

BUREAU OF INDIAN STANDARDS

Draft Indian Standard (WC Draft)
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रखरखाव और मरम्मत सेवाएँ - आवश्यकताएँ

MAINTENANCE AND REPAIR SERVICES – REQUIREMENTS

ICS 91.010.01, 91.010.20, 91.080, 93.010

Post Construction Services Sectional Committee, SSD 22

FOREWORD

(Formal clause will be added later)

Maintenance and Repair services play a critical role in ensuring the safety, efficiency, and sustainability of civil engineering structures. Maintenance and Repair is undertaken to keep, restore or improve the facilities of a structure which include civil, electrical, mechanical, plumbing, horticulture and landscaping services to keep the structure in good and acceptable conditions to sustain its utility and value. The objective of the maintenance and repair is to ensure safety of the occupants or public at large, to preserve the structure and its systems in good operating and habitable conditions, including upgrading, renovating, rehabilitating, or retrofitting the structure or services to the latest requirements, specifications and standards.

The maintenance and repair services include routine maintenance, periodical maintenance and repairs, special repairs, rehabilitation and retrofitting, renovation and restoration services along with materials used as per the requirements of the owner to keep the structure in good, habitable, safe and aesthetic conditions. This may require selection of the specialized agency providing appropriate maintenance and repair services, preferably based on the experience available with the agency of such services. Therefore, Appointing Authority should carefully select maintenance and repair services agency using an appropriate selection system.

The intent of this standard is to:

- a) define the maintenance and repair services;
 - b) to bring transparency, uniformity, and inclusiveness in the qualification requirements and selection of maintenance and repair agency;
 - c) to suggest the fair practices to be followed by the maintenance and repair agency;
 - d) to suggest the workers' requirements for skilled jobs;
 - e) to suggest the system to be followed for selection of the maintenance and repair agency;
- and

- f) to suggest the qualification and experience of the technical personnel of maintenance and repair agency.

This Indian Standard defines the scope and responsibilities of various stakeholders, different systems of selection of maintenance and repair agency, and minimum qualification and experience of the technical personnel appointed by the maintenance and repair agency. However, users of such services may take appropriate decisions based on the nature, importance, cost, and scope of work. The intention of this standard is not to replace the registration and licensing system but to guide and bring uniformity in selection process of the maintenance and repair agencies and to ensure the required services.

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MAINTENANCE AND REPAIR SERVICES – REQUIREMENTS

1 SCOPE

This standard covers the requirements for all types of maintenance and repair services of civil engineering structures and its systems during post construction stage. It also includes the roles, responsibilities, qualifications and experience as well as deliverables expected from all the stakeholders.

NOTE — Housekeeping services are not covered in the scope of this code, however the maintenance and repair agency can also provide housekeeping services on the demand of the Appointing Authority.

2 NORMATIVE REFERENCE

The standard given below contains provisions which, through reference in this text, constitutes provisions of this standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of this standard:

<i>IS No.</i>	<i>Title</i>
IS 18299 : 2023	Structural Design and Proof Checking Consultancy Services for Structures — Requirements

3 TERMINOLOGY

For the purpose of this standard, the definition given in IS 18299 and the following shall apply.

3.1 Appointing Authority (AA) — Appointing authority means the authority responsible for appointment of the service provider(s) such as consultant(s), maintenance and repair agency.

NOTE — AA may be the owner or any other authority authorized by the owner.

3.2 Asset Management Consultant (AMC) — An agency or the consultant appointed to manage the maintenance and repair works. The owner may either perform the role of AMC himself or appoint AMC.

3.3 Maintenance and Repair Agency — Maintenance and Repair Agency means a contractor appointed to execute maintenance and repair works.

3.4 Maintenance Manual — It is a comprehensive guide to operate and maintain a structure and its systems to keep them in acceptable conditions of an organization.

3.5 Owner — The owner means an individual or organization that owns the built asset and engages service provider(s) such as consultant and Maintenance and Repair Agency.

3.6 Periodic Maintenance and Repair — Periodic Maintenance and repair are the repairs carried out periodically of a fixed period in the structure or its systems.

3.7 Rehabilitation — Structural intervention to bring the structure or its components back to its original design level of performance including strength, serviceability and durability.

3.8 Renovation — Renovation means the up-gradation works not involving increase in Floor Area Ratio/Floor Space Index and rehabilitation and retrofitting. Such works are taken up to enhance the life or functionality or aesthetics of utilities and components of the structure.

3.9 Renovation Consultant — A consultant appointed to provide consultancy services related to renovation works. In case, the maintenance and repairs require repair, rehabilitation, retrofitting and/or renovation, a single consultant may also be appointed.

3.10 Repair — Structural Intervention to prevent further damages/deterioration to the distressed structural members, restore functional performance and/or enhance visual appeal of the structure.

3.11 Repair and Maintenance Services — Repair and maintenance services are the services carried out to keep, restore or improve the facilities of a structure in good and acceptable conditions to sustain its utility and value. The services include Routine maintenance, Periodic Maintenance and Repairs, Special Repairs, Renovation, Restoration, and Rehabilitation and Retrofitting.

3.12 Repair, Rehabilitation and Retrofitting Consultant — A consultant appointed to provide consultancy services for repair, rehabilitation, and retrofitting of the structure. Appointing Authority may appoint a repair, rehabilitation and retrofitting consultant with other maintenance and repair works consultant.

3.13 Restoration — Restoration works are the repair works carried out to bring the structure back to the original condition with regard to function, aesthetic and performance to the best extent possible.

3.14 Restoration Consultant — Restoration consultant is a consultant to provide consultancy services related to restoration works of heritage and monumental structures.

3.15 Retrofitting — Structural intervention to enhance the strength, serviceability and durability of a structure or its components to an improved level of performance, above the original design level of performance.

3.16 Routine Maintenance — Routine maintenance means the minor routine works carried out on the day to day basis for keeping the structure and its systems functional, safe, serviceable, habitable and in operational conditions such as removing chokeage of drainage pipes, restoration of water supply, removing and replacement of leaking water supply fittings, broken sanitary fittings / fixtures, replacement of floor tiles, repair of minor doors, windows or their hardware fittings, replacement of glass window panes, minor patch repair to plaster, replacement of faulty switches, sockets, fittings, repair of fans, replacement of wiring in small portion, watering of plants, lawn mowing, hedge cutting, and sweeping of leaf falls in case of buildings, potholes patching in roads.

3.17 Service Centre — Service centre is the office where the complaints related to maintenance and repairs are received/lodged digitally/online/manually, the workers to whom the complaints assigned, records kept of the complaints attended and carried over, inventory management, feedback on customers' satisfaction and generation of MIS (Management Information System) reports etc. The functions of the service centre may be performed manually, digitally, online or in combination through available information systems.

3.18 Special Repair — Special Repair means the works carried out for major repairs and replacement of items of the structure and its systems, to prevent undue wear and tear as well as to restore it back to its original condition to the extent possible such as water proofing treatment to the roof, repair of internal roads and pavements, replacement of flooring, skirting, dado and plaster, replacement of doors, window frames, shutters and fittings, replacement of water supply and sanitary installation, re-grassing of lawns with or without replacement of earth, completely uprooting and removing hedges and shrubbery. Special repairs are thus the corrective maintenance and repairs however such repairs can also be taken up as pro-active maintenance.

3.19 Specialized Maintenance and Repair Works — Specialized maintenance and repair works include rehabilitation, retrofitting, renovation, restoration and upgradation. Maintenance and repair agency shall not undertake specialized maintenance and repair until and unless qualified to carry out such works and carried out under the guidance of repair, rehabilitation and retrofitting consultant.

3.20 Utility Services Consultant – A consultant appointed to provide consultancy services for maintenance and repair of utility services.

4 ROLES AND RESPONSIBILITIES

4.1 Roles and responsibilities of the Appointing Authority (AA) are as given in the following:

- a) Clearly define the scope of work, qualification criteria if any, contract conditions and items required for the design, supervision, and execution of work, as per the requirements, for the consultant(s), AMC and Maintenance and Repair agency based on their qualifications and past experience. AA may appoint a single eligible consultant or different consultants for the specialized maintenance and repair works such as renovation, utilities upgradation, rehabilitation and retrofitting, and restoration. AA may refer maintenance manual prepared during execution of work while preparation of the scope of maintenance and repair, and make part of the contract(s) entered with consultant(s)/AMC/maintenance and repair agency as the case maybe;
- b) Get declaration from consultant(s) and/or maintenance and repair agency regarding their blacklisting-and/or debarment, during last 5 years;
- c) Provide available reliable data, details, and drawings related to the assets to be maintained and repaired;

- d) Allow the bidders of maintenance and repair services to visually inspect the site, see the available drawings, and inspect the site for carrying out the maintenance and repair works;
- e) Conduct pre-bid meeting(s) to address queries of the prospective bidders and get any other additional information or details required;
- f) Enter into the written MoU/contract with the AMC/consultant(s)/ maintenance and repair agency(ies) as the case may be;
- g) Obtain or assist in getting the approvals/permissions from the authorities as provided in the contract;
- h) Arrange the budget and make the payment to the consultant(s)/ Maintenance and Repair agency as per the contract provisions;
- j) Monitor the services and hold co-ordination meetings with the consultant(s), AMC and Maintenance and Repair agency from time to time; and
- k) Consider abnormality or variation in the quantities particularly related to structural damage and give decision to take up their repair before periodical maintenance and repairs.

4.2 The roles and responsibilities of AMC are as given in the following:

- a) Enter into a written explicit agreement/MoU with the AA defining the scope of work, and terms and conditions for performing the assignment;
- b) Coordinate with the consultant(s) for issue and clarifications of the drawings and provide relevant details for performing the assignment;
- c) Deploy adequate and appropriate supervisory technical personnel for supervision of the maintenance and repair work;
- d) Intimate any abnormality or variation at the site from the provisions made in Bill of Quantities to the consultant and AA, as the case maybe;
- e) Ensure the work is carried out as per the Good for Construction (GFC) drawings issued for carrying out the maintenance and repair works;
- f) Ensure that the technical personnel and workers of Maintenance and Repair agency possess the minimum required qualification and experience as specified in the contract and required at the site;
- g) Prepare details of expected deliverables and time schedules;

- h) Ensure that the Maintenance and Repair including the materials, and workmanship are as per the specifications provided in the contract;
- j) Ensure implementation of the Health, Safety and Environmental provisions at site;
- k) Ensure deployment of skilled workers as per the requirements of the work mentioned in contract through the Maintenance and Repair agency;
- m) Ensure timely rectification of the defective work;
- n) Ensure submission of progress and status reports to the AA as required;
- p) Prepare variations including special interventions required during execution and inform to the consultant/AA;
- q) Get “As maintained drawings” prepared from the maintenance and repair agency incorporating the changes and submit to AA;
- r) Ensure communication to the Maintenance and Repair agency regarding drawings for the execution of work at site and maintain evidence of actual execution of various activities/items of work as per the contract entered between AA/AMC and the Maintenance and Repair agency;
- s) Ensure timely preparation of bills for the payment to the Maintenance and Repair agency and/or the consultant as the case maybe;
- t) Advise the AA on technical and budgetary matters related to the work;
- u) Record and issue completion certificate after satisfactory completion of work;
- v) Ensure having no conflict of interest with the consultant or Maintenance and Repair agency(ies); and
- w) Get acquainted with Laws, and Rules and Regulations and ensure their implementation.

4.3 The roles and responsibilities of the consultant(s) specified in **3.9, 3.12, 3.14** and **3.20** above, are given in the following:

- a) Enter into a written explicit agreement with the AA defining the scope of work and terms and conditions for performing the assignment;
- b) Engage adequate and appropriate technical personnel for performing the assignment;
- c) Visit the site, assess the repair and maintenance items of the work through necessary tests, prepare the report and submit to AA for approval;

- d) Propose materials and methods of construction, and relevant contract conditions considering functional requirements, quality and safety requirements, and constraints with special construction sequencing to AA/AMC as the case may be, for incorporation in the bid document of Maintenance and Repair Agency;
- e) Assist AA in the preparation of bid document for selection of Maintenance and Repair agency(ies);
- f) Provide design and GFC drawings for execution of maintenance and repair work, before commencement of execution. In case, changes required due to site conditions, the drawings shall be revised well before the scheduled execution;
- g) Provide any other details, information, and clarifications to AA/AMC;
- h) Ensure timely communication to the AA/AMC regarding the designs and drawings during execution of maintenance and repair work;
- j) Ensure the accuracy and completeness of the design and drawings as per codal provisions, guidelines, and best practices of the industry;
- k) Inspect the site at the stages of the critical activities to ensure exact implementation of the design and drawings;
- m) Ensure having no conflict of interest with the AMC or Maintenance and Repair agency(ies);
- n) Ensure compliance with the observations raised by the AA;
- p) Maintain confidentiality throughout; and
- q) Remain responsible for accuracy and correctness of the issued designs and drawings.

4.4 The roles and responsibilities of the Maintenance and Repair agency(ies) are as given in the following:

- a) Enter into a written explicit contract with the AA/AMC as the case may be, defining the scope of work and terms and conditions for performing the assignment;
- b) Deploy adequate and appropriate supervisory technical personnel and workers for carrying out the maintenance and repair work;
- c) Ensure that the technical personnel and workers possess minimum required qualification, experience and working licenses as specified in the contract and required at the site;
- d) Prepare details of expected deliverables and time schedules and submit to AMC for approval;

- e) Ensure that the quality of materials, and the workmanship are strictly as per the specifications of the items and the contract provisions;
- f) Ensure overall quality during execution of the maintenance and repair works;
- g) Make arrangements and implement Health, Safety and Environment provisions at site and training of the workers, if required;
- h) Ensure deployment of skilled workers and requisite tools and plants as per the requirements of the maintenance and repair work;
- j) Coordinate with the AMC for issue and clarifications of drawings;
- k) Arrange the samples of materials and preparation of mock ups and take approval of AMC;
- m) Ensure the work is carried out as per GFC drawings;
- n) Maintain evidence of actual execution of various activities/items of work as per the contract, and submit the bills to the AMC;
- p) Get the materials tested from the reputed laboratory and maintain their record at site;
- q) Submit details of variations and intimate to AMC well in time. In case, special interventions are required for specialized repair and maintenance, the same will be brought out in the notice of AA/AMC;
- r) Ensure workers' welfare measures including basic amenities like separate toilet facilities for male and females;
- s) Engage only certified skilled workers for the specialised items of works;
- t) Ensure compliance of Laws, Rules and Regulations related to the execution of work, Health, Safety & Environment (HSE) and other welfare measures;
- u) Ensure timely rectification of defective work;
- v) Ensure submission of progress reports to the AMC as required;
- w) Ensure timely preparation of bills and submission to the AMC;
- y) Ensure payments to his sub-contractors, associates, technical and supervisory personnel, workers and vendors in time;
- z) Maintain cleanliness at site and ensure removal of garbage/malba on daily basis from the site;

- aa) Hand over clean site free from stains to AA/AMC;
- bb) Prepare “As maintained” drawings incorporating changes in the service drawings and hand over to AA/AMC; and
- cc) Ensure availability of adequate physical and financial resources to execute the maintenance and repair work.

NOTE — The functions mentioned in the Role and Responsibilities may be carried out manually or digitally as per available resources.

5 SELECTION SYSTEM

5.1 Selection process for selection of Asset Management Consultant (AMC), Maintenance and Repair Agency or Consultants are given in the following:

- a) *Least Cost Selection (LCS) System* — LCS is least cost selection method wherein successful bidder is selected based on the least cost quoted by the bidder for the work, for example – single bid item rate contract and percentage rate contract system. AA may use it for small maintenance and repair works, and non-specialized works;
- b) *Quality cum Cost Based Selection (QCBS) System* — In QCBS, the successful bidder is selected based on highest score derived from weighted quality and cost scores, for example two bid (technical bid and financial bid) system of item rate, percentage rate or EPC contract system. AA may adopt it for selection of Consultants, and Maintenance and Repair agency for all types of maintenance and repair works; and
- c) *Quality Based Selection (QBS) System* — In QBS, the successful bidder is selected based on the highest score of the quality. AA may use it for highly specialized works, as per the policy of the organization.

6 QUALIFICATION AND EXPERIENCE

Minimum qualification and experience of the technical personnel engaged by the Maintenance and Repair agency is given in Table 1.

Table 1 Qualification and Experience of the Technical Personnel

(Clause 6.1)

Sl. No.	Nature of Work		Technical Personnel Required	Qualification and Experience of Team Leader	To be Considered a Specialized Work
(1)	(2)		(3)	(4)	(5)
i)	Routine, Periodic maintenance and repair and special repair	service	Depending upon quantum of work		No
	a) Without centre		a) AA to decide b) Yes	a) AA to decide	

	b) With service centre (for a premises as decided by AA)		b) Diploma in respective field with 5 years' experience or graduate in respective field with 3 years' experience for each service centre	
ii)	Renovation works	Depending upon quantum of work	a) In case of major work, Diploma in respective field with 5 years' experience or graduate in respective field with 3 years' experience for each service centre NOTE — AA will decide whether being a major work.	Yes
iii)	Repair, Rehabilitation and Retrofitting, and Restoration works a) Repair, Rehabilitation and Retrofitting works b) Restoration works	Yes	a) Diploma in respective field with 7 years' experience or graduate in respective field with 5 years' experience b) Graduate Architect/conservationist with 5 years' experience in restoration of heritage/monumental structures	Yes

NOTES

1 For specialized works, skilled workforce in respective field shall be engaged to perform skilled items.

2 For the work where license is required like electric license, the same shall be included in the qualifications of contractors/workers.