ROSS CUSSEN, P.E., LEED AP

Principal

Summary

Ross Cussen is a principal in Thornton Tomasetti's Los Angeles office and leads the firm's protective design and security practice for the Western Region. He is a licensed professional engineer in the State of California and is a LEED-Accredited Professional. Ross joined Thornton Tomasetti in 2005 and has more than 15 years of experience in structural engineering and protective design and security consulting. He has worked on over 200 projects and has experience in a broad range of project types and delivery methods. Ross is an expert in threat, vulnerability and risk assessments, blast engineering, progressive collapse mitigation, ballistic and forced entry resistance, and hostile vehicle mitigation.

Areas of Technical Expertise

- Blast Engineering
- Hostile Vehicle Mitigation
- Security Assessments
- Structural Engineering

Education

- M.S., Structural Engineering, 2004, University of California, San Diego
- B.S., Structural Engineering, 2003, University of California, San Diego

Registrations

- Licensed Professional Engineer in CA
- LEED AP

Professional activities

- Committee Member, Blast, Shock and Impact Committee, American Society of Civil Engineers (ASCE), 2019-2025
- Committee Member, Disproportionate Collapse Technical Committee, American Society of Civil Engineers, 2011-2017

CONTACT

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Select Project Experience

Investigations and Litigation

Federal Law Enforcement Tenant Office Building, Confidential. Review of proposed waterproofing repairs to office building with blast-resistant façade. Evaluated blast design standards and capacity of proposed retrofit.

El Paso Federal Courthouse, El Paso, TX. Provided expert witness report for matter involving allegations of blast-resistant façade design errors, resulting constuction delays, and cost overruns. Reviewed construction documents, wrote report and participated in deposition preparation for expert witness.

Ft. Hood Hospital, Ft. Hood, TX. Provided expert witness report for dispute of code interpretation related to disproproitiate collapse mitigation design critera.

Private Residence, Ketchum, ID. Evaluation of avalanche damage to home and development of strategies to strengthen structure.

Shell Pearl GTL, Ras Laffan, Qatar. Review of design criteria and evaluation of installed protective construction for accidental explosion at petrochemical processing facility.

Hurricane Sandy Rapid Review Building Inspections, New York, NY. Performed Rapid assessments of buildings in NYC per Department of Buildings guidelines.

Blast Engineering

ARL Energetics Laboratory, Aberdeen, MD. Evaluation of accidental explosion in energetics research laboratory. Design of doors, glazing, venting and consideration of blast propogation through multiple rooms.

*Denotes work performed with previous employer.

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World Trade Center Towers 1-4, New York, NY. Blast analysis and protective design services for all commercial office buildings at the World Trade Center (WTC) site. Design included assessment of existing slurry wall to a vehicle threat, sizing and detailing of primary structural elements to resist the vehicle threat as well as satchel threats, design of hardened enclosures to protect critical life safety systems, and design of the exterior façade for blast load effects. Worked with the Port Authority of NY and NJ to coordinate hardening of shared and adjacent spaces in the below-grade concourse levels that run through the WTC site.

Dodger Stadium, Los Angeles, CA. Performed vulnerability and feasibility assessment for existing stadium in support of a DHS Safety Act application. Scope included vehicle vector study and design of hostile vehicle mitigation barriers.

Naval Air Warfare Center, China Lake, CA.* Design, analysis and testing of a force protection blast wall system constructed with fiber-reinforced polymer composite materials.

United Nations Capital Master Plan, New York, NY. Structural and blast-protection engineering for the United Nations Capital Master Plan. Entailed a campus-wide modernization and renovation of the facilities, including security upgrades to enhance blast protection. LEED Gold.

LaGuardia Airport, Central Terminal Building—Terminal B Replacement, Queens, NY. Structural design, façade engineering and protective design of new terminal for the Port Authority of NJ and NY. Structural design of the headhouse, west garage bridge, central hall, hotel, and central heating and refrigeration plant, as well as blast and redundancy design and façade support services for the 100-foot-tall by 1,600-foot-long cable wall along the frontage roadway.

Illinois Supreme Court, Springfield, IL. Performed a blast threat and risk assessment to determine the performance of the building in response to the specified threat and identified feasible retrofits to the historic façade. Developed the protective design criteria based on the owner's available resources and project constraints. Developed construction documents for the protective replacement of the historic façade and provided construction administration services.

P921, SOF LOGSU Facility #3, Coronado, CA. Protective design for a 100,000-gross-square-foot Logistics Support Unit ONE Operations Facility for Naval Special Warfare Group ONE. Performed anti-terrorism and force protection engineering of new facility to support Special Operations Forces logistics. Project was a design-build procurement. Facility supports operational gear storage, applied instruction, training, administration, tactical ground mobility vehicle service and maintenance, civil engineering support equipment service and maintenance, small craft engineering storage and maintenance, vehicle and watercraft wash, vehicle dispatch and fuel supply.

Moynihan Station, New York, NY. Protective design and security services for the conversion of historic post office into new train station. Scope included a threat and risk assessment to develop protective design criteria followed by protective design for exterior and interior threats and developing construction documents for structural and façade hardening.

U.S. Embassy, Pristina, KOS. Structural, seismic and blast engineering services for the preparation of bridging documents for the new embassy campus. Complex includes a 6-story chancery tower, conference center, warehouse, marine security guard residence and utility building combined into a single structure to make the most efficient use of the compact site. Blast engineering for design-build team.

U.S. Embassy, New Delhi, IND. Protective design engineering for an embassy compound with multiple buildings. Scope included design of glazing and other façade elements.

Structural Engineering

U.S. Embassy, Riyadh, SAU. Principal in charge for structural, blast and façade engineering scope for multi-building compound.

Information Systems Facility, Joint Base Lewis McChord, WA. Coordination of non-structural system and equipment bracing for seismic and antiterrorism/force protection loading for a new information systems facility.

The David H Koch Center for Cancer Care at Memorial Sloan Kettering Cancer Center, New York, NY. Performed structural engineering for high-rise healthcare center. Design of structural steel cantilever and overhanging portions of the building including design/detailing of trusses, hangars and connections.

U.S. Federal Courthouse, Nashville, TN. Structural, seismic and blast engineering through 100 percent construction documents. Building houses eight district courtrooms, four magistrate courtrooms, offices for various federal agencies, court library and additional joint-use space.

U.S. Embassy, Bishkek, KGZ. Blast and conventional structural work for a new embassy compound consisting of perimeter design and multiple buildings on the site.

U.S. Embassy, Kathmandu, NPL. Structural, seismic and blast engineering for new complex consisting of chancery, three CACs, MSGQ and utility building. Project challenges for the design-build embassy included high seismic forces and poor soil conditions.

Select Papers, Lectures and Publications

"How to strengthen your facility's perimeter security", Athletic Business, 2019 (co-author)

"Inelastic Dynamic Finite-Element Design of Glazed Façade Systems for Blast Loading," ASCE Structures Congress, 2008 (co-author)