Chola MS Risk Services

Audit date: 2025-09-01 • Report generated: 2025-09-01T0642Z

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High Risks	Medium Risks	Low Risks	Total Observations
64	41	27	135

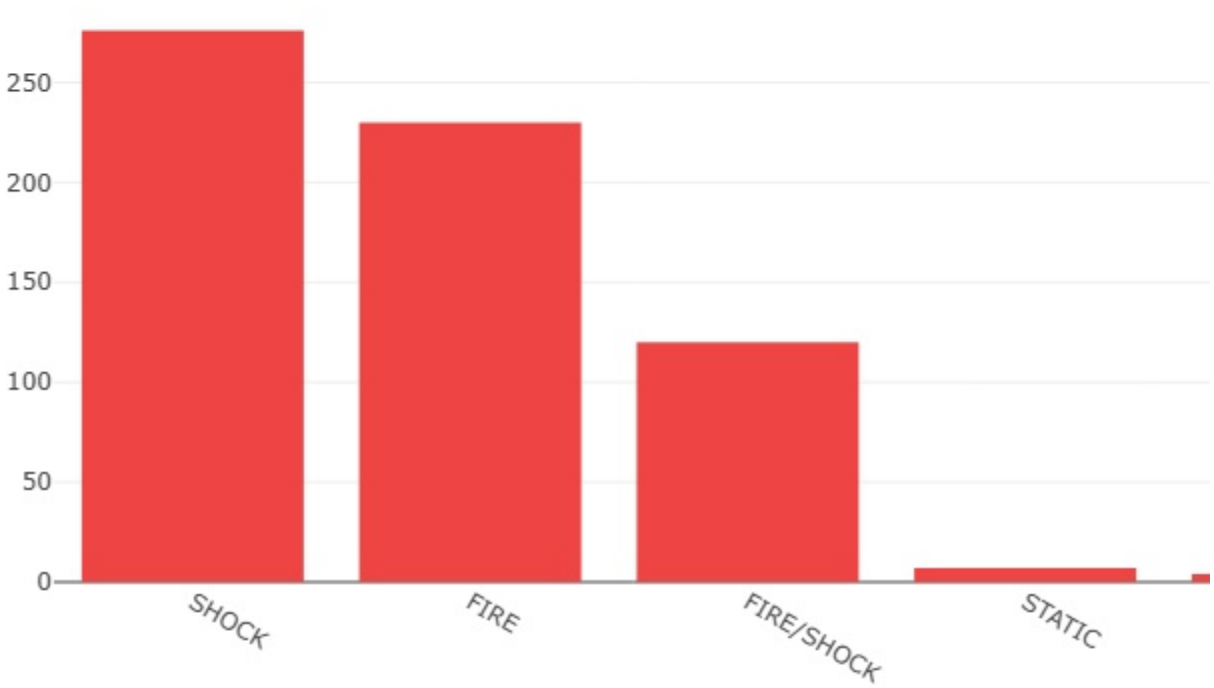
Executive Summary

This audit revealed 135 electrical safety deficiencies across the facility, posing significant risks to personnel and operations. Of these findings, 64 were classified as high risk, 41 as medium risk, and 27 as low risk. The high concentration of high-risk findings indicates a critical need for immediate corrective action. Recurring themes include inadequate cable sizing and protection (overloaded circuits with improperly rated Miniature Circuit Breakers - MCBs), compromised distribution board integrity, and unsafe work practices such as using aluminum ladders for electrical work. These issues are prevalent in critical areas including the control center, workshop, and logistics areas, increasing the potential for fire, shock, and equipment damage. The examples provided highlight the severity of the risks. Multiple instances of undersized wiring connected to oversized MCBs create a significant fire hazard due to potential overheating. Faulty Residual Current Breakers (RCBs) fail to provide essential protection against electric shock. Poor cable routing and inadequate distribution board protection further exacerbate these risks. These issues, coupled with unsafe work practices, create a high-probability environment for serious incidents. Immediate action is required to mitigate these risks and ensure compliance with safety standards. We recommend prioritizing the high-risk findings and addressing the root causes to prevent recurrence. Specific action items include: 1) Implement a corrective action plan to address all identified deficiencies within a defined timeframe. 2) Conduct a comprehensive review of electrical systems, including load calculations and protective device adequacy. 3) Reinforce electrical safety training for all personnel, emphasizing safe work practices and hazard awareness.

Interactive Charts

All Priorities | All Locations

Search observations... | Reset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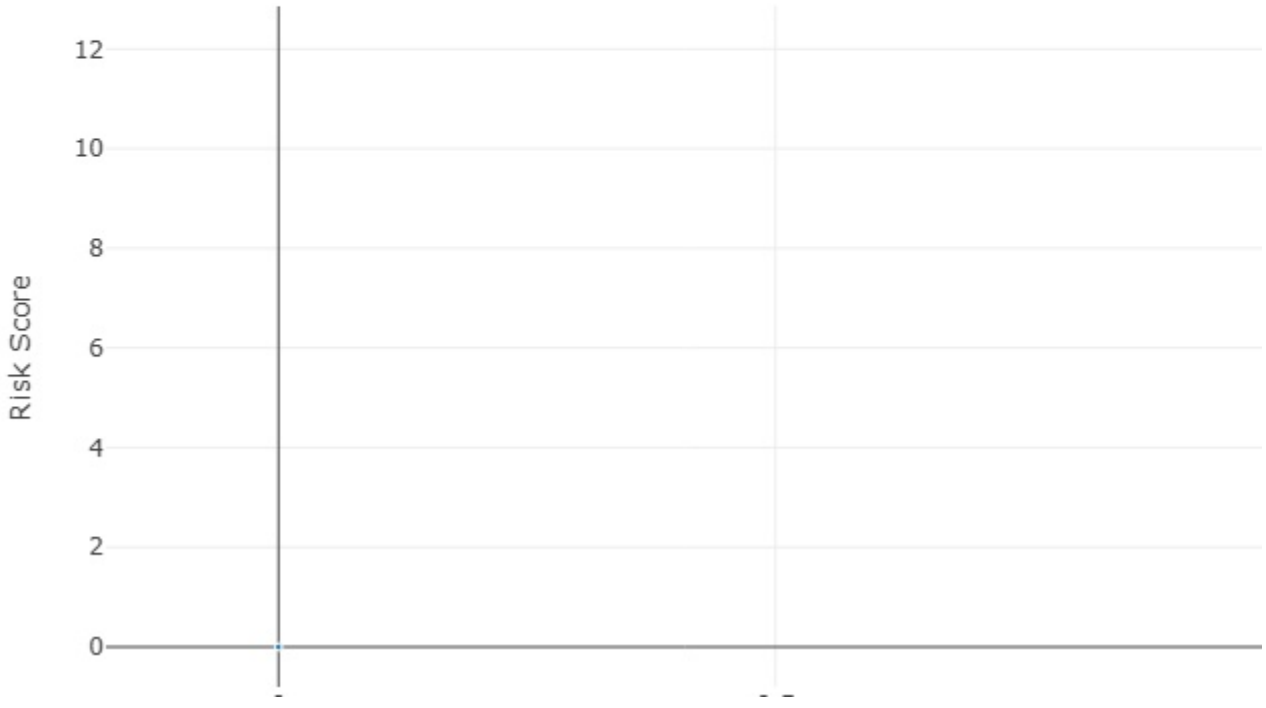
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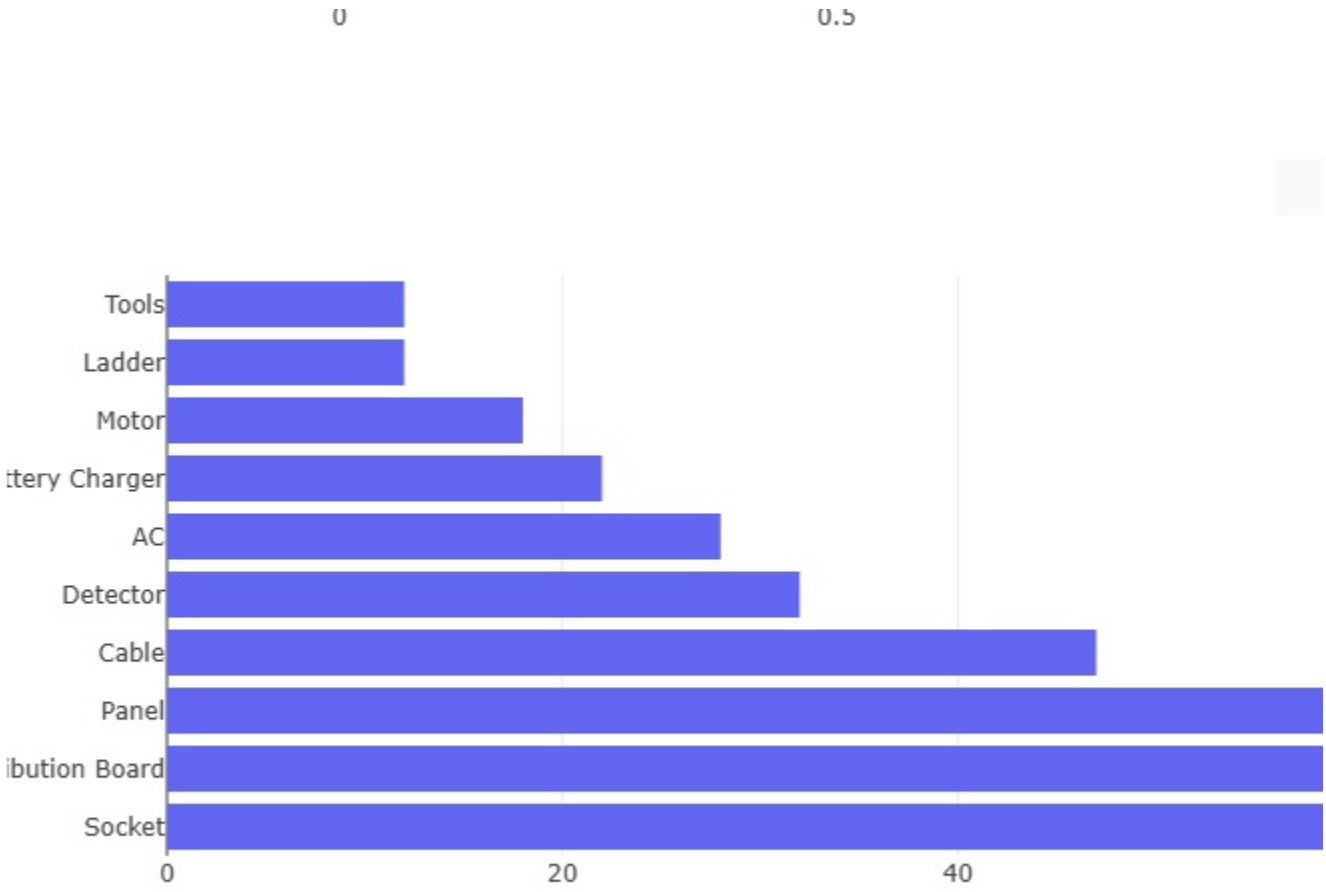

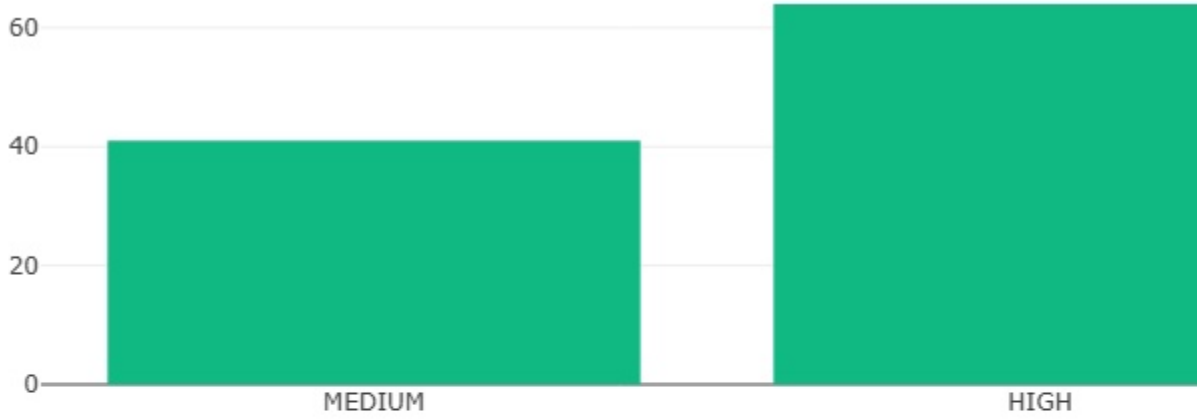

Top Findings

#1 • MEDIUM • FIRE • SECURITY

Fire alarm panel off condition. After switch ON, battery fault, fault alarm observed.

Recommendation: Ensure the fire alarm panel remains powered ON at all times. Connect to an uninterruptible power supply (UPS) or dedicated emergency power circuit to prevent accidental shutdown. A "battery fault" on a fire alarm panel after switching it on from an "off" state, observed under Indian Standard (IS) 1646, likely means the panel's backup battery is either faulty or not charging properly, or that there's an issue with the power supply to the panel. To resolve this, you should inspect the backup battery for damage and ensure its fully charged, then check the electrical connections and power supply to the panel. If the issue persists, professional help may be needed to diagnose a deeper system fault.

#2 • HIGH • FIRE/SHOCK • SECURITY

LDB 4 2.5 sq mm cable with C63 A MCB is used.

Recommendation: For a 2.5 sq.mm Cu cable, use: B20A or C20A MCB (max) The protective device rating must not exceed the current carrying capacity of the cable. C20A or lower depending on actual load current and cable installation method. Using a 2.5 sq mm LDB 4 cable with a C63 A MCB is a safety risk, as the cable's current carrying capacity is significantly lower than the MCB's rating, creating a fire hazard. A 2.5 sq mm cable is suitable for loads around 20 25 amps, whereas a C63 (63 Amp) MCB is designed to protect circuits up to 63 amps, meaning the cable could overheat and melt before the MCB trips. This combination is incorrect and requires correction by using a higher rated cable (e.g., 6 sq mm or more for this current) or a lower rated MCB (e.g., 25A or 32A for 2.5 sq mm cable).

#3 • LOW • FIRE • SECURITY

Fire alarm cable is unarmoured.

Recommendation: Replace unarmoured cables with armoured fire rated cables, such as: Steel Wire Armoured (SWA) or Steel Tape Armoured (STA) types. These provide mechanical protection and fire resistance.

#4 • LOW • UNAUTHOURIZED ACCESS • CONTROL CENTER

Unauthorised entry in Emergency control center.

Recommendation: Restrict access to ECC using: Biometric access, RFID card, or electronic keypad locks. Allow entry only to trained and authorized personnel (e.g., facility manager, fire officer, control room operators). Maintain a list of authorized personnel and review periodically.

#5 • LOW • SECURITY • CONTROL CENTER

Alcohol, frisking and metal detector & quantity to be increased at security gate.

Recommendation: Install additional alcohol breath analysers at all major entry points. Make alcohol screening mandatory for all contract workers, labourers, and plant operating staff. Provide frisking booths with proper privacy for male and female personnel. Install more handheld and walkthrough metal detectors at entry points. The statement, "Alcohol, frisking and metal detector & quantity to be increased at security gate," suggests increasing the frequency of security checks for prohibited items and potentially alcohol, along with implementing more metal detection screenings and possibly even increasing the number of security personnel and equipment.

#6 • HIGH • FIRE/SHOCK • CONTROL CENTER

LDB 3/4 2.5 sq/mm cable with C63A MCB is used.

Recommendation: For a 2.5 sq.mm Cu cable, use: B20A or C20A MCB (max) The protective device rating must not exceed the current carrying capacity of the cable. C20A or lower depending on actual load current and cable installation method.

#7 • HIGH • FIRE/SHOCK • CONTROL CENTER

RCB not tripping while pressing test switch. Tour

Recommendation: Replace with a new, IS/IEC certified RCB of appropriate: Current rating (e.g., 25A, 40A, 63A) Sensitivity (typically 30 mA for personal protection or 100/300 mA for equipment/fire protection).

#8 • NONE • MATERIAL LOSS • CONTROL CENTER

Recently observed theft inside Solar Panel Yard, in which copper materials burglary observed.

Recommendation: Install a checkpoint based Tour Guarding System using: RFID or NFC tags placed at key locations Handheld data loggers or mobile apps used by security guards to scan checkpoints Alternatively, adopt GPS based patrol tracking for open area facilities.

#9 • HIGH • FIRE/SHOCK • CONTROL CENTER

Aluminium ladder not to be used for electrical activities.

Recommendation: Immediately stop the use of aluminium or any conductive ladders in the CCTV room or similar electrical/electronic control rooms. Regular practice prohibit the use of aluminium ladders inside electrical panel rooms or

in proximity to energized equipment because they are conductive and pose a severe risk of electric shock, burns, and fatalities due to conductivity.

#10 • HIGH • FIRE/SHOCK • CONTROL CENTER

LDB 2 2.5 sq mm cable with C63A MCB is used.

Recommendation: For a 2.5 sq.mm Cu cable, use: B20A or C20A MCB (max) The protective device rating must not exceed the current carrying capacity of the cable. C20A or lower depending on actual load current and cable installation method.

#11 • LOW • DELAY EMERGENCY EVACUATION • CONTROL CENTER

During fire safety regulations often require boom barriers and access controlled doors to open automatically in case of a fire or smoke to facilitate emergency evacuation, with the system integrated with the fire alarm or smoke detection system. This is a critical feature that enables people to exit safely and allows emergency responders to access the building.

Recommendation: Configure the security gate's motorized control system to receive input from the fire alarm control panel (FACP). On fire alarm activation, the gate should automatically unlock and open without manual intervention.

#12 • MEDIUM • SHOCK • CONTROL CENTER

CLMS Room Security MCC panel earthing to be provided with 25 sq. mm. cable.

Recommendation: Install a dedicated earth conductor of 25 sq. mm copper cable from the MCC panel to the earth pit.

#13 • HIGH • SHORT CIRCUIT • CONTROL CENTER

Panel maintenance and cleaning required.

Recommendation: Implement a periodic maintenance schedule (e.g., every 6 months). Use dry, non conductive cleaning tools such as: Vacuum cleaner with ESD safe attachments Soft brushes to remove dust and debris Avoid moisture or liquids inside the panel to prevent short circuits.

#14 • HIGH • SHOCK • CONTROL CENTER

Security Room Socket earth missing and broken condition.

Recommendation: Inspect all socket outlets in the Security Room. Repair or replace sockets that have: Broken earth terminals Missing earth wiring Connect all sockets to a proper

earth conductor as per electrical standards.

#15 • MEDIUM • FIRE • SECURITY

Smoke detectors not working.

Recommendation: Conduct a comprehensive inspection of all smoke detectors. Check: Power supply (mains and backup battery) Wiring and connections Detector sensitivity and contamination (dust, dirt) Functional operation using detector test tools or smoke test aerosol

#16 • HIGH • FIRE • SECURITY

Store room power cable and AC drain line coupled together. Possible short circuit and water leak.

Recommendation: Reroute either the power cable or drain line to ensure physical separation. Maintain a minimum safe distance of at least 300 mm (1 foot) between electrical cables and plumbing or drainage lines.

#17 • LOW • FIRE • SECURITY

Sanitizers were found inside store room.

Recommendation: Relocate sanitizers to a designated flammable material storage area that complies with fire safety regulations.

#18 • MEDIUM • FIRE • SECURITY

Smoke detectors inside store room not working.

Recommendation: Conduct a comprehensive inspection of all smoke detectors. Check: Power supply (mains and backup battery) Wiring and connections Detector sensitivity and contamination (dust, dirt) Functional operation using detector test tools or smoke test aerosol

#19 • MEDIUM • LIGHTNING • SECURITY

Security biometric shed to be earthed.

Recommendation: Install a dedicated earth electrode (earth pit) near the biometric shed. Connect the shed's metal structure and biometric devices to the earth electrode using: Copper conductor of at least 6 sq. mm (or as per design and soil resistivity) Use GI strip (minimum 25x3 mm) if shed is large or load is higher.

#20 • LOW • SHOCK • SECURITY

Admin UPS cover to be IP65 compartment.

Recommendation: Install the UPS in a dust tight and water jet proof enclosure that meets IP65 standard (as per IEC 60529). The enclosure should: Be made of non corrosive material (e.g., powder coated steel or polycarbonate) Allow adequate

heat dissipation or include a ventilation fan/filter (with IP rated filters)

#21 • HIGH • SHOCK • SECURITY

Cable joints were observed in Admin UPS, maintenance to be done.

Recommendation: Replace the jointed cables with continuous runs wherever possible. Cables supplying or exiting UPS systems should be single length, uninterrupted, and properly rated. Physical finding: connections (joints) were noticed on the cables connected to the Uninterruptible Power Supply (UPS) in the Administration department. This is not inherently good or bad; it simply means the cables are connected in a way that allows for power continuity, but the quality or location of these joints needs to be assessed to ensure safety and reliability for the electrical system.

#22 • MEDIUM • FIRE • SECURITY

Battery not accessible and ventilation is required.

Recommendation: Ensure the battery bank is placed in an accessible location that allows for safe and easy inspection, maintenance, and replacement. Maintain at least 0.6 1.0 meter clearance around the battery bank. Provide mechanical exhaust ventilation for the battery room to dissipate heat and hazardous gases (e.g., hydrogen from lead acid batteries).

#23 • MEDIUM • SHOCK • SECURITY

Incomer cable gland damaged condition.

Recommendation: Immediate Replacement of Damaged Gland. Ensure that the gland: Provides proper sealing to prevent moisture or dust ingress. Offers adequate strain relief to prevent mechanical stress on the cable terminals.

#24 • MEDIUM • FIRE • WPAC

WPAC Warranty Parts Analysis Centre No smoke detector, no sprinklers, and no fire alarm panel. Only fire extinguisher observed in the Warranty Parts Analysis center.

Recommendation: Install addressable or conventional smoke detectors. Smoke detectors should be interconnected and trigger an audible/visual alarm. Install a fire alarm panel suitable for the size and risk level of the facility. Integrate all detection devices (smoke detectors, heat detectors, manual call points). Ensure backup power supply (battery or UPS) is provided. Install a wet pipe sprinkler system (or alternate type

based on hazard classification and ambient temperature).

#25 • HIGH • SHOCK • WPAC

Outside washroom socket open earth/loose.

Recommendation: Properly terminate the earth wire to the socket's grounding terminal. Tighten all terminal connections to ensure mechanical integrity. Use a continuity tester or earth loop impedance tester to verify the effectiveness of the earth connection.

#26 • TOOLS • SHOCK • WPAC

Multimeter/Clampon meter with cat 3 cable, cat 2 meters cannot be used in incomer.

Recommendation: Do not use Cat 3 (or any low grade communication cable) for control or signal circuits in high voltage environments. Replace with meters rated for: CAT III for distribution level panels CAT IV for incomer. Ensure user safety during electrical measurements. A CAT III multimeter is rated for measuring in distribution systems like three phase installations, while a CAT II multimeter is for single phase loads in environments such as homes and offices. You should choose the multimeter's CAT rating based on the highest potential transient voltage in the measurement environment.

#27 • HIGH • SHOCK • WPAC

Cable gland tightness to be verified to ensure integrity.

Recommendation: The gland's armor clamp (banjo or earthing ring) is correctly fitted and securely tightened. Continuity is maintained between gland body and earth bar using an earth continuity tester.

#28 • HIGH • SHOCK • WPAC

Warranty return storage socket open earth found.

Recommendation: Properly terminate the earth wire to the socket's grounding terminal. Tighten all terminal connections to ensure mechanical integrity. Use a continuity tester or earth loop impedance tester to verify the effectiveness of the earth connection.

#29 • LOW • TERMINATION LOOSENING • WPAC

DM Test Bench incomer C.B 125A poor cable routing.

Recommendation: Ensure cables entering the 125A incomer follow a straight, strain free path. Maintain minimum bending radius (typically 8 12 times the cable diameter). Avoid sharp bends, twists, or routing over sharp metallic edges.

#30 • MEDIUM • FIRE • WPAC

Engine Fuel test section inspection test bench max of 6 liters diesel stored.

Recommendation: Store diesel only in approved, labelled, and sealed metal or certified plastic containers. Store diesel in a dedicated, well ventilated area, away from: Electrical panels or sources of ignition Heat generating equipment Maintain minimum clearance of 1.5 meters from electrical equipment.

#31 • HIGH • FIRE • WPAC

Normal socket provided near diesel storage. To be replaced with FLP rated.

Recommendation: Install a Flameproof (FLP) or Explosion Proof socket outlet certified for hazardous areas. If feasible, relocate the socket outside the hazardous zone to avoid the need for FLP design. Maintain minimum distance of 1.5 meters or more from the diesel storage point if possible.

#32 • HIGH • FIRE • WPAC

Non FLP rated motor near diesel storage.

Recommendation: Install a motor that is: FLP (Ex d) or Ex e/Ex nA rated depending on the hazardous area classification. Install the FLP motor with: FLP rated cable glands and conduits Correct earthing/bonding to dissipate static charges Avoid mounting on or near surfaces with high ambient temperatures Enclosure and cable entries must be IP65/IP66 minimum.

#33 • HIGH • SHOCK • WPAC

Engine fuel test section to be earthed.

Recommendation: Immediately Provide Dedicated Earthing to the Fuel Test Section. Use: Copper or GI earthing conductors. Earth resistance of the system should be ≤ 1 ohm Ensure all joints are mechanically strong and corrosion protected.

#34 • MEDIUM • FIRE • UTILITY

RO Plant Incomer supply from PDB cable routing not proper, gland open condition.

Recommendation: Route cable through a dedicated cable tray, conduit, or trunking. Ensure: Minimum bending radius is maintained (typically 8 12 times the cable diameter) Cables are not crossing sharp edges, hot surfaces, or obstructing access. Install or tighten a suitable cable gland appropriate for the cable type and panel entry: Use brass/stainless steel glands for armored cables. Use polyamide/IP rated glands for flexible cables

flexible cables.

#35 • HIGH • FIRE/SHOCK • WORKSHOP / YARD

Power control panel R & B phase insulation completely damaged, possible short circuit.

Recommendation: Replace all damaged R & B phase conductors with: Correct size and type (as per design). Proper insulation rating (e.g., 1.1 kV PVC/XLPE). Avoid temporary taping or insulation patchwork—it must be a permanent fix.

#36 • MEDIUM • FIRE • WORKSHOP / YARD

Near Biogas two motors are non FLP rated.

Recommendation: Install FLP motors with: FLP cable glands, junction boxes, and starters. Rigid conduit or armored cable with proper earthing. Perform a formal Hazardous Area Classification around the biogas zone.

#37 • HIGH • FIRE • CANTEEN AREA

Canteen main PDB panel maintenance and cleaning required.

Recommendation: Schedule and perform thorough internal and external cleaning of the panel. Use: Industrial vacuum cleaner or soft brushes for dry dust removal Isopropyl alcohol or electrical contact cleaner for terminals (if required) Do not use water or wet cloths.

#38 • HIGH • FIRE • CANTEEN AREA

Canteen kitchen DB Panel 1 & 2 rat dead inside the panel between two phase conductors.

Recommendation: Isolate and de energize the panels immediately. Remove all rodent remains, droppings, and debris. Clean the panel thoroughly using: Industrial vacuum Dry cloths and electrical contact cleaners. Seal all panel entry points (top, bottom, sides) using: Rodent resistant grommets or conduit entry seals Metallic or polyamide glands with proper IP rating (IP54 or higher) Use fine steel mesh or rodent barrier foam around cable entries if needed.

#39 • HIGH • FIRE/SHOCK • CANTEEN AREA

Cable routing to be improved, many joints found. No DB schedule.

Recommendation: Reroute cables using proper cable trays, conduits, or cable ladders to maintain neat and secure runs. Avoid excessive bending and sharp edges to prevent mechanical stress. Minimize the number of cable joints by using longer, continuous cable lengths where feasible. Create a comprehensive DB schedule listing: Incoming and outgoing

a comprehensive DB schedule listing: Incoming and outgoing feeders Circuit identification Cable sizes, types, and lengths Joint locations (if any) Keep the schedule updated and available near the DB for reference during maintenance and troubleshooting.

#40 • LOW • FIRE • CANTEEN AREA

Maida, Atta, and oil kept in the same place.

Recommendation: a mixture of maida (refined flour), atta (whole wheat flour), and oil can catch fire if exposed to an ignition source. Both flour and oil are flammable, and when combined, they form a mixture that can burn if heated sufficiently. Flour dust, especially, can also cause a dust explosion if dispersed in the air and ignited. Store oil separately from dry powders (Maida, Atta) in a dedicated, well ventilated area. Use fire resistant storage cabinets for flammable liquids like oil. Maintain proper labelling and signage indicating flammable contents.

#41 • MEDIUM • FIRE • CANTEEN AREA

No smoke detector inside store room.

Recommendation: Install photoelectric smoke detectors suitable for the store room environment. Ensure detectors comply with relevant standards and are interconnected to the main fire alarm system or an independent local alarm.

#42 • LOW • FIRE • CANTEEN AREA

No DB to be provided inside store room.

Recommendation: Relocate DB outside the store room to a dedicated panel room If not feasible immediately, ensure fire rated enclosure and maintain clearances.

#43 • LOW • FIRE • CANTEEN AREA

Provide I/C supply to store outside the room.

Recommendation: Relocate the incomer panel or supply point to an accessible location outside the store room.

#44 • HIGH • SHOCK • CANTEEN AREA

All industrial sockets fully dust accumulated.

Recommendation: Clean all industrial sockets using appropriate non conductive cleaning methods (e.g., dry cloth, vacuum, or compressed air). Avoid using water or liquid cleaners unless sockets are rated for such cleaning.

#45 • HIGH • FIRE • CANTEEN AREA

All industrial sockets to be provided with RCCB with 30mA and a IP rated.

Recommendation: Install Residual Current Circuit Breakers (RCCBs) on all industrial socket circuits. RCCBs will ensure protection against earth faults and reduce risk of electric shock or fire. Select RCCBs with appropriate sensitivity (e.g., 30mA for personnel protection). Replace existing sockets with IP rated (Ingress Protection) sockets, suitable for the environment.

#46 • LOW • FIRE • CANTEEN AREA

Single Domestic AC observed inside cold storage and there is no Redundancy provided, whereas another unit is not working for the past 1 month.

Recommendation: Use industrial grade AC units specifically designed for continuous operation and cold storage environments. Overloading AC may lead to compressor overheating due to which probable chance of overloading, short circuit resulting fire inside the cold storage.

#47 • MEDIUM • FIRE • CANTEEN AREA

Electrical supply should not be near a gas line. Flange observed near electrical panel to be FLP rated.

Recommendation: Ensure minimum clearance distances between electrical equipment and gas lines as per applicable safety standards. The flange near the electrical panel must be replaced with a Flameproof (FLP) rated flange designed for hazardous locations.

#48 • LOW • SHOCK • CANTEEN AREA

Electrical panel earth in looped condition.

Recommendation: Each electrical panel must be connected to the earth pit using a dedicated, independent earth conductor. Do not loop earth connections from one panel to another.

#49 • MEDIUM • FIRE • CANTEEN AREA

All equipment near gas line flange to be FLP rated.

Recommendation: Replace all electrical equipment (motors, switches, lights, sockets, etc.) within 1.5 meters of the gas line flange with certified Flameproof (FLP)/Explosion Proof rated equipment.

#50 • LOW • FIRE • CANTEEN AREA

Gas line hose to be moved away from the burner.

Recommendation: Re route the gas hose to maintain a safe clearance from the burner flame and hot surfaces to prevent melting, fire, or gas leakage. Use heat resistant, certified gas

hoses compliant with applicable gas safety codes.

#51 • MEDIUM • FIRE • CANTEEN AREA

Flange bonding to be provided. Integrity to be verified.

Recommendation: Install flange bonding jumpers across all insulated or non conductive flanged joints in pipelines carrying flammable, explosive, or static prone materials. Perform electrical continuity tests across bonded flanges as part of periodic maintenance.

#52 • NONE • - • CANTEEN AREA

LPG detector to be provided.

Recommendation: Assess the area where LPG is stored, handled, or used. Identify hazardous zones (Zone 1 or Zone 2). Since LPG is heavier than air, leakage will settle near the ground — detectors must be installed accordingly.

#53 • MEDIUM • FIRE/SHOCK • CANTEEN AREA

Sprinklers available near to the light fittings.

Recommendation: Ensure a minimum horizontal clearance between sprinkler heads and electrical fixtures. If relocation is not possible, replace existing light fixtures with moisture resistant, fully enclosed fittings.

#54 • MEDIUM • FIRE • CANTEEN AREA

LPG Hose line valve observed damaged

Recommendation: Isolate the gas supply feeding the damaged valve immediately to eliminate the risk of gas leakage. Notify both maintenance and fire & gas safety teams without delay. Ensure the new valve is of anti static, corrosion resistant material.

#55 • MEDIUM • FIRE • CANTEEN AREA

Obstruction near Gas shutoff valve

Recommendation: Remove any physical obstruction (tools, materials, equipment, structural elements, etc.) near the Gas Hose 5 valve to allow: Safe and quick access for emergency shutdown. Routine maintenance without delay or risk. Ensure a clear approach path of at least 1 meter radius around critical gas valves.

#56 • MEDIUM • SHOCK • CANTEEN AREA

No earth is provided inside canteen office socket.

Recommendation: Install an independent earth conductor to the socket point from the nearest earth busbar or earth pit. Ensure the earth conductor: Is of adequate size (minimum 2.5 mm² Cu for socket circuits). Has continuous continuity from

socket to earth electrode. Is properly terminated on the earth terminal of the socket and distribution board.

#57 • HIGH • SHOCK • CANTEEN AREA

No Double insulated tool observed.

Recommendation: If the tool is repairable (e.g., replaceable outer shell or cord), it must: Be repaired only by qualified personnel, Use manufacturer approved parts, and Be tested for insulation resistance before being returned to service. If the tool cannot be safely repaired: Permanently decommission and dispose of it as per the organization's electrical equipment disposal policy.

#58 • MEDIUM • FIRE • UTILITY - PUMP HOUSE

Fire Pump House Hooters to be provided for pump on Communication.

Recommendation: Provide audible hooters near the pump to alert personnel that the pump is starting or has started via remote communication. The hooter should activate prior to or simultaneously with pump start.

#59 • MEDIUM • FIRE • UTILITY - PUMP HOUSE

Pump panel (main pump) in off condition.

Recommendation: A fire or safety critical pump, the panel must never be left OFF under normal conditions. Switch ON the pump panel immediately after verifying: Electrical health (no faults, no overloads), Proper mechanical readiness, No maintenance work is ongoing. If the OFF condition is intentional (e.g., maintenance), ensure: A valid work permit is active, Lockout Tagout (LOTO) procedures are followed.

#60 • LOW • FIRE • UTILITY - PUMP HOUSE

Battery Charger to be relocated.

Recommendation: Ensure a minimum clearance of 1.2 meters from the fire pump electrical panel. Relocating the battery mitigates the risk of fire, corrosion, electrical faults, and ensures compliance with fire safety and electrical clearance standards. It also helps in the proper maintenance and accessibility of both battery and fire pump control systems.

#61 • MEDIUM • FIRE • UTILITY - PUMP HOUSE

Diesel Day tank PVC Level hose to be replaced with glass type.

Recommendation: Replace the existing PVC level hose with a borosilicate glass type level indicator.

#62 • LOW • FIRE • UTILITY - PUMP HOUSE

Pressure Gauge Calibration passing with Date of Validity to be provided.

Recommendation: All pressure gauges used in safety critical systems must be: Calibrated at specified intervals (typically every 6 to 12 months, depending on usage and criticality). Calibrated against a master instrument traceable to standards. Affix a calibration sticker on or near the pressure gauge with the following details: Instrument ID. Last calibration date. Next due date Calibrated by (agency/technician name or initials). "OK" status if passed.

#63 • HIGH • SHOCK • UTILITY - PUMP HOUSE

Main Hydrant and Jockey pumps with single earthing.

Recommendation: Install two independent earth conductors from the motor body to the main earth grid. Earthing should be: Of adequate size (minimum 2.5 mm² CU or equivalent Al, depending on motor size). Properly lugged and bolted at both ends. Mechanically protected.

#64 • LOW • FIRE • UTILITY - PUMP HOUSE

Fire Room is stored with materials / other related storage.

Recommendation: Clear all materials immediately from the fire pump room. Ensure zero storage policy is enforced in: Fire pump rooms, Sprinkler valve rooms, Electrical panels within fire control rooms.

#65 • MEDIUM • SHOCK • UTILITY - PUMP HOUSE

Fire pump room Electrical panel rubber mat to be replaced.

Recommendation: Remove any damaged, worn out, cracked, or non IS compliant rubber mats from the fire pump electrical panel area. Ensure mats are ISI marked, with the manufacturer name, batch number, IS standard, and test date embossed or printed on them.

#66 • HIGH • FIRE • UTILITY ROOM

UPS Room Ventilation to be improved.

Recommendation: Install exhaust fans + fresh air inlets to achieve air changes as per load. For high capacity UPS systems, install a dedicated air conditioning unit with temperature control.

#67 • HIGH • SHOCK • ADMIN BLOCK

Admin Block Avoid socket point near water sink.

Recommendation: Immediately relocate the socket outlet to maintain a safe horizontal clearance of at least 1.2 meters (4

feet) from the edge of the sink or water source. In rare cases where the socket must remain, implement the following: Replace with a weatherproof socket (minimum IP55/IP65), Ensure it is protected by a Residual Current Device (RCD) with 30 mA sensitivity, Add a protective cover that prevents accidental water spray/contact.

#68 • MEDIUM • FIRE • ADMIN BLOCK

Oil Lamp observed surrounded with combustible material.

Recommendation: If religious or cultural practices require their use, consider electric alternatives (LED lamps) instead.

#69 • HIGH • SHOCK • ADMIN BLOCK

Panel Rear side identifications are missing.

Recommendation: All electrical panels must have permanent, legible identification labels on both the front and rear sides. Label should include: Panel name/ID (e.g., “PDB 1”, “UPS Panel”, “Main LT Panel”). Voltage level. Source feeder details (e.g., "Fed from TPN DB 2"). Panel function or load served.

#70 • MEDIUM • FIRE • ADMIN BLOCK

Fire door shall be provided.

Recommendation: Provide a certified fire rated door in the concerned area. Specifications should include Fire resistance rating: Minimum 2 hours (120 minutes) for electrical rooms, pump rooms, and high risk zones.

#71 • HIGH • SHOCK • OFFICE / ADMIN

BV Ramesh cabin Earthing is missing for socket.

Recommendation: Immediately connect the socket’s earth terminal to the system’s grounding network. Ensure the earthing conductor is: Of adequate size. Continuously bonded to the main earth bar or earth pit, Mechanically and electrically secure.

#72 • HIGH • SHOCK • OFFICE / ADMIN

SCM Head cabin socket Earth loose.

Recommendation: Tighten the earth wire connection securely using proper tools to ensure a solid, low resistance connection. Perform an earth continuity test to verify that the earth conductor is intact and provides a low resistance path.

#73 • HIGH • FIRE • OFFICE / ADMIN

Work Station power cable routed inside the wooden compartment.

Recommendation: Do not run power cables directly inside or through wooden compartments without mechanical and

through wooden compartments without mechanical and thermal protection. Replace or re route the existing cable inside: Rigid PVC conduit. Flexible conduit. Metallic trunking or raceways for improved fire resistance. Conduit must run inside the wooden compartment to isolate cable from flammable surfaces.

#74 • HIGH • SHOCK • OFFICE / ADMIN

Cashier room socket earthing missing.

Recommendation: Connect the socket's earth terminal to the main earthing system using a dedicated copper earth wire. Ensure: Minimum conductor size: ≥ 1.5 mm² copper. Secure and low resistance connection to the earthing bus bar or pit. Conduct an Earth Continuity Test to ensure the earth path is intact.

#75 • HIGH • SHOCK • OFFICE / ADMIN

Replace 100 mA RCCB with 30 mA.

Recommendation: A 30 mA RCCB is designed to trip quickly and disconnect the supply when a leakage current ≥ 30 mA is detected — a level potentially dangerous to humans. 100 mA RCCBs are generally used for fire protection, not for direct human shock protection.

#76 • MEDIUM • FIRE • OFFICE / ADMIN

Smoke detectors observed missing.

Recommendation: Provide photoelectric smoke detectors, which are highly effective in detecting slow developing, soldering fires typically caused by electrical equipment.

#77 • HIGH • SHOCK • OFFICE / ADMIN

Spike Board with Earthing & RCCB observed missing.

Recommendation: Only ISI certified spike boards with 3 pin plug and sockets should be used. Ensure the earth pin of every socket is connected and functional, and the power cord includes a dedicated earth conductor. Avoid spike boards with 2 pin plugs, as they offer no earthing protection. Use a 30 mA RCCB either: Built into the spike board, or Connected externally at the supply point.

#78 • HIGH • SHOCK • OFFICE / ADMIN

Spike board with Phase Neutral reverse.

Recommendation: Disconnect and label the spike board as unsafe to prevent further usage. Remove it from service until the wiring fault is corrected and verified. Ensure proper wiring of the spike board plug and internal connections. Ensure proper wiring of the spike board plug and internal connections.

#79 • HIGH • SHOCK • OFFICE / ADMIN

RCCB not working as employee experience may shock.

Recommendation: Disconnect and tag the faulty RCCB as unsafe. Replace it with a new ISI marked RCCB. Recommended sensitivity for personal protection: 30 mA RCCB (not 100 mA or higher). Perform manual testing monthly using the built in test (T) button.

#80 • HIGH • SHOCK • OFFICE / ADMIN

Perfumer earth loose connected.

Recommendation: Locate the earthing terminal or conductor related to the perfumer equipment. Tighten all bolts, nuts, and clamps to ensure a firm, stable connection without any movement. Perform an earth continuity test between the equipment and the main earth busbar.

#81 • HIGH • SHOCK • OFFICE / ADMIN

Bath Room socket with phase neutral reverse.

Recommendation: Disconnect power supply to the socket to prevent any shock hazards. Label the socket as “Do Not Use” until corrected. Rewire the socket ensuring: Phase (Live) conductor connected to the correct terminal (usually right side when facing the socket), Neutral conductor connected properly (left side), Earth terminal connected securely. Use a polarity tester or socket tester to verify correct wiring after repair.

#82 • HIGH • SHOCK • OFFICE / ADMIN

FF Office pantry socket with phase neutral reverse.

Recommendation: Disconnect power supply to the socket to prevent any shock hazards. Label the socket as “Do Not Use” until corrected. Rewire the socket ensuring: Phase (Live) conductor connected to the correct terminal (usually right side when facing the socket), Neutral conductor connected properly (left side), Earth terminal connected securely. Use a polarity tester or socket tester to verify correct wiring after repair.

#83 • HIGH • SHOCK • OFFICE / ADMIN

FF office pantry DB with 100 mA RCCB

Recommendation: For personal protection against electric shock, especially in areas like pantries where water is present, 30 mA RCCB sensitivity is recommended. 100 mA RCCBs are typically used for fire protection but are insufficient to protect against low level leakage currents causing shock.

#84 • HIGH • FIRE • OFFICE / ADMIN

Wooden Board to hold DB inside.

Recommendation: Wooden boards are combustible and can increase fire risk if the DB overheats or in case of electrical faults. Prefer mounting DBs on non combustible, fire retardant surfaces such as: Metal backplates, Fire resistant boards (e.g., cement board, gypsum board with fire rating), Concrete or masonry walls.

#85 • HIGH • SHOCK • R&D

R&D PDB RCCB to be provided.

Recommendation: Provide a 30 mA RCCB (Residual Current Circuit Breaker) on the R&D Power Distribution Board to: Protect personnel from electric shock by detecting earth leakage currents, Enhance fire safety by tripping on leakage faults, Comply with electrical safety regulations.

#86 • LOW • SHOCK • R&D

R&D PDB near fire hydrant hose.

Recommendation: Ideally, relocate the Power Distribution Board (PDB) to a safe distance from the fire hydrant hose. Maintain a minimum clearance of 1.5 to 2 meters between electrical panels and any fire water source. Ensure the new location meets clearance, accessibility, and ventilation requirements.

#87 • HIGH • SHOCK • R&D

Socket near store found open neutral.

Recommendation: Disconnect the socket from the power supply until the issue is rectified. Label it as “Unsafe Do Not Use” to prevent accidental use. Reconnect or replace wiring to ensure a continuous and secure neutral path.

#88 • MEDIUM • SHOCK • R&D SHOP

I/C from R&D PDB LDB gland dummy opening observed.

Recommendation: Install a non conductive, fire retardant dummy gland or plug to securely seal the open entry point. Ensure the dummy is compatible with the gland size and type. This prevents moisture, dust, or vermin ingress which could lead to short circuits or equipment failure.

#89 • HIGH • FIRE • R&D SHOP

Outgoing cables tapping has been done.

Recommendation: Remove all tapped connections from outgoing cables. Tapping should not be practiced, especially without: Proper connectors, Load calculations, Protection coordination.

#90 • MEDIUM • FIRE • OFFICE / ADMIN

Smoke detectors not working.

Recommendation: Inspect and identify faulty detectors. Replace batteries (if battery operated) or check power supply. If detectors are damaged or obsolete, replace with new, compliant units. Use approved smoke detector testers (aerosol or heat tools), to confirm: Visual indicator (LED) activates. Signal is received at the Fire Alarm Control Panel (FACP). Alarm sounders activate.

#91 • LOW • FIRE/SHOCK • OFFICE / ADMIN

Battery blue phase cable excessive bending.

Recommendation: Ensure Cable Bend Radius Meets Standard Requirements. If space is constrained, re route the cable through a path that allows smooth bending, Use cable trays or saddles to support the cable and maintain uniform curvature.

#92 • HIGH • SHOCK • OFFICE / ADMIN

AC condensed water tripping on electrical panel.

Recommendation: Repair or reroute the AC drainage system. Ensure the drainage is directed away from all electrical equipment. Relocate the AC unit or the electrical panel to avoid proximity. Maintain a minimum horizontal and vertical clearance between AC units and electrical panels to prevent future issues.

#93 • LOW • STATIC • CANTEEN AREA

No mobile restriction board.

Recommendation: Erect clearly visible boards stating: “No Mobile Phones Beyond This Point”, Or “Mobile Phones Strictly Prohibited in HSD Area”. Along with mobile phone restriction, also prohibit: Smoking, Open flames, Unauthorized electrical tools.

#94 • MEDIUM • STATIC • CANTEEN AREA

Go No Go system to be provided.

Recommendation: Provide ESD (Electrostatic Discharge) control stations at all HSD yard entrances, which include: A conductive mat or plate for personnel to touch or step on, A wrist strap or palm touch system that discharges static safely to earth, A Go No Go indicator (Green = Safe, Red = Charged) that signals whether entry is permitted.

#95 • MEDIUM • STATIC • CANTEEN AREA

Earth ride not working.

Recommendation: Inspect the system for faults in: Grounding cables. Earth terminals/clamps. Resistance to earth. Replace any damaged parts immediately to restore functionality. Add a visual/audible Go No Go interlock system to ensure fuel transfer does not start until proper grounding is confirmed. The system should prevent activation of pumps if grounding is faulty.

#96 • MEDIUM • STATIC • CANTEEN AREA

Flame proof pump starter align key screw missing.

Recommendation: Use only manufacturer approved flameproof rated screws (same thread, length, and material). Never use makeshift or non matching fasteners. Ensure correct torque is applied during reinstallation to maintain the gas tight flame path.

#97 • HIGH • FIRE/SHOCK • HEALTH CENTER

AC is provided with C25 A MCB.

Recommendation: Typical 1.5 2.0 Ton ACs draws 7 12 A max — which does not require a 25A breaker. And if the load is <15A, a C16 A MCB is more appropriate.

#98 • HIGH • SHOCK • HEALTH CENTER

All sockets earth missing.

Recommendation: Until earthing is provided and verified, mark sockets as “Do Not Use Earth Missing”, Prevent use of medical or electrical devices in unearthed sockets. Install dedicated earth wires (green/yellow) from sockets to the nearest earth bus bar or earth pit. Ensure earth continuity is intact across all sockets.

#99 • HIGH • SHOCK • HEALTH CENTER

Outside Recoup room phase neutral reverse socket.

Recommendation: Open the socket and verify connections: Phase (live) should be connected to the right terminal (marked L), Neutral should go to the left terminal (marked N), Earth to the top/bottom terminal (marked ⏚ or E). Perform a socket polarity test on all outlets in the Recoup Room (and adjacent areas if on the same circuit).

#100 • HIGH • SHOCK • OFFICE / ADMIN

D.Koteswara Rao Room socket phase & neutral reverse.

Recommendation: Open the socket and verify connections: Phase (live) should be connected to the right terminal (marked L), Neutral should go to the left terminal (marked N), Earth to the top/bottom terminal (marked ⏚ or E). Perform a socket polarity test on all outlets in the Room (and adjacent areas if

polarity test on all outlets in the Room (and adjacent areas if on the same circuit).

#101 • MEDIUM • SHOCK • OFFICE / ADMIN

Earth pit near DMC office vegetation growth is observed.

Recommendation: Clear grass, weeds, shrubs, and any organic matter manually or using safe herbicides. Maintain a minimum 1 meter clearance radius around the earth pit. Cover the cleared area with: Crushed stone/gravel to suppress regrowth and promote drainage, or Paving tiles for high access zones to allow visibility and maintenance.

#102 • MEDIUM • LIGHTNING • LOGISTICS

No Surge Protection Device provided.

Recommendation: Select and install a Type 2 SPD (or as recommended by manufacturer) on the power supply line feeding the weigh machine. Ensure the SPD is suitable for the voltage rating and load current of the weighing machine.

#103 • MEDIUM • FIRE • UTILITY

MCC panel cable entry to be closed.

Recommendation: Recommended to seal all multiple cable pass openings in the Electrical Rooms, UPS Rooms, and Battery Rooms using approved fire rated sealing materials of fire rating minimum 120 mins. to prevent fire and smoke spread. Fire stop solutions such as intumescent sealants, fire rated foam, or fire resistant cable transit systems should be used to ensure compliance with NBC code requirements and fire safety standards. Regular inspections should also be conducted to maintain fire integrity.

#104 • HIGH • FIRE • UTILITY

MCB Box 2.5 Sq.mm cable with C32A for welding machine.

Recommendation: Choose an MCB or MCCB with a suitable rated current and breaking capacity to protect the cable and equipment. For welding machines, consider motor rated MCBs or MCCBs that can handle surge currents without nuisance tripping. Replace the MCB with one suitable for 2.5 sq.mm cable capacity (usually 20A or less), if welding load permits (which is unlikely).

#105 • HIGH • SHOCK • UTILITY

Chiller motor supply gland is not proper.

Recommendation: Use a correctly sized cable gland matching the cable diameter and motor terminal entry. Ensure it is tightened properly without over compressing the cable. Verify the gland includes proper provisions for armour

Verify the gland includes proper provisions for armour grounding or earthing continuity (if using armored cable).

#106 • MEDIUM • SHOCK • WORKSHOP / YARD

Battery charger plug earth not connected properly.

Recommendation: Take the battery charger out of service until the earthing connection is corrected. Reconnect the earth terminal of the plug securely and correctly as per wiring standards.

#107 • LOW • SHOCK • WORKSHOP / YARD

48 V / 80 A fork lift charger cable without plug.

Recommendation: Use a heavy duty industrial plug (at least 80A rated, 2P+E or 3P+E depending on configuration). Plug and socket should be: Appropriate for DC application (if DC charger), Rated for 48V / 80A continuous current, With IP44/IP67 protection depending on environmental conditions.

#108 • LOW • FIRE • WORKSHOP / YARD

Battery observed with sulphation.

Recommendation: Include battery inspection in preventive maintenance schedules. Monitor for: Swelling, Acid leaks, Sulphation, Terminal corrosion.

#109 • MEDIUM • FIRE • YARD / STORAGE

No smoke detector and water sprinkler.

Recommendation: Provide photoelectric (optical) smoke detectors or multi sensor detectors across the warehouse ceiling. Design and install a wet pipe sprinkler system suitable for general storage areas. Smoke detectors should be part of an addressable or conventional fire alarm system.

#110 • HIGH • FIRE • YARD / STORAGE

Battery charger kept on wooden frame.

Recommendation: Relocate the battery charger from the wooden frame to a non combustible, heat resistant surface with proper ventilation and grounding.

#111 • HIGH • SHOCK • YARD / STORAGE

DB panel near entrance incomer is C32 A and outgoing for light is C63 A.

Recommendation: The incomer breaker rating should be equal to or higher than the sum of outgoing breakers. Perform a load assessment of the lighting circuits fed from this DB. Breaker ratings should follow selective coordination principles to isolate only the faulty circuit without affecting the entire DB.

#112 • HIGH • SHOCK • YARD / STORAGE

D store battery charger area no RCCB provided in the incomer and outgoing.

Recommendation: Provide appropriately rated 30 mA RCCBs on both the incomer and individual outgoing circuits feeding battery chargers. RCCBs should match the load current ratings and sensitivity requirements.

#113 • MEDIUM • SHOCK • YARD / STORAGE

Battery charger stands to be earthed.

Recommendation: Connect the battery charger stand (especially if metallic) to the main equipment earthing system using a low resistance conductor.

#114 • LOW • FIRE • YARD / STORAGE

Emergency door obstructed near EA UV.

Recommendation: Remove all materials, equipment, or obstacles blocking or near the emergency door. Maintain an unobstructed escape route from the emergency door to a safe assembly point.

#115 • LOW • FIRE • YARD / STORAGE

SCM Office AC outdoor unit near combustible material(tyre Storage).

Recommendation: Remove and relocate all combustible materials to a safe distance from the AC outdoor unit. Maintain minimum clearance as per manufacturer recommendations (typically at least 1 meter clearance).

#116 • HIGH • SHOCK • YARD / STORAGE

AC unit power cable and chiller condenser line coupled together.

Recommendation: Do not route power cables and condenser lines together. Relocate one of the systems to ensure separate paths, use proper conduits, and maintain moisture and thermal protection.

#117 • HIGH • FIRE • YARD / STORAGE

Avoid storage of tyre near to electrical panel.

Recommendation: Remove all stored tyres from the vicinity of electrical panels. Maintain a clear, marked, and unobstructed area of at least 1 meter around all panels. This is essential for fire prevention, safe access, and compliance with electrical safety standards.

#118 • LOW • SHOCK • YARD / STORAGE

AD blue pump gland leak, water spillage all around.

Recommendation: Inspect and immediately repair or replace

Recommendation: Inspect and immediately repair or replace the leaking gland on the AdBlue pump. Verify the integrity of seals, gaskets, and fittings.

#119 • HIGH • SHOCK • YARD / STORAGE

UV tyre yard main DB panel opening observed.

Recommendation: Install suitable IP rated cable glands or blanking plugs (for unused entries) made of non corrosive material (e.g., polyamide, brass) to seal all open entry points.

#120 • MEDIUM • FIRE • YARD / STORAGE

Flammable liquid inside Scrapyard (MS Drum 20 liters)

Recommendation: Immediately remove the flammable liquid drum from the scrapyard and store it in a compliant, ventilated, fire rated storage area with proper labelling, containment, and fire protection. Ensure no flammable substances are stored near electrical or operational equipment.

#121 • HIGH • SHOCK • WORKSHOP / YARD

Socket panel not provided with RCCB.

Recommendation: Install an RCCB of appropriate rating at the socket panel to ensure protection against electric shock and earth leakage currents.

#122 • HIGH • FIRE • VENDORS

Multiple connections (tapping) have been made from a single plug point.

Recommendation: Disconnect all unauthorized or unsafe tapping from the plug or socket outlet. Provide separate socket outlets for each equipment or load.

#123 • HIGH • SHOCK • VENDORS

No RCCB, for industrial socket.

Recommendation: Install RCCB protection (30 mA sensitivity) for all industrial sockets to prevent electrical shock and fire hazards. Select the appropriate RCCB type and integrate into the socket or panel.

#124 • HIGH • SHOCK • VENDORS

Cutting machine cable were observed with joints.

Recommendation: Replace jointed cables on the cutting machine with a continuous, heavy duty cable of appropriate rating. Joints in power supply cables for movable equipment are unsafe, non compliant, and must be eliminated to prevent electrical shock, fire, and mechanical failure.

#125 • HIGH • SHOCK • VENDORS

Incomer 415 V panel bottom cover open condition.

Recommendation: Immediately close and secure the open bottom cover of the 415 V incomer panel. This is critical to eliminate shock risk, prevent ingress of foreign material, and maintain integrity.

#126 • HIGH • FIRE • EXPORT

Battery charger kept on paint tin.

Recommendation: Immediately remove the battery charger from the paint tin and place it on a stable, fire resistant, non conductive surface in a well ventilated area designated for battery charging.

#127 • HIGH • SHOCK • EXPORT

Cutting machine has no plug.

Recommendation: Provide a suitable industrial plug and socket arrangement for the cutting machine to eliminate unsafe direct wiring.

#128 • MEDIUM • FIRE • EXPORT

No detector & no sprinklers.

Recommendation: Install a compliant fire detection (smoke/heat detectors) and sprinkler system in the Export (Spare Parts) storage area to ensure early fire detection, effective suppression, and protection of assets and personnel.

#129 • HIGH • FIRE/SHOCK • LOGISTICS

Distribution Board cable gland integrity is compromised.

Recommendation: Inspect and replace all compromised DB cable glands with appropriately rated, properly installed glands to prevent cable damage, ingress, and fire/electrical hazards.

#130 • MEDIUM • FIRE • LOGISTICS

Improper cable routing & cable tapping.

Recommendation: Reroute all improperly laid cables using appropriate supports/conduits and eliminate unauthorized cable tapping by installing proper distribution points.

#131 • LOW • FIRE • UTILITY - PUMP HOUSE

MCC panel cable chamber carbon deposits were found.

Recommendation: Immediately isolate and inspect the MCC cable chamber for damage causing carbon deposits. Clean the deposits, repair or replace faulty components, and perform thorough testing before re energizing.

#132 • MEDIUM • FIRE • UTILITY - PUMP HOUSE

No proper cable routing, no maintenance.

Recommendation: Reroute all cables using appropriate cable trays, conduits, or cable ladders. Avoid routing cables near

trays, conduits, or cable ladders. Avoid routing cables near heat sources, sharp edges, or walkways. Maintain proper segregation of power and control cables. Cleaning panel interiors to remove dust and debris. Tightening all electrical connections to manufacturer torque specifications. Inspecting components for signs of wear, corrosion, or overheating. Maintain records of all maintenance activities.

#133 • LOW • FIRE • UTILITY - PUMP HOUSE

HP 10 RPM 2800 motor (raw water pump) very hot 90 100 deg Celsius.

Recommendation: Shut down the motor to prevent further damage. Allow the motor to cool down before inspection. Immediately investigate and address the causes of motor overheating (load, supply quality, cooling, mechanical issues).

#134 • HIGH • SHOCK • MACHINE SHOP

LAN Room socket open neutral.

Recommendation: Restore the neutral conductor connection in the LAN room socket immediately to ensure safe and reliable operation of electrical and communication equipment.

#135 • LOW • FIRE • TCF OFFICE

Chemicals without identification inside the store near TCF office.

Recommendation: All chemicals must be clearly identified with labels and stored according to their hazard classifications with proper documentation and safety measures in place.