

# CASE STUDY

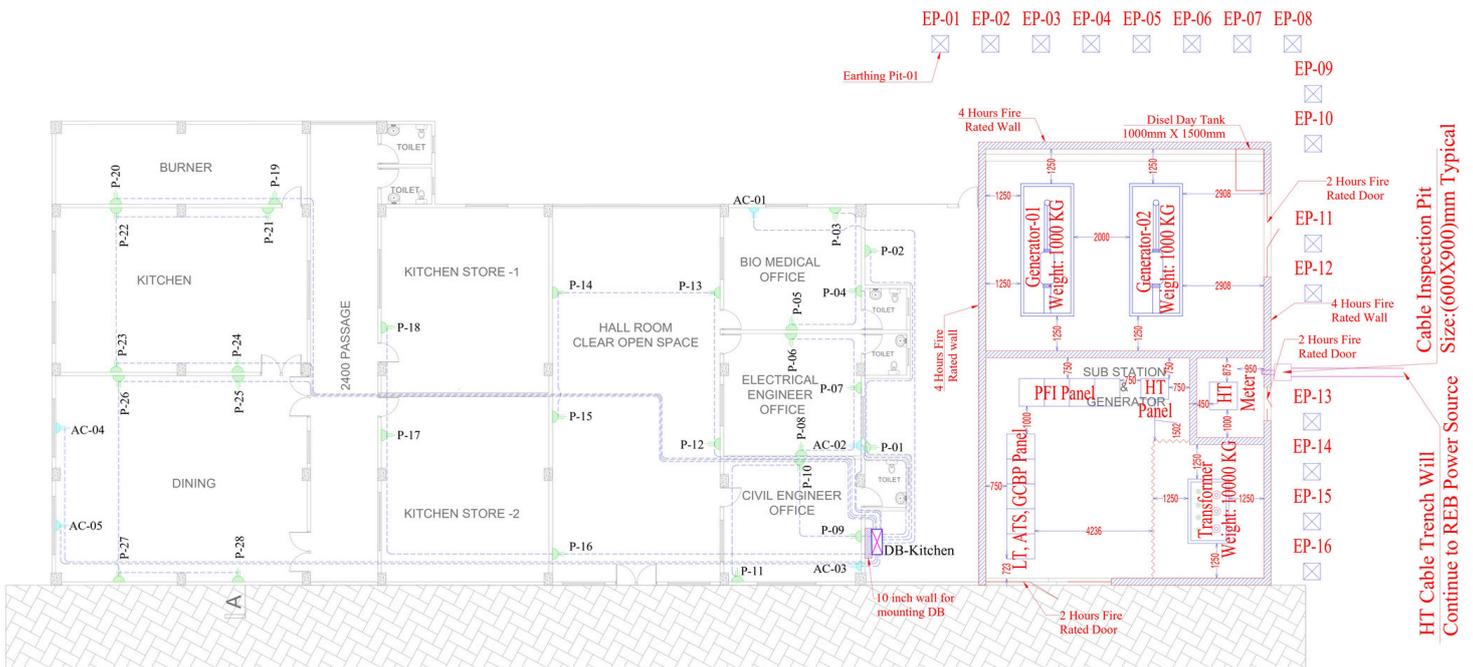
Case Study: AutoCAD Electrical Design for  
Residential and Commercial Projects

PREPARED BY

Innovative Station Ltd.

Client: An electrical contractor requiring detailed AutoCAD electrical drawings for wiring, power distribution, and lighting layouts in residential and commercial buildings.

Objective: Develop precise AutoCAD electrical schematics to optimize power distribution, ensure safety compliance, and prevent electrical faults.



PLAN OF DINING, KITCHEN, STORE, BIO MEDICAL OFFICE, ELECTRICAL ENGINEER OFFICE, CIVIL ENGINEER OFFICE, HALL ROOM & SUB STATION & GENERATOR

0 1M 2M 4M  
SCALE

Lighting Fixture & Conduit Layout of DINING, KITCHEN, STORE, BIO MEDICAL OFFICE, ELECTRICAL ENGINEER OFFICE, CIVIL ENGINEER OFFICE, HALL ROOM, SUB STATION & GENERATOR

# CHALLENGES

- Complex Wiring Systems: Required accurate designs for power, lighting, and low-voltage systems in multi-story buildings.
- Code Compliance: Ensured compliance with NEC (National Electrical Code), IEC, and local electrical regulations.
- Coordination with MEP Systems: Prevent conflicts with plumbing and HVAC components.
- Load Balancing & Safety: Needed proper circuit calculations to avoid overloading and ensure efficient power distribution.

# OUR APPROACH

we bring ideas to life through cutting-edge CAD design services

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## Work Processes

- **Requirement Analysis & Planning**

1. Gathered project specifications, including voltage requirements, circuit loads, and fixture placements.
2. Reviewed architectural and structural plans to integrate electrical systems effectively.

- **Auto CAD HVAC Drafting & Design**

1. Single-Line Diagrams (SLD): Developed power distribution layouts showing panel boards, transformers, and circuit breakers.
2. Wiring & Conduit Layouts: Designed electrical pathways, including conduit sizing and cable routing.
3. Lighting Design: Created lighting circuit layouts for optimal energy efficiency and illumination levels.
4. Panel Schedules & Load Calculations: Performed load balancing to prevent circuit overloads.
5. Emergency & Fire Alarm Systems: Designed emergency power backup, fire alarm circuits, and security system layouts.

- **Compliance & Quality Check**

1. Ensured designs met NEC, IEC, and local electrical safety codes.
2. Conducted short circuit and voltage drop analysis to ensure safe and efficient power distribution.
3. Performed clash detection with HVAC and plumbing layouts using Revit.

- **Client Review & Revisions**

1. Shared the initial electrical design with the client for feedback and adjustments.
2. Incorporated requested changes and ensured all labels, symbols, and dimensions were clear.

- **Final Delivery & Documentation**

1. Delivered AutoCAD DWG and PDF files with detailed annotations.
2. Provided Bill of Materials (BoM) listing cables, conduits, switches, and distribution boards.
3. Supplied installation guidelines for on-site electricians.

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## Result

- **Improved Safety & Compliance:** Ensured proper grounding, circuit protection, and adherence to electrical codes.
- **Energy Efficiency Optimization:** Reduced power wastage through well-planned circuit layouts and smart lighting solutions.
- **Seamless Integration:** Avoided conflicts with MEP components, ensuring a smooth installation.
- **Reduced Installation Errors:** Detailed AutoCAD schematics minimized on-site electrical faults by 40%.

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## Conclusion

By leveraging AutoCAD Electrical drafting, the client successfully optimized power distribution, improved safety compliance, and enhanced energy efficiency in their electrical projects. Detailed CAD designs contributed to cost savings, reduced errors, and smoother project execution.