

Maharashtra State Road Development Corporation Ltd.

E - Tendering System

Name of Work: Appointment of Consultant to act as Independent Engineer for the work of Maintenance of Rajiv Gandhi Sea Link with Operation of Toll Plaza & Collection of Toll on Upfront Basis

VOLUME - II



Maharashtra State Road Development Corporation Ltd.

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**Contract Document for
Consultancy Services for
Appointment of Consultant
to act as Independent
Engineer for the work of
Maintenance of Rajiv
Gandhi Sea Link with
Operation of Toll Plaza &
Collection of Toll on Upfront
Basis**

Volume – II

(Variable Document)

Issue To _____

M/s _____

Authenticated by

Shri _____

Designation _____

Signature _____

**Appointment of Consultant to act as Independent Engineer for the work of
Maintenance of Rajiv Gandhi Sea Link with Operation of Toll Plaza &
Collection of Toll on Upfront Basis**

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SECTION I

NOTICE INVITING CONSULTANCY SERVICES

1. BRIEF SCOPE OF WORK

The Maharashtra State Road Development Corporation Ltd. (MSRDC) has been entrusted with the development, maintenance and management of various infrastructure projects in state of Maharashtra. MSRDC has completed Rajiv Gandhi Sea Link project and has been commissioned in 2009. MSRDC is in process of appointment of Contractor for toll collection and operation & maintenance of the sea link. MSRDC now intends to appoint suitable consultant to act as Independent Engineer for inspection, supervision as well as monitoring the Operation, Maintenance & Toll Collection contract. The consultant will be appointed for a period of three years.

Qualifying requirements for consultancy firms/ JOINT VENTURES have been spelt out in the document

2. MODE OF ACCESS FOR BID DOCUMENTS

“Bid document” will be available for download as per Tender Schedule given in Volume I.

3. SUBMISSION OF DOCUMENTS

Proposal shall be sent only by online as per procedure defined in Volume I and tender schedule.

4. SUBMISSION CONDITIONS

The proposal shall be submitted as per the schedule and procedure defined in the Volume I for online submission. Please note that only online mode of submission is available.

MSRDC will not be responsible for any delay in receiving the proposals and reserves the right to accept/reject any or all proposals without assigning any reason thereof. The consultancy firms will be selected as per the guidelines as indicated in the Bid Document.

5. ADDRESS FOR COMMUNICATION

Executive Engineer (Rajiv Gandhi Sea Link)

MSRDC LTD.

Camp Office,

K. C. Marg, Infront of Bandra Reclamation Depot,

Bandra (W), Mumbai - 400050

Tel : (022) 26400190/26400201/26558175/26558176/26433908 (Ext. 137)

Fax : (022) 26417893

SECTION II

Name of Work: - Bid for Appointment of Consultant to act as Independent Engineer for the work of Maintenance of Rajiv Gandhi Sea Link with Operation of Toll Plaza & Collection of Toll on Upfront Basis

DATA SHEET

1.	The Name of the Assignment is	Appointment of Consultant to act as Independent Engineer for the work of Maintenance of Rajiv Gandhi Sea Link with Operation of Toll Plaza & Collection of Toll on Upfront Basis
2.	The Name of the Client is	Maharashtra State Road Development Corporation Ltd. (An Undertaking Of Govt. Of Maharashtra)
3A.	The Description of the Project	<p>MSRDC is in process of appointing of Contractor for toll collection and operation & maintenance of the sea link. MSRDC now intends to appoint suitable consultant to act as Independent Engineer for inspection, supervision as well as monitoring the Operation, Maintenance & Toll Collection contract. The consultant will be appointed for a period of three years.</p> <p>The brief scope of consultancy services are :</p> <ul style="list-style-type: none"> • Comprehensive inspections of the bridge including bearings, cable, etc. and submit regular report to MSRDC. • Supervision of day to day maintenance of the sea link i.e. structures and approaches/embankments including Lift in Pylon, toll equipment's and toll plaza building, exhibition centre and control room, CCVT Cameras. • Supervision of Toll collection activities. • Collecting Traffic surveys data and processing the data in view of Profit sharing clause as per Contract Agreement of O&M contractor. • Supervision of Landscaping / Beautification – maintenance • Advice / Administration of Contract between MSRDC & the Contractor as an Independent Consultant. • Any other incidental work.
3B.	Scope & Terms of work	As per Appendix – “A” of Volume II

4.	Date and Time of Pre- bid Conference (Ref. ITB Para – 1.2)	To be held on 24/04/2014 at 1500 hrs. MSRDC Ltd., Camp Office, K.C. Marg, Bandra (W), Mumbai - 400 050.
5.	Document fee	Bid documents Vol. I, II and Vol. III will be given to the intending bidder at MSRDC Bandra office on payment of Rs. 10,000/- in the form as specified in Vol. I.
6.	Bid Processing Fee	Rs. 25,000 /-
6.	Bid Security (Ref. ITB Para – 3.1.4.1)	Rs. 1,00,000/-. The Bid Security shall be in the form as specified in Volume I for online submission.
7.	Evaluation of Key Personnel (Ref. ITB Para– 3.2.1)	Team Leader Resident Engineer
8.	Intention of giving specific assignment by giving fixed fee (Ref. ITB Para– 3.3.5)	It is intended to give this specific assignment by giving fixed fee called as total fees. 90% Total fees will be paid as per fees payment schedule in Appendix C of Vol. III. Balance 10% will be paid after receipt of Final Report from Consultant/ completion of the contract
9.	The address is (Ref. ITB Para – 4.4)	Client / Employer Vice Chairman & Managing Director, Maharashtra State Road Development Corporation Ltd., Near Priyadarshani Park, Nepean Sea Road, Mumbai-400 036. website :www.msrdc.org Facsimile – 022 26417893 Tel : 022 – 26400190
10.	Estimated Cost Of work (Ref. Appendix- “C” of Volume-III)	Not applicable
11.	Consumer price index for industrial workers for the center at (Ref. Appendix- “ C” of Volume-III)	As Applicable to Mumbai

12. Performance Security:

Rs. 5,00,000/- (Rupees Five Lakhs Only). The Performance Security shall be payable in the form of BG. The BG shall remain valid for entire period of contract plus twelve months.

- 13.** The bid document shall be submitted by way of online submission as specified in Tendering Procedure in Volume I and as per Tendering Schedule along with Volume I, II & Volume III and CSD, Addendum (if any) and necessary documents to M.S.R.D.C.

14. Bid validity period (days, date): 120 days from the last date of receipt of bid document. (Ref. ITB Para 4.5 Vol. I)
15. **Evaluation criteria:** (Ref. ITB Para 3.1.3 & Para 5 of Vol. I)
Based on the Technical Evaluation of the committee, MSRDC will rank the consultant. The Consultants shall score a minimum of 75% marks for short listing. The financial bid of the consultants thus shortlisted will be opened and the lowest responsive financial bid shall qualify for award.
16. Eligibility requirements (First stage evaluation) (Ref. ITB Para 5.2)
- i) Firm's Experience - Minimum of 10 years.
 - ii) Minimum Qualification and Experience Requirement of Key Personnel.

Sr. No.	Details	Education / Qualification	Essential Experience in years			Age Limit
			Total Professional Experience	Experience in Highway/ bridge Projects	Experience in similar capacity	
1	2	3	4	5	6	7
1.	Team Leader	Graduate in Civil Engineering	25	15	05	60
2.	Resident Engineer	Graduate in Civil Engineering	20	10	05	55

Availability of Key Persons – It shall be generally ensured as given in the Form TF-VII of Annexure – II Vol. I, that the key persons are available at site during the period shown in the schedule.

- iii) For qualification the Consultant shall score 75% in Technical evaluation.
 - iv) Final evaluation of proposal shall be based on weightage to technical evaluation and financial in 80:20 proportions, as per clause 5.0 of ITB of Volume I.
17. Time Limit: - Time limit for consultancy is as follows.
Supervision of Operation & Maintenance and monitoring of toll operations of Rajiv Gandhi Sea link: 42 months from the date of Work Order.
18. Authority to grant extension and penalty - The VC & MD, MSRDC
(Ref. Appendix-“C” of Volume-III)

- 19.** Minimum availability of personnel during Contract Period. –
Given in Statement below--

Sr. No.	Details	No. of Persons	Minimum Availability of the Person	Remarks
1.	Team Leader	01	Part Time	One day a week
2.	Resident Engineer	01	Full Time	----
3.	Supervisor	01	Full Time	----

Above mentioned personnel to be provided by the consultant are minimum. The Consultant shall provide adequate personnel and supervisory support staff required at all times. For providing additional staff over & above minimum staff requirement mentioned in the contract, no extra payment will be made.

- 20.** Fee Structure and mode of payment: As per Appendix “C” of Volume III

SECTION III

Name of Work:- Appointment of Consultant to act as Independent Engineer for the work of Maintenance of Rajiv Gandhi Sea Link with Operation of Toll Plaza & Collection of Toll on Upfront Basis

APPENDIX - A
Scope of Work and Terms Of Reference

1.0 THE PROJECT IN BRIEF

The project work is of providing services as Independent Engineer services for the Work of Maintenance of Rajiv Gandhi Sea Link with Operation of Toll Plaza & Collection of Toll. It involves inspection, supervision and monitoring of Operation, Maintenance & Supervision of Work including Toll Collection of Rajiv Gandhi Sealink.

1.1 Description of Project

The description of project is as per clause 3A of Data Sheet.

2.0 OBJECTIVES

The Independent Engineer shall be required to:

- i) act independently on behalf of both MSRDC and the Contractor to review and monitor all activities associated with operation and maintenance and toll collection to ensure compliance with provisions of the Contract.
- ii) visit, inspect and report to MSRDC on various aspects of the project and carryout all such activities as are provided in the Contract. Without prejudice to this, the scope of services of the Independent Engineer shall be as specified in para 2 to 6.

The Independent Engineer shall have no authority to relieve the Contractor of any of his duties or to impose additional obligations other than those expressly provided in the Contract.

3.0 AN OUTLINE OF THE TASK TO BE CARRIED OUT

3.1 The Consultant is expected to act as Independent Engineer and provide services and assistance to the MSRDC for the management and implementation of all activities to be carried out under the project as envisaged in the Contract. These services will require appropriate skills and expertise during implementation of the project, as outlined fully below.

3.2 In providing these services, the consultant shall examine the detailed program for operation and maintenance of the project facility prepared by the Contractor. The consultant must at all times

retain direct responsibility for reviewing and approving the work program, reports and any other output prepared under these tasks by participating with local sub-contractor, or sub-consultants. Accordingly, the consultant will be required to provide staffing resource of demonstrably sound and extensive expertise in the monitoring and supervision of project involving high traffic levels based on high design standards. While, executing the activities set in TOR by the consultant, it is obligatory to take approvals that are deemed necessary from various relevant agencies like MSRDC, MBMC, Traffic Police, and Revenue Department. etc. The client will assist in form of letters for getting approvals.

4.0 STANDARDS AND CODES OF PRACTICE

- i) All activities related to inspection of bridge and supervision and monitoring of O & M activities, shall be done as per the latest guidelines / circulars of MORT&H and relevant publications of the Indian Road Congress (IRC) and Bureau of Indian Standards (BIS). For aspects not covered by IRC and BIS, international standard practices, such as British & Americans Standard may be adopted. The consultants, upon award of the contract, may finalize this in consultation with MSRDC.
- ii) All notations, abbreviations and symbols used in this reports, documents and drawings shall be as per IRC: 71.
- iii) The Consultant shall use for guidance during all phases of his work, the Quality Assurance Manual/ Maintenance Manual approved by MSRDC. The copy of the Quality Assurance Manual/ Maintenance Manual must be available at the site office of the Independent Engineer during the contract period.

5.0 SCOPE OF SERVICES

5.1 General

Scope of Services of the Independent Engineer will include responsibilities arising out of the relationship between the Contractor & Independent Engineer in accordance with the provisions as mentioned in the Contract document of (Maintenance of Rajiv Gandhi Sea Link with Operation of Toll Plaza & Collection of Toll on Upfront Basis).

To prepare and submit the running and final bills of M/s. Hindustan Construction Corporation Ltd. for the work of Bandra Worli Sea Link after the defect liability period is over (March 2015) on the basis of last bill certified by DAR Consultant and other incidental works related to this project. The necessary details and the certified copy of the last bill shall be made available to the Project Management Consultant by MSRDC Ltd.

The copy of Maintenance & Operation Contract will be made available to the Consultant. Responsibilities / activities to be carried out by the Independent Engineer shall cover, generally the Operation, Maintenance & Toll Collection and the relevant tasks are as follows.

- (i) To carry out the structural audit of the bridge with the help of contractor within 30 days of commencement order. Based on the structural audit, the maintenance work shall be got done from the contractor. A comprehensive report shall be submitted to the MSRDC and defects, if any, shall be brought to the notice of MSRDC.
- (ii) To carry out to comprehensive inspection of the bridge yearly. The first such inspection shall be carried out within 30 days of commencement order and status report shall be submitted to MSRDC. Routine inspection shall also be carried out at least once in a month and as and when necessary and the defects noticed shall be got rectified from the contractor immediately.
- (iii) To guide the contractor and get the maintenance manual prepared to set out the operation and maintenance standards and activities to be undertaken during the contract period, so that the project facility shall at all times conform to the design requirements.
- (iv) To inspect site and prepare inventory with present condition survey of all civil, electrical, mechanical, electronic etc. fixed and mobile assets transferred to the contractor for Toll Collection operation and maintenance and to be handed over to MSRDC.
- (v) To review & approve the Implementation Schedule / CPM / PERT charts and any modification thereto, submitted by the Contractor for works if any.
- (vi) To review and approve the Environmental Assessment & Management Plan for the Project during Operations / Maintenance Period considering environmental restrictions, if any, as well as environment related rules / laws.
- (vii) To review & approve Quality Assurance and Quality Control procedures during the Operations Period / maintenance period.
- (viii) To review & approve the safety measures including traffic safety such as sign boards, road markings, overhead sign boards, crash barriers etc during Operations / Maintenance Period by the Contractor.
- (ix) To give consent to using materials / plants / equipments in or for the M&R/O&M works.
- (x) To take appropriate actions against the Contractor for any non performance as per the Contract.

- (xi) To take all actions to ensure smooth and safe running of traffic.
- (xii) Arboriculture and Landscaping:
 - a) Supervision of day to day maintenance of Arboriculture & Landscaping is also covered in the Consultants assignment.
- (xiii) Miscellaneous Works:
 - a) To scrutinize & approve suitable designs and layout prepared by the Contractor for miscellaneous works during operation & maintenance period.
 - b) To scrutinize and approve the detailed scheme and layout plan for works prepared by Contractor.
 - c) To scrutinize and approve detailed plan for the traffic. Management and safety during the operation & maintenance period.
- (xiv) Estimation of Quantities and Project Costs
 - a) To scrutinize & approve the provisions made by contractor for execution of the work. The Consultant will also scrutinize and approve the rate analysis of the items incorporated in the estimate by the Contractor and get it approved before proceeding with the preparation of detailed estimates for quantities and project cost for the variations, change of scope etc. including the cost of environmental and social safeguards proposals based on MORT&H/ applicable PWD DSR approved by PWD. The estimation of quantities for change of scope, variation shall be based on detailed design of various components of the projects. The Consultant shall submit the detailed estimate in 3 sets.
 - b) The consultant will process and obtain prior sanction for the variations, change of scope in M&R work from the competent authority in the MSRDC.
 - c) The estimate shall be based on sanctioned alignment plan / GAD.
- (xv) Monitor Quality Assurance and Quality Control during Operation & Maintenance period.
- (xvi) Review the material testing results, mix designs and order special tests of materials and/or completed works, and/or order removal and substitution of substandard materials and/or works as required.
- (xvii) To supervise and ensure that the operation & maintenance work is carried out in accordance with the Specifications and Standards and Good Industry Practice.

- (xviii) Review “As Built” drawings for each component of the works prepared by the Contractor.
- (xix) To review and approve the safety measures including traffic safety provided by the Contractor and ensure smooth & safe movement of traffic.
- (xx) To supervise and monitor various Completion Tests as provided in the Contract.
- (xxi) To take appropriate actions & supervise shifting of utilities, as and when required, during operation & maintenance period.
- (xxii) Review and approve the Maintenance Manual prepared by the Contractor as may be needed.
- (xxiii) Review, approve and ensure implementation of the Environmental assessment & Management Plan and all Statutory Compliances.
- (xxiv) To collect toll collection and traffic details from the O& M contractor and submitting it to MSRDC after scrutinizing it.
- (xxv) To collect traffic survey data and processing it for profit sharing as specified in the Agreement of O& M contractor.
- (xxvi) To prepare estimates for restoration of road/ bridge/ approaches as part of maintenance or due to laying of utilities in consultation with O& M contractor.
- (xxvii) To prepare Inception Report indicating methodology to be adopted for consultancy services.
- (xxviii) Preliminary Study of existing toll with probable diversions.
- (xxix) Assessing the Growth in Traffic and in Revenue based on traffic data given by MSRDC.
- (xxx) Estimating the future expenditure on Operation and Maintenance of the project.
- (xxxi) To prepare of Feasibility Report.
- (xxxii) To prepare Business Plan for the Purpose of Securitization.
- (xxxiii) To Prepare Draft and Final Tender Document.

(xxxiv) Tender Process Management for appointment of new O & M Contractor.

(xxxv) Any other services till work order of new toll collection contractor.

Monitor the maintenance activity as per the maintenance and operation manual and ensure prompt performance by the Contractor.

- (i) Supervision of routine and special maintenance.
- (ii) Detailed and Routine inspection of bridge and submit reports with its recommendation
- (iii) Identify the difficulties and intimate to the Contractor for implementation.
- (iv) Review & approve the Maintenance documents.
- (v) Review & approve the safety measures provided by the Contractor
- (vi) Issue the variation orders & take appropriate action. (If instructed by the Employer.)
- (vii) Supervision & monitoring Toll Collection activities as per Govt. Toll Notifications/ MSRDC's instructions and guidelines from time to time.
- (viii) Collect & review the Traffic survey data at Toll Plaza if instructed by the Employer.
- (ix) Process the claims of the Contractor / Employer.
- (x) To give consent to using materials, plant, equipments in or for the Maintenance & Repair, Operation & Maintenance Works.

5.2 The scope of supervision of maintenance activities for various components of the Project Facility is as given below:

i. Pavement

a) Rigid Pavement

Routine maintenance

- Cleaning of the roads once in a week.
- Deteriorated joint seals shall be replaced as and when required.
- Minor cracks shall be sealed with epoxy material as and when required.
- Concrete spall and edge breaking shall be repaired with epoxy material as and when required.

Periodic maintenance

- Road markings and other road side features shall be maintained to meet the relevant standards to the satisfaction of the Independent Engineer.
- The periodic maintenance activities shall also include (i) removal of surface defects such as polishing of stones, loss of coarse aggregates potholes, scaling, raveling etc. by using Portland-cement mixes, bituminous mixes or resin mixes etc., (ii) removal of cracks and (iii) removal of deficiencies in joints

b) Flexible Pavement

Routine maintenance

- Cleaning of the roads once in a week.
- Repairing of pavement distress (including pavement ruts, pot holes) to be attended as and when required.
- Corrugations and shoving to be removed by camber correction as and when required.
- Repairing of settlement and grade depressions by providing DBM, BC layers as and when required.
- During monsoon skiddy surfaces shall be flushed by fine aggregates to increase skid resistance. Similarly in the summer whenever bleeding is observed fine aggregates shall be flushed to avoid skidding as and when required.
- Resurfacing hungry area by means of MSS as and when required.

Periodic maintenance

- The renewal treatment to bituminous surfaces including thermoplastic painting.

c) Paver block pavement

Routine maintenance

- Cleaning the pavement surface once in a week.
- Removing of rut and ravel by removing the paver blocks, correcting the surface including compaction and rearranging the paver blocks as and when required.
- Whenever paver blocks are observed to be damaged or missing they shall be replaced with new ones.

Periodic Maintenance

- Removing and resettling of paver blocks every three years.

ii. Structures/ Bridges

Routine maintenance

- Cleaning the carriageway once in a week.
- Pot holes, surface irregularities shall be repaired as and when required.
- Repairs to the painting with paint of same standard as and when required.

Periodic maintenance

- Cleaning and washing parapet wall / railing every month.
- Oil Painting of railings, crash barriers once in a year.
- Oil painting of kerbs, median verge twice in a year.
- Cleaning of water spouts & down take pipes.
- Painting of substructure, super structure every three years.
- Cleaning of water spouts & down take pipes.

- Paint to structures for durability purpose with anti carbonation or equivalent paint once in three years. IE shall approve the quality of paint in consultation with MSRDC.
- Repairs / replacement of drainage above & below the bridge as and when required.
- Wearing course renewal with milling, DBM leveling course and BC / mastic asphalt overlay every 3rd year. Polymer Modified bitumen (55 Grade) shall be used for Bituminous concrete.
- Repairs / replacement of street lighting as and when required.

iii. Longitudinal covered drains / Open drains / Median drains

Routine maintenance

- Cleaning before and after monsoon and whenever required.
- Repairs required to be carried out to the open drains as and when required.

iv. Landscaping

- Maintenance of highway landscape including attending to repairs to elements of the landscape connected services as and when necessary, and replacement of irreparable items of work.
- Maintenance of trees as per guide lines in SP: 21-1979 and no indiscriminate felling of trees shall be resorted.

Routine maintenance

- Watering to trees, plants and shrubs on daily basis.
- If the median plantation and Bridge gardens, watering drip irrigation system fails, the contractor shall carry out watering by other means.
- Cleaning seat outs, lawns, pergolas, artifacts, bus stops shall be carried out on daily basis.
- Maintenance of civil works such as repairing to tiling, roofing, seat outs, drip irrigation system, railings shall be carried out as and when required.
- Grass cutting and pruning of shrubs and trees shall be done once in a month.
- Lights provided for garden areas near bridge / road side gardens have to be maintained.

Periodic maintenance

- Applying manure, pesticide and sweet soil once in every three months and whenever required.
- Replacement of ground cover, lawn once in a year.
- Replacement of plants and shrubs as and when required.

v. Toll Plaza Complex

Routine Maintenance

- Cleaning of toll plaza premises and administrative building on daily basis.
- Maintenance of electrical and toll plaza system equipments as and when required.
- Replacement of damaged boom barriers.
- Cleaning of sign boards on daily basis.
- Cleaning and maintenance of drainage system of toll plaza complex, administrative building and pavement once in a month.
- Maintenance and repairs of damaged barriers, kerbs and their painting as and when required.
- Maintenance of upkeep of furniture in toll booths & administrative building.
- Security – watch and ward round the clock.

Periodic Maintenance

- Painting of toll booths, canopy, administrative building and other structures of toll plaza complex - every 3 years.
- Upkeep and replacement of road furniture.

vi. Control / Exhibition Room

Routine Maintenance

- Cleaning of Building on daily basis.
- Maintenance of electrical and equipments as and when required.
- Maintenance of upkeep of furniture in administrative building.
- Security – watch and ward round the clock.

Periodic Maintenance

- Painting of building - every 3 years.
- Upkeep and replacement of furniture.

vii. Embankment slope / ROW retaining wall and ROW railing

Routine Maintenance

- Side slopes shall be repaired as and when required
- Rain cuts shall be repaired as and when required
- ROW railing precast panels if damaged or missing shall be replaced as and when required.

Periodic maintenance

- For retaining wall and ROW railing exposed faces to be painted with anti-carbonation paint once in every three years.

viii. Footpath

Routine Maintenance

- Cleaning of footpath on weekly basis
- Replacement of footpath kerbs, water table, and lacquered finish paver blocks as and when required.
- Cleaning / washing of kerb stones once in a month.
- Periodic Maintenance
- Painting of kerbs with enamel paint twice in a year

ix. Median and Newjersy barrier

Routine Maintenance

- Cleaning/ washing of Kerbs and Newjersy barriers on once in a month.
- Replacement of kerbs and Newjersy barriers as and when required.
- Periodic Maintenance
- Painting of Median and Newjersy barrier with enamel paint twice in a year

x. Road Furniture

Road furniture shall consist of road markings, overhead signs, gantry signs, bus stops along with bays and pedestrian guard rails/safety barriers etc.

- Cleaning of all traffic signs and markings to keep them visible and in correct alignment and position.
- Any damage to traffic signs which reduces or threatens to reduce full and clear visibility shall be rectified within twenty four (24) hours of its occurrence.
- Any part of traffic signs damaged due to weathering, corrosion, vandalism or any other cause shall be replaced by the Contractor within seven days.
- Any mandatory sign including those for traffic safety, damaged beyond repair shall be replaced within 2 days and all other signs replaced within 3 days.
- Appropriate devices for measuring the luminosity and reflectivity shall be used to check visibility and reflectivity of signs, delineators and markings. These shall be replaced by similar material if the reduction in the level of these two requirements falls below 50% of the original level.
- Lane marking with thermo-plastic paint shall be carried out soon after any overlay / renewal coat is provided.
- Safety Barriers and Pedestrian Guard Rail

The Crash Barrier (W Type) / M S railing replacement/ repairs incase of damage due to impact/ theft etc. Metallic painting as and when required.

Concrete Posts and Steel Beam Guardrails will require repairs or replacement from impact damage caused by vehicles. Periodic cement/ oil painting once every year.

xi. Street lighting, Aviation Beacon and electric fittings / fixtures of Bridge, Landscaping, C.C.T.V. Cameras etc. wherever applicable.

Routine maintenance

- Cleaning of street light poles, light fixtures / fittings once in a month.
- Replacement of consumables such as bulbs, tube lights etc as when required.
- Repairs to fixtures / fittings as and when required.
- Repairs to painting of electric poles, other fixtures / fittings etc. as and when required.

Periodic maintenance

- Replacement / repairs of electric cable, ducting, wiring as and when required.
- Painting to electric poles, other fixtures / fittings every three years.
- Timely payment towards the electricity bill for entire bridge, toll station, control room and exhibition center, etc.

xii. Road markings

Routine maintenance

- Cleaning of thermo plastic marking, patch painting of other markings as and when required.

Periodic maintenance

- Replacement of thermo plastic lane marking every year.
- Replacement of other road markings twice a year.
- Replacement of fixtures such as cat eyes, tiger eyes, carboys, bollards as and when required.

xiii. Expansion Joint

Carrying out Annual Inspection every year and General Inspection every 3 year.

Annual Inspection

- Condition of the elastomeric profiles, sliding surfaces where accessible, gap width (in the first 10 years only), corrosion protection (paint), cover plates (foothpath, fascia), adjacent pavement (nosing).
- Evidence of noise
- Water damages on the concrete structure below the joint.

General Inspection

- Condition of the welding, bolts, sliding springs and control springs (if accessible).
- Determination of the opening and closing capacity
- Noising

The result of the general inspection shall be recorded on the on the inspection report sheet.

xiv. Disc Bearing

Inspection:

Suitable easy access to the bearing have been provided and maintained. Provision to be kept in the substructure & superstructure for jacking it up in case the bearings get damaged beyond repair and is required to be replaced.

Frequency of Inspection:

Inspection of the bearings at site is required from time to time to ascertain the performance of the same. Periodic normal maintenance of the bearings like keeping the surrounding area clean and dry, repainting of exposed metallic parts should be carried out in order to ensure better performance and longer life of the bearings. The bearings are required to be inspected at an interval of one year for the first six years and the bearings should be examined carefully after unusual occurrence like unusual heavy traffic, earthquake, cyclone, flood, etc. Necessary records of inspection should be maintained.

Maintenance:

- Disc Bearings are maintenance free due to its unique features and supporting quality assurance system and thereby eliminate considerable effects caused by extreme atmospheric or adverse environment condition and /or unforeseen events/
- Keeping surrounding area of the bearings clean and dry.
- Cleaning of bearings to keep free from deposition of salt and debris, dust or any other foreign material on or adjacent to the bearing once in a year.
- The exposed nonworking metallic surfaces of the bearing shall be painted once in every three years as per the following :
 - i. Clean manually the surfaces and remove grease, oil, salt and other contaminates.
 - ii. Apply a coat of AKZONOBEL Interseal-670 HS by brush as per paint manufacturer's instruction (data sheet for Interseal-670 HS enclosed for ready reference.)

5.3 The supervision of Toll Operations:

- To collect toll collection and traffic details from the O& M contractor and submitting it to MSRDC after scrutinizing it.
- To collect traffic data and process it for profit sharing as specified in the Agreement of O& M contractor.

- To conduct toll audit once a year considering following points :
 - Comparative scrutiny and variance analysis of the revenue collected during the period of system audit vis-à-vis the revenue collected in the last 7 days (same duration preceding the toll system audit) to see whether it is more or less than what should be expected as user fee collection.
 - The traffic data with analysis and video shall be submitted to MSRDC in electronic storage media viz. portable HDD/ Pen Drive/ DVD media along with the reports.
 - Determine and list out possible areas of concern comparing and analyzing the traffic data obtained through video graphic traffic count vis-à-vis data obtained from the toll system in operation.
 - Determine whether the toll system has adequate physical security controls to prevent unauthorized access to the data
 - Review operating systems, application software and toll system equipment in operation along with its integration.
 - Ensure that toll system computers have no traces of unauthorized program code/script/triggers or unwarranted applications either installed / hidden in the toll systems which interact with the normal processing of the toll system with the intent to produce/ cause harm / manipulate the system information.
 - Review the toll system security policies, procedures and practices. This will include physical security, logical security, application security, database security, and network and application security.
 - Verify that all toll system equipment including all support systems (AVCC), are working properly and effectively. Toll system equipment inspection may also be required to assessed for damages and malfunctioning including system downtime records/log and equipment performance measurements.
 - Review the toll system's disaster recovery plan and back up procedures.

6.0 TERMS

The Consultant will be responsible to carryout work as given under various phases listed above.

- 6.0.1 The consultant shall be required to carry out the proof checking of the designs submitted by the contractor & scrutinize the same in accordance to applicable codes and standards and sound engineering practices and approve or disapprove the same. The proof checking

- shall be completed in the time frame such that the contractor's operations are not adversely affected.
- 6.0.2 Supervision of civil works shall be responsibility of qualified personnel with satisfactory experience in carrying out works in size and nature to the project to be supervised. Contractually, consultant shall be "Engineer" on the project. He shall administer works contract and control the quality of Operation & Maintenance works.
- 6.1 The program of reviewing / checking and approving the working drawing prepared by the Contractor shall be as per the contract.
- 6.2 The Consultant shall exercise powers and authority as well as perform all the duties, liabilities, function and obligations as "Independent Engineer" except for the following for which the Independent Engineer shall submit proposals for obtaining specific approval of the competent authority in MSRDC, before taking any action. In general, any matter involving financial liabilities on the Employer shall be referred to the Employer.
- 6.3 The Independent Engineer shall obtain specific approval of the competent authority in MSRDC in respect of
1. Granting extension to Contract Period (if any)
 2. Approving subletting of the work
 3. Approving compensation to be paid to the Contractor
 4. Except expressly stated in the contract, the Independent Engineer shall have no authority to relieve the Contractor of any of his obligations under the contract.
- 6.4 The consultant shall set up a site office nearby the site preferably near the Rajiv Gandhi Sealink under the Resident Engineer who will be in constant charge for the direction and control of the work.
- 6.5 The Resident Engineer shall visit the work site personally from time to time and whenever his services are required for ascertaining that the work is being carried out satisfactorily and also for studying the problems on the spot and giving necessary clarification / directions.
- 6.6 The consultant shall engage and retain for the purpose adequate supervisory staff as suggested from time to time by client. The supervisory staff shall consist of skilled and experienced technical men and the consultant shall undertake to keep a qualified and experienced Site Engineer who shall always be in charge of the works and be available on the site until the project is completed. The minimum manpower deployment shall be generally as specified in the bid document / TOR. However, adjustment in the requirement can be considered by MSRDC depending on the progress of the work.

- 6.7 The Resident Engineer available at site shall receive instructions on behalf of the consultants, which may be given from time to time by the Inspecting Officers of MSRDC.
- 6.8.1 The consultant shall ensure that, all observations made during the periodic visits, by various Inspecting Officers about the quality of work are attended by the contractor.
- 6.8.2 Visits
(i) Every day by Resident Engineer
- He will issue work memos / inspection report after each visit and issue copies to the contractor and E.E. / S.E, MSRDC.
Apart from above site visits the Resident Engineer shall be available at site office.
- 6.9 The consultant shall deploy staff, transport and equipment at the site of Work for supervision and exercising adequate and constant day to day technical supervision over the operation & maintenance activities including checking requirement of material and their procurement in time, checking their quality conforming to approved specifications and accepted standards.
- 6.10 The Consultants shall provide and maintain at their cost, their own vehicles required for use in connection with their assignment.
- 6.11 As per construction contract the contractor is supposed to provide office accommodation for the Independent Engineer.
- 6.12 The Consultants will be fully responsible in their capacity as Independent Engineer for the soundness and correctness of all works executed assuming responsibility of soundness of design and of the conformity of the work to the approved plans, design and specifications and conditions of contract applicable to the subject work.
- 6.13 Any approval / concurrence by the MSRDC to consultant's instruction, preliminary or detailed engineering, design, drawing and estimate shall in no way absolve the consultant to ensure sound construction and performance as per the specification of the scheme as a whole. The appointment of any engineering staff by the client at the site of the work shall not in any way diminish the responsibility of the consultants in this respect.
- 6.14 The consultant shall not have any objection to the client maintaining any civil engineering staff (the office space for whom will be provided separately by the client) at its cost at the site of works to carryout works and duties allotted to them by the client in respect of works at the site of other areas. In this case during inspection of such

authorities the consultant shall produce necessary records, drawing, documents etc. to the inspecting officer.

- 6.15 The Consultants shall not have any objection to the works being inspected by any other consultant, Independent Engineer or any other agency appointed by the Client for inspection of the same.
- 6.16 The Consultants shall certify that the work executed by the Contractor are fully consistent with the type, quality and specifications prescribed in the agreement entered into with the specifications prescribed in the agreement entered into with the contractor(s). In the matter of approving such works, the consultant shall conform to the rules and instructions issued by the MSRDC from time to time. The consultants shall be deemed to guarantee the correctness, scrutinized, checked or issued by them, as to quality of the work concerned. The MSRDC or its authorized representative(s) may also check a certain percentage of the measurements if felt necessary.
- 6.17 The Consultant shall supervise the work and also record measurements of hidden items to be done jointly by the consultant's staff in the presence of the contractor or his authorized representative. The consultants shall affix their signature as a token of their check.
- 6.18 The consultant shall approve the Quality Management Plan prepared by the contractor and ensuring compliance with its requirements during the operation & maintenance of the work. Additional actions listed in the following scope for generating such Quality Management realization have been indicated hereunder. Each Quality Control requirement needs to be stitched into the overall Quality Management Plan to realize a Total Quality Control Management function. The Quality Management Plan consistent with the Construction Contract shall consist of the following points; however the list is not exhaustive.
- A) Prepare a manual containing Quality Management Plan including Quality Control procedures and check lists for approval to materials and methods of maintenance and a system for maintaining records of work and test results.
 - B) Following approval to the Quality Management plan by MSRDC, the consultant will instruct the contractor in its day to day implementation including advising on the organization of laboratory and equipment requirement's at site and demonstrate the different work procedures and maintenance of records.
 - C) Checking on the contractor's construction methods, sequence of operations and temporary works needed for ensuring quality of output and safety during constructions to the extent such works arise.

- D) Monitoring the implementation of the Quality Management System and various other suggestions made by the Officers of the MSRDC, by the periodical visits compiling and analyzing the test results and advising on necessary remedial / corrective action in time.
- E) Furnishing monthly reports on monitoring of Quality Control to the MSRDC covering the above-mentioned aspects and any other important points relevant to quality of work and the extent of his inputs.
- F) Submitting a final report on quality aspects of the entire job on its completion. Some of the subtasks to be included, but not limited to, under the above stated scope of the Quality Management plan are:
- (i) To prepare comprehensive checklists for each item of the work and guidelines for quality control / quality assurance operations. The Quality Management Plan to be prepared by the Contractors will include the following:

a)	Materials, equipment, workmanship and end products	Type of tests and frequency at source and at site as available.
b)	Degree of quality control measures	Acceptability criteria as per tender specifications
c)	Quality check	Rectification / corrective actions surveillance, review technical appraisal, performance.
d)	Records, reporting and documentation	Formats for records keeping reporting and analyzing

The consultant will also arrange to keep one copy of QC/ QA manual of the MSRDC on the site for reference. The instructions contained in the QC/ QA manual would be applicable to the present assignment.

- (ii) To formulate and implement Management Information / Reporting formats, Progress reports, financial forecasts, Data sheets, Registers etc.
- (iii) To analyze the various results of laboratory and field tests carried out, prepare and submit reports to MSRDC and suggest remedial measures, if any, to remedy shortcomings.
- (iv) Approving, checking the centering and shuttering and other temporary works proposed to be erected by the contractor.

- (v) To check and approve all items of work before commencement. For all-important items of work like concreting operations, the consultant's Engineer shall supervise the operation throughout.
- (vi) To advice and approve construction methods, sequence of operations and program for work proposed by the contractor.
- (vii) To ensure that all the work is in line, level and verticality and the finishing are as per the approved drawings & standards.
- (viii) To develop a format of "Workmanship Index" in respect of all primary activities carried out for each items of work, so that qualitative assessment of the project can be generated to facilitate acceptance criteria for reference and records.
- (ix) Independent Engineer to also attend site inspections and meetings with officers of MSRDC, etc. whenever so requested.
- (x) To carryout joint principal inspection (detailed inspection) at the end of the consultancy contract period and advising on remedial measures for defects, if any, discovered.
- (xi) To submit Daily (during monsoon only), weekly & monthly progress reports covering physical progress against targets, financial forecast, analysis of test results and suggestions for corrective actions, quality aspects compliance with tender specifications / provisions and suggestions for wiping out back-log if any. The progress reports shall also include the Consultants inputs on the job for the period of reporting and any other observations.

6.19 The Consultants would be responsible for checking the materials, workmanship and soundness of the structures keeping in view Quality Assurance checks and safety standards. Consultants shall submit monthly progress reports as per the directions of the MSRDC and should also submit recommendations in regard to the variation if any with supporting site records and also supervise field tests on materials, structures etc. in accordance with predetermined schedules. The Consultants shall also maintain adequate records to ensure proper verification of the work done for working out cost in case of disputes, claims, non-performance of the contractors, including recommendations of extension applications, variation statements, Quality and Quantity checks for all items etc., in forms prescribed by MSRDC. The consultants should also hold periodic review meeting with the MSRDC and contractors and co-ordinate follow up actions. The

Consultant should depute adequate and qualified staff for execution of the project. The Consultant should maintain staff attendance register at site indicating arrival and departure at site and shall be made available for inspection when requested by MSRDC.

- 6.20 The consultant shall exercise complete day-to-day supervision during operation & maintenance activity period of the assigned work, ensuring quality control in accordance with tender stipulations, specifications, drawing and site conditions. The quality control will be exercised at all stages viz. Approval of materials thereof in proper proportion including prescribing norms for test periodically and acceptability criteria and workmanship at all stages of execution of individual items of work.
- 6.21 The Consultant shall maintain necessary site records & obtain data in support of the same. The Consultant shall ensure all field and laboratory tests on materials of construction as well as partially or completely erected structures etc. are carried out by the contractor and maintain adequate records thereof.
- 6.22 The consultant shall suggest to client modifications, if any, due to site conditions and advising regarding cost variation, on account of extra items and excesses on the contract.
- 6.23 The consultant shall undertake complete administration and management of contract till expiry of the consultancy contract & settlement of claims of the contractor during that period.
- 6.24 The consultant shall scrutinize, As built" drawing obtained from the contractors of all works carried out.
- 6.25 The consultant shall advise the client by periodical inspection during the Consultancy Contract period on maintenance requirements, if any.
- 6.26 The consultant shall undertake verification of work on completion.
- 6.27 The Consultant shall carry out verification by taking and recording line, levels, joint measurement/s of the work done and finalization of records, claims as per the items and conditions of Contract Agreement and for working out the quantities, cost of work done for future records & use in case of claim, disputes, complaints etc. The consultant shall provide a statement of claims/disputes, if any on a monthly basis.
- 6.28 The consultant shall advise the client with regard to variations claim / dispute, if any till the cases are settled. The Consultant will also be required to brief the legal adviser / legal consultant of the MSRDC on cases pertaining to the work.

6.29 The Consultant shall render to the client every assistance, all technical services, guidance or advice on any matter concerning the technical and engineering aspects of the Project including periodical interaction and also through invited experts on specific subjects with client's prior approval.

6.30 Meetings with Clients

Meeting with Executive Engineer, MSRDC by Resident Engineer once in a month and frequently as and when required

6.31 To take all actions to ensure smooth and safe running of traffic.

7.0 ADDITIONAL SERVICES

The consultant shall, if so required by the client, provide the services as specified below as additional services to those specified above.

- a) Preparations of reports or additional contract documents for consideration of proposals for carrying out of additional work.
- b) Any other specialist services by the Independent Engineer or other specifications as may be agreed upon not included in the contract.

All additional services other than minor extras without materially affecting the scope of work will be authorized by the client at rates or on man month basis and under conditions to be mutually agreed prior to the signing of the contract.

8.0 STAFFING REQUIREMENT

The following minimum supervisory staff for supervision of work shall be provided during consultancy contract.

Operation, Maintenance & Toll Collection Period

i)	Team Leader	01 No.	Part Time
ii)	Resident Engineer	01 No.	Full Time
iii)	Site Supervisor (Technical)	01 No.	Full Time

9.0 SERVICES DURING DEFECT LIABILITY PERIOD

Not Applicable

10.0 REPORTS DURING SUPERVISION OF CONTRACT

The consultant will submit to the MSRDC the following reports:

- a) The Consultant shall submit the structural audit report within 30 days of work order.
- b) The consultant shall submit the comprehensive inspection report within 30 days from the date of work order.
- c) The consultant shall submit the maintenance manual got prepared from the contractor duly approved.
- d) The consultant shall submit the Inception Report within 15 days of date of Work Order mentioning the present status of the project facility.
- e) Daily report in Monsoon period on every day.
- f) Monthly Progress report due within the 5th day of each calendar month.
- g) Minutes of regular meetings with contractor, MSRDC etc.
- h) A Completion report of Consultancy Services, two months ahead of the actual end of the assignment, in the scope and format required by the client as follows:
 1. Final Report in hardbound and soft format – 3 copies.
 2. All approved working drawings prepared in the three Volumes with hard copy and soft copy.
 3. Important data stored in computer diskette / CD.
 4. Quality Control Test Reports, Statistical Analysis of the Q.C. test carried with standard deviations whenever relevant.
 5. Strip plan showing utilities laid during the contract period.
 6. Report mentioning the owner of utilities, location, chainages, depth at which the utility is located, copy of NOC issued by MSRDC to lay the utility.
 7. Any other report dealing with the services as requested by the MSRDC.
 8. Any other information like speed breaker provided or removed any other street furniture added etc.

11.0 PAYMENT TO PMC

As Per negotiated financial proposal of the consultant and as per the terms and conditions of payments listed in Appendix-”C”.

12.0 TIME PERIOD FOR SERVICES

Time period shall be as per data sheet.

Sr. No.	Description	No. of days from the date of commencement
1	Consultants mobilization	5 days from the date of work order to the Contractor
2	Inception Report	15 days from the date of work order to the Contractor.
3.	Structural Audit Report	30 days from the date of work order to the Contractor.
4.	Comprehensive Inspection Report	30 days from the date of work order to the Contractor.
5.	Maintenance manual	30 days from the date of work order to the Contractor.
6.	Monthly report	30 days from the date of work order to the Contractor.
7.	Supervision of Operation and Maintenance of Rajiv Gandhi Sealink	42 months from the date of work order to the consultant.

13.0 PENALTY

The consultant will indemnify MSRDC for any direct loss or damage, which accrue due to deficiency in services. Penalty shall be imposed on the consultants for poor performance / deficiency in services as expected from the consultant as per **Appendix-”C” of Volume-III**.

SECTION IV

Name of Work: - Bid for Appointment of Consultant to act as Independent Engineer for the work of Maintenance of Rajiv Gandhi Sea Link with Operation of Toll Plaza & Collection of Toll on Upfront Basis

APPENDIX - B

Personnel, Equipment, Facilities and Services of Others to be provided by the Clients

1. To facilitate smooth conduct of the Consultancy services, MSRDC shall offer due help viz.

- i. To vest the team with the authority to carry out supervision, checking / monitoring of the work as per items mentioned in the scope of study but not limited to them.
- ii. To assist in obtaining permission from respective departments for entry into private properties or restricted areas for services.
- iii. Issue of authority / recommendation letters.
- iv. Provide Consultants, Sub Consultants and the personnel with the work permits and such other documents as shall be necessary to enable the Consultants, Sub Consultants or Personnel to perform the services.

2. Access to Land

The MSRDC warrant that the Consultants shall have, free of charge, unimpeded access to all land in respect of which access is required for the performance of the services.

3. Site Office & Furniture

As per Appendix- “A”

SECTION IV

Amendments to Provisions in Volume I

Amendments to provisions in Volume I to be included are as below:

AMENDMENT NO. 1

Deleted