सत्यमेव जयते

भारतीय राष्ट्रीय राजमार्ग प्राधिकरण
(सड़क परिवहन और राजमार्ग मंत्रालय, भारत सरकार)
National Highways Authority of India
(Ministry of Road Transport and Highways, Government of India)
जी-5 एवं 6, सेक्टर-10, द्वारका, नई दिल्ली - 110 075 • G-5 & 6, Sector-10, Dwarka, New Delhi-110075
दूरभाष/Phone : 91-11-25074100 / 25074200

भाराराप्रा /. नीति दिशानिर्देश / मानक दस्तावेज़ /2026
नीति परिपत्र सं. 11.116 /2026 दिनाक 16th अक्टूबर, 2026
{(ई-ऑफिस फाइल स. HOUDIV-15011/1/2025-HOU Division (कम्प्युटर सं. 302427 पर लिया गया निर्णय)}

NHAI/Policy Guidelines/ Standard Documents/2026
Policy Circular No. 11.116 / 2026 dated 16th October, 2026
{(Decision taken on E-Office File No. HOUDIV-15011/1/2025-HOU Division (Comp No. 302427)}

विषय: राष्ट्रीय राजमार्गों पर टोल प्लाजा पर सार्वजनिक शौचालय सुविधाओं और पार्किंग के व्यापक पुनर्वास, संचालन, रखरखाव और स्मार्ट निगरानी के कार्यान्वयन हेतु मानक संचालन प्रक्रिया (एसओपी) के संदर्भ में।

Sub.: Standard Operating Procedure (SOP) for Comprehensive Rehabilitation, Operation, Maintenance and Smart Monitoring of Public Toilet Facilities and Parking at Toll Plazas on National Highways. reg:-

टोल प्लाजा पर स्थित सार्वजनिक शौचालय सुविधाओं और निर्दिष्ट पार्किंग स्थलों को स्वच्छ, स्वास्थ्यप्रद, कार्यात्मक, सुरक्षित, सुलभ और चौबीसों घंटे (24 x 7) उपलब्ध रखने को सुनिश्चित करने के लिए, भाराराप्रा मुख्यालय ने राष्ट्रीय राजमार्गों पर सार्वजनिक शौचालय सुविधाओं और पार्किंग के व्यापक पुनर्वास, रखरखाव और स्मार्ट निगरानी के लिए दिशानिर्देश तैयार किए हैं।

To ensure that Public Toilet facilities and designated Parking Spaces located at Toll Plazas remain clean, hygienic, functional, safe, accessible and available round-the-clock (24 X 7). NHAI HQ has laid down Guidelines for comprehensive rehabilitation, maintenance, and smart monitoring of Public Toilet Facilities and Parking at Toll Plazas on National Highways.

2. तदनुसार, राष्ट्रीय राजमार्गों पर टोल प्लाजा पर सार्वजनिक शौचालय सुविधाओं और पार्किंग के व्यापक पुनर्वास, संचालन, रखरखाव और स्मार्ट निगरानी के कार्यान्वयन हेतु मानक संचालन प्रक्रिया (एसओपी), कार्यान्वयन के लिए **अनुबंध- ए** के रूप में इसके साथ संलग्न है।

Accordingly, The Standard Operating Procedure (SOP) for Comprehensive Rehabilitation, Operation, Maintenance and Smart Monitoring of Public Toilet Facilities and Parking at Toll Plazas on National Highways is enclosed herewith as **Annexure-A** for implementation.

3. यह सक्षम प्राधिकारी के अनुमोदन से जारी किया जाता है।
This issues with the approval of Competent Authority.

16/10/26

(सीएस. संजय कुमार पटेल/ CS. Sanjay Kumar Patel)
प्रभारी मुख्य महाप्रबंधक(समन्वय) (i/c) Chief General Manager (Coord.)

प्रति/ To:

भाराराप्रा मुख्यालय/आरओ/पीआईयू/सीएमयू/साइट कार्यालयों के सभी अधिकारी।
All Officers of NHAI HQ/ ROs/ PIUs/ CMUs/ Site Offices.

प्रतिलिपि/ Copy to:

1. पुस्तकालय की साइट पर प्रकाशन के लिए पुस्तकालय को।
Library for hosting the Circular on Library site.
2. परिचालन के लिए वेब एडमिन को।
Web Admin for Circulation.
3. सचिव, सड़क परिवहन और राजमार्ग मंत्रालय के प्रधान निजी सचिव को सूचनार्थ।
PPS to Secretary, MoRT&H for Kind Information

Annexure-A

STANDARD OPERATING PROCEDURE (SOP)

Subject: Comprehensive Rehabilitation, Operation, Maintenance and Smart Monitoring of Public Toilet Facilities and Parking at Toll Plazas on National Highways

Reference: Taken up as per NHAI Policy Circular No. 11.97/2026 dated 14.07.2026 (For plazas not covered under OM dated 31.07.2026)

1. Objective

To ensure that public toilet facilities and designated parking spaces located at Toll Plazas remain clean, hygienic, functional, safe, accessible, and available round-the-clock (24×7) through:

- One-time comprehensive rehabilitation of existing assets based on engineering condition assessments.
- Standardized, continuous routine operation, housekeeping, and preventive maintenance.
- Dedicated women-safety provisions, dignity infrastructure, and vector/reptile safeguards.
- Deployment of open-architecture, IoT-based smart monitoring systems.
- Performance-based monitoring with consolidated Service Level Agreements (SLAs) and liquidated damages.
- Multichannel citizen feedback mechanisms via QR codes (Rajmarg Yatra App integration) and interactive touchscreens.
- Centralized digital reporting and real-time integration with the NHAI Data Lake / Central Asset Management Platform.

2. Applicability & Contractual Demarcation

1. This SOP is applicable to all Public-Funded Toll Plazas where public toilets are available and the original Defect Liability Period (DLP) or Concession period has expired, and which are not covered under the umbrella OM dated 31.07.2026.
2. If toilet block maintenance or sanitation staff is already covered within the contractual obligations of any existing user fee collecting agency or maintenance contractor, the Project Director (PD) shall review the contract. The PIU shall execute a formal negative variation order to de-scope the work and effect necessary financial recoveries before deploying new agencies or reimbursing manpower under this SOP, ensuring zero duplicate expenditure.

3. Definitions

- **Rehabilitation:** One-time comprehensive restoration, modernization, and vector/safety retrofitting of toilet facilities and parking spaces to standard specifications based on certified condition assessments.
- **Routine Maintenance:** Day-to-day cleaning, periodic deep cleaning, preventive maintenance, mechanized waste handling, and continuous restocking of consumables.
- **Smart Monitoring System:** An integrated IoT architecture consisting of specialized environmental sensors, communication gateways, cloud analytics, and mobile/web applications for tracking hygiene, utility availability, and user feedback.
- **Service Level Deductions:** liquidated damages deducted from admissible monthly agency dues for operational defaults.

4. Scope

The SOP comprises five operational parts:

- **Part-I:** One-Time Comprehensive Rehabilitation & Safety Retrofit
- **Part-II:** Routine Operation, Housekeeping & Statutory Maintenance
- **Part-III:** Smart IoT Monitoring Architecture & Anti-Tampering Protocols
- **Part-IV:** Multi-Tier Inspection, Audit & Citizen Feedback Framework
- **Part-V:** Consolidated SLA, Liquidated Damages & Payment Framework

PART-I: One-Time Rehabilitation

1.1 Inspection, Condition Assessment & Scope of Work

The Project Director shall ensure the technical inspection of every toilet block. To prevent infructuous expenditure and the unnecessary replacement of serviceable assets, works shall strictly follow a **Three-Tier Condition Assessment Matrix** prior to preparing the BOQ:

1. Elements that are intact and functional shall undergo intensive descaling, deep cleaning, minor servicing, and polishing.
2. Elements exhibiting minor or localized defects (e.g., leaking spindles, faulty flush cisterns, loose hardware, damaged tile grout) shall be repaired through component replacements rather than full-unit overhauls.
3. Replacement shall be permitted **only when the item is certified by the Committee (under para 1.5) as beyond economical repair (BER).** Every proposed replacement must be accompanied by an itemized technical justification and geo-tagged photographic evidence in the BOQ.

Scope of Rehabilitation Works:

- **Civil & Aesthetics:** Replacement of damaged flooring with heavy-duty anti-skid vitrified tiles, glazed ceramic wall tiling up to ceiling height, structural waterproofing, crack repairs, ceiling restoration, anti-fungal painting, durable cubicle partitions, robust weather-proof doors, and roofing. Paving of the forecourt using interlocking concrete paver blocks with an acrylic mould finish to suppress dust from entering the block.
- **Plumbing & Sanitaryware:** Heavy-duty commercial European/Indian water closets (WCs), urinals with privacy screens, wash basins, high-durability quarter-turn brass/SS taps, dual-flush valves/systems, replacement of corroded internal/external piping, drainage re-alignment, and overhead water storage tanks.
- **Electrical & Ventilation:** Complete rewiring in industrial-grade conduits, miniature circuit breakers (MCBs), commercial exhaust fans, and energy-efficient LED luminaires designed to provide a minimum uniform illuminance of 40 Lux with zero blind or shadowy spots.
- **Fittings & Accessories:** Commercial-grade distortion-free mirrors, stainless steel (SS 304) grab rails, lockable soap dispensers, heavy-duty jumbo roll/tissue holders, automatic warm-air hand dryers, dual-compartment covered foot-operated dustbins, baby diaper changing tables, and retro-reflective bilingual signages.
- **Vector, Reptile & Pest Proofing:** Heavy-duty rubber door-sweeps/drop-seals at the base of exterior doors to seal ground gaps against crawling reptiles and rodents; fine stainless steel insect mesh on all ventilations and windows; heavy-duty cast-iron/SS floor-drain covers with anti-cockroach/insect traps; commercial ultraviolet (UV) electric insect killers installed near entry vestibules; and complete clearing of wild grass and bushes up to a 5-meter perimeter around the facility.

1.2 Universal Accessibility & PwD Standards

Every toll plaza shall provide at least one dedicated, universally accessible toilet unit strictly complying with Harmonised Guidelines and CPWD standards:

- Barrier-free ramp access with a non-slip surface and continuous stainless steel (Grade SS 304) double handrails on both sides.
- Outward-swinging 900 mm clear doorways with horizontal pull handles.
- Ergonomically positioned grab bars alongside the WC and wash basin, wheelchair-accessible mirrors, and low-height emergency call buttons.

1.3 Women's Safety, Dignity & Security Infrastructure

To ensure safety and confidence for female road users and families stopping at night, all toilet complexes shall incorporate:

- **Illuminated Approach & Line of Sight:** Conspicuous illumination with direct line of sight from the toll administration building and fee collection booths, eliminating blind spots.
- **CCTV Surveillance:** Continuous external CCTV surveillance covering pedestrian approaches, parking spaces, and building entry points. *(Camera placement inside washrooms, cubicles, or changing vestibules is strictly prohibited)*.
- **Feminine Hygiene Amenities:** Installation of automatic/coin-operated sanitary napkin vending machines and electric smokeless sanitary pad incinerators inside the women's facility.
- High-visibility retro-reflective and back-lit advance informatory signage placed 1,000 meters and 500 meters ahead of the toll plaza indicating 24×7 public amenities.

1.4 Parking Area Upgrades & EV Conduits

Parking facilities shall be overhauled with demarcated parking bays, curbing, and drainage. To prevent infructuous civil expenditure ahead of national EV charging equipment concessions by IHMCL/ NHAI HQ, works under this rehabilitation scope shall be strictly restricted to:

- Demarcating designated parking bays for future Electric Vehicle (EV) charging stations.
- Laying underground heavy-duty HDPE electrical conduits from the main electrical panel/substation to the charging bays. *(Pouring concrete equipment plinths, mounting pads, or proprietary EV cabling is excluded until HQ awards the EV concession)*.

1.5 Estimation Procedure & Project Committee

A committee comprising the Project Director, Dy. Manager / Manager (Technical), Representative of Finance/Accounts, AE/IE (If available) shall prepare a detailed inventory, Three-Tier Condition Assessment, BOQ, geo-tagged photographs, and cost estimates through a registered Architect.

- Estimates shall be prepared as per NHAI Policy Circular No. 11.97 dated 14.07.2026 based on CPWD DSR, State Schedule of Rates, or prevailing verified market rates.
- **Scope of Estimate:** The estimate must cover the complete one-time capital rehabilitation, cost of consumables for a 12-month baseline cycle, and IoT deployment with 1-year operation and maintenance.

1.6 Approval, Financial Powers & Execution Timeline

- Policy Circular No. 12.43/2025 dated 10.12.2025 is hereby amended to include works under instant SOP. Project Directors (PDs) are delegated powers to approve rectification works up to an amount of Rupees 10 Lakhs per toilet block and rectification measures costing more than Rupees 10 Lakhs but up to Rupees 25 Lakhs, proposal may be referred to concerned RO for approval.
- Works may be executed via a Change of Scope (COS) to existing operating contractors or through standalone competitive tenders as per site requirements and exigencies of work. The Toilet upgradation/rehabilitation works sectioned under this SOP/Circular shall not be part of admissible limit of CoS under respective works contract. It is an exclusive delegation to PD/RO under the said policy Guideline.
- All rehabilitation works must be executed as a single comprehensive intervention completed within **90 calendar days** from the date of work order issuance. The executing agency must maintain temporary, hygienic portable toilet arrangements during execution if main cubicles are taken offline.
- **Defect Liability Period (DLP):** The rehabilitation contractor shall provide a mandatory **1-Year DLP** covering all civil, structural, plumbing, electrical, and IoT hardware installations. A joint handing-over inventory between the rehabilitation contractor and the O&M/user fee collection agency shall be executed to demarcate latent construction defects from operational misuse.

1.7 Selection and Engagement of Architect

- The Architect (individual or firm registered with the Council of Architecture or state functionaries) shall be hired primarily through a COS to the existing Independent Engineer (IE) / Authority Engineer (AE). In toll stretches where no IE/AE is currently deployed, the Regional Officer (RO) is authorized to engage a local registered architectural firm through a fast-track quotation/empanelment process.
- Approved by the RO under delegated powers up to a maximum fee of 4% of the rehabilitation estimate or ₹1,00,000/-, whichever is lower.
- The Architect/firm engaged for the preparation of estimates and supervision shall have no direct or indirect financial, commercial, or organizational interest in the agency executing the rehabilitation works, and must submit a formal declaration of non-conflict of interest prior to contract award.
- The Architect/firm shall have a permanent office in the state/RO city, possess modern drawing equipment and technical staff, and have no record of poor performance or abandoned contracts. The Architect shall conduct weekly site visits and attend progress meetings with the PD on construction updates and deviations.
- **Milestone Payments:** Architectural fees shall be released strictly across three stages:
- *Stage 1 (20%):* Upon submission, validation, and PIU approval of the detailed inventory, condition assessment, BOQ, and drawings.
- *Stage 2 (30%):* Upon completion and certification of 100% of the civil, structural, and plumbing rehabilitation works.
- *Stage 3 (50%):* Upon successful execution, commissioning of IoT/safety hardware, trial run, and certification of the completion of one-time rehabilitation works.

PART-II: Routine Operation & Maintenance

2.1 Minimum Manpower Deployment & Statutory Safeguards

Manpower must be deployed in shifts to ensure 24×7 operational readiness:

Plaza Classification	Baseline Criteria	Housekeeping Staff Deployment	Supervisory Staff
Small & Medium Plaza	≤ 50 sqm / Traffic < 15,000 PCU/day	**2 Housekeeping staff per shift*** (minimum 1 female attendant deployed for dedicated women's toilets at block)	1 Supervisor per 2 adjacent toilet blocks
Large Plaza	> 50 sqm / Traffic > 15,000 PCU/day	**3 Housekeeping staff per shift*** (minimum 1 female attendant deployed for dedicated women's toilets at each block)	1 Supervisor per 2 adjacent toilet blocks

**Note: Housekeeping staff deployment is per shift. Since 01 housekeeping staff per shift is already covered under the standard schedule of toll plaza agreements, the PIU must certify that this baseline staff cost is not double-billed under this SOP.*

- **Attendance Tracking:** Staff attendance must be logged daily through an Aadhaar-enabled Biometric Attendance System (BAS) linked to the toll plaza administration.

2.2 Supervisor Qualifications & Responsibilities

The Supervisor shall be a graduate, tech-savvy individual serving as the primary on-site authority responsible for strict SLA compliance, 24×7 operational readiness, and a "no user complaint" standard.

- Managing housekeeping shift rosters, procuring consumables and minor repair spares to guarantee zero stock-outs, and coordinating rapid defect rectification within prescribed SLA timelines.
- Continuously monitoring the central IoT dashboard, responding to real-time sensor alerts (such as foul odor or low water), resolving QR-code-based citizen complaints, and uploading daily geo-tagged, time-stamped photographs to verify site hygiene.
- Ensuring continuous uptime of smart monitoring hardware, maintaining physical site registers, and facilitating joint inspections with PIU officials to validate the Monthly Performance Score.

2.3 Cleaning Schedules & Operational Frequencies

Operational Activity	Mandatory Minimum Frequency
Inspection by Supervisor	Every 2 Hours (logged in physical register & mobile app)
Sweeping & Forecourt Clearing	Hourly
Mopping & Toilet Cleaning	Every 2 Hours (dynamically increased during peak traffic/festivals)
Wash Basin Cleaning	Every 2 Hours
Consumable Replenishment	Every shift mandatorily and as & when required
Disinfection (Sodium Hypochlorite / Phenolic)	Daily
Deep Cleaning & Scrubbing	Weekly
Vector & Pest Control Spraying	Monthly
Water Tank Cleaning & Disinfection	Quarterly

2.4 Consumables Management

Continuous availability of the following consumables is mandatory: liquid soap, toilet paper, hand sanitizer, urinal deodorizer blocks, dustbin liners, naphthalene balls, and air fresheners. Stock levels must be verified by the Supervisor at the beginning of every shift.

2.5 Preventive Maintenance & Mandatory Mechanized Desludging

- **Weekly Maintenance:** Check plumbing lines, taps, flushing mechanisms, lighting fixtures, and electrical wiring.
- **Monthly Maintenance:** Service water pumps, exhaust fans, electrical distribution panels, and insect killers.
- **Quarterly Maintenance:** Inspect septic systems, soak pits, overhead tanks, and conduct complete plumbing overhauls.
- **100% Mechanized Desludging (Statutory Compliance):** In strict compliance with the *Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013*, the cleaning, emptying, and desludging of septic tanks, soak pits, and sewer lines shall be **100% mechanized using suction vacuum tankers and high-pressure jetting equipment.** Manual entry of any person into septic tanks, manholes, or sewer lines is strictly prohibited under all circumstances. Any violation shall result in immediate contract termination, blacklisting of the agency, forfeiture of performance security, and the registration of a criminal FIR under statutory legal provisions.

PART-III: Smart Toilet Monitoring System

3.1 System Architecture & Integration

The monitoring architecture shall be open, modular, and interoperable. All smart monitoring telemetry must be integrated via open REST APIs with the **NHAI Data Lake / Central Asset Management Platform.** This enables PD, RO, and HQ officials to monitor hygiene scores, hardware uptime, response times, and contractor SLA compliance on a single unified national dashboard.

3.2 Hardware & Sensor Requirements

Device / Sensor Type	Purpose & Monitored Parameters	Threshold / Operating Trigger
Odour & Air Quality Sensor	Monitor ammonia (NH_3), hydrogen sulphide (H_2S), TVOC, temp, humidity	NH_3 > 15 ppm (Warning); NH_3 > 25 ppm (Breach); H_2S > 5 ppm (Breach)
Footfall Sensor	Count users via optical/ToF sensors to optimize cleaning frequency	Automatically logs traffic for consumable indexing
Water Level Sensor	Monitor overhead water tank availability in real time	Storage < 25% triggers an automated refill alert
STP/Septic Level Sensor	Prevent sewage overflow by monitoring tank levels	Level > 80% triggers automated desludging requisition
Leak Detection Sensor	Detect sub-surface and plumbing leakages	Real-time alarm on continuous moisture detection
Door Occupancy Sensor	Monitor cubicle occupancy, dwell times, and availability	Real-time cubicle availability status
Power Monitoring Module	Monitor electrical grid and UPS backup failures	Alert on mains failure or battery dropping < 20%
IoT Gateway	Secure data aggregation and encrypted cellular transmission	4G/5G/Ethernet with continuous 15-min heartbeat ping
Wall-Mounted Touchscreen	10-inch ruggedized display collecting passenger satisfaction (1-5 Stars)	Ratings < 3 stars generate an immediate supervisor alert

3.3 Functional & Technical Specifications

- **Automated Alerting Engine:** Real-time SMS, email, and mobile push notifications dispatched for foul odour (NH_3 > 15 ppm), water shortage, sewage overflow, prolonged occupancy, or power outages.
- **Live Dashboard Displays:** Must display Hygiene Score, occupancy, cleaning schedules, complaint resolution logs, water/energy consumption, and citizen feedback.
- **Data Logging & Redundancy:** Minimum 1 year of historical data retention on the cloud, supported by local device-level offline ring-buffer storage of at least 30 days.
- **Engineering Specifications:** Minimum IP65 environmental rating, 230 V AC operating power with minimum 4 hours continuous online UPS battery backup, operational temperature 0-55°C, 99% cloud service uptime, over-the-air (OTA) firmware updates, and AES-256 data encryption.
- **Anti-Tampering Safeguards:** All IoT edge devices shall transmit an automated "heartbeat" keep-alive packet to the NHAI Data Lake at 15-minute intervals. If a sensor drops off while main power and gateway connectivity remain active, the system shall classify it as a **Tampering / Deliberate Disconnection Event**, subject to liquidated damages.

PART-IV: Inspection Framework

4.1 Tiered Routine Inspections

1. **Daily (Shift Supervisor):** Complete and verify the Daily Housekeeping Register (Annexure-I), Consumable Register, Biometric Muster, and Complaint Register.
2. **Weekly (Site Engineer / IE):** Complete the comprehensive 18-Point Weekly Inspection Checklist (Annexure-II) supported by geo-tagged, time-stamped photographs.
3. **Monthly (Nominated PIU Officer / PD):** The Manager/Dy. Manager (Technical) shall conduct a monthly joint inspection to generate the Monthly Performance Score (Annexure-III). The Project Director shall conduct quarterly reviews across all plazas under the PIU.
4. **Quarterly (Regional Office):** Random surprise quality and hygiene audits across plazas under the RO's jurisdiction.
5. **Annual (Third-Party Audits):** Independent technical, hygiene, accessibility, and asset durability audits commissioned by NHAI HQ.

4.2 QR Code & Citizen Feedback System

- **Prominent QR Signage:** Each toilet complex shall prominently display high-contrast QR codes and wall-mounted touchscreens linked to the **Rajmarg Yatra App**/Central Dashboard.
- **Interactive Options:** Users can submit star ratings (cleanliness, odour, water availability), log specific complaints, and upload photographs.
- **Automated Ticket Lifecycle:** Negative feedback and citizen complaints automatically populate the PIU dashboard, assign incident tickets, and initiate the SLA rectification timer.

PART-V: Consolidated Service Level Agreement (SLA), Liquidated Damages & Payment

5.1 Service Level Agreement & Deduction Principles

Liquidated damages specified below represent estimates of service shortfall deductions, for failure to meet contractual benchmarks.

- **Rule Against Double Deductions:** A single operational failure shall attract deductions under only one specific head (the higher amount if overlapping). Duplicate or cumulative deductions for the same underlying lapse are strictly prohibited.
- **Monthly Cap on Deductions:** Total cumulative deductions levied against an agency in any billing cycle shall not exceed **25% of the total monthly admissible O&M fee** (excluding consumable reimbursements). Deductions exceeding 25% for two consecutive months shall trigger an immediate show-cause (non performer) notice for contract default and termination.
- **Events of Excusable Delay:** Deductions shall not apply where failure arises directly from documented regional grid collapse exceeding UPS limits, borewell failure, or local force majeure, provided prompt manual mitigation was initiated by the agency.

5.2 Consolidated SLA & Liquidated Damages Schedule

Category	Parameter / Breach Event	Service Level Benchmark	Maximum Permissible Rectification Time	Liquidated Damages / Deduction Rate
Critical Outages	Toilet block closed	Facility open and accessible 24×7	1 Hour	₹5,000 per day or part thereof
	No water availability	Continuous pressurized water supply	1 Hour	₹2,000 per hour of outage
	Raw sewage overflow	Free-flowing drains and clear traps	Immediate (< 1 Hour)	₹10,000 per occurrence
	Complete electrical failure	Uninterrupted power and illumination	4 Hours	₹5,000 per day
Hygiene & Consumables	Dirty floors, stained pans, or foul odour	Dry floors, clean bowls, NH_3 < 15 ppm	2 Hours	₹1,000 per verified instance
	Unavailability of consumables	Liquid soap, paper, liners continuously stocked	2 Hours	₹500 per instance
	Overflowing dustbins	Empty, lined bins with closed lids	2 Hours	₹500 per instance
Functional Assets	Leaking tap / damaged plumbing fittings	Functional, drip-free quarter-turn taps	12 Hours	₹300 per day of delay
	Broken WC, flush valve, or cistern	Intact fixtures and functional flushing	24 Hours	₹500 per day of delay
	Broken door, lock, hinge, or partition	Secure, functional cubicle privacy doors	48 Hours	₹1,000 per day of delay
	Broken mirror or cosmetic trim	Clean, intact mirrors and accessories	72 Hours	₹300 per day of delay
	Failed illumination / dark exterior zone	Uniform lighting (40 lux); zero dark spots	12 Hours	₹500 per day of delay
Manpower Deficits	Absence of mandated housekeeping staff	Shift deployment strictly as per Para 2.1	Immediate (< 1 Hour)	₹1,000 per staff member per shift
Smart IoT Systems	Sensor downtime / gateway communication drop	99% continuous cloud telemetry uptime	48 Hours	₹10,000 per day beyond 48 hours
	Intentional sensor tampering / disconnect	Zero tolerance for deliberate deactivation	Immediate	₹5,000 per detected occurrence
Customer Satisfaction	Low user feedback rating (< 80% satisfaction)	>90 % positive user feedback score	30-Day Cycle	Show-cause; 3 consecutive low months initiates agency debarment

5.3 Payment Terms & Financial Settlements

- **5.3.1 Manpower Remuneration:** Remuneration for additional housekeeping staff & supervisor beyond the 01 staff already covered in the toll collection agreement shall be paid directly to the agency based on Aadhaar Biometric Attendance System (BAS) certification by the PIU on a monthly basis. The PIU must verify and certify that baseline staff costs are not double-billed.
- **5.3.2 Footfall-Indexed Consumables Reimbursement:** Consumable expenditures shall be reimbursed monthly based on verified usage rather than an open-ended flat ceiling:
- *Base Allocation:* Up to ₹20,000/- per month for blocks having an area up to 50 sqm (covering up to 2,000 user visits), and up to ₹30,000/- per month for blocks larger than 50 sqm (covering up to 2,500 user visits).
- *Footfall Multiplier:* For high-traffic plazas where verified IoT footfall sensor logs exceed baseline thresholds, an additional reimbursement of **₹1,500 per incremental 1,000 verified users** shall be admissible, subject to a maximum overall cap of 50% above the base allocation.
- *Audit Submission:* Invoices must be accompanied by original paid GST bills, store issue registers certified by the Supervisor, and automated footfall logs sheet.
- **5.3.3 Reimbursement for Major Structural / Latent Defects:** Costs toward rectifying major structural failures, deep borewell collapses, or main sewer fractures (not attributable to poor workmanship during the 1-year rehabilitation DLP or operational negligence) shall be reimbursed by the PIU based on estimates pre-certified by the Joint Committee under Para 1.5.
- **5.3.4 Rehabilitation Progress Payments:** Rehabilitation payments shall be released monthly during construction based on progress certification by the Team Leader (TL) / Architect of the IE/PIU.
- **5.3.5 Architect Fee Milestone Disbursements:** Disbursed strictly across the three verified milestones outlined in **Para 1.7.**

ANNEXURE-I: Daily Housekeeping Register

Toll Plaza Name: _____

Date: _____

Block ID / Direction: _____

(Inspections and physical register entries are mandatory every 2 hours)

Inspection Time	Toilet Cleaned (Y/N)	Water Available (Y/N)	Soap Dispenser Full (Y/N)	Tissue Paper Available (Y/N)	Odour Level Acceptable (Y/N)	Panic Button / Intercom OK (Y/N)	Attendant Signature	Supervisor Signature
06:00								
08:00								
10:00								
12:00								
14:00								
16:00								
18:00								
20:00								
22:00								
00:00								
02:00								
04:00								

ANNEXURE-II: Weekly Technical & Safety Checklist

Inspecting Engineer: _____

Designation: _____

Date of Audit: _____

S.No.	Parameter	Pass (□)	Fail (□)	Observations / Defect Remarks
1	Floor clean, anti-skid tiles intact, grout sealed	□	□	
2	Walls, ceramic tiles, and external cladding clean	□	□	
3	European/Indian WCs clean and flushing properly	□	□	
4	Urinals and auto-flush mechanisms fully functional	□	□	
5	Wash basins clean; quarter-turn taps drip-free	□	□	
6	Uninterrupted overhead water pressure verified	□	□	
7	Consumables (liquid soap, tissue rolls, liners) stocked	□	□	
8	Illuminance measured (40 lux) zero dark spots	□	□	
9	Commercial exhaust fans clean and running quietly	□	□	
10	Doors, drop-seals, hinges, and privacy locks functional	□	□	
11	Floor drains clear; septic lines moving freely	□	□	
12	Odour acceptable; ammonia reading < 15ppm	□	□	
13	Exterior approach CCTV cameras fully operational	□	□	
14	SOS Panic buttons and Toll Control Room intercom tested	□	□	
15	Sanitary pad vending machine and incinerator functional	□	□	
16	5-meter perimeter cleared of grass; insect killers active	□	□	
17	All IoT sensors operational with active Data Lake telemetry	□	□	
18	Interactive touch screen and QR code signage intact	□	□	

Signature of Inspecting Engineer: _____

ANNEXURE-III: Monthly Performance Assessment Format

PIU: _____

Toll Plaza Name: _____

Evaluating Officer: _____

Date of Joint Review: _____

The composite monthly performance score shall be weighted: **50% Physical Joint Inspection + 30% IoT Hygiene Telemetry + 20% Verified Citizen Feedback.**

Evaluation Parameter	Max Points	Assessed Score	Deficiencies Noted & Deductions Levied
Physical Cleanliness & Aesthetics (Floors, walls, forecourt)	20		
Sanitary & Hardware Functionality (WCs, taps, doors, latches)	20		
Continuous Water Availability & Storage	15		
Electrical Safety, Illumination (40 lux) & Exhausts	10		
Stocking of Consumables & Feminine Hygiene Amenities	10		
Universal Accessibility (PwD Ramps, Grab Bars, Doorways)	5		
Women's Safety Provisions (CCTV, Panic Alarm, Clear Approach)	5		
Odour Control (NH_3 < 15ppm) & Pest Proofing	5		
Housekeeping Manpower Presence & Biometric Compliance	5		
Overall Maintenance, Painting & Approach Road Upkeep	5		
Total Physical Inspection Score	**100 Marks**		*(Evaluated for 50% overall weightage)*

Composite Performance Calculation:
Composite Score = (0.50 * Physical Score) + (0.30 * IoT Telemetry Score) + (0.20 * Citizen Rating Score)

Evaluating Officer Remarks: _____

Corrective Actions Required: _____

Target Completion Date: _____

Photographs Attached: Yes / No

Project Director Signature: _____

ANNEXURE-IV: Technical Specifications of IoT Monitoring System

Hardware Parameters

Parameter	Technical Requirement
Ingress Protection	Minimum IP65 (dust-tight and protected against water jets)
Power Supply	230 V AC nominal, 50 Hz with industrial surge suppression
Battery Backup	Minimum 4 Hours continuous online UPS backup
Communication	4G/5G Cellular with Wi-Fi and Ethernet redundancy
Operating Temperature	0-55°C industrial operating grade
Data Logging	Minimum 1 Year searchable cloud history; 30-day offline buffer
OTA Updates	Mandatory Over-the-Air firmware upgrade support
Encryption	AES-256 data encryption for storage and transit
Time Synchronization	NTP / GPS time synchronization
Heartbeat & Telemetry	Mandatory edge heartbeat transmission every 15 minutes

Sensor Calibrations

- **Ammonia (NH_3):** Range 0-100 ppm; accuracy +_2ppm; alert threshold set at 15 ppm.
- **Hydrogen Sulphide (H_2S):** Range 0-50 ppm; accuracy +_1 ppm; alert threshold set at 5 ppm.
- **Total Volatile Organic Compounds (TVOC):** Range 0-10,000ppb; automatic zero-drift compensation.
- **Water Level Sensor:** Ultrasonic non-contact sensor; range 0.2 m to 4.0m; IP67 rating.
- **Footfall Sensor:** Directional time-of-flight / stereoscopic optical counter; >98 counting accuracy.

Software Platform & Data Lake Integration

- Web dashboard featuring GIS mapping of all toll plaza sanitary facilities nationwide.
- Role-based access control for Toll Operating Agencies, PIU, RO, and NHAI HQ.
- Live dashboards displaying Hygiene Scores, sensor telemetry, occupancy, cleaning schedules, and active alerts.
- Historical analytics, trend graphs, and downloadable compliance reports.
- QR code-based citizen feedback with photo upload capability linked to the Rajmarg Yatra App.
- Automatic SMS/email/mobile push notifications triggered upon sensor threshold breaches.
- Open REST APIs for continuous two-way integration with the NHAI Data Lake and Asset Management Portal with guaranteed 99% cloud uptime.
- Immutable digital audit trail of all inspections, sensor alerts, maintenance dispatches, and citizen feedback resolutions.