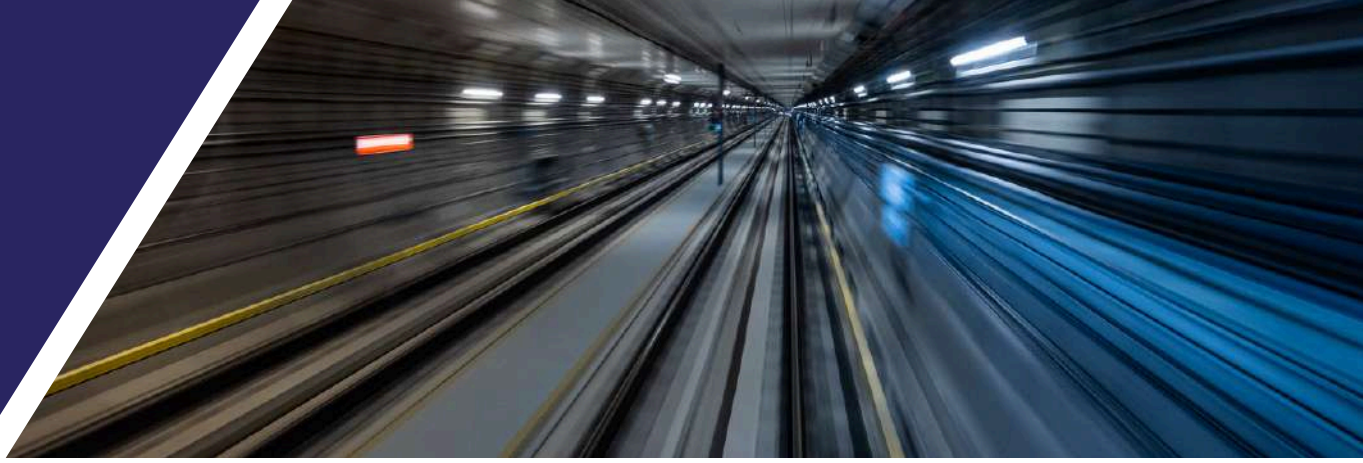
http://UnitedECM.com

UNITED ECM

UNITED ENGINEERING & CONSTRUCTION MANAGEMENT

A STATEMENT OF QUALIFICATIONS & COMPANY PROFILE

United Engineering & Construction Management (UECM) is a certified SBE/MSBE firm leading the transformation of rail transit through expert engineering, technical oversight, and digital PMCM innovation. With a deep specialization in traction power systems, overhead catenary, SCADA, and electrical integration, UECM brings unmatched precision to complex infrastructure projects across California and the United States. Our team of licensed engineers, program managers, and construction specialists deliver quality-driven solutions as both a prime contractor and strategic niche partner. This document outlines our qualifications, project experience, and core capabilities that enable safe, efficient, and sustainable rail systems.



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UNITED
ENGINEERING & CONSTRUCTION MANAGEMENT

WELCOME
MESSAGE

Ammar Alsarabi, PE, PMP

Chief Executive Officer, United ECM

Thank you for taking the time to learn more about United ECM. As a California-based small business with national reach, we are proud to serve as a trusted partner to public agencies, transit operators, and prime contractors committed to transforming how people move through modern, electrified rail networks.

Our mission is clear: to accelerate infrastructure delivery through integrated systems thinking, uncompromising quality, and a culture of performance. From traction power and overhead systems to digital project management and AI-enabled assurance, we bring depth, diversity, and digital innovation to every project we touch.

The team you'll meet in these pages is more than experienced—we're deeply invested in our clients' success. Whether serving as a prime contractor or a niche sub-consultant, we show up as collaborators, problem-solvers, and system integrators. We approach every opportunity with integrity, curiosity, and a relentless commitment to getting the job done right—and getting it done safely.

I invite you to explore how United ECM can bring value to your next project. We look forward to building the future with you.

Warm regards,
Ammar Alsarabi, PE, PMP
Chief Executive Officer
United ECM
ammar@unitedecm.com | (650) 442-6526

ABOUT
UNITED ECM

United ECM is an innovative rail industry expert specializing in the accelerated delivery of complex infrastructure through integrated systems engineering. As a certified small business founded in 2021, United ECM has rapidly built a reputation for technical excellence and inventive solutions in electrified transit and high-performance power systems. We serve transit agencies, prime contractors, and developers with a multidisciplinary team that acts as owner's engineer, contractor's engineer, construction manager or program manager as needed. Our approach centers on safety, quality assurance, and delivery certainty, leveraging cutting-edge digital tools and a proprietary Quality Project Management Office (QPMO) methodology to mitigate risks and streamline project timelines. This Statement of Qualifications highlights our core competencies—traction power engineering, construction oversight, interface management, and digital PMCM (Project Management/Construction Management)—illustrated by signature projects and key personnel that demonstrate our capability to deliver rail and electrified infrastructure projects safer, faster, and more efficiently.

"United ECM's commitment to innovation, safety, and on-time delivery gave us total confidence in our electrification program."
– Deputy Executive Officer, Major Transit Agency

- Established: 2021 (California Certified Small Business)
- Headquarters: Sacramento, CA – with offices in Oakland, Los Angeles, and Boston
- Specialization: Electrified rail systems, high-reliability power infrastructure, and renewable energy facilities
- Core Expertise: Traction power (substations, OCS, SCADA), systems integration, project management & oversight
- Notable Clients: Caltrain, BART, MBTA, Amtrak, Los Angeles Metro, and SMART

OUR GOAL

MISSION

"To deliver high-performance, electrified infrastructure through integrated engineering, collaborative management, and digital innovation—ensuring safety, quality, and long-term value for every client we serve."

At United ECM, our mission is rooted in the belief that the most complex infrastructure projects require not just technical expertise, but strategic alignment, proactive risk management, and a culture of trust. We exist to bridge the gap between planning and performance, helping public agencies and private partners accelerate the safe delivery of modern rail and utility infrastructure across North America.

VISION

"To become the industry's most trusted partner for electrified transit and resilient infrastructure—pioneering the future of digital PMCM and sustainable engineering excellence."
We envision a future where transit systems are smarter, cleaner, and more efficient. Our role is to help realize that vision by offering system-wide thinking, cutting-edge technologies, and nimble, responsive service that drives real impact.

Our vision is not just about growth, it's about elevating the standard of what a small business can do:

- Integrate rail, power, and communication systems seamlessly
- Enable safer, faster, smarter delivery
- Support infrastructure that moves people and powers progress

CORE VALUES

- **Integrity** – We do what's right, even when it's not easy
- **Excellence** – We strive for engineering precision and management discipline
- **Collaboration** – We work side-by-side with clients, partners, and communities
- **Accountability** – We take ownership of results, timelines, and safety outcomes
- **Innovation** – We push boundaries to unlock smarter ways of building the future

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MEET
THE TEAM

Ammar Alsarabi, PE, PMP

Principal Systems Engineer & Chief Executive Officer
Expert in Traction Power, Systems Integration, and Electrified Transit Delivery

Ammar is a licensed Professional Engineer in multiple states and a nationally recognized traction power and systems integration expert. He has led design, construction, and commissioning efforts on projects for Amtrak, BART, MBTA, and Caltrain. With 15+ years of hands-on experience in traction power substations, OCS, SCADA, and rail systems, Ammar brings both technical depth and leadership acumen. He founded United ECM to create an agile firm that integrates engineering excellence with delivery assurance.

Harri Emari, DBA, PMP, CQM

Senior Director of Performance Assurance & Operational Excellence
System Thinker of the QualityPMO Methodology for Smart Decisions Faster

Harri is a certified CQM expert, PMI-CP Ambassador, and DOE-qualified leader with 25+ years in high-reliability capital projects, including DOE ISMS and energy infrastructure. He pioneers enterprise-wide systems for Contractor Assurance, QMS, and QualityPMO, aligning operational excellence with ISO 9001, USACE CQM-C, DOE 414.1D, PMBoK, and Lean standards. His strategic leadership integrates human and organizational performance (WQM), driving cultural transformation, safety compliance, and risk-based quality across portfolios. Skilled in BIM, Power BI, and AI for real-time insights, he ensures owners and primes benefit from smarter, faster decisions at scale.

Mohammed Harb, PMP, RMP

Director of Traction Power, Electrical Engineering, & Renewable Energy
Bridging High-Voltage Expertise with Sustainable Infrastructure Solutions

Mohammed is a seasoned electrical engineer with over 15 years of experience in HV/MV/LV design, power system studies, and traction power systems. His career spans rail electrification, energy storage, solar PV, and utility integration. At United ECM, he leads engineering development for traction power substations, ETTS systems, and advanced grid modeling using tools like ETAP and DigSILENT. He's known for his ability to bridge detailed technical design with field constructability and operations.

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STRATEGIC GOALS

United ECM's goals are guided by our commitment to long-term partnerships, sustainable practices, and high-reliability outcomes:

1. Accelerate Project Delivery
- Reduce delays through interface management, decision support, and quality-driven PMO
- Use digital tools and advanced simulations to compress schedules without compromising safety

2. Champion Innovation
- Lead the integration of AI, BIM, digital twins, and real-time analytics in PMCM workflows
- Pilot smart QA/QC, predictive maintenance, and automation for rail systems

3. Deliver Quality Without Compromise
- Apply QPMO methodology to ensure that safety, quality, and compliance are embedded at every phase
- Cultivate a zero-defect culture through training, audits, and continuous improvement

4. Empower Diverse Talent
- Build an inclusive workforce of expert engineers, inspectors, and managers
- Mentor future leaders through internal apprenticeships and hands-on project delivery roles

5. Serve as a Strategic Partner to Owners & Primes
- Act as an extension of our client's mission, adapting to needs across delivery models
- Bring clarity, control, and technical assurance to every engagement

United ECM's multidisciplinary team of 15 professionals brings a deep bench of qualifications across engineering, project management, and construction oversight. Our staff includes licensed Professional Engineers (PE) in multiple states, Project Management Professionals (PMP®), Risk Management Professionals (RMP®), and Certified Quality Managers (CQM-C) accredited by USACE. We also hold certifications in Construction Management (CMIT, CCM), Building Information Modeling (CM-BIM), LEED Green Associate, and OSHA 10/30 Safety. Several team members are PMI-Construction Professionals (PMI-CP) and Disciplined Agile Scrum Masters (DASM), integrating agile practices into our digital PMCM workflows. Our power systems experts are trained in ETAP, DigSILENT, and Siemens/ABB relay systems, while others bring field-proven credentials in track safety, commissioning, and quality auditing. This collective expertise allows us to deliver technically sound, code-compliant, and performance-driven solutions for today's most demanding infrastructure projects.

Watt Lei
Civil Construction Manager

Rajendra Karumanchi
Network & Security Engineer

Eyad Hamadah
Senior Network & SCADA Engineer

Artem Nemyro
System Integration Engineer

Kisha Pollard
Director of Network Systems

Emma Androlowicz
System Engineer & BIM/CAD Support

Jose Garcia
Geotechnical & Structural System Engineering

Million Tadese
Testing & Commissioning Construction Services

Jackson Samuthram
OCS Inspection Lead Construction Services

Alan Horton
Rail Systems Lead Electrical Traction Powers

LICENSES & **CERTIFICATIONS**

United ECM maintains all necessary licenses and certifications to perform engineering and project management services for public agencies and private clients. Key licenses/certifications include:

- Engineering Licenses: United ECM is a licensed engineering business in the State of California, authorized to offer professional engineering services (Electrical and Civil). Our key engineers are registered Professional Engineers (PE) in multiple states (including CA, NY, and MA), enabling us to sign and seal designs as required. (License number available upon request.)

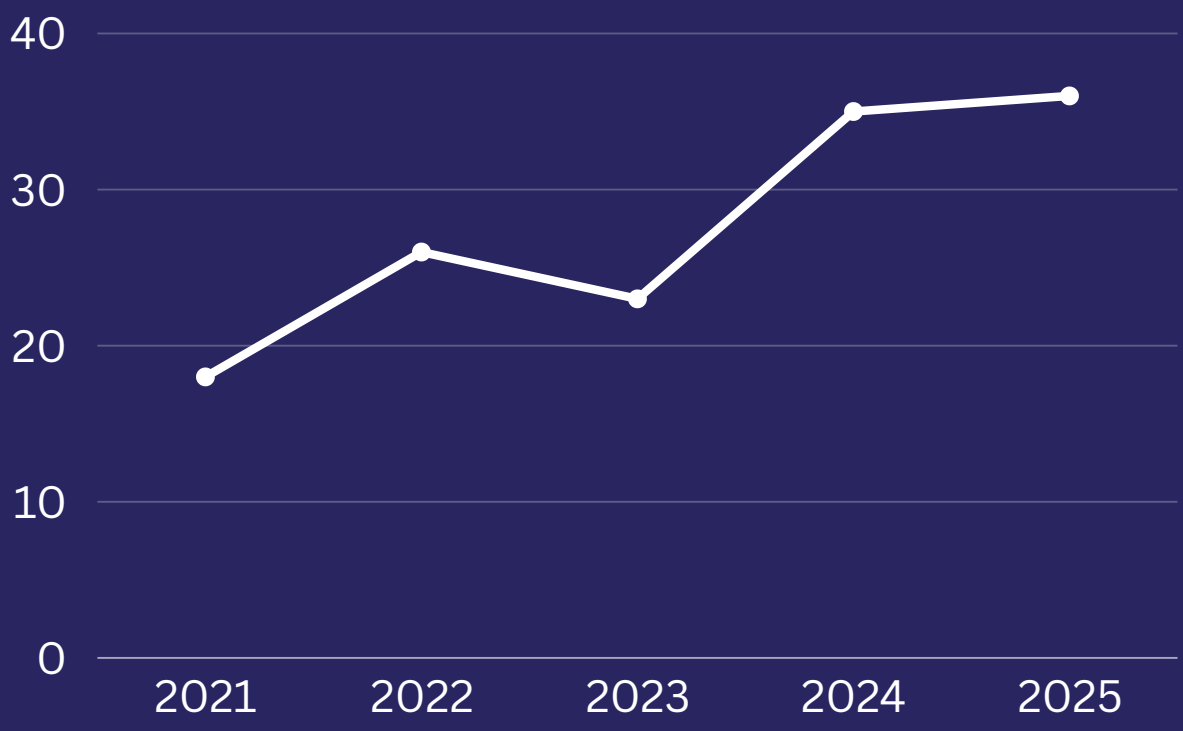
- Small Business Enterprise (SBE) Certification: United ECM is a Certified Small Business with the State of California (and recognized SBE by agencies such as BART). This certification attests that we meet the criteria as a small, independent business and is often utilized by primes and agencies to satisfy SBE participation goals. Our NAICS codes include 541330 (Engineering Services) and 541611 (Project Management Consulting) as listed in our company profile.

- Professional Certifications (Staff): United ECM's team members hold a range of relevant professional certifications:
  - Project Management Professional (PMP®) – held by multiple project managers, reflecting our adherence to PMI's global project management standards.
  - Certified Construction Manager (CCM) and Design-Build Professional (DBIA) – held by staff who lead our construction management tasks, ensuring we apply best practices in field management and alternate delivery.
  - Certified Quality Manager (CQM) – held by our performance director, signifying advanced knowledge in quality systems and continuous improvement (integral to our QPMO approach).
  - CM-BIM (Certified Manager of BIM) – held by staff leading our digital initiatives, evidencing proficiency in managing BIM processes for construction projects.
  - Professional Engineer (PE) and Chartered Engineer (CEng) – several of our engineers carry PE licenses in electrical and civil engineering, and one is Chartered in the UK, underscoring our international standards competence.
  - LEED Green Associate – held by team members to support sustainable design and construction practices in our projects.

- Corporate Safety Program: United ECM has an established Safety and Health Program aligned with OSHA and FRA safety regulations. Our safety record is exemplary (zero recordable incidents to date), and we continuously maintain relevant safety trainings and certifications (e.g., OSHA 30, RWP certifications for rail corridors, CPR/First Aid) for our staff.

All licenses and certifications are available for client verification. We invest in maintaining current credentials and staying up-to-date with industry certifications as part of our commitment to professionalism and exceeding the qualification standards expected by our clients and partners.

BUSINESS **GROWTH**



Between 2021 and 2025, United ECM has experienced steady, sustainable growth driven by strategic hiring, technical specialization, and successful project delivery. Using a weighted composite index that factors in four core growth indicators—(1) number of experts added to the team, (2) number of projects awarded, (3) cumulative project value, and (4) active backlog—we have calculated an annual growth score that reflects both scale and performance. Our index shows progressive advancement from a baseline score of 18 in 2021 to a robust 36 in 2025, reflecting a 100% increase in organizational capability and market position over five years. This formula accounts not only for expansion in headcount and project wins but also for the complexity, strategic importance, and technical scope of each engagement. Our growth trajectory underscores our capacity to scale while maintaining high standards in safety, quality, and innovation.

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CORE
COMPETENCIES

Our core competencies reflect the specialized services and expertise that make us a valued partner in rail and electrified infrastructure projects:

Electrical & Traction Power Engineering

Comprehensive design and analysis for rail electrification systems, including traction power substations, overhead contact systems (OCS), SCADA, and utility power integrations. We perform load flow simulations, short-circuit analyses, and power quality studies to ensure reliable and efficient traction power delivery. Our in-house engineers produce final designs and conduct peer reviews for high-speed rail and transit power systems, emphasizing safety and compliance with IEEE, IEC, and AREMA standards.

Construction Management & Oversight

Proven capability in construction oversight of transit infrastructure, from managing field inspections to contractor coordination. Our team has served as owner's representatives and construction managers on multi-million dollar projects, overseeing installation of critical systems (track, power, signals) and ensuring adherence to specifications and safety protocols. We implement rigorous quality assurance (QA) and progress tracking, keeping projects on schedule and within budget while maintaining the highest safety standards.

Quality PMO & Interface Management

Through our Quality Project Management Office (QPMO) methodology, we embed quality-focused planning into every project phase. This competency ensures clear interface management among civil, electrical, and systems contracts – a critical factor in rail projects' success. We excel at coordinating multiple stakeholders (agencies, contractors, third parties), managing technical interfaces (e.g. track-traction power, vehicle-signaling), and facilitating faster decision-making by eliminating silos. Our QPMO framework uses defined decision workflows and accountability matrices to prevent delays, aligning with lean principles to drive smarter, faster project decisions.

Digital PMCM (Project Management/Construction Management)

United ECM harnesses digital tools and data-driven processes to enhance project delivery. Our team includes BIM specialists who integrate 3D/4D modeling for design coordination and constructability reviews. We deploy real-time collaboration platforms and PMIS (Project Management Information Systems) to give stakeholders transparency into progress, issues, and documentation. By utilizing data analytics (Power BI dashboards) and AI-driven quality control checks, we provide early warnings on risks and actionable insights that help keep projects on course. This competency in digital PMCM ensures that our clients benefit from increased efficiency, better communication, and informed decision-making throughout the project lifecycle.

Systems Engineering & Integration

We take a holistic systems engineering approach to rail project delivery. Our experts understand that rail infrastructure is an integrated ecosystem—traction power, train control, communications, and civil works must function in concert. We develop system architectures, interface matrices, and integration test plans to guarantee that all subsystems (vehicles, wayside equipment, power supply, etc.) work together seamlessly. This competency is especially valuable in projects like driverless people movers or complex commuter rail upgrades, where we've served as Systems Integration Managers ensuring end-to-end performance and reliability.

Testing & Commissioning Oversight

United ECM provides seasoned testing and commissioning engineers to plan, witness, and verify the performance of new systems. We prepare detailed test procedures for traction power substations, OCS, and signal systems, and oversee on-site testing to validate that installations meet design criteria and safety standards. Our team's expertise in commissioning ensures a smooth transition from construction to operations, with all issues identified and resolved before revenue service. (For example, we led substation testing & commissioning oversight for new power facilities on San Francisco Muni and BART projects.)

PROJECT DELIVERY
METHODOLOGIES

United ECM's project delivery methodologies are what truly set us apart. We blend industry best practices with proprietary approaches to accelerate schedules and assure quality in every engagement:

QualityPMO Methodology

Our Quality Project Management Office (QualityPMO) methodology is a comprehensive framework that infuses quality assurance into traditional project management. In practice, this means every project has a "quality compass" guiding scope, schedule, and cost decisions. We utilize six QPMO decision-making frameworks (including RACI, SWOT, Cost-Benefit, MoSCoW prioritization, DACI, and Decision Trees) to drive clarity and speed in decision processes. By clarifying roles, analyzing data-driven tradeoffs, and visualizing outcomes, we help stakeholders make smarter decisions faster – preventing the delays and rework that often plague large projects. Our QPMO approach is rooted in Dr. Harri Emari's 25+ years of contractor assurance and PMCM expertise, blending PMBOK best practices with a "quality-driven" mindset for modern rail projects. The result is a leaner, more proactive PMO that keeps all 10 knowledge areas in sync – from integration and risk to procurement and communications – with quality and safety as non-negotiable core values.

Systems Thinking and Interface Management

We employ systems engineering principles as a baseline methodology on all projects. Early in project development, we map out all critical interfaces (civil-structural, track-systems, vehicle-systems, etc.) and develop an Interface Management Plan. This plan assigns clear responsibility for each interface point and establishes regular interface coordination meetings. By thinking in terms of the whole system, we prevent gaps or overlaps in scope and ensure that changes in one discipline are communicated across all others. Our interface management methodology has been instrumental in avoiding costly integration issues and ensuring that subsystems come together smoothly during testing and commissioning. It's a methodology that underpins our work on multi-stakeholder programs like the LA Metro Regional Connector and airport people mover systems, where timely interface resolution was key to success.

Digital PMCM and Lean Delivery

United ECM integrates Digital PMCM strategies to modernize project delivery. We develop digital twins and BIM models that remain live throughout construction, enabling virtual inspections and clash detections early. Our project managers use cloud-based PMIS platforms (such as Procore, Kahua, or Oracle Unifier) configured with customized workflows for submittals, RFIs, and issue tracking – ensuring nothing falls through the cracks. We also incorporate Lean Construction techniques like Last Planner® System and pull planning in our scheduling approach, facilitated by digital tools for real-time updates. By combining lean principles with digital collaboration, our methodology eliminates waste (idle time, rework) and focuses on delivering value to the client faster. A testament to this approach is our success in accelerating schedule on a recent electrification project by 15% via concurrent work packaging and real-time progress visualization, all managed through our digital PMCM toolset.

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INDUSTRY
RELATIONS

SANDAG
MTA New York City Transit
Massachusetts Bay Transportation Authority
AMTRAK
SEPTA
Metro
BART
NetworkRail
UNDERGROUND
MTA Long Island Rail Road
DLR
SLAC National Accelerator Laboratory
DTE
BRINKER
SPALDING DeDECKER
GSA
Department of Veterans Affairs
USDA
Project Management Institute.
WAYNE STATE UNIVERSITY
Ford

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OUR SERVICES

High-Speed Rail Systems
Our team has delivered high-speed rail solutions globally, applying international best practices in corridor development, power systems, and systems integration.

25kV Overhead Contact Systems (OCS)
Our OCS experts have helped deliver North America's first electrified commuter rail, with hands-on experience in design, construction, and QA implementation.

AC/DC Traction Power
United ECM delivers world-class traction power systems using sustainable engineering principles and field-certified QA/QC processes.

SCADA & Communications
We implement advanced SCADA, communications, and remote control systems using industry-leading platforms and engineering integration standards.

Train Control/Signaling
We provide full-spectrum design and integration services for train control and signaling systems, with expertise in FRA, FTA, and ETCS standards.

Systems Integration
We engineer and deliver integrated rail systems—combining traction power, SCADA, train control, and communications into unified operating environments.

Traction Power System (TPS)
We design, upgrade, and manage traction substations and wayside assets to ensure safe, efficient, and resilient rail electrification.

Owner/Operator Expertise
We understand the priorities of public agencies and transit operators, helping reduce lifecycle costs, enhance maintainability, and improve asset reliability.

Operations & Maintenance Strategy
We deliver streamlined O&M strategies that integrate civil, electrical, and systems-level expertise with localized training, inspection, and quality assurance frameworks.

Yards, Stations & Maintenance Facilities
Our portfolio includes light and heavy maintenance facilities (LMF/HMF), multimodal stations, and corridor-wide infrastructure—from feasibility to final commissioning.

Corridor Planning & Feasibility
We lead corridor studies, feasibility analysis, and alignment planning—supported by digital workflows, GIS tools, and agency coordination expertise.

Environmental & Right-of-Way Services
We support environmental compliance, permitting, and right-of-way coordination to streamline project delivery and reduce delays in pre-construction phases.

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ELECTRICAL
ENGINEERING

Power Systems Design & Traction Power Engineering

United ECM's Electrical Engineering Department specializes in comprehensive power systems design for rail and infrastructure projects, covering High Voltage (HV), Medium Voltage (MV), and Low Voltage (LV) applications. We engineer critical systems including traction power substations (TPSS), emergency trip systems (ETTS), and load balancing infrastructure for both AC and DC networks. Our engineers are proficient in rail electrification standards and apply deep knowledge of utility coordination, transformer sizing, and power distribution architecture to ensure reliable, scalable, and code-compliant installations. We regularly perform load flow analysis, arc flash studies, short circuit analysis, and grounding system design using advanced tools like ETAP and ETRAX, ensuring safety, operability, and efficiency under all operating conditions.

Systems Integration & SCADA Controls

We bring strong capabilities in rail systems coordination and controls integration, with a focus on aligning electrical infrastructure to real-time operational requirements. Our engineers design and implement SCADA systems, interlocking logic, and signal intertrip protection to coordinate with train control and OCS/TPSS networks. We provide turnkey design and field support for automation architecture, including PLC programming, relay logic (ABB, Siemens), and networked protection systems. This includes custom relay configuration, fiber optic routing, and DCS/SCADA-to-rail interface designs. Our integration services ensure seamless operation across traction, communications, and safety systems—reducing downtime, improving operator visibility, and ensuring compliance with NEMA, IEEE, and Cal-OSHA standards.

Design Review, Testing & Commissioning

Beyond design, our team provides full lifecycle engineering support through constructability reviews, submittal management, and commissioning oversight. We develop and validate as-built documentation, perform quality audits, and support third-party inspection and field testing to ensure installations meet technical specifications. Our engineers witness and review factory acceptance tests (FAT), site acceptance tests (SAT), and in-service energization procedures for substations, distribution panels, and OCS power delivery systems. United ECM also supports contractor coordination and punch list resolution, ensuring project turnover is smooth and certifiable. Whether working as Owner's Engineer, Technical Reviewer, or Resident Engineer, our electrical engineering department brings rigor and responsiveness to every phase of the delivery cycle.

FLAGSHIP **PROJECTS**

SMART On-Call Construction Management Contract

United ECM leads as the prime consultant to deliver the on-call construction management and engineering services for the Sonoma-Marin Area Rail Transit District (SMART). This multi-year engagement demonstrates United ECM's program management leadership in the rail industry, supporting SMART in executing its capital improvement program.

- Full project lifecycle activities under PMBOK-aligned methodologies.
- Provide a multi-disciplinary team of Resident Engineering, Civil, Electrical, and Inspectors.
- Quality assurance and cost control for optimizing schedule and budget outcomes.

LAWA Integrated Express Solutions (LINXS) Automated People Mover (APM)

United ECM played a key role in the design and implementation of the Automated People Mover (APM) at LAX. We led systems integration, managed third-party vendors, oversaw testing, and supported engineering staffing, mentoring, and scheduling.

- Developed and executed the System Integration Plan.
- Managed third-party vendors and tracked performance metrics.
- Handled engineering team hiring, mentoring, and scheduling.

Caltrain – Peninsula Corridor Electrification Program (PCEP)

United ECM provided critical QA and commissioning oversight for traction power and OCS systems. Our experts evaluated substation equipment, oversaw pantograph testing, and conducted field QA on electrical installations.

- Validated system installation using real-time field sensors and 3D photographic QA tools.
- Supported as-built documentation and redline drawing validation for closeout packages.
- Assessed contractor test procedures against NEC and NEMA standards for final acceptance.

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FLAGSHIP **PROJECTS**

BART MPS TPSS Replacement

United ECM served as a key engineering partner in the San Francisco Bay Area Rapid Transit (BART) Powell Street (MPS) Traction Power Substation (TPSS) Replacement Project. This critical initiative modernized and improved the reliability of BART's DC traction power infrastructure.

- Provided engineering design and technical oversight to integrate upgrades with BART's existing 1000 V DC traction power system.
- Designed and implemented a new Emergency and Transfer Trip System (ETTS) for enhanced protection, fault detection, and rapid isolation.
- Ensured ETTS interoperability with adjacent substations and train control rooms to support remote tripping and coordinated shutdowns.

SEPTA Ambler Traction Power Substation Rehabilitation

United ECM served as the prime consultant for the Southeastern Pennsylvania Transportation Authority (SEPTA) Ambler Traction Power Substation Rehabilitation, a $160 million initiative to renew and modernize SEPTA's 36 kV, 25 Hz autotransformer system.

- Designed upgrades for critical substation components, including circuit breakers, autotransformers, air-break switches, and protection/control systems.
- Developed sequencing strategies to replace aging assets while keeping the 80-year-old substation in service with minimal operational disruption.

MBTA Green Line Traction Power Load Flow

United ECM conducted a traction power load flow study for the Massachusetts Bay Transportation Authority (MBTA) Green Line to assess system capacity in support of increased service demand. The study covered all Green Line branches (B–E), spanning 23 route miles and 15 substations.

- Performed detailed site surveys of tracks, tunnels, and substations to establish accurate baseline data.
- Modeled five operational scenarios to evaluate system performance under higher loads.
- Identified root causes of potential power "blow-outs" and recommended mitigation strategies.

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FLAGSHIP **PROJECTS**

MBTA Green Line Extension Project

United ECM supported the Massachusetts Bay Transportation Authority (MBTA) Green Line Extension (GLX) Project, a 14.5-mile double-track electrified rail expansion. The team focused on traction power and overhead catenary system (OCS) delivery.

- Directed OCS installation, including QA inspections, complex tensioning operations, and coordination around bridges and special trackwork.
- Developed safety plans and training programs to prepare newly hired catenary technicians.
- Designed traction power system, including 4 new DC substations and system-wide raceway.

MBTA Red Line Traction Power Upgrade

United ECM delivered design and construction-phase services for the MBTA Red Line Traction Power Upgrade in Boston, a $7 million modernization project completed between April 2016 and June 2022. The work focused on enhancing the safety, capacity, and reliability of MBTA's traction power substations.

- Replaced legacy DC switchgear with modern high resistance-grounded equipment and epoxy insulation.
- Upgraded rectifier transformers from 2 MW to 3 MW, with new oil containment, bus ducts, and drainage boards.
- Deployed a mobile substation and performed a load flow study to maintain service during upgrades.

MBTA South Coast Rail Electrification

United ECM supported the MBTA South Coast Rail Electrification project, which spans more than 65 miles of track between Boston, Canton Junction, Taunton, New Bedford, and Fall River. Services focused on technical traction power planning, system design, and a traction power load flow (TPLF) study.

- Finalized system design based on TPLF results and coordinated with utilities to confirm interconnection points.
- Developed the sectionalization plan, including disconnect switch and phase break locations.
- Designed traction power feeding for layover sites (Wamsutta and Weaver's Cove) and prepared site layouts.

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DIGITAL SOLUTIONS
PROGRAM & PMCM

Program Management & Owner's Representation

United ECM offers program-level leadership and strategic advisory services that help public agencies and infrastructure owners deliver complex capital programs with confidence. As trusted Owner's Representatives, we provide portfolio planning, stakeholder alignment, and governance oversight to ensure projects remain on time, within budget, and aligned with mission objectives. We develop and manage Master Schedules, Cost Plans, and Risk Registers while supporting agencies through funding compliance, reporting, and technical coordination. Our program managers are skilled at navigating multi-agency environments, managing design consultants and contractors, and aligning scope execution with organizational readiness. From design criteria documentation to program-wide interface plans, our team adds structure and transparency to every major transit and utility capital initiative.

Project Management & Integrated Delivery Oversight

Our Project Management team leads day-to-day coordination across design, procurement, construction, and commissioning phases. We apply PMBOK, ISO, and Lean Construction principles to manage scope, cost, schedule, and quality with discipline and agility. United ECM is experienced in both traditional and alternative delivery methods—including Design-Build (DB), Construction Manager/General Contractor (CM/GC), and Progressive Design-Build (PDB)—and provides end-to-end services such as submittal review, change management, invoice validation, progress documentation, and schedule analysis. Our PMs utilize earned value metrics, look-ahead tracking, and interface control to identify issues early and keep projects on track. We also lead risk-based stakeholder meetings and commissioning readiness planning, ensuring informed decision-making at every milestone.

Construction Management & Quality Assurance

United ECM brings field-proven expertise in construction oversight, inspection, and digital quality control. We deploy Construction Managers and inspectors who are trained in CQM, Cal/OSHA, and NEC compliance, supporting daily field reporting, ITP execution, punch list resolution, and site safety audits. Our in-house QA/QC processes are powered by the QPMO methodology, which integrates inspection tracking, issue logs, and nonconformance reports into cloud-based dashboards. Using platforms like Procore, BIM 360, Power BI, and AI-enhanced QA tools, we deliver real-time visibility into project performance and contractor accountability. From civil works to electrical systems and communications, our CM staff ensures technical fidelity, safe execution, and certifiable delivery across every scope.

FLAGSHIP **PROJECTS**

SLAC National Lab – Capital Construction Oversight & Contractor Assurance

Our Program Manager served as owner's representative to the Department of Energy, overseeing over $1B in infrastructure upgrades. They implemented digital assurance systems, chaired technical boards, and led performance audits.

- Power BI dashboards for executive-level tracking of quality, cost, and schedule metrics.
- Performance audits across major utility upgrade projects under DOE OPM/PMO governance.
- Root cause analysis of non-conformance reports (NCRs) and preventive action planning.

LA Metro Exposition Line Operations and Maintenance Facility

UECM supported design and construction of the Overhead Contact System (OCS) and 750 VDC traction power at a 45-car rail yard connected to the Exposition Phase 2 Mainline. We ensured LA Metro compliance, coordinated with Exposition Line teams, and provided construction support through site visits and technical oversight.

- Designed catenary systems, power monitoring, interlocks, and SCADA interfaces.
- Provided construction phase support and site inspections.
- Ensured design compliance and coordinated with project stakeholders.

BART – R-Line 34.5kV Cable Replacement and Fiber Optic Installation

UECM provided technical construction management, including field coordination, inspections, and QA procedures. The work involved high-voltage cable replacement and fiber optic system upgrades across active rail corridors.

- Conducted daily field walks to verify cable routing, terminations, and vault access safety.
- Reviewed splice documentation and coordination drawings to validate constructability.
- Provided schedule recovery analysis when the project faced procurement-driven delays.

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RAIL INDUSTRY **EXPERTISE**

Overhead Catenary Systems (OCS) & Railway Electrification

United ECM has a distinguished track record in the design, construction, inspection, and rehabilitation of Overhead Catenary Systems (OCS) across commuter and intercity rail lines. Our experts lead OCS feasibility studies, tensioning system design, foundation planning, and pole/armature installation. We manage the full lifecycle of OCS delivery—from procurement and layout reviews to pantograph clearance checks and final energization. With deep knowledge of American Railway Engineering and Maintenance-of-Way Association (AREMA) standards, our team ensures safe, reliable, and resilient catenary infrastructure for speeds up to 160 mph and beyond. Field staff are experienced in working under active service windows, enabling safe delivery with minimal disruption to ongoing operations.

Communications Systems & Fiber Optic Infrastructure

United ECM provides turnkey services for communications and intelligent transport systems in rail environments. This includes fiber optic cable routing, communications ductbank layout, network design, and integration with SCADA and Train Control Systems. We assist with outside plant (OSP) and inside plant (ISP) coordination, as well as procurement review, contractor oversight, and continuity testing. Our team also supports Positive Train Control (PTC) readiness, camera surveillance systems (CCTV), public address, and passenger information systems. We ensure all communications work aligns with signal system interfaces, cybersecurity protocols, and uptime requirements to support modern, connected rail operations.

Digital Innovation Integration & Workforce Development

At the systems level, United ECM leads with innovation. We develop and implement digital project controls, smart QA tools, and real-time safety dashboards for capital projects. Our digital stack includes AI-enabled interface tracking, VR/AR-based training, BIM-integrated ITPs, and cloud-based asset turnover. We actively support Safety Management Systems (SMS) through embedded hazard analysis, HSE compliance auditing, and contractor safety tracking. United ECM also invests in the future workforce, offering structured apprenticeship pipelines, OCS technician training, and client-specific capacity-building programs. We help agencies achieve their safety, performance, and equity goals by aligning people, processes, and technology into unified delivery systems.

FLAGSHIP **PROJECTS**

WestBay Core Capacity Project

UECM provided field engineering support for BART's $50 million 1000V DC substation project at Civic Center and Montgomery stations. We inspected work for contract compliance, coordinated multi-discipline support, prepared daily reports, and worked closely with BART stakeholders to monitor progress and resolve issues.

- Inspected construction work for compliance with project specifications.
- Coordinated electrical, mechanical, and structural support around track operations.
- Prepared daily inspection reports and resolved field issues with BART stakeholders.

BART – Fiber Optic and Cable Integration (R-Line)

In addition to high-voltage work, UECM supported communications backbone upgrades through fiber optic cable installation, integration testing, and field oversight—ensuring data and signal continuity across the system.

- Pathway conflict resolution between traction power ducts and fiber conduits.
- Verified test signal continuity and bandwidth thresholds during commissioning.
- Updated system schematics and fiber maps for integration with BART's asset registry.

DTE ESOC – Digital Assurance Ecosystem

Our team deployed Procore, Power BI, and BIM 360 platforms to digitize performance tracking and enhance construction visibility. We developed dashboards, automated risk monitoring, and implemented structured OJT programs for workforce development.

- Automated submittal tracking, RFI aging, and change order using Procore workflows.
- Trained engineering staff in the use of BIM 360 and field QA checklists.
- Predictive maintenance KPIs that were later adopted program-wide on capital projects.

UNITED
ENGINEERING & CONSTRUCTION MANAGEMENT

AMMAR ALSARABI PE, PMP

Principal Engineer

Years of Experience
15+

Education
B.S., Electrical Engineering,
University of Massachusetts

Licenses and Certifications
- Professional Engineer, Electrical, CA, No. 23204
- Professional Engineer, Electrical, MA, No. 54902
- Professional Engineer, Electrical, NV, No. 031939
- Project Management Professional (PMP)

Applicable Specialize Experience
- AC/DC Traction Power
- 25kV OCS Programs
- Caltrain 25kV Experience
- Rail Systems Coordination
- Rail Systems Integration
- SCADA Systems
- AC/DC Traction Power
- DC Switchgear Replacement Program
- Rail Systems Coordination
- Rail Systems Integration
- Constructability
- Safety

Ammar Alsarabi, PE, PMP, serves as the Principal Systems Engineer and Resident Engineer for United ECM, bringing a crucial leadership function with authority to act on behalf of the firm on contractual matters and ensure overall satisfaction in service delivery. With a B.S. in Electrical Engineering from the University of Massachusetts and over 15 years of relevant experience, he meets the educational and experience requirements for a Principal, holding a key leadership position within the firm. He possesses deep technical knowledge in electrified systems design, significantly contributing to major programs such as the Caltrain Peninsula Corridor Electrification Program (PCEP) as Traction Power Quality Assurance Manager and BART's Measure RR Program with TPS CM/Design Oversight. His expertise encompasses traction power, electrical facilities, testing, commissioning, design, and construction management, including direct experience in designing switchgear, managing SCADA system changes, and overseeing system constructability and compliance with NEC codes for transit systems across the U.S.. As Principal, issues are escalated to Ammar, and he ensures overall satisfaction on the delivery of services while negotiating contractual matters. The Sound Transit Contractor Assessment is directed to him, reflecting his corporate and leadership function.

Project Experience

Caltrain Peninsula Corridor Electrification Program (PCEP)
Serving as Traction Power Quality Assurance Manager, Ammar Alsarabi conducted in-depth evaluations of traction power and electrical facilities (TPS, SWS, PS, WPC), ensuring their alignment with industry standards and assessing the efficacy of testing procedures. His meticulous review of project documentation, vigilant adherence to NEC codes, and execution of comprehensive quality audits are critical for ensuring the reliability and safety of Sound Transit's electrified rail systems.

Bay Area Rapid Transit (BART) Measure RR Program – TPS CM/Design Oversight
Ammar supported traction power substation programs by overseeing design and constructability, ensuring system functionality across architectural, structural, mechanical, electrical, and communication elements. He reviewed specifications, calculations, design drawings, and testing/commissioning plans.

Bay Area Rapid Transit (BART), R-Line 34.5kV Cable Replacement and Fiber Optic Installation
Ammar was the Assistant Resident Engineer and provided traction power technical support to ensure the feasibility of the new 34.5kV cable installations with minimal disruption to BART operations and schedule. He checked the contractor's demolition and installation plans and activity to ensure that one cable of the two was always energized to feed the substations to maintain current train headway, acceleration, and speed. Ammar also managed field activities, held coordination meetings with the contractor, BART stakeholders, and EOR to identify and mitigate risks.

MBTA Red Line Traction Power Upgrade
Ammar delivered design and construction services for upgrading MBTA substations. Work included replacing Bertram Thomas DC switchgear with high resistance-grounded units, installing epoxy insulation, upgrading 2 MW rectifier transformers to 3 MW with oil containment, and replacing associated bus ducts and drainage boards. A mobile substation with a 3 MW unit and 4 DC breakers was used to maintain power during upgrades. Ammar also conducted a traction power load flow study to assess outage coverage.

MBTA Systemwide Transformer Replacement
Ammar was the Traction Power Design Engineer and supported both the design and construction phases of this project at various traction power substations. During construction services, Ammar witnessed multiple transformers with factory, KEMA, and site testing and ensured the testing and commissioning follower the relevant specifications, standards, and approved plans.

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Project Experience

VTA Eastridge to BART Regional Connector, Traction Power Design Lead
Ammar was responsible to develop Traction Power substation and OCS design package and LoadFlow simulation for EBRC VTA Extension, which extends along Capitol Avenue and Capitol Expressway from Wilbur Avenue near the existing Alum Rock LRT Station (Existing TP28) to Quimby Road. This extension is approximately 2.4miles long with storage tracks at the end of line. Ammar was responsible to develop build and run Traction Power LoadFlow simulation using Train Operation Model (TOM), as a result of the simulation three (3) new substations were needed; two in the middle of the new extension and one at the storage tracks. This project also included modification of one (1) existing substation TP28 which is the located at the end of the existing line.

LA METRO Division 13 Arc Flash Analysis
Ammar conducted a comprehensive analysis of the LA Metro Division 13 electrical system, focusing on identifying and mitigating potential arc flash hazards. Existing electrical drawings were reviewed, and shortcircuit and coordination studies were performed. Advanced software tools were used to calculate incident energy levels, and arc flash labels for key equipment were developed. Recommendations for personal protective equipment (PPE) requirements, system improvements, and safety protocols were provided to minimize risk. Throughout the study, clear communication was maintained with LA Metro's safety and engineering departments, ensuring that all deliverables met the required standards for safety, compliance, and operational efficiency.

Amtrak, Sunny Side Yard New Interlocking and Security System
As the Design Lead - Electrical, Ammar provided Amtrak a design for anew Kirk Key interlock system, as well as a new lighting indication system for the 25kV OCT circuit feeding the engine house. The design included a fully new, complete Kirk Key interlock system with control center in the foreman's office. This included not only the control system hub, but all accompanying wire and conduit runs necessary for a fully operational system. The design of the lighting indication system provides for clear indication of energization state of the different catenary sections. All wiring and conduit run for the lighting system was also included.

SANDAG, Traction Power Substation and OCS Installation Design
Ammar was the Traction Power Design Engineer and supported the installation of 16 1.5MW and two 2MW 12kV AC, 650V DC traction power substations. He was responsible for reviewing the traction power substation procurement design documents and preparing final design plans based on the owner-furnished substations being procured. He utilized the substation layout information to be provided by the substation manufacturer to design traction power substation site improvements.

AMMAR **ALSARABI**

MOHAMMED HARB PMP, RMP

Director of Engineering

Firm
United ECM

Years of Experience
16+

Education
Bachelor of Electrical Power Engineering, Jordan

Licenses and Certifications
- Project Management Professional (PMP)
- Risk Management Professional (RMP)
- Internal Auditor in Occupational Health & Safety Management System (OHSAS18001)
- ETAP Certificate
- SIEMENS Relay Training
- Relion 615 ABB Relays Operation & Programming

Applicable Specialize Experience
- Engineering Management & Oversight
- Project Controls & Lifecycle Management
- Budget & Schedule Adherence
- Risk Management & Mitigation
- • EPC (Engineering, Procurement, Construction) Project Execution
- Technical Oversight of HV/MV/LV Power Systems
- Testing, Commissioning & Quality Assurance
- Vendor & Stakeholder Coordination
- Traction Power Systems (TPSS) Modernization

A seasoned Director of Engineering and Project Manager with over 16 years of US and international experience leading complex project execution and providing robust engineering oversight. Mohammed is certified as a Project Management Professional (PMP) and Risk Management Professional (RMP), possessing a proven track record of managing the full project lifecycle for large-scale power infrastructure projects. He is adept at managing and coordinating all project controls activities, including cost estimation, scheduling, and risk assessment to ensure strict budget and schedule adherence. Excels in overseeing multidisciplinary teams, managing vendor coordination, and ensuring compliance with the highest quality and safety standards in dynamic EPC environments. Combines deep technical expertise in HV/MV/LV power systems with strategic management to mitigate risk, drive continuous improvement, and successfully deliver complex engineering programs.

Project Experience

BART – Traction Power Facility Replacement, Powell Street
Mohammed played a key leadership role in upgrading BART's DC traction power infrastructure at Powell Street Station. He led the engineering and implementation of the Emergency and Transfer Trip System (ETTS) for the M-Line Traction Power Substation, a critical protection system designed to interface with adjacent facilities for remote fault isolation and enhanced reliability.

Veolia – Central Utilities and Waste Valorization Plant
As Lead Electrical Engineer, Mohammed directed all engineering, construction, and commissioning activities for this large-scale utilities and waste valorization facility. He managed a wide range of systems, including HV, MV, LV, SCADA/DCS, AC/DC UPS, transformers, motors, VSDs, and emergency generators. His responsibilities included resolving construction challenges through detailed design reviews, providing technical support, and reviewing commissioning procedures and documentation to ensure seamless handover and compliance with strict quality standards.

SIDEM Veolia – Rabigh III Independent Water Project & Al Dur 2 Desalination Project
In his role as Lead Electrical Engineer, Mohammed supervised all aspects of electrical construction, ensuring strict adherence to project schedules and budgets. He maintained project controls by providing daily progress updates, detailed reporting to management, and oversight of commissioning activities. He also drove continuous improvement initiatives, managed document control for all electrical systems, and developed comprehensive commissioning procedures in a demanding EPC environment.

NEPCO – Green Corridor Project
As Senior Electrical Engineer and Site Manager, Mohammed oversaw the installation, testing, and commissioning of multiple 132 kV and 400 kV substations. He provided expert technical support to resolve complex challenges during pre-commissioning and start-up and managed updates to critical documentation, including distribution drawings and schematic wiring diagrams, to support project execution.

ABB – Senior Electrical Engineer
At ABB, Mohammed was responsible for the installation and commissioning of medium-voltage switchgear, where he performed short-circuit and protection coordination calculations and verifications to ensure system reliability and compliance with design requirements.

CDRA & NA Group – Electrical Construction Oversight
Mohammed supervised all electrical construction works for major infrastructure projects, ensuring that safety standards were met, commissioning schedules were maintained, and project deliverables aligned with client requirements.

UNITED
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HARRI EMARI DBA, PMP, CQM

Director of Performance

Years of Experience
25

Education

- Civil and Environmental Engineer, Wayne State University, Detroit, MI
- Master's Degree in Construction Project Management, Wayne State University, Detroit, MI
- Doctor of Business Administration, University of Tehran, Faculty of Strategic Management

Licenses and Certifications

- Project Management Professional (PMP) – PMI
- PMI Construction Professional (PMI-CP)
- Certified Quality Manager (CQM-C) – USACE
- CM-BIM Certified Manager for Building Information Modeling
- LEED Green Associate – U.S. Green Building
- DASM Disciplined Agile Scrum Master – PMI
- DOE Contractor Assurance System Certification (DOE)
- DOE Accident Investigation
- Certification (EIP-400)
- OSHA 30-Hour Safety

Brought a combination of strategic oversight and interdisciplinary collaboration to both U.S. and international capital programs, each involving highly complex mechanical, electrical, plumbing (MEP), and broader infrastructure systems. Drew upon a comprehensive background in civil engineering, project assurance, and quality leadership to actively engage with technical teams, ensuring alignment across multiple disciplines during the execution of SCADA-integrated upgrades, variable speed drive (VSD) implementation, and electrical design validations. Provided structured support in the oversight of federally funded energy modernization initiatives, including the planning and delivery of major master substation upgrades. Applied Construction Quality Management (CQM) principles in conjunction with digital transformation methodologies to strengthen processes for testing, commissioning, and the long-term lifecycle operability of critical electrical systems, ultimately improving system reliability, efficiency, and compliance with program objectives.

Why Harri?

- Demonstrated leadership in interface assurance for critical systems, including coordination of Safety and Emergency integration with stakeholder-driven commissioning protocols.
- Recognized as a cross-disciplinary advisor, providing strategic QA oversight across electrical, mechanical, and civil scopes within complex capital programs.
- Applies a systems-thinking approach to align field observability and lifecycle maintenance planning with contract performance goals and asset reliability.
- Experienced in leading testing and commissioning phases, ensuring compliance with technical specifications and regulatory requirements for high-performance environments.
- Designs and implements risk-based maintenance strategies to mitigate unplanned downtime and support resilient operations.
- Embeds safety-by-design principles into all workstreams, ensuring proactive hazard analysis and alignment with DOE, OSHA, and ISO frameworks.
- Collaborates with engineers and data analysts to interpret ETAP modeling outputs, applying insights into power flow optimization, fault mitigation, and operational readiness.

Applicable Experience

Project & Contract Administration
Led end-to-end contract and project delivery to ensure alignment with client goals and contractual obligations, including project planning, subcontract management, invoice validation, and progress reporting.

Financial Oversight & Cost Control
Managed project budgets by monitoring scope progress, staff allocation, and financial forecasts, while ensuring adherence to reimbursable expense protocols and audited overhead rate compliance.

Compliance & Risk Governance
Ensured full adherence to federal, state, and client-specific compliance mandates through oversight of certifications, conflict disclosures, and clause flow-downs to sub-consultants.

Operational Assurance
Implemented QA/QC procedures to uphold quality standards and performance targets across all deliverables, integrating Value Engineering and Lean Practices.

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Project Experience

SLAC National Accelerator Laboratory

Leading as the Construction Specialist within the Contractor Assurance and Contract Management team at SLAC for Stanford University, Harri served as the Owner's Representative to the Department of Energy, providing senior advisory leadership in quality, compliance, and performance assurance across more than $1 billion in DOE 413.3B capital construction contracts supporting mission-critical scientific infrastructure. His leadership spanned major electrical and utility upgrade initiatives—including the Critical Utilities Infrastructure Revitalization (CUIR), Linac Coherent Light Source High Energy Upgrade (LCLS-II-HE), and Large-Scale Collaboration Center (LSCC)—which involved Government-Furnished Equipment (GFE), Design-Build, and Design-Bid-Build delivery methods. Harri directed QA/QC planning and implementation for complex cryomodule systems, waveguide assemblies, and high-voltage electrical distribution networks, ensuring technical accuracy, system reliability, and alignment with DOE Orders 414.1D and 413.3B. He co-chaired the Technical Change Control Board (TCCB), driving collaborative decision-making for scope changes, cost impacts, and schedule integration under the PMI-CP framework. His contributions also included the development of a digital assurance ecosystem utilizing Procore, BIM 360, and Power BI to deliver real-time analytics, interface risk tracking, and contractor documentation control. Harri's oversight extended to vendor qualification, supplier QA program approvals, and international manufacturing audits across the U.S. and Europe, reducing procurement nonconformance by 85% and strengthening electrical system readiness. Harri's ability to connect engineering discipline, contract assurance, and digital transformation positioned him as a key facilitator of DOE mission success and stakeholder confidence in capital asset delivery.

LS Brinker – Brinker Group

Serving as Director of Risk-Based Quality Management at LS Brinker, Harri led enterprise-level quality and compliance programs for complex infrastructure initiatives, including mission-critical and federally funded projects. He founded and implemented the Construction Quality Management (CQM) methodology, aligning USACE, ISO, and Lean standards to reduce quality incidents and improve first-pass yield across all phases of construction—from preconstruction through commissioning. Harri oversaw digital transformation efforts using Procore, BIM 360, and predictive analytics to improve QA/QC tracking, automate compliance workflows, and enhance field-to-office integration. Acting as the Owner's Representative on high-stakes projects such as DTE Energy's $80M ESOC/HQEC facilities and the $55M Little Caesars Medical Institute, he applied 3-phase QA protocols, BIM-based audits, and risk-driven reporting dashboards to manage contractor performance and ensure safety-critical functionality. Through Lean practices such as Last Planner System, Obeya Big Room sessions, and pull scheduling, he accelerated delivery timelines while maintaining quality control across mechanical and electrical systems.

Earlier Career Highlights in Engineering & Construction Management

As a Senior Construction Project Manager in complex civil and utility infrastructure. He managed multi-million-dollar Design-Build and Design-Bid-Build projects including the $37M Lake Huron Water Treatment Plant, $35M Detroit Water Main Replacement, and the $10M DPS School Renovation Blitz, which required rapid delivery and high-stakes coordination with municipal agencies. His use of earned value tracking, field control systems, and early versions of business intelligence dashboards enabled him to align capital execution with long-term operational goals. As a Civil & Environmental Engineer at Spalding DeDecker, Harri gained foundational expertise in site design, stormwater modeling, and permitting compliance. He contributed to grading and utility infrastructure planning for public projects, conducted environmental assessments, and collaborated with local governments on CSI MasterFormat specification writing and regulatory workflows.

ALAN HORTON

Train Control Expert

Firm
United ECM

Years of Experience
35

Education
BEng (Hons), Electrical and Electronic Engineering, Hatfield University, UK

Applicable Specialized Experience
- High Speed Rail Traction Power Design
- AC and DC Electric Traction Systems
- Traction Power Load Flow Computer Simulations
- Substation Design & Rehabilitation (AC & DC)
- Project Lifecycle Management (Feasibility to Commissioning)
- System Testing & Commissioning Oversight

Licenses and Certifications
- Institute of the Electronic & Electrical Engineers (IEEE)

A senior technical advisor and career railroad engineer with 35 years of international experience specializing in the planning, design, and implementation of high-voltage AC and DC electric traction power systems. Alan's expertise encompasses the full project lifecycle, from feasibility studies and complex load flow computer simulations to detailed design, commissioning, and operational support. He possesses direct experience designing traction power supply networks for high-speed rail corridors in the USA and has a proven track record of leading substation renewal and upgrade projects for major transit authorities, including Amtrak, SEPTA, and MTA.

Project Experience

Florida High Speed Rail (Phase 1), Engineer
Alan was responsible for the design of the power supply network for the proposed Tampa–Orlando high-speed rail system. The plan called for a 25-0-25 kV autotransformer system with four utility supplies drawn from the 230 kV or 115 kV transmission network. His scope included producing design drawings, a design criteria manual, and detailed equipment specifications to support the electrification proposal.

Network Rail – Traction Power Input to Company Business Plan UK, Engineer
Alan provided technical input on traction power to Network Rail's submission to the UK Rail Regulator for Control Period 4 (2009–2014). He conducted a strategic review of traction power networks in the London area, identifying renewal and enhancement needs, and developed outline scopes of work with budgetary cost estimates for the regulator's review.

Network Rail – Dollands Moor/Eurotunnel Interface UK, Project Manager
As Project Manager with Atkins Rail, Alan oversaw the design of earthing and bonding modifications at Dollands Moor to enable Eurotunnel's upgrade of its 25 kV, 50 Hz a.c. power supply. He specified changes to the a.c./d.c. interface between Network Rail and Eurotunnel, including isolation sections and isolating transformers, ensuring safe and reliable interoperability.

Keolis – Relocation of Utility Substation No. 317 Boston, MA, Lead Engineer
Alan served as lead engineer for the design of a new 13.8 kV utility substation to replace an existing facility impacted by a development project. The substation supplies the Boston Engine Terminal (BET), which maintains the MBTA's commuter rail fleet. His scope included substation design and staging works to ensure power transfer without service interruption.

Amtrak, Northeast Corridor – Engineer
Alan contributed to several traction power upgrade projects along the Northeast Corridor. At Monmouth and Millstone Substations in New Jersey, he performed the electrical design for adding a fourth 138/12 kV, 25 Hz traction power transformer, which included modifications to the protection system and upgrades to original 1930s-era panel boards. At Rheems Substation in Pennsylvania, he led the design for the installation of a second 138/12 kV, 25 Hz transformer, incorporating new switchgear and control panel modifications to enhance system reliability.

SEPTA, Traction Power Substation Rehabilitation Projects, Pennsylvania – Lead Engineer
Alan played a central role in multiple substation rehabilitation efforts for SEPTA's traction power network. At Wayne Junction Substation, he served as Lead Engineer for the full renewal of equipment at the primary 36 kV, 25 Hz autotransformer distribution substation, developing a detailed sequence of work to keep the 80-year-old facility operational during construction. At Ambler Substation, he designed the replacement of major electrical components, including outdoor circuit breakers, transformers, and control panels, while carefully staging the work to maintain uninterrupted service. In addition, he provided design documentation for a Design/Build program to rehabilitate three DC substations, which included renewal of 13.2 kV AC switchgear, rectifiers, and 630 V DC switchgear.

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Project Experience

MBTA, Green Line Extension Project, Boston, MA – Lead Engineer / Project Manager
Alan served as Lead Engineer for the relocation of a 480V load center (LC-12) to support new track construction, ensuring uninterrupted power to signal cabinets, switch heaters, and lighting systems. In an earlier role as Project Manager, he directed the design of four new DC traction power substations and the system-wide raceway for the extension, overseeing the production of all traction power plans and drawings.

MBTA, Substations Rehabilitation Project, Boston, MA – Lead Engineer
Alan led the design to rehabilitate five 600V DC substations across Boston's rapid transit network, including Alewife, Porter Square, Berkeley, Dewey, and Ashmont. His work included producing condition assessment reports and developing conceptual design drawings for major system upgrades.

Network Rail, Brighton Main Line Power Upgrade, UK – Lead Engineer
Alan led the upgrade of five 750V DC substations between London and Brighton to accommodate growing traffic demand. His scope included installing packaged 33 kV substations, transformer/rectifier units, renewing DC switchgear, and implementing SCADA system modifications.

Network Rail, Thameslink Project, UK – Lead Engineer
Alan supported the system design of the DC electrification system for the Thameslink Program, conducting load flow studies and advising on equipment ratings for a new AC/DC changeover section to handle longer and more frequent train services.

Docklands Light Railway, London, UK – Project Manager
Alan managed a system-wide traction power study to assess requirements for longer trains, future extensions, and the timetable for the 2012 Olympics. This included load flow studies of the 750V DC third rail system and the 11 kV AC high-voltage distribution network.

Network Rail, North London Line, UK – Lead Engineer
Alan prepared technical specifications for a project aimed at reducing stray direct current levels on the North London Line, improving system reliability and compliance.

London Underground, Inner London, UK – Project Manager
Alan directed a multidisciplinary feasibility study evaluating the impact of raising the conductor rail voltage from 660V DC to 750V DC in the Inner London area, assessing implications for rolling stock, substations, and existing infrastructure.

Early Career – British Railways Board / Atkins Rail
Alan began his career in 1989 with the British Railways Board as an assistant engineer in the Electrification Planning Team, supporting upgrades to the UK's 25 kV power system. He later joined the Electrification Distribution Team, handling relay protection settings and technical support for electrical distribution equipment. Returning to the Planning Team, he contributed to studies on signaling-electrification interactions, stray D.C. currents, and A.C./D.C. interface issues. Following the privatization of British Rail in 1995, Alan joined Atkins, where he led a team of engineers conducting power system simulations on IBM Unix platforms to assess improvements required for additional train capacity and higher-performance rolling stock.

ALAN HORTON

AMR MOHAMED PMP

Train Control Expert

Firm
United ECM

Years of Experience
17

Education
Faculty of Electronic Engineering, Menoufia University, Egypt
Bachelor's Degree, Electrical and Electronics Engineering

Applicable Specialized Experience
- Project Planning & Scheduling
- Budget & Cost Control
- Risk Management
- Stakeholder Engagement
- Resource Management
- Change Management
- Quality Assurance & Compliance
- Contract & Vendor Management
- Team Leadership
- Project Reporting

Licenses and Certifications
- Google Project Management Professional Certificate
- CompTIA A+ Certification
- OSHA Outreach Training for General Industry
- Certificate in Railway Control Engineering
- PMP Certified, Project Management

Experienced train control and railway signaling professional with extensive hands-on experience in the commissioning, maintenance, and project management of complex railway systems. Amr possesses deep expertise in Siemens interlocking systems, propulsion control circuits, and ETCS Level 1, demonstrated through senior roles on major metro and railway projects. A certified Project Management Professional (PMP) and holds a Certificate in Railway Control Engineering from the Institution of Railway Signal Engineers (IRSE), combining technical field skills with proven project oversight capabilities. Skilled in system dynamic testing, site acceptance testing, and diagnosing complex electrical malfunctions in rolling stock and trackside equipment.

Project Experience

Siemens Mobility USA, Testing & Commissioning Senior Engineer
On the CTA 7000 Series Metro Project in the United States, Amr served in an expert capacity overseeing the commissioning and field service of propulsion systems and traction drives for the new fleet of 7000 series metro vehicles. His role involved diagnosing and resolving critical electrical malfunctions in propulsion control circuits by analyzing schematics and location circuit plans to determine corrective actions. He developed and executed detailed technical testing plans for system qualification and produced comprehensive test reports throughout the commissioning phase. In addition, he debugged propulsion software using a command-line interface and worked directly with the Siemens engineering department to drive product improvements, ensuring greater system reliability and maintainability.

Siemens Mobility KSA, Senior Project Engineer
For the King Abdel Aziz Seaport Railway Systems project in Saudi Arabia, Amr managed the execution phase, which included overseeing site construction, equipment installation, and commissioning protocol updates in collaboration with German engineers. He was responsible for successfully managing the project budget, scheduling tasks and activities, and ensuring the quality of deliverables. His work also involved approving the final as-built drawings for the railway infrastructure at the seaport, ensuring compliance with project requirements and international standards.

Siemens Mobility KSA, Signaling Supervisor Project Engineer
In the Saudi Railways Organization (SRO) Signaling System Maintenance and Upgrades project, Amr acted as a supervising engineer responsible for maintaining indoor signaling systems such as Siemens interlocking (ECC system, XR computers), axle counter cabinets, and the ETCS Level 1 system. He directed two major infrastructure projects that included the installation and commissioning of nine automatic gates and nine level crossings. His responsibilities covered the supervision of all civil works, installation of track signals, and the final commissioning process to ensure operational readiness.

Siemens Mobility KSA, Signaling Maintenance Engineer
As part of the Mainline Preventive and Corrective Maintenance project in Saudi Arabia, Amr led a technical team responsible for maintaining telecommunication, power, and signaling components for railway stations and on-track equipment between Houfuf and Dammam. His leadership ensured consistent execution of preventive and corrective maintenance, supporting the reliability and safety of railway operations across the region.

Nestlé USA, Consultant, Electrical & Automation Transition Project
On the Nestlé Distribution Center Automation project in the United States, Amr served as a consultant on a $40 million pilot initiative to transition a major distribution center to an advanced automation system. The project required coordinating with a team of approximately 83 people across technical, operational, and maintenance functions. The system, supplied by Electtric-80 (E-80), included FANUC robot-based palletizing islands, multiple conveyor systems, an automatic warehouse with stacker cranes, AGV unit load vehicles, and wrapping machines.

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Project Experience

ZAN-Modern-Co-LTD, Service Engineer
Amr worked on the Surveying Equipment Maintenance project in Saudi Arabia, performing maintenance, troubleshooting, and calibration for both hardware and software of surveying machines. His responsibilities covered Total Stations, automatic levels, and GPS programming, ensuring precise and reliable functionality of the equipment.

ARM Holding Algeria, Project Manager
In Algeria, Amr managed and controlled project work for the construction of GSM sites and fiber optic lines for clients Huawei and ZTE. For the GSM sites, he oversaw civil works, tower erection, and installation of indoor systems including BTS, microwave, battery, and antenna systems. He also managed the construction of optical fiber lines, which involved civil works, blowing and splicing fiber optic cables, testing lines, and ODF installation. Additionally, Amr led an OPGW fiber project along 220KV electrical lines, handling splicing and testing for 30 km of 24-fiber cable.

AE GROUP Senegal, Project Manager
Amr managed GSM and fiber optic network construction projects in Senegal for clients Huawei and ZTE. His scope included overseeing GSM site works such as civil construction, tower erection, and installation of BTS, microwave, battery, and antenna systems. He also directed optical fiber line construction, covering civil works, cable blowing, splicing, testing, and ODF installation. In addition, he contributed to an OPGW fiber project along 220KV electrical lines, carrying out joint box creation, testing, and splicing of fiber optic cables.

ARM Holding Algeria, Telecom Site Engineer
On GSM and Fiber Optic Network Execution projects in Algeria, Amr worked closely with Huawei and ZTE on both GSM site and fiber optic infrastructure delivery. His role included overseeing civil works for GSM sites, tower erection, and installation of indoor equipment such as BTS, microwave, battery, and antenna systems. He also contributed to optical fiber line construction, which required civil works, cable blowing, splicing, line testing, and ODF installation.

6 of October Milling and Marketing, Electrical Engineer
In Egypt, Amr was responsible for industrial electrical maintenance, overseeing the operation and upkeep of various electrical machines and control systems. His work included maintaining scales, level sensors, AC/DC motors, and troubleshooting PLCs. He also carried out SCADA system maintenance, performed troubleshooting for milling machines, and developed programming for scales and HDMI screens, ensuring efficient plant operations.

AMR MOHAMED

JACKSON SAMUTHRAM

Tracks and OCS Expert

Firm
United ECM

Years of Experience
25+

Education
Diploma, Mechanical Engineering

Applicable Specialized Experience
- Track and OCS Integration
- OCS Design
- OCS Inspection & Quality Assurance
- Project & Construction Management
- Budget Management
- Staff Development
- Feasibility Studies & System Assessments
- Rail Electrification Rehabilitation
- Regulatory & Safety Compliance
- Stakeholder Coordination
- Training & Workforce Development

Licenses and Certifications
- Railway Track Safety
- Certificate in General Mechanics and Machine Shop
- OSHA 10
- Internal Auditing

A seasoned Railway Electrification Project Manager with over 25 years of hands-on experience in the rail industry, specializing in Overhead Catenary Systems (OCS) construction, design, and project management. Jackson possesses in-depth expertise in managing the complete project lifecycle for major railway electrification projects in the United States, Thailand, and Malaysia. With a proven ability to lead and mentor diverse, high-performing teams while ensuring adherence to the highest standards of safety, quality, and regulatory compliance. Combines technical proficiency in OCS systems and track safety with strong commercial acumen in budget management, financial reporting, and risk assessment.

Project Experience

Peninsula Corridor Electrification Project (PCEP – Caltrain), OCS Inspector
On the PCEP project, Jackson conducted final quality monitoring and sign-off for the Overhead Catenary System (OCS). He performed detailed inspections of pantographs and ensured that contractor builds strictly adhered to design specifications. His responsibilities included managing quality control through daily progress reports, identifying defects for punch lists, and conducting final clearance envelope tests with clients to secure project approval.

Green Line Extension Project (GLX), OCS Superintendent
Jackson led the construction of the OCS over a 14.5-mile double track, managing the project across multiple phases from Union Station to College Avenue Station. He directed all aspects of site supervision, including planning construction schedules, managing crews, performing quality inspections, and enforcing safety compliance. In addition, he played a key role in training new OCS personnel and ensuring that all work plans and risk assessments met client and regulatory standards.

Amtrak Susquehanna River Rail Bridge, Electrification Manager
For the Susquehanna River Rail Bridge project, Jackson led the OCS and Power feasibility study for the construction of two new two-track bridges. He designed the OCS system for the proposed structures and analyzed the electrical infrastructure capacity, determining that existing systems could not support future high-speed train traffic due to increased electrical loading and steeper bridge approaches.

Balfour Beatty Rail, OCS Planning and Execution
Jackson managed OCS planning, procurement, and construction for a 7.5 km urban double-track electrification project. He oversaw material delivery, construction sequencing, and installation activities, while coordinating with stakeholders to maintain compliance with safety and regulatory standards. His leadership ensured the OCS was installed to design requirements and fully aligned with project schedules.

DMIA, OCS Rehabilitation Project
Jackson directed the rehabilitation of 42 km of OCS, with responsibility for scheduling, procurement, and compliance oversight. He supervised workforce recruitment and training, established inspection protocols, and approved design and method statements with contractors and clients. His role ensured that the rehabilitated OCS met performance standards and was smoothly integrated into active rail operations.

Amtrak, Susquehanna River Rail Bridge Project
As Electrification Manager, Jackson led the feasibility study for OCS and traction power on two new two-track bridges across the Susquehanna River. He developed preliminary OCS designs, analyzed clearance and constructability constraints, and assessed the electrical infrastructure's ability to handle future high-speed rail traffic. His findings highlighted system limitations and informed Amtrak's electrification strategy for the corridor.

UNITED
ENGINEERING & CONSTRUCTION MANAGEMENT

KISHA POLLARD

Network Architect

Firm
United ECM

Years of Experience
20

Education
BS Information Technology,
Major in Information Security,
Minor in Information Technology

Applicable Specialized Experience

- Network Systems Design & Implementation
- Unified Contact Center Enterprise (UCCE) Architecture
- VoIP Systems Migration & Integration
- Cisco Unified Intelligence Center (CUIC) & Customer Voice Portal (CVP) Configuration
- Cisco Call Manager Configuration
- System Integration Planning & Execution
- Vendor Management & Technology Evaluation
- Network Performance Optimization

A seasoned Network Architect with 20 years of experience designing, implementing, and optimizing complex communication networks and enterprise-level solutions. Kisha possesses deep expertise in architecting and integrating Unified Contact Center Enterprise (UCCE) environments and leading large-scale VoIP system migrations and upgrades. She has a proven ability to develop comprehensive system integration plans, manage multi-vendor solutions, and ensure seamless coordination across complex control systems. Excels at translating business needs into robust technical architecture, enhancing system performance, and ensuring high reliability and availability for critical infrastructure.

Project Experience

LAWA Integrated Express Solutions (LINXS) Automated People Mover (APM) – Lead Systems Architect
Kisha played a pivotal role in the design and implementation of the communications and control systems network for the LAX Automated People Mover. She led the development and execution of the System Integration Plan, ensuring interoperability across diverse facilities and complex control systems essential for safe and efficient operations. Her responsibilities included architecting solutions with third-party vendors, defining performance metrics, and overseeing system testing to verify network reliability and compliance with design specifications.

Unified Contact Center Optimization – Solutions Architect
As Solutions Architect, Kisha led the optimization of a Unified Contact Center Enterprise (UCCE) environment, managing the configuration and integration of Cisco Unified Intelligence Center (CUIC) and Customer Voice Portal (CVP). She designed and implemented advanced call-routing scripts integrated with the core network infrastructure, achieving a 30% reduction in call handling times. By collaborating with cross-functional teams to resolve complex network issues, she streamlined operations and significantly increased system reliability and customer satisfaction.

VoIP System Migration and Upgrade – Network Architect
Kisha spearheaded the architecture and execution of a large-scale VoIP system migration, configuring Cisco Call Manager and ensuring seamless integration with existing UCCE components. She designed and conducted comprehensive testing, troubleshooting, and validation plans to minimize service disruptions throughout the migration. To support long-term business continuity, she also developed detailed system documentation and architecture diagrams that facilitated smooth adoption across the enterprise.

Enterprise Communication Enhancement Initiative – Lead Architect
In this role, Kisha served as Lead Architect for the enhancement of enterprise communication infrastructure through the implementation of a robust UCCE solution. She designed custom call-flow management scripts and optimized network resource allocation, leading to improved call resolution times and reduced operational costs. Additionally, she managed network configurations for Moves, Adds, Changes, and Deletes (MACD), ensuring the system could support evolving business requirements while maintaining uninterrupted service delivery.

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EMMA ANDROLOWICZ

Electrical Engineer/CADD Drafter

Years of Experience
2

Education
B.S., Electrical Engineering,
University of California L.A.
from Henry Samueli School of
Engineering & Applied Science

Applicable Specialized Experience

- AutoCAD
- Revit
- Microstation
- C++
- Python
- PowerPoint
- Excel
- Canva
- Waveformer
- Arduino
- Matlab

An electrical engineer graduated from UCLA. Emma is skilled when it comes to ETAP, power systems, circuit design, and building integration. She has gained hands-on experience through internships, where she worked on substation design, electrical layouts, and system integration. Beyond her technical experience, she is actively involved in leadership and extracurricular activities - mentoring engineering students through UCLA IEEE WATT and collaborate on circuit projects with the UCLA Institute of Electrical Engineers. Emma also takes pride in giving back through Alpha Phi, where she has helped raise funds for women's heart health.

Why Emma?

- Participated in philanthropy events and raised over $10,000 for the Alpha Phi Foundation which directly supports Women's Heart health.
- Learned the basics of circuit theory such as Ohm's law and node voltage analysis to provide a theoretical basis for the circuit projects.
- Led weekly meetings where students participated in engineering-related projects to give younger students hands-on experience.
- Reached out to students and staff to market multiple fundraising events on campus.
- Worked on multiple circuit projects in a group setting to refine breadboarding and soldering skills.
- Mentored under class men engineering students with adjusting to college, choosing classes, and finding internships.

Applicable Experience

Working with AutoCAD to design & refine building layouts while integrating necessary equipment. Collaborating with a multidisciplinary team to develop and update designs. Gaining hands-on experience with high and low-voltage systems, including fire alarms and telecom. Engaging with clients and industry professionals to contribute to complex, long-term projects. Designing and modifying substation schematics using Microstation and AutoCAD while ensuring accuracy and quality control. Collaborating with the team to complete projects and improve workflows. Gaining hands-on experience in substation design, from planning to installation, and applying learned concepts in real-world applications.

Project Experience

Stantec, Buildings Intern

Emma furthered her knowledge of AutoCAD design platforms while learning the foundations of building design and integration, working with a multi-disciplinary team using an integrated design strategy to create and update building layouts and place necessary equipment. She also explored the basics of high and low-voltage systems, including fire alarms and telecom systems, and participated in sessions with clients and industry professionals to support the development of complex long-term projects.

Unified Contact Center Optimization

Emma used platforms such as MicroStation and AutoCAD to design and modify substation documents, checking schematics for accuracy and quality control while collaborating with a team to complete projects and presenting on key office safety topics. She gained a solid understanding of substation elements and the design-to-installation process, applying these skills to support the team. At the end of the internship, Emma created and presented a capstone project highlighting critical aspects of substations and the knowledge she acquired.

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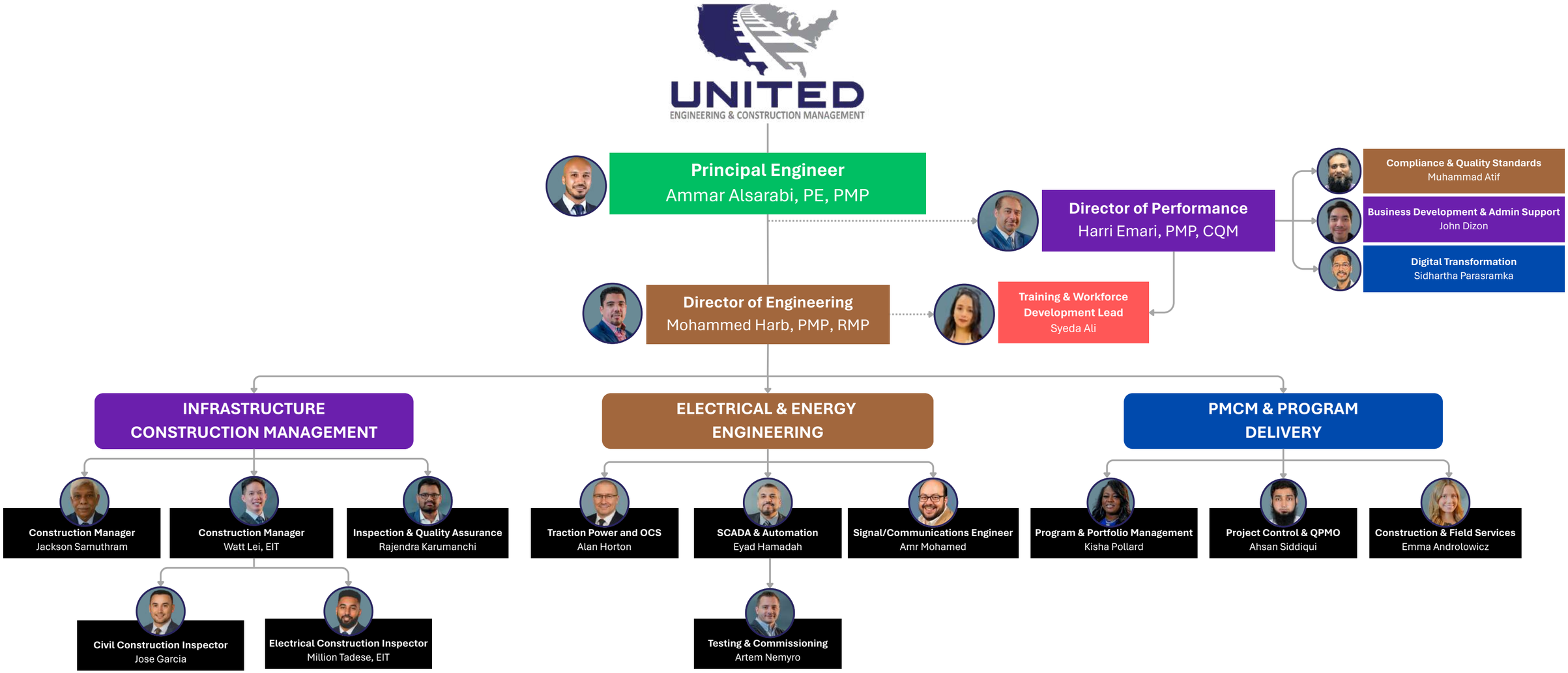
Organizational Chart



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