

SPECIAL CONDITION OF CONTRACT

MANDATORY PRELIMINARY STRUCTURAL ASSESSMENT, DETAILED INVESTIGATION AND REPAIR STRATEGY FORMULATION

The quantities, repair locations, strengthening provisions and retrofitting measures included in this estimate and BOQ are based upon preliminary visual inspection, limited condition assessment, preliminary investigations and test results made available by the Principal Client at the time of preparation of the estimate and tender documents. The quantities indicated herein are therefore tentative and indicative in nature and shall not be construed as the final extent of repair, strengthening or retrofitting works required for the structure.

The Contractor shall visit the site, satisfy himself regarding the age, condition, accessibility and extent of deterioration of the structure and shall be deemed to have considered the same while quoting his rates.

Prior to commencement of any repair, strengthening or retrofitting work under this contract, the Contractor shall carry out, at his own cost and under the direction and supervision of the Structural Consultant, a comprehensive structural condition assessment of the entire building.

The assessment shall include detailed distress mapping, crack mapping, corrosion mapping, leakage mapping, dampness mapping, delamination mapping, structural damage mapping and preparation of member-wise condition drawings covering slabs, beams, columns, walls, staircases, foundations and all other structural components.

The investigation programme shall include Non-Destructive Testing (NDT), Semi-Destructive Testing (SDT) and Destructive Testing (DT), wherever directed by the Structural Consultant, in accordance with applicable Indian Standards including IS 13311 (Part 1), IS 13311 (Part 2), IS 516 (relevant parts), IS 456, IS 15988 and any other BIS standards or accepted engineering assessment methodologies considered necessary by the Structural Consultant.

The investigation programme may additionally include reinforcement scanning, cover meter survey, carbonation depth testing, chloride content testing, half-cell potential testing, concrete coring, laboratory testing of extracted samples, selective opening-up of structural members, exposure of reinforcement for verification of reinforcement condition, diameter and spacing, and any other investigation considered necessary by the Structural Consultant.

Based upon the findings of the above investigations, all structural members shall be classified according to their condition and distress severity. The complete findings, drawings, test reports and observations shall be submitted to the Structural Consultant for detailed review.

Upon review of the detailed assessment and investigation results, the Structural Consultant shall have full authority to revise, modify, add, delete or alter the repair methodology, strengthening scheme, retrofitting strategy, structural details, drawings, specifications, repair locations, quantities, materials, sequence of execution and any other technical requirement considered necessary in the interest of structural safety, serviceability, durability and long-term performance of the structure.

Accordingly, the final repair and strengthening scheme may differ substantially from the preliminary scheme contemplated during preparation of this estimate and tender documents. The Contractor shall execute the works strictly in accordance with the revised drawings, revised specifications and instructions issued by the Structural Consultant and Engineer-in-Charge from time to time during execution.

Trial panels, trial repairs, trial injections, trial grouting operations and field verification exercises shall be carried out wherever directed by the Structural Consultant to finalize repair materials, repair methodology, grid spacing, drilling parameters, hole diameter and depth, nipple or packer type, injection pressures, refusal criteria, material consumption, application procedures and acceptance criteria before commencement of full-scale execution.

No separate payment whatsoever shall be made for distress mapping, damage mapping, crack mapping, leakage mapping, corrosion mapping, delamination mapping, preparation of condition drawings, NDT, SDT, DT investigations, cover meter survey, reinforcement scanning, carbonation testing, chloride testing, half-cell potential testing, concrete coring, laboratory testing, selective opening-up, trial panels, trial repairs, trial injections, trial grouting, preparation of reports, submission of findings, coordination with the Structural Consultant, revision of repair layouts arising from investigation findings, or any other activity required for formulation and finalization of the repair, strengthening and retrofitting strategy.

The Contractor shall be deemed to have examined the tender documents thoroughly and fully allowed for all such requirements in the rates quoted for the respective BOQ items. All costs towards labour, supervision, instruments, testing equipment, consumables, temporary works, access arrangements, documentation, reports, approvals, coordination, transportation, overheads and incidental expenses required for carrying out the above activities shall be deemed included in the quoted rates of the respective contract items, and no additional payment, compensation, escalation, extra item or claim of whatsoever nature shall be entertained on this account.

The Contractor shall further not be entitled to any claim on the grounds that the actual repair quantities, repair locations, strengthening requirements, retrofitting details,

OTHER SPECIAL CONDITION OF CONTRACT (SCC-1)

AUTHORITY OF THE STRUCTURAL CONSULTANT

1. The Employer has appointed the Structural Consultant as the technical authority for all matters relating to structural investigation, rehabilitation, strengthening, repair methodology, structural safety and quality control of the works.
2. The Contractor shall comply with all written instructions, drawings, sketches, technical notes and site directions issued by the Structural Consultant during execution of the contract.
3. The Structural Consultant shall have full authority to interpret the structural drawings, repair specifications, rehabilitation procedures and technical requirements of the contract, and such interpretation shall be binding upon the Contractor.
4. In the event of any discrepancy between drawings, specifications, BOQ or site conditions affecting structural safety, the decision of the Structural Consultant shall prevail unless otherwise directed by the Employer.
5. The Structural Consultant may instruct additional investigations, opening-up of structural members, removal of finishes or exploratory dismantling wherever considered necessary to assess the actual structural condition.
6. The Contractor shall not commence any structural repair, strengthening, grouting, jacketing, FRP application, corrosion treatment or reconstruction without prior approval of the Structural Consultant.
7. The Structural Consultant shall have unrestricted access to the site, labour, materials, equipment, testing facilities and work records throughout the contract period.
8. The Structural Consultant shall have authority to reject any material, equipment, workmanship or completed work that does not comply with the Contract Documents or accepted engineering practice.
9. Rejected work shall be removed, rectified or replaced by the Contractor at his own cost without entitlement to additional payment or extension of time, unless otherwise approved by the Employer.
10. The Contractor shall immediately implement all corrective measures instructed by the Structural Consultant to ensure structural integrity and long-term durability of the repaired structure.
11. The Structural Consultant may require additional laboratory testing, field testing, NDT, proof testing or monitoring whenever deemed necessary for verification of structural performance.
12. No measurement of concealed structural repair items shall be recorded unless jointly inspected by the Structural Consultant before covering the work.
13. Approval of materials, repair methodology or interim stages shall not relieve the Contractor of his contractual responsibility for quality, safety or satisfactory performance of the completed works.
14. The Contractor shall maintain complete cooperation with the Structural Consultant and shall provide all assistance necessary for inspection, testing and verification.
15. Any disagreement on technical matters shall first be referred to the Structural Consultant before being taken up through contractual dispute resolution procedures.

16. Verbal instructions affecting structural works shall be confirmed in writing by the Structural Consultant within a reasonable period and shall thereafter become part of the Contract Records.
 17. The Structural Consultant may suspend any activity likely to endanger structural stability, public safety or adjoining property until satisfactory corrective measures have been implemented.
 18. The Contractor shall not alter the approved repair sequence or structural methodology without obtaining prior written approval from the Structural Consultant.
 19. The Structural Consultant shall certify satisfactory completion of structural rehabilitation works before such works are considered acceptable for payment or handover.
 20. The authority vested in the Structural Consultant under this clause shall be exercised solely in the interest of structural safety, quality, durability and compliance with the Contract Documents and shall not diminish the Contractor's contractual obligations or liabilities.
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SPECIAL CONDITION OF CONTRACT (SCC-2)

MANDATORY HOLD POINTS AND INSPECTION STAGES

1. Certain stages of structural rehabilitation shall be designated as Mandatory Hold Points requiring inspection and written clearance by the Structural Consultant before subsequent work proceeds.
2. The Contractor shall provide a minimum of forty-eight (48) hours' written notice before any Hold Point inspection.
3. No work beyond a Hold Point shall commence without written approval from the Structural Consultant.
4. Hold Points shall include dismantling of distressed portions where structural members are exposed for inspection.
5. Exposure of reinforcement after removal of deteriorated concrete shall constitute a mandatory inspection stage.
6. Completion of reinforcement cleaning, rust removal and corrosion protection treatment shall require inspection before further concreting.
7. Installation of additional reinforcement, shear connectors, anchors, dowels or welded components shall be inspected before placement of repair materials.
8. Formwork and shuttering for jacketing, strengthening or reconstruction shall require approval before concreting.
9. Placement of micro-concrete, repair mortar or structural grout shall not commence until inspection approval has been obtained.
10. Injection grouting operations shall be inspected for location of ports, sealing arrangements and injection sequence prior to commencement.
11. FRP wrapping, steel plate bonding or externally bonded strengthening systems shall require approval of substrate preparation before installation.

12. Waterproofing systems over repaired structural components shall be inspected before application of protective finishes.
 13. Completion of curing for structural repair materials shall be verified before loading or removal of temporary supports.
 14. NDT, pull-off tests, rebound hammer tests, core testing or other specified acceptance tests shall be completed before final acceptance of the repaired component.
 15. Closure of concealed structural work shall not be permitted until measurements and inspection records have been jointly recorded.
 16. Failure to obtain inspection clearance before covering work may require the Contractor to uncover completed work entirely at his own cost.
 17. The Contractor shall maintain a Hold Point Register indicating inspection requests, approvals, observations and corrective actions.
 18. Delay arising from failure of the Contractor to request timely inspection shall not constitute grounds for extension of contract time.
 19. Approval at any Hold Point shall not relieve the Contractor of responsibility for defects subsequently detected during execution or Defects Liability Period.
 20. All Hold Point inspections shall become part of the permanent Quality Assurance documentation of the Contract.
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SPECIAL CONDITION OF CONTRACT (SCC-3)

TRIAL REPAIRS, MOCK-UP PANELS AND DEMONSTRATION WORKS

1. Before commencement of production work, the Contractor shall execute trial repairs or mock-up panels demonstrating the proposed repair methodology.
2. Trial works shall be executed only at locations approved by the Structural Consultant.
3. Separate mock-ups shall be prepared wherever different repair materials, techniques or finishes are proposed.
4. Trial repairs shall demonstrate workmanship, surface preparation, reinforcement treatment, repair material application, curing and final finish.
5. The dimensions of each mock-up shall be sufficient to evaluate workmanship and performance under actual site conditions.
6. All materials proposed for production work shall first be used in the approved trial panel.
7. Trial repairs shall be carried out using the same equipment, labour and supervision intended for the permanent works.
8. The Structural Consultant may require testing of trial panels including bond strength, pull-off strength, compressive strength or other specified performance tests.
9. Deficiencies observed during trial works shall be rectified before approval is granted.
10. Approval of a trial panel shall establish the minimum acceptable standard of workmanship for the Contract.
11. Production work failing to achieve the approved standard may be rejected.

12. The Contractor shall bear all costs associated with preparation, testing, modification and removal of trial panels.
 13. Approved trial panels may remain on site for comparison throughout the execution period if directed by the Structural Consultant.
 14. Trial repairs shall not be measured separately unless specifically provided in the BOQ.
 15. No claim shall arise from modifications required during trial approval.
 16. Trial panels shall include complete documentation of materials, batch numbers, equipment and environmental conditions.
 17. Photographic records shall be maintained before, during and after completion of each trial repair.
 18. Any change in repair material, supplier or methodology shall require a fresh trial panel unless specifically waived.
 19. Acceptance of the trial repair shall not relieve the Contractor of responsibility for maintaining the same quality throughout the Contract.
 20. Production work shall commence only after written approval of the trial repairs by the Structural Consultant.
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SPECIAL CONDITION OF CONTRACT (SCC-4)

SUBMISSION AND APPROVAL OF METHOD STATEMENTS

1. The Contractor shall submit detailed Method Statements for every major structural rehabilitation activity before commencement of work.
2. Method Statements shall describe the sequence of execution from commencement to completion.
3. The Method Statement shall identify plant, equipment, tools, manpower and supervision proposed for each activity.
4. Temporary supports, propping, shoring and stability measures shall be clearly described wherever required.
5. Procedures for dismantling deteriorated concrete shall ensure that sound structural portions are not damaged.
6. Repair material preparation, mixing, transportation, placement and curing shall be fully described.
7. Quality control procedures, inspection stages and testing requirements shall form part of every Method Statement.
8. Safety precautions for workers, occupants and adjoining properties shall be incorporated.
9. Environmental protection measures including dust suppression, waste disposal and noise control shall be specified.
10. Emergency procedures for structural instability or unforeseen deterioration shall be included.

11. Material storage, shelf-life control and manufacturer recommendations shall be incorporated.
 12. Proposed construction joints, repair joints and sequence of repairs shall be identified.
 13. The Contractor shall not deviate from the approved Method Statement without prior written approval.
 14. Any revised Method Statement shall be submitted sufficiently in advance of the affected activity.
 15. Approval of the Method Statement shall not transfer responsibility for successful execution from the Contractor.
 16. Copies of approved Method Statements shall remain available at site throughout execution.
 17. Supervisory staff shall be briefed regarding approved procedures before commencement of work.
 18. Failure to comply with the approved Method Statement shall constitute non-conforming work.
 19. The Structural Consultant may require modification of Method Statements whenever site conditions so warrant.
 20. All approved Method Statements shall become Contract Documents and shall govern execution of the respective activities.
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SPECIAL CONDITION OF CONTRACT (SCC-5)

QUALITY ASSURANCE, QUALITY CONTROL AND DOCUMENTATION

1. The Contractor shall establish and maintain a comprehensive Quality Assurance and Quality Control (QA/QC) system throughout the Contract period.
2. The QA/QC system shall comply with the Contract Specifications, relevant Indian Standards and accepted engineering practice.
3. Inspection and Test Plans (ITP) shall be prepared for each major repair activity and submitted for approval.
4. All repair materials shall be supported by manufacturer's certificates, test certificates and batch identification records.
5. Material sampling and testing shall be carried out only in approved laboratories where specified.
6. Site quality records shall include inspection reports, test reports, calibration certificates and daily quality checklists.
7. Photographic documentation shall be maintained before, during and after each stage of structural repair.
8. Measurements of concealed works shall be jointly recorded before covering.
9. Non-Conformance Reports (NCR) shall be issued for defective work and corrective actions shall be documented.
10. Corrective work shall be verified before acceptance.

11. Registers shall be maintained for material receipt, batch usage, repairs executed and testing completed.
12. Calibration certificates of testing equipment shall remain valid throughout the Contract period.
13. Daily site records shall include weather conditions where they influence repair quality.
14. All NDT and performance testing records shall become part of the permanent project documentation.
15. The Contractor shall maintain traceability of repair materials from receipt through final application.
16. Monthly QA/QC reports shall be submitted to the Employer and Structural Consultant.
17. Final completion shall include submission of an indexed Quality Dossier containing all quality documentation.
18. Absence of required documentation may constitute sufficient grounds for withholding certification of completed work.
19. Acceptance of documentation shall not relieve the Contractor of responsibility for latent defects or deficient workmanship.
20. The completed QA/QC documentation shall form an integral part of the final handover records and shall remain the property of the Employer.

SPECIAL CONDITION OF CONTRACT (SCC-6)

ACCEPTANCE CRITERIA FOR STRUCTURAL REHABILITATION WORKS

1. All completed rehabilitation works shall satisfy the requirements of the Contract Documents, relevant Indian Standards, approved drawings and the accepted engineering practices prevailing at the time of execution.
2. Acceptance of any completed work shall be based upon compliance with specified performance requirements rather than merely visual appearance.
3. Concrete repair shall exhibit complete bond with the parent concrete without evidence of cracking, debonding, segregation, honeycombing or surface distress.
4. Structural grout, repair mortar and micro-concrete shall attain the specified strength and durability characteristics before acceptance.
5. Reinforcement exposed during repair shall be completely cleaned, protected and restored in accordance with approved specifications.
6. All replacement reinforcement shall conform to approved drawings and shall possess the specified cover, anchorage and lap lengths.
7. Surface tolerances after repair shall be consistent with adjoining members and acceptable to the Structural Consultant.
8. Waterproofed surfaces shall remain free from leakage throughout the testing period specified in the Contract.
9. Injection grouting shall demonstrate satisfactory filling of cracks as verified by inspection and testing wherever specified.

10. FRP strengthening systems shall exhibit complete adhesion without wrinkles, voids or delamination.
 11. Steel strengthening members shall satisfy fabrication tolerances, alignment requirements and welding quality specified in the Contract.
 12. Protective coatings shall possess the specified thickness, continuity and adhesion.
 13. Where specified, pull-off tests, core tests, rebound hammer tests or other acceptance tests shall satisfy the minimum values prescribed in the Specifications.
 14. Repair work failing to comply with acceptance criteria shall be classified as defective work.
 15. Defective work shall be rectified or replaced entirely at the Contractor's own cost.
 16. Acceptance of one repair location shall not constitute acceptance of similar work executed elsewhere.
 17. The Structural Consultant may require additional testing whenever quality is considered doubtful.
 18. Final acceptance shall only be granted after satisfactory completion of all rectification works.
 19. Acceptance shall not relieve the Contractor from obligations during the Defects Liability Period.
 20. The decision of the Structural Consultant regarding technical acceptability shall be binding unless modified by the Employer.
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SPECIAL CONDITION OF CONTRACT (SCC-7)

CONCEALED STRUCTURAL DISTRESS AND UNFORESEEN CONDITIONS

1. Structural rehabilitation inherently involves uncertainty regarding concealed deterioration which may not be visible during tendering.
2. The Contractor shall immediately notify the Employer and Structural Consultant upon discovery of any concealed structural distress.
3. Concealed defects include corrosion, voids, delamination, unsound concrete, reinforcement loss, foundation distress, settlement, water ingress and any other structural deficiencies not reasonably visible during pre-bid inspection.
4. No repair work affecting such areas shall proceed until inspected by the Structural Consultant.
5. The Structural Consultant may direct additional dismantling, investigation or testing to determine the actual extent of deterioration.
6. Additional repair methodology may be prescribed depending upon observed site conditions.
7. Quantities originally provided in the BOQ may increase or decrease accordingly.
8. The Contractor shall not execute unauthorized repairs merely to avoid delay.
9. Emergency temporary stabilisation may be undertaken where immediate public safety is involved, after informing the Structural Consultant.

10. Additional work arising from concealed structural defects shall be measured separately where admissible under the Contract.
 11. No claim shall be entertained for defects which could reasonably have been identified during normal execution.
 12. Records including sketches, photographs and measurements shall be maintained for every concealed defect discovered.
 13. The Structural Consultant may revise repair details wherever structural safety so demands.
 14. Such revised details shall form part of the Contract.
 15. Work already executed contrary to revised instructions shall be rectified by the Contractor where attributable to his negligence.
 16. Time implications, if any, shall be considered strictly in accordance with Contract provisions.
 17. The Contractor shall extend full cooperation during investigation of concealed defects.
 18. Safety of adjoining structures shall remain the Contractor's responsibility during exploratory works.
 19. The Employer reserves the right to omit, modify or add rehabilitation items arising from concealed conditions.
 20. This Clause shall prevail over any contrary interpretation of the BOQ where structural safety is involved.
 21. Nothing contained herein shall reduce the Contractor's responsibility for proper workmanship.
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SPECIAL CONDITION OF CONTRACT (SCC-8)

VARIATION IN REPAIR QUANTITIES AND PAYMENT

1. The quantities indicated in the BOQ are approximate and prepared from visible site conditions available at the time of tender.
2. Actual repair quantities may vary substantially after dismantling and exposure of structural members.
3. The Contractor shall not treat BOQ quantities as guaranteed quantities.
4. All variations shall be measured jointly by the Employer's Representative and the Structural Consultant.
5. Measurements shall be recorded before concealment of work.
6. Payment shall be made only for actual quantities executed and certified.
7. No claim shall arise solely because final quantities differ from estimated quantities.
8. Newly discovered repair items not appearing in the BOQ shall be treated as Extra Items.
9. Extra Items shall be valued in accordance with Contract provisions.
10. Similar items shall preferably be derived from existing Contract rates.
11. Where no comparable rate exists, market rate analysis shall be adopted.

12. Supporting documents including labour, material and equipment details may be demanded.
 13. Variations shall not be executed without written instructions except in emergency situations.
 14. Quantities omitted due to changed site conditions shall not constitute breach of Contract.
 15. Contractor's overheads and profit shall be governed by Contract provisions.
 16. The Structural Consultant shall certify technical necessity of additional rehabilitation items.
 17. The Employer alone shall approve financial implications where required.
 18. Interim payments shall not prejudice final measurements.
 19. Final payment shall be based upon certified executed quantities.
 20. All quantity variations shall remain subject to audit.
 21. Contractor shall maintain complete quantity records throughout execution.
 22. Measurements recorded without authorised representatives shall not be admissible.
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SPECIAL CONDITION OF CONTRACT (SCC-9)

APPROVED REPAIR MATERIALS, MANUFACTURERS AND SUBSTITUTIONS

1. All repair materials incorporated into the Works shall strictly conform to the Technical Specifications forming part of the Contract.
2. Only products manufactured by approved and established manufacturers having demonstrated performance in structural rehabilitation shall be permitted.
3. Materials shall be supplied in original sealed containers bearing batch numbers and manufacturing details.
4. Shelf life requirements shall be strictly observed.
5. Expired or deteriorated materials shall be removed from site immediately.
6. Manufacturer's technical literature and test certificates shall accompany each supply.
7. Materials requiring controlled storage shall be stored strictly in accordance with manufacturer recommendations.
8. Cementitious repair materials shall not be mixed with unapproved additives.
9. Epoxy systems shall be proportioned strictly in accordance with manufacturer instructions.
10. Reinforcement steel shall conform to the specified grade and relevant BIS Standards.
11. Structural steel sections shall satisfy specified grades and mill certification requirements.
12. Any proposal for substitution shall be submitted sufficiently in advance together with complete technical justification.
13. Approval of substitution shall be entirely at the discretion of the Employer based upon recommendations of the Structural Consultant.
14. Approval of one substitute shall not imply approval of subsequent substitutions.
15. Materials rejected after delivery shall be removed from site promptly.

16. Storage conditions shall remain open to inspection at all times.
 17. Random sampling may be carried out without prior notice.
 18. The Contractor shall bear all testing costs for rejected materials.
 19. Only approved materials shall be measured for payment.
 20. Non-compliance with this Clause shall constitute grounds for rejection of the work.
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SPECIAL CONDITION OF CONTRACT (SCC-10)

NON-DESTRUCTIVE TESTING, PROOF TESTING AND PERFORMANCE VERIFICATION

1. The Employer or Structural Consultant may direct Non-Destructive Testing (NDT) at any stage of the rehabilitation works whenever considered necessary.
2. Testing shall be carried out only by competent agencies possessing suitable experience and calibrated equipment.
3. NDT may include rebound hammer testing, ultrasonic pulse velocity testing, cover meter survey, half-cell potential survey, carbonation depth measurement or any other approved technique.
4. Semi-destructive or destructive tests such as core extraction, pull-out tests or pull-off tests may also be directed where required.
5. Locations of testing shall be selected by the Structural Consultant.
6. Testing frequencies shall be as specified or as directed during execution.
7. Test results shall be submitted in approved formats.
8. Unsatisfactory results shall require investigation into the extent of deficient work.
9. Additional testing may be ordered to establish the limits of unacceptable work.
10. Proof load testing may be directed wherever structural performance requires verification.
11. Temporary loading arrangements shall be designed to ensure complete safety.
12. Monitoring instruments shall remain installed until completion of testing.
13. Testing shall not damage the integrity of repaired members beyond acceptable limits.
14. Damaged areas resulting from testing shall be reinstated by the Contractor.
15. Costs of routine specified testing shall be deemed included in Contract rates unless otherwise stated.
16. Repeat testing resulting from defective workmanship shall be entirely at the Contractor's expense.
17. Acceptance shall be based upon compliance with specified performance criteria.
18. Copies of all test reports shall become permanent project records.
19. Final completion shall not be certified until all required testing has been satisfactorily completed.
20. The Structural Consultant shall interpret all technical test results.
21. Where doubt persists regarding structural safety, additional investigations may be ordered notwithstanding satisfactory earlier test results.
22. The Employer's decision based upon the recommendations of the Structural Consultant shall be final regarding acceptance of tested work.

PECIAL CONDITION OF CONTRACT (SCC-11)

STRUCTURAL MONITORING DURING EXECUTION

1. The Contractor shall continuously monitor the structural behaviour of the building throughout the execution of rehabilitation works.
2. Monitoring shall include observation of cracks, deflections, settlements, tilting, vibrations and any other signs of structural movement.
3. Existing cracks identified before commencement shall be marked, numbered and recorded with dimensions and locations.
4. Crack gauges or other approved monitoring devices shall be installed wherever directed by the Structural Consultant.
5. Settlement markers shall be installed where foundation movements are suspected or anticipated.
6. Monitoring frequency shall be as directed by the Structural Consultant depending upon the nature of the rehabilitation activity.
7. Readings shall be recorded in a structured register and submitted periodically for review.
8. Any sudden increase in crack width, settlement or structural movement shall be immediately reported to the Employer and the Structural Consultant.
9. Upon such occurrence, the affected work shall be suspended until further instructions are issued.
10. Temporary shoring, propping or protective measures shall be immediately provided whenever directed.
11. Monitoring instruments shall not be disturbed or removed without written approval.
12. The Contractor shall protect all monitoring devices from accidental damage throughout the contract period.
13. Damage to monitoring equipment caused by the Contractor shall be replaced at his own cost.
14. Monitoring records shall form part of the permanent completion documents.
15. Acceptance of monitoring records shall not relieve the Contractor of responsibility for structural safety.
16. The Structural Consultant may require additional monitoring whenever site conditions warrant.
17. The Employer reserves the right to engage independent monitoring agencies whenever considered necessary.
18. Structural monitoring under this Clause shall continue until the Structural Consultant certifies that the rehabilitated structure has achieved satisfactory stability.

SPECIAL CONDITION OF CONTRACT (SCC-12)

WARRANTY AND DEFECT LIABILITY FOR STRUCTURAL REHABILITATION

1. The Contractor shall warrant that all rehabilitation works executed under this Contract are free from defects in workmanship, materials and execution.
2. The Defects Liability Period shall be as specified in the Contract Agreement and shall commence from the date of certified completion.
3. During the Defects Liability Period, the Contractor shall rectify at his own cost any defect attributable to defective workmanship, inferior materials or non-compliance with the Contract.
4. Such rectification shall include dismantling, replacement and reinstatement wherever necessary.
5. Defects shall be attended within the period specified in the Employer's written notice.
6. Failure to commence rectification within the stipulated period shall entitle the Employer to execute the work through another agency at the Contractor's risk and cost.
7. Repairs executed during the Defects Liability Period shall themselves carry the same warranty as the original work.
8. The warranty shall include waterproofing failures, corrosion protection failures, debonding, cracking, delamination and any premature deterioration resulting from defective execution.
9. Normal wear, misuse, accidental damage or alterations carried out by others shall not constitute warranty obligations of the Contractor.
10. The Employer may withhold security deposits or retention money until satisfactory completion of all defect rectification works.
11. Final release of retention shall not prejudice the Employer's right to claim damages arising from latent defects discovered subsequently, where legally permissible.
12. Certification of completion shall not be construed as acceptance of concealed defective work.
13. The Contractor shall maintain a register of all warranty complaints and rectification actions.
14. All rectification works shall be completed to the satisfaction of the Structural Consultant.
15. The obligations under this Clause shall survive expiry of the Contract to the extent permitted by applicable law.

SPECIAL CONDITION OF CONTRACT (SCC-13)

QUALIFICATION AND DEPLOYMENT OF TECHNICAL PERSONNEL

1. The Contractor shall deploy competent technical personnel experienced in structural rehabilitation works throughout the execution period.

2. A qualified Civil Engineer having not less than five years' experience in structural repair and strengthening projects shall remain available at site during working hours.
 3. Supervisory personnel responsible for specialised repair works shall possess adequate training in the respective techniques.
 4. Skilled labour engaged for epoxy injection, FRP installation, corrosion treatment, grouting, micro-concreting and similar specialised activities shall have demonstrable experience.
 5. Copies of qualifications and experience records of key personnel shall be submitted before commencement of work.
 6. Replacement of key personnel shall not be made without prior approval of the Employer.
 7. The Employer may require replacement of personnel found technically incompetent or negligent.
 8. Such replacement shall be effected without delay and without additional cost to the Employer.
 9. Adequate supervision shall be maintained during all critical structural operations.
 10. Absence of competent supervision shall constitute sufficient grounds for suspension of the affected work.
 11. The Contractor shall ensure that all personnel are familiar with approved Method Statements and safety procedures.
 12. Attendance records of technical personnel shall be maintained at site.
 13. Deployment of competent personnel shall not reduce or transfer the Contractor's contractual responsibilities.
 14. The Structural Consultant may verify the competency of deployed personnel whenever considered necessary.
 15. Persistent failure to maintain qualified supervision shall constitute a material breach of the Contract.
 16. The Employer may recover losses arising from inadequate supervision in accordance with the Contract.
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SPECIAL CONDITION OF CONTRACT (SCC-14)

PRICE ADJUSTMENT FOR STRUCTURAL STEEL AND SPECIFIED MATERIALS

1. Unless otherwise expressly provided in the Contract, the accepted rates shall remain firm throughout the execution period.
2. Where the Contract specifically permits price adjustment, escalation shall be applicable only to the materials identified in the Contract.
3. Structural steel, if eligible, shall be adjusted strictly in accordance with the approved escalation formula or Government guidelines applicable to the Contract.
4. No price adjustment shall be admissible for delays attributable to the Contractor.
5. Price variation shall apply only to quantities actually executed within the eligible period.

6. Claims shall be supported by documentary evidence including purchase invoices, manufacturer's invoices and statutory price indices wherever applicable.
 7. Materials procured before the eligible period shall not qualify for escalation unless specifically permitted.
 8. Price adjustment shall not apply to wastage, rejected materials or quantities exceeding approved measurements.
 9. Any reduction in market prices shall similarly be recoverable by the Employer where so provided in the Contract.
 10. The Employer shall have the right to verify all documents submitted in support of escalation claims.
 11. False or misleading claims shall constitute breach of the Contract.
 12. No claim for indirect losses or consequential escalation shall be entertained.
 13. All adjustments shall be reflected in interim and final bills after due verification.
 14. The decision of the Employer regarding admissibility of escalation shall be final, subject to the dispute resolution provisions of the Contract.
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SPECIAL CONDITION OF CONTRACT (SCC-15)

AUTHORITY TO SUSPEND OR STOP UNSAFE WORK

1. Safety of the existing structure, adjoining properties, occupants and workmen shall receive the highest priority throughout execution of the Contract.
2. The Structural Consultant shall have authority to order immediate suspension of any work considered unsafe or technically unacceptable.
3. Such suspension may be directed verbally in emergency situations and shall thereafter be confirmed in writing.
4. The Contractor shall immediately comply with every Stop-Work instruction without waiting for further clarification.
5. Suspension may be ordered due to unsafe dismantling, inadequate temporary supports, excessive structural movement, defective workmanship, use of unapproved materials, unsafe equipment or any condition likely to endanger life or property.
6. During suspension, the Contractor shall secure the work, provide temporary stabilisation and protect the structure from further deterioration.
7. Work shall recommence only after written clearance has been issued by the Structural Consultant.
8. Time lost due to suspension arising from the Contractor's default shall not qualify for extension of time or additional payment.
9. Where suspension results from reasons beyond the Contractor's control, entitlement to extension of time shall be governed by the relevant Contract provisions.
10. The Employer may engage another agency to carry out emergency protective works if the Contractor fails to act promptly.
11. The cost of such emergency works shall be recoverable from the Contractor where the suspension has resulted from his negligence or default.
12. Repeated violations of safety requirements shall constitute grounds for termination of the Contract in accordance with the General Conditions of Contract.

13. Nothing contained herein shall restrict the Employer from exercising statutory powers under applicable laws or regulations.
14. The powers conferred under this Clause are preventive in nature and shall be exercised solely to safeguard structural stability, public safety and successful completion of the rehabilitation works.
15. Compliance with a Stop-Work Order shall not relieve the Contractor of any obligation, liability or responsibility imposed under the Contract.
16. The records of all Stop-Work Orders, corrective actions and recommencement approvals shall be maintained as part of the permanent Contract documentation.