

# Terms of Reference

## 1.0 BACKGROUND:

### 1. Introduction:

Indian coast of about 5700 kilometers are highly vulnerable to tropical cyclones and consequently to recurrent loss of life and properties. To give effects to the strategic interventions, the Ministry of Home Affairs decided to put in place the “**National Cyclone Risk Mitigation Project**”. After the formation of National Disaster Management Authority (NDMA) the management of the Project was transferred to it in September, 2006. The National Cyclone Risk Mitigation Project (NCRMP) has been drawn up with a view to address the cyclone risks in the country, with World Bank assistance. The main objectives of the project are to minimize risk and vulnerabilities to cyclones, to strengthen the structural and non-structural cyclone mitigation efforts and to build capabilities and capacities of people for cyclone risk mitigation in harmony with the conservation of coastal ecosystems in coastal cyclone hazard prone States and Union Territories.

Considering the vulnerability of the state, Gujarat is chosen as one of the states under the National Cyclone Risk Mitigation Project. The main Components of the project are for Construction of multipurpose Cyclone Shelters (MPCS), and Construction of Missing Roads and Bridges.

To support the timely implementation of the project, GSDMA proposes to recruit Design and Construction Supervision Consultants (DSC) to provide the on ground support to the implementing agencies for construction of 128 MPCS and 23 access roads in 15 districts.

## 2.0 SCOPE OF SERVICES

The scope of work of the consultants will include, inter alia, the following:

### A. Planning, Design, and Procurement Assistance

#### 1. Review, Design and Procurement

- (i) Review existing NCRMP documents prepared for Gujarat and understand objective and scope of the project;
- (ii) The Consultant will be provided with reference designs prepared by GSDMA for shelter with capacity 550 and capacity 800. The Consultant has to review this reference design and make site specific modifications as required following the design guidelines mentioned below and any other reference documents that will be provided by GSDMA/ World Bank;
- (iii) Study the SBC reports for each site and data collected for preparation of architectural and structural designs for construction of MPCS; If required carry out the required engineering surveys and investigations such as topographical surveys, geo-technical investigations, soil survey construction material survey, ground water investigation, rainfall data collection, wind speed, ground water quality testing for each site to support revision of type designs to suit the site requirement. This activity is completed in 69 sites and it needs to be undertaken for 59 sites;

- (iv) Visit each site and study the suitability of the proposed type design applicable for each site. Wherever modifications needs to be carried out, the same should be done taking into account the shelter capacity, surge height, seismic zone, soil characteristics, liquefaction hazard, applicable codes and building standards to be used, loading criteria, plinth height, total built up area, whether with or without stilt floor, foundation system, basic design parameters for structural, electrical, plumbing and sanitation design, ventilation system, water alternative energy backup system, approach roads to MPCS, street lighting, direction/location signboards, etc.; Care shall be taken that provisions for special needs for physically challenged persons and other gender specific needs already incorporated in the type designs may be modified but not removed from the designs during revisions;
- (v) Prepare necessary architectural layouts, engineering designs for each MPCS based on the site requirements in sufficient detail to ensure clarity and understanding by the contractors and other relevant stakeholders. All designs should be in conformity with national construction standards (BIS (Bureau of Indian Standards) and GDCR (General Development Control Regulation))
- (vi) The detailed designs (revised to each site requirement) will, as a minimum, include construction drawings, detailed cost estimates, necessary calculations to determine and justify the engineering details, associated contract documentation to include letter of invitation, conditions of contract, detailed specifications, engineering drawings, bill of quantities (BOQs), and implementation schedules;
- (vii) BoQ will be prepared in accordance to the Schedule of Rates (SoR) approved by GoG for 2017-18, and wherever items in the BoQ is not listed in the SoR, Rate Analysis will be carried out based on the market rates
- (viii) Prepare necessary electrical, mechanical, plumbing and drainage designs along with working drawings, layout specifications and detailed cost estimates.
- (ix) Conduct Environment Impact Assessment studies, as per ESMF guidelines duly in consultation with GSDMA at NCRMP sites if required to obtain CRZ and other necessary clearance through respective state/central agencies,
- (x) Ensure designs prepared are compliant with the environmental safeguards for all civil works under the project in line with the Environment & Social Management Framework (ESMF) prepared for the project. She will adopt a model environmental management plan (EMP) prepared by GSDMA with respect to principles and processes laid down in the ESMF and DSC shall prepare site specific environmental management plan (EMP) based on model environmental management plan (EMP) in every three months from the date of start of construction.
- (xi) Ensure that EMP for the respective site is attached with the bidding document prepared and relevant costs and line items be included in the BoQs;
- (xii) Should any resettlement/rehabilitation due to land acquisition or removal of encroachments be triggered; then support Revenue Department in designing questionnaire and necessary surveys for resettlement planning. Such surveys must cover all affected households, businesses, and others along the project alignments/right of way and include data, among others, family profiles, income levels, assets (land, structures, crops, etc.), tenure status, land use patterns, preferences for relocation and resettlement;
  - a) Train enumerators to conduct the surveys and validate the findings through appropriate sample cross-checking, wherever /if any needed;

- b) Analyze the survey data and present the findings in the Resettlement Plan (RP) in a clear, cogent and consistent manner;
  - c) Assist government agencies in preparation of Resettlement Action Plans (RAPs) and submit to GSDMA and World Bank for concurrence
  - d) Guide and assist staff of implementing agency to effectively carryout the process for land acquisition, livelihood enhancement of Project Affected Persons (PAPs) to facilitate implementation of resettlement activities as per the RPs, including the facilitation of their inception, progress, and completion reporting;
- (xiii) Prepare bidding documents for construction packages adopting World Bank's approved draft bidding documents for civil works and other procurements;
  - (xiv) Assist GSDMA and R&B ( State &Panchayat) Department in evaluation of civil works tenders and contract award and other related bid processes;
  - (xv) Coordinate with the project executing departments/agencies and other stakeholders in preparation and finalization of subproject implementation activities.

**B. General**

- (i) The Consultant shall provide necessary training and capacity building for the staff of the implementing agency – R&B and PIU - GSDMA on functional areas requested by GSDMA;
- (ii) Prepare and submit to GSDMA training schedule for the Implementing agencies, beneficiary community and other stakeholders;
- (iii) Any other work as directed by GSDMA and R&B (State & Panchayat) Department from time to time related to MPCs and access roads.

**C. Construction Management and Post Construction Phase**

**1. Contract Administration**

- (i) Work as the engineer or employer's representative within the context of the construction contracts. Assist Implementing agency and/or GSDMA and R&B (State & Panchayat) Department in overall contract administration.
- (ii) Prepare effective construction schedule and advise all civil works contractors to follow work activities as stipulated in the schedule.
- (iii) Support the Implementing agency and the contractor in the following activities to ensure fair working condition to the laborers:
  - Awareness raising programs for laborers at the construction sites informing them about their opportunities, rights and duties.
  - Ensure that the laborers are fully aware of the insurance facilities provided under the contract and facilitate claims arising out of injuries, disabilities, and death.
  - Enforce strictly the provision of labor cards.
  - Prepare posters and pamphlets for dissemination of relevant information on fair working conditions including elimination of child labor, provision of equal pay for both men and women for equal volumes of work performed, occupational safety and health, and other relevant aspects.

- (iv) Monitor contract variations and time extensions, and build the capacity of implementing agency and their authorized staff to keep up-to-date records of contract prices and completion dates.
- (v) Review contractor's requests for time extensions, variations, additional compensation and claims and recommend appropriately and timely to process necessary approvals; and
- (vi) Assist Implementing agency in the resolution of contractual issues including review, evaluation and confirmation of contract variation orders.
- (vii) Any other work related to contract administration as directed by GSDMA and R&B (State & Panchayat) Department related to MPCs and access roads

## **2. Construction Supervision**

### **a. Quality Monitoring**

- (i) Supervise all construction works to ensure quality of works as per technical specification, drawings, and condition of contract, and support Implementing agency in managing construction supervision work. This shall include shelters with capacity 550 and 800 & Roads.
- (ii) Prepare, monitor and enforce implementation of quality assurance plan at each site.
- (iii) Monitor construction and quality control methods, certify that quality of works conform to the specifications and drawings;
- (iv) Assess the adequacy of the contractor's inputs in material, labor and construction method, furnish all revisions and detailed drawings as necessary during the continuance of the contract; and
- (v) Develop and maintain detailed record of work activities accomplished by the contractors.
- (vi) Any other work related to Quality Monitoring as directed by GSDMA and R&B (State & Panchayat) Department related to MPCs and access roads.

## **3. Construction Site Management**

- (i) Furnish detailed drawings to the contractors, check contractors' As-built Documents.
- (ii) Assess and enforce as per standard Construction Management System and as given in the bid/contract, the adequacy of contractors' inputs in terms of materials, equipment, construction machinery, workers, funds and construction approach and methodologies.
- (iii) Assist R & B (Panchayat) Department for recording measurements and material inventory for completed works and in progress and verify interim claims and bills for payments; and
- (iv) Maintain/Modify PMIS Trackers (Time, cost and procurement trackers etc.) for efficient Project Monitoring.
- (v) Prepare periodic progress report.
- (vi) Submit the RA bills raised by contractors to the divisions, copy of cash book register, copy of check issue register, copy of passbook maintained at district levels to GSDMA
- (vii) Any other work related to Construction Site Management as directed by GSDMA/ Implementing Agency.

### **Transfer of Technology:**

The Consultant through their key experts shall organize regular training programs for the R&B Engineers as part of technology transfer in Contract Management, Quality Management,

Construction Management and other related subjects. This shall be continuous process during the contract period with minimum one program in a quarter both at headquarter and at District Division level.

***Contract Completion Reports***

(5 copies) The Consultant will prepare a comprehensive completion report for each contract within 30 days of issuance of Completion Certificate for each construction contract. The report shall summarize all relevant issues pertaining to the contract in the format acceptable to the Employer.

***Final Completion Report***

(5 copies) The Consultant will prepare a comprehensive final completion report before 30 days of end of Consultancy assignment.

**11. Time Schedule/ Deliverables: -**

Sl. No	Deliverable	Timeline
<b>A. Planning, Design and Procurement Assistance</b>		
1.	Preparation and submission of Inception Report which shall include overall appreciation of the project, proposed methodology, work plan (Project schedule), Quality Assurance Plan (QAP) and Construction Supervision Manual	Within three weeks from the date of signing the contract
2.	<ul style="list-style-type: none"> <li>• Preparation , Revision/ update of architectural drawings, structural drawings, construction drawings, DPR , and Bid Document</li> <li>• Preparation of Environmental Impact Assessment &amp; Resettlement Plan (if applicable) for 1 no of MPCs site in Devbhumi Dwarka, 10 nos. of MPCs sites in Gir Somnath.</li> </ul>	Within 6 weeks from the date of signing contract.
3.	<ul style="list-style-type: none"> <li>• Preparation , Revision/ update of architectural drawings, structural drawings, construction drawings, DPR , and Bid Document</li> <li>• Preparation of Environmental Impact Assessment &amp; Resettlement Plan (if applicable) for 6 nos. of MPCs sites in Gir Somnath, 2 nos. of MPCs sites in Junagadh, 1 no of MPCs site in Navsari, 3 nos. of MPCs sites in Porbandar</li> </ul>	Within 10 weeks from the date of signing the contract

Sl. No	Deliverable	Timeline
4.	<ul style="list-style-type: none"> <li>• Preparation , Revision/ update of architectural drawings, structural drawings, construction drawings, DPR , and Bid Document</li> <li>• Preparation of Environmental Impact Assessment &amp; Resettlement Plan (if applicable) for 1 no of MPCS site in Amreli, 3 nos. of MPCS sites in Bharuch, 1 no of MPCS site in Devbhumi Dwarka, 6 nos. of MPCS sites in Gir Somnath</li> </ul>	Within 14 weeks from the date of signing the contract
5.	<ul style="list-style-type: none"> <li>• Preparation , Revision/ update of architectural drawings, structural drawings, construction drawings, DPR , and Bid Document</li> <li>• Preparation of Environmental Impact Assessment &amp; Resettlement Plan (if applicable) for 7 nos. of MPCS sites in Gir Somnath, 4 nos. of MPCS sites in Junagadh</li> </ul>	Within 18 weeks from the date of signing the contract
6.	<ul style="list-style-type: none"> <li>• Preparation , Revision/ update of architectural drawings, structural drawings, construction drawings, DPR , and Bid Document</li> <li>• Preparation of Environmental Impact Assessment &amp; Resettlement Plan (if applicable) for 8 nos. of MPCS sites in Junagadh, 5 nos. of MPCS sites in Kachchh, 1 no of MPCS site in Navsari</li> </ul>	Within 22 Weeks from the date of signing the contract
7.	Preparation/review of evaluation reports, and providing assistance in award of contracts for all MPCS packages – 89 sites	Till contract award for all packages  Submission of evaluation report for tender process of each package and copy of award of contract upon contract award for each package

Sl. No	Deliverable	Timeline
<b>B. Supervision</b>		
8.	<p>Construction Supervision -128 MPCS sites and 23 access roads</p> <p>a) Monthly update on PMIS</p> <p>b) Monthly progress reports and quarterly progress reports</p> <ul style="list-style-type: none"> <li>• Progress of delivery of each project component</li> <li>• Key issues and constraints in implementation and construction</li> <li>• Status of Safeguards compliance by the contractors and project</li> <li>• Updated project schedule</li> <li>• Updated physical and financial progress</li> </ul> <p>c) Bi-annual report</p> <ul style="list-style-type: none"> <li>• Consolidated Progress report of implementation Issues and constraints</li> <li>• Best practices, lessons learnt</li> </ul> <p>d) Annual Report</p> <p>e) Final report Subproject completion reports, and summary of all other reports, progress and issues under the subproject</p> <p>f) Quality control reports based on Quality Assurance Plan</p> <p>g) EMP reports as per EMP monitoring format prepared by GSDMA</p> <p>h) Contract completion reports</p>	<p>Completion of construction activities at all sites</p> <p>a) 28<sup>th</sup> day of every month.</p> <p>b) 1<sup>st</sup> day of every month and 15<sup>th</sup> day after completion of each quarter</p> <p>c) 15<sup>th</sup> day after completion of a period of every six months</p> <p>d) 15<sup>th</sup> day after completion of a period of twelve months</p> <p>e) One month prior to contract completion date</p> <p>f) 5<sup>th</sup> day of every month</p> <p>g) 5<sup>th</sup> day after completion of each quarter of construction</p> <p>h) Within 30 days of issuance of Completion Certificate for each construction contract</p>

## **12. PERFORMANCE REVIEW**

The Consultant's performance would be reviewed periodically and monitored through the performance reports. A review committee may be constituted to review the work of the Consultant from time to time.

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 Consultants at any point of time, under any circumstances.

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.

The duration of the services shall be of about 24 months.

**The duration of the service is as follows:**

- 1) Phase A (DPR Preparation) for 6 months; and**
- 2) Phase B (Supervision) for 24 months**

## **15. ADDITIONAL SERVICES**

The supervision consultant shall, if so required by the Client, provide any additional service at rates or on man-month rates as per the contract, or as mutually agreed upon, as a variation order.

i) The Commencement Report shall contain the details of all meetings held with the Client and the Contractor and decisions taken therein, the resources mobilized by the Consultants as well as the Contractor and the Consultant's perception in the management and supervision of the project. The report shall also include the Master Work Programme and Resources Mobilization for the Project. Just after the commencement of services of contractor, the Consultant will start submitting their compliance report with respect to activities to be performed by the contractor as covered in the bidding document/work programme.

ii) The Progress Report (Monthly, Quarterly, Biannual and Annual) shall contain details of all meetings, decisions taken therein, mobilization of resources (Consultants' and the Contractors') including actual mobilization plan for the previous month and proposed mobilization plan for the next month w.r.t. consultant's resources, detailed compliance report of each activity, physical and financial progress and the projected progress for the forthcoming periods. The Report shall clearly bring out the delays, if any, reasons for such

delay(s) and the recommendations for corrective measures. The Report shall also contain the performance data for contractor's plant and equipment.

**iii) Final Report:**

The consultant (Team Leader) will prepare a comprehensive final completion report of the construction contract package after completion of the work. The report shall incorporate summary of the method of construction, the construction supervision performed, as built construction drawing, problems encountered and solutions undertaken thereon and recommendations for future projects of similar nature to be undertaken by the client. The consultant shall submit the self-attested report within the prescribed time summarizing the following details:

1. Details of Personnel including substitution made during the assignment.
2. Details of variation orders issued
3. Details of extension of time granted to the Contractor.
4. Details of Quality Assurance System
5. Quality observed at site by the consultant.
6. Details of claims.
7. Special preventive measures for maintenance suggested by the consultant.

**(iv) Review**

- Review the progress achieved in the previous month and revised schedule with approval of the client, if any; and,
- Review of any changes required in the schedule due to extraneous reasons beyond the control of the contractor, with prior approval of the client.

**(v) Construction Supervision Manual**

The primary objective of the Construction Supervision Manual will be to draft guidelines for administration, supervision and management of the project. Such a manual is not intended to be a contractual document nor is it to take precedence over the specifications. The manual will merely act as a guide and reference to the various staff in the management and supervision of the project in discharging their duties in a smooth and systematic manner.

**(vi) Quality Assurance Plan**

The Quality Assurance Plan (QAP) documents shall be developed on the basis of the relevant manual for quality system for highways published by the Indian Road Congress (IRC) and for buildings published by Bureau of Indian Standards (BIS).

## **16. STAFFING SCHEDULE**

- i. The total implementation period will consist of the construction period of 24 months for civil works.
- ii. The site supervision team would be mobilized on the date of actual commencement of works by the contractors or as decided by the Employer.
- iii. After award of the contract the client expects all the proposed key personnel to be available during implementation of the contract as per the agreed staffing schedule. In case of situations, where replacement is inevitable, the following general policy shall be adhered to
  - In case of exceptional circumstances (such as death and/or extreme nature of ailments for which medical certificate shall be produced from Hospital/ Nursing Home) the replacement will be done with the person having same or higher qualification and experience and no reduction in the remuneration of the key person will be assumed for the calculation of cost of consultancy work.
  - If the key personnel have left the firm then a certificate mentioning this will be produced by the consultant and for the first replacement, no reduction & a reduction of 10% in the remuneration of the key person for each replacement after first replacement will be assumed for arriving at the cost of the consultancy work. In no circumstances, replacement with a personnel having less qualification and experience than that of the previous one will be admissible.

## **17. CONSULTANT'S PROPOSAL SUBMISSION**

- a. The ToR is prepared to address the design and supervision consultancy service in a general way. The consultants are advised to understand fully the specific requirements of the supervision consultancy package of their concern, for which they will be short-listed and for which they are submitting the proposal. The consultants are also advised to inspect the project stretches/sites and acquaint themselves with the ground realities. The consultants are also advised to go through the bid documents of the construction package which have been put to tender by the EA before submission of proposal and include the provisions required thereof meeting the contract requirements.
- b. The consultant's submission should be focused to the project requirements as per the ToR details. All specific issues for which references have been made in the various paragraphs of ToR should be addressed effectively. General descriptions should be avoided.

**Qualification and experience requirement of key personnel and other supporting staff:**

**Key Experts:**

<b>S. No</b>	<b>Indicative Consultant Team Composition</b>	<b>No. of Units</b>	<b>Estimated Man Months (Phase A)</b>	<b>Estimated Man Months (Phase B)</b>	<b>Qualifications &amp; Experience</b>	<b>Remarks</b>
1	Team Leader	1	3	12	<ul style="list-style-type: none"> <li>• The Team Leader must have Master's degree in Civil/ Structural engineering / Construction Engineering and Management with additional qualifications in project management having Project Management Professional (PMP) credential holder being preferable; Should have minimum of 15 years of experience in designing, procurement and construction supervision, quality and safety of buildings, public infrastructure works, of which at least 3 multi-lateral bank funded projects as Team Leader/ Project Manager.</li> <li>• Knowledge of Gujarati language would be beneficial</li> </ul>	Please attach Certificates for Educational / qualifications certificates and active PMP credentials
2	Environment Specialist	1	3	12	<ul style="list-style-type: none"> <li>• The Environment Specialist shall have Master's degree in environment sciences or its equivalent with at least 8 years of experience in carrying out environmental impact assessments, of which a minimum of 3 years should be in implementing EMPS. The Specialist shall be familiar with the environmental policies of the World Bank and will be responsible to assess the extent of the Implementing agency and contractor's compliance with the ESMF of the project.</li> </ul>	Please attach Certificates for Educational / qualifications certificates

S. No	Indicative Consultant Team Composition	No. of Units	Estimated Man Months (Phase A)	Estimated Man Months (Phase B)	Qualifications & Experience	Remarks
					<ul style="list-style-type: none"> <li>• Knowledge of Gujarati language would be beneficial</li> </ul>	
3	Social Safeguard Specialist	1	3	12	<ul style="list-style-type: none"> <li>• The Social Development Specialist shall have Master's degree in social development/science with 10 years of relevant experience in development and implementation of social safeguards for World Bank/multi-lateral financed projects in India. Experience in participatory rural development and empowerment projects for women and vulnerable groups. Working experience in the Gujarat and Knowledge of Hindi and Gujarati would be of comparative advantage.</li> <li>• Knowledge of Gujarati language would be beneficial</li> </ul>	Please attach Certificates for Educational / qualifications certificates
4	Architect	1	3	0	<ul style="list-style-type: none"> <li>• Architect shall have a Master's degree or equivalent in Architecture and will have over 15 years' of proven experience in designing public buildings, building for various utilities, usage, landscaping etc.</li> </ul>	Please attach Certificates for Educational / qualifications certificates
5	Structural Engineer	1	3	0	<ul style="list-style-type: none"> <li>• Structural Engineer shall have a Master's degree in Structural Engineering with over 12 years of designing, reviewing and implementation structural designs experience for infrastructure/ building construction activities in Wind and Earthquake prone zones.</li> </ul>	Please attach Certificates for Educational / qualifications certificates
6	Quantity Surveyor	1	3	0	<ul style="list-style-type: none"> <li>• Quantity Surveyor shall have a Bachelor's degree in Civil Engineering with additional qualification in QS as MRICS credential is preferable with</li> </ul>	Please attach Certificates for Educational / qualifications

S. No	Indicative Consultant Team Composition	No. of Units	Estimated Man Months (Phase A)	Estimated Man Months (Phase B)	Qualifications & Experience	Remarks
					minimum 10 years of experience in cost, contract and procurement management for public buildings and infrastructure works among which at least 3 projects should be either World Bank/multilateral financed projects. Familiar with World Bank procurement guidelines, application of FIDIC contracting processes and documentation, and e-tendering is a must.	certificates and active MRICS credentials
7	Resident Engineer Roads <sup>2</sup>	1	0	12	<ul style="list-style-type: none"> <li>Resident Engineer shall be a Post Graduate in Civil /Highway Engineering / Construction Management and will have minimum 10 years of experience with last 3 years working as a Construction Manager/ Resident Engineer. The consultant will have experience in design, contract administration construction supervision of public buildings and infrastructure such as roads &amp; bridges, water supply and drainage, etc. along with experience in preparation of construction drawings and construction safety plan and monitoring project with PMIS.</li> </ul>	Please attach Certificates for Educational / qualifications certificates
	Resident Engineer MPCS	1	0	24		
8	Civil Engineer	1	3	21	<ul style="list-style-type: none"> <li>Civil Engineer shall have minimum Bachelor's Degree in Civil Engineering with minimum 7 years of work experience in construction supervision, progress and quality with strong computer skills and working knowledge of</li> </ul>	Please attach Certificates for Educational / qualifications certificates

<sup>2</sup> It is anticipated the works related to construction of access roads will be completed within the 1 years of commencement of services of DSC

S. No	Indicative Consultant Team Composition	No. of Units	Estimated Man Months (Phase A)	Estimated Man Months (Phase B)	Qualifications & Experience	Remarks
					construction management software like MS Project. Primavera etc. He will work under the close guidance of the key experts.	
9	Occupational Health & Safety Expert	1	2	16.5	<ul style="list-style-type: none"> <li>• Occupational Health &amp; Safety Expert shall have minimum Bachelor's Degree in Civil Engineering with minimum 10 years of construction work experience with at least 7 years of experience as safety expert.</li> <li>• Should have diploma in Occupational Health &amp; Safety</li> <li>• Knowledge of Gujarati language would be beneficial</li> </ul>	Please attach Certificates for Educational / qualifications certificates

#### Non – key Technical Support Professionals

S. No.	Indicative Consultant Team Composition	No. of Units	Estimated Man Months (Phase A)	Estimated Man Months (Phase B)	Qualifications & Experience
1a	Senior Site Engineer (Civil) MPCS	2	0	48	<ul style="list-style-type: none"> <li>• Senior Site Engineer shall have Bachelor's degree in Civil Engineering and will have minimum 5 years of experience or shall have Diploma in Civil with minimum 7 years of experience. He should have experience in construction quality, progress, safety and construction supervision of public buildings and infrastructure such as roads &amp; bridges, water supply and drainage, etc. along with experience in monitoring project with PMIS</li> </ul>
1b	Senior Site Engineer (Electrical) MPCS	1	0	24	<ul style="list-style-type: none"> <li>• Senior Site Engineer shall have Bachelor's degree in Electrical Engineering and will have minimum 5 years of experience or shall have Diploma in Electrical with minimum 7 years of experience. He should have experience in electrical works related to construction quality, progress, safety and construction supervision of public infrastructure along with experience in monitoring project with PMIS</li> </ul>

S. No.	Indicative Consultant Team Composition	No. of Units	Estimated Man Months (Phase A)	Estimated Man Months (Phase B)	Qualifications & Experience
2a	Junior Site Engineer Roads <sup>3</sup>	5	0	60	<ul style="list-style-type: none"> <li>Junior Site Engineer shall have Bachelor's degree in Civil Engineering with minimum 3 years of experience or shall have Diploma in Civil with minimum 5 years of experience. He should have experience in construction quality and construction supervision of public buildings and infrastructure such as roads &amp; bridges, water supply and drainage, etc. along with preferable experience in maintaining site quality and progress records.</li> </ul>
2b	Junior Site Engineer (Civil) MPCS	15	0	360	
2c	Junior Site Engineer (Electrical) MPCS	5	0	120	<ul style="list-style-type: none"> <li>Junior Site Engineer (Electrical) shall have Bachelor's degree in Electrical Engineering with minimum 3 years of experience or shall have Diploma in Electrical with minimum 5 years of experience. He should have experience in electrical works related to construction quality and construction supervision of public infrastructure along with preferable experience in maintaining site quality and progress records.</li> </ul>
3	CAD Technician	2	12	0	<ul style="list-style-type: none"> <li>CAD Technician shall have a diploma in Civil Engineering with working knowledge on CAD/CAM software, and having minimum 5 years of experience in preparation of construction design drawings for public infrastructure/ construction works, in India. The scope of work will include but not limited to preparation of detailed engineering-construction drawings to facilitate construction and supervision of the infrastructure proposed to be implemented in this project</li> </ul>
4	Admin Officer Road	1	0	12	<ul style="list-style-type: none"> <li>Admin Officer shall be a Graduate with a minimum of 3-5 years of experience in office administration work. All admin officers must have demonstrated computer skills, whereby working on writing letters and email under the close guidance of the Key Experts at PIU's and IA's offices.</li> </ul>
	Admin Officer MPCS	1	0	24	
	Admin Officer PIU Office	1	3	21	

Note: (i) Fitness certificate including ID proof with photograph of the candidates need to be

<sup>3</sup> It is anticipated the works related to construction of access roads will be completed within the 1 years of commencement of services of DSC

furnished

(ii) For non-key technical support professionals, CVs will not be included in the evaluation but must be submitted prior to deployment in the project, as negotiated during the contract negotiations, to determine the adequacy of qualifications and experience.