predominantly of rock (boulder) type material having minimum size greater than 75 mm per cubic meter and shall have the a percentage of wear by the Los Angeles Abrasion test (



AASHTO T-96) of not more than thirty (30) to qualify for rock material. The type of material to be used shall be finalized as per the site requirement with the approval of The Engineer.

117.3

CONSTRUCTION REQUIREMENTS

117.3.1

Granular Material Platform

Granular platform material shall be used in water logged areas. Prior to laying of granular material platform, water logged area upon which embankment is to be placed, shall be dried and drained or kept drained of all surface water prior to commencing of fill in accordance with the relevant specifications.

Construction of the granular fill layer shall proceed from one end of the soft area by using the granular fill as a ramp for further granular fill transport. The thickness of the granular fill shall be as shown on the project drawings or as directed by the Engineer's Representative and the width shall be that of the embankment or part as directed by the Engineer's Representative. The placement and compaction of the working platform shall be carried out by the use of appropriate light equipment, in layers, if necessary. The placement, spreading and compaction of the granular material platform shall be carried out by using light equipment. The top 15 cm of the platform shall be compacted to at least 90% AASHTO T-180 density.

In those areas of high water levels and salinity with soft subsoils and where embankments are high such as approach fills to structures, special provisions shall be made to measure and determine likely fill settlements which may occur. These preconditions are necessary in order to specify particular construction procedures which may be necessary and to establish the time at which the pavement structure can be placed to avoid cracks and subsidence of these layers. In particular, additional compaction of the fill material and its adequate protection shall be required to prevent and underscore the risk of "collapse" settlement.

No extra payment under this item shall be made to the Contractor for re-working, re-instatement, replacement of granular material which has become slushy, or replenishing of granular material for whatever reason.

117.3.2

Formation of Embankment with Rock Material

Embankment formed of material consisting predominantly of rock shall be used where water ponding condition exists. Embankment formed of material consisting predominantly of rock fragment of such size that the material cannot be placed in layers of the thickness prescribed without crushing, pulverizing or further breaking down the pieces, such material may be placed in layers not exceeding in thickness than the approximate average size of the rocks except that no layer shall exceed eighty (80) centimeters of loose measurement and compacted by a vibratory roller.

The material shall be carefully placed in layers, so that all large stones will be well distributed and voids completely filled with smaller stones, clean small spells, shale, earth, sand, gravel, to form a solid mass. After placing rock material, surface shall be covered with a layer of fine material having thickness less than twenty (20) centimeters. Such fine material shall be reserved from roadway excavation by the Contractor. Should such material be available but not reserved, Contractor will supply and place borrow material for forming smooth grade without extra payment. Each layer shall be leveled with motor



grader, bulldozer or similar equipment capable of shifting and forming the layer into a neat and orderly condition. Material for each layer should be consolidated with heavy weight vibratory roller until settlement as checked between two consecutive passes of roller is less than one (1) percent of the layer thickness. For evaluation of settlement, survey points should be established and rolling continued until difference of levels as checked after two consecutive passes is less than one (1) percent of the total layer thickness. More over initial rolling of overlaid fine material shall be done without watering to ensure their intrusion in voids of rock layer beneath. Watering shall be done when voids are properly filled.

117.4

MEASUREMENT AND PAYMENT

The quantities measured against this item as shown on the drawings with respect to line and grades shall be paid for at the contract unit price for the pay items listed below and shown in the Bill of Quantities. These prices and payments shall constitute full payment and compensation for providing including hauling, processing, placing at site and compacting as specified, replenishing granular material / rock material for remedying loss of material due to traffic and sinking of granular material platform during construction due to whatever reason, including all equipment, labour, material and all other costs related to the completion of works in all respects.

On first-time completion and approval of granular material platform, only 75% payment for pay item SP 117a and SP 117b shall be made to the Contractor. Balance 25% payment for pay item SP 117a and SP 117b shall be made to the Contractor only when it has been approved by the Engineer's Representative and ready to receive oncoming layer of embankment. In case of using granular material platform and rock fill material, item 101 and item 104 of NHA CSR shall not be entertained.

Pay Item No.	Description	Unit of Measurement
SP-117a	Formation of Granular Material Platform	CM
SP-117b	Formation of Embankment from Borrow Rock Material	CM



SP 118 FILLING OF CENTER MEDIAN WITH SWEET SOIL

118.1 DESCRIPTION

This work shall consist of providing & filling sweet earth in center median, shown on the drawing or as required by the Engineer.

118.2 MATERIAL REQUIREMENTS

118.2.1 Sweet Soil

Sweet soil shall consist of a natural friable surface soil without admixture of undesirable subsoil, refuse, or foreign materials. It shall be reasonable free from roots, hard clay, coarse gravel, stones larger than 3cm in diameter, noxious woods, tall grass, or other litter, and shall have been taken from the field where healthy growth of crops, grasses, trees or other vegetation was cultivated.

118.3 CONSTRUCTION REQUIREMENTS

118.3.1 Source of Material

The contractor shall notify the area to the Engineer at least 7 days prior to his intention of digging in that area and placement of top soil. The operation of digging and then placement shall start only after approval of Engineer and quality of soil to be placed as top soil in the designated areas as shown on the drawings or as directed by the Engineer.

118.3.2 Place of Sweet Top Soil

The top soil shall be evenly spread and to the line and slope as shown on the drawings and compacted to degree of compaction of natural ground a depth of not less than 15 cm or as directed by the Engineer. Spreading shall not be done when the ground topsoil is excessively wet or otherwise in the condition detrimental to the work.

After spreading has been completed, large clods, stones, roots, stumps and other such unwanted material if any shall be raked and removed.

118.4. MEASUREMENT AND PAYMENT

Measurement of sweet top soiling shall be measured by the cubic meter, which has been placed in accordance with these specifications and accepted by the Engineer.

The quantity measured for payment as described above; shall be at contract price for items listed below, and as shown in bill of quantities. The payment shall include full compensation for furnishing all material, labour and equipment including water, transport and all cost necessary to complete the work in accordance with these specifications and accepted by the Engineer.

Pay Item No.	Description	Unit of Measurement
SP-118	Filling of center median with sweet soil.	CM



414.1**SCOPE OF WORK**

The Contractor shall carry out confirmatory boring at bridge and Flyover sites at locations marked on the drawings or as directed by the Engineer's Representative.

The purpose of the Work specified herein is to determine the type, nature, arrangement, thickness and texture of the various subsurface strata, the conditions and the Engineering characteristics of the subsurface materials as they exist to the depth and at the locations specified. This is to be accomplished by means of drilling, in-situ testing, collection of disturbed and undisturbed soil and water samples and laboratory testing.

The Contractor shall carry out the specified works under the supervision of the Engineer's Representative.

414.1.1**Plant and Equipment**

The Contractor shall keep at-least one rotary drill machine and one percussion winch along with accessories on the site to meet the requirements of the Work. The plant and equipment shall be in good operating condition and capable of performing efficiently the Work as set forth.

414.1.2**Drillers and Supervisory Staff**

The Contractor shall provide qualified, experienced, orderly and thoroughly competent persons at all times including geotechnical engineers or engineering geologists who shall conduct and supervise drilling, sampling, logging and in-situ testing at the site. The Contractor shall remove any of his employees from the site that in the opinion of the Engineer does not meet these requirements.

The Contractor shall make his own arrangements for housing of his personnel, security and storage of the equipment and supplies at the site.

414.1.3**Setting up at each Hole**

The Contractor shall make all the necessary arrangements for setting-up plant and equipment at each location, carrying out the work specified, preparation and reinstatement of the work areas, improvement to access routes and all other temporary works.

414.1.4**Measurement of Quantities**

The quantities shown in the Bill of Quantities are only approximate. The payment shall be made on the basis of actual work performed in accordance with the Specifications.

414.1.5**Submission of Field and Laboratory Data**

The Contractor shall supply complete field and laboratory investigation data to the Engineer's Representative within the time set forth for completion of works.



This data shall include copies of all the approved logs and test records provided during the course of the Contract including any alterations or amendments required by the Engineer's Representative.

414.1.6

Location of Investigation Points

- a) The locations of investigation points shall be established in the field by the Contractor on the basis of the Drawings to be provided later or as directed by the Engineer's Representative. Locating the boreholes accurately in the field shall be the sole responsibility of the Contractor.
- b) It is to be understood that further Drawings may be issued by the Engineer showing the revised locations of investigation points.
- c) All the investigation points shall be located by the Contractor through field survey to an accuracy of 1 m in plan and 0.05 m in ground elevation.

414.2

WORK METHODOLOGY

414.2.1

Investigated Areas

The location of the boreholes will be selected as directed by The Engineer. The Engineer will specify from time to time during the Contract period, the exact location and reference number of all holes. To locate the holes accurately in the field shall however be the Contractor's responsibility.

414.2.2

Casing

A hole shall be cased in any stratum which is friable or not sufficiently strong to stand unsupported, or as and when directed by the Engineer's Representative.

The Contractor shall ensure that casings are of a suitable size and inserted in such a manner as to render them recoverable. The Contract Rates for drilling shall be deemed to include the supply, insertion and recovery of casing including any damage, loss or delay caused by difficulty or failure in recovering casing.

414.2.3

Removal of Casing

Casing shall neither be removed from any hole nor any filling introduced into it until permission is given by the Engineer. This permission will normally be given as soon as work in the hole is completed and the groundwater level has been measured.

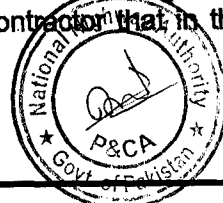
As far as possible the Contractor shall avoid leaving a hole overnight after he has begun to withdraw the casing and before he has finished.

414.2.4

Supplementary Holes

Abandoned holes and / or the holes from which unsatisfactory samples have been obtained and/or in which unsatisfactory field tests have been performed due to the negligence of the Contractor shall be supplemented by other holes adjacent to the original location. The exact location of such supplementary holes shall be specified by the Engineer in the field.

The depth where the unacceptable holes were abandoned or to the depths where unsatisfactory samples were obtained or unsatisfactory field testing was performed may be made by any method selected by the Contractor that in the



opinion of the Engineer will permit satisfactory field testing and sampling below those depths at which original hole was abandoned shall be carried out using only the specified method of advancing the hole.

No payment will be made for that portion of the supplementary hole above the depth paid for in the unacceptable hole.

414.2.5 Groundwater Level

The groundwater level in holes shall be determined after completion of the hole or when required by the Engineer, as follows:

Clear water shall be added or the hole shall be bailed-out as necessary to bring the water level to the expected groundwater level as directed by the Engineer and the water level shall be measured and recorded at intervals of 6 hours for a period of twenty four (24) hours thereafter.

414.2.6 Backfilling Holes

Boreholes shall be backfilled with grout as directed by the Engineer.

Grouting for backfilling holes shall consist of a mud formed by mixing one (1) part by weight of bentonite with ten (10) parts of water, to which two parts by weight of cement shall be added after the bentonite and water have been thoroughly mixed. Alternatively, holes may be backfilled with purpose-made pellets of bentonite or bentonite/cement, provided they are of a size which, in the opinion of the Engineer, is compatible with the size of hole. If there is no standing water in the hole, grout may be poured in from the top. If there is standing water in the hole, the grout shall be fed into the bottom of the hole by a tremie pipe, the end of which shall always be below the groundwater junction while grouting is being carried out.

Grout backfill shall be taken up to 30 cm below the original ground level. Any apparent loss of grout due to leakage or consolidation within one week shall be made-up with fresh grout and then the remaining depth of the hole shall be filled with concrete.

414.2.7 Logs

Logs of boreholes shall be provided on an approved specimen. These shall include descriptions of all strata including details of the soil macrofabric (such as frequency, orientation and nature of fissures) and details of samples taken, and an account of all observations and field tests. Logs of boreholes shall include notes on the nature, quantity and colour of the drilling fluid returns. All logs shall be subject to the approval of the Engineer and two draft copies shall be submitted to the Engineer, not more than two days after the hole is backfilled. Soil descriptions shall conform to ASTM designation D 2488 and classified according to ASTM designation D 2487. All depths and thicknesses of topsoil and strata shall be recorded in meters and all reduced levels shall be recorded in meters with reference to Survey of Pakistan datum. Accurate determination of ground levels at all the hole points is the Contractor's responsibility for which no extra payment shall be made.

414.2.8 Contractor's Responsibility for Records



The presence of the Engineer or any of his staff and their keeping separate drilling records shall not relieve the Contractor of any of his responsibilities for keeping records.

414.2.9 Order of Work

The order in which the work is to be accomplished shall be determined and approved in the field by the Engineer.

414.3 DRILLING

414.3.1 Depth of Drilling

Drilling would generally be required up to a minimum of 45 meters depth or at least 5 m below the pile tip level, whichever is more or as directed by the Engineer.

414.3.2 Accuracy of Alignment of Holes

Boreholes will be within 2 degrees of the vertical unless the Engineer's Representative has ordered the drilling of an angled hole in which case the hole angle shall be within 5 degrees of the angle specified.

414.3.3 Drilling Plant

The drilling plant and ancillary equipment to be mobilized at the site should be adequate to advance the boreholes in an efficient manner, to the required depths.

Rotary drilling rigs shall be of the hydraulic feed type equipped with side discharge type fish tail and tricone bits for drilling. Bits and casing shall conform to B.S. 4019; Part I; 1974 or an approved equivalent.

Drilling bits shall be of side discharge type designed to prevent unnecessary disturbance of soil at bottom of the hole by flow of drilling fluid, unless the Engineer directs otherwise.

414.3.4 Drilling Procedure

The method of drilling shall be of any approved standard and accepted method by means of which a hole of specified diameter is extended to the desired depth. The normal method of drilling shall be rotary unless gravelly strata are encountered where percussion may be used.

During drilling the Contractor shall regulate the drilling operation which ensures minimum disturbance in the underlying material in which the in-situ testing and sampling is to be carried out.

In rock, core drilling shall be carried out in such a manner and using such sizes of bits, that the maximum core is recovered. This requires close surveillance of the flushing media, drilling pressures, lengths of runs, use of appropriate core barrels and other factors relevant to the nature of the material drilled. The drill bit shall be withdrawn and core removed as often as may be necessary to secure the maximum possible amount of core. In soft or friable formation, dry drilling techniques may be required using single tube core barrel with tungsten carbide bits as directed by the Engineer. The cores would be placed in core boxes in a proper manner.



414.3.5

Stabilizing of Holes

Drilling mud of suitable consistency shall be used during rotary cum wash boring to stabilize the walls of boreholes by preventing caving-in and to avoid disturbance of the sampling horizons. The drilling mud shall be a mixture of bentonite and water with approved chemical additives being used, if required, to assist in modifying its density and viscosity. The density and viscosity shall be selected considering such factors as hole stability, cutting operation and undisturbed samples recovery.

Where drilling mud is not effective, casing of appropriate size and strength may be used subject to the approval of the Engineer. It will be responsibility of the Contractor to use appropriate means to stabilize the walls of the boreholes.

It shall be ensured that there is no jetting action of the drilling fluid. The minimum amount of drilling fluid necessary to carry away the cuttings shall be used. During drilling the Contractor shall regulate the pressure of the drilling fluid to ensure minimum disturbance to the underlying material in which the in-situ testing and sampling is to be carried out.

414.4

SAMPLING

414.4.1

General

The Contractor shall take disturbed or undisturbed samples from any borehole when ordered to do so by the Engineer. This shall include the provision of all necessary sampling equipment, tubes and containers, crates and boxes, as well as handling and transportation to the approved laboratory or store at site.

414.4.2

Approval of Equipment

No equipment or containers shall be used unless and until approved by the Engineer.

414.4.3

Care of Samples

The Contractor shall be responsible for the safe keeping of samples of all kinds until these have been handed over to the designated laboratory or disposed of on the Engineer's instruction as the case may be. Any sample lost, damaged or showing signs of deterioration while in the Contractor's care shall be replaced by the Contractor at no expense.

414.4.4

Labeling Samples

All disturbed and undisturbed soil samples and water samples taken from holes shall be clearly labeled. Each label shall include the following information:

- a) Name of Contract
- b) Reference number of the holes
- c) Reference number of sample
- d) Date of sampling
- e) Brief description of the sample (e.g. stiff brown silty clay)
- f) Depth of the top and bottom of the sample below ground level
- g) Number of the sampler tube

Tubes and crates for undisturbed samples shall be labeled "Do not jar or vibrate" and "Haul and transport in a horizontal position".

414.4.5

Disturbed Samples



In all the boreholes, small disturbed samples shall be taken at the top of each stratum, and at intervals as directed by the Engineer. Material from the cutting shoes of open-drive undisturbed samples, and from the split spoon sampler used for Standard Penetration Tests, shall also be taken as disturbed samples.

414.4.6

Undisturbed Sampling

Undisturbed sampling from boreholes shall be done by Shelby tube or Pitcher/Denison sampler or as directed by the Engineer. The undisturbed samples should be properly sealed and preserved as directed by the Engineer.

414.4.7

Cores

The cores obtained from boreholes shall be carefully removed from the core barrel and placed in the boxes in the correct sequence, with increasing depth from left to right and top to bottom in the box. Coloured photographs of cores shall be taken at site.

Where the core is contained in an expandable triple tube liner, the ends of the tube shall be sealed and waxed as directed by the Engineer.

Each core run shall be segregated by labeled wooden blocks 25 mm thick and the depth of the bottom of each run shall be marked on the partitions in the core box with paint.

No box shall contain more than 3 meters of core.

414.4.8

Core Samples

Selected cores, preferably not less than 30 cm in length, shall be preserved as core samples. The preservation would consist of clearance of any loose sludge, waxing of cores, packing in wooden boxes using sawdust and labeling before transportation to the testing laboratory.

414.4.9

Water Samples

The Contractor shall take water samples from holes when directed by the Engineer before the addition of water to the hole unless it is unavoidable. If necessary, the hole shall be balled-out before taking the sample to ensure that any potential contaminant is removed. No fuel or other potential contaminant shall be allowed to enter the hole. The method of sampling shall be as approved by the Engineer. Samples shall only be stored in approved, air tight and scrupulously clean, containers and shall not be less than 1 litre in volume.

414.4.10

Transportation of Samples

All samples shall be shifted to the store at the site, the day they are collected. Samples in tubes shall be kept and transported with the tubes in a horizontal position.

The samples shall be continuously transported to the testing laboratory on conclusion of every borehole and on the instructions of the Engineer. The laboratory for testing shall be approved by the Engineer.

414.5

IN-SITU TESTS

414.5.1

Standard Penetration Tests (SPTs)



When directed by the Engineer the Contractor shall carry out Standard Penetration Tests (SPTs) in boreholes. The penetration resistance 'N' shall be expressed as the number of blows of a 63.5 kg hammer freely dropping 76.2 cm required to force the standard split tube sampler 30.5 cm into the soil.

Standard Penetration Test (SPTs) shall be conducted in the boreholes in accordance with ASTM 1586 generally at 1 meter depth interval or as directed by the Engineer at the site.

414.6

LABORATORY TESTING

414.6.1

General

The samples shall be tested in a laboratory approved by the Engineer. 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, BSS or AASHTO Standards or as directed by the Engineer. The Contractor shall arrange to carry out the following laboratory tests on the specified samples of the subsoil materials. The samples to be tested and the tests to be carried out for each sample shall be specified by the Engineer.

414.6.2

Type of Tests

Sr. No.	Name of Test	Standard
i.	Grain size analysis	ASTM D 422
ii.	Liquid limit, plastic limit	ASTM D 4318
iii.	Specific gravity	ASTM D 854
iv.	Unit weight of soil	
v.	Unconfined compression (soil)	ASTM D 2166
vi.	Unconfined compression (rock)	ASTM D 2938
vii.	Natural moisture content	ASTM D 2216
viii.	Consolidation	ASTM D 2435
ix.	Direct shear	ASTM D 3080
x.	Triaxial compression test	ASTM D 4767
xi.	Sulphate content of Soil	BS 1377
xii.	Organic matter content of soil	BS 1377
xiii.	Total dissolved salts of soil	BS 1377
xiv.	Chloride content of soil	BS 1377
xv.	Chemical analysis of water	BS 1377
	a) Sulphate content of water	
	b) Total dissolved salts of water	
	c) Chloride content of water	
	d) pH of water	

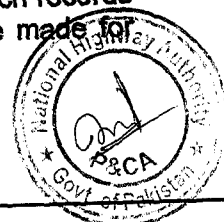
414.7

RECORDS AND REPORTS

414.7.1

Records

- The Contractor shall keep accurate logs and records of all work accomplished under this item. All such records shall be preserved in good condition and order by the Contractor until these 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. Separate logs shall be made for



each borehole. The following information shall be included on the logs or in the records for boreholes:

- i. Borehole number or designation and elevation of top of borehole.
 - ii. Method of drilling holes.
 - iii. Dates and time by depths when hole was performed.
 - iv. Type of drilling fluid used.
 - v. Depths at which samples were recovered or attempts made to collect samples along with designation, thickness and type.
 - vi. Record of SPT on borehole log.
 - vii. The classification or description by depth of the materials samples including a description of condition of compactness or stiffness of soil materials encountered and moisture conditions.
 - viii. Depth of groundwater level if encountered.
 - ix. Depth of bottom of borehole.
- b) The Contractor shall furnish the Engineer with the record as specified above in duplicate, not later than 48 hours after completion of each borehole.
- c) The presence of Engineer or the keeping of separate records by the Engineer shall not relieve the Contractor of the responsibility for the work specified in this Section. Payment shall not be made for any work for which the records have not been furnished by the Contractor.

414.7.2

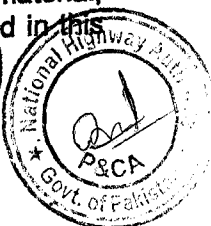
Reports

- a) The results of each borehole and the field tests carried out shall be communicated to the Engineer as follows:
- i. Oral reports as the work proceeds.
 - ii. Three sets of complete data of the work within two (2) days of the date of completion of borehole.
- b) The data shall comprise:
- i. A site plan showing the position of the boreholes and giving their map reference.
 - ii. The borehole logs
 - iii. Complete results of field tests
 - iv. Comments on any point which the Engineer has put-up to the Contractor for inquiry and investigation during the Works.
- c) Complete results of laboratory tests shall be communicated to the Engineer within seven (07) days of the date of completion of borehole.

414.8

MEASUREMENT AND PAYMENT

The measurement and payment for the Work specified in the Contract for drilling of bore holes, collection of disturbed, undisturbed and rock core samples, performing the standard penetration tests, laboratory testing and compilation and submission of results shall be done and paid for as per the pay item given in the BOQ, which payment shall be full compensation for furnishing, material, tools, equipment and incidentals and for performing all the work involved in this item as mentioned above in this specification.



Bill No. 4d(i) : Structures (Soil Investigation for Bridges)		
Pay Item No.	Item Description	Unit
SP-414 (a)	6" minimum dia drilling straight rotary/ Percussion including back filling of holes from NSL upto 45m depth or till the rock level which ever is met earlier.	LM
SP-414(b)	Perform SPT at 1 m interval i/c collection, preservation & Transportation of disturbed samples to an approved Laboratory.	No.
SP-414(b-1)	Continuous core drilling in bedrock up to a maximum of 5 m depth below rock strike level, including determination of core recovery/ RQD, preservation of core samples in core boxes, labelling, waxing of selected core samples, photography of rock cores and transportation of core samples to the laboratory. In case core recovery is less than 80% reduce run length to 0.5 m.	LM
SP-414(c)	Collection of undisturbed soil samples from boreholes using Shelby pitcher/denison sampler i/c preservation and transportation of samples to an approved Laboratory.	No.
SP-414(d)	Performance of FDT in test pits through sand replacement method i/c moisture content determination.	No.
SP-414(e)	Excavation of testpits upto 1.5 m depth along road alignment including backfilling of pits to original condition.	M
SP-414(f)	Collection of undisturbed block samples from test pits at appropriate location as directed by the Engineer.	No.
SP-414(f1)	Collection of composite bulk sample (atleast 60 kg for sandy/clayey soils and 120 kg for gravelly soils)	No.
SP-414(g)	Collection & preservation of water samples from bore holes & transportation to an approved Laboratory.	No.
SP-414(h)	Laboratory Testing	No.
i.	Grain size analysis.	No.
ii.	Hydrometer analysis.	No.
iii.	Atterberg limits	No.
iv.	Specific gravity	No.
v.	Natural moisture content	No.
vi.	Bulk density & Dry density (Soil/rock cores)	No.
vii.	Direct shear test	No.
viii.	Consolidation test (collapse/swell potential)	No.
ix.	Unconfined compression test (Soil/rock cores)	No.
x.	Chemical analysis of soil	No.
xi.	Chemical analysis of water	No.
xii.	Submission of Investigation Report (triplicate)	No.
xiii.	CBR	No.
xvi.	Modified Proctor Test	No.



1.

General

Expansion joints will follow Specifications of AASHTO-SS-Division II-section 19 "Bridge deck joints seals"

The Contractor shall submit to the Engineer, complete documentations about the Expansion Joints he intends to use for the movements shown on the Drawings, including references of the last 10 years, material Specifications for metal, rubber and bonding between them, fixations, and test certificates from authorized laboratories showing that the proposed joints meet the specifications.

Elsewhere the submittal will be accompanied by samples of at least 0.50m, with its fixations.

The expansion joints shall satisfy the following functional requirements:

1. It shall withstand traffic loads of the highway, and accommodate movements between the deck and abutment or the adjacent deck.
2. It shall have good riding quality and shall not cause any inconvenience to road user.
3. It shall not cause skidding hazard.
4. It shall not generate excessive noise or vibration during the passage of vehicles.
5. Parts liable to wear out shall be easily replaceable.
6. It shall be watertight and will have provision for carrying away water and silt.
7. It shall be easy to inspect and maintain.
8. It shall be resistant in hot and very sunny climate.

2.

Construction Requirements

The methodology of placing the expansion joint will be clearly described by the Contractor with a complete set of drawings.

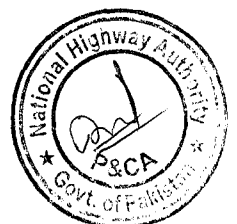
Connection or overlapping between roadway and walkway expansion joints will be clearly shown.

Connection with water proofing of the deck will be detailed.

All necessary provisions in deck reinforcement will be indicated.

Initial gap at the time of placing will be clearly indicated and justified.

The second stage reinforced concrete for fixations, if any, will be Class Y concrete and will be included in pay item SP- 417.



3. Measurement and Payment

3.1 Measurement

The length of computed joints for roadway is measured in linear meter between the faces of the kerbs, plus 150 mm height on each bridge railing.

3.2 Payment

The accepted quantity measured as provided above shall be paid for at the contract unit price respectively for the pay items listed below and shown in the Bill of Quantities which price and payment shall be full compensation for furnishing all materials, labour, equipment, tools and incidentals and any work pertaining to expansion joints and which is not paid for separately, necessary to complete the item.

Pay Item No	Description	Unit of Measurement
SP -417	Manufactured trade mark expansion Joints for roadway, for (25-30) mm movement	M



SP-417a SONIC INTEGRITY TESTS (SIT) ON ALL PILES

1. SONIC INTEGRITY TESTS (SIT)

All working piles shall be subjected to Sonic Integrity Testing (SIT) by a specialist agency engaged by the Contractor. The SIT equipment like FPDS (Foundation Pile Diagnostic System) or equivalent, as approved by the Engineer, shall be used for this purpose. The testing shall be done as per ASTM D5882-07. Before starting this testing, the Contractor shall submit his Method statement for approval of the Engineer.

The contractor shall arrange performance and interpretation of these tests by the specialist agency like TNO Netherlands or equivalent. The interpretation shall include information on pile length, concrete crushing strength, Sonic Pulse Velocity and defects like necking / honeycombing etc. A separate report shall be submitted for SIT carried out on piles by the Contractor.

2. PAYMENT

Item No.	Description	Unit of Measurement
SP-417a	Sonic Integrity Tests (SIT) on all piles	Each



SP- 418 GALVANIZED IRON DRAIN PIPE

418.1 DESCRIPTION

The Contractor shall furnish and place galvanized iron drain pipe (AASHTO Standards M 1118-80 1986) in accordance with the plan of Bridge deck, specifications and/or as ordered by the Engineer.

418.2 MATERIALS

The Galvanized iron pipe shall conform to the requirements of ASTM Designation A120.

418.3 CONSTRUCTION

Where the pipe is used for bridge drains it shall be cast in the deck and shall be flush with the deck surface.

418.4 MEASUREMENT

The quantity to be paid for under this item will be number of linear meter of pipe incorporated in the work in accordance with the plans and specifications and as directed by the Engineer.

418.5 PAYMENT

The unit price bid per linear meter shall include the cost of furnishing and placement including all labor, materials and equipment necessary to complete the work.

Item No.	Description	Unit of Measurement
SP-418	GI drain pipe Dia 100 mm	M



SP-501 SUPPLYING AND INSTALLATION OF uPVC PIPE 100/150 MM Dia

501.1 DESCRIPTION

The work consists of supplying, installing, and commissioning of all material and services of the complete conduits and pipes as specified herein, shown on the Drawings and/or as directed by the Engineer's Representative.

The Contractor shall get the prior approval of the layout from the Engineer's Representative at Site for exact route, location and position of the conduits and pipes.

501.2 GENERAL

The Contractor shall ensure exact location and route of conduit and pipes in coordination with other services as per site requirements and get the approval of Engineer's representative prior to execution of the work.

501.3 APPLICABLE STANDARD/CODES

Latest editions of the following standards/codes shall be applicable for the materials in scope of this Section:

BS 6099	-	PVC Conduits and Accessories
BS 3595	-	PVC Pipes and Accessories
BS 4346	-	Cement Solvent for Jointing

501.4 MATERIAL

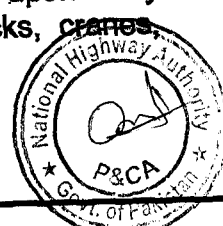
501.4.1 uPVC Conduits and Accessories

The heavy gauge uPVC conduits and accessories conforming to BS6099 shall be generally used. The uPVC conduits and accessories of light gauge may be used on the project with the concurrence of the Engineer's Representative.

The uPVC bends, sockets, elbows, couplings etc. shall conform to the same specifications as for the conduits. The uPVC bends shall have enlarged ends to receive conduit without any reduction in the internal diameter at joint. Manufactured smooth bends shall be used where conduit changes direction. Bending of conduits by heating or otherwise will not be allowed in any situation. The use of sharp 90-degree bends and tees will not be allowed.

501.4.2 uPVC Pipe and Accessories

The pipe shall be rigid. All pipes shall be minimum Class D (Working pressure - 12 bar), unless otherwise stated on drawings. The buried uPVC pipe should be able to withstand the external load acting upon it by continuous movement of heavy duty vehicles such as trucks, cranes,



forklift, etc. Where pipe changes direction, manufactured smooth bends shall be used. Bending of pipes by heating or otherwise will be allowed in special cases only. Bending of pipes by heating shall be carried out by first filling the pipe with sand inside and then immediately removing the sand. The use of sharp 90-degree bends and tees will not be allowed. The bends shall conform to same specifications as given for uPVC conduits. For joining of pipe all precautions and procedures recommended by manufacturer shall be followed.

501.5 INSTALLATION

501.5.1 uPVC Pipe

Rigid PVC pipes shall be installed under roads and paved areas, at crossing with other services as shown on the Drawings and/or as directed by the Engineer's Representative. The depth of the pipe shall vary according to the conditions at site, and approval of Engineer's Representative shall be obtained prior to installation. In general the pipes shall be installed underground at the following depths measured from the top of the pipe and or as directed by the Engineer's representative.

Under roads and paved surface	800 mm below the finished surface
When crossing other services	250-mm vertical clearance for the crossing length 500 mm horizontal clearance with CC protective cover

The trench of required dimensions shall be excavated and the bottom of trench cleaned and leveled. A four-inch thick bed of fine sand shall be provided over which the uPVC pipes installed after proper alignment. Where two or more pipes are installed in the same trench the clearance between pipes shall not be less than two inches. After laying of pipe the trench shall be backfilled with clean-screened earth in layer of four inches. Each layer shall be properly compacted. All joints shall be sealed adequately to prevent entry of foreign elements.

For crossing of major services, the uPVC pipes shall installed in trench of size as shown on drawings or as directed by the Engineer and will be covered with concrete class A as per drawings or as directed by the Engineer.

The installation of pipes shall be completed in all respects including its fixing at terminations, before cabling work is started. All sharp edges and burrs shall be removed by using reamer or any approved device. The pipe shall be thoroughly cleaned of dirt and dust from inside. The pipes shall be installed in proper co-ordination with other works.



501.6

MEASUREMENT AND PAYMENT

Measurement

Measurement shall be made for the number of running meters of pipes acceptably supplied and installed by the Contractor.

Payment

Payment shall be made for the total numbers of meters measured, as provided above, at the Contract unit price. The payment shall constitute full compensation for supplying, installing and completion of the laying of the uPVC pipes including jointing materials and accessories and all incidentals for completion of the work.

Pay Item No.	Description	Unit of Measurement
SP-501	Supplying & Installation of uPVC Pipe 100/150mm dia	M



SP-502
& SP-503

**RELOCATION OF UNLINED WATER COURSES
RELOCATION OF BRICK LINED WATER COURSES**

1 DESCRIPTION

The work shall consist of dismantling and disposal as required of existing brick lined / unlined water course and relocating the same with standard work items and required discharged capacity as approved by the Engineer's Representative for smooth flow of water.

2 MATERIAL REQUIREMENT

Brick Lining

This shall conform to the requirements of Item 410.2 of General Specification.

3 CONSTRUCTION REQUIREMENT

Cross-section for Relocation

This shall be cut and dressed according to specified /required line and grade as directed by the Engineer's Representative, prior to commencement of this work.

Brick lining shall conform to the requirements of item no 410.3 of General Specification.

4 MEASUREMENT

The work of relocation of (Unlined) water course which is completed as per line, grade and cross-section according to discharge capacity, accepted by the Engineer shall be measured in square meters.

The work of brick lining on cement mortar for lined water course, which is completed according to the required thickness and grade, shall be measured by superficial area accepted by the Engineer's Representative. The unit of measurement shall be square meters.



5 PAYMENT

Payment shall be made as measured above and shall be full compensation for relocation of the water courses, disposal of surplus /dismantled/unsuitable material, provision of all labour ,materials, equipment, tools and all others necessary to complete the work as prescribed above and accepted by the Engineer's Representative.

Pay Item No	Description	Unit of Measurement
SP-502	Relocation of Unlined Water Course	SM
SP-503	Relocation of Brick Lined Watercourse	SM



504.1

DESCRIPTION

The work shall consist of supply and installation of delineators /angle reflectors at locations detailed on drawings or as directed by the Engineer, complete in all respect. The work will be executed as per item 607 "Traffic Road Signs and Safety Devices of general specifications with amendments as follows:

In item 607 "Traffic Road Signs and Safety Devices" of general specifications, add in line 1, after "furnishing" insert ",", delete "and" and after "traffic signs" insert "and delineators"

Add at the end of para:

Unless otherwise shown on the Drawings, all signs shall be lettered in both Urdu and English. In case of any discrepancy between NTRC requirements and General Specifications, the requirements of NTRC shall govern.

504.2

MATERIAL REQUIREMENTS

In item 607 "Traffic Road Signs and Safety Devices" of general specifications, add new para under head "Material Requirement" as follows:

Materials shall be of new stock unless otherwise shown on the Drawings or ordered by the Engineer's Representative and shall conform to the item 607 of general specifications with amendments as mentioned below:

504.2.2

Rubber Washer

In 607.2.6, Add at the end "Thickness of rubber washer is as given below:

On top	3 mm
On Bottom	2 mm

504.2.3

Concrete Foundation Blocks

In 607.2.9, in line 1, delete "Class A" and replace with "Class A1".

In line 3, after "mm", add "or as shown on the drawings or as directed by the Engineer."

504.2.4

Road Posts and Hazard Markers

In 607.2.10, in line 6, delete "with standing" and replace with "withstanding".



504.2.4

Excavation and Backfilling

In 607.3.1, Add at the end of para 3:

Concrete shall be placed against the undisturbed excavated faces, except that the top fifteen (15) centimeters of each footing shall be formed. Forming of the entire footing will not be permitted unless approved by the Engineer. Concrete shall be thoroughly rodded and spaded so as to eliminate all voids. Tops of footings shall be finished with a wood float and all exposed edges shall be rounded with an edger.

Backfill shall be thoroughly compacted by mechanical tampers, and care taken to prevent damage to the finished concrete. Backfill shall be brought up level with the finished ground line. Pipe post bases and/or posts set in concrete shall be firmly supported, plumb, vertical and at the proper elevation.

In case precast concrete foundations are used, these shall be of the concrete class 'A1' and of the sizes as shown on the drawings.

504.2.5

Erection of Posts

In 607.3.2, In line 3, delete "the" written in between "to" and "prevent".

504.2.6 Installations of Safety Devices

In 607.3.5, In line 11, delete "a" written in between "for" and "prohibiting".

504.2.7 Sign Faces

In item 607.3.6, following amendments be made as mentioned below:

a) Design

In serial No. 3, line 1, delete "italics" and replace with "Smalls".

In serial No. 4, delete "21 cm" and replace with "35 cm".

In serial No. 5, delete "17 cm" and replace with "25 cm".

In serial No. 5, delete "italics" and replace with "Small".

In serial No. 6, delete "3.5 cm" and replace with "10 cm".

In serial No. 10, delete "4 cm" and replace with "2.3 cm".

In serial No. 11, delete "23 cm" and replace with "35 cm".

In serial No. 13, delete "Size of letter for km. Height" and replace with "Height of letter for km".



504.2.8 Storage of Signs

After 607.3.7, add the following:

504.2.9 Painting

The rear sign face of all signs shall be painted with two (2) coats priming paint pigmented with chromates of chromes (excluding lead chromes) plus two (2) coats of weather-resisting dull silver gray paint. Where connection of large aluminum sheet signs to a steel stiffening frame is required, the studs or screws, bolts and washers shall be painted to properly match the color of the surrounding material.

All painting shall conform to the requirements of Section 413 of General Specifications.

504.2.10 Placement and Orientation

The Engineer will approve and mark the longitudinal location of each sign on the working drawings submitted by the Contractor.

The sign shall be laterally positioned from the shoulder or curb as shown on the approved drawings or directed by the Engineer.

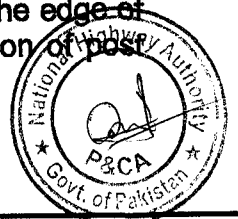
The Contractor shall stake the location of each sign support and shall get its approval from the Engineer prior to carrying out excavation for foundations. The Engineer may order change in location due to site constraints. No separate payment shall be made to the Contractor on account of such change if the change is made before fixing of the sign support in concrete block.

The Contractor shall be responsible for the proper elevation, off-set, level and orientation of all signs he erects. He shall exercise due care on the preservation of stakes for his and the Engineer's use. If any stakes are lost, damaged, displaced, or removed, the Contractor shall have them reset at his own expense.

Unless otherwise shown on the drawings all signs shall be erected so that the edge and face of the sign are truly vertical and face is at an angle of ninety three (93) degrees to the centerline; that is, facing slightly away from the centerline of the lane which the sign serves. Where lanes divide or are on sharp curves, the Contractor shall orient sign faces as indicated on the Drawings or by the Engineer so that they will be most effective both during day and night and so as to avoid specular reflection and glare. All sign supports shall be plumbed.

504.2.11 Sign Posts

Lengths of posts shown on the drawings for signs are for bidding purposes only. When progress of the work permits, the Engineer will authorize the location of each sign, with the station and offset distance from the edge of pavement. The Contractor shall be responsible for determination of post



lengths to provide the vertical clearance shown on the drawings. Field cutting of posts shall be performed by sawing.

"Sign Post Support Assemblies" shall be fabricated as detailed on the drawings. Test specimens for pipe shall be taken at least fifteen (15) centimeters from one (1) end of the pipe, instead of at the ends as specified in ASTM A 53, Grade B. When Galvanizing is specified assemblies shall be hot-dip galvanized after fabrication. All welds shall be mechanically cleaned before Galvanizing. Galvanized materials on which the Galvanizing has been damaged in transporting, handling, or erection will be rejected or may, with the approval of the Engineer, be repaired in the field by the zinc alloy stick method. Required field welds and adjacent areas on which the Galvanizing has been damaged shall be galvanized by this same method. The zinc alloy stick shall be cast from zinc, tin, and lead in combination with fluxing ingredients. The compound shall be completely liquid at a temperature not lower than two hundred and forty six (246) degrees C. The area to be re-galvanized shall be thoroughly cleaned, including the removal of slag on welds. The surface shall be heated with an oxyacetylene torch to approximately three hundred and fifteen (315) degrees C, and the alloy stick rubbed over the surface to fix a deposit. While the alloy is still liquid, a clean wire brush shall be used to smooth the deposit evenly over the entire area being re-galvanized. If a heavy deposit or build-up is required to match the original coating, more alloys shall be added immediately to the initial bond deposit and spread with a paddle or brush until the required thickness is obtained. Edges of drilled holes shall be coated with commercially available zinc-rich paint. Shop drawings will not be required for pipe posts.

The Contractor shall furnish to the Engineer, fabricators' certifications in triplicate certifying that the material supplied conforms to all of the requirements specified.

504.2.12 Fastening Signs to Sign Posts

Signs shall be fastened to sign supports in accordance with the requirements of the drawings, the recommendations of the sign manufacturer and to the satisfaction of the Engineer.

After installation of signs on their supports all bolt heads, screw heads, and washers which are exposed on the face of the sign shall be painted. The color of the paint used shall be as nearly as practical the same as the color of the background or message area at the point where the bolt, screw, or washer is exposed.

Where steel signs are mounted with aluminum hardware or on steel posts, approved asphalt, nylon, or neoprene insulation shall be installed at all points where dissimilar metals might come in contact.

504.3

Erection of Delineators and Marker Posts

Delineators shall be erected at locations shown on the drawings and set at elevations such that the Delineator reflectors will be at the indicated height.



above the ground surfaces. Unless otherwise noted in the Drawings or authorized by the Engineer's Representative, holes for posts shall be of the depth and size shown on the Drawings. Posts shall be set plumb and will be set to lines and grades as specified on the drawings. The cost of all excavation and concrete will be considered subsidiary to the bid item (s) for Delineators. Chevron shall also be installed on same pattern except using high density sheet for good reflection.

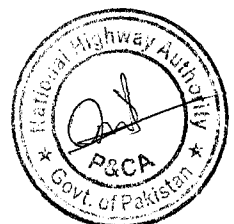
When noted on the Drawings or authorized by the Engineer's Representative, the posts shall be erected by driving, either by hand or with approved mechanical devices. The method of driving shall not substantially alter the cross-sectional dimensions of the posts or materially damage the coating. Battered tops will not be permitted. Posts which, in the opinion of the Engineer's Representative, are bent or otherwise damaged during or after erection shall be removed from the site and replaced at the Contractor's expense. After driving, the portion of the posts above ground shall be plumb and the posts shall be firm in the ground.

Reflectors shall be attached to the posts as indicated on the drawings or as directed by the Engineer or according to the manufacturer's specifications.

504.4

PAYMENT

Pay Item No.	Description	Unit of Measurement
SP-504	Delineators / Angle Reflector	Each



SP-505 **CLEANING AND MINOR REPAIR OF EXISTING STRUCTURE (CULVERTS)**

1 DESCRIPTION

The work shall consist of cleaning of existing culverts from all type of dirt, clearing the complete water way and minor repair i.e. minor inlet & outlet repairs, covering of steel reinforcement with cement concrete (class A) as per drawings or as directed by the Engineer's Representative for smooth flow of water.

2 CONSTRUCTION REQUIREMENT

All the culverts need to be cleaned and required minor repair will be verified by contractor at site as per drawings or as per the directions of the Engineer's representative. Cracks shall be marked and repaired with cement sand slurry of ratio (1:3) and will be plastered.

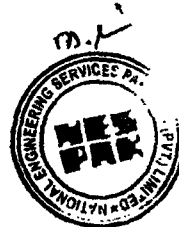
3 MEASUREMENT

The work of cleaning and repair of culverts which is completed as per drawing and site requirement shall be measured in number of culverts which are cleaned and repaired, complete in all respect to the entire satisfaction of the Engineer representative.

4 PAYMENT

Payment shall be made as measured above and shall be full compensation for cleaning of choked culverts, minor repair and complete the work as prescribed above and accepted by the Engineer's Representative.

Pay Item No	Description	Unit of Measurement
SP-505	Cleaning and Minor Repair of Existing Structure (Culverts)	Each



1 DESCRIPTION

The work shall consist of dismantling of existing guard rail at locations specified in drawings or as directed by the Engineer.

2 CONSTRUCTION REQUIREMENT

Foundation concrete of existing guard rail will be dismantled with the help of jack hammer. Care must be taken in dismantling process keeping in view the site safety. Damaged and un-damaged guard rail will be notified to the Engineer's representative at site. Un-damaged guard rail will be used positively on project road.

3 MEASUREMENT

The work of dismantling of guard rail shall be measured in linear meters which are dismantled, complete in all respect to the entire satisfaction of the Engineer representative

4 PAYMENT

Payment shall be made as measured above and shall be full compensation for dismantling of foundation and guard rail, complete the work as prescribed above and accepted by the Engineer's Representative.

Pay Item No	Description	Unit of Measurement
SP-507	Dismantling of existing guard rail	M



601.1

GENERAL

The work shall consist of supply, fabrication and installation of gantry signs at locations as shown on drawings or as directed by the Engineer as per the site requirement, complete in all respect. Gantry signs shall be required to be installed to provide the information about the important places and restriction enforced for type of passing vehicles.

The gantry signs shall be manufactured and installed in accordance with the details shown in the gantry sign's drawings and as directed and approved by the Engineer's representative. The sign panel shall be designed suiting the situation and approved by the Engineer's representative before its manufacture.

Gantry Sign Structure

The contractor shall be responsible to submit the complete methodology and shop drawings prior to the start of any activity and get approved from the Engineer representative. All work in respect of the furnishing, construction of foundation and erection and finishing of gantry sign structure shall conform to the drawings and to the relevant requirements of General Specifications section 401 "Concrete", section 404 "Steel Reinforcement", section 413 "Steel Structures and section 607 "traffic signs and safety devices" with amendments made in SP-504.

601.2

MEASUREMENT AND PAYMENT

The item shall be paid for as under, which price and payment shall be full compensation for all the costs necessary for the proper manufacture, installation and completion of work prescribed in the item/drawing:

Payment Item No.	Description	Unit of Measurement
SP-601a	Gantry Sign Type-I as shown on drawing	Each
SP-601b	Gantry Sign Type-II (Cantilever) as shown on drawing	Each



SS-1 PROVIDING SULPHATE RESISTANT CEMENT IN CONCRETE WORKS

SS.1 DESCRIPTION

This work shall consist of using sulphate resistant cement instead of ordinary Portland cement in concrete works of specified class, where specified in drawings or as per the site requirement.

SS.2 MATERIALS

The material requirement shall be same as specified in item 401 of NHA general specifications except:

Replace para 2 of heading 401.2 (Material Requirements) Sub heading 401.2.1 (Portland cement) with following:

"Portland cement shall conform to the requirements of the standard specifications for Portland cement, AASHTO Designation M85 (ASTM Designation C150). The type of cement to be used shall be type-V (sulphate resisting cement), where specified on drawing / BOQ or as per the directions of the Engineer".

SS.3 CONSTRUCTION REQUIREMENT

Construction requirement shall be same as specified in item 401 of general specifications.

SS.4 MEASUREMENT

Measurement requirement shall be same as specified in item 401 of NHA general specifications.

SS.5 PAYMENT

The unit price per cubic meter to be paid covered under this provision shall be the difference of unit cost of sulphate resistant cement per cubic meter and ordinary Portland cement per cubic meter.

Item No.	Description	Unit of Measurement
SS-1	Extra over for providing sulphate resistant cement in concrete works of specified class:	
	For Plum Concrete	CM
	For Concrete Class B	CM
	For Lean Concrete	CM
	For Concrete Class A 2	CM
	For Concrete Class A 3	CM



701.1

DESCRIPTION

The Contractor shall provide and maintain survey equipment for the sole use of the Engineer. All surveying equipment shall be new and shall be maintained throughout the Contract period and replaced by the Contractor free of charge in case of damage or loss. The survey equipment shall be supplied to the Engineer within thirty (30) calendar days from the Engineer's Order to Commence the Works.

Upon completion of the Contract, the surveying instruments and equipment shall become the property of the Employer and shall be handed over completely, and in a state of good, condition and working order taking into account fair wear and tear.

The Contractor shall provide adequate number of helpers, along with the equipment, to the Engineer/Engineer's Representative to assist in carrying out the field works.

701.2

EXTENT OF PROVISION AND GENERAL REQUIREMENT

The Contractor shall provide and maintain at his own cost at least the following surveying equipment and any other surveying equipment deemed essential for the Work by the Engineer's Representative for the sole use of the Engineer's Representative:

Sr. No	Description	Quantity
1	Electronic Total Station 1" reading, 6" Accuracy, memory 10,000 points or more, Builtin SD Card Slot & USB Port, programs topographic survey, setting out, curve Guide Light, Keyboard, Automatic Dual Axis Compensator working range $\pm 6'$ distance range reflector less 400 meter with single prism 5000 meter, with Triple Prism 6000 meters, one Bailey & Quick Charger in Standard Accessories (Made in Japan or Equivalent).	1 Nos.
2	Software for Data Downloading.	1 No.
3	Single Prism Target Set includes: Prism, range pole graduated 2.6m., tilting mount with Coaxial Target Plate.	4 Nos.
4	Automatic Level, magnification 32X	2 Nos.
5	Levelling Staves with graduations in metric units	12 Nos.
6	Steel measuring tapes 30 m long	4 Nos.
7	Lockable Pocket tapes 5 m.	4 Nos.
8	TRIPOD (Aluminum)	5 Nos.



9	TRIPOD for Prism Pole	4 Nos.
10	Club hammers 2 kg.	4 Nos.
11	Sledge hammers 4 kg.	4 Nos.
12	Traffic Cones	40 Nos.

13	Survey Umbrellas	6 Nos.
14	Aluminum Straight Edges, 4 m long	2 Nos.
15	Aluminum Straight Edges, 5 m long	2 Nos.
16	Spirit Levels, 30cm long	4 Nos.

- All miscellaneous tools, equipment and materials required in surveying in numbers as determined by the Engineer's Representative.

All new surveying equipment shall be provided and maintained throughout the Contract period. In case of damage or loss those shall be replaced by the Contractor at his own cost.

The Contractor shall make available two (02) qualified surveyors and transport for checking and incorporation as and when required by the Engineer's Representative.

The survey equipment shall be placed at the disposal of the Engineer's Representative during the Contract period and shall be returned to the Employer on completion of the Contract, complete and in a good state, taking into account fair wear and tear.

The Contractor shall provide adequate supplies of expendable materials i.e. level books, pencils, erasers inks, drawing papers, pegs, nails, flags, brushes and paints etc. as required by the Engineer's Representative.

701.3

PAYMENT

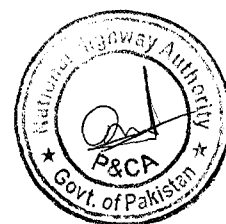
The cost of supplying the equipment shall be paid as re-imbursement against provisional sum substantiated by vouchers from the owner plus twelve (12) percent surcharge to the contractor for administrative and overhead expenses including income tax (7.5%) related to the purchase and delivery of said items.

For running and maintenance, supporting staff, transport, stationery, utilities etc. shall be paid under maintain of Surveyor Instrument.



Payment shall constitute full compensation for all costs of provision and maintenance of equipment, furnishing survey teams, supplies of expendable materials, necessary labor/helpers and all other incidental item(s) for the proper completion of the Work as stated herein above and as directed by the Engineer's Representative:

Item No.	Description	Unit of Measurement
SP-701(a)	Provide Surveying and Allied Instruments.	P.S.
SP-701(b)	Maintain Survey Instruments, provide vehicle, Survey Team & helpers.	Month



**SP 702 PROVIDE EQUIP & FURNISH ENGINEER'S OFFICE &
ACCOMMODATION**

702.1 General

The contractor shall provide a Site Office on hiring basis against provisional sum provided in the Bill of Quantities. The Site Office includes the following:

- i) Office accommodation
- ii) Office furnishing and equipment
- iii) Office running and maintenance
- iv) Office supporting staff

702.2

Engineer's Representative Office / Accommodation

The office accommodation as approved and accepted by the Engineer shall be provided on rental basis. The overall size of the Engineer office shall be approximately 500 Sq. meters and residence accommodation of about 2,000 Sq.m having all kind of facilities.

702.3

Furnishing & Equipment

The furniture and equipment as approved and accepted by the Engineer shall be provided by the Contractor on the instructions of the Engineer or Representative of Engineer as per the requirement.

702.4

Running and Maintenance

702.4.1

The contractor shall be responsible for the running and maintenance of office accommodation, residence accommodation, furnishing and equipment etc. bills for all services/utilities to be paid by the contractor.

702.4.2

Office and Drawing Stationery and necessary equipment shall be provided by the contractor on monthly requirement basis as per the requirement or as directed by the Engineer.

702.5

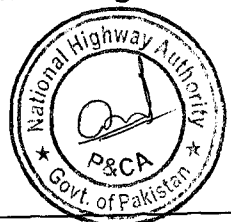
Supporting Staff

The contractor shall provide to the Engineer following supporting staff.

- | | | |
|------|------------|-------------------|
| i) | Naib Qasid | Two |
| ii) | Cook | one and helper 02 |
| iii) | Sweeper | two |
| iv) | Guards | Three |

The appointment of the supporting staff shall be subject to the approval of the Engineer and once assigned shall not be transferred or laid off without prior approval of the Engineer.

In case of power failure and non-availability of power, electric power through generators shall also be provided by the contractor. All rooms shall be provided with standard office lighting of the flours cent type. All rooms shall have doors with locks and keys and supplied Air-conditioning and heating system as per the approval of the Engineer.



The water supply shall be maintained through water supply system of the town or locality boring/installing well with pump or by an elevated or pressure storage tank with a capacity of 2500 gallons.

A telephone shall be installed in Engineer's Office or cell phone may also be provided to facilitate the Engineer. Engineer office will be equipped with air-conditioning unit as per requirement.

702.6

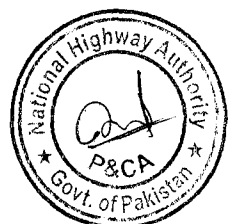
Measurement and Payment

For the hiring of accommodation for site office if approved & allowed by the Engineer, the cost of rent and supplying office furniture and Equipment shall be paid as re-imbursement against provisional sum substantiated by vouchers from the owner plus ten (12) percent surcharge to the contractor for administrative and overhead expenses including income tax (7.5%) related to the purchase and delivery of said items.

For running and maintenance, office supporting staff, drawings, stationery, utilities bills etc. shall be paid under maintain of Engineer's office.

If the contractor does not provide necessary facility, Engineer shall hire the accommodation and arrange necessary supplies of furniture and equipment and employ staff etc. as specified and maintain the office. Expenditures shall be recovered from the IPC's / running bills of the contractor by adding hundred (100) percent overheads.

Pay Item No.	Description	Unit of Measurement
SP-702 a	Provide the Employer's and Engineer's Representative's Office and Residence (on rental basis)	Provisional Sum
SP-702 b	Furnish and Equip. the Employer's & Engineer's Representative Office and Residence	Provisional Sum
SP-702 c	Maintain Employer's and Engineer's Office and Residence	Month



SP 703

PROVIDE, EQUIP AND MAINTAIN LABORATORY FOR THE PROJECT

703.1

Description

The building for the base laboratory shall be hired (minimum 500 Sq.m covered area) and shall be fully equipped, with all necessary furnishing & equipment, utilities, installations and others as directed by the Engineer.

703.2

General Requirements

The furnishing of equipment shall ensure conducting all tests related to construction as per the list provided by the Engineer. In case if any test required for testing of material cannot be performed in the project laboratory, the Engineer may authorize such test to be carried out at the cost of contractor, at any other laboratory. The Contractor shall provide at no cost to the Engineer, technicians, helpers and vehicles deemed necessary by the Engineer, to assist in the operation of the laboratories as required by the Contractor's proposed program of work. Technicians and helpers once assigned to the laboratories may be removed by the Contractor only with the approval of the Engineer and salaries shall be paid by the contractor. The equipment shall be procured within 15 days on the instructions of the Engineer.

The contractor shall maintain the laboratory equipment, apparatus and supplies necessary to permit execution of all standard test required by the specifications. Lists of specific laboratory equipment shall be provided as per the requirement and recommendation to purchase from recognized manufacturers. The Contractor shall submit to the Engineer for his approval at the earliest. The list shall include the manufacturer's name and descriptive literature. Lab Equipment, fixtures and furniture shall remain the property of the Employer after completion of the project.

703.3

Facility of the Material Testing

Material testing equipment as described above shall be provided within minimum period. In case of delay in providing such facility, as an interim arrangement, temporary facilities of testing material shall be provided as agreed by the Engineer. Contractor may be paid for maintenance of temporary laboratory, provided such facilities are acceptable to the Engineer. Contractor shall also be responsible for extra expenses of the Engineer for conduction of test in temporary arrangement.

703.3.1

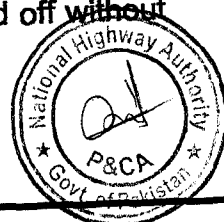
Supporting Staff

The contractor shall provide to the Engineer following supporting staff.

i)	Naib Qasid	One
ii)	Chowkidar	Two
iii)	Sweeper	One
iv)	Helpers	Four



The appointment of the supporting staff shall be subject to the approval of the Engineer and once assigned shall not be transferred or laid off without the Engineer approval. Salaries shall be paid by the contractor.



703.4 Running and Maintenance

703.4.1 The contractor shall be responsible for the running and maintenance of Laboratory, furnishing and equipment etc. bills for all services/utilities to be paid by the contractor.

703.4.2 Office and Drawing Stationery and necessary equipment & material shall be provided by the contractor on monthly requirement basis as directed by the Engineer.

703.5 MEASUREMENT AND PAYMENT

703.5.1 Measurement

Work under this item shall be measured in two portions.

- i) Hired the building for Material Testing Laboratory and purchase of laboratory equipment shall be paid as reimbursement against provisional sum substantiated by vouchers from the owner plus twelve (12) percent surcharge to the contractor for administrative, overhead expenses including income tax (7.5%) related to the purchase and delivery of said items.
- ii) For running and maintenance and office supporting staff, drawing stationery, Lab. Material/equipment (minor), utilities bills, helpers (04 nos.) etc. shall be paid under maintain base Laboratory. Maintain Laboratory, to be measured for the duration of the contract and paid as per the rate/month.

703.6 Payment

The quantities under this item of work shall be paid at the contract price indicated in the Bill of Quantities which price and payment shall constitute full compensation for all costs of furnishing labor, materials, equipment and incidentals for the proper completion of the work indicated in these specifications and specified on the drawings and Special Provisions (Specification).

Pay Item No.	Description	Unit of Measurement
SP- 703 a	Provide Material Testing Project Laboratory (on rental basis)	Provisional Sum
SP- 703 b	Equip and Furnish Material Testing Project Laboratory	Provisional Sum
SP- 703 c	Maintain Material Testing Project Laboratory including provision of 04 helpers	Month



**PROVIDE, RUN AND MAINTAIN TRANSPORT FOR
EMPLOYER/ENGINEER'S REPRESENTATIVE****708.1 General**

The transport for the Employer's / Engineer's Representative and site staff is to be provided under this Contract for which rate item has been provided in the B.O.Q. Contractor shall procure these vehicles under the instruction of the Engineer.

Procurement of Vehicles

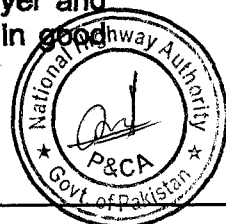
The contractor shall procure the vehicles from the local market, get these registered in the name of the Employer and hand over to the Employer's and Engineer's Representative, however transport for OHS Manager shall be hired from local market on rental basis.

Details /Type of vehicles are as under:

- SP-708a : Two (02) No vehicles for the Employer's representatives
01 Nos will be Toyota Double Cabin with A/C (4 Wheel drive) with Hood
01 Nos will be Toyota Corolla 1300 cc with A/C
- SP-708b : Seven (07) No vehicles for the Engineer's representatives
01 Nos will be Toyota Double Cabin with A/C (4 Wheel drive) with Hood
02 Nos will be Toyota Corolla 1300 cc with A/C
04 Nos will be Suzuki Bolan (Carry)
- SP-708bi : Two (02) No vehicles for the OHS Manager
01 No will be Toyota Corolla 1300 cc with A/C
01 No will be Suzuki Bolan (Carry)

Total no of 11 Nos. vehicles shall be covered under this provision, out of which 02 No Vehicles i.e. Toyota Double Cabin and Suzuki Carry Bolan shall be procured for Engineer Representatives under this provision. 09 vehicles out of 11 vehicles shall be provided by NHA from its vehicles pool for smooth execution of project. Vehicles to be provided by NHA from its own vehicle's pool, type of vehicle may alter as per availability, however equivalent type of vehicle shall be provided.

Vehicle shall be procured as new/ latest model at the time of delivery when instructions to procure the vehicles is given as per approval of the Engineer and 02 Nos vehicles for OHS Manager and support staff shall be hired on rental basis when instructions to hire these vehicles will be given by The Engineer. The new / rental vehicles shall be handed over to Employer / Engineer's Representative for the entire length of project. The Contractor shall be responsible for the cost of running & maintenance of all 11 Nos vehicles whether procured under this provision or provided by NHA from it vehicles pool. Newly procured vehicle shall remain the property of the Employer and shall be handed over to the Employer after completion of the work in good



working condition. The cost of vehicle shall be inclusive all like purchase, transportation, registration and other dues incurred in this regard. In case new vehicles are not purchased, same numbers of road worthy conditions vehicles shall be hired and its rent cost shall be paid through pay item SP 708a, rental cost shall be approved by the Employer.

In case of delay, failure or default on the part of the Contractor in providing the facilities under these provisions, the Engineer's Representative may arrange the same at the risk and cost of the Contractor or hired the vehicles for project period.

708.2 Running & Maintenance

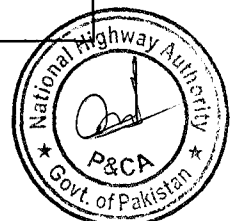
The Contractor shall be responsible for the running and maintenance of these vehicles which includes petrol, diesel, repair works, regular tuning, replacement of tires, registration, comprehensive insurance, annual renewal, lubricants, servicing including providing drivers etc.

708.3 Method of Payment

On the instructions and determination by the Engineer, Contractor shall be paid for the Services under this Clause as follows:-

- i) For the procurement of vehicles, Contractor shall provide the original supporting vouchers/receipts including applicable levies & other taxes paid for procurement of vehicles.
- ii) For running and maintenance of above vehicles including salaries of drivers, the Contractor shall be paid on monthly basis.
- iii) On failure of the contractor to provide and of the services under this clause or even otherwise notwithstanding anything contained in any other clauses of the Contract Documents, the "Engineer" shall have the authority to nominate/sublet to any other contracting agency on recommendation of the Resident Engineer for the supply of services under this clause, the payment for which shall be made through this contract direct to the nominated agency out of Provisional Sum provided in the Contract or hire the good road worthy vehicles and recover the cost with 100% penalty charges from contractor's IPC's.

Item No.	Description	Unit of Measurement
Sp-708b	Provide Engineer's Representative Transport (i) Toyota Double Cabin with A/C (4 Wheel drive) (ii) Suzuki Bolan (Carry)	Each
SP-708bi	Provide OHS Manager and support staff Transport (On rental basis) (i) Toyota Corolla 1300 cc with A/C (01 No) (ii) Suzuki Carry (01 No)	Vehicle- Month
Sp-708c	Running & Maintenance of Employer's / Engineer's Representative's Transport	Vehicle- Month



SP-OHS (Occupational Health and Safety)

General:

The Contractor shall appoint one OHS manager having minimum qualification of Masters in Environmental science or equivalent with international certifications i.e. OSHA or NEBOSH along with four nos support staff having min qualification of graduation in relevant discipline to act full-time as Safety/Risk Assessment/ Accident prevention Officer throughout the duration of project and shall notify the Engineer of such appointment. The OHS manager shall be experienced in all matters relating to health and safety on site and shall be familiar with all relevant safety regulations and legislation. The OHS manager shall have the power to receive instructions from the Engineer on matters relating to the health and safety of personnel on site and the safe conduct of site operations. It will be the responsibility of OHS manager to prepare OHS manual covering all the risks involved in operational activities and will submit to the Engineer for approval. After approval of subject manual, proper monitoring of OHS activities will be done and monthly progress report will be submitted to the Engineer.

If the contractor uses existing roads for the transportation of his materials and equipment for the project or for detour roads, the Contractor shall be responsible for maintaining these existing roads during construction and ensuring all OHS protocols. After the completion of the project, the Contractor shall be responsible for reinstating the existing roads used to its original state ensuring that all mitigation measures are adopted for reinstatement and safe usage. Prior to use the existing roads, the Contractor shall investigate and document the entire length of the existing road condition together with the Engineer's staff including photographs or video.

Responsibilities of OHS Manager:

OHS manager will be contractor representative at site regarding monitoring of OHS works. OHS manager will be responsible for the implementation of health and safety at site and will supervise implementation of the contractor's OHS policies. The OHS manager will also be responsible for health and safety aspects of work sites and shall submit monthly reports to concerned the Engineer representative on the status of implementation of mitigation measures, complaints received and actions taken. The contractor's OHS manager, in coordination with the CSC (construction supervision consultant) shall set-up a grievance redress committee that will address any complaints arising project implementation. The OHS manager shall ensure that all necessary equipment (listed below) and support including but not limited to provision of dedicated vehicle, office space and accessories, safety related tools are provided to the OHS Manager and concerned staff during the currency of the contract. The OHS manager shall conduct necessary trainings for Employer and site staff for developing awareness about OHS. It will also be the responsibility of OHS manager to keep and maintain necessary first aid kit at site in order to cope with emergency situations.



LIST OF NECESSARY EQUIPMENT

SAFETY SHOES	FACE SHIELDS	SAFETY GOGGLES
HARDHATS	DUST AND FUME MASKS	GLOVES (LEATHER)
COVERALL DRESSES	EAR PLUGS	GLOVES (COTTON)
FULL BODY HARNESS	EAR MUFFS	NAVIGATIONAL SIGNAGE
HIGH VISIBILITY VESTS	ROPE (PLASTIC 4MM)	WARNING TAPE RED & WHITE
HIGH VISIBILITY CONES	MANDATORY SIGNAGE	PVC MESH (ORANGE)
TRAFFIC BARRIERS	CAUTIONARY SIGNAGE	PROHIBITORY SIGNAGE
GREEN NET (PVC)		

Payment:

The payment for activities under this item shall be paid at the contract price and monthly rate as per the measurement unit indicated in the Bill of Quantities after certification by the Engineer / Employer and any other concerned stakeholder or authority nominated by the Employer that activities related to the item of OHS have been performed and managed satisfactorily by the Contractor.

SP-OHS	Item Description	Unit
i)	Provide 1 x Qualified OHS Manager having international certifications as per specifications.	Month
ii)	Provide 4 nos support staff as assistant to OHS Manager as per specifications.	Month
iii)	Equip OHS Manager with necessary accessories i.e. stationery, laptop etc for proper monitoring of OHS activities.	LS
iv)	Conduct OHS awareness trainings for Employer and contractor staff at site and conducting courses to visitors and new comers.	Month
v)	Carrying out and submit the OHS manual to the Engineer's representative, monitoring of all site activities as per OHS manual and submitting monthly progress report to the Engineer representative at site.	LS
vi)	Construct and maintain detours i.e. installation of safety signs and other related safety features, preparing diversion plans and submit to the Engineer's representative in accordance with GCC.	LS
vii)	Provide and maintain PPE's at site.	Month
viii)	Provide and maintain first aid kit at site.	Month



NSI-IV

EMPLOYING TRAINEE ENGINEER's WITH BOARDING, LODGING AND MESSING

The contractor will employ total 04 nos Trainee Engineers after the approval of the Employer, throughout the duration of project as per the contract and BOQ. Each Trainee Engineer will be given a monthly stipend Rs. 50,000 (minimum) by the contractor. 01 no Trainee Engineer out of total 04 nos shall be hired for NHA (Design-QS) for complete duration of project. The period of training of each trainee will be as per the contract. The Contractor will prepare a comprehensive training program and get it approved from NHA. It will be the contractor's responsibility for the provision of boarding & lodging of each Trainee Engineer or paid separately its cost.

Measurement and Payment

The number of Trainee Engineers shall be counted and paid to contractor as per the contract unit price which includes full compensation for all costs necessary like monthly stipend, boarding, lodging and transport facility.

Item No.	Description	Unit of Measurement
NSI-IV	Employing Trainee Engineer's With Boarding, Lodging And Messing	Man-Month



Ref: No. 3906/103/ JUH/21/12462 dated: 11-09-2020

Lot-2



**GOVERNMENT OF PAKISTAN
MINISTRY OF COMMUNICATIONS
NATIONAL HIGHWAY AUTHORITY**

**INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD
PROJECT**

**KANDH KOT ~ KASHMORE SECTION
(INCLUDING KASHMORE BYPASS)**

KM. (105+820 - KM. 164+600) LENGTH : 58.78 KM

SPECIAL PROVISIONS

SEPTEMBER 2020



**NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.
HIGHWAYS & TRANSPORTATION ENGINEERING SECTION,
ATTATURK AVENUE, SECTOR G-5/2, ISLAMABAD**



Lot – 2: Kandhkot – Kashmore Section

From Km 105+820 to Km 164+600 (58.78 Km)

SP 117a FORMATION OF GRANULAR MATERIAL PLATFORM
SP 117b FORMATION OF EMBANKMENT FROM BORROW ROCK MATERIAL

117.1 DESCRIPTION

This work shall consist of the formation of embankment in areas of soft embankment foundation, water ponding areas, high water levels, where compaction of natural ground is unable to achieve the density required in Item 104 with the prescribed general method. This would also include the wet areas which cannot be dried by scarifying or other measures and which exhibit moderate to severe heaving of surface during proof-rolling.

The embankment shall consist of a working platform of the granular material or rock material followed by the embankment fill material at toe of the embankment, all placed in accordance with these specifications and the specifications for other work items involved and in conformity with the lines, grades, sections and dimensions shown on the drawings or as directed by the Engineer's Representative.

117.2 MATERIAL REQUIREMENTS

117.2.1 Granular Material Platform

The material for the granular material platform shall consist of normal or processed granular fill material obtained from borrow excavation or quarry waste. This material shall conform to the following Specifications:

Size	%age of Weight Passing Mesh Sieve AASHTO T-27
37.5 mm	100
10 mm	75 - 100
# 4	60 - 80
# 10	45 - 65
# 40	25 - 40
# 100	0 - 15
# 200	0 - 5

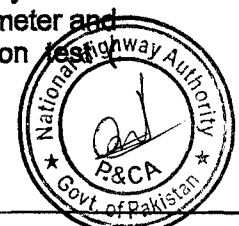
It shall also be checked that selected grading is such that intrusion into the working platform material of subgrade or natural ground surface material is not allowed. For this condition to be met it will be required that the ratio as below shall be checked and followed:

$$\frac{D15 - (\text{Granular Fill Material})}{D85 - (\text{Natural Ground Material})} < 5$$

D85 and D15 mean the practical diameters corresponding to 85% and 15% respectively, passing (by weight) in a grain size analysis.

117.2.2 Rock Fill Material

Rock fill material shall be as per 108.2 (d) and shall consist predominantly of rock (boulder) type material having minimum size greater than quarter cubic meter and shall have the a percentage of wear by the Loss Angeles Abrasion test



AASHTO T-96) of not more than thirty (30) to qualify for rock material. The type of material to be used shall be finalized as per the site requirement with the approval of The Engineer.

117.3 CONSTRUCTION REQUIREMENTS

117.3.1 Granular Material Platform

Granular platform material shall be used in water logged areas. Prior to laying of granular material platform, water logged area upon which embankment is to be placed, shall be dried and drained or kept drained of all surface water prior to commencing of fill in accordance with the relevant specifications.

Construction of the granular fill layer shall proceed from one end of the soft area by using the granular fill as a ramp for further granular fill transport. The thickness of the granular fill shall be as shown on the project drawings or as directed by the Engineer's Representative and the width shall be that of the embankment or part as directed by the Engineer's Representative. The placement and compaction of the working platform shall be carried out by the use of appropriate light equipment, in layers, if necessary. The placement, spreading and compaction of the granular material platform shall be carried out by using light equipment. The top 15 cm of the platform shall be compacted to at least 90% AASHTO T-180 density.

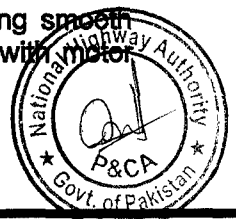
In those areas of high water levels and salinity with soft subsoils and where embankments are high such as approach fills to structures, special provisions shall be made to measure and determine likely fill settlements which may occur. These preconditions are necessary in order to specify particular construction procedures which may be necessary and to establish the time at which the pavement structure can be placed to avoid cracks and subsidence of these layers. In particular, additional compaction of the fill material and its adequate protection shall be required to prevent and underscore the risk of "collapse" settlement.

No extra payment under this item shall be made to the Contractor for re-working, re-instatement, replacement of granular material which has become slushy, or replenishing of granular material for whatever reason.

117.3.2 Formation of Embankment with Rock Material

Embankment formed of material consisting predominantly of rock shall be used where water ponding condition exists. Embankment formed of material consisting predominantly of rock fragment of such size that the material cannot be placed in layers of the thickness prescribed without crushing, pulverizing or further breaking down the pieces, such material may be placed in layers not exceeding in thickness than the approximate average size of the rocks except that no layer shall exceed eighty (80) centimeters of loose measurement and compacted by a vibratory roller.

The material shall be carefully placed in layers, so that all large stones will be well distributed and voids completely filled with smaller stones, clean small spells, shale, earth, sand, gravel, to form a solid mass. After placing rock material, surface shall be covered with a layer of fine material having thickness less than twenty (20) centimeters. Such fine material shall be reserved from roadway excavation by the Contractor. Should such material be available but not reserved, Contractor will supply and place borrow material for forming smooth grade without extra payment. Each layer shall be bladed and leveled with motor



SP 118 FILLING OF CENTER MEDIAN WITH SWEET SOIL

118.1 DESCRIPTION

This work shall consist of providing & filling sweet earth in center median, shown on the drawing or as required by the Engineer.

118.2 MATERIAL REQUIREMENTS

118.2.1 Sweet Soil

Sweet soil shall consist of a natural friable surface soil without admixture of undesirable subsoil, refuse, or foreign materials. It shall be reasonable free from roots, hard clay, coarse gravel, stones larger than 3cm in diameter, noxious woods, tall grass, or other litter, and shall have been taken from the field where healthy growth of crops, grasses, trees or other vegetation was cultivated.

118.3 CONSTRUCTION REQUIREMENTS

118.3.1 Source of Material

The contractor shall notify the area to the Engineer at least 7 days prior to his intention of digging in that area and placement of top soil. The operation of digging and then placement shall start only after approval of Engineer and quality of soil to be placed as top soil in the designated areas as shown on the drawings or as directed by the Engineer.

118.3.2 Place of Sweet Top Soil

The top soil shall be evenly spread and to the line and slope as shown on the drawings and compacted to degree of compaction of natural ground a depth of not less than 15 cm or as directed by the Engineer. Spreading shall not be done when the ground topsoil is excessively wet or otherwise in the condition detrimental to the work.

After spreading has been completed, large clods, stones, roots, stumps and other such unwanted material if any shall be raked and removed.

118.4. MEASUREMENT AND PAYMENT

Measurement of sweet top solling shall be measured by the cubic meter, which has been placed in accordance with these specifications and accepted by the Engineer.

The quantity measured for payment as described above; shall be at contract price for items listed below, and as shown in bill of quantities. The payment shall include full compensation for furnishing all material, labour and equipment including water, transport and all cost necessary to complete the work in accordance with these specifications and accepted by the Engineer.

Pay Item No.	Description	Unit of Measurement
SP-118	Filling of center median with sweet soil.	CM



414.1 SCOPE OF WORK

The Contractor shall carry out confirmatory boring at bridge and Flyover sites at locations marked on the drawings or as directed by the Engineer's Representative.

The purpose of the Work specified herein is to determine the type, nature, arrangement, thickness and texture of the various subsurface strata, the conditions and the Engineering characteristics of the subsurface materials as they exist to the depth and at the locations specified. This is to be accomplished by means of drilling, in-situ testing, collection of disturbed and undisturbed soil and water samples and laboratory testing.

The Contractor shall carry out the specified works under the supervision of the Engineer's Representative.

414.1.1 Plant and Equipment

The Contractor shall keep at-least one rotary drill machine and one percussion winch along with accessories on the site to meet the requirements of the Work. The plant and equipment shall be in good operating condition and capable of performing efficiently the Work as set forth.

414.1.2 Drillers and Supervisory Staff

The Contractor shall provide qualified, experienced, orderly and thoroughly competent persons at all times including geotechnical engineers or engineering geologists who shall conduct and supervise drilling, sampling, logging and in-situ testing at the site. The Contractor shall remove any of his employees from the site that in the opinion of the Engineer does not meet these requirements.

The Contractor shall make his own arrangements for housing of his personnel, security and storage of the equipment and supplies at the site.

414.1.3 Setting up at each Hole

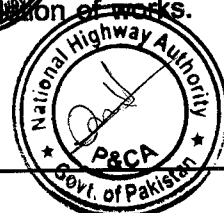
The Contractor shall make all the necessary arrangements for setting-up plant and equipment at each location, carrying out the work specified, preparation and reinstatement of the work areas, improvement to access routes and all other temporary works.

414.1.4 Measurement of Quantities

The quantities shown in the Bill of Quantities are only approximate. The payment shall be made on the basis of actual work performed in accordance with the Specifications.

414.1.5 Submission of Field and Laboratory Data

The Contractor shall supply complete field and laboratory investigation data to the Engineer's Representative within the time set-forth for completion of works.



This data shall include copies of all the approved logs and test records provided during the course of the Contract including any alterations or amendments required by the Engineer's Representative.

414.1.6 Location of Investigation Points

- a) The locations of investigation points shall be established in the field by the Contractor on the basis of the Drawings to be provided later or as directed by the Engineer's Representative. Locating the boreholes accurately in the field shall be the sole responsibility of the Contractor.
- b) It is to be understood that further Drawings may be issued by the Engineer showing the revised locations of investigation points.
- c) All the investigation points shall be located by the Contractor through field survey to an accuracy of 1 m in plan and 0.05 m in ground elevation.

414.2 WORK METHODOLOGY

414.2.1 Investigated Areas

The location of the boreholes will be selected as directed by The Engineer. The Engineer will specify from time to time during the Contract period, the exact location and reference number of all holes. To locate the holes accurately in the field shall however be the Contractor's responsibility.

414.2.2 Casing

A hole shall be cased in any stratum which is friable or not sufficiently strong to stand unsupported, or as and when directed by the Engineer's Representative.

The Contractor shall ensure that casings are of a suitable size and inserted in such a manner as to render them recoverable. The Contract Rates for drilling shall be deemed to include the supply, insertion and recovery of casing including any damage, loss or delay caused by difficulty or failure in recovering casing.

414.2.3 Removal of Casing

Casing shall neither be removed from any hole nor any filling introduced into it until permission is given by the Engineer. This permission will normally be given as soon as work in the hole is completed and the groundwater level has been measured.

As far as possible the Contractor shall avoid leaving a hole overnight after he has begun to withdraw the casing and before he has finished.

414.2.4 Supplementary Holes

Abandoned holes and / or the holes from which unsatisfactory samples have been obtained and/or in which unsatisfactory field tests have been performed due to the negligence of the Contractor shall be supplemented by other holes adjacent to the original location. The exact location of such supplementary holes shall be specified by the Engineer in the field.

The depth where the unacceptable holes were abandoned or to the depths where unsatisfactory samples were obtained or unsatisfactory field testing was performed may be made by any method selected by the Contractor.



opinion of the Engineer will permit satisfactory field testing and sampling below those depths at which original hole was abandoned shall be carried out using only the specified method of advancing the hole.

No payment will be made for that portion of the supplementary hole above the depth paid for in the unacceptable hole.

414.2.5 Groundwater Level

The groundwater level in holes shall be determined after completion of the hole or when required by the Engineer, as follows:

Clear water shall be added or the hole shall be bailed-out as necessary to bring the water level to the expected groundwater level as directed by the Engineer and the water level shall be measured and recorded at intervals of 6 hours for a period of twenty four (24) hours thereafter.

414.2.6 Backfilling Holes

Boreholes shall be backfilled with grout as directed by the Engineer.

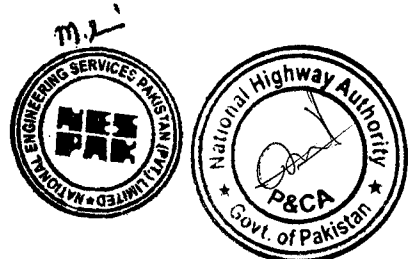
Grouting for backfilling holes shall consist of a mud formed by mixing one (1) part by weight of bentonite with ten (10) parts of water, to which two parts by weight of cement shall be added after the bentonite and water have been thoroughly mixed. Alternatively, holes may be backfilled with purpose-made pellets of bentonite or bentonite/cement, provided they are of a size which, in the opinion of the Engineer, is compatible with the size of hole. If there is no standing water in the hole, grout may be poured in from the top. If there is standing water in the hole, the grout shall be fed into the bottom of the hole by a tremie pipe, the end of which shall always be below the groundwater junction while grouting is being carried out.

Grout backfill shall be taken up to 30 cm below the original ground level. Any apparent loss of grout due to leakage or consolidation within one week shall be made-up with fresh grout and then the remaining depth of the hole shall be filled with concrete.

414.2.7 Logs

Logs of boreholes shall be provided on an approved specimen. These shall include descriptions of all strata including details of the soil macrofabric (such as frequency, orientation and nature of fissures) and details of samples taken, and an account of all observations and field tests. Logs of boreholes shall include notes on the nature, quantity and colour of the drilling fluid returns. All logs shall be subject to the approval of the Engineer and two draft copies shall be submitted to the Engineer, not more than two days after the hole is backfilled. Soil descriptions shall conform to ASTM designation D 2488 and classified according to ASTM designation D 2487. All depths and thicknesses of topsoil and strata shall be recorded in meters and all reduced levels shall be recorded in meters with reference to Survey of Pakistan datum. Accurate determination of ground levels at all the hole points is the Contractor's responsibility for which no extra payment shall be made.

414.2.8 Contractor's Responsibility for Records



The presence of the Engineer or any of his staff and their keeping separate drilling records shall not relieve the Contractor of any of his responsibilities for keeping records.

414.2.9 Order of Work

The order in which the work is to be accomplished shall be determined and approved in the field by the Engineer.

414.3 DRILLING

414.3.1 Depth of Drilling

Drilling would generally be required up to a minimum of 45 meters depth or at least 5 m below the pile tip level, whichever is more or as directed by the Engineer.

414.3.2 Accuracy of Alignment of Holes

Boreholes will be within 2 degrees of the vertical unless the Engineer's Representative has ordered the drilling of an angled hole in which case the hole angle shall be within 5 degrees of the angle specified.

414.3.3 Drilling Plant

The drilling plant and ancillary equipment to be mobilized at the site should be adequate to advance the boreholes in an efficient manner, to the required depths.

Rotary drilling rigs shall be of the hydraulic feed type equipped with side discharge type fish tail and tricone bits for drilling. Bits and casing shall conform to B.S. 4019; Part I; 1974 or an approved equivalent.

Drilling bits shall be of side discharge type designed to prevent unnecessary disturbance of soil at bottom of the hole by flow of drilling fluid, unless the Engineer directs otherwise.

414.3.4 Drilling Procedure

The method of drilling shall be of any approved standard and accepted method by means of which a hole of specified diameter is extended to the desired depth. The normal method of drilling shall be rotary unless gravelly strata are encountered where percussion may be used.

During drilling the Contractor shall regulate the drilling operation which ensures minimum disturbance in the underlying material in which the in-situ testing and sampling is to be carried out.

In rock, core drilling shall be carried out in such a manner and using such sizes of bits, that the maximum core is recovered. This requires close surveillance of the flushing media, drilling pressures, lengths of runs, use of appropriate core barrels and other factors relevant to the nature of the material drilled. The drill bit shall be withdrawn and core removed as often as may be necessary to secure the maximum possible amount of core. In soft or friable formation, dry drilling techniques may be required using single tube core barrel with tungsten carbide bits as directed by the Engineer. The cores would be placed in core boxes in a proper manner.



414.3.5 Stabilizing of Holes

Drilling mud of suitable consistency shall be used during rotary cum wash boring to stabilize the walls of boreholes by preventing caving-in and to avoid disturbance of the sampling horizons. The drilling mud shall be a mixture of bentonite and water with approved chemical additives being used, if required, to assist in modifying its density and viscosity. The density and viscosity shall be selected considering such factors as hole stability, cutting operation and undisturbed samples recovery.

Where drilling mud is not effective, casing of appropriate size and strength may be used subject to the approval of the Engineer. It will be responsibility of the Contractor to use appropriate means to stabilize the walls of the boreholes.

It shall be ensured that there is no jetting action of the drilling fluid. The minimum amount of drilling fluid necessary to carry away the cuttings shall be used. During drilling the Contractor shall regulate the pressure of the drilling fluid to ensure minimum disturbance to the underlying material in which the in-situ testing and sampling is to be carried out.

414.4 SAMPLING

414.4.1 General

The Contractor shall take disturbed or undisturbed samples from any borehole when ordered to do so by the Engineer. This shall include the provision of all necessary sampling equipment, tubes and containers, crates and boxes, as well as handling and transportation to the approved laboratory or store at site.

414.4.2 Approval of Equipment

No equipment or containers shall be used unless and until approved by the Engineer.

414.4.3 Care of Samples

The Contractor shall be responsible for the safe keeping of samples of all kinds until these have been handed over to the designated laboratory or disposed-of on the Engineer's instruction as the case may be. Any sample lost, damaged or showing signs of deterioration while in the Contractor's care shall be replaced by the Contractor at no expense.

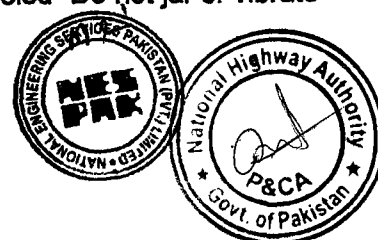
414.4.4 Labeling Samples

All disturbed and undisturbed soil samples and water samples taken from holes shall be clearly labeled. Each label shall include the following information:

- a) Name of Contract
- b) Reference number of the holes
- c) Reference number of sample
- d) Date of sampling
- e) Brief description of the sample (e.g. stiff brown silty clay)
- f) Depth of the top and bottom of the sample below ground level
- g) Number of the sampler tube

Tubes and crates for undisturbed samples shall be labeled "Do not jar or vibrate" and "Haul and transport in a horizontal position".

414.4.5 Disturbed Samples



In all the boreholes, small disturbed samples shall be taken at the top of each stratum, and at intervals as directed by the Engineer. Material from the cutting shoes of open drive undisturbed samples, and from the split spoon sampler used for Standard Penetration Tests, shall also be taken as disturbed samples.

414.4.6 Undisturbed Sampling

Undisturbed sampling from boreholes shall be done by Shelby tube or Pitcher/Denison sampler or as directed by the Engineer. The undisturbed samples should be properly sealed and preserved as directed by the Engineer.

414.4.7 Cores

The cores obtained from boreholes shall be carefully removed from the core barrel and placed in the boxes in the correct sequence, with increasing depth from left to right and top to bottom in the box. Coloured photographs of cores shall be taken at site.

Where the core is contained in an expandable triple tube liner, the ends of the tube shall be sealed and waxed as directed by the Engineer.

Each core run shall be segregated by labeled wooden blocks 25 mm thick and the depth of the bottom of each run shall be marked on the partitions in the core box with paint.

No box shall contain more than 3 meters of core.

414.4.8 Core Samples

Selected cores, preferably not less than 30 cm in length, shall be preserved as core samples. The preservation would consist of clearance of any loose sludge, waxing of cores, packing in wooden boxes using sawdust and labeling before transportation to the testing laboratory.

414.4.9 Water Samples

The Contractor shall take water samples from holes when directed by the Engineer before the addition of water to the hole unless it is unavoidable. If necessary, the hole shall be bailed-out before taking the sample to ensure that any potential contaminant is removed. No fuel or other potential contaminant shall be allowed to enter the hole. The method of sampling shall be as approved by the Engineer. Samples shall only be stored in approved, air tight and scrupulously clean, containers and shall not be less than 1 litre in volume.

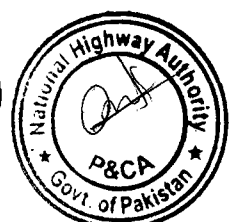
414.4.10 Transportation of Samples

All samples shall be shifted to the store at the site, the day they are collected. Samples in tubes shall be kept and transported with the tubes in a horizontal position.

The samples shall be continuously transported to the testing laboratory on conclusion of every borehole and on the instructions of the Engineer. The laboratory for testing shall be approved by the Engineer.

414.5 IN-SITU TESTS

414.5.1 Standard Penetration Tests (SPTs)



When directed by the Engineer the Contractor shall carry out Standard Penetration Tests (SPTs) in boreholes. The penetration resistance 'N' shall be expressed as the number of blows of a 63.5 kg hammer freely dropping 76.2 cm required to force the standard split tube sampler 30.5 cm into the soil.

Standard Penetration Test (SPTs) shall be conducted in the boreholes in accordance with ASTM 1586 generally at 1 meter depth interval or as directed by the Engineer at the site.

414.6 LABORATORY TESTING

414.6.1 General

The samples shall be tested in a laboratory approved by the Engineer. 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, BSS or AASHTO Standards or as directed by the Engineer. The Contractor shall arrange to carry out the following laboratory tests on the specified samples of the subsoil materials. The samples to be tested and the tests to be carried out for each sample shall be specified by the Engineer.

414.6.2 Type of Tests

Sr. No.	Name of Test	Standard
i.	Grain size analysis	ASTM D 422
ii.	Liquid limit, plastic limit	ASTM D 4318
iii.	Specific gravity	ASTM D 854
iv.	Unit weight of soil	
v.	Unconfined compression (soil)	ASTM D 2166
vi.	Unconfined compression (rock)	ASTM D 2938
vii.	Natural moisture content	ASTM D 2216
viii.	Consolidation	ASTM D 2435
ix.	Direct shear	ASTM D 3080
x.	Triaxial compression test	ASTM D 4767
xi.	Sulphate content of Soil	BS 1377
xii.	Organic matter content of soil	BS 1377
xiii.	Total dissolved salts of soil	BS 1377
xiv.	Chloride content of soil	BS 1377
xv.	Chemical analysis of water BS 1377	
	a) Sulphate content of water	
	b) Total dissolved salts of water	
	c) Chloride content of water	
	d) pH of water	

414.7 RECORDS AND REPORTS

414.7.1 Records

- a) The Contractor shall keep accurate logs and records of all work accomplished under this item. All such records shall be preserved in good condition and order by the Contractor until these 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. Separate logs shall be made for



each borehole. The following information shall be included on the logs or in the records for boreholes:

- i. Borehole number or designation and elevation of top of borehole.
 - ii. Method of drilling holes.
 - iii. Dates and time by depths when hole was performed.
 - iv. Type of drilling fluid used.
 - v. Depths at which samples were recovered or attempts made to collect samples along with designation, thickness and type.
 - vi. Record of SPT on borehole log.
 - vii. The classification or description by depth of the materials samples including a description of condition of compactness or stiffness of soil materials encountered and moisture conditions.
 - viii. Depth of groundwater level if encountered.
 - ix. Depth of bottom of borehole.
- b) The Contractor shall furnish the Engineer with the record as specified above in duplicate, not later than 48 hours after completion of each borehole.
- c) The presence of Engineer or the keeping of separate records by the Engineer shall not relieve the Contractor of the responsibility for the work specified in this Section. Payment shall not be made for any work for which the records have not been furnished by the Contractor.

414.7.2

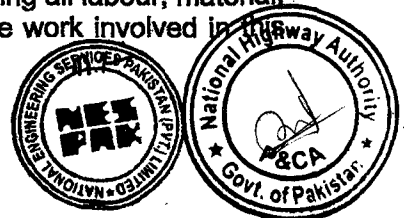
Reports

- a) The results of each borehole and the field tests carried out shall be communicated to the Engineer as follows:
- i. Oral reports as the work proceeds.
 - ii. Three sets of complete data of the work within two (2) days of the date of completion of borehole.
- b) The data shall comprise:
- i. A site plan showing the position of the boreholes and giving their map reference.
 - ii. The borehole logs
 - iii. Complete results of field tests
 - iv. Comments on any point which the Engineer has put-up to the Contractor for inquiry and investigation during the Works.
- c) Complete results of laboratory tests shall be communicated to the Engineer within seven (07) days of the date of completion of borehole.

414.8

MEASUREMENT AND PAYMENT

The measurement and payment for the Work specified in the Contract for drilling of bore holes, collection of disturbed, undisturbed and rock core samples, performing the standard penetration tests, laboratory testing and compilation and submission of results shall be done and paid for as per the pay item given in the BOQ, which payment shall be full compensation for furnishing all labour, material, tools, equipment and incidentals and for performing all the work involved in the item as mentioned above in this specification.



Bill No. 4d(i) : Structures (Soil Investigation for Bridges)		
Pay Item No.	Item Description	Unit
SP-414 (a)	6" minimum dia drilling straight rotary/ Percussion including back filling of holes from NSL upto 45m depth or till the rock level which ever is met earlier.	LM
SP-414(b)	Perform SPT at 1 m interval i/c collection, preservation & Transportation of disturbed samples to an approved Laboratory.	No.
SP-414(b-1)	Continuous core drilling in bedrock up to a maximum of 5 m depth below rock strike level, including determination of core recovery/ RQD, preservation of core samples in core boxes, labelling, waxing of selected core samples, photography of rock cores and transportation of core samples to the laboratory. In case core recovery is less than 80% reduce run length to 0.5 m.	LM
SP-414(c)	Collection of undisturbed soil samples from boreholes using Shelby pitcher/denison sampler i/c preservation and transportation of samples to an approved Laboratory.	No.
SP-414(d)	Performance of FDT in test pits through sand replacement method i/c moisture content determination.	No.
SP-414(e)	Excavation of testpits upto 1.5 m depth along road alignment including backfilling of pits to original condition.	M
SP-414(f)	Collection of undisturbed block samples from test pits at appropriate location as directed by the Engineer.	No.
SP-414(f1)	Collection of composite bulk sample (atleast 60 kg for sandy/clayey soils and 120 kg for gravelly soils)	No.
SP-414(g)	Collection & preservation of water samples from bore holes & transportation to an approved Laboratory.	No.
SP-414(h)	Laboratory Testing	No.
i.	Grain size analysis.	No.
ii.	Hydrometer analysis.	No.
iii.	Atterberg limits	No.
iv.	Specific gravity	No.
v.	Natural moisture content	No.
vi.	Bulk density & Dry density (Soil/rock cores)	No.
vii.	Direct shear test	No.
viii.	Consolidation test (collapse/swell potential)	No.
ix.	Unconfined compression test (Soil/rock cores)	No.
x.	Chemical analysis of soil	No.
xi.	Chemical analysis of water	No.
xii.	Submission of Investigation Report (triplicate)	No.
xiii.	CBR	No.
xvi.	Modified Proctor Test	No.



1.

General

Expansion joints will follow Specifications of AASHTO-SS-Division II-section 19 "Bridge deck joints seals"

The Contractor shall submit to the Engineer, complete documentations about the Expansion joints he intends to use for the movements shown on the Drawings, including references of the last 10 years, material Specifications for metal, rubber and bonding between them, fixations, and test certificates from authorized laboratories showing that the proposed joints meet the specifications.

Elsewhere the submittal will be accompanied by samples of at least 0.50m, with its fixations.

The expansion joints shall satisfy the following functional requirements:

1. It shall withstand traffic loads of the highway, and accommodate movements between the deck and abutment or the adjacent deck.
2. It shall have good riding quality and shall not cause any inconvenience to road user.
3. It shall not cause skidding hazard.
4. It shall not generate excessive noise or vibration during the passage of vehicles.
5. Parts liable to wear out shall be easily replaceable.
6. It shall be watertight and will have provision for carrying away water and silt.
7. It shall be easy to inspect and maintain.
8. It shall be resistant in hot and very sunny climate.

2.

Construction Requirements

The methodology of placing the expansion joint will be clearly described by the Contractor with a complete set of drawings.

Connection or overlapping between roadway and walkway expansion joints will be clearly shown.

Connection with water proofing of the deck will be detailed.

All necessary provisions in deck reinforcement will be indicated.

Initial gap at the time of placing will be clearly indicated and justified.

The second stage reinforced concrete for fixations, if any, will be Class Y concrete and will be included in pay item SP- 417.



3. Measurement and Payment

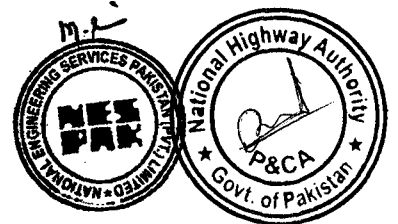
3.1 Measurement

The length of computed joints for roadway is measured in linear meter between the faces of the kerbs, plus 150 mm height on each bridge railing.

3.2 Payment

The accepted quantity measured as provided above shall be paid for at the contract unit price respectively for the pay items listed below and shown in the Bill of Quantities which price and payment shall be full compensation for furnishing all materials, labour, equipment, tools and incidentals and any work pertaining to expansion joints and which is not paid for separately, necessary to complete the item.

Pay Item No	Description	Unit of Measurement
SP -417	Manufactured trade mark expansion Joints for roadway, for (25-30) mm movement	M



SP-417a SONIC INTEGRITY TESTS (SIT) ON ALL PILES

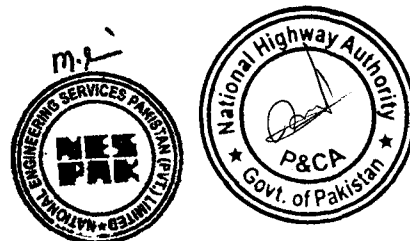
1. SONIC INTEGRITY TESTS (SIT)

All working piles shall be subjected to Sonic Integrity Testing (SIT) by a specialist agency engaged by the Contractor. The SIT equipment like FPDS (Foundation Pile Diagnostic System) or equivalent, as approved by the Engineer, shall be used for this purpose. The testing shall be done as per ASTM D5882-07. Before starting this testing, the Contractor shall submit his Method statement for approval of the Engineer.

The contractor shall arrange performance and interpretation of these tests by the specialist agency like TNO Netherlands or equivalent. The interpretation shall include information on pile length, concrete crushing strength, Sonic Pulse Velocity and defects like necking / honeycombing etc. A separate report shall be submitted for SIT carried out on piles by the Contractor.

2. PAYMENT

Item No.	Description	Unit of Measurement
SP-417a	Sonic Integrity Tests (SIT) on all piles	Each



SP- 418 GALVANIZED IRON DRAIN PIPE**418.1 DESCRIPTION**

The Contractor shall furnish and place galvanized iron drain pipe (AASHTO Standards M 1118-80 1986) in accordance with the plan of Bridge deck, specifications and/or as ordered by the Engineer.

418.2 MATERIALS

The Galvanized iron pipe shall conform to the requirements of ASTM Designation A120.

418.3 CONSTRUCTION

Where the pipe is used for bridge drains it shall be cast in the deck and shall be flush with the deck surface.

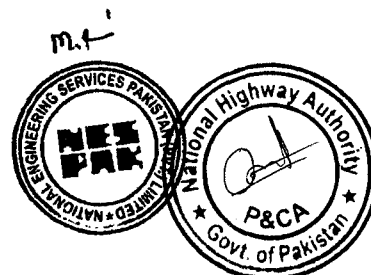
418.4 MEASUREMENT

The quantity to be paid for under this item will be number of linear meter of pipe incorporated in the work in accordance with the plans and specifications and as directed by the Engineer.

418.5 PAYMENT

The unit price bid per linear meter shall include the cost of furnishing and placement including all labor, materials and equipment necessary to complete the work.

Item No.	Description	Unit of Measurement
SP-418	GI drain pipe Dia 100 mm	M



501.1 DESCRIPTION

The work consists of supplying, installing, and commissioning of all material and services of the complete conduits and pipes as specified herein, shown on the Drawings and/or as directed by the Engineer's Representative.

The Contractor shall get the prior approval of the layout from the Engineer's Representative at Site for exact route, location and position of the conduits and pipes.

501.2 GENERAL

The Contractor shall ensure exact location and route of conduit and pipes in coordination with other services as per site requirements and get the approval of Engineer's representative prior to execution of the work.

501.3 APPLICABLE STANDARD/CODES

Latest editions of the following standards/codes shall be applicable for the materials in scope of this Section:

- BS 6099 - PVC Conduits and Accessories
- BS 3595 - PVC Pipes and Accessories
- BS 4346 - Cement Solvent for Jointing

501.4 MATERIAL**501.4.1 uPVC Conduits and Accessories**

The heavy gauge uPVC conduits and accessories conforming to BS6099 shall be generally used. The uPVC conduits and accessories of light gauge may be used on the project with the concurrence of the Engineer's Representative.

The uPVC bends, sockets, elbows, couplings etc. shall conform to the same specifications as for the conduits. The uPVC bends shall have enlarged ends to receive conduit without any reduction in the internal diameter at joint. Manufactured smooth bends shall be used where conduit changes direction. Bending of conduits by heating or otherwise will not be allowed in any situation. The use of sharp 90-degree bends and tees will not be allowed.

501.4.2 uPVC Pipe and Accessories

The pipe shall be rigid. All pipes shall be minimum Class 2 (Working pressure - 12 bar), unless otherwise stated on drawings. The buried uPVC pipe should be able to withstand the external load acting upon it by continuous movement of heavy duty vehicles such as trucks, cranes



forklift, etc. Where pipe changes direction, manufactured smooth bends shall be used. Bending of pipes by heating or otherwise will be allowed in special cases only. Bending of pipes by heating shall be carried out by first filling the pipe with sand inside and then immediately removing the sand. The use of sharp 90-degree bends and tees will not be allowed. The bends shall conform to same specifications as given for uPVC conduits. For joining of pipe all precautions and procedures recommended by manufacturer shall be followed.

501.5 INSTALLATION

501.5.1 uPVC Pipe

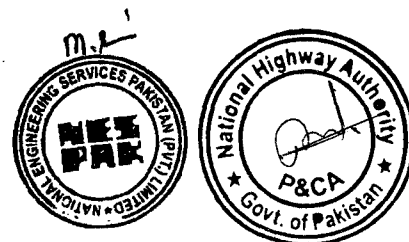
Rigid PVC pipes shall be installed under roads and paved areas, at crossing with other services as shown on the Drawings and/or as directed by the Engineer's Representative. The depth of the pipe shall vary according to the conditions at site, and approval of Engineer's Representative shall be obtained prior to installation. In general the pipes shall be installed underground at the following depths measured from the top of the pipe and or as directed by the Engineer's representative.

Under roads and paved surface	800 mm below the finished surface
When crossing other services	250-mm vertical clearance for the crossing length 500 mm horizontal clearance with CC protective cover

The trench of required dimensions shall be excavated and the bottom of trench cleaned and leveled. A four-inch thick bed of fine sand shall be provided over which the uPVC pipes installed after proper alignment. Where two or more pipes are installed in the same trench the clearance between pipes shall not be less than two inches. After laying of pipe the trench shall be backfilled with clean-screened earth in layer of four inches. Each layer shall be properly compacted. All joints shall be sealed adequately to prevent entry of foreign elements.

For crossing of major services, the uPVC pipes shall installed in trench of size as shown on drawings or as directed by the Engineer and will be covered with concrete class A as per drawings or as directed by the Engineer.

The installation of pipes shall be completed in all respects including its fixing at terminations, before cabling work is started. All sharp edges and burrs shall be removed by using reamer or any approved device. The pipe shall be thoroughly cleaned of dirt and dust from inside. The pipes shall be installed in proper co-ordination with other works.



501.6

MEASUREMENT AND PAYMENT

Measurement

Measurement shall be made for the number of running meters of pipes acceptably supplied and installed by the Contractor.

Payment

Payment shall be made for the total numbers of meters measured, as provided above, at the Contract unit price. The payment shall constitute full compensation for supplying, installing and completion of the laying of the uPVC pipes including jointing materials and accessories and all incidentals for completion of the work.

Pay Item No.	Description	Unit of Measurement
SP-501	Supplying & Installation of uPVC Pipe 100/150mm dia	M



SP-502	RELOCATION OF UNLINED WATER COURSES
& SP-503	RELOCATION OF BRICK LINED WATER COURSES

1 DESCRIPTION

The work shall consist of dismantling and disposal as required of existing brick lined / unlined water course and relocating the same with standard work items and required discharged capacity as approved by the Engineer's Representative for smooth flow of water.

2 MATERIAL REQUIREMENT

Brick Lining

This shall conform to the requirements of Item 410.2 of General Specification.

3 CONSTRUCTION REQUIREMENT

Cross-section for Relocation

This shall be cut and dressed according to specified /required line and grade as directed by the Engineer's Representative, prior to commencement of this work.

Brick lining shall conform to the requirements of item no 410.3 of General Specification.

4 MEASUREMENT

The work of relocation of (Unlined) water course which is completed as per line, grade and cross-section according to discharge capacity, accepted by the Engineer shall be measured in square meters.

The work of brick lining on cement mortar for lined water course, which is completed according to the required thickness and grade, shall be measured by superficial area accepted by the Engineer's Representative. The unit of measurement shall be square meters.



5 PAYMENT

Payment shall be made as measured above and shall be full compensation for relocation of the water courses, disposal of surplus /dismantled/unsuitable material, provision of all labour ,materials, equipment, tools and all others necessary to complete the work as prescribed above and accepted by the Engineer's Representative.

Pay Item No	Description	Unit of Measurement
SP-502	Relocation of Unlined Water Course	SM
SP-503	Relocation of Brick Lined Watercourse	SM



SP-504 DELINEATORS/ANGLE REFLECTOR

504.1 DESCRIPTION

The work shall consist of supply and installation of delineators /angle reflectors at locations detailed on drawings or as directed by the Engineer, complete in all respect. The work will be executed as per item 607 "Traffic Road Signs and Safety Devices of general specifications with amendments as follows:

In item 607 "Traffic Road Signs and Safety Devices" of general specifications, add in line 1, after "furnishing" insert ",", delete "and" and after "traffic signs" insert "and delineators"

Add at the end of para:

Unless otherwise shown on the Drawings, all signs shall be lettered in both Urdu and English. In case of any discrepancy between NTRC requirements and General Specifications, the requirements of NTRC shall govern.

504.2 MATERIAL REQUIREMENTS

In item 607 "Traffic Road Signs and Safety Devices" of general specifications, add new para under head "Material Requirement" as follows:

Materials shall be of new stock unless otherwise shown on the Drawings or ordered by the Engineer's Representative and shall conform to the item 607 of general specifications with amendments as mentioned below:

504.2.2 Rubber Washer

In 607.2.6, Add at the end "Thickness of rubber washer is as given below:

On top	3 mm
On Bottom	2 mm

504.2.3 Concrete Foundation Blocks

In 607.2.9, in line 1, delete "Class A" and replace with "Class A1".

In line 3, after "mm", add "or as shown on the drawings or as directed by the Engineer."

504.2.4 Road Posts and Hazard Markers

In 607.2.10, in line 6, delete "with standing" and replace with "withstanding".



504.2.4 Excavation and Backfilling

In 607.3.1, Add at the end of para 3:

Concrete shall be placed against the undisturbed excavated faces, except that the top fifteen (15) centimeters of each footing shall be formed. Forming of the entire footing will not be permitted unless approved by the Engineer. Concrete shall be thoroughly rodded and spaded so as to eliminate all voids. Tops of footings shall be finished with a wood float and all exposed edges shall be rounded with an edger.

Backfill shall be thoroughly compacted by mechanical tampers, and care taken to prevent damage to the finished concrete. Backfill shall be brought up level with the finished ground line. Pipe post bases and/or posts set in concrete shall be firmly supported, plumb, vertical and at the proper elevation.

In case precast concrete foundations are used, these shall be of the concrete class 'A1' and of the sizes as shown on the drawings.

504.2.5 Erection of Posts

In 607.3.2, In line 3, delete "the" written in between "to" and "prevent".

504.2.6 Installations of Safety Devices

In 607.3.5, In line 11, delete "a" written in between "for" and "prohibiting".

504.2.7 Sign Faces

In item 607.3.6, following amendments be made as mentioned below:

a) Design

In serial No. 3, line 1, delete "italics" and replace with "Smalls".

In serial No. 4, delete "21 cm" and replace with "35 cm".

In serial No. 5, delete "17 cm" and replace with "25 cm".

In serial No. 5, delete "italics" and replace with "Small".

In serial No. 6, delete "3.5 cm" and replace with "10 cm".

In serial No. 10, delete "4 cm" and replace with "2.3 cm".

In serial No. 11, delete "23 cm" and replace with "35 cm".

In serial No. 13, delete "Size of letter for km. Height" and replace with "Height of letter for km".



504.2.8 Storage of Signs

After 607.3.7, add the following:

504.2.9 Painting

The rear sign face of all signs shall be painted with two (2) coats priming paint pigmented with chromates of chromes (excluding lead chromes) plus two (2) coats of weather-resisting dull silver gray paint. Where connection of large aluminum sheet signs to a steel stiffening frame is required, the studs or screws, bolts and washers shall be painted to properly match the color of the surrounding material.

All painting shall conform to the requirements of Section 413 of General Specifications.

504.2.10 Placement and Orientation

The Engineer will approve and mark the longitudinal location of each sign on the working drawings submitted by the Contractor.

The sign shall be laterally positioned from the shoulder or curb as shown on the approved drawings or directed by the Engineer.

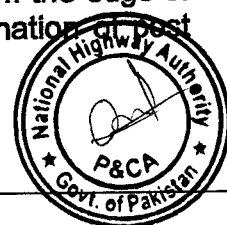
The Contractor shall stake the location of each sign support and shall get its approval from the Engineer prior to carrying out excavation for foundations. The Engineer may order change in location due to site constraints. No separate payment shall be made to the Contractor on account of such change if the change is made before fixing of the sign support in concrete block.

The Contractor shall be responsible for the proper elevation, off-set, level and orientation of all signs he erects. He shall exercise due care on the preservation of stakes for his and the Engineer's use. If any stakes are lost, damaged, displaced, or removed, the Contractor shall have them reset at his own expense.

Unless otherwise shown on the drawings all signs shall be erected so that the edge and face of the sign are truly vertical and face is at an angle of ninety three (93) degrees to the centerline; that is, facing slightly away from the centerline of the lane which the sign serves. Where lanes divide or are on sharp curves, the Contractor shall orient sign faces as indicated on the Drawings or by the Engineer so that they will be most effective both during day and night and so as to avoid specular reflection and glare. All sign supports shall be plumbed.

504.2.11 Sign Posts

Lengths of posts shown on the drawings for signs are for bidding purposes only. When progress of the work permits, the Engineer will authorize the location of each sign, with the station and offset distance from the edge of pavement. The Contractor shall be responsible for determination of Post



lengths to provide the vertical clearance shown on the drawings. Field cutting of posts shall be performed by sawing.

"Sign Post Support Assemblies" shall be fabricated as detailed on the drawings. Test specimens for pipe shall be taken at least fifteen (15) centimeters from one (1) end of the pipe, instead of at the ends as specified in ASTM A 53, Grade B. When Galvanizing is specified assemblies shall be hot-dip galvanized after fabrication. All welds shall be mechanically cleaned before Galvanizing. Galvanized materials on which the Galvanizing has been damaged in transporting, handling, or erection will be rejected or may, with the approval of the Engineer, be repaired in the field by the zinc alloy stick method. Required field welds and adjacent areas on which the Galvanizing has been damaged shall be galvanized by this same method. The zinc alloy stick shall be cast from zinc, tin, and lead in combination with fluxing ingredients. The compound shall be completely liquid at a temperature not lower than two hundred and forty six (246) degrees C. The area to be re-galvanized shall be thoroughly cleaned, including the removal of slag on welds. The surface shall be heated with an oxyacetylene torch to approximately three hundred and fifteen (315) degrees C, and the alloy stick rubbed over the surface to fix a deposit. While the alloy is still liquid, a clean wire brush shall be used to smooth the deposit evenly over the entire area being re-galvanized. If a heavy deposit or build-up is required to match the original coating, more alloys shall be added immediately to the initial bond deposit and spread with a paddle or brush until the required thickness is obtained. Edges of drilled holes shall be coated with commercially available zinc-rich paint. Shop drawings will not be required for pipe posts.

The Contractor shall furnish to the Engineer, fabricators' certifications in triplicate certifying that the material supplied conforms to all of the requirements specified.

504.2.12 Fastening Signs to Sign Posts

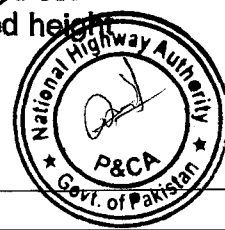
Signs shall be fastened to sign supports in accordance with the requirements of the drawings, the recommendations of the sign manufacturer and to the satisfaction of the Engineer.

After installation of signs on their supports all bolt heads, screw heads, and washers which are exposed on the face of the sign shall be painted. The color of the paint used shall be as nearly as practical the same as the color of the background or message area at the point where the bolt, screw, or washer is exposed.

Where steel signs are mounted with aluminum hardware or on steel posts, approved asphalt, nylon, or neoprene insulation shall be installed at all points where dissimilar metals might come in contact.

504.3 Erection of Delineators and Marker Posts

Delineators shall be erected at locations shown on the drawings and set at elevations such that the Delineator reflectors will be at the indicated height.



above the ground surfaces. Unless otherwise noted in the Drawings or authorized by the Engineer's Representative, holes for posts shall be of the depth and size shown on the Drawings. Posts shall be set plumb and will be set to lines and grades as specified on the drawings. The cost of all excavation and concrete will be considered subsidiary to the bid item (s) for Delineators. Chevron shall also be installed on same pattern except using high density sheet for good reflection.

When noted on the Drawings or authorized by the Engineer's Representative, the posts shall be erected by driving, either by hand or with approved mechanical devices. The method of driving shall not substantially alter the cross-sectional dimensions of the posts or materially damage the coating. Battered tops will not be permitted. Posts which, in the opinion of the Engineer's Representative, are bent or otherwise damaged during or after erection shall be removed from the site and replaced at the Contractor's expense. After driving, the portion of the posts above ground shall be plumb and the posts shall be firm in the ground.

Reflectors shall be attached to the posts as indicated on the drawings or as directed by the Engineer or according to the manufacturer's specifications.

504.4

PAYMENT

Pay Item No.	Description	Unit of Measurement
SP-504	Delineators / Angle Reflector	Each



1 DESCRIPTION

The work shall consist of cleaning of existing culverts from all type of dirt, clearing the complete water way and minor repair i.e. minor inlet & outlet repairs, covering of steel reinforcement with cement concrete (class A) as per drawings or as directed by the Engineer's Representative for smooth flow of water.

2 CONSTRUCTION REQUIREMENT

All the culverts need to be cleaned and required minor repair will be verified by contractor at site as per drawings or as per the directions of the Engineer's representative. Cracks shall be marked and repaired with cement sand slurry of ratio (1:3) and will be plastered.

3 MEASUREMENT

The work of cleaning and repair of culverts which is completed as per drawing and site requirement shall be measured in number of culverts which are cleaned and repaired, complete in all respect to the entire satisfaction of the Engineer representative.

4 PAYMENT

Payment shall be made as measured above and shall be full compensation for cleaning of choked culverts, minor repair and complete the work as prescribed above and accepted by the Engineer's Representative.

Pay Item No	Description	Unit of Measurement
SP-505	Cleaning and Minor Repair of Existing Structure (Culverts)	Each



1 DESCRIPTION

The work shall consist of dismantling of existing guard rail at locations specified in drawings or as directed by the Engineer.

2 CONSTRUCTION REQUIREMENT

Foundation concrete of existing guard rail will be dismantled with the help of jack hammer. Care must be taken in dismantling process keeping in view the site safety. Damaged and un-damaged guard rail will be notified to the Engineer's representative at site. Un-damaged guard rail will be used positively on project road.

3 MEASUREMENT

The work of dismantling of guard rail shall be measured in linear meters which are dismantled, complete in all respect to the entire satisfaction of the Engineer representative

4 PAYMENT

Payment shall be made as measured above and shall be full compensation for dismantling of foundation and guard rail, complete the work as prescribed above and accepted by the Engineer's Representative.

Pay Item No	Description	Unit of Measurement
SP-507	Dismantling of existing guard rail	M



601.1

GENERAL

The work shall consist of supply, fabrication and installation of gantry signs at locations as shown on drawings or as directed by the Engineer as per the site requirement, complete in all respect. Gantry signs shall be required to be installed to provide the information about the important places and restriction enforced for type of passing vehicles.

The gantry signs shall be manufactured and installed in accordance with the details shown in the gantry sign's drawings and as directed and approved by the Engineer's representative. The sign panel shall be designed suiting the situation and approved by the Engineer's representative before its manufacture.

Gantry Sign Structure

The contractor shall be responsible to submit the complete methodology and shop drawings prior to the start of any activity and get approved from the Engineer representative. All work in respect of the furnishing, construction of foundation and erection and finishing of gantry sign structure shall conform to the drawings and to the relevant requirements of General Specifications section 401 "Concrete", section 404 "Steel Reinforcement", section 413 "Steel Structures and section 607 "traffic signs and safety devices" with amendments made in SP-504.

601.2

MEASUREMENT AND PAYMENT

The item shall be paid for as under, which price and payment shall be full compensation for all the costs necessary for the proper manufacture, installation and completion of work prescribed in the item/drawing:

Payment Item No.	Description	Unit of Measurement
SP-601a	Gantry Sign Type-I as shown on drawing	Each
SP-601b	Gantry Sign Type-II (Cantilever) as shown on drawing	Each



SS-1 PROVIDING SULPHATE RESISTANT CEMENT IN CONCRETE WORKS

SS.1 DESCRIPTION

This work shall consist of using sulphate resistant cement instead of ordinary Portland cement in concrete works of specified class, where specified in drawings or as per the site requirement.

SS.2 MATERIALS

The material requirement shall be same as specified in item 401 of NHA general specifications except:

Replace para 2 of heading 401.2 (Material Requirements) Sub heading 401.2.1 (Portland cement) with following:

"Portland cement shall conform to the requirements of the standard specifications for Portland cement, AASHTO Designation M85 (ASTM Designation C150). The type of cement to be used shall be type-V (sulphate resisting cement), where specified on drawing / BOQ or as per the directions of the Engineer".

SS.3 CONSTRUCTION REQUIREMENT

Construction requirement shall be same as specified in item 401 of general specifications.

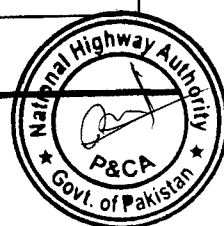
SS.4 MEASUREMENT

Measurement requirement shall be same as specified in item 401 of NHA general specifications.

SS.5 PAYMENT

The unit price per cubic meter to be paid covered under this provision shall be the difference of unit cost of sulphate resistant cement per cubic meter and ordinary Portland cement per cubic meter.

Item No.	Description	Unit of Measurement
SS-1	Extra over for providing sulphate resistant cement in concrete works of specified class:	
	For Plum Concrete	CM
	For Concrete Class B	CM
	For Lean Concrete	CM
	For Concrete Class A 2	CM
	For Concrete Class A 3	CM



701.1

DESCRIPTION

The Contractor shall provide and maintain survey equipment for the sole use of the Engineer. All surveying equipment shall be new and shall be maintained throughout the Contract period and replaced by the Contractor free of charge in case of damage or loss. The survey equipment shall be supplied to the Engineer within thirty (30) calendar days from the Engineer's Order to Commence the Works.

Upon completion of the Contract, the surveying instruments and equipment shall become the property of the Employer and shall be handed over completely, and in a state of good, condition and working order taking into account fair wear and tear.

The Contractor shall provide adequate number of helpers, along with the equipment, to the Engineer/Engineer's Representative to assist in carrying out the field works.

701.2

EXTENT OF PROVISION AND GENERAL REQUIREMENT

The Contractor shall provide and maintain at his own cost at least the following surveying equipment and any other surveying equipment deemed essential for the Work by the Engineer's Representative for the sole use of the Engineer's Representative:

Sr. No	Description	Quantity
1	Electronic Total Station 1" reading, 6" Accuracy, memory 10,000 points or more, Builtin SD Card Slot & USB Port, programs topographic survey, setting out, curve Guide Light, Keyboard, Automatic Dual Axis Compensator working range $\pm 6'$ distance range reflector less 400 meter with single prism 5000 meter, with Triple Prism 6000 meters, one Balley & Quick Charger in Standard Accessories (Made in Japan or Equivalent).	1 Nos.
2	Software for Data Downloading.	1 No.
3	Single Prism Target Set includes: Prism, range pole graduated 2.6m., tilting mount with Coaxial Target Plate.	4 Nos.
4	Automatic Level, magnification 32X	2 Nos.
5	Levelling Staves with graduations in metre	12 Nos.
6	Steel measuring tapes 30 m long	4 Nos.
7	Lockable Pocket tapes 5 m.	4 Nos.
8	TRIPOD (Aluminum)	5 Nos.



9	TRIPOD for Prism Pole	4 Nos.
10	Club hammers 2 kg.	4 Nos.
11	Sledge hammers 4 kg.	4 Nos.
12	Traffic Cones	40 Nos.

13	Survey Umbrellas	6 Nos.
14	Aluminum Straight Edges, 4 m long	2 Nos.
15	Aluminum Straight Edges, 5 m long	2 Nos.
16	Spirit Levels, 30cm long	4 Nos.

- All miscellaneous tools, equipment and materials required in surveying in numbers as determined by the Engineer's Representative.

All new surveying equipment shall be provided and maintained throughout the Contract period. In case of damage or loss those shall be replaced by the Contractor at his own cost.

The Contractor shall make available two (02) qualified surveyors and transport for checking and incorporation as and when required by the Engineer's Representative.

The survey equipment shall be placed at the disposal of the Engineer's Representative during the Contract period and shall be returned to the Employer on completion of the Contract, complete and in a good state, taking into account fair wear and tear.

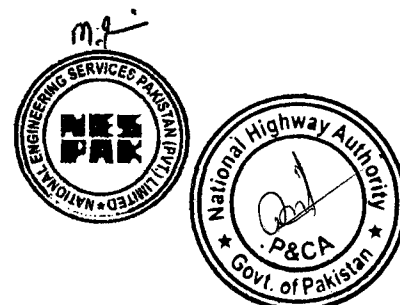
The Contractor shall provide adequate supplies of expendable materials i.e. level books, pencils, erasers inks, drawing papers, pegs, nails, flags, brushes and paints etc. as required by the Engineer's Representative.

701.3

PAYMENT

The cost of supplying the equipment shall be paid as re-imbursement against provisional sum substantiated by vouchers from the owner plus twelve (12) percent surcharge to the contractor for administrative and overhead expenses including income tax (7.5%) related to the purchase and delivery of said items.

For running and maintenance, supporting staff, transport, stationery, utilities etc. shall be paid under maintain of Surveyor Instrument.



Payment shall constitute full compensation for all costs of provision and maintenance of equipment, furnishing survey teams, supplies of expendable materials, necessary labor/helpers and all other incidental item(s) for the proper completion of the Work as stated herein above and as directed by the Engineer's Representative:

Item No.	Description	Unit of Measurement
SP-701(a)	Provide Surveying and Allied Instruments.	P.S.
SP-701(b)	Maintain Survey Instruments, provide vehicle, Survey Team & helpers.	Month



**SP 702 PROVIDE EQUIP & FURNISH ENGINEER'S OFFICE &
ACCOMODATION**

702.1 General

The contractor shall provide a Site Office on hiring basis against provisional sum provided in the Bill of Quantities. The Site Office includes the following:

- i) Office accommodation
- ii) Office furnishing and equipment
- iii) Office running and maintenance
- iv) Office supporting staff

702.2 Engineer's Representative Office / Accommodation

The office accommodation as approved and accepted by the Engineer shall be provided on rental basis. The overall size of the Engineer office shall be approximately 500 Sq. meters and residence accommodation of about 2,000 Sq.m having all kind of facilities.

702.3 Furnishing & Equipment

The furniture and equipment as approved and accepted by the Engineer shall be provided by the Contractor on the instructions of the Engineer or Representative of Engineer as per the requirement.

702.4 Running and Maintenance

702.4.1 The contractor shall be responsible for the running and maintenance of office accommodation, residence accommodation, furnishing and equipment etc. bills for all services/utilities to be paid by the contractor.

702.4.2 Office and Drawing Stationery and necessary equipment shall be provided by the contractor on monthly requirement basis as per the requirement or as directed by the Engineer.

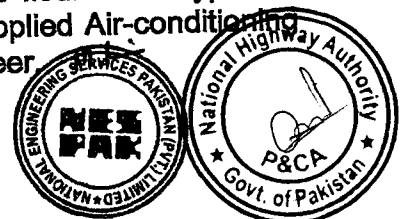
702.5 Supporting Staff

The contractor shall provide to the Engineer following supporting staff.

- | | | |
|------|------------|-------------------|
| i) | Naib Qasid | Two |
| ii) | Cook | one and helper 02 |
| iii) | Sweeper | two |
| iv) | Guards | Three |

The appointment of the supporting staff shall be subject to the approval of the Engineer and once assigned shall not be transferred or laid off without prior approval of the Engineer.

In case of power failure and non-availability of power, electric power through generators shall also be provided by the contractor. All rooms shall be provided with standard office lighting of the flours cent type. All rooms shall have doors with locks and keys and supplied Air-conditioning and heating system as per the approval of the Engineer



The water supply shall be maintained through water supply system of the town or locality boring/installing well with pump or by an elevated or pressure storage tank with a capacity of 2500 gallons.

A telephone shall be installed in Engineer's Office or cell phone may also be provided to facilitate the Engineer. Engineer office will be equipped with air-conditioning unit as per requirement.

702.6

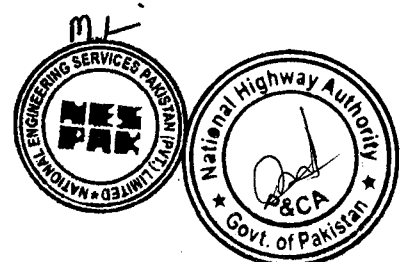
Measurement and Payment

For the hiring of accommodation for site office if approved & allowed by the Engineer, the cost of rent and supplying office furniture and Equipment shall be paid as re-imbursement against provisional sum substantiated by vouchers from the owner plus ten (12) percent surcharge to the contractor for administrative and overhead expenses including income tax (7.5%) related to the purchase and delivery of said items.

For running and maintenance, office supporting staff, drawings, stationery, utilities bills etc. shall be paid under maintain of Engineer's office.

If the contractor does not provide necessary facility, Engineer shall hire the accommodation and arrange necessary supplies of furniture and equipment and employ staff etc. as specified and maintain the office. Expenditures shall be recovered from the IPC's / running bills of the contractor by adding hundred (100) percent overheads.

Pay Item No.	Description	Unit of Measurement
SP-702 a	Provide the Employer's and Engineer's Representative's Office and Residence (on rental basis)	Provisional Sum
SP-702 b	Furnish and Equip. the Employer's & Engineer's Representative Office and Residence	Provisional Sum
SP-702 c	Maintain Employer's and Engineer's Office and Residence	Month



SP 703 PROVIDE, EQUIP AND MAINTAIN LABORATORY FOR THE PROJECT

703.1 Description

The building for the base laboratory shall be hired (minimum 500 Sq.m covered area) and shall be fully equipped, with all necessary furnishing & equipment, utilities, installations and others as directed by the Engineer.

703.2 General Requirements

The furnishing of equipment shall ensure conducting all tests related to construction as per the list provided by the Engineer. In case if any test required for testing of material cannot be performed in the project laboratory, the Engineer may authorize such test to be carried out at the cost of contractor, at any other laboratory. The Contractor shall provide at no cost to the Engineer, technicians, helpers and vehicles deemed necessary by the Engineer, to assist in the operation of the laboratories as required by the Contractor's proposed program of work. Technicians and helpers once assigned to the laboratories may be removed by the Contractor only with the approval of the Engineer and salaries shall be paid by the contractor. The equipment shall be procured within 15 days on the instructions of the Engineer.

The contractor shall maintain the laboratory equipment, apparatus and supplies necessary to permit execution of all standard test required by the specifications. Lists of specific laboratory equipment shall be provided as per the requirement and recommendation to purchase from recognized manufacturers. The Contractor shall submit to the Engineer for his approval at the earliest. The list shall include the manufacturer's name and descriptive literature. Lab Equipment, fixtures and furniture shall remain the property of the Employer after completion of the project.

703.3 Facility of the Material Testing

Material testing equipment as described above shall be provided within minimum period. In case of delay in providing such facility, as an interim arrangement, temporary facilities of testing material shall be provided as agreed by the Engineer. Contractor may be paid for maintenance of temporary laboratory, provided such facilities are acceptable to the Engineer. Contractor shall also be responsible for extra expenses of the Engineer for conduction of test in temporary arrangement.

703.3.1 Supporting Staff

The contractor shall provide to the Engineer following supporting staff.

i)	Naib Qasid	One
ii)	Chowkidar	Two
iii)	Sweeper	One
iv)	Helpers	Four



The appointment of the supporting staff shall be subject to the approval of the Engineer and once assigned shall not be transferred or laid off without the Engineer approval. Salaries shall be paid by the contractor.

703.4 Running and Maintenance

703.4.1 The contractor shall be responsible for the running and maintenance of Laboratory, furnishing and equipment etc. bills for all services/utilities to be paid by the contractor.

703.4.2 Office and Drawing Stationery and necessary equipment & material shall be provided by the contractor on monthly requirement basis as directed by the Engineer.

703.5 MEASUREMENT AND PAYMENT

703.5.1 Measurement

Work under this item shall be measured in two portions.

- i) Hired the building for Material Testing Laboratory and purchase of laboratory equipment shall be paid as reimbursement against provisional sum substantiated by vouchers from the owner plus twelve (12) percent surcharge to the contractor for administrative, overhead expenses including income tax (7.5%) related to the purchase and delivery of said items.
- ii) For running and maintenance and office supporting staff, drawing stationery, Lab. Material/equipment (minor), utilities bills, helpers (04 nos.) etc. shall be paid under maintain base Laboratory. Maintain Laboratory, to be measured for the duration of the contract and paid as per the rate/month.

703.6 Payment

The quantities under this item of work shall be paid at the contract price indicated in the Bill of Quantities which price and payment shall constitute full compensation for all costs of furnishing labor, materials, equipment and incidentals for the proper completion of the work indicated in these specifications and specified on the drawings and Special Provisions (Specification).

Pay Item No.	Description	Unit of Measurement
SP- 703 a	Provide Material Testing Project Laboratory (on rental basis)	Provisional Sum
SP- 703 b	Equip and Furnish Material Testing Project Laboratory	Provisional Sum
SP- 703 c	Maintain Material Testing Project Laboratory including provision of 04 helpers	Month



SP 708

**PROVIDE, RUN AND MAINTAIN TRANSPORT FOR
EMPLOYER/ENGINEER'S REPRESENTATIVE**

708.1 General

The transport for the Employer's / Engineer's Representative and site staff is to be provided under this Contract for which rate item has been provided in the B.O.Q. Contractor shall procure these vehicles under the instruction of the Engineer.

Procurement of Vehicles

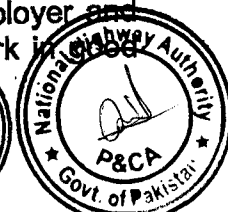
The contractor shall procure the vehicles from the local market, get these registered in the name of the Employer and hand over to the Employer's and Engineer's Representative, however transport for OHS Manager shall be hired from local market on rental basis.

Details /Type of vehicles are as under:

- SP-708a : Two (02) No vehicles for the Employer's representatives
01 Nos will be Toyota Double Cabin with A/C (4 Wheel drive) with Hood
01 Nos will be Toyota Corolla 1300 cc with A/C
- SP-708b : Seven (07) No vehicles for the Engineer's representatives
01 Nos will be Toyota Double Cabin with A/C (4 Wheel drive) with Hood
02 Nos will be Toyota Corolla 1300 cc with A/C
04 Nos will be Suzuki Bolan (Carry)
- SP-708bi : Two (02) No vehicles for the OHS Manager
01 No will be Toyota Corolla 1300 cc with A/C
01 No will be Suzuki Bolan (Carry)

Total no of 11 Nos. vehicles shall be covered under this provision, out of which 01 No Vehicle i.e. Suzuki Carry Bolan shall be procured for Engineer Representatives under this provision. 10 vehicles out of 11 vehicles shall be provided by NHA from its vehicles pool for smooth execution of project. Vehicles to be provided by NHA from its own vehicle's pool, type of vehicle may alter as per availability, however equivalent type of vehicle shall be provided.

Vehicle shall be procured as new/ latest model at the time of delivery when instructions to procure the vehicles is given as per approval of the Engineer and 02 Nos vehicles for OHS Manager and support staff shall be hired on rental basis when instructions to hire these vehicles will be given by The Engineer. The new / rental vehicles shall be handed over to Employer / Engineer's Representative for the entire length of project. The Contractor shall be responsible for the cost of running & maintenance of all 11 Nos vehicles whether procured under this provision or provided by NHA from it vehicles pool. Newly procured vehicle shall remain the property of the Employer and shall be handed over to the Employer after completion of the work in highway.



working condition. The cost of vehicle shall be inclusive all like purchase, transportation, registration and other dues incurred in this regard. In case new vehicles are not purchased, same numbers of road worthy conditions vehicles shall be hired and its rent cost shall be paid through pay item SP 708a, rental cost shall be approved by the Employer.

In case of delay, failure or default on the part of the Contractor in providing the facilities under these provisions, the Engineer's Representative may arrange the same at the risk and cost of the Contractor or hired the vehicles for project period.

708.2 Running & Maintenance

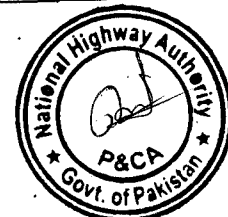
The Contractor shall be responsible for the running and maintenance of these vehicles which includes petrol, diesel, repair works, regular tuning, replacement of tires, registration, comprehensive insurance, annual renewal, lubricants, servicing including providing drivers etc.

708.3 Method of Payment

On the instructions and determination by the Engineer, Contractor shall be paid for the Services under this Clause as follows:-

- i) For the procurement of vehicles, Contractor shall provide the original supporting vouchers/receipts including applicable levies & other taxes paid for procurement of vehicles.
- ii) For running and maintenance of above vehicles including salaries of drivers, the Contractor shall be paid on monthly basis.
- iii) On failure of the contractor to provide and of the services under this clause or even otherwise notwithstanding anything contained in any other clauses of the Contract Documents, the "Engineer" shall have the authority to nominate/sublet to any other contracting agency on recommendation of the Resident Engineer for the supply of services under this clause, the payment for which shall be made through this contract direct to the nominated agency out of Provisional Sum provided in the Contract or hire the good road worthy vehicles and recover the cost with 100% penalty charges from contractor's IPC's.

Item No.	Description	Unit of Measurement
Sp-708b	Provide Engineer's Representative Transport Suzuki Bolan (Carry)	Each
SP-708bi	Provide OHS Manager and support staff Transport (On rental basis) (i) Toyota Corrolla 1300 cc with A/C (01 No)	Vehicle- Month
	(ii) Suzuki Carry (01 No)	Vehicle- Month
Sp-708c	Running & Maintenance of Employer's / Engineer's Representative's Transport	Vehicle- Month



SP-OHS (Occupational Health and Safety)

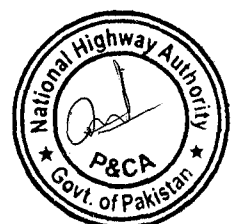
General:

The Contractor shall appoint one OHS manager having minimum qualification of Masters in Environmental science or equivalent with international certifications i.e. OSHA or NEBOSH along with four nos support staff having min qualification of graduation in relevant discipline to act full-time as Safety/Risk Assessment/ Accident prevention Officer throughout the duration of project and shall notify the Engineer of such appointment. The OHS manager shall be experienced in all matters relating to health and safety on site and shall be familiar with all relevant safety regulations and legislation. The OHS manager shall have the power to receive instructions from the Engineer on matters relating to the health and safety of personnel on site and the safe conduct of site operations. It will be the responsibility of OHS manager to prepare OHS manual covering all the risks involved in operational activities and will submit to the Engineer for approval. After approval of subject manual, proper monitoring of OHS activities will be done and monthly progress report will be submitted to the Engineer.

If the contractor uses existing roads for the transportation of his materials and equipment for the project or for detour roads, the Contractor shall be responsible for maintaining these existing roads during construction and ensuring all OHS protocols. After the completion of the project, the Contractor shall be responsible for reinstating the existing roads used to its original state ensuring that all mitigation measures are adopted for reinstatement and safe usage. Prior to use the existing roads, the Contractor shall investigate and document the entire length of the existing road condition together with the Engineer's staff including photographs or video.

Responsibilities of OHS Manager:

OHS manager will be contractor representative at site regarding monitoring of OHS works. OHS manager will be responsible for the implementation of health and safety at site and will supervise implementation of the contractor's OHS policies. The OHS manager will also be responsible for health and safety aspects of work sites and shall submit monthly reports to concerned the Engineer representative on the status of implementation of mitigation measures, complaints received and actions taken. The contractor's OHS manager, in coordination with the CSC (construction supervision consultant) shall set-up a grievance redress committee that will address any complaints firing project implementation. The OHS manager shall ensure that all necessary equipment (listed below) and support including but not limited to provision of dedicated vehicle, office space and accessories, safety related tools are provided to the OHS Manager and concerned staff during the currency of the contract. The OHS manager shall conduct necessary trainings for Employer and site staff for developing awareness about OHS. It will also be the responsibility of OHS manager to keep and maintain necessary first aid kit at site in order to cope with emergency situations.



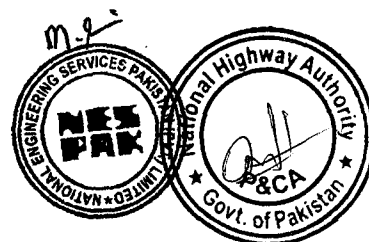
LIST OF NECESSARY EQUIPMENT

SAFETY SHOES	FACE SHIELDS	SAFETY GOGGLES
HARDHATS	DUST AND FUME MASKS	GLOVES (LEATHER)
COVERALL DRESSES	EAR PLUGS	GLOVES (COTTON)
FULL BODY HARNESS	EAR MUFFS	NAVIGATIONAL SIGNAGE
HIGH VISIBILITY VESTS	ROPE (PLASTIC 4MM)	WARNING TAPE RED & WHITE
HIGH VISIBILITY CONES	MANDATORY SIGNAGE	PVC MESH (ORANGE)
TRAFFIC BARRIERS	CAUTIONARY SIGNAGE	PROHIBITORY SIGNAGE
GREEN NET (PVC)		

Payment:

The payment for activities under this item shall be paid at the contract price and monthly rate as per the measurement unit indicated in the Bill of Quantities after certification by the Engineer / Employer and any other concerned stakeholder or authority nominated by the Employer that activities related to the item of OHS have been performed and managed satisfactorily by the Contractor.

SP-OHS	Item Description	Unit
i)	Provide 1 x Qualified OHS Manager having international certifications as per specifications.	Month
ii)	Provide 4 nos support staff as assistant to OHS Manager as per specifications.	Month
iii)	Equip OHS Manager with necessary accessories i.e. stationery, laptop etc for proper monitoring of OHS activities.	LS
iv)	Conduct OHS awareness trainings for Employer and contractor staff at site and conducting courses to visitors and new comers.	Month
v)	Carrying out and submit the OHS manual to the Engineer's representative, monitoring of all site activities as per OHS manual and submitting monthly progress report to the Engineer representative at site.	LS
vi)	Construct and maintain detours i.e. Installation of safety signs and other related safety features, preparing diversion plans and submit to the Engineer's representative in accordance with GCC.	LS
vii)	Provide and maintain PPE's at site.	Month
viii)	Provide and maintain first aid kit at site.	Month



NSI-IV**EMPLOYING TRAINEE ENGINEER's WITH BOARDING, LODGING AND MESSING**

The contractor will employ total 04 nos Trainee Engineers after the approval of the Employer, throughout the duration of project as per the contract and BOQ. Each Trainee Engineer will be given a monthly stipend Rs. 50,000 (minimum) by the contractor. 01 no Trainee Engineer out of total 04 nos shall be hired for NHA (Design-QS) for complete duration of project. The period of training of each trainee will be as per the contract. The Contractor will prepare a comprehensive training program and get it approved from NHA. It will be the contractor's responsibility for the provision of boarding & lodging of each Trainee Engineer or paid separately its cost.

Measurement and Payment

The number of Trainee Engineers shall be counted and paid to contractor as per the contract unit price which includes full compensation for all costs necessary like monthly stipend, boarding, lodging and transport facility.

Item No.	Description	Unit of Measurement
NSI-IV	Employing Trainee Engineer's With Boarding, Lodging And Messing	Man-Month



3906/103/JOH/21/12204
02/07/20



Lot-3

**GOVERNMENT OF PAKISTAN
MINISTRY OF COMMUNICATIONS
NATIONAL HIGHWAY AUTHORITY**

**INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT
(N-55)**

KASHMORE ~ ROJHAN SECTION

KM. (164+600 - KM. 213+500) LENGTH : 48.90 KM

**SPECIAL PROVISIONS
(SPECIFICATIONS)**

JUNE 2020



**NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.
HIGHWAYS & TRANSPORTATION ENGINEERING SECTION,
ATTATURK AVENUE, SECTOR G-5/2, ISLAMABAD**



Lot – 3: Kashmore – Rojhan Section

From Km 164+600 to Km 213+500 (48.90 KM)

SP 117a FORMATION OF GRANULAR MATERIAL PLATFORM
SP 117b FORMATION OF EMBANKMENT FROM BORROW ROCK MATERIAL

117.1 DESCRIPTION

This work shall consist of the formation of embankment in areas of soft embankment foundation, water ponding areas, high water levels, where compaction of natural ground is unable to achieve the density required in Item 104 with the prescribed general method. This would also include the wet areas which cannot be dried by scarifying or other measures and which exhibit moderate to severe heaving of surface during proof-rolling.

The embankment shall consist of a working platform of the granular material or rock material followed by the embankment fill material at toe of the embankment, all placed in accordance with these specifications and the specifications for other work items involved and in conformity with the lines, grades, sections and dimensions shown on the drawings or as directed by the Engineer's Representative.

117.2 MATERIAL REQUIREMENTS

117.2.1 Granular Material Platform

The material for the granular material platform shall consist of normal or processed granular fill material obtained from borrow excavation or quarry waste. This material shall conform to the following Specifications:

Size	%age of Weight Passing Mesh Sieve AASHTO T-27
37.5 mm	100
10 mm	75 - 100
# 4	60 - 80
# 10	45 - 65
# 40	25 - 40
# 100	0 - 15
# 200	0 - 5

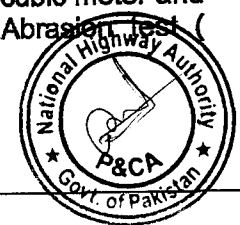
It shall also be checked that selected grading is such that intrusion into the working platform material of subgrade or natural ground surface material is not allowed. For this condition to be met it will be required that the ratio as below shall be checked and followed:

$$\frac{D15 - (\text{Granular Fill Material})}{D85 - (\text{Natural Ground Material})} < 5$$

D85 and D15 mean the practical diameters corresponding to 85% and 15% respectively, passing (by weight) in a grain size analysis.

117.2.2 Rock Fill Material

Rock fill material shall be as per 108.2 (d) and shall consist predominantly of rock (boulder) type material having minimum size greater than quarter cubic meter and shall have the a percentage of wear by the Loss Angeles Abrasion Test (



AASHTO T-96) of not more than thirty (30) to qualify for rock material. The type of material to be used shall be finalized as per the site requirement with the approval of The Engineer.

117.3 CONSTRUCTION REQUIREMENTS

117.3.1 Granular Material Platform

Granular platform material shall be used in water logged areas. Prior to laying of granular material platform, water logged area upon which embankment is to be placed, shall be dried and drained or kept drained of all surface water prior to commencing of fill in accordance with the relevant specifications.

Construction of the granular fill layer shall proceed from one end of the soft area by using the granular fill as a ramp for further granular fill transport. The thickness of the granular fill shall be as shown on the project drawings or as directed by the Engineer's Representative and the width shall be that of the embankment or part as directed by the Engineer's Representative. The placement and compaction of the working platform shall be carried out by the use of appropriate light equipment, in layers, if necessary. The placement, spreading and compaction of the granular material platform shall be carried out by using light equipment. The top 15 cm of the platform shall be compacted to at least 90% AASHTO T-180 density.

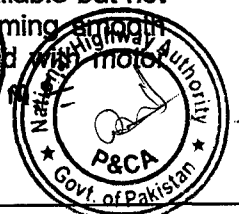
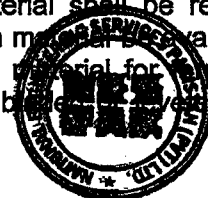
In those areas of high water levels and salinity with soft subsoils and where embankments are high such as approach fills to structures, special provisions shall be made to measure and determine likely fill settlements which may occur. These preconditions are necessary in order to specify particular construction procedures which may be necessary and to establish the time at which the pavement structure can be placed to avoid cracks and subsidence of these layers. In particular, additional compaction of the fill material and its adequate protection shall be required to prevent and underscore the risk of "collapse" settlement.

No extra payment under this item shall be made to the Contractor for re-working, re-instatement, replacement of granular material which has become slushy, or replenishing of granular material for whatever reason.

117.3.2 Formation of Embankment with Rock Material

Embankment formed of material consisting predominantly of rock shall be used where water ponding condition exists. Embankment formed of material consisting predominantly of rock fragment of such size that the material cannot be placed in layers of the thickness prescribed without crushing, pulverizing or further breaking down the pieces, such material may be placed in layers not exceeding in thickness than the approximate average size of the rocks except that no layer shall exceed eighty (80) centimeters of loose measurement and compacted by a vibratory roller.

The material shall be carefully placed in layers, so that all large stones will be well distributed and voids completely filled with smaller stones, clean small shells, shale, earth, sand, gravel, to form a solid mass. After placing rock material, surface shall be covered with a layer of fine material having thickness less than twenty (20) centimeters. Such fine material shall be reserved from roadway excavation by the Contractor. Should such material be available but not reserved, Contractor will supply and place borrow material for forming enough grade without extra payment. Each layer shall be broken down with motor



grader, bulldozer or similar equipment capable of shifting and forming the layer into a neat and orderly condition. Material for each layer should be consolidated with heavy weight vibratory roller until settlement as checked between two consecutive passes of roller is less than one (1) percent of the layer thickness. For evaluation of settlement, survey points should be established and rolling continued until difference of levels as checked after two consecutive passes is less than one (1) percent of the total layer thickness. More over initial rolling of overlaid fine material shall be done without watering to ensure their intrusion in voids of rock layer beneath. Watering shall be done when voids are properly filled.

117.4 MEASUREMENT AND PAYMENT

The quantities measured against this item as shown on the drawings with respect to line and grades shall be paid for at the contract unit price for the pay items listed below and shown in the Bill of Quantities. These prices and payments shall constitute full payment and compensation for providing including hauling, processing, placing at site and compacting as specified, replenishing granular material / rock material for remedying loss of material due to traffic and sinking of granular material platform during construction due to whatever reason, including all equipment, labour, material and all other costs related to the completion of works in all respects.

On first-time completion and approval of granular material platform, only 75% payment for pay item SP 117a and SP 117b shall be made to the Contractor. Balance 25% payment for pay item SP 117a and SP 117b shall be made to the Contractor only when it has been approved by the Engineer's Representative and ready to receive oncoming layer of embankment. In case of using granular material platform and rock fill material, item 101 and item 104 of NHA CSR shall not be entertained.

Pay Item No.	Description	Unit of Measurement
SP-117a	Formation of Granular Material Platform	CM
SP-117b	Formation of Embankment from Borrow Rock Material	CM



SP 118 FILLING OF CENTER MEDIAN WITH SWEET SOIL**118.1 DESCRIPTION**

This work shall consist of providing & filling sweet earth in center median, shown on the drawing or as required by the Engineer.

118.2 MATERIAL REQUIREMENTS**118.2.1 Sweet Soil**

Sweet soil shall consist of a natural friable surface soil without admixture of undesirable subsoil, refuse, or foreign materials. It shall be reasonable free from roots, hard clay, coarse gravel, stones larger than 3cm in diameter, noxious weeds, tall grass, or other litter, and shall have been taken from the field where healthy growth of crops, grasses, trees or other vegetation was cultivated.

118.3 CONSTRUCTION REQUIREMENTS**118.3.1 Source of Material**

The contractor shall notify the area to the Engineer at least 7 days prior to his intention of digging in that area and placement of top soil. The operation of digging and then placement shall start only after approval of Engineer and quality of soil to be placed as top soil in the designated areas as shown on the drawings or as directed by the Engineer.

118.3.2 Place of Sweet Top Soil

The top soil shall be evenly spread and to the line and slope as shown on the drawings and compacted to degree of compaction of natural ground a depth of not less than 15 cm or as directed by the Engineer. Spreading shall not be done when the ground topsoil is excessively wet or otherwise in the condition detrimental to the work.

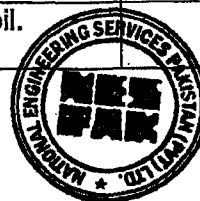
After spreading has been completed, large clods, stones, roots, stumps and other such unwanted material if any shall be raked and removed.

118.4. MEASUREMENT AND PAYMENT

Measurement of sweet top soiling shall be measured by the cubic meter, which has been placed in accordance with these specifications and accepted by the Engineer.

The quantity measured for payment as described above; shall be at contract price for items listed below, and as shown in bill of quantities. The payment shall include full compensation for furnishing all material, labour and equipment including water, transport and all cost necessary to complete the work in accordance with these specifications and accepted by the Engineer.

Pay Item No.	Description	Unit of Measurement
SP-118	Filling of center median with sweet soil.	CM



414.1 SCOPE OF WORK

The Contractor shall carry out confirmatory boring at bridge and Flyover sites at locations marked on the drawings or as directed by the Engineer's Representative.

The purpose of the Work specified herein is to determine the type, nature, arrangement, thickness and texture of the various subsurface strata, the conditions and the Engineering characteristics of the subsurface materials as they exist to the depth and at the locations specified. This is to be accomplished by means of drilling, in-situ testing, collection of disturbed and undisturbed soil and water samples and laboratory testing.

The Contractor shall carry out the specified works under the supervision of the Engineer's Representative.

414.1.1 Plant and Equipment

The Contractor shall keep at-least one rotary drill machine and one percussion winch along with accessories on the site to meet the requirements of the Work. The plant and equipment shall be in good operating condition and capable of performing efficiently the Work as set forth.

414.1.2 Drillers and Supervisory Staff

The Contractor shall provide qualified, experienced, orderly and thoroughly competent persons at all times including geotechnical engineers or engineering geologists who shall conduct and supervise drilling, sampling, logging and in-situ testing at the site. The Contractor shall remove any of his employees from the site that in the opinion of the Engineer does not meet these requirements.

The Contractor shall make his own arrangements for housing of his personnel, security and storage of the equipment and supplies at the site.

414.1.3 Setting up at each Hole

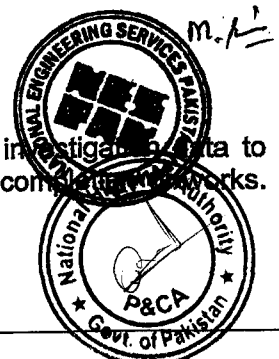
The Contractor shall make all the necessary arrangements for setting-up plant and equipment at each location, carrying out the work specified, preparation and reinstatement of the work areas, improvement to access routes and all other temporary works.

414.1.4 Measurement of Quantities

The quantities shown in the Bill of Quantities are only approximate. The payment shall be made on the basis of actual work performed in accordance with the Specifications.

414.1.5 Submission of Field and Laboratory Data

The Contractor shall supply complete field and laboratory investigation data to the Engineer's Representative within the time set-forth for completion of works.



This data shall include copies of all the approved logs and test records provided during the course of the Contract including any alterations or amendments required by the Engineer's Representative.

414.1.6 Location of Investigation Points

- a) The locations of investigation points shall be established in the field by the Contractor on the basis of the Drawings to be provided later or as directed by the Engineer's Representative. Locating the boreholes accurately in the field shall be the sole responsibility of the Contractor.
- b) It is to be understood that further Drawings may be issued by the Engineer showing the revised locations of investigation points.
- c) All the investigation points shall be located by the Contractor through field survey to an accuracy of 1 m in plan and 0.05 m in ground elevation.

414.2 WORK METHODOLOGY

414.2.1 Investigated Areas

The location of the boreholes will be selected as directed by The Engineer. The Engineer will specify from time to time during the Contract period, the exact location and reference number of all holes. To locate the holes accurately in the field shall however be the Contractor's responsibility.

414.2.2 Casing

A hole shall be cased in any stratum which is friable or not sufficiently strong to stand unsupported, or as and when directed by the Engineer's Representative.

The Contractor shall ensure that casings are of a suitable size and inserted in such a manner as to render them recoverable. The Contract Rates for drilling shall be deemed to include the supply, insertion and recovery of casing including any damage, loss or delay caused by difficulty or failure in recovering casing.

414.2.3 Removal of Casing

Casing shall neither be removed from any hole nor any filling introduced into it until permission is given by the Engineer. This permission will normally be given as soon as work in the hole is completed and the groundwater level has been measured.

As far as possible the Contractor shall avoid leaving a hole overnight after he has begun to withdraw the casing and before he has finished.

414.2.4 Supplementary Holes

Abandoned holes and / or the holes from which unsatisfactory samples have been obtained and/or in which unsatisfactory field tests have been performed due to the negligence of the Contractor shall be supplemented by other holes adjacent to the original location. The exact location of such supplementary holes shall be specified by the Engineer in the field.

The depth where the unacceptable holes were abandoned or to the depths where unsatisfactory samples were obtained or unsatisfactory field testing was performed may be made by any method selected by the Contractor that in the



opinion of the Engineer will permit satisfactory field testing and sampling below those depths at which original hole was abandoned shall be carried out using only the specified method of advancing the hole.

No payment will be made for that portion of the supplementary hole above the depth paid for in the unacceptable hole.

414.2.5 Groundwater Level

The groundwater level in holes shall be determined after completion of the hole or when required by the Engineer, as follows:

Clear water shall be added or the hole shall be bailed-out as necessary to bring the water level to the expected groundwater level as directed by the Engineer and the water level shall be measured and recorded at intervals of 6 hours for a period of twenty four (24) hours thereafter.

414.2.6 Backfilling Holes

Boreholes shall be backfilled with grout as directed by the Engineer.

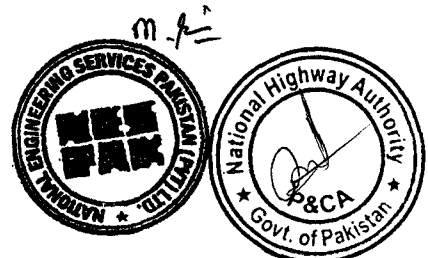
Grouting for backfilling holes shall consist of a mud formed by mixing one (1) part by weight of bentonite with ten (10) parts of water, to which two parts by weight of cement shall be added after the bentonite and water have been thoroughly mixed. Alternatively, holes may be backfilled with purpose-made pellets of bentonite or bentonite/cement, provided they are of a size which, in the opinion of the Engineer, is compatible with the size of hole. If there is no standing water in the hole, grout may be poured in from the top. If there is standing water in the hole, the grout shall be fed into the bottom of the hole by a tremie pipe, the end of which shall always be below the groundwater junction while grouting is being carried out.

Grout backfill shall be taken up to 30 cm below the original ground level. Any apparent loss of grout due to leakage or consolidation within one week shall be made-up with fresh grout and then the remaining depth of the hole shall be filled with concrete.

414.2.7 Logs

Logs of boreholes shall be provided on an approved specimen. These shall include descriptions of all strata including details of the soil macrofabric (such as frequency, orientation and nature of fissures) and details of samples taken, and an account of all observations and field tests. Logs of boreholes shall include notes on the nature, quantity and colour of the drilling fluid returns. All logs shall be subject to the approval of the Engineer and two draft copies shall be submitted to the Engineer, not more than two days after the hole is backfilled. Soil descriptions shall conform to ASTM designation D 2488 and classified according to ASTM designation D 2487. All depths and thicknesses of topsoil and strata shall be recorded in meters and all reduced levels shall be recorded in meters with reference to Survey of Pakistan datum. Accurate determination of ground levels at all the hole points is the Contractor's responsibility for which no extra payment shall be made.

414.2.8 Contractor's Responsibility for Records



The presence of the Engineer or any of his staff and their keeping separate drilling records shall not relieve the Contractor of any of his responsibilities for keeping records.

414.2.9 Order of Work

The order in which the work is to be accomplished shall be determined and approved in the field by the Engineer.

414.3 DRILLING

414.3.1 Depth of Drilling

Drilling would generally be required up to a minimum of 45 meters depth or at least 5 m below the pile tip level, whichever is more or as directed by the Engineer.

414.3.2 Accuracy of Alignment of Holes

Boreholes will be within 2 degrees of the vertical unless the Engineer's Representative has ordered the drilling of an angled hole in which case the hole angle shall be within 5 degrees of the angle specified.

414.3.3 Drilling Plant

The drilling plant and ancillary equipment to be mobilized at the site should be adequate to advance the boreholes in an efficient manner, to the required depths.

Rotary drilling rigs shall be of the hydraulic feed type equipped with side discharge type fish tail and tricone bits for drilling. Bits and casing shall conform to B.S. 4019; Part I; 1974 or an approved equivalent.

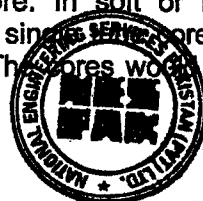
Drilling bits shall be of side discharge type designed to prevent unnecessary disturbance of soil at bottom of the hole by flow of drilling fluid, unless the Engineer directs otherwise.

414.3.4 Drilling Procedure

The method of drilling shall be of any approved standard and accepted method by means of which a hole of specified diameter is extended to the desired depth. The normal method of drilling shall be rotary unless gravelly strata are encountered where percussion may be used.

During drilling the Contractor shall regulate the drilling operation which ensures minimum disturbance in the underlying material in which the in-situ testing and sampling is to be carried out.

In rock, core drilling shall be carried out in such a manner and using such sizes of bits, that the maximum core is recovered. This requires close surveillance of the flushing media, drilling pressures, lengths of runs, use of appropriate core barrels and other factors relevant to the nature of the material drilled. The drill bit shall be withdrawn and core removed as often as may be necessary to secure the maximum possible amount of core. In soft or friable formation, dry drilling techniques may be required using single fluted core barrel with tungsten carbide bits as directed by the Engineer. The cores will be placed in core boxes in a proper manner.



414.3.5 Stabilizing of Holes

Drilling mud of suitable consistency shall be used during rotary cum wash boring to stabilize the walls of boreholes by preventing caving-in and to avoid disturbance of the sampling horizons. The drilling mud shall be a mixture of bentonite and water with approved chemical additives being used, if required, to assist in modifying its density and viscosity. The density and viscosity shall be selected considering such factors as hole stability, cutting operation and undisturbed samples recovery.

Where drilling mud is not effective, casing of appropriate size and strength may be used subject to the approval of the Engineer. It will be responsibility of the Contractor to use appropriate means to stabilize the walls of the boreholes.

It shall be ensured that there is no jetting action of the drilling fluid. The minimum amount of drilling fluid necessary to carry away the cuttings shall be used. During drilling the Contractor shall regulate the pressure of the drilling fluid to ensure minimum disturbance to the underlying material in which the in-situ testing and sampling is to be carried out.

414.4 SAMPLING

414.4.1 General

The Contractor shall take disturbed or undisturbed samples from any borehole when ordered to do so by the Engineer. This shall include the provision of all necessary sampling equipment, tubes and containers, crates and boxes, as well as handling and transportation to the approved laboratory or store at site.

414.4.2 Approval of Equipment

No equipment or containers shall be used unless and until approved by the Engineer.

414.4.3 Care of Samples

The Contractor shall be responsible for the safe keeping of samples of all kinds until these have been handed over to the designated laboratory or disposed-of on the Engineer's instruction as the case may be. Any sample lost, damaged or showing signs of deterioration while in the Contractor's care shall be replaced by the Contractor at no expense.

414.4.4 Labeling Samples

All disturbed and undisturbed soil samples and water samples taken from holes shall be clearly labeled. Each label shall include the following information:

- a) Name of Contract
- b) Reference number of the holes
- c) Reference number of sample
- d) Date of sampling
- e) Brief description of the sample (e.g. stiff brown silty clay)
- f) Depth of the top and bottom of the sample below ground level
- g) Number of the sampler tube

Tubes and crates for undisturbed samples shall be labeled "Do not jar or vibrate" and "Haul and transport in a horizontal position"

414.4.5 Disturbed Samples



In all the boreholes, small disturbed samples shall be taken at the top of each stratum, and at intervals as directed by the Engineer. Material from the cutting shoes of open drive undisturbed samples, and from the split spoon sampler used for Standard Penetration Tests, shall also be taken as disturbed samples.

414.4.6 Undisturbed Sampling

Undisturbed sampling from boreholes shall be done by Shelby tube or Pitcher/Denison sampler or as directed by the Engineer. The undisturbed samples should be properly sealed and preserved as directed by the Engineer.

414.4.7 Cores

The cores obtained from boreholes shall be carefully removed from the core barrel and placed in the boxes in the correct sequence, with increasing depth from left to right and top to bottom in the box. Coloured photographs of cores shall be taken at site.

Where the core is contained in an expandable triple tube liner, the ends of the tube shall be sealed and waxed as directed by the Engineer.

Each core run shall be segregated by labeled wooden blocks 25 mm thick and the depth of the bottom of each run shall be marked on the partitions in the core box with paint.

No box shall contain more than 3 meters of core.

414.4.8 Core Samples

Selected cores, preferably not less than 30 cm in length, shall be preserved as core samples. The preservation would consist of clearance of any loose sludge, waxing of cores, packing in wooden boxes using sawdust and labeling before transportation to the testing laboratory.

414.4.9 Water Samples

The Contractor shall take water samples from holes when directed by the Engineer before the addition of water to the hole unless it is unavoidable. If necessary, the hole shall be bailed-out before taking the sample to ensure that any potential contaminant is removed. No fuel or other potential contaminant shall be allowed to enter the hole. The method of sampling shall be as approved by the Engineer. Samples shall only be stored in approved, air tight and scrupulously clean, containers and shall not be less than 1 litre in volume.

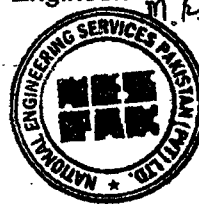
414.4.10 Transportation of Samples

All samples shall be shifted to the store at the site, the day they are collected. Samples in tubes shall be kept and transported with the tubes in a horizontal position.

The samples shall be continuously transported to the testing laboratory on conclusion of every borehole and on the instructions of the Engineer. The laboratory for testing shall be approved by the Engineer.

414.5 IN-SITU TESTS

414.5.1 Standard Penetration Tests (SPTs)



When directed by the Engineer the Contractor shall carry out Standard Penetration Tests (SPTs) in boreholes. The penetration resistance 'N' shall be expressed as the number of blows of a 63.5 kg hammer freely dropping 76.2 cm required to force the standard split tube sampler 30.5 cm into the soil.

Standard Penetration Test (SPTs) shall be conducted in the boreholes in accordance with ASTM 1586 generally at 1 meter depth interval or as directed by the Engineer at the site.

414.6

LABORATORY TESTING

414.6.1

General

The samples shall be tested in a laboratory approved by the Engineer. 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, BSS or AASHTO Standards or as directed by the Engineer. The Contractor shall arrange to carry out the following laboratory tests on the specified samples of the subsoil materials. The samples to be tested and the tests to be carried out for each sample shall be specified by the Engineer.

414.6.2

Type of Tests

Sr. No.	Name of Test	Standard
i.	Grain size analysis	ASTM D 422
ii.	Liquid limit, plastic limit	ASTM D 4318
iii.	Specific gravity	ASTM D 854
iv.	Unit weight of soil	
v.	Unconfined compression (soil)	ASTM D 2166
vi.	Unconfined compression (rock)	ASTM D 2938
vii.	Natural moisture content	ASTM D 2216
viii.	Consolidation	ASTM D 2435
ix.	Direct shear	ASTM D 3080
x.	Triaxial compression test	ASTM D 4767
xi.	Sulphate content of Soil	BS 1377
xii.	Organic matter content of soil	BS 1377
xiii.	Total dissolved salts of soil	BS 1377
xiv.	Chloride content of soil	BS 1377
xv.	Chemical analysis of water BS 1377	
	a) Sulphate content of water	
	b) Total dissolved salts of water	
	c) Chloride content of water	
	d) pH of water	

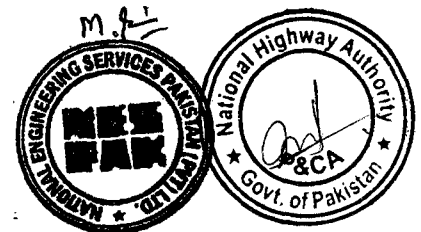
414.7

RECORDS AND REPORTS

414.7.1

Records

- a) The Contractor shall keep accurate logs and records of all work accomplished under this item. All such records shall be preserved in good condition and order by the Contractor until these 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. Separate logs shall be made for



each borehole. The following information shall be included on the logs or in the records for boreholes:

- i. Borehole number or designation and elevation of top of borehole.
 - ii. Method of drilling holes.
 - iii. Dates and time by depths when hole was performed.
 - iv. Type of drilling fluid used.
 - v. Depths at which samples were recovered or attempts made to collect samples along with designation, thickness and type.
 - vi. Record of SPT on borehole log.
 - vii. The classification or description by depth of the materials samples including a description of condition of compactness or stiffness of soil materials encountered and moisture conditions.
 - viii. Depth of groundwater level if encountered.
 - ix. Depth of bottom of borehole.
- b) The Contractor shall furnish the Engineer with the record as specified above in duplicate, not later than 48 hours after completion of each borehole.
- c) The presence of Engineer or the keeping of separate records by the Engineer shall not relieve the Contractor of the responsibility for the work specified in this Section. Payment shall not be made for any work for which the records have not been furnished by the Contractor.

414.7.2

Reports

- a) The results of each borehole and the field tests carried out shall be communicated to the Engineer as follows:
- i. Oral reports as the work proceeds.
 - ii. Three sets of complete data of the work within two (2) days of the date of completion of borehole.
- b) The data shall comprise:
- i. A site plan showing the position of the boreholes and giving their map reference.
 - ii. The borehole logs
 - iii. Complete results of field tests
 - iv. Comments on any point which the Engineer has put-up to the Contractor for inquiry and investigation during the Works.
- c) Complete results of laboratory tests shall be communicated to the Engineer within seven (07) days of the date of completion of borehole.

414.8

MEASUREMENT AND PAYMENT

The measurement and payment for the Work specified in the Contract for drilling of bore holes, collection of disturbed, undisturbed and rock core samples, performing the standard penetration tests, laboratory testing and compilation and submission of results shall be done and paid for as per the pay item given in the BOQ, which payment shall be full compensation for furnishing all labour, material, tools, equipment and incidentals and for performing work involved in this item as mentioned above in this specification.



Bill No. 4d(I) : Structures (Soil Investigation for Bridges)		
Pay Item No.	Item Description	Unit
SP-414 (a)	6" minimum dia drilling straight rotary/ Percussion including back filling of holes from NSL upto 45m depth or till the rock level which ever is met earlier.	LM
SP-414(b)	Perform SPT at 1 m interval I/c collection, preservation & Transportation of disturbed samples to an approved Laboratory.	No.
SP-414(b-1)	Continuous core drilling in bedrock up to a maximum of 5 m depth below rock strike level, including determination of core recovery/ RQD, preservation of core samples in core boxes, labelling, waxing of selected core samples, photography of rock cores and transportation of core samples to the laboratory. In case core recovery is less than 80% reduce run length to 0.5 m.	LM
SP-414(c)	Collection of undisturbed soil samples from boreholes using Shelby pttcher/denison sampler I/c preservation and transportation of samples to an approved Laboratory.	No.
SP-414(d)	Performance of FDT in test pits through sand replacement method I/c moisture content determination.	No.
SP-414(e)	Excavation of testpits upto 1.5 m depth along road alignment including backfilling of pits to original condition.	M
SP-414(f)	Collection of undisturbed block samples from test pits at appropriate location as directed by the Engineer.	No.
SP-414(f1)	Collection of composite bulk sample (atleast 60 kg for sandy/clayey soils and 120 kg for gravelly soils)	No.
SP-414(g)	Collection & preservation of water samples from bore holes & transportation to an approved Laboratory.	No.
SP-414(h)	Laboratory Testing	No.
I.	Grain size analysis.	No.
II.	Hydrometer analysis.	No.
III.	Atterberg limits	No.
IV.	Specific gravity	No.
V.	Natural moisture content	No.
VI.	Bulk density & Dry density (Soil/rock cores)	No.
VII.	Direct shear test	No.
VIII.	Consolidation test (collapse/swell potential)	No.
IX.	Unconfined compression test (Soil/rock cores)	No.
X.	Chemical analysis of soil	No.
XI.	Chemical analysis of water	No.
XII.	Submission of Investigation Report (triplicate)	No.
XIII.	CBR	No.
XVI.	Modified Proctor Test	No.



1. General

Expansion joints will follow Specifications of AASHTO-SS-Division II-section 19 "Bridge deck joints seals"

The Contractor shall submit to the Engineer, complete documentations about the Expansion joints he intends to use for the movements shown on the Drawings, including references of the last 10 years, material Specifications for metal, rubber and bonding between them, fixations, and test certificates from authorized laboratories showing that the proposed joints meet the specifications.

Elsewhere the submittal will be accompanied by samples of at least 0.50m, with its fixations.

The expansion joints shall satisfy the following functional requirements:

1. It shall withstand traffic loads of the highway, and accommodate movements between the deck and abutment or the adjacent deck.
2. It shall have good riding quality and shall not cause any inconvenience to road user.
3. It shall not cause skidding hazard.
4. It shall not generate excessive noise or vibration during the passage of vehicles.
5. Parts liable to wear out shall be easily replaceable.
6. It shall be watertight and will have provision for carrying away water and silt.
7. It shall be easy to inspect and maintain.
8. It shall be resistant in hot and very sunny climate.

2. Construction Requirements

The methodology of placing the expansion joint will be clearly described by the Contractor with a complete set of drawings.

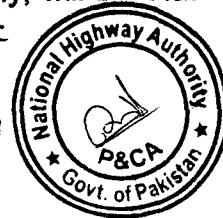
Connection or overlapping between roadway and walkway expansion joints will be clearly shown.

Connection with water proofing of the deck will be detailed.

All necessary provisions in deck reinforcement will be indicated.

Initial gap at the time of placing will be clearly indicated and justified.

The second stage reinforced concrete for fixations, if any, will be Class Y concrete and will be included in pay item SP- 417.



3. Measurement and Payment

3.1 Measurement

The length of computed joints for roadway is measured in linear meter between the faces of the kerbs, plus 150 mm height on each bridge railing.

3.2 Payment

The accepted quantity measured as provided above shall be paid for at the contract unit price respectively for the pay items listed below and shown in the Bill of Quantities which price and payment shall be full compensation for furnishing all materials, labour, equipment, tools and incidentals and any work pertaining to expansion joints and which is not paid for separately, necessary to complete the item.

Pay Item No	Description	Unit of Measurement
SP -417	Manufactured trade mark expansion Joints for roadway, for (25-30) mm movement	M



SP-417a SONIC INTEGRITY TESTS (SIT) ON ALL PILES

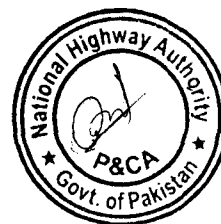
1. SONIC INTEGRITY TESTS (SIT)

All working piles shall be subjected to Sonic Integrity Testing (SIT) by a specialist agency engaged by the Contractor. The SIT equipment like FPDS (Foundation Pile Diagnostic System) or equivalent, as approved by the Engineer, shall be used for this purpose. The testing shall be done as per ASTM D5882-07. Before starting this testing, the Contractor shall submit his Method statement for approval of the Engineer.

The contractor shall arrange performance and interpretation of these tests by the specialist agency like TNO Netherlands or equivalent. The interpretation shall include information on pile length, concrete crushing strength, Sonic Pulse Velocity and defects like necking / honeycombing etc. A separate report shall be submitted for SIT carried out on piles by the Contractor.

2. PAYMENT

Item No.	Description	Unit of Measurement
SP-417a	Sonic Integrity Tests (SIT) on all piles	Each



SP- 418 GALVANIZED IRON DRAIN PIPE

418.1 DESCRIPTION

The Contractor shall furnish and place galvanized iron drain pipe (AASHTO Standards M 1118-80 1986) in accordance with the plan of Bridge deck, specifications and/or as ordered by the Engineer.

418.2 MATERIALS

The Galvanized iron pipe shall conform to the requirements of ASTM Designation A120.

418.3 CONSTRUCTION

Where the pipe is used for bridge drains it shall be cast in the deck and shall be flush with the deck surface.

418.4 MEASUREMENT

The quantity to be paid for under this item will be number of linear meter of pipe incorporated in the work in accordance with the plans and specifications and as directed by the Engineer.

418.5 PAYMENT

The unit price bid per linear meter shall include the cost of furnishing and placement including all labor, materials and equipment necessary to complete the work.

Item No.	Description	Unit of Measurement
SP-418	GI drain pipe Dia 100 mm	M



501.1 DESCRIPTION

The work consists of supplying, installing, and commissioning of all material and services of the complete conduits and pipes as specified herein, shown on the Drawings and/or as directed by the Engineer's Representative.

The Contractor shall get the prior approval of the layout from the Engineer's Representative at Site for exact route, location and position of the conduits and pipes.

501.2 GENERAL

The Contractor shall ensure exact location and route of conduit and pipes in coordination with other services as per site requirements and get the approval of Engineer's representative prior to execution of the work.

501.3 APPLICABLE STANDARD/CODES

Latest editions of the following standards/codes shall be applicable for the materials in scope of this Section:

- BS 6099 - PVC Conduits and Accessories
- BS 3595 - PVC Pipes and Accessories
- BS 4346 - Cement Solvent for Jointing

501.4 MATERIAL**501.4.1 uPVC Conduits and Accessories**

The heavy gauge uPVC conduits and accessories conforming to BS6099 shall be generally used. The uPVC conduits and accessories of light gauge may be used on the project with the concurrence of the Engineer's Representative.

The uPVC bends, sockets, elbows, couplings etc. shall conform to the same specifications as for the conduits. The uPVC bends shall have enlarged ends to receive conduit without any reduction in the internal diameter at joint. Manufactured smooth bends shall be used where conduit changes direction. Bending of conduits by heating or otherwise will not be allowed in any situation. The use of sharp 90-degree bends and tees will not be allowed.

501.4.2 uPVC Pipe and Accessories

The pipe shall be rigid. All pipes shall be minimum Class D (Working pressure - 12 bar), unless otherwise stated on drawings. The buried uPVC pipe should be able to withstand the external load acting upon it by continuous movement of heavy duty vehicles such as trucks, cranes,



forklift, etc. Where pipe changes direction, manufactured smooth bends shall be used. Bending of pipes by heating or otherwise will be allowed in special cases only. Bending of pipes by heating shall be carried out by first filling the pipe with sand inside and then immediately removing the sand. The use of sharp 90-degree bends and tees will not be allowed. The bends shall conform to same specifications as given for uPVC conduits. For joining of pipe all precautions and procedures recommended by manufacturer shall be followed.

501.5 INSTALLATION

501.5.1 uPVC Pipe

Rigid PVC pipes shall be installed under roads and paved areas, at crossing with other services as shown on the Drawings and/or as directed by the Engineer's Representative. The depth of the pipe shall vary according to the conditions at site, and approval of Engineer's Representative shall be obtained prior to installation. In general the pipes shall be installed underground at the following depths measured from the top of the pipe and or as directed by the Engineer's representative.

Under roads and paved surface	800 mm below the finished surface
When crossing other services	250-mm vertical clearance for the crossing length 500 mm horizontal clearance with CC protective cover

The trench of required dimensions shall be excavated and the bottom of trench cleaned and leveled. A four-inch thick bed of fine sand shall be provided over which the uPVC pipes installed after proper alignment. Where two or more pipes are installed in the same trench the clearance between pipes shall not be less than two inches. After laying of pipe the trench shall be backfilled with clean-screened earth in layer of four inches. Each layer shall be properly compacted. All joints shall be sealed adequately to prevent entry of foreign elements.

For crossing of major services, the uPVC pipes shall installed in trench of size as shown on drawings or as directed by the Engineer and will be covered with concrete class A as per drawings or as directed by the Engineer.

The installation of pipes shall be completed in all respects including its fixing at terminations, before cabling work is started. All sharp edges and burrs shall be removed by using reamer or any approved device. The pipe shall be thoroughly cleaned of dirt and dust from inside. The pipes shall be installed in proper co-ordination with other works.



501.6

MEASUREMENT AND PAYMENT

Measurement

Measurement shall be made for the number of running meters of pipes acceptably supplied and installed by the Contractor.

Payment

Payment shall be made for the total numbers of meters measured, as provided above, at the Contract unit price. The payment shall constitute full compensation for supplying, installing and completion of the laying of the uPVC pipes including jointing materials and accessories and all incidentals for completion of the work.

Pay Item No.	Description	Unit of Measurement
SP-501	Supplying & Installation of uPVC Pipe 100/150mm dia	M



SP-502	RELOCATION OF UNLINED WATER COURSES
& SP-503	RELOCATION OF BRICK LINED WATER COURSES

1 DESCRIPTION

The work shall consist of dismantling and disposal as required of existing brick lined / unlined water course and relocating the same with standard work items and required discharged capacity as approved by the Engineer's Representative for smooth flow of water.

2 MATERIAL REQUIREMENT

Brick Lining

This shall conform to the requirements of Item 410.2 of General Specification.

3 CONSTRUCTION REQUIREMENT

Cross-section for Relocation

This shall be cut and dressed according to specified /required line and grade as directed by the Engineer's Representative, prior to commencement of this work.

Brick lining shall conform to the requirements of item no 410.3 of General Specification.

4 MEASUREMENT

The work of relocation of (Unlined) water course which is completed as per line, grade and cross-section according to discharge capacity, accepted by the Engineer shall be measured in square meters.

The work of brick lining on cement mortar for lined water course, which is completed according to the required thickness and grade, shall be measured by superficial area accepted by the Engineer's Representative. The unit of measurement shall be square meters.



5 PAYMENT

Payment shall be made as measured above and shall be full compensation for relocation of the water courses, disposal of surplus /dismantled/unsuitable material, provision of all labour ,materials, equipment, tools and all others necessary to complete the work as prescribed above and accepted by the Engineer's Representative.

Pay Item No	Description	Unit of Measurement
SP-502	Relocation of Unlined Water Course	SM
SP-503	Relocation of Brick Lined Watercourse	SM



SP-504 DELINEATORS/ANGLE REFLECTOR

504.1 DESCRIPTION

The work shall consist of supply and installation of delineators /angle reflectors at locations detailed on drawings or as directed by the Engineer, complete in all respect. The work will be executed as per item 607 "Traffic Road Signs and Safety Devices of general specifications with amendments as follows:

In item 607 "Traffic Road Signs and Safety Devices" of general specifications, add in line 1, after "furnishing" insert ",", delete "and" and after "traffic signs" insert "and delineators"

Add at the end of para:

Unless otherwise shown on the Drawings, all signs shall be lettered in both Urdu and English. In case of any discrepancy between NTRC requirements and General Specifications, the requirements of NTRC shall govern.

504.2 MATERIAL REQUIREMENTS

In item 607 "Traffic Road Signs and Safety Devices" of general specifications, add new para under head "Material Requirement" as follows:

Materials shall be of new stock unless otherwise shown on the Drawings or ordered by the Engineer's Representative and shall conform to the item 607 of general specifications with amendments as mentioned below:

504.2.2 Rubber Washer

In 607.2.6, Add at the end "Thickness of rubber washer is as given below:

On top	3 mm
On Bottom	2 mm

504.2.3 Concrete Foundation Blocks

In 607.2.9, in line 1, delete "Class A" and replace with "Class A1".

In line 3, after "mm", add "or as shown on the drawings or as directed by the Engineer."

504.2.4 Road Posts and Hazard Markers

In 607.2.10, in line 6, delete "with standing" and replace with "withstanding".



504.2.4 Excavation and Backfilling

In 607.3.1, Add at the end of para 3:

Concrete shall be placed against the undisturbed excavated faces, except that the top fifteen (15) centimeters of each footing shall be formed. Forming of the entire footing will not be permitted unless approved by the Engineer. Concrete shall be thoroughly rodded and spaded so as to eliminate all voids. Tops of footings shall be finished with a wood float and all exposed edges shall be rounded with an edger.

Backfill shall be thoroughly compacted by mechanical tampers, and care taken to prevent damage to the finished concrete. Backfill shall be brought up level with the finished ground line. Pipe post bases and/or posts set in concrete shall be firmly supported, plumb, vertical and at the proper elevation.

In case precast concrete foundations are used, these shall be of the concrete class 'A1' and of the sizes as shown on the drawings.

504.2.5 Erection of Posts

In 607.3.2, In line 3, delete "the" written in between "to" and "prevent".

504.2.6 Installations of Safety Devices

In 607.3.5, In line 11, delete "a" written in between "for" and "prohibiting".

504.2.7 Sign Faces

In item 607.3.6, following amendments be made as mentioned below:

a) Design

In serial No. 3, line 1, delete "italics" and replace with "Smalls".

In serial No. 4, delete "21 cm" and replace with "35 cm".

In serial No. 5, delete "17 cm" and replace with "25 cm".

In serial No. 5, delete "italics" and replace with "Small".

In serial No. 6, delete "3.5 cm" and replace with "10 cm".

In serial No. 10, delete "4 cm" and replace with "2.3 cm".

In serial No. 11, delete "23 cm" and replace with "35 cm".

In serial No. 13, delete "Size of letter for km. Height" and replace with "Height of letter for km".



504.2.8 Storage of Signs

After 607.3.7, add the following:

504.2.9 Painting

The rear sign face of all signs shall be painted with two (2) coats priming paint pigmented with chromates of chromes (excluding lead chromes) plus two (2) coats of weather-resisting dull silver gray paint. Where connection of large aluminum sheet signs to a steel stiffening frame is required, the studs or screws, bolts and washers shall be painted to properly match the color of the surrounding material.

All painting shall conform to the requirements of Section 413 of General Specifications.

504.2.10 Placement and Orientation

The Engineer will approve and mark the longitudinal location of each sign on the working drawings submitted by the Contractor.

The sign shall be laterally positioned from the shoulder or curb as shown on the approved drawings or directed by the Engineer.

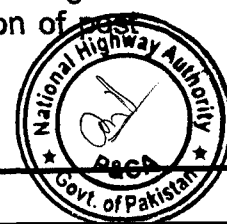
The Contractor shall stake the location of each sign support and shall get its approval from the Engineer prior to carrying out excavation for foundations. The Engineer may order change in location due to site constraints. No separate payment shall be made to the Contractor on account of such change if the change is made before fixing of the sign support in concrete block.

The Contractor shall be responsible for the proper elevation, off-set, level and orientation of all signs he erects. He shall exercise due care on the preservation of stakes for his and the Engineer's use. If any stakes are lost, damaged, displaced, or removed, the Contractor shall have them reset at his own expense.

Unless otherwise shown on the drawings all signs shall be erected so that the edge and face of the sign are truly vertical and face is at an angle of ninety three (93) degrees to the centerline; that is, facing slightly away from the centerline of the lane which the sign serves. Where lanes divide or are on sharp curves, the Contractor shall orient sign faces as indicated on the Drawings or by the Engineer so that they will be most effective both during day and night and so as to avoid specular reflection and glare. All sign supports shall be plumbed.

504.2.11 Sign Posts

Lengths of posts shown on the drawings for signs are for bidding purposes only. When progress of the work permits, the Engineer will authorize the location of each sign, with the station and offset distance from the edge of pavement. The Contractor shall be responsible for determination of post



lengths to provide the vertical clearance shown on the drawings. Field cutting of posts shall be performed by sawing.

"Sign Post Support Assemblies" shall be fabricated as detailed on the drawings. Test specimens for pipe shall be taken at least fifteen (15) centimeters from one (1) end of the pipe, instead of at the ends as specified in ASTM A 53, Grade B. When Galvanizing is specified assemblies shall be hot-dip galvanized after fabrication. All welds shall be mechanically cleaned before Galvanizing. Galvanized materials on which the Galvanizing has been damaged in transporting, handling, or erection will be rejected or may, with the approval of the Engineer, be repaired in the field by the zinc alloy stick method. Required field welds and adjacent areas on which the Galvanizing has been damaged shall be galvanized by this same method. The zinc alloy stick shall be cast from zinc, tin, and lead in combination with fluxing ingredients. The compound shall be completely liquid at a temperature not lower than two hundred and forty six (246) degrees C. The area to be re-galvanized shall be thoroughly cleaned, including the removal of slag on welds. The surface shall be heated with an oxyacetylene torch to approximately three hundred and fifteen (315) degrees C, and the alloy stick rubbed over the surface to fix a deposit. While the alloy is still liquid, a clean wire brush shall be used to smooth the deposit evenly over the entire area being re-galvanized. If a heavy deposit or build-up is required to match the original coating, more alloys shall be added immediately to the initial bond deposit and spread with a paddle or brush until the required thickness is obtained. Edges of drilled holes shall be coated with commercially available zinc-rich paint. Shop drawings will not be required for pipe posts.

The Contractor shall furnish to the Engineer, fabricators' certifications in triplicate certifying that the material supplied conforms to all of the requirements specified.

504.2.12

Fastening Signs to Sign Posts

Signs shall be fastened to sign supports in accordance with the requirements of the drawings, the recommendations of the sign manufacturer and to the satisfaction of the Engineer.

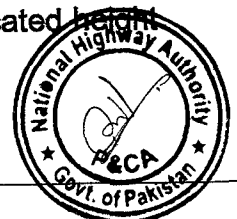
After installation of signs on their supports all bolt heads, screw heads, and washers which are exposed on the face of the sign shall be painted. The color of the paint used shall be as nearly as practical the same as the color of the background or message area at the point where the bolt, screw, or washer is exposed.

Where steel signs are mounted with aluminum hardware or on steel posts, approved asphalt, nylon, or neoprene insulation shall be used at all points where dissimilar metals might come in contact.

504.3

Erection of Delineators and Marker Posts

Delineators shall be erected at locations shown on the drawings and set at elevations such that the Delineator reflectors will be at the indicated height.



above the ground surfaces. Unless otherwise noted in the Drawings or authorized by the Engineer's Representative, holes for posts shall be of the depth and size shown on the Drawings. Posts shall be set plumb and will be set to lines and grades as specified on the drawings. The cost of all excavation and concrete will be considered subsidiary to the bid item (s) for Delineators. Chevron shall also be installed on same pattern except using high density sheet for good reflection.

When noted on the Drawings or authorized by the Engineer's Representative, the posts shall be erected by driving, either by hand or with approved mechanical devices. The method of driving shall not substantially alter the cross-sectional dimensions of the posts or materially damage the coating. Battered tops will not be permitted. Posts which, in the opinion of the Engineer's Representative, are bent or otherwise damaged during or after erection shall be removed from the site and replaced at the Contractor's expense. After driving, the portion of the posts above ground shall be plumb and the posts shall be firm in the ground.

Reflectors shall be attached to the posts as indicated on the drawings or as directed by the Engineer or according to the manufacturer's specifications.

504.4

PAYMENT

Pay Item No.	Description	Unit of Measurement
SP-504	Delineators / Angle Reflector	Each



SP-505 CLEANING AND MINOR REPAIR OF EXISTING STRUCTURE (CULVERTS)

1 DESCRIPTION

The work shall consist of cleaning of existing culverts from all type of dirt, clearing the complete water way and minor repair i.e. minor inlet & outlet repairs, covering of steel reinforcement with cement concrete (class A) as per drawings or as directed by the Engineer's Representative for smooth flow of water.

2 CONSTRUCTION REQUIREMENT

All the culverts need to be cleaned and required minor repair will be verified by contractor at site as per drawings or as per the directions of the Engineer's representative. Cracks shall be marked and repaired with cement sand slurry of ratio (1:3) and will be plastered.

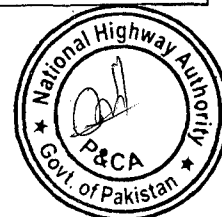
3 MEASUREMENT

The work of cleaning and repair of culverts which is completed as per drawing and site requirement shall be measured in number of culverts which are cleaned and repaired, complete in all respect to the entire satisfaction of the Engineer representative.

4 PAYMENT

Payment shall be made as measured above and shall be full compensation for cleaning of choked culverts, minor repair and complete the work as prescribed above and accepted by the Engineer's Representative.

Pay Item No	Description	Unit of Measurement
SP-505	Cleaning and Minor Repair of Existing Structure (Culverts)	Each



SP-507 DISMANTLING OF EXISTING GUARD RAIL

1 DESCRIPTION

The work shall consist of dismantling of existing guard rail at locations specified in drawings or as directed by the Engineer.

2 CONSTRUCTION REQUIREMENT

Foundation concrete of existing guard rail will be dismantled with the help of jack hammer. Care must be taken in dismantling process keeping in view the site safety. Damaged and un-damaged guard rail will be notified to the Engineer's representative at site. Un-damaged guard rail will be used positively on project road.

3 MEASUREMENT

The work of dismantling of guard rail shall be measured in linear meters which are dismantled, complete in all respect to the entire satisfaction of the Engineer representative

4 PAYMENT

Payment shall be made as measured above and shall be full compensation for dismantling of foundation and guard rail, complete the work as prescribed above and accepted by the Engineer's Representative.

Pay Item No	Description	Unit of Measurement
SP-507	Dismantling of existing guard rail	M



601.1

GENERAL

The work shall consist of supply, fabrication and installation of gantry signs at locations as shown on drawings or as directed by the Engineer as per the site requirement, complete in all respect. Gantry signs shall be required to be installed to provide the information about the important places and restriction enforced for type of passing vehicles.

The gantry signs shall be manufactured and installed in accordance with the details shown in the gantry sign's drawings and as directed and approved by the Engineer's representative. The sign panel shall be designed suiting the situation and approved by the Engineer's representative before its manufacture.

Gantry Sign Structure

The contractor shall be responsible to submit the complete methodology and shop drawings prior to the start of any activity and get approved from the Engineer representative. All work in respect of the furnishing, construction of foundation and erection and finishing of gantry sign structure shall conform to the drawings and to the relevant requirements of General Specifications section 401 "Concrete", section 404 "Steel Reinforcement", section 413 "Steel Structures and section 607 "traffic signs and safety devices" with amendments made in SP-504.

601.2

MEASUREMENT AND PAYMENT

The item shall be paid for as under, which price and payment shall be full compensation for all the costs necessary for the proper manufacture, installation and completion of work prescribed in the item/drawing:

Payment Item No.	Description	Unit of Measurement
SP-601a	Gantry Sign Type-I as shown on drawing	Each
SP-601b	Gantry Sign Type-II (Cantilever) as shown on drawing	Each



SS-1 PROVIDING SULPHATE RESISTANT CEMENT IN CONCRETE WORKS**SS.1 DESCRIPTION**

This work shall consist of using sulphate resistant cement instead of ordinary Portland cement in concrete works of specified class, where specified in drawings or as per the site requirement.

SS.2 MATERIALS

The material requirement shall be same as specified in item 401 of NHA general specifications except:

Replace para 2 of heading 401.2 (Material Requirements) Sub heading 401.2.1 (Portland cement) with following:

"Portland cement shall conform to the requirements of the standard specifications for Portland cement, AASHTO Designation M85 (ASTM Designation C150). The type of cement to be used shall be type-V (sulphate resisting cement), where specified on drawing / BOQ or as per the directions of the Engineer".

SS.3 CONSTRUCTION REQUIREMENT

Construction requirement shall be same as specified in item 401 of general specifications.

SS.4 MEASUREMENT

Measurement requirement shall be same as specified in item 401 of NHA general specifications.

SS.5 PAYMENT

The unit price per cubic meter to be paid covered under this provision shall be the difference of unit cost of sulphate resistant cement per cubic meter and ordinary Portland cement per cubic meter.

Item No.	Description	Unit of Measurement
SS-1	Extra over for providing sulphate resistant cement in concrete works of specified class:	
	For Plum Concrete	CM
	For Concrete Class B	CM
	For Lean Concrete	CM
	For Concrete Class A 2	CM
	For Concrete Class A 3	CM



701.1

DESCRIPTION

The Contractor shall provide and maintain survey equipment for the sole use of the Engineer. All surveying equipment shall be new and shall be maintained throughout the Contract period and replaced by the Contractor free of charge in case of damage or loss. The survey equipment shall be supplied to the Engineer within thirty (30) calendar days from the Engineer's Order to Commence the Works.

Upon completion of the Contract, the surveying instruments and equipment shall become the property of the Employer and shall be handed over completely, and in a state of good, condition and working order taking into account fair wear and tear.

The Contractor shall provide adequate number of helpers, along with the equipment, to the Engineer/Engineer's Representative to assist in carrying out the field works.

701.2

EXTENT OF PROVISION AND GENERAL REQUIREMENT

The Contractor shall provide and maintain at his own cost at least the following surveying equipment and any other surveying equipment deemed essential for the Work by the Engineer's Representative for the sole use of the Engineer's Representative:

Sr. No	Description	Quantity
1	Electronic Total Station 1" reading, 6" Accuracy, memory 10,000 points or more, Built-in SD Card Slot & USB Port, programs topographic survey, setting out, curve Guide Light, Keyboard, Automatic Dual Axis Compensator working range $\pm 6'$ distance range reflector less 400 meter with single prism 5000 meter, with Triple Prism 6000 meters, one Balley & Quick Charger in Standard Accessories (Made in Japan or Equivalent).	1 Nos.
2	Software for Data Downloading.	1 No.
3	Single Prism Target Set includes: Prism, range pole graduated 2.6m., tilting mount with Coaxial Target Plate.	4 Nos.
4	Automatic Level, magnification 32X	2 Nos.
5	Levelling Staves with graduations in metric units	12 Nos.
6	Steel measuring tapes 30 m long	4 Nos.
7	Lockable Pocket tapes 5 m.	4 Nos.
8	TRIPOD (Aluminum)	5 Nos.



9	TRIPOD for Prism Pole	4 Nos.
10	Club hammers 2 kg.	4 Nos.
11	Sledge hammers 4 kg.	4 Nos.
12	Traffic Cones	40 Nos.

13	Survey Umbrellas	6 Nos.
14	Aluminum Straight Edges, 4 m long	2 Nos.
15	Aluminum Straight Edges, 5 m long	2 Nos.
16	Spirit Levels, 30cm long	4 Nos.

- *All miscellaneous tools, equipment and materials required in surveying in numbers as determined by the Engineer's Representative.*

All new surveying equipment shall be provided and maintained throughout the Contract period. In case of damage or loss those shall be replaced by the Contractor at his own cost.

The Contractor shall make available two (02) qualified surveyors and transport for checking and incorporation as and when required by the Engineer's Representative.

The survey equipment shall be placed at the disposal of the Engineer's Representative during the Contract period and shall be returned to the Employer on completion of the Contract, complete and in a good state, taking into account fair wear and tear.

The Contractor shall provide adequate supplies of expendable materials i.e. level books, pencils, erasers inks, drawing papers, pegs, nails, flags, brushes and paints etc. as required by the Engineer's Representative.

701.3

PAYMENT

The cost of supplying the equipment shall be paid as re-imbusement against provisional sum substantiated by vouchers from the owner plus twelve (12) percent surcharge to the contractor for administrative and overhead expenses including income tax (7.5%) related to the purchase and delivery of said items.

For running and maintenance, supporting staff, transport, stationery, utilities etc. shall be paid under maintain of Surveyor Instrument.



Payment shall constitute full compensation for all costs of provision and maintenance of equipment, furnishing survey teams, supplies of expendable materials, necessary labor/helpers and all other incidental item(s) for the proper completion of the Work as stated herein above and as directed by the Engineer's Representative:

Item No.	Description	Unit of Measurement
SP-701(a)	Provide Surveying and Allied Instruments.	P.S.
SP-701(b)	Maintain Survey Instruments, provide vehicle, Survey Team & helpers.	Month



SP 702 PROVIDE EQUIP & FURNISH ENGINEER'S OFFICE & ACCOMODATION

702.1 General

The contractor shall provide a Site Office on hiring basis against provisional sum provided in the Bill of Quantities. The Site Office includes the following:

- i) Office accommodation
- ii) Office furnishing and equipment
- iii) Office running and maintenance
- iv) Office supporting staff

702.2 Engineer's Representative Office / Accommodation

The office accommodation as approved and accepted by the Engineer shall be provided on rental basis. The overall size of the Engineer office shall be approximately 500 Sq. meters and residence accommodation of about 2,000 Sq.m having all kind of facilities.

702.3 Furnishing & Equipment

The furniture and equipment as approved and accepted by the Engineer shall be provided by the Contractor on the instructions of the Engineer or Representative of Engineer as per the requirement.

702.4 Running and Maintenance

702.4.1 The contractor shall be responsible for the running and maintenance of office accommodation, residence accommodation, furnishing and equipment etc. bills for all services/utilities to be paid by the contractor.

702.4.2 Office and Drawing Stationery and necessary equipment shall be provided by the contractor on monthly requirement basis as per the requirement or as directed by the Engineer.

702.5 Supporting Staff

The contractor shall provide to the Engineer following supporting staff,

- | | | |
|------|------------|-------------------|
| i) | Naib Qasid | Two |
| ii) | Cook | one and helper 02 |
| iii) | Sweeper | two |
| iv) | Guards | Three |

The appointment of the supporting staff shall be subject to the approval of the Engineer and once assigned shall not be transferred or laid off without prior approval of the Engineer.

In case of power failure and non-availability of power, electric power through generators shall also be provided by the contractor. All rooms shall be provided with standard office lighting of the flours cent type. All rooms shall have doors with locks and keys and supplied Air-conditioning and heating system as per the approval of the Engineer.



The water supply shall be maintained through water supply system of the town or locality boring/installing well with pump or by an elevated or pressure storage tank with a capacity of 2500 gallons.

A telephone shall be installed in Engineer's Office or cell phone may also be provided to facilitate the Engineer. Engineer office will be equipped with air-conditioning unit as per requirement.

702.6

Measurement and Payment

For the hiring of accommodation for site office if approved & allowed by the Engineer, the cost of rent and supplying office furniture and Equipment shall be paid as re-imbusement against provisional sum substantiated by vouchers from the owner plus ten (12) percent surcharge to the contractor for administrative and overhead expenses including income tax (7.5%) related to the purchase and delivery of said items.

For running and maintenance, office supporting staff, drawings, stationery, utilities bills etc. shall be paid under maintain of Engineer's office.

If the contractor does not provide necessary facility, Engineer shall hire the accommodation and arrange necessary supplies of furniture and equipment and employ staff etc. as specified and maintain the office. Expenditures shall be recovered from the IPC's / running bills of the contractor by adding hundred (100) percent overheads.

Pay Item No.	Description	Unit of Measurement
SP-702 a	Provide the Employer's and Engineer's Representative's Office and Residence (on rental basis)	Provisional Sum
SP-702 b	Furnish and Equip. the Employer's & Engineer's Representative Office and Residence	Provisional Sum
SP-702 c	Maintain Employer's and Engineer's Office and Residence	Month



SP 703 PROVIDE, EQUIP AND MAINTAIN LABORATORY FOR THE PROJECT

703.1 Description

The building for the base laboratory shall be hired (minimum 500 Sq.m covered area) and shall be fully equipped, with all necessary furnishing & equipment, utilities, installations and others as directed by the Engineer.

703.2 General Requirements

The furnishing of equipment shall ensure conducting all tests related to construction as per the list provided by the Engineer. In case if any test required for testing of material cannot be performed in the project laboratory, the Engineer may authorize such test to be carried out at the cost of contractor, at any other laboratory. The Contractor shall provide at no cost to the Engineer, technicians, helpers and vehicles deemed necessary by the Engineer, to assist in the operation of the laboratories as required by the Contractor's proposed program of work. Technicians and helpers once assigned to the laboratories may be removed by the Contractor only with the approval of the Engineer and salaries shall be paid by the contractor. The equipment shall be procured within 15 days on the instructions of the Engineer.

The contractor shall maintain the laboratory equipment, apparatus and supplies necessary to permit execution of all standard test required by the specifications. Lists of specific laboratory equipment shall be provided as per the requirement and recommendation to purchase from recognized manufacturers. The Contractor shall submit to the Engineer for his approval at the earliest. The list shall include the manufacturer's name and descriptive literature. Lab Equipment, fixtures and furniture shall remain the property of the Employer after completion of the project.

703.3 Facility of the Material Testing

Material testing equipment as described above shall be provided within minimum period. In case of delay in providing such facility, as an interim arrangement, temporary facilities of testing material shall be provided as agreed by the Engineer. Contractor may be paid for maintenance of temporary laboratory, provided such facilities are acceptable to the Engineer. Contractor shall also be responsible for extra expenses of the Engineer for conduction of test in temporary arrangement.

703.3.1 Supporting Staff

The contractor shall provide to the Engineer following supporting staff

- | | | |
|------|------------|------|
| i) | Naib Qasid | One |
| ii) | Chowkidar | Two |
| iii) | Sweeper | One |
| iv) | Helpers | Four |



The appointment of the supporting staff shall be subject to the approval of the Engineer and once assigned shall not be transferred or laid off without the Engineer approval. Salaries shall be paid by the contractor.

703.4 Running and Maintenance

703.4.1 The contractor shall be responsible for the running and maintenance of Laboratory, furnishing and equipment etc. bills for all services/utilities to be paid by the contractor.

703.4.2 Office and Drawing Stationery and necessary equipment & material shall be provided by the contractor on monthly requirement basis as directed by the Engineer.

703.5 MEASUREMENT AND PAYMENT

703.5.1 Measurement

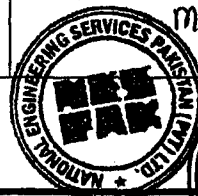
Work under this item shall be measured in two portions.

- i) Hired the building for Material Testing Laboratory and purchase of laboratory equipment shall be paid as reimbursement against provisional sum substantiated by vouchers from the owner plus twelve (12) percent surcharge to the contractor for administrative, overhead expenses including income tax (7.5%) related to the purchase and delivery of said items.
- ii) For running and maintenance and office supporting staff, drawing stationery, Lab. Material/equipment (minor), utilities bills, helpers (04 nos.) etc. shall be paid under maintain base Laboratory. Maintain Laboratory, to be measured for the duration of the contract and paid as per the rate/month.

703.6 Payment

The quantities under this item of work shall be paid at the contract price indicated in the Bill of Quantities which price and payment shall constitute full compensation for all costs of furnishing labor, materials, equipment and incidentals for the proper completion of the work indicated in these specifications and specified on the drawings and Special Provisions (Specification).

Pay Item No.	Description	Unit of Measurement
SP- 703 a	Provide Material Testing Project Laboratory (on rental basis)	Provisional Sum
SP- 703 b	Equip and Furnish Material Testing Project Laboratory	Provisional Sum
SP- 703 c	Maintain Material Testing Project Laboratory including provision of 04 helpers	Month



SP 708

**PROVIDE, RUN AND MAINTAIN TRANSPORT FOR
EMPLOYER/ENGINEER'S REPRESENTATIVE**

708.1 General

The transport for the Employer's / Engineer's Representative and site staff is to be provided under this Contract for which rate item has been provided in the B.O.Q. Contractor shall procure these vehicles under the instruction of the Engineer.

Procurement of Vehicles

The contractor shall procure the vehicles from the local market, get these registered in the name of the Employer and hand over to the Employer's and Engineer's Representative, however transport for OHS Manager shall be hired from local market on rental basis.

Details /Type of vehicles are as under:

- SP-708a : One (01) No vehicles for the Employer's representatives
01 Nos will be Toyota Double Cabin with A/C (4 Wheel drive)
with Hood
- SP-708b : Seven (07) No vehicles for the Engineer's representatives
01 Nos will be Toyota Double Cabin with A/C (4 Wheel drive)
with Hood
02 Nos will be Toyota Corolla 1300 cc with A/C
04 Nos will be Suzuki Bolan (Carry)
- SP-708bi : Two (02) No vehicles for the Employer's representatives
01 No will be Toyota Corolla 1300 cc with A/C
01 No will be Suzuki Bolan (Carry)

Total no of 10 Nos. vehicles shall be covered under this provision, out of which only 01 No Double Cabin and 01 No Suzuki Carry Bolan shall be procured for Engineer Representatives under this provision. 08 vehicles out of 10 vehicles shall be provided by NHA from its vehicles pool for smooth execution of project. Vehicles to be provided by NHA from its own vehicle's pool, type of vehicle may alter as per availability, however equivalent type of vehicle shall be provided.

Vehicle shall be procured as new/ latest model at the time of delivery when instructions to procure these vehicles is given as per approval of the Engineer and 02 Nos vehicles for OHS Manager and support staff shall be hired on rental basis when instructions to hire these vehicles will be given by The Engineer. The new / rental vehicles shall be handed over to Employer / Engineer's Representative for the entire length of project. The Contractor shall be responsible for the cost of running & maintenance of all 10 Nos vehicles whether procured under this provision or provided by NHA from it vehicles pool. Newly procured vehicles shall remain the property of the Employer and shall be handed over to the Employer after completion of work in good working condition. The cost of vehicle shall be like purchase price.



transportation, registration and other dues incurred in this regard. In case new vehicles are not purchased, same numbers of road worthy conditions vehicles shall be hired and its rent cost shall be paid through pay item SP 708a, rental cost shall be approved by the Employer.

In case of delay, failure or default on the part of the Contractor in providing the facilities under these provisions, the Engineer's Representative may arrange the same at the risk and cost of the Contractor or hired the vehicles for project period.

708.2 Running & Maintenance

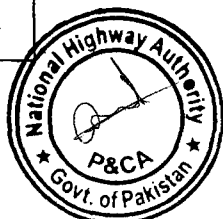
The Contractor shall be responsible for the running and maintenance of these vehicles which includes petrol, diesel, repair works, regular tuning, replacement of tires, registration, comprehensive insurance, annual renewal, lubricants, servicing including providing drivers etc.

708.3 Method of Payment

On the instructions and determination by the Engineer, Contractor shall be paid for the Services under this Clause as follows:-

- i) For the procurement of vehicles, Contractor shall provide the original supporting vouchers/receipts including applicable levies & other taxes paid for procurement of vehicles.
- ii) For running and maintenance of above vehicles including salaries of drivers, the Contractor shall be paid on monthly basis.
- iii) On failure of the contractor to provide and of the services under this clause or even otherwise notwithstanding anything contained in any other clauses of the Contract Documents, the "Engineer" shall have the authority to nominate/sublet to any other contracting agency on recommendation of the Resident Engineer for the supply of services under this clause, the payment for which shall be made through this contract direct to the nominated agency out of Provisional Sum provided in the Contract or hire the good road worthy vehicles and recover the cost with 100% penalty charges from contractor's IPC's.

Item No.	Description	Unit of Measurement
Sp-708b	Provide Engineer's Representative Transport (i) Toyota Double Cabin with A/C (4. wheel drive)	Each
	(ii) Suzuki Bolan (Carry)	Each
SP-708bi	Provide OHS Manager and support staff Transport (On rental basis) (i) Toyota Corrolla 1300 cc with A/C (01 No)	Month
	(ii) Suzuki Carry (01 No)	Month
Sp-708c	Running & Maintenance of Employer's Engineer's Representative's Transport	Month



SP-OHS (Occupational Health and Safety)

The Contractor shall appoint one OHS manager having minimum qualification of Masters in Environmental science or equivalent with international certifications i.e. OSHA or NEBOSH along with four nos support staff having min qualification of graduation in relevant discipline to act full-time as Safety/Risk Assessment/ Accident prevention Officer throughout the duration of project and shall notify the Engineer of such appointment. The OHS manager shall be experienced in all matters relating to health and safety on site and shall be familiar with all relevant safety regulations and legislation. The OHS manager shall have the power to receive instructions from the Engineer on matters relating to the health and safety of personnel on site and the safe conduct of site operations. It will be the responsibility of OHS manager to prepare OHS manual covering all the risks involved in operational activities and will submit to the Engineer for approval. After approval of subject manual, proper monitoring of OHS activities will be done and monthly progress report will be submitted to the Engineer.

If the contractor uses existing roads for the transportation of his materials and equipment for the project or for detour roads, the Contractor shall be responsible for maintaining these existing roads during construction and ensuring all OHS protocols. After the completion of the project, the Contractor shall be responsible for reinstating the existing roads used to its original state ensuring that all mitigation measures are adopted for reinstatement and safe usage. Prior to use the existing roads, the Contractor shall investigate and document the entire length of the existing road condition together with the Engineer's staff including photographs or video.

Responsibilities of OHS Manager:

OHS manager will be contractor representative at site regarding monitoring of OHS works. OHS manager will be responsible for the implementation of health and safety at site and will supervise implementation of the contractor's OHS policies. The OHS manager will also be responsible for health and safety aspects of work sites and shall submit monthly reports to concerned the Engineer representative on the status of implementation of mitigation measures, complaints received and actions taken. The contractor's OHS manager, in coordination with the CSC (construction supervision consultant) shall set-up a grievance redress committee that will address any complaints arising project implementation. The OHS manager shall ensure that all necessary equipment (listed below) and support including but not limited to provision of dedicated vehicle, office space and accessories, safety related tools are provided to the OHS Manager and concerned staff during the currency of the contract. The OHS manager shall conduct necessary trainings for Employer and site staff for developing awareness about OHS. It will also be the responsibility of OHS manager to keep and maintain necessary first aid kit at site in order to cope with emergency situations.



LIST OF NECESSARY EQUIPMENT

SAFETY SHOES	FACE SHIELDS	SAFETY GOGGLES
HARDHATS	DUST AND FUME MASKS	GLOVES (LEATHER)
COVERALL DRESSES	EAR PLUGS	GLOVES (COTTON)
FULL BODY HARNESS	EAR MUFFS	NAVIGATIONAL SIGNAGE
HIGH VISIBILITY VESTS	ROPE (PLASTIC 4MM)	WARNING TAPE RED & WHITE
HIGH VISIBILITY CONES	MANDATORY SIGNAGE	PVC MESH (ORANGE)
TRAFFIC BARRIERS	CAUTIONARY SIGNAGE	PROHIBITORY SIGNAGE
GREEN NET (PVC)		

Payment:

The payment for activities under this item shall be paid at the contract price and monthly rate as per the measurement unit indicated in the Bill of Quantities after certification by the Engineer / Employer and any other concerned stakeholder or authority nominated by the Employer that activities related to the item of OHS have been performed and managed satisfactorily by the Contractor.

SP-OHS	Item Description	Unit
i)	Provide 1 x Qualified OHS Manager having international certifications as per specifications.	Month
ii)	Provide 4 nos support staff as assistant to OHS Manager as per specifications.	Month
iii)	Equip OHS Manager with necessary accessories i.e. stationery, laptop etc for proper monitoring of OHS activities.	LS
iv)	Conduct OHS awareness trainings for Employer and contractor staff at site and conducting courses to visitors and new comers.	Month
v)	Carrying out and submit the OHS manual to the Engineer's representative, monitoring of all site activities as per OHS manual and submitting monthly progress report to the Engineer representative at site.	LS
vi)	Construct and maintain detours i.e. installation of safety signs and other related safety features, preparing diversion plans and submit to the Engineer's representative in accordance with GCC.	LS
vii)	Provide and maintain PPE's at site.	Month
viii)	Provide and maintain first aid kit at site.	Month



NSI-IV**EMPLOYING TRAINEE ENGINEER'S WITH BOARDING, LODGING AND MESSING**

The contractor will employ total 04 nos Trainee Engineers after the approval of the Employer, throughout the duration of project as per the contract and BOQ. Each Trainee Engineer will be given a monthly stipend Rs. 50,000 (minimum) by the contractor. 01 no Trainee Engineer out of total 04 nos shall be hired for NHA (Design-QS) for complete duration of project. The period of training of each trainee will be as per the contract. The Contractor will prepare a comprehensive training program and get it approved from NHA. It will be the contractor's responsibility for the provision of boarding & lodging of each Trainee Engineer or paid separately its cost.

Measurement and Payment

The number of Trainee Engineers shall be counted and paid to contractor as per the contract unit price which includes full compensation for all costs necessary like monthly stipend, boarding, lodging and transport facility.

Item No.	Description	Unit of Measurement
NSI-IV	Employing Trainee Engineer's With Boarding, Lodging And Messing	Month



3906/103/JO H/21/2204
02/07/20



Let-4

**GOVERNMENT OF PAKISTAN
MINISTRY OF COMMUNICATIONS
NATIONAL HIGHWAY AUTHORITY**

**INDUS HIGHWAY (N-55) ADDITIONAL CARRIAGEWAY ROAD PROJECT
(N-55)**

**ROJHAN ~ RAJANPUR SECTION
KM. (213+500 - KM. 265+350) LENGTH : 51.85 KM**

**SPECIAL PROVISIONS
(SPECIFICATIONS)**

JUNE 2020



**NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.
HIGHWAYS & TRANSPORTATION ENGINEERING SECTION,
ATTATURK AVENUE, SECTOR G-5/2, ISLAMABAD**



Lot – 4: Rojhan – Rajanpur Section

From Km 213+500 to Km 265+350 (51.85 KM)

SP 117a FORMATION OF GRANULAR MATERIAL PLATFORM
SP 117b FORMATION OF EMBANKMENT FROM BORROW ROCK MATERIAL

117.1 DESCRIPTION

This work shall consist of the formation of embankment in areas of soft embankment foundation, water ponding areas, high water levels, where compaction of natural ground is unable to achieve the density required in Item 104 with the prescribed general method. This would also include the wet areas which cannot be dried by scarifying or other measures and which exhibit moderate to severe heaving of surface during proof-rolling.

The embankment shall consist of a working platform of the granular material or rock material followed by the embankment fill material at toe of the embankment, all placed in accordance with these specifications and the specifications for other work items involved and in conformity with the lines, grades, sections and dimensions shown on the drawings or as directed by the Engineer's Representative.

117.2 MATERIAL REQUIREMENTS

117.2.1 Granular Material Platform

The material for the granular material platform shall consist of normal or processed granular fill material obtained from borrow excavation or quarry waste. This material shall conform to the following Specifications:

Size	%age of Weight Passing Mesh Sieve AASHTO T-27
37.5 mm	100
10 mm	75 - 100
# 4	60 - 80
# 10	45 - 65
# 40	25 - 40
# 100	0 - 15
# 200	0 - 5

It shall also be checked that selected grading is such that intrusion into the working platform material of subgrade or natural ground surface material is not allowed. For this condition to be met it will be required that the ratio as below shall be checked and followed:

$$\frac{D15 - (\text{Granular Fill Material})}{D85 - (\text{Natural Ground Material})} < 5$$

D85 and D15 mean the practical diameters corresponding to 85% and 15% respectively, passing (by weight) in a grain size analysis.

117.2.2 Rock Fill Material

Rock fill material shall be as per 108.2 (d) and shall consist predominantly of rock (boulder) type material having minimum size greater than quarter cubic meter and shall have the a percentage of wear by the Loss Angeles Abrasion test.



AASHTO T-96) of not more than thirty (30) to qualify for rock material. The type of material to be used shall be finalized as per the site requirement with the approval of The Engineer.

117.3

CONSTRUCTION REQUIREMENTS

117.3.1

Granular Material Platform

Granular platform material shall be used in water logged areas. Prior to laying of granular material platform, water logged area upon which embankment is to be placed, shall be dried and drained or kept drained of all surface water prior to commencing of fill in accordance with the relevant specifications.

Construction of the granular fill layer shall proceed from one end of the soft area by using the granular fill as a ramp for further granular fill transport. The thickness of the granular fill shall be as shown on the project drawings or as directed by the Engineer's Representative and the width shall be that of the embankment or part as directed by the Engineer's Representative. The placement and compaction of the working platform shall be carried out by the use of appropriate light equipment, in layers, if necessary. The placement, spreading and compaction of the granular material platform shall be carried out by using light equipment. The top 15 cm of the platform shall be compacted to at least 90% AASHTO T-180 density.

In those areas of high water levels and salinity with soft subsoils and where embankments are high such as approach fills to structures, special provisions shall be made to measure and determine likely fill settlements which may occur. These preconditions are necessary in order to specify particular construction procedures which may be necessary and to establish the time at which the pavement structure can be placed to avoid cracks and subsidence of these layers. In particular, additional compaction of the fill material and its adequate protection shall be required to prevent and underscore the risk of "collapse" settlement.

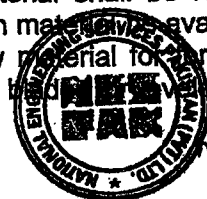
No extra payment under this item shall be made to the Contractor for re-working, re-instatement, replacement of granular material which has become slushy, or replenishing of granular material for whatever reason.

117.3.2

Formation of Embankment with Rock Material

Embankment formed of material consisting predominantly of rock shall be used where water ponding condition exists. Embankment formed of material consisting predominantly of rock fragment of such size that the material cannot be placed in layers of the thickness prescribed without crushing, pulverizing or further breaking down the pieces, such material may be placed in layers not exceeding in thickness than the approximate average size of the rocks except that no layer shall exceed eighty (80) centimeters of loose measurement and compacted by a vibratory roller.

The material shall be carefully placed in layers, so that all large stones will be well distributed and voids completely filled with smaller stones, clean small shells, shale, earth, sand, gravel, to form a solid mass. After placing rock material, surface shall be covered with a layer of fine material having thickness less than twenty (20) centimeters. Such fine material shall be reserved from roadway excavation by the Contractor. Should such material be available but not reserved, Contractor will supply and place borrow material for forming smooth grade without extra payment. Each layer shall be compacted with motor



grader, bulldozer or similar equipment capable of shifting and forming the layer into a neat and orderly condition. Material for each layer should be consolidated with heavy weight vibratory roller until settlement as checked between two consecutive passes of roller is less than one (1) percent of the layer thickness. For evaluation of settlement, survey points should be established and rolling continued until difference of levels as checked after two consecutive passes is less than one (1) percent of the total layer thickness. More over initial rolling of overlaid fine material shall be done without watering to ensure their intrusion in voids of rock layer beneath. Watering shall be done when voids are properly filled.

117.4

MEASUREMENT AND PAYMENT

The quantities measured against this item as shown on the drawings with respect to line and grades shall be paid for at the contract unit price for the pay items listed below and shown in the Bill of Quantities. These prices and payments shall constitute full payment and compensation for providing including hauling, processing, placing at site and compacting as specified, replenishing granular material / rock material for remedying loss of material due to traffic and sinking of granular material platform during construction due to whatever reason, including all equipment, labour, material and all other costs related to the completion of works in all respects.

On first-time completion and approval of granular material platform, only 75% payment for pay item SP 117a and SP 117b shall be made to the Contractor. Balance 25% payment for pay item SP 117a and SP 117b shall be made to the Contractor only when it has been approved by the Engineer's Representative and ready to receive oncoming layer of embankment. In case of using granular material platform and rock fill material, item 101 and item 104 of NHA CSR shall not be entertained.

Pay Item No.	Description	Unit of Measurement
SP-117a	Formation of Granular Material Platform	CM
SP-117b	Formation of Embankment from Borrow Rock Material	CM



SP 118 FILLING OF CENTER MEDIAN WITH SWEET SOIL

118.1 DESCRIPTION

This work shall consist of providing & filling sweet earth in center median, shown on the drawing or as required by the Engineer.

118.2 MATERIAL REQUIREMENTS**118.2.1 Sweet Soil**

Sweet soil shall consist of a natural friable surface soil without admixture of undesirable subsoil, refuse, or foreign materials. It shall be reasonable free from roots, hard clay, coarse gravel, stones larger than 3cm in diameter, noxious weeds, tall grass, or other litter, and shall have been taken from the field where healthy growth of crops, grasses, trees or other vegetation was cultivated.

118.3 CONSTRUCTION REQUIREMENTS**118.3.1 Source of Material**

The contractor shall notify the area to the Engineer at least 7 days prior to his intention of digging in that area and placement of top soil. The operation of digging and then placement shall start only after approval of Engineer and quality of soil to be placed as top soil in the designated areas as shown on the drawings or as directed by the Engineer.

118.3.2 Place of Sweet Top Soil

The top soil shall be evenly spread and to the line and slope as shown on the drawings and compacted to degree of compaction of natural ground a depth of not less than 15 cm or as directed by the Engineer. Spreading shall not be done when the ground topsoil is excessively wet or otherwise in the condition detrimental to the work.

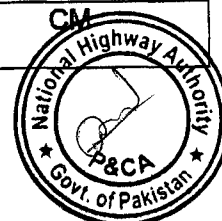
After spreading has been completed, large clods, stones, roots, stumps and other such unwanted material if any shall be raked and removed.

118.4. MEASUREMENT AND PAYMENT

Measurement of sweet top soiling shall be measured by the cubic meter, which has been placed in accordance with these specifications and accepted by the Engineer.

The quantity measured for payment as described above; shall be at contract price for items listed below, and as shown in bill of quantities. The payment shall include full compensation for furnishing all material, labour and equipment including water, transport and all cost necessary to complete the work in accordance with these specifications and accepted by the Engineer.

Pay Item No.	Description	Unit of Measurement
SP-118	Filling of center median with sweet soil	CM



SP-414 SOIL INVESTIGATIONS AT BRIDGE SITES

414.1 SCOPE OF WORK

The Contractor shall carry out confirmatory boring at bridge and Flyover sites at locations marked on the drawings or as directed by the Engineer's Representative.

The purpose of the Work specified herein is to determine the type, nature, arrangement, thickness and texture of the various subsurface strata, the conditions and the Engineering characteristics of the subsurface materials as they exist to the depth and at the locations specified. This is to be accomplished by means of drilling, in-situ testing, collection of disturbed and undisturbed soil and water samples and laboratory testing.

The Contractor shall carry out the specified works under the supervision of the Engineer's Representative.

414.1.1 Plant and Equipment

The Contractor shall keep at-least one rotary drill machine and one percussion winch along with accessories on the site to meet the requirements of the Work. The plant and equipment shall be in good operating condition and capable of performing efficiently the Work as set forth.

414.1.2 Drillers and Supervisory Staff

The Contractor shall provide qualified, experienced, orderly and thoroughly competent persons at all times including geotechnical engineers or engineering geologists who shall conduct and supervise drilling, sampling, logging and in-situ testing at the site. The Contractor shall remove any of his employees from the site that in the opinion of the Engineer does not meet these requirements.

The Contractor shall make his own arrangements for housing of his personnel, security and storage of the equipment and supplies at the site.

414.1.3 Setting up at each Hole

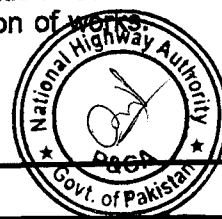
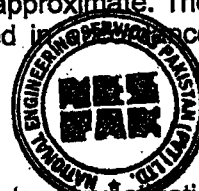
The Contractor shall make all the necessary arrangements for setting-up plant and equipment at each location, carrying out the work specified, preparation and reinstatement of the work areas, improvement to access routes and all other temporary works.

414.1.4 Measurement of Quantities

The quantities shown in the Bill of Quantities are only approximate. The payment shall be made on the basis of actual work performed in accordance with the Specifications.

414.1.5 Submission of Field and Laboratory Data

The Contractor shall supply complete field and laboratory investigation data to the Engineer's Representative within the time set-forth for completion of works.



This data shall include copies of all the approved logs and test records provided during the course of the Contract including any alterations or amendments required by the Engineer's Representative.

414.1.6 Location of Investigation Points

- a) The locations of investigation points shall be established in the field by the Contractor on the basis of the Drawings to be provided later or as directed by the Engineer's Representative. Locating the boreholes accurately in the field shall be the sole responsibility of the Contractor.
- b) It is to be understood that further Drawings may be issued by the Engineer showing the revised locations of investigation points.
- c) All the investigation points shall be located by the Contractor through field survey to an accuracy of 1 m in plan and 0.05 m in ground elevation.

414.2 WORK METHODOLOGY

414.2.1 Investigated Areas

The location of the boreholes will be selected as directed by The Engineer. The Engineer will specify from time to time during the Contract period, the exact location and reference number of all holes. To locate the holes accurately in the field shall however be the Contractor's responsibility.

414.2.2 Casing

A hole shall be cased in any stratum which is friable or not sufficiently strong to stand unsupported, or as and when directed by the Engineer's Representative.

The Contractor shall ensure that casings are of a suitable size and inserted in such a manner as to render them recoverable. The Contract Rates for drilling shall be deemed to include the supply, insertion and recovery of casing including any damage, loss or delay caused by difficulty or failure in recovering casing.

414.2.3 Removal of Casing

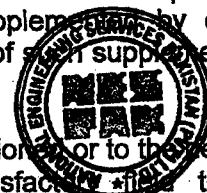
Casing shall neither be removed from any hole nor any filling introduced into it until permission is given by the Engineer. This permission will normally be given as soon as work in the hole is completed and the groundwater level has been measured.

As far as possible the Contractor shall avoid leaving a hole overnight after he has begun to withdraw the casing and before he has finished.

414.2.4 Supplementary Holes

Abandoned holes and / or the holes from which unsatisfactory samples have been obtained and/or in which unsatisfactory field tests have been performed due to the negligence of the Contractor shall be supplemented by other holes adjacent to the original location. The exact location of supplementary holes shall be specified by the Engineer in the field.

The depth where the unacceptable holes were abandoned or to the depths where unsatisfactory samples were obtained or unsatisfactory field testing was performed may be made by any method selected by the Contractor that in the



opinion of the Engineer will permit satisfactory field testing and sampling below those depths at which original hole was abandoned shall be carried out using only the specified method of advancing the hole.

No payment will be made for that portion of the supplementary hole above the depth paid for in the unacceptable hole.

414.2.5 Groundwater Level

The groundwater level in holes shall be determined after completion of the hole or when required by the Engineer, as follows:

Clear water shall be added or the hole shall be bailed-out as necessary to bring the water level to the expected groundwater level as directed by the Engineer and the water level shall be measured and recorded at intervals of 6 hours for a period of twenty four (24) hours thereafter.

414.2.6 Backfilling Holes

Boreholes shall be backfilled with grout as directed by the Engineer.

Grouting for backfilling holes shall consist of a mud formed by mixing one (1) part by weight of bentonite with ten (10) parts of water, to which two parts by weight of cement shall be added after the bentonite and water have been thoroughly mixed. Alternatively, holes may be backfilled with purpose-made pellets of bentonite or bentonite/cement, provided they are of a size which, in the opinion of the Engineer, is compatible with the size of hole. If there is no standing water in the hole, grout may be poured in from the top. If there is standing water in the hole, the grout shall be fed into the bottom of the hole by a tremie pipe, the end of which shall always be below the groundwater junction while grouting is being carried out.

Grout backfill shall be taken up to 30 cm below the original ground level. Any apparent loss of grout due to leakage or consolidation within one week shall be made-up with fresh grout and then the remaining depth of the hole shall be filled with concrete.

414.2.7 Logs

Logs of boreholes shall be provided on an approved specimen. These shall include descriptions of all strata including details of the soil macrofabric (such as frequency, orientation and nature of fissures) and details of samples taken, and an account of all observations and field tests. Logs of boreholes shall include notes on the nature, quantity and colour of the drilling fluid returns. All logs shall be subject to the approval of the Engineer and two draft copies shall be submitted to the Engineer, not more than two days after the hole is backfilled. Soil descriptions shall conform to ASTM designation D 2488 and classified according to ASTM designation D 2487. All depths and thicknesses of topsoil and strata shall be recorded in meters and all reduced levels shall be recorded in meters with reference to Survey of Pakistan datum. Accurate determination of ground levels at all the hole points is the Contractor's responsibility for which no extra payment shall be made.

414.2.8 Contractor's Responsibility for Records



The presence of the Engineer or any of his staff and their keeping separate drilling records shall not relieve the Contractor of any of his responsibilities for keeping records.

414.2.9 Order of Work

The order in which the work is to be accomplished shall be determined and approved in the field by the Engineer.

414.3 DRILLING

414.3.1 Depth of Drilling

Drilling would generally be required up to a minimum of 45 meters depth or at least 5 m below the pile tip level, whichever is more or as directed by the Engineer.

414.3.2 Accuracy of Alignment of Holes

Boreholes will be within 2 degrees of the vertical unless the Engineer's Representative has ordered the drilling of an angled hole in which case the hole angle shall be within 5 degrees of the angle specified.

414.3.3 Drilling Plant

The drilling plant and ancillary equipment to be mobilized at the site should be adequate to advance the boreholes in an efficient manner, to the required depths.

Rotary drilling rigs shall be of the hydraulic feed type equipped with side discharge type fish tail and tricone bits for drilling. Bits and casing shall conform to B.S. 4019; Part I; 1974 or an approved equivalent.

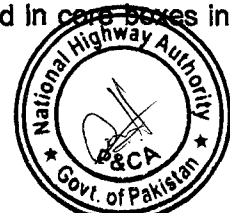
Drilling bits shall be of side discharge type designed to prevent unnecessary disturbance of soil at bottom of the hole by flow of drilling fluid, unless the Engineer directs otherwise.

414.3.4 Drilling Procedure

The method of drilling shall be of any approved standard and accepted method by means of which a hole of specified diameter is extended to the desired depth. The normal method of drilling shall be rotary unless gravelly strata are encountered where percussion may be used.

During drilling the Contractor shall regulate the drilling operation which ensures minimum disturbance in the underlying material in which the in-situ testing and sampling is to be carried out.

In rock, core drilling shall be carried out in such a manner and using such sizes of bits, that the maximum core is recovered. This requires close surveillance of the flushing media, drilling pressures, lengths of runs, use of appropriate core barrels and other factors relevant to the nature of the material drilled. The drill bit shall be withdrawn and core removed as often as may be necessary to secure the maximum possible amount of core. In soft or friable formation, dry drilling techniques may be required using single tube core barrel with tungsten carbide bits as directed by the Engineer. The ~~bits~~ should be placed in core boxes in a proper manner.



414.3.5 Stabilizing of Holes

Drilling mud of suitable consistency shall be used during rotary cum wash boring to stabilize the walls of boreholes by preventing caving-in and to avoid disturbance of the sampling horizons. The drilling mud shall be a mixture of bentonite and water with approved chemical additives being used, if required, to assist in modifying its density and viscosity. The density and viscosity shall be selected considering such factors as hole stability, cutting operation and undisturbed samples recovery.

Where drilling mud is not effective, casing of appropriate size and strength may be used subject to the approval of the Engineer. It will be responsibility of the Contractor to use appropriate means to stabilize the walls of the boreholes.

It shall be ensured that there is no jetting action of the drilling fluid. The minimum amount of drilling fluid necessary to carry away the cuttings shall be used. During drilling the Contractor shall regulate the pressure of the drilling fluid to ensure minimum disturbance to the underlying material in which the in-situ testing and sampling is to be carried out.

414.4 SAMPLING

414.4.1 General

The Contractor shall take disturbed or undisturbed samples from any borehole when ordered to do so by the Engineer. This shall include the provision of all necessary sampling equipment, tubes and containers, crates and boxes, as well as handling and transportation to the approved laboratory or store at site.

414.4.2 Approval of Equipment

No equipment or containers shall be used unless and until approved by the Engineer.

414.4.3 Care of Samples

The Contractor shall be responsible for the safe keeping of samples of all kinds until these have been handed over to the designated laboratory or disposed-of on the Engineer's instruction as the case may be. Any sample lost, damaged or showing signs of deterioration while in the Contractor's care shall be replaced by the Contractor at no expense.

414.4.4 Labeling Samples

All disturbed and undisturbed soil samples and water samples taken from holes shall be clearly labeled. Each label shall include the following information:

- a) Name of Contract
- b) Reference number of the holes
- c) Reference number of sample
- d) Date of sampling
- e) Brief description of the sample (e.g. stiff brown silty clay)
- f) Depth of the top and bottom of the sample below ground level
- g) Number of the sampler tube

Tubes and crates for undisturbed samples shall be labeled "Do not jar or vibrate" and "Haul and transport in a horizontal position".

414.4.5 Disturbed Samples



In all the boreholes, small disturbed samples shall be taken at the top of each stratum, and at intervals as directed by the Engineer. Material from the cutting shoes of open drive undisturbed samples, and from the split spoon sampler used for Standard Penetration Tests, shall also be taken as disturbed samples.

414.4.6 Undisturbed Sampling

Undisturbed sampling from boreholes shall be done by Shelby tube or Pitcher/Denison sampler or as directed by the Engineer. The undisturbed samples should be properly sealed and preserved as directed by the Engineer.

414.4.7 Cores

The cores obtained from boreholes shall be carefully removed from the core barrel and placed in the boxes in the correct sequence, with increasing depth from left to right and top to bottom in the box. Coloured photographs of cores shall be taken at site.

Where the core is contained in an expandable triple tube liner, the ends of the tube shall be sealed and waxed as directed by the Engineer.

Each core run shall be segregated by labeled wooden blocks 25 mm thick and the depth of the bottom of each run shall be marked on the partitions in the core box with paint.

No box shall contain more than 3 meters of core.

414.4.8 Core Samples

Selected cores, preferably not less than 30 cm in length, shall be preserved as core samples. The preservation would consist of clearance of any loose sludge, waxing of cores, packing in wooden boxes using sawdust and labeling before transportation to the testing laboratory.

414.4.9 Water Samples

The Contractor shall take water samples from holes when directed by the Engineer before the addition of water to the hole unless it is unavoidable. If necessary, the hole shall be bailed-out before taking the sample to ensure that any potential contaminant is removed. No fuel or other potential contaminant shall be allowed to enter the hole. The method of sampling shall be as approved by the Engineer. Samples shall only be stored in approved, air tight and scrupulously clean, containers and shall not be less than 1 litre in volume.

414.4.10 Transportation of Samples

All samples shall be shifted to the store at the site, the day they are collected. Samples in tubes shall be kept and transported with the tubes in a horizontal position.

The samples shall be continuously transported to the testing laboratory on conclusion of every borehole and on the instructions of the Engineer. The laboratory for testing shall be approved by the Engineer.

414.5 IN-SITU TESTS

414.5.1 Standard Penetration Tests (SPTs)



When directed by the Engineer the Contractor shall carry out Standard Penetration Tests (SPTs) in boreholes. The penetration resistance 'N' shall be expressed as the number of blows of a 63.5 kg hammer freely dropping 76.2 cm required to force the standard split tube sampler 30.5 cm into the soil.

Standard Penetration Test (SPTs) shall be conducted in the boreholes in accordance with ASTM 1586 generally at 1 meter depth interval or as directed by the Engineer at the site.

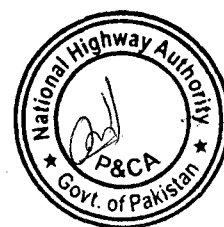
414.6 LABORATORY TESTING

414.6.1 General

The samples shall be tested in a laboratory approved by the Engineer. 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, BSS or AASHTO Standards or as directed by the Engineer. The Contractor shall arrange to carry out the following laboratory tests on the specified samples of the subsoil materials. The samples to be tested and the tests to be carried out for each sample shall be specified by the Engineer.

414.6.2 Type of Tests

Sr. No.	Name of Test	Standard
i.	Grain size analysis	ASTM D 422
ii.	Liquid limit, plastic limit	ASTM D 4318
iii.	Specific gravity	ASTM D 854
iv.	Unit weight of soil	
v.	Unconfined compression (soil)	ASTM D 2166
vi.	Unconfined compression (rock)	ASTM D 2938
vii.	Natural moisture content	ASTM D 2216
viii.	Consolidation	ASTM D 2435
ix.	Direct shear	ASTM D 3080
x.	Triaxial compression test	ASTM D 4767
xi.	Sulphate content of Soil	BS 1377
xii.	Organic matter content of soil	BS 1377
xiii.	Total dissolved salts of soil	BS 1377
xiv.	Chloride content of soil	BS 1377
xv.	Chemical analysis of water BS 1377	
	a) Sulphate content of water	
	b) Total dissolved salts of water	
	c) Chloride content of water	
	d) pH of water	



414.7 RECORDS AND REPORTS

414.7.1 Records

- a) The Contractor shall keep accurate logs and records of all work accomplished under this item. All such records shall be preserved in good condition and order by the Contractor until these 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. Separate logs shall be made for

each borehole. The following information shall be included on the logs or in the records for boreholes:

- i. Borehole number or designation and elevation of top of borehole.
 - ii. Method of drilling holes.
 - iii. Dates and time by depths when hole was performed.
 - iv. Type of drilling fluid used.
 - v. Depths at which samples were recovered or attempts made to collect samples along with designation, thickness and type.
 - vi. Record of SPT on borehole log.
 - vii. The classification or description by depth of the materials samples including a description of condition of compactness or stiffness of soil materials encountered and moisture conditions.
 - viii. Depth of groundwater level if encountered.
 - ix. Depth of bottom of borehole.
- b) The Contractor shall furnish the Engineer with the record as specified above in duplicate, not later than 48 hours after completion of each borehole.
- c) The presence of Engineer or the keeping of separate records by the Engineer shall not relieve the Contractor of the responsibility for the work specified in this Section. Payment shall not be made for any work for which the records have not been furnished by the Contractor.

414.7.2

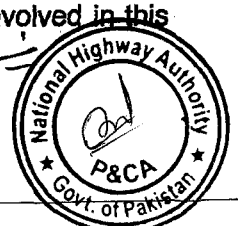
Reports

- a) The results of each borehole and the field tests carried out shall be communicated to the Engineer as follows:
- i. Oral reports as the work proceeds.
 - ii. Three sets of complete data of the work within two (2) days of the date of completion of borehole.
- b) The data shall comprise:
- i. A site plan showing the position of the boreholes and giving their map reference.
 - ii. The borehole logs
 - iii. Complete results of field tests
 - iv. Comments on any point which the Engineer has put-up to the Contractor for inquiry and investigation during the Works.
- c) Complete results of laboratory tests shall be communicated to the Engineer within seven (07) days of the date of completion of borehole.

414.8

MEASUREMENT AND PAYMENT

The measurement and payment for the Work specified in the Contract for drilling of bore holes, collection of disturbed, undisturbed and rock core samples, performing the standard penetration tests, laboratory testing and compilation and submission of results shall be done and paid for as per the pay item given in the BOQ, which payment shall be full compensation for furnishing all labour, material, tools, equipment and incidentals and for performing the work involved in this item as mentioned above in this specification.



Bill No. 4d(i) : Structures (Soil Investigation for Bridges)		
Pay Item No.	Item Description	Unit
SP-414 (a)	6" minimum dia drilling straight rotary/ Percussion including back filling of holes from NSL upto 45m depth or till the rock level which ever is met earlier.	LM
SP-414(b)	Perform SPT at 1 m interval i/c collection, preservation & Transportation of disturbed samples to an approved Laboratory.	No.
SP-414(b-1)	Continuous core drilling in bedrock up to a maximum of 5 m depth below rock strike level, including determination of core recovery/ RQD, preservation of core samples in core boxes, labelling, waxing of selected core samples, photography of rock cores and transportation of core samples to the laboratory. In case core recovery is less than 80% reduce run length to 0.5 m.	LM
SP-414(c)	Collection of undisturbed soil samples from boreholes using Shelby pitcher/denison sampler i/c preservation and transportation of samples to an approved Laboratory.	No.
SP-414(d)	Performance of FDT in test pits through sand replacement method i/c moisture content determination.	No.
SP-414(e)	Excavation of testpits upto 1.5 m depth along road alignment including backfilling of pits to original condition.	M
SP-414(f)	Collection of undisturbed block samples from test pits at appropriate location as directed by the Engineer.	No.
SP-414(f1)	Collection of composite bulk sample (atleast 80 kg for sandy/clayey soils and 120 kg for gravelly soils)	No.
SP-414(g)	Collection & preservation of water samples from bore holes & transportation to an approved Laboratory.	No.
SP-414(h) i.	Laboratory Testing Grain size analysis.	No.
ii.	Hydrometer analysis.	No.
iii.	Atterberg limits	No.
iv.	Specific gravity	No.
v.	Natural moisture content	No.
vi.	Bulk density & Dry density (Soil/rock cores)	No.
vii.	Direct shear test	No.
viii.	Consolidation test (collapse/swell potential)	No.
ix.	Unconfined compression test (Soil/rock cores)	No.
x.	Chemical analysis of soil	No.
xi.	Chemical analysis of water	No.
xii.	Submission of Investigation Report (triplicate)	No.
xiii.	CBR	No.
xvi.	Modified Proctor Test	No.



1. General

Expansion joints will follow Specifications of AASHTO-SS-Division II-section 19 "Bridge deck joints seals"

The Contractor shall submit to the Engineer, complete documentations about the Expansion joints he intends to use for the movements shown on the Drawings, including references of the last 10 years, material Specifications for metal, rubber and bonding between them, fixations, and test certificates from authorized laboratories showing that the proposed joints meet the specifications.

Elsewhere the submittal will be accompanied by samples of at least 0.50m, with its fixations.

The expansion joints shall satisfy the following functional requirements:

1. It shall withstand traffic loads of the highway, and accommodate movements between the deck and abutment or the adjacent deck.
2. It shall have good riding quality and shall not cause any inconvenience to road user.
3. It shall not cause skidding hazard.
4. It shall not generate excessive noise or vibration during the passage of vehicles.
5. Parts liable to wear out shall be easily replaceable.
6. It shall be watertight and will have provision for carrying away water and silt.
7. It shall be easy to inspect and maintain.
8. It shall be resistant in hot and very sunny climate.

2. Construction Requirements

The methodology of placing the expansion joint will be clearly described by the Contractor with a complete set of drawings.

Connection or overlapping between roadway and walkway expansion joints will be clearly shown.

Connection with water proofing of the deck will be detailed.

All necessary provisions in deck reinforcement will be indicated.

Initial gap at the time of placing will be clearly indicated and justified.

The second stage reinforced concrete for fixations, if any, will be Class Y concrete and will be included in pay item SP- 41 m. 1/-



3. Measurement and Payment

3.1 Measurement

The length of computed joints for roadway is measured in linear meter between the faces of the kerbs, plus 150 mm height on each bridge railing.

3.2 Payment

The accepted quantity measured as provided above shall be paid for at the contract unit price respectively for the pay items listed below and shown in the Bill of Quantities which price and payment shall be full compensation for furnishing all materials, labour, equipment, tools and incidentals and any work pertaining to expansion joints and which is not paid for separately, necessary to complete the item.

Pay Item No	Description	Unit of Measurement
SP -417	Manufactured trade mark expansion Joints for roadway, for (25-30) mm movement	M



SP-417a SONIC INTEGRITY TESTS (SIT) ON ALL PILES

1. SONIC INTEGRITY TESTS (SIT)

All working piles shall be subjected to Sonic Integrity Testing (SIT) by a specialist agency engaged by the Contractor. The SIT equipment like FPDS (Foundation Pile Diagnostic System) or equivalent, as approved by the Engineer, shall be used for this purpose. The testing shall be done as per ASTM D5882-07. Before starting this testing, the Contractor shall submit his Method statement for approval of the Engineer.

The contractor shall arrange performance and interpretation of these tests by the specialist agency like TNO Netherlands or equivalent. The interpretation shall include information on pile length, concrete crushing strength, Sonic Pulse Velocity and defects like necking / honeycombing etc. A separate report shall be submitted for SIT carried out on piles by the Contractor.

2. PAYMENT

Item No.	Description	Unit of Measurement
SP-417a	Sonic Integrity Tests (SIT) on all piles	Each



SP- 418 GALVANIZED IRON DRAIN PIPE

418.1 DESCRIPTION

The Contractor shall furnish and place galvanized iron drain pipe (AASHTO Standards M 1118-80 1986) in accordance with the plan of Bridge deck, specifications and/or as ordered by the Engineer.

418.2 MATERIALS

The Galvanized Iron pipe shall conform to the requirements of ASTM Designation A120.

418.3 CONSTRUCTION

Where the pipe is used for bridge drains it shall be cast in the deck and shall be flush with the deck surface.

418.4 MEASUREMENT

The quantity to be paid for under this item will be number of linear meter of pipe incorporated in the work in accordance with the plans and specifications and as directed by the Engineer.

418.5 PAYMENT

The unit price bid per linear meter shall include the cost of furnishing and placement including all labor, materials and equipment necessary to complete the work.

Item No.	Description	Unit of Measurement
SP-418	GI drain pipe Dia 100 mm	M



SP-501 SUPPLYING AND INSTALLATION OF uPVC PIPE 100/150 MM Dia

501.1 DESCRIPTION

The work consists of supplying, installing, and commissioning of all material and services of the complete conduits and pipes as specified herein, shown on the Drawings and/or as directed by the Engineer's Representative.

The Contractor shall get the prior approval of the layout from the Engineer's Representative at Site for exact route, location and position of the conduits and pipes.

501.2 GENERAL

The Contractor shall ensure exact location and route of conduit and pipes in coordination with other services as per site requirements and get the approval of Engineer's representative prior to execution of the work.

501.3 APPLICABLE STANDARD/CODES

Latest editions of the following standards/codes shall be applicable for the materials in scope of this Section:

BS 6099	-	PVC Conduits and Accessories
BS 3595	-	PVC Pipes and Accessories
BS 4346	-	Cement Solvent for Jointing

501.4 MATERIAL

501.4.1 uPVC Conduits and Accessories

The heavy gauge uPVC conduits and accessories conforming to BS6099 shall be generally used. The uPVC conduits and accessories of light gauge may be used on the project with the concurrence of the Engineer's Representative.

The uPVC bends, sockets, elbows, couplings etc. shall conform to the same specifications as for the conduits. The uPVC bends shall have enlarged ends to receive conduit without any reduction in the internal diameter at joint. Manufactured smooth bends shall be used where conduit changes direction. Bending of conduits by heating or otherwise will not be allowed in any situation. The use of sharp bends and tees will not be allowed.

501.4.2 uPVC Pipe and Accessories

The pipe shall be rigid. All pipes shall be minimum Class D (Working pressure - 12 bar), unless otherwise stated on drawings. The buried uPVC pipe should be able to withstand the external load acting upon it by continuous movement of heavy duty vehicles such as trucks



forklift, etc. Where pipe changes direction, manufactured smooth bends shall be used. Bending of pipes by heating or otherwise will be allowed in special cases only. Bending of pipes by heating shall be carried out by first filling the pipe with sand inside and then immediately removing the sand. The use of sharp 90-degree bends and tees will not be allowed. The bends shall conform to same specifications as given for uPVC conduits. For joining of pipe all precautions and procedures recommended by manufacturer shall be followed.

501.5 INSTALLATION

501.5.1 uPVC Pipe

Rigid PVC pipes shall be installed under roads and paved areas, at crossing with other services as shown on the Drawings and/or as directed by the Engineer's Representative. The depth of the pipe shall vary according to the conditions at site, and approval of Engineer's Representative shall be obtained prior to installation. In general the pipes shall be installed underground at the following depths measured from the top of the pipe and or as directed by the Engineer's representative.

Under roads and paved surface	800 mm below the finished surface
When crossing other services	250-mm vertical clearance for the crossing length 500 mm horizontal clearance with CC protective cover

The trench of required dimensions shall be excavated and the bottom of trench cleaned and leveled. A four-inch thick bed of fine sand shall be provided over which the uPVC pipes installed after proper alignment. Where two or more pipes are installed in the same trench the clearance between pipes shall not be less than two inches. After laying of pipe the trench shall be backfilled with clean-screened earth in layer of four inches. Each layer shall be properly compacted. All joints shall be sealed adequately to prevent entry of foreign elements.

For crossing of major services, the uPVC pipes shall installed in trench of size as shown on drawings or as directed by the Engineer and will be covered with concrete class A as per drawings or as directed by the Engineer.

The installation of pipes shall be completed in all respects including its fixing at terminations, before cabling work is started. All sharp edges and burrs shall be removed by using reamer or any approved device. The pipe shall be thoroughly cleaned of dirt and dust from inside. The pipes shall be installed in proper co-ordination with other works.



501.6

MEASUREMENT AND PAYMENT

Measurement

Measurement shall be made for the number of running meters of pipes acceptably supplied and installed by the Contractor.

Payment

Payment shall be made for the total numbers of meters measured, as provided above, at the Contract unit price. The payment shall constitute full compensation for supplying, installing and completion of the laying of the uPVC pipes including jointing materials and accessories and all incidentals for completion of the work.

Pay Item No.	Description	Unit of Measurement
SP-501	Supplying & Installation of uPVC Pipe 100/150mm dia	M



SP-502	RELOCATION OF UNLINED WATER COURSES
& SP-503	RELOCATION OF BRICK LINED WATER COURSES

1 DESCRIPTION

The work shall consist of dismantling and disposal as required of existing brick lined / unlined water course and relocating the same with standard work items and required discharged capacity as approved by the Engineer's Representative for smooth flow of water.

2 MATERIAL REQUIREMENT

Brick Lining

This shall conform to the requirements of Item 410.2 of General Specification.

3 CONSTRUCTION REQUIREMENT

Cross-section for Relocation

This shall be cut and dressed according to specified /required line and grade as directed by the Engineer's Representative, prior to commencement of this work.

Brick lining shall conform to the requirements of Item no 410.3 of General Specification.

4 MEASUREMENT

The work of relocation of (Unlined) water course which is completed as per line, grade and cross-section according to discharge capacity, accepted by the Engineer shall be measured in square meters.

The work of brick lining on cement mortar for lined water course, which is completed according to the required thickness and grade, shall be measured by superficial area accepted by the Engineer's Representative. The unit of measurement shall be square meters.



5 PAYMENT

Payment shall be made as measured above and shall be full compensation for relocation of the water courses, disposal of surplus /dismantled/unsuitable material, provision of all labour, materials, equipment, tools and all others necessary to complete the work as prescribed above and accepted by the Engineer's Representative.

Pay Item No	Description	Unit of Measurement
SP-502	Relocation of Unlined Water Course	SM
SP-503	Relocation of Brick Lined Watercourse	SM



SP-504 DELINEATORS/ANGLE REFLECTOR

504.1 DESCRIPTION

The work shall consist of supply and installation of delineators /angle reflectors at locations detailed on drawings or as directed by the Engineer, complete in all respect. The work will be executed as per item 607 "Traffic Road Signs and Safety Devices of general specifications with amendments as follows:

In item 607 "Traffic Road Signs and Safety Devices" of general specifications, add in line 1, after "furnishing" insert ",", delete "and" and after "traffic signs" insert "and delineators"

Add at the end of para:

Unless otherwise shown on the Drawings, all signs shall be lettered in both Urdu and English. In case of any discrepancy between NTRC requirements and General Specifications, the requirements of NTRC shall govern.

504.2 MATERIAL REQUIREMENTS

In item 607 "Traffic Road Signs and Safety Devices" of general specifications, add new para under head "Material Requirement" as follows:

Materials shall be of new stock unless otherwise shown on the Drawings or ordered by the Engineer's Representative and shall conform to the item 607 of general specifications with amendments as mentioned below:

504.2.2 Rubber Washer

In 607.2.6, Add at the end "Thickness of rubber washer is as given below:

On top	3 mm
On Bottom	2 mm

504.2.3 Concrete Foundation Blocks

In 607.2.9, in line 1, delete "Class A" and replace with "Class A1".

In line 3, after "mm", add "or as shown on the drawings or as directed by the Engineer."

504.2.4 Road Posts and Hazard Markers

In 607.2.10, in line 6, delete "with standing" and replace with "withstanding".



504.2.4 Excavation and Backfilling

In 607.3.1, Add at the end of para 3:

Concrete shall be placed against the undisturbed excavated faces, except that the top fifteen (15) centimeters of each footing shall be formed. Forming of the entire footing will not be permitted unless approved by the Engineer. Concrete shall be thoroughly rodded and spaded so as to eliminate all voids. Tops of footings shall be finished with a wood float and all exposed edges shall be rounded with an edger.

Backfill shall be thoroughly compacted by mechanical tampers, and care taken to prevent damage to the finished concrete. Backfill shall be brought up level with the finished ground line. Pipe post bases and/or posts set in concrete shall be firmly supported, plumb, vertical and at the proper elevation.

In case precast concrete foundations are used, these shall be of the concrete class 'A1' and of the sizes as shown on the drawings.

504.2.5 Erection of Posts

In 607.3.2, In line 3, delete "the" written in between "to" and "prevent".

504.2.6 Installations of Safety Devices

In 607.3.5, In line 11, delete "a" written in between "for" and "prohibiting".

504.2.7 Sign Faces

In item 607.3.6, following amendments be made as mentioned below:

a) Design

In serial No. 3, line 1, delete "italics" and replace with "Smalls".

In serial No. 4, delete "21 cm" and replace with "35 cm".

In serial No. 5, delete "17 cm" and replace with "25 cm".

In serial No. 5, delete "italics" and replace with "Small".

In serial No. 6, delete "3.5 cm" and replace with "10 cm".

In serial No. 10, delete "4 cm" and replace with "2.3 cm".

In serial No. 11, delete "23 cm" and replace with "35 cm".

In serial No. 13, delete "Size of letter for km. Height" and replace with "Height of letter for km".



504.2.8 Storage of Signs

After 607.3.7, add the following:

504.2.9 Painting

The rear sign face of all signs shall be painted with two (2) coats priming paint pigmented with chromates of chromes (excluding lead chromes) plus two (2) coats of weather-resisting dull silver gray paint. Where connection of large aluminum sheet signs to a steel stiffening frame is required, the studs or screws, bolts and washers shall be painted to properly match the color of the surrounding material.

All painting shall conform to the requirements of Section 413 of General Specifications.

504.2.10 Placement and Orientation

The Engineer will approve and mark the longitudinal location of each sign on the working drawings submitted by the Contractor.

The sign shall be laterally positioned from the shoulder or curb as shown on the approved drawings or directed by the Engineer.

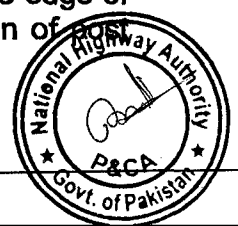
The Contractor shall stake the location of each sign support and shall get its approval from the Engineer prior to carrying out excavation for foundations. The Engineer may order change in location due to site constraints. No separate payment shall be made to the Contractor on account of such change if the change is made before fixing of the sign support in concrete block.

The Contractor shall be responsible for the proper elevation, off-set, level and orientation of all signs he erects. He shall exercise due care on the preservation of stakes for his and the Engineer's use. If any stakes are lost, damaged, displaced, or removed, the Contractor shall have them reset at his own expense.

Unless otherwise shown on the drawings all signs shall be erected so that the edge and face of the sign are truly vertical and face is at an angle of ninety three (93) degrees to the centerline; that is, facing slightly away from the centerline of the lane which the sign serves. Where lanes divide or are on sharp curves, the Contractor shall orient sign faces as indicated on the Drawings or by the Engineer so that they will be most effective both during day and night and so as to avoid specular reflection. All sign supports shall be plumbed.

504.2.11 Sign Posts

Lengths of posts shown on the drawings for signs are for bidding purposes only. When progress of the work permits, the Engineer will authorize the location of each sign, with the station and offset distance from the edge of pavement. The Contractor shall be responsible for determination of



lengths to provide the vertical clearance shown on the drawings. Field cutting of posts shall be performed by sawing.

"Sign Post Support Assemblies" shall be fabricated as detailed on the drawings. Test specimens for pipe shall be taken at least fifteen (15) centimeters from one (1) end of the pipe, instead of at the ends as specified in ASTM A 53, Grade B. When Galvanizing is specified assemblies shall be hot-dip galvanized after fabrication. All welds shall be mechanically cleaned before Galvanizing. Galvanized materials on which the Galvanizing has been damaged in transporting, handling, or erection will be rejected or may, with the approval of the Engineer, be repaired in the field by the zinc alloy stick method. Required field welds and adjacent areas on which the Galvanizing has been damaged shall be galvanized by this same method. The zinc alloy stick shall be cast from zinc, tin, and lead in combination with fluxing ingredients. The compound shall be completely liquid at a temperature not lower than two hundred and forty six (246) degrees C. The area to be re-galvanized shall be thoroughly cleaned, including the removal of slag on welds. The surface shall be heated with an oxyacetylene torch to approximately three hundred and fifteen (315) degrees C, and the alloy stick rubbed over the surface to fix a deposit. While the alloy is still liquid, a clean wire brush shall be used to smooth the deposit evenly over the entire area being re-galvanized. If a heavy deposit or build-up is required to match the original coating, more alloys shall be added immediately to the initial bond deposit and spread with a paddle or brush until the required thickness is obtained. Edges of drilled holes shall be coated with commercially available zinc-rich paint. Shop drawings will not be required for pipe posts.

The Contractor shall furnish to the Engineer, fabricators' certifications in triplicate certifying that the material supplied conforms to all of the requirements specified.

504.2.12 Fastening Signs to Sign Posts

Signs shall be fastened to sign supports in accordance with the requirements of the drawings, the recommendations of the sign manufacturer and to the satisfaction of the Engineer.

After installation of signs on their supports all bolt heads, screw heads, and washers which are exposed on the face of the sign shall be painted. The color of the paint used shall be as nearly as practical the same as the color of the background or message area at the point where the bolt, screw, or washer is exposed.

Where steel signs are mounted with aluminum hardware or on steel posts, approved asphalt, nylon, or neoprene insulation shall be installed at all points where dissimilar metals might come in contact.

504.3 Erection of Delineators and Marker Posts

Delineators shall be erected at locations shown on the drawings and at heights and elevations such that the Delineator reflectors will be at the indicated height.



above the ground surfaces. Unless otherwise noted in the Drawings or authorized by the Engineer's Representative, holes for posts shall be of the depth and size shown on the Drawings. Posts shall be set plumb and will be set to lines and grades as specified on the drawings. The cost of all excavation and concrete will be considered subsidiary to the bid item (s) for Delineators. Chevron shall also be installed on same pattern except using high density sheet for good reflection.

When noted on the Drawings or authorized by the Engineer's Representative, the posts shall be erected by driving, either by hand or with approved mechanical devices. The method of driving shall not substantially alter the cross-sectional dimensions of the posts or materially damage the coating. Battered tops will not be permitted. Posts which, in the opinion of the Engineer's Representative, are bent or otherwise damaged during or after erection shall be removed from the site and replaced at the Contractor's expense. After driving, the portion of the posts above ground shall be plumb and the posts shall be firm in the ground.

Reflectors shall be attached to the posts as indicated on the drawings or as directed by the Engineer or according to the manufacturer's specifications.

504.4

PAYMENT

Pay Item No.	Description	Unit of Measurement
SP-504	Delineators / Angle Reflector	Each



SP-505 CLEANING AND MINOR REPAIR OF EXISTING STRUCTURE (CULVERTS)

1 DESCRIPTION

The work shall consist of cleaning of existing culverts from all type of dirt, clearing the complete water way and minor repair i.e. minor inlet & outlet repairs, covering of steel reinforcement with cement concrete (class A) as per drawings or as directed by the Engineer's Representative for smooth flow of water.

2 CONSTRUCTION REQUIREMENT

All the culverts need to be cleaned and required minor repair will be verified by contractor at site as per drawings or as per the directions of the Engineer's representative. Cracks shall be marked and repaired with cement sand slurry of ratio (1:3) and will be plastered.

3 MEASUREMENT

The work of cleaning and repair of culverts which is completed as per drawing and site requirement shall be measured in number of culverts which are cleaned and repaired, complete in all respect to the entire satisfaction of the Engineer representative.

4 PAYMENT

Payment shall be made as measured above and shall be full compensation for cleaning of choked culverts, minor repair and complete the work as prescribed above and accepted by the Engineer's Representative.

Pay Item No	Description	Unit of Measurement
SP-505	Cleaning and Minor Repair of Existing Structure (Culverts)	Each



SP-507 DISMANTLING OF EXISTING GUARD RAIL

1 DESCRIPTION

The work shall consist of dismantling of existing guard rail at locations specified in drawings or as directed by the Engineer.

2 CONSTRUCTION REQUIREMENT

Foundation concrete of existing guard rail will be dismantled with the help of jack hammer. Care must be taken in dismantling process keeping in view the site safety. Damaged and un-damaged guard rail will be notified to the Engineer's representative at site. Un-damaged guard rail will be used positively on project road.

3 MEASUREMENT

The work of dismantling of guard rail shall be measured in linear meters which are dismantled, complete in all respect to the entire satisfaction of the Engineer representative

4 PAYMENT

Payment shall be made as measured above and shall be full compensation for dismantling of foundation and guard rail, complete the work as prescribed above and accepted by the Engineer's Representative.

Pay Item No	Description	Unit of Measurement
SP-507	Dismantling of existing guard rail	M



SP-601 GANTRY SIGNS

601.1 GENERAL

The work shall consist of supply, fabrication and installation of gantry signs at locations as shown on drawings or as directed by the Engineer as per the site requirement, complete in all respect. Gantry signs shall be required to be installed to provide the information about the important places and restriction enforced for type of passing vehicles.

The gantry signs shall be manufactured and installed in accordance with the details shown in the gantry sign's drawings and as directed and approved by the Engineer's representative. The sign panel shall be designed suiting the situation and approved by the Engineer's representative before its manufacture.

Gantry Sign Structure

The contractor shall be responsible to submit the complete methodology and shop drawings prior to the start of any activity and get approved from the Engineer representative. All work in respect of the furnishing, construction of foundation and erection and finishing of gantry sign structure shall conform to the drawings and to the relevant requirements of General Specifications section 401 "Concrete", section 404 "Steel Reinforcement", section 413 "Steel Structures and section 607 "traffic signs and safety devices" with amendments made in SP-504.

601.2 MEASUREMENT AND PAYMENT

The item shall be paid for as under, which price and payment shall be full compensation for all the costs necessary for the proper manufacture, installation and completion of work prescribed in the item/drawing:

Payment Item No.	Description	Unit of Measurement
SP-601a	Gantry Sign Type-I as shown on drawing	Each
SP-601b	Gantry Sign Type-II (Cantilever) as shown on drawing	Each



SS-1 PROVIDING SULPHATE RESISTANT CEMENT IN CONCRETE WORKS

SS.1 DESCRIPTION

This work shall consist of using sulphate resistant cement instead of ordinary Portland cement in concrete works of specified class, where specified in drawings or as per the site requirement.

SS.2 MATERIALS

The material requirement shall be same as specified in item 401 of NHA general specifications except:

Replace para 2 of heading 401.2 (Material Requirements) Sub heading 401.2.1 (Portland cement) with following:

"Portland cement shall conform to the requirements of the standard specifications for Portland cement, AASHTO Designation M85 (ASTM Designation C150). The type of cement to be used shall be type-V (sulphate resisting cement), where specified on drawing / BOQ or as per the directions of the Engineer".

SS.3 CONSTRUCTION REQUIREMENT

Construction requirement shall be same as specified in item 401 of general specifications.

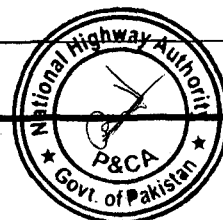
SS.4 MEASUREMENT

Measurement requirement shall be same as specified in item 401 of NHA general specifications.

SS.5 PAYMENT

The unit price per cubic meter to be paid covered under this provision shall be the difference of unit cost of sulphate resistant cement per cubic meter and ordinary Portland cement per cubic meter.

Item No.	Description	Unit of Measurement
SS-1	Extra over for providing sulphate resistant cement in concrete works of specified class:	
	For Plum Concrete	CM
	For Concrete Class B	CM
	For Lean Concrete	CM
	For Concrete Class A 2	CM
	For Concrete Class A 3	CM



SP 701 PROVISIONS OF SURVEY TEAMS AND INSTRUMENTS**701.1 DESCRIPTION**

The Contractor shall provide and maintain survey equipment for the sole use of the Engineer. All surveying equipment shall be new and shall be maintained throughout the Contract period and replaced by the Contractor free of charge in case of damage or loss. The survey equipment shall be supplied to the Engineer within thirty (30) calendar days from the Engineer's Order to Commence the Works.

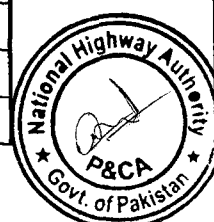
Upon completion of the Contract, the surveying instruments and equipment shall become the property of the Employer and shall be handed over completely, and in a state of good, condition and working order taking into account fair wear and tear.

The Contractor shall provide adequate number of helpers, along with the equipment, to the Engineer/Engineer's Representative to assist in carrying out the field works.

701.2 EXTENT OF PROVISION AND GENERAL REQUIREMENT

The Contractor shall provide and maintain at his own cost at least the following surveying equipment and any other surveying equipment deemed essential for the Work by the Engineer's Representative for the sole use of the Engineer's Representative:

Sr. No	Description	Quantity
1	Electronic Total Station 1" reading, 6" Accuracy, memory 10,000 points or more, Built-in SD Card Slot & USB Port, programs topographic survey, setting out, curve Guide Light, Keyboard, Automatic Dual Axis Compensator working range $\pm 6'$ distance range reflector less 400 meter with single prism 5000 meter, with Triple Prism 6000 meters, one Balley & Quick Charger in Standard Accessories (Made in Japan or Equivalent).	1 Nos.
2	Software for Data Downloading.	1 No.
3	Single Prism Target Set includes: Prism, range pole graduated 2.6m., tilting mount with Coaxial Target Plate.	4 Nos.
4	Automatic Level, magnification 32X	2 Nos.
5	Levelling Staves with graduations in metric units	12 Nos.
6	Steel measuring tapes 30 m long	4 Nos.
7	Lockable Pocket tapes 5 m.	4 Nos.
8	TRIPOD (Aluminum)	5 Nos.



9	TRIPOD for Prism Pole	4 Nos.
10	Club hammers 2 kg.	4 Nos.
11	Sledge hammers 4 kg.	4 Nos.
12	Traffic Cones	40 Nos.

13	Survey Umbrellas	6 Nos.
14	Aluminum Straight Edges, 4 m long	2 Nos.
15	Aluminum Straight Edges, 5 m long	2 Nos.
16	Spirit Levels, 30cm long	4 Nos.

- All miscellaneous tools, equipment and materials required in surveying in numbers as determined by the Engineer's Representative.

All new surveying equipment shall be provided and maintained throughout the Contract period. In case of damage or loss those shall be replaced by the Contractor at his own cost.

The Contractor shall make available two (02) qualified surveyors and transport for checking and incorporation as and when required by the Engineer's Representative.

The survey equipment shall be placed at the disposal of the Engineer's Representative during the Contract period and shall be returned to the Employer on completion of the Contract, complete and in a good state, taking into account fair wear and tear.

The Contractor shall provide adequate supplies of expendable materials i.e. level books, pencils, erasers inks, drawing papers, pegs, nails, flags, brushes and paints etc. as required by the Engineer's Representative.

701.3

PAYMENT

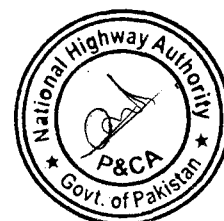
The cost of supplying the equipment shall be paid as re-imbursement against provisional sum substantiated by vouchers from the owner plus twelve (12) percent surcharge to the contractor for administrative and overhead expenses including income tax (7.5%) related to the purchase and delivery of said items.

For running and maintenance, supporting staff, transport, stationery, utilities etc. shall be paid under maintain of Surveyor Instrument.



Payment shall constitute full compensation for all costs of provision and maintenance of equipment, furnishing survey teams, supplies of expendable materials, necessary labor/helpers and all other incidental item(s) for the proper completion of the Work as stated herein above and as directed by the Engineer's Representative:

Item No.	Description	Unit of Measurement
SP-701(a)	Provide Surveying and Allied Instruments.	P.S.
SP-701(b)	Maintain Survey Instruments, provide vehicle, Survey Team & helpers.	Month



SP 702 PROVIDE EQUIP & FURNISH ENGINEER'S OFFICE & ACCOMODATION

702.1 General

The contractor shall provide a Site Office on hiring basis against provisional sum provided in the Bill of Quantities. The Site Office includes the following:

- i) Office accommodation
- ii) Office furnishing and equipment
- iii) Office running and maintenance
- iv) Office supporting staff

702.2 Engineer's Representative Office / Accommodation

The office accommodation as approved and accepted by the Engineer shall be provided on rental basis. The overall size of the Engineer office shall be approximately 500 Sq. meters and residence accommodation of about 2,000 Sq.m having all kind of facilities.

702.3 Furnishing & Equipment

The furniture and equipment as approved and accepted by the Engineer shall be provided by the Contractor on the instructions of the Engineer or Representative of Engineer as per the requirement.

702.4 Running and Maintenance

702.4.1 The contractor shall be responsible for the running and maintenance of office accommodation, residence accommodation, furnishing and equipment etc. bills for all services/utilities to be paid by the contractor.

702.4.2 Office and Drawing Stationery and necessary equipment shall be provided by the contractor on monthly requirement basis as per the requirement or as directed by the Engineer.

702.5 Supporting Staff

The contractor shall provide to the Engineer following supporting staff ^{m.l}

- | | | |
|------|------------|-------------------|
| i) | Naib Qasid | Two |
| ii) | Cook | one and helper 02 |
| iii) | Sweeper | two |
| iv) | Guards | Three |

The appointment of the supporting staff shall be subject to the approval of the Engineer and once assigned shall not be transferred or laid off without prior approval of the Engineer.

In case of power failure and non-availability of power, electric power through generators shall also be provided by the contractor. All rooms shall be provided with standard office lighting of the fluorescent type. All rooms shall have doors with locks and keys and supplied Air-conditioning and heating system as per the approval of the Engineer.



The water supply shall be maintained through water supply system of the town or locality boring/installing well with pump or by an elevated or pressure storage tank with a capacity of 2500 gallons.

A telephone shall be installed in Engineer's Office or cell phone may also be provided to facilitate the Engineer. Engineer office will be equipped with air-conditioning unit as per requirement.

702.6

Measurement and Payment

For the hiring of accommodation for site office if approved & allowed by the Engineer, the cost of rent and supplying office furniture and Equipment shall be paid as re-imbursement against provisional sum substantiated by vouchers from the owner plus ten (12) percent surcharge to the contractor for administrative and overhead expenses including income tax (7.5%) related to the purchase and delivery of said items.

For running and maintenance, office supporting staff, drawings, stationery, utilities bills etc. shall be paid under maintain of Engineer's office.

If the contractor does not provide necessary facility, Engineer shall hire the accommodation and arrange necessary supplies of furniture and equipment and employ staff etc. as specified and maintain the office. Expenditures shall be recovered from the IPC's / running bills of the contractor by adding hundred (100) percent overheads.

Pay Item No.	Description	Unit of Measurement
SP-702 a	Provide the Employer's and Engineer's Representative's Office and Residence (on rental basis)	Provisional Sum
SP-702 b	Furnish and Equip. the Employer's & Engineer's Representative Office and Residence	Provisional Sum
SP-702 c	Maintain Employer's and Engineer's Office and Residence	Month



SP 703 PROVIDE, EQUIP AND MAINTAIN LABORATORY FOR THE PROJECT

703.1 Description

The building for the base laboratory shall be hired (minimum 500 Sq.m covered area) and shall be fully equipped, with all necessary furnishing & equipment, utilities, installations and others as directed by the Engineer.

703.2 General Requirements

The furnishing of equipment shall ensure conducting all tests related to construction as per the list provided by the Engineer. In case if any test required for testing of material cannot be performed in the project laboratory, the Engineer may authorize such test to be carried out at the cost of contractor, at any other laboratory. The Contractor shall provide at no cost to the Engineer, technicians, helpers and vehicles deemed necessary by the Engineer, to assist in the operation of the laboratories as required by the Contractor's proposed program of work. Technicians and helpers once assigned to the laboratories may be removed by the Contractor only with the approval of the Engineer and salaries shall be paid by the contractor. The equipment shall be procured within 15 days on the instructions of the Engineer.

The contractor shall maintain the laboratory equipment, apparatus and supplies necessary to permit execution of all standard test required by the specifications. Lists of specific laboratory equipment shall be provided as per the requirement and recommendation to purchase from recognized manufacturers. The Contractor shall submit to the Engineer for his approval at the earliest. The list shall include the manufacturer's name and descriptive literature. Lab Equipment, fixtures and furniture shall remain the property of the Employer after completion of the project.

703.3 Facility of the Material Testing

Material testing equipment as described above shall be provided within minimum period. In case of delay in providing such facility, as an interim arrangement, temporary facilities of testing material shall be provided as agreed by the Engineer. Contractor may be paid for maintenance of temporary laboratory, provided such facilities are acceptable to the Engineer. Contractor shall also be responsible for extra expenses of the Engineer for conduction of test in temporary arrangement.

703.3.1 Supporting Staff

The contractor shall provide to the Engineer following supporting staff.

- | | | |
|------|------------|------|
| i) | Naib Qasid | One |
| ii) | Chowkidar | Two |
| iii) | Sweeper | One |
| iv) | Helpers | Four |



The appointment of the supporting staff shall be subject to the approval of the Engineer and once assigned shall not be transferred or laid off without the Engineer approval. Salaries shall be paid by the contractor.

703.4 Running and Maintenance

703.4.1 The contractor shall be responsible for the running and maintenance of Laboratory, furnishing and equipment etc. bills for all services/utilities to be paid by the contractor.

703.4.2 Office and Drawing Stationery and necessary equipment & material shall be provided by the contractor on monthly requirement basis as directed by the Engineer.

703.5 MEASUREMENT AND PAYMENT

703.5.1 Measurement

Work under this item shall be measured in two portions.

- i) Hired the building for Material Testing Laboratory and purchase of laboratory equipment shall be paid as reimbursement against provisional sum substantiated by vouchers from the owner plus twelve (12) percent surcharge to the contractor for administrative, overhead expenses including income tax (7.5%) related to the purchase and delivery of said items.
- ii) For running and maintenance and office supporting staff, drawing stationery, Lab. Material/equipment (minor), utilities bills, helpers (04 nos.) etc. shall be paid under maintain base Laboratory. Maintain Laboratory, to be measured for the duration of the contract and paid as per the rate/month.

703.6 Payment

The quantities under this item of work shall be paid at the contract price indicated in the Bill of Quantities which price and payment shall constitute full compensation for all costs of furnishing labor, materials, equipment and incidentals for the proper completion of the work indicated in these specifications and specified on the drawings and Special Provisions (Specification).

Pay Item No.	Description	Unit of Measurement
SP- 703 a	Provide Material Testing Project Laboratory (on rental basis)	Provisional Sum
SP- 703 b	Equip and Furnish Material Testing Project Laboratory	Provisional Sum
SP- 703 c	Maintain Material Testing Project Laboratory including provision of 04 helpers	Month



**PROVIDE, RUN AND MAINTAIN TRANSPORT FOR
EMPLOYER/ENGINEER'S REPRESENTATIVE****708.1 General**

The transport for the Employer's / Engineer's Representative and site staff is to be provided under this Contract for which rate item has been provided in the B.O.Q. Contractor shall procure these vehicles under the instruction of the Engineer.

Procurement of Vehicles

The contractor shall procure the vehicles from the local market, get these registered in the name of the Employer and hand over to the Employer's and Engineer's Representative, however transport for OHS Manager shall be hired from local market on rental basis.

Details /Type of vehicles are as under:

- SP-708a : One (01) No vehicles for the Employer's representatives
01 Nos will be Toyota Double Cabin with A/C (4 Wheel drive)
with Hood
- SP-708b : Seven (07) No vehicles for the Engineer's representatives
01 Nos will be Toyota Double Cabin with A/C (4 Wheel drive)
with Hood
02 Nos will be Toyota Corolla 1300 cc with A/C
04 Nos will be Suzuki Bolan (Carry)
- SP-708bi : Two (02) No vehicles for the Employer's representatives
01 No will be Toyota Corolla 1300 cc with A/C
01 No will be Suzuki Bolan (Carry)

Total no of 10 Nos. vehicles shall be covered under this provision, out of which only 01 No Suzuki Carry Bolan shall be procured for Engineer Representatives under this provision. 09 vehicles out of 10 vehicles shall be provided by NHA from its vehicles pool for smooth execution of project. Vehicles to be provided by NHA from its own vehicle's pool, type of vehicle may alter as per availability, however equivalent type of vehicle shall be provided.

Vehicle shall be procured as new/ latest model at the time of delivery when instructions to procure these vehicles is given as per approval of the Engineer and 02 Nos vehicles for OHS Manager and support staff shall be hired on rental basis when instructions to hire these vehicles will be given by The Engineer. The new / rental vehicles shall be handed over to Employer / Engineer's Representative for the entire length of project. The Contractor shall be responsible for the cost of running & maintenance of all 10 Nos vehicles whether procured under this provision or provided by NHA from its vehicles pool. Newly procured vehicle shall remain the property of the Employer and shall be handed over to the Employer after completion of the work in good working condition. The cost of vehicle shall be included in all like purchases.



transportation, registration and other dues incurred in this regard. In case new vehicles are not purchased, same numbers of road worthy conditions vehicles shall be hired and its rent cost shall be paid through pay item SP 708a, rental cost shall be approved by the Employer.

In case of delay, failure or default on the part of the Contractor in providing the facilities under these provisions, the Engineer's Representative may arrange the same at the risk and cost of the Contractor or hired the vehicles for project period.

708.2 Running & Maintenance

The Contractor shall be responsible for the running and maintenance of these vehicles which includes petrol, diesel, repair works, regular tuning, replacement of tires, registration, comprehensive insurance, annual renewal, lubricants, servicing including providing drivers etc.

708.3 Method of Payment

On the instructions and determination by the Engineer, Contractor shall be paid for the Services under this Clause as follows:-

- i) For the procurement of vehicles, Contractor shall provide the original supporting vouchers/receipts including applicable levies & other taxes paid for procurement of vehicles.
- ii) For running and maintenance of above vehicles including salaries of drivers, the Contractor shall be paid on monthly basis.
- iii) On failure of the contractor to provide and of the services under this clause or even otherwise notwithstanding anything contained in any other clauses of the Contract Documents, the "Engineer" shall have the authority to nominate/sublet to any other contracting agency on recommendation of the Resident Engineer for the supply of services under this clause, the payment for which shall be made through this contract direct to the nominated agency out of Provisional Sum provided in the Contract or hire the good road worthy vehicles and recover the cost with 100% penalty charges from contractor's IPC's.

Item No.	Description	Unit of Measurement
Sp-708b	Provide Engineer's Representative Transport (I) Suzuki Bolan (Carry)	Each
SP-708bi	Provide OHS Manager and support staff Transport (On rental basis) (I) Toyota Corolla 1300 cc with A/C (01 No)	Month
	(II) Suzuki Carry (01 No)	Month
Sp-708c	Running & Maintenance of Employer's / Engineer's Representative's Transport	Month



transportation, registration and other dues incurred in this regard. In case new vehicles are not purchased, same numbers of road worthy conditions vehicles shall be hired and its rent cost shall be paid through pay item SP 708a, rental cost shall be approved by the Employer.

In case of delay, failure or default on the part of the Contractor in providing the facilities under these provisions, the Engineer's Representative may arrange the same at the risk and cost of the Contractor or hired the vehicles for project period.

708.2 Running & Maintenance

The Contractor shall be responsible for the running and maintenance of these vehicles which includes petrol, diesel, repair works, regular tuning, replacement of tires, registration, comprehensive insurance, annual renewal, lubricants, servicing including providing drivers etc.

708.3 Method of Payment

On the instructions and determination by the Engineer, Contractor shall be paid for the Services under this Clause as follows:-

- i) For the procurement of vehicles, Contractor shall provide the original supporting vouchers/receipts including applicable levies & other taxes paid for procurement of vehicles.
- ii) For running and maintenance of above vehicles including salaries of drivers, the Contractor shall be paid on monthly basis.
- iii) On failure of the contractor to provide and of the services under this clause or even otherwise notwithstanding anything contained in any other clauses of the Contract Documents, the "Engineer" shall have the authority to nominate/sublet to any other contracting agency on recommendation of the Resident Engineer for the supply of services under this clause, the payment for which shall be made through this contract direct to the nominated agency out of Provisional Sum provided in the Contract or hire the good road worthy vehicles and recover the cost with 100% penalty charges from contractor's IPC's.

Item No.	Description	Unit of Measurement
Sp-708b	Provide Engineer's Representative Transport (i) Suzuki Bolan (Carry)	Each
SP-708bi	Provide OHS Manager and support staff Transport (On rental basis) (i) Toyota Corolla 1300 cc with A/C (01 No)	Month
	(ii) Suzuki Carry (01 No)	Month
Sp-708c	Running & Maintenance of Employer's / Engineer's Representative's Transport	Month



SP-OHS (Occupational Health and Safety)

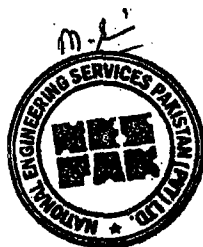
General:

The Contractor shall appoint one OHS manager having minimum qualification of Masters in Environmental science or equivalent with international certifications i.e. OSHA or NEBOSH along with four nos support staff having min qualification of graduation in relevant discipline to act full-time as Safety/Risk Assessment/ Accident prevention Officer throughout the duration of project and shall notify the Engineer of such appointment. The OHS manager shall be experienced in all matters relating to health and safety on site and shall be familiar with all relevant safety regulations and legislation. The OHS manager shall have the power to receive instructions from the Engineer on matters relating to the health and safety of personnel on site and the safe conduct of site operations. It will be the responsibility of OHS manager to prepare OHS manual covering all the risks involved in operational activities and will submit to the Engineer for approval. After approval of subject manual, proper monitoring of OHS activities will be done and monthly progress report will be submitted to the Engineer.

If the contractor uses existing roads for the transportation of his materials and equipment for the project or for detour roads, the Contractor shall be responsible for maintaining these existing roads during construction and ensuring all OHS protocols. After the completion of the project, the Contractor shall be responsible for reinstating the existing roads used to its original state ensuring that all mitigation measures are adopted for reinstatement and safe usage. Prior to use the existing roads, the Contractor shall investigate and document the entire length of the existing road condition together with the Engineer's staff including photographs or video.

Responsibilities of OHS Manager:

OHS manager will be contractor representative at site regarding monitoring of OHS works. OHS manager will be responsible for the implementation of health and safety at site and will supervise implementation of the contractor's OHS policies. The OHS manager will also be responsible for health and safety aspects of work sites and shall submit monthly reports to concerned the Engineer representative on the status of implementation of mitigation measures, complaints received and actions taken. The contractor's OHS manager, in coordination with the CSC (construction supervision consultant) shall set-up a grievance redress committee that will address any complaints arising project implementation. The OHS manager shall ensure that all necessary equipment (listed below) and support including but not limited to provision of dedicated vehicle, office space and accessories, safety related tools are provided to the OHS Manager and concerned staff during the currency of the contract. The OHS manager shall conduct necessary trainings for Employer and site staff for developing awareness about OHS .It will also be the responsibility of OHS manager to keep and maintain necessary first aid kit at site in order to cope with emergency situations.



LIST OF NECESSARY EQUIPMENT

SAFETY SHOES	FACE SHIELDS	SAFETY GOGGLES
HARDHATS	DUST AND FUME MASKS	GLOVES (LEATHER)
COVERALL DRESSES	EAR PLUGS	GLOVES (COTTON)
FULL BODY HARNESS	EAR MUFFS	NAVIGATIONAL SIGNAGE
HIGH VISIBILITY VESTS	ROPE (PLASTIC 4MM)	WARNING TAPE RED & WHITE
HIGH VISIBILITY CONES	MANDATORY SIGNAGE	PVC MESH (ORANGE)
TRAFFIC BARRIERS	CAUTIONARY SIGNAGE	PROHIBITORY SIGNAGE
GREEN NET (PVC)		

Payment:

The payment for activities under this item shall be paid at the contract price and monthly rate as per the measurement unit indicated in the Bill of Quantities after certification by the Engineer / Employer and any other concerned stakeholder or authority nominated by the Employer that activities related to the item of OHS have been performed and managed satisfactorily by the Contractor.

SP-OHS	Item Description	Unit
i)	Provide 1 x Qualified OHS Manager having international certifications as per specifications.	Month
ii)	Provide 4 nos support staff as assistant to OHS Manager as per specifications.	Month
iii)	Equip OHS Manager with necessary accessories i.e. stationery, laptop etc for proper monitoring of OHS activities.	LS
iv)	Conduct OHS awareness trainings for Employer and contractor staff at site and conducting courses to visitors and new comers.	Month
v)	Carrying out and submit the OHS manual to the Engineer's representative, monitoring of all site activities as per OHS manual and submitting monthly progress report to the Engineer representative at site.	LS
vi)	Construct and maintain detours i.e. installation of safety signs and other related safety features, preparing diversion plans and submit to the Engineer's representative in accordance with GCC.	LS
vii)	Provide and maintain PPE's at site.	Month
viii)	Provide and maintain first aid kit at site.	Month



NSI-IV**EMPLOYING TRAINEE ENGINEER'S WITH BOARDING, LODGING AND MESSING**

The contractor will employ total 04 nos Trainee Engineers after the approval of the Employer, throughout the duration of project as per the contract and BOQ. Each Trainee Engineer will be given a monthly stipend Rs. 50,000 (minimum) by the contractor. 01 no Trainee Engineer out of total 04 nos shall be hired for NHA (Design-QS) for complete duration of project. The period of training of each trainee will be as per the contract. The Contractor will prepare a comprehensive training program and get it approved from NHA. It will be the contractor's responsibility for the provision of boarding & lodging of each Trainee Engineer or paid separately its cost.

Measurement and Payment

The number of Trainee Engineers shall be counted and paid to contractor as per the contract unit price which includes full compensation for all costs necessary like monthly stipend, boarding, lodging and transport facility.

Item No.	Description	Unit of Measurement
NSI-IV	Employing Trainee Engineer's With Boarding, Lodging And Messing	Month



Drawings



Supplementary Information Regarding Works to Be Procured

Standard Operation Procedures (SOPs) issued by Government of Pakistan from time to time, local regulations and guidance specific to COVID-19 prevention and controls, and worksite safety measures requirements that are deemed applicable to the contract, as well as the applicable international good practices on Health and Safety for the contract.

Site Specific Health and Safety Management Plan (SSHSMMP)

Standard Operating Procedures (SOPs): *All Standard Operating Procedures (SOPs) issued by the Government of Pakistan from time to time on COVID-19 prevention and controls, as well as workplace safety requirements, with international good practice guidelines [World Health Organization, Considerations for public health and social measures in the workplace in the context of COVID-19. Geneva. Available here: <https://www.who.int/publications-detail/considerations-for-public-health-and-social-measures-in-the-workplace-in-the-context-of-covid-19>] and SOPs (<http://covid.gov.pk/>) will be applicable.*



Personnel Requirements

Using Form PER - 1 and PER - 2 in Section 4 (Bidding Forms), the Bidder must demonstrate that it has personnel who meet the following requirements for each lot:

No.	Position	Total Work Experience [years]	Experience In Similar Work [years]
1	Project Manager	20	10
2	Deputy Project Engineer/Planning Engineer	10	5
3	Material Engineer	10	5
4	Structure Engineer	10	5
5	Highway Engineer	10	5
6	Qualified / Experienced Surveyors (2 Nos)	15	10
7	Qualified Environmentalist	10	5
8	Qualified Health and Safety Expert	10	5
9	Quantity Surveyor	15	10

Note: All engineers whether foreign or local must be registered with Pakistan Engineering Council (PEC). Copy of registration certificate shall be required to be submitted to Employer prior to starting any activity at site



Equipment Requirements

Using Form EQU in Section 4 (Bidding Forms), the Bidder must demonstrate that it has the key equipment listed below for each lot:

No.	Equipment Type and Characteristics	Minimum Number Required
1	Concrete Batching Plant (35 Cu.m/hr minimum)	1
2	Crane 20 ton	1
3	Concrete Pump	1
4	Concrete Transit Mixer (6 Cu.m Minimum)	6
5	Complete Set of Shuttering & scaffolding (Steel) 100 Sq.m	1
6	Asphalt plant	1
7	Asphalt paver	2
8	Cold Milling Machine	1
9	Rollers (Asphalt and Earthwork)	10
10	Graders	3
11	Dump Trucks	35
12	Wheel Loaders	4
13	Excavators	6
14	Bull Dozers	4
15	Bitumen Sprayers	2
16	Lane Marking Machines	2

Note: The bidder shall furnish on judicial stamp paper an undertaking after the signing of the contract stating that it shall bring the equipment mentioned here-in-above or more to successfully execute and complete the project within the completion period.



Environmental Management Plan



ENVIRONMENTAL MANAGEMENT PLAN

Environment Management and Monitoring Plan

Environmental Management facilitates managing and reducing short- and long-term potential environmental impacts. Environmental Management may involve strategies, plans and practices for minimum environmental damages and quality assurance. Best management practices shall be adopted during different stages of the project. Implementation of best management practices can be achieved by guidelines for building works, contractual bindings to the contractors, or provision of trainings to the staff.

Environmental Monitoring is undertaken during both the construction and operational phases to ensure the effectiveness of the proposed mitigation measures/BMPs. Specific monitoring indicators, monitoring and reporting frequencies, responsibilities for the collection and analysis of data as well as the reporting requirements has been outlined in Environmental Management and Monitoring Plan (EMMP) below:

Implementation of Mitigation Plan

- Construction Contractor is responsible for implementation of mitigation measures provided in the proposed EMMP as well as for obtaining all construction activities related permits and agreements. For the effective implementation and management of the proposed mitigation measures, it is necessary to develop an EMP which basically provides a delivery mechanism to address the potential impacts of the Project activities and to develop a monitoring program in order to minimize the potential impacts during construction and operational stages of the Project.

The EMP has been prepared with an objective of:

- Providing an implementation plan for the mitigation of possible environmental issues arising during construction and operation of the project
- Developing a monitoring mechanisms and identifying the requisite monitoring parameters to conform to mitigation measures recommended in the EIA.



CONSTRUCTION OF ADDITIONAL CARRIAGEWAY SHIKARPUR ~ RAJANPUR SECTION

- Defining roles and responsibilities of the project proponent for the implementation of EMP and identifying areas where these roles and responsibilities can be shared with other organizations involved in the execution and monitoring of the Project.
- Defining the requirements necessary for documenting compliance with the EMP and communicating it to all the concerned regulatory agencies.
- If necessary, this meeting/training can include provision of some basic environmental knowledge as well as specific knowledge related to EMP implementation e.g. in prevention of damages on vegetation, transportation, handling and storage of construction materials and waste (including proper handling of the hazardous materials like oil, etc.).
- Well before start of work on ground, the project contractor will get acquaintance of the EIA, particularly the EMP and the mitigation measures to be taken in execution of the project. Monitoring of the EMP will be carried out by the Supervision Contractor or Environmental Officer (EO) who should supervise implementation of EMP and liaison with concerned EPA.
- After commissioning of the project, a concerned department will take responsibility of implementing EMP related to operation of the facility. It is highly recommended to associate concerned department with the project right from the beginning of the project and training may be imparted in advance of starting the actual operation of.

Implementation of Environmental Mitigation and Monitoring Plan (EMMP)

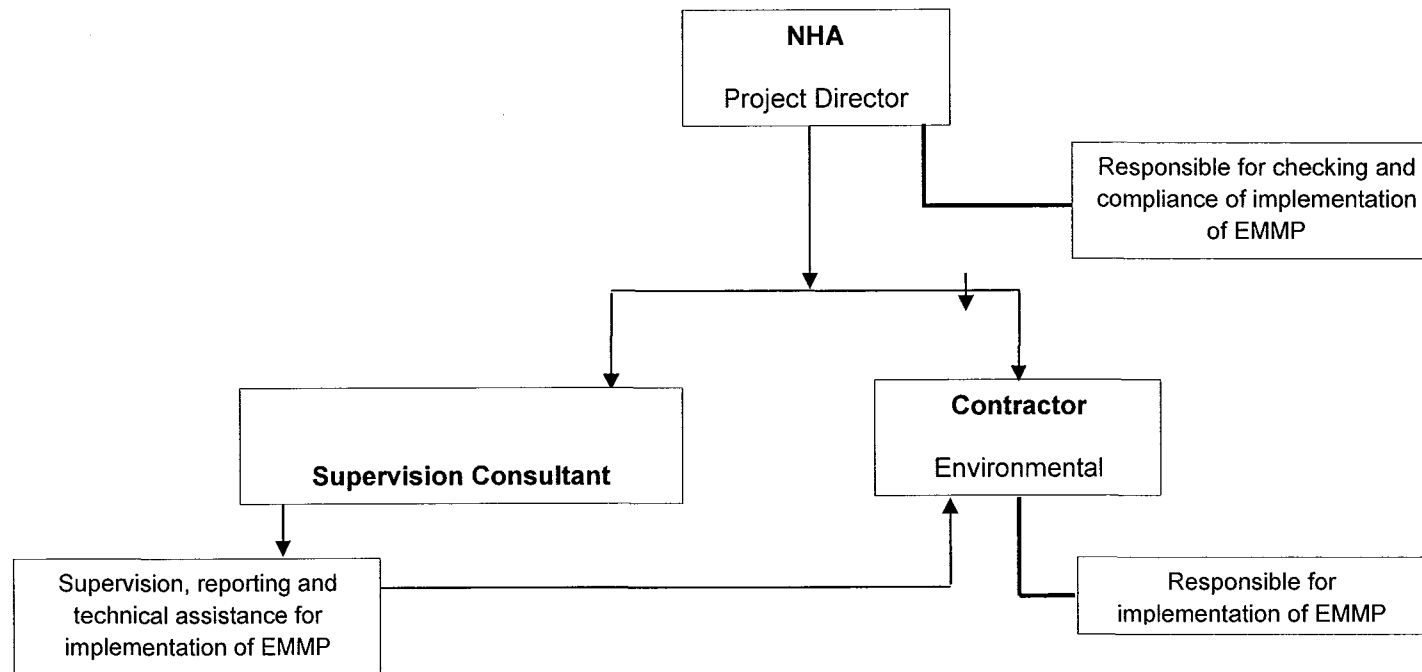
The following staff will be involved in the implementation of EMMP;

- Environmental Engineer from Environmental Supervision Consultant
- Site Environmental Engineer of the Contractor
- Representative from NHA

The contractor shall be made bound through contract documents to implement the suggested mitigation measures in the EMMP. The EMMP shall be included as a clause of the contract documents. The organizational setup for implementation of EMMP is given below in **Figure:**



CONSTRUCTION OF ADDITIONAL CARRIAGEWAY SHIKARPUR ~ RAJANPUR SECTION



Organizational Setup for Implementation of EMMP

Roles and Responsibilities of the Functionaries involved in EMMP Implementation

a. NHA: Project Director

Project Director of NHA will have responsibility for assuring implementation of EMMP. This includes the following:

- Ensuring that the required environmental training is provided to the staff concerned;
- The Project Director will be responsible for carrying out visits to the construction sites to review the environmental performance of the contractors;



- Monitoring the progress of environment related activities; and
- Ensure that the construction contractor is implementing the additional measures suggested by NESPAK in monthly environmental monitoring reports.

b. Supervision Consultant : Environmental Engineer

Environmental Engineer will oversee the performance of contractor through periodic monitoring to make sure that the contractor is carrying out the work in accordance with EMMP. The Environmental Engineer/Specialist will also provide assistance to the Contractor's Staff to implement EMMP.

c. Construction Contractor : Site Environmental Engineer

Site Environmental Engineer of Construction Contractor will carry out the implementation of the mitigation measures at construction site. Construction Contractor will be bound through contract documents to appoint the Site Environmental Engineer with relevant educational background and experience.

Reporting Mechanism

Progress reporting related to environmental activities will be the responsibility of the Environmental Engineer of Supervision Consultant. Environmental Engineer will also be responsible for submitting a monthly EMMP compliance report for the project to the concerned EPD.

Non-Compliance of the EMMP

The implementation of the proposed EMMP involves inputs from various functionaries as discussed earlier. Contractor shall be primarily responsible for ensuring implementation of the mitigation measures proposed in the EMMP, which shall be part of the contract documents. The provision of the environmental mitigation cost shall be made in the total cost of project, for which contractor shall be paid on the basis of monthly compliance reports. However, if the contractor fails to comply with the



CONSTRUCTION OF ADDITIONAL CARRIAGEWAY SHIKARPUR ~ RAJANPUR SECTION

implementation of EMMP and submission of the monthly compliance reports, deductions shall be made from the payments to the contractor claimed under the heads of environmental components.

Functions of EO and SC

EMP Implementation at Planning and design stage

- Set up system for environmental management.
- Ensure that the terms of reference for project contractor adequately cover environmental and social issues
- Ensure that the contractor develops and carryout environmental implementation plan that is in consistent with the EMP
- Supervise environmental assessments, and providing substantial inputs and guidance.

EMP Implementation at Pre-construction phase

- Identify problems to be faced by community to access roads during construction and verifying whether ramps/diversions have been provided where required.
- Ensure that the contractor has selected right sites for worker's camps. The contractor should undertake to restore environment of these sites to the original conditions when work is completed.
- Establish a grievance readdress committee to deal with public complaints

EMP Implementation at Construction phase

- Liaison with Project staff of different sections, Project Implementation Agencies (NHA), concerned EPA and furnishes fortnight EMP implementation report.
- Hold and attend project meetings and indicate any violation of EMP, if observed.
- Supervise and provide technical support to Project and operational staff to help ensure compliance of EMP.

EMP Implementation at Operation stage

Coordinate with the operational staff working under different departments and other relevant departments to ensue environmental sustainability of dualization of Ratodero to Shikarpur road section.



CONSTRUCTION OF ADDITIONAL CARRIAGEWAY SHIKARPUR ~ RAJANPUR SECTION

Arrange Post EIA visits and report progress of environmental compliance to the concerned EPA.

Report to NHA any environmental issue observed but not envisaged in EIA report and take measures to offset it by himself or by seeking technical support of environmental experts.

Monitoring Program

Environmental Monitoring is essential part of EMP which is required to assess, whether the committed mitigation measures are being taken to achieve objectives of goals of environmental protection.

- The management of NHA may constitute an Environment Monitoring Committee (EMC) headed by a senior officer of NHA to oversee whether objectives of EMP are being achieved. The EMC will perform the following functions:
 - Periodically review EMP Implementation Report of EO to check compliance of EMP
 - Advise on disposal of construction wastes and excavated soil including development of landscape
 - Closely monitor drainage design and sewerage structure and system and issue instruction to EO and concerned department for remedial actions where necessary.
- Visit project site from time to time to verify actions on ground
- Review steps taken to redress public complaints
- Upon completion of the project, ensure restoration of environment of worker's camps and asphalt building sites to the pre project condition



INITIAL ENVIRONMENTAL EXAMINATION (IEE)

URL of draft initial environmental examination:

<https://www.adb.org/projects/documents/pak-48404-004-iee>



LAND ACQUISITION AND RESETTLEMENT PLANS (LARPS)

URL of draft land acquisition and resettlement plans are:

Lot 1 (Shikarpur–Kandhkot Section):

<https://www.adb.org/projects/documents/pak-48404-004-rp>

Lot 2 (Kandhko–Kashmore Section):

<https://www.adb.org/projects/documents/pak-48404-004-rp-0>

Lot 3 (Kashmore–Rojhan) and Lot 4 (Rojhan–Rajanpur):

<https://www.adb.org/projects/documents/pak-48404-004-rp-1>



Section 7: General Conditions of Contract

The Conditions of Contract comprise two parts, this Section 7 - General Conditions of Contract (GCC) and the following Section 8 - Particular Conditions of Contract (PCC).

The General Conditions shall be the Conditions of Contract for Construction for Building and Engineering Works Designed by the Employer, Multilateral Development Bank Harmonized Edition, prepared by the Fédération Internationale des Ingénieurs-Conseil, or FIDIC (FIDIC MDB Harmonized Construction Contract) available at FIDIC MDB June 2010. The FIDIC MDB Harmonized Construction Contract is exclusive for the use of ADB Borrowers and their project implementing agencies as provided under the License Agreement dated 09 June, 2005, between the ADB and FIDIC, and, consequently, no part of this publication may be reproduced, translated, adapted, stored in a retrieval system or communicated, in any form or by any means, whether mechanical, electronic, magnetic, photocopying, recording or otherwise, without prior permission in writing from FIDIC, except by the Employer identified in the contract and only for the exclusive purpose of preparing bidding documents for ADB financed contracts.

The standard text of the General Conditions chosen must be retained intact to facilitate its reading and interpretation by Bidders and its review by the Bank. Any amendments and additions to the GCC, specific to the contract in hand, should be introduced in Section 8 (Particular Conditions of Contract), Part A (Contract Data) and Part B (Special Provisions). Clause numbers in the PCC correspond to those in the GCC. As per GCC 1.5 (Priority of Documents), the PCC take precedence over the GCC.

Part A (Contract Data) of the PCC, includes data to complement the GCC in a manner similar to the way in which the Bid Data Sheet (BDS) complements the Instructions to Bidders (ITB).

Part B (Specific Provisions) is intended to be used to introduce country or project specific provisions if so required. Whoever drafts the Specific Provisions should be thoroughly familiar with the provisions of the GCC and with any specific requirements of the Contract. Legal advice is recommended when amending provisions or drafting new ones.

The Conditions of Contract have been prepared for an ad measurement (unit price or unit rate) type of contract and cannot be used for other types of contract.



APPENDIX

General Conditions of Dispute Board Agreement

1. Definitions

Each "Dispute Board Agreement" is a tripartite agreement by and between:

- (a) the "Employer";
- (b) the "Contractor"; and
- (c) the "Member" who is defined in the Dispute Board Agreement as being:
 - (i) the sole member of the "DB" and, where this is the case, all references to the "Other Members" do not apply, or
 - (ii) one of the three persons who are jointly called the "DB" (or "dispute board") and, where this is the case, the other two persons are called the "Other Members."

The Employer and the Contractor have entered (or intend to enter) into a contract, which is called the "Contract" and is defined in the Dispute Board Agreement, which incorporates this Appendix. In the Dispute Board Agreement, words and expressions which are not otherwise defined shall have the meanings assigned to them in the Contract.

2. General Provisions

Unless otherwise stated in the Dispute Board Agreement, it shall take effect on the latest of the following dates:

- (a) the Commencement Date defined in the Contract,
- (b) when the Employer, the Contractor and the Member have each signed the Dispute Board Agreement, or
- (c) when the Employer, the Contractor and each of the Other Members (if any) have respectively each signed a dispute board agreement.

This employment of the Member is a personal appointment. At any time, the Member may give not less than 70 days' notice of resignation to the Employer and to the Contractor, and the Dispute Agreement shall terminate upon the expiry of this period.

3. Warranties

The Member warrants and agrees that he/she is and shall be impartial and independent of the Employer, the Contractor and the Engineer. The Member shall promptly disclose, to each of them and to the Other Members (if any), any fact or circumstance which might appear inconsistent with his/her warranty and agreement of impartiality and independence.

When appointing the Member, the Employer and the Contractor relied upon the Member's representations that he/she is:

- (a) experienced in the work which the Contractor is to carry out under the Contract,
- (b) experienced in the interpretation of contract documentation, and
- (c) fluent in the language for communications defined in the Contract.



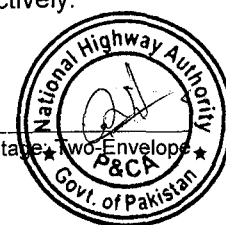
4. General Obligations of the Member

The Member shall:

- (a) have no interest financial or otherwise in the Employer, the Contractor or Engineer, nor any financial interest in the Contract except for payment under the Dispute Board Agreement;
- (b) not previously have been employed as a consultant or otherwise by the Employer, the Contractor or the Engineer, except in such circumstances as were disclosed in writing to the Employer and the Contractor before they signed the Dispute Board Agreement;
- (c) have disclosed in writing to the Employer, the Contractor and the Other Members (if any), before entering into the Dispute Board Agreement and to his/her best knowledge and recollection, any professional or personal relationships with any director, officer or employee of the Employer, the Contractor or the Engineer, and any previous involvement in the overall project of which the Contract forms part;
- (d) not, for the duration of the Dispute Board Agreement, be employed as a consultant or otherwise by the Employer, the Contractor or the Engineer, except as may be agreed in writing by the Employer, the Contractor and the Other Members (if any);
- (e) comply with the annexed procedural rules and with Sub-Clause 20.4 of the Conditions of Contract;
- (f) not give advice to the Employer, the Contractor, the Employer's Personnel or the Contractor's Personnel concerning the conduct of the Contract, other than in accordance with the annexed procedural rules;
- (g) not while a Member enter into discussions or make any agreement with the Employer, the Contractor or the Engineer regarding employment by any of them, whether as a consultant or otherwise, after ceasing to act under the Dispute Board Agreement;
- (h) ensure his/her availability for all site visits and hearings as are necessary;
- (i) become conversant with the Contract and with the progress of the Works (and of any other parts of the project of which the Contract forms part) by studying all documents received which shall be maintained in a current working file;
- (j) treat the details of the Contract and all the DB's activities and hearings as private and confidential, and not publish or disclose them without the prior written consent of the Employer, the Contractor and the Other Members (if any); and
- (k) be available to give advice and opinions, on any matter relevant to the Contract when requested by both the Employer and the Contractor, subject to the agreement of the Other Members (if any).

5. General Obligations of the Employer and the Contractor

The Employer, the Contractor, the Employer's Personnel and the Contractor's Personnel shall not request advice from or consultation with the Member regarding the Contract, otherwise than in the normal course of the DB's activities under the Contract and the Dispute Board Agreement. The Employer and the Contractor shall be responsible for compliance with this provision, by the Employer's Personnel and the Contractor's Personnel respectively.



The Employer and the Contractor undertake to each other and to the Member that the Member shall not, except as otherwise agreed in writing by the Employer, the Contractor, the Member and the Other Members (if any):

- (a) be appointed as an arbitrator in any arbitration under the Contract;
- (b) be called as a witness to give evidence concerning any dispute before arbitrator(s) appointed for any arbitration under the Contract; or
- (c) be liable for any claims for anything done or omitted in the discharge or purported discharge of the Member's functions, unless the act or omission is shown to have been in bad faith.

The Employer and the Contractor hereby jointly and severally indemnify and hold the Member harmless against and from claims from which he is relieved from liability under the preceding paragraph.

Whenever the Employer or the Contractor refers a dispute to the DB under Sub-Clause 20.4 of the Conditions of Contract, which will require the Member to make a site visit and attend a hearing, the Employer or the Contractor shall provide appropriate security for a sum equivalent to the reasonable expenses to be incurred by the Member. No account shall be taken of any other payments due or paid to the Member.

6. Payment

The Member shall be paid as follows, in the currency named in the Dispute Board Agreement:

- (a) a retainer fee per calendar month, which shall be considered as payment in full for:
 - (i) being available on 28 days' notice for all site visits and hearings;
 - (ii) becoming and remaining conversant with all project developments and maintaining relevant files;
 - (iii) all office and overhead expenses including secretarial services, photocopying and office supplies incurred in connection with his duties; and
 - (iv) all services performed hereunder except those referred to in subparagraphs (b) and (c) of this Clause.

The retainer fee shall be paid with effect from the last day of the calendar month in which the Dispute Board Agreement becomes effective; until the last day of the calendar month in which the Taking-Over Certificate is issued for the whole of the Works.

With effect from the first day of the calendar month following the month in which the Taking-Over Certificate is issued for the whole of the Works, the retainer fee shall be reduced by one third. This reduced fee shall be paid until the first day of the calendar month in which the Member resigns or the Dispute Board Agreement is otherwise terminated.

- (b) a daily fee which shall be considered as payment in full for:
 - (i) each day or part of a day up to a maximum of two days' travel time in each direction for the journey between the Member's home and the site, or another location of a meeting with the Other Members (if any);



- (ii) each working day on Site visits, hearings or preparing decisions; and
- (iii) each day spent reading submissions in preparation for a hearing.
- (c) all reasonable expenses including necessary travel expenses (air fare in less than first class, hotel and subsistence and other direct travel expenses) incurred in connection with the Member's duties, as well as the cost of telephone calls, courier charges, faxes and telexes: a receipt shall be required for each item in excess of five percent of the daily fee referred to in sub-paragraph (b) of this Clause;
- (d) any taxes properly levied in the Country on payments made to the Member (unless a national or permanent resident of the Country) under this Clause 6.

The retainer and daily fees shall be as specified in the Dispute Board Agreement. Unless it specifies otherwise, these fees shall remain fixed for the first 24 calendar months, and shall thereafter be adjusted by agreement between the Employer, the Contractor and the Member, at each anniversary of the date on which the Dispute Board Agreement became effective.

If the parties fail to agree on the retainer fee or the daily fee, the appointing entity or official named in the Contract Data shall determine the amount of the fees to be used.

The Member shall submit invoices for payment of the monthly retainer and air fares quarterly in advance. Invoices for other expenses and for daily fees shall be submitted following the conclusion of a site visit or hearing. All invoices shall be accompanied by a brief description of activities performed during the relevant period and shall be addressed to the Contractor.

The Contractor shall pay each of the Member's invoices in full within 56 calendar days after receiving each invoice and shall apply to the Employer (in the Statements under the Contract) for reimbursement of one-half of the amounts of these invoices. The Employer shall then pay the Contractor in accordance with the Contract.

If the Contractor fails to pay to the Member the amount to which he/she is entitled under the Dispute Board Agreement, the Employer shall pay the amount due to the Member and any other amount which may be required to maintain the operation of the DB; and without prejudice to the Employer's rights or remedies. In addition to all other rights arising from this default, the Employer shall be entitled to reimbursement of all sums paid in excess of one-half of these payments, plus all costs of recovering these sums and financing charges calculated at the rate specified in Sub-Clause 14.8 of the Conditions of Contract.

If the Member does not receive payment of the amount due within 70 days after submitting a valid invoice, the Member may (i) suspend his/her services (without notice) until the payment is received, and/or (ii) resign his/her appointment by giving notice under Clause 7.

7. Termination

At any time: (i) the Employer and the Contractor may jointly terminate the Dispute Board Agreement by giving 42 days' notice to the Member; or (ii) the Member may resign as provided for in Clause 2.



If the Member fails to comply with the Dispute Board Agreement, the Employer and the Contractor may, without prejudice to their other rights, terminate it by notice to the Member. The notice shall take effect when received by the Member.

If the Employer or the Contractor fails to comply with the Dispute Board Agreement, the Member may, without prejudice to his other rights, terminate it by notice to the Employer and the Contractor. The notice shall take effect when received by them both.

Any such notice, resignation and termination shall be final and binding on the Employer, the Contractor and the Member. However, a notice by the Employer or the Contractor, but not by both, shall be of no effect.

8. Default of the Member

If the Member fails to comply with any of his obligations under Clause 4 (a) - (d) above, he shall not be entitled to any fees or expenses hereunder and shall, without prejudice to their other rights, reimburse each of the Employer and the Contractor for any fees and expenses received by the Member and the Other Members (if any), for proceedings or decisions (if any) of the DB which are rendered void or ineffective by the said failure to comply.

If the Member fails to comply with any of his obligations under Clause 4 (e) - (k) above, he shall not be entitled to any fees or expenses hereunder from the date and to the extent of the non-compliance and shall, without prejudice to their other rights, reimburse each of the Employer and the Contractor for any fees and expenses already received by the Member, for proceedings or decisions (if any) of the DB which are rendered void or ineffective by the said failure to comply.

9. Disputes

Any dispute or claim arising out of or in connection with this Dispute Board Agreement, or the breach, termination or invalidity thereof, shall be finally settled by institutional arbitration. If no other arbitration institute is agreed, the arbitration shall be conducted under the Rules of Arbitration of the International Chamber of Commerce by one arbitrator appointed in accordance with these Rules of Arbitration.



Procedural Rules

Unless otherwise agreed by the Employer and the Contractor, the DB shall visit the site at intervals of not more than 140 days, including times of critical construction events, at the request of either the Employer or the Contractor. Unless otherwise agreed by the Employer, the Contractor and the DB, the period between consecutive visits shall not be less than 70 days, except as required to convene a hearing as described below.

The timing of and agenda for each site visit shall be as agreed jointly by the DB, the Employer and the Contractor, or in the absence of agreement, shall be decided by the DB. The purpose of site visits is to enable the DB to become and remain acquainted with the progress of the Works and of any actual or potential problems or claims, and, as far as reasonable, to endeavour to prevent potential problems or claims from becoming disputes.

Site visits shall be attended by the Employer, the Contractor and the Engineer and shall be co-ordinated by the Employer in co-operation with the Contractor. The Employer shall ensure the provision of appropriate conference facilities and secretarial and copying services. At the conclusion of each site visit and before leaving the site, the DB shall prepare a report on its activities during the visit and shall send copies to the Employer and the Contractor.

The Employer and the Contractor shall furnish to the DB one copy of all documents which the DB may request, including Contract documents, progress reports, variation instructions, certificates and other documents pertinent to the performance of the Contract. All communications between the DB and the Employer or the Contractor shall be copied to the other Party. If the DB comprises three persons, the Employer and the Contractor shall send copies of these requested documents and these communications to each of these persons.

If any dispute is referred to the DB in accordance with Sub-Clause 20.4 of the Conditions of Contract, the DB shall proceed in accordance with Sub-Clause 20.4 and these Rules. Subject to the time allowed to give notice of a decision and other relevant factors, the DB shall:

- (a) act fairly and impartially as between the Employer and the Contractor, giving each of them a reasonable opportunity of putting his case and responding to the other's case, and
- (b) adopt procedures suitable to the dispute, avoiding unnecessary delay or expense.

The DB may conduct a hearing on the dispute, in which event it will decide on the date and place for the hearing and may request that written documentation and arguments from the Employer and the Contractor be presented to it prior to or at the hearing.

Except as otherwise agreed in writing by the Employer and the Contractor, the DB shall have power to adopt an inquisitorial procedure, to refuse admission to hearings or audience at hearings to any persons other than representatives of the Employer, the Contractor and the Engineer, and to proceed in the absence of any party who the DB is satisfied received notice of the hearing; but shall have discretion to decide whether and to what extent this power may be exercised.

The Employer and the Contractor empower the DB, among other things, to:

- (a) establish the procedure to be applied in deciding a dispute,
- (b) decide upon the DB's own jurisdiction, and as to the scope of any dispute referred to it,
- (c) conduct any hearing as it thinks fit, not being bound by any rules or procedures other than those contained in the Contract and these Guidelines,



- (d) take the initiative in ascertaining the facts and matters required for a decision,
- (e) make use of its own specialist knowledge, if any,
- (f) decide upon the payment of financing charges in accordance with the Contract,
- (g) decide upon any provisional relief such as interim or conservatory measures, and
- (h) open up, review and revise any certificate, decision, determination, instruction, opinion or valuation of the Engineer, relevant to the dispute.

The DB shall not express any opinions during any hearing concerning the merits of any arguments advanced by the Parties. Thereafter, the DB shall make and give its decision in accordance with Sub-Clause 20.4, or as otherwise agreed by the Employer and the Contractor in writing. If the DB comprises three persons:

- (a) it shall convene in private after a hearing, in order to have discussions and prepare its decision;
- (b) it shall endeavour to reach a unanimous decision: if this proves impossible the applicable decision shall be made by a majority of the Members, who may require the minority Member to prepare a written report for submission to the Employer and the Contractor; and
- (c) if a Member fails to attend a meeting or hearing, or to fulfil any required function, the other two Members may nevertheless proceed to make a decision, unless:
 - (i) either the Employer or the Contractor does not agree that they do so, or
 - (ii) the absent Member is the chairman and he/she instructs the other Members to not make a decision.



Conditions of Contract for Construction

MULTILATERAL DEVELOPMENT BANK HARMONISED EDITION

GENERAL CONDITIONS

June 2010

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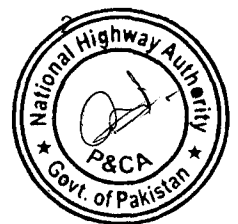
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INTERNATIONAL FEDERATION OF CONSULTING ENGINEERS
INTERNATIONALE VEREINIGUNG BERATENDER INGENIEURE
FEDERACION INTERNACIONAL DE INGENIEROS CONSULTORES



General Conditions

CONTENTS

- 1 General Provisions
 - 1.1 Definitions
 - 1.2 Interpretation
 - 1.3 Communications
 - 1.4 Law and Language
 - 1.5 Priority of Documents
 - 1.6 Contract Agreement
 - 1.7 Assignment
 - 1.8 Care and Supply of Documents
 - 1.9 Delayed Drawings or Instructions
 - 1.10 Employer's Use of Contractor's Documents
 - 1.11 Contractor's Use of Employer's Documents
 - 1.12 Confidential Details
 - 1.13 Compliance with Laws
 - 1.14 Joint and Several Liability
 - 1.15 Inspections and Audit by the Bank
- 2 The Employer
 - 2.1 Right of Access to the Site
 - 2.2 Permits, Licences or Approvals
 - 2.3 Employer's Personnel
 - 2.4 Employer's Financial Arrangements
 - 2.5 Employer's Claims
- 3 The Engineer
 - 3.1 Engineer's Duties and Authority
 - 3.2 Delegation by the Engineer
 - 3.3 Instructions of the Engineer
 - 3.4 Replacement of the Engineer
 - 3.5 Determinations



- 4 **The Contractor**
 - 4.1 Contractor's General Obligations
 - 4.2 Performance Security
 - 4.3 Contractor's Representative
 - 4.4 Subcontractors
 - 4.5 Assignment of Benefit of Subcontract
 - 4.6 Co-operation
 - 4.7 Setting Out
 - 4.8 Safety Procedures
 - 4.9 Quality Assurance
 - 4.10 Site Data
 - 4.11 Sufficiency of the Accepted Contract Amount
 - 4.12 Unforeseeable Physical Conditions
 - 4.13 Rights of Way and Facilities
 - 4.14 Avoidance of Interference
 - 4.15 Access Route
 - 4.16 Transport of Goods
 - 4.17 Contractor's Equipment
 - 4.18 Protection of the Environment
 - 4.19 Electricity, Water and Gas
 - 4.20 Employer's Equipment and Free-Issue Materials
 - 4.21 Progress Reports
 - 4.22 Security of the Site
 - 4.23 Contractor's Operations on Site
 - 4.24 Fossils
- 5 **Nominated Subcontractors**
 - 5.1 Definition of "nominated Subcontractor"
 - 5.2 Objection to Nomination
 - 5.3 Payments to nominated Subcontractors
 - 5.4 Evidence of Payments
- 6 **Staff and labour**
 - 6.1 Engagement of Staff and Labour



- 6.2 Rates of Wages and Conditions of Labour
- 6.3 Persons in the Service of Employer
- 6.4 Labour Laws
- 6.5 Working Hours
- 6.6 Facilities for Staff and Labour
- 6.7 Health and Safety
- 6.8 Contractor's Superintendence
- 6.9 Contractor's Personnel
- 6.10 Records of Contractor's Personnel and Equipment
- 6.11 Disorderly Conduct
- 6.12 Foreign Personnel
- 6.13 Supply of Foodstuffs
- 6.14 Supply of Water
- 6.15 Measures against Insect and Pest Nuisance
- 6.16 Alcoholic Liquor or Drugs
- 6.17 Arms and Ammunition
- 6.18 Festival and Religious Customs
- 6.19 Funeral Arrangements
- 6.20 Forced Labour
- 6.21 Child Labour
- 6.22 Employment Records of Workers
- 6.23 Workers' Organisations
- 6.24 Non-Discrimination and Equal Opportunity
- 7 Plant, Materials and Workmanship
 - 7.1 Manner of Execution
 - 7.2 Samples
 - 7.3 Inspection
 - 7.4 Testing
 - 7.5 Rejection
 - 7.6 Remedial Work
 - 7.7 Ownership of Plant and Materials
 - 7.8 Royalties
- 8 Commencement, Delays and Suspension



- 8.1 Commencement of Works
- 8.2 Time for Completion
- 8.3 Programme
- 8.4 Extension of Time for Completion
- 8.5 Delays Caused by Authorities
- 8.6 Rate of Progress
- 8.7 Delay Damages
- 8.8 Suspension of Work
- 8.9 Consequences of Suspension
- 8.10 Payment for Plant and Materials in Event of Suspension
- 8.11 Prolonged Suspension
- 8.12 Resumption of Work
- 9 Tests on Completion
 - 9.1 Contractor's Obligations
 - 9.2 Delayed Tests
 - 9.3 Retesting
 - 9.4 Failure to Pass Tests on Completion
- 10 Employer's Taking Over
 - 10.1 Taking Over of the Works and Sections
 - 10.2 Taking Over of Parts of the Works
 - 10.3 Interference with Tests on Completion
 - 10.4 Surfaces Requiring Reinstatement
- 11 Defects Liability
 - 11.1 Completion of Outstanding Work and Remedying Defects
 - 11.2 Cost of Remedying Defects
 - 11.3 Extension of Defects Notification Period
 - 11.4 Failure to Remedy Defects
 - 11.5 Removal of Defective Work
 - 11.6 Further Tests
 - 11.7 Right of Access
 - 11.8 Contractor to Search
 - 11.9 Performance Certificate



- 11.10 Unfulfilled Obligations
- 11.11 Clearance of Site
- 12 Measurement and Evaluation
 - 12.1 Works to be Measured
 - 12.2 Method of Measurement
 - 12.3 Evaluation
 - 12.4 Omissions
- 13 Variations and Adjustments
 - 13.1 Right to Vary
 - 13.2 Value Engineering
 - 13.3 Variation Procedure
 - 13.4 Payment in Applicable Currencies
 - 13.5 Provisional Sums
 - 13.6 Daywork
 - 13.7 Adjustments for Changes in Legislation
 - 13.8 Adjustments for Changes in Cost
- 14 Contract Price and Payment
 - 14.1 The Contract Price
 - 14.2 Advance Payment
 - 14.3 Application for Interim Payment Certificates
 - 14.4 Schedule of Payments
 - 14.5 Plant and Materials intended for the Works
 - 14.6 Issue of Interim Payment Certificates
 - 14.7 Payment
 - 14.8 Delayed Payment
 - 14.9 Payment of Retention Money
 - 14.10 Statement at Completion
 - 14.11 Application for Final Payment Certificate
 - 14.12 Discharge
 - 14.13 Issue of Final Payment Certificate
 - 14.14 Cessation of Employer's Liability
 - 14.15 Currencies of Payment



- 15 Termination by Employer
 - 15.1 Notice to Correct
 - 15.2 Termination by Employer
 - 15.3 Valuation at Date of Termination
 - 15.4 Payment after Termination
 - 15.5 Employer's Entitlement to Termination for Convenience
 - 15.6 Corrupt and Fraudulent Practices
- 16 Suspension and Termination by Contractor
 - 16.1 Contractor's Entitlement to Suspend Work
 - 16.1 Termination by Contractor
 - 16.3 Cessation of Work and Removal of Contractor's Equipment
 - 16.4 Payment on Termination
- 17 Risk and Responsibility
 - 17.1 Indemnities
 - 17.2 Contractor's Care of the Works
 - 17.3 Employer's Risks
 - 17.4 Consequences of Employer's Risks
 - 17.5 Intellectual and Industrial Property Rights
 - 17.6 Limitation of Liability
 - 17.7 Use of Employer's Facilities/Accommodation
- 18 Insurance
 - 18.1 General Requirements for Insurances
 - 18.2 Insurance for Works and Contractor's Equipment
 - 18.3 Insurance against Injury to Persons and Damage to Property
 - 18.4 Insurance for Contractor's Personnel
- 19 Force Majeure
 - 19.1 Definition of Force Majeure
 - 19.2 Notice of Force Majeure
 - 19.3 Duty to Minimise Delay
 - 19.4 Consequences of Force Majeure
 - 19.5 Force Majeure Affecting Subcontractor



- 19.6 Optional Termination, Payment and Release
- 19.7 Release from Performance
- 20 Claims, Disputes and Arbitration
 - 20.1 Contractor's Claims
 - 20.2 Appointment of the Dispute Board
 - 20.3 Failure to Agree of the Composition of the Dispute Board
 - 20.4 Obtaining Dispute Board's Decision
 - 20.5 Amicable Settlement
 - 20.6 Arbitration
 - 20.7 Failure to Comply with Dispute Board's Decision
 - 20.8 Expiry of Dispute Board's Appointment

APPENDIX: GENERAL CONDITIONS OF DISPUTE BOARD AGREEMENT



General Conditions

1 General Provisions

1.1 Definitions

In the Conditions of Contract ("these Conditions"), which include Particular Conditions, Parts A and B, and these General Conditions, the following words and expressions shall have the meanings stated. Words indicating persons or parties include corporations and other legal entities, except where the context requires otherwise.

1.1.1 The Contract

- 1.1.1.1 "Contract" means the Contract Agreement, the Letter of Acceptance, the Letter of Tender, these Conditions, the Specification, the Drawings, the Schedules, and the further documents (if any) which are listed in the Contract Agreement or in the Letter of Acceptance.
- 1.1.1.2 "Contract Agreement" means the contract agreement referred to in Sub-Clause 1.6 [Contract Agreement].
- 1.1.1.3 "Letter of Acceptance" means the letter of formal acceptance, signed by the Employer, of the Letter of Tender, including any annexed memoranda comprising agreements between and signed by both Parties. If there is no such letter of acceptance, the expression "Letter of Acceptance" means the Contract Agreement and the date of issuing or receiving the Letter of Acceptance means the date of signing the Contract Agreement.
- 1.1.1.4 "Letter of Tender" means the document entitled letter of tender or letter of bid, which was completed by the Contractor and includes the signed offer to the Employer for the Works.
- 1.1.1.5 "Specification" means the document entitled specification, as included in the Contract, and any additions and modifications to the specification in accordance with the Contract. Such document specifies the Works.
- 1.1.1.6 "Drawings" means the drawings of the Works, as included in the Contract, and any additional and modified drawings issued by (or on behalf of) the Employer in accordance with the Contract.
- 1.1.1.7 "Schedules" means the document(s) entitled schedules, completed by the Contractor and submitted with the Letter of Tender, as included in the Contract. Such document may include the Bill of Quantities, data, lists, and schedules of rates and/or prices.
- 1.1.1.8 "Tender" means the Letter of Tender and all other documents which the Contractor submitted with the Letter of Tender, as included in the Contract.
- 1.1.1.9 "Bill of Quantities", "Daywork Schedule" and "Schedule of Payment Currencies" mean the documents so named (if any) which are comprised in the Schedules.
- 1.1.1.10 "Contract Data" means the pages completed by the Employer entitled contract data which constitute Part A of the Particular Conditions.

1.1.2 Parties and Persons

- 1.1.2.1 "Party" means the Employer or the Contractor, as the context requires.



- 1.1.2.2 "Employer" means the person named as employer in the Contract Data and the legal successors in title to this person.
- 1.1.2.3 "Contractor" means the person(s) named as contractor in the Letter of Tender accepted by the Employer and the legal successors in title to this person(s).
- 1.1.2.4 "Engineer" means the person appointed by the Employer to act as the Engineer for the purposes of the Contract and named in the Contract Data, or other person appointed from time to time by the Employer and notified to the Contractor under Sub-Clause 3.4 [Replacement of the Engineer].
- 1.1.2.5 "Contractor's Representative" means the person named by the Contractor in the Contract or appointed from time to time by the Contractor under Sub-Clause 4.3 [Contractor's Representative], who acts on behalf of the Contractor.
- 1.1.2.6 "Employer's Personnel" means the Engineer, the assistants referred to in Sub-Clause 3.2 [Delegation by the Engineer] and all other staff, labour and other employees of the Engineer and of the Employer; and any other personnel notified to the Contractor, by the Employer or the Engineer, as Employer's Personnel.
- 1.1.2.7 "Contractor's Personnel" means the Contractor's Representative and all personnel whom the Contractor utilises on Site, who may include the staff, labour and other employees of the Contractor and of each Subcontractor; and any other personnel assisting the Contractor in the execution of the Works.
- 1.1.2.8 "Subcontractor" means any person named in the Contract as a subcontractor, or any person appointed as a subcontractor, for a part of the Works; and the legal successors in title to each of these persons.
- 1.1.2.9 "DB" means the person or three persons appointed under Sub-Clause 20.2 [Appointment of the Dispute Board] or Sub-Clause 20.3 [Failure to Agree on the Composition of the Dispute Board]
- 1.1.2.10 "FIDIC" means the Fédération Internationale des Ingénieurs-Conseils, the international federation of consulting engineers.
- 1.1.2.11 "Bank" means the financing institution (if any) named in the Contract Data.
- 1.1.2.12 "Borrower" means the person (if any) named as the borrower in the Contract Data.
- 1.1.3 Dates, Tests, Periods and Completion
 - 1.1.3.1 "Base Date" means the date 28 days prior to the latest date for submission of the Tender.
 - 1.1.3.2 "Commencement Date" means the date notified under Sub-Clause 8.1 [Commencement of Works].
 - 1.1.3.3 "Time for Completion" means the time for completing the Works or a Section (as the case may be) under Sub-Clause 8.2 [Time for Completion], as stated in the Contract Data (with any extension under Sub-Clause 8.4 [Extension of Time for Completion]), calculated from the Commencement Date.
 - 1.1.3.4 "Tests on Completion" means the tests which are specified in the Contract or agreed by both Parties or instructed as a Variation, and which are carried out under Clause 9 [Tests on Completion] before the Works or a Section (as the case may be) are taken over by the Employer.
 - 1.1.3.5 "Taking-Over Certificate" means a certificate issued under Clause 10 [Employer's Taking Over].

- 1.1.3.6 "Tests after Completion" means the tests (if any) which are specified in the Contract and which are carried out in accordance with the Specification after the Works or a Section (as the case may be) are taken over by the Employer.
- 1.1.3.7 "Defects Notification Period" means the period for notifying defects in the Works or a Section (as the case may be) under Sub-Clause 11.1 [Completion of Outstanding Work and Remedying Defects], which extends over 365 days except if otherwise stated in the Contract Data (with any extension under Sub-Clause 11.3 [Extension of Defects Notification Period]), calculated from the date on which the Works or Section is completed as certified under Sub-Clause 10.1 [Taking Over of the Works and Sections].
- 1.1.3.8 "Performance Certificate" means the certificate issued under Sub-Clause 11.9 [Performance Certificate].
- 1.1.3.9 "day" means a calendar day and "year" means 365 days.

1.1.4 Money and Payments

- 1.1.4.1 "Accepted Contract Amount" means the amount accepted in the Letter of Acceptance for the execution and completion of the Works and the remedying of any defects.
- 1.1.4.2 "Contract Price" means the price defined in Sub-Clause 14.1 [The Contract Price], and includes adjustments in accordance with the Contract.
- 1.1.4.3 "Cost" means all expenditure reasonably incurred (or to be incurred) by the Contractor, whether on or off the Site, including overhead and similar charges, but does not include profit.
- 1.1.4.4 "Final Payment Certificate" means the payment certificate issued under Sub-Clause 14.13 [Issue of Final Payment Certificate].
- 1.1.4.5 "Final Statement" means the statement defined in Sub-Clause 14.11 [Application for Final Payment Certificate].
- 1.1.4.6 "Foreign Currency" means a currency in which part (or all) of the Contract Price is payable, but not the Local Currency.
- 1.1.4.7 "Interim Payment Certificate" means a payment certificate issued under Clause 14 [Contract Price and Payment], other than the Final Payment Certificate.
- 1.1.4.8 "Local Currency" means the currency of the Country.
- 1.1.4.9 "Payment Certificate" means a payment certificate issued under Clause 14 [Contract Price and Payment].
- 1.1.4.10 "Provisional Sum" means a sum (if any) which is specified in the Contract as a provisional sum, for the execution of any part of the Works or for the supply of Plant, Materials or services under Sub-Clause 13.5 [Provisional Sums].
- 1.1.4.11 "Retention Money" means the accumulated retention moneys which the Employer retains under Sub-Clause 14.3 [Application for Interim Payment Certificates] and pays under Sub-Clause 14.9 [Payment of Retention Money].
- 1.1.4.12 "Statement" means a statement submitted by the Contractor as part of an application, under Clause 14 [Contract Price and Payment], for a payment certificate.

1.1.5 Works and Goods



- 1.1.5.1 "Contractor's Equipment" means all apparatus, machinery, vehicles and other things required for the execution and completion of the Works and the remedying of any defects. However, Contractor's Equipment excludes Temporary Works, Employer's Equipment (if any), Plant, Materials and any other things intended to form or forming part of the Permanent Works.
- 1.1.5.2 "Goods" means Contractor's Equipment, Materials, Plant and Temporary Works, or any of them as appropriate.
- 1.1.5.3 "Materials" means things of all kinds (other than Plant) intended to form or forming part of the Permanent Works, including the supply-only materials (if any) to be supplied by the Contractor under the Contract.
- 1.1.5.4 "Permanent Works" means the permanent works to be executed by the Contractor under the Contract.
- 1.1.5.5 "Plant" means the apparatus, machinery and other equipment intended to form or forming part of the Permanent Works, including vehicles purchased for the Employer and relating to the construction or operation of the Works.
- 1.1.5.6 "Section" means a part of the Works specified in the Contract Data as a Section (if any).
- 1.1.5.7 "Temporary Works" means all temporary works of every kind (other than Contractor's Equipment) required on Site for the execution and completion of the Permanent Works and the remedying of any defects.
- 1.1.5.8 "Works" mean the Permanent Works and the Temporary Works, or either of them as appropriate.

1.1.6 Other Definitions

- 1.1.6.1 "Contractor's Documents" means the calculations, computer programs and other software, drawings, manuals, models and other documents of a technical nature (if any) supplied by the Contractor under the Contract.
- 1.1.6.2 "Country" means the country in which the Site (or most of it) is located, where the Permanent Works are to be executed.
- 1.1.6.3 "Employer's Equipment" means the apparatus, machinery and vehicles (if any) made available by the Employer for the use of the Contractor in the execution of the Works, as stated in the Specification; but does not include Plant which has not been taken over by the Employer.
- 1.1.6.4 "Force Majeure" is defined in Clause 19 [Force Majeure].
- 1.1.6.5 "Laws" means all national (or state) legislation, statutes, ordinances and other laws, and regulations and by-laws of any legally constituted public authority.
- 1.1.6.6 "Performance Security" means the security (or securities, if any) under Sub-Clause 4.2 [Performance Security].
- 1.1.6.7 "Site" means the places where the Permanent Works are to be executed, including storage and working areas, and to which Plant and Materials are to be delivered, and any other places as may be specified in the Contract as forming part of the Site.
- 1.1.6.8 "Unforeseeable" means not reasonably foreseeable by an experienced contractor by the Base Date.
- 1.1.6.9 "Variation" means any change to the Works, which is instructed or approved as a variation under Clause 13 [Variations and Adjustments].



1.1.6.10 "Notice of Dissatisfaction" means the notice given by either Party to the other under Sub-Clause 20.4 [Obtaining Dispute Board's Decision] indicating its dissatisfaction and intention to commence arbitration.

1.2 Interpretation

In the Contract, except where the context requires otherwise

- (a) words indicating one gender include all genders;
- (b) words indicating the singular also include the plural and words indicating the plural also include the singular;
- (c) provisions including the word "agree", "agreed" or "agreement" require the agreement to be recorded in writing;
- (d) "written" or "in writing" means hand-written, type-written, printed or electronically made, and resulting in a permanent record;
- (e) the word "tender" is synonymous with "bid" and "tenderer" with "bidder" and the words "tender documents" with "bidding documents".

The marginal words and other headings shall not be taken into consideration in the interpretation of these Conditions.

In these Conditions, provisions including the expression "Cost plus profit" require this profit to be one-twentieth (5%) of this Cost unless otherwise indicated in the Contract Data.

1.3 Communications

Wherever these Conditions provide for the giving or issuing of approvals, certificates, consents, determinations, notices, requests and discharges, these communications shall be:

- (a) in writing and delivered by hand (against receipt), sent by mail or courier, or transmitted using any of the agreed systems of electronic transmission as stated in the Contract Data; and
- (b) delivered, sent or transmitted to the address for the recipient's communications as stated in the Contract Data. However:
 - (i) if the recipient gives notice of another address, communications shall thereafter be delivered accordingly; and
 - (ii) if the recipient has not stated otherwise when requesting an approval or consent, it may be sent to the address from which the request was issued.

Approvals, certificates, consents and determinations shall not be unreasonably withheld or delayed. When a certificate is issued to a Party, the certifier shall send a copy to the other Party. When a notice is issued to a Party, by the other Party or the Engineer, a copy shall be sent to the Engineer or the other Party, as the case may be.

1.4 Law and Language

The Contract shall be governed by the law of the country or other jurisdiction stated in the Contract Data.

The ruling language of the Contract shall be that stated in the Contract Data.

The language for communications shall be that stated in the Contract Data. If no language is stated there, the language for communications shall be the ruling language of the Contract.

1.5 Priority of Documents

The documents forming the Contract are to be taken as mutually explanatory of one another. For the purposes of interpretation, the priority of the documents shall be in accordance with the following sequence:

- (a) the Contract Agreement (if any),
- (b) the Letter of Acceptance,
- (c) the Letter of Tender,
- (d) the Particular Conditions – Part A,
- (e) the Particular Conditions – Part B,
- (f) these General Conditions,
- (g) the Specification,
- (h) the Drawings, and
- (i) the Schedules and any other documents forming part of the Contract.

If an ambiguity or discrepancy is found in the documents, the Engineer shall issue any necessary clarification or instruction.

1.6 Contract Agreement

The Parties shall enter into a Contract Agreement within 28 days after the Contractor receives the Letter of Acceptance, unless the Particular Conditions establish otherwise. The Contract Agreement shall be based upon the form annexed to the Particular Conditions. The costs of stamp duties and similar charges (if any) imposed by law in connection with entry into the Contract Agreement shall be borne by the Employer.

1.7 Assignment

Neither Party shall assign the whole or any part of the Contract or any benefit or interest in or under the Contract. However, either Party:

- (a) may assign the whole or any part with the prior agreement of the other Party, at the sole discretion of such other Party, and
- (b) may, as security in favour of a bank or financial institution, assign its right to any moneys due, or to become due, under the Contract.

1.8 Care and Supply of Documents

The Specification and Drawings shall be in the custody and care of the Employer. Unless otherwise stated in the Contract, two copies of the Contract and of each subsequent Drawing shall be supplied to the Contractor, who may make or request further copies at the cost of the Contractor.

Each of the Contractor's Documents shall be in the custody and care of the Contractor, unless and until taken over by the Employer. Unless otherwise stated in the Contract, the Contractor shall supply to the Engineer six copies of each of the Contractor's Documents.

The Contractor shall keep, on the Site, a copy of the Contract, publications named in the Specification, the Contractor's Documents (if any), the Drawings and Variations and other communications given under the Contract. The Employer's Personnel shall have the right of access to all these documents at all reasonable times.

If a Party becomes aware of an error or defect in a document which was prepared for use in executing the Works, the Party shall promptly give notice to the other Party of such error or defect.

1.9 Delayed Drawings or Instructions

The Contractor shall give notice to the Engineer whenever the Works are likely to be delayed or disrupted if any necessary drawing or instruction is not issued to the Contractor within a particular time, which shall be reasonable. The notice shall include details of the necessary drawing or instruction, details of why and by when it should be issued, and the nature and amount of the delay or disruption likely to be suffered if it is late.

If the Contractor suffers delay and/or incurs Cost as a result of a failure of the Engineer to issue the notified drawing or instruction within a time which is reasonable and is specified in the notice with supporting details, the Contractor shall give a further notice to the Engineer and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost plus profit, which shall be included in the Contract Price.

After receiving this further notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

However, if and to the extent that the Engineer's failure was caused by any error or delay by the Contractor, including an error in, or delay in the submission of, any of the Contractor's Documents, the Contractor shall not be entitled to such extension of time, Cost or profit.

1.10 Employer's Use of Contractor's Documents

As between the Parties, the Contractor shall retain the copyright and other intellectual property rights in the Contractor's Documents and other design documents made by (or on behalf of) the Contractor.

The Contractor shall be deemed (by signing the Contract) to give to the Employer a non-terminable transferable non-exclusive royalty-free licence to copy, use and communicate the Contractor's Documents, including making and using modifications of them. This licence shall:

- (a) apply throughout the actual or intended working life (whichever is longer) of the relevant parts of the Works,
- (b) entitle any person in proper possession of the relevant part of the Works to copy, use and communicate the Contractor's Documents for the purposes of completing, operating, maintaining, altering, adjusting, repairing and demolishing the Works, and
- (c) in the case of Contractor's Documents which are in the form of computer programs and other software, permit their use on any computer on the Site and other places as envisaged by the Contract, including replacements of any computers supplied by the Contractor.



The Contractor's Documents and other design documents made by (or on behalf of) the Contractor shall not, without the Contractor's consent, be used, copied or communicated to a third party by (or on behalf of) the Employer for purposes other than those permitted under this Sub-Clause.

1.11 Contractor's Use of Employer's Documents

As between the Parties, the Employer shall retain the copyright and other intellectual property rights in the Specification, the Drawings and other documents made by (or on behalf of) the Employer. The Contractor may, at his cost, copy, use, and obtain communication of these documents for the purposes of the Contract. They shall not, without the Employer's consent, be copied, used or communicated to a third party by the Contractor, except as necessary for the purposes of the Contract.

1.12 Confidential Details

The Contractor's and the Employer's Personnel shall disclose all such confidential and other information as may be reasonably required in order to verify compliance with the Contract and allow its proper implementation.

Each of them shall treat the details of the Contract as private and confidential, except to the extent necessary to carry out their respective obligations under the Contract or to comply with applicable Laws. Each of them shall not publish or disclose any particulars of the Works prepared by the other Party without the previous agreement of the other Party. However, the Contractor shall be permitted to disclose any publicly available information, or information otherwise required to establish his qualifications to compete for other projects.

1.13 Compliance with Laws

The Contractor shall, in performing the Contract, comply with applicable Laws. Unless otherwise stated in the Particular Conditions:

- (a) the Employer shall have obtained (or shall obtain) the planning, zoning, building permit or similar permission for the Permanent Works, and any other permissions described in the Specification as having been (or to be) obtained by the Employer; and the Employer shall indemnify and hold the Contractor harmless against and from the consequences of any failure to do so; and
- (b) the Contractor shall give all notices, pay all taxes, duties and fees, and obtain all permits, licences and approvals, as required by the Laws in relation to the execution and completion of the Works and the remedying of any defects; and the Contractor shall indemnify and hold the Employer harmless against and from the consequences of any failure to do so, unless the Contractor is impeded to accomplish these actions and shows evidence of its diligence.

1.14 Joint and Several Liability

If the Contractor constitutes (under applicable Laws) a joint venture, consortium or other unincorporated grouping of two or more persons:

- (a) these persons shall be deemed to be jointly and severally liable to the Employer for the performance of the Contract;
- (b) these persons shall notify the Employer of their leader who shall have authority to bind the Contractor and each of these persons; and
- (c) the Contractor shall not alter its composition or legal status without the prior consent of the Employer.

1.15 Inspections and Audit by the Bank



The Contractor shall permit the Bank and/or persons appointed by the Bank to inspect the Site and/or the Contractor's accounts and records relating to the performance of the Contract and to have such accounts and records audited by auditors appointed by the Bank if required by the Bank.

2 The Employer

2.1 Right of Access to the Site

The Employer shall give the Contractor right of access to, and possession of, all parts of the Site within the time (or times) stated in the Contract Data. The right and possession may not be exclusive to the Contractor. If, under the Contract, the Employer is required to give (to the Contractor) possession of any foundation, structure, plant or means of access, the Employer shall do so in the time and manner stated in the Specification. However, the Employer may withhold any such right or possession until the Performance Security has been received.

If no such time is stated in the Contract Data, the Employer shall give the Contractor right of access to, and possession of, the Site within such times as required to enable the Contractor to proceed without disruption in accordance with the programme submitted under Sub-Clause 8.3 [Programme].

If the Contractor suffers delay and/or incurs Cost as a result of a failure by the Employer to give any such right or possession within such time, the Contractor shall give notice to the Engineer and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost plus profit, which shall be included in the Contract Price.

After receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

However, if and to the extent that the Employer's failure was caused by any error or delay by the Contractor, including an error in, or delay in the submission of, any of the Contractor's Documents, the Contractor shall not be entitled to such extension of time, Cost or profit.

2.2 Permits, Licences or Approvals

The Employer shall provide, at the request of the Contractor, such reasonable assistance as to allow the Contractor to obtain properly:

- (a) copies of the Laws of the Country which are relevant to the Contract but are not readily available, and
- (b) any permits, licences or approvals required by the Laws of the Country:
 - (i) which the Contractor is required to obtain under Sub-Clause 1.13 [Compliance with Laws],
 - (ii) for the delivery of Goods, including clearance through customs, and
 - (iii) for the export of Contractor's Equipment when it is removed from the Site.

2.3 Employer's Personnel

The Employer shall be responsible for ensuring that the Employer's Personnel and the Employer's other contractors on the Site:

- (a) co-operate with the Contractor's efforts under Sub-Clause 4.6 [Co-operation], and



- (b) take actions similar to those which the Contractor is required to take under sub-paragraphs (a), (b) and (c) of Sub-Clause 4.8 [Safety Procedures] and under Sub-Clause 4.18 [Protection of the Environment].

2.4 Employer's Financial Arrangements

The Employer shall submit, before the Commencement Date and thereafter within 28 days after receiving any request from the Contractor, reasonable evidence that financial arrangements have been made and are being maintained which will enable the Employer to pay the Contract Price punctually (as estimated at that time) in accordance with Clause 14 [Contract Price and Payment]. Before the Employer makes any material change to his financial arrangements, the Employer shall give notice to the Contractor with detailed particulars.

In addition, if the Bank has notified to the Borrower that the Bank has suspended disbursements under its loan, which finances in whole or in part the execution of the Works, the Employer shall give notice of such suspension to the Contractor with detailed particulars, including the date of such notification, with a copy to the Engineer, within 7 days of the Borrower having received the suspension notification from the Bank. If alternative funds will be available in appropriate currencies to the Employer to continue making payments to the Contractor beyond a date 60 days after the date of Bank notification of the suspension, the Employer shall provide reasonable evidence in his notice of the extent to which such funds will be available.

2.5 Employer's Claims

If the Employer considers himself to be entitled to any payment under any Clause of these Conditions or otherwise in connection with the Contract, and/or to any extension of the Defects Notification Period, the Employer or the Engineer shall give notice and particulars to the Contractor. However, notice is not required for payments due under Sub-Clause 4.19 [Electricity, Water and Gas], under Sub-Clause 4.20 [Employer's Equipment and Free-Issue Materials], or for other services requested by the Contractor.

The notice shall be given as soon as practicable and no longer than 28 days after the Employer became aware, or should have become aware, of the event or circumstances giving rise to the claim. A notice relating to any extension of the Defects Notification Period shall be given before the expiry of such period.

The particulars shall specify the Clause or other basis of the claim, and shall include substantiation of the amount and/or extension to which the Employer considers himself to be entitled in connection with the Contract. The Engineer shall then proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine (i) the amount (if any) which the Employer is entitled to be paid by the Contractor, and/or (ii) the extension (if any) of the Defects Notification Period in accordance with Sub-Clause 11.3 [Extension of Defects Notification Period].

This amount may be included as a deduction in the Contract Price and Payment Certificates. The Employer shall only be entitled to set off against or make any deduction from an amount certified in a Payment Certificate, or to otherwise claim against the Contractor, in accordance with this Sub-Clause.

3 The Engineer

3.1 Engineer's Duties and Authority

The Employer shall appoint the Engineer who shall carry out the duties assigned to him in the Contract. The Engineer's staff shall include suitably qualified engineers and other professionals who are competent to carry out these duties.

The Engineer shall have no authority to amend the Contract.



The Engineer may exercise the authority attributable to the Engineer as specified in or necessarily to be implied from the Contract. If the Engineer is required to obtain the approval of the Employer before exercising a specified authority, the requirements shall be as stated in the Particular Conditions. The Employer shall promptly inform the Contractor of any change to the authority attributed to the Engineer.

However, whenever the Engineer exercises a specified authority for which the Employer's approval is required, then (for the purposes of the Contract) the Employer shall be deemed to have given approval.

Except as otherwise stated in these Conditions:

- (a) whenever carrying out duties or exercising authority, specified in or implied by the Contract, the Engineer shall be deemed to act for the Employer;
- (b) the Engineer has no authority to relieve either Party of any duties, obligations or responsibilities under the Contract;
- (c) any approval, check, certificate, consent, examination, inspection, instruction, notice, proposal, request, test, or similar act by the Engineer (including absence of disapproval) shall not relieve the Contractor from any responsibility he has under the Contract, including responsibility for errors, omissions, discrepancies and non-compliances; and
- (d) any act by the Engineer in response to a Contractor's request except as otherwise expressly specified shall be notified in writing to the Contractor within 28 days of receipt.

The following provisions shall apply:

The Engineer shall obtain the specific approval of the Employer before taking action under the following Sub-Clauses of these Conditions:

- (A) Sub-Clause 4.12: agreeing or determining an extension of time and/or additional cost.
- (B) Sub-Clause 13.1: instructing a Variation, except;
 - (i) in an emergency situation as determined by the Engineer, or
 - (ii) if such a Variation would increase the Accepted Contract Amount by less than the percentage specified in the Contract Data.
- (C) Sub-Clause 13.3: approving a proposal for Variation submitted by the Contractor in accordance with Sub Clause 13.1 or 13.2.
- (D) Sub-Clause 13.4: specifying the amount payable in each of the applicable currencies

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 responsibility 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 13 and shall notify the Contractor accordingly, with a copy to the Employer.

3.2 Delegation by the Engineer

The Engineer may from time to time assign duties and delegate authority to assistants, and may also revoke such assignment or delegation. These assistants may include a resident engineer, and/or independent inspectors appointed to inspect and/or test items of Plant and/or Materials. The assignment, delegation or revocation shall be in writing and shall not take effect until copies have been received by both Parties. However, unless otherwise agreed by both Parties, the Engineer shall not delegate the authority to determine any matter in accordance with Sub-Clause 3.5 [Determinations].

Assistants shall be suitably qualified persons, who are competent to carry out these duties and exercise this authority, and who are fluent in the language for communications defined in Sub-Clause 1.4 [Law and Language].

Each assistant, to whom duties have been assigned or authority has been delegated, shall only be authorised to issue instructions to the Contractor to the extent defined by the delegation. Any approval, check, certificate, consent, examination, inspection, instruction, notice, proposal, request, test, or similar act by an assistant, in accordance with the delegation, shall have the same effect as though the act had been an act of the Engineer. However:

- (a) any failure to disapprove any work, Plant or Materials shall not constitute approval, and shall therefore not prejudice the right of the Engineer to reject the work, Plant or Materials;
- (b) if the Contractor questions any determination or instruction of an assistant, the Contractor may refer the matter to the Engineer, who shall promptly confirm, reverse or vary the determination or instruction.

3.3 Instructions of the Engineer

The Engineer may issue to the Contractor (at any time) instructions and additional or modified Drawings which may be necessary for the execution of the Works and the remedying of any defects, all in accordance with the Contract. The Contractor shall only take instructions from the Engineer, or from an assistant to whom the appropriate authority has been delegated under this Clause. If an instruction constitutes a Variation, Clause 13 [Variations and Adjustments] shall apply.

The Contractor shall comply with the instructions given by the Engineer or delegated assistant, on any matter related to the Contract. Whenever practicable, their instructions shall be given in writing. If the Engineer or a delegated assistant:

- (a) gives an oral instruction,
- (b) receives a written confirmation of the instruction, from (or on behalf of) the Contractor, within two working days after giving the instruction, and
- (c) does not reply by issuing a written rejection and/or instruction within two working days after receiving the confirmation,

then the confirmation shall constitute the written instruction of the Engineer or delegated assistant (as the case may be).

3.4 Replacement of the Engineer

If the Employer intends to replace the Engineer, the Employer shall, not less than 21 days before the intended date of replacement, give notice to the Contractor of the name, address and relevant experience of the intended replacement Engineer. If the Contractor considers the intended replacement Engineer to be unsuitable, he has the right to raise objection against him by notice to the Employer, with supporting particulars, and the Employer shall give full and fair consideration to this objection.

3.5 Determinations

Whenever these Conditions provide that the Engineer shall proceed in accordance with this Sub-Clause 3.5 to agree or determine any matter, the Engineer shall consult with each Party in an endeavour to reach agreement. If agreement is not achieved, the Engineer shall make a fair determination in accordance with the Contract, taking due regard of all relevant circumstances.



The Engineer shall give notice to both Parties of each agreement or determination, with supporting particulars, within 28 days from the receipt of the corresponding claim or request except when otherwise specified. Each Party shall give effect to each agreement or determination unless and until revised under Clause 20 [Claims, Disputes and Arbitration].

4 The Contractor

4.1 Contractor's General Obligations

The Contractor shall design (to the extent specified in the Contract), execute and complete the Works in accordance with the Contract and with the Engineer's instructions, and shall remedy any defects in the Works.

The Contractor shall provide the Plant and Contractor's Documents specified in the Contract, and all Contractor's Personnel, Goods, consumables and other things and services, whether of a temporary or permanent nature, required in and for this design, execution, completion and remedying of defects.

All equipment, material, and services to be incorporated in or required for the Works shall have their origin in any eligible source country as defined by the Bank.

The Contractor shall be responsible for the adequacy, stability and safety of all Site operations and of all methods of construction. Except to the extent specified in the Contract, the Contractor (i) shall be responsible for all Contractor's Documents, Temporary Works, and such design of each item of Plant and Materials as is required for the item to be in accordance with the Contract, and (ii) shall not otherwise be responsible for the design or specification of the Permanent Works.

The Contractor shall, whenever required by the Engineer, submit details of the arrangements and methods which the Contractor proposes to adopt for the execution of the Works. No significant alteration to these arrangements and methods shall be made without this having previously been notified to the Engineer.

If the Contract specifies that the Contractor shall design any part of the Permanent Works, then unless otherwise stated in the Particular Conditions:

- (a) the Contractor shall submit to the Engineer the Contractor's Documents for this part in accordance with the procedures specified in the Contract;
- (b) these Contractor's Documents shall be in accordance with the Specification and Drawings, shall be written in the language for communications defined in Sub-Clause 1.4 [Law and Language], and shall include additional information required by the Engineer to add to the Drawings for co-ordination of each Party's designs;
- (c) the Contractor shall be responsible for this part and it shall, when the Works are completed, be fit for such purposes for which the part is intended as are specified in the Contract; and
- (d) prior to the commencement of the Tests on Completion, the Contractor shall submit to the Engineer the "as-built" documents and, if applicable, operation and maintenance manuals in accordance with the Specification and in sufficient detail for the Employer to operate, maintain, dismantle, reassemble, adjust and repair this part of the Works. Such part shall not be considered to be completed for the purposes of taking-over under Sub-Clause 10.1 [Taking Over of the Works and Sections] until these documents and manuals have been submitted to the Engineer.

4.2 Performance Security

The Contractor shall obtain (at his cost) a Performance Security for proper performance, in the amount stated in the Contract Data and denominated in the currency(ies) of the Contract or in a freely convertible currency acceptable to the Employer. If an amount is not stated in the Contract Data, this Sub-Clause shall not apply.



The Contractor shall deliver the Performance Security to the Employer within 28 days after receiving the Letter of Acceptance, and shall send a copy to the Engineer. The Performance Security shall be issued by a reputable bank or financial institution selected by the Contractor, and shall be in the form annexed to the Particular Conditions, as stipulated by the Employer in the Contract Data, or in another form approved by the Employer.

The Contractor shall ensure that the Performance Security is valid and enforceable until the Contractor has executed and completed the Works and remedied any defects. If the terms of the Performance Security specify its expiry date, and the Contractor has not become entitled to receive the Performance Certificate by the date 28 days prior to the expiry date, the Contractor shall extend the validity of the Performance Security until the Works have been completed and any defects have been remedied.

The Employer shall not make a claim under the Performance Security, except for amounts to which the Employer is entitled under the Contract.

The Employer shall indemnify and hold the Contractor harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from a claim under the Performance Security to the extent to which the Employer was not entitled to make the claim.

The Employer shall return the Performance Security to the Contractor within 21 days after receiving a copy of the Performance Certificate.

Without limitation to the provisions of the rest of this Sub-Clause, whenever the Engineer determines an addition or a reduction to the Contract Price as a result of a change in cost and/or legislation, or as a result of a Variation, amounting to more than 25 percent of the portion of the Contract Price payable in a specific currency, the Contractor shall at the Engineer's request promptly increase, or may decrease, as the case may be, the value of the Performance Security in that currency by an equal percentage.

4.3 Contractor's Representative

The Contractor shall appoint the Contractor's Representative and shall give him all authority necessary to act on the Contractor's behalf under the Contract.

Unless the Contractor's Representative is named in the Contract, the Contractor shall, prior to the Commencement Date, submit to the Engineer for consent the name and particulars of the person the Contractor proposes to appoint as Contractor's Representative. If consent is withheld or subsequently revoked in terms of Sub-Clause 6.9 [Contractor's Personnel], or if the appointed person fails to act as Contractor's Representative, the Contractor shall similarly submit the name and particulars of another suitable person for such appointment.

The Contractor shall not, without the prior consent of the Engineer, revoke the appointment of the Contractor's Representative or appoint a replacement.

The whole time of the Contractor's Representative shall be given to directing the Contractor's performance of the Contract. If the Contractor's Representative is to be temporarily absent from the Site during the execution of the Works, a suitable replacement person shall be appointed, subject to the Engineer's prior consent, and the Engineer shall be notified accordingly.

The Contractor's Representative shall, on behalf of the Contractor, receive instructions under Sub-Clause 3.3 [Instructions of the Engineer].

The Contractor's Representative may delegate any powers, functions and authority to any competent person, and may at any time revoke the delegation. Any delegation or revocation shall not take effect until the Engineer has received prior notice signed by the Contractor's Representative, naming the person and specifying the powers, functions and authority being delegated or revoked.

The Contractor's Representative shall be fluent in the language for communications defined in Sub-Clause 1.4 [Law and Language]. If the Contractor's Representative's delegates are not fluent in the said language, the Contractor shall make competent interpreters available during all working hours in a number deemed sufficient by the Engineer.

4.4 Subcontractors

The Contractor shall not subcontract the whole of the Works.

The Contractor shall be responsible for the acts or defaults of any Subcontractor, his agents or employees, as if they were the acts or defaults of the Contractor. Unless otherwise stated in the Particular Conditions:

- (a) the Contractor shall not be required to obtain consent to suppliers solely of Materials, or to a subcontract for which the Subcontractor is named in the Contract;
- (b) the prior consent of the Engineer shall be obtained to other proposed Subcontractors;
- (c) the Contractor shall give the Engineer not less than 28 days' notice of the intended date of the commencement of each Subcontractor's work, and of the commencement of such work on the Site; and
- (d) each subcontract shall include provisions which would entitle the Employer to require the subcontract to be assigned to the Employer under Sub-Clause 4.5 [Assignment of Benefit of Subcontract] (if or when applicable) or in the event of termination under Sub-Clause 15.2 [Termination by Employer].

The Contractor shall ensure that the requirements imposed on the Contractor by Sub-Clause 1.12 [Confidential Details] apply equally to each Subcontractor.

Where practicable, the Contractor shall give fair and reasonable opportunity for contractors from the Country to be appointed as Subcontractors.

4.5 Assignment of Benefit of Subcontract

If a Subcontractor's obligations extend beyond the expiry date of the relevant Defects Notification Period and the Engineer, prior to this date, instructs the Contractor to assign the benefit of such obligations to the Employer, then the Contractor shall do so. Unless otherwise stated in the assignment, the Contractor shall have no liability to the Employer for the work carried out by the Subcontractor after the assignment takes effect.

4.6 Co-operation

The Contractor shall, as specified in the Contract or as instructed by the Engineer, allow appropriate opportunities for carrying out work to:

- (a) the Employer's Personnel,
- (b) any other contractors employed by the Employer, and
- (c) the personnel of any legally constituted public authorities,

who may be employed in the execution on or near the Site of any work not included in the Contract.

Any such instruction shall constitute a Variation if and to the extent that it causes the Contractor to suffer delays and/or to incur Unforeseeable Cost. Services for these personnel and other contractors may include the use of Contractor's Equipment, Temporary Works or access arrangements which are the responsibility of the Contractor.

If, under the Contract, the Employer is required to give to the Contractor possession of any foundation, structure, plant or means of access in accordance with Contractor's Documents, the Contractor shall submit such documents to the Engineer in the time and manner stated in the Specification.



4.7 Setting Out

The Contractor shall set out the Works in relation to original points, lines and levels of reference specified in the Contract or notified by the Engineer. The Contractor shall be responsible for the correct positioning of all parts of the Works, and shall rectify any error in the positions, levels, dimensions or alignment of the Works.

The Employer shall be responsible for any errors in these specified or notified items of reference, but the Contractor shall use reasonable efforts to verify their accuracy before they are used.

If the Contractor suffers delay and/or incurs Cost from executing work which was necessitated by an error in these items of reference, and an experienced contractor could not reasonably have discovered such error and avoided this delay and/or Cost, the Contractor shall give notice to the Engineer and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost plus profit, which shall be included in the Contract Price.

After receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine (i) whether and (if so) to what extent the error could not reasonably have been discovered, and (ii) the matters described in sub-paragraphs (a) and (b) above related to this extent.

4.8 Safety Procedures

The Contractor shall:

- (a) comply with all applicable safety regulations,
- (b) take care for the safety of all persons entitled to be on the Site,
- (c) use reasonable efforts to keep the Site and Works clear of unnecessary obstruction so as to avoid danger to these persons,
- (d) provide fencing, lighting, guarding and watching of the Works until completion and taking over under Clause 10 [Employer's Taking Over], and
- (e) provide any Temporary Works (including roadways, footways, guards and fences) which may be necessary, because of the execution of the Works, for the use and protection of the public and of owners and occupiers of adjacent land.

4.9 Quality Assurance

The Contractor shall institute a quality assurance system to demonstrate compliance with the requirements of the Contract. The system shall be in accordance with the details stated in the Contract. The Engineer shall be entitled to audit any aspect of the system.

Details of all procedures and compliance documents shall be submitted to the Engineer for information before each design and execution stage is commenced. When any document of a technical nature is issued to the Engineer, evidence of the prior approval by the Contractor himself shall be apparent on the document itself.

Compliance with the quality assurance system shall not relieve the Contractor of any of his duties, obligations or responsibilities under the Contract.

4.10 Site Data

The Employer shall have made available to the Contractor for his information, prior to the Base Date, all relevant data in the Employer's possession on sub-surface and hydrological conditions at the Site, including environmental aspects. The Employer shall similarly make available to the Contractor all such data which come into the Employer's possession after the Base Date. The Contractor shall be responsible for interpreting all such data.

To the extent which was practicable (taking account of cost and time), the Contractor shall be deemed to have obtained all necessary information as to risks, contingencies and other circumstances which may influence or affect the Tender or Works. To the same extent, the Contractor shall be deemed to have inspected and examined the Site, its surroundings, the above data and other available information, and to have been satisfied before submitting the Tender as to all relevant matters, including (without limitation):

- (a) the form and nature of the Site, including sub-surface conditions,
- (b) the hydrological and climatic conditions,
- (c) the extent and nature of the work and Goods necessary for the execution and completion of the Works and the remedying of any defects,
- (d) the Laws, procedures and labour practices of the Country, and
- (e) the Contractor's requirements for access, accommodation, facilities, personnel, power, transport, water and other services.

4.11 Sufficiency of the Accepted Contract Amount

The Contractor shall be deemed to:

- (a) have satisfied himself as to the correctness and sufficiency of the Accepted Contract Amount, and
- (b) have based the Accepted Contract Amount on the data, interpretations, necessary information, inspections, examinations and satisfaction as to all relevant matters referred to in Sub-Clause 4.10 [Site Data].

Unless otherwise stated in the Contract, the Accepted Contract Amount covers all the Contractor's obligations under the Contract (including those under Provisional Sums, if any) and all things necessary for the proper execution and completion of the Works and the remedying of any defects.

4.12 Unforeseeable Physical Conditions

In this Sub-Clause, "physical conditions" means natural physical conditions and man-made and other physical obstructions and pollutants, which the Contractor encounters at the Site when executing the Works, including sub-surface and hydrological conditions but excluding climatic conditions.

If the Contractor encounters adverse physical conditions which he considers to have been Unforeseeable, the Contractor shall give notice to the Engineer as soon as practicable.

This notice shall describe the physical conditions, so that they can be inspected by the Engineer, and shall set out the reasons why the Contractor considers them to be Unforeseeable. The Contractor shall continue executing the Works, using such proper and reasonable measures as are appropriate for the physical conditions, and shall comply with any instructions which the Engineer may give. If an instruction constitutes a Variation, Clause 13 [Variations and Adjustments] shall apply.

If and to the extent that the Contractor encounters physical conditions which are Unforeseeable, gives such a notice, and suffers delay and/or incurs Cost due to these conditions, the Contractor shall be entitled subject to notice under Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost, which shall be included in the Contract Price.

Upon receiving such notice and inspecting and/or investigating these physical conditions, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine (i) whether and (if so) to what extent these physical conditions were Unforeseeable, and (ii) the matters described in sub-paragraphs (a) and (b) above related to this extent.

However, before additional Cost is finally agreed or determined under sub-paragraph (ii), the Engineer may also review whether other physical conditions in similar parts of the Works (if any) were more favourable than could reasonably have been foreseen when the Contractor submitted the Tender. If and to the extent that these more favourable conditions were encountered, the Engineer may proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine the reductions in Cost which were due to these conditions, which may be included (as deductions) in the Contract Price and Payment Certificates. However, the net effect of all adjustments under sub-paragraph (b) and all these reductions, for all the physical conditions encountered in similar parts of the Works, shall not result in a net reduction in the Contract Price.

The Engineer shall take account of any evidence of the physical conditions foreseen by the Contractor when submitting the Tender, which shall be made available by the Contractor, but shall not be bound by the Contractor's interpretation of any such evidence.

4.13 Rights of Way and Facilities

Unless otherwise specified in the Contract the Employer shall provide effective access to and possession of the Site including special and/or temporary rights-of-way which are necessary for the Works. The Contractor shall obtain, at his risk and cost, any additional rights of way or facilities outside the Site which he may require for the purposes of the Works.

4.14 Avoidance of Interference

The Contractor shall not interfere unnecessarily or improperly with:

- (a) the convenience of the public, or
- (b) the access to and use and occupation of all roads and footpaths, irrespective of whether they are public or in the possession of the Employer or of others.

The Contractor shall indemnify and hold the Employer harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from any such unnecessary or improper interference.

4.15 Access Route

The Contractor shall be deemed to have been satisfied as to the suitability and availability of access routes to the Site at Base Date. The Contractor shall use reasonable efforts to prevent any road or bridge from being damaged by the Contractor's traffic or by the Contractor's Personnel. These efforts shall include the proper use of appropriate vehicles and routes.

Except as otherwise stated in these Conditions:

- (a) the Contractor shall (as between the Parties) be responsible for any maintenance which may be required for his use of access routes;

- (b) the Contractor shall provide all necessary signs or directions along access routes, and shall obtain any permission which may be required from the relevant authorities for his use of routes, signs and directions;
- (c) the Employer shall not be responsible for any claims which may arise from the use or otherwise of any access route;
- (d) the Employer does not guarantee the suitability or availability of particular access routes; and
- (e) Costs due to non-suitability or non-availability, for the use required by the Contractor, of access routes shall be borne by the Contractor.

4.16 Transport of Goods

Unless otherwise stated in the Particular Conditions:

- (a) the Contractor shall give the Engineer not less than 21 days' notice of the date on which any Plant or a major item of other Goods will be delivered to the Site;
- (b) the Contractor shall be responsible for packing, loading, transporting, receiving, unloading, storing and protecting all Goods and other things required for the Works; and
- (c) the Contractor shall indemnify and hold the Employer harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from the transport of Goods, and shall negotiate and pay all claims arising from their transport.

4.17 Contractor's Equipment

The Contractor shall be responsible for all Contractor's Equipment. When brought on to the Site, Contractor's Equipment shall be deemed to be exclusively intended for the execution of the Works. The Contractor shall not remove from the Site any major items of Contractor's Equipment without the consent of the Engineer. However, consent shall not be required for vehicles transporting Goods or Contractor's Personnel off Site.

4.18 Protection of the Environment

The Contractor shall take all reasonable steps to protect the environment (both on and off the Site) and to limit damage and nuisance to people and property resulting from pollution, noise and other results of his operations.

The Contractor shall ensure that emissions, surface discharges and effluent from the Contractor's activities shall not exceed the values stated in the Specification or prescribed by applicable Laws.

4.19 Electricity, Water and Gas

The Contractor shall, except as stated below, be responsible for the provision of all power, water and other services he may require for his construction activities and to the extent defined in the Specifications, for the tests.

The Contractor shall be entitled to use for the purposes of the Works such supplies of electricity, water, gas and other services as may be available on the Site and of which details and prices are given in the Specification. The Contractor shall, at his risk and cost, provide any apparatus necessary for his use of these services and for measuring the quantities consumed.

The quantities consumed and the amounts due (at these prices) for such services shall be agreed or determined by the Engineer in accordance with Sub-Clause 2.5 [Employer's Claims] and Sub-Clause 3.5 [Determinations]. The Contractor shall pay these amounts to the Employer.

4.20 Employer's Equipment and Free-Issue Materials

The Employer shall make the Employer's Equipment (if any) available for the use of the Contractor in the execution of the Works in accordance with the details, arrangements and prices stated in the Specification. Unless otherwise stated in the Specification:

- (a) the Employer shall be responsible for the Employer's Equipment, except that
- (b) the Contractor shall be responsible for each item of Employer's Equipment whilst any of the Contractor's Personnel is operating it, driving it, directing it or in possession or control of it.

The appropriate quantities and the amounts due (at such stated prices) for the use of Employer's Equipment shall be agreed or determined by the Engineer in accordance with Sub-Clause 2.5 [Employer's Claims] and Sub-Clause 3.5 [Determinations]. The Contractor shall pay these amounts to the Employer.

The Employer shall supply, free of charge, the "free-issue materials" (if any) in accordance with the details stated in the Specification. The Employer shall, at his risk and cost, provide these materials at the time and place specified in the Contract. The Contractor shall then visually inspect them, and shall promptly give notice to the Engineer of any shortage, defect or default in these materials. Unless otherwise agreed by both Parties, the Employer shall immediately rectify the notified shortage, defect or default.

After this visual inspection, the free-issue materials shall come under the care, custody and control of the Contractor. The Contractor's obligations of inspection, care, custody and control shall not relieve the Employer of liability for any shortage, defect or default not apparent from a visual inspection.

4.21 Progress Reports

Unless otherwise stated in the Particular Conditions, monthly progress reports shall be prepared by the Contractor and submitted to the Engineer in six copies. The first report shall cover the period up to the end of the first calendar month following the Commencement Date. Reports shall be submitted monthly thereafter, each within 7 days after the last day of the period to which it relates.

Reporting shall continue 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.

Each report shall include:

- (a) charts and detailed descriptions of progress, including each stage of design (if any), Contractor's Documents, procurement, manufacture, delivery to Site, construction, erection and testing; and including these stages for work by each nominated Subcontractor (as defined in Clause 5 [Nominated Subcontractors]),
- (b) photographs showing the status of manufacture and of progress on the Site;
- (c) for the manufacture of each main item of Plant and Materials, the name of the manufacturer, manufacture location, percentage progress, and the actual or expected dates of:
 - (i) commencement of manufacture,
 - (ii) Contractor's inspections,
 - (iii) tests, and
 - (iv) shipment and arrival at the Site;
- (d) the details described in Sub-Clause 6.10 [Records of Contractor's Personnel and Equipment];
- (e) copies of quality assurance documents, test results and certificates of Materials;

- (f) list of notices given under Sub-Clause 2.5 [Employer's Claims] and notices given under Sub-Clause 20.1 [Contractor's Claims];
- (g) safety statistics, including details of any hazardous incidents and activities relating to environmental aspects and public relations; and
- (h) comparisons of actual and planned progress, with details of any events or circumstances which may jeopardise the completion in accordance with the Contract, and the measures being (or to be) adopted to overcome delays.

4.22 Security of the Site

Unless otherwise stated in the Particular Conditions:

- (a) the Contractor shall be responsible for keeping unauthorised persons off the Site, and
- (b) authorised persons shall be limited to the Contractor's Personnel and the Employer's Personnel; and to any other personnel notified to the Contractor, by the Employer or the Engineer, as authorised personnel of the Employer's other contractors on the Site.

4.23 Contractor's Operations on Site

The Contractor shall confine his operations to the Site, and to any additional areas which may be obtained by the Contractor and agreed by the Engineer as additional working areas. The Contractor shall take all necessary precautions to keep Contractor's Equipment and Contractor's Personnel within the Site and these additional areas, and to keep them off adjacent land.

During the execution of the Works, the Contractor shall keep the Site free from all unnecessary obstruction, and shall store or dispose of any Contractor's Equipment or surplus materials. The Contractor shall clear away and remove from the Site any wreckage, rubbish and Temporary Works which are no longer required.

Upon the issue of a Taking-Over Certificate, the Contractor shall clear away and remove, from that part of the Site and Works to which the Taking-Over Certificate refers, all Contractor's Equipment, surplus material, wreckage, rubbish and Temporary Works. The Contractor shall leave that part of the Site and the Works in a clean and safe condition. However, the Contractor may retain on Site, during the Defects Notification Period, such Goods as are required for the Contractor to fulfil obligations under the Contract.

4.24 Fossils

All fossils, coins, articles of value or antiquity, and structures and other remains or items of geological or archaeological interest found on the Site shall be placed under the care and authority of the Employer. The Contractor shall take reasonable precautions to prevent Contractor's Personnel or other persons from removing or damaging any of these findings.

The Contractor shall, upon discovery of any such finding, promptly give notice to the Engineer, who shall issue instructions for dealing with it. If the Contractor suffers delay and/or incurs Cost from complying with the instructions, the Contractor shall give a further notice to the Engineer and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost, which shall be included in the Contract Price.

After receiving this further notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

5 Nominated Subcontractors

5.1 Definition of "nominated Subcontractor"

In the Contract, "nominated Subcontractor" means a Subcontractor:

- (a) who is stated in the Contract as being a nominated Subcontractor, or
- (b) whom the Engineer, under Clause 13 [Variations and Adjustments], instructs the Contractor to employ as a Subcontractor subject to Sub-Clause 5.2 [Objection to Notification].

5.2 Objection to Nomination

The Contractor shall not be under any obligation to employ a nominated Subcontractor against whom the Contractor raises reasonable objection by notice to the Engineer as soon as practicable, with supporting particulars. An objection shall be deemed reasonable if it arises from (among other things) any of the following matters, unless the Employer agrees in writing to indemnify the Contractor against and from the consequences of the matter:

- (a) there are reasons to believe that the Subcontractor does not have sufficient competence, resources or financial strength;
- (b) the nominated Subcontractor does not accept to indemnify the Contractor against and from any negligence or misuse of Goods by the nominated Subcontractor, his agents and employees; or
- (c) the nominated Subcontractor does not accept to enter into a subcontract which specifies that, for the subcontracted work (including design, if any), the nominated Subcontractor shall:
 - (i) undertake to the Contractor such obligations and liabilities as will enable the Contractor to discharge his obligations and liabilities under the Contract,
 - (ii) indemnify the Contractor against and from all obligations and liabilities arising under or in connection with the Contract and from the consequences of any failure by the Subcontractor to perform these obligations or to fulfil these liabilities, and
 - (iii) be paid only if and when the Contractor has received from the Employer payments for sums due under the Subcontract referred to under Sub-Clause 5.3 [Payment to nominated Subcontractors].

5.3 Payments to nominated Subcontractors

The Contractor shall pay to the nominated Subcontractor the amounts shown on the nominated Subcontractor's invoices approved by the Contractor 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 sub-paragraph (b) of Sub-Clause 13.5 [Provisional Sums], except as stated in Sub-Clause 5.4 [Evidence of Payments].

5.4 Evidence of Payments

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 this 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.

6 Staff and Labour

6.1 Engagement of Staff and Labour

Except as otherwise stated in the Specification, the Contractor shall make arrangements for the engagement of all staff and labour, local or otherwise, and for their payment, feeding, transport and, when appropriate, housing.

The Contractor is encouraged, to the extent practicable and reasonable, to employ staff and labour with appropriate qualifications and experience from sources within the Country.

6.2 Rates of Wages and Conditions of Labour

The Contractor shall pay rates of wages, and observe conditions of labour, which are not lower than those established for the trade or industry where the work is carried out. If no established rates or conditions are applicable, the Contractor shall pay rates of wages and observe conditions which are not lower than the general level of wages and conditions observed locally by employers whose trade or industry is similar to that of the Contractor.

The Contractor shall inform the Contractor's Personnel about their liability to pay personal income taxes in the Country in respect of such of their salaries, wages, allowances and any benefits as are subject to tax under the Laws of the Country for the time being in force, and the Contractor shall perform such duties in regard to such deductions thereof as may be imposed on him by such Laws.

6.3 Persons in the Service of Employer

The Contractor shall not recruit, or attempt to recruit, staff and labour from amongst the Employer's Personnel.

6.4 Labour Laws

The Contractor shall comply with all the relevant labour Laws applicable to the Contractor's Personnel, including Laws relating to their employment, health, safety, welfare, immigration and emigration, and shall allow them all their legal rights.

The Contractor shall require his employees to obey all applicable Laws, including those concerning safety at work.

6.5 Working Hours

No work shall be carried out on the Site on locally recognised days of rest, or outside the normal working hours stated in the Contract Data, unless:



- (a) otherwise stated in the Contract,
- (b) the Engineer gives consent, or
- (c) the work is unavoidable, or necessary for the protection of life or property or for the safety of the Works, in which case the Contractor shall immediately advise the Engineer.

6.6 Facilities for Staff and Labour

Except as otherwise stated in the Specification, the Contractor shall provide and maintain all necessary accommodation and welfare facilities for the Contractor's Personnel. The Contractor shall also provide facilities for the Employer's Personnel as stated in the Specification.

The Contractor shall not permit any of the Contractor's Personnel to maintain any temporary or permanent living quarters within the structures forming part of the Permanent Works.

6.7 Health and Safety

The Contractor shall at all times take all reasonable precautions to maintain the health and safety of the Contractor's Personnel. In collaboration with local health authorities, the Contractor shall ensure that medical staff, first aid facilities, sick bay and ambulance service are available at all times at the Site and at any accommodation for Contractor's and Employer's Personnel, and that suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics.

The Contractor shall appoint an accident prevention officer at the Site, responsible for maintaining safety and protection against accidents. This person shall be qualified for this responsibility, and shall have the authority to issue instructions and take protective measures to prevent accidents. Throughout the execution of the Works, the Contractor shall provide whatever is required by this person to exercise this responsibility and authority.

The Contractor shall send, to the Engineer, details of any accident as soon as practicable after its occurrence. The Contractor shall maintain records and make reports concerning health, safety and welfare of persons, and damage to property, as the Engineer may reasonably require.

HIV-AIDS Prevention. The Contractor shall conduct an HIV-AIDS awareness programme via an approved service provider, and shall undertake such other measures as are specified in this Contract to reduce the risk of the transfer of the HIV virus between and among the Contractor's Personnel and the local community, to promote early diagnosis and to assist affected individuals.

The Contractor shall throughout the contract (including the Defects Notification Period): (i) conduct Information, Education and Communication (IEC) campaigns, at least every other month, addressed to all the Site staff and labour (including all the Contractor's employees, all Subcontractors and any other Contractor's or Employer's personnel employees, and all truck drivers and crew making deliveries to Site for construction activities) and to the immediate local communities, concerning the risks, dangers and impact, and appropriate avoidance behaviour with respect to, of Sexually Transmitted Diseases (STD) - or Sexually Transmitted Infections (STI) in general and HIV/AIDS in particular; (ii) provide male or female condoms for all Site staff and labour as appropriate; and (iii) provide for STI and HIV/AIDS screening, diagnosis, counselling and referral to a dedicated national STI and HIV/AIDS programme, (unless otherwise agreed) of all Site staff and labour.

The Contractor shall include in the programme to be submitted for the execution of the Works under Sub-Clause 8.3 an alleviation programme for Site staff and labour and their families in respect of Sexually Transmitted Infections (STI) and Sexually Transmitted Diseases (STD) including HIV/AIDS. The STI, STD and HIV/AIDS alleviation programme shall indicate when, how and at what cost the Contractor plans to satisfy the requirements of this Sub-Clause and the related specification. For each component, the programme shall detail the resources to be provided or utilised and any related sub-contracting proposed. The programme shall also include provision of a detailed cost estimate with supporting documentation. Payment to the Contractor for preparation and implementation this programme shall not exceed the Provisional Sum dedicated for this purpose.



6.8 Contractor's Superintendence

Throughout the execution of the Works, and as long thereafter as is necessary to fulfil the Contractor's obligations, the Contractor shall provide all necessary superintendence to plan, arrange, direct, manage, inspect and test the work.

Superintendence shall be given by a sufficient number of persons having adequate knowledge of the language for communications (defined in Sub-Clause 1.4 [Law and Language]) and of the operations to be carried out (including the methods and techniques required, the hazards likely to be encountered and methods of preventing accidents), for the satisfactory and safe execution of the Works.

6.9 Contractor's Personnel

The Contractor's Personnel shall be appropriately qualified, skilled and experienced in their respective trades or occupations. The Engineer may require the Contractor to remove (or cause to be removed) any person employed on the Site or Works, including the Contractor's Representative if applicable, who:

- (a) persists in any misconduct or lack of care,
- (b) carries out duties incompetently or negligently,
- (c) fails to conform with any provisions of the Contract, or
- (d) persists in any conduct which is prejudicial to safety, health, or the protection of the environment.

If appropriate, the Contractor shall then appoint (or cause to be appointed) a suitable replacement person.

6.10 Records of Contractor's Personnel and 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.

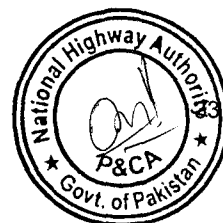
6.11 Disorderly Conduct

The Contractor shall at all times take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by or amongst the Contractor's Personnel, and to preserve peace and protection of persons and property on and near the Site.

6.12 Foreign Personnel

The Contractor may bring in to the Country any foreign personnel who are necessary for the execution of the Works to the extent allowed by the applicable Laws. The Contractor shall ensure that these personnel are provided with the required residence visas and work permits. The Employer will, if requested by the Contractor, use his best endeavours in a timely and expeditious manner to assist the Contractor in obtaining any local, state, national or government permission required for bringing in the Contractor's personnel.

The Contractor shall be responsible for the return of these personnel to the place where they were recruited or to their domicile. In the event of the death in the Country of any of these personnel or members of their families, the Contractor shall similarly be responsible for making the appropriate arrangements for their return or burial.



6.13 Supply of Foodstuffs

The Contractor shall arrange for the provision of a sufficient supply of suitable food as may be stated in the Specification at reasonable prices for the Contractor's Personnel for the purposes of or in connection with the Contract.

6.14 Supply of Water

The Contractor shall, having regard to local conditions, provide on the Site an adequate supply of drinking and other water for the use of the Contractor's Personnel.

6.15 Measures against Insect and Pest Nuisance

The Contractor shall at all times take the necessary precautions to protect the Contractor's Personnel employed on the Site from insect and pest nuisance, and to reduce the danger to their health. The Contractor shall comply with all the regulations of the local health authorities, including use of appropriate insecticide.

6.16 Alcoholic Liquor or Drugs

The Contractor shall not, otherwise than in accordance with the Laws of the Country, import, sell, give, barter or otherwise dispose of any alcoholic liquor or drugs, or permit or allow importation, sale, gift, barter or disposal thereof by Contractor's Personnel.

6.17 Arms and Ammunition

The Contractor shall not give, barter, or otherwise dispose of, to any person, any arms or ammunition of any kind, or allow Contractor's Personnel to do so.

6.18 Festivals and Religious Customs

The Contractor shall respect the Country's recognized festivals, days of rest and religious or other customs.

6.19 Funeral Arrangements

The Contractor shall be responsible, to the extent required by local regulations, for making any funeral arrangements for any of his local employees who may die while engaged upon the Works.

6.20 Forced Labour

The Contractor shall not employ forced labour, which consists of any work or service, not voluntarily performed, that is exacted from an individual under threat of force or penalty, and includes any kind of involuntary or compulsory labour, such as indentured labour, bonded labour or similar labour-contracting arrangements.

6.21 Child Labour

The Contractor shall not employ children in a manner that is economically exploitative, or is likely to be hazardous, or to interfere with, the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development. Where the relevant labour laws of the Country have provisions for employment of minors, the Contractor shall follow those laws applicable to the Contractor. Children below the age of 18 years shall not be employed in dangerous work.

6.22 Employment Records of Workers

The Contractor shall keep complete and accurate records of the employment of labour at the Site. The records shall include the names, ages, genders, hours worked and wages paid to all workers. These records shall be summarized on a monthly basis and submitted to the Engineer. These records shall be included in the details to be submitted by the Contractor under Sub-Clause 6.10 [Records of Contractor's Personnel and Equipment].

6.23 Workers' Organisations

In countries where the relevant labour laws recognise workers' rights to form and to join workers' organisations of their choosing without interference and to bargain collectively, the Contractor shall comply with such laws. Where the relevant labour laws substantially restrict workers' organisations, the Contractor shall enable alternative means for the Contractor's Personnel to express their grievances and protect their rights regarding working conditions and terms of employment. In either case described above, and where the relevant labour laws are silent, the Contractor shall not discourage the Contractor's Personnel from forming or joining workers' organisations of their choosing or from bargaining collectively, and shall not discriminate or retaliate against the Contractor's Personnel who participate, or seek to participate, in such organisations and bargain collectively. The Contractor shall engage with such workers' representatives. Workers' organisations are expected to fairly represent the workers in the workforce.

6.24 Non-Discrimination and Equal Opportunity

The Contractor shall not make employment decisions on the basis of personal characteristics unrelated to inherent job requirements. The Contractor shall base the employment relationship on the principle of equal opportunity and fair treatment, and shall not discriminate with respect to aspects of the employment relationship, including recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, promotion, termination of employment or retirement, and discipline. In countries where the relevant labour laws provide for non-discrimination in employment, the Contractor shall comply with such laws. When the relevant labour laws are silent on non-discrimination in employment, the Contractor shall meet this Sub-Clause's requirements. Special measures of protection or assistance to remedy past discrimination or selection for a particular job based on the inherent requirements of the job shall not be deemed discrimination.

7 Plant, Materials and Workmanship

7.1 Manner of Execution

The Contractor shall carry out the manufacture of Plant, the production and manufacture of Materials, and all other execution of the Works:

- (a) in the manner (if any) specified in the Contract,
- (b) in a proper workmanlike and careful manner, in accordance with recognised good practice, and
- (c) with properly equipped facilities and non-hazardous Materials, except as otherwise specified in the Contract.

7.2 Samples

The Contractor shall submit the following samples of Materials, and relevant information, to the Engineer for consent prior to using the Materials in or for the Works:

- (a) manufacturer's standard samples of Materials and samples specified in the Contract, all at the Contractor's cost, and
- (b) additional samples instructed by the Engineer as a Variation.

Each sample shall be labelled as to origin and intended use in the Works.

7.3 Inspection

The Employer's Personnel shall at all reasonable times:

- (a) have full access to all parts of the Site and to all places from which natural Materials are being obtained, and
- (b) during production, manufacture and construction (at the Site and elsewhere), be entitled to examine, inspect, measure and test the materials and workmanship, and to check the progress of manufacture of Plant and production and manufacture of Materials.

The Contractor shall give the Employer's Personnel full opportunity to carry out these activities, including providing access, facilities, permissions and safety equipment. No such activity shall relieve the Contractor from any obligation or responsibility.

The Contractor shall give notice to the Engineer whenever any work is ready and before it is covered up, put out of sight, or packaged for storage or transport. The Engineer shall then either carry out the examination, inspection, measurement or testing without unreasonable delay, or promptly give notice to the Contractor that the Engineer does not require to do so. If the Contractor fails to give the notice, he shall, if and when required by the Engineer, uncover the work and thereafter reinstate and make good, all at the Contractor's cost.

7.4 Testing

This Sub-Clause shall apply to all tests specified in the Contract, other than the Tests after Completion (if any).

Except as otherwise specified in the Contract, the Contractor shall provide all apparatus, assistance, documents and other information, electricity, equipment, fuel, consumables, instruments, labour, materials, and suitably qualified and experienced staff, as are necessary to carry out the specified tests efficiently. The Contractor shall agree, with the Engineer, the time and place for the specified testing of any Plant, Materials and other parts of the Works.

The Engineer may, under Clause 13 [Variations and Adjustments], vary the location or details of specified tests, or instruct the Contractor to carry out additional tests. If these varied or additional tests show that the tested Plant, Materials or workmanship is not in accordance with the Contract, the cost of carrying out this Variation shall be borne by the Contractor, notwithstanding other provisions of the Contract.

The Engineer shall give the Contractor not less than 24 hours' notice of the Engineer's intention to attend the tests. If the Engineer does not attend at the time and place agreed, the Contractor may proceed with the tests, unless otherwise instructed by the Engineer, and the tests shall then be deemed to have been made in the Engineer's presence.

If the Contractor suffers delay and/or incurs Cost from complying with these instructions or as a result of a delay for which the Employer is responsible, the Contractor shall give notice to the Engineer and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:



- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost plus profit, which shall be included in the Contract Price.

After receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

The Contractor shall promptly forward to the Engineer duly certified reports of the tests. When the specified tests have been passed, the Engineer shall endorse the Contractor's test certificate, or issue a certificate to him, to that effect. If the Engineer has not attended the tests, he shall be deemed to have accepted the readings as accurate.

7.5 Rejection

If, as a result of an examination, inspection, measurement or testing, any Plant, Materials or workmanship is found to be defective or otherwise not in accordance with the Contract, the Engineer may reject the Plant, Materials or workmanship by giving notice to the Contractor, with reasons. The Contractor shall then promptly make good the defect and ensure that the rejected item complies with the Contract.

If the Engineer requires this Plant, Materials or workmanship to be retested, the tests shall be repeated under the same terms and conditions. If the rejection and retesting cause the Employer to incur additional costs, the Contractor shall subject to Sub-Clause 2.5 [Employer's Claims] pay these costs to the Employer.

7.6 Remedial Work

Notwithstanding any previous test or certification, the Engineer may instruct the Contractor to:

- (a) remove from the Site and replace any Plant or Materials which is not in accordance with the Contract,
- (b) remove and re-execute any other work which is not in accordance with the Contract, and
- (c) execute any work which is urgently required for the safety of the Works, whether because of an accident, unforeseeable event or otherwise.

The Contractor shall comply with the instruction within a reasonable time, which shall be the time (if any) specified in the instruction, or immediately if urgency is specified under sub-paragraph (c).

If the Contractor fails to comply with the instruction, the Employer shall be entitled to employ and pay other persons to carry out the work. Except to the extent that the Contractor would have been entitled to payment for the work, the Contractor shall subject to Sub-Clause 2.5 [Employer's Claims] pay to the Employer all costs arising from this failure.

7.7 Ownership of Plant and Materials

Except as otherwise provided in the Contract, each item of Plant and Materials shall, to the extent consistent with the Laws of the Country, become the property of the Employer at whichever is the earlier of the following times, free from liens and other encumbrances:

- (a) when it is incorporated in the Works;
- (b) when the Contractor is paid the corresponding value of the Plant and Materials under Sub-Clause 8.10 [Payment for Plant and Materials in Event of Suspension].

7.8 Royalties



Unless otherwise stated in the Specification, the Contractor shall pay all royalties, rents and other payments for:

- (a) natural Materials obtained from outside the Site, and
- (b) the disposal of material from demolitions and excavations and of other surplus material (whether natural or man-made), except to the extent that disposal areas within the Site are specified in the Contract.

8 Commencement, Delays and Suspension

8.1 Commencement of Works

Except as otherwise specified in the Particular Conditions of Contract, the Commencement Date shall be the date at which the following precedent conditions have all been fulfilled and the Engineer's notification recording the agreement of both Parties on such fulfilment and instructing to commence the Work is received by the Contractor:

- (a) signature of the Contract Agreement by both Parties, and if required, approval of the Contract by relevant authorities of the Country;
- (b) delivery to the Contractor of reasonable evidence of the Employer's financial arrangements (under Sub-Clause 2.4 [Employer's Financial Arrangements]);
- (c) except if otherwise specified in the Contract Data, effective access to and possession of the Site given to the Contractor together with such permission(s) under (a) of Sub-Clause 1.13 [Compliance with Laws] as required for the commencement of the Works;
- (d) receipt by the Contractor of the Advance Payment under Sub-Clause 14.2 [Advance Payment] provided that the corresponding bank guarantee has been delivered by the Contractor.

If the said Engineer's instruction is not received by the Contractor within 180 days from his receipt of the Letter of Acceptance, the Contractor shall be entitled to terminate the Contract under Sub-Clause 16.2 [Termination by Contractor].

The Contractor shall commence the execution of the Works as soon as is reasonably practicable after the Commencement Date, and shall then proceed with the Works with due expedition and without delay.

8.2 Time for Completion

The Contractor shall complete the whole of the Works, and each Section (if any), within the Time for Completion for the Works or Section (as the case may be), including:

- (a) achieving the passing of the Tests on Completion, and
- (b) completing all work which is stated in the Contract as being required for the Works or Section to be considered to be completed for the purposes of taking-over under Sub-Clause 10.1 [Taking Over of the Works and Sections].

8.3 Programme

The Contractor shall submit a detailed time programme to the Engineer within 28 days after receiving the notice under Sub-Clause 8.1 [Commencement of Works]. 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 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, manufacture of Plant, delivery to Site, construction, erection and testing,
- (b) each of these stages for work by each nominated Subcontractor (as defined in Clause 5 [Nominated Subcontractors]),
- (c) the sequence and timing of inspections and tests specified in the Contract, and
- (d) 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.

The Contractor shall promptly give notice to the Engineer of specific probable future events or circumstances which may adversely affect the work, increase the Contract Price or delay the execution of the Works. The Engineer may require the Contractor to submit an estimate of the anticipated effect of the future event or circumstances, and/or a proposal under Sub-Clause 13.3 [Variation Procedure].

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.

8.4 Extension of Time for Completion

The Contractor shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to an extension of the Time for Completion if and to the extent that completion for the purposes of Sub-Clause 10.1 [Taking Over of the Works and Sections] is or will be delayed by any of the following causes:

- (a) a Variation (unless an adjustment to the Time for Completion has been agreed under Sub-Clause 13.3 [Variation Procedure]) or other substantial change in the quantity of an item of work included in the Contract,
- (b) a cause of delay giving an entitlement to extension of time under a Sub-Clause of these Conditions,
- (c) exceptionally adverse climatic conditions,
- (d) Unforeseeable shortages in the availability of personnel or Goods caused by epidemic or governmental actions, or
- (e) any delay, impediment or prevention caused by or attributable to the Employer, the Employer's Personnel, or the Employer's other contractors.

If the Contractor considers himself to be entitled to an extension of the Time for Completion, the Contractor shall give notice to the Engineer in accordance with Sub-Clause 20.1 [Contractor's Claims]. When determining each extension of time under Sub-Clause 20.1, the Engineer shall review previous determinations and may increase, but shall not decrease, the total extension of time.

8.5 Delays Caused by Authorities



If the following conditions apply, namely:

- (a) the Contractor has diligently followed the procedures laid down by the relevant legally constituted public authorities in the Country,
- (b) these authorities delay or disrupt the Contractor's work, and
- (c) the delay or disruption was Unforeseeable,

then this delay or disruption will be considered as a cause of delay under sub-paragraph (b) of Sub-Clause 8.4 [Extension of Time for Completion].

8.6 Rate of Progress

If, at any time:

- (a) actual progress is too slow to complete within the Time for Completion, and/or
- (b) progress has fallen (or will fall) behind the current programme under Sub-Clause 8.3 [Programme],

other than as a result of a cause listed in Sub-Clause 8.4 [Extension of Time for Completion], then the Engineer may instruct the Contractor to submit, under Sub-Clause 8.3 [Programme], a revised programme and supporting report describing the revised methods which the Contractor proposes to adopt in order to expedite progress and complete within the Time for Completion.

Unless the Engineer notifies otherwise, the Contractor shall adopt these revised methods, which may require increases in the working hours and/or in the numbers of Contractor's Personnel and/or Goods, at the risk and cost of the Contractor. If these revised methods cause the Employer to incur additional costs, the Contractor shall subject to notice under Sub-Clause 2.5 [Employer's Claims] pay these costs to the Employer, in addition to delay damages (if any) under Sub-Clause 8.7 below.

Additional costs of revised methods including acceleration measures, instructed by the Engineer to reduce delays resulting from causes listed under Sub-Clause 8.4 [Extension of Time for Completion] shall be paid by the Employer, without generating, however, any other additional payment benefit to the Contractor.

8.7 Delay Damages

If the Contractor fails to comply with Sub-Clause 8.2 [Time for Completion], the Contractor shall subject to notice under Sub-Clause 2.5 [Employer's Claims] pay delay damages to the Employer for this default. These delay damages shall be the sum stated in the Contract Data, which shall be paid for every day which shall elapse between the relevant Time for Completion and the date stated in the Taking-Over Certificate. However, the total amount due under this Sub-Clause shall not exceed the maximum amount of delay damages (if any) stated in the Contract Data.

These delay damages shall be the only damages due from the Contractor for such default, other than in the event of termination under Sub-Clause 15.2 [Termination by Employer] prior to completion of the Works. These damages shall not relieve the Contractor from his obligation to complete the Works, or from any other duties, obligations or responsibilities which he may have under the Contract.

8.8 Suspension of Work

The Engineer may at any time instruct the Contractor to suspend progress of part or all of the Works. During such suspension, the Contractor shall protect, store and secure such part or the Works against any deterioration, loss or damage.

The Engineer may also notify the cause for the suspension. If and to the extent that the cause is notified and is the responsibility of the Contractor, the following Sub-Clauses 8.9, 8.10 and 8.11 shall not apply.

8.9 Consequences of Suspension

If the Contractor suffers delay and/or incurs Cost from complying with the Engineer's instructions under Sub-Clause 8.8 [Suspension of Work] and/or from resuming the work, the Contractor shall give notice to the Engineer and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost, which shall be included in the Contract Price.

After receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

The Contractor shall not be entitled to an extension of time for, or to payment of the Cost incurred in, making good the consequences of the Contractor's faulty design, workmanship or materials, or of the Contractor's failure to protect, store or secure in accordance with Sub-Clause 8.8 [Suspension of Work].

8.10 Payment for Plant and Materials in Event of Suspension

The Contractor shall be entitled to payment of the value (as at the date of suspension) of Plant and/or Materials which have not been delivered to Site, if:

- (a) the work on Plant or delivery of Plant and/or Materials has been suspended for more than 28 days, and
- (b) the Contractor has marked the Plant and/or Materials as the Employer's property in accordance with the Engineer's instructions.

8.11 Prolonged Suspension

If the suspension under Sub-Clause 8.8 [Suspension of Work] has continued for more than 84 days, the Contractor may request the Engineer's permission to proceed. If the Engineer does not give permission within 28 days after being requested to do so, the Contractor may, by giving notice to the Engineer, treat the suspension as an omission under Clause 13 [Variations and Adjustments] of the affected part of the Works. If the suspension affects the whole of the Works, the Contractor may give notice of termination under Sub-Clause 16.2 [Termination by Contractor].

8.12 Resumption of Work

After the permission or instruction to proceed is given, the Contractor and the Engineer shall jointly examine the Works and the Plant and Materials affected by the suspension. The Contractor shall make good any deterioration or defect in or loss of the Works or Plant or Materials, which has occurred during the suspension after receiving from the Engineer an instruction to this effect under Clause 13 [Variations and Adjustments].

9 Tests on Completion

9.1 Contractor's Obligations

The Contractor shall carry out the Tests on Completion in accordance with this Clause and Sub-Clause 7.4 [Testing], after providing the documents in accordance with sub-paragraph (d) of Sub-Clause 4.1 [Contractor's General Obligations].



The Contractor shall give to the Engineer not less than 21 days' notice of the date after which the Contractor will be ready to carry out each of the Tests on Completion. Unless otherwise agreed, Tests on Completion shall be carried out within 14 days after this date, on such day or days as the Engineer shall instruct.

In considering the results of the Tests on Completion, the Engineer shall make allowances for the effect of any use of the Works by the Employer on the performance or other characteristics of the Works. As soon as the Works, or a Section, have passed any Tests on Completion, the Contractor shall submit a certified report of the results of these Tests to the Engineer.

9.2 Delayed Tests

If the Tests on Completion are being unduly delayed by the Employer, Sub-Clause 7.4 [Testing] (fifth paragraph) and/or Sub-Clause 10.3 [Interference with Tests on Completion] shall be applicable.

If the Tests on Completion are being unduly delayed by the Contractor, the Engineer may by notice require the Contractor to carry out the Tests within 21 days after receiving the notice. The Contractor shall carry out the Tests on such day or days within that period as the Contractor may fix and of which he shall give notice to the Engineer.

If the Contractor fails to carry out the Tests on Completion within the period of 21 days, the Employer's Personnel may proceed with the Tests at the risk and cost of the Contractor. The Tests on Completion shall then be deemed to have been carried out in the presence of the Contractor and the results of the Tests shall be accepted as accurate.

9.3 Retesting

If the Works, or a Section, fail to pass the Tests on Completion, Sub-Clause 7.5 [Rejection] shall apply, and the Engineer or the Contractor may require the failed Tests, and Tests on Completion on any related work, to be repeated under the same terms and conditions.

9.4 Failure to Pass Tests on Completion

If the Works, or a Section, fail to pass the Tests on Completion repeated under Sub-Clause 9.3 [Retesting], the Engineer shall be entitled to:

- (a) order further repetition of Tests on Completion under Sub-Clause 9.3;
- (b) if the failure deprives the Employer of substantially the whole benefit of the Works or Section, reject the Works or Section (as the case may be), in which event the Employer shall have the same remedies as are provided in sub-paragraph (c) of Sub-Clause 11.4 [Failure to Remedy Defects]; or
- (c) issue a Taking-Over Certificate, if the Employer so requests.

In the event of sub-paragraph (c), the Contractor shall proceed in accordance with all other obligations under the Contract, and the Contract Price shall be reduced by such amount as shall be appropriate to cover the reduced value to the Employer as a result of this failure. Unless the relevant reduction for this failure is stated (or its method of calculation is defined) in the Contract, the Employer may require the reduction to be (i) agreed by both Parties (in full satisfaction of this failure only) and paid before this Taking-Over Certificate is issued, or (ii) determined and paid under Sub-Clause 2.5 [Employer's Claims] and Sub-Clause 3.5 [Determinations].

10 Employer's Taking Over

10.1 Taking Over of the Works and Sections



Except as stated in Sub-Clause 9.4 [Failure to Pass Tests on Completion], the Works shall be taken over by the Employer when (i) the Works have been completed in accordance with the Contract, including the matters described in Sub-Clause 8.2 [Time for Completion] and except as allowed in sub-paragraph (a) below, and (ii) a Taking-Over Certificate for the Works has been issued, or is deemed to have been issued in accordance with this Sub-Clause.

The Contractor may apply by notice to the Engineer for a Taking-Over Certificate not earlier than 14 days before the Works will, in the Contractor's opinion, be complete and ready for taking over. If the Works are divided into Sections, the Contractor may similarly apply for a Taking-Over Certificate for each Section.

The Engineer shall, within 28 days after receiving the Contractor's application:

- (a) issue the Taking-Over Certificate to the Contractor, stating the date on which the Works or Section were completed in accordance with the Contract, except for any minor outstanding work and defects which will not substantially affect the use of the Works or Section for their intended purpose (either until or whilst this work is completed and these defects are remedied); or
- (b) reject the application, giving reasons and specifying the work required to be done by the Contractor to enable the Taking-Over Certificate to be issued. The Contractor shall then complete this work before issuing a further notice under this Sub-Clause.

If the Engineer fails either to issue the Taking-Over Certificate or to reject the Contractor's application within the period of 28 days, and if the Works or Section (as the case may be) are substantially in accordance with the Contract, the Taking-Over Certificate shall be deemed to have been issued on the last day of that period.

10.2 Taking Over of Parts of the Works

The Engineer may, at the sole discretion of the Employer, issue a Taking-Over Certificate for any part of the Permanent Works.

The Employer shall not use any part of the Works (other than as a temporary measure which is either specified in the Contract or agreed by both Parties) unless and until the Engineer has issued a Taking-Over Certificate for this part. However, if the Employer does use any part of the Works before the Taking-Over Certificate is issued:

- (a) the part which is used shall be deemed to have been taken over as from the date on which it is used,
- (b) the Contractor shall cease to be liable for the care of such part as from this date, when responsibility shall pass to the Employer, and
- (c) if requested by the Contractor, the Engineer shall issue a Taking-Over Certificate for this part.

After the Engineer has issued a Taking-Over Certificate for a part of the Works, the Contractor shall be given the earliest opportunity to take such steps as may be necessary to carry out any outstanding Tests on Completion. The Contractor shall carry out these Tests on Completion as soon as practicable before the expiry date of the relevant Defects Notification Period.

If the Contractor incurs Cost as a result of the Employer taking over and/or using a part of the Works, other than such use as is specified in the Contract or agreed by the Contractor, the Contractor shall (i) give notice to the Engineer and (ii) be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to payment of any such Cost plus profit, which shall be included in the Contract Price. After receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine this Cost and profit.



If a Taking-Over Certificate has been issued for a part of the Works (other than a Section), the delay damages thereafter for completion of the remainder of the Works shall be reduced. Similarly, the delay damages for the remainder of the Section (if any) in which this part is included shall also be reduced. For any period of delay after the date stated in this Taking-Over Certificate, the proportional reduction in these delay damages shall be calculated as the proportion which the value of the part so certified bears to the value of the Works or Section (as the case may be) as a whole. The Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these proportions. The provisions of this paragraph shall only apply to the daily rate of delay damages under Sub-Clause 8.7 [Delay Damages], and shall not affect the maximum amount of these damages.

10.3 Interference with Tests on Completion

If the Contractor is prevented, for more than 14 days, from carrying out the Tests on Completion by a cause for which the Employer is responsible, the Employer shall be deemed to have taken over the Works or Section (as the case may be) on the date when the Tests on Completion would otherwise have been completed.

The Engineer shall then issue a Taking-Over Certificate accordingly, and the Contractor shall carry out the Tests on Completion as soon as practicable, before the expiry date of the Defects Notification Period. The Engineer shall require the Tests on Completion to be carried out by giving 14 days' notice and in accordance with the relevant provisions of the Contract.

If the Contractor suffers delay and/or incurs Cost as a result of this delay in carrying out the Tests on Completion, the Contractor shall give notice to the Engineer and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost plus profit, which shall be included in the Contract Price.

After receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

10.4 Surfaces Requiring Reinstatement

Except as otherwise stated in a Taking-Over Certificate, a certificate for a Section or part of the Works shall not be deemed to certify completion of any ground or other surfaces requiring reinstatement.

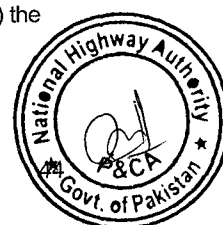
11 Defects Liability

11.1 Completion of Outstanding Work and Remedying Defects

In order that the Works and Contractor's Documents, and each Section, shall be in the condition required by the Contract (fair wear and tear excepted) by the expiry date of the relevant Defects Notification Period or as soon as practicable thereafter, the Contractor shall:

- (a) complete any work which is outstanding on the date stated in a Taking-Over Certificate, within such reasonable time as is instructed by the Engineer, and
- (b) execute all work required to remedy defects or damage, as may be notified by (or on behalf of) the Employer on or before the expiry date of the Defects Notification Period for the Works or Section (as the case may be).

If a defect appears or damage occurs, the Contractor shall be notified accordingly, by (or on behalf of) the Employer.



11.2 Cost of Remedying Defects

All work referred to in sub-paragraph (b) of Sub-Clause 11.1 [Completion of Outstanding Work and Remedying Defects] shall be executed at the risk and cost of the Contractor, if and to the extent that the work is attributable to:

- (a) any design for which the Contractor is responsible,
- (b) Plant, Materials or workmanship not being in accordance with the Contract, or
- (c) failure by the Contractor to comply with any other obligation.

If and to the extent that such work is attributable to any other cause, the Contractor shall be notified promptly by (or on behalf of) the Employer, and Sub-Clause 13.3 [Variation Procedure] shall apply.

11.3 Extension of Defects Notification Period

The Employer shall be entitled subject to Sub-Clause 2.5 [Employer's Claims] to an extension of the Defects Notification Period for the Works or a Section if and to the extent that the Works, Section or a major item of Plant (as the case may be, and after taking over) cannot be used for the purposes for which they are intended by reason of a defect or by reason of damage attributable to the Contractor. However, a Defects Notification Period shall not be extended by more than two years.

If delivery and/or erection of Plant and/or Materials was suspended under Sub-Clause 8.8 [Suspension of Work] or Sub-Clause 16.1 [Contractor's Entitlement to Suspend Work], the Contractor's obligations under this Clause shall not apply to any defects or damage occurring more than two years after the Defects Notification Period for the Plant and/or Materials would otherwise have expired.

11.4 Failure to Remedy Defects

If the Contractor fails to remedy any defect or damage within a reasonable time, a date may be fixed by (or on behalf of) the Employer, on or by which the defect or damage is to be remedied. The Contractor shall be given reasonable notice of this date.

If the Contractor fails to remedy the defect or damage by this notified date and this remedial work was to be executed at the cost of the Contractor under Sub-Clause 11.2 [Cost of Remedying Defects], the Employer may (at his option):

- (a) carry out the work himself or by others, in a reasonable manner and at the Contractor's cost, but the Contractor shall have no responsibility for this work; and the Contractor shall subject to Sub-Clause 2.5 [Employer's Claims] pay to the Employer the costs reasonably incurred by the Employer in remedying the defect or damage;
- (b) require the Engineer to agree or determine a reasonable reduction in the Contract Price in accordance with Sub-Clause 3.5 [Determinations]; or
- (c) if the defect or damage deprives the Employer of substantially the whole benefit of the Works or any major part of the Works, terminate the Contract as a whole, or in respect of such major part which cannot be put to the intended use. Without prejudice to any other rights, under the Contract or otherwise, the Employer shall then be entitled to recover all sums paid for the Works or for such part (as the case may be), plus financing costs and the cost of dismantling the same, clearing the Site and returning Plant and Materials to the Contractor.

11.5 Removal of Defective Work



If the defect or damage cannot be remedied expeditiously on the Site and the Employer gives consent, the Contractor may remove from the Site for the purposes of repair such items of Plant as are defective or damaged. This consent may require the Contractor to increase the amount of the Performance Security by the full replacement cost of these items, or to provide other appropriate security.

11.6 Further Tests

If the work of remedying of any defect or damage may affect the performance of the Works, the Engineer may require the repetition of any of the tests described in the Contract. The requirement shall be made by notice within 28 days after the defect or damage is remedied.

These tests shall be carried out in accordance with the terms applicable to the previous tests, except that they shall be carried out at the risk and cost of the Party liable, under Sub-Clause 11.2 [Cost of Remedying Defects], for the cost of the remedial work.

11.7 Right of Access

Until the Performance Certificate has been issued, the Contractor shall have such right of access to the Works as is reasonably required in order to comply with this Clause, except as may be inconsistent with the Employer's reasonable security restrictions.

11.8 Contractor to Search

The Contractor shall, if required by the Engineer, search for the cause of any defect, under the direction of the Engineer. Unless the defect is to be remedied at the cost of the Contractor under Sub-Clause 11.2 [Cost of Remedying Defects], the Cost of the search plus profit shall be agreed or determined by the Engineer in accordance with Sub-Clause 3.5 [Determinations] and shall be included in the Contract Price.

11.9 Performance Certificate

Performance of the Contractor's obligations shall not be considered to have been completed until the Engineer has issued the Performance Certificate to the Contractor, stating the date on which the Contractor completed his obligations under the Contract.

The Engineer shall issue the Performance Certificate within 28 days after the latest of the expiry dates of the Defects Notification Periods, or as soon thereafter as the Contractor has supplied all the Contractor's Documents and completed and tested all the Works, including remedying any defects. A copy of the Performance Certificate shall be issued to the Employer.

Only the Performance Certificate shall be deemed to constitute acceptance of the Works.

11.10 Unfulfilled Obligations

After the Performance Certificate has been issued, each Party shall remain liable for the fulfilment of any obligation which remains unperformed at that time. For the purposes of determining the nature and extent of unperformed obligations, the Contract shall be deemed to remain in force.

11.11 Clearance of Site

Upon receiving the Performance Certificate, the Contractor shall remove any remaining Contractor's Equipment, surplus material, wreckage, rubbish and Temporary Works from the Site.



If all these items have not been removed within 28 days after receipt by the Contractor of the Performance Certificate, the Employer may sell or otherwise dispose of any remaining items. The Employer shall be entitled to be paid the costs incurred in connection with, or attributable to, such sale or disposal and restoring the Site.

Any balance of the moneys from the sale shall be paid to the Contractor. If these moneys are less than the Employer's costs, the Contractor shall pay the outstanding balance to the Employer.

12 Measurement and Evaluation

12.1 Works to be Measured

The Works shall be measured, and valued for payment, in accordance with this Clause. The Contractor shall show in each application under Sub-Clauses 14.3 [Application for Interim Payment Certificates], 14.10 [Statement on Completion] and 14.11 [Application for Final Payment Certificate] the quantities and other particulars detailing the amounts which he considers to be entitled under the Contract.

Whenever the Engineer requires any part of the Works to be measured, reasonable notice shall be given to the Contractor's Representative, who shall:

- (a) promptly either attend or send another qualified representative to assist the Engineer in making the measurement, and
- (b) supply any particulars requested by the Engineer.

If the Contractor fails to attend or send a representative, the measurement made by (or on behalf of) the Engineer shall be accepted as accurate.

Except as otherwise stated in the Contract, wherever any Permanent Works are to be measured from records, these shall be prepared by the Engineer. The Contractor shall, as and when requested, attend to examine and agree the records with the Engineer, and shall sign the same when agreed. If the Contractor does not attend, the records shall be accepted as accurate.

If the Contractor examines and disagrees the records, and/or does not sign them as agreed, then the Contractor shall give notice to the Engineer of the respects in which the records are asserted to be inaccurate. After receiving this notice, the Engineer shall review the records and either confirm or vary them and certify the payment of the undisputed part. If the Contractor does not so give notice to the Engineer within 14 days after being requested to examine the records, they shall be accepted as accurate.

12.2 Method of Measurement

Except as otherwise stated in the Contract and notwithstanding local practice:

- (a) measurement shall be made of the net actual quantity of each item of the Permanent Works, and
- (b) the method of measurement shall be in accordance with the Bill of Quantities or other applicable Schedules.

12.3 Evaluation

Except as otherwise stated in the Contract, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine the Contract Price by evaluating each item of work, applying the measurement agreed or determined in accordance with the above Sub-Clauses 12.1 and 12.2 and the appropriate rate or price for the item.

For each item of work, the appropriate rate or price for the item shall be the rate or price specified for such item in the Contract or, if there is no such item, specified for similar work.

Any item of work included in the Bill of Quantities for which no rate or price was specified shall be considered as included in other rates and prices in the Bill of Quantities and will not be paid for separately.

However, a new rate or price shall be appropriate for an item of work if:

- (a) (i) the measured quantity of the item is changed by more than 25% from the quantity of this item in the Bill of Quantities or other Schedule,
- (ii) this change in quantity multiplied by such specified rate for this item exceeds 0.25% of the Accepted Contract Amount,
- (iii) this change in quantity directly changes the Cost per unit quantity of this item by more than 1%, and
- (iv) this item is not specified in the Contract as a "fixed rate item";
- or
- (b) (i) the work is instructed under Clause 13 [Variations and Adjustments],
- (ii) no rate or price is specified in the Contract for this item, and
- (iii) no specified rate or price is appropriate because the item of work is not of similar character, or is not executed under similar conditions, as any item in the Contract.

Each new rate or price shall be derived from any relevant rates or prices in the Contract, with reasonable adjustments to take account of the matters described in sub-paragraph (a) and/or (b), as applicable. If no rates or prices are relevant for the derivation of a new rate or price, it shall be derived from the reasonable Cost of executing the work, together with profit, taking account of any other relevant matters.

Until such time as an appropriate rate or price is agreed or determined, the Engineer shall determine a provisional rate or price for the purposes of Interim Payment Certificates as soon as the concerned work commences.

12.4 Omissions

Whenever the omission of any work forms part (or all) of a Variation, the value of which has not been agreed, if:

- (a) the Contractor will incur (or has incurred) cost which, if the work had not been omitted, would have been deemed to be covered by a sum forming part of the Accepted Contract Amount;
- (b) the omission of the work will result (or has resulted) in this sum not forming part of the Contract Price; and
- (c) this cost is not deemed to be included in the evaluation of any substituted work;

then the Contractor shall give notice to the Engineer accordingly, with supporting particulars. Upon receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine this cost, which shall be included in the Contract Price.

13 Variations and Adjustments

13.1 Right to Vary

Variations may be initiated by the Engineer at any time prior to issuing the Taking-Over Certificate for the Works, either by an instruction or by a request for the Contractor to submit a proposal.



The Contractor shall execute and be bound by each Variation, unless the Contractor promptly gives notice to the Engineer stating (with supporting particulars) that (i) the Contractor cannot readily obtain the Goods required for the Variation, or (ii) such Variation triggers a substantial change in the sequence or progress of the Works. Upon receiving this notice, the Engineer shall cancel, confirm or vary the instruction.

Each Variation may include:

- (a) changes to the quantities of any item of work included in the Contract (however, such changes do not necessarily constitute a Variation),
- (b) changes to the quality and other characteristics of any item of work,
- (c) changes to the levels, positions and/or dimensions of any part of the Works,
- (d) omission of any work unless it is to be carried out by others,
- (e) any additional work, Plant, Materials or services necessary for the Permanent Works, including any associated Tests on Completion, boreholes and other testing and exploratory work, or
- (f) changes to the sequence or timing of the execution of the Works.

The Contractor shall not make any alteration and/or modification of the Permanent Works, unless and until the Engineer instructs or approves a Variation.

13.2 Value Engineering

The Contractor may, at any time, submit to the Engineer a written proposal which (in the Contractor's opinion) will, if adopted, (i) accelerate completion, (ii) reduce the cost to the Employer of executing, maintaining or operating the Works, (iii) improve the efficiency or value to the Employer of the completed Works, or (iv) otherwise be of benefit to the Employer.

The proposal shall be prepared at the cost of the Contractor and shall include the items listed in Sub-Clause 13.3 [Variation Procedure].

If a proposal, which is approved by the Engineer, includes a change in the design of part of the Permanent Works, then unless otherwise agreed by both Parties:

- (a) the Contractor shall design this part,
- (b) sub-paragraphs (a) to (d) of Sub-Clause 4.1 [Contractor's General Obligations] shall apply, and
- (c) if this change results in a reduction in the contract value of this part, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine a fee, which shall be included in the Contract Price. This fee shall be half (50%) of the difference between the following amounts:
 - (i) such reduction in contract value, resulting from the change, excluding adjustments under Sub-Clause 13.7 [Adjustments for Changes in Legislation] and Sub-Clause 13.8 [Adjustments for Changes in Cost], and
 - (ii) the reduction (if any) in the value to the Employer of the varied works, taking account of any reductions in quality, anticipated life or operational efficiencies.

However, if amount (i) is less than amount (ii), there shall not be a fee.

13.3 Variation Procedure



If the Engineer requests a proposal, prior to instructing a Variation, the Contractor shall respond in writing as soon as practicable, either by giving reasons why he cannot comply (if this is the case) or by submitting:

- (a) a description of the proposed work to be performed and a programme for its execution,
- (b) the Contractor's proposal for any necessary modifications to the programme according to Sub-Clause 8.3 [Programme] and to the Time for Completion, and
- (c) the Contractor's proposal for evaluation of the Variation.

The Engineer shall, as soon as practicable after receiving such proposal (under Sub-Clause 13.2 [Value Engineering] or otherwise), respond with approval, disapproval or comments. The Contractor shall not delay any work whilst awaiting a response.

Each instruction to execute a Variation, with any requirements for the recording of Costs, shall be issued by the Engineer to the Contractor, who shall acknowledge receipt.

Each Variation shall be evaluated in accordance with Clause 12 [Measurement and Evaluation], unless the Engineer instructs or approves otherwise in accordance with this Clause.

13.4 Payment in Applicable Currencies

If the Contract provides for payment of the Contract Price in more than one currency, then whenever an adjustment is agreed, approved or determined as stated above, the amount payable in each of the applicable currencies shall be specified. For this purpose, reference shall be made to the actual or expected currency proportions of the Cost of the varied work, and to the proportions of various currencies specified for payment of the Contract Price.

13.5 Provisional Sums

Each Provisional Sum shall only be used, in whole or in part, in accordance with the Engineer's instructions, and the Contract Price shall be adjusted accordingly. The total sum paid to the Contractor shall include only such amounts, for the work, supplies or services to which the Provisional Sum relates, as the Engineer shall have instructed. For each Provisional Sum, the Engineer may instruct:

- (a) work to be executed (including Plant, Materials or services to be supplied) by the Contractor and valued under Sub-Clause 13.3 [Variation Procedure]; and/or
- (b) Plant, Materials or services to be purchased by the Contractor, from a nominated Subcontractor (as defined in Clause 5 [Nominated Subcontractors]) or otherwise; and for which there shall be included in the Contract Price:
 - (i) the actual amounts paid (or due to be paid) by the Contractor, and
 - (ii) a sum for overhead charges and profit, calculated as a percentage of these actual amounts by applying the relevant percentage rate (if any) stated in the appropriate Schedule. If there is no such rate, the percentage rate stated in the Contract Data shall be applied.

The Contractor shall, when required by the Engineer, produce quotations, invoices, vouchers and accounts or receipts in substantiation.

13.6 Daywork

For work of a minor or incidental nature, the Engineer may instruct that a Variation shall be executed on a daywork basis. The work shall then be valued in accordance with the Daywork Schedule included in the Contract, and the following procedure shall apply. If a Daywork Schedule is not included in the Contract, this Sub-Clause shall not apply.



Before ordering Goods for the work, the Contractor shall submit quotations to the Engineer. When applying for payment, the Contractor shall submit invoices, vouchers and accounts or receipts for any Goods.

Except for any items for which the Daywork Schedule specifies that payment is not due, the Contractor shall deliver each day to the Engineer accurate statements in duplicate which shall include the following details of the resources used in executing the previous day's work:

- (a) the names, occupations and time of Contractor's Personnel,
- (b) the identification, type and time of Contractor's Equipment and Temporary Works, and
- (c) the quantities and types of Plant and Materials used.

One copy of each statement will, if correct, or when agreed, be signed by the Engineer and returned to the Contractor. The Contractor shall then submit priced statements of these resources to the Engineer, prior to their inclusion in the next Statement under Sub-Clause 14.3 [Application for Interim Payment Certificates].

13.7 Adjustments for Changes in Legislation

The Contract Price shall be adjusted to take account of any increase or decrease in Cost resulting from a change in the Laws of the Country (including the introduction of new Laws and the repeal or modification of existing Laws) or in the judicial or official governmental interpretation of such Laws, made after the Base Date, which affect the Contractor in the performance of obligations under the Contract.

If the Contractor suffers (or will suffer) delay and/or incurs (or will incur) additional Cost as a result of these changes in the Laws or in such interpretations, made after the Base Date, the Contractor shall give notice to the Engineer and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost, which shall be included in the Contract Price.

After receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

Notwithstanding the foregoing, the Contractor shall not be entitled to an extension of time if the relevant delay has already been taken into account in the determination of a previous extension of time and such Cost shall not be separately paid if the same shall already have been taken into account in the indexing of any inputs to the table of adjustment data in accordance with the provisions of Sub-Clause 13.8 [Adjustments for Changes in Cost].

13.8 Adjustments for Changes in Cost

In this Sub-Clause, "table of adjustment data" means the completed table of adjustment data for local and foreign currencies included in the Schedules. If there is no such table of adjustment data, this Sub-Clause shall not apply.

If this Sub-Clause applies, the amounts payable to the Contractor shall be adjusted for rises or falls in the cost of labour, Goods and other inputs to the Works, by the addition or deduction of the amounts determined by the formulae prescribed in this Sub-Clause. To the extent that full compensation for any rise or fall in Costs is not covered by the provisions of this or other Clauses, the Accepted Contract Amount shall be deemed to have included amounts to cover the contingency of other rises and falls in costs.



The adjustment to be applied to the amount otherwise payable to the Contractor, as valued in accordance with the appropriate Schedule and certified in Payment Certificates, shall be determined from formulae for each of the currencies in which the Contract Price is payable. No adjustment is to be applied to work valued on the basis of Cost or current prices. The formulae shall be of the following general type:

$$P_n = a + b L_n / L_o + c E_n / E_o + d M_n / M_o + \dots$$

where:

" P_n " is the adjustment multiplier to be applied to the estimated contract value in the relevant currency of the work carried out in period " n ", this period being a month unless otherwise stated in the Contract Data;

" a " is a fixed coefficient, stated in the relevant table of adjustment data, representing the non-adjustable portion in contractual payments;

" b ", " c ", " d ", ... are coefficients representing the estimated proportion of each cost element related to the execution of the Works, as stated in the relevant table of adjustment data; such tabulated cost elements may be indicative of resources such as labour, equipment and materials;

" L_n ", " E_n ", " M_n ", ... are the current cost indices or reference prices for period " n ", expressed in the relevant currency of payment, each of which is applicable to the relevant tabulated cost element on the date 49 days prior to the last day of the period (to which the particular Payment Certificate relates); and

" L_o ", " E_o ", " M_o ", ... are the base cost indices or reference prices, expressed in the relevant currency of payment, each of which is applicable to the relevant tabulated cost element on the Base Date.

The cost indices or reference prices stated in the table of adjustment data shall be used. If their source is in doubt, it shall be determined by the Engineer. For this purpose, reference shall be made to the values of the indices at stated dates for the purposes of clarification of the source; although these dates (and thus these values) may not correspond to the base cost indices.

In cases where the "currency of index" is not the relevant currency of payment, each index shall be converted into the relevant currency of payment at the selling rate, established by the central bank of the Country, of this relevant currency on the above date for which the index is required to be applicable

Until such time as each current cost index is available, the Engineer shall determine a provisional index for the issue of Interim Payment Certificates. When a current cost index is available, the adjustment shall be recalculated accordingly.

If the Contractor fails to complete the Works within the Time for Completion, adjustment of prices thereafter shall be made using either (i) each index or price applicable on the date 49 days prior to the expiry of the Time for Completion of the Works, or (ii) the current index or price, whichever is more favourable to the Employer.

The weightings (coefficients) for each of the factors of cost stated in the table(s) of adjustment data shall only be adjusted if they have been rendered unreasonable, unbalanced or inapplicable, as a result of Variations.

14 Contract Price and Payment

14.1 The Contract Price

Unless otherwise stated in the Particular Conditions:

- (a) the Contract Price shall be agreed or determined under Sub-Clause 12.3 [Evaluation] and be subject to adjustments in accordance with the Contract;

- (b) the Contractor shall pay all taxes, duties and fees required to be paid by him under the Contract, and the Contract Price shall not be adjusted for any of these costs except as stated in Sub-Clause 13.7 [Adjustments for Changes in Legislation];
- (c) any quantities which may be set out in the Bill of Quantities or other Schedule are estimated quantities and are not to be taken as the actual and correct quantities:
 - (i) of the Works which the Contractor is required to execute, or
 - (ii) for the purposes of Clause 12 [Measurement and Evaluation]; and
- (d) the Contractor shall submit to the Engineer, within 28 days after the Commencement Date, a proposed breakdown of each lump sum price in the Schedules. The Engineer may take account of the breakdown when preparing Payment Certificates, but shall not be bound by it.

Notwithstanding the provisions of sub-paragraph (b), Contractor's Equipment, including essential spare parts therefor, imported by the Contractor for the sole purpose of executing the Contract shall be exempt from the payment of import duties and taxes upon importation.

14.2 Advance Payment

The Employer shall make an advance payment, as an interest-free loan for mobilisation and cash flow support, when the Contractor submits a guarantee in accordance with this Sub-Clause. The total advance payment, the number and timing of instalments (if more than one), and the applicable currencies and proportions, shall be as stated in the Contract Data.

Unless and until the Employer receives this guarantee, or if the total advance payment is not stated in the Contract Data, this Sub-Clause shall not apply.

The Engineer shall deliver to the Employer and to the Contractor an Interim Payment Certificate for the advance payment or its first instalment after receiving a Statement (under Sub-Clause 14.3 [Application for Interim Payment Certificates]) and after the Employer receives (i) the Performance Security in accordance with Sub-Clause 4.2 [Performance Security] and (ii) a guarantee in amounts and currencies equal to the advance payment. This guarantee shall be issued by a reputable bank or financial institution selected by the Contractor and shall be in the form annexed to the Particular Conditions or in another form approved by the Employer.

The Contractor shall ensure that the guarantee is valid and enforceable until the advance payment has been repaid, but its amount shall be progressively reduced by the amount repaid by the Contractor as indicated in the Payment Certificates. If the terms of the guarantee specify its expiry date, and the advance payment has not been repaid by the date 28 days prior to the expiry date, the Contractor shall extend the validity of the guarantee until the advance payment has been repaid.

Unless stated otherwise in the Contract Data, the advance payment shall be repaid through percentage deductions from the interim payments determined by the Engineer in accordance with Sub-Clause 14.6 [Issue of Interim Payment Certificates], as follows:

- (a) deductions shall commence in the next interim Payment Certificate following that in which the total of all certified interim payments (excluding the advance payment and deductions and repayments of retention) exceeds 30 percent (30%) of the Accepted Contract Amount less Provisional Sums; and
- (b) deductions shall be made at the amortisation rate stated in the Contract Data of the amount of each Interim Payment Certificate (excluding the advance payment and deductions for its repayments as well as deductions for retention money) in the currencies and proportions of the advance payment until such time as the advance payment has been repaid; provided that the advance payment shall be completely repaid prior to the time when 90 percent (90%) of the Accepted Contract Amount less Provisional Sums has been certified for payment.

If the advance payment has not been repaid prior to the issue of the Taking-Over Certificate for the Works or prior to termination under Clause 15 [Termination by Employer], Clause 16 [Suspension and Termination by Contractor] or Clause 19 [Force Majeure] (as the case may be), the whole of the balance then outstanding shall immediately become due and in case of termination under Clause 15 [Termination by Employer], except for Sub-Clause 15.5 [Employer's Entitlement to Termination for Convenience], payable by the Contractor to the Employer.

14.3 Application for Interim Payment Certificates

The Contractor shall submit a Statement in six copies to the Engineer after the end of each month, in a form approved by the Engineer, showing in detail the amounts to which the Contractor considers himself to be entitled, together with supporting documents which shall include the report on the progress during this month in accordance with Sub-Clause 4.21 [Progress Reports].

The Statement shall include the following items, as applicable, which shall be expressed in the various currencies in which the Contract Price is payable, in the sequence listed:

- (a) the estimated contract value of the Works executed and the Contractor's Documents produced up to the end of the month (including Variations but excluding items described in sub-paragraphs (b) to (g) below);
- (b) any amounts to be added and deducted for changes in legislation and changes in cost, in accordance with Sub-Clause 13.7 [Adjustments for Changes in Legislation] and Sub-Clause 13.8 [Adjustments for Changes in Cost];
- (c) any amount to be deducted for retention, calculated by applying the percentage of retention stated in the Contract Data to the total of the above amounts, until the amount so retained by the Employer reaches the limit of Retention Money (if any) stated in the Contract Data;
- (d) any amounts to be added for the advance payment (if more than one instalment) and to be deducted for its repayments in accordance with Sub-Clause 14.2 [Advance Payment];
- (e) any amounts to be added and deducted for Plant and Materials in accordance with Sub-Clause 14.5 [Plant and Materials intended for the Works];
- (f) any other additions or deductions which may have become due under the Contract or otherwise, including those under Clause 20 [Claims, Disputes and Arbitration]; and
- (g) the deduction of amounts certified in all previous Payment Certificates.

14.4 Schedule of Payments

If the Contract includes a schedule of payments specifying the instalments in which the Contract Price will be paid, then unless otherwise stated in this schedule:

- (a) the instalments quoted in this schedule of payments shall be the estimated contract values for the purposes of sub-paragraph (a) of Sub-Clause 14.3 [Application for Interim Payment Certificates];
- (b) Sub-Clause 14.5 [Plant and Materials intended for the Works] shall not apply; and
- (c) if these instalments are not defined by reference to the actual progress achieved in executing the Works, and if actual progress is found to be less or more than that on which this schedule of payments was based, then the Engineer may proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine revised instalments, which shall take account of the extent to which progress is less or more than that on which the instalments were previously based.



If the Contract does not include a schedule of payments, the Contractor shall submit non-binding estimates of the payments which he expects to become due during each quarterly period. The first estimate shall be submitted within 42 days after the Commencement Date. Revised estimates shall be submitted at quarterly intervals, until the Taking-Over Certificate has been issued for the Works.

14.5 Plant and Materials intended for the Works

If this Sub-Clause applies, Interim Payment Certificates shall include, under sub-paragraph (e) of Sub-Clause 14.3, (i) an amount for Plant and Materials which have been sent to the Site for incorporation in the Permanent Works, and (ii) a reduction when the contract value of such Plant and Materials is included as part of the Permanent Works under sub-paragraph (a) of Sub-Clause 14.3 [Application for Interim Payment Certificates].

If the lists referred to in sub-paragraphs (b)(i) or (c)(i) below are not included in the Schedules this Sub-Clause shall not apply.

The Engineer shall determine and certify each addition if the following conditions are satisfied:

(a) the Contractor has:

- (i) kept satisfactory records (including the orders, receipts, Costs and use of Plant and Materials) which are available for inspection, and
- (ii) submitted a statement of the Cost of acquiring and delivering the Plant and Materials to the Site, supported by satisfactory evidence;

and either:

(b) the relevant Plant and Materials:

- (i) are those listed in the Schedules for payment when shipped,
- (ii) have been shipped to the Country, en route to the Site, in accordance with the Contract; and
- (iii) are described in a clean shipped bill of lading or other evidence of shipment, which has been submitted to the Engineer together with evidence of payment of freight and insurance, any other documents reasonably required, and a bank guarantee in a form and issued by an entity approved by the Employer in amounts and currencies equal to the amount due under this Sub-Clause: this guarantee may be in a similar form to the form referred to in Sub-Clause 14.2 [Advance Payment] and shall be valid until the Plant and Materials are properly stored on Site and protected against loss, damage or deterioration;

or

(c) the relevant Plant and Materials:

- (i) are those listed in the Schedules for payment when delivered to the Site, and
- (ii) have been delivered to and are properly stored on the Site, are protected against loss, damage or deterioration, and appear to be in accordance with the Contract.

The additional amount to be certified shall be the equivalent of eighty percent (80%) of the Engineer's determination of the cost of the Plant and Materials (including delivery to Site), taking account of the documents mentioned in this Sub-Clause and of the contract value of the Plant and Materials.

The currencies for this additional amount shall be the same as those in which payment will become due when the contract value is included under sub-paragraph (a) of Sub-Clause 14.3 [Application for Interim Payment Certificates]. At that time, the Payment Certificate shall include the applicable reduction which shall be equivalent to, and in the same currencies and proportions as, this additional amount for the relevant Plant and Materials

14.6 Issue of Interim Payment Certificates

No amount will be certified or paid until the Employer has received and approved the Performance Security. Thereafter, the Engineer shall, within 28 days after receiving a Statement and supporting documents, deliver to the Employer and to the Contractor an Interim Payment Certificate which shall state the amount which the Engineer fairly determines to be due, with all supporting particulars for any reduction or withholding made by the Engineer on the Statement if any.

However, prior to issuing the Taking-Over Certificate for the Works, the Engineer shall not be bound to issue an Interim Payment Certificate in an amount which would (after retention and other deductions) be less than the minimum amount of Interim Payment Certificates (if any) stated in the Contract Data. In this event, the Engineer shall give notice to the Contractor accordingly.

An Interim Payment Certificate shall not be withheld for any other reason, although:

- (a) if any thing supplied or work done by the Contractor is not in accordance with the Contract, the cost of rectification or replacement may be withheld until rectification or replacement has been completed; and/or
- (b) if the Contractor was or is failing to perform any work or obligation in accordance with the Contract, and had been so notified by the Engineer, the value of this work or obligation may be withheld until the work or obligation has been performed.

The Engineer may in any Payment Certificate make any correction or modification that should properly be made to any previous Payment Certificate. A Payment Certificate shall not be deemed to indicate the Engineer's acceptance, approval, consent or satisfaction.

14.7 Payment

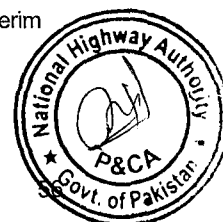
The Employer shall pay to the Contractor:

- (a) the first instalment of the advance payment within 42 days after issuing the Letter of Acceptance or within 21 days after receiving the documents in accordance with Sub-Clause 4.2 [Performance Security] and Sub-Clause 14.2 [Advance Payment], whichever is later;
- (b) the amount certified in each Interim Payment Certificate within 56 days after the Engineer receives the Statement and supporting documents; or, at a time when the Bank's loan or credit (from which part of the payments to the Contractor is being made) is suspended, the amount shown on any statement submitted by the Contractor within 14 days after such statement is submitted, any discrepancy being rectified in the next payment to the Contractor; and
- (c) the amount certified in the Final Payment Certificate within 56 days after the Employer receives this Payment Certificate; or, at a time when the Bank's loan or credit (from which part of the payments to the Contractor is being made) is suspended, the undisputed amount shown in the Final Statement within 56 days after the date of notification of the suspension in accordance with Sub-Clause 16.2 [Termination by Contractor].

Payment of the amount due in each currency shall be made into the bank account, nominated by the Contractor, in the payment country (for this currency) specified in the Contract.

14.8 Delayed Payment

If the Contractor does not receive payment in accordance with Sub-Clause 14.7 [Payment], the Contractor shall be entitled to receive financing charges compounded monthly on the amount unpaid during the period of delay. This period shall be deemed to commence on the date for payment specified in Sub-Clause 14.7 [Payment], irrespective (in the case of its sub-paragraph (b)) of the date on which any Interim Payment Certificate is issued.



Unless otherwise stated in the Particular Conditions, these financing charges shall be calculated at the annual rate of three percentage points above the discount rate of the central bank in the country of the currency of payment, or if not available, the interbank offered rate, and shall be paid in such currency.

The Contractor shall be entitled to this payment without formal notice or certification, and without prejudice to any other right or remedy.

14.9 Payment of Retention Money

When the Taking-Over Certificate has been issued for the Works, the first half of the Retention Money shall be certified by the Engineer for payment to the Contractor. If a Taking-Over Certificate is issued for a Section or part of the Works, a proportion of the Retention Money shall be certified and paid. This proportion shall be half (50%) of the proportion calculated by dividing the estimated contract value of the Section or part, by the estimated final Contract Price.

Promptly after the latest of the expiry dates of the Defects Notification Periods, the outstanding balance of the Retention Money shall be certified by the Engineer for payment to the Contractor. If a Taking-Over Certificate was issued for a Section, a proportion of the second half of the Retention Money shall be certified and paid promptly after the expiry date of the Defects Notification Period for the Section. This proportion shall be half (50%) of the proportion calculated by dividing the estimated contract value of the Section by the estimated final Contract Price.

However, if any work remains to be executed under Clause 11 [Defects Liability], the Engineer shall be entitled to withhold certification of the estimated cost of this work until it has been executed.

When calculating these proportions, no account shall be taken of any adjustments under Sub-Clause 13.7 [Adjustments for Changes in Legislation] and Sub-Clause 13.8 [Adjustments for Changes in Cost].

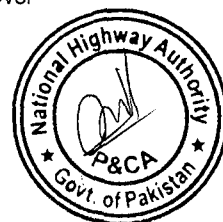
Unless otherwise stated in the Particular Conditions, when the Taking-Over Certificate has been issued for the Works and the first half of the Retention Money has been certified for payment by the Engineer, the Contractor shall be entitled to substitute a guarantee, in the form annexed to the Particular Conditions or in another form approved by the Employer and issued by a reputable bank or financial institution selected by the Contractor, for the second half of the Retention Money. The Contractor shall ensure that the guarantee is in the amounts and currencies of the second half of the Retention Money and is valid and enforceable until the Contractor has executed and completed the Works and remedied any defects, as specified for the Performance Security in Sub-Clause 4.2. On receipt by the Employer of the required guarantee, the Engineer shall certify and the Employer shall pay the second half of the Retention Money. The release of the second half of the Retention Money against a guarantee shall then be in lieu of the release under the second paragraph of this Sub-Clause. The Employer shall return the guarantee to the Contractor within 21 days after receiving a copy of the Performance Certificate.

If the Performance Security required under Sub-Clause 4.2 is in the form of a demand guarantee, and the amount guaranteed under it when the Taking-Over Certificate is issued is more than half of the Retention Money, then the Retention Money guarantee will not be required. If the amount guaranteed under the Performance Security when the Taking-Over Certificate is issued is less than half of the Retention Money, the Retention Money guarantee will only be required for the difference between half of the Retention Money and the amount guaranteed under the Performance Security.

14.10 Statement at Completion

Within 84 days after receiving the Taking-Over Certificate for the Works, the Contractor shall submit to the Engineer six copies of a Statement at completion with supporting documents, in accordance with Sub-Clause 14.3 [Application for Interim Payment Certificates], showing:

- (a) the value of all work done in accordance with the Contract up to the date stated in the Taking-Over Certificate for the Works,
- (b) any further sums which the Contractor considers to be due, and



- (c) an estimate of any other amounts which the Contractor considers will become due to him under the Contract. Estimated amounts shall be shown separately in this Statement at completion.

The Engineer shall then certify in accordance with Sub-Clause 14.6 [Issue of Interim Payment Certificates].

14.11 Application for Final Payment Certificate

Within 56 days after receiving the Performance Certificate, the Contractor shall submit, to the Engineer, six copies of a draft final statement with supporting documents showing in detail in a 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 within 28 days from receipt of said draft 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. This agreed statement is referred to in these Conditions as the "Final Statement".

However if, following discussions between the Engineer and the Contractor and any changes to the draft final statement which are agreed, it becomes evident that a dispute exists, the Engineer shall deliver to the Employer (with a copy to the Contractor) an Interim Payment Certificate for the agreed parts of the draft final statement. Thereafter, if the dispute is finally resolved under Sub-Clause 20.4 [Obtaining Dispute Board's Decision] or Sub-Clause 20.5 [Amicable Settlement], the Contractor shall then prepare and submit to the Employer (with a copy to the Engineer) a Final Statement.

14.12 Discharge

When submitting the Final Statement, the Contractor shall submit a discharge which confirms that the total of the Final Statement represents full and final settlement of all moneys due to the Contractor under or in connection with the Contract. This discharge may state that it becomes effective when the Contractor has received the Performance Security and the outstanding balance of this total, in which event the discharge shall be effective on such date.

14.13 Issue of Final Payment Certificate

Within 28 days after receiving the Final Statement and discharge in accordance with Sub-Clause 14.11 [Application for Final Payment Certificate] and Sub-Clause 14.12 [Discharge], the Engineer shall deliver, to the Employer and to the Contractor, the Final Payment Certificate which shall state:

- (a) the amount which he fairly determines is finally due, 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, the balance (if any) due from the Employer to the Contractor or from the Contractor to the Employer, as the case may be.

If the Contractor has not applied for a Final Payment Certificate in accordance with Sub-Clause 14.11 [Application for Final Payment Certificate] and Sub-Clause 14.12 [Discharge], the Engineer shall request the Contractor to do so. If the Contractor fails to submit an application within a period of 28 days, the Engineer shall issue the Final Payment Certificate for such amount as he fairly determines to be due.

14.14 Cessation of Employer's Liability



The Employer shall not be liable to the Contractor for any matter or thing under or in connection with the Contract or execution of the Works, except to the extent that the Contractor shall have included an amount expressly for it:

- (a) in the Final Statement and also
- (b) (except for matters or things arising after the issue of the Taking-Over Certificate for the Works) in the Statement at completion described in Sub-Clause 14.10 [Statement at Completion].

However, this Sub-Clause shall not limit the Employer's liability under his indemnification obligations, or the Employer's liability in any case of fraud, deliberate default or reckless misconduct by the Employer.

14.15 Currencies of Payment

The Contract Price shall be paid in the currency or currencies named in the Schedule of Payment Currencies. If more than one currency is so named, payments shall be made as follows:

- (a) if the Accepted Contract Amount was expressed in Local Currency only:
 - (i) the proportions or amounts of the Local and Foreign Currencies, and the fixed rates of exchange to be used for calculating the payments, shall be as stated in the Schedule of Payment Currencies, except as otherwise agreed by both Parties;
 - (ii) payments and deductions under Sub-Clause 13.5 [Provisional Sums] and Sub-Clause 13.7 [Adjustments for Changes in Legislation] shall be made in the applicable currencies and proportions; and
 - (iii) other payments and deductions under sub-paragraphs (a) to (d) of Sub-Clause 14.3 [Application for Interim Payment Certificates] shall be made in the currencies and proportions specified in sub-paragraph (a)(i) above;
- (b) payment of the damages specified in the Contract Data shall be made in the currencies and proportions specified in the Schedule of Payment Currencies;
- (c) other payments to the Employer by the Contractor shall be made in the currency in which the sum was expended by the Employer, or in such currency as may be agreed by both Parties;
- (d) if any amount payable by the Contractor to the Employer in a particular currency exceeds the sum payable by the Employer to the Contractor in that currency, the Employer may recover the balance of this amount from the sums otherwise payable to the Contractor in other currencies; and
- (e) if no rates of exchange are stated in the Schedule of Payment Currencies, they shall be those prevailing on the Base Date and determined by the central bank of the Country.

15 Termination by Employer

15.1 Notice to Correct

If the Contractor fails to carry out any obligation under the Contract, the Engineer may by notice require the Contractor to make good the failure and to remedy it within a specified reasonable time.

15.2 Termination by Employer

The Employer shall be entitled to terminate the Contract if the Contractor:



- (a) fails to comply with Sub-Clause 4.2 [Performance Security] or with a notice under Sub-Clause 15.1 [Notice to Correct],
- (b) abandons the Works or otherwise plainly demonstrates the intention not to continue performance of his obligations under the Contract,
- (c) without reasonable excuse fails:
 - (i) to proceed with the Works in accordance with Clause 8 [Commencement, Delays and Suspension], or
 - (ii) to comply with a notice issued under Sub-Clause 7.5 [Rejection] or Sub-Clause 7.6 [Remedial Work], within 28 days after receiving it,
- (d) subcontracts the whole of the Works or assigns the Contract without the required agreement,
- (e) becomes bankrupt or insolvent, goes into liquidation, has a receiving or administration order made against him, compounds with his creditors, or carries on business under a receiver, trustee or manager for the benefit of his creditors, or if any act is done or event occurs which (under applicable Laws) has a similar effect to any of these acts or events, or
- (f) gives or offers to give (directly or indirectly) to any person any bribe, gift, gratuity, commission or other thing of value, as an inducement or reward:
 - (i) for doing or forbearing to do any action in relation to the Contract, or
 - (ii) for showing or forbearing to show favour or disfavour to any person in relation to the Contract,

or if any of the Contractor's Personnel, agents or Subcontractors gives or offers to give (directly or indirectly) to any person any such inducement or reward as is described in this sub-paragraph (f). However, lawful inducements and rewards to Contractor's Personnel shall not entitle termination.

In any of these events or circumstances, the Employer may, upon giving 14 days' notice to the Contractor, terminate the Contract and expel the Contractor from the Site. However, in the case of sub-paragraph (e) or (f), the Employer may by notice terminate the Contract immediately.

The Employer's election to terminate the Contract shall not prejudice any other rights of the Employer, under the Contract or otherwise.

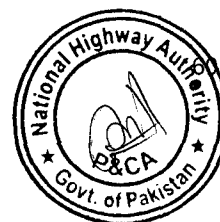
The Contractor shall then leave the Site and deliver any required Goods, all Contractor's Documents, and other design documents made by or for him, to the Engineer. However, the Contractor shall use his best efforts to comply immediately with any reasonable instructions included in the notice (i) for the assignment of any subcontract, and (ii) for the protection of life or property or for the safety of the Works.

After termination, the Employer may complete the Works and/or arrange for any other entities to do so. The Employer and these entities may then use any Goods, Contractor's Documents and other design documents made by or on behalf of the Contractor.

The Employer shall then give notice that the Contractor's Equipment and Temporary Works will be released to the Contractor at or near the Site. The Contractor shall promptly arrange their removal, at the risk and cost of the Contractor. However, if by this time the Contractor has failed to make a payment due to the Employer, these items may be sold by the Employer in order to recover this payment. Any balance of the proceeds shall then be paid to the Contractor.

15.3 Valuation at Date of Termination

As soon as practicable after a notice of termination under Sub-Clause 15.2 [Termination by Employer] has taken effect, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine the value of the Works, Goods and Contractor's Documents, and any other sums due to the Contractor for work executed in accordance with the Contract.



15.4 Payment after Termination

After a notice of termination under Sub-Clause 15.2 [Termination by Employer] has taken effect, the Employer may:

- (a) proceed in accordance with Sub-Clause 2.5 [Employer's Claims],
- (b) withhold further payments to the Contractor until the costs of execution, completion and remedying of any defects, damages for delay in completion (if any), and all other costs incurred by the Employer, have been established, and/or
- (c) recover from the Contractor any losses and damages incurred by the Employer and any extra costs of completing the Works, after allowing for any sum due to the Contractor under Sub-Clause 15.3 [Valuation at Date of Termination]. After recovering any such losses, damages and extra costs, the Employer shall pay any balance to the Contractor.

15.5 Employer's Entitlement to Termination for Convenience

The Employer shall be entitled to terminate the Contract, at any time for the Employer's convenience, by giving notice of such termination to the Contractor. The termination shall take effect 28 days after the later of the dates on which the Contractor receives this notice or the Employer returns the Performance Security. The Employer shall not terminate the Contract under this Sub-Clause in order to execute the Works himself or to arrange for the Works to be executed by another contractor or to avoid a termination of the Contract by the Contractor under Clause 16.2 [Termination by Contractor].

After this termination, the Contractor shall proceed in accordance with Sub-Clause 16.3 [Cessation of Work and Removal of Contractor's Equipment] and shall be paid in accordance with Sub-Clause 16.4 [Payment on Termination].

15.6 Corrupt or Fraudulent Practices

If the Employer determines, based on reasonable evidence, that the Contractor has engaged in corrupt, fraudulent, collusive or coercive practices, in competing for or in executing the Contract, then the Employer may, after giving 14 days notice to the Contractor, terminate the Contract and expel him from the Site, and the provisions of Clause 15 shall apply as if such termination had been made under Sub-Clause 15.2 [Termination by Employer].

Should any employee of the Contractor be determined, based on reasonable evidence, to have engaged in corrupt, fraudulent or coercive practice during the execution of the work then that employee shall be removed in accordance with Sub-Clause 6.9 [Contractor's Personnel].

[For contracts financed by the African Development Bank]

For the purposes of this Sub-Clause:

- (a) "corrupt practice" means the offering, giving, receiving or soliciting of any thing of value to influence the action of a public official in the procurement process or in the Contract execution; and
- (b) "fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of the Contract to the detriment of the Borrower, and includes collusive practice among Bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the Borrower of the benefits of free and open competition.

[For contracts financed by the Asian Development Bank]

For the purposes of this Sub-Clause:

- (a) "corrupt practice" means the offering, giving, receiving, or soliciting, directly or indirectly, anything of value to influence improperly the actions of another party;
- (b) "fraudulent practice" means any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;
- (c) "coercive practice" means impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;
- (d) "collusive practice" means an arrangement between two or more parties designed to achieve an improper purpose, including influencing improperly the actions of another party.

[For contracts financed by the Black Sea Trade and Development Bank and by the European Bank for Reconstruction and Development]

For the purposes of this Sub-Clause, the Bank defines, for the purposes of this provision, the terms set forth below as follows:

- (a) "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value to influence a person, or the threatening of injury to person, property or reputation, in connection with the procurement process or in contract execution in order to obtain or retain business or other improper advantage in the conduct of international business;
- (b) "fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the client, and includes collusive practices among tenderers (prior to or after tender submission) designed to establish tender prices at artificial, non-competitive levels and to deprive the client of the benefits of free and open competition.

[For contracts financed by the Caribbean Development Bank:]

For the purposes of this Sub-Clause:

- (a) "corrupt practice" means the offering, giving, receiving or soliciting, directly or indirectly, of any thing of value to influence the action of a public official in the procurement process or in the Contract execution;
- (b) "fraudulent practice" means a misrepresentation or omission of facts in order to influence a procurement process or the execution of the Contract;
- (c) "collusive practice" means a scheme or arrangement between two or more bidders, with or without the knowledge of the Borrower, designed to establish bid prices at artificial, non-competitive levels;
- (d) "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the procurement process or affect the execution of a contract.

[For contracts financed by the Inter-American Development Bank]

For the purposes of this Sub-Clause:

The Bank requires that all Contractors adhere to the Bank's Policies for the Procurement of Works and Goods financed by the Bank. In particular, the Bank requires that all Borrowers (including grant beneficiaries), the executing agencies and contracting agencies, as well as all firms, entities and individuals bidding for or participating in a Bank-financed project, including, inter alia, applicants, bidders, contractors, consulting firms and individual consultants (including their respective officers, employees and agents) adhere to the highest ethical standards, and report to the Bank all suspected acts of fraud or corruption of which it has knowledge or becomes aware, during the Bidding Process and throughout the negotiation or execution of a Contract. Fraud and corruption are prohibited.

Fraud and corruption include acts of:

- (a) bribery,
- (b) extortion or coercion,
- (c) fraud, and
- (d) collusion.

The definitions of actions set forth below cover the most common types of corrupt practices, but are not exhaustive. For this reason, the Bank shall also take action in the event of any similar deed or complaint involving alleged acts of corruption, even when these are not specified in the following list. The Bank shall in all cases proceed in accordance with Sub-Clause 15.6.

In pursuance of this policy:

- (a) the Bank defines the terms set forth below as follows:
 - (i) "bribery" meaning the offering or giving of anything of value to influence the actions or decisions of third parties or the receiving or soliciting of any benefit in exchange for actions or omissions related to the performance of duties;
 - (ii) "extortion" or "coercion" meaning the act of obtaining something, compelling an action or influencing a decision through intimidation, threat or the use of force, where potential or actual injury may befall upon a person, his/her reputation or property;
 - (ii) "fraud" meaning any action or omission intended to misrepresent the truth so as to induce others to act in reliance thereof, with the purpose of obtaining some unjust advantage or causing damage to others; and
 - (iv) "collusion" meaning a secret agreement between two or more parties to defraud or cause damage to a person or entity or to obtain an unlawful purpose;
- (b) if the Bank, in accordance with its administrative procedures, demonstrates that any firm, entity or individual bidding for or participating in a Bank-financed project including, inter alia, applicants, bidders, contractors, consulting firms, individual consultants, borrowers (including grant beneficiaries), purchasers, executing agencies and contracting agency (including their respective officers, employees and agents) engaged in an act of fraud or corruption in connection with Bank-financed projects, the Bank may:
 - (i) decide not to finance any proposal to award a contract or a contract awarded financed by the Bank;
 - (ii) suspend disbursement of the operation if it is determined at any stage that evidence is sufficient to support a finding that an employee, agent or representative of the Borrower, Executing Agency or Contracting Agency has engaged in an act of fraud or corruption;
 - (iii) cancel and/or accelerate the payment of, the portion of a loan or grant earmarked for a contract, when there is evidence that the representative of the Borrower, or Beneficiary of a grant, has not taken the adequate remedial measures within a time period which the Bank considers reasonable, and in accordance with the due process guarantees of the Borrowing country's legislation;
 - (iv) issue a reprimand in the form of a formal letter of censure of the firm, entity or individual's behaviour;
 - (v) issue a declaration that an individual, entity or firm is ineligible, either permanently or for a stated period of time, to be awarded contracts under Bank-financed projects except under such conditions as the Bank deems to be appropriate;
 - (v) refer the matter to appropriate law enforcement authorities; and/or;



- (vii) may impose other sanctions that it deems to be appropriate under the circumstances, including the imposition of fines representing reimbursement of the Bank for costs associated with investigations and proceedings. Such other sanctions may be imposed in addition to or in lieu of other sanctions;
- (c) the Bank has established administrative procedures for cases of allegations of fraud and corruption within the procurement process or the execution of a contract financed by the Bank which are available at the Bank's website (www.iadb.org), as updated from time to time. To that effect any complaint shall be submitted to the Bank's Office of Institutional Integrity (OI) for the appropriate investigation. Allegations may be presented confidentially or anonymously;
- (d) payments are expressly conditional upon the claimant's participation in the procurement process conformed with all applicable Bank policies on Fraud and Corruption described in this Sub-Clause 15.5; and
- (e) the imposition of any sanction referred to paragraph (b) of this Sub-Clause will be public;

The Bank will have the right to require that a Contractor permit the Bank to inspect their accounts and records and other documents relating to the submission of bids and contract performance and to have them audited by auditors appointed by the Bank. The Bank will have the right to require that Contractors to:

- (a) maintain all documents and records related to the Bank-financed project for five (5) years after completion of the work; and
- (b) require the delivery of any document necessary for the investigation of allegations of fraud or corruption and the availability of employees or agents of the contractor with knowledge of the Bank-financed project to respond to questions from the Bank.

If the Contractor refuses to comply with the Bank's request, the Bank, in its sole discretion, may take appropriate action against the Contractor.

The Contractor represents and warrants:

- (a) that they have read and understood the Bank's prohibition against fraud and corruption and agrees to abide by the applicable rules;
- (b) that they have not engaged in any violation of policies on fraud and corruption described herein;
- (c) that they have not misrepresented or concealed any material facts during the procurement or contract negotiation processes or performance of the contract;
- (d) that neither they nor any of their directors, officers or principal shareholders have been declared ineligible to be awarded Bank-financed contracts or have been convicted of a crime involving fraud or corruption;
- (e) that none of their directors, officers or principal shareholders has been a director, officer or principal shareholder of any other company or entity that has been declared ineligible to be awarded a Bank-financed contract or has been convicted of a crime involving fraud or corruption;
- (f) that all commissions, agents' fees, facilitating payments or revenue-sharing agreements related to the Bank-financed contract or consulting agreement have been disclosed;
- (g) that they acknowledge that the breach of any of these warranties constitute a basis for the imposition of any or a combination of the measures described in this Sub-Clause.

[For contracts financed by the World Bank]

In pursuance of this policy, the Bank:

- (a) defines, for the purposes of this provision, the terms set forth below as follows:



- (i) "corrupt practice" is the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;

In this context, "another party" refers to a public official acting in relation to the procurement process or contract execution]. In this context, "public official" includes World Bank staff and employees of other organisations taking or reviewing procurement decisions.

- (ii) "fraudulent practice" is any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;

In this context, "party" refers to a public official; the terms "benefit" and "obligation" relate to the procurement process or contract execution; and the "act or omission" is intended to influence the procurement process or contract execution.

- (iii) "collusive practice" is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;

In this context, "parties" refers to participants in the procurement process (including public officials) attempting to establish bid prices at artificial, non competitive levels.

- (iv) "coercive practice" is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;

In this context, "parties" refers to participants in the procurement process (including public officials) attempting to establish bid prices at artificial, non competitive levels.

- (v) "obstructive practice" is

(A) deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a Bank investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation, or

(B) acts intended to materially impede the exercise of the Bank's inspection and audit rights.

In this context, "party" refers to a participant in the procurement process or contract execution.

16 Suspension and Termination by Contractor

16.1 Contractor's Entitlement to Suspend Work

If the Engineer fails to certify in accordance with Sub-Clause 14.6 [Issue of Interim Payment Certificates] or the Employer fails to comply with Sub-Clause 2.4 [Employer's Financial Arrangements] or Sub-Clause 14.7 [Payment], the Contractor may, after giving not less than 21 days' notice to the Employer, suspend work (or reduce the rate of work) unless and until the Contractor has received the Payment Certificate, reasonable evidence or payment, as the case may be and as described in the notice.

Notwithstanding the above, if the Bank has suspended disbursements under the loan or credit from which payments to the Contractor are being made, in whole or in part, for the execution of the Works, and no alternative funds are available as provided for in Sub-Clause 2.4 [Employer's Financial Arrangements], the Contractor may by notice suspend work or reduce the rate of work at any time, but not less than 7 days after the Borrower having received the suspension notification from the Bank.

The Contractor's action shall not prejudice his entitlements to financing charges under Sub-Clause 14.8 [Delayed Payment] and to termination under Sub-Clause 16.2 [Termination by Contractor].



If the Contractor subsequently receives such Payment Certificate, evidence or payment (as described in the relevant Sub-Clause and in the above notice) before giving a notice of termination, the Contractor shall resume normal working as soon as is reasonably practicable.

If the Contractor suffers delay and/or incurs Cost as a result of suspending work (or reducing the rate of work) in accordance with this Sub-Clause, the Contractor shall give notice to the Engineer and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost plus profit, which shall be included in the Contract Price.

After receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

16.2 Termination by Contractor

The Contractor shall be entitled to terminate the Contract if:

- (a) the Contractor does not receive the reasonable evidence within 42 days after giving notice under Sub-Clause 16.1 [Contractor's Entitlement to Suspend Work] in respect of a failure to comply with Sub-Clause 2.4 [Employer's Financial Arrangements],
- (b) the Engineer fails, within 56 days after receiving a Statement and supporting documents, to issue the relevant Payment Certificate,
- (c) the Contractor does not receive the amount due under an Interim Payment Certificate within 42 days after the expiry of the time stated in Sub-Clause 14.7 [Payment] within which payment is to be made (except for deductions in accordance with Sub-Clause 2.5 [Employer's Claims]),
- (d) the Employer substantially fails to perform his obligations under the Contract in such manner as to materially and adversely affect the economic balance of the Contract and/or the ability of the Contractor to perform the Contract,
- (e) the Employer fails to comply with Sub-Clause 1.6 [Contract Agreement] or Sub-Clause 1.7 [Assignment],
- (f) a prolonged suspension affects the whole of the Works as described in Sub-Clause 8.11 [Prolonged Suspension],
- (g) the Employer becomes bankrupt or insolvent, goes into liquidation, has a receiving or administration order made against him, compounds with his creditors, or carries on business under a receiver, trustee or manager for the benefit of his creditors, or if any act is done or event occurs which (under applicable Laws) has a similar effect to any of these acts or events,
- (h) the Contractor does not receive the Engineer's instruction recording the agreement of both Parties on the fulfilment of the conditions for the Commencement of Works under Sub-Clause 8.1 [Commencement of Works].

In any of these events or circumstances, the Contractor may, upon giving 14 days' notice to the Employer, terminate the Contract. However, in the case of sub-paragraph (f) or (g), the Contractor may by notice terminate the Contract immediately.

In the event the Bank suspends the loan or credit from which part or whole of the payments to the Contractor are being made, if the Contractor has not received the sums due to him upon expiration of the 14 days referred to in Sub-Clause 14.7 [Payment] for payments under Interim Payment Certificates, the Contractor may, without prejudice to the Contractor's entitlement to financing charges under Sub-Clause 14.8 [Delayed Payment], take one of the following actions, namely (i) suspend work or reduce the rate of work under Sub-Clause 16.1 above, or (ii) terminate the Contract by giving notice to the Employer, with a copy to the Engineer, such termination to take effect 14 days after the giving of the notice.

The Contractor's election to terminate the Contract shall not prejudice any other rights of the Contractor, under the Contract or otherwise.

16.3 Cessation of Work and Removal of Contractor's Equipment

After a notice of termination under Sub-Clause 15.5 [Employer's Entitlement to Termination for Convenience], Sub-Clause 16.2 [Termination by Contractor] or Sub-Clause 19.6 [Optional Termination, Payment and Release] has taken effect, the Contractor shall promptly:

- (a) cease all further work, except for such work as may have been instructed by the Engineer for the protection of life or property or for the safety of the Works,
- (b) hand over Contractor's Documents, Plant, Materials and other work, for which the Contractor has received payment, and
- (c) remove all other Goods from the Site, except as necessary for safety, and leave the Site.

16.4 Payment on Termination

After a notice of termination under Sub-Clause 16.2 [Termination by Contractor] has taken effect, the Employer shall promptly:

- (a) return the Performance Security to the Contractor,
- (b) pay the Contractor in accordance with Sub-Clause 19.6 [Optional Termination, Payment and Release], and
- (c) pay to the Contractor the amount of any loss or damage sustained by the Contractor as a result of this termination.

17 Risk and Responsibility

17.1 Indemnities

The Contractor shall indemnify and hold harmless the Employer, the Employer's Personnel, and their respective agents, against and from all claims, damages, losses and expenses (including legal fees and expenses) in respect of:

- (a) bodily injury, sickness, disease or death, of any person whatsoever arising out of or in the course of or by reason of the Contractor's design (if any), the execution and completion of the Works and the remedying of any defects, unless attributable to any negligence, wilful act or breach of the Contract by the Employer, the Employer's Personnel, or any of their respective agents, and
- (b) damage to or loss of any property, real or personal (other than the Works), to the extent that such damage or loss arises out of or in the course of or by reason of the Contractor's design (if any), the execution and completion of the Works and the remedying of any defects, unless and to the extent that any such damage or loss is attributable to any negligence, wilful act or breach of the Contract by the Employer, the Employer's Personnel, their respective agents, or anyone directly or indirectly employed by any of them.

The Employer shall indemnify and hold harmless the Contractor, the Contractor's Personnel, and their respective agents, against and from all claims, damages, losses and expenses (including legal fees and expenses) in respect of (1) bodily injury, sickness, disease or death, which is attributable to any negligence, wilful act or breach of the Contract by the Employer, the Employer's Personnel, or any of their respective agents, and (2) the matters for which liability may be excluded from insurance cover, as described in sub-paragraphs (d)(i), (ii) and (iii) of Sub-Clause 18.3 [Insurance Against Injury to Persons and Damage to Property].



17.2 Contractor's Care of the Works

The Contractor shall take full responsibility for the care of the Works and Goods from the Commencement Date until the Taking-Over Certificate is issued (or is deemed to be issued under Sub-Clause 10.1 [Taking Over of the Works and Sections]) for the Works, when responsibility for the care of the Works shall pass to the Employer. If a Taking-Over Certificate is issued (or is so deemed to be issued) for any Section or part of the Works, responsibility for the care of the Section or part shall then pass to the Employer.

After responsibility has accordingly passed to the Employer, the Contractor shall take responsibility for the care of any work which is outstanding on the date stated in a Taking-Over Certificate, until this outstanding work has been completed.

If any loss or damage happens to the Works, Goods or Contractor's Documents during the period when the Contractor is responsible for their care, from any cause not listed in Sub-Clause 17.3 [Employer's Risks], the Contractor shall rectify the loss or damage at the Contractor's risk and cost, so that the Works, Goods and Contractor's Documents conform with the Contract.

The Contractor shall be liable for any loss or damage caused by any actions performed by the Contractor after a Taking-Over Certificate has been issued. The Contractor shall also be liable for any loss or damage which occurs after a Taking-Over Certificate has been issued and which arose from a previous event for which the Contractor was liable.

17.3 Employer's Risks

The risks referred to in Sub-Clause 17.4 [Consequences of Employer's Risks] below, insofar as they directly affect the execution of the Works in the Country, are:

- (a) war, hostilities (whether war be declared or not), invasion, act of foreign enemies,
- (b) rebellion, terrorism, sabotage by persons other than the Contractor's Personnel, revolution, insurrection, military or usurped power, or civil war, within the Country,
- (c) riot, commotion or disorder within the Country by persons other than the Contractor's Personnel,
- (d) munitions of war, explosive materials, ionising radiation or contamination by radio-activity, within the Country, except as may be attributable to the Contractor's use of such munitions, explosives, radiation or radio-activity,
- (e) pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds,
- (f) use or occupation by the Employer of any part of the Permanent Works, except as may be specified in the Contract,
- (g) design of any part of the Works by the Employer's Personnel or by others for whom the Employer is responsible, and
- (h) any operation of the forces of nature which is Unforeseeable or against which an experienced contractor could not reasonably have been expected to have taken adequate preventive precautions.

17.4 Consequences of Employer's Risks

If and to the extent that any of the risks listed in Sub-Clause 17.3 above results in loss or damage to the Works, Goods or Contractor's Documents, the Contractor shall promptly give notice to the Engineer and shall rectify this loss or damage to the extent required by the Engineer.

If the Contractor suffers delay and/or incurs Cost from rectifying this loss or damage, the Contractor shall give a further notice to the Engineer and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:



- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost, which shall be included in the Contract Price. In the case of sub-paragraphs (f) and (g) of Sub-Clause 17.3 [Employer's Risks], Cost plus profit shall be payable.

After receiving this further notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

17.5 Intellectual and Industrial Property Rights

In this Sub-Clause, "infringement" means an infringement (or alleged infringement) of any patent, registered design, copyright, trade mark, trade name, trade secret or other intellectual or industrial property right relating to the Works; and "claim" means a claim (or proceedings pursuing a claim) alleging an infringement.

Whenever a Party does not give notice to the other Party of any claim within 28 days of receiving the claim, the first Party shall be deemed to have waived any right to indemnity under this Sub-Clause.

The Employer shall indemnify and hold the Contractor harmless against and from any claim alleging an infringement which is or was:

- (a) an unavoidable result of the Contractor's compliance with the Contract, or
- (b) a result of any Works being used by the Employer:
 - (i) for a purpose other than that indicated by, or reasonably to be inferred from, the Contract, or
 - (ii) in conjunction with any thing not supplied by the Contractor, unless such use was disclosed to the Contractor prior to the Base Date or is stated in the Contract.

The Contractor shall indemnify and hold the Employer harmless against and from any other claim which arises out of or in relation to (i) the manufacture, use, sale or import of any Goods, or (ii) any design for which the Contractor is responsible.

If a Party is entitled to be indemnified under this Sub-Clause, the indemnifying Party may (at its cost) conduct negotiations for the settlement of the claim, and any litigation or arbitration which may arise from it. The other Party shall, at the request and cost of the indemnifying Party, assist in contesting the claim. This other Party (and its Personnel) shall not make any admission which might be prejudicial to the indemnifying Party, unless the indemnifying Party failed to take over the conduct of any negotiations, litigation or arbitration upon being requested to do so by such other Party.

17.6 Limitation of Liability

Neither Party shall be liable to the other Party for loss of use of any Works, loss of profit, loss of any contract or for any indirect or consequential loss or damage which may be suffered by the other Party in connection with the Contract, other than as specifically provided in Sub-Clause 8.7 [Delay Damages]; Sub-Clause 11.2 [Cost of Remedying Defects]; Sub-Clause 15.4 [Payment after Termination]; Sub-Clause 16.4 [Payment on Termination]; Sub-Clause 17.1 [Indemnities]; Sub-Clause 17.4(b) [Consequences of Employer's Risks] and Sub-Clause 17.5 [Intellectual and Industrial Property Rights].

The total liability of the Contractor to the Employer, under or in connection with the Contract other than under Sub-Clause 4.19 [Electricity, Water and Gas], Sub-Clause 4.20 [Employer's Equipment and Free-Issue Materials], Sub-Clause 17.1 [Indemnities] and Sub-Clause 17.5 [Intellectual and Industrial Property Rights], shall not exceed the sum resulting from the application of a multiplier (less or greater than one) to the Accepted Contract Amount, as stated in the Contract Data, or (if such multiplier or other sum is not so stated) the Accepted Contract Amount.

This Sub-Clause shall not limit liability in any case of fraud, deliberate default or reckless misconduct by the defaulting Party.

17.7 Use of Employer's Accommodation/Facilities

The Contractor shall take full responsibility for the care of the Employer provided accommodation and facilities, if any, as detailed in the Specification, from the respective dates of hand-over to the Contractor until cessation of occupation (where hand-over or cessation of occupation may take place after the date stated in the Taking-Over Certificate for the Works).

If any loss or damage happens to any of the above items while the Contractor is responsible for their care arising from any cause whatsoever other than those for which the Employer is liable, the Contractor shall, at his own cost, rectify the loss or damage to the satisfaction of the Engineer.

18 Insurance

18.1 General Requirements for Insurances

In this Clause, "insuring Party" means, for each type of insurance, the Party responsible for effecting and maintaining the insurance specified in the relevant Sub-Clause.

Wherever the Contractor is the insuring Party, each insurance shall be effected with insurers and in terms approved by the Employer. These terms shall be consistent with any terms agreed by both Parties before the date of the Letter of Acceptance. This agreement of terms shall take precedence over the provisions of this Clause

Wherever the Employer is the insuring Party, each insurance shall be effected with insurers and in terms acceptable to the Contractor. These terms shall be consistent with any terms agreed by both Parties before the date of the Letter of Acceptance. This agreement of terms shall take precedence over the provisions of this Clause.

If a policy is required to indemnify joint insured, the cover shall apply separately to each insured as though a separate policy had been issued for each of the joint insured. If a policy indemnifies additional joint insured, namely in addition to the insured specified in this Clause, (i) the Contractor shall act under the policy on behalf of these additional joint insured except that the Employer shall act for Employer's Personnel, (ii) additional joint insured shall not be entitled to receive payments directly from the insurer or to have any other direct dealings with the insurer, and (iii) the insuring Party shall require all additional joint insured to comply with the conditions stipulated in the policy.

Each policy insuring against loss or damage shall provide for payments to be made in the currencies required to rectify the loss or damage. Payments received from insurers shall be used for the rectification of the loss or damage.

The relevant insuring Party shall, within the respective periods stated in the Contract Data (calculated from the Commencement Date), submit to the other Party:

- (a) evidence that the insurances described in this Clause have been effected, and
- (b) copies of the policies for the insurances described in Sub-Clause 18.2 [Insurance for Works and Contractor's Equipment] and Sub-Clause 18.3 [Insurance against Injury to Persons and Damage to Property].

When each premium is paid, the insuring Party shall submit evidence of payment to the other Party. Whenever evidence or policies are submitted, the insuring Party shall also give notice to the Engineer.

Each Party shall comply with the conditions stipulated in each of the insurance policies. The insuring Party shall keep the insurers informed of any relevant changes to the execution of the Works and ensure that insurance is maintained in accordance with this Clause.

Neither Party shall make any material alteration to the terms of any insurance without the prior approval of the other Party. If an insurer makes (or attempts to make) any alteration, the Party first notified by the insurer shall promptly give notice to the other Party.

If the insuring Party fails to effect and keep in force any of the insurances it is required to effect and maintain under the Contract, or fails to provide satisfactory evidence and copies of policies in accordance with this Sub-Clause, the other Party may (at its option and without prejudice to any other right or remedy) effect insurance for the relevant coverage and pay the premiums due. The insuring Party shall pay the amount of these premiums to the other Party, and the Contract Price shall be adjusted accordingly.

Nothing in this Clause limits the obligations, liabilities or responsibilities of the Contractor or the Employer, under the other terms of the Contract or otherwise. Any amounts not insured or not recovered from the insurers shall be borne by the Contractor and/or the Employer in accordance with these obligations, liabilities or responsibilities. However, if the insuring Party fails to effect and keep in force an insurance which is available and which it is required to effect and maintain under the Contract, and the other Party neither approves the omission nor effects insurance for the coverage relevant to this default, any moneys which should have been recoverable under this insurance shall be paid by the insuring Party.

Payments by one Party to the other Party shall be subject to Sub-Clause 2.5 [Employer's Claims] or Sub-Clause 20.1 [Contractor's Claims], as applicable.

The Contractor shall be entitled to place all insurance relating to the Contract (including, but not limited to the insurance referred to Clause 18) with insurers from any eligible source country.

18.2 Insurance for Works and Contractor's Equipment

The insuring Party shall insure the Works, Plant, Materials and Contractor's Documents for not less than the full reinstatement cost including the costs of demolition, removal of debris and professional fees and profit. This insurance shall be effective from the date by which the evidence is to be submitted under sub-paragraph (a) of Sub-Clause 18.1 [General Requirements for Insurances], until the date of issue of the Taking-Over Certificate for the Works.

The insuring Party shall maintain this insurance to provide cover until the date of issue of the Performance Certificate, for loss or damage for which the Contractor is liable arising from a cause occurring prior to the issue of the Taking-Over Certificate, and for loss or damage caused by the Contractor in the course of any other operations (including those under Clause 11 [Defects Liability]).

The insuring Party shall insure the Contractor's Equipment for not less than the full replacement value, including delivery to Site. For each item of Contractor's Equipment, the insurance shall be effective while it is being transported to the Site and until it is no longer required as Contractor's Equipment.

Unless otherwise stated in the Particular Conditions, insurances under this Sub-Clause:

- (a) shall be effected and maintained by the Contractor as insuring Party,
- (b) shall be in the joint names of the Parties, who shall be jointly entitled to receive payments from the insurers, payments being held or allocated to the Party actually bearing the costs of rectifying the loss or damage,
- (c) shall cover all loss and damage from any cause not listed in Sub-Clause 17.3 [Employer's Risks],
- (d) shall also cover, to the extent specifically required in the bidding documents of the Contract, loss or damage to a part of the Works which is attributable to the use or occupation by the Employer of another part of the Works, and loss or damage from the risks listed in sub-paragraphs (c), (g) and (h) of Sub-Clause 17.3 [Employer's Risks], excluding (in each case) risks which are not insurable at commercially reasonable terms, with deductibles per occurrence of not more than the amount stated in the Contract Data (if an amount is not so stated, this sub-paragraph (d) shall not apply), and
- (e) may however exclude loss of, damage to, and reinstatement of:

- (i) a part of the Works which is in a defective condition due to a defect in its design, materials or workmanship (but cover shall include any other parts which are lost or damaged as a direct result of this defective condition and not as described in sub-paragraph (ii) below),
- (ii) a part of the Works which is lost or damaged in order to reinstate any other part of the Works if this other part is in a defective condition due to a defect in its design, materials or workmanship,
- (iii) a part of the Works which has been taken over by the Employer, except to the extent that the Contractor is liable for the loss or damage, and
- (iv) Goods while they are not in the Country, subject to Sub-Clause 14.5 [Plant and Materials intended for the Works].

If, more than one year after the Base Date, the cover described in sub-paragraph (d) above ceases to be available at commercially reasonable terms, the Contractor shall (as insuring Party) give notice to the Employer, with supporting particulars. The Employer shall then (i) be entitled subject to Sub-Clause 2.5 [Employer's Claims] to payment of an amount equivalent to such commercially reasonable terms as the Contractor should have expected to have paid for such cover, and (ii) be deemed, unless he obtains the cover at commercially reasonable terms, to have approved the omission under Sub-Clause 18.1 [General Requirements for Insurances].

18.3 Insurance against Injury to Persons and Damage to Property

The insuring Party shall insure against each Party's liability for any loss, damage, death or bodily injury which may occur to any physical property (except things insured under Sub-Clause 18.2 [Insurance for Works and Contractor's Equipment]) or to any person (except persons insured under Sub-Clause 18.4 [Insurance for Contractor's Personnel]), which may arise out of the Contractor's performance of the Contract and occurring before the issue of the Performance Certificate.

This insurance shall be for a limit per occurrence of not less than the amount stated in the Contract Data, with no limit on the number of occurrences. If an amount is not stated in the Contract Data, this Sub-Clause shall not apply.

Unless otherwise stated in the Particular Conditions, the insurances specified in this Sub-Clause:

- (a) shall be effected and maintained by the Contractor as insuring Party,
- (b) shall be in the joint names of the Parties,
- (c) shall be extended to cover liability for all loss and damage to the Employer's property (except things insured under Sub-Clause 18.2) arising out of the Contractor's performance of the Contract, and
- (d) may however exclude liability to the extent that it arises from:
 - (i) the Employer's right to have the Permanent Works executed on, over, under, in or through any land, and to occupy this land for the Permanent Works,
 - (ii) damage which is an unavoidable result of the Contractor's obligations to execute the Works and remedy any defects, and
 - (iii) a cause listed in Sub-Clause 17.3 [Employer's Risks], except to the extent that cover is available at commercially reasonable terms.

18.4 Insurance for Contractor's Personnel

The Contractor shall effect and maintain insurance against liability for claims, damages, losses and expenses (including legal fees and expenses) arising from injury, sickness, disease or death of any person employed by the Contractor or any other of the Contractor's Personnel.



The insurance shall cover the Employer and the Engineer against liability for claims, damages, losses and expenses (including legal fees and expenses) arising from injury, sickness, disease or death of any person employed by the Contractor or any other of the Contractor's Personnel, except that this insurance may exclude losses and claims to the extent that they arise from any act or neglect of the Employer or of the Employer's Personnel.

The insurance shall be maintained in full force and effect during the whole time that these personnel are assisting in the execution of the Works. For a Subcontractor's employees, the insurance may be effected by the Subcontractor, but the Contractor shall be responsible for compliance with this Clause.

19 Force Majeure

19.1 Definition of Force Majeure

In this Clause, "Force Majeure" means an exceptional event or circumstance:

- (a) which is beyond a Party's control,
- (b) which such Party could not reasonably have provided against before entering into the Contract,
- (c) which, having arisen, such Party could not reasonably have avoided or overcome, and
- (d) which is not substantially attributable to the other Party.

Force Majeure may include, but is not limited to, exceptional events or circumstances of the kind listed below, so long as conditions (a) to (d) above are satisfied:

- (i) war, hostilities (whether war be declared or not), invasion, act of foreign enemies,
- (ii) rebellion, terrorism, sabotage by persons other than the Contractor's Personnel, revolution, insurrection, military or usurped power, or civil war,
- (iii) riot, commotion, disorder, strike or lockout by persons other than the Contractor's Personnel,
- (iv) munitions of war, explosive materials, ionising radiation or contamination by radio-activity, except as may be attributable to the Contractor's use of such munitions, explosives, radiation or radio-activity, and
- (v) natural catastrophes such as earthquake, hurricane, typhoon or volcanic activity.

19.2 Notice of Force Majeure

If a Party is or will be prevented from performing its substantial obligations under the Contract by Force Majeure, then it shall give notice to the other Party of the event or circumstances constituting the Force Majeure and shall specify the obligations, the performance of which is or will be prevented. The notice shall be given within 14 days after the Party became aware, or should have become aware, of the relevant event or circumstance constituting Force Majeure.

The Party shall, having given notice, be excused performance of its obligations for so long as such Force Majeure prevents it from performing them.

Notwithstanding any other provision of this Clause, Force Majeure shall not apply to obligations of either Party to make payments to the other Party under the Contract

19.3 Duty to Minimise Delay



Each Party shall at all times use all reasonable endeavours to minimise any delay in the performance of the Contract as a result of Force Majeure.

A Party shall give notice to the other Party when it ceases to be affected by the Force Majeure.

19.4 Consequences of Force Majeure

If the Contractor is prevented from performing his substantial obligations under the Contract by Force Majeure of which notice has been given under Sub-Clause 19.2 [Notice of Force Majeure], and suffers delay and/or incurs Cost by reason of such Force Majeure, the Contractor shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) if the event or circumstance is of the kind described in sub-paragraphs (i) to (iv) of Sub-Clause 19.1 [Definition of Force Majeure] and, in sub-paragraphs (ii) to (iv), occurs in the Country, payment of any such Cost, including the costs of rectifying or replacing the Works and/or Goods damaged or destroyed by Force Majeure, to the extent they are not indemnified through the insurance policy referred to in Sub-Clause 18.2 [Insurance for Works and Contractor's Equipment].

After receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

19.5 Force Majeure Affecting Subcontractor

If any Subcontractor is entitled under any contract or agreement relating to the Works to relief from force majeure on terms additional to or broader than those specified in this Clause, such additional or broader force majeure events or circumstances shall not excuse the Contractor's non-performance or entitle him to relief under this Clause.

19.6 Optional Termination, Payment and Release

If the execution of substantially all the Works in progress is prevented for a continuous period of 84 days by reason of Force Majeure of which notice has been given under Sub-Clause 19.2 [Notice of Force Majeure], or for multiple periods which total more than 140 days due to the same notified Force Majeure, then either Party may give to the other Party a notice of termination of the Contract. In this event, the termination shall take effect 7 days after the notice is given, and the Contractor shall proceed in accordance with Sub-Clause 16.3 [Cessation of Work and Removal of Contractor's Equipment].

Upon such termination, the Engineer shall determine the value of the work done and issue a Payment Certificate which shall include:

- (a) the amounts payable for any work carried out for which a price is stated in the Contract;
- (b) the Cost of Plant and Materials ordered for the Works which have been delivered to the Contractor, or of which the Contractor is liable to accept delivery: this Plant and Materials shall become the property of (and be at the risk of) the Employer when paid for by the Employer, and the Contractor shall place the same at the Employer's disposal;
- (c) other Cost or liabilities which in the circumstances were reasonably and necessarily incurred by the Contractor in the expectation of completing the Works;
- (d) the Cost of removal of Temporary Works and Contractor's Equipment from the Site and the return of these items to the Contractor's works in his country (or to any other destination at no greater cost); and



- (e) the Cost of repatriation of the Contractor's staff and labour employed wholly in connection with the Works at the date of termination.

19.7 Release from Performance

Notwithstanding any other provision of this Clause, if any event or circumstance outside the control of the Parties (including, but not limited to, Force Majeure) arises which makes it impossible or unlawful for either or both Parties to fulfil its or their contractual obligations or which, under the law governing the Contract, entitles the Parties to be released from further performance of the Contract, then upon notice by either Party to the other Party of such event or circumstance:

- (a) the Parties shall be discharged from further performance, without prejudice to the rights of either Party in respect of any previous breach of the Contract, and
- (b) the sum payable by the Employer to the Contractor shall be the same as would have been payable under Sub-Clause 19.6 [Optional Termination, Payment and Release] if the Contract had been terminated under Sub-Clause 19.6.

20 Claims, Disputes and Arbitration

20.1 Contractor's Claims

If the Contractor considers himself to be entitled to any extension of the Time for Completion and/or any additional payment, under any Clause of these Conditions or otherwise in connection with the Contract, the Contractor shall give notice to the Engineer, describing the event or circumstance giving rise to the claim. The notice shall be given as soon as practicable, and not later than 28 days after the Contractor became aware, or should have become aware, of the event or circumstance.

If the Contractor fails to give notice of a claim within such period of 28 days, the Time for Completion shall not be extended, the Contractor shall not be entitled to additional payment, and the Employer shall be discharged from all liability in connection with the claim. Otherwise, the following provisions of this Sub-Clause shall apply.

The Contractor shall also submit any other notices which are required by the Contract, and supporting particulars for the claim, all as relevant to such event or circumstance.

The Contractor shall keep such contemporary records as may be necessary to substantiate any claim, either on the Site or at another location acceptable to the Engineer. Without admitting the Employer's liability, the Engineer may, after receiving any notice under this Sub-Clause, monitor the record-keeping and/or instruct the Contractor to keep further contemporary records. The Contractor shall permit the Engineer to inspect all these records, and shall (if instructed) submit copies to the Engineer.

Within 42 days after the Contractor became aware (or should have become aware) of the event or circumstance giving rise to the claim, or within such other period as may be proposed by the Contractor and approved by the Engineer, the Contractor shall send to the Engineer a fully detailed claim which includes full supporting particulars of the basis of the claim and of the extension of time and/or additional payment claimed. If the event or circumstance giving rise to the claim has a continuing effect:

- (a) this fully detailed claim shall be considered as interim;
- (b) the Contractor shall send further interim claims at monthly intervals, giving the accumulated delay and/or amount claimed, and such further particulars as the Engineer may reasonably require; and
- (c) the Contractor shall send a final claim within 28 days after the end of the effects resulting from the event or circumstance, or within such other period as may be proposed by the Contractor and approved by the Engineer.



Within 42 days after receiving a claim or any further particulars supporting a previous claim, or within such other period as may be proposed by the Engineer and approved by the Contractor, the Engineer shall respond with approval, or with disapproval and detailed comments. He may also request any necessary further particulars, but shall nevertheless give his response on the principles of the claim within the above defined time period.

Within the above defined period of 42 days, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine (i) the extension (if any) of the Time for Completion (before or after its expiry) in accordance with Sub-Clause 8.4 [Extension of Time for Completion], and/or (ii) the additional payment (if any) to which the Contractor is entitled under the Contract.

Each Payment Certificate shall include such additional payment for any claim as has been reasonably substantiated as due under the relevant provision of the Contract. Unless and until the particulars supplied are sufficient to substantiate the whole of the claim, the Contractor shall only be entitled to payment for such part of the claim as he has been able to substantiate.

If the Engineer does not respond within the timeframe defined in this Clause, either Party may consider that the claim is rejected by the Engineer and any of the Parties may refer to the Dispute Board in accordance with Sub-Clause 20.4 [Obtaining Dispute Board's Decision].

The requirements of this Sub-Clause are in addition to those of any other Sub-Clause which may apply to a claim. If the Contractor fails to comply with this or another Sub-Clause in relation to any claim, any extension of time and/or additional payment shall take account of the extent (if any) to which the failure has prevented or prejudiced proper investigation of the claim, unless the claim is excluded under the second paragraph of this Sub-Clause.

20.2 Appointment of the Dispute Board

Disputes shall be referred to a DB for decision in accordance with Sub-Clause 20.4 [Obtaining Dispute Board's Decision]. The Parties shall appoint a DB by the date stated in the Contract Data.

The DB shall comprise, as stated in the Contract Data, either one or three suitably qualified persons ("the members"), each of whom shall be fluent in the language for communication defined in the Contract and shall be a professional experienced in the type of construction involved in the Works and with the interpretation of contractual documents. If the number is not so stated and the Parties do not agree otherwise, the DB shall comprise three persons.

If the Parties have not jointly appointed the DB 21 days before the date stated in the Contract Data and the DB is to comprise three persons, each Party shall nominate one member for the approval of the other Party. The first two members shall recommend and the Parties shall agree upon the third member, who shall act as chairman.

However, if a list of potential members has been agreed by the Parties and is included in the Contract, the members shall be selected from those on the list, other than anyone who is unable or unwilling to accept appointment to the DB.

The agreement between the Parties and either the sole member or each of the three members shall incorporate by reference the General Conditions of Dispute Board Agreement contained in the Appendix to these General Conditions, with such amendments as are agreed between them.

The terms of the remuneration of either the sole member or each of the three members, including the remuneration of any expert whom the DB consults, shall be mutually agreed upon by the Parties when agreeing the terms of appointment. Each Party shall be responsible for paying one-half of this remuneration.

If at any time the Parties so agree, they may jointly refer a matter to the DB for it to give its opinion. Neither Party shall consult the DB on any matter without the agreement of the other Party.

If a member declines to act or is unable to act as a result of death, disability, resignation or termination of appointment, a replacement shall be appointed in the same manner as the replaced person was required to have been nominated or agreed upon, as described in this Sub-Clause.



The appointment of any member may be terminated by mutual agreement of both Parties, but not by the Employer or the Contractor acting alone. Unless otherwise agreed by both Parties, the appointment of the DB (including each member) shall expire when the discharge referred to in Sub-Clause 14.12 [Discharge] shall have become effective.

20.3 Failure to Agree on the Composition of the Dispute Board

If any of the following conditions apply, namely:

- (a) the Parties fail to agree upon the appointment of the sole member of the DB by the date stated in the first paragraph of Sub-Clause 20.2, [Appointment of the Dispute Board]
- (b) either Party fails to nominate a member (for approval by the other Party), or fails to approve a member nominated by the other Party, of a DB of three persons by such date,
- (c) the Parties fail to agree upon the appointment of the third member (to act as chairman) of the DB by such date, or
- (d) the Parties fail to agree upon the appointment of a replacement person within 42 days after the date on which the sole member or one of the three members declines to act or is unable to act as a result of death, disability, resignation or termination of appointment,

then the appointing entity or official named in the Contract Data shall, upon the request of either or both of the Parties and after due consultation with both Parties, appoint this member of the DB. This appointment shall be final and conclusive. Each Party shall be responsible for paying one-half of the remuneration of the appointing entity or official.

20.4 Obtaining Dispute Board's Decision

If a dispute (of any kind whatsoever) arises between the Parties in connection with, or arising out of, the Contract or the execution of the Works, including any dispute as to any certificate, determination, instruction, opinion or valuation of the Engineer, either Party may refer the dispute in writing to the DB for its decision, with copies to the other Party and the Engineer. Such reference shall state that it is given under this Sub-Clause.

For a DB of three persons, the DB shall be deemed to have received such reference on the date when it is received by the chairman of the DB.

Both Parties shall promptly make available to the DB all such additional information, further access to the Site, and appropriate facilities, as the DB may require for the purposes of making a decision on such dispute. The DB shall be deemed to be not acting as arbitrator(s).

Within 84 days after receiving such reference, or within such other period as may be proposed by the DB and approved by both Parties, the DB shall give its decision, which shall be reasoned and shall state that it is given under this Sub-Clause. The decision shall be binding on both Parties, who shall promptly give effect to it unless and until it shall be revised in an amicable settlement or an arbitral award as described below. Unless the Contract has already been abandoned, repudiated or terminated, the Contractor shall continue to proceed with the Works in accordance with the Contract.

If either Party is dissatisfied with the DB's decision, then either Party may, within 28 days after receiving the decision, give a Notice of Dissatisfaction to the other Party indicating its dissatisfaction and intention to commence arbitration. If the DB fails to give its decision within the period of 84 days (or as otherwise approved) after receiving such reference, then either Party may, within 28 days after this period has expired, give a Notice of Dissatisfaction to the other Party.

In either event, this Notice of Dissatisfaction shall state that it is given under this Sub-Clause, and shall set out the matter in dispute and the reason(s) for dissatisfaction. Except as stated in Sub-Clause 20.7 [Failure to Comply with Dispute Board's Decision] and Sub-Clause 20.8 [Expiry of Dispute Board's Appointment], neither Party shall be entitled to commence arbitration of a dispute unless a Notice of Dissatisfaction has been given in accordance with this Sub-Clause.

If the DB has given its decision as to a matter in dispute to both Parties, and no Notice of Dissatisfaction has been given by either Party within 28 days after it received the DB's decision, then the decision shall become final and binding upon both Parties.

20.5 Amicable Settlement

Where a Notice of Dissatisfaction has been given under Sub-Clause 20.4 above, both Parties shall attempt to settle the dispute amicably before the commencement of arbitration. However, unless both Parties agree otherwise, the Party giving a Notice of Dissatisfaction in accordance with Sub-Clause 20.4 above should move to commence arbitration after the fifty-sixth day from the day on which a Notice of Dissatisfaction was given, even if no attempt at an amicable settlement has been made.

20.6 Arbitration

Any dispute between the Parties arising out of or in connection with the Contract not settled amicably in accordance with Sub-Clause 20.5 above and in respect of which the DB's decision (if any) has not become final and binding shall be finally settled by arbitration. Arbitration shall be conducted as follows:

(a) if the contract is with foreign contractors,

(i) for contracts financed by all participating Banks except under sub-paragraph (a) (2) below:

international arbitration (1) with proceedings administered by the arbitration institution designated in the Contract Data, and conducted under the rules of arbitration of such institution; or, if so specified in the Contract Data, (2) international arbitration in accordance with the arbitration rules of the United Nations Commission on International Trade Law (UNCITRAL); or (3) if neither an arbitration institution nor UNCITRAL arbitration rules are specified in the Contract Data, with proceedings administered by the International Chamber of Commerce (ICC) and conducted under the ICC Rules of Arbitration; by one or more arbitrators appointed in accordance with said arbitration rules.

(ii) for contracts financed by the Asian Development Bank:

international arbitration (1) with proceedings administered by the arbitration institution specified in the Contract Data and conducted under the rules of arbitration of such institution unless it is specified in the Contract Data that the arbitration shall be conducted under the rules of the United Nations Commission on International Trade Law (UNCITRAL) and if UNCITRAL Rules are so specified then the named arbitration institution shall be the appointing authority and shall administer the arbitration); or (2) if an arbitration institution is not specified in the Contract Data, with proceedings administered by the Singapore International Arbitration Centre (SIAC) and conducted under the SIAC Rules, by one or more arbitrators appointed in accordance with the said arbitration rules.

(b) if the Contract is with domestic contractors, arbitration with proceedings conducted in accordance with the laws of the Employer's country.

The place of arbitration shall be the neutral location specified in the Contract Data; and the arbitration shall be conducted in the language for communications defined in Sub-Clause 1.4 [Law and Language].

The arbitrators shall have full power to open up, review and revise any certificate, determination, instruction, opinion or valuation of the Engineer, and any decision of the DB, relevant to the dispute. Nothing shall disqualify representatives of the Parties and the Engineer from being called as a witness and giving evidence before the arbitrators on any matter whatsoever relevant to the dispute.

Neither Party shall be limited in the proceedings before the arbitrators to the evidence or arguments previously put before the DB to obtain its decision, or to the reasons for dissatisfaction given in its Notice of Dissatisfaction. Any decision of the DB shall be admissible in evidence in the arbitration.



Arbitration may be commenced prior to or after completion of the Works. The obligations of the Parties, the Engineer and the DB shall not be altered by reason of any arbitration being conducted during the progress of the Works.

20.7 Failure to Comply with Dispute Board's Decision

In the event that a Party fails to comply with a final and binding DB decision, then the other Party may, without prejudice to any other rights it may have, refer the failure itself to arbitration under Sub-Clause 20.6 [Arbitration]. Sub-Clause 20.4 [Obtaining Dispute Board's Decision] and Sub-Clause 20.5 [Amicable Settlement] shall not apply to this reference.

20.8 Expiry of Dispute Board's Appointment

If a dispute arises between the Parties in connection with, or arising out of, the Contract or the execution of the Works and there is no DB in place, whether by reason of the expiry of the DB's appointment or otherwise:

- (a) Sub-Clause 20.4 [Obtaining Dispute Board's Decision] and Sub-Clause 20.5 [Amicable Settlement] shall not apply, and
- (b) the dispute may be referred directly to arbitration under Sub-Clause 20.6 [Arbitration].

APPENDIX

A General Conditions of Dispute Board Agreement

1 Definitions

Each "Dispute Board Agreement" is a tripartite agreement by and between:

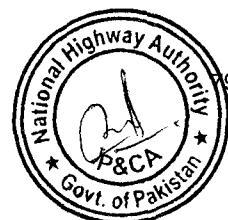
- (a) the "Employer";
- (b) the "Contractor"; and
- (c) the "Member" who is defined in the Dispute Board Agreement as being:
 - (i) the sole member of the "DB" and, where this is the case, all references to the "Other Members" do not apply, or
 - (ii) one of the three persons who are jointly called the "DB" (or "Dispute Board") and, where this is the case, the other two persons are called the "Other Members".

The Employer and the Contractor have entered (or intend to enter) into a contract, which is called the "Contract" and is defined in the Dispute Board Agreement, which incorporates this Appendix. In the Dispute Board Agreement, words and expressions which are not otherwise defined shall have the meanings assigned to them in the Contract.

2 General Provisions

Unless otherwise stated in the Dispute Board Agreement, it shall take effect on the latest of the following dates:

- (a) the Commencement Date defined in the Contract,



- (b) when the Employer, the Contractor and the Member have each signed the Dispute Board Agreement, or
- (c) when the Employer, the Contractor and each of the Other Members (if any) have respectively each signed a dispute board agreement.

This employment of the Member is a personal appointment. At any time, the Member may give not less than 70 days' notice of resignation to the Employer and to the Contractor, and the Dispute Board Agreement shall terminate upon the expiry of this period.

3 Warranties

The Member warrants and agrees that he/she is and shall be impartial and independent of the Employer, the Contractor and the Engineer. The Member shall promptly disclose, to each of them and to the Other Members (if any), any fact or circumstance which might appear inconsistent with his/her warranty and agreement of impartiality and independence.

When appointing the Member, the Employer and the Contractor relied upon the Member's representations that he/she is:

- (a) experienced in the work which the Contractor is to carry out under the Contract,
- (b) experienced in the interpretation of contract documentation, and
- (c) fluent in the language for communications defined in the Contract.

4 General Obligations of the Member

The Member shall:

- (a) have no interest financial or otherwise in the Employer, the Contractor or Engineer, nor any financial interest in the Contract except for payment under the Dispute Board Agreement;
- (b) not previously have been employed as a consultant or otherwise by the Employer, the Contractor or the Engineer, except in such circumstances as were disclosed in writing to the Employer and the Contractor before they signed the Dispute Board Agreement;
- (c) have disclosed in writing to the Employer, the Contractor and the Other Members (if any), before entering into the Dispute Board Agreement and to his/her best knowledge and recollection, any professional or personal relationships with any director, officer or employee of the Employer, the Contractor or the Engineer, and any previous involvement in the overall project of which the Contract forms part;
- (d) not, for the duration of the Dispute Board Agreement, be employed as a consultant or otherwise by the Employer, the Contractor or the Engineer, except as may be agreed in writing by the Employer, the Contractor and the Other Members (if any);
- (e) comply with the annexed procedural rules and with Sub-Clause 20.4 of the Conditions of Contract;
- (f) not give advice to the Employer, the Contractor, the Employer's Personnel or the Contractor's Personnel concerning the conduct of the Contract, other than in accordance with the annexed procedural rules;
- (g) not while a Member enter into discussions or make any agreement with the Employer, the Contractor or the Engineer regarding employment by any of them, whether as a consultant or otherwise, after ceasing to act under the Dispute Board Agreement;
- (h) ensure his/her availability for all site visits and hearings as are necessary;



- (i) become conversant with the Contract and with the progress of the Works (and of any other parts of the project of which the Contract forms part) by studying all documents received which shall be maintained in a current working file;
- (j) treat the details of the Contract and all the DB's activities and hearings as private and confidential, and not publish or disclose them without the prior written consent of the Employer, the Contractor and the Other Members (if any); and
- (k) be available to give advice and opinions, on any matter relevant to the Contract when requested by both the Employer and the Contractor, subject to the agreement of the Other Members (if any).

5 General Obligations of the Employer and the Contractor

The Employer, the Contractor, the Employer's Personnel and the Contractor's Personnel shall not request advice from or consultation with the Member regarding the Contract, otherwise than in the normal course of the DB's activities under the Contract and the Dispute Board Agreement. The Employer and the Contractor shall be responsible for compliance with this provision, by the Employer's Personnel and the Contractor's Personnel respectively.

The Employer and the Contractor undertake to each other and to the Member that the Member shall not, except as otherwise agreed in writing by the Employer, the Contractor, the Member and the Other Members (if any):

- (a) be appointed as an arbitrator in any arbitration under the Contract;
- (b) be called as a witness to give evidence concerning any dispute before arbitrator(s) appointed for any arbitration under the Contract; or
- (c) be liable for any claims for anything done or omitted in the discharge or purported discharge of the Member's functions, unless the act or omission is shown to have been in bad faith.

The Employer and the Contractor hereby jointly and severally indemnify and hold the Member harmless against and from claims from which he is relieved from liability under the preceding paragraph.

Whenever the Employer or the Contractor refers a dispute to the DB under Sub-Clause 20.4 of the Conditions of Contract, which will require the Member to make a site visit and attend a hearing, the Employer or the Contractor shall provide appropriate security for a sum equivalent to the reasonable expenses to be incurred by the Member. No account shall be taken of any other payments due or paid to the Member.

6 Payment

The Member shall be paid as follows, in the currency named in the Dispute Board Agreement:

- (a) a retainer fee per calendar month, which shall be considered as payment in full for:
 - (i) being available on 28 days' notice for all Site visits and hearings;
 - (ii) becoming and remaining conversant with all project developments and maintaining relevant files;
 - (iii) all office and overhead expenses including secretarial services, photocopying and office supplies incurred in connection with his duties; and
 - (iv) all services performed hereunder except those referred to in sub-paragraphs (b) and (c) of this Clause.

The retainer fee shall be paid with effect from the last day of the calendar month in which the Dispute Board Agreement becomes effective; until the last day of the calendar month in which the Taking-Over Certificate is issued for the whole of the Works.



With effect from the first day of the calendar month following the month in which the Taking-Over Certificate is issued for the whole of the Works, the retainer fee shall be reduced by one third. This reduced fee shall be paid until the first day of the calendar month in which the Member resigns or the Dispute Board Agreement is otherwise terminated.

- (b) a daily fee which shall be considered as payment in full for:
- (i) each day or part of a day up to a maximum of two days' travel time in each direction for the journey between the Member's home and the Site, or another location of a meeting with the Other Members (if any);
 - (ii) each working day on Site visits, hearings or preparing decisions; and
 - (iii) each day spent reading submissions in preparation for a hearing.
- (c) all reasonable expenses including necessary travel expenses (air fare in less than first class, hotel and subsistence and other direct travel expenses) incurred in connection with the Member's duties, as well as the cost of telephone calls, courier charges, faxes and telexes: a receipt shall be required for each item in excess of five percent of the daily fee referred to in sub-paragraph (b) of this Clause;
- (d) any taxes properly levied in the Country on payments made to the Member (unless a national or permanent resident of the Country) under this Clause 6.

The retainer and daily fees shall be as specified in the Dispute Board Agreement. Unless it specifies otherwise, these fees shall remain fixed for the first 24 calendar months, and shall thereafter be adjusted by agreement between the Employer, the Contractor and the Member, at each anniversary of the date on which the Dispute Board Agreement became effective.

If the parties fail to agree on the retainer fee or the daily fee, the appointing entity or official named in the Contract Data shall determine the amount of the fees to be used.

The Member shall submit invoices for payment of the monthly retainer and air fares quarterly in advance. Invoices for other expenses and for daily fees shall be submitted following the conclusion of a Site visit or hearing. All invoices shall be accompanied by a brief description of activities performed during the relevant period and shall be addressed to the Contractor.

The Contractor shall pay each of the Member's invoices in full within 56 calendar days after receiving each invoice and shall apply to the Employer (in the Statements under the Contract) for reimbursement of one-half of the amounts of these invoices. The Employer shall then pay the Contractor in accordance with the Contract.

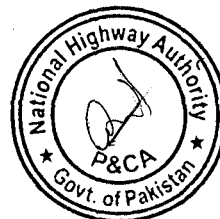
If the Contractor fails to pay to the Member the amount to which he/she is entitled under the Dispute Board Agreement, the Employer shall pay the amount due to the Member and any other amount which may be required to maintain the operation of the DB; and without prejudice to the Employer's rights or remedies. In addition to all other rights arising from this default, the Employer shall be entitled to reimbursement of all sums paid in excess of one-half of these payments, plus all costs of recovering these sums and financing charges calculated at the rate specified in Sub-Clause 14.8 of the Conditions of Contract.

If the Member does not receive payment of the amount due within 70 days after submitting a valid invoice, the Member may (i) suspend his/her services (without notice) until the payment is received, and/or (ii) resign his/her appointment by giving notice under Clause 7.

7 Termination

At any time: (i) the Employer and the Contractor may jointly terminate the Dispute Board Agreement by giving 42 days' notice to the Member; or (ii) the Member may resign as provided for in Clause 2.

If the Member fails to comply with the Dispute Board Agreement, the Employer and the Contractor may, without prejudice to their other rights, terminate it by notice to the Member. The notice shall take effect when received by the Member.



If the Employer or the Contractor fails to comply with the Dispute Board Agreement, the Member may, without prejudice to his other rights, terminate it by notice to the Employer and the Contractor. The notice shall take effect when received by them both.

Any such notice, resignation and termination shall be final and binding on the Employer, the Contractor and the Member. However, a notice by the Employer or the Contractor, but not by both, shall be of no effect.

8 Default of the Member

If the Member fails to comply with any of his obligations under Clause 4 (a) - (d) above, he shall not be entitled to any fees or expenses hereunder and shall, without prejudice to their other rights, reimburse each of the Employer and the Contractor for any fees and expenses received by the Member and the Other Members (if any), for proceedings or decisions (if any) of the DB which are rendered void or ineffective by the said failure to comply.

If the Member fails to comply with any of his obligations under Clause 4 (e) - (k) above, he shall not be entitled to any fees or expenses hereunder from the date and to the extent of the non-compliance and shall, without prejudice to their other rights, reimburse each of the Employer and the Contractor for any fees and expenses already received by the Member, for proceedings or decisions (if any) of the DB which are rendered void or ineffective by the said failure to comply.

9 Disputes

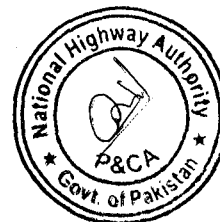
Any dispute or claim arising out of or in connection with this Dispute Board Agreement, or the breach, termination or invalidity thereof, shall be finally settled by institutional arbitration. If no other arbitration institute is agreed, the arbitration shall be conducted under the Rules of Arbitration of the International Chamber of Commerce by one arbitrator appointed in accordance with these Rules of Arbitration.

PROCEDURAL RULES

- 1 Unless otherwise agreed by the Employer and the Contractor, the DB shall visit the Site at intervals of not more than 140 days, including times of critical construction events, at the request of either the Employer or the Contractor. Unless otherwise agreed by the Employer, the Contractor and the DB, the period between consecutive visits shall not be less than 70 days, except as required to convene a hearing as described below.
- 2 The timing of and agenda for each Site visit shall be as agreed jointly by the DB, the Employer and the Contractor, or in the absence of agreement, shall be decided by the DB. The purpose of Site visits is to enable the DB to become and remain acquainted with the progress of the Works and of any actual or potential problems or claims, and, as far as reasonable, to endeavour to prevent potential problems or claims from becoming disputes.
- 3 Site visits shall be attended by the Employer, the Contractor and the Engineer and shall be co-ordinated by the Employer in co-operation with the Contractor. The Employer shall ensure the provision of appropriate conference facilities and secretarial and copying services. At the conclusion of each Site visit and before leaving the site, the DB shall prepare a report on its activities during the visit and shall send copies to the Employer and the Contractor.
- 4 The Employer and the Contractor shall furnish to the DB one copy of all documents which the DB may request, including Contract documents, progress reports, variation instructions, certificates and other documents pertinent to the performance of the Contract. All communications between the DB and the Employer or the Contractor shall be copied to the other Party. If the DB comprises three persons, the Employer and the Contractor shall send copies of these requested documents and these communications to each of these persons.



- 5 If any dispute is referred to the DB in accordance with Sub-Clause 20.4 of the Conditions of Contract, the DB shall proceed in accordance with Sub-Clause 20.4 and these Rules. Subject to the time allowed to give notice of a decision and other relevant factors, the DB shall:
- (a) act fairly and impartially as between the Employer and the Contractor, giving each of them a reasonable opportunity of putting his case and responding to the other's case, and
 - (b) adopt procedures suitable to the dispute, avoiding unnecessary delay or expense.
- 6 The DB may conduct a hearing on the dispute, in which event it will decide on the date and place for the hearing and may request that written documentation and arguments from the Employer and the Contractor be presented to it prior to or at the hearing.
- 7 Except as otherwise agreed in writing by the Employer and the Contractor, the DB shall have power to adopt an inquisitorial procedure, to refuse admission to hearings or audience at hearings to any persons other than representatives of the Employer, the Contractor and the Engineer, and to proceed in the absence of any party who the DB is satisfied received notice of the hearing; but shall have discretion to decide whether and to what extent this power may be exercised.
- 8 The Employer and the Contractor empower the DB, among other things, to:
- (a) establish the procedure to be applied in deciding a dispute,
 - (b) decide upon the DB's own jurisdiction, and as to the scope of any dispute referred to it,
 - (c) conduct any hearing as it thinks fit, not being bound by any rules or procedures other than those contained in the Contract and these Rules.
 - (d) take the initiative in ascertaining the facts and matters required for a decision,
 - (e) make use of its own specialist knowledge, if any,
 - (f) decide upon the payment of financing charges in accordance with the Contract,
 - (g) decide upon any provisional relief such as interim or conservatory measures, and
 - (h) open up, review and revise any certificate, decision, determination, instruction, opinion or valuation of the Engineer, relevant to the dispute.
- 9 The DB shall not express any opinions during any hearing concerning the merits of any arguments advanced by the Parties. Thereafter, the DB shall make and give its decision in accordance with Sub-Clause 20.4, or as otherwise agreed by the Employer and the Contractor in writing. If the DB comprises three persons:
- (a) it shall convene in private after a hearing, in order to have discussions and prepare its decision;
 - (b) it shall endeavour to reach a unanimous decision: if this proves impossible the applicable decision shall be made by a majority of the Members, who may require the minority Member to prepare a written report for submission to the Employer and the Contractor; and
 - (c) if a Member fails to attend a meeting or hearing, or to fulfil any required function, the other two Members may nevertheless proceed to make a decision, unless:
 - (i) either the Employer or the Contractor does not agree that they do so, or
 - (ii) the absent Member is the chairman and he/she instructs the other Members to not make a decision.

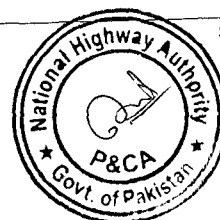


Section 8: Particular Conditions of Contract

The following Particular Conditions of Contract (PCC) shall supplement the General Conditions of Contract (GCC). Whenever there is a conflict, the provisions herein shall prevail over those in the GCC.

Part A – Contract Data

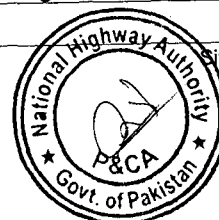
Ref. GCC	Subject	Data
1.1.2.2 and 1.3	Employer's name and address	National Highway Authority 28-Mauve Area, G-9/1, Islamabad.
1.1.2.4 and 1.3	Engineer's name and address	To be determined later, Employer will notify before commencement of work
1.1.2.11	Bank's name	Asian Development Bank (ADB)
1.1.2.12	Borrower's name	Islamic Republic of Pakistan
1.1.3.3	Time for completion	Lot-1: 730 days Lot-2: 730 days Lot-3: 730 days Lot-4: 730 days
1.1.3.7	Defects notification period	365 days.
1.1.5.6	Sections	Not Applicable
1.3	Electronic transmission systems	Facsimile and Email
1.4	Governing law	Law of Islamic Republic of Pakistan
1.4	Ruling language	English
1.4	Language for communications	English
2.1	Time for access to the site	28 days after Commencement Date
3.1(B)(ii)	Engineer's duties and authority	Variations resulting in an increase of the Accepted Contract Amount in excess of 0.1% shall require approval of the Employer.
4.2	Performance security	The performance security will be in the form of an unconditional bank guarantee in the amount(s) of 10% (ten percent) of the Contract Price payable in the currencies and proportions in which the Contract Price will be paid.
6.5	Normal working hours	8:00 AM to 5:00 PM inclusive of one hour break.
6.25	Respectful Work Environment	The following paragraphs shall apply: The Contractor shall ensure that its employees and sub-contractors observe the highest ethical



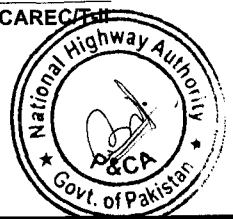
		<p>standards and refrain from any form of bullying, discrimination, misconduct and harassment, including sexual harassment and shall, at all times, behave in a manner that creates an environment free of unethical behavior, bullying, misconduct and harassment, including sexual harassment. The Contractor shall take appropriate action against any employees or sub-contractors, including suspension or termination of employment or sub-contract, if any form of unethical or inappropriate behavior is identified.</p> <p>The Contractor shall conduct training programs for its employees and Subcontractors to raise awareness on and prevent any form of bullying, discrimination, misconduct and harassment including sexual harassment, and to promote a respectful work environment. The Contractor shall keep an up-to-date record of its employees and subcontractors who have attended and completed such training programs and provide such records to the Employer or the Engineer at their first written request.</p>
8.7 and 14.15(b)	Delay damages for the Works	0.05% of the Contract Price per day, in the currencies and proportions in which the Contract Price is payable.
8.7	Maximum amount of delay damages	10% (ten percent) of the Contract Price.
13.5.(b)(ii)	Provisional Sums	12% (twelve percent)
13.8	Adjustments for Changes in Cost	The Contract Price <u>is Adjustable</u> during Contract Execution.
14.1	The Contract Price	<p>The following sentence under Clause 14.1 shall <u>not</u> apply:</p> <p><i>"Notwithstanding the provisions of subparagraph (b), Contractor's Equipment, including essential spare parts therefore, imported by the Contractor for the sole purpose of executing the Contract shall be exempt from the payment of import duties and taxes upon importation."</i></p>



14.2	Total advance payment	10% (ten percent) of the Accepted Contract Amount payable in the currencies and proportions in which the Accepted Contract Amount is payable provided that the Contractor delivers the corresponding bank guarantee for advance payment to the Employer in a timely manner. In case this bank guarantee is not delivered until 42 (forty two) days after signing the Contract, the GCC Sub Clause 8.1 (d) shall not apply.
14.2(b)	Repayment amortization of advance payment	17% (Seventeen Percent)
14.3(c)	Percentage of retention	5% (five percent)
14.3(c)	Limit of Retention Money	5% (five percent) of the Accepted Contract Amount.
14.5(b)(i)	Plant and Materials	NIL
14.5(c)(i)	Plant and Materials	Steel Reinforcement, Asphalt Cement and Cement (OPC) (Refer to Schedule in Section 4)
14.6	Minimum Amount of Interim Payment Certificates	3% (three percent) of the Accepted Contract Amount.
15.2	Termination by Employer	This sentence will apply as Subclause 15.2(g): (g) the Engineer gives two consecutive Notices to submit the Program when the Contractor does not do so within 28 days after receiving the notice under Sub Clause 8.1, or update the Program and accelerate the works, to ensure compliance with Subclause 8.2 (Time for Completion) and the Contractor fails to submit or update the Program and demonstrate acceleration of the works within a reasonable period of time determined by the Engineer;
15.6	Corrupt and Fraudulent Practices	The following sentence shall apply: For the purposes of this Subclause: ADB's Anticorruption Policy (1998, as amended to date) requires Borrowers (including beneficiaries of ADB-financed activity), as well as Contractors, Subcontractors, manufacturers, and Consultants under ADB-financed contracts, observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, ADB (a) defines, for the purposes of this provision, the terms set forth below as follows: (i) "corrupt practice" means the offering, giving, receiving, or soliciting, directly

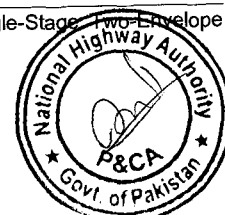


		<p>or indirectly, anything of value to influence improperly the actions of another party;</p> <p>(ii) "fraudulent practice" means any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;</p> <p>(iii) "coercive practice" means impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;</p> <p>(iv) "collusive practice" means an arrangement between two or more parties designed to achieve an improper purpose, including influencing improperly the actions of another party;</p> <p>(v) "abuse" means theft, waste or improper use of assets related to ADB-related activity, either committed intentionally or through reckless disregard;</p> <p>(vi) "conflict of interest" means any situation in which a party has interests that could improperly influence that party's performance of official duties or responsibilities, contractual obligations, or compliance with applicable laws and regulations;</p> <p>(vii) "obstructive practice" means (a) deliberately destroying, falsifying, altering or concealing of evidence material to an ADB investigation, or deliberately making false statements to investigators, with the intent to impede an ADB investigation; (b) threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to a Bank investigation or from pursuing the investigation; or (c) deliberate acts intended to impede the exercise of ADB's contractual rights of audit or inspection or access to information; and</p> <p>(viii) "integrity violation" is any act, as defined under ADB's Integrity Principles and Guidelines (2015, as amended from time to time), which violates ADB's Anticorruption Policy, including (i) to (vii) above and the following: violations of ADB sanctions, retaliation against whistleblowers or witnesses, and other violations of ADB's Anticorruption Policy, including</p>
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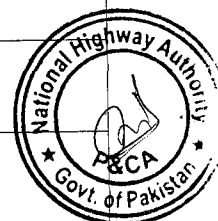


		<p>failure to adhere to the highest ethical standard.</p> <p>(b) will reject a proposal for award if it determines that the Bidder recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices or other integrity violations in competing for the Contract;</p> <p>(c) will cancel the portion of the financing allocated to a contract if it determines at any time that representatives of the borrower or of a beneficiary of ADB-financing engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices or other integrity violations during the procurement or the execution of that contract, without the borrower having taken timely and appropriate action satisfactory to ADB to remedy the situation; and</p> <p>(d) will impose remedial actions on a firm or an individual, at any time, in accordance with ADB's Anticorruption Policy and Integrity Principles and Guidelines, including declaring ineligible, either indefinitely or for a stated period of time, to participate¹ in ADB-financed, -administered, or -supported activities or to benefit from an ADB-financed, -administered, or -supported contract, financially or otherwise, if it at any time determines that the firm or individual has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices or other integrity violations.</p> <p>All Bidders, consultants, contractors, suppliers and other third parties engaged or involved in ADB-related activities have a duty to cooperate fully in any screening or investigation when requested by ADB to do so. Such cooperation includes, but is not limited to, the following:</p> <p>(a) being available to be interviewed and replying fully and truthfully to all questions asked;</p> <p>(b) providing ADB with any items requested that are within the party's control including, but not limited to, documents and other physical objects;</p> <p>(c) upon written request by ADB, authorizing other related entities to release directly to ADB such information that is specifically</p>
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¹ Whether as a Contractor, Subcontractor, Consultant, Manufacturer or Supplier, or Service Provider; or in any other capacity (different names are used depending on the particular Bidding Document).



		<p>and materially related, directly or indirectly, to the said entities or issues which are the subject of the investigation;</p> <p>(d) cooperating with all reasonable requests to search or physically inspect their person and/or work areas, including files, electronic databases, and personal property used on ADB activities, or that utilizes ADB's ICT resources or systems (including mobile phones, personal electronic devices, and electronic storage devices such as external disk drives);</p> <p>(e) cooperating in any testing requested by ADB, including but not limited to, fingerprint identification, handwriting analysis, and physical examination and analysis; and</p> <p>(f) preserving and protecting confidentiality of all information discussed with, and as required by, ADB.</p> <p>All Bidders, consultants, contractors and suppliers shall ensure that, in its contract with its sub-consultants, sub-contractors and other third parties engaged or involved in ADB-related activities, such sub-consultants, sub-contractors and other third parties similarly undertake the foregoing duty to cooperate fully in any screening or investigation when requested by ADB to do so.</p>
17.6	Maximum total liability of the Contractor to the Employer	The product of 1.15 times the Accepted Contract Amount
18.1	Periods for submission of insurance: (a) evidence of insurance. (b) relevant policies	<p>The Contractor shall be the insuring party under the Contract.</p> <p>(a) Within 28 days after Commencement Date.</p> <p>(b) Within 28 days after the Commencement Date</p>
18.2(d)	Maximum amount of deductibles for insurance of the Employer's risks	US\$ 20,000.
18.3	Minimum amount of third party insurance	<p>US\$ 50,000 in case of injury,</p> <p>US\$ 100,000 per occurrence in case of death, and one percent of Accepted Contract Amount per occurrence in case of damage to property; number of occurrences unlimited.</p>
20.2	Date by which the Dispute Board shall be appointed	28 days after the commencement
20.2	The Dispute Board shall be comprised of	Three Members



20.2	List of potential Dispute Board sole members	None
20.3	Appointment (if not agreed) to be made by	Pakistan Engineering Council, Islamabad
20.6 (a)	International arbitration shall be administered by	See Section 8-B (PCC 20.6)
20.6	Place of Arbitration	Agreed place of arbitration shall be a neutral place/venue in case of foreign contractor which shall neither be administered by and in the Employer's country nor in the foreign contractor's country. In case of domestic Contractor, place of arbitration shall be Islamabad, Pakistan.

Summary of Sections of the Works

Section Name/Description (Subclause 1.1.5.6)	Time for Completion (Subclause 1.1.3.3)	Damages for Delay (Subclause 8.7)
Not Applicable		

Part B – Specific Provisions

Part B - Specific Provisions of the Particular Conditions of Contract are intended to address country, project, and contract specific requirements not covered by the General Conditions of Contract. Whoever drafts the specific provisions should be thoroughly familiar with the provisions of the General Conditions of Contract and with any specific requirements of the contract. Legal advice is recommended when amending provisions or drafting new ones.



Part B – Specific Provisions

PARTICULAR CONDITIONS OF CONTRACT

PART –B

The following “Particular Conditions”, include amendments and additions to the “General Conditions” which form part of the “**Conditions of Contract for Construction**”, Multilateral Development bank Harmonized Edition 2010 published by the Federation International des Ingenieurs-Conseils (FIDIC).

Clause-1: General Provisions

“1.1.2.6(a)

Add the following Sub Clause 1.1.2.6(a):

Employer's Representative

Employer's Representative means **General Manager (CAREC)** or any other person appointed by the Employer and notified to the Engineer and Contractor from time to time.”

1.1.5.7

Add the following at the end:

Temporary Works

“e.g. the construction and maintenance of the Contractor's camp, plant yard and Pre-cast yard etc.”

1.3

Add the following paragraphs at the end:

Communications

“Copies of all communications exchanged between the Employer and the Contractor in connection with the Contract, shall be submitted to the Engineer by the sender of such communications”.

1.5

Replace (a) to (i) with following:

Priority of Documents

- “a. The Contract Agreement,
- b. The Letter of Acceptance,
- c. Letters of Bid,
- d. Particular Conditions of Contract (Part-A Contract Data, Part-B Special Provisions),
- e. Conditions of Contract (General Conditions of Contract for Construction MDB Harmonized Edition-2010),
- f. Particular Specifications (if any),
- g. The Addenda/Corrigenda to NHA General Specifications,
- h. The NHA General Specifications (NHA's Specifications-1998),
- i. Supplementary information as stated in section 6 of bidding documents,
- j. Drawings,
- k. Schedules to Bid,
- l. Any other documents forming part of the Contract.”

1.6

Contract Agreement

The text of last sentence of the Sub Clause 1.6 is deleted and replaced with following text:

“The cost of stamp duties and similar charges (if any) imposed by law in connection with entry into the Contract Agreement shall be borne by the Contractor”

1.8

Care and Supply of Documents

At the end of this Sub Clause add the following new paragraph:

“The Contractor shall make available to the Engineer / his agents the approved drawings, shop drawings, bar bending schedules, specifications or any other document required during inspection and testing of the Works.”



1.9**Delayed Drawing or Instructions**

Add the following at the end of first paragraph of this Sub Clause:

"This notice shall be given not less than 42 days prior to the requirement of such drawings or instructions required to be incorporated in the Works as per submitted programme in accordance with Sub-Clause 8.3 [Programme]."

2.1 Right of Access to Site

Add the following after the last sentence of this Sub-Clause:

"There shall be no work nor construction activities at the Site or any part thereof (as the case may be) unless the Employer has granted access to the Site or part thereof (as the case may be) in accordance with this Sub-Clause 2.1.

The Employer shall be responsible for acquiring and providing legal and physical possession of the Site or any part thereof (as the case may be) and access thereto, and for providing possession of, and access to, all other areas reasonably required for the proper execution of the Contract, including all requisite rights of way.

Prior to, and as a condition of, granting the Contractor access to the Site or a relevant part thereof (as the case may be), for commencing work or any construction activities on the Site or part thereof, the Employer shall issue a notice to the Contractor (with a copy to ADB) confirming in writing ("Notice") all of the following with respect to the Site or part thereof:

(i) the corresponding final Resettlement Plan ("RP") and/ or the Due Diligence Report based on the detailed design of the Site or part thereof (as the case may be) have been submitted to, and accepted by, ADB;

(ii) due consultation, compensation payments and other entitlements have been provided to affected people fully in accordance with the RP for the Site or part thereof (as the case may be), and ADB has been duly notified of such provision in the Resettlement Plan Compliance Report accepted by ADB for the Site or part thereof;

(iii) completion of any other actions as required by the Employer;

(iv) the final initial environmental examination (IEE) is prepared by NHA and approved through issuance of no objection certificate (NOC) by national or provincial Environmental Protection Agency, in case an IEE is required by Pakistan's National/Provincial environmental legislation; and

(v) as a result of the confirmations contained above, the Employer accordingly grants the Contractor access to the Site or part thereof."

Clause-3: The Engineer**3.1****Engineer's Duties and Authority**

Delete the second last paragraph and replace with the following:

"The Engineer shall obtain the approval of the Employer before taking action under the following Sub-Clauses of these conditions:

- a) Consenting to the sub-contracting of any part of Works under Sub-Clause 4.4;
- b) Certifying additional cost determined under Sub-Clause 4.12;
- c) Determining an extension of time under Sub-Clause 8.4;
- d) Suspending the progress of the Works under Sub-Clause 8.8 and



certifying an additional cost under Sub-Clause 8.9;

- e) Issuing the Taking-Over Certificate under Clause 10;
- f) Issuing a Performance Certificate under Sub-Clause 11.9;
- g) Issuing a Variation under Clause 13 except in emergency situation as reasonably determined by the Engineer involving loss/damages to life, property and /or Works, and if such a Variation would not increase the Accepted Contract Amount;
- h) Adjustment of Contract Price under Clauses 13.7 and 13.8; and
- i) Proceeding under Sub-Clause 14.11 and issuance of Final Payment Certificate under Sub-Clause 14.13."

3.5

Determinations

Insert the following after the word "specified." in line three of second paragraph:

"Such claim or request must be supported with evidence required to substantiate this claim or request or any other documents which the Engineer may reasonably ask from either Party."

"3.6

Management Meeting

Add this Sub-Clause at the end of Clause 3:

The Engineer or the Employer may require the other to attend a management meeting in presence of the Contractor or otherwise, in order to review the progress with reference to the agreed programme and arrangements for future works. The Engineer shall record the business of management meeting and supply copies of the record to those attending the meeting and to the Employer. In the record, responsibilities for any actions to be taken shall be in accordance with the Contract.

No Traveling Allowance / Daily Allowance (TA/DA) or any other expenditure incurred by Contractor will be paid by the Employer to the Contractor in this connection."

Clause-4: The Contractor

4.2

Performance Security

Insert following at the end of the second paragraph of this Sub-Clause:

"The Performance Security shall be issued either (a) by a schedule bank² located in the Country, or (b) by a reputable foreign bank, selected by the Contractor and acceptable to the Employer. If the bank issuing the Performance Security furnished by the Contractor is outside the Country, the issuer shall have a correspondent bank in the Country to make it enforceable in the Country. The Performance Security shall be in the form annexed to the Bidding Document.

The Performance Security of a Joint Venture shall be in the name of the Joint Venture."

4.3

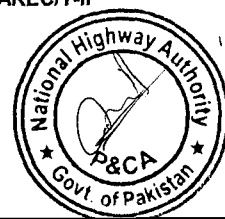
Contractor's Representative

At the end of this Sub-Clause add:

"The Contractor's Representative or the person to whom Contractor's Representative delegates any power, functions and authority must be a qualified Professional Engineer (registered with Pakistan Engineering Council) in the relevant field.

In addition to the Contractor's Representative, all engineers and foremen present at the Site, shall also be fluent in speaking Urdu or English Language, otherwise the Contractor shall provide sufficient interpreters at the Site to ensure adequate communication with the

² Schedule Banks are Banks which are registered in the list of State Bank of Pakistan under its charter.



local personnel.

In case of JV where one of the firm/contractor is foreign, The contractor' authorized representative and his other professional Engineers working at site shall register themselves with the Pakistan Engineering Council.

In case of local firm or JV with a foreign firm, it is the obligation of the Contractor to ensure that all Senior Engineering Management Personnel as mentioned by the Contractor/JV in its Technical Bid/Contract Agreement are deployed at Site for execution of Works in accordance with the resource schedule stated in the program.

In case of Contractor's failure to deploy its key staff within 45 days after stipulated date of commencement, an amount of Rs. 10,000/- per person/day will be deducted from any money due to the contractor.

If the Employer finds sufficient evidence that the Contractor has not deployed its key staff at site, the Employer may, within 28 days after becoming aware of the events or circumstances, issue a Notice to the Contractor for Employers Claim pursuant to Clause 2.5."

4.8

Replace the first line with:

Safety Procedures

"The Contractor shall, at his own expense."

At the end of bullet point (b), please add the following:

"In particular, the Contractor is responsible for providing site workers with safe and healthy working conditions and establishes an operating system to prevent accidents, injuries, and disease."

<p>4.12</p> <p>Unforeseeable physical Conditions</p>	<p>Add the following at the end of Sub-Clause:</p> <p><i>"In addition to notice of any unforeseeable physical conditions, the Contractor shall provide the Engineer and the Employer with a written notice of any unanticipated environmental, land acquisition and resettlement and/or indigenous peoples risks or impacts that arise during construction, implementation or operation of the Works, which were not considered in the initial environmental examination ("IEE"), the environmental management plan ("EMP") or the resettlement plan ("RP") attached hereto as Appendix [xxx], [xxx] and [xxx], respectively.</i></p> <p><i>If any unanticipated environmental or social risks and impacts arise during construction that were not considered in the IEE, EMP and RP, the Employer shall be informed with detailed description of the event and proposed corrective action plan".</i></p>
<p>4.15 Access Route</p>	<p>Add the following at the end of Sub-Clause:</p> <p><i>"The Contractor shall fully reinstate pathways, other local infrastructure, and agricultural land to at least their pre-project condition upon the completion of construction."</i></p>

4.16

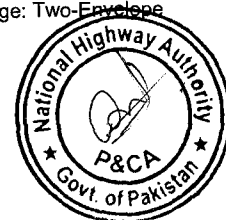
Transport of Goods

Add the following at the end of Sub-Clause by shifting the word "and" from after Para 'b' to after Para 'c' along with replacement of full stop at the end of Para 'c' with semicolon:

"(d) The Contractor shall adequately record the condition of roads, agricultural land and other infrastructure prior to starting to transport materials and construction."

4.18

Add the following paragraphs at the end of Sub-Clause:



Protection of Environments

"The Contractor, to ensure protection of the environment, shall take all necessary measures and precautions in conformity with statutory and regulatory environmental requirements enforced and amended from time to time including those provided under this Contract in the form of Environmental Management Plan and prescribed else wherein the Contract. The Contractor shall provide the Engineer and the Employer with a written notice of any unanticipated environmental, and acquisition and resettlement and/or social risks or impacts that arise during construction, implementation, operation of the Works that were not considered in the EMP or the Land Acquisition and Resettlement Plan attached here to as Appendix _____

The Contractor shall exercise care to protect the natural landscape and shall conduct his construction operations as to prevent any unnecessary destruction, scarring or defacing of the natural surroundings in the vicinity of the Works, except where clearing is required for Permanent Works, approved Temporary Works and the excavation operations. All trees and native vegetation shall be preserved and shall be protected from damages, which may be caused, by the Contractor's construction operations and equipment.

On completion of the Works all work area shall be smoothed and graded in a manner to conform the natural appearance of the landscape. Where unnecessary destruction, scarring damage or defacing may occur as a result of the Contractor's operations, it shall be repaired, replanted or otherwise corrected as directed by the Engineer at Contractor's expense.

Borrow areas shall be located and operated so as not to detract from the future usefulness or value of the sites. Upon completion of operations borrow areas shall be left in a safe and slightly better conditions. No borrow areas shall be located within 500 meter from the right of way.

During the execution of the Work required under the Contract, the Contractor shall carryout proper and efficient measures as often as necessary to reduce the dust nuisance and to prevent dust originating from his operations. For waste water disposal the provision of septic tank alone for worker's camp etc. will not be sufficient and may have to be supplemented with secondary treatment in form of gravel drains constructed wetland depending on the laboratory results of effluent from the septic tank.

The Contractor shall also comply with all applicable national, provincial and local environment laws and regulations. The Contractor shall: (a) prepare a Site Specific Environment Management Plan (SSEMP) which shall be finalized by the Employer and submitted for approval by ADB, such SSEMP shall be based on the EMP as required in the Initial Environmental Examination (IEE) Report; (b) comply with the measures relevant to the Contractor set forth in the IEE, the SSEMP, and the LARP (to the extent they concern impacts on affected people during construction; and (c) allocate the budget required to ensure that such measures are carried out. The Contractor shall submit quarterly reports on the carrying out of such measure to the Employer. The Contractor shall also comply with: (a) all applicable laws and regulations of Pakistan relating to health and safety; (b) the Environment Safeguards; (c) the Environment Assessment and Review



Framework (EARF); and all measures and requirements set forth in the Safeguards Monitoring Report.

4.19

The entire text of Sub-Clause is deleted and substituted with the following:

Electricity, Water and Gas

"Except as otherwise stated in the Contract, the Contractor shall be responsible for the provision of all supplies of electricity, water, Gas and other services as are required for carrying out the Works at the Site. Any apparatus and equipment required for the use of these services shall be arranged by the Contractor, at its own risk and cost."

4.21**Progress Report**

In the second line of first paragraph after the word "Contractor" add the text "in the format acceptable to the Engineer/Employer"

In subparagraph (g), the word "and" appearing at the end is deleted.

In sub-paragraph (h) the full stop appearing at the end is substituted with a semi colon.

Add the following subparagraph at the end of Sub-Clause with continuing order:

- (i) "Planned programme for the execution of the Works for the next two (2) months to enable the Engineer to determine its programme of inspection and testing;
- (j) Monthly summary of daily job record indicating weather conditions, deployment of Contractor's Equipment, labour employment (segregated by gender), local material procurement and material import, if any;
- (k) Salient contractual and project Information; and
- (l) Monitoring of obligations in Sub-Clauses 4.12, 4.18, 4.25, 6.1, 6.4, 6.7, 6.20 and 6.21.

4.25

The Contractor shall comply with all applicable national, provincial, and local land acquisition and involuntary resettlement laws and regulations of Pakistan.

The Contractor shall comply with (i) the measures and requirements relevant to the Contractor which are set forth in the RP attached hereto as Appendix [], to the extent that it concerns impacts on affected people during construction; and (ii) any corrective or preventative actions set out in safeguards monitoring reports that the Employer will prepare from time to time to monitor implementation of the RP. The Contractor shall submit quarterly reports on the carrying out of such measures to the Employer.

"In addition, the Contractor shall reflect the status of access to the Site or part thereof (as the case may be) in its monthly progress reports under "key milestones" and "project progress: planned vs. actual."

The Contractor shall allocate a budget for compliance with these measures, requirements and actions.

Clause-6: Staff and Labour**6.1**

Add the following as the second paragraph of this Sub-Clause:

Engagement of Staff and Labour

"To the extent possible, the Contractor shall employ women and local people, including disadvantaged people living in the project area, who meet the job and efficiency requirements for the Works. The Contractor



shall not differentiate between men and women's wages or benefits for work of equal value. The contractor shall maximize female training and employment."

In addition, the Contractor shall enable conditions for women workers and take necessary actions to encourage women living in the project area to participate in the design and implementation of the project activities.

6.2

In first line Insert following after the word "wages":

Rates of Wages and Condition of Labour

"not less than the rates as published by Federal Bureau of Statistics or as established for trade or industry or market rate of the project area"

6.4

Labour Laws

The Contractor shall allow freedom of association and effectively recognize the right to collective bargaining.

"The Contractor shall comply with Pakistan's applicable labor law and regulations and shall incorporate applicable workplace occupational safety norms. The Contractor shall not discriminate workers in respect of employment and occupation"

6.6

Facilities for Staff and Labour

The text of first paragraph is deleted and substituted with the following:

"Save insofar as the Contract otherwise provides, the Contractor shall provide and maintain suitable accommodation and amenities for all its staff and labour, employed for the purpose of or in connection with the Contract, including all fencing, water supply (both for drinking and other purpose), electricity supply, sanitation, fire prevention and fire fighting equipment, cooling system compliant with labour laws and acceptable to the Employer, refrigerator, furniture and other equipment in connection with such accommodation or amenities. The Contractor shall provide appropriate facilities for children of laborers in the construction Camp Sites. On completion of the Works, unless otherwise agreed the temporary camps/housing provided by the Contractor shall be removed and the Site be reinstated to its original condition, all to the approval of the Engineer.

Notwithstanding the above following completion of the Works in case the Employer require the Contractor not to remove/demolish the temporary-built camps/houses, then the relevant cost, as determined by the Engineer, shall be paid to the Contractor."

6.7

Health and Safety

At the end of this Sub-Clause add:

"The Contractor shall ensure that all applicable road safety standards are complied with during execution of Works. For the purpose of first and second paragraphs of this Sub-Clause the expenditure will be borne by the Contractor and not the Employer. If Contractor fails to comply the provisions stated therein, the Contractor will be fined at the rate of Rs. 3000 /day of delay in provision of these facilities."

"The Contractor is responsible for establishment of preventive and emergency preparedness and response measures to avoid, and where avoidance is not possible, to minimize, adverse impacts and risks of the construction site work to the health and safety of local communities. Besides, as a specific section of the SSEMP referred to in sub-clause 4.18 [Protection of the Environment], the Contractor shall submit a detailed Site Specific Health and Safety Management Plan (SSHSM) for the Engineer's no objection showing how he/she intends to comply with the local Health and Safety laws and regulations and other specific



requirements prescribed in the Contract, taking into account the Supplementary Information in Section 6 of the bidding document (Employer's Requirements). Where unanticipated health and safety hazards or risks become apparent during the Contract, the Contractor is required to update the SSHSMP to outline the potential impacts to site works and associated mitigation measures for the Engineer's no objection.

The Contractor shall comply with the approved SSHSMP and any corrective or preventative actions set out in safeguards monitoring reports that the Employer will prepare from time to time to monitor the implementation of the project EMP through the SSHSMP.

In particular, the Contractor is required to provide all personnel on site including Employer's Personnel and visitors with personal protective equipment, including protection for feet (safety boots), head, eyes, ears (safety helmets) and hands, etc., in accordance with the Contractor's SSHSMP. The Contractor should ensure that his Subcontractors comply with the SSHSMP and provide all such necessary equipment to their personnel."

"In the event of a significant injury involving medical treatment or hospitalization and fatal accident the Contractor shall notify the Engineer immediately by verbal communication and submit a formal report as soon as practicable after its occurrence. For all accidents, whether fatal or not, the Contractor shall also notify the appropriate local authorities in accordance with the Laws of the Country. The Contractor shall carry out or engage appropriate service providers to conduct health and safety programs for workers employed under the project and to members of the local communities surrounding the Site, particularly women, and shall include information on the trafficking of women and the risk of sexually transmitted diseases, including HIV/AIDs in such programs."

6.8

Contractor's Superintendence

Add the following paragraphs at the end of Sub-Clause:

"The Contractor's superintending staff shall be qualified civil engineers or possess Diploma of Associate Engineer in Civil Engineering or civil technology depending upon the nature of assignment and have a working knowledge of English and Urdu, otherwise the Contractor shall arrange a sufficient number of competent interpreters available at the Site during all working hours.

The Contractor's superintending staff must be available at Site whenever the Engineer's representative or his subordinate staff related to construction supervision is inspecting and testing the Works as per Contractor's daily inspection and testing schedule."

6.10

Records of Contractor's Personnel and Equipment

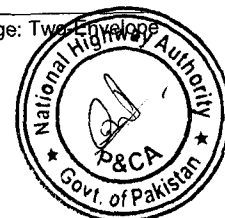
Insert in second line after the word "Personnel":

"along with their names, designation and their placing" In second line after the word 'Site' insert the following:

"along with their location of work, make, model and registration number or the number allotted to the specific equipment by the Contractor and printed on the front or sides of the equipment"

At the end of this Sub-Clause add:

"In case of disagreement by the Engineer on the above said records daily report as made by the inspector from the Engineer's staff showing the Contractor's equipment will be considered authentic while taking into account the duplication of any equipment reflected in the



Contractor's daily report."

6.15

Replace the whole text of the Sub-Clause with the following:

Measures against Insect and Pest Nuisance

"The Contractor shall at all times take the necessary precautions to protect the Contractors Personnel employed on the Site from all pests and reduce the dangers to health and the general nuisance caused by the same. The Contractor shall provide his staff and labour with suitable prophylactics for the prevention of malaria and shall 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 Bilharzias and wild animals."

6.19

Replace the whole text of the Sub-Clause with the following:

Funeral Arrangements

"The Contractor shall make any necessary arrangements for the transport to any place as required for burial, of any of his local or expatriate employees or members of families of expatriate employees who may die at the place of Works or in the Country of Works. 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 employees who may die while engaged upon the Works."

6.21

Replace the whole text of the Sub-Clause with the following:

Child Labor

"The Contractor shall not employ any child to perform work, including work that is economically exploitative or is likely to be hazardous to, or to interfere with, the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral or social development. "Child" means a child below the statutory minimum age of Fourteen (14) years."

"6.25

Add the following paragraph as Sub-Clause 6.25:

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 or sanitary authorities for the purpose of dealing with and overcoming the same."

Clause-7: Plant, Materials and Workmanship

7.8

In paragraph (a), the word "and" appearing at the end is deleted.

Royalties

In paragraph (b), the full stop '.' appearing at the end is replaced with ", and"

Add the following paragraph as (c) at the end of Sub-Clause:

"c) use of other parties' intellectual property rights, including but not limited to patents and copyrights."

Clause-8: Commencement, Delay and Suspension

8.1

Amend the last paragraph to read as follows:

Commencement of Works

"The Contractor shall commence the execution of the Works as soon as is reasonably practicable after access to and possession of the Site or any part thereof have been given under Sub-Clause 2.1, and shall then



proceed with the Works with due expedition and without delay."

"Item (c) listed under the first paragraph is deleted"

8.3

Programme

The following words shall be added after the words "..... in accordance with this Sub-Clause" at the end of the 4th paragraph of GCC 8.3:

"promptly, and in any event within twenty eight (28) days after the receipt of a notice from the Engineer".

Add at the end of item (a) listed in the first paragraph:

"it being understood that the sequence of construction activities should take into account, to extent possible, the constraints due to land acquisition as set out in the LARP."

The following paragraphs shall be inserted as the fifth and sixth paragraphs of GCC

"The programme shall be submitted in the form of Microsoft Project or other similar software (3 Nos. hard and soft copies). The Contractor shall also have a licensed copy of the software from a reputed firm which shall be accessible to the Engineer as well as his assistants. The Contractor shall organize a training programme for the staff of the Contractor as well as the staff of the Engineer.

In case of delayed submission of the revised programme in accordance with this Sub-Clause, the Contractor shall pay a penalty of Rs. 5,000/- (Rupees five thousand) for each day of delay in the submission of the programme. The maximum amount of penalty for delayed submission of the revised programme shall be Rs.1,000,000/-. Any penalty payable by the Contractor under this Sub-Clause shall first reduce the outstanding amounts due from the Employer to the Contractor (if any). Such penalty for delayed submission of revised programme does not prejudice the Employer's rights under the Contract, including without limitation the Employer's rights to terminate the Contract under GCC 15.2."

Clause-9: Test on Completion

"9.5

Specific Testing

Add a new Sub-Clause 9.5 at the end of Clause 9 as follows:

The Contractor shall carry out joint roughness survey with the Engineer at the time of completion of the Works and on expiry of Defects Notification Period for issuance of Taking-Over Certificate and Performance Certificate. The Contractor shall provide man power and equipment for his survey and bear all the costs in this regard.

All tests be performed in presence of the Engineer/his agents or for any specific situation a committee notified by the Engineer with prior approval of Employer."

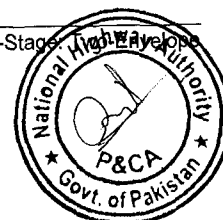
Clause-10: Employer's Taking Over

10.1

Taking Over of the Works and Sections

Delete the third paragraph reading as "The Engineer application:" and insert the following:

"Within 14 days of the date of receipt of Contractor's notice for issuance of Taking-Over Certificate, the Employer shall constitute a committee comprising of the Employer's representative, the Engineer/Engineer's representative and Contractor's Representative. The committee shall



within fourteen (14) days of its constitution conduct a detailed inspection of the Works completed by the Contractor to ascertain the completion or the extent of completion to decide about the issuance of Taking-Over Certificate. After the certification by the committee, the Engineer shall, within 14 days, issue the Taking-Over Certificate."

Clause-11: Defects Liability

11.2

The full stop at the end of Para (c) is replaced with :

Cost of Remedying Defects

"including reinstatement, upon the completion of construction, of pathways, other local infrastructure, and agricultural land to at least their pre-project condition as recorded by the Contractor in consonance with its obligation in Clause 4.16."

11.9

Performance Certificate

Add the following paragraph before the first paragraph:

"At the completion of the Defect Notification Period the Employer shall constitute a committee comprising of the Employer's Representative, Engineer/Engineer's representative and the Contractor's Representative. The committee shall within fourteen (14) days conduct a detailed inspection of the Works to ascertain the issuance of Performance Certificate.

In middle paragraph of the GCC, replace the words "within 28 days after the latest of the expiry dates of the Defects Notification Period" with "within 28 days after the detailed inspection by the committee as required under this Sub-Clause"

Clause-12: Measurement and Evaluation

12.3

Evaluation

"In subparagraph (a) (ii), replace "0.25%" with "1%".

In subparagraph (a) (iii), replace "1%" with "2%".

Clause-14: Contract Price and Payment

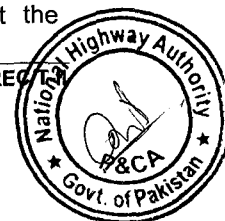
14.5

Plant and Materials Intended for the Works

The text of Sub-para 14.5(c)(ii) and subsequent Para (fourth) is deleted and replaced with the following:

"(ii) the Contractor shall be entitled to receive from the Employer an amount for Materials as "Secured Advance" against an indemnity bond acceptable to the Employer (Form provided in Section 9) of such sum as the Engineer may consider proper in respect of the Materials (listed in the Schedules for payment and) delivered to the Site but not yet incorporated in the Permanent Works provided that:

- (1) The Materials are in accordance with the Specifications for the Permanent Works;
- (2) Such Materials have been delivered to the Site and are properly stored and protected against loss or damage or deterioration to the satisfaction of the Engineer but at the risk and cost of the Contractor;
- (3) The Contractor's records of the requirements, orders, receipts and use of Materials are kept in a form approved by the Engineer, and such records shall be available for inspection by the Engineer;
- (4) The Contractor shall submit with his monthly statement the



estimated value of the Materials on Site together with such documents as may be required by the Engineer for the purpose of valuation of Materials and providing evidence of ownership and payment therefore;

- (5) Ownership of such Materials shall be deemed to vest in the Employer and these Materials shall not be removed from the Site or otherwise disposed off without written permission of the Employer; and
- (6) The sum payable for such Materials on Site shall not exceed 75% of the (i) landed cost of imported Materials, or (ii) ex-factory / ex-warehouse price of locally manufactured or produced Materials, or (iii) market price of other Materials, also keeping in view value of the Materials under the Contract taking into account the unit rates of the corresponding items of payment in the Bills of Quantity.
- (iii) The recovery of "Secured Advance" paid to the Contractor under the above provisions shall be effected from the monthly payments on actual consumption basis."

14.7(a)

Payment

The respective reference to "42" and "21" shall be deleted and replaced with "56"

14.13

Issue of Final Payment Certificate

The text of first paragraph of this Sub-Clause is replaced with the following:
"Within 56 days after receiving the Final Statement and written discharge in accordance with Sub-Clause 14.11 [Application for Final Payment Certificate] and Sub-Clause 14.12 [Discharge], the Engineer shall issue, to the Employer [with a copy to the Contractor], the Final Payment Certificate which shall state the amount which is finally due as per Contract."

Clause-15: Termination by Employer

15.2

Termination by Employer

Replace the text of subparagraph (d) with the following:

"subcontracts the whole or part of the Works or assigns the whole or part of the Contract without consent of the Employer and required agreement"

15.6

Corrupt or Fraudulent Practices

ADB's Anticorruption Policy requires Borrowers (including beneficiaries of ADB-financed activity), as well as Bidders, suppliers, and contractors under ADB-financed contracts, observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, ADB:

- (a) defines, for the purposes of this provision, the terms set forth below as follows:
 - (i) "corrupt practice" means the offering, giving, receiving, or soliciting, directly or indirectly, anything of value to influence improperly the actions of another party;
 - (ii) "fraudulent practice" means any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;
 - (iii) "coercive practice" means impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of



the party to influence improperly the actions of a party;

- (iv) "collusive practice" means an arrangement between two or more parties designed to achieve an improper purpose, including influencing improperly the actions of another party;
 - (v) "integrity violation" means any act, as defined under ADB's Integrity Principles and Guidelines, which violates ADB's Anticorruption Policy including corrupt, fraudulent, coercive, or collusive practice, abuse, and obstructive practice.
 - (vi) "obstructive practice" means (a) deliberately destroying, falsifying, altering or concealing of evidence material to an ADB investigation; (b) making false statements to investigators in order to materially impede an ADB investigation; (c) failing to comply with requests to provide information, documents or records in connection with an OAI investigation; (d) threatening, harassing, or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation, or (e) materially impeding ADB's contractual rights of audit or access to information.
- (b) will reject a proposal for award if it determines that the Bidder recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices or other integrity violations in competing for the Contract;
 - (c) will cancel the portion of the financing allocated to a contract if it determines at any time that representatives of the borrower or of a beneficiary of ADB-financing engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices or other integrity violations during the procurement or the execution of that contract, without the borrower having taken timely and appropriate action satisfactory to ADB to remedy the situation;
 - (d) will sanction impose remedial actions on a firm or an individual, at any time, in accordance with ADB's Anticorruption Policy and Integrity Principles and Guidelines (both as amended from time to time), including declaring ineligible, either indefinitely or for a stated period of time, to participate in ADB-financed, or administered or supported activities or to benefit from an ADB-financed, administered or supported contract, financially or otherwise, if it at any time determines that the firm or individual has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices or other integrity violations; and
 - (e) will have the right to require that a provision be included in bidding documents and in contracts financed by ADB, requiring Bidders, suppliers and contractors to permit ADB or its representative to inspect their accounts and records and other documents relating to the bid submission and contract performance and to have them audited by auditors appointed by ADB.

Clause-16: Suspension and Termination by Contractor

16.1

Contractor's Entitlement to Suspend Work

First paragraph, third line, replace the number "21" with "42".

In the second paragraph, fourth line the number "7" is replaced with "14".

16.2

In first line of subparagraph (a) replace the expression "42" with "56".



Termination by Contractor

In third last paragraph, first line, replace the expression "14" with "28"

In second last paragraph, in last line, replace the expression "14" with "28".

Insert the following at the end of third last paragraph:

"the Employer shall provide notification within 7 days to the Contractor on ADB's suspension of the loan, and such notification shall state whether sufficient fund in appropriate currencies are expected to be available to the Employer to continue making payments to the Contractor beyond 42 days after the date of ADB's suspension of the loan."

Clause-17: Risk and Responsibility**17.3****Employer's Risk**

The word "and" at the end of subparagraph (g) is deleted.

The full stop at the end of subparagraph (h) is replaced with comma.

Add the following at the end:

- i. Ionizing radiations or contamination by radioactivity from any nuclear fuel, or from any nuclear waste from combustion of nuclear fuel, radioactive toxic explosive or other hazardous properties of any explosive nuclear assembly nuclear component thereof, and
- j. biological/bacterial terrorism.

Clause-18: Insurance**18.1****General Requirements for Insurances**

The following new paragraphs are added at the end of Sub-Clause 18.1:

"The Contractor shall be entitled to place all insurance relating to the Contract (including but not limited to, the insurance referred to in Sub-Clauses 18.2 [Insurance for Works and Contractor's Equipment], 18.3 [Insurance against Injury to Persons and Damage to Property] and 18.4 [Insurance for Contractor's Personnel] with the insurance company as approved by the Employer.

The relevant insuring party shall within 28 days from the Commencement Date submit to the other party:

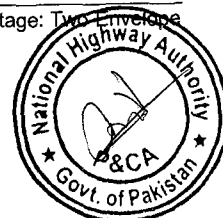
- a. Evidence that the insurance described in this Clause 18 [Insurance] have been effected, and
- b. Copies of the policies of insurance described in the Sub-Clause 18.2 [Insurance for Works and Contractor's Equipment], 18.3 [Insurance against Injury to Persons and Damage to Property] and 18.4 [insurance for Contractor's Personnel]. There shall be no obligation for the insurances in this Sub-Clause to include loss or damage caused by the Risks listed under Sub-Clause 17.3 [Employer's Risks] subparagraphs, (a) to(j) of the Conditions of Contract."

18.2**Insurance for Works and Contractor's Equipment**

Add following paragraphs at the end of Sub- Clause 18.2:

"The insurance shall also cover:

- b. The Contractor for his liability:
 - i. during the defects liability for loss or damages arising from a cause occurring after commencement of Defects Notification Period.
 - ii. caused by the Contractor in the course of any operations



carried out by him for the purpose of compliance with the obligations under defect liability.

It shall be the responsibility of the Contractor to notify the insurance company of any damage in the nature and extent of the Works and to ensure the adequacy of the insurance coverage at all times during period of the Contract.

Clause-20: Claims, Disputes and Arbitration

20.6

Arbitration

Replace the subparagraphs (a) and (b) with the following paragraph:

"In case of foreign contractor, arbitration shall be carried out in accordance with the Rules of Arbitration of the International Chamber of Commerce, and in the case of domestic contractor, arbitration shall be carried out in accordance with the rules and provision of Arbitration Act 1940 of Islamic Republic of Pakistan. The place of arbitration shall be "Islamabad, Islamic Republic of Pakistan" for domestic Contractor and the city / country acceptable to the Parties in case of foreign Contractor."

Add the following Clause after Clause 20:

Clause 21: Other Issues

"21.1

General Items

If the Contractor does not provide the items or fails to fulfill its obligations in respect of the items under Bill No. 7 within the time frame specified in its Program for these activities, the Engineer shall instruct the Contractor to fulfill its obligations in respect of the items under Bill No. 7 within 28 days, failing which the Engineer shall deduct the amounts due to the Contractor from Interim Payment Certificates in accordance with clause 3.5 [Determination] to compensate the Employer against the expenditure incurred by the Employer in this respect including his administrative overheads etc. @12%.



Section 9: Contract Forms

This Section contains forms which, once completed, will form part of the Contract. The forms for Performance Security and Advance Payment Security, when required, shall only be completed by the successful Bidder after contract award. Indemnity Bond, if required, shall be completed by the Contractor.

Table of Forms

Notice of Intention for Award of Contract.....	9-2
Notification of Award	9-3
Contract Agreement.....	9-4
Performance Security	9-6
Advance Payment Security	9-7
Indemnity Bond for Secured Advance	9-8



Notice of Intention for Award of Contract

[on letterhead paper of the employer]

[date of notification]

To: [name of the bidder]
 Attention: [insert name of the bidder's authorized representative]
 Address: [insert address of the bidder's authorized representative]
 Telephone/Fax numbers: [insert telephone/fax numbers of the bidder's authorized representative]
 E-mail Address: [insert e-mail address of the bidder's authorized representative]

This is to notify you of our intention to award the contract [insert name of the contract and identification number, as given in the Bid Data Sheet]. You have [insert number of days as specified in ITB 41.1 of the BDS] days from the date of this notification to (i) request for a debriefing in relation to the evaluation of your Bid; and/or (ii) submit a bidding-related complaint in relation to the intention for award of contract, in accordance with the procedures specified in ITB 46.1.

The summary of the evaluation are as follows:

1. List of Bidders

Name of Bidder	Bid Price as Read Out at Opening	Evaluated Bid Price

2. Reason/s Why Your Bid was Unsuccessful

.....

3. The Successful Bidder

Name of Bidder:	
Address:	
Contract Price:	
Duration of Contract:	
Scope of the Contract Awarded:	
Amount Performance Security Required:	

Authorized Signature:

Name and Title of Signatory:

Name of Agency:



Notification of Award

[on letterhead paper of the employer]

Letter of Acceptance

[date]

To: [Name and address of the contractor]

Subject: [Notification of Award Contract No.]

This is to notify you that your Bid dated [date] for execution of the [name of the contract and identification number, as given in the Bid Data Sheet] for the Accepted Contract Amount in the equivalent of [amount in words and figures and name of currency], as corrected and modified in accordance with the Instructions to Bidders is hereby accepted by our Agency.

You are requested to furnish the Performance Security within 28 days in accordance with the Conditions of Contract and any additional security required as a result of the evaluation of your bid, using for that purpose the Performance Security Form included in Section 9 (Contract Forms) of the Bidding Document.

Authorized Signature:

Name and Title of Signatory:

Name of Agency:

Attachment: Contract Agreement



Contract Agreement

THIS AGREEMENT made the [date] day of [month], [year], between [name of the employer] (hereinafter "the Employer"), of the one part, and [name of the contractor] (hereinafter "the Contractor"), of the other part:

WHEREAS the Employer desires that the Works known as [name of the contract] should be executed by the Contractor, and has accepted a Bid by the Contractor for the execution and completion of these Works and the remedying of any defects therein.

The Employer and the Contractor agree as follows:

1. In this Agreement, words and expressions shall have the same meanings as are respectively assigned to them in the Contract documents referred to.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement. This Agreement shall prevail over all other Contract documents.
 - (a) Contract Agreement,
 - (b) Letter of Acceptance,
 - (c) Letter of Technical Bid,
 - (d) Letter of Price Bid,
 - (e) Addenda Nos [insert addenda numbers if any]
 - (f) Particular Conditions of Contract – Part A,
 - (g) Particular Conditions of Contract – Part B,
 - (h) List of Eligible Countries as specified in Section 5 of the Bidding Document,
 - (i) General Conditions of Contract,
 - (j) Specifications,
 - (k) Drawings,
 - (l) completed Schedules including Bill of Quantities, and
 - (m) any other documents shall be added here.¹
3. In consideration of the payments to be made by the Employer to the Contractor as indicated in this Agreement, the Contractor hereby covenants with the Employer to execute the Works and to remedy 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.



¹ Tables of Adjustment Data may be added if the contract provides for price adjustment (see GCC 13.8). The JV agreement, in case of JV Bidder/Contractor, is to be made part of the Contract besides the Performance Security as well as Forms of Advance Payment Security and Indemnity Bond for Secured Advance against Materials (where applicable) as well as IEE, EMP, SSEMP and the LARP.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with the laws of [*name of the borrowing country*] on the day, month and year indicated above.

Signed by

(Name and Designation)

Signed by

(Name and Designation)

for and on behalf of the Employer
in the presence of

for and on behalf the Contractor
in the presence of

Witness, Name, Signature, Address, Date

Witness, Name, Signature, Address, Date



Performance Security

[Bank's name, and address of issuing branch or office]

Beneficiary: [Name and address of the employer]

Date:

Performance Guarantee No.:

We have been informed that [name of the contractor] (hereinafter called "the Contractor") has entered into Contract No. [reference number of the contract] dated with you, for the execution of [name of contract and brief description of works] (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.

At the request of the Contractor, we [name of the bank] hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of [name of the currency and amount in words]¹ [amount in figures] such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation(s) under the Contract, without your needing to prove or to show grounds for your demand or the sum specified therein.

This guarantee shall expire, no later than the [date] day of [month], [year]², and any demand for payment under it must be received by us at this office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 758], except that subparagraph (ii) of article 15 (a) is hereby excluded.³

.....
[Signature(s) and seal of bank (where appropriate)]

Note to Bidder

If the institution issuing the performance security is located outside the country of the employer, it shall have a correspondent financial institution located in the country of the employer to make it enforceable.

- ¹ The guarantor shall insert an amount representing the percentage of the contract price specified in the contract and denominated either in the currency(ies) of the contract or a freely convertible currency acceptable to the employer.
- ² Insert the date 28 days in addition to the period of Defects Notification after the expected completion date. The employer should note that in the event of an extension of the time for completion of the contract, the employer would need to request an extension of this guarantee from the guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the employer might consider adding the following text to the form, at the end of the penultimate paragraph: "The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [6 months] [1 year], in response to the Employer's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."
- ³ Or the same or similar to this clause specified in the Uniform Rules for Demand Guarantees, ICC Publication No. 758 where applicable.



Advance Payment Security

..... Bank's name, and address of issuing branch or office¹

Beneficiary: Name and address of the employer

Date:

Advance Payment Guarantee No.:

We have been informed that name of the contractor. (hereinafter called "the Contractor") has entered into Contract No. reference number of the contract. dated with you, for the execution of name of contract and brief description of works. (hereinafter called "the Contract").

Furthermore, we understand that, according to the Conditions of the Contract, an advance payment in the sum name of the currency and amount in words². (..... amount in figures.) is to be made against an advance payment guarantee.

At the request of the Contractor, we name of the bank. hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of name of the currency and amount in words³. (..... amount in figures.) upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation under the Contract because the Contractor used the advance payment for purposes other than the costs of mobilization in respect of the Works.

It is a condition for any claim and payment under this guarantee to be made that the advance payment referred to above less withholding tax must have been received by the Contractor on its account number Contractor's account number. at name and address of the bank. This guarantee shall become effective upon receipt of the advance payment on this bank account.

The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Contractor as indicated in copies of interim statements or payment certificates which shall be presented to us. This guarantee shall expire, at the latest, upon our receipt of a copy of the interim payment certificate indicating that ninety percent (90%) of the Contract Price has been certified for payment, or on the ... day of,⁴, whichever is earlier. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 758

.....
Signature(s) and seal of bank (where appropriate)

Note to Bidder

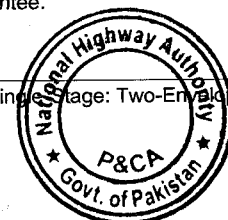
If the institution issuing the advance payment security is located outside the country of the employer, it shall have a correspondent financial institution located in the country of the employer to make it enforceable.

¹ All italicized text is for guidance on how to prepare this demand guarantee and shall be deleted from the final document.

² The guarantor shall insert an amount representing the amount of the advance payment denominated either in the currency(ies) of the advance payment as specified in the Contract, or in a freely convertible currency acceptable to the employer.

³ Footnote 2.

⁴ Insert the expected expiration date of the time for completion. The employer should note that in the event of an extension of the time for completion of the contract, the employer would need to request an extension of this guarantee from the guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the employer might consider adding the following text to the form, at the end of the penultimate paragraph: "The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [6 months][1 year], in response to the Employer's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."



**INDEMNITY BOND
FOR SECURED ADVANCE
AGAINST MATERIALS BROUGHT AT SITE
(ON PAK RS.40 JUDICIAL STAMP PAPER)**

This Deed of Indemnity is issued by M/s. _____

(Name of the Contractor) in favor of National Highway
Authority, 28-Mauve Area, G-9/1, Islamabad.

Whereas the National Highway Authority (hereinafter called the Employer) has paid the Secured Advance against the cost of Materials through any Bank or like agency by any other method by virtue of the terms of the Contract existing between the Parties. The details of the Materials and their price for which Secured Advance is sought for the period _____ till consumption of the Materials is as under:-

1. _____ at Rs. _____ per _____ = Rs.
2. _____ at Rs. _____ per _____ = Rs.

THEREFORE THIS DEED OF INDEMNITY WITNESSETH AS FOLLOWS:

I/We _____ of M/s _____ do hereby indemnify the Employer for all losses due to thefts, arson, pilferage, loss due to flood and inundation, shortage, deterioration and depreciation etc. through any act of Man or God or slump in the Market of any or all the Materials financed or paid by the Employer on our request for financing payment against Materials.

I/We _____ shall indemnify the Employer against any or all claims and damages arising out of or resulting to the said Materials.

I/We _____ further declare that we will faithfully abide by the above declaration and solemnly affirm that we will not remove, sell, pilferage any of the Materials against which the Employer has paid us such a Secured Advance and will not pledge the same with any Bank, Finance Corporation, Firm, Company, Individual or the like agency or create any change whereon in any from what so ever, except incorporating in the Permanent Works under the Contract.

I/We _____ do hereby also declare that in the event of my/our infringement of the declaration made above the Employer will be entitled to forfeit all such Materials and also proceed against me/us according to the relevant clause pertaining to breach of Contract and further invoke the power or seek any remedies secured of any kind under the Contract signed with us or otherwise available under the Law.

Place _____ Dated _____

Contractor _____ (Signature)
Name and CNIC/Passport (copy attached) number _____

