

DENNIS GROUP

Career Pathway Structural Group



Your Journey Starts Here

Below are general guidelines on skills that are expected for our Structural Group at Dennis Group. The skills outlined cover Junior Engineer, Engineer, Lead Engineer, Senior Engineer, and Team Leader.

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 at Dennis Group as we are frequently facing engineering challenges that require a lot of technical knowledge and experience.

If you wish to keep working within your discipline but prefer to assume a leadership position, you can aim to become a Team Lead. 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. Dennis Group offers a variety of resources, training and support for those in leadership positions.

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 management.

Structural Group Competencies

General Understanding of Design Options	Junior	Engineer	Lead Engineer	Senior Engineer	Team Leader
Common structural framing systems (steel, composite steel, joists)	●	●	●	●	●
Uncommon structural framing systems (cast in place concrete, precast, wood, light gage, etc.)			●	●	●
Common façade systems (IMP, precast, masonry)		●	●	●	●
Uncommon façade systems (masonry veneers, wood, light gage, curtainwalls, etc.)			●	●	
Common foundations systems (Spread footings, drilled piers)	●	●	●	●	●
Uncommon foundation systems (Driven piles, combined footings, pile caps, grade beams, etc)		●	●	●	●
Common lateral systems (Shear walls, braced frames, moment frames)		●	●	●	●
Uncommon lateral systems (RBS, eccentric braced frames, etc.)			●	●	

General Understanding of Applicable Design and Standards and Loadings	Junior	Engineer	Lead Engineer	Senior Engineer	Team Leader
Determine the correct Building Code	●	●	●	●	●
Locate any local or site specific amendments to the Building Code	●	●	●	●	●
Document gravity design loads	●	●	●	●	●
Document wind design loads	●	●	●	●	●
Document seismic design loads		●	●	●	●

Preliminary Design Tasks	Junior	Engineer	Lead Engineer	Senior Engineer	Team Leader
Review and understand geotechnical reports	●	●	●	●	●
Layout the preliminary column grid		●	●	●	●
Estimate foundation types & sizes	●	●	●	●	●
Estimate preliminary steel sizes	●	●	●	●	●
Estimate type & location of lateral force resisting elements		●	●	●	●
Develop Preliminary Design Drawings	Junior	Engineer	Lead Engineer	Senior Engineer	Team Leader
Plans	●	●	●	●	●
Elevations		●	●	●	●
Sections		●	●	●	●
Details		●	●	●	●

Structural Design – New Construction	Junior	Engineer	Lead Engineer	Senior Engineer	Team Leader
Design common foundations systems (Spread footings, drilled piers)	●	●	●	●	●
Design uncommon foundation systems (Driven piles, combined footings, pile caps, grade beams, etc)		●	●	●	
Design common structural framing systems (precast, steel, composite steel, joists)	●	●	●	●	●
Design uncommon structural framing systems (cast in place concrete, wood, light gage, etc.)		●	●	●	
Design common façade systems (IMP, precast, masonry)		●	●	●	●
Design uncommon façade systems (masonry veneers, wood, light gage, curtainwalls, etc.)			●	●	
Design common lateral systems (Shear walls, braced frames, moment frames / Seismic Design Category A-C)			●	●	●
Design uncommon lateral systems (RBS, eccentric braced frames, etc / Seismic Design Category D-F)				●	
Design diaphragms, collectors, chords, and openings			●	●	●

Understand and utilize AISC second order methodologies (effective length, direct analysis, p-delta)			●	●	●
Coordinate structural layout with other disciplines		●	●	●	●

Structural Design - Renovations	Junior	Engineer	Lead Engineer	Senior Engineer	Team Leader
Locate, obtain, review, and understand existing documents	●	●	●	●	●
Clearly summarize information required from others to perform structural work	●	●	●	●	●
Field measure existing structures to gather necessary information	●	●	●	●	●
Understand & implement reinforcing methods for steel wide flange steel beams		●	●	●	●
Understand & implement reinforcing methods for steel joists and joist girders		●	●	●	●
Understand & implement reinforcing methods for steel columns		●	●	●	●
Understand & implement reinforcing methods for concrete structures			●	●	

Understand & implement reinforcing methods for wood structures			●	●	
Understand & implement reinforcing methods for foundations				●	

Process Equipment Support	Junior	Engineer	Lead Engineer	Senior Engineer	Team Leader
Determine appropriate loads for use in designing supports for process equipment	●	●	●	●	●
Design and draft stainless steel platforms for equipment access & support	●	●	●	●	●
Design mat slabs for process tanks, vessels, and silos	●	●	●	●	●
Design pipe bridges for process piping	●	●	●	●	●

Construction Estimates	Junior	Engineer	Lead Engineer	Senior Engineer	Team Leader
Perform take offs from structural plans	●	●	●	●	●
Estimate unit costs & project budget for structural components			●		●
Contact potential bidders for preliminary budget estimates	●	●	●	●	●
Create preliminary budget packages		●	●		●
Create a scope of work to guide engineering efforts			●	●	●
Create a milestone schedule for design and construction			●		●

Procurement	Junior	Engineer	Lead Engineer	Senior Engineer	Team Leader
Prepare RFP for Sub-Consultants		●	●	●	●
Evaluate Proposals and Provide Recommendations for Sub-Consultants			●	●	●
Developing Bidders List	●	●	●	●	●
Structural RFQs		●	●	●	●
Prepare Addenda Documentation and Narratives			●	●	●
Bid Tabulation	●	●	●	●	●
Recommendation for Award			●	●	●

Construction Administration	Junior	Engineer	Lead Engineer	Senior Engineer	Team Leader
Review of standard submittals	●	●	●	●	●
Review of complex submittals		●	●	●	
Review of standard shop drawings	●	●	●	●	●
Review of complex shop drawings			●	●	
Responding to RFIs		●	●	●	●
Revisions Due to Field Conditions		●	●	●	●

Training, Coordination, Client Interface	Junior	Engineer	Lead Engineer	Senior Engineer	Team Leader
Small-scale project primary client technical contact		●	●	●	●
Mid-scale project primary client technical contact			●	●	●
Large-scale project primary client technical contact				●	●
Small-scale project primary DG structural coordination resource		●	●	●	●
Mid-scale project primary DG structural coordination resource			●	●	●
Large-scale project primary DG structural coordination resource				●	●
Lead team of structural engineers on a specific project			●	●	●
Mentoring of team members			●	●	●
Manage & prioritize several projects simultaneously		●	●	●	●

Encourage & inspire coworkers to succeed					
Maintain professional behavior with regard to schedule, dress, attitude, and behavior					
Takes initiative to continue learning and improve problem solving skills					

Junior Engineer

Typical Minimum Experience: 0 - 3 Years

- Works within a work team.
- License: None
- Acquires basic knowledge and develops skills.
- Applies standard techniques, procedures, and criteria to perform assigned tasks as part of a broader assignment.
- Exercises limited judgement on details of work and in application of standard methods for conventional work.
- Performs basic design tasks. Assists on other tasks such as: preparation of permit applications, drawings and CAD work.
- Performs basic procurement tasks such as bid list development, contractor initial contact, bid tabulation, and preliminary bid evaluation.
- Acquires basic drawing literacy; develops an understanding of discipline specific plan elements, and how to navigate a set of drawings.
- Performs basic construction administration tasks including submittal review.
- Follows through on assigned tasks in a timely manner.
- Receives close supervision, and all aspects of work are reviewed.
- Limited to no direct client contact.

Intra-Discipline Mobility: Engineer

Engineer

Typical Minimum Experience: 3 - 6 Years

- Works within a work team for complex projects, or independently for simple projects.
- License: EIT
- Applies broad knowledge of principles and practices.
- Collaboratively uses judgement to determine adaptations in methods for non-routine aspects of assignments.
- Performs moderate design tasks, receives guidance when necessary on unconventional or complex problems, direction on modified techniques, and new approaches on assignments with conflicting criteria.
- Prepare partial to complete project documentation, including complete CAD drawings.
- Performs procurement tasks including bid package and addendum preparation.
- Edits project specifications.
- Develops drawing proficiency; develops an understanding of multidiscipline plan elements, and how to navigate a complete set of drawings.
- Performs construction administration tasks including shop drawing review.
- Receives supervision, and general review of work.
- Limited client contact.
- May work independently or with other ME's, depending on project size.

Intra-Discipline Mobility: Lead Engineer

Lead Engineer

Typical Minimum Experience: 6 - 8 Years

- Works as discipline lead for simple to moderately complex projects.
- License: PE
- Applies broad knowledge of principles and practices.
- Designs a complete project, responsible for complete project documents.
- Assigns tasks to/and directs engineers, designers, and drafters.
- Receives general direction on key objectives.
- Interacts with clients.

Intra-Discipline Mobility: Senior Engineer, Team Leader

Senior Engineer

Typical Minimum Experience: 8+ Years

- Subject matter expert.
- Licensed: PE
- Independently applies extensive and diversified knowledge of principles and practices to a wide range of materials and construction techniques.
- Reviews complete project documentation for conformity and quality assurance.
- Possesses advanced oral and written communication skills.
- Interacts with clients.

Intra-Discipline Mobility: Team Leader

Team Leader

Typical Minimum Experience: 8+ Years

- Fully versed in all activities associated with design and execution.
- Licensed: PE
- Has successfully executed several projects.
- Responsible for managing Junior Engineers, Engineers, and Lead 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 milestone schedule.
- Responsible for review of project scopes of work and budget preparation.
- Supports project teams and backs up team members as necessary.
- Interacts directly with clients.

Intra-Discipline Mobility: Office Discipline Manager, Senior Engineer

Engineering Manager/Office Discipline Manager

Typical Minimum Experience: 12+ Years

- Interfaces with project managers to review deliverables and milestone schedule.
- Fully versed in all activities associated with design and execution.
- Licensed: PE
- Has successfully executed several large projects.
- Makes decisions and recommendations that are authoritative and have an important impact on extensive organizational activities.
- Sets priorities and reconciles directions from competing interests.
- Interacts directly with clients.

Intra-Discipline Mobility: Discipline Manager