

Patrick Byrd

📞 (337) 555-4182 ✉️ patrick.byrd@example.com 🔗 linkedin.com/example/patrickbyrd 📍 Lafayette, LA 70503

SUMMARY

Early career civil engineering graduate with supervised experience supporting bridge design, structural evaluation, **load rating**, preservation, rehabilitation, replacement, and **transportation infrastructure** planning. Prepared **structural calculations**, CAD plan sheets, specifications, quantity estimates, technical reports, and design presentations for faculty and practicing engineer review. Applied statics, mechanics of materials, structural analysis, reinforced concrete concepts, steel member analysis, load combinations, and documented design assumptions. Research work included bridge inspection data, simplified load rating exercises, drawing review, discrepancy investigation, and preservation recommendations. Communicates technical information clearly with project teams and reviewers, organizes calculation packages, and checks documents for consistency, completeness, and applicable design criteria. Eligible to pursue a **Louisiana Engineer Intern Certificate** and prepared for supervised engineering assignments supporting safe, maintainable transportation assets.

EDUCATION

Bachelor's Degree in Civil Engineering
University of Louisiana at Lafayette GPA: 0
Coursework: Structural analysis, reinforced concrete design, steel design, transportation engineering

2026
Lafayette, LA

TECHNICAL SKILLS

- **Structural Engineering:** Structural analysis, reinforced concrete, steel member analysis
- **Bridge Engineering:** Bridge design, bridge preservation, bridge rehabilitation
- **Load Rating:** Load rating, structural evaluations, capacity checks
- **Civil Engineering:** Engineering mechanics, statics, mechanics of materials
- **CAD Software:** Autodesk AutoCAD, CAD plan production, detail drawings
- **Technical Documents:** Specifications, structural calculations, technical reports
- **Estimating:** Quantity estimates, quantity takeoffs, cost estimates
- **Design Review:** Peer review, technical accuracy, document completeness
- **Transportation Infrastructure:** Transportation assets, bridge replacement, new capacity
- **Research Methods:** Inspection datasets, benchmark comparison, technical references
- **Project Coordination:** Project information, design teams, review comments
- **Engineering Standards:** Design criteria, applicable standards, compliance review

SKILLS

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|-----------------------|--------------------------|---------------------------|---------------------------------|
| • Bridge design | • Rehabilitation | • Engineering drawings | • Technical documentation |
| • Structural analysis | • Structural evaluations | • Structural calculations | • Design review |
| • Load rating | • Civil engineering | • Specifications | • Transportation infrastructure |
| • Bridge preservation | • CAD | • Estimates | |

EXPERIENCE

Bridge Design Capstone Engineer
Capstone Project

January 2026 - May 2026
Lafayette, LA

Supported a supervised bridge replacement design for a two lane transportation corridor. Owned **structural calculations**, CAD documentation, estimates, preservation comparisons, and final technical presentations.

- Developed conceptual **bridge** replacement geometry, loading assumptions, alternatives, and constraints for faculty review.
- Prepared reinforced concrete and steel calculations with load combinations, assumptions, and documented design checks.
- Created CAD plan sheets and structural details matching calculations, dimensions, notes, and design narrative.
- Linked quantity takeoffs with structural plans and **specifications**, producing preliminary **estimates** for major components.
- Compared preservation and **replacement** options using condition information, service needs, constructability, and lifecycle reasoning.
- Presented a complete design package to practicing engineers, addressing comments through final document revisions.

Undergraduate Bridge Evaluation Researcher
University Research Lab

August 2025 - December 2025
Lafayette, LA

Conducted supervised bridge evaluation research using inspection datasets, structural drawings, spreadsheet calculations, technical references, and reproducible documentation for preservation decisions.

- Evaluated **bridge** inspection datasets under faculty supervision, connecting condition observations with preservation decisions.

- Built spreadsheet **load rating** exercises that traced inputs, capacity assumptions, and rating results.
- Reviewed structural drawings and references to identify geometry, materials, and load paths.
- Compared calculated findings with benchmark solutions, investigating discrepancies and recording corrections in research notes.
- Organized calculation sheets, technical files, and references so research results remained auditable.
- Presented evaluation methods and findings, explaining structural limitations and engineering judgment to research reviewers.

Structural Design Project Engineer

January 2025 - May 2025

Course Project

Lafayette, LA

Completed a supervised **structural design** project covering gravity loads, member analysis, connection concepts, coordinated drawings, specifications, quantity summaries, and formal design review.

- Completed gravity load development, member analysis, connection concepts, and coordinated drawing production.
- Applied statics and mechanics methods to calculate reactions, internal forces, deflections, and design demands.
- Prepared CAD plan and detail drawings matching calculation assumptions and drafting requirements.
- Developed technical specifications and quantity summaries, checking consistency across drawings and calculations.
- Conducted peer checks that corrected unit, load path, and documentation issues before submission.
- Presented design decisions, evaluation methods, constraints, and recommended refinements during formal team review.

PROJECTS

Transportation Bridge Preservation Study 📅 2025

Reviewed inspection observations and structural data to compare preservation, rehabilitation, and replacement considerations for transportation assets. Findings supported a clear technical presentation.

Structural Calculation Review Package 📅 2026

Compiled reinforced concrete and steel calculations, CAD details, quantities, specifications, and design assumptions into a coordinated bridge replacement package for supervised review.

LEADERSHIP & AWARDS

- Dean's List recognition received in 2025 and 2026 for sustained academic performance.
- Civil Engineering Senior Design Recognition awarded in 2026 for bridge design quality and presentation.
- Undergraduate Research Presentation Award received in 2025 for clear communication of bridge evaluation findings.

CERTIFICATIONS

- Engineer Intern Certificate Eligibility, Louisiana 📅 2026
- Autodesk AutoCAD for Design and Drafting Coursework Certificate 📅 2025

PROFESSIONAL AFFILIATIONS

- American Society of Civil Engineers Student Chapter, project team member supporting civil engineering activities.
- Civil Engineering Peer Study Group, structural analysis mentor helping classmates work through technical problems.
- Senior Design Review Committee, student presenter contributing technical perspectives during project reviews.

LANGUAGES

- English (Native)
- Spanish (Beginner)

ADDITIONAL INFORMATION

Work Status : Authorized to work in United States. No sponsorship required.

REFERENCES

AVAILABLE ON REQUEST