FIRM OVERVIEW

We are the Choice for Securing the Safety of People and Assets

JENSEN HUGHES is a global leader in specialty engineering and consulting services for the built environment. We are a company of engineers, consultants, and scientists focused on evaluating risks and diligently developing the best, most cost effective protection and safety solutions. We offer extensive, practical experience through countless projects, research and industry innovation.

Our global clients include numerous Fortune 500 companies that encompass architects, designers, general contractors, developers, building owners and facility operators who retain our services for the following market sectors and occupancy types:

- Assembly
- Corporate Real Estate
- Education
- Gaming and Recreation
- Government and Military
- Healthcare
- Hospitality and Lodging
- Industrial and Manufacturing
- Power and Energy
- Science and Technology
- Telecom and Data Centers
- Transportation (Aviation, Marine and Rail)

Our Past, Present and Future

JENSEN HUGHES was formed in January 2015 after the historic merger of two of the most experienced and respected specialty engineering and consulting firms, Hughes Associates (Hughes) and Rolf Jensen & Associates (RJA) in June 2014.

Both Hughes and RJA exhibited the highest level of technical excellence, offered proven on-time and on-budget performance on projects, and developed long-term client relationships. The merger brought together Hughes’ strengths in areas such as research, testing, forensic engineering and risk analysis, and the complementary strengths of RJA in the areas of code consulting, performance-based design, construction management and security design.

Between March and November of 2015, JENSEN HUGHES merged with the following five outstanding firms to further expand our specialty engineering and consulting services into numerous vertical markets, our geographic footprint in Canada, Singapore and the United States, and increase our professional staff of engineers, consultants, scientists and administrative professionals.

- ERIN Engineering and Research, Inc. (ERIN)
- Nexus Technical Services Group (Nexus)
- Randal Brown & Associates, Inc. (RBA)
- Sereca Consulting, Inc. (Sereca)
- Gage-Babcock & Associates, Ltd. (GBA)

We will continue to grow our services and geographic footprint in the future with the goal of being recognized globally as the best in our profession at providing high-quality technical consulting, engineering and related specialty services in the full life cycle of the built environment.
OUR SERVICES

Fire Protection and Life Safety Design and Analysis
Our experts design cost-effective, performance-based protection systems that meet code requirements and the highest standards of life safety. We routinely handle challenging designs which involve life safety, mission continuity, property protection, heritage preservation, and environmental protection.

Code Consulting
Our problem-solving consultants ensure design and construction projects comply with safety (Building, Fire, Hazardous Materials, etc.) and accessibility codes, maintain the integrity of architectural design, preserve historical authenticity, and address a wide range of project-specific requirements, including code equivalencies and variance requests.

Hazard Analysis and Risk Management
Our fire hazard and risk analysis consultants provide fire and smoke modeling, process hazard analysis, risk management and regulatory compliance support, and a suite of risk-informed engineering and applications services, which include probabilistic risk assessment (PRA), human factors analysis, technology evaluation and selection, gap assessments, trade-off studies, and emergency response planning and training.

Security Design and Consulting
Our security experts utilize a holistic approach for all physical security elements to ensure they provide high-level protection. We conduct surveys and audits, master planning, emergency response planning, operations planning, physical and technical system design, building system integration, construction management, training and support.

Construction Administration and Commissioning
We verify and document the performance of a building and its systems to insure that it meets the owner’s design needs and requirements. Our services include complete fire and life safety systems commissioning and inspection as well as project turnover for training and documentation to the building’s operation and maintenance staff.

Electrical System Design and Analysis
We provide electrical system design and analysis services to the Department of Defense (DoD) and other facilities. Our areas of technical expertise include electrical, instrumentation and control, fire protection, energy efficiency, risk assessment, and systems engineering.

Fire Research, Development and Testing
Our engineers and scientists offer the industry’s most comprehensive services to test, assess and implement fire protection concepts and products. The broad spectrum of services performed in our 10,000 sq. ft. laboratory include new product roll-out, testing of unique fire protection strategies for special hazards and new processes or equipment designs that are not considered in current code provisions.

Forensic Engineering and Litigation Support
We deliver technically superior analyses and scientifically credible expert witness testimony on a wide range of subjects, including fire incident reconstruction, engineering analysis, fire spread analysis, fire modeling, origin and cause, testing, and compliance with codes and standards.

Sustainability and Pollution Prevention
Our environmental team provides regulatory forecasting and analysis, policy and standards development, sustainable design, audit and remediation services.

Training
We deliver advanced web-based training in convenient, self-paced modules, and accredited live instruction courses covering a variety of safety topics, including fire alarm systems, sprinklers, flammable liquids, hazardous materials, electrical safety, emergency evacuation and other safety related topics.
HIGH RISE COMMERCIAL OFFICE BUILDING SECTOR

Innovative Solutions for Unique Applications

JENSEN HUGHES stays on the cutting edge of evolving fire and life safety codes and regulations for new construction and renovation projects. We are committed to providing clients with cost-effective, high quality services that are crucial to the protection of life, property and the environment.

Our experts have helped ensure commercial infrastructure designs meet all building and fire safety code requirements while providing a safe environment for occupants. Hughes has experience with a wide range of commercial projects, including:

- Offices
- Restaurants
- Mixed-Use
- Warehouses
- Retail
- Hospitality

A project may involve an evaluation of fire protection and life safety systems for an entire complex. This work typically involves surveys, feasibility studies, information gathering from project stakeholders, and participation in the master planning effort. On the other hand, a project may involve the renovation, expansion or new construction of a single building or group of buildings.

JENSEN HUGHES has the experience and expertise to provide fire protection engineering and code consulting for all commercial applications. We provide cost-effective approaches to fire protection and code compliance issues while maintaining the highest level of protection to the public.

We determine applicable codes and review items for compliance such as:

- Occupancy classifications
- Construction type
- Required fire resistance of building elements
- Vertical opening protection
- Laboratory-specific fire safety provisions
- Hazardous materials quantities and locations
- Fire protection systems
- Means of egress provisions
- Exterior fire exposures
- Fire department vehicle access
- High-rise building provisions (e.g., stairway pressurization)
PROJECT EXPERIENCE

NORTH AMERICA

NBCUniversal, New York, NY
Fire Alarm and Life Safety Consulting
JENSEN HUGHES was the fire protection engineer consultant available for periodic review of projects and existing conditions at the NBCUniversal building in Rockefeller Plaza in Midtown Manhattan. The goal of this consulting agreement was to allow for the facility to be able to easily obtain access to the fire protection experts in order to obtain FDNY variances and for review of modifications to the existing fire alarm systems.

The World Bank, Washington, DC
Fire Safety and Code Consulting Services
Fire Safety and Code Consulting services provided for the 12-story historic building. The scope of services will encompass the 4th and 5th Floors comprising approximately 29,624 rentable square feet. The 4th Floor is currently classified as a Group B, business occupancy. The 5th Floor is classified as a mixed occupancy with uses in Group A, assembly (an 870-net sf conference room) and Group B, business. No change of occupancy is anticipated to occur as a result of the project. The project will be limited to selective interior demolition and alteration. The proposed scope of services is intended to assist the design team with respect to fire safety code compliance including the building and fire codes and standards.

Potomac Center North, Washington, DC
Fire Protection and Life Safety Property Conditions Assessment
Fire Protection and Life Safety Property Conditions Assessment for an 11-story, 500,000-sf, high-rise office building in Washington, DC.

The Investment Building, Washington, DC
Fire Protection and Life Safety Assessment Services
Fire Protection and Life Safety Assessment services were provided to Pond, Robinson & Associates, LP for the historic 13-story high-rise building located at 1501 K Street NW in Washington, D.C. The 400,000-sf building houses offices and retail space including a bookstore and coffee house.

Taco Bell Office Building, Irvine, CA
Third Party Special Inspection and Testing Services
Provided third party special inspection and testing services for the existing smoke control system to Taco Bell Corporation for the recertification of the Taco Bell office building project located in Irvine, California. The existing Taco Bell office building consists of a high-rise administrative office tower and a low-rise design center. The high-rise portion of the facility consists of five stories of office space having a total height of 91’-0”. The first floor lobby is open to the second floor office via an open balcony.

Park Place Office Tower, Irvine, CA
Fire and Life Safety Services
Fire and Life Safety Services were provided for the Park Place Office Tower project located at 3161 Michelson Drive in Irvine, California. The existing Park Place Office Tower is a fully sprinklered 19-story structure having a total height of 313 feet. Our firm re-inspected the current design to determine the applicability of the existing smoke control system.
1888 Century Park East, Century City, CA  
**Feasibility and Design Services**

Feasibility and Design services were provided for retrofitting this 21-story, 500,000–sf high rise per the sprinkler and fire alarm ordinance requirements. During the construction phase, we attended pre bid and pre construction meetings, review the bids, shop drawings/submittal reviews, and installation inspections.

400 S. Hope Street, Los Angeles, CA  
**Fire Alarm System Services**

Services were retained to bring the fire alarm system into compliance with current code requirements. JENSEN HUGHES reviewed the building to identify existing conditions and locations of equipment. We provided bid specifications, bid package review and negotiations with the authority having jurisdiction.

911 Wilshire, Los Angeles, CA  
**Fire Alarm System Services**

Services were retained to bring the fire alarm system into compliance with current code requirements to a 22-story high-rise office building located in Downtown Los Angeles. We reviewed the building to identify existing conditions and locations of equipment. Two replacement approaches were identified with pros/cons of each noted. We provided bid specifications, bid package review and negotiations with the authority having jurisdiction.

Century Plaza Towers, Century City, CA  
**Design Analysis and Systems Design Services**

Provided design analysis and systems design for the upgrade of fire alarm systems the twin 44-story skyscraper complex. We started by performing a survey and analysis of the existing fire alarm system. Then reviewed viable options for upgrading with the owner, and developed a design approach. Negotiations followed, with City officials, in order to gain approval of our approach.

We developed design drawings and specifications centered on an addressable network system. Having over 40 nodes, it is the largest fire alarm network system ever installed in this region by the major manufacturer that was selected. Construction support services including reviewing shop drawings and installation progress, and witnessing final acceptance testing were also provided. The towers are the tallest buildings in Century City and the tallest skyscrapers in Southern California outside of downtown Los Angeles. Beneath the towers, is a parking facility with a capacity of approximately 5,000 cars making it one of the world’s largest underground parking facilities.

American Consulate, Vancouver, Canada  
**Fire Alarm System Design**

JENSEN HUGHES provided the design for a new fire alarm system for the renovation of the American Consulate in Vancouver. The chancery occupies 25,000 square feet on three floors of a 22-story building. Other existing fire alarm, fire sprinkler and standpipe systems in the 500,000 square foot building would remain in service.
INTERNATIONAL

ChemSunny Plaza, Beijing, China
Fire Safety Design Services
ChemSunny Plaza is a fourteen story mixed use facility combining office, retail, storage, and automobile parking. The building site is in a prominent location in Beijing and will house one of the nation’s largest oil companies. The building design incorporates several full height atrium spaces to bring light into interior offices.

JENSEN HUGHES scope of work for this mixed-use high-rise tower included the development of a fire safety approach to address the atrium fire protection strategies and fire compartment requirements for the facility. The effort included a performance based design analysis utilizing FDS fire modeling.

Pearl River Tower, Guangzhou, China
Fire Protection Engineering Services
The Pearl River Tower is designed to be a 310 meter, 70-floor tower containing offices, a business club, restaurants and conference center functions. The building will have approximately 170,000 gross square meters (“gsm”) above ground and 40,000 gsm below ground for a total area of 210,000 gsm. The project contains approximately 8,000 gsm of site work area.

When completed, the Pearl River Tower will be one of the most environmentally friendly buildings in the world with turbines that turn wind into HVAC energy, a rainwater collection system and a solar collector for power generation. JENSEN HUGHES was chosen by Skidmore, Owings and Merrill, LLP/Chicago not only to create the fire protection strategy for the building but also to contribute our LEED accredited expertise to the sustainable design elements of the life safety systems.

Jin Mao Tower, Shanghai, China
Fire Protection and Life Safety Services
The 421 meter high Jin Mao Tower is China’s second tallest building and among the tallest building in the world. The building contains mixed uses including office, hotel, retail, and assembly. The structure is a prominent landmark on Shanghai’s skyline.

JENSEN HUGHES scope of work for this mixed-use high-rise tower included the development of a fire safety master plan to address the atrium fire protection strategies and fire compartment requirements for the facility. The effort included a performance based design approach utilizing fire modeling. JENSEN HUGHES provided the security approach and design for the project.

North Bund White Magnolia Plaza, Shanghai, China
Code Consulting Services
The North Bund White Magnolia Plaza is a mixed-use development, consisting of a 66-story office tower, a 39-story west hotel tower, a 24-story east hotel tower and a 4-story retail podium building including three blocks. The retail podium building block A is connected to the two hotel towers on Level 2 to Level 4 by bridges. In addition to the retail podium building, underground retail spaces are also designed on lower level 1 and lower level 2. These two underground retail levels are interconnected by numerous sunken gardens.

JENSEN HUGHES assisted the design team to develop a fire and life safety strategy that complies with code requirements or is accepted by the local fire authority, without eliminating the unique features of the architectural design. Unique issues addressed include the openness of the underground retail spaces, the fire compartmentation, the exit discharge of the office tower, the egress of the underground cinemas, and the firefighting access through the hotel canopy.
Shanghai World Financial Center, Shanghai, China
*Fire Protection Engineering Services*

JENSEN HUGHES was retained by Mori Building Co. Ltd. to provide fire protection consulting services for the Shanghai World Financial Center in Shanghai, China. The total project area is approximately 317,000 m² and includes an Office Tower with a Hotel above, retail stores at the base, a Gallery and an Observation Deck at the top. It is a total of 492 Meters in height.

The purpose of our services for this project was to assist in development of fire protection strategies for the large public assembly spaces and amusement ride located at the top of the building. JENSEN HUGHES utilized CFD fire and smoke modeling as well as egress simulations to verify the design and to refine the smoke control approach for the space. We were able to develop cost effective solutions to the fire safety requirements of the project that are consistent with the applicable codes and which represent internationally recognized “best practice” approaches to fire safety engineering design. The project was governed by the building and fire codes applicable to the City of Shanghai, China.

India Gujarat International Finance Tec-City, Gujarat, India
*Fire and Life Safety Consulting Services*

The Gujarat International Finance Tec-City (GIFT) is a 506 acres new mixed-use development located between Ahmedabad and Gandhinagar, India. The whole GIFT development consists of 30 blocks with multiple high-rise or low-rise buildings in each block. The building types include residential buildings, hotels, retail spaces, offices, hospitals and recreation spaces. It will act as the central business strict after construction. The goal of the GIFT development is to maintain compliance with internationally recognized codes and standards and the best practice used in similar high-rise developments worldwide, in addition to or in lieu of the National Building Code of India, 2005 Edition.

As the fire and life safety consultant of the GIFT development, JENSEN HUGHES role is to assist the design team in the establishment of major strategies for the fire and life safety site master planning. The master planning issues addressed by JENSEN HUGHES include the required fire station locations and necessary staffing/equipment levels, fire protection water supply demand and fire hydrants, crisis evacuation plan, rooftop helistop requirements, evacuation procedures and fire drills, emergency power supply requirements, special fire protection considerations for recessed road, underground service trench, the logistic center and the utilization of natural gas. In addition to the site master planning, JENSEN HUGHES is also providing code consulting services for the blocks C, D and H of the GIFT development.

Shangri-La at The Fort, Manila, Philippines
*Fire and Life Safety Code Consulting*

The Shangri-La at the Fort is a new mixed-use development located in Taguig, Metro Manila. It is approximately 225 meters in height with 4 podium levels, 17 hotel floors, 42 residential floors and 4 below grade levels.

JENSEN HUGHES scope of service includes fire and life safety related code consulting. To the extent feasible, the building is designed to comply with the National Building Code of Philippines, the Fire Code of Philippines and the Shangri-La fire Protection & Life Safety Guideline. NFPA 101 and International Building Code are also followed in addition to or in lieu of the requirement of the national Philippine codes as an enhancement or where it is accepted by the local fire authority.
Downtown Burj Dubai, Dubai, UAE
*Fire and Life Safety Services*

Downtown Burj Dubai is a 1 km² mixed-use development which, upon completion, shall include the Burj Dubai (World’s Tallest Building), Dubai Mall (World’s Largest Mall) and over 80 other residential/commercial/office buildings. The Downtown Burj Dubai development is being developed as an iconic development for Dubai, United Arab Emirates and the entire Middle East. Upon completion, the Downtown Burj Dubai is expected to house over 100,000 residents and entertain an average of 150,000 visitors daily.

Emaar Properties PJSC, the Downtown Burj Dubai developer, identified the concern for how to effectively manage and coordinate responses to Fire and Life Safety issues that may adversely affect the Downtown Burj Dubai. Emaar Properties requested JENSEN HUGHES to develop comprehensive Fire and Life Safety Strategies and Procedures to manage various emergency situations that could adversely affect the site’s operations, tenants, guests and staff. These procedures, to be utilized upon opening of the various parcels, is being designed to provide a coordinated approach between the parcel management, Downtown Burj Dubai management and various Dubai Local Authorities that may be required to respond to a crisis situation.

JENSEN HUGHES began work on the Downtown Burj Dubai in 2004 and the involvement on this project has led Emaar Properties to contract JENSEN HUGHES to develop Fire and Life Safety Strategies and Procedures for other Emaar-owned master developments. In addition, JENSEN HUGHES is working with Emaar Properties to standardize their approach to Fire and Life Safety Strategies on a global basis throughout their portfolio located in 35 different countries.

Burj Khalifa, Dubai, UAE
*Fire and Life Safety Services*

Destined to be the world’s tallest building when complete, the Burj Dubai will stand over 800 meters tall. The building includes a 5 star hotel with associated restaurants and public assembly amenities, residential condominiums, corporate office suites, an observation level and below grade parking. The total building area is approximately 440,000 m².

JENSEN HUGHES is the fire and life safety consultant for this landmark building. This effort includes developing fire protection strategies based on code requirements and life safety enhancements. As part of this effort, JENSEN HUGHES has performed timed egress analysis, elevator assisted egress analysis, and an analysis of unprotected steel structural elements in the lower portion of the building.

JENSEN HUGHES has worked with the design team and the Dubai Civil Defense Authority throughout the design and construction process to coordinate the fire safety strategy and to provide guidance on the design of the fire protection features of the building. JENSEN HUGHES is currently developing the Crisis Response Plan that will be used by building management during an emergency and will provide training to key management staff before building operations begin.
CONTRIBUTIONS TO THE SCIENCE OF SAFETY

JENSEN HUGHES has established a reputation for expertise, ethics, and competency in fire protection engineering and research. We have achieved this through years of active participation with regional, national and international building and fire code committees and regulatory bodies. We continue to contribute to the development of such codes through our representation both on and before many of these committees.

Our familiarity and participation in the codes and standards making processes enables our staff to develop code compliant approaches and equivalencies in a timely manner, thus streamlining the design and construction process. Our engineers, scientists and consultants actively participate in 150+ committees for numerous industry associations, including but not limited to:

- National Fire Protection Association (NFPA)
- Society of Fire Protection Engineers (SFPE)
- International Code Council (ICC)
- Institute of Electrical and Electronics Engineers (IEEE)
- Underwriters Laboratory (UL)
- Fire Protection Research Foundation (FPRF)
- American Society for Testing and Materials (ASTM)
- Automatic Fire Alarm Association (AFAA)
- American Society of Mechanical Engineers (ASME)
- American Nuclear Society (ANS)
- American Institute of Steel Construction (AISC)
- American Iron and Steel Institute (AISI)
- American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)
- American Society for Industrial Security (ASIS)
- Council on Tall Buildings and Urban Habitat (CTBUH)
- National Association of Fire Investigators (NAFI)
- Joint Army-Navy-NASA-Air Force Safety and Environmental Protection (JANNAF)
- World Organization of Building Officials (WOBO)
- Various Fire Inspector and Fire Chiefs Associations Nationwide

In-Depth Knowledge

- Authored several chapters and edited the SFPE Handbook of Fire Protection Engineering
- Authored chapters of the NFPA Fire Protection Handbook
- Contributors to multiple Department of Defense (DOD) UFC Codes and Specifications, including UFC 3-560-01, Electrical Safety - Operations and Maintenance
GLOBAL REACH

JENSEN HUGHES has completed hundreds of thousands of projects on every continent and in over 100 countries, some of which include:

**North America**
- Canada
- Mexico
- Puerto Rico
- United States

**Central / South America**
- Argentina
- Bermuda
- Brazil
- Bolivia
- Chile
- Colombia
- Ecuador
- Panama
- Trinidad & Tobago
- Uruguay

**Europe**
- England
- Finland
- France
- Germany
- Ireland
- Italy
- Norway
- Portugal
- Scotland
- Turkey

**Africa**
- Algeria
- Egypt
- Ghana
- Guinea
- Jordan
- Nigeria
- Oman
- Republic of South Africa
- Sierra Leone

**Asia (continued)**
- Cambodia
- Dubai
- Hong Kong
- India
- Indonesia
- Iraq
- Japan
- Macau
- Malaysia
- Maldives
- Myanmar
- Nepal
- Pakistan
- Peoples Republic of China
- Philippines
- Qatar
- Saudi Arabia
- Singapore
- South Korea
- Sri Lanka
- Taiwan
- Thailand
- Vietnam
- United Arab Emirates
- Vietnam

**Pacific**
- Australia
- Fiji Islands
- Guam
- New Zealand

**Antarctica**
- Abu Dhabi
- Bangladesh
Headquartered in Baltimore, MD, USA, JENSEN HUGHES serves our customers globally through office locations strategically located in major metropolitan areas. Our team of nearly 900 professionals has the capacity to assist from any location on a variety of projects in order to satisfy the needs of our clients.

**US Offices**
- **Arizona**: Phoenix
- **California**: Anaheim, Los Angeles, San Diego, San Francisco, San Jose, Walnut Creek
- **Colorado**: Colorado Springs, Denver
- **Florida**: Miami, Orlando
- **Georgia**: Atlanta
- **Illinois**: Chicago, Oakbrook, Warrenville
- **Indiana**: Fort Wayne
- **Maryland**: Baltimore, Rockville
- **Massachusetts**: Boston, North Andover
- **Nebraska**: Lincoln
- **New Jersey**: Woodstown
- **New Mexico**: Albuquerque
- **New York**: Armonk, Manhattan
- **Nevada**: Las Vegas
- **North Carolina**: Charlotte, Raleigh
- **Ohio**: Cincinnati
- **Pennsylvania**: Philadelphia, West Chester
- **Rhode Island**: Providence
- **Tennessee**: Knoxville

**Texas**: Austin, Dallas, Houston
**Virginia**: Alexandria, Blacksburg, Fairfax, Virginia Beach
**Washington**: Seattle, Vancouver

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