



HAZARD IDENTIFICATION AND RISK ASSESSMENT

Exhaust Fan & Secondary Fan Installation / Replacement

HVAC Works — Site, ABC

1. Document Details

Contract Name	Site HVAC Works	Contract No.	MS-HVAC-EF-002
Organisation	[Insert Organisation / Company Name]	Main Contractor	[Insert Main Contractor Name]
Sub-Contractor	[Insert Sub-Contractor Name]	Site / Location	ABC
Activity	Exhaust Fan & Secondary Fan Installation / Replacement	Activity Type	Routine Activity
Date of Assessment	29 March 2026	Review Date	[Insert Review Date]
Prepared By	Mechanical Engineering Team	Reviewed By (HSE)	[Insert HSE Officer Name & Designation]
Approved By	[Insert Approving Authority Name & Designation]	Persons at Risk	HVAC Technicians, Electricians, Supervisors, Helpers, Site Engineers, Visitors
Document Classification	INTERNAL — Do not distribute outside the organisation without authorisation		

2. Legislative & Regulatory Context

This risk assessment has been prepared in accordance with the following international standards and guidance. Organisations must supplement with applicable national legislation and industry codes:

- ISO 45001:2018 — Occupational Health and Safety Management Systems (Hazard identification, risk assessment & controls — Clause 6.1)
- ISO 31000:2018 — Risk Management — Principles, Framework and Process
- ISO 9001:2015 — Quality Management Systems (applicable to workmanship and inspection standards)
- ILO OSH 2001 — Guidelines on Occupational Safety and Health Management Systems (global applicability)
- ISO 11228 series — Ergonomics / Manual Handling (ISO 11228-1 Lifting & Carrying; ISO 11228-2 Pushing & Pulling)
- ISO 9612:2009 — Acoustics — Determination of Occupational Noise Exposure
- ISO 5349-1:2001 / ISO 5349-2:2001 — Mechanical Vibration — Hand-Arm Vibration
- ISO 7933:2023 — Ergonomics of the Thermal Environment — Heat Stress
- ISO 10333 series — Personal Fall Protection Equipment
- IEC 60900 / IEC 60309 — Electrical Safety Standards for Portable Power Tools and Industrial Sockets
- IEC 60079 series — Explosive Atmospheres (applicable to confined space gas detection)

- ISO 45003:2021 — Psychological Health and Safety at Work (heat stress, fatigue, and shift work)
- ISO 22301:2019 — Business Continuity / Emergency Preparedness (Clause 8.4)
- [Insert applicable national occupational safety and health legislation]
- [Insert applicable national working at height / scaffold regulations]
- [Insert applicable national electrical safety / LOTO standard]

3. Scope and Purpose

This risk assessment identifies hazards and evaluates risks associated with the removal, supply, and installation of exhaust fans and secondary fans at the QAW Site, Abu Dhabi. The scope of work covered is:

- **2 No's of Exhaust Fans — Old-to-New Replacement (like-for-like)**
- **2 No's of Secondary Fans — Old-to-New Replacement (like-for-like)**
- **1 No of Secondary Fan at 5.5 Floor — New Installation for New Process Line**

Activities covered include pre-installation checks, electrical isolation (LOTO), removal of existing fans, installation of new units, ductwork flexible connection, anti-vibration mounting, electrical reconnection, bump testing, commissioning, and working at height. Control measures are referenced to applicable international standards.

4. Risk Assessment Matrix (RAM) Reference

Risk Rating (R) = Likelihood (L) × Severity (S). Aligned with ISO 45001:2018 Clause 6.1 and ISO 31000:2018 risk evaluation principles.

Severity (S)	Probability (P)	Risk Rating (R) = S × P	Action Required	Rating Scale	ISO Reference
1 – No Injury 2 – Minor Injury 3 – +3 Day Absence 4 – Major Injury 5 – Death	1 – Very Unlikely 2 – Unlikely 3 – Likely 4 – Very Likely 5 – Virtually Certain	1–5 → LOW 6–14 → MEDIUM 15–25 → HIGH	LOW – Acceptable, proceed MED – Review & additional controls HIGH – Stop; further controls required	HIGH (15–25) MEDIUM (6–14) LOW (1–5)	ISO 45001:2018 Cl.6.1 ISO 31000:2018

5. Hazard Identification and Risk Assessment Matrix

Sub-Activity	Hazard	Who is at Risk	Consequence(s)	L	S	R	Control Measures (with Int'l Standard Reference)	L	S	R	Person Responsible
Activity 1 — Pre-Installation Checks & Material Inspection											
Material Inspection & Site Preparation	- Receipt of damaged fan units due to transit mishandling - Incorrect fan specification installed (wrong model, rotation, rating) - Slips and trips from packaging debris in work area - Manual handling injury during unloading of fan units	HVAC Technicians, Helpers, QC Inspector	- Personnel injury from falls or falling objects - Non-conforming equipment leading to rework or system failure - Back and musculoskeletal strain from unloading	3	3	MED (9)	- Inspect all fan units immediately upon delivery. Record any transit damage on the delivery note and notify the client representative (Ref: ISO 9001:2015 Cl.8.4). - Verify fan model number, motor rating, impeller size, and rotation direction against approved material submittal before installation (Ref: ISO 45001:2018 Cl.8.1). - Maintain a clean, tidy, and well-lit work area. Remove packaging materials immediately after unloading. - Use mechanical aids (trolleys, pallet jacks) for fan units >25 kg. Conduct pre-lift briefing (Ref: ISO 11228-1:2003 — Manual lifting). - Daily toolbox talk to be conducted prior to commencement (Ref: ISO 45001:2018 Cl.7.3).	1	2	LOW (2)	Site Engineer Supervisor / Foreman
Activity 2 — Electrical Isolation — Lock-Out / Tag-Out (LOTO)											
Electrical Isolation (LOTO)	- Electric shock or electrocution from live conductors during fan removal - Inadvertent re-energisation while crew is working on fan - Failure to verify zero voltage before contact - Inadequate LOTO allowing simultaneous isolation removal by different parties	HVAC Technicians, Electricians	- Fatal electrocution or severe electrical burns - Arc flash injury - Cardiac arrest from electric shock	3	5	HIGH (15)	- Formal LOTO procedure to be implemented by a qualified electrician before any fan removal or installation commences (Ref: ISO 45001:2018 Cl.8.1.2 — Hierarchy of controls). - Every member of the working crew to apply their own personal lock to the isolation point; each lock to be tagged with the worker's name. - Zero voltage to be verified using an approved voltage tester before touching any electrical connections; results to be recorded. - Isolation point to remain locked for the full duration of the work activity; locks to be removed only by the person who applied them. - All electrical work to be performed by competent, authorised electricians only (Ref: IEC 60900; applicable national electrical safety standard).	1	5	LOW (5)	Electrical Supervisor HSE Officer

Sub-Activity	Hazard	Who is at Risk	Consequence(s)	L	S	R	Control Measures (with Int'l Standard Reference)	L	S	R	Person Responsible
							- Insulated tools and appropriate electrical PPE (insulated gloves, face shield) to be worn during all electrical activities. - Permit to Work (PTW) for electrical isolation to be obtained and signed off before commencing.				
Activity 3 — Removal of Existing Exhaust / Secondary Fans (Replacement Units)											
Fan Removal (Dismantling & Disconnection)	- Manual handling injury from lifting/manoeuvring heavy fan units - Falling fan unit or components striking personnel below - Cuts and lacerations from sharp fan casing edges, fixing bolts, or conduit - Residual rotation of fan impeller after isolation (coast-down injury) - Dust, debris, and contaminants released from existing ductwork on disconnection	HVAC Technicians, Helpers, Persons in Vicinity	- Crush or musculoskeletal injury from heavy fan units - Struck-by injuries from dropped components - Laceration from sharp edges - Entanglement injury from residual impeller rotation - Respiratory irritation from duct debris	3	4	MED (12)	- LOTO to be confirmed in place and zero voltage verified before dismantling commences. - Allow fan impeller to come to a complete stop before any mechanical work. Lock impeller with timber wedge if required. - Photograph and label all electrical connections before disconnection; cap all conductors after disconnection. - Use appropriate mechanical lifting equipment (chain block, trolley) for fans exceeding manual handling capacity (Ref: ISO 11228-1:2003). - Establish exclusion zone below any elevated fan removal. Minimum 2 personnel for all lifting operations. - Wear cut-resistant gloves (EN 388 Level C+) when handling fan casings and sharp components. - Cap all open duct ends immediately after disconnection to prevent ingress of debris. Wear dust mask (FFP2) during disconnection (Ref: ISO 16972:2020). - Dispose of old fan units in accordance with the site waste management plan.	1	3	LOW (3)	HVAC Supervisor Site Engineer
Activity 4 — Installation of New Exhaust / Secondary Fans (Replacement & 5.5 Floor New Line)											
New Fan Installation (Positioning, Fixing & Connecting)	- Manual handling and lifting of new fan units to mounting position - Falls from height when installing fans at elevated or ceiling locations - Falling tools or fan components onto personnel below	HVAC Technicians, Helpers, Persons Below	- Musculoskeletal injury from heavy lifting - Fatal or serious injury from fall from height - Struck-by injury from dropped components - Premature fan failure from misalignment - Structural collapse from inadequate fixing	4	4	HIGH (16)	- Working at height permit (PTW) to be obtained for any installation above 2 metres (Ref: ISO 45001:2018 Cl.8.1; ISO 10333 series — Fall protection). - Approved scaffold, work platform, or mobile elevating work platform (MEWP) to be used. Operators of MEWP to be certified (Ref: ISO 18878:2004). - Full-body harness with double lanyard to be worn where guardrail collective protection is	1	4	LOW (4)	HVAC Supervisor Site Engineer HSE Officer

Sub-Activity	Hazard	Who is at Risk	Consequence(s)	L	S	R	Control Measures (with Int'l Standard Reference)	L	S	R	Person Responsible
	- Incorrect alignment causing mechanical stress on ductwork or fan bearings - Anchor failure from inadequate structural fixing of fan to support - New process line at 5.5 Floor — structural support not yet confirmed adequate						not feasible; anchor points to be engineer-certified. - Tool lanyards and secured pouches to be used for all tools and fixings at height to prevent dropped object incidents. - Exclusion zone to be established below all elevated installation works; hard hats mandatory for all personnel in proximity. - For 5.5 Floor new installation: confirm structural support is complete and approved by structural engineer before positioning fan unit (Ref: ISO 9001:2015 Cl.8.5). - Install anti-vibration mounts (AVMs) per manufacturer specification. Verify fan level with spirit level before final fixing. - Mechanical lifting aids to be used for fans exceeding manual handling limits; lifting plan to be prepared for complex picks (Ref: ISO 11228-1:2003). - Use colour-coded, load-rated slings and shackles. Certified rigger and banksman for mechanical lifts.				
Activity 5 — Flexible Ductwork Connection & Duct Sealing											
Flexible Duct Connection (Inlet / Outlet)	- Cuts and lacerations from sharp GI duct edges and stainless-steel clamps - Awkward postures and overreaching to connect flexible duct in confined plant room - Inhalation of duct sealant fumes in poorly ventilated areas - Loose or improperly secured flexible connections separating under fan operation	HVAC Technicians	- Laceration injuries from sharp metal edges - Musculoskeletal strain from awkward access - Respiratory irritation from sealant vapours - System failure from unsecured ductwork	3	3	MED (9)	- Wear cut-resistant gloves (EN 388 Level C+) during all ductwork connection activities. - Deburr all cut duct edges before handling. - Ensure adequate ventilation in plant room during sealant application; use forced ventilation where natural ventilation is insufficient (Ref: ISO 45001:2018 Cl.8.1.2). - Wear half-face dust/vapour respirator with appropriate cartridge during sealant application in enclosed areas (Ref: ISO 16972:2020). - Secure all flexible duct connections with stainless-steel clamps of correct size. Inspect all connections before fan start-up. - Review MSDS/SDS for duct sealant; check flammability and vapour hazard rating before use (Ref: GHS — Globally Harmonised System). - Daily task briefing to all workers prior to commencement (Ref: ISO 45001:2018 Cl.7.3).	1	2	LOW (2)	HVAC Supervisor Site Engineer

Sub-Activity	Hazard	Who is at Risk	Consequence(s)	L	S	R	Control Measures (with Int'l Standard Reference)	L	S	R	Person Responsible
Activity 6 — Electrical Reconnection, Bump Test & Commissioning											
Electrical Reconnection & Fan Testing	- Electric shock from incorrect reconnection or live testing without adequate controls - Incorrect phase connection causing reverse rotation — impeller damage - Overloading of motor from incorrect wiring or VFD setting - Vibration and noise from misaligned or improperly mounted fan unit - Entanglement with rotating fan impeller during bump test if guards not reinstated - Unexpected energisation injuring personnel still working on the unit	Electricians, HVAC Technicians, Commissioning Engineers	- Electrocution or electric burns from live conductor contact - Fan impeller damage from reverse rotation - Motor overload burnout - Personnel injury from unguarded rotating parts	3	4	MED (12)	- Reconnection of electrical wiring only to be performed by a qualified, authorised electrician per the motor wiring diagram and as-photographed configuration. - Conduct insulation resistance (IR) test on motor windings and cable cores before energisation. Record and submit results. - Confirm all mechanical work is fully complete and all personnel are clear before LOTO locks are removed. - Perform bump test to verify correct rotation direction. If rotation is reversed, swap any two supply phases in a de-energised state before re-testing. - All fan guards and access panels to be fully reinstated before any energisation. - Measure full-load current (FLA) and compare against motor nameplate. Record on commissioning sheet. Investigate any overcurrent before continued operation (Ref: ISO 45001:2018 Cl.9.1). - Check for abnormal vibration, noise, and overheating during first run. Any anomaly to be investigated and rectified before handover. - Mandatory PPE during all testing: insulated gloves, safety glasses, hearing protection.	1	3	LOW (3)	Electrical Supervisor HVAC Engineer
Activity 7 — Working at Height (Plant Rooms, Elevated Fan Locations, 5.5 Floor)											
Working at Height (Scaffold, Platforms, Access)	- Falls from elevated fan mounting positions, ceiling mounts, or pipe rack areas - Improper or overloaded scaffold or access platform - Falling tools, components, and fixings onto personnel below - Unsafe ladder use for access - Structural instability of temporary access platforms - Adverse conditions (wet floor in plant room, limited headroom)	HVAC Technicians, Helpers, Supervisors, Persons Below	- Fatal or serious injury from falls from height - Struck-by injuries from falling objects - Fractures, crush or head injuries - Equipment and structural damage	4	5	HIGH (20)	- Working at height permit (PTW) to be obtained prior to any work above 2 metres (Ref: ISO 45001:2018 Cl.8.1). - Working at height training to be provided and documented for all personnel involved (Ref: ISO 45001:2018 Cl.7.2 — Competence). - Scaffold to be erected by certified scaffold erectors only; scaffold to be inspected, tagged GREEN, and registered before use. Re-inspect after any adverse event. - Full-body harness complying with ISO 10333-1 and double lanyards with energy absorbers to be used where collective fall protection (guardrails) is not feasible.	1	5	LOW (5)	HSE Officer Site Engineer Supervisor / Foreman

Sub-Activity	Hazard	Who is at Risk	Consequence(s)	L	S	R	Control Measures (with Int'l Standard Reference)	L	S	R	Person Responsible
							- Anchor points to be identified, certified, and load-rated by a structural engineer prior to harness attachment. - Tool lanyards and secured tool pouches to be used for all tools and fasteners at height. - Exclusion zone to be established directly below elevated work; warning signs and barriers to be erected; hard hats mandatory. - MEWP operators to be certified; platforms to be operated within manufacturer capacity and weather limits (Ref: ISO 18878:2004). - No more than one operative to stand on a ladder at any time; ladders secured at top; ladders for access only, not as working platform. - Work to cease in high wind speeds or adverse weather affecting grip and stability.				

Activity 8 — Use of Power Tools & Hand Tools

Power Tools & Hand Tools (Drills, Grinders, Spanners)	- Electrocution from damaged cables or faulty power tools - Hand and finger injuries from drills, grinders, and cutting tools - Noise and hand-arm vibration from power tools - Eye injuries from particles generated during drilling or grinding - Trip hazards from trailing electrical cables in plant room - Sparks from angle grinder causing fire near combustible materials	HVAC Technicians, Electricians, Adjacent Personnel	- Electrocution and electrical burns - Laceration and crush injuries to hands - Hearing loss from prolonged noise exposure - Hand-arm vibration syndrome (HAVS) - Eye injury from particles or swarf	3	4	MED (12)	- All portable electrical equipment to be PAT tested and colour-coded; test dates to be displayed on equipment (Ref: IEC 60900; IEC 60309). - Daily visual inspection of all electrical connections and cables by operator before use; damaged equipment to be removed from service immediately. - Residual current device (RCD) to be used at the supply socket for all 230V equipment. - Noise assessment to be conducted; hearing protection (SNR ≥ 25 dB) to be worn when using power tools in designated noise zones (Ref: ISO 9612:2009). - Hand-arm vibration exposure to be managed through job rotation and selection of low-vibration tools (Ref: ISO 5349-1:2001). - Eye protection (safety glasses or face shield) to be worn during all drilling, grinding, and cutting operations (Ref: ISO 16321 series). - Hot work permit to be obtained if grinding near combustible duct insulation materials. Fire extinguisher to be immediately available. - Only trained and competent operatives to operate power tools (Ref: ISO 45001:2018 Cl.7.2).	1	3	LOW (3)	Site Engineer Supervisor / Foreman
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Sub-Activity	Hazard	Who is at Risk	Consequence(s)	L	S	R	Control Measures (with Int'l Standard Reference)	L	S	R	Person Responsible
							Cables to be routed and managed to prevent tripping hazards; cables not to be repaired with insulating tape.				
Activity 9 — Working in Plant Rooms / Restricted Spaces											
Plant Room Working (Heat, Confined Access, Noise)	- Heat stress from high ambient temperature in enclosed plant rooms - Oxygen deficiency or accumulation of gases in enclosed areas (if applicable) - Limited egress in emergency from densely equipped plant rooms - Excessive noise from multiple running systems in plant rooms - Poor lighting conditions in plant room areas - Slips on wet plant room floors (drainage, condensation)	HVAC Technicians, Electricians, All Plant Room Personnel	- Heat exhaustion, heat stroke, or loss of consciousness - Asphyxiation in oxygen-deficient atmosphere - Delayed emergency evacuation - Noise-induced hearing loss - Slip, trip, and fall injuries	3	4	MED (12)	- Check ventilation adequacy before entry into enclosed plant rooms. Provide forced ventilation fans where required (Ref: ISO 45001:2018 Cl.8.1.2). - Monitor temperature. Comply with site heat stress management plan. Provide cool drinking water; rest breaks of 10 minutes per 50 minutes in hot conditions (Ref: ISO 7933:2023; ISO 45003:2021). - Atmospheric gas test to be conducted if plant room has confined space classification; use calibrated multi-gas detector (O2, LEL, CO, H2S) (Ref: IEC 60079 series). - Buddy system to be enforced in plant rooms at all times. No lone working. - Ensure adequate lighting (minimum per applicable national standard) in all work areas. Provide personal torches for backup. - Hearing protection to be worn in designated noise zones (Ref: ISO 9612:2009). - Wet floors to be clearly marked with warning signs. Wear safety boots with slip-resistant soles. - Emergency rescue plan and emergency contact numbers to be communicated to all plant room personnel before entry (Ref: ISO 22301:2019 Cl.8.4).	1	3	LOW (3)	HSE Officer Site Engineer
Activity 10 — Working in Hot Weather / Direct Sun Exposure											
Hot Weather Working (Heat Stress & Sun Exposure)	- Continuous working without adequate hydration in hot climate - Prolonged exposure to direct sunlight during outdoor works - Wearing PPE and coveralls increasing body heat load - Fatigue from extended shifts in high temperature environments	HVAC Technicians, All Site Operatives, Supervisors	- Heat exhaustion, heat cramps, heat stroke - Nausea, dizziness, disorientation, loss of consciousness - Fatality from untreated heat stroke in extreme cases	4	5	HIGH (20)	- Daily safety task briefing to include heat stress awareness before commencement (Ref: ISO 45001:2018 Cl.7.3). - Comply with site heat stress / summer working plan and applicable national heat-work regulation. - Monitor Wet Bulb Globe Temperature (WBGT) or equivalent at the worksite; modify or suspend activities when threshold limits are exceeded (Ref: ISO 7933:2023 — Ergonomics of thermal environment).	1	5	LOW (5)	HSE Officer Construction Manager Site Engineer

Sub-Activity	Hazard	Who is at Risk	Consequence(s)	L	S	R	Control Measures (with Int'l Standard Reference)	L	S	R	Person Responsible
	New or returning workers not acclimatised to heat						- Cool drinking water to be available at all times; workers to drink minimum 250 ml every 20 minutes. - Shaded and temperature-controlled rest areas with seating to be provided near the work area. - Minimum scheduled rest breaks: 10 minutes rest per 50 minutes work in high temperature conditions. - Buddy system to be enforced to monitor colleague health and identify early heat illness symptoms (Ref: ISO 45003:2021). - Heavy tasks to be re-scheduled to the coolest parts of the day where possible. - New and returning workers to undergo acclimatisation protocol before assignment to hot environment tasks. - Supervisors to be trained to recognise symptoms of heat stress and to take immediate action. - First aid personnel to be available on site and trained in heat illness management.				
Activity 11 — Quality Inspection, Testing & Final Commissioning											
QC Inspection & Commissioning Check	- Cuts and abrasions from sharp fan casing or duct edges during inspection - Slips, trips, and falls in plant room inspection areas - Falls from height during inspection of elevated fan units - Electric shock when using inspection instruments near live systems - Noise exposure during fan operational testing	QC Inspectors, Engineers, HSE Personnel, Visitors	- Cut and abrasion injuries - Trip and fall injuries - Fall from height during elevated fan inspection - Electrical injury during commissioning	3	3	MED (9)	- Pre-inspection safety briefing to be conducted with all inspection team members (Ref: ISO 45001:2018 Cl.7.3). - Cut-resistant gloves to be worn during physical inspection of fan casings and ductwork. - All walkways and inspection routes to be checked for trip hazards before inspection team enters the area. - Working at height procedure and permit to be followed for inspection of elevated fan installations (Ref: ISO 45001:2018 Cl.8.1). - All inspection and commissioning equipment to be electrically tested and in good condition; no use of damaged instruments near live systems. - Hearing protection to be worn during fan operational tests (Ref: ISO 9612:2009). - All commissioning results (voltage, FLA, IR, vibration, noise) to be formally documented and signed by client inspector (Ref: ISO 9001:2015 Cl.8.6).	1	2	LOW (2)	HVAC Engineer QC Engineer Site Engineer

Sub-Activity	Hazard	Who is at Risk	Consequence(s)	L	S	R	Control Measures (with Int'l Standard Reference)	L	S	R	Person Responsible
							Mandatory PPE: safety glasses, cut-resistant gloves, hard hat, safety boots, hearing protection.				

6. Further Actions

- Conduct continuous risk monitoring across all activities and update this assessment after any incident, near-miss, or change in scope (Ref: ISO 45001:2018 Cl.9.1 — Performance evaluation).
- Conduct toolbox talks covering all activities listed in this assessment before work commencement each day.
- Integrate lessons learned from site incidents and near-misses into revised control measures.
- Ensure all personnel receive regular refresher training in line with ISO 45001:2018 Cl.7.2.
- Update all safety protocols annually or in accordance with changes to applicable national legislation.
- Engage with [Insert national HSE authority / labour inspection body] for site-specific regulatory guidance.
- Verify that all replacement fan units comply with the approved material submittal, motor rating, and HVAC system design intent.

7. Document Sign-Off

Prepared By	Reviewed By (HSE Officer)	Approved By
Name: [Insert] Designation: [Insert] Signature: Date: [Insert]	Name: [Insert] Designation: [Insert] Signature: Date: [Insert]	Name: [Insert] Designation: [Insert] Signature: Date: [Insert]

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The following is **relevant Indian compliance reference list** you can include in your *Method Statement for Exhaust Fan Replacement & Installation Works*. These are based on **BIS standards, CPWD specifications, and electrical safety regulations applicable in India**.

Indian Compliance Reference List (For Exhaust Fan Works)

1. Statutory & Regulatory Requirements

Indian Electricity Act, 2003

→ Governs all electrical installations and safety compliance in India

Central Electricity Authority (CEA) Regulations, 2010

→ Measures relating to safety and electric supply (mandatory for installation & maintenance)

2. National Codes & General Electrical Standards

National Electrical Code of India (NEC) 2023 – SP 30

→ Covers planning, installation, operation, and maintenance of electrical systems

IS 732:2019 – Code of Practice for Electrical Wiring Installations

→ Design, erection, inspection, and testing of wiring systems

IS 3043:1987 – Code of Practice for Earthing

→ Earthing requirements for all electrical equipment

3. Fan-Specific Standards (Very Important for Your Scope)

IS 302 (Part 2/Section 80):2017 + A1:2023

→ Safety requirements for electric fans (including exhaust & ventilation fans)

IS 302 (Part 1): General Safety for Electrical Appliances

→ Covers electrical, thermal, and mechanical safety

BIS Certification (ISI Mark) Requirement

→ Mandatory for all electric fans sold/installed in India

IS 11037:2019 – Fan Regulators Specification

→ Applicable if speed control systems are involved

4. Installation & Workmanship Standards

CPWD General Specifications for Electrical Works (Latest Edition – 2023)

Key clauses for exhaust fans:

Proper wall opening and mounting with rag bolts

Connection with flexible wiring

Correct rotation direction verification

Installation at designated locations

Proper finishing after installation

5. Safety & Testing Requirements

Pre-commissioning checks as per **IS 732 & NEC**

Insulation resistance test

Earthing continuity test

Functional testing of fan rotation and airflow

Protection against:

Electric shock

Overheating

Mechanical hazards

(BIS standards emphasize safety against electrical, thermal, and fire risks)

6. Additional Recommended Standards (Good Practice)

IS/IEC 60335 series (aligned with IS 302) → Appliance safety

National Building Code (NBC) 2016 – Part 8 (Building Services)

→ Ventilation and electrical installation guidelines

How to Mention in Your Method Statement

You can include a section like:

“All works shall be carried out in compliance with the following Indian Standards and Regulations:”

Indian Electricity Act 2003

CEA Safety Regulations 2010

NEC 2023 (SP 30)

IS 732:2019

IS 3043:1987

IS 302 (Part 2/Section 80)

CPWD Electrical Specification

