AGREEMENT No_17of *2013 - 14*

GOVERNMENT OF ODISHA
WORKS DEPARTMENT

Contract for Consultant's Services

For

Construction Supervision of Jagatpur Chandbali Road
(0/0 km to 99/0 km of MDR and 52/0 km to 45/0 km of SH 9)
of Odisha State Roads Project

between

Chief Engineer, World Bank Projects, Odisha
on behalf of
Works Department, Government of Odisha

and

LEA Associates South Asia Pvt. Ltd., New Delhi
in association with
S.M. Consultant, Bhubaneswar, Odisha, as Sub-consultant

Contract Amount : Rs. 13,65,79,250 /-

Project Management Unit, Odisha State Roads Project
Office of the Engineer-in-Chief (Civil), Odisha,
Nirman Soudha, Keshari Nagar, Unit – V, Bhubaneswar – 751 001

November 08, 2013

Chief Engineer,
World Bank Project
O/o the E.I.C.(Civil), Odisha
Bhubaneswar

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Client

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Contract

This CONTRACT (hereinafter called the "Contract") is made the 08th day of the month of *Novemberber, 2013*, between, on the one hand, ***Chief Engineer, World Bank Projects, Odisha on behalf of Works Department, Government of Odisha*** (hereinafter called the"Client") and, on the other hand, an association consisting of the following entities, each of which will be jointly and severally liable to the Client for all the Consultant's obligations under this Contract, namely, **LEA Associates South Asia Pvt. Ltd. (LASA)** , B-1/E-27, Mohan Cooperative Industrial Estate, Mathura Road, New Delhi- 110044 (India) in association with **S.M. Consultant,** S.M. Tower, Plot No. – 130, Mancheswar Industrial Estate, Rasulgarh, Bhubaneswar- 751010 Odisha as sub-consultant (hereinafter called the "Consultant").

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WHEREAS

(a) the Client has requested the Consultant to provide certain consulting services as defined in this Contract (hereinafter called the "Services");

(b) the Consultant, having represented to the Client that he has the required professional skills, and personnel and technical resources, has agreed to provide the Services on the terms and conditions set forth in this Contract;

(c) the Client has received a loan from the International Bank for Reconstruction and Development (hereinafter called the "Bank") towards the cost of the Services and intends to apply a portion of the proceeds of this loan to eligible payments under this Contract, it being understood (i) that payments by the Bank will be made only at the request of the Client and upon approval by the Bank, (ii) that such payments will be subject, in all respects, to the terms and conditions of the agreement providing for the loan, and (iii) that no party other than the Client shall derive any rights from the agreement providing for the loan or have any claim to the loan proceeds;

NOW THEREFORE the parties hereto hereby agree as follows:

1. The following documents attached hereto shall be deemed to form an integral part of this Contract:

(a) The General Conditions of Contract;
(b) The Special Conditions of Contract;
(c) The following Appendices:

Appendix A: Description of Services
Appendix B: Reporting Requirements
Appendix C: Personnel and Sub-Consultant
Appendix D: Cost Estimates in Foreign Currency
Appendix E: Cost Estimates in Local Currency
Appendix F: Duties of the Client
Appendix G: Form of Advance Payments Guarantee
Appendix H: Memorandum of Association of the Consulting Firms

2. The mutual rights and obligations of the Client and the Consultant shall be as set forth in the Contract, in particular:

(a) the Consultant shall carry out the Services in accordance with the provisions of the Contract; and
(b) the Client shall make payments to the Consultant accordance with the provisions of the Contract.

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IN WITNESS WHEREOF, the Parties hereto have caused this Contract to be signed in their respective names as of the day and year first above written.

For and on behalf of *Chief Engineer, World Bank Projects, Odisha on behalf of Works Department, Government of Odisha*

[Er. Om Prakash Patel]

For and on behalf of the Consultant, LEA Associates South Asia Pvt. Ltd. (LASA), India *in association with* S.M. Consultant, as sub-consultant

[Mr. Pradyot Biswas]

Witness:

1. Manoranjan Misra, Executive Engineer, PMU

2.Bindheswar Patra, Superintending Engineer
Office of the EIC (Civil), Odisha

3. Mr. G.P.Sahoo, LASA

4.Mr. Satyakam Sahoo, LASA

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General Conditions of Contract

1. General Provisions

1.1 Definitions

Unless the context otherwise requires, the following terms whenever used in this Contract have the following meanings:

(a) "Applicable Law" means the laws and any other instruments having the force of law in the Government's country, or in such other country as may be specified in the Special Conditions of Contract (SC), as they may be issued and in force from time to time.

(b) "Bank" means the International Bank for Reconstruction and Development, Washington, D.C., U.S.A., or the International Development Association, Washington, D.C., U.S.A.

(c) "Consultant" means any private or public entity that will provide the Services to the Client under the Contract.

(d) "Contract" means the Contract signed by the Parties and all the attached documents listed in its Clause 1, that is these General Conditions (GC), the Special Conditions (SC), and the Appendices.

(e) "Day" means calendar day.

(f) "Effective Date" means the date on which this Contract comes into force and effect pursuant to Clause GC 2.1.

(g) "Foreign Currency" means any currency other than the currency of the Client's country.

(h) "GC" means these General Conditions of Contract.

(i) "Government" means the Government of the Client's country.

(j) "Local Currency" means the currency of the Client's country.

(k) "Member" means any of the entities that make up the joint venture/consortium/association; and "Members" means all these entities.

(l) "Party" means the Client or the Consultant, as the case may be, and "Parties" means both of them.

(m) "Personnel" means professionals and support staff provided by the Consultant or by any Sub-Consultant and assigned to perform the Services or any part thereof; "Foreign Personnel" means such professionals and support staff who at the time of being so provided had their domicile outside the Government's country; "Local Personnel" means such professionals and

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support staff who at the time of being so provided had their domicile inside the Government's country; and "Key Personnel" means the Personnel referred to in Clause GC 4.2(a).

(n) "Reimbursable expenses" means all assignment-related costs other than Consultant's remuneration.

(o) "SC" means the Special Conditions of Contract by which the GC may be amended or supplemented.

(p) "Services" means the work to be performed by the Consultant pursuant to this Contract, as described in Appendix A hereto.

(q) "Sub-Consultant" means any person or entity to whom/which the Consultant subcontracts any part of the Services.

(r) "Third Party" means any person or entity other than the Government, the Client, the Consultant or a Sub-Consultant.

(s) "In writing" means communicated in written form with proof of receipt.

1.2 Relationship Between the Parties

Nothing contained herein shall be construed as establishing a relationship of master and servant or of principal and agent as between the Client and the Consultant. The Consultant, subject to this Contract, has complete charge of Personnel and Sub-Consultant, if any, performing the Services and shall be fully responsible for the Services performed by them or on their behalf hereunder.

1.3 Law Governing Contract

This Contract, its meaning and interpretation, and the relation between the Parties shall be governed by the Applicable Law.

1.4 Language

This Contract has been executed in the language specified in the SC, which shall be the binding and controlling language for all matters relating to the meaning or interpretation of this Contract.

1.5 Headings

The headings shall not limit, alter or affect the meaning of this Contract.

1.6 Notices

1.6.1 Any notice, request or consent required or permitted to be given or made pursuant to this Contract shall be in writing. Any such notice, request or consent shall be deemed to have been given or made when delivered in person to an authorized representative of the Party to whom the communication is addressed, or when sent to such Party at the address specified in the SC.

1.6.2 A Party may change its address for notice hereunder by giving the other Party notice in writing of such change to the address specified in the SC.

1.7 Location

The Services shall be performed at such locations as are specified in

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Appendix A hereto and, where the location of a particular task is not so specified, at such locations, whether in the Government's country or elsewhere, as the Client may approve.

1.8 Authority of Member in Charge

In case the Consultant consists of a joint venture/consortium/ association of more than one entity, the Members hereby authorize the entity specified in the SC to act on their behalf in exercising all the Consultant's rights and obligations towards the Client under this Contract, including without limitation the receiving of instructions and payments from the Client.

1.9 Authorized Representatives

Any action required or permitted to be taken, and any document required or permitted to be executed under this Contract by the Client or the Consultant may be taken or executed by the officials specified in the SC.

1.10 Taxes and Duties

The Consultant, Sub-Consultant and Personnel shall pay such indirect taxes, duties, fees and other impositions levied under the Applicable Law as specified in the SC.

1.11 Fraud and Corruption

If the Client determines that the Consultant and/or its Personnel, sub-contractors, sub-Consultant, services providers and suppliers has engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices, in competing for or in executing the Contract, then the Client may, after giving 14 days notice to the Consultant, terminate the Consultant's employment under the Contract, and the provisions of Clause 2 shall apply as if such expulsion had been made under Sub-Clause 2.9.1(d).

Should any Personnel of the Consultant be determined to have engaged in corrupt, fraudulent, collusive, coercive, or obstructive practice during the execution of the Contract, then that Personnel shall be removed in accordance with Sub-Clause 4.5.

1.11.1 Definitions

For the purposes of this Sub-Clause, the terms set-forth below are defined as follows:

(i) "corrupt practice"[1] is the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;

(ii) "fraudulent practice"[2] 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;

[1] "Another party" refers to a public official acting in relation to the selection process or contract execution. In this context, "public official" includes World Bank staff and employees of other organizations taking or reviewing procurement decisions.

[2] A "party" refers to a public official; the terms "benefit" and "obligation" relate to the selection process or contract execution; and the "act or omission" is intended to influence the selection process or contract execution.

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(iii) "collusive practice"[3] is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;

(iv) "coercive practice"[4] 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;

(v) "obstructive practice" is

(aa) 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

(bb) acts intended to materially impede the exercise of the Bank's inspection and audit rights provided for under Clause 3.6.

1.11.2 Commissions and Fees The Client will require the successful Consultant to disclose any commissions or fees that may have been paid or are to be paid to agents, representatives, or commission agents with respect to the selection process or execution of the contract. The information disclosed must include at least the name and address of the agent, representative, or commission agent, the amount and currency, and the purpose of the commission or fee.

2. COMMENCEMENT, COMPLETION, MODIFICATION AND TERMINATION OF CONTRACT

2.1 Effectiveness of Contract This Contract shall come into force and effect on the date (the "Effective Date") of the Client's notice to the Consultant instructing the Consultant to begin carrying out the Services. This notice shall confirm that the effectiveness conditions, if any, listed in the SC have been met.

2.2 Termination of Contract for Failure to Become Effective If this Contract has not become effective within such time period after the date of the Contract signed by the Parties as specified in the SC, either Party may, by not less than twenty one (21) days written notice to the other Party, declare this Contract to be null and void, and in the event of such a declaration by either Party, neither Party shall have any claim against the other Party with respect hereto.

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[3] "Parties" refers to participants in the selection process (including public officials) attempting to establish bid prices at artificial, non competitive levels.

[4] A "party" refers to a participant in the selection process or contract execution.

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2.3 Commencement of Services The Consultant shall begin carrying out the Services not later than the number of days after the Effective Date specified in the SC.

2.4 Expiration of Contract Unless terminated earlier pursuant to Clause GC 2.9 hereof, this Contract shall expire at the end of such time period after the Effective Date as specified in the SC.

2.5 Entire Agreement This Contract contains all covenants, stipulations and provisions agreed by the Parties. No agent or representative of either Party has authority to make, and the Parties shall not be bound by or be liable for, any statement, representation, promise or agreement not set forth herein.

2.6 Modifications or Variations

(a) Any modification or variation of the terms and conditions of this Contract, including any modification or variation of the scope of the Services, may only be made by written agreement between the Parties. Pursuant to Clause GC 7.2 here of, however, each Party shall give due consideration to any proposals for modification or variation made by the other Party.

(b) In cases of substantial modifications or variations, the prior written consent of the Bank is required.

2.7 Force Majeure

2.7.1 Definition

(a) For the purposes of this Contract, "Force Majeure" means an event which is beyond the reasonable control of a Party, is not foreseeable, is unavoidable, and which makes a Party's performance of its obligations hereunder impossible or so impractical as reasonably to be considered impossible in the circumstances, and includes, but is not limited to, war, riots, civil disorder, earthquake, fire, explosion, storm, flood or other adverse weather conditions, strikes, lockouts or other industrial action (except where such strikes, lockouts or other industrial action are within the power of the Party invoking Force Majeure to prevent), confiscation or any other action by Government agencies.

(b) Force Majeure shall not include (i) any event which is caused by the negligence or intentional action of a Party or such Party's Sub-Consultant or agents or employees, nor (ii) any event which a diligent Party could reasonably have been expected both to take into account at the time of the conclusion of this Contract, and avoid or overcome in the carrying out of its obligations hereunder.

(c) Force Majeure shall not include insufficiency of funds or failure to make any payment required hereunder.

2.7.2 No Breach of Contract The failure of a Party to fulfill any of its obligations hereunder shall not be considered to be a breach of, or default under, this Contract

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insofar as such inability arises from an event of Force Majeure, provided that the Party affected by such an event has taken all reasonable precautions, due care and reasonable alternative measures, all with the objective of carrying out the terms and conditions of this Contract.

2.7.3 Measures to be Taken

(a) A Party affected by an event of Force Majeure shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall take all reasonable measures to minimize the consequences of any event of Force Majeure.

(b) A Party affected by an event of Force Majeure shall notify the other Party of such event as soon as possible, and in any case not later than fourteen (14) days following the occurrence of such event, providing evidence of the nature and cause of such event, and shall similarly give written notice of the restoration of normal conditions as soon as possible.

(c) Any period within which a Party shall, pursuant to this Contract, complete any action or task, shall be extended for a period equal to the time during which such Party was unable to perform such action as a result of Force Majeure.

(d) During the period of their inability to perform the Services as a result of an event of Force Majeure, the Consultant, upon instructions by the Client, shall either:

(i) demobilize, in which case the Consultant shall be reimbursed for additional costs they reasonably and necessarily incurred, and, if required by the Client, in reactivating the Services; or

(ii) continue with the Services to the extent possible, in which case the Consultant shall continue to be paid under the terms of this Contract and be reimbursed for additional costs reasonably and necessarily incurred.

(e) In the case of disagreement between the Parties as to the existence or extent of Force Majeure, the matter shall be settled according to Clause GC 8.

2.8 Suspension

The Client may, by written notice of suspension to the Consultant, suspend all payments to the Consultant hereunder if the Consultant fails to perform any of its obligations under this Contract, including the carrying out of the Services, provided that such notice of suspension (i) shall specify the nature of the failure, and (ii) shall request the Consultant to remedy such failure within a period not exceeding thirty (30) days after receipt by the Consultant of such notice of suspension.

2.9 Termination

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2.9.1 By the Client

The Client may terminate this Contract in case of the occurrence of any of the events specified in paragraphs (a) through (g) of this Clause GC 2.9.1. In such an occurrence the Client shall give a not less than thirty (30) days' written notice of termination to the Consultant, and sixty (60) days' in case of the event referred to in (g).

(a) If the Consultant fails to remedy a failure in the performance of its obligations hereunder, as specified in a notice of suspension pursuant to Clause GC 2.8 hereinabove, within thirty (30) days of receipt of such notice of suspension or within such further period as the Client may have subsequently approved in writing.

(b) If the Consultant becomes (or, if the Consultant consists of more than one entity, if any of its Members becomes) insolvent or bankrupt or enter into any agreements with their creditors for relief of debt or take advantage of any law for the benefit of debtors or go into liquidation or receivership whether compulsory or voluntary.

(c) If the Consultant fails to comply with any final decision reached as a result of arbitration proceedings pursuant to Clause GC 8 hereof.

(d) If the Consultant, in the judgment of the Client, has engaged in corrupt or fraudulent practices in competing for or in executing this Contract.

(e) If the Consultant submits to the Client a false statement which has a material effect on the rights, obligations or interests of the Client.

(f) If, as the result of Force Majeure, the Consultant is unable to perform a material portion of the Services for a period of not less than sixty (60) days.

(g) If the Client, in its sole discretion and for any reason whatsoever, decides to terminate this Contract.

2.9.2 By the Consultant

The Consultant may terminate this Contract, by not less than thirty (30) days' written notice to the Client, in case of the occurrence of any of the events specified in paragraphs (a) through (d) of this Clause GC 2.9.2.

(a) If the Client fails to pay any money due to the Consultant pursuant to this Contract and not subject to dispute pursuant to Clause GC 8 hereof within forty-five (45) days after receiving written notice from the Consultant that such payment is overdue.

(b) If, as the result of Force Majeure, the Consultant is unable to

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perform a material portion of the Services for a period of not less than sixty (60) days.

(c) If the Client fails to comply with any final decision reached as a result of arbitration pursuant to Clause GC 8 hereof.

(d) If the Client is in material breach of its obligations pursuant to this Contract and has not remedied the same within forty-five (45) days (or such longer period as the Consultant may have subsequently approved in writing) following the receipt by the Client of the Consultant's notice specifying such breach.

2.9.3 Cessation of Rights and Obligations Upon termination of this Contract pursuant to Clauses GC 2.2 or GC 2.9 hereof, or upon expiration of this Contract pursuant to Clause GC 2.4 hereof, all rights and obligations of the Parties hereunder shall cease, except (i) such rights and obligations as may have accrued on the date of termination or expiration, (ii) the obligation of confidentiality set forth in Clause GC 3.3 hereof, (iii) the Consultant's obligation to permit inspection, copying and auditing of their accounts and records set forth in Clause GC 3.6 hereof, and (iv) any right which a Party may have under the Applicable Law.

2.9.4 Cessation of Services Upon termination of this Contract by notice of either Party to the other pursuant to Clauses GC 2.9.1 or GC 2.9.2 hereof, the Consultant shall, immediately upon dispatch or receipt of such notice, take all necessary steps to bring the Services to a close in a prompt and orderly manner and shall make every reasonable effort to keep expenditures for this purpose to a minimum. With respect to documents prepared by the Consultant and equipment and materials furnished by the Client, the Consultant shall proceed as provided, respectively, by Clauses GC 3.9 or GC 3.10 hereof.

2.9.5 Payment upon Termination Upon termination of this Contract pursuant to Clauses GC 2.9.1 or GC 2.9.2 hereof, the Client shall make the following payments to the Consultant:

(a) remuneration pursuant to Clause GC 6 hereof for Services satisfactorily performed prior to the effective date of termination, and reimbursable expenditures pursuant to Clause GC 6 hereof for expenditures actually incurred prior to the effective date of termination; and

(b) except in the case of termination pursuant to paragraphs (a) through (e) of Clause GC 2.9.1 hereof, reimbursement of any reasonable cost incidental to the prompt and orderly termination of this Contract including the cost of the return travel of the Personnel and their eligible dependents.

2.9.6 Disputes about Events of If either Party disputes whether an event specified in paragraphs (a) through (f) of Clause GC 2.9.1 or in Clause GC 2.9.2 hereof has occurred, such Party may, within forty-five (45) days after receipt of

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Termination notice of termination from the other Party, refer the matter to Clause GC 8 hereof, and this Contract shall not be terminated on account of such event except in accordance with the terms of any resulting arbitral award.

3. OBLIGATIONS OF THE CONSULTANT

3.1 General

3.1.1 Standard of Performance The Consultant shall perform the Services and carry out their obligations hereunder with all due diligence, efficiency and economy, in accordance with generally accepted professional standards and practices, and shall observe sound management practices, and employ appropriate technology and safe and effective equipment, machinery, materials and methods. The Consultant shall always act, in respect of any matter relating to this Contract or to the Services, as faithful adviser to the Client, and shall at all times support and safeguard the Client's legitimate interests in any dealings with Sub-Consultant or Third Parties.

3.1.2 Law Governing Services The Consultant shall perform the Services in accordance with the Applicable Law and shall take all practicable steps to ensure that any Sub-Consultant, as well as the Personnel of the Consultant and any Sub-Consultant, comply with the Applicable Law. The Client shall notify the Consultant in writing of relevant local customs, and the Consultant shall, after such notification, respect such customs.

3.2 Conflict of Interests

The Consultant shall hold the Client's interests paramount, without any consideration for future work, and strictly avoid conflict with other assignments or their own corporate interests.

3.2.1 Consultant Not to Benefit from Commis-sions, Discounts, etc.

(a) The payment of the Consultant pursuant to Clause GC 6 hereof shall constitute the Consultant's only payment in connection with this Contract and, subject to Clause GC 3.2.2 hereof, the Consultant shall not accept for its own benefit any trade commission, discount or similar payment in connection with activities pursuant to this Contract or in the discharge of its obligations hereunder, and the Consultant shall use its best efforts to ensure that any Sub-Consultant, as well as the Personnel and agents of either of them, similarly shall not receive any such additional payment.

(b) Furthermore, if the Consultant, as part of the Services, has the responsibility of advising the Client on the procurement of goods, works or services, the Consultant shall comply with the Bank's applicable procurement guidelines, and shall at all times exercise such responsibility in the best interest of the Client. Any discounts or commissions obtained by the Consultant in the exercise of such procurement responsibility shall be for the

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account of the Client.

3.2.2 Consultant and Affiliates Not to Engage in Certain Activities

The Consultant agrees that, during the term of this Contract and after its termination, the Consultant and any entity affiliated with the Consultant, as well as any Sub-Consultant and any entity affiliated with such Sub-Consultant, shall be disqualified from providing goods, works or services (other than consulting services) resulting from or directly related to the Consultant's Services for the preparation or implementation of the project.

3.2.3 Prohibition of Conflicting Activities

The Consultant shall not engage, and shall cause their Personnel as well as their Sub-Consultant and their Personnel not to engage, either directly or indirectly, in any business or professional activities that would conflict with the activities assigned to them under this Contract.

3.3 Confidentiality

Except with the prior written consent of the Client, the Consultant and the Personnel shall not at any time communicate to any person or entity any confidential information acquired in the course of the Services, nor shall the Consultant and the Personnel make public the recommendations formulated in the course of, or as a result of, the Services.

3.4 Liability of the Consultant

Subject to additional provisions, if any, set forth in the SC, the Consultant's liability under this Contract shall be provided by the Applicable Law.

3.5 Insurance to be Taken out by the Consultant

The Consultant (i) shall take out and maintain, and shall cause any Sub-Consultant to take out and maintain, at their (or the Sub-Consultant's, as the case may be) own cost but on terms and conditions approved by the Client, insurance against the risks, and for the coverages specified in the SC, and (ii) at the Client's request, shall provide evidence to the Client showing that such insurance has been taken out and maintained and that the current premiums therefore have been paid.

3.6 Accounting, Inspection and Auditing

3.6.1 The Consultant shall keep, and shall cause its Sub-Consultant to keep, accurate and systemic accounts and records in respect of the Contract, in accordance with internationally accepted accounting principles and in such form and detail as will clearly identify relevant time changes and costs.

3.6.2 The Consultant shall permit, and shall cause its Sub-Consultant to permit, the Bank and/or persons appointed by the Bank to inspect all accounts and records relating to the performance of the Contract and the submission of the Proposal to provide the Services, and to have such accounts and records audited by auditors appointed by the Bank if requested by the Bank. The Consultant's attention is drawn to Clause 1.11.1 which provides, inter alia, that acts intended to materially impede the exercise of the Bank's inspection and audit rights provided for under Clause 3.6 constitute a prohibited practice

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subject to contract termination (as well as to a determination of ineligibility pursuant to the Bank's prevailing sanctions procedures).

3.7 Consultant's Actions Requiring Client's Prior Approval

The Consultant shall obtain the Client's prior approval in writing before taking any of the following actions:

(a) Any change or addition to the Personnel listed in Appendix C.

(b) Subcontracts: the Consultant may subcontract work relating to the Services to an extent and with such experts and entities as may be approved in advance by the Client. Notwithstanding such approval, the Consultant shall retain full responsibility for the Services. In the event that any Sub-Consultant are found by the Client to be incompetent or incapable in discharging assigned duties, the Client may request the Consultant to provide a replacement, with qualifications and experience acceptable to the Client, or to resume the performance of the Services itself.

(c) Any other action that may be specified in the SC.

3.8 Reporting Obligations

The Consultant shall submit to the Client the reports and documents specified in Appendix B hereto, in the form, in the numbers and within the time periods set forth in the said Appendix. Final reports shall be delivered in CD ROM in addition to the hard copies specified in said Appendix.

3.9 Documents Prepared by the Consultant to be the Property of the Client

All plans, drawings, specifications, designs, reports, other documents and software prepared by the Consultant for the Client under this Contract shall become and remain the property of the Client, and the Consultant shall, not later than upon termination or expiration of this Contract, deliver all such documents to the Client, together with a detailed inventory thereof. The Consultant may retain a copy of such documents and software, and use such software for their own use with prior written approval of the Client. If license agreements are necessary or appropriate between the Consultant and third parties for purposes of development of any such computer programs, the Consultant shall obtain the Client's prior written approval to such agreements, and the Client shall be entitled at its discretion to require recovering the expenses related to the development of the program(s) concerned. Other restrictions about the future use of these documents and software, if any, shall be specified in the SC.

3.10 Equipment, Vehicles and Materials Furnished by the Client

Equipment, vehicles and materials made available to the Consultant by the Client, or purchased by the Consultant wholly or partly with funds provided by the Client, shall be the property of the Client and shall be marked accordingly. Upon termination or expiration of this Contract, the Consultant shall make available to the Client an inventory of such equipment, vehicles and materials and shall dispose of such equipment and materials in accordance with the

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Client's instructions. While in possession of such equipment, vehicles and materials, the Consultant, unless otherwise instructed by the Client in writing, shall insure them at the expense of the Client in an amount equal to their full replacement value.

3.11 Equipment and Materials Provided by the Consultant

Equipment or materials brought into the Government's country by the Consultant and the Personnel and used either for the Project or personal use shall remain the property of the Consultant or the Personnel concerned, as applicable.

4. CONSULTANT'S PERSONNEL AND SUB-CONSULTANT

4.1 General

The Consultant shall employ and provide such qualified and experienced Personnel and Sub-Consultant as are required to carry out the Services.

4.2 Description of Personnel

(a) The title, agreed job description, minimum qualification and estimated period of engagement in the carrying out of the Services of each of the Consultant's Key Personnel are described in Appendix C. If any of the Key Personnel has already been approved by the Client, his/her name is listed as well.

(b) If required to comply with the provisions of Clause GC 3.1.1 hereof, adjustments with respect to the estimated periods of engagement of Key Personnel set forth in Appendix C may be made by the Consultant by written notice to the Client, provided (i) that such adjustments shall not alter the originally estimated period of engagement of any individual by more than 10% or one week, whichever is larger, and (ii) that the aggregate of such adjustments shall not cause payments under this Contract to exceed the ceilings set forth in Clause GC 6.1(b) of this Contract. Any other such adjustments shall only be made with the Client's written approval.

(c) If additional work is required beyond the scope of the Services specified in Appendix A, the estimated periods of engagement of Key Personnel set forth in Appendix C may be increased by agreement in writing between the Client and the Consultant. In case where payments under this Contract exceed the ceilings set forth in Clause GC 6.1(b) of this Contract, this will be explicitly mentioned in the agreement.

4.3 Approval of Personnel

The Key Personnel and Sub-Consultant listed by title as well as by name in Appendix C are hereby approved by the Client. In respect of other Personnel which the Consultant proposes to use in the carrying out of the Services, the Consultant shall submit to the Client for review and approval a copy of their Curricula Vitae (CVs). If the Client does not object in writing (stating the reasons for the objection) within twenty-one (21) days from the date of receipt of

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such CVs, such Personnel shall be deemed to have been approved by the Client.

4.4 Working Hours, Overtime, Leave, etc.

(a) Working hours and holidays for Key Personnel are set forth in Appendix C hereto. To account for travel time, Foreign Personnel carrying out Services inside the Client's country shall be deemed to have commenced, or finished work in respect of the Services such number of days before their arrival in, or after their departure from the Client's country as is specified in Appendix C hereto.

(b) The Key Personnel shall not be entitled to be paid for overtime nor to take paid sick leave or vacation leave except as specified in Appendix C hereto, and except as specified in such Appendix, the Consultant's remuneration shall be deemed to cover these items. All leave to be allowed to the Personnel is included in the staff-months of service set forth in Appendix C. Any taking of leave by Personnel shall be subject to the prior approval by the Consultant who shall ensure that absence for leave purposes will not delay the progress and adequate supervision of the Services.

4.5 Removal and/or Replacement of Personnel

(a) Except as the Client may otherwise agree, no changes shall be made in the Personnel. If, for any reason beyond the reasonable control of the Consultant, such as retirement, death, medical incapacity, among others, it becomes necessary to replace any of the Personnel, the Consultant shall forthwith provide as a replacement a person of equivalent or better qualifications.

(b) If the Client (i) finds that any of the Personnel has committed serious misconduct or has been charged with having committed a criminal action, or (ii) has reasonable cause to be dissatisfied with the performance of any of the Personnel, then the Consultant shall, at the Client's written request specifying the grounds therefore, forthwith provide as a replacement a person with qualifications and experience acceptable to the Client.

(c) Any of the Personnel provided as a replacement under Clauses (a) and (b) above, as well as any reimbursable expenditures (including expenditures due to the number of eligible dependents) the Consultant may wish to claim as a result of such replacement, shall be subject to the prior written approval by the Client. The rate of remuneration applicable to a replacement person will be obtained by multiplying the rate of remuneration applicable to the replaced person by the ratio between the monthly salary to be effectively paid to the replacement person and the average salary effectively paid to the replaced person in the period of six months prior to the

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date of replacement. Except as the Client may otherwise agree, (i) the Consultant shall bear all additional travel and other costs arising out of or incidental to any removal and/or replacement, and (ii) the remuneration to be paid for any of the Personnel provided as a replacement shall not exceed the remuneration which would have been payable to the Personnel replaced.

4.6 Resident Project Manager

If required by the SC, the Consultant shall ensure that at all times during the Consultant's performance of the Services in the Government's country a resident project manager, acceptable to the Client, shall take charge of the performance of such Services.

5. OBLIGATIONS OF THE CLIENT

5.1 Assistance and Exemptions

Unless otherwise specified in the SC, the Client shall use its best efforts to ensure that the Government shall:

(a) Provide the Consultant, Sub-Consultant and Personnel with work permits and such other documents as shall be necessary to enable the Consultant, Sub-Consultant or Personnel to perform the Services.

(b) Arrange for the Personnel and, if appropriate, their eligible dependents to be provided promptly with all necessary entry and exit visas, residence permits, exchange permits and any other documents required for their stay in the Government's country.

(c) Facilitate prompt clearance through customs of any property required for the Services and of the personal effects of the Personnel and their eligible dependents.

(d) Issue to officials, agents and representatives of the Government all such instructions as may be necessary or appropriate for the prompt and effective implementation of the Services.

(e) Exempt the Consultant and the Personnel and any Sub-Consultant employed by the Consultant for the Services from any requirement to register or obtain any permit to practice their profession or to establish themselves either individually or as a corporate entity according to the Applicable Law.

(f) Grant to the Consultant, any Sub-Consultant and the Personnel of either of them the privilege, pursuant to the Applicable Law, of bringing into the Government's country reasonable amounts of foreign currency for the purposes of the Services or for the personal use of the Personnel and their dependents and of withdrawing any such amounts as may be earned

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therein by the Personnel in the execution of the Services.

(g) Provide to the Consultant, Sub-Consultant and Personnel any such other assistance as may be specified in the SC.

5.2 Access to Land

The Client warrants that the Consultant shall have, free of charge, unimpeded access to all land in the Government's country in respect of which access is required for the performance of the Services. The Client will be responsible for any damage to such land or any property thereon resulting from such access and will indemnify the Consultant and each of the Personnel in respect of liability for any such damage, unless such damage is caused by the default or negligence of the Consultant or any Sub-Consultant or the Personnel of either of them.

5.3 Change in the Applicable Law Related to Taxes and Duties

If, after the date of this Contract, there is any change in the Applicable Law with respect to taxes and duties which increases or decreases the cost incurred by the Consultant in performing the Services, then the remuneration and reimbursable expenses otherwise payable to the Consultant under this Contract shall be increased or decreased accordingly by agreement between the Parties hereto, and corresponding adjustments shall be made to the ceiling amounts specified in Clause GC 6.1(b).

5.4 Services, Facilities and Property of the Client

(a) The Client shall make available to the Consultant and the Personnel, for the purposes of the Services and free of any charge, the services, facilities and property described in Appendix F at the times and in the manner specified in said Appendix F.

(b) In case that such services, facilities and property shall not be made available to the Consultant as and when specified in Appendix F, the Parties shall agree on (i) any time extension that it may be appropriate to grant to the Consultant for the performance of the Services, (ii) the manner in which the Consultant shall procure any such services, facilities and property from other sources, and (iii) the additional payments, if any, to be made to the Consultant as a result thereof pursuant to Clause GC 6.1(c) hereinafter.

5.5 Payment

In consideration of the Services performed by the Consultant under this Contract, the Client shall make to the Consultant such payments and in such manner as is provided by Clause GC 6 of this Contract.

5.6 Counterpart Personnel

(a) The Client shall make available to the Consultant free of charge such professional and support counterpart personnel, to be nominated by the Client with the Consultant's advice, if specified in Appendix F.

(b) If counterpart personnel are not provided by the Client to the Consultant as and when specified in Appendix F, the Client

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and the Consultant shall agree on (i) how the affected part of the Services shall be carried out, and (ii) the additional payments, if any, to be made by the Client to the Consultant as a result thereof pursuant to Clause GC 6.1(c) hereof.

(c) Professional and support counterpart personnel, excluding Client's liaison personnel, shall work under the exclusive direction of the Consultant. If any member of the counterpart personnel fails to perform adequately any work assigned to such member by the Consultant that is consistent with the position occupied by such member, the Consultant may request the replacement of such member, and the Client shall not unreasonably refuse to act upon such request.

6. PAYMENTS TO THE CONSULTANT

6.1 Cost Estimates; Ceiling Amount

(a) An estimate of the cost of the Services payable in foreign currency is set forth in Appendix D. An estimate of the cost of the Services payable in local currency is set forth in Appendix E.

(b) Except as may be otherwise agreed under Clause GC 2.6 and subject to Clause GC 6.1(c), payments under this Contract shall not exceed the ceilings in foreign currency and in local currency specified in the SC.

(c) Notwithstanding Clause GC 6.1(b) hereof, if pursuant to any of the Clauses GC 5.3, 5.4 or 5.6 hereof, the Parties shall agree that additional payments in local and/or foreign currency, as the case may be, shall be made to the Consultant in order to cover any necessary additional expenditures not envisaged in the cost estimates referred to in Clause GC 6.1(a) above, the ceiling or ceilings, as the case may be, set forth in Clause GC 6.1(b) above shall be increased by the amount or amounts, as the case may be, of any such additional payments.

6.2 Remuneration and Reimbursable Expenses

(a) Subject to the ceilings specified in Clause GC 6.1(b) hereof, the Client shall pay to the Consultant (i) remuneration as set forth in Clause GC 6.2(b) hereunder, and (ii) reimbursable expenses as set forth in Clause GC 6.2(c) hereunder. Unless otherwise specified in the SC, said remuneration shall be fixed for the duration of the Contract.

(b) Payment for the Personnel shall be determined on the basis of time actually spent by such Personnel in the performance of the Services after the date determined in accordance with Clause GC 2.3 and Clause SC 2.3 (or such other date as the Parties shall agree in writing), at the rates referred to in Clause SC 6.2(b), and subject to price adjustment, if any, specified in Clause SC 6.2(a).

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(c) Reimbursable expenses actually and reasonably incurred by the Consultant in the performance of the Services, as specified in Clause SC 6.2(c).

(d) The remuneration rates referred to under paragraph (b) here above shall cover: (i) such salaries and allowances as the Consultant shall have agreed to pay to the Personnel as well as factors for social charges and overhead (bonuses or other means of profit-sharing shall not be allowed as an element of overhead), (ii) the cost of backstopping by home office staff not included in the Personnel listed in Appendix C, and (iii) the Consultant's fee.

(e) Any rates specified for Personnel not yet appointed shall be provisional and shall be subject to revision, with the written approval of the Client, once the applicable salaries and allowances are known.

(f) Payments for periods of less than one month shall be calculated on an hourly basis for actual time spent in the Consultant's home office and directly attributable to the Services (one hour being equivalent to $1/176^{th}$ of a month) and on a calendar-day basis for time spent away from home office (one day being equivalent to $1/30^{th}$ of a month).

6.3 Currency of Payment

Foreign currency payments shall be made in the currency or currencies specified in the SC, and local currency payments shall be made in the currency of the Client's country.

6.4 Mode of Billing and Payment

Billings and payments in respect of the Services shall be made as follows:

(a) Within the number of days after the Effective Date specified in the SC, the Client shall cause to be paid to the Consultant advance payments in foreign currency and in local currency as specified in the SC. When the SC indicate advance payment, this will be due after provision by the Consultant to the Client of an advance payment guarantee acceptable to the Client in an amount (or amounts) and in a currency (or currencies) specified in the SC. Such guarantee (i) to remain effective until the advance payment has been fully set off, and (ii) to be in the form set forth in Appendix G hereto, or in such other form as the Client shall have approved in writing. The advance payments will be set off by the Client in equal installments against the statements for the number of months of the Services specified in the SC until said advance payments have been fully set off.

(b) As soon as practicable and not later than fifteen (15) days after the end of each calendar month during the period of the Services, or after the end of each time intervals otherwise

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indicated in the SC, the Consultant shall submit to the Client, in duplicate, itemized statements, accompanied by copies of invoices, vouchers and other appropriate supporting materials, of the amounts payable pursuant to Clauses GC 6.3 and GC 6.4 for such month, or any other period indicated in the SC. Separate statements shall be submitted in respect of amounts payable in foreign currency and in local currency. Each statement shall distinguish that portion of the total eligible costs which pertains to remuneration from that portion which pertains to reimbursable expenses.

(c) The Client shall pay the Consultant's statements within sixty (60) days after the receipt by the Client of such statements with supporting documents. Only such portion of a statement that is not satisfactorily supported may be withheld from payment. Should any discrepancy be found to exist between actual payment and costs authorized to be incurred by the Consultant, the Client may add or subtract the difference from any subsequent payments. Interest at the annual rate specified in the SC shall become payable as from the above due date on any amount due by, but not paid on, such due date.

(d) The final payment under this Clause shall be made only after the final report and a final statement, identified as such, shall have been submitted by the Consultant and approved as satisfactory by the Client. The Services shall be deemed completed and finally accepted by the Client and the final report and final statement shall be deemed approved by the Client as satisfactory ninety (90) calendar days after receipt of the final report and final statement by the Client unless the Client, within such ninety (90) day period, gives written notice to the Consultant specifying in detail deficiencies in the Services, the final report or final statement. The Consultant shall thereupon promptly make any necessary corrections, and thereafter the foregoing process shall be repeated. Any amount, which the Client has paid or caused to be paid in accordance with this Clause in excess of the amounts actually payable in accordance with the provisions of this Contract, shall be reimbursed by the Consultant to the Client within thirty (30) days after receipt by the Consultant of notice thereof. Any such claim by the Client for reimbursement must be made within twelve (12) calendar months after receipt by the Client of a final report and a final statement approved by the Client in accordance with the above.

(e) All payments under this Contract shall be made to the accounts of the Consultant specified in the SC.

(f) Payments in respect of remuneration or reimbursable expenses, which exceed the cost estimates for these items as set forth in

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Appendices D and E, may be charged to the respective contingencies provided for foreign and local currencies only if such expenditures were approved by the Client prior to being incurred.

(g) With the exception of the final payment under (d) above, payments do not constitute acceptance of the Services nor relieve the Consultant of any obligations hereunder.

7. Fairness and Good Faith

7.1 Good Faith

The Parties undertake to act in good faith with respect to each other's rights under this Contract and to adopt all reasonable measures to ensure the realization of the objectives of this Contract.

7.2 Operation of the Contract

The Parties recognize that it is impractical in this Contract to provide for every contingency which may arise during the life of the Contract, and the Parties hereby agree that it is their intention that this Contract shall operate fairly as between them, and without detriment to the interest of either of them, and that, if during the term of this Contract either Party believes that this Contract is operating unfairly, the Parties will use their best efforts to agree on such action as may be necessary to remove the cause or causes of such unfairness, but no failure to agree on any action pursuant to this Clause shall give rise to a dispute subject to arbitration in accordance with Clause GC 8 hereof.

8. Settlement of Disputes

8.1 Amicable Settlement

If either Party objects to any action or inaction of the other Party, the objecting Party may file a written Notice of Dispute to the other Party providing in detail the basis of the dispute. The Party receiving the Notice of Dispute will consider it and respond in writing within 14 days after receipt. If that Party fails to respond within 14 days, or the dispute cannot be amicably settled within 14 days following the response of that Party, Clause GC 8.2 shall apply.

8.2 Dispute Resolution

Any dispute between the Parties as to matters arising pursuant to this Contract that cannot be settled amicably according to Clause GC 8.1 may be submitted by either Party for settlement in accordance with the provisions specified in the SC.

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III. Special Conditions of Contract

Number of GC Clause	Amendments of, and Supplements to, Clauses in the General Conditions of Contract
1.1(a)	The words "in the Government's country" are amended to read "in India"
1.4	The language is : English.
1.6	The addresses are: Client : Chief Engineer, World Bank Projects, Odisha on behalf of Works Department, Government of Orissa Attention : Er. Om Prakash Patel, Chief Engineer, World Bank Projects, Odisha Telephone : +91 674 2396783 Facsimile : +91 674 239 0080 Consultant : LEA Associates South Asia Pvt. Ltd. (LASA) in association with S.M.Consultants, Bhubaneswar B-1/E-27, Mohan Cooperative Industrial Estate, Mathura Road, New Delhi- 110044 (India) Attention : Pradyot Biswas, Associate Director, LASA Facsimile : +91-11-4167 8659, 2697 1062
1.8	The Member in Charge is LEA Associates South Asia Pvt. Ltd. (LASA).
1.9	The Authorized Representatives are: For the Client: Chief Engineer, World Bank Projects, Odisha For the Consultant: Pradyot Biswas, Associate Director, LASA

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1.10 1.10.1	<u>For domestic Consultant/sub-Consultant / personnel and foreign Consultant/personnel who are permanent residents in India</u> The Consultant, Sub-Consultant and the Personnel shall pay the taxes, duties, fees, levies and other impositions levied under the existing, amended or enacted laws during life of this contract and the client shall perform such duties in regard to the deduction of such tax as may be lawfully imposed.
1.10.2	<u>For foreign Consultancy firms</u> The Client warrants that the Client shall reimburse the Consultant, the Sub-Consultant and the Personnel for any indirect taxes, duties, fees, levies and other impositions imposed, under the Applicable Law, on the Consultant, the Sub-Consultant and the Personnel in respect of: (a) any payments whatsoever made by the client directly to the Consultant, Sub-Consultant and the Personnel (other than nationals or permanent residents of the Government's country), in connection with the carrying out of the Services; (b) any equipment, materials and supplies brought into the Government's country by the Consultant or Sub-Consultant for the purpose of carrying out the Services and which, after having been brought into such territories, will be subsequently withdrawn there from by them; (c) any equipment imported for the purpose of carrying out the Services and paid for out of funds provided by the Client and which is treated as property of the Client; (d) any property brought into the Government's country by the Consultant, any Sub-Consultant or the Personnel (other than nationals or permanent residents of the Government's country), or the eligible dependents of such Personnel for their personal use and which will subsequently be withdrawn there from by them upon their respective departure from the Government's country, provided that: (1) the Consultant, Sub-Consultant and Personnel, and their eligible dependents, shall follow the usual customs procedures of the Government's country in importing property into the Government's country; and (2) if the Consultant, Sub-Consultant or Personnel, or their eligible dependents, do not withdraw but dispose of any property in the Government's country upon which customs duties and taxes have been exempted, the Consultant, Sub-Consultant or Personnel, as the case may

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	be, (i) shall bear such customs duties and taxes in conformity with the regulations of the Government's country, or (ii) shall reimburse them to the Client if they were paid by the Client at the time the property in question was brought into the Government's country.
1.10.3	a) The client shall reimburse Service Tax payable in India as per Applicable Law. The consultant shall register itself for service tax with appropriate authority in India & shall provide the registration Number to the client. b) Tax will be deducted at source as per the prevailing Income Tax Rules.
2.1	The effectiveness conditions are the following: [a] Client's approval of Consultant's proposals for appointment of specified key staff members; and [b] approval of the Contract by the Bank
2.2	The time period shall be *6 months* or such other time period as the parties may agree in writing.
2.3	The time period shall be *1 month* or such other time period as the parties may agree in writing.
2.4	The time period shall be *41 months* or such other time period as the parties may agree in writing.
3.4	"3.4 Limitation of the Consultant's Liability towards the Client (a) Except in case of gross negligence or willful misconduct on the part of the Consultant or on the part of any person or firm acting on behalf of the Consultant in carrying out the Services, the Consultant, with respect to damage caused by the Consultant to the Client's property, shall not be liable to the Client: (i) for any indirect or consequential loss or damage; and (ii) for any direct loss or damage that exceeds by *three* times the total value of the Contract. (b) This limitation of liability shall not affect the Consultant's liability, if any, for damage to Third Parties caused by the Consultant or any person or firm acting on behalf of the Consultant in carrying out the Services."

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3.5	The risks and the coverage shall be as follows: (a) Third Party motor vehicle liability insurance in respect of motor vehicles operated in the Government's country by the Consultant or its Personnel or any Sub-Consultant or their Personnel, with a minimum coverage as per Motor Vehicles Act 1988; (b) Third Party liability insurance, with a minimum coverage of *Rs.20,00,000 (Rupees Twenty Lakhs)* (After each occurrence the Consultant shall repay premium necessary to make insurance valid for this amount always) ; (c) professional liability insurance, with a minimum coverage of *Two times the Contract Price*; (d) employer's liability and workers' compensation insurance in respect of the Personnel of the Consultant and of any Sub-Consultant, in accordance with the relevant provisions of the Applicable Law, as well as, with respect to such Personnel, any such life, health, accident, travel or other insurance as may be appropriate; and (e) insurance against loss of or damage to (i) equipment purchased in whole or in part with funds provided under this Contract, (ii) the Consultant's property used in the performance of the Services, and (iii) any documents prepared by the Consultant in the performance of the Services.
3.7 (c)	The other actions are: *Taking any action by the designated "Engineer" of the Consultant, for which action, pursuant to such civil works contract, the written approval of the Client as "Employer" is required.*
3.9	The Consultant shall not use these documents and software for purposes unrelated to this Contract without the prior written approval of the Client.
4.6	The person designated as *Resident Engineer of each of the Civil Work Packages OSRP-CW-P04A & P04B* in Appendix C shall serve in that capacity, as specified in Clause GC 4.6
6.1(b)	The ceiling in foreign currency or currencies is: NIL The ceiling in local currency is: INR 15,34,60,445 (Cost INR 13,65,79,250 and service tax @ 12.36%)
6.2(a)	Payments for remuneration made in accordance with Clause GC 6.2(a) in local currency shall be adjusted as follows:

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	(a) Remuneration paid in local currency pursuant to the rates set forth in Appendix E shall be adjusted every 12 months (and, for the first time, with effect for the remuneration earned in the 13th calendar month after the date of the Contract) by applying the following formula: $R_l = R_{lo} \times \left[0.1 + 0.9 \frac{I_l}{I_{lo}} \right]$ where R_l is the adjusted remuneration, R_{lo} is the remuneration payable on the basis of the rates set forth in Appendix E for remuneration payable in local currency, I_l is the official index for salaries in the Client's country for the first month for which the adjustment is to have effect and, I_{lo} is the official index for salaries in the Client's country for the month of the date of the Contract. (Index for "State /UT wise General Consumer Price Index (Urban) for Orissa published by Central Statistics Office, Ministry of Statistics And Programme Implementation, Government of India shall be considered for adoption)
6.2(b)	The rates for Foreign Personnel are set forth in Appendix D, and the rates for Local Personnel are set forth in Appendix E.
6.2(c)	The Reimbursable expenses to be paid in foreign currency are set forth in Appendix D, and the Reimbursable expenses to be paid in local currency are set forth in Appendix E.
6.3	The foreign currency [currencies] shall be the following: *Not Applicable*
6.4(a)	The following provisions shall apply to the advance payment and the advance payment guarantee: (1) An advance payment of *5% of Total Local Remuneration payable under the Contract* in local currency shall be made within *90* days after the Effective Date. The advance payment will be set off by the Client in equal installments against the statements for the first *12* months of the Services until the advance payment has been fully set off. (2) The advance payment guarantee shall be in the amount in the local currency for the advance payment.
6.4(c)	The Client shall pay the Consultant's statements within thirty (30) days after the receipt by the Client of such statements with supporting documents.

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	The interest rate is: - For foreign currency : LIBOR plus 2% , per annum - for local currency: 8 % per annum
6.4(e)	The accounts are: for local currency: Name : LEA Associates South Asia Pvt. Ltd. (LASA) Canara Bank Account No. 0349261002986, Canara Bank, Maharani Bagh Branch, 4, Sidhartha Enclave Commercial Complex, Maharani Bagh, Ashram Chowk, New Delhi-110014 IFSC Code : CNRB0000349 Swift Code:CNRBINBBMHB
8.2	Disputes shall be settled by arbitration in accordance with the following provisions: 1. Selection of Arbitrators. Each dispute submitted by a Party to arbitration shall be heard by a sole arbitrator or an arbitration panel composed of three arbitrators, in accordance with the following provisions: (a) Where the Parties agree that the dispute concerns a technical matter, they may agree to appoint a sole arbitrator or, failing agreement on the identity of such sole arbitrator within thirty (30) days after receipt by the other Party of the proposal of a name for such an appointment by the Party who initiated the proceedings, either Party may apply to *Secretary General, Indian Roads Congress, New Delhi,* for a list of not fewer than five nominees and, on receipt of such list, the Parties shall alternately strike names there from, and the last remaining nominee on the list shall be the sole arbitrator for the matter in dispute. If the last remaining nominee has not been determined in this manner within sixty (60) days of the date of the list, *Secretary General, Indian Roads Congress, New Delhi,* shall appoint, upon the request of either Party and from such list or otherwise, a sole arbitrator for the matter in dispute. (b) Where the Parties do not agree that the dispute concerns a technical matter, the Client and the Consultant shall each appoint one arbitrator, and these two arbitrators shall jointly appoint a third arbitrator, who shall chair the arbitration panel. If the arbitrators named by the Parties do not succeed in appointing a third arbitrator within thirty (30)

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	days after the latter of the two arbitrators named by the Parties has been appointed, the third arbitrator shall, at the request of either Party, be appointed by *Secretary General, Indian Roads Congress, New Delhi.*
	(c) If, in a dispute subject to Clause SC 8.2 1.(b), one Party fails to appoint its arbitrator within thirty (30) days after the other Party has appointed its arbitrator, the Party which has named an arbitrator may apply to the *Secretary General, Indian Roads Congress, New Delhi* to appoint a sole arbitrator for the matter in dispute, and the arbitrator appointed pursuant to such application shall be the sole arbitrator for that dispute. 2. Rules of Procedure. Except as stated herein, arbitration proceedings shall be conducted in accordance with the rules of procedure for arbitration of the United Nations Commission on International Trade Law (UNCITRAL) as in force on the date of this Contract. 3. Substitute Arbitrators. If for any reason an arbitrator is unable to perform his function, a substitute shall be appointed in the same manner as the original arbitrator. 4. Nationality and Qualifications of Arbitrators. The sole arbitrator or the third arbitrator appointed pursuant to paragraphs (a) through (c) of Clause SC 8.2 1 hereof shall be an internationally recognized legal or technical expert with extensive experience in relation to the matter in dispute.
	5. Miscellaneous. In any arbitration proceeding hereunder: (a) proceedings shall, unless otherwise agreed by the Parties, be held in BHUBANESWAR, INDIA; (b) the English language shall be the official language for all purposes; and (c) the decision of the sole arbitrator or of a majority of the arbitrators (or of the third arbitrator if there is no such majority) shall be final and binding and shall be enforceable in any court of competent jurisdiction, and the Parties hereby waive any objections to or claims of immunity in respect of such enforcement.

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IV. Appendices

Appendix A – Description of Services

1.1. BACKGROUND

.1 Details of the Project

The Odisha State Roads Project (OSRP) has been initiated by the Government of Odisha for an amount of about US$ 350million with provisions for construction of State Highways in various part of the State, along with other Institutional Strengthening and Capacity Building components. The road construction part consists of new construction/ reconstruction of different State Highways and MDRs of the State for about 310 km. Of this, civil works for approximately 204 Km of roads has already commenced since early 2009 under Year-1 programme of OSRP and the balance 106 Km road will be taken up for execution as Year-2 programme besides rehabilitation of other roads.

The current assignment is about providing consultancy services for Construction Supervision of the construction package for the Year-2 road as provide below.

Consultancy Services for Construction Supervision of Jagatpur Chandbali Road (0/0 km to 99/0 km of MDR and 52/0 km to 45/0 km of SH 9) of Odisha State Roads Project

The details of the road, where the construction shall be taken up, are provided below.

Package No.s	*OSRP-CW-Y2-04A and OSRP-CW-Y2-04B*
Name of the Corridor	*Jagatpur – Chandbali, consisting of MDR from km 0/0 to 99/0 and SH 9 from km 45/0 to 52/0 km*
Length of the Road	*106 km(49km & 57 km in two packages)*
Pre ContructionPeriod	*2 Months*
Period of Construction	*27 months*
End of Defect Liability Period	*12 months after Construction*
Total Assignment of Consultancy	*About 41 months*

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The location of the corridor is shown in the indicative map attached at Annexure -1 .

.2 Project Funding

Out of the total requirement of US$ 350 million, the Government of Odisha shall receive loan of about US$250 million from the International Bank for Reconstruction and Development (World Bank) through Government of India towards part of the project fund for OSRP. The Loan has been approved by the World Bank vide no. 7577-IN. The balance fund will be mobilized through the annual budgets of Government of Odisha.

The Government of Odisha now intends to apply a part of the project fund towards the expenditure under the contract for *Consultancy Services for Construction Supervision* under description in this document.

.3 Geographical & Climatic Information of the packages

This road is located in the eastern part of Odisha. The total length of the road is 106 km. The road passes completely through plain terrain. Major stretch of road, about 99 km, is located in the districts of Cuttack and Kendrapada, and a small stretch of 7 km is located in the district of Bhadrak.

This part of the State experiences average rainfall of about 1600mm per annum. Bulk of the rainfall occurs during June to October during the monsoon period. The terrain and topography do not allow the water to recede very quickly and a major part of the area remains under the spate of flood each year. Principal rivers in the area are river Brahmani, Kharashrota and Baitarani, which cross the project road at the km 74/000, km 89/500 and km 99/0 of the MDR respectively.

Highest temperature in the area during summer is 45^0 Celsius and the temperature dips down to 7^0 Celsius during winter season.

This stretch passes through major human settlements at Jagatpur, Salipur, Kendrapada, Pattamundai, Aul, Rajkanika and Chandbali. A bye pass for Pattamundai town has been proposed for construction.

.4 Scope of Civil Works Contract

(a) The civil works for the above corridors consist of new construction and/or widening and strengthening *road* of the existing single or intermediate-lane width to double lane width with paved / hard shoulders for about 106 km from Jagatpur to Chandbali (0/0 km to 99/0 km of MDR and 52/0 km to 45/0 km of SH 9) in the State of Odisha, India. The civil works for the 106 km shall be executed under two contracts i.e, in 49 km and 57 km stretches.

The road works shall include, but not limited to, the following items.

a. Improvement of road geometry mostly on existing alignments

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b. Raising & Widening of Embankments considering drainage and geometry

c. Construction of Flexible pavements with Sub base, Base and Bituminous courses for about two third of the total project length

d. Construction of Rigid pavements in discrete stretches for about one third of the project length; in the built up areas and at the Toll Plaza

e. Providing road signs and road markings and traffic safety features

f. Construction of a bye pass at Pattamundai

(b) For improvement to drainage in the area, the work comprises new construction and/or rehabilitation and replacement of a number of *cross drainage structures* on the road including major and minor bridges, and roadside drains.

The works for cross drainage structures shall include, but not limited to, the following items .

a. Widening, repair and rehabilitation of old bridges
b. Construction of new minor bridges and culverts
c. Widening of existing structurally safe and functional culverts

Besides the cross drainage structures, there will be earth retaining structures, drains and appurtenances.

(c) Traffic management during the construction activities shall be undertaken. The works shall include, but not limited to, the *following items .*

a. Traffic diversion and management during the construction
b. Routine Maintenance of Project Corridors during the construction period
c. Construction and Maintenance of Diversion roads

(d) Environment management during the construction activities shall be undertaken. The works shall include, but not limited to, the following items .

a. Construction of transverse structures in the road to be used for animals
b. Construction of structures for mitigation of environmental issues
c. Management of environmental protection measures
d. Ensuring due observation of Social & Environmental Safeguards/ policies/ clauses/ guidelines provided in the civil works contract

The Works Contract documents are based on World Bank's Standard Bidding Document for ICB works (May 2006, revised August, 2010) as modified / supplemented by the Particular Conditions for ICB procured contracts.

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1.2. OBJECTIVES OF THE ASSIGNMENT

The objectives of the consultancy service is to ensure timely completion of civil works with due regards to sound contract management, quality, safety and environment practices in accordance with the contract provisions.

1.3. SCOPE OF CONSULTANCY SERVICES

M/s LEA Associates South Asia Pvt. Ltd. in association with M/s S.M.Consultant as sub-consultant, as the agency providing consultancy services to carry out the Construction Supervision of the above civil works, shall be referred to as '**Consultant**' here after. The Consultant shall provide construction supervision to the Construction of the road from Jagatpur to Chandbali, in the State of Odisha, India to be executed through two civil works package contracts.

The broad scope of services shall include but not limited to the following.

a. The Consultant shall provide **installation of an online computerized documentation control system** to manage all inspection requests, billing and contractual correspondences.
b. The Consultant shall establish **computer aided Project Management & Monitoring System and project management softwares for** .monitoring and control of the project activities and deliverables .
c. The Consultant shall ensure quality requirements and standards for the project and document for necessary compliance through the **Quality Management Plan**.
d. The Consultant shall ensure that all the components of the work are carried out in full compliance with the **Civil Works Contract** regarding engineering design, technical specifications and contract conditions.
e. The Consultant shall ensure **adequate and correct documentation** of the project for dealing with legal and contractual aspects of the civil works.
f. The Consultant required to provide particular emphasis on **safety** are adopted during construction.

The OWD, through a DPR Consultant, has made all engineering designs, prepared bid documents. The Consultant are required to develop proper understanding of the project design and drawings. Within the first two months of Services, the Consultant shall review the DPR documents, EMPs, Engineering reports pertaining to the Construction package and provide the OWD with the necessary corrective measures. To mitigate major changes, the Consultant shall induct one Highway Design Engineer and one Bridge Design Engineer, whose input shall be utilized in phased manner in consultation with the Employer during the pre-construction stage and during execution.

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The Consultant shall conduct appropriate field reconnaissance for examining the provisions of the Bidding Documents, Engineering Design Reports, Environment Management Plan and advice the Client and/or his representative for necessary corrective measures, as felt necessary. As indicated in the methodology, they shall engage appropriate and adequate survey team in the preconstruction period of initial two months to carry out all topographical survey and verify the centreline of the road using their own survey equipments like Total Station and DGPS, Auto Level; and conform and establish the Bench Marks and Control Points in the field along the length of the complete road prior to commencement of the works. In case of absence of Contractor, the same may be handed over to the Client. They shall approve setting out of works done by the Contractor and record the initial measurements and survey levels jointly with the Contractor and OWD's representatives.

The Consultant shall nominate the Resident Engineer as the **"Engineer"** for the performance of the Civil Works Contracts. The Resident Engineer of each Civil Works package shall be declared to act as the **"Engineer" for each of the Civil Works Package** by the Client, who is also the "Employer" for the Civil Work Contract. All the duties and responsibilities of the Engineer shall be discharged by the Resident Engineer, and the Consultant shall facilitate all that is needed for the same. All other activities in connection with the work shall be done by the Consultant. The Consultant shall be responsible and liable to the Client for all actions of the Engineer.

Broadly, the Engineer shall ensure that the civil works construction includes *all the work required and only the work required to complete the project successfully*. The task shall be to verify and control the scope of the Civil Works Contract, along with generation of payment certificates for the contractor, generation of reports for the client and conduct all those activity that are required to complete the work within budget and in time. Other details of assignment have been provided under the subhead "Duties and Responsibilities as the Engineer" in the subsequent paragraphs.

The supervision teams headed by the Engineers will be composed of qualified and experienced experts, who can carry out all the routine construction supervision as a fully competent and independent unit. However, for discharging the Construction Supervision Services in a well coordinated manner, the Consultant shall nominate a senior official of the firm as Project Manager/ Coordinator operating from the firm's head office to provide management support to the project teams, as and when required, at no additional cost. This will help each team to be fully aware of the remedies to common problems used by the other team, so that the full experience of all the members of the team as well as that of the Engineer and his staff can be harnessed. The qualification, experience for support personnel (Technical) as indicated in Annexure – II and Annexure – III shall regulate the approval of these personnel during the implementation stage.

The Consultant shall assist the Client in providing relevant data needed to augment other programme such as Asset Management System, IT/ICT or ISAP modules being developed by the PMU.

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The methodology for supervision of works furnished by the Consultant has been appended in this document.

UNDERSTANDING THE ASSIGNMENTS

The Consultant are required to supervise the civil works. The services are primarily divided into three phases. Based on which the work plan, technical approach and methodology, staff schedule on the overall project duration has been presented.

- *Phase -1: Development Period (Pre-construction Stage)*
- *(2 Months)*
- *Phase-2: Construction Supervision Period* ***(27 months)***
- *Phase-3: Defects Liability Period* ***(12 months)***

In the initial two months provision of development period Consultant shall carry out all the topographical **surveys** for finalizing the control point and benchmarks including the major design review activities. (Apart from regular design reviews during actual construction). It shall be the Consultant's effort that all amendments are initiated within the first **two months** of the development phase. All major design review activities, however, shall be completed within this total time of 2 months including preparation of variation orders progressively in discussion with the Client. This period can also be termed as pre-construction period.

During the mobilization period of the Contractor, the Consultant shall render services like finalization of Management Systems, Site Preparation, Contractor's Mobilization, Co-ordination with Third Parties plus other preparatory works as may be deemed necessary at that point of time. The services shall include proposing all necessary field surveys and data collection to be undertaken during the supervision phase to complete the work in accordance with these requirements and standards mentioned in the civil works contract documents.

Twenty Seven (27) months of actual construction time is demarcated to involve construction supervision during the construction ensuring processes, methods, plans and proposals submitted by the construction contractor are adequate to enable client to deliver the project on time, quality and cost. During construction supervision stage, the Resident Engineers of respective packages is to perform the duties and obligations as 'Engineer' as identified in the FIDIC Conditions of Contract for the Works and be fully responsible for the supervision of the construction works. This will include undertaking of all the works necessary to achieve a successful project, including any technical studies and investigations needed as a consequence of carrying out the design review.

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Defect Liability Period of 12 months is a period when the completed Works are continuously monitored for effective performance. The main tasks of the Engineer will be as follows:

i. Inspect the completion of all outstanding works following the issue of the taking over certificate(s) are completed satisfactorily and within the agreed time period at issue of the certificate(s).
ii. The Consultant will propose a schedule of periodic inspections of the Works during the defects liability period to ensure proper performance, and if any defects are observed, inform the client and advice on the appropriate actions.
iii. Undertake a final inspection of the Works, and after consulting with the client, and all other interested parties, and if satisfied, issue the Defects Liability Certificate at the end of the Defects Liability Period.

Within last one month of the end of the Defects Liability period, the consultant will prepare the Final Completion Report and submit to Client.

It is comprehended that the design review and supervision team will be comprised of highly qualified and experienced experts, who can carry out all the design review and construction supervision duties as a fully competent and inter-related unit.

It is further understood that the Consultant shall allow for a suitable mechanism which will ensure thorough co-ordination between the team members in order that each team member is at all times fully aware of the remedies to common problems adopted by the other member(s), and to ensure that the full experience of all the members of the team as well as that of the Resident Engineer.

Critical areas, which influence the project, can be identified as,

- *Level of Sufficiency of design and drawings*
- *Level of clarity in Contract Provisions and BOQ items*
- *Availability of clear Right of Way for construction*
- *Efficiency of Project Management*
- *Adequacy of the Contractor's resources*
- *Gaps in know-how in Contractors' Personnel*
- *Disposal of 'decisions' from the Client beyond the authority of the 'Engineer'.*

All the above singly or jointly contribute to implementation of successful project.

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Contract Management Framework

The execution of the civil works by the Contractors and supervision by the Consultant will be governed by the Contract Management Framework (CMF). The main features of CMF are described below.

a. Er. Bindheswar Patro, Superintending Engineer, O/o the E.I.C(Civil), Odisha will function as representative of the Chief Engineer, World Bank Projects, Odisha.

b. Invoices of the Consultant shall be paid by the Chief Engineer, World Bank Projects, Odisha after due certification by the Superintending Engineer in charge of the project.

c. Project accounts will be kept by the Financial Advisor/ Senior Divisional Accounts Officer attached to the Chief Engineer, World Bank Projects, Odisha in the Project Management Unit (PMU) of Odisha State Roads Project.

The following figure (Fig 1) shows the lines of authority and responsibility in the Contract Management Framework.

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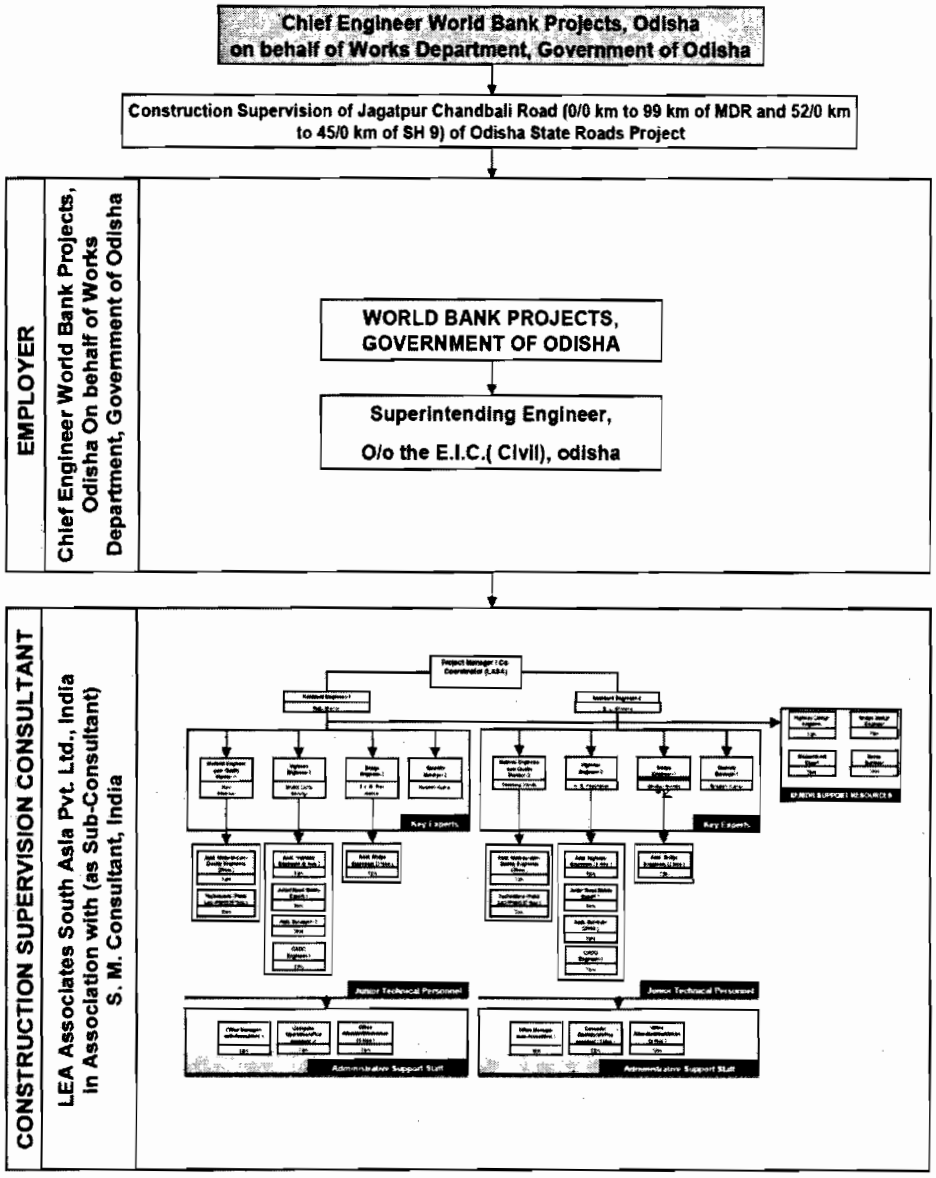

Fig 1: Contract Management Framework

Vital Activities in the Pre Construction period

These are the activities to be performed by the Consultant soon after their mobilization, so as to make them ready for the assignment. The responsibility of the Consultant shall be, but not limited to the following.

(i) To acquaint themselves with the data, drawings, designs, material report and other documents of the DPR and point out any inconsistencies and inform the Client;

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(ii) To carry out all topographical survey to verify the centre line of the road using their own survey equipments like Total Station and DGPS, Auto Level ; conform and establish the Bench Marks and Control Points in the field along the length of the complete road and record them; prior to commencement of the works;

(iii) To update the drawing based on the above survey using road design software tools and issue 'Good for Construction' drawings to the Contractor, based on the setting out details and working drawings submitted by the Contractor, prior to execution of works;

(iv) To handover the physical control points and bench marks to the Contractor along with the record;

(v) To approve setting out of the works done by the Contractor;

(vi) To record the initial measurements jointly with the Contractor and OWD's representatives;

(vii) To clarify any inconsistency in the Contract Document of civil works;

(viii) To alert the Client for shifting / relocation and removal of obstructions/ hindrances like utility and community assets from the milestones prior to hand over to the Contractor;

(ix) To prepare and submit a Quality Management Plan which shall contain the Quality Plan, Quality Assurance Methodology, Quality Control Parameters and Formats.

(x) To provide installation of an online computerized documentation control system to manage all inspection requests, billing and contractual correspondences.

(xi) To install computer aided project management and monitoring system and software for ensuring monitoring and control of the project activities and deliverables.

Duties and Responsibilities as the "Engineer"

The Resident Engineer shall act as "Engineer" of the project while taking any action under the Civil Works contract, and the client shall act as the "Employer". The duty of the "Engineer" of the project is to supervise the works for *correctness and completeness* of the scope of the civil works as specified in the Civil Works Contract documents; within the time period, approved budget and all other limitations specified therein. Their duty comprise both meeting the functional, non-functional and cross functional requirements of the project. The functional requirements of the project are related to tasks of direct execution of the civil works; and the responsibilities of the Engineer shall be, but not limited to the following.

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i. To approve the Contractor's key experts;

ii. To check the data, drawing and other components of the Civil works contract;

iii. To conform the centre line of the road prior to issuance of orders for commencement and conform the benchmarks and control points;

iv. To issue order to commence the work;

v. To verify the control points and bench marks handed over to the Contractor and approve setting out of the works done by the contractor;

vi. To record the initial measurements jointly with the Contractor and OWD's representatives

vii. To verify and if necessary, order correction of the drawings supplied by theContractor and to approve all working drawings or

viii. To modify the existing drawings or to supply a new/supplementary drawing which is not included in the contract, whenever required and to give instructions thereof for the work considering minor design changes to suit site requirements;

ix. To ensure Quality Assurance of works by following standards for consistency in quality, and to adopt all Quality Control measures to meet required standards and acceptability criteria as per the Quality Management Plan ;

x. To ensure further Quality Control, carry out independent laboratory tests in OWD's own and/or approved Laboratories;

xi. To ensure that the construction works are in accordance with the technical specifications, Environmental Management Plan and other stipulation of construction contract documents and the construction methods and schedule proposed by the contractor;

xii. To take independent measurements for quantities and check all measurements and calculations required for payment purpose in a manner and frequencies specified in the contract documents and record in the measurement book approved by the client before issue of monthly/interim payment certificates ;

xiii. To direct the Contractor to carry out all such works or to do such things as may be necessary in his opinion to avoid or to reduce the risk in any emergency affecting the safety of life or of adjoining property;

xiv. To approve the contractor's schedule as the Schedule Baseline along with activity resources and activity times using computer aided project management tool such as MS projects or Primavera or the like (software not to be provided by the client);

xv. To monitor and control the project activities by tracking, reviewing and regulating the progress to meet the performance objectives of the project using their own computer aided project management tool such as MS projects

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or Primavera or the like (computers & software to be provided by the Consultant);

xvi. To suggest changes to the same if necessary as per the prevailing site conditions, and to review all change requests made by client/ contractor; to approve changes if they are felt necessary;

xvii. To assess the legitimacy of the request for time extensions submitted by the contractor with reference to the Schedule Baseline and the critical path and recommend the Client appropriately the period of time extension;

xviii. To update the project documents and Quality Management Plan incorporating the approved changes;

xix. To update the Scope, Cost and Schedule Baselines and Performance Baselines with flow of project information and changes ;

xx. To order removal and substitution of improper materials and/or works as required;

xxi. To order suspension of works.

The non-functional requirements of the project are related to the documentation, reporting, communication and management of legal and contractual aspects of the civil works, which is required for effective implementation of the construction contract. However the Engineer, in no case, shall make an excuse to retard the progress of the day to day supervision works on account of these activities. The responsibilities related to this shall be, but not limited to the following.

(i) To clarify any inconsistency in the Contract document of civil works that is needed for achieving the project objectives;

(ii) To record all day by day events pertaining to the project in a 'project diary' and communicate to the Client;

(iii) To prepare monthly and quarterly progress reports in an approved format and communicate to the Client;

(iv) To monitor and control the project scope;

(v) To certify the as-built drawings and other records supplied by the Contractor before closure of the milestones and finally the project, prepare the completion reports , and communicate to the Client;

(vi) To advise the Client on all matters relating to execution of the works, claims from the Contractor and to make recommendations there on, including the possible recourse to dispute resolution and arbitration;

(vii) To assist the Client in taking over from the Contractor of each Milestone, preparing lists of deficiencies which need to be corrected, and assisting

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with monitoring of the performance of the works during the defects liability period;

(viii) To prepare a maintenance manual describing the routine maintenance procedures to be adopted in each specific reach and for the C. D. works and bridges during defect liability period and beyond;

(ix) To assist the Client in providing clarifications/explanations to observations made, from time to time, by the statutory Audits;

(x) To assist the Client in co-ordination works with different agencies and hold meetings for proper and timely implementation of the project ;

(xi) To prepare revised cost estimate, if required;

(xii) To assist the Client during DB Meetings, Arbitration Proceedings and any other hearings held by statutory & legal body;

(xiii) To meet the legal requirements as provided in the civil works contract and to follow the law of the land.

Actions requiring Specific Approval of the Client

The Engineer will be required to obtain the prior approval of the Client in the following matters.

i. The Engineer, taking any action under the civil works contract, for which action, pursuant to such civil works contract, the written approval of the Client as "Employer" is required.

ii. Issuing the order to commence the works;

iii. Approving new rates either for existing items of work, which arises from variation quantities beyond the limit, defined in the contract or fixing rates of non-priced works involving any extra item and certifying any additional cost determined under the provisions of contract;

iv. Approving subletting of any part of works;

v. Carrying out independent Quality Control tests;

vi. Issuing the order for special tests not provided for in the contract and determining the cost of such tests, which shall be added to the contract price;

vii. Issuing/approving the Technical Specification, if not provided for an item of works in the Construction Contract, similarly; for any change in Technical Specification of any item of work.

viii. In the following matters as specified in General Conditions & Particular Conditions of Civil Works Contract.

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a. Agreeing or determining an extension of time and/or additional cost [Sub-Clause 4.12 of General Conditions Civil Works Contract]

b. Instructing a Variation, [Sub-Clause 13.1 of General Conditions Civil Works Contract]except
   i. in an emergency situation as determined by the Engineer, or
   ii. if such a Variation shall increase the Accepted Contract Amount by less than the percentage specified in the Contract Data.

c. Approving a proposal for Variation submitted by the Contractor [Sub-Clause 13 of General Conditions Civil Works Contract.

d. Specifying the amount payable in each of the applicable currencies [Sub-Clause 13.4 of General Conditions Civil Works Contract]

e. 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 Client, 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 Client.

ix. However, the Engineer shall have **no authority** to relieve the Contractor of any of their duties or obligations under the contract or to impose additional obligations not included in the contract **without sanction by the client**.

Duties & Responsibilities of the Engineer's Representative

The Engineer may declare any of his subordinates as Engineer's Representative from time to time and delegate any or some of the duties and authorities vested with the Engineer and he may at any time revoke such delegation. Any such delegation or revocation shall be in writing and shall not take effect until a copy thereof has been delivered to the Client and the Contractor.

The duties of the Engineer's Representatives are, under the overall control of the Engineer, to supervise construction of the works and, to test or order to test and examine any material to be used or workmanship employed in connection with the works. They shall have no authority to relieve the Contractor of any of his duties or obligations under the Contract, or to order any works involving delay or any extra payment either by the Client, or to make any variation of quantities or rates in the works.

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Interim and Final Payments for Contractor

The Engineer will process interim and final payment certificates of the Contractor, following submissions made by the Contractor in proper form. In processing certificates, the Engineer will certify that he has checked the measurement books. Whenever measurements are to be made, the Engineer will inform the Contractor in advance. The Engineer shall process these payments through the computerized system.

The Engineer will promptly submit the payment certificates duly certified in accordance with the Contract clauses to the Employer's Representative who will then submit it to the Chief Engineer, World Bank Projects, Odisha for payment incorporating his observations.

1.4. PROJECT TEAM COMPOSITION & QUALIFICATION REQUIREMENTS

The Consultant's team shall comprise Key Experts, Senior Support Resources, and Junior Technical Personnel who will assist the Key Experts and Senior Support Resources as provided in Annexure-II.

.1 Key Experts

Deployment of suitable personnel is considered essential for the positions of key experts like Resident Engineer, Highway Engineer, Bridge Engineer, Quality Monitor and Quantity Surveyor for successful completion of the project. The suggestive qualification, experience for Senior Support Resources and Junior Technical Personnel, as indicated in **Annex – III** and **Annex – IV,** shall regulate the approval of these personnel during the implementation stage.

The duration of the Consultant's services is estimated for 2 months of pre construction , 27 months of construction and 12 months of defect liability period. As per the Consultant's assessment, 338 key expert staff- months are required. During the defects liability period, the Consultant shall engage skeletal staff, close project and provide technical advisory services on "as and when required" basis and process for payment certificates.

All the key experts shall be available as per the schedule during implementation of the contract. However, before every quarter this will be reviewed and adjusted to ensure availability of required resources aligning with the forecast proposed by the Consultant for the next quarter.

The Client will not consider substitutions during contract implementation except under exceptional circumstances up to a maximum of

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one-third of the key experts. In case of replacements, the consultant will take care and ensure that there is a reasonable overlap between the staff to be replaced and the replacement to avoid any dislocations. The Resident Engineer, Quantity Surveyor, Highway Engineer must be from the Lead/ Principal Firm.

.2 Other Resources of the Supervision Team

The duration of the Engineer services for Jagatpur-Chandbali Road is estimated for 2 months of pre construction, 27 months of construction and 12 months of defect liability period. As per the Consultant's assessment, about 1006 other technical (Senior / Junior Technical) Personnel and 366 administrative support staff-months are needed. However, mobilization of staff shall be subject to agreement with the Client, every three months, proportionate to the pace of the work.

1. Person-month requirements for each category as proposed by the consultant will be generally considered as the ceiling for each category. In no case, shall actual deployment exceeds more than 10% for any category.

2. During the defects liability period, the Consultant shall engage Professional Staffs as per staffing schedule Tech-7 of Consultant's technical proposal. The mobilization of personnel shall be reviewed and agreed before deployment every quarter.

3. Some of the Senior Support Resources and Junior Technical Personnel shall be available after mobilization. The Client will ordinarily not consider substitutions during contract implementation. In case of replacements, the consultant will take care and ensure that there is a reasonable overlap between the staff to be replaced and the replacement to avoid any dislocations.

.3 Quality Management

Quality Management includes creating and following policies and procedures to ensure that the project meets its intended objective. It looks at both management of the project and deliverables at each item level, at the end of each phase and at completion, with no deviation from the project requirements. Quality Management includes the processes of planning quality, performing quality assurance, and performing quality control which must be followed to ensure that the deliverables produced by the team are "fit for purpose" and actually meet the requirements of the project.

The Consultant shall submit a Quality Management Plan (QMP) which shall contain the Quality Plan, Quality Assurance methodology, Quality Control parameters and formats. It shall identify the quality requirements and /or standards for the project and document how the project will demonstrate compliance. This document shall provide necessary processes and metrics for quality management and shall include but not limited to the following.

I. The quality standards that apply to the project, with reference to the

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technical specifications and codes

2. Quality control, quality assurance and process improvement approaches for the project
3. Quality control tools and techniques
4. The responsibility chart/ matrix showing who will be involved in managing quality, when and what their specific duties will be
5. The metrics that shall be used to measure quality
6. Specific mentions about the parts of the projects or deliverables that will be measured and their time and frequency
7. Check lists for inspection of material and processes
8. Flow charting of processes to detect potential quality problems
9. Scope for periodically quality audit
10. Balance the needs of the of quality with scope, cost, time, resources and risk

The start of the Quality Management involves setting quality targets. The quality assurance processes and quality control processes shall be undertaken by the Engineer to measure and report the actual quality of deliverables for the parts, phases or the complete project. As part of the Quality Management, the Engineer shall identify all quality issues and resolve them quickly.

The Engineer shall perform quality assurance for consistency in quality; undertake quality control for meeting quality targets, standards and acceptability criteria. He shall identify quality issues and initiate quality improvement, and implement Quality Management. To ensure further quality control, the Engineer shall carry out independent laboratory tests in OWD's own and/or approved Laboratories and record the findings for appropriate action. The Engineer shall report all non-conformances and order removal and substitution of improper materials and/or works as required.

As a part of the quality management, the Engineer shall make documentation on ***Lessons Learnt*** including the causes of variances, reasoning behind the corrective action chosen, and any other types of lessons learned from quality control so that they become a part of the historical database for both project and for the Client.

The Consultant shall submit the QMP for approval by the World Bank and the Client. It is expected that the Consultant will share the draft versions of the above before finalization.

.4 Communication Management

The Consultant shall manage communication processes to ensure timely and appropriate collection, distribution, storage, retrieval and ultimate

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disposition of project information. They shall make use of multiple communication modes such as post, e-mail, fax, telephone and web.

The responsibility of the Consultant shall be, but not limited to the following.

(i) To prepare the formats, templates for the project communications;

(ii) To install a computerized **Project Management & Monitoring System (PM&MS)** with real time interface with client and the contractor to record/ receive/ issue/approve/ reject/ monitor RFIs, payment certificates and all contractual correspondences and review the performance of the system from time to time;

(iii) To communicate the performance and status reports such as MPRs, QPRs in approved formats to the Client;

(iv) To handover all the project records that include correspondences, memos, meeting minutes, and other documents describing the project in an organized manner sorted in month wise folders to the Client upon completion of the assignment, in hard copy and in soft copy.

The responsibility of the Engineer shall be, but not limited to the following.

(i) To issue order to commence the work;

(ii) To communicate approvals to the Contractor regarding Key experts, drawings, Schedule Baseline, and other like materials ;

(iii) To clarify any inconsistency in the Contract document of civil works to the Client and/or Contractor;

(iv) To communicate the QMP to the Contractor;

(v) To issue orders for removal and substitution of improper materials and/or works as required; to issue orders for suspension of works;

(vi) To record issues related to the work and alerting the client and contractor regarding their urgency and impact

(vii) To communicate the change orders to the Contractor and to the Client;

(viii) To communicate the performance and status reports in approved formats to the Client;

(ix) To communicate authorization of Client's approval for time extensions to the Contractor ;

(x) To issue orders for special tests not provided for in the contract;

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(xi) To hold meetings / participate in the meetings, as given below, and communicate the minutes/ proceedings to all concerned;

i. Conduct monthly status review meetings (on the first working day of each month);

ii. Conduct quarterly meetings (A fortnight before end of every quarter) with the Contractor and Client for setting the physical and financial forecast for the coming quarter;

iii. Participate in the coordination meetings and contract management meetings held by the Client;

iv. Make presentations of the project performance, forecast, risks and issues before the Client and the World Bank, during reviews and Missions;

(xii) To use the **Project Management & Monitoring System (PM&MS)** and comment on the performance of the system from time to time;

.5 Risk Management

This is a vital area of focus for the Consultant as a part of overall project management. Risks affecting the project have to be identified and listed along with the analysis. The risk management shall include, but not limited to the following.

(i) To identify and record the risks that shall affect the project and analyze the root cause of the risks;

(ii) To categorize the risks as external, internal, technical, legal or unforeseen;

(iii) To perform a qualitative analysis of the risks and rank them;

(iv) To assess the likelihood of their occurrence, their urgency and potential impacts, give recommendations for overcoming the issues along with the time required for their solution in order to keep the project on schedule, cost and within scope. ;

(v) To plan responses for the risks so as to avoid, transfer, mitigate or accept the risks ;

(vi) To get ready with contingency plans and fallback plans that shall keep the project on track;

(vii) To indicate the Client regarding the Reserves for Schedule and Cost.

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The Consultant have identified and comprehended a number of assumptions and risks and analyzed these risks in preparing this proposal and proposed mitigation measures where possible.

It is noted that many of the risks comprehended by the Consultant are associated with the institutional strengths at various levels, local apprehension about the impending benefit, various approval processes and their potential consequent delays. Many of these risks could be addressed through close interactions between Client, Consultant and other stake holders. Client's representative and the Consultant could meet regularly to review reports on the projects progress and have guidelines as to how best to overcome problems and maintain progress.

Some of the risks identified together with suggested mitigation measures are given in table-1, as follows:

Table 1 : Risks identified and mitigation measures

Risks	Mitigation Measures
Design Reviews, Comments and Approval of submissions take longer than programmed time resulting in delays in completion of updated Design Review Reports and bid documents. This results in delay in issuance of updated drawings to the Contractor, delay in issuance of Variation Orders (if any) resulting in claims from the Contractor.	Client representatives need to be involved in the design review process through regular meetings and discussions so that the findings are generally in agreement before they are submitted. Formal communications from Client needs to be expedited.
Land acquisition is delayed resulting in delays in the completion of the Construction works.	Review Contractor's programme to ensure works are phased in a manner that is compatible with the acquisition of land, in discussion with Client.
Delays in obtaining information and approvals from Utility Departments resulting in delays in completion of Design Review and updating of tender documents.	Early and regular meetings and discussions with representatives from the Utility Departments with assistance from Client shall minimize the delay.

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Risks	Mitigation Measures
Delays to the contractor's programme due to lack of resources, adverse weather conditions etc.	Review Contractor's time and resource based programmes to ensure adequate provisions have been made, appreciating the 'risks' associated with the local industry.
Delays to interim payments to the Contractors resulting in additional costs from interest payments and delays to contract completion.	Periodical updating of project cost shall allow Client to allocate funds for disbursement in advance, in addition to the allocated budget.

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1.5. REPORTING REQUIREMENTS & TIME SCHEDULE

The Consultant shall prepare and submit to the Client *ten hard copies along with the softcopy* of each of the following reports. The soft copy of project monitoring component shall be prepared using any computer aided project management tool (e.g. MS projects or Primavera) and shall be provided to the client in their respective file types, and not in scanned or non-editable formats (e.g. pdf). Actions related to reporting shall be followed as per the schedule agreed with the Consultant, and shall be viewed as a major indicator of performance of the Consultant. Reporting activities should not be posed as an excuse for retarding the field activities at any point of time, under any circumstances.

The following table in table 2 shows the deliverables and scheduled time delivery.

Table 2 : Deliverable schedule

Sl. No.	Deliverables	Scheduled Time
1	Inception Report	30 days from Commencement of Services of the Consultant
2	Quality Management Plan (QMP)	45 calendar days from the Commencement of Services of the Consultant
3(a)	Project Management & Monitoring System (PM&MS) - *RFI management*	45 calendar days from the Commencement of Services of the Consultant
3(b)	Project Management & Monitoring System (PM&MS) - *Billing and payment*	90 calendar days from the Commencement of Services of the Consultant
4	Monthly Progress Report (MPR)	5 business days after end of every month
5	Quarterly Progress Report (QPR)	5 business days after end of every quarter
6	Manual for Maintenance during DLP	Within 12 months of commencement of Civil Works
7	Sectional Substantial Completion Reports	After substantial completion
8	Contract Completion Report	Before end of DLP

.1 Inception Report

The inception report shall cover methodology and work plan, task assignments, project team, their mobilizations, staff schedules in detail. The report shall also highlight the issues of concerns to the Client which might affect the project cost and time. The in-principle approvals/ interventions requirements on the critical issues observed in the DPR shall be listed and decision of the Client shall be adopted for further proceedings of the assignment.

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.2 Quality Management Plan & Report regarding Project Management & Monitoring System (PM&MS)

The Quality Management Plan, as mentioned in the Quality Management subhead above, and Report regarding DMS shall be provided within 45 calendar days after the effectiveness of the commencement of services of the Consultant.

.3 Monthly Progress Report

The Consultant will, no later than 5 business days after end of every month, prepare a Monthly Progress Report (MPR) summarizing the work accomplished by the supervision team for the preceding month. The contents of the MPR shall be, but not limited to the following.

a. Analysis and report of performance for the past month along with few photographs, on the following aspects.
   (i) Road works
   (ii) CD Works and Structures
   (iii)Routine maintenance of the road and traffic diversion
   (iv)Environmental aspects following the reporting formats of the Civil Works contract
   (v) Status of utility and community asset shifting, tree felling and other such preconstruction activities
   (vi)Road Safety aspects in the construction zones
b. The *status of payment certificates* made to the Contractors, their claims and disputes
c. The *status of risks*, and their impact on the project schedule, cost, scope, quality
d. The variations and change orders made during the month.
e. Contractor's mobilization status for the resources (machinery, manpower, materials) vis-a-vis requirement
f. All correspondences with the Contractor along with the abstract
g. Both the physical and financial *forecast* for the coming month
h. Minutes of the *Monthly Status Review Meeting* for the preceding month held on the first day of the succeeding month in which the report is due
i. *Consultant's mobilization* for the preceeding month
j. The day by day project diary for the preceding month as Annexure to the MPRs.

The MPRs shall not be required once the DLP starts.

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.4 Quarterly Progress Reports

The Quarterly Progress Reports (QPRs) shall be submitted within 5 business days after end of each quarter. The quarters to be considered for this purpose are the quarters of the financial year ending in June, September, December and March. The Consultant is expected to visualize the entire project in the form of achievement during these quarters vis-à-vis the performance in the previous quarter. The contents of the QPR shall be, but not limited to the following.

i. *Brief work summary* for the preceding quarter, including status of Environmental and Road Safety issues.
ii. *Status of various cost elements* such as Budgeted Cost of Work Scheduled, Actual Cost of Work Performed, total payments received by the Contractor up-to-date, and status of advances and the status of financial securities. The comparison of the cost elements with the Cost Baseline shall be reflected in the report along with the schedule performance index, schedule variance, cost variance. The progress summary of the work will be supported by the S-Curve.
iii. Status of project duration, by comparing the progress with the Schedule Baseline. The output of project management in the form of Gantt chart, comparison with the baseline data.
iv. The summary of variations and change orders made during the quarter and their effect on the project.
v. Updated baselines for Scope, Cost and Schedule.
vi. Physical targets and cost forecast for the coming quarter, recorded in the form of minutes of the meeting with the Contractor and Client.
vii. *Consultant's mobilization* proposal for the quarter in which the report is due
viii. Documentation on *Lessons Learnt* including the causes of issues, reasoning behind the corrective action chosen.

The QPRs shall be submitted during the DLP also.

.5 Sectional and Substantial / Contract Completion Reports

a. The Consultant will prepare a comprehensive final Completion Report for each defined section of the construction contract, after such sections reaches a stage of substantial completion during the period of the services. These reports must be submitted immediately after the completion of the work by the contractor and before taking over of such sections by the Client.
b. The report shall incorporate summary of the methods of construction, the construction supervision performed, as built construction drawings,

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problems encountered & solutions undertaken thereon and recommendations for future projects of similar nature to be undertaken by the Client.

c. The reports shall contain documentation on Lessons Learnt from the risks and issues, and reasoning behind the action chosen for overcoming the issues. Lessons learned shall include suggestions for future in order to keep a project on schedule, cost and within scope.
d. The Consultant shall summarize and consolidate in a single report the key information from each sectional completion reports to prepare the final Completion Report for the entire construction package.

.6 Manual for Maintenance during DLP

This document shall be submitted within 12 months of commencement of Civil Works.

1.6. PERFORMANCE REVIEW

The Consultant's performance shall be reviewed periodically and monitored through the performance reports. A review committee consisting of the following officers will review the work of the Consultant from time to time.

a. Engineer-in-Chief (Civil), Odisha
b. Chief Engineer, D.P. & I. & Roads, Odisha
c. Chief Engineer, R.D. & Q.P., Odisha
d. Chief Engineer, World Bank Projects, Odisha

Actions related to reporting shall be followed as per the schedule agreed with the Consultant, and shall be viewed as a major indicator of performance of the Consultant. Reporting activities should not be posed as an excuse for retarding the field activities by the Consultant at any point of time, under any circumstances.

The performance of the Resident Engineer shall be considered complete in every month only when timely submission of deliverables has been made.

Any correction/ modification/ alteration to the deliverables suggested by the Bank/ PMU shall be done promptly by the Consultant and resubmitted in the same manner within fifteen days of intimation.

1.7. CLIENT'S INPUT & COUNTERPART PERSONNEL

The following shall be provided by the Client either directly or through the civil works Contract.

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.1 Services, facilities and property to be made available to the Consultant by the Client:

(i) Project Data/ Contract Documents:

The reports, base mapping, existing road inventory including data on pavement history, traffic statistics and forecasts and traffic count details on various project roads which were prepared earlier by the DPR Consultant will be available for the use of the Construction Supervision Consultant. The civil works contract documents will be provided by the Client. Electronic copies of all Data/ Documents shall be provided by Client immediately after the issuance of commencement letter.

(ii) Site Laboratories:

The site laboratories (including furniture, equipment, running and maintenance) will be provided through the construction contract. The Engineer will perform the tests selectively and supervise all the tests done by the contractors.

In case of additional independent test, the Consultant shall conduct these tests in Quality Control Laboratories approved by the State Government or through State's Quality Control Laboratories on payment basis, under prior intimation to the client to facilitate the payment of the same.

As it is difficult to assess the type and number of independent tests at present, the cost for all these items have not be included in the financial proposal. Therefore the expenditure thereof shall be reimbursed to the Consultant as per actual on submission of documentary evidence.

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(iii) Facilities not to be provided by the Client:

Attention is drawn to the following which are **not to be provided by the Client** and are to be arranged by the Consultant at his own cost.

a. The Client will not provide office accommodation. The Consultant shall establish one (or more) office(s), suitably located near the project road for suitable implementation of the work programme. They shall make their own office accommodation arrangements for the field supervision teams including furniture, equipment, communication equipments like telephones, VHF, operation and maintenance etc. The Consultant shall hire/purchase furniture and equipment for the offices and shall maintain inventory of such item at all times and submit the same to Client as and when requested/necessary. Upon completion of the assignment the furniture and equipment so purchased for this contract shall become the property of the Client and the same shall be handed over to the Client.

b. The Client will not provide project vehicles to the Consultant. The Consultant shall hire vehicles required to perform their assignment.

c. The Consultant shall be responsible for making his own arrangements for survey equipments.

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1.8. **Bank Policy – Corrupt and Fraudulent Practices**

Fraud and Corruption

It is the Bank's policy to require that Borrowers (including beneficiaries of Bank loans), Consultant, and their agents (whether declared or not), sub-contractors, sub-Consultant, service providers, or suppliers, and any personnel thereof, observe the highest standard of ethics during the selection and execution of Bank-financed contracts [footnote: In this context, any action taken by a consultant or any of its personnel, or its agents, or its sub-Consultant, sub-contractors, services providers, suppliers, and/or their employees, to influence the selection process or contract execution for undue advantage is improper.]. 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[5];

(ii) "fraudulent practice" is any act or omission, including misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain financial or other benefit or to avoid an obligation[6];

(iii) "collusive practices" is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party[7];

(iv) "coercive practices" 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[8];

(v) "obstructive practice" is

(aa) 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

[5]For the purpose of this sub-paragraph, "another party" refers to a public official acting in relation to the selection process or contract execution. In this context "public official" includes World Bank staff and employees of other organizations taking or reviewing selection decisions.

[6] For the purpose of this sub-paragraph, "party" refers to a public official; the terms "benefit" and "obligation" relate to the selection process or contract execution; and the "act or omission" is intended to influence the selection process or contract execution.

[7] For the purpose of this sub-paragraph, "parties" refers to participants in the procurement or selection process (including public officials) attempting either themselves, or through another person or entity not participating in the procurement or selection process, to simulate competition or to establish prices at artificial, non-competitive levels, or are privy to each other's bid prices or other conditions.

8For the purpose of this sub-paragraph, "party" refers to a participant in the selection process or contract execution.

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from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation, or

(bb) acts intended to materially impede the exercise of the Bank's inspection and audit rights;

(b) will reject a proposal for award if it determines that the consultant recommended for award or any of its personnel, or its agents, or its sub-Consultant, sub-contractors, services providers, suppliers, and/or their employees, has, directly or indirectly, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract in question;

(c) will declare misprocurement and cancel the portion of the Loan allocated to a contract if it determines at any time that representatives of the Borrower or of a recipient of any part of the proceeds of the Loan were engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices during the selection process or the implementation of the contract in question, without the Borrower having taken timely and appropriate action satisfactory to the Bank to address such practices when they occur, including by failing to inform the Bank in a timely manner they knew of the practices;

(d) will sanction a firm or an individual at any time, in accordance with prevailing Bank's sanctions procedures[9], including by publicly declaring such firm or an ineligible, either indefinitely or for a stated period of time: (i) to be awarded a Bank-financed contract, and (ii) to be a nominated[10] sub-consultant, supplier, or service provider of an otherwise eligible firm being awarded a Bank-financed contract.

9 A firm or an individual may be declared ineligible to be awarded a Bank-financed contract upon (i) completion of the Bank's sanctions proceedings as per its sanctions procedures, including inter alia: cross-debarment as agreed with other International Financial Institutions, including Multilateral Development Banks, and through the application of the World Bank Group corporate administrative procurement sanctions procedures for fraud and corruption; and (ii) as a result of temporary suspension or early temporary suspension in connection with an ongoing sanctions proceedings. See footnote 12 and paragraph 8 of Appendix 1 of these Guidelines.

10 A nominated sub-consultant, supplier, or service provider is one which has been either (i) included by the consultant in its proposal because it brings specific and critical experience and know-how that are accounted for in the technical evaluation of the consultant's proposal for the particular services; or (ii) appointed by the Borrower.

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CONSULTANT'S METHODOLOGY

TECHNICAL APPROACH

The technical approach to services has been developed on the basis of:

- *the "understanding of the objectives" as discussed above*
- *Scope of Services,*
- *Technical Requirements' as depicted in scope of services*
- *Resolutions / mitigation measures to the critical aspects enunciated as above*
- *Site Appreciation*
- *Appreciation of 'risks' and its mitigation measures*
- *Innovations to improve the service*

Timely mobilization of consultancy team shall be ensured thereby enabling the Consultant to be effectively primed for **cogent project delivery**. Resident Engineer shall mobilize on receiving notification regarding commencement of services and shall keep Client informed of progressive mobilization of other staff and also the progress.

Dedicated project office shall be set up immediately on mobilization. Office logistics such as equipment, communication facilities and transport shall also be procured/hired construction contract and be in place. During the mobilization, organization/team **structure** and **methodology** presented in this Technical Proposal shall be reviewed and duly **adapted** in consultations with Client. Special emphasis shall be given on the collection of data, documents and information from different stake-holders, besides assessing their relevance to the study and its stated objectives. A comprehensive Work Plan outlining the priorities and steps required in achieving the project objectives, Consultant's resources and recommended additional activities (if any) complemented with initial visual and preliminary risk assessments and **monitoring mechanism** shall be presented in the Inception Report and submitted to the Client for their approval. Periodic evaluation and review of the Work Plan shall be a continuous, interactive and iterative process.

The Consultant shall implement a **Quality Management System** and thus ensure in-tandem quantitative and qualitative output in consonance with the required standards and specifications, and satisfaction of the Client.

A holistic methodology centered on the above has been presented in the subsequent sections with a sincere effort to adequately cover all aspects of the present assignment. While substantiated next, broadly the methodology desegregates different constituent activities warranted at the different stages of the project. Appreciating **symbiotic interfaces** between the constituent activities, the Consultant have established an order that abets its understanding of such interface and a cascading order, besides furnishing respective scope of services references so as to facilitate appreciation of the Client of their relevance and comprehensiveness.

Further, the Consultant appreciates that a project of such magnitude and complexity shall certainly encounter some problems/issues which need to be tackled/ sorted out by the Consultant during Construction Supervision stage within the ambit of

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the Contract document. The following sections outline the Consultant Approach to address all such issues, based on its experience and also list of parameters listed above.

- **LEVEL OF SUFFICIENCY OF DESIGN AND DRAWINGS**

This job shall be carried out before the start of construction by the Consultant with the co-operation of various discipline experts through,

- *Desk studies*
- *Verification of ground conditions*
- *Verification of survey data*

If necessary, inadequacy/insufficiency in design/drawings shall be brought to the notice of the client and necessary rectification to be carried out to ensure sufficiency therein. This will help reduce chances of variations during construction.

- **LEVEL OF CLARITY, TRANSPARENCY OF CONTRACT PROVISIONS AND BOQ ITEMS**

The Engineer shall carry out this assignment with the assistance of other team members. This will include,

- *Inclusion of "Modifications in Design" in BOQ and Technical Specifications to assure sufficiency*
- *Ensuring no ambiguity in contract stipulations*
- *Proper matching/referencing between BOQ and Technical Specifications*
- *Modifications will be suggested wherever any discrepancy is observed*

- **AVAILABILITY OF CLEAR RIGHT OF WAY FOR CONSTRUCTION**

The Engineer with the assistance of other team members will bring into the notice of Client any discrepancy on the *resettlement and compensation issues* at site and resolve them in liaison with the Client or his authorized representatives. The same team will resolve issues related to *shifting of utility services* within ROW with the help of concerned authorities.

- **EFFICIENCY OF PROJECT MANAGEMENT**

The Consultant shall provide greater emphasis on project management, as this is the principal key to project success.

- **MANAGEMENT DYNAMICS**

The construction Supervision shall be successfully managed through an efficient Project Management & Monitoring System which shall include,

- *Quality Management*
- *Construction Management, and*
- *Contract Management*

- **SYSTEM UPDATION (CHANGE CONTROL MECHANISMS)**

The Project Management & Monitoring System (PM&MS) is dynamic and receptive to a continuous process of upgradation to manage changes in circumstances, technology and demand with time.

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❑ CONTROLS:MANUALS AND GUIDELINES

As an elaboration of the Project Management Strategy, the three management plans and their conceptual jurisdictions are given in the Figure-2**Error! Reference source not found.** below:

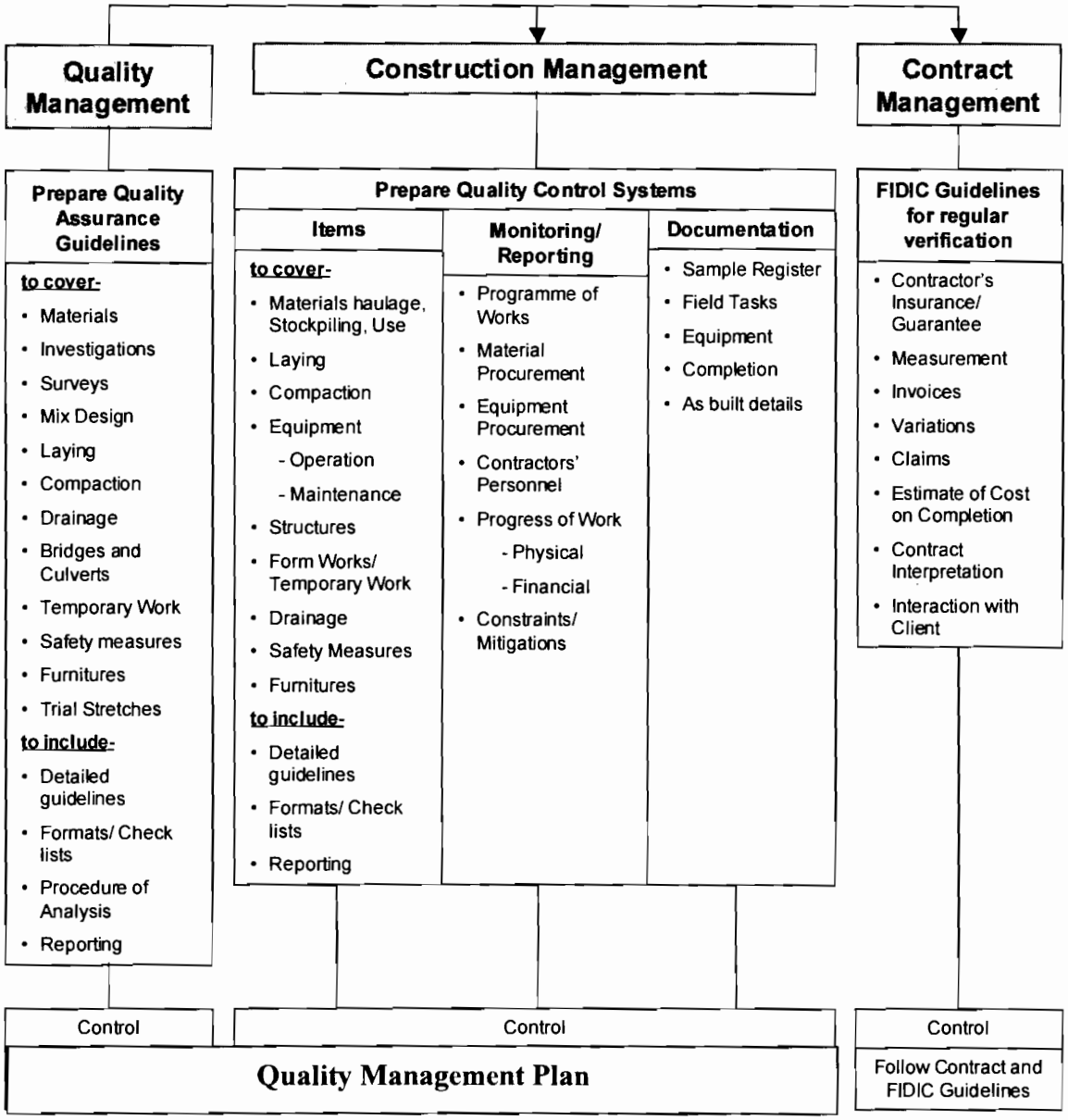

Fig 2 Project Management System

In the similar lines, the proposed Lines of Communication have been formulated and given in Fig **Error! Reference source not found.**3 below.

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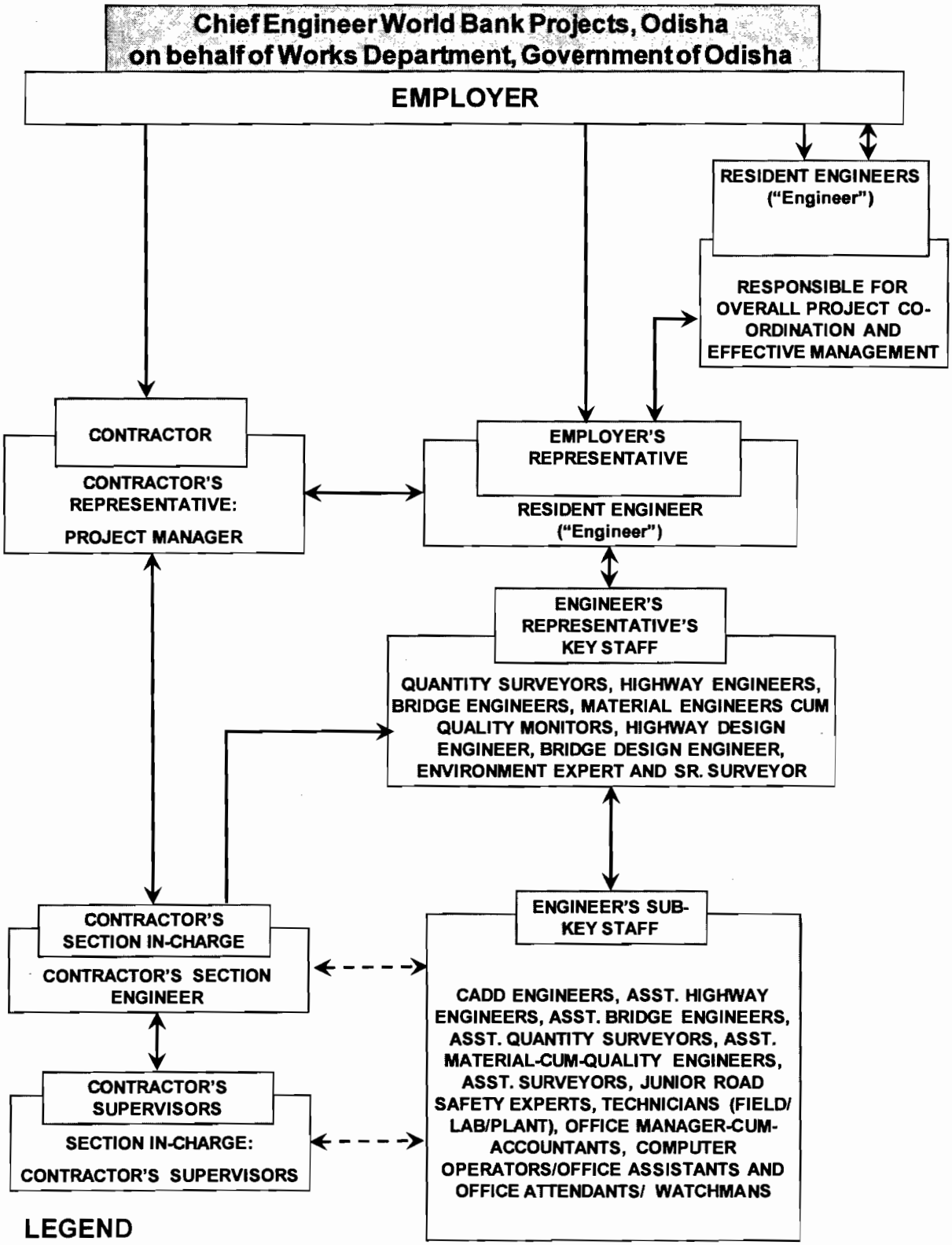

Fig 3 Supervision Consultant's Organisation Chart (Line of Communication)

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- **ADEQUACY OF THE CONTRACTOR' RESOURCES**

This is a perpetual problem in majority of international supervision consultancy jobs that the Consultant have concluded.

The Consultant shall play a major role in this project by way of,

- *- Creating an atmosphere of harmony/confidence with the Contractor in the spirit of the Contract*
- *- Time has a big value: this has to be brought home to the contractor.*
- *- The contractors' personnel /staff may not be familiar with the desired technology. The Consultant have to assist them in bridging this gap.*
- *- The Consultant shall provide regular support to the contractor in programming, gearing up of resources and construction.*

- **GAPS IN TECHNICAL KNOW-HOW IN CONTRACTORS' PERSONNEL**

The contractors' personnel/operators may not be used to the system of working on the prescribed specifications or in conditions similar to the one they are to work now. The Consultant shall introduce,

- *- Introduction of Manuals and Guidelines*
- *- Transfer of technology through practical demonstrations*

As an enhancement proposal, the Consultant will nominate a senior official of the firm as Project Manager/ Coordinator operating from firm's Head Office to provide management support to the project team, as and when required at no additional cost.

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METHODOLOGY

The methodology has been formulated following a logical sequence as shown in Figure-4.

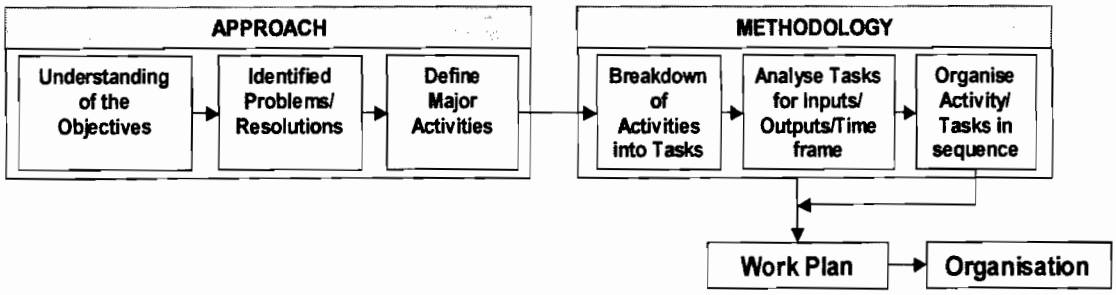

Fig 4 : Logical Sequencing of Methodology

In the Technical Approach to Services, "Tasks" have been identified based on the requirements determined in the discussions above. The Consultant, however, shall add a few more activities to the Scope of Services during construction stage to further improve the consultancy performance.

The Activities proposed in the technical approach have been further broken down into specific Tasks, according to the intended content of the Activity, to help ease in comprehending the methodology planned for carrying out the Activity.

The entire work shall be carried out in a single consultancy contract. However the work has been divided into three distinct phases, **Development Period**, **'Construction Supervision'** and **'Defect Liability'** are elaborated in the ensuing pages and broad activities of the all phases are shown in the following figure no-5.

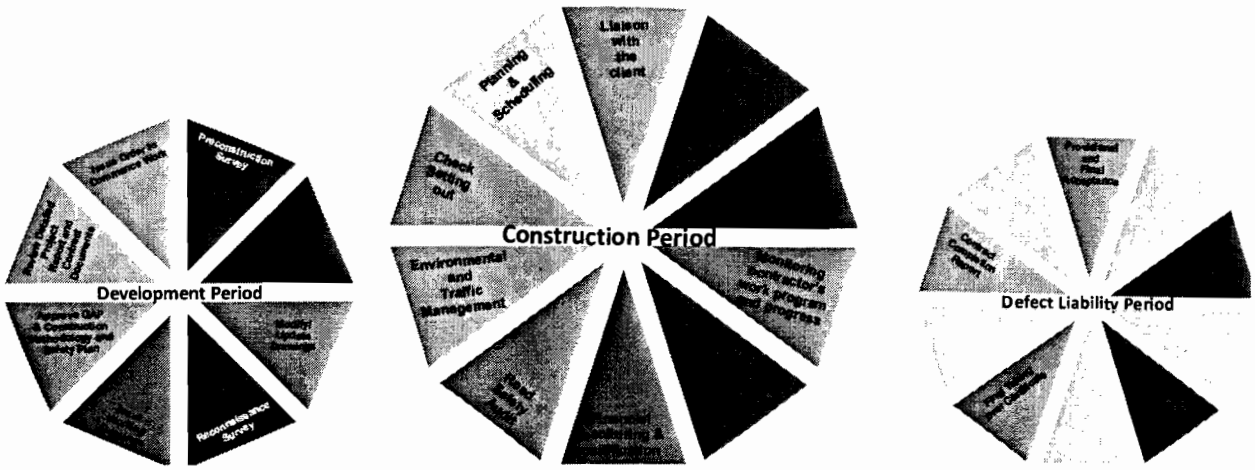

Fig 5 Three Phases of Consultancy Services

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PHASE-I:

DEVELOPMENT PERIOD (DESIGN REVIEW / MOBILIZATION PERIOD / PRE-CONSTRUCTION STAGE) (2 MONTHS)

VITAL ACTIVITIES IN THE PRE CONSTRUCTION PERIOD

The Consultant shall deploy surveyor and survey equipment to carry out the topographical survey and hand over the control points and bench marks to the Contractor.

The Consultant fully appreciates the paramount significance and absolute necessity of the objective of the assignments. The Engineering Design/Drawings/Contract Documents are legal documents which form an integral part of the contract, and the contractor is required to perform the work in accordance with them. To achieve proper administration of the contract, the data generation and assimilation, meticulous comparing and developing precise design and drawings and the transmittal of the approved design, drawings and documents related to 'works' shall be handled with circumspection, and properly recorded at all stages to avoid unnecessary disputes and claims. This, in the opinion of the Consultant, warrants sequencing, linking and combining the assignments of consultant and contractors for achieving the desired and precise output. To this end, the Consultant shall do the following.

The Consultant will undertake field reconnaissance of the entire corridor to examine and compare the existing conditions to the one proposed in the plans. During this period, Consultant shall review the data, design, drawings and material report and also check the sufficiency of Bill of Quantities (BOQ) and assess the technical specification and Contract Document. All findings, omissions/ ambiguities/ inadequacies including possible feasible solutions, with particular focus on, (a) Design/Drawings (b) Civil Contract Document (c) Bill of Quantity to ensure soundness and sufficiency of the design and contract document, and accuracy of BoQ shall be brought to notice of Client for their perusal in form of **Inception Report** within one month time. The Consultant shall provide an illustrative Inception Report, which shall form the pedestal for finalisation of designs and drawings and shall provide the first hand basic information on the changes and its impact on time and cost, if any, to Client for seeking approval.

Concurrently, the consultant will carry out necessary topographical survey and establish all bench marks and control points within the development period. This is the core task of the Consultant during the preconstruction stage to tie and integrate the entire project with authenticated referencing in place of missing/ displaced/ non-representative survey points, on which all construction works are reliant. The consultant will hand over this survey data to contractor, based on which contractor will conduct his setting out and prepare **Working Drawing**.

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The consultant will be responsible for review and approval of setting out details and working drawings of Contractor and issue "**Good for Construction**" drawing to contractor. This process of issuance of "Good for Construction" will ensure enhanced accuracy and accommodate contractor's methodology w.r.t. site condition, thus shall guarantee the active participation of contractor as well as of Consultant and shall certainly minimise/ eliminate the probability of variation and consequently arrest time and cost overrun and avoid contractual conflict. This shall be a continuous and interactive process between Consultant and contractor during the tenure of the project. Our methodology, presented in the following sections, shall provide a comprehensive detailing on the same.

The Design Review / Mobilization period / Pre-construction stage shall essentially be restricted to the design review and modification in design and drawings, if any, and preparation of Project Quality Plan, activities like finalization of Management Systems, Site Preparation, Contractor's Mobilization, Co-ordination with Third Parties, prior to actual construction. The 'Activities' and 'Tasks' have been drawn while formulating the 'Approach'. ***In case, some of the 'activities' or 'tasks' are not addressed hereunder, which are otherwise included in other parts of the scope of services, these are deemed to be a part of the assignment and the Consultant shall perform such assignments without any prejudice as part of their responsibility for full compliance with the scope of services.***

PROJECT INITIATION & APPOINTMENT OF RESIDENT ENGINEER

On receipt of 'Notice to commence' services from Client, the Resident Engineer will mobilize immediately. He shall discuss the status of the project with Client and discuss the **applicability of the 'manning schedule'** of the consultant.

At this stage, the consultant shall also prepare and submit to client a tentative activity schedule which shows detailed tasks in conformity with the Contractor's work program.

Incorporating the comment of Client and comparing with the approved Contractor's work program the Consultant will prepare the final Activity and Manning Schedules which will be used as a framework for the execution and follow up of all the project activities and assignment of supervisory staff. The activity and manning schedule may be revised depending on the progress of the work and other unforeseen circumstances.

The Consultant's personnel will be deployed on site primarily based on the actual staff input requirement as per outcome of meetings with Client, and Contractor's work program. This will be communicated to headquarters in Delhi for adherence to mobilization schedule.

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COLLECTION, ACQUAINTANCE WITH CONTRACT & DESIGN DOCUMENTS AND ANY ADDITIONAL DATA

The Consultant will collect, review, familiarize, and satisfy the sufficiency of **specifications, engineering data and drawings, material report, design calculations, pertinent reports, Particular Conditions of the Contract, BOQ, the land acquisition plan**, and other relevant reports and assess if any inconsistencies occur with the actual site condition and bring it forward to Client's attention. Observation of the documents will be made for any missing ones. It is expected that contractor will plan & initiate his mobilization during this period. As part of the review, the Engineer will also confirm that the Contractor has been given possession of site and issuance of advance payment, as the FIDIC conditions of the Contract requires granting of possession of site and advance payment to the contractor before issuance of commencement letter. For this purpose, the Engineer will review the fulfillment of the requirements before the issuance of the commencement letter and forward proper advice to Client, if the actual situation does not conform to the Contract requirement.

The Engineer will also collect the following additional data and other information from Client (nearby districts, projects or sections) and other Ministries/Departments or Institutes/regional offices introduced by Client including but not limited to climate, geology, traffic, hydrology, original transit book or electronic survey data etc.

The Engineer will ensure for the submission of all contract requirements as third party insurance, his plan to commence the work, camp facility layout, quarry expropriation proposals and the like by the Contractor.

SUBMISSION OF INCEPTION REPORT

The Consultant shall submit a detailed inception report within 30 days from commencement of work to achieve the requirements of TOR. The inception report will cover methodology and work plan, task assignment, project team and there mobilization schedule, staff schedule etc. The report will also highlight the issues of concerns to the client which might affect the **project cost and time**. The in principal approval/intervention requirement on these critical issues observed in DPR will be listed for client and the decisions of the client will be adopted for further proceedings of the assignment.

INITIAL SURVEYS

Reconnaissance Survey & Initial Assessment

The Consultant's comprehension of the whole delivery under this activity shall follow **following methodology** of individual tasks:

Walk-over Survey and Visual Assessment of Road Elements

The Consultant's team shall undertake visual assessment and prepare site inventory by a drive through/walkover survey for attainment of following objectives and

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identifying any 'Omissions' on significant engineering parameters by the Detailed Engineering consultant:

- *Generic familiarization of the project site/road, terrain, logistics & infra-structure, socio-economic condition etc*
- *Assessment of the existing road condition, quantifying various types of distress and delineating locations where the visible distress may be due to deep seated problems*
- *Identify major issues with respect to flooding, road safety and access*
- *Determine sufficiency of horizontal and vertical alignment, prima-facie*
- *Need for any adjustment in alignments which might minimize cost, reduce land acquisition without compromising on 'quality'*
- *Assessment on applicability of typical cross-sections developed by the Design Consultant*
- *An assessment of the catchments area of the structures provided in the drawing*
- *Assessment of culvert conditions needing new construction than 'rehabilitation'*
- *Assessment of bridge condition*
- *Identify any new utilities, encroachments*
- *Sufficiency of ancillary features in the detailed engineering drawing*
- *Verification of road safety features in the detailed engineering drawing*
- *Availability of topographic survey bench marks*
- *Current speed of different type of vehicles on the existing roads*
- *Generic understanding of the vehicle loading patterns*
- *Need for any additional structures*

Initial Assessment

Based on conclusions arrived from walk-over survey and visual assessment of road elements, we shall include an initial assessment of the project road in the background of the completed Detailed project report.

Identification of Additional Survey Work and Design Revisions

In the initial two months provision of development period Consultant shall carry out all the topographical **surveys** for finalizing the control point and benchmarks including the major design review activities. It shall be the Consultant's effort that all amendments are initiated within the first **two months** of the development phase. All major design review activities, however, shall be completed within this total time of 2 months including preparation of variation orders progressively in discussion with the Client. This period can also be termed as pre-construction period.

Any additional survey and field investigation work and design revisions shall be identified and recommended to client for technical and financial approval, to achieve the stated objective of the project, for the intended service level it has to cater. The findings also identify which design drawings, specifications and schedules need to be revised and their overall implications.

Verification of Route Assessment

Verification of the route assessment shall be based on the concept of designing an alignment that best fits the existing road alignment and the topography, while complying with the necessary geometric standards for a given design speed.

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The exercise shall begin by studying existing mapping and aerial photography supplemented by visual inspection, consultations, field visits and already prepared detail engineering drawings to identify any factor that could further influence the decision making process.

Data Collection and Analysis

Data collection and analysis shall be primarily regarding 'Traffic data'. However, this is proposed to be extended to several others areas to satisfy the project objective. The following secondary data will be collected and will be analyzed- a) Climate b) Geology c) Maps d) Traffic data etc..

PREPARATION OF SITE FOR CONTRACTOR'S ACTIVITIES - IDENTIFICATION OF GROUND CONTROL POINTS AND SURVEY ACTIVITIES

Identification, Verification and re-establishment of Ground Control Points

The survey ground control stations (Beacons and Benchmarks) are the bases for the setting out of horizontal, vertical alignment and other drainage structures, which are referenced from these stations while designing. Any changes/incorrectness of these survey ground control stations results in changes of the horizontal and vertical alignment/design changes/ which finally result in the change in BOQ and project cost unless accurately re-established. The Consultant will collect the topographical survey data which shall be recorded in standard survey field books together with the electronic copies and drawing undertaken by the design consultant to enable them identify the survey control stations, beacons and bench marks using these data and drawing as reference. Such details shall be shared with the Contractor.

Surveying

Checking the Elevations (Z Values)

In most circumstances, if any closing error exists between consecutive bases stations, the elevation of the first base station will be used and differential leveling will be applied from the first base to the next base through the intermediate bench marks in between. BM Elevation obtained in this manner will be utilized instead of those shown in the design. This is the case on most similar class road contract projects where direct leveling might not have been done during the design stage.

Checking the X- and Y - Coordinates

The Consultant will check and satisfy that the horizontal accuracy (X and Y coordinates) of the survey beacons is within the tolerance limit. This shall be carried out starting from the first GPS monument/Control Points and running traverse survey to the next GPS monument/ Control points by touching the benchmarks stationed in between.

There happens a case that the X- and Y- coordinates of a bench mark are not within the acceptable error, traverse survey will be carried out from one primary control point to the next by touching the benchmarks therein and new x and y coordinates will be established based on the traverse output so obtained and as long as closure error between the primary control points is satisfactory.

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HAND OVER OF CONTROL POINTS AND APPROVAL OF SETTING OUT

Based on the outputs of the topographical survey, Consultant will hand over the physical control points to the Contractor to carry out setting out of the centerline and detail survey to form the basis for preparation of working drawings. The setting out of the centerline will be approved by the Consultant with information to client.

DRAWING/DESIGN REVIEW – CHECKING SUFFICIENCY OF DESIGNS, DRAWINGS, TECHNICAL SPECIFICATION, BOQ AND CONTRACT

For identification and point out the inconsistencies in design/drawing/DPR and inform the same to client , the Consultant will review all the drawings/Design/reports . The reports/drawings/designs will be reviewed but not limited to following:

- *Review of design assumptions/Guidelines followed*
- *Review of Traffic Studies & Pavement Design /Drawing*
- *Review of Geometric Design / reports/drawings*
- *Review of Geotechnical Studies/reports*
- *Review of Construction and Sub Grade Materials and sources/ Material reports.*
- *Review of Pavement Design Studies/Reports*
- *Review of Hydrological Study reports*
- *Review of Structural Design /Drawings*
- *Review of EIA/EMP reports*
- *Review of Works Contract Document*
- *Review and Verification of Bill of Quantities and Cost Estimate*

All **the inconsistencies observed in the contract document of civil works** will be reported to client as there may be large affect **on project time and cost**. The Consultant will also submit their best possible recommendation/assistance to client for resolving such inconsistency.

DESIGN CHANGE/MODIFICATIONS / AMENDMENTS ISSUANCE OF "GOOD FOR CONSTRUCTION" DRAWINGS

As an outcome of decisions of client on inception report, design review outputs and Topographical **survey results**, setting out of contractor and submitted working drawing of contractor, the consultant will **issue "Good for construction drawing" by using road design software** for execution.

The Consultant shall prepare / update /Modify working drawings, if any, which include but shall not be limited to the following:

- *Plan and profile drawings to specified scale*
- *Cross sections*
- *Pavement Rehabilitation drawings*
- *Patching Details and Payment Items*

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- *Typical cross sections*
- *Mass haul diagrams for earthworks and pavement materials*
- *Drainage Schedules*
- *General (miscellaneous) drawings*
- *Junction and Urban Layout drawings*
- *Structural drawings*

Software to be used:
- *AutoCAD*
- *MX Road/Civil 3D*

RECORD OF INITIAL MEASUREMENT

The Consultant will record all the measurements in relation to the project jointly with representatives of Contractor and Client. The measurements such taken will be used for any future reference during the project development period.

PREPARATION OF DOCUMENTS ON QUALITY MANAGEMENT ,PROJECT MANAGEMENT & MONITORING SYSTEM

Initially these shall be formulated as 'drafts' based on Client's manuals and guidelines, local practices and Consultant's experiences and submitted for Client's approval.

The manuals shall be prepared by qualified staff of the Consultant at early stage of the services. The manuals will strictly consider the sufficiency of the available Consultant's personnel in comparison with the frequency of tests and checks to be made in the manual. This will naturally depend on the progress of the construction contractor. The manuals will have a checklist on all relevant activities of the project. The manuals will have different checklist for materials, structures and pavement works. The manuals will also provide standardized methods of operation for dealing with the Contractor on a daily basis. The manuals will include standard forms that will establish lines of authority, administration control any ways of communication. Such manuals will essentially cover the following:

i. *Project Control Plan to ensure adequate supervision and positive quality control of all works at all times*
ii. *Quality Management Plan, including site supervision procedures, guidelines, standard forms to be completed; approvals to be sought; non-conformance identification and management*
iii. *Project Management & Monitoring System*

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iv. *Technical verification procedures for on-site design changes, and certification of works completed*
v. *Document control and change management procedures*
vi. *Management of technical and contractual records (to ensure compliance with latest documentation and accurate As-built records)*
vii. *Materials testing plan, including sampling and testing methodology, testing schedules, analysis and reporting formats*
viii. *Key Performance Indicators to monitor the works*
ix. *Environmental and Social Management Plan*

Finalize Quality Management Plan (QMP)

The Consultant propose to provide strict supervision of Contractors' activities to ensure all works are carried out in full compliance with **engineering designs, technical specifications and other contract document**, including amendments, if any, and in keeping with the "Best Practices" norms. QMP will essentially cover the following:

- *What to inspect*
- *How to inspect (with flow charts detailing scheduling of tasks for inspection)*
- *Evolving effective quality control measures to be adopted*
- *Role of supervision during laboratory testing*
- *Description of role of key and sub-key professionals*
- *How to identify non-conformance and line of action*
- *Aspects on Contract Management*

The QMP shall be submitted **45 days after the commencement** of services.

The Technical Specifications applicable to the project provide for Quality Control and Quality Assurance of the work executed by making use of a Quality Management System. The basic concept of this process is that the contractor performs adequate testing and inspections to ensure a quality product and the Engineer performs adequate testing and inspection to ensure that the Contractor's Quality Control test results are accurate.

The main aim is to make sure that the contractor performs the necessary tests and inspections to ensure that all the works in road construction including structures and miscellaneous works meet the specifications stipulated in the contract agreement for acceptance of works as per laid down specifications.

The Contractor's part of this QMS process is referred as Quality Control (QC), while the Construction Supervision Consultant's part of the process is referred as Quality Assurance (QA). The Contractor is responsible to mobilize competent personnel and laboratory equipments to perform his quality control as per the Quality Control part of the QMP, and the Consultant is responsible to provide competent personnel to perform and implement the Quality Assurance part of the QMP. To achieve this said objective of assessing and ensuring quality, it is essential to have a **Quality Management Plan** for the job in the initial stage itself.

The proposed Quality Management Plan, in general, will spell out the following:

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- *Procedures for checks on level, dimensions, edges, geometric details*
- *Procedure for selection, approval and operation of quarry and borrow area*
- *Procedure for storing of materials to be used in pavement and permanent works*
- *Design procedures for design mixes and type, frequency and procedure of tests for different kinds of materials and related pavement works*
- *Norms and procedures for control of alignment, surface regularity for pavement layers and concrete structures*
- *Norms of compaction of different pavement layers*
- *Equipment and organization for field tests and sampling of materials for laboratory tests*
- *Procedures for monitoring of bituminous mixing plants during production, laying and compaction*
- *Procedures for monitoring concrete production, laying and compacting and testing*
- *Formats for recording and compilation of test data, and reporting system for test results including forms/checklist and for actions taken*
- *Safety measures*
- *Environmental mitigation measures*
- *Procedure and checklists for implementation of social management plan*
- *Procedures of acceptance of works*
- *Do's and Don't for supervisory staff*
- *Responsibilities of operating and supervising staff*
- *Procedures and activities where 'approvals' are to be sought from the Client*
- *Procedure for non-conformance management*
- *Technical verification procedures for on-site design changes*
- *Agreed approval process*
- *Procedure for certification of completed works*
- *Document control and change management procedures*
- *Management of technical and contractual records ensuring compliance with latest documentation and accurate as-built records*
- *Key performance indicators to monitor the works*

Communication Management

The Consultant will develop a communication process to ensure timely collection, distribution, storage, retrieval and ultimate disposal of all the project information. The system will be computer based and have **real-time interface with client and contractor**. Also Consultant will use the multiple communication modes such as post, e-mail, fax, telephone and web. The QMP containing supervision methodology shall be finalised considering the computerised documentation management proposed in the PM&MS. The communications in the project are mainly the RFI's, different formats or contractual correspondences. Copy of all the correspondences between contractor and consultant will be marked to client for record and necessary action. The Consultant's methodology on computerized documentation management system may be referred to at the end of this chapter.

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IDENTIFICATION OF UTILITIES AFFECTING CONSTRUCTION

Survey of utility services and alert client

Throughout the duration of the project, but especially during the pre construction period, the Consultant shall make a survey of existing utility services and review the relocation plan of these utilities. They will check land acquisition report, land acquisition drawing and contract documents if any whether information is provided regarding the space availability of utility services such as Water pipes, sewerages, electric poles, telephone lines/poles etc. To effect such relocation there may be required design modification with respect to level and alignment, which modifications shall however be notified to Client for approval whenever the extent of such changes is calls for Client's prior approval. Waterlines, sewerage lines, underground telephone lines and electric lines are some of the numerous utilities that shall be closely investigated upon close liaison with local authorities. Detailed plans and proposals for the relocations of utilities shall be reviewed by the Consultant. Survey of all the existing utilities and relocations necessary thereto shall be reported by the Consultant well before the Contractor shall take a possession of the location where these utilities exist.

The Consultant will alert the client for shifting/relocation and removal of hindrances at due course of the time to avoid any time and cost implication on the project.

ESTABLISH OTHER BACKUP SUPPORT FROM HEAD OFFICE

The Consultant shall provide technical/contractual support to supervision staff by other senior staff stationed in the head office in New Delhi. It is important that such support be available to provide advice and design input to solve any unexpected problems encountered at site. In addition, in case of any unexpected work to be done on site, the supervision team will be supported by New Delhi Office. However, for discharging the Construction Supervision Services in a well coordinated manner, the Consultant shall nominate a senior official of the firm as Project Manager/ Coordinator operating from the firm's head office to provide management support to the project teams, as and when required, at no additional cost.

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CONTRACTOR'S MOBILIZATION

Support to Client

The Engineer shall support Client in preparing for the mobilization of the Contractor, in particular on the following:

- *Checking that all contract and project documents are complete and accurate before issue to the Contractor*
- *Reviewing contractual responsibilities and making sure these are clearly defined for all aspects of the work*
- *Preparing a list of actions required for a smooth project start on site, including drafting letters informing other Ministries and key stakeholders at central and local levels*
- *Support Client to prepare for and facilitate a pre-construction meeting with the Works Contractors, including the following:*

  - *Discussion of contractual obligations and responsibilities*
  - *Checking the contractor has been issued with all necessary contract and project documents*
  - *Identifying any supplementary information the contractor may request to carry out the works*
  - *Review Contractor's mobilization plan and Site handover arrangements*
  - *Agree dates for submission of contractor's programme, breakdown of rates, plant list quality control plan, and other deliverables required under the contract*
  - *Review the proposed Key Performance Indicators*
  - *It has to be noted that this task will be performed by the consultant in the situation when consultancy contract agreement precedes the works contract agreement.*

Review & Approval of Mobilization Programme of the Contractor

The consultant shall seek from the contractor a detailed mobilization program as per their own inference to fulfill their contractual obligations. This shall essentially include:

- *Contractors' programme of mobilization of machineries to support the schedule.*
- *Contractors' personnel for supervision personnel, operators and skilled labor;*
- *Contractor's financial resources;*
- *Contractors' proposal on source of water and facilities/locations of storage of material; and*
- *Contractors' site camps and facilities.*

The Consultant shall review the contractor's mobilization programme, provide comments, ensure compliance from the Contractor and report the findings and conclusions to Client.

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Review and Approval of Key Superintendent Personnel of Contractor

The Engineer shall ask the contractor to submit CVs of their key superintendent personnel as required under the provisions of the Contract. The Engineer shall scrutinize the CVs and accordingly accord approval to the contractor's personnel for deployment.

Checking and Verifying the Insurances / Guaranties

The Engineer will check first that the conditions stated in the Insurance/ Guarantees such as Advance Payment Guarantee, Performance Bond, Guarantee for Release of Retention Money, third part insurances, etc. are according to the conditions stated in works contract document and the existing law and is acceptable to the client if required. The Engineerwill check that the amount stated in the Contract document are correctly quoted in Guarantees and are from eligible Banks /Insurances companies. The Engineer will check and verify the validity date of the insurances/guarantees regularly and report on the monthly progress report and request the contractor to extend the validity date if it is found that the validity date is known to be expired before due date.

Pre-Construction Review of Cash Flow Forecast

The Engineer will review the Contractors cash flow forecast with respect to the Contractor's resources and submitted final schedule. If the cash flow is not realistic or doesn't seem to meet the intended schedule, it will be corrected in consultation with the Contractor before the commencement of the Works. The reviewed cash flow forecast schedule shall be submitted to OWD in order to schedule its budget in advance.

Pre-Construction Meeting

Pre-construction meeting will be held with the Contractor in the presence of clients's Representative. During this meeting the Work program and cash flow forecast will be discussed to have a common understanding with the Contractor. At this meeting the Construction Contractor will present his final detailed work program corrected for the engineer's comments, and proposed construction schedule inclusive of plant and equipment resources, in order that the Engineer may formulate his own schedule for supervision activities. After this meeting, the Engineer will prepare and submit to client the contractor's mobilization report. The report will include the points included under reporting.

The Engineer will invite the contractor for pre-construction meetings.

1. Primarily to discuss location of construction commencement areas
   - *To have a common understanding about the peculiarities of the project*
   - *To discuss availability of information provided during bidding*
   - *To discuss on matters and engineers comments, campsite location and establishment, pre-construction preparation, crew assignment on activities like ground surveying (x-sectioning) for working drawing preparation.*

2. Discussion will be made with construction contractor on his final detailed work Program, proposed construction schedule and method of construction inclusive of plant

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and equipment resources, construction material delivery time, the minimum amount and type of equipment fleet required and their time of arrival on site and provision of competent construction personnel. Accordingly the Engineer formulates his overall schedule for supervision activities.

Contractor's Equipment and Facilities Inspection

The Contractor's equipment and/or plant record during the mobilization period is necessary to note the availability of the equipment and facilities to be judged. The Consultant will be responsible to record the date of arrival of each equipment and facilities. The efficiency of each equipment (how often it will be available for work) will also be checked by comparing its operable hour against the total hour determined for work.

The Engineer shall prepare a Contractors Mobilization Report summarizing the above and the following and include the same in the Monthly Progress Reports (MPRs) of that Month.

- *Performance Bond, Advance Payment Guarantee, Insurance of the Works,*
- *Parties to the Project, Commencement Order,*
- *Organization and Correspondence*
- *Lines of Communication*
- *Contractor's detailed work programme and Engineer's initial analysis of*
- *production rates, critical path etc*
- *Contractors initial method statements for undertaking critical components of the*
- *works*
- *Proposed resource schedules and Consultant comments*
- *Description of the Management Systems and standard forms to be used*
- *Schedule of site meetings*
- *Contractor s obligations*
- *List of all contractual documentation submitted or to be submitted*
- *Contractor's mobilization of Equipments, Labour etc.*

Verification of Contractor's Mobilization

For verifying the mobilization of the Contractor, the Engineer will ensure the following:

- *That the Contractor has submitted his work program under relevant Clause of*
- *FIDIC General Conditions of Contract.*
- *That he has mobilized and deployed the required number of equipment in*
- *accordance with his work program and has also arranged the required number*
- *of minimum equipment envisaged in the bid documents.*
- *That he has arranged minimum quantity of material and number of labour*
- *required for meeting the two months requirement.*
- *That he has deployed technical staff such as Project manager and Site*
- *Engineers along with other support staff.*
- *That he has submitted copies of the relevant insurances required as per*
- *contract.*

And when any equipment is brought at site of work, the Contractor shall be asked to inform the Consultant within 24 hours through an RFI (Request For Inspection)

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indicating the particulars of equipment, month/year of manufacture and capacity of equipment and accordingly the Consultant will verify the same and find out if the equipment is in proper running condition. In addition to the above, the Contractor shall furnish to the Consultant a monthly statement showing the Contractor's plant and equipment brought at site up to that month.

The Engineer will ensure that the Contractor does not remove any of the equipment from site of work without the written consent of the Consultant which has been intended to be used in the construction.

ISSUING DRAWINGS, SPECIFICATIONS, CONTRACT DOCUMENTS AND ANY ADDITIONAL INFORMATION TO THE CONTRACTOR

The Engineer will be responsible for the provision to the Contractor of all necessary copies of the contract documents containing the Engineering Drawings, Technical Specification, and Contract Conditions and any additional information requested by the contractor that are necessary for the execution of the work after they have been checked. Any clarifications, to carry out the Works, requested by the Contractor will be provided by the Engineer on time. In case of any design changes, the Engineer will carry out a timely change/modification all drawings and plans and issue the corrected versions of all associated calculations of design or quantification so as to expedite construction timely. The letter of notice to commence will be given to the contractor as soon after the signing of contract as possible.

DATA AND RECORD MANAGEMENT

The Consultant will establish suitable procedures and forms for data transmittal from the construction sites and a computerized system for data storage, processing and updating the information received. In order to meet the objectives, the Consultant will undertake to implement a Project Management and Monitoring System for maintaining up-to-date detailed Daily Site Diary and detailed records.

The Consultant shall understand the current system of correspondence between Contractors, Consultant, Employer and other stakeholders. This shall help to understand most convenient and manageable way of receiving and transmitting information and develop a Management Information System. A flow diagram of the Management Information System (MIS) is presented in the diagram.

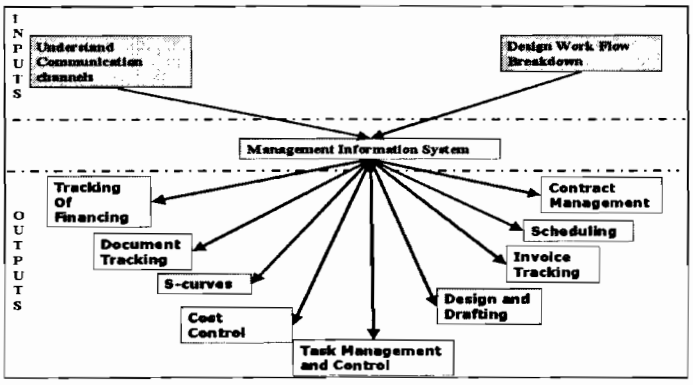

Fig-6 Flow Diagram of MIS

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The Consultant shall integrate the Management Information System in the Project Management & Monitoring System.

Establish Standardized Forms and Procedures

The Consultant will review Client's existing management procedures and reporting requirements for construction supervision of road contracts. Incorporating outcomes of the review and based on experience, the Consultant will prepare guidelines for standardizing construction contract supervision forms for records.

The Consultant will establish an all-inclusive record keeping system, to contain all reports, daily site records, correspondence, site instructions, quantity calculations, payment records and other documents. A regular reporting procedure, reporting system, will be established so that a continuous record is kept of project events and actions. Details regarding quantities, as built plan changes, modification in construction procedures and staff assignments, shall be made promptly. The supervisory staff shall keep detailed diaries of daily events on site and make them available for inspection to the Employer or his representative when requested to do so. All day-to-day project activities will be recorded by the supervision team in a format that contains but not limited to the following:

- *Activity Name; record of activities in progress at any time on site that includes the start and end time and full details of the resources employed per activities.*
- *Weather Condition; this includes rainfall and temperature record which is used to indicate the convenient and difficult working times.*
- *Visitors; the name and title of the visitor and date and reason of the site visit will be recorded.*
- *Correspondences: all the correspondences made on site will be properly compiled and recorded including date, sending part, receiving part and their subject.*
- *Accident on site: The accidents on site, injuries or damages on man, work or equipment and plant will be recorded and advice will be given to avoid or minimize future accidents.*
- *Work stoppage and Delays; all work stoppages and time taken (delays) will be recorded. The reasons of stoppages or delay will be investigated and recorded.*
- *Man power on site: The contractor's manpower on site mobilized or demobilized including their mobilization and demobilization date will be recorded.*
- *Contractor's Equipment on site*
- *Others: Besides above, Consultant will record but not limited to the following;*
  - *Material usage*
  - *Problems encountered and errors of surveying alignments etc.*
  - *Work accomplished*
  - *Discussions and deals with the Contractor and Consultant*
  - *Site instructions received or delivered*
  - *Starting and completion of major works, their type, amount and location*
  - *Idle hours and reasons*
  - *Comments on performance of work (Laboratory test, quality control performed and their acceptance)*
  - *Progress of works etc.*

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PHASE II:

CONSTRUCTION SUPERVISION STAGE (27 MONTHS)

ORGANISING THE SUPERVISION TEAM OF THE CONSULTANT

In order to enable the Engineer to control the quality of the works, the Consultant will organize the supervision of the works with proper allocation of duties and responsibilities to individual members of the supervision' team by developing a standard manual for both design checking and construction supervision activities and issued to each member of the Construction team which will describe the organization, standard of practice to be met and general technical requirements; staffing levels and responsibilities; schedule of reports, daily records, etc; Inspection procedure of the different activities; scope of service; type of sampling and testing to be made; minimum and recommended intervals of testing, taking survey measurements and acceptance tolerance based on the sound engineering and statistical practice.

The Engineer will ensure that all the staff of the project on behalf of the Consultant have clear understanding of their responsibilities. All personnel will be given their job descriptions and standard of the Works to be achieved, which are subject to later modification.

SUPERVISION OF ENTIRE CONSTRUCTION

The Consultant will ensure that the Engineer of respective packages supervise the construction of the works fully in order to make sure that the works are executed in the agreed **construction practices**. Consequently, the final goal of the supervision will be to assure that the work is executed with in the contract time and price by not compromising the quality of the final product i.e by fulfilling the minimum requirement the employer's requirement (design-construct Client's requirement). For this, the Consultant shall discharge their responsibility accordance with sound technical and administration practices in a very diligent and efficient manner.

The methodology proposed by the Consultant will be an integrated system which identifies new coordination and management methodologies, environmental supervision and control technologies as well as the choice of best materials, including innovative materials and relevant construction techniques adopted by the contractor. And therefore, a valid project management plan is vital for the successful outcome of the project, and the Consultant shall ensure its accomplishment. This applies for both the design activities and construction works carried out by the contractor yet evaluated and approved by the Engineer.

INSPECTION OF CONTRACTOR'S SETTING OUT AND PREPARATION PRIOR TO APPROVAL TO CONSTRUCT THE WORKS

All survey and pertinent workmanship and inspection checks shall be done before commencing any following (succeeding) activity is permitted. The contractor shall provide accurate control of position, line and level at each and every stage of construction for all activities, with respect to the road alignment. Horizontal alignment control shall be done at a very defined interval so that the road layout, longitudinal section, and cross-section level of sub-grade and sub-base course, thickness of pavement

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layers, cambers and super elevations are constructed as specified on the contract document or directed by the Engineer. Closer control intervals shall be given on curves depending upon the radius of the curve. Care and closer control intervals shall also be adopted for vertical curves. Setting out of culverts, bridges, foundations floor slabs, grade stakes, slope stakes, flow lines of culvers etc. will be spot-checked by Engineer to ensure accuracy.

In order that a more efficient output of quality works may be insured it is of vital importance that the Engineer devises tools for controlling the works from the scratch. This is ensured by application of checking of the Contractor's setting out of the Works and preparation for the Works and giving approval for the same prior to issuance of approval to commence the Works. To this effect checking and approval of the following preparatory works, which lists of works by no means is exhaustive, shall be made prior to approval of the main activities. Most construction activities may require application of trial sections in order that the Contractor may demonstrate the sufficiency of his task force and the methodologies adopted, which shall be enforced by the Engineer. A very brief indication of what preparations of contractor will be observed and inspected is shown below in table 3.

Table 3 : Preparatory activities of inspecting Contractor's setting out work prior to approval of works

The Works	**Preparatory activities required to be checked**
Excavation/embankment construction/subgrade	Check the setting out of the road centerline and check whether or not slope stakes (stakes placed for showing the construction limits) are in their correct positions; whether remnants of materials from clearing and grubbing are not available in the roadway. In case of embankment works check and approve the material to be used, the intended spacing of dumpings, the sufficiency of the machinery, etc. check whether grade checkers (personnel deployed to check the appropriateness of the slope of fill or the slope of cut) are available. For final sub-grade level order the utilization of stakes showing the top level of sub-grade.
Sub-base/ constructions	Check as built levels on the sub-grade constructions are within acceptable tolerance. Check if material has passed the quality tests. Check the intended dumping interval; check that 'blue tops' are in their appropriate locations, inspect the machinery setup.
Base-course constructions	Check if material has passed the quality tests. Check optimum moisture is applied at the mixing site. Check if machinery setup is as required in the specifications .Check whether proper level marked and construction width limits are placed before paving. Check the appropriateness of the allowance applied for shrinkage of base course for compaction.
Dry Lean Concrete	Check if material has passed the quality tests including the mix design. Check, trial compaction has been done and rolling pattern has been established to ensure the proper compaction. Check if machinery setup is as required in the specifications. Check optimum moisture

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The Works	Preparatory activities required to be checked
	is applied at the mixing site. Check whether proper level marked and construction width limits are placed before paving.
Pavement Quality Concrete	Check if material has passed the quality tests including the mix design. Check weather condition is favorable for laying of PQC or not. Check, trial compaction has been done and laying procedure has been established to ensure the proper compaction. Check if machinery setup is as required in the specifications. Ensure the tie bar and dowel bar inserter is working properly. Check the concrete mix before sending to site. Check whether proper level marked and construction width limits are placed before paving. Ensure the transverse & longitudinal joints have been cut within specified time.
Bituminous Works (DBM & BC)	Insure that materials to be used are those having satisfactorily passed quality requirements. Check that number of each kind of equipment is sufficient for the specific work required of it. Check that proper level marks, and construction limits are marked.
Drainage structure works	Check that materials brought close to the structure location are ones having passed the quality requirements. In case of concrete casting check whether the constituent materials are brought to site according to the mix-design with some required tolerance. Check whether reinforcement steel is bent in the required shape, placed in the designed spacing, and is of the required diameter and length. Check whether the formworks are standard and are fixed in the required positions, and are braced well. Check the machinery setup.

REVIEW & APPROVE CONTRACTORS' PROPOSALS, WORK PROGRAMME, PLANS INCLUDING ACTIVITY SCHEDULING AND RESOURCE PROGRAMMING INCLUDING EQUIPMENT

Initial Work Program (as per relevant Clause of FIDIC) submitted by Contractor shall be reviewed in tandem with the Contractors' proposed resources: men, material and equipment.

Review and Approve Construction Schedule/ Work Programme Including Activity Scheduling and Resource Programming Including Equipment

As is normally required in the works contract document the contractor shall be required to submit work program in the form of a Critical Path Method Network (CPM Network) showing the order of procedure and description of the construction methods and arrangements by which he proposes to carry out the works. The Engineer shall ensure that the Contractors will use **MS Project or PRIMAVERA** software to prepare such programme.

In addition, the aforesaid critical path programme should be supplemented by:

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- *Time bar chart detailing each construction activity, showing for each construction*
- *activity; the periods of construction activity planned; the percentage completion*
- *anticipated per month; the timing and planned rate of production; the programme shall*
- *be in accordance with the works contract specifications.*
-
- *Detailed work method statement in respect of each construction activity. It should be*
- *supplemented by a time-bar chart of the same programme.*
- *Cumulative cash flow.*

The Contractor's proposal shall be reviewed which (in the Contractor's opinion) will, if adopted shall result in the following:

- *Accelerate completion of works,*
- *Reduce the cost of executing, maintaining or operating the works,*
- *Improve the efficiency or value of the completed works, or*
- *Otherwise be of benefit to Client and the road sector and*
- *Advise Client regarding accepting/modifying or rejecting such proposals and*
- *any cost implications.*

The Work programme is intended to be a flexible document which cannot form part of the contract. Accordingly, the Engineer will ensure that the Programme is modified / revised as and when required by committing the completion of work within the stipulated date of completion provided in the contract or within the extended date of completion.

The Engineer shall review details specified by the Contractor in the Construction Schedule submitted by them. The schedule shall be reviewed to ensure consistency between contractors' resources and work schedule.

A **"Traffic Diversion Plan / Safety Plan"** shall also be asked for in accordance with construction schedule to ensure smooth flow of traffic. The Engineer shall ensure that the traffic management measures proposed will in no event compromise the **health and safety of road users**, in particular vulnerable road users such as pedestrians or cyclists, or any of the Contractor's staff.

After incorporating the comments for further improvement, the resubmitted programme shall be approved by the Engineer including activity scheduling and resource programming for implementation and monitoring on ground.

It shall be clearly documented that the contractor shall place all key construction equipments as mentioned in the program on ground and no equipment shall be demobilized or shifted from its designated location without clear written permission from the 'Engineer'.

Review and Approval of Methodology/ Method Statement and Material Source Plan

The Engineer will ensure that the Contractor submits detailed work method statement of each particular construction activity indicating the category/type and

quantity the labour, skilled labour, supervisors, plant, equipment and materials to be employed on the particular construction activity; together with: the estimated average daily production anticipated; the estimated equipment availability and utilization factor anticipated; and a detailed step description of the way in which resources are to be utilized to achieve the construction.

Review and Approval of Traffic Management Plans

The Engineer shall review and approve traffic management plans prepared by the Contractor detailing how motorized and non-motorized traffic and pedestrians shall be accommodated during the construction phase considering the safety and security of the traffic and construction workmen. It shall be ensured that the plan shall consist of, but not be limited to the following:

- *Phased approach to construction which minimizes road user disruption*
- *Details of public roads to be or not to be used for construction or diverted traffic*
- *Location and detail of temporary diversion roads*
- *Conditions for one way traffic working*
- *Details of required provisions for temporary bus bays and lay by facilities*
- *Reasonable access to frontages, particularly commercial frontages, at all times*
- *Details of temporary signing that must be provided and maintained*
- *Specification of speed limits to be applied and locations of speed humps*
- *Specifications of minimum standards of riding quality to be provided on the existing and diversion roads and*
- *Specifications of special facilities to be provided for pedestrians and other vulnerable road users, particularly in urban centers and near schools.*

DEVELOPMENT OF KEY PERFORMANCE INDICATORS (KPIS)

The Engineer shall develop Key Performance Indicators and a work plan to monitor all aspects of the quality of the works as well as Health & Safety (e.g. accidents on site etc.), Environmental (record of oil spills etc.) to be reported on monthly basis. The indicators shall be agreed between Client and the Contractor.

REVIEW OF CONTROL OVER WORKS

The Engineer shall provide strict supervision of Contractors' activities to ensure all works are carried out in full compliance with engineering designs, technical specifications and other contract document, including amendments, if any, and in keeping with the "Best Practices" norms. Brief Description of Controls proposed is presented below:

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TYPES OF CONTROL OVER WORKS

- ***Design Control:*** *Ensure project Designs are appropriate with in view of changing site conditions and apply value engineering to apply economic improvement in design.*
- ***Location Control:*** *Ensure works are constructed to lines and levels in compliance with contract documents*
- ***Material Control:*** *Ensure Materials used in construction meet the technical specification.*
- ***Technical Control:*** *Works are constructed in accordance to plans and specifications.*
- ***Financial Control:*** *Payments to contractors are completely justified on basis of work done.*
- ***Project Management and Time Control:*** *Keep track of progress and recommend corrective measure to comply with time schedule.*
- ***Environment Management:*** *Environment safeguards are implemented and no unexpected, residual or cumulative impacts take place.*
- ***Traffic Management:*** *Minimum interference takes place with existing traffic.*

Engineer will organize Monthly review meetings with the contractor in the presence of the Counterpart Engineer and shall thrash out the problems of the site within periphery of the contract.

MONITORING CONTRACTOR'S WORK PROGRAM AND PROGRESS

The Engineer will monitor the progress of the works and the contractor's method of works against approved programme and method statement with respect to each construction activity. Maximum effort will be made to create the contractor's awareness with respect to the schedules he presented and approved earlier. The following methods will be used to evaluate and monitor such progress:

Monthly Site Meeting

The Engineer will organize site meetings once a month or as required for evaluating the progress of the contract and for discussing matters pertaining to the contract, which any of the parities represented, wish to rise. The Employer will decide the dates and times of meeting.

Revision of programme of work

Any point of time, if the contractor falls behind the program submitted by him and approved, and in as far as the last submission date was before the agreed revision limit (usually three months), the Engineer instructs him to present a revised work program, which should indicate the manner in which the contractor undertakes to complete the works within the remaining contract time. The Engineer checks any proposal in the revised program that accelerates the rates of progress by more and/ or better labor and equipment being provided. The proposal to accelerate the rate of progress hall also detail in writing to the Engineer, what additional plant/equipments will be provided; how the plant/ equipment and/or labor will be improved, and how the plant and labor will be more effectively utilized.

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The Contractor's progress will be monitored in respect of each construction activity and with respect to chainage. The progress of each activity will be compared with the program. The impact of the method of working on the progress will also be examined and commented by the Engineer. The Engineer shall use different methods to monitor and smoothen the work progress:

***Regular site meetings*:** and progress and technical meetings between the Project Manager and Engineer shall be held and formally minuted. This will afford the opportunity for detailed discussion of any problem areas. Work plans and other matters affecting the progress of the contract.

These meetings will discuss activities expected for the following week, including confirmation of the Contractor's needs in maintaining scheduled progress, regarding survey checks, testing, inspection and measurement of quantities.

***On monthly and quarterly basis*:** The Engineer will formally arrange a joint inspection with the Contractor, in the presence of Client, of completed sections of the works for acceptance. And also, a meeting shall be held involving the Project Manager, Construction Contractor and Client's representative to appraise the progress of the Works. Minutes of the meeting shall be taken for circulation as required. It will not be the intention of these meetings to discuss details, but to clarify the extent of progress and deal with broader contractual matters.

The Contractor's equipment on site: its arrival and removal, availability, utilization and hours worked and conditions will be recorded. The Engineer will also prepare an equipment availability figures for each category.

***Work schedule*:** The Engineer will continuously monitor progress of the Works by using **PRIMAVERA/ MS Project** to analyze the critical activity with critical path method. If the Contractor is behind schedule, the Engineer will request the Contractor to propose and utilize improved work methods and resources to solve the delay. The Engineer will also submit to Client, recommendations to re-establish and maintain the previously agreed schedule.

If the delay is inevitable, the schedule will be revised considering actual conditions. The remaining works will be continuously examined in relation to the agreed schedule and Contract budget.

Generally all project records will be taken and kept in site office. These documents will be listed with a registration number, date, number of copies, the names of the persons who have submitted or taken it, to which it is issued etc.

REVIEW CONTRACTOR'S WORKING DRAWINGS, PLANS AND CALCULATIONS

The contractor is expected to prepare any construction shop drawing for the purpose of this contract.

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The drawings shall be prepared as specified in the contract document for each and every item of work and in accordance with any further requirements specified by the Engineer including but not limited to the road cross-section indicating the station, transverse distance at each break point up to the slope stake position for the existing ground, elevation at each corresponding distance for the existing ground, pavement layers along the cross section for both cut and fill sections, details of pavement layers, side and ditch slopes, crown of carriageway and shoulder, widening details, super elevation details and drainage layer details if any etc. and structures and drainage facilities indicating station, foundation details and section, abutment details and section, superstructure details and section, wing walls, retaining walls, parapets, culverts details, under drainage details, scour and erosion protection details, form and false work details and pertinent calculations, assumptions standards etc.

The contractor will be instructed to submit only fully completed drawings in accordance with the requirements of the specification and shall not be entitled to claim for delays from the submission of incomplete drawings and then only Engineer will issue the "Good for Construction" drawing to the contractor.

Only accepted drawings shall form an integral part of the project document, and any drawings not accepted and signed by the Engineer shall not be permitted on site of the works for construction purpose. It shall be the full responsibility of the contractor for works executed without signed (approved) working drawings for observed discrepancies, omissions, errors, etc.

INSPECTION OF WORKS

All construction activities shall be monitored and inspected on a routine basis by the Engineer both on construction and completed status. Methods shall be checked for compliance with the specifications & agreed methods. This will be used as a basis of payment.

If there is non-compliance, the Engineer will issue a **non-compliance report** to instruct the Contractor to find remedies or to make adjustments as required. Reports describing the operation, environmental mitigation measures, work area, problems encountered, corrective measures taken, work persons and equipment on site and quantity of work performed, shall be prepared. Inspection shall also be done upon request of the Contractor, while random, intermittent inspections are compulsory to ensure that approved methodologies and materials have been employed.

The sourcing and utilizing materials in work, methods of execution of work, acceptance and non-conformance criteria , workmanship and quality control shall be followed as per Quality Management Plan(QMP).

MONITORING PAYMENT PROCESS

It is obvious that the contract condition defines the time limit within which Client shall pay the payment due to the contractor after being submitted to the Employer. Hence, in order to protect Client from interest costs due to delayed payments, the Consultant will monitor the payment process and the total Project Cost with detailed reasoning.

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Client shall be alerted when payment delays resulting from interest charges will become due and when Client will be in default for late payment by raising the issue on the monthly progress meeting, stating the default date on the monthly progress report, communicating with Client from time to time so that the Employer will be aware of the occurrences of additional interest payment and will take the necessary actions in a timely manner.

DATA AND RECORD MANAGEMENT

The Consultant, in the pre-construction phase, will establish suitable procedures and forms for data transmittal from the construction sites and a computerized system for data storage, processing and updating the information received. In order to meet the objectives, the Consultant will undertake to implement a Project Management and Monitoring System for maintaining up-to-date detailed Daily Site Diary and detailed records.

The Consultant shall integrate the Management Information System in the Project Management & Monitoring System.

Daily Records and Daily Work Plan

The Consultant shall develop formats to fully comprehend what is going on and done on each activity everyday. The formats should include the start and end times, chainages, site instructions to the contractor, comment/ decision ideas to be advised by the Engineer (for work stoppages or delays or changes to be made, etc.) accidents on site, official visitors to site and their comments (if any), weather records etc.

The formats will be in such a way that the Engineer could be able to understand easily what is done on site by reading the information on the formats. The Engineer should be able to decide/ plan on his part by understanding the information on formats. Their daily work plan preparation results from this information but not limited to it. The records shall be available online in the system for viewing.

The Consultant will develop procedures for evaluating and certifying the Contractors periodic progress reports including procedures for utilizing the measurement books and supervision team's Daily Reports for verification of the Contractors estimate of quantities. This task will extend throughout the entire construction period and includes any special situations that arise during post-construction period.

Daily site recording regarding all aspects of the project will also include; weather condition, manpower on site, equipment on site, material usage, and work accomplished, site instruction, problems encountered, idle hours and reasons, comments on the performance will be included.

The Engineer assisted by the Consultant will prepare a daily work plan to make sure that every item to be constructed on each workday is covered by the supervision personnel. The plan will be revised based on the on going construction activity.

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Contractor's Equipment Record

The minimum required number and capacity of equipment should be recorded and compared against the contractors' minimum requirements. The capacities of vital equipments will be measured and checked on its performance measured on site. The efficiency of each equipments (how often it will be available for work) will also be checked by comparing its operable hour against the total hour determined for work. Equipment availability figures will be produced for each category of equipment and will be analyzed how much it will be suitable and available for the work. If the equipments condition in general is not as per the requirement, the construction contractor will be advised to bring equipments as per the bid document and remove these from site or if not possible to add additional equipments so as to save and prevent the time beyond the contract period.

Record of each equipment shall be kept in the system covering at least the following information:

- *Precise date of arrival and date of commissioning at site to commence works*
- *Precise date of removal from site*
- *Availability, utilization and previous hours worked and condition*
- *Manufacture date*
- *Capacity evaluation for processing outputs*
- *Repair frequency and downtime*

Inspection of Plant and Equipment

At the commencement of the work, the Engineer will inspect in detail and record the contractor's equipment, at site to ensure that they meet the specifications, are in suitable condition and are compatible with the nature and quantities of the work to be performed. Special attention will be given to:

- *Earthwork machinery;*
- *Rock crushing plant for the production of crushed base course and aggregates for asphalt surfacing and concrete works;*
- *Suitability of proposed batching plants, concrete mixers, plate and needle vibrators;*
- *Slip form paver*
- *Asphalt paving machines, if required; (incase of Asphalt concrete)*
- *Compacting equipment; (rollers)*
- *Hot mix plant*
- *Asphalt distributors*
- *Water trucks*
- *Dewatering equipments, and*
- *Electric generators for power supply.*

Should the Engineer be not satisfied with any of the items, the Engineer will immediately inform the Contractor of its unsuitability with an advice to replace it. All equipment will be monitored throughout the job to ensure its continued acceptability. All events of incoming and outgoing machinery of the site has to be informed to the Engineer by the contractor in advance Daily records shall be kept by the supervision staff of the Consultant to keep a check on the contractor.

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Establish monthly availability of equipments for work in percentage for each category of equipment. The Contractor Equipment Record will be taken with its precise date of arrival or removal from site, hours worked and conditions and it's availability and utilization.

Detailed information regarding the Contractor's equipment on site will be kept for inspection by Client or his representative. All correspondences made to and from the Contractor, relevant local and other organization will be recorded and made available. The recording includes stoppage or delay, accident on site, official visitors to the site, all weather records, and all activities in progress on site showing the start and end time and full details of the resources employed per activity.

Detailed Records of Staff

The Engineer will keep the record of all the key professionals deployed by the contractor at site. In case of non performing staff, Engineer may ask the contractor to remove such personnel under provisions of the contract. Daily records on this account shall be kept by the Engineer.

All events of incoming and outgoing staff of the site have to be informed to the Engineer by the contractor in advance. Daily records shall be kept by the Engineer to keep a check on the contractor.

Other Records

In addition, the Consultant shall maintain following records:

- *Comprehensive records of material resources mobilized and used by the Contractor. Unbalanced resources or discrepancies between projected outputs and works performed shall be brought to the attention of the Contractor.*

- *A systematic record of all inspection and test results to provide the basis for systematic and statistical analysis.*

- *A formal record of digital progress photographs taken throughout the duration of the Contract at monthly intervals at set locations and as required of any construction activity of technical or contractual interest at any time, including all environmentally sensitive locations. Each photograph is to be captioned with: reference number, time, date, precise location, subject and points of particular note. The digital photographic data shall be stored in the system together with the captions and shall be made available to Client as part of the monthly reports, in CD/DVD/external storage devices.*

PREPARE DESIGN CHANGES TO SUIT FIELD CONDITIONS AND/OR NEW DESIGNS

Necessary verifications, investigations and consequent modifications in design shall be made by the Consultant in the development period, considering site conditions or optimization of costs. The same shall be done by the Engineer in the construction supervision phase, with the help of the Consultant.

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Design Changes

The purpose of any modification will be either to correct errors or omissions in the design or to adjust the design **to suit field conditions or add value to the project**. It will be the Consultant responsibility to carry out necessary investigations and prepare modified designs & drawings. This may include design of structures conforming to latest specifications or some re-alignments or, increase/ reduction in cost without any dent on the desired quality of works. These changes will be made after proper information to the clients and approval thereon from them. The Consultant will also inform the client of possible financial impact on the cost of Civil Works. If need be, the Consultant shall prepare variation orders to the design changes and/or new designs.

UPDATE OF COSTS AND ROUTINELY ADVISE THE CLIENT ABOUT COST

The total project cost may be changed, usually raised above the original estimated project cost, due to different reasons, usually due to matters not adequately observed during the design stage. These comprise, errors in calculating quantities, escalation (labor, equipment, materials, etc). Cost variations may also arise out of design changes/variations. Varied quantities have great influence not only on the project cost but also on the completion time of the project. Hence, the Engineer shall give due attention for the determination and updating of project costs.

A financial analysis of the project shall be prepared routinely and not more than quarterly interval showing disbursement schedules and recording payments made. The status and description of contract variation orders, an estimate of the final cost of the contract based on accurate measurements of quantities made on the sections completed, projected final quantities (if data available) and the amounts of any variation orders will be included.

Details of the Supervision Contract disbursements and final projected costs will also form part of the report. Around the end of the contract period, the Engineer will advise Client on whether liquidated damages are due from the Contractor and on the total amount of the envisaged liquidated damage, which will be presented on the nearest monthly progress report. Client will be advised of the total cost with detail description for increase or decrease.

Bill of quantities will be checked and compared against the actual measured quantities. If variations in quantities are observed, the Engineer will assess the contractor's resources and timely advise him in consultation with Client. Matters that may bring risk to Client will be dealt with deeply. If at any time cost savings are obtained for Client, this shall be notified to the contractor and Client timely.

The Engineer will, routinely and at not more than quarterly intervals, advise the Client of the estimated total cost in different contract currencies to completion of the works. The following three important issues contribute for the successful completion of a project within budget,

- *Study of project records and advice the contactor about the status of the work*
- *and establish mechanisms to follow the work program,*
- *Identifying the present conditions of the project and prepare appropriate work*

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- *plan to compensate the delayed work*
- *Forecasting the requirements for completion and also identify the possible problems that may encounter and prepare the possible techniques to minimize/ avoid the problems*

REVIEW AND RECOMENDATION OF CLAIMS AND TIME EXTENSION

Upon recommendations of Engineer, the Consultant will assess and in due time process matters that will otherwise be causes for potential problems of claim. To protect any disputes, the Consultant shall have proper records and take action to make the employer free of claim/ time extension and financial claims.

Sometimes, occurrence of claims may be beyond the control of the Consultant such as incorrect/inadequate bidding documents issued to the contractors, technical specification which does not adequately specify the works to be executed and methods of measurements and payments, errors in topographic survey data undertaken by the design consultant, unexpected site condition such as sub-grade condition and assumed bearing capacity, contradicting articles/clauses within the contract document. Due to these reasons the contractor may claim for both financial and time extension claims. Hence, in order to minimize the claims the Consultant will take the following actions.

As discussed under design review activity the Consultant will review the design documents including the contract document and investigate the actual site condition to identify the problematic issues which may lead to claim due to the above reason and proposes solution including design changes and variation orders to the employer before the issues lead to further financial and time extension claims due to stoppage of manpower and equipment of the contractor. The Consultant will carry on checking the design drawing and topographic survey data as to whether they reflect the actual site condition before the site is handed over to the contractor so that solutions can be sought before it enforces the contractor to stop the activity.

For the claims which may occur during the construction activities such as delay in site possession, delay in removal of site encumbrances, additional works recommended, delay in payments and other unforeseen conditions such as exceptionally adverse climatic condition, occurrences of malaria and other epidemics, special risks (war, hostilities, invasion, rebellion, revolution etc.), the Engineer will perform the following activities to avoid or minimize the causes or its effect;

1. Timely checking and approval of contractors proposed working drawings
2. By timely and properly liaising with the local administration, clears off compensation costs of properties within the right of way.
3. Discuss with the local administration, people and any governmental bodies not to cause obstacles for the contractor's activities.
4. Timely issuance of the road designs, plans and any pertinent documents of the road to the contractor.
5. Timely and proper decision of site problems encountered
6. Proper record of weather that is not healthy for the construction. E.g. rainy & foggy.
7. Excess/ unsuitable excavation will be dumped in a site approved by the Engineer within

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economic hauling distance so as to have less environmental impact.

8. The best qualitative material within the economic haulage distance shall be used for construction.

9. If material in roadway excavation fulfills the specification requirements, economic advantages of Client will be kept by utilizing the material for the purpose it fulfills.

10. For the unforeseen problems, the Engineer will minimize the effects and timely propose solutions to overcome them before it leads to further problems.

The Consultant will do its best effort to avoid any financial & time extension claims by timely issuing design changes and other relevant documents, by having a good liaison with local administrators & the employer regarding land acquisition and timely possession of site to the Contractor. And also the Consultant will avoid such problems by giving complete designs, timely responses, approvals or rejection and recommendation for the Contractor's requests. When such claims could not be avoided, as per the General Conditions of Contract, the Contract will be watched to submit any intent of possible claims or extension of time as reasonable as practicably possible, and followed up with details soon after. The Consultant will advise Client on all matters relating to claims from the Contractor and make recommendations thereon including the possible recourse to arbitration. Where claims arise, the Consultant will analyse them according to the conditions of contract and advise client on all related manners and ensure that full documentation is available to facilitate and substantiate the Engineers' decision. A review and analysis shall be made by the Claim Expert of any claims submitted by the Contractor followed from the intent, for extension of time and/or extra compensation. Using official records, discussions with site staff, daily reports and contract documents, a comprehensive study shall be made of all matters relating to the claim. A report shall be submitted to Client detailing the chronology and nature of the claim itself, the Consultant's appraisal thereof, as well as conclusions and recommendations as to the validity of the claim. Upon obtaining the approval from Client, the Engineer will forward the decisions reached to the contractor.

ASSISTING IN ADJUDICATION/ARBITRATION

The Consultant will explain and/or adjust ambiguities and/or discrepancies in the Contract Documents and will provide assistance to Client in the Settlement of disputes with the Contractor.

Minor ambiguities and discrepancies in the Contract Documents will be handled by normal procedures familiar to the Consultant's staff. Every effort will be made, in case of any disputes to negotiate a fair and equitable settlement before they lead to formal claims situations.

Where ambiguities or inconsistencies exist in the Contract, the Consultant will work with Client to clarify those aspects. In addition, whenever matters of ambiguities lead to unavoidable disputes, the Consultant will provide assistance to Client to overcome disputes with the Contractor in a professional manner.

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If the contractor implements the results of the above decision without objection the claim issue is deemed settled. But otherwise when the contractor protests the decision, the Engineer will assess the reason for protest. Careful consideration and analysis will be made for the reasons of protest that the contractor will forward. Relevant clauses will be thoroughly investigated on the specific conditions of contract and different literatures available and the cases will be analyzed particularly w.r.t our condition. Detail records of each site conditions will be kept with the Engineer, especially w.r.t the claim cases and will be produced to Client any time up on request. The Consultant will timely respond to these issues in consultation with Client. Upon another protest by the contractor, the Consultant will based on the provisions of the Conditions of contract advice the employer to upgrade the matter as an arbitration matter. The Consultant will prepare and provide the necessary expertise and personnel for the case to advise and assist the employer.

The Consultant will conduct a careful dispute resolution procedure and will not make any decisions beyond his sole discretion without the awareness of Client. And in the event of adjudication or arbitration, the necessary personnel will be proposed to assist Client. Further analysis if required will be produced to assist Client in presentation of the case.

AS-BUILT DRAWING

The Engineer will request the contractor to prepare "As Built" drawings along with the final documents. The "As Built" drawings shall be prepared in A3 sizes and shall be signed and stamped by the Consultant and the contractor.

The Consultant will review the as built drawings that they detail all alignment and level information position and size of drainages, services information and structural drawings etc. and approve and submit the full set of as built drawing within two months of completion of the works.

As built drawings will be checked and monitored continuously in order to reduce workload at the end of the project. Complete as-built drawings will be prepared for the whole project, including rehabilitation on existing works. Surveys, where, will be made with the co-operation of the Contractor's staff to obtain detailed completion information. This will be done as soon as work is completed on each section or structure, to ensure that the as-built drawings reflect accurate detail of the work done and are kept up to date.

All services encountered, deviated or protected will also be shown on the as-built drawings. An original and the required number of copies in both hard and soft copies of the as-built drawings will be submitted to Client.

ARRANGEMENT FOR JOINT INSPECTION FOR PROVISIONAL ACCEPTANCE AND TAKING OVER CERTIFICATES

Before the request for taking over certificate in respect of the works, the contractor shall submit to the Engineer all test results and survey data of all finished works and constructions. Scales, format and layout are to be determined by the Consultant.

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The Engineer shall then investigate the request on practical grounds, compare the minimum length of allowable to takeover in the works contract and act to call the employer accordingly.

All repair/ remedial work shall be carried out by the contractor, at his own expense if the necessity there off be shall in the opinion of the Engineer.

The Engineer will inspect and test which he deems necessary to determine that the provisions of the specification are met of the completed section of the road or upon the request of the Contractor. The Engineer will then note all defects, imperfection and faults and prepare a list and inform the Contractor to rectify them according to the contract document by detailing the defects, imperfections etc and the actions required to be taken by the contractor. Having been satisfied with the rectification works and compliance of all the works to be accepted to requirements of specifications and drawings i.e. the adequacy of the road for provisional acceptance; the Engineer will formally arrange joint inspection with the contractor and Client.

During the inspection in the presence of Client's representative, any additional defects/faults will be identified. Each defect identified will be discussed for remedial measures and make definite recommendation for rectification.

After the completion of the Work, in accordance with the Contract Documents, once the contract is substantially complete, a final inspection of the works will be carried out by the Engineer together with representatives of the Contractor and Client. A list of outstanding works will be compiled and handed to the Contractor, who will undertake to complete them in a specified time. Once this outstanding work has been completed, the issue of the Taking over Certificate will be recommended and issued to the contractor.

PREPARATION OF A MAINTENANCE MANUAL

Consultant will prepare a 'Maintenance Manual' covering the routine maintenance needs for the all the sections of the project including CD works for the period beyond Defect Liability Period. The maintenance manual shall cover all salient features and provide details which shall help Client in establishing an Asset Management System (ASM) and /or Maintenance Management System (MMS) detailing timely interventions to maintain the desired "service" level.

CONTRACT COMPLETION REPORT

Handing Over of Properties of Client

The Consultant will ensure that all materials, tools, plants, equipment, facilities etc. which have to be handed over to the Client at the completion of the project are properly dismantled, packed, stored and maintained until official handing over to Client. At the completion of the project, the Engineer will request the contractor to carry out a joint inspection of all the list of equipment and facilities required in the contract to be the properties of the Employer after completion of the works and for subsequent handover of these items to Employer. All the properties purchased for the sole use of the Engineer or joint use of the Engineer and the contractor and/or any properties which are stated in the work contract document to be reverted to Employer at the completion of the project in a complete and state of satisfactory repair. The Engineer will arrange for the handing over of these properties to take place as provided for in the works contract and inform Employer to takeover these properties in a timely manner.

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Any missing items or items not properly maintained shall be subject to deductions as provided for in the contract from the Contractor's remaining payments and to this effect the Engineer shall advise Employer on the reasonable amount of deduction to be applied.

Handover of Design Records, Quality Control and Testing Records

The Consultant will maintain permanent records of all design detail, used in the project in the PM&MS. Permanent records of all design changes including all correspondence between the Contractor, Employer and Engineer shall be maintained in the PM&MS and submitted to Client. It will include all surveys, soils investigations, plans, design calculations, quantity calculations and relevant contract change order documents.

Permanent records of the approved Contractor's Quality Control Plan, including approved testing methods and procedures, materials specifications, standard application formats, and all quality control test performed by the Contractor or the Engineer shall also be indexed and submitted. Minutes of Meeting between Engineer, Employer, Contractor and Design Consultant held during the entire tenure of assignment shall also be maintained and submitted.

Handover of Records of Payment Request and Claims

Permanent records of all requests for payment by the Construction Contractors, including all backup data which supports the payment request, including Interim and Final Payment Certificates along with concerned measurement books shall be maintained by Consultant in the PM&MS during the project tenure and handed over to Client at conclusion of the contract. Claims by the Contractors, and Consultant's evaluation and recommendations of the claim, along with action taken by Client and all supporting documents shall be maintained by the Consultant and handed over on completion.

All documents pertaining to import of equipments, exemption of duties for material and equipments shall be compiled and handed over at the end of the Project.

Handover of Records of Setting Out of the Project

The Consultant shall maintain as a permanent record all Control Points and Survey Data for alignment control and benchmarks for elevation control. This data shall be turned over to Client at the completion of the Contract.

Handover Records of Correspondence

The Consultant shall during the entire period of the assignment index and file organize correspondence all correspondence related to construction, contract administration etc. Assistance or references required by the Client on correspondence shall be handed over to Client.

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PHASE III:

DEFECT LIABILITY PERIOD (12 MONTHS)

ACTIVITIES DURING DEFECT LIABILITY/MAINTENANCE PERIOD

General

Defects Liability period is the period just after the date of provisional Acceptance until the final acceptance of the subject road depending on the duration stated in the works contract.

Services

The services that will be provided during the defects liability period for the contract are:

- *Periodic inspection of any required repairs of the works by the Contractor;*
- *Final inspection on completion of the defects liability period;*
- *Recommend final acceptance of the works by Client;*
- *Issue of a Contract Completion Certificate;*
- *Compile a Final Contract Report.*

The Supervision staff will be available to undertake inspections as necessary during the defects liability period, the last of which will be at the end of this period, so that the certificate may be issued at the conclusion of this inspection. A final payment certificate will be prepared to close all contract obligations. The section of the road may be taken over as work proceeds and the works that needs to be done during the defect liability period may not be the whole length of the road.

The final Contractor Report will then be prepared containing all the final details, as required in the scope of services. This report will contain all details provided in the project completion report and incorporate all activities and occurrences during the maintenance period along with a final statement regarding total construction costs.

Provisional and Final Acceptance

When the contractor's assumes that the whole works of the project or section of the project as prescribed in the works contractor documents have been substantially completed and have satisfactory passed any test on completion proscribed by the contract, the Contractor requests the Engineer to issue a taking over certificate for provisional acceptance accompanied by a written undertaking to finish any outstanding works during the detect liability period.

Before, issuing the taking over certificate the Engineer shall inspect the work in the presence of the Employer's Representative to check that the work is substantially completed as prescribed in the contract.

It after the inspection it is found that the work is not substantially completed the Engineer shall notify the contractor the same and advise him to complete the outstanding works to be completed before issuing the taking over certificate.

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However, if the work is substantially completed the Engineer, after petting approval from the Employer and upon written undertaking to finish with due expedition any outstanding work by the contractor during detect Liability period within the specified period shall issue the taking over certificate to the contractor.

On completion of the detect liability period the contractor is expected to request final acceptance of the work. Similarly the Engineer shall inspected jointly the outstanding works listed during the provisional acceptance and any other detects observed during the defect liability period are completed and maintained to the contractor requirement.

If all the unacceptable items have been rectified and the Employer is satisfied that the taking over Certificate may be issued to the contractor, the Engineer will issue the final taking – over- certificate to the contractor.

Inspection during Defect Liability Period

Following the day of receipt of the certificate of completion, the Engineer shall inspect such works of repair, amendment, reconstruction, and rectification and making good defects, imperfections, shrinkages or other faults as may be required. Then, the Engineer will notify the contractor in writing for remedial works to the requirements of the specification, lines, grades, dimensions, plans and x-sections. Remedial guidance, if given in the contract document, will be adhered to but will not be responsible if the remedy is not properly done or brought due to the guidance.

The Engineer will inspect the site for any rectification works upon the request of the Contractor. In addition, he will monitor the condition of the work periodically in order to identify any defects in material or workmanship. A report will be submitted to client after each inspection with the list of defects and remedial measures.

Joint Inspection for Final acceptance

Up on the request of the contractor, the Engineer will conduct a final inspection of the work completed jointly with the Contractor's staff before issuing the defect liability certificate. When any part of the works is found not to conform to the requirements of the specification due to the contractor's workmanship problem at any stage before final acceptance, the Engineer shall order the contractor to completely remove and replacement or take appropriate measure with satisfactory work in order to make good any such defects or damage. All remedial measures shall insure full compliance with the requirements of the specifications of the final product, shall not endanger or damage any other part of the works. The Engineer will notify the contractor the list of remedial works to be conducted until he is satisfied. A joint final inspection will be arranged by the Engineer and will be conduct in the presence of the Engineer, Client and the Contractor. The contract will then be deemed complete after completion and acceptance by the Consultant as well as Client.

Final Taking over Certificate

The Engineer is responsible for the processing of final payment checklist and preparing Defect Liability Certificate for the Contract. He shall insure that the Contractor has met all terms of contract. The checklist will be sent to Client for approval and release of the retention payment. Finally, all documentation and final progress payment report will be prepared.

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CONTRACT COMPLETION REPORT

The Engineer shall prepare and submit a Contract Completion Report within **2 month** of the completion of the services. This shall include:

- *Executive Summary*
- *Mobilization / Demobilization Details*
- *Description of the Project*
- *Project Implementation Summary*
- *Financial information, Final Accounts, identification of cost increases / deceases and reasons*
- *Technical information, summary of work executed, techniques employed, materials used and sources of material*
- *Contract changes and variations, Construction Records, As-Built Records*
- *Assessment of Contractor's performance*
- *Assessment of Counterpart training if any*
- *Critical assessment of important technical problems and Lessons Learned*
- *Recommendations as to how future projects could be improved*
- *Comments on Consultant's TOR, works Technical Specifications and Conditions of Contract*
- *Conclusions and Recommendations*
- *Details of parties involved*
- *Comments on the project design, details of design changes applied*
- *Maintenance requirements*
- *Problems encountered and actions taken*

CONSULTANCY COMPLETION REPORT

The Consultancy Completion Report shall be prepared and submitted to Client. This will be submitted within 1 month of the end of the Defects liability period. It should also have details of the parties involved, details of funding, comments on the project design, including changes in design applied etc.

It should also have details of taking over certificates issued to sections of the road (in the case that handover of sections is allowed).

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METHODOLOGY ON IMPLEMENTATION OF PROJECT MANAGEMENT & MONITORING SYSTEM

The communication in the project will be managed for collection, distribution, storage, retrieval and ultimate disposition of project information to ensure timely execution. To implement an efficient and robust communication process, a computerised documentation control system will be established. The intent is to remove limitations in the traditional methods with respect to time, precision, sharing of voluminous data. Project communications will be generally done for the following purpose;

1) To record/ issue/ receive/ approve / reject/ monitor RFIs and all contractual correspondences.

2) To communicate;

- Order (or change order)for various purpose like; commencement, suspension, removal of material/work/tests to contractor and client;
- Approvals / client authorisation to the Contractor;
- Any inconsistency to the Client and/or Contractor;
- Issues / alerts related to the work to the client/contractor on their urgency and impact
- Performance and status reports in approved formats to the Client;
- The minutes/ proceedings of monthly, quarterly, coordination, contract management or bank review / mission meetings to all concerned.

It is proposed to computerise the communication process related to Requesting for Inspection (RFI) and Payment Certificates (Bills) through a web application. A schematic diagram for both the processes are provided below in figure no 7 and 8.

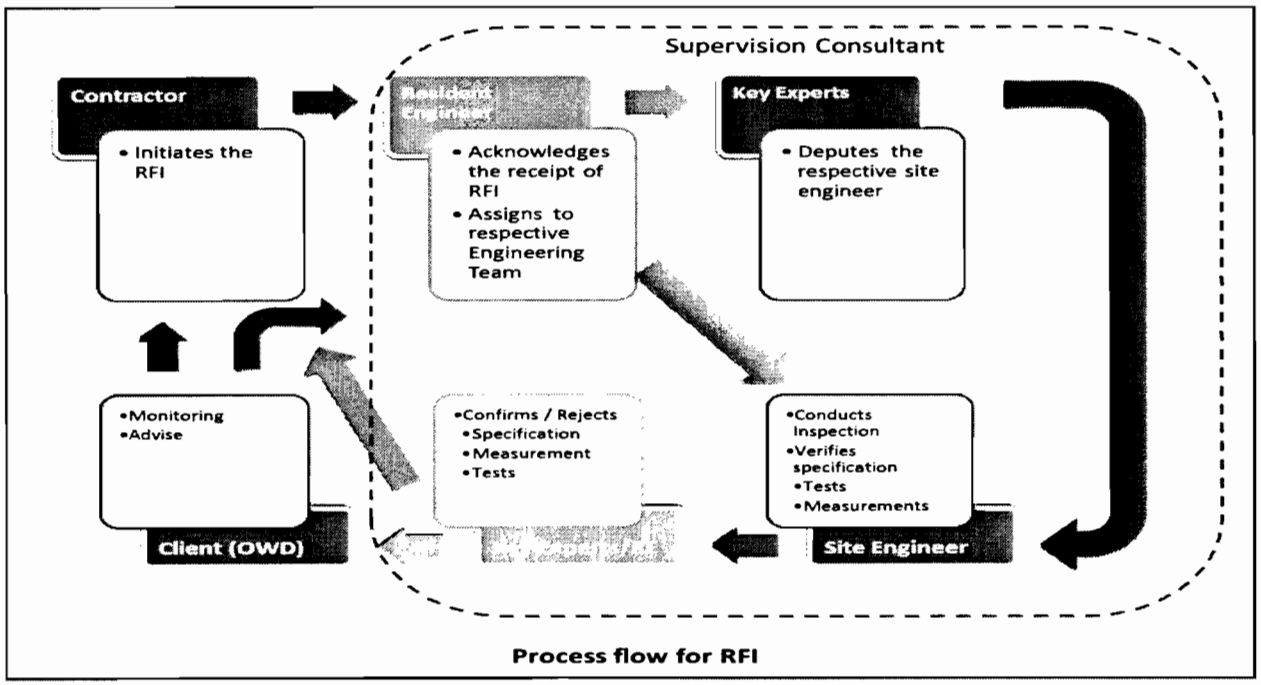

Fig 7 :Process Flow of RFI

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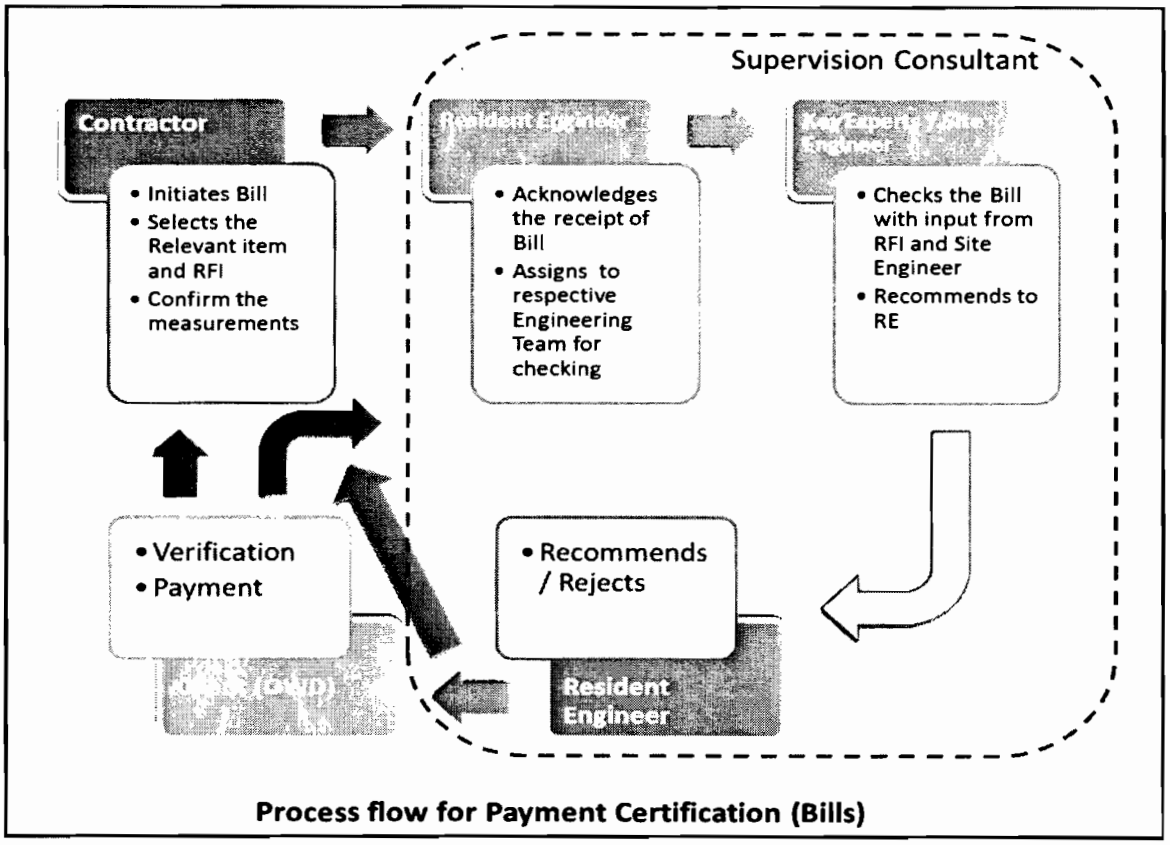

Fig 8 : Process flow for payment certification (Bills)

A web application to integrate the above work flow with centralised data repository will be created. Various users such as Contractor, Supervision Consultant (and its Engineers), and the Client (OWD) will access the application through internet with their user credentials (User ID, Password).

Each contractual correspondence with regards to 'RFI' and 'Bills' will be performed through separate interfaces designed for each party (Contractor, Consultant, Client) to communicate with regards to create/ issue/ receive/ delegate/ approve / reject/ monitor RFIs / Bills. Once any party takes any actions as above, it will be shown in real time to all the parties concerned.

Facilities to record quantities will be provided in the measurement sheets for the relevant RFI. These will be stored against each item of work and RFI with time stamp. Contractor will select the item of work and the relevant RFI for submitting the bill on-line using this application. Facilities in the system will be provided to check / approve / reject the invoices of the Contractor by the Supervision Consultant and the Client.

The network diagram for the web application of processes flow are shown in figure no 9.

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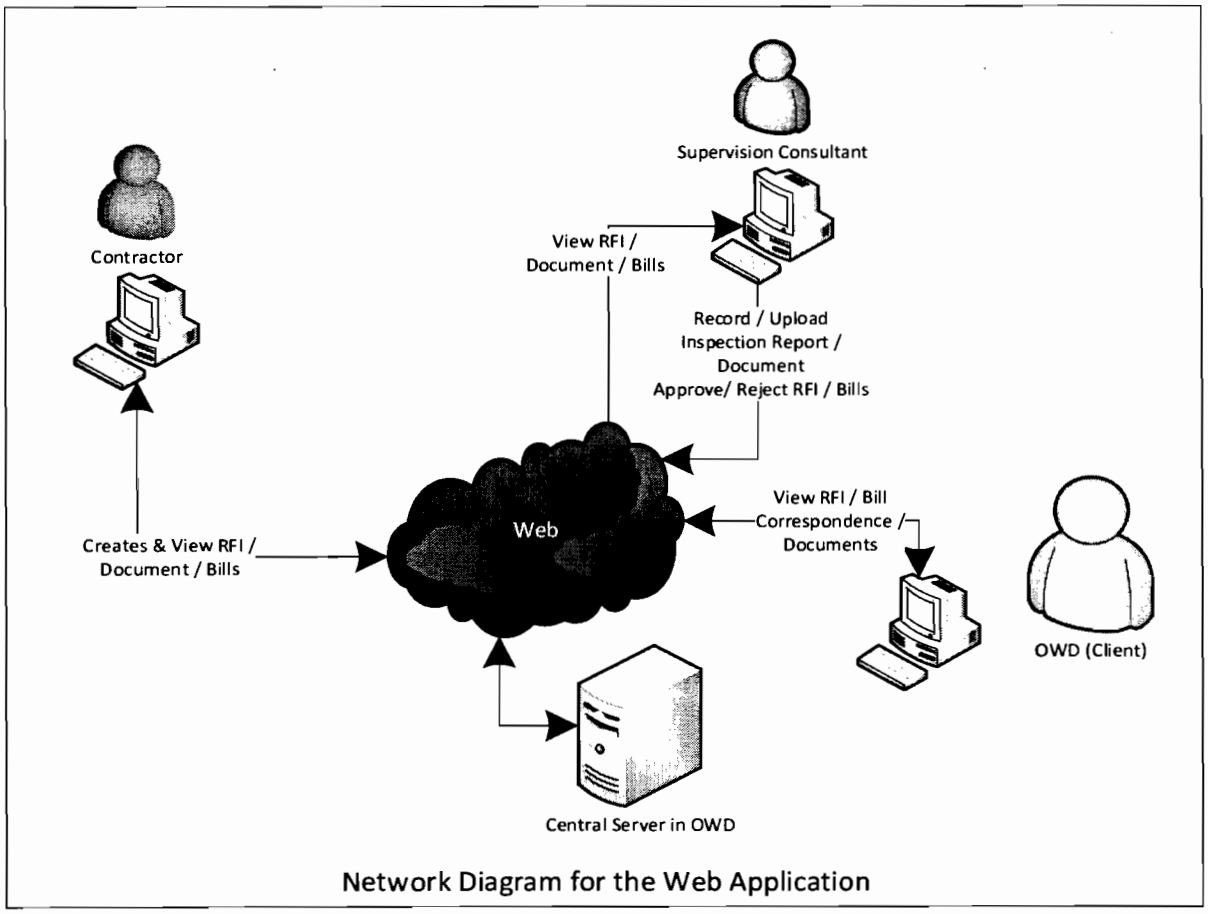

Fig 9 : Network diagram of the web application

A prototype of the application (selected interfaces) is provided below for information through screen shots of GUIs as shown in figure no 10 to 16.

Login Screen

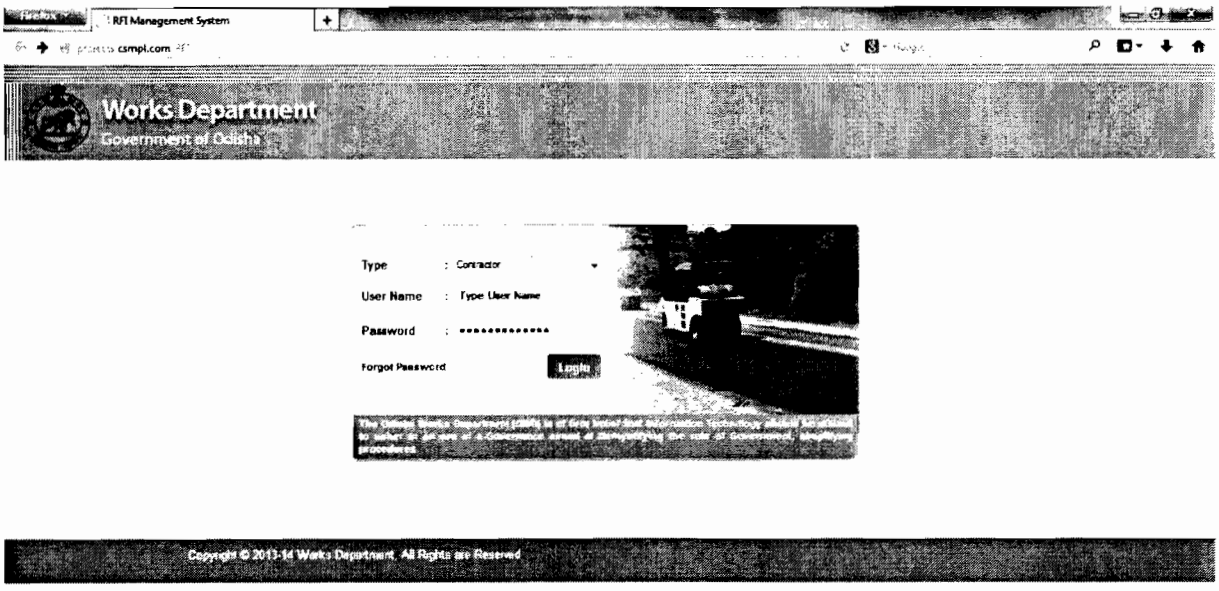

Fig 10: Login Screen

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A. Contractor's Interface (Dashboard)

Contractor's login page has the following sections: Create RFI/ Bill, Active RFI/ Bill, Search RFI/ Bill, Approved RFI/ Bill, Rejected RFI/ Bill, Project Monitoring, Notifications and Submit RFI/ Bill. Details of the functions are given below.

- Create a new RFI by entering details of relevant item number, inspection date, test details and measurements as required and other relevant details.
- Create a new Bill by entering details of relevant item numbers, RFI numbers, measurement sheets, pdf documents and other details.
- Active RFI/ Bill section contains details of which are pending along with their ID number and submission date.
- Search RFI/ Bill section allows users to search for reports based on date, project name and RFI number.
- Approved section contains the reports which have been approved by RE while rejected section contains those reports that have been rejected.
- Project monitoring section shows the status of on-going projects i.e. whether completed as per date or delayed or to be started. Coloured indicators will be used to enhance the effect.
- Notification section informs the contractor regarding the inspection dates of approved RFIs.
- Finally, the submit RFI / Bill section allows a contractor to submit a RFI / Bill. When a contractor clicks on the report submission tab a new screen appears to make necessary entries like: project name, department name, item no., RFI, inspection date and time and location.

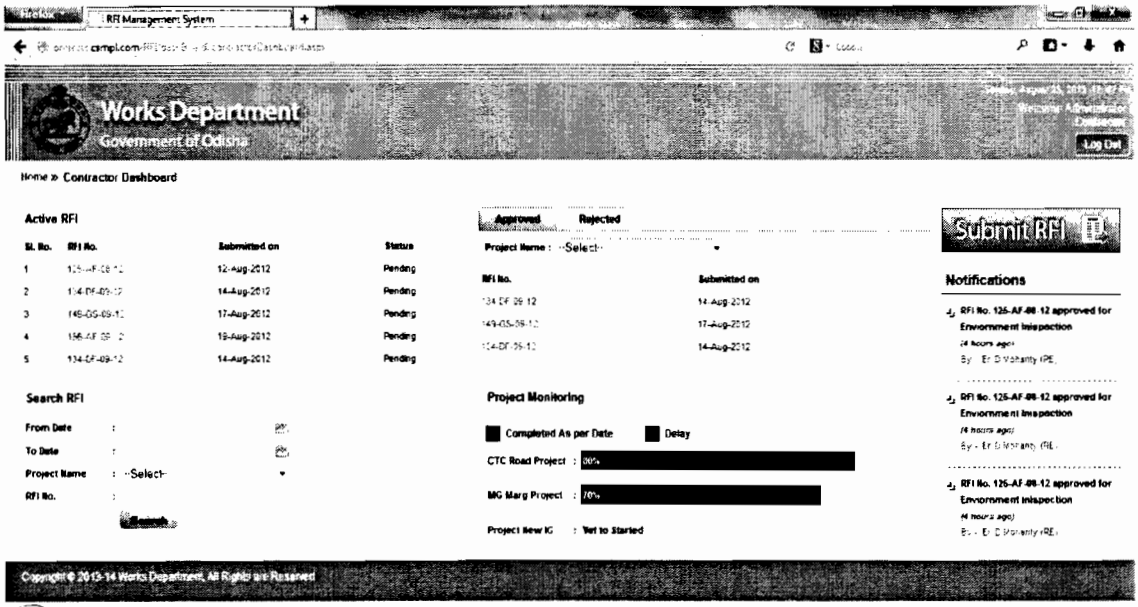

Fig 11: RFI submission Screen

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B. Supervision Consultant's Interface

a. Resident Engineer

This will have the following features:

- View RFIs/ Bills created by the Contractor
- Assign the Inspection to respective Engineering Team (or Site Engineer in emergency)
- Assign Bills to Key Experts / Site Engineer for checking
- View Inspection Reports
- Take action (Approve, Reject) on a RFI/ Bill based on Inspection Report

After a contractor submits an RFI report, it is delivered to RE (residence engineer). RE's dashboard contains the following sections: Assign, Search, Action, Project monitoring and Notifications. Assign section enables the RE to allocate a task or checking of Bill to Key Expert (e.g. Quality engineer, Bridge Engineer, Highway engineer, Environment Engineer). This section may contain item no., RFI number along with date of receipt and contractor's name. RE checks the report/ Bill and assigns it to a Key Expert by clicking on assign tab. A new window opens wherein the corresponding engineer's designation and name are selected from a drop down list. Thereafter, the task is updated in the corresponding engineer's dashboard.

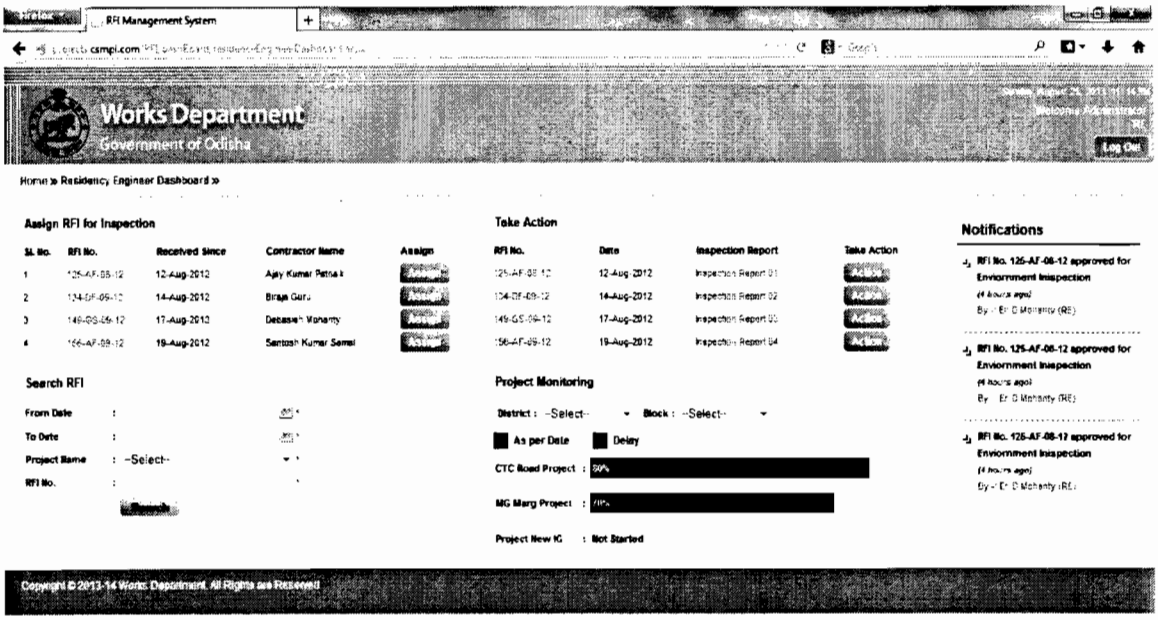

Fig 12: Assign RFI for inspection screen

b. Key Experts

This will have the following features;

- View RFIs / Bills for action by the Resident Engineer
- Checks the Bill and recommends to RE
- Assign the Inspection to a specific Site Engineer

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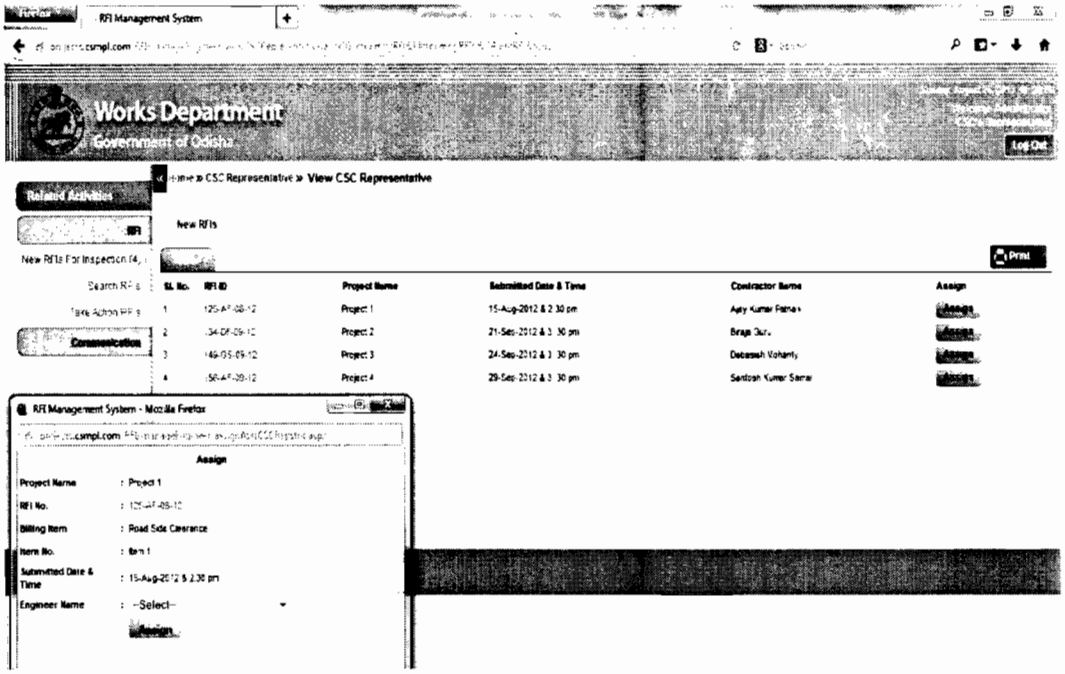

Fig 13 : View RFI screen- CSC Representative

c. <u>Site Engineer</u>

This will have the following features;

- View RFIs for inspection as assigned by the Key Expert
- Record the inspection details in RFI, and attach Test Report (as scanned copies, pdf files etc.)

- Report to the Key Experts / RE for review and notification to the Contractor

The site engineer will record the information obtained from site inspection in the standard form for RFI and measurements. The test reports will be attached as scanned copies in the application interface. He will then submit the completed RFI to the key expert / RE for necessary action.

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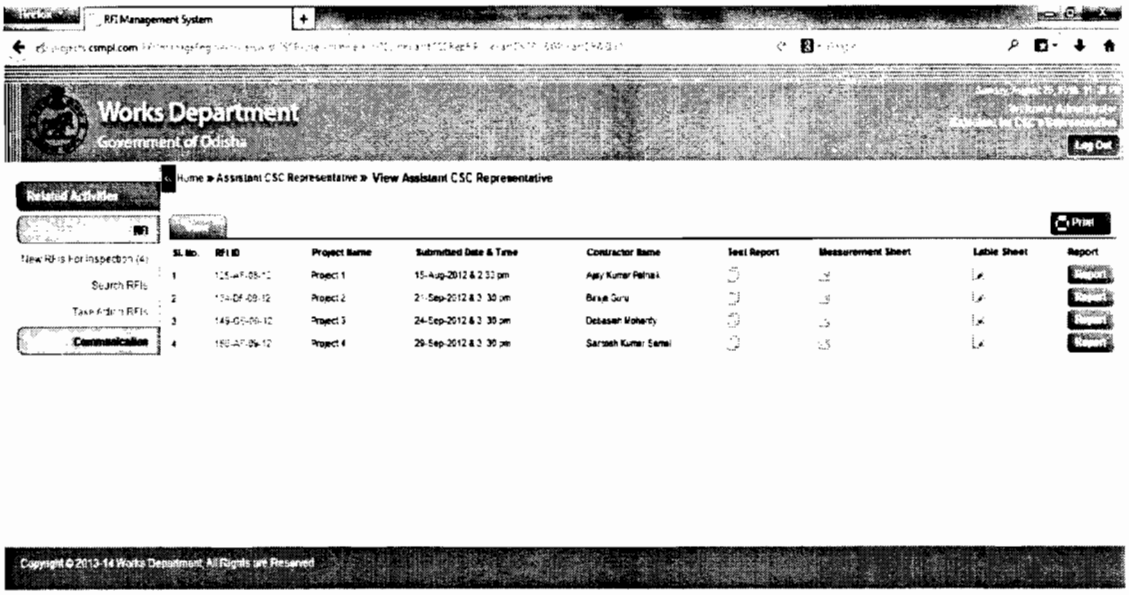

Fig 14 : View RFI screen- Assistant CSC Representative

For communication of documents, reports and progress, the following interface will be integrated. Notification for each communication will be automatically sent to the respective e-mail IDs registered in the system. The view of documents, communications however can only be accessed through the web-based application using User ID and Password.

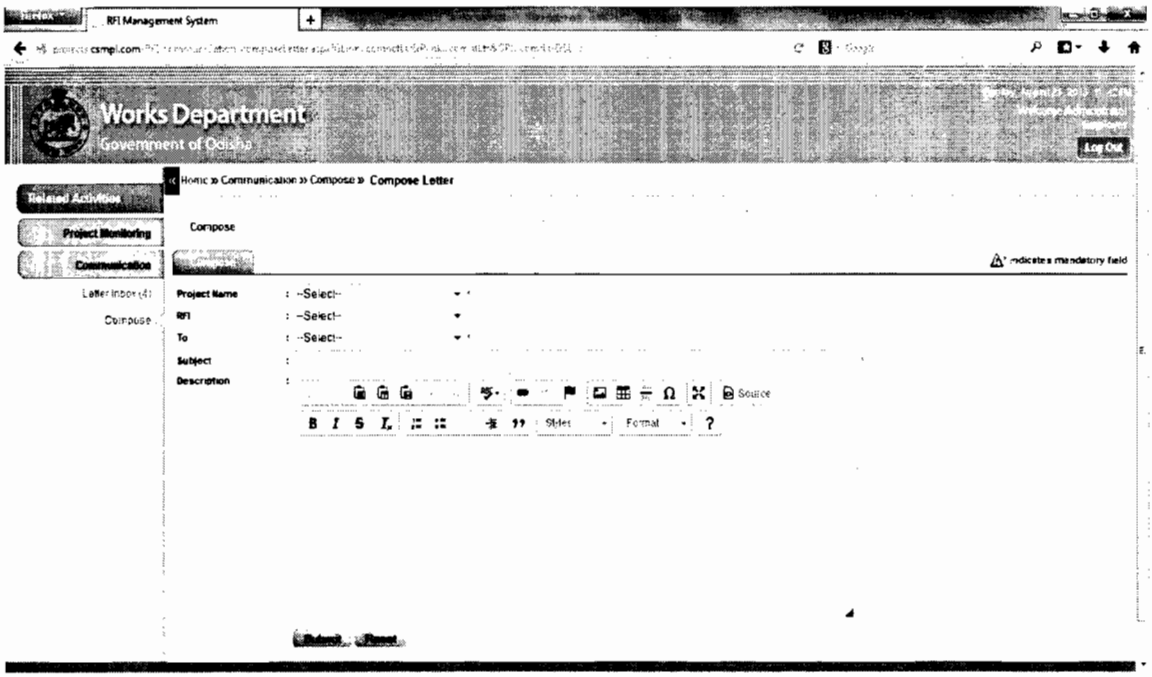

Fig 15 : Composing Letter referenced to RFI

C. Client's Interface

This will have the following features;

- View and Monitor RFIs
- View Inspection Report, Test Report & Measurement Sheets
- Communicate orders to the Supervision Consultant and the Contractor

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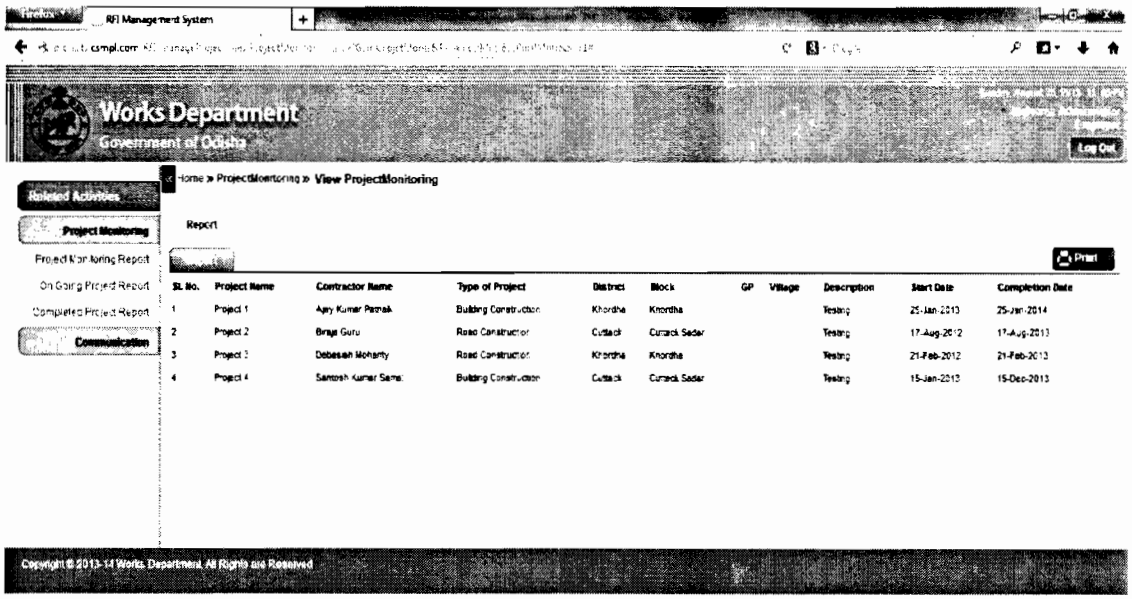

Fig 16 : View Project Monitoring

In addition to the above functions, this system will have Central file repository for;

(1) Standardised formats, templates for the project communications for download
(2) All RFIs
(3) Bills
(4) Archival of past communications

Digitally signed documents will be used to enhance security. This will facilitate efficient way to access all the documents and provide means for quick, transparent and credible decisions.

Consultant will use its own programming software. However, it is proposed to use OWD database server to store the data and host the application.

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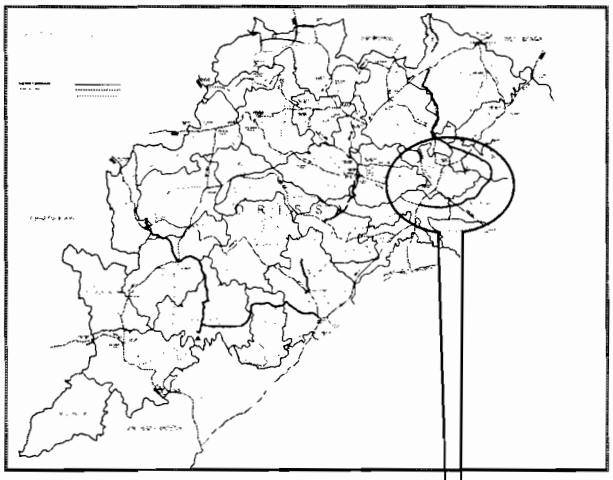
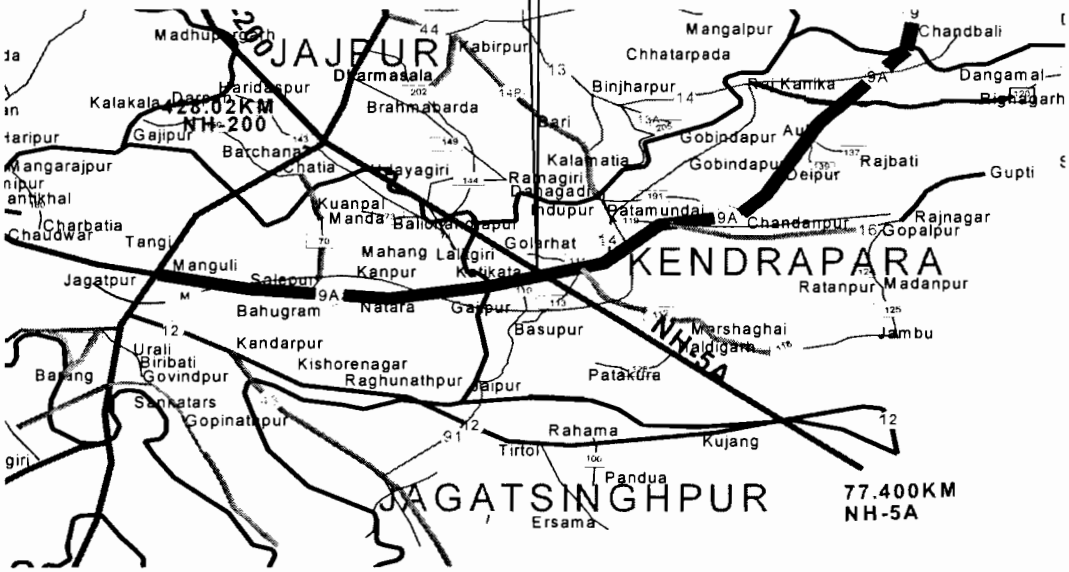
ANNEXURE - I

Road Map of Odisha

(And any other requirements which will be used for evaluating the Key Experts under Data Sheet 21.1 of the ITC)



Road Map of Odisha



Jagatpur-Chandbali Road

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Annexure - II

BROAD QUALIFICATION REQUIREMENTS OF KEY EXPERTS

1. Resident Engineer

The Resident Engineer must be from the Lead/ Principal Firm in case of association or JV, failing which the proposal shall be non-responsive in the Technical Evaluation.

I Educational Qualification

a) Minimum : Graduate in Civil Engineering

b) Desirable : Post Graduation in Transportation Engineering; or Construction Management

II General Experience

a) Total Experience : Total Professional Experience :
Minimum: 10 Years
Desirable:15 Years

b) Relevant Experience : Experience as RE / Highway Engineer : **5 Years** ;
Highway Projects of US$ 15 Million: **3 Projects** of similar complexity either that of NHAI or other project funded by multilateral agencies e.g. WB, JBIC, ADB or State Governments/ Concessionaires (PMC)/ International Clients etc.

Knowledge in following fields are essential:

1. Administering FIDIC / International Funded Contracts
2. Specifications and Standards for Highway Projects relevant to India and International best practice.
3. Design and evaluation of Pavements
4. Modern Survey & Construction Techniques
5. Computer Aided Project Management Tools & Interpretation

c) Relevant experience in the region : working level, fluency in local language(s)/ knowledge of local culture or administrative system, government organization

2. Material Engineer -cum-Quality Monitor

I Educational Qualification

a) Minimum : Graduate in Civil Engineering

b) Desirable : Post Graduation is desirable either in Geotechnical / Soil Mechanics / Highway; or any relevant field

II General Experience

a) Total Experience : Total Professional Experience :
Minimum: 8 Years
Desirable: 10 Years

b) Relevant Experience : Experience as Material / Quality Control Engineer : 3 Years ;

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Highway Projects of US$ 15 Million : **3 Projects** of similar complexity either that of NHAI or other project funded by multilateral agencies e.g. WB, JBIC, ADB or State Governments/ Concessionaires (PMC)/ International Clients etc.

Knowledge in following fields are essential:

(i) Monitoring Quality Control Laboratory

(ii) Supervising Contractor's Crushers & Mixing Plants

(iii) Use of right Construction Materials

(iv) Design of Bitumen & Concrete Mix

(v) Construction Supervision Manual, Quality Assurance Manual and Quality Control Manual

(vi) Specifications and Standards for Highway Projects relevant to India and International best practice

c) Relevant experience in the region : working level, fluency in local language(s)/ knowledge of local culture or administrative system, government organization

3. Bridge Engineer

I Educational Qualification

a) Minimum : Graduate in Civil Engineering

b) Desirable : Post Graduation is desirable either in Structural Engineering

II General Experience

a) Total Experience : Total Professional Experience :
Minimum: 8Years
Desirable:10 Years

b) Relevant Experience : Experience as Bridge Engineer : 3 Years ;

Highway Projects of US$ 15 Million : **3 Projects** of similar complexity either that of NHAI or other project funded by multilateral agencies e.g. WB, JBIC, ADB or State Governments/ Concessionaires (PMC)/ International Clients etc.

Knowledge in following fields are essential:

(i) Design & Construction of HL Bridges

(ii) Latest Codes, Circulars, Guidelines of MORTH / IRC / AASHTO / TRL / BIS

(iii) Modern Bridge Survey & Construction Techniques

c) Relevant experience in : working level, fluency in local language(s)/ knowledge of

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the region		local culture or administrative system, government organization

4. Highway Engineer

The Highway Engineer must be from the Lead/ Principal Firm in case of association or JV, failing which the proposal shall be non-responsive in the Technical Evaluation.

I Educational Qualification

a) Minimum	:	Graduate in Civil Engineering
b) Desirable	:	Post Graduation is desirable either in Transportation Engineering

II General Experience

a) Total Experience	:	Total Professional Experience : Minimum: 8Years Desirable:10 Years
b) Relevant Experience	:	Experience as Highway / Pavement Engineer : 3 Years min; Highway Projects of US$ 15 Million : **2 Projects** of similar complexity either that of NHAI or other project funded by multilateral agencies e.g. WB, JBIC, ADB or State Governments/ Concessionaires (PMC)/ International Clients etc. **Knowledge in following fields are essential:** (i) Design of Flexible and Rigid Pavements (ii) Latest Codes, Circulars, Guidelines of MORTH / IRC / AASHTO / TRL / BIS (iii) Modern Survey & Construction Techniques
c) Relevant experience in the region	:	working level, fluency in local language(s)/ knowledge of local culture or administrative system, government organization

5. Quantity Surveyor

The Quantity Surveyor must be from the Lead/ Principal Firm in case of association or JV, failing which the proposal shall be non-responsive in the Technical Evaluation.

I Educational Qualification

a) Minimum	:	Graduate in Civil Engineering
b) Desirable	:	Post Graduation is desirable either in any discipline of Civil Engineering

II General Experience

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a) Total Experience	:	Total Professional Experience : 8 Years minimum Desirable:10 Years
b) Relevant Experience	:	Experience as Quantity Surveyor or equiv. : 3 Years minimum ; **Knowledge in following fields are essential:** (i) Administering FIDIC / International Funded Contracts (ii) Specifications and Standards for Highway Projects relevant to India and International best practice (iii) Computer aided project management tools
c) Relevant experience in the region	:	working level, fluency in local language(s)/ knowledge of local culture or administrative system, government organization

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Annexure - III

BROAD QUALIFICATION REQUIREMENTS OF SENIOR SUPPORT RESOURCES

1. Highway Design Engineer

I Educational Qualification

a) Minimum	:	Graduate in Civil Engineering
b) Desirable	:	Post Graduation is desirable either in Highway / Pavement Engineering; or any relevant field

II General Experience

a) Total Experience	:	Total Professional Experience : 8 Years minimum
b) Relevant Experience	:	Experience as Highway Design Engineer or equiv.: 5 Years minimum ; **Knowledge in following fields are essential:** (i) Design of Flexible and Rigid Pavements (ii) Latest CODEs, Circulars, Guidelines of MOST / IRC / AASHTO / TRL / BIS (iii) Expertise in MX / MOSS / CIVIL CADD etc (iv) Modern Survey & Construction Techniques
c) Relevant experience in the region	:	working level, fluency in local language(s)/ knowledge of local culture or administrative system, government organization

2. Bridge Design Engineer

I Educational Qualification

a) Minimum	:	Graduate in Civil Engineering
b) Desirable	:	Post Graduation is desirable either in Structural Engineering; Or any relevant field

II General Experience

a) Total Experience	:	Total Professional Experience : 8 Years minimum
b) Relevant Experience	:	Experience as Structural / Bridge Design Engineer or equiv. : 5 Years minimum ; **Knowledge in following fields are essential:** (i) Design of Modern HL Bridges (ii) Latest CODEs, Circulars, Guidelines of MOST / IRC / AASHTO / TRL / BIS (iii) Modern Survey & Construction Techniques (iv) Expertise in STAAD / FEM etc.
c) Relevant experience in the region	:	working level, fluency in local language(s)/ knowledge of local culture or administrative system, government

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3. Environmental Expert

I Educational Qualification

a) Minimum : Degree/ Diploma/Professional Course in Environment

b) Desirable : Post Graduation / Specialization is desirable in Environmental or relevant field

II General Experience

a) Total Experience : Total Professional Experience : 8 Years minimum

b) Relevant Experience : Experience as Environmental Expert or equiv. : 5 Years minimum ;

Knowledge in following fields are essential:

(i) Administering FIDIC / International Funded Contracts

(ii) Specifications and Standards for Highway Projects relevant to India and International best practice for environment aspects

(ii) Circulars, Guidelines, Relevant Acts of GoI, CPCB, SPCB etc.

(iii) EIA and EMP implementation

c) Relevant experience in the region : working level, fluency in local language(s)/ knowledge of local culture or administrative system, government organization

4. Sr. Surveyor

I Educational Qualification

a) Minimum : Diploma/ Graduate in Civil Engineering

II General Experience

a) Total Experience : Total Professional Experience : 8 Years minimum

b) Relevant Experience : Experience as Survey Engineer or equiv. : 5 Years minimum;

Knowledge in following fields are essential:

(i) Administering FIDIC / International Funded Contracts

(ii) Specifications and Standards for Highway Projects relevant to India and International best practice

(iii) Modern Survey & Construction Techniques

c) Relevant experience in the region : working level, fluency in local language(s)/ knowledge of local culture or administrative system, government organization

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Annexure – IV

BROAD QUALIFICATION REQUIREMENTS OF JUNIOR TECHNICAL PERSONNEL

1. CADD Engineer

I Educational Qualification

Minimum : Diploma in Civil Engineering

II General Experience

a) Total Experience : Total Professional Experience : 2 Years minimum

b) Relevant Experience : **Knowledge in following fields are essential:**
(i) CAD in AutoCAD

c) Relevant experience in the region : working level, fluency in local language(s)/ knowledge of local culture or administrative system, government organization

2. Asst. Highway Engineer / Asst. Bridge Engineer

I Educational Qualification

Minimum : Diploma in Civil Engineering

II General Experience

a) Total Experience : Total Professional Experience : 2 Years minimum

b) Relevant Experience : **Knowledge in following fields are essential:**
(i) Administering FIDIC / International Funded Contracts
(ii) Specifications and Standards for Highway Projects relevant to India and International best practice
(iii) Modern Survey & Construction Techniques

c) Language : Communication fluently in English is minimum

3. Asst. Quantity Surveyor

I Educational Qualification

a) Minimum : Diploma in Civil Engineering

II General Experience

a) Total Experience : Total Professional Experience : 2 Years minimum

b) Relevant Experience : **Knowledge in following fields are essential:**
(i) Administering FIDIC / International Funded Contracts
(ii) Specifications and Standards for Highway Projects relevant to India and International best

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practice
(iii) Modern Survey & Construction Techniques

c) Language : Communication fluently in English is minimum

4. Asst. Material Engineer

I Educational Qualification

a) Minimum : Diploma in Civil Engineering

II General Experience

a) Total Experience : Total Professional Experience : 2 Years minimum

b) Relevant Experience : **Knowledge in following fields are essential:**
(i) Administering FIDIC / International Funded Contracts
(ii) Specifications and Standards for Highway Projects relevant to India and International best practice
(iii) Evaluation of Construction Materials
(iv) Design of Bitumen & concrete Mix
(v) Modern QAP & Construction Techniques

c) Language : Communication fluently in English is minimum

5. Asst. Surveyor

I Educational Qualification

a) Minimum : ITI Certification in Survey

II General Experience

a) Total Experience : Total Professional Experience : 5 Years minimum

b) Relevant Experience : **Knowledge in following fields are essential:**
(i) Administering FIDIC / International Funded Contracts
(ii) Specifications and Standards for Highway Projects relevant to India and International best practice
(iii) Modern Survey & Construction Techniques

c) Language : Communication fluently in English is minimum

6. Jr. Road Safety Specialist

I Educational Qualification

a) Minimum : Diploma/ Graduate in Civil Engineering

b) Desirable : Road Safety training/ short-term course

II General Experience

a) Total Experience : Total Professional Experience : 2 Years minimum

b) Relevant Experience : Experience as Road Safety Auditing. : 1 year
Knowledge in following fields are essential:

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(i) Administering FIDIC / International Funded Contracts

(ii) Specifications and Standards for Highway Projects relevant to India and International best practice

(iii) Modern Road safety knowhow

c) Language : Communication fluently in English is minimum

7. **Technical assistant**

a) Total Experience : Total Professional Experience : 2 Years minimum

b) Relevant Experience : Experience in Field Level Testing

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APPENDIX B - REPORTING REQUIREMENTS

The Consultant shall prepare and submit to the Client *ten hard copies along with the softcopy* of each of the following Reports as per Para 1.5 of Appendix-A : Description of Services.

Sl. No.	Deliverables	Scheduled Time
1	Inception Report	30 days from Commencement of Services of the Consultant
2	Quality Management Plan (QMP)	45 calendar days from the Commencement of Services of the Consultant
3(a)	Project Management & Monitoring System (PM&MS) - *RFI management*	45 calendar days from the Commencement of Services of the Consultant
3(b)	Project Management & Monitoring System (PM&MS) - *Billing and payment*	90 calendar days from the Commencement of Services of the Consultant
4	Monthly Progress Report (MPR)	5 business days after end of every month
5	Quarterly Progress Report (QPR)	5 business days after end of every quarter
6	Manual for Maintenance during DLP	Within 12 months of commencement of Civil Works
7	Sectional Substantial Completion Reports	After substantial completion
8	Contract Completion Report	Before end of DLP

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APPENDIX C

KEY PERSONNEL AND SUPPORT TECHNICAL AND ADMINISTRATIVE STAFF

The numbers of key professionals have been proposed by the Consultant as per requirement of ToR is :

(i)	Resident Engineer	-	2 No.
(ii)	Quantity Surveyor	-	2 No.
(iii)	Highway Engineer	-	2 No.
(iv)	Bridge Engineer	-	2 No.
(v)	Material Engineer -cum-Quality Monitor-		2 No.

The following numbers of Senior Support Resources and Junior Technical Personnel along with administrative support staff shall be available as per Consultant's proposal.

Sr. Support Resources

i.	Highway Design Engineer	-	1 No.
ii.	Bridge Design Engineer	-	1 No.
iii.	Environment Expert	-	1 No.
iv.	Sr. Surveyor	-	1 No.

Junior Technical Personnel

i.	CADD Engineer	-	2 No.
ii.	Asst. Highway Engineer	-	5 No.
iii.	Asst. Bridge Engineer	-	4 No.
iv.	Asst. Quantity Surveyor	-	2 No.
v.	Asst. Material-cum-Quality Engineer	-	4 No.
vi.	Asst. Surveyor	-	3 No.
vii.	Junior Road Safety Expert	-	2 No.
viii.	Technicians (Field/ Lab/ Plant)	-	10No.

Administrative Support Staff

1.	Office Manager-cum- Accountant	-	2No.
2.	Computer Operators/Office assistant	-	3 No.
3.	Office Attendant. / Watchman	-	6 No.

The role of local partner, M/s S.M. Consultant, Bhubaneswar shall provide services based on the information provided by LASA and M/s S.M. Consultants as attached in Annexure-H.

The Man-month requirements during each phase of activities for the entire Consultancy Services have been proposed by the Consultant as provided in *Appendix A: Description of Services* and Table 5.

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Task Assignment of Key Personnel

The Responsibilities for the KEY EXPERTS shall be, but not limited to, the following.

i. Minor design changes to suit site requirements will be attended by the Engineer. To mitigate major changes, the Consultant shall induct the Highway Design Engineer and the Bridge Design Engineer, whose input shall be from the Head Office or Field office as required, in phased manner, in consultation with the Client as and when required.

ii. All the duties and responsibilities of the Engineer shall be discharged by the Resident Engineer. The Engineer may delegate some of the authority to the respective Highway Engineer / Bridge Engineer/ Quantity Surveyor in his team for the said package who will act as "the Engineer's Representative", to whom duties and authorities are to be assigned / delegated by the "Engineer".

iii. Resident Engineer(s) and key experts and other support staffs must be stationed at the project site on the Jagatpur - Chandbali Road.

iv. The Resident Engineer shall act as the interface between the Client (Employer) and Contractor in managing the contract. The Resident Engineer shall visit regularly to the field to monitor and control the schedule, cost and scope of the project.

v. The Resident Engineer is only empowered for all correspondences and communications.

vi. The Resident Engineer shall take over the assignment from the Client and collect all relevant documents which are related to the project.

vii. The Resident Engineer shall make a quick sample assessment of the completed works of Land acquisition, Utility Shifting and Rehabilitation and Resettlement status so as to match the requirements of the Schedule.

viii. The Resident Engineer will conduct coordination meetings, both those on the job sites and those in Bhubaneswar which shall be attended by a representative of the PMU / OWD having authority to make decision on behalf of the "Client." Such decisions will be communicated in writing immediately after the meeting.

ix. The Consultant will make use of computerized techniques of Project Management such as MS projects or Primavera or the like (computers & software to be provided by the Consultant) to have effective monitoring of physical and financial progress. The Quantity Surveyor shall be responsible for this activity under the guidance of the Resident Engineer. The Environment Expert assisted by the Junior Road Safety Expert will adopt specific plan / programme for ensuring safety during construction as per the Contractual and regulatory needs. To cite a few, following activities should form part of the Consultant's work programme which need to be implemented by this team at site.

- Involve public in selecting and finalizing traffic control plan
- Initiate traffic awareness among contractor's personnel
- Group and sequence projects activities to minimize exposure
- Conduct Work Zone Traffic Management Training

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- Report all work zone crashes and analyze them
- Collect and disseminate real time traffic information
- Ensure provision of "Attention Getting" signs in work zones .
- Insist and ensure on durable temporary pavement marking material.
- Insist and ensure adequate lighting for all nighttime operations.
- Insist the Contractors to have trained security guards/ flagmen deployed to guide the traffic.
- Ensure unauthorized personnel are prevented from entering hazardous or restricted areas.
- Establish procedures for the transport and handling of hazardous materials.
- Implement of an operations and public emergency response program for spills, fires and major accidents, including emergency equipment and trained personnel, and test critical components of the program on a regular basis.

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Table 4 : The following key personnel, their qualification of all staffs are proposed in the technical proposal of the Consultant.

Sl.No	Name of Key Person	Proposed Position	Qualification
a	Raju Mathur	Resident Engineer-1	BE (Civil engineering), Ravi Shankar Shukla University, M.P.- 1994 ME(Construction Technology & Management), Rajiv Gandhi Prodyogiki Viswavidyalaya, Bhopal- 2002
b	B. L. Sharma	Resident Engineer-2	AMIE(Civil Engineering) , IE(I)-1989 M.Tech in Civil Engineering (Transportation), Jodhpur National University-2011
c	Rakesh Kumar	Quantity surveyor-1	BE Civil Engg, MNREC, Allahabad-2002 MSc. In Civil Engineering (Soil Mechanics) , Muzaffarpur Institute of Technology-2010
d	Brajesh Kumar	Quantity Surveyor-2	BE Civil Engineering , University of Kuvempu, Karnataka-1994
e	Shaktidutta Sarangi	Highway Engineer-1	BE Civil Engineering , OEC, Utkal University - 1998 M Tech (Highway and Transportation Engineering) - JNR Rajasthan Vidyapeeth University- 2006
f	N.B. Prabhakar	Highway Engineer-2	AMIE Civil Engg, IE(I)-1999 M Tech (Construction Engineering & Management), SRM Inst. Of Sc. And Technology, Chennai-2011
g	T V M Ravi Sankar	Bridge Engineer-1	B Tech Civil Engg , Sri Krishnadebaraya University, AP- 1994 MTech Structural Engineering- JNTU, Hyderabad -2008
h	Dinakar Mondal	Bridge Engineer-2	BE Civil , REC, Surat- 1992
i	Ravi Shankar	Material Engineer-cum-Quality Monitor-1	BE Civil engineering , MIT Aurangabad-1999 ME in Civil Engineering (SMFE)- BIT, Mesra-2002
j	Sandeep Panda	Material Engineer-cum-Quality Monitor-2	BE Civil Engineering, OEC- 1998 ME (SMFE), NIT, Rourkela-2001

The Consultant have agreed for a Multi Disciplinary Team, consisting of Key Staff and other staff. The team of professionals have been carefully chosen, having **solid background of engineering and hands on experience to work on similar projects and most importantly working experience in the region and also similar topographic and environmental condition.**

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Team Composition and Task Assignment (Form Tech - 5) is given in Table 5 below.

Table 5: Team Composition and Task Assignments (FORM TECH-5)

S. No	Name of Staff	Firm	Area of Expertise	Position Assigned	Task Assigned
A. KEY EXPERTS					
K-1	**Raju Mathur**	LASA	Detailed Design, Construction Supervision, Project Mangement, Contract Mangement and Administration, Material Management, Quality Assurance, Geotechnical and Hydrological Investigation, Dispute Settlement	Resident Engineer-1	o *Act as 'Engineer' of the project during contract implementation* o *Liaise with and assist the Client and regional officials as required.* o *Confirm centerline of the road, bench marks and control points* o *Issue the commencement order to contractor* o *Assisting client in reviewing Contractor's Performance Bond, retention bond & Bank Guarantee for advance payment and other guarantees if any.* o *Ensure the fulfillment of the obligations and duties of the Engineer as described under the works contract agreement* o *Record initial measurement jointly with OWD's and contractor's representative* o *Prepare modifications/ amendments or design changes assisted by other staff after checking the DPR.* o *Issue the contractor with all copies of contract documents and design reports.* o *Planning and scheduling project activities with computer aided programme such as MS projects* o *Preparation of Quality Management Plan and ensure quality assurance and quality control* o *Organize documentation and filing system on the project site* o *Supervise site supervisory staff* o *Review, check, comment and approve Contractor's work schedule, method statement, equipment and key experts* o *Monitoring the progress of all activities of the project including budget and time in MS project* o *To direct contractor to carry out works to avoid or to reduce any life risk or to ensure safety*
K-2	**B. L. Sharma**	LASA	Detailed Design, Construction Supervision, Project Mangement, Contract Mangement and Administration, Material Management, Quality Assurance, Geotechnical and Hydrological Investigation, Dispute Settlement	Resident Engineer-2	

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S. No	Name of Staff	Firm	Area of Expertise	Position Assigned	Task Assigned
					○ *Order contractor to remove improper works or materials as required* ○ *Approval of all working drawings submitted by contractor and issuance of good for construction drawings with the help of key staffs* ○ *Suggest site specific changes or all changes requested by client/contractor* ○ *Update the project documents* ○ *Update project time, cost and scope* ○ *Review and certify payment certificates by taking independent measurements of quantity* ○ *Assess and recommendation on extension of time requested by contractor* ○ *Assess variation and prepares variation orders* ○ *Technical assistance in every activities* ○ *Report on the contractor's financial and time extension claims.* ○ *Team coordination, organizing, assigning duties and checking the performances of the team* ○ *Check if reports, drawings and photographs are recorded* ○ *Inspect facilities of the Supplier's and Contractor's personnel as required by the Contract* ○ *Responsible in arranging regular meetings between the Contractor, Client and Supplier* ○ *Enforce works to comply with Works Contract , technical specification, Environment management plan etc.* ○ *Prepare all the reports* ○ *In coordination with the site supervisory staff, coordinate Traffic Management .* ○ *Inspect the road and prepare defect lists and arrange joint inspection among parties for provisional acceptance.* ○ *Inspect the road, Monitor conditions of the road during*

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S. No	Name of Staff	Firm	Area of Expertise	Position Assigned	Task Assigned
					defect liability period and arrange final joint inspection among parties and prepare defect lists. o *Preparation of sectional/substantial contract completion report with assistance of other staffs* o *To order suspension of works.*
K-3	**Rakesh Kumar**	LASA	Quantity Surveying and Cost Estimation, Rate Analysis	Quantity Surveyor-1	o *Active participation in preconstruction stage works of consultant* o *Review of civil works contract* o *Check DPR quantities* o *Checking Contractor's working drawings* o *Ensure technical specification and guidelines* o *Keep record of approved RFI's* o *Ensure payments based on approved RFI only* o *Monitor physical and financial progress and report to RE* o *Calculate quantities of earth work, structures, pavement etc.* o *Review and confirm himself and RE the contract quantities and measurements.* o *Monitor measurement process and BOQ's of works* o *Check as built drawings* o *Record the measurement and quantities* o *Check the contractor's payment certificate* o *Reporting findings to the Resident Engineer* o *Others as required*
K-4	**Brajesh Kumar**	LASA	Quantity Surveying and Cost Estimation, Rate Analysis	Quantity Surveyor-2	
K-5	**Shakti Dutta Sarangi**	LASA	Highway Design, Construction Supervision, Geometric Design, Alignment Finalisation	Highway Engineer-1	o *Assists the RE for the tasks assigned to him and be delegated for RE during his absence from the project site.* o *Acting within the delegated authority given by the resident engineer.* o *Management of the site staff in his control.* o *Liaison with service providers to ensure that the construction works does not affect supplies.* o *Provision of assistance to client*
K-6	**N. B. Prabhakar**	LASA	Highway Design, Construction Supervision, Geometric Design, Alignment Finalisation	Highway Engineer-2	

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S. No	Name of Staff	Firm	Area of Expertise	Position Assigned	Task Assigned
					during construction to ensure the assessment of compensation for property owners is dealt with correctly. o *Maintenance up-to-date records of labor and plant used by the contractor.* o *Maintain records, working drawings, as-built drawing, test data, details of variations etc. assisted with the other respective staffs* o *Ensuring that the contractor uses safe working practices.* o *Reviewing the design of the scheme and communicate through the RE to client on the need to issue instruction to amend the design* o *Taking of regular digital photographs.* o *Arranging traffic counts* o *Will actively participate in all sort of traffic control measurements during construction.* o *Will overview the work done by the senior surveyor and also check the accuracy of survey works against designed alignment and highway drawings.* o *Review and comment on the working drawings & As-Built drawing of the highways submitted by the contractor.*

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S. No	Name of Staff	Firm	Area of Expertise	Position Assigned	Task Assigned
K-7	T.V.M. Ravi Sankar	LASA	Design of Bridges, Construction Supervision of Bridges, Concrete Mix Design, QC/QA	Bridge Engineer-1	o *Review, comment ,update and approve all structural design/drawings and calculation for drainage structures* o *Undertake structural design if required to be revised additionally recommended* o *Assist the RE in reviewing structural or bridges construction program submitted by the contractor.* o *Review and comment on the working drawings & As-Built drawing of the structures submitted by the contractor.* o *Regularly and as required inspect structural layout and structural construction activities* o *Inspect completed works* o *Guide Sr. surveyor in layout of bridge components on field before construction.* o *Outline checklists of all important items to be checked by the inspectors to set inspection procedures for the structures* o *Check and prepare quantities of structure* o *If required make design changes of structures* o *Others as required*
K-8	Dinakar Mondal	LASA	Design of Bridges, Construction Supervision of Bridges, Concrete Mix Design, QC/QA	Bridge Engineer-2	
K-9	Ravi Shanker	LASA	Construction Supervision, Pavement Manaement, Material Management, Material Testing, Tests QA/QC, Bituminous Mix Design	Material Engineer cum Quality Monitor-1	o *Assist the Resident Engineer in approving or rejecting construction material to be used by the Contractor* o *Review pavement design and prepare design change if required* o *Control setting up contractor's field laboratory establishment, test procedures, crushing activities, concrete mix designs etc* o *Undertake construction material investigation.* o *Assist the Resident Engineer in the preparation of the standard supervision forms, Quality Management Plan* o *Material investigation and testing* o *Assist the Resident Engineer in the preparation of reports* o *Traffic analysis*
K-10	Sandeep Panda	LASA	Construction Supervision, Pavement Manaement, Material Management, Material Testing, Tests QA/QC, Bituminous Mix Design	Material Engineer cum Quality Monitor-2	

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S. No	Name of Staff	Firm	Area of Expertise	Position Assigned	Task Assigned
					○ *Review the pavement design in the pre-construction stage* ○ *Perform pavement design and material type changes if necessary* ○ *Periodically review test results and recommend types of tests to be conducted on the* ○ *construction materials* ○ *Assist the Resident Engineer during defect liability period* ○ *Inspect the quality of works accomplished periodically* ○ *Will direct all activities of staff engaged on the checking, inspection and testing of all construction materials and laboratory technicians. He will also co-operate with the inspection as necessary for the use of surveyors to locate borrow pits and quarries.* ○ *In respect of the laboratories he will oversee the conducting of sample preparation and testing. His formal responsibility will be the evaluation of the test results and on the basis thereof approve the application of material or the rejection of the same.* ○ *Others as required*
○ *B. SENIOR SUPPORT RESOURCES*					
1	**To be named**	LASA	Highway Design, Geometric Design, Alignment Finalisation	Highway Design Engineer	○ *Overall coordination and liasioning with client;* ○ *Design review and prepare modified design & drawings;* ○ *Provide solution to problems within the constraints specified in the scope of services* ○ *Preparation of project reports,* ○ *"Any Other relevant tasks as identified from time to time"*

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S. No	Name of Staff	Firm	Area of Expertise	Position Assigned	Task Assigned
2	**To be named**	LASA	Design of Bridges/Structures, Construction Supervision of Bridges, Concrete Mix Design, QC/QA	Bridge Design Engineer	○ *Coordinate, guide/supervise inventorisation of bridge and other C-D works, condition surveys thereof;·* ○ *Suggest cost-effective measures for rehabilitation/repair /replacement of the existing bridges; and·* ○ *Guide/supervise other team members in evolving/ preliminary designing the most cost-effective bridge & culverts, in preparation of GAD* ○ *Modification of any design and drawings if required* ○ *Verification of quantities and cost towards rehabilitation / reconstruction of the structures.* ○ *"Any Other relevant tasks as identified and assigned by Resident Engineer"*
3	**To be named**	LASA	Environmental Engineering/Management, preparation of EIA/EMP, implementation of EMP	Environment Expert	○ *Organize and coordinate environmental surveys;·* ○ *Review Environmental Assessment of the project road;·* ○ *Carrying our Environmental Impact Screening; and·* ○ *Finalisation of traffic management plan involving public and road safety engineer* ○ *Group and sequence project activities* ○ *Collect realtime traffic information* ○ *Ensure adequate illumination during nighttime construction* ○ *Attending all public emergency and respond to them* ○ *"Any Other relevant tasks as identified and assigned by Resident Engineer"*

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S. No	Name of Staff	Firm	Area of Expertise	Position Assigned	Task Assigned
4	To be named	LASA	Topographic Surveying, Hydrological Surveying, Quantity Measurement, Setting out of Works	Sr. Surveyor	o *Leads all surveying activities of the staff* o *During pre construction stage carry out the traversing work and fix up the control points and benchmarks* o *Hand over the Control points and benchmarks to contractor prior to commencement of civil works* o *Identify/fixing all survey ground control stations (beacons and bench marks) which have been established by the design Supplier.* o *Verify the accuracy of survey stations* o *Establish the damaged, altered or missing survey control stations.* o *Perform all surveying activities* o *Check contractors survey results of setting outs, lines, levels and cross sections and conduct joint construction surveying as required* o *Check other survey results and accept or reject and recommend improvements* o *Record daily survey progress & data* o *Check and approve setting outs* o *Others as required "Any Other relevant tasks as identified and assigned by Resident Engineer"*
o *C. JUNIOR TECHNICAL PERSONNEL*					
1	To be named	LASA	Highway Engineer, Design Highway Drawings by using Softdesk, 3DMax etc.	CADD Engineer -1	o *Conduct, and analyze various highway engineering surveys and investigations;·* o *Conduct preliminary geometric design and drawings* o *Prepare preliminary designs for highway improvements, project facilities, utility relocation plan;·* o *Identify sources of construction materials and determine their suitability;·* o *Verification of Quantities and preparation reports and documents; and* o *Assist team leader in all activities of project preparation.* o *"Any Other relevant tasks as identified and assigned by*
2	To be named	LASA	Highway Engineer, Design Highway Drawings by using Softdesk, 3DMax etc.	CADD Engineer -2	

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S. No	Name of Staff	Firm	Area of Expertise	Position Assigned	Task Assigned
					Resident Engineer"
3	**To be named**	LASA	Construction Supervision, Geometric Design, Alignment Finalisation	Asst. Highway Engineer -1	o *Assist Highway Engineers (Key Experts) in the following activities:* o *Coordinate in Management of the site staff in his control.* o *Liaison with service providers to ensure that the construction works does not affect supplies.* o *Provision of assistance to client during construction to ensure the assessment of compensation for property owners is dealt with correctly.* o *Maintenance up-to-date records of labor and plant used by the contractor.* o *Maintain records, working drawings, as-built drawing, test data, details of variations etc. assisted with the other respective staffs* o *Taking of regular digital photographs.* o *Arranging traffic counts* o *Will actively participate in all sort of traffic control measurements during construction.* o *Review and the working drawings & As-Built drawing of the highways submitted by the contractor.* o *"Any Other relevant tasks as identified and assigned by Resident Engineer or key Experts"*
4	**To be named**	LASA	Construction Supervision, Geometric Design, Alignment Finalisation	Asst. Highway Engineer -2	
5	**To be named**	LASA	Construction Supervision, Geometric Design, Alignment Finalisation	Asst. Highway Engineer -3	
6	**To be named**	LASA	Construction Supervision, Geometric Design, Alignment Finalisation	Asst. Highway Engineer -4	
7	**To be named**	LASA	Construction Supervision, Geometric Design, Alignment Finalisation	Asst. Highway Engineer -5	
8	**To be named**	LASA	Construction Supervision of Bridges, Concrete Mix Design, QC/QA	Asst. Bridge Engineer -1	o *Assist Bridge Engineers (Key Experts) in the following activities:* o *Undertake structural design if required to be revised or any additionally recommended* o *Review and comment on the working drawings & As-Built drawing of the structures submitted by the contractor.* o *Regularly and as required inspect structural layout and structural construction activities* o *Inspect completed works* o *Outline checklists of all important*
9	**To be named**	LASA	Construction Supervision of Bridges, Concrete Mix Design, QC/QA	Asst. Bridge Engineer -2	
10	**To be named**	LASA	Construction Supervision of Bridges, Concrete Mix Design, QC/QA	Asst. Bridge Engineer -3	
11	**To be named**	LASA	Construction	Asst.	

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S. No	Name of Staff	Firm	Area of Expertise	Position Assigned	Task Assigned
			Supervision of Bridges, Concrete Mix Design, QC/QA	Bridge Engineer -4	*items to be checked by the inspectors to set inspection procedures for the structures* o *Check and prepare quantities of structure* o *If required make design changes of structures* o *"Any Other relevant tasks as identified and assigned by Resident Engineer or key Experts"* o
12	**To be named**	LASA	Quantity Surveying and Cost Estimation, Rate Analysis	Asst. Quantity Surveyor -1	o *Assist Quantity Surveyors (Key Experts) in the following activities:* o *Handling total station, DGPS , Auto level etc in fixing the benchmarks and during setting out of centerline* o *Checking Contractor's working drawings if according to drawing including templates* o *Calculate quantities of earth work, structures, pavement etc.* o *Monitor measurement process and BOQ's of works* o *Record the measurement and quantities* o *"Any Other relevant tasks as identified and assigned by Resident Engineer or key experts"*
13	**To be named**	LASA	Quantity Surveying and Cost Estimation, Rate Analysis	Asst. Quantity Surveyor -2	
14	**To be named**	LASA	Construction Supervision, Pavement Manaement, Material Management, Material Testing, Tests QA/QC	Asst. Material-cum-Quality Engineer -1	o *Assist Material Engineer-cum-Quality Monitors (Key Experts) in the following activities:* o *Assist in setting up contractor's field laboratory establishment, test procedures, crushing activities, concrete mix designs etc* o *Construction material investigation.* o *Material investigation and testing* o *Traffic analysis* o *Review the pavement design in the pre-construction stage*
15	**To be named**	LASA	Construction Supervision, Pavement Manaement, Material Management, Material Testing, Tests QA/QC	Asst. Material-cum-Quality Engineer -2	

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S. No	Name of Staff	Firm	Area of Expertise	Position Assigned	Task Assigned
16	To be named	LASA	Construction Supervision, Pavement Manaement, Material Management, Material Testing, Tests QA/QC	Asst. Material-cum-Quality Engineer -3	
17	To be named	LASA	Construction Supervision, Pavement Manaement, Material Management, Material Testing, Tests QA/QC	Asst. Material-cum-Quality Engineer -4	
18	To be named	LASA	Topographic Surveying, Hydrological Surveying, Quantity Measurement, Setting out of Works	Asst. Surveyor -1	○ *Assist Sr. Surveyors (Key Experts) in the following activities:* ○ *Assist in all surveying activities of the staff* ○ *Conduct topographical survey including traversing , levelling and cross section survey* ○ *Perform all surveying activities* ○ *Stake out the proposed centre line on ground* ○ *Preparing the survey information and setting out drawings* ○ *Keep all the data in required form* ○ *"Any Other relevant tasks as identified and assigned by Resident Engineer or key experts"*
19	To be named	LASA	Topographic Surveying, Hydrological Surveying, Quantity Measurement, Setting out of Works	Asst. Surveyor -2	
20	To be named	LASA	Topographic Surveying, Hydrological Surveying, Quantity Measurement, Setting out of Works	Asst. Surveyor -3	
21	To be named	LASA	Highway Engineering/ Road Safety	Junior Road Safety Expert -1	○ *Finalisation of traffic control plan involving Public*

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S. No	Name of Staff	Firm	Area of Expertise	Position Assigned	Task Assigned
22	To be named	LASA	Highway Engineering/ Road Safety	Junior Road Safety Expert -2	
23	To be named	LASA	Construction Supervision, Quality Control, Quantity Measurement, Soil/Material Testing and Investigations	Technician (Field/ Lab/Plant) - 1	
24	To be named	LASA	Construction Supervision, Quality Control, Quantity Measurement, Soil/Material Testing and Investigations	Technician (Field/ Lab/Plant) - 2	
25	To be named	LASA	Construction Supervision, Quality Control, Quantity Measurement, Soil/Material Testing and Investigations	Technician (Field/Lab/ Plant) -3	o *Inspection/Confirmation of Material Sites* o *Ensure QAP in construction* o *Check all the guideline and specification* o *Assisting the Senior Materials Technologist in allocation of duties to Laboratory Site staff* o *Sampling and testing of materials,* o *Recorded all test results and filing them in an orderly fashion such as to enable future reference,* o *Materials Testing and calculation of results* o *Checking the quality of materials for permanent works* o *"Any Other relevant tasks as identified and assigned by Resident Engineer or key experts"*
26	To be named	LASA	Construction Supervision, Quality Control, Quantity Measurement, Soil/Material Testing and Investigations	Technician (Field/ Lab/Plant) - 4	
27	To be named	LASA	Construction Supervision, Quality Control, Quantity Measurement, Soil/Material Testing and Investigations	Technician (Field/ Lab/Plant) - 5	
28	To be named	LASA	Construction Supervision, Quality Control, Quantity Measurement, Soil/Material Testing and Investigations	Technician (Field/Lab/ Plant) -6	
29	To be named	LASA	Construction Supervision, Quality Control, Quantity Measurement, Soil/Material Testing and Investigations	Technician (Field/ Lab/Plant) - 7	
30	To be named	LASA	Construction	Technician	

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S. No	Name of Staff	Firm	Area of Expertise	Position Assigned	Task Assigned
			Supervision, Quality Control, Quantity Measurement, Soil/Material Testing and Investigations	(Field/ Lab/Plant) - 8	
31	**To be named**	LASA	Construction Supervision, Quality Control, Quantity Measurement, Soil/Material Testing and Investigations	Technician (Field/ Lab/Plant) - 9	
32	**To be named**	LASA	Construction Supervision, Quality Control, Quantity Measurement, Soil/Material Testing and Investigations	Technician (Field/ Lab/Plant) - 10	
o	***D. ADMINISTRATIVE SUPPORT STAFF***				
1	**To be named**	LASA	Office Administration, record keeping and accountancy	Office Manager-cum-Accountant -1	o *Coordination with all the project staff* o *Office Administration* o *Book Keeping* o *Day to day accountancy work etc.* o *"Any Other relevant tasks as identified and assigned by Resident Engineer "*
2	**To be named**	LASA	Office Administration, record keeping and accountancy	Office Manager-cum-Accountant -2	
3	**To be named**	LASA	Office Administration, record keeping and accountancy	Computer Operators/office assistant -1	o *Ensure the communication management as per Quality Management Plan* o *Typing all reports* o *Proper documentation and record in soft copies of all the reports* o *Administrative support to all the project staff* o *"Any Other relevant tasks as identified and assigned by Resident Engineer or key experts"*
4	**To be named**	LASA	Office Administration, record keeping and accountancy	Computer Operators/office assistant -2	
5	**To be named**	LASA	Office Administration, record keeping and accountancy	Computer Operators/office assistant -3	
6	**To be named**	LASA	Office Assistance & Security	Office Attendant/ Watchman - 1	o *Day to day office work,* o *Office maintenance,* o *Photocopying,* o *Office security, etc.*
7	**To be named**	LASA	Office Assistance & Security	Office Attendant/ Watchman - 2	

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S. No	Name of Staff	Firm	Area of Expertise	Position Assigned	Task Assigned
8	To be named	LASA	Office Assistance & Security	Office Attendant/ Watchman - 3	
9	To be named	LASA	Office Assistance & Security	Office Attendant/ Watchman - 4	
10	To be named	LASA	Office Assistance & Security	Office Attendant/ Watchman - 5	
11	To be named	LASA	Office Assistance & Security	Office Attendant/ Watchman - 6	

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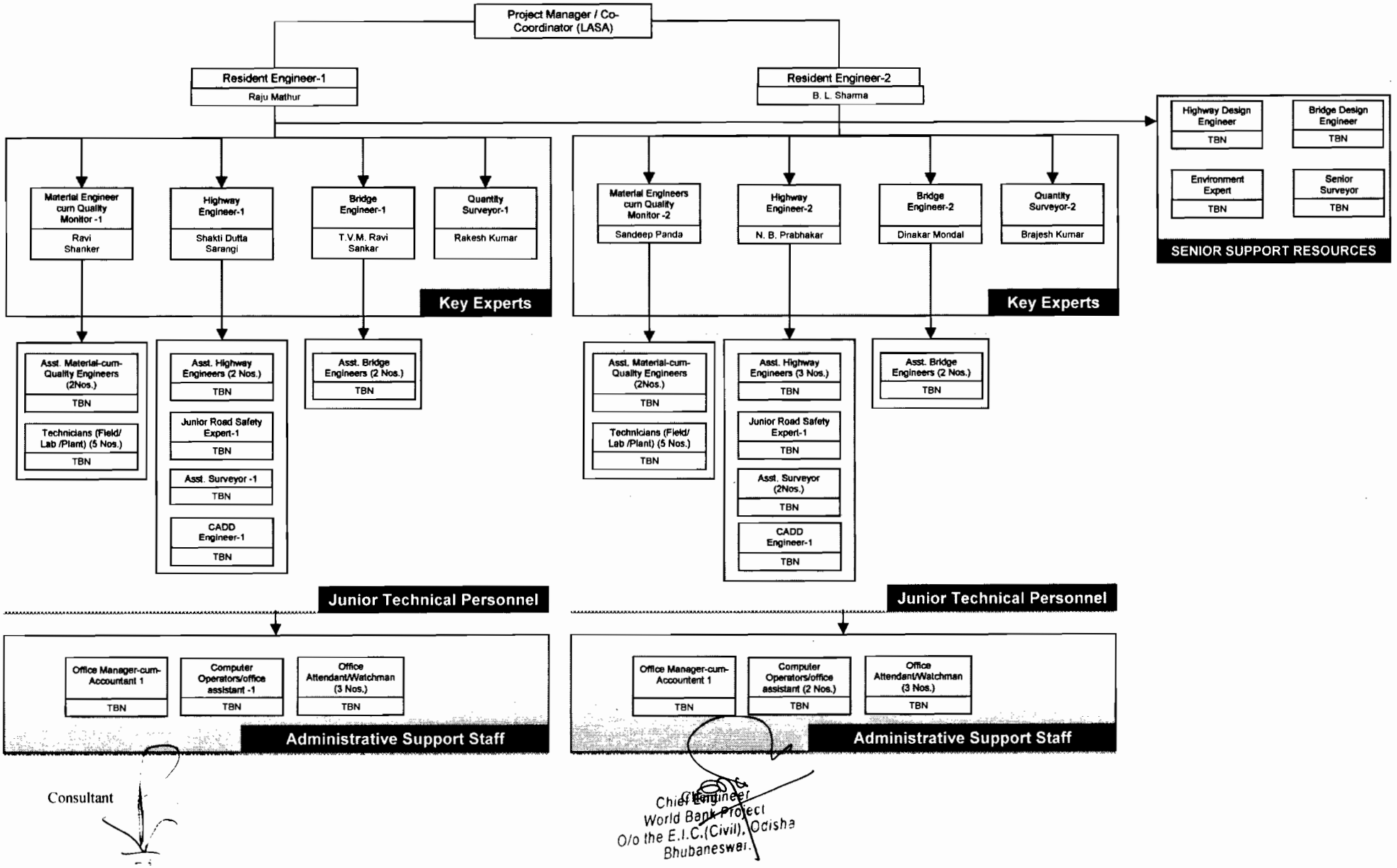
Team Organisation & Staffing, Composition, Task Assignments and Staffing Schedule



STAFFING SCHEDULE

The Estimated Time Schedule for Key Personnel Experts, Sr. Support Resources, Jr. Technical Personnel and Administrative Support Staff is given in the next page.

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Staffing Schedule

No.	Name of Staff	Position Assigned	Home / Field	Months: Phase -I: Development Period (2 months) 1 2	Phase -II: Construction Supervision Period (27 Months) 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29	Phase -III: Defects Liability Period (12 Months) 30 31 32 33 34 35 36 37 38 39 40 41	Home	Field	Total Staff-Month Input (Total)
A. KEY EXPERTS									
K-1	Raju Mathur	*Resident Engineer-1*	Home						31
			Field					31	
K-2	B. L. Sharma	*Resident Engineer-2*	Home						31
			Field					31	
K-3	Rakesh Kumar	*Quantity Surveyor-1*	Home						40
			Field					40	
K-4	Brajesh Kumar	*Quantity Surveyor-2*	Home						40
			Field					40	
K-5	Shakti Dutta Sarangi	*Highway Engineer-1*	Home						40
			Field					40	
K-6	N. B. Prabhakar	*Highway Engineer-2*	Home						40
			Field					40	
K-7	T.V.M. Ravi Sankar	*Bridge Engineer-1*	Home						30
			Field					30	
K-8	Dinakar Mondal	*Bridge Engineer-2*	Home						30
			Field					30	
K-9	Ravi Shanker	*Material Engineer cum Quality Monitor-1*	Home						28
			Field					28	
K-10	Sandeep Panda	*Material Engineer cum Quality Monitor-2*	Field						28
			Field					28	
							SUB-TOTAL	0 338	338
B. SENIOR SUPPORT RESOURCES									
1	TBN	*Highway Design Engineer*	Home						4
			Field					4	
2	TBN	*Bridge Design Engineer*	Home						4
			Field					4	
3	TBN	*Environment Expert*	Home						29
			Field					29	
4	TBN	*Sr. Surveyor*	Home						29
			Field					29	
							SUB-TOTAL	0 66	66

Full Time Input

Part Time input

TBN: To be named

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No.	Name of Staff	Position Assigned	Home / Field	Months																																	Home	Field	Total Staff-Month Input (Total)
				Phase -I : Develop-ment Period (2 months)		Phase -II : Construction Supervision Period (27 Months)																									Phase -III: Defects Liability Period (12 Months)												
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41			
C. JUNIOR TECHNICAL PERSONNEL																																								
1	TBN	*CADD Engineer -1*	*Home*																																				
			Field																																				32	32
2	TBN	*CADD Engineer -2*	*Home*																																				
			Field																																				32	32
3	TBN	*Asst. Highway Engineer - 1*	*Home*																																				
			Field																																				33	33
4	TBN	*Asst. Highway Engineer - 2*	*Home*																																				
			Field																																				33	33
5	TBN	*Asst. Highway Engineer - 3*	*Home*																																				
			Field																																				27	27
6	TBN	*Asst. Highway Engineer - 4*	*Home*																																				
			Field																																				33	33
7	TBN	*Asst. Highway Engineer - 5*	*Home*																																				
			Field																																				33	33
8	TBN	*Asst. Bridge Engineer -1*	*Home*																																				
			Field																																				33	33
9	TBN	*Asst. Bridge Engineer -2*	*Home*																																				
			Field																																				27	27
10	TBN	*Asst. Bridge Engineer -3*	*Home*																																				
			Field																																				33	33
11	TBN	*Asst. Bridge Engineer -4*	*Home*																																				
			Field																																				27	27
12	TBN	*Asst. Quantity Surveyor - 1*	*Home*																																				
			Field																																				39	39
13	TBN	*Asst. Quantity Surveyor - 2*	*Home*																																				
			Field																																				39	39
14	TBN	*Asst. Material-cum-Quality Engineer -1*	*Home*																																				
			Field																																				27	27

Full Time Input

Part Time input

TBN: To be named

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No.	Name of Staff	Position Assigned	Home / Field	Months																																	Home	Field	Total Staff-Month Input (Total)
				Phase -I : Development Period (2 months)		Phase -II : Construction Supervision Period (27 Months)																							Phase -III: Defects Liability Period (12 Months)													
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41			
15	TBN	Asst. Material-cum-Quality Engineer -2	Home																																							27
			Field																																							27	
16	TBN	Asst. Material-cum-Quality Engineer -3	Home																																							27
			Field																																							27	
17	TBN	Asst. Material-cum-Quality Engineer -4	Home																																							27
			Field																																							27	
18	TBN	Asst. Surveyor -1	Home																																							29
			Field																																							29	
19	TBN	Asst. Surveyor -2	Home																																							29
			Field																																							29	
20	TBN	Asst. Surveyor -3	Home																																							29
			Field																																							29	
21	TBN	Junior Road Safety Expert -1	Home																																							27
			Field																																							27	
22	TBN	Junior Road Safety Expert -2	Home																																							27
			Field																																							27	
23	TBN	Technician (Field/ Lab/Plant) -1	Home																																							27
			Field																																							27	
24	TBN	Technician (Field/ Lab/Plant) -2	Home																																							27
			Field																																							27	
25	TBN	Technician (Field/Lab/Plant) -3	Home																																							27
			Field																																							27	
26	TBN	Technician (Field/ Lab/Plant) -4	Home																																							27
			Field																																							27	
27	TBN	Technician (Field/ Lab/Plant) -5	Home																																							27
			Field																																							27	

Full Time Input

Part Time input

TBN: To be named

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No.	Name of Staff	Position Assigned	Home / Field	Months: Phase -I : Develop-ment Period (2 months) 1 2	Phase -II : Construction Supervision Period (27 Months) 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29	Phase -III: Defects Liability Period (12 Months) 30 31 32 33 34 35 36 37 38 39 40 41	Home	Field	Total Staff-Month Input (Total)
28	TBN	Technician (Field/Lab/Plant) -6	Home						27
			Field					27	
29	TBN	Technician (Field/ Lab/Plant) -7	Home						27
			Field					27	
30	TBN	Technician (Field/ Lab/Plant) -8	Home						27
			Field					27	
31	TBN	Technician (Field/ Lab/Plant) -9	Home						27
			Field					27	
32	TBN	Technician (Field/ Lab/Plant) -10	Home						27
			Field					27	
							SUB-TOTAL	0	940	940
					D. ADMINISTRATIVE SUPPORT STAFF				
1	TBN	Office Manager-cum-Accountant -1	Home						41
			Field					41	
2	TBN	Office Manager-cum-Accountant -2	Home						37
			Field					37	
3	TBN	Computer Operators/office assistant -1	Home						39
			Field					39	
4	TBN	Computer Operators/office assistant -2	Home						39
			Field					39	
5	TBN	Computer Operators/office assistant -3	Home						24
			Field					24	
6	TBN	Office Attendant/ Watchman -1	Home						41
			Field					41	
7	TBN	Office Attendant/ Watchman -2	Home						41
			Field					41	
8	TBN	Office Attendant/ Watchman -3	Home						37
			Field					37	
9	TBN	Office Attendant/ Watchman -4	Home						37
			Field					37	
10	TBN	Office Attendant/ Watchman -5	Home						15
			Field					15	
11	TBN	Office Attendant/ Watchman -6	Home						15
			Field					15	
							SUB-TOTAL	0	366	366
							TOTAL (A+B+C+D)	0	1710	1710

Full Time Input

Part Time input

TBN: To be named

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WORK SCHEDULE

Activity/ Task No.	Item of Activity/Tasks	Months																																						
		Phase -I: Develop-ment Period (2 months)		Phase -II: Construction Supervision Period (27 Months)																												Phase -III: Defects Liability Period (12 Months)											
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
PHASE -I: DEVELOPMENT PERIOD (DESIGN REVIEW / MOBILIZATION PERIOD / PRE-CONSTRUCTION STAGE) (2 MONTHS)																																										
ACTIVITY 1	PROJECT INITIATION & APPOINTMENT OF RESIDENT ENGINEER	■																																								
ACTIVITY 2	COLLECTION, ACQUAINTED WITH CONTRACT & DESIGN DOCUMENTS AND ANY ADDITIONAL DATA	■																																								
ACTIVITY 3	SUBMISSION OF INCEPTION REPORT	■																																								
ACTIVITY 4	INITIAL SURVEYS																																									
Task -4.1	Reconnaissance Survey & Initial Assessment	■																																								
Task -4.2	Identification of Additional Survey Work and Design Revisions	■																																								
Task -4.3	Verification of Route Assessment	■																																								
Task -4.4	Data Collection and Analysis	■																																								
ACTIVITY 5	PREPARATION OF SITE FOR CONTRACTOR'S ACTIVITIES - IDENTIFICATION OF GROUND CONTROL POINTS AND SURVEY ACTIVITIES																																									
Task -5.1	Identification, Verification and re-establishment of Ground Control Points	■	■																																							
Task -5.2	Surveying	■	■																																							
Task -5.3	Contractor's Routine Setting out of Works	■	■																																							
ACTIVITY 6	HAND OVER OF CONTROL POINTS AND APPROVAL OF SETTING OUT		■																																							
ACTIVITY 7	DRAWING/DESIGN REVIEW - CHECKING SUFFICIENCY OF DESIGNS, DRAWINGS, TECHNICAL SPECIFICATION, BOQ AND CONTRACT		■																																							
ACTIVITY 8	DESIGN CHANGE/MODIFICATIONS / AMENDMENTS ISSUANCE OF "GOOD FOR CONSTRUCTION" DRAWINGS		■																																							
ACTIVITY 9	RECORD OF INITIAL MEASUREMENT		■																																							
ACTIVITY 10	PREPARATION OF CONSTRUCTION SUPERVISION MANUAL,MANAGEMENT SYSTEMS INCLUDING MANAGEMENT INFORMATION SYSTEM , QUALITY MANAGEMENT PROCEDURES, COMMUNICATION MANAGEMENT																																									
Task -10.1	Finalize Supervision Manual		■																																							
Task -10.2	Finalize Quality Assurance Plan		■																																							
Task -10.3	Manual on Management Information System		■																																							
Task -10.4	Communication Management		■																																							

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Activity/ Task No.	Item of Activity/Tasks	Months																																		
		Phase -I: Develop-ment Period (2 months)		Phase -II: Construction Supervision Period (27 Months)																									Phase -III: Defects Liability Period (12 Months)									
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
ACTIVITY 11	IDENTIFICATION OF UTILITIES AFFECTING CONSTRUCTION																																							
Task -11.1	Survey of utility services and alert otent																																							
ACTIVITY 12	APPOINTMENT OF 'ENGINEER' & 'ENGINEER'S REPRESENTATIVE' IN TERMS OF THE CONTRACTS																																							
Task -12.1	Act as an 'Engineer'																																							
Task -12.2	Delegation of Power																																							
ACTIVITY 13	ESTABLISH OTHER BACKUP SUPPORT FROM HEAD OFFICE																																							
ACTIVITY 14	CONTRACTOR'S MOBILIZATION																																							
Task -14.1	Support to Client																																							
Task -14.2	Review & Approval of Mobilization Programme of the Contractor																																							
Task -14.3	Review and Approval of Key Superintendent Personnel of Contractor																																							
Task -14.4	Checking and Verifying the Insurances / Guaranties																																							
Task -14.5	Pre-Construction Review of Cash Flow Forecast																																							
Task -14.6	Pre-Construction Meeting																																							
Task -14.7	Contractor's Equipment and Facilities Inspection																																							
Task -14.8	Preparation of Contractor's Mobilization Report																																							
Task -14.9	Verification of Contractor's Mobilization																																							
ACTIVITY 15	ISSUING DRAWINGS, SPECIFICATIONS, CONTRACT DOCUMENTS AND ANY ADDITIONAL INFORMATION TO THE CONTRACTOR																																							
ACTIVITY 16	PROJECT DATA COMPILATION																																							
PHASE -II: CONSTRUCTION SUPERVISION PERIOD (27 MONTHS)																																								
ACTIVITY 17	ORGANISING THE SUPERVISION TEAM OF THE CONSULTANT																																							
ACTIVITY 18	SUPERVISION OF ENTIRE CONSTRUCTION																																							
ACTIVITY 19	INSPECTION OF CONTRACTOR'S SETTING OUT AND PREPARATION PRIOR TO APPROVAL TO CONSTRUCT THE WORKS																																							
ACTIVITY 20	REVIEW & APPROVE CONTRACTORS' PROPOSALS, WORK PROGRAMME, PLANS INCLUDING ACTIVITY SCHEDULING AND RESOURCE PROGRAMMING INCLUDING EQUIPMENT																																							
Task -20.1	Review and Approve Construction Schedule/ Work Programme including Activity Scheduling and Resource Programming including Equipment																																							
Task -20.2	Review and Approval of Methodology/ Method Statement and Material Source Plan																																							
Task -20.3	Review and Approval of Traffic Management Plans																																							

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Activity/ Task No.	Item of Activity/Tasks	Months																																		
		Phase -I: Develop-ment Period (2 months)		Phase -II: Construction Supervision Period (27 Months)																									Phase -III: Defects Liability Period (12 Months)									
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
ACTIVITY 21.	DEVELOPMENT OF KEY PERFORMANCE INDICATORS (KPIS)																																							
ACTIVITY 22	REVIEW OF CONTROL OVER WORKS																																							
ACTIVITY 23.	MONITORING CONTRACTOR'S WORK PROGRAM AND PROGRESS																																							
Task -23.1	Monthly Site Meeting																																							
Task -23.2	Revision of programme of work																																							
ACTIVITY 24	REVIEW CONTRACTOR'S WORKING DRAWINGS, PLANS AND CALCULATIONS																																							
ACTIVITY 25	TRIAL STRETCH RUN FOR PAVEMENT LAYERS																																							
Task -26.1	Trial Stretch Run																																							
ACTIVITY 26	INSPECTION OF WORKS																																							
ACTIVITY 27	IDENTIFICATION OF SOURCE OF MATERIALS FOR SUSTAINABILITY AND OPTIMIZATION																																							
ACTIVITY 28.	APPROVAL OF SOURCE OF MATERIALS																																							
ACTIVITY 29	QUALITY CONTROL AND MATERIAL INSPECTION																																							
Task -29.1	Setting up of Testing Facilities																																							
Task -29.2	Sampling and Testing																																							
Task -29.3	Site Laboratory Testing Facilities																																							
Task -29.4	Analysis of Test Results and Approval																																							
Task -29.5	Approval of Mix Designs																																							
Task -29.6	Order Special Tests																																							
Task -29.7	Carry out Independent Tests																																							
Task -29.8	Communication to Contractor																																							
ACTIVITY 30	CONTROLLING SAFETY																																							
ACTIVITY 31.	MEASUREMENT OF WORKS AND PAYMENT CERTIFICATION																																							
ACTIVITY 32.	MONITORING PAYMENT PROCESS																																							
ACTIVITY 33.	DATA AND RECORD MANAGEMENT																																							
Task -33.1	Establish Standardized Forms and Procedures																																							
Task -33.2	Contractor's Equipment Record																																							
Task -33.3	Detailed Records of Staff																																							
Task -33.4	Other Records																																							

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Activity/ Task No.	Item of Activity/Tasks	Months																																		
		Phase -I: Develop-ment Period (2 months)		Phase -II: Construction Supervision Period (27 Months)																									Phase -III: Defects Liability Period (12 Months)										
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
ACTIVITY 34	PREPARE DESIGN CHANGES TO SUIT FIELD CONDITIONS AND/OR NEW DESIGNS																																							
Task -34.1	Design Changes																																							
ACTIVITY 35	UPDATE OF COSTS AND ROUTINELY ADVISE THE CLIENT ABOUT COST																																							
ACTIVITY 36	REGULAR ACTIVITIES & ADVICES																																							
Task -36.1	Regular Review the Contractor's Proposal(S)																																							
Task -36.2	Regular Advice on Estimated Completion Cost																																							
Task -36.3	Regular Checking of Setting Out Data																																							
Task -36.4	Regular Verification of Contractor's Insurance/Guarantees Forms Values & Validity																																							
Task -36.5	Regular Soil & Material Investigation for Optimization																																							
Task -36.6	Regular Advice on Problems Arising during Execution of Works																																							
ACTIVITY 37	MONITORING ENVIRONMENTAL PROTECTION																																							
ACTIVITY 38	ENGINEER'S RECOMENDATION, VARIATION ORDERS ADDENDA AND SPECIFIC APPROVAL OF CLIENT																																							
Task -38.1	Actions requiring Specific Approval of the Client																																							
ACTIVITY 39	REVIEW AND RECOMENDATION OF CLAIMS AND TIME EXTENSION																																							
ACTIVITY 40	ASSISTING IN ADJUDICATION/ARBITRATION																																							
ACTIVITY 41	PHOTOGRAPHS																																							
ACTIVITY 42	PROGRESS REPORTING																																							
ACTIVITY 43	LIAISON WITH CLIENT																																							
ACTIVITY 44	PROVIDE ADDITIONAL AND OTHER SERVICES																																							
Task -44.1	Preparation of Additional Reports and Documents																																							
Task -44.2	Other Specialist Services or other Specifications																																							
Task -44.3	Assist Employer in Technical Audit																																							
ACTIVITY 45	AS-BUILT DRAWING																																							
ACTIVITY 46	ARRANGEMENT FOR JOINT INSPECTION FOR PROVISIONAL ACCEPTANCE AND TAKING OVER CERTIFICATES																																							
ACTIVITY 47	PREPARATION OF A MAINTENANCE MANUAL																																							
ACTIVITY 48	SUBTANTIAL COMPLETION REPORT																																							
Task -48.1	Handing Over of Properties of Client																																							
Task -48.2	Handover of Design Records, Quality Control and Testing Records																																							

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Activity/ Task No.	Item of Activity/Tasks	Months																																		
		Phase -I: Development Period (2 months)		Phase -II: Construction Supervision Period (27 Months)																									Phase -III: Defects Liability Period (12 Months)									
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
Task -48.3	Handover of Records of Payment Request and Claims																																							
Task -48.4	Handover of Records of Setting Out of the Project																																							
Task -48.5	Handover Records of Correspondence																																							
ACTIVITY 49	REPORTING																																							
	PHASE -III: DEFECTS LIABILITY PERIOD (12 MONTHS)																																							
ACTIVITY 50	ACTIVITIES DURING DEFECT LIABILITY/MAINTENANCE PERIOD																																							
Task -50.1	General																																							
Task -50.2	Services																																							
Task -50.3	Provisional and Final Acceptance																																							
Task -50.4	Inspection During Defect Liability Period																																							
Task -50.5	Joint Inspection for Final acceptance																																							
Task -50.6	Final Taking over Certificate																																							
ACTIVITY 51	CONTRACT COMPLETION REPORT																																							
ACTIVITY 52.	CONSULTANCY COMPLETION REPORT																																							
	SUBMISSION OF REPORT																																							
1	Inception Report																																							
2	Construction Supervision manual																																							
3	Installation of computerized RFI/documentation control system																																							
4	Monthly Progress Report (MPR)																																							
5	Quarterly Progress Report (QPR)																																							
6	Manual for Maintenance during DLP																																							
7	Sectional Substantial Completion Reports																																							
8	Contract Completion Report																																							

Full Time Input

Part Time Input

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APPENDIX D - COST ESTIMATES IN FOREIGN CURRENCY

NOT APPLICABLE

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APPENDIX E - COST ESTIMATES IN LOCAL CURRENCY

Form FIN 2: SUMMARY OF COSTS IN LOCAL AND FOREIGN CURRENCY			
Sl.No.	**Description**	**Amount (INR)**	**Amount (USD)**
	Local Consultant		
I	Remuneration For Local Key Professional Staff	5,53,30,000	0
II	Supporting Staff	5,35,33,500	0
III	Transportation	1,74,60,000	0
IV	Duty Travel To Site	2,85,000	0
V	Office Rent	3,075,000	0
VI	Office Supplies, Utilities and Communication	35,15,750	0
VII	Office Furniture and Equipment	1,025,000	0
VIII	Reports and Document Printing	23,55,000	0
IX	Surveys	0	0
	Subtotal Local Consultant	**13,65,79,250**	**0**
	Foreign Consultant		0
F-I	Remuneration for Expatriate Staff		0
F-II	Mobilization and Demobilisation		0
F-III	Accommodation for Consultant'sStaff		0
F-IV	Other Costs		0
	Subtotal Foreign Consultant		0
	Total Cost Net of Taxes indicated below: Local & Foreign Consultant		
Local Taxes & Duties	Local Indirect Taxes and Duties as defined in clause 1.10 of SCC(excluding service tax)		
	Service tax payable in India as defined in clause 1.10 of SCC @ 12.36%	**1,68,81,195**	0
	TOTAL COSTS (Including Taxes and duties)	**15,34,60,445**	

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I. Remuneration for Local Staff					
S. No.	**Position**	**Name**	**Rate**	**Staff Months**	**Amount**
(a)Key Professional Staff					
1	Resident Engineer -1	Raju Mathur	195000.00	31	6045000
2	Resident Engineer -2	B.L Sharma	195000.00	31	6045000
3	Highway Engineer -1	Shakti Dutta Sarangi	157000.00	40	6280000
4	Highway Engineer -2	N B Pravakar	157000.00	40	6280000
5	Quantity Surveyor-1	Rakesh Kumar	155000.00	40	6200000
6	Quantity Surveyor-2	Brajesh Kumar	155000.00	40	6200000
7	Bridge Engineer-1	TVM Ravi Shankar	160000.00	30	4800000
8	Bridge Engineer-2	Dinankar Mandal	160000.00	30	4800000
9	Material Engineer-cum-Quality Monitor-1	Ravi Shankar	155000.00	28	4340000
10	Material Engineer-cum-Quality Monitor-2	Sandeep Panda	155000.00	28	4340000
		Sub Total		338	**5,53,30,000**
(b)Sr. Technical/ Jr. Technical Support Staff					
11	Highway Design Engineer	To be named	120000.00	4	480000
12	Bridge Design Engineer	To be named	120000.00	4	480000
13	Environment Expert	To be named	65000.00	29	1885000
14	Sr. Surveyor	To be named	95000.00	29	2755000

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15	CADD Engineer -1	To be named	46000.00	32	1472000
16	CADD Engineer -2	To be named	46000.00	32	1472000
17	Asst. Highway Engineer- 1	To be named	57500.00	33	1897500
18	Asst. Highway Engineer- 2	To be named	57500.00	33	1897500
19	Asst. Highway Engineer- 3	To be named	57500.00	27	1552500
20	Asst. Highway Engineer- 4	To be named	57500.00	33	1897500
21	Asst. Highway Engineer- 5	To be named	57500.00	33	1897500
22	Asst. Bridge Engineer-1	To be named	57500.00	33	1897500
23	Asst. Bridge Engineer-2	To be named	57500.00	27	1552500
24	Asst. Bridge Engineer-3	To be named	57500.00	33	1897500
25	Asst. Bridge Engineer-4	To be named	57500.00	27	1552500
26	Asst. Quantity Surveyor-1	To be named	40000.00	39	1560000
27	Asst. Quantity Surveyor-2	To be named	40000.00	39	1560000
28	Asst. Material / Quality Engineer - 1	To be named	40000.00	27	1080000
29	Asst. Material / Quality Engineer - 2	To be named	40000.00	27	1080000
30	Asst. Material / Quality Engineer - 3	To be named	40000.00	27	1080000
31	Asst. Material / Quality Engineer - 4	To be named	40000.00	27	1080000
32	Asst. Surveyor- 1	To be named	40000.00	29	1160000
33	Asst. Surveyor- 2	To be named	40000.00	29	1160000

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34	Asst. Surveyor- 3	To be named	40000.00	29	1160000
35	Jr. Road Safty Expert-1	To be named	38000.00	27	1026000
36	Jr. Road Safty Expert-2	To be named	38000.00	27	1026000
37	Technicians (Field /Lab/Plant)-1	To be named	31000.00	27	837000
38	Technicians (Field /Lab/Plant)-2	To be named	31000.00	27	837000
39	Technicians (Field /Lab/Plant)-3	To be named	31000.00	27	837000
40	Technicians (Field /Lab/Plant)-4	To be named	31000.00	27	837000
41	Technicians (Field /Lab/Plant)-5	To be named	31000.00	27	837000
42	Technicians (Field /Lab/Plant)-6	To be named	31000.00	27	837000
43	Technicians (Field /Lab/Plant)-7	To be named	31000.00	27	837000
44	Technicians (Field /Lab/Plant)-8	To be named	31000.00	27	837000
45	Technicians (Field /Lab/Plant)-9	To be named	31000.00	27	837000
46	Technicians (Field /Lab/Plant)-10	To be named	31000.00	27	837000
		Sub Total		**1006**	**4,59,28,500**
I.		**Grand Total of (a+b)**		**1344**	**10,12,58,500**

II. Administrative Support Staff					
S. No.	**Position**	**Name**	**Rate**	**Staff-Month**	**Amount**
1	Office Manager- cum-Accountant -1	To be named	35000.00	39	1365000
2	Office Manager- cum-Accountant-2	To be named	35000.00	39	1365000
3	Computer oprator/Office Assistant-1	To be named	25000.00	39	975000

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4	Computer oprator/Office Assistant-2	To be named	25000.00	39	975000
5	Computer oprator/Office Assistant-3	To be named	25000.00	24	600000
6	Office Attendant/Watch Man-1	To be named	12500.00	41	512500
7	Office Attendant/Watch Man-2	To be named	12500.00	41	512500
8	Office Attendant/Watch Man-3	To be named	12500.00	37	462500
9	Office Attendant/Watch Man-4	To be named	12500.00	37	462500
10	Office Attendant/Watch Man-5	To be named	12500.00	15	187500
11	Office Attendant/Watch Man-6	To be named	12500.00	15	187500
Sub-Total				**366**	**76,05,000**
Total of I & II				**1710**	**10,88,63,500**

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III. Transportation (Reimbursable)

The vehicles provided by the Consultant shall include the cost for rental,drivers,operation,maintenance,repairs,insurance etc

SI. No.	Description	Unit	Total Vehicle/ Months	Rate / Vehicle Month (Rs.)	Amount (Rs.)
1	Pre-Construction Phase	Veh-Month	4	45000	180000
2	Construction Supervision	Veh-Month	324	45000	14580000
3	Defect Liability Period	Veh-Month	60	45000	2700000
	Total				**1,74,60,000**

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IV. Duty Travel to Site for Pre-Construction, Construction Supervision & DLP (Reimbursable)				
Sl.No.	**Trips**	**Number of Trips**	**Rate***	**Amount (Rs.)**
1	Travel Expenses for short term staff	57	5,000	285,000
2	Mobilisation expenses for sub professional staff	0		
3	Vehicle for project (3 vehicles/RE office)	0		
			Total	**2,85,000**

V. Office Rent for Pre-Construction, Construction Supervision & DLP - (Reimbursable)			
The rent cost includes maintenance, Cleaning, repairs etc			
Area	**No of Months**	**Rate/month**	**Amount**
Project Offices Rent	41	75,000	665,000
Total			**30,75,000**

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VI. Office Supplies, Utilities and Communication, & DLP (Reimbursable)					
Sl. No.	**Item**	**Offices**	**Months**	**Monthly Rate (Rs.)**	**Amount (Rs.)**
1	Office Supplies	Pre-Construction Phase	2	20,000	40,000
		Construction Supervision	27	20,000	5,40,000
		DLP	12	20,000	2,40,000
2	Drafting Supplies	Pre-Construction Phase	2	20,000	40,000
		Construction Supervision	27	20,000	5,40,000
		DLP	12	20,000	2,40,000
3	Computer Running Costs	Pre-Construction Phase	2	20,000	40,000
		Construction Supervision	27	20,000	5,40,000
		DLP	12	20,000	2,40,000
4	Domestic and International Communication	Pre-Construction Phase	2	20,000	40,000
		Construction Supervision	27	20,000	5,40,000
		DLP	12	20,000	2,40,000
5	Softwares	Pre-Construction Phase	2	5,750	11,500
		Construction Supervision	27	5,750	1,55,250
		DLP	12	5,750	69,000
	Total				**35,15,750**

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VII. Office Furniture and Equipment (Reimbursable)					
SI. No.	**Description**	**Unit**	**Quantity**	**Rate**	**Amount (Rs.)**
OFFICE FURNITURE(PURCHASE)					
	NIL				
OFFICE EQUIPMENT (PURCHASE)- Office Equipments (computer, printer, photocopy, scanner, camera, etc.)					
1	Pre-Construction Phase	No.	2	25,000	50,000
2	Construction Supervision	No.	27	25,000	6,75,000
3	DLP	No.	12	25,000	3,00,000
	Total		41		**10,25,000**

VIII. Reports and Documents Printing Pre-Construction, Construction Supervision & DLP					
SI. No.	**Description**	**Unit**	**No. of Copies**	**Rate per Copy (Rs)**	**Amount (Rs.)**
1	Monthly Progress Report	Nos.	580	1500	870000
2	Quarterly Progress Reports	Nos.	195	3000	585000
3	Quality Management Plan	Nos.	20	10000	200000
4	Maintenance Manual	Nos.	20	5000	100000
5	Sectional Substantial Completion Report	Nos.	20	10000	200000
6	Contract Completion Report	Nos.	20	15000	300000
7	PM & MS	LS			1,00,000
	Total				**23,55,000**

IX. Topographical Surveys

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1. Surveying equipment for design will be provided by the Consultant. The cost would be included in the overall amount of consultancy				
S.No	**Description**	**Month**		**Amount(Rs)**
	Sub Total			0

2. Chainmen

S.No	Description	Month	Rate	Amount(Rs)
	Sub Total			0
	Total			0
Total of III to IX				**2,77,15,750**
Grand Total of Remuneration & Reimbursable Expenses (From I to IX)				**13,65,79,250**

[N.B.: For all reimbursable components, the Consultant need not required to submit the vouchers along with invoices to the Client. However, the Client at any point of time may inspect, audit and verify the Consultant's records of consumables and vouchers at the Offices of the Consultant/ Resident Engineers.]

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Breakdown of Agreed Fixed Rates in Consultant's Contract

We hereby confirm that we have agreed to pay to the staff members listed, who will be involved in this assignment, the basic salaries and away from headquarters allowances (if applicable) indicated below:

(Expressed in *[INR]*)

Personnel		1	2	3	4	5	6	7	8
Name	Position	Basic Salary per Working Month	Social Charges [1]	Overhead [1]	Subtotal	Fee[2]	Away from Headquarters Allowance	Agreed Fixed Rate per Working Month	Agreed Fixed Rate per Working Month
			37.03 %	**65.61%**	**=1+2+3**	**10.00%**	**0%**	**=4+5+6**	
(A)Key Professional Staff (Local)									
Raju Mathur	Resident Engineer -1	87,482	37.03%	65.61%	177,273	10.00%	-	195,000	222.90%
B.L Sharma	Resident Engineer -2	87,482	37.03%	65.61%	177,273	10.00%	-	195,000	222.90%
Shakti Dutta Sarangi	Highway Engineer -1	69,537	37.03%	65.61%	140,909	10.00%	-	155,000	222.90%
N B Pravakar	Highway Engineer -2	69,537	37.03%	65.61%	140,909	10.00%	-	155,000	222.90%
Rakesh Kumar	Quantity Surveyor-1	70,434	37.03%	65.61%	142,727	10.00%	-	157,000	222.90%

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Brajesh Kumar	Quantity Surveyor-2	70,434	37.03%	65.61%	142,727	10.00%	-	157,000	222.90%
TVM Ravi shankar	Bridge Engineer-1	71,780	37.03%	65.61%	145,455	10.00%	-	160,000	222.90%
Dinankar Mandal	Bridge Engineer-2	71,780	37.03%	65.61%	145,455	10.00%	-	160,000	222.90%
Ravi Shankar	Material Engineer-cum-Quality Monitor-1	69,537	37.03%	65.61%	140,909	10.00%	-	155,000	222.90%
Sandeep Panda	Material Engineer-cum-Quality Monitor-2	69,537	37.03%	65.61%	140,909	10.00%	-	155,000	222.90%
Sub-Total (A)		**7,37,537**			**1,494,545**			**1,644,000**	
(B) Sr. Support Resouces (Local)									
TBN	Highway Design Engineer	53,835	37.03%	65.61%	109,091	10.00%	-	120,000	222.90%
TBN	Bridge Design Engineer	53,835	37.03%	65.61%	109,091	10.00%	-	120,000	222.90%
TBN	Environment Expert	29,161	37.03%	65.61%	59,091	10.00%	-	65,000	222.90%
TBN	Sr. Surveyor	42,619	37.03%	65.61%	86,364	10.00%	-	95,000	222.90%
Sub-Total (B)		**1,79,449**			**363,636**			**400,000**	
(C) Jr. Technical Personnel (Local)									
TBN	CADD Engineer -1	20,637	37.03%	65.61%	41,818	10.00%	-	46,000	222.90%

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TBN	CADD Engineer -2	20,637	37.03%	65.61%	41,818	10.00%	-	46,000	222.90%
TBN	Asst. Highway Engineer- 1	25,796	37.03%	65.61%	52,273	10.00%	-	57,500	222.90%
TBN	Asst. Highway Engineer- 2	25,796	37.03%	65.61%	52,273	10.00%	-	57,500	222.90%
TBN	Asst. Highway Engineer- 3	25,796	37.03%	65.61%	52,273	10.00%	-	57,500	222.90%
TBN	Asst. Highway Engineer- 4	25,796	37.03%	65.61%	52,273	10.00%	-	57,500	222.90%
TBN	Asst. Highway Engineer- 5	25,796	37.03%	65.61%	52,273	10.00%	-	57,500	222.90%
TBN	Asst. Bridge Engineer-1	25,796	37.03%	65.61%	52,273	10.00%	-	57,500	222.90%
TBN	Asst. Bridge Engineer-2	25,796	37.03%	65.61%	52,273	10.00%	-	57,500	222.90%
TBN	Asst. Bridge Engineer-3	25,796	37.03%	65.61%	52,273	10.00%	-	57,500	222.90%
TBN	Asst. Bridge Engineer-4	25,796	37.03%	65.61%	52,273	10.00%	-	57,500	222.90%
TBN	Asst. Quantity Surveyor-1	17,945	37.03%	65.61%	36,364	10.00%	-	40,000	222.90%
TBN	Asst. Quantity Surveyor-2	17,945	37.03%	65.61%	36,364	10.00%	-	40,000	222.90%
TBN	Asst. Material / Quality Engineer - 1	17,945	37.03%	65.61%	36,364	10.00%	-	40,000	222.90%
TBN	Asst. Material / Quality Engineer - 2	17,945	37.03%	65.61%	36,364	10.00%	-	40,000	222.90%

Consultant

Client
Chief Engineer
World Bank Project
O/o the E.I.C.(Civil), Odisha
Bhubaneswar.

TBN	Asst. Material / Quality Engineer - 3	17,945	37.03%	65.61%	36,364	10.00%	-	40,000	222.90%
TBN	Asst. Material / Quality Engineer - 4	17,945	37.03%	65.61%	36,364	10.00%	-	40,000	222.90%
TBN	Asst. Surveyor- 1	17,945	37.03%	65.61%	36,364	10.00%	-	40,000	222.90%
TBN	Asst. Surveyor- 2	17,945	37.03%	65.61%	36,364	10.00%	-	40,000	222.90%
TBN	Asst. Surveyor- 3	17,945	37.03%	65.61%	36,364	10.00%	-	40,000	222.90%
TBN	Jr. Road Safty Expert-1	17,048	37.03%	65.61%	34,545	10.00%	-	38,000	222.90%
TBN	Jr. Road Safty Expert-2	17,048	37.03%	65.61%	34,545	10.00%	-	38,000	222.90%
TBN	Technicians (Field /Lab/Plant)-1	13,907	37.03%	65.61%	28,182	10.00%	-	31,000	222.90%
TBN	Technicians (Field /Lab/Plant)-2	13,907	37.03%	65.61%	28,182	10.00%	-	31,000	222.90%
TBN	Technicians (Field /Lab/Plant)-3	13,907	37.03%	65.61%	28,182	10.00%	-	31,000	222.90%
TBN	Technicians (Field /Lab/Plant)-4	13,907	37.03%	65.61%	28,182	10.00%	-	31,000	222.90%
TBN	Technicians (Field /Lab/Plant)-5	13,907	37.03%	65.61%	28,182	10.00%	-	31,000	222.90%
TBN	Technicians (Field /Lab/Plant)-6	13,907	37.03%	65.61%	28,182	10.00%	-	31,000	222.90%
TBN	Technicians (Field /Lab/Plant)-7	13,907	37.03%	65.61%	28,182	10.00%	-	31,000	222.90%

Consultant

Chief Engineer
World Bank Project
O/o the E.I.C.(Civil), Odisha
Bhubaneswar

TBN	Technicians (Field /Lab/Plant)-8	13,907	37.03%	65.61%	28,182	10.00%	-	31,000	222.90%
TBN	Technicians (Field /Lab/Plant)-9	13,907	37.03%	65.61%	28,182	10.00%	-	31,000	222.90%
TBN	Technicians (Field /Lab/Plant)-10	13,907	37.03%	65.61%	28,182	10.00%	-	31,000	222.90%
Sub-Total (C)		**6,08,109**			**12,32,273**			**13,55,500**	
(D)Administrative Support Staff (Local)									
TBN	Office Manager- cum-Accountant -1	15,702	37.03%	65.61%	31,818	10.00%	-	35,000	222.90%
TBN	Office Manager- cum-Accountant-2	15,702	37.03%	65.61%	31,818	10.00%	-	35,000	222.90%
TBN	Computer oprator/Office Assistant-1	11,216	37.03%	65.61%	22,727	10.00%	-	25,000	222.90%
TBN	Computer oprator/Office Assistant-2	11,216	37.03%	65.61%	22,727	10.00%	-	25,000	222.90%
TBN	Computer oprator/Office Assistant-3	11,216	37.03%	65.61%	22,727	10.00%	-	25,000	222.90%
TBN	Office Attendant/Watch Man-1	5,608	37.03%	65.61%	11,364	10.00%	-	12,500	222.90%
TBN	Office Attendant/Watch Man-2	5,608	37.03%	65.61%	11,364	10.00%	-	12,500	222.90%
TBN	Office Attendant/Watch Man-3	5,608	37.03%	65.61%	11,364	10.00%	-	12,500	222.90%
TBN	Office Attendant/Watch Man-4	5,608	37.03%	65.61%	11,364	10.00%	-	12,500	222.90%

Consultant

Client

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Bhubaneswar.

TBN	Office Attendant/Watch Man-5	5,608	37.03%	65.61%	11,364	10.00%	-	12,500	222.90%
TBN	Office Attendant/Watch Man-6	5,608	37.03%	65.61%	11,364	10.00%	-	12,500	222.90%
Sub-Total (D)		**98,697**			**2,00,000**			**2,20,000**	
Total (A+B+C+D)		**16,23,793**			3,290,455			3,619,500	

1. Expressed as percentage of 1
2.Expressed as percentage of 4

Consultant

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World Bank Project
O/o the E.I.C.(Civil), Odisha
Bhubaneswar

APPENDIX F - DUTIES OF THE CLIENT

DATA, SERVICES AND FACILITIES TO BE PROVIDED BY THE EMPLOYER

The following shall be provided by the Employer either directly or through the civil works Contract.

a. **Project Data/ Contract Documents:** The reports, base mapping, existing road inventory including data on pavement history, traffic statistics and forecasts and traffic count details on various project roads which were prepared earlier by the DPR Consultant will be available for the use of the Construction Supervision Consultant. The civil works contract documents will be provided by the Employer.

b. **Site Laboratories:** The site laboratories (including furniture, equipment, running and maintenance) will be provided through the construction contract. The supervision consultant will perform the tests selectively and supervise all the tests done by the contractors.

c. In case of additional independent test, the Consultant shall conduct these tests in Quality Control Laboratories approved by the State Government or through State's Quality Control Laboratories on payment basis. Prior approval of the Employer for the tests and laboratory is necessary in these cases.

d. As it is difficult to assess the type and number of independent tests at present, the cost for all these items shall not be included in the financial proposal. Therefore the expenditure thereof shall be reimbursed as per actual on submission of documentary evidence.

Attention is drawn to the following which are **not to be provided by the Employer** and are to be arranged by the Consultant at his own cost.

a. The OWD will not provide office accommodation.

The Consultant shall make his own arrangements for the office of the Resident Engineers and other support staff **at the project site** and for each of the field supervision teams including furniture, equipment, communication equipments like telephones, VHF, operation and maintenance etc. The Consultant shall hire/purchase furniture and equipment for the offices and shall maintain inventory of such item at all times and submit the same to client as and when requested/necessary. Upon completion of the assignment the furniture and equipment so purchased for this contract shall become the property of the OWD and the same shall be handed over to the OWD.

Consultant

Client
Chief Engineer
World Bank Project
O/o the E.I.C.(Civil), Odisha
Bhubaneswar

b. The OWD will not provide project vehicles to the Consultant. The Consultant shall hire vehicles required to perform their assignment.

c. The Consultant shall be responsible for making his own arrangements for survey equipments.

Consultant

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Chief Engineer
World Bank Project
O/o the E.I.C.(Civil), Odish.
Bhubaneswar

APPENDIX G - FORM OF ADVANCE PAYMENTS GUARANTEE

***Note**: See Clause GC 6.4(a) and Clause SC 6.4(a).*

Bank Guarantee for Advance Payment

_____ *[Bank's Name, and Address of Issuing Branch or Office]*

Beneficiary: _____ *[Name and Address of Client]*

Date: _____

ADVANCE PAYMENT GUARANTEE No.: _____

We have been informed that _____ *[name of Consulting Firm]* (hereinafter called "the Consultant") has entered into Contract No. _____ *[reference number of the contract]* dated _____ with you, for the provision of _____ *[brief description of Services]* (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, an advance payment in the sum of _____ *[amount in figures]* (_____) *[amount in words]* is to be made against an advance payment guarantee.

At the request of the Consultant, we _____ *[name of Bank]* hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of _____ *[amount in figures]* (_____) *[amount in words]*[1] upon receipt by us of your first demand in writing accompanied by a written statement stating that the Consultant are in breach of their obligation under the Contract because the Consultant have used the advance payment for purposes other than toward providing the Services under the Contract.

It is a condition for any claim and payment under this guarantee to be made that the advance payment referred to above must have been received by the Consultant on their account number _____ at _____ *[name and address of Bank]*.

The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Consultant as indicated in copies of certified monthly statements which shall be presented to us. This guarantee shall expire, at the latest, upon our receipt of the monthly payment certificate indicating that the Consultant have made full repayment of the amount of the advance payment, or on the __ day of _____,

[1] The Guarantor shall insert an amount representing the amount of the advance payment and denominated either in the currency(ies) of the advance payment as specified in the Contract, or in a freely convertible currency acceptable to the Client.

Consultant

Chief Engineer
World Bank Project
O/o the E.I.C.(Civil), Odisha
Bhubaneswar.

2___,[2] 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. 458.

_____
[signature(s)]

Note: All italicized text is for indicative purposes only to assist in preparing this form and shall be deleted from the final product.

[2] Insert the expected expiration date. In the event of an extension of the time for completion of the Contract, the Client 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 Client 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 [six months][one year], in response to the Client's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."

Consultant

Client
Chief Engineer
World Bank Project
O/o the E.I.C.(Civil), Odisha
Bhubaneswar.

APPENDIX H - MEMORANDUM OF ASSOCIATION OF THE CONSULTING FIRMS

MoU for Consultancy Services for Construction Supervision of Jagatpur Chandbali Road (0/0 km to 99/0 km of MDR and 52/0 km to 45/0 km of SH 9) of Odisha State Roads Project

LEA Associates South Asia Pvt, Ltd, India of B-1/E-27, Mohan Co-operative Industrial Estate, Mathura Road, New Delhi – 110044, INDIA (hereinafter called 'LASA') has submitted the Proposal as Lead Consultant for Consultancy Services for Construction Supervision of Jagatpur Chandbali Road (0/0 km to 99/0 km of MDR and 52/0 km to 45/0 km of SH 9) of Odisha State Roads Project to the Chief Engineer, World Bank Projects, Odisha (on behalf of Works Department, Govt of Odisha) in association with **S. M. Consultants**, S. M. Tower, Plot No. 130, Mancheswar Industrial Estate, Rasulgarh, Bhubaneswar – 751010, Odisha (hereinafter called 'SMC') as Sub-Consultant.

1. DUTIES AND RESPONSIBILITIES

1.1 LASA is primarily responsible to the client under the contract and LASA will liaise with the Client. SMC shall coordinate locally as required

1.2 SMC is responsible to LASA under the contract and shall assist and support LASA and the Resident Engineer(s) in all assigned tasks for the best interest of the project

1.3 SMC shall assist LASA and shall work in association in completing the assignment as per the scope of services of Main Contract in the best of professional manner acceptable to the Client.

1.4 Each firm will take professional responsibility for the work carried out by their nominated personnel and the responsibilities that LASA has to the Client under the Main Contract will apply accordingly to both the parties.

1.5 The staffing schedule shall be as per the Main Contract

2. ALLOCATION OF RESPONSIBILITIES

Allocation of responsibilities between LASA & SMC would be as follows:

2.1 LASA shall be responsible for

- The list of Key Experts, Senior Support Resources, Junior Technical Personnel and Administrative Support Staff to be fielded by LASA for entire duration specified in the Main Contract is enclosed in Annexure-I
- Arranging all facilities pertinent to office and local transport for official purpose only.
- LASA will designate one Project Coordinator for overall coordination and finalization of the Project Assignment.

Consultant

Chief Engineer
World Bank Project
O/o the E.I.C.(Civil), Odisha
Bhubaneswar.

2.2 SMC shall be responsible for

- The list of Senior Support Resources, Junior Technical Personnel and Administrative Support Staff to be fielded by SM Consultants for entire duration specified in the Main Contract is enclosed in Annexure-I
- SMC will designate one Project Coordinator to interact with his counterpart of LASA for effective supervision of the project. He would also discuss with Project Coordinator of LASA on deployment of professionals as per the deployment agreed to and various other management and administrative issues of the project. The Project Coordinator from SMC shall also chair a meeting of the professionals deployed by them on monthly basis for smooth project management
- SMC shall provide services and equipment for survey as per the provision of the Main Contract during pre-construction.
- Project Coordinator may also attend meetings to be conducted as per provision of contract.

3. **LIABILITY**

Both LASA and SMC shall be responsible for the conduct of their respective personnel and will accept the liabilities for the consequences of all errors and omissions after establishing about such errors and omissions through joint enquiry.

LEA Associates South Asia Pvt. Ltd,	**S. M. Consultants,**
New Delhi	**Bhubaneswar**
By	By
Name: Pradyot Biswas	Name: DEBASIS MOHANTY
Title: Associate Director	Title: DIRECTOR
Date :04.09.2013	Date :04.09.2013

NEW DELHI

Consultant

Chief Engineer
World Bank Project
O/o the E.I.C.(Civil), Odisha
Bhubaneswar.

Gmail

Fwd: NO OBJECTION : Consulting Services for Construction Supervision of Jagatpur Chandbali Road - Submission of Combined Evaluation Report & Draft Contract

Chief Engineer, World Bank Projects, Orissa <pmuosrp@gmail.com> Tue, Oct 1, 2013 at 8:48 AM
To: Manoranjan Misra <mrmisra@pmuosrp.org>, AKSHAY KUMAR SAHOO <aksahoo@pmuosrp.org>, "rashmibohidar81@gmail.com" <rashmibohidar81@gmail.com>

Aksyay,

Please make the papers ready, we shall send it to the Government today.

Regards

-------- Forwarded message --------
From: <rrohatgi@worldbank.org>
Date: 30 Sep 2013 20:37
Subject: NO OBJECTION : Consulting Services for Construction Supervision of Jagatpur Chandbali Road - Submission of Combined Evaluation Report & Draft Contract
To: "N K Pradhan" <pmuosrp@gmail.com>

Dear Mr Patel

Thank you for your email of September 20, 2013 and September 27, 2013 enclosing negotiated draft contract along with the minutes of the negotiation for the above. We have reviewed the final draft of the proposed contract and have no objection to your signing the contract with M/s. LEA Associates South Asia Pvt. Ltd. in association with M/s S.M. Consultants, Bhubaneswar, Odisha for an amount not exceeding the INR 13,65,79,250, excluding taxes.
Please forward to the Bank copy of the signed contract at your earliest for enabling us issue the WBR No.

Regards,
Rajesh Rohatgi

Consultant

Chief Engineer
World Bank Project
O/o the E.I.C.(Civil), Odisha
Bhubaneswar.

GOVERNMENT OF ODISHA
WORKS DEPARTMENT

No. 11819 /W., Bhubaneswar, Dated, the 29th October,2013
AC-I/0718040114 2013

From
Sri A. Mahalik,
FA-cum-Additional Secretary to Government

To
The Chief Engineer, World Bank Projects, Odisha,
Nirman Soudha, Bhubaneswar

Sub:- Consultancy Services for Construction Supervision of Jagatpur Chandbali Road (0/0 km to 99/0 km of MDR and 52/0 km to 45/0 km of SH 9) of Odisha State Roads Project

Sir,

I am directed to invite a reference to your Letter No.43431 dated 01.10.2013 on the subject noted above and convey the approval of Government for acceptance of the lowest offer of **LEA Associates South Asia (LASA) Pvt. Ltd.** in association with **M/s S.M. Consultants, Bhubaneswar, Odisha**, which stood highest in combined technical and financial evaluation for **Providing Consultancy Services for "Construction Supervision of Jagatpur Chandbali Road (0/0 km to 99/0 km of MDR and 52/0 km to 45/0 km of SH 9) of Odisha State Roads Project"** amounting to **₹13,65,79,250.00,** (Rupees Thirteen Crore sixty-five lakh seventy-nine thousand two hundred fifty) only which is 4.6% excess over the estimated cost of ₹13,05,67,000.00 excluding service taxes subject to the conditions that all formalities and other preliminaries should be completed well before signing contract with the Agency. Further the Chief Engineer, World Bank Projects is to ensure mobilization of resources by the Consultant commensurate with progress of civil works.

A copy of the proceedings of the Tender Committee Meeting held on 03.10.2013 for the above work is enclosed for reference.

Documents received with your letter under reference are returned herewith, the receipt of which may please be acknowledged.

Yours faithfully

Encl: As above

29/10/2013
FA-cum-Additional Secretary to Government

Consultant

Client
Chief Engineer
World Bank Project
O/o the E.I.C.(Civil), Odisha
Bhubaneswar.

OFFICE OF THE ENGINEER-IN-CHIEF (CIVIL), ODISHA
NIRMAN SOUDHA, KESHARI NAGAR, UNIT – V, BHUBANESWAR – 751 001

Letter No. PMU – WB – 9 / 2012 (Pt.-2)- **47548** **October 29, 2013**

From

Er. Om Prakash Patel
Chief Engineer, World Bank Projects, Odisha
Tel: +91-674-2396783 / Fax:+91 – 674 -239 0080
Email: pmuosrp@gmail.com

To

LEA Associates South Asia Pvt. Ltd.,
(in association with M/s S.M. Consultants, Bhubaneswar, Odisha)
Mohan Cooperative Industrial Estate,
Mathura Road,
New Delhi- 110 044, India.

Tel.: 91-11-26973950-52,
Fax: 91-11-26971062
E-mail: lasa@lasaindia.com

Sub: Consulting Services for Construction Supervision of Jagatpur Chandbali Road (0/0 km to 99/0 km of MDR and 52/0 km to 45/0 km of SH 9) of Odisha State Roads Project

- **AWARD OF CONTRACT**

Ref: i.) Request for Proposal issued vide this office letter No. 12400 Dt. 25.03.2013
ii) Receipt of your proposal on 22nd May 2013 and Financial Proposal opened on 06.08.2013
iii) Call for Negotiation issued vide this office No. 35326 Dt. 17.08.2013

Sir,

In inviting a reference to the negotiation held with your authorized representatives concluded on 16th September 2013 followed by signing of draft contract, this is to intimate that the proposal for the aforesaid consultancy services submitted by **LEA Associates South Asia (LASA) Pvt. Ltd. in association with M/s S.M. Consultants, Bhubaneswar, Odisha** has been accepted for an amount of **Rs. 13,65,79,250 /-** (Indian Rupees Thirteen Crore Sixty Five Lakh Seventy-nine Thousand Two Hundred Fifty only) excluding applicable Service Tax. No objection for award of the contract has been received from the World Bank on September 30, 2013 and approval of the Government have been communicated in Works Department No. 11819/W Dt. 29-10-2013. Hence, in pursuant to Clause 7.1 of ITC, the contract is hereby awarded in favour of above consortium.

You are requested to send the authorized representative of the firm within seven days to sign the Contract.

Yours sincerely,

Chief Engineer
World Bank Projects, Orissa

Consultant

Client
Chief Engineer
World Bank Project
O/o the E.I.C.(Civil), Odisha
Bhubaneswar.

Memo No. **47549** Dt. **29.10.2013**

Copy submitted to the **Engineer-in-Chief-cum-Secretary**, Works Department, Government of Orissa for favour of information. This is with reference to Works Department No. 11819/W Dt. 29-10-2013.

Chief Engineer
World Bank Projects, Orissa

Memo No. **47550** Dt. **29.10.2013**

Copy forwarded to **Mr. Rajesh Rohatgi,** Senior Transport Specialist & Task Team Leader OSRP, Sustainable Development (South Asia Region), The World Bank, 18-20, KG Marg, New Delhi - 110 001 for information.

Chief Engineer
World Bank Projects, Orissa

Consultant

Client
Chief Engineer
World Bank Project
O/o the E.I.C.(Civil), Odisha
Bhubaneswar

LEA Associates South Asia Pvt. Ltd.
A LEA Group Company
Consulting Engineers and Planners

B-1/E-27, Mohan Co-operative Industrial Estate
Mathura Road, New Delhi -110 044, INDIA
Tel : 91-11-2697 3950-52, 41678150
Fax : 91-11-4167 8659, 2697 1062
Email : lasa@lasaindia.com, www.lasaindia.com

LASA/BD/Contract Agreement/JCR/Odisha/71693/2013

19th August 2013

To
Er. Bharat Chandra Pradhan,
Chief Engineer
World Bank Projects, Odisha
Nirman Soudha, Keshari Nagar,
Bhubaneswar- 751001 (India)
Telephone: 0674-2396783
Facsimile: 0674-2390800
E-mail: pmuosrp@gmail.com

Subject: Letter of Authorisation to Negotiate and Sign the Contract Agreement Document

Ref.: 1. Your Letter No. PMU – WB – 9 / 2012 -35326, dated August 17, 2013
2. Consultancy Services for Construction Supervision of Jagatpur Chandbali Road (0/0 km to 99/0 km of MDR and 52/0 km to 45/0 km of SH 9) of Odisha State Roads Project

Dear Sir,

This is in reference to your letter no. PMU – WB – 9 / 2012 -35326, dated August 17, 2013, we would like to thank you for inviting our firm for the negotiation for the above referred assignment.

We hereby authorize **Mr. Pradyot Biswas, Associate Director,** of our firm to Negotiate and Sign the Contract Agreement Document, as our authorized representative.

Thanking you,

Yours faithfully,
for LEA Associates South Asia Pvt. Ltd.

Pinaki Roychowdhury
Managing Director

Sri Mishra EE
22/8/13

Consultant

Chief Engineer
World Bank Project
O/o the E.I.C.(Civil), Odisha
Bhubaneswar.

INDIA NON JUDICIAL

Government of National Capital Territory of Delhi

e-Stamp

सत्यमेव जयते

Certificate No.	:	**IN-DL74145023213060L**
Certificate Issued Date	:	07-Oct-2013 05:24 PM
Account Reference	:	IMPACC (IV)/ dl732103/ DELHI/ DL-DLH
Unique Doc. Reference	:	SUBIN-DLDL73210346444852347859L
Purchased by	:	LEA ASSOCIATES SOUTH ASIA PVT LTD
Description of Document	:	Article 5 General Agreement
Property Description	:	Not Applicable
Consideration Price (Rs.)	:	0
		(Zero)
First Party	:	LEA ASSOCIATES SOUTH ASIA PVT LTD
Second Party	:	Not Applicable
Stamp Duty Paid By	:	LEA ASSOCIATES SOUTH ASIA PVT LTD
Stamp Duty Amount(Rs.)	:	100
		(One Hundred only)

Please write or type below this line

POWER OF ATTORNEY

KNOW ALL MEN by these present that I, Pinaki Roychowdhury, Managing Director, LEA Associates South Asia Pvt. Ltd. (LASA), B-1/E-27, Mohan Cooperative Industrial Estate, Mathura Road, New Delhi-110044, residing at C-64, United India Apartments, Mayur Vihar Phase-I Extension, New Delhi-110091, do hereby nominate, constitute and appoint **Mr. Pradyot Biswas, Associate Director**, LEA Associates South Asia Pvt. Ltd., B-1/E-27, Mohan Cooperative Industrial Estate, Mathura Road, New Delhi-110044, to be the true and lawful attorney on behalf of LEA Associates South Asia Pvt. Ltd., to sign the Contract Agreement Document for **"Odisha State Roads Project; Consultancy Services for Construction Supervision of Jagatpur Chandbali Road (0/0 km to 99/0 km of MDR and 52/0 km to 45/0 km of SH 9) of Odisha State Roads Project; Loan # 7577-IN".**

And, I hereby agree that all acts, deeds and things lawfully done by the said Attorney shall be construed as acts, deeds and things done by me on behalf of LEA Associates South Asia Pvt. Ltd., and I undertake to ratify and confirm all and whatsoever that my said Attorney shall lawfully do or cause to be done in connection with the above mentioned purpose for me by virtue of the power hereby given.

Pinaki Roychowdhury

LEA ASSOCIATES SOUTH ASIA PVT. LTD. NEW DELHI

Statutory Alert:

1. The authenticity of this Stamp Certificate should be verified at "www.shcilestamp.com". Any discrepancy in the details on this Certificate and as available on the website renders it invalid.
2. The onus of checking the legitimacy is on the users of the certificate.
3. In case of any discrepancy please inform the Competent Authority.

The signature of Mr. Pradyot Biswas, Associate Director, LEA Associates South Asia Pvt. Ltd. is attested below:

In witness I have signed this Deed on the 6th November 2013.

Pinaki Roychowdhury
Managing Director

LEA ASSOCIATES SOUTH ASIA PVT. LTD. NEW DELHI

Signature of Pradyot Biswas

ATTESTED

Pinaki Roychowdhury
Managing Director

Witness:

(ANANDA KISHORE DAS)