

DENNIS GROUP

Career Pathway Building Electrical



Your Journey Starts Here

Below are general guidelines on skills that are expected for different positions in the Dennis Group. After you reach an Engineer III level, different pathways can be followed according to the role you want to play in this company as a senior employee.

If you desire to dedicate 100% of your time within your discipline working in projects, you can aim to become a Technical Expert. This position is highly valuable to our company as we are frequently facing engineering challenges that require a lot of technical knowledge and experience to be overcome.

If you do want to keep working within your discipline but prefer to assume a leadership position, you can aim to become a Team Leader. It is very important to the growth of the company that we have leaders that can help in the development of our younger employees and the management of resources within each department.

Finally, if you wish to start managing projects, you can aim to become a Project Manager. If you choose this pathway, there is a different document that comprises the skill of different levels of project manager.

Building Electrical Competencies

Project Definition and Proposals	Engineer I	Engineer II	Engineer III	Technical Expert	Team Lead
Survey existing conditions		●	●		●
Coordinate project electrical definition with power utility		●	●		●
Estimate Size of Electrical Service and create conceptual power one line/layout		●	●		●
Define means and methods by area – identify NEMA and XP Ratings		●	●		●
Define Lighting level and control criteria – create light level drawing		●	●		●
Define Fire Alarm Requirements per IBC and NFPA 101			●		●
Define Low Voltage Systems			●		●
Review Scope with Client – Create and manage needs list			●		●
Estimate Construction Costs and Schedule			●		●

Create Assumptions/Exclusions/VE List			●		●
Estimate Engineering Time and Costs					●
Provide Engineering Proposal to client					●
Produce Basis of Design documentation			●		●
Present Proposal to Client and manage feedback			●		●

Basic Electrical Engineering (Power Systems)	Engineer I	Engineer II	Engineer III	Technical Expert	Team Lead
Ohms Law, AC/DC, Electric and Magnetic Fields	●	●	●	●	●
Power System theory – 3-phase vector math, Power Factor, Symmetrical Components	●	●	●	●	●
Motors and Starters/VFD's	●	●	●	●	●
Transformer configurations	●	●	●	●	●
Motor Starting methods – inrush, torque, speed	●	●	●	●	●
Efficiency	●	●	●	●	●
Reliability				●	
Breaker and Fuse types	●	●	●	●	●
Conductor and Raceway types	●	●	●	●	●
Power Quality – Harmonics, Sags, Surges			●		

Engineering Calculations and Specifications	Engineer I	Engineer II	Engineer III	Technical Expert	Team Lead
Load Calc for power system equipment	●	●	●	●	
Tray/Raceway/Conductor size per NEC	●	●	●	●	
Voltage drops (Steady State as well as Transient from motor starting)	●	●	●	●	
Estimate weights of main tray/trapezes and equipment needing support	●	●	●	●	
Size Medium Voltage cables using Ampcalc software			●	●	
Short Circuit calculation identifying deficiencies or series ratings		●	●	●	
Coordination – settings for adjustable breakers, selectivity for emergency		●	●	●	
Arc Flash calc with recommendations to reduce or abate dangerous levels			●	●	
Generator Sizing using vendor software		●	●	●	

Light Level Calcs on Visual		●	●	●	
Pulling calcs for long runs of large feeders			●	●	
Motor/Drive conductor & protection sizing		●	●	●	
Power Factor Correction sizing				●	
Code Expertise – NEC, NFPA 72/101/110, IBC		●	●	●	
Grounding and Bonding Standards and Recommendations		●	●	●	
Specify Means and Methods		●	●	●	
Specify other common work – grounding, identification, startup, LV & MV Cables		●	●	●	
Specify Devices – receptacles, switches, dimmers, occ. sensors, disconnects		●	●	●	
Specify Equipment – Power Distribution, Lighting, Generators, UPS		●	●	●	

Cad/ Computer Competencies	Engineer I	Engineer II	Engineer III	Technical Expert	Team Lead
Excel/Word/Outlook, File Management devices, & other (backflow, metering devices, hose stations)	●	●	●		●
CAD – Xref and Sheet File Creation		●	●		
CAD – Add 2D devices to Xrefs	●	●	●		
CAD – Add 3D Objects to Xrefs		●	●		
CAD – Publish Drawings	●	●	●		
REVIT	●	●	●		

Drawings and Other Documentation	Engineer I	Engineer II	Engineer III	Technical Expert	Team Lead
Create Cover Sheet and Legend		●	●	●	
Create NEMA Dwg with means and methods by area		●	●	●	

Create Site Plans - with Pole Lights and Service Equipment, etc.		●	●	●	
Create Lighting Plans – Lights tagged per schedule with circuiting		●	●	●	
Create Power Plans – with circuiting and key notes		●	●	●	
Create Tray/Trapeze Plans – with elevations and weights		●	●	●	
Create Fire Alarm Plans – with NFPA 72 layouts		●	●	●	
Create Low Voltage Plans for Access Control and PA and other			●	●	
Create Power One line and Panel Schedules		●	●	●	
Select Standard Details for the project		●	●	●	
Identify wiring needs for other trades		●	●	●	
Develop details for project specific mounting or interconnection schematics			●		

Create Control Schematics for hardwired control of HVAC as needed			●		
Coordinate raceways and equipment with other trades		●	●		
3D layout for long 2.5" conduit and above runs		●	●		
Produce Study/Report to client regarding technical topics such as Arc Flash, Power Quality, etc.			●	●	

Procurement and Contract Administration	Engineer I	Engineer II	Engineer III	Technical Expert	Team Lead
Vet bidders suitable for the project – verify bid list with client			●		●
Create bid packages with RFQ doc info, SOW, milestone schedules, and assemble drawings and specs		●	●		●
Administer a bid walkthrough which flags key items of scope/specs		●	●		●
Manage bid process fairly – resolve questions, issue addendums, and ensure bidders will bid		●	●		●
Create Bid Tab and review with client		●	●		●

Produce "For Construction" documents capturing addendum items and coordination with other trades		●	●		●
Drive a kickoff meeting with winner and review mockups		●	●		●
Review Vendor Submittals		●	●		
Attend Vendor Shop Inspection/FAT		●	●		
Track shipment/milestone schedule		●	●		●
Review and track change orders			●		●
Manage and respond to RFIs, EWAs and other onsite documentation.		●	●		●

Construction, Commissioning and Start-Up Support	Engineer I	Engineer II	Engineer III	Technical Expert	Team Lead
Site Support of Construction Activities		●	●		●
Observe rough-in construction for compliance with plans, specs, and details		●	●		●

Observe final construction		●	●		●
Site Support of Commissioning Activities		●	●		●
Ensure client training performed and close out documents delivered		●	●		●
Training, Coordination, Client Interface	Engineer I	Engineer II	Engineer III	Technical Expert	Team Lead
Primary Client Technical Contact		●	●		●
Gives Peer Review indicating major concerns versus minor artistic options			●		●
Adjusts after peer review	●	●	●	●	●
Recommends and justifies improvements	●	●	●	●	●
Lead Team of Engineers on a Specific Project – managing/tracking to-dos			●		●
Mentoring of Employees			●	●	●

Provide internal training on subject expertise			●	●	●
Provide internal training on subject expertise			●	●	
Assist other DGL departments answering electrical questions			●	●	
Maintains project document organization	●	●	●		●
Maintains discipline document organization			●	●	
Tracks design issues on Action Log		●	●		●
Manage Time – Meet commitments	●	●	●		●
Reliable Owner of Project – Seeing deadlines met and defects fixed to completion		●	●		●
Sound Engineering Judgement		●	●	●	●
Ethical Judgement	●	●	●	●	●

Identify a Subject of Expertise	Engineer I	Engineer II	Engineer III	Technical Expert	Team Lead
Industry Recognized Lighting Engineering Expertise				●	
Industry Recognized Power Expertise				●	
Industry Recognized Fire Alarm Engineering Expertise				●	
Industry Recognized Low Voltage Systems Expertise				●	
Industry Recognized Controls Engineering Expertise				●	
Industry Recognized Subject Matter Expert Regulatory (NEC, IBC, NFPA, etc.)				●	
Often advises other personnel in terms of how to approach engineering problems				●	
Technology Lead – drive methods of improving workflow				●	
Develop Methods, Standards, Documents, Quality Control Procedures				●	

Team Lead Skills	Engineer I	Engineer II	Engineer III	Technical Expert	Team Lead
Assigning and monitoring work					●
Setting goals and evaluating performance					●
Mapping career movement					●
Addressing workplace performance issues					●
Works with the Office Discipline Manager and project managers to obtain work.					●
Interfaces with project managers to review deliverables and milestone					●
Supports project teams and backs up team members as necessary					●
Interfaces directly with clients					●

Engineer Level I

Typical Minimum Experience: 0-3 Years

- Works within a team leader group
- Work closely with assigned mentor/team leader to learn the ropes of engineering execution
- Gains knowledge of how building electrical engineering is implemented at DGL
- Learns basic engineering tasks of design and execution
- Gains exposure to full project life cycle on specific
- Limited direct client contact

Intra-Discipline Mobility: Engineer Level II

Engineer Level II

Typical Minimum Experience: 3 - 6 Years

- Works within a team leader group
- Capable of executing all tasks necessary to complete the engineering on a project from design through execution.
- Works autonomously on specific tasks
- May present engineering findings to clients but does not act as the primary engineering contact point.

Intra-Discipline Mobility: Engineer Level III

Engineer Level III

Typical Minimum Experience: 6 - 8 Years

- May report directly to Office Discipline Manager; does not need to work within a team.
- Strong exposure to all aspects of design/execution on larger projects.
- Capable of being the direct client contact and lead engineer on specific projects.

Intra-Discipline Mobility: Technical Expert, Team Leader

Technical Expert

Typical Minimum Experience: 8+ Years

- Reports directly to the Office Discipline Manager.
- Fully versed in all activities associated with design and execution.
- Has successfully executed several large projects.
- Subject matter expert in multiple areas and specific process systems.
- Able to provide guidance and direction to other engineers.
- Interfaces directly with clients

Intra-Discipline Mobility: Team Leader

Team Leader

Typical Minimum Experience: 8+ Years

- Fully versed in all activities associated with design and execution.
- Has successfully executed several large projects.
- Subject matter expert in multiple areas and specific process systems.
- Responsible for managing Engineers and Junior Engineers. In this capacity they are responsible for:
 - Assigning and monitoring work
 - Mentoring
 - Setting goals and evaluating performance
 - Mapping career movement
 - Addressing workplace performance issues
- Works with the Office Discipline Manager and project managers to obtain work.
- Interfaces with project managers to review deliverables and milestones.
- Supports project teams and backs up team members as necessary.
- Interfaces directly with clients

Intra-Discipline Mobility: Technical Expert