

Terms of Reference

INDIA

GUJARAT STATE HIGHWAY PROJECT II

Consulting Services

OPRC Package

Background

1. Government of Gujarat has received the assistance of the World Bank through Government of India for the project (GSHP II) involving about 625 kms. of up-gradation and rehabilitation of the State Highways in the State of Gujarat. The project, besides inclusion of other innovations, envisages innovation of piloting output cum performance based contract (OPRC).
2. Proximately, located 4 corridors involving about 130 km. of state highways are identified for this purpose. The details of these corridors are as per Annexure I. Annexure also shows indicative tentative design interventions for these corridors. The contract for all the works within the OPRC pilot project may be based on principles enshrined in the World Bank's Sample Bidding Document "*Procurement of Works and Services under Output and Performance Based Road Contracts, 2005*". This document is available on the World Bank's website under <http://www.worldbank.org/html/opr/procure/bdocpage.html>
3. The term of the pilot contract will be for a period of about ten years. The contractor will have to make his own assessment about the interventions required to meet with the stipulated level of services and safety, and stipulated base minimum design parameters and other conditions which will be incorporated in the bidding document for OPRC works.

Objectives

4. PIU intends hiring a consultant to successfully achieve this pilot OPRC project so as to set an imitative example for other works in R & BD. Pilot OPRC project needs to demonstrate value of money and perpetual safety and services levels during the entire OPRC project tenure. The consultants needs to device and implement this project keeping in mind the existing ambiance in terms of existing legal and regulatory regime, available construction capabilities and technology – experience transfer across R & BD, GoG staff. Project formulation needs to imbibe the conceptual optimum design interventions through evolvment of various design interventions aiming various service levels and users safety , imposed site constrains (land availability, forestry and utility clearance), taking full cognizance of envisaged design interventions and thereby fix optimum design and other inputs which will go into bidding documents as conditions for following up by the contractor. The consultant

also needs to assess likely budget requirements for the project and payment pattern to the contractor balancing interest of PIU, GoG and Contractor. The consultant is also required to put up a regime of monitoring and evaluating performance of contractor which can later be easily adopted by the PIU and R & BD staff for this as well as other works in the state.

5. PIU is proposing to engage highly qualified and experienced consultant for assistance in all aspects of project preparation, procurement process and implementation, in accordance with the objectives detailed earlier. Specifically, the consultant shall carry out :-
- (i) Generic technical studies;
 - (ii) Specific technical studies and preparation of bidding documents for Output-and Performance-based Road Contracts (OPRC);
 - (iii) Support to the procurement process; and
 - (iv) Training of PIU / RBD personnel regarding preparation and implementation of OPRC.
 - (v) Project Management
 - (vi) Conformance Monitoring and Management
 - (vii) Condition Monitoring and Pavement Condition Modeling
 - (viii) Roads Information and Data Analysis

All the indicative services required under this consultancy are divided into two parts:

Part A: Pre-Procurement services

Part B: Post-Procurement services

The scope of services for each part is described in further detail in following sections.

5. In order for the consultant to fully understand the requirements of the present TOR, it is essential that he is familiar with and fully understands the concepts of OPRC and method of operations of the Sample Bidding Document mentioned above.
6. The selection of the consultant will be based on the Quality cum Cost Base Selection (QCBS) procedures set out in the World Bank's " Guidelines : Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers January 2011 ". The weightage of cost would be 20 %.
7. Consultant is required for 4 years initially extendable to not more than 1 year.

Scope of Services

The consultant shall have to carry out the following specific tasks related to pre-identified road sections (annex 1):”

Task: A1: Definition of service level classification.

8. The Consultant will define a generic system of service level classifications. This service level classification may however not necessarily be linked to the overall road network classification in the state. The different service level classes will be defined mostly from the road user’s point of view. They should be simple and easy to evaluate, and take into consideration the criteria provided in the Technical Specifications of the World Bank’s Sample Bidding document for OPRC (travel speed, comfort, etc.). Criteria may however be added or dropped as needed in the specific country context. For the execution of this task, the consultant will carry out a formal process of consultations with different types of road users representing the different traffic and vehicle types present in the country (both motorized and non-motorized, and including pedestrians). The consultant shall also define method and systems required by the public/road users/utility providers in informing the authorities on road condition/utility laying-access permission proposals. The system will then be used in evaluation of contractor’s performance.

Task A2: Financial Model to be used for payment

9. Based on the service level classification established under A.1 above, the Consultant will carry out a detailed analysis which will lead to an estimate of the likely medium- and long-term cost of assuring each of the pre-defined service levels. In order to reach that result, he will need to identify all physical works and other activities (managerial, self-control, etc.) a contractor will most likely have to carry out for each service level class, as well as the frequency of those activities and interventions as well as *the quality of a road at the time of handing over to the Client at the end of the contract*. A cost recovery model in at least 3 alternatives will be developed as to define the most suitable and optimized method of payment for the contracting entity, as well as to define “the best value for money” the client will pay to the contracting entity. The cost estimate will be based on **conceptual designs** for each road which will include the typical cross sections and other typical geometric design parameters and be based on basic field surveys (traffic counts and forecasting, topographical and soils/material).

Task A3: Legal Framework and EIA and SIA Frameworks.

10. As OPRC is a new concept in Gujarat State, the Consultant will be expected to look at the existing laws on civil works contracts and see how this concept will be implemented within the scope of the current law. To adequately address the environmental and social impacts of the project, the PIU has prepared a Resettlement and Rehabilitation Policy (R&R Policy) and Environmental Management Plans (EMP) and Resettlement Action Plan (RAP). ESMF is also available. The objective of these plans and frame work is to present the principles and procedures for environmental assessment and resettlement/compensation, respectively as it relates to the roads sub-sector. These

frameworks will guide the implementing entities during their detailed designs and implementation on how environmental and social issues will be dealt with and implemented. The consultant shall integrate the EMP and RAP into the conceptual design to ensure that the environmental and social issues are addressed in accordance with the national legislation and regulations as well as the applicable World Bank Operational Policies (OP) 4.01 on Environmental Assessment and OP 4.12 on Involuntary Resettlement.

The consultant shall be examined existing applicable laws for the protection of public properties, right of way (RoW), overloading, access / easement control, and management of traffic, and shall be responsible for effective implementation of the same.

Payment strategy for dealing with utility provider – access permission seekers to be developed so as not increase any burden on OPRC contractor and PIU / RBD while efficiently dealing with such proposals.

Task A4: Confirmation of contracting capacity to undertake and manage the works

11. The detailed assessment of technical (specifically, design and long term maintenance planning capability), financial and managerial capacity shall be undertaken to identify:
 - The number of potential bidders for such work,
 - A basis for pre-qualification of bidders, if required.
 - Specific issues of risk which will require mitigation when developing the contract documents and
 - The value of contract that will best fit local capacity.

The review shall consider both the consulting and contracting industry and also look to awaken the industry to the opportunities presented by these contracts.

Task A5 : Development of contract format

12. The Consultant shall study and recommend an appropriate format for the Pilot performance based contracts. It is important that the proposed format matches the industry's ability to undertake the works and maximizes the potential for success. The consultant shall give careful consideration to the appropriate mix of ~~outcome and output~~ elements in the contract, nothing that objective is to introduce performance based elements during the entire operation/duration of the project life, which encompass the rehabilitation, maintenance, pavement strengthening (periodic maintenance) and again short maintenance phases before handing over the facility back to the Client. The Consultant may consult the sample specification for OPRC, . This document is available on the world bank's web site under <http://www.worldbank.org/html/opr/procure/bdocpage.html> . However the sample Bidding Documents is to be used only as a reference, while the TOR have clearly identified that all activities required in the planned life-span of the project will be based on Output based performance aspects and under a single contract and payment model,

- defined by the adopted cost recovery (financial model) option, which will ensure that the contracting entity remains interested in maintaining the quality of its operation at all times (for example, to defer part of payment to the CE due under the rehabilitation phase and to add it to the low payments during maintenance phase of the project). At the completion of this task the consultant shall prepare a concise report outlining the options considered, the reasons for their recommendations, and the cost implications.
13. Issues to be addressed in the study include the **extent of the assets, in addition to the pavement, that is to be maintained under the contract**, for example, in addition to the pavements should the contract include the management and maintenance of all:
 - Signage.
 - Delineation.
 - Lighting.
 - Vegetation.
 - Bus/heavy vehicles rest stops.
 - Slopes.
 - Retaining Structures.
 - Drainage Works.
 - Bridge Structures.
 - Road Right of Way. (i.e. control and preservation)
 14. **End of contract residual road condition.** To ensure that the road is returned in a fit condition for service that will not require major capital maintenance immediately following the end of the contract, the consultant shall specify separate residual life for each element of the project road. The Consultant shall review, as a part of this assignment the impact of the contract in asset value up to the end of the contract and should advise the Client on the inclusion of additional measures during the contract period to achieve the minimum required asset value at the end of the contract.
 15. The Consultant shall also specify procedure for arrangements in the contract for detailed joint inspections required at various points of time during pendency of OPRC contract. Specified inspection timings shall at least encompass what is specified in the Post-Procurement services. In these inspections likely works needed are noted and remedial action is expected to be taken in accordance with an agreed program. For compliance of the agreed program, another inspection shall be carried out no later than six months prior to the end of the contract. A similar procedure covering all elements of the project road may be specified prior to the end of the contract to ensure work has been carried out in accordance with the agreed program and to assess any other works needed to achieve the required standard at contract termination.
 16. In addition to the standard performance guarantee, the Consultant shall also suggest a financial arrangement such as retention money or depositing the suitable percentage of the amount of agreed remedial works in escrow account which the department may utilize if the contractor fails to complete the work.
 17. The Consultant shall prepare a **compliance framework** inter alia specifying reviews/ inspections / audit regime of records and site for ensuring compliance of the works, including the penalty regime that will prevail in the event of any non-compliance by the

contractor. This will also include methods and systems involving public/road user interactions related to road situation/condition.

18. **The tender evaluation procedures:** The consultant shall work with the PIU to develop an evaluation procedure that meets the objectives of obtaining the best value for money over the term of the contract, whilst at the same time provides flexibility to allow the bidders to propose the services and risk allocation they considered best asset management practices and also are conforming to any legislative requirements that govern the letting of contracts by the PIU.

Task A6: Industry Consultation Workshop

19. The Consultant shall support the PIU to conduct 1 workshop with representatives from the industry (contractors) to outline the draft contract strategy and gain feedback from them before producing the final report and submitting it to the PIU

Task A7: Development of a comprehensive approach to allocation and mitigation of risk.

20. The risk allocation shall be one of the key components of OPRC. The consultant shall identify all associated risks related to the output and performance based road contracts, analyze them and quantify them in the main body of the contract and prepare the cost estimates in the BOQ. Such identified and defined risks will then be divided between the contracting parties. Some of the risks identified initially, but not limited to, are :-
- i. *Inflation.* The contracting industry has concerns with bidding for a long term contract if they are not to be adequately protected against inflation and exchange rate fluctuation. An index for escalation during the contract shall need to be developed to mitigate the risk.
 - ii. *Traffic growth.* Traffic levels have a significant impact on the price of the contract in terms of the degree of damage caused to the pavements. The approach can be to place the risk of traffic growth with the contractor, up to a threshold value beyond which the client compensates the effect of additional growth.
 - iii. *Traffic overloading.* Gujarat State has a significant problem with overloaded trucks using the network. Currently, Transport Department of GoG monitors overloading. Since overloading has a significant impact on the price, the approach can be to empower the contractor in conformity with the legislative provisions of GoG.
 - iv. *Emergencies and natural hazards (e.g. slip/breach etc).* The approach to managing emergencies will need to be covered in the OPRC contract. Various methods have been used elsewhere for such items – open book accounting, coverage of work up to a certain value by the contractor above which the client makes extra payment, or rate fixing at market rates – and each have their advantages and disadvantages.
 - v. *Initial improvement work and future potential development work.* These risks are both similar in so far as it becomes too complex to try and manage such work using performance type indicators. The approach for any initial improvement work shall be to scope out the work and ensure it is paid as a separate item. For future potential improvement work, it is best to minimize this likelihood, as it will most likely involve negotiating a change to the scope of the contract.
 - vi. *Change in Law.* Change in law can cause a significant impact on the cost or reduction in net after tax return or other financial burden. The approach can be to

place the risk of change in law with the contractor upto a threshold value beyond which the client compensate the effect of increase in cost, decrease in return or additional financial burden imposed.

vii. *Political Force Majeure*. Compulsory termination of the contract can have significant impact on the investment made by the Contractor. The approach can be to place deterrent cost to avoid Political Force Majeure.

viii. .

Other risks can be:

- New roadside development (land clearing can have a major impact on the amount of sediment build-up in drainage structures)
- Capital/improvement works being undertaken by others
- Work undertaken by Utility operators within the Road Right of Way.
- Environmental Compliance
- Access control or lack thereof
- Any other risks directly or indirectly related to the project area.

The Consultant shall suggest and optimally allocate the risks to the party who is best able to manage it to minimize the total cost of risk to the project.

Task A8: Review of the Adequacy of Current Information & Collection of Additional Data

21. (a) The consultant shall review its adequacy (i) for design and specification of initial improvement works and (ii) the implementation and management of a performance based contract. At the end of this task, the Consultant shall submit a technical report on each of these issues outlining the findings and recommendation for consideration by GoG. These recommendations shall identify all missing data and a plan for additional data to be collected in line with over all time frames for implementation of OPRC.

(b) Collection of missing data as per plan in (a) above. The Consultant will also conduct necessary baseline survey which covers inter alia, road standard and condition, trip time, traffic volume, transportation costs and prepare an M & E (monitoring and evaluation) program to measure the impacts of the improved road on the development of the intervention areas.

1. 22. On the completion of this task the consultant shall provide a report on the data and its implications for the management of the contract. The data shall be stored in a database, which can be distributed to the Contractors, and reported in a manner suitable for inclusion in the contract documents. The data may also be required to be handed over to other consultants to be linked to GIS maps. “The consultant shall also ensure that the results of all soils investigation undertaken to support the proposed conceptual designs is incorporated in the contract documents, along with the comprehensive TORs for detailed field investigations to be carried by the Contracting Entity during the detailed design phase of the civil works contract to prepare the detailed designs and his work program.”

Task A9: Definition of service levels for each road included in the pilot study areas.

23. The consultant, in cooperation with the PIU shall define the appropriate service levels/maintenance standards for each road to be included in OPRC contracts. This exercise will be based on:
- Existing data with R&BD & PIU
 - Feasibility study report,
 - Information collected during field visits to each road,
 - Analyses of typical road uses and road user needs for each road, including formal consultations and informal discussions with road users and local communities,
 - Establishing a link between road user needs and the required service level class, and
 - Affordability or the availability of sustainable funding levels.
 - “Time required to gradually achieve the final service levels”.

Task A10: Contract packaging, Conceptual Designs, Financial Model and Confidential price estimate for each road.

1. 24. The Consultant shall undertake an analysis to estimate the long-term requirements, using relationships such as those contained in the HDM model or a similar alternative. The Consultant shall ensure that the modeling relationships are properly calibrated, and used to suit the objectives of the contract. The Consultant shall finalize in details the required initial capital investment, the required service/maintenance standards and the output and performance criteria. *The conceptual design will include details of structures, cross sections (typical at scale 1:50), longitudinal and horizontal alignment at 1:2000 scale, pavement design and its composition with material classification, drainage details, details of topographical survey polygon, bench mark details, etc.), standard drawings for cross drainage structures, typical pavement marking schemes, etc. The consultant shall also carry out cost /benefit analysis using the concept of life cycle cost (inclusive of sensitivity analysis).”*
25. The consultant shall integrate the EMP, RAP, ESMF and HIV/AIDS prevention action plan into the conceptual design to ensure that the environmental and social issues are addressed in accordance with the national legislation and regulations as well as the applicable World Bank Operational Policies (OP) 4.01 on Environmental Assessment and OP 4.12 on Involuntary Resettlement. Basic unit costs of such interventions will be indicated based on recent prices in the country.
26. Road Safety standards. The consultants should follow the “Manual for Safety in Road Design” prepared by the MoRTH and international best practices while carrying out the Conceptual design. The consultant would also include proposed improvements to the

existing accident black spot along the corridors in the proposed design. “The consultant shall propose measures in the safeguard ROW in line with the action plan evolved following task A3. Amongst other options, the consultant may consider regular reporting using satellite imagery of the roads/area. The consultant shall prepare the related cost estimate for this specific activity.”

27. The Consultant shall prepare a confidential price estimate for each of the OPRC civil works to be tendered for. This shall include, in accordance with the definitions of the Sample Bidding Document, price estimates for (i) maintenance services, (ii) rehabilitation works iii) improvement works, if required, (iv) emergency works, and (v) cost to maintain the road at the desired quality at the time of handing over it to the client. The purpose of the confidential price estimate is to obtain a benchmark price for each contract against which actual bids can later be compared. The conceptual design will include the BoQ with cost estimate for the adopted option, based on the unit cost analysis, broken down to taxes, levies and other costs and then be compared with the project cost for similar road interventions done in India in general and in Gujarat State in particular in the period of last 3 years. The cost estimates will provide for the planned activities within the right-of-way for the roads in the period of @ 10 years. Cost of EMP/RAP & HIV / AIDS interventions will also be added. The conceptual design will include all required technical specifications for the planned activities in the design period. The consultant shall also propose measures and action plans to how to safeguard the ROW of the road including the pilot roads.
28. “The financial option (model) and the associated cost recovery model (payment model) as mentioned in para A2 and A3 shall be confirmed ... will pay to the contracting entity.” Further please insert the following line at the end of this para: “The Bidding Documents will explain the financial and payment models which will be used in the civil works OPRC.” The cost estimate will be based on conceptual designs and road works specifications for each road which will include the typical cross sections and other typical geometric design parameters and be based on basic field surveys (traffic counts and forecasting, topographical and soils/materials).

Task A11 : Estimate and pricing for Emergency works

29. In cooperation with the Government, the consultant shall determine and justify whether unit prices for Emergency works should be subject to bidding or should rather be fixed in advance based on existing market rates. If the latter option is elected, he shall identify the prevailing market rates based on recent contracts or those under execution. He shall further determine the provisional sum for Emergency works for the contracts. Also, he shall identify the work units applicable for emergency works for which unit prices are to be established.

Task A12 : Preparation of Contract Documentation.

30. **Definition of standard clauses for all contracts:** The Contract Documentation should be generally in line with the Sample Bidding Document published by the World Bank for the Output- and Performance- based Road Contracts (OPRC). This document is available on the World Bank’s website under <http://www.worldbank.org/html/opr/procure/bdocpage.html>..Before preparing the

individual bidding documents, the Consultant will prepare a document which identifies those elements which are common to all the bidding documents, and proposes and justifies the solutions to be adopted. This applies in particular to the Bidding Data (Section III), the Special Conditions of Contract (Section V) and to parts of the Specifications (Section VI). The Consultant shall obtain an agreement with the PIU on those characteristics before the individual bidding documents are finalized.

31. Preparation of individual bidding documents: The Consultant will complete the bidding documents including reports, plans, maps, drawings, sketches, specifications, etc. by first submitting the draft report and bidding documents to the Client for review and, after receipt of the Client's comments, finalising the same for advertisement.
32. The Consultant shall propose a framework for a project document control system to be used for monitoring the project during implementation. This system will be used to maintain all engineering reports and records to adequately document the programs and performance of the work. The system shall be designed and developed consistent with standard formats that can be used to document decisions, minutes of meetings and any other communications, which might direct actions on the project. Document control shall involve sequential logging of incoming and outgoing correspondences to establish a chain trail of correspondences for custody. The control function shall be designed to ensure distribution to all concerned.
33. The consultant's proposal should be developed to ensure maximum local participation through skills transfer, capacity building or any other strategy that will promote the development of the domestic construction industry.

Task A13 :Prequalification of Contractors

34. The Consultant shall prepare the prequalification documents and assist the PIU in advertising the prequalification process, obtaining the Bank's non-objection, launching the document, receiving and analyzing the submissions and notifying the potential bidders of the outcome.

Task A14.:Pre-bid workshop

35. The consultant shall support the Government in the organization and execution of three pre-bid workshops, each of half day duration. for prequalified contractors (one workshop per contract), which may include field visits to the roads included in the OPRC contracts. The purpose of the workshops is to go through the various elements of the bidding documents, in order to make sure that bidders fully understand the nature of the contract and its requirements, and are thus able to present reasonable and responsive bids. Notes covering salient points of bidding documents shall be distributed among the contractors during the workshop.

Task A15:Tender Process and Evaluation of Tenders

36. Once the prequalified contractors have been identified the bidding process will commence. Given the complex nature of the work and significant effort required to tender for such work, it is expected that the tender period shall be at least two months.

37. Given the complex nature of the work and significant degree of risk transfer to the contractor, tendering workshop shall be held with the bidders to ensure that they are fully aware of the nature of the work. Up to three workshops may be required, each of half-day duration, for all interested bidders.
38. During the tender process, the Consultant shall support PIU as necessary for such matter as:
Providing information to issue as necessary, any addenda varying or clarifying the scope of the contract technical assistance with the necessary bid evaluation procedures and, negotiations with the preferred bidder.

If the Consultant has any reservations as to the appropriateness of the bidding and selection process, he is obliged immediately to inform the Government and the Bank in writing. He shall further support the Government in finalizing the contracts until both parties reach agreement.

Task A16: Training

39. The following specific training initiatives have been identified:
- Training of 10 project staff (PIU & RBD field staff), to ensure they understand their new role.
 - Training of 4 senior PIU/RBD staff in the principles of OPRC and on specific matters that arise during the contract.

Part B: Post-Procurement services

40. Assisting PIU / RBD in carrying out responsibilities of the Project implementation. The consultant's services shall include, but not limited to following:
- i. clarifying interpretation/ queries on the Contract clauses/Data;
 - ii. Assist the process of initial handover/possession of the site to the Contractor.
 - iii. cause submission and improvement through review of all documents submitted/maintained by contractor under the contract
 1. Health and safety Management Plan, Emergency Procedures and Contingency Plan, Traffic Management Plan, EMP / RAP /HIV_AIDS Prevention Plan and action plan for contract compliance (review within 30 days)
 2. Contractor's internal records; documentation, internal auditing, reporting verification and certification to ensure that it reflect the Contractor's CQAMP requirements initially (review within 14 days)
 3. Contractor's program and updates thereof (review within 2 weeks) and advice to establish methods, arrangements and timings for various activities be realistic and coherent to site condition in achieving service levels specified in the contract
 4. All technical submissions (review within 14 days)
 5. Any other (review within 30 days)
 6. Random reviews of above all at frequency not exceeding 12 months.
 - iv. approve the proposed centre-line reference levels for the roads as proposed by the Contractor
 - v. assist PIU in getting proper day to day implementation of contract through reviews, inspections, audits and training.
 1. arrange and attend bi-monthly Management Meetings of Employer or his Representative/Client and recording the proceedings thereof
 2. arrange site inspections as decided under para XX and job conferences; prepare draft minutes and circulate approved minutes
 3. checking the Contractor's work as per frequency decided in para XX, notifying the Contractor of any defects found and requesting additional testing as considered necessary

4. Auditing annually contractor's quality assurance processes through approved Random Verification Testing Plan.
 5. Bi-monthly verification of Service Levels achieved in relation to maintenance services for performance evaluation purposes and submitting the same to Employer's Representative
 6. checking the Contractor's monthly statements and recommending for the amounts due to be paid to the Contractor
 7. Bi-Monthly inspections/audits of selected audit lengths of the roads indicated by the Employer's Representative
 8. Drive over daytime(once in a month) and night time inspection(once in 6 months) inspections and summarizing the outcomes from the inspection along with a detailed action plan to address any issues identified.
 9. Review and certification of the Contractor's test results, review of the Contractor's request for substantial completion and amended Periodic Payment Report (including any RDPM survey results) provided to the Employer
- vi. recommend extension of the dates for achieving compliance with Service Level Criteria if warranted by the occurrence of unforeseen events or by the issuance of changes to the contract
 - vii. advising necessary actions on requests for contract changes as made by either the Contractor or the Employer
 - viii. Overview the necessary signalling and demarcation of work zones and bypasses by the Contractor to ensure their sufficiency for safety of road users, including non-motorised road users and pedestrians
 - ix. Submitting advice on any claim or dispute regarding OPRC contract and to make recommendations thereon, including possible recourse to the Dispute Review Board (DRB)
 - x. Advice the employer steps/works required during emergency to avoid or reduce the risk to safety of life, works and adjoining properties.

- xi. determining the justification for Emergency Works and the recommending the issuance of Work Orders in respect thereof to Employer's Representative;
- xii. assist engineering staff from the PIU & RBD in completing inspections during or immediately following defined Emergency Events to verify the extent of any damage or disruption as a result of the emergency event, determine estimates of repair costs and to assist with the coordination of the Contractor's resources in the restoration of the operational capacity of roads as soon as possible following of the declared event
- xiii. assist the PIU/RBD's staff in completing
 - 1. Joint inspections required at 12 months prior to end of contract (OPRC/Consultancy as the case may be) to determine extent of residual work,
 - 2. Joint inspections required at 6 months prior to the end of OPRC / Consultancy as the case may be) for identifying and agreeing any additional remedial works
 - 3. Joint inspection required, as the case may be, at 2 months before the end of the Defects Liability period for confirming no works pendency
 - 4. Joint inspection required no later than ten (10) days after the end of the OPRC contract (if the case may be so) with the purpose of confirming that all required works have been adequately completed.
- xiv. Reports
 - 1. Inception report: (Four weeks from date of start): This should include introduction of all team members and tasks assigned to them and how each task is proposed to be carried out, the project quality assurance plan, technical approach, the methodology, the equipment, and the software(s) which the consultant proposes to use and proposal(s) to train the counterpart personnel. The consultant shall also make a presentation before the review committee on the proposed technical approach and methodology.
 - 2. Monthly Reports covering all activities stipulated under OPRC contract including all activities listed above, besides activities performed by the consultant in compliance of consultancy contract referring summary of all other stand-alone reports mandated herein. The monthly report shall

also include other activities / task when completed for which no payment release is linked directly.

- a. In Pre-Procurement stage, these reports shall cover mobilization / demobilization schedule, key activities carried out, invoices pending with client, site specific problems encountered, data acquisition status, and any other matter requiring client's specific attention and intervention
 - b. In Post-Procurement stage, as per (a) above and details of implementation status, inspections, audits and other activities where separate stand-alone reports are not mandated herein.
3. Interim Report 1 (Three months from date of start) which would contain inter alia:
- a. A-1: Generic service levels for each class of road and performance evaluation system.
 - b. A-2: Basic Cost Recovery Model & payment strategy.
 - c. A-4: Report on existing capacity of contracting industry to deliver OPRC contracts. Recommendations regarding actions required for improving capability and capacity of contracting industry.
 - d. A-5: Report on
 - i. Review/inspection/audit regime to be adopted during implementation of OPRC
 - ii. Draft OPRC contract format
 - e. A-8: Report on data collection program
 - f. A3: Report on legal framework required for carrying out OPRC contract in Gujarat State..
4. Interim Report 2 (Five months from date of start) which would contain inter alia
- a. A-6: Final OPRC contract format after discussion with Public Works Department and industry.
 - b. A-7: Report on Risk Allocation.
 - c. A-8: Compiled data report (fit to be handed over to contractor).
 - d. A-9 & A10 Service levels for each road, pavement strengthening and re-surfacing strategies, Contract Packaging based on capabilities of contractors.
 - i. Conceptual design for rehabilitation and up gradation contracts meeting technical, environmental and social frame work

- ii. Confidential price estimate for each contract.
- iii. Financial Model report and recommendation.
- iv. Basis and price estimate for emergency works
- v. Draft Bid Documents with Brief notes covering salient points of bidding documents to be distributed among the contractors during the pre bid workshop and Proposed prequalification scoring system and final pre qualification documents
- vi. [Report on long term pavement strengthening and re-surfacing strategies.](#)
- vii. [Contract Packaging Options based on capabilities of the contracting industry.](#)

5. Draft Final Report : (eight months from date of start)

- i. A-10 : Conceptual design for road/s contacts meeting technical, environmental and social frame works, draft final report
- ii. **A-10:** Confidential price estimate for each contract/civil works package.
- iii. **A-10:** Financial Model report and, Payment schedule model Reports and recommendations.
- iv. **A-11:** Basis and price estimate for emergency works.
- v. **A-12:** Draft Bid Documents.
- vi. **A-13:** Brief notes covering salient points of bidding documents and the project to be distributed among the contractors during the pre bid meeting(s).

6. Final Report (Nine months from date of start)

- a. Draft final report shall be modified if required based on experiences during pre-bid workshops. The final report shall incorporate the modifications approved by review committee as well as final bidding document.

7. A-13 Pre qualification evaluation report.

8. A-15 Tender Evaluation report.

- xv. **A-14:** Tender Evaluation Reports for each contract/civil works package.
- xvi. **A-14** Draft Negotiated Contract for each contract/civil works package.

1. A-16 Training & Workshop Reports

- a. Training Plan
- b. Report upon conclusion of each Training/ workshops

2. Semi-annual Data Collection (Inventory) Report
3. Annual Progress
4. Completion of the works;
5. Combined Drive Over Daytime and Night-Time Inspection Summary Report: This report shall be prepared and submitted within 5 working days following the completion of the roads drive over.
6. Hand-Over Report: Consultant shall prepare and submit this report within 5 working days of these completed inspections. This report will summarize the significant issues or defects identified along with recommendations for any necessary corrective actions
7. Roads Condition Report: The Consultant shall prepare and submit a roads condition report within 4-weeks following the completion of each of the six monthly roughness surveys and yearly roads pavement deflection surveys and the post construction pavement deflection surveys. Post construction surveys will be in addition to the Contractor's construction confirmation quality surveys and will undertake by equipment and manpower provided under the OPRC contract. The report shall summarize as a minimum the following information:
 - a. Roads Average Surface Texture Depth (where measured) and exceptions from average target texture depths.
 - b. Roads Maximum and Average Roughness values for each road category and for sections of new pavement construction.
 - c. Roads Average Pavement Deflections for each loading category and post construction pavement deflections.
 - d. Where appropriate a summary of the output from the latest annual run of the Pavement Deterioration Model indicating the impact the current roads condition, and completed Resurfacing, Pavement Rehabilitation and Improvement works has had on condition trends and future financial forecasts.
 - e. This report shall provide a summary discussion on the achievement by the Contractor in completing the required quantities of asset preservation works and improvement works and the quality that has been achieved. This information combined with the results of the above surveys shall be used by the Consultant to provide comprehensive

recommendations to the Client on the extent of any pavement asset consumption that be occurring and nay actions required to address the risk, including any increase or reduction in the annual preservation quantities specified within the OPRC document.

- f. The summary in this report shall also be used to confirm conformance with the OPRC document Road Durability Performance Measure (RDPM's). This report shall also include recommendations drawn from further pavement condition modelling and any other investigations or tests commissioned by the Client. The report shall also make recommendations concerning the need for future model calibration needs including the establishment and monitoring of any long-term pavement modelling calibration sites.

8. Final consultancy Report shall be with contents and cross references to earlier reports making deemed single report for the entire period of consultancies.

xvii. recommending the payment due upon termination of the contract.

Composition of Review Committee to Consultant's Works

41. A reviewing committee consisting of the following officers of the PIU/RBD shall review the progress of the work and the reports to be submitted by the consultant including monitoring of incorporation of comments of PIU/RBD and World Bank.

1. Chief Engineer, WB	- Chairman
2. OSD (SP), RBD	- Member
3. SE, PIU	- Member
4. EE, SRP Division Rajkot	- Convener

Procedure for Review of Reports

42. The Review Committee will review the reports submitted by the Consultant, give suggestions and modifications, if any, within three weeks of receipt and would be sole authority to approve the reports.

Review Committee may also hold meeting with the Consultant as necessary to discuss reports submitted and review the progress etc.

Duration of the assignment

43. It is expected that work pertaining to OPRC shall be carried over 5 years. In first @ 10 months, consultant is expected to deliver bidding documents. @ 6 months are earmarked for procurement processes. During @ 1 year then-after, execution of the

initial civil works is expected to be complete. During the remaining period, consultant is expected to monitor the contract and train PIU/RBD staff. The Client reserves the right to review the level of Consultant engagement on all tasks subject to the extent of his own internal resource and skills capacity and the transfer of knowledge completed as part of the Client's internal training programme and will be given advance information in order to facilitate such a demobilization of Consultant's staff.

Team Composition

44. It is the consultant responsibility to access the required inputs of Key Professional, provide necessary logistic arrangements to render these services efficiently and diligently. The consultant shall deploy adequate numbers of suitably qualified and experienced junior professional and technical support staff to assist the key professionals to render these services in a time bound manner. When proposing the team members, the consultant should make sure that the proposed staff is actually available and aware of the intensity of the required travel. Any Change in key personal shall be permitted only under exceptional circumstances.
45. The team shall operate from a Home office established at Gandhinagar / Ahmedabad.

Staff Qualifications

46. The Consultant shall submit names, Curriculum Vitae (CVs) and certified copies of qualifications for all these key professional staff. The certified copies of qualifications shall be in English or accompanied by certified translations in English where the original qualifications are not in English. All the key staff are required to be proficient in English. The evaluation will be based on all the following key professional staff.
47. **Team Leader:** The person shall be a senior highway engineer. He should have degree in Civil/Highway Engineering or equivalent with **minimum 15 year's experience. He must have minimum 4 years of international experience. He must have experience in designing and implementing OPRC project.** He must have worked as Independent Engineer during construction and maintenance phases. The incumbent must have **minimum 2 years of experience as Team Leader** on similar assignments and work experience of 2 years in projects funded by international financing institutions. Knowledge of international 'best practices' , modern highway construction technology, Associated risks, Key performance measures, project management, implementation and operation of performance based road maintenance contracts, road asset valuation and road asset management is important. The candidate must have proven record as Highway Engineer and project manager.
48. **Highway Specialist:** The candidate should have degree in Civil engineering with **minimum 10 years of experience** of which minimum **Six years' experience in Performance based road contracts covering at least two projects is essential.** He must have worked as Independent Engineer during construction and maintenance phases. The person should have minimum 2 years' experience on major highway projects funded by international lending agencies. Knowledge of international 'best practices' and modern highway construction technology is important.

49. **Pavement Management Specialist:** The candidate should have degree in Civil engineering with **minimum 15 years of experience** of which minimum five years in Pavement management is essential. He must have worked as Independent Engineer during construction and maintenance phases. Experience in Performance based road contracts shall be an added advantage. The person should be thoroughly conversant with various internationally accepted design methodologies applicable for tropical countries, both flexible and rigid pavement, and fully familiar with international 'best practices'. Experience in pavement & sub grade investigations including deflection tests and in design of pavement rehabilitation & strengthening is a necessity. Further, experience and knowledge in use of latest HDM-IV and/or other equivalent evaluation models is vital. The person must have experience in designing appropriate cost effective pavements making best use of locally available materials. Thorough experience on planning and managing traffic surveys and studies, roads analysis, transport demand forecasting, roads planning and traffic management is essential. The candidate must be conversant with the latest analysis and planning tools.
50. **Procurement Specialist:** The candidate should have a degree in engineering with **minimum 10 years of experience** of which at least 5 years on procurement of works and quantity surveying in more than one country. The person should have at least 2 years' experience on major highway projects funded by international lending agencies. In-depth knowledge and experience on FIDIC conditions of contract, preparation of civil works bid documents, bid evaluation including evaluation of post-qualification application and analysis of rates are essential.
51. **Roads Management Specialist:** The candidate must have a Master degree or equivalent in Transportation with **minimum 15 years of experience** out of which at least 4 years on road projects. Experience of at least 2 years in developed countries and of at least 3 years in developing countries, particularly in Asia, is essential. Experience and knowledge in use of latest HDM-IV and/or other equivalent evaluation models is essential. He must have worked as Independent Engineer during construction and maintenance phases. Thorough experience on planning and managing traffic surveys and studies, roads analysis, transport demand forecasting, roads planning and traffic management is essential. The candidate must be conversant with the latest analysis and planning tools.
52. **Legal Advisor:** The candidate must have a **minimum of 10 years' experience** of on legal drafting of legislations / regulations / contracts in relation to transport sector development. A registered attorney, with a minimum of a LLB academic degree or equivalent, and a minimum of 10 years post registration experience in carrying out cases related to contract law for civil engineering works. Knowledge of appropriate Indian laws is a must.
53. **Financial Management Specialist:** The candidate must have a **minimum of 10 years' experience** of financial management applied in infrastructure project. Proven experience in financial modeling and preparation cost recovery options for major infrastructure investments. A minimum equivalent education comparable to MSc in engineering or Business management and 8 years post registration experience in preparation of Financial and Economic investment studies for Civil works construction projects is desirable.

54. Principal Auditor: The candidate shall be a senior highway engineer. He should have degree in Civil/Highway Engineering or equivalent with minimum 10 years' experience. Knowledge of international 'best practices' relating to asset management, quality management and auditing of performance based road maintenance contracts, modern highway construction technology, associated risks, key performance measures and project management is required.

The CV of the following Sub Professional staff will not be evaluated but C.V. Should be submitted for approval of the client before mobilization.

55. OPRC Operational Specialist/ Asset Manager: The candidate shall be a senior highway engineer. He should have a degree in Civil/Highway Engineering or equivalent with minimum 7-years of experience with the operational management of roads, including all facets of road asset management. A minimum of 3 years' experience with road/highway asset management (operations and maintenance) is essential.
56. Data Analyst/Statistician: The candidate must have a minimum of 5 years' experience in the management of specialist road asset management databases and associated analysis packages including GIS and GPS systems. The candidate shall preferably have a tertiary degree/diploma in statistics and will be familiar with the typical analysis and reporting of road condition and inventory data required to develop long term asset management policies and strategies.
57. Environmental Specialist: The person should have Master's degree or equivalent in environmental science or in related other disciplines with about 7 years of experience of which about 5 years on environmental impact assessment of development projects. Related experience of about 2 years in developing countries and about 2 Highway Project is essential. The candidate must have full knowledge of the World Bank's guidelines, procedures and operational policies/directives and applicable Indian laws. Experience of working as environmental expert in at least two World Bank funded project is required. The candidate must have the experience of preparing environmental management plans and supervising & monitoring implementation of the plans.

Data, Facilities and Resources to be provided by the Employer

58. The following and any other similar data that is available shall be provided by the RBD/PIU.
- a) Available information in respect of, existing road inventories including data on pavement history and condition, traffic statistics and road accident statistics, geographical maps of all districts including category of road thereon. However, consultant shall be required to collect any necessary information, which is not available with PIU/RBD and shall be responsible for any translation of documents and for processing of all data;
1. Copy of the DPRs available in respect of two road corridors.
 2. ESMF

3. HIV/AIDs Prevention Plan
4. Traffic census

Payment Terms

59.. The consultant's services shall be remunerated on Lump sum basis based upon the deliverables schedule.

Till procurement (18 m)

• Advance Payment	10%
• Inception Report	5%
• Interim Report 1	15%
• Interim Report 2	15%
• Draft final Report	20%
• Final Report	30%
• Tender Evaluation Report & Prebid meeting	5%

60.. List of Key Positions whose C.V. and Experience would be evaluated

- (i) Team Leader
- (ii) Highway Specialist
- (iii) Pavement Management Specialist
- (iv) Procurement Specialist
- (v) Roads Management Specialist
- (vi) Principal Auditor
- (vii) OPRC Operational Specialist/ Asset Manager

Total indicative man month of above key staff would be about 167 .

Attachment I

List of roads for OPRC

Package No.	Name of Road	Improvement	Length (Km.)	Cost M US\$	Mode of Execution	Procurement Mode	Consultancies engaged other than PMC			Contract Period	DLP and or O&M
							Design	CSC / QATA / IE	Implementation of RAP, R&R, IPDP, HPP		
GSHPII/ OPRC/ ICB/ 02	(a) Dhandhuka- Dholera	(a) Widening & Strengthening	27.00	35.27	Item Rate	OPRC* (ICB)	Partly comple ted	IE	No	120 Mo- nths	7.5 Year
	(b) Paliyad- Dhandhuka	(b) Rehabilitation	46.00								
	(c) Surendranagar – Limbdī	(c) Rehabilitation	22.10								
	(d) Limbadi- Dhandhuka	(d) Rehabilitation	34.65								

Indicative Man-month

Sr. No.	Name of Key Professionals	Man Months
1	Team Leader	44
2	Highway Specialist	39
3	Pavement Management Specialist	18
4	Procurement Specialist	17
5	Roads Management Specialist	17
6	Legal Adviser	6
7	Financial Management Specialist	8
8	Principal Auditor	18
	Total Man Months	167