

Chad Meyer

Structural Engineer

Education

B.S., Civil Engineering, Iowa State University, 2000

Professional Registrations

Structural Engineer: Iowa (License No. 17394, 2005)

Relevant Experience

Mr. Meyer is a structural engineer with 11 years of experience specializing in bridge design and rehabilitation of steel, prestressed, and reinforced concrete bridges. He also has experience in bridge hydraulic analysis, bridge inspection, and is proficient in building and specialty structure design.

Representative Projects

Bridge Design

Bridge Engineer, Toll 49 Design Build, Tyler, Texas, North East Texas Regional Mobility Authority, 2011.

Prepared independent structural calculations in a very compressed time-frame for five separate bridges on this design build project. Calculations were performed to independently verify the design of the proposed bridges, and included the LRFD design of the concrete deck, expansion joints, prestressed concrete I-girders, elastomeric bearing pads, and multi-column frame bents and abutments which included an LPILE lateral analysis of the drilled shafts.

Bridge Engineer, IH 35 Improvement, Temple, Texas, Texas DOT, 2010-2011.

Bridge Engineer for the final design of a 450-foot and 670-foot multi-span frontage road bridge over the BNSF railroad. These bridges are on a curved and superelevated alignment, and utilize straight prestressed tub and I-girder segments. Responsibilities included the LRFD final design of the single column bents (T-piers), which featured cantilevers of up to 18 feet and were supported on a single 66-inch diameter drilled shaft. Also responsible for the design review of the two 1740-foot IH 35 mainline bridges, which were also on a curved alignment in a superelevation transition.

Bridge Engineer, Route 364 (Page Avenue Extension), St. Charles County, Missouri, Missouri DOT, 2009.

Bridge Engineer for the LRFD final design of the prestressed concrete NU girders of three separate bridges on this \$48 million corridor extension project. Responsibilities also included custom structural design of the bridge mounted signs.

Hydraulic Engineer, IA 100 Cedar River Bridge, Linn County, Iowa, Iowa DOT, 2007-2011.

Performed HEC-RAS hydraulic modeling and scour analysis for this 1880-foot curved Welded Plate Girder Bridge in a Flood Insurance Study area over the Cedar River. A detailed hydraulic report was also completed for this complex crossing, including permit applications to the Iowa DNR and US Army Corps of Engineers.

Bridge Engineer, I-80 / I-29 Interstate System, Council Bluffs, Iowa, Iowa DOT, 2006-2011.

Bridge Engineer for the preliminary design of 18 bridges in Segment 3 of the East System Interchange of the I-80 / I-29 corridor through Council Bluffs. Bridge types range from relatively short grade separations and stream crossings, to complex viaducts and curved flyover ramps over 3000 feet in length. Preliminary design duties also included HEC-RAS hydraulic modeling and completion of a detailed hydraulic report for a critical stream crossing in a Flood Insurance Study area.

Bridge Engineer, Broadway Viaduct, Council Bluffs, Iowa, Iowa DOT, 2006-2008.

Developed an in-depth structure type study as part of the preliminary design of this large viaduct to aid the Iowa DOT in selection of the preferred bridge alternative. Numerous superstructure, substructure, foundation, and approach types were reviewed, with consideration for accelerated construction techniques. Detailed construction cost estimates and schedules were provided as part of the study.

Bridge Engineer, Arugam Bay Bridges Replacement Project, Sri Lanka Tsunami Reconstruction Program, United States Agency for International Development (USAID), 2006-2007.

Performed detailed design of the precast deck panels and steel girder splices for two rolled steel girder bridges (160 m and 25 m in length) over the Arugam Bay that were replaced due to damage caused by the 2004 Tsunami that hit the south and east coasts of Sri Lanka. Also completed a detailed shop drawing review for the precast deck panels and substructures.

Bridge Engineer, Wilson Street Culvert, City of Van Meter, Iowa, 2005.

Project Engineer for the preliminary design of a reinforced concrete box culvert to replace a deteriorated single-span bridge. Hydraulic analysis of this triple box culvert, along with permit applications to the Iowa DNR and US Army Corps of Engineers were completed as part of the preliminary design.

Bridge Engineer, F36 over Indian Creek, Jasper County, Iowa, 2004-2005.

Project Engineer for the preliminary and final design of a custom 233-foot, three-span prestressed beam bridge with a roadway width of 30 feet. Preliminary design included a hydraulic analysis to determine the required bridge opening. A wave-equation analysis was also completed to aid in steel pile driving during construction.

Bridge Engineer, 495th Street over Little Sioux River, Clay County, Iowa, 2004.

Preliminary and final design of a custom 263-foot, three span prestressed beam bridge. A hydraulic analysis of this 24-foot wide bridge was completed as part of the preliminary design. The bridge consists of a reinforced concrete deck on prestressed concrete beams, reinforced concrete hammerhead piers and integral abutments.

Bridge Engineer, South 12th Avenue over North Skunk River, Jasper County, Iowa, 2003-2004.

Project Engineer for the preliminary and final design of a custom 272-foot, two span prestressed beam bridge over the North Skunk River. This highly skewed river crossing required the use of a single hammerhead pier in the center of the North Skunk River to avoid existing foundations. Prestressed bulb-tee beam sections were used to accomplish the two 136-foot spans. A wave-equation analysis for the steel piling was also performed as part of the construction services.

Bridge Engineer, I-35 over UPRR, Ankeny, Iowa, Iowa DOT, 2001-2002.

Participated in the final design of these custom dual prestressed concrete bridges over the UPRR in Ankeny, Iowa. These bridges are on a curved alignment, with a high skew and superelevation. Straight prestressed concrete beam segments, and flared beam lines were utilized to mimic the horizontal curvature of the superstructure to maximize economy and constructability.

Bridge Engineer, 4th Street over Clear Creek, Lansing, Iowa, 2001.

Project Engineer for the final design of a three-span continuous concrete slab bridge. This custom bridge utilized reinforced concrete wall piers, and included concrete open rails and a sidewalk on one side of the bridge.

Bridge Rehabilitation, Widening, Inspection, and Rating

Lead Bridge Engineer, Four Bridge Rehabilitations, Iowa DOT, 2009-2010.

Lead Bridge Engineer and Structural Engineer of Record for the final design of four bridge deck replacement projects in Dallas, Harrison, Lucas and Polk counties. These structures ranged from relatively short PPCB bridges to CWPG bridges over 980 feet in length. In addition to the deck replacement, the abutment backwalls of each bridge were also reconstructed, with the Lucas County bridge abutments actually being converted from stub to semi-integral. New strip seal expansion joints were provided at the abutments of the Dallas and Harrison bridges, and new finger joints installed at the Polk county bridge. Services during construction were also provided, including shop drawing review and plan revisions to address existing field issues. The Polk County rehabilitation project won the 2008-2010 Iowa Quality Initiative Structures Award for Special Structures.

QA/QC Engineer, I-235 over NE Broadway Ave. Widening, Des Moines, Iowa, Iowa DOT, 2005.

Provided quality control checking of all three stages of the widening plans for this I-235 structure in Des Moines, Iowa. This project included the widening of both the eastbound and westbound bridges, as well as a median infill to temporarily provide additional lanes until the new replacement bridge could be constructed in the future.

Bridge Engineer, University Avenue Arch over Des Moines River Rehabilitation, City of Des Moines, Iowa, 2004.

Completed an in-depth inspection of this historic arch bridge for use in preparation of the rehabilitation plans. Inspections included evaluation of the deck, sidewalks, railings, arches, piers, and abutments. Detailed inspections of the arches and substructure units were completed using a Snooper.

Bridge Engineer, SW 8th and 9th Street Viaduct Rehabilitations, City of Des Moines, Iowa, 2003-2004.

Project Engineer for the inspection and preparation of rehabilitation plans for these large viaduct structures in downtown Des Moines. Concrete repairs to the deck, barrier rails, sidewalks, and substructures, as well as painting of the steel plate girder spans were a major portion of these projects. In addition, deteriorated beam bearings, deck joints, and deck drain troughs were replaced, and a high-density concrete overlay was provided. Mr. Meyer also served as the inspector for emergency repairs done to both viaducts using state-of-the-art carbon fiber strengthening techniques.

Bridge Engineer, South Center Street Viaduct Rehabilitation, City of Marshalltown, Iowa, 2003-2004.

Project Engineer for the inspection and rehabilitation plan development for this multi-span steel beam bridge. Significant concrete repairs to the piers and cellular abutments, along with a complete replacement of the concrete sidewalk and steel handrail comprised the key aspects of this project. Repairs to the deck joints and drainage troughs were also completed.

Bridge Engineer, SW 9th Street Bridge over Raccoon River Rehabilitation, City of Des Moines, Iowa, 2003.

Project Engineer for the inspection and preparation of rehabilitation plans for this multi-span prestressed beam bridge over the Raccoon River. The plans included significant concrete repairs to the deck, barrier rails, sidewalk, piers and abutments. Deteriorated beam bearings and deck joints were also replaced, and a new high-density concrete deck overlay was provided.

Bridge Inspections, Ratings, and Evaluations, Iowa, 2000-2005.

Project Engineer for the field inspection, rating analysis, and completion of SI&A reports for hundreds of bridges in cities and counties across Iowa. Evaluations include recommendations for repair and load posting, as well as scour analysis.

Buildings

Project Engineer, Lincoln Elementary School, Cedar Falls, Iowa, 2005.

Design of a two-story elementary school consisting of steel framing, reinforced masonry walls (some with curved and complex geometry), precast hollow core floor slabs, and steel joists and roof deck. A detailed shop drawing review of all structural systems was also completed.

Project Engineer, Great Western Bank, Altoona, Iowa, 2004-2005.

Performed analysis and design of all structural systems of this single story steel framed bank. The building is approximately 6000 square feet, with a four lane drive-thru canopy and a 5-foot clearstory running the entire length of the building. This building also features a 30-foot tower structure at the front entrance constructed of reinforced masonry columns with steel roof framing. Lateral forces were resisted through a combination of the steel stud framed; plywood sheathed shear walls, and reinforced masonry columns. Construction administration and inspection were also provided.

Project Engineer, Scandia Building Remodel, Des Moines, Iowa, 2005.

This remodeling project of an aging building in Des Moines' East Village required detailed analysis of the existing structural framing to ensure adequate capacity for its new use as a local architect's office. Extensive strengthening of both the existing timber roof and floor were required after it was determined that the existing framing was inadequate. Several windows and other new openings were also cut into the existing masonry walls. All structural renovations needed to be as visually appealing as possible, as the building's structure was to be left exposed as part of the architectural treatment of the interior.

Special Inspector, Des Moines Central Public Library, Des Moines, Iowa, 2004-2005.

Structural Special Inspector for the construction of the Des Moines Public Library's new 140,500 square foot downtown building. Duties included detailed shop drawing review and field inspection of all aspects of this two-way reinforced concrete flat slab structure. The building featured a unique airplane shaped floor plan, copper colored glass glazing system, green roof design, exposed structural elements, and underground parking.

Project Engineer, Polk County Sheriff Standards Building Structural Evaluation, Des Moines, Iowa, 2004.

Performed a field inspection and prepared a detailed structural evaluation report for this deteriorating Polk County Sheriff's building. Assessment of the structural condition of the building was provided so an informed decision could be made relative to the potential for remodeling.

Specialty Structures

Retaining Wall Review Coordinator, I-495 HOT Lanes PPTA/Design Build, VDOT, 2008-2009

Review Coordinator for over 100 retaining walls associated with this VDOT mega-project. Retaining wall types included MSE, Post & Panel (including tie-backs), and Concrete Gravity Walls, with some locations supporting sound walls above. Responsibilities on this fast-paced design build project included review of design submittals for project conformance and coordination of several review staff.

Project Engineer, Leesburg Executive Airport Hangars, City of Leesburg, VA, 2008-2009

Project Engineer for the slab-on-grade and foundation design of two prefabricated metal building hangars in the expansion of the Leesburg Executive Airport. Moment resisting foundations were utilized for these hangars to eliminate floor ties, and the slab-on-grade was designed to resist axle loads of up to 16,000 pounds to accommodate both LearJet 35-A and H-10 vehicle loads.

Project Engineer, Manns Harbor Mezzanine, North Carolina DOT, 2006

Responsible for structural analysis and design of a steel framed storage mezzanine for a NC DOT marine maintenance facility in Manns Harbor. Also responsible for developing scope of work, design criteria, final structural drawings, and detailed quantities.

Project Engineer, Robert D. Ray Asian Garden, Des Moines, Iowa, 2005.

Project engineer for the design of a structure to support an authentic Chinese pavilion along the banks of the Des Moines River. The pavilion support structure consists of an entirely cast-in-place reinforced concrete frame, flat slab deck, and two approach bridges with unique zig-zag geometry. The pavilion appears to "float" on a reflecting pond located directly beneath the main deck of the structure, which outlets to a lower reflecting pond via a system of short waterfalls. The wood framed Chinese pavilion, and marble railings and statues were all hand-made in China and erected on site by the Chinese workers who crafted them.

Project Engineer, Iowa State Capitol Rehabilitation Phase F, Des Moines, Iowa, 2003-2004.

Performed structural design of a new underground tunnel linking a series of existing tunnels to the Iowa State Capitol Building in downtown Des Moines. A soldier-pile and lagging open cut excavation was created to allow construction of this cast-in-place reinforced concrete tunnel. Extensive underpinning of the existing Capitol foundations using micro-piles was required, as the tunnel entered the building below the existing basement level. A new elevator shaft and stairwell connected to the tunnel were also constructed. Shop drawing review and construction inspection services were also provided.

Project Engineer, 4th & Grand Parking Garage Rehabilitation, City of Des Moines, Iowa, 2001-2002.

Participated in the inspection, plan preparation, and construction inspection of the rehabilitation of this four level concrete parking garage structure in downtown Des Moines. Extensive concrete repairs to the precast tee beams and columns were performed throughout this structure, as well as restoration of two sets of stairs, and the complete replacement of another. A deck coating was also installed on the parking surface to provide a long-lasting, durable surface.

Project Engineer, Iowa Army National Guard Camp Dodge Rappelling Tower, Johnston, Iowa, 2001.

Performed structural analysis and design for a 40'-9" tall steel framed rappelling tower at the Iowa Army National Guard's Camp Dodge in Johnston, Iowa. The tower features two sides of vertical rappelling, an inclined climbing wall, and a "fast rope" which simulates deployment from a helicopter. Two rappelling platforms allow training opportunities for varied levels of ability. Soldier safety was paramount in the design, as can be seen by the special edge details developed to minimize wear and fraying of ropes, safety railing around the platform perimeters, secure and durable rope tie-down points, and sand base material for soft landings. Shop drawing review and construction inspection services were also provided. A modified version of this tower was designed for the Iowa Army National Guard's Council Bluffs, Iowa facility.

Professional Organizations/Affiliations

- Central Iowa ASCE Younger Members Group (President 2005-2007, Secretary 2002-2005)
- Chi Epsilon National Civil Engineering Honor Society

Specialized Computer Skills

SAP2000, RISA-2D, RISA-3D, RISAFoot, LPILE, MDX, CONSPAN, PGSuper, RC-PIER, HEC-RAS, MathCAD, MicroStation, AutoCAD, 3DS Max, Google SketchUp, PHP, SQL, HTML, C, Visual BASIC, AutoLISP

Professional Development

- AGC Iowa "*Structural Design & Construction Quality Workshop*", 2011
- Iowa DOT "*LRFD Bridge Pier Design Seminar*", 2010
- Iowa DOT "*Accelerated Bridge Construction Workshop*", 2008
- FHWA-NHI Course 130081D "*LRFD for Highway Bridge Superstructures*", 2007
- Iowa DOT "*Implementation of the AASHTO LRFD Bridge Design Specifications*", 2007
- NHI Course 130082 "*LRFD for Highway Bridge Substructures*", 2006
- FHWA-NCBC-IADOT "*Design of Concrete Bridges by AASHTO LRFD Bridge Design Specifications*", 2006
- Iowa DOT "*BARS Training*", 2006
- NHI Course 132021 "*Driven Pile Foundations - Design & Construction*", 2005

Employment History

2006 - Present: CH2M HILL, Des Moines, Iowa, Bridge Engineer

2000 - 2006: Shuck-Britson, Inc., Des Moines, Iowa, Structural Engineer

Last Update: 04/2011