FDR Engineers, PLLC

Capabilities Statement

General Information

Registered Company Name:
FDR Engineers, PLLC

State of Incorporation:
North Carolina

Business Type:
Small Business

Office Telephone:
919-957-5100

Web Site:
www.fdr-eng.com

Location

Mailing Address:
13200 Strickland Road
Suite 114, Box 332
Raleigh, NC 27613

Key Contacts

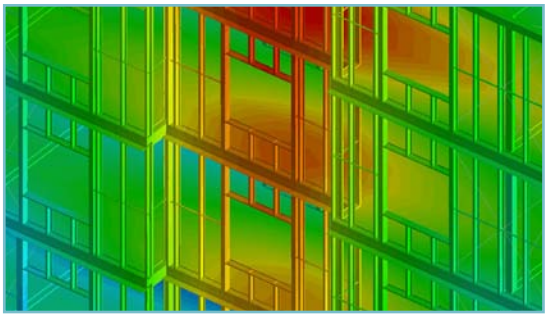
Justin Fejfar, PE
Principal
jfejfar@fdr-eng.com

Heath Hendrick, PE
Lead Structural Engineer
hhendrick@fdr-eng.com

About FDR Engineers

FDR Engineers, PLLC. is owned and operated by individuals whose primary goal is to meet the architectural visions while maintaining the owner's budget and schedule requirements. This mission is supported by our spirit of collaboration among all design and construction team members.

We think outside the "box", always striving for new ideas, and we value our clients. We pride ourselves on delivering the highest quality structural engineering services while maintaining an excellent working relationship with our clients. Allow us to display our "can do" spirit with the opportunity to work with you on your next project.



Structural Engineering Services

FDR Engineers, PLLC, is a full-service structural engineering consulting firm, whose engineers are known for their creativity and technical excellence. Our engineering approach looks at facilities and structures from the perspective of structural performance under a variety of possible loads that the structure will encounter throughout its lifecycle rather than conventional design methods alone.

Structures can easily be over-designed using a conventional design approach that may neglect the contribution of significant structural components. A performance based approach takes the structure as a whole with all of its components into account to provide not only a more efficient but more cost effective design solution.

Structural Design
- Commercial Buildings
- Residential Buildings
- Design-Build Projects
- Light Gauge Steel Framing
- Seismic Analysis & Design
- High Wind Engineering
- Renovations
- Upgrades/Change in Use
- Sustainable Design/LEED
- Roof Truss Design

Structural Investigation
- Facility Condition Assessment
- Forensic Studies
- Load Studies
- Defect & Damage Assessment
- Historic Structure Evaluation

Specialty Engineering Services
- Shop & Panel Drawings
- 3D BIM Modeling
- ATFP and Blast Design
- Progressive Collapse Design
- Litigation Support
- Peer Review
- Finite Element Analysis
- Fast-Track Projects
- Special Inspections

NAICS Codes

- 541330 - Engineering Services
- 541613 - New product development services
- 541710 - R&D in the physical & engineering sciences

SIC Codes

- 8711 - Engineering Services
- 8731 - R&D in the physical, engineering, & life sciences

FDRENGINEERS

Design of Cold-Formed Steel Structures

- **Rex Hospital – Heart and Vascular Center, Raleigh, North Carolina, 2014 -** Performed structural engineering design and detail drawings for exterior cold-formed steel wall framing for an 8-story medical center. Project presented significant challenges in adequately supporting the curtain wall systems, which were required to bear outboard of the cold-formed steel framing. Structural steel tubular shaped framing was utilized at large openings, which incorporated large eccentric loads from the support of custom Z-shaped steel plates to allow for hidden shades in all patient rooms.

- **Project: BAHA MAR Nassau Beach Hotel, Nassau, Bahamas, Jan. 2014** – Engineering and detail drawings for exterior cold-formed steel wall framing for a 5-star beach hotel. Framing was designed for wind speed up to 146 mph. Framing members and their connections were detailed. Challenges included design and detailing of wide openings, curved windows and structural steel-supported framing.

- **NCSU Talley Student Center 12-116, Raleigh, North Carolina, 2012 -**Performed structural engineering design and detail drawings for exterior cold-formed steel wall and ceiling framing for a 6-story steel framed structure. The project presented significant detailing challenges where connecting to the existing Student Center and framing around some very unique exterior architectural features. All structural cold-formed steel framing members and their connections to the super-structure were designed, optimized, and detailed.

- **Greenbridge, Chapel Hill, North Carolina, 2011 -** Performed structural engineering design and detail drawings for exterior cold-formed steel wall framing for a 9-story multi-family residential project. Framing members and their connections were detailed. Challenges included design and detailing of wide openings and unique details to support storefronts with limited available space and limited construction access.

Progressive Collapse Analysis

- **Airmen Dormitory Building, Westover Air Reserve Base, 2013** – Peer review of the client's Extreme Loading for Structures (ELS) computer model analyses and the associated UFC code checks. The building was planned for renovations and required to be upgraded to resist progressive collapse per UFC 4-023-03 (2010). The ELS model review included overall and detailed dimensions, reinforcement details, loads, material properties and meshing. Code check review included deformation-controlled actions and force controlled actions. The final ELS model and set of calculations ensured that all acceptance criteria for progressive collapse resistance requirements was met or a reinforcement plan was recommended to meet UFC acceptance criteria.

- **UEPH Barracks, Ft. Lewis, 2012** – Alternate path method analysis to verify that the structure had adequate flexural resistance to bridge over any missing vertical support. Nonlinear dynamic analysis of the primary structural components of the building, including the composite deck floor slabs was performed. Twelve different load bearing wall, post, and column removal scenarios were performed. Design recommendations were documented and implemented in the computer model to ensure that all acceptance criteria were met and the building has satisfied the progressive collapse resistance requirements of the UFC.

- **Fort Bragg Barracks, USA, 2011** – Non-linear dynamic analysis of the composite deck floor system of a 4 story barracks building to resist progressive collapse. A condition occurred at one area of the 2nd floor slab of the building where the hooks of longitudinal ties did not wrap around the peripheral ties to provide the full anchorage. A 3-D computer model using Extreme Loading® for Structures (ELS) software was developed to examine the effects of lack of anchorage hooks between longitudinal ties and peripheral ties on the slab behavior and the development of tension forces in the longitudinal ties when the slab is subjected to loss of a supporting vertical load bearing wall. Two load bearing wall locations were selected for removal during analysis. The "Hooked" and "Un-hooked" ties cases were analyzed for each wall removal.

Blast Analysis

- **Soldier Family Critical Care Facility, Fort Drum, NY, 2014** – Designed the structural truss roof system to meet requirements outlined in the UFC Specification. Service included initially, calculating static blast load to determine preliminary member sizes. Subsequently, dynamic analyses of the roof was performed to determine if design of the preliminary truss system was adequate. Prepared a final calculation package to meet project requirements. The proprietary software Extreme Loading® for Structures software was used to perform the analysis as well as a combination of PDC tools (SBEDS, etc.) as needed for the blast analysis of roof system.

- **Homeport Ashore Naval Station, Norfolk, VA, Nov. 2013** – Blast analysis for light steel framing of a 5-story bachelor quarters building at the Naval Station in Norfolk. Service included SDOF dynamic analysis of supporting framing components for door and window openings based on UFC 4-010-01 (2012), selected appropriate sections for the supporting framing, and designed connections between framing members and connections to primary structure (connectors, fasteners, and anchorage).

- **Company Operations Facility, Fort Hood, TX, July 2013** – AT/FP analysis and design for a CFS curtain wall system of the building. Service included defining design criteria, damage level, and acceptable response limits using UFC 4-010-01 (2007), ran SDOF dynamic analysis of supporting structure framing components of door and window openings (jambs, headers and sills), selected appropriate CFS sections for the supporting structure framing components, calculated reactions for connection design of supporting structure framing components, and designed connections between framing members and connections to primary structure.

FDRENGINEERS